



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

October 12, 2021

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

RE: Tower Share Application
126 Pioneer Height Road, Somers CT 06071
Latitude: 41.94888333
Longitude: -72.4920972200
Site# 806378_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 126 Pioneer Height Road in Somers, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 5G MHz antenna and six (6) RRUs, at the 147-foot level of the existing 160-foot self-support tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by B+T Group, dated July 9, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated June 15, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the CT Siting Council, Docket No. 58 on July 11, 1986. 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 C.G. 'Bud' Knorr, Jr., First Selectman and Ms. Jennifer Roy, Zoning Enforcement Officer for the Town of Somers, as well as the tower owner (Crown Castle) and property owner (Lena Farnham & Faye Gately)

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 160-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 147-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 negligible.



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 12.55% 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 self-support in Somers. 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 147-foot level of the existing 160-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

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

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



Attachments cc:

C.G. 'Bud' Knorr, Jr., First Selectman (Property Owner)
Town of Somers
600 Main Street, Somers CT 06071

Jennifer Roy, Zoning Enforcement Officer
Town of Somers
600 Main Street, Somers CT 06071

Lena Farnham & Faye Gately
c/o Crown Atlantic
P.O. Box 353
4017 Washington Rd, McMurray PA 15317

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

DOCKET NO. 58

AN APPLICATION OF HARTFORD CELLULAR
COPANY FOR A CERTIFICATE OF
ENVIRONMENTAL COMPATIBILITY AND PUBLIC
NEED FOR THE CONSTRUCTION, MAINTENANCE,
AND OPERATION OF FACILITIES TO PROVIDE
CELLULAR SERVICE IN HARTFORD, TOLLAND AND
MIDDLESEX COUNTIES.

CONNECTICUT SITING
COUNCIL

July 11, 1986.

D E C I S I O N A N D O R D E R

Pursuant to the foregoing opinion, the Connecticut Siting Council (Council) hereby directs that a Certificate of Environmental Compatibility and Public Need as provided by Section 16-50k of the General Statutes of Connecticut (CGS) be issued to the Hartford Cellular Company for the construction, maintenance, and operation of cellular mobile phone telecommunication towers and associated equipment in the towns of Glastonbury, Haddam, Hartford, Portland, Rocky Hill, Somers, Vernon, Windsor, and Willington subject to the conditions below.

- 1) The proposed Bloomfield and Middlefield sites are rejected without prejudice.
- 2) The antennas on the Glastonbury tower shall be mounted no higher than the 180' level of this existing tower.
- 3) The Portland and Rocky Hill towers shall be monopoles.
- 4) The towers shall be no taller than necessary to provide the proposed service, and in no event shall exceed total heights, including antennas, of
 - a) 193' at the Haddam site;
 - b) 173' at the Portland site;

- c) 153' at the Rocky Hill site;
- d) 173' at the Somers site;
- e) 173' at the Vernon site;
- f) 153' at the Willington site;
- g) 173' at the Windsor site.

5) The Hartford site receive antennas shall be mounted below the top of the high point of the building to preclude visibility.

6) Any future actions requiring the removal of the existing Glastonbury tower to be shared by the certificate holder shall also apply to the equipment mounted on that tower by the certificate holder, regardless of that equipment's status under Chapter 277a of the CGS.

7) The certificate holder shall submit a development and management (D&M) plan for the Haddam, Portland, Rocky Hill, Somers, Vernon and Windsor sites pursuant to Sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies (RSA), except that irrelevant items in Section 16-50j-76 need only be identified as such. In addition to the requirements of Section 16-50j-76, the D&M plan shall provide plans for evergreen screening around the fenced perimeter at the Haddam, Somers, Vernon, and Windsor sites. The D&M plan shall include a proposal for painting the approved monopole structures to blend with the sky. The D&M plan must be approved prior to facility construction. Any changes to specifications in the D&M plan must be approved by the Council prior to facility operation.

8) All certified facilities shall be constructed, operated, and maintained as specified in the Council's record and in the

site plan required by order number 7.

9) The certificate holder shall comply with any future radiofrequency (RF) standards promulgated by state or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted in this decision shall continue to be in compliance with such standards.

10) The certificate holder shall permit public or private entities to share space on the towers approved herein, for due consideration received, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. In addition to complying with Section 16-50j-73 of the RSA, the certificate holder shall notify the Council of the addition of any equipment to any approved tower.

11) A fence not lower than 8' shall surround each tower and associated equipment.

12) Unless necessary to comply with order 13, no lights shall be installed on any of these towers.

13) The facilities' construction and any future tower sharing shall be in accordance with all applicable federal, state, and municipal laws and regulations. Shared uses by entities not subject to jurisdiction pursuant to Section 16-50k of the CGS shall be subject to all applicable federal, state, and municipal laws and regulations.

14) Construction activities shall take place during daylight working hours.

15) This decision and order shall be void and the towers and associate equipment shall be dismantled and removed, or reapplication for any new use shall be made to the Council before any such new use is made, if the towers do not provide or permanently cease to provide cellular service following completion of construction.

16) This decision and order shall be void if all construction authorized herein is not completed within three years of the issuance of this decision, or within three years of the completion of any appeal if appeal of this decision is taken, unless otherwise approved by the Council.

Pursuant to CGS Section 16-50p, we hereby direct that a copy of the decision and order shall be served on each person listed below. A notice of the issuance shall be published in the Hartford Courant, Middletown Press, Manchester Journal Inquirer, and the Willimantic Chronicle.

The parties to the proceeding are:

Metro Mobile (applicant)
5 Eversley Avenue
Norwalk, Connecticut 06855
ATTN: Armand Mascioli
General Manager

Howard L. Slater, Esq. (its attorneys)
Scott A. Gursky, Esq.
Byrne, Slater, Sandler,
Shulman & Rouse, P.C.
111 Pearl Street
Hartford, Connecticut 06103

Richard Rubin, Esq.
Fleischman and Walsh, P.C.
1725 N Street, N.W.
Washington, D. C. 20036

Mr. William Wamester
1225 Randolph Road
Middletown, Connecticut 06457

The Southern New England Telephone Company
227 Church Street
New Haven, Connecticut 06506
ATTN: Peter J. Tyrrell, Esq.

Mr. James W. Tilney

represented by:
Patricia A. Ayars
Samuel Baily, Jr.
Robinson & Cole
One Commercial Plaza
Hartford, CT. 06103-3597

Mr. Samuel DuBosar, Chairman
Bessie Bennett, Esq.
Town Plan & Zoning Commission
P.O. Box 337
Bloomfield, Connecticut 06002

Town of Somers

represented by:

Mr. Robert F. Peters
Town Counsel
Tatoian, Devline, Peters
& Davis
11 South Road
P.O. Box 415
Somers, CT. 06071

Town of Haddam
represented by:

Lucy R. Petrella
Chairperson
Town Office Building
Route 9A
P.O. Box 87
Haddam, CT. 06438

Midstate Regional Planning Agency

represented by:

Thomas M. Gilligan
Regional Planner
P.O. Box 139
Middletown, CT. 06457

Dr. Donald P. LaSalle
Director
Talcott Mountain Science Center
Montevideo Road
Avon, Connecticut 06001

Barnard Tilson (service waived)
Secretary
Avon Planning and Zoning
60 West Main Street
Avon, Connecticut 06001

Alden Giddings
33 Privelege Road
Bloomfield, Connecticut 06002

Town of Bloomfield

represented by:

Joseph M. Suggs, Jr.
Deputy Mayor
Town Hall
880 Bloomfield Avenue
P.O. Box 337
Bloomfield, CT. 06002
(service waived)

Town of Middlefield

represented by:

David Silverstone, Esq.
Silverstone & Koontz
37 Lewis Street
Hartford, CT. 06103

with a copy to:

Geoffrey Colegrove
Midstate Regional Planning Agency
100 DeKoven Drive
Middletown, CT. 06457

Zoning Commission
Town of Somers

represented by:

Joseph A. Paradis
Chairman
Town Hall
600 Main Street
P.O. Box 803
Somers, CT. 06071

Barbara Sirwilo, Secretary (service waived)
Planning & Zoning Commission
Town of Rocky Hill
600 Old Main Street
P.O. Box 657
Rocky Hill, Connecticut 06067

H. Robert Goodrich (service waived)
Goodrich Lane
Portland, Connecticut 06480

The Honorable Richard P. Antonetti
State Representative (service waived)
5 Sachem Circle
Meriden, Connecticut 06450

John Hevrin
R.D. #1 - Plains Road
Haddam, Connecticut 06438

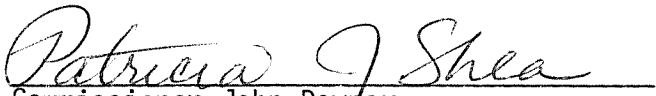



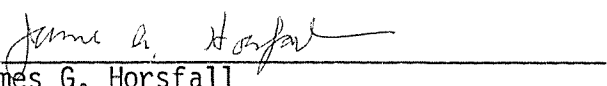
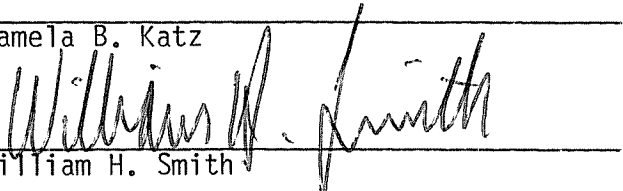
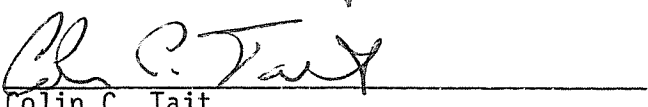
Norman and Darlene Manning (represented by)

Elizabeth Allen, Esq.
P.O. Box 467
Higganum, CT. 06441
(service waived)

C E R T I F I C A T I O N

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case or read the record thereof, and that we voted as follows:


Dated at New Britain, Connecticut, this 11th day of July, 1986.

<u>Council Members</u>	<u>Vote Cast</u>
_____) Gloria Dibble Pond Chairperson	Absent
 _____) Commissioner John Downey Designee: Patricia Shea	Yes
 _____) Commissioner Stanley Pac Designee: Christopher Cooper	Yes
 _____) Owen L. Clark	Yes
 _____) Mortimer A. Gelston	Yes
 _____) James G. Horsfall	Yes
_____) Pamela B. Katz	Absent
 _____) William H. Smith	Yes
 _____) Colin C. Tait	Yes

STATE OF CONNECTICUT)
 :
COUNTY OF HARTFORD) ss. New Britain, July 11, 1986

I hereby certify that the foregoing is a true and correct copy of the decision and order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:



Christopher S. Wood, Executive Director
Connecticut Siting Council

Exhibit B

Property card



Property Information

Property Location	126 PIONEER HEIGHTS
Owner	FARNHAM LENA G & FAYE F GATELY
Co-Owner	C/O CROWN ATLANTIC CO LLC
Mailing Address	PMB 353 4017 WASHINGTON R MCMURRAY PA 15317
Land Use	299 Vac Comm Lnd
Land Class	C
Zoning Code	A-1
Census Tract	5382.01

Neighborhood	C
Acreage	0.5
Utilities	
Lot Setting/Desc	
Book / Page	0280/0125
Additional Info	

Primary Construction Details

Year Built	0
Building Desc.	Vac Comm Lnd
Building Style	UNKNOWN
Building Grade	
Stories	
Occupancy	
Exterior Walls	
Exterior Walls 2	NA
Roof Style	
Roof Cover	
Interior Walls	
Interior Walls 2	NA
Interior Floors 1	
Interior Floors 2	NA

Heating Fuel	
Heating Type	
AC Type	
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	0
Fin Bsmt Quality	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Vacant
Building Condition	
Sprinkler %	NA
Heat / AC	NA
Frame Type	NA
Baths / Plumbing	NA
Ceiling / Wall	NA
Rooms / Prtns	NA
Wall Height	NA
First Floor Use	NA
Foundation	NA

Photo



Sketch

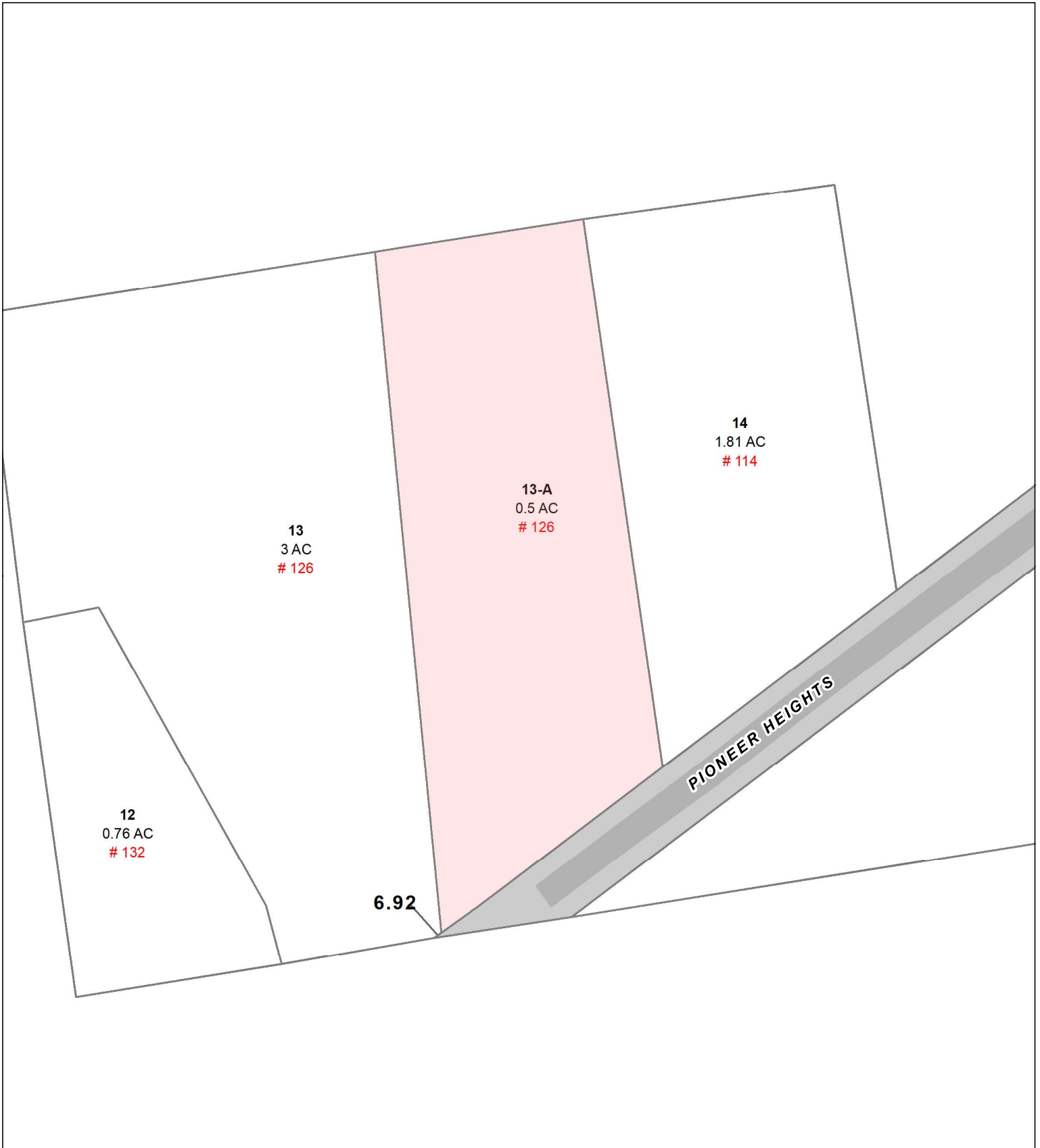


Town of Somers, Connecticut - Assessment Parcel Map



Parcel: 01-13-A

Address: 126 PIONEER HEIGHTS



Approximate Scale: 1 inch = 100 feet

Map Produced June 2020

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Somers and its mapping contractors assume no legal responsibility for the information contained herein.

Exhibit C

Construction Drawings



DISH Wireless L.L.C. SITE ID:

BOBDL00049A

DISH Wireless L.L.C. SITE ADDRESS:

**126 PIONEER HEIGHT RD
SOMERS, CT 06071**

SCOPE OF WORK	
THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:	
TOWER SCOPE OF WORK:	
<ul style="list-style-type: none"> • INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR) • INSTALL (3) PROPOSED ANTENNA MOUNTS (1 PER SECTOR) • INSTALL PROPOSED JUMPERS • INSTALL (6) PROPOSED RRUs (2 PER SECTOR) • INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP) • INSTALL (1) PROPOSED HYBRID CABLE 	
GROUND SCOPE OF WORK:	
<ul style="list-style-type: none"> • INSTALL (1) PROPOSED METAL PLATFORM • INSTALL (1) PROPOSED ICE BRIDGE • INSTALL (1) PROPOSED PPC CABINET • INSTALL (1) PROPOSED EQUIPMENT CABINET • INSTALL (1) PROPOSED POWER CONDUIT • INSTALL (1) PROPOSED TELCO CONDUIT • INSTALL (1) PROPOSED TELCO-FIBER BOX • INSTALL (1) PROPOSED GPS UNIT • INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED) • INSTALL (1) PROPOSED FIBER NID (IF REQUIRED) • INSTALL (1) PROPOSED METER SOCKET 	

SITE INFORMATION	PROJECT DIRECTORY
PROPERTY OWNER: THE CLARENCE & LENA FARNHAM ADDRESS: 126 PIONEER HEIGHTS RD SOMERS, CT 06071	APPLICANT: DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER TYPE: SELF-SUPPORT TOWER	TOWER OWNER: CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
TOWER CO SITE ID: 806378	SITE DESIGNER: B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
TOWER APP NUMBER: 556636	SITE ACQUISITION: NICHOLAS CURRY (704) 405-6600
COUNTY: TOLLAND	CONSTRUCTION MGR: JAVIER SOTO JAVIER.SOTO@DISH.COM
LATITUDE (NAD 83): 41° 56' 55.98" N 41.94888333 N	RF ENGINEER: BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM
LONGITUDE (NAD 83): 72° 29' 31.55" W 72.4920972200 W	
ZONING JURISDICTION: TOWN OF SOMERS	
ZONING DISTRICT: A-1	
PARCEL NUMBER: SOME-000001-000013-A000000	
OCCUPANCY GROUP: U	
CONSTRUCTION TYPE: II-B	
POWER COMPANY: NORTHEAST UTILITIES	
TELEPHONE COMPANY: T.B.D.	



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



2000 CORPORATE DRIVE
CANONSBURG, PA 15317



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



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

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: LHT	CHECKED BY: MTJ	APPROVED BY: MDW
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RFDS REV #: ---

CONSTRUCTION DOCUMENTS

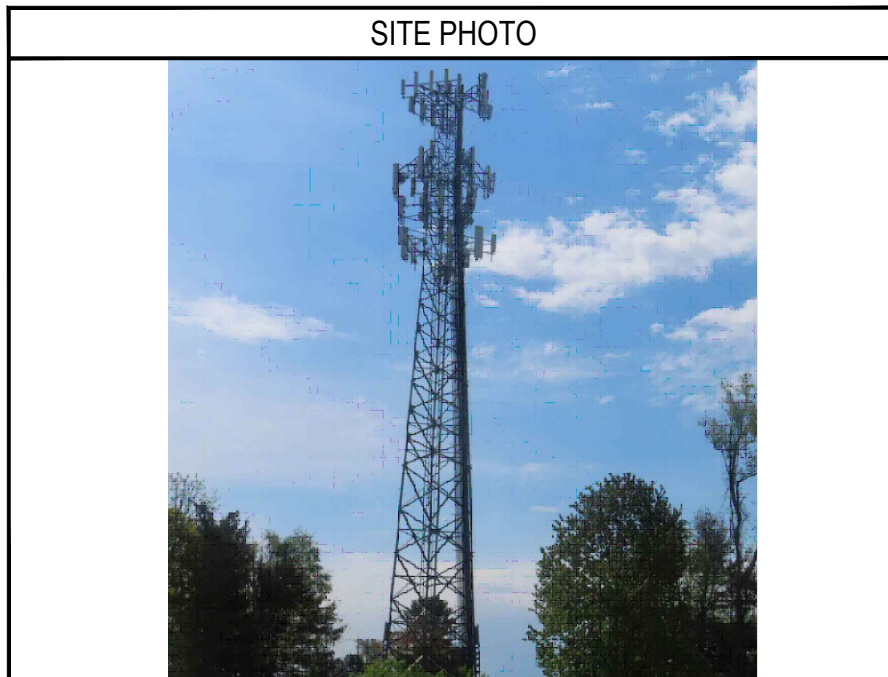
SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/17/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
136290.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



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

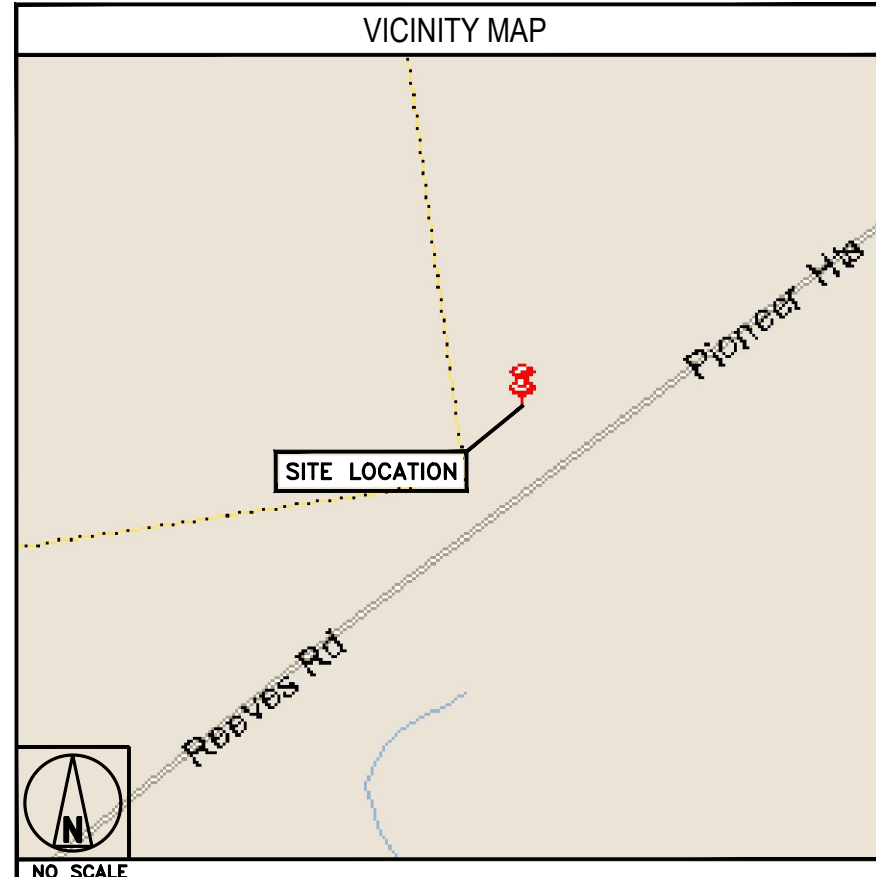
THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE, NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE 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 BRADLEY INTERNATIONAL AIRPORT:
DRIVE FROM CT-140 W AND ELM ST TO WINDSOR LOCKS 23 MIN (11.7 MI) HEAD SOUTHWEST ON REEVES RD TOWARD GRISWOLD RD 1.4 MI TURN RIGHT ONTO CT-140 W 0.8 MI TURN LEFT ONTO CT-140 W/CT-191 S CONTINUE TO FOLLOW CT-140 W 6.0 MI TURN LEFT ONTO MAIN ST 0.3 MI TURN RIGHT ONTO ELM ST 2.3 MI TURN LEFT ONTO ELLA GRASSO TURNPIKE 0.3 MI TURN RIGHT ONTO SCHOEPHOESTER RD 0.6 MI TURN RIGHT



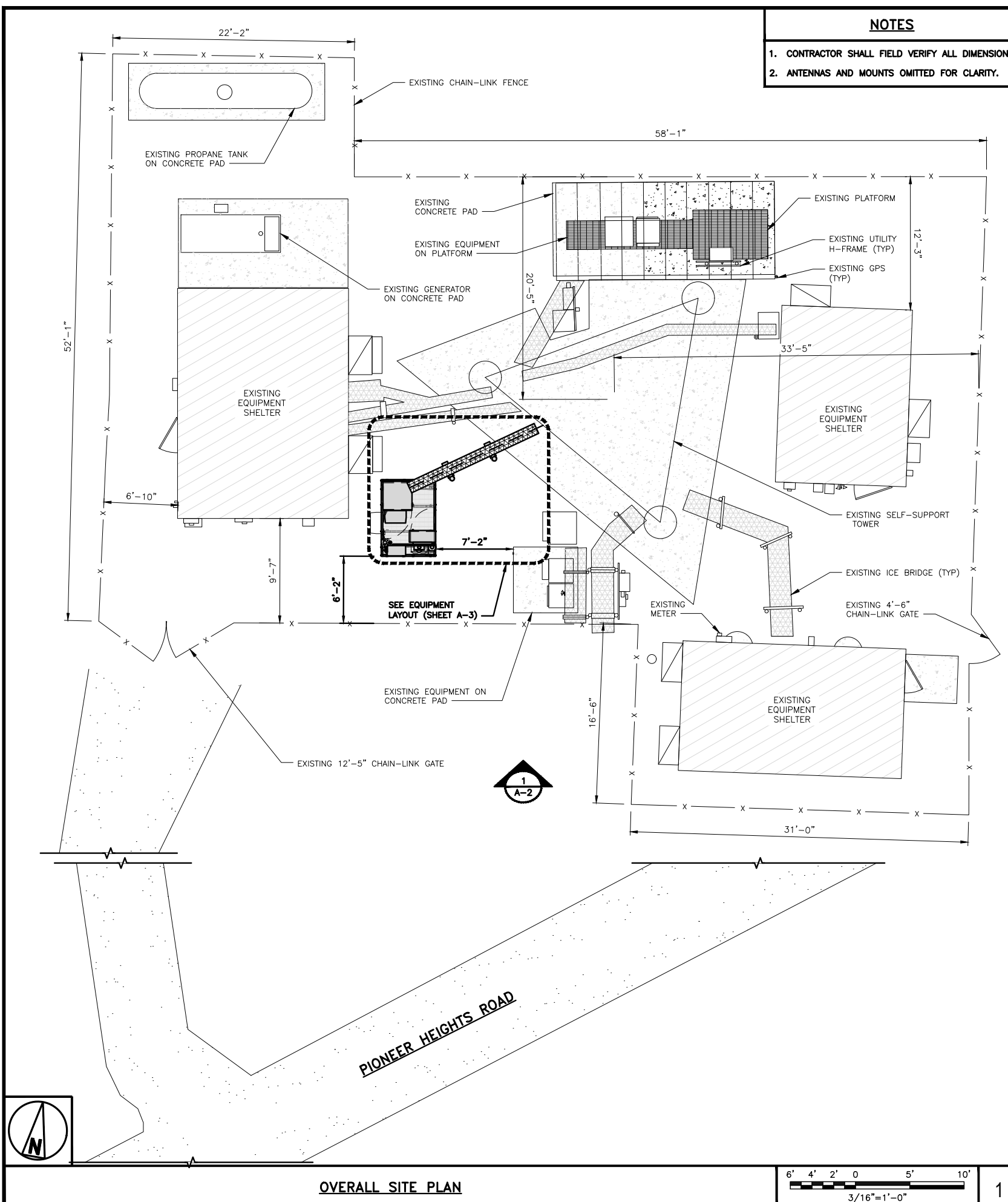
CONNECTICUT CODE COMPLIANCE

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

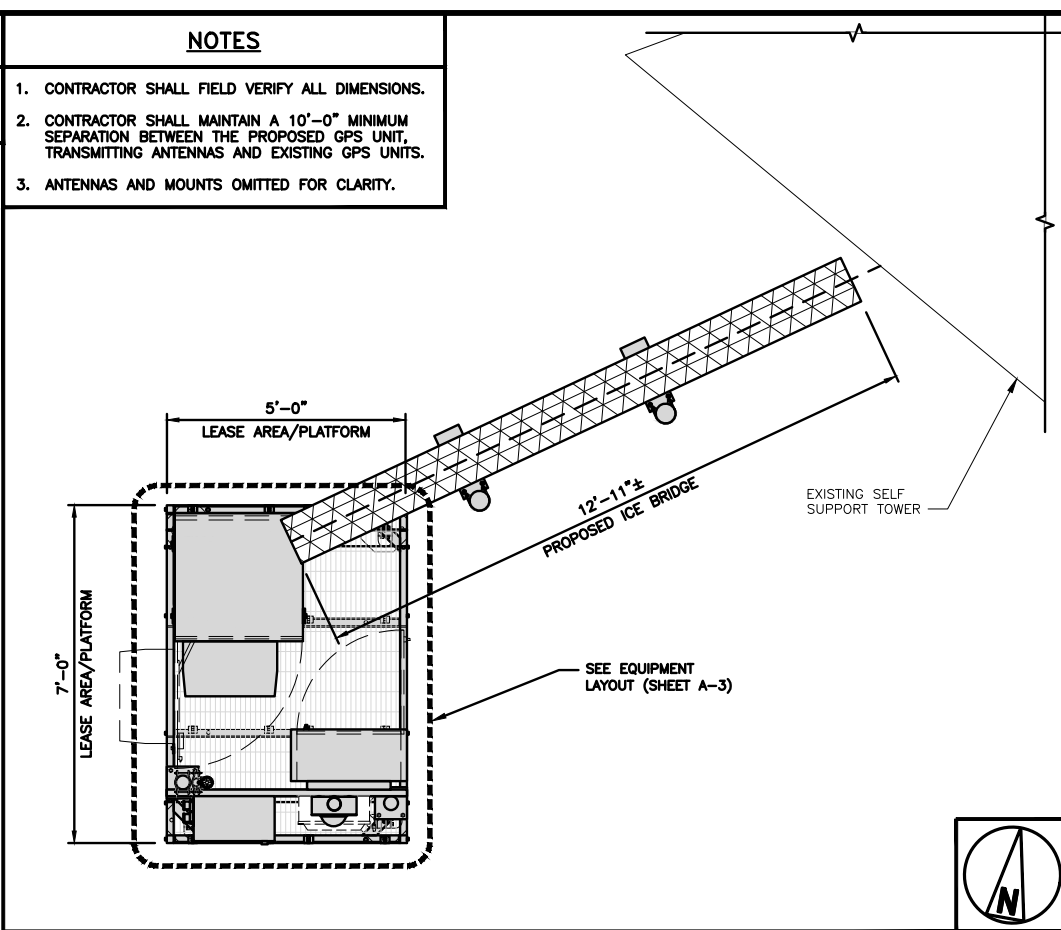
SHEET INDEX

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
RF-2	RF PLUMBING DIAGRAM
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES



NOTES

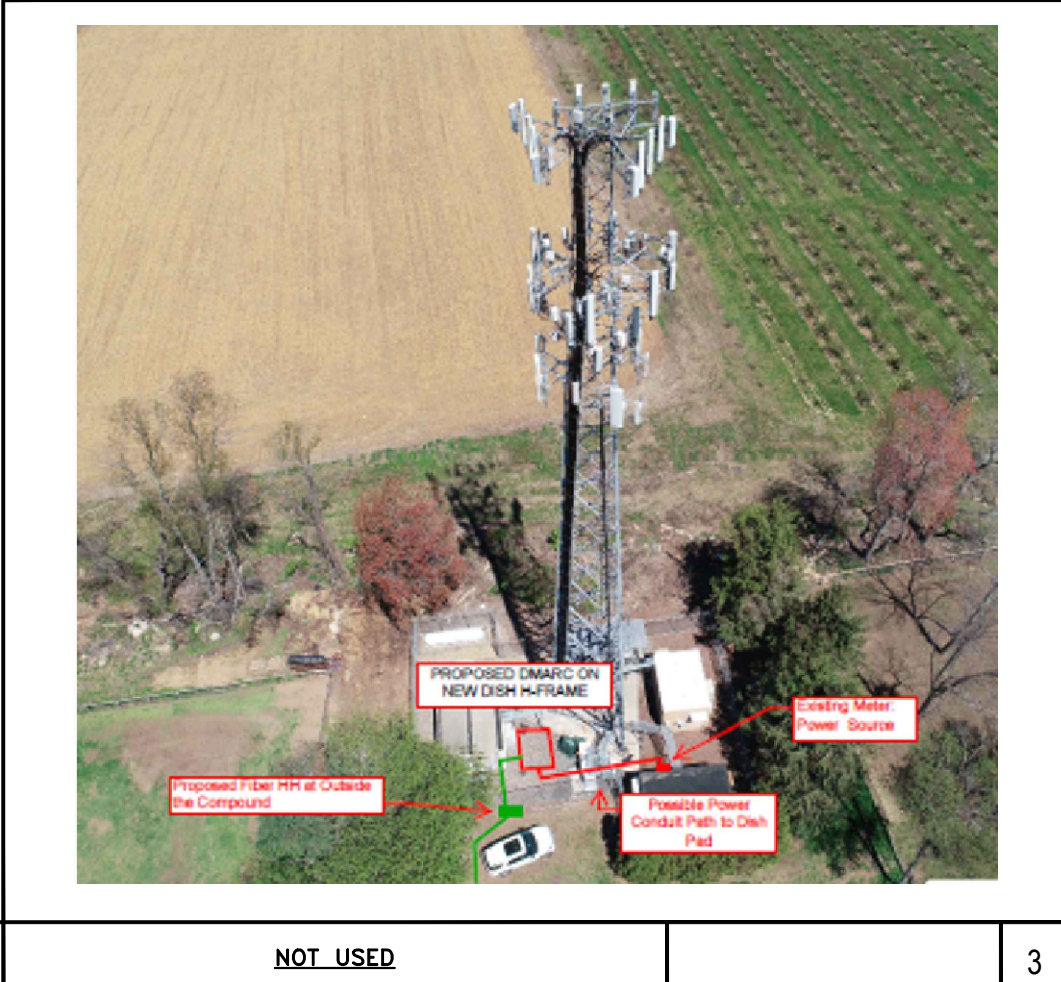
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



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.

ENLARGED SITE PLAN



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

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

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DRAWN BY: LHT CHECKED BY: MTJ APPROVED BY: MDW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/17/21	ISSUED FOR REVIEW
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A&E PROJECT NUMBER
136290.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

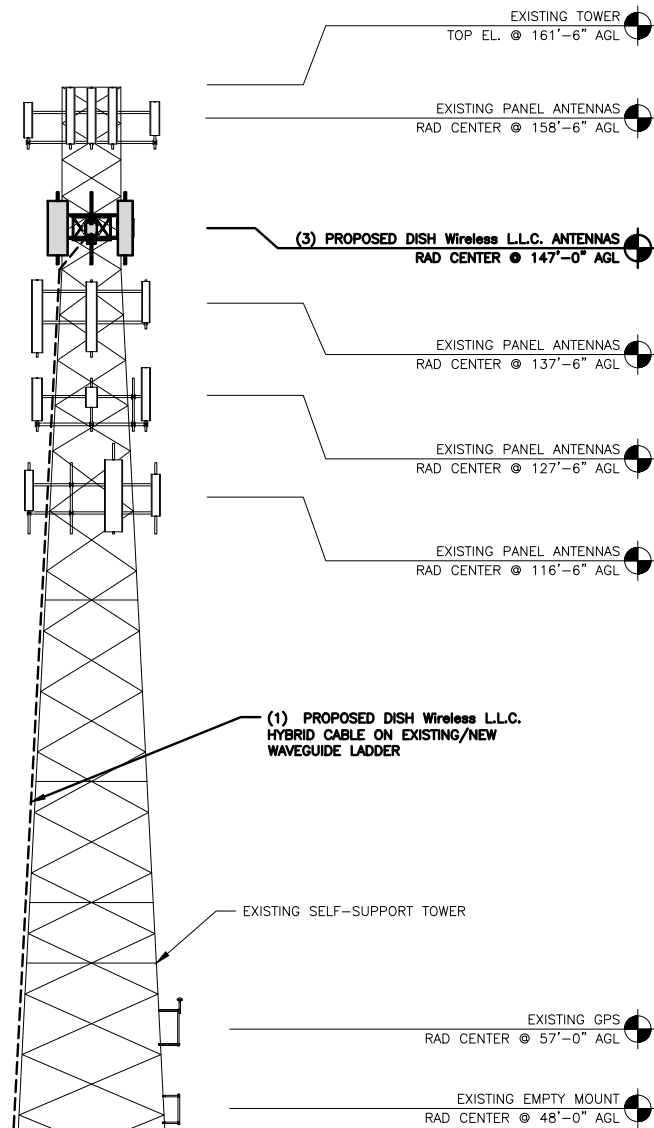
BOBDL00049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

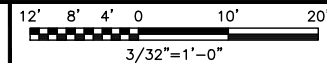
SHEET NUMBER
A-1

NOTES

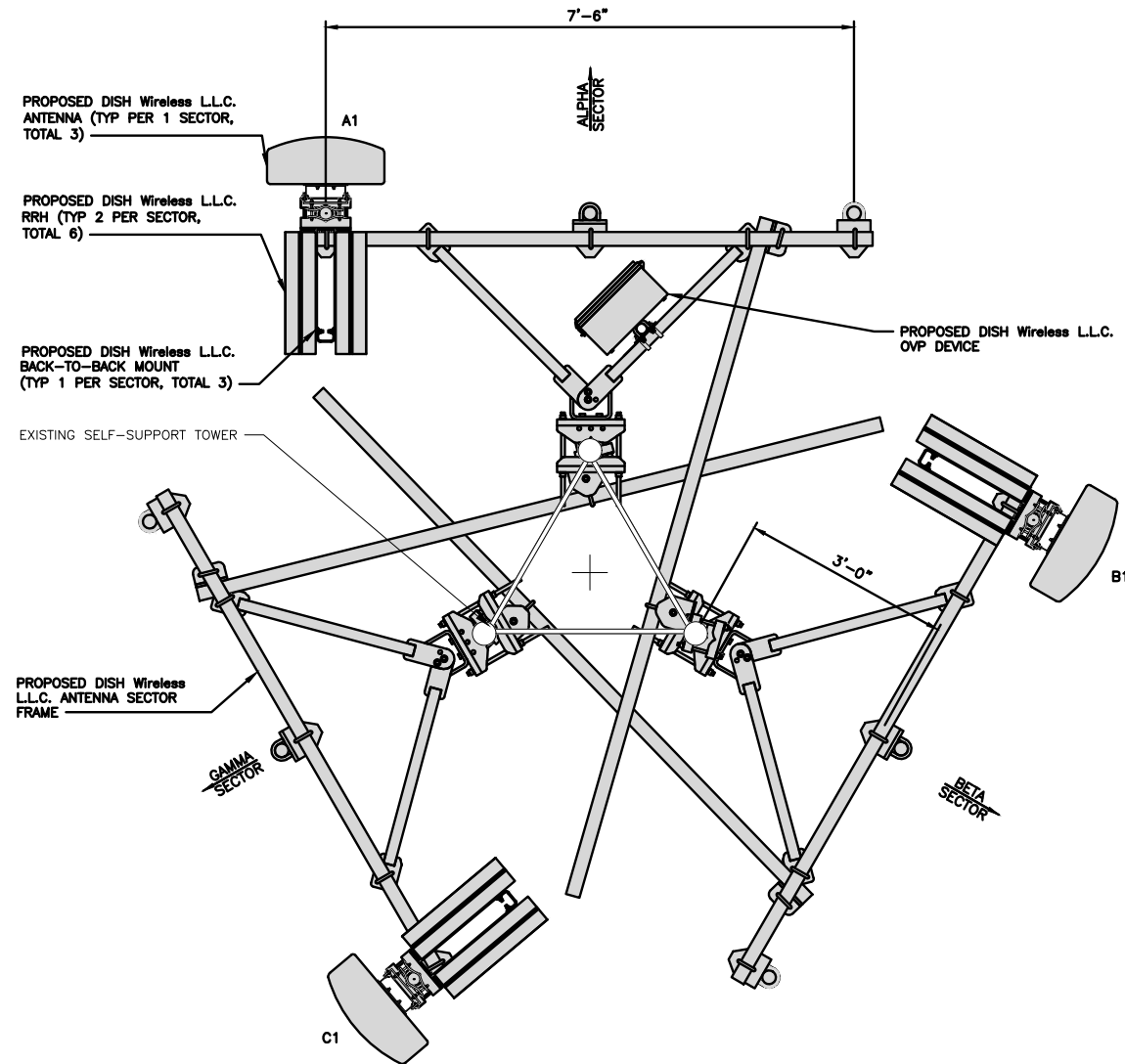
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



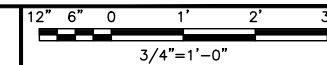
PROPOSED SOUTH ELEVATION



1



ANTENNA LAYOUT



2

SECTOR	POSITION	ANTENNA					TRANSMISSION CABLE	
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS-MX08FRO665-21	5G	72.0" x 20.0"	0°	147'-0"	(1) HIGH-CAPACITY HYBRID CABLE (183' LONG)
BETA	B1	PROPOSED	JMA WIRELESS-MX08FRO665-21	5G	72.0" x 20.0"	120°	147'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS-MX08FRO665-21	5G	72.0" x 20.0"	230°	147'-0"	

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	C1	FUJITSU-TA08025-B604	5G	
	C1	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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RFDS REV #: ---

CONSTRUCTION DOCUMENTS

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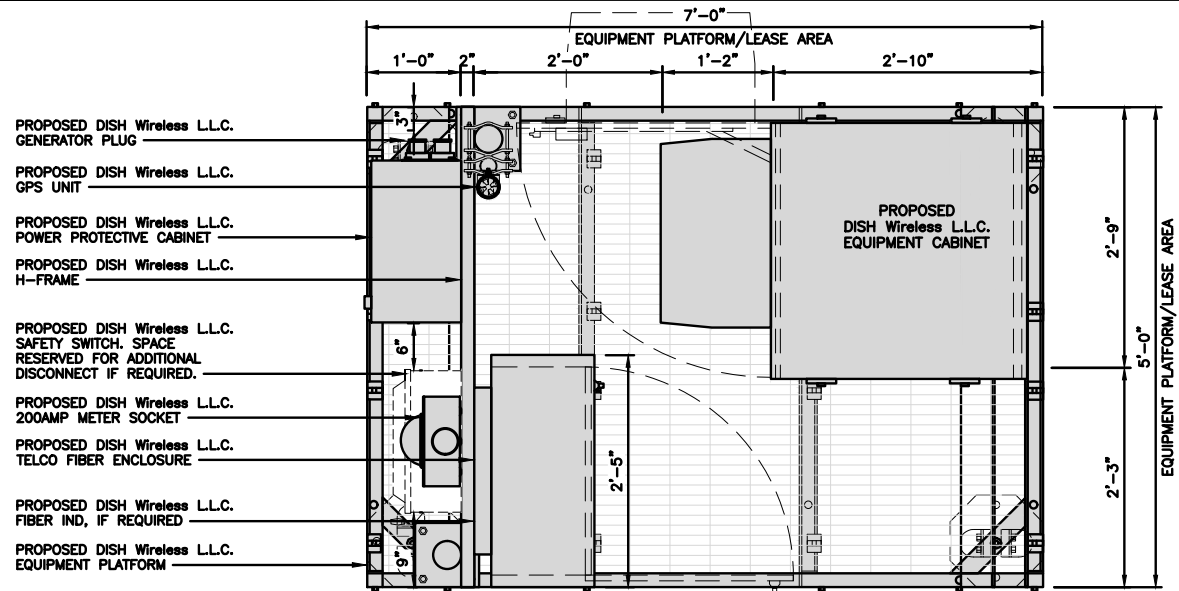
A&E PROJECT NUMBER
136290.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

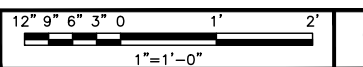
SHEET TITLE
ELEVATION, ANTENNA
LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



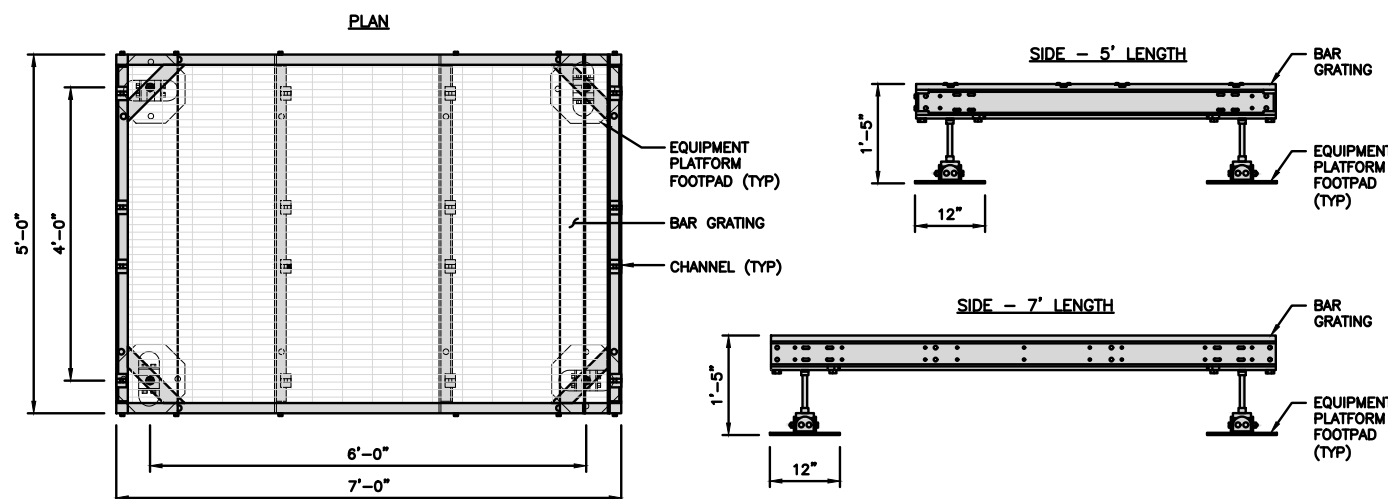
PLATFORM EQUIPMENT PLAN



1

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

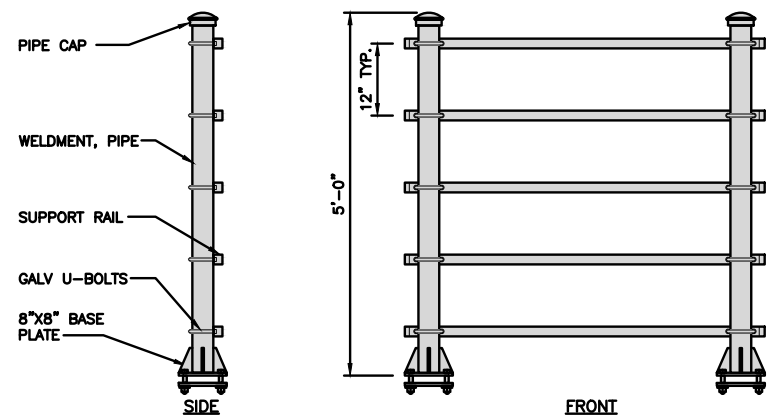
NOTE:
GC TO PROVIDE EXTENDED
THREAD FOR PLATFORM IF
REQUIRED HEIGHT EXCEEDS 17"



PLATFORM DETAIL

NO SCALE 2

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



H-FRAME DETAIL

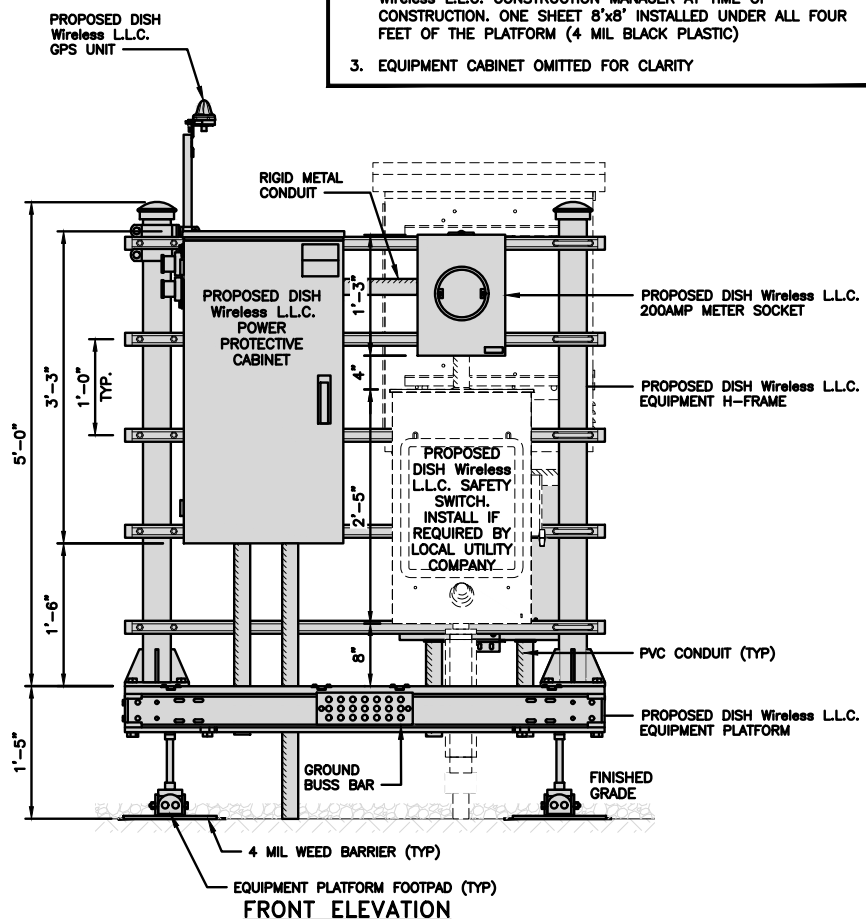
NO SCALE 3

NOT USED

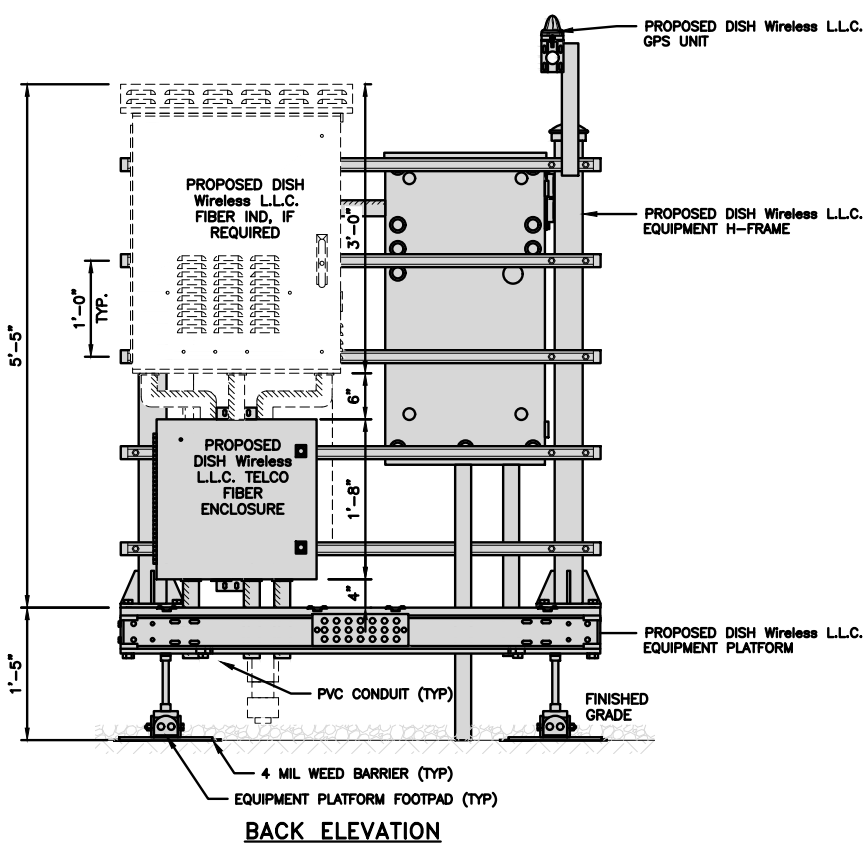
NO SCALE 4

NOTES

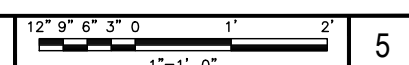
- CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
- WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
- EQUIPMENT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



FRONT ELEVATION



BACK ELEVATION



H-FRAME EQUIPMENT ELEVATION

NO SCALE 5



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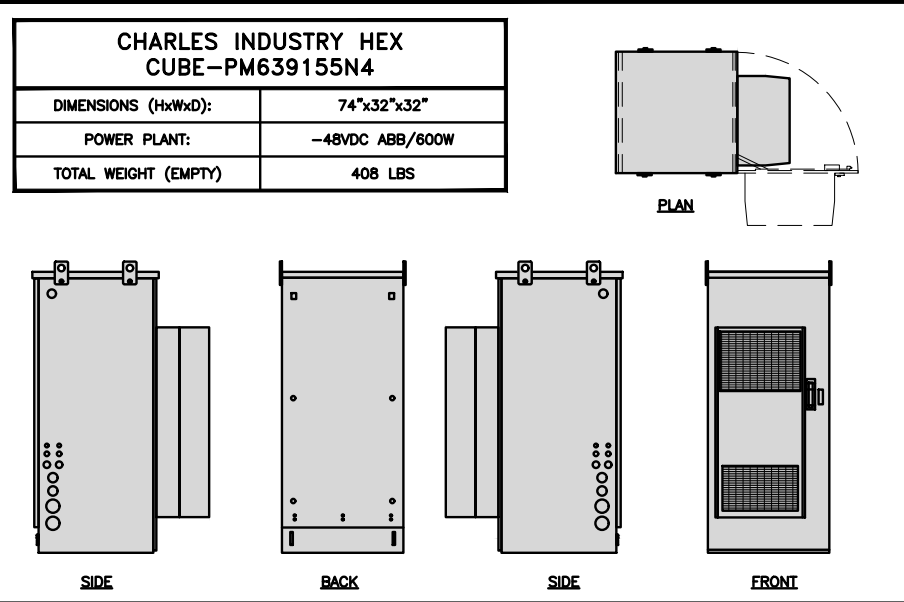
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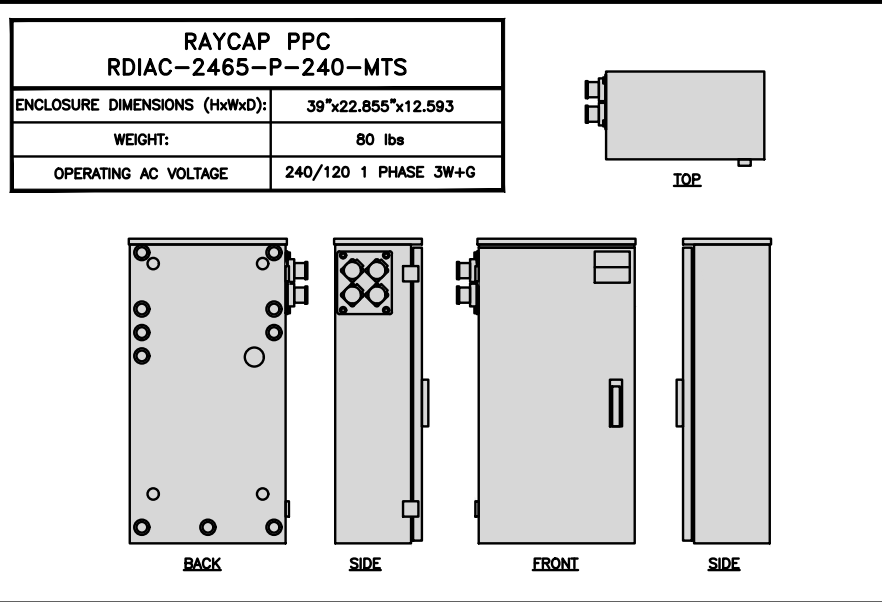
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL0049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

SHEET TITLE
EQUIPMENT PLATFORM AND
H-FRAME DETAILS

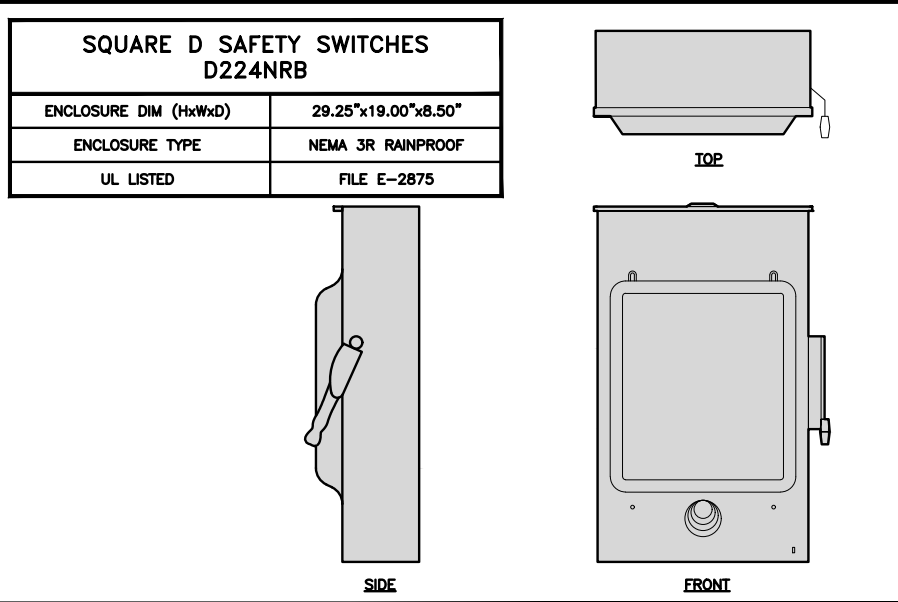
SHEET NUMBER
A-3



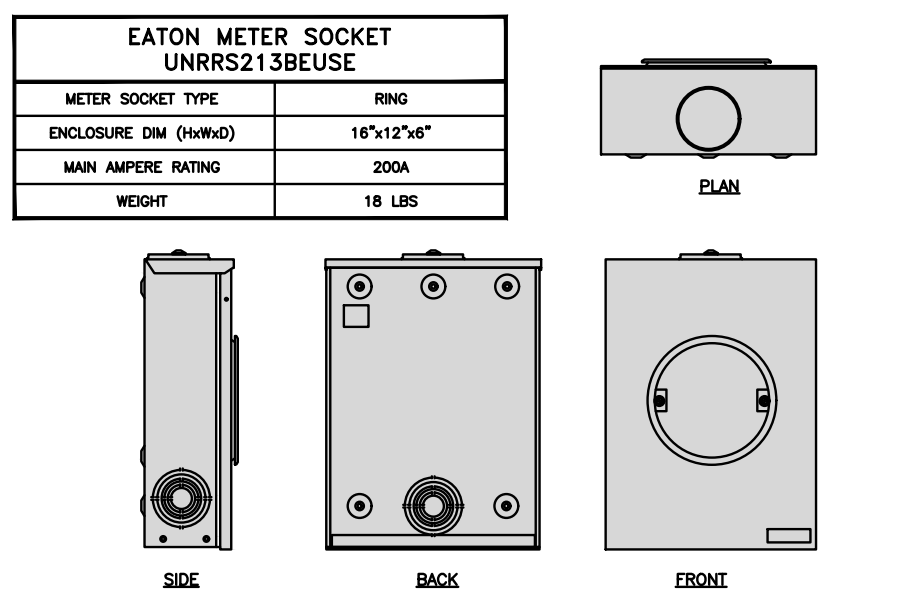
CABINET DETAIL NO SCALE 1



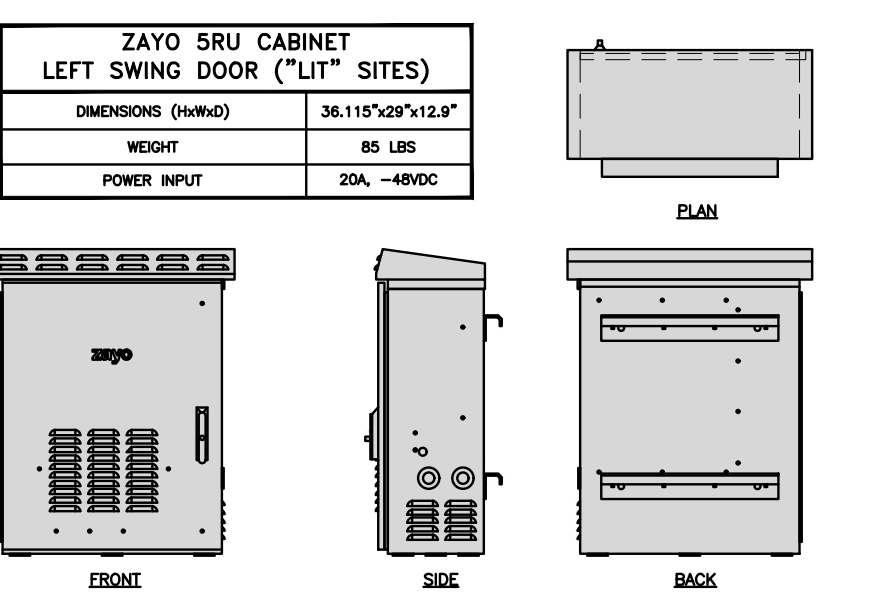
POWER PROTECTION CABINET (PPC) DETAIL NO SCALE 2



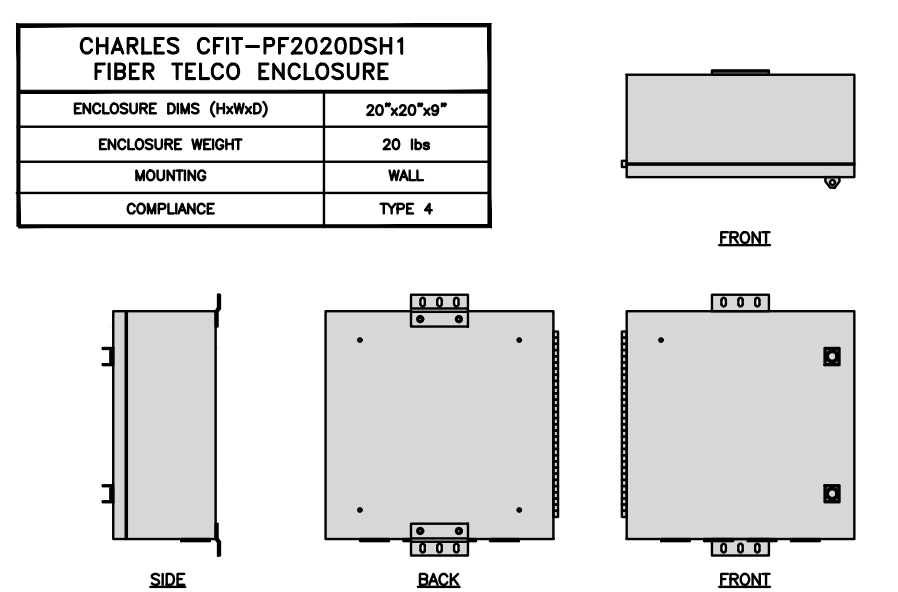
SAFETY SWITCH DETAIL NO SCALE 3



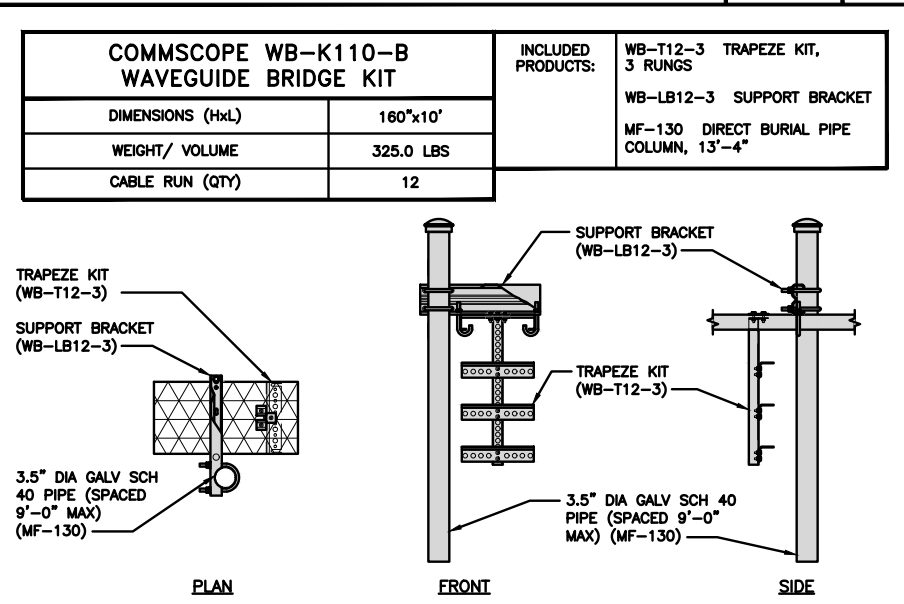
METER SOCKET DETAIL NO SCALE 4



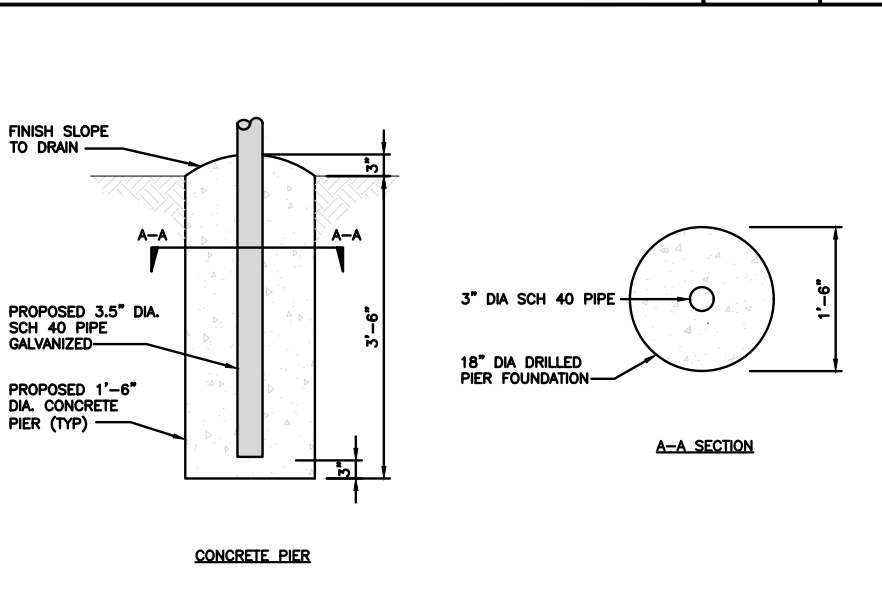
NETWORK INTERFACE UNIT DETAIL NO SCALE 5



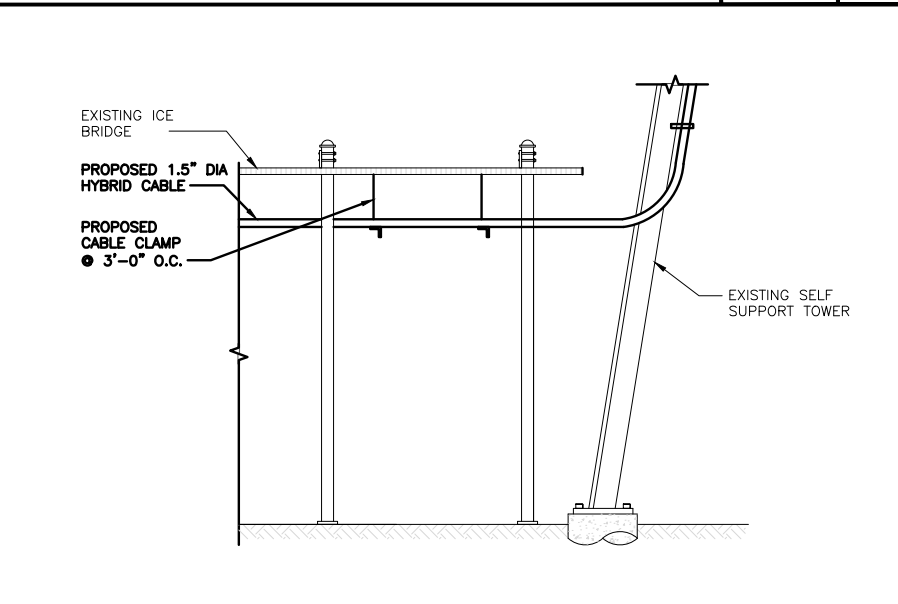
FIBER TELCO ENCLOSURE DETAIL NO SCALE 6



ICE BRIDGE DETAIL NO SCALE 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL NO SCALE 8



HYBRID CABLE RUN NO SCALE 9

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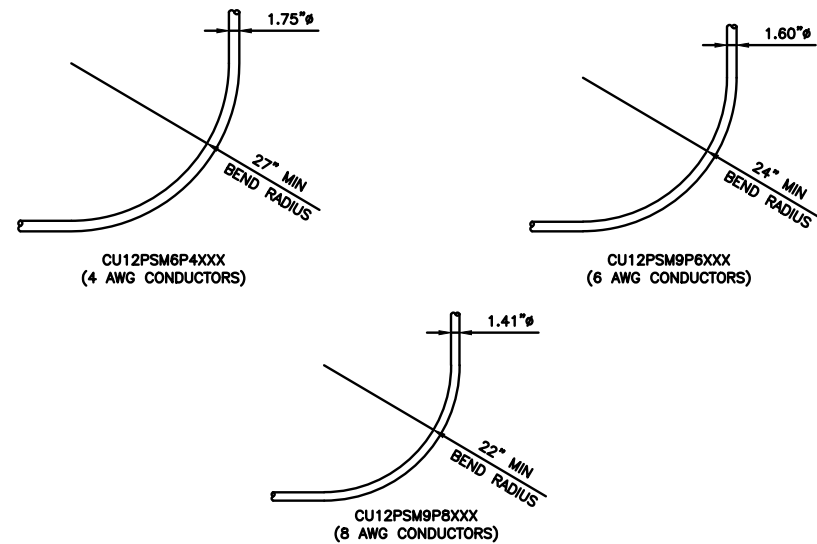
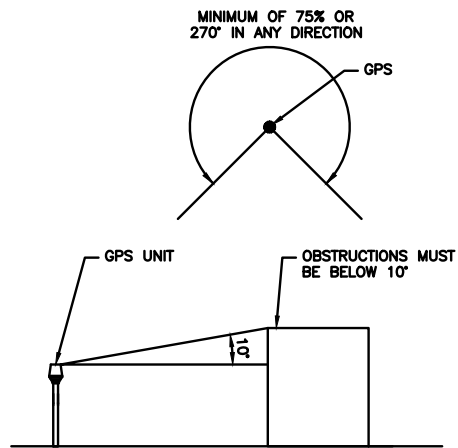
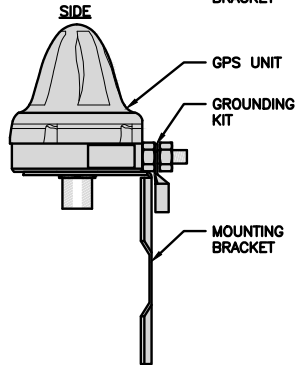
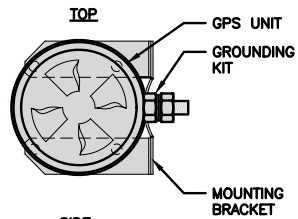
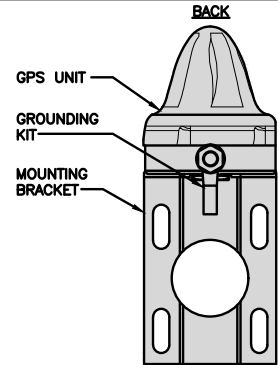
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL0049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

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



GPS ANTENNA DETAIL

NO SCALE 1

GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE 2

CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUSES

NO SCALE 3

NOT USED

NO SCALE 4

NOT USED

NO SCALE 5

NOT USED

NO SCALE 6

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9

dish
wireless.

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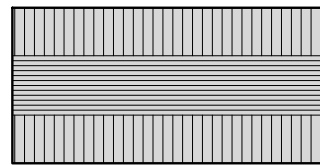
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126 PIONEER HEIGHTS RD
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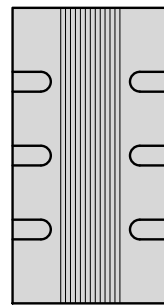
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

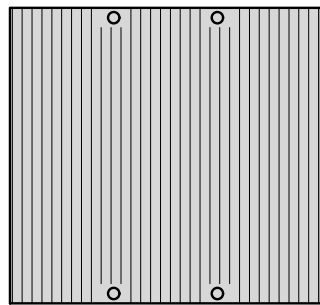
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE



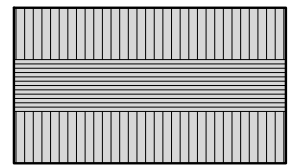
FRONT

REMOTE RADIO HEAD DETAIL

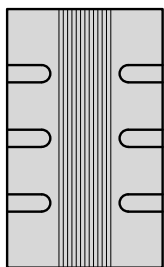
NO SCALE

1

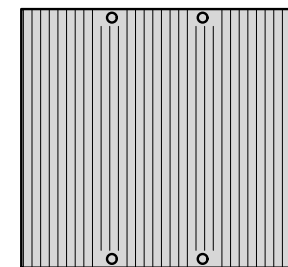
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE



FRONT

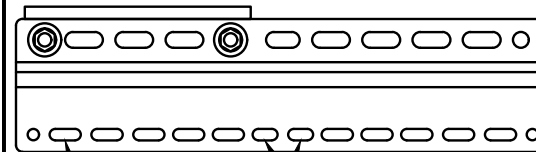
REMOTE RADIO HEAD DETAIL

NO SCALE

2

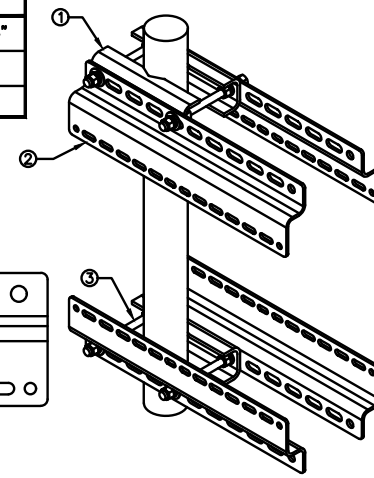
SABRE INDUSTRIES RRU BRACKET MOUNT C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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



11MM x 30MM SLOTS
40MM ON CENTER

11MM x 24MM SLOTS



REMOTE RADIO MOUNT DETAIL

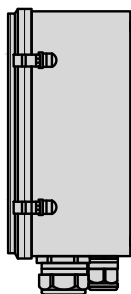
NO SCALE

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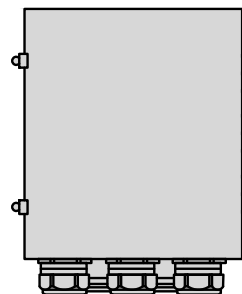
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



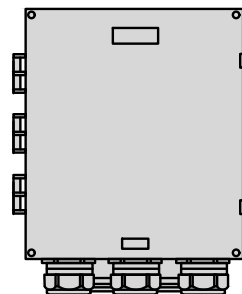
PLAN



SIDE



BACK



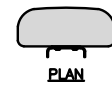
FRONT

SURGE SUPPRESSION DETAIL (OVP)

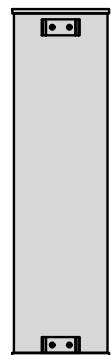
NO SCALE

4

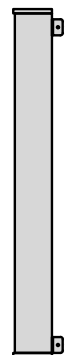
JMA WIRELESS MX08FR0665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



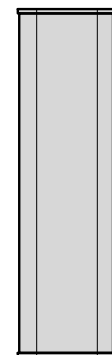
PLAN



BACK



SIDE



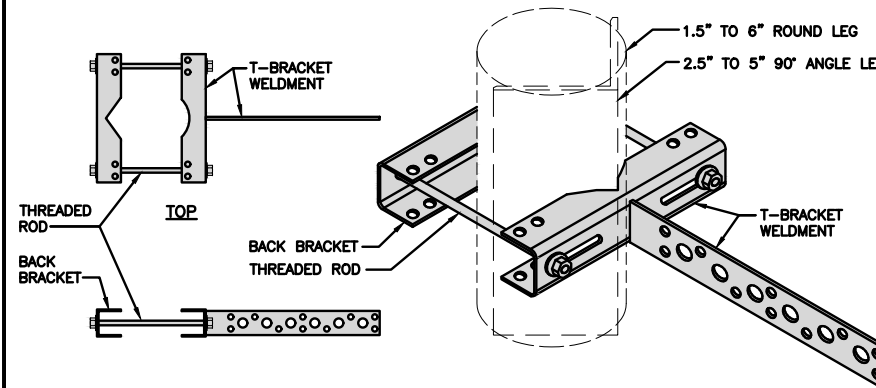
FRONT

ANTENNA DETAIL

NO SCALE

5

SITEPRO1 T600 UNIVERSAL T-BRACKET	
DIMENSIONS (HxWxD)	2.25"x10.0"x15.25"
WEIGHT/ VOLUME	5.60 LBS



SIDE

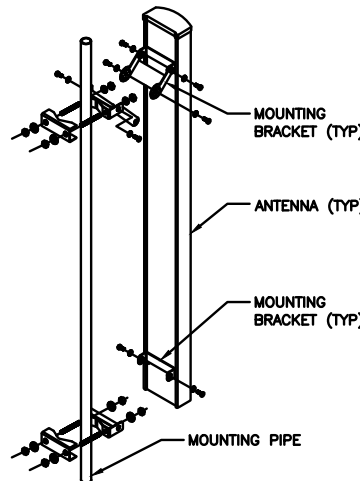
ISOMETRIC

VERTICAL CABLE SUPPORT DETAIL

NO SCALE

9

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



MOUNTING BRACKET (TYP)

ANTENNA (TYP)

MOUNTING BRACKET (TYP)

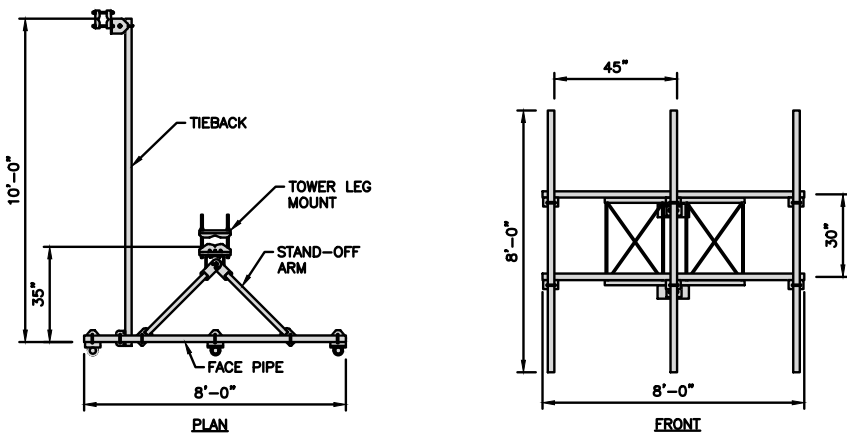
MOUNTING PIPE

ANTENNA MOUNTING DETAIL

NO SCALE

7

COMMSCOPE V-FRAME MTC3975083	
FACE SIZE	8'-0"
WEIGHT	352.136 lbs



PLAN

FRONT

ANTENNA FRAME DETAIL

NO SCALE

8

dish
wireless.

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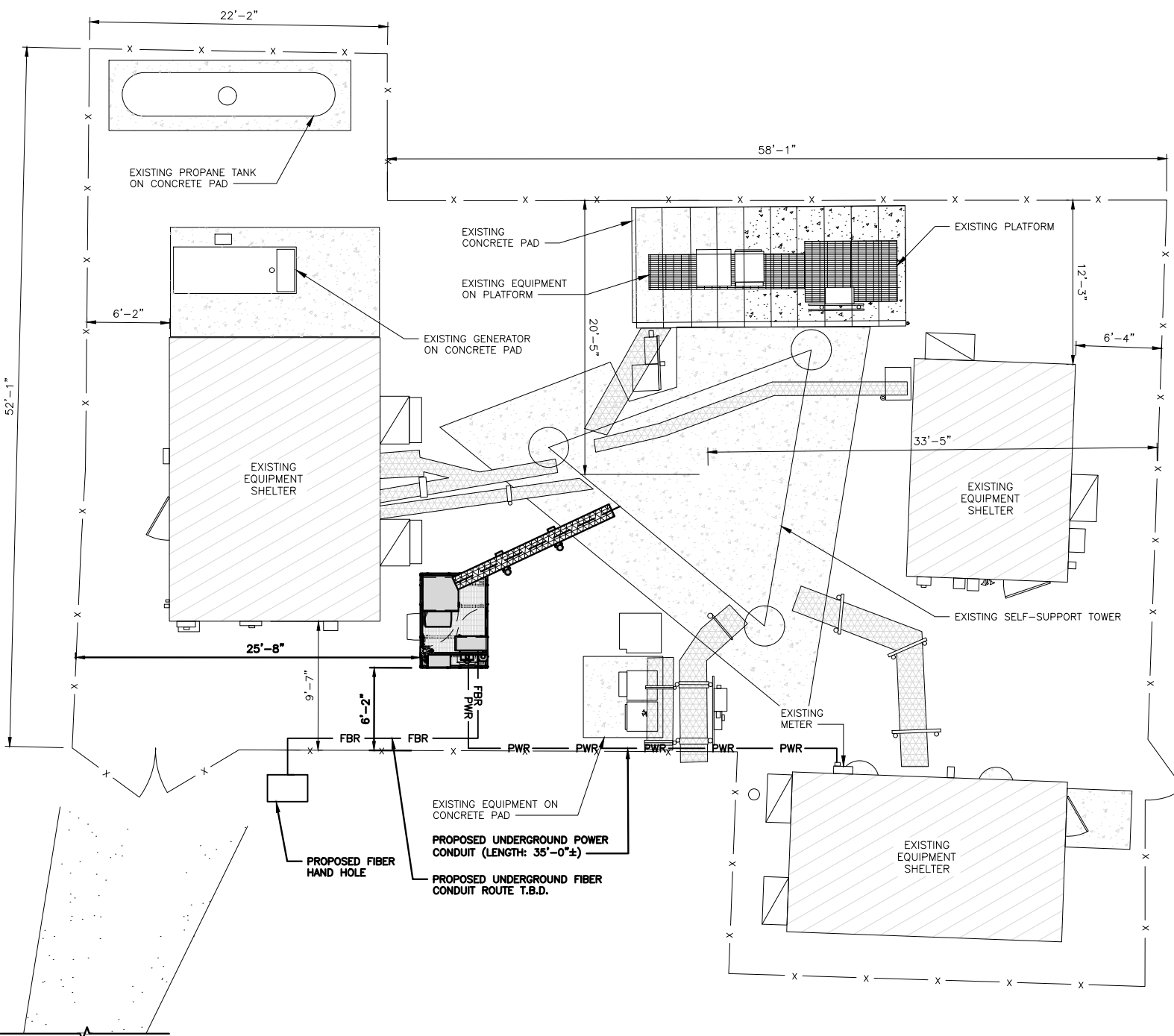
DISH Wireless L.L.C.
PROJECT INFORMATION

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126 PIONEER HEIGHTS RD
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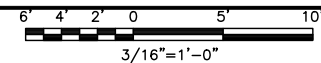
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

A-6



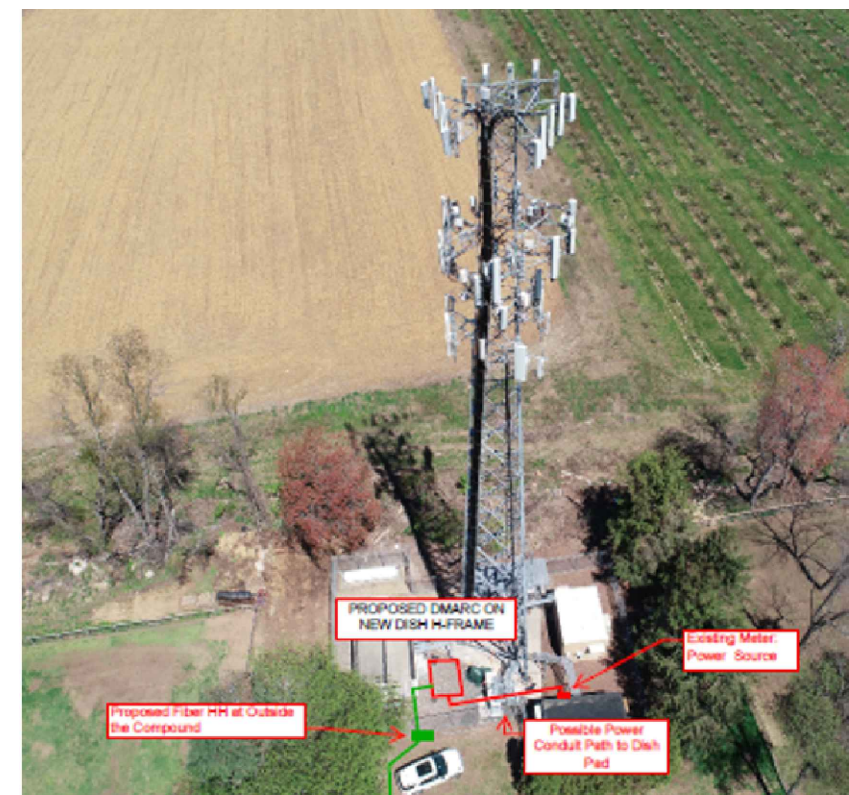
UTILITY ROUTE PLAN



1

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

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



ELECTRICAL NOTES

NO SCALE

2

dish
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A&E PROJECT NUMBER
136290.002.01

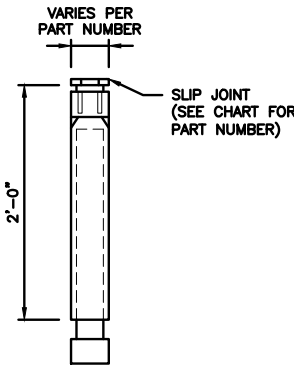
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

SHEET TITLE
ELECTRICAL/FIBER ROUTE
PLAN AND NOTES

SHEET NUMBER

E-1

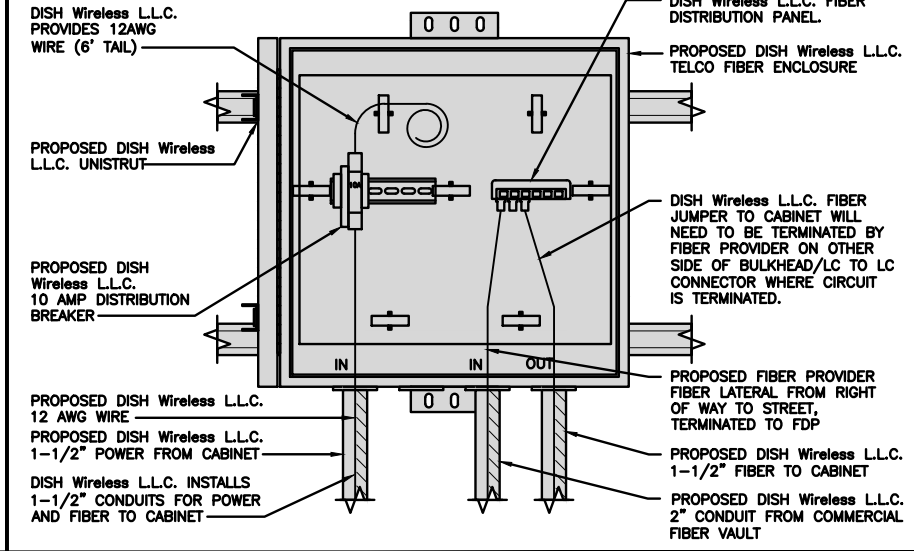
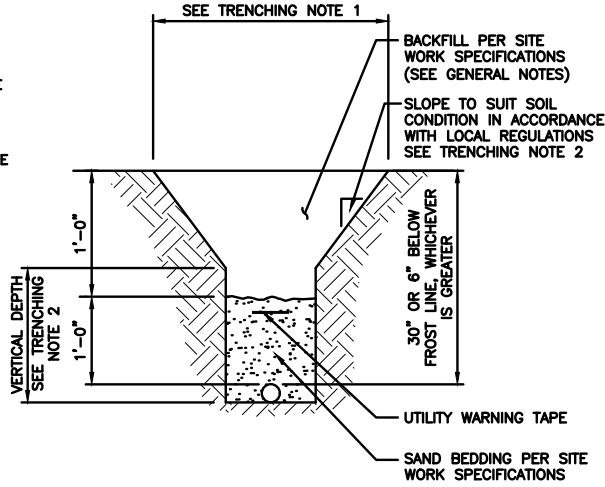
CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"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



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

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

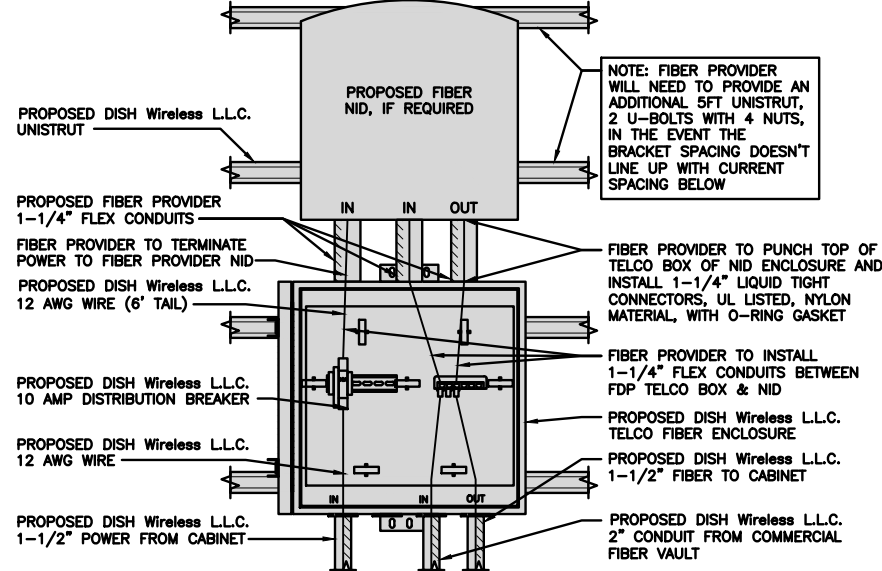
NO SCALE 1

TYPICAL UNDERGROUND TRENCH DETAIL

NO SCALE 2

DARK TELCO BOX – INTERIOR WIRING LAYOUT

NO SCALE 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL)

NO SCALE 4

NOT USED

NO SCALE 5

NOT USED

NO SCALE 6

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9



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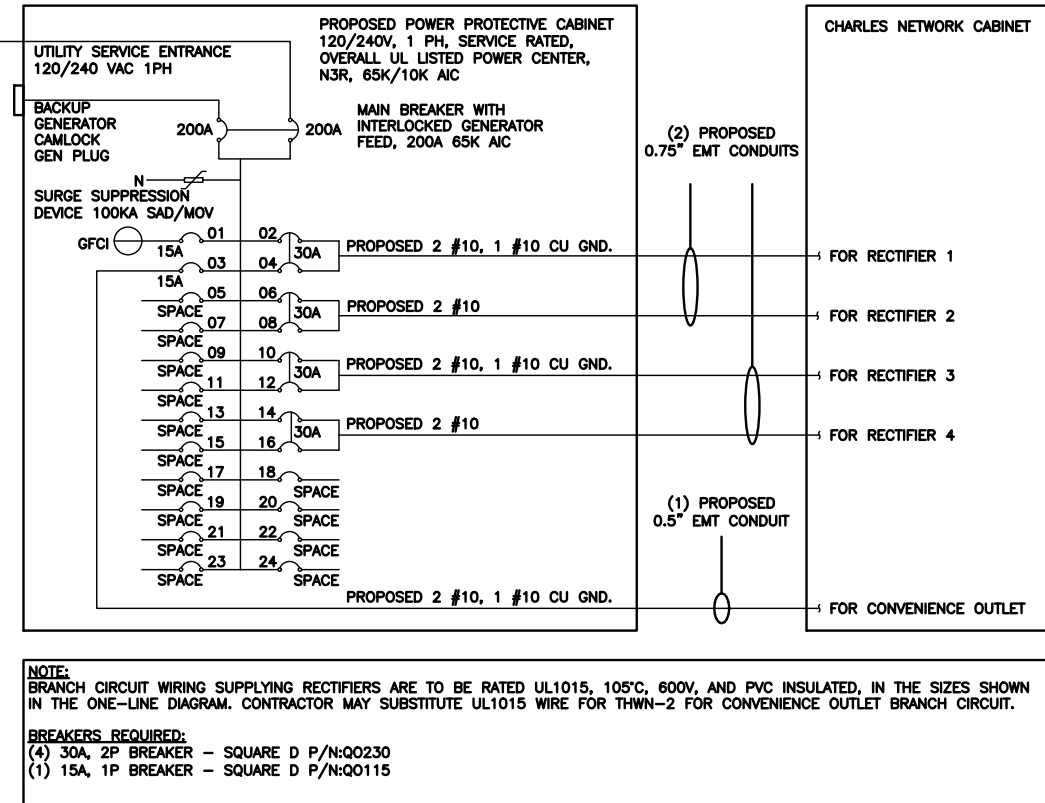
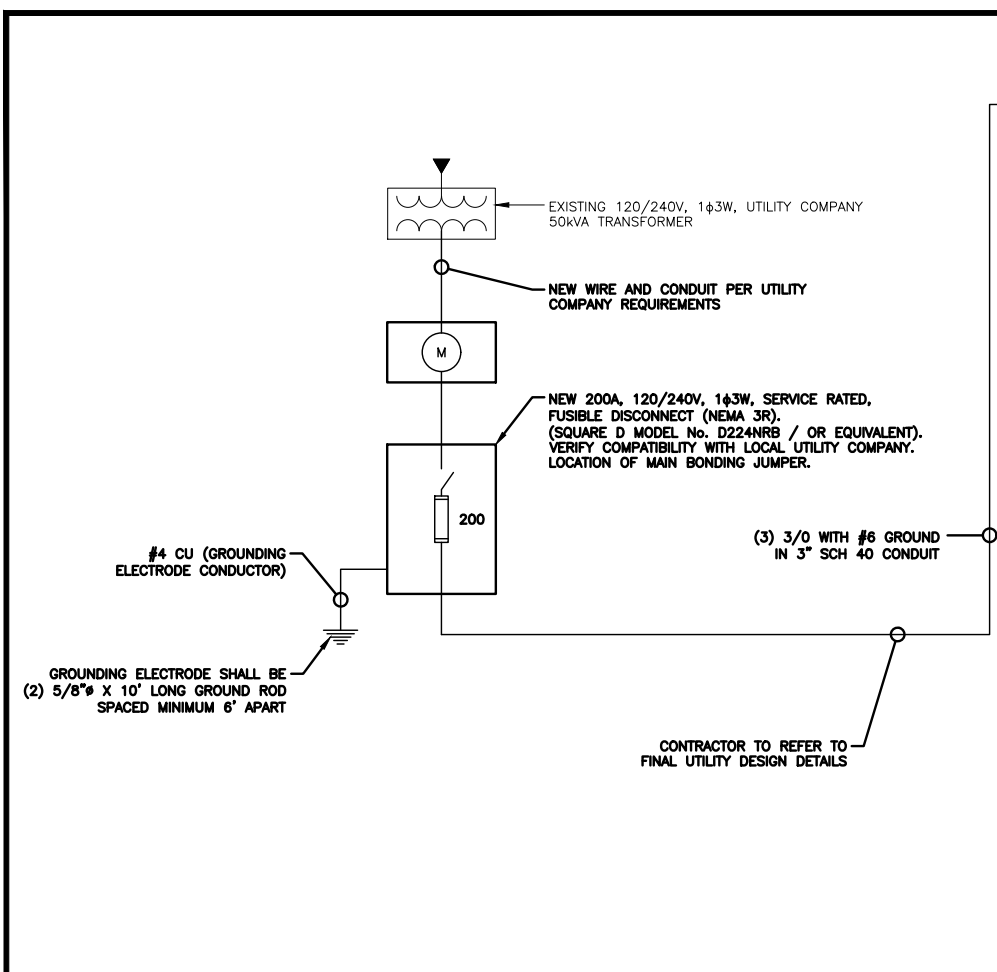
A&E PROJECT NUMBER
136290.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL0049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

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					
-SPACE-				5	A	6	30A	2880	2880	ABB/GE INFINITY RECTIFIER 2	
-SPACE-				7	B	8					
-SPACE-				9	A	10	30A	2880	2880	ABB/GE INFINITY RECTIFIER 3	
-SPACE-				11	B	12					
-SPACE-				13	A	14	30A	2880	2880	ABB/GE INFINITY RECTIFIER 4	
-SPACE-				15	B	16					
-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		VOLTAGE AMPS				
MB RATING: 65,000 AIC			11700		11700		AMPS				
			98		98		MAX AMPS				
					123		MAX 125%				

PANEL SCHEDULE

NO SCALE 2

NOT USED

NO SCALE 3



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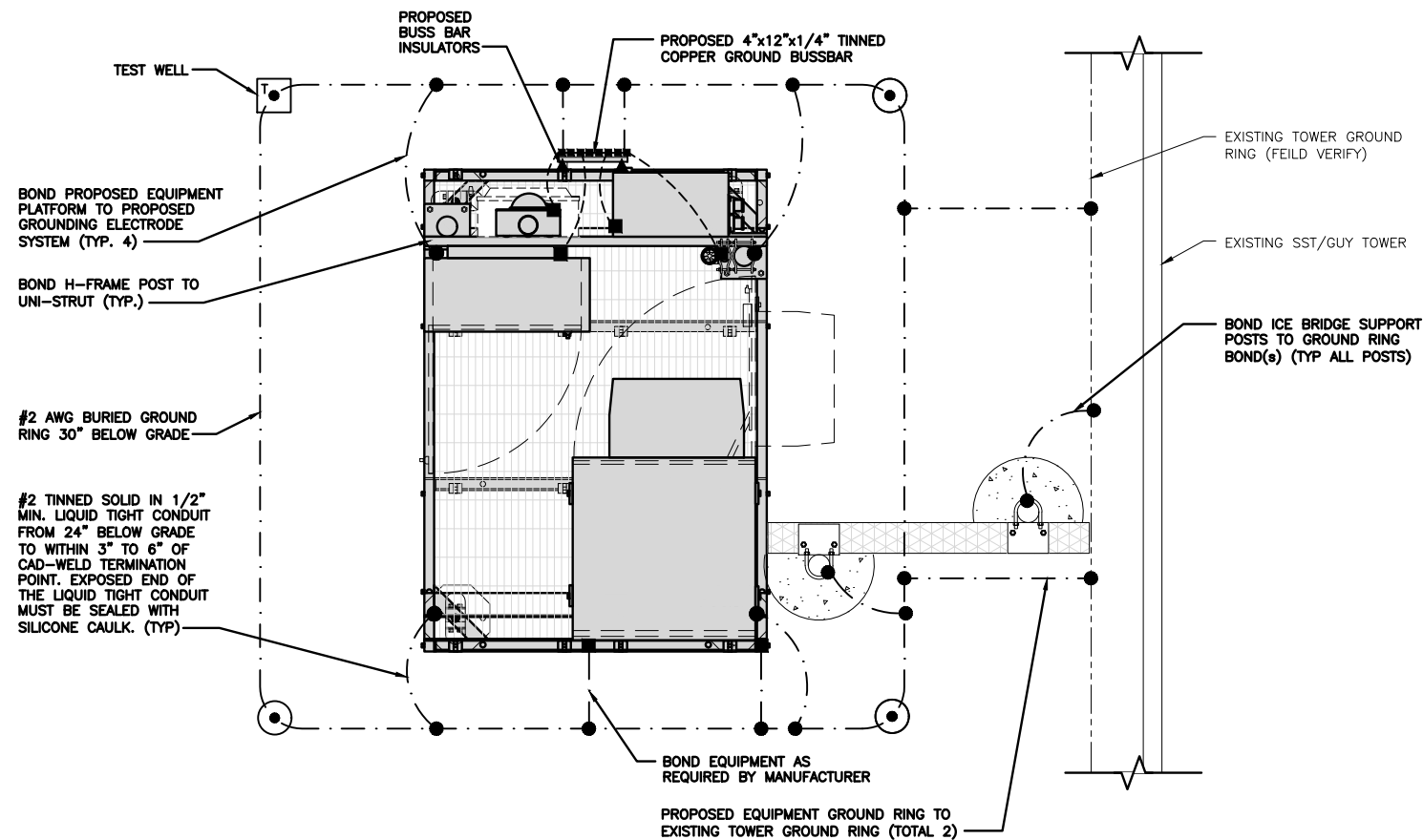
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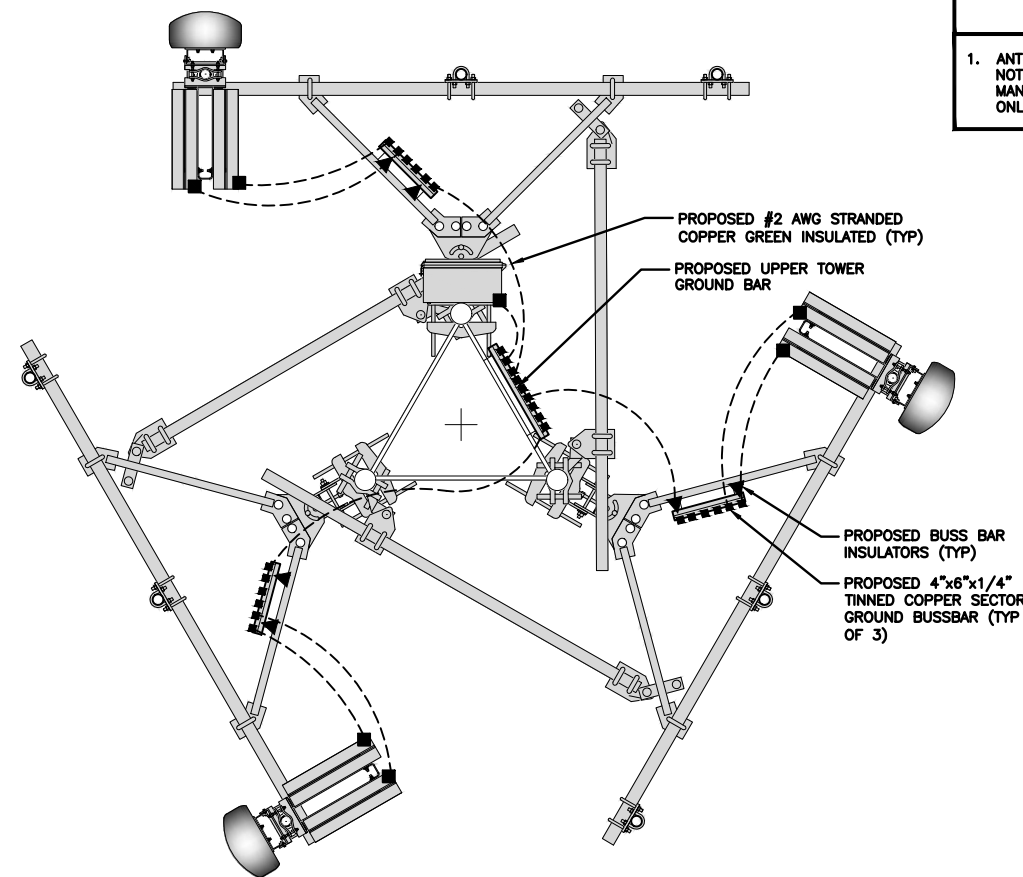
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT
CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3



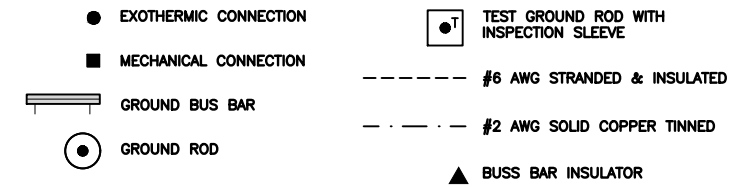
TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



GROUNDING LEGEND

- GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
- 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.
- 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 8 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 TOWER STEEL.
REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE 3



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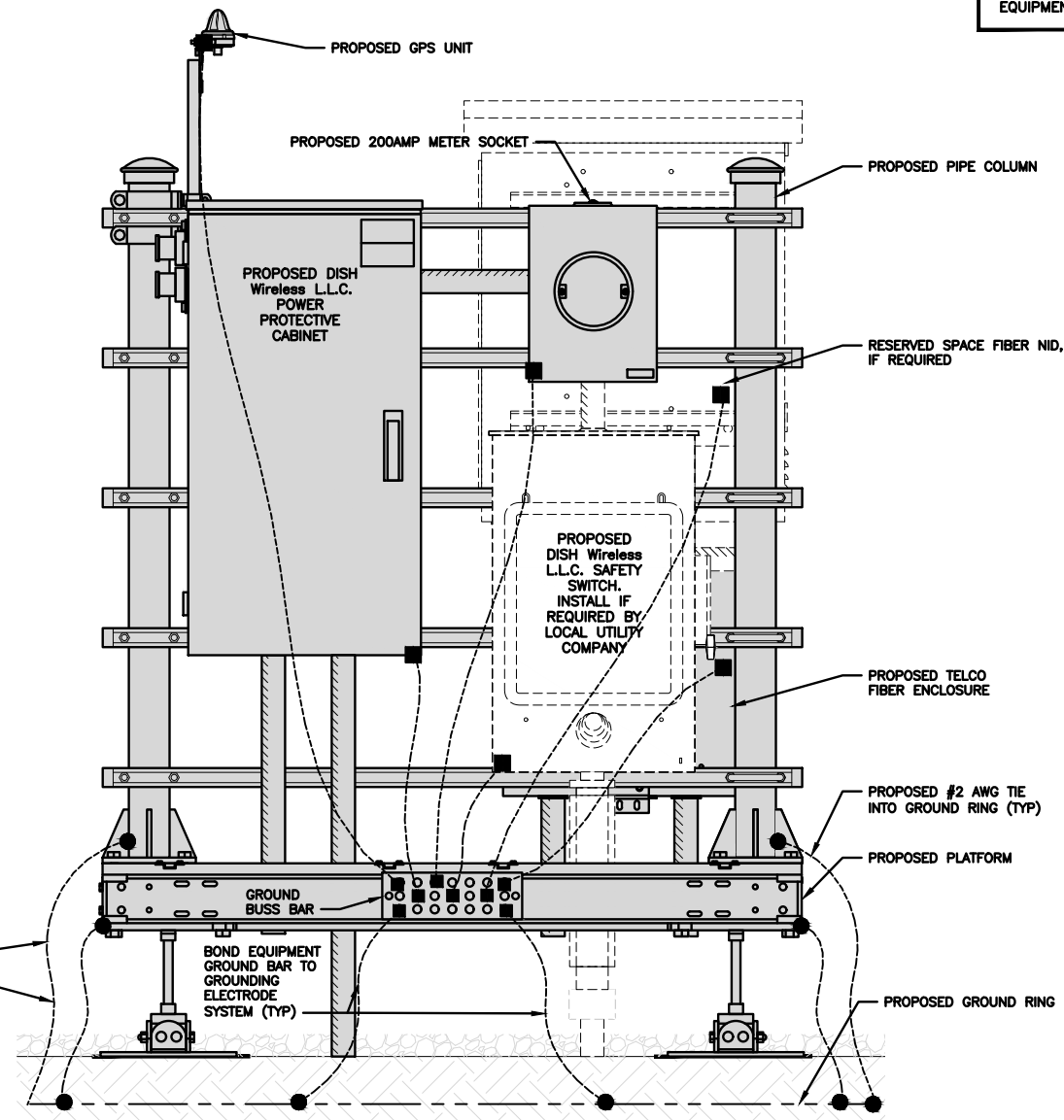
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126 PIONEER HEIGHTS RD
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SHEET TITLE
GROUNDING PLANS
AND NOTES

SHEET NUMBER

G-1

NOTES
EQUIPMENT CABINET OMITTED FOR CLARITY

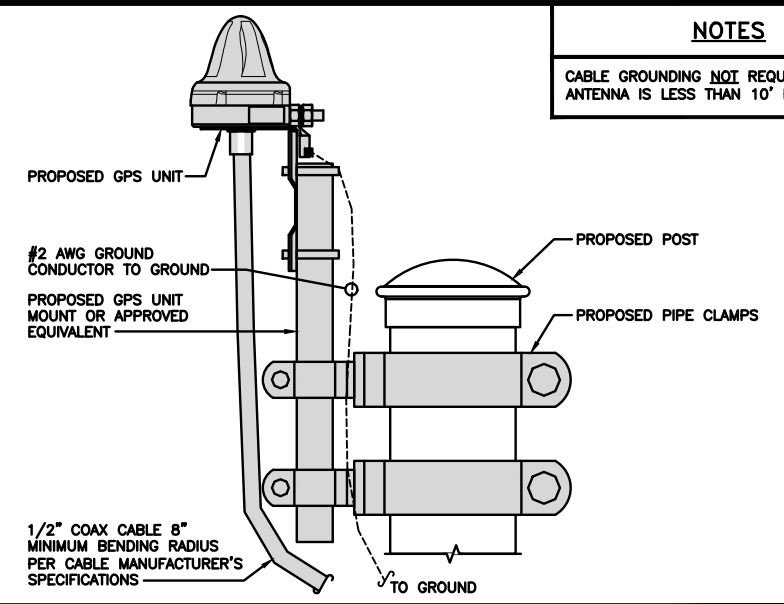


#2 TINNED SOLID IN 1/2" MIN. LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK. (TYP)

H-FRAME GROUNDING DETAIL

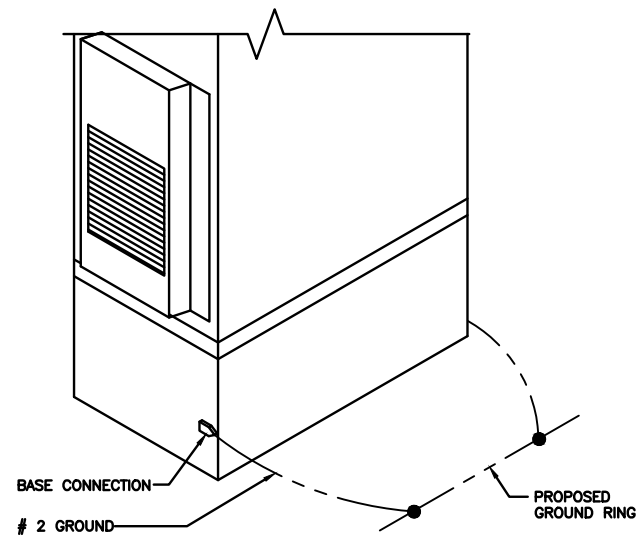
NO SCALE 1

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



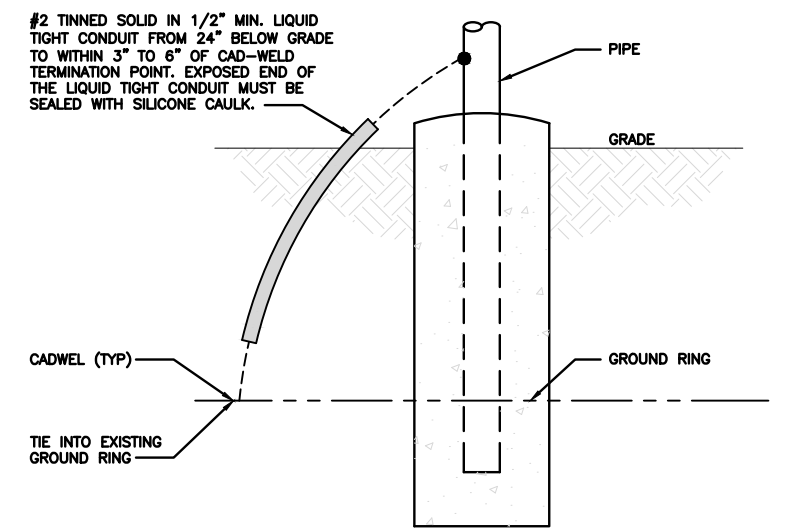
TYPICAL GPS UNIT GROUNDING

NO SCALE 2



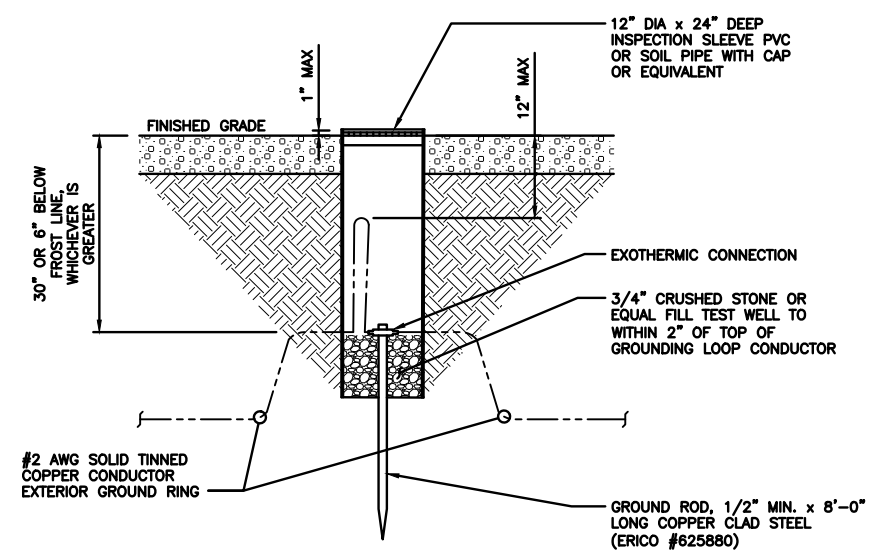
OUTDOOR CABINET GROUNDING

NO SCALE 3



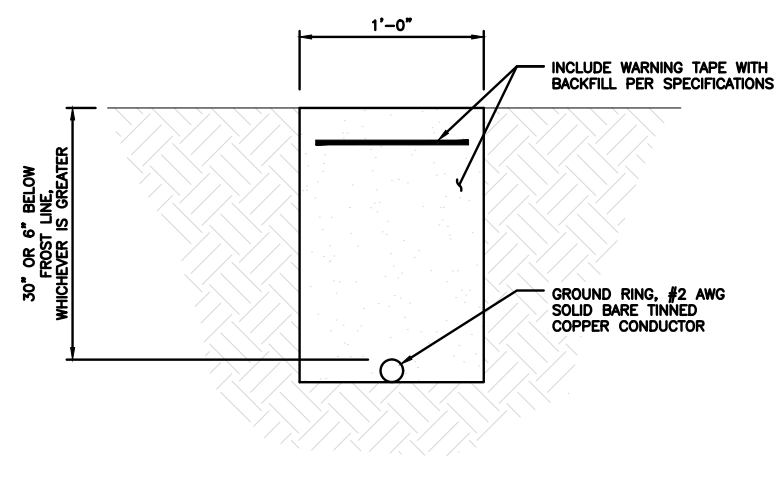
TRANSITIONING GROUND DETAIL

NO SCALE 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE

NO SCALE 5



TYPICAL GROUND RING TRENCH

NO SCALE 6

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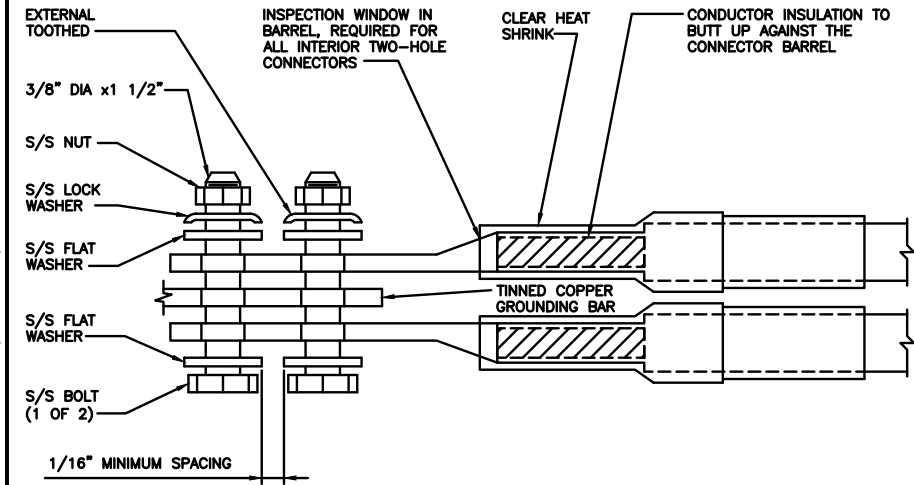
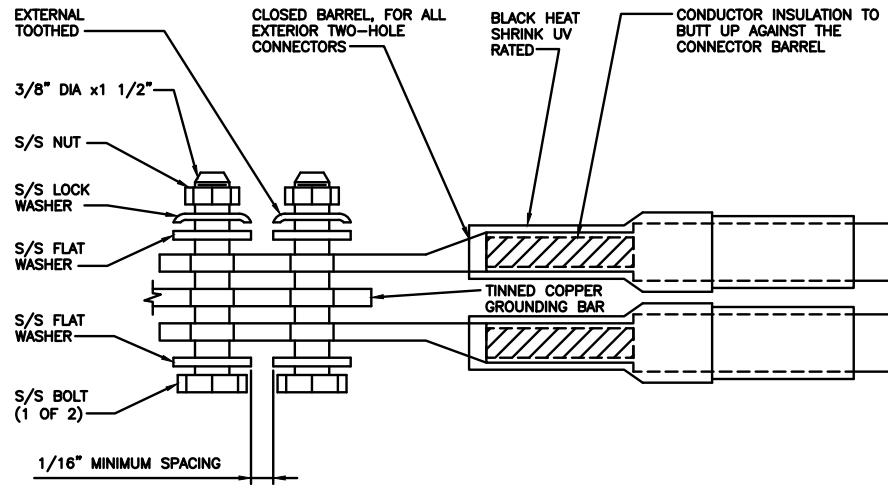
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SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-2

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



TYPICAL GROUNDING NOTES

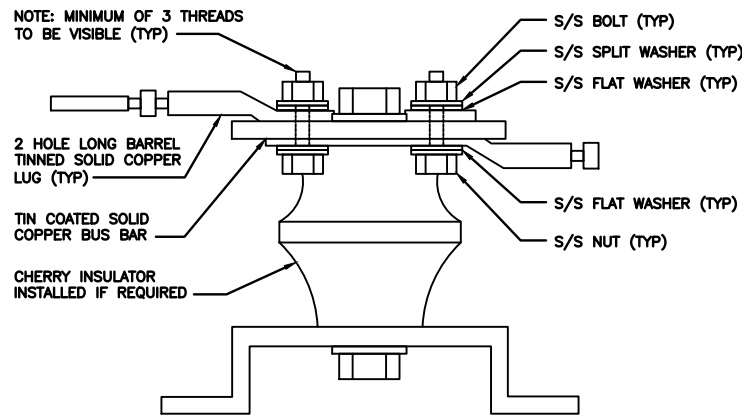
NO SCALE 1

TYPICAL EXTERIOR TWO HOLE LUG

NO SCALE 2

TYPICAL INTERIOR TWO HOLE LUG

NO SCALE 3



LUG DETAIL

NO SCALE 4

NOT USED

NO SCALE 5

NOT USED

NO SCALE 6

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9

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136290.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL0049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

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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2000 CORPORATE DRIVE
CANONSBURG, PA 15317



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

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

DRAWN BY: CHECKED BY: APPROVED BY:

LHT MTJ MDW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/17/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
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DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER

RF-1



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SUBMITTALS

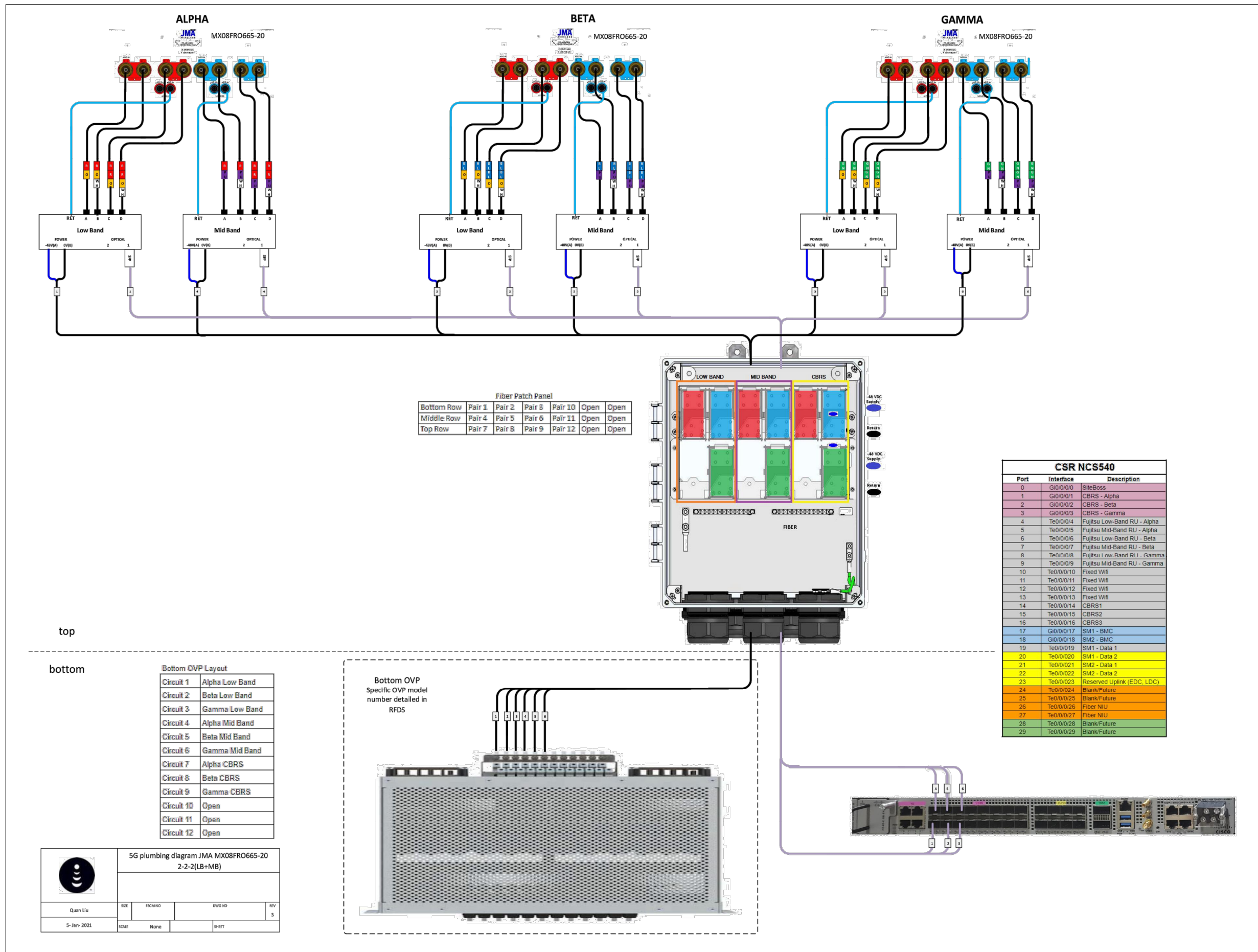
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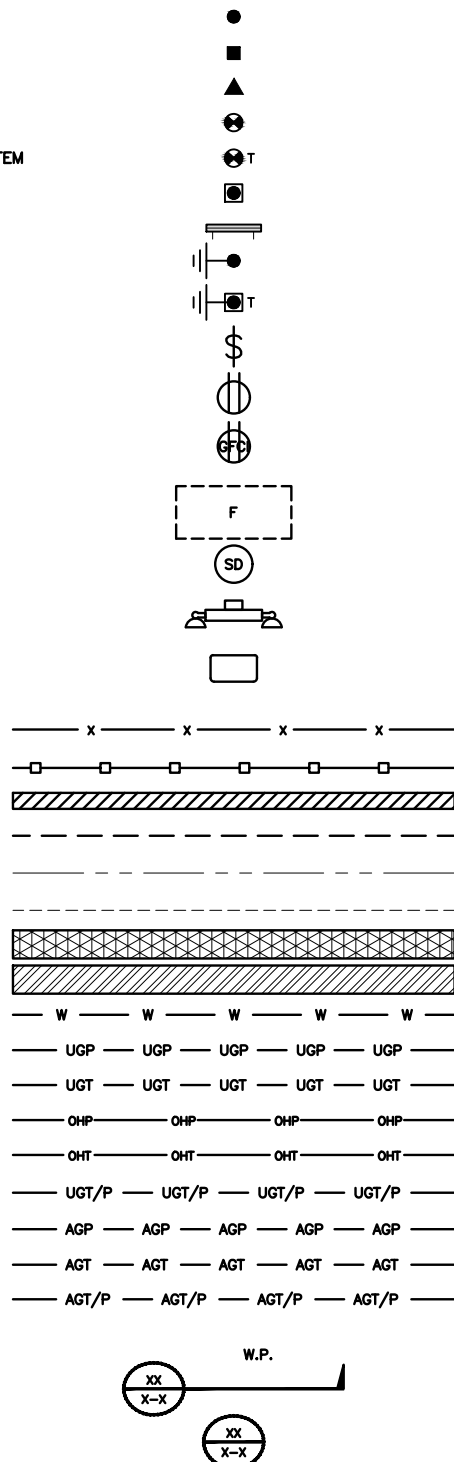
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SHEET TITLE
**RF
PLUMBING DIAGRAM**

SHEET NUMBER
RF-2



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

ABBREVIATIONS



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 SOMERS CT 06071

SHEET TITLE
 LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH Wireless L.L.C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.
2. "LOOK UP" – DISH Wireless L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:
THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH Wireless L.L.C. AND DISH Wireless L.L.C. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH Wireless L.L.C. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH DISH Wireless L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH Wireless L.L.C. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA-1019-A-2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH Wireless L.L.C. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH Wireless L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
CARRIER: DISH Wireless L.L.C.
TOWER OWNER: TOWER OWNER
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH Wireless L.L.C. AND TOWER OWNER
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.



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DRAWN BY: CHECKED BY: APPROVED BY:

LHT MTJ MDW

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	6/17/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
136290.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL0049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
 - #4 BARS AND SMALLER 40 ksi
 - #5 BARS AND LARGER 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
 - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
 - CONCRETE EXPOSED TO EARTH OR WEATHER:
 - #6 BARS AND LARGER 2"
 - #5 BARS AND SMALLER 1-1/2"
 - CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
 - SLAB AND WALLS 3/4"
 - BEAMS AND COLUMNS 1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- 4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- 4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. TIE WRAPS ARE NOT ALLOWED.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



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LHT	MTJ	MDW

RFDS REV #: ---

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A	6/17/21	ISSUED FOR REVIEW
0	7/9/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
136290.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

GROUNDING NOTES:

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



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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00049A
126 PIONEER HEIGHTS RD
SOMERS CT 06071

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

Exhibit D

Structural Analysis Report

Date: **June 15, 2021**



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

Subject: **Structural Analysis Report**

Carrier Designation: **DISH Network Co-Locate**
Site Number: BOBDL00049A
Site Name: CT-CCI-T-806378

Crown Castle Designation: **BU Number:** 806378
Site Name: HRT 086 943248
JDE Job Number: 650044
Work Order Number: 1963270
Order Number: 556636 Rev. 2

Engineering Firm Designation: **Crown Castle Project Number:** 1963270

Site Data: **126 PIONEER HEIGHTS RD, SOMERS, TOLLAND County, CT**
Latitude 41° 56' 55.98", Longitude -72° 29' 31.55"
160 Foot - Self Support 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

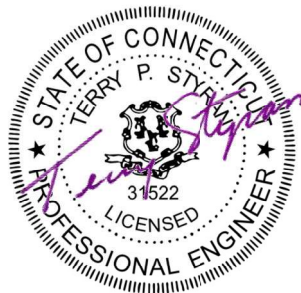
Sufficient Capacity- 95.1%

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of xxx mph per Section 1609.3 and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Abigail Ruiz / TS

Respectfully submitted by:

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



Terry P Styran
2021.06.17
15:58:42 -04'00'

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1) INTRODUCTION

This tower is a 160 ft Self Support tower designed by ROHN.

The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	2 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
147.0	147.0	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 MTC3975083 (3)		

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)
157.0	157.0	3	alcatel lucent	RRH2X60-PCS	20	1-5/8
		3	alcatel lucent	RRH2x60-AWS		
		3	andrew	LNx-6514DS-VTM w/ Mount Pipe		
		2	antel	LPA-80063/4CF w/ Mount Pipe		
		2	antel	LPA-80063/4CFx5 w/ Mount Pipe		
		6	commscope	HBXX-6517DS-VTM w/ Mount Pipe		
		2	rfs celwave	APL866513-42T6 w/ Mount Pipe		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
		1	tower mounts	Sector Mount [SM 504-3]		
135.0	137.0	3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe	12 4 2	1-1/4 3/4 3/8
		3	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 4426 B66		
		3	ericsson	RRUS 4415 B25		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	ericsson	WCS RRUS-32-B30		
		3	kaelus	DBC0062F1V51-1		
		6	powerwave technologies	7020.00		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		3	powerwave technologies	TT19-08BP111-001		
		2	raycap	DC6-48-60-18-8F		
	135.0	1	tower mounts	Sector Mount [SM 504-3]		
125.0	126.0	3	alcatel lucent	TD-RRH8x20-25	3 1	1-1/4 5/8
		1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe		
		2	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe		
	3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
	125.0	3	alcatel lucent	1900MHz RRH (65MHz)		
		3	alcatel lucent	800MHz 2X50W RRH W/FILTER		
1		tower mounts	Sector Mount [SM 402-3]			
113.0	114.0	3	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe	3	1-5/8
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe		
		3	ericsson	RADIO 4449 B12/B71		
	3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe			
	113.0	1	tower mounts	Sector Mount [SM 502-3]		
57.0	60.0	1	gps	GPS_A	1	1/2
	57.0	1	tower mounts	Side Arm Mount [SO 202-1]		
48.0	50.0	1	empty	EMPTY_MOUNT w/ Mount Pipe	1	1/2
	48.0	1	tower mounts	Side Arm Mount [SO 202-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1275233	CCISITES
4-TOWER MANUFACTURER DRAWINGS	7175605	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	1278690	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2961397	CCISITES
4-POST-MODIFICATION INSPECTION	2961404	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3265393	CCISITES

Document	Reference	Source
4-POST-MODIFICATION INSPECTION	3684249	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5615504	CCISITES
4-POST-MODIFICATION INSPECTION	5852475	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	7498454	CCISITES
4-POST-MODIFICATION INSPECTION	8011021	CCISITES

3.1) Analysis Method

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

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

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	160 - 140	Leg	Pipe 2.375" x 0.154" (2 STD)	2	-19.71	38.68	51.0	Pass
T2	140 - 135	Leg	Pipe 2.875" x 0.276" (2.5 EH)	38	-25.47	78.15	32.6	Pass
T3	135 - 130	Leg	Pipe 2.875" x 0.276" (2.5 EH)	50	-36.62	78.15	46.9	Pass
T4	130 - 125	Leg	Pipe 2.875" x 0.276" (2.5 EH)	59	-45.82	78.15	58.6	Pass
T5	125 - 120	Leg	Pipe 2.875" x 0.276" (2.5 EH)	68	-56.40	78.15	72.2	Pass
T6	120 - 113.333	Leg	Pipe 3.5" x 0.300" (3 EH)	77	-67.81	99.06	68.5	Pass
T7	113.333 - 106.667	Leg	Pipe 3.5" x 0.300" (3 EH)	86	-82.93	99.07	83.7	Pass
T8	106.667 - 100	Leg	Pipe 3.5" x 0.300" (3 EH)	95	-97.73	129.33	75.6	Pass
T9	100 - 93.333	Leg	Pipe 4" x 0.318" (3.5 EH)	107	-111.77	132.01	84.7	Pass
T10	93.333 - 86.667	Leg	Pipe 4" x 0.318" (3.5 EH)	116	-125.58	132.02	95.1	Pass
T11	86.667 - 80	Leg	Pipe 4" x 0.318" (3.5 EH)	125	-138.65	161.63	85.8	Pass
T12	80 - 73.333	Leg	Pipe 4.5" x 0.337" (4 XS)	137	-152.34	167.89	90.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T13	73.333 - 66.667	Leg	Pipe 4.5" x 0.337" (4 XS)	146	-164.72	196.79	83.7	Pass
T14	66.667 - 60	Leg	Pipe 4.5" x 0.337" (4 XS)	158	-177.75	196.81	90.3	Pass
T15	60 - 50	Leg	Pipe 5.563" x 0.375" (5 EH)	170	-193.97	211.31	91.8	Pass
T16	50 - 40	Leg	Pipe 5.563" x 0.375" (5 EH)	179	-212.60	265.80	80.0 81.5 (b)	Pass
T17	40 - 30	Leg	Pipe 5.563" x 0.375" (5 XS)	191	-231.44	265.82	87.1	Pass
T18	30 - 20	Leg	Pipe 5.563" x 0.375" (5 XS)	203	-249.54	283.21	88.1	Pass
T19	20 - 0	Leg	BU 806378 (PJF) - 6.625"x0.34" pipe w/ 2" SR- (modified with 19.5" spacing)	245	-286.69	-	84.2	Pass ¹
T1	160 - 140	Diagonal	L 1.75 x 1.75 x 3/16	9	-3.46	11.65	29.7 56.7 (b)	Pass
T2	140 - 135	Diagonal	L 1.75 x 1.75 x 3/16	45	-3.59	8.95	40.1 55.4 (b)	Pass
T3	135 - 130	Diagonal	L 1.75 x 1.75 x 3/16	54	-4.67	8.11	57.6 78.4 (b)	Pass
T4	130 - 125	Diagonal	L 1.75 x 1.75 x 3/16	63	-4.77	7.37	64.7 78.5 (b)	Pass
T5	125 - 120	Diagonal	L 2 x 2 x 3/16	72	-5.45	10.18	53.6 83.4 (b)	Pass
T6	120 - 113.333	Diagonal	L 2.5 x 2.5 x 1/4	81	-6.09	19.77	30.8 76.1 (b)	Pass
T7	113.333 - 106.667	Diagonal	L 2.5 x 2.5 x 1/4	90	-7.39	17.94	41.2 90.5 (b)	Pass
T8	106.667 - 100	Diagonal	L 2.5 x 2.5 x 1/4	99	-7.41	15.77	47.0 92.4 (b)	Pass
T9	100 - 93.333	Diagonal	L 2.5 x 2.5 x 3/16	111	-7.48	11.17	66.9	Pass
T10	93.333 - 86.667	Diagonal	L 2.5 x 2.5 x 1/4	120	-7.59	13.26	57.2	Pass
T11	86.667 - 80	Diagonal	2L 2.5 x 2.5 x 3/16 (1/4)	132	-8.36	38.39	21.8 28.4 (b)	Pass
T12	80 - 73.333	Diagonal	L 3 x 3 x 3/16	144	-7.90	15.17	52.1 53.8 (b)	Pass
T13	73.333 - 66.667	Diagonal	L 3 x 3 x 3/16	153	-8.89	13.95	63.7	Pass
T14	66.667 - 60	Diagonal	L 3 x 3 x 3/16	165	-8.74	12.86	68.0	Pass
T15	60 - 50	Diagonal	2L 3 x 3 x 3/16 (1/4)	177	-10.14	39.37	25.8 64.2 (b)	Pass
T16	50 - 40	Diagonal	2L 3 x 3 x 3/16 (1/4)	186	-11.20	35.62	31.4 65.7 (b)	Pass
T17	40 - 30	Diagonal	2L 3 x 3 x 1/4 (1/4)	198	-11.40	45.25	25.2 66.3 (b)	Pass
T18	30 - 20	Diagonal	2L 3 x 3 x 1/4 (1/4)	223	-12.29	72.30	17.0 71.1 (b)	Pass
T19	20 - 0	Diagonal	2L 3.5 x 3.5 x 1/4 (1/4)	252	-12.53	56.90	22.0 75.2 (b)	Pass
T18	30 - 20	Horizontal	L 3 x 3 x 3/16	205	-4.33	6.46	67.0	Pass
T8	106.667 - 100	Secondary Horizontal	L 1.75 x 1.75 x 1/4	103	-1.70	7.91	21.4 23.6 (b)	Pass
T11	86.667 - 80	Secondary Horizontal	L 2 x 2 x 3/16	133	-2.40	6.44	37.3	Pass
T13	73.333 - 66.667	Secondary Horizontal	L 1.75 x 1.75 x 1/4	154	-2.86	4.44	64.3	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T14	66.667 - 60	Secondary Horizontal	L 2 x 2 x 3/16	166	-3.08	4.70	65.6	Pass
T16	50 - 40	Secondary Horizontal	L 2.5 x 2.5 x 3/16	187	-3.69	7.40	49.8	Pass
T17	40 - 30	Secondary Horizontal	L 3 x 3 x 1/4	199	-4.01	14.90	26.9 33.8 (b)	Pass
T1	160 - 140	Top Girt	L 2 x 2 x 1/8	5	-0.61	4.27	14.3	Pass
T2	140 - 135	Top Girt	L 2 x 2 x 1/8	40	-0.44	4.27	10.3	Pass
T18	30 - 20	Redund Horz 1 Bracing	L 2 x 2 x 3/16	214	-4.33	12.23	35.4	Pass
T18	30 - 20	Redund Diag 1 Bracing	L 2 x 2 x 3/16	231	-2.52	9.01	28.0	Pass
							Summary	
							Leg (T10)	95.1 Pass
							Diagonal (T8)	92.4 Pass
							Horizontal (T18)	67.0 Pass
							Secondary Horizontal (T14)	65.6 Pass
							Top Girt (T1)	14.3 Pass
							Redund Horz 1 Bracing (T18)	35.4 Pass
							Redund Diag 1 Bracing (T18)	28.0 Pass
							Bolt Checks	92.4 Pass
							RATING =	95.1 Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	74.6	Pass
1	Base Foundation (Structure)	0	46.9	Pass
1	Base Foundation (Soil Interaction)	0	82.9	Pass

Structure Rating (max from all components) =	95.1%
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Notes:

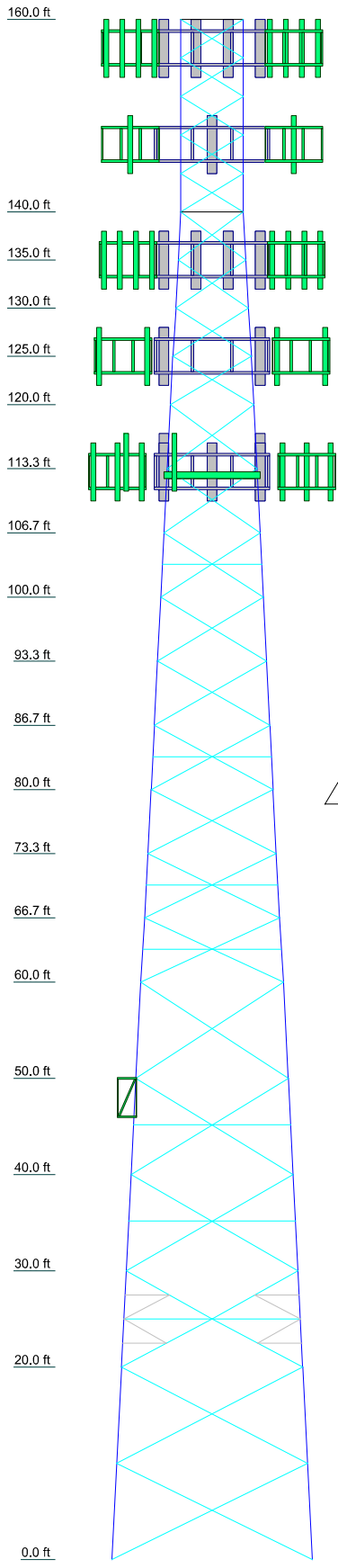
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity.

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	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	A																		
Leg Grade																			
Diagonals	2L 3.5 x 3.5 x 1/4 (1/4)	2L 3 x 3 x 1/4 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)	2L 3 x 3 x 3/16 (1/4)
Diagonal Grade	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50
Top Girts																			
Horizontals	N.A.	L 3 x 3 x 3/16	L 3 x 3 x 1/4	C	N.A.	B	F	N.A.	B	N.A.	F	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Sec. Horizontals	N.A.	N.A.	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16	L 3 x 3 x 3/16
Red. Horizontals	N.A.	N.A.	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16
Red. Diagonals	N.A.	N.A.	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16	L 2 x 2 x 3/16
Face Width (ft)	20.8646	18.8542	17.8125	16.7708	15.7708	14.7708	14.0729	13.375	12.6771	11.9874	11.3151	10.6354	9.95833	9.28125	8.60417	8.09337	7.58337	7.07292	6.5625
# Panels @ (ft)	2 @ 10	2 @ 10	2 @ 5	3 @ 10	3 @ 10	3 @ 10	1 @ 6.667	1 @ 6.666	2 @ 6.666	2 @ 6.666	1 @ 6.666	2 @ 6.667	1 @ 6.667	1 @ 6.666	1 @ 6.667	4 @ 5	4 @ 5	5 @ 4	5 @ 4
Weight (K)	21.6	5.3	2.5	2.2	1.7	1.5	0.9	0.9	0.8	0.8	1.0	0.6	0.6	0.5	0.3	0.2	0.2	0.3	0.4



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	BU 806378 (PJF) - 6.625"x0.34" pipe w/ 2" SR- (modified with 19.5" spacing)	D	L 2.5 x 2.5 x 1/4
B	L 2 x 2 x 3/16	E	2L 2.5 x 2.5 x 3/16 (1/4)
C	L 2.5 x 2.5 x 3/16	F	L 1.75 x 1.75 x 1/4

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

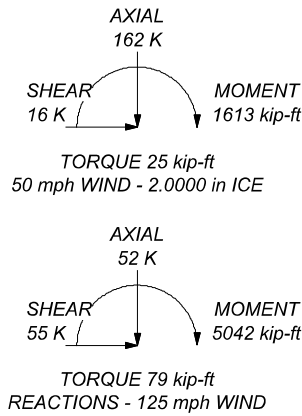
1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 95.1%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:

DOWN: 296 K
SHEAR: 34 K

UPLIFT: -256 K
SHEAR: 30 K



Crown Castle		Job: BU 806378	
2000 Corporate Drive		Project:	
Canonsburg, PA 15317		Client: Crown Castle	Drawn by: TStyran
The Pathway to Possible Phone: (724) 416-2000		Code: TIA-222-H	Date: 06/17/21
FAX:		Path:	Scale: NTS
		Dwg No. E-1	

C:\Users\TStyran\Documents\WIP\806378\WO 1963270 - SAIGA\806378 RPA.dwg

Tower Input Data

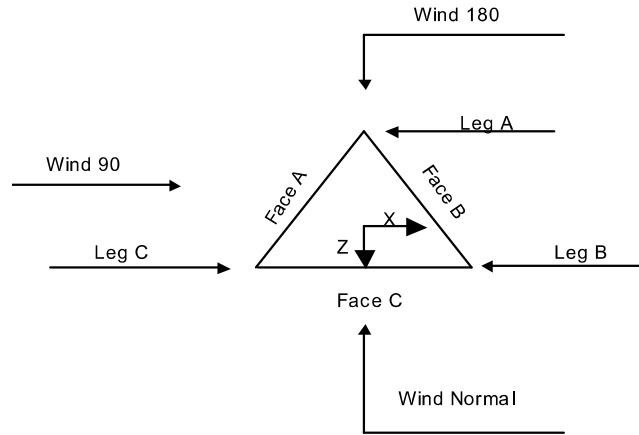
The main tower is a 3x free standing tower with an overall height of 160.00 ft above the ground line.
 The base of the tower is set at an elevation of 0.00 ft above the ground line.
 The face width of the tower is 6.52 ft at the top and 20.86 ft at the base.
 This tower is designed using the TIA-222-H standard.

The following design criteria apply:

- 1) Tower is located in Tolland County, Connecticut.
- 2) Tower base elevation above sea level: 396.00 ft.
- 3) Basic wind speed of 125 mph.
- 4) Risk Category II.
- 5) Exposure Category C.
- 6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 7) Topographic Category: 1.
- 8) Crest Height: 0.00 ft.
- 9) Nominal ice thickness of 2.0000 in.
- 10) Ice thickness is considered to increase with height.
- 11) Ice density of 56 pcf.
- 12) A wind speed of 50 mph is used in combination with ice.
- 13) Deflections calculated using a wind speed of 60 mph.
- 14) Pressures are calculated at each section.
- 15) Stress ratio used in tower member design is 1.05.
- 16) Tower analysis based on target reliabilities in accordance with Annex S.
- 17) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- 18) Maximum demand-capacity ratio is: 1.
- 19) 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="background-color: #e0e0e0; text-align: center; padding: 2px;">Poles</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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Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	160.00-140.00			6.52	1	20.00
T2	140.00-135.00			6.56	1	5.00
T3	135.00-130.00			7.07	1	5.00
T4	130.00-125.00			7.58	1	5.00
T5	125.00-120.00			8.09	1	5.00
T6	120.00-113.33			8.60	1	6.67
T7	113.33-106.67			9.28	1	6.67
T8	106.67-100.00			9.96	1	6.67
T9	100.00-93.33			10.64	1	6.67
T10	93.33-86.67			11.32	1	6.67
T11	86.67-80.00			12.00	1	6.67
T12	80.00-73.33			12.68	1	6.67
T13	73.33-66.67			13.38	1	6.67
T14	66.67-60.00			14.07	1	6.67
T15	60.00-50.00			14.77	1	10.00
T16	50.00-40.00			15.77	1	10.00
T17	40.00-30.00			16.77	1	10.00
T18	30.00-20.00			17.81	1	10.00
T19	20.00-0.00			18.85	1	20.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	160.00-140.00	4.00	X Brace	No	No	0.0000	0.0000
T2	140.00-135.00	5.00	X Brace	No	No	0.0000	0.0000
T3	135.00-130.00	5.00	X Brace	No	No	0.0000	0.0000
T4	130.00-125.00	5.00	X Brace	No	No	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T5	125.00-120.00	5.00	X Brace	No	No	0.0000	0.0000
T6	120.00-113.33	6.67	X Brace	No	No	0.0000	0.0000
T7	113.33-106.67	6.67	X Brace	No	No	0.0000	0.0000
T8	106.67-100.00	6.67	X Brace	No	Yes	0.0000	0.0000
T9	100.00-93.33	6.67	X Brace	No	No	0.0000	0.0000
T10	93.33-86.67	6.67	X Brace	No	No	0.0000	0.0000
T11	86.67-80.00	6.67	X Brace	No	Yes	0.0000	0.0000
T12	80.00-73.33	6.67	X Brace	No	No	0.0000	0.0000
T13	73.33-66.67	6.67	X Brace	No	Yes	0.0000	0.0000
T14	66.67-60.00	6.67	X Brace	No	Yes	0.0000	0.0000
T15	60.00-50.00	10.00	X Brace	No	No	0.0000	0.0000
T16	50.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T17	40.00-30.00	10.00	X Brace	No	Yes	0.0000	0.0000
T18	30.00-20.00	5.00	Double K1	No	Yes	0.0000	0.0000
T19	20.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 160.00-140.00	Pipe	Pipe 2.375" x 0.154" (2 STD)	A572-50 (50 ksi)	Single Angle	L 1.75 x 1.75 x 3/16	A36 (36 ksi)
T2 140.00-135.00	Pipe	Pipe 2.875" x 0.276" (2.5 EH)	A572-50 (50 ksi)	Single Angle	L 1.75 x 1.75 x 3/16	A36 (36 ksi)
T3 135.00-130.00	Pipe	Pipe 2.875" x 0.276" (2.5 EH)	A572-50 (50 ksi)	Single Angle	L 1.75 x 1.75 x 3/16	A36 (36 ksi)
T4 130.00-125.00	Pipe	Pipe 2.875" x 0.276" (2.5 EH)	A572-50 (50 ksi)	Single Angle	L 1.75 x 1.75 x 3/16	A36 (36 ksi)
T5 125.00-120.00	Pipe	Pipe 2.875" x 0.276" (2.5 EH)	A572-50 (50 ksi)	Single Angle	L 2 x 2 x 3/16	A36 (36 ksi)
T6 120.00-113.33	Pipe	Pipe 3.5" x 0.300" (3 EH)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 1/4	A36 (36 ksi)
T7 113.33-106.67	Pipe	Pipe 3.5" x 0.300" (3 EH)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 1/4	A36 (36 ksi)
T8 106.67-100.00	Pipe	Pipe 3.5" x 0.300" (3 EH)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 1/4	A36 (36 ksi)
T9 100.00-93.33	Pipe	Pipe 4" x 0.318" (3.5 EH)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T10 93.33-86.67	Pipe	Pipe 4" x 0.318" (3.5 EH)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 1/4	A36 (36 ksi)
T11 86.67-80.00	Pipe	Pipe 4" x 0.318" (3.5 EH)	A572-50 (50 ksi)	Double Angle	2L 2.5 x 2.5 x 3/16 (1/4)	A36 (36 ksi)
T12 80.00-73.33	Pipe	Pipe 4.5" x 0.337" (4 XS)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T13 73.33-66.67	Pipe	Pipe 4.5" x 0.337" (4 XS)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T14 66.67-60.00	Pipe	Pipe 4.5" x 0.337" (4 XS)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T15 60.00-50.00	Pipe	Pipe 5.563" x 0.375" (5 EH)	A572-50 (50 ksi)	Double Angle	2L 3 x 3 x 3/16 (1/4)	A36 (36 ksi)
T16 50.00-40.00	Pipe	Pipe 5.563" x 0.375" (5 EH)	A572-50 (50 ksi)	Double Angle	2L 3 x 3 x 3/16 (1/4)	A36 (36 ksi)
T17 40.00-30.00	Pipe	Pipe 5.563" x 0.375" (5 XS)	A572-50 (50 ksi)	Double Angle	2L 3 x 3 x 1/4 (1/4)	A572-50 (50 ksi)
T18 30.00-20.00	Pipe	Pipe 5.563" x 0.375" (5 XS)	A572-50 (50 ksi)	Double Angle	2L 3 x 3 x 1/4 (1/4)	A572-50 (50 ksi)
T19 20.00-0.00	Arbitrary Shape	BU 806378 (PJF) - 6.625"x0.34" pipe w/ 2" SR- (modified with 19.5" spacing)	A572-50 (50 ksi)	Double Angle	2L 3.5 x 3.5 x 1/4 (1/4)	A572-50 (50 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 160.00-140.00	Equal Angle	L 2 x 2 x 1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 140.00-135.00	Equal Angle	L 2 x 2 x 1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T18 30.00-20.00	None	Single Angle		A36 (36 ksi)	Equal Angle	L 3 x 3 x 3/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T8 106.67-100.00	Equal Angle	L 1.75 x 1.75 x 1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 86.67-80.00	Equal Angle	L 2 x 2 x 3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 73.33-66.67	Equal Angle	L 1.75 x 1.75 x 1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T14 66.67-60.00	Equal Angle	L 2 x 2 x 3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 50.00-40.00	Equal Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T17 40.00-30.00	Equal Angle	L 3 x 3 x 1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Redundant Bracing Grade	Redundant Type	Redundant Size	K Factor
T18 30.00-20.00	A36 (36 ksi)	Horizontal (1) Diagonal (1)	Equal Angle Equal Angle	1 1

Tower Section Geometry (cont'd)

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	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
T1 160.00-140.00	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T2 140.00-135.00	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T3 135.00-130.00	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T4 130.00-125.00	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T5 125.00-120.00	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T6 120.00-113.33	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T7 113.33-106.67	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T8 106.67-100.00	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T9 100.00-93.33	1.99	0.5000	A572-50 (50 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T10 93.33-86.67	2.36	0.5000	A572-50 (50 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T11 86.67-80.00	2.13	0.5000	A572-50 (50 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T12 80.00-73.33	1.99	0.5000	A572-50 (50 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T13 73.33-66.67	2.36	0.5000	A572-50 (50 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T14 66.67-60.00	1.99	0.5000	A572-50 (50 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T15 60.00-50.00	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T16 50.00-40.00	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T17 40.00-30.00	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T18 30.00-20.00	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T19 20.00-0.00	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹							
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace	
											X
ft				Y	Y	Y	Y	Y	Y	Y	
T1 160.00-140.00	Yes	No	1	1	1	1	1	1	1	1	1
T2 140.00-135.00	Yes	No	1	1	1	1	1	1	1	1	1
T3 135.00-130.00	Yes	No	1	1	1	1	1	1	1	1	1
T4 130.00-125.00	Yes	No	1	1	1	1	1	1	1	1	1
T5 125.00-120.00	Yes	No	1	1	1	1	1	1	1	1	1
T6 120.00-113.33	Yes	No	1	1	1	1	1	1	1	1	1
T7 113.33-106.67	Yes	No	1	1	1	1	1	1	1	1	1
T8 106.67-100.00	No	No	1	1	1	1	1	1	1	0.5	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹								
				X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y		
T9 100.00-93.33	No	No	1	1	1	1	1	1	1	1	1	1
T10 93.33-86.67	No	No	1	1	1	1	1	1	1	1	1	1
T11 86.67-80.00	No	No	1	1	1	1	1	1	1	1	1	1
T12 80.00-73.33	No	No	1	1	1	1	1	1	1	0.5	1	1
T13 73.33-66.67	No	No	1	1	1	1	1	1	1	0.5	1	1
T14 66.67-60.00	No	No	1	1	1	1	1	1	1	0.5	1	1
T15 60.00-50.00	Yes	No	1	1	1	1	1	1	1	1	1	1
T16 50.00-40.00	No	No	1	1	1	1	1	1	1	0.5	1	1
T17 40.00-30.00	No	No	1	1	1	1	1	1	1	0.5	1	1
T18 30.00-20.00	Yes	No	1	1	1	1	1	1	1	1	1	1
T19 20.00-0.00	Yes	No	1	1	1	1	1	1	1	1	1	1

¹Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 140.00-135.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 135.00-130.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 130.00-125.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 125.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 120.00-113.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 113.33-106.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 106.67-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 100.00-93.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 93.33-86.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 86.67-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 80.00-73.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 73.33-66.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 66.67-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T15 60.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 50.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 40.00-30.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T18 30.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T19 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 160.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 140.00-135.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 135.00-130.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 130.00-125.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 125.00-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 120.00-113.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 113.33-106.67	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 106.67-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 100.00-93.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 93.33-86.67	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 86.67-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 80.00-73.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 73.33-66.67	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 66.67-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 60.00-50.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 50.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 40.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T18 30.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T19 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 160.00-140.00	Flange	0.6250	4	0.5000	1	0.5000	1	0.0000	0	0.6250	0	0.6250	0	0.6250	0
T2 140.00-135.00	Flange	0.7500	0	0.5000	1	0.5000	1	0.0000	0	0.6250	0	0.6250	0	0.6250	0
T3 135.00-130.00	Flange	0.7500	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
T4 130.00-125.00	Flange	0.7500	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
T5 125.00-120.00	Flange	0.7500	4	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
T6 120.00-113.33	Flange	0.8750	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
T7 113.33-106.67	Flange	0.8750	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
T8 106.67-100.00	Flange	0.8750	4	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	1
T9 100.00-93.33	Flange	0.8750	0	0.5000	2	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
T10 93.33-86.67	Flange	0.8750	0	0.5000	2	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
T11 86.67-80.00	Flange	0.8750	4	0.5000	2	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	1
T12 80.00-73.33	Flange	1.0000	0	0.5000	2	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
T13 73.33-66.67	Flange	1.0000	0	0.5000	2	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	1
T14 66.67-60.00	Flange	1.0000	4	0.5000	2	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	1
T15 60.00-50.00	Flange	1.0000	0	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
T16 50.00-40.00	Flange	1.0000	4	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	1
T17 40.00-30.00	Flange	1.0000	0	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	1
T18 30.00-20.00	Flange	1.0000	6	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	1	0.6250	0
T19 20.00-0.00	Flange	1.0000	0	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Shield Leg	Allow	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Face A													
HCS 6X12 4AWG(1-5/8) 1.5" flat	A	No	No	Ar (CaAa)	113.00 - 0.00	0.0000	-0.35	3	3	1.0000	1.6600		2.40
Cable Ladder Rail *****	A	No	No	Af (CaAa)	113.00 - 0.00	0.0000	-0.35	2	2	30.000	1.5000		1.80
LDF4-50A(1/2)	A	No	No	Ar (CaAa)	57.00 - 0.00	0.0000	0.35	1	1	0.6250	0.6300		0.15
LDF7-50A(1-5/8) 1.5" flat	A	No	No	Ar (CaAa)	157.00 - 0.00	0.0000	0.35	20	7	1.0000	1.9800		0.82
Cable Ladder Rail *****	A	No	No	Af (CaAa)	157.00 - 0.00	0.0000	0.35	2	2	30.000	1.5000		1.80
Face B													
FB-L98B-002-75000(3/8)	B	No	No	Ar (CaAa)	135.00 - 0.00	0.0000	-0.4	1	1	0.3937	0.3937		0.06

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
WR-VG86ST-BRD(3/4)	B	No	No	Ar (CaAa)	135.00 - 0.00	0.0000	-0.4	2	2	0.7950 0.5000	0.7950		0.58
FB-L98B-002-75000(3/8)	B	No	No	Ar (CaAa)	135.00 - 0.00	0.0000	-0.4	1	1	0.3937 0.5000	0.3937		0.06
WR-VG86ST-BRD(3/4)	B	No	No	Ar (CaAa)	135.00 - 0.00	0.0000	-0.4	2	2	0.7950 0.5000	0.7950		0.58
LDF6-50A(1-1/4)	B	No	No	Ar (CaAa)	135.00 - 0.00	0.0000	-0.42	6	3	1.0000 0.5000	1.5500		0.60
LCF114-50J(1-1/4)	B	No	No	Ar (CaAa)	135.00 - 0.00	0.0000	-0.37	6	3	1.0000 0.5000	1.5800		0.70
1.5" flat Cable Ladder Rail	B	No	No	Af (CaAa)	135.00 - 0.00	0.0000	-0.4	1	1	1.5000	1.5000		1.80

LDF4-50A(1/2)	B	No	No	Ar (CaAa)	48.00 - 0.00	0.0000	-0.35	1	1	0.6250 0.5000	0.6300		0.15
HB058-M12-XXXF(5/8)	B	No	No	Ar (CaAa)	125.00 - 0.00	0.0000	-0.35	1	1	0.8400 0.5000	0.8400		0.24
HB114-1-08U4-M5J(1-1/4)	B	No	No	Ar (CaAa)	125.00 - 0.00	0.0000	-0.35	3	3	0.7500 0.5000	1.5400		1.08
1.5" flat Cable Ladder Rail	B	No	No	Af (CaAa)	135.00 - 0.00	0.0000	-0.35	1	1	1.5000	1.5000		1.80
Face C													
1.5" flat Cable Ladder Rail	C	No	No	Af (CaAa)	143.00 - 0.00	0.0000	0.35	2	2	30.000 0 1.5000	1.5000		1.80

CU12PSM9P6XXX(1-1/2)	C	No	No	Ar (CaAa)	147.00 - 0.00	0.0000	0	1	1	1.6000	1.6000		2.35

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 ² /ft	Weight plf

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	CAAA In Face ft ²	CAAA Out Face ft ²	Weight K
T1	160.00-140.00	A	0.000	0.000	75.820	0.000	0.34
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.620	0.000	0.03
T2	140.00-135.00	A	0.000	0.000	22.300	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.300	0.000	0.03
T3	135.00-130.00	A	0.000	0.000	22.300	0.000	0.10

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B	0.000	0.000	13.874	0.000	0.07
		C	0.000	0.000	3.300	0.000	0.03
T4	130.00-125.00	A	0.000	0.000	22.300	0.000	0.10
		B	0.000	0.000	13.874	0.000	0.07
		C	0.000	0.000	3.300	0.000	0.03
T5	125.00-120.00	A	0.000	0.000	22.300	0.000	0.10
		B	0.000	0.000	16.604	0.000	0.09
		C	0.000	0.000	3.300	0.000	0.03
T6	120.00-113.33	A	0.000	0.000	29.735	0.000	0.13
		B	0.000	0.000	22.139	0.000	0.12
		C	0.000	0.000	4.400	0.000	0.04
T7	113.33-106.67	A	0.000	0.000	36.051	0.000	0.20
		B	0.000	0.000	22.136	0.000	0.12
		C	0.000	0.000	4.400	0.000	0.04
T8	106.67-100.00	A	0.000	0.000	36.388	0.000	0.21
		B	0.000	0.000	22.139	0.000	0.12
		C	0.000	0.000	4.400	0.000	0.04
T9	100.00-93.33	A	0.000	0.000	36.388	0.000	0.21
		B	0.000	0.000	22.139	0.000	0.12
		C	0.000	0.000	4.400	0.000	0.04
T10	93.33-86.67	A	0.000	0.000	36.383	0.000	0.21
		B	0.000	0.000	22.136	0.000	0.12
		C	0.000	0.000	4.400	0.000	0.04
T11	86.67-80.00	A	0.000	0.000	36.388	0.000	0.21
		B	0.000	0.000	22.139	0.000	0.12
		C	0.000	0.000	4.400	0.000	0.04
T12	80.00-73.33	A	0.000	0.000	36.388	0.000	0.21
		B	0.000	0.000	22.139	0.000	0.12
		C	0.000	0.000	4.400	0.000	0.04
T13	73.33-66.67	A	0.000	0.000	36.383	0.000	0.21
		B	0.000	0.000	22.136	0.000	0.12
		C	0.000	0.000	4.400	0.000	0.04
T14	66.67-60.00	A	0.000	0.000	36.388	0.000	0.21
		B	0.000	0.000	22.139	0.000	0.12
		C	0.000	0.000	4.400	0.000	0.04
T15	60.00-50.00	A	0.000	0.000	55.021	0.000	0.31
		B	0.000	0.000	33.207	0.000	0.17
		C	0.000	0.000	6.600	0.000	0.06
T16	50.00-40.00	A	0.000	0.000	55.210	0.000	0.31
		B	0.000	0.000	33.711	0.000	0.17
		C	0.000	0.000	6.600	0.000	0.06
T17	40.00-30.00	A	0.000	0.000	55.210	0.000	0.31
		B	0.000	0.000	33.837	0.000	0.17
		C	0.000	0.000	6.600	0.000	0.06
T18	30.00-20.00	A	0.000	0.000	55.210	0.000	0.31
		B	0.000	0.000	33.837	0.000	0.17
		C	0.000	0.000	6.600	0.000	0.06
T19	20.00-0.00	A	0.000	0.000	110.420	0.000	0.62
		B	0.000	0.000	67.675	0.000	0.35
		C	0.000	0.000	13.200	0.000	0.12

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	160.00-140.00	A	1.978	0.000	0.000	77.603	0.000	1.85
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.763	0.000	0.15
T2	140.00-135.00	A	1.961	0.000	0.000	22.762	0.000	0.54
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	9.182	0.000	0.17
T3	135.00-130.00	A	1.954	0.000	0.000	22.735	0.000	0.54
		B		0.000	0.000	36.787	0.000	0.56
		C		0.000	0.000	9.161	0.000	0.17
T4	130.00-125.00	A	1.946	0.000	0.000	22.708	0.000	0.54

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		in	ft ²	ft ²	ft ²	ft ²	K
		B		0.000	0.000	36.704	0.000	0.56
		C		0.000	0.000	9.138	0.000	0.17
T5	125.00-120.00	A	1.938	0.000	0.000	22.680	0.000	0.54
		B		0.000	0.000	46.083	0.000	0.69
		C		0.000	0.000	9.115	0.000	0.17
T6	120.00-113.33	A	1.929	0.000	0.000	30.195	0.000	0.71
		B		0.000	0.000	61.275	0.000	0.91
		C		0.000	0.000	12.116	0.000	0.23
T7	113.33-106.67	A	1.918	0.000	0.000	47.762	0.000	1.02
		B		0.000	0.000	61.060	0.000	0.91
		C		0.000	0.000	12.069	0.000	0.23
T8	106.67-100.00	A	1.906	0.000	0.000	48.580	0.000	1.03
		B		0.000	0.000	60.851	0.000	0.90
		C		0.000	0.000	12.023	0.000	0.22
T9	100.00-93.33	A	1.893	0.000	0.000	48.456	0.000	1.02
		B		0.000	0.000	60.620	0.000	0.89
		C		0.000	0.000	11.972	0.000	0.22
T10	93.33-86.67	A	1.879	0.000	0.000	48.317	0.000	1.02
		B		0.000	0.000	60.365	0.000	0.89
		C		0.000	0.000	11.916	0.000	0.22
T11	86.67-80.00	A	1.865	0.000	0.000	48.183	0.000	1.01
		B		0.000	0.000	60.111	0.000	0.88
		C		0.000	0.000	11.861	0.000	0.22
T12	80.00-73.33	A	1.850	0.000	0.000	48.032	0.000	1.00
		B		0.000	0.000	59.829	0.000	0.87
		C		0.000	0.000	11.799	0.000	0.22
T13	73.33-66.67	A	1.833	0.000	0.000	47.861	0.000	1.00
		B		0.000	0.000	59.515	0.000	0.86
		C		0.000	0.000	11.730	0.000	0.21
T14	66.67-60.00	A	1.815	0.000	0.000	47.690	0.000	0.99
		B		0.000	0.000	59.191	0.000	0.85
		C		0.000	0.000	11.659	0.000	0.21
T15	60.00-50.00	A	1.789	0.000	0.000	74.104	0.000	1.50
		B		0.000	0.000	88.087	0.000	1.26
		C		0.000	0.000	17.335	0.000	0.31
T16	50.00-40.00	A	1.754	0.000	0.000	74.774	0.000	1.49
		B		0.000	0.000	90.426	0.000	1.27
		C		0.000	0.000	17.121	0.000	0.30
T17	40.00-30.00	A	1.710	0.000	0.000	74.050	0.000	1.46
		B		0.000	0.000	89.977	0.000	1.25
		C		0.000	0.000	16.860	0.000	0.29
T18	30.00-20.00	A	1.653	0.000	0.000	73.108	0.000	1.43
		B		0.000	0.000	88.319	0.000	1.20
		C		0.000	0.000	16.521	0.000	0.28
T19	20.00-0.00	A	1.509	0.000	0.000	141.403	0.000	2.66
		B		0.000	0.000	168.157	0.000	2.19
		C		0.000	0.000	31.304	0.000	0.51

Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
T1	160.00-140.00	-2.6257	-13.6821	-2.4537	-10.4185
T2	140.00-135.00	-4.2796	-13.0591	-4.5279	-8.6418
T3	135.00-130.00	-2.5379	-22.6780	-2.0243	-21.7511
T4	130.00-125.00	-2.6477	-23.8602	-2.1265	-22.9123
T5	125.00-120.00	-2.1481	-25.4181	-1.5058	-25.4526
T6	120.00-113.33	-2.1841	-26.1075	-1.5986	-27.0756
T7	113.33-106.67	-6.0339	-23.6804	-6.1637	-23.8542
T8	106.67-100.00	-5.9979	-23.1695	-6.2843	-23.5182
T9	100.00-93.33	-6.1207	-23.8004	-6.7538	-25.3432
T10	93.33-86.67	-6.2611	-24.5160	-7.0077	-26.3830
T11	86.67-80.00	-6.0281	-23.9926	-6.8189	-25.8656
T12	80.00-73.33	-6.4661	-25.6365	-7.4260	-28.1472

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
T13	73.33-66.67	-6.0985	-24.6148	-7.1246	-27.2371
T14	66.67-60.00	-6.2806	-25.4301	-7.3496	-28.1569
T15	60.00-50.00	-8.5095	-33.0879	-9.1206	-34.6439
T16	50.00-40.00	-7.8602	-31.8572	-8.5352	-34.7608
T17	40.00-30.00	-7.9314	-32.5354	-8.7088	-36.0927
T18	30.00-20.00	-6.9893	-29.4688	-7.9366	-33.3531
T19	20.00-0.00	-9.1145	-37.1698	-9.7877	-40.6002

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	9	LDF7-50A(1-5/8)	140.00 - 157.00	0.6000	0.5760
T1	11	1.5" flat Cable Ladder Rail	140.00 - 157.00	0.6000	0.5760
T1	26	1.5" flat Cable Ladder Rail	140.00 - 143.00	0.6000	0.5760
T1	28	CU12PSM9P6XXX(1-1/2)	140.00 - 147.00	0.6000	0.5760
T2	9	LDF7-50A(1-5/8)	135.00 - 140.00	0.6000	0.5502
T2	11	1.5" flat Cable Ladder Rail	135.00 - 140.00	0.6000	0.5502
T2	26	1.5" flat Cable Ladder Rail	135.00 - 140.00	0.6000	0.5502
T2	28	CU12PSM9P6XXX(1-1/2)	135.00 - 140.00	0.6000	0.5502
T3	9	LDF7-50A(1-5/8)	130.00 - 135.00	0.6000	0.6000
T3	11	1.5" flat Cable Ladder Rail	130.00 - 135.00	0.6000	0.6000
T3	13	FB-L98B-002-75000(3/8)	130.00 - 135.00	0.6000	0.6000
T3	14	WR-VG86ST-BRD(3/4)	130.00 - 135.00	0.6000	0.6000
T3	15	FB-L98B-002-75000(3/8)	130.00 - 135.00	0.6000	0.6000
T3	16	WR-VG86ST-BRD(3/4)	130.00 - 135.00	0.6000	0.6000
T3	17	LDF6-50A(1-1/4)	130.00 - 135.00	0.6000	0.6000
T3	18	LCF114-50J(1-1/4)	130.00 - 135.00	0.6000	0.6000
T3	19	1.5" flat Cable Ladder Rail	130.00 - 135.00	0.6000	0.6000
T3	24	1.5" flat Cable Ladder Rail	130.00 - 135.00	0.6000	0.6000
T3	26	1.5" flat Cable Ladder Rail	130.00 - 135.00	0.6000	0.6000
T3	28	CU12PSM9P6XXX(1-1/2)	130.00 - 135.00	0.6000	0.6000
T4	9	LDF7-50A(1-5/8)	125.00 - 130.00	0.6000	0.6000
T4	11	1.5" flat Cable Ladder Rail	125.00 - 130.00	0.6000	0.6000
T4	13	FB-L98B-002-75000(3/8)	125.00 - 130.00	0.6000	0.6000
T4	14	WR-VG86ST-BRD(3/4)	125.00 - 130.00	0.6000	0.6000
T4	15	FB-L98B-002-75000(3/8)	125.00 - 130.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T4	16	WR-VG86ST-BRD(3/4)	125.00 - 130.00	0.6000	0.6000
T4	17	LDF6-50A(1-1/4)	125.00 - 130.00	0.6000	0.6000
T4	18	LCF114-50J(1-1/4)	125.00 - 130.00	0.6000	0.6000
T4	19	1.5" flat Cable Ladder Rail	125.00 - 130.00	0.6000	0.6000
T4	24	1.5" flat Cable Ladder Rail	125.00 - 130.00	0.6000	0.6000
T4	26	1.5" flat Cable Ladder Rail	125.00 - 130.00	0.6000	0.6000
T4	28	CU12PSM9P6XXX(1-1/2)	125.00 - 130.00	0.6000	0.6000
T5	9	LDF7-50A(1-5/8)	120.00 - 125.00	0.6000	0.6000
T5	11	1.5" flat Cable Ladder Rail	120.00 - 125.00	0.6000	0.6000
T5	13	FB-L98B-002-75000(3/8)	120.00 - 125.00	0.6000	0.6000
T5	14	WR-VG86ST-BRD(3/4)	120.00 - 125.00	0.6000	0.6000
T5	15	FB-L98B-002-75000(3/8)	120.00 - 125.00	0.6000	0.6000
T5	16	WR-VG86ST-BRD(3/4)	120.00 - 125.00	0.6000	0.6000
T5	17	LDF6-50A(1-1/4)	120.00 - 125.00	0.6000	0.6000
T5	18	LCF114-50J(1-1/4)	120.00 - 125.00	0.6000	0.6000
T5	19	1.5" flat Cable Ladder Rail	120.00 - 125.00	0.6000	0.6000
T5	22	HB058-M12-XXXF(5/8)	120.00 - 125.00	0.6000	0.6000
T5	23	HB114-1-08U4-M5J(1-1/4)	120.00 - 125.00	0.6000	0.6000
T5	24	1.5" flat Cable Ladder Rail	120.00 - 125.00	0.6000	0.6000
T5	26	1.5" flat Cable Ladder Rail	120.00 - 125.00	0.6000	0.6000
T5	28	CU12PSM9P6XXX(1-1/2)	120.00 - 125.00	0.6000	0.6000
T6	9	LDF7-50A(1-5/8)	113.33 - 120.00	0.6000	0.6000
T6	11	1.5" flat Cable Ladder Rail	113.33 - 120.00	0.6000	0.6000
T6	13	FB-L98B-002-75000(3/8)	113.33 - 120.00	0.6000	0.6000
T6	14	WR-VG86ST-BRD(3/4)	113.33 - 120.00	0.6000	0.6000
T6	15	FB-L98B-002-75000(3/8)	113.33 - 120.00	0.6000	0.6000
T6	16	WR-VG86ST-BRD(3/4)	113.33 - 120.00	0.6000	0.6000
T6	17	LDF6-50A(1-1/4)	113.33 - 120.00	0.6000	0.6000
T6	18	LCF114-50J(1-1/4)	113.33 - 120.00	0.6000	0.6000
T6	19	1.5" flat Cable Ladder Rail	113.33 - 120.00	0.6000	0.6000
T6	22	HB058-M12-XXXF(5/8)	113.33 - 120.00	0.6000	0.6000
T6	23	HB114-1-08U4-M5J(1-1/4)	113.33 - 120.00	0.6000	0.6000
T6	24	1.5" flat Cable Ladder Rail	113.33 - 120.00	0.6000	0.6000
T6	26	1.5" flat Cable Ladder Rail	113.33 - 120.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T6	28	CU12PSM9P6XXX(1-1/2)	113.33 - 120.00	0.6000	0.6000
T7	5	HCS 6X12 4AWG(1-5/8)	106.67 - 113.00	0.6000	0.6000
T7	6	1.5" flat Cable Ladder Rail	106.67 - 113.00	0.6000	0.6000
T7	9	LDF7-50A(1-5/8)	106.67 - 113.33	0.6000	0.6000
T7	11	1.5" flat Cable Ladder Rail	106.67 - 113.33	0.6000	0.6000
T7	13	FB-L98B-002-75000(3/8)	106.67 - 113.33	0.6000	0.6000
T7	14	WR-VG86ST-BRD(3/4)	106.67 - 113.33	0.6000	0.6000
T7	15	FB-L98B-002-75000(3/8)	106.67 - 113.33	0.6000	0.6000
T7	16	WR-VG86ST-BRD(3/4)	106.67 - 113.33	0.6000	0.6000
T7	17	LDF6-50A(1-1/4)	106.67 - 113.33	0.6000	0.6000
T7	18	LCF114-50J(1-1/4)	106.67 - 113.33	0.6000	0.6000
T7	19	1.5" flat Cable Ladder Rail	106.67 - 113.33	0.6000	0.6000
T7	22	HB058-M12-XXXF(5/8)	106.67 - 113.33	0.6000	0.6000
T7	23	HB114-1-08U4-M5J(1-1/4)	106.67 - 113.33	0.6000	0.6000
T7	24	1.5" flat Cable Ladder Rail	106.67 - 113.33	0.6000	0.6000
T7	26	1.5" flat Cable Ladder Rail	106.67 - 113.33	0.6000	0.6000
T7	28	CU12PSM9P6XXX(1-1/2)	106.67 - 113.33	0.6000	0.6000
T8	5	HCS 6X12 4AWG(1-5/8)	100.00 - 106.67	0.6000	0.6000
T8	6	1.5" flat Cable Ladder Rail	100.00 - 106.67	0.6000	0.6000
T8	9	LDF7-50A(1-5/8)	100.00 - 106.67	0.6000	0.6000
T8	11	1.5" flat Cable Ladder Rail	100.00 - 106.67	0.6000	0.6000
T8	13	FB-L98B-002-75000(3/8)	100.00 - 106.67	0.6000	0.6000
T8	14	WR-VG86ST-BRD(3/4)	100.00 - 106.67	0.6000	0.6000
T8	15	FB-L98B-002-75000(3/8)	100.00 - 106.67	0.6000	0.6000
T8	16	WR-VG86ST-BRD(3/4)	100.00 - 106.67	0.6000	0.6000
T8	17	LDF6-50A(1-1/4)	100.00 - 106.67	0.6000	0.6000
T8	18	LCF114-50J(1-1/4)	100.00 - 106.67	0.6000	0.6000
T8	19	1.5" flat Cable Ladder Rail	100.00 - 106.67	0.6000	0.6000
T8	22	HB058-M12-XXXF(5/8)	100.00 - 106.67	0.6000	0.6000
T8	23	HB114-1-08U4-M5J(1-1/4)	100.00 - 106.67	0.6000	0.6000
T8	24	1.5" flat Cable Ladder Rail	100.00 - 106.67	0.6000	0.6000
T8	26	1.5" flat Cable Ladder Rail	100.00 - 106.67	0.6000	0.6000
T8	28	CU12PSM9P6XXX(1-1/2)	100.00 - 106.67	0.6000	0.6000
T9	5	HCS 6X12 4AWG(1-5/8)	93.33 - 100.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T9	6	1.5" flat Cable Ladder Rail	93.33 - 100.00	0.6000	0.6000
T9	9	LDF7-50A(1-5/8)	93.33 - 100.00	0.6000	0.6000
T9	11	1.5" flat Cable Ladder Rail	93.33 - 100.00	0.6000	0.6000
T9	13	FB-L98B-002-75000(3/8)	93.33 - 100.00	0.6000	0.6000
T9	14	WR-VG86ST-BRD(3/4)	93.33 - 100.00	0.6000	0.6000
T9	15	FB-L98B-002-75000(3/8)	93.33 - 100.00	0.6000	0.6000
T9	16	WR-VG86ST-BRD(3/4)	93.33 - 100.00	0.6000	0.6000
T9	17	LDF6-50A(1-1/4)	93.33 - 100.00	0.6000	0.6000
T9	18	LCF114-50J(1-1/4)	93.33 - 100.00	0.6000	0.6000
T9	19	1.5" flat Cable Ladder Rail	93.33 - 100.00	0.6000	0.6000
T9	22	HB058-M12-XXXF(5/8)	93.33 - 100.00	0.6000	0.6000
T9	23	HB114-1-08U4-M5J(1-1/4)	93.33 - 100.00	0.6000	0.6000
T9	24	1.5" flat Cable Ladder Rail	93.33 - 100.00	0.6000	0.6000
T9	26	1.5" flat Cable Ladder Rail	93.33 - 100.00	0.6000	0.6000
T9	28	CU12PSM9P6XXX(1-1/2)	93.33 - 100.00	0.6000	0.6000
T10	5	HCS 6X12 4AWG(1-5/8)	86.67 - 93.33	0.6000	0.6000
T10	6	1.5" flat Cable Ladder Rail	86.67 - 93.33	0.6000	0.6000
T10	9	LDF7-50A(1-5/8)	86.67 - 93.33	0.6000	0.6000
T10	11	1.5" flat Cable Ladder Rail	86.67 - 93.33	0.6000	0.6000
T10	13	FB-L98B-002-75000(3/8)	86.67 - 93.33	0.6000	0.6000
T10	14	WR-VG86ST-BRD(3/4)	86.67 - 93.33	0.6000	0.6000
T10	15	FB-L98B-002-75000(3/8)	86.67 - 93.33	0.6000	0.6000
T10	16	WR-VG86ST-BRD(3/4)	86.67 - 93.33	0.6000	0.6000
T10	17	LDF6-50A(1-1/4)	86.67 - 93.33	0.6000	0.6000
T10	18	LCF114-50J(1-1/4)	86.67 - 93.33	0.6000	0.6000
T10	19	1.5" flat Cable Ladder Rail	86.67 - 93.33	0.6000	0.6000
T10	22	HB058-M12-XXXF(5/8)	86.67 - 93.33	0.6000	0.6000
T10	23	HB114-1-08U4-M5J(1-1/4)	86.67 - 93.33	0.6000	0.6000
T10	24	1.5" flat Cable Ladder Rail	86.67 - 93.33	0.6000	0.6000
T10	26	1.5" flat Cable Ladder Rail	86.67 - 93.33	0.6000	0.6000
T10	28	CU12PSM9P6XXX(1-1/2)	86.67 - 93.33	0.6000	0.6000
T11	5	HCS 6X12 4AWG(1-5/8)	80.00 - 86.67	0.6000	0.6000
T11	6	1.5" flat Cable Ladder Rail	80.00 - 86.67	0.6000	0.6000
T11	9	LDF7-50A(1-5/8)	80.00 - 86.67	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T11	11	1.5" flat Cable Ladder Rail	80.00 - 86.67	0.6000	0.6000
T11	13	FB-L98B-002-75000(3/8)	80.00 - 86.67	0.6000	0.6000
T11	14	WR-VG86ST-BRD(3/4)	80.00 - 86.67	0.6000	0.6000
T11	15	FB-L98B-002-75000(3/8)	80.00 - 86.67	0.6000	0.6000
T11	16	WR-VG86ST-BRD(3/4)	80.00 - 86.67	0.6000	0.6000
T11	17	LDF6-50A(1-1/4)	80.00 - 86.67	0.6000	0.6000
T11	18	LCF114-50J(1-1/4)	80.00 - 86.67	0.6000	0.6000
T11	19	1.5" flat Cable Ladder Rail	80.00 - 86.67	0.6000	0.6000
T11	22	HB058-M12-XXXF(5/8)	80.00 - 86.67	0.6000	0.6000
T11	23	HB114-1-08U4-M5J(1-1/4)	80.00 - 86.67	0.6000	0.6000
T11	24	1.5" flat Cable Ladder Rail	80.00 - 86.67	0.6000	0.6000
T11	26	1.5" flat Cable Ladder Rail	80.00 - 86.67	0.6000	0.6000
T11	28	CU12PSM9P6XXX(1-1/2)	80.00 - 86.67	0.6000	0.6000
T12	5	HCS 6X12 4AWG(1-5/8)	73.33 - 80.00	0.6000	0.6000
T12	6	1.5" flat Cable Ladder Rail	73.33 - 80.00	0.6000	0.6000
T12	9	LDF7-50A(1-5/8)	73.33 - 80.00	0.6000	0.6000
T12	11	1.5" flat Cable Ladder Rail	73.33 - 80.00	0.6000	0.6000
T12	13	FB-L98B-002-75000(3/8)	73.33 - 80.00	0.6000	0.6000
T12	14	WR-VG86ST-BRD(3/4)	73.33 - 80.00	0.6000	0.6000
T12	15	FB-L98B-002-75000(3/8)	73.33 - 80.00	0.6000	0.6000
T12	16	WR-VG86ST-BRD(3/4)	73.33 - 80.00	0.6000	0.6000
T12	17	LDF6-50A(1-1/4)	73.33 - 80.00	0.6000	0.6000
T12	18	LCF114-50J(1-1/4)	73.33 - 80.00	0.6000	0.6000
T12	19	1.5" flat Cable Ladder Rail	73.33 - 80.00	0.6000	0.6000
T12	22	HB058-M12-XXXF(5/8)	73.33 - 80.00	0.6000	0.6000
T12	23	HB114-1-08U4-M5J(1-1/4)	73.33 - 80.00	0.6000	0.6000
T12	24	1.5" flat Cable Ladder Rail	73.33 - 80.00	0.6000	0.6000
T12	26	1.5" flat Cable Ladder Rail	73.33 - 80.00	0.6000	0.6000
T12	28	CU12PSM9P6XXX(1-1/2)	73.33 - 80.00	0.6000	0.6000
T13	5	HCS 6X12 4AWG(1-5/8)	66.67 - 73.33	0.6000	0.6000
T13	6	1.5" flat Cable Ladder Rail	66.67 - 73.33	0.6000	0.6000
T13	9	LDF7-50A(1-5/8)	66.67 - 73.33	0.6000	0.6000
T13	11	1.5" flat Cable Ladder Rail	66.67 - 73.33	0.6000	0.6000
T13	13	FB-L98B-002-75000(3/8)	66.67 - 73.33	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T13	14	WR-VG86ST-BRD(3/4)	66.67 - 73.33	0.6000	0.6000
T13	15	FB-L98B-002-75000(3/8)	66.67 - 73.33	0.6000	0.6000
T13	16	WR-VG86ST-BRD(3/4)	66.67 - 73.33	0.6000	0.6000
T13	17	LDF6-50A(1-1/4)	66.67 - 73.33	0.6000	0.6000
T13	18	LCF114-50J(1-1/4)	66.67 - 73.33	0.6000	0.6000
T13	19	1.5" flat Cable Ladder Rail	66.67 - 73.33	0.6000	0.6000
T13	22	HB058-M12-XXXF(5/8)	66.67 - 73.33	0.6000	0.6000
T13	23	HB114-1-08U4-M5J(1-1/4)	66.67 - 73.33	0.6000	0.6000
T13	24	1.5" flat Cable Ladder Rail	66.67 - 73.33	0.6000	0.6000
T13	26	1.5" flat Cable Ladder Rail	66.67 - 73.33	0.6000	0.6000
T13	28	CU12PSM9P6XXX(1-1/2)	66.67 - 73.33	0.6000	0.6000
T14	5	HCS 6X12 4AWG(1-5/8)	60.00 - 66.67	0.6000	0.6000
T14	6	1.5" flat Cable Ladder Rail	60.00 - 66.67	0.6000	0.6000
T14	9	LDF7-50A(1-5/8)	60.00 - 66.67	0.6000	0.6000
T14	11	1.5" flat Cable Ladder Rail	60.00 - 66.67	0.6000	0.6000
T14	13	FB-L98B-002-75000(3/8)	60.00 - 66.67	0.6000	0.6000
T14	14	WR-VG86ST-BRD(3/4)	60.00 - 66.67	0.6000	0.6000
T14	15	FB-L98B-002-75000(3/8)	60.00 - 66.67	0.6000	0.6000
T14	16	WR-VG86ST-BRD(3/4)	60.00 - 66.67	0.6000	0.6000
T14	17	LDF6-50A(1-1/4)	60.00 - 66.67	0.6000	0.6000
T14	18	LCF114-50J(1-1/4)	60.00 - 66.67	0.6000	0.6000
T14	19	1.5" flat Cable Ladder Rail	60.00 - 66.67	0.6000	0.6000
T14	22	HB058-M12-XXXF(5/8)	60.00 - 66.67	0.6000	0.6000
T14	23	HB114-1-08U4-M5J(1-1/4)	60.00 - 66.67	0.6000	0.6000
T14	24	1.5" flat Cable Ladder Rail	60.00 - 66.67	0.6000	0.6000
T14	26	1.5" flat Cable Ladder Rail	60.00 - 66.67	0.6000	0.6000
T14	28	CU12PSM9P6XXX(1-1/2)	60.00 - 66.67	0.6000	0.6000
T15	5	HCS 6X12 4AWG(1-5/8)	50.00 - 60.00	0.6000	0.6000
T15	6	1.5" flat Cable Ladder Rail	50.00 - 60.00	0.6000	0.6000
T15	8	LDF4-50A(1/2)	50.00 - 57.00	0.6000	0.6000
T15	9	LDF7-50A(1-5/8)	50.00 - 60.00	0.6000	0.6000
T15	11	1.5" flat Cable Ladder Rail	50.00 - 60.00	0.6000	0.6000
T15	13	FB-L98B-002-75000(3/8)	50.00 - 60.00	0.6000	0.6000
T15	14	WR-VG86ST-BRD(3/4)	50.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T15	15	FB-L98B-002-75000(3/8)	50.00 - 60.00	0.6000	0.6000
T15	16	WR-VG86ST-BRD(3/4)	50.00 - 60.00	0.6000	0.6000
T15	17	LDF6-50A(1-1/4)	50.00 - 60.00	0.6000	0.6000
T15	18	LCF114-50J(1-1/4)	50.00 - 60.00	0.6000	0.6000
T15	19	1.5" flat Cable Ladder Rail	50.00 - 60.00	0.6000	0.6000
T15	22	HB058-M12-XXXF(5/8)	50.00 - 60.00	0.6000	0.6000
T15	23	HB114-1-08U4-M5J(1-1/4)	50.00 - 60.00	0.6000	0.6000
T15	24	1.5" flat Cable Ladder Rail	50.00 - 60.00	0.6000	0.6000
T15	26	1.5" flat Cable Ladder Rail	50.00 - 60.00	0.6000	0.6000
T15	28	CU12PSM9P6XXX(1-1/2)	50.00 - 60.00	0.6000	0.6000
T16	5	HCS 6X12 4AWG(1-5/8)	40.00 - 50.00	0.6000	0.6000
T16	6	1.5" flat Cable Ladder Rail	40.00 - 50.00	0.6000	0.6000
T16	8	LDF4-50A(1/2)	40.00 - 50.00	0.6000	0.6000
T16	9	LDF7-50A(1-5/8)	40.00 - 50.00	0.6000	0.6000
T16	11	1.5" flat Cable Ladder Rail	40.00 - 50.00	0.6000	0.6000
T16	13	FB-L98B-002-75000(3/8)	40.00 - 50.00	0.6000	0.6000
T16	14	WR-VG86ST-BRD(3/4)	40.00 - 50.00	0.6000	0.6000
T16	15	FB-L98B-002-75000(3/8)	40.00 - 50.00	0.6000	0.6000
T16	16	WR-VG86ST-BRD(3/4)	40.00 - 50.00	0.6000	0.6000
T16	17	LDF6-50A(1-1/4)	40.00 - 50.00	0.6000	0.6000
T16	18	LCF114-50J(1-1/4)	40.00 - 50.00	0.6000	0.6000
T16	19	1.5" flat Cable Ladder Rail	40.00 - 50.00	0.6000	0.6000
T16	21	LDF4-50A(1/2)	40.00 - 48.00	0.6000	0.6000
T16	22	HB058-M12-XXXF(5/8)	40.00 - 50.00	0.6000	0.6000
T16	23	HB114-1-08U4-M5J(1-1/4)	40.00 - 50.00	0.6000	0.6000
T16	24	1.5" flat Cable Ladder Rail	40.00 - 50.00	0.6000	0.6000
T16	26	1.5" flat Cable Ladder Rail	40.00 - 50.00	0.6000	0.6000
T16	28	CU12PSM9P6XXX(1-1/2)	40.00 - 50.00	0.6000	0.6000
T17	5	HCS 6X12 4AWG(1-5/8)	30.00 - 40.00	0.6000	0.6000
T17	6	1.5" flat Cable Ladder Rail	30.00 - 40.00	0.6000	0.6000
T17	8	LDF4-50A(1/2)	30.00 - 40.00	0.6000	0.6000
T17	9	LDF7-50A(1-5/8)	30.00 - 40.00	0.6000	0.6000
T17	11	1.5" flat Cable Ladder Rail	30.00 - 40.00	0.6000	0.6000
T17	13	FB-L98B-002-75000(3/8)	30.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T17	14	WR-VG86ST-BRD(3/4)	30.00 - 40.00	0.6000	0.6000
T17	15	FB-L98B-002-75000(3/8)	30.00 - 40.00	0.6000	0.6000
T17	16	WR-VG86ST-BRD(3/4)	30.00 - 40.00	0.6000	0.6000
T17	17	LDF6-50A(1-1/4)	30.00 - 40.00	0.6000	0.6000
T17	18	LCF114-50J(1-1/4)	30.00 - 40.00	0.6000	0.6000
T17	19	1.5" flat Cable Ladder Rail	30.00 - 40.00	0.6000	0.6000
T17	21	LDF4-50A(1/2)	30.00 - 40.00	0.6000	0.6000
T17	22	HB058-M12-XXXF(5/8)	30.00 - 40.00	0.6000	0.6000
T17	23	HB114-1-08U4-M5J(1-1/4)	30.00 - 40.00	0.6000	0.6000
T17	24	1.5" flat Cable Ladder Rail	30.00 - 40.00	0.6000	0.6000
T17	26	1.5" flat Cable Ladder Rail	30.00 - 40.00	0.6000	0.6000
T17	28	CU12PSM9P6XXX(1-1/2)	30.00 - 40.00	0.6000	0.6000
T18	5	HCS 6X12 4AWG(1-5/8)	20.00 - 30.00	0.6000	0.6000
T18	6	1.5" flat Cable Ladder Rail	20.00 - 30.00	0.6000	0.6000
T18	8	LDF4-50A(1/2)	20.00 - 30.00	0.6000	0.6000
T18	9	LDF7-50A(1-5/8)	20.00 - 30.00	0.6000	0.6000
T18	11	1.5" flat Cable Ladder Rail	20.00 - 30.00	0.6000	0.6000
T18	13	FB-L98B-002-75000(3/8)	20.00 - 30.00	0.6000	0.6000
T18	14	WR-VG86ST-BRD(3/4)	20.00 - 30.00	0.6000	0.6000
T18	15	FB-L98B-002-75000(3/8)	20.00 - 30.00	0.6000	0.6000
T18	16	WR-VG86ST-BRD(3/4)	20.00 - 30.00	0.6000	0.6000
T18	17	LDF6-50A(1-1/4)	20.00 - 30.00	0.6000	0.6000
T18	18	LCF114-50J(1-1/4)	20.00 - 30.00	0.6000	0.6000
T18	19	1.5" flat Cable Ladder Rail	20.00 - 30.00	0.6000	0.6000
T18	21	LDF4-50A(1/2)	20.00 - 30.00	0.6000	0.6000
T18	22	HB058-M12-XXXF(5/8)	20.00 - 30.00	0.6000	0.6000
T18	23	HB114-1-08U4-M5J(1-1/4)	20.00 - 30.00	0.6000	0.6000
T18	24	1.5" flat Cable Ladder Rail	20.00 - 30.00	0.6000	0.6000
T18	26	1.5" flat Cable Ladder Rail	20.00 - 30.00	0.6000	0.6000
T18	28	CU12PSM9P6XXX(1-1/2)	20.00 - 30.00	0.6000	0.6000
T19	5	HCS 6X12 4AWG(1-5/8)	0.00 - 20.00	0.6000	0.6000
T19	6	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T19	8	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T19	9	LDF7-50A(1-5/8)	0.00 - 20.00	0.6000	0.6000
T19	11	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T19	13	FB-L98B-002-75000(3/8)	0.00 - 20.00	0.6000	0.6000
T19	14	WR-VG86ST-BRD(3/4)	0.00 - 20.00	0.6000	0.6000
T19	15	FB-L98B-002-75000(3/8)	0.00 - 20.00	0.6000	0.6000
T19	16	WR-VG86ST-BRD(3/4)	0.00 - 20.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T19	17	LDF6-50A(1-1/4)	0.00 - 20.00	0.6000	0.6000
T19	18	LCF114-50J(1-1/4)	0.00 - 20.00	0.6000	0.6000
T19	19	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T19	21	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T19	22	HB058-M12-XXXF(5/8)	0.00 - 20.00	0.6000	0.6000
T19	23	HB114-1-08U4-M5J(1-1/4)	0.00 - 20.00	0.6000	0.6000
T19	24	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T19	26	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T19	28	CU12PSM9P6XXX(1-1/2)	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement	C_{AA} Front	C_{AA} Side	Weight	
			ft ft ft	°	ft	ft ²	ft ²	K	
(2) APL866513-42T6 w/ Mount Pipe	A	From Leg	4.00	0.0000	157.00	No Ice	3.96	4.25	0.03
			0.00			1/2"	4.44	4.74	0.07
			0.00			Ice	4.93	5.25	0.12
						1" Ice	5.98	6.30	0.24
						2" Ice			
(2) LPA-80063/4CF w/ Mount Pipe	B	From Leg	4.00	0.0000	157.00	No Ice	6.38	6.60	0.04
			0.00			1/2"	6.78	7.23	0.10
			0.00			Ice	7.19	7.88	0.18
						1" Ice	8.04	9.21	0.34
						2" Ice			
(2) LPA-80063/4CFx5 w/ Mount Pipe	C	From Leg	4.00	0.0000	157.00	No Ice	6.38	6.60	0.04
			0.00			1/2"	6.78	7.23	0.10
			0.00			Ice	7.19	7.88	0.18
						1" Ice	8.04	9.21	0.34
						2" Ice			
(2) HBXX-6517DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.0000	157.00	No Ice	7.97	5.99	0.08
			0.00			1/2"	8.73	6.72	0.14
			0.00			Ice	9.51	7.47	0.21
						1" Ice	11.11	9.02	0.40
						2" Ice			
(2) HBXX-6517DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.0000	157.00	No Ice	7.97	5.99	0.08
			0.00			1/2"	8.73	6.72	0.14
			0.00			Ice	9.51	7.47	0.21
						1" Ice	11.11	9.02	0.40
						2" Ice			
(2) HBXX-6517DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.0000	157.00	No Ice	7.97	5.99	0.08
			0.00			1/2"	8.73	6.72	0.14
			0.00			Ice	9.51	7.47	0.21
						1" Ice	11.11	9.02	0.40
						2" Ice			
LNx-6514DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.0000	157.00	No Ice	4.09	3.30	0.06
			0.00			1/2"	4.49	3.68	0.13
			0.00			Ice	4.89	4.06	0.20
						1" Ice	5.71	4.87	0.38
						2" Ice			
LNx-6514DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.0000	157.00	No Ice	4.09	3.30	0.06
			0.00			1/2"	4.49	3.68	0.13
			0.00			Ice	4.89	4.06	0.20
						1" Ice	5.71	4.87	0.38
						2" Ice			
LNx-6514DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.0000	157.00	No Ice	4.09	3.30	0.06
			0.00			1/2"	4.49	3.68	0.13
			0.00			Ice	4.89	4.06	0.20
						1" Ice	5.71	4.87	0.38
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
RRH2x60-AWS	A	From Leg	4.00 0.00 0.00	0.0000	157.00	2" Ice			
						No Ice	3.50	1.82	0.06
						1/2"	3.76	2.05	0.08
						Ice	4.03	2.29	0.11
						1" Ice	4.58	2.79	0.17
RRH2x60-AWS	B	From Leg	4.00 0.00 0.00	0.0000	157.00	2" Ice			
						No Ice	3.50	1.82	0.06
						1/2"	3.76	2.05	0.08
						Ice	4.03	2.29	0.11
						1" Ice	4.58	2.79	0.17
RRH2x60-AWS	C	From Leg	4.00 0.00 0.00	0.0000	157.00	2" Ice			
						No Ice	3.50	1.82	0.06
						1/2"	3.76	2.05	0.08
						Ice	4.03	2.29	0.11
						1" Ice	4.58	2.79	0.17
RRH2X60-PCS	A	From Leg	4.00 0.00 0.00	0.0000	157.00	2" Ice			
						No Ice	2.20	1.72	0.06
						1/2"	2.39	1.90	0.08
						Ice	2.59	2.09	0.10
						1" Ice	3.01	2.48	0.16
RRH2X60-PCS	B	From Leg	4.00 0.00 0.00	0.0000	157.00	2" Ice			
						No Ice	2.20	1.72	0.06
						1/2"	2.39	1.90	0.08
						Ice	2.59	2.09	0.10
						1" Ice	3.01	2.48	0.16
RRH2X60-PCS	C	From Leg	4.00 0.00 0.00	0.0000	157.00	2" Ice			
						No Ice	2.20	1.72	0.06
						1/2"	2.39	1.90	0.08
						Ice	2.59	2.09	0.10
						1" Ice	3.01	2.48	0.16
DB-T1-6Z-8AB-0Z	C	From Leg	4.00 0.00 0.00	0.0000	157.00	2" Ice			
						No Ice	4.80	2.00	0.04
						1/2"	5.07	2.19	0.08
						Ice	5.35	2.39	0.12
						1" Ice	5.93	2.81	0.21
Sector Mount [SM 504-3]	C	None		0.0000	157.00	2" Ice			
						No Ice	31.05	31.05	1.71
						1/2"	43.83	43.83	2.33
						Ice	56.44	56.44	3.14
						1" Ice	81.28	81.28	5.36

MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice			
						No Ice	8.01	4.23	0.11
						1/2"	8.52	4.69	0.19
						Ice	9.04	5.16	0.29
						1" Ice	10.11	6.12	0.52
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice			
						No Ice	8.01	4.23	0.11
						1/2"	8.52	4.69	0.19
						Ice	9.04	5.16	0.29
						1" Ice	10.11	6.12	0.52
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice			
						No Ice	8.01	4.23	0.11
						1/2"	8.52	4.69	0.19
						Ice	9.04	5.16	0.29
						1" Ice	10.11	6.12	0.52
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice			
						No Ice	1.96	0.98	0.06
						1/2"	2.14	1.11	0.08
						Ice	2.32	1.25	0.10
						1" Ice	2.71	1.55	0.15
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice			
						No Ice	1.96	0.98	0.06
						1/2"	2.14	1.11	0.08
						Ice	2.32	1.25	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	147.00	1" Ice	2.71	1.55	0.15
						2" Ice			
						No Ice	1.96	0.98	0.06
						1/2" Ice	2.14	1.11	0.08
						Ice	2.32	1.25	0.10
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	147.00	1" Ice	2.71	1.55	0.15
						2" Ice			
						No Ice	1.96	1.13	0.08
						1/2" Ice	2.14	1.27	0.09
						Ice	2.32	1.41	0.11
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	147.00	1" Ice	2.71	1.72	0.16
						2" Ice			
						No Ice	1.96	1.13	0.08
						1/2" Ice	2.14	1.27	0.09
						Ice	2.32	1.41	0.11
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	147.00	1" Ice	2.71	1.72	0.16
						2" Ice			
						No Ice	1.96	1.13	0.08
						1/2" Ice	2.14	1.27	0.09
						Ice	2.32	1.41	0.11
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	147.00	1" Ice	2.71	1.72	0.16
						2" Ice			
						No Ice	2.31	1.29	0.02
						1/2" Ice	2.50	1.45	0.04
						Ice	2.70	1.61	0.06
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	147.00	1" Ice	3.12	1.96	0.12
						2" Ice			
						No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						Ice	3.40	3.40	0.06
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	147.00	1" Ice	4.40	4.40	0.12
						2" Ice			
						No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						Ice	3.40	3.40	0.06
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	147.00	1" Ice	4.40	4.40	0.12
						2" Ice			
						No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						Ice	3.40	3.40	0.06
Commscope MTC3975083 (3)	C	None		0.0000	147.00	1" Ice	4.40	4.40	0.12
						2" Ice			
						No Ice	23.85	23.85	1.26
						1/2" Ice	34.12	34.12	1.80
						Ice	44.39	44.39	2.35
***** 7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	135.00	1" Ice	64.93	64.93	3.43
						2" Ice			
						No Ice	5.75	4.25	0.06
						1/2" Ice	6.18	5.01	0.10
						Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	135.00	1" Ice	7.49	7.16	0.29
						2" Ice			
						No Ice	5.75	4.25	0.06
						1/2" Ice	6.18	5.01	0.10
						Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	135.00	1" Ice	7.49	7.16	0.29
						2" Ice			
						No Ice	5.75	4.25	0.06
						1/2" Ice	6.18	5.01	0.10
						Ice	6.61	5.71	0.16
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.00 0.00	0.0000	135.00	1" Ice	7.49	7.16	0.29
						2" Ice			
						No Ice	12.25	8.33	0.10
						Ice	13.19	9.23	0.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
			2.00			1/2" Ice 16.14	10.15 12.05	0.30 0.54
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 16.14	8.33 9.23 10.15 12.05	0.10 0.19 0.30 0.54
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 16.14	8.33 9.23 10.15 12.05	0.10 0.19 0.30 0.54
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 15.64	8.99 9.88 10.79 12.66	0.11 0.21 0.32 0.58
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 15.64	8.99 9.88 10.79 12.66	0.11 0.21 0.32 0.58
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 15.64	8.99 9.88 10.79 12.66	0.11 0.21 0.32 0.58
TT19-08BP111-001	A	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 0.97	0.44 0.53 0.63 0.84	0.02 0.02 0.03 0.05
TT19-08BP111-001	B	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 0.97	0.44 0.53 0.63 0.84	0.02 0.02 0.03 0.05
TT19-08BP111-001	C	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 0.97	0.44 0.53 0.63 0.84	0.02 0.02 0.03 0.05
(2) 7020.00	A	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 0.33	0.17 0.24 0.31 0.48	0.00 0.01 0.01 0.02
(2) 7020.00	B	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 0.33	0.17 0.24 0.31 0.48	0.00 0.01 0.01 0.02
(2) 7020.00	C	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 0.33	0.17 0.24 0.31 0.48	0.00 0.01 0.01 0.02
DC6-48-60-18-8F	A	From Leg	4.00 0.00 2.00	0.0000	135.00	No Ice 1/2" Ice 2.57	1.21 1.89 2.11 2.57	0.02 0.04 0.07 0.13
DC6-48-60-18-8F	C	From Leg	4.00	0.0000	135.00	No Ice	1.21	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
			0.00			1/2"	1.89	1.89	0.04
			2.00			Ice	2.11	2.11	0.07
						1" Ice	2.57	2.57	0.13
						2" Ice			
RRUS 11	A	From Leg	4.00	0.0000	135.00	No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
			2.00			Ice	3.21	1.49	0.09
						1" Ice	3.66	1.83	0.15
						2" Ice			
RRUS 11	B	From Leg	4.00	0.0000	135.00	No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
			2.00			Ice	3.21	1.49	0.09
						1" Ice	3.66	1.83	0.15
						2" Ice			
RRUS 11	C	From Leg	4.00	0.0000	135.00	No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
			2.00			Ice	3.21	1.49	0.09
						1" Ice	3.66	1.83	0.15
						2" Ice			
RRUS 4415 B25	A	From Leg	4.00	0.0000	135.00	No Ice	1.64	0.68	0.04
			0.00			1/2"	1.80	0.79	0.06
			2.00			Ice	1.97	0.91	0.07
						1" Ice	2.33	1.18	0.11
						2" Ice			
RRUS 4415 B25	B	From Leg	4.00	0.0000	135.00	No Ice	1.64	0.68	0.04
			0.00			1/2"	1.80	0.79	0.06
			2.00			Ice	1.97	0.91	0.07
						1" Ice	2.33	1.18	0.11
						2" Ice			
RRUS 4415 B25	C	From Leg	4.00	0.0000	135.00	No Ice	1.64	0.68	0.04
			0.00			1/2"	1.80	0.79	0.06
			2.00			Ice	1.97	0.91	0.07
						1" Ice	2.33	1.18	0.11
						2" Ice			
RRUS 4426 B66	A	From Leg	4.00	0.0000	135.00	No Ice	1.64	0.73	0.05
			0.00			1/2"	1.80	0.84	0.06
			2.00			Ice	1.97	0.97	0.08
						1" Ice	2.33	1.24	0.11
						2" Ice			
RRUS 4426 B66	B	From Leg	4.00	0.0000	135.00	No Ice	1.64	0.73	0.05
			0.00			1/2"	1.80	0.84	0.06
			2.00			Ice	1.97	0.97	0.08
						1" Ice	2.33	1.24	0.11
						2" Ice			
RRUS 4426 B66	C	From Leg	4.00	0.0000	135.00	No Ice	1.64	0.73	0.05
			0.00			1/2"	1.80	0.84	0.06
			2.00			Ice	1.97	0.97	0.08
						1" Ice	2.33	1.24	0.11
						2" Ice			
DBC0062F1V51-1	A	From Leg	4.00	0.0000	135.00	No Ice	0.22	0.71	0.01
			0.00			1/2"	0.29	0.82	0.01
			2.00			Ice	0.37	0.93	0.02
						1" Ice	0.54	1.18	0.04
						2" Ice			
DBC0062F1V51-1	B	From Leg	4.00	0.0000	135.00	No Ice	0.22	0.71	0.01
			0.00			1/2"	0.29	0.82	0.01
			2.00			Ice	0.37	0.93	0.02
						1" Ice	0.54	1.18	0.04
						2" Ice			
DBC0062F1V51-1	C	From Leg	4.00	0.0000	135.00	No Ice	0.22	0.71	0.01
			0.00			1/2"	0.29	0.82	0.01
			2.00			Ice	0.37	0.93	0.02
						1" Ice	0.54	1.18	0.04
						2" Ice			
WCS RRUS-32-B30	A	From Leg	4.00	0.0000	135.00	No Ice	3.31	2.42	0.08

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Vert					
				0.00					
				2.00		1/2"	3.56	2.64	0.10
						Ice	3.81	2.86	0.14
						1" Ice	4.33	3.32	0.21
						2" Ice			
WCS RRUS-32-B30	B	From Leg	4.00	0.0000	135.00	No Ice	3.31	2.42	0.08
			0.00			1/2"	3.56	2.64	0.10
			2.00			Ice	3.81	2.86	0.14
						1" Ice	4.33	3.32	0.21
						2" Ice			
WCS RRUS-32-B30	C	From Leg	4.00	0.0000	135.00	No Ice	3.31	2.42	0.08
			0.00			1/2"	3.56	2.64	0.10
			2.00			Ice	3.81	2.86	0.14
						1" Ice	4.33	3.32	0.21
						2" Ice			
Sector Mount [SM 504-3]	C	None		0.0000	135.00	No Ice	31.05	31.05	1.71
						1/2"	43.83	43.83	2.33
						Ice	56.44	56.44	3.14
						1" Ice	81.28	81.28	5.36
						2" Ice			

APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	125.00	No Ice	4.60	4.01	0.10
			0.00			1/2"	5.05	4.45	0.16
			1.00			Ice	5.50	4.89	0.23
						1" Ice	6.44	5.82	0.42
						2" Ice			
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	125.00	No Ice	4.60	4.01	0.10
			0.00			1/2"	5.05	4.45	0.16
			1.00			Ice	5.50	4.89	0.23
						1" Ice	6.44	5.82	0.42
						2" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	125.00	No Ice	4.60	4.01	0.10
			0.00			1/2"	5.05	4.45	0.16
			1.00			Ice	5.50	4.89	0.23
						1" Ice	6.44	5.82	0.42
						2" Ice			
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00	0.0000	125.00	No Ice	4.09	2.86	0.08
			0.00			1/2"	4.48	3.23	0.13
			1.00			Ice	4.88	3.61	0.19
						1" Ice	5.71	4.40	0.33
						2" Ice			
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00	0.0000	125.00	No Ice	4.09	2.86	0.08
			0.00			1/2"	4.48	3.23	0.13
			1.00			Ice	4.88	3.61	0.19
						1" Ice	5.71	4.40	0.33
						2" Ice			
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00	0.0000	125.00	No Ice	4.09	2.86	0.08
			0.00			1/2"	4.48	3.23	0.13
			1.00			Ice	4.88	3.61	0.19
						1" Ice	5.71	4.40	0.33
						2" Ice			
TD-RRH8x20-25	A	From Leg	4.00	0.0000	125.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			1.00			Ice	4.56	1.90	0.13
						1" Ice	5.10	2.30	0.20
						2" Ice			
TD-RRH8x20-25	B	From Leg	4.00	0.0000	125.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			1.00			Ice	4.56	1.90	0.13
						1" Ice	5.10	2.30	0.20
						2" Ice			
TD-RRH8x20-25	C	From Leg	4.00	0.0000	125.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			1.00			Ice	4.56	1.90	0.13
						1" Ice	5.10	2.30	0.20
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
800MHz 2X50W RRH W/FILTER	A	From Leg	4.00 0.00 0.00	0.0000	125.00	No Ice	2.06	1.93	0.06
						1/2" Ice	2.24	2.11	0.09
						Ice	2.43	2.29	0.11
						1" Ice	2.83	2.68	0.17
						2" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	4.00 0.00 0.00	0.0000	125.00	No Ice	2.06	1.93	0.06
						1/2" Ice	2.24	2.11	0.09
						Ice	2.43	2.29	0.11
						1" Ice	2.83	2.68	0.17
						2" Ice			
800MHz 2X50W RRH W/FILTER	C	From Leg	4.00 0.00 0.00	0.0000	125.00	No Ice	2.06	1.93	0.06
						1/2" Ice	2.24	2.11	0.09
						Ice	2.43	2.29	0.11
						1" Ice	2.83	2.68	0.17
						2" Ice			
1900MHz RRH (65MHz)	A	From Leg	4.00 0.00 0.00	0.0000	125.00	No Ice	2.31	2.38	0.06
						1/2" Ice	2.52	2.58	0.08
						Ice	2.73	2.79	0.11
						1" Ice	3.17	3.24	0.18
						2" Ice			
1900MHz RRH (65MHz)	B	From Leg	4.00 0.00 0.00	0.0000	125.00	No Ice	2.31	2.38	0.06
						1/2" Ice	2.52	2.58	0.08
						Ice	2.73	2.79	0.11
						1" Ice	3.17	3.24	0.18
						2" Ice			
1900MHz RRH (65MHz)	C	From Leg	4.00 0.00 0.00	0.0000	125.00	No Ice	2.31	2.38	0.06
						1/2" Ice	2.52	2.58	0.08
						Ice	2.73	2.79	0.11
						1" Ice	3.17	3.24	0.18
						2" Ice			
Sector Mount [SM 402-3]	C	None		0.0000	125.00	No Ice	18.87	18.87	0.85
						1/2" Ice	26.47	26.47	1.21
						Ice	33.99	33.99	1.70
						1" Ice	48.84	48.84	3.04
						2" Ice			

(2) ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	2.00 0.00 1.00	0.0000	113.00	No Ice	3.14	2.59	0.11
						1/2" Ice	3.45	2.88	0.16
						Ice	3.77	3.19	0.22
						1" Ice	4.43	3.84	0.37
						2" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	2.00 0.00 1.00	0.0000	113.00	No Ice	3.14	2.59	0.11
						1/2" Ice	3.45	2.88	0.16
						Ice	3.77	3.19	0.22
						1" Ice	4.43	3.84	0.37
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	113.00	No Ice	3.76	3.15	0.19
						1/2" Ice	4.12	3.49	0.25
						Ice	4.48	3.84	0.32
						1" Ice	5.24	4.58	0.48
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	113.00	No Ice	3.76	3.15	0.19
						1/2" Ice	4.12	3.49	0.25
						Ice	4.48	3.84	0.32
						1" Ice	5.24	4.58	0.48
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	113.00	No Ice	3.76	3.15	0.19
						1/2" Ice	4.12	3.49	0.25
						Ice	4.48	3.84	0.32
						1" Ice	5.24	4.58	0.48
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	113.00	No Ice	14.69	6.87	0.19
						1/2" Ice	15.46	7.55	0.31
						Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	113.00	2" Ice			
						No Ice	14.69	6.87	0.19
						1/2"	15.46	7.55	0.31
						Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	113.00	2" Ice			
						No Ice	14.69	6.87	0.19
						1/2"	15.46	7.55	0.31
						Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
(2) ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	2.00 0.00 1.00	0.0000	113.00	2" Ice			
						No Ice	6.33	5.64	0.11
						1/2"	6.78	6.43	0.17
						Ice	7.21	7.13	0.23
						1" Ice	8.12	8.59	0.38
Side Arm Mount [SO 702-3]	C	None		0.0000	113.00	2" Ice			
						No Ice	3.22	3.22	0.08
						1/2"	4.15	4.15	0.11
						Ice	5.08	5.08	0.15
						1" Ice	6.94	6.94	0.21
Pipe Mount [PM 601-3]	C	None		0.0000	113.00	2" Ice			
						No Ice	4.39	4.39	0.20
						1/2"	5.48	5.48	0.24
						Ice	6.57	6.57	0.28
						1" Ice	8.75	8.75	0.36
Sector Mount [SM 502-3]	C	None		0.0000	113.00	2" Ice			
						No Ice	29.82	29.82	1.67
						1/2"	42.21	42.21	2.27
						Ice	54.43	54.43	3.05
						1" Ice	78.49	78.49	5.18
***** GPS_A	A	From Leg	2.00 0.00 3.00	0.0000	57.00	2" Ice			
						No Ice	0.26	0.26	0.00
						1/2"	0.32	0.32	0.00
						Ice	0.39	0.39	0.01
						1" Ice	0.56	0.56	0.02
Side Arm Mount [SO 202-1]	A	From Leg	1.00 0.00 0.00	0.0000	57.00	2" Ice			
						No Ice	1.78	2.97	0.11
						1/2"	2.24	3.57	0.13
						Ice	2.75	4.19	0.16
						1" Ice	3.89	5.55	0.25
***** EMPTY_MOUNT w/ Mount Pipe	C	From Leg	2.00 0.00 2.00	0.0000	48.00	2" Ice			
						No Ice	0.15	0.15	0.00
						1/2"	0.23	0.23	0.00
						Ice	0.32	0.32	0.00
						1" Ice	0.56	0.56	0.00
Side Arm Mount [SO 202-1]	C	From Leg	1.00 0.00 0.00	0.0000	48.00	2" Ice			
						No Ice	1.78	2.97	0.11
						1/2"	2.24	3.57	0.13
						Ice	2.75	4.19	0.16
						1" Ice	3.89	5.55	0.25
***** ***** ***** ***** *****									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
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
T1	160 - 140	Leg	Max Tension	23	15.36	-0.01	-0.02
			Max. Compression	10	-19.71	0.11	0.02
			Max. Mx	6	-1.47	0.69	-0.01
			Max. My	24	-1.31	0.00	-0.79
			Max. Vy	19	-1.25	0.56	0.01
			Max. Vx	12	1.27	0.00	-0.48
		Diagonal	Max Tension	25	3.40	0.00	0.00
			Max. Compression	12	-3.46	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
T2	140 - 135	Top Girt	Max. Mx	38	0.49	0.03	-0.00
			Max. My	20	-2.22	0.00	0.01
			Max. Vy	38	-0.03	0.03	-0.00
			Max. Vx	20	-0.00	0.00	0.00
			Max Tension	6	0.61	0.00	0.00
			Max. Compression	19	-0.61	0.00	0.00
		Leg	Max. Mx	26	-0.01	-0.07	0.00
			Max. My	26	-0.01	0.00	0.00
			Max. Vy	26	0.04	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
			Max Tension	23	20.88	-0.08	-0.03
			Max. Compression	10	-25.47	0.08	0.03
		Diagonal	Max. Mx	14	18.89	-0.08	-0.01
			Max. My	8	-2.79	0.01	-0.07
			Max. Vy	14	0.04	-0.08	-0.01
			Max. Vx	8	0.07	0.01	0.02
			Max Tension	23	3.32	0.00	0.00
			Max. Compression	10	-3.59	0.00	0.00
Top Girt	Max. Mx	27	0.29	0.02	0.00		
	Max. My	30	0.54	0.02	0.00		
	Max. Vy	36	0.03	0.02	-0.00		
	Max. Vx	30	-0.00	0.00	0.00		
	Max Tension	22	0.40	0.00	0.00		
	Max. Compression	3	-0.37	0.00	0.00		
T3	135 - 130	Leg	Max. Mx	26	0.05	-0.07	0.00
			Max. My	26	0.05	0.00	0.00
			Max. Vy	26	0.04	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
			Max Tension	23	29.10	-0.03	-0.04
			Max. Compression	10	-36.62	0.08	0.03
		Diagonal	Max. Mx	14	26.29	-0.08	-0.01
			Max. My	20	-4.35	-0.01	-0.29
			Max. Vy	10	0.04	0.08	0.03
			Max. Vx	8	-0.16	-0.01	0.29
			Max Tension	12	4.70	0.00	0.00
			Max. Compression	12	-4.67	0.00	0.00
		Leg	Max. Mx	38	1.41	0.03	0.00
			Max. My	28	-1.23	0.03	0.00
			Max. Vy	38	0.03	0.03	-0.00
			Max. Vx	28	-0.00	0.00	0.00
			Max Tension	23	37.93	-0.13	-0.04
			Max. Compression	10	-45.82	0.02	0.04
Diagonal	Max. Mx	10	-45.81	0.15	0.04		
	Max. My	20	-4.39	-0.01	-0.29		
	Max. Vy	10	-0.06	0.15	0.04		
	Max. Vx	20	-0.17	-0.01	-0.29		
	Max Tension	12	4.71	0.00	0.00		
	Max. Compression	12	-4.77	0.00	0.00		
T4	130 - 125	Leg	Max. Mx	38	0.49	0.04	-0.00
			Max. My	36	1.17	0.03	-0.01
			Max. Vy	36	0.03	0.03	-0.01
			Max. Vx	36	0.00	0.00	0.00
			Max Tension	23	47.03	-0.13	-0.04
			Max. Compression	10	-56.40	0.04	0.07
		Diagonal	Max. Mx	10	-55.47	0.15	0.04
			Max. My	20	-5.59	-0.02	-0.41
			Max. Vy	14	-0.74	-0.13	-0.01
			Max. Vx	8	0.66	0.01	-0.07
			Max Tension	12	5.43	0.00	0.00
			Max. Compression	12	-5.45	0.00	0.00
		Leg	Max. Mx	38	1.57	0.04	0.00
			Max. My	18	-5.18	-0.00	-0.01
			Max. Vy	38	0.04	0.04	-0.00
			Max. Vx	29	-0.00	0.00	0.00
			Max Tension	23	57.40	-0.40	-0.07
			Max. Compression	10	-67.81	0.43	0.07
T5	125 - 120	Leg	Max. Mx	10	-67.81	0.43	0.07
			Max. My	20	-5.72	-0.02	-0.41
			Max. Vy	20	-5.72	-0.02	-0.41
T6	120 - 113.333	Leg	Max. Mx	10	-67.81	0.43	0.07
			Max. My	20	-5.72	-0.02	-0.41
			Max. Vy	20	-5.72	-0.02	-0.41
			Max. Mx	10	-67.81	0.43	0.07
			Max. My	20	-5.72	-0.02	-0.41
			Max. Vy	20	-5.72	-0.02	-0.41

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft		
T7	113.333 - 106.667	Diagonal	Max. Vy	10	-0.11	0.43	0.07		
			Max. Vx	20	-0.18	-0.02	-0.41		
			Max Tension	12	6.00	0.00	0.00		
			Max. Compression	10	-6.09	0.00	0.00		
			Max. Mx	27	1.45	0.08	-0.01		
			Max. My	20	5.06	0.05	-0.01		
			Max. Vy	27	-0.05	0.08	-0.01		
		Leg	Max. Vx	36	0.00	0.00	0.00		
			Max Tension	23	70.13	-0.40	-0.07		
			Max. Compression	10	-82.93	-0.07	0.04		
			Max. Mx	10	-81.34	0.43	0.07		
			Max. My	20	-7.84	-0.06	-0.59		
			Max. Vy	14	-1.16	-0.40	-0.03		
			Max. Vx	12	-1.04	0.01	-0.07		
T8	106.667 - 100	Diagonal	Max Tension	16	7.13	0.00	0.00		
			Max. Compression	10	-7.39	0.00	0.00		
			Max. Mx	38	1.95	0.08	0.01		
			Max. My	18	-7.27	-0.01	-0.01		
			Max. Vy	38	-0.06	0.08	0.01		
			Max. Vx	29	-0.00	0.00	0.00		
			Max Tension	23	83.26	-0.51	0.00		
		T9	100 - 93.333	Diagonal	Max. Compression	10	-97.76	-0.07	0.04
					Max. Mx	10	-97.74	0.63	-0.00
					Max. My	20	-8.08	-0.06	-0.59
					Max. Vy	10	0.25	0.63	-0.00
					Max. Vx	20	-0.29	-0.06	-0.59
					Max Tension	17	7.28	0.05	0.00
					Max. Compression	10	-7.41	0.00	0.00
Secondary Horizontal	Max. Mx			27	1.85	0.10	-0.01		
	Max. My			36	1.84	0.09	-0.01		
	Max. Vy			27	-0.06	0.10	-0.01		
	Max. Vx			36	0.00	0.00	0.00		
	Max Tension			20	0.41	0.00	0.00		
	Max. Compression			21	-0.36	0.00	0.00		
	Max. Mx			36	0.17	0.05	0.00		
T10	93.333 - 86.667	Leg	Max. My	22	-0.24	0.01	0.01		
			Max. Vy	36	0.04	0.05	0.00		
			Max. Vx	37	-0.00	0.00	0.00		
			Max Tension	23	96.25	-0.42	-0.08		
			Max. Compression	10	-111.77	-0.12	0.03		
			Max. Mx	11	-109.93	0.45	0.07		
			Max. My	20	-8.78	-0.01	-0.40		
		Diagonal	Max. Vy	10	-0.14	0.44	0.07		
			Max. Vx	8	-0.17	-0.00	0.40		
			Max Tension	16	7.25	0.00	0.00		
			Max. Compression	10	-7.48	0.00	0.00		
			Max. Mx	27	1.60	0.08	0.01		
			Max. My	35	-2.31	0.07	-0.01		
			Max. Vy	37	0.06	0.08	0.01		
T11	86.667 - 80	Leg	Max. Vx	35	0.00	0.00	0.00		
			Max Tension	23	109.02	0.00	-0.06		
			Max. Compression	10	-125.58	0.44	0.07		
			Max. Mx	11	-123.67	0.45	0.07		
			Max. My	20	-9.25	-0.02	-0.51		
			Max. Vy	10	0.13	0.44	0.07		
			Max. Vx	20	0.15	-0.02	-0.51		
		Diagonal	Max Tension	10	7.54	0.00	0.00		
			Max. Compression	10	-7.59	0.00	0.00		
			Max. Mx	27	1.67	0.11	0.01		
			Max. My	36	-1.28	0.08	-0.01		
			Max. Vy	37	0.07	0.10	-0.01		
			Max. Vx	36	0.00	0.00	0.00		
			Max Tension	23	120.90	-0.77	0.01		
Leg	Max. Compression	10	-138.67	-0.03	0.06				
	Max. Mx	10	-138.67	0.91	-0.00				

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft	
T12	80 - 73.333	Diagonal	Max. My	20	-9.54	-0.02	-0.51	
			Max. Vy	10	0.34	0.91	-0.00	
			Max. Vx	20	-0.25	-0.02	-0.51	
			Max Tension	7	7.78	-0.08	-0.01	
			Max. Compression	18	-8.36	0.00	0.00	
			Max. Mx	27	1.80	-0.15	0.02	
			Max. My	36	-2.34	-0.11	0.03	
			Max. Vy	37	-0.10	-0.14	-0.02	
			Max. Vx	36	0.01	0.00	0.00	
			Max Tension	20	0.47	0.00	0.00	
		Secondary Horizontal	Max. Compression	21	-0.40	0.00	0.00	
			Max. Mx	35	0.12	0.07	0.00	
			Max. My	22	-0.32	0.02	0.01	
			Max. Vy	35	0.05	0.07	0.00	
			Max. Vx	37	-0.00	0.00	0.00	
			Max Tension	23	133.09	0.05	-0.02	
			Max. Compression	10	-152.34	0.12	0.05	
			Max. Mx	27	-77.92	-0.20	-0.00	
			Max. My	20	-10.44	-0.00	-0.58	
			Max. Vy	10	-0.10	0.12	0.05	
T13	73.333 - 66.667	Leg	Max. Vx	20	0.18	-0.00	-0.58	
			Max Tension	18	7.94	0.00	0.00	
			Max. Compression	18	-7.90	0.00	0.00	
			Max. Mx	27	1.85	0.13	0.02	
			Max. My	36	-1.16	0.10	-0.02	
			Max. Vy	37	0.08	0.12	-0.02	
			Max. Vx	36	0.00	0.00	0.00	
			Max Tension	23	144.35	-0.10	-0.06	
			Max. Compression	10	-164.75	1.23	-0.01	
			Max. Mx	10	-164.75	1.23	-0.01	
Diagonal	Max. My	20	-10.63	-0.00	-0.58			
	Max. Vy	10	0.61	1.23	-0.01			
	Max. Vx	20	-0.26	-0.00	-0.58			
	Max Tension	7	8.22	0.06	0.00			
	Max. Compression	18	-8.89	0.00	0.00			
	Max. Mx	27	1.78	0.14	-0.02			
	Max. My	36	1.70	0.13	-0.02			
	Max. Vy	37	0.08	0.13	0.02			
	Max. Vx	36	0.00	0.00	0.00			
	Max Tension	20	0.65	0.00	0.00			
Secondary Horizontal	Max. Compression	21	-0.57	0.00	0.00			
	Max. Mx	35	0.16	0.08	0.00			
	Max. My	38	-0.04	0.08	0.01			
	Max. Vy	35	0.06	0.08	0.00			
	Max. Vx	38	-0.00	0.00	0.00			
	Max Tension	23	155.88	0.54	-0.02			
	Max. Compression	10	-177.77	1.17	-0.03			
	Max. Mx	10	-177.77	1.17	-0.03			
	Max. My	20	-11.52	-0.01	-1.02			
	Max. Vy	10	-0.62	1.17	-0.03			
T14	66.667 - 60	Leg	Max. Vx	20	0.41	-0.01	-1.02	
			Max Tension	19	8.16	0.04	-0.01	
			Max. Compression	18	-8.74	0.00	0.00	
			Max. Mx	27	1.75	0.14	0.02	
			Max. My	35	-3.10	0.11	-0.02	
			Max. Vy	37	0.08	0.14	-0.02	
			Max. Vx	35	-0.01	0.00	0.00	
			Max Tension	22	0.62	0.02	-0.00	
			Max. Compression	11	-0.54	0.00	0.00	
			Max. Mx	29	0.06	0.09	0.01	
Diagonal	Max. My	38	-0.02	0.09	0.01			
	Max. Vy	29	-0.06	0.09	0.01			
	Max. Vx	38	-0.00	0.00	0.00			
	Max Tension	23	170.14	-0.55	-0.18			
	Max. Compression	10	-193.97	-0.22	0.09			
	T15	60 - 50	Leg	Max. My	20	-9.54	-0.02	-0.51
				Max. Vy	10	0.34	0.91	-0.00
				Max. Vx	20	-0.25	-0.02	-0.51
				Max Tension	7	7.78	-0.08	-0.01
				Max. Compression	18	-8.36	0.00	0.00
Max. Mx				27	1.80	-0.15	0.02	
Max. My				36	-2.34	-0.11	0.03	
Max. Vy				37	-0.10	-0.14	-0.02	
Max. Vx				36	0.01	0.00	0.00	
Max Tension				20	0.47	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	
T16	50 - 40	Diagonal	Max. Mx	10	-193.88	0.61	0.18	
			Max. My	20	-12.52	-0.14	-1.33	
			Max. Vy	10	0.20	0.61	0.18	
			Max. Vx	20	0.26	-0.14	-1.33	
			Max Tension	18	9.97	0.00	0.00	
			Max. Compression	18	-10.14	0.00	0.00	
			Max. Mx	27	2.14	-0.26	-0.03	
			Max. My	29	-2.57	-0.21	-0.04	
			Max. Vy	37	-0.13	-0.26	0.03	
			Max. Vx	29	0.01	0.00	0.00	
		Leg	Max Tension	23	186.68	0.02	-0.10	
			Max. Compression	10	-212.60	2.35	-0.02	
			Max. Mx	10	-212.60	2.35	-0.02	
			Max. My	20	-12.90	-0.14	-1.33	
			Max. Vy	10	0.76	2.35	-0.02	
			Max. Vx	20	-0.44	-0.14	-1.33	
			Diagonal	Max Tension	7	10.20	-0.14	0.00
				Max. Compression	18	-11.20	0.00	0.00
				Max. Mx	27	2.17	-0.30	0.04
				Max. My	36	2.05	-0.29	0.05
Max. Vy	37	-0.14		-0.29	-0.04			
Secondary Horizontal	Max. Vx	36	-0.01	0.00	0.00			
	Max Tension	8	0.91	0.04	-0.01			
	Max. Compression	21	-0.81	0.00	0.00			
	Max. Mx	36	0.34	0.13	0.00			
	Max. My	22	-0.66	0.03	0.01			
T17	40 - 30	Leg	Max. Vy	36	0.08	0.13	0.00	
			Max. Vx	37	-0.00	0.00	0.00	
			Max Tension	23	202.92	1.12	-0.09	
			Max. Compression	10	-231.48	3.24	0.00	
			Max. Mx	10	-231.43	-3.63	-0.00	
			Max. My	20	-14.49	-0.42	-2.25	
			Max. Vy	10	1.38	3.24	0.00	
			Max. Vx	20	0.64	-0.42	-2.25	
			Diagonal	Max Tension	7	10.29	-0.20	-0.03
				Max. Compression	18	-11.40	0.00	0.00
		Max. Mx		37	1.60	-0.34	0.04	
		Max. My		18	-11.33	-0.02	0.07	
		Max. Vy		37	-0.16	-0.34	0.04	
		Secondary Horizontal	Max. Vx	35	0.01	0.00	0.00	
			Max Tension	20	1.62	0.00	0.00	
Max. Compression	21		-1.43	0.00	0.00			
Max. Mx	38		-0.11	0.17	0.02			
Max. My	22		-1.16	0.06	0.02			
T18	30 - 20	Leg	Max. Vy	38	-0.10	0.17	0.02	
			Max. Vx	37	-0.00	0.00	0.00	
			Max Tension	23	217.82	0.37	0.01	
			Max. Compression	10	-249.54	2.74	-0.11	
			Max. Mx	10	-248.63	3.94	0.08	
			Max. My	20	-15.05	-0.42	-2.25	
			Max. Vy	10	-3.04	3.94	0.08	
			Max. Vx	24	0.64	-0.40	2.19	
			Diagonal	Max Tension	7	11.03	-0.15	0.00
				Max. Compression	18	-12.29	0.00	0.00
		Max. Mx		10	8.24	-0.26	0.01	
		Max. My		37	-2.18	-0.04	0.02	
		Max. Vy		27	0.10	-0.17	0.02	
		Horizontal	Max. Vx	29	0.01	0.00	0.00	
			Max Tension	20	0.76	0.00	0.00	
Max. Compression	21		-0.69	0.00	0.00			
Max. Mx	37		0.33	0.18	0.12			
Max. My	27		-0.08	0.18	0.12			
Redund Horz 1 Bracing	Max. Vy	37	-0.10	0.18	0.12			
	Max. Vx	27	0.02	0.00	0.00			
	Max Tension	10	2.88	0.00	0.00			
	Max. Compression	23	-2.47	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	
T19	20 - 0	Redund Diag 1 Bracing	Max. Mx	26	0.28	-0.03	0.00	
			Max. My	26	0.35	0.00	0.00	
			Max. Vy	26	0.03	0.00	0.00	
			Max. Vx	26	-0.00	0.00	0.00	
			Max Tension	23	1.46	0.00	0.00	
			Max. Compression	10	-1.88	0.00	0.00	
			Max. Mx	26	-0.59	-0.04	0.00	
			Max. My	26	-0.55	0.00	0.00	
			Max. Vy	26	-0.03	0.00	0.00	
			Max. Vx	26	0.00	0.00	0.00	
		Leg	Max Tension	23	248.77	-1.01	-0.11	
			Max. Compression	10	-286.69	0.00	-0.00	
			Max. Mx	22	245.06	-1.03	-0.11	
			Max. My	20	-17.92	-0.08	-1.62	
			Max. Vy	11	-0.26	0.97	0.10	
			Max. Vx	20	-0.35	-0.08	-1.62	
			Diagonal	Max Tension	18	11.69	0.00	0.00
				Max. Compression	18	-12.53	0.00	0.00
				Max. Mx	38	0.77	-0.49	0.06
				Max. My	20	7.81	-0.30	0.08
			Max. Vy	38	-0.20	-0.49	-0.07	
			Max. Vx	36	-0.01	0.00	0.00	

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	287.45	27.36	-17.99
	Max. H _x	18	287.45	27.36	-17.99
	Max. H _z	7	-245.02	-23.65	15.76
	Min. Vert	7	-245.02	-23.65	15.76
	Min. H _x	7	-245.02	-23.65	15.76
	Min. H _z	18	287.45	27.36	-17.99
Leg B	Max. Vert	10	296.02	-28.61	-18.17
	Max. H _x	23	-256.42	24.92	16.00
	Max. H _z	23	-256.42	24.92	16.00
	Min. Vert	23	-256.42	24.92	16.00
	Min. H _x	10	296.02	-28.61	-18.17
	Min. H _z	10	296.02	-28.61	-18.17
Leg A	Max. Vert	2	282.06	-0.60	31.69
	Max. H _x	21	14.15	5.87	1.11
	Max. H _z	2	282.06	-0.60	31.69
	Min. Vert	15	-236.02	0.57	-27.29
	Min. H _x	8	19.66	-5.90	1.53
	Min. H _z	15	-236.02	0.57	-27.29

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	43.51	-0.00	-0.00	-28.85	14.04	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	52.21	0.03	-50.73	-4782.16	10.69	-21.13
0.9 Dead+1.0 Wind 0 deg - No Ice	39.16	0.03	-50.73	-4773.50	6.48	-21.13
1.2 Dead+1.0 Wind 30 deg - No Ice	52.21	23.36	-40.40	-3877.99	-2207.49	-36.83

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 30 deg - No Ice	39.16	23.36	-40.40	-3869.33	-2211.71	-36.83
1.2 Dead+1.0 Wind 60 deg - No Ice	52.21	42.85	-24.74	-2366.52	-4019.11	-67.21
0.9 Dead+1.0 Wind 60 deg - No Ice	39.16	42.85	-24.74	-2357.86	-4023.32	-67.21
1.2 Dead+1.0 Wind 90 deg - No Ice	52.21	51.56	-0.03	-40.78	-4815.54	-79.27
0.9 Dead+1.0 Wind 90 deg - No Ice	39.16	51.56	-0.03	-32.12	-4819.75	-79.27
1.2 Dead+1.0 Wind 120 deg - No Ice	52.21	47.27	27.26	2494.47	-4372.98	-51.06
0.9 Dead+1.0 Wind 120 deg - No Ice	39.16	47.27	27.26	2503.12	-4377.19	-51.06
1.2 Dead+1.0 Wind 150 deg - No Ice	52.21	25.01	43.31	4055.72	-2342.98	-7.58
0.9 Dead+1.0 Wind 150 deg - No Ice	39.16	25.01	43.31	4064.38	-2347.20	-7.58
1.2 Dead+1.0 Wind 180 deg - No Ice	52.21	-0.03	47.67	4491.89	23.00	21.13
0.9 Dead+1.0 Wind 180 deg - No Ice	39.16	-0.03	47.67	4500.54	18.79	21.13
1.2 Dead+1.0 Wind 210 deg - No Ice	52.21	-23.36	40.40	3808.74	2241.18	36.83
0.9 Dead+1.0 Wind 210 deg - No Ice	39.16	-23.36	40.40	3817.39	2236.97	36.83
1.2 Dead+1.0 Wind 240 deg - No Ice	52.21	-45.50	26.27	2407.78	4244.21	67.21
0.9 Dead+1.0 Wind 240 deg - No Ice	39.16	-45.50	26.27	2416.44	4240.00	67.21
1.2 Dead+1.0 Wind 270 deg - No Ice	52.21	-51.56	0.03	-28.47	4849.23	79.27
0.9 Dead+1.0 Wind 270 deg - No Ice	39.16	-51.56	0.03	-19.81	4845.02	79.27
1.2 Dead+1.0 Wind 300 deg - No Ice	52.21	-44.62	-25.73	-2453.20	4215.25	51.06
0.9 Dead+1.0 Wind 300 deg - No Ice	39.16	-44.62	-25.73	-2444.55	4211.04	51.06
1.2 Dead+1.0 Wind 330 deg - No Ice	52.21	-25.01	-43.31	-4124.97	2376.67	7.58
0.9 Dead+1.0 Wind 330 deg - No Ice	39.16	-25.01	-43.31	-4116.32	2372.46	7.58
1.2 Dead+1.0 Ice	161.52	-0.00	-0.00	-185.71	59.81	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	161.52	0.00	-15.05	-1602.29	59.27	-6.58
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	161.52	7.18	-12.45	-1367.80	-622.31	-13.94
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	161.52	13.11	-7.57	-898.25	-1172.66	-23.47
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	161.52	15.31	-0.00	-186.25	-1377.40	-25.32
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	161.52	13.65	7.89	551.13	-1215.81	-15.93
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	161.52	7.53	13.05	1045.76	-650.20	-3.77
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	161.52	-0.00	14.64	1202.76	60.35	6.58
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	161.52	-7.18	12.45	996.38	741.93	13.94
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	161.52	-13.46	7.77	540.89	1316.62	23.47
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	161.52	-15.31	0.00	-185.17	1497.02	25.32
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	161.52	-13.31	-7.69	-908.49	1311.09	15.93
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	161.52	-7.53	-13.05	-1417.18	769.82	3.77
Dead+Wind 0 deg - Service	43.51	0.01	-12.45	-1185.45	12.54	-5.13
Dead+Wind 30 deg - Service	43.51	5.74	-9.93	-965.47	-528.02	-8.94

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 60 deg - Service	43.51	10.52	-6.08	-597.00	-969.29	-16.31
Dead+Wind 90 deg - Service	43.51	12.66	-0.01	-30.35	-1163.14	-19.23
Dead+Wind 120 deg - Service	43.51	11.60	6.69	587.11	-1055.11	-12.38
Dead+Wind 150 deg - Service	43.51	6.14	10.64	967.66	-560.88	-1.84
Dead+Wind 180 deg - Service	43.51	-0.01	11.71	1074.14	15.53	5.13
Dead+Wind 210 deg - Service	43.51	-5.74	9.93	907.76	556.10	8.94
Dead+Wind 240 deg - Service	43.51	-11.17	6.45	566.09	1043.78	16.31
Dead+Wind 270 deg - Service	43.51	-12.66	0.01	-27.36	1191.21	19.23
Dead+Wind 300 deg - Service	43.51	-10.95	-6.32	-618.02	1036.76	12.38
Dead+Wind 330 deg - Service	43.51	-6.14	-10.64	-1025.37	588.96	1.84

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	-43.51	0.00	0.00	43.51	0.00	0.000%
2	0.03	-52.21	-50.73	-0.03	52.21	50.73	0.000%
3	0.03	-39.16	-50.73	-0.03	39.16	50.73	0.000%
4	23.36	-52.21	-40.40	-23.36	52.21	40.40	0.000%
5	23.36	-39.16	-40.40	-23.36	39.16	40.40	0.000%
6	42.85	-52.21	-24.74	-42.85	52.21	24.74	0.000%
7	42.85	-39.16	-24.74	-42.85	39.16	24.74	0.000%
8	51.56	-52.21	-0.03	-51.56	52.21	0.03	0.000%
9	51.56	-39.16	-0.03	-51.56	39.16	0.03	0.000%
10	47.27	-52.21	27.26	-47.27	52.21	-27.26	0.000%
11	47.27	-39.16	27.26	-47.27	39.16	-27.26	0.000%
12	25.01	-52.21	43.31	-25.01	52.21	-43.31	0.000%
13	25.01	-39.16	43.31	-25.01	39.16	-43.31	0.000%
14	-0.03	-52.21	47.67	0.03	52.21	-47.67	0.000%
15	-0.03	-39.16	47.67	0.03	39.16	-47.67	0.000%
16	-23.36	-52.21	40.40	23.36	52.21	-40.40	0.000%
17	-23.36	-39.16	40.40	23.36	39.16	-40.40	0.000%
18	-45.50	-52.21	26.27	45.50	52.21	-26.27	0.000%
19	-45.50	-39.16	26.27	45.50	39.16	-26.27	0.000%
20	-51.56	-52.21	0.03	51.56	52.21	-0.03	0.000%
21	-51.56	-39.16	0.03	51.56	39.16	-0.03	0.000%
22	-44.62	-52.21	-25.73	44.62	52.21	25.73	0.000%
23	-44.62	-39.16	-25.73	44.62	39.16	25.73	0.000%
24	-25.01	-52.21	-43.31	25.01	52.21	43.31	0.000%
25	-25.01	-39.16	-43.31	25.01	39.16	43.31	0.000%
26	0.00	-161.52	0.00	0.00	161.52	0.00	0.000%
27	0.00	-161.52	-15.05	-0.00	161.52	15.05	0.000%
28	7.18	-161.52	-12.45	-7.18	161.52	12.45	0.000%
29	13.11	-161.52	-7.57	-13.11	161.52	7.57	0.000%
30	15.31	-161.52	-0.00	-15.31	161.52	0.00	0.000%
31	13.65	-161.52	7.89	-13.65	161.52	-7.89	0.000%
32	7.53	-161.52	13.05	-7.53	161.52	-13.05	0.000%
33	-0.00	-161.52	14.64	0.00	161.52	-14.64	0.000%
34	-7.18	-161.52	12.45	7.18	161.52	-12.45	0.000%
35	-13.46	-161.52	7.77	13.46	161.52	-7.77	0.000%
36	-15.31	-161.52	0.00	15.31	161.52	-0.00	0.000%
37	-13.31	-161.52	-7.69	13.31	161.52	7.69	0.000%
38	-7.53	-161.52	-13.05	7.53	161.52	13.05	0.000%
39	0.01	-43.51	-12.45	-0.01	43.51	12.45	0.000%
40	5.74	-43.51	-9.93	-5.74	43.51	9.93	0.000%
41	10.52	-43.51	-6.08	-10.52	43.51	6.08	0.000%
42	12.66	-43.51	-0.01	-12.66	43.51	0.01	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
43	11.60	-43.51	6.69	-11.60	43.51	-6.69	0.000%
44	6.14	-43.51	10.64	-6.14	43.51	-10.64	0.000%
45	-0.01	-43.51	11.71	0.01	43.51	-11.71	0.000%
46	-5.74	-43.51	9.93	5.74	43.51	-9.93	0.000%
47	-11.17	-43.51	6.45	11.17	43.51	-6.45	0.000%
48	-12.66	-43.51	0.01	12.66	43.51	-0.01	0.000%
49	-10.95	-43.51	-6.32	10.95	43.51	6.32	0.000%
50	-6.14	-43.51	-10.64	6.14	43.51	10.64	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 140	4.695	49	0.2687	0.0394
T2	140 - 135	3.574	49	0.2504	0.0386
T3	135 - 130	3.311	49	0.2445	0.0376
T4	130 - 125	3.049	49	0.2366	0.0363
T5	125 - 120	2.800	49	0.2273	0.0344
T6	120 - 113.333	2.556	49	0.2163	0.0325
T7	113.333 - 106.667	2.258	49	0.2038	0.0308
T8	106.667 - 100	1.973	49	0.1895	0.0288
T9	100 - 93.333	1.712	49	0.1737	0.0267
T10	93.333 - 86.667	1.467	49	0.1599	0.0237
T11	86.667 - 80	1.245	49	0.1450	0.0213
T12	80 - 73.333	1.048	43	0.1294	0.0196
T13	73.333 - 66.667	0.866	43	0.1160	0.0167
T14	66.667 - 60	0.703	43	0.1022	0.0137
T15	60 - 50	0.557	43	0.0880	0.0107
T16	50 - 40	0.379	43	0.0720	0.0085
T17	40 - 30	0.238	43	0.0557	0.0063
T18	30 - 20	0.129	43	0.0387	0.0046
T19	20 - 0	0.060	43	0.0217	0.0029

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
157.00	(2) APL866513-42T6 w/ Mount Pipe	49	4.523	0.2661	0.0394	117205
147.00	MX08FRO665-21 w/ Mount Pipe	49	3.956	0.2574	0.0393	45079
135.00	7770.00 w/ Mount Pipe	49	3.311	0.2445	0.0376	142055
125.00	APXVSP18-C-A20 w/ Mount Pipe	49	2.800	0.2273	0.0344	48896
113.00	(2) ERICSSON AIR 21 B4A B2P w/ Mount Pipe	49	2.243	0.2032	0.0307	50960
57.00	GPS_A	43	0.499	0.0827	0.0098	23873
48.00	EMPTY_MOUNT w/ Mount Pipe	43	0.348	0.0689	0.0081	35701

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 140	19.437	11	1.1038	0.1623

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T2	140 - 135	14.825	11	1.0315	0.1591
T3	135 - 130	13.738	11	1.0074	0.1550
T4	130 - 125	12.658	11	0.9751	0.1494
T5	125 - 120	11.628	11	0.9376	0.1419
T6	120 - 113.333	10.624	11	0.8921	0.1341
T7	113.333 - 106.667	9.391	11	0.8412	0.1268
T8	106.667 - 100	8.215	11	0.7826	0.1187
T9	100 - 93.333	7.135	11	0.7182	0.1099
T10	93.333 - 86.667	6.118	11	0.6614	0.0977
T11	86.667 - 80	5.197	11	0.6006	0.0877
T12	80 - 73.333	4.375	11	0.5362	0.0808
T13	73.333 - 66.667	3.616	11	0.4810	0.0689
T14	66.667 - 60	2.934	11	0.4243	0.0565
T15	60 - 50	2.324	11	0.3657	0.0440
T16	50 - 40	1.580	11	0.2994	0.0350
T17	40 - 30	0.991	11	0.2316	0.0259
T18	30 - 20	0.537	11	0.1611	0.0189
T19	20 - 0	0.250	11	0.0903	0.0121

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
157.00	(2) APL866513-42T6 w/ Mount Pipe	11	18.729	1.0939	0.1625	29234
147.00	MX08FRO665-21 w/ Mount Pipe	11	16.398	1.0592	0.1620	11243
135.00	7770.00 w/ Mount Pipe	11	13.738	1.0074	0.1550	37612
125.00	APXVSPP18-C-A20 w/ Mount Pipe	11	11.628	0.9376	0.1419	12039
113.00	(2) ERICSSON AIR 21 B4A B2P w/ Mount Pipe	11	9.331	0.8386	0.1264	12605
57.00	GPS_A	11	2.080	0.3437	0.0403	5734
48.00	EMPTY_MOUNT w/ Mount Pipe	11	1.452	0.2865	0.0333	8673

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T1	160	Leg	A325N	0.6250	4	3.84	20.34	0.189	1.05	Bolt Tension Member Block Shear Member Bearing
		Diagonal	A325N	0.5000	1	3.40	5.71	0.595	1.05	
		Top Girt	A325N	0.5000	1	0.61	4.13	0.147	1.05	
T2	140	Diagonal	A325N	0.5000	1	3.32	5.71	0.582	1.05	Member Block Shear Member Bearing
		Top Girt	A325N	0.5000	1	0.44	4.13	0.107	1.05	
T3	135	Diagonal	A325N	0.5000	1	4.70	5.71	0.824	1.05	Member Block Shear
T4	130	Diagonal	A325N	0.5000	1	4.71	5.71	0.825	1.05	Member Block Shear
T5	125	Leg	A325N	0.7500	4	11.76	30.10	0.391	1.05	Bolt Tension Member Bearing
		Diagonal	A325N	0.5000	1	5.43	6.20	0.875	1.05	
T6	120	Diagonal	A325X	0.5000	1	6.00	7.50	0.799	1.05	Gusset Bearing
T7	113.333	Diagonal	A325X	0.5000	1	7.13	7.50	0.950	1.05	Gusset Bearing
T8	106.667	Leg	A325N	0.8750	4	20.81	41.56	0.501	1.05	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T9	100	Diagonal	A325X	0.5000	1	7.28	7.50	0.970	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	1.70	6.85	0.247	1.05	Member Block Shear
T9	100	Diagonal	A325N	0.5000	2	3.62	6.53	0.556	1.05	Member Block Shear
T10	93.333	Diagonal	A325N	0.5000	2	3.77	8.70	0.433	1.05	Member Block Shear
T11	86.667	Leg	A325N	0.8750	4	30.22	41.56	0.727	1.05	Bolt Tension
		Diagonal	A325N	0.5000	2	3.89	13.05	0.298	1.05	Member Block Shear
T12	80	Secondary Horizontal	A325N	0.6250	1	2.40	7.12	0.338	1.05	Member Block Shear
		Diagonal	A325N	0.5000	2	3.97	7.03	0.564	1.05	Member Block Shear
T13	73.333	Diagonal	A325N	0.5000	2	4.11	7.03	0.585	1.05	Member Block Shear
T14	66.667	Secondary Horizontal	A325N	0.6250	1	2.86	8.13	0.352	1.05	Member Block Shear
		Leg	A325N	1.0000	4	38.96	54.52	0.715	1.05	Bolt Tension
T14	66.667	Diagonal	A325N	0.5000	2	4.08	7.03	0.580	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	3.08	7.12	0.433	1.05	Member Block Shear
T15	60	Diagonal	A325N	0.6250	1	9.97	14.79	0.674	1.05	Gusset Bearing
T16	50	Leg	A325N	1.0000	4	46.64	54.52	0.856	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	10.20	14.79	0.690	1.05	Gusset Bearing
T17	40	Secondary Horizontal	A325N	0.6250	1	3.69	8.48	0.435	1.05	Member Bearing
		Diagonal	A325N	0.6250	1	10.29	14.79	0.696	1.05	Gusset Bearing
T17	40	Secondary Horizontal	A325N	0.6250	1	4.01	11.31	0.355	1.05	Member Bearing
		Diagonal	A325N	0.6250	1	10.29	14.79	0.696	1.05	Gusset Bearing
T18	30	Leg	A325N	1.0000	6	36.28	54.52	0.665	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	11.03	14.79	0.746	1.05	Gusset Bearing
T18	30	Horizontal	A325N	0.6250	1	4.33	8.48	0.510	1.05	Member Bearing
		Diagonal	A325N	0.6250	1	11.69	14.79	0.790	1.05	Gusset Bearing
T19	20	Diagonal	A325N	0.6250	1	11.69	14.79	0.790	1.05	Gusset Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
T1	160 - 140	Pipe 2.375" x 0.154" (2 STD)	20.00	4.00	61.0 K=1.00	1.0745	-19.71	36.84	0.535 ¹
T2	140 - 135	Pipe 2.875" x 0.276" (2.5 EH)	5.01	5.01	65.0 K=1.00	2.2535	-25.47	74.43	0.342 ¹
T3	135 - 130	Pipe 2.875" x 0.276" (2.5 EH)	5.01	5.01	65.0 K=1.00	2.2535	-36.62	74.43	0.492 ¹
T4	130 - 125	Pipe 2.875" x 0.276" (2.5 EH)	5.01	5.01	65.0 K=1.00	2.2535	-45.82	74.43	0.616 ¹
T5	125 - 120	Pipe 2.875" x 0.276" (2.5 EH)	5.01	5.01	65.0 K=1.00	2.2535	-56.40	74.43	0.758 ¹
T6	120 - 113.333	Pipe 3.5" x 0.300" (3 EH)	6.68	6.68	70.5 K=1.00	3.0159	-67.81	94.34	0.719 ¹
T7	113.333 - 106.667	Pipe 3.5" x 0.300" (3 EH)	6.68	6.68	70.5 K=1.00	3.0159	-82.93	94.35	0.879 ¹
T8	106.667 - 100	Pipe 3.5" x 0.300" (3 EH)	6.68	3.45	36.4 K=1.00	3.0159	-97.73	123.17	0.793 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
T9	100 - 93.333	Pipe 4" x 0.318" (3.5 EH)	6.68	6.68	61.3 K=1.00	3.6784	-111.77	125.72	0.889 ¹
T10	93.333 - 86.667	Pipe 4" x 0.318" (3.5 EH)	6.68	6.68	61.3 K=1.00	3.6784	-125.58	125.73	0.999 ¹
T11	86.667 - 80	Pipe 4" x 0.318" (3.5 EH)	6.68	3.43	31.5 K=1.00	3.6784	-138.65	153.94	0.901 ¹
T12	80 - 73.333	Pipe 4.5" x 0.337" (4 XS)	6.68	6.68	54.3 K=1.00	4.4074	-152.34	159.90	0.953 ¹
T13	73.333 - 66.667	Pipe 4.5" x 0.337" (4 XS)	6.68	3.42	27.8 K=1.00	4.4074	-164.72	187.42	0.879 ¹
T14	66.667 - 60	Pipe 4.5" x 0.337" (4 XS)	6.68	3.42	27.8 K=1.00	4.4074	-177.75	187.44	0.948 ¹
T15	60 - 50	Pipe 5.563" x 0.375" (5 EH)	10.02	10.02	65.4 K=1.00	6.1120	-193.97	201.25	0.964 ¹
T16	50 - 40	Pipe 5.563" x 0.375" (5 EH)	10.02	5.16	33.7 K=1.00	6.1120	-212.60	253.14	0.840 ¹
T17	40 - 30	Pipe 5.563" x 0.375" (5 XS)	10.02	5.16	33.7 K=1.00	6.1120	-231.44	253.16	0.914 ¹
T18	30 - 20	Pipe 5.563" x 0.375" (5 XS)	10.02	2.50	16.3 K=1.00	6.1120	-249.54	269.72	0.925 ¹
T19	20 - 0	BU 806378 (PJF) - 6.625"x0.34" pipe w/ 2" SR- (modified with 19.5" spacing)	20.03	10.02	75.6 K=1.00	9.8549	-286.69	292.10	0.981 ¹

¹ P_u / φP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
T1	160 - 140	L 1.75 x 1.75 x 3/16	7.68	3.62	126.6 K=1.00	0.6211	-3.46	11.09	0.312 ¹
T2	140 - 135	L 1.75 x 1.75 x 3/16	8.46	4.13	144.4 K=1.00	0.6211	-3.59	8.52	0.421 ¹
T3	135 - 130	L 1.75 x 1.75 x 3/16	8.87	4.34	151.7 K=1.00	0.6211	-4.67	7.73	0.604 ¹
T4	130 - 125	L 1.75 x 1.75 x 3/16	9.30	4.55	159.1 K=1.00	0.6211	-4.77	7.02	0.679 ¹
T5	125 - 120	L 2 x 2 x 3/16	9.73	4.77	145.3 K=1.00	0.7150	-5.45	9.69	0.562 ¹
T6	120 - 113.333	L 2.5 x 2.5 x 1/4	11.16	5.50	134.5 K=1.00	1.1900	-6.09	18.83	0.324 ¹
T7	113.333 - 106.667	L 2.5 x 2.5 x 1/4	11.71	5.78	141.2 K=1.00	1.1900	-7.39	17.09	0.432 ¹
T8	106.667 - 100	L 2.5 x 2.5 x 1/4	12.27	6.16	150.6 K=1.00	1.1900	-7.41	15.02	0.494 ¹
T9	100 - 93.333	L 2.5 x 2.5 x 3/16	12.84	6.43	155.8 K=1.00	0.9020	-7.48	10.64	0.703 ¹
T10	93.333 - 86.667	L 2.5 x 2.5 x 1/4	13.43	6.72	164.2 K=1.00	1.1900	-7.59	12.63	0.601 ¹
T11	86.667 - 80	2L 2.5 x 2.5 x 3/16 (1/4)	14.02	7.02	113.1 K=1.00	1.8047	-8.36	36.57	0.229 ¹
T12	80 - 73.333	2L 'a' > 40.1531 in - 132 L 3 x 3 x 3/16	14.63	7.30	147.0 K=1.00	1.0898	-7.90	14.44	0.547 ¹
T13	73.333 - 66.667	L 3 x 3 x 3/16	15.26	7.61	153.2 K=1.00	1.0898	-8.89	13.28	0.669 ¹
T14	66.667 - 60	L 3 x 3 x 3/16	15.89	7.93	159.6 K=1.00	1.0898	-8.74	12.25	0.714 ¹
T15	60 - 50	2L 3 x 3 x 3/16 (1/4) 2L 'a' > 51.5914 in - 177	18.26	9.03	122.0 K=1.00	2.1797	-10.14	37.50	0.270 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T16	50 - 40	2L 3 x 3 x 3/16 (1/4)	19.10	9.57	129.3 K=1.00	2.1797	-11.20	33.93	0.330 ¹
T17	40 - 30	2L 'a' > 54.6855 in - 186 2L 3 x 3 x 1/4 (1/4)	19.98	10.02	135.4 K=1.00	2.8750	-11.40	43.09	0.264 ¹
T18	30 - 20	2L 'a' > 57.4295 in - 198 2L 3 x 3 x 1/4 (1/4)	10.67	10.17	105.2 K=1.00	2.8750	-12.29	68.85	0.178 ¹
T19	20 - 0	2L 3.5 x 3.5 x 1/4 (1/4) 2L 'a' > 63.5109 in - 252	22.69	11.10	129.1 K=1.00	3.3750	-12.53	54.19	0.231 ¹

¹ P_u / φP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T18	30 - 20	L 3 x 3 x 3/16	18.33	8.81	225.2 K=1.00	1.0900	-4.33	6.15	0.703 ¹

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T8	106.667 - 100	L 1.75 x 1.75 x 1/4	10.29	5.00	175.7 K=1.00	0.8125	-1.70	7.54	0.225 ¹
T11	86.667 - 80	L 2 x 2 x 3/16	12.33	6.00	182.7 K=1.00	0.7150	-2.40	6.13	0.392 ¹
T13	73.333 - 66.667	L 1.75 x 1.75 x 1/4	13.72	6.67	234.5 K=1.00	0.8125	-2.86	4.23	0.676 ¹
T14	66.667 - 60	L 2 x 2 x 3/16	14.41	7.02	213.8 K=1.00	0.7150	-3.08	4.48	0.689 ¹
T16	50 - 40	L 2.5 x 2.5 x 3/16	16.26	7.90	191.4 K=1.00	0.9020	-3.69	7.05	0.523 ¹
T17	40 - 30	L 3 x 3 x 1/4	17.28	8.41	170.4 K=1.00	1.4400	-4.01	14.20	0.283 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	L 2 x 2 x 1/8	6.52	6.11	184.6 K=1.00	0.4844	-0.61	4.07	0.150 ¹
T2	140 - 135	L 2 x 2 x 1/8	6.56	6.11	184.6 K=1.00	0.4844	-0.44	4.07	0.109 ¹

¹ $P_u / \phi P_n$ controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T18	30 - 20	L 2 x 2 x 3/16	4.58	4.35	132.5 K=1.00	0.7150	-4.33	11.65	0.371 ¹

¹ $P_u / \phi P_n$ controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T18	30 - 20	L 2 x 2 x 3/16	5.34	5.07	154.4 K=1.00	0.7150	-2.52	8.58	0.294 ¹

¹ $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	Pipe 2.375" x 0.154" (2 STD)	20.00	4.00	61.0	1.0745	15.36	48.35	0.318 ¹
T2	140 - 135	Pipe 2.875" x 0.276" (2.5 EH)	5.01	5.01	65.0	2.2535	20.88	101.41	0.206 ¹
T3	135 - 130	Pipe 2.875" x 0.276" (2.5 EH)	5.01	5.01	65.0	2.2535	29.10	101.41	0.287 ¹
T4	130 - 125	Pipe 2.875" x 0.276" (2.5 EH)	5.01	5.01	65.0	2.2535	37.93	101.41	0.374 ¹
T5	125 - 120	Pipe 2.875" x 0.276" (2.5 EH)	5.01	5.01	65.0	2.2535	47.03	101.41	0.464 ¹
T6	120 - 113.333	Pipe 3.5" x 0.300" (3 EH)	6.68	6.68	70.5	3.0159	57.40	135.72	0.423 ¹
T7	113.333 - 106.667	Pipe 3.5" x 0.300" (3 EH)	6.68	6.68	70.5	3.0159	70.13	135.72	0.517 ¹
T8	106.667 - 100	Pipe 3.5" x 0.300" (3 EH)	6.68	3.23	34.1	3.0159	83.26	135.72	0.613 ¹
T9	100 - 93.333	Pipe 4" x 0.318" (3.5 EH)	6.68	6.68	61.3	3.6784	96.25	165.53	0.581 ¹
T10	93.333 - 86.667	Pipe 4" x 0.318" (3.5 EH)	6.68	6.68	61.3	3.6784	109.02	165.53	0.659 ¹
T11	86.667 - 80	Pipe 4" x 0.318" (3.5 EH)	6.68	3.25	29.8	3.6784	120.90	165.53	0.730 ¹
T12	80 - 73.333	Pipe 4.5" x 0.337" (4 XS)	6.68	6.68	54.3	4.4074	133.09	198.34	0.671 ¹
T13	73.333 - 66.667	Pipe 4.5" x 0.337" (4 XS)	6.68	3.25	26.4	4.4074	144.35	198.34	0.728 ¹
T14	66.667 - 60	Pipe 4.5" x 0.337" (4 XS)	6.68	3.26	26.5	4.4074	155.88	198.34	0.786 ¹
T15	60 - 50	Pipe 5.563" x 0.375" (5 EH)	10.02	10.02	65.4	6.1120	170.14	275.04	0.619 ¹
T16	50 - 40	Pipe 5.563" x 0.375" (5 EH)	10.02	4.85	31.7	6.1120	186.68	275.04	0.679 ¹
T17	40 - 30	Pipe 5.563" x 0.375" (5 XS)	10.02	4.86	31.7	6.1120	202.92	275.04	0.738 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T18	30 - 20	Pipe 5.563" x 0.375" (5 XS)	10.02	2.50	16.3	6.1120	217.82	275.04	0.792 ¹
T19	20 - 0	BU 806378 (PJF) - 6.625"x0.34" pipe w/ 2" SR- (modified with 19.5" spacing)	20.03	10.02	75.6	9.8549	248.77	443.47	0.561 ¹

¹ P_u / φP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	L 1.75 x 1.75 x 3/16	7.68	3.62	83.3	0.3779	3.40	16.44	0.207 ¹
T2	140 - 135	L 1.75 x 1.75 x 3/16	8.46	4.13	94.7	0.3779	3.32	16.44	0.202 ¹
T3	135 - 130	L 1.75 x 1.75 x 3/16	8.87	4.34	99.4	0.3779	4.70	16.44	0.286 ¹
T4	130 - 125	L 1.75 x 1.75 x 3/16	9.30	4.55	104.1	0.3779	4.71	16.44	0.286 ¹
T5	125 - 120	L 2 x 2 x 3/16	9.73	4.77	94.8	0.4484	5.43	19.50	0.278 ¹
T6	120 - 113.333	L 2.5 x 2.5 x 1/4	11.16	5.50	87.5	0.7753	6.00	33.73	0.178 ¹
T7	113.333 - 106.667	L 2.5 x 2.5 x 1/4	11.71	5.78	91.8	0.7753	7.13	33.73	0.211 ¹
T8	106.667 - 100	L 2.5 x 2.5 x 1/4	12.27	6.16	96.2	0.7753	7.28	33.73	0.216 ¹
T9	100 - 93.333	L 2.5 x 2.5 x 3/16	12.84	6.43	99.0	0.5886	7.25	25.60	0.283 ¹
T10	93.333 - 86.667	L 2.5 x 2.5 x 1/4	13.43	6.72	104.9	0.7753	7.54	33.73	0.223 ¹
T11	86.667 - 80	2L 2.5 x 2.5 x 3/16 (1/4) 2L 'a' > 40.1531 in - 132	14.02	7.02	108.2	1.1777	7.78	51.23	0.152 ¹
T12	80 - 73.333	L 3 x 3 x 3/16	14.63	7.30	93.3	0.7295	7.94	31.73	0.250 ¹
T13	73.333 - 66.667	L 3 x 3 x 3/16	15.26	7.61	97.3	0.7295	8.22	31.73	0.259 ¹
T14	66.667 - 60	L 3 x 3 x 3/16	15.89	7.93	101.3	0.7295	8.16	31.73	0.257 ¹
T15	60 - 50	2L 3 x 3 x 3/16 (1/4) 2L 'a' > 51.5914 in - 176	18.26	9.03	116.9	1.4238	9.97	61.94	0.161 ¹
T16	50 - 40	2L 3 x 3 x 3/16 (1/4) 2L 'a' > 54.6855 in - 186	19.10	9.57	122.3	1.4238	10.20	61.94	0.165 ¹
T17	40 - 30	2L 3 x 3 x 1/4 (1/4) 2L 'a' > 57.4295 in - 198	19.98	10.02	129.3	1.8750	10.29	91.41	0.113 ¹
T18	30 - 20	2L 3 x 3 x 1/4 (1/4)	10.67	10.17	93.1	1.8750	11.03	91.41	0.121 ¹
T19	20 - 0	2L 3.5 x 3.5 x 1/4 (1/4) 2L 'a' > 60.9601 in - 257	21.79	10.66	118.5	2.2500	11.69	109.69	0.107 ¹

¹ P_u / φP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T18	30 - 20	L 3 x 3 x 3/16	18.33	8.81	171.3	0.7120	4.33	30.97	0.140 ¹

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T8	106.667 - 100	L 1.75 x 1.75 x 1/4	10.29	5.00	226.8	0.4688	1.70	20.39	0.083 ¹
T11	86.667 - 80	L 2 x 2 x 3/16	12.33	6.00	233.3	0.4308	2.40	18.74	0.128 ¹
T13	73.333 - 66.667	L 1.75 x 1.75 x 1/4	13.72	6.67	302.7	0.4688	2.86	20.39	0.140 ¹
T14	66.667 - 60	L 2 x 2 x 3/16	14.41	7.02	273.0	0.4308	3.08	18.74	0.165 ¹
T16	50 - 40	L 2.5 x 2.5 x 3/16	16.26	7.90	243.6	0.5710	3.69	24.84	0.148 ¹
T17	40 - 30	L 3 x 3 x 1/4	17.28	8.41	216.9	0.9394	4.01	40.86	0.098 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	L 2 x 2 x 1/8	6.52	6.11	121.2	0.3047	0.61	13.25	0.046 ¹
T2	140 - 135	L 2 x 2 x 1/8	6.56	6.11	121.2	0.3047	0.44	13.25	0.033 ¹

¹ P_u / φP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T18	30 - 20	L 2 x 2 x 3/16	4.58	4.35	84.6	0.7150	4.33	23.17	0.187 ¹

¹ P_u / φP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T18	30 - 20	L 2 x 2 x 3/16	5.34	5.07	98.6	0.7150	2.52	23.17	0.109 ¹

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	φP _{allow} K	% Capacity	Pass Fail
T1	160 - 140	Leg	Pipe 2.375" x 0.154" (2 STD)	2	-19.71	38.68	51.0	Pass
T2	140 - 135	Leg	Pipe 2.875" x 0.276" (2.5 EH)	38	-25.47	78.15	32.6	Pass
T3	135 - 130	Leg	Pipe 2.875" x 0.276" (2.5 EH)	50	-36.62	78.15	46.9	Pass
T4	130 - 125	Leg	Pipe 2.875" x 0.276" (2.5 EH)	59	-45.82	78.15	58.6	Pass
T5	125 - 120	Leg	Pipe 2.875" x 0.276" (2.5 EH)	68	-56.40	78.15	72.2	Pass
T6	120 - 113.333	Leg	Pipe 3.5" x 0.300" (3 EH)	77	-67.81	99.06	68.5	Pass
T7	113.333 - 106.667	Leg	Pipe 3.5" x 0.300" (3 EH)	86	-82.93	99.07	83.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T8	106.667 - 100	Leg	Pipe 3.5" x 0.300" (3 EH)	95	-97.73	129.33	75.6	Pass
T9	100 - 93.333	Leg	Pipe 4" x 0.318" (3.5 EH)	107	-111.77	132.01	84.7	Pass
T10	93.333 - 86.667	Leg	Pipe 4" x 0.318" (3.5 EH)	116	-125.58	132.02	95.1	Pass
T11	86.667 - 80	Leg	Pipe 4" x 0.318" (3.5 EH)	125	-138.65	161.63	85.8	Pass
T12	80 - 73.333	Leg	Pipe 4.5" x 0.337" (4 XS)	137	-152.34	167.89	90.7	Pass
T13	73.333 - 66.667	Leg	Pipe 4.5" x 0.337" (4 XS)	146	-164.72	196.79	83.7	Pass
T14	66.667 - 60	Leg	Pipe 4.5" x 0.337" (4 XS)	158	-177.75	196.81	90.3	Pass
T15	60 - 50	Leg	Pipe 5.563" x 0.375" (5 EH)	170	-193.97	211.31	91.8	Pass
T16	50 - 40	Leg	Pipe 5.563" x 0.375" (5 EH)	179	-212.60	265.80	80.0	Pass
T17	40 - 30	Leg	Pipe 5.563" x 0.375" (5 XS)	191	-231.44	265.82	81.5 (b) 87.1	Pass
T18	30 - 20	Leg	Pipe 5.563" x 0.375" (5 XS)	203	-249.54	283.21	88.1	Pass
T19	20 - 0	Leg	BU 806378 (PJF) - 6.625"x0.34" pipe w/ 2" SR- (modified with 19.5" spacing)	245	-286.69	306.71	93.5	Pass
T1	160 - 140	Diagonal	L 1.75 x 1.75 x 3/16	9	-3.46	11.65	29.7 56.7 (b)	Pass
T2	140 - 135	Diagonal	L 1.75 x 1.75 x 3/16	45	-3.59	8.95	40.1 55.4 (b)	Pass
T3	135 - 130	Diagonal	L 1.75 x 1.75 x 3/16	54	-4.67	8.11	57.6 78.4 (b)	Pass
T4	130 - 125	Diagonal	L 1.75 x 1.75 x 3/16	63	-4.77	7.37	64.7 78.5 (b)	Pass
T5	125 - 120	Diagonal	L 2 x 2 x 3/16	72	-5.45	10.18	53.6 83.4 (b)	Pass
T6	120 - 113.333	Diagonal	L 2.5 x 2.5 x 1/4	81	-6.09	19.77	30.8 76.1 (b)	Pass
T7	113.333 - 106.667	Diagonal	L 2.5 x 2.5 x 1/4	90	-7.39	17.94	41.2 90.5 (b)	Pass
T8	106.667 - 100	Diagonal	L 2.5 x 2.5 x 1/4	99	-7.41	15.77	47.0 92.4 (b)	Pass
T9	100 - 93.333	Diagonal	L 2.5 x 2.5 x 3/16	111	-7.48	11.17	66.9	Pass
T10	93.333 - 86.667	Diagonal	L 2.5 x 2.5 x 1/4	120	-7.59	13.26	57.2	Pass
T11	86.667 - 80	Diagonal	2L 2.5 x 2.5 x 3/16 (1/4)	132	-8.36	38.39	21.8 28.4 (b)	Pass
T12	80 - 73.333	Diagonal	L 3 x 3 x 3/16	144	-7.90	15.17	52.1 53.8 (b)	Pass
T13	73.333 - 66.667	Diagonal	L 3 x 3 x 3/16	153	-8.89	13.95	63.7	Pass
T14	66.667 - 60	Diagonal	L 3 x 3 x 3/16	165	-8.74	12.86	68.0	Pass
T15	60 - 50	Diagonal	2L 3 x 3 x 3/16 (1/4)	177	-10.14	39.37	25.8 64.2 (b)	Pass
T16	50 - 40	Diagonal	2L 3 x 3 x 3/16 (1/4)	186	-11.20	35.62	31.4 65.7 (b)	Pass
T17	40 - 30	Diagonal	2L 3 x 3 x 1/4 (1/4)	198	-11.40	45.25	25.2 66.3 (b)	Pass
T18	30 - 20	Diagonal	2L 3 x 3 x 1/4 (1/4)	223	-12.29	72.30	17.0 71.1 (b)	Pass
T19	20 - 0	Diagonal	2L 3.5 x 3.5 x 1/4 (1/4)	252	-12.53	56.90	22.0 75.2 (b)	Pass
T18	30 - 20	Horizontal	L 3 x 3 x 3/16	205	-4.33	6.46	67.0	Pass
T8	106.667 - 100	Secondary Horizontal	L 1.75 x 1.75 x 1/4	103	-1.70	7.91	21.4 23.6 (b)	Pass
T11	86.667 - 80	Secondary Horizontal	L 2 x 2 x 3/16	133	-2.40	6.44	37.3	Pass
T13	73.333 - 66.667	Secondary Horizontal	L 1.75 x 1.75 x 1/4	154	-2.86	4.44	64.3	Pass
T14	66.667 - 60	Secondary Horizontal	L 2 x 2 x 3/16	166	-3.08	4.70	65.6	Pass
T16	50 - 40	Secondary Horizontal	L 2.5 x 2.5 x 3/16	187	-3.69	7.40	49.8	Pass
T17	40 - 30	Secondary Horizontal	L 3 x 3 x 1/4	199	-4.01	14.90	26.9 33.8 (b)	Pass
T1	160 - 140	Top Girt	L 2 x 2 x 1/8	5	-0.61	4.27	14.3	Pass
T2	140 - 135	Top Girt	L 2 x 2 x 1/8	40	-0.44	4.27	10.3	Pass
T18	30 - 20	Redund Horz 1 Bracing	L 2 x 2 x 3/16	214	-4.33	12.23	35.4	Pass
T18	30 - 20	Redund Diag 1 Bracing	L 2 x 2 x 3/16	231	-2.52	9.01	28.0	Pass
							Summary	
Leg (T10)							95.1	Pass

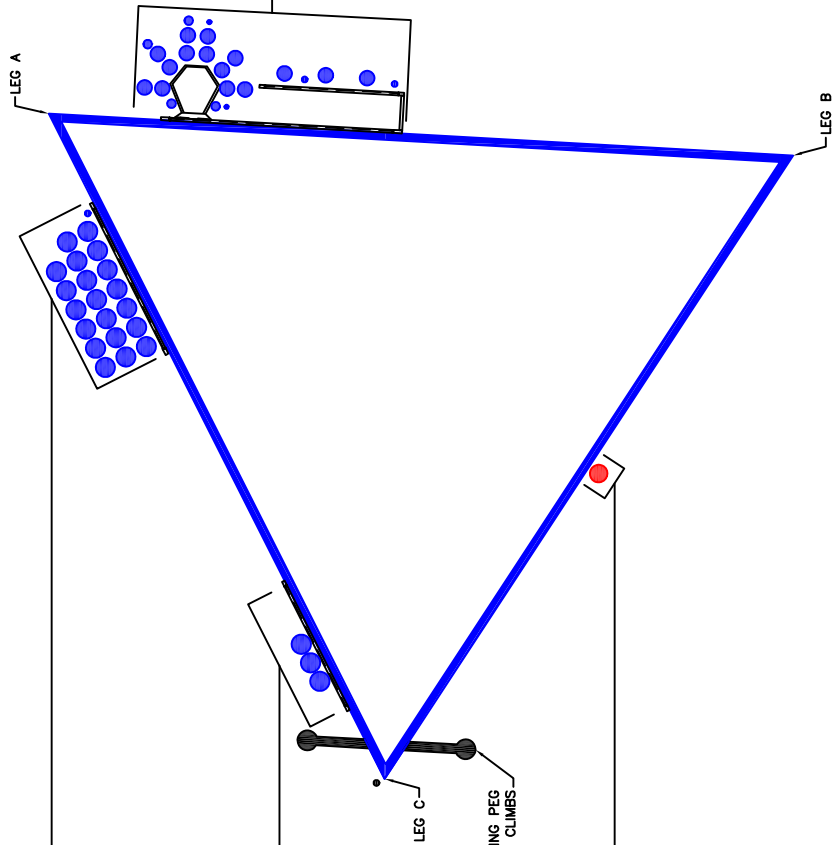
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						Diagonal (T8)	92.4	Pass
						Horizontal (T18)	67.0	Pass
						Secondary Horizontal (T14)	65.6	Pass
						Top Girt (T1)	14.3	Pass
						Redund Horz 1 Bracing (T18)	35.4	Pass
						Redund Diag 1 Bracing (T18)	28.0	Pass
						Bolt Checks	92.4	Pass
RATING =							95.1	Pass

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

APPENDIX B
BASE LEVEL DRAWING



(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 57 FT LEVEL
(20) 1-5/8" TO 157 FT LEVEL



(OTHER CONSIDERED EQUIPMENT)
(3) 1-5/8" TO 113 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 48 FT LEVEL
(1) 5/8" TO 125 FT LEVEL
(3) 1-1/4" TO 125 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(2) 3/8" TO 135 FT LEVEL
(4) 3/4" TO 135 FT LEVEL
(12) 1-1/4" TO 135 FT LEVEL

(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 147 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

SR Leg Reinforcement Rev. H

Leg Capacities from trnTower: Uplift := 248.77·kip Compression := 286.69·kip

Additional SR Rod Group: $N_{rod} := 1$ $D_{rod} := 2.00\text{-in}$ $F_{u,rod} := 65\text{ksi}$
 $A_{n,rod} := 3.14\text{-in}^2$ $F_{y,rod} := 50\text{ksi}$

$$A_{n_new} := N_{rod} \cdot A_{n,rod} = 3.14\text{-in}^2$$

Existing Leg: $D_{existing} = 6.625 \times 0.34$ $F_{u,leg} := 65\text{ksi}$
 $A_{existing} := 6.71\text{-in}^2$ $F_{y,leg} := 50\text{ksi}$

$$A_{n_exist} := A_{existing} = 6.71\text{-in}^2$$

Division of Forces: Contribution :=
 Yes
 No

$$A_{total} := (A_{n_exist}) + (A_{n_new}) = 9.85\text{-in}^2$$

$$\text{Percentage}_{existing} := \left(\frac{\text{Contribution} \cdot A_{n_exist}}{A_{total}} \right) = 68.12\%$$

$$\text{Percentage}_{new} := 100\% - \text{Percentage}_{existing} = 31.88\%$$

Reactions to Existing Leg:

$$\text{Uplift}_{existing} := \text{Uplift} \cdot \text{Percentage}_{existing} = 169.47\text{-kip}$$

$$\text{Compression}_{existing} := \text{Compression} \cdot \text{Percentage}_{existing} = 195.3\text{-kip}$$

Reactions to SR:

$$\text{Uplift}_{rod} := \text{Uplift} \cdot \text{Percentage}_{new} = 79.3\text{-kip}$$

$$\text{Compression}_{rod} := \text{Compression} \cdot \text{Percentage}_{new} = 91.39\text{-kip}$$

Tensile Capacity

Existing Leg Tensile Capacity:

$$\phi_t := 0.9$$

$$\phi P_{n,\text{existing}} := \phi_t \cdot F_{y,\text{leg}} \cdot A_{n,\text{exist}} = 301.95 \cdot \text{kip}$$

$$\frac{\text{Uplift}_{\text{existing}}}{\phi P_{n,\text{existing}}} = 53.45\%$$

SR Rod Tensile Capacity:

$$\phi_t := 0.9$$

$$\phi P_{n,\text{rod.t}} := \phi_t \cdot F_{y,\text{rod}} \cdot A_{n,\text{rod}} = 141.3 \cdot \text{kip}$$

$$\frac{\left(\frac{\text{Uplift}_{\text{rod}}}{N_{\text{rod}}} \right)}{\phi P_{n,\text{rod.t}}} = 53.45\%$$

Compression Capacity

Existing Leg Compression Capacity:

$$\phi_c := 0.9$$

$$K_{\text{leg}} := 1$$

$$L_{u,\text{leg}} := 120.24 \cdot \text{in}$$

$$L_{\text{leg}} := K_{\text{leg}} \cdot L_{u,\text{leg}} = 120.24 \cdot \text{in}$$

$$E := 29000 \cdot \text{ksi}$$

$$r_{\text{leg}} := 1.8388 \cdot \text{in}$$

$$F_{e,\text{leg}} := \frac{\pi^2 \cdot E}{\left(\frac{L_{\text{leg}}}{r_{\text{leg}}} \right)^2} = 66.94 \cdot \text{ksi}$$

$$F_{\text{cr},\text{leg}} := \begin{cases} \frac{F_{y,\text{leg}}}{F_{e,\text{leg}}} \cdot F_{y,\text{leg}} & \text{if } \frac{L_{\text{leg}}}{r_{\text{leg}}} \leq 4.71 \cdot \sqrt{\frac{E}{F_{y,\text{leg}}}} \\ (0.877 \cdot F_{e,\text{leg}}) & \text{otherwise} \end{cases}$$

$$\phi P_{n,\text{leg.c}} := \phi_c \cdot F_{\text{cr},\text{leg}} \cdot A_{\text{existing}}$$

$$\phi P_{n,leg.c} = 220.88 \cdot \text{kip}$$

$\frac{\text{Compression}_{existing}}{\phi P_{n,leg.c}} = 84.21\%$
$\frac{1.05}{1.05}$

SR Rod Compression Capacity:

$$\phi_{max} := 0.9$$

$$K_{rod} := 1$$

$L_{u,rod} := 18 \cdot \text{in}$

$$L_c := K_{rod} \cdot L_{u,rod} = 18 \cdot \text{in}$$

$$E := 29000 \text{ ksi}$$

$$r_{rod} := \frac{D_{rod}}{4} = 0.44 \cdot \text{in}$$

$$F_{e,rod} := \frac{\pi^2 \cdot E}{\left(\frac{L_c}{r_{rod}}\right)^2} = 169.09 \cdot \text{ksi}$$

$$F_{cr,rod} := \begin{cases} \frac{F_{y,rod}}{F_{e,rod}} \cdot F_{y,rod} & \text{if } \frac{L_c}{r_{rod}} \leq 4.71 \cdot \sqrt{\frac{E}{F_{y,rod}}} \\ (0.877 \cdot F_{e,rod}) & \text{otherwise} \end{cases}$$

$$\phi P_{n,rod.c} := \begin{cases} \phi_c \cdot F_{y,rod} \cdot A_{n,rod} & \text{if } \frac{L_c}{r_{rod}} \leq 25 \\ \phi_c \cdot F_{cr,rod} \cdot A_{n,rod} & \text{otherwise} \end{cases}$$

$$\phi P_{n,rod.c} = 124.85 \cdot \text{kip}$$

$\frac{\left(\frac{\text{Compression}_{rod}}{N_{rod}}\right)}{\phi P_{n,rod.c}} = 69.72\%$
$\frac{1.05}{1.05}$

Self Support Anchor Rod Capacity



Site Info	
BU #	806378
Site Name	HRT 086 943248
Order #	556636 rev.2

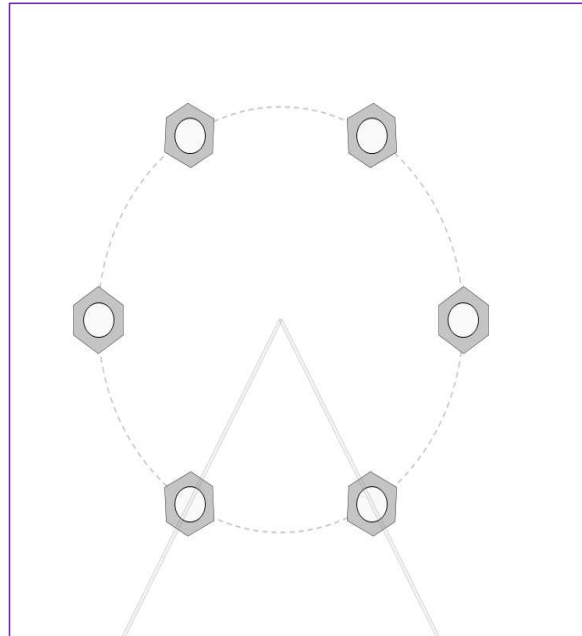
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	2

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	296.02	256.42
Shear Force (kips)	33.89	29.61

*TIA-222-H Section 15.5 Applied

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

*Anchor Rod Eccentricity Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data	
(6) 1" ϕ bolts (A449 N; $F_y=92$ ksi, $F_u=120$ ksi)	
l_{ar} (in):	2

Anchor Rod Summary		(units of kips, kip-in)	
$P_{u,t}$ = 42.74	$\phi P_{n,t}$ = 54.54	Stress Rating	
V_u = 4.94	ϕV_n = 35.34	74.6%	
M_u = n/a	ϕM_n = n/a	Pass	

Pier and Pad Foundation



BU #: 806378
 Site Name: HRT 086 943248
 App. Number: 556636, Rev. 2

TIA-222 Revision: H
 Tower Type: Self Support

Top & Bot. Pad Rein. Different?:
 Block Foundation?:
 Rectangular Pad?:

Superstructure Analysis Reactions		
Compression, P_{comp} :	296.02	kips
Compression Shear, V_{u_comp} :	33.89	kips
Uplift, P_{uplift} :	256.42	kips
Uplift Shear, V_{u_uplift} :	29.61	kips
Tower Height, H :	160	ft
Base Face Width, BW :	20.86	ft
BP Dist. Above Fdn, bp_{dist} :	3	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
<i>Uplift (kips)</i>	294.43	256.42	82.9%	Pass
<i>Lateral (Sliding) (kips)</i>	112.83	29.61	25.0%	Pass
<i>Bearing Pressure (ksf)</i>	12.38	4.64	35.7%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	1339.92	355.85	25.3%	Pass
<i>Pier Flexure (Tension) (kip*ft)</i>	851.36	310.91	34.8%	Pass
<i>Pier Compression (kip)</i>	2315.08	314.20	12.9%	Pass
<i>Pad Flexure (kip*ft)</i>	565.50	158.93	26.8%	Pass
<i>Pad Shear - 1-way (kips)</i>	194.10	48.43	23.8%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.164	0.065	37.7%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	1037.39	213.51	19.6%	Pass
<i>Pad Shear - 2-way (Uplift) (ksi)</i>	0.164	0.081	46.9%	Pass
<i>Flexural 2-way (Tension) (kip*ft)</i>	1037.39	186.54	17.1%	Pass

*Rating per TIA-222-H Section 15.5

Structural Rating*:	46.9%
Soil Rating*:	82.9%

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, $dpier$:	3.5	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, S_c :	9	
Pier Rebar Quantity, mc :	16	
Pier Tie/Spiral Size, St :	3	
Pier Tie/Spiral Quantity, mt :	12	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Pad Properties		
Depth, D :	12	ft
Pad Width, W_1 :	10	ft
Pad Thickness, T :	2	ft
Pad Rebar Size (Bottom dir. 2), Sp_2 :	7	
Pad Rebar Quantity (Bottom dir. 2), mp_2 :	11	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60	ksi
Concrete Compressive Strength, F'_c :	3	ksi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	115	pcf
Ultimate Gross Bearing, Q_{ult} :	16.500	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	34	degrees
SPT Blow Count, N_{blows} :		
Base Friction, μ :		
Neglected Depth, N :	3.30	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	10.5	ft

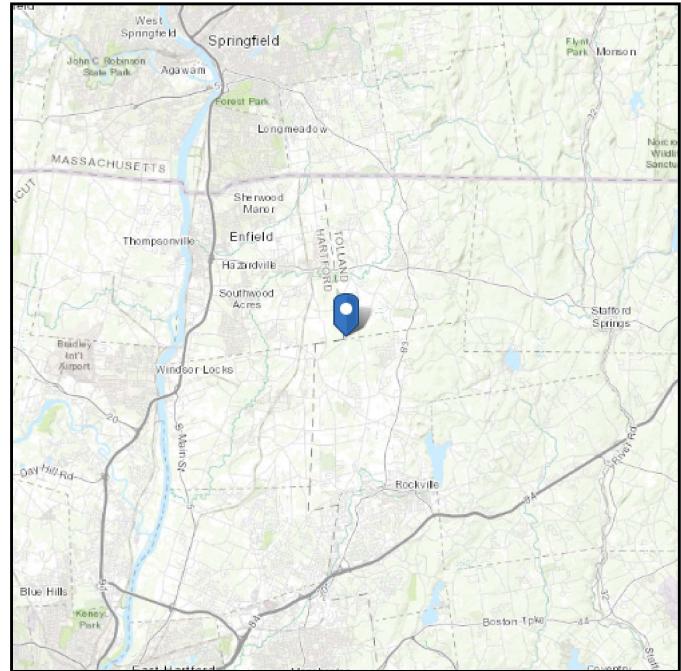
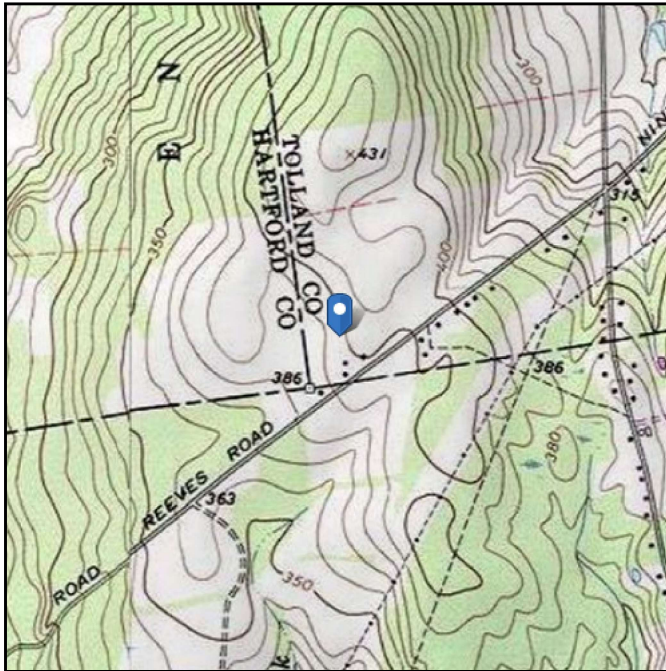
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ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 396.21 ft (NAVD 88)
Latitude: 41.948883
Longitude: -72.492097



Wind

Results:

Wind Speed:	122 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	93 Vmph
100-year MRI	100 Vmph

Data Source: ASCE/SEI 2010 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).

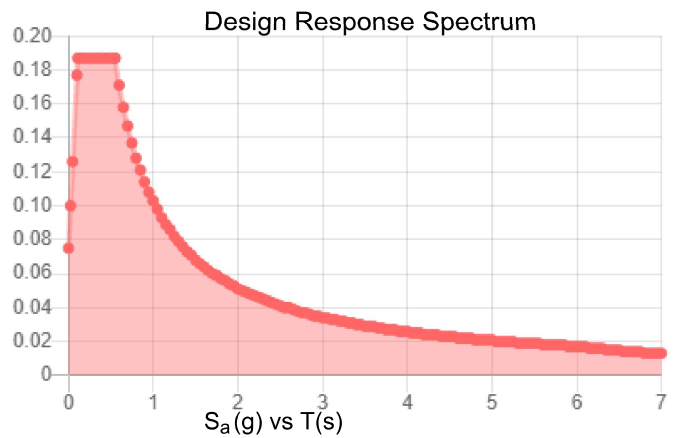
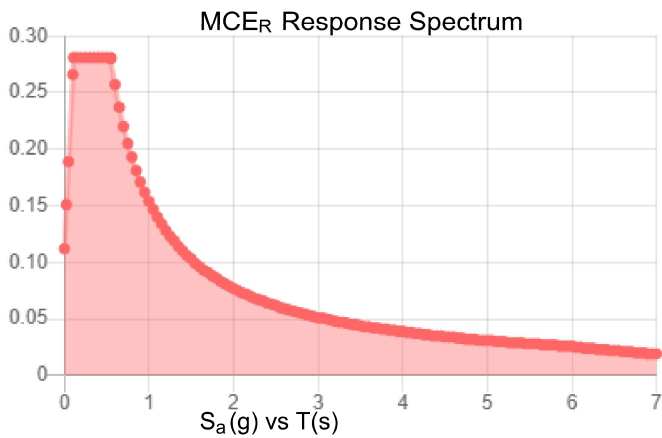
Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.176	S_{DS} :	0.187
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.086
S_{MS} :	0.281	PGA _M :	0.138
S_{M1} :	0.154	F _{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Fri May 14 2021

Date Source:

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

Ice

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 5 F
Gust Speed: 50 mph

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

Date Accessed: Fri May 14 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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Exhibit E

Mount Analysis

Date: **August 2, 2021**

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



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

Subject: **Mount Replacement Analysis Report**

Carrier Designation: **Dish Network Equipment Change-Out**
Carrier Site Number: BOBDL00049A
Carrier Site Name: CT-CCI-T-806378

Crown Castle Designation: **Crown Castle BU Number:** 806378
Crown Castle Site Name: HRT 086 943248
Crown Castle JDE Job Number: 650044
Crown Castle Order Number: 556636 Rev. 2

Engineering Firm Designation: **Trylon Report Designation:** 189060

Site Data: **126 Pioneer Heights Road, Somers, Tolland County, CT, 06071**
Latitude 41°56'55.98" Longitude -72°29'31.55"

Structure Information: **Tower Height & Type:** **160.0 ft Self Support**
Mount Elevation: **147.0 ft**
Mount Type: **8.0 ft Sector Frame**

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:

Sector Frame

Sufficient

***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

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

Mount analysis prepared by: Mostafa Faghihnia, P.E.

Respectfully Submitted by:
Cliff Abernathy, P.E.



Cliff Abernathy
Digitally signed by Cliff Abernathy
Date: 2021.08.02 19:14:20 -04'00'

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1) INTRODUCTION

This is a proposed 3 sector 8.0 ft Sector Frame Mount, designed by Commscope.

2) ANALYSIS CRITERIA

Building Code: 2015 IBC/2018 CTSCB
TIA-222 Revision: TIA-222-H
Risk Category: II
Ultimate Wind Speed: 125 mph
Exposure Category: C
Topographic Factor at Base: 1.0
Topographic Factor at Mount: 1.0
Ice Thickness: 2.0 in
Wind Speed with Ice: 50 mph
Seismic S_s: 0.174
Seismic S₁: 0.064
Live Loading Wind Speed: 60 mph
Man Live Load at Mid/End-Points: 250 lb
Man Live Load at Mount Pipes: 500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
147.0	147.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Sector Frame [Commscope MTC3975083]
		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	556636 Rev. 2	CCI Sites
Mount Manufacturer Drawings	Commscope	MTC3975083	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 Tylon 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 (Sector Frame, Worst Case Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP1	147.0	19.2	Pass
	Horizontal(s)	H1		18.3	Pass
	Standoff(s)	M4		22.0	Pass
	Bracing(s)	M24		47.4	Pass
	Mount Connection(s)	---		24.6	Pass

Structure Rating (max from all components) =	47.4%
---	--------------

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

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb) ³	Notes
N52A	Proposed	915.4	Leg	P 2x.154	1842	1

Notes:

- 1) Tieback connection point is within 25% of either end of the connected tower member
- 2) Tieback connection point is NOT within 25% of either end of the connected tower member
- 3) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

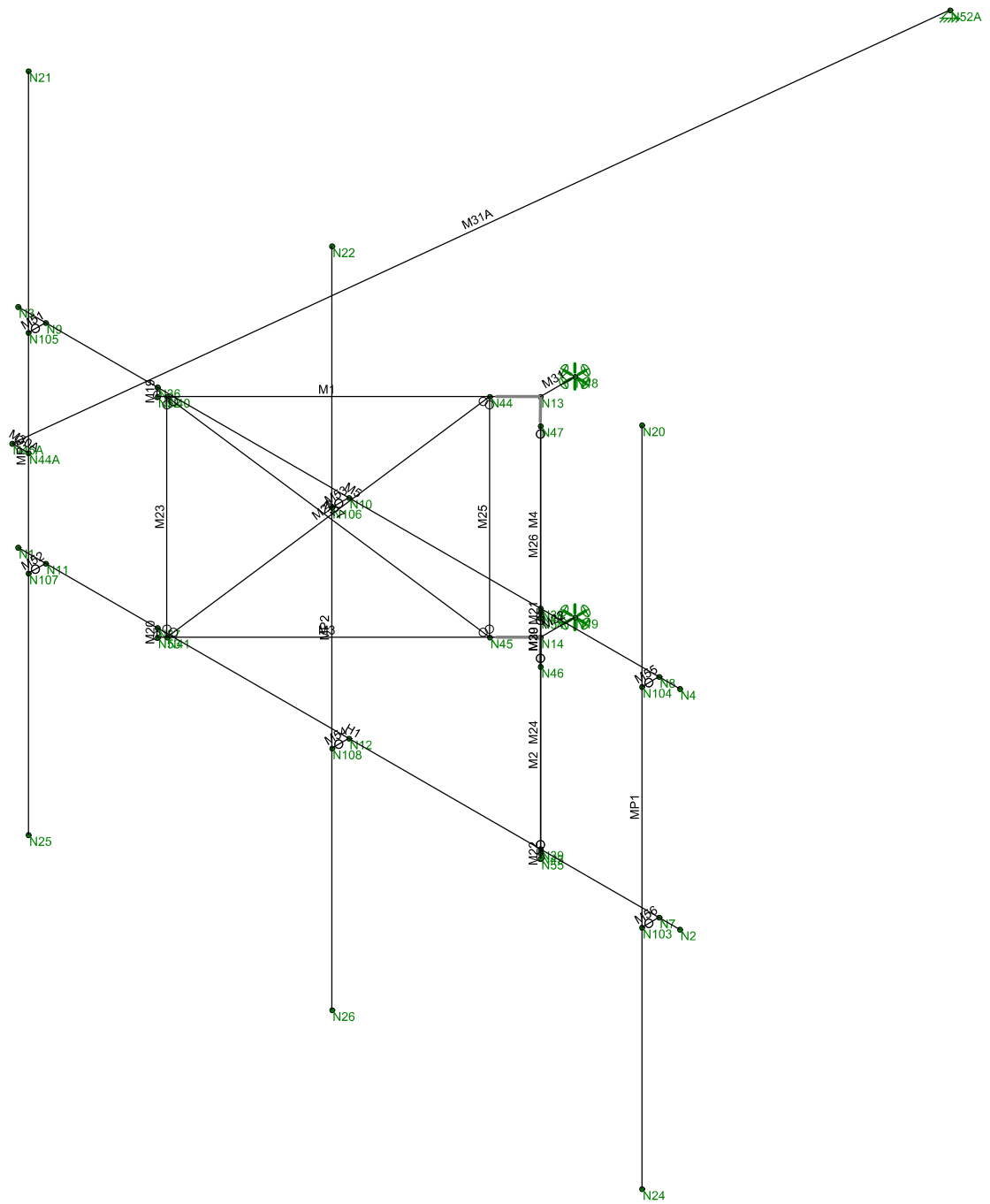
4.1) Recommendations

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 MTC3975083.
2. Proposed tiebacks to be installed within 25% ends of tower leg.

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

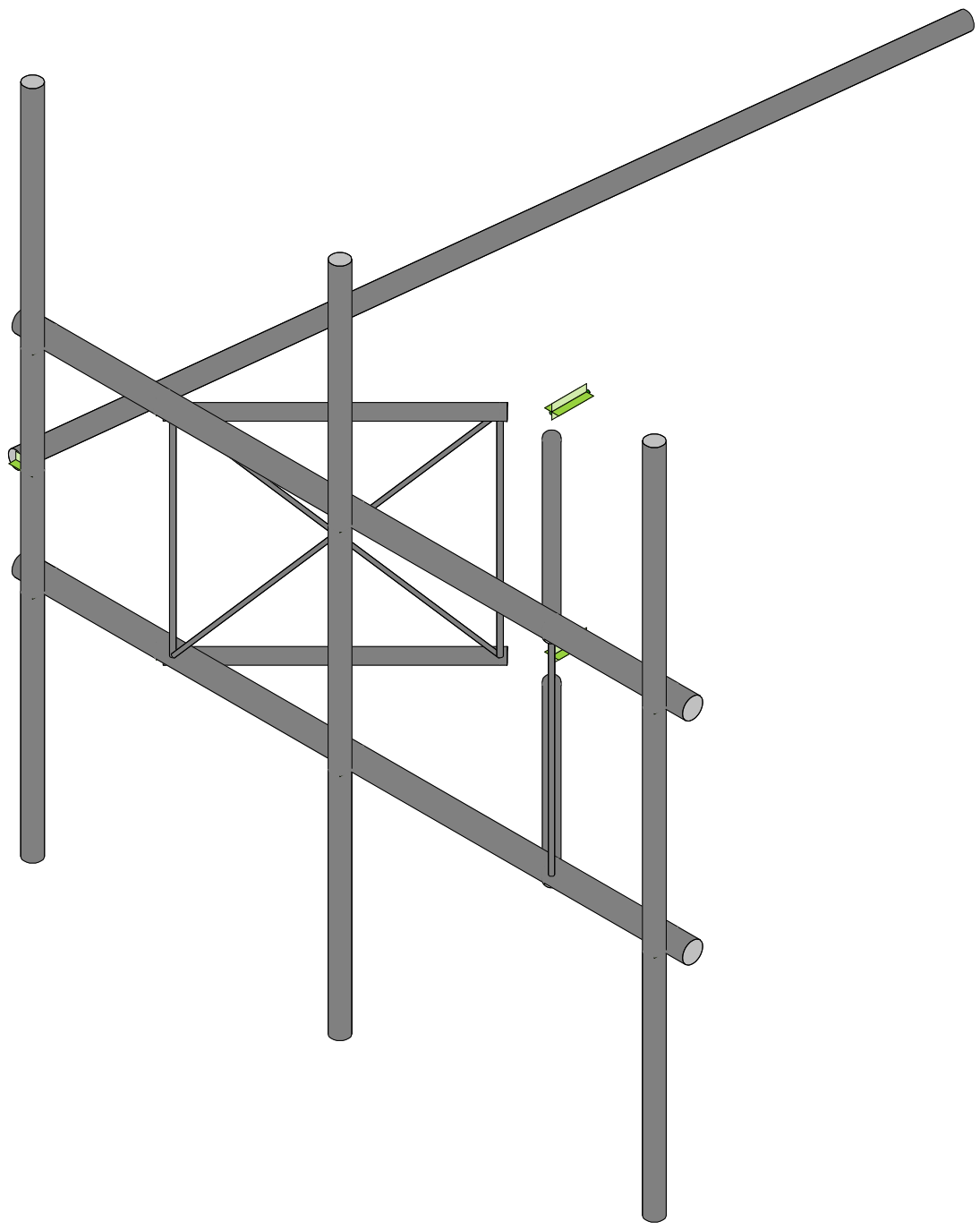
APPENDIX A
WIRE FRAME AND RENDERED MODELS



Trylon
MFT
189060

806378

Wireframe
Aug 2, 2021 at 11:37 AM
HRT_loaded.r3d



Trylon
MFT
189060

806378

Render
Aug 2, 2021 at 11:38 AM
HRT_loaded.r3d

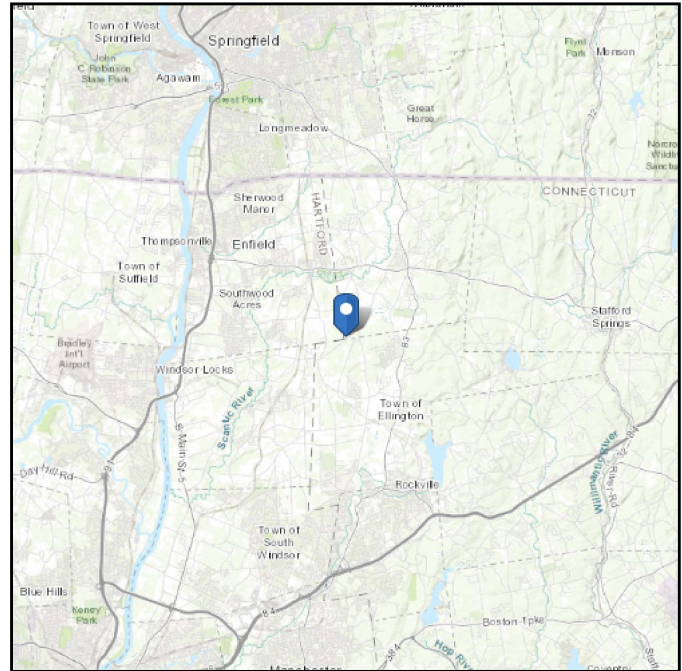
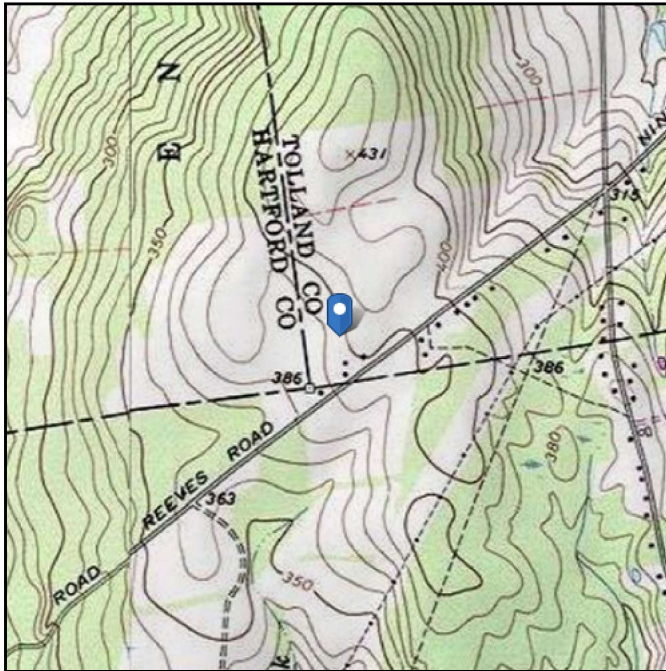
APPENDIX B
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 396.21 ft (NAVD 88)
Latitude: 41.948883
Longitude: -72.492097



Ice

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 5 F
Gust Speed: 50 mph

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

Date Accessed: Thu Jul 29 2021

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

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

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

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.



Trylon

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

TIA LOAD CALCULATOR 2.0

PROJECT DATA	
Job Code:	189060
Carrier Site ID:	806378
Carrier Site Name:	HRT 086 943248

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

STRUCTURE DETAILS		
Mount Type:	Sector Frame	--
Mount Elevation:	147.0	ft.
Number of Sectors:	3	--
Structure Type:	Self Support Tower	--
Structure Height:	160.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	396.21	ft.

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

WIND PARAMETERS		
Design Wind Speed:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.37	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (G_h):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	51.41	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	2.00	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	51.41	psf
Mount Ice Thickness (t_{iz}):	2.32	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	92.55	psf
Round Member Pressure:	55.53	psf
Ice Wind Pressure:	7.52	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel. (S_s):	0.17	g
1 Second Accel (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.19	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (C_s):	0.09	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

EQUIPMENT LOADING [CONT.]

<i>Appurtenance Name/Location</i>	<i>Qty.</i>	<i>Elevation [ft]</i>	<i>--</i>	<i>EPA_N (ft2)</i>	<i>EPA_T (ft2)</i>	<i>Weight (lbs)</i>
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

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 S100-07: 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): ASD
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?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt	
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	A500 Gr. C - 46	29000	11154	.3	.65	.49	46	1.3	62	1.4
9	A529 Gr. 50	29000	11154	.3	.65	.49	50	1.3	65	1.4

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
1	Horizontal	PIPE 2.5	Beam	None	A500 Gr. C -...	Typical	1.61	1.45	1.45	2.89
2	Standoffs	PIPE 1.5	Beam	None	A500 Gr. C -...	Typical	.749	.293	.293	.586
3	Tie Backs	PIPE 2.0	Beam	None	A500 Gr. C -...	Typical	1.02	.627	.627	1.25
4	Mount Pipes	PIPE 2.0	Beam	None	A500 Gr. C -...	Typical	1.02	.627	.627	1.25
5	Standoff Bra...	SR 5/8_HRA	Beam	None	A529 Gr. 50	Typical	.307	.007	.007	.015
6	Vertical pipes	PIPE 3.0	Beam	None	A500 Gr. C -...	Typical	2.07	2.85	2.85	5.69
7	Standoff Bra...	SR 1/2"	Beam	None	A529 Gr. 50	Typical	.196	.003	.003	.006

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	N13						
2	N14						
3	N48	Reaction	Reaction	Reaction	Reaction		Reaction
4	N49	Reaction	Reaction	Reaction	Reaction		Reaction
5	N52A	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N52	N13			Standoffs	Beam	None	A500 Gr. ...	Typical
2	M2	N55	N14			Standoffs	Beam	None	A500 Gr. ...	Typical
3	M3	N53	N14			Standoffs	Beam	None	A500 Gr. ...	Typical
4	M4	N54	N13			Standoffs	Beam	None	A500 Gr. ...	Typical
5	M5	N3	N4			Horizontals	Beam	None	A500 Gr. ...	Typical
6	H1	N1	N2			Horizontals	Beam	None	A500 Gr. ...	Typical
7	MP3	N25	N21			Mount Pipes	Beam	None	A500 Gr. ...	Typical
8	MP2	N26	N22			Mount Pipes	Beam	None	A500 Gr. ...	Typical
9	MP1	N24	N20			Mount Pipes	Beam	None	A500 Gr. ...	Typical
10	M51	N105	N9			RIG ID	None	None	RIG ID	Typical
11	M52	N107	N11			RIG ID	None	None	RIG ID	Typical
12	M53	N106	N10			RIG ID	None	None	RIG ID	Typical
13	M54	N108	N12			RIG ID	None	None	RIG ID	Typical
14	M55	N104	N8			RIG ID	None	None	RIG ID	Typical
15	M56	N103	N7			RIG ID	None	None	RIG ID	Typical
16	M19	N36	N52			RIG ID	None	None	RIG ID	Typical
17	M20	N37	N53			RIG ID	None	None	RIG ID	Typical
18	M21	N38	N54			RIG ID	None	None	RIG ID	Typical
19	M22	N39	N55			RIG ID	None	None	RIG ID	Typical
20	M23	N40	N41			Standoff Braci...	Beam	None	A529 Gr. 50	Typical
21	M24	N42	N43			Standoff Braci...	Beam	None	A529 Gr. 50	Typical
22	M25	N44	N45			Standoff Braci...	Beam	None	A529 Gr. 50	Typical
23	M26	N47	N46			Standoff Braci...	Beam	None	A529 Gr. 50	Typical
24	M27	N40	N45			Standoff Braci...	Beam	None	A529 Gr. 50	Typical
25	M28	N44	N41			Standoff Braci...	Beam	None	A529 Gr. 50	Typical
26	M29	N47	N43			Standoff Braci...	Beam	None	A529 Gr. 50	Typical
27	M30	N42	N46			Standoff Braci...	Beam	None	A529 Gr. 50	Typical
28	M31	N13	N48			RIG ID	None	None	RIG ID	Typical
29	M32	N14	N49			RIG ID	None	None	RIG ID	Typical
30	M30A	N44A	N45A			RIG ID	None	None	RIG ID	Typical
31	M31A	N45A	N52A			Tie Backs	Beam	None	A500 Gr. ...	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic ...
1	M1				4.5		Yes				None
2	M2				4.5		Yes				None
3	M3				4.5		Yes				None
4	M4				4.5		Yes				None
5	M5						Yes	Default			None
6	H1						Yes				None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic ...
7	MP3						Yes				None
8	MP2						Yes				None
9	MP1						Yes				None
10	M51	OOOXOX					Yes	** NA **			None
11	M52	OOOXOX					Yes	** NA **			None
12	M53	OOOXOX					Yes	** NA **			None
13	M54	OOOXOX					Yes	** NA **			None
14	M55	OOOXOX					Yes	** NA **			None
15	M56	OOOXOX					Yes	** NA **			None
16	M19	OOOXOO					Yes	** NA **			None
17	M20	OOOXOO					Yes	** NA **			None
18	M21	OOOXOO					Yes	** NA **			None
19	M22	OOOXOO					Yes	** NA **			None
20	M23	BenPIN	BenPIN				Yes				None
21	M24	BenPIN	BenPIN				Yes				None
22	M25	BenPIN	BenPIN				Yes				None
23	M26	BenPIN	BenPIN				Yes				None
24	M27	BenPIN	BenPIN			Euler Buc...	Yes				None
25	M28	BenPIN	BenPIN				Yes	Default			None
26	M29	BenPIN	BenPIN				Yes				None
27	M30	BenPIN	BenPIN			Euler Buc...	Yes				None
28	M31						Yes	** NA **			None
29	M32						Yes	** NA **			None
30	M30A						Yes	** NA **			None
31	M31A	BenPIN					Yes	Default			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Standoffs	39.31	40.2	40.2	Lbyy	40.2	40.2				Lateral
2	M2	Standoffs	39.31	40.2	40.2	40.2		40.2				Lateral
3	M3	Standoffs	39.31	40.2	40.2	40.2		40.2				Lateral
4	M4	Standoffs	39.31	40.2	40.2	Lbyy	40.2	40.2				Lateral
5	M5	Horizontals	96	72	72	Lbyy	72	72				Lateral
6	H1	Horizontals	96	72	72	72		72				Lateral
7	MP3	Mount Pipes	96			Lbyy						Lateral
8	MP2	Mount Pipes	96			Lbyy						Lateral
9	MP1	Mount Pipes	96			Lbyy						Lateral
10	M23	Standoff Br...	30.25			Lbyy						Lateral
11	M24	Standoff Br...	30.25			Lbyy						Lateral
12	M25	Standoff Br...	30.25			Lbyy						Lateral
13	M26	Standoff Br...	30.25			Lbyy						Lateral
14	M27	Standoff Br...	44.854	22	22	Lbyy						Lateral
15	M28	Standoff Br...	44.854	22	22	Lbyy						Lateral
16	M29	Standoff Br...	44.854	22	22	Lbyy						Lateral
17	M30	Standoff Br...	44.854	22	22	Lbyy						Lateral
18	M31A	Tie Backs	123.25			Lbyy						Lateral

Joint Loads and Enforced Displacements

Joint Label	L,D,M	Direction	Magnitude [(lb,lb-ft), (in,rad), (lb*s^...]
No Data to Print ...			

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude [(lb,lb-ft)]	Location [in, %]
1	MP 1	Y	-41.25	12
2	MP 1	Y	-41.25	84
3	MP 1	Y	-63.9	48
4	MP 1	Y	-75	48
5	MP 1	Y	-21.85	16

Member Point Loads (BLC 4 : Wind Load 0 AZI)

	Member Label	Direction	Magnitude [(lb,lb-ft)]	Location [in, %]
1	MP 1	Z	-185.322	12
2	MP 1	Z	-185.322	84
3	MP 1	Z	-90.856	48
4	MP 1	Z	-90.856	48
5	MP 1	Z	-93.095	16
6	MP 1	X	0	12
7	MP 1	X	0	84
8	MP 1	X	0	48
9	MP 1	X	0	48
10	MP 1	X	0	16

Member Point Loads (BLC 5 : Wind Load 30 AZI)

	Member Label	Direction	Magnitude [(lb,lb-ft)]	Location [in, %]
1	MP 1	Z	-136.45	12
2	MP 1	Z	-136.45	84
3	MP 1	Z	-68.842	48
4	MP 1	Z	-70.328	48
5	MP 1	Z	-72.17	16
6	MP 1	X	-78.779	12
7	MP 1	X	-78.779	84
8	MP 1	X	-39.746	48
9	MP 1	X	-40.604	48
10	MP 1	X	-41.667	16

Member Point Loads (BLC 6 : Wind Load 45 AZI)

	Member Label	Direction	Magnitude [(lb,lb-ft)]	Location [in, %]
1	MP 1	Z	-91.779	12
2	MP 1	Z	-91.779	84
3	MP 1	Z	-48.174	48
4	MP 1	Z	-50.601	48
5	MP 1	Z	-52.025	16
6	MP 1	X	-91.779	12
7	MP 1	X	-91.779	84
8	MP 1	X	-48.174	48
9	MP 1	X	-50.601	48
10	MP 1	X	-52.025	16

Member Point Loads (BLC 7 : Wind Load 60 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	-51.016	12
2	MP 1	Z	-51.016	84
3	MP 1	Z	-28.382	48
4	MP 1	Z	-30.956	48
5	MP 1	Z	-31.907	16
6	MP 1	X	-88.362	12
7	MP 1	X	-88.362	84
8	MP 1	X	-49.159	48
9	MP 1	X	-53.618	48
10	MP 1	X	-55.265	16

Member Point Loads (BLC 8 : Wind Load 90 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	0	12
2	MP 1	Z	0	84
3	MP 1	Z	0	48
4	MP 1	Z	0	48
5	MP 1	Z	0	16
6	MP 1	X	-74.268	12
7	MP 1	X	-74.268	84
8	MP 1	X	-45.399	48
9	MP 1	X	-52.264	48
10	MP 1	X	-54.055	16

Member Point Loads (BLC 9 : Wind Load 120 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	51.016	12
2	MP 1	Z	51.016	84
3	MP 1	Z	28.382	48
4	MP 1	Z	30.956	48
5	MP 1	Z	31.907	16
6	MP 1	X	-88.362	12
7	MP 1	X	-88.362	84
8	MP 1	X	-49.159	48
9	MP 1	X	-53.618	48
10	MP 1	X	-55.265	16

Member Point Loads (BLC 10 : Wind Load 135 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	91.779	12
2	MP 1	Z	91.779	84
3	MP 1	Z	48.174	48
4	MP 1	Z	50.601	48
5	MP 1	Z	52.025	16
6	MP 1	X	-91.779	12
7	MP 1	X	-91.779	84
8	MP 1	X	-48.174	48
9	MP 1	X	-50.601	48
10	MP 1	X	-52.025	16

Member Point Loads (BLC 11 : Wind Load 150 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	136.45	12
2	MP 1	Z	136.45	84
3	MP 1	Z	68.842	48
4	MP 1	Z	70.328	48
5	MP 1	Z	72.17	16
6	MP 1	X	-78.779	12
7	MP 1	X	-78.779	84
8	MP 1	X	-39.746	48
9	MP 1	X	-40.604	48
10	MP 1	X	-41.667	16

Member Point Loads (BLC 12 : Ice Weight)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Y	-200.339	12
2	MP 1	Y	-200.339	84
3	MP 1	Y	-102.06	48
4	MP 1	Y	-108.393	48
5	MP 1	Y	-106.922	16

Member Point Loads (BLC 15 : Ice Wind Load 0 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	-37.695	12
2	MP 1	Z	-37.695	84
3	MP 1	Z	-18.896	48
4	MP 1	Z	-18.896	48
5	MP 1	Z	-19.317	16
6	MP 1	X	0	12
7	MP 1	X	0	84
8	MP 1	X	0	48
9	MP 1	X	0	48
10	MP 1	X	0	16

Member Point Loads (BLC 16 : Ice Wind Load 30 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	-28.587	12
2	MP 1	Z	-28.587	84
3	MP 1	Z	-14.587	48
4	MP 1	Z	-14.855	48
5	MP 1	Z	-15.22	16
6	MP 1	X	-16.504	12
7	MP 1	X	-16.504	84
8	MP 1	X	-8.422	48
9	MP 1	X	-8.576	48
10	MP 1	X	-8.787	16

Member Point Loads (BLC 17 : Ice Wind Load 45 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	-20.027	12
2	MP 1	Z	-20.027	84
3	MP 1	Z	-10.458	48



Member Point Loads (BLC 17 : ke Wind Load 45 AZI) (Continued)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
4	MP 1	Z	-10.896	48
5	MP 1	Z	-11.194	16
6	MP 1	X	-20.027	12
7	MP 1	X	-20.027	84
8	MP 1	X	-10.458	48
9	MP 1	X	-10.896	48
10	MP 1	X	-11.194	16

Member Point Loads (BLC 18 : ke Wind Load 60 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	-11.818	12
2	MP 1	Z	-11.818	84
3	MP 1	Z	-6.368	48
4	MP 1	Z	-6.833	48
5	MP 1	Z	-7.044	16
6	MP 1	X	-20.469	12
7	MP 1	X	-20.469	84
8	MP 1	X	-11.03	48
9	MP 1	X	-11.835	48
10	MP 1	X	-12.2	16

Member Point Loads (BLC 19 : ke Wind Load 90 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	0	12
2	MP 1	Z	0	84
3	MP 1	Z	0	48
4	MP 1	Z	0	48
5	MP 1	Z	0	16
6	MP 1	X	-18.949	12
7	MP 1	X	-18.949	84
8	MP 1	X	-10.683	48
9	MP 1	X	-11.922	48
10	MP 1	X	-12.345	16

Member Point Loads (BLC 20 : ke Wind Load 120 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	11.818	12
2	MP 1	Z	11.818	84
3	MP 1	Z	6.368	48
4	MP 1	Z	6.833	48
5	MP 1	Z	7.044	16
6	MP 1	X	-20.469	12
7	MP 1	X	-20.469	84
8	MP 1	X	-11.03	48
9	MP 1	X	-11.835	48
10	MP 1	X	-12.2	16

Member Point Loads (BLC 21 : ke Wind Load 135 AZI)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	20.027	12

Member Point Loads (BLC 21 : Ice Wind Load 135 A Z) (Continued)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
2	MP 1	Z	20.027	84
3	MP 1	Z	10.458	48
4	MP 1	Z	10.896	48
5	MP 1	Z	11.194	16
6	MP 1	X	-20.027	12
7	MP 1	X	-20.027	84
8	MP 1	X	-10.458	48
9	MP 1	X	-10.896	48
10	MP 1	X	-11.194	16

Member Point Loads (BLC 22 : Ice Wind Load 150 A Z)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	28.587	12
2	MP 1	Z	28.587	84
3	MP 1	Z	14.587	48
4	MP 1	Z	14.855	48
5	MP 1	Z	15.22	16
6	MP 1	X	-16.504	12
7	MP 1	X	-16.504	84
8	MP 1	X	-8.422	48
9	MP 1	X	-8.576	48
10	MP 1	X	-8.787	16

Member Point Loads (BLC 23 : Seismic Load Z)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	Z	-4.594	12
2	MP 1	Z	-4.594	84
3	MP 1	Z	-7.116	48
4	MP 1	Z	-8.352	48
5	MP 1	Z	-2.433	16

Member Point Loads (BLC 24 : Seismic Load X)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP 1	X	-4.594	12
2	MP 1	X	-4.594	84
3	MP 1	X	-7.116	48
4	MP 1	X	-8.352	48
5	MP 1	X	-2.433	16

Member Point Loads (BLC 25 : Live Load 1 (Lv))

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	H1	Y	-250	0

Member Point Loads (BLC 26 : Live Load 2 (Lv))

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	H1	Y	-250	%50

Member Point Loads (BLC 27 : Live Load 3 (Lv))

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
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Member Point Loads (BLC 27 : Live Load 3 (Lv)) (Continued)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	H1	Y	-250	%100

Member Point Loads (BLC 28 : Maintenance Load 1 (L m))

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP3	Y	-500	%50

Member Point Loads (BLC 29 : Maintenance Load 2 (L m))

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP2	Y	-500	%50

Member Point Loads (BLC 30 : Maintenance Load 3 (L m))

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in, %]
1	MP1	Y	-500	%50

Member Distributed Loads (BLC 2 : Structure Wind Z)

	Member Label	Direction	Start Magnitude [lb/ft, ...]	End Magnitude [lb/ft, F, ...]	Start Location [in, %]	End Location [in, %]
1	M1	SZ	-55.527	-55.527	0	%100
2	M2	SZ	-55.527	-55.527	0	%100
3	M3	SZ	-55.527	-55.527	0	%100
4	M4	SZ	-55.527	-55.527	0	%100
5	M5	SZ	-55.527	-55.527	0	%100
6	H1	SZ	-55.527	-55.527	0	%100
7	MP3	SZ	-55.527	-55.527	0	%100
8	MP2	SZ	-55.527	-55.527	0	%100
9	MP1	SZ	-55.527	-55.527	0	%100
10	M51	SZ	-92.545	-92.545	0	%100
11	M52	SZ	-92.545	-92.545	0	%100
12	M53	SZ	-92.545	-92.545	0	%100
13	M54	SZ	-92.545	-92.545	0	%100
14	M55	SZ	-92.545	-92.545	0	%100
15	M56	SZ	-92.545	-92.545	0	%100
16	M19	SZ	-92.545	-92.545	0	%100
17	M20	SZ	-92.545	-92.545	0	%100
18	M21	SZ	-92.545	-92.545	0	%100
19	M22	SZ	-92.545	-92.545	0	%100
20	M23	SZ	-55.527	-55.527	0	%100
21	M24	SZ	-55.527	-55.527	0	%100
22	M25	SZ	-55.527	-55.527	0	%100
23	M26	SZ	-55.527	-55.527	0	%100
24	M27	SZ	-55.527	-55.527	0	%100
25	M28	SZ	-55.527	-55.527	0	%100
26	M29	SZ	-55.527	-55.527	0	%100
27	M30	SZ	-55.527	-55.527	0	%100
28	M31	SZ	-92.545	-92.545	0	%100
29	M32	SZ	-92.545	-92.545	0	%100
30	M30A	SZ	-92.545	-92.545	0	%100
31	M31A	SZ	-55.527	-55.527	0	%100

Member Distributed Loads (BLC 3 : Structure Wind X)

	Member Label	Direction	Start Magnitude [lb/ft,...	End Magnitude [lb/ft,F...	Start Location [in, %]	End Location [in, %]
1	M1	SX	-55.527	-55.527	0	%100
2	M2	SX	-55.527	-55.527	0	%100
3	M3	SX	-55.527	-55.527	0	%100
4	M4	SX	-55.527	-55.527	0	%100
5	M5	SX	-55.527	-55.527	0	%100
6	H1	SX	-55.527	-55.527	0	%100
7	MP3	SX	-55.527	-55.527	0	%100
8	MP2	SX	-55.527	-55.527	0	%100
9	MP1	SX	-55.527	-55.527	0	%100
10	M51	SX	-92.545	-92.545	0	%100
11	M52	SX	-92.545	-92.545	0	%100
12	M53	SX	-92.545	-92.545	0	%100
13	M54	SX	-92.545	-92.545	0	%100
14	M55	SX	-92.545	-92.545	0	%100
15	M56	SX	-92.545	-92.545	0	%100
16	M19	SX	-92.545	-92.545	0	%100
17	M20	SX	-92.545	-92.545	0	%100
18	M21	SX	-92.545	-92.545	0	%100
19	M22	SX	-92.545	-92.545	0	%100
20	M23	SX	-55.527	-55.527	0	%100
21	M24	SX	-55.527	-55.527	0	%100
22	M25	SX	-55.527	-55.527	0	%100
23	M26	SX	-55.527	-55.527	0	%100
24	M27	SX	-55.527	-55.527	0	%100
25	M28	SX	-55.527	-55.527	0	%100
26	M29	SX	-55.527	-55.527	0	%100
27	M30	SX	-55.527	-55.527	0	%100
28	M31	SX	-92.545	-92.545	0	%100
29	M32	SX	-92.545	-92.545	0	%100
30	M30A	SX	-92.545	-92.545	0	%100
31	M31A	SX	-55.527	-55.527	0	%100

Member Distributed Loads (BLC 12 : Ice Weight)

	Member Label	Direction	Start Magnitude [lb/ft,...	End Magnitude [lb/ft,F...	Start Location [in, %]	End Location [in, %]
1	M1	Y	-11.979	-11.979	0	%100
2	M2	Y	-11.979	-11.979	0	%100
3	M3	Y	-11.979	-11.979	0	%100
4	M4	Y	-11.979	-11.979	0	%100
5	M5	Y	-14.746	-14.746	0	%100
6	H1	Y	-14.746	-14.746	0	%100
7	MP3	Y	-13.327	-13.327	0	%100
8	MP2	Y	-13.327	-13.327	0	%100
9	MP1	Y	-13.327	-13.327	0	%100
10	M51	Y	0	0	0	%100
11	M52	Y	0	0	0	%100
12	M53	Y	0	0	0	%100
13	M54	Y	0	0	0	%100
14	M55	Y	0	0	0	%100
15	M56	Y	0	0	0	%100
16	M19	Y	0	0	0	%100
17	M20	Y	0	0	0	%100



Member Distributed Loads (BLC 12 : Ice Weight) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft,...	End Magnitude [lb/ft,F...	Start Location [in,%]	End Location [in,%]
18	M21	Y	0	0	0	%100
19	M22	Y	0	0	0	%100
20	M23	Y	-8.362	-8.362	0	%100
21	M24	Y	-8.362	-8.362	0	%100
22	M25	Y	-8.362	-8.362	0	%100
23	M26	Y	-8.362	-8.362	0	%100
24	M27	Y	-8.007	-8.007	0	%100
25	M28	Y	-8.007	-8.007	0	%100
26	M29	Y	-8.007	-8.007	0	%100
27	M30	Y	-8.007	-8.007	0	%100
28	M31	Y	0	0	0	%100
29	M32	Y	0	0	0	%100
30	M30A	Y	0	0	0	%100
31	M31A	Y	-13.327	-13.327	0	%100

Member Distributed Loads (BLC 13 : Ice Structure Wind Z)

	Member Label	Direction	Start Magnitude [lb/ft,...	End Magnitude [lb/ft,F...	Start Location [in,%]	End Location [in,%]
1	M1	SZ	-25.888	-25.888	0	%100
2	M2	SZ	-25.888	-25.888	0	%100
3	M3	SZ	-25.888	-25.888	0	%100
4	M4	SZ	-25.888	-25.888	0	%100
5	M5	SZ	-19.658	-19.658	0	%100
6	H1	SZ	-19.658	-19.658	0	%100
7	MP3	SZ	-22.214	-22.214	0	%100
8	MP2	SZ	-22.214	-22.214	0	%100
9	MP1	SZ	-22.214	-22.214	0	%100
10	M51	SZ	0	0	0	%100
11	M52	SZ	0	0	0	%100
12	M53	SZ	0	0	0	%100
13	M54	SZ	0	0	0	%100
14	M55	SZ	0	0	0	%100
15	M56	SZ	0	0	0	%100
16	M19	SZ	0	0	0	%100
17	M20	SZ	0	0	0	%100
18	M21	SZ	0	0	0	%100
19	M22	SZ	0	0	0	%100
20	M23	SZ	-63.368	-63.368	0	%100
21	M24	SZ	-63.368	-63.368	0	%100
22	M25	SZ	-63.368	-63.368	0	%100
23	M26	SZ	-63.368	-63.368	0	%100
24	M27	SZ	-77.331	-77.331	0	%100
25	M28	SZ	-77.331	-77.331	0	%100
26	M29	SZ	-77.331	-77.331	0	%100
27	M30	SZ	-77.331	-77.331	0	%100
28	M31	SZ	0	0	0	%100
29	M32	SZ	0	0	0	%100
30	M30A	SZ	0	0	0	%100
31	M31A	SZ	-22.214	-22.214	0	%100

Member Distributed Loads (BLC 14 : Ice Structure Wind X)

	Member Label	Direction	Start Magnitude [lb/ft,...	End Magnitude [lb/ft,F...	Start Location [in,%]	End Location [in,%]
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Member Distributed Loads (BLC 14 : Ice Structure Wind X) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft,...	End Magnitude [lb/ft, F...	Start Location [in, %]	End Location [in, %]
1	M1	SX	-25.888	-25.888	0	%100
2	M2	SX	-25.888	-25.888	0	%100
3	M3	SX	-25.888	-25.888	0	%100
4	M4	SX	-25.888	-25.888	0	%100
5	M5	SX	-19.658	-19.658	0	%100
6	H1	SX	-19.658	-19.658	0	%100
7	MP3	SX	-22.214	-22.214	0	%100
8	MP2	SX	-22.214	-22.214	0	%100
9	MP1	SX	-22.214	-22.214	0	%100
10	M51	SX	0	0	0	%100
11	M52	SX	0	0	0	%100
12	M53	SX	0	0	0	%100
13	M54	SX	0	0	0	%100
14	M55	SX	0	0	0	%100
15	M56	SX	0	0	0	%100
16	M19	SX	0	0	0	%100
17	M20	SX	0	0	0	%100
18	M21	SX	0	0	0	%100
19	M22	SX	0	0	0	%100
20	M23	SX	-63.368	-63.368	0	%100
21	M24	SX	-63.368	-63.368	0	%100
22	M25	SX	-63.368	-63.368	0	%100
23	M26	SX	-63.368	-63.368	0	%100
24	M27	SX	-77.331	-77.331	0	%100
25	M28	SX	-77.331	-77.331	0	%100
26	M29	SX	-77.331	-77.331	0	%100
27	M30	SX	-77.331	-77.331	0	%100
28	M31	SX	0	0	0	%100
29	M32	SX	0	0	0	%100
30	M30A	SX	0	0	0	%100
31	M31A	SX	-22.214	-22.214	0	%100

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude [psf]
No Data to Print ...						

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area (Me...	Surface (P...
1	Self Weight	DL		-1			5		
2	Structure Wind Z	WLZ						31	
3	Structure Wind X	WLX						31	
4	Wind Load 0 AZI	WLZ					10		
5	Wind Load 30 AZI	None					10		
6	Wind Load 45 AZI	None					10		
7	Wind Load 60 AZI	None					10		
8	Wind Load 90 AZI	WLX					10		
9	Wind Load 120 AZI	None					10		
10	Wind Load 135 AZI	None					10		
11	Wind Load 150 AZI	None					10		



Company : Trylon
 Designer : MFT
 Job Number : 189060
 Model Name : 806378

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Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
12	Ice Weight	OL1					5	31	
13	Ice Structure Wind Z	OL2						31	
14	Ice Structure Wind X	OL3						31	
15	Ice Wind Load 0 AZI	OL2					10		
16	Ice Wind Load 30 AZI	None					10		
17	Ice Wind Load 45 AZI	None					10		
18	Ice Wind Load 60 AZI	None					10		
19	Ice Wind Load 90 AZI	OL3					10		
20	Ice Wind Load 120 AZI	None					10		
21	Ice Wind Load 135 AZI	None					10		
22	Ice Wind Load 150 AZI	None					10		
23	Seismic Load Z	ELZ			-.111		5		
24	Seismic Load X	ELX	-.111				5		
25	Live Load 1 (Lv)	None					1		
26	Live Load 2 (Lv)	None					1		
27	Live Load 3 (Lv)	None					1		
28	Maintenance Load 1 (...)	None					1		
29	Maintenance Load 2 (...)	None					1		
30	Maintenance Load 3 (...)	None					1		

Load Combinations

	Description	Sol.	PD.	SR.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.
1	1.4DL	Yes	Y		DL	1.4													
2	1.2DL + 1...	Yes	Y		DL	1.2	2	1	3		4	1							
3	1.2DL + 1...	Yes	Y		DL	1.2	2	.866	3	.5	5	1							
4	1.2DL + 1...	Yes	Y		DL	1.2	2	.707	3	.707	6	1							
5	1.2DL + 1...	Yes	Y		DL	1.2	2	.5	3	.866	7	1							
6	1.2DL + 1...	Yes	Y		DL	1.2	2		3	1	8	1							
7	1.2DL + 1...	Yes	Y		DL	1.2	2	-.5	3	.866	9	1							
8	1.2DL + 1...	Yes	Y		DL	1.2	2	-.707	3	.707	10	1							
9	1.2DL + 1...	Yes	Y		DL	1.2	2	-.866	3	.5	11	1							
10	1.2DL + 1...	Yes	Y		DL	1.2	2	-1	3		4	-1							
11	1.2DL + 1...	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1							
12	1.2DL + 1...	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1							
13	1.2DL + 1...	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1							
14	1.2DL + 1...	Yes	Y		DL	1.2	2		3	-1	8	-1							
15	1.2DL + 1...	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1							
16	1.2DL + 1...	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1							
17	1.2DL + 1...	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1							
18	0.9DL + 1...	Yes	Y		DL	.9	2	1	3		4	1							
19	0.9DL + 1...	Yes	Y		DL	.9	2	.866	3	.5	5	1							
20	0.9DL + 1...	Yes	Y		DL	.9	2	.707	3	.707	6	1							
21	0.9DL + 1...	Yes	Y		DL	.9	2	.5	3	.866	7	1							
22	0.9DL + 1...	Yes	Y		DL	.9	2		3	1	8	1							
23	0.9DL + 1...	Yes	Y		DL	.9	2	-.5	3	.866	9	1							
24	0.9DL + 1...	Yes	Y		DL	.9	2	-.707	3	.707	10	1							
25	0.9DL + 1...	Yes	Y		DL	.9	2	-.866	3	.5	11	1							
26	0.9DL + 1...	Yes	Y		DL	.9	2	-1	3		4	-1							
27	0.9DL + 1...	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1							
28	0.9DL + 1...	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1							



Company : TryMon
 Designer : MFT
 Job Number : 189060
 Model Name : 806378

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Load Combinations (Continued)

	Description	Sol.	PD.	SR.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.
29	0.9DL + 1...	Yes	Y		DL .9	2	-.5	3	-.866	7	-1									
30	0.9DL + 1...	Yes	Y		DL .9	2		3	-1	8	-1									
31	0.9DL + 1...	Yes	Y		DL .9	2	.5	3	-.866	9	-1									
32	0.9DL + 1...	Yes	Y		DL .9	2	.707	3	-.707	10	-1									
33	0.9DL + 1...	Yes	Y		DL .9	2	.866	3	-.5	11	-1									
34	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	1	14		15	1							
35	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	.866	14	.5	16	1							
36	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	.707	14	.707	17	1							
37	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	.5	14	.866	18	1							
38	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13		14	1	19	1							
39	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	-.5	14	.866	20	1							
40	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	-.707	14	.707	21	1							
41	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	-.866	14	.5	22	1							
42	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	-1	14		15	-1							
43	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	-.866	14	-.5	16	-1							
44	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	-.707	14	-.707	17	-1							
45	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	-.5	14	-.866	18	-1							
46	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13		14	-1	19	-1							
47	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	.5	14	-.866	20	-1							
48	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	.707	14	-.707	21	-1							
49	1.2DL + 1...	Yes	Y		DL 1.2	OL1	1	13	.866	14	-.5	22	-1							
50	(1.2+0.2S...	Yes	Y		DL 1.237	23	1	24												
51	(1.2+0.2S...	Yes	Y		DL 1.237	23	.866	24	.5											
52	(1.2+0.2S...	Yes	Y		DL 1.237	23	.707	24	.707											
53	(1.2+0.2S...	Yes	Y		DL 1.237	23	.5	24	.866											
54	(1.2+0.2S...	Yes	Y		DL 1.237	23		24	1											
55	(1.2+0.2S...	Yes	Y		DL 1.237	23	-.5	24	.866											
56	(1.2+0.2S...	Yes	Y		DL 1.237	23	-.707	24	.707											
57	(1.2+0.2S...	Yes	Y		DL 1.237	23	-.866	24	.5											
58	(1.2+0.2S...	Yes	Y		DL 1.237	23	-1	24												
59	(1.2+0.2S...	Yes	Y		DL 1.237	23	-.866	24	-.5											
60	(1.2+0.2S...	Yes	Y		DL 1.237	23	-.707	24	-.707											
61	(1.2+0.2S...	Yes	Y		DL 1.237	23	-.5	24	-.866											
62	(1.2+0.2S...	Yes	Y		DL 1.237	23		24	-1											
63	(1.2+0.2S...	Yes	Y		DL 1.237	23	.5	24	-.866											
64	(1.2+0.2S...	Yes	Y		DL 1.237	23	.707	24	-.707											
65	(1.2+0.2S...	Yes	Y		DL 1.237	23	.866	24	-.5											
66	(0.9-0.2Sd...	Yes	Y		DL .863	23	1	24												
67	(0.9-0.2Sd...	Yes	Y		DL .863	23	.866	24	.5											
68	(0.9-0.2Sd...	Yes	Y		DL .863	23	.707	24	.707											
69	(0.9-0.2Sd...	Yes	Y		DL .863	23	.5	24	.866											
70	(0.9-0.2Sd...	Yes	Y		DL .863	23		24	1											
71	(0.9-0.2Sd...	Yes	Y		DL .863	23	-.5	24	.866											
72	(0.9-0.2Sd...	Yes	Y		DL .863	23	-.707	24	.707											
73	(0.9-0.2Sd...	Yes	Y		DL .863	23	-.866	24	.5											
74	(0.9-0.2Sd...	Yes	Y		DL .863	23	-1	24												
75	(0.9-0.2Sd...	Yes	Y		DL .863	23	-.866	24	-.5											
76	(0.9-0.2Sd...	Yes	Y		DL .863	23	-.707	24	-.707											
77	(0.9-0.2Sd...	Yes	Y		DL .863	23	-.5	24	-.866											
78	(0.9-0.2Sd...	Yes	Y		DL .863	23		24	-1											
79	(0.9-0.2Sd...	Yes	Y		DL .863	23	.5	24	-.866											
80	(0.9-0.2Sd...	Yes	Y		DL .863	23	.707	24	-.707											



Company : Trylon
 Designer : MFT
 Job Number : 189060
 Model Name : 806378

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Load Combinations (Continued)

	Description	Sol.	PD.	SR.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.
81	(0.9-0.2Sd...	Yes	Y		DL	.863	23	.866	24	-.5						
82	1.2DL + 1...	Yes	Y		DL	1.2	25	1.5								
83	1.2DL + 1...	Yes	Y		DL	1.2	26	1.5								
84	1.2DL + 1...	Yes	Y		DL	1.2	27	1.5								
85	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	.058	3		4	.058		
86	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	.05	3	.029	5	.058		
87	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	.041	3	.041	6	.058		
88	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	.029	3	.05	7	.058		
89	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2		3	.058	8	.058		
90	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	-.029	3	.05	9	.058		
91	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	-.041	3	.041	10	.058		
92	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	-.05	3	.029	11	.058		
93	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	-.058	3		4	-.058		
94	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	-.05	3	-.029	5	-.058		
95	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	-.041	3	-.041	6	-.058		
96	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	-.029	3	-.05	7	-.058		
97	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2		3	-.058	8	-.058		
98	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	.029	3	-.05	9	-.058		
99	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	.041	3	-.041	10	-.058		
100	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5	2	.05	3	-.029	11	-.058		
101	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	.058	3		4	.058		
102	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	.05	3	.029	5	.058		
103	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	.041	3	.041	6	.058		
104	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	.029	3	.05	7	.058		
105	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2		3	.058	8	.058		
106	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	-.029	3	.05	9	.058		
107	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	-.041	3	.041	10	.058		
108	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	-.05	3	.029	11	.058		
109	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	-.058	3		4	-.058		
110	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	-.05	3	-.029	5	-.058		
111	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	-.041	3	-.041	6	-.058		
112	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	-.029	3	-.05	7	-.058		
113	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2		3	-.058	8	-.058		
114	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	.029	3	-.05	9	-.058		
115	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	.041	3	-.041	10	-.058		
116	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5	2	.05	3	-.029	11	-.058		
117	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	.058	3		4	.058		
118	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	.05	3	.029	5	.058		
119	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	.041	3	.041	6	.058		
120	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	.029	3	.05	7	.058		
121	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2		3	.058	8	.058		
122	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	-.029	3	.05	9	.058		
123	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	-.041	3	.041	10	.058		
124	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	-.05	3	.029	11	.058		
125	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	-.058	3		4	-.058		
126	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	-.05	3	-.029	5	-.058		
127	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	-.041	3	-.041	6	-.058		
128	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	-.029	3	-.05	7	-.058		
129	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2		3	-.058	8	-.058		
130	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	.029	3	-.05	9	-.058		
131	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	.041	3	-.041	10	-.058		
132	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5	2	.05	3	-.029	11	-.058		



Company : Trylon
 Designer : MFT
 Job Number : 189060
 Model Name : 806378

Aug 2, 2021
 11:42 AM
 Checked By: Jordan Evers on

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	N48	max	565.494	90	2021.122	41	597.376	33	-80.974	18	0	132	666.856	41
2		min	-1197.886	46	117.259	18	-2110.295	41	-1400.87	41	0	1	-184.677	100
3	N49	max	1196.022	121	669.37	101	2092.685	49	114.527	124	0	132	282.046	84
4		min	-565.714	97	-53.924	124	-606.495	26	-523.048	101	0	1	-188.38	100
5	N52A	max	75.219	18	89.933	40	888.263	25	0	132	0	132	0	132
6		min	-75.285	26	15.376	79	-896.126	33	0	1	0	1	0	1
7	Totals:	max	772.796	6	2353.683	41	1260.222	2						
8		min	-772.788	30	431.395	81	-1260.219	26						

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

	Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M24	SR 5/8_HRA	.498	18.2...	42	.018	30.25	33	1849.145	13805.82	143.808	143.808	1	H1-1a	
2	M29	SR 1/2"	.480	22.4...	36	.008	0	42	1432.022	8835.75	73.632	73.632	1	H1-1a	
3	M4	PIPE 1.5	.230	34.81	46	.231	34.81	49	23485.28	31008.6	1452.45	1452.45	1	H1-1b	
4	MP3	PIPE 2.0	.223	48	17	.134	33	9	15369.6...	42228	2459.85	2459.85	1...	H1-1b	
5	M28	SR 1/2"	.208	22.4...	48	.012	44.854	46	1432.022	8835.75	73.632	73.632	1	H1-1b	
6	M2	PIPE 1.5	.206	34.81	37	.132	.725	34	23485.28	31008.6	1452.45	1452.45	1...	H1-1b	
7	MP1	PIPE 2.0	.202	33	2	.092	33	9	15369.6...	42228	2459.85	2459.85	1...	H1-1b	
8	H1	PIPE 2.5	.192	76	34	.062	76	34	45255.2...	66654	4726.5	4726.5	1...	H1-1b	
9	M3	PIPE 1.5	.186	34.4...	38	.084	34.81	1...	23485.28	31008.6	1452.45	1452.45	1	H1-1b	
10	M5	PIPE 2.5	.180	76	42	.057	76	42	45255.2...	66654	4726.5	4726.5	1	H1-1b	
11	M1	PIPE 1.5	.171	34.81	130	.083	34.81	85	23485.28	31008.6	1452.45	1452.45	1	H1-1b	
12	M31A	PIPE 2.0	.108	61.6...	39	.007	123.25	46	9324.69	42228	2459.85	2459.85	1...	H1-1b	
13	M26	SR 5/8_HRA	.046	30.25	42	.056	0	1...	1849.145	13805.82	143.808	143.808	1	H1-1b*	
14	M23	SR 5/8_HRA	.039	30.25	9	.019	0	9	1849.145	13805.82	143.808	143.808	1	H1-1b*	
15	MP2	PIPE 2.0	.025	33	101	.100	63	1...	15369.6...	42228	2459.85	2459.85	1...	H1-1b*	
16	M25	SR 5/8_HRA	.019	16.3...	42	.056	0	1...	1849.145	13805.82	143.808	143.808	1	H1-1b	
17	M27	SR 1/2"	.000	0	132	.014	0	39	1432.022	8835.75	73.632	73.632	1	H1-1a	
18	M30	SR 1/2"	.000	0	132	.011	0	9	1432.022	8835.75	73.632	73.632	1	H1-1a	

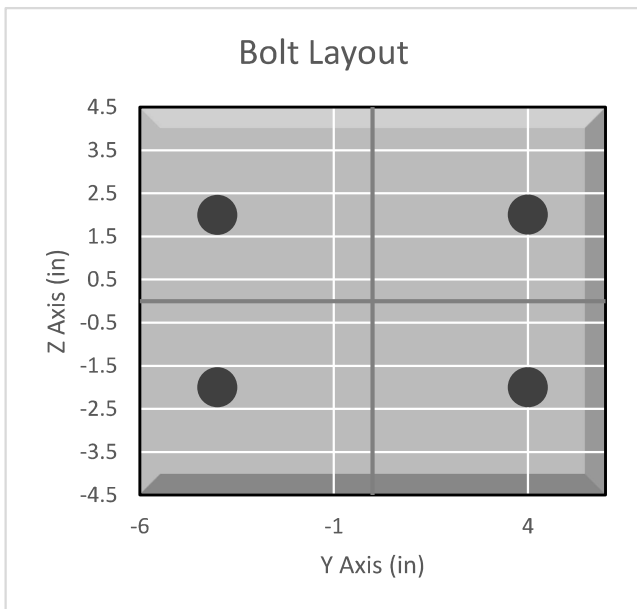
APPENDIX D
ADDITIONAL CALCUATIONS

BOLT TOOL 1.5.2

Project Data	
Job Code:	189060
Carrier Site ID:	806378
Carrier Site Name:	HRT 086 94328

Code	
Design Standard:	TIA-222-H
Slip Check:	Yes
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.625	in
Grade:	A307	--
Yield Strength (Fy):	36	ksi
Ultimate Strength (Fu):	60	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	8	in



Connection Description
Mount to Tower Connection

Bolt Check*		
Tensile Capacity (ϕT_n):	10170.1	lbs
Shear Capacity (ϕV_n):	6902.9	lbs
Tension Force (T_u):	2628.9	lbs
Shear Force (V_u):	1004.9	lbs
Tension Usage:	24.6%	--
Shear Usage:	13.9%	--
Interaction:	24.6%	Pass
Controlling Member:	M31	--
Controlling LC:	41	--

*Rating per TIA-222-H Section 15.5

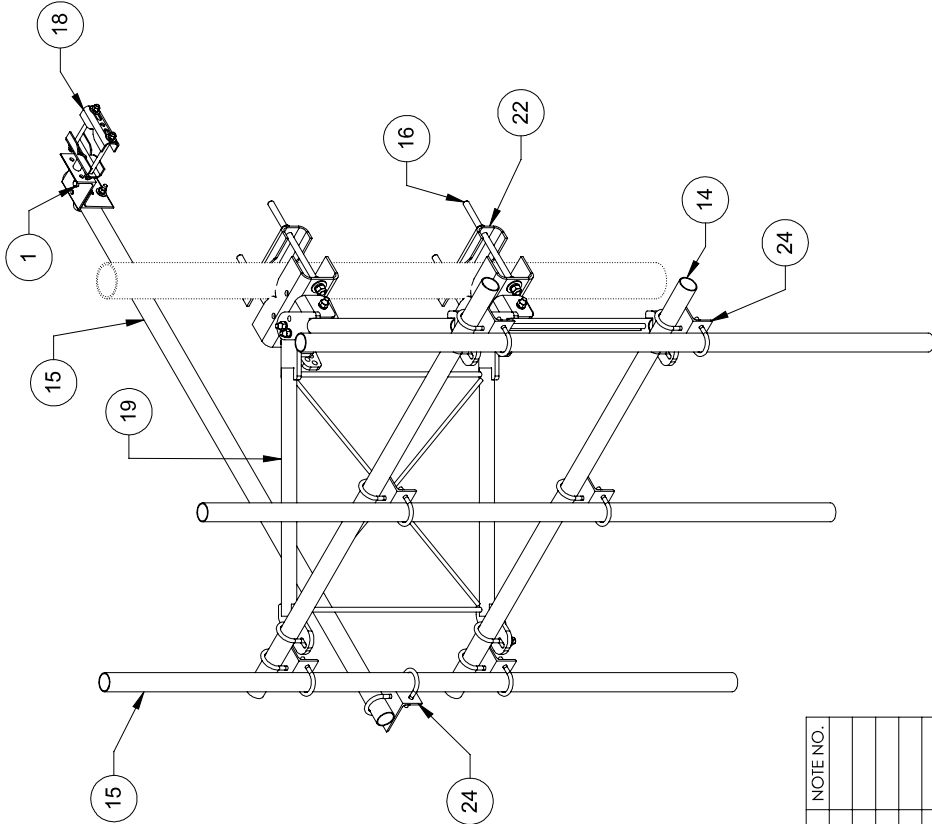
Slip Check*		
Sliding Capacity (ϕR_{ns}):	13460.0	lbs
Torsion Capacity (ϕR_{nr}):	4486.7	lb-ft
Sliding Force (V_{us}):	2021.1	lbs
Torsional Force (T_{ur}):	0.0	lb-ft
Sliding Usage:	14.3%	--
Torsion Usage:	0.0%	--
Interaction:	14.3%	Pass
Controlling Member:	M31	--
Controlling LC:	41	--

*Rating per TIA-222-H Section 15.5

APPENDIX E
SUPPLEMENTAL DRAWINGS

NOTES:
1.0 ALL METRIC DIMENSIONS ARE IN BRACKETS.

www.Talleycom.com | Sales@Talleycom.com | 800.949.7079



ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT	NOTE NO.
1	GB-04125	1/2" X 1-1/4" GALV BOLT KIT	1	0.12 LBS	
2	GB-04265	1/2" X 2-3/4" GALV BOLT KIT	1	0.20 LBS	
3	GB-05225	5/8" X 2-1/4" GALV BOLT KIT	8	0.28 LBS	
4	GB-05305	5/8" X 3" GALV BOLT KIT	4	0.36 LBS	
5	GN-04	1/2" GALV HEX NUT	4	0.04 LBS	
6	GN-06	3/4" GALV HEX NUT	12	0.15 LBS	
7	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	19	0.56 LBS	
8	GWF-04	1/2" GALV FLAT WASHER	4	0.03 LBS	
9	GWF-05	5/8" GALV FLAT WASHER	4	0.06 LBS	
10	GWF-06	3/4" GALV FLAT WASHER	8	0.10 LBS	
11	GWL-04	1/2" GALV LOCK WASHER	4	0.01 LBS	
12	GWL-06	3/4" GALV LOCK WASHER	8	0.04 LBS	
13	MT-379-8	1/2" X 8" GALV THREADED ROD	2	0.44 LBS	
14	MT-651-96	2.375" OD X 96" PIPE	2	17.29 LBS	
15	MT-651-96	Ø 2.375" OD X 96" PIPE	4	23.05 LBS	
16	MT38416	Threaded Rod Galv 3/4" x 16"	4	1.99 LBS	
17	OS15034	3/4" X 1-1/2" OFFSET COLLAR	1	0.14 LBS	
18	SAB01	FORMED CLAMP	2	1.35 LBS	
19	SFV01	WELDMENT_SF-V STANDOFF ARM	2	36.81 LBS	
20	SFV02	SFV AZIMUTH BRACKET	3	6.70 LBS	
21	SFV03	SFV TAPER BRACKET	1	7.49 LBS	
22	SMU2080.06	CLAMP PLATE	2	6.96 LBS	
23	SMU208004	MOUNT	2	12.15 LBS	
24	XA2020.01	ANTENNA MOUNT ANGLE	9	2.65 LBS	

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES	SAP MATERIAL MASTER
0 PLACE X ± .25	2 PLACE XX ± .06
1 PLACE X ± .12	ANGLES ± 2°

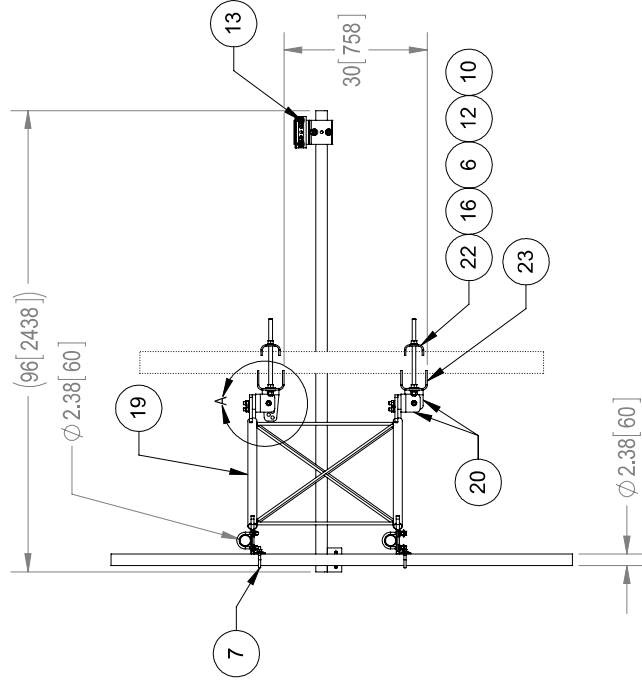
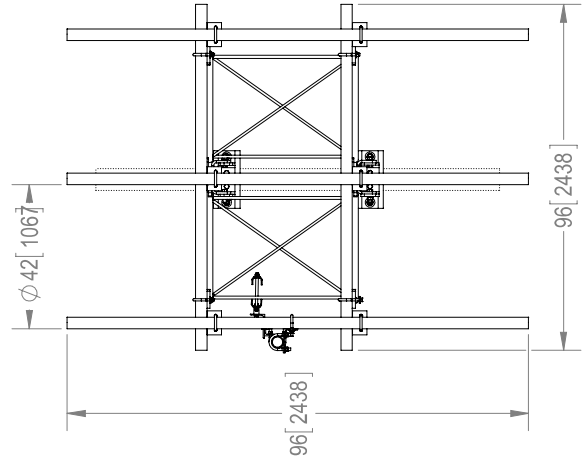
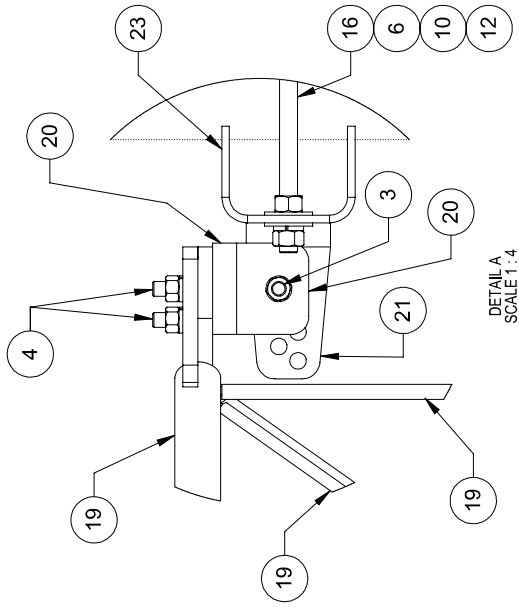
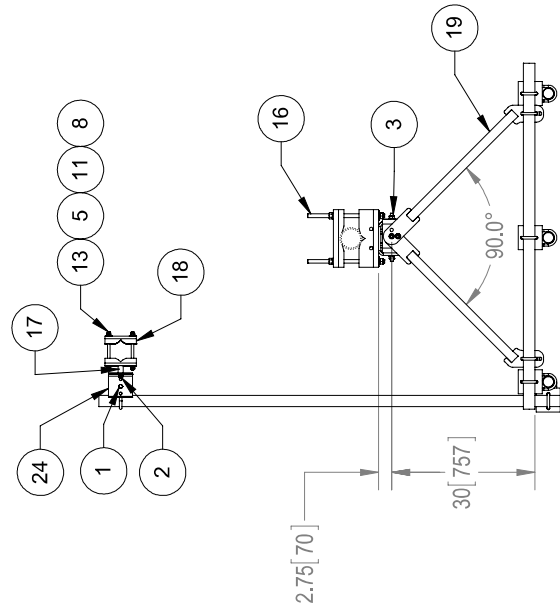
FINISH	MATERIAL
GALV A123	A1011/A1018, A500, A529

NAME	DATE	TITLE
RDLS	7/14/17	SECTOR FRAME, 8' FACE, (3) 96" PIPES
CE		
RV		
AD		
RE	7/14/17	SCALE DOCUMENT NO.
ECN		1:12 MTC3975083
WORK AREA	MODEL	DRAWING
	STATUS	VERSION
	REVISION	STATUS
	REVISION	REVISION
		PRE

DENSITY	0.28	lb/in ³
MASS	400.61	lb
VOLUME	142.66	in ³
SURFACE AREA		in ²
HEIGHT		
LENGTH		
WIDTH		

NOTES:

1.0 ALL METRIC DIMENSIONS ARE IN BRACKETS.



COMMSCOPE, INC. OF NORTH CAROLINA

TITLE

SECTOR FRAME, 8" FACE, (3) 96" PIPES

SIZE C
SCALE 1:20

DOCUMENT NO. MTC3975083

DRAWING	REVISION	SHEET
VERSION	STATUS	PRE

2 OF 2

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: BOBDL00049A

806378

**126 Pioneer Height Road
Somers, Connecticut 06071**

October 5, 2021

EBI Project Number: 6221005704

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	12.55%

October 5, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00049A - 806378

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **126 Pioneer Height Road in Somers, 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 126 Pioneer Height Road in Somers, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

- 5) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 6) The antenna mounting height centerline of the proposed antennas is 147 feet above ground level (AGL).
- 7) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 8) All calculations were done with respect to uncontrolled / general population threshold limits.

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz
Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd
Height (AGL):	147 feet	Height (AGL):	147 feet	Height (AGL):	147 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts
ERP (W):	3,065.51	ERP (W):	3,065.51	ERP (W):	3,065.51
Antenna AI MPE %:	0.80%	Antenna BI MPE %:	0.80%	Antenna CI MPE %:	0.80%

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	0.80%
AT&T	3.06%
T-Mobile	5.49%
Nextel	0.26%
Verizon	2.23%
Sprint	0.71%
Site Total MPE % :	12.55%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	0.80%
Dish Wireless Sector B Total:	0.80%
Dish Wireless Sector C Total:	0.80%
Site Total MPE % :	12.55%

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	147.0	1.62	600 MHz n71	400	0.40%
Dish Wireless 1900 MHz n70	4	542.70	147.0	3.93	1900 MHz n70	1000	0.39%
Total:							0.80%

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

Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	0.80%
Sector B:	0.80%
Sector C:	0.80%
Dish Wireless Maximum MPE % (Sector A):	0.80%
Site Total:	12.55%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **12.55%** 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:
126 PIONEER HEIGHTS RD, SOMERS, CT 06071

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

Crown Site ID/Name: 806378/HRT 086 943248
Customer Site ID: BOBDL00049A/CT-CCI-T-806378
Site Address: 126 PIONEER HEIGHTS RD, SOMERS, CT 06071

Crown Castle

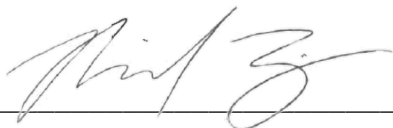
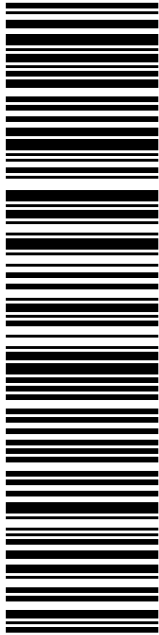
By:  _____ Date: 10/11/2021
Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



USPS TRACKING #

9405 5036 9930 0030 0098 12

Electronic Rate Approved #038555749

SHIP

TO: C.G. BUD KNORR JR
FIRST SELECTMAN- SOMERS
600 MAIN ST
SOMERS CT 06071-2119

P

PRIORITY MAIL 2-DAY™

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

Expected Delivery Date: 10/15/21
Re#: DS-806378
0006

R005

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

U.S. POSTAGE PAID
click-n-ship®

USPS.com 9405 5036 9930 0030 0098 12 0087 0000 0010 6071
\$8.70
US POSTAGE
Flat Rate Env
10/12/2021 Mailed from 01566



Cut on dotted line.

Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0030 0098 12

Trans. #: 545740468	Priority Mail® Postage: \$8.70
Print Date: 10/12/2021	Total: \$8.70
Ship Date: 10/12/2021	
Expected Delivery Date: 10/15/2021	

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

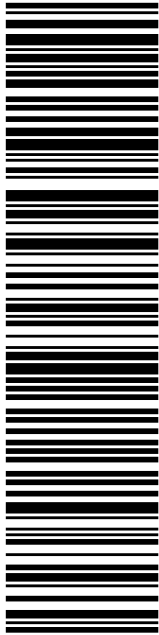
Re#: DS-806378

To: C.G. BUD KNORR JR
FIRST SELECTMAN- SOMERS
600 MAIN ST
SOMERS CT 06071-2119

* 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 0030 0098 36

Electronic Rate Approved #038555749

SHIP

TO: JENNIFER ROY
ZONING ENFORCEMENT OFFICER
600 MAIN ST
SOMERS CT 06071-2119

P

PRIORITY MAIL 2-DAY™

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

Expected Delivery Date: 10/15/21
Re#: DS-806378
0006

R005

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

U.S. POSTAGE PAID

Flat Rate Env
US POSTAGE \$8.70
usps.com 9405 5036 9930 0030 0098 36 0087 0000 0010 6071

Mailed from 01566
10/12/2021



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Instructions

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2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0030 0098 36

Trans. #: 545740468	Priority Mail® Postage: \$8.70
Print Date: 10/12/2021	Total: \$8.70
Ship Date: 10/12/2021	
Expected Delivery Date: 10/15/2021	

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


Re#: DS-806378

To: JENNIFER ROY
ZONING ENFORCEMENT OFFICER
600 MAIN ST
SOMERS CT 06071-2119

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POSTAL SERVICE®**

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10/12/2021

Mailed from 01566

usps.com 9405 5036 9930 0030 0098 43 0087 0000 0041 5317

US POSTAGE

Flat Rate Env

U.S. POSTAGE PAID

click-n-ship®

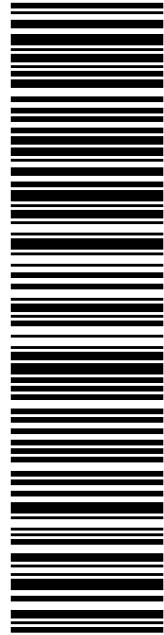
PRIORITY MAIL 3-DAY™

Expected Delivery Date: 10/16/21 Ref#: DS-806378

0006

SHIP TO: LENA FARNHAM
CROWN ATLANTIC
PO BOX 353
MCMURRAY PA 15317

USPS TRACKING #



9405 5036 9930 0030 0098 43

Electronic Rate Approved #038555749



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

Click-N-Ship® Label Record

USPS TRACKING # :	
9405 5036 9930 0030 0098 43	
Trans. #:	545740468
Print Date:	10/12/2021
Ship Date:	10/12/2021
Expected Delivery Date:	10/16/2021
Priority Mail® Postage:	\$8.70
Total:	\$8.70
From:	DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359
To:	LENA FARNHAM CROWN ATLANTIC PO BOX 353 MCMURRAY PA 15317
	Ref#: DS-806378
* 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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Click-N-Ship®

P

usps.com 9405 5036 9930 0030 0098 67 0087 0000 0031 4586
US POSTAGE
 Flat Rate Envoy

U.S. POSTAGE PAID
click-n-ship®

10/12/2021 Mailed from 01566

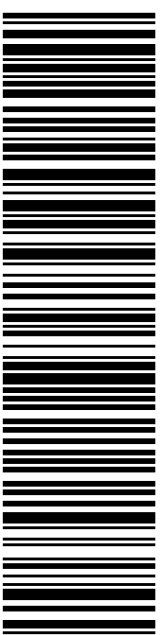
PRIORITY MAIL 2-DAY™

Expected Delivery Date: 10/15/21
 Re#: DS-806378
0006

R013

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

USPS TRACKING #



9405 5036 9930 0030 0098 67

Electronic Rate Approved #038555749



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0030 0098 67

Trans. #: 545740468	Priority Mail® Postage: \$8.70
Print Date: 10/12/2021	Total: \$8.70
Ship Date: 10/12/2021	
Expected Delivery Date: 10/15/2021	

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

Re#: DS-806378

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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806378



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

10/13/2021

02:24 PM

Product	Qty	Unit Price	Price
Prepaid Mail	1		\$0.00
West Henrietta, NY 14586			
Weight: 0 lb 2.00 oz			
Acceptance Date:			
Wed 10/13/2021			
Tracking #:			
9405 5036 9930 0030 0098 67			
Prepaid Mail	1		\$0.00
Somers, CT 06071			
Weight: 0 lb 14.80 oz			
Acceptance Date:			
Wed 10/13/2021			
Tracking #:			
9405 5036 9930 0030 0098 36			
Prepaid Mail	1		\$0.00
Canonsburg, PA 15317			
Weight: 0 lb 14.80 oz			
Acceptance Date:			
Wed 10/13/2021			
Tracking #:			
9405 5036 9930 0030 0098 43			
Prepaid Mail	1		\$0.00
Somers, CT 06071			
Weight: 0 lb 14.80 oz			
Acceptance Date:			
Wed 10/13/2021			
Tracking #:			
9405 5036 9930 0030 0098 12			
Grand Total:			\$0.00