



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

August 11, 2021

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

RE: Tower Share Application
#14 Route 80, Killingworth CT 06413
Latitude: 41.9357333
Longitude: -72.519944
Site# 806387_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 #14 Route 80 in Killingworth, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 MHz antenna and six (6) RRUs, at the 124-foot level of the existing 160-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, dated June 25, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated April 20, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by CT Siting Council, Docket No. 69 on February 18, 1987. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to The Honorable Catherine Iino, First Selectwoman for the Town of Killingworth, Cathie S. Jefferson, Zoning Enforcement Officer, as well as the tower owner (Crown Castle) and property owner (14 Route 80 LLC).

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 160-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 124-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 11.615% as evidenced by Exhibit F.

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

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

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this support tower in Killingworth. 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 124-foot level of the existing 160-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Dish Wireless LLC proposed loading. Dish Wireless LLC is not aware of any public safety concerns relative to the proposed sharing of the existing guyed tower. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Killingworth.

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:

The Honorable Catherine Iino, First Selectwoman (ciino@townofkillingworth.com)
Town of Killingworth
323 Route 81 Killingworth, CT 06419

Cathie S. Jefferson, Zoning Enforcement Officer (cjefferson@townofkillingworth.com)
Town of Killingworth 323 Route 81 Killingworth, CT 06419

14 Route 80 LLC (property owner)
93A Glenwood Road Clinton, CT 06413

Crown Castle (tower Owner)

Exhibit A

Original Facility Approval

AN APPLICATION OF METRO MOBILE CTS OF : CONNECTICUT SITING
HARTFORD, INC., FOR A CERTIFICATE OF :
ENVIRONMENTAL COMPATIBILITY AND PUBLIC : COUNCIL
NEED FOR THE CONSTRUCTION, MAINTENANCE,
AND OPERATION OF FACILITIES TO PROVIDE
CELLULAR SERVICE IN THE TOWNS OF
KILLINGWORTH, MIDDLETOWN, AND
OLD SAYBROOK, CONNECTICUT. : February 18, 1987

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 Metro Mobile CTS of Hartford, Inc., for the construction, operation, and maintenance of a cellular mobile phone telecommunication tower and associated equipment in the town of Killingworth, Connecticut. The proposed Middletown and Old Saybrook sites are rejected without prejudice.

The facility shall be constructed, operated, and maintained as specified in the Council's record on this matter, and subject to the following conditions.

1. The tower, including antennas, shall be no taller than necessary to provide the proposed service, and in no event shall exceed 173 feet.
2. A fence not lower than eight feet shall surround the tower and its associated equipment building.
3. Unless necessary to comply with condition number four, below, no lights shall be installed on the tower.
4. The facility shall be constructed in accordance with all applicable federal, state, and municipal laws and regulations.

5. The certificate holder shall comply with sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies, providing for development and management (D&M) plans and reporting. The D&M plan shall provide plans for evergreen screening around the fenced perimeter.
6. No construction activities shall take place outside the hours of 7:00 A.M. to 7:00 P.M., Monday through Saturday.
7. The certificate holder or its successor shall notify the Council if and when directional antennas or any equipment other than that listed in the D&M plan is added to the facility.
8. The certificate holder or its successor shall permit public or private entities to share space on the tower, for due consideration received, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
9. If the tower does not provide or permanently cease to provide cellular service following completion of construction, this Decision and Order shall be void and the tower and all associated 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.
10. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years of the completion of any appeal taken in this Decision.

11. 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.

Pursuant to CGS section 16-50p, we hereby direct that a copy of the Decision and Order be served on each person listed below. A notice of the issuance shall be published in the Hartford Courant, the New Haven Register, the Middletown Press, and the Clinton Recorder.

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 18th day of February 1987.

<u>Council Members</u>	<u>Vote Cast</u>		
	<u>Middletown</u>	<u>Killingworth</u>	<u>Old Saybrook</u>
<u>Gloria Dibble Pond</u>) Gloria Dibble Pond Chairperson	No	Yes	No
<u>Peter G. Boucher</u>) Commissioner John Downey Designee: Commissioner Peter G. Boucher	No	Yes	Yes
<u>Brian J. Emerick</u>) Commissioner Stanley Pac Designee: Brian Emerick	No	Yes	Yes
<u>Owen L. Clark 2/18/87</u>) Owen L. Clark	No	Yes	Yes
<u>Fred J. Doocy</u>) Fred J. Doocy	No	Yes	No
<u>Mortimer A. Gelston</u>) Mortimer A. Gelston	No	Yes	No
<u>James G. Horsfall</u>) James G. Horsfall	No	Yes	No
<u>William Smith</u>) William Smith		Absent	
<u>Colin C. Tait</u>) Colin C. Tait	No	No	No

STATE OF CONNECTICUT)
COUNTY OF HARTFORD)

: ss. New Britain, February 18, 1987
)

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.

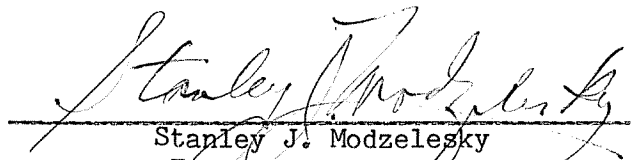
ATTEST:



John C. Kelly
Executive Director
Connecticut Siting Council

I certify that a copy of the opinion and decision and order have been forwarded by mail to all parties of record on 2-19-87.

ATTEST:



Stanley J. Modzelesky
Executive Assistant
Connecticut Siting Council

Exhibit B

Property Card

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2016.



Information on the Property Records for the Municipality of Killingworth was last updated on 4/3/2021.

Parcel Information

Location:	14 ROUTE 80	Property Use:	Industrial	Primary Use:	Light Industrial
Unique ID:	00218500	Map Block Lot:	34-36A	Acres:	2.00
490 Acres:	0.00	Zone:	ID	Volume / Page:	0225/0110
Developers Map / Lot:	DEV MP 312	Census:	6401		

Value Information

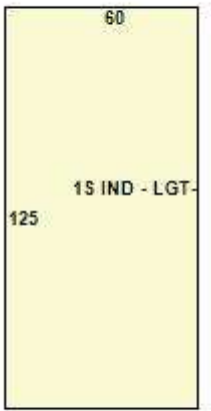
	Appraised Value	Assessed Value
Land	200,000	140,000
Buildings	252,719	176,900
Detached Outbuildings	251,459	176,020
Total	704,178	492,920

Owner's Information

Owner's Data

14 ROUTE 80 LLC
93A GLENWOOD RD
CLINTON, CT 06413

Building 1



Category:	Industrial	Use:	Light Industrial	GLA:	7,508
Stories:	1.00	Construction:	Average	Year Built:	1969
Heating:	Susp. Space	Fuel:	Oil	Cooling Percent:	0%
Siding:	Metal	Roof Material:	Arch Shingles	Beds/Units:	0

Special Features

Attached Components

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Fencing	1999	9	234	2,106
Concrete/Masonry Patio	1999			432
Concrete/Masonry Patio	1999	8	20	160
Cell Tower	2000			1

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
14 ROUTE 80 LLC	0225	0110	06/14/2007	Quit Claim	No	\$0

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
F18-192	Comm Renovations	10/15/2018		Closed	SPRINT TO REMOVE AND REPLACE SIX (6) ANTENNAS & ADD TWELVE (12) RRH'S. SEE ATTACHED PLANS FOR DETAI
F18-147	Commercial	09/24/2018		Closed	VERIZON WIRELESS TO REPLACE (6) EXISTING WITH (6) NEW ANTENNAS AND ASSOCIATED ANCILLARY EQUIPMENT. A
12-410	Commercial	04/12/2013		Closed	CELL TOWER MAINTENANCE
12-394	Comm Renovations	12/11/2012		Closed	CELL TOWER MAINTENANCE

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
11-C006	Commercial	12/22/2011		Closed	ANTENNA REPLACEMENT
08-E018	Electrical	04/13/2008		Closed	ELECTRICAL SERVICE PANEL INSTALLATION; ELECTRICAL SERVICE PANEL INSTALLATION;
99-099	Commercial New	04/01/1999		Closed	TELECOMMUNICATIONS-UTILITY BLDG,TOWER;

Information Published With Permission From The Assessor

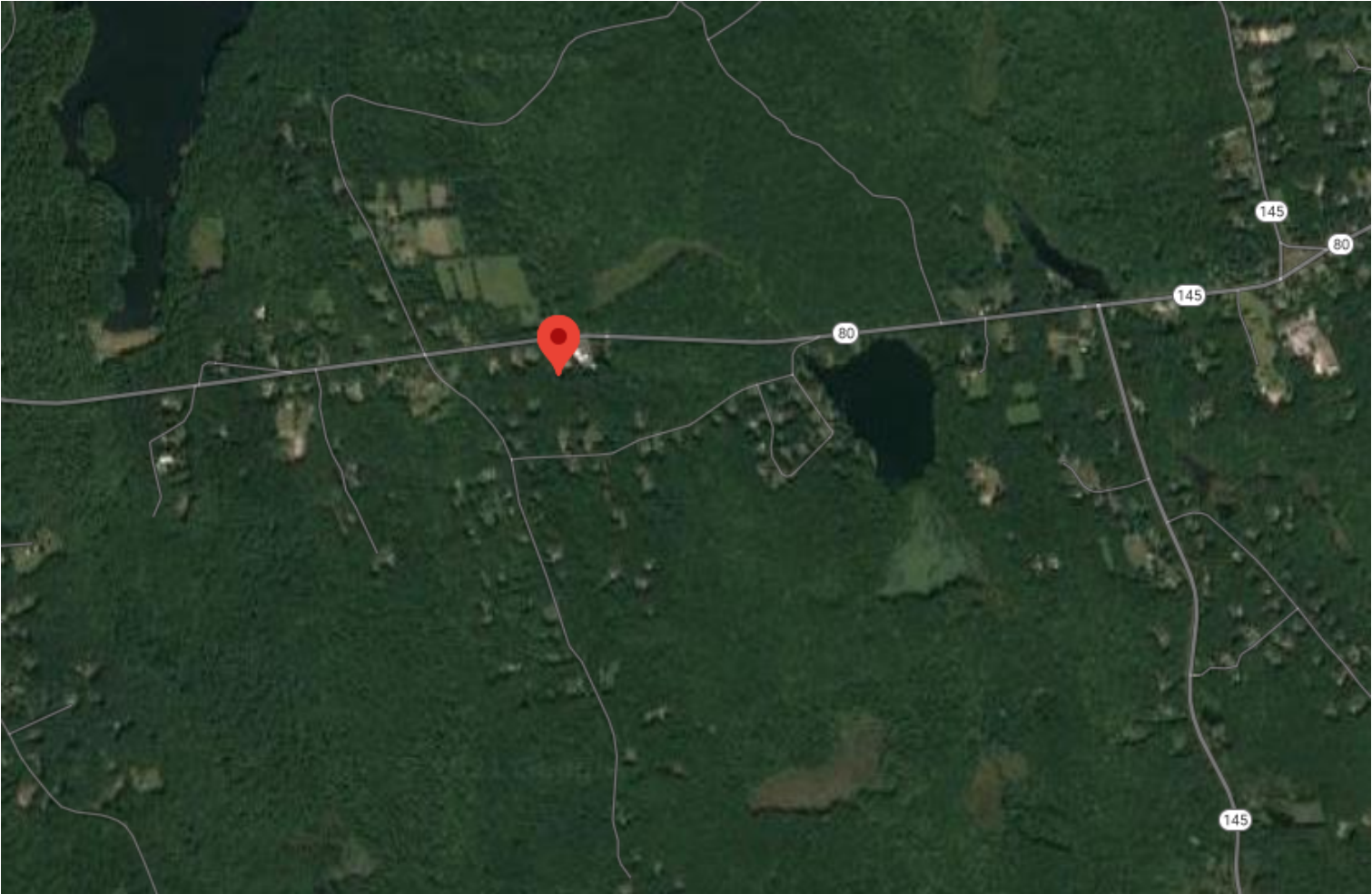


Exhibit C

Construction Drawings



DISH WIRELESS, LLC. SITE ID:

BOBDL00052A

DISH WIRELESS, LLC. SITE ADDRESS:

**#14 ROUTE 80
KILLINGWORTH, CT 06419**

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 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

SCOPE OF WORK

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

- TOWER SCOPE OF WORK:**
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
 - INSTALL (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:**
- 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 CIENA BOX (IF REQUIRED)
 - EXISTING METER SOCKET ON EXISTING H-FRAME TO BE UTILIZED

SITE PHOTO



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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION



GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER: 14 ROUTE 80 LLC
ADDRESS: 93A GLENWOOD ROAD
CLINTON, CT 06413
TOWER TYPE: SELF SUPPORT TOWER
TOWER CO SITE ID: 806387
TOWER APP NUMBER: 553395
COUNTY: MIDDLESEX
LATITUDE (NAD 83): 41° 21' 26.43" N
41.357333 N
LONGITUDE (NAD 83): -72° 31' 11.83" W
-72.519944 W
ZONING JURISDICTION: CT-CONNECTICUT SITING COUNCIL
ZONING DISTRICT: INDUSTRIAL
PARCEL NUMBER: KILL-000021-008500
OCCUPANCY GROUP: U
CONSTRUCTION TYPE: V-B
POWER COMPANY: NORTHEAST UTILITIES
TELEPHONE COMPANY: CROWN CASTLE

PROJECT DIRECTORY

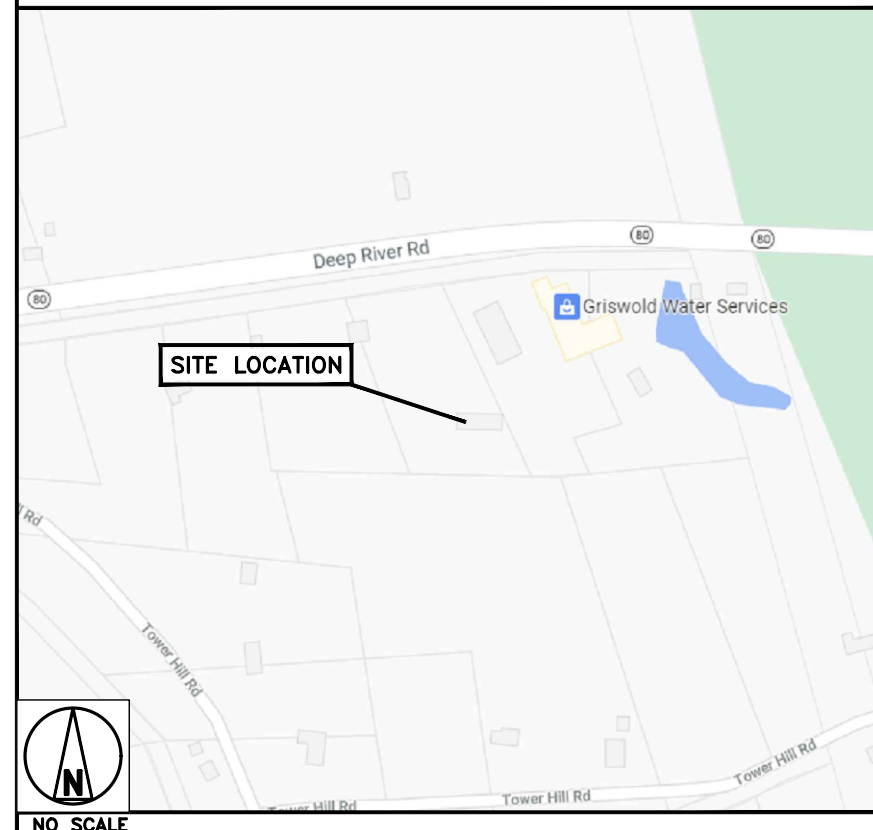
APPLICANT: DISH WIRELESS, LLC.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120
TOWER OWNER: CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317
(877) 486-9377
SITE DESIGNER: INFINIGY
2500 W. HIGGINS RD. STE. 500
HOFFMAN ESTATES, IL 60169
(847) 648-4068
SITE ACQUISITION: NICHOLAS CURRY
TBD
CONSTRUCTION MANAGER: JAVIER SOTO
TBD
RF ENGINEER: TBD
TBD

DIRECTIONS

DIRECTIONS FROM CHESTER AIRPORT KSNC:

HEAD NORTHWEST ON CHESTER AIRPORT TOWARD CROSS RD, TURN LEFT ONTO CT-145 / WINTHROP RD, TURN RIGHT ONTO CT-80 / CT-145 / WINTHROP RD, ARRIVE AT #14 ROUTE 80, KILLINGWORTH, CT 06419.

VICINITY MAP



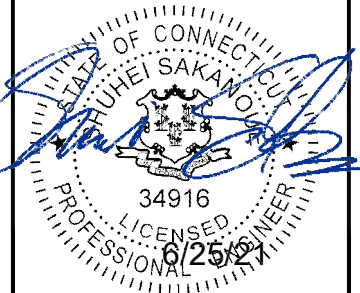
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



2000 CORPORATE DRIVE
CANONSBURG, PA 15317



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



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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

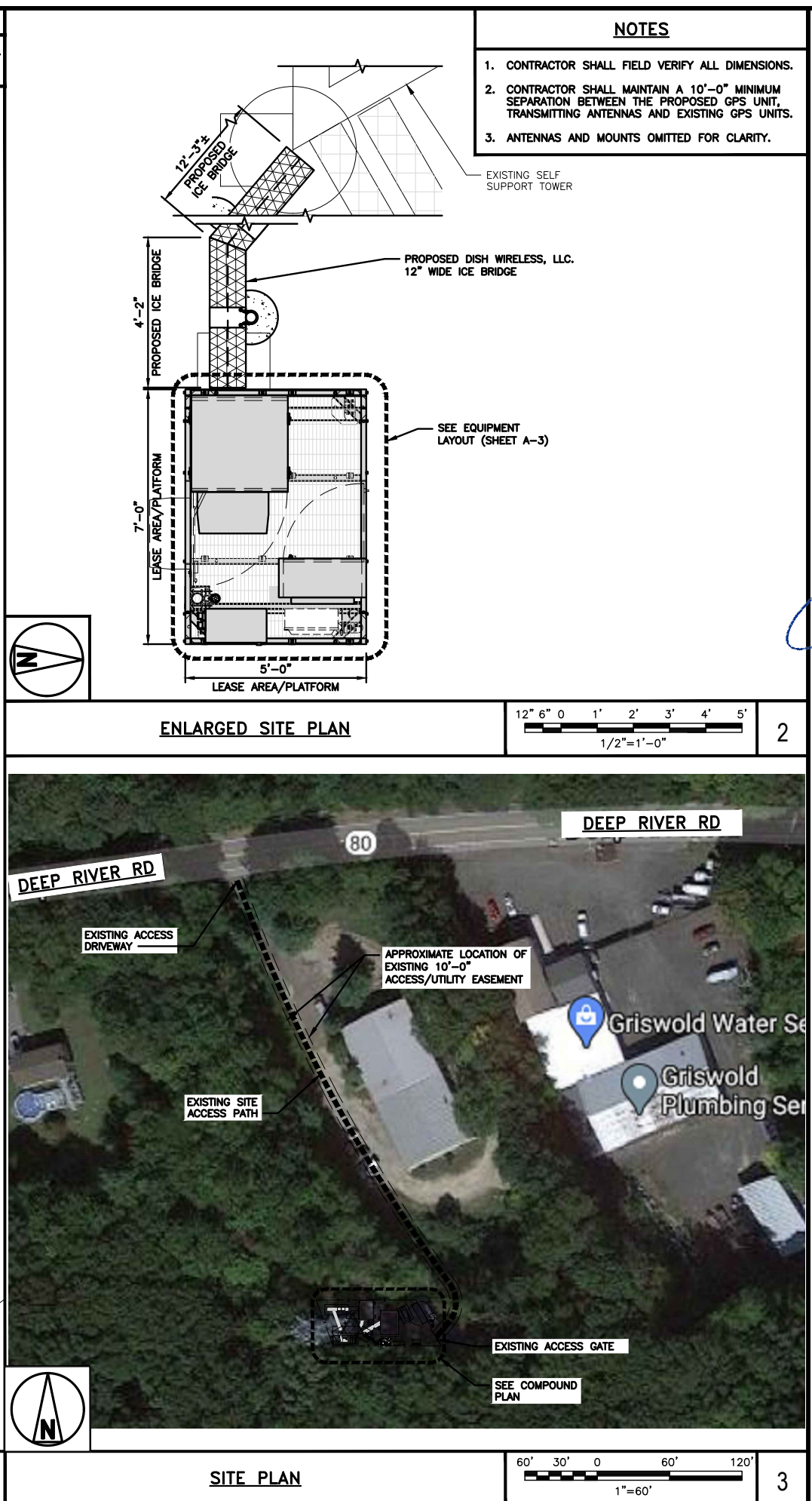
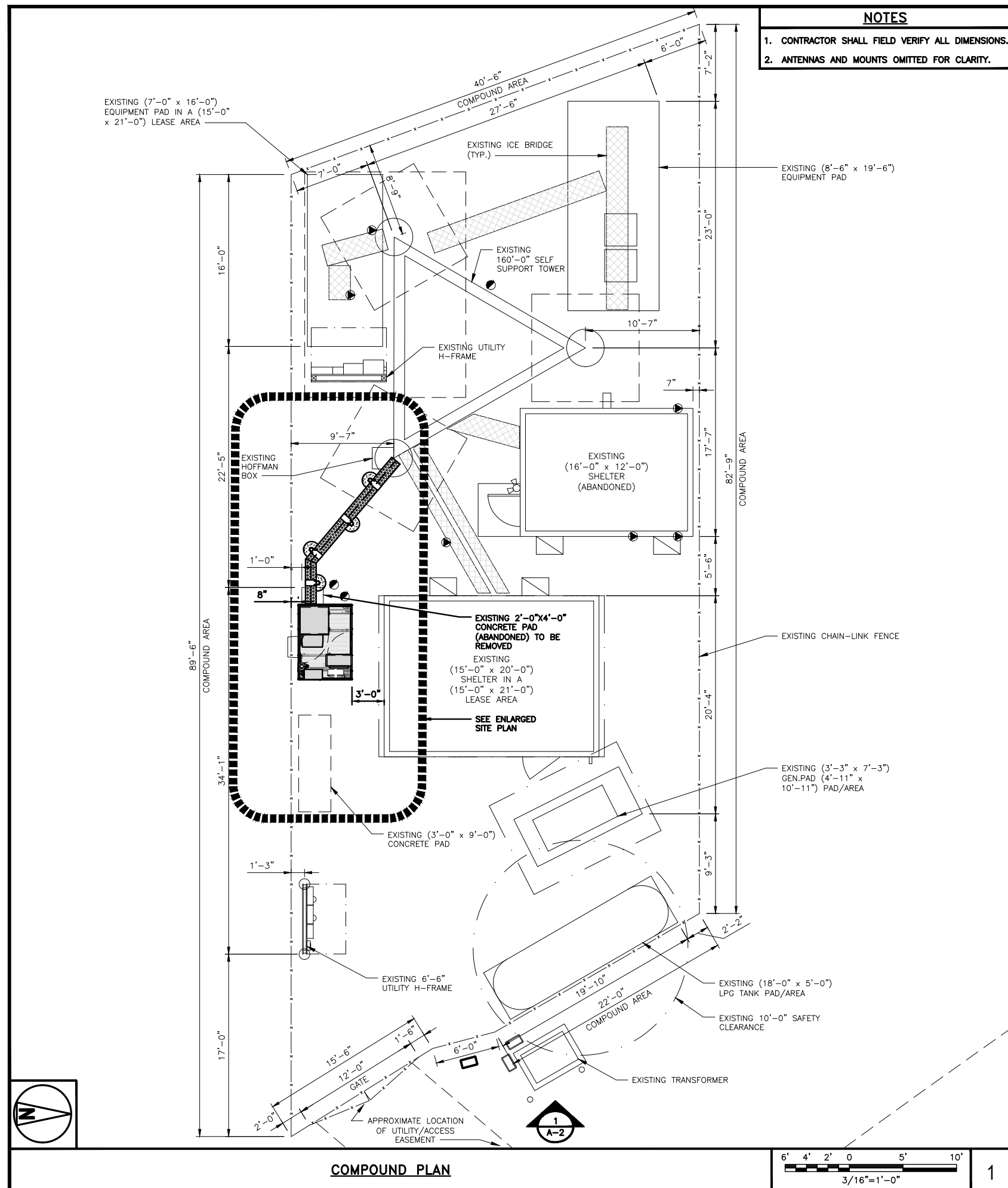
SUBMITTALS		
REV	DATE	DESCRIPTION
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1	06/24/2021	FINAL

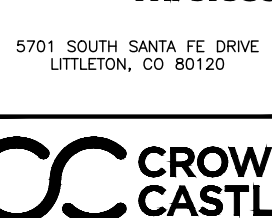
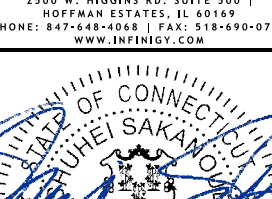
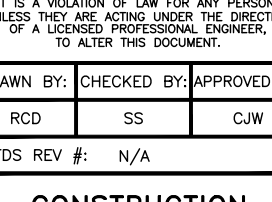
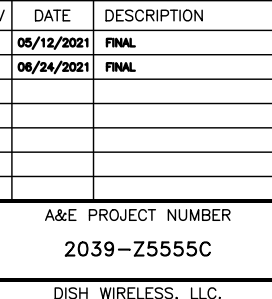
A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00052A
HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

SHEET TITLE
TITLE SHEET

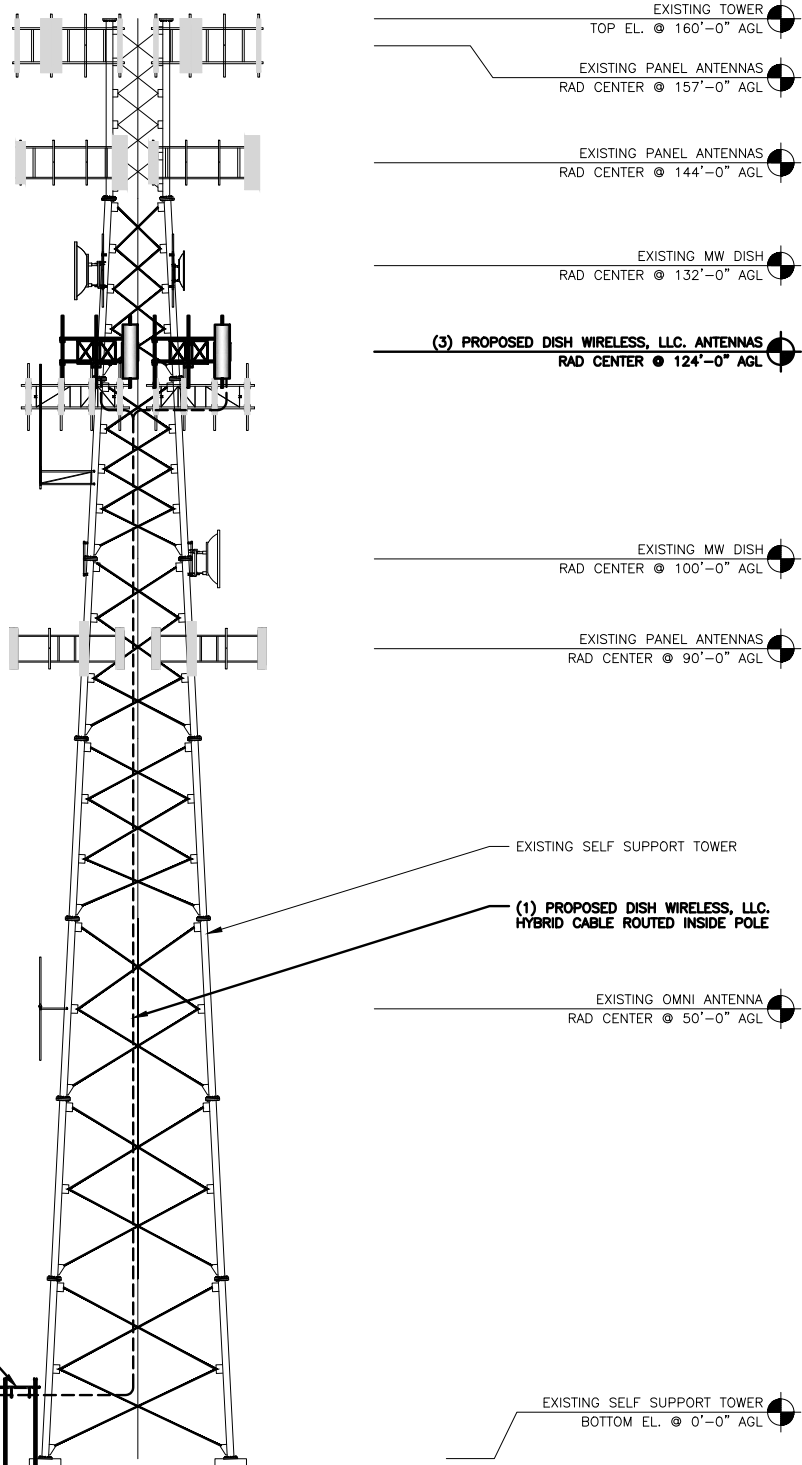
SHEET NUMBER
T-1



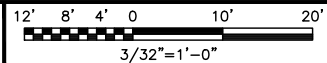
		
5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120		
		
2000 CORPORATE DRIVE CANONSBURG, PA 15317		
		
FROM ZERO TO INFINIGY the solutions are endless 2500 W. HIGGINS RD. SUITE 500 HOFFMAN ESTATES, IL 60169 PHONE: 847-648-4068 FAX: 518-690-0793 WWW.INFINIGY.COM		
		
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.		
DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW
RFDS REV #: N/A		
CONSTRUCTION DOCUMENTS		
SUBMITTALS		
REV	DATE	DESCRIPTION
0	05/12/2021	FINAL
1	06/24/2021	FINAL
A&E PROJECT NUMBER 2039-25555C		
DISH WIRELESS, LLC. PROJECT INFORMATION BOBDL00052A HRT 088 943629 #14 ROUTE 80 KILLINGWORTH, CT 06419		
SHEET TITLE OVERALL AND ENLARGED SITE PLAN		
SHEET NUMBER A-1		

NOTES

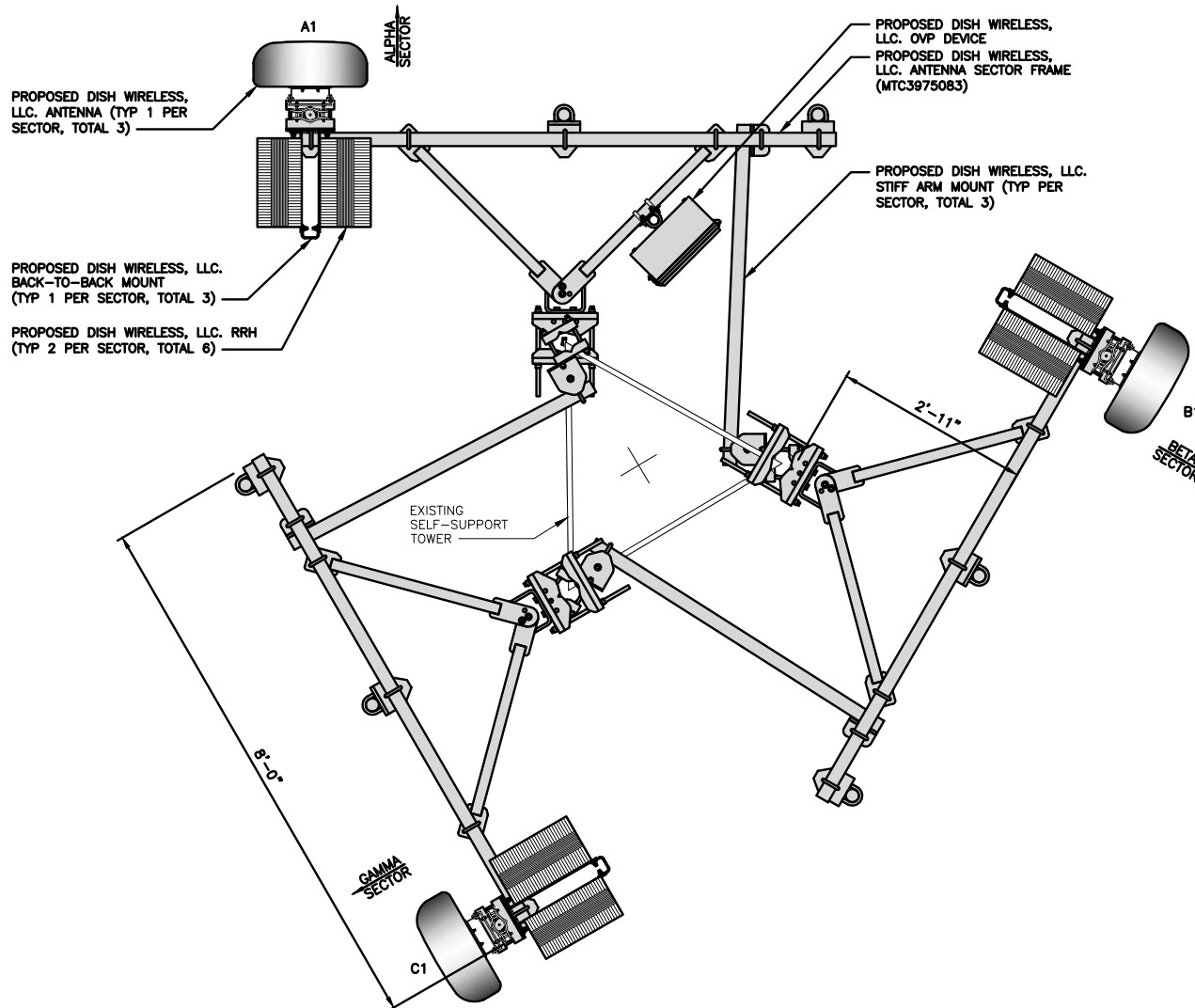
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY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



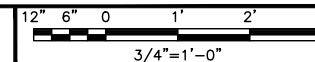
PROPOSED EAST ELEVATION



1



ANTENNA LAYOUT



2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665–20	5G	72.0" x 20.0"	0°	124'–0"	(1) HIGH–CAPACITY HYBRID CABLE (174' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665–20	5G	72.0" x 20.0"	120°	124'–0"	
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665–20	5G	72.0" x 20.0"	240°	124'–0"	
NOTES								
1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.								
2. ANTENNA OR RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.								

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY	
ALPHA	A1	FUJITSU – TA08025–B604	5G	1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. 2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.
	A1	FUJITSU – TA08025–B605	5G	
BETA	B1	FUJITSU – TA08025–B604	5G	
	B1	FUJITSU – TA08025–B605	5G	
GAMMA	C1	FUJITSU – TA08025–B604	5G	
	C1	FUJITSU – TA08025–B605	5G	

ANTENNA SCHEDULE

NO SCALE

3

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

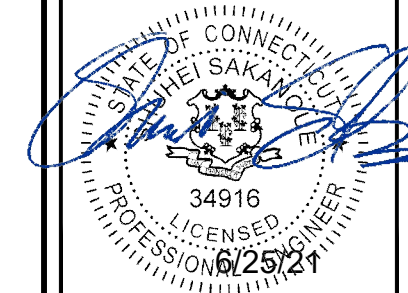
CROWN
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CONSTRUCTION DOCUMENTS

SUBMITTALS		
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A&E PROJECT NUMBER

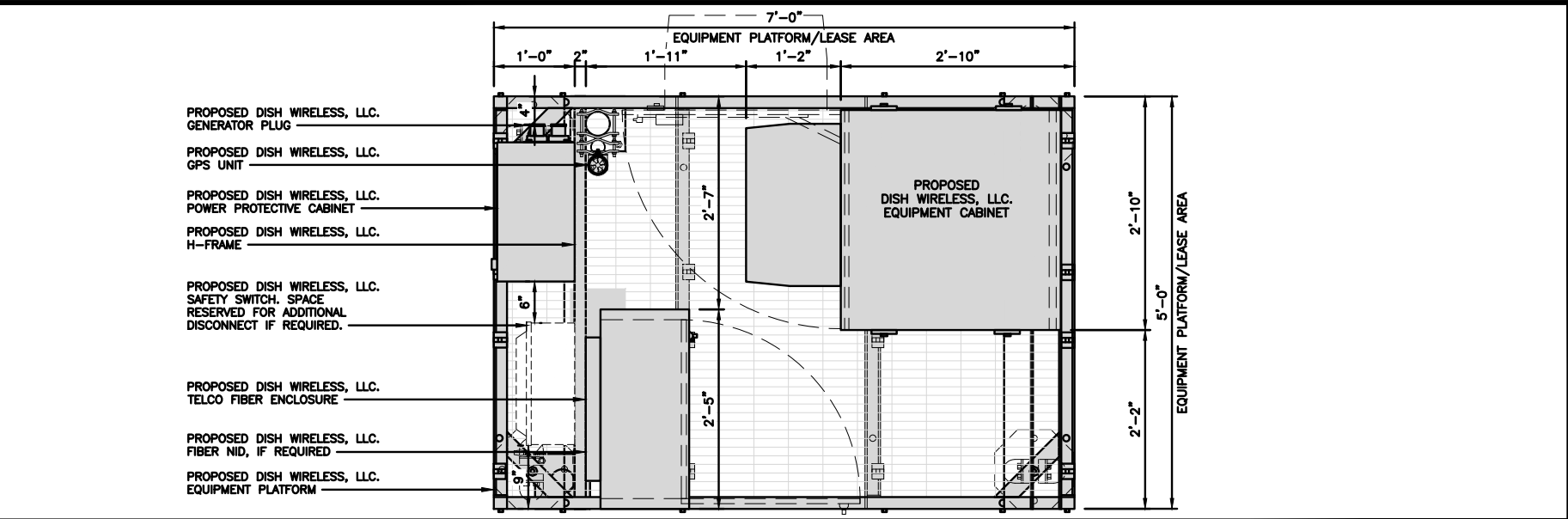
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00052A
HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

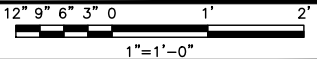
SHEET TITLE
ELEVATION, ANTENNA
LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



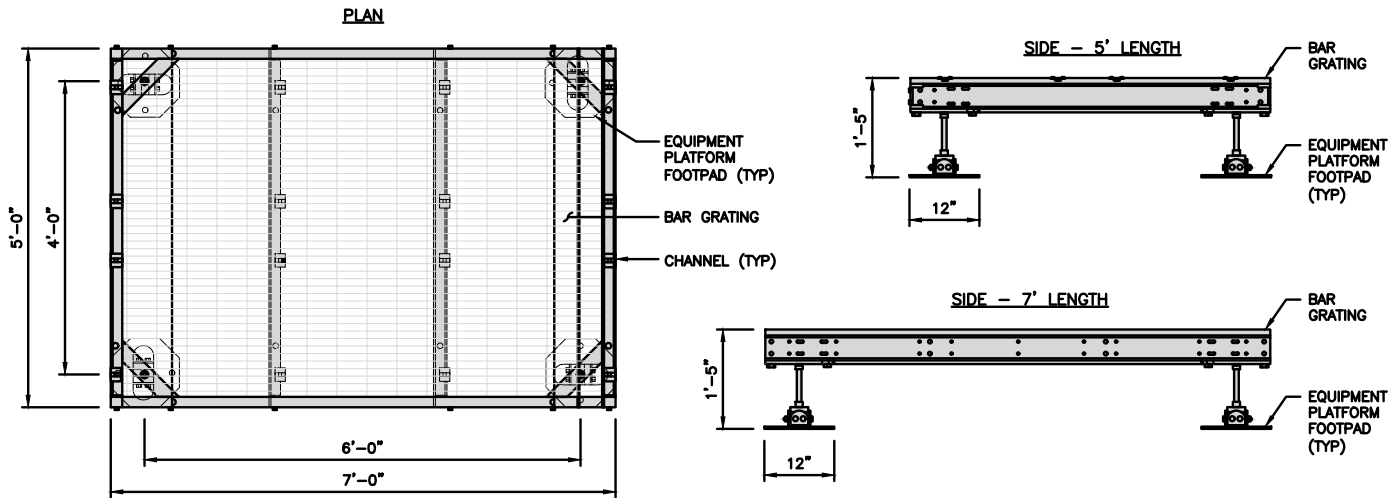
PLATFORM EQUIPMENT PLAN



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"

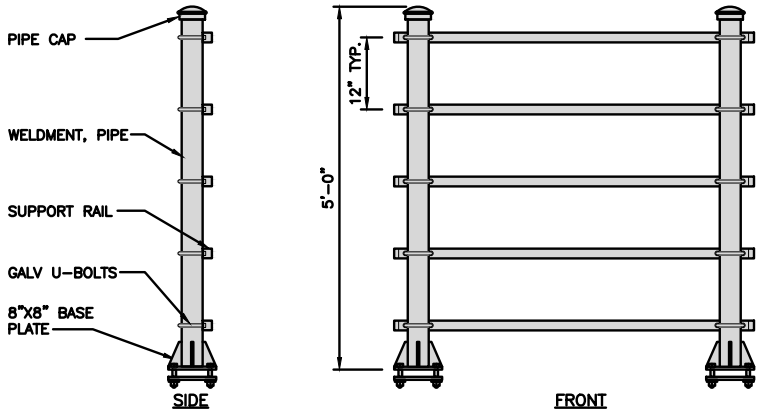


PLATFORM DETAIL

NO SCALE

2

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



H-FRAME DETAIL

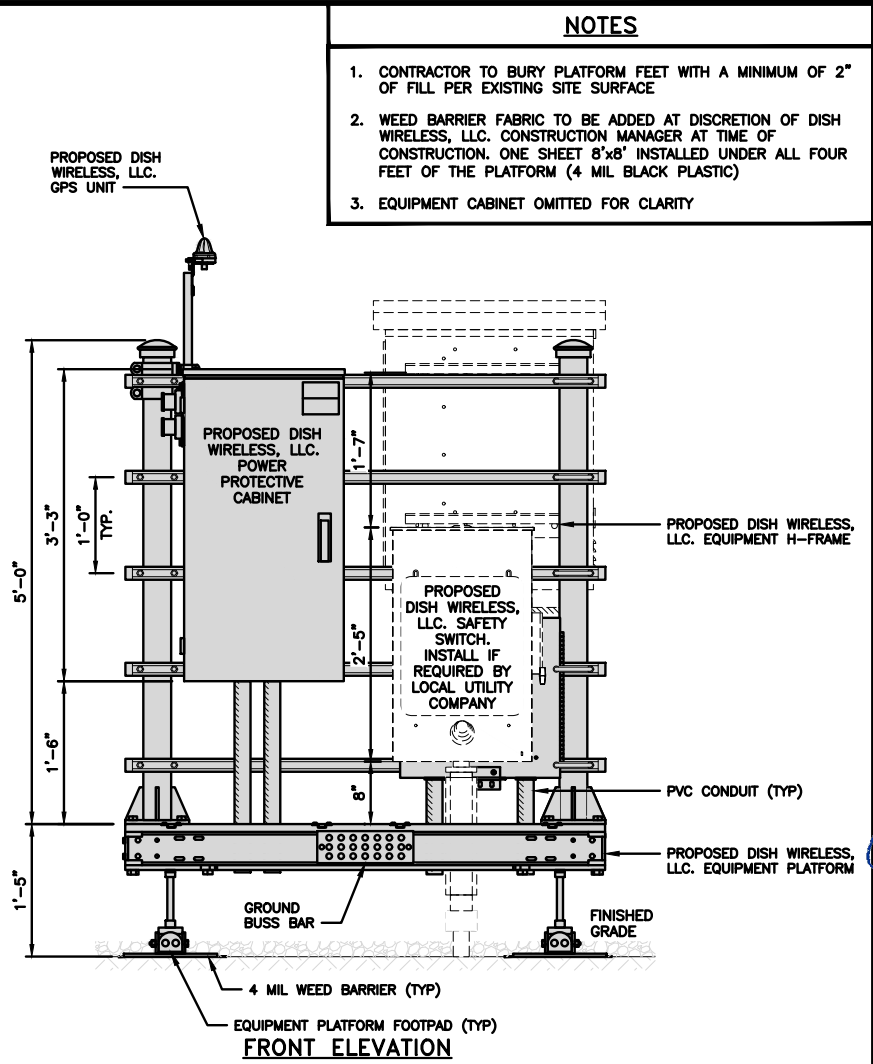
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3

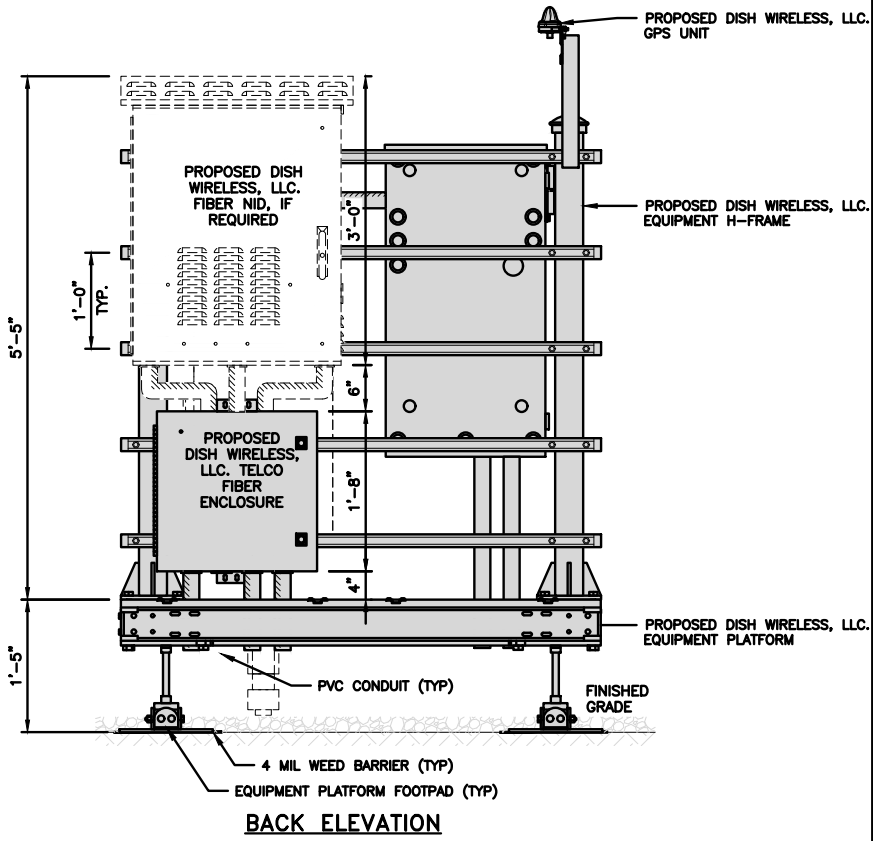
NOT USED

NO SCALE

4

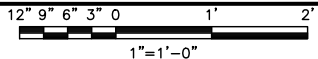


FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION



5

NOTES

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



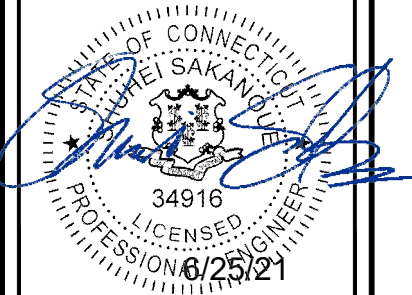
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2039-Z5555C

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PROJECT INFORMATION
BOBDL00052A
HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

SHEET TITLE
EQUIPMENT PLATFORM AND
H-FRAME DETAILS

SHEET NUMBER

A-3

CHARLES INDUSTRY HEX
CUBE-PM639155N4

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

PLAN

SIDE

BACK

SIDE

FRONT

CABINET DETAIL

NO SCALE

1

RAYCAP PPC
RDIAC-2465-P-240-MTS

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

TOP

BACK

SIDE

FRONT

SIDE

POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

2

SQUARE D SAFETY SWITCHES
D224NRB

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

SIDE

FRONT

SAFETY SWITCH DETAIL

NO SCALE

3

COMMSCOPE SS-TB2550
SUPPORT TEE BRACKET

DIMENSIONS (HxWxL)	--"x10.75"x2.26"
WEIGHT/ VOLUME	8.46 LBS

FRONT

BACK

PLAN

SIDE

VERTICAL CABLE SUPPORT DETAIL

NO SCALE

4

ZAYO 5RU CABINET
("LIT" SITES)

DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, -48VDC

FRONT

SIDE

BACK

NETWORK INTERFACE UNIT DETAIL

NO SCALE

5

CHARLES CFIT-PF2020DSH1
FIBER TELCO ENCLOSURE

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

SIDE

BACK

FRONT

FIBER TELCO ENCLOSURE DETAIL

NO SCALE

6

COMMSCOPE WB-K110-B
WAVEGUIDE BRIDGE KIT

DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

PLAN

FRONT

SIDE

ICE BRIDGE DETAIL

NO SCALE

7

CONCRETE PIER DETAIL

FINISH SLOPE TO DRAIN

PROPOSED 3.5" DIA. SCH 40 PIPE GALVANIZED

PROPOSED 1'-6" DIA. CONCRETE PIER (TYP)

A-A SECTION

3" DIA SCH 40 PIPE

18" DIA DRILLED PIER FOUNDATION

1'-6"

CONCRETE PIER

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

8

HYBRID CABLE RUN

PROPOSED ICE BRIDGE

PROPOSED X" DIA HYBRID CABLE

PROPOSED CABLE CLAMP 3'-0" O.C.

EXISTING SELF SUPPORT TOWER

HYBRID CABLE RUN

NO SCALE

9



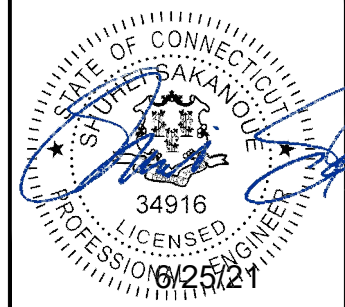
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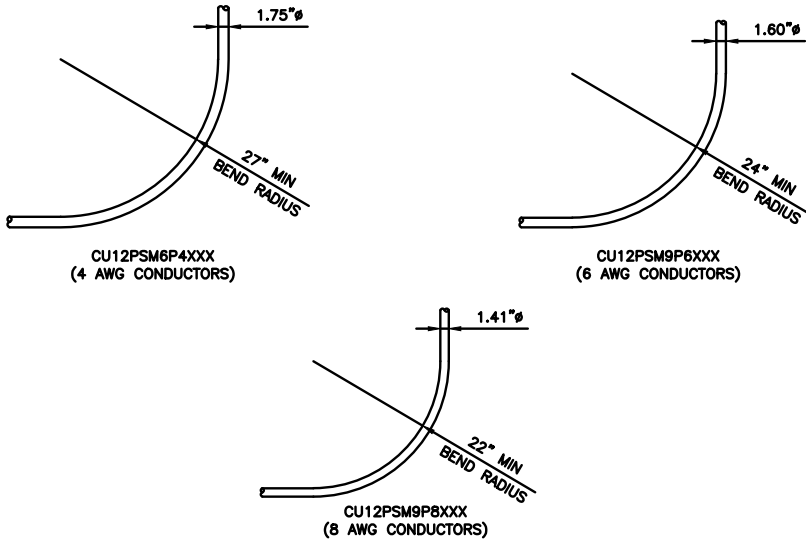
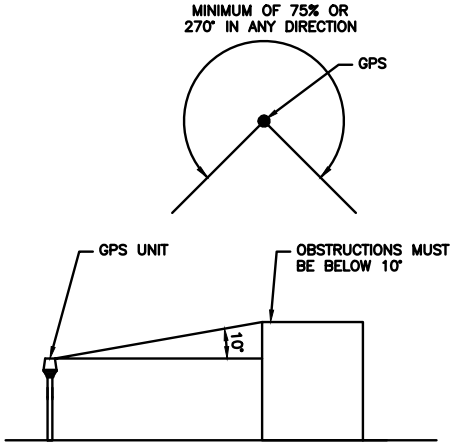
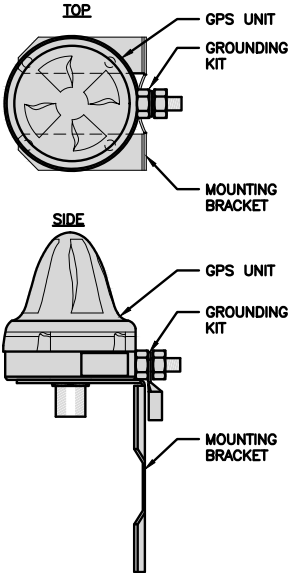
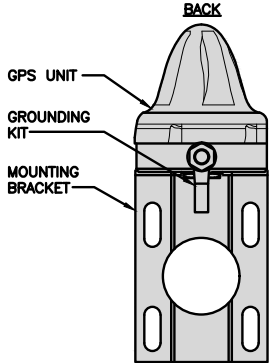
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2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00052A
HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

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 RADIUS

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.

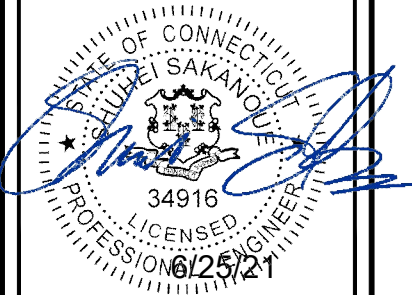
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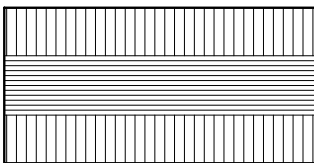
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SHEET TITLE
EQUIPMENT DETAILS

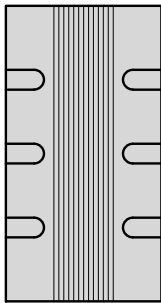
SHEET NUMBER

A-5

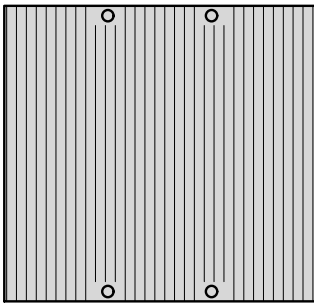
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN

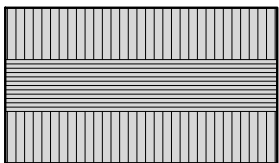


SIDE

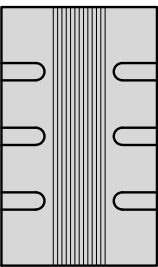


FRONT

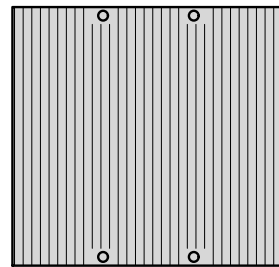
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



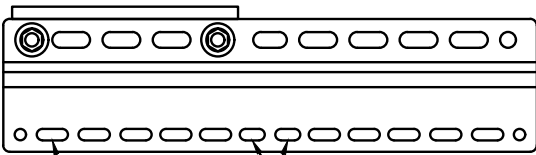
SIDE



FRONT

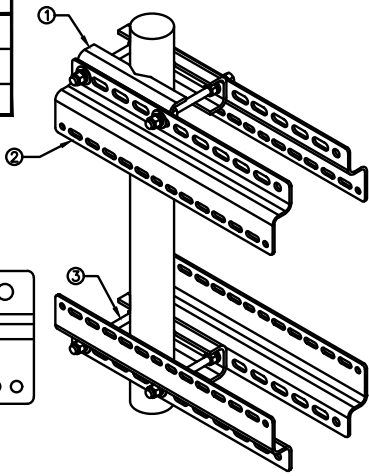
SABRE INDUSTRIES RRU BRACKET MOUNT C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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 HEAD DETAIL

NO SCALE

1

REMOTE RADIO HEAD DETAIL

NO SCALE

2

REMOTE RADIO MOUNT DETAIL

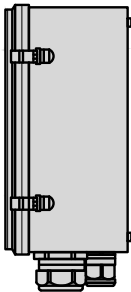
NO SCALE

3

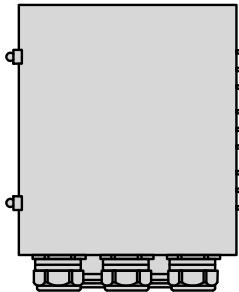
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



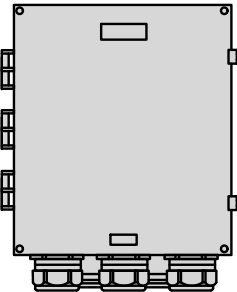
PLAN



SIDE

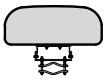


BACK



FRONT

JMA WIRELESS MX08FR0665-20 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	54 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



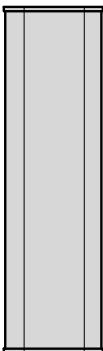
PLAN



BACK



SIDE



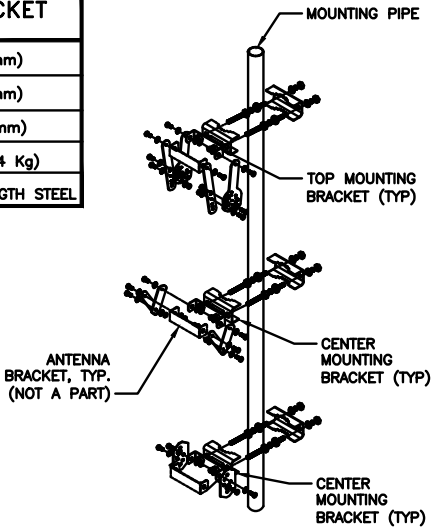
FRONT

NOTES

FINAL ANTENNA SPECIFICATIONS
TO BE CONFIRMED BY GC

JMA 91900318 MOUNTING BRACKET

WIDTH	8.3" (211mm)
DEPTH	7.5" (191mm)
HEIGHT	11.2" (284mm)
TOTAL WEIGHT (WITH BRACKETS)	18.5 LBS (8.4 Kg)
HOUSING MATERIAL	GALV. HIGH STRENGTH STEEL



SURGE SUPPRESSION DETAIL

NO SCALE

4

ANTENNA DETAIL

NO SCALE

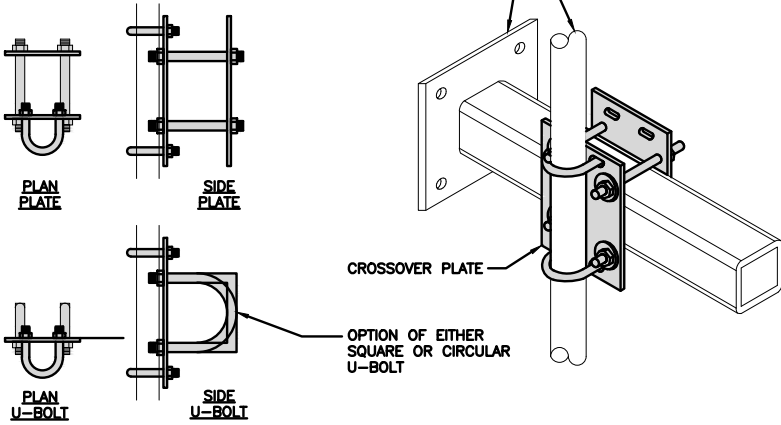
5

ANTENNA MOUNTING DETAIL

NO SCALE

6

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

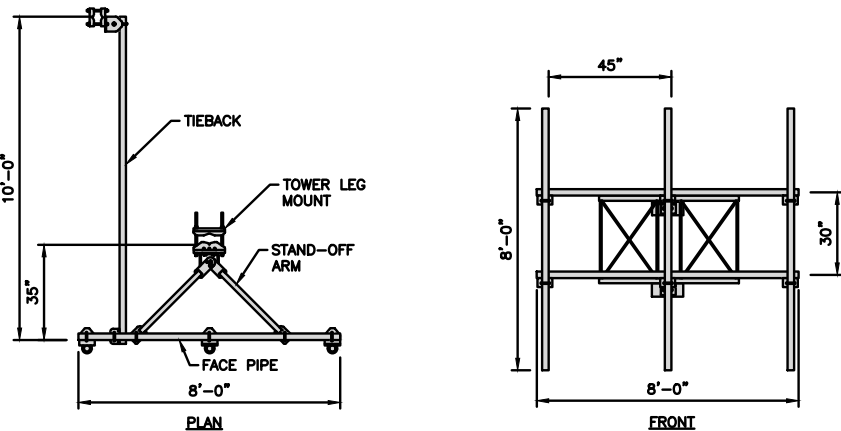


RRH/OVP MOUNT DETAIL

NO SCALE

7

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



ANTENNA FRAME DETAIL

NO SCALE

8

NOT USED

NO SCALE

9

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wireless.

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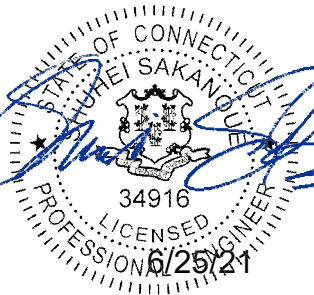
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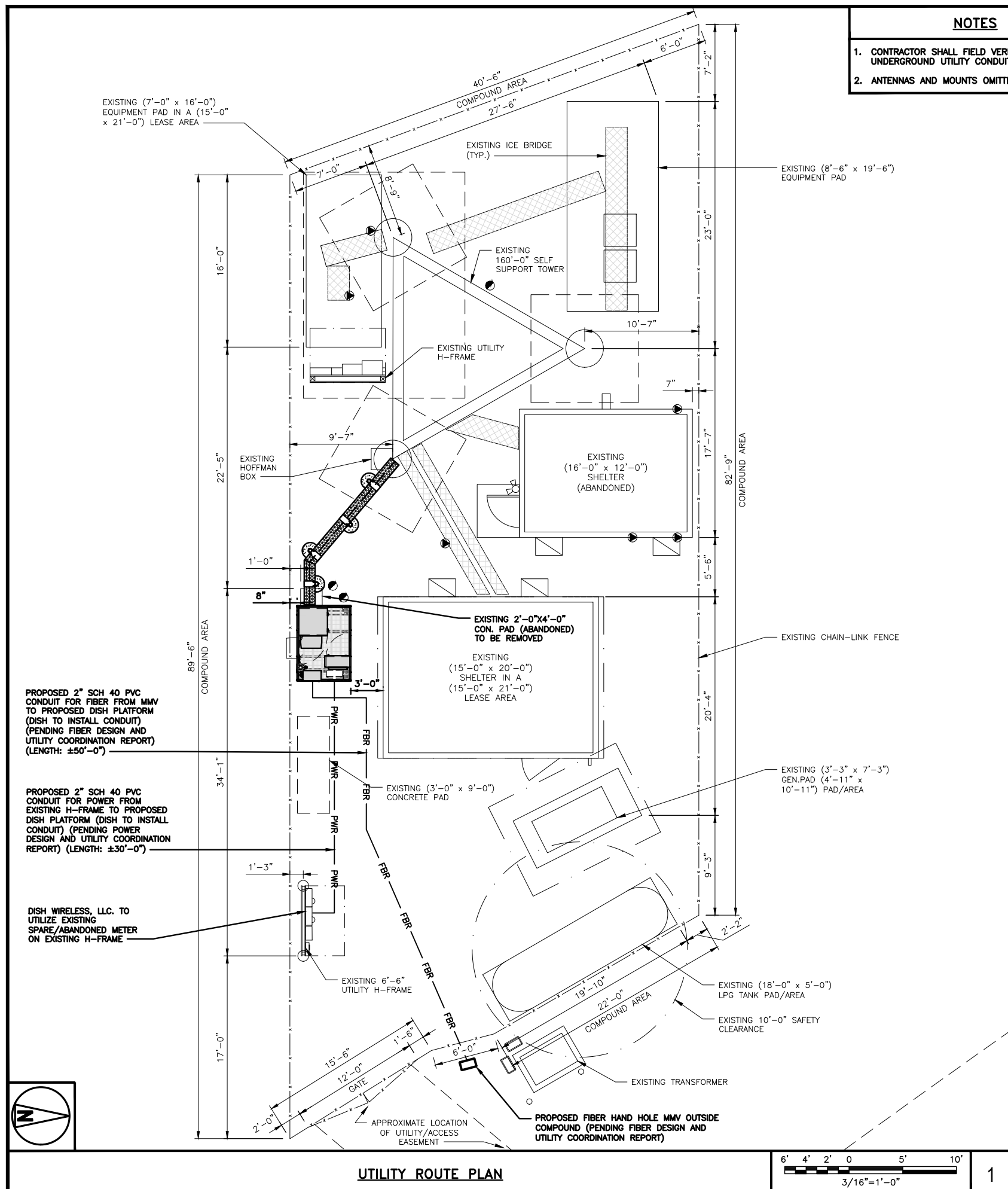
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DISH WIRELESS, LLC.
PROJECT INFORMATION
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HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

A-6



NOTES

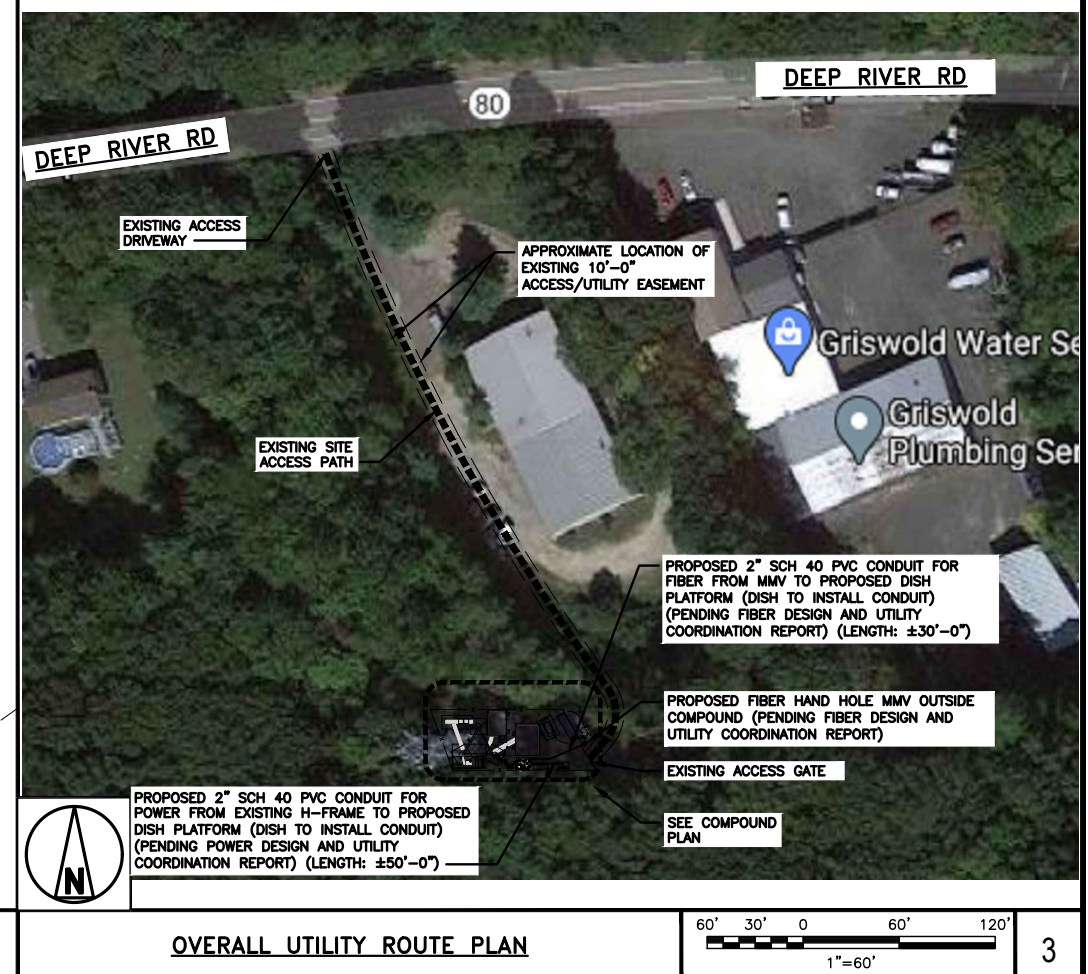
1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.

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

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

ELECTRICAL NOTES

2



OVERALL UTILITY ROUTE PLAN

60' 30' 0 60' 120'

1"=60'

3



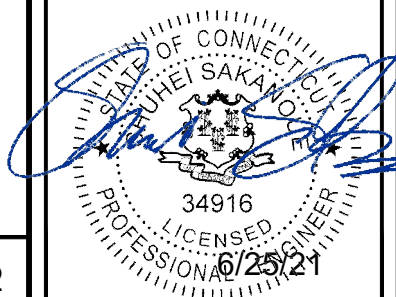
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RCD	SS	CJW
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RFDS REV #: N/A

CONSTRUCTION
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	05/12/2021	FINAL
1	06/24/2021	FINAL

A&E PROJECT NUMBER

2039-Z5555C

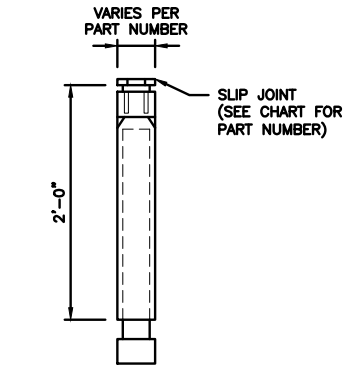
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00052A
HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

SHEET TITLE
ELECTRICAL/FIBER ROUTE
PLAN AND NOTES

SHEET NUMBER

E-1

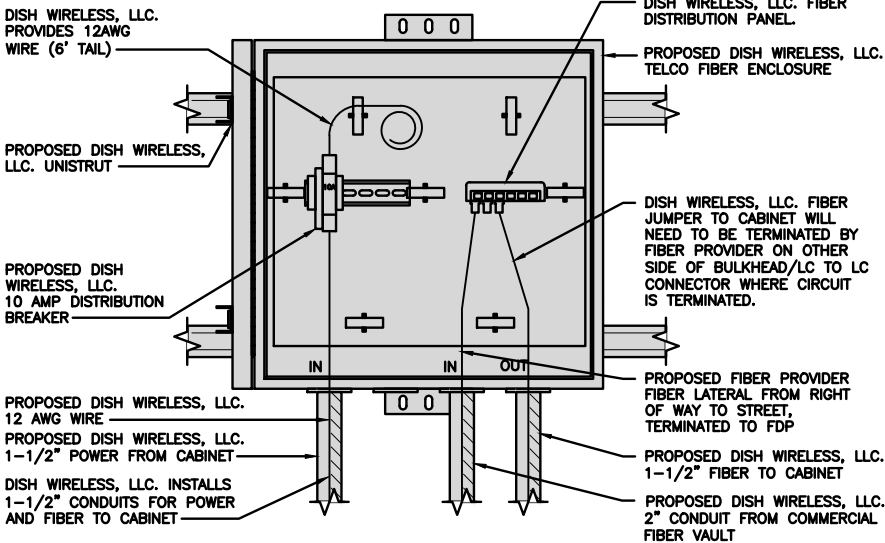
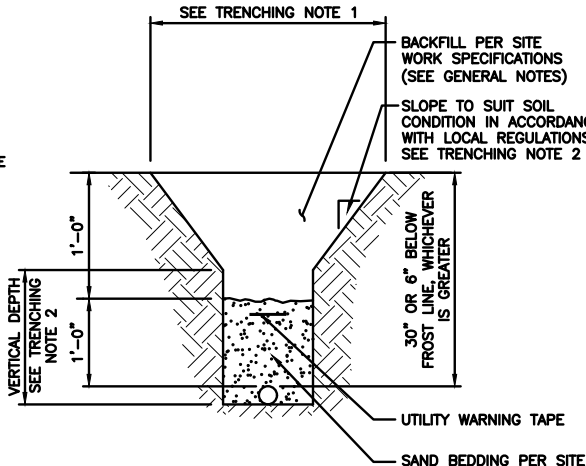
CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"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

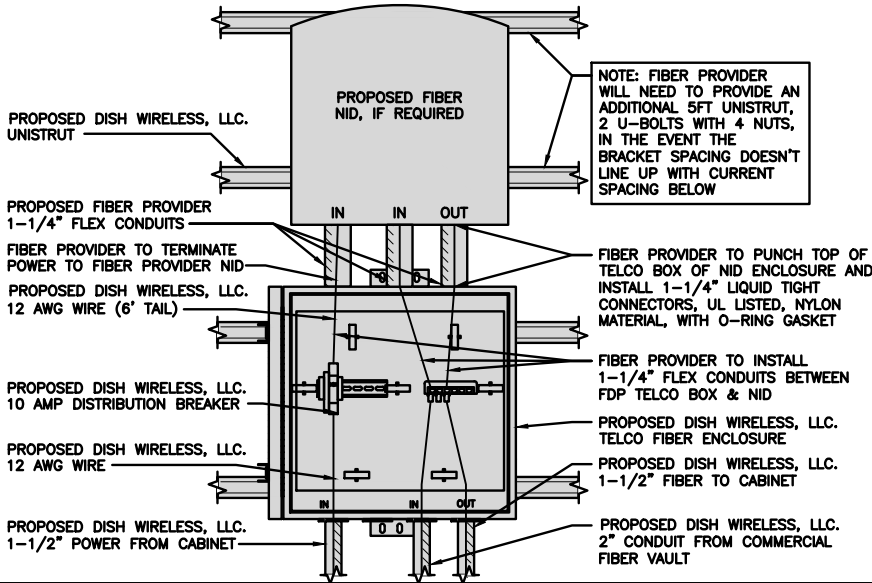
NO SCALE

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

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

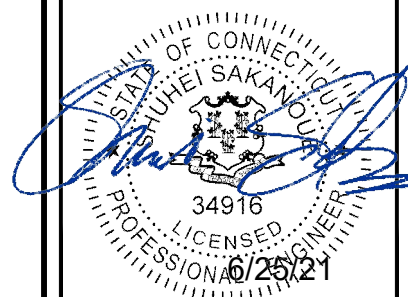
CROWN
CASTLE

2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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RCD SS CJW

RFDS REV #: N/A

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A&E PROJECT NUMBER

2039-Z5555C

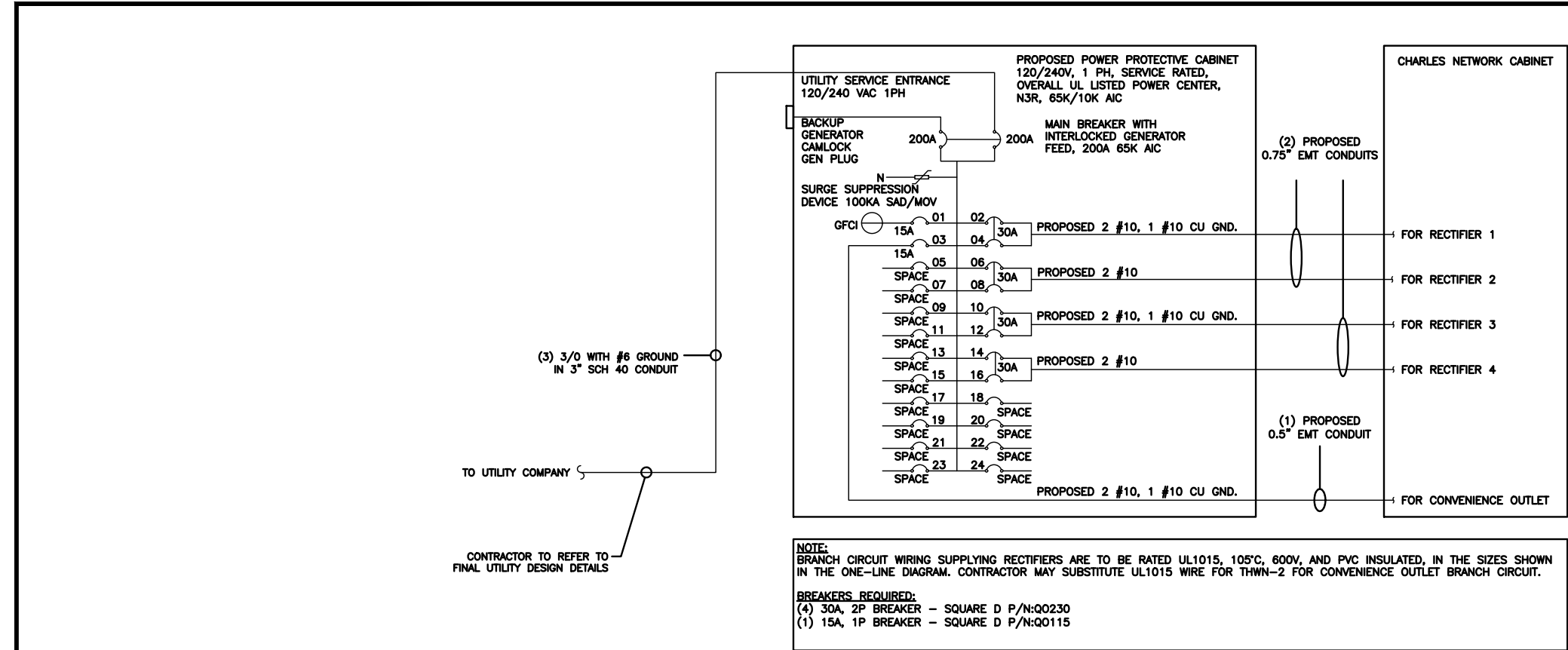
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00052A
HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

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)(a) OR 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE.	
#12 FOR 15A-20A/1P BREAKER:	$0.8 \times 30A = 24.0A$
#10 FOR 25A-30A/2P BREAKER:	$0.8 \times 40A = 32.0A$
#8 FOR 35A-40A/2P BREAKER:	$0.8 \times 55A = 44.0A$
#6 FOR 45A-60A/2P BREAKER:	$0.8 \times 75A = 60.0A$
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.	



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RCD SS CJW

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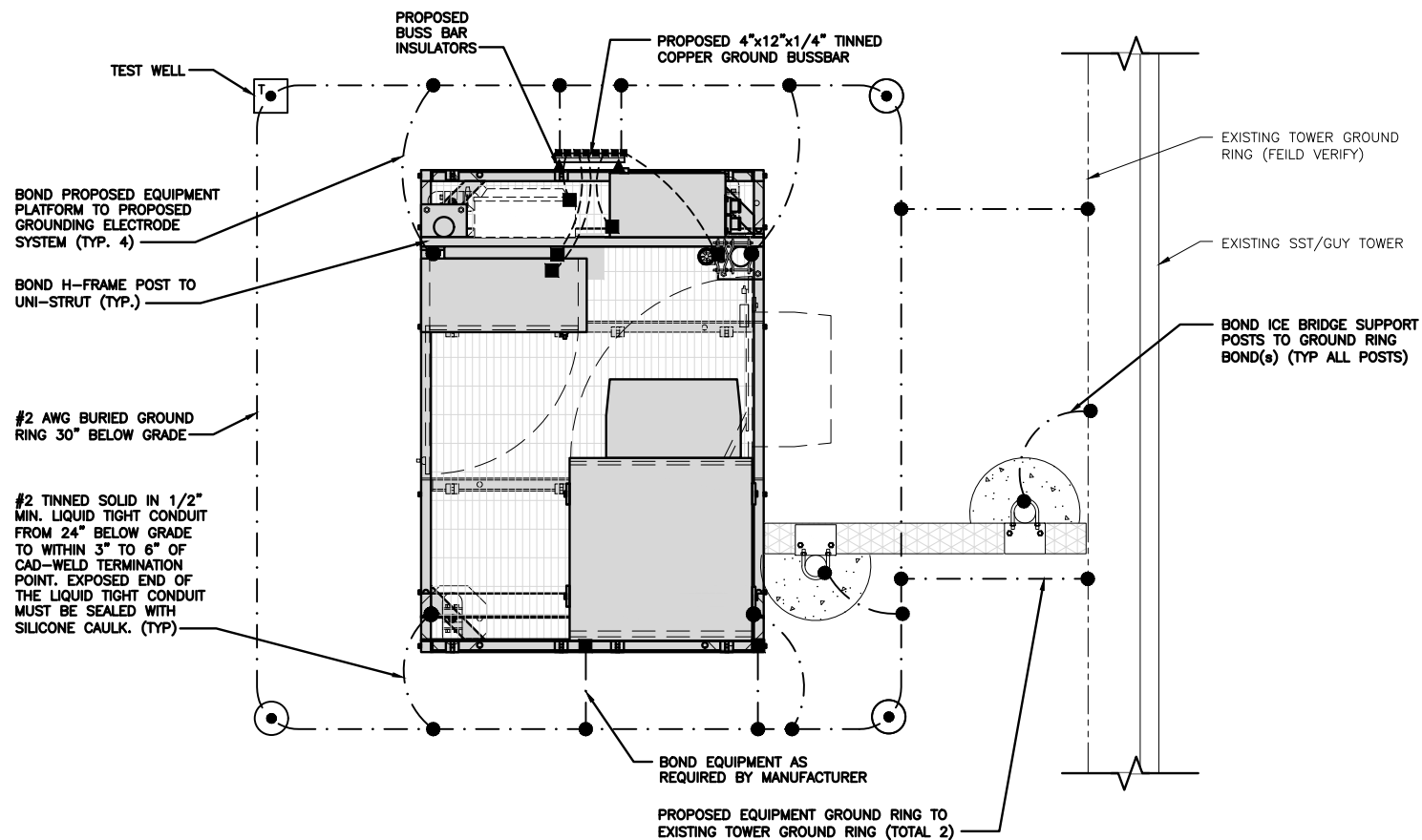
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PROJECT INFORMATION
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HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

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

SHEET NUMBER

E-3

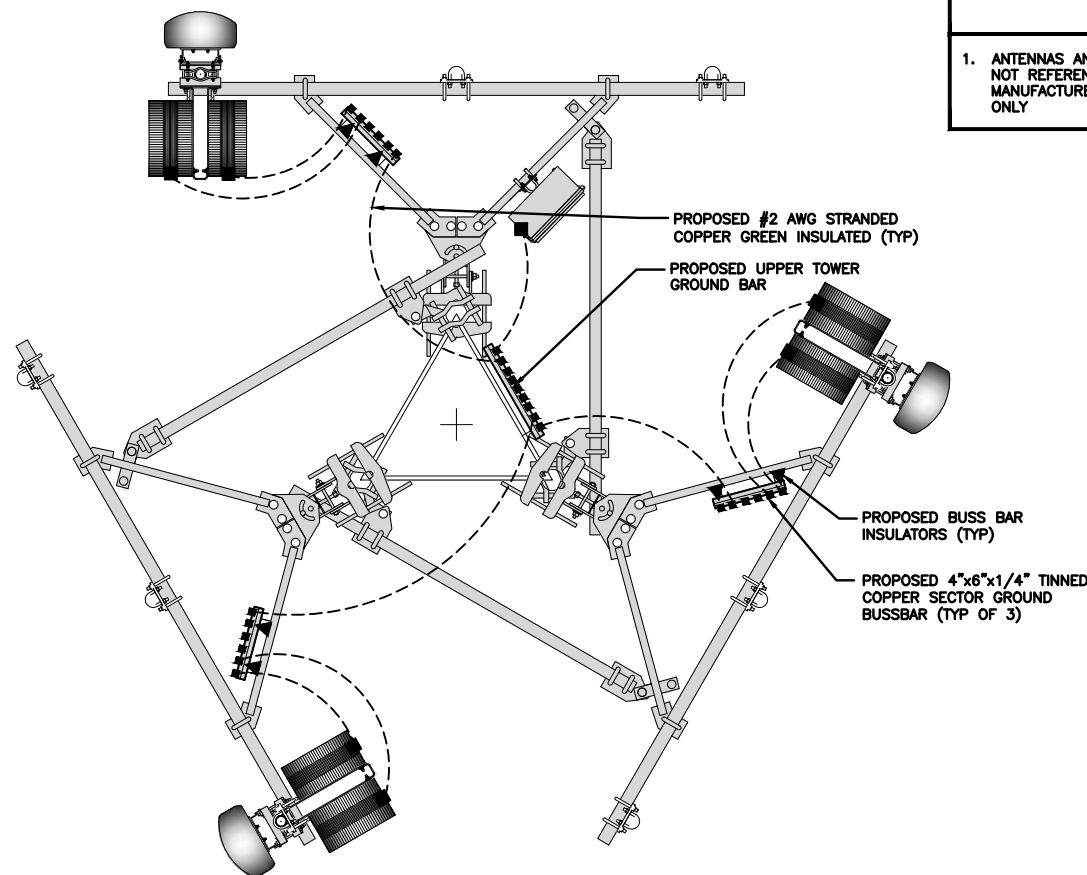
PPC ONE—LINE DIAGRAM										NO SCALE		1																																																																																																																																																																																																																																								
<table><tr><th colspan="14">PROPOSED CHARLES PANEL SCHEDULE</th></tr><tr><th rowspan="2">LOAD SERVED</th><th colspan="2">VOLT AMPS (WATTS)</th><th rowspan="2">TRIP</th><th rowspan="2">CKT #</th><th rowspan="2">PHASE</th><th rowspan="2">CKT #</th><th rowspan="2">TRIP</th><th colspan="2">VOLT AMPS (WATTS)</th><th rowspan="2">LOAD SERVED</th></tr><tr><th>L1</th><th>L2</th><th>L1</th><th>L2</th></tr><tr><td>PPC GFCI OUTLET</td><td>180</td><td></td><td>15A</td><td>1</td><td>A</td><td>2</td><td>30A</td><td>2880</td><td></td><td>ABB/GE INFINITY RECTIFIER 1</td></tr><tr><td>CHARLES GFCI OUTLET</td><td></td><td>180</td><td>15A</td><td>3</td><td>B</td><td>4</td><td></td><td>2880</td><td>2880</td><td></td></tr><tr><td>—SPACE—</td><td></td><td></td><td></td><td>5</td><td>A</td><td>6</td><td>30A</td><td>2880</td><td></td><td>ABB/GE INFINITY RECTIFIER 2</td></tr><tr><td>—SPACE—</td><td></td><td></td><td></td><td>7</td><td>B</td><td>8</td><td></td><td>2880</td><td>2880</td><td></td></tr><tr><td>—SPACE—</td><td></td><td></td><td></td><td>9</td><td>A</td><td>10</td><td>30A</td><td>2880</td><td></td><td>ABB/GE INFINITY RECTIFIER 3</td></tr><tr><td>—SPACE—</td><td></td><td></td><td></td><td>11</td><td>B</td><td>12</td><td></td><td>2880</td><td>2880</td><td></td></tr><tr><td>—SPACE—</td><td></td><td></td><td></td><td>13</td><td>A</td><td>14</td><td>30A</td><td>2880</td><td></td><td>ABB/GE INFINITY RECTIFIER 4</td></tr><tr><td>—SPACE—</td><td></td><td></td><td></td><td>15</td><td>B</td><td>16</td><td></td><td></td><td>2880</td><td></td></tr><tr><td>—SPACE—</td><td></td><td></td><td></td><td>17</td><td>A</td><td>18</td><td></td><td></td><td></td><td>—SPACE—</td></tr><tr><td>—SPACE—</td><td></td><td></td><td></td><td>19</td><td>B</td><td>20</td><td></td><td></td><td></td><td>—SPACE—</td></tr><tr><td>—SPACE—</td><td></td><td></td><td></td><td>21</td><td>A</td><td>22</td><td></td><td></td><td></td><td>—SPACE—</td></tr><tr><td>—SPACE—</td><td></td><td></td><td></td><td>23</td><td>B</td><td>24</td><td></td><td></td><td></td><td>—SPACE—</td></tr><tr><td>VOLTAGE AMPS</td><td>180</td><td>180</td><td></td><td></td><td></td><td></td><td></td><td>11520</td><td>11520</td><td></td></tr><tr><td colspan="3">200A MCB, 10, 24 SPACE, 120/240V</td><td>L1</td><td colspan="2">L2</td><td colspan="2"></td><td colspan="2"></td><td></td></tr><tr><td colspan="3">MB RATING: 65,000 AIC</td><td>11700</td><td colspan="2">11700</td><td colspan="2">VOLTAGE AMPS</td><td colspan="2"></td><td></td></tr><tr><td colspan="3"></td><td>98</td><td colspan="2">98</td><td colspan="2">AMPS</td><td colspan="2"></td><td></td></tr><tr><td colspan="3"></td><td>98</td><td colspan="2"></td><td colspan="2">MAX AMPS</td><td colspan="2"></td><td></td></tr><tr><td colspan="3"></td><td>123</td><td colspan="2"></td><td colspan="2">MAX 125%</td><td colspan="2"></td><td></td></tr></table>														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		15A	1	A	2	30A	2880		ABB/GE INFINITY RECTIFIER 1	CHARLES GFCI OUTLET		180	15A	3	B	4		2880	2880		—SPACE—				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2	—SPACE—				7	B	8		2880	2880		—SPACE—				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3	—SPACE—				11	B	12		2880	2880		—SPACE—				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4	—SPACE—				15	B	16			2880		—SPACE—				17	A	18				—SPACE—	—SPACE—				19	B	20				—SPACE—	—SPACE—				21	A	22				—SPACE—	—SPACE—				23	B	24				—SPACE—	VOLTAGE AMPS	180	180						11520	11520		200A MCB, 10, 24 SPACE, 120/240V			L1	L2							MB RATING: 65,000 AIC			11700	11700		VOLTAGE AMPS								98	98		AMPS								98			MAX AMPS								123			MAX 125%								
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TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE

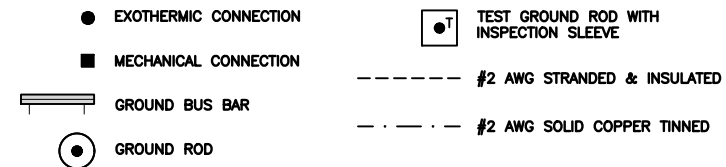
1



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, LLC. 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 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.
- (B) **TOWER GROUND RING:** THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.
- (C) **INTERIOR GROUND RING:** #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.
- (D) **BOND TO INTERIOR GROUND RING:** #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.
- (E) **GROUND ROD:** UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.
- (F) **CELL REFERENCE GROUND BAR:** POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE. STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.
- (G) **HATCH PLATE GROUND BAR:** BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.
- (H) **EXTERIOR CABLE ENTRY PORT GROUND BARS:** LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.
- (J) **TELCO GROUND BAR:** BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.
- (K) **FRAME BONDING:** THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.
- (L) **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.
- (M) **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.
- (N) **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.
- (P) **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.
- (Q) **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.
- (R) **TOWER TOP COLLECTOR BUSS BAR** IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH WIRELESS, LLC. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE

3

dish
wireless.

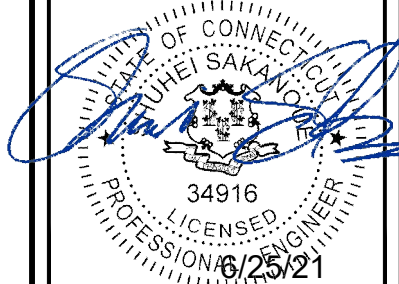
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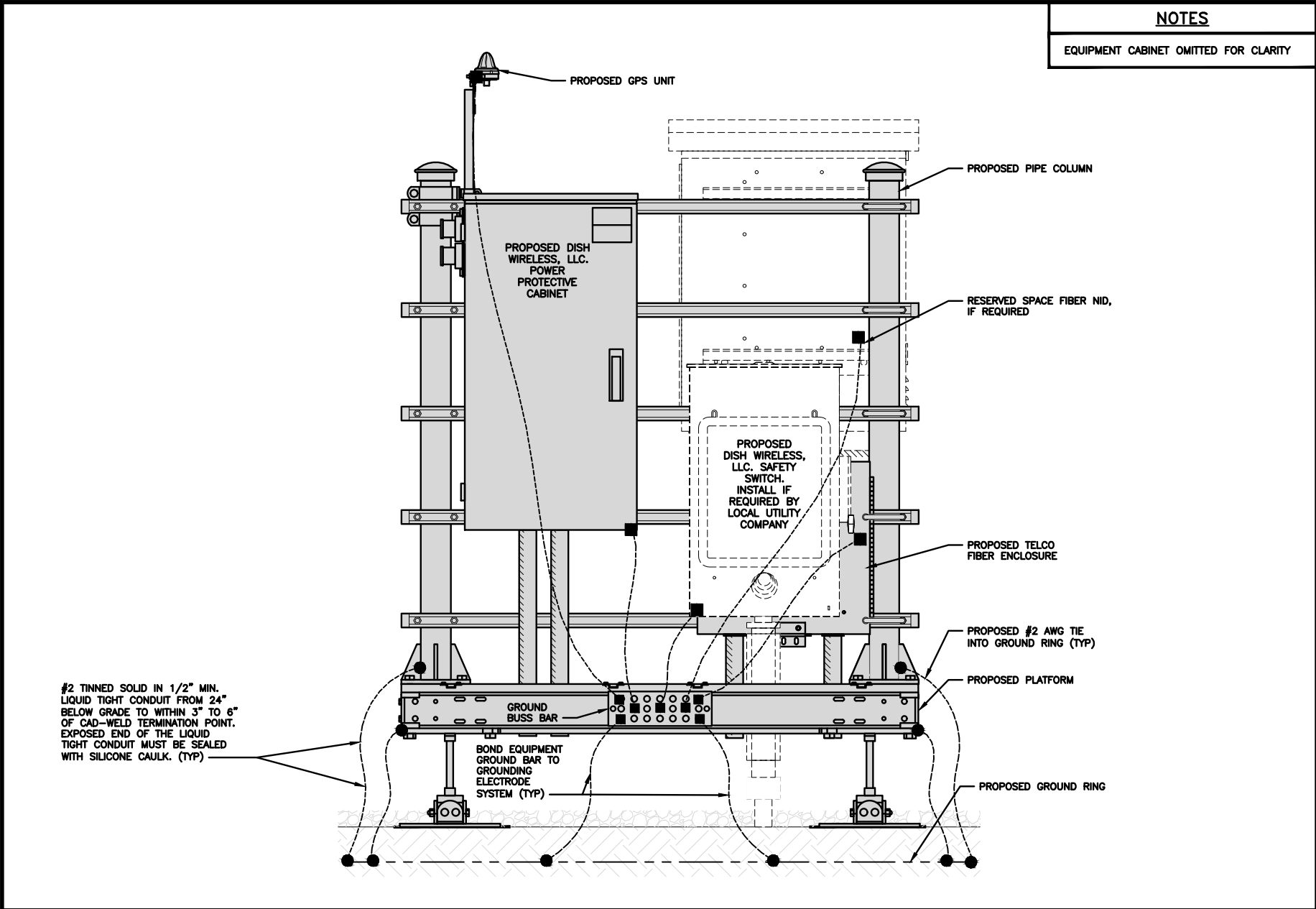
A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00052A
HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

SHEET TITLE
GROUNDING PLANS
AND NOTES

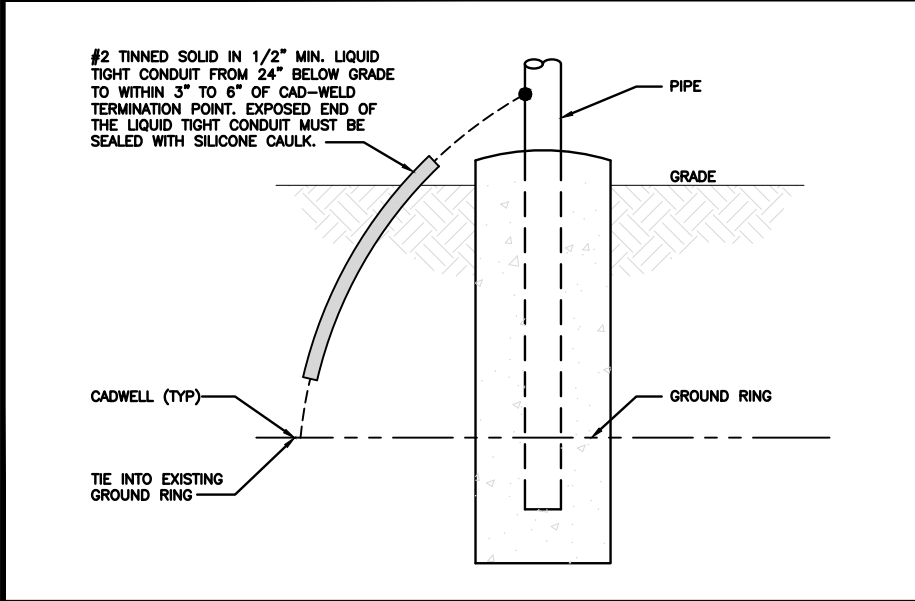
SHEET NUMBER

G-1



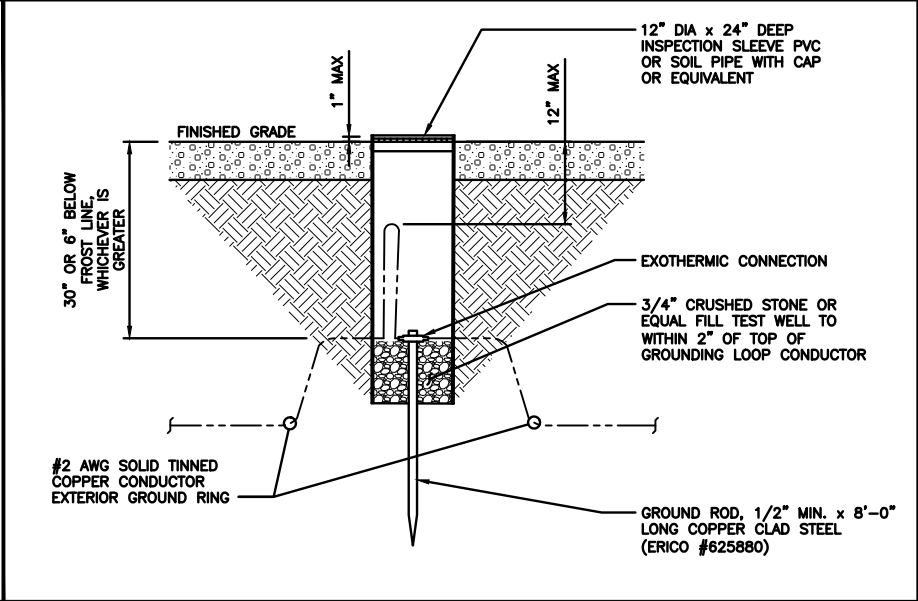
H-FRAME GROUNDING DETAIL

NO SCALE 1



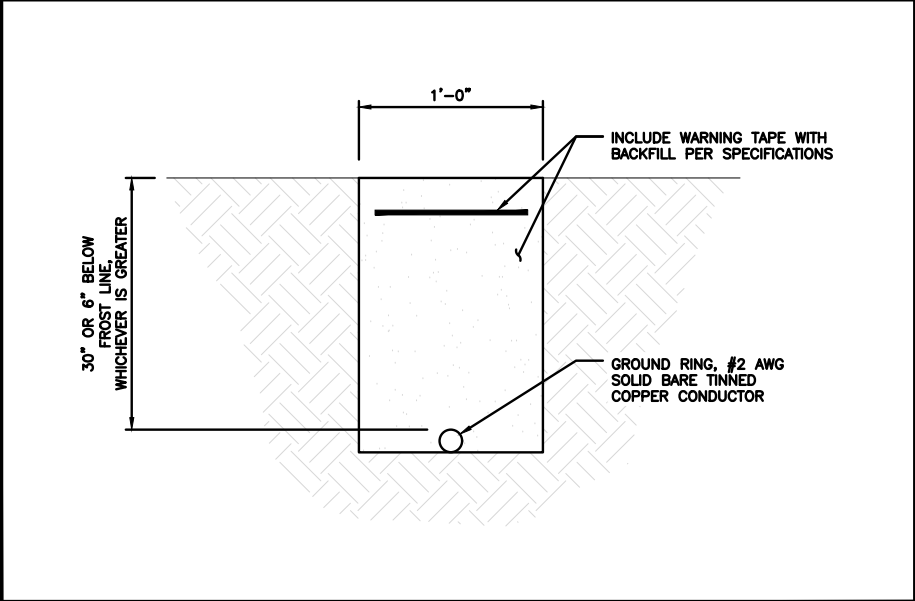
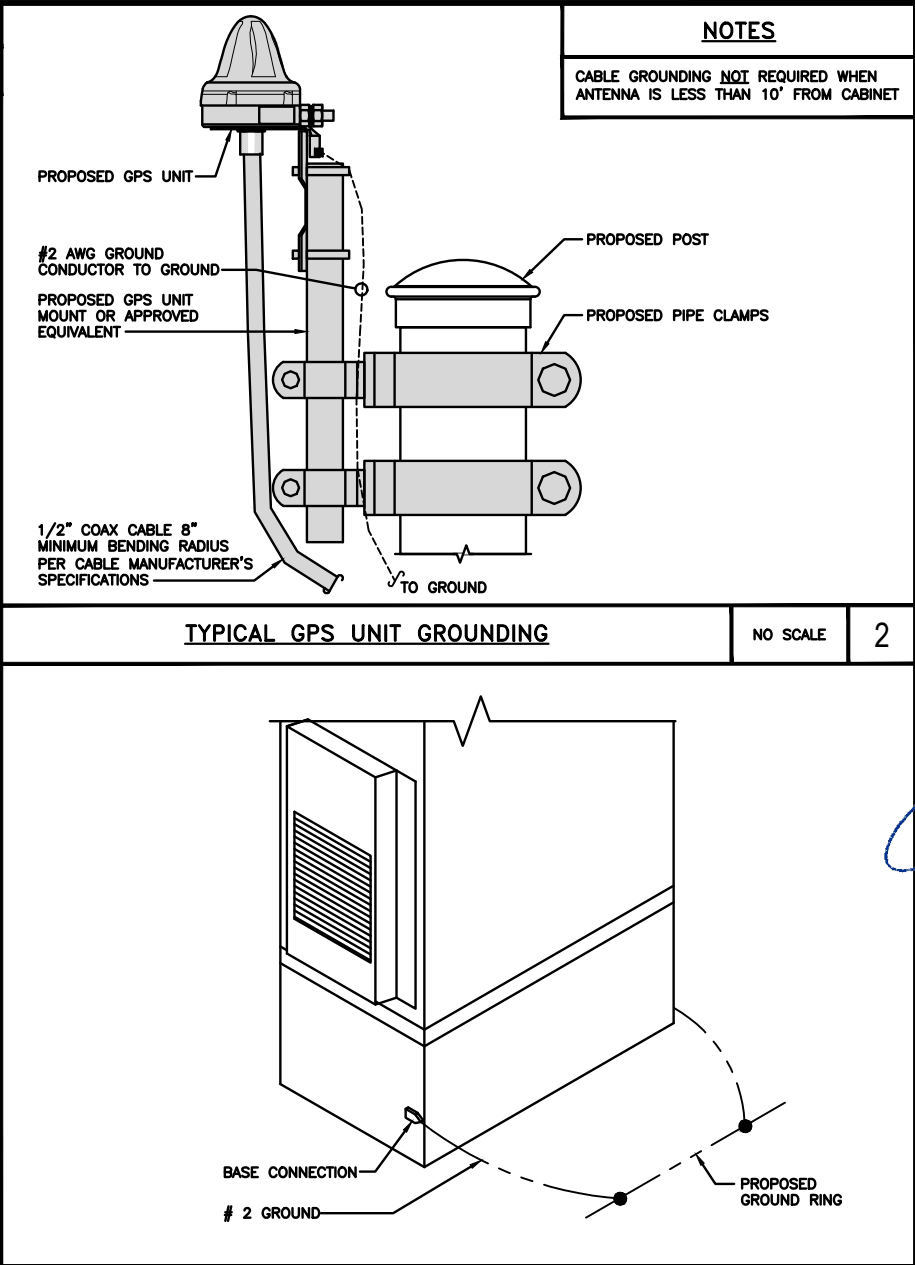
TRANSITIONING GROUND DETAIL

NO SCALE 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE

NO SCALE 5



dish
wireless.

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STATE OF CONNECTICUT
SHUHEI SAKANO
34916
LICENSED PROFESSIONAL ENGINEER
6/25/21

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RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

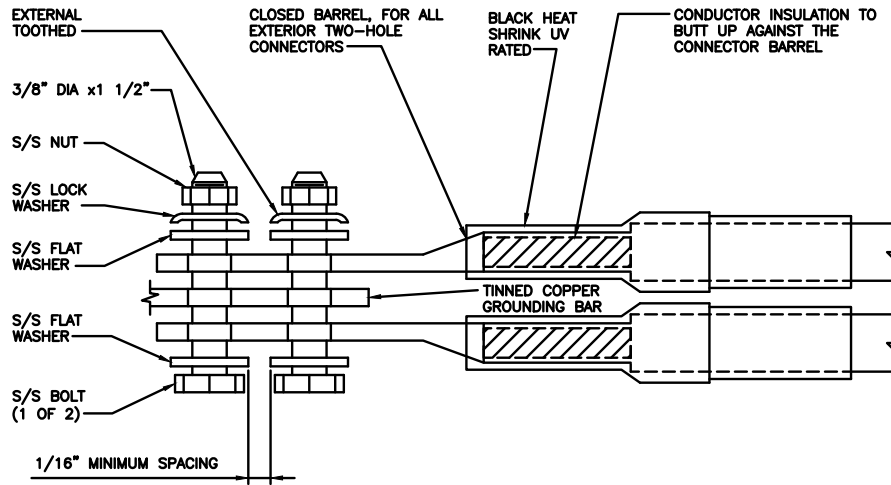
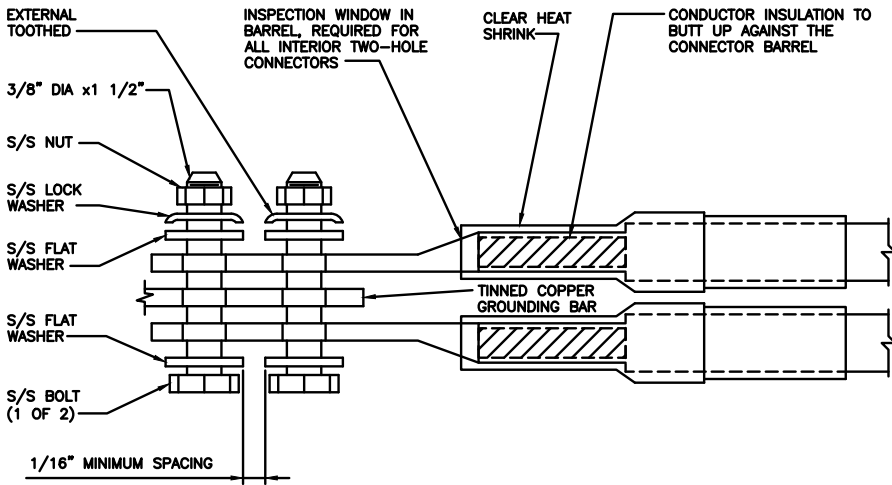
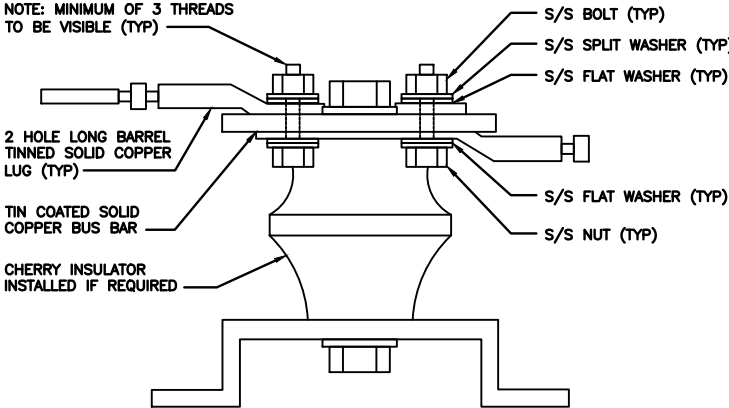
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HRT 088 943629
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KILLINGWORTH, CT 06419

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-2

1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR. ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD. 2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING. 3. FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING. 4. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS. 5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE. 6. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR. 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED. 8. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).														
TYPICAL GROUNDING NOTES			NO SCALE	1	TYPICAL EXTERIOR TWO HOLE LUG			NO SCALE	2	TYPICAL INTERIOR TWO HOLE LUG			NO SCALE	3
														
LUG DETAIL			NO SCALE	4	NOT USED			NO SCALE	5	NOT USED			NO SCALE	6
NOT USED			NO SCALE	7	NOT USED			NO SCALE	8	NOT USED			NO SCALE	9



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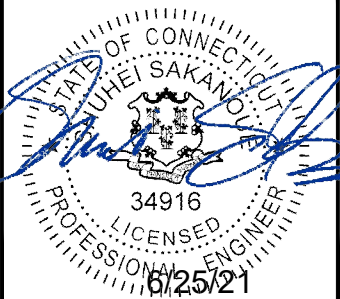
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DISH WIRELESS, LLC. PROJECT INFORMATION BOBDL00052A HRT 088 943629 #14 ROUTE 80 KILLINGWORTH, CT 06419		
SHEET TITLE GROUNDING DETAILS		
SHEET NUMBER G-3		

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 (1) PORT	ORANGE	ORANGE		WHITE (1) PORT	ORANGE	ORANGE		WHITE (1) PORT	ORANGE	ORANGE
			WHITE (1) PORT				WHITE (1) PORT				WHITE (1) 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 (1) PORT	PURPLE	PURPLE		WHITE (1) PORT	PURPLE	PURPLE		WHITE (1) PORT	PURPLE	PURPLE
			WHITE (1) PORT				WHITE (1) PORT				WHITE (1) PORT

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED AM
LONG 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
RED	RED
BLUE	BLUE
GREEN	GREEN
ORANGE	YELLOW
PURPLE	

HYBRID/DISCREET CABLES

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

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

RET MOTORS AT ANTENNAS

PORT 1/ ANTENNA 1 "IN"	PORT 1/ ANTENNA 1 "IN"	PORT 1/ ANTENNA 1 "IN"
RED	BLUE	GREEN

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

PRIMARY	SECONDARY
WHITE	WHITE
RED	RED
WHITE	WHITE
	RED
	WHITE

RF CABLE COLOR CODES

NO SCALE

1

LOW BANDS (N71–N28)
OPTIONAL – (N29)

ORANGE

AWS
(N65+N70+H–BLOCK)

PURPLE

CBRS TECH
(3 GHz)

YELLOW

NEGATIVE SLANT PORT
ON ANTRRH

WHITE

ALPHA SECTOR

RED

BETA SECTOR

BLUE

GAMMA SECTOR

GREEN

COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4

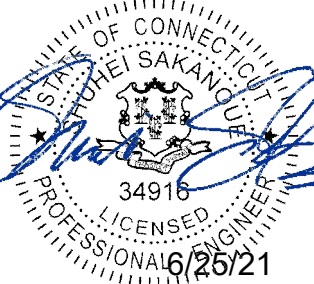
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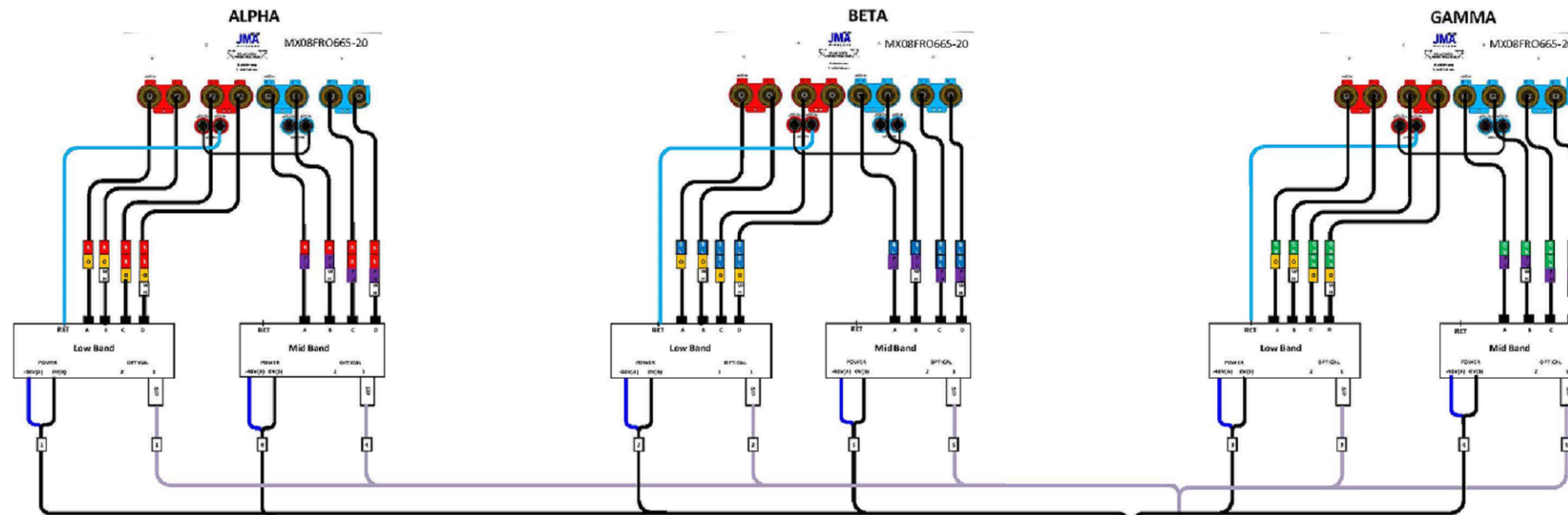
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SHEET TITLE

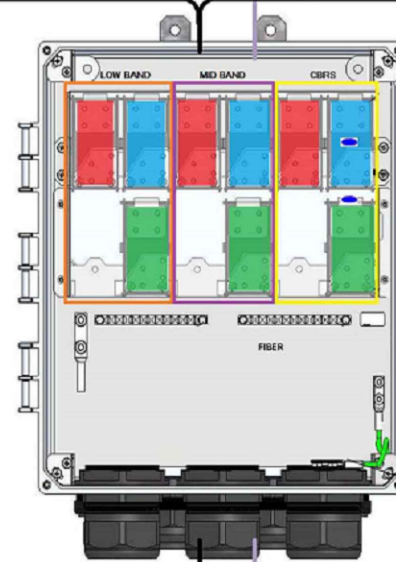
RF
CABLE COLOR CODE

SHEET NUMBER

RF-1



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



CSR NCS540		
Port	Interface	Description
0	G0/0/0/0	SoSeBoss
1	G0/0/0/1	CBRS - Alpha
2	G0/0/0/2	CBRS - Beta
3	G0/0/0/3	CBRS - Gamma
4	Te0/0/0/4	Fujitsu Low-Band RU - Alpha
5	Te0/0/0/5	Fujitsu Mid-Band RU - Alpha
6	Te0/0/0/6	Fujitsu Low-Band RU - Beta
7	Te0/0/0/7	Fujitsu Mid-Band RU - Beta
8	Te0/0/0/8	Fujitsu Low-Band RU - Gamma
9	Te0/0/0/9	Fujitsu Mid-Band RU - Gamma
10	Te0/0/0/10	Fixed VNF
11	Te0/0/0/11	Fixed VNF
12	Te0/0/0/12	Fixed VNF
13	Te0/0/0/13	Fixed VNF
14	Te0/0/0/14	CBRS1
15	Te0/0/0/15	CBRS2
16	Te0/0/0/16	CBRS3
17	G0/0/0/17	SM1 - BMC
18	G0/0/0/18	SM2 - BMC
19	Te0/0/0/19	SM1 - Data 1
20	Te0/0/0/20	SM1 - Data 2
21	Te0/0/0/21	SM2 - Data 1
22	Te0/0/0/22	SM2 - Data 2
23	Te0/0/0/23	Reserved Uplink (EDC, LDC)
24	Te0/0/0/24	Blank/Future
25	Te0/0/0/25	Blank/Future
26	Te0/0/0/26	Fiber N/U
27	Te0/0/0/27	Fiber N/U
28	Te0/0/0/28	Blank/Future
29	Te0/0/0/29	Blank/Future

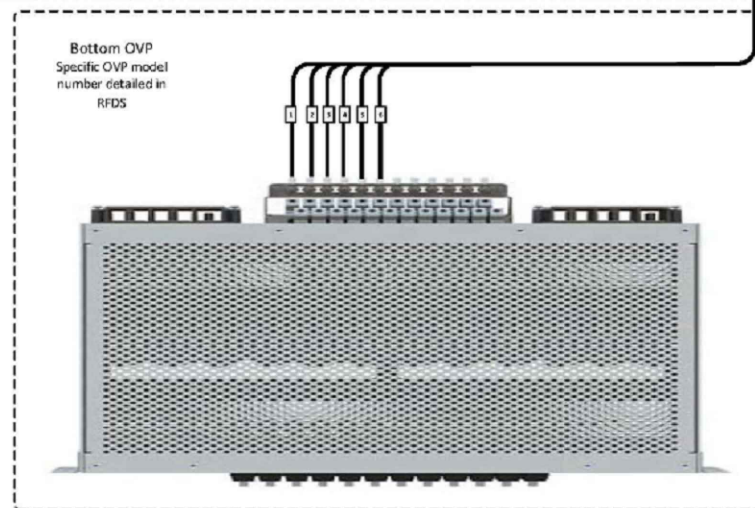
top

bottom

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

5G plumbing diagram JMA MX08FRO665-20 2-2-Z(LB+MB)				
Quantity	LOT	REV NO	CHK NO	REV
5-Jan-2022	Rev	None	None	3

Bottom OVP
Specific OVP model
number detailed in
RFDS



dish
wireless.

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#14 ROUTE 80
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SHEET TITLE
RF
PLUMBING DIAGRAM

SHEET NUMBER
RF-2

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
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-DEBTD

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

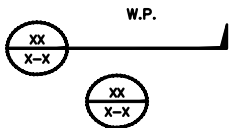
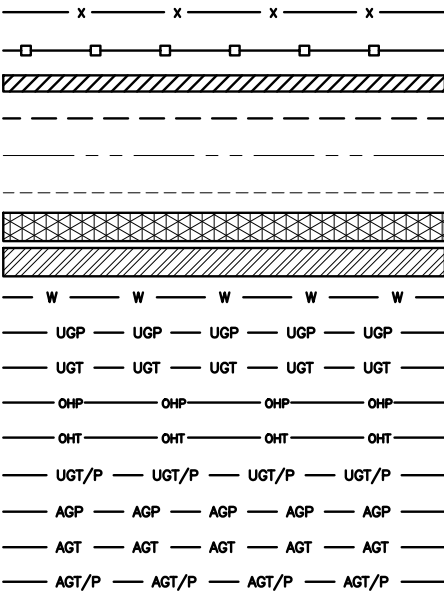
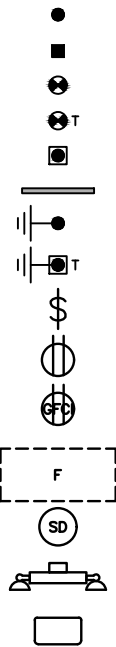
ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE



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

dish
wireless.

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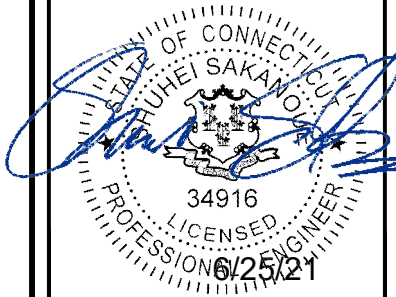
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SHEET TITLE

LEGEND AND
ABBREVIATIONS

SHEET NUMBER

GN-1

LEGEND

ABBREVIATIONS

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, LLC. AND TOWER OWNER NOC & THE DISH WIRELESS, LLC. AND TOWER OWNER CONSTRUCTION MANAGER.

2. "LOOK UP" – DISH WIRELESS, LLC. 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, LLC. AND DISH WIRELESS, LLC. 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, LLC. 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, LLC. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, LLC. 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, LLC. 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, LLC. 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, LLC.

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, LLC. 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.



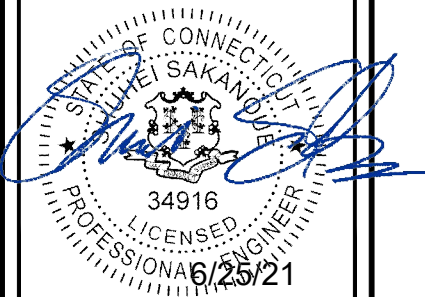
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TO ALTER THIS DOCUMENT.

DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	05/12/2021	FINAL
1	06/24/2021	FINAL

A&E PROJECT NUMBER

2039–Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00052A
HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

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



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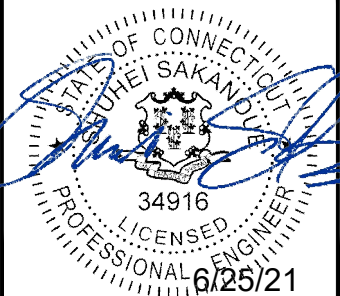
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DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	05/12/2021	FINAL
1	06/24/2021	FINAL

A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00052A
HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

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.



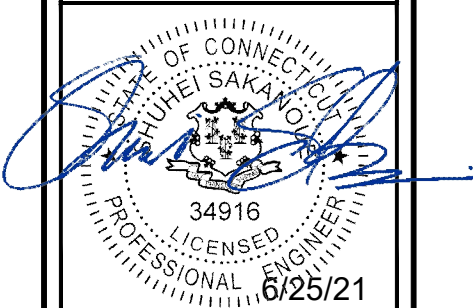
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LITTLETON, CO 80120



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UNLESS THEY ARE ACTING UNDER THE DIRECTION
OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	05/12/2021	FINAL
1	06/24/2021	FINAL

A&E PROJECT NUMBER

2039–Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00052A
HRT 088 943629
#14 ROUTE 80
KILLINGWORTH, CT 06419

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **April 20, 2021**



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

Subject: **Structural Analysis Report**

Carrier Designation: **DISH Network Co-Locate**
Site Number: BOBDL00052A
Site Name: CT-CCI-T-806387

Crown Castle Designation: **BU Number:** 806387
Site Name: HRT 088 943629
JDE Job Number: 645650
Work Order Number: 1945872
Order Number: 553395 Rev. 0

Engineering Firm Designation: **Crown Castle Project Number:** 1945872

Site Data: **#14 Route 80, KILLINGWORTH, MIDDLESEX County, CT**
Latitude 41° 21' 26.43", Longitude -72° 31' 11.83"
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:

LC7: Proposed Equipment Configuration

Sufficient Capacity – 80.6%

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Steven Hu

Respectfully submitted by:

Maham Barimani, P.E.
Senior Project Engineer

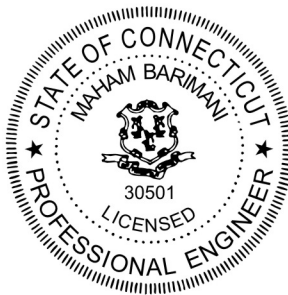


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1) INTRODUCTION

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:	130 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 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)
124.0	124.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-20 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	B13 RRH 4X30	8 1	7/8 1-5/8
		3	alcatel lucent	B66A RRH4X45		
		6	antel	LPA-80080/6CF w/ Mount Pipe		
		6	commscope	JAHH-65B-R3B w/ Mount Pipe		
		3	nokia	AHCA		
		1	raycap	RC3DC-3315-PF-48		
		1	tower mounts	Sitepro VFA12-HD Sector Mount (3)		
144.0	144.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	4	1-5/8
		3	ericsson	RADIO 4415 B66A_CCIV3		
		3	ericsson	RADIO 4424 B25_TMO		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		1	tower mounts	Sector Mount [SM 506-3]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
118.0	118.0	12	decibel	DB844H90E-XY w/ Mount Pipe	-	-
		1	tower mounts	Pipe Mount [PM 601-3]		
		1	tower mounts	Sector Mount [SM 201-3]		
109.0	115.0	1	celwave	PD1110	1	1-1/4
	109.0	1	tower mounts	Side Arm Mount [SO 308-1]		
90.0	90.0	6	ericsson	RRUS-11	1 2 12	3/8 7/16 7/8
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe		
		6	powerwave technologies	7770.00 w/ Mount Pipe		
		12	powerwave technologies	LGP21401		
		1	powerwave technologies	P45-16-XLH-RR w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8F		
		1	tower mounts	Sector Mount [SM 104-3]		
50.0	50.0	1	lucent	KS24019-L112A	1	1/2
		1	tower mounts	Side Arm Mount [SO 306-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1237256	CCISITES
4-POST-MODIFICATION INSPECTION	8150390	CCISITES
4-POST-MODIFICATION INSPECTION	2450760	CCISITES
4-POST-MODIFICATION INSPECTION	1296500	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	821498	CCISITES
4-TOWER MANUFACTURER DRAWINGS	2281721	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	7235023	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2340021	CCISITES

3.1) Analysis Method

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

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 - 156	Leg	Rohn 2.375" x 0.218" (2 EH)	3	-3.34	49.90	6.7	Pass
T2	156 - 152	Leg	Rohn 2.375" x 0.218" (2 EH)	15	-4.11	52.40	7.8	Pass
T3	152 - 148	Leg	Rohn 2.375" x 0.218" (2 EH)	24	-7.02	52.40	13.4	Pass
T4	148 - 144	Leg	Rohn 2.375" x 0.218" (2 EH)	33	-10.09	52.40	19.3	Pass
T5	144 - 140	Leg	Rohn 2.375" x 0.218" (2 EH)	42	-16.89	52.40	32.2	Pass
T6	140 - 120	Leg	Rohn 2.875" x 0.276" (2.5 EH)	49	-48.98	78.15	62.7	Pass
T7	120 - 100	Leg	ROHN 3 EH	79	-79.86	99.06	80.6	Pass
T8	100 - 80	Leg	Rohn 4" x 0.318" (3.5 EH) (GR)	100	-109.74	155.70	70.5	Pass
T9	80 - 60	Leg	ROHN 4 EH (GR)	121	-138.61	202.56	68.4	Pass
T10	60 - 40	Leg	Rohn 5.563" x 0.375" (5 EH) (GR)	142	-163.32	259.31	63.0	Pass
T11	40 - 20	Leg	Rohn 5.563" x 0.375" (5 EH) (GR)	157	-188.42	259.29	72.7	Pass
T12	20 - 0	Leg	Rohn 6.625" x 0.432" (6 EH) (GR)	172	-212.70	400.17	53.2	Pass
T1	160 - 156	Diagonal	L 1.5 x 1.5 x 1/8	9	-0.62	5.80	10.7 16.6 (b)	Pass
T2	156 - 152	Diagonal	L 1.5 x 1.5 x 1/8	19	-1.81	5.79	31.3 50.0 (b)	Pass
T3	152 - 148	Diagonal	L 1.5 x 1.5 x 1/8	27	-1.77	5.78	30.7 47.7 (b)	Pass
T4	148 - 144	Diagonal	L 1.5 x 1.5 x 1/8	37	-1.92	5.77	33.3 53.6 (b)	Pass
T5	144 - 140	Diagonal	L 2 x 2 x 1/4	45	-4.50	24.24	18.6 55.7 (b)	Pass
T6	140 - 120	Diagonal	2L 1.5 x 1.5 x 1/8 (3/16)	57	-4.15	14.33	29.0 62.9 (b)	Pass
T7	120 - 100	Diagonal	2L 2 x 2 x 3/16 (3/16)	84	-5.10	30.02	17.0 65.4 (b)	Pass
T8	100 - 80	Diagonal	2L 2.5 x 2.5 x 3/16 (3/16)	105	-5.92	40.83	14.5 44.4 (b)	Pass
T9	80 - 60	Diagonal	2L 3 x 3 x 3/16 (1/4)	124	-5.84	49.16	11.9 44.1 (b)	Pass
T10	60 - 40	Diagonal	2L 3 x 3 x 3/16 (1/4)	145	-6.78	37.89	17.9 41.8 (b)	Pass
T11	40 - 20	Diagonal	2L 3 x 3 x 1/4 (1/4)	161	-6.70	44.49	15.1 41.2 (b)	Pass
T12	20 - 0	Diagonal	2L 3.5 x 3.5 x 1/4 (1/4)	175	-7.45	57.93	12.9 44.7 (b)	Pass
T1	160 - 156	Top Girt	L 2 x 2 x 1/8	4	-0.28	4.27	6.5	Pass
T6	140 - 120	Top Girt	L 2 x 2 x 1/8	54	-0.85	4.27	19.9	Pass
							Summary	

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Leg (T7)	80.6	Pass
						Diagonal (T7)	65.4	Pass
						Top Girt (T6)	19.9	Pass
						Bolt Checks	65.4	Pass
						Rating =	80.6	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	52.6	Pass
1	Base Foundation (Structure)	0	32.0	Pass
1	Base Foundation (Soil Interaction)	0	57.8	Pass

Structure Rating (max from all components) =	80.6%
---	--------------

Notes:

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

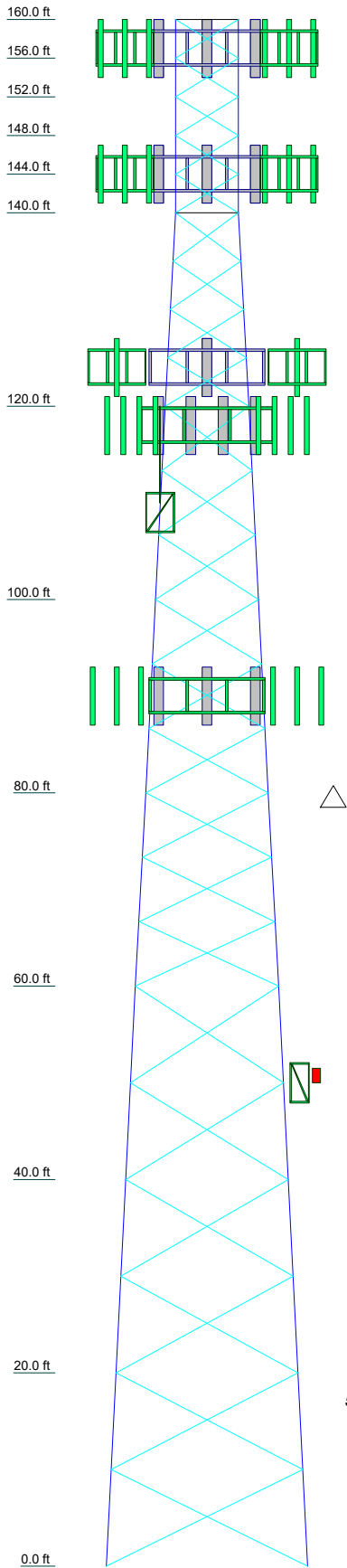
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	A	Rohn 5.563" x 0.375" (5 EH) (GR)	Rohn 4 EH (GR)	Rohn 4" x 0.318" (3.5 EH) (GR)	ROHN 3 EH	Rohn 2.875" x 0.276" (2.5 EH)	Rohn 2.375" x 0.218" (2 EH)					
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 2.5 x 2.5 x 3/16 (3/16)	2L 2 x 2 x 3/16 (3/16)	2L 1.5 x 1.5 x 1/8 (3/16)	2L 1.5 x 1.5 x 1/8					
Diagonal Grade												
Top Girts												
Face Width (ft)	20.8646	18.9542	16.7708	14.7708	12.6771	10.6354	8.60417	6.56255	5.5416	4.5833	3.5376	2.5297
# Panels @ (ft)		6 @ 10				9 @ 6.66667		4 @ 5		5 @ 4		
Weight (K)	25.6	6.6	4.9	4.2	3.7	2.8	1.6	1.0	0.2	0.1	0.1	0.2



SYMBOL LIST			
MARK	SIZE	MARK	SIZE
A	Rohn 6.625" x 0.432" (6 EH) (GR)	C	A529-50
B	L 2 x 2 x 1/4	D	L 2 x 2 x 1/8

MATERIAL STRENGTH					
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A529-50	50 ksi	65 ksi
A36	36 ksi	58 ksi			

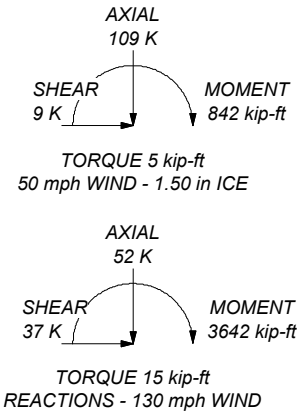
- TOWER DESIGN NOTES**
1. Tower is located in Middlesex County, Connecticut.
 2. Tower designed for Exposure B to the TIA-222-H Standard.
 3. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
 4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is 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. Grouted pipe f'c is 7 ksi
 9. TOWER RATING: 80.6%

ALL REACTIONS
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:

DOWN: 219 K
SHEAR: 24 K

UPLIFT: -181 K
SHEAR: 20 K





CROWN CASTLE
The Pathway to Possible

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX: (724) 416-4623

Job: 806387		
Project:		
Client: Crown Castle	Drawn by: Steven Hu	App'd:
Code: TIA-222-H	Date: 04/20/21	Scale: NTS
Path: C:\Users\SHu\Documents\WFH\806387\WO 1945872 - SA\Prod\806387_RPA.dwg		Dwg No. E-1

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.

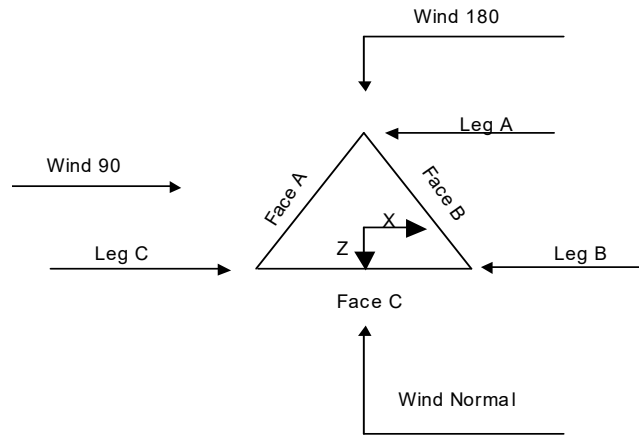
This tower is designed using the TIA-222-H standard.

The following design criteria apply:

- Tower is located in Middlesex County, Connecticut.
- Tower base elevation above sea level: 417.00 ft.
- Basic wind speed of 130 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.50 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Grouted pipe f'_c is 7 ksi.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.05.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	✓ Calculate Redundant Bracing Forces
Consider Moments - Diagonals	✓ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	✓ Use Clear Spans For Wind Area	✓ SR Leg Bolts Resist Compression
Use Code Stress Ratios	✓ Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
✓ Use Code Safety Factors - Guys	✓ Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	✓ Bypass Mast Stability Checks	✓ Consider Feed Line Torque
Always Use Max Kz	✓ Use Azimuth Dish Coefficients	✓ Include Angle Block Shear Check
Use Special Wind Profile	✓ Project Wind Area of Appurt.	Use TIA-222-H Bracing Resist.
✓ Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Exemption
Leg Bolts Are At Top Of Section		Use TIA-222-H Tension Splice
✓ Secondary Horizontal Braces Leg	Add IBC .6D+W Combination	Exemption
Use Diamond Inner Bracing (4 Sided)	✓ Sort Capacity Reports By Component	
SR Members Have Cut Ends	Triangulate Diamond Inner Bracing	Poles
SR Members Are Concentric	Treat Feed Line Bundles As Cylinder	Include Shear-Torsion Interaction
	Ignore KL/ry For 60 Deg. Angle Legs	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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	160.00-156.00			6.52	1	4.00
T2	156.00-152.00			6.53	1	4.00
T3	152.00-148.00			6.54	1	4.00
T4	148.00-144.00			6.55	1	4.00
T5	144.00-140.00			6.55	1	4.00
T6	140.00-120.00			6.56	1	20.00
T7	120.00-100.00			8.60	1	20.00
T8	100.00-80.00			10.64	1	20.00
T9	80.00-60.00			12.68	1	20.00
T10	60.00-40.00			14.77	1	20.00
T11	40.00-20.00			16.77	1	20.00
T12	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	160.00-156.00	4.00	X Brace	No	No	0.00	0.00
T2	156.00-152.00	4.00	X Brace	No	No	0.00	0.00
T3	152.00-148.00	4.00	X Brace	No	No	0.00	0.00
T4	148.00-144.00	4.00	X Brace	No	No	0.00	0.00
T5	144.00-140.00	4.00	X Brace	No	No	0.00	0.00
T6	140.00-120.00	5.00	X Brace	No	No	0.00	0.00
T7	120.00-100.00	6.67	X Brace	No	No	0.00	0.00
T8	100.00-80.00	6.67	X Brace	No	No	0.00	0.00
T9	80.00-60.00	6.67	X Brace	No	No	0.00	0.00
T10	60.00-40.00	10.00	X Brace	No	No	0.00	0.00
T11	40.00-20.00	10.00	X Brace	No	No	0.00	0.00

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
T12	20.00-0.00	10.00	X Brace	No	No	0.00	0.00

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 160.00-156.00	Pipe	Rohn 2.375" x 0.218" (2 EH)	A572-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)
T2 156.00-152.00	Pipe	Rohn 2.375" x 0.218" (2 EH)	A572-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)
T3 152.00-148.00	Pipe	Rohn 2.375" x 0.218" (2 EH)	A572-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)
T4 148.00-144.00	Pipe	Rohn 2.375" x 0.218" (2 EH)	A572-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)
T5 144.00-140.00	Pipe	Rohn 2.375" x 0.218" (2 EH)	A572-50 (50 ksi)	Single Angle	L 2 x 2 x 1/4	A529-50 (50 ksi)
T6 140.00-120.00	Pipe	Rohn 2.875" x 0.276" (2.5 EH)	A572-50 (50 ksi)	Double Angle	2L 1.5 x 1.5 x 1/8 (3/16)	A36 (36 ksi)
T7 120.00-100.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Double Angle	2L 2 x 2 x 3/16 (3/16)	A36 (36 ksi)
T8 100.00-80.00	Grouted Pipe	Rohn 4" x 0.318" (3.5 EH)	A572-50 (50 ksi)	Double Angle	2L 2.5 x 2.5 x 3/16 (3/16)	A36 (36 ksi)
T9 80.00-60.00	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Angle	2L 3 x 3 x 3/16 (1/4)	A36 (36 ksi)
T10 60.00-40.00	Grouted Pipe	Rohn 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)
T11 40.00-20.00	Grouted Pipe	Rohn 5.563" x 0.375" (5 EH)	A572-50 (50 ksi)	Double Angle	2L 3 x 3 x 1/4 (1/4)	A36 (36 ksi)
T12 20.00-0.00	Grouted Pipe	Rohn 6.625" x 0.432" (6 EH)	A572-50 (50 ksi)	Double Angle	2L 3.5 x 3.5 x 1/4 (1/4)	A36 (36 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 160.00-156.00	Equal Angle	L 2 x 2 x 1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T6 140.00-120.00	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	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 160.00-156.00	0.00	0.19	A36 (36 ksi)	1.03	1	1.05	30.00	30.00	36.00
T2 156.00-152.00	0.00	0.19	A36 (36 ksi)	1.03	1	1.05	30.00	30.00	36.00
T3 152.00-148.00	0.00	0.19	A36 (36 ksi)	1.03	1	1.05	30.00	30.00	36.00
T4 148.00-	0.00	0.19	A36	1.03	1	1.05	30.00	30.00	36.00

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
144.00			(36 ksi)						
T5 144.00-140.00	0.00	0.19	A36	1.03	1	1.05	30.00	30.00	36.00
T6 140.00-120.00	0.00	0.19	(36 ksi) A36	1.03	1	1.05	Mid-Pt	30.00	36.00
T7 120.00-100.00	0.00	0.19	(36 ksi) A36	1.03	1	1.05	Mid-Pt	30.00	36.00
T8 100.00-80.00	0.00	0.44	(36 ksi) A36	1.03	1	1.05	Mid-Pt	30.00	36.00
T9 80.00-60.00	0.00	0.44	(36 ksi) A36	1.03	1	1.05	Mid-Pt	30.00	36.00
T10 60.00-40.00	0.00	0.25	(36 ksi) A36	1.03	1	1.05	Mid-Pt	30.00	36.00
T11 40.00-20.00	0.00	0.25	(36 ksi) A36	1.03	1	1.05	Mid-Pt	30.00	36.00
T12 20.00-0.00	0.00	0.25	(36 ksi) A36	1.03	1	1.05	Mid-Pt	30.00	36.00

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 Y	X Y	X Y	X Y	X Y	X Y	X Y
ft										
T1 160.00-156.00	Yes	No	1	1	1	1	1	1	1	1
T2 156.00-152.00	Yes	No	1	1	1	1	1	1	1	1
T3 152.00-148.00	Yes	No	1	1	1	1	1	1	1	1
T4 148.00-144.00	Yes	No	1	1	1	1	1	1	1	1
T5 144.00-140.00	Yes	No	1	1	1	1	1	1	1	1
T6 140.00-120.00	Yes	No	1	1	1	1	1	1	1	1
T7 120.00-100.00	Yes	No	1	1	1	1	1	1	1	1
T8 100.00-80.00	Yes	No	1	1	1	1	1	1	1	1
T9 80.00-60.00	Yes	No	1	1	1	1	1	1	1	1
T10 60.00-40.00	Yes	No	1	1	1	1	1	1	1	1
T11 40.00-20.00	Yes	No	1	1	1	1	1	1	1	1
T12 20.00-0.00	Yes	No	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- 156.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T2 156.00- 152.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T3 152.00- 148.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T4 148.00- 144.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T5 144.00- 140.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T6 140.00- 120.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T7 120.00- 100.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T8 100.00- 80.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T9 80.00- 60.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T10 60.00- 40.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T11 40.00- 20.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T12 20.00- 0.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	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- 156.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T2 156.00- 152.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T3 152.00- 148.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T4 148.00- 144.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T5 144.00- 140.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T6 140.00- 120.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T7 120.00- 100.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T8 100.00- 80.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T9 80.00- 60.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T10 60.00- 40.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T11 40.00- 20.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T12 20.00- 0.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
	in	in	in	in	in	in	in	in
T1 160.00-156.00	2.50	3.50	2.50	3.50	0.00	0.00	0.00	0.00
T2 156.00-152.00	2.50	3.50	2.50	3.50	0.00	0.00	0.00	0.00
T3 152.00-148.00	2.50	3.50	2.50	3.50	0.00	0.00	0.00	0.00
T4 148.00-144.00	2.50	3.50	2.50	3.50	0.00	0.00	0.00	0.00
T5 144.00-140.00	2.50	3.50	2.50	3.50	0.00	0.00	0.00	0.00
T6 140.00-120.00	2.50	4.40	2.50	4.40	0.00	0.00	0.00	0.00
T7 120.00-100.00	2.50	4.90	2.50	4.90	0.00	0.00	0.00	0.00
T8 100.00-80.00	2.50	4.90	2.50	4.90	0.00	0.00	0.00	0.00
T9 80.00-60.00	2.50	4.80	2.50	4.80	0.00	0.00	0.00	0.00
T10 60.00-40.00	2.50	5.30	2.50	5.30	0.00	0.00	0.00	0.00
T11 40.00-20.00	2.50	5.40	2.50	5.40	0.00	0.00	0.00	0.00
T12 20.00-0.00	2.50	5.40	2.50	5.40	0.00	0.00	0.00	0.00

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	No.	Bolt Size	No.	Bolt Size	No.	Bolt Size	No.	Bolt Size	No.	Bolt Size	No.	Bolt Size	No.
		in		in		in		in		in		in		in	
T1 160.00-156.00	Flange	0.63	4	0.50	1	0.50	1	0.00	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2 156.00-152.00	Flange	0.63	0	0.50	1	0.63	0	0.00	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3 152.00-148.00	Flange	0.63	0	0.50	1	0.63	0	0.00	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4 148.00-144.00	Flange	0.63	0	0.50	1	0.63	0	0.00	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5 144.00-140.00	Flange	0.63	0	0.50	1	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T6 140.00-120.00	Flange	0.63	4	0.50	1	0.50	1	0.63	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7 120.00-100.00	Flange	0.75	4	0.50	1	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T8 100.00-80.00	Flange	0.88	4	0.50	1	0.63	0	0.63	0	0.63	0	0.63	0	0.50	1
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T9 80.00-60.00	Flange	1.00	6	0.50	1	0.63	0	0.63	0	0.63	0	0.63	0	0.50	1
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10 60.00-40.00	Flange	1.00	6	0.63	1	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T11 40.00-20.00	Flange	1.00	6	0.63	1	0.63	0	0.63	0	0.63	0	0.63	0	0.50	1
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T12 20.00-0.00	Flange	1.00	6	0.63	1	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
		A449		A325N		A325N		A325N		A325N		A325N		A325N	

Grouted Pipe Properties

Size	F_y ksi	A_s in ²	A_c in ²	W/t plf	E_c ksi	E_m ksi	F_{ym} ksi
Rohn 4" x 0.318" (3.5 EH) (GR)	50	3.68	8.89	31	4769	38218	64
ROHN 4 EH (GR)	50	4.41	11.50	39	4769	38952	66
Rohn 5.563" x 0.375" (5 EH) (GR)	50	6.11	18.19	59	4769	40357	68
Rohn 6.625" x 0.432" (6 EH) (GR)	50	8.40	26.07	83	4769	40832	68

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Componen t Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacin g in	Width or Diameter in	Perimete r in	Weight plf
FACE A													
HB158- 21U6S24- xxM_TMO(1- 5/8)	A	No	No	Ar (CaAa)	144.00 - 0.00	0.00	0.4	4	4	0.50	2.00		3
1.5" flat Cable Ladder Rail ***	A	No	No	Af (CaAa)	150.00 - 0.00	0.00	0.42	1	1	12.00 1.50	1.50		2
FACE B													
LDF5- 50A(7/8)	B	No	No	Ar (CaAa)	157.00 - 0.00	0.00	0.45	8	8	0.50	1.09		0
HB158-1- 08U8-	B	No	No	Ar (CaAa)	157.00 - 0.00	0.00	0.4	1	1	0.50	1.98		1
S8J18(1-5/8) 1.5" flat Cable Ladder Rail ***	B	No	No	Af (CaAa)	160.00 - 0.00	0.00	0.42	1	1	12.00 1.50	1.50		2
FACE C													
HB114-1- 08U4-M5F(1- 1/4)	C	No	No	Ar (CaAa)	109.00 - 0.00	0.00	-0.42	1	1	1.54	1.54		1
LDF4- 50A(1/2)	C	No	No	Ar (CaAa)	50.00 - 0.00	0.00	-0.4	1	1	0.63	0.63		0
1.5" flat Cable Ladder Rail ***	C	No	No	Af (CaAa)	150.00 - 0.00	0.00	-0.4	1	1	12.00 1.50	1.50		2
LEG C													
LDF5- 50A(7/8")	C	No	No	Ar (CaAa)	90.00 - 0.00	-2.00	0.45	12	4	0.50	1.09		0
2" (Nominal) Conduit	C	No	No	Ar (CaAa)	90.00 - 0.00	-2.00	0.45	1	1	2.38	2.38		1
FB-L98B- 002-	C	No	No	Ar (CaAa)	90.00 - 0.00	-2.00	0.45	1	1	0.39	0.39		0
75000(3/8) WR-	C	No	No	Ar (CaAa)	90.00 - 0.00	-2.00	0.45	2	2	0.46	0.46		0
VG122ST- BRDA(7/16)	C	No	No	Af (CaAa)	90.00 - 0.00	-2.00	0.45	1	1	1.00	1.00		8
T-Brackets (Af) ***	C	No	No	Af (CaAa)	90.00 - 0.00	-2.00	0.45	1	1	1.00	1.00		8
Safety Line 3/8 ***	B	No	No	Ar (CaAa)	160.00 - 0.00	0.00	0.5	1	1	0.38	0.38		0
CU12PSM9P 6XXX(1-1/2)	B	No	No	Ar (CaAa)	124.00 - 0.00	0.00	-0.5	1	1	1.60	1.60		2

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf

Feed Line/Linear Appurtenances Section Areas

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
T1	160.00-156.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	2.220	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
T2	156.00-152.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	5.430	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.00
T3	152.00-148.00	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	5.430	0.000	0.02
		C	0.000	0.000	0.500	0.000	0.00
T4	148.00-144.00	A	0.000	0.000	1.000	0.000	0.01
		B	0.000	0.000	5.430	0.000	0.02
		C	0.000	0.000	1.000	0.000	0.01
T5	144.00-140.00	A	0.000	0.000	4.194	0.000	0.05
		B	0.000	0.000	5.430	0.000	0.02
		C	0.000	0.000	1.000	0.000	0.01
T6	140.00-120.00	A	0.000	0.000	20.968	0.000	0.24
		B	0.000	0.000	27.790	0.000	0.13
		C	0.000	0.000	5.000	0.000	0.04
T7	120.00-100.00	A	0.000	0.000	20.968	0.000	0.24
		B	0.000	0.000	30.350	0.000	0.17
		C	0.000	0.000	6.386	0.000	0.05
T8	100.00-80.00	A	0.000	0.000	20.968	0.000	0.24
		B	0.000	0.000	30.350	0.000	0.17
		C	0.000	0.000	26.515	0.000	0.20
T9	80.00-60.00	A	0.000	0.000	20.968	0.000	0.24
		B	0.000	0.000	30.350	0.000	0.17
		C	0.000	0.000	44.951	0.000	0.33
T10	60.00-40.00	A	0.000	0.000	20.968	0.000	0.24
		B	0.000	0.000	30.350	0.000	0.17
		C	0.000	0.000	45.581	0.000	0.33
T11	40.00-20.00	A	0.000	0.000	20.968	0.000	0.24
		B	0.000	0.000	30.350	0.000	0.17
		C	0.000	0.000	46.211	0.000	0.33
T12	20.00-0.00	A	0.000	0.000	20.968	0.000	0.24
		B	0.000	0.000	30.350	0.000	0.17
		C	0.000	0.000	46.211	0.000	0.33

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	160.00-156.00	A	1.491	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	5.999	0.000	0.08

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
T2	156.00-152.00	C	1.487	0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	13.376	0.000	0.17
T3	152.00-148.00	C	1.483	0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	1.093	0.000	0.02
		B		0.000	0.000	13.362	0.000	0.17
T4	148.00-144.00	C	1.479	0.000	0.000	1.093	0.000	0.02
		A		0.000	0.000	2.184	0.000	0.03
		B		0.000	0.000	13.347	0.000	0.17
T5	144.00-140.00	C	1.475	0.000	0.000	2.184	0.000	0.03
		A		0.000	0.000	8.871	0.000	0.14
		B		0.000	0.000	13.333	0.000	0.17
T6	140.00-120.00	C	1.462	0.000	0.000	2.180	0.000	0.03
		A		0.000	0.000	44.221	0.000	0.70
		B		0.000	0.000	68.238	0.000	0.86
T7	120.00-100.00	C	1.438	0.000	0.000	10.849	0.000	0.17
		A		0.000	0.000	43.967	0.000	0.70
		B		0.000	0.000	74.942	0.000	0.97
T8	100.00-80.00	C	1.410	0.000	0.000	14.727	0.000	0.22
		A		0.000	0.000	43.668	0.000	0.68
		B		0.000	0.000	74.310	0.000	0.95
T9	80.00-60.00	C	1.375	0.000	0.000	52.917	0.000	0.80
		A		0.000	0.000	43.301	0.000	0.67
		B		0.000	0.000	73.537	0.000	0.92
T10	60.00-40.00	C	1.329	0.000	0.000	85.286	0.000	1.27
		A		0.000	0.000	42.825	0.000	0.66
		B		0.000	0.000	72.533	0.000	0.89
T11	40.00-20.00	C	1.263	0.000	0.000	87.026	0.000	1.27
		A		0.000	0.000	42.134	0.000	0.63
		B		0.000	0.000	71.073	0.000	0.85
T12	20.00-0.00	C	1.132	0.000	0.000	87.796	0.000	1.24
		A		0.000	0.000	40.764	0.000	0.59
		B		0.000	0.000	68.179	0.000	0.76
		C		0.000	0.000	82.798	0.000	1.13

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
T1	160.00-156.00	3.15	2.08	5.40	3.14
T2	156.00-152.00	8.22	5.64	10.57	6.45
T3	152.00-148.00	8.46	5.04	10.79	5.54
T4	148.00-144.00	8.69	4.49	10.97	4.73
T5	144.00-140.00	6.59	-1.83	9.18	-0.63
T6	140.00-120.00	7.89	-2.46	10.48	-1.18
T7	120.00-100.00	9.16	-3.59	12.79	-2.66
T8	100.00-80.00	4.67	-0.85	8.58	0.51
T9	80.00-60.00	0.64	1.15	4.11	2.86
T10	60.00-40.00	1.01	1.58	5.50	3.86
T11	40.00-20.00	1.32	1.90	6.52	4.66
T12	20.00-0.00	1.29	1.91	6.17	4.58

Shielding Factor K_a

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	8	LDF5-50A(7/8)	156.00 -	0.6000	0.5889

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	9	HB158-1-08U8-S8J18(1-5/8)	157.00 156.00 - 157.00	0.6000	0.5889
T1	10	1.5" flat Cable Ladder Rail	156.00 - 160.00	0.6000	0.5889
T1	24	Safety Line 3/8	156.00 - 160.00	0.6000	0.5889
T2	8	LDF5-50A(7/8)	152.00 - 156.00	0.6000	0.6000
T2	9	HB158-1-08U8-S8J18(1-5/8)	152.00 - 156.00	0.6000	0.6000
T2	10	1.5" flat Cable Ladder Rail	152.00 - 156.00	0.6000	0.6000
T2	24	Safety Line 3/8	152.00 - 156.00	0.6000	0.6000
T3	5	1.5" flat Cable Ladder Rail	148.00 - 150.00	0.6000	0.6000
T3	8	LDF5-50A(7/8)	148.00 - 152.00	0.6000	0.6000
T3	9	HB158-1-08U8-S8J18(1-5/8)	148.00 - 152.00	0.6000	0.6000
T3	10	1.5" flat Cable Ladder Rail	148.00 - 152.00	0.6000	0.6000
T3	15	1.5" flat Cable Ladder Rail	148.00 - 150.00	0.6000	0.6000
T3	24	Safety Line 3/8	148.00 - 152.00	0.6000	0.6000
T4	5	1.5" flat Cable Ladder Rail	144.00 - 148.00	0.6000	0.6000
T4	8	LDF5-50A(7/8)	144.00 - 148.00	0.6000	0.6000
T4	9	HB158-1-08U8-S8J18(1-5/8)	144.00 - 148.00	0.6000	0.6000
T4	10	1.5" flat Cable Ladder Rail	144.00 - 148.00	0.6000	0.6000
T4	15	1.5" flat Cable Ladder Rail	144.00 - 148.00	0.6000	0.6000
T4	24	Safety Line 3/8	144.00 - 148.00	0.6000	0.6000
T5	2	HB158-21U6S24-xxM_TMO(1-5/8)	140.00 - 144.00	0.6000	0.6000
T5	5	1.5" flat Cable Ladder Rail	140.00 - 144.00	0.6000	0.6000
T5	8	LDF5-50A(7/8)	140.00 - 144.00	0.6000	0.6000
T5	9	HB158-1-08U8-S8J18(1-5/8)	140.00 - 144.00	0.6000	0.6000
T5	10	1.5" flat Cable Ladder Rail	140.00 - 144.00	0.6000	0.6000
T5	15	1.5" flat Cable Ladder Rail	140.00 - 144.00	0.6000	0.6000
T5	24	Safety Line 3/8	140.00 - 144.00	0.6000	0.6000
T6	2	HB158-21U6S24-xxM_TMO(1-5/8)	120.00 - 140.00	0.6000	0.6000
T6	5	1.5" flat Cable Ladder Rail	120.00 - 140.00	0.6000	0.6000
T6	8	LDF5-50A(7/8)	120.00 - 140.00	0.6000	0.6000
T6	9	HB158-1-08U8-S8J18(1-5/8)	120.00 - 140.00	0.6000	0.6000
T6	10	1.5" flat Cable Ladder Rail	120.00 - 140.00	0.6000	0.6000
T6	15	1.5" flat Cable Ladder Rail	120.00 - 140.00	0.6000	0.6000
T6	24	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T6	29	CU12PSM9P6XXX(1-1/2)	120.00 - 124.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T7	2	HB158-21U6S24-xxM_TMO(1-5/8)	100.00 - 120.00	0.6000	0.6000
T7	5	1.5" flat Cable Ladder Rail	100.00 - 120.00	0.6000	0.6000
T7	8	LDF5-50A(7/8)	100.00 - 120.00	0.6000	0.6000
T7	9	HB158-1-08U8-S8J18(1-5/8)	100.00 - 120.00	0.6000	0.6000
T7	10	1.5" flat Cable Ladder Rail	100.00 - 120.00	0.6000	0.6000
T7	13	HB114-1-08U4-M5F(1-1/4)	100.00 - 109.00	0.6000	0.6000
T7	15	1.5" flat Cable Ladder Rail	100.00 - 120.00	0.6000	0.6000
T7	24	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T7	29	CU12PSM9P6XXX(1-1/2)	100.00 - 120.00	0.6000	0.6000
T8	2	HB158-21U6S24-xxM_TMO(1-5/8)	80.00 - 100.00	0.6000	0.6000
T8	5	1.5" flat Cable Ladder Rail	80.00 - 100.00	0.6000	0.6000
T8	8	LDF5-50A(7/8)	80.00 - 100.00	0.6000	0.6000
T8	9	HB158-1-08U8-S8J18(1-5/8)	80.00 - 100.00	0.6000	0.6000
T8	10	1.5" flat Cable Ladder Rail	80.00 - 100.00	0.6000	0.6000
T8	13	HB114-1-08U4-M5F(1-1/4)	80.00 - 100.00	0.6000	0.6000
T8	15	1.5" flat Cable Ladder Rail	80.00 - 100.00	0.6000	0.6000
T8	18	LDF5-50A(7/8")	80.00 - 90.00	0.6000	0.6000
T8	19	2" (Nominal) Conduit	80.00 - 90.00	0.6000	0.6000
T8	20	FB-L98B-002-75000(3/8)	80.00 - 90.00	0.0000	0.0000
T8	21	WR-VG122ST-BRDA(7/16)	80.00 - 90.00	0.0000	0.0000
T8	22	T-Brackets (Af)	80.00 - 90.00	0.6000	0.6000
T8	24	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T8	29	CU12PSM9P6XXX(1-1/2)	80.00 - 100.00	0.6000	0.6000
T9	2	HB158-21U6S24-xxM_TMO(1-5/8)	60.00 - 80.00	0.6000	0.6000
T9	5	1.5" flat Cable Ladder Rail	60.00 - 80.00	0.6000	0.6000
T9	8	LDF5-50A(7/8)	60.00 - 80.00	0.6000	0.6000
T9	9	HB158-1-08U8-S8J18(1-5/8)	60.00 - 80.00	0.6000	0.6000
T9	10	1.5" flat Cable Ladder Rail	60.00 - 80.00	0.6000	0.6000
T9	13	HB114-1-08U4-M5F(1-1/4)	60.00 - 80.00	0.6000	0.6000
T9	15	1.5" flat Cable Ladder Rail	60.00 - 80.00	0.6000	0.6000
T9	18	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.6000
T9	19	2" (Nominal) Conduit	60.00 - 80.00	0.6000	0.6000
T9	20	FB-L98B-002-75000(3/8)	60.00 - 80.00	0.0000	0.0000
T9	21	WR-VG122ST-BRDA(7/16)	60.00 - 80.00	0.0000	0.0000
T9	22	T-Brackets (Af)	60.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T9	24	Safety Line 3/8	80.00 60.00 - 80.00	0.6000	0.6000
T9	29	CU12PSM9P6XXX(1-1/2)	60.00 - 80.00	0.6000	0.6000
T10	2	HB158-21U6S24-xxM_TMO(1-5/8)	40.00 - 60.00	0.6000	0.6000
T10	5	1.5" flat Cable Ladder Rail	40.00 - 60.00	0.6000	0.6000
T10	8	LDF5-50A(7/8)	40.00 - 60.00	0.6000	0.6000
T10	9	HB158-1-08U8-S8J18(1-5/8)	40.00 - 60.00	0.6000	0.6000
T10	10	1.5" flat Cable Ladder Rail	40.00 - 60.00	0.6000	0.6000
T10	13	HB114-1-08U4-M5F(1-1/4)	40.00 - 60.00	0.6000	0.6000
T10	14	LDF4-50A(1/2)	40.00 - 50.00	0.6000	0.6000
T10	15	1.5" flat Cable Ladder Rail	40.00 - 60.00	0.6000	0.6000
T10	18	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.6000
T10	19	2" (Nominal) Conduit	40.00 - 60.00	0.6000	0.6000
T10	20	FB-L98B-002-75000(3/8)	40.00 - 60.00	0.0000	0.0000
T10	21	WR-VG122ST-BRDA(7/16)	40.00 - 60.00	0.0000	0.0000
T10	22	T-Brackets (Af)	40.00 - 60.00	0.6000	0.6000
T10	24	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T10	29	CU12PSM9P6XXX(1-1/2)	40.00 - 60.00	0.6000	0.6000
T11	2	HB158-21U6S24-xxM_TMO(1-5/8)	20.00 - 40.00	0.6000	0.6000
T11	5	1.5" flat Cable Ladder Rail	20.00 - 40.00	0.6000	0.6000
T11	8	LDF5-50A(7/8)	20.00 - 40.00	0.6000	0.6000
T11	9	HB158-1-08U8-S8J18(1-5/8)	20.00 - 40.00	0.6000	0.6000
T11	10	1.5" flat Cable Ladder Rail	20.00 - 40.00	0.6000	0.6000
T11	13	HB114-1-08U4-M5F(1-1/4)	20.00 - 40.00	0.6000	0.6000
T11	14	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T11	15	1.5" flat Cable Ladder Rail	20.00 - 40.00	0.6000	0.6000
T11	18	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.6000
T11	19	2" (Nominal) Conduit	20.00 - 40.00	0.6000	0.6000
T11	20	FB-L98B-002-75000(3/8)	20.00 - 40.00	0.0000	0.0000
T11	21	WR-VG122ST-BRDA(7/16)	20.00 - 40.00	0.0000	0.0000
T11	22	T-Brackets (Af)	20.00 - 40.00	0.6000	0.6000
T11	24	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T11	29	CU12PSM9P6XXX(1-1/2)	20.00 - 40.00	0.6000	0.6000
T12	2	HB158-21U6S24-xxM_TMO(1-5/8)	0.00 - 20.00	0.6000	0.6000
T12	5	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T12	8	LDF5-50A(7/8)	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
T12	9	HB158-1-08U8-S8J18(1-5/8)	0.00 - 20.00	0.6000	0.6000
T12	10	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T12	13	HB114-1-08U4-M5F(1-1/4)	0.00 - 20.00	0.6000	0.6000
T12	14	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T12	15	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T12	18	LDF5-50A(7/8")	0.00 - 20.00	0.6000	0.6000
T12	19	2" (Nominal) Conduit	0.00 - 20.00	0.6000	0.6000
T12	20	FB-L98B-002-75000(3/8)	0.00 - 20.00	0.0000	0.0000
T12	21	WR-VG122ST-BRDA(7/16)	0.00 - 20.00	0.0000	0.0000
T12	22	T-Brackets (Af)	0.00 - 20.00	0.6000	0.6000
T12	24	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T12	29	CU12PSM9P6XXX(1-1/2)	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 5.11 5.61 6.65	10.26 11.43 12.31 14.13	0.05 0.11 0.19 0.36
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 5.11 5.61 6.65	10.26 11.43 12.31 14.13	0.05 0.11 0.19 0.36
(2) LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 5.11 5.61 6.65	10.26 11.43 12.31 14.13	0.05 0.11 0.19 0.36
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.50 5.97 6.45 7.44	4.38 4.84 5.30 6.26	0.10 0.17 0.25 0.46
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.50 5.97 6.45 7.44	4.38 4.84 5.30 6.26	0.10 0.17 0.25 0.46
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.50 5.97 6.45 7.44	4.38 4.84 5.30 6.26	0.10 0.17 0.25 0.46
B66A RRH4X45	A	From Leg	4.00 0.00 0.00	0.00	157.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.58 2.79 3.01 3.48	1.63 1.81 2.00 2.40	0.07 0.09 0.11 0.17
B66A RRH4X45	B	From Leg	4.00 0.00 0.00	0.00	157.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01 3.48	1.63 1.81 2.00 2.40	0.07 0.09 0.11 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
B66A RRH4X45	C	From Leg	4.00 0.00 0.00	0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01 3.48	1.63 1.81 2.00 2.40	0.07 0.09 0.11 0.17
AHCA	A	From Leg	4.00 0.00 0.00	0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	1.29 1.43 1.58 1.90	0.72 0.83 0.96 1.22	0.04 0.05 0.06 0.09
AHCA	B	From Leg	4.00 0.00 0.00	0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	1.29 1.43 1.58 1.90	0.72 0.83 0.96 1.22	0.04 0.05 0.06 0.09
AHCA	C	From Leg	4.00 0.00 0.00	0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	1.29 1.43 1.58 1.90	0.72 0.83 0.96 1.22	0.04 0.05 0.06 0.09
RC3DC-3315-PF-48	A	From Leg	4.00 0.00 0.00	0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	3.79 4.04 4.30 4.84	2.51 2.72 2.94 3.41	0.03 0.06 0.10 0.18
B13 RRH 4X30	A	From Leg	4.00 0.00 0.00	0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43 2.84	1.32 1.48 1.64 2.00	0.06 0.07 0.09 0.14
B13 RRH 4X30	B	From Leg	4.00 0.00 0.00	0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43 2.84	1.32 1.48 1.64 2.00	0.06 0.07 0.09 0.14
B13 RRH 4X30	C	From Leg	4.00 0.00 0.00	0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43 2.84	1.32 1.48 1.64 2.00	0.06 0.07 0.09 0.14
Sitepro VFA12-HD Sector Mount (3)	C	None		0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	25.20 38.36 51.52 77.84	25.20 38.36 51.52 77.84	1.97 2.41 2.85 3.73
2.4" Dia. x 6-ft	A	From Leg	4.00 0.00 0.00	0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
2.4" Dia. x 6-ft	B	From Leg	4.00 0.00 0.00	0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
2.4" Dia. x 6-ft	C	From Leg	4.00 0.00 0.00	0.00	157.00	2" Ice No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09

APX16DWV-16DWV-S-E- A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice 1/2" Ice	6.29 6.86 7.45	2.76 3.27 3.79	0.06 0.11 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
						1" Ice	8.68	4.90	0.29
						2" Ice			
APX16DWV-16DWV-S-E- A20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	6.29	2.76	0.06
						1/2"	6.86	3.27	0.11
						Ice	7.45	3.79	0.16
						1" Ice	8.68	4.90	0.29
						2" Ice			
APX16DWV-16DWV-S-E- A20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	6.29	2.76	0.06
						1/2"	6.86	3.27	0.11
						Ice	7.45	3.79	0.16
						1" Ice	8.68	4.90	0.29
						2" Ice			
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	14.69	6.87	0.18
						1/2"	15.46	7.55	0.31
						Ice	16.23	8.25	0.45
						1" Ice	17.82	9.67	0.78
						2" Ice			
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	14.69	6.87	0.18
						1/2"	15.46	7.55	0.31
						Ice	16.23	8.25	0.45
						1" Ice	17.82	9.67	0.78
						2" Ice			
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	14.69	6.87	0.18
						1/2"	15.46	7.55	0.31
						Ice	16.23	8.25	0.45
						1" Ice	17.82	9.67	0.78
						2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	5.19	2.71	0.13
						1/2"	5.59	3.04	0.17
						Ice	6.02	3.38	0.23
						1" Ice	6.90	4.12	0.35
						2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	5.19	2.71	0.13
						1/2"	5.59	3.04	0.17
						Ice	6.02	3.38	0.23
						1" Ice	6.90	4.12	0.35
						2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	5.19	2.71	0.13
						1/2"	5.59	3.04	0.17
						Ice	6.02	3.38	0.23
						1" Ice	6.90	4.12	0.35
						2" Ice			
RADIO 4415 B66A_CCIV3	A	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	1.64	0.68	0.05
						1/2"	1.80	0.79	0.06
						Ice	1.97	0.91	0.07
						1" Ice	2.32	1.18	0.11
						2" Ice			
RADIO 4415 B66A_CCIV3	B	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	1.64	0.68	0.05
						1/2"	1.80	0.79	0.06
						Ice	1.97	0.91	0.07
						1" Ice	2.32	1.18	0.11
						2" Ice			
RADIO 4415 B66A_CCIV3	C	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	1.64	0.68	0.05
						1/2"	1.80	0.79	0.06
						Ice	1.97	0.91	0.07
						1" Ice	2.32	1.18	0.11
						2" Ice			
RADIO 4449 B71 B85A_T- MOBILE	A	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	1.97	1.59	0.07
						1/2"	2.15	1.75	0.09
						Ice	2.33	1.92	0.12
						1" Ice	2.72	2.28	0.17
						2" Ice			
RADIO 4449 B71 B85A_T- MOBILE	B	From Leg	4.00 0.00 0.00	0.00	144.00	No Ice	1.97	1.59	0.07
						1/2"	2.15	1.75	0.09
						Ice	2.33	1.92	0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
						1" Ice	2.72	2.28	0.17
						2" Ice			
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00	0.00	144.00	No Ice	1.97	1.59	0.07
			0.00			1/2"	2.15	1.75	0.09
			0.00			Ice	2.33	1.92	0.12
						1" Ice	2.72	2.28	0.17
						2" Ice			
RADIO 4424 B25_TMO	A	From Leg	4.00	0.00	144.00	No Ice	2.05	1.61	0.09
			0.00			1/2"	2.23	1.77	0.11
			0.00			Ice	2.42	1.94	0.13
						1" Ice	2.81	2.30	0.19
						2" Ice			
RADIO 4424 B25_TMO	B	From Leg	4.00	0.00	144.00	No Ice	2.05	1.61	0.09
			0.00			1/2"	2.23	1.77	0.11
			0.00			Ice	2.42	1.94	0.13
						1" Ice	2.81	2.30	0.19
						2" Ice			
RADIO 4424 B25_TMO	C	From Leg	4.00	0.00	144.00	No Ice	2.05	1.61	0.09
			0.00			1/2"	2.23	1.77	0.11
			0.00			Ice	2.42	1.94	0.13
						1" Ice	2.81	2.30	0.19
						2" Ice			
Sector Mount [SM 506-3]	C	None		0.00	144.00	No Ice	35.47	35.47	1.74
						1/2"	50.60	50.60	2.35
						Ice	65.73	65.73	2.95
						1" Ice	95.99	95.99	4.16
						2" Ice			
2.4" Dia. x 6-ft	A	From Leg	4.00	0.00	144.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
2.4" Dia. x 6-ft	A	From Leg	4.00	0.00	144.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
2.4" Dia. x 6-ft	A	From Leg	4.00	0.00	144.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			

MX08FRO665-20 w/ Mount Pipe	A	From Leg	4.00	0.00	124.00	No Ice	8.01	4.23	0.10
			0.00			1/2"	8.52	4.69	0.18
			0.00			Ice	9.04	5.16	0.28
						1" Ice	10.11	6.12	0.51
						2" Ice			
MX08FRO665-20 w/ Mount Pipe	B	From Leg	4.00	0.00	124.00	No Ice	8.01	4.23	0.10
			0.00			1/2"	8.52	4.69	0.18
			0.00			Ice	9.04	5.16	0.28
						1" Ice	10.11	6.12	0.51
						2" Ice			
MX08FRO665-20 w/ Mount Pipe	C	From Leg	4.00	0.00	124.00	No Ice	8.01	4.23	0.10
			0.00			1/2"	8.52	4.69	0.18
			0.00			Ice	9.04	5.16	0.28
						1" Ice	10.11	6.12	0.51
						2" Ice			
TA08025-B604	A	From Leg	4.00	0.00	124.00	No Ice	1.96	0.98	0.06
			0.00			1/2"	2.14	1.11	0.08
			0.00			Ice	2.32	1.25	0.10
						1" Ice	2.71	1.55	0.15
						2" Ice			
TA08025-B604	B	From Leg	4.00	0.00	124.00	No Ice	1.96	0.98	0.06
			0.00			1/2"	2.14	1.11	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			Ice	2.32	1.25	0.10
						1" Ice	2.71	1.55	0.15
						2" Ice			
TA08025-B604	C	From Leg	4.00	0.00	124.00	No Ice	1.96	0.98	0.06
			0.00			1/2"	2.14	1.11	0.08
			0.00			Ice	2.32	1.25	0.10
						1" Ice	2.71	1.55	0.15
						2" Ice			
TA08025-B605	A	From Leg	4.00	0.00	124.00	No Ice	1.96	1.13	0.08
			0.00			1/2"	2.14	1.27	0.09
			0.00			Ice	2.32	1.41	0.11
						1" Ice	2.71	1.72	0.16
						2" Ice			
TA08025-B605	B	From Leg	4.00	0.00	124.00	No Ice	1.96	1.13	0.08
			0.00			1/2"	2.14	1.27	0.09
			0.00			Ice	2.32	1.41	0.11
						1" Ice	2.71	1.72	0.16
						2" Ice			
TA08025-B605	C	From Leg	4.00	0.00	124.00	No Ice	1.96	1.13	0.08
			0.00			1/2"	2.14	1.27	0.09
			0.00			Ice	2.32	1.41	0.11
						1" Ice	2.71	1.72	0.16
						2" Ice			
RDIDC-9181-PF-48	A	From Leg	4.00	0.00	124.00	No Ice	2.31	1.29	0.02
			0.00			1/2"	2.50	1.45	0.04
			0.00			Ice	2.70	1.61	0.06
						1" Ice	3.12	1.96	0.12
						2" Ice			
Commscope MTC3975083 (3)	C	None		0.00	124.00	No Ice	23.85	23.85	1.26
						1/2"	34.12	34.12	1.80
						Ice	44.39	44.39	2.35
						1" Ice	64.93	64.93	3.43
						2" Ice			
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.00	124.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.00	124.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.00	124.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
**									
(4) DB844H90E-XY w/ Mount Pipe	A	From Leg	4.00	0.00	118.00	No Ice	2.24	3.34	0.04
			0.00			1/2"	2.61	3.73	0.08
			0.00			Ice	2.99	4.13	0.12
						1" Ice	3.78	4.97	0.23
						2" Ice			
(4) DB844H90E-XY w/ Mount Pipe	B	From Leg	4.00	0.00	118.00	No Ice	2.24	3.34	0.04
			0.00			1/2"	2.61	3.73	0.08
			0.00			Ice	2.99	4.13	0.12
						1" Ice	3.78	4.97	0.23
						2" Ice			
(4) DB844H90E-XY w/ Mount Pipe	C	From Leg	4.00	0.00	118.00	No Ice	2.24	3.34	0.04
			0.00			1/2"	2.61	3.73	0.08
			0.00			Ice	2.99	4.13	0.12
						1" Ice	3.78	4.97	0.23
						2" Ice			
Sector Mount [SM 201-3]	C	None		0.00	118.00	No Ice	26.69	26.69	1.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
						1/2" Ice	37.60 48.51	37.60 48.51	1.49 1.90
						1" Ice	70.33	70.33	2.71
Pipe Mount [PM 601-3]	C	None		0.00	118.00	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
						2" Ice			

PD1110	C	From Leg	0.00	0.00	109.00	No Ice	2.50	2.50	0.02
			0.00			1/2"	3.84	3.84	0.04
			6.00			Ice	5.20	5.20	0.07
						1" Ice	7.97	7.97	0.15
						2" Ice			
Side Arm Mount [SO 308-1]	C	From Leg	0.00	0.00	109.00	No Ice	0.98	3.03	0.05
			0.00			1/2"	1.70	5.22	0.08
			0.00			Ice	2.42	7.41	0.10
						1" Ice	3.86	11.79	0.16
						2" Ice			

(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0.00	90.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			0.00			Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice			
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0.00	90.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			0.00			Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice			
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	0.00	90.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			0.00			Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00	0.00	90.00	No Ice	4.63	3.27	0.07
			0.00			1/2"	5.06	3.69	0.13
			0.00			Ice	5.51	4.12	0.20
						1" Ice	6.43	5.00	0.38
						2" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00	0.00	90.00	No Ice	4.63	3.27	0.07
			0.00			1/2"	5.06	3.69	0.13
			0.00			Ice	5.51	4.12	0.20
						1" Ice	6.43	5.00	0.38
						2" Ice			
P45-16-XLH-RR w/ Mount Pipe	C	From Leg	4.00	0.00	90.00	No Ice	8.24	4.83	0.04
			0.00			1/2"	8.70	5.57	0.10
			0.00			Ice	9.16	6.27	0.17
						1" Ice	10.09	7.67	0.34
						2" Ice			
(4) LGP21401	A	From Leg	4.00	0.00	90.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			0.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(4) LGP21401	B	From Leg	4.00	0.00	90.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			0.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(4) LGP21401	C	From Leg	4.00	0.00	90.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			0.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
(2) RRUS-11	A	From Leg	4.00 0.00 0.00	0.00	90.00	2" Ice No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.09 0.15
(2) RRUS-11	B	From Leg	4.00 0.00 0.00	0.00	90.00	2" Ice No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.09 0.15
(2) RRUS-11	C	From Leg	4.00 0.00 0.00	0.00	90.00	2" Ice No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.09 0.15
DC6-48-60-18-8F	C	From Leg	4.00 0.00 0.00	0.00	90.00	2" Ice No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.02 0.04 0.07 0.13
Sector Mount [SM 104-3]	C	None		0.00	90.00	2" Ice No Ice 1/2" Ice 1" Ice 2" Ice	30.21 38.12 46.01 62.03	30.21 38.12 46.01 62.03	0.95 1.43 2.03 3.58

KS24019-L112A	B	From Leg	4.00 0.00 0.00	0.00	50.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.10 0.18 0.26 0.42	0.10 0.18 0.26 0.42	0.01 0.01 0.01 0.01
Side Arm Mount [SO 306-1]	B	From Leg	2.00 0.00 0.00	0.00	50.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.70 2.42 3.86	2.18 3.80 5.42 8.66	0.04 0.06 0.08 0.12

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

Comb. No.	Description
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 - 156	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	27	-3.34	0.11	-0.00
			Max. Mx	14	-1.44	0.63	0.01
			Max. My	8	-1.45	0.00	-0.68
			Max. Vy	2	-1.04	0.41	-0.00
			Max. Vx	8	-1.05	0.00	0.37
		Diagonal	Max Tension	9	0.61	0.00	0.00
			Max. Compression	8	-0.62	0.00	0.00
			Max. Mx	29	-0.21	0.01	-0.00
			Max. My	8	-0.30	0.00	0.00
			Max. Vy	29	0.02	0.01	-0.00
			Max. Vx	8	-0.00	0.00	0.00
		Top Girt	Max Tension	14	0.28	0.00	0.00
			Max. Compression	3	-0.28	0.00	0.00
			Max. Mx	26	0.01	-0.05	0.00
			Max. My	28	0.01	0.00	0.00
			Max. Vy	26	-0.03	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
T2	156 - 152	Leg	Max Tension	7	0.93	-0.49	0.01
			Max. Compression	27	-4.11	-0.06	-0.00
			Max. Mx	2	-3.52	0.51	-0.01
			Max. My	21	-1.11	0.00	-0.39
			Max. Vy	2	0.20	0.51	-0.01
			Max. Vx	16	0.14	0.01	0.38
		Diagonal	Max Tension	12	1.82	0.00	0.00
			Max. Compression	24	-1.81	0.00	0.00
			Max. Mx	31	0.14	0.01	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft			
T3	152 - 148	Leg	Max. My	24	-1.81	0.00	-0.00			
			Max. Vy	31	-0.02	0.01	-0.00			
			Max. Vx	24	-0.00	0.00	0.00			
			Max Tension	7	4.30	0.02	-0.01			
			Max. Compression	2	-7.02	0.00	-0.01			
			Max. Mx	2	-7.00	-0.04	-0.01			
		Diagonal	Max. My	7	-3.84	-0.02	-0.04			
			Max. Vy	10	-0.03	-0.00	0.00			
			Max. Vx	16	-0.04	0.01	0.02			
			Max Tension	24	1.74	0.00	0.00			
			Max. Compression	12	-1.77	0.00	0.00			
			Max. Mx	28	0.24	0.01	-0.00			
			Max. My	2	-1.35	0.00	-0.00			
			Max. Vy	28	-0.02	0.01	-0.00			
T4	148 - 144	Leg	Max. Vx	2	0.00	0.00	0.00			
			Max Tension	7	7.15	-0.12	-0.01			
			Max. Compression	2	-10.09	-0.11	-0.00			
			Max. Mx	18	-10.02	0.14	0.01			
			Max. My	16	-1.63	0.01	0.09			
			Max. Vy	18	0.08	0.14	0.01			
		Diagonal	Max. Vx	16	0.06	0.01	0.09			
			Max Tension	12	1.95	0.00	0.00			
			Max. Compression	3	-1.92	0.00	0.00			
			Max. Mx	30	0.59	0.01	-0.00			
			Max. My	16	-1.83	0.00	0.00			
			Max. Vy	30	-0.01	0.01	-0.00			
			Max. Vx	16	-0.00	0.00	0.00			
			T5	144 - 140	Leg	Max Tension	7	11.33	0.08	-0.00
Max. Compression	2	-16.89				-0.07	-0.01			
Max. Mx	6	10.62				-0.16	-0.01			
Max. My	6	-9.73				0.07	-0.08			
Max. Vy	14	-0.10				-0.16	0.01			
Max. Vx	4	-0.07				-0.01	-0.08			
Diagonal	Max Tension	24			4.39	0.00	0.00			
	Max. Compression	10			-4.50	0.00	0.00			
	Max. Mx	27			0.60	0.03	-0.00			
	Max. My	12			-4.45	-0.01	0.00			
	Max. Vy	27			-0.03	0.03	-0.00			
	Max. Vx	12			0.00	0.00	0.00			
	T6	140 - 120			Leg	Max Tension	7	41.13	-0.10	0.00
						Max. Compression	18	-48.98	0.60	0.01
Max. Mx			14	38.56		-0.65	0.03			
Max. My			4	-4.44		-0.03	-0.57			
Max. Vy			14	-0.43		-0.11	0.00			
Max. Vx			8	0.43		-0.02	0.13			
Diagonal			Max Tension	12	4.13	0.00	0.00			
			Max. Compression	12	-4.15	0.00	0.00			
			Max. Mx	27	0.68	-0.03	0.00			
			Max. My	22	-3.58	-0.00	0.00			
			Max. Vy	29	-0.03	-0.03	-0.00			
			Max. Vx	28	-0.00	0.00	0.00			
			Top Girt	Max Tension	6	0.78	0.00	0.00		
				Max. Compression	3	-0.68	0.00	0.00		
Max. Mx	26	0.03		-0.05	0.00					
Max. My	28	0.02		0.00	0.00					
Max. Vy	26	0.03		0.00	0.00					
Max. Vx	28	-0.00		0.00	0.00					
T7	120 - 100	Leg	Max Tension	7	68.09	0.22	-0.01			
			Max. Compression	18	-79.86	0.43	0.02			
			Max. Mx	10	-58.44	0.95	0.02			
			Max. My	4	-5.32	-0.01	-0.57			
			Max. Vy	14	0.37	-0.92	0.02			
			Max. Vx	4	-0.44	-0.04	-0.29			
		Diagonal	Max Tension	12	5.15	0.00	0.00			
			Max. Compression	12	-5.21	0.00	0.00			
			Max. Mx	31	1.04	-0.06	0.01			
			Max. My	34	-0.64	-0.05	-0.01			
			Max. Vy	29	-0.05	-0.06	0.01			
			Max. Vx	34	0.00	0.00	0.00			

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T8	100 - 80	Leg	Max Tension	7	93.39	-0.51	-0.01
			Max. Compression	18	-109.74	0.26	0.01
			Max. Mx	18	-89.58	0.92	0.02
			Max. My	12	-7.50	-0.03	0.80
			Max. Vy	6	0.50	-0.79	-0.01
			Max. Vx	4	0.49	-0.03	-0.77
		Diagonal	Max Tension	12	5.78	0.00	0.00
			Max. Compression	12	-5.92	0.00	0.00
			Max. Mx	31	1.33	-0.11	0.01
			Max. My	22	-4.59	-0.01	0.01
			Max. Vy	29	-0.07	-0.10	0.01
			Max. Vx	29	-0.00	0.00	0.00
T9	80 - 60	Leg	Max Tension	7	117.93	-0.39	-0.01
			Max. Compression	18	-138.61	0.39	0.02
			Max. Mx	6	108.08	-0.45	-0.01
			Max. My	4	-8.82	-0.03	-0.41
			Max. Vy	6	-0.11	-0.45	-0.01
			Max. Vx	4	0.10	-0.00	-0.35
		Diagonal	Max Tension	20	5.75	0.00	0.00
			Max. Compression	20	-5.84	0.00	0.00
			Max. Mx	31	1.29	-0.16	-0.02
			Max. My	29	-1.06	-0.13	0.02
			Max. Vy	29	-0.10	-0.15	0.02
			Max. Vx	29	-0.01	0.00	0.00
T10	60 - 40	Leg	Max Tension	7	138.42	0.13	-0.01
			Max. Compression	18	-163.32	1.35	0.04
			Max. Mx	18	-163.32	1.35	0.04
			Max. My	4	-10.55	-0.05	-1.05
			Max. Vy	10	-0.23	1.34	0.02
			Max. Vx	4	0.19	-0.05	-1.05
		Diagonal	Max Tension	8	6.49	0.00	0.00
			Max. Compression	20	-6.78	0.00	0.00
			Max. Mx	31	1.37	-0.21	0.03
			Max. My	28	1.37	-0.20	0.03
			Max. Vy	29	-0.11	-0.21	0.03
			Max. Vx	29	-0.01	0.00	0.00
T11	40 - 20	Leg	Max Tension	7	158.24	-0.08	-0.01
			Max. Compression	18	-188.42	1.14	0.03
			Max. Mx	18	-188.42	1.14	0.03
			Max. My	4	-12.52	-0.07	-1.14
			Max. Vy	10	-0.19	1.13	0.01
			Max. Vx	4	0.19	-0.07	-1.14
		Diagonal	Max Tension	8	6.40	0.00	0.00
			Max. Compression	8	-6.70	0.00	0.00
			Max. Mx	31	1.39	-0.28	0.04
			Max. My	28	1.41	-0.28	0.04
			Max. Vy	30	-0.13	-0.28	-0.04
			Max. Vx	28	-0.01	0.00	0.00
T12	20 - 0	Leg	Max Tension	7	176.25	-0.63	-0.02
			Max. Compression	18	-212.70	0.20	0.00
			Max. Mx	6	163.80	-0.89	-0.03
			Max. My	4	-14.98	-0.10	-1.63
			Max. Vy	6	-0.15	-0.68	-0.02
			Max. Vx	4	0.27	-0.10	-1.63
		Diagonal	Max Tension	8	6.93	0.00	0.00
			Max. Compression	18	-7.45	0.00	0.00
			Max. Mx	30	0.62	-0.37	0.05
			Max. My	28	1.50	-0.37	0.05
			Max. Vy	30	-0.16	-0.37	-0.05
			Max. Vx	28	-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	218.84	20.56	-11.55
	Max. H _x	18	218.84	20.56	-11.55
	Max. H _z	7	-180.58	-17.34	9.67
	Min. Vert	7	-180.58	-17.34	9.67
	Min. H _x	7	-180.58	-17.34	9.67
	Min. H _z	18	218.84	20.56	-11.55
Leg B	Max. Vert	10	217.15	-20.20	-11.84
	Max. H _x	23	-179.24	16.98	9.97
	Max. H _z	23	-179.24	16.98	9.97
	Min. Vert	23	-179.24	16.98	9.97
	Min. H _x	10	217.15	-20.20	-11.84
	Min. H _z	10	217.15	-20.20	-11.84
Leg A	Max. Vert	2	215.55	0.14	23.16
	Max. H _x	21	13.21	2.22	1.06
	Max. H _z	2	215.55	0.14	23.16
	Min. Vert	15	-176.68	-0.15	-19.42
	Min. H _x	9	13.16	-2.22	1.06
	Min. H _z	15	-176.68	-0.15	-19.42

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	43.18	-0.00	0.00	-4.41	1.73	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	51.81	0.01	-35.86	-3582.71	2.48	5.32
0.9 Dead+1.0 Wind 0 deg - No Ice	38.86	0.01	-35.86	-3576.89	1.97	5.32
1.2 Dead+1.0 Wind 30 deg - No Ice	51.81	17.36	-30.12	-3044.26	-1747.32	14.53
0.9 Dead+1.0 Wind 30 deg - No Ice	38.86	17.36	-30.12	-3039.10	-1745.63	14.53
1.2 Dead+1.0 Wind 60 deg - No Ice	51.81	29.98	-17.35	-1759.37	-3027.50	10.28
0.9 Dead+1.0 Wind 60 deg - No Ice	38.86	29.98	-17.35	-1755.81	-3024.20	10.28
1.2 Dead+1.0 Wind 90 deg - No Ice	51.81	35.74	-0.01	-5.15	-3584.30	0.01
0.9 Dead+1.0 Wind 90 deg - No Ice	38.86	35.74	-0.01	-3.80	-3580.32	0.02
1.2 Dead+1.0 Wind 120 deg - No Ice	51.81	31.43	18.18	1806.79	-3127.27	-5.32
0.9 Dead+1.0 Wind 120 deg - No Ice	38.86	31.43	18.18	1805.87	-3123.88	-5.31
1.2 Dead+1.0 Wind 150 deg - No Ice	51.81	17.04	29.60	2981.35	-1717.17	-2.48
0.9 Dead+1.0 Wind 150 deg - No Ice	38.86	17.04	29.60	2978.93	-1715.52	-2.47
1.2 Dead+1.0 Wind 180 deg - No Ice	51.81	-0.01	33.92	3429.61	1.57	-5.32
0.9 Dead+1.0 Wind 180 deg - No Ice	38.86	-0.01	33.92	3426.62	1.06	-5.32
1.2 Dead+1.0 Wind 210 deg - No Ice	51.81	-17.36	30.12	3033.86	1750.96	-14.53
0.9 Dead+1.0 Wind 210 deg - No Ice	38.86	-17.36	30.12	3031.37	1748.25	-14.53
1.2 Dead+1.0 Wind 240 deg - No Ice	51.81	-31.66	18.32	1819.93	3154.93	-10.28
0.9 Dead+1.0 Wind 240 deg - No Ice	38.86	-31.66	18.32	1818.99	3150.47	-10.28
1.2 Dead+1.0 Wind 270 deg - No Ice	51.81	-35.74	0.01	-6.06	3588.43	-0.01
0.9 Dead+1.0 Wind 270 deg - No Ice	38.86	-35.74	0.01	-4.71	3583.42	-0.02

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 300 deg	51.81	-29.75	-17.21	-1746.35	3008.03	5.32
- No Ice						
0.9 Dead+1.0 Wind 300 deg	38.86	-29.75	-17.21	-1742.81	3003.73	5.31
- No Ice						
1.2 Dead+1.0 Wind 330 deg	51.81	-17.04	-29.60	-2991.86	1721.60	2.48
- No Ice						
0.9 Dead+1.0 Wind 330 deg	38.86	-17.04	-29.60	-2986.76	1718.92	2.47
- No Ice						
1.2 Dead+1.0 Ice	109.08	-0.00	0.00	2.96	-11.98	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	109.08	-0.00	-8.27	-810.90	-11.38	3.08
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	109.08	4.11	-7.15	-703.29	-417.93	5.33
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	109.08	7.23	-4.18	-410.23	-726.04	4.77
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	109.08	8.43	0.00	3.76	-842.13	0.91
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	109.08	7.32	4.24	419.01	-729.54	-1.82
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	109.08	4.04	7.02	697.00	-412.02	-2.03
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	109.08	0.00	8.02	798.72	-13.12	-3.08
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	109.08	-4.11	7.15	709.03	393.45	-5.33
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	109.08	-7.45	4.31	424.96	717.07	-4.77
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	109.08	-8.43	-0.00	2.02	817.63	-0.91
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	109.08	-7.10	-4.12	-404.29	689.51	1.82
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	109.08	-4.04	-7.02	-691.26	387.49	2.03
Dead+Wind 0 deg - Service	43.18	0.00	-8.11	-808.32	1.82	1.18
Dead+Wind 30 deg - Service	43.18	3.92	-6.81	-687.39	-391.36	3.25
Dead+Wind 60 deg - Service	43.18	6.78	-3.92	-398.60	-679.06	2.31
Dead+Wind 90 deg - Service	43.18	8.08	-0.00	-4.35	-804.17	0.01
Dead+Wind 120 deg - Service	43.18	7.10	4.11	402.75	-701.45	-1.18
Dead+Wind 150 deg - Service	43.18	3.85	6.69	666.74	-384.69	-0.54
Dead+Wind 180 deg - Service	43.18	-0.00	7.67	767.48	1.62	-1.18
Dead+Wind 210 deg - Service	43.18	-3.92	6.81	678.50	394.79	-3.25
Dead+Wind 240 deg - Service	43.18	-7.16	4.14	405.68	710.17	-2.31
Dead+Wind 270 deg - Service	43.18	-8.08	0.00	-4.55	807.61	-0.01
Dead+Wind 300 deg - Service	43.18	-6.73	-3.89	-395.68	677.22	1.18
Dead+Wind 330 deg - Service	43.18	-3.85	-6.69	-675.64	388.13	0.54

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	-43.18	0.00	0.00	43.18	-0.00	0.000%
2	0.01	-51.81	-35.86	-0.01	51.81	35.86	0.001%
3	0.01	-38.86	-35.86	-0.01	38.86	35.86	0.001%
4	17.36	-51.81	-30.12	-17.36	51.81	30.12	0.001%
5	17.36	-38.86	-30.12	-17.36	38.86	30.12	0.001%
6	29.98	-51.81	-17.35	-29.98	51.81	17.35	0.001%
7	29.98	-38.86	-17.35	-29.98	38.86	17.35	0.001%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
8	35.74	-51.81	-0.01	-35.74	51.81	0.01	0.001%
9	35.74	-38.86	-0.01	-35.74	38.86	0.01	0.001%
10	31.43	-51.81	18.18	-31.43	51.81	-18.18	0.001%
11	31.43	-38.86	18.18	-31.43	38.86	-18.18	0.001%
12	17.04	-51.81	29.60	-17.04	51.81	-29.60	0.001%
13	17.04	-38.86	29.60	-17.04	38.86	-29.60	0.001%
14	-0.01	-51.81	33.92	0.01	51.81	-33.92	0.001%
15	-0.01	-38.86	33.92	0.01	38.86	-33.92	0.001%
16	-17.36	-51.81	30.12	17.36	51.81	-30.12	0.001%
17	-17.36	-38.86	30.12	17.36	38.86	-30.12	0.001%
18	-31.66	-51.81	18.32	31.66	51.81	-18.32	0.001%
19	-31.66	-38.86	18.32	31.66	38.86	-18.32	0.001%
20	-35.74	-51.81	0.01	35.74	51.81	-0.01	0.001%
21	-35.74	-38.86	0.01	35.74	38.86	-0.01	0.001%
22	-29.75	-51.81	-17.21	29.75	51.81	17.21	0.001%
23	-29.75	-38.86	-17.21	29.75	38.86	17.21	0.001%
24	-17.04	-51.81	-29.60	17.04	51.81	29.60	0.001%
25	-17.04	-38.86	-29.60	17.04	38.86	29.60	0.001%
26	0.00	-109.08	0.00	0.00	109.08	-0.00	0.001%
27	-0.00	-109.08	-8.27	0.00	109.08	8.27	0.000%
28	4.11	-109.08	-7.15	-4.11	109.08	7.15	0.000%
29	7.23	-109.08	-4.18	-7.23	109.08	4.18	0.000%
30	8.43	-109.08	0.00	-8.43	109.08	-0.00	0.000%
31	7.32	-109.08	4.24	-7.32	109.08	-4.24	0.000%
32	4.04	-109.08	7.02	-4.04	109.08	-7.02	0.000%
33	0.00	-109.08	8.02	-0.00	109.08	-8.02	0.000%
34	-4.11	-109.08	7.15	4.11	109.08	-7.15	0.000%
35	-7.45	-109.08	4.31	7.45	109.08	-4.31	0.000%
36	-8.43	-109.08	-0.00	8.43	109.08	0.00	0.000%
37	-7.10	-109.08	-4.12	7.10	109.08	4.12	0.000%
38	-4.04	-109.08	-7.02	4.04	109.08	7.02	0.000%
39	0.00	-43.18	-8.11	-0.00	43.18	8.11	0.000%
40	3.92	-43.18	-6.81	-3.92	43.18	6.81	0.000%
41	6.78	-43.18	-3.92	-6.78	43.18	3.92	0.000%
42	8.08	-43.18	-0.00	-8.08	43.18	0.00	0.000%
43	7.10	-43.18	4.11	-7.10	43.18	-4.11	0.000%
44	3.85	-43.18	6.69	-3.85	43.18	-6.69	0.000%
45	-0.00	-43.18	7.67	0.00	43.18	-7.67	0.000%
46	-3.92	-43.18	6.81	3.92	43.18	-6.81	0.000%
47	-7.16	-43.18	4.14	7.16	43.18	-4.14	0.000%
48	-8.08	-43.18	0.00	8.08	43.18	-0.00	0.000%
49	-6.73	-43.18	-3.89	6.73	43.18	3.89	0.000%
50	-3.85	-43.18	-6.69	3.85	43.18	6.69	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00003031
2	Yes	10	0.00000001	0.00007057
3	Yes	10	0.00000001	0.00005918
4	Yes	10	0.00000001	0.00007384
5	Yes	10	0.00000001	0.00006230
6	Yes	10	0.00000001	0.00007678
7	Yes	10	0.00000001	0.00006509
8	Yes	10	0.00000001	0.00007376
9	Yes	10	0.00000001	0.00006224
10	Yes	10	0.00000001	0.00007047
11	Yes	10	0.00000001	0.00005910
12	Yes	10	0.00000001	0.00007378
13	Yes	10	0.00000001	0.00006227
14	Yes	10	0.00000001	0.00007669
15	Yes	10	0.00000001	0.00006503
16	Yes	10	0.00000001	0.00007378
17	Yes	10	0.00000001	0.00006228

18	Yes	10	0.00000001	0.00007041
19	Yes	10	0.00000001	0.00005905
20	Yes	10	0.00000001	0.00007372
21	Yes	10	0.00000001	0.00006221
22	Yes	10	0.00000001	0.00007669
23	Yes	10	0.00000001	0.00006503
24	Yes	10	0.00000001	0.00007379
25	Yes	10	0.00000001	0.00006227
26	Yes	6	0.00000001	0.00011863
27	Yes	10	0.00000001	0.00009381
28	Yes	10	0.00000001	0.00009558
29	Yes	10	0.00000001	0.00009713
30	Yes	10	0.00000001	0.00009647
31	Yes	10	0.00000001	0.00009488
32	Yes	10	0.00000001	0.00009283
33	Yes	10	0.00000001	0.00009196
34	Yes	10	0.00000001	0.00009148
35	Yes	10	0.00000001	0.00009183
36	Yes	10	0.00000001	0.00009195
37	Yes	10	0.00000001	0.00009228
38	Yes	10	0.00000001	0.00009235
39	Yes	10	0.00000001	0.00006049
40	Yes	10	0.00000001	0.00006110
41	Yes	10	0.00000001	0.00006167
42	Yes	10	0.00000001	0.00006109
43	Yes	10	0.00000001	0.00006034
44	Yes	10	0.00000001	0.00006061
45	Yes	10	0.00000001	0.00006116
46	Yes	10	0.00000001	0.00006069
47	Yes	10	0.00000001	0.00006024
48	Yes	10	0.00000001	0.00006090
49	Yes	10	0.00000001	0.00006142
50	Yes	10	0.00000001	0.00006084

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 156	2.98	39	0.18	0.01
T2	156 - 152	2.84	39	0.18	0.01
T3	152 - 148	2.69	39	0.18	0.01
T4	148 - 144	2.54	39	0.17	0.01
T5	144 - 140	2.39	39	0.17	0.01
T6	140 - 120	2.25	47	0.17	0.01
T7	120 - 100	1.58	47	0.14	0.00
T8	100 - 80	1.04	47	0.11	0.00
T9	80 - 60	0.63	47	0.08	0.00
T10	60 - 40	0.35	47	0.05	0.00
T11	40 - 20	0.15	47	0.03	0.00
T12	20 - 0	0.04	47	0.01	0.00

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) LPA-80080/6CF w/ Mount Pipe	39	2.87	0.18	0.01	68846
144.00	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	39	2.39	0.17	0.01	73554
124.00	MX08FRO665-20 w/ Mount Pipe	47	1.70	0.14	0.00	35413
118.00	(4) DB844H90E-XY w/ Mount Pipe	47	1.52	0.14	0.00	29969

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
109.00	PD1110	47	1.26	0.12	0.00	31884
90.00	(2) 7770.00 w/ Mount Pipe	47	0.82	0.09	0.00	37149
50.00	KS24019-L112A	47	0.24	0.04	0.00	56710

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	160 - 156	13.34	18	0.79	0.03
T2	156 - 152	12.70	18	0.79	0.03
T3	152 - 148	12.03	18	0.78	0.03
T4	148 - 144	11.37	18	0.78	0.03
T5	144 - 140	10.72	18	0.76	0.03
T6	140 - 120	10.08	18	0.74	0.03
T7	120 - 100	7.05	18	0.62	0.02
T8	100 - 80	4.63	18	0.48	0.02
T9	80 - 60	2.83	18	0.35	0.01
T10	60 - 40	1.54	18	0.24	0.01
T11	40 - 20	0.67	18	0.15	0.00
T12	20 - 0	0.17	18	0.06	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
157.00	(2) LPA-80080/6CF w/ Mount Pipe	18	12.86	0.79	0.03	15406
144.00	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	18	10.72	0.76	0.03	16748
124.00	MX08FRO665-20 w/ Mount Pipe	18	7.62	0.65	0.02	8042
118.00	(4) DB844H90E-XY w/ Mount Pipe	18	6.78	0.61	0.02	6769
109.00	PD1110	18	5.64	0.54	0.02	7189
90.00	(2) 7770.00 w/ Mount Pipe	18	3.66	0.41	0.01	8339
50.00	KS24019-L112A	18	1.06	0.19	0.01	12666

Bolt Design Data

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of Bolts	Maximum Load per Bolt	Allowable Load per Bolt	Ratio Load Allowable	Allowable Ratio	Criteria
	ft			in		K	K			
T1	160	Leg Diagonal	A325N	0.63	4	0.28	20.34	0.014	1	Bolt Tension Member Block Shear Member Bearing
			A325N	0.50	1	0.61	3.47	0.175	1.05	
		Top Girt	A325N	0.50	1	0.28	4.13	0.067	1.05	
T2	156	Diagonal	A325N	0.50	1	1.82	3.47	0.525	1.05	Member Block Shear
T3	152	Diagonal	A325N	0.50	1	1.74	3.47	0.501	1.05	Member Block Shear
T4	148	Diagonal	A325N	0.50	1	1.95	3.47	0.563	1.05	Member Block Shear
T5	144	Diagonal	A325N	0.50	1	4.39	7.50	0.585	1.05	Gusset Bearing

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
T6	140	Leg	A325N	0.63	4	10.28	20.34	0.505	1.05	Bolt Tension
		Diagonal	A325N	0.50	1	4.13	6.25	0.660	1.05	Member Block Shear
		Top Girt	A325N	0.50	1	0.85	4.13	0.206	1.05	Member Bearing
T7	120	Leg	A325N	0.75	4	17.02	30.10	0.565	1.05	Bolt Tension
		Diagonal	A325N	0.50	1	5.15	7.50	0.687	1.05	Gusset Bearing
T8	100	Leg	A325N	0.88	4	23.35	41.56	0.562	1.05	Bolt Tension
		Diagonal	A325N	0.50	1	5.78	12.40	0.466	1.05	Member Bearing
T9	80	Leg	A325N	1.00	6	19.66	54.52	0.361	1.05	Bolt Tension
		Diagonal	A325N	0.50	1	5.75	12.40	0.463	1.05	Member Bearing
T10	60	Leg	A325N	1.00	6	23.07	54.52	0.423	1.05	Bolt Tension
		Diagonal	A325N	0.63	1	6.49	14.79	0.439	1.05	Gusset Bearing
T11	40	Leg	A325N	1.00	6	26.37	54.52	0.484	1.05	Bolt Tension
		Diagonal	A325N	0.63	1	6.40	14.79	0.433	1.05	Gusset Bearing
T12	20	Leg	A449	1.00	6	29.37	54.52	0.539	1.05	Bolt Tension
		Diagonal	A325N	0.63	1	6.93	14.79	0.469	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 - 156	Rohn 2.375" x 0.218" (2 EH)	4.00	4.00	62.6 K=1.00	1.48	-3.34	49.90	0.067 ¹
T2	156 - 152	Rohn 2.375" x 0.218" (2 EH)	4.00	4.00	62.6 K=1.00	1.48	-4.11	49.90	0.082 ¹
T3	152 - 148	Rohn 2.375" x 0.218" (2 EH)	4.00	4.00	62.6 K=1.00	1.48	-7.02	49.90	0.141 ¹
T4	148 - 144	Rohn 2.375" x 0.218" (2 EH)	4.00	4.00	62.6 K=1.00	1.48	-10.09	49.90	0.202 ¹
T5	144 - 140	Rohn 2.375" x 0.218" (2 EH)	4.00	4.00	62.6 K=1.00	1.48	-16.89	49.90	0.338 ¹
T6	140 - 120	Rohn 2.875" x 0.276" (2.5 EH)	20.03	5.01	65.0 K=1.00	2.25	-48.98	74.43	0.658 ¹
T7	120 - 100	ROHN 3 EH	20.03	6.68	70.5 K=1.00	3.02	-79.86	94.34	0.847 ¹
T8	100 - 80	Rohn 4" x 0.318" (3.5 EH) (GR)	20.03	6.68	61.3 K=1.00	3.68	-109.74	148.29	0.740 ¹
T9	80 - 60	ROHN 4 EH (GR)	20.04	6.68	54.3 K=1.00	4.41	-138.61	192.91	0.719 ¹
T10	60 - 40	Rohn 5.563" x 0.375" (5 EH) (GR)	20.03	10.02	65.4 K=1.00	6.11	-163.32	246.97	0.661 ¹
T11	40 - 20	Rohn 5.563" x 0.375" (5 EH) (GR)	20.04	10.02	65.4 K=1.00	6.11	-188.42	246.94	0.763 ¹
T12	20 - 0	Rohn 6.625" x 0.432" (6 EH) (GR)	20.03	10.02	54.8 K=1.00	8.40	-212.70	381.11	0.558 ¹

* DL controls

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 $\frac{P_u}{\phi P_n}$
T1	160 - 156	L 1.5 x 1.5 x 1/8	6.94	3.37	136.4 K=1.00	0.36	-0.62	5.53	0.113 ¹
T2	156 - 152	L 1.5 x 1.5 x 1/8	6.95	3.37	136.6 K=1.00	0.36	-1.81	5.51	0.328 ¹
T3	152 - 148	L 1.5 x 1.5 x 1/8	6.95	3.37	136.7 K=1.00	0.36	-1.77	5.50	0.322 ¹
T4	148 - 144	L 1.5 x 1.5 x 1/8	6.96	3.38	136.9 K=1.00	0.36	-1.92	5.49	0.350 ¹
T5	144 - 140	L 2 x 2 x 1/4	6.97	3.38	107.8 K=1.04	0.94	-4.50	23.09	0.195 ¹
T6	140 - 120	2L 1.5 x 1.5 x 1/8 (3/16)	8.89	4.48	119.2 K=1.00	0.72	-4.15	13.64	0.304 ¹
T7	120 - 100	2L 'a' > 25.65 in - 57 2L 2 x 2 x 3/16 (3/16)	11.36	5.76	116.3 K=1.00	1.43	-5.10	28.59	0.178 ¹
T8	100 - 80	2L 'a' > 33.07 in - 84 2L 2.5 x 2.5 x 3/16 (3/16)	13.11	6.63	107.8 K=1.00	1.80	-5.92	38.88	0.152 ¹
T9	80 - 60	2L 'a' > 37.95 in - 105 2L 3 x 3 x 3/16 (1/4)	14.99	7.57	102.3 K=1.00	2.18	-5.84	46.82	0.125 ¹
T10	60 - 40	2L 'a' > 43.26 in - 124 2L 3 x 3 x 3/16 (1/4)	18.13	9.22	124.6 K=1.00	2.18	-6.78	36.09	0.188 ¹
T11	40 - 20	2L 'a' > 52.70 in - 145 2L 3 x 3 x 1/4 (1/4)	19.90	10.11	136.6 K=1.00	2.88	-6.70	42.37	0.158 ¹
T12	20 - 0	2L 'a' > 57.94 in - 161 2L 3.5 x 3.5 x 1/4 (1/4)	21.70	11.00	127.9 K=1.00	3.38	-7.45	55.17	0.135 ¹
		2L 'a' > 62.90 in - 175							

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 - 156	L 2 x 2 x 1/8	6.52	6.11	184.6 K=1.00	0.48	-0.28	4.07	0.068 ¹
T6	140 - 120	L 2 x 2 x 1/8	6.56	6.11	184.6 K=1.00	0.48	-0.85	4.07	0.209 ¹

¹ P_u / φP_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 $\frac{P_u}{\phi P_n}$
T2	156 - 152	Rohn 2.375" x 0.218" (2 EH)	4.00	4.00	62.6	1.48	0.93	66.48	0.014 ¹
T3	152 - 148	Rohn 2.375" x 0.218" (2 EH)	4.00	4.00	62.6	1.48	4.30	66.48	0.065 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T4	148 - 144	EH) Rohn 2.375" x 0.218" (2	4.00	4.00	62.6	1.48	7.15	66.48	0.108 ¹
T5	144 - 140	EH) Rohn 2.375" x 0.218" (2	4.00	4.00	62.6	1.48	11.33	66.48	0.170 ¹
T6	140 - 120	EH) Rohn 2.875" x 0.276" (2.5	20.03	5.01	65.0	2.25	41.13	101.41	0.406 ¹
T7	120 - 100	EH) ROHN 3 EH	20.03	6.68	70.5	3.02	68.09	135.72	0.502 ¹
T8	100 - 80	Rohn 4" x 0.318" (3.5 EH)	20.03	6.68	61.3	3.68	93.39	165.53	0.564 ¹
T9	80 - 60	(GR) ROHN 4 EH (GR)	20.04	6.68	54.3	4.41	117.93	198.34	0.595 ¹
T10	60 - 40	Rohn 5.563" x 0.375" (5	20.03	10.02	65.4	6.11	138.43	275.04	0.503 ¹
T11	40 - 20	EH) (GR) Rohn 5.563" x 0.375" (5	20.04	10.02	65.4	6.11	158.24	275.04	0.575 ¹
T12	20 - 0	EH) (GR) Rohn 6.625" x 0.432" (6	20.03	10.02	54.8	8.40	176.25	378.22	0.466 ¹
		EH) (GR)							

¹ P_u / φP_n controls

Diagonal 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 - 156	L 1.5 x 1.5 x 1/8	6.94	3.37	89.6	0.21	0.61	9.18	0.066 ¹
T2	156 - 152	L 1.5 x 1.5 x 1/8	6.95	3.37	89.6	0.21	1.82	9.18	0.198 ¹
T3	152 - 148	L 1.5 x 1.5 x 1/8	6.95	3.37	89.7	0.21	1.74	9.18	0.189 ¹
T4	148 - 144	L 1.5 x 1.5 x 1/8	6.96	3.38	89.8	0.21	1.95	9.18	0.213 ¹
T5	144 - 140	L 2 x 2 x 1/4	6.97	3.38	68.7	0.59	4.39	28.58	0.154 ¹
T6	140 - 120	2L 1.5 x 1.5 x 1/8 (3/16)	8.89	4.48	118.2	0.42	4.13	18.35	0.225 ¹
		2L 'a' > 25.65 in - 58							
T7	120 - 100	2L 2 x 2 x 3/16 (3/16)	10.80	5.48	108.6	0.90	5.15	39.00	0.132 ¹
		2L 'a' > 31.49 in - 91							
T8	100 - 80	2L 2.5 x 2.5 x 3/16 (3/16)	13.11	6.63	103.8	1.18	5.78	51.23	0.113 ¹
		2L 'a' > 37.95 in - 106							
T9	80 - 60	2L 3 x 3 x 3/16 (1/4)	14.99	7.57	98.1	1.46	5.75	63.47	0.091 ¹
		2L 'a' > 43.26 in - 125							
T10	60 - 40	2L 3 x 3 x 3/16 (1/4)	17.29	8.81	114.0	1.42	6.49	61.94	0.105 ¹
		2L 'a' > 50.32 in - 151							
T11	40 - 20	2L 3 x 3 x 1/4 (1/4)	19.90	10.11	132.0	1.88	6.40	81.56	0.078 ¹
		2L 'a' > 57.94 in - 160							
T12	20 - 0	2L 3.5 x 3.5 x 1/4 (1/4)	21.70	11.00	122.2	2.25	6.93	97.88	0.071 ¹
		2L 'a' > 62.90 in - 175							

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

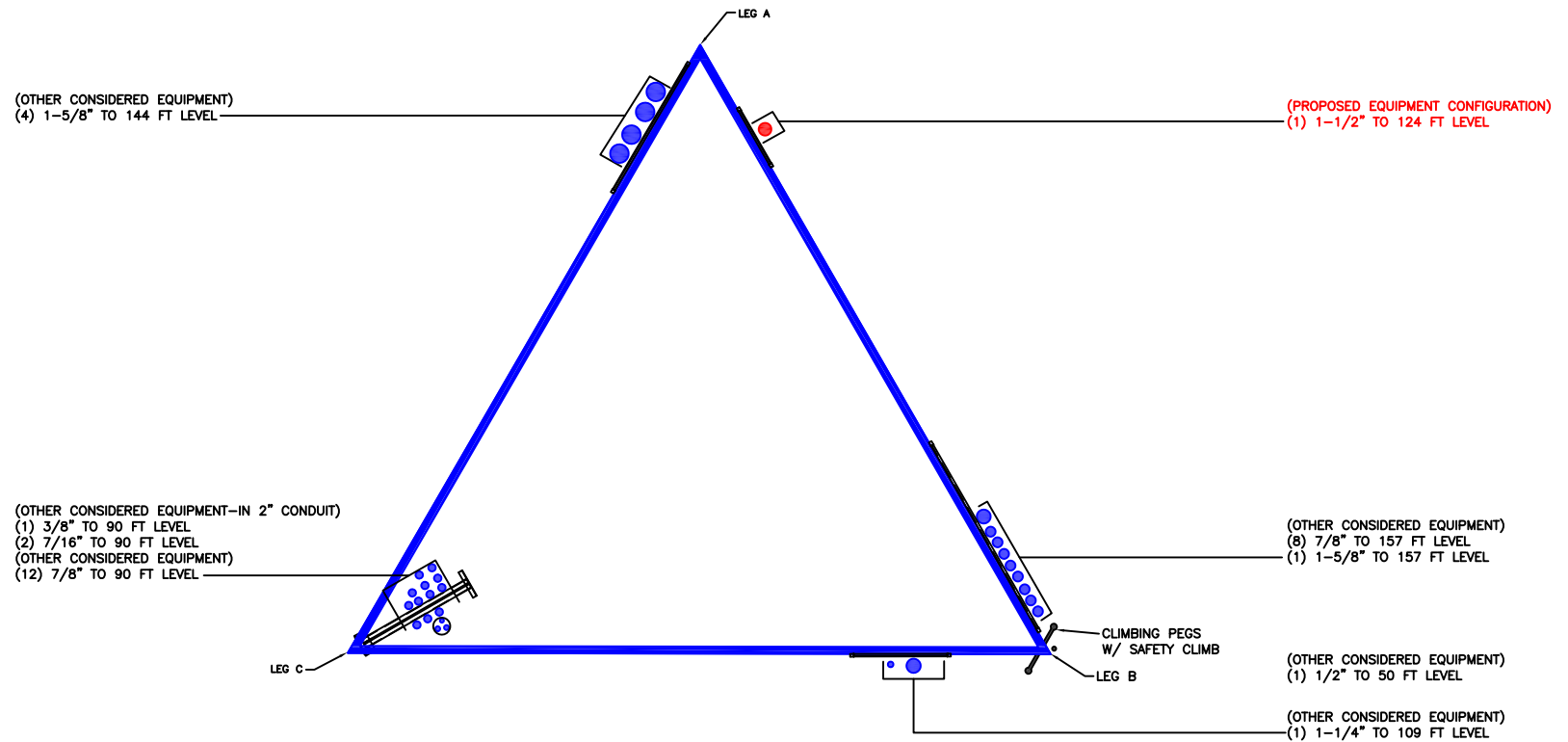
Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 156	L 2 x 2 x 1/8	6.52	6.11	121.2	0.30	0.28	13.25	0.021 ¹
T6	140 - 120	L 2 x 2 x 1/8	6.56	6.11	121.2	0.30	0.85	13.25	0.064 ¹

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 - 156	Leg	Rohn 2.375" x 0.218" (2 EH)	3	-3.34	49.90	6.7	Pass
T2	156 - 152	Leg	Rohn 2.375" x 0.218" (2 EH)	15	-4.11	52.40	7.8	Pass
T3	152 - 148	Leg	Rohn 2.375" x 0.218" (2 EH)	24	-7.02	52.40	13.4	Pass
T4	148 - 144	Leg	Rohn 2.375" x 0.218" (2 EH)	33	-10.09	52.40	19.3	Pass
T5	144 - 140	Leg	Rohn 2.375" x 0.218" (2 EH)	42	-16.89	52.40	32.2	Pass
T6	140 - 120	Leg	Rohn 2.875" x 0.276" (2.5 EH)	49	-48.98	78.15	62.7	Pass
T7	120 - 100	Leg	ROHN 3 EH	79	-79.86	99.06	80.6	Pass
T8	100 - 80	Leg	Rohn 4" x 0.318" (3.5 EH) (GR)	100	-109.74	155.70	70.5	Pass
T9	80 - 60	Leg	ROHN 4 EH (GR)	121	-138.61	202.56	68.4	Pass
T10	60 - 40	Leg	Rohn 5.563" x 0.375" (5 EH) (GR)	142	-163.32	259.31	63.0	Pass
T11	40 - 20	Leg	Rohn 5.563" x 0.375" (5 EH) (GR)	157	-188.42	259.29	72.7	Pass
T12	20 - 0	Leg	Rohn 6.625" x 0.432" (6 EH) (GR)	172	-212.70	400.17	53.2	Pass
T1	160 - 156	Diagonal	L 1.5 x 1.5 x 1/8	9	-0.62	5.80	10.7	Pass
T2	156 - 152	Diagonal	L 1.5 x 1.5 x 1/8	19	-1.81	5.79	16.6 (b)	Pass
T3	152 - 148	Diagonal	L 1.5 x 1.5 x 1/8	27	-1.77	5.78	31.3	Pass
T4	148 - 144	Diagonal	L 1.5 x 1.5 x 1/8	37	-1.92	5.77	50.0 (b)	Pass
T5	144 - 140	Diagonal	L 2 x 2 x 1/4	45	-4.50	24.24	30.7	Pass
T6	140 - 120	Diagonal	2L 1.5 x 1.5 x 1/8 (3/16)	57	-4.15	14.33	47.7 (b)	Pass
T7	120 - 100	Diagonal	2L 2 x 2 x 3/16 (3/16)	84	-5.10	30.02	33.3	Pass
T8	100 - 80	Diagonal	2L 2.5 x 2.5 x 3/16 (3/16)	105	-5.92	40.83	53.6 (b)	Pass
T9	80 - 60	Diagonal	2L 3 x 3 x 3/16 (1/4)	124	-5.84	49.16	18.6	Pass
T10	60 - 40	Diagonal	2L 3 x 3 x 3/16 (1/4)	145	-6.78	37.89	55.7 (b)	Pass
T11	40 - 20	Diagonal	2L 3 x 3 x 1/4 (1/4)	161	-6.70	44.49	29.0	Pass
T12	20 - 0	Diagonal	2L 3.5 x 3.5 x 1/4 (1/4)	175	-7.45	57.93	62.9 (b)	Pass
T1	160 - 156	Top Girt	L 2 x 2 x 1/8	4	-0.28	4.27	17.0	Pass
T6	140 - 120	Top Girt	L 2 x 2 x 1/8	54	-0.85	4.27	65.4 (b)	Pass
							44.4 (b)	
							11.9	
							44.1 (b)	
							17.9	
							41.8 (b)	
							15.1	
							41.2 (b)	
							12.9	
							44.7 (b)	
							6.5	
							19.9	
							Summary	
							Leg (T7)	80.6
							Diagonal (T7)	65.4
							Top Girt (T6)	19.9
							Bolt	65.4
							Checks	
							RATING =	80.6
								Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity

Site Info		
BU #	806387	
Site Name	HRT 088 943629	
Order #	553395 Rev. 0	

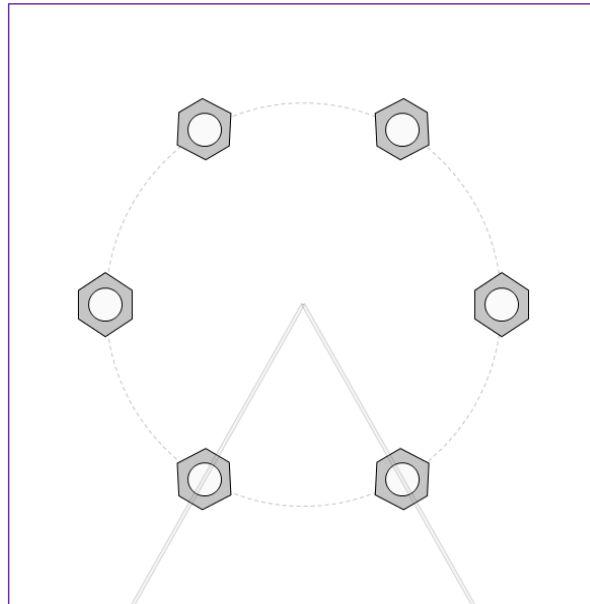
Analysis Considerations		
TIA-222 Revision	H	
Grout Considered:	Yes	
l_{ar} (in)	0	

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	218.84	180.58
Shear Force (kips)	23.58	19.85

*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		Anchor Rod Summary	(units of kips, kip-in)
(6) 1" ϕ bolts (A449 N; $F_y=92$ ksi, $F_u=120$ ksi)		$Pu_t = 30.1$	$\phi Pn_t = 54.54$
l_{ar} (in): 0		$Vu = 3.31$	$\phi Vn = 35.34$
		$Mu = n/a$	$\phi Mn = n/a$
			Stress Rating
			52.6%
			Pass

Pier and Pad Foundation



BU # : 806387
 Site Name: HRT 088 943629
 App. Number: 553395 Rev. 0

TIA-222 Revision: H
 Tower Type: Self Support

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	218.84	kips
Compression Shear, V_{u_comp} :	23.58	kips
Uplift, P_{uplift} :	180.58	kips
Uplift Shear, V_{u_uplift} :	19.85	kips
Tower Height, H :	160	ft
Base Face Width, BW :	20.86	ft
BP Dist. Above Fdn, bp_{dist} :	3	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, $dpier$:	3.5	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, Sc :	8	
Pier Rebar Quantity, mc :	16	
Pier Tie/Spiral Size, St :	3	
Pier Tie/Spiral Quantity, mt :	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Pad Properties		
Depth, D :	12	ft
Pad Width, W_1 :	9.4	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 Net Bearing, Q_{net} :	16.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	35	degrees
SPT Blow Count, N_{blows} :	53	
Base Friction, μ :		
Neglected Depth, N :	4.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	N/A	ft

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Uplift (kips)	297.77	180.58	57.8%	Pass
Lateral (Sliding) (kips)	112.61	19.85	16.8%	Pass
Bearing Pressure (ksf)	13.04	4.27	31.2%	Pass
Pier Flexure (Comp.) (kip*ft)	1094.92	247.59	21.5%	Pass
Pier Flexure (Tension) (kip*ft)	713.54	208.43	27.8%	Pass
Pier Compression (kip)	2214.70	237.02	10.2%	Pass
Pad Flexure (kip*ft)	564.27	103.57	17.5%	Pass
Pad Shear - 1-way (kips)	182.45	31.17	16.3%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.164	0.046	26.5%	Pass
Flexural 2-way (Comp) (kip*ft)	1128.55	148.55	12.5%	Pass
Pad Shear - 2-way (Uplift) (ksi)	0.164	0.055	32.0%	Pass
Flexural 2-way (Tension) (kip*ft)	1128.55	125.06	10.6%	Pass

*Rating per TIA-222-H Section 15.5

Soil Rating*:	57.8%
Structural Rating*:	32.0%

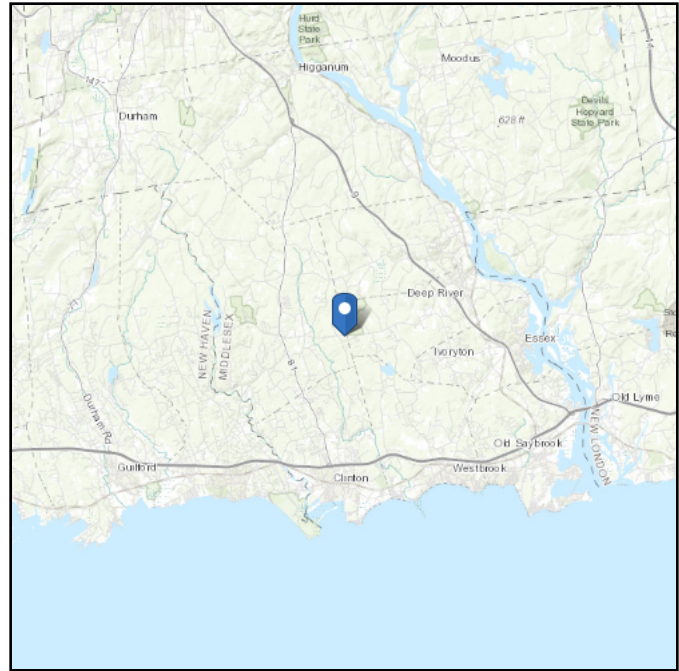
<-- Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 416.51 ft (NAVD 88)
Latitude: 41.357342
Longitude: -72.519953



Wind

Results:

Wind Speed:	130 Vmph Per Jurisdiction
10-year MRI	78 Vmph
25-year MRI	88 Vmph
50-year MRI	96 Vmph
100-year MRI	106 Vmph

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

Date Accessed: Tue Feb 02 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

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

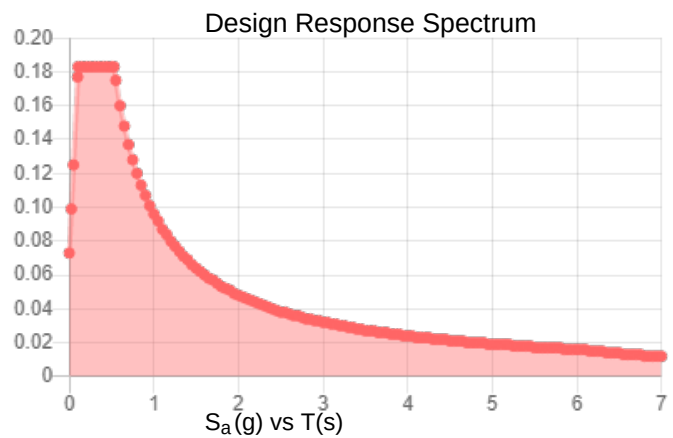
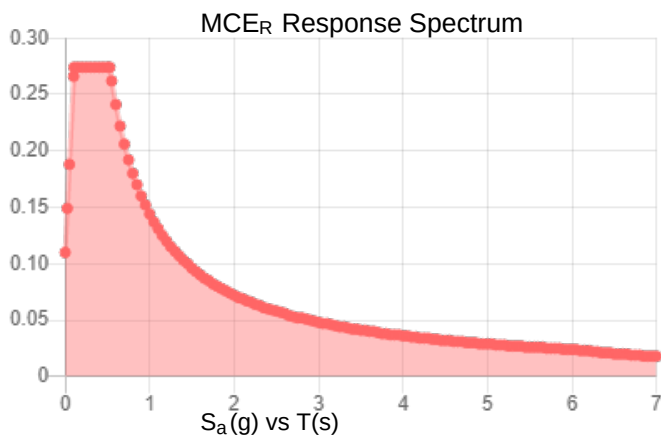
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.171	S_{DS} :	0.183
S_1 :	0.06	S_{D1} :	0.096
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.087
S_{MS} :	0.274	PGA_M :	0.138
S_{M1} :	0.144	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Tue Feb 02 2021

Date Source:

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

Results:

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

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

Date Accessed: Tue Feb 02 2021

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

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

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Exhibit E

Mount Analysis

Date: **July 30, 2021**

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



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

Subject: Mount Replacement Analysis Report

Carrier Designation: DISH Network Equipment Change Out
Carrier Site Number: BOBDL00052A
Carrier Site Name: CT-CCI-T-806387

Crown Castle Designation: **Crown Castle BU Number:** 806387
Crown Castle Site Name: HRT 088 943629
Crown Castle JDE Job Number: 645650
Crown Castle Order Number: 553395 Rev. 1

Engineering Firm Designation: **Trylon Report Designation:** 189196

Site Data: #14 Route 80, Killingworth, Middlesex County, CT, 06419
Latitude 41°21'26.43" Longitude -72°31'11.83"

Structure Information: **Tower Height & Type:** 160.0 ft Guyed Tower
Mount Elevation: 124.0 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 130 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Bryan P. Mawhinney

Respectfully Submitted by:
Cliff Abernathy, P.E.

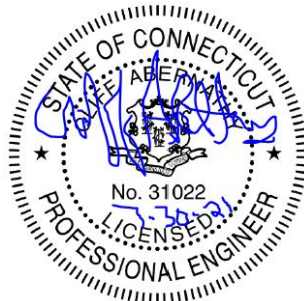


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Supplemental Drawings

1) INTRODUCTION

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

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	130 mph
Exposure Category:	B
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:	0.173
Seismic S_1:	0.061
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
202.0	202.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Sector Frame [Commscope MTC397508]
		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	553395 Rev. 1	CCI Sites
Tower Structural Analysis Reports	Crown Castle	9746660	CCI Sites
Mount Manufacturer Drawings	Commscope	MTC397508	TSA

3.1) Analysis Method

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

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

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

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Sector Frame, Worst Case Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP1	202.0	19.9	Pass
	Horizontal(s)	H1		16.8	Pass
	Standoff(s)	M4		20.6	Pass
	Bracing(s)	M24		37.6	Pass
	Tieback(s)	M31A		7.7	Pass
	Mount Connection(s)	--		18.4	Pass

Structure Rating (max from all components) =	37.6%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H, Section 15.5

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	757.2	Leg	Rohn 2.5 EH	3,721.5	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*

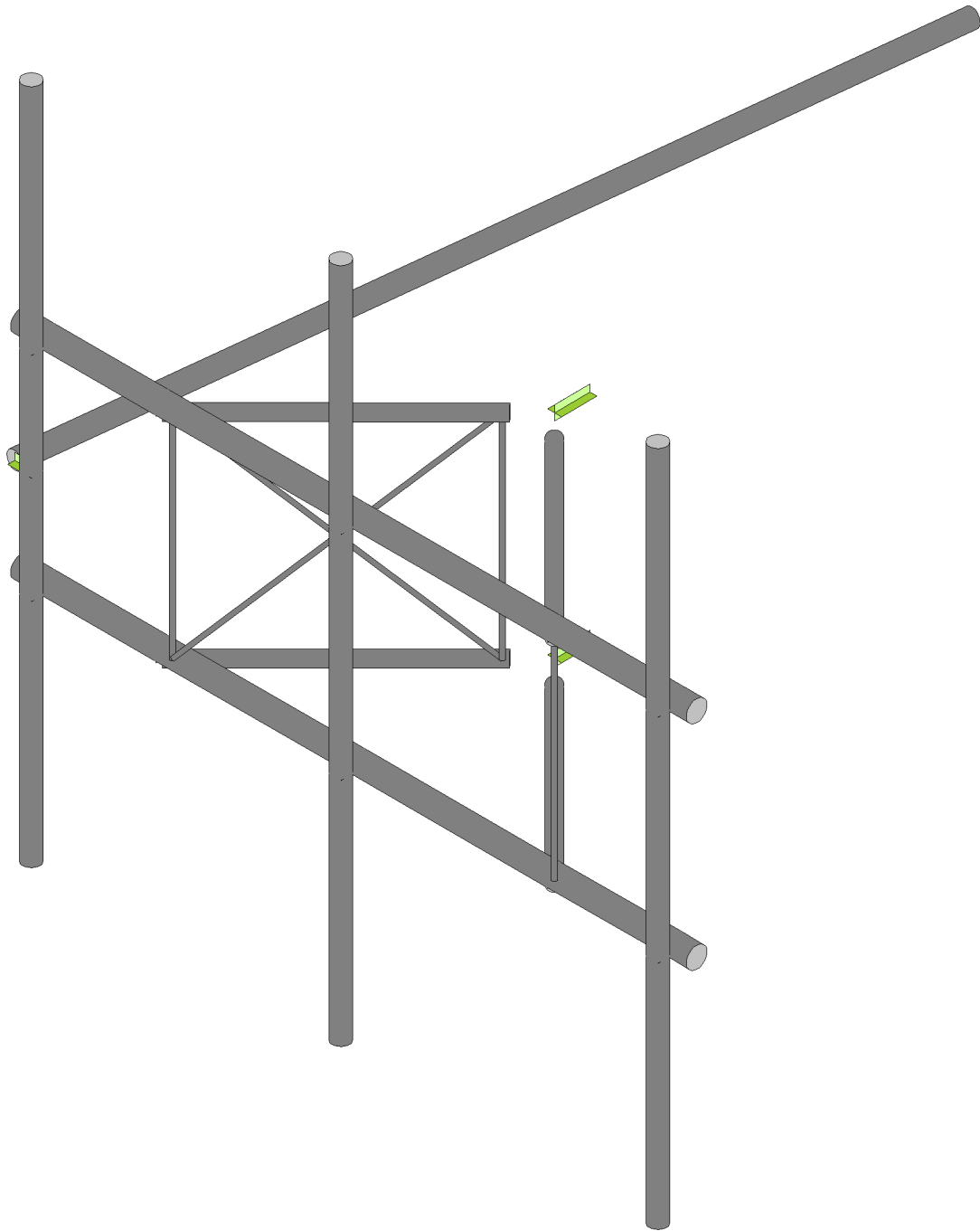
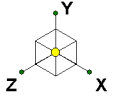
4.1) Recommendations

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 MTC397508

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

APPENDIX A
WIRE FRAME AND RENDERED MODELS



Trylon

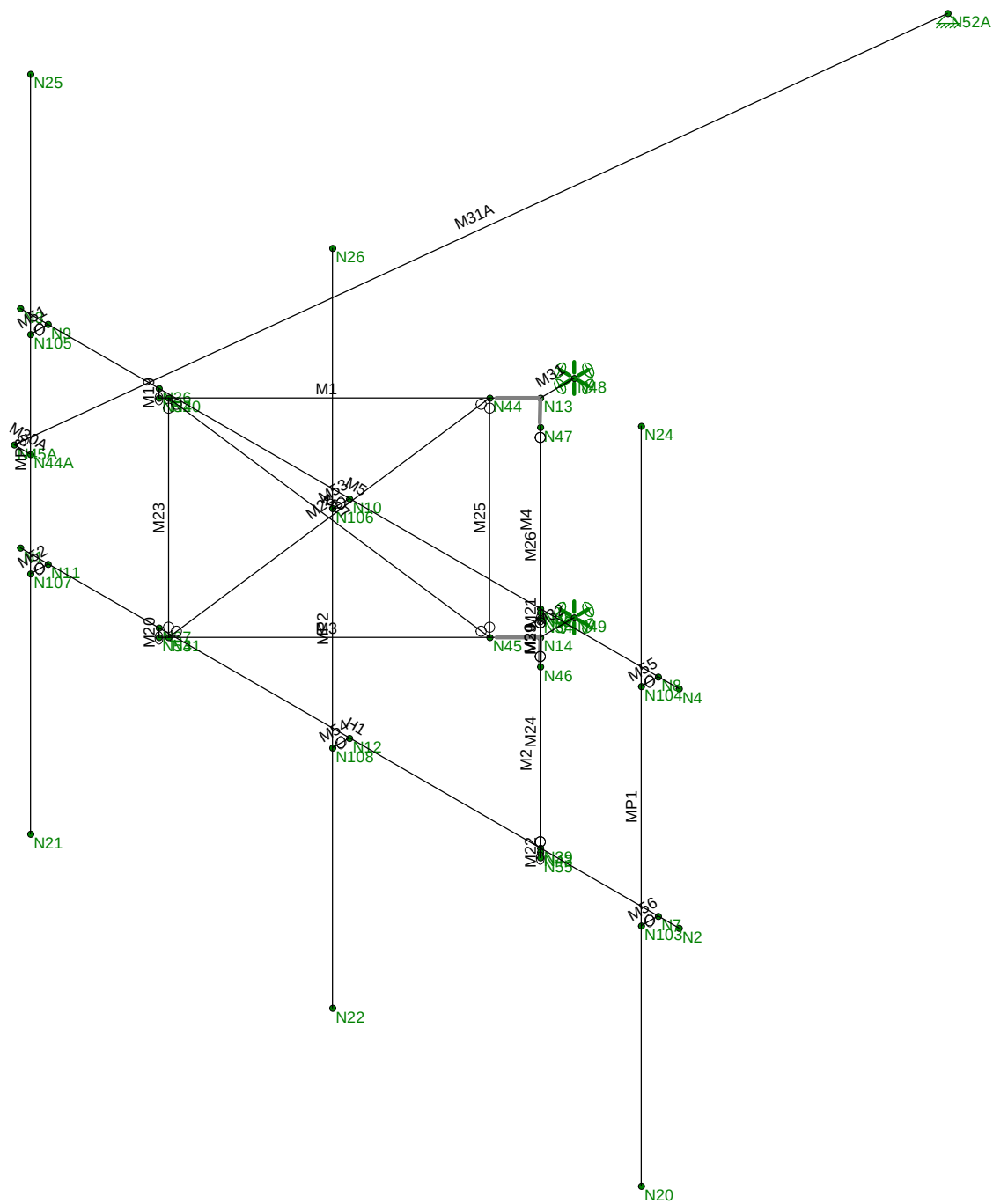
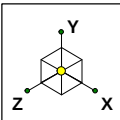
JE

MTC3975083

SK - 1

July 30, 2021 at 12:19 PM

MTC3975083_loaded.r3d



Trylon	MTC3975083	SK - 2
JE		July 30, 2021 at 12:20 PM
		MTC3975083_loaded.r3d

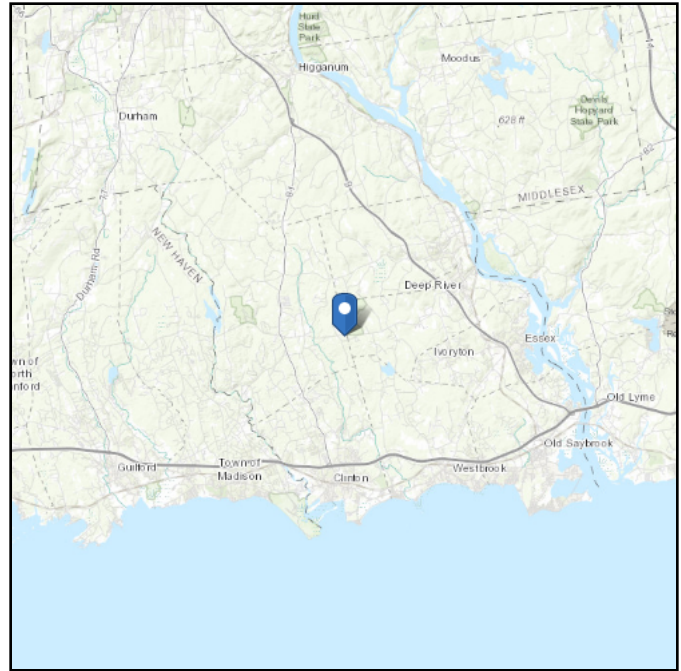
APPENDIX B
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 416.51 ft (NAVD 88)
Latitude: 41.357342
Longitude: -72.519953

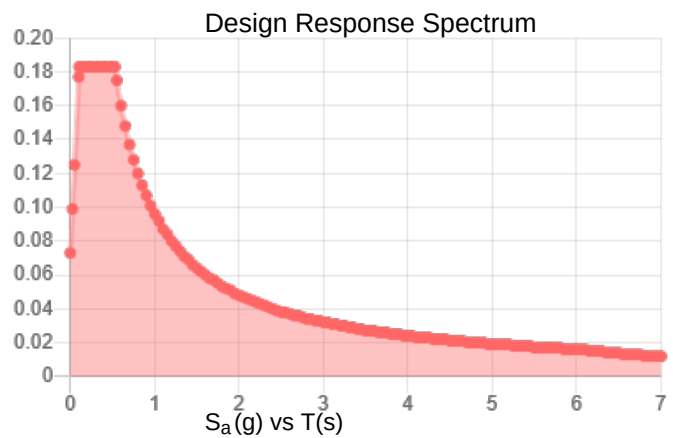
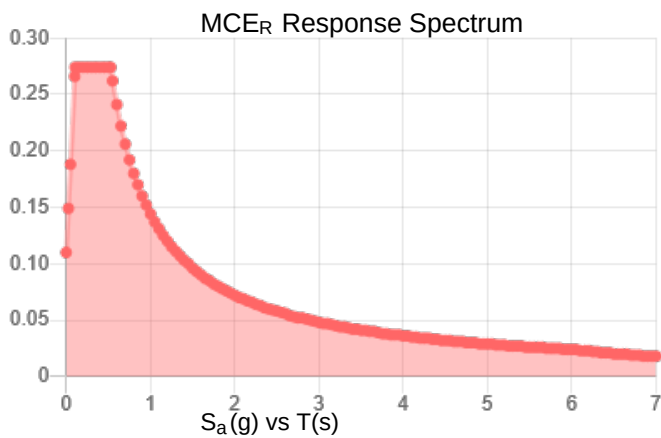


Site Soil Class: D - Stiff Soil

Results:

S_S :	0.171	S_{DS} :	0.183
S_1 :	0.06	S_{D1} :	0.096
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.087
S_{MS} :	0.274	PGA _M :	0.138
S_{M1} :	0.144	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Fri Jul 30 2021

Date Source:

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

Ice

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

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

Date Accessed: Fri Jul 30 2021

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

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

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TIA LOAD CALCULATOR 2.0

PROJECT DATA		
Job Code:	189196	
Carrier Site ID:	BOBDL00052A	
Carrier Site Name:	CT-CCI-T-806387	

CODES AND STANDARDS		
Building Code:	2015 IBC	
Local Building Code:	Connecticut State Building	
Design Standard:	TIA-222-H	

STRUCTURE DETAILS		
Mount Type:	Sector Frame	--
Mount Elevation:	124.0	ft.
Number of Sectors:	3	--
Structure Type:	Self Support Tower	--
Structure Height:	160.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default	--
Ground Elevation:	416	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:	130	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.05	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (G_h):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	42.55	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	42.55	psf
Mount Ice Thickness (t_{iz}):	1.71	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	76.58	psf
Round Member Pressure:	45.95	psf
Ice Wind Pressure:	7.38	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}):	0.18	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

[illegible]

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			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

[illegible]

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

[illegible]

EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

<i>Appurtenance Name</i>	<i>Qty.</i>	<i>--</i>	<i>0° 180°</i>	<i>30° 210°</i>	<i>60° 240°</i>	<i>90° 270°</i>	<i>120° 300°</i>	<i>150° 330°</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						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

[illegible]

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 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISACONNECTION CODE	AISC 14th(360-10): 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 ADM1-10: 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

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		13	32.1	0
3	Total General		13	32.1	0
4					
5	Hot Rolled Steel				
6	A500 Gr. C - 46	PIPE 1.5	4	139.2	.03
7	A500 Gr. C - 46	PIPE 2.0	4	411.2	.119
8	A500 Gr. C - 46	PIPE 2.5	2	192	.088
9	A529 Gr. 50	SR 1/2"	4	179.4	.01
10	A529 Gr. 50	SR 5/8 HRA HRA	4	121	.011
11	Total HR Steel		18	1042.9	.257

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	N1	-48	-30.25	49.623	0	
2	N2	48	-30.25	49.623	0	
3	N3	-48	0	49.623	0	
4	N4	48	0	49.623	0	
5	N7	45	-30.25	49.623	0	
6	N8	45	0	49.623	0	
7	N9	-44.000033	0	49.623	0	
8	N10	0.000033	0	49.623	0	
9	N11	-44.000033	-30.25	49.623	0	
10	N12	0.000033	-30.25	49.623	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
11	N13	0	-1.1875	21.83	0	
12	N14	0	-31.4375	21.83	0	
13	N20	45	-63.125	52.123	0	
14	N21	-44.000033	-63.125	52.123	0	
15	N22	0.000033	-63.125	52.123	0	
16	N24	45	32.875	52.123	0	
17	N25	-44.000033	32.875	52.123	0	
18	N26	0.000033	32.875	52.123	0	
19	N103	45	-30.25	52.123	0	
20	N104	45	0	52.123	0	
21	N105	-44.000033	0	52.123	0	
22	N106	0.000033	0	52.123	0	
23	N107	-44.000033	-30.25	52.123	0	
24	N108	0.000033	-30.25	52.123	0	
25	N52	-27.8	-1.1875	49.623	0	
26	N53	-27.8	-31.4375	49.623	0	
27	N54	27.8	-1.1875	49.623	0	
28	N55	27.8	-31.4375	49.623	0	
29	N36	-27.8	0	49.623	0	
30	N37	-27.8	-30.25	49.623	0	
31	N38	27.8	0	49.623	0	
32	N39	27.8	-30.25	49.623	0	
33	N40	-27.105879	-1.1875	48.929054	0	
34	N41	-27.105879	-31.4375	48.929054	0	
35	N42	27.105879	-1.1875	48.929054	0	
36	N43	27.105879	-31.4375	48.929054	0	
37	N44	-3.684645	-1.1875	25.513717	0	
38	N45	-3.684645	-31.4375	25.513717	0	
39	N46	3.684645	-31.4375	25.513717	0	
40	N47	3.684645	-1.1875	25.513717	0	
41	N48	0	-1.1875	16.83	0	
42	N49	0	-31.4375	16.83	0	
43	N52A	-32.8	-15.125	-70.377	0	
44	N44A	-44.000033	-15.125	52.123	0	
45	N45A	-46.375033	-15.125	52.123	0	

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(de...	Section/Shape	Type	Design List	Material	Design Rul...
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			RIGID	None	None	RIGID	Typical
11	M52	N107	N11			RIGID	None	None	RIGID	Typical
12	M53	N106	N10			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(de...	Section/Shape	Type	Design List	Material	Design Rul...
13	M54	N108	N12			RIGID	None	None	RIGID	Typical
14	M55	N104	N8			RIGID	None	None	RIGID	Typical
15	M56	N103	N7			RIGID	None	None	RIGID	Typical
16	M19	N36	N52			RIGID	None	None	RIGID	Typical
17	M20	N37	N53			RIGID	None	None	RIGID	Typical
18	M21	N38	N54			RIGID	None	None	RIGID	Typical
19	M22	N39	N55			RIGID	None	None	RIGID	Typical
20	M23	N40	N41			Standoff Bracing (Vert)	Beam	None	A529 Gr. ...	Typical
21	M24	N42	N43			Standoff Bracing (Vert)	Beam	None	A529 Gr. ...	Typical
22	M25	N44	N45			Standoff Bracing (Vert)	Beam	None	A529 Gr. ...	Typical
23	M26	N47	N46			Standoff Bracing (Vert)	Beam	None	A529 Gr. ...	Typical
24	M27	N40	N45			Standoff Bracing (Diag)	Beam	None	A529 Gr. ...	Typical
25	M28	N44	N41			Standoff Bracing (Diag)	Beam	None	A529 Gr. ...	Typical
26	M29	N47	N43			Standoff Bracing (Diag)	Beam	None	A529 Gr. ...	Typical
27	M30	N42	N46			Standoff Bracing (Diag)	Beam	None	A529 Gr. ...	Typical
28	M31	N13	N48			RIGID	None	None	RIGID	Typical
29	M32	N14	N49			RIGID	None	None	RIGID	Typical
30	M30A	N44A	N45A			RIGID	None	None	RIGID	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
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

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Horizontals	PIPE 2.5	Beam	None	A500 Gr. C - 46	Typical	1.61	1.45	1.45	2.89
2	Standoffs	PIPE 1.5	Beam	None	A500 Gr. C - 46	Typical	.749	.293	.293	.586
3	Tie Backs	PIPE 2.0	Beam	None	A500 Gr. C - 46	Typical	1.02	.627	.627	1.25
4	Mount Pipes	PIPE 2.0	Beam	None	A500 Gr. C - 46	Typical	1.02	.627	.627	1.25
5	Standoff Bracing ...	SR 5/8 HRA HRA	Beam	None	A529 Gr. 50	Typical	.307	.007	.007	.015
6	Vertical pipes	PIPE 3.0	Beam	None	A500 Gr. C - 46	Typical	2.07	2.85	2.85	5.69
7	Standoff Bracing ...	SR 1/2"	Beam	None	A529 Gr. 50	Typical	.196	.003	.003	.006

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

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-41.25	0
2	MP1	Y	-41.25	72
3	MP1	Y	-63.9	%50
4	MP1	Y	-75	%50
5	MP1	Y	-21.85	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-153.358	0
2	MP1	Z	-153.358	72
3	MP1	Z	-75.185	%50
4	MP1	Z	-75.185	%50
5	MP1	Z	-77.038	%25
6	MP1	X	0	0
7	MP1	X	0	72
8	MP1	X	0	%50
9	MP1	X	0	%50
10	MP1	X	0	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-112.915	0
2	MP1	Z	-112.915	72
3	MP1	Z	-56.968	%50
4	MP1	Z	-58.198	%50
5	MP1	Z	-59.722	%25
6	MP1	X	-65.191	0
7	MP1	X	-65.191	72
8	MP1	X	-32.891	%50
9	MP1	X	-33.601	%50
10	MP1	X	-34.481	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-75.949	0
2	MP1	Z	-75.949	72
3	MP1	Z	-39.865	%50
4	MP1	Z	-41.873	%50
5	MP1	Z	-43.052	%25
6	MP1	X	-75.949	0
7	MP1	X	-75.949	72
8	MP1	X	-39.865	%50
9	MP1	X	-41.873	%50
10	MP1	X	-43.052	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-42.216	0
2	MP1	Z	-42.216	72

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
3	MP1	Z	-23.487	%50
4	MP1	Z	-25.617	%50
5	MP1	Z	-26.404	%25
6	MP1	X	-73.121	0
7	MP1	X	-73.121	72
8	MP1	X	-40.68	%50
9	MP1	X	-44.37	%50
10	MP1	X	-45.733	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-3.763e-15	0
2	MP1	Z	-3.763e-15	72
3	MP1	Z	-2.3e-15	%50
4	MP1	Z	-2.648e-15	%50
5	MP1	Z	-2.739e-15	%25
6	MP1	X	-61.458	0
7	MP1	X	-61.458	72
8	MP1	X	-37.569	%50
9	MP1	X	-43.25	%50
10	MP1	X	-44.732	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	42.216	0
2	MP1	Z	42.216	72
3	MP1	Z	23.487	%50
4	MP1	Z	25.617	%50
5	MP1	Z	26.404	%25
6	MP1	X	-73.121	0
7	MP1	X	-73.121	72
8	MP1	X	-40.68	%50
9	MP1	X	-44.37	%50
10	MP1	X	-45.733	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	75.949	0
2	MP1	Z	75.949	72
3	MP1	Z	39.865	%50
4	MP1	Z	41.873	%50
5	MP1	Z	43.052	%25
6	MP1	X	-75.949	0
7	MP1	X	-75.949	72
8	MP1	X	-39.865	%50
9	MP1	X	-41.873	%50
10	MP1	X	-43.052	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
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Member Point Loads (BLC 11 : Wind Load 150 AZI) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	112.915	0
2	MP1	Z	112.915	72
3	MP1	Z	56.968	%50
4	MP1	Z	58.198	%50
5	MP1	Z	59.722	%25
6	MP1	X	-65.191	0
7	MP1	X	-65.191	72
8	MP1	X	-32.891	%50
9	MP1	X	-33.601	%50
10	MP1	X	-34.481	%25

Member Point Loads (BLC 12 : Ice Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-140.404	0
2	MP1	Y	-140.404	72
3	MP1	Y	-68.938	%50
4	MP1	Y	-73.446	%50
5	MP1	Y	-72.384	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-27.249	0
2	MP1	Z	-27.249	72
3	MP1	Z	-13.496	%50
4	MP1	Z	-13.496	%50
5	MP1	Z	-13.806	%25
6	MP1	X	0	0
7	MP1	X	0	72
8	MP1	X	0	%50
9	MP1	X	0	%50
10	MP1	X	0	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-20.534	0
2	MP1	Z	-20.534	72
3	MP1	Z	-10.369	%50
4	MP1	Z	-10.568	%50
5	MP1	Z	-10.833	%25
6	MP1	X	-11.855	0
7	MP1	X	-11.855	72
8	MP1	X	-5.986	%50
9	MP1	X	-6.101	%50
10	MP1	X	-6.255	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-14.263	0
2	MP1	Z	-14.263	72
3	MP1	Z	-7.389	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
4	MP1	Z	-7.714	%50
5	MP1	Z	-7.928	%25
6	MP1	X	-14.263	0
7	MP1	X	-14.263	72
8	MP1	X	-7.389	%50
9	MP1	X	-7.714	%50
10	MP1	X	-7.928	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-8.316	0
2	MP1	Z	-8.316	72
3	MP1	Z	-4.463	%50
4	MP1	Z	-4.808	%50
5	MP1	Z	-4.958	%25
6	MP1	X	-14.404	0
7	MP1	X	-14.404	72
8	MP1	X	-7.73	%50
9	MP1	X	-8.327	%50
10	MP1	X	-8.587	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-8.018e-16	0
2	MP1	Z	-8.018e-16	72
3	MP1	Z	-4.533e-16	%50
4	MP1	Z	-5.096e-16	%50
5	MP1	Z	-5.277e-16	%25
6	MP1	X	-13.094	0
7	MP1	X	-13.094	72
8	MP1	X	-7.402	%50
9	MP1	X	-8.322	%50
10	MP1	X	-8.618	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	8.316	0
2	MP1	Z	8.316	72
3	MP1	Z	4.463	%50
4	MP1	Z	4.808	%50
5	MP1	Z	4.958	%25
6	MP1	X	-14.404	0
7	MP1	X	-14.404	72
8	MP1	X	-7.73	%50
9	MP1	X	-8.327	%50
10	MP1	X	-8.587	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	14.263	0

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
2	MP1	Z	14.263	72
3	MP1	Z	7.389	%50
4	MP1	Z	7.714	%50
5	MP1	Z	7.928	%25
6	MP1	X	-14.263	0
7	MP1	X	-14.263	72
8	MP1	X	-7.389	%50
9	MP1	X	-7.714	%50
10	MP1	X	-7.928	%25

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	20.534	0
2	MP1	Z	20.534	72
3	MP1	Z	10.369	%50
4	MP1	Z	10.568	%50
5	MP1	Z	10.833	%25
6	MP1	X	-11.855	0
7	MP1	X	-11.855	72
8	MP1	X	-5.986	%50
9	MP1	X	-6.101	%50
10	MP1	X	-6.255	%25

Member Point Loads (BLC 23 : Seismic Load Z)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-4.567	0
2	MP1	Z	-4.567	72
3	MP1	Z	-7.075	%50
4	MP1	Z	-8.304	%50
5	MP1	Z	-2.419	%25

Member Point Loads (BLC 24 : Seismic Load X)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-4.567	0
2	MP1	X	-4.567	72
3	MP1	X	-7.075	%50
4	MP1	X	-8.304	%50
5	MP1	X	-2.419	%25

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 (Lm))

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

Member Point Loads (BLC 29 : Maintenance Load 2 (Lm))

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

Member Point Loads (BLC 30 : Maintenance Load 3 (Lm))

	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	-45.95	-45.95	0	%100
2	M2	SZ	-45.95	-45.95	0	%100
3	M3	SZ	-45.95	-45.95	0	%100
4	M4	SZ	-45.95	-45.95	0	%100
5	M5	SZ	-45.95	-45.95	0	%100
6	H1	SZ	-45.95	-45.95	0	%100
7	MP3	SZ	-45.95	-45.95	0	%100
8	MP2	SZ	-45.95	-45.95	0	%100
9	MP1	SZ	-45.95	-45.95	0	%100
10	M51	SZ	-76.583	-76.583	0	%100
11	M52	SZ	-76.583	-76.583	0	%100
12	M53	SZ	-76.583	-76.583	0	%100
13	M54	SZ	-76.583	-76.583	0	%100
14	M55	SZ	-76.583	-76.583	0	%100
15	M56	SZ	-76.583	-76.583	0	%100
16	M19	SZ	-76.583	-76.583	0	%100
17	M20	SZ	-76.583	-76.583	0	%100
18	M21	SZ	-76.583	-76.583	0	%100
19	M22	SZ	-76.583	-76.583	0	%100
20	M23	SZ	-45.95	-45.95	0	%100
21	M24	SZ	-45.95	-45.95	0	%100
22	M25	SZ	-45.95	-45.95	0	%100
23	M26	SZ	-45.95	-45.95	0	%100
24	M27	SZ	-45.95	-45.95	0	%100
25	M28	SZ	-45.95	-45.95	0	%100
26	M29	SZ	-45.95	-45.95	0	%100
27	M30	SZ	-45.95	-45.95	0	%100
28	M31	SZ	-76.583	-76.583	0	%100
29	M32	SZ	-76.583	-76.583	0	%100
30	M30A	SZ	-76.583	-76.583	0	%100
31	M31A	SZ	-45.95	-45.95	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	-45.95	-45.95	0	%100
2	M2	SX	-45.95	-45.95	0	%100
3	M3	SX	-45.95	-45.95	0	%100
4	M4	SX	-45.95	-45.95	0	%100
5	M5	SX	-45.95	-45.95	0	%100
6	H1	SX	-45.95	-45.95	0	%100
7	MP3	SX	-45.95	-45.95	0	%100
8	MP2	SX	-45.95	-45.95	0	%100
9	MP1	SX	-45.95	-45.95	0	%100
10	M51	SX	-76.583	-76.583	0	%100
11	M52	SX	-76.583	-76.583	0	%100
12	M53	SX	-76.583	-76.583	0	%100
13	M54	SX	-76.583	-76.583	0	%100
14	M55	SX	-76.583	-76.583	0	%100
15	M56	SX	-76.583	-76.583	0	%100
16	M19	SX	-76.583	-76.583	0	%100
17	M20	SX	-76.583	-76.583	0	%100
18	M21	SX	-76.583	-76.583	0	%100
19	M22	SX	-76.583	-76.583	0	%100
20	M23	SX	-45.95	-45.95	0	%100
21	M24	SX	-45.95	-45.95	0	%100
22	M25	SX	-45.95	-45.95	0	%100
23	M26	SX	-45.95	-45.95	0	%100
24	M27	SX	-45.95	-45.95	0	%100
25	M28	SX	-45.95	-45.95	0	%100
26	M29	SX	-45.95	-45.95	0	%100
27	M30	SX	-45.95	-45.95	0	%100
28	M31	SX	-76.583	-76.583	0	%100
29	M32	SX	-76.583	-76.583	0	%100
30	M30A	SX	-76.583	-76.583	0	%100
31	M31A	SX	-45.95	-45.95	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	-7.557	-7.557	0	%100
2	M2	Y	-7.557	-7.557	0	%100
3	M3	Y	-7.557	-7.557	0	%100
4	M4	Y	-7.557	-7.557	0	%100
5	M5	Y	-9.597	-9.597	0	%100
6	H1	Y	-9.597	-9.597	0	%100
7	MP3	Y	-8.551	-8.551	0	%100
8	MP2	Y	-8.551	-8.551	0	%100
9	MP1	Y	-8.551	-8.551	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	-4.89	-4.89	0	%100
21	M24	Y	-4.89	-4.89	0	%100
22	M25	Y	-4.89	-4.89	0	%100
23	M26	Y	-4.89	-4.89	0	%100
24	M27	Y	-4.628	-4.628	0	%100
25	M28	Y	-4.628	-4.628	0	%100
26	M29	Y	-4.628	-4.628	0	%100
27	M30	Y	-4.628	-4.628	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	-8.551	-8.551	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	-20.692	-20.692	0	%100
2	M2	SZ	-20.692	-20.692	0	%100
3	M3	SZ	-20.692	-20.692	0	%100
4	M4	SZ	-20.692	-20.692	0	%100
5	M5	SZ	-16.179	-16.179	0	%100
6	H1	SZ	-16.179	-16.179	0	%100
7	MP3	SZ	-18.031	-18.031	0	%100
8	MP2	SZ	-18.031	-18.031	0	%100
9	MP1	SZ	-18.031	-18.031	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	-47.842	-47.842	0	%100
21	M24	SZ	-47.842	-47.842	0	%100
22	M25	SZ	-47.842	-47.842	0	%100
23	M26	SZ	-47.842	-47.842	0	%100
24	M27	SZ	-57.957	-57.957	0	%100
25	M28	SZ	-57.957	-57.957	0	%100
26	M29	SZ	-57.957	-57.957	0	%100
27	M30	SZ	-57.957	-57.957	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	-18.031	-18.031	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	-20.692	-20.692	0	%100
2	M2	SX	-20.692	-20.692	0	%100
3	M3	SX	-20.692	-20.692	0	%100
4	M4	SX	-20.692	-20.692	0	%100
5	M5	SX	-16.179	-16.179	0	%100
6	H1	SX	-16.179	-16.179	0	%100
7	MP3	SX	-18.031	-18.031	0	%100
8	MP2	SX	-18.031	-18.031	0	%100
9	MP1	SX	-18.031	-18.031	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	-47.842	-47.842	0	%100
21	M24	SX	-47.842	-47.842	0	%100
22	M25	SX	-47.842	-47.842	0	%100
23	M26	SX	-47.842	-47.842	0	%100
24	M27	SX	-57.957	-57.957	0	%100
25	M28	SX	-57.957	-57.957	0	%100
26	M29	SX	-57.957	-57.957	0	%100
27	M30	SX	-57.957	-57.957	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	-18.031	-18.031	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(...
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		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me... Surface(...	
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 (Lm)	None					1		
29	Maintenance Load 2 (Lm)	None					1		
30	Maintenance Load 3 (Lm)	None					1		

Load Combinations

	Description	Solve	PDelta	SRSS	BLC	Fa...B...	Fa...B...	Fact...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...
1	1.4DL	Yes	Y		DL	1.4													
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1							
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1							
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1							
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1							
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1							
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1							
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.7...	3	.707	10	1							
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.8...	3	.5	11	1							
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1							
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.8...	3	-.5	5	-1							
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.7...	3	-.707	6	-1							
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1							
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1							
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1							
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1							
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1							
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1							
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1							
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1							
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1							
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1							
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1							
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.7...	3	.707	10	1							
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.8...	3	.5	11	1							
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1							
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.8...	3	-.5	5	-1							
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.7...	3	-.707	6	-1							

Load Combinations (Continued)

	Description	Solve	PDelta	SRSS	BLC	Fa...B...	Fa...B...	Fact...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1							
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1							
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.866	9	-1							
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.707	10	-1							
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1							
34	1.2DL + 1DLi + 1WL 0 ...	Yes	Y		DL	1.2	0...	1	13	1	14	15	1						
35	1.2DL + 1DLi + 1WL 30 ...	Yes	Y		DL	1.2	0...	1	13	.866	14	.5	16	1					
36	1.2DL + 1DLi + 1WL 45 ...	Yes	Y		DL	1.2	0...	1	13	.707	14	.707	17	1					
37	1.2DL + 1DLi + 1WL 60 ...	Yes	Y		DL	1.2	0...	1	13	.5	14	.866	18	1					
38	1.2DL + 1DLi + 1WL 90 ...	Yes	Y		DL	1.2	0...	1	13		14	1	19	1					
39	1.2DL + 1DLi + 1WL 12...	Yes	Y		DL	1.2	0...	1	13	-.5	14	.866	20	1					
40	1.2DL + 1DLi + 1WL 13...	Yes	Y		DL	1.2	0...	1	13	-.707	14	.707	21	1					
41	1.2DL + 1DLi + 1WL 15...	Yes	Y		DL	1.2	0...	1	13	-.866	14	.5	22	1					
42	1.2DL + 1DLi + 1WL 18...	Yes	Y		DL	1.2	0...	1	13	-1	14		15	-1					
43	1.2DL + 1DLi + 1WL 21...	Yes	Y		DL	1.2	0...	1	13	-.866	14	-.5	16	-1					
44	1.2DL + 1DLi + 1WL 22...	Yes	Y		DL	1.2	0...	1	13	-.707	14	-.7...	17	-1					
45	1.2DL + 1DLi + 1WL 24...	Yes	Y		DL	1.2	0...	1	13	-.5	14	-.8...	18	-1					
46	1.2DL + 1DLi + 1WL 27...	Yes	Y		DL	1.2	0...	1	13		14	-1	19	-1					
47	1.2DL + 1DLi + 1WL 30...	Yes	Y		DL	1.2	0...	1	13	.5	14	-.8...	20	-1					
48	1.2DL + 1DLi + 1WL 31...	Yes	Y		DL	1.2	0...	1	13	.707	14	-.7...	21	-1					
49	1.2DL + 1DLi + 1WL 33...	Yes	Y		DL	1.2	0...	1	13	.866	14	-.5	22	-1					
50	(1.2+0.2Sds)DL + 1E 0 ...	Yes	Y		DL	1....	23	1	24										
51	(1.2+0.2Sds)DL + 1E 30...	Yes	Y		DL	1....	23	.866	24	.5									
52	(1.2+0.2Sds)DL + 1E 45...	Yes	Y		DL	1....	23	.707	24	.707									
53	(1.2+0.2Sds)DL + 1E 60...	Yes	Y		DL	1....	23	.5	24	.866									
54	(1.2+0.2Sds)DL + 1E 90...	Yes	Y		DL	1....	23		24	1									
55	(1.2+0.2Sds)DL + 1E 12...	Yes	Y		DL	1....	23	-.5	24	.866									
56	(1.2+0.2Sds)DL + 1E 13...	Yes	Y		DL	1....	23	-.7...	24	.707									
57	(1.2+0.2Sds)DL + 1E 15...	Yes	Y		DL	1....	23	-.8...	24	.5									
58	(1.2+0.2Sds)DL + 1E 18...	Yes	Y		DL	1....	23	-1	24										
59	(1.2+0.2Sds)DL + 1E 21...	Yes	Y		DL	1....	23	-.8...	24	-.5									
60	(1.2+0.2Sds)DL + 1E 22...	Yes	Y		DL	1....	23	-.7...	24	-.707									
61	(1.2+0.2Sds)DL + 1E 24...	Yes	Y		DL	1....	23	-.5	24	-.866									
62	(1.2+0.2Sds)DL + 1E 27...	Yes	Y		DL	1....	23		24	-1									
63	(1.2+0.2Sds)DL + 1E 30...	Yes	Y		DL	1....	23	.5	24	-.866									
64	(1.2+0.2Sds)DL + 1E 31...	Yes	Y		DL	1....	23	.707	24	-.707									
65	(1.2+0.2Sds)DL + 1E 33...	Yes	Y		DL	1....	23	.866	24	-.5									
66	(0.9-0.2Sds)DL + 1E 0 A...	Yes	Y		DL	.863	23	1	24										
67	(0.9-0.2Sds)DL + 1E 30 ...	Yes	Y		DL	.863	23	.866	24	.5									
68	(0.9-0.2Sds)DL + 1E 45 ...	Yes	Y		DL	.863	23	.707	24	.707									
69	(0.9-0.2Sds)DL + 1E 60 ...	Yes	Y		DL	.863	23	.5	24	.866									
70	(0.9-0.2Sds)DL + 1E 90 ...	Yes	Y		DL	.863	23		24	1									
71	(0.9-0.2Sds)DL + 1E 12...	Yes	Y		DL	.863	23	-.5	24	.866									
72	(0.9-0.2Sds)DL + 1E 13...	Yes	Y		DL	.863	23	-.7...	24	.707									
73	(0.9-0.2Sds)DL + 1E 15...	Yes	Y		DL	.863	23	-.8...	24	.5									
74	(0.9-0.2Sds)DL + 1E 18...	Yes	Y		DL	.863	23	-1	24										
75	(0.9-0.2Sds)DL + 1E 21...	Yes	Y		DL	.863	23	-.8...	24	-.5									
76	(0.9-0.2Sds)DL + 1E 22...	Yes	Y		DL	.863	23	-.7...	24	-.707									
77	(0.9-0.2Sds)DL + 1E 24...	Yes	Y		DL	.863	23	-.5	24	-.866									
78	(0.9-0.2Sds)DL + 1E 27...	Yes	Y		DL	.863	23		24	-1									
79	(0.9-0.2Sds)DL + 1E 30...	Yes	Y		DL	.863	23	.5	24	-.866									
80	(0.9-0.2Sds)DL + 1E 31...	Yes	Y		DL	.863	23	.707	24	-.707									

Load Combinations (Continued)

	Description	Solve	PDelta	SRSS	BLC	Fa...B...	Fa...B...	Fact...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...
81	(0.9-0.2Sds)DL + 1E 33...	Yes	Y		DL	.863	23.866	24	-.5									
82	1.2DL + 1Lv1	Yes	Y		DL	1.225	1.5											
83	1.2DL + 1Lv2	Yes	Y		DL	1.226	1.5											
84	1.2DL + 1Lv3	Yes	Y		DL	1.227	1.5											
85	1.2DL + 1.5Lm + 1Wm 0...	Yes	Y		DL	1.228	1.5	2	.053	3		4	.053					
86	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.228	1.5	2	.046	3	.027	5	.053					
87	1.2DL + 1.5Lm + 1Wm 4...	Yes	Y		DL	1.228	1.5	2	.038	3	.038	6	.053					
88	1.2DL + 1.5Lm + 1Wm 6...	Yes	Y		DL	1.228	1.5	2	.027	3	.046	7	.053					
89	1.2DL + 1.5Lm + 1Wm 9...	Yes	Y		DL	1.228	1.5	2		3	.053	8	.053					
90	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.228	1.5	2	-.027	3	.046	9	.053					
91	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.228	1.5	2	-.038	3	.038	10	.053					
92	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.228	1.5	2	-.046	3	.027	11	.053					
93	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.228	1.5	2	-.053	3		4	-.0...					
94	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.228	1.5	2	-.046	3	-.0...	5	-.0...					
95	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.228	1.5	2	-.038	3	-.0...	6	-.0...					
96	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.228	1.5	2	-.027	3	-.0...	7	-.0...					
97	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.228	1.5	2		3	-.0...	8	-.0...					
98	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.228	1.5	2	.027	3	-.0...	9	-.0...					
99	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.228	1.5	2	.038	3	-.0...	10	-.0...					
100	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.228	1.5	2	.046	3	-.0...	11	-.0...					
101	1.2DL + 1.5Lm + 1Wm 0...	Yes	Y		DL	1.229	1.5	2	.053	3		4	.053					
102	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.229	1.5	2	.046	3	.027	5	.053					
103	1.2DL + 1.5Lm + 1Wm 4...	Yes	Y		DL	1.229	1.5	2	.038	3	.038	6	.053					
104	1.2DL + 1.5Lm + 1Wm 6...	Yes	Y		DL	1.229	1.5	2	.027	3	.046	7	.053					
105	1.2DL + 1.5Lm + 1Wm 9...	Yes	Y		DL	1.229	1.5	2		3	.053	8	.053					
106	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.229	1.5	2	-.027	3	.046	9	.053					
107	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.229	1.5	2	-.038	3	.038	10	.053					
108	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.229	1.5	2	-.046	3	.027	11	.053					
109	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.229	1.5	2	-.053	3		4	-.0...					
110	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.229	1.5	2	-.046	3	-.0...	5	-.0...					
111	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.229	1.5	2	-.038	3	-.0...	6	-.0...					
112	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.229	1.5	2	-.027	3	-.0...	7	-.0...					
113	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.229	1.5	2		3	-.0...	8	-.0...					
114	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.229	1.5	2	.027	3	-.0...	9	-.0...					
115	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.229	1.5	2	.038	3	-.0...	10	-.0...					
116	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.229	1.5	2	.046	3	-.0...	11	-.0...					
117	1.2DL + 1.5Lm + 1Wm 0...	Yes	Y		DL	1.230	1.5	2	.053	3		4	.053					
118	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.230	1.5	2	.046	3	.027	5	.053					
119	1.2DL + 1.5Lm + 1Wm 4...	Yes	Y		DL	1.230	1.5	2	.038	3	.038	6	.053					
120	1.2DL + 1.5Lm + 1Wm 6...	Yes	Y		DL	1.230	1.5	2	.027	3	.046	7	.053					
121	1.2DL + 1.5Lm + 1Wm 9...	Yes	Y		DL	1.230	1.5	2		3	.053	8	.053					
122	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.230	1.5	2	-.027	3	.046	9	.053					
123	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.230	1.5	2	-.038	3	.038	10	.053					
124	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.230	1.5	2	-.046	3	.027	11	.053					
125	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.230	1.5	2	-.053	3		4	-.0...					
126	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.230	1.5	2	-.046	3	-.0...	5	-.0...					
127	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.230	1.5	2	-.038	3	-.0...	6	-.0...					
128	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.230	1.5	2	-.027	3	-.0...	7	-.0...					
129	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.230	1.5	2		3	-.0...	8	-.0...					
130	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.230	1.5	2	.027	3	-.0...	9	-.0...					
131	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.230	1.5	2	.038	3	-.0...	10	-.0...					
132	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.230	1.5	2	.046	3	-.0...	11	-.0...					

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N48	max	564.599	88	1525.403	41	686.818	18	-95.054	33	0	132	653.993	132
2		min	-1194.777	128	139.006	18	-1627.595	41	-1054.815	41	0	1	-187.811	92
3	N49	max	1186.77	122	667.824	101	1540.55	49	114.153	124	0	132	282.398	84
4		min	-556.252	98	-54.12	124	-210.517	25	-521.507	116	0	1	-189.512	92
5	N52A	max	62.377	2	65.344	38	735.521	9	0	132	0	132	0	132
6		min	-62.246	10	15.378	79	-741.319	17	0	1	0	1	0	1
7	Totals:	max	639.498	22	1748.268	41	1042.855	2						
8		min	-639.507	14	431.5	72	-1042.85	26						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code	Che...	Lo...	LC	She...	Lo...	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb...	phi*M.....	Egn
1	M24	SR 5/8...	.395	27...	124	.034	30...	17	1849.145	13805.82	143.808	143.8...	1	H1-1a
2	M29	SR 1/2"	.346	22...	37	.015	0	17	1432.022	8835.75	73.632	73.632	1	H1-1a
3	M4	PIPE_1.5	.216	34...	130	.198	34...	132	23485.28	31008.6	1452.45	1452...	1	H1-1b
4	MP1	PIPE_2.0	.209	33	2	.155	33	2	15369.683	42228	2459.85	2459...		H1-1b
5	M2	PIPE_1.5	.193	34...	120	.124	725	132	23485.28	31008.6	1452.45	1452...		H1-1b
6	MP3	PIPE_2.0	.184	48	17	.160	33	17	15369.683	42228	2459.85	2459...		H1-1b
7	M3	PIPE_1.5	.183	34...	122	.083	34...	85	23485.28	31008.6	1452.45	1452...	1	H1-1b
8	M5	PIPE_2.5	.176	21	17	.053	76	117	45255.275	66654	4726.5	4726.5	1	H1-1b
9	H1	PIPE_2.5	.172	76	132	.056	76	125	45255.275	66654	4726.5	4726.5		H1-1b
10	M1	PIPE_1.5	.172	34...	131	.083	34...	92	23485.28	31008.6	1452.45	1452...	1	H1-1b
11	M28	SR 1/2"	.135	22...	48	.017	0	17	1432.022	8835.75	73.632	73.632	1	H1-1b
12	M31A	PIPE_2.0	.081	0	9	.005	12...	46	9324.69	42228	2459.85	2459...		H1-...
13	M26	SR 5/8...	.035	30...	41	.057	0	132	1849.145	13805.82	143.808	143.8...	1	H1-...
14	M23	SR 5/8...	.025	30...	9	.034	0	17	1849.145	13805.82	143.808	143.8...	1	H1-...
15	MP2	PIPE_2.0	.025	63	109	.155	33	17	15369.683	42228	2459.85	2459...		H1-...
16	M25	SR 5/8...	.014	16...	42	.057	0	132	1849.145	13805.82	143.808	143.8...	1	H1-1b
17	M27	SR 1/2"	.002	44...	25	.014	44...	2	1432.022	8835.75	73.632	73.632	1	H1-...
18	M30	SR 1/2"	.000	0	132	.010	0	2	1432.022	8835.75	73.632	73.632	1	H1-1a

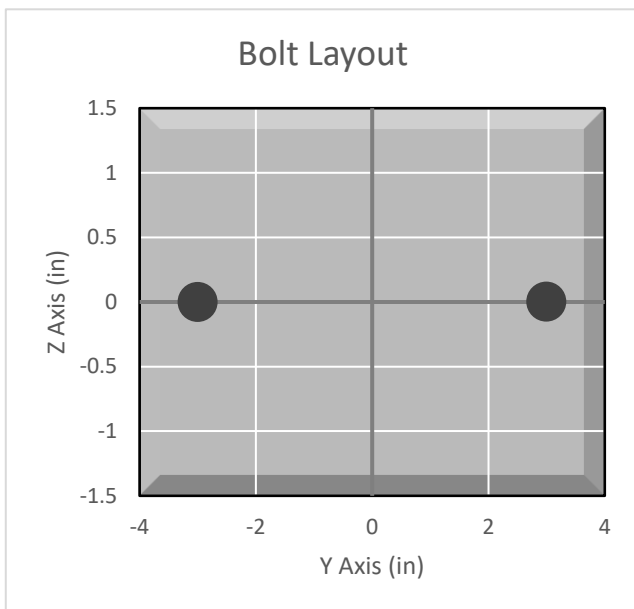
APPENDIX D
ADDITIONAL CALCUATIONS

BOLT TOOL 1.5.2

Project Data	
Job Code:	189196
Carrier Site ID:	BOBDL00052A
Carrier Site Name:	CT-CCI-T-806387

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

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.75	in
Grade:	A529	--
Yield Strength (Fy):	50	ksi
Ultimate Strength (Fu):	65	ksi
Number of Bolts:	2	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	6	in



Connection Description
Mount Standoff to Tower Leg

Bolt Check*		
Tensile Capacity (ϕT_n):	16304.9	lbs
Shear Capacity (ϕV_n):	10768.5	lbs
Tension Force (T_u):	567.5	lbs
Shear Force (V_u):	2080.0	lbs
Tension Usage:	3.3%	--
Shear Usage:	18.4%	--
Interaction:	18.4%	Pass
Controlling Member:	M31	--
Controlling LC:	132	--

*Rating per TIA-222-H Section 15.5

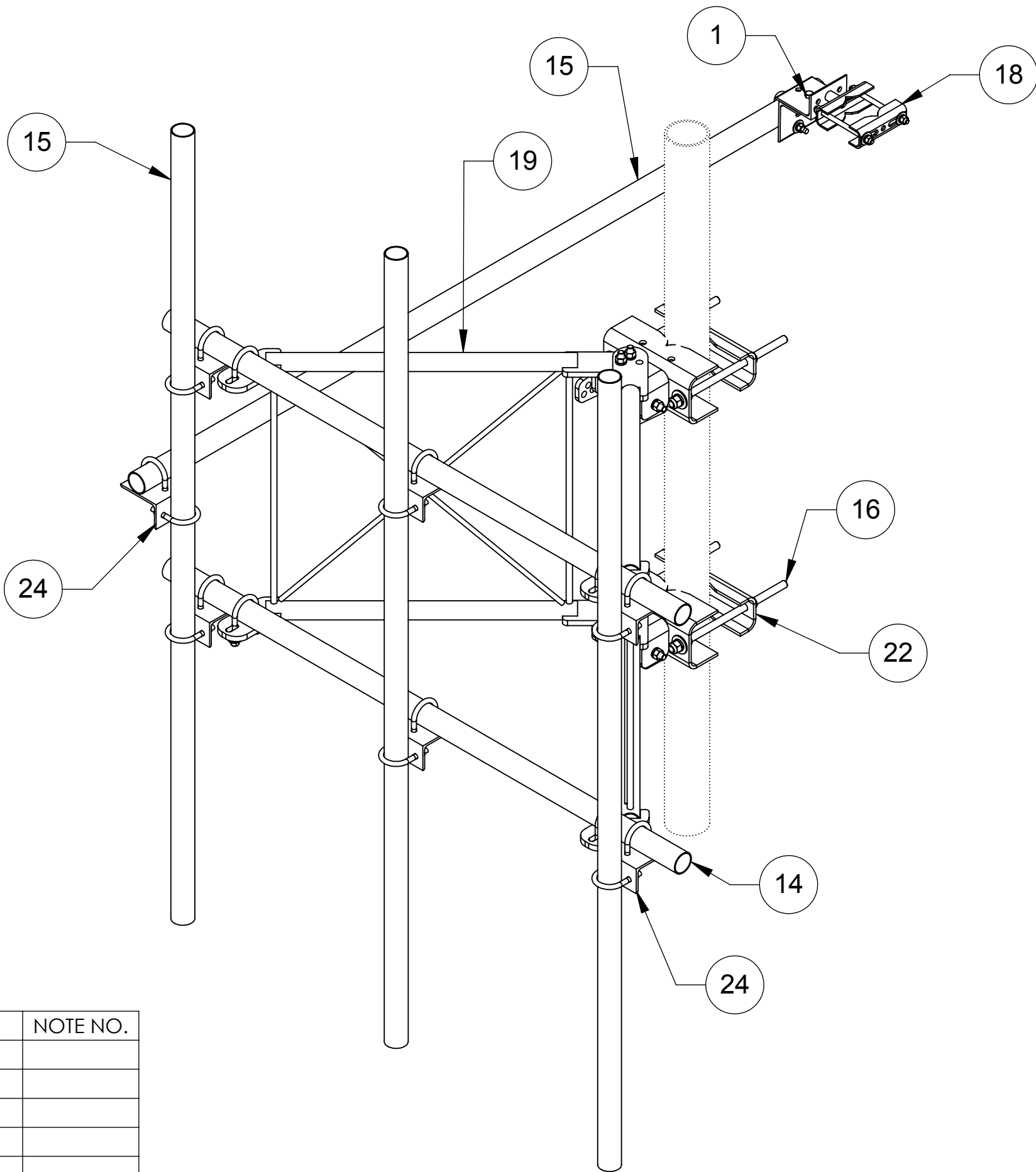
Slip Check*		
Sliding Capacity (ϕR_{ns}):	9626.3	lbs
Torsion Capacity (ϕR_{nr}):	2406.6	lb-ft
Sliding Force (V_{us}):	1525.4	lbs
Torsional Force (T_{ur}):	0.0	lb-ft
Sliding Usage:	15.1%	--
Torsion Usage:	0.0%	--
Interaction:	15.1%	Pass
Controlling Member:	M31	--
Controlling LC:	41	--

*Rating per TIA-222-H Section 15.5

APPENDIX E
SUPPLEMENTAL DRAWINGS

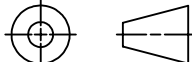
NOTES:
1.0 ALL METRIC DIMENSIONS ARE IN BRACKETS.

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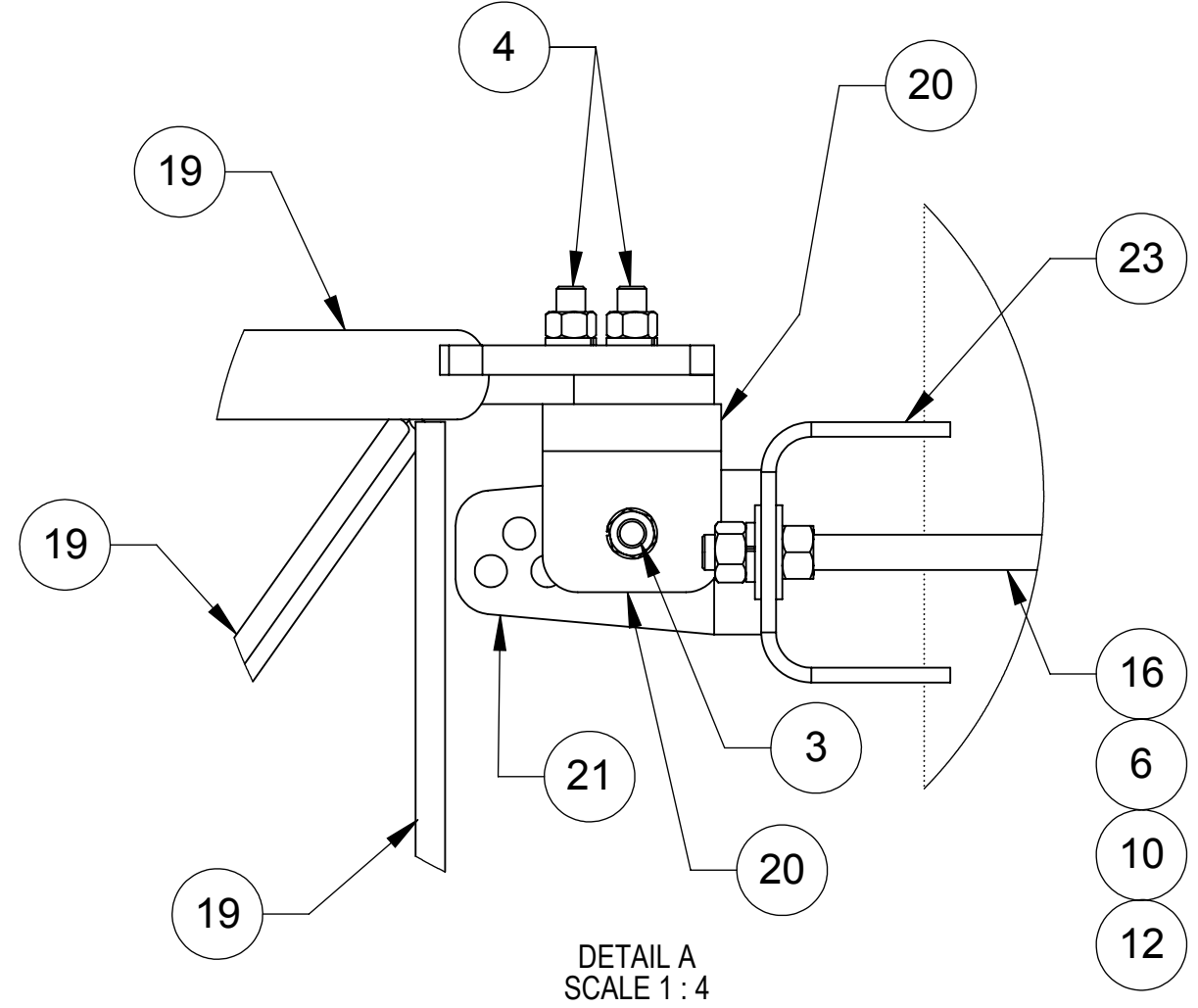
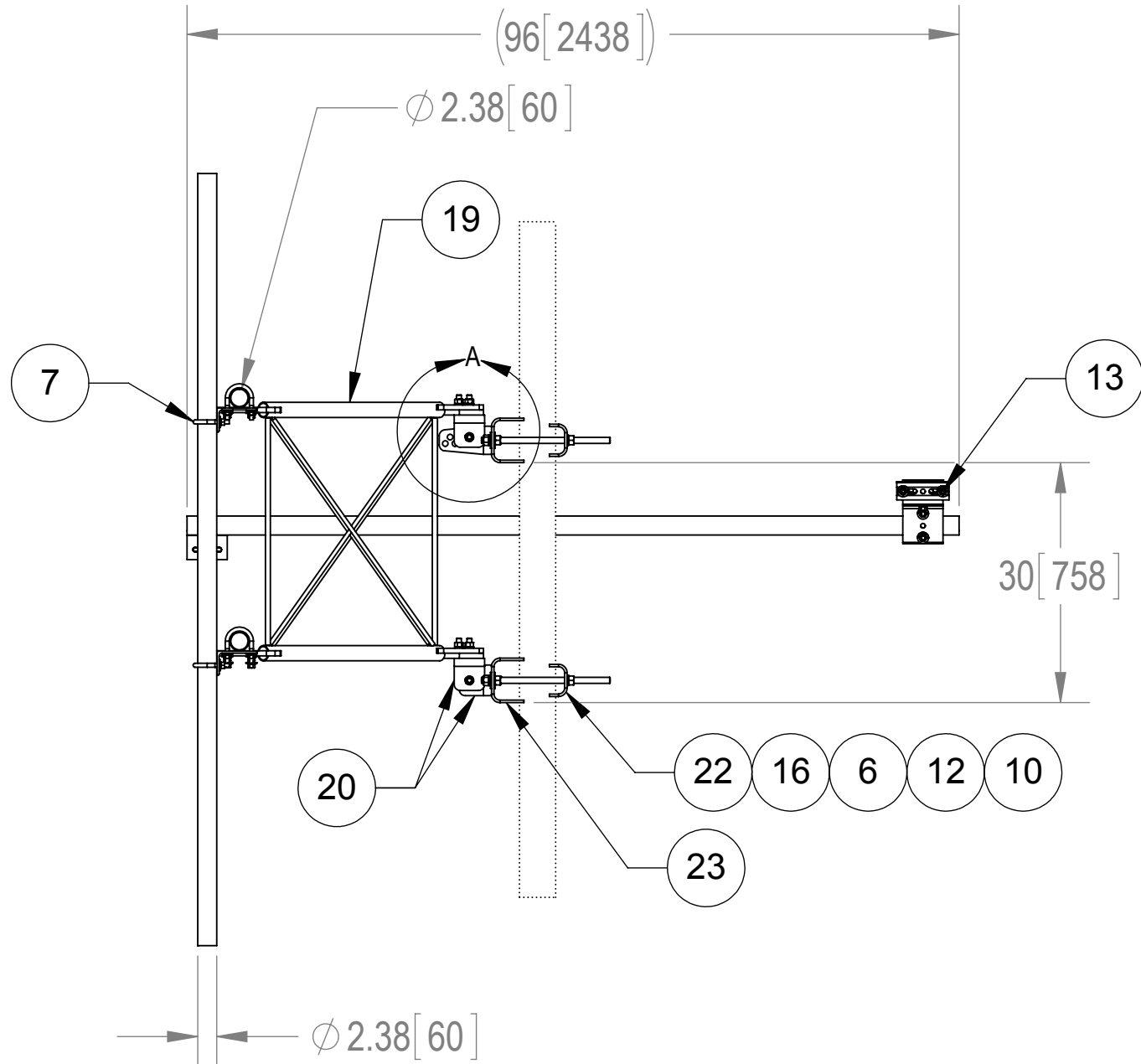
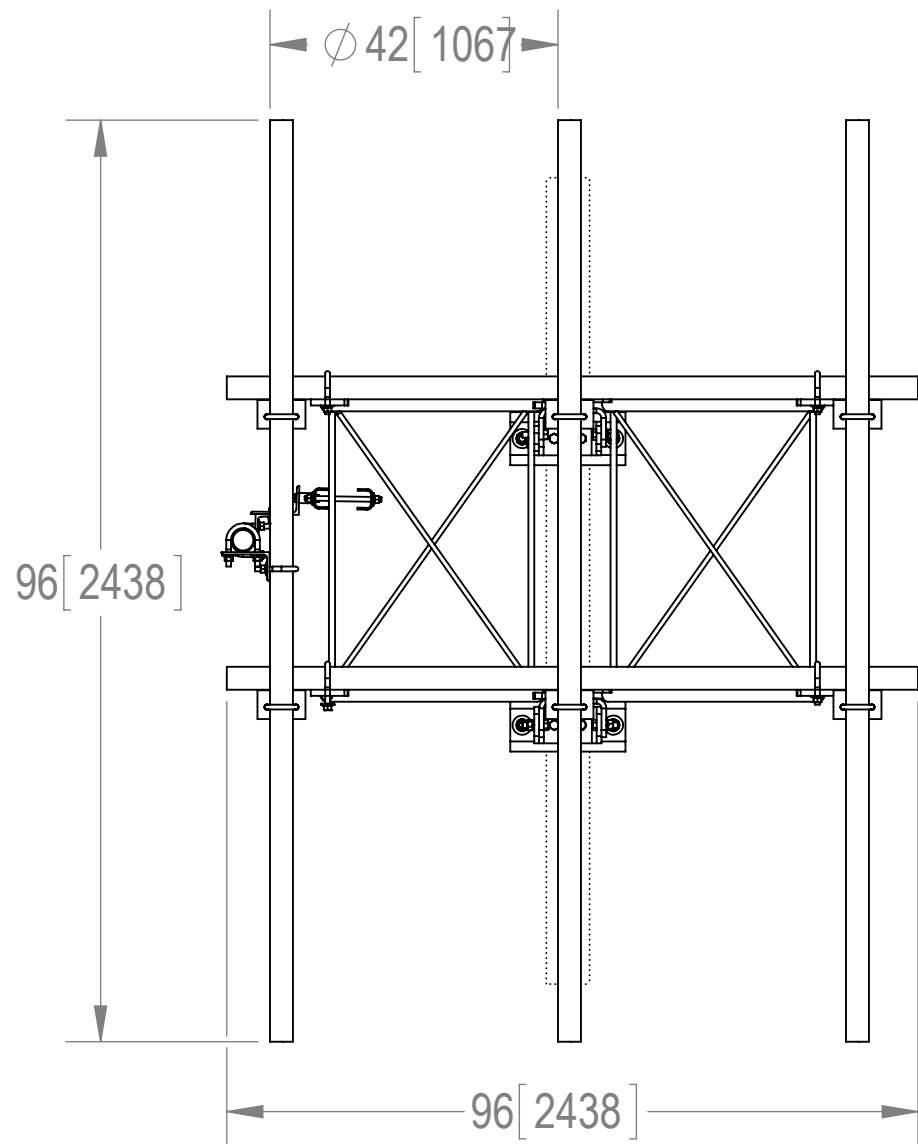
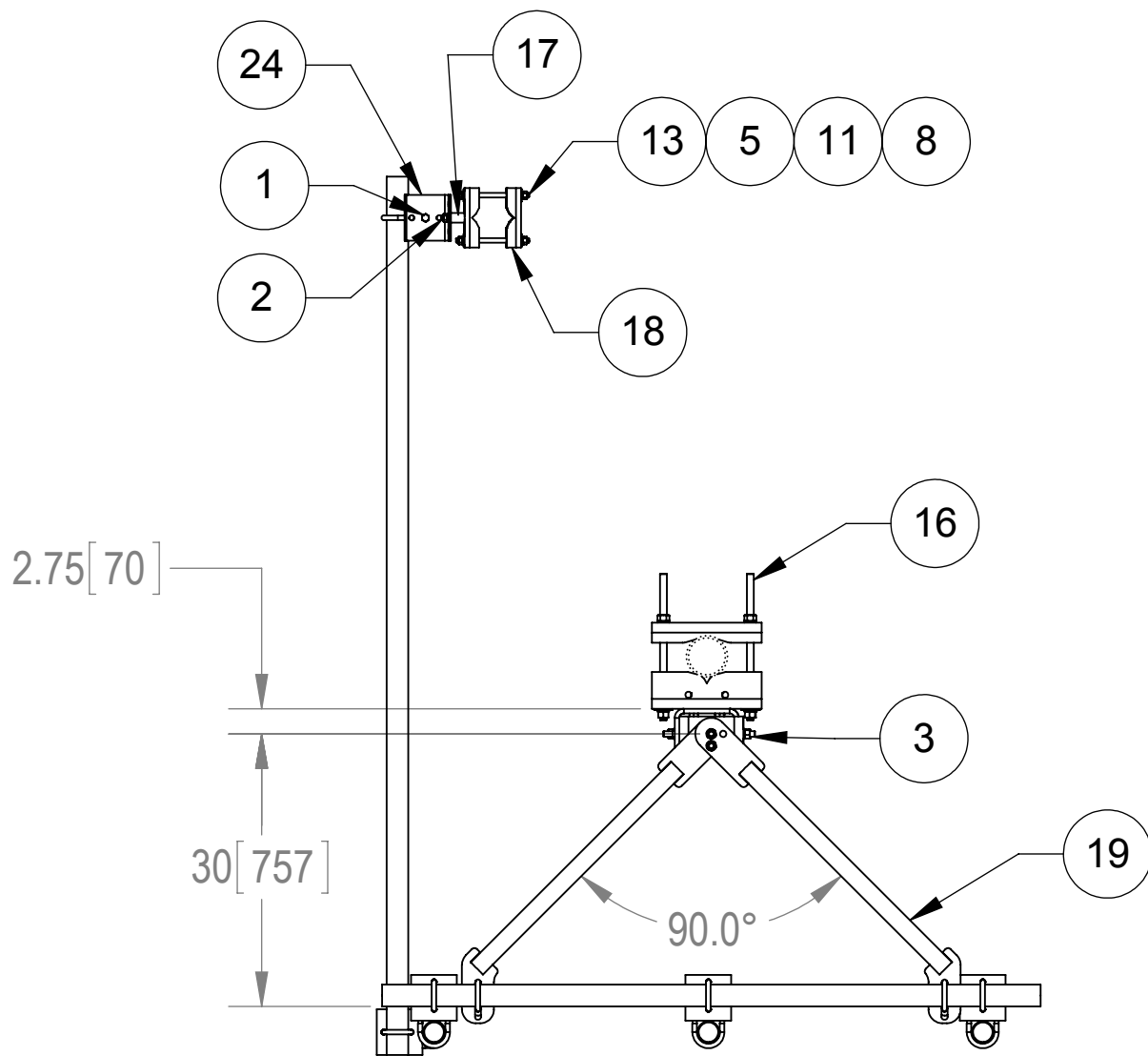
ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT	NOTE NO.
1	GB-04125	1/2" X 1-1/4" GALV BOLT KIT	1	0.12 LBS	
2	GB-04265	1/2" X 2-3/4" GALV BOLT KIT	1	0.20 LBS	
3	GB-05225	5/8" X 2-1/4" GALV BOLT KIT	8	0.28 LBS	
4	GB-05305	5/8" X 3" GALV BOLT KIT	4	0.35 LBS	
5	GN-04	1/2" GALV HEX NUT	4	0.04 LBS	
6	GN-06	3/4" GALV 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	

DENSITY	0.28	lbs/in³
MASS	400.61	lbs
VOLUME	1421.66	in³
SURFACE AREA		in²
HEIGHT		
LENGTH		
WIDTH		

COMMSCOPE, INC. OF NORTH CAROLINA									
TOLERANCES						SAP MATERIAL MASTER			
0 PLACE X ± .25			2 PLACE .XX ± .06			MTC3975083			
1 PLACE X ± .12			ANGLES ± 2°						
FINISH					MATERIAL				
GALV A123					A1011/A1018, A500, A529				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS PER ISO STANDARDS HANDBOOK TECHNICAL DRAWINGS VOLUMES 1 & 2, THIRD EDITION (2002)		NAME	DATE	TITLE SECTOR FRAME, 8' FACE, (3) 96" PIPES					
	CE	RDLS	7/14/17						
	RW								
	RV								
	AD			SCALE 1:12		DOCUMENT NO. MTC3975083			
	RE	TP	7/14/17						
	ECN								
	SIZE	WORK AREA		MODEL			DRAWING		
C			VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	
								PRE	

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. MT C3975083		
 	DRAWING			SHEET 2 OF 2
	VERSION	STATUS	REVISION	
			PRE	

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Exhibit F

Power Density/RF Emissions Report



RF EMISSIONS COMPLIANCE REPORT

Crown Castle on behalf of Dish Wireless

**Crown Castle Site Name: HRT 088 943629
Crown Castle Site BU Number: 806387
Dish Wireless Site ID: BOBDL00052A
#14 Route 80
Killingworth, CT
5/27/2021**

Report Status:

Dish Wireless Is Compliant

Signed 27 May 2021

Prepared By:

Site Safe, LLC

Engineering Statement in Re:
Electromagnetic Energy Analysis
Crown Castle
Killingworth, CT

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Site Safe, LLC in Vienna, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by Crown Castle (see attached Site Summary and Carrier documents) and that Dish Wireless' installation involves communications equipment, antennas and associated technical equipment at a location referred to as "HRT 088 943629" ("the site"); and

That Dish Wireless proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by Dish Wireless and shown on the worksheet and that worst-case 100% duty cycle has been assumed; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio frequency energy must utilize the standards set by the FCC, which is the federal agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," which defines situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and 2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of Dish Wireless' operating frequencies as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed Dish Wireless operation is no more

than 1.277% of the maximum permissible exposure limits in any accessible area on the ground; and

That it is understood per FCC Guidelines and OET 65 Appendix A, that regardless of the existent radio frequency environment, only those licensees whose contributions exceed 5% of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 11.615% of the maximum in any accessible area up to two meters above the ground per OET 65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET 65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier(s) and frequency range(s) indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding radio frequency safety; and

In summary, it is stated here that the proposed operation at the site will not result in exposure of the public to excessive levels of radio frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307(b), and that Dish Wireless' proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals and approved contractor personnel trained in radio frequency safety and that this instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower or in the immediate proximity of the antennas.

Crown Castle
HRT 088 943629
Site Summary

Carrier	Area Maximum Percentage MPE
AT&T Mobility, LLC	0.407 %
AT&T Mobility, LLC	0.358 %
AT&T Mobility, LLC	0.258 %
AT&T Mobility, LLC (Not in service)	0.000 %
Dish Wireless (Proposed)	0.343 %
Dish Wireless (Proposed)	0.343 %
Dish Wireless (Proposed)	0.591 %
Sprint (T-Mobile)	4.354 %
Sprint (T-Mobile)	0.677 %
Sprint (T-Mobile)	0.320 %
Sprint (T-Mobile)	0.430 %
Sprint (T-Mobile)	0.511 %
Verizon Wireless	0.334 %
Verizon Wireless	0.353 %
Verizon Wireless	0.276 %
Verizon Wireless	1.643 %
Verizon Wireless	0.417 %
Composite Site MPE:	11.615 %

AT&T Mobility, LLC
HRT 088 943629
Carrier Summary

Frequency: 1900 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 4.06704 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.4067 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
KMW	AM-X-CD-16-65-00T	90	65	3666	2.101224	0.210122	3.661082	0.366108
KMW	AM-X-CD-16-65-00T	90	175	3666	2.101224	0.210122	3.661082	0.366108
KMW	AM-X-CD-16-65-00T	90	305	3666	2.101224	0.210122	3.661082	0.366108

AT&T Mobility, LLC
HRT 088 943629
Carrier Summary

Frequency: 737 MHz
Maximum Permissible Exposure (MPE): 491.33 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 1.75689 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.35758 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
KMW	AM-X-CD-16-65-00T	90	65	1239	1.625585	0.330852	1.664806	0.338834
KMW	AM-X-CD-16-65-00T	90	175	1239	1.625585	0.330852	1.664806	0.338834
KMW	AM-X-CD-16-65-00T	90	305	1239	1.625585	0.330852	1.664806	0.338834

AT&T Mobility, LLC
HRT 088 943629
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	μW/cm^2
Maximum power density at ground level:	1.46065	μW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.25776	%

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density (μW/cm^2)	Percent of MPE	Max Power Density (μW/cm^2)	Percent of MPE
Powerwave	7770	90	65	547	0.685531	0.120976	1.067999	0.18847
Powerwave	7770	90	175	547	0.685531	0.120976	1.067999	0.18847
Powerwave	7770	90	305	547	0.685531	0.120976	1.067999	0.18847

AT&T Mobility, LLC (Not in service)**HRT 088 943629****Carrier Summary**

Frequency: 850 MHz
Maximum Permissible Exposure (MPE): 566.67 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 0 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Powerwave	7770	90	65	0	0	0	0	0
Powerwave	7770	90	175	0	0	0	0	0
Powerwave	7770	90	305	0	0	0	0	0

Dish Wireless (Proposed)

HRT 088 943629

Carrier Summary

Frequency: 2100 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 3.42745 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.34275 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
JMA Wireless	MX08FRO665-20	124	0	6904	1.861497	0.18615	3.380884	0.338088
JMA Wireless	MX08FRO665-20	124	120	6904	1.861497	0.18615	3.380884	0.338088
JMA Wireless	MX08FRO665-20	124	240	6904	1.861497	0.18615	3.380884	0.338088

Dish Wireless (Proposed)
HRT 088 943629
Carrier Summary

Frequency: 1900 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 3.42745 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.34275 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
JMA Wireless	MX08FRO665-20	124	0	6904	1.861497	0.18615	3.380884	0.338088
JMA Wireless	MX08FRO665-20	124	120	6904	1.861497	0.18615	3.380884	0.338088
JMA Wireless	MX08FRO665-20	124	240	6904	1.861497	0.18615	3.380884	0.338088

Dish Wireless (Proposed)
HRT 088 943629
Carrier Summary

Frequency: 600 MHz
Maximum Permissible Exposure (MPE): 400 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 2.36435 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.59109 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
JMA Wireless	MX08FRO665-20	124	0	3229	1.394689	0.348672	2.256369	0.564092
JMA Wireless	MX08FRO665-20	124	120	3229	1.394689	0.348672	2.256369	0.564092
JMA Wireless	MX08FRO665-20	124	240	3229	1.394689	0.348672	2.256369	0.564092

Sprint (T-Mobile)
HRT 088 943629
Carrier Summary

Frequency: 2500 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 43.54375 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 4.35437 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Ericsson	AIR6449	144	0	27612	8.185965	0.818597	12.513287	1.251329
Ericsson	AIR6449	144	0	27612	8.185965	0.818597	12.513287	1.251329
Ericsson	AIR6449	144	120	27612	8.185965	0.818597	12.513287	1.251329
Ericsson	AIR6449	144	120	27612	8.185965	0.818597	12.513287	1.251329
Ericsson	AIR6449	144	240	27612	8.185965	0.818597	12.513287	1.251329
Ericsson	AIR6449	144	240	27612	8.185965	0.818597	12.513287	1.251329

Sprint (T-Mobile)
HRT 088 943629
Carrier Summary

Frequency: 1900 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 6.76694 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.67669 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
RFS	APXVAALL24_43-U-NA20	144	0	1340	0.460494	0.046049	0.832413	0.083241
RFS	APXVAALL24_43-U-NA20	144	0	1340	0.460494	0.046049	0.832413	0.083241
RFS	APXVAALL24_43-U-NA20	144	0	8039	2.762975	0.276298	4.994497	0.49945
RFS	APXVAALL24_43-U-NA20	144	120	1340	0.460494	0.046049	0.832413	0.083241
RFS	APXVAALL24_43-U-NA20	144	120	1340	0.460494	0.046049	0.832413	0.083241
RFS	APXVAALL24_43-U-NA20	144	120	8039	2.762975	0.276298	4.994497	0.49945
RFS	APXVAALL24_43-U-NA20	144	240	1340	0.460494	0.046049	0.832413	0.083241
RFS	APXVAALL24_43-U-NA20	144	240	1340	0.460494	0.046049	0.832413	0.083241
RFS	APXVAALL24_43-U-NA20	144	240	8039	2.762975	0.276298	4.994497	0.49945

Sprint (T-Mobile)
HRT 088 943629
Carrier Summary

Frequency: 700 MHz
Maximum Permissible Exposure (MPE): 466.67 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 1.49224 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.31976 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
RFS	APXVAALL24_43-U-NA20	144	0	3794	1.130746	0.242303	1.42543	0.305449
RFS	APXVAALL24_43-U-NA20	144	120	3794	1.130746	0.242303	1.42543	0.305449
RFS	APXVAALL24_43-U-NA20	144	240	3794	1.130746	0.242303	1.42543	0.305449

Sprint (T-Mobile)
HRT 088 943629
Carrier Summary

Frequency: 600 MHz
Maximum Permissible Exposure (MPE): 400 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 1.7202 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.43005 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
RFS	APXVAALL24_43-U-NA20	144	0	1730	0.530767	0.132692	0.81896	0.20474
RFS	APXVAALL24_43-U-NA20	144	0	1730	0.530767	0.132692	0.81896	0.20474
RFS	APXVAALL24_43-U-NA20	144	120	1730	0.530767	0.132692	0.81896	0.20474
RFS	APXVAALL24_43-U-NA20	144	120	1730	0.530767	0.132692	0.81896	0.20474
RFS	APXVAALL24_43-U-NA20	144	240	1730	0.530767	0.132692	0.81896	0.20474
RFS	APXVAALL24_43-U-NA20	144	240	1730	0.530767	0.132692	0.81896	0.20474

Sprint (T-Mobile)
HRT 088 943629
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	μW/cm ²
Maximum power density at ground level:	5.10647	μW/cm ²
Highest percentage of Maximum Permissible Exposure:	0.51065	%

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density (μW/cm ²)	Percent of MPE	Max Power Density (μW/cm ²)	Percent of MPE
RFS	APX16DWV-16DWVS-C-A20	144	0	6763	5.058575	0.505857	5.058575	0.505857
RFS	APX16DWV-16DWVS-C-A20	144	120	6763	5.058575	0.505857	5.058575	0.505857
RFS	APX16DWV-16DWVS-C-A20	144	240	6763	5.058575	0.505857	5.058575	0.505857

Verizon Wireless
HRT 088 943629
Carrier Summary

Frequency: 2100 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 3.34224 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.33422 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Commscope	JAAH-65B-R3B	157	40	6069	1.806701	0.18067	3.16153	0.316153
Commscope	JAAH-65B-R3B	157	170	6069	1.806701	0.18067	3.16153	0.316153
Commscope	JAAH-65B-R3B	157	290	6069	1.806701	0.18067	3.16153	0.316153

Verizon Wireless
HRT 088 943629
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	μW/cm^2
Maximum power density at ground level:	3.53414	μW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.35341	%

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density (μW/cm^2)	Percent of MPE	Max Power Density (μW/cm^2)	Percent of MPE
Commscope	JAAH-65B-R3B	157	40	5890	2.092521	0.209252	3.277663	0.327766
Commscope	JAAH-65B-R3B	157	170	5890	2.092521	0.209252	3.277663	0.327766
Commscope	JAAH-65B-R3B	157	290	5890	2.092521	0.209252	3.277663	0.327766

Verizon Wireless
HRT 088 943629
Carrier Summary

Frequency: 751 MHz
Maximum Permissible Exposure (MPE): 500.67 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 1.38275 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.27618 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Commscope	JAAH-65B-R3B	157	40	2661	0.755331	0.150865	1.076171	0.214948
Commscope	JAAH-65B-R3B	157	170	2661	0.755331	0.150865	1.076171	0.214948
Commscope	JAAH-65B-R3B	157	290	2661	0.755331	0.150865	1.076171	0.214948

Verizon Wireless
HRT 088 943629
Carrier Summary

Frequency:	3700	MHz
Maximum Permissible Exposure (MPE):	1000	μW/cm^2
Maximum power density at ground level:	16.42678	μW/cm^2
Highest percentage of Maximum Permissible Exposure:	1.64268	%

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density (μW/cm^2)	Percent of MPE	Max Power Density (μW/cm^2)	Percent of MPE
Samsung	MT6407-77A	157	40	43155	6.72348	0.672348	15.451674	1.545167
Samsung	MT6407-77A	157	170	43155	6.72348	0.672348	15.451674	1.545167
Samsung	MT6407-77A	157	290	43155	6.72348	0.672348	15.451674	1.545167

Verizon Wireless
HRT 088 943629
Carrier Summary

Frequency: 850 MHz
Maximum Permissible Exposure (MPE): 566.67 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 2.36326 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.41704 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Antel	LPA-80080-6CF	157	40	1005	0.272499	0.048088	0.415922	0.073398
Commscope	JAHH-65B-R3B	157	40	3120	0.756532	0.133506	1.219831	0.215264
Antel	LPA-80080-6CF	157	40	1005	0.272499	0.048088	0.415922	0.073398
Antel	LPA-80080-6CF	157	170	1005	0.272499	0.048088	0.415922	0.073398
Commscope	JAHH-65B-R3B	157	170	3120	0.756532	0.133506	1.219831	0.215264
Antel	LPA-80080-6CF	157	170	1005	0.272499	0.048088	0.415922	0.073398
Antel	LPA-80080-6CF	157	290	1005	0.272499	0.048088	0.415922	0.073398
Commscope	JAHH-65B-R3B	157	290	3120	0.756532	0.133506	1.219831	0.215264
Antel	LPA-80080-6CF	157	290	1005	0.272499	0.048088	0.415922	0.073398

Exhibit G

Letter of Authorization



3 Corporate Dr, Suite 101
Clifton Park, NY 12065

Phone: (201) 236-9224
Fax: (724) 416-6112
www.crowncastle.com

Crown Castle Letter of Authorization

CT - CONNECTICUT SITING COUNCIL

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

Re: Tower Share Application
Crown Castle telecommunications site at:
#14 ROUTE 80, KILLINGWORTH, CT 06419

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 and approvals through the CT - CONNECTICUT SITING COUNCIL for the existing wireless communications site described below:

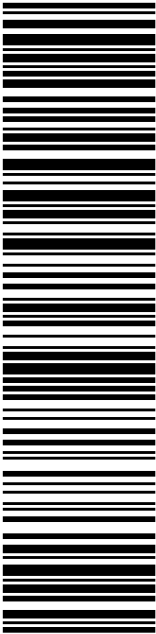
Crown Site ID/Name: 806387/HRT 088 943629
Customer Site ID: BOBDL00052A/CT-CCI-T-806387
Site Address: #14 Route 80, KILLINGWORTH, CT 06419

Crown Castle

By: Anne Marie Zsamba Date: 7/23/21
Anne Marie Zsamba
Project Manager – Site Acquisition

Exhibit H

Recipient Mailings

 Click-N-Ship®	
P	usps.com US POSTAGE Flat Rate Env \$7.95 9405 5036 9930 0476 0963 22 0079 5000 0031 4586 U.S. POSTAGE PAID Click-N-Ship®
08/17/2021	Mailed from 01566
PRIORITY MAIL 2-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Expected Delivery Date: 08/20/21 Re#: DS-806387 0006
SHIP TO: RICH ZAJAC CROWN CASTLE 4545 E RIVER RD STE 320 W HENRIETTA NY 14586-9024	
USPS TRACKING #  9405 5036 9930 0476 0963 22	
Electronic Rate Approved #038555749	

R013

Cut on dotted line.

Instructions

- 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.
- Place your label so it does not wrap around the edge of the package.
- 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.
- To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
- Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0476 0963 22

Trans. #: 540983850
 Print Date: 08/17/2021
 Ship Date: 08/17/2021
 Expected Delivery Date: 08/20/2021

Priority Mail® Postage: **\$7.95**
 Total: **\$7.95**

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

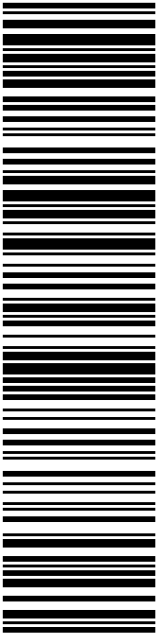
Re#: DS-806387

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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 Check the status of your shipment on the USPS Tracking® page at usps.com

 Click-N-Ship®	
P	usps.com US POSTAGE Flat Rate Env 08/17/2021 Mailed from 01566
PRIORITY MAIL 2-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Expected Delivery Date: 08/20/21 Re#: DS-806387 0006
SHIP TO: CATHERINE IINO FIRST SELECTWOMAN 323 ROUTE 81 KILLINGWORTH CT 06419-1218	
USPS TRACKING #  9405 5036 9930 0476 0963 46	
Electronic Rate Approved #038555749	

✂ ————— Cut on dotted line.

Instructions

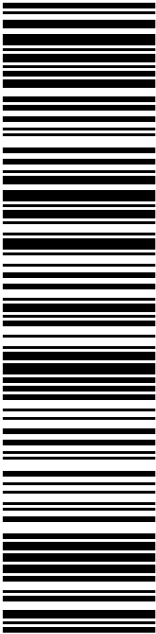
- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
- Place your label so it does not wrap around the edge of the package.
- Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT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

Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0476 0963 46	
Trans. #: 540983850 Print Date: 08/17/2021 Ship Date: 08/17/2021 Expected Delivery Date: 08/20/2021	Priority Mail® Postage: \$7.95 Total: \$7.95
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
To: CATHERINE IINO FIRST SELECTWOMAN 323 ROUTE 81 KILLINGWORTH CT 06419-1218	
Re#: DS-806387	
* 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 US POSTAGE Flat Rate Env 08/17/2021 Mailed from 01566
PRIORITY MAIL 2-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Expected Delivery Date: 08/20/21 Re#: DS-806387 0006
SHIP TO: CATHIE S JEFFERSON ZONING ENFORCEMENT OFFICER 323 ROUTE 81 KILLINGWORTH CT 06419-1218	
USPS TRACKING #  9405 5036 9930 0476 0963 53	
Electronic Rate Approved #038555749	

✂ ————— Cut on dotted line.

Instructions

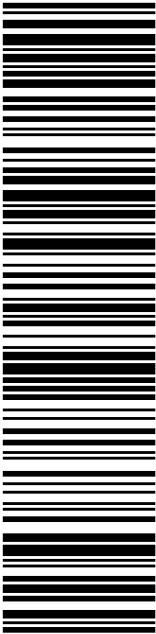
- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
- Place your label so it does not wrap around the edge of the package.
- Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT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

Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0476 0963 53	
Trans. #: 540983850 Print Date: 08/17/2021 Ship Date: 08/17/2021 Expected Delivery Date: 08/20/2021	Priority Mail® Postage: \$7.95 Total: \$7.95
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
To: CATHIE S JEFFERSON ZONING ENFORCEMENT OFFICER 323 ROUTE 81 KILLINGWORTH CT 06419-1218	
Re#: DS-806387	
* 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 US POSTAGE Flat Rate Env 08/17/2021 Mailed from 01566
9405 5036 9930 0476 0963 60 0079 5000 0010 6413 U.S. POSTAGE PAID Click-N-Ship®	
PRIORITY MAIL 2-DAY™	
Expected Delivery Date: 08/20/21 Re#: DS-806387 0006	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
C001	
SHIP TO: 14 ROUTE 80 LLC 93 GLENWOOD RD UNIT A CLINTON CT 06413-2440	
USPS TRACKING #  9405 5036 9930 0476 0963 60	
Electronic Rate Approved #038555749	



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Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0476 0963 60	
Trans. #: 540983850 Print Date: 08/17/2021 Ship Date: 08/17/2021 Expected Delivery Date: 08/20/2021	Priority Mail® Postage: \$7.95 Total: \$7.95
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
To: 14 ROUTE 80 LLC 93 GLENWOOD RD UNIT A CLINTON CT 06413-2440	
Re#: DS-806387	
* 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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806387

**UNITED STATES
POSTAL SERVICE.**

FISKDALE
458 MAIN ST
FISKDALE, MA 01518-9998
(800)275-8777

08/18/2021

12:51 PM

Product	Qty	Unit Price	Price
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Prepaid Mail	1		\$0.00
West Henrietta, NY 14586			
Weight: 0 lb 2.00 oz			
Acceptance Date:			
Wed 08/18/2021			
Tracking #:			
9405 5036 9930 0476 0963 22			

Prepaid Mail	1		\$0.00
Killingworth, CT 06419			
Weight: 1 lb 15.10 oz			
Acceptance Date:			
Wed 08/18/2021			
Tracking #:			
9405 5036 9930 0476 0963 46			

Prepaid Mail	1		\$0.00
Killingworth, CT 06419			
Weight: 1 lb 14.80 oz			
Acceptance Date:			
Wed 08/18/2021			
Tracking #:			
9405 5036 9930 0476 0963 53			

Prepaid Mail	1		\$0.00
Clinton, CT 06413			
Weight: 1 lb 14.70 oz			
Acceptance Date:			
Wed 08/18/2021			
Tracking #:			
9405 5036 9930 0476 0963 60			

Grand Total:			\$0.00
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