Via FedEx and Email
Tracking #: 776814585141

June 12, 2024

Connecticut Siting Council
Attn: Melanie A. Bachman
10 Franklin Square
New Britain, CT 06051
860-827-2935

RE: Tower Share Application
Facility Address: 107 Stickney Hill Road, Union, CT 06076
Facility Coordinates: 41.985378, -72.192167
Site#: BOBOS00933B

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 on the existing lattice tower site located at 107 Stickney Hill Road, Union, Connecticut.

Dish Wireless LLC proposes to install three (3) antenna sector frames, three (3) 600/1900/2100 5G MHz antenna and six (6) RRUs, at the 97-foot level of the existing 117-foot lattice tower, one (1) hybrid cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within 5'x7' lease area. Included are plans by American Tower Engineering, dated April 24, 2024, Exhibit C. Also included is a structural analysis prepared by American Tower, dated April 8, 2024, confirming that the existing lattice tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Connecticut Siting Council, Docket No.36 on February 24, 1994. 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 David D. Eaton, First Selectman, Lee Ann Fitzgerald Planning & Zoning Commission, Joe Pajak Building Official, as well as the property owner and tower owner.

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 modifications will not result in an increase in the height of the existing structure. The top of the lattice tower is 117-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 97-feet.

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

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total density of 11.98% as evidenced by Exhibit F.

Connecticut General Statutes 16-50-aa 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 lattice tower has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included in 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 lattice tower such as this lattice tower in Union. 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 97-foot level of the existing 117-foot tower would have an insignificant visual impact on the area around the lattice 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.

318 West Ave., Saratoga Springs, NY 12866
Office 518-306-1711 – Fax 518-306-1711
www.airosmithdevelopment.com

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 share application.

E. Public Safety Concerns. As discussed above, the lattice 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 lattice 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 Union.

Sincerely,

Mark Fuentes

Mark Fuentes
Airosmith Development - Authorized Agent for ATC
3391 Cambier Road Marion, NY 14505
(585) 230-7891 phone
mfuentes@airosmithdevelopment.com // mfuentes@asdwireless.com

Enclosed: Check # 12030 for $625.00 for Filing Fees
(3) Copies of Exempt Modification Notification and Supporting Documentation

Attachments Cc:
David D. Eaton, First Selectman Town Hall (Via FedEx 776733878276)
1043 Buckley Hwy
Union, CT 06076

Lee Ann Fitzgerald Chair, Planning & Zoning Commission Town Hall (Via FedEx 776734319751)
1043 Buckley Hwy
Union, CT 06076

Joe Pajak, Building Official Town Hall (Via FedEx 776734150844)
1043 Buckley Hwy
Union, CT 06076

Cox Communications, Inc, Property Owner (Via FedEx 776734571111)
1400 Lake Hearn Drive NE
Atlanta, GA 30319

American Tower, Tower Owner, (Via email)
10 Presidential Way
Woburn, MA 01801

Exhibit A

Original Facility Approval

DOCKET NO. 36

AN APPLICATION SUBMITTED BY CONTINENTAL CABLEVISION OF CONNECTICUT INC., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE ERECTION OF COMMUNITY ANTENNA TELEVISION TOWERS IN THE TOWNS OF EAST GRANBY, HARTLAND AND UNION.	:	CONNECTICUT SITING COUNCIL
	:	February 24, 1984

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

Pursuant to the foregoing opinion, the Council hereby directs that a certificate of environmental compatibility and public need as required by section 16-50k of the General Statutes of Connecticut, revisions of 1958, revised to 1983, as amended, shall be issued to Continental Cablevision of Connecticut, Inc. for the erection of community antenna television towers and associated equipment in the towns of East Granby, Hartland, and Union, as specified in the Council's record on this matter, subject to the following conditions:

1. The towers shall be no taller or wider than proposed and in no event shall
   a. The East Granby tower exceed 20' plus the height of the dish mounted on the tower,
   b. The Hartland tower exceed 110', plus the height of dishes mounted on the tower, and
   c. The Union tower exceed 110' feet, plus the height of the dish mounted on the tower;
2. A fence not lower than eight feet shall surround each facility site;
3. No associated equipment other than that referenced in finding 41 shall be added to the East Granby facility without prior notification to the Council;

4. No associated equipment other than that referenced in finding 62 shall be added to the Hartland facility without prior notification to the Council;
5. No associated equipment other than that referenced in finding 71 shall be added to the Union facility without prior notification to the Council;
6. The East Granby facility shall be screened with appropriate evergreen vegetation;
7. The applicant shall comply with the reporting requirements of a development and management plan pursuant to section 16-50j-77 of the regulations of state agencies;
8. The facilities construction shall be conducted in accordance with all applicable federal, state, and municipal laws and regulations; and
9. This decision and order shall be void if all construction authorized is not completed by June 30, 1987.

We hereby direct, pursuant to section 16-50p(c) of the General Statutes, 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, Manchester Journal Inquirer and the Winsted Evening Citizen. The parties to this proceeding are:

Mr. Roger Worboys (Applicant)
General Manager
Continental Cablevision of
Connecticut, Inc.
5 Shoham Road
East Windsor, Connecticut 06088

Leete, O'Neill & Kosto (its attorney)
60 Washington Street
Suite 600
Hartford, Connecticut 06106

Mr. Eugene Biggio (service waived)
595 North Main Street
Suffield, Connecticut 06078

Mr. Louis E. Roberts
Second Selectman
606 Buckley Highway
Union, Connecticut

Mr. James Johnston
12 Hillside Avenue
Enfield, Connecticut

CERTIFICATION

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 24th day of February, 1984.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	Yes
Commissioner John Downey Designee: Commissioner Peter G. Boucher	Yes
Commissioner Stanley Pac Designee: Christopher Cooper	Absent
Owen L. Clark	Yes
Fred J. Doocy	Yes
Mortimer A. Gelston	Absent
James G. Horsfall	Yes
Janet Sitty	Yes
Colin C. Tait	Yes

STATE OF CONNECTICUT)
: ss. New Britain, February 24, 1984
COUNTY OF HARTFORD)

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

ATTEST:

Christopher S. Wood

Christopher S. Wood, Executive Director
Connecticut Siting Council

Exhibit B

Property Card

neccog

Ashford Brooklyn Canterbury Chaplin Eastford Hampton Killingly Plainfield Pomfret Putnam Scotland Sterling Thompson Union Voluntown Woodstock

Parcel Information:

Report Generated: *5/6/2024 3:32:17 PM*

GIS ID: CT-145-03-15-034

Assessment:

Owner Name: ***SPRINGWICH CELLULAR LP (LESSEE)***

Appraisal: $596,350.00

Street Address: STICKNEY HILL RD

Mailing Address: 754 PEACHTREE ST. NE

145

ATLANTA GA 30308

Land: 0.00

Buildings:

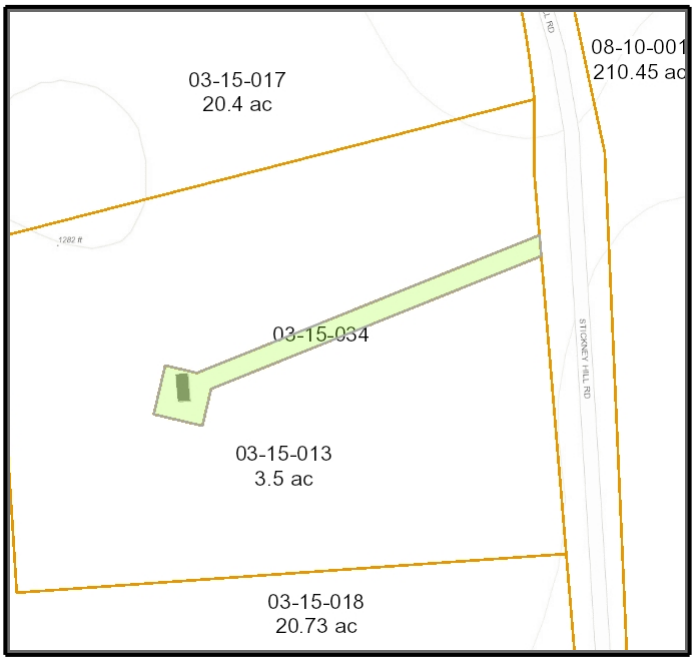
	Land Value:	Improvement Value:	Total Value:
Appraised		$0.00	$596,350.00
Assessed			

Sale Date:

Sale Price: $0

Year Built: 0

Primary Structure Area: sq. ft.



Taxlot highlighted in blue

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBOS00933B

DISH Wireless L.L.C. SITE ADDRESS:

107 STICKNEY HILL ROAD
UNION,CT 06076

SCOPE OF WORK

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

TOWER SCOPE OF WORK:
- REMOVE ABANDONED EQUIPMENT AT 94' RAD
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (3) PROPOSED ANTENNA SECTOR FRAME MOUNTS (1 PER SECTOR)
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL PROPOSED (1) 1.60" HYBRID CABLE(s)

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 DRIP BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED CIENA BOX (IF REQUIRED)
- INSTALL (1) PROPOSED METER SOCKET

NOTE: THE SCOPE OF THIS PROJECT DOES NOT INCLUDE MODIFICATIONS TO THE TOWER STRUCTURE OR FOUNDATION. A SEPARATE BUILDING PERMIT APPLICATION WILL BE SUBMITTED FOR ANY TOWER MODIFICATIONS.

SITE INFORMATION

PROPERTY OWNER:	COXCOM, LLC
ADDRESS:	107 STICKNEY HILL ROAD UNION,CT 06076
COUNTY:	TOLLAND
TOWER TYPE:	SELF SUPPORT
TOWER CO SITE ID:	209144
TOWER APP NUMBER:	14580426_D2
LATITUDE (NAD 83):	41° 59' 7.361" N 41.985378
LONGITUDE (NAD 83):	72° 11' 31.801" W -72.192167
GROUND ELEVATION:	1240' AMSL
ZONING JURISDICTION:	TOWN OF UNION
ZONING DISTRICT:	COMMERCIAL
PARCEL NUMBER:	UNIO M:0003 B:0015 L:013
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	TBD
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801
ENGINEER:	A.T. ENGINEERING SERVICES LLC 1 FENTON MAIN, SUITE 300 CARY, NC 27511
SITE ACQUISITION:	JULIE CHAREST JULIE.CHAREST@DISH.COM
CONSTRUCTION MANAGER:	ROBERT MORAN ROBERT.MORAN@DISH.COM
RF ENGINEER:	IRMA SEBASTIAN IRMA.SEBASTIAN@DISH.COM

CODES OF COMPLIANCE

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

2021 IBC
NATIONAL ELECTRICAL CODE (NFPA 70, NEC 2020 W/ AMND)
2022 CONNECTICUT STATE BUILDING CODE, IMC PORTION (IMC 2021 W/ AMND)
2022 CONNECTICUT STATE BUILDING CODE, IPC PORTION (IPC 2021 W/ AMND)
2022 CONNECTICUT STATE BUILDING CODE, IECC PORTION (IECC 2021 W/ AMND)
PART III OF THE 2022 CT STATE FIRE SAFETY CODE (IFC 2021 W/ AMND)
2022 CONNECTICUT STATE BUILDING CODE, IEBC PORTION (IEBC 2021 W/ AMND)
2022 CONNECTICUT STATE BUILDING CODE
2022 CONNECTICUT STATE BUILDING CODE, IRC PORTION (IRC 2021 W/ AMND)
CONNECTICUT STATE FUEL GAS CODE (IFGC 2021 W/ AMND)

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-0	EXISTING SURVEY
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
E-4	PPC NEUTRAL-TO-GROUND SCHEMATIC
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
G-4	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	RF SIGNAGE
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES
GN-5	GENERAL NOTES
R-1	MOUNT ANALYSIS

SITE PHOTO

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

11"x17" PLOT WILL BE HALF SCALE

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

DIRECTIONS

FROM SOUTHBRIDGE MUNICIPAL AIRPORT, TAKE PLEASANT ST TO MAIN ST. TURN LEFT ON MAIN ST. TURN RIGHT ONTO WEST ST. TURN RIGHT ONTO SOUTH ST. CONTINUE TO MASHAPAUG RD. TURN LEFT ONTO HAYNES ST. ENTER I-84, TAKE EXIT 73. TURN RIGHT ONTO WEBSTER RD. TURN RIGHT ONTO STICKNEY HILL RD. THEN TURN LEFT AND ARRIVE AT SITE ON THE RIGHT.

VICINITY MAP

NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
1 FENTON MAIN
SUITE 300
CARY, NC 27511
PHONE: (919) 468-0112
PEC.0001553

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	FER	04/24/24
1	MOUNT ANALYSIS	FER	05/28/24

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
209144-14580426_D2

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

SURVEY NOTES:

1. BASIS OF BEARING:
CT GRID NAD 83

2. NO SUBSURFACE INVESTIGATION WAS PERFORMED TO LOCATE UNDERGROUND UTILITIES. UTILITIES SHOWN HEREON ARE LIMITED TO AND ARE PER OBSERVED EVIDENCE ONLY.

3. THIS SURVEY DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARENT PARCEL.

4. ALL VISIBLE TOWER EQUIPMENT AND IMPROVEMENTS ARE CONTAINED WITH IN THE DESCRIBED AREA.

5. BOUNDARY CONTROL FROM TOWN GIS

ZONING: RESIDENTIAL (RR)

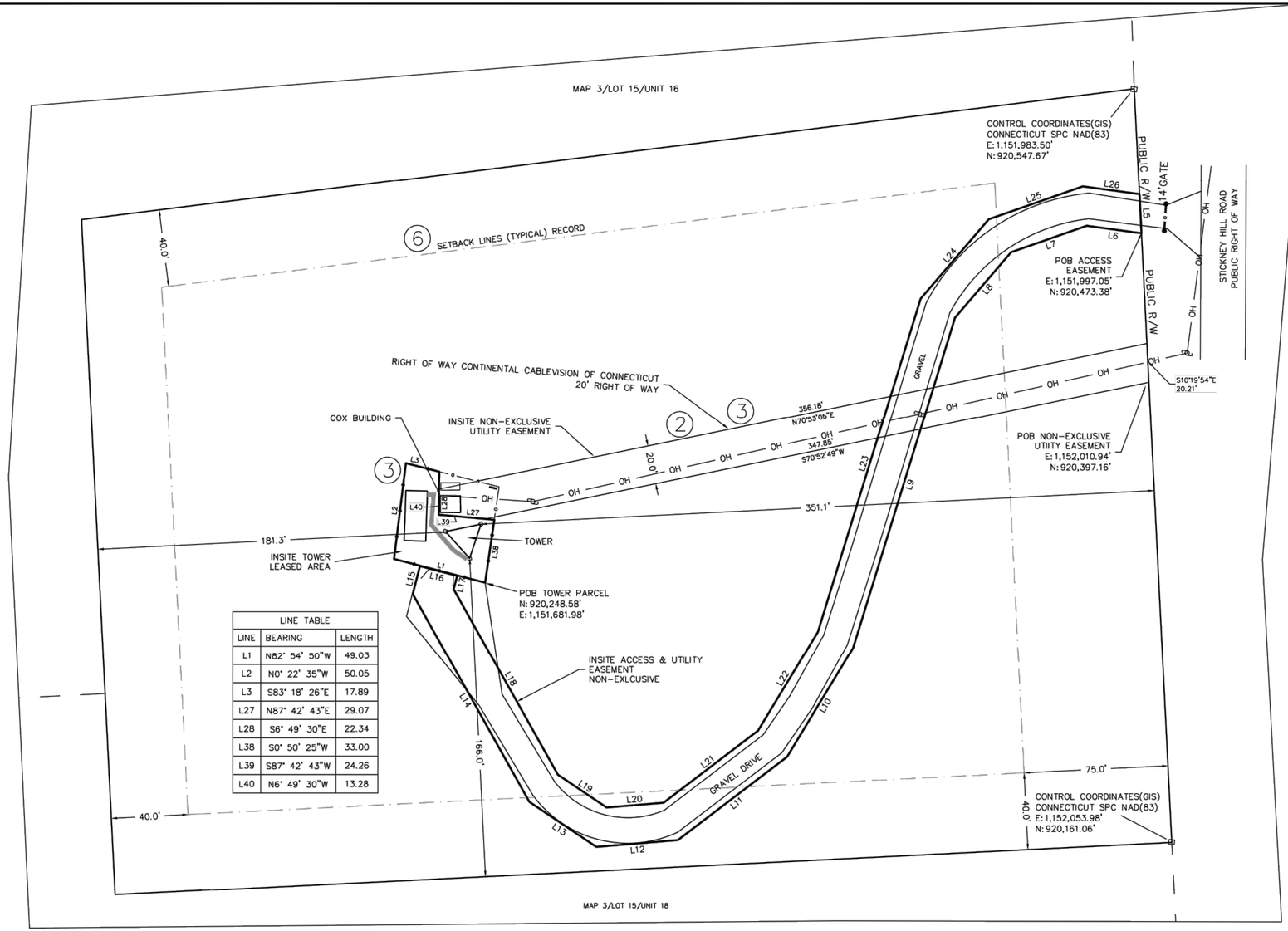
THIS PARCEL OF LAND LIES WITHIN FLOOD ZONE C WHICH IS NOT A SPECIAL FLOOD HAZARD AREA AS PER F.I.R.M. PANEL NUMBER: 090190B
EFFECTIVE DATE: DECEMBER 4, 1985

LEGEND

- □ : COMPUTED FROM GIS
- ● : SET 5/8" REBAR.
- ○ : FOUND 1/2" REBAR AS NOTED.
- (____). : RECORD DESCRIPTION DATA.
- P.O.B. : POINT OF BEGINNING.
- P.O.C. : POINT OF COMMENCEMENT.
- —o— : FENCE AS NOTED.
- —OH— : OVER HEAD UTILITY LINES.
- : WOOD UTILITY POLE.
- E : ELECTRIC TRANSFORMER.
- T : TELCO PEDESTAL.
- WM : WATER METER.
- CATV : CABLE TELEVISION

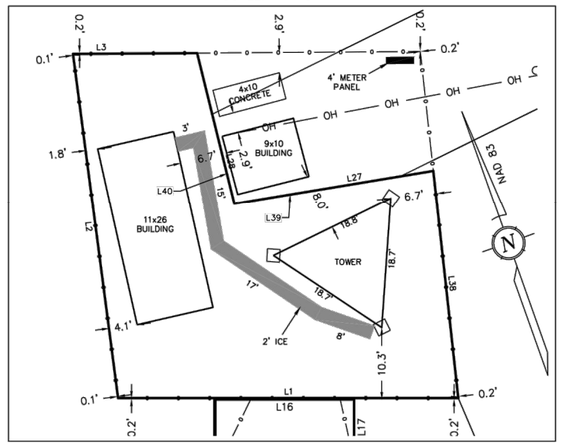
AREA	SQUARE FEET	ACRE
PARENT PARCEL	152460	3.50
TOWER PARCEL	1868	0.04
COMPOUND AREA	2463	0.05
ACCESS EASEMENT	12729	0.29

SURVEYORS REVIEW OF STEWART TITLE GUARANTY COMPANY COMMITMENT 57878 DATED: APRIL 23 2012
SCHEDULE B SECTION II:
1-5 GENERAL EXCEPTIONS AS PROVIDED BY THIS SURVEY
SPECIAL EXCEPTIONS
1. RIGHT OF FIRST REFUSAL NOT A SURVEY MATTER
2.NOTICE OF LEASE BY AND BETWEEN PAUL M. RIZNER, GEORGE RIZNER A/K/A GEORGE RIZNER, JR. AND MARY R. HATTIN AND CONTINENTAL CABLEVISION OF CONNECTICUT DATED MARCH 3, 1984 AND RECORDED JULY 17, 1984 IN VOLUME 30 AT PAGE 261; AS MODIFIED BY SUBORDINATION AGREEMENT DATED OCTOBER 12, 1990 AND RECORDED OCTOBER 24, 1990 IN VOLUME 34 AT PAGE 354 OF THE UNION LAND RECORDS. PROPOSED RIGHT OF WAY SHOWN ON SURVEY
3.WIRELESS COMMUNICATIONS EASEMENT AGREEMENT BY AND BETWEEN MARGARET M. HARRISON AND T6 UNISON SITE MANGEMENT LLC DATED DECEMBER 11, 2009 AND RECORDED DECEMBER 30, 2009 IN VOLUME 57 AT PAGE 313 OF THE UNION LAND RECORDS. RIGHT OF WAY AND EASEMENT SHOWN
4.ASSIGNMENT AND ASSUMPTION OF LEASE AGREEMENT BY AND BETWEEN MARGARET M. HARRISON AND T6 UNISON SITE MANAGEMENT LLC DATED DECEMBER 11, 2009 AND RECORDED DECEMBER 30, 2009 IN VOLUME 57 AT PAGE 327 OF THE UNION LAND RECORDS. ASSUMPTION OF LEASE NOT A SURVEY MATTER
5.EASEMENT IN FAVOR OF THE CONNECTICUT LIGHT AND POWER COMPANY NOT PLOTTABLE, PLAT NOT PROVIDED.
6. NOTES, BUILDING SETBACK LINES, EASEMENT AND CONDITIONS AS SHOWN ON SAID MAP NO. 469 ARE SHOWN ON THIS SURVEY.



LINE TABLE		
LINE	BEARING	LENGTH
L1	N82° 54' 50"W	49.03
L2	N0° 22' 35"W	50.05
L3	S83° 18' 26"E	17.89
L27	N87° 42' 43"E	29.07
L28	S6° 49' 30"E	22.34
L38	S0° 50' 25"W	33.00
L39	S87° 42' 43"W	24.26
L40	N6° 49' 30"W	13.28

COMPOUND DETAIL
SCALE: 1"=10'



LINE TABLE		
LINE	BEARING	LENGTH
L5	S10° 19' 54"E	20.35
L6	N89° 43' 42"W	28.76
L7	S63° 16' 18"W	41.75
L8	S33° 11' 15"W	44.77
L9	S9° 42' 08"W	179.86
L10	S23° 39' 20"W	66.35
L11	S45° 12' 17"W	71.54
L12	S77° 45' 31"W	42.59
L13	N63° 35' 23"W	42.07
L14	N36° 45' 22"W	124.22
L15	N7° 05' 10"E	14.99
L16	S82° 54' 50"E	20.00
L17	S7° 05' 10"W	7.22
L18	S36° 47' 00"E	110.93
L19	S63° 35' 23"E	30.59
L20	N77° 45' 31"E	29.73
L21	N45° 12' 17"E	61.89
L22	N23° 39' 20"E	60.19
L23	N9° 41' 27"E	181.45
L24	N33° 11' 15"E	54.33

LINE TABLE		
LINE	BEARING	LENGTH
L25	N63° 16' 18"E	51.92
L26	S89° 43' 42"E	29.81

LEGAL:

LEGAL DESCRIPTION OF: Insite Tower Leased Area
From the POINT OF BEGINNING Having Connecticut State Plane Coordinates: N:920,248.58' –and– E:1,151,681.98'; Thence, N 82° 54' 50" W for a distance of 49.03 feet to a point ; Thence, N 00° 22' 35" W for a distance of 50.05 feet to a point ; Thence, S 83° 18' 26" E for a distance of 17.89 feet to a point ; Thence, S 06° 49' 30" E for a distance of 22.34 feet to a point ; Thence N 87° 42' 43" E a distance of 29.07 feet to a point; Thence, S 00° 50' 25" W for a distance of 33.00 feet to the POINT OF BEGINNING; Containing 1868 square feet –and– 0.04 Acres.

LEGAL DESCRIPTION OF: Non-Exclusive Access/Utility Easement
From the POINT OF BEGINNING Having Connecticut State Plane Coordinates: E:1,151,997.05' –and– N:920,473.38'; Thence, N 89° 43' 42" W for a distance of 28.76 feet to a point; Thence, S 63° 16' 18" W for a distance of 41.75 feet to a point; Thence, S 33° 11' 15" W for a distance of 44.77 feet to a point; Thence, S 09° 42' 08" W for a distance of 179.86 feet to a point; Thence, S 23° 39' 20" W for a distance of 66.35 feet to a point; Thence, S 45° 12' 17" W for a distance of 71.54 feet to a point; Thence, S 77° 45' 31" W for a distance of 42.59 feet to a point; Thence, N 63° 35' 23" W for a distance of 42.07 feet to a point; Thence, N 36° 45' 22" W for a distance of 124.22 feet to a point; Thence, N 07° 05' 10" E for a distance of 14.99 feet to a point; Thence, S 82° 54' 50" E for a distance of 20.00 feet to a point; Thence, S 07° 05' 10" W for a distance of 7.22 feet to a point; Thence, S 36° 47' 00" E for a distance of 110.93 feet to a point; Thence, S 63° 35' 23" E for a distance of 30.59 feet to a point; Thence, N 77° 45' 31" E for a distance of 29.73 feet to a point; Thence, N 45° 12' 17" E for a distance of 61.89 feet to a point; Thence, N 23° 39' 20" E for a distance of 60.19 feet to a point; Thence, N 09° 41' 27" E for a distance of 181.45 feet to a point; Thence, N 33° 11' 15" E for a distance of 54.33 feet to a point; Thence, N 63° 16' 18" E for a distance of 51.92 feet to a point; Thence S 89° 43' 42" E a distance of 29.81 feet to a point; Thence, S 10° 19' 54" E for a distance of 20.35 feet to the POINT OF BEGINNING; Containing 12,729 square feet –and– 0.29 Acres.

LEGAL DESCRIPTION OF: Non-Exclusive Utility Easement
From the POINT OF BEGINNING Having Connecticut State Plane Coordinates: E:1,152,010.94' –and– N:920,397.16'; Thence, S 70° 52' 49" W for a distance of 347.85 feet to a point; Thence, S 87° 42' 43" W for a distance of 24.26 feet to a point; Thence, N 6° 49' 30" W for a distance of 13.28 feet to a point; Thence, N 70° 53' 05" E for a distance of 356.18 feet to a point; Thence S 10° 19' 54" E a distance of 20.21 feet to the POINT OF BEGINNING; Containing 7,448 square feet –and– 0.17 Acres.

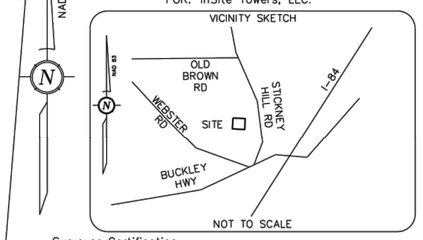
OWNER:

MARGARET M. HARRISON
107 STICKNEY HILL RD,
UNION, CT 06076
MAP 3, LOT 15, UNIT 13
VOL 25, PG 23
BOOK 50, PG 14

30 0 15 30 60
BAR GRAPH 1 inch = 30 ft.
CT907 UNION.DWG

AS-BUILT SURVEY

TOLLAND COUNTY
TOWN OF UNION, CT
FOR: InSite Towers, LLC.



Surveyor Certification
Form of Surveyor's Certificate for Existing Towers

I, MATTHEY BATTEY, do hereby certify to InSite Towers, LLC, a Delaware limited liability company with its headquarters address at 301 N. Fairfax Street, Suite 101, Alexandria, VA 22314 ("InSite Towers"), InSite Wireless Group, LLC, a Delaware limited liability company its Successors assignees and lenders, Stewart Title Guaranty Company, of each of the foregoing that this survey was made on the ground under my personal supervision and that this plat is a true, correct and accurate representation of the facts as found at the time of the survey, and more specifically,

I so hereby certify that the survey conforms to the conditions and stipulations as checked (x) below.

(X) 1. The boundary lines and dimensions of the InSite Towers Lease Area and access and utilities easements (collectively, the "Easements") indicated hereon is correct.

(X) 2. To the extent the Lease Area and Easements indicated hereon are part of a parent parcel, such Lease Area and Easements are located within the boundaries of the record title legal description of such parent parcel. The location of said Lease Area and Easements relative to an approximation of the location of the boundaries of the parent tract is illustrated on the inset shown hereon.

(X) 3. Shows the location and dimension of all alleys, streets, roads, rights-of-way, easements and other matters of record which the surveyor has been advised affects the Lease Area and/or Easements (each has been identified by instrument volume and page number if available).

(X) 4. Except as shown, there are no visible easements, rights-of way, party walls or conflicts affecting the Lease Area and/or Easements; further, this survey is not subject to any easements or rights-of-way not visible on the ground.

(X) 5. The location of all buildings, structures and other improvements of visible items affecting the Lease Area and Easements, if shown, are as indicated hereon. The location of all other buildings, structures and other improvements of visible items on the parent tract, if shown hereon, are approximate in nature, except that the Lease Area and Easements are entirely located within the boundaries of the parent parcel, as shown on the inset.

(X) 6. Except as shown, there are no visible protrusions on adjoining premises, streets or alleys by any building, structure or other improvements situated on the Lease Area and/or Easements and there are no visible encroachments onto the Lease Area and/or Easements by any building, structure or other improvements situated on adjoining premises.

( ) 7a. Shows the location and acres contained in all portions of the Lease Area and Easements which are located in an area designated as a "FLOOD PRONE AREA (ZONE A)" as defined by the U.S. Department of Housing and Urban Development pursuant to the Flood Disaster Act of 1973; NONE, FIRM Community Panel Number xxxxxxxxx

(X) 7b The site Lease Area and Easements are located in an area designated as a Flood Zone (C) as defined by the U.S. Department of Housing and Urban Development pursuant to the Flood Disaster Act of 1973 FIRM Community Panel No.090190B

(X) 8. Describes and shows the location of all public streets and roads visibly providing access to and from the subject property, and correctly sets forth the municipal address of the subject property.

(X) 9. Survey of the Lease Area and Easements meets or exceeds the minimum technical standards for Land Boundary surveys set forth by CONNECTICUT State Law.

MURPHY GEOMATICS
_____
MATTHEW BATTEY
LAND SURVEYOR – CT # 70369
Date of Survey: APRIL 28 2012

Date of Last Revision _____

STATE OF CONNECTICUT
MATTHEW R. BATTEY
No. 70369
LICENSED LAND SURVEYOR

INSITE SITE NAME:
CT907-C UNION

SURVEY WORK PERFORMED BY:

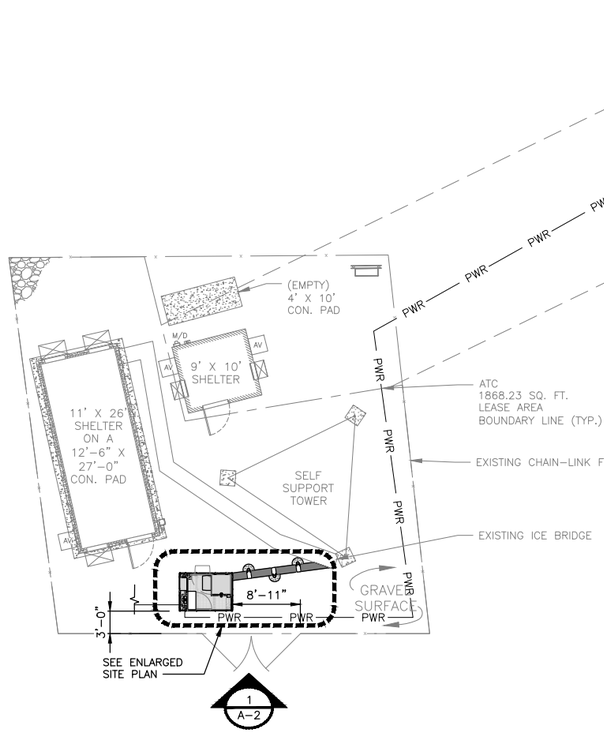
murphy GEOMATICS
Professional Land Surveying
6308 J. Richard Drive (919) 787-7873
Raleigh NC 27617-4601 FAX 881-9573
FIRM# C-0257
E-MAIL : raleigh@murphygeomatics.com

NATIONAL SURVEY SERVICES COORDINATION BY:

GEOLINE SURVEYING, INC.
13430 NW 104th Terrace, Suite A
Alachua, FL 32615
(386) 418-0500
(386) 462-9986 Fax
WWW.GEOLINEINC.COM

NOTES

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



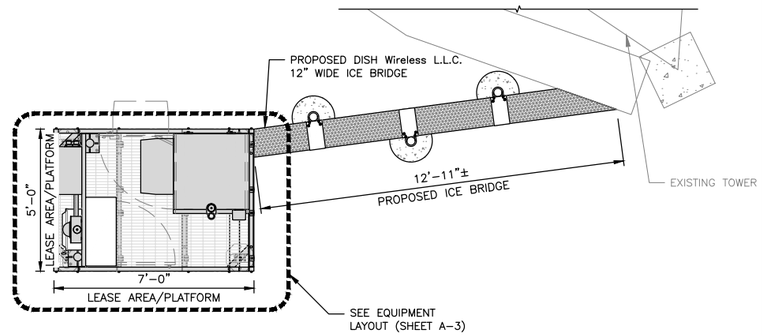
OVERALL SITE PLAN

10' 0 10' 20'
1"=10'

1

NOTES

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



ENLARGED SITE PLAN

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

2

AERIAL VIEW

NO SCALE

3

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

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
1 FENTON MAIN
SUITE 300
CARY, NC 27511
PHONE: (919) 468-0112
PEC.0001553

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	FER	04/24/24

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

Digitally Signed 2024-05-28

A&E PROJECT NUMBER
209144-14580426_D2

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

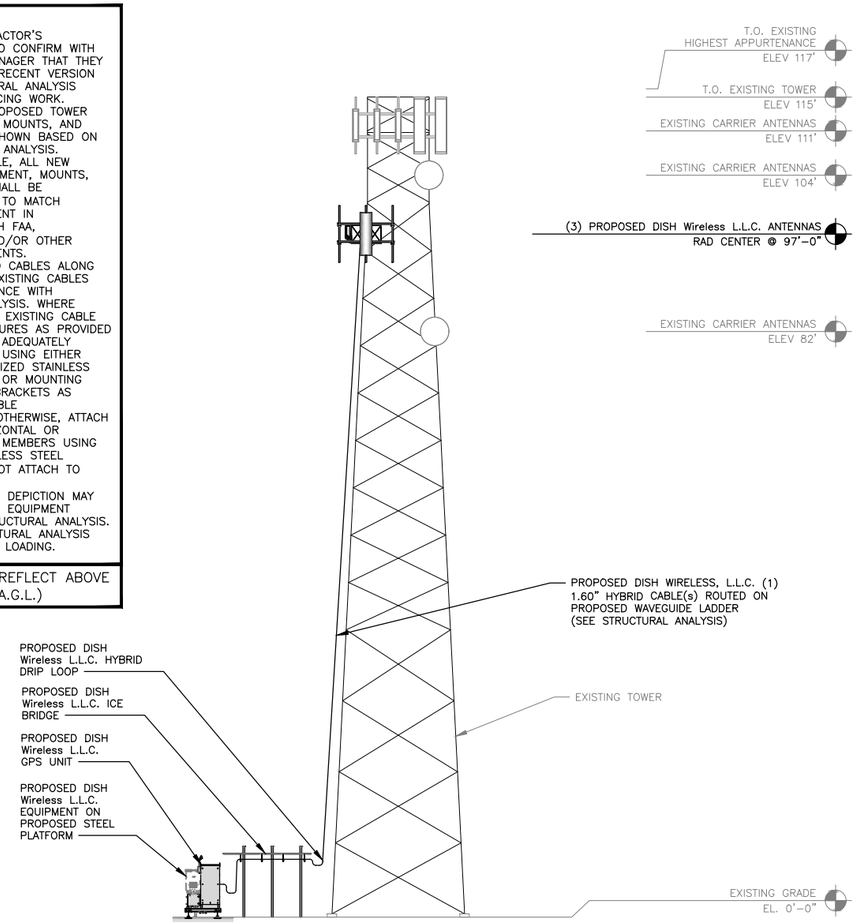
NOTES

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.

ABANDONED EQUIPMENT AT RAD CENTER @ 94' SHALL BE REMOVED BY THE CONTRACTOR PRIOR TO INSTALLING THE PROPOSED INSTALLATION. FAILURE TO COMPLY WITH THE FOREGOING MAY RESULT IN ADDITIONAL CHARGES OR FEES.

TOWER NOTE:
1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC. SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
3. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. WHERE POSSIBLE UTILIZE EXISTING CABLE SUPPORT STRUCTURES AS PROVIDED FOR CARRIER TO ADEQUATELY SECURE CABLES, USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER. OTHERWISE, ATTACH CABLES TO HORIZONTAL OR DIAGONAL TOWER MEMBERS USING PROPOSED STAINLESS STEEL ADAPTERS (DO NOT ATTACH TO TOWER LEG).
4. TOWER ELEVATION DEPICTION MAY NOT REFLECT ALL EQUIPMENT INCLUDED IN STRUCTURAL ANALYSIS. REFER TO STRUCTURAL ANALYSIS FOR FULL TOWER LOADING.

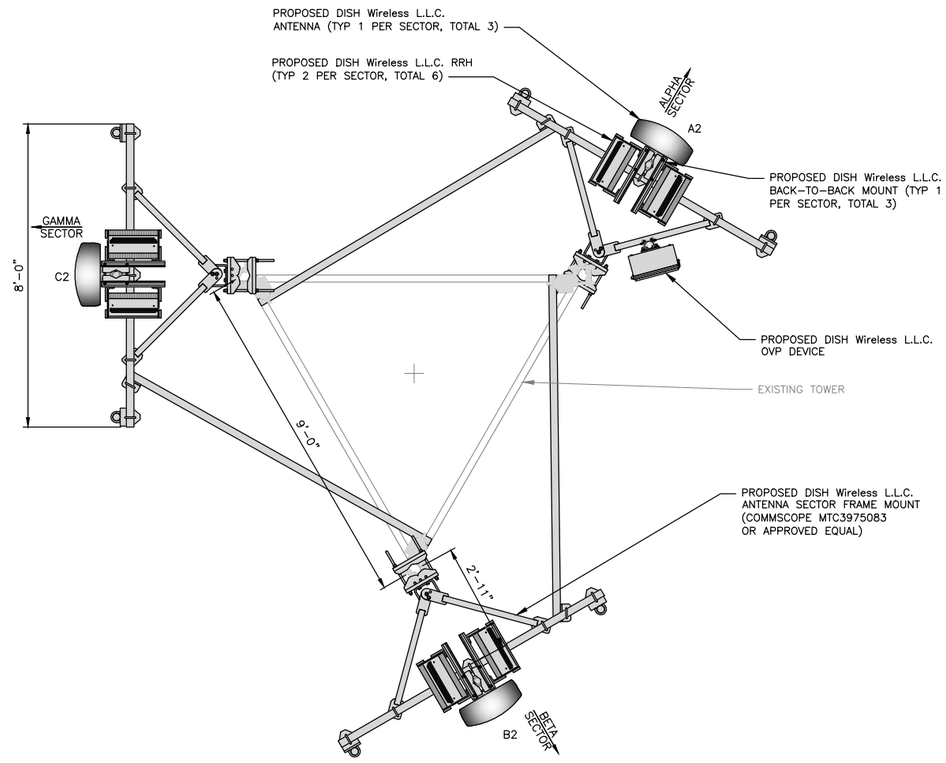
ALL ELEVATIONS REFLECT ABOVE GROUND LEVEL (A.G.L.)



PROPOSED NORTH ELEVATION

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

1



N

ANTENNA LAYOUT

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

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH (DEGREES)	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1									A1	
A2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	30	97'	(1) 1.60" HYBRID CABLE (127' LONG)	SAMSUNG RF4450t-71A SAMSUNG RF4451d-70A	5G	A2	(1) RAYCAP RDIDC-9181-PF-48
A3									A3	
B1									B1	
B2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	150	97'	SHARED W/ALPHA	SAMSUNG RF4450t-71A SAMSUNG RF4451d-70A	5G	B2	SHARED W/ALPHA
B3									B3	
C1									C1	
C2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	270	97'	SHARED W/ALPHA	SAMSUNG RF4450t-71A SAMSUNG RF4451d-70A	5G	C2	SHARED W/ALPHA
C3									C3	

NOTES

1. GC TO VERIFY THE FINAL RFDS MATCHES THE FINAL CONSTRUCTION DRAWINGS. GC TO NOTIFY ATC PM OF ANY DISCREPANCY PRIOR TO INSTALLING THE EQUIPMENT.
2. GC TO CAP ALL UNUSED PORTS.
3. GC TO CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.

ANTENNA SCHEDULE

NO SCALE

3

dish wireless
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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PHONE: (919) 468-0112
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RFDS REV #: ---

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SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

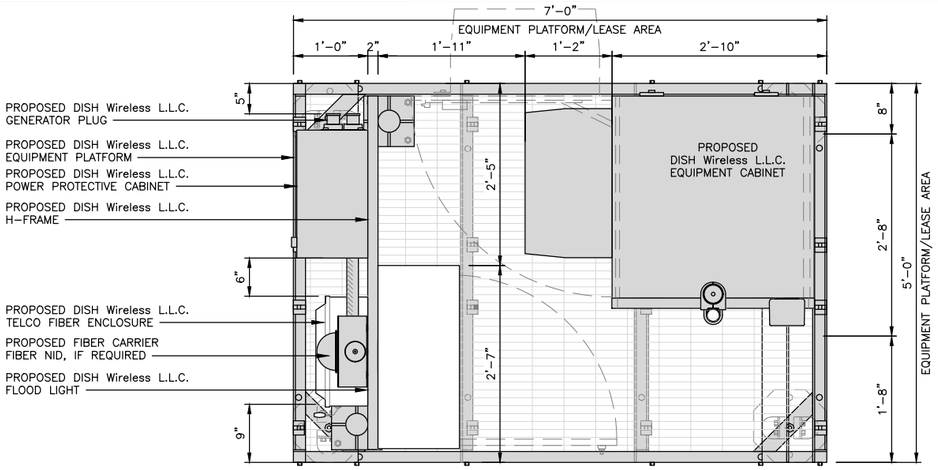
Digitally Signed 2024-05-28

A&E PROJECT NUMBER
209144-14580426_D2

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



PLATFORM EQUIPMENT PLAN

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

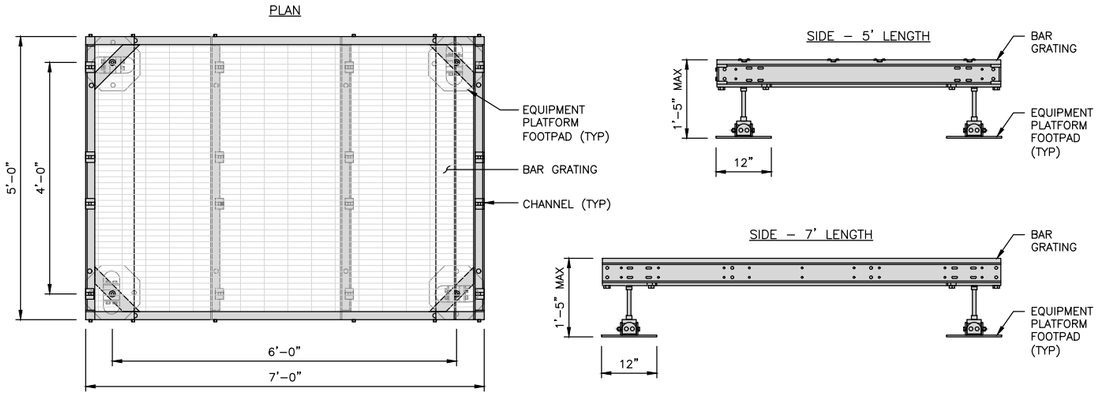
1

NOTES

1. INSTALL POSTS BASES TO GRATING JUST INSIDE PLATFORM FRAME. NO DRILLING REQUIRED.
2. GPS MAY BE MOVED TO ICE BRIDGE OR H-FRAME.
3. ALL CONDUIT TO BE ROUTED THROUGH PLATFORM GRATING USING LIQUIDTIGHT, EMT, RIGID OR PVC COUPLERS. CONDUIT QUANTITY AND SIZES ARE PER ONE-LINE DIAGRAM ON E-3 SHEET OF CDS. (DC PLANT DEPENDENT.)
4. CONTRACTOR MAY FIELD INSTALL CONDUIT HOLES IN BOTTOM OF PPC CABINET TO MATCH CONDUIT SIZES. (SEAL TO PPC MANUFACTURER SPECIFICATIONS).
5. H-FRAME POSTS ARE STAGGERED TO ALLOW FIBER NID BOXES TO BE INSTALLED CLOSE TO PERIMETER FRAME OF PLATFORM.
6. CONDUITS FROM PPC/FIBER DEMARK CABINETS TO EQUIPMENT CABINET (BBU) SHALL BE INSTALLED INSIDE PERIMETER OF PLATFORM AND UNDER GRATING.

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

NOTE:
PLATFORM TO BE WITHIN 1° OF LEVEL

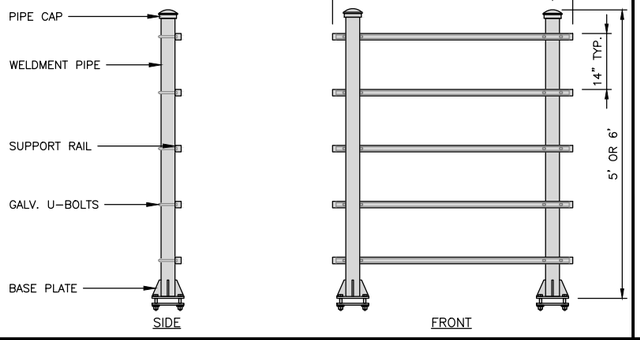


PLATFORM DETAIL

NO SCALE

2

COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs



H-FRAME DETAIL

NO SCALE

3

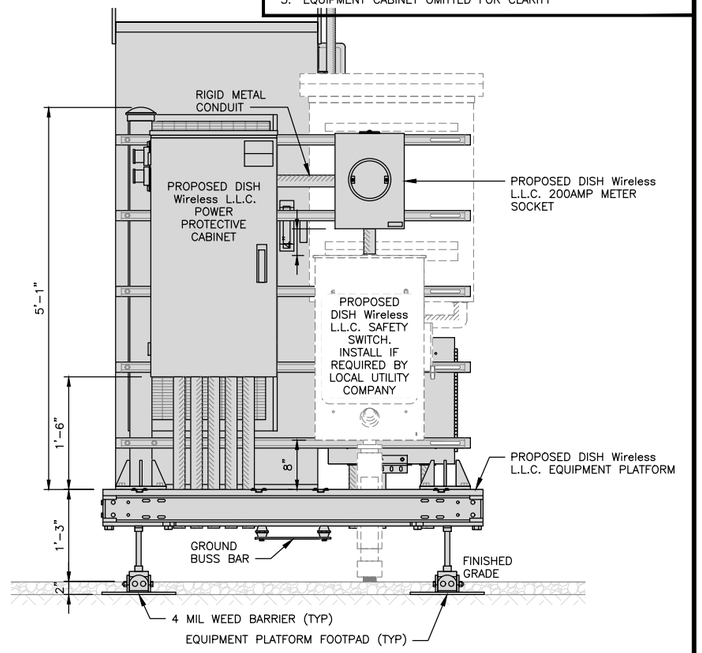
NOT USED

NO SCALE

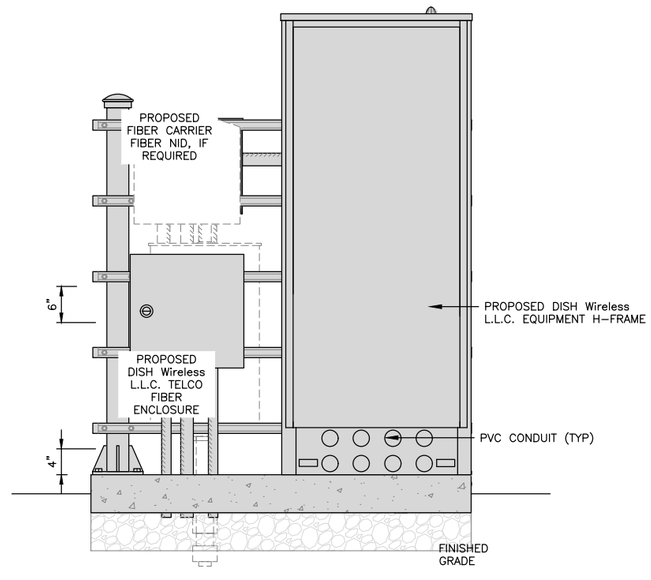
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

5

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

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
1 FENTON MAIN
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PHONE: (919) 468-0112
PEC.0001553

RFDS REV #: ---

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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

Digitally Signed 2024-05-28

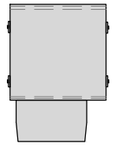
A&E PROJECT NUMBER
209144-14580426_D2

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

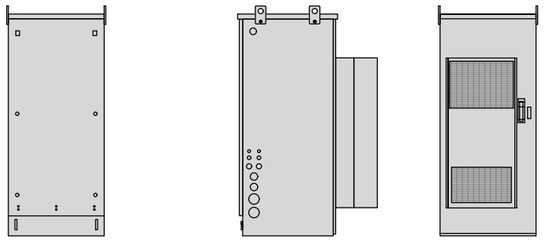
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

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

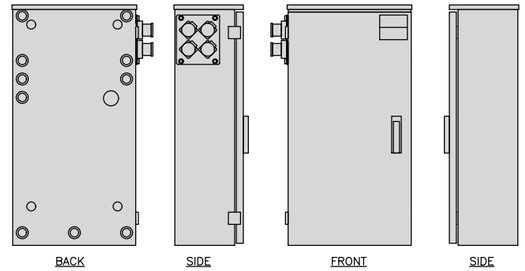


BACK SIDE FRONT

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

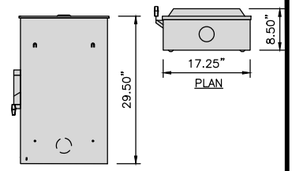
TOP

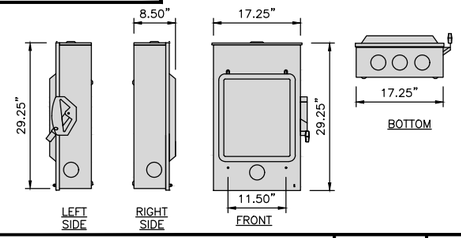


BACK SIDE FRONT SIDE

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

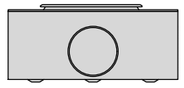
SQUARE D D224NRB DISCONNECT/SAFETY SWITCH DETAIL	
ENCLOSURE DIM (HxWxD)	29.25"x17.25"x8.50"
TOTAL WEIGHT	45 LBS
VOLTAGE	240VAC
NEMA RATING	NEMA 3R
ENCLOSURE TYPE	NEMA 3R RAINPROOF
DISCONNECT TYPE	FUSIBLE



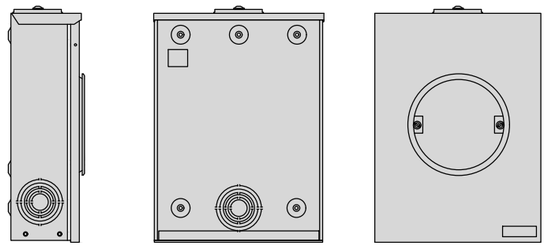


DISCONNECT SWITCH DETAIL — NO SCALE — 3

EATON METER SOCKET UNRRS213BEUSE	
METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS



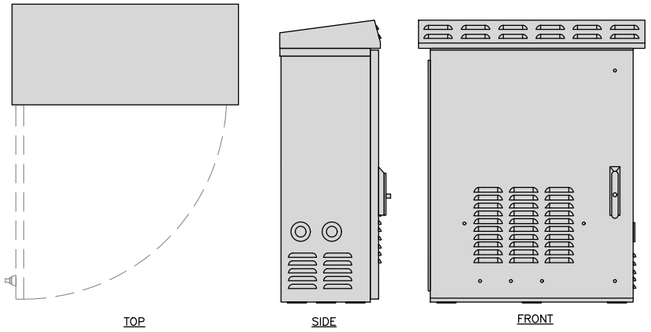
PLAN



SIDE BACK FRONT

METER SOCKET DETAIL — NO SCALE — 4

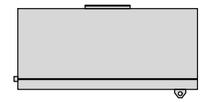
MULTILINK 030-264-10	
DIMENSIONS (HxWxD)	36.12"x29"x14"
WEIGHT	80 lbs



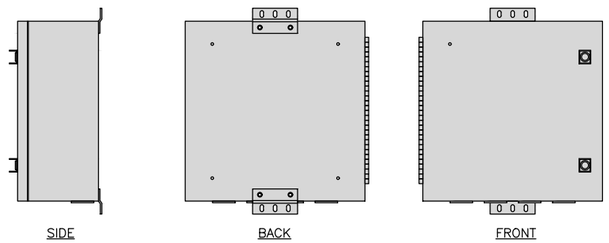
TOP SIDE FRONT

FIBER NID ENCLOSURE DETAIL — NO SCALE — 5

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



FRONT

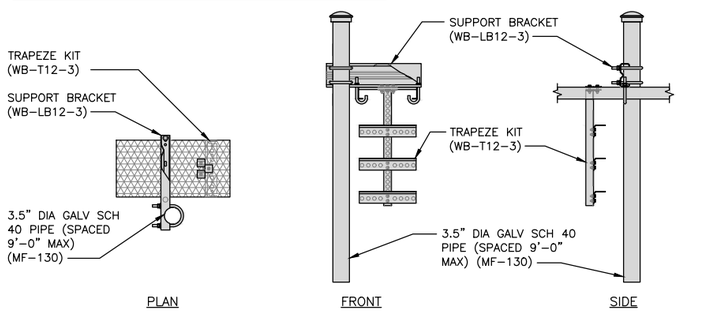


SIDE BACK FRONT

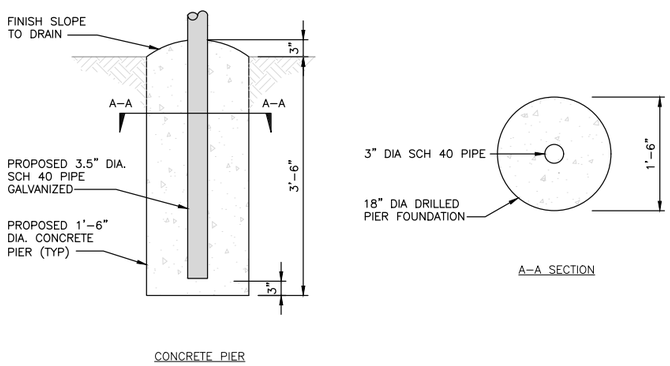
FIBER TELCO ENCLOSURE DETAIL — NO SCALE — 6

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

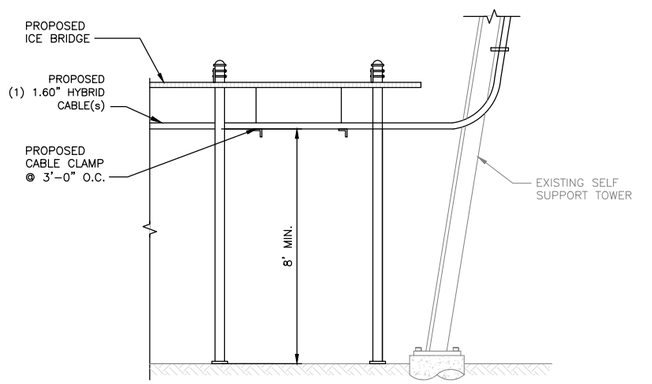
INCLUDED PRODUCTS:
- WB-T12-3 TRAPEZE KIT, 3 RUNGS
- WB-LB12-3 SUPPORT BRACKET
- MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"



ICE BRIDGE DETAIL — NO SCALE — 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL — NO SCALE — 8



HYBRID CABLE RUN — NO SCALE — 9

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A.T. ENGINEERING SERVICES LLC
1 FENTON MAIN
SUITE 300
CARY, NC 27511
PHONE: (919) 468-0112
PEC.0001553

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	FER	04/24/24

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

Digitally Signed by Scott A. Wirgau 2024-05-28

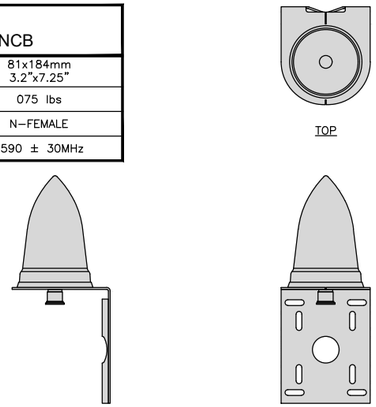
A&E PROJECT NUMBER
209144-14580426_D2

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

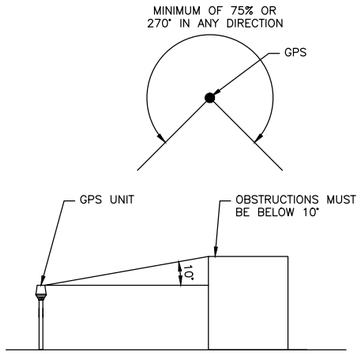
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

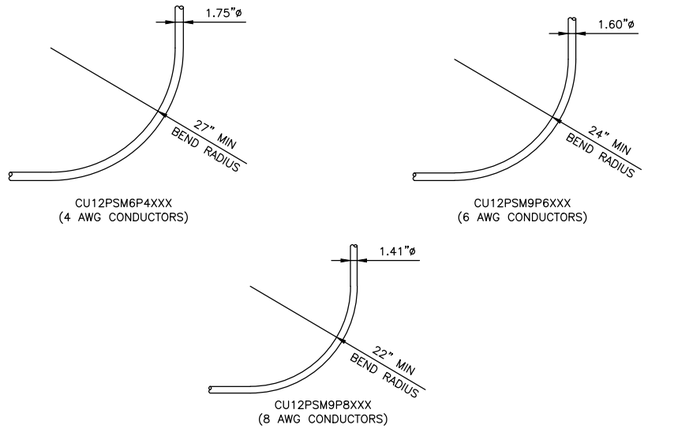
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2

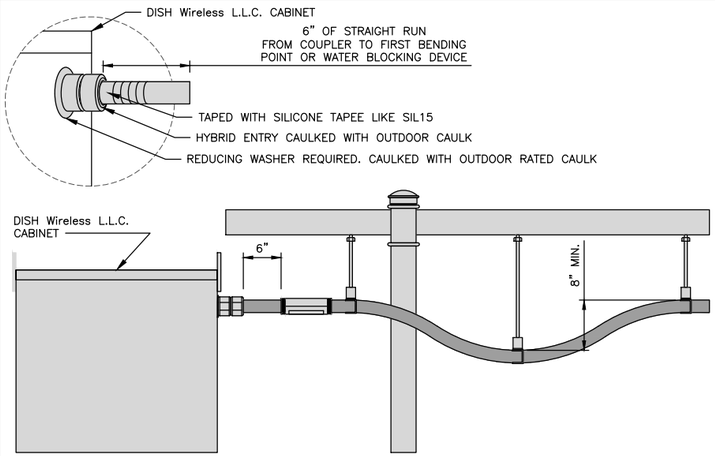


CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUSES | NO SCALE | 3

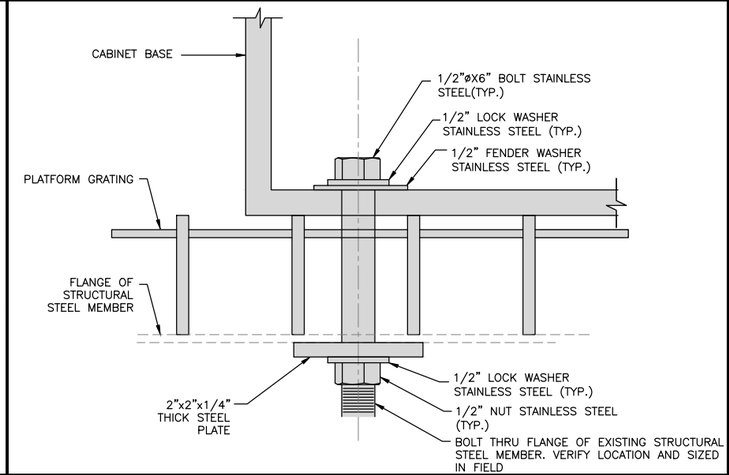
NOTE:

CONTRACTOR SHALL NOT LOOP EXCESS HYBRID OUTSIDE CABINET. EXCESS HYBRID LENGTH IS TO BE ADJUSTED BY STRIPPING JACKET AND SHIELDING AND TERMINATING DC CABLE TO LENGTH. FIBER EXCESS IS TO BE COILED IN FIBER SLACK TRAY INSIDE NETWORK CABINET.

HYBRID CABLE INSTALLATION NOTE | NO SCALE | 4

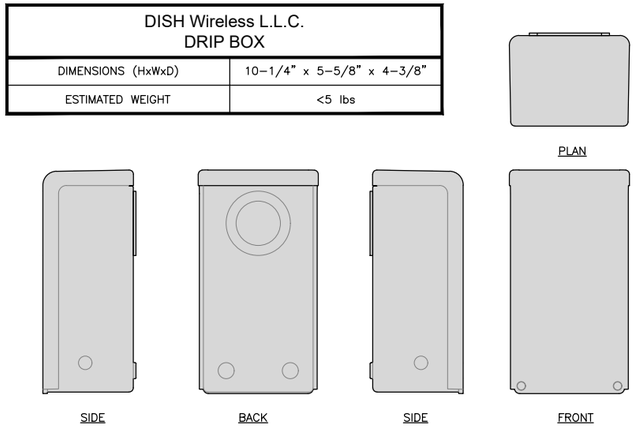


HYBRID CABLE INSTALLATION DETAIL | NO SCALE | 5



CABINET MOUNTING DETAIL | NO SCALE | 6

DISH Wireless L.L.C. DRIP BOX	
DIMENSIONS (HxWxD)	10-1/4" x 5-5/8" x 4-3/8"
ESTIMATED WEIGHT	<5 lbs



DRIP BOX DETAIL | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

Digitally Signed by Scott A. Wirgau 2024-05-28

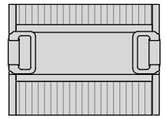
A&E PROJECT NUMBER
209144-14580426_D2

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

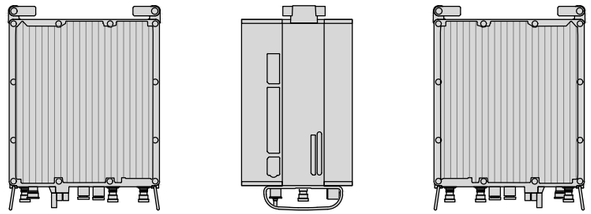
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

SAMSUNG - LOW BAND RF4450T-71A	
DIMENSIONS (HxWxD)	15"x16.5"x11"
WEIGHT	94.6 lbs
CONNECTOR TYPE	4.3–10 RF CONNECTOR
INPUT VOLTAGE	–48VDC (–36 to 58 VDC)



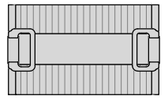
PLAN



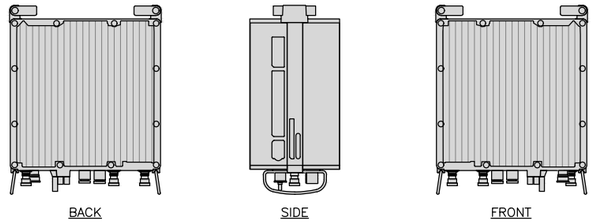
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

SAMSUNG - MID BAND RF4451D-70A	
DIMENSIONS (HxWxD)	15"x15"x8.9"
WEIGHT	61.3 lbs
CONNECTOR TYPE	4.3–10 RF CONNECTOR
INPUT VOLTAGE	–48VDC (–36 to 58 VDC)



PLAN

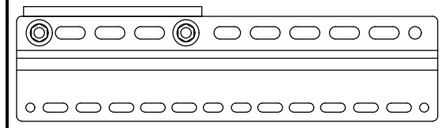


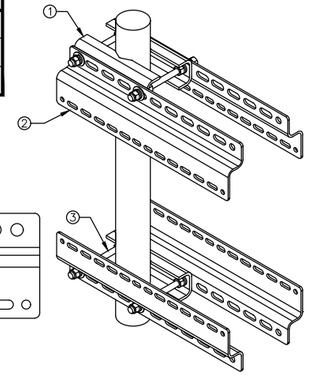
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z-BRACKET G10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1–13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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



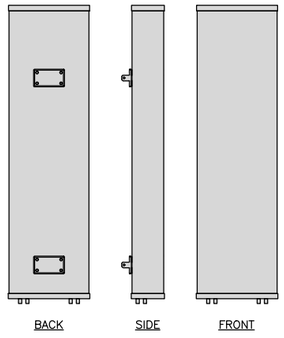


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

COMMSCOPE FFVV-65B-R2	
DIMENSIONS (HxWxD)(MM/IN)	1828x498x197 72"x19.6"x7.8"
RF CONNECTOR INTERFACE	4.3–10 FEMALE
WEIGHT	70.8 lbs
WEIGHT WITH BRACKETS	98.1 lbs

PLAN

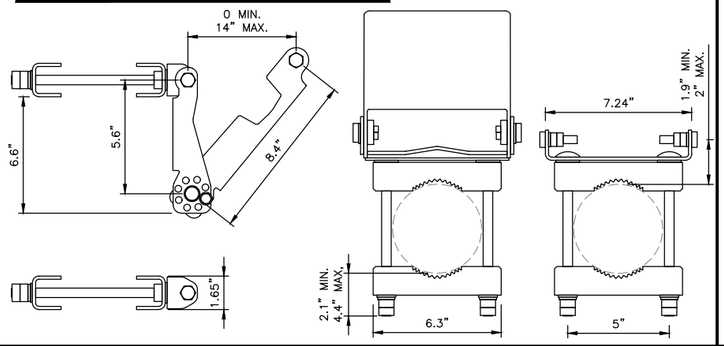


BACK SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

COMMSCOPE ANTENNA BRACKET BSAMNT-3	
DIAMETER COMPATIBILITY	2.362" – 4.528"
NET WEIGTH	13.669 lbs

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

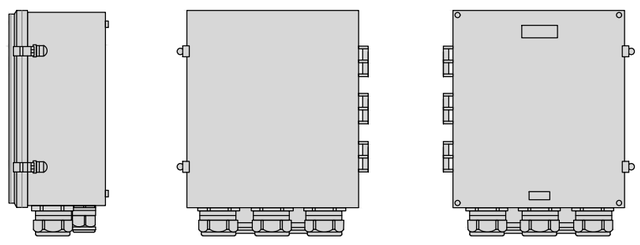


ANTENNA BRACKET DETAIL | NO SCALE | 5

NOT USED | NO SCALE | 6

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

PLAN

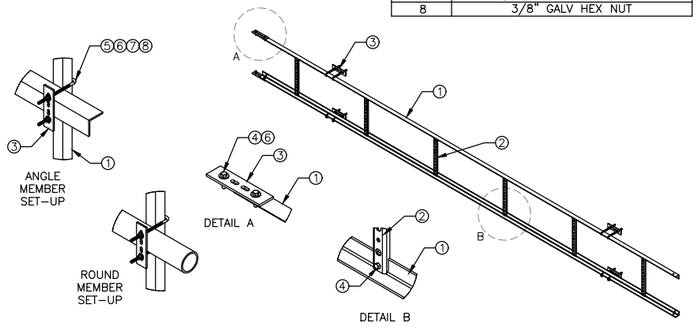


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

COMMSCOPE 20' CABLE LADDER 6 HOLE RUNGS	
DIMENSIONS (WxL)	20.5"x240"
WEIGHT	84.94 lbs

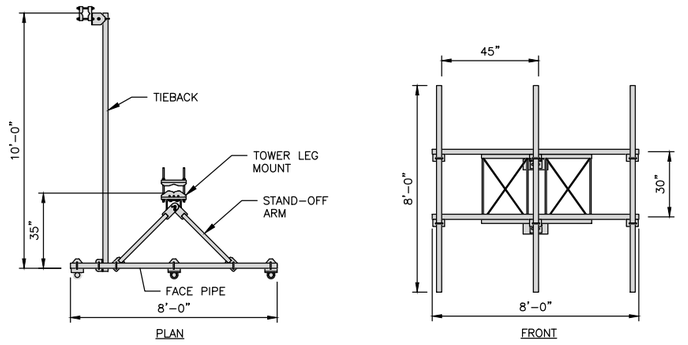
ITEM#	DESCRIPTION
1	20' ANGLE SIDE RAIL
2	20" LADDER RUNG
3	BACKING PLATE
4	3/8"x1–1/2" GALV BOLT KIT
5	8" GALV J–BOLT KIT
6	3/8" GALV FLAT WASHER
7	3/8" GALV LOCK WASHER
8	3/8" GALV HEX NUT



CABLE LADDER DETAIL | NO SCALE | 8

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

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



ANTENNA FRAME DETAIL | NO SCALE | 9

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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

Digitally Signed 2024-04-26

A&E PROJECT NUMBER
209144-14580426_D2

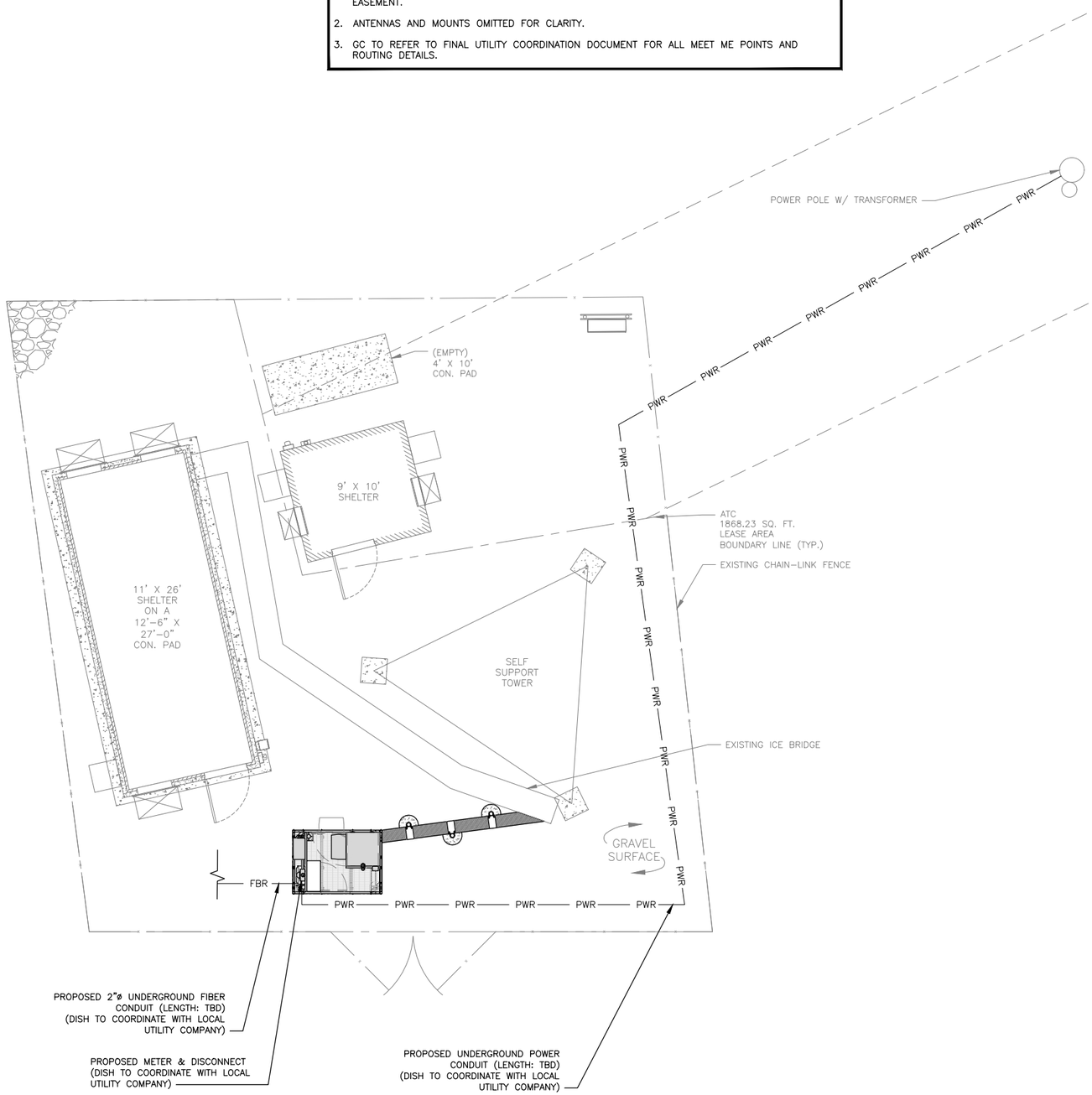
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

1. CONTRACTOR MUST VERIFY THAT THE PROPOSED UTILITY ROUTES ARE WITHIN AMERICAN TOWER'S EASEMENT.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. GC TO REFER TO FINAL UTILITY COORDINATION DOCUMENT FOR ALL MEET ME POINTS AND ROUTING DETAILS.



UTILITY ROUTE PLAN | 5' 0 5' 10' (1"=5') | 1

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

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

ELECTRICAL NOTES | NO SCALE | 2

AERIAL VIEW | NO SCALE | 3

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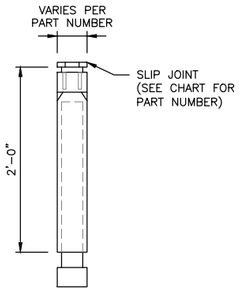
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

SHEET TITLE
ELECTRICAL/FIBER ROUTE PAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

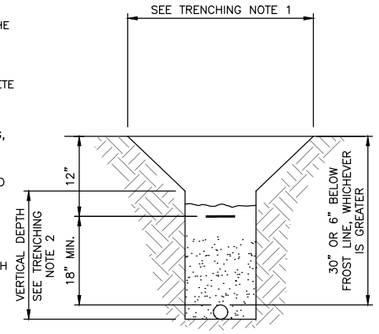


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

EXPANSION JOINT DETAIL | NO SCALE | 1

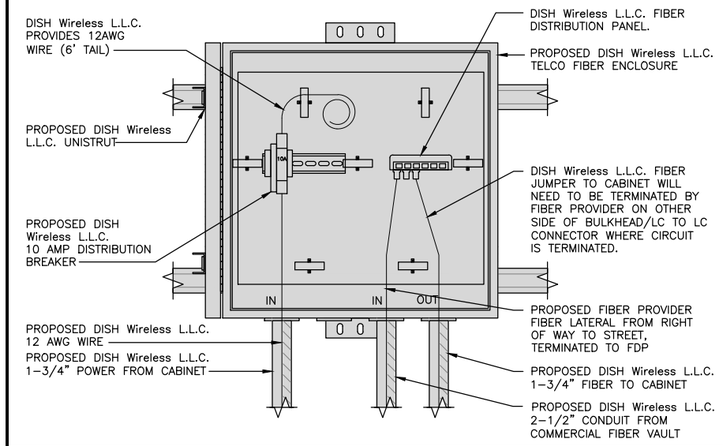
TRENCHING NOTES

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

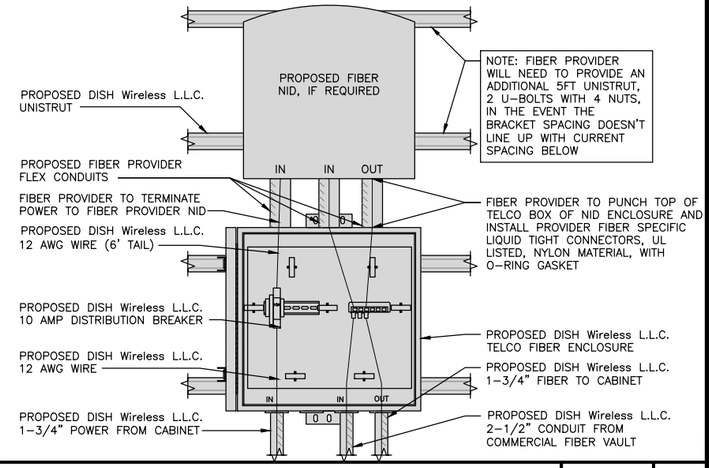


IMPORTANT: UNDERGROUND WARNING/MARKING TAPE SHALL BE BURIED AT A DEPTH OF 12 IN (30 CM) OR LESS BELOW GRADE. THE MINIMUM DISTANCE FROM THE TOP OF THE PIPELINE SHOULD BE 12 IN (30 CM). REQUIRED DEPTH OF PIPELINE SHALL BE 30" BELOW GRADE OR 6" BELOW FROSTLINE, WHICHEVER IS GREATER. EACH RUN OF UNDERGROUND WARNING/MARKING TAPE MUST BE OVERLAPPED BY A MINIMUM OF 20 FT (6 M) OR MUST BE JOINED.

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 | 6

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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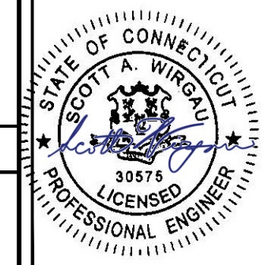

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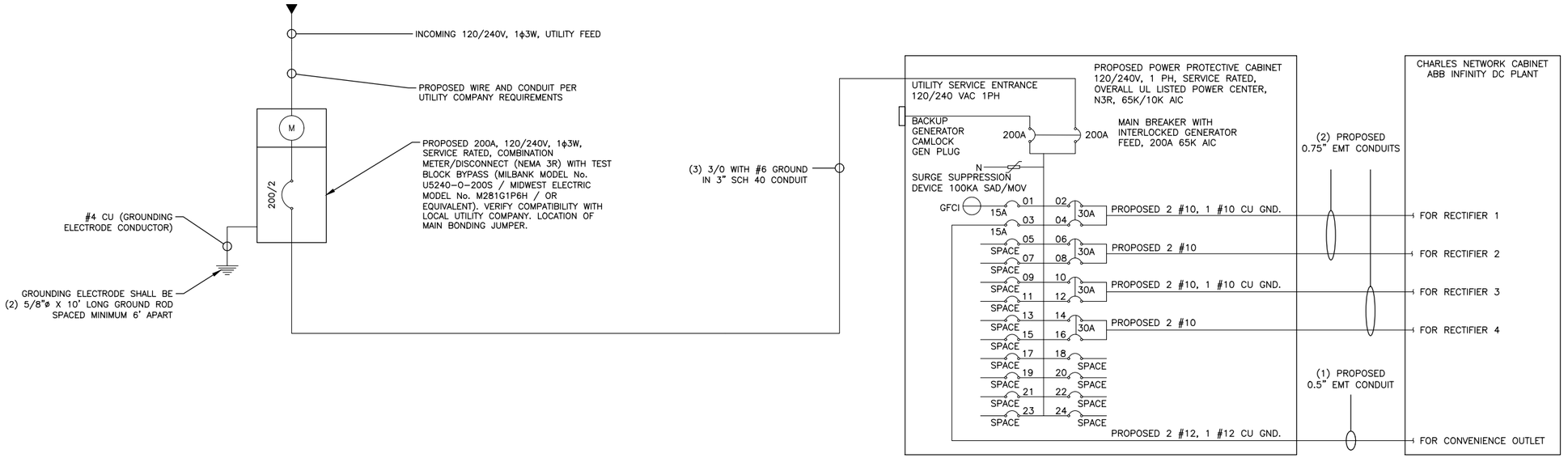
SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



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

BREAKERS REQUIRED:
(4) 30A, 2P BREAKER - SQUARE D P/N:QO230
(2) 15A, 1P BREAKER - SQUARE D P/N:QO115

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PANEL DESIGNATION: DISH
TYPE: LIGHTING & APPLIANCE
MOUNTING: SURFACE
ENCLOSURE: NEMA 3R
SYSTEM: 120/240V, 1Ø, 3W, 24 CKT
MAIN BREAKER (MB): 200A
MAIN BUS RATING: 200A
MIN. A.I.C. RATING: 65K
LOCATION: DISH LEASE EQUIPMENT AREA
PANEL NOTES: PROPOSED CHARLES

CONNECTED LOAD (kVA) A	CONNECTED LOAD (kVA) B	BRIEF DESCRIPTION	FEEDER OR BRANCH CIRCUIT BREAKER AMPS	BREAKER POLES	POLE NO.	CIRC. NOTES	CIRC. NOTES	POLE NO.	FEEDER OR BRANCH CIRCUIT BREAKER POLES	BREAKER AMPS	BRIEF DESCRIPTION	CONNECTED LOAD (kVA) A	CONNECTED LOAD (kVA) B
0.18		PPC GFCI	15	1	1	1		2				2.04	
	0.18	CABINET GFCI	15	1	3	1	1	4	2	30	RECTIFIER 1		2.04
0.00					5		1	6	2	30	RECTIFIER 2	2.04	
	0.00				7			8					2.04
0.00					9		1	10	2	30	RECTIFIER 3	2.04	
	0.00				11			12					2.04
0.00					13		2	14	2	30	RECTIFIER 4	0.00	
	0.00				15			16					0.00
0.00					17			18				0.00	
	0.00				19			20					0.00
0.00					21			22				0.00	
	0.00				23			24					0.00
0.2	0.2											6.1	6.1

A	B	TOTAL	
6.3	6.3	12.6	CONNECTED LOAD (kVA)
6.3	6.3	12.6	DEMAND LOAD (kVA)

DERATING FACTOR (80%) DEMANDLOAD SIZING: 66 AMPS

CIRCUIT NOTES
1) PROPOSED CIRCUIT, KNOWN LOAD FOR LOAD CAPACITY ASSESSMENT
2) RECTIFIERS INSTALLED AS N+1 SYSTEM

PANEL SCHEDULE

NO SCALE | 2

SERVICE/FEEDER CONDUCTOR LENGTH TABLE
(BASED ON INDUSTRY STANDARD 3% VOLTAGE DROP AND 5% NEC ALLOWABLE LIMIT)

	CONDUCTOR SIZES					
DESIGN LOADS	250 kcmil AL	300 kcmil AL	3/0 CU	4/0 CU	250 kcmil CU	300 kcmil CU
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (160A) (NEC ARTICLE 220 & 230 3% VOLTAGE DROP)	130'	155'	145'	180'	215'	255'
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (160A) (NEC ARTICLE 220 & 230 5% VOLTAGE DROP)	220'	260'	240'	300'	360'	425'

NOTES:
1. 250 MCM/KCMIL AL + #2 AL GRD MAY BE USED AS A REPLACEMENT FOR 3/0 CU + #6 CU GRD SERVICE CONDUCTOR FROM THE DISH Wireless L.L.C. FIRST MEANS OF DISCONNECT/UTILITY COMPANY MEET-ME POINT. REFER TO VALUES ABOVE TO LIMIT VOLTAGE DROP TO 3%.
2. ALUMINUM/COPPER CONDUCTORS MUST BE RATED 75°C.
3. ALUMINUM TO COPPER BUSS CONNECTIONS MUST MEET AND CONFORM TO ANSI AND BE UL LISTED. USE ANTI CORROSION CONDUCTIVE LUBRICANT ON CONNECTIONS
4. PPC MAIN DISCONNECT CIRCUIT BREAKERS ACCEPT #4 - 300KCMIL AL OR CU CONDUCTORS.
5. VOLTAGE DROP FOR SINGLE METER ENCLOSURE FED FROM TRANSFORMER WITH MULTIPLE CUSTOMERS IS CALCULATED FROM THE TRANSFORMER TO PPC. (SERVICE AND FEEDER CONDUCTOR LENGTH)
6. VOLTAGE DROP FOR MULTI-METER ENCLOSURE IS CALCULATED FROM THE METER TO PPC. (FEEDER CONDUCTOR LENGTH)
7. VOLTAGE DROP CALCULATIONS ARE BASED ON A POWER FACTOR OF 1, A LINE TO GROUND VOLTAGE PER CONDUCTOR OF 120V, NO CORRECTION FACTOR FOR AMBIENT TEMPERATURE OR ADJUSTMENT FACTOR FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A SINGLE CONDUCT OR RACEWAY. A POWER FACTOR LESS THAN 1 OR VOLTAGE LESS THAN 120 WILL RESULT IN SHORTER DISTANCES THAN SHOWN IN TABLE.

SERVICE/FEEDER CONDUCTOR LENGTH TABLE

NO SCALE | 3

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PEC.0001553

RFDS REV #: ---

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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

Digitally Signed 2024-05-28

A&E PROJECT NUMBER
209144-14580426_D2

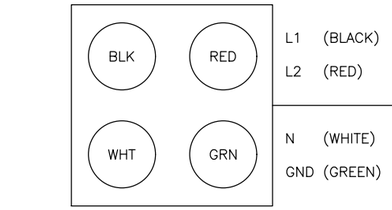
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

SHEET TITLE
ELECTRICAL ONE-LINE AND PANEL SCHEDULE

SHEET NUMBER
E-3

NOTES:

1. HAZARD OF ELECTRICAL SHOCK OR BURN. TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE.
2. 100 OR 200 AMP, 240 VOLTS, SINGLE PHASE ALTERNATING CURRENT CIRCUIT ONLY
3. GENERATOR SHORT CIRCUIT RATING: 10,000 / 20,000 AMPS RMS SYMMETRICAL, AMPERES AT 240 VOLTS
4. UTILITY SHORT CIRCUIT RATING: 65,000 AMPS RMS SYMMETRICAL, AMPERES AT 240 VOLTS
5. SUITABLE FOR USE AS SERVICE EQUIPMENT
6. SUITABLE FOR USE IN ACCORDANCE WITH ARTICLE 702 OF THE NATIONAL ELECTRIC CODE ANSI/NFPA 70
7. BONDED NEUTRAL WHEN INSTALLED AS SHOWN IN WIRING DIAGRAM
8. RAIN PROOF TYPE 3R
9. USE CU–AL WIRE 60–75 °C
10. EQUIPPED WITH SLIDE BAR MECHANICAL INTERLOCK
11. INTERLOCK PROHIBITS BOTH POWER SOURCES FROM BEING IN THE ON POSITION SIMULTANEOUSLY
12. EQUIPPED WITH SQUARE D BREAKERS OR ALTERNATIVE MANUFACTURER EQUIVALENT
13. WHEN REPLACE LOAD CENTER BREAKERS, USE ONLY SQUARE D (QO TYPE) OF THE SAME RATING OR EQUIVALENT
14. WHEN RESETTING BREAKERS TURN TO OFF POSITION, THEN TO ON POSITION
15. WARNING: MAKE CONTINUITY CHECK WITH OHM METER TO VERIFY CORRECT PHASING AND GROUNDING CONNECTIONS BEFORE POWER UP
16. VERIFY PIN OUT CONFIGURATION OF GENERATOR PRIOR TO USE.
17. RISK OF ELECTRIC SHOCK, BOTH ENDS OF DISCONNECTING MEANS MAY BE ENERGIZED. TEST BEFORE SERVICING
18. THIS SWITCH BOARD MAY CONTAIN A TAP ON THE SERVICE SIDE OF THE MAIN POWER DISCONNECT FOR REMOTE MONITORING OF UTILITY/STANDBY POWER
19. THE NORMAL AC POWER MONITORING CIRCUIT MUST UTILIZE A DISCONNECTING MEANS WITH A SHORT CIRCUIT RATING GREATER THAN THE AVAILABLE INTERRUPTING CURRENT
20. A RED PUSH–TO–TRIP BUTTON PROVIDES A MEANS TO MECHANICALLY TRIP THE CIRCUIT BREAKER. THIS ACTION EXERCISES THE TRIPPING PORTION OF THE MECHANISM AND ALLOWS MAINTENANCE CHECK ON THE BREAKER



CAM–LOCK GENERATOR RECEPTACLE

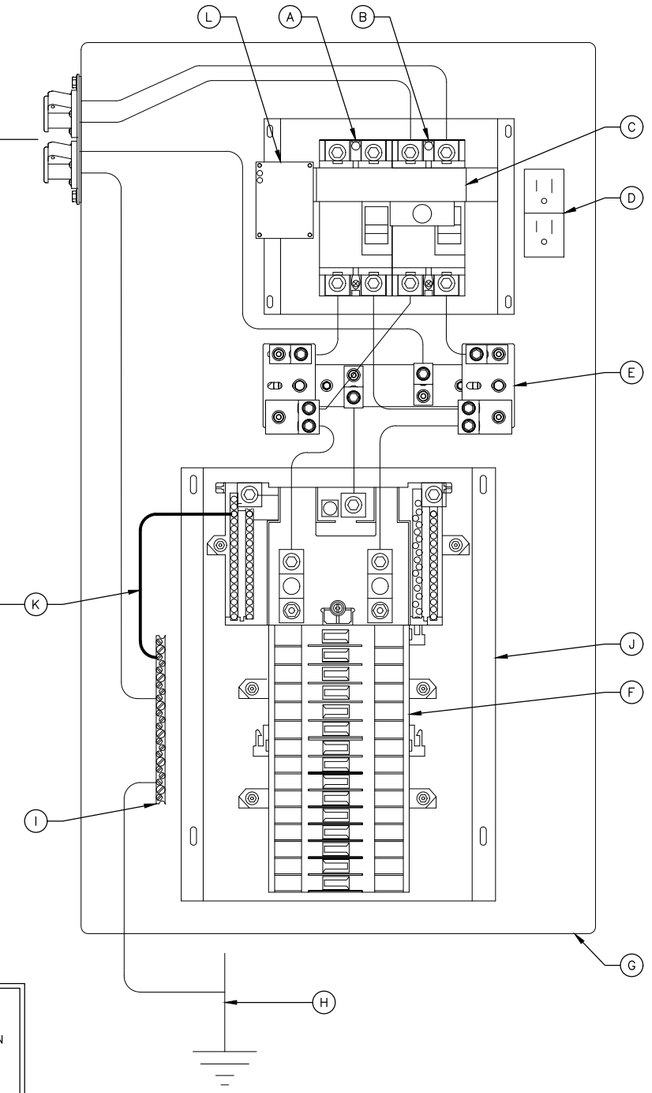
(AS VIEWED FROM OUTSIDE OF ENCLOSURE)
USE LINE UP PIN AS REFERENCE

REFER TO RECEPTACLE FOR MODEL NUMBER

DANGER:

HAZARD OF ELECTRICAL SHOCK OR BURN. TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE.

RAYCAP CUSTOMER SERVICE
(800) 890–2569



SUITABLE FOR USE AS SERVICE EQUIPMENT

ELECTRICAL RATING 120/240 VOLTS SINGLE PHASE 60 Hz	
NORMAL AC POWER 100A□ 200A□	GENERATOR POWER 100A□ 200A□

CAUTION:

- THE OPERATING HANDLE ASSUMES A CENTER POSITION WHEN THE CIRCUIT BREAKER IS TRIPPED
- THE BREAKER CAN BE RESET BY OPERATING THE HANDLE TO THE EXTREME OFF POSITION AND THEN TO ON
- SLIDE BAR MECHANICAL INTERLOCK TRANSFERS NORMAL AC POWER TO GENERATOR POWER. THE SLIDE BAR MECHANICAL INTERLOCK PROHIBITS BOTH POWER SOURCES FROM BEING IN THE ON POSITION SIMULTANEOUSLY
- TO TRANSFER FROM ON POWER SOURCE TO THE OTHER POWER SOURCE, SWITCH ON BREAKER TO THE OFF POSITION, MOVE THE SLIDE BAR TO THE OTHER SIDE AND THE SWITCH THE OTHER BREAKER TO THE ON POSITION

THIS SWITCHBOARD UTILITY MAN BREAKER IS SUITABLE FOR USE ON CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 65,000 RMS SYMMETRICAL AMPS, 240 VOLTS MAXIMUM.

200A UTILITY FEED

LOAD SIZE CIRCUIT BREAKERS				LINE SIDE MAIN CIRCUIT BREAKER					
MFR.	TYPE	POLES	AMP RATING	MFR.	TYPE	AMP RATING	SYMMET. AMP RMS	VOLTS AC	PHASES
SQ–D	QO	1 2	15–100A	SQ–D	QGL	200A	65,000A	240V	2

THIS SWITCHBOARD GENERATOR POWER CIRCUIT IS SUITABLE FOR USE ON A CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 10,000 RMS SYMMETRICAL AMPS, 240 VOLTS MAXIMUM.

200A GENERATOR FEED

LOAD SIZE CIRCUIT BREAKERS				LINE SIDE MAIN CIRCUIT BREAKER					
MFR.	TYPE	POLES	AMP RATING	MFR.	TYPE	AMP RATING	SYMMET. AMP RMS	VOLTS AC	PHASES
SQ–D	QO	1 2	15–100A	SQ–D	QGL	200A	65,000A	240V	2

MAXIMUM CONTINUOUS LOADS NOT TO EXCEED 80% OF THE OVER–CURRENT PROTECTIVE DEVICE (CIRCUIT BREAKER AND FUSES) RATINGS EMPLOYED IN OTHER THAN MOTOR CIRCUITS, EXCEPT FOR THOSE CIRCUITS EMPLOYING CIRCUIT BREAKERS MARKED AS SUITABLE FOR CONTINUOUS OPERATION AT 100% OF THEIR RATINGS. CONDUCTORS ARE NOT TO ENTER OR LEAVE THE ENCLOSURE DIRECTLY OPPOSITE THE WIRING TERMINAL

NEUTRAL–TO–GROUND NOTES:

- WHEN THE PPC IS USED AS THE SERVICE ENTRANCE DEVICE, THE NEUTRAL TO GROUND BOND NEEDS TO BE ESTABLISHED IN THE PPC.
- WHEN THE SERVICE ENTRY DEVICE IS A MULTI–METER CENTER OR A PRE–PPC DISCONNECT IS USED AND HAS "NEUTRAL TO GROUND" ACCOMMODATIONS, THE NEUTRAL TO GROUND WIRE IN THE PPC IS NOT REQUIRED.
- THE GREEN #6 WIRE IS PROVIDED WITH THE PPC CABINET AS A SEPARATE UNINSTALLED PART TO BE INSTALLED BY CONTRACTOR IF NEEDED.

NEUTRAL–TO–GROUND CONDING JUMPER

INSTALLTION INSTRUCTIONS:

- IF REQUIRED, THE N–G BONDING KIT SHOULD BE INSTALLED BY QUALIFIED PERSONNEL
- ENSURE THE MAIN BREAKERS ARE OFF
- USE THE GREEN #6 WIRE PROVIDED WITH THE PPC
- INSTALL THE JUMPER AS SHOWN IN THE WIRING DIAGRAM
- TIGHTEN TERMINALS TO TORQUE VALUE SHOWN IN TORQUE TABLE
- PLACE THE PROVIDED "SERVICE" LABEL IN THE SPACE BELOW THE WORDS "AC POWER" LOCATED ABODE THE MAIN CIRCUIT BREAKER IN THE UPPER PORTION OF THE DEAD FRONT

LEGEND:

A. UTILITY DISCONNECT (SERVICE RATED)
B. GENERATOR DISCONNECT
C. MAIN DISCONNECT CIRCUIT BREAKERS W/ MECHANICAL INTERLOCK
D. GFCI RECEPTACLE 15A
E. SPD STRIKESORB KELVIN CONNECTION (TYP OF 2)
F. BREAKER PANEL – 24 POSITION (CONTRACTOR TO ADD APPROPRIATE BREAKER PER ONE–LINE DIAGRAM PANEL SCHEDULE)
G. POWER PROTECTION CABINET (PPC) (FULLY ASSEMBLED FROM MANUFACTURER)
H. CONTRACTOR TO ATTACH TO UNDERGROUND GROUNDING HALO OR INSTALL GROUND ROD WHEN REQUIRED BY CODE
I. GROUND BAR
J. SQUARE D Q SERIES LOAD CENTER
K. NETURAL–TO–GROUND (N–G) BONDING JUMPER (CONTRACTOR INSTALLED IF REQUIRED)
L. OPTIONAL SPD STATUS INDICATORS

RAYCAP POWER PROTECTION CABINET - RDIAC-2465-P-240-MTS (NEUTRAL-TO-GROUND)

NO SCALE | 1

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FOR REFERENCE ONLY

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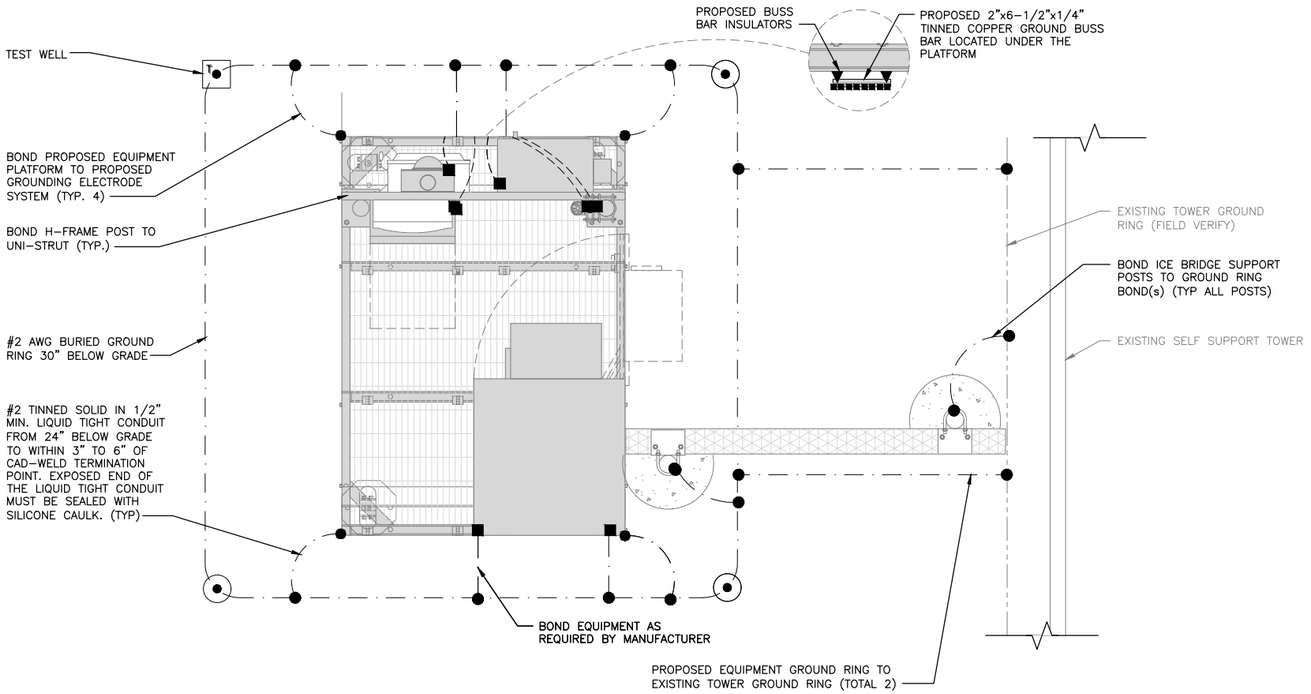
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

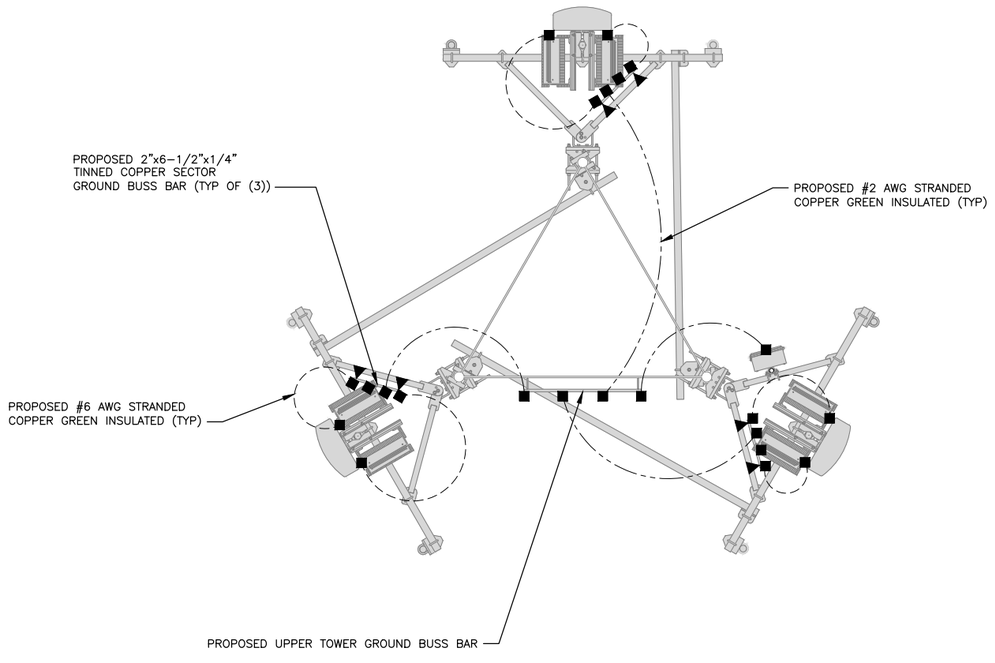
SHEET TITLE
PPC NEUTRAL-TO-GROUND SCHEMATIC

SHEET NUMBER
E-4



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

UPPER TOWER BUSSBAR SHALL BE INSTALLED WITHOUT INSULATORS

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
GROUND BUS BAR
GROUND ROD
TEST GROUND ROD WITH INSPECTION SLEEVE
#6 AWG STRANDED & INSULATED
#2 AWG SOLID COPPER TINNED
#2 AWG STRANDED & INSULATED
BUSS BAR INSULATOR

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

(E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 5/8" 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 TOWER STEEL.

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

GROUNDING KEY NOTES

NO SCALE | 3

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STATE OF CONNECTICUT
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Digitally Signed 2024-05-28

A&E PROJECT NUMBER
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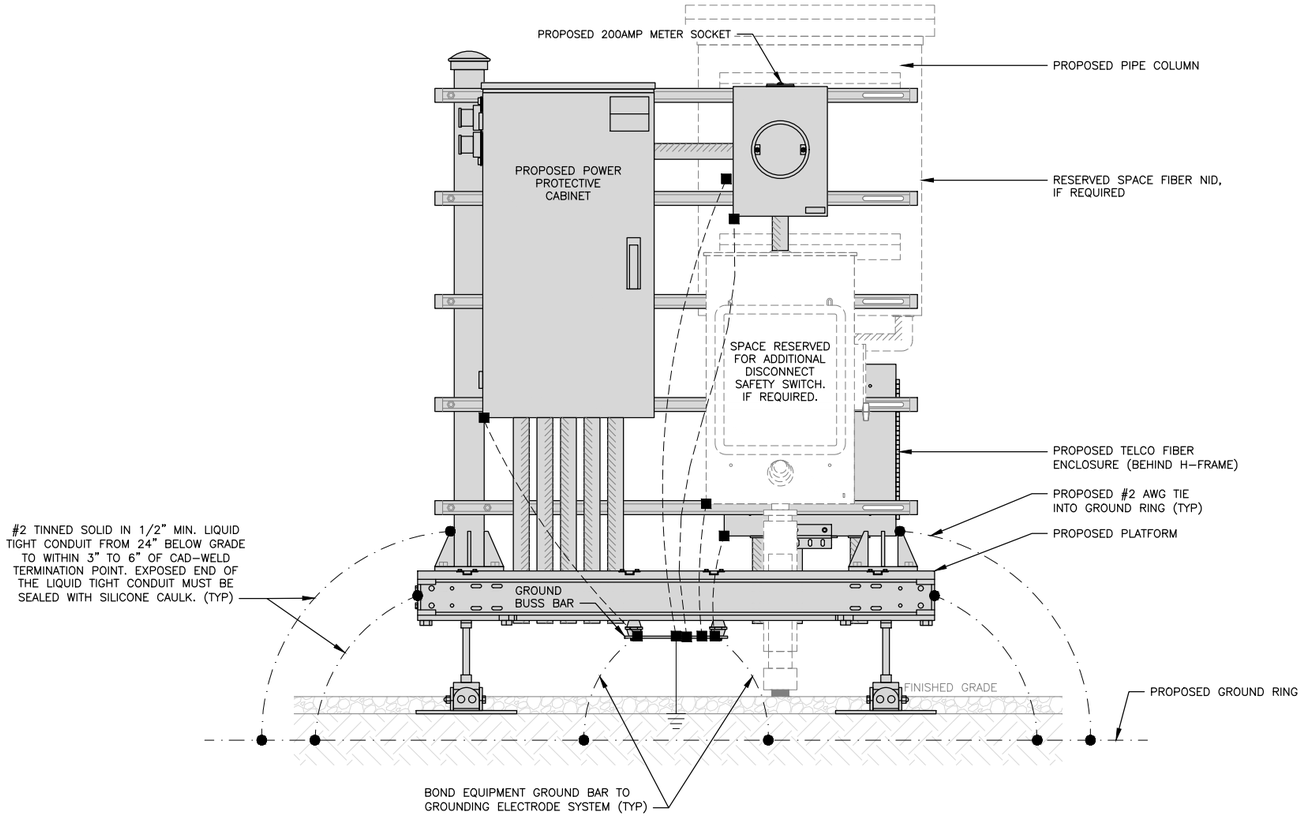
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

SHEET TITLE
GROUNDING PLAN AND NOTES

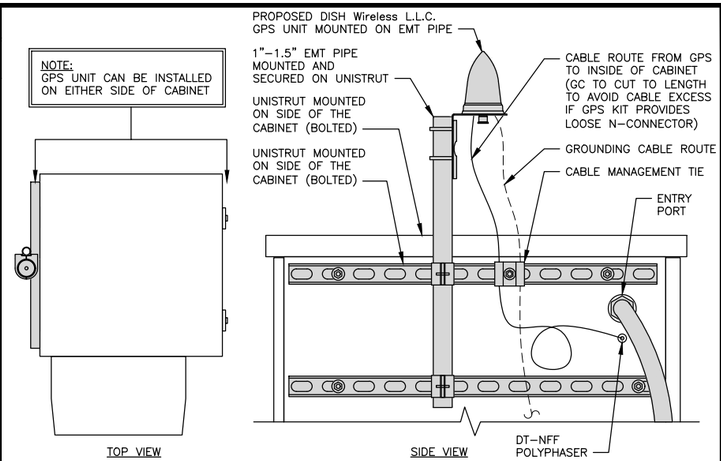
SHEET NUMBER
G-1

NOTES

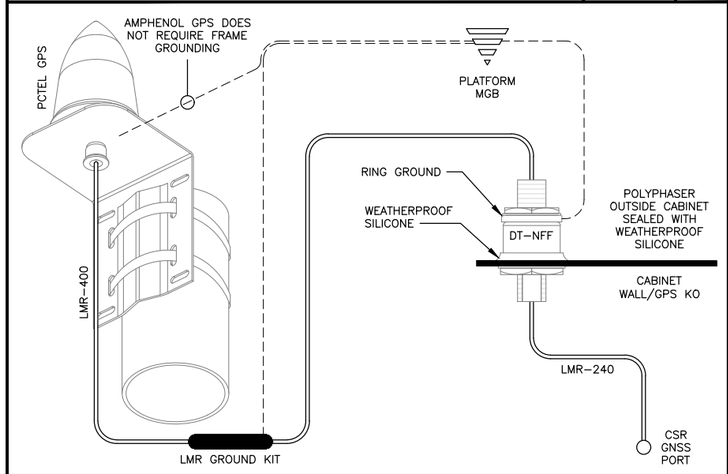
EQUIPMENT CABINET OMITTED FOR CLARITY



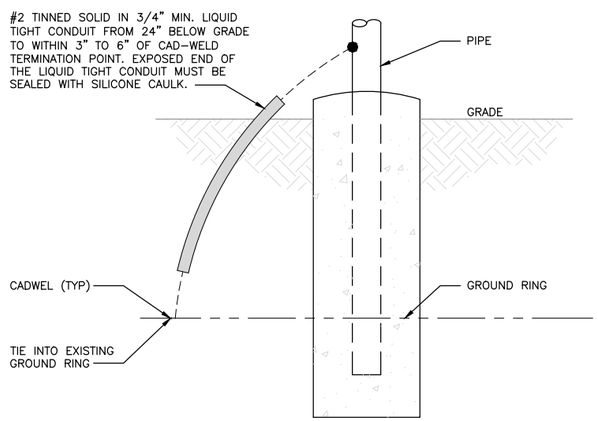
H-FRAME GROUNDING DETAIL | NO SCALE | 1



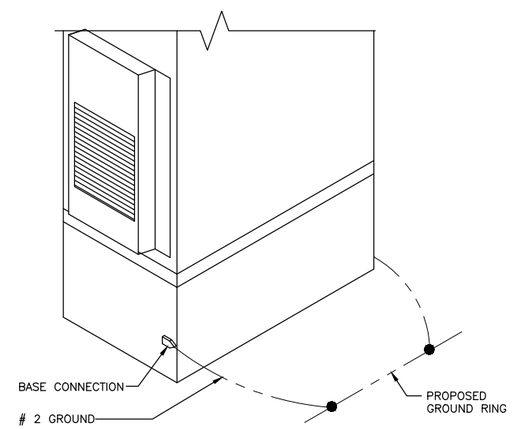
TYPICAL PCTEL GPS UNIT GROUNDING | NO SCALE | 2



TYPICAL PCTEL GPS UNIT GROUNDING DIAGRAM | NO SCALE | 3



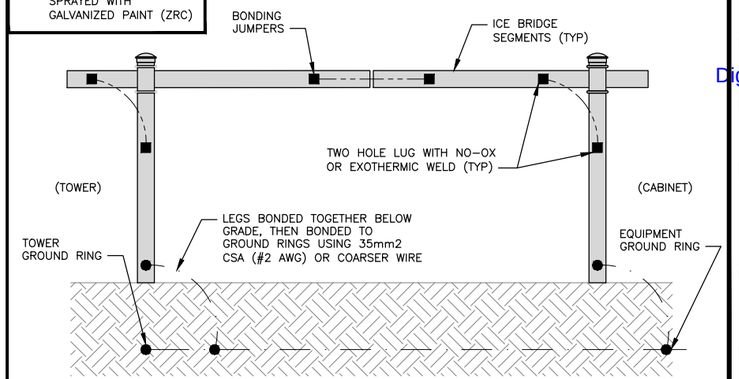
TRANSITIONING GROUND DETAIL | NO SCALE | 4



OUTDOOR CABINET GROUNDING | NO SCALE | 5

NOTES

- DRILLED HOLES TO BE SPRAYED WITH GALVANIZED PAINT (ZRC)



ICE BRIDGE GROUNDING DETAIL | NO SCALE | 6

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Digitally Signed 2024-05-28

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DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
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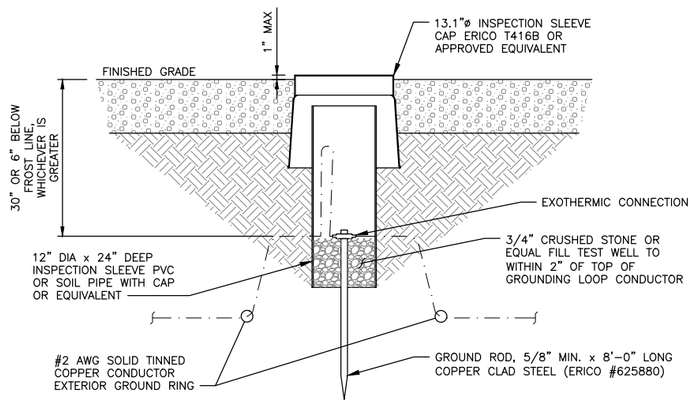
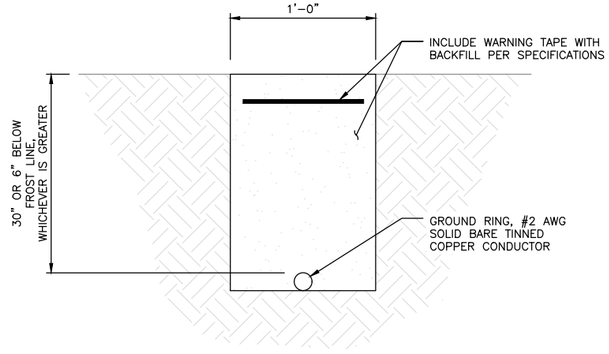
SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-2



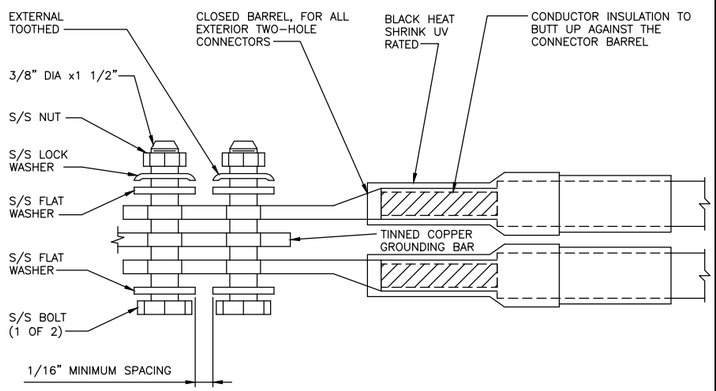
TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE | NO SCALE | 1



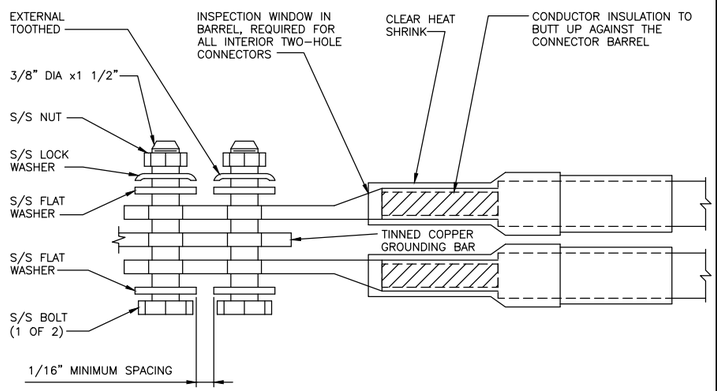
TYPICAL GROUND RING TRENCH | NO SCALE | 2

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).

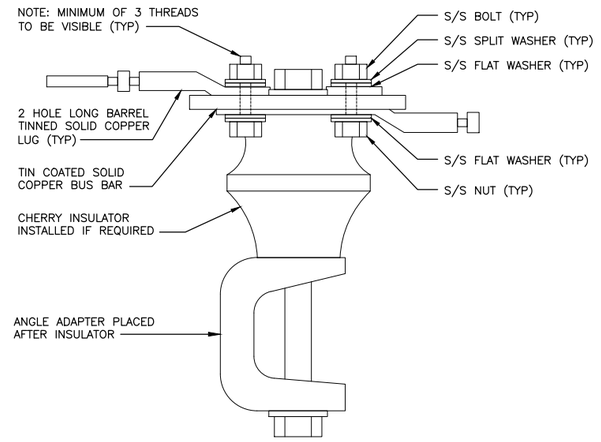
TYPICAL GROUNDING NOTES | NO SCALE | 3



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 4



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 5



LUG DETAIL | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

dish wireless.
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PHONE: (919) 468-0112
PEC.0001553

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	FER	04/24/24

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

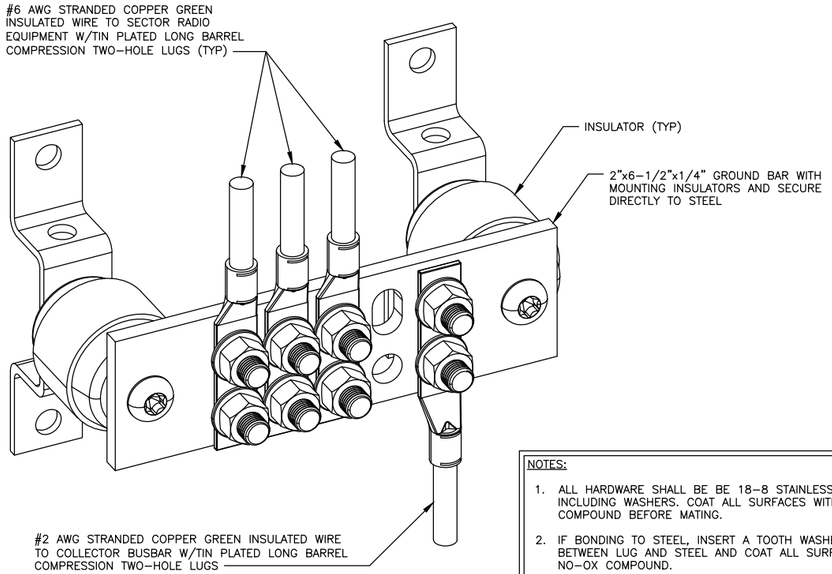
Digitally Signed 2024-05-28

A&E PROJECT NUMBER
209144-14580426_D2

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

SHEET TITLE
GROUNDING DETAILS

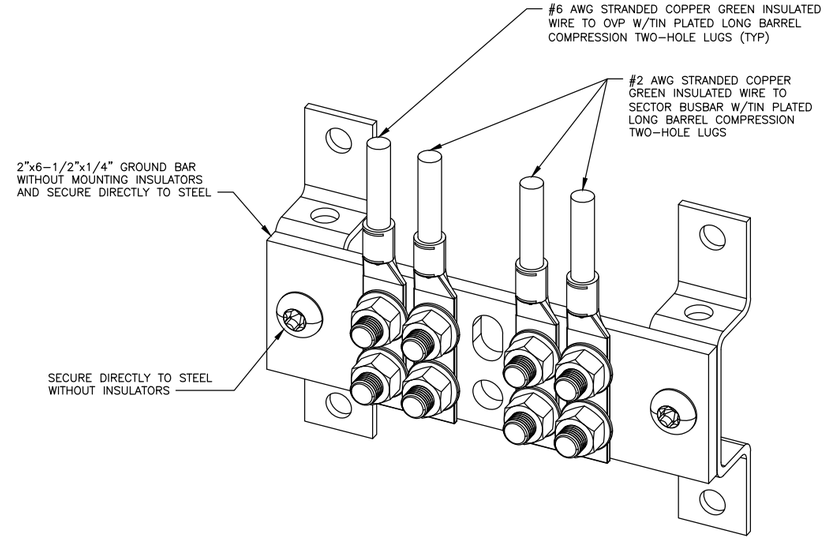
SHEET NUMBER
G-3



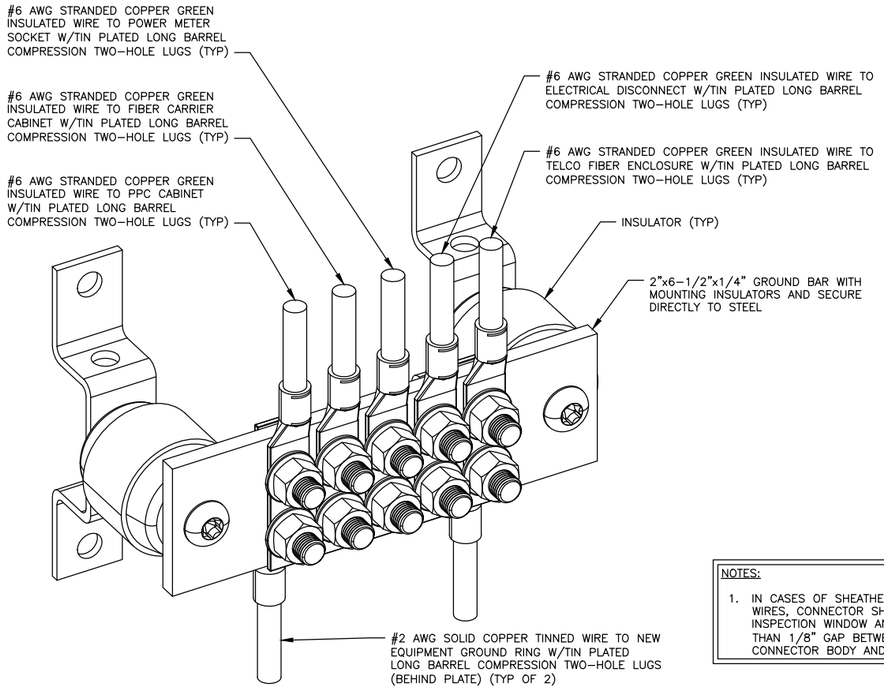
NOTES:

1. ALL HARDWARE SHALL BE BE 18-8 STAINLESS STEEL INCLUDING WASHERS. COAT ALL SURFACES WITH NO-OX COMPOUND BEFORE MATING.
2. IF BONDING TO STEEL, INSERT A TOOTH WASHER BETWEEN LUG AND STEEL AND COAT ALL SURFACE WITH NO-OX COMPOUND.
3. USE A THIN COAT OF NO-OX OR UL LISTED ANTIOXIDANT COMPOUND BETWEEN GROUNDING CONNECTIONS.

SECTOR GROUND BUSBAR DETAIL | NO SCALE | 1



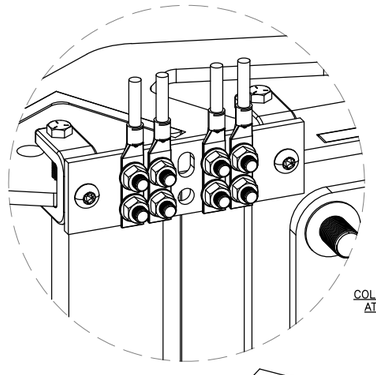
UPPER TOWER GROUND BUSBAR DETAIL | NO SCALE | 2



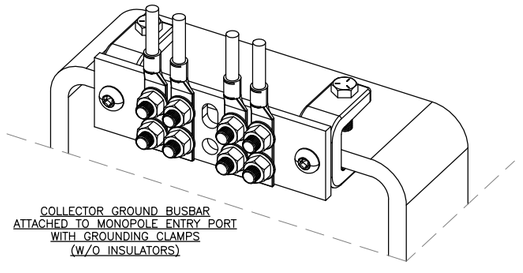
NOTES:

1. IN CASES OF SHEATHED STRANDED WIRES, CONNECTOR SHALL HAVE INSPECTION WINDOW AND NO MORE THAN 1/8" GAP BETWEEN CONNECTOR BODY AND SHEATH.

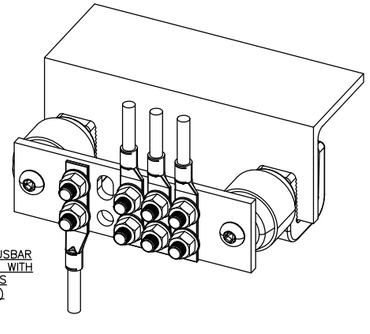
EQUIPMENT GROUND BUSBAR DETAIL | NO SCALE | 3



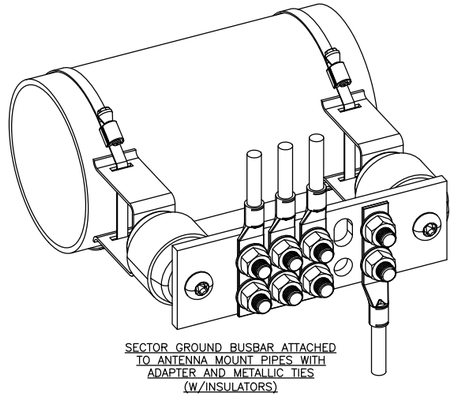
COLLECTOR GROUND BUSBAR ATTACHED TO COLLAR OR SECTOR MOUNT (W/O INSULATORS)



COLLECTOR GROUND BUSBAR ATTACHED TO MONOPOLE ENTRY PORT WITH GROUNDING CLAMPS (W/O INSULATORS)



SECTOR GROUND BUSBAR ATTACHED TO METAL WITH ANGLE ADAPTERS (W/INSULATORS)



SECTOR GROUND BUSBAR ATTACHED TO ANTENNA MOUNT PIPES WITH ADAPTER AND METALLIC TIES (W/INSULATORS)

GROUND BUSBAR ATTACHMENT OPTIONS | NO SCALE | 4

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Digitally Signed: 2024-05-28

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SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-4

HYBRID/DISCREET CABLES — 3/4" TAPE WIDTHS WITH 3/4" SPACING

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

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

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

MID-BAND RRH
(AWS BANDS N66+N70)

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

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

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

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

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3 COAX#1 (ALPHA)	CANISTER COAX #2 (ALPHA)
RED	RED	RED	RED
BLUE	BLUE		RED
GREEN	GREEN		
ORANGE	YELLOW		
PURPLE			

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY.

RED	RED	BLUE	BLUE	GREEN	GREEN
ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY

LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE

RET MOTORS AT ANTENNAS

RET CONTROL IS HANDLED BY THE MID-BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA.

SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.

ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN	ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN	ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN
RED	RED	BLUE	BLUE	GREEN	GREEN
PURPLE	ORANGE	PURPLE	ORANGE	PURPLE	ORANGE

MICROWAVE RADIO LINKS

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

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

FORWARD AZIMUTH OF 0–120 DEGREES		FORWARD AZIMUTH OF 120–240 DEGREES		FORWARD AZIMUTH OF 240–359 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	BLUE	GREEN	GREEN
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
	RED		BLUE		GREEN
	WHITE		WHITE		WHITE

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

AWS (N66+N70+H-BLOCK): PURPLE

CBRS TECH (3 GHz): YELLOW

NEGATIVE SLANT PORT ON ANT/RRH: WHITE

ALPHA SECTOR: RED

BETA SECTOR: BLUE

GAMMA SECTOR: GREEN

COLOR IDENTIFIER		2
NOT USED		3
RF CABLE COLOR CODES		1
NOT USED		4

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SHEET TITLE
RF CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

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

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — x — x — x — x

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

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

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

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

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

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

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

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

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

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107 STICKNEY HILL ROAD
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SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SIGN TYPES		
TYPE	COLOR	COLOR CODE PURPOSE
INFORMATION	GREEN	**"INFORMATIONAL SIGN"** TO NOTIFY OTHERS OF SITE OWNERSHIP & CONTACT NUMBER AND POTENTIAL RF EXPOSURE.
NOTICE	BLUE	**"NOTICE BEYOND THIS POINT"** RF FIELDS BEYOND THIS POINT MAY EXCEED THE FCC GENERAL PUBLIC EXPOSURE LIMIT. OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR–1.1307(b)
CAUTION	YELLOW	**"CAUTION BEYOND THIS POINT"** RF FIELDS BEYOND THIS POINT MAY EXCEED THE FCC GENERAL PUBLIC EXPOSURE LIMIT. OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR–1.1307(b)
WARNING	ORANGE/RED	**"WARNING BEYOND THIS POINT"** RF FIELDS AT THIS SITE EXCEED FCC RULES FOR HUMAN EXPOSURE. FAILURE TO OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS COULD RESULT IN SERIOUS INJURY. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR–1.1307(b)

SIGN PLACEMENT:

- RF SIGNAGE PLACEMENT SHALL FOLLOW THE RECOMMENDATIONS OF AN EXISTING EME REPORT, CREATED BY A THIRD PARTY PREVIOUSLY AUTHORIZED BY DISH Wireless L.L.C.
- INFORMATION SIGN (GREEN) SHALL BE LOCATED ON EXISTING DISH Wireless L.L.C EQUIPMENT.
  A) IF THE INFORMATION SIGN IS A STICKER, IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C EQUIPMENT CABINET.
  B) IF THE INFORMATION SIGH IS A METAL SIGN IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C H–FRAME WITH A SECURE ATTACH METHOD.
- IF EME REPORT IS NOT AVAILABLE AT THE TIME OF CREATION OF CONSTRUCTION DOCUMENTS; PLEASE CONTACT DISH Wireless L.L.C. CONSTRUCTION MANAGER FOR FURTHER INSTRUCTION ON HOW TO PROCEED.

NOTES:

1. FOR DISH Wireless L.L.C. LOGO, SEE DISH Wireless L.L.C. DESIGN SPECIFICATIONS (PROVIDED BY DISH Wireless L.L.C.)
2. SITE ID SHALL BE APPLIED TO SIGNS USING "LASER ENGRAVING" OR ANY OTHER WEATHER RESISTANT METHOD (DISH Wireless L.L.C. APPROVAL REQUIRED)
3. TEXT FOR SIGNAGE SHALL INDICATE CORRECT SITE NAME AND NUMBER AS PER DISH Wireless L.L.C. CONSTRUCTION MANAGER RECOMMENDATIONS.
4. CABINET/SHELTER MOUNTING APPLICATION REQUIRES ANOTHER PLATE APPLIED TO THE FACE OF THE CABINET WITH WATER PROOF POLYURETHANE ADHESIVE
5. ALL SIGNS WILL BE SECURED WITH EITHER STAINLESS STEEL ZIP TIES OR STAINLESS STEEL TECH SCREWS
6. ALL SIGNS TO BE 8.5"x11" AND MADE WITH 0.04" OF ALUMINUM MATERIAL

INFORMATION

This is an access point to an area with transmitting antennas.

Obey all signs and barriers beyond this point.
Call the DISH Wireless L.L.C. NOC at 1-866-624-6874

Site ID: _____

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE

Transmitting Antenna(s)

Radio frequency fields beyond this point MAY *EXCEED* the FCC Occupational exposure limit.

Obey all posted signs and site guidelines for working in radio frequency environments.

Call the DISH Wireless L.L.C. NOC at 1-866-624-6874 prior to working beyond this point.

Site ID: _____

dish

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CAUTION

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RF SIGNAGE

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PEC.0001553

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	FER	04/24/24

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

Digitally Signed 2024-05-28

A&E PROJECT NUMBER
209144-14580426_D2

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

SHEET TITLE
RF SIGNAGE

SHEET NUMBER
GN-2

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.
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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.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."

2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:

A. ASTM A-572, GRADE 50 – ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE

B. ASTM A-36 – ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.

C. ASTM A-500, GRADE B – HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)

D. ASTM A-325, TYPE SC OR N – ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS

E. ASTM F-1554 07 – ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE

3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.

4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.

6. CONNECTIONS:

A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.

B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.

C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.

D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.

E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.

F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.

G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING ½" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.

H. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.

I. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND DISH NETWORK PROJECT MANAGER IN WRITING

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

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
1 FENTON MAIN
SUITE 300
CARY, NC 27511
PHONE: (919) 468-0112
PEC.0001553

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	FER	04/24/24

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

Digitally Signed 2024-05-28

A&E PROJECT NUMBER
209144-14580426_D2

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00933B
107 STICKNEY HILL ROAD
UNION,CT 06076

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-5

Mount Analysis Report

ATC Asset Name	:	Union 2
ATC Asset Number	:	209144
Engineering Number	:	14580426_C8_06
Mount Elevation	:	97 ft
Proposed Carrier	:	Dish Wireless L.L.C.
Carrier Site Name	:	BOBOS00933B
Carrier Site Number	:	BOBOS00933B
Site Location	:	107 Stickney Hill Road Union, CT 6076-4624 41.985378, -72.192167
County	:	Tolland
Date	:	May 17, 2024
Max Usage	:	41%
Analysis Result	:	Contingent Pass

Prepared By:
Zach Stoll
Structural Engineer I

Esha Modi

Digitally signed by Esha Modi
Date: 2024.05.21 17:42:08 -04'00'

COA: PEC.0001553

Introduction

The purpose of this report is to summarize results of the mount analysis performed for Dish Wireless L.L.C. at 97 ft.

Supporting Documents

Specifications Sheet:	Commscope MTC3975083, dated March 17, 2021
Construction Drawings:	Dish Project #209144-14580426_D2, dated April 24, 2024
Radio Frequency Data Sheet:	RFDS ID #BOBOS00933B, dated February 6, 2024
Reference Photos:	Site photos from 2021

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	118 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.50" radial ice concurrent
Codes:	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Hill
Crest Height (H):	239 ft
Crest Length (L):	2118 ft
Spectral Response:	Ss = 0.177, S1 = 0.055
Site Class:	D - Stiff Soil - Default
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

***Live Load(s) reduction is confirmed to either not govern or not be applicable**

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Analysis based on new installation of Commscope MTC3975083 Sector Frame(s).
- Install P2.5 (2.875" x 96") in mount pipe position 1 through 3. Connect with Site Pro 1 SCX7-U (or approved equivalent) crossover plate kits.
- Install P2 (2.375" x 60") in mount pipe position MA1. Connect with Site Pro 1 SCX7-U (or approved equivalent) crossover plate kits.
- No structural failures were addressed with the noted contingencies. Contingencies address Carrier's antenna spacing requirements.

If you have any questions or require additional information, please reach out to your American Tower contact. If you do not have an American Tower contact and have an Engineering question, please contact MountAnalysis@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

A.T. Engineering Service, PLLC - 1 Fenton Main, Suite 300 - Cary, NC 27511 - 919.468.0112 Office - 919.466.5414 Fax - www.americantower.com

SHEET TITLE
MOUNT ANALYSIS

SHEET NUMBER
R-1

MOUNT ANALYSIS

Exhibit D

Structural Analysis Report

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	115 ft Self Support Tower
ATC Asset Name	:	Union 2
ATC Asset Number	:	209144
Engineering Number	:	14580426_C3_04
Proposed Carrier	:	DISH WIRELESS L.L.C.
Carrier Site Name	:	BOBOS00933B
Carrier Site Number	:	BOBOS00933B
Site Location	:	107 Stickney Hill Road Union, CT 6076-4624 41.9854° N, 72.1922° W
County	:	Tolland
Date	:	April 8, 2024
Max Usage	:	84%
Analysis Result	:	Pass

Created By:

Pedro Morales Mendoza
Structural Engineer I

pedro morales

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

Esha Modi

Digitally signed by Esha Modi
Date: 2024.04.09 10:22:09 -04'00'

COA: PEC.0001553

Table of Contents

Introduction 3

Supporting Documents 3

Analysis 3

Conclusion 3

Structure Usages 4

Maximum Reactions 4

Tower Loading 5

Standard Conditions ..... Attached

Calculations ..... Attached

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 115 ft Self Support tower to reflect the change in loading by DISH WIRELESS L.L.C..

Supporting Documents

Tower:	Mapping by Structural Components Job #170784, dated September 10, 2017
Foundation:	Mapping by Delta Oaks Group Project #BGI21-08543-02, dated May 18, 2021
Geotechnical:	Delta Oaks Group Project #GEO21-08543-02, dated April 14, 2021

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	118 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.50" radial ice concurrent
Code(s):	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Hill
Crest Height (H):	239 ft
Crest Length (L):	2118 ft
Spectral Response:	Ss = 0.18, S_1 = 0.06
Site Class:	D - Stiff Soil - Default

Wind load and Ice thickness have been reduced by applicable existing structure load modification factors in accordance with TIA-222-H, ANNEX-S
Antennas, lines, and mounts currently installed at the rad center where the proposed equipment is to be installed shall be removed by the contractor.

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please reach out to your American Tower contact. If you do not have an American Tower contact and have an Engineering question, please contact **Engineering@americantower.com** Please include the American Tower asset name, asset number, and engineering number in the subject line for any questions.

Structure Usages

Structural Component	Usage	Control	Location	Result
Leg	84.0%	Member X	Section 4	Pass
Diagonal	77.0%	Bolt Bear	Section 2	Pass
Horizontal	24.0%	Member Y	Section 6	Pass
Bolt	37.5%	-	Section 4	Pass
Serviceability Usage	5.6%	Rotation	Elevation 80 ft	Pass
Foundation	75.0%	Uplift [Soil]	-	Pass

Maximum Reactions

Foundation	Moment (k-ft)	Axial (k)	Uplift (k)	Shear (k)
Self Support Base (Global)	1,682.8	22.5	-	22.8
Self Support Base (Local)	-	111.6	92.9	13.2

Reactions shown are maximum overall and not limited by Load Case

Structure base reactions were analyzed using available geotechnical and foundation information.

DISH WIRELESS L.L.C. Final Loading

Elev (ft)	Qty	Equipment	Lines
97.0	1	Raycap RDIDC-9181-PF-48	(1) 1.60" (40.6mm) Hybrid (1) Waveguide
	3	Commscope FFVV-65B-R2	
	3	Light Sector Frame	
	3	Samsung RF4450T-71A	
	3	Samsung RF4451d-70A	

Install proposed lines on the tower face with the least amount of existing lines.

Other Existing/Reserved Loading

Elev (ft)	Qty	Equipment	Lines	Carrier
120.0	1	10' Dipole	-	COX COMMUNICATIONS
113.0	3	Ericsson RRUS 4449 B5, B12	(2) 0.39" (10mm) Fiber Trunk (4) 0.59" (15.0mm) Cable (2) 0.78" (19.7mm) 8 AWG 6 (1) 2" conduit	AT&T MOBILITY
	3	Ericsson RRUS 8843 B2, B66A		
	3	Sector Frame		
	6	Kathrein Scala 80010966		
111.0	3	Kathrein Scala 800-10121	(12) 1 1/4" Coax	AT&T MOBILITY
	3	Powerwave Allgon TT19-08BP111-001		
	6	Kathrein Scala 860-10025		
108.0	1	8' Std. Dish	(2) 7/8" Coax	COX COMMUNICATIONS
105.0	2	Raycap DC6-48-60-18-8F	-	AT&T MOBILITY
82.0	1	4' Grid Dish	(1) E105	COX COMMUNICATIONS
78.0	1	8' Yagi	-	COX COMMUNICATIONS

(If table breaks across pages, please see previous page for data in merged cells)

Standard Conditions

All engineering services performed by A.T. Engineering Services LLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts, and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Services LLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Services LLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

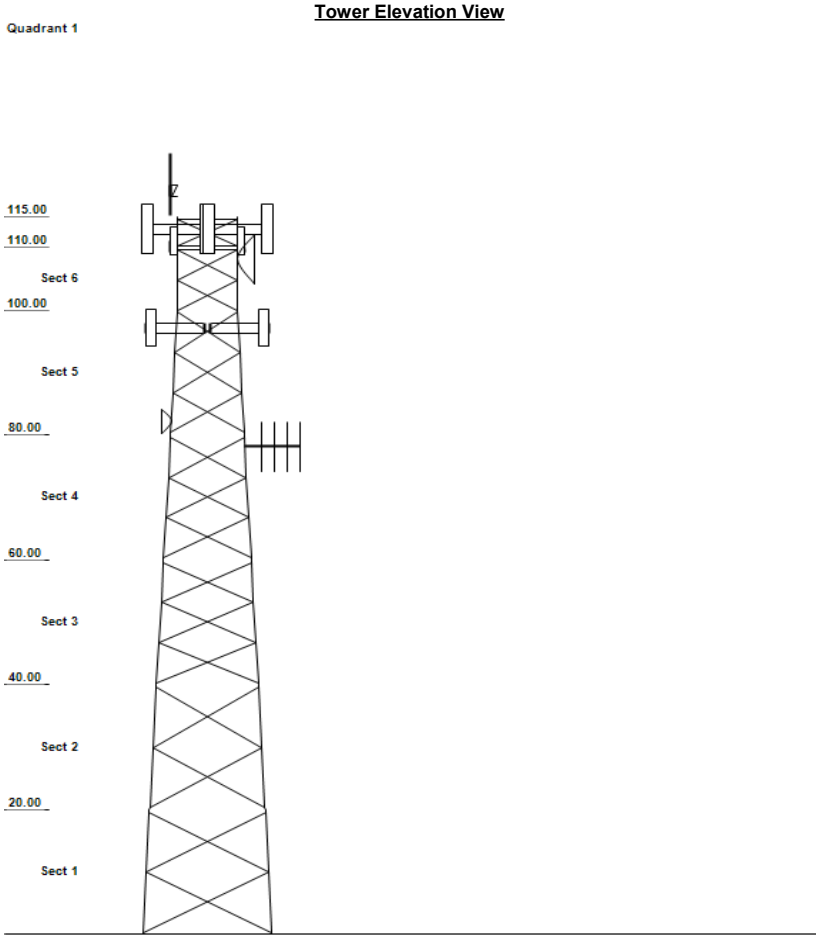
Unless explicitly agreed by both the client and A.T. Engineering Services LLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

ANALYSIS PARAMETERS

Nominal Wind:	115 mph	**Ice Wind:**	49 mph w/ 1.28" ice	**Service Wind:**	60 mph
Risk Category:	II	**Exposure:**	B	**S_s:** 0.177	**S_1:** 0.055
Topo Category:	3	**Topo Factor:**	Method 2	**Topo Feature:**	Hill
Structure Height:	115 ft	**Base Elevation:**	0 ft	**Shape:**	Triangle
Base Width:	18.67 ft	**Top Width:**	8.67 ft		

Tower Elevation View



TOWER SECTION PROPERTIES

Section	Leg Members	Diagonal Members	Horizontal Members
1	PST 50 ksi 5" DIA PIP	SAE 36 ksi 3X3X0.25	
2	PX 50 ksi 4" DIA PIPE	SAE 36 ksi 3X3X0.1875	
3	PX 50 ksi 3" DIA PIPE	SAE 36 ksi 3X3X0.1875	
4	PX 50 ksi 2-1/2" DIA	SAE 36 ksi 2.5X2.5X0.1875	
5	PX 50 ksi 2-1/2" DIA	SAE 36 ksi 2X2X0.1875	
6	PX 50 ksi 2-1/2" DIA	SAE 36 ksi 2X2X0.1875	DAE 36 ksi 2X2X0.1875
7	PX 50 ksi 2-1/2" DIA	SAE 36 ksi 2X2X0.1875	SAE 36 ksi 2.5X2.5X0.1875

SECONDARY BRACING MEMBERS

DISCRETE APPURTENANCE

Elev (ft)	Description
120.0	(1) Generic 10' Dipole
113.0	(6) Kathrein Scala 80010966
113.0	(3) Ericsson RRUS 8843 B2, B66A
113.0	(3) Generic Round Sector Frame
113.0	(3) Ericsson RRUS 4449 B5, B12
111.0	(6) Kathrein Scala 860-10025
111.0	(3) Kathrein Scala 800-10121
111.0	(3) Powerwave Allgon TT19-08BP111-
108.0	(1) Generic 8' Std. Dish
105.0	(2) Raycap DC6-48-60-18-8F
97.0	(3) Commscope FFVV-65B-R2
97.0	(3) Samsung RF4450T-71A
97.0	(3) Generic Flat Light Sector Fram
97.0	(3) Samsung RF4451d-70A
97.0	(1) Raycap RDIDC-9181-PF-48
82.0	(1) Generic 4' Grid Dish
78.0	(1) Generic 8' Yagi

LINEAR APPURTENANCE

Elev To (ft)	Description
115.0	(1) Waveguide
113.0	(4) 0.59" (15.0mm) Cable
113.0	(2) 0.78" (19.7mm) 8 AWG 6
113.0	(2) 0.39" (10mm) Fiber Trunk
113.0	(1) 2" conduit
111.0	(12) 1 1/4" Coax
108.0	(2) 7/8" Coax
97.0	(1) Waveguide
97.0	(1) 1.60" (40.6mm) Hybrid
82.0	(1) E105

GLOBAL BASE REACTIONS

	DL+WL	DL+WL+IL
Moment (k-ft):	1682.81	516.47
Axial (k):	22.47	57.76
Shear (k):	22.78	7.12

INDIVIDUAL BASE REACTIONS

Comp (k):	111.59
Uplift (k):	92.92
Shear (k):	13.21

ANALYSIS PARAMETERS

Location:	Tolland County, CT	**Height:**	115 ft
Type and Shape:	Self Support, Triangle	**Base Elevation:**	0.00 ft
Manufacturer:	Rohn	**Bottom Face Width:**	18.67 ft
Kd	0.85	**Top Face Width:**	8.67 ft
Ke:	0.96	**Anchor Bolt Detail Type:**	c

ICE & WIND PARAMETERS

Exposure Category:	B	**Design Wind Speed Without Ice:**	115 mph
Risk Category:	II	**Design Wind Speed with Ice:**	49 mph
Topographic Factor Procedure:	Method 2	**Operational Windspeed:**	60 mph
		Design Ice Thickness:	1.28 in
		HMSL:	1240 ft
Crest Height(H):	239 ft		
Crest Length(L):	2118 ft	**Distance from Apex (x):**	274
Feature:	Hill	**Upwind/Downwind:**	Upwind

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			**Period Based on Rayleigh Method (sec):**	0.66
T_L (sec):	6	**P:**	1.3	**C_s:**	0.045
S_s:	0.177	**S_1:**	0.055	**C_s Max:**	0.045
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.189	**S_{d1}:**	0.088		

LOAD CASES

1.2D + 1.0W Normal	1.2D + 1.0W Normal - 115.01 mph Wind with No Ice
1.2D + 1.0W 60°	1.2D + 1.0W 60° - 115.01 mph Wind with No Ice
1.2D + 1.0W 90°	1.2D + 1.0W 90° - 115.01 mph Wind with No Ice
1.2D + 1.0W 120°	1.2D + 1.0W 120° - 115.01 mph Wind with No Ice
1.2D + 1.0W 180°	1.2D + 1.0W 180° - 115.01 mph Wind with No Ice
1.2D + 1.0W 210°	1.2D + 1.0W 210° - 115.01 mph Wind with No Ice
1.2D + 1.0W 240°	1.2D + 1.0W 240° - 115.01 mph Wind with No Ice
1.2D + 1.0W 300°	1.2D + 1.0W 300° - 115.01 mph Wind with No Ice
1.2D + 1.0W 330°	1.2D + 1.0W 330° - 115.01 mph Wind with No Ice
0.9D + 1.0W Normal	0.9D + 1.0W Normal - 115.01 mph Wind with No Ice (Reduced DL)
0.9D + 1.0W 60°	0.9D + 1.0W 60° - 115.01 mph Wind with No Ice (Reduced DL)
0.9D + 1.0W 90°	0.9D + 1.0W 90° - 115.01 mph Wind with No Ice (Reduced DL)
0.9D + 1.0W 120°	0.9D + 1.0W 120° - 115.01 mph Wind with No Ice (Reduced DL)
0.9D + 1.0W 180°	0.9D + 1.0W 180° - 115.01 mph Wind with No Ice (Reduced DL)
0.9D + 1.0W 210°	0.9D + 1.0W 210° - 115.01 mph Wind with No Ice (Reduced DL)
0.9D + 1.0W 240°	0.9D + 1.0W 240° - 115.01 mph Wind with No Ice (Reduced DL)
0.9D + 1.0W 300°	0.9D + 1.0W 300° - 115.01 mph Wind with No Ice (Reduced DL)
0.9D + 1.0W 330°	0.9D + 1.0W 330° - 115.01 mph Wind with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi Normal	1.2D + 1.0Di + 1.0Wi Normal - 48.73 mph Wind with 1.275" Radial Ice
1.2D + 1.0Di + 1.0Wi 60°	1.2D + 1.0Di + 1.0Wi 60° - 48.73 mph Wind with 1.275" Radial Ice
1.2D + 1.0Di + 1.0Wi 90°	1.2D + 1.0Di + 1.0Wi 90° - 48.73 mph Wind with 1.275" Radial Ice
1.2D + 1.0Di + 1.0Wi 120°	1.2D + 1.0Di + 1.0Wi 120° - 48.73 mph Wind with 1.275" Radial Ice
1.2D + 1.0Di + 1.0Wi 180°	1.2D + 1.0Di + 1.0Wi 180° - 48.73 mph Wind with 1.275" Radial Ice
1.2D + 1.0Di + 1.0Wi 210°	1.2D + 1.0Di + 1.0Wi 210° - 48.73 mph Wind with 1.275" Radial Ice
1.2D + 1.0Di + 1.0Wi 240°	1.2D + 1.0Di + 1.0Wi 240° - 48.73 mph Wind with 1.275" Radial Ice

LOAD CASES	
1.2D + 1.0Di + 1.0Wi 300°	1.2D + 1.0Di + 1.0Wi 300° - 48.73 mph Wind with 1.275" Radial Ice
1.2D + 1.0Di + 1.0Wi 330°	1.2D + 1.0Di + 1.0Wi 330° - 48.73 mph Wind with 1.275" Radial Ice
1.2D + 1.0Ev + 1.0Eh Normal	1.2D + 1.0Ev + 1.0Eh Normal - Seismic
1.2D + 1.0Ev + 1.0Eh 60°	1.2D + 1.0Ev + 1.0Eh 60° - Seismic
1.2D + 1.0Ev + 1.0Eh 90°	1.2D + 1.0Ev + 1.0Eh 90° - Seismic
1.2D + 1.0Ev + 1.0Eh 120°	1.2D + 1.0Ev + 1.0Eh 120° - Seismic
1.2D + 1.0Ev + 1.0Eh 180°	1.2D + 1.0Ev + 1.0Eh 180° - Seismic
1.2D + 1.0Ev + 1.0Eh 210°	1.2D + 1.0Ev + 1.0Eh 210° - Seismic
1.2D + 1.0Ev + 1.0Eh 240°	1.2D + 1.0Ev + 1.0Eh 240° - Seismic
1.2D + 1.0Ev + 1.0Eh 300°	1.2D + 1.0Ev + 1.0Eh 300° - Seismic
1.2D + 1.0Ev + 1.0Eh 330°	1.2D + 1.0Ev + 1.0Eh 330° - Seismic
0.9D - 1.0Ev + 1.0Eh Normal	0.9D - 1.0Ev + 1.0Eh Normal - Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 60°	0.9D - 1.0Ev + 1.0Eh 60° - Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 90°	0.9D - 1.0Ev + 1.0Eh 90° - Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 120°	0.9D - 1.0Ev + 1.0Eh 120° - Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 180°	0.9D - 1.0Ev + 1.0Eh 180° - Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 210°	0.9D - 1.0Ev + 1.0Eh 210° - Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 240°	0.9D - 1.0Ev + 1.0Eh 240° - Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 300°	0.9D - 1.0Ev + 1.0Eh 300° - Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 330°	0.9D - 1.0Ev + 1.0Eh 330° - Seismic (Reduced DL)
1.0D + 1.0W Service Normal	1.0D + 1.0W Service Normal - 60 mph Wind with No Ice
1.0D + 1.0W Service 60°	1.0D + 1.0W Service 60° - 60 mph Wind with No Ice
1.0D + 1.0W Service 90°	1.0D + 1.0W Service 90° - 60 mph Wind with No Ice
1.0D + 1.0W Service 120°	1.0D + 1.0W Service 120° - 60 mph Wind with No Ice
1.0D + 1.0W Service 180°	1.0D + 1.0W Service 180° - 60 mph Wind with No Ice
1.0D + 1.0W Service 210°	1.0D + 1.0W Service 210° - 60 mph Wind with No Ice
1.0D + 1.0W Service 240°	1.0D + 1.0W Service 240° - 60 mph Wind with No Ice
1.0D + 1.0W Service 300°	1.0D + 1.0W Service 300° - 60 mph Wind with No Ice
1.0D + 1.0W Service 330°	1.0D + 1.0W Service 330° - 60 mph Wind with No Ice

TOWER LOADING – DISCRETE APPURTENANCE

Discrete Appurtenance Properties for LC: **1.2D + 1.0W**

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc. (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
120.0	Generic 10' Dipole	1	30	3.8	10.0	3.0	3.0	1.00	1.00	0.0	0.00	35.55	114	36
113.0	Ericsson RRUS 8843 B2, B66A	3	72	1.6	1.2	13.2	10.9	0.80	0.50	0.0	0.00	35.14	59	259
113.0	Ericsson RRUS 4449 B5, B12	3	71	2.0	1.5	13.2	9.4	0.80	0.50	0.0	0.00	35.14	71	256
113.0	Generic Round Sector Frame	3	700	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.00	35.14	648	2520
113.0	Kathrein Scala 80010966	6	115	17.4	8.0	20.0	6.9	0.80	0.63	0.0	0.00	35.14	1568	825
111.0	Kathrein Scala 860-10025	6	1	0.1	0.6	2.4	2.0	0.80	0.50	0.0	0.00	35.01	10	8
111.0	Powerwave Allgon TT19-08BP111-	3	16	0.6	0.8	6.7	5.4	0.80	0.50	0.0	0.00	35.01	20	58
111.0	Kathrein Scala 800-10121	3	44	5.2	4.5	10.3	5.9	0.80	0.68	0.0	0.00	35.01	251	159
108.0	Generic 8' Std. Dish	1	340	83.6	8.0	96.0	0.0	0.90	1.00	0.0	0.00	34.82	2228	408
105.0	Raycap DC6-48-60-18-8F	2	20	1.3	2.0	9.7	9.7	0.90	1.00	0.0	0.00	34.63	67	48
97.0	Raycap RDIDC-9181-PF-48	1	22	1.9	1.3	14.0	8.0	0.80	1.00	0.0	0.00	34.08	43	26
97.0	Samsung RF4451d-70A	3	61	1.9	1.3	15.0	8.9	0.80	0.50	0.0	0.00	34.08	65	221
97.0	Samsung RF4450T-71A	3	95	2.1	1.3	16.5	11.0	0.80	0.67	0.0	0.00	34.08	96	341
97.0	Commscope FFVV-65B-R2	3	71	12.3	6.0	19.6	7.8	0.80	0.64	0.0	0.00	34.08	546	255
97.0	Generic Flat Light Sector Fram	3	800	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.00	34.08	875	2880
82.0	Generic 4' Grid Dish	1	51	7.5	4.0	48.0	0.0	1.00	1.00	0.0	0.00	32.90	209	61
78.0	Generic 8' Yagi	1	30	12.0	8.0	60.0	3.0	1.00	1.00	0.0	0.00	32.55	332	36
	Totals	**46**	**6,996**	**389.8**									7,201	8,396

Discrete Appurtenance Properties for LC: **0.9D + 1.0W**

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc. (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
120.0	Generic 10' Dipole	1	30	3.8	10.0	3.0	3.0	1.00	1.00	0.0	0.00	35.55	114	27
113.0	Ericsson RRUS 8843 B2, B66A	3	72	1.6	1.2	13.2	10.9	0.80	0.50	0.0	0.00	35.14	59	194
113.0	Ericsson RRUS 4449 B5, B12	3	71	2.0	1.5	13.2	9.4	0.80	0.50	0.0	0.00	35.14	71	192
113.0	Generic Round Sector Frame	3	700	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.00	35.14	648	1890
113.0	Kathrein Scala 80010966	6	115	17.4	8.0	20.0	6.9	0.80	0.63	0.0	0.00	35.14	1568	619
111.0	Kathrein Scala 860-10025	6	1	0.1	0.6	2.4	2.0	0.80	0.50	0.0	0.00	35.01	10	6
111.0	Powerwave Allgon TT19-08BP111-	3	16	0.6	0.8	6.7	5.4	0.80	0.50	0.0	0.00	35.01	20	43
111.0	Kathrein Scala 800-10121	3	44	5.2	4.5	10.3	5.9	0.80	0.68	0.0	0.00	35.01	251	119
108.0	Generic 8' Std. Dish	1	340	83.6	8.0	96.0	0.0	0.90	1.00	0.0	0.00	34.82	2228	306
105.0	Raycap DC6-48-60-18-8F	2	20	1.3	2.0	9.7	9.7	0.90	1.00	0.0	0.00	34.63	67	36
97.0	Raycap RDIDC-9181-PF-48	1	22	1.9	1.3	14.0	8.0	0.80	1.00	0.0	0.00	34.08	43	20
97.0	Samsung RF4451d-70A	3	61	1.9	1.3	15.0	8.9	0.80	0.50	0.0	0.00	34.08	65	166
97.0	Samsung RF4450T-71A	3	95	2.1	1.3	16.5	11.0	0.80	0.67	0.0	0.00	34.08	96	255
97.0	Commscope FFVV-65B-R2	3	71	12.3	6.0	19.6	7.8	0.80	0.64	0.0	0.00	34.08	546	191
97.0	Generic Flat Light Sector Fram	3	800	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.00	34.08	875	2160
82.0	Generic 4' Grid Dish	1	51	7.5	4.0	48.0	0.0	1.00	1.00	0.0	0.00	32.90	209	46
78.0	Generic 8' Yagi	1	30	12.0	8.0	60.0	3.0	1.00	1.00	0.0	0.00	32.55	332	27
	Totals	**46**	**6,996**	**389.8**									7,201	6,297

Discrete Appurtenance Properties for LC: **1.2D + 1.0Di + 1.0Wi**

Elev (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc. (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
120.0	Generic 10' Dipole	1	130	9.1	10.0	3.0	3.0	1.00	1.00	0.0	0.00	6.38	50	136
113.0	Ericsson RRUS 8843 B2, B66A	3	127	2.4	1.2	13.2	10.9	0.80	0.50	0.0	0.00	6.31	15	424
113.0	Ericsson RRUS 4449 B5, B12	3	129	2.8	1.5	13.2	9.4	0.80	0.50	0.0	0.00	6.31	18	429
113.0	Generic Round Sector Frame	3	1574	29.2	0.0	0.0	0.0	0.75	0.67	0.0	0.00	6.31	236	5142
113.0	Kathrein Scala 80010966	6	402	20.7	8.0	20.0	6.9	0.80	0.63	0.0	0.00	6.31	335	2552
111.0	Kathrein Scala 860-10025	6	6	0.4	0.6	2.4	2.0	0.80	0.50	0.0	0.00	6.29	5	37
111.0	Powerwave Allgon TT19-08BP111-	3	34	1.0	0.8	6.7	5.4	0.80	0.50	0.0	0.00	6.29	6	112
111.0	Kathrein Scala 800-10121	3	147	7.1	4.5	10.3	5.9	0.80	0.68	0.0	0.00	6.29	61	467
108.0	Generic 8' Std. Dish	1	1086	89.1	8.0	96.0	0.0	0.90	1.00	0.0	0.00	6.25	426	1154
105.0	Raycap DC6-48-60-18-8F	2	67	1.8	2.0	9.7	9.7	0.90	1.00	0.0	0.00	6.22	18	142
97.0	Raycap RDIDC-9181-PF-48	1	72	2.7	1.3	14.0	8.0	0.80	1.00	0.0	0.00	6.12	11	77
97.0	Samsung RF4451d-70A	3	114	2.7	1.3	15.0	8.9	0.80	0.50	0.0	0.00	6.12	17	380
97.0	Samsung RF4450T-71A	3	158	2.9	1.3	16.5	11.0	0.80	0.67	0.0	0.00	6.12	24	532
97.0	Commscope FFVV-65B-R2	3	293	14.8	6.0	19.6	7.8	0.80	0.64	0.0	0.00	6.12	118	923
97.0	Generic Flat Light Sector Fram	3	1787	31.3	0.0	0.0	0.0	0.75	0.75	0.0	0.00	6.12	274	5842
82.0	Generic 4' Grid Dish	1	258	51.7	4.0	48.0	0.0	1.00	1.00	0.0	0.00	5.91	259	269
78.0	Generic 8' Yagi	1	324	41.0	8.0	60.0	3.0	1.00	1.00	0.0	0.00	5.84	204	330
	Totals	**46**	**17,548**	**606.1**									2079	18,947

Discrete Appurtenance Properties for LC: **1.0D + 1.0W Service**

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc. (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
120.0	Generic 10' Dipole	1	30	3.8	10.0	3.0	3.0	1.00	1.00	0.0	0.00	9.68	31	30
113.0	Ericsson RRUS 8843 B2, B66A	3	72	1.6	1.2	13.2	10.9	0.80	0.50	0.0	0.00	9.56	16	216
113.0	Ericsson RRUS 4449 B5, B12	3	71	2.0	1.5	13.2	9.4	0.80	0.50	0.0	0.00	9.56	19	213
113.0	Generic Round Sector Frame	3	700	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.00	9.56	176	2100
113.0	Kathrein Scala 80010966	6	115	17.4	8.0	20.0	6.9	0.80	0.63	0.0	0.00	9.56	427	688

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc. (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
111.0	Kathrein Scala 860-10025	6	1	0.1	0.6	2.4	2.0	0.80	0.50	0.0	0.00	9.53	3	7
111.0	Powerwave Allgon TT19-08BP111-	3	16	0.6	0.8	6.7	5.4	0.80	0.50	0.0	0.00	9.53	5	48
111.0	Kathrein Scala 800-10121	3	44	5.2	4.5	10.3	5.9	0.80	0.68	0.0	0.00	9.53	68	132
108.0	Generic 8' Std. Dish	1	340	83.6	8.0	96.0	0.0	0.90	1.00	0.0	0.00	9.48	606	340
105.0	Raycap DC6-48-60-18-8F	2	20	1.3	2.0	9.7	9.7	0.90	1.00	0.0	0.00	9.42	18	40
97.0	Raycap RDIDC-9181-PF-48	1	22	1.9	1.3	14.0	8.0	0.80	1.00	0.0	0.00	9.27	12	22
97.0	Samsung RF4451d-70A	3	61	1.9	1.3	15.0	8.9	0.80	0.50	0.0	0.00	9.27	18	184
97.0	Samsung RF4450T-71A	3	95	2.1	1.3	16.5	11.0	0.80	0.67	0.0	0.00	9.27	26	284
97.0	Commscope FFVV-65B-R2	3	71	12.3	6.0	19.6	7.8	0.80	0.64	0.0	0.00	9.27	149	212
97.0	Generic Flat Light Sector Fram	3	800	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.00	9.27	238	2400
82.0	Generic 4' Grid Dish	1	51	7.5	4.0	48.0	0.0	1.00	1.00	0.0	0.00	8.95	57	51
78.0	Generic 8' Yagi	1	30	12.0	8.0	60.0	3.0	1.00	1.00	0.0	0.00	8.86	90	30
	Totals	**46**	**6,996**	**389.8**									1,960	6,996

TOWER LOADING – LINEAR APPURTENANCE

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	% In Wind	Spread On Faces	Bundling	Cluster Dia (in)	Out of Zone	Spacing (in)	Orient. Factor	K_a Override
0.0	115.0	Waveguide	1	2.00	6.00	100	3	Individual	0.00	N	1.00	1.00	0.00
0.0	113.0	0.59" (15.0mm) Cable	4	0.59	0.20	100	3	Individual	0.00	N	1.00	1.00	0.00
0.0	113.0	2" conduit	1	2.38	3.65	100	3	Individual	0.00	N	1.00	1.00	0.01
0.0	113.0	0.39" (10mm) Fiber Trunk	2	0.39	0.06	100	3	Individual	0.00	N	1.00	1.00	0.01
0.0	113.0	0.78" (19.7mm) 8 AWG 6	2	0.78	0.59	100	3	Individual	0.00	N	1.00	1.00	0.01
0.0	111.0	1 1/4" Coax	12	1.55	0.63	50	3	Block	0.00	N	1.00	1.00	0.00
0.0	108.0	7/8" Coax	2	1.09	0.33	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	97.0	1.60" (40.6mm) Hybrid	1	1.60	2.34	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	97.0	Waveguide	1	2.00	6.00	100	1	Individual	0.00	N	0.00	1.00	0.00
0.0	82.0	E105	1	1.30	0.40	100	1	Individual	0.00	N	1.00	1.00	0.00

SECTION FORCES

1.2D + 1.0W Normal — Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	1.00	1.00	0.0	8.03	20.75	0.00	565	0	619	75	694
6	105	34.63	7.853	4.792	0.00	0.142	2.80	1.00	1.00	0.0	10.57	29.61	0.00	1014	0	871	448	1320
5	90	33.55	11.368	9.599	0.00	0.106	2.94	1.00	1.00	0.0	16.79	49.36	0.00	1815	0	1408	1032	2440
4	70	31.79	16.348	9.599	0.00	0.109	2.93	1.00	1.00	0.0	21.77	63.74	0.00	2125	0	1722	1039	2762
3	50	29.42	22.213	11.686	0.00	0.121	2.88	1.00	1.00	0.0	28.82	82.98	0.00	2638	0	2075	962	3038
2	30	25.95	18.015	15.025	0.00	0.103	2.95	1.00	1.00	0.0	26.28	77.58	0.00	2752	0	1711	848	2560
1	10	26.49	19.658	18.574	0.00	0.105	2.94	1.00	1.00	0.0	28.44	83.69	0.00	3163	0	1884	866	2751
													Totals	**14,072**	**0**			**15,563**

1.2D + 1.0W 60° — Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.80	1.00	0.0	6.70	17.31	0.00	565	0	517	75	592
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.80	1.00	0.0	9.00	25.21	0.00	1014	0	742	448	1190
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.80	1.00	0.0	14.51	42.68	0.00	1815	0	1217	1032	2249
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.80	1.00	0.0	18.50	54.17	0.00	2125	0	1464	1039	2503
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.80	1.00	0.0	24.38	70.19	0.00	2638	0	1755	962	2718
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.80	1.00	0.0	22.68	66.95	0.00	2752	0	1476	848	2325
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.80	1.00	0.0	24.70	72.68	0.00	3163	0	1636	866	2503
													Totals	**14,072**	**0**			**14,079**

1.2D + 1.0W 90° — Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.85	1.00	0.0	7.03	18.17	0.00	565	0	542	75	617
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.85	1.00	0.0	9.39	26.31	0.00	1014	0	774	448	1223
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.85	1.00	0.0	15.08	44.35	0.00	1815	0	1265	1032	2297
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.85	1.00	0.0	19.32	56.56	0.00	2125	0	1528	1039	2568
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.85	1.00	0.0	25.49	73.39	0.00	2638	0	1835	962	2798
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.85	1.00	0.0	23.58	69.61	0.00	2752	0	1535	848	2384
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.85	1.00	0.0	25.68	75.57	0.00	3163	0	1701	866	2568
													Totals	**14,072**	**0**			**14,453**

1.2D + 1.0W 120° — Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	1.00	1.00	0.0	8.03	20.75	0.00	565	0	619	75	694
6	105	34.63	7.853	4.792	0.00	0.142	2.80	1.00	1.00	0.0	10.57	29.61	0.00	1014	0	871	448	1320
5	90	33.55	11.368	9.599	0.00	0.106	2.94	1.00	1.00	0.0	16.79	49.36	0.00	1815	0	1408	1032	2440
4	70	31.79	16.348	9.599	0.00	0.109	2.93	1.00	1.00	0.0	21.77	63.74	0.00	2125	0	1722	1039	2762
3	50	29.42	22.213	11.686	0.00	0.121	2.88	1.00	1.00	0.0	28.82	82.98	0.00	2638	0	2075	962	3038
2	30	25.95	18.015	15.025	0.00	0.103	2.95	1.00	1.00	0.0	26.28	77.58	0.00	2752	0	1711	848	2560
1	10	26.49	19.658	18.574	0.00	0.105	2.94	1.00	1.00	0.0	28.63	84.24	0.00	3163	0	1897	866	2763
													Totals	**14,072**	**0**			**15,576**

1.2D + 1.0W 180° — Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.80	1.00	0.0	6.70	17.31	0.00	565	0	517	75	592
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.80	1.00	0.0	9.00	25.21	0.00	1014	0	742	448	1190
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.80	1.00	0.0	14.51	42.68	0.00	1815	0	1217	1032	2249
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.80	1.00	0.0	18.50	54.17	0.00	2125	0	1464	1039	2503
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.80	1.00	0.0	24.38	70.19	0.00	2638	0	1755	962	2718
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.80	1.00	0.0	22.68	66.95	0.00	2752	0	1476	848	2325
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.80	1.00	0.0	24.70	72.68	0.00	3163	0	1636	866	2503
													Totals	**14,072**	**0**			**14,079**

1.2D + 1.0W 210° — Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.85	1.00	0.0	7.03	18.17	0.00	565	0	542	75	617
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.85	1.00	0.0	9.39	26.31	0.00	1014	0	774	448	1223
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.85	1.00	0.0	15.08	44.35	0.00	1815	0	1265	1032	2297
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.85	1.00	0.0	19.32	56.56	0.00	2125	0	1528	1039	2568
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.85	1.00	0.0	25.49	73.39	0.00	2638	0	1835	962	2798
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.85	1.00	0.0	23.58	69.61	0.00	2752	0	1535	848	2384
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.85	1.00	0.0	25.68	75.57	0.00	3163	0	1701	866	2568

SECTION FORCES

1.2D + 1.0W 210° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
													Totals	**14,072**	**0**			**14,453**

1.2D + 1.0W 240° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	1.00	1.00	0.0	8.03	20.75	0.00	565	0	619	75	694
6	105	34.63	7.853	4.792	0.00	0.142	2.80	1.00	1.00	0.0	10.57	29.61	0.00	1014	0	871	448	1320
5	90	33.55	11.368	9.599	0.00	0.106	2.94	1.00	1.00	0.0	16.79	49.36	0.00	1815	0	1408	1032	2440
4	70	31.79	16.348	9.599	0.00	0.109	2.93	1.00	1.00	0.0	21.77	63.74	0.00	2125	0	1722	1039	2762
3	50	29.42	22.213	11.686	0.00	0.121	2.88	1.00	1.00	0.0	28.82	82.98	0.00	2638	0	2075	962	3038
2	30	25.95	18.015	15.025	0.00	0.103	2.95	1.00	1.00	0.0	26.28	77.58	0.00	2752	0	1711	848	2560
1	10	26.49	19.658	18.574	0.00	0.105	2.94	1.00	1.00	0.0	28.63	84.24	0.00	3163	0	1897	866	2763
													Totals	**14,072**	**0**			**15,576**

1.2D + 1.0W 300° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.80	1.00	0.0	6.70	17.31	0.00	565	0	517	75	592
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.80	1.00	0.0	9.00	25.21	0.00	1014	0	742	448	1190
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.80	1.00	0.0	14.51	42.68	0.00	1815	0	1217	1032	2249
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.80	1.00	0.0	18.50	54.17	0.00	2125	0	1464	1039	2503
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.80	1.00	0.0	24.38	70.19	0.00	2638	0	1755	962	2718
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.80	1.00	0.0	22.68	66.95	0.00	2752	0	1476	848	2325
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.80	1.00	0.0	24.70	72.68	0.00	3163	0	1636	866	2503
													Totals	**14,072**	**0**			**14,079**

1.2D + 1.0W 330° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.85	1.00	0.0	7.03	18.17	0.00	565	0	542	75	617
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.85	1.00	0.0	9.39	26.31	0.00	1014	0	774	448	1223
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.85	1.00	0.0	15.08	44.35	0.00	1815	0	1265	1032	2297
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.85	1.00	0.0	19.32	56.56	0.00	2125	0	1528	1039	2568
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.85	1.00	0.0	25.49	73.39	0.00	2638	0	1835	962	2798
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.85	1.00	0.0	23.58	69.61	0.00	2752	0	1535	848	2384
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.85	1.00	0.0	25.68	75.57	0.00	3163	0	1701	866	2568
													Totals	**14,072**	**0**			**14,453**

0.9D + 1.0W Normal Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	1.00	1.00	0.0	8.03	20.75	0.00	424	0	619	75	694
6	105	34.63	7.853	4.792	0.00	0.142	2.80	1.00	1.00	0.0	10.57	29.61	0.00	761	0	871	448	1320
5	90	33.55	11.368	9.599	0.00	0.106	2.94	1.00	1.00	0.0	16.79	49.36	0.00	1361	0	1408	1032	2440
4	70	31.79	16.348	9.599	0.00	0.109	2.93	1.00	1.00	0.0	21.77	63.74	0.00	1593	0	1722	1039	2762
3	50	29.42	22.213	11.686	0.00	0.121	2.88	1.00	1.00	0.0	28.82	82.98	0.00	1979	0	2075	962	3038
2	30	25.95	18.015	15.025	0.00	0.103	2.95	1.00	1.00	0.0	26.28	77.58	0.00	2064	0	1711	848	2560
1	10	26.49	19.658	18.574	0.00	0.105	2.94	1.00	1.00	0.0	28.63	84.24	0.00	2372	0	1897	866	2763
													Totals	**10,554**	**0**			**15,576**

0.9D + 1.0W 60° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.80	1.00	0.0	6.70	17.31	0.00	424	0	517	75	592
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.80	1.00	0.0	9.00	25.21	0.00	761	0	742	448	1190
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.80	1.00	0.0	14.51	42.68	0.00	1361	0	1217	1032	2249
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.80	1.00	0.0	18.50	54.17	0.00	1593	0	1464	1039	2503
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.80	1.00	0.0	24.38	70.19	0.00	1979	0	1755	962	2718
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.80	1.00	0.0	22.68	66.95	0.00	2064	0	1476	848	2325
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.80	1.00	0.0	24.70	72.68	0.00	2372	0	1636	866	2503
													Totals	**10,554**	**0**			**14,079**

0.9D + 1.0W 90° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)

SECTION FORCES

0.9D + 1.0W 90° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.85	1.00	0.0	7.03	18.17	0.00	424	0	542	75	617
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.85	1.00	0.0	9.39	26.31	0.00	761	0	774	448	1223
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.85	1.00	0.0	15.08	44.35	0.00	1361	0	1265	1032	2297
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.85	1.00	0.0	19.32	56.56	0.00	1593	0	1528	1039	2568
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.85	1.00	0.0	25.49	73.39	0.00	1979	0	1835	962	2798
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.85	1.00	0.0	23.58	69.61	0.00	2064	0	1535	848	2384
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.85	1.00	0.0	25.68	75.57	0.00	2372	0	1701	866	2568
													Totals	**10,554**	**0**			**14,453**

0.9D + 1.0W 120° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	1.00	1.00	0.0	8.03	20.75	0.00	424	0	619	75	694
6	105	34.63	7.853	4.792	0.00	0.142	2.80	1.00	1.00	0.0	10.57	29.61	0.00	761	0	871	448	1320
5	90	33.55	11.368	9.599	0.00	0.106	2.94	1.00	1.00	0.0	16.79	49.36	0.00	1361	0	1408	1032	2440
4	70	31.79	16.348	9.599	0.00	0.109	2.93	1.00	1.00	0.0	21.77	63.74	0.00	1593	0	1722	1039	2762
3	50	29.42	22.213	11.686	0.00	0.121	2.88	1.00	1.00	0.0	28.82	82.98	0.00	1979	0	2075	962	3038
2	30	25.95	18.015	15.025	0.00	0.103	2.95	1.00	1.00	0.0	26.28	77.58	0.00	2064	0	1711	848	2560
1	10	26.49	19.658	18.574	0.00	0.105	2.94	1.00	1.00	0.0	28.63	84.24	0.00	2372	0	1897	866	2763
													Totals	**10,554**	**0**			**15,576**

0.9D + 1.0W 180° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.80	1.00	0.0	6.70	17.31	0.00	424	0	517	75	592
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.80	1.00	0.0	9.00	25.21	0.00	761	0	742	448	1190
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.80	1.00	0.0	14.51	42.68	0.00	1361	0	1217	1032	2249
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.80	1.00	0.0	18.50	54.17	0.00	1593	0	1464	1039	2503
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.80	1.00	0.0	24.38	70.19	0.00	1979	0	1755	962	2718
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.80	1.00	0.0	22.68	66.95	0.00	2064	0	1476	848	2325
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.80	1.00	0.0	24.70	72.68	0.00	2372	0	1636	866	2503
													Totals	**10,554**	**0**			**14,079**

0.9D + 1.0W 210° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.85	1.00	0.0	7.03	18.17	0.00	424	0	542	75	617
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.85	1.00	0.0	9.39	26.31	0.00	761	0	774	448	1223
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.85	1.00	0.0	15.08	44.35	0.00	1361	0	1265	1032	2297
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.85	1.00	0.0	19.32	56.56	0.00	1593	0	1528	1039	2568
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.85	1.00	0.0	25.49	73.39	0.00	1979	0	1835	962	2798
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.85	1.00	0.0	23.58	69.61	0.00	2064	0	1535	848	2384
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.85	1.00	0.0	25.68	75.57	0.00	2372	0	1701	866	2568
													Totals	**10,554**	**0**			**14,453**

0.9D + 1.0W 240° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	1.00	1.00	0.0	8.03	20.75	0.00	424	0	619	75	694
6	105	34.63	7.853	4.792	0.00	0.142	2.80	1.00	1.00	0.0	10.57	29.61	0.00	761	0	871	448	1320
5	90	33.55	11.368	9.599	0.00	0.106	2.94	1.00	1.00	0.0	16.79	49.36	0.00	1361	0	1408	1032	2440
4	70	31.79	16.348	9.599	0.00	0.109	2.93	1.00	1.00	0.0	21.77	63.74	0.00	1593	0	1722	1039	2762
3	50	29.42	22.213	11.686	0.00	0.121	2.88	1.00	1.00	0.0	28.82	82.98	0.00	1979	0	2075	962	3038
2	30	25.95	18.015	15.025	0.00	0.103	2.95	1.00	1.00	0.0	26.28	77.58	0.00	2064	0	1711	848	2560
1	10	26.49	19.658	18.574	0.00	0.105	2.94	1.00	1.00	0.0	28.63	84.24	0.00	2372	0	1897	866	2763
													Totals	**10,554**	**0**			**15,576**

0.9D + 1.0W 300° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.80	1.00	0.0	6.70	17.31	0.00	424	0	517	75	592
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.80	1.00	0.0	9.00	25.21	0.00	761	0	742	448	1190
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.80	1.00	0.0	14.51	42.68	0.00	1361	0	1217	1032	2249
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.80	1.00	0.0	18.50	54.17	0.00	1593	0	1464	1039	2503
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.80	1.00	0.0	24.38	70.19	0.00	1979	0	1755	962	2718
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.80	1.00	0.0	22.68	66.95	0.00	2064	0	1476	848	2325
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.80	1.00	0.0	24.70	72.68	0.00	2372	0	1636	866	2503

SECTION FORCES

0.9D + 1.0W 300° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
													Totals	**10,554**	**0**			**14,079**

0.9D + 1.0W 330° Gust Response Factor (Gh): 0.85
115.01 mph Wind with No Ice (Reduced DL) Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	35.11	6.648	2.396	0.00	0.203	2.59	0.85	1.00	0.0	7.03	18.17	0.00	424	0	542	75	617
6	105	34.63	7.853	4.792	0.00	0.142	2.80	0.85	1.00	0.0	9.39	26.31	0.00	761	0	774	448	1223
5	90	33.55	11.368	9.599	0.00	0.106	2.94	0.85	1.00	0.0	15.08	44.35	0.00	1361	0	1265	1032	2297
4	70	31.79	16.348	9.599	0.00	0.109	2.93	0.85	1.00	0.0	19.32	56.56	0.00	1593	0	1528	1039	2568
3	50	29.42	22.213	11.686	0.00	0.121	2.88	0.85	1.00	0.0	25.49	73.39	0.00	1979	0	1835	962	2798
2	30	25.95	18.015	15.025	0.00	0.103	2.95	0.85	1.00	0.0	23.58	69.61	0.00	2064	0	1535	848	2384
1	10	26.49	19.658	18.574	0.00	0.105	2.94	0.85	1.00	0.0	25.68	75.57	0.00	2372	0	1701	866	2568
													Totals	**10,554**	**0**			**14,453**

1.2D + 1.0Di + 1.0Wi Normal Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
48.73 mph Wind with 1.275" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	6.30	6.648	14.528	12.13	0.462	1.95	1.00	1.00	1.6	16.31	31.88	12.13	1685	1120	171	32	203
6	105	6.22	7.853	22.520	17.73	0.331	2.22	1.00	1.00	1.6	21.57	47.81	17.73	3237	2223	253	173	426
5	90	6.02	11.368	37.808	28.21	0.242	2.46	1.00	1.00	1.5	33.41	82.26	28.21	5712	3897	421	445	866
4	70	5.71	16.348	39.881	30.28	0.231	2.50	1.00	1.00	1.5	39.50	98.56	30.28	6541	4416	478	462	940
3	50	5.28	22.213	43.802	32.12	0.232	2.49	1.00	1.00	1.5	47.66	118.73	32.12	7522	4884	533	421	954
2	30	4.66	18.015	41.762	26.74	0.184	2.65	1.00	1.00	1.4	41.90	111.09	26.74	7062	4310	440	374	814
1	10	4.76	19.658	43.393	24.82	0.172	2.69	1.00	1.00	1.2	44.40	119.54	24.82	7056	3893	483	357	841
													Totals	**38,814**	**24,742**			**5,043**

1.2D + 1.0Di + 1.0Wi 60° Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
48.73 mph Wind with 1.275" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	6.30	6.648	14.528	12.13	0.462	1.95	0.80	1.00	1.6	14.98	29.28	12.13	1685	1120	157	32	189
6	105	6.22	7.853	22.520	17.73	0.331	2.22	0.80	1.00	1.6	20.00	44.33	17.73	3237	2223	234	173	407
5	90	6.02	11.368	37.808	28.21	0.242	2.46	0.80	1.00	1.5	31.14	76.66	28.21	5712	3897	393	445	838
4	70	5.71	16.348	39.881	30.28	0.231	2.50	0.80	1.00	1.5	36.24	90.41	30.28	6541	4416	439	462	900
3	50	5.28	22.213	43.802	32.12	0.232	2.49	0.80	1.00	1.5	43.21	107.66	32.12	7522	4884	483	421	904
2	30	4.66	18.015	41.762	26.74	0.184	2.65	0.80	1.00	1.4	38.29	101.53	26.74	7062	4310	402	374	776
1	10	4.76	19.658	43.393	24.82	0.172	2.69	0.80	1.00	1.2	40.47	108.95	24.82	7056	3893	440	357	798
													Totals	**38,814**	**24,742**			**4,812**

1.2D + 1.0Di + 1.0Wi 90° Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
48.73 mph Wind with 1.275" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	6.30	6.648	14.528	12.13	0.462	1.95	0.85	1.00	1.6	15.32	29.93	12.13	1685	1120	160	32	192
6	105	6.22	7.853	22.520	17.73	0.331	2.22	0.85	1.00	1.6	20.40	45.20	17.73	3237	2223	239	173	412
5	90	6.02	11.368	37.808	28.21	0.242	2.46	0.85	1.00	1.5	31.71	78.06	28.21	5712	3897	400	445	845
4	70	5.71	16.348	39.881	30.28	0.231	2.50	0.85	1.00	1.5	37.05	92.44	30.28	6541	4416	448	462	910
3	50	5.28	22.213	43.802	32.12	0.232	2.49	0.85	1.00	1.5	44.33	110.43	32.12	7522	4884	496	421	917
2	30	4.66	18.015	41.762	26.74	0.184	2.65	0.85	1.00	1.4	39.19	103.92	26.74	7062	4310	411	374	785
1	10	4.76	19.658	43.393	24.82	0.172	2.69	0.85	1.00	1.2	41.45	111.60	24.82	7056	3893	451	357	809
													Totals	**38,814**	**24,742**			**4,869**

1.2D + 1.0Di + 1.0Wi 120° Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
48.73 mph Wind with 1.275" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	6.30	6.648	14.528	12.13	0.462	1.95	1.00	1.00	1.6	16.31	31.88	12.13	1685	1120	171	32	203
6	105	6.22	7.853	22.520	17.73	0.331	2.22	1.00	1.00	1.6	21.57	47.81	17.73	3237	2223	253	173	426
5	90	6.02	11.368	37.808	28.21	0.242	2.46	1.00	1.00	1.5	33.41	82.26	28.21	5712	3897	421	445	866
4	70	5.71	16.348	39.881	30.28	0.231	2.50	1.00	1.00	1.5	39.50	98.56	30.28	6541	4416	478	462	940
3	50	5.28	22.213	43.802	32.12	0.232	2.49	1.00	1.00	1.5	47.66	118.73	32.12	7522	4884	533	421	954
2	30	4.66	18.015	41.762	26.74	0.184	2.65	1.00	1.00	1.4	41.90	111.09	26.74	7062	4310	440	374	814
1	10	4.76	19.658	43.393	24.82	0.172	2.69	1.00	1.00	1.2	44.40	119.54	24.82	7056	3893	483	357	841
													Totals	**38,814**	**24,742**			**5,043**

1.2D + 1.0Di + 1.0Wi 180° Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
48.73 mph Wind with 1.275" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)

SECTION FORCES

1.2D + 1.0Di + 1.0Wi 180° Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
48.73 mph Wind with 1.275" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	6.30	6.648	14.528	12.13	0.462	1.95	0.80	1.00	1.6	14.98	29.28	12.13	1685	1120	157	32	189
6	105	6.22	7.853	22.520	17.73	0.331	2.22	0.80	1.00	1.6	20.00	44.33	17.73	3237	2223	234	173	407
5	90	6.02	11.368	37.808	28.21	0.242	2.46	0.80	1.00	1.5	31.14	76.66	28.21	5712	3897	393	445	838
4	70	5.71	16.348	39.881	30.28	0.231	2.50	0.80	1.00	1.5	36.24	90.41	30.28	6541	4416	439	462	900
3	50	5.28	22.213	43.802	32.12	0.232	2.49	0.80	1.00	1.5	43.21	107.66	32.12	7522	4884	483	421	904
2	30	4.66	18.015	41.762	26.74	0.184	2.65	0.80	1.00	1.4	38.29	101.53	26.74	7062	4310	402	374	776
1	10	4.76	19.658	43.393	24.82	0.172	2.69	0.80	1.00	1.2	40.47	108.95	24.82	7056	3893	440	357	798
													Totals	**38,814**	**24,742**			**4,812**

1.2D + 1.0Di + 1.0Wi 210° Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
48.73 mph Wind with 1.275" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	6.30	6.648	14.528	12.13	0.462	1.95	0.85	1.00	1.6	15.32	29.93	12.13	1685	1120	160	32	192
6	105	6.22	7.853	22.520	17.73	0.331	2.22	0.85	1.00	1.6	20.40	45.20	17.73	3237	2223	239	173	412
5	90	6.02	11.368	37.808	28.21	0.242	2.46	0.85	1.00	1.5	31.71	78.06	28.21	5712	3897	400	445	845
4	70	5.71	16.348	39.881	30.28	0.231	2.50	0.85	1.00	1.5	37.05	92.44	30.28	6541	4416	448	462	910
3	50	5.28	22.213	43.802	32.12	0.232	2.49	0.85	1.00	1.5	44.33	110.43	32.12	7522	4884	496	421	917
2	30	4.66	18.015	41.762	26.74	0.184	2.65	0.85	1.00	1.4	39.19	103.92	26.74	7062	4310	411	374	785
1	10	4.76	19.658	43.393	24.82	0.172	2.69	0.85	1.00	1.2	41.45	111.60	24.82	7056	3893	451	357	809
													Totals	**38,814**	**24,742**			**4,869**

1.2D + 1.0Di + 1.0Wi 240° Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
48.73 mph Wind with 1.275" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	6.30	6.648	14.528	12.13	0.462	1.95	1.00	1.00	1.6	16.31	31.88	12.13	1685	1120	171	32	203
6	105	6.22	7.853	22.520	17.73	0.331	2.22	1.00	1.00	1.6	21.57	47.81	17.73	3237	2223	253	173	426
5	90	6.02	11.368	37.808	28.21	0.242	2.46	1.00	1.00	1.5	33.41	82.26	28.21	5712	3897	421	445	866
4	70	5.71	16.348	39.881	30.28	0.231	2.50	1.00	1.00	1.5	39.50	98.56	30.28	6541	4416	478	462	940
3	50	5.28	22.213	43.802	32.12	0.232	2.49	1.00	1.00	1.5	47.66	118.73	32.12	7522	4884	533	421	954
2	30	4.66	18.015	41.762	26.74	0.184	2.65	1.00	1.00	1.4	41.90	111.09	26.74	7062	4310	440	374	814
1	10	4.76	19.658	43.393	24.82	0.172	2.69	1.00	1.00	1.2	44.40	119.54	24.82	7056	3893	483	357	841
													Totals	**38,814**	**24,742**			**5,043**

1.2D + 1.0Di + 1.0Wi 300° Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
48.73 mph Wind with 1.275" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	6.30	6.648	14.528	12.13	0.462	1.95	0.80	1.00	1.6	14.98	29.28	12.13	1685	1120	157	32	189
6	105	6.22	7.853	22.520	17.73	0.331	2.22	0.80	1.00	1.6	20.00	44.33	17.73	3237	2223	234	173	407
5	90	6.02	11.368	37.808	28.21	0.242	2.46	0.80	1.00	1.5	31.14	76.66	28.21	5712	3897	393	445	838
4	70	5.71	16.348	39.881	30.28	0.231	2.50	0.80	1.00	1.5	36.24	90.41	30.28	6541	4416	439	462	900
3	50	5.28	22.213	43.802	32.12	0.232	2.49	0.80	1.00	1.5	43.21	107.66	32.12	7522	4884	483	421	904
2	30	4.66	18.015	41.762	26.74	0.184	2.65	0.80	1.00	1.4	38.29	101.53	26.74	7062	4310	402	374	776
1	10	4.76	19.658	43.393	24.82	0.172	2.69	0.80	1.00	1.2	40.47	108.95	24.82	7056	3893	440	357	798
													Totals	**38,814**	**24,742**			**4,812**

1.2D + 1.0Di + 1.0Wi 330° Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
48.73 mph Wind with 1.275" Radial Ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	6.30	6.648	14.528	12.13	0.462	1.95	0.85	1.00	1.6	15.32	29.93	12.13	1685	1120	160	32	192
6	105	6.22	7.853	22.520	17.73	0.331	2.22	0.85	1.00	1.6	20.40	45.20	17.73	3237	2223	239	173	412
5	90	6.02	11.368	37.808	28.21	0.242	2.46	0.85	1.00	1.5	31.71	78.06	28.21	5712	3897	400	445	845
4	70	5.71	16.348	39.881	30.28	0.231	2.50	0.85	1.00	1.5	37.05	92.44	30.28	6541	4416	448	462	910
3	50	5.28	22.213	43.802	32.12	0.232	2.49	0.85	1.00	1.5	44.33	110.43	32.12	7522	4884	496	421	917
2	30	4.66	18.015	41.762	26.74	0.184	2.65	0.85	1.00	1.4	39.19	103.92	26.74	7062	4310	411	374	785
1	10	4.76	19.658	43.393	24.82	0.172	2.69	0.85	1.00	1.2	41.45	111.60	24.82	7056	3893	451	357	809
													Totals	**38,814**	**24,742**			**4,869**

1.0D + 1.0W Service Normal Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	9.55	6.648	2.396	0.00	0.203	2.59	1.00	1.00	0.0	8.03	20.75	0.00	471	0	169	20	189
6	105	9.42	7.853	4.792	0.00	0.142	2.80	1.00	1.00	0.0	10.57	29.61	0.00	845	0	237	122	359
5	90	9.13	11.368	9.599	0.00	0.106	2.94	1.00	1.00	0.0	16.79	49.36	0.00	1512	0	383	281	664
4	70	8.65	16.348	9.599	0.00	0.109	2.93	1.00	1.00	0.0	21.77	63.74	0.00	1771	0	469	283	752
3	50	8.01	22.213	11.686	0.00	0.121	2.88	1.00	1.00	0.0	28.82	82.98	0.00	2199	0	565	262	827
2	30	7.06	18.015	15.025	0.00	0.103	2.95	1.00	1.00	0.0	26.50	78.22	0.00	2293	0	469	231	700
1	10	7.21	19.658	18.574	0.00	0.105	2.94	1.00	1.00	0.0	30.14	88.69	0.00	2636	0	543	236	779

SECTION FORCES

1.0D + 1.0W Service Normal — Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
													Totals	**11,726**	**0**			**4,270**

1.0D + 1.0W Service 60° — Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	9.55	6.648	2.396	0.00	0.203	2.59	0.80	1.00	0.0	6.70	17.31	0.00	471	0	141	20	161
6	105	9.42	7.853	4.792	0.00	0.142	2.80	0.80	1.00	0.0	9.00	25.21	0.00	845	0	202	122	324
5	90	9.13	11.368	9.599	0.00	0.106	2.94	0.80	1.00	0.0	14.51	42.68	0.00	1512	0	331	281	612
4	70	8.65	16.348	9.599	0.00	0.109	2.93	0.80	1.00	0.0	18.50	54.17	0.00	1771	0	398	283	681
3	50	8.01	22.213	11.686	0.00	0.121	2.88	0.80	1.00	0.0	24.38	70.19	0.00	2199	0	478	262	740
2	30	7.06	18.015	15.025	0.00	0.103	2.95	0.80	1.00	0.0	22.89	67.58	0.00	2293	0	406	231	637
1	10	7.21	19.658	18.574	0.00	0.105	2.94	0.80	1.00	0.0	26.21	77.12	0.00	2636	0	473	236	708
													Totals	**11,726**	**0**			**3,863**

1.0D + 1.0W Service 90° — Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	9.55	6.648	2.396	0.00	0.203	2.59	0.85	1.00	0.0	7.03	18.17	0.00	471	0	148	20	168
6	105	9.42	7.853	4.792	0.00	0.142	2.80	0.85	1.00	0.0	9.39	26.31	0.00	845	0	211	122	333
5	90	9.13	11.368	9.599	0.00	0.106	2.94	0.85	1.00	0.0	15.08	44.35	0.00	1512	0	344	281	625
4	70	8.65	16.348	9.599	0.00	0.109	2.93	0.85	1.00	0.0	19.32	56.56	0.00	1771	0	416	283	699
3	50	8.01	22.213	11.686	0.00	0.121	2.88	0.85	1.00	0.0	25.49	73.39	0.00	2199	0	500	262	761
2	30	7.06	18.015	15.025	0.00	0.103	2.95	0.85	1.00	0.0	23.79	70.24	0.00	2293	0	422	231	653
1	10	7.21	19.658	18.574	0.00	0.105	2.94	0.85	1.00	0.0	27.19	80.01	0.00	2636	0	490	236	726
													Totals	**11,726**	**0**			**3,965**

1.0D + 1.0W Service 120° — Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	9.55	6.648	2.396	0.00	0.203	2.59	1.00	1.00	0.0	8.03	20.75	0.00	471	0	169	20	189
6	105	9.42	7.853	4.792	0.00	0.142	2.80	1.00	1.00	0.0	10.57	29.61	0.00	845	0	237	122	359
5	90	9.13	11.368	9.599	0.00	0.106	2.94	1.00	1.00	0.0	16.79	49.36	0.00	1512	0	383	281	664
4	70	8.65	16.348	9.599	0.00	0.109	2.93	1.00	1.00	0.0	21.77	63.74	0.00	1771	0	469	283	752
3	50	8.01	22.213	11.686	0.00	0.121	2.88	1.00	1.00	0.0	28.82	82.98	0.00	2199	0	565	262	827
2	30	7.06	18.015	15.025	0.00	0.103	2.95	1.00	1.00	0.0	26.50	78.22	0.00	2293	0	469	231	700
1	10	7.21	19.658	18.574	0.00	0.105	2.94	1.00	1.00	0.0	30.14	88.69	0.00	2636	0	543	236	779
													Totals	**11,726**	**0**			**4,270**

1.0D + 1.0W Service 180° — Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	9.55	6.648	2.396	0.00	0.203	2.59	0.80	1.00	0.0	6.70	17.31	0.00	471	0	141	20	161
6	105	9.42	7.853	4.792	0.00	0.142	2.80	0.80	1.00	0.0	9.00	25.21	0.00	845	0	202	122	324
5	90	9.13	11.368	9.599	0.00	0.106	2.94	0.80	1.00	0.0	14.51	42.68	0.00	1512	0	331	281	612
4	70	8.65	16.348	9.599	0.00	0.109	2.93	0.80	1.00	0.0	18.50	54.17	0.00	1771	0	398	283	681
3	50	8.01	22.213	11.686	0.00	0.121	2.88	0.80	1.00	0.0	24.38	70.19	0.00	2199	0	478	262	740
2	30	7.06	18.015	15.025	0.00	0.103	2.95	0.80	1.00	0.0	22.89	67.58	0.00	2293	0	406	231	637
1	10	7.21	19.658	18.574	0.00	0.105	2.94	0.80	1.00	0.0	26.21	77.12	0.00	2636	0	473	236	708
													Totals	**11,726**	**0**			**3,863**

1.0D + 1.0W Service 210° — Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	9.55	6.648	2.396	0.00	0.203	2.59	0.85	1.00	0.0	7.03	18.17	0.00	471	0	148	20	168
6	105	9.42	7.853	4.792	0.00	0.142	2.80	0.85	1.00	0.0	9.39	26.31	0.00	845	0	211	122	333
5	90	9.13	11.368	9.599	0.00	0.106	2.94	0.85	1.00	0.0	15.08	44.35	0.00	1512	0	344	281	625
4	70	8.65	16.348	9.599	0.00	0.109	2.93	0.85	1.00	0.0	19.32	56.56	0.00	1771	0	416	283	699
3	50	8.01	22.213	11.686	0.00	0.121	2.88	0.85	1.00	0.0	25.49	73.39	0.00	2199	0	500	262	761
2	30	7.06	18.015	15.025	0.00	0.103	2.95	0.85	1.00	0.0	23.79	70.24	0.00	2293	0	422	231	653
1	10	7.21	19.658	18.574	0.00	0.105	2.94	0.85	1.00	0.0	27.19	80.01	0.00	2636	0	490	236	726
													Totals	**11,726**	**0**			**3,965**

1.0D + 1.0W Service 240° — Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)

SECTION FORCES

1.0D + 1.0W Service 240° Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	9.55	6.648	2.396	0.00	0.203	2.59	1.00	1.00	0.0	8.03	20.75	0.00	471	0	169	20	189
6	105	9.42	7.853	4.792	0.00	0.142	2.80	1.00	1.00	0.0	10.57	29.61	0.00	845	0	237	122	359
5	90	9.13	11.368	9.599	0.00	0.106	2.94	1.00	1.00	0.0	16.79	49.36	0.00	1512	0	383	281	664
4	70	8.65	16.348	9.599	0.00	0.109	2.93	1.00	1.00	0.0	21.77	63.74	0.00	1771	0	469	283	752
3	50	8.01	22.213	11.686	0.00	0.121	2.88	1.00	1.00	0.0	28.82	82.98	0.00	2199	0	565	262	827
2	30	7.06	18.015	15.025	0.00	0.103	2.95	1.00	1.00	0.0	26.50	78.22	0.00	2293	0	469	231	700
1	10	7.21	19.658	18.574	0.00	0.105	2.94	1.00	1.00	0.0	30.14	88.69	0.00	2636	0	543	236	779
													Totals	**11,726**	**0**			**4,270**

1.0D + 1.0W Service 300° Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	9.55	6.648	2.396	0.00	0.203	2.59	0.80	1.00	0.0	6.70	17.31	0.00	471	0	141	20	161
6	105	9.42	7.853	4.792	0.00	0.142	2.80	0.80	1.00	0.0	9.00	25.21	0.00	845	0	202	122	324
5	90	9.13	11.368	9.599	0.00	0.106	2.94	0.80	1.00	0.0	14.51	42.68	0.00	1512	0	331	281	612
4	70	8.65	16.348	9.599	0.00	0.109	2.93	0.80	1.00	0.0	18.50	54.17	0.00	1771	0	398	283	681
3	50	8.01	22.213	11.686	0.00	0.121	2.88	0.80	1.00	0.0	24.38	70.19	0.00	2199	0	478	262	740
2	30	7.06	18.015	15.025	0.00	0.103	2.95	0.80	1.00	0.0	22.89	67.58	0.00	2293	0	406	231	637
1	10	7.21	19.658	18.574	0.00	0.105	2.94	0.80	1.00	0.0	26.21	77.12	0.00	2636	0	473	236	708
													Totals	**11,726**	**0**			**3,863**

1.0D + 1.0W Service 330° Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
7	112	9.55	6.648	2.396	0.00	0.203	2.59	0.85	1.00	0.0	7.03	18.17	0.00	471	0	148	20	168
6	105	9.42	7.853	4.792	0.00	0.142	2.80	0.85	1.00	0.0	9.39	26.31	0.00	845	0	211	122	333
5	90	9.13	11.368	9.599	0.00	0.106	2.94	0.85	1.00	0.0	15.08	44.35	0.00	1512	0	344	281	625
4	70	8.65	16.348	9.599	0.00	0.109	2.93	0.85	1.00	0.0	19.32	56.56	0.00	1771	0	416	283	699
3	50	8.01	22.213	11.686	0.00	0.121	2.88	0.85	1.00	0.0	25.49	73.39	0.00	2199	0	500	262	761
2	30	7.06	18.015	15.025	0.00	0.103	2.95	0.85	1.00	0.0	23.79	70.24	0.00	2293	0	422	231	653
1	10	7.21	19.658	18.574	0.00	0.105	2.94	0.85	1.00	0.0	27.19	80.01	0.00	2636	0	490	236	726
													Totals	**11,726**	**0**			**3,965**

EQUIVALENT LATERAL FORCE METHOD

Spectral Response Acceleration for Short Period (S_S):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v:	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.09
Seismic Response Coefficient (C_s):	0.04
Upper Limit C_S:	0.04
Lower Limit C_S:	0.03
Period based on Rayleigh Method (sec):	0.66
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.08
Total Unfactored Dead Load:	18.72 k
Seismic Base Shear (E):	1.08 k

SEISMIC FORCES

0.9D - 1.0Ev + 1.0Eh

Section/Appurtenance	Height Above Base (ft)	Weight (lb)	W_Z (lb-ft)	Cvx	Horizontal Force (lb)	Vertical Force (lb)
7	112.50	471	76,999	0.040	44	406
6	105.00	845	128,369	0.067	73	729
5	90.00	1,512	194,441	0.102	110	1,304
4	70.00	1,771	173,580	0.091	99	1,527
3	50.00	2,199	149,912	0.078	85	1,896
2	30.00	2,293	90,094	0.047	51	1,977
1	10.00	2,636	31,640	0.017	18	2,273
Generic 10' Dipole	115.00	30	5,026	0.003	3	26
Ericsson RRUS 8843 B2, B66A	113.00	216	35,508	0.019	20	186
Ericsson RRUS 4449 B5, B12	113.00	213	35,015	0.018	20	184
Generic Round Sector Frame	113.00	2,100	345,216	0.181	196	1,811
Kathrein Scala 80010966	113.00	688	113,034	0.059	64	593
Kathrein Scala 860-10025	111.00	7	1,064	0.001	1	6
Powerwave Allgon TT19-08BP111-001	111.00	48	7,740	0.004	4	41
Kathrein Scala 800-10121	111.00	132	21,333	0.011	12	114
Generic 8' Std. Dish	108.00	340	53,228	0.028	30	293
Raycap DC6-48-60-18-8F	105.00	40	6,075	0.003	3	34
Raycap RDIDC-9181-PF-48	97.00	22	3,053	0.002	2	19
Samsung RF4451d-70A	97.00	184	25,638	0.013	15	159
Samsung RF4450T-71A	97.00	284	39,566	0.021	22	245
Commscope FFVV-65B-R2	97.00	212	29,612	0.016	17	183
Generic Flat Light Sector Frame	97.00	2,400	334,595	0.175	190	2,069
Generic 4' Grid Dish	82.00	51	5,931	0.003	3	44
Generic 8' Yagi	78.00	30	3,306	0.002	2	26
	Totals	**18,723**	**1,909,974**	**1.000**	**1,084**	**16,144**

1.2D + 1.0Ev + 1.0Eh

Section/Appurtenance	Height Above Base (ft)	Weight (lb)	W_Z (lb-ft)	Cvx	Horizontal Force (lb)	Vertical Force (lb)
7	112.50	471	76,999	0.040	44	583
6	105.00	845	128,369	0.067	73	1,046
5	90.00	1,512	194,441	0.102	110	1,872
4	70.00	1,771	173,580	0.091	99	2,191
3	50.00	2,199	149,912	0.078	85	2,721
2	30.00	2,293	90,094	0.047	51	2,838
1	10.00	2,636	31,640	0.017	18	3,263
Generic 10' Dipole	115.00	30	5,026	0.003	3	37
Ericsson RRUS 8843 B2, B66A	113.00	216	35,508	0.019	20	267
Ericsson RRUS 4449 B5, B12	113.00	213	35,015	0.018	20	264
Generic Round Sector Frame	113.00	2,100	345,216	0.181	196	2,599
Kathrein Scala 80010966	113.00	688	113,034	0.059	64	851

Kathrein Scala 860-10025		111.00	7	1,064	0.001	1	8
Powerwave Allgon TT19-08BP111-001		111.00	48	7,740	0.004	4	59
Kathrein Scala 800-10121		111.00	132	21,333	0.011	12	164
Generic 8' Std. Dish		108.00	340	53,228	0.028	30	421
Raycap DC6-48-60-18-8F		105.00	40	6,075	0.003	3	50
Raycap RDIDC-9181-PF-48		97.00	22	3,053	0.002	2	27
Samsung RF4451d-70A		97.00	184	25,638	0.013	15	228
Samsung RF4450T-71A		97.00	284	39,566	0.021	22	351
Commscope FFVV-65B-R2		97.00	212	29,612	0.016	17	263
Generic Flat Light Sector Frame		97.00	2,400	334,595	0.175	190	2,971
Generic 4' Grid Dish		82.00	51	5,931	0.003	3	63
Generic 8' Yagi		78.00	30	3,306	0.002	2	37
	Totals		**18,723**	**1,909,974**	**1.000**	**1,084**	**23,174**

FORCE/STRESS SUMMARY

Section 1 – 0.0' to 20.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PST - 5" DIA PIPE	-107.37	1.2D + 1.0W N	9.641	100	100	100	61.54	50.00	146.70	0.00	0.00	0	0	73	Member X
D SAE - 3X3X0.25	-5.09	1.2D + 1.0W 90°	19.699	50	50	50	199.65	36.00	10.34	8.84	13.92	1	1	57	Bolt Shear

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PST - 5" DIA PIPE	93.58	0.9D + 1.0W 60°	50.0	65	193.50	0.00	0.00		0	0	48	Member
D SAE - 3X3X0.25	4.99	1.2D + 1.0W 90°	36.0	58	42.39	8.84	8.26	13.05	1	1	60	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Bot Tension	93.59	0.9D + 1.0W 180°	227.15	17	4	1" A354-BC
Bot Compression	111.95	1.2D + 1.0W 120°	264.10	1	0	

Section 2 – 20.0' to 40.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 4" DIA PIPE	-89.27	1.2D + 1.0W N	9.641	100	100	100	78.17	50.00	126.94	0.00	0.00	0	0	70	Member X
D SAE - 3X3X0.1875	-4.92	1.2D + 1.0W 90°	17.98	50	50	50	181.01	36.00	9.52	8.84	10.44	1	1	55	Bolt Shear

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 4" DIA PIPE	78.55	0.9D + 1.0W 60°	50.0	65	198.45	0.00	0.00		0	0	39	Member
D SAE - 3X3X0.1875	4.79	1.2D + 1.0W 90°	36.0	58	32.12	8.84	6.20	9.79	1	1	77	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Bot Tension	78.41	0.9D + 1.0W 180°	218.07	36	4	1 A325

Section 3 – 40.0' to 60.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 3" DIA PIPE	-71.40	1.2D + 1.0W N	6.427	100	100	100	67.66	50.00	97.24	0.00	0.00	0	0	73	Member X
D SAE - 3X3X0.1875	-4.36	1.2D + 1.0W 90°	14.52	50	50	50	146.18	36.00	14.60	8.84	10.44	1	1	49	Bolt Shear

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 3" DIA PIPE	62.30	0.9D + 1.0W 60°	50.0	65	135.90	0.00	0.00		0	0	45	Member
D SAE - 3X3X0.1875	4.24	1.2D + 1.0W 90°	36.0	58	32.12	8.84	6.20	9.79	1	1	68	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Bot Tension	62.15	0.9D + 1.0W 180°	166.22	37	4	0.875" A325

Section 4 – 60.0' to 80.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 2-1/2" DIA PIPE	-51.61	1.2D + 1.0W N	6.427	100	100	100	83.47	50.00	60.83	0.00	0.00	0	0	84	Member X
D SAE - 2.5X2.5X0.1875	-3.96	1.2D + 1.0W 90°	12.757	50	50	50	154.63	36.00	10.80	8.84	10.44	1	1	44	Bolt Shear

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 2-1/2" DIA PIPE	45.21	0.9D + 1.0W 60°	50.0	65	101.25	0.00	0.00		0	0	44	Member
D SAE - 2.5X2.5X0.1875	3.91	1.2D + 1.0W 90°	36.0	58	25.99	8.84	6.20	8.77	1	1	63	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Bot Tension	45.10	0.9D + 1.0W 180°	120.41	37	4	0.75" A325

FORCE/STRESS SUMMARY

Section 5 – 80.0' to 100.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 2-1/2" DIA PIPE	-31.32	1.2D + 1.0W N	6.427	100	100	100	83.47	50.00	60.83	0.00	0.00	0	0	51	Member X
D SAE - 2X2X0.1875	-3.43	1.2D + 1.0W 90°	12.143	50	50	50	184.92	36.00	5.98	8.84	10.44	1	1	57	Member Z

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 2-1/2" DIA PIPE	27.19	0.9D + 1.0W 60°	50.0	65	101.25	0.00	0.00		0	0	26	Member
D SAE - 2X2X0.1875	3.42	1.2D + 1.0W 90°	36.0	58	19.89	8.84	6.20	6.73	1	1	55	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Bot Tension	27.10	0.9D + 1.0W 180°	81.36	33	4	5/8 A325

Section 6 – 100.0' to 110.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 2-1/2" DIA PIPE	-10.41	1.2D + 1.0W N	4.813	100	100	100	62.50	50.00	76.09	0.00	0.00	0	0	13	Member X
H DAE - 2X2X0.1875	-1.25	1.2D + 1.0W 60°	8.666	100	100	100	284.59	36.00	5.05	17.67	20.88	2	2	24	Member Y
D SAE - 2X2X0.1875	-2.82	1.2D + 1.0W 90°	9.913	50	50	50	150.95	36.00	8.98	8.84	10.44	1	1	31	Bolt Shear

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 2-1/2" DIA PIPE	6.23	1.2D + 1.0W 60°	50.0	65	101.25	0.00	0.00		0	0	6	Member
H DAE - 2X2X0.1875	1.21	1.2D + 1.0W N	36.0	58	39.77	17.67	12.40	13.46	2	2	9	Bolt Bear
D SAE - 2X2X0.1875	2.68	1.2D + 1.0W 90°	36.0	58	19.89	8.84	6.20	6.73	1	1	43	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Bot Tension	9.26	0.9D + 1.0W 180°	81.36	11	4	5/8 A325

Section 7 – 110.0' to 115.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 2-1/2" DIA PIPE	-4.18	1.2D + 1.0Di + 1.0Wi N	0.375	100	100	100	4.87	50.00	101.07	0.00	0.00	0	0	4	Member X
H SAE - 2.5X2.5X0.1875	-0.49	1.2D + 1.0W 60°	8.666	100	100	100	210.08	36.00	5.85	13.81	13.05	1	1	8	Member Z
D SAE - 2X2X0.1875	-1.28	1.2D + 1.0W 90°	9.652	50	50	50	146.98	36.00	9.47	13.81	13.05	1	1	13	Member Z

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 2-1/2" DIA PIPE	0.30	1.2D + 1.0W 60°	50.0	65	101.25	0.00	0.00		0	0	0	Member
H SAE - 2.5X2.5X0.1875	0.60	1.2D + 1.0W N	36.0	58	25.22	13.81	7.83	8.87	1	1	7	Bolt Bear
D SAE - 2X2X0.1875	1.16	1.2D + 1.0W 90°	36.0	58	19.12	13.81	7.83	6.83	1	1	17	Blk Shear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Bot Tension	0.60	0.9D + 1.0W 180°	81.36	1	4	5/8 A325

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	79.63	0.071	-0.0152	0.2028	0.2029
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	80.38	0.0737	-0.0155	0.2027	0.2028
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	99.63	0.11	-0.0216	0.1491	0.1495
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	104.81	0.1204	-0.0201	0.1053	0.1072
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	109.63	0.1301	-0.0187	0.1461	0.1464
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	110.38	0.132	-0.0185	0.1449	0.1452
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	114.63	0.1405	-0.0181	0.1060	0.1075
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	115.00	0.1412	-0.0180	0.1063	0.1078
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	79.63	0.0701	0.0132	0.2076	0.2076
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	80.38	0.0725	0.0134	0.2092	0.2092
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	99.63	0.1085	0.0186	0.1536	0.1536
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	104.81	0.1188	0.0173	0.1028	0.1042
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	109.63	0.1285	0.0161	0.1463	0.1463
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	110.38	0.1304	0.0160	0.1441	0.1441
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	114.63	0.1389	0.0155	0.1032	0.1044
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	115.00	0.1395	0.0155	0.1035	0.1047
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	79.63	0.0735	0.0135	0.2242	0.2242
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	80.38	0.0766	0.0137	0.2241	0.2241
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	99.63	0.1138	0.0192	0.1571	0.1571
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	104.81	0.1246	0.0179	0.1065	0.108
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	109.63	0.1346	0.0166	0.1524	0.1524
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	110.38	0.1365	0.0165	0.1513	0.1513
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	114.63	0.1453	0.0161	0.1080	0.1092
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	115.00	0.146	0.0161	0.1084	0.1095
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	79.63	0.071	-0.0170	0.2031	0.2033
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	80.38	0.0738	-0.0173	0.2030	0.2031
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	99.63	0.1101	-0.0242	0.1493	0.1498
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	104.81	0.1205	-0.0229	0.1054	0.1079
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	109.63	0.1302	-0.0216	0.1463	0.1467
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	110.38	0.1321	-0.0215	0.1451	0.1455
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	114.63	0.1407	-0.0211	0.1061	0.1082
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	115.00	0.1413	-0.0210	0.1064	0.1085
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	79.63	0.0699	0.0118	0.2070	0.207
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	80.38	0.0723	0.0120	0.2086	0.2086
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	99.63	0.1082	0.0165	0.1531	0.1531
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	104.81	0.1185	0.0150	0.1025	0.1036
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	109.63	0.1282	0.0137	0.1458	0.1458
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	110.38	0.1301	0.0136	0.1437	0.1437
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	114.63	0.1385	0.0131	0.1029	0.1037
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	115.00	0.1392	0.0131	0.1032	0.104
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	79.63	0.0735	-0.0135	0.2242	0.2242
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	80.38	0.0766	-0.0137	0.2241	0.2241
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	99.63	0.1138	-0.0192	0.1571	0.1571
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	104.81	0.1246	-0.0179	0.1065	0.108
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	109.63	0.1346	-0.0166	0.1524	0.1524
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	110.38	0.1365	-0.0165	0.1513	0.1513
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	114.63	0.1453	-0.0161	0.1080	0.1092
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	115.00	0.146	-0.0161	0.1084	0.1095
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	79.63	0.071	-0.0170	0.2030	0.2032
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	80.38	0.0738	-0.0173	0.2029	0.2031
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	99.63	0.1101	-0.0243	0.1493	0.1498
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	104.81	0.1205	-0.0229	0.1054	0.1079
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	109.63	0.1302	-0.0217	0.1463	0.1467
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	110.38	0.1321	-0.0215	0.1451	0.1454
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	114.63	0.1407	-0.0211	0.1061	0.1082
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	115.00	0.1413	-0.0211	0.1064	0.1085
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	79.63	0.0701	-0.0132	0.2076	0.2076
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	80.38	0.0725	-0.0134	0.2092	0.2092
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	99.63	0.1085	-0.0186	0.1536	0.1536

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	104.81	0.1188	-0.0173	0.1028	0.1042
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	109.63	0.1285	-0.0161	0.1463	0.1463
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	110.38	0.1304	-0.0160	0.1441	0.1441
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	114.63	0.1389	-0.0155	0.1032	0.1044
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	115.00	0.1395	-0.0155	0.1035	0.1047
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	79.63	0.0735	0.0136	0.2241	0.2241
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	80.38	0.0766	0.0138	0.2241	0.2241
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	99.63	0.1138	0.0193	0.1571	0.1571
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	104.81	0.1246	0.0179	0.1065	0.108
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	109.63	0.1346	0.0167	0.1524	0.1524
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	110.38	0.1365	0.0166	0.1513	0.1513
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	114.63	0.1453	0.0161	0.1080	0.1092
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	115.00	0.146	0.0161	0.1084	0.1095
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	79.63	0.0166	-0.0029	0.0524	0.0524
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	80.38	0.0173	-0.0030	0.0522	0.0522
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	99.63	0.026	-0.0040	0.0385	0.0386
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	104.81	0.0286	-0.0035	0.0248	0.025
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	109.63	0.031	-0.0030	0.0390	0.039
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	110.38	0.0315	-0.0029	0.0387	0.0387
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	114.63	0.0336	-0.0028	0.0268	0.027
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	115.00	0.0338	-0.0027	0.0272	0.0274
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	79.63	0.0166	0.0026	0.0539	0.0539
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	80.38	0.0172	0.0026	0.0546	0.0546
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	99.63	0.026	0.0035	0.0401	0.0401
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	104.81	0.0286	0.0030	0.0246	0.0248
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	109.63	0.031	0.0026	0.0395	0.0395
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	110.38	0.0315	0.0025	0.0384	0.0384
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	114.63	0.0336	0.0024	0.0263	0.0264
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	115.00	0.0337	0.0024	0.0267	0.0268
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	79.63	0.0166	0.0026	0.0562	0.0562
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	80.38	0.0174	0.0026	0.0560	0.056
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	99.63	0.026	0.0035	0.0361	0.0361
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	104.81	0.0287	0.0030	0.0240	0.0242
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	109.63	0.031	0.0026	0.0395	0.0395
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	110.38	0.0315	0.0025	0.0393	0.0393
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	114.63	0.0336	0.0024	0.0265	0.0266
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	115.00	0.0337	0.0024	0.0269	0.027
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	79.63	0.0166	-0.0029	0.0524	0.0524
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	80.38	0.0173	-0.0030	0.0522	0.0522
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	99.63	0.026	-0.0040	0.0385	0.0386
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	104.81	0.0286	-0.0035	0.0247	0.025
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	109.63	0.031	-0.0030	0.0390	0.039
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	110.38	0.0315	-0.0029	0.0387	0.0387
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	114.63	0.0336	-0.0028	0.0268	0.027
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	115.00	0.0338	-0.0027	0.0272	0.0274
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	79.63	0.0166	0.0026	0.0539	0.0539
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	80.38	0.0172	0.0026	0.0546	0.0546
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	99.63	0.026	0.0035	0.0401	0.0401
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	104.81	0.0286	0.0030	0.0246	0.0248
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	109.63	0.031	0.0026	0.0395	0.0395
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	110.38	0.0315	0.0025	0.0384	0.0384
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	114.63	0.0336	0.0024	0.0263	0.0264
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	115.00	0.0337	0.0024	0.0267	0.0268
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	79.63	0.0166	-0.0026	0.0562	0.0562
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	80.38	0.0174	0.0026	0.0560	0.056
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	99.63	0.026	-0.0035	0.0361	0.0361
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	104.81	0.0287	0.0030	0.0240	0.0242
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	109.63	0.031	0.0026	0.0395	0.0395
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	110.38	0.0315	0.0025	0.0393	0.0393

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	114.63	0.0336	0.0024	0.0265	0.0266
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	115.00	0.0337	0.0024	0.0269	0.027
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	79.63	0.0166	-0.0030	0.0524	0.0524
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	80.38	0.0173	-0.0030	0.0522	0.0522
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	99.63	0.026	-0.0040	0.0385	0.0386
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	104.81	0.0286	-0.0035	0.0247	0.025
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	109.63	0.031	-0.0030	0.0390	0.039
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	110.38	0.0315	-0.0029	0.0387	0.0387
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	114.63	0.0336	-0.0028	0.0268	0.027
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	115.00	0.0338	-0.0027	0.0272	0.0274
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	79.63	0.0166	-0.0026	0.0539	0.0539
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	80.38	0.0172	0.0026	0.0546	0.0546
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	99.63	0.026	-0.0035	0.0401	0.0401
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	104.81	0.0286	0.0030	0.0246	0.0248
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	109.63	0.031	0.0026	0.0395	0.0395
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	110.38	0.0315	0.0025	0.0384	0.0384
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	114.63	0.0336	0.0024	0.0263	0.0264
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	115.00	0.0337	0.0024	0.0267	0.0268
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	79.63	0.0166	0.0026	0.0562	0.0562
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	80.38	0.0174	0.0026	0.0559	0.0559
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	99.63	0.026	0.0035	0.0361	0.0361
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	104.81	0.0287	0.0030	0.0240	0.0242
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	109.63	0.031	0.0026	0.0395	0.0395
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	110.38	0.0315	0.0025	0.0393	0.0393
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	114.63	0.0336	0.0024	0.0265	0.0266
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	115.00	0.0337	0.0024	0.0269	0.027
1.2D + 1.0Ev + 1.0Eh 330° Seismic	79.63	0.0167	-0.0029	0.0530	0.053
1.2D + 1.0Ev + 1.0Eh 330° Seismic	80.38	0.0174	-0.0030	0.0526	0.0526
1.2D + 1.0Ev + 1.0Eh 330° Seismic	99.63	0.0261	-0.0040	0.0394	0.0394
1.2D + 1.0Ev + 1.0Eh 330° Seismic	104.81	0.0287	-0.0035	0.0248	0.025
1.2D + 1.0Ev + 1.0Eh 330° Seismic	109.63	0.031	-0.0030	0.0391	0.0391
1.2D + 1.0Ev + 1.0Eh 330° Seismic	110.38	0.0315	-0.0029	0.0390	0.039
1.2D + 1.0Ev + 1.0Eh 330° Seismic	114.63	0.0336	-0.0028	0.0269	0.027
1.2D + 1.0Ev + 1.0Eh 330° Seismic	115.00	0.0338	-0.0027	0.0273	0.0274
1.2D + 1.0Ev + 1.0Eh 300° Seismic	79.63	0.0166	0.0026	0.0536	0.0536
1.2D + 1.0Ev + 1.0Eh 300° Seismic	80.38	0.0172	0.0026	0.0545	0.0545
1.2D + 1.0Ev + 1.0Eh 300° Seismic	99.63	0.026	0.0035	0.0410	0.041
1.2D + 1.0Ev + 1.0Eh 300° Seismic	104.81	0.0286	0.0030	0.0248	0.025
1.2D + 1.0Ev + 1.0Eh 300° Seismic	109.63	0.031	0.0026	0.0396	0.0396
1.2D + 1.0Ev + 1.0Eh 300° Seismic	110.38	0.0315	0.0025	0.0383	0.0383
1.2D + 1.0Ev + 1.0Eh 300° Seismic	114.63	0.0336	0.0024	0.0263	0.0264
1.2D + 1.0Ev + 1.0Eh 300° Seismic	115.00	0.0338	0.0024	0.0267	0.0268
1.2D + 1.0Ev + 1.0Eh 240° Seismic	79.63	0.0167	0.0026	0.0568	0.0568
1.2D + 1.0Ev + 1.0Eh 240° Seismic	80.38	0.0175	0.0026	0.0564	0.0564
1.2D + 1.0Ev + 1.0Eh 240° Seismic	99.63	0.0261	0.0035	0.0356	0.0358
1.2D + 1.0Ev + 1.0Eh 240° Seismic	104.81	0.0287	0.0030	0.0240	0.0241
1.2D + 1.0Ev + 1.0Eh 240° Seismic	109.63	0.031	0.0026	0.0396	0.0396
1.2D + 1.0Ev + 1.0Eh 240° Seismic	110.38	0.0315	0.0025	0.0396	0.0396
1.2D + 1.0Ev + 1.0Eh 240° Seismic	114.63	0.0336	0.0024	0.0266	0.0267
1.2D + 1.0Ev + 1.0Eh 240° Seismic	115.00	0.0338	0.0024	0.0270	0.0271
1.2D + 1.0Ev + 1.0Eh 210° Seismic	79.63	0.0167	-0.0030	0.0530	0.053
1.2D + 1.0Ev + 1.0Eh 210° Seismic	80.38	0.0174	-0.0030	0.0526	0.0526
1.2D + 1.0Ev + 1.0Eh 210° Seismic	99.63	0.0261	-0.0040	0.0394	0.0394
1.2D + 1.0Ev + 1.0Eh 210° Seismic	104.81	0.0287	-0.0035	0.0248	0.025
1.2D + 1.0Ev + 1.0Eh 210° Seismic	109.63	0.031	-0.0030	0.0391	0.0391
1.2D + 1.0Ev + 1.0Eh 210° Seismic	110.38	0.0315	-0.0029	0.0390	0.039
1.2D + 1.0Ev + 1.0Eh 210° Seismic	114.63	0.0336	-0.0028	0.0269	0.027
1.2D + 1.0Ev + 1.0Eh 210° Seismic	115.00	0.0338	-0.0028	0.0273	0.0274
1.2D + 1.0Ev + 1.0Eh 180° Seismic	79.63	0.0166	0.0026	0.0537	0.0537

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0Ev + 1.0Eh 180° Seismic	80.38	0.0172	0.0026	0.0545	0.0545
1.2D + 1.0Ev + 1.0Eh 180° Seismic	99.63	0.026	0.0035	0.0410	0.041
1.2D + 1.0Ev + 1.0Eh 180° Seismic	104.81	0.0286	0.0030	0.0248	0.025
1.2D + 1.0Ev + 1.0Eh 180° Seismic	109.63	0.031	0.0026	0.0396	0.0396
1.2D + 1.0Ev + 1.0Eh 180° Seismic	110.38	0.0315	0.0026	0.0383	0.0383
1.2D + 1.0Ev + 1.0Eh 180° Seismic	114.63	0.0336	0.0024	0.0263	0.0264
1.2D + 1.0Ev + 1.0Eh 180° Seismic	115.00	0.0338	0.0024	0.0267	0.0268
1.2D + 1.0Ev + 1.0Eh 120° Seismic	79.63	0.0167	-0.0026	0.0568	0.0568
1.2D + 1.0Ev + 1.0Eh 120° Seismic	80.38	0.0175	0.0026	0.0564	0.0564
1.2D + 1.0Ev + 1.0Eh 120° Seismic	99.63	0.0261	0.0035	0.0356	0.0358
1.2D + 1.0Ev + 1.0Eh 120° Seismic	104.81	0.0287	0.0030	0.0240	0.0241
1.2D + 1.0Ev + 1.0Eh 120° Seismic	109.63	0.031	0.0026	0.0396	0.0396
1.2D + 1.0Ev + 1.0Eh 120° Seismic	110.38	0.0315	0.0025	0.0396	0.0396
1.2D + 1.0Ev + 1.0Eh 120° Seismic	114.63	0.0336	0.0024	0.0266	0.0267
1.2D + 1.0Ev + 1.0Eh 120° Seismic	115.00	0.0338	0.0024	0.0270	0.0271
1.2D + 1.0Ev + 1.0Eh 90° Seismic	79.63	0.0167	-0.0030	0.0530	0.053
1.2D + 1.0Ev + 1.0Eh 90° Seismic	80.38	0.0174	-0.0030	0.0526	0.0526
1.2D + 1.0Ev + 1.0Eh 90° Seismic	99.63	0.0261	-0.0040	0.0394	0.0394
1.2D + 1.0Ev + 1.0Eh 90° Seismic	104.81	0.0287	-0.0035	0.0248	0.025
1.2D + 1.0Ev + 1.0Eh 90° Seismic	109.63	0.031	-0.0030	0.0391	0.0391
1.2D + 1.0Ev + 1.0Eh 90° Seismic	110.38	0.0315	-0.0029	0.0390	0.039
1.2D + 1.0Ev + 1.0Eh 90° Seismic	114.63	0.0336	-0.0028	0.0269	0.027
1.2D + 1.0Ev + 1.0Eh 90° Seismic	115.00	0.0338	-0.0028	0.0273	0.0274
1.2D + 1.0Ev + 1.0Eh 60° Seismic	79.63	0.0166	-0.0026	0.0536	0.0536
1.2D + 1.0Ev + 1.0Eh 60° Seismic	80.38	0.0172	0.0026	0.0545	0.0545
1.2D + 1.0Ev + 1.0Eh 60° Seismic	99.63	0.026	0.0035	0.0410	0.041
1.2D + 1.0Ev + 1.0Eh 60° Seismic	104.81	0.0286	0.0030	0.0248	0.025
1.2D + 1.0Ev + 1.0Eh 60° Seismic	109.63	0.031	0.0026	0.0396	0.0396
1.2D + 1.0Ev + 1.0Eh 60° Seismic	110.38	0.0315	0.0025	0.0383	0.0383
1.2D + 1.0Ev + 1.0Eh 60° Seismic	114.63	0.0336	0.0024	0.0263	0.0264
1.2D + 1.0Ev + 1.0Eh 60° Seismic	115.00	0.0338	0.0024	0.0267	0.0268
1.2D + 1.0Ev + 1.0Eh Normal Seismic	79.63	0.0167	0.0026	0.0568	0.0568
1.2D + 1.0Ev + 1.0Eh Normal Seismic	80.38	0.0175	0.0026	0.0564	0.0564
1.2D + 1.0Ev + 1.0Eh Normal Seismic	99.63	0.0261	0.0035	0.0356	0.0357
1.2D + 1.0Ev + 1.0Eh Normal Seismic	104.81	0.0287	0.0030	0.0240	0.0241
1.2D + 1.0Ev + 1.0Eh Normal Seismic	109.63	0.031	0.0026	0.0396	0.0396
1.2D + 1.0Ev + 1.0Eh Normal Seismic	110.38	0.0315	0.0025	0.0396	0.0396
1.2D + 1.0Ev + 1.0Eh Normal Seismic	114.63	0.0336	0.0024	0.0266	0.0267
1.2D + 1.0Ev + 1.0Eh Normal Seismic	115.00	0.0338	0.0024	0.0270	0.0271
1.2D + 1.0Di + 1.0Wi 330° 48.73 mph Wind with 1.275" Radial Ice	79.63	0.0811	-0.0177	0.2324	0.2325
1.2D + 1.0Di + 1.0Wi 330° 48.73 mph Wind with 1.275" Radial Ice	80.38	0.0841	-0.0178	0.2290	0.2292
1.2D + 1.0Di + 1.0Wi 330° 48.73 mph Wind with 1.275" Radial Ice	99.63	0.1242	-0.0237	0.1597	0.1602
1.2D + 1.0Di + 1.0Wi 330° 48.73 mph Wind with 1.275" Radial Ice	104.81	0.1352	-0.0224	0.1145	0.1166
1.2D + 1.0Di + 1.0Wi 330° 48.73 mph Wind with 1.275" Radial Ice	109.63	0.1461	-0.0212	0.1566	0.157
1.2D + 1.0Di + 1.0Wi 330° 48.73 mph Wind with 1.275" Radial Ice	110.38	0.1481	-0.0211	0.1565	0.1568
1.2D + 1.0Di + 1.0Wi 330° 48.73 mph Wind with 1.275" Radial Ice	114.63	0.1573	-0.0206	0.1159	0.1177
1.2D + 1.0Di + 1.0Wi 330° 48.73 mph Wind with 1.275" Radial Ice	115.00	0.1581	-0.0206	0.1163	0.1181
1.2D + 1.0Di + 1.0Wi 300° 48.73 mph Wind with 1.275" Radial Ice	79.63	0.0804	0.0139	0.2362	0.2362
1.2D + 1.0Di + 1.0Wi 300° 48.73 mph Wind with 1.275" Radial Ice	80.38	0.0836	0.0140	0.2417	0.2417
1.2D + 1.0Di + 1.0Wi 300° 48.73 mph Wind with 1.275" Radial Ice	99.63	0.1234	0.0183	0.1648	0.1648
1.2D + 1.0Di + 1.0Wi 300° 48.73 mph Wind with 1.275" Radial Ice	104.81	0.1344	0.0170	0.1130	0.1142
1.2D + 1.0Di + 1.0Wi 300° 48.73 mph Wind with 1.275" Radial Ice	109.63	0.1452	0.0158	0.1568	0.1568
1.2D + 1.0Di + 1.0Wi 300° 48.73 mph Wind with 1.275" Radial Ice	110.38	0.1473	0.0157	0.1533	0.1533
1.2D + 1.0Di + 1.0Wi 300° 48.73 mph Wind with 1.275" Radial Ice	114.63	0.1564	0.0153	0.1132	0.1142
1.2D + 1.0Di + 1.0Wi 300° 48.73 mph Wind with 1.275" Radial Ice	115.00	0.1571	0.0152	0.1136	0.1146
1.2D + 1.0Di + 1.0Wi 240° 48.73 mph Wind with 1.275" Radial Ice	79.63	0.0826	0.0155	0.2527	0.2527
1.2D + 1.0Di + 1.0Wi 240° 48.73 mph Wind with 1.275" Radial Ice	80.38	0.0852	0.0156	0.2494	0.2494
1.2D + 1.0Di + 1.0Wi 240° 48.73 mph Wind with 1.275" Radial Ice	99.63	0.1262	0.0209	0.1621	0.1621
1.2D + 1.0Di + 1.0Wi 240° 48.73 mph Wind with 1.275" Radial Ice	104.81	0.1372	0.0197	0.1136	0.1153

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0Di + 1.0Wi 240° 48.73 mph Wind with 1.275" Radial Ice	109.63	0.1483	0.0187	0.1609	0.1609
1.2D + 1.0Di + 1.0Wi 240° 48.73 mph Wind with 1.275" Radial Ice	110.38	0.1503	0.0185	0.1610	0.161
1.2D + 1.0Di + 1.0Wi 240° 48.73 mph Wind with 1.275" Radial Ice	114.63	0.1597	0.0182	0.1167	0.1181
1.2D + 1.0Di + 1.0Wi 240° 48.73 mph Wind with 1.275" Radial Ice	115.00	0.1604	0.0181	0.1171	0.1185
1.2D + 1.0Di + 1.0Wi 210° 48.73 mph Wind with 1.275" Radial Ice	79.63	0.0811	-0.0177	0.2325	0.2327
1.2D + 1.0Di + 1.0Wi 210° 48.73 mph Wind with 1.275" Radial Ice	80.38	0.0841	-0.0178	0.2291	0.2293
1.2D + 1.0Di + 1.0Wi 210° 48.73 mph Wind with 1.275" Radial Ice	99.63	0.1243	-0.0238	0.1597	0.1602
1.2D + 1.0Di + 1.0Wi 210° 48.73 mph Wind with 1.275" Radial Ice	104.81	0.1352	-0.0225	0.1144	0.1166
1.2D + 1.0Di + 1.0Wi 210° 48.73 mph Wind with 1.275" Radial Ice	109.63	0.1461	-0.0212	0.1566	0.157
1.2D + 1.0Di + 1.0Wi 210° 48.73 mph Wind with 1.275" Radial Ice	110.38	0.1481	-0.0211	0.1565	0.1568
1.2D + 1.0Di + 1.0Wi 210° 48.73 mph Wind with 1.275" Radial Ice	114.63	0.1573	-0.0207	0.1159	0.1177
1.2D + 1.0Di + 1.0Wi 210° 48.73 mph Wind with 1.275" Radial Ice	115.00	0.1581	-0.0206	0.1163	0.1181
1.2D + 1.0Di + 1.0Wi 180° 48.73 mph Wind with 1.275" Radial Ice	79.63	0.0805	0.0154	0.2366	0.2366
1.2D + 1.0Di + 1.0Wi 180° 48.73 mph Wind with 1.275" Radial Ice	80.38	0.0837	0.0156	0.2420	0.242
1.2D + 1.0Di + 1.0Wi 180° 48.73 mph Wind with 1.275" Radial Ice	99.63	0.1236	0.0207	0.1650	0.165
1.2D + 1.0Di + 1.0Wi 180° 48.73 mph Wind with 1.275" Radial Ice	104.81	0.1346	0.0195	0.1131	0.1148
1.2D + 1.0Di + 1.0Wi 180° 48.73 mph Wind with 1.275" Radial Ice	109.63	0.1454	0.0184	0.1570	0.157
1.2D + 1.0Di + 1.0Wi 180° 48.73 mph Wind with 1.275" Radial Ice	110.38	0.1474	0.0183	0.1535	0.1535
1.2D + 1.0Di + 1.0Wi 180° 48.73 mph Wind with 1.275" Radial Ice	114.63	0.1566	0.0179	0.1133	0.1147
1.2D + 1.0Di + 1.0Wi 180° 48.73 mph Wind with 1.275" Radial Ice	115.00	0.1573	0.0179	0.1137	0.1151
1.2D + 1.0Di + 1.0Wi 120° 48.73 mph Wind with 1.275" Radial Ice	79.63	0.0826	-0.0155	0.2527	0.2527
1.2D + 1.0Di + 1.0Wi 120° 48.73 mph Wind with 1.275" Radial Ice	80.38	0.0852	-0.0156	0.2494	0.2494
1.2D + 1.0Di + 1.0Wi 120° 48.73 mph Wind with 1.275" Radial Ice	99.63	0.1262	-0.0209	0.1621	0.1621
1.2D + 1.0Di + 1.0Wi 120° 48.73 mph Wind with 1.275" Radial Ice	104.81	0.1372	-0.0197	0.1136	0.1153
1.2D + 1.0Di + 1.0Wi 120° 48.73 mph Wind with 1.275" Radial Ice	109.63	0.1483	-0.0187	0.1609	0.1609
1.2D + 1.0Di + 1.0Wi 120° 48.73 mph Wind with 1.275" Radial Ice	110.38	0.1503	-0.0185	0.1610	0.161
1.2D + 1.0Di + 1.0Wi 120° 48.73 mph Wind with 1.275" Radial Ice	114.63	0.1597	-0.0182	0.1167	0.1181
1.2D + 1.0Di + 1.0Wi 120° 48.73 mph Wind with 1.275" Radial Ice	115.00	0.1604	-0.0181	0.1171	0.1185
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph Wind with 1.275" Radial Ice	79.63	0.0811	-0.0215	0.2325	0.2328
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph Wind with 1.275" Radial Ice	80.38	0.0841	-0.0217	0.2291	0.2294
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph Wind with 1.275" Radial Ice	99.63	0.1243	-0.0292	0.1598	0.1604
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph Wind with 1.275" Radial Ice	104.81	0.1353	-0.0282	0.1146	0.118
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph Wind with 1.275" Radial Ice	109.63	0.1462	-0.0272	0.1567	0.1573
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph Wind with 1.275" Radial Ice	110.38	0.1482	-0.0271	0.1566	0.1571
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph Wind with 1.275" Radial Ice	114.63	0.1574	-0.0268	0.1159	0.119
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph Wind with 1.275" Radial Ice	115.00	0.1582	-0.0268	0.1163	0.1194
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph Wind with 1.275" Radial Ice	79.63	0.0804	-0.0139	0.2362	0.2362
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph Wind with 1.275" Radial Ice	80.38	0.0836	-0.0140	0.2417	0.2417
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph Wind with 1.275" Radial Ice	99.63	0.1234	-0.0183	0.1648	0.1648
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph Wind with 1.275" Radial Ice	104.81	0.1344	-0.0170	0.1130	0.1142
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph Wind with 1.275" Radial Ice	109.63	0.1452	-0.0158	0.1568	0.1568
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph Wind with 1.275" Radial Ice	110.38	0.1473	-0.0157	0.1533	0.1533
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph Wind with 1.275" Radial Ice	114.63	0.1564	-0.0153	0.1132	0.1142
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph Wind with 1.275" Radial Ice	115.00	0.1571	-0.0152	0.1136	0.1146
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph Wind with 1.275" Radial Ice	79.63	0.0826	0.0172	0.2527	0.2527
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph Wind with 1.275" Radial Ice	80.38	0.0852	0.0173	0.2495	0.2495
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph Wind with 1.275" Radial Ice	99.63	0.1262	0.0233	0.1621	0.1621
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph Wind with 1.275" Radial Ice	104.81	0.1373	0.0223	0.1137	0.1158
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph Wind with 1.275" Radial Ice	109.63	0.1483	0.0213	0.1610	0.161
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph Wind with 1.275" Radial Ice	110.38	0.1504	0.0212	0.1611	0.1611
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph Wind with 1.275" Radial Ice	114.63	0.1598	0.0209	0.1167	0.1186
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph Wind with 1.275" Radial Ice	115.00	0.1605	0.0209	0.1171	0.119
0.9D + 1.0W 330° 115.01 mph Wind with No Ice (Reduced DL)	79.63	0.261	-0.1396	0.7483	0.7517
0.9D + 1.0W 330° 115.01 mph Wind with No Ice (Reduced DL)	80.38	0.2705	-0.1419	0.7504	0.7539
0.9D + 1.0W 330° 115.01 mph Wind with No Ice (Reduced DL)	99.63	0.4045	-0.1956	0.5440	0.5527
0.9D + 1.0W 330° 115.01 mph Wind with No Ice (Reduced DL)	104.81	0.4425	-0.1964	0.3879	0.4348
0.9D + 1.0W 330° 115.01 mph Wind with No Ice (Reduced DL)	109.63	0.4785	-0.1963	0.5372	0.5516
0.9D + 1.0W 330° 115.01 mph Wind with No Ice (Reduced DL)	110.38	0.4855	-0.1963	0.5313	0.5444
0.9D + 1.0W 330° 115.01 mph Wind with No Ice (Reduced DL)	114.63	0.5168	-0.1963	0.3899	0.4365

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
0.9D + 1.0W 330° 115.01 mph Wind with No Ice (Reduced DL)	115.00	0.5194	-0.1963	0.3910	0.4375
0.9D + 1.0W 300° 115.01 mph Wind with No Ice (Reduced DL)	79.63	0.2574	0.1217	0.7588	0.7588
0.9D + 1.0W 300° 115.01 mph Wind with No Ice (Reduced DL)	80.38	0.2674	0.1238	0.7619	0.7619
0.9D + 1.0W 300° 115.01 mph Wind with No Ice (Reduced DL)	99.63	0.3991	0.1694	0.5605	0.5605
0.9D + 1.0W 300° 115.01 mph Wind with No Ice (Reduced DL)	104.81	0.4374	0.1697	0.3778	0.4142
0.9D + 1.0W 300° 115.01 mph Wind with No Ice (Reduced DL)	109.63	0.4727	0.1698	0.5384	0.5448
0.9D + 1.0W 300° 115.01 mph Wind with No Ice (Reduced DL)	110.38	0.4799	0.1698	0.5321	0.5382
0.9D + 1.0W 300° 115.01 mph Wind with No Ice (Reduced DL)	114.63	0.5107	0.1696	0.3803	0.4164
0.9D + 1.0W 300° 115.01 mph Wind with No Ice (Reduced DL)	115.00	0.5132	0.1696	0.3814	0.4174
0.9D + 1.0W 240° 115.01 mph Wind with No Ice (Reduced DL)	79.63	0.2707	0.1216	0.8322	0.8322
0.9D + 1.0W 240° 115.01 mph Wind with No Ice (Reduced DL)	80.38	0.2813	0.1236	0.8347	0.8347
0.9D + 1.0W 240° 115.01 mph Wind with No Ice (Reduced DL)	99.63	0.4186	0.1714	0.5828	0.5828
0.9D + 1.0W 240° 115.01 mph Wind with No Ice (Reduced DL)	104.81	0.4582	0.1724	0.3932	0.4293
0.9D + 1.0W 240° 115.01 mph Wind with No Ice (Reduced DL)	109.63	0.4952	0.1721	0.5603	0.5651
0.9D + 1.0W 240° 115.01 mph Wind with No Ice (Reduced DL)	110.38	0.5023	0.1721	0.5546	0.5577
0.9D + 1.0W 240° 115.01 mph Wind with No Ice (Reduced DL)	114.63	0.5347	0.1722	0.3970	0.4328
0.9D + 1.0W 240° 115.01 mph Wind with No Ice (Reduced DL)	115.00	0.5373	0.1722	0.3982	0.4339
0.9D + 1.0W 210° 115.01 mph Wind with No Ice (Reduced DL)	79.63	0.261	-0.1397	0.7484	0.752
0.9D + 1.0W 210° 115.01 mph Wind with No Ice (Reduced DL)	80.38	0.2705	-0.1420	0.7505	0.7542
0.9D + 1.0W 210° 115.01 mph Wind with No Ice (Reduced DL)	99.63	0.4045	-0.1956	0.5440	0.5527
0.9D + 1.0W 210° 115.01 mph Wind with No Ice (Reduced DL)	104.81	0.4425	-0.1964	0.3879	0.4348
0.9D + 1.0W 210° 115.01 mph Wind with No Ice (Reduced DL)	109.63	0.4785	-0.1964	0.5372	0.5516
0.9D + 1.0W 210° 115.01 mph Wind with No Ice (Reduced DL)	110.38	0.4855	-0.1964	0.5313	0.5444
0.9D + 1.0W 210° 115.01 mph Wind with No Ice (Reduced DL)	114.63	0.5168	-0.1963	0.3899	0.4366
0.9D + 1.0W 210° 115.01 mph Wind with No Ice (Reduced DL)	115.00	0.5194	-0.1963	0.3910	0.4376
0.9D + 1.0W 180° 115.01 mph Wind with No Ice (Reduced DL)	79.63	0.2574	0.1229	0.7587	0.7587
0.9D + 1.0W 180° 115.01 mph Wind with No Ice (Reduced DL)	80.38	0.2674	0.1249	0.7619	0.7619
0.9D + 1.0W 180° 115.01 mph Wind with No Ice (Reduced DL)	99.63	0.3991	0.1710	0.5605	0.5605
0.9D + 1.0W 180° 115.01 mph Wind with No Ice (Reduced DL)	104.81	0.4374	0.1713	0.3778	0.4148
0.9D + 1.0W 180° 115.01 mph Wind with No Ice (Reduced DL)	109.63	0.4727	0.1715	0.5385	0.5453
0.9D + 1.0W 180° 115.01 mph Wind with No Ice (Reduced DL)	110.38	0.4799	0.1715	0.5321	0.5388
0.9D + 1.0W 180° 115.01 mph Wind with No Ice (Reduced DL)	114.63	0.5107	0.1713	0.3803	0.4171
0.9D + 1.0W 180° 115.01 mph Wind with No Ice (Reduced DL)	115.00	0.5132	0.1713	0.3814	0.4181
0.9D + 1.0W 120° 115.01 mph Wind with No Ice (Reduced DL)	79.63	0.2707	-0.1216	0.8322	0.8322
0.9D + 1.0W 120° 115.01 mph Wind with No Ice (Reduced DL)	80.38	0.2813	-0.1236	0.8347	0.8347
0.9D + 1.0W 120° 115.01 mph Wind with No Ice (Reduced DL)	99.63	0.4186	-0.1714	0.5828	0.5828
0.9D + 1.0W 120° 115.01 mph Wind with No Ice (Reduced DL)	104.81	0.4582	-0.1724	0.3932	0.4293
0.9D + 1.0W 120° 115.01 mph Wind with No Ice (Reduced DL)	109.63	0.4952	-0.1721	0.5603	0.5651
0.9D + 1.0W 120° 115.01 mph Wind with No Ice (Reduced DL)	110.38	0.5023	-0.1721	0.5546	0.5577
0.9D + 1.0W 120° 115.01 mph Wind with No Ice (Reduced DL)	114.63	0.5347	-0.1722	0.3970	0.4328
0.9D + 1.0W 120° 115.01 mph Wind with No Ice (Reduced DL)	115.00	0.5373	-0.1722	0.3982	0.4339
0.9D + 1.0W 90° 115.01 mph Wind with No Ice (Reduced DL)	79.63	0.261	-0.1400	0.7483	0.7516
0.9D + 1.0W 90° 115.01 mph Wind with No Ice (Reduced DL)	80.38	0.2705	-0.1423	0.7504	0.7538
0.9D + 1.0W 90° 115.01 mph Wind with No Ice (Reduced DL)	99.63	0.4045	-0.1960	0.5440	0.552
0.9D + 1.0W 90° 115.01 mph Wind with No Ice (Reduced DL)	104.81	0.4425	-0.1968	0.3879	0.435
0.9D + 1.0W 90° 115.01 mph Wind with No Ice (Reduced DL)	109.63	0.4785	-0.1967	0.5372	0.5517
0.9D + 1.0W 90° 115.01 mph Wind with No Ice (Reduced DL)	110.38	0.4855	-0.1967	0.5313	0.5445
0.9D + 1.0W 90° 115.01 mph Wind with No Ice (Reduced DL)	114.63	0.5168	-0.1967	0.3899	0.4367
0.9D + 1.0W 90° 115.01 mph Wind with No Ice (Reduced DL)	115.00	0.5194	-0.1967	0.3910	0.4377
0.9D + 1.0W 60° 115.01 mph Wind with No Ice (Reduced DL)	79.63	0.2574	-0.1217	0.7588	0.7588
0.9D + 1.0W 60° 115.01 mph Wind with No Ice (Reduced DL)	80.38	0.2674	-0.1238	0.7619	0.7619
0.9D + 1.0W 60° 115.01 mph Wind with No Ice (Reduced DL)	99.63	0.3991	-0.1694	0.5605	0.5605
0.9D + 1.0W 60° 115.01 mph Wind with No Ice (Reduced DL)	104.81	0.4374	-0.1697	0.3778	0.4142
0.9D + 1.0W 60° 115.01 mph Wind with No Ice (Reduced DL)	109.63	0.4727	-0.1698	0.5384	0.5448
0.9D + 1.0W 60° 115.01 mph Wind with No Ice (Reduced DL)	110.38	0.4799	-0.1698	0.5321	0.5382
0.9D + 1.0W 60° 115.01 mph Wind with No Ice (Reduced DL)	114.63	0.5107	-0.1696	0.3803	0.4164
0.9D + 1.0W 60° 115.01 mph Wind with No Ice (Reduced DL)	115.00	0.5132	-0.1696	0.3814	0.4174
0.9D + 1.0W Normal 115.01 mph Wind with No Ice (Reduced DL)	79.63	0.2707	0.1227	0.8321	0.8321
0.9D + 1.0W Normal 115.01 mph Wind with No Ice (Reduced DL)	80.38	0.2813	0.1247	0.8346	0.8346

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
0.9D + 1.0W Normal 115.01 mph Wind with No Ice (Reduced DL)	99.63	0.4186	0.1729	0.5828	0.5828
0.9D + 1.0W Normal 115.01 mph Wind with No Ice (Reduced DL)	104.81	0.4582	0.1740	0.3932	0.43
0.9D + 1.0W Normal 115.01 mph Wind with No Ice (Reduced DL)	109.63	0.4952	0.1737	0.5603	0.5656
0.9D + 1.0W Normal 115.01 mph Wind with No Ice (Reduced DL)	110.38	0.5023	0.1737	0.5546	0.5582
0.9D + 1.0W Normal 115.01 mph Wind with No Ice (Reduced DL)	114.63	0.5347	0.1738	0.3970	0.4334
0.9D + 1.0W Normal 115.01 mph Wind with No Ice (Reduced DL)	115.00	0.5373	0.1738	0.3982	0.4345
1.2D + 1.0W 330° 115.01 mph Wind with No Ice	79.63	0.2613	-0.1400	0.7510	0.7545
1.2D + 1.0W 330° 115.01 mph Wind with No Ice	80.38	0.2709	-0.1423	0.7529	0.7564
1.2D + 1.0W 330° 115.01 mph Wind with No Ice	99.63	0.405	-0.1960	0.5453	0.554
1.2D + 1.0W 330° 115.01 mph Wind with No Ice	104.81	0.4431	-0.1968	0.3885	0.4355
1.2D + 1.0W 330° 115.01 mph Wind with No Ice	109.63	0.4792	-0.1968	0.5382	0.5526
1.2D + 1.0W 330° 115.01 mph Wind with No Ice	110.38	0.4862	-0.1968	0.5325	0.5454
1.2D + 1.0W 330° 115.01 mph Wind with No Ice	114.63	0.5175	-0.1967	0.3905	0.4372
1.2D + 1.0W 330° 115.01 mph Wind with No Ice	115.00	0.5201	-0.1967	0.3916	0.4382
1.2D + 1.0W 300° 115.01 mph Wind with No Ice	79.63	0.2578	0.1220	0.7600	0.76
1.2D + 1.0W 300° 115.01 mph Wind with No Ice	80.38	0.2676	0.1241	0.7635	0.7635
1.2D + 1.0W 300° 115.01 mph Wind with No Ice	99.63	0.3996	0.1698	0.5619	0.5619
1.2D + 1.0W 300° 115.01 mph Wind with No Ice	104.81	0.438	0.1701	0.3784	0.4149
1.2D + 1.0W 300° 115.01 mph Wind with No Ice	109.63	0.4734	0.1703	0.5394	0.5458
1.2D + 1.0W 300° 115.01 mph Wind with No Ice	110.38	0.4805	0.1703	0.5329	0.5394
1.2D + 1.0W 300° 115.01 mph Wind with No Ice	114.63	0.5114	0.1701	0.3808	0.417
1.2D + 1.0W 300° 115.01 mph Wind with No Ice	115.00	0.5139	0.1701	0.3818	0.418
1.2D + 1.0W 240° 115.01 mph Wind with No Ice	79.63	0.271	0.1219	0.8353	0.8353
1.2D + 1.0W 240° 115.01 mph Wind with No Ice	80.38	0.2818	0.1239	0.8375	0.8375
1.2D + 1.0W 240° 115.01 mph Wind with No Ice	99.63	0.4192	0.1718	0.5834	0.5835
1.2D + 1.0W 240° 115.01 mph Wind with No Ice	104.81	0.4589	0.1728	0.3936	0.4299
1.2D + 1.0W 240° 115.01 mph Wind with No Ice	109.63	0.4959	0.1725	0.5614	0.5662
1.2D + 1.0W 240° 115.01 mph Wind with No Ice	110.38	0.503	0.1725	0.5559	0.5587
1.2D + 1.0W 240° 115.01 mph Wind with No Ice	114.63	0.5355	0.1726	0.3976	0.4335
1.2D + 1.0W 240° 115.01 mph Wind with No Ice	115.00	0.5381	0.1726	0.3988	0.4346
1.2D + 1.0W 210° 115.01 mph Wind with No Ice	79.63	0.2613	-0.1400	0.7511	0.7547
1.2D + 1.0W 210° 115.01 mph Wind with No Ice	80.38	0.2709	-0.1423	0.7530	0.7567
1.2D + 1.0W 210° 115.01 mph Wind with No Ice	99.63	0.405	-0.1961	0.5453	0.5537
1.2D + 1.0W 210° 115.01 mph Wind with No Ice	104.81	0.4431	-0.1969	0.3885	0.4355
1.2D + 1.0W 210° 115.01 mph Wind with No Ice	109.63	0.4792	-0.1968	0.5382	0.5527
1.2D + 1.0W 210° 115.01 mph Wind with No Ice	110.38	0.4862	-0.1968	0.5325	0.5454
1.2D + 1.0W 210° 115.01 mph Wind with No Ice	114.63	0.5175	-0.1968	0.3905	0.4373
1.2D + 1.0W 210° 115.01 mph Wind with No Ice	115.00	0.5201	-0.1968	0.3916	0.4383
1.2D + 1.0W 180° 115.01 mph Wind with No Ice	79.63	0.2578	0.1232	0.7600	0.76
1.2D + 1.0W 180° 115.01 mph Wind with No Ice	80.38	0.2676	0.1252	0.7634	0.7634
1.2D + 1.0W 180° 115.01 mph Wind with No Ice	99.63	0.3996	0.1714	0.5619	0.5619
1.2D + 1.0W 180° 115.01 mph Wind with No Ice	104.81	0.438	0.1718	0.3784	0.4155
1.2D + 1.0W 180° 115.01 mph Wind with No Ice	109.63	0.4734	0.1719	0.5394	0.5464
1.2D + 1.0W 180° 115.01 mph Wind with No Ice	110.38	0.4806	0.1719	0.5329	0.5399
1.2D + 1.0W 180° 115.01 mph Wind with No Ice	114.63	0.5114	0.1717	0.3808	0.4177
1.2D + 1.0W 180° 115.01 mph Wind with No Ice	115.00	0.5139	0.1717	0.3818	0.4187
1.2D + 1.0W 120° 115.01 mph Wind with No Ice	79.63	0.271	-0.1219	0.8353	0.8353
1.2D + 1.0W 120° 115.01 mph Wind with No Ice	80.38	0.2818	-0.1239	0.8375	0.8375
1.2D + 1.0W 120° 115.01 mph Wind with No Ice	99.63	0.4192	-0.1718	0.5834	0.5835
1.2D + 1.0W 120° 115.01 mph Wind with No Ice	104.81	0.4589	-0.1728	0.3936	0.4299
1.2D + 1.0W 120° 115.01 mph Wind with No Ice	109.63	0.4959	-0.1725	0.5614	0.5662
1.2D + 1.0W 120° 115.01 mph Wind with No Ice	110.38	0.503	-0.1725	0.5559	0.5587
1.2D + 1.0W 120° 115.01 mph Wind with No Ice	114.63	0.5355	-0.1726	0.3976	0.4335
1.2D + 1.0W 120° 115.01 mph Wind with No Ice	115.00	0.5381	-0.1726	0.3988	0.4346
1.2D + 1.0W 90° 115.01 mph Wind with No Ice	79.63	0.2613	-0.1403	0.7510	0.7543
1.2D + 1.0W 90° 115.01 mph Wind with No Ice	80.38	0.2709	-0.1427	0.7529	0.7563
1.2D + 1.0W 90° 115.01 mph Wind with No Ice	99.63	0.405	-0.1965	0.5453	0.5533
1.2D + 1.0W 90° 115.01 mph Wind with No Ice	104.81	0.4431	-0.1973	0.3885	0.4357
1.2D + 1.0W 90° 115.01 mph Wind with No Ice	109.63	0.4792	-0.1972	0.5382	0.5528

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0W 90° 115.01 mph Wind with No Ice	110.38	0.4862	-0.1972	0.5325	0.5456
1.2D + 1.0W 90° 115.01 mph Wind with No Ice	114.63	0.5175	-0.1972	0.3905	0.4374
1.2D + 1.0W 90° 115.01 mph Wind with No Ice	115.00	0.5201	-0.1972	0.3916	0.4384
1.2D + 1.0W 60° 115.01 mph Wind with No Ice	79.63	0.2578	-0.1220	0.7600	0.76
1.2D + 1.0W 60° 115.01 mph Wind with No Ice	80.38	0.2676	-0.1241	0.7635	0.7635
1.2D + 1.0W 60° 115.01 mph Wind with No Ice	99.63	0.3996	-0.1698	0.5619	0.5619
1.2D + 1.0W 60° 115.01 mph Wind with No Ice	104.81	0.438	-0.1701	0.3784	0.4149
1.2D + 1.0W 60° 115.01 mph Wind with No Ice	109.63	0.4734	-0.1703	0.5394	0.5458
1.2D + 1.0W 60° 115.01 mph Wind with No Ice	110.38	0.4805	-0.1703	0.5329	0.5394
1.2D + 1.0W 60° 115.01 mph Wind with No Ice	114.63	0.5114	-0.1701	0.3808	0.417
1.2D + 1.0W 60° 115.01 mph Wind with No Ice	115.00	0.5139	-0.1701	0.3818	0.418
1.2D + 1.0W Normal 115.01 mph Wind with No Ice	79.63	0.271	0.1230	0.8352	0.8352
1.2D + 1.0W Normal 115.01 mph Wind with No Ice	80.38	0.2818	0.1251	0.8374	0.8374
1.2D + 1.0W Normal 115.01 mph Wind with No Ice	99.63	0.4192	0.1733	0.5834	0.5834
1.2D + 1.0W Normal 115.01 mph Wind with No Ice	104.81	0.4589	0.1744	0.3936	0.4305
1.2D + 1.0W Normal 115.01 mph Wind with No Ice	109.63	0.4959	0.1741	0.5614	0.5667
1.2D + 1.0W Normal 115.01 mph Wind with No Ice	110.38	0.503	0.1741	0.5559	0.5592
1.2D + 1.0W Normal 115.01 mph Wind with No Ice	114.63	0.5355	0.1742	0.3976	0.4341
1.2D + 1.0W Normal 115.01 mph Wind with No Ice	115.00	0.5381	0.1742	0.3988	0.4352

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	FX* (kip)	FY* (kip)	FZ* (kip)
					(-) Uplift and (+) Down		
	10.78	0.00	0	1	0.00	111.58	-13.20
1.2D + 1.0W Normal	10.78	0.00	120	1a	4.16	-44.56	-4.78
	10.78	0.00	240	1b	-4.16	-44.56	-4.78
	10.78	0.00	0	1	-1.92	56.80	-6.39
1.2D + 1.0W 60°	10.78	0.00	120	1a	-6.50	56.80	1.53
	10.78	0.00	240	1b	-10.01	-91.14	-5.78
	10.78	0.00	0	1	-2.25	7.49	-0.39
1.2D + 1.0W 90°	10.78	0.00	120	1a	-10.06	94.09	4.50
	10.78	0.00	240	1b	-9.34	-79.11	-4.10
	10.78	0.00	0	1	-2.06	-44.56	6.00
1.2D + 1.0W 120°	10.78	0.00	120	1a	-11.44	111.59	6.60
	10.78	0.00	240	1b	-6.22	-44.56	-1.21
	10.78	0.00	0	1	0.00	-91.14	11.56
1.2D + 1.0W 180°	10.78	0.00	120	1a	-4.58	56.80	4.86
	10.78	0.00	240	1b	4.58	56.80	4.86
	10.78	0.00	0	1	1.12	-79.11	10.14
1.2D + 1.0W 210°	10.78	0.00	120	1a	0.79	7.49	2.15
	10.78	0.00	240	1b	8.93	94.09	6.47
	10.78	0.00	0	1	2.06	-44.56	6.00
1.2D + 1.0W 240°	10.78	0.00	120	1a	6.22	-44.56	-1.21
	10.78	0.00	240	1b	11.44	111.59	6.60
	10.78	0.00	0	1	1.92	56.80	-6.39
1.2D + 1.0W 300°	10.78	0.00	120	1a	10.01	-91.14	-5.78
	10.78	0.00	240	1b	6.50	56.80	1.53
	10.78	0.00	0	1	1.14	94.09	-10.96
1.2D + 1.0W 330°	10.78	0.00	120	1a	8.22	-79.11	-6.03
	10.78	0.00	240	1b	1.47	7.49	-1.76
	10.78	0.00	0	1	0.00	109.62	-13.09
0.9D + 1.0W Normal	10.78	0.00	120	1a	4.26	-46.38	-4.84
	10.78	0.00	240	1b	-4.26	-46.38	-4.84
	10.78	0.00	0	1	-1.92	54.88	-6.28
0.9D + 1.0W 60°	10.78	0.00	120	1a	-6.40	54.88	1.48
	10.78	0.00	240	1b	-10.11	-92.92	-5.84
	10.78	0.00	0	1	-2.25	5.62	-0.28
0.9D + 1.0W 90°	10.78	0.00	120	1a	-9.97	92.13	4.44
	10.78	0.00	240	1b	-9.43	-80.90	-4.16
	10.78	0.00	0	1	-2.06	-46.38	6.11
0.9D + 1.0W 120°	10.78	0.00	120	1a	-11.34	109.62	6.55
	10.78	0.00	240	1b	-6.32	-46.38	-1.27
	10.78	0.00	0	1	0.00	-92.92	11.67
0.9D + 1.0W 180°	10.78	0.00	120	1a	-4.48	54.88	4.80
	10.78	0.00	240	1b	4.48	54.88	4.80
	10.78	0.00	0	1	1.12	-80.90	10.25
0.9D + 1.0W 210°	10.78	0.00	120	1a	0.88	5.62	2.09
	10.78	0.00	240	1b	8.83	92.13	6.41
	10.78	0.00	0	1	2.06	-46.38	6.11
0.9D + 1.0W 240°	10.78	0.00	120	1a	6.32	-46.38	-1.27
	10.78	0.00	240	1b	11.34	109.62	6.55
	10.78	0.00	0	1	1.92	54.88	-6.28
0.9D + 1.0W 300°	10.78	0.00	120	1a	10.11	-92.92	-5.84
	10.78	0.00	240	1b	6.40	54.88	1.48
	10.78	0.00	0	1	1.14	92.13	-10.85
0.9D + 1.0W 330°	10.78	0.00	120	1a	8.32	-80.90	-6.09
	10.78	0.00	240	1b	1.37	5.62	-1.81
	10.78	0.00	0	1	0.00	51.20	-4.39
1.2D + 1.0Di + 1.0Wi Normal	10.78	0.00	120	1a	1.06	3.28	-1.37
	10.78	0.00	240	1b	-1.06	3.28	-1.37
	10.78	0.00	0	1	-0.63	34.79	-2.33
1.2D + 1.0Di + 1.0Wi 60°	10.78	0.00	120	1a	-2.33	34.79	0.62

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	FX* (kip)	FY* (kip)	FZ* (kip)
	10.78	0.00	240	1b	-3.00	-11.83	-1.73
	10.78	0.00	0	1	-0.73	19.25	-0.39
1.2D + 1.0Di + 1.0Wi 90°	10.78	0.00	120	1a	-3.45	46.39	1.57
	10.78	0.00	240	1b	-2.76	-7.88	-1.17
	10.78	0.00	0	1	-0.65	3.29	1.60
1.2D + 1.0Di + 1.0Wi 120°	10.78	0.00	120	1a	-3.80	51.19	2.19
	10.78	0.00	240	1b	-1.71	3.29	-0.23
	10.78	0.00	0	1	0.00	-11.86	3.47
1.2D + 1.0Di + 1.0Wi 180°	10.78	0.00	120	1a	-1.70	34.81	1.71
	10.78	0.00	240	1b	1.70	34.81	1.71
	10.78	0.00	0	1	0.37	-7.87	2.98
1.2D + 1.0Di + 1.0Wi 210°	10.78	0.00	120	1a	0.02	19.25	0.83
	10.78	0.00	240	1b	3.08	46.38	2.20
	10.78	0.00	0	1	0.65	3.29	1.60
1.2D + 1.0Di + 1.0Wi 240°	10.78	0.00	120	1a	1.71	3.29	-0.23
	10.78	0.00	240	1b	3.80	51.19	2.19
	10.78	0.00	0	1	0.63	34.79	-2.33
1.2D + 1.0Di + 1.0Wi 300°	10.78	0.00	120	1a	3.00	-11.83	-1.73
	10.78	0.00	240	1b	2.33	34.79	0.62
	10.78	0.00	0	1	0.37	46.38	-3.77
1.2D + 1.0Di + 1.0Wi 330°	10.78	0.00	120	1a	2.40	-7.87	-1.81
	10.78	0.00	240	1b	0.71	19.25	-0.44
	10.78	0.00	0	1	0.00	13.52	-1.09
1.2D + 1.0Ev + 1.0Eh Normal	10.78	0.00	120	1a	-0.16	4.50	0.02
	10.78	0.00	240	1b	0.16	4.50	0.02
	10.78	0.00	0	1	-0.07	10.51	-0.77
1.2D + 1.0Ev + 1.0Eh 60°	10.78	0.00	120	1a	-0.71	10.51	0.33
	10.78	0.00	240	1b	-0.14	1.49	-0.08
	10.78	0.00	0	1	-0.08	7.51	-0.46
1.2D + 1.0Ev + 1.0Eh 90°	10.78	0.00	120	1a	-0.89	12.72	0.47
	10.78	0.00	240	1b	-0.09	2.30	-0.01
	10.78	0.00	0	1	-0.07	4.50	-0.15
1.2D + 1.0Ev + 1.0Eh 120°	10.78	0.00	120	1a	-0.94	13.52	0.54
	10.78	0.00	240	1b	0.09	4.50	0.13
	10.78	0.00	0	1	0.00	1.49	0.16
1.2D + 1.0Ev + 1.0Eh 180°	10.78	0.00	120	1a	-0.64	10.51	0.45
	10.78	0.00	240	1b	0.64	10.51	0.45
	10.78	0.00	0	1	0.04	2.30	0.08
1.2D + 1.0Ev + 1.0Eh 210°	10.78	0.00	120	1a	-0.36	7.51	0.30
	10.78	0.00	240	1b	0.85	12.72	0.54
	10.78	0.00	0	1	0.07	4.50	-0.15
1.2D + 1.0Ev + 1.0Eh 240°	10.78	0.00	120	1a	-0.09	4.50	0.13
	10.78	0.00	240	1b	0.94	13.52	0.54
	10.78	0.00	0	1	0.07	10.51	-0.77
1.2D + 1.0Ev + 1.0Eh 300°	10.78	0.00	120	1a	0.14	1.49	-0.08
	10.78	0.00	240	1b	0.71	10.51	0.33
	10.78	0.00	0	1	0.04	12.72	-1.00
1.2D + 1.0Ev + 1.0Eh 330°	10.78	0.00	120	1a	0.05	2.30	-0.07
	10.78	0.00	240	1b	0.44	7.51	0.16
	10.78	0.00	0	1	0.00	11.24	-0.95
0.9D - 1.0Ev + 1.0Eh Normal	10.78	0.00	120	1a	-0.04	2.23	-0.05
	10.78	0.00	240	1b	0.04	2.23	-0.05
	10.78	0.00	0	1	-0.07	8.23	-0.63
0.9D - 1.0Ev + 1.0Eh 60°	10.78	0.00	120	1a	-0.58	8.23	0.26
	10.78	0.00	240	1b	-0.26	-0.78	-0.15
	10.78	0.00	0	1	-0.08	5.23	-0.32
0.9D - 1.0Ev + 1.0Eh 90°	10.78	0.00	120	1a	-0.77	10.43	0.40
	10.78	0.00	240	1b	-0.21	0.03	-0.08
0.9D - 1.0Ev + 1.0Eh 120°	10.78	0.00	0	1	-0.07	2.23	-0.01

*(-) Uplift and (+) Down

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	FX* (kip)	FY* (kip)	FZ* (kip)
	10.78	0.00	120	1a	-0.82	11.24	0.47
	10.78	0.00	240	1b	-0.03	2.23	0.06
	10.78	0.00	0	1	0.00	-0.78	0.30
0.9D - 1.0Ev + 1.0Eh 180°	10.78	0.00	120	1a	-0.52	8.23	0.38
	10.78	0.00	240	1b	0.52	8.23	0.38
	10.78	0.00	0	1	0.04	0.03	0.22
0.9D - 1.0Ev + 1.0Eh 210°	10.78	0.00	120	1a	-0.24	5.23	0.23
	10.78	0.00	240	1b	0.73	10.43	0.47
	10.78	0.00	0	1	0.07	2.23	-0.01
0.9D - 1.0Ev + 1.0Eh 240°	10.78	0.00	120	1a	0.03	2.23	0.06
	10.78	0.00	240	1b	0.82	11.24	0.47
	10.78	0.00	0	1	0.07	8.23	-0.63
0.9D - 1.0Ev + 1.0Eh 300°	10.78	0.00	120	1a	0.26	-0.78	-0.15
	10.78	0.00	240	1b	0.58	8.23	0.26
	10.78	0.00	0	1	0.04	10.43	-0.86
0.9D - 1.0Ev + 1.0Eh 330°	10.78	0.00	120	1a	0.17	0.03	-0.14
	10.78	0.00	240	1b	0.32	5.23	0.09
	10.78	0.00	0	1	0.00	34.53	-3.86
1.0D + 1.0W Service Normal	10.78	0.00	120	1a	0.90	-7.90	-1.18
	10.78	0.00	240	1b	-0.90	-7.90	-1.18
	10.78	0.00	0	1	-0.53	19.64	-2.01
1.0D + 1.0W Service 60°	10.78	0.00	120	1a	-2.00	19.64	0.55
	10.78	0.00	240	1b	-2.51	-20.56	-1.45
	10.78	0.00	0	1	-0.62	6.24	-0.37
1.0D + 1.0W Service 90°	10.78	0.00	120	1a	-2.97	29.80	1.36
	10.78	0.00	240	1b	-2.33	-17.32	-0.99
	10.78	0.00	0	1	-0.57	-7.90	1.37
1.0D + 1.0W Service 120°	10.78	0.00	120	1a	-3.35	34.53	1.93
	10.78	0.00	240	1b	-1.47	-7.90	-0.19
	10.78	0.00	0	1	0.00	-20.50	2.89
1.0D + 1.0W Service 180°	10.78	0.00	120	1a	-1.47	19.61	1.46
	10.78	0.00	240	1b	1.47	19.61	1.46
	10.78	0.00	0	1	0.31	-17.32	2.51
1.0D + 1.0W Service 210°	10.78	0.00	120	1a	-0.01	6.24	0.72
	10.78	0.00	240	1b	2.66	29.80	1.90
	10.78	0.00	0	1	0.57	-7.90	1.37
1.0D + 1.0W Service 240°	10.78	0.00	120	1a	1.47	-7.90	-0.19
	10.78	0.00	240	1b	3.35	34.53	1.93
	10.78	0.00	0	1	0.53	19.64	-2.01
1.0D + 1.0W Service 300°	10.78	0.00	120	1a	2.51	-20.56	-1.45
	10.78	0.00	240	1b	2.00	19.64	0.55
	10.78	0.00	0	1	0.31	29.78	-3.25
1.0D + 1.0W Service 330°	10.78	0.00	120	1a	2.02	-17.29	-1.52
	10.78	0.00	240	1b	0.63	6.24	-0.35

*(-) Uplift and (+) Down

MAXIMUM REACTIONS SUMMARY

Individual		Global (DL+WL+IL)		Global (DL+WL)	
Max Uplift:	92.92 (kip)	Moment Ice:	516.47 (kip-ft)	Moment:	1682.81 (kip-ft)
Max Down:	111.59 (kip)	Total Down Ice:	57.76 (kip)	Total Down:	22.47 (kip)
Max Shear:	13.21 (kip)	Total Shear Ice:	7.12 (kip)	Total Shear:	22.78 (kip)

1.2D + 1.0W 120°

Site Name: Union 2, CT
Site Number: 209144
Tower Type: SST
Design Loads (Factored) - Analysis per TIA-222-H Standards

Mat & Pier Foundation Analysis

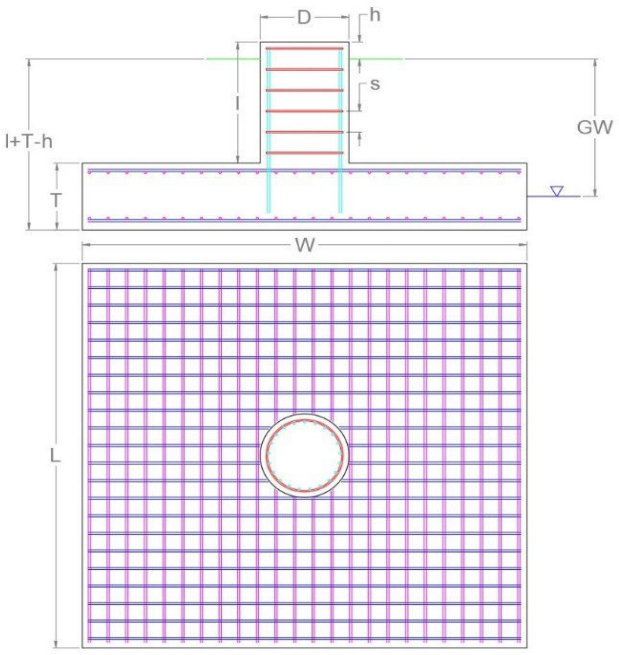
Foundation Analysis Parameters		
Design / Analysis / Mapping:	Mapping	-
Compression/Leg:	111.6	k
Uplift/Leg:	92.9	k
Shear/Leg:	13.2	k
Global Moment:		k-ft
Global Axial:		k
Depth to Base of Foundation (l + t - h):	4.1	ft
Diameter of Pier (d):	2	ft
Length of Pier (l):	2.8	ft
Height of Pier above Ground (h):	1.2	ft
Pier Shape:	Square	
If Square: Pier Taper:	Prismatic	
Pier Width at Base:	2	ft
Width of Pad (W):	12	ft
Length of Pad (L):	12	ft
Thickness of Pad (t):	2.5	ft
Tower Leg Center to Center:	0	ft
Number of Connection to Tower:	1	-
Tower Center from Mat Center:	0	ft
Depth Below Ground Surface to Water Table:	99	ft
Unit Weight of Soil Above Water Table:	130	pcf
Angle of Uplift:	30	°
Coefficient of Shear Friction:	0.35	-
Ultimate Compressive Bearing Pressure:	30,000	psf
Bearing Pressure Type:	Net	-
Ultimate Passive Pressure on Pad Face:	371	psf
Ultimate Skin Friction:	768	psf
Soil Type:	Clay	-
$\Phi_{Soil\ and\ Concrete\ Weight}$:	1.2	-
Φ_{Soil}:	0.75	-

Overturning Moment Usage		
Design OTM:	70.0	k-ft
OTM Resistance:	464.6	k-ft
$M_u/\Phi_s M_n$:	15.1%	Pass

Soil Bearing Pressure Usage		
Applied Bearing Pressure:	610.1	psf
Factored Nominal Bearing Pressure:	22500.0	psf
$P_u/\Phi_s P_n$:	2.7%	Pass
Load Direction Controling Design Bearing Pressure:	*Parallel to Pad Edge*	

Sliding Factor of Safety		
Bearing Surface Adhesive Resistance:	110.6	k
Ultimate Passive Pressure Resistance:	11.1	k
Total Factored Sliding Resistance:	91.3	k
$V_u/\Phi_s V_n$:	14.5%	Pass

Uplift and Pullout Usage		
Applied Uplift Force:	92.9	k
Ultimate Skin Friction Resistance:	92.2	k
Factored Uplift Capacity per Leg ($\Phi_s T_n$):	123.7	k
$T_u/\Phi_s T_n$:	75%	Pass



RF DESIGN SHEET

Issue Date	1/2/2024
Revision	0

RFDS Status	Preliminary
Created By	Sebastian, Irma

SITE INFORMATION	
DISH Site Number	BOBOS00933B
DISH Site Name	0
Prequal Asset ID	
AOI	BOS
PEA	0
Latitude	41.985378
Longitude	-72.192167
Address	107 Stickney Hill Road
City	Union
State	CT
ZIP Code	06076
County	Tolland
Rad Center (ft)	99
RAD Confirmed	*No Confirmed RAD*
Structure Type	SST

PROJECT ASSIGNMENTS	
Market Manager	Bradford Rainey
Site Development Mgr.	David Goodfellow
RF Engineer	Irma Sebastian
Site Acq Specialist/Develop. Cord.	Julie Charest /
SAQ Vendor/A&E Vendor	AMERICAN TOWER CORPORATION / AMERICAN TOWER CORPORATION
Asset Owner/Asset #	ATC / 209144
Construction Mgr. (Lead/Field)	Robert Moran /
Contractor (General/Tower/Civil)	/ /
Power Company / Transport Provider	/

EMERGENCY CONTACT INFORMATION	
Name	Temporary Emergency Line
Phone	866-624-6874

LEASE AREA	
Dimensions (ft.)	
Type	Steel Platform
Baseband Cabinet	Charles(Amphenol)-H/EX
Dimensions (in)	32" x 32.1" x 74"
Baseband	gNB-CU
Generator Required	
Make/Model	

DESIGN COMMENTS
Prelim RFDS.

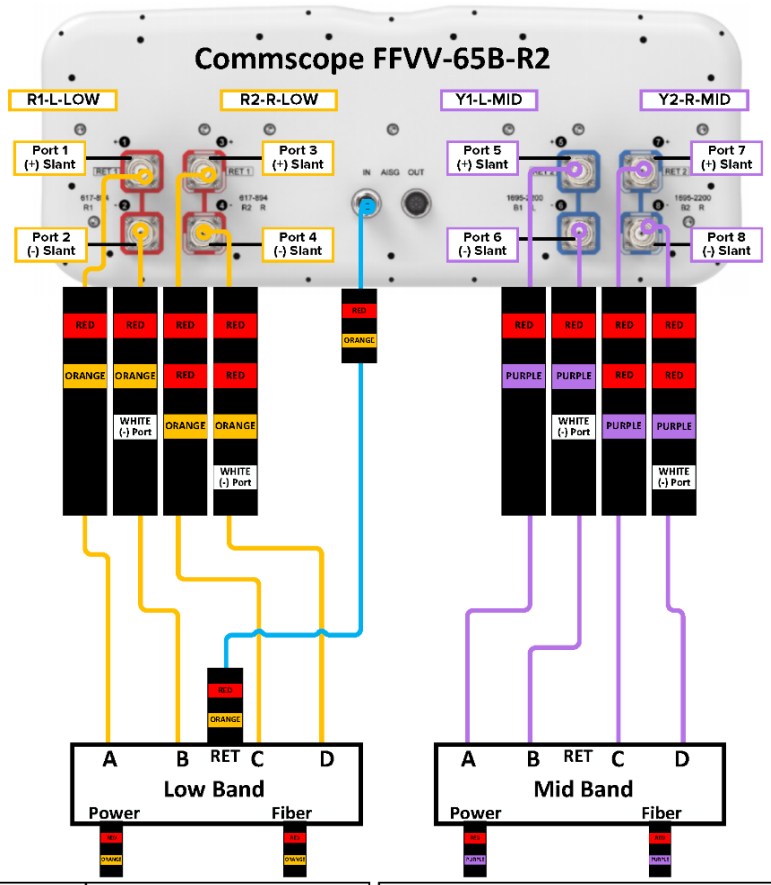
RF EQUIPMENT INFORMATION

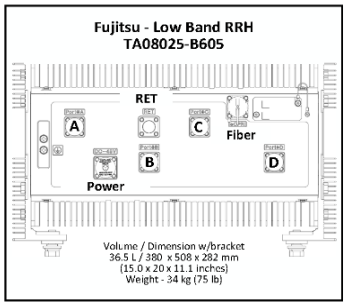
Issue Date/Revision	1/2/2024	**Revision:**	0	**Latitude**	41.985378
Site ID	BOBOS00933B			**Prequal Asset ID**	
Site Address	107 Stickney Hill Road, Union CT 06076			**SOW / RF Comments**	Dish proposes to place 3 antennas, 6 RRUs, 1 junction box(s), and 1 (power/hybrid) cable(s), at the 99 foot RAD. Dish will require a lease area for ground equipment. Prelim RFDS.
Structure Type	SST				
sectors >20' apart?	No	***Confirmed RAD?***	***No Confirmed RAD***		99

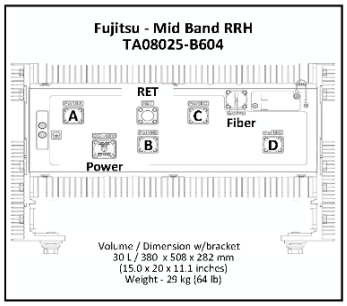
	Sector 1 (alpha)			Sector 2 (beta)			Sector 3 (gamma)		
ANTENNA									
Antenna Mount Position	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Antenna ID		1			2			3	
Manufacturer		Commscope			Commscope			Commscope	
Model Number		FFVV-65B-R2			FFVV-65B-R2			FFVV-65B-R2	
Dimensions H x W x D (in)		72.0" x 19.6" 7.8"			72.0" x 19.6" 7.8"			72.0" x 19.6" 7.8"	
Weight (lbs.)		70.8			70.8			70.8	
TX Power Output (watts)		40000			40000			40000	
ERP (dBm)		76.02			76.02			76.02	
RAD Centerline Height (ft.)		99			99			99	
Azimuths (True North)		30°			150°			270°	
Mech Down Tilt		0°			0°			0°	
Default Mount		Generic							
LOW BAND/RADIO #1									
Manufacturer		Samsung			Samsung			Samsung	
Model Number		RF4450t-71A			RF4450t-71A			RF4450t-71A	
Dimensions H x W x D (in.)		16.5" x 15.0" x 11.0"			16.5" x 15.0" x 11.0"			16.5" x 15.0" x 11.0"	
Weight (lbs.)		94.58			94.58			94.58	
Location		Antenna			Antenna			Antenna	
Band		n71 |			n71 |			n71 |	
Quantity		1			1			1	
Port Assignment		Port 1-4			Port 1-4			Port 1-4	
Elec Down Tilt		2°			2°			2°	
MID BAND/RADIO #2									
Manufacturer		Samsung			Samsung			Samsung	
Model Number		RF4451d-70A			RF4451d-70A			RF4451d-70A	
Dimensions H x W x D (in)		15.0" x 15.0" x 8.9"			15.0" x 15.0" x 8.9"			15.0" x 15.0" x 8.9"	
Weight (lbs.)		61.3			61.3			61.3	
Location		Antenna			Antenna			Antenna	
Quantity		1			1			1	
Band		n70 |n66			n70 |n66			n70 |n66	
Port Assignment		Port 5-8			Port 5-8			Port 5-8	
Elec Down Tilt		2°			2°			2°	
OVP (Junction Box)									
Manufacturer		Raycap							
Model Number		RDIDC-9181-PF-48							
Dimensions H x W x D (in.)		16" x 14" x 8"							
Weight (lbs.)		21							
Quantity		1							
LINE DETAILS									
Line Type	Hybrid								
Manufacturer	Cables Unlimited								
Model Number	CU12PSM9P6XXX_6AWG								
Diameter (O.D. in.)	1.60"								
Weight (lbs. per ft.)	2.346 lbs/ft								
Quantity	1								
Approx. Cable Length	129								
OTHER EQUIPMENT									
Type of Equipment									
Manufacturer									
Model Number									
Dimensions H x W x D (in)									
Weight (lbs.)									
Equipment Location									
Quantity									

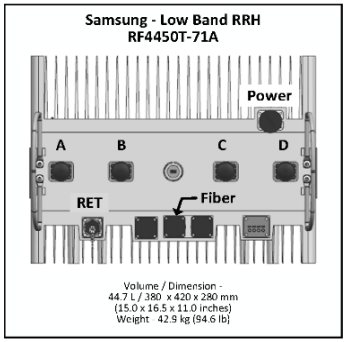
Frequencies	**n29**	**n66**	**n70**	**n71**
Downlink (TX)	-	|2160 - 2165| |2180 - 2200|	|1995 - 2020|	|632 - 652|
Uplink (RX)	-	|1760 - 1765|	|1695 - 1710|	|678 - 698|

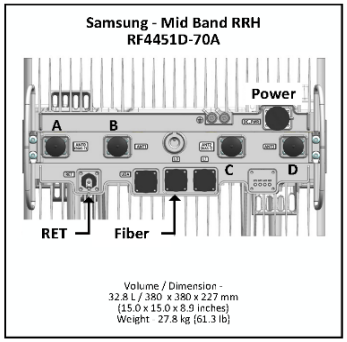
PLUMBING DIAGRAM ANTENNA











Wireless Engineering

ALPHA SECTOR (1 Antenna)
RRU AND ANTENNA
RF CABLING CONFIGURATION

Commscope FFVV-65B-R2 - 8 Port - 6ft
LOW/MID Radios
LOW Band RET cable

Chuck Iversen	SIZE	CAGE CODE 50HD6	DWG NAME FFVV-65B-R2-Commscope-6ft_ALPHA	REV 1
20 - Sept – 2022	SCALE None		SHEET 1 OF 1	

Dimensions

Length	1828 mm | 72.0 in
Width	498 mm | 19.6 in
Depth	197 mm | 7.8 in

Mechanical Specifications

/ind Loading at Velocity, frontal	685 N @ 150 km/h | 154.0 lbf @ 150 km/h
/ind Loading at Velocity, lateral	232 N @ 150 km/h | 52.2 lbf @ 150 km/h
/ind Loading at Velocity, rear	564 N @ 150 km/h | 126.8 lbf @ 150 km/h
/ind Loading at Velocity, maximum	889 N @ 150 km/h | 199.8 lbf @ 150 km/h
/ind Speed, maximum	241 km/h | 150 mph

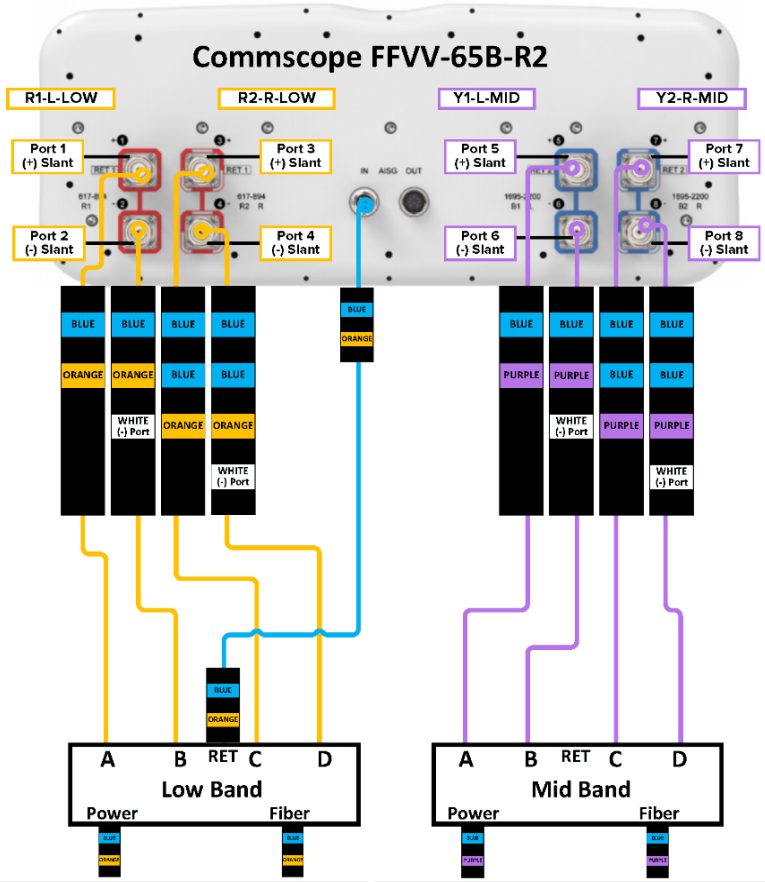
Packaging and Weights

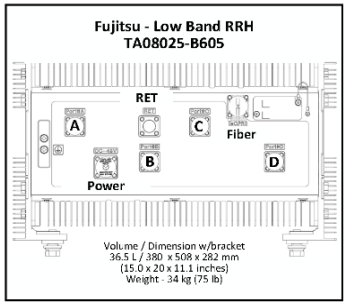
Length, packed	2010 mm | 79.1 in
Width, packed	608 mm | 23.9 in
Depth, packed	352 mm | 13.9 in
Net Weight, without mounting kit	32.1 kg | 70.8 lb
Weight, gross	44.5 kg | 98.1 lb

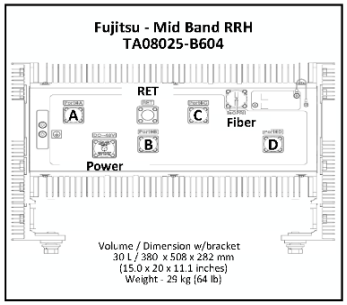
- Refer to the color coding chart for RF Cables
- Check RRH SFPs are 'I-temp' rated, (industrial-temp range)
- RF Connector recommended torque: 50 inch-lbs.
- RET connector recommended torque: 4.3-8.6 inch-lbs.
- Weatherproof boots required on all RF jumpers.
- RET cables require self-sealing tape.
- Protect unused ports with weather-sealing caps.
- **When OOBE filters are used, provide straight-through connectivity (Ant port 1 --> RU port A) with each port and each set of RF jumpers color-coded accordingly.**

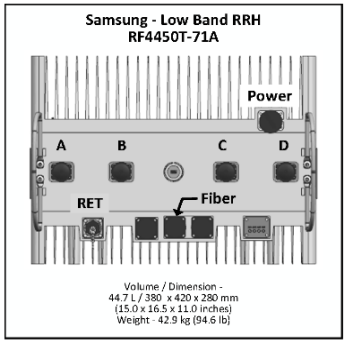
Sector Color Bands	Frequency Color Bands	Main Coax
ALPHA SECTOR	LOW BAND (LB)	RET Cable
BETA SECTOR	MID BAND (MB)	RF Jumper - Low Band
GAMMA SECTOR	FUTURE	RF Jumper - Mid Band

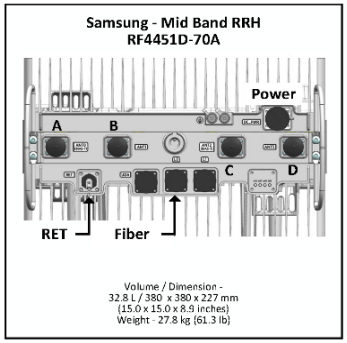
PLUMBING DIAGRAM ANTENNA











Wireless Engineering

BETA SECTOR (1 Antenna)
RRU AND ANTENNA
RF CABLING CONFIGURATION

Commscope FFVV-65B-R2 - 8 Port - 6ft
LOW/MID Radios
LOW Band RET cable

Chuck Iversen	SIZE	CAGE CODE	DWG NAME	REV
		50HD6	FFVV-65B-R2-Commscope-6ft_BETA	1
20 - Sept – 2022	SCALE	None	SHEET	1 OF 1

Dimensions

Length	1828 mm | 72.0 in
Width	498 mm | 19.6 in
Depth	197 mm | 7.8 in

Mechanical Specifications

/ind Loading at Velocity, frontal	685 N @ 150 km/h | 154.0 lbf @ 150 km/h
/ind Loading at Velocity, lateral	232 N @ 150 km/h | 52.2 lbf @ 150 km/h
/ind Loading at Velocity, rear	564 N @ 150 km/h | 126.8 lbf @ 150 km/h
/ind Loading at Velocity, maximum	889 N @ 150 km/h | 199.8 lbf @ 150 km/h
/ind Speed, maximum	241 km/h | 150 mph

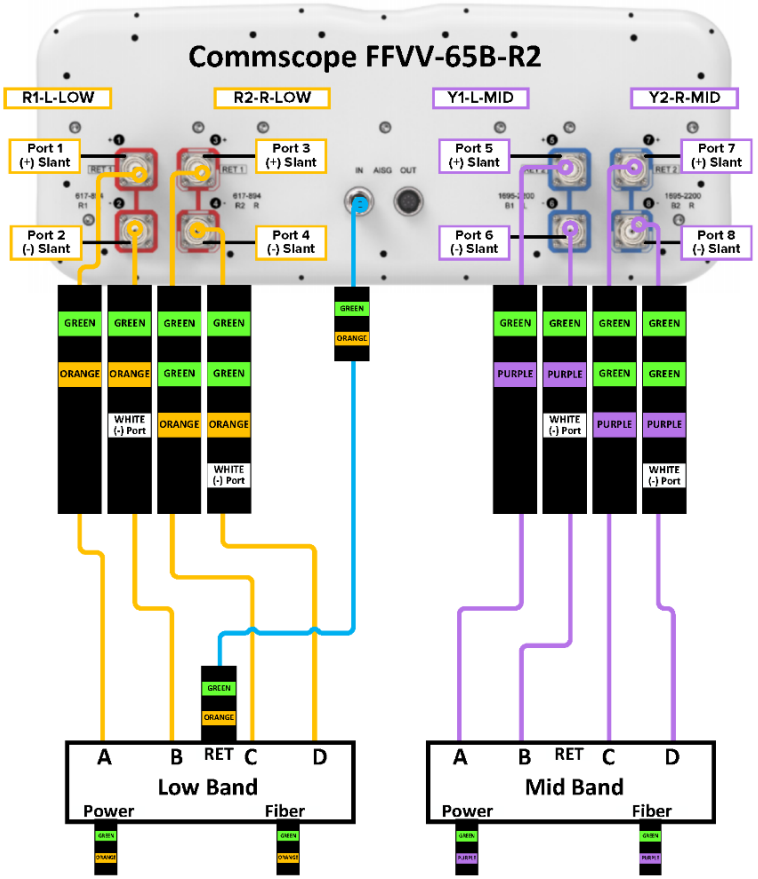
Packaging and Weights

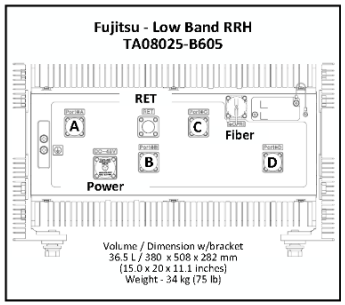
Length, packed	2010 mm | 79.1 in
Width, packed	608 mm | 23.9 in
Depth, packed	352 mm | 13.9 in
Net Weight, without mounting kit	32.1 kg | 70.8 lb
Weight, gross	44.5 kg | 98.1 lb

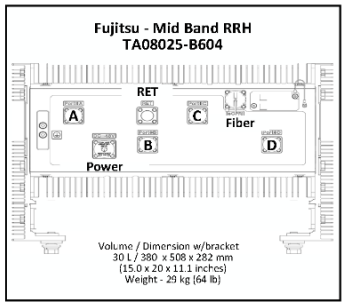
- Refer to the color coding chart for RF Cables
- Check RRH SFPs are 'I-temp' rated, (industrial-temp range)
- RF Connector recommended torque: 50 inch-lbs.
- RET connector recommended torque: 4.3-8.6 inch-lbs.
- Weatherproof boots required on all RF jumpers.
- RET cables require self-sealing tape.
- Protect unused ports with weather-sealing caps.
- **When OOBE filters are used, provide straight-through connectivity (Ant port 1 --> RU port A) with each port and each set of RF jumpers color-coded accordingly.**

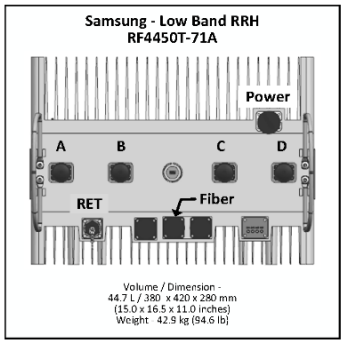
Sector Color Bands	Frequency Color Bands	Main Coax
ALPHA SECTOR	LOW BAND (LB)	RET Cable
BETA SECTOR	MID BAND (MB)	RF Jumper - Low Band
GAMMA SECTOR	FUTURE	RF Jumper - Mid Band

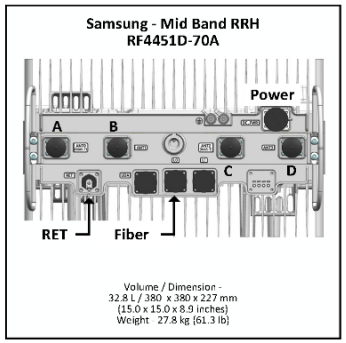
PLUMBING DIAGRAM ANTENNA











Wireless Engineering

GAMMA SECTOR (1 Antenna)
RRU AND ANTENNA
RF CABLING CONFIGURATION

Commscope FFVV-65B-R2 - 8 Port - 6ft
LOW/MID Radios
LOW Band RET cable

Chuck Iversen	SIZE	CAGE CODE	DWG NAME	REV
		50HD6	FFVV-65B-R2-Commscope-6ft_GAMMA	1
20 - Sept – 2022	SCALE None		SHEET 1 OF 1	

Dimensions

Length	1828 mm | 72.0 in
Width	498 mm | 19.6 in
Depth	197 mm | 7.8 in

Mechanical Specifications

Axial Loading at Velocity, frontal	685 N @ 150 km/h | 154.0 lbf @ 150 km/h
Axial Loading at Velocity, lateral	232 N @ 150 km/h | 52.2 lbf @ 150 km/h
Axial Loading at Velocity, rear	564 N @ 150 km/h | 126.8 lbf @ 150 km/h
Axial Loading at Velocity, maximum	889 N @ 150 km/h | 199.8 lbf @ 150 km/h
Axial Speed, maximum	241 km/h | 150 mph

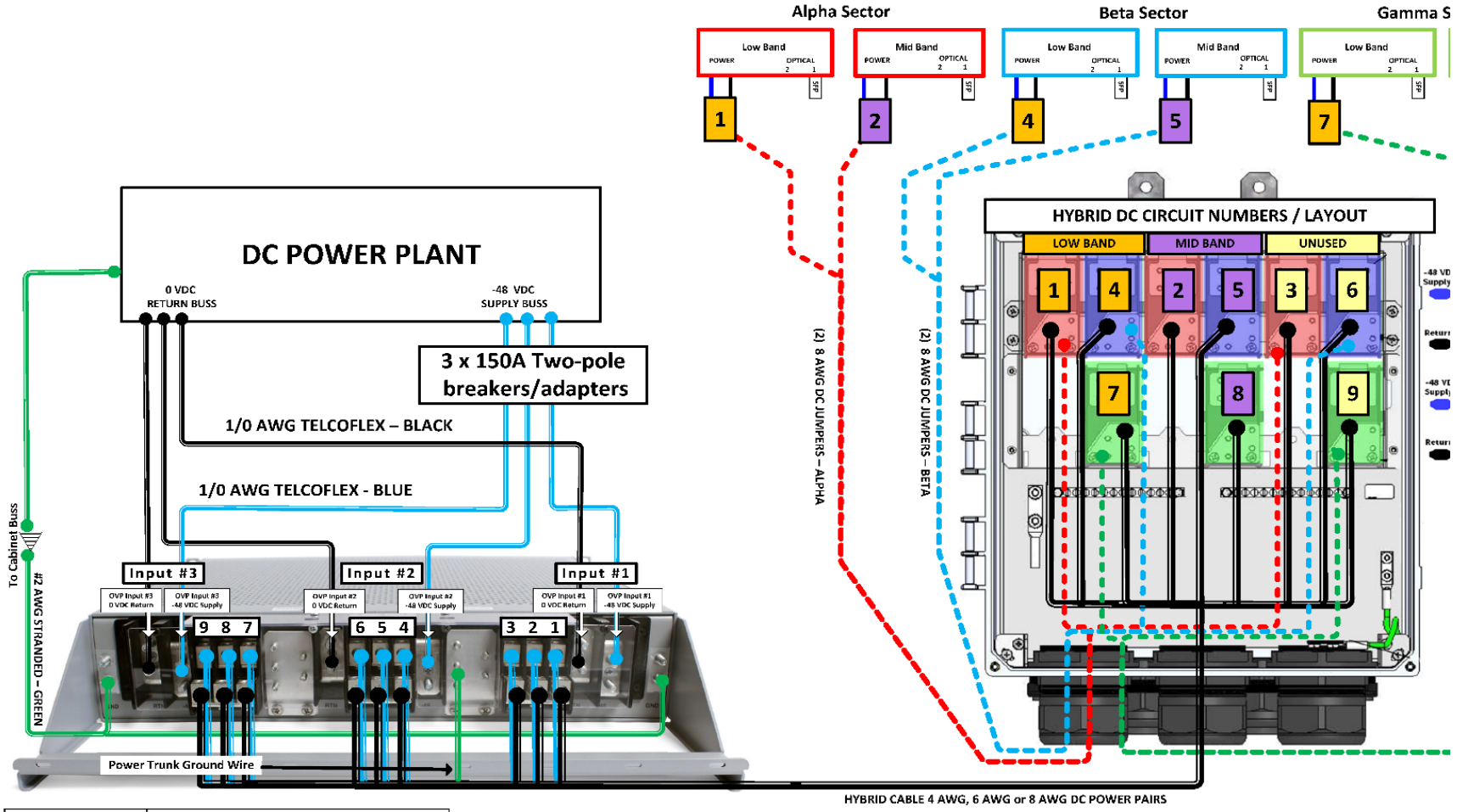
Packaging and Weights

Length, packed	2010 mm | 79.1 in
Width, packed	638 mm | 25.9 in
Depth, packed	352 mm | 13.9 in
Net Weight, without mounting kit	32.1 kg | 70.8 lb
Weight, gross	44.5 kg | 98.1 lb

- Refer to the color coding chart for RF Cables
- Check RRH SFPs are 'I-temp' rated, (industrial-temp range)
- RF Connector recommended torque: 50 inch-lbs.
- RET connector recommended torque: 4.3-8.6 inch-lbs.
- Weatherproof boots required on all RF jumpers.
- RET cables require self-sealing tape.
- Protect unused ports with weather-sealing caps.
- **When OOBE filters are used, provide straight-through connectivity (Ant port 1 --> RU port A) with each port and each set of RF jumpers color-coded accordingly.**

Sector Color Bands	Frequency Color Bands	Main Coax
ALPHA SECTOR	LOW BAND (LB)	RET Cable
BETA SECTOR	MID BAND (MB)	RF Jumper - Low Band
GAMMA SECTOR	FUTURE	RF Jumper - Mid Band

PLUMBING DIAGRAM OVP

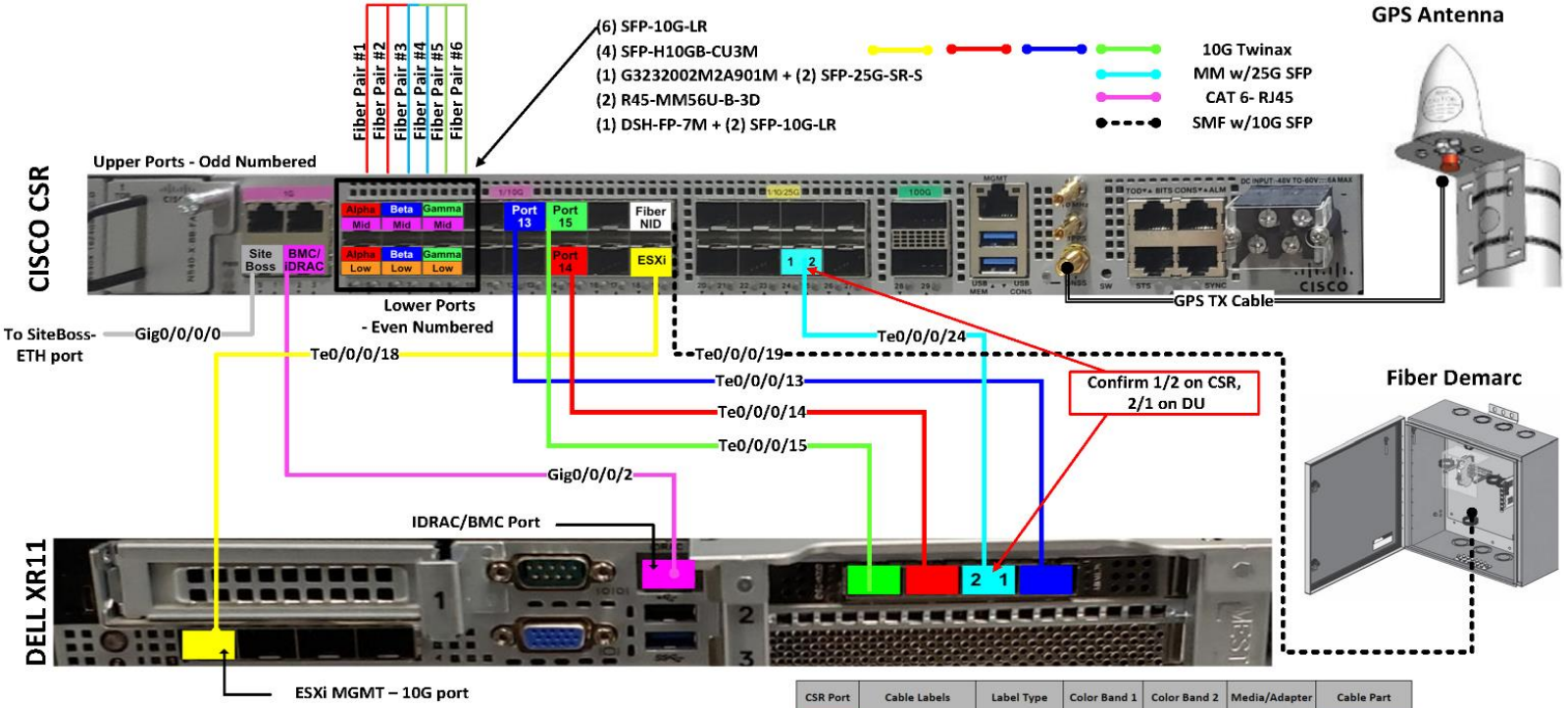


Wireless Engineering	5G Macro Site Communications Diagram			
	Raycap 9303 (3 x 3 Circuits) No Booster Raycap 9181 (TOWER) Top OVP			
Chuck Iversen	SIZE	CAGE CODE 50HD6	DWG NAME 9303-NoBoost-Tower OVP	REV 1
20 - Nov - 2022	SCALE None		SHEET 1 OF 1	

DC Circuit pair #

RF Color Coding Sector color bands	RF Color Coding Frequency color bands
ALPHA SECTOR	LOW BAND (LB)
BETA SECTOR	MID BAND (MB)
GAMMA SECTOR	UNUSED

PLUMBING DIAGRAM NETWORK



CSR Port	Cable Labels	Label Type	Color Band 1	Color Band 2	Media/Adapter	Cable Part
CSR - Port 0	SiteBoss/ETH port CSR Port 0/16	Tag or Flag	NONE/GREY RIBBON CABLE		Native RJ45	CAT 5
CSR - Port 2	BMC/IDRAC CSR Port 2/17 DU IDRAC port	Tag or Flag	PURPLE		Native RJ46	CAT 5
CSR - Port 4	Alpha Low	Tag or Flag	RED	ORANGE	SFP-10G-LR-S	Hybrid Fiber Pair
CSR - Port 5	Alpha Mid	Tag or Flag	RED	PURPLE	SFP-10G-LR-S	Hybrid Fiber Pair
CSR - Port 6	Beta Low	Tag or Flag	BLUE	ORANGE	SFP-10G-LR-S	Hybrid Fiber Pair
CSR - Port 7	Beta Mid	Tag or Flag	BLUE	PURPLE	SFP-10G-LR-S	Hybrid Fiber Pair
CSR - Port 8	Gamma Low	Tag or Flag	GREEN	ORANGE	SFP-10G-LR-S	Hybrid Fiber Pair
CSR - Port 9	Gamma Mid	Tag or Flag	GREEN	PURPLE	SFP-10G-LR-S	Hybrid Fiber Pair
CSR - Port 13	PTP CSR PORT 13 DU PORT 1	Flag	BLUE		DAC/10G	SFP-H10GB-CU3M
CSR - Port 14	VMWARE-MGMT CSR PORT 14 DU PORT 3	Flag	RED		DAC/10G	SFP-H10GB-CU3M
CSR - Port 15	MIDHAUL CSR PORT 15 DU PORT 4	Flag	GREEN		DAC/10G	SFP-H10GB-CU3M
CSR - Port 18	ESXi CSR PORT 18 DU ESXi MGMT PORT	Flag	YELLOW		DAC/10G	SFP-H10GB-CU3M
CSR - Port 19	To XHAUL NID (CKT ID) CSR PORT 19	Flag	LABEL ONLY		SFP-10G-LR-S (Typically)	SM Fiber
CSR - Port 24	FRONTHAUL CSR PORT 24 DU PORT 2	Flag	LABEL ONLY		SFP-25G-SR-S	G3232002M2A901M

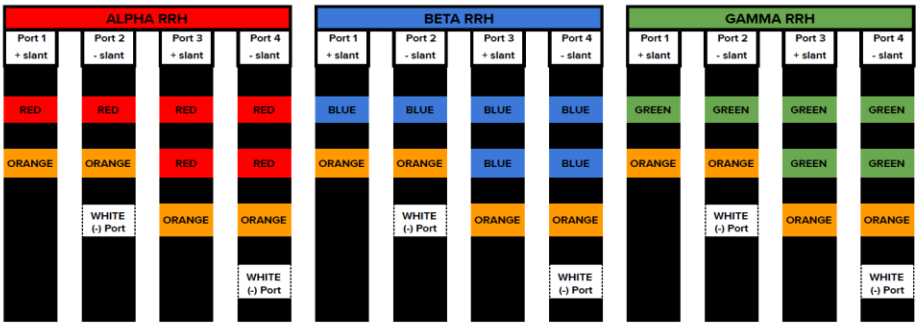
Wireless Engineering	5G Macro Site Communications Diagram			
Chuck Iversen	Cisco CSR – NCS-540 Lit Fiber-Dell XR11 DU			
1 - July - 2022	SIZE	CAGE CODE 50HD6	DWG NAME CSR-DU-Good CSR-Dell	REV 2
	SCALE None		SHEET 1 OF 1	

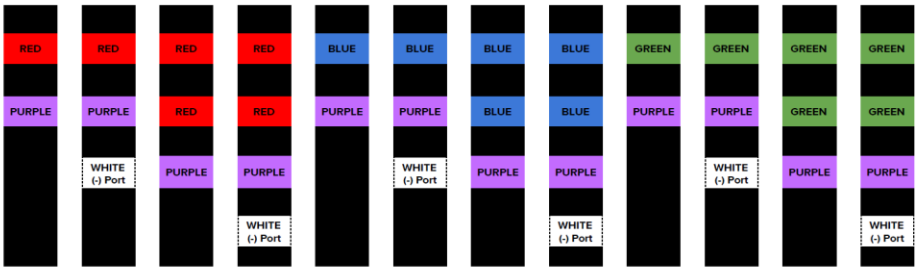
RF COLOR CODING

RF Cable Color Codes

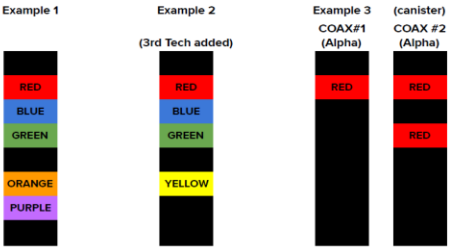
RF Jumper Color Coding

3/4" tape widths with 3/4" spacing



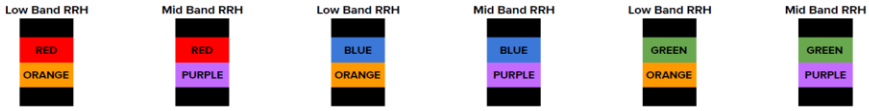


Hybrid/Discreet Cables



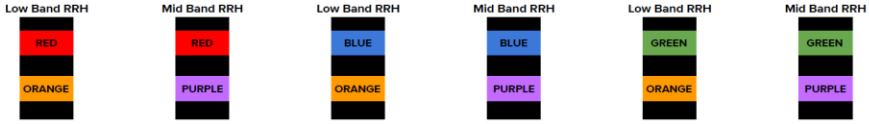
Fiber Jumpers to RRHs

Low Band RRH fiber cables have sector stripe only



Power Cables to RRHs

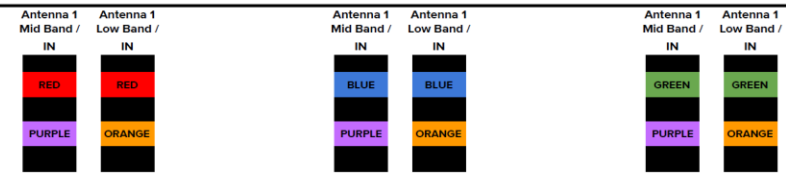
Low Band RRH power cables have sector stripe only



RET motors at Antennas

RET control is handled by the MID-band RRU when one set of RET ports exist on antenna.

Separate RET cables are used when antenna ports provide inputs for both LOW and MID bands.



Microwave Radio Links

Links will have a 1.5-2 inch white wrap with the azimuth color overlapping in the middle. Add additional sector color bands for each additional MW radio.

Microwave cables will require P-touch labels inside the cabinet to identify the local and remote Site ID's.

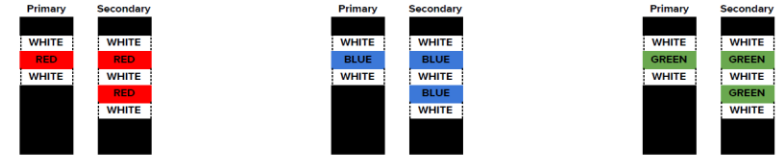


Exhibit E

Mount Analysis

AMERICAN TOWER®
CORPORATION

Mount Analysis Report

ATC Asset Name	:	Union 2
ATC Asset Number	:	209144
Engineering Number	:	14580426_C8_06
Mount Elevation	:	97 ft
Proposed Carrier	:	Dish Wireless L.L.C.
Carrier Site Name	:	BOBOS00933B
Carrier Site Number	:	BOBOS00933B
Site Location	:	107 Stickney Hill Road Union, CT 6076-4624 41.985378, -72.192167
County	:	Tolland
Date	:	May 17, 2024
Max Usage	:	41%
Analysis Result	:	Contingent Pass

Prepared By:
Zach Stoll
Structural Engineer I

COA: PEC.0001553

Table of Contents

Introduction 3

Supporting Documents 3

Analysis 3

Conclusion 3

Application Loading 4

Structure Usages 4

Mount Layout 5

Equipment Layout 6

Standard Conditions ..... Attached

Calculations ..... Attached

Introduction

The purpose of this report is to summarize results of the mount analysis performed for Dish Wireless L.L.C. at 97 ft.

Supporting Documents

Specifications Sheet:	Commscope MTC3975083, dated March 17, 2021
Construction Drawings:	Dish Project #209144-14580426_D2, dated April 24, 2024
Radio Frequency Data Sheet:	RFDS ID #BOBOS00933B, dated February 6, 2024
Reference Photos:	Site photos from 2021

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	118 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.50'' radial ice concurrent
Codes:	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Hill
Crest Height (H):	239 ft
Crest Length (L):	2118 ft
Spectral Response:	Ss = 0.177, S1 = 0.055
Site Class:	D - Stiff Soil - Default
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

***Live Load(s) reduction is confirmed to either not govern or not be applicable**

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Analysis based on new installation of Commscope MTC3975083 Sector Frame(s).
- Install P2.5 (2.875" x 96") in mount pipe position 1 through 3. Connect with Site Pro 1 SCX7-U (or approved equivalent) crossover plate kits.
- Install P2 (2.375" x 60") in mount pipe position MA1. Connect with Site Pro 1 SCX7-U (or approved equivalent) crossover plate kits.
- No structural failures were addressed with the noted contingencies. Contingencies address Carrier's antenna spacing requirements.

If you have any questions or require additional information, please reach out to your American Tower contact. If you do not have an American Tower contact and have an Engineering question, please contact MountAnalysis@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

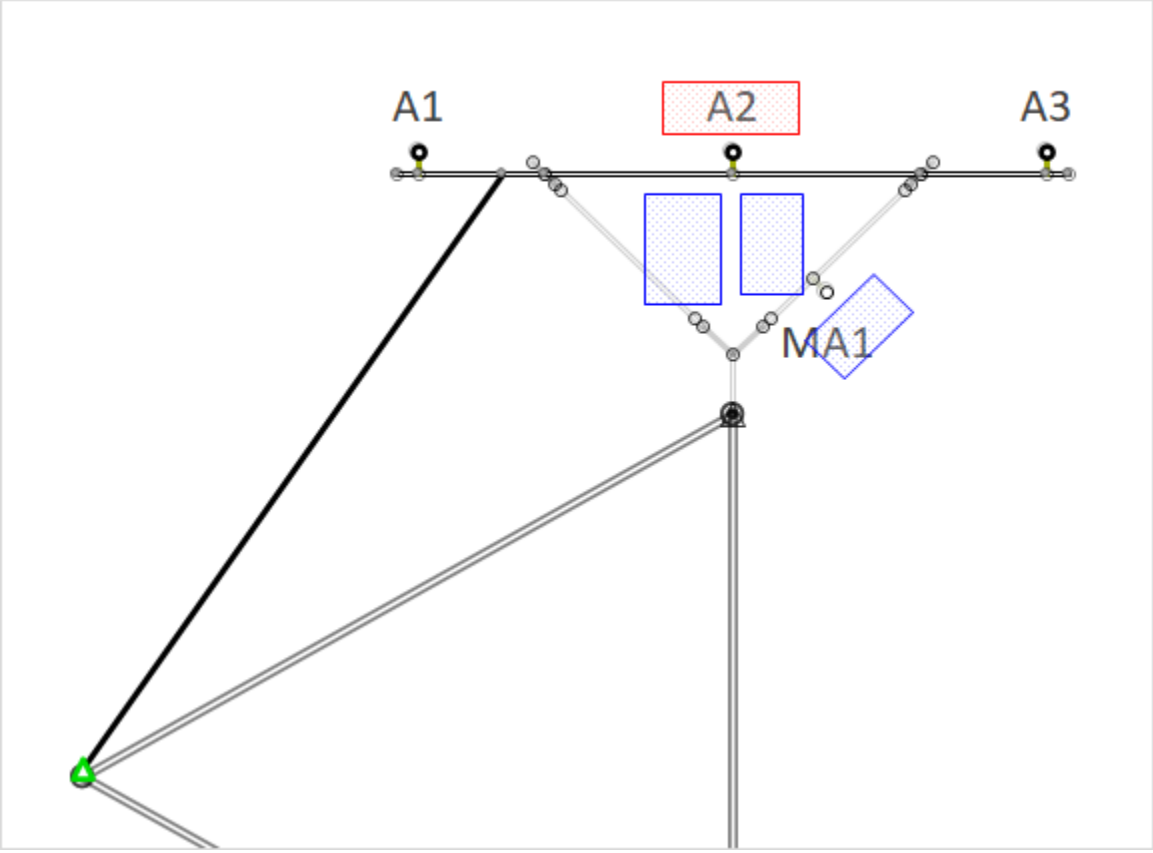
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
97.0	97.0	3	Commscope FFVV-65B-R2
		1	Raycap RDIDC-9181-PF-48
		3	Samsung RF4450T-71A
		3	Samsung RF4451d-70A

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Horizontals	41%	Pass
Verticals	18%	Pass
Diagonals	21%	Pass
Tie-Backs	7%	Pass
Mount Pipes	12%	Pass
Tower Leg Check	40%	Pass
Clamp Connection Check	27%	Pass

Mount Layout

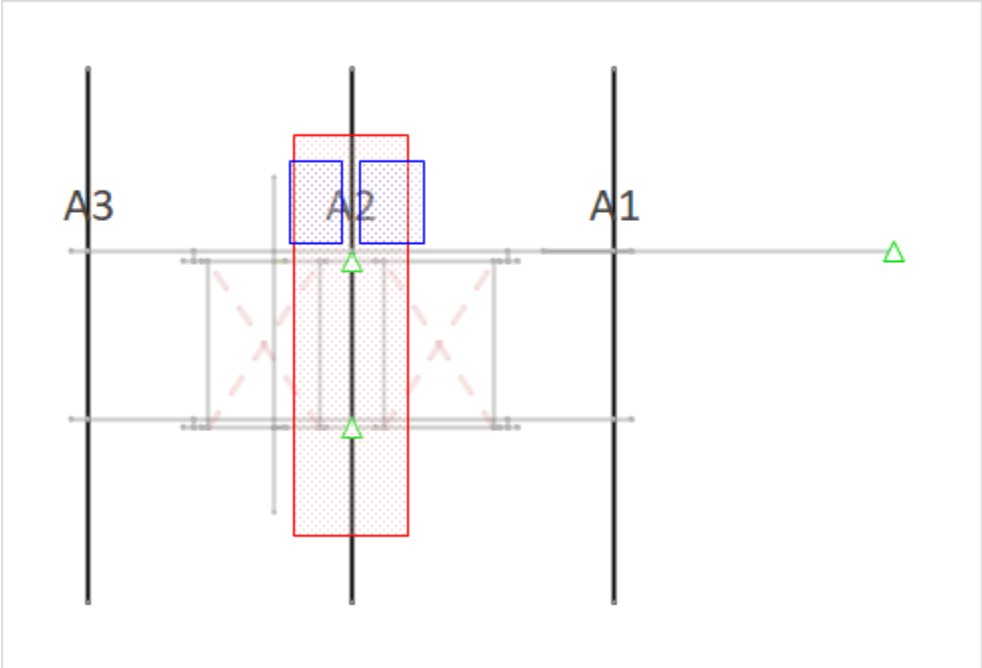


Equipment Position Table

MP	RAD Center (ft)	Qty.	Antenna Model
A1	-	-	Empty
A2	97.0	1	Commscope FFVV-65B-R2
	97.0	1	Samsung RF4450T-71A
	97.0	1	Samsung RF4451d-70A
A3	-	-	Empty
MA1	97.0	1	Raycap RDIDC-9181-PF-48

Equipment Layout

Front View - Alpha



Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding equipment, mounts, and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

AMERICAN TOWER®
CORPORATION

Site Number:	*209144*
Project Number:	*14580426_C8_06*
Carrier:	*Dish Wireless L.L.C.*
Mount Elevation:	*97 ft*
Date:	5/17/2024

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	0.98	
Topographic Factor	K_{zt}	1.26	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	0.96	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	118	mph
Velocity Pressure	q_z	40.1	psf
Height Escalation Factor	K_{iz}	1.11	
Thickness of Radial Glaze Ice	T_{iz}	1.81	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.142	
1 Second DSRAP	S_{D1}	0.088	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.071	
Amplification Factor	A	1.0	
Total Weight	W	618.4	lbs
Total Shear Force	V_S	43.8	lbs
Horizontal Seismic Load	Eh	43.8	lbs
Vertical Seismic Load	Ev	17.5	lbs

Antenna Calculations (Elevations per Application/RFDS)*

Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{Ni}	EPA_{Ti}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Commscope FFVV-65B-R2	72.0	19.6	7.8	70.8	12.27	2.34	15.27	3.60
Raycap RDIDC-9181-PF-48	16.0	14.0	8.0	21.9	1.87	1.07	2.88	1.90
Samsung RF4450T-71A	15.0	16.5	11.0	94.6	2.06	1.38	3.12	2.27
Samsung RF4451d-70A	15.0	15.0	8.9	61.3	1.88	1.11	2.89	1.94

**** Equipment with EPA values N/A were not considered in the mount analysis***
*****Equipmwent EPA has been adjusted per wind tunnel and CFD testing***

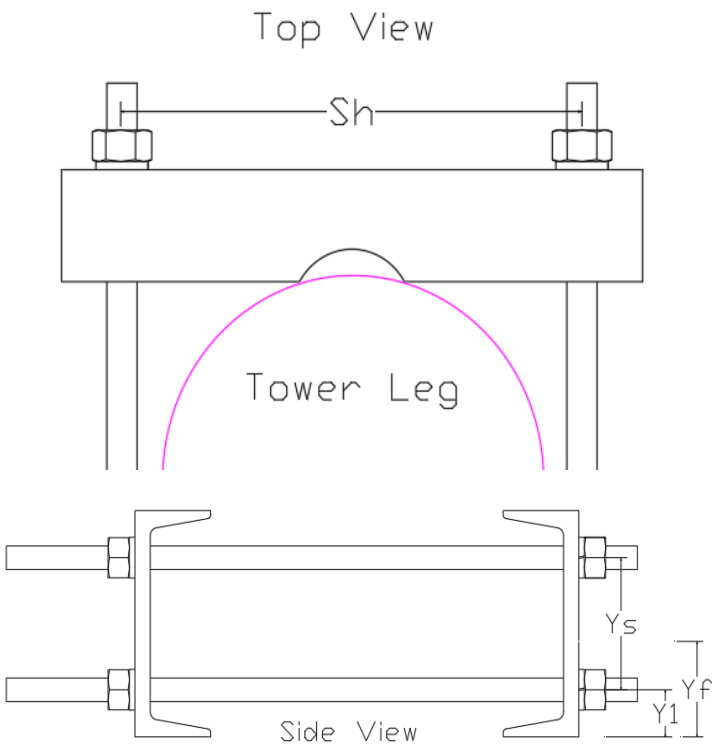
AMERICAN TOWER®
CORPORATION

Site Number:	*209144*
Project Number:	*14580426_C8_06*
Carrier:	*Dish Wireless L.L.C.*
Mount Elevation:	*97 ft*
Date:	5/17/2024

Mount-to-Tower Connection Analysis

Applied Loads from RISA 3D			
Controlling Load Combination		26	
Node Label / Orientation (Degrees)		N007	
Force in X	Fx	7.0	lbs
Force in Y	Fy	917.2	lbs
Force in Z	Fz	1606.2	lbs
Moment about X	Mx	-938.8	lb-ft
Moment about Y	My	0.0	lb-ft
Moment about Z	Mz	-19.5	lb-ft

Bolt Capacity			
Bolt Type		Threaded Rod(s)	
Threaded Rod(s) Quantity	n	2	
Bolt Diameter	D_B	5/8	in
Vertical Bolt Spacing	Y_s		in
Lower Bolt Edge Distance	Y_1	2.75	in
Horizontal Bolt Spacing	S_h	9.5	in
Clamp Height	H	5	in
Load Eccentricity	Y_f	2.5	in
Bolt Grade		A449	
Bolt Fy	Fy_B	92	ksi
Bolt Fu	Fu_B	120	ksi
Max Applied Tension	Tu	5.50	k
Tensile Strength	ϕTn	20.3	k
Connection Capacity	Tu/ϕTn	27%	Pass



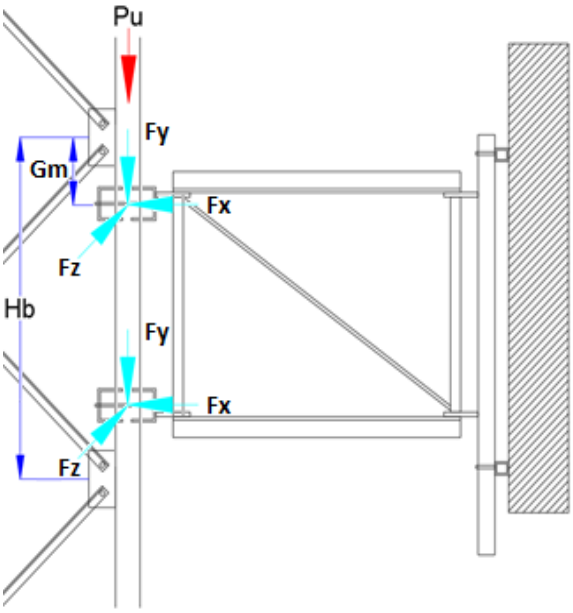
AMERICAN TOWER®
CORPORATION

Site Number:	*209144*
Project Number:	*14580426_C8_06*
Carrier:	*Dish Wireless L.L.C.*
Mount Elevation:	*97 ft*
Date:	5/17/2024

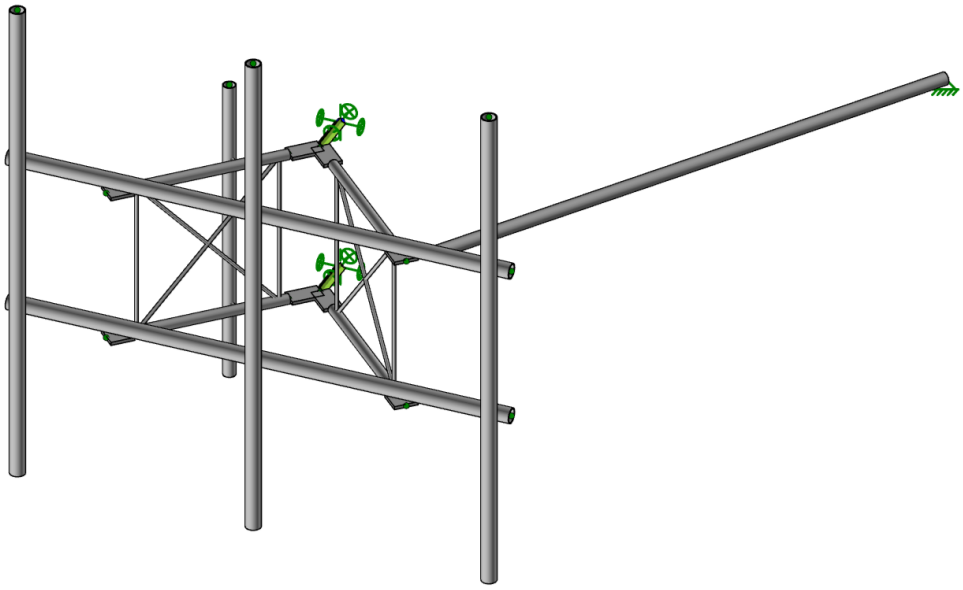
Tower Leg Reaction Analysis

Applied Loads from RISA 3D				
Controlling Load Combination/ Leg Orient.		9	-30	deg
Leg Node Label(s)	N001	N007		
Force in X, Fx	-161.4	-177.6		lbs
Force in Y, Fy	398.6	304.4		lbs
Force in Z, Fz	-1620.1	245.0		lbs
Moment about X, Mx	-397.7	-308.1		lb-ft
Moment about Y, My	0.0	0.0		lb-ft
Moment about Z, Mz	-48.5	-37.6		lb-ft

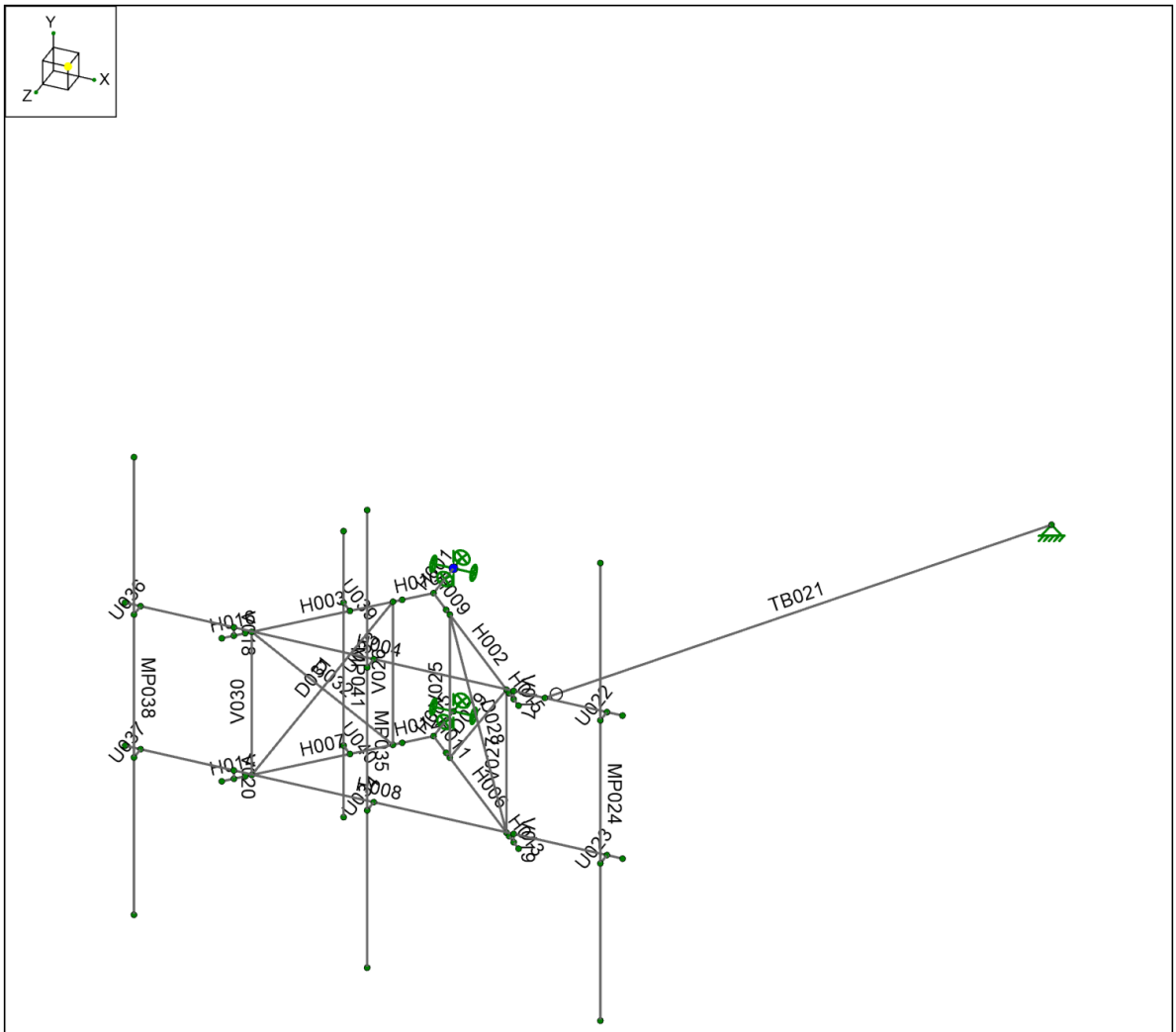
Tower Leg Properties				
Leg Type		Pipe		Mods
Leg Member		PIPE_2.5X		N
Leg Bay Height	Hb	6.43	ft	
Upper Mount Offset	Gm	21.00	in	
Tower Axial Load	Pu_T	0	k	
Leg Grade		A572-50		
Leg Yield Strength	Fy	50	ksi	
Cross Sectional Area	Ag	2.254	in^2	
Radius of Gyration	r	0.924	in	
Moment of Inertia	I	1.924	in^4	
Major Section Modulus	S_{max}	1.339	in^3	
Minimum Section Modulus	S_{min}	1.339	in^3	
Plastic Modulus	Z_{min}	1.871	in^3	
Torsional Constant	J	3.848	in^4	
Elastic Modulus	E	29,000	ksi	
Shear Modulus	G	11,200	ksi	
Slenderness Limit	4.71√(E/F'y)	113.4	-	
Member Slenderness	KL/r	83.5	-	
Rotation of Leg	Θ	N/A	rads	
Leg Torsional Stiffness	k	**N/A**	k-in/rad	



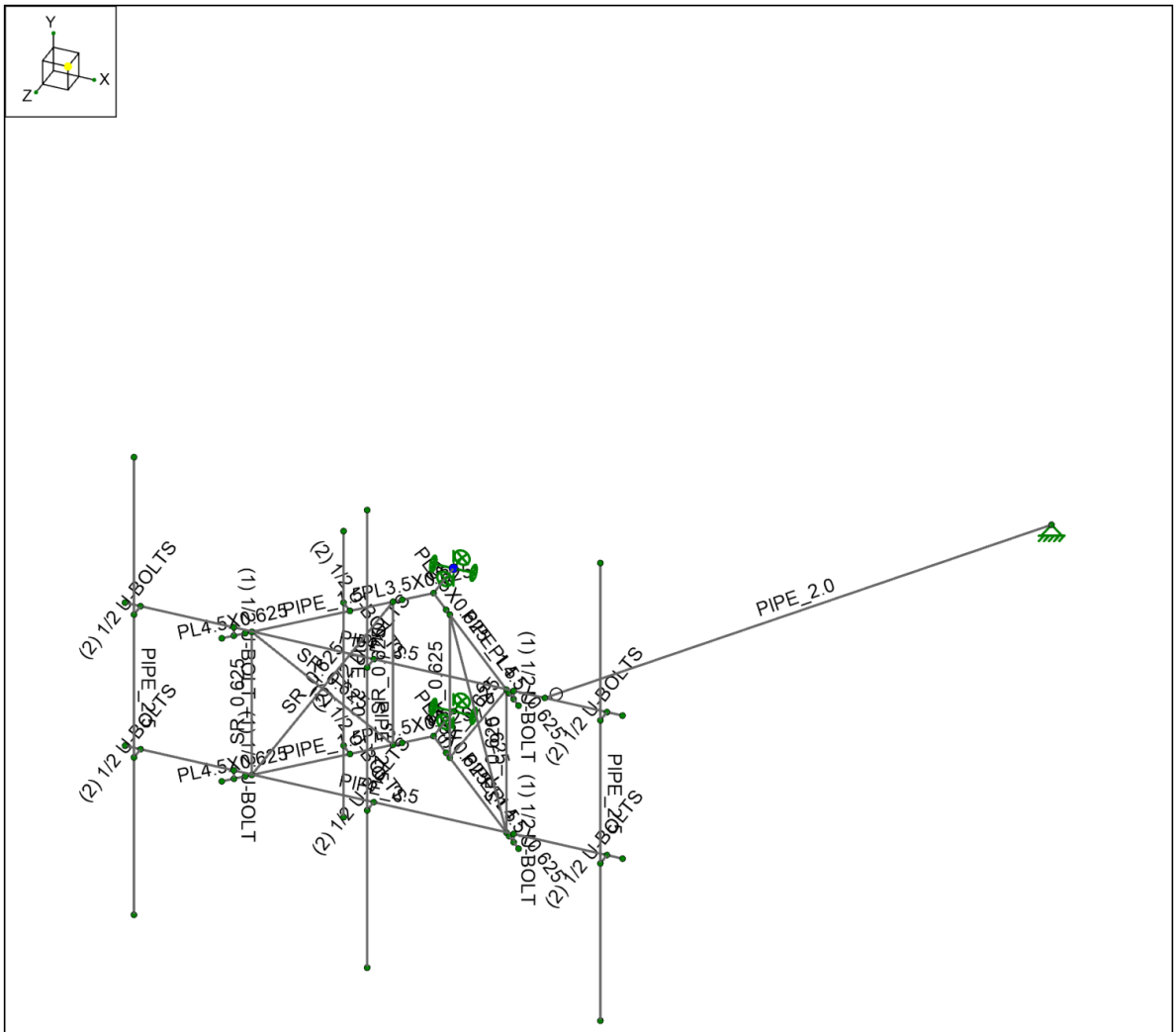
Tower Leg Analysis			
Critical Stress	F_{cr}	30.0	ksi
Axial Stress	σ_a	0.31	ksi
Shear Stress	τ_b	0.94	ksi
Maj. Bending Stress	σ_{bw}	6.39	ksi
Min. Bending Stress	σ_{bz}	11.04	ksi
Torsional Stress	τ_t	0.00	ksi
Normal Stress Limit State	F_{un}	45.0	ksi
Shear Stress Limit State	F_{uv}	27.0	ksi
Maj. Bend. Stress Limit State	F_{cbw}	45.0	ksi
Min. Bend. Stress Limit State	F_{cbz}	45.0	ksi
Buckling Limit State	F_{ca}	27.0	ksi
Torsional/Shear Impact	$\Sigma\tau / F_{uv}$	3%	Pass
Buckling/Axial Impact	$\Sigma\sigma / F_{un}$	40%	Pass



American Tower Corp.	209144, Union 2	SK-1
Zach.Stoll		May 17, 2024
14580426_C8_06		R3D. DISH WIRELESS L.L.C. @ …



American Tower Corp.	209144, Union 2	SK-2
Zach.Stoll		May 17, 2024
14580426_C8_06		R3D. DISH WIRELESS L.L.C. @ …



American Tower Corp.	209144, Union 2	SK-3
Zach.Stoll		May 17, 2024
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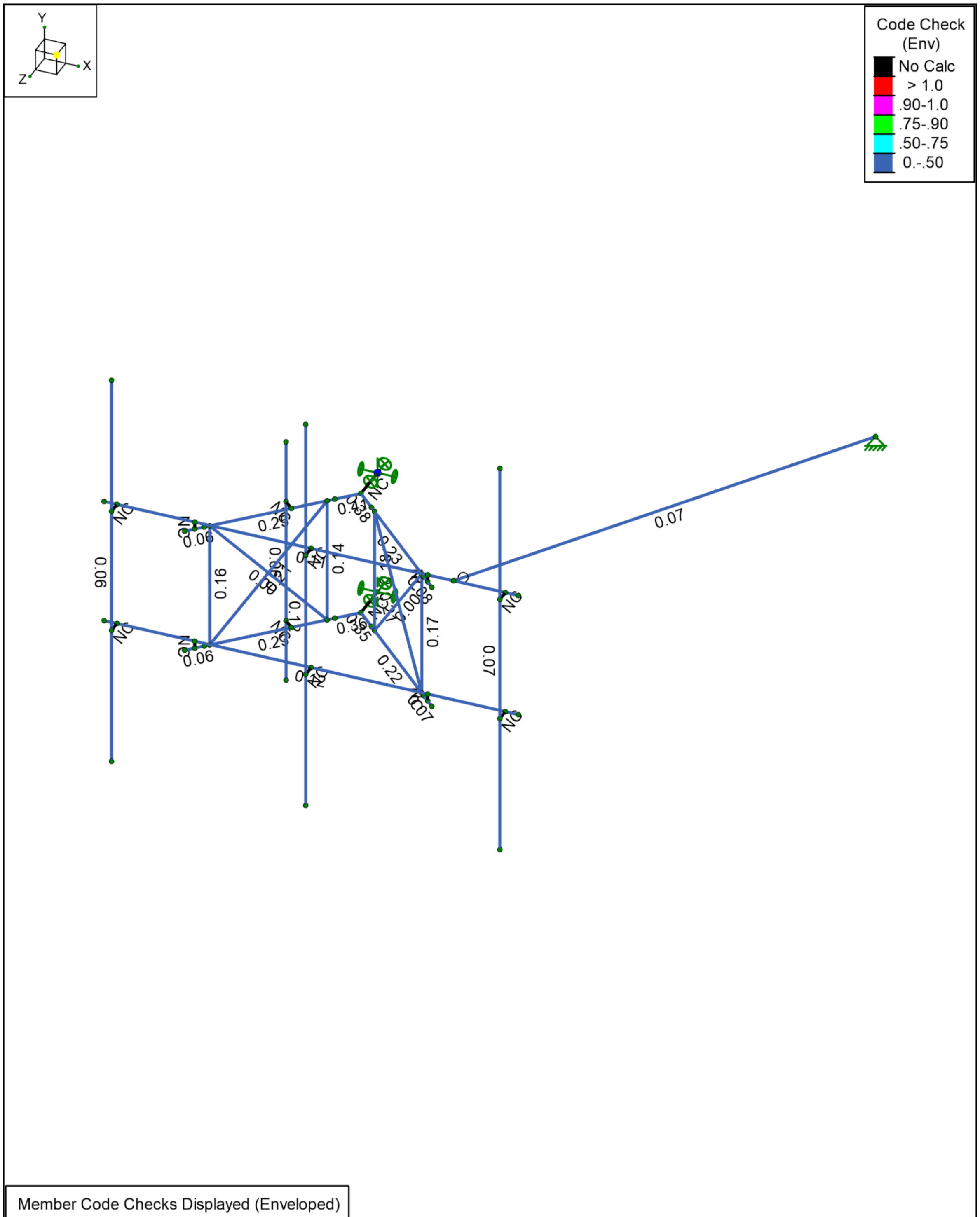

American Tower Corp.	209144, Union 2	SK-4
Zach.Stoll		May 17, 2024
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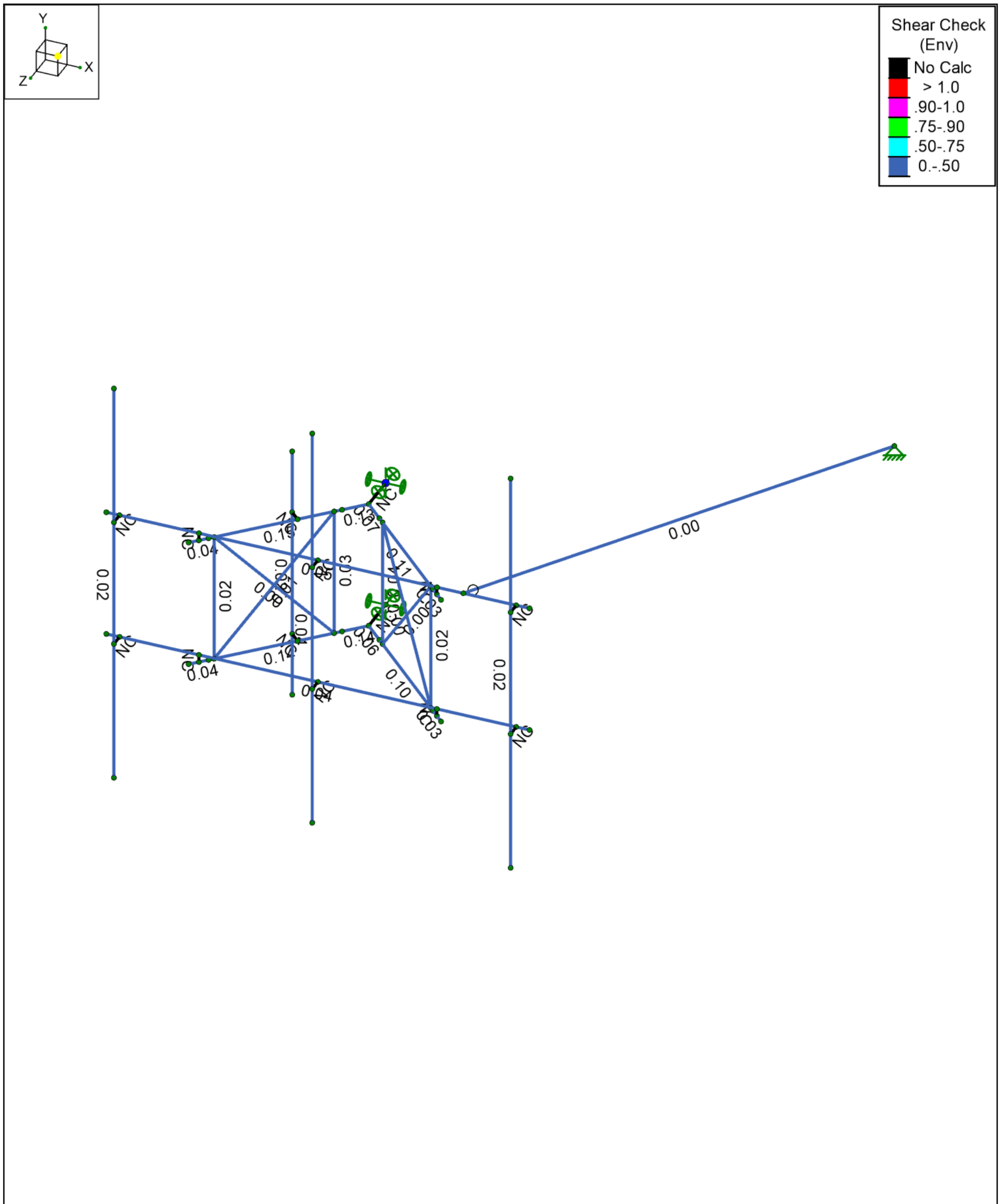

Member Shear Checks Displayed (Enveloped)

American Tower Corp.	209144, Union 2	SK-5
Zach.Stoll		May 17, 2024
14580426_C8_06		R3D. DISH WIRELESS L.L.C. @ ...

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
1	D	DL		-1			5	
2	Di	IL					5	27
3	W 0	WL					5	40
4	W 30	WL					10	79
5	W 60	WL					10	79
6	W 90	WL					5	41
7	W 120	WL					10	79
8	W 150	WL					10	79
9	W 180	WL					5	40
10	W 210	WL					10	79
11	W 240	WL					10	79
12	W 270	WL					5	41
13	W 300	WL					10	79
14	W 330	WL					10	79
15	Wi 0	WL					5	40
16	Wi 30	WL					10	79
17	Wi 60	WL					10	79
18	Wi 90	WL					5	41
19	Wi 120	WL					10	79
20	Wi 150	WL					10	79
21	Wi 180	WL					5	40
22	Wi 210	WL					10	79
23	Wi 240	WL					10	79
24	Wi 270	WL					5	41
25	Wi 300	WL					10	79
26	Wi 330	WL					10	79
27	Ws 0	WL					5	40
28	Ws 30	WL					10	79
29	Ws 60	WL					10	79
30	Ws 90	WL					5	41
31	Ws 120	WL					10	79
32	Ws 150	WL					10	79
33	Ws 180	WL					5	40
34	Ws 210	WL					10	79
35	Ws 240	WL					10	79
36	Ws 270	WL					5	41
37	Ws 300	WL					10	79
38	Ws 330	WL					10	79
39	Ev -Y	ELY		-0.028			5	
40	Eh -Z	ELZ			-0.071		5	
41	Eh -X	ELX	-0.071				5	
42	Lv (1)	LL					1	
43	Lv (2)	LL					1	
44	Lv (3)	LL					1	
45	Lv (4)	LL					1	
46	Lv (5)	LL					1	
47	Lv (6)	LL					1	
48	Lv (7)	LL					1	
49	Lv (8)	LL					1	
50	Lv (9)	LL					1	
51	Lv (10)	LL					1	
52	Lv (11)	LL				1		
53	Lv (12)	LL				1		
54	Lv (13)	LL				1		
55	Lm (1)	LL				1		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
56	Lm (2)	LL				1		
57	Lm (3)	LL				1		
58	Lm (4)	LL				1		

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	DL	1.4						
2	1.2D + 1.0W [0°]	Yes	Y	DL	1.2	3	1				
3	1.2D + 1.0W [30°]	Yes	Y	DL	1.2	4	1				
4	1.2D + 1.0W [60°]	Yes	Y	DL	1.2	5	1				
5	1.2D + 1.0W [90°]	Yes	Y	DL	1.2	6	1				
6	1.2D + 1.0W [120°]	Yes	Y	DL	1.2	7	1				
7	1.2D + 1.0W [150°]	Yes	Y	DL	1.2	8	1				
8	1.2D + 1.0W [180°]	Yes	Y	DL	1.2	9	1				
9	1.2D + 1.0W [210°]	Yes	Y	DL	1.2	10	1				
10	1.2D + 1.0W [240°]	Yes	Y	DL	1.2	11	1				
11	1.2D + 1.0W [270°]	Yes	Y	DL	1.2	12	1				
12	1.2D + 1.0W [300°]	Yes	Y	DL	1.2	13	1				
13	1.2D + 1.0W [330°]	Yes	Y	DL	1.2	14	1				
14	0.9D + 1.0W [0°]	Yes	Y	DL	0.9	3	1				
15	0.9D + 1.0W [30°]	Yes	Y	DL	0.9	4	1				
16	0.9D + 1.0W [60°]	Yes	Y	DL	0.9	5	1				
17	0.9D + 1.0W [90°]	Yes	Y	DL	0.9	6	1				
18	0.9D + 1.0W [120°]	Yes	Y	DL	0.9	7	1				
19	0.9D + 1.0W [150°]	Yes	Y	DL	0.9	8	1				
20	0.9D + 1.0W [180°]	Yes	Y	DL	0.9	9	1				
21	0.9D + 1.0W [210°]	Yes	Y	DL	0.9	10	1				
22	0.9D + 1.0W [240°]	Yes	Y	DL	0.9	11	1				
23	0.9D + 1.0W [270°]	Yes	Y	DL	0.9	12	1				
24	0.9D + 1.0W [300°]	Yes	Y	DL	0.9	13	1				
25	0.9D + 1.0W [330°]	Yes	Y	DL	0.9	14	1				
26	1.2D + 1.0Di + 1.0Wi [0°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	15	1		
27	1.2D + 1.0Di + 1.0Wi [30°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	16	1		
28	1.2D + 1.0Di + 1.0Wi [60°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	17	1		
29	1.2D + 1.0Di + 1.0Wi [90°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	18	1		
30	1.2D + 1.0Di + 1.0Wi [120°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	19	1		
31	1.2D + 1.0Di + 1.0Wi [150°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	20	1		
32	1.2D + 1.0Di + 1.0Wi [180°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	21	1		
33	1.2D + 1.0Di + 1.0Wi [210°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	22	1		
34	1.2D + 1.0Di + 1.0Wi [240°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	23	1		
35	1.2D + 1.0Di + 1.0Wi [270°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	24	1		
36	1.2D + 1.0Di + 1.0Wi [300°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	25	1		
37	1.2D + 1.0Di + 1.0Wi [330°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	26	1		
38	1.2D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	1.2	ELY	1	ELZ	1	ELX	0.001
39	1.2D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	0.5
40	1.2D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	0.866
41	1.2D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	1
42	1.2D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	0.866
43	1.2D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	0.5
44	1.2D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	1.2	ELY	1	ELZ	-1	ELX	0.001
45	1.2D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	-0.5
46	1.2D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	-0.866
47	1.2D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	-1
48	1.2D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	-0.866
49	1.2D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	-0.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
50	0.9D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	0.9	ELY	1	ELZ	1	ELX	0.001
51	0.9D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	0.5
52	0.9D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	0.866
53	0.9D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	1
54	0.9D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	0.866
55	0.9D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	0.5
56	0.9D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	0.9	ELY	1	ELZ	-1	ELX	0.001
57	0.9D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	-0.5
58	0.9D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	-0.866
59	0.9D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	-1
60	0.9D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	-0.866
61	0.9D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	-0.5
62	1.2D + 1.5Lv(1)	Yes	Y	DL	1.2	42	1.5				
63	1.2D + 1.5Lv(2)	Yes	Y	DL	1.2	43	1.5				
64	1.2D + 1.5Lv(3)	Yes	Y	DL	1.2	44	1.5				
65	1.2D + 1.5Lv(4)	Yes	Y	DL	1.2	45	1.5				
66	1.2D + 1.5Lv(5)	Yes	Y	DL	1.2	46	1.5				
67	1.2D + 1.5Lv(6)	Yes	Y	DL	1.2	47	1.5				
68	1.2D + 1.5Lv(7)	Yes	Y	DL	1.2	48	1.5				
69	1.2D + 1.5Lv(8)	Yes	Y	DL	1.2	49	1.5				
70	1.2D + 1.5Lv(9)	Yes	Y	DL	1.2	50	1.5				
71	1.2D + 1.5Lv(10)	Yes	Y	DL	1.2	51	1.5				
72	1.2D + 1.5Lv(11)	Yes	Y	DL	1.2	52	1.5				
73	1.2D + 1.5Lv(12)	Yes	Y	DL	1.2	53	1.5				
74	1.2D + 1.5Lv(13)	Yes	Y	DL	1.2	54	1.5				
75	1.2D + 1.5Lm(1) + 1.0Wm [0°]	Yes	Y	DL	1.2	55	1.5	27	1		
76	1.2D + 1.5Lm(1) + 1.0Wm [30°]	Yes	Y	DL	1.2	55	1.5	28	1		
77	1.2D + 1.5Lm(1) + 1.0Wm [60°]	Yes	Y	DL	1.2	55	1.5	29	1		
78	1.2D + 1.5Lm(1) + 1.0Wm [90°]	Yes	Y	DL	1.2	55	1.5	30	1		
79	1.2D + 1.5Lm(1) + 1.0Wm [120°]	Yes	Y	DL	1.2	55	1.5	31	1		
80	1.2D + 1.5Lm(1) + 1.0Wm [150°]	Yes	Y	DL	1.2	55	1.5	32	1		
81	1.2D + 1.5Lm(1) + 1.0Wm [180°]	Yes	Y	DL	1.2	55	1.5	33	1		
82	1.2D + 1.5Lm(1) + 1.0Wm [210°]	Yes	Y	DL	1.2	55	1.5	34	1		
83	1.2D + 1.5Lm(1) + 1.0Wm [240°]	Yes	Y	DL	1.2	55	1.5	35	1		
84	1.2D + 1.5Lm(1) + 1.0Wm [270°]	Yes	Y	DL	1.2	55	1.5	36	1		
85	1.2D + 1.5Lm(1) + 1.0Wm [300°]	Yes	Y	DL	1.2	55	1.5	37	1		
86	1.2D + 1.5Lm(1) + 1.0Wm [330°]	Yes	Y	DL	1.2	55	1.5	38	1		
87	1.2D + 1.5Lm(2) + 1.0Wm [0°]	Yes	Y	DL	1.2	56	1.5	27	1		
88	1.2D + 1.5Lm(2) + 1.0Wm [30°]	Yes	Y	DL	1.2	56	1.5	28	1		
89	1.2D + 1.5Lm(2) + 1.0Wm [60°]	Yes	Y	DL	1.2	56	1.5	29	1		
90	1.2D + 1.5Lm(2) + 1.0Wm [90°]	Yes	Y	DL	1.2	56	1.5	30	1		
91	1.2D + 1.5Lm(2) + 1.0Wm [120°]	Yes	Y	DL	1.2	56	1.5	31	1		
92	1.2D + 1.5Lm(2) + 1.0Wm [150°]	Yes	Y	DL	1.2	56	1.5	32	1		
93	1.2D + 1.5Lm(2) + 1.0Wm [180°]	Yes	Y	DL	1.2	56	1.5	33	1		
94	1.2D + 1.5Lm(2) + 1.0Wm [210°]	Yes	Y	DL	1.2	56	1.5	34	1		
95	1.2D + 1.5Lm(2) + 1.0Wm [240°]	Yes	Y	DL	1.2	56	1.5	35	1		
96	1.2D + 1.5Lm(2) + 1.0Wm [270°]	Yes	Y	DL	1.2	56	1.5	36	1		
97	1.2D + 1.5Lm(2) + 1.0Wm [300°]	Yes	Y	DL	1.2	56	1.5	37	1		
98	1.2D + 1.5Lm(2) + 1.0Wm [330°]	Yes	Y	DL	1.2	56	1.5	38	1		
99	1.2D + 1.5Lm(3) + 1.0Wm [0°]	Yes	Y	DL	1.2	57	1.5	27	1		
100	1.2D + 1.5Lm(3) + 1.0Wm [30°]	Yes	Y	DL	1.2	57	1.5	28	1		
101	1.2D + 1.5Lm(3) + 1.0Wm [60°]	Yes	Y	DL	1.2	57	1.5	29	1		
102	1.2D + 1.5Lm(3) + 1.0Wm [90°]	Yes	Y	DL	1.2	57	1.5	30	1		
103	1.2D + 1.5Lm(3) + 1.0Wm [120°]	Yes	Y	DL	1.2	57	1.5	31	1		
104	1.2D + 1.5Lm(3) + 1.0Wm [150°]	Yes	Y	DL	1.2	57	1.5	32	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
105	1.2D + 1.5Lm(3) + 1.0Wm [180°]	Yes	Y	DL	1.2	57	1.5	33	1		
106	1.2D + 1.5Lm(3) + 1.0Wm [210°]	Yes	Y	DL	1.2	57	1.5	34	1		
107	1.2D + 1.5Lm(3) + 1.0Wm [240°]	Yes	Y	DL	1.2	57	1.5	35	1		
108	1.2D + 1.5Lm(3) + 1.0Wm [270°]	Yes	Y	DL	1.2	57	1.5	36	1		
109	1.2D + 1.5Lm(3) + 1.0Wm [300°]	Yes	Y	DL	1.2	57	1.5	37	1		
110	1.2D + 1.5Lm(3) + 1.0Wm [330°]	Yes	Y	DL	1.2	57	1.5	38	1		
111	1.2D + 1.5Lm(4) + 1.0Wm [0°]	Yes	Y	DL	1.2	58	1.5	27	1		
112	1.2D + 1.5Lm(4) + 1.0Wm [30°]	Yes	Y	DL	1.2	58	1.5	28	1		
113	1.2D + 1.5Lm(4) + 1.0Wm [60°]	Yes	Y	DL	1.2	58	1.5	29	1		
114	1.2D + 1.5Lm(4) + 1.0Wm [90°]	Yes	Y	DL	1.2	58	1.5	30	1		
115	1.2D + 1.5Lm(4) + 1.0Wm [120°]	Yes	Y	DL	1.2	58	1.5	31	1		
116	1.2D + 1.5Lm(4) + 1.0Wm [150°]	Yes	Y	DL	1.2	58	1.5	32	1		
117	1.2D + 1.5Lm(4) + 1.0Wm [180°]	Yes	Y	DL	1.2	58	1.5	33	1		
118	1.2D + 1.5Lm(4) + 1.0Wm [210°]	Yes	Y	DL	1.2	58	1.5	34	1		
119	1.2D + 1.5Lm(4) + 1.0Wm [240°]	Yes	Y	DL	1.2	58	1.5	35	1		
120	1.2D + 1.5Lm(4) + 1.0Wm [270°]	Yes	Y	DL	1.2	58	1.5	36	1		
121	1.2D + 1.5Lm(4) + 1.0Wm [300°]	Yes	Y	DL	1.2	58	1.5	37	1		
122	1.2D + 1.5Lm(4) + 1.0Wm [330°]	Yes	Y	DL	1.2	58	1.5	38	1		

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N001	N002		RIGID	None	None	RIGID	Typical
2	H002	N019	N022		PIPE_1.5	Beam	None	A500 Gr. C	Typical
3	H003	N013	N016		PIPE_1.5	Beam	None	A500 Gr. C	Typical
4	H004	N005	N006		PIPE_2.5	Beam	None	A500 Gr. C	Typical
5	H005	N007	N008		RIGID	None	None	RIGID	Typical
6	H006	N020	N021		PIPE_1.5	Beam	None	A500 Gr. C	Typical
7	H007	N014	N015		PIPE_1.5	Beam	None	A500 Gr. C	Typical
8	H008	N011	N012		PIPE_2.5	Beam	None	A500 Gr. C	Typical
9	H009	N002	N019	90	PL3.5X0.625	Beam	None	A36	Typical
10	H010	N002	N013	90	PL3.5X0.625	Beam	None	A36	Typical
11	H011	N008	N020	90	PL3.5X0.625	Beam	None	A36	Typical
12	H012	N008	N014	90	PL3.5X0.625	Beam	None	A36	Typical
13	H013	N021	N024	90	PL4.5X0.625	Beam	None	A36	Typical
14	H014	N015	N018	90	PL4.5X0.625	Beam	None	A36	Typical
15	H015	N022	N023	90	PL4.5X0.625	Beam	None	A36	Typical
16	H016	N016	N017	90	PL4.5X0.625	Beam	None	A36	Typical
17	V017	N025	N003		(1) 1/2 U-BOLT	Column	None	A36	Typical
18	V018	N026	N004		(1) 1/2 U-BOLT	Column	None	A36	Typical
19	V019	N027	N009		(1) 1/2 U-BOLT	Column	None	A36	Typical
20	V020	N028	N010		(1) 1/2 U-BOLT	Column	None	A36	Typical
21	TB021	N030	N029		PIPE_2.0	Beam	None	A500 Gr. C	Typical
22	U022	N031	N032		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
23	U023	N033	N034		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
24	MP024	N035	N036		PIPE_2.5	Column	None	A53 Gr. B	Typical
25	V025	N038	N037		SR_0.625	Column	None	A36	Typical
26	V026	N040	N039		SR_0.625	Column	None	A36	Typical
27	V027	N041	N042		SR_0.625	Column	None	A36	Typical
28	D028	N041	N037		SR_0.625	Column	None	A36	Typical
29	D029	N038	N042		SR_0.625	Column	None	A36	Typical
30	V030	N044	N043		SR_0.625	Column	None	A36	Typical
31	D031	N044	N039		SR_0.625	Column	None	A36	Typical
32	D032	N040	N043		SR_0.625	Column	None	A36	Typical
33	U033	N045	N047		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
34	U034	N048	N049		(2) 1/2 U-BOLTS	Beam	None	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
35	MP035	N050	N051		PIPE_2.5	Column	None	A53 Gr. B	Typical
36	U036	N046	N052		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
37	U037	N053	N054		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
38	MP038	N055	N056		PIPE_2.5	Column	None	A53 Gr. B	Typical
39	U039	N057	N058		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
40	U040	N059	N060		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
41	MP041	N061	N062		PIPE_2.0	Column	None	A53 Gr. B	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
1	H002	PIPE_1.5	30			Lbyy		0.8	1	Lateral
2	H003	PIPE_1.5	30			Lbyy		0.8	1	Lateral
3	H004	PIPE_2.5	96			Lbyy		1	1	Lateral
4	H006	PIPE_1.5	30			Lbyy		0.8	1	Lateral
5	H007	PIPE_1.5	30			Lbyy		0.8	1	Lateral
6	H008	PIPE_2.5	96			Lbyy		1	1	Lateral
7	H009	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
8	H010	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
9	H011	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
10	H012	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
11	H013	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral
12	H014	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral
13	H015	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral
14	H016	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral
15	V017	(1) 1/2 U-BOLT	1.75			Lbyy		0.65	0.65	Lateral
16	V018	(1) 1/2 U-BOLT	1.75			Lbyy		0.65	0.65	Lateral
17	V019	(1) 1/2 U-BOLT	1.75			Lbyy		0.65	0.65	Lateral
18	V020	(1) 1/2 U-BOLT	1.75			Lbyy		0.65	0.65	Lateral
19	TB021	PIPE_2.0	106.922			Lbyy		1	1	Lateral
20	U022	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
21	U023	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
22	MP024	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
23	V025	SR_0.625	30			Lbyy		0.65	0.65	Lateral
24	V026	SR_0.625	30			Lbyy		0.65	0.65	Lateral
25	V027	SR_0.625	30			Lbyy		0.65	0.65	Lateral
26	D028	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral
27	D029	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral
28	V030	SR_0.625	30			Lbyy		0.65	0.65	Lateral
29	D031	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral
30	D032	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral
31	U033	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
32	U034	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
33	MP035	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
34	U036	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
35	U037	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
36	MP038	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
37	U039	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
38	U040	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
39	MP041	PIPE_2.0	60	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Z Rot [k-in/rad]
1	N001	Reaction	Reaction	Reaction	Reaction	Reaction
2	N007	Reaction	Reaction	Reaction	Reaction	Reaction
3	N030	Reaction	Reaction	Reaction		

Member Advanced Data

	Label	J Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001			Yes	** NA **		None
2	H002			Yes	N/A		None
3	H003			Yes	N/A		None
4	H004			Yes	N/A		None
5	H005			Yes	** NA **		None
6	H006			Yes	N/A		None
7	H007			Yes	N/A		None
8	H008			Yes	N/A		None
9	H009			Yes	N/A		None
10	H010			Yes	N/A		None
11	H011			Yes	N/A		None
12	H012			Yes	N/A		None
13	H013			Yes	N/A		None
14	H014			Yes	N/A		None
15	H015			Yes	N/A		None
16	H016			Yes	N/A		None
17	V017			Yes	** NA **	Exclude	None
18	V018			Yes	** NA **	Exclude	None
19	V019			Yes	** NA **	Exclude	None
20	V020			Yes	** NA **	Exclude	None
21	TB021	BenPIN		Yes	N/A		None
22	U022			Yes	N/A	Exclude	None
23	U023			Yes	N/A	Exclude	None
24	MP024			Yes	** NA **		None
25	V025			Yes	** NA **		None
26	V026			Yes	** NA **		None
27	V027			Yes	** NA **		None
28	D028		Tension Only	Yes	** NA **		None
29	D029		Tension Only	Yes	** NA **		None
30	V030			Yes	** NA **		None
31	D031		Tension Only	Yes	** NA **		None
32	D032		Tension Only	Yes	** NA **		None
33	U033			Yes	N/A	Exclude	None
34	U034			Yes	N/A	Exclude	None
35	MP035			Yes	** NA **		None
36	U036			Yes	N/A	Exclude	None
37	U037			Yes	N/A	Exclude	None
38	MP038			Yes	** NA **		None
39	U039			Yes	N/A	Exclude	None
40	U040			Yes	N/A	Exclude	None
41	MP041			Yes	** NA **		None

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [lb/ft³]	Yield [psi]	Ry	Fu [psi]	Rt
1	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
2	A500 Gr. C	2.9e+07	1.115e+07	0.3	0.65	490	46000	1.4	62000	1.3

Hot Rolled Steel Properties (Continued)

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [lb/ft³]	Yield [psi]	Ry	Fu [psi]	Rt
3	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N001	max	912.852	101	1088.807	32	688.554	15	-280.655	15	0	122	298.945	77
2		min	-915.292	83	269.428	15	-1819.221	33	-1103.862	32	0	1	-306.764	107
3	N007	max	913.653	77	917.204	26	1606.245	26	-226.206	21	0	122	274.725	77
4		min	-911.601	107	224.262	21	-11.725	20	-940.914	27	0	1	-278.912	107
5	N030	max	412.606	4	393.555	74	541.417	12	0	122	0	122	0	122
6		min	-412	10	13.905	23	-541.308	6	0	1	0	1	0	1
7	Totals:	max	937.601	16	2051.636	34	1149.773	14						
8		min	-937.601	10	541.17	15	-1149.773	8						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	H002	PIPE_1.5	0.228	1.563	83	0.11	0		77	26562.555	31008.6	1452.45	1452.45	2.073	H1-1b
2	H003	PIPE_1.5	0.249	1.563	103	0.149	0		107	26562.555	31008.6	1452.45	1452.45	2.28	H1-1b
3	H004	PIPE_2.5	0.108	75	107	0.051	21		12	33487.322	66654	4726.5	4726.5	2.082	H1-1b
4	H006	PIPE_1.5	0.221	1.563	77	0.099	0		77	26562.555	31008.6	1452.45	1452.45	2.076	H1-1b
5	H007	PIPE_1.5	0.235	1.563	109	0.136	0		109	26562.555	31008.6	1452.45	1452.45	1.776	H1-1b
6	H008	PIPE_2.5	0.122	75	106	0.035	21		79	33487.322	66654	4726.5	4726.5	2.222	H1-1b
7	H009	PL3.5X0.625	0.384	0	84	0.067	0.187	y	77	54826.037	70875	922.852	5167.969	1.084	H1-1b
8	H010	PL3.5X0.625	0.408	0	106	0.134	0	y	107	54826.037	70875	922.852	5167.969	1.101	H1-1b
9	H011	PL3.5X0.625	0.351	0	77	0.064	6	y	77	54826.037	70875	922.852	5167.969	1.074	H1-1b
10	H012	PL3.5X0.625	0.363	0	109	0.14	6	y	109	54826.037	70875	922.852	5167.969	1.09	H1-1b
11	H013	PL4.5X0.625	0.068	2.156	91	0.034	2.156	y	79	78870.627	91125	1186.523	8542.969	2.46	H1-1b
12	H014	PL4.5X0.625	0.065	2.156	94	0.04	0	y	81	78870.627	91125	1186.523	8542.969	2.326	H1-1b
13	H015	PL4.5X0.625	0.084	2.156	3	0.033	2.156	y	76	78870.627	91125	1186.523	8542.969	2.571	H1-1b
14	H016	PL4.5X0.625	0.064	0	104	0.041	0	y	76	78870.627	91125	1186.523	8542.969	2.625	H1-1b
15	TB021	PIPE_2.0	0.066	53.461	34	0.005	106.922		34	12390.125	42228	2459.85	2459.85	1.136	H1-1b
16	MP024	PIPE_2.5	0.065	33	80	0.02	33		12	38601.739	50715	3596.25	3596.25	3	H1-1b
17	V025	SR_0.625	0.182	30	79	0.035	30		109	4378.243	9940.196	103.544	103.544	2.098	H1-1b
18	V026	SR_0.625	0.144	30	105	0.033	0		109	4378.243	9940.196	103.544	103.544	2.266	H1-1b
19	V027	SR_0.625	0.174	0	76	0.019	30		83	4378.243	9940.196	103.544	103.544	2.273	H1-1b*
20	D028	SR_0.625	0.213	40.361	79	0.005	0		12	2458.567	9940.196	103.544	103.544	2.181	H1-1a*
21	D029	SR_0.625	0	40.361	122	0	40.361		122	2458.567	9940.196	103.544	103.544	1	H1-1a
22	V030	SR_0.625	0.163	0	99	0.017	30		101	4378.243	9940.196	103.544	103.544	2.268	H1-1b*
23	D031	SR_0.625	0.209	40.361	107	0.006	0		4	2458.567	9940.196	103.544	103.544	2.162	H1-1a*
24	D032	SR_0.625	0	40.361	122	0	40.361		122	2458.567	9940.196	103.544	103.544	1	H1-1a
25	MP035	PIPE_2.5	0.118	33	3	0.042	33		10	38601.739	50715	3596.25	3596.25	3	H1-1b
26	MP038	PIPE_2.5	0.064	33	106	0.015	33		101	38601.739	50715	3596.25	3596.25	3	H1-1b
27	MP041	PIPE_2.0	0.06	45	80	0.023	15		77	23088.171	32130	1871.625	1871.625	1.461	H1-1b

Exhibit F

Power Density/RF Emissions Report

FOX HILL TELECOM

Radio Frequency Emissions Analysis Report

Site ID: BOBOS00933B

107 Stickney Hill Road
Union, CT 06076

June 5, 2024

Fox Hill Telecom Project Number: 240164

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**11.98 %**

FOX HILL TELECOM

June 5, 2024

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOBOS00933B**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **107 Stickney Hill Road, Union, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and antenna installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 600 MHz band is approximately 400 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS / AWS-4) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report the percentage of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the Dish Wireless antenna facility located at **107 Stickney Hill Road, Union, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65 for far field modeling calculations.

In OET-65, plane wave power densities in the Far Field of an antenna are calculated by considering antenna gain and reflective waves that would contribute to exposure.

Since the radiation pattern of an antenna has developed in the **Far Field** region the power gain in specific directions needs to be considered in exposure predictions to yield an Effective Radiated Power (ERP) in each specific direction from the antenna. Also, since the vertical radiation pattern of the antenna is considered, the exposure calculations would most likely be reduced significantly at ground level, resulting in a more realistic estimate of the actual exposure levels. To determine a worst-case scenario at each point along the calculation radials, each point was calculated using the antenna gain value at each angle of incident and compared against the result using an isotropic radiator at the antenna height with the greater of the two used to yield the more pessimistic far field value for each point along the calculation radial.

Additionally, to model a truly "worst case" prediction of exposure levels at or near a surface, such as at ground-level or on a rooftop, reflection off the surface of antenna radiation power can be assumed, resulting in a potential 1.6 times increase in power density in calculating far field power density values.

With these factors Considered, the worst case **Far Field prediction model** utilized in this analysis is determined by the following equation:

Equation 9 per FCC OET65 for Far Field Modeling

$$S = \frac{33.4\ ERP}{R^2}$$

S = Power Density (in μw/cm^2)
ERP = Effective Radiated Power from antenna (watts)
R = Distance from the antenna (meters)

Predicted far field power density values for all carriers identified in this report were calculated 6 feet above the ground level and are displayed as a percentage of the applicable FCC standards. All emissions values for other carriers were calculated using the same Far Field model outlined above, using industry standard radio configurations and frequency band selection based upon available licenses in this geographic area for emissions contribution estimates.

For each Dish sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
5G	n71 (600 MHz)	4	61.5
5G	n70 (AWS-4 / 1995-2020)	4	40
5G	n66 (AWS-4 / 2180-2200)	4	40

Table 1: Channel Data Table

The following **Dish** antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz (n71) frequency band and the 2100 MHz (AWS 4) frequency bands at 1995-2020 MHz (n70) and 2180-2200 MHz (n66). This is based on feedback from Dish regarding anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Commscope FFVV-65B-R2	97
B	1	Commscope FFVV-65B-R2	97
C	1	Commscope FFVV-65B-R2	97

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

RESULTS

Per the calculations completed for the proposed **Dish** configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Commscope FFVV-65B-R2	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	12.15 / 15.95 / 16.25	12	566	17,079.80	4.09
						Sector A Composite MPE%	**4.09**
Antenna B1	Commscope FFVV-65B-R2	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	12.15 / 15.95 / 16.25	12	566	17,079.80	4.09
						Sector B Composite MPE%	**4.09**
Antenna C1	Commscope FFVV-65B-R2	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	12.15 / 15.95 / 16.25	12	566	17,079.80	4.09
						Sector C Composite MPE%	**4.09**

Table 3: Dish Emissions Levels

The Following table (*Table 4*) shows all additional carriers on site and their emissions contribution estimates, along with the newly calculated **Dish** far field emissions contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas the highest recorded sector value be used for composite site emissions values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each **Dish** Sector as well as the composite emissions value for the site.

Site Composite MPE%	
Carrier	**MPE%**
Dish – Max Per Sector Value	**4.09 %**
AT&T	7.89 %
Site Total MPE %:	**11.98 %**

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	4.09 %
Dish Sector B Total:	4.09 %
Dish Sector C Total:	4.09 %
Site Total:	11.98 %

Table 5: Site MPE Summary

Table 6 below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

Dish _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Dish n71 (600 MHz) 5G	4	1,008.96	97	2.76	n71 (600 MHz)	400	0.69%
Dish n70 (AWS-4 / 1995-2020) 5G	4	1,574.20	97	6.90	n70 (AWS-4 / 1995-2020)	1000	0.69%
Dish n66 (AWS-4 / 2180-2200) 5G	4	1,686.79	97	27.10	n66 (AWS-4 / 2180-2200)	1000	2.71%
						Total:	**4.09 %**

Table 6: Dish Maximum Sector MPE Power Values

Summary

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

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

Dish Sector	Power Density Value (%)
Sector A:	4.09 %
Sector B:	4.09 %
Sector C:	4.09 %
Dish Maximum Total (per sector):	4.09 %
Site Total:	11.98 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite emissions value for this site, assuming all carriers present, is **11.98 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon the far field calculations performed for all carriers identified in this report.

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

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Worcester, MA 01609
(978)660-3998

Exhibit G

Letter of Authorization

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION FOR PERMITTING

ATC SITE#/NAME/PROJECT: 209144 / Union 2 / 14580426
SITE ADDRESS: 107 Stickney Hill Rd, Union, CT 06076-4624
APN: UNIO M:0003 B:0015 L:013
LICENSEE: DISH WIRELESS L.L.C.
SITE ACQUISITION VENDOR: AIROSMITH INC

I, Margaret Robinson, Vice President, UST Legal for American Tower*, owner of the tower facility located at the address identified above (the "Tower Facility"), do hereby authorize DISH WIRELESS L.L.C., LLC, AIROSMITH INC, their successors and assigns, and/or their agent, (collectively, the "Licensee") to act as American Tower's non-exclusive agent for the sole purpose of filing and consummating any land-use, building, or electrical permit application(s) as may be required by the applicable permitting authorities for Licensee's telecommunications' installation on the Tower Facility.

I understand that these applications may be approved with conditions. The above authorization is limited to the acceptance by Licensee only of conditions related to Licensee's installation and any such conditions of approval or modifications will be Licensee's sole responsibility.

Signature: _____

Margaret Robinson, Vice President, UST Legal
US Tower Division

NOTARY BLOCK

COMMONWEALTH OF MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Vice President, UST Legal for American Tower* (Tower Facility owner and/or operator), personally known to me (or proved to me based on satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same.

WITNESS my hand and official seal, this 13th day of March 2024.

NOTARY SEAL

GERARD T. HEFFRON
Notary Public
Commonwealth of Massachusetts
My Commission Expires
August 9, 2024

Notary Public _____
My Commission Expires: August 9th, 2024

* American Tower is defined as American Tower Corporation and any of its affiliates or subsidiaries.

Exhibit H

Recipient Mailings

ORIGIN ID:GFLA (585) 230-7891
MARK FUENTES
AIROSMITH DEVELOPMENT INC.
318 WEST AVE

SARATOGA SPRINGS, NY 12866
UNITED STATES US

SHIP DATE: 06JUN24
ACTWGT: 1.00 LB
CAD: 107631113/INET4730

BILL SENDER

TO **DAVID D. EATON FIRST SELECTMAN**
TOWN OF UNION
1043 BUCKLEY HIGHWAY

UNION CT 06076
(860) 684-3812
INV:
PO:

REF: ATC ZP P-64068 UNION 2
DEPT:

583J3/6CA9/9AE3

J242024032601uv

FedEx Express

MON - 10 JUN 5:00P
**** 2DAY ****

TRK# 0201 **7767 3387 8276**

SP QCWA

06076
BDL
CT-US

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

DELIVERED

Tuesday

6/11/24 at 12:12 PM

Signed for by: H.BRADRICK

Obtain proof of delivery

TRACKING ID

776733878276

DELIVERY STATUS

Delivered

Report missing package

FROM
SARATOGA SPRINGS, NY US

Label Created
6/6/24 10:40 AM

MENANDS, NY
6/6/24 4:04 PM

ON THE WAY
WINDSOR LOCKS, CT
6/11/24 7:14 AM

OUT FOR DELIVERY
WINDSOR LOCKS, CT
6/11/24 7:22 AM

DELIVERED
UNION, CT US

Delivered
6/11/24 at 12:12 PM

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ORIGIN ID:GFLA (585) 230-7891
MARK FUENTES
AIROSMITH DEVELOPMENT INC.
318 WEST AVE

SARATOGA SPRINGS, NY 12866
UNITED STATES US

SHIP DATE: 06JUN24
ACTWGT: 1.00 LB
CAD: 107631113/INET4730

BILL SENDER

TO **LEE ANN FITZGERALD, CHAIR P&Z COMM**
TOWN OF UNION
1043 BUCKLEY HIGHWAY

UNION CT 06076
(860) 684-3770
INV:
PO:
DEPT:

REF: ATC ZP P-64068 UNION 2

583J3/6CA9/9AE3

J242024032601uv

FedEx Express

SP QCWA

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TRK# 0201 **7767 3431 9751**

MON - 10 JUN 5:00P
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776734319751

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SARATOGA SPRINGS, NY US

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6/6/24 10:58 AM

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6/6/24 4:04 PM

ON THE WAY
WINDSOR LOCKS, CT
6/11/24 7:17 AM

OUT FOR DELIVERY
WINDSOR LOCKS, CT
6/11/24 7:22 AM

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UNION, CT US

Delivered
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Signed for by: H.BRADRICK

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776734150844

DELIVERY STATUS

Delivered

Report missing package

FROM
SARATOGA SPRINGS, NY US

Label Created
6/6/24 10:51 AM

MENANDS, NY
6/6/24 4:04 PM

ON THE WAY
WINDSOR LOCKS, CT
6/11/24 7:16 AM

OUT FOR DELIVERY
WINDSOR LOCKS, CT
6/11/24 7:22 AM

DELIVERED
UNION, CT US

Delivered
6/11/24 at 12:12 PM

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AIROSMITH DEVELOPMENT INC.
318 WEST AVE

SARATOGA SPRINGS, NY 12866
UNITED STATES US

SHIP DATE: 06JUN24
ACTWGT: 1.00 LB
CAD: 107631113/INET4730

BILL SENDER

TO **REAL ESTATE DEPARTMENT**
COX COMMUNICATIONS, INC
1400 LAKE HEARN DRIVE NE

ATLANTA GA 30319
(404) 260-2200
INV:
PO:
REF: ATC ZP P-64068 UNION 2
DEPT:

583J3/6CA9/9AE3

J242024032601uv

FedEx Express

MON - 10 JUN 5:00P
**** 2DAY ****

TRK# 0201 **7767 3457 1111**

SS TMAA

30319
ATL
GA-US

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Monday

6/10/24 at 10:58 AM

Signed for by: M.JOHNSON

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TRACKING ID

776734571111

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Delivered

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Label Created
6/6/24 11:08 AM

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6/6/24 4:04 PM

ON THE WAY
MARIETTA, GA
6/10/24 7:41 AM

OUT FOR DELIVERY
MARIETTA, GA
6/10/24 8:14 AM

DELIVERED
ATLANTA, GA US

Delivered
6/10/24 at 10:58 AM

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AIROSMITH DEVELOPMENT INC.
318 WEST AVE

SARATOGA SPRINGS, NY 12866
UNITED STATES US

SHIP DATE: 12JUN24
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CAD: 107631113/INET4730

BILL SENDER

TO **MELANIE A. BACHMAN**
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE

NEW BRITAIN CT 06051
(860) 827-2935
INV:
PO:
REF: ATC ZP P-64068 UNION 2
DEPT:

583J5/B21D/9AE3

J242024032601uv

FedEx Express

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FRI - 14 JUN 5:00P
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