NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

October 12, 2021

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

RE: Tower Share Application
122 Jonathan Trumbull Highway, Andover CT 06232
Latitude: 41.750128
Longitude: 72.402675
Site# 842856_Crown_Dish

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 122 Jonathan Trumbull Highway in Andover, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 5G MHz antenna and six (6) RRUs, at the 120-foot level of the existing 149-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, dated August 18, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated August 11, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the CT Siting Council, Docket No. 242 on October 14, 2003. 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 First Selectman Jeffrey J. Maguire and Jim Hallisey, Zoning Enforcement Officer for the Town of Andover, as well as the tower owner (Crown Castle) and property owner (ASC Real Estate Inc)

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 149-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 120-feet.

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

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

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 10.24% as evidenced by Exhibit F.

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

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

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this monopole in Andover. 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 120-foot level of the existing 149-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

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

Sincerely,

Denise Sabo

Denise Sabo
Mobile: 203-435-3640
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com

NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development

Attachments cc:

Jeffrey J. Maguire, First Selectman
Andover Town Hall
17 School Road Andover, CT 06232

Jim Hallisey – Zoning Agent
Town of Andover
17 School Road Andover, CT 06232

ASC Real Estate Inc
c/o Andover Sportsmans Club
PO Box 122, Andover CT 06232

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

DOCKET NO. 242 - AT&T Wireless PCS, LLC d/b/a AT&T Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility at one of two sites at 122 Route 6 (Andover Sportsmen Club), Andover, Connecticut.	}	Connecticut Siting Council October 14, 2003

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes **§** 16-50k, be issued to AT&T Wireless PCS d/b/a AT&T Wireless for the construction, maintenance and operation of a wireless telecommunications facility at Site A at the Andover Sportsmen Club, 122 Route 6, Andover, Connecticut. The Council denies certification of Site B, also located at 122 Route 6, Andover, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T Wireless PCS, LLC and Omnipoint Holdings, Inc. d/b/a T-Mobile and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level.

2. Panel antennas shall be installed on the monopole using a flush mount design.

3. Site preparation and construction activities shall occur during the time period of November 1 through March 31 to reduce potential impacts to populations of the Wood Turtle *(Clemmys insculpta)*, a State Species of Special Concern.

4. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:

    a. a detailed site development plan that depicts the location of the access road, compound, tower, utility line, erosion and sedimentation control features, and landscaping;

    b. specifications for the tower, tower foundation, antennas, equipment building, and security fence; and

    c. construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

5. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the

Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

6. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

7. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. The Certificate Holder shall provide space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.

8. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

9. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and ceases to function.

10. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes **§** 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, Rivereast News Bulletin, and the Journal Inquirer.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
AT&T Wireless PCS, LLC d/b/a AT&T Wireless	Christopher B. Fisher, Esq. Cuddy & Feder LLP 90 Maple Avenue White Plains, New York 10601 (914) 761-1300
Party	**Its Representative**
Tower Ventures II, LLC	Julie Donaldson Kohler, Esq. Hurwitz & Sagarin, LLC 147 N. Broad Street Milford, CT 06460 (203) 877-8000
Party	**Its Representative**
Town of Andover	First Selectman Andover Town Office Building 17 School Road, P.O. Box 328

Andover, CT 06232-0328
(860) 742-7305

Intervenor

Omnipoint Holdings, Inc.
d/b/a T-Mobile

Its Representative

Stephen J. Humes, Esq.
Diane W. Whitney, Esq.
LeBoeuf, Lamb, Greene & MacRae
Goodwin Square
225 Asylum Street
Hartford, CT 06103

Content Last Modified on 10/17/2003 4:34:53 PM

Exhibit B

Property Card

122 ROUTE 6

Location	122 ROUTE 6	**Mblu**	28/ 5/ 4/ /
Acct#	530	**Owner**	ASC REAL ESTATE INC
Assessment	$361,340	**Appraisal**	$586,800
PID	530	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$239,100	$347,700	$586,800
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$167,500	$193,840	$361,340

Owner of Record

Owner	ASC REAL ESTATE INC	**Sale Price**	$0
Co-Owner	ANDOVER SPORTSMANS CLUB	**Certificate**	
Address	P O BOX 122 ANDOVER, CT 06232	**Book & Page**	0020/0572
		Sale Date	

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
ASC REAL ESTATE INC	$0		0020/0572	

Building Information

Building 1 : Section 1

Year Built:	1970
Living Area:	1,040
Replacement Cost:	$154,971
Building Percent Good:	79
Replacement Cost Less Depreciation:	$122,400

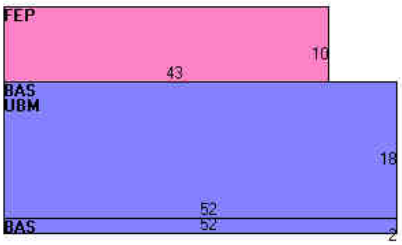
Building Attributes	
Field	**Description**
STYLE	Clubs/Lodges
MODEL	Commercial

Building Photo

Grade	C
Stories:	1
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Vinyl/Asphalt
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Hot Air-no Duc
AC Type	Central
Bldg Use	Fratnl Org
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3530
Heat/AC	NONE
Frame Type	WOOD FRAME
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	8
% Comn Wall	0

(http://images.vgsi.com/photos2/AndoverCTPhotos//default.jp

Building Layout



(http://images.vgsi.com/photos2/AndoverCTPhotos//Sketches

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,040	1,040
FEP	Porch, Enclosed, Finished	430	0
UBM	Basement, Unfinished	936	0
		2,406	1,040

Building 2 : Section 1

Year Built: 1970
Living Area: 896
Replacement Cost: $132,799
Building Percent Good: 71
Replacement Cost Less Depreciation: $94,300

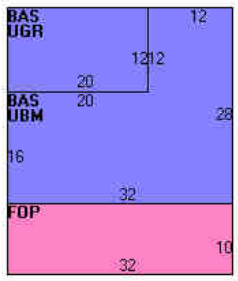
Building Attributes : Bldg 2 of 2	
Field	Description
STYLE	Clubs/Lodges
MODEL	Commercial
Grade	C
Stories:	1
Occupancy	

Building Photo

(http://images.vgsi.com/photos2/AndoverCTPhotos//default.jp

Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	
Heating Fuel	Coal or Wood
Heating Type	None
AC Type	None
Bldg Use	Fratnl Org
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	
Heat/AC	NONE
Frame Type	WOOD FRAME
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	8
% Comn Wall	

Building Layout



(http://images.vgsi.com/photos2/AndoverCTPhotos//Sketches/53

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	896	896
FOP	Porch, Open, Finished	320	0
UBM	Basement, Unfinished	656	0
UGR	Garage, Unfinished	240	0
		2,112	896

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	3530
Description	Fratnl Org
Zone	R-40
Neighborhood	C1
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	67.13
Frontage	0
Depth	0
Assessed Value	$193,840
Appraised Value	$347,700

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
FN3	Fence-6' Chain			290 L.F.	$2,000	1

SHD5	Shed			384 S.F.	$6,500	2
LT4	Lights (4)			2 UNITS	$1,300	2
SHD5	Shed			91 S.F.	$1,300	1
LT1	Lights (1)			10 UNITS	$2,000	2
PAV1	Paving-Asphalt			1344 S.F.	$600	1
SHD1	Shed Frame			180 S.F.	$1,100	1
SHD1	Shed Frame			180 S.F.	$1,100	2
PAT1	Patio Av			360 S.F.	$500	2
SHD1	Shed Frame			180 S.F.	$1,100	1
SHD1	Shed Frame			144 S.F.	$900	1
PAV1	Paving-Asphalt			840 S.F.	$400	1
SHD1	Shed Frame			120 S.F.	$700	1
SHD1	Shed Frame			240 S.F.	$2,900	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$107,800	$334,000	$441,800
2011	$222,400	$334,000	$556,400
2010	$124,700	$239,200	$363,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$138,200	$171,050	$309,250
2011	$155,700	$171,050	$326,750
2010	$87,300	$102,280	$189,580

(c) 2019 Vision Government Solutions, Inc. All rights reserved.

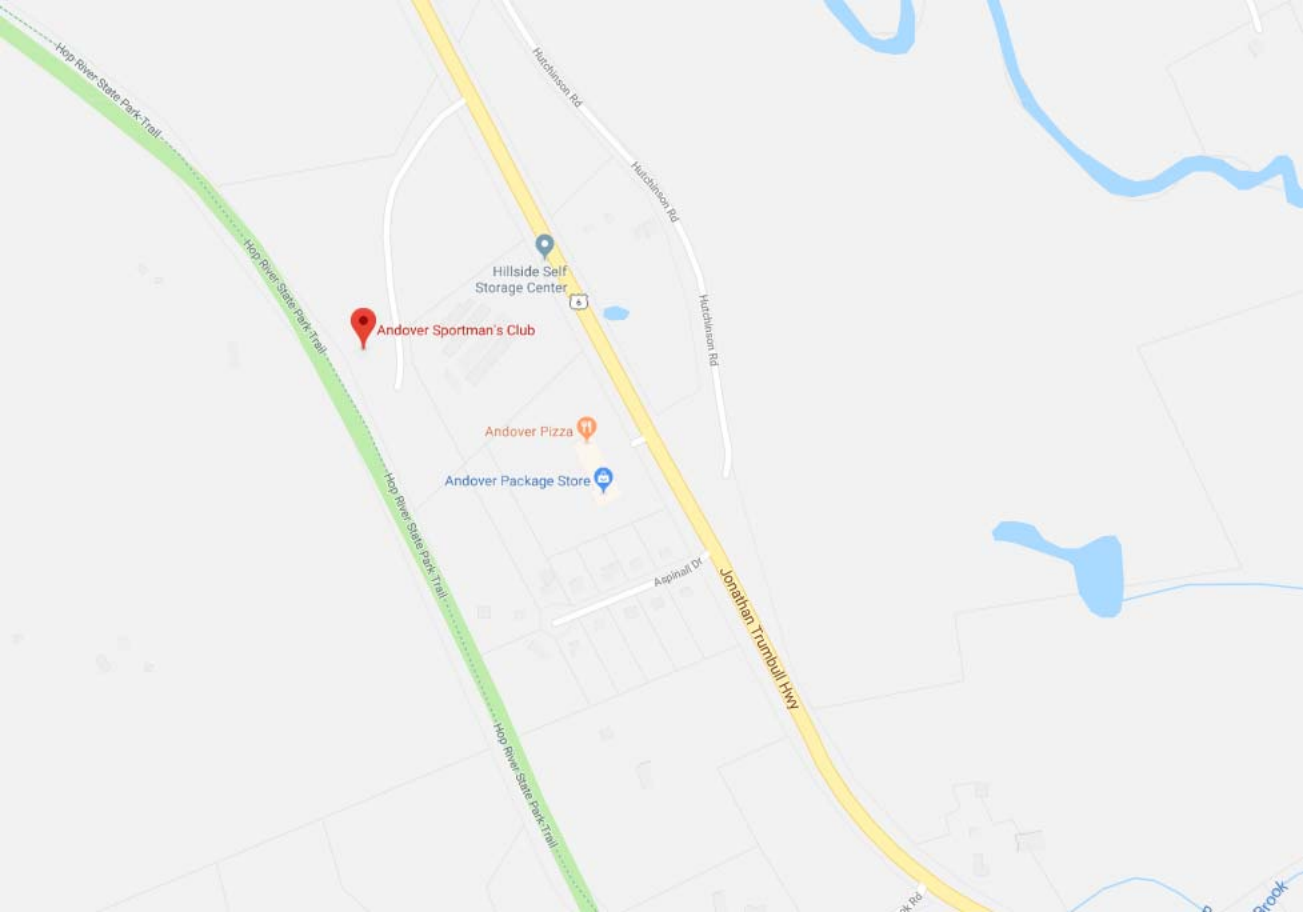

Hop River State Park Trail
Hop River State Park Trail
Hop River State Park Trail
Hop River State Park Trail
Hutchinson Rd
Hutchinson Rd
Hutchinson Rd
Hillside Self Storage Center
6
Andover Sportman's Club
Andover Pizza
Andover Package Store
Aspinall Dr
Jonathan Trumbull Hwy

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBDL00063A

DISH Wireless L.L.C. SITE ADDRESS:

122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SCOPE OF WORK

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

TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED PLATFORM
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED CIENA BOX (IF REQUIRED)
- EXISTING METER SOCKET ON EXISTING H-FRAME TO BE UTILIZED

SITE INFORMATION

PROPERTY OWNER:	ASC REAL ESTATE INC
ADDRESS:	PO BOX 122 ANDOVER, CT 06232
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	842856
TOWER APP NUMBER:	556629
COUNTY:	TOLLAND
LATITUDE (NAD 83):	41° 45' 0.46" N 41.750128 N
LONGITUDE (NAD 83):	72° 24' 9.63" W 72.402675 W
ZONING JURISDICTION:	CT – TOWN OF ANDOVER
ZONING DISTRICT:	CT – TOWN OF ANDOVER
PARCEL NUMBER:	28 005 000004 A/K/A/UNIQUE ID 530
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

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

CONNECTICUT CODE COMPLIANCE

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

CODE TYPE	CODE
BUILDING	2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS

SITE PHOTO

DIRECTIONS

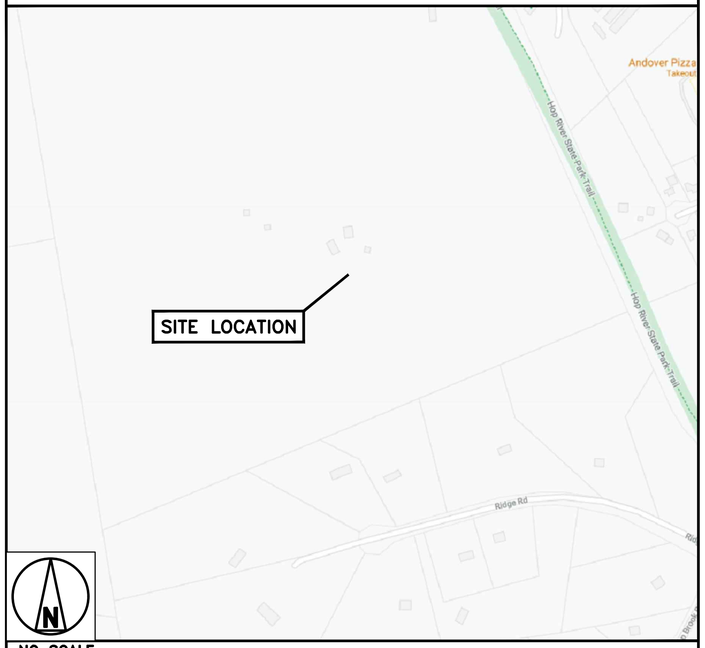
DIRECTIONS FROM HARTFORD-BRAINARD AIRPORT:

DEPART AND HEAD TOWARD MAXIM RD, TURN LEFT ONTO MAXIM RD, BEAR RIGHT ONTO BRAINARD RD TAKE THE RAMP ON THE RIGHT FOR US-5 N / CT-15 N / WILBUR CROSS HWY N AND HEAD TOWARD BOSTON / SPRINGFIELD, KEEP STRAIGHT TO GET ONTO CT-15 N / WILBUR CROSS HWY N, KEEP STRAIGHT TO GET ONTO I-84 E / US-6 E / WILBUR CROSS HWY N, KEEP STRAIGHT TO GET ONTO I-384 E, KEEP STRAIGHT TO GET ONTO US-6 E / US-44 E / BOSTON TPKE, KEEP RIGHT TO GET ONTO US-6 E / HOPRIVER RD, TURN RIGHT ONTO BURNAP BROOK RD, TURN RIGHT ONTO RIDGE RD, ARRIVE AT, 122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6), ANDOVER, CT 06232.

SHEET INDEX

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

VICINITY MAP



UNDERGROUND SERVICE ALERT
UTILITY NOTIFICATION CENTER OF (STATE)
(XXX) XXX-XXXX
WWW.(WEBSITE).ORG

811

CALL # WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

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

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

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

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

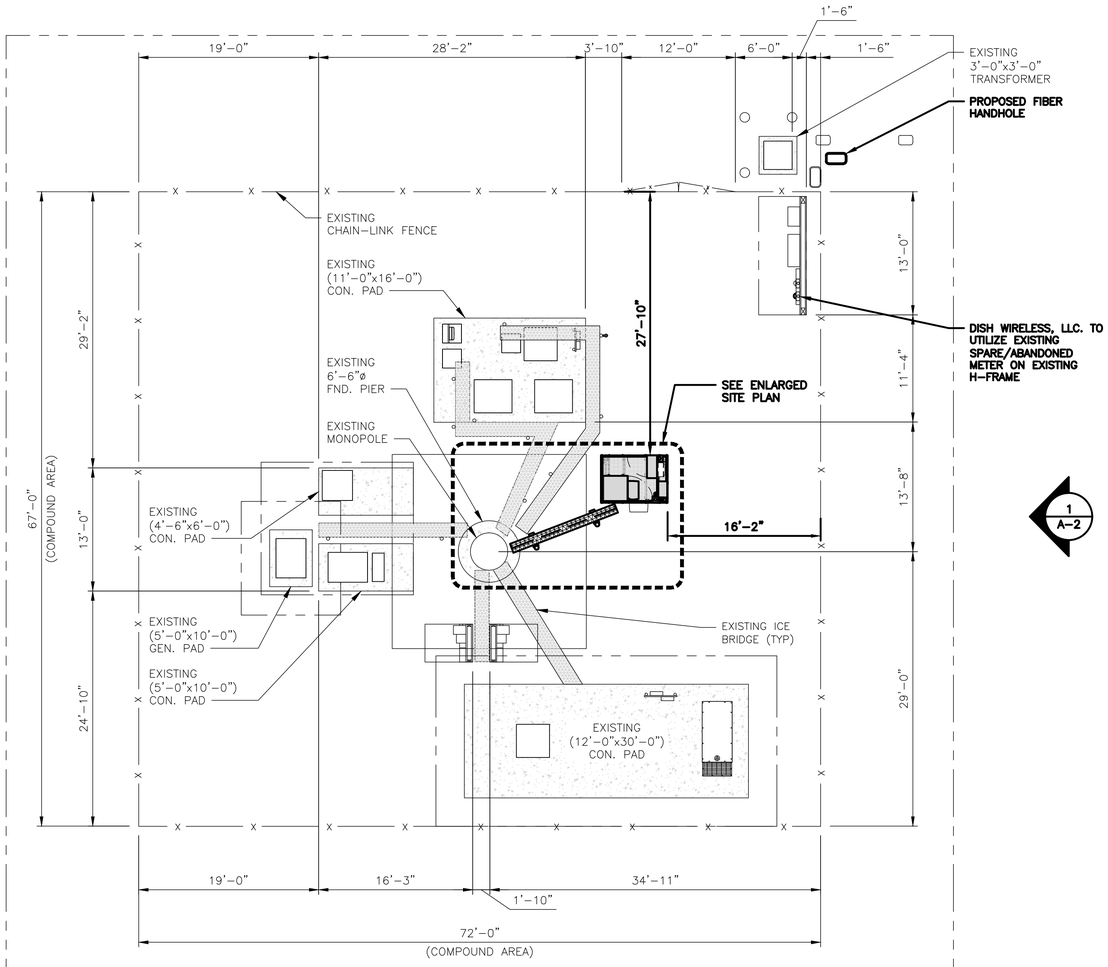
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



1 A-2

N

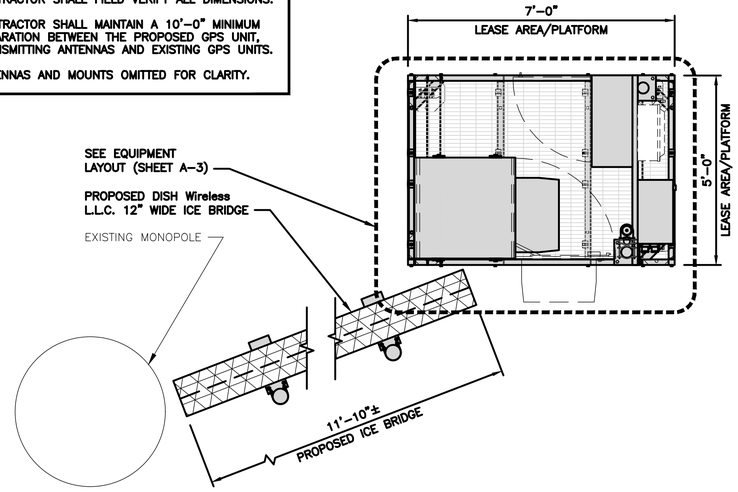
OVERALL SITE PLAN

8' 4' 0 8' 16'
1/8"=1'-0"

1

NOTES

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

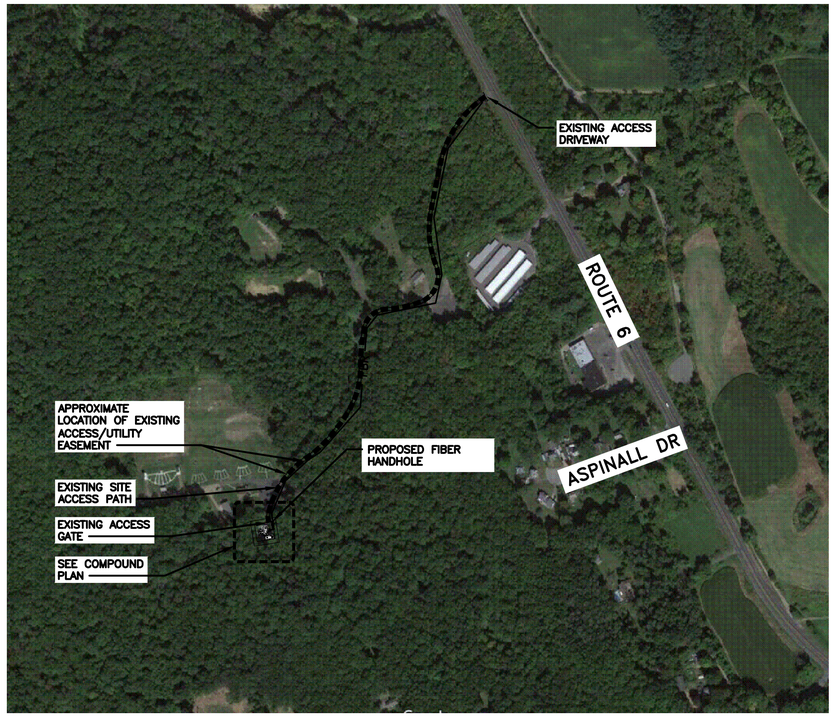


N

ENLARGED SITE PLAN

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

2



SITE PLAN

300' 150' 0 300' 600'
1"=300'

3

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

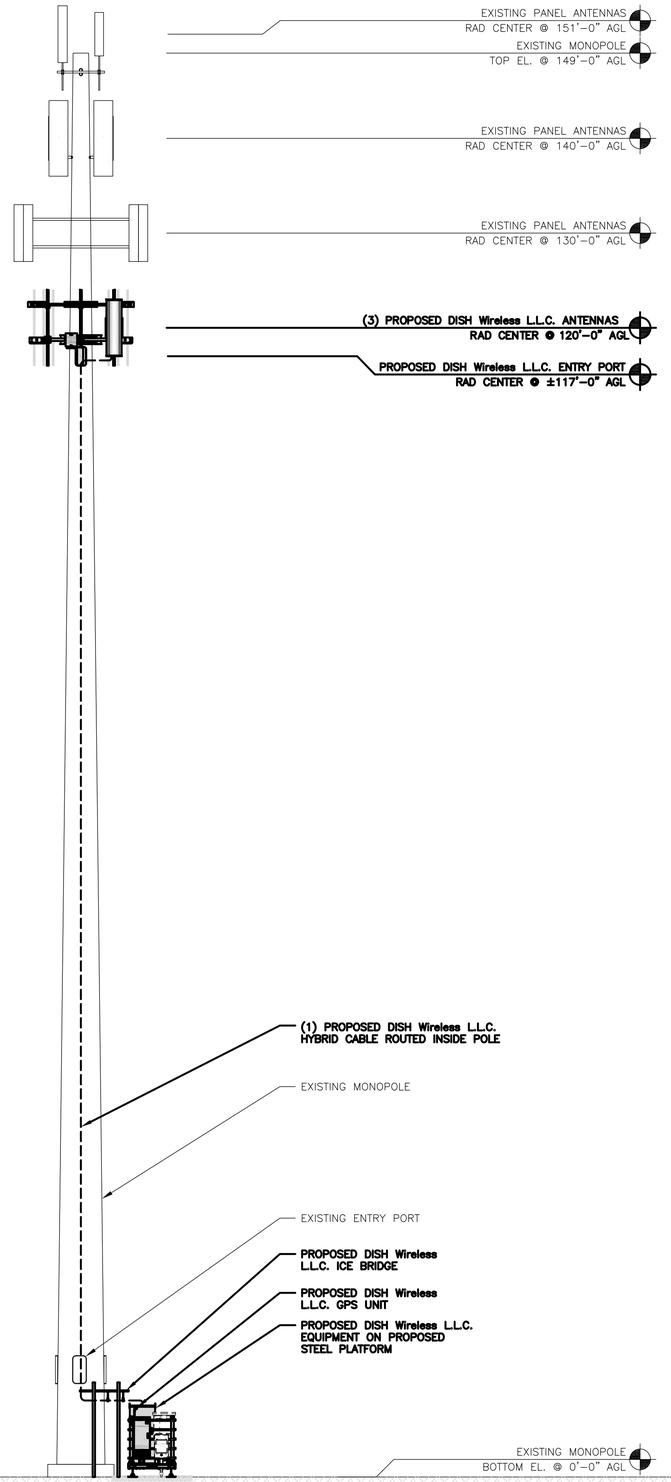
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

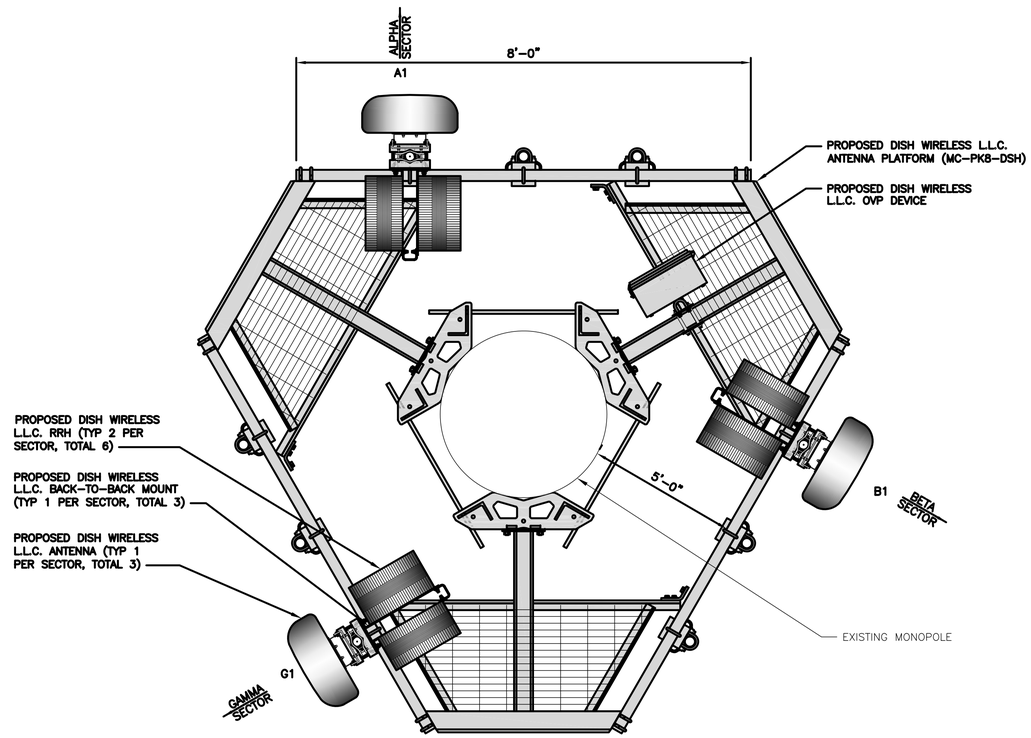
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED EAST ELEVATION

8' 4' 0 8' 16'
1/8"=1'-0"

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUITH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	0°	120'-0"	(1) HIGH-CAPACITY HYBRID CABLE (165' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	120°	120'-0"	
GAMMA	G1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	240°	120'-0"	

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

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

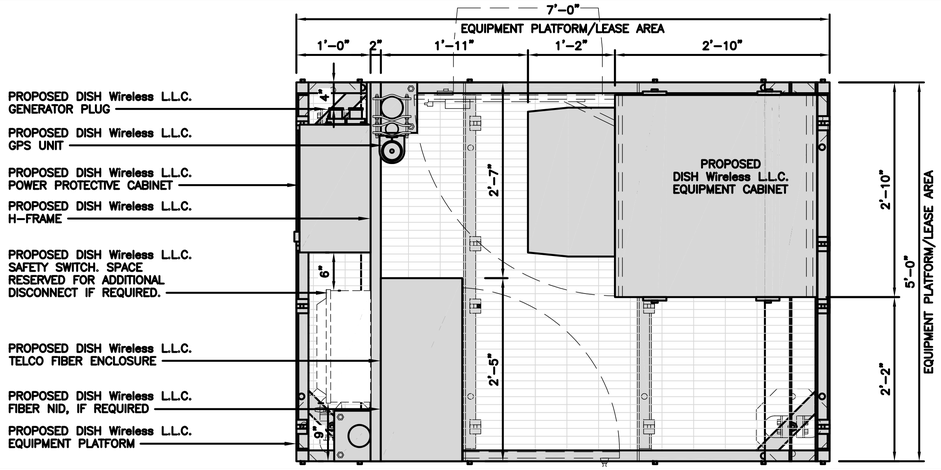
REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



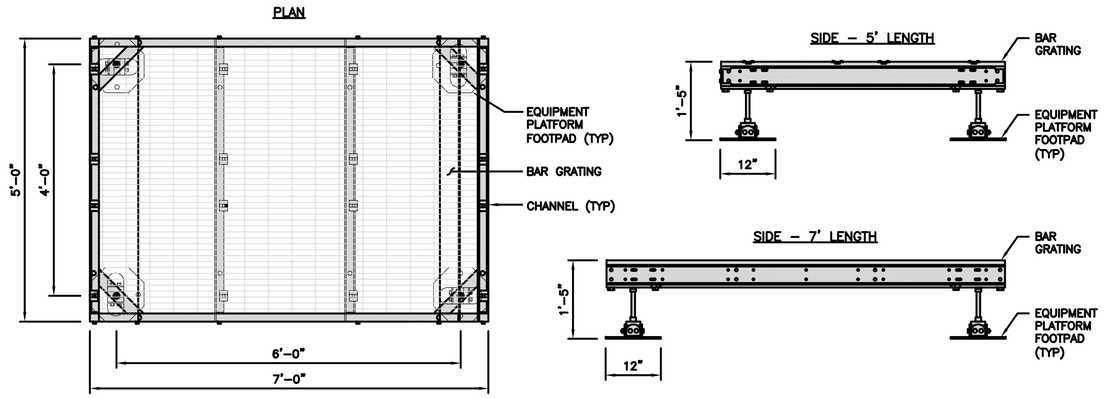
PLATFORM EQUIPMENT PLAN

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

1

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

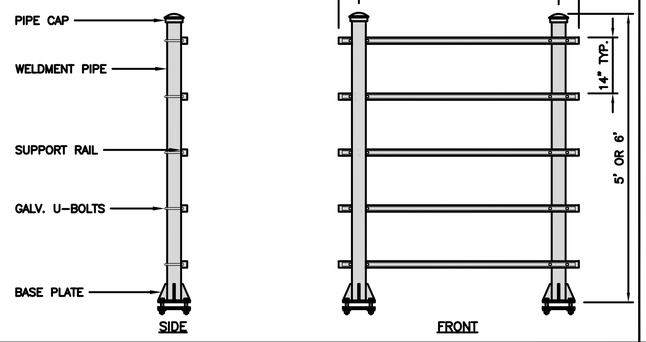
NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"



PLATFORM DETAIL — NO SCALE — 2

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

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

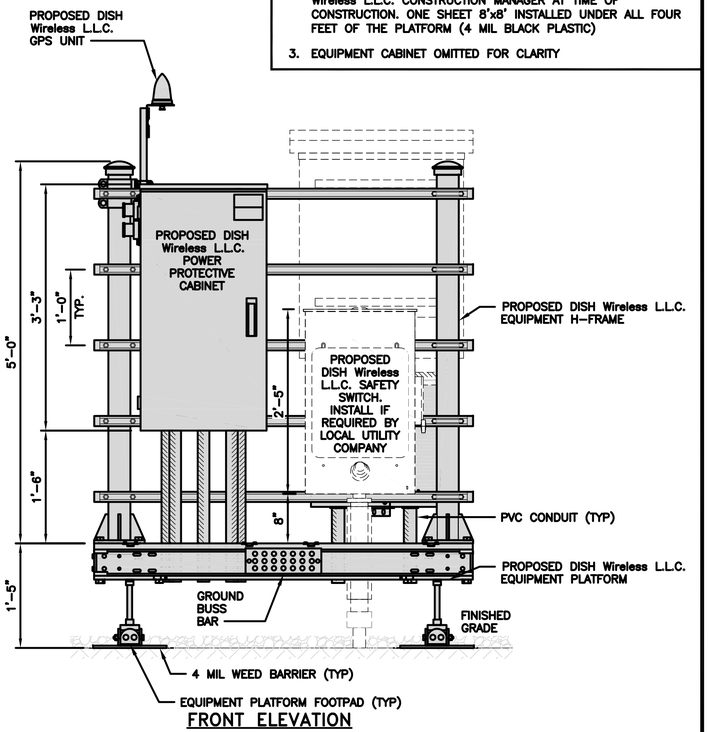


H-FRAME DETAIL — NO SCALE — 3

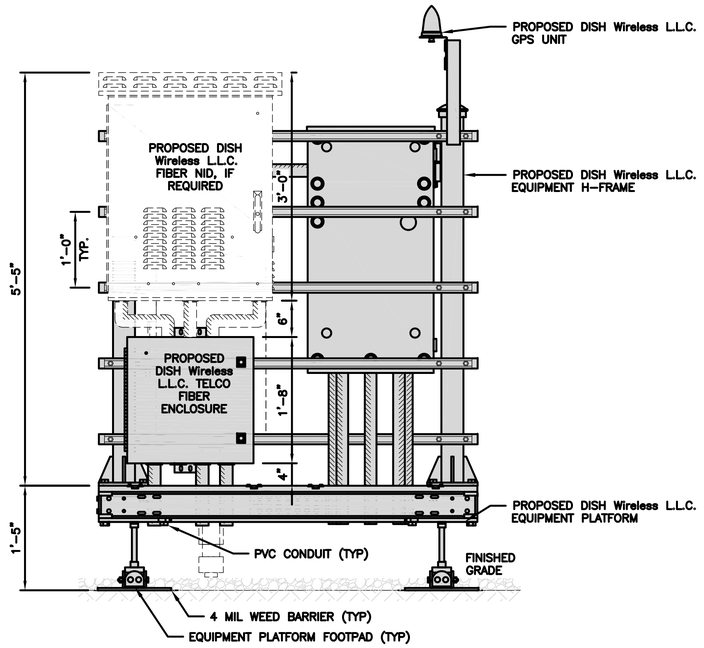
NOT USED — NO SCALE — 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION — 12" 9" 6" 3" 0 1' 2' — 1"=1'-0" — 5

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

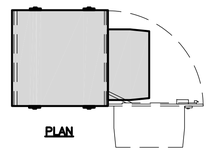
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

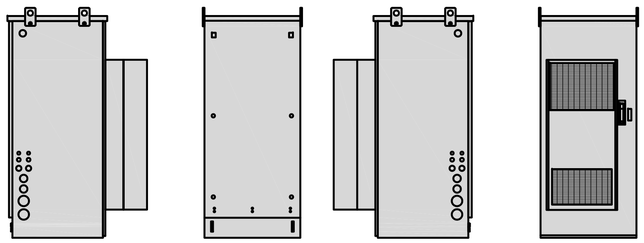
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

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


PLAN

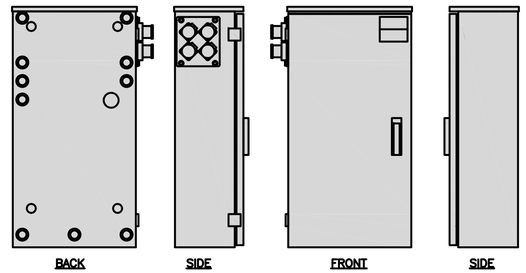

SIDE BACK SIDE FRONT

CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC–2465–P–240–MTS

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

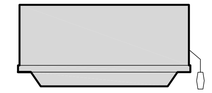

TOP

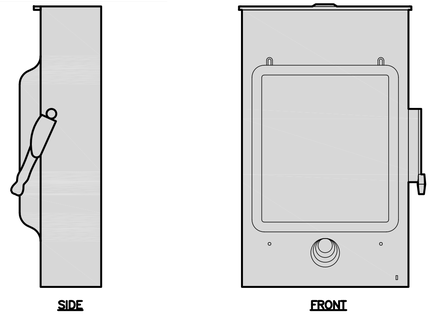

BACK SIDE FRONT SIDE

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

SQUARE D SAFETY SWITCHES D224NRB

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


TOP

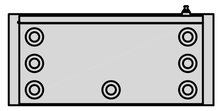

SIDE FRONT

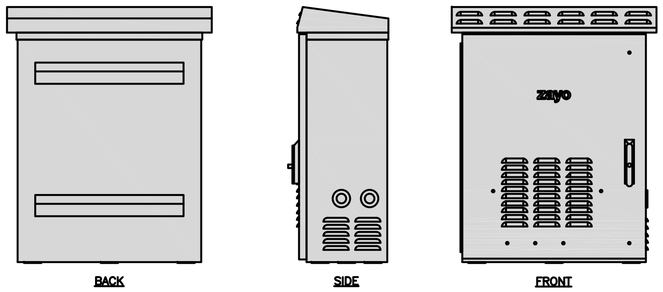
SAFETY SWITCH DETAIL | NO SCALE | 3

NOT USED | NO SCALE | 4

ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE

DIMENSIONS (HxWxD)	36.1"x29"x12.9"
WEIGHT	85 lbs


BOTTOM



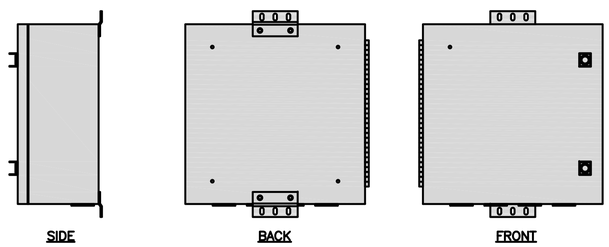
BACK SIDE FRONT

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

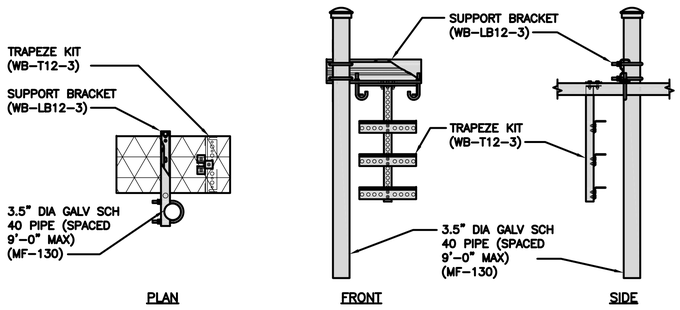

SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT

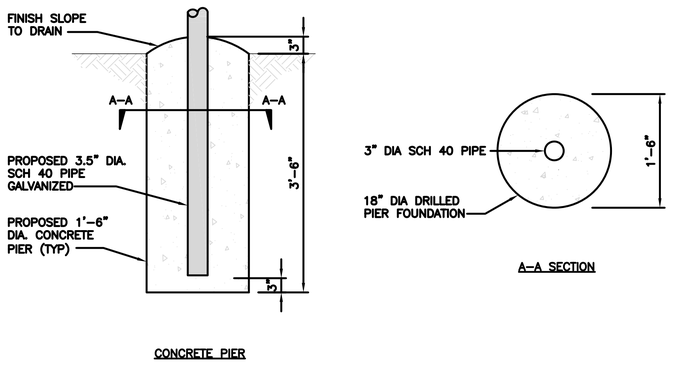
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



PLAN FRONT SIDE

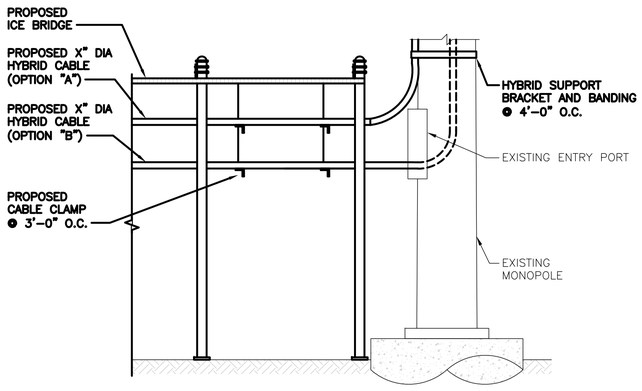
ICE BRIDGE DETAIL | NO SCALE | 7



CONCRETE PIER

A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

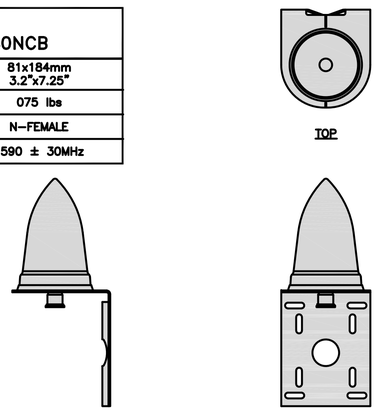
A&E PROJECT NUMBER
6039–Z0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

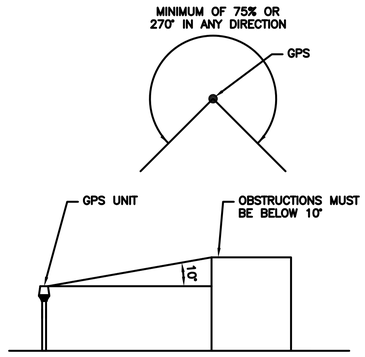
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

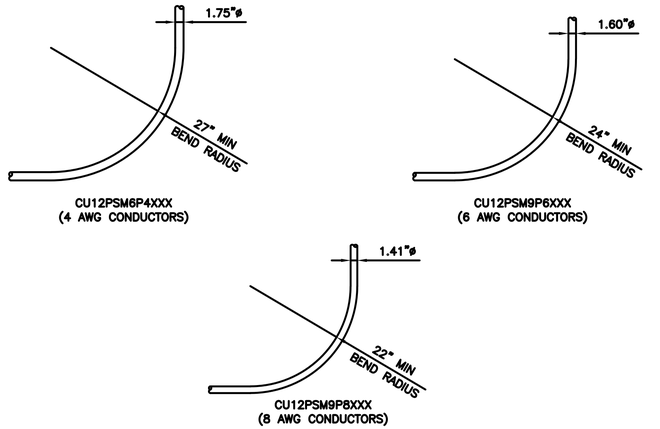
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

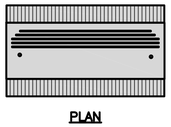
A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

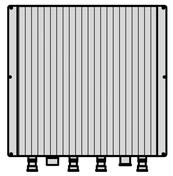
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

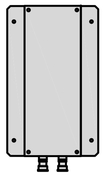
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



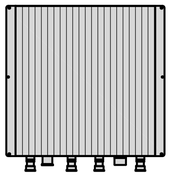
PLAN



BACK



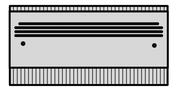
SIDE



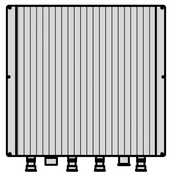
FRONT

RRH DETAIL | NO SCALE | 1

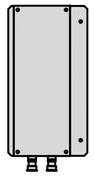
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



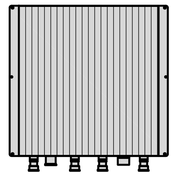
PLAN



BACK



SIDE

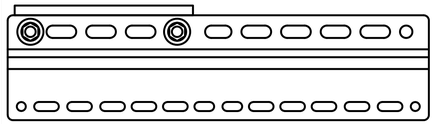


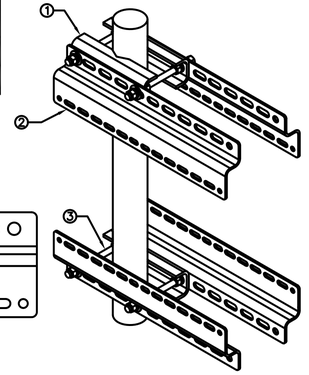
FRONT

RRH DETAIL | NO SCALE | 2

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

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



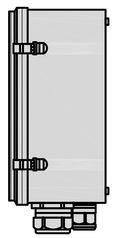


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

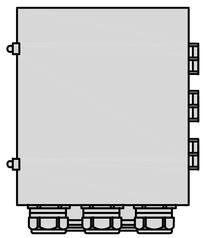
RRH MOUNT DETAIL | NO SCALE | 3

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

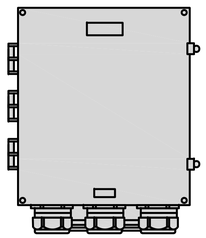
PLAN



SIDE



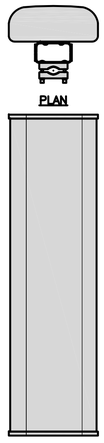
BACK



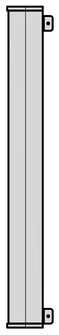
FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 4

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



PLAN



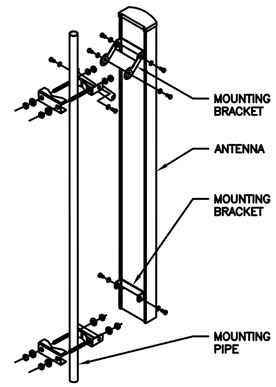
SIDE

FRONT

ANTENNA DETAIL | NO SCALE | 5

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

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

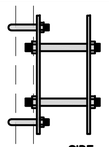


ANTENNA MOUNTING DETAIL | NO SCALE | 6

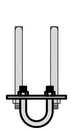
COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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

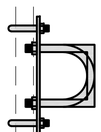
PLAN
PLATE



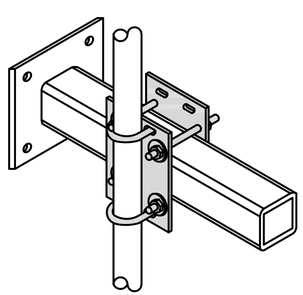
SIDE
PLATE



PLAN
U-BOLT



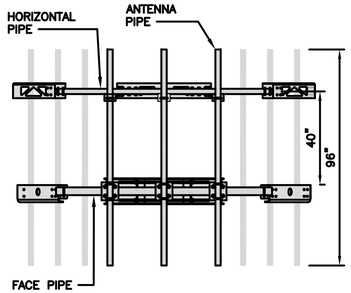
SIDE
U-BOLT

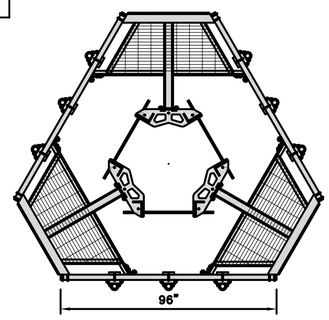


RRH/OVP MOUNT DETAIL | NO SCALE | 7

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

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





ANTENNA PLATFORM DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

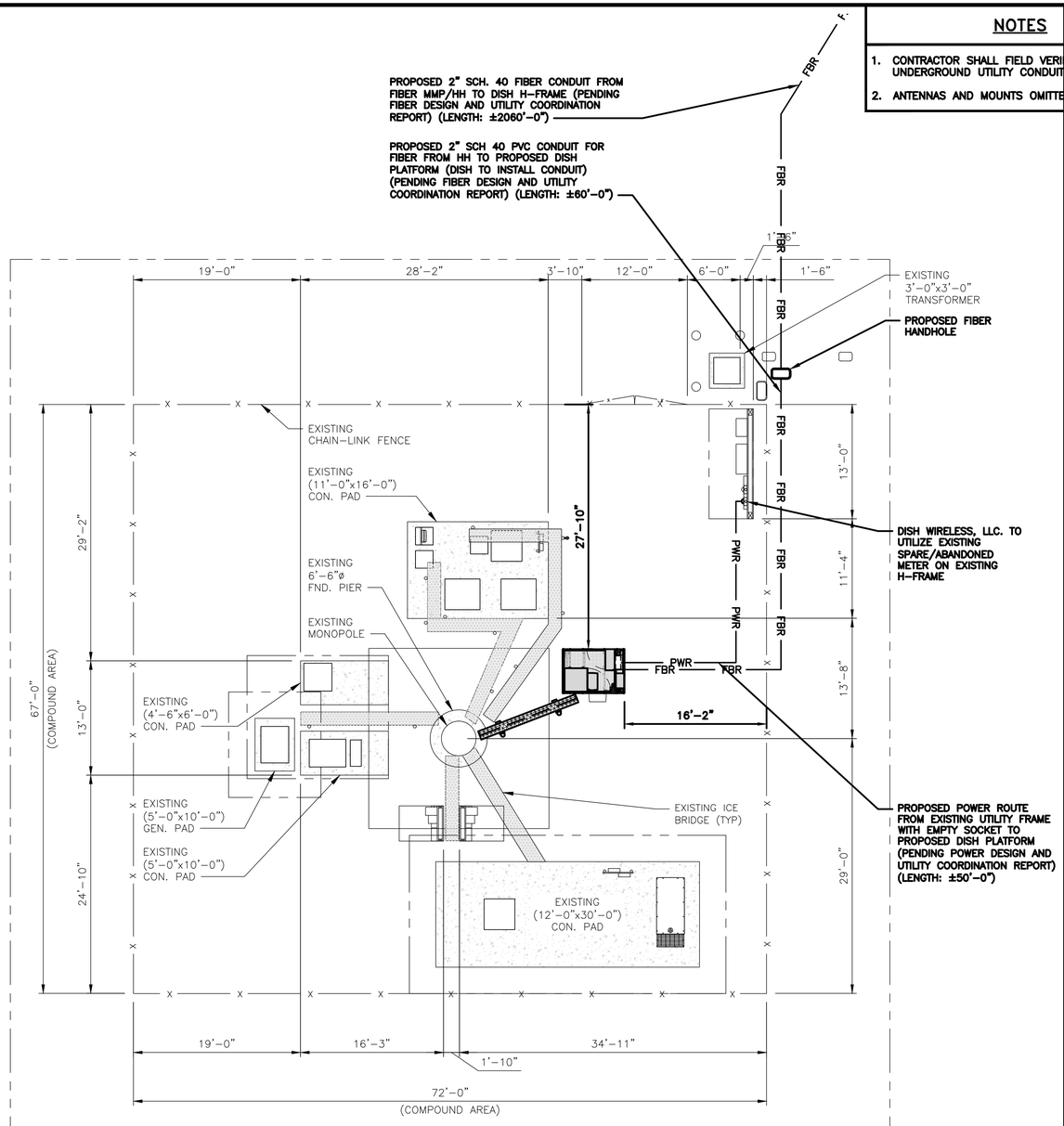
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

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



UTILITY ROUTE PLAN

8' 4' 0 8' 16'
1/8"=1'-0"

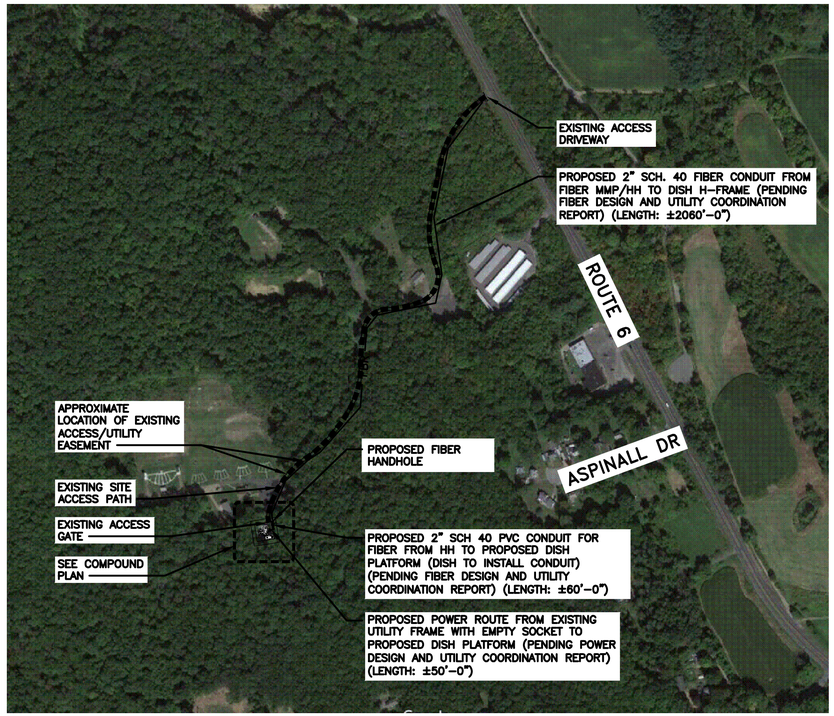
1

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

2



ELECTRICAL NOTES

300' 150' 0 300' 600'
1"=300'

3

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

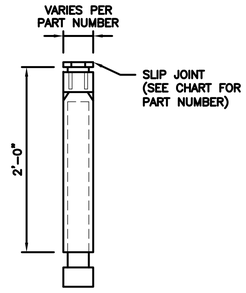
A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

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

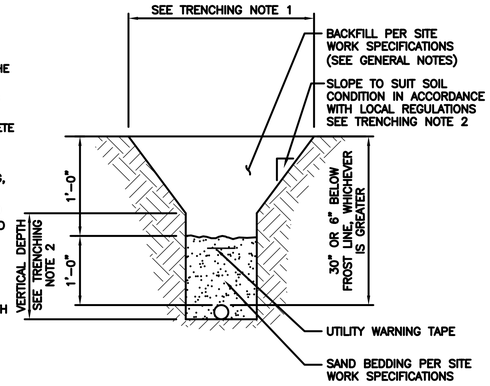


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

EXPANSION JOINT DETAIL | NO SCALE | 1

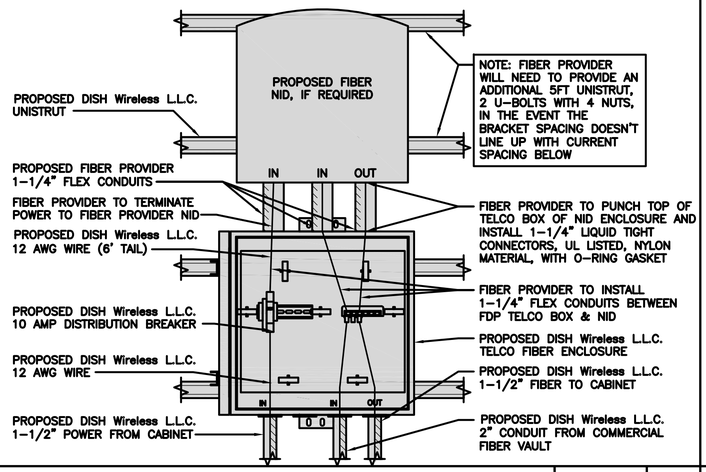
TRENCHING NOTES

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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2

NOT USED | NO SCALE | 3



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

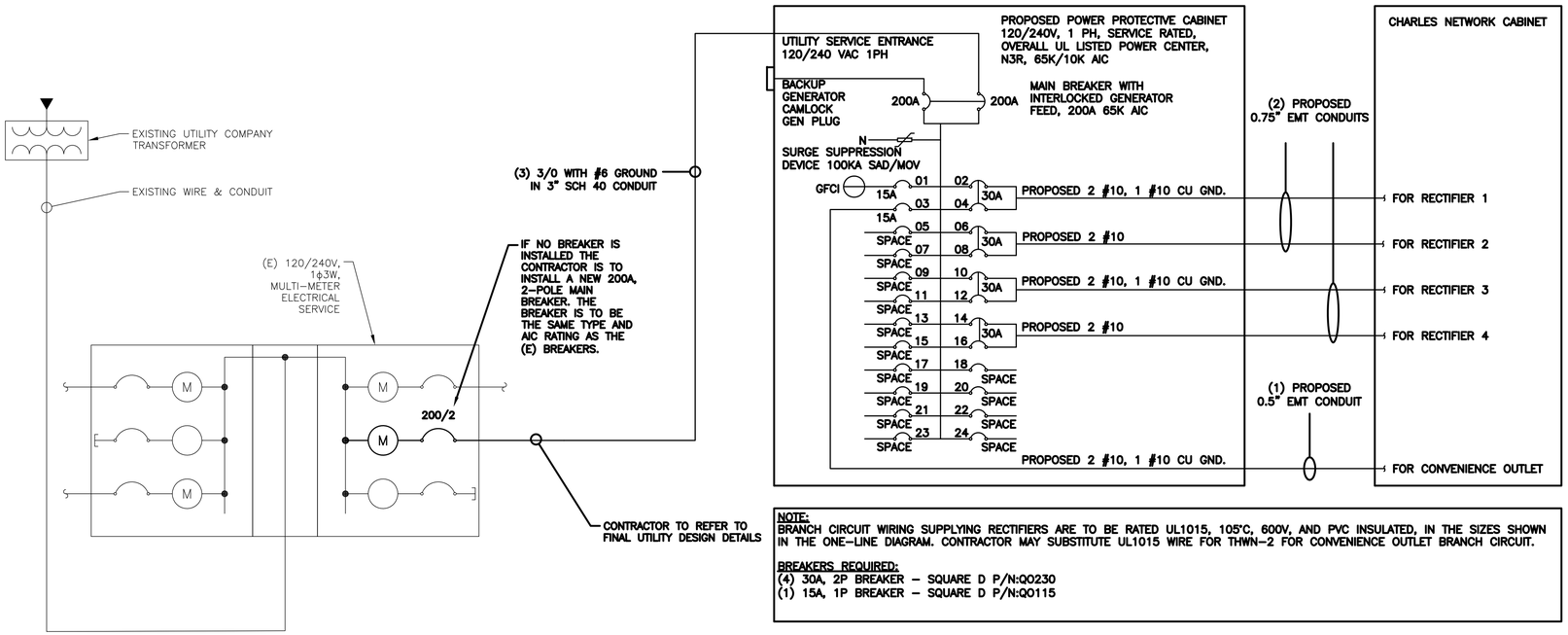
REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

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
(1) 15A, 1P BREAKER – SQUARE D P/N:QO115

NOTES

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

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

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

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

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

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

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.

#10 – 0.0266 SQ. IN X 4 = 0.1064 SQ. IN
#10 – 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND
TOTAL = 0.1146 SQ. IN

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

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

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

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

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

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

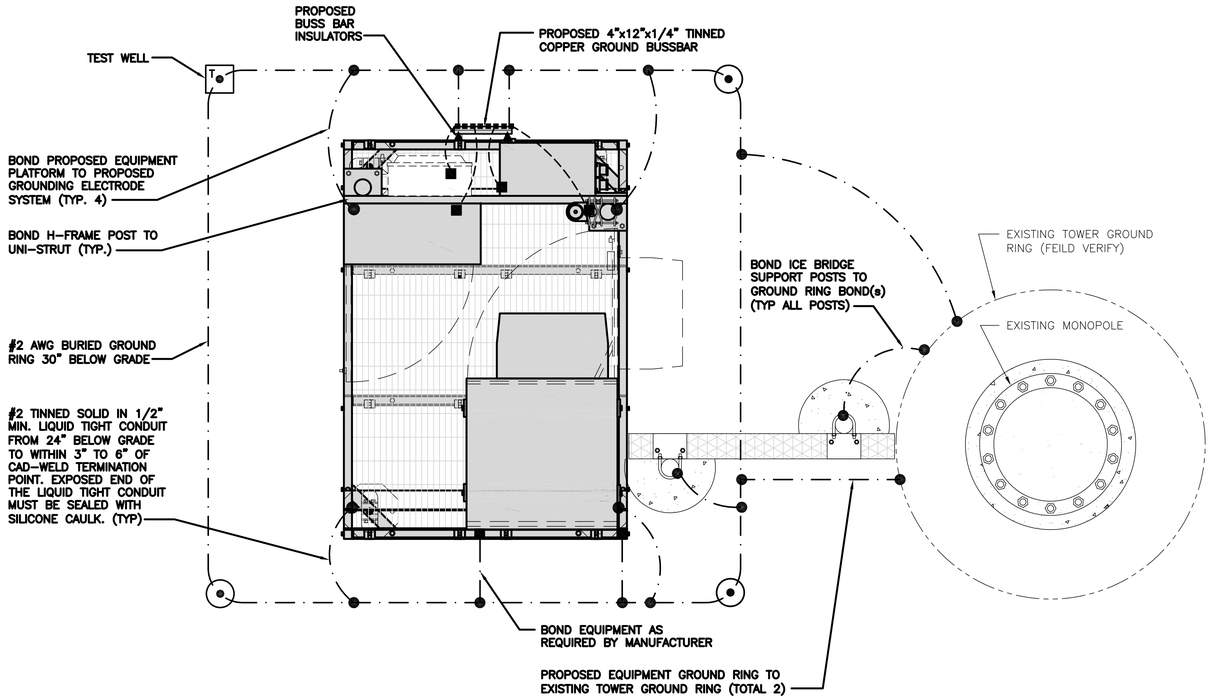
REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

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

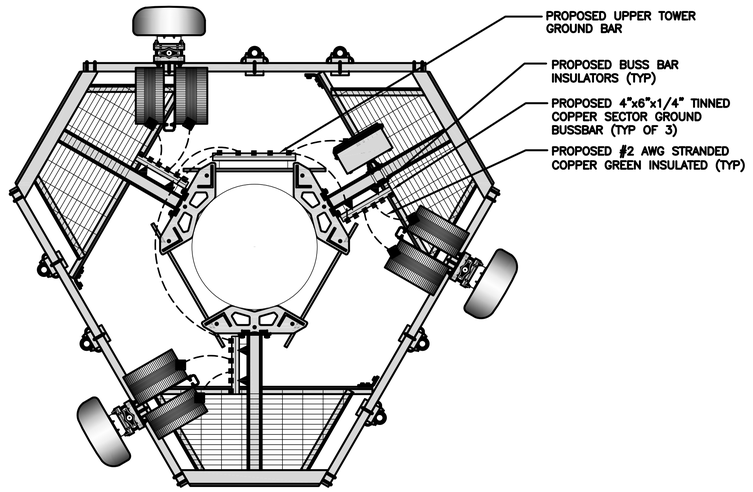
SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

(E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.

(F) CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.

(G) HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.

(H) EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.

(I) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.

(J) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.

(K) INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.

(L) FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.

(M) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE

(N) ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.

(O) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR

(P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR.

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

GROUNDING KEY NOTES | NO SCALE | 3

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

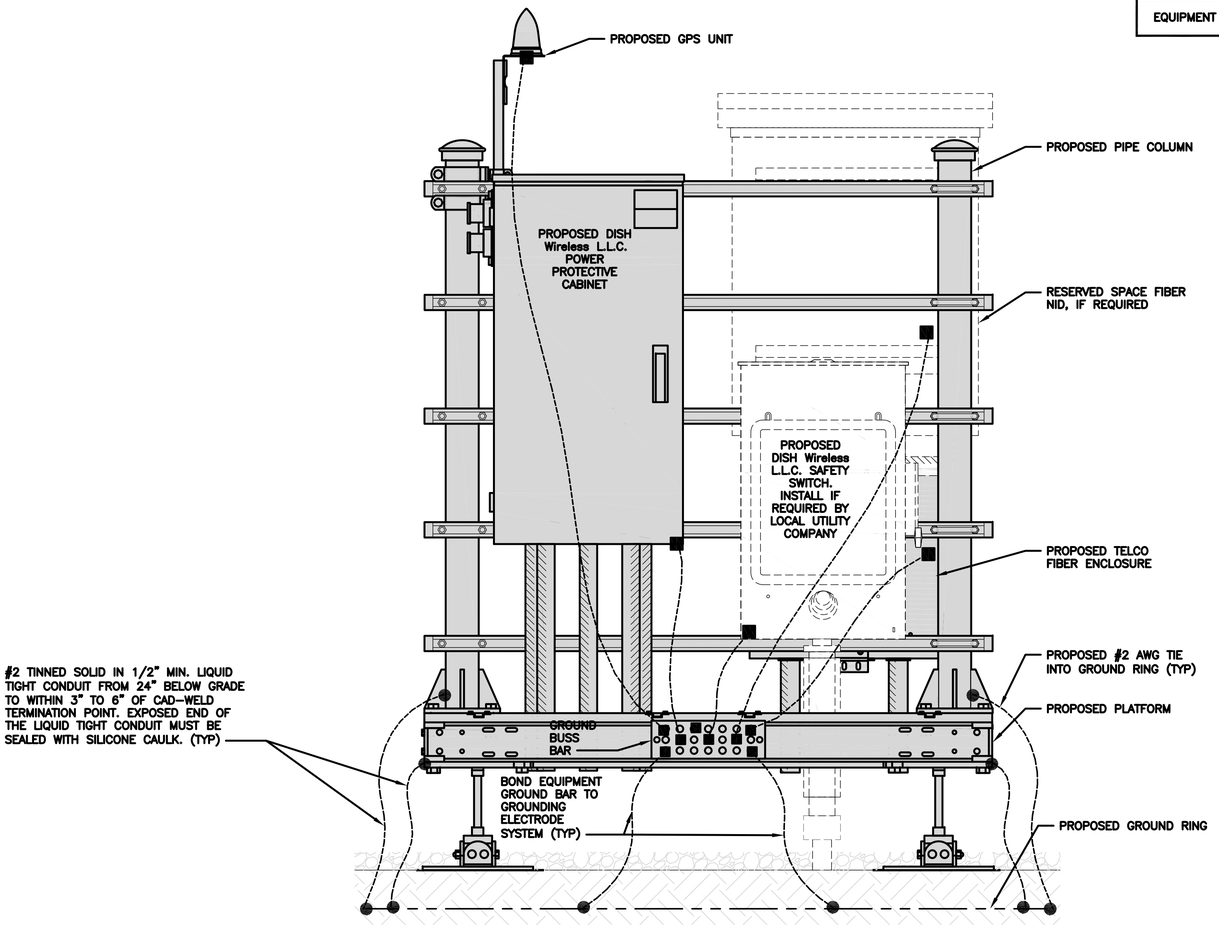
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

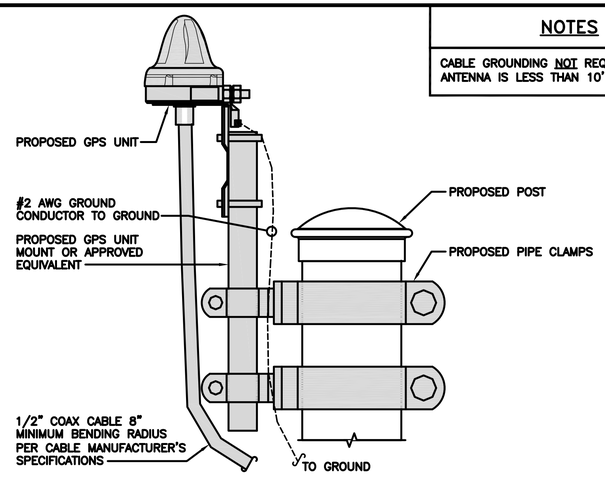
EQUIPMENT CABINET OMITTED FOR CLARITY



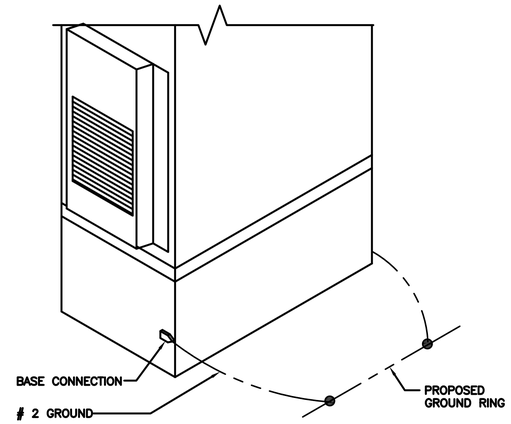
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

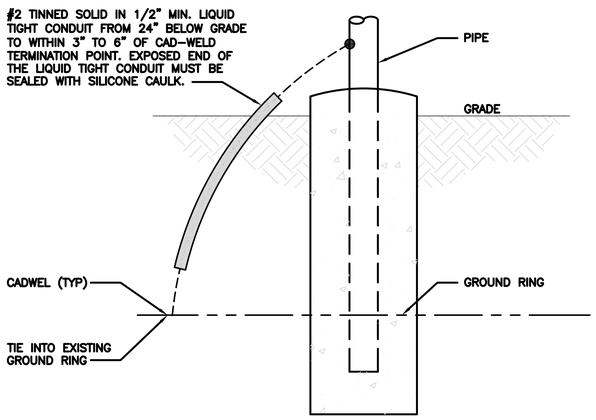
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



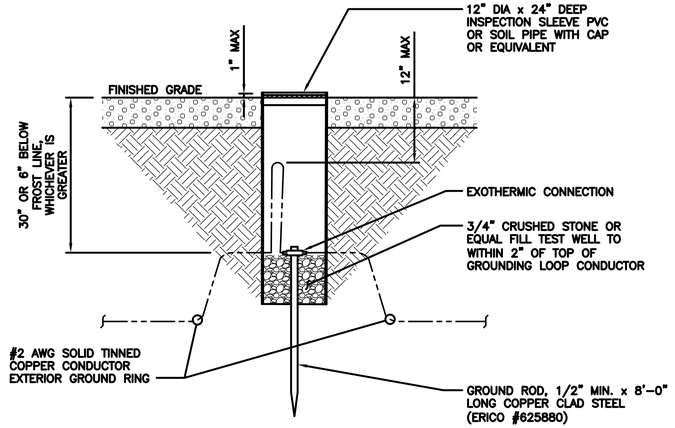
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



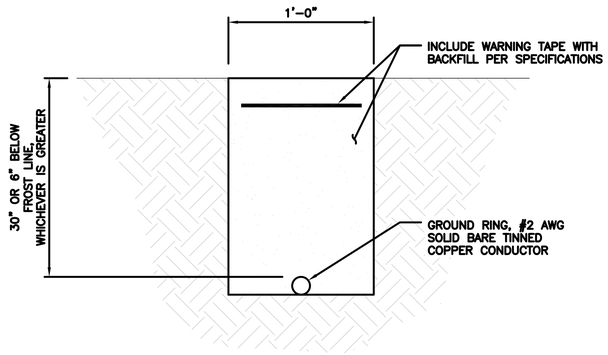
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE | NO SCALE | 5



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE

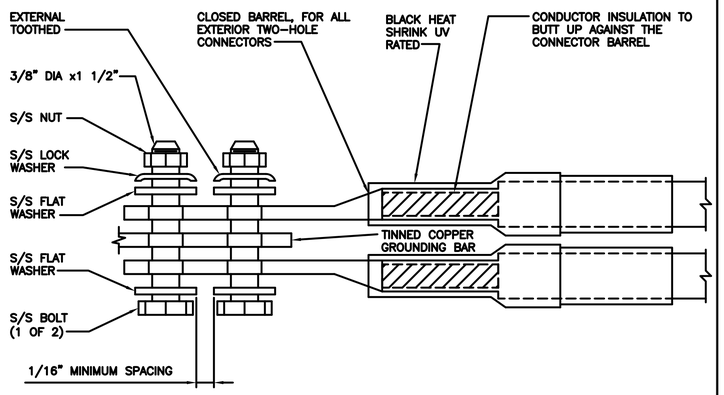
GROUNDING DETAILS

SHEET NUMBER

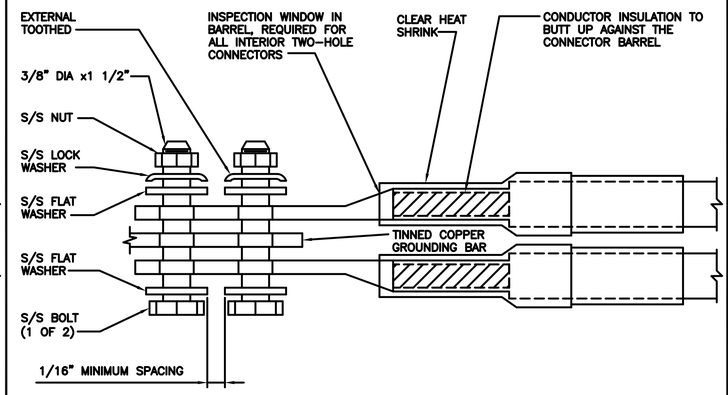
G-2

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

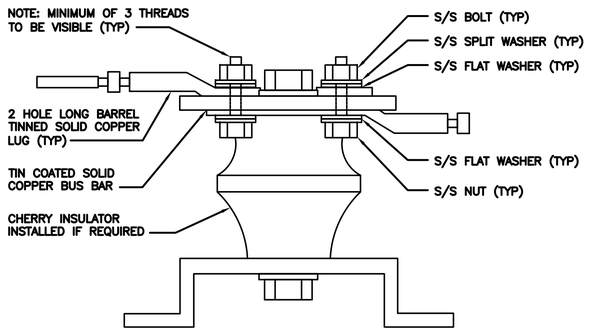
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039–Z0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE
GROUNDING DETAILS

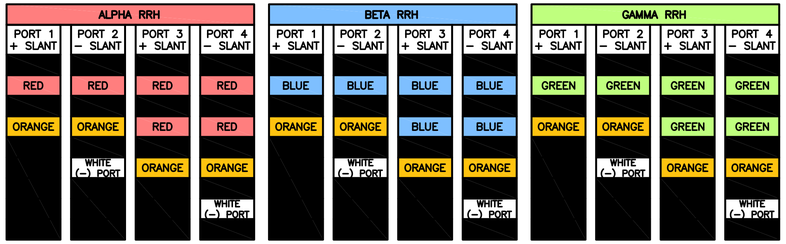
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

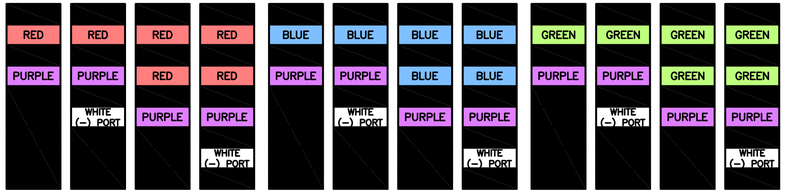
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

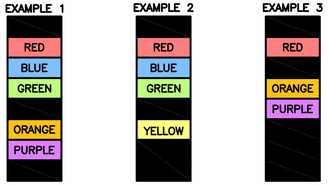


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

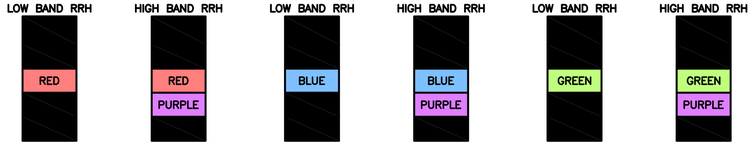
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



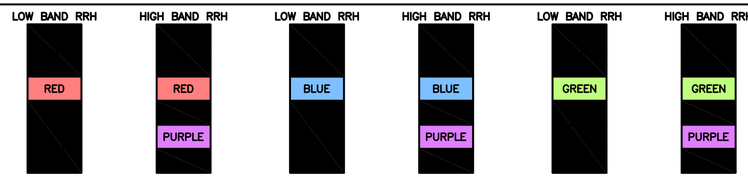
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

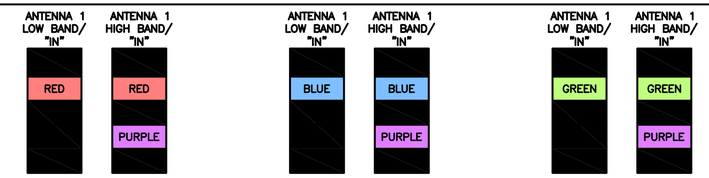


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



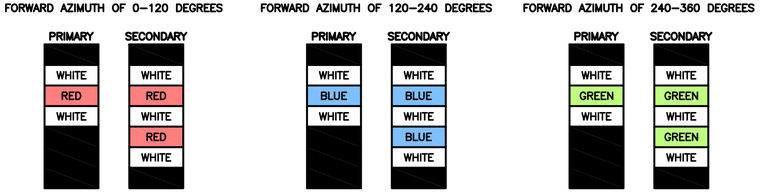
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES	NO SCALE	1

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

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER	NO SCALE	2

NOT USED	NO SCALE	3

NOT USED	NO SCALE	4

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH — $

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

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

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — X — X — X — X

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

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

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

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

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

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

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

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

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

6039–Z0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039–Z0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/18/2021

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

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/10/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00063A
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6)
ANDOVER, CT 06232

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **August 11, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00063A
	Site Name:	CT-CCI-T-842856
Crown Castle Designation:	**BU Number:**	842856
	Site Name:	ANDOVER NORTH
	JDE Job Number:	650052
	Work Order Number:	2010137
	Order Number:	556629 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	2010137
Site Data:	**122 Jonathan Trumbull Highway (Route 6), Andover, Tolland County, CT** **Latitude *41° 45' 0.46"*, Longitude *-72° 24' 9.63"*** **149 Foot - Monopole Tower**	

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

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

LC5: Proposed Equipment Configuration **Sufficient Capacity – 84.8%**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 119 mph. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Steven Hu

Respectfully submitted by:

STATE OF CONNECTICUT
TERRY P. STYRAN
31522
LICENSED
PROFESSIONAL ENGINEER

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

Terry P Styran
2021.08.11
16:04:03 -04'00'

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 149 ft Monopole tower designed by Engineered Endeavors, Inc.

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

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	119 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
120.0	120.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
147.0	151.0	3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	1 2 6	3/8 7/8 1-1/4
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8F		
	149.0	3	ericsson	RRUS-11		
		6	powerwave technologies	LGP21401		
		6	powerwave technologies	LGP21901		
	147.0	1	tower mounts	T-Arm Mount [TA 702-3]		
138.0	140.0	3	ericsson	KRY 112 489/2	13	1-5/8
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
	138.0	1	tower mounts	Side Arm Mount [SO 101-3]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
130.0	130.0	1	sitepro1	RMV5-SQNP w/ PRK-SFS and HRK12	2	1-5/8
		12	commscope	NHH-65B-R2B w/ Mount Pipe		
		1	rfs celwave	DB-C1-12C-24AB-0Z		
		6	samsung telecommunications	RFV01U-D1A		
		6	samsung telecommunications	RFV01U-D2A		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4713186	CCISITES
4-GEOTECHNICAL REPORTS	9289410	CCISITES
4-POST-MODIFICATION INSPECTION	4713189	CCISITES
4-POST-MODIFICATION INSPECTION	6003147	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4529267	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4713188	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	4713190	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5760149	CCISITES

3.1) Analysis Method

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

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

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
149 - 144	Pole	TP22.426x21.5x0.1875	Pole	3.5%	Pass
144 - 139	Pole	TP23.352x22.426x0.1875	Pole	6.4%	Pass
139 - 134	Pole	TP24.278x23.352x0.1875	Pole	12.3%	Pass
134 - 129	Pole	TP25.204x24.278x0.1875	Pole	18.8%	Pass
129 - 127.39	Pole	TP26.202x25.204x0.1875	Pole	21.5%	Pass
127.39 - 122.39	Pole	TP26.043x25.128x0.1875	Pole	30.4%	Pass
122.39 - 117.39	Pole	TP26.958x26.043x0.1875	Pole	40.0%	Pass
117.39 - 112.39	Pole	TP27.873x26.958x0.1875	Pole	49.9%	Pass
112.39 - 107.39	Pole	TP28.788x27.873x0.1875	Pole	59.1%	Pass
107.39 - 102.39	Pole	TP29.703x28.788x0.1875	Pole	67.7%	Pass
102.39 - 98.5	Pole	TP30.415x29.703x0.1875	Pole	74.0%	Pass
98.5 - 98.25	Pole + Reinf.	TP30.46x30.415x0.3438	Reinf. 2 Tension Rupture	59.5%	Pass
98.25 - 93.25	Pole + Reinf.	TP31.375x30.46x0.3375	Reinf. 2 Tension Rupture	65.6%	Pass
93.25 - 88.25	Pole + Reinf.	TP32.29x31.375x0.3313	Reinf. 2 Tension Rupture	71.4%	Pass
88.25 - 83.87	Pole + Reinf.	TP33.96x32.29x0.3313	Reinf. 2 Tension Rupture	76.1%	Pass
83.87 - 78.13	Pole	TP33.763x32.716x0.25	Pole	69.6%	Pass
78.13 - 73.13	Pole	TP34.675x33.763x0.25	Pole	73.5%	Pass
73.13 - 68.13	Pole	TP35.586x34.675x0.25	Pole	77.3%	Pass
68.13 - 63.13	Pole	TP36.497x35.586x0.25	Pole	80.8%	Pass
63.13 - 58.13	Pole	TP37.408x36.497x0.25	Pole	84.3%	Pass
58.13 - 57.25	Pole	TP37.568x37.408x0.25	Pole	84.8%	Pass
57.25 - 57	Pole + Reinf.	TP37.614x37.568x0.4188	Reinf. 1 Tension Rupture	70.2%	Pass
57 - 52	Pole + Reinf.	TP38.525x37.614x0.4125	Reinf. 1 Tension Rupture	72.8%	Pass
52 - 48.76	Pole + Reinf.	TP40.121x38.525x0.4125	Reinf. 1 Tension Rupture	74.4%	Pass
48.76 - 42.24	Pole	TP39.803x38.616x0.3125	Pole	70.7%	Pass
42.24 - 37.24	Pole	TP40.714x39.803x0.3125	Pole	72.6%	Pass
37.24 - 32.24	Pole	TP41.625x40.714x0.3125	Pole	74.5%	Pass
32.24 - 27.24	Pole	TP42.536x41.625x0.3125	Pole	76.3%	Pass
27.24 - 22.24	Pole	TP43.447x42.536x0.3125	Pole	78.0%	Pass
22.24 - 17.24	Pole	TP44.358x43.447x0.3125	Pole	79.7%	Pass
17.24 - 12.24	Pole	TP45.269x44.358x0.3125	Pole	81.2%	Pass
12.24 - 7.24	Pole	TP46.18x45.269x0.3125	Pole	82.7%	Pass
7.24 - 2.24	Pole	TP47.091x46.18x0.3125	Pole	84.2%	Pass
2.24 - 0	Pole	TP47.5x47.091x0.3125	Pole	84.8%	Pass
				Summary	
			Pole	84.8%	Pass

			Reinforcement	76.1%	Pass
			Overall	84.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	69.8	Pass
1	Base Plate	0	78.9	Pass
1	Base Foundation (Structure)	0	53.5	Pass
1	Base Foundation (Soil Interaction)	0	72.0	Pass

Structure Rating (max from all components) =	84.8%

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

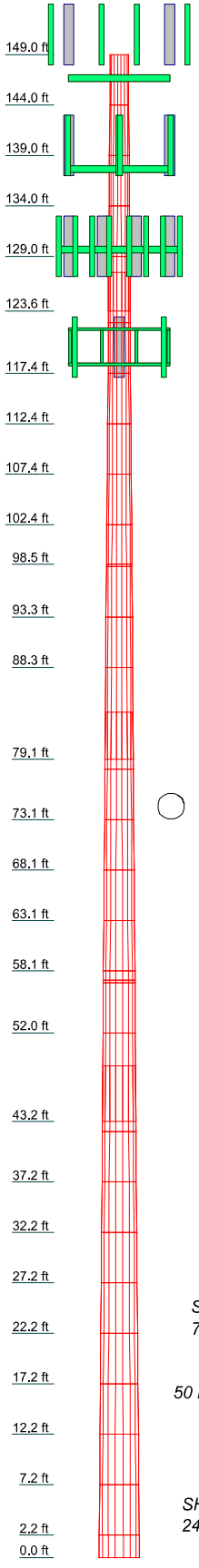
4.1) Recommendations

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

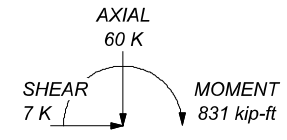
APPENDIX A

TNXTOWER OUTPUT

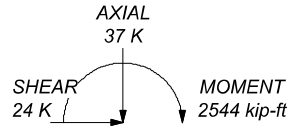
Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Length (ft)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	2.24
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.338	0.331	0.331	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.412	0.412	0.313	0.313	0.313	0.313	0.313	0.313	0.313	0.313	0.313	0.313
Socket Length (ft)					3.78										4.75									5.52										
Top Dia (in)	21.500	22.426	23.352	24.278	25.204	25.671	26.042	26.958	27.873	28.788	29.703	30.170	30.460	31.375	32.290	32.716	33.632	34.675	35.586	36.497	36.954	37.411	37.654	38.525	39.616	39.803	40.714	41.625	42.536	43.447	44.358	45.269	46.180	47.091
Bot Dia (in)	22.426	23.352	24.278	25.204	26.202	26.671	26.958	27.873	28.788	29.703	30.170	30.460	31.375	32.290	33.960	33.763	34.675	35.586	36.497	37.408	37.654	38.525	38.525	40.121	40.803	40.714	41.625	42.536	43.447	44.358	45.269	46.180	47.091	47.500
Grade	A572-65																																	
Weight (K)	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.0	0.5	0.5	1.0	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.8	1.5	0.9	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.4



ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
50 mph WIND - 1.500 in ICE



TORQUE 1 kip-ft
REACTIONS - 119 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 84.8%

CROWN CASTLE
The Pathway to Possible

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

Job: **BU# 842856**			
Project:			
Client: Crown Castle	Drawn by: Steven Hu	App'd:	
Code: TIA-222-H	Date: 08/11/21	Scale: NTS	
Path: C:\Users\SHu\Documents\WFH\842856\WO 2010137 - SA\Prod\842856Rel.er		Dwg No. E-1	

Tower Input Data

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

- Tower is located in Tolland County, Connecticut.
- Tower base elevation above sea level: 496.00 ft.
- Basic wind speed of 119 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- TOWER RATING: 84.8%.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	149.00-144.00	5.00	0.00	18	21.500	22.426	0.188	0.750	A572-65 (65 ksi)
L2	144.00-139.00	5.00	0.00	18	22.426	23.352	0.188	0.750	A572-65 (65 ksi)
L3	139.00-134.00	5.00	0.00	18	23.352	24.278	0.188	0.750	A572-65 (65 ksi)
L4	134.00-129.00	5.00	0.00	18	24.278	25.204	0.188	0.750	A572-65 (65 ksi)
L5	129.00-123.61	5.39	3.78	18	25.204	26.202	0.188	0.750	A572-65 (65 ksi)
L6	123.61-122.39	5.00	0.00	18	25.128	26.043	0.188	0.750	A572-65 (65 ksi)
L7	122.39-117.39	5.00	0.00	18	26.043	26.958	0.188	0.750	A572-65 (65 ksi)
L8	117.39-112.39	5.00	0.00	18	26.958	27.873	0.188	0.750	A572-65 (65 ksi)
L9	112.39-107.39	5.00	0.00	18	27.873	28.788	0.188	0.750	A572-65 (65 ksi)
L10	107.39-102.39	5.00	0.00	18	28.788	29.703	0.188	0.750	A572-65 (65 ksi)
L11	102.39-98.50	3.89	0.00	18	29.703	30.415	0.188	0.750	A572-65 (65 ksi)
L12	98.50-98.25	0.25	0.00	18	30.415	30.460	0.344	1.375	A572-65 (65 ksi)
L13	98.25-93.25	5.00	0.00	18	30.460	31.375	0.338	1.350	A572-65 (65 ksi)
L14	93.25-88.25	5.00	0.00	18	31.375	32.290	0.331	1.325	A572-65 (65 ksi)
L15	88.25-79.13	9.12	4.75	18	32.290	33.960	0.331	1.325	A572-65 (65 ksi)
L16	79.13-78.13	5.75	0.00	18	32.716	33.763	0.250	1.000	A572-65 (65 ksi)
L17	78.13-73.13	5.00	0.00	18	33.763	34.675	0.250	1.000	A572-65 (65 ksi)
L18	73.13-68.13	5.00	0.00	18	34.675	35.586	0.250	1.000	A572-65 (65 ksi)
L19	68.13-63.13	5.00	0.00	18	35.586	36.497	0.250	1.000	A572-65 (65 ksi)
L20	63.13-58.13	5.00	0.00	18	36.497	37.408	0.250	1.000	A572-65 (65 ksi)
L21	58.13-57.25	0.88	0.00	18	37.408	37.568	0.250	1.000	A572-65 (65 ksi)
L22	57.25-57.00	0.25	0.00	18	37.568	37.614	0.419	1.675	A572-65 (65 ksi)
L23	57.00-52.00	5.00	0.00	18	37.614	38.525	0.412	1.650	A572-65 (65 ksi)
L24	52.00-43.24	8.76	5.52	18	38.525	40.121	0.412	1.650	A572-65 (65 ksi)
L25	43.24-42.24	6.52	0.00	18	38.616	39.803	0.313	1.250	A572-65 (65 ksi)
L26	42.24-37.24	5.00	0.00	18	39.803	40.714	0.313	1.250	A572-65 (65 ksi)
L27	37.24-32.24	5.00	0.00	18	40.714	41.625	0.313	1.250	A572-65 (65 ksi)
L28	32.24-27.24	5.00	0.00	18	41.625	42.536	0.313	1.250	A572-65 (65 ksi)
L29	27.24-22.24	5.00	0.00	18	42.536	43.447	0.313	1.250	A572-65 (65 ksi)
L30	22.24-17.24	5.00	0.00	18	43.447	44.358	0.313	1.250	A572-65 (65 ksi)
L31	17.24-12.24	5.00	0.00	18	44.358	45.269	0.313	1.250	A572-65 (65 ksi)
L32	12.24-7.24	5.00	0.00	18	45.269	46.180	0.313	1.250	A572-65 (65 ksi)
L33	7.24-2.24	5.00	0.00	18	46.180	47.091	0.313	1.250	A572-65 (65 ksi)
L34	2.24-0.00	2.24		18	47.091	47.500	0.313	1.250	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	21.803	12.684	727.862	7.566	10.922	66.642	1456.681	6.343	3.454	18.421
	22.743	13.235	826.923	7.895	11.392	72.585	1654.933	6.619	3.617	19.291
L2	22.743	13.235	826.923	7.895	11.392	72.585	1654.933	6.619	3.617	19.291
	23.683	13.786	934.587	8.223	11.863	78.783	1870.404	6.894	3.780	20.16
L3	23.683	13.786	934.587	8.223	11.863	78.783	1870.404	6.894	3.780	20.16
	24.624	14.337	1051.213	8.552	12.333	85.234	2103.810	7.170	3.943	21.029
L4	24.624	14.337	1051.213	8.552	12.333	85.234	2103.810	7.170	3.943	21.029
	25.564	14.888	1177.159	8.881	12.804	91.939	2355.868	7.445	4.106	21.898
L5	25.564	14.888	1177.159	8.881	12.804	91.939	2355.868	7.445	4.106	21.898
	26.577	15.482	1323.723	9.235	13.311	99.448	2649.188	7.742	4.282	22.835
L6	26.188	14.843	1166.401	8.854	12.765	91.376	2334.337	7.423	4.092	21.827
	26.416	15.387	1299.554	9.179	13.230	98.230	2600.818	7.695	4.254	22.686
L7	26.416	15.387	1299.554	9.179	13.230	98.230	2600.818	7.695	4.254	22.686
	27.345	15.932	1442.473	9.503	13.695	105.332	2886.844	7.967	4.415	23.544
L8	27.345	15.932	1442.473	9.503	13.695	105.332	2886.844	7.967	4.415	23.544
	28.274	16.476	1595.504	9.828	14.159	112.681	3193.107	8.240	4.576	24.403
L9	28.274	16.476	1595.504	9.828	14.159	112.681	3193.107	8.240	4.576	24.403
	29.203	17.021	1758.992	10.153	14.624	120.279	3520.299	8.512	4.737	25.262
L10	29.203	17.021	1758.992	10.153	14.624	120.279	3520.299	8.512	4.737	25.262
	30.132	17.565	1933.284	10.478	15.089	128.124	3869.113	8.784	4.898	26.121
L11	30.132	17.565	1933.284	10.478	15.089	128.124	3869.113	8.784	4.898	26.121
	30.855	17.989	2076.502	10.731	15.451	134.396	4155.736	8.996	5.023	26.789
L12	30.831	32.809	3748.188	10.675	15.451	242.592	7501.308	16.408	4.748	13.812
	30.877	32.859	3765.323	10.691	15.474	243.335	7535.600	16.433	4.756	13.836
L13	30.878	32.268	3699.164	10.694	15.474	239.059	7403.196	16.137	4.767	14.124
	31.807	33.249	4046.620	11.018	15.939	253.887	8098.565	16.627	4.928	14.602
L14	31.808	32.639	3974.083	11.021	15.939	249.336	7953.395	16.323	4.939	14.91
	32.737	33.601	4335.960	11.345	16.404	264.331	8677.626	16.804	5.100	15.397
L15	32.737	33.601	4335.960	11.345	16.404	264.331	8677.626	16.804	5.100	15.397
	34.433	35.357	5051.550	11.938	17.252	292.817	10109.748	17.682	5.394	16.284
L16	34.061	25.762	3430.738	11.526	16.620	206.423	6865.990	12.883	5.318	21.272
	34.246	26.593	3773.470	11.897	17.152	220.004	7551.904	13.299	5.502	22.009
L17	34.246	26.593	3773.470	11.897	17.152	220.004	7551.904	13.299	5.502	22.009
	35.171	27.316	4089.718	12.221	17.615	232.176	8184.817	13.661	5.663	22.651
L18	35.171	27.316	4089.718	12.221	17.615	232.176	8184.817	13.661	5.663	22.651
	36.096	28.039	4423.159	12.544	18.078	244.676	8852.138	14.022	5.823	23.292
L19	36.096	28.039	4423.159	12.544	18.078	244.676	8852.138	14.022	5.823	23.292
	37.022	28.762	4774.249	12.868	18.541	257.503	9554.781	14.384	5.983	23.934
L20	37.022	28.762	4774.249	12.868	18.541	257.503	9554.781	14.384	5.983	23.934
	37.947	29.485	5143.443	13.191	19.003	270.658	10293.654	14.745	6.144	24.575
L21	37.947	29.485	5143.443	13.191	19.003	270.658	10293.654	14.745	6.144	24.575
	38.109	29.612	5210.176	13.248	19.085	273.002	10427.208	14.809	6.172	24.688
L22	38.083	49.376	8609.191	13.188	19.085	451.104	17229.711	24.693	5.875	14.03
	38.130	49.437	8640.906	13.204	19.108	452.217	17293.182	24.723	5.883	14.049
L23	38.131	48.707	8516.229	13.207	19.108	445.692	17043.664	24.358	5.894	14.289
	39.056	49.900	9157.487	13.530	19.571	467.916	18327.024	24.955	6.054	14.677
L24	39.056	49.900	9157.487	13.530	19.571	467.916	18327.024	24.955	6.054	14.677
	40.676	51.989	10356.716	14.097	20.382	508.142	20727.059	26.000	6.335	15.358
L25	40.184	37.992	7042.027	13.598	19.617	358.980	14093.321	19.000	6.246	19.988
	40.369	39.170	7717.470	14.019	20.220	381.676	15445.095	19.589	6.455	20.657
L26	40.369	39.170	7717.470	14.019	20.220	381.676	15445.095	19.589	6.455	20.657
	41.294	40.073	8264.002	14.343	20.683	399.560	16538.877	20.040	6.616	21.17
L27	41.294	40.073	8264.002	14.343	20.683	399.560	16538.877	20.040	6.616	21.17
	42.219	40.977	8835.745	14.666	21.146	417.853	17683.117	20.492	6.776	21.683
L28	42.219	40.977	8835.745	14.666	21.146	417.853	17683.117	20.492	6.776	21.683
	43.144	41.881	9433.270	14.989	21.608	436.556	18878.952	20.944	6.936	22.196
L29	43.144	41.881	9433.270	14.989	21.608	436.556	18878.952	20.944	6.936	22.196
	44.069	42.784	10057.143	15.313	22.071	455.669	20127.520	21.396	7.097	22.709
L30	44.069	42.784	10057.143	15.313	22.071	455.669	20127.520	21.396	7.097	22.709
	44.994	43.688	10707.934	15.636	22.534	475.191	21429.958	21.848	7.257	23.223
L31	44.994	43.688	10707.934	15.636	22.534	475.191	21429.958	21.848	7.257	23.223
	45.919	44.591	11386.211	15.960	22.997	495.122	22787.405	22.300	7.417	23.736
L32	45.919	44.591	11386.211	15.960	22.997	495.122	22787.405	22.300	7.417	23.736

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	46.844	45.495	12092.543	16.283	23.460	515.463	24200.998	22.752	7.578	24.249
L33	46.844	45.495	12092.543	16.283	23.460	515.463	24200.998	22.752	7.578	24.249
	47.770	46.399	12827.498	16.606	23.922	536.213	25671.876	23.204	7.738	24.762
L34	47.770	46.399	12827.498	16.606	23.922	536.213	25671.876	23.204	7.738	24.762
	48.185	46.804	13166.650	16.752	24.130	545.655	26350.626	23.406	7.810	24.992

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 149.00-144.00				1	1	1			
L2 144.00-139.00				1	1	1			
L3 139.00-134.00				1	1	1			
L4 134.00-129.00				1	1	1			
L5 129.00-123.61				1	1	1			
L6 123.61-122.39				1	1	1			
L7 122.39-117.39				1	1	1			
L8 117.39-112.39				1	1	1			
L9 112.39-107.39				1	1	1			
L10 107.39-102.39				1	1	1			
L11 102.39-98.50				1	1	1			
L12 98.50-98.25				1	1	0.959145			
L13 98.25-93.25				1	1	0.964288			
L14 93.25-88.25				1	1	0.970367			
L15 88.25-79.13				1	1	0.96048			
L16 79.13-78.13				1	1	1			
L17 78.13-73.13				1	1	1			
L18 73.13-68.13				1	1	1			
L19 68.13-63.13				1	1	1			
L20 63.13-58.13				1	1	1			
L21 58.13-57.25				1	1	1			
L22 57.25-57.00				1	1	0.963839			
L23 57.00-52.00				1	1	0.969379			
L24 52.00-43.24				1	1	0.963836			
L25 43.24-42.24				1	1	1			
L26 42.24-37.24				1	1	1			
L27 37.24-32.24				1	1	1			
L28 32.24-27.24				1	1	1			
L29 27.24-22.24				1	1	1			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L30 22.24-17.24				1	1	1			
L31 17.24-12.24				1	1	1			
L32 12.24-7.24				1	1	1			
L33 7.24-2.24				1	1	1			
L34 2.24-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
***										
****										
CCI-AFP-060100	A	No	Surface Af (CaAa)	59.75 - 44.75	1	1	0.100 0.250	6.000	14.000	0.00
CCI-AFP-060100	B	No	Surface Af (CaAa)	59.75 - 44.75	1	1	0.100 0.250	6.000	14.000	0.00
CCI-AFP-060100	C	No	Surface Af (CaAa)	59.75 - 44.75	1	1	0.100 0.250	6.000	14.000	0.00
***										
CCI-AFP-045100	A	No	Surface Af (CaAa)	100.50 - 80.50	1	1	0.300 0.400	4.500	11.000	0.00
CCI-AFP-045100	B	No	Surface Af (CaAa)	100.50 - 80.50	1	1	0.300 0.400	4.500	11.000	0.00
CCI-AFP-045100	C	No	Surface Af (CaAa)	100.50 - 80.50	1	1	0.300 0.400	4.500	11.000	0.00
********										
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
HCS 6X12 4AWG(1-5/8")	A	No	No	Inside Pole	138.00 - 8.00	13	No Ice	0.00	2.40
							1/2" Ice	0.00	2.40
							1" Ice	0.00	2.40
							2" Ice	0.00	2.40
***									
HB158-1-13U6-S6F18 (1-5/8")	C	No	No	Inside Pole	130.00 - 0.00	2	No Ice	0.00	1.90
							1/2" Ice	0.00	1.90
							1" Ice	0.00	1.90
							2" Ice	0.00	1.90
***									
***									
LDF6-50A(1-1/4)	B	No	No	Inside Pole	147.00 - 0.00	6	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
							2" Ice	0.00	0.60
FB-L98B-034-XXX(3/8)	B	No	No	Inside Pole	147.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG66ST-BRD(7/8)	B	No	No	Inside Pole	147.00 - 0.00	2	No Ice	0.00	0.91
							1/2" Ice	0.00	0.91
							1" Ice	0.00	0.91

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							2" Ice	0.00	0.91
***									
CU12PSM9P6XXX (1-1/2)	C	No	No	Inside Pole	120.00 - 0.00	1	No Ice	0.00	2.35
							1/2" Ice	0.00	2.35
							1" Ice	0.00	2.35
							2" Ice	0.00	2.35

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	149.00-144.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.00
L2	144.00-139.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.00
L3	139.00-134.00	A	0.000	0.000	0.000	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.00
L4	134.00-129.00	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.00
L5	129.00-123.61	A	0.000	0.000	0.000	0.000	0.17
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.02
L6	123.61-122.39	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L7	122.39-117.39	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L8	117.39-112.39	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L9	112.39-107.39	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L10	107.39-102.39	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L11	102.39-98.50	A	0.000	0.000	1.500	0.000	0.12
		B	0.000	0.000	1.500	0.000	0.02
		C	0.000	0.000	1.500	0.000	0.02
L12	98.50-98.25	A	0.000	0.000	0.188	0.000	0.01
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.00
L13	98.25-93.25	A	0.000	0.000	3.750	0.000	0.16
		B	0.000	0.000	3.750	0.000	0.03
		C	0.000	0.000	3.750	0.000	0.03
L14	93.25-88.25	A	0.000	0.000	3.750	0.000	0.16
		B	0.000	0.000	3.750	0.000	0.03
		C	0.000	0.000	3.750	0.000	0.03
L15	88.25-79.13	A	0.000	0.000	5.813	0.000	0.28
		B	0.000	0.000	5.813	0.000	0.05
		C	0.000	0.000	5.813	0.000	0.06
L16	79.13-78.13	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.01
L17	78.13-73.13	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.000	0.000	0.03
L18	73.13-68.13	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L19	68.13-63.13	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L20	63.13-58.13	A	0.000	0.000	1.622	0.000	0.16
		B	0.000	0.000	1.622	0.000	0.03
		C	0.000	0.000	1.622	0.000	0.03
L21	58.13-57.25	A	0.000	0.000	0.878	0.000	0.03
		B	0.000	0.000	0.878	0.000	0.00
		C	0.000	0.000	0.878	0.000	0.01
L22	57.25-57.00	A	0.000	0.000	0.250	0.000	0.01
		B	0.000	0.000	0.250	0.000	0.00
		C	0.000	0.000	0.250	0.000	0.00
L23	57.00-52.00	A	0.000	0.000	5.000	0.000	0.16
		B	0.000	0.000	5.000	0.000	0.03
		C	0.000	0.000	5.000	0.000	0.03
L24	52.00-43.24	A	0.000	0.000	7.250	0.000	0.27
		B	0.000	0.000	7.250	0.000	0.05
		C	0.000	0.000	7.250	0.000	0.05
L25	43.24-42.24	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.01
L26	42.24-37.24	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L27	37.24-32.24	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L28	32.24-27.24	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L29	27.24-22.24	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L30	22.24-17.24	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L31	17.24-12.24	A	0.000	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L32	12.24-7.24	A	0.000	0.000	0.000	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L33	7.24-2.24	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.03
L34	2.24-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.01

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	149.00-144.00	A	1.480	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.00
L2	144.00-139.00	A	1.475	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.00
L3	139.00-134.00	A	1.469	0.000	0.000	0.000	0.000	0.12
		B		0.000	0.000	0.000	0.000	0.03

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	0.000	0.00
L4	134.00-129.00	A	1.464	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.00
L5	129.00-123.61	A	1.458	0.000	0.000	0.000	0.000	0.17
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.02
L6	123.61-122.39	A	1.454	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L7	122.39-117.39	A	1.451	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L8	117.39-112.39	A	1.444	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L9	112.39-107.39	A	1.438	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L10	107.39-102.39	A	1.431	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L11	102.39-98.50	A	1.425	0.000	0.000	2.070	0.000	0.14
		B		0.000	0.000	2.070	0.000	0.04
		C		0.000	0.000	2.070	0.000	0.04
L12	98.50-98.25	A	1.422	0.000	0.000	0.259	0.000	0.01
		B		0.000	0.000	0.259	0.000	0.00
		C		0.000	0.000	0.259	0.000	0.00
L13	98.25-93.25	A	1.418	0.000	0.000	5.168	0.000	0.20
		B		0.000	0.000	5.168	0.000	0.07
		C		0.000	0.000	5.168	0.000	0.08
L14	93.25-88.25	A	1.411	0.000	0.000	5.161	0.000	0.20
		B		0.000	0.000	5.161	0.000	0.07
		C		0.000	0.000	5.161	0.000	0.08
L15	88.25-79.13	A	1.399	0.000	0.000	7.981	0.000	0.35
		B		0.000	0.000	7.981	0.000	0.12
		C		0.000	0.000	7.981	0.000	0.12
L16	79.13-78.13	A	1.391	0.000	0.000	0.000	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.01
L17	78.13-73.13	A	1.385	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L18	73.13-68.13	A	1.376	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L19	68.13-63.13	A	1.366	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L20	63.13-58.13	A	1.355	0.000	0.000	1.974	0.000	0.17
		B		0.000	0.000	1.974	0.000	0.04
		C		0.000	0.000	1.974	0.000	0.05
L21	58.13-57.25	A	1.348	0.000	0.000	1.068	0.000	0.04
		B		0.000	0.000	1.068	0.000	0.01
		C		0.000	0.000	1.068	0.000	0.01
L22	57.25-57.00	A	1.347	0.000	0.000	0.304	0.000	0.01
		B		0.000	0.000	0.304	0.000	0.00
		C		0.000	0.000	0.304	0.000	0.00
L23	57.00-52.00	A	1.341	0.000	0.000	6.079	0.000	0.21
		B		0.000	0.000	6.079	0.000	0.08
		C		0.000	0.000	6.079	0.000	0.08
L24	52.00-43.24	A	1.323	0.000	0.000	8.801	0.000	0.34
		B		0.000	0.000	8.801	0.000	0.12
		C		0.000	0.000	8.801	0.000	0.12
L25	43.24-42.24	A	1.308	0.000	0.000	0.000	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.01
L26	42.24-37.24	A	1.299	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	0.000	0.03
L27	37.24-32.24	A	1.282	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L28	32.24-27.24	A	1.262	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L29	27.24-22.24	A	1.239	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L30	22.24-17.24	A	1.211	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L31	17.24-12.24	A	1.176	0.000	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L32	12.24-7.24	A	1.128	0.000	0.000	0.000	0.000	0.13
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L33	7.24-2.24	A	1.050	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.03
L34	2.24-0.00	A	0.909	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.01

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	149.00-144.00	0.000	0.000	0.000	0.000
L2	144.00-139.00	0.000	0.000	0.000	0.000
L3	139.00-134.00	0.000	0.000	0.000	0.000
L4	134.00-129.00	0.000	0.000	0.000	0.000
L5	129.00-123.61	0.000	0.000	0.000	0.000
L6	123.61-122.39	0.000	0.000	0.000	0.000
L7	122.39-117.39	0.000	0.000	0.000	0.000
L8	117.39-112.39	0.000	0.000	0.000	0.000
L9	112.39-107.39	0.000	0.000	0.000	0.000
L10	107.39-102.39	0.000	0.000	0.000	0.000
L11	102.39-98.50	0.000	0.000	0.000	0.000
L12	98.50-98.25	0.000	0.000	0.000	0.000
L13	98.25-93.25	0.000	0.000	0.000	0.000
L14	93.25-88.25	0.000	0.000	0.000	0.000
L15	88.25-79.13	0.000	0.000	0.000	0.000
L16	79.13-78.13	0.000	0.000	0.000	0.000
L17	78.13-73.13	0.000	0.000	0.000	0.000
L18	73.13-68.13	0.000	0.000	0.000	0.000
L19	68.13-63.13	0.000	0.000	0.000	0.000
L20	63.13-58.13	0.000	0.000	0.000	0.000
L21	58.13-57.25	0.000	0.000	0.000	0.000
L22	57.25-57.00	0.000	0.000	0.000	0.000
L23	57.00-52.00	0.000	0.000	0.000	0.000
L24	52.00-43.24	0.000	0.000	0.000	0.000
L25	43.24-42.24	0.000	0.000	0.000	0.000
L26	42.24-37.24	0.000	0.000	0.000	0.000
L27	37.24-32.24	0.000	0.000	0.000	0.000
L28	32.24-27.24	0.000	0.000	0.000	0.000
L29	27.24-22.24	0.000	0.000	0.000	0.000
L30	22.24-17.24	0.000	0.000	0.000	0.000
L31	17.24-12.24	0.000	0.000	0.000	0.000
L32	12.24-7.24	0.000	0.000	0.000	0.000
L33	7.24-2.24	0.000	0.000	0.000	0.000
L34	2.24-0.00	0.000	0.000	0.000	0.000

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L11	15	CCI-AFP-045100	98.50 - 100.50	1.0000	1.0000
L11	16	CCI-AFP-045100	98.50 - 100.50	1.0000	1.0000
L11	17	CCI-AFP-045100	98.50 - 100.50	1.0000	1.0000
L12	15	CCI-AFP-045100	98.25 - 98.50	1.0000	1.0000
L12	16	CCI-AFP-045100	98.25 - 98.50	1.0000	1.0000
L12	17	CCI-AFP-045100	98.25 - 98.50	1.0000	1.0000
L13	15	CCI-AFP-045100	93.25 - 98.25	1.0000	1.0000
L13	16	CCI-AFP-045100	93.25 - 98.25	1.0000	1.0000
L13	17	CCI-AFP-045100	93.25 - 98.25	1.0000	1.0000
L14	15	CCI-AFP-045100	88.25 - 93.25	1.0000	1.0000
L14	16	CCI-AFP-045100	88.25 - 93.25	1.0000	1.0000
L14	17	CCI-AFP-045100	88.25 - 93.25	1.0000	1.0000
L15	15	CCI-AFP-045100	80.50 - 88.25	1.0000	1.0000
L15	16	CCI-AFP-045100	80.50 - 88.25	1.0000	1.0000
L15	17	CCI-AFP-045100	80.50 - 88.25	1.0000	1.0000
L20	11	CCI-AFP-060100	58.13 - 59.75	1.0000	1.0000
L20	12	CCI-AFP-060100	58.13 - 59.75	1.0000	1.0000
L20	13	CCI-AFP-060100	58.13 - 59.75	1.0000	1.0000
L21	11	CCI-AFP-060100	57.25 - 58.13	1.0000	1.0000
L21	12	CCI-AFP-060100	57.25 - 58.13	1.0000	1.0000
L21	13	CCI-AFP-060100	57.25 - 58.13	1.0000	1.0000
L22	11	CCI-AFP-060100	57.00 - 57.25	1.0000	1.0000
L22	12	CCI-AFP-060100	57.00 - 57.25	1.0000	1.0000
L22	13	CCI-AFP-060100	57.00 - 57.25	1.0000	1.0000
L23	11	CCI-AFP-060100	52.00 - 57.00	1.0000	1.0000
L23	12	CCI-AFP-060100	52.00 - 57.00	1.0000	1.0000
L23	13	CCI-AFP-060100	52.00 - 57.00	1.0000	1.0000
L24	11	CCI-AFP-060100	44.75 - 52.00	1.0000	1.0000
L24	12	CCI-AFP-060100	44.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L24	13	CCI-AFP-060100	52.00 44.75 - 52.00	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L11	15	CCI-AFP-045100	98.50 - 100.50	Auto	0.0000
L11	16	CCI-AFP-045100	98.50 - 100.50	Auto	0.0000
L11	17	CCI-AFP-045100	98.50 - 100.50	Auto	0.0000
L12	15	CCI-AFP-045100	98.25 - 98.50	Auto	0.0000
L12	16	CCI-AFP-045100	98.25 - 98.50	Auto	0.0000
L12	17	CCI-AFP-045100	98.25 - 98.50	Auto	0.0000
L13	15	CCI-AFP-045100	93.25 - 98.25	Auto	0.0000
L13	16	CCI-AFP-045100	93.25 - 98.25	Auto	0.0000
L13	17	CCI-AFP-045100	93.25 - 98.25	Auto	0.0000
L14	15	CCI-AFP-045100	88.25 - 93.25	Auto	0.0000
L14	16	CCI-AFP-045100	88.25 - 93.25	Auto	0.0000
L14	17	CCI-AFP-045100	88.25 - 93.25	Auto	0.0000
L15	15	CCI-AFP-045100	80.50 - 88.25	Auto	0.0000
L15	16	CCI-AFP-045100	80.50 - 88.25	Auto	0.0000
L15	17	CCI-AFP-045100	80.50 - 88.25	Auto	0.0000
L20	11	CCI-AFP-060100	58.13 - 59.75	Auto	0.0000
L20	12	CCI-AFP-060100	58.13 - 59.75	Auto	0.0000
L20	13	CCI-AFP-060100	58.13 - 59.75	Auto	0.0000
L21	11	CCI-AFP-060100	57.25 - 58.13	Auto	0.0000
L21	12	CCI-AFP-060100	57.25 - 58.13	Auto	0.0000
L21	13	CCI-AFP-060100	57.25 - 58.13	Auto	0.0000
L22	11	CCI-AFP-060100	57.00 - 57.25	Auto	0.0202
L22	12	CCI-AFP-060100	57.00 - 57.25	Auto	0.0202
L22	13	CCI-AFP-060100	57.00 - 57.25	Auto	0.0202
L23	11	CCI-AFP-060100	52.00 - 57.00	Auto	0.0058
L23	12	CCI-AFP-060100	52.00 -	Auto	0.0058

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L23	13	CCI-AFP-060100	57.00 52.00 - 57.00	Auto	0.0058
L24	11	CCI-AFP-060100	44.75 - 52.00	Auto	0.0000
L24	12	CCI-AFP-060100	44.75 - 52.00	Auto	0.0000
L24	13	CCI-AFP-060100	44.75 - 52.00	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00 0.00 4.00	0.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.63 5.06 5.51 6.43	3.27 3.69 4.12 5.00	0.07 0.13 0.20 0.38
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 4.00	0.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.63 5.06 5.51 6.43	3.27 3.69 4.12 5.00	0.07 0.13 0.20 0.38
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00 0.00 4.00	0.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.63 5.06 5.51 6.43	3.27 3.69 4.12 5.00	0.07 0.13 0.20 0.38
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 4.00	0.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 4.00	0.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 4.00	0.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
RRUS-11	A	From Leg	4.00 0.00 2.00	0.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.09 0.15
RRUS-11	B	From Leg	4.00 0.00 2.00	0.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.09 0.15
RRUS-11	C	From Leg	4.00 0.00	0.0000	147.00	No Ice 1/2"	2.78 2.99	1.19 1.33	0.05 0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.00			Ice	3.21	1.49	0.09
						1" Ice	3.66	1.83	0.15
						2" Ice			
(2) LGP21401	A	From Leg	4.00	0.0000	147.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			2.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21401	B	From Leg	4.00	0.0000	147.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			2.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21401	C	From Leg	4.00	0.0000	147.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			2.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21901	A	From Leg	4.00	0.0000	147.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			2.00			Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice			
(2) LGP21901	B	From Leg	4.00	0.0000	147.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			2.00			Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice			
(2) LGP21901	C	From Leg	4.00	0.0000	147.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			2.00			Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice			
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	147.00	No Ice	1.21	1.21	0.02
			0.00			1/2"	1.89	1.89	0.04
			4.00			Ice	2.11	2.11	0.07
						1" Ice	2.57	2.57	0.13
						2" Ice			
T-Arm Mount [TA 702-3]	C	None		0.0000	147.00	No Ice	4.75	4.75	0.34
						1/2"	5.82	5.82	0.43
						Ice	6.98	6.98	0.55
						1" Ice	9.72	9.72	0.87
						2" Ice			
4' x 2" Pipe Mount	A	From Leg	3.00	0.0000	147.00	No Ice	0.79	0.79	0.03
			0.00			1/2"	1.03	1.03	0.04
			0.00			Ice	1.28	1.28	0.04
						1" Ice	1.81	1.81	0.07
						2" Ice			
4' x 2" Pipe Mount	B	From Leg	3.00	0.0000	147.00	No Ice	0.79	0.79	0.03
			0.00			1/2"	1.03	1.03	0.04
			0.00			Ice	1.28	1.28	0.04
						1" Ice	1.81	1.81	0.07
						2" Ice			
4' x 2" Pipe Mount	C	From Leg	3.00	0.0000	147.00	No Ice	0.79	0.79	0.03
			0.00			1/2"	1.03	1.03	0.04
			0.00			Ice	1.28	1.28	0.04
						1" Ice	1.81	1.81	0.07
						2" Ice			
****									
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	2.00	0.0000	138.00	No Ice	14.69	6.87	0.19
			0.00			1/2"	15.46	7.55	0.31
			2.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			
APXVAARR24_43-U-NA20	B	From Leg	2.00	0.0000	138.00	No Ice	14.69	6.87	0.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
w/ Mount Pipe			0.00			1/2" Ice	15.46	7.55	0.31
			2.00			1" Ice	16.23	8.25	0.46
						2" Ice	17.82	9.67	0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	2.00	0.0000	138.00	No Ice	14.69	6.87	0.19
			0.00			1/2" Ice	15.46	7.55	0.31
			2.00			1" Ice	16.23	8.25	0.46
						2" Ice	17.82	9.67	0.79
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	2.00	0.0000	138.00	No Ice	6.29	2.76	0.06
			0.00			1/2" Ice	6.86	3.27	0.11
			2.00			1" Ice	7.45	3.79	0.16
						2" Ice	8.68	4.90	0.29
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	2.00	0.0000	138.00	No Ice	6.29	2.76	0.06
			0.00			1/2" Ice	6.86	3.27	0.11
			2.00			1" Ice	7.45	3.79	0.16
						2" Ice	8.68	4.90	0.29
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	2.00	0.0000	138.00	No Ice	6.29	2.76	0.06
			0.00			1/2" Ice	6.86	3.27	0.11
			2.00			1" Ice	7.45	3.79	0.16
						2" Ice	8.68	4.90	0.29
RADIO 4449 B12/B71	A	From Leg	2.00	0.0000	138.00	No Ice	1.65	1.16	0.07
			0.00			1/2" Ice	1.81	1.30	0.09
			2.00			1" Ice	1.98	1.45	0.11
						2" Ice	2.34	1.76	0.16
RADIO 4449 B12/B71	B	From Leg	2.00	0.0000	138.00	No Ice	1.65	1.16	0.07
			0.00			1/2" Ice	1.81	1.30	0.09
			2.00			1" Ice	1.98	1.45	0.11
						2" Ice	2.34	1.76	0.16
RADIO 4449 B12/B71	C	From Leg	2.00	0.0000	138.00	No Ice	1.65	1.16	0.07
			0.00			1/2" Ice	1.81	1.30	0.09
			2.00			1" Ice	1.98	1.45	0.11
						2" Ice	2.34	1.76	0.16
KRY 112 489/2	A	From Leg	2.00	0.0000	138.00	No Ice	0.56	0.37	0.02
			0.00			1/2" Ice	0.66	0.45	0.02
			2.00			1" Ice	0.76	0.54	0.03
						2" Ice	1.00	0.75	0.05
KRY 112 489/2	B	From Leg	2.00	0.0000	138.00	No Ice	0.56	0.37	0.02
			0.00			1/2" Ice	0.66	0.45	0.02
			2.00			1" Ice	0.76	0.54	0.03
						2" Ice	1.00	0.75	0.05
KRY 112 489/2	C	From Leg	2.00	0.0000	138.00	No Ice	0.56	0.37	0.02
			0.00			1/2" Ice	0.66	0.45	0.02
			2.00			1" Ice	0.76	0.54	0.03
						2" Ice	1.00	0.75	0.05
Side Arm Mount [SO 101-3]	C	None		0.0000	138.00	No Ice	5.81	5.81	0.25
						1/2" Ice	6.95	6.95	0.34
						1" Ice	8.28	8.28	0.46
						2" Ice	11.54	11.54	0.78
10' horizontal x 2" Pipe Mount	A	From Leg	3.00	0.0000	138.00	No Ice	1.90	0.01	0.03
			0.00			1/2" Ice	2.92	0.04	0.04
			2.00			1" Ice	3.97	0.09	0.06
						2" Ice	5.65	0.21	0.13
10' horizontal x 2" Pipe	B	From Leg	3.00	0.0000	138.00	No Ice	1.90	0.01	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount			0.00			1/2" Ice	2.92	0.04	0.04
			2.00			1" Ice	3.97	0.09	0.06
						2" Ice	5.65	0.21	0.13
10' horizontal x 2" Pipe Mount	C	From Leg	3.00	0.0000	138.00	No Ice	1.90	0.01	0.03
			0.00			1/2" Ice	2.92	0.04	0.04
			2.00			1" Ice	3.97	0.09	0.06
						2" Ice	5.65	0.21	0.13
****									
(4) NHH-65B-R2B w/ Mount Pipe	A	From Leg	3.00	0.0000	130.00	No Ice	4.09	3.29	0.07
			0.00			1/2" Ice	4.48	3.67	0.13
			0.00			1" Ice	4.88	4.06	0.21
						2" Ice	5.70	4.86	0.39
(4) NHH-65B-R2B w/ Mount Pipe	B	From Leg	3.00	0.0000	130.00	No Ice	4.09	3.29	0.07
			0.00			1/2" Ice	4.48	3.67	0.13
			0.00			1" Ice	4.88	4.06	0.21
						2" Ice	5.70	4.86	0.39
(4) NHH-65B-R2B w/ Mount Pipe	C	From Leg	3.00	0.0000	130.00	No Ice	4.09	3.29	0.07
			0.00			1/2" Ice	4.48	3.67	0.13
			0.00			1" Ice	4.88	4.06	0.21
						2" Ice	5.70	4.86	0.39
(2) RFV01U-D1A	A	From Leg	3.00	0.0000	130.00	No Ice	1.88	1.25	0.08
			0.00			1/2" Ice	2.05	1.39	0.10
			0.00			1" Ice	2.22	1.54	0.12
						2" Ice	2.60	1.86	0.18
(2) RFV01U-D1A	B	From Leg	3.00	0.0000	130.00	No Ice	1.88	1.25	0.08
			0.00			1/2" Ice	2.05	1.39	0.10
			0.00			1" Ice	2.22	1.54	0.12
						2" Ice	2.60	1.86	0.18
(2) RFV01U-D1A	C	From Leg	3.00	0.0000	130.00	No Ice	1.88	1.25	0.08
			0.00			1/2" Ice	2.05	1.39	0.10
			0.00			1" Ice	2.22	1.54	0.12
						2" Ice	2.60	1.86	0.18
(2) RFV01U-D2A	A	From Leg	3.00	0.0000	130.00	No Ice	1.88	1.01	0.07
			0.00			1/2" Ice	2.05	1.14	0.09
			0.00			1" Ice	2.22	1.28	0.11
						2" Ice	2.60	1.59	0.15
(2) RFV01U-D2A	B	From Leg	3.00	0.0000	130.00	No Ice	1.88	1.01	0.07
			0.00			1/2" Ice	2.05	1.14	0.09
			0.00			1" Ice	2.22	1.28	0.11
						2" Ice	2.60	1.59	0.15
(2) RFV01U-D2A	C	From Leg	3.00	0.0000	130.00	No Ice	1.88	1.01	0.07
			0.00			1/2" Ice	2.05	1.14	0.09
			0.00			1" Ice	2.22	1.28	0.11
						2" Ice	2.60	1.59	0.15
DB-C1-12C-24AB-0Z	A	From Leg	3.00	0.0000	130.00	No Ice	4.06	3.10	0.03
			0.00			1/2" Ice	4.32	3.34	0.07
			0.00			1" Ice	4.58	3.58	0.11
						2" Ice	5.14	4.09	0.20
Site Pro1 RMV5-SQNP w/ PRK-SFS and HRK12	C	None		0.0000	130.00	No Ice	14.77	14.77	0.61
						1/2" Ice	18.10	18.10	0.85
						1" Ice	21.77	21.77	1.16
						2" Ice	30.35	30.35	2.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) 10' horizontal x 2" Pipe Mount	A	From Leg	3.00 0.00 2.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.92 3.97 5.65	0.01 0.04 0.09 0.21	0.03 0.04 0.06 0.13
(2) 10' horizontal x 2" Pipe Mount	B	From Leg	3.00 0.00 2.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.92 3.97 5.65	0.01 0.04 0.09 0.21	0.03 0.04 0.06 0.13
(2) 10' horizontal x 2" Pipe Mount	C	From Leg	3.00 0.00 2.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.92 3.97 5.65	0.01 0.04 0.09 0.21	0.03 0.04 0.06 0.13
(2) Dual Antenna Bracket	A	From Leg	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.97 1.13 1.30 1.61	0.07 0.10 0.13 0.19
(2) Dual Antenna Bracket	B	From Leg	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.97 1.13 1.30 1.61	0.07 0.10 0.13 0.19
(2) Dual Antenna Bracket	C	From Leg	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.97 1.13 1.30 1.61	0.07 0.10 0.13 0.19
**									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice			
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.31 2.50 2.70 3.12	1.29 1.45 1.61 1.96	0.02 0.04 0.06 0.12
Commscope MC-PK8-DSH	C	None		0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	34.24 62.95 91.66 149.08	34.24 62.95 91.66 149.08	1.75 2.10 2.45 3.15
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
**									

Load Combinations

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

Comb. No.	Description
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	149 - 144	Pole	Max Tension	2	0.00	0.00	-0.00
			Max. Compression	26	-3.92	0.00	0.49
			Max. Mx	8	-1.28	-14.63	0.09
			Max. My	2	-1.27	0.00	14.75
			Max. Vy	8	2.75	-14.63	0.09
			Max. Vx	2	-2.75	0.00	14.75
			Max. Torque	8			0.30
L2	144 - 139	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-4.45	0.00	0.50
			Max. Mx	8	-1.54	-29.33	0.09
			Max. My	2	-1.54	0.00	29.45
			Max. Vy	8	3.13	-29.33	0.09
			Max. Vx	2	-3.13	0.00	29.45
			Max. Torque	8			0.30
L3	139 - 134	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.31	0.00	0.51
			Max. Mx	8	-3.29	-60.32	0.10
			Max. My	2	-3.29	0.00	60.45
			Max. Vy	8	6.07	-60.32	0.10
			Max. Vx	2	-6.07	0.00	60.45
			Max. Torque	8			0.30
L4	134 - 129	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.99	0.00	1.17
			Max. Mx	8	-6.89	-96.06	0.19
			Max. My	2	-6.88	0.00	96.39
			Max. Vy	8	10.41	-96.06	0.19
			Max. Vx	2	-10.45	0.00	96.39
			Max. Torque	8			0.79

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L5	129 - 123.612	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.24	0.00	1.17
			Max. Mx	8	-7.06	-112.95	0.20
			Max. My	2	-7.05	0.00	113.33
			Max. Vy	8	10.54	-112.95	0.20
			Max. Vx	2	-10.58	0.00	113.33
			Max. Torque	8			0.79
L6	123.612 - 122.388	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.46	0.00	1.20
			Max. Mx	8	-7.82	-166.79	0.21
			Max. My	2	-7.81	0.00	167.38
			Max. Vy	8	10.99	-166.79	0.21
			Max. Vx	2	-11.03	0.00	167.38
			Max. Torque	8			0.79
L7	122.388 - 117.388	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.17	0.00	1.70
			Max. Mx	8	-11.25	-231.71	0.32
			Max. My	2	-11.23	0.00	232.72
			Max. Vy	8	14.83	-231.71	0.32
			Max. Vx	2	-14.91	0.00	232.72
			Max. Torque	8			1.03
L8	117.388 - 112.388	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.01	0.00	1.73
			Max. Mx	8	-11.86	-306.84	0.33
			Max. My	2	-11.84	0.00	308.25
			Max. Vy	8	15.23	-306.84	0.33
			Max. Vx	2	-15.31	0.00	308.25
			Max. Torque	8			1.03
L9	112.388 - 107.388	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.87	0.00	1.75
			Max. Mx	8	-12.49	-383.96	0.34
			Max. My	2	-12.47	0.00	385.76
			Max. Vy	8	15.63	-383.96	0.34
			Max. Vx	2	-15.71	0.00	385.76
			Max. Torque	8			1.03
L10	107.388 - 102.388	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.75	0.00	1.78
			Max. Mx	8	-13.14	-463.06	0.35
			Max. My	2	-13.13	0.00	465.26
			Max. Vy	8	16.02	-463.06	0.35
			Max. Vx	2	-16.10	0.00	465.26
			Max. Torque	8			1.03
L11	102.388 - 98.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.51	0.00	1.79
			Max. Mx	8	-13.67	-525.91	0.35
			Max. My	2	-13.65	0.00	528.42
			Max. Vy	8	16.33	-525.91	0.35
			Max. Vx	2	-16.41	0.00	528.42
			Max. Torque	8			1.02
L12	98.5 - 98.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.57	0.00	1.80
			Max. Mx	8	-13.72	-530.00	0.35
			Max. My	2	-13.71	0.00	532.53
			Max. Vy	8	16.34	-530.00	0.35
			Max. Vx	2	-16.43	0.00	532.53
			Max. Torque	8			1.02
L13	98.25 - 93.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.89	0.00	1.81
			Max. Mx	8	-14.64	-612.82	0.36
			Max. My	2	-14.63	0.00	615.75
			Max. Vy	8	16.80	-612.82	0.36

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-16.88	0.00	615.75
			Max. Torque	8			1.02
L14	93.25 - 88.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.23	0.00	1.83
			Max. Mx	8	-15.58	-697.89	0.37
			Max. My	2	-15.57	0.00	701.21
			Max. Vy	8	17.24	-697.89	0.37
			Max. Vx	2	-17.32	0.00	701.21
			Max. Torque	8			1.02
L15	88.25 - 79.128	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.40	0.00	1.85
			Max. Mx	8	-16.42	-774.19	0.37
			Max. My	2	-16.40	0.00	777.86
			Max. Vy	8	17.63	-774.19	0.37
			Max. Vx	2	-17.71	0.00	777.86
			Max. Torque	8			1.02
L16	79.128 - 78.128	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.69	0.00	1.85
			Max. Mx	8	-17.99	-877.15	0.38
			Max. My	2	-17.98	0.00	881.28
			Max. Vy	8	18.21	-877.15	0.38
			Max. Vx	2	-18.29	0.00	881.28
			Max. Torque	8			1.02
L17	78.128 - 73.128	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.81	0.00	1.85
			Max. Mx	8	-18.87	-969.13	0.39
			Max. My	2	-18.86	0.00	973.66
			Max. Vy	8	18.61	-969.13	0.39
			Max. Vx	2	-18.69	0.00	973.66
			Max. Torque	8			1.02
L18	73.128 - 68.128	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.94	0.00	1.85
			Max. Mx	8	-19.77	-1063.08	0.39
			Max. My	2	-19.76	0.00	1068.01
			Max. Vy	8	19.00	-1063.08	0.39
			Max. Vx	2	-19.08	0.00	1068.01
			Max. Torque	8			1.02
L19	68.128 - 63.128	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.09	0.00	1.85
			Max. Mx	8	-20.69	-1158.96	0.40
			Max. My	2	-20.68	0.00	1164.29
			Max. Vy	8	19.38	-1158.96	0.40
			Max. Vx	2	-19.46	0.00	1164.29
			Max. Torque	8			1.02
L20	63.128 - 58.128	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.31	0.00	1.85
			Max. Mx	8	-21.63	-1256.75	0.40
			Max. My	2	-21.62	0.00	1262.48
			Max. Vy	8	19.76	-1256.75	0.40
			Max. Vx	2	-19.84	0.00	1262.48
			Max. Torque	8			1.02
L21	58.128 - 57.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.54	0.00	1.85
			Max. Mx	8	-21.80	-1274.12	0.40
			Max. My	2	-21.79	0.00	1279.91
			Max. Vy	8	19.82	-1274.12	0.40
			Max. Vx	2	-19.90	0.00	1279.91
			Max. Torque	8			1.02
L22	57.25 - 57	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.63	0.00	1.85
			Max. Mx	8	-21.87	-1279.08	0.40

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-21.87	0.00	1284.89
			Max. Vy	8	19.84	-1279.08	0.40
			Max. Vx	2	-19.92	0.00	1284.89
			Max. Torque	8			1.02
L23	57 - 52	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.34	0.00	1.85
			Max. Mx	8	-23.15	-1379.35	0.40
			Max. My	2	-23.14	0.00	1385.55
			Max. Vy	8	20.28	-1379.35	0.40
			Max. Vx	2	-20.36	0.00	1385.55
			Max. Torque	8			1.02
L24	52 - 43.243	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.44	0.00	1.85
			Max. Mx	8	-23.99	-1445.48	0.41
			Max. My	2	-23.99	0.00	1451.94
			Max. Vy	8	20.56	-1445.48	0.41
			Max. Vx	2	-20.64	0.00	1451.94
			Max. Torque	8			1.02
L25	43.243 - 42.243	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.85	0.00	1.85
			Max. Mx	8	-26.51	-1581.54	0.41
			Max. My	2	-26.50	0.00	1588.51
			Max. Vy	8	21.19	-1581.54	0.41
			Max. Vx	2	-21.27	0.00	1588.51
			Max. Torque	8			1.02
L26	42.243 - 37.243	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.25	0.00	1.85
			Max. Mx	8	-27.66	-1688.34	0.41
			Max. My	2	-27.66	0.00	1695.71
			Max. Vy	8	21.56	-1688.34	0.41
			Max. Vx	2	-21.63	0.00	1695.71
			Max. Torque	8			1.02
L27	37.243 - 32.243	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.67	0.00	1.85
			Max. Mx	8	-28.84	-1796.92	0.41
			Max. My	2	-28.84	0.00	1804.67
			Max. Vy	8	21.90	-1796.92	0.41
			Max. Vx	2	-21.98	0.00	1804.67
			Max. Torque	8			1.02
L28	32.243 - 27.243	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.11	0.00	1.85
			Max. Mx	8	-30.04	-1907.20	0.41
			Max. My	2	-30.04	0.00	1915.35
			Max. Vy	8	22.24	-1907.20	0.41
			Max. Vx	2	-22.32	0.00	1915.35
			Max. Torque	8			1.02
L29	27.243 - 22.243	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.57	0.00	1.85
			Max. Mx	8	-31.27	-2019.11	0.42
			Max. My	2	-31.26	0.00	2027.64
			Max. Vy	8	22.55	-2019.11	0.42
			Max. Vx	2	-22.63	0.00	2027.64
			Max. Torque	8			1.02
L30	22.243 - 17.243	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.04	0.00	1.85
			Max. Mx	8	-32.51	-2132.54	0.42
			Max. My	2	-32.51	0.00	2141.46
			Max. Vy	8	22.85	-2132.54	0.42
			Max. Vx	2	-22.93	0.00	2141.46
			Max. Torque	8			1.02
L31	17.243 - 12.243	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.54	0.00	1.85

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-33.77	-2247.38	0.42
			Max. My	2	-33.77	0.00	2256.68
			Max. Vy	8	23.12	-2247.38	0.42
			Max. Vx	2	-23.19	0.00	2256.68
			Max. Torque	8			1.02
L32	12.243 - 7.243	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.01	0.00	1.85
			Max. Mx	8	-35.03	-2363.56	0.41
			Max. My	2	-35.03	0.00	2373.23
			Max. Vy	8	23.39	-2363.56	0.41
			Max. Vx	2	-23.46	0.00	2373.23
			Max. Torque	8			1.02
L33	7.243 - 2.243	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.33	0.00	1.85
			Max. Mx	8	-36.15	-2481.07	0.41
			Max. My	2	-36.15	0.00	2491.12
			Max. Vy	8	23.65	-2481.07	0.41
			Max. Vx	2	-23.73	0.00	2491.12
			Max. Torque	8			1.02
L34	2.243 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.91	0.00	1.85
			Max. Mx	8	-36.66	-2534.22	0.41
			Max. My	2	-36.66	0.00	2544.43
			Max. Vy	8	23.77	-2534.22	0.41
			Max. Vx	2	-23.85	0.00	2544.43
			Max. Torque	8			1.02

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	59.91	0.00	7.37
	Max. H_x	21	27.50	23.75	0.00
	Max. H_z	2	36.67	0.00	23.83
	Max. M_x	2	2544.43	0.00	23.83
	Max. M_z	8	2534.22	-23.75	0.00
	Max. Torsion	8	1.02	-23.75	0.00
	Min. Vert	11	27.50	-20.57	-11.91
	Min. H_x	9	27.50	-23.75	0.00
	Min. H_z	14	36.67	0.00	-23.83
	Min. M_x	14	-2543.57	0.00	-23.83
	Min. M_z	20	-2534.22	23.75	0.00
	Min. Torsion	20	-1.02	23.75	0.00

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	30.56	0.00	0.00	-0.32	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	36.67	0.00	-23.83	-2544.43	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	27.50	0.00	-23.83	-2505.50	0.00	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	36.67	11.88	-20.63	-2203.61	-1267.10	-0.51
0.9 Dead+1.0 Wind 30 deg - No Ice	27.50	11.88	-20.63	-2169.87	-1247.76	-0.50

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 60 deg - No Ice	36.67	20.57	-11.91	-1272.44	-2194.69	-0.88
0.9 Dead+1.0 Wind 60 deg - No Ice	27.50	20.57	-11.91	-1252.91	-2161.21	-0.87
1.2 Dead+1.0 Wind 90 deg - No Ice	36.67	23.75	0.00	-0.41	-2534.22	-1.02
0.9 Dead+1.0 Wind 90 deg - No Ice	27.50	23.75	-0.00	-0.30	-2495.55	-1.01
1.2 Dead+1.0 Wind 120 deg - No Ice	36.67	20.57	11.91	1271.60	-2194.68	-0.88
0.9 Dead+1.0 Wind 120 deg - No Ice	27.50	20.57	11.91	1252.31	-2161.20	-0.88
1.2 Dead+1.0 Wind 150 deg - No Ice	36.67	11.88	20.63	2202.76	-1267.08	-0.51
0.9 Dead+1.0 Wind 150 deg - No Ice	27.50	11.88	20.63	2169.26	-1247.76	-0.51
1.2 Dead+1.0 Wind 180 deg - No Ice	36.67	0.00	23.83	2543.57	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	27.50	0.00	23.83	2504.88	0.00	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	36.67	-11.88	20.63	2202.76	1267.08	0.51
0.9 Dead+1.0 Wind 210 deg - No Ice	27.50	-11.88	20.63	2169.26	1247.76	0.51
1.2 Dead+1.0 Wind 240 deg - No Ice	36.67	-20.57	11.91	1271.60	2194.68	0.88
0.9 Dead+1.0 Wind 240 deg - No Ice	27.50	-20.57	11.91	1252.31	2161.20	0.88
1.2 Dead+1.0 Wind 270 deg - No Ice	36.67	-23.75	0.00	-0.41	2534.22	1.02
0.9 Dead+1.0 Wind 270 deg - No Ice	27.50	-23.75	-0.00	-0.30	2495.55	1.01
1.2 Dead+1.0 Wind 300 deg - No Ice	36.67	-20.57	-11.91	-1272.44	2194.69	0.88
0.9 Dead+1.0 Wind 300 deg - No Ice	27.50	-20.57	-11.91	-1252.91	2161.21	0.87
1.2 Dead+1.0 Wind 330 deg - No Ice	36.67	-11.88	-20.63	-2203.61	1267.10	0.51
0.9 Dead+1.0 Wind 330 deg - No Ice	27.50	-11.88	-20.63	-2169.87	1247.76	0.50
1.2 Dead+1.0 Ice+1.0 Temp	59.91	0.00	-0.00	-1.85	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	59.91	0.00	-7.37	-831.40	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	59.91	3.68	-6.38	-720.28	-413.69	-0.15
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	59.91	6.37	-3.68	-416.70	-716.53	-0.26
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	59.91	7.35	-0.00	-2.01	-827.37	-0.30
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	59.91	6.37	3.68	412.68	-716.53	-0.26
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	59.91	3.68	6.38	716.26	-413.69	-0.15
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	59.91	0.00	7.37	827.37	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	59.91	-3.68	6.38	716.26	413.69	0.15
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	59.91	-6.37	3.68	412.68	716.53	0.26
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	59.91	-7.35	-0.00	-2.01	827.37	0.30
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	59.91	-6.37	-3.68	-416.70	716.53	0.26
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	59.91	-3.68	-6.38	-720.28	413.69	0.15
Dead+Wind 0 deg - Service	30.56	0.00	-5.71	-604.75	0.00	0.00
Dead+Wind 30 deg - Service	30.56	2.84	-4.94	-523.77	-301.03	-0.13
Dead+Wind 60 deg - Service	30.56	4.93	-2.85	-302.55	-521.40	-0.22
Dead+Wind 90 deg - Service	30.56	5.69	0.00	-0.35	-602.06	-0.25

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 120 deg - Service	30.56	4.93	2.85	301.84	-521.40	-0.22
Dead+Wind 150 deg - Service	30.56	2.84	4.94	523.07	-301.03	-0.13
Dead+Wind 180 deg - Service	30.56	0.00	5.71	604.04	0.00	0.00
Dead+Wind 210 deg - Service	30.56	-2.84	4.94	523.07	301.03	0.13
Dead+Wind 240 deg - Service	30.56	-4.93	2.85	301.84	521.40	0.22
Dead+Wind 270 deg - Service	30.56	-5.69	0.00	-0.35	602.06	0.25
Dead+Wind 300 deg - Service	30.56	-4.93	-2.85	-302.55	521.40	0.22
Dead+Wind 330 deg - Service	30.56	-2.84	-4.94	-523.77	301.03	0.13

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-30.56	0.00	0.00	30.56	0.00	0.000%
2	0.00	-36.67	-23.83	0.00	36.67	23.83	0.000%
3	0.00	-27.50	-23.83	0.00	27.50	23.83	0.000%
4	11.88	-36.67	-20.63	-11.88	36.67	20.63	0.000%
5	11.88	-27.50	-20.63	-11.88	27.50	20.63	0.000%
6	20.57	-36.67	-11.91	-20.57	36.67	11.91	0.000%
7	20.57	-27.50	-11.91	-20.57	27.50	11.91	0.000%
8	23.75	-36.67	0.00	-23.75	36.67	0.00	0.000%
9	23.75	-27.50	0.00	-23.75	27.50	0.00	0.000%
10	20.57	-36.67	11.91	-20.57	36.67	-11.91	0.000%
11	20.57	-27.50	11.91	-20.57	27.50	-11.91	0.000%
12	11.88	-36.67	20.63	-11.88	36.67	-20.63	0.000%
13	11.88	-27.50	20.63	-11.88	27.50	-20.63	0.000%
14	0.00	-36.67	23.83	0.00	36.67	-23.83	0.000%
15	0.00	-27.50	23.83	0.00	27.50	-23.83	0.000%
16	-11.88	-36.67	20.63	11.88	36.67	-20.63	0.000%
17	-11.88	-27.50	20.63	11.88	27.50	-20.63	0.000%
18	-20.57	-36.67	11.91	20.57	36.67	-11.91	0.000%
19	-20.57	-27.50	11.91	20.57	27.50	-11.91	0.000%
20	-23.75	-36.67	0.00	23.75	36.67	0.00	0.000%
21	-23.75	-27.50	0.00	23.75	27.50	0.00	0.000%
22	-20.57	-36.67	-11.91	20.57	36.67	11.91	0.000%
23	-20.57	-27.50	-11.91	20.57	27.50	11.91	0.000%
24	-11.88	-36.67	-20.63	11.88	36.67	20.63	0.000%
25	-11.88	-27.50	-20.63	11.88	27.50	20.63	0.000%
26	0.00	-59.91	0.00	0.00	59.91	0.00	0.000%
27	0.00	-59.91	-7.37	0.00	59.91	7.37	0.000%
28	3.68	-59.91	-6.38	-3.68	59.91	6.38	0.000%
29	6.37	-59.91	-3.68	-6.37	59.91	3.68	0.000%
30	7.35	-59.91	0.00	-7.35	59.91	0.00	0.000%
31	6.37	-59.91	3.68	-6.37	59.91	-3.68	0.000%
32	3.68	-59.91	6.38	-3.68	59.91	-6.38	0.000%
33	0.00	-59.91	7.37	0.00	59.91	-7.37	0.000%
34	-3.68	-59.91	6.38	3.68	59.91	-6.38	0.000%
35	-6.37	-59.91	3.68	6.37	59.91	-3.68	0.000%
36	-7.35	-59.91	0.00	7.35	59.91	0.00	0.000%
37	-6.37	-59.91	-3.68	6.37	59.91	3.68	0.000%
38	-3.68	-59.91	-6.38	3.68	59.91	6.38	0.000%
39	0.00	-30.56	-5.71	0.00	30.56	5.71	0.000%
40	2.84	-30.56	-4.94	-2.84	30.56	4.94	0.000%
41	4.93	-30.56	-2.85	-4.93	30.56	2.85	0.000%
42	5.69	-30.56	0.00	-5.69	30.56	0.00	0.000%
43	4.93	-30.56	2.85	-4.93	30.56	-2.85	0.000%
44	2.84	-30.56	4.94	-2.84	30.56	-4.94	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
45	0.00	-30.56	5.71	0.00	30.56	-5.71	0.000%
46	-2.84	-30.56	4.94	2.84	30.56	-4.94	0.000%
47	-4.93	-30.56	2.85	4.93	30.56	-2.85	0.000%
48	-5.69	-30.56	0.00	5.69	30.56	0.00	0.000%
49	-4.93	-30.56	-2.85	4.93	30.56	2.85	0.000%
50	-2.84	-30.56	-4.94	2.84	30.56	4.94	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00030358
3	Yes	5	0.00000001	0.00010593
4	Yes	7	0.00000001	0.00019633
5	Yes	6	0.00000001	0.00094805
6	Yes	7	0.00000001	0.00020146
7	Yes	6	0.00000001	0.00097440
8	Yes	6	0.00000001	0.00009772
9	Yes	5	0.00000001	0.00066552
10	Yes	7	0.00000001	0.00019473
11	Yes	6	0.00000001	0.00094042
12	Yes	7	0.00000001	0.00020000
13	Yes	6	0.00000001	0.00096693
14	Yes	5	0.00000001	0.00030346
15	Yes	5	0.00000001	0.00010591
16	Yes	7	0.00000001	0.00020000
17	Yes	6	0.00000001	0.00096692
18	Yes	7	0.00000001	0.00019472
19	Yes	6	0.00000001	0.00094042
20	Yes	6	0.00000001	0.00009772
21	Yes	5	0.00000001	0.00066552
22	Yes	7	0.00000001	0.00020146
23	Yes	6	0.00000001	0.00097440
24	Yes	7	0.00000001	0.00019633
25	Yes	6	0.00000001	0.00094805
26	Yes	4	0.00000001	0.00043497
27	Yes	7	0.00000001	0.00031397
28	Yes	7	0.00000001	0.00052178
29	Yes	7	0.00000001	0.00052782
30	Yes	7	0.00000001	0.00031233
31	Yes	7	0.00000001	0.00051331
32	Yes	7	0.00000001	0.00051977
33	Yes	7	0.00000001	0.00031088
34	Yes	7	0.00000001	0.00051977
35	Yes	7	0.00000001	0.00051331
36	Yes	7	0.00000001	0.00031233
37	Yes	7	0.00000001	0.00052782
38	Yes	7	0.00000001	0.00052178
39	Yes	5	0.00000001	0.00006704
40	Yes	5	0.00000001	0.00073607
41	Yes	5	0.00000001	0.00079138
42	Yes	5	0.00000001	0.00010981
43	Yes	5	0.00000001	0.00071879
44	Yes	5	0.00000001	0.00077290
45	Yes	5	0.00000001	0.00006688
46	Yes	5	0.00000001	0.00077290
47	Yes	5	0.00000001	0.00071879
48	Yes	5	0.00000001	0.00010981
49	Yes	5	0.00000001	0.00079138
50	Yes	5	0.00000001	0.00073607

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 144	29.394	39	1.6527	0.0035
L2	144 - 139	27.665	39	1.6498	0.0034
L3	139 - 134	25.941	39	1.6413	0.0032
L4	134 - 129	24.230	39	1.6259	0.0031
L5	129 - 123.612	22.539	39	1.6025	0.0029
L6	127.388 - 122.388	22.000	39	1.5929	0.0028
L7	122.388 - 117.388	20.342	39	1.5687	0.0027
L8	117.388 - 112.388	18.724	39	1.5198	0.0024
L9	112.388 - 107.388	17.163	39	1.4595	0.0021
L10	107.388 - 102.388	15.671	39	1.3896	0.0018
L11	102.388 - 98.5	14.256	39	1.3117	0.0015
L12	98.5 - 98.25	13.214	39	1.2465	0.0014
L13	98.25 - 93.25	13.149	39	1.2441	0.0014
L14	93.25 - 88.25	11.872	39	1.1941	0.0012
L15	88.25 - 79.128	10.650	39	1.1405	0.0011
L16	83.873 - 78.128	9.626	39	1.0920	0.0010
L17	78.128 - 73.128	8.336	39	1.0451	0.0010
L18	73.128 - 68.128	7.283	39	0.9655	0.0008
L19	68.128 - 63.128	6.314	39	0.8845	0.0007
L20	63.128 - 58.128	5.431	39	0.8026	0.0006
L21	58.128 - 57.25	4.634	39	0.7201	0.0005
L22	57.25 - 57	4.503	39	0.7056	0.0005
L23	57 - 52	4.466	39	0.7031	0.0005
L24	52 - 43.243	3.756	39	0.6521	0.0005
L25	48.76 - 42.243	3.325	39	0.6190	0.0004
L26	42.243 - 37.243	2.507	39	0.5726	0.0004
L27	37.243 - 32.243	1.943	39	0.5032	0.0003
L28	32.243 - 27.243	1.453	39	0.4341	0.0003
L29	27.243 - 22.243	1.034	39	0.3654	0.0002
L30	22.243 - 17.243	0.687	39	0.2971	0.0002
L31	17.243 - 12.243	0.412	39	0.2293	0.0001
L32	12.243 - 7.243	0.207	39	0.1620	0.0001
L33	7.243 - 2.243	0.072	39	0.0954	0.0001
L34	2.243 - 0	0.007	39	0.0294	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.00	AM-X-CD-16-65-00T-RET w/ Mount Pipe	39	28.702	1.6519	0.0035	48169
138.00	APXVAARR24_43-U-NA20 w/ Mount Pipe	39	25.598	1.6387	0.0032	22140
130.00	(4) NHH-65B-R2B w/ Mount Pipe	39	22.875	1.6082	0.0030	12009
120.00	MX08FRO665-21 w/ Mount Pipe	39	19.563	1.5483	0.0025	6105

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 144	123.622	2	6.9554	0.0140

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L2	144 - 139	116.360	2	6.9439	0.0136
L3	139 - 134	109.123	2	6.9086	0.0130
L4	134 - 129	101.936	2	6.8444	0.0124
L5	129 - 123.612	94.833	2	6.7470	0.0118
L6	127.388 - 122.388	92.567	2	6.7069	0.0114
L7	122.388 - 117.388	85.601	2	6.6056	0.0107
L8	117.388 - 112.388	78.802	2	6.4007	0.0095
L9	112.388 - 107.388	72.241	2	6.1478	0.0083
L10	107.388 - 102.388	65.965	2	5.8538	0.0072
L11	102.388 - 98.5	60.014	2	5.5261	0.0062
L12	98.5 - 98.25	55.631	2	5.2520	0.0055
L13	98.25 - 93.25	55.357	2	5.2420	0.0054
L14	93.25 - 88.25	49.984	2	5.0312	0.0050
L15	88.25 - 79.128	44.839	2	4.8058	0.0045
L16	83.873 - 78.128	40.531	2	4.6013	0.0042
L17	78.128 - 73.128	35.099	2	4.4037	0.0038
L18	73.128 - 68.128	30.667	2	4.0681	0.0034
L19	68.128 - 63.128	26.588	2	3.7269	0.0029
L20	63.128 - 58.128	22.868	2	3.3816	0.0025
L21	58.128 - 57.25	19.511	2	3.0335	0.0022
L22	57.25 - 57	18.959	2	2.9725	0.0021
L23	57 - 52	18.803	2	2.9620	0.0021
L24	52 - 43.243	15.815	2	2.7470	0.0019
L25	48.76 - 42.243	13.999	2	2.6075	0.0017
L26	42.243 - 37.243	10.554	2	2.4120	0.0016
L27	37.243 - 32.243	8.182	2	2.1196	0.0013
L28	32.243 - 27.243	6.116	2	1.8283	0.0011
L29	27.243 - 22.243	4.353	2	1.5386	0.0009
L30	22.243 - 17.243	2.893	2	1.2508	0.0007
L31	17.243 - 12.243	1.733	2	0.9651	0.0005
L32	12.243 - 7.243	0.871	2	0.6819	0.0004
L33	7.243 - 2.243	0.304	2	0.4013	0.0002
L34	2.243 - 0	0.029	2	0.1236	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.00	AM-X-CD-16-65-00T-RET w/ Mount Pipe	2	120.716	6.9523	0.0138	12073
138.00	APXVAARR24_43-U-NA20 w/ Mount Pipe	2	107.680	6.8980	0.0128	5476
130.00	(4) NHH-65B-R2B w/ Mount Pipe	2	96.245	6.7705	0.0120	2954
120.00	MX08FRO665-21 w/ Mount Pipe	2	82.328	6.5201	0.0102	1492

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	149 - 144 (1)	TP22.426x21.5x0.188	5.00	0.00	0.0	13.235	-1.27	774.23	0.002
L2	144 - 139 (2)	TP23.352x22.426x0.188	5.00	0.00	0.0	13.786	-1.54	806.47	0.002
L3	139 - 134 (3)	TP24.278x23.352x0.188	5.00	0.00	0.0	14.337	-3.29	838.71	0.004
L4	134 - 129 (4)	TP25.204x24.278x0.188	5.00	0.00	0.0	14.888	-6.88	870.95	0.008
L5	129 - 123.612 (5)	TP26.202x25.204x0.188	5.39	0.00	0.0	15.066	-7.05	881.35	0.008
L6	123.612 - 122.388 (6)	TP26.043x25.128x0.188	5.00	0.00	0.0	15.387	-7.81	900.15	0.009
L7	122.388 - 117.388 (7)	TP26.958x26.043x0.188	5.00	0.00	0.0	15.932	-11.23	932.01	0.012
L8	117.388 - 112.388 (8)	TP27.873x26.958x0.188	5.00	0.00	0.0	16.476	-11.84	963.86	0.012
L9	112.388 - 107.388 (9)	TP28.788x27.873x0.188	5.00	0.00	0.0	17.021	-12.47	995.72	0.013
L10	107.388 - 102.388 (10)	TP29.703x28.788x0.188	5.00	0.00	0.0	17.565	-13.13	1027.58	0.013
L11	102.388 - 98.5 (11)	TP30.415x29.703x0.188	3.89	0.00	0.0	17.989	-13.65	1052.35	0.013
L12	98.5 - 98.25 (12)	TP30.46x30.415x0.344	0.25	0.00	0.0	32.859	-13.71	1922.25	0.007
L13	98.25 - 93.25 (13)	TP31.375x30.46x0.338	5.00	0.00	0.0	33.249	-14.63	1945.04	0.008
L14	93.25 - 88.25 (14)	TP32.29x31.375x0.331	5.00	0.00	0.0	33.601	-15.57	1965.68	0.008
L15	88.25 - 79.128 (15)	TP33.96x32.29x0.331	9.12	0.00	0.0	34.444	-16.40	2014.95	0.008
L16	79.128 - 78.128 (16)	TP33.763x32.716x0.25	5.75	0.00	0.0	26.593	-17.98	1555.68	0.012
L17	78.128 - 73.128 (17)	TP34.675x33.763x0.25	5.00	0.00	0.0	27.316	-18.86	1597.98	0.012
L18	73.128 - 68.128 (18)	TP35.586x34.675x0.25	5.00	0.00	0.0	28.039	-19.76	1640.28	0.012
L19	68.128 - 63.128 (19)	TP36.497x35.586x0.25	5.00	0.00	0.0	28.762	-20.68	1682.58	0.012
L20	63.128 - 58.128 (20)	TP37.408x36.497x0.25	5.00	0.00	0.0	29.485	-21.62	1724.88	0.013
L21	58.128 - 57.25 (21)	TP37.568x37.408x0.25	0.88	0.00	0.0	29.612	-21.79	1732.31	0.013
L22	57.25 - 57 (22)	TP37.614x37.568x0.419	0.25	0.00	0.0	49.437	-21.87	2892.04	0.008
L23	57 - 52 (23)	TP38.525x37.614x0.413	5.00	0.00	0.0	49.900	-23.14	2919.15	0.008
L24	52 - 43.243 (24)	TP40.121x38.525x0.413	8.76	0.00	0.0	50.673	-23.99	2964.37	0.008
L25	43.243 - 42.243 (25)	TP39.803x38.616x0.313	6.52	0.00	0.0	39.170	-26.50	2291.43	0.012
L26	42.243 - 37.243 (26)	TP40.714x39.803x0.313	5.00	0.00	0.0	40.073	-27.66	2344.29	0.012
L27	37.243 - 32.243 (27)	TP41.625x40.714x0.313	5.00	0.00	0.0	40.977	-28.84	2397.15	0.012
L28	32.243 - 27.243 (28)	TP42.536x41.625x0.313	5.00	0.00	0.0	41.881	-30.04	2450.02	0.012
L29	27.243 - 22.243 (29)	TP43.447x42.536x0.313	5.00	0.00	0.0	42.784	-31.26	2502.88	0.012
L30	22.243 - 17.243 (30)	TP44.358x43.447x0.313	5.00	0.00	0.0	43.688	-32.51	2555.74	0.013
L31	17.243 - 12.243 (31)	TP45.269x44.358x0.313	5.00	0.00	0.0	44.591	-33.77	2608.60	0.013
L32	12.243 - 7.243 (32)	TP46.18x45.269x0.313	5.00	0.00	0.0	45.495	-35.03	2661.46	0.013
L33	7.243 - 2.243 (33)	TP47.091x46.18x0.313	5.00	0.00	0.0	46.399	-36.15	2714.33	0.013
L34	2.243 - 0 (34)	TP47.5x47.091x0.313	2.24	0.00	0.0	46.804	-36.66	2738.04	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	149 - 144 (1)	TP22.426x21.5x0.188	14.75	422.86	0.035	0.00	422.86	0.000
L2	144 - 139 (2)	TP23.352x22.426x0.188	29.45	452.93	0.065	0.00	452.93	0.000
L3	139 - 134 (3)	TP24.278x23.352x0.188	60.45	483.48	0.125	0.00	483.48	0.000
L4	134 - 129 (4)	TP25.204x24.278x0.188	96.39	514.46	0.187	0.00	514.46	0.000
L5	129 - 123.612 (5)	TP26.202x25.204x0.188	113.33	524.53	0.216	0.00	524.53	0.000
L6	123.612 - 122.388 (6)	TP26.043x25.128x0.188	167.38	542.84	0.308	0.00	542.84	0.000
L7	122.388 - 117.388 (7)	TP26.958x26.043x0.188	232.72	574.11	0.405	0.00	574.11	0.000
L8	117.388 - 112.388 (8)	TP27.873x26.958x0.188	308.25	605.63	0.509	0.00	605.63	0.000
L9	112.388 - 107.388 (9)	TP28.788x27.873x0.188	385.76	637.35	0.605	0.00	637.35	0.000
L10	107.388 - 102.388 (10)	TP29.703x28.788x0.188	465.26	669.22	0.695	0.00	669.22	0.000
L11	102.388 - 98.5 (11)	TP30.415x29.703x0.188	528.42	694.06	0.761	0.00	694.06	0.000
L12	98.5 - 98.25 (12)	TP30.46x30.415x0.344	532.52	1506.55	0.353	0.00	1506.55	0.000
L13	98.25 - 93.25 (13)	TP31.375x30.46x0.338	615.75	1571.88	0.392	0.00	1571.88	0.000
L14	93.25 - 88.25 (14)	TP32.29x31.375x0.331	701.21	1630.72	0.430	0.00	1630.72	0.000
L15	88.25 - 79.128 (15)	TP33.96x32.29x0.331	777.86	1703.49	0.457	0.00	1703.49	0.000
L16	79.128 - 78.128 (16)	TP33.763x32.716x0.25	881.28	1228.92	0.717	0.00	1228.92	0.000
L17	78.128 - 73.128 (17)	TP34.675x33.763x0.25	973.66	1283.78	0.758	0.00	1283.78	0.000
L18	73.128 - 68.128 (18)	TP35.586x34.675x0.25	1068.01	1339.04	0.798	0.00	1339.04	0.000
L19	68.128 - 63.128 (19)	TP36.497x35.586x0.25	1164.29	1394.68	0.835	0.00	1394.68	0.000
L20	63.128 - 58.128 (20)	TP37.408x36.497x0.25	1262.47	1450.61	0.870	0.00	1450.61	0.000
L21	58.128 - 57.25 (21)	TP37.568x37.408x0.25	1279.91	1460.46	0.876	0.00	1460.46	0.000
L22	57.25 - 57 (22)	TP37.614x37.568x0.419	1284.89	2799.79	0.459	0.00	2799.79	0.000
L23	57 - 52 (23)	TP38.525x37.614x0.413	1385.55	2896.98	0.478	0.00	2896.98	0.000
L24	52 - 43.243 (24)	TP40.121x38.525x0.413	1451.94	2987.93	0.486	0.00	2987.93	0.000
L25	43.243 - 42.243 (25)	TP39.803x38.616x0.313	1588.51	2177.53	0.730	0.00	2177.53	0.000
L26	42.243 - 37.243 (26)	TP40.714x39.803x0.313	1695.71	2261.48	0.750	0.00	2261.48	0.000
L27	37.243 - 32.243 (27)	TP41.625x40.714x0.313	1804.68	2346.11	0.769	0.00	2346.11	0.000
L28	32.243 - 27.243 (28)	TP42.536x41.625x0.313	1915.35	2431.36	0.788	0.00	2431.36	0.000
L29	27.243 - 22.243 (29)	TP43.447x42.536x0.313	2027.64	2517.18	0.806	0.00	2517.18	0.000
L30	22.243 - 17.243 (30)	TP44.358x43.447x0.313	2141.46	2603.52	0.823	0.00	2603.52	0.000
L31	17.243 - 12.243 (31)	TP45.269x44.358x0.313	2256.68	2690.31	0.839	0.00	2690.31	0.000
L32	12.243 - 7.243 (32)	TP46.18x45.269x0.313	2373.23	2777.50	0.854	0.00	2777.50	0.000
L33	7.243 - 2.243 (33)	TP47.091x46.18x0.313	2491.12	2865.04	0.869	0.00	2865.04	0.000
L34	2.243 - 0 (34)	TP47.5x47.091x0.313	2544.43	2904.42	0.876	0.00	2904.42	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	149 - 144 (1)	TP22.426x21.5x0.188	2.75	232.27	0.012	0.00	452.35	0.000
L2	144 - 139 (2)	TP23.352x22.426x0.188	3.13	241.94	0.013	0.00	490.81	0.000
L3	139 - 134 (3)	TP24.278x23.352x0.188	6.07	251.61	0.024	0.00	530.84	0.000
L4	134 - 129 (4)	TP25.204x24.278x0.188	10.45	261.29	0.040	0.00	572.43	0.000
L5	129 - 123.612 (5)	TP26.202x25.204x0.188	10.58	264.40	0.040	0.00	586.18	0.000
L6	123.612 - 122.388 (6)	TP26.043x25.128x0.188	11.03	270.04	0.041	0.00	611.46	0.000
L7	122.388 - 117.388 (7)	TP26.958x26.043x0.188	14.91	279.60	0.053	0.00	655.50	0.000
L8	117.388 - 112.388 (8)	TP27.873x26.958x0.188	15.31	289.16	0.053	0.00	701.08	0.000
L9	112.388 - 107.388 (9)	TP28.788x27.873x0.188	15.71	298.72	0.053	0.00	748.19	0.000
L10	107.388 - 102.388 (10)	TP29.703x28.788x0.188	16.10	308.27	0.052	0.00	796.83	0.000
L11	102.388 - 98.5 (11)	TP30.415x29.703x0.188	16.41	315.70	0.052	0.00	835.71	0.000
L12	98.5 - 98.25 (12)	TP30.46x30.415x0.344	16.43	576.68	0.028	0.00	1520.96	0.000
L13	98.25 - 93.25 (13)	TP31.375x30.46x0.338	16.88	583.51	0.029	0.00	1586.07	0.000
L14	93.25 - 88.25 (14)	TP32.29x31.375x0.331	17.32	589.71	0.029	0.00	1650.47	0.000
L15	88.25 - 79.128 (15)	TP33.96x32.29x0.331	17.71	604.49	0.029	0.00	1734.25	0.000
L16	79.128 - 78.128 (16)	TP33.763x32.716x0.25	18.29	466.70	0.039	0.00	1369.75	0.000
L17	78.128 - 73.128 (17)	TP34.675x33.763x0.25	18.69	479.39	0.039	0.00	1445.25	0.000
L18	73.128 - 68.128 (18)	TP35.586x34.675x0.25	19.08	492.08	0.039	0.00	1522.78	0.000
L19	68.128 - 63.128 (19)	TP36.497x35.586x0.25	19.46	504.77	0.039	0.00	1602.33	0.000
L20	63.128 - 58.128 (20)	TP37.408x36.497x0.25	19.84	517.47	0.038	0.00	1683.90	0.000
L21	58.128 - 57.25 (21)	TP37.568x37.408x0.25	19.90	519.69	0.038	0.00	1698.43	0.000
L22	57.25 - 57 (22)	TP37.614x37.568x0.419	19.92	867.61	0.023	0.00	2826.13	0.000
L23	57 - 52 (23)	TP38.525x37.614x0.413	20.36	875.74	0.023	0.00	2922.98	0.000
L24	52 - 43.243 (24)	TP40.121x38.525x0.413	20.64	889.31	0.023	0.00	3014.26	0.000
L25	43.243 - 42.243 (25)	TP39.803x38.616x0.313	21.27	687.43	0.031	0.00	2377.39	0.000
L26	42.243 - 37.243 (26)	TP40.714x39.803x0.313	21.63	703.29	0.031	0.00	2488.35	0.000
L27	37.243 - 32.243 (27)	TP41.625x40.714x0.313	21.98	719.15	0.031	0.00	2601.83	0.000
L28	32.243 - 27.243 (28)	TP42.536x41.625x0.313	22.32	735.01	0.030	0.00	2717.85	0.000
L29	27.243 - 22.243 (29)	TP43.447x42.536x0.313	22.63	750.86	0.030	0.00	2836.40	0.000
L30	22.243 - 17.243 (30)	TP44.358x43.447x0.313	22.93	766.72	0.030	0.00	2957.47	0.000
L31	17.243 - 12.243 (31)	TP45.269x44.358x0.313	23.19	782.58	0.030	0.00	3081.08	0.000
L32	12.243 - 7.243 (32)	TP46.18x45.269x0.313	23.46	798.44	0.029	0.00	3207.22	0.000
L33	7.243 - 2.243 (33)	TP47.091x46.18x0.313	23.73	814.30	0.029	0.00	3335.89	0.000
L34	2.243 - 0 (34)	TP47.5x47.091x0.313	23.85	821.41	0.029	0.00	3394.44	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	149 - 144 (1)	0.002	0.035	0.000	0.012	0.000	0.037	1.050	4.8.2
L2	144 - 139 (2)	0.002	0.065	0.000	0.013	0.000	0.067	1.050	4.8.2
L3	139 - 134 (3)	0.004	0.125	0.000	0.024	0.000	0.130	1.050	4.8.2
L4	134 - 129 (4)	0.008	0.187	0.000	0.040	0.000	0.197	1.050	4.8.2
L5	129 - 123.612 (5)	0.008	0.216	0.000	0.040	0.000	0.226	1.050	4.8.2
L6	123.612 - 122.388 (6)	0.009	0.308	0.000	0.041	0.000	0.319	1.050	4.8.2
L7	122.388 - 117.388 (7)	0.012	0.405	0.000	0.053	0.000	0.420	1.050	4.8.2
L8	117.388 - 112.388 (8)	0.012	0.509	0.000	0.053	0.000	0.524	1.050	4.8.2
L9	112.388 - 107.388 (9)	0.013	0.605	0.000	0.053	0.000	0.621	1.050	4.8.2
L10	107.388 - 102.388 (10)	0.013	0.695	0.000	0.052	0.000	0.711	1.050	4.8.2
L11	102.388 - 98.5 (11)	0.013	0.761	0.000	0.052	0.000	0.777	1.050	4.8.2
L12	98.5 - 98.25 (12)	0.007	0.353	0.000	0.028	0.000	0.361	1.050	4.8.2
L13	98.25 - 93.25 (13)	0.008	0.392	0.000	0.029	0.000	0.400	1.050	4.8.2
L14	93.25 - 88.25 (14)	0.008	0.430	0.000	0.029	0.000	0.439	1.050	4.8.2
L15	88.25 - 79.128 (15)	0.008	0.457	0.000	0.029	0.000	0.466	1.050	4.8.2
L16	79.128 - 78.128 (16)	0.012	0.717	0.000	0.039	0.000	0.730	1.050	4.8.2
L17	78.128 - 73.128 (17)	0.012	0.758	0.000	0.039	0.000	0.772	1.050	4.8.2
L18	73.128 - 68.128 (18)	0.012	0.798	0.000	0.039	0.000	0.811	1.050	4.8.2
L19	68.128 - 63.128 (19)	0.012	0.835	0.000	0.039	0.000	0.849	1.050	4.8.2
L20	63.128 - 58.128 (20)	0.013	0.870	0.000	0.038	0.000	0.884	1.050	4.8.2
L21	58.128 - 57.25 (21)	0.013	0.876	0.000	0.038	0.000	0.890	1.050	4.8.2
L22	57.25 - 57 (22)	0.008	0.459	0.000	0.023	0.000	0.467	1.050	4.8.2
L23	57 - 52 (23)	0.008	0.478	0.000	0.023	0.000	0.487	1.050	4.8.2
L24	52 - 43.243 (24)	0.008	0.486	0.000	0.023	0.000	0.495	1.050	4.8.2
L25	43.243 - 42.243 (25)	0.012	0.730	0.000	0.031	0.000	0.742	1.050	4.8.2
L26	42.243 - 37.243 (26)	0.012	0.750	0.000	0.031	0.000	0.763	1.050	4.8.2
L27	37.243 - 32.243 (27)	0.012	0.769	0.000	0.031	0.000	0.782	1.050	4.8.2
L28	32.243 - 27.243 (28)	0.012	0.788	0.000	0.030	0.000	0.801	1.050	4.8.2
L29	27.243 - 22.243 (29)	0.012	0.806	0.000	0.030	0.000	0.819	1.050	4.8.2
L30	22.243 - 17.243 (30)	0.013	0.823	0.000	0.030	0.000	0.836	1.050	4.8.2
L31	17.243 - 12.243 (31)	0.013	0.839	0.000	0.030	0.000	0.853	1.050	4.8.2
L32	12.243 - 7.243 (32)	0.013	0.854	0.000	0.029	0.000	0.868	1.050	4.8.2
L33	7.243 - 2.243 (33)	0.013	0.869	0.000	0.029	0.000	0.884	1.050	4.8.2
L34	2.243 - 0 (34)	0.013	0.876	0.000	0.029	0.000	0.890	1.050	4.8.2

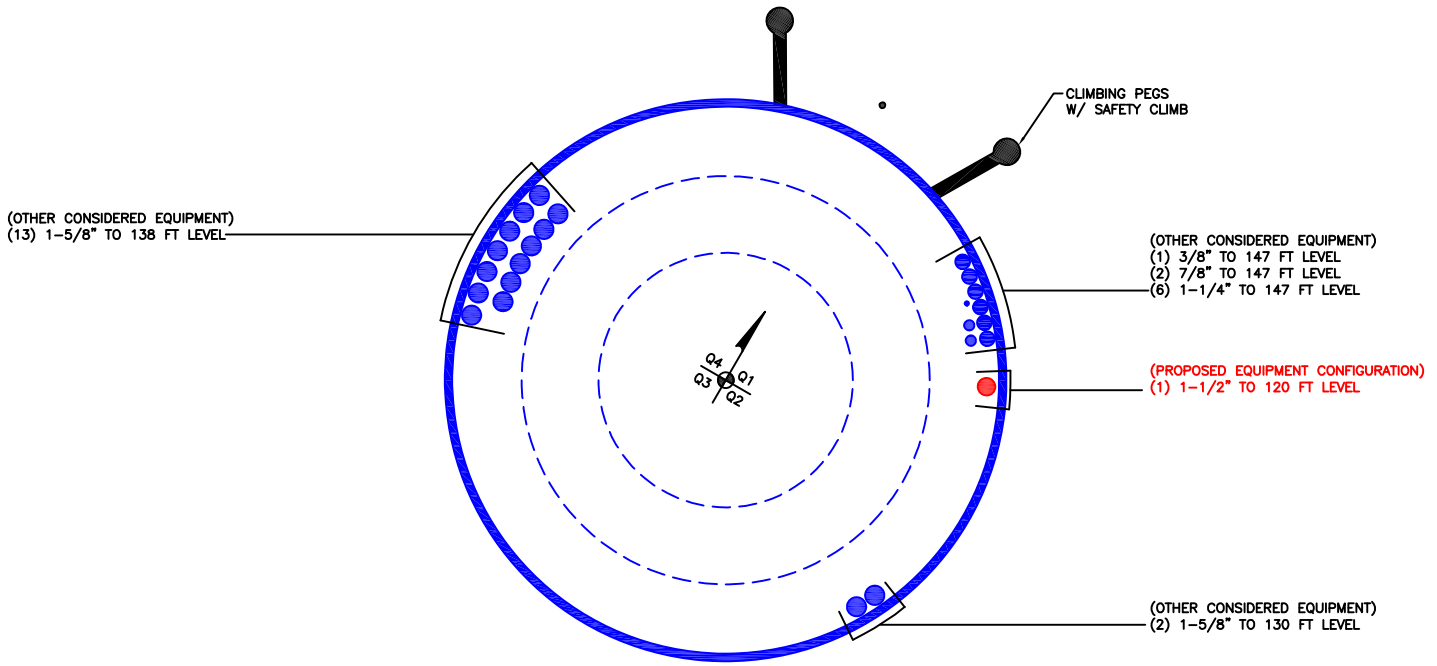
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	149 - 144	Pole	TP22.426x21.5x0.188	1	-1.27	812.94	3.5	Pass
L2	144 - 139	Pole	TP23.352x22.426x0.188	2	-1.54	846.79	6.4	Pass
L3	139 - 134	Pole	TP24.278x23.352x0.188	3	-3.29	880.65	12.3	Pass
L4	134 - 129	Pole	TP25.204x24.278x0.188	4	-6.88	914.50	18.7	Pass
L5	129 - 123.612	Pole	TP26.202x25.204x0.188	5	-7.05	925.41	21.5	Pass
L6	123.612 - 122.388	Pole	TP26.043x25.128x0.188	6	-7.81	945.15	30.3	Pass
L7	122.388 - 117.388	Pole	TP26.958x26.043x0.188	7	-11.23	978.61	40.0	Pass
L8	117.388 - 112.388	Pole	TP27.873x26.958x0.188	8	-11.84	1012.06	49.9	Pass
L9	112.388 - 107.388	Pole	TP28.788x27.873x0.188	9	-12.47	1045.50	59.1	Pass
L10	107.388 - 102.388	Pole	TP29.703x28.788x0.188	10	-13.13	1078.96	67.7	Pass
L11	102.388 - 98.5	Pole	TP30.415x29.703x0.188	11	-13.65	1104.97	74.0	Pass
L12	98.5 - 98.25	Pole	TP30.46x30.415x0.344	12	-13.71	2018.36	34.4	Pass
L13	98.25 - 93.25	Pole	TP31.375x30.46x0.338	13	-14.63	2042.29	38.1	Pass
L14	93.25 - 88.25	Pole	TP32.29x31.375x0.331	14	-15.57	2063.96	41.8	Pass
L15	88.25 - 79.128	Pole	TP33.96x32.29x0.331	15	-16.40	2115.70	44.3	Pass
L16	79.128 - 78.128	Pole	TP33.763x32.716x0.25	16	-17.98	1633.46	69.5	Pass
L17	78.128 - 73.128	Pole	TP34.675x33.763x0.25	17	-18.86	1677.88	73.5	Pass
L18	73.128 - 68.128	Pole	TP35.586x34.675x0.25	18	-19.76	1722.29	77.3	Pass
L19	68.128 - 63.128	Pole	TP36.497x35.586x0.25	19	-20.68	1766.71	80.8	Pass
L20	63.128 - 58.128	Pole	TP37.408x36.497x0.25	20	-21.62	1811.12	84.2	Pass
L21	58.128 - 57.25	Pole	TP37.568x37.408x0.25	21	-21.79	1818.93	84.8	Pass
L22	57.25 - 57	Pole	TP37.614x37.568x0.419	22	-21.87	3036.64	44.5	Pass
L23	57 - 52	Pole	TP38.525x37.614x0.413	23	-23.14	3065.11	46.4	Pass
L24	52 - 43.243	Pole	TP40.121x38.525x0.413	24	-23.99	3112.59	47.1	Pass
L25	43.243 - 42.243	Pole	TP39.803x38.616x0.313	25	-26.50	2406.00	70.7	Pass
L26	42.243 - 37.243	Pole	TP40.714x39.803x0.313	26	-27.66	2461.50	72.6	Pass
L27	37.243 - 32.243	Pole	TP41.625x40.714x0.313	27	-28.84	2517.01	74.5	Pass
L28	32.243 - 27.243	Pole	TP42.536x41.625x0.313	28	-30.04	2572.52	76.3	Pass
L29	27.243 - 22.243	Pole	TP43.447x42.536x0.313	29	-31.26	2628.02	78.0	Pass
L30	22.243 - 17.243	Pole	TP44.358x43.447x0.313	30	-32.51	2683.53	79.6	Pass
L31	17.243 - 12.243	Pole	TP45.269x44.358x0.313	31	-33.77	2739.03	81.2	Pass
L32	12.243 - 7.243	Pole	TP46.18x45.269x0.313	32	-35.03	2794.53	82.7	Pass
L33	7.243 - 2.243	Pole	TP47.091x46.18x0.313	33	-36.15	2850.05	84.2	Pass
L34	2.243 - 0	Pole	TP47.5x47.091x0.313	34	-36.66	2874.94	84.8	Pass
							Summary	
						Pole (L21)	84.8	Pass
						RATING =	**84.8**	**Pass**

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

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(13) 1-5/8" TO 138 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 147 FT LEVEL
(2) 7/8" TO 147 FT LEVEL
(6) 1-1/4" TO 147 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 120 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1-5/8" TO 130 FT LEVEL
Q4
Q1
Q3
Q2

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 842856

Work Order: 2010137

Copyright © 2019 Crown Castle

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	149	25.388	3.776	18	21.5	26.2021	0.1875	Auto	A572-65
2	127.388	48.26	4.745	18	25.13	33.9598	0.1875	Auto	A572-65
3	83.873	40.63	5.517	18	32.72	40.1211	0.25	Auto	A572-65
4	48.76	48.76	0	18	38.62	47.5	0.3125	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	47.25	57.25	plate	CCI-AFP-060100	3																		
2	82.5	98.5	plate	CCI-AFP-045100	3																		
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
2	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	20.000	3.250	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	149 - 144	5		18	21.500	22.426	0.1875	A572-65	1.000
2	144 - 139	5		18	22.426	23.352	0.1875	A572-65	1.000
3	139 - 134	5		18	23.352	24.278	0.1875	A572-65	1.000
4	134 - 129	5		18	24.278	25.204	0.1875	A572-65	1.000
5	129 - 127.388	5.388	3.776	18	25.204	26.202	0.1875	A572-65	1.000
6	127.388 - 122.388	5		18	25.128	26.043	0.1875	A572-65	1.000
7	122.388 - 117.388	5		18	26.043	26.958	0.1875	A572-65	1.000
8	117.388 - 112.388	5		18	26.958	27.873	0.1875	A572-65	1.000
9	112.388 - 107.388	5		18	27.873	28.788	0.1875	A572-65	1.000
10	107.388 - 102.388	5		18	28.788	29.703	0.1875	A572-65	1.000
11	102.388 - 98.5	3.888		18	29.703	30.415	0.1875	A572-65	1.000
12	98.5 - 98.25	0.25		18	30.415	30.460	0.34375	A572-65	0.959
13	98.25 - 93.25	5		18	30.460	31.375	0.3375	A572-65	0.964
14	93.25 - 88.25	5		18	31.375	32.290	0.33125	A572-65	0.970
15	88.25 - 83.873	9.122	4.745	18	32.290	33.960	0.33125	A572-65	0.960
16	83.873 - 78.128	5.745		18	32.716	33.763	0.25	A572-65	1.000
17	78.128 - 73.128	5		18	33.763	34.675	0.25	A572-65	1.000
18	73.128 - 68.128	5		18	34.675	35.586	0.25	A572-65	1.000
19	68.128 - 63.128	5		18	35.586	36.497	0.25	A572-65	1.000
20	63.128 - 58.128	5		18	36.497	37.408	0.25	A572-65	1.000
21	58.128 - 57.25	0.878		18	37.408	37.568	0.25	A572-65	1.000
22	57.25 - 57	0.25		18	37.568	37.614	0.41875	A572-65	0.964
23	57 - 52	5		18	37.614	38.525	0.4125	A572-65	0.969
24	52 - 48.76	8.757	5.517	18	38.525	40.121	0.4125	A572-65	0.964
25	48.76 - 42.243	6.517		18	38.616	39.803	0.3125	A572-65	1.000
26	42.243 - 37.243	5		18	39.803	40.714	0.3125	A572-65	1.000
27	37.243 - 32.243	5		18	40.714	41.625	0.3125	A572-65	1.000
28	32.243 - 27.243	5		18	41.625	42.536	0.3125	A572-65	1.000
29	27.243 - 22.243	5		18	42.536	43.447	0.3125	A572-65	1.000
30	22.243 - 17.243	5		18	43.447	44.358	0.3125	A572-65	1.000
31	17.243 - 12.243	5		18	44.358	45.269	0.3125	A572-65	1.000
32	12.243 - 7.243	5		18	45.269	46.180	0.3125	A572-65	1.000
33	7.243 - 2.243	5		18	46.180	47.091	0.3125	A572-65	1.000
34	2.243 - 0	2.243		18	47.091	47.500	0.3125	A572-65	1.000

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	149 - 144	1.27	14.75	2.75
2	144 - 139	1.54	29.45	3.13
3	139 - 134	3.29	60.45	6.07
4	134 - 129	6.88	96.39	10.45
5	129 - 127.388	7.05	113.33	10.58
6	127.388 - 122.388	7.81	167.38	11.03
7	122.388 - 117.388	11.23	232.72	14.91
8	117.388 - 112.388	11.84	308.25	15.31
9	112.388 - 107.388	12.47	385.76	15.71
10	107.388 - 102.388	13.13	465.26	16.10
11	102.388 - 98.5	13.65	528.42	16.41
12	98.5 - 98.25	13.71	532.53	16.43
13	98.25 - 93.25	14.63	615.75	16.88
14	93.25 - 88.25	15.57	701.21	17.32
15	88.25 - 83.873	16.40	777.86	17.71
16	83.873 - 78.128	17.98	881.28	18.29
17	78.128 - 73.128	18.86	973.66	18.69
18	73.128 - 68.128	19.76	1068.01	19.08
19	68.128 - 63.128	20.68	1164.29	19.46
20	63.128 - 58.128	21.62	1262.48	19.84
21	58.128 - 57.25	21.79	1279.91	19.90
22	57.25 - 57	21.87	1284.89	19.92
23	57 - 52	23.14	1385.55	20.36
24	52 - 48.76	23.99	1451.94	20.64
25	48.76 - 42.243	26.50	1588.51	21.27
26	42.243 - 37.243	27.66	1695.71	21.63
27	37.243 - 32.243	28.84	1804.67	21.98
28	32.243 - 27.243	30.04	1915.35	22.32
29	27.243 - 22.243	31.26	2027.64	22.63
30	22.243 - 17.243	32.51	2141.46	22.93
31	17.243 - 12.243	33.77	2256.68	23.19
32	12.243 - 7.243	35.03	2373.23	23.46
33	7.243 - 2.243	36.15	2491.12	23.73
34	2.243 - 0	36.66	2544.43	23.85

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
149 - 144	Pole	TP22.426x21.5x0.1875	Pole	3.5%	Pass
144 - 139	Pole	TP23.352x22.426x0.1875	Pole	6.4%	Pass
139 - 134	Pole	TP24.278x23.352x0.1875	Pole	12.3%	Pass
134 - 129	Pole	TP25.204x24.278x0.1875	Pole	18.8%	Pass
129 - 127.39	Pole	TP26.202x25.204x0.1875	Pole	21.5%	Pass
127.39 - 122.39	Pole	TP26.043x25.128x0.1875	Pole	30.4%	Pass
122.39 - 117.39	Pole	TP26.958x26.043x0.1875	Pole	40.0%	Pass
117.39 - 112.39	Pole	TP27.873x26.958x0.1875	Pole	49.9%	Pass
112.39 - 107.39	Pole	TP28.788x27.873x0.1875	Pole	59.1%	Pass
107.39 - 102.39	Pole	TP29.703x28.788x0.1875	Pole	67.7%	Pass
102.39 - 98.5	Pole	TP30.415x29.703x0.1875	Pole	74.0%	Pass
98.5 - 98.25	Pole + Reinf.	TP30.46x30.415x0.3438	Reinf. 2 Tension Rupture	59.5%	Pass
98.25 - 93.25	Pole + Reinf.	TP31.375x30.46x0.3375	Reinf. 2 Tension Rupture	65.6%	Pass
93.25 - 88.25	Pole + Reinf.	TP32.29x31.375x0.3313	Reinf. 2 Tension Rupture	71.4%	Pass
88.25 - 83.87	Pole + Reinf.	TP33.96x32.29x0.3313	Reinf. 2 Tension Rupture	76.1%	Pass
83.87 - 78.13	Pole	TP33.763x32.716x0.25	Pole	69.6%	Pass
78.13 - 73.13	Pole	TP34.675x33.763x0.25	Pole	73.5%	Pass
73.13 - 68.13	Pole	TP35.586x34.675x0.25	Pole	77.3%	Pass
68.13 - 63.13	Pole	TP36.497x35.586x0.25	Pole	80.8%	Pass
63.13 - 58.13	Pole	TP37.408x36.497x0.25	Pole	84.3%	Pass
58.13 - 57.25	Pole	TP37.568x37.408x0.25	Pole	84.8%	Pass
57.25 - 57	Pole + Reinf.	TP37.614x37.568x0.4188	Reinf. 1 Tension Rupture	70.2%	Pass
57 - 52	Pole + Reinf.	TP38.525x37.614x0.4125	Reinf. 1 Tension Rupture	72.8%	Pass
52 - 48.76	Pole + Reinf.	TP40.121x38.525x0.4125	Reinf. 1 Tension Rupture	74.4%	Pass
48.76 - 42.24	Pole	TP39.803x38.616x0.3125	Pole	70.7%	Pass
42.24 - 37.24	Pole	TP40.714x39.803x0.3125	Pole	72.6%	Pass
37.24 - 32.24	Pole	TP41.625x40.714x0.3125	Pole	74.5%	Pass
32.24 - 27.24	Pole	TP42.536x41.625x0.3125	Pole	76.3%	Pass
27.24 - 22.24	Pole	TP43.447x42.536x0.3125	Pole	78.0%	Pass
22.24 - 17.24	Pole	TP44.358x43.447x0.3125	Pole	79.7%	Pass
17.24 - 12.24	Pole	TP45.269x44.358x0.3125	Pole	81.2%	Pass
12.24 - 7.24	Pole	TP46.18x45.269x0.3125	Pole	82.7%	Pass
7.24 - 2.24	Pole	TP47.091x46.18x0.3125	Pole	84.2%	Pass
2.24 - 0	Pole	TP47.5x47.091x0.3125	Pole	84.8%	Pass
				Summary	
			Pole	84.8%	Pass
			Reinforcement	76.1%	Pass
			Overall	84.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*		
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2
149 - 144	827	n/a	827	13.23	n/a	13.23	3.5%		
144 - 139	934	n/a	934	13.79	n/a	13.79	6.4%		
139 - 134	1051	n/a	1051	14.34	n/a	14.34	12.3%		
134 - 129	1177	n/a	1177	14.89	n/a	14.89	18.8%		
129 - 127.39	1219	n/a	1219	15.07	n/a	15.07	21.5%		
127.39 - 122.39	1299	n/a	1299	15.39	n/a	15.39	30.4%		
122.39 - 117.39	1442	n/a	1442	15.93	n/a	15.93	40.0%		
117.39 - 112.39	1595	n/a	1595	16.48	n/a	16.48	49.9%		
112.39 - 107.39	1758	n/a	1758	17.02	n/a	17.02	59.1%		
107.39 - 102.39	1933	n/a	1933	17.56	n/a	17.56	67.7%		
102.39 - 98.5	2076	n/a	2076	17.99	n/a	17.99	74.0%		
98.5 - 98.25	2085	1682	3767	18.02	13.50	31.52	40.6%		59.5%
98.25 - 93.25	2280	1781	4061	18.56	13.50	32.06	45.5%		65.6%
93.25 - 88.25	2487	1882	4369	19.10	13.50	32.60	50.2%		71.4%
88.25 - 83.87	2677	1973	4651	19.58	13.50	33.08	54.3%		76.1%
83.87 - 78.13	3772	n/a	3772	26.59	n/a	26.59	69.6%		
78.13 - 73.13	4088	n/a	4088	27.31	n/a	27.31	73.5%		
73.13 - 68.13	4422	n/a	4422	28.04	n/a	28.04	77.3%		
68.13 - 63.13	4773	n/a	4773	28.76	n/a	28.76	80.8%		
63.13 - 58.13	5142	n/a	5142	29.48	n/a	29.48	84.3%		
58.13 - 57.25	5208	n/a	5208	29.61	n/a	29.61	84.8%		
57.25 - 57	5227	3383	8610	29.65	18.00	47.65	50.9%	70.2%	
57 - 52	5619	3543	9162	30.37	18.00	48.37	53.4%	72.8%	
52 - 48.76	5883	3649	9532	30.84	18.00	48.84	54.9%	74.4%	
48.76 - 42.24	7715	n/a	7715	39.17	n/a	39.17	70.7%		
42.24 - 37.24	8261	n/a	8261	40.07	n/a	40.07	72.6%		
37.24 - 32.24	8833	n/a	8833	40.98	n/a	40.98	74.5%		
32.24 - 27.24	9430	n/a	9430	41.88	n/a	41.88	76.3%		
27.24 - 22.24	10053	n/a	10053	42.78	n/a	42.78	78.0%		
22.24 - 17.24	10704	n/a	10704	43.69	n/a	43.69	79.7%		
17.24 - 12.24	11382	n/a	11382	44.59	n/a	44.59	81.2%		
12.24 - 7.24	12088	n/a	12088	45.49	n/a	45.49	82.7%		
7.24 - 2.24	12823	n/a	12823	46.40	n/a	46.40	84.2%		
2.24 - 0	13162	n/a	13162	46.80	n/a	46.80	84.8%		

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

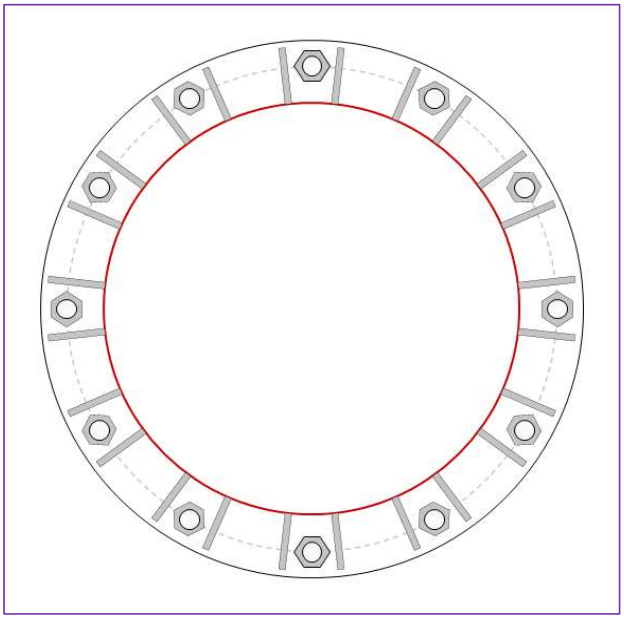
Monopole Base Plate Connection

Site Info	
BU #	842856
Site Name	ANDOVER NORTH
Order #	556629 Rev. 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2.25

Applied Loads	
Moment (kip-ft)	2544.43
Axial Force (kips)	36.66
Shear Force (kips)	23.85

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 56" BC

Base Plate Data

62" OD x 1.5" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(24) 13"H x 6.5"W x 0.75"T, Notch: 0.75"
plate: Fy= 50 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.375" groove, 45° dbl bevel, 0.25" fillet
vert. weld: 0.3125" fillet

Pole Data

47.5" x 0.3125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
Pu_t = 178.57	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.99	ϕVn = 149.1	**69.8%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary		
Max Stress (ksi):	44.73	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**78.9%**	**Pass**

Stiffener Summary		
Horizontal Weld:	**37.9%**	**Pass**
Vertical Weld:	**43.7%**	**Pass**
Plate Flexure+Shear:	**18.9%**	**Pass**
Plate Tension+Shear:	**39.4%**	**Pass**
Plate Compression:	**52.9%**	**Pass**
Pole Summary		
Punching Shear:	**17.7%**	**Pass**

Pier and Pad Foundation

BU # :	842856
Site Name:	ANDOVER NORTH
App. Number:	556629 Rev. 1

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions

Compression, P_{comp}:	36.67	kips
Base Shear, Vu_comp:	23.83	kips
Moment, M_u:	2544.43	ft-kips
Tower Height, **H**:	149	ft
BP Dist. Above Fdn, bp_{dist}:	4.25	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	6.5	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	40	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	5	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	6.5	ft
Pad Width, W_1:	20.5	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Top dir.2), Sp_{top2}:	8	
Pad Rebar Quantity (Top dir. 2), mp_{top2}:	21	
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	25	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	115	pcf
Ultimate Gross Bearing, Qult:	18.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	36	degrees
SPT Blow Count, N_{blows}:	47	
Base Friction, μ:		
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	223.72	23.83	**10.1%**	**Pass**
Bearing Pressure (ksf)	13.50	3.21	**23.8%**	**Pass**
*Overturning (kip*ft)*	3794.98	2731.59	**72.0%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	4724.60	2651.67	**53.5%**	**Pass**
Pier Compression (kip)	26891.28	70.89	**0.3%**	**Pass**
*Pad Flexure (kip*ft)*	2736.60	1177.17	**41.0%**	**Pass**
Pad Shear - 1-way (kips)	735.13	217.38	**28.2%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	3755.83	1591.00	**40.3%**	**Pass**

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

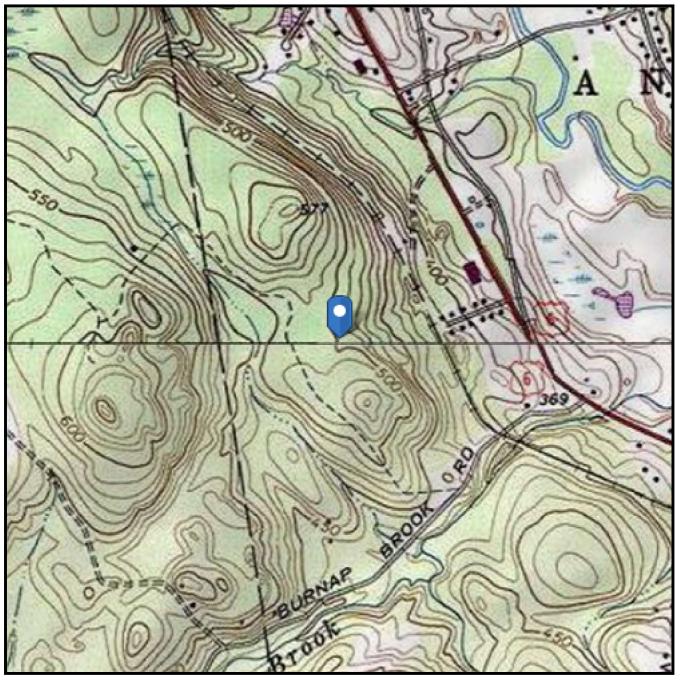
Structural Rating*:	**53.5%**
Soil Rating*:	**72.0%**

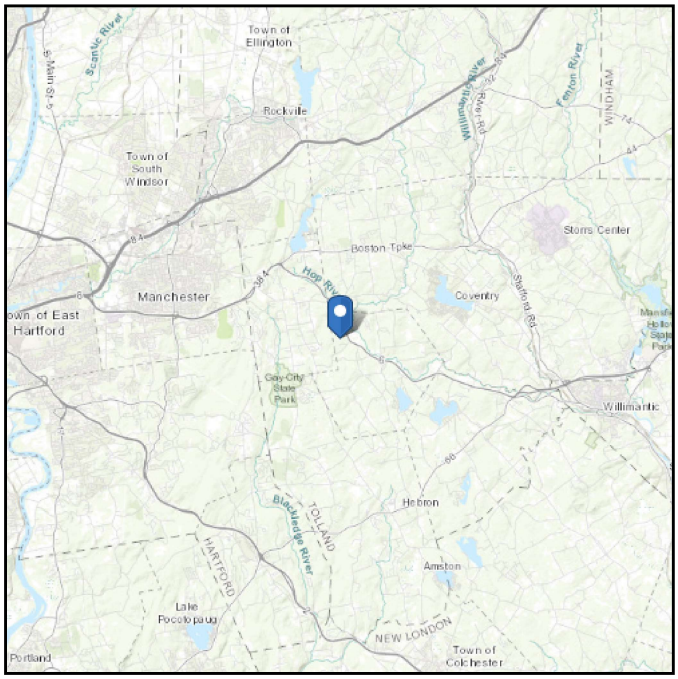
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 495.67 ft (NAVD 88)
Latitude: 41.750128
Longitude: -72.402675





Wind

Results:

Wind Speed:	119 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	91 Vmph
100-year MRI	98 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Wed Jun 16 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

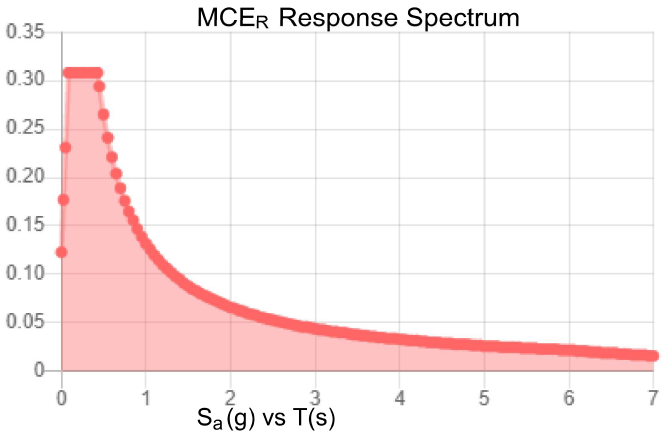
Seismic

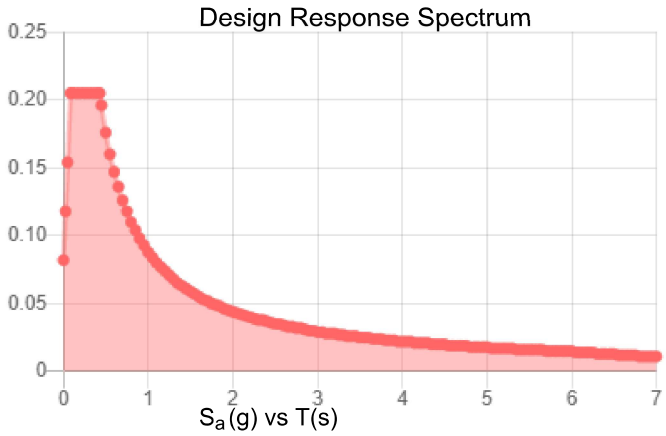
Site Soil Class: D - Default (see Section 11.4.3)

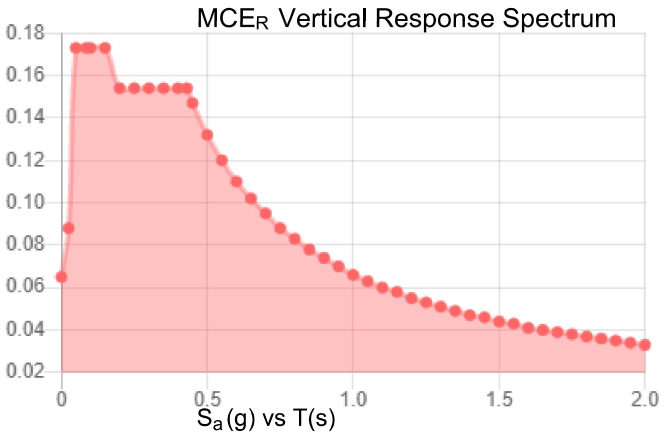
Results:

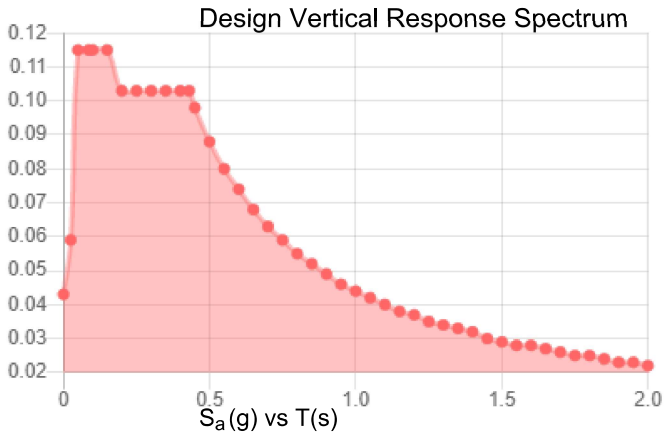
S_S :	0.193	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.104
F_v :	2.4	PGA_M :	0.166
S_{MS} :	0.308	F_{PGA} :	1.591
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.205	C_v :	0.7

Seismic Design Category B









Data Accessed: Wed Jun 16 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Jun 16 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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

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

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

Exhibit E

Mount Analysis

Date: **July 31, 2021**

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

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

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	**DISH Network Equipment Change Out**	
	Carrier Site Number:	BOBDL00063A
	Carrier Site Name:	CT-CCI-T-842856
Crown Castle Designation:	**Crown Castle BU Number:**	842856
	Crown Castle Site Name:	ANDOVER NORTH
	Crown Castle JDE Job Number:	650052
	Crown Castle Order Number:	556629 Rev. 1
Engineering Firm Designation:	**Trylon Report Designation:**	189206
Site Data:	**122 Jonathan Trumbull Highway (Route 6), Andover, Tolland County, CT, 06232** **Latitude 41°45'0.46" Longitude -72°24'9.63"**	
Structure Information:	**Tower Height & Type:**	**149.0 ft Monopole**
	Mount Elevation:	**120.0 ft**
	Mount Type:	**8.0 ft Platform**

Dear Darcy Tarr,

Trylon is pleased to submit this **"Mount Replacement Analysis Report"** to determine the structural integrity of DISH Network's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

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

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

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

Mount analysis prepared by: Jordan Everson, E.I.T.

Respectfully Submitted by:
Cliff Abernathy, P.E.

Cliff Abernathy Digitally signed by Cliff Abernathy
Date: 2021.07.31 15:17:03 -04'00'

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3 sector 8.0 ft Platform, designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 CTSBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	130 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.176
Seismic S_1:	0.063
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
120.0	120.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Platform [Commscope MC-PK8-DSH]
		3	FUJITSU	TA08025-B604	
		3	FUJITSU	TA08025-B605	
		1	RAYCAP	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	DISH Network Application	556629 Rev. 1	CCI Sites
Mount Manufacturer Drawings	Commscope	MC-PK8-DSH	TSA

3.1) Analysis Method

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

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

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

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP3	121.0	39.3	Pass
	Horizontal(s)	H1		12.1	Pass
	Standoff(s)	M2		50.1	Pass
	Bracing(s)	M11		38.2	Pass
	Mount Connection(s)	--		20.7	Pass

Structure Rating (max from all components) =	50.1%

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

4.1) Recommendations

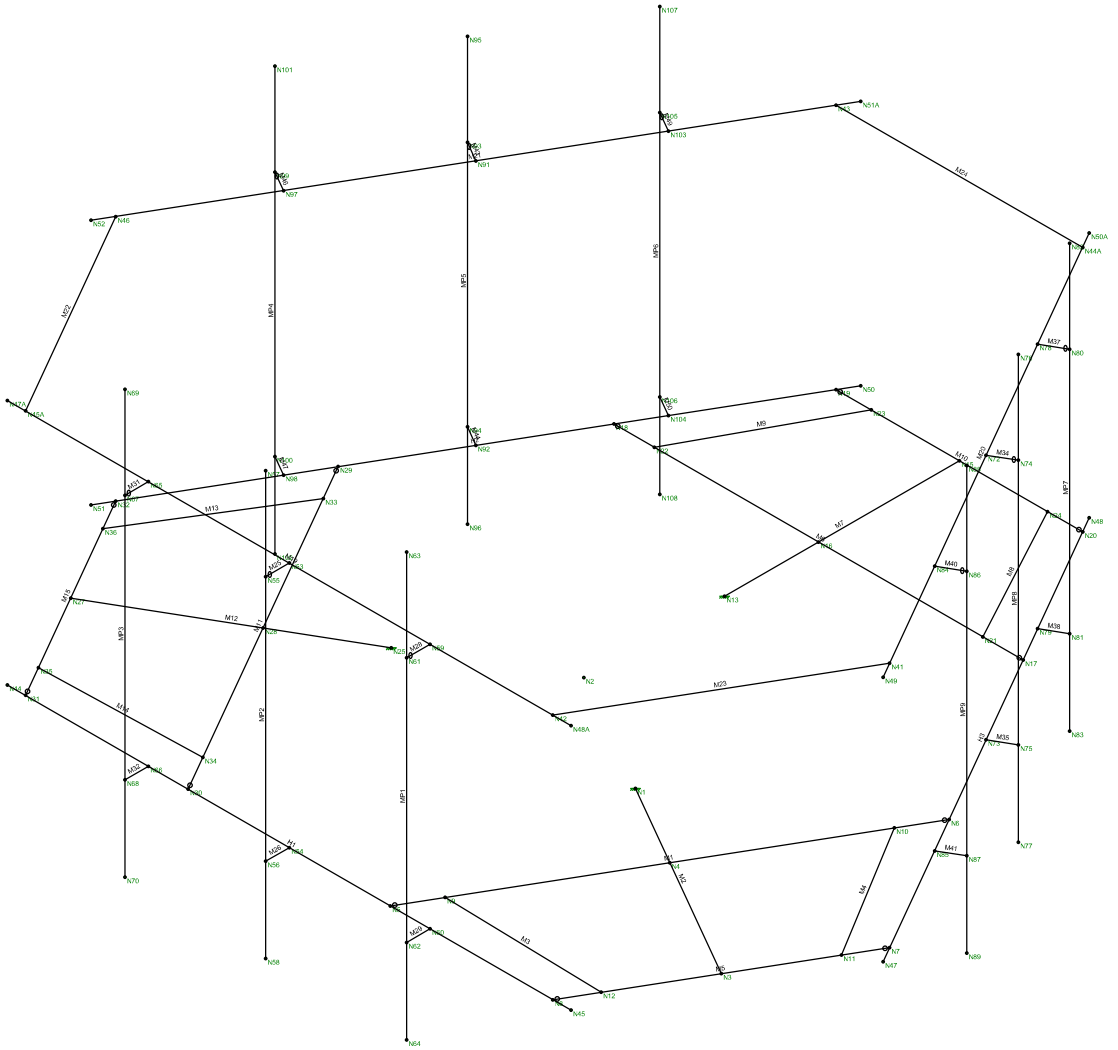
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope MC-PK8-DSH.

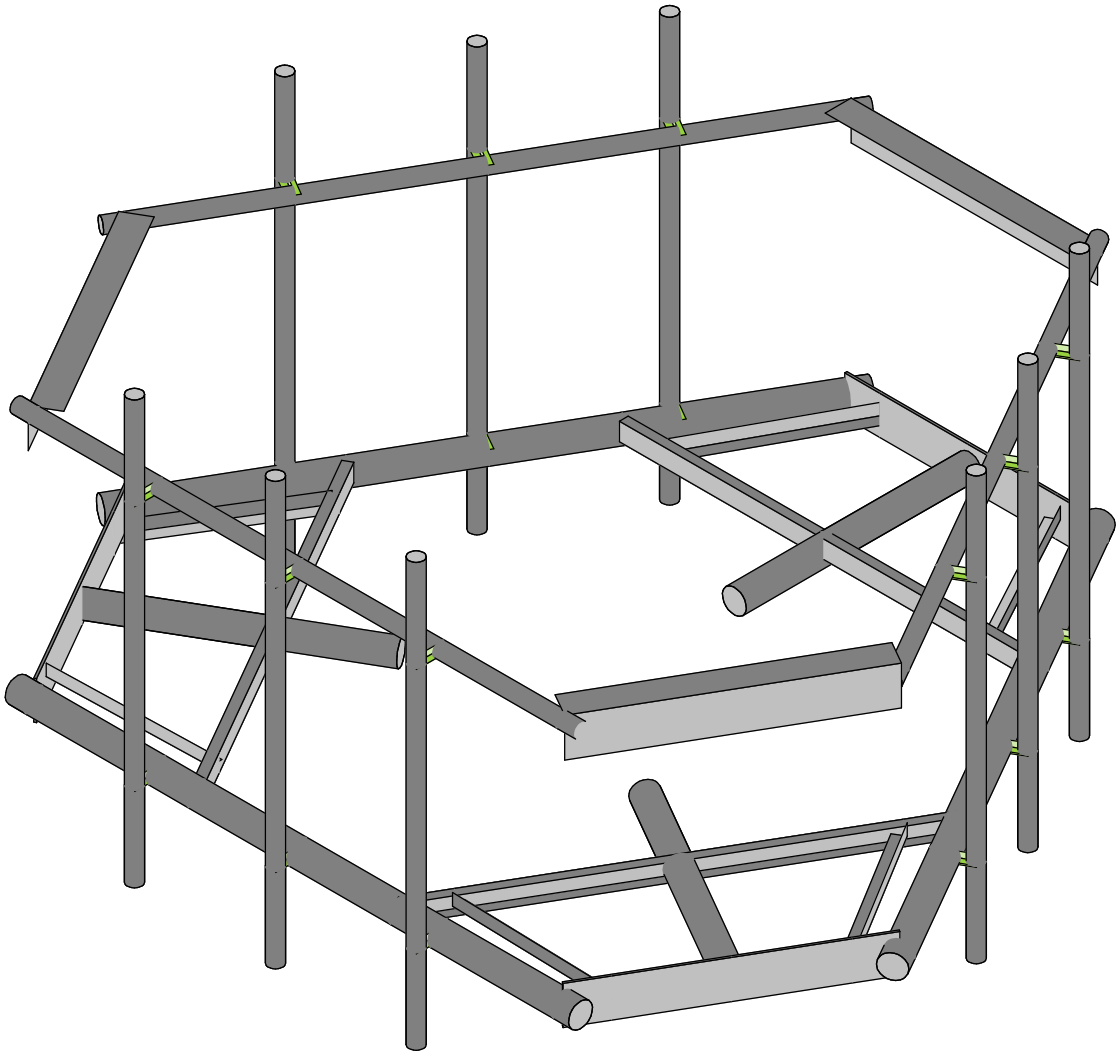
No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Trylon	876339	Wireframe
JE		July 31, 2021 at 9:57 AM
		842856_loaded.r3d



Trylon	876339	Render
JE		July 31, 2021 at 9:57 AM
		842856_loaded.r3d

APPENDIX B

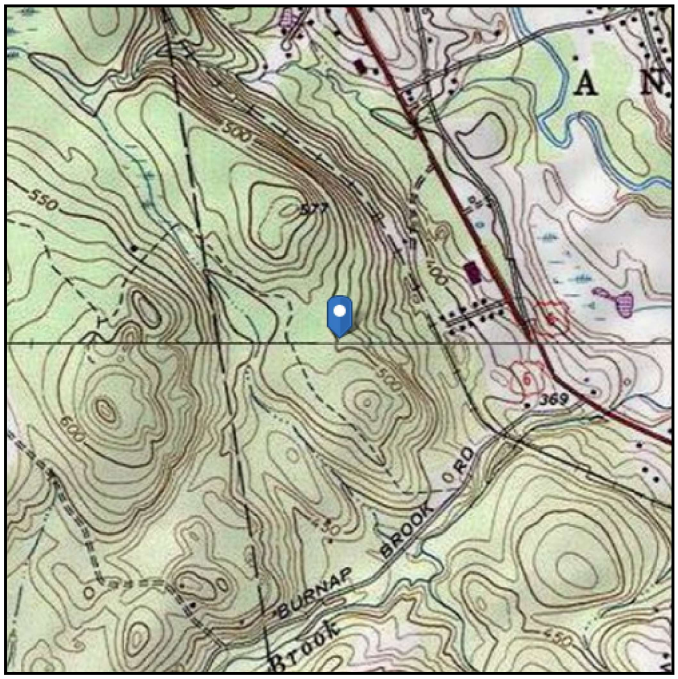
SOFTWARE INPUT CALCULATIONS

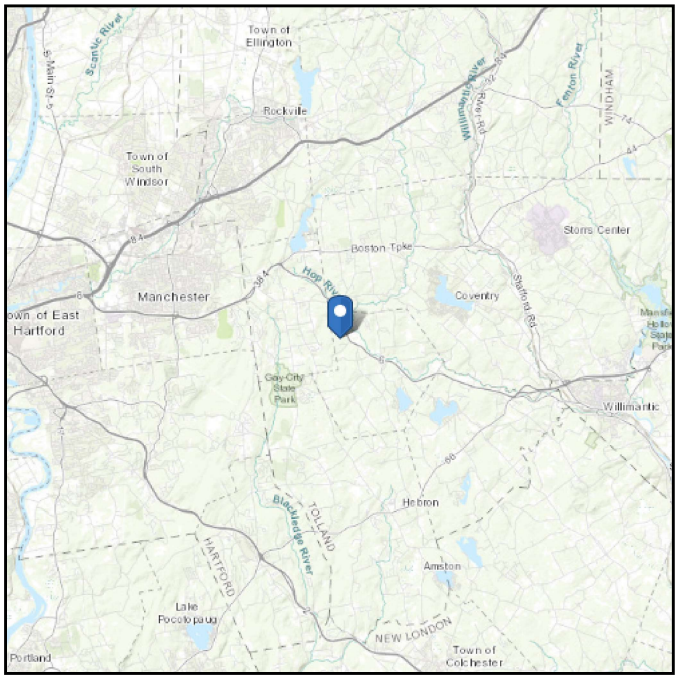
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 495.67 ft (NAVD 88)
Latitude: 41.750128
Longitude: -72.402675





Ice

Results:

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

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

Date Accessed: Sat Jul 31 2021

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

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

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

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

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

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

TIA LOAD CALCULATOR 2.0

PROJECT DATA	
Job Code:	189206
Carrier Site ID:	842856
Carrier Site Name:	ANDOVER NORTH

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

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	120.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	149.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	595	ft.

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

WIND PARAMETERS		
Design Wind Speed:	130	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.32	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	52.90	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	52.90	psf
Mount Ice Thickness (t_{iz}):	1.71	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	95.22	psf
Round Member Pressure:	57.13	psf
Ice Wind Pressure:	7.31	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.18	g
1 Second Accel (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.19	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.09	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

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

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

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

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

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

EQUIPMENT LOADING

Appurtenance Name/Location	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
MX08FRO665-21	3	120	No Ice	8.01	3.21	82.50
MP1/MP4/MP7, 0/120/240	--	--	w/ Ice	9.63	4.63	279.76
TA08025-B604	3	120	No Ice	1.96	0.98	63.90
MP1/MP4/MP7, 0/120/240	--	--	w/ Ice	2.38	1.31	68.66
TA08025-B605	3	120	No Ice	1.96	1.13	75.00
MP1/MP4/MP7, 0/120/240	--	--	w/ Ice	2.38	1.47	73.15
RDIDC-9181-PF-48	1	120	No Ice	2.01	1.17	21.85
MP1, 0	--	--	w/ Ice	2.44	1.52	72.09
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
MX08FRO665-21	3	120	1.00	1.32	0.95	1.71	52.90	7.83
TA08025-B604	3	120	1.00	1.32	0.95	1.71	52.90	7.83
TA08025-B605	3	120	1.00	1.32	0.95	1.71	52.90	7.83
RDIDC-9181-PF-48	1	120	1.00	1.32	0.95	1.71	52.90	7.83

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
MX08FRO665-21	3	No Ice	381.37	209.97	324.23	152.83	324.23	209.97
MP1/MP4/MP7, 0/120/240	--	w/ Ice	67.85	41.43	59.04	32.63	59.04	41.43
TA08025-B604	3	No Ice	93.49	58.41	81.79	46.71	81.79	58.41
MP1/MP4/MP7, 0/120/240	--	w/ Ice	16.77	11.09	14.88	9.20	14.88	11.09
TA08025-B605	3	No Ice	93.49	63.70	83.56	53.78	83.56	63.70
MP1/MP4/MP7, 0/120/240	--	w/ Ice	16.77	11.95	15.16	10.34	15.16	11.95
RDIDC-9181-PF-48	1	No Ice	95.79	65.66	85.75	55.62	85.75	65.66
MP1, 0	--	w/ Ice	17.16	12.32	15.54	10.71	15.54	12.32
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	Weight [lbs]	F_p [lbs]
MX08FRO665-21	3	120	82.5	9.29
TA08025-B604	3	120	63.9	7.20
TA08025-B605	3	120	75	8.45
RDIDC-9181-PF-48	1	120	21.85	2.46

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-12: LRFD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

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

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E..Density[k/ft...	Yield[psi]	Ry	Fu[psi]	Rt
1	A992	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65	.49	50000	1.4	65000	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Plates	6.5"x0.37" Plate	Beam	RECT	A53 Gr.B	Typical	2.405	.027	8.468	.106
2	Grating Bracing	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
3	Standoffs	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
4	Standoff Bracing	C3X5	Beam	Channel	A36 Gr.36	Typical	1.47	.241	1.85	.043
5	Handrails	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Handrail Corners	L6 5/8x4 7/16x...	Beam	Single Angle	A36 Gr.36	Typical	2.039	3.593	9.575	.023
7	Horizontals	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
8	Mount Pipes	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N25	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N13	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N5	N6			Standoff Bracing	Beam	Channel	A36 Gr.36	Typical
2	M2	N3	N1			Standoffs	Beam	Pipe	A53 Gr.B	Typical
3	M3	N9	N12		270	Grating Bracing	Beam	Single Angle	A36 Gr.36	Typical
4	M4	N10	N11			Grating Bracing	Beam	Single Angle	A36 Gr.36	Typical
5	M5	N8	N7			Plates	Beam	RECT	A53 Gr.B	Typical
6	M6	N17	N18			Standoff Bracing	Beam	Channel	A36 Gr.36	Typical
7	M7	N15	N13			Standoffs	Beam	Pipe	A53 Gr.B	Typical
8	M8	N21	N24		270	Grating Bracing	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N22	N23			Grating Bracing	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N20	N19			Plates	Beam	RECT	A53 Gr.B	Typical
11	M11	N29	N30			Standoff Bracing	Beam	Channel	A36 Gr.36	Typical
12	M12	N27	N25			Standoffs	Beam	Pipe	A53 Gr.B	Typical
13	M13	N33	N36		270	Grating Bracing	Beam	Single Angle	A36 Gr.36	Typical
14	M14	N34	N35			Grating Bracing	Beam	Single Angle	A36 Gr.36	Typical
15	M15	N32	N31			Plates	Beam	RECT	A53 Gr.B	Typical
16	H1	N44	N45			Horizontals	Beam	Pipe	A53 Gr.B	Typical
17	H3	N47	N48			Horizontals	Beam	Pipe	A53 Gr.B	Typical
18	H2	N50	N51			Horizontals	Beam	Pipe	A53 Gr.B	Typical
19	M19	N47A	N48A			Handrails	Beam	Pipe	A53 Gr.B	Typical
20	M20	N49	N50A			Handrails	Beam	Pipe	A53 Gr.B	Typical
21	M21	N51A	N52			Handrails	Beam	Pipe	A53 Gr.B	Typical
22	M22	N46	N45A		180	Handrail Corne...	Beam	Single Angle	A36 Gr.36	Typical
23	M23	N42	N41		180	Handrail Corne...	Beam	Single Angle	A36 Gr.36	Typical
24	M24	N44A	N43		180	Handrail Corne...	Beam	Single Angle	A36 Gr.36	Typical
25	M25	N55	N53			RIGID	None	None	RIGID	Typical
26	M26	N56	N54			RIGID	None	None	RIGID	Typical
27	MP2	N57	N58			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
28	M28	N61	N59			RIGID	None	None	RIGID	Typical
29	M29	N62	N60			RIGID	None	None	RIGID	Typical
30	MP1	N63	N64			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
31	M31	N67	N65			RIGID	None	None	RIGID	Typical
32	M32	N68	N66			RIGID	None	None	RIGID	Typical
33	MP3	N69	N70			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
34	M34	N74	N72			RIGID	None	None	RIGID	Typical
35	M35	N75	N73			RIGID	None	None	RIGID	Typical
36	MP8	N76	N77			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
37	M37	N80	N78			RIGID	None	None	RIGID	Typical
38	M38	N81	N79			RIGID	None	None	RIGID	Typical
39	MP7	N82	N83			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
40	M40	N86	N84			RIGID	None	None	RIGID	Typical
41	M41	N87	N85			RIGID	None	None	RIGID	Typical
42	MP9	N88	N89			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
43	M43	N93	N91			RIGID	None	None	RIGID	Typical
44	M44	N94	N92			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
45	MP5	N95	N96			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
46	M46	N99	N97			RIGID	None	None	RIGID	Typical
47	M47	N100	N98			RIGID	None	None	RIGID	Typical
48	MP4	N101	N102			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
49	M49	N105	N103			RIGID	None	None	RIGID	Typical
50	M50	N106	N104			RIGID	None	None	RIGID	Typical
51	MP6	N107	N108			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic ...
1	M1	BenPIN	BenPIN				Yes				None
2	M2						Yes				None
3	M3						Yes				None
4	M4						Yes				None
5	M5	OOOOXO	OOOOXO				Yes	Default			None
6	M6	BenPIN	BenPIN				Yes				None
7	M7						Yes				None
8	M8						Yes				None
9	M9						Yes				None
10	M10	OOOOXO	OOOOXO				Yes	Default			None
11	M11	BenPIN	BenPIN				Yes				None
12	M12						Yes				None
13	M13						Yes				None
14	M14						Yes				None
15	M15	OOOOXO	OOOOXO				Yes	Default			None
16	H1						Yes	Default			None
17	H3						Yes				None
18	H2						Yes				None
19	M19						Yes				None
20	M20						Yes				None
21	M21						Yes				None
22	M22						Yes				None
23	M23						Yes				None
24	M24						Yes				None
25	M25	OOOXOO					Yes	** NA **			None
26	M26						Yes	** NA **			None
27	MP2						Yes				None
28	M28	OOOXOO					Yes	** NA **			None
29	M29						Yes	** NA **			None
30	MP1						Yes				None
31	M31	OOOXOO					Yes	** NA **			None
32	M32						Yes	** NA **			None
33	MP3						Yes				None
34	M34	OOOXOO					Yes	** NA **			None
35	M35						Yes	** NA **			None
36	MP8						Yes				None
37	M37	OOOXOO					Yes	** NA **			None
38	M38						Yes	** NA **			None
39	MP7						Yes				None
40	M40	OOOXOO					Yes	** NA **			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic ...
41	M41						Yes	** NA **			None
42	MP9						Yes				None
43	M43	OOOXOO					Yes	** NA **			None
44	M44						Yes	** NA **			None
45	MP5						Yes				None
46	M46	OOOXOO					Yes	** NA **			None
47	M47						Yes	** NA **			None
48	MP4						Yes				None
49	M49	OOOXOO					Yes	** NA **			None
50	M50						Yes	** NA **			None
51	MP6						Yes				None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Standoff Br...	69.713			Lbyy						Lateral
2	M2	Standoffs	40			Lbyy						Lateral
3	M3	Grating Bra...	27.295			Lbyy						Lateral
4	M4	Grating Bra...	27.295			Lbyy						Lateral
5	M5	Plates	42			Lbyy						Lateral
6	M6	Standoff Br...	69.713	28	28	28	28	28				Lateral
7	M7	Standoffs	40			Lbyy						Lateral
8	M8	Grating Bra...	27.295			Lbyy						Lateral
9	M9	Grating Bra...	27.295			Lbyy						Lateral
10	M10	Plates	42			Lbyy						Lateral
11	M11	Standoff Br...	69.713			Lbyy						Lateral
12	M12	Standoffs	40			Lbyy						Lateral
13	M13	Grating Bra...	27.295			Lbyy						Lateral
14	M14	Grating Bra...	27.295			Lbyy						Lateral
15	M15	Plates	42			Lbyy						Lateral
16	H1	Horizontals	96			Lbyy						Lateral
17	H3	Horizontals	96			Lbyy						Lateral
18	H2	Horizontals	96			Lbyy						Lateral
19	M19	Handrails	96			Lbyy						Lateral
20	M20	Handrails	96			Lbyy						Lateral
21	M21	Handrails	96			Lbyy						Lateral
22	M22	Handrail Co...	42			Lbyy						Lateral
23	M23	Handrail Co...	42			Lbyy						Lateral
24	M24	Handrail Co...	42			Lbyy						Lateral
25	MP2	Mount Pipes	72			Lbyy						Lateral
26	MP1	Mount Pipes	72			Lbyy						Lateral
27	MP3	Mount Pipes	72			Lbyy						Lateral
28	MP8	Mount Pipes	72			Lbyy						Lateral
29	MP7	Mount Pipes	72			Lbyy						Lateral
30	MP9	Mount Pipes	72			Lbyy						Lateral
31	MP5	Mount Pipes	72			Lbyy						Lateral
32	MP4	Mount Pipes	72			Lbyy						Lateral
33	MP6	Mount Pipes	72			Lbyy						Lateral

Joint Loads and Enforced Displacements

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

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in,%]
1	MP1	Y	-41.25	3
2	MP1	Y	-41.25	69
3	MP1	Y	-63.9	%50
4	MP1	Y	-75	%50
5	MP1	Y	-21.85	%33
6	MP4	Y	-41.25	3
7	MP4	Y	-41.25	69
8	MP4	Y	-63.9	%50
9	MP4	Y	-75	%50
10	MP7	Y	-41.25	3
11	MP7	Y	-41.25	69
12	MP7	Y	-63.9	%50
13	MP7	Y	-75	%50

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

	Member Label	Direction	Magnitude [lb,lb-ft]	Location [in,%]
1	MP1	Z	-190.684	3
2	MP1	Z	-190.684	69
3	MP1	Z	-93.485	%50
4	MP1	Z	-93.485	%50
5	MP1	Z	-95.788	%33
6	MP4	Z	-104.983	3
7	MP4	Z	-104.983	69
8	MP4	Z	-58.406	%50
9	MP4	Z	-63.703	%50
10	MP7	Z	-104.983	3
11	MP7	Z	-104.983	69
12	MP7	Z	-58.406	%50
13	MP7	Z	-63.703	%50
14	MP1	X	0	3
15	MP1	X	0	69
16	MP1	X	0	%50
17	MP1	X	0	%50
18	MP1	X	0	%33
19	MP4	X	0	3
20	MP4	X	0	69
21	MP4	X	0	%50
22	MP4	X	0	%50
23	MP7	X	0	3
24	MP7	X	0	69
25	MP7	X	0	%50
26	MP7	X	0	%50

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

Member Label	Direction	Magnitude [lb,lb-ft]	Location [in,%]

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-140.397	3
2	MP1	Z	-140.397	69
3	MP1	Z	-70.834	%50
4	MP1	Z	-72.363	%50
5	MP1	Z	-74.258	%33
6	MP4	Z	-140.397	3
7	MP4	Z	-140.397	69
8	MP4	Z	-70.834	%50
9	MP4	Z	-72.363	%50
10	MP7	Z	-66.178	3
11	MP7	Z	-66.178	69
12	MP7	Z	-40.455	%50
13	MP7	Z	-46.572	%50
14	MP1	X	-81.058	3
15	MP1	X	-81.058	69
16	MP1	X	-40.896	%50
17	MP1	X	-41.779	%50
18	MP1	X	-42.873	%33
19	MP4	X	-81.058	3
20	MP4	X	-81.058	69
21	MP4	X	-40.896	%50
22	MP4	X	-41.779	%50
23	MP7	X	-38.208	3
24	MP7	X	-38.208	69
25	MP7	X	-23.356	%50
26	MP7	X	-26.888	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-94.434	3
2	MP1	Z	-94.434	69
3	MP1	Z	-49.567	%50
4	MP1	Z	-52.065	%50
5	MP1	Z	-53.531	%33
6	MP4	Z	-129.421	3
7	MP4	Z	-129.421	69
8	MP4	Z	-63.888	%50
9	MP4	Z	-64.223	%50
10	MP7	Z	-59.447	3
11	MP7	Z	-59.447	69
12	MP7	Z	-35.246	%50
13	MP7	Z	-39.906	%50
14	MP1	X	-94.434	3
15	MP1	X	-94.434	69
16	MP1	X	-49.567	%50
17	MP1	X	-52.065	%50
18	MP1	X	-53.531	%33
19	MP4	X	-129.421	3
20	MP4	X	-129.421	69
21	MP4	X	-63.888	%50
22	MP4	X	-64.223	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
23	MP7	X	-59.447	3
24	MP7	X	-59.447	69
25	MP7	X	-35.246	%50
26	MP7	X	-39.906	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-52.492	3
2	MP1	Z	-52.492	69
3	MP1	Z	-29.203	%50
4	MP1	Z	-31.852	%50
5	MP1	Z	-32.831	%33
6	MP4	Z	-95.342	3
7	MP4	Z	-95.342	69
8	MP4	Z	-46.743	%50
9	MP4	Z	-46.743	%50
10	MP7	Z	-52.492	3
11	MP7	Z	-52.492	69
12	MP7	Z	-29.203	%50
13	MP7	Z	-31.852	%50
14	MP1	X	-90.918	3
15	MP1	X	-90.918	69
16	MP1	X	-50.581	%50
17	MP1	X	-55.169	%50
18	MP1	X	-56.864	%33
19	MP4	X	-165.137	3
20	MP4	X	-165.137	69
21	MP4	X	-80.96	%50
22	MP4	X	-80.96	%50
23	MP7	X	-90.918	3
24	MP7	X	-90.918	69
25	MP7	X	-50.581	%50
26	MP7	X	-55.169	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-4.679e-15	3
2	MP1	Z	-4.679e-15	69
3	MP1	Z	-2.86e-15	%50
4	MP1	Z	-3.293e-15	%50
5	MP1	Z	-3.406e-15	%33
6	MP4	Z	-9.927e-15	3
7	MP4	Z	-9.927e-15	69
8	MP4	Z	-5.008e-15	%50
9	MP4	Z	-5.116e-15	%50
10	MP7	Z	-9.927e-15	3
11	MP7	Z	-9.927e-15	69
12	MP7	Z	-5.008e-15	%50
13	MP7	Z	-5.116e-15	%50
14	MP1	X	-76.416	3
15	MP1	X	-76.416	69

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
16	MP1	X	-46.713	%50
17	MP1	X	-53.776	%50
18	MP1	X	-55.619	%33
19	MP4	X	-162.117	3
20	MP4	X	-162.117	69
21	MP4	X	-81.792	%50
22	MP4	X	-83.558	%50
23	MP7	X	-162.117	3
24	MP7	X	-162.117	69
25	MP7	X	-81.792	%50
26	MP7	X	-83.558	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	52.492	3
2	MP1	Z	52.492	69
3	MP1	Z	29.203	%50
4	MP1	Z	31.852	%50
5	MP1	Z	32.831	%33
6	MP4	Z	52.492	3
7	MP4	Z	52.492	69
8	MP4	Z	29.203	%50
9	MP4	Z	31.852	%50
10	MP7	Z	95.342	3
11	MP7	Z	95.342	69
12	MP7	Z	46.743	%50
13	MP7	Z	46.743	%50
14	MP1	X	-90.918	3
15	MP1	X	-90.918	69
16	MP1	X	-50.581	%50
17	MP1	X	-55.169	%50
18	MP1	X	-56.864	%33
19	MP4	X	-90.918	3
20	MP4	X	-90.918	69
21	MP4	X	-50.581	%50
22	MP4	X	-55.169	%50
23	MP7	X	-165.137	3
24	MP7	X	-165.137	69
25	MP7	X	-80.96	%50
26	MP7	X	-80.96	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	94.434	3
2	MP1	Z	94.434	69
3	MP1	Z	49.567	%50
4	MP1	Z	52.065	%50
5	MP1	Z	53.531	%33
6	MP4	Z	59.447	3
7	MP4	Z	59.447	69
8	MP4	Z	35.246	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
9	MP4	Z	39.906	%50
10	MP7	Z	129.421	3
11	MP7	Z	129.421	69
12	MP7	Z	63.888	%50
13	MP7	Z	64.223	%50
14	MP1	X	-94.434	3
15	MP1	X	-94.434	69
16	MP1	X	-49.567	%50
17	MP1	X	-52.065	%50
18	MP1	X	-53.531	%33
19	MP4	X	-59.447	3
20	MP4	X	-59.447	69
21	MP4	X	-35.246	%50
22	MP4	X	-39.906	%50
23	MP7	X	-129.421	3
24	MP7	X	-129.421	69
25	MP7	X	-63.888	%50
26	MP7	X	-64.223	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	140.397	3
2	MP1	Z	140.397	69
3	MP1	Z	70.834	%50
4	MP1	Z	72.363	%50
5	MP1	Z	74.258	%33
6	MP4	Z	66.178	3
7	MP4	Z	66.178	69
8	MP4	Z	40.455	%50
9	MP4	Z	46.572	%50
10	MP7	Z	140.397	3
11	MP7	Z	140.397	69
12	MP7	Z	70.834	%50
13	MP7	Z	72.363	%50
14	MP1	X	-81.058	3
15	MP1	X	-81.058	69
16	MP1	X	-40.896	%50
17	MP1	X	-41.779	%50
18	MP1	X	-42.873	%33
19	MP4	X	-38.208	3
20	MP4	X	-38.208	69
21	MP4	X	-23.356	%50
22	MP4	X	-26.888	%50
23	MP7	X	-81.058	3
24	MP7	X	-81.058	69
25	MP7	X	-40.896	%50
26	MP7	X	-41.779	%50

Member Point Loads (BLC 12 : Ice Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-141.268	3

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
2	MP1	Y	-141.268	69
3	MP1	Y	-68.656	%50
4	MP1	Y	-73.148	%50
5	MP1	Y	-72.09	%33
6	MP4	Y	-141.268	3
7	MP4	Y	-141.268	69
8	MP4	Y	-68.656	%50
9	MP4	Y	-73.148	%50
10	MP7	Y	-141.268	3
11	MP7	Y	-141.268	69
12	MP7	Y	-68.656	%50
13	MP7	Y	-73.148	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-33.924	3
2	MP1	Z	-33.924	69
3	MP1	Z	-16.771	%50
4	MP1	Z	-16.771	%50
5	MP1	Z	-17.155	%33
6	MP4	Z	-20.717	3
7	MP4	Z	-20.717	69
8	MP4	Z	-11.089	%50
9	MP4	Z	-11.947	%50
10	MP7	Z	-20.717	3
11	MP7	Z	-20.717	69
12	MP7	Z	-11.089	%50
13	MP7	Z	-11.947	%50
14	MP1	X	0	3
15	MP1	X	0	69
16	MP1	X	0	%50
17	MP1	X	0	%50
18	MP1	X	0	%33
19	MP4	X	0	3
20	MP4	X	0	69
21	MP4	X	0	%50
22	MP4	X	0	%50
23	MP7	X	0	3
24	MP7	X	0	69
25	MP7	X	0	%50
26	MP7	X	0	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-25.566	3
2	MP1	Z	-25.566	69
3	MP1	Z	-12.884	%50
4	MP1	Z	-13.131	%50
5	MP1	Z	-13.461	%33
6	MP4	Z	-25.566	3
7	MP4	Z	-25.566	69

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
8	MP4	Z	-12.884	%50
9	MP4	Z	-13.131	%50
10	MP7	Z	-14.129	3
11	MP7	Z	-14.129	69
12	MP7	Z	-7.964	%50
13	MP7	Z	-8.953	%50
14	MP1	X	-14.761	3
15	MP1	X	-14.761	69
16	MP1	X	-7.438	%50
17	MP1	X	-7.581	%50
18	MP1	X	-7.772	%33
19	MP4	X	-14.761	3
20	MP4	X	-14.761	69
21	MP4	X	-7.438	%50
22	MP4	X	-7.581	%50
23	MP7	X	-8.157	3
24	MP7	X	-8.157	69
25	MP7	X	-4.598	%50
26	MP7	X	-5.169	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-17.762	3
2	MP1	Z	-17.762	69
3	MP1	Z	-9.181	%50
4	MP1	Z	-9.585	%50
5	MP1	Z	-9.851	%33
6	MP4	Z	-23.154	3
7	MP4	Z	-23.154	69
8	MP4	Z	-11.5	%50
9	MP4	Z	-11.554	%50
10	MP7	Z	-12.37	3
11	MP7	Z	-12.37	69
12	MP7	Z	-6.861	%50
13	MP7	Z	-7.615	%50
14	MP1	X	-17.762	3
15	MP1	X	-17.762	69
16	MP1	X	-9.181	%50
17	MP1	X	-9.585	%50
18	MP1	X	-9.851	%33
19	MP4	X	-23.154	3
20	MP4	X	-23.154	69
21	MP4	X	-11.5	%50
22	MP4	X	-11.554	%50
23	MP7	X	-12.37	3
24	MP7	X	-12.37	69
25	MP7	X	-6.861	%50
26	MP7	X	-7.615	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-10.358	3
2	MP1	Z	-10.358	69
3	MP1	Z	-5.545	%50
4	MP1	Z	-5.973	%50
5	MP1	Z	-6.16	%33
6	MP4	Z	-16.962	3
7	MP4	Z	-16.962	69
8	MP4	Z	-8.385	%50
9	MP4	Z	-8.385	%50
10	MP7	Z	-10.358	3
11	MP7	Z	-10.358	69
12	MP7	Z	-5.545	%50
13	MP7	Z	-5.973	%50
14	MP1	X	-17.941	3
15	MP1	X	-17.941	69
16	MP1	X	-9.604	%50
17	MP1	X	-10.346	%50
18	MP1	X	-10.669	%33
19	MP4	X	-29.379	3
20	MP4	X	-29.379	69
21	MP4	X	-14.524	%50
22	MP4	X	-14.524	%50
23	MP7	X	-17.941	3
24	MP7	X	-17.941	69
25	MP7	X	-9.604	%50
26	MP7	X	-10.346	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-9.99e-16	3
2	MP1	Z	-9.99e-16	69
3	MP1	Z	-5.631e-16	%50
4	MP1	Z	-6.331e-16	%50
5	MP1	Z	-6.556e-16	%33
6	MP4	Z	-1.808e-15	3
7	MP4	Z	-1.808e-15	69
8	MP4	Z	-9.11e-16	%50
9	MP4	Z	-9.284e-16	%50
10	MP7	Z	-1.808e-15	3
11	MP7	Z	-1.808e-15	69
12	MP7	Z	-9.11e-16	%50
13	MP7	Z	-9.284e-16	%50
14	MP1	X	-16.314	3
15	MP1	X	-16.314	69
16	MP1	X	-9.196	%50
17	MP1	X	-10.339	%50
18	MP1	X	-10.707	%33
19	MP4	X	-29.521	3
20	MP4	X	-29.521	69
21	MP4	X	-14.877	%50
22	MP4	X	-15.163	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
23	MP7	X	-29.521	3
24	MP7	X	-29.521	69
25	MP7	X	-14.877	%50
26	MP7	X	-15.163	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	10.358	3
2	MP1	Z	10.358	69
3	MP1	Z	5.545	%50
4	MP1	Z	5.973	%50
5	MP1	Z	6.16	%33
6	MP4	Z	10.358	3
7	MP4	Z	10.358	69
8	MP4	Z	5.545	%50
9	MP4	Z	5.973	%50
10	MP7	Z	16.962	3
11	MP7	Z	16.962	69
12	MP7	Z	8.385	%50
13	MP7	Z	8.385	%50
14	MP1	X	-17.941	3
15	MP1	X	-17.941	69
16	MP1	X	-9.604	%50
17	MP1	X	-10.346	%50
18	MP1	X	-10.669	%33
19	MP4	X	-17.941	3
20	MP4	X	-17.941	69
21	MP4	X	-9.604	%50
22	MP4	X	-10.346	%50
23	MP7	X	-29.379	3
24	MP7	X	-29.379	69
25	MP7	X	-14.524	%50
26	MP7	X	-14.524	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	17.762	3
2	MP1	Z	17.762	69
3	MP1	Z	9.181	%50
4	MP1	Z	9.585	%50
5	MP1	Z	9.851	%33
6	MP4	Z	12.37	3
7	MP4	Z	12.37	69
8	MP4	Z	6.861	%50
9	MP4	Z	7.615	%50
10	MP7	Z	23.154	3
11	MP7	Z	23.154	69
12	MP7	Z	11.5	%50
13	MP7	Z	11.554	%50
14	MP1	X	-17.762	3
15	MP1	X	-17.762	69

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
16	MP1	X	-9.181	%50
17	MP1	X	-9.585	%50
18	MP1	X	-9.851	%33
19	MP4	X	-12.37	3
20	MP4	X	-12.37	69
21	MP4	X	-6.861	%50
22	MP4	X	-7.615	%50
23	MP7	X	-23.154	3
24	MP7	X	-23.154	69
25	MP7	X	-11.5	%50
26	MP7	X	-11.554	%50

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	25.566	3
2	MP1	Z	25.566	69
3	MP1	Z	12.884	%50
4	MP1	Z	13.131	%50
5	MP1	Z	13.461	%33
6	MP4	Z	14.129	3
7	MP4	Z	14.129	69
8	MP4	Z	7.964	%50
9	MP4	Z	8.953	%50
10	MP7	Z	25.566	3
11	MP7	Z	25.566	69
12	MP7	Z	12.884	%50
13	MP7	Z	13.131	%50
14	MP1	X	-14.761	3
15	MP1	X	-14.761	69
16	MP1	X	-7.438	%50
17	MP1	X	-7.581	%50
18	MP1	X	-7.772	%33
19	MP4	X	-8.157	3
20	MP4	X	-8.157	69
21	MP4	X	-4.598	%50
22	MP4	X	-5.169	%50
23	MP7	X	-14.761	3
24	MP7	X	-14.761	69
25	MP7	X	-7.438	%50
26	MP7	X	-7.581	%50

Member Point Loads (BLC 23 : Seismic Load Z)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-4.646	3
2	MP1	Z	-4.646	69
3	MP1	Z	-7.198	%50
4	MP1	Z	-8.448	%50
5	MP1	Z	-2.461	%33
6	MP4	Z	-4.646	3
7	MP4	Z	-4.646	69
8	MP4	Z	-7.198	%50

Member Point Loads (BLC 23 : Seismic Load Z) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
9	MP4	Z	-8.448	%50
10	MP7	Z	-4.646	3
11	MP7	Z	-4.646	69
12	MP7	Z	-7.198	%50
13	MP7	Z	-8.448	%50

Member Point Loads (BLC 24 : Seismic Load X)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-4.646	3
2	MP1	X	-4.646	69
3	MP1	X	-7.198	%50
4	MP1	X	-8.448	%50
5	MP1	X	-2.461	%33
6	MP4	X	-4.646	3
7	MP4	X	-4.646	69
8	MP4	X	-7.198	%50
9	MP4	X	-8.448	%50
10	MP7	X	-4.646	3
11	MP7	X	-4.646	69
12	MP7	X	-7.198	%50
13	MP7	X	-8.448	%50

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

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

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

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

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

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

Member Point Loads (BLC 28 : Live Load 4 (Lv))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	H3	Y	-250	0

Member Point Loads (BLC 29 : Live Load 5 (Lv))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	H3	Y	-250	%50

Member Point Loads (BLC 30 : Live Load 6 (Lv))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	H3	Y	-250	%100

Member Point Loads (BLC 31 : Live Load 7 (Lv))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]

Member Point Loads (BLC 31 : Live Load 7 (Lv)) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	H2	Y	-250	0

Member Point Loads (BLC 32 : Live Load 8 (Lv))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	H2	Y	-250	%50

Member Point Loads (BLC 33 : Live Load 9 (Lv))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	H2	Y	-250	%100

Member Point Loads (BLC 34 : Maintenance Load 1 (Lm))

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

Member Point Loads (BLC 35 : Maintenance Load 2 (Lm))

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

Member Point Loads (BLC 36 : Maintenance Load 3 (Lm))

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

Member Point Loads (BLC 37 : Maintenance Load 4 (Lm))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP8	Y	-500	%50

Member Point Loads (BLC 38 : Maintenance Load 5 (Lm))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP7	Y	-500	%50

Member Point Loads (BLC 39 : Maintenance Load 6 (Lm))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP9	Y	-500	%50

Member Point Loads (BLC 40 : Maintenance Load 7 (Lm))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP5	Y	-500	%50

Member Point Loads (BLC 41 : Maintenance Load 8 (Lm))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP4	Y	-500	%50

Member Point Loads (BLC 42 : Maintenance Load 9 (Lm))

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP6	Y	-500	%50

Member Distributed Loads (BLC 2 : Structure Wind Z)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	SZ	-95.223	-95.223	0	%100
2	M2	SZ	-57.134	-57.134	0	%100
3	M3	SZ	-95.223	-95.223	0	%100
4	M4	SZ	-95.223	-95.223	0	%100
5	M5	SZ	-95.223	-95.223	0	%100
6	M6	SZ	-95.223	-95.223	0	%100
7	M7	SZ	-57.134	-57.134	0	%100
8	M8	SZ	-95.223	-95.223	0	%100
9	M9	SZ	-95.223	-95.223	0	%100
10	M10	SZ	-95.223	-95.223	0	%100
11	M11	SZ	-95.223	-95.223	0	%100
12	M12	SZ	-57.134	-57.134	0	%100
13	M13	SZ	-95.223	-95.223	0	%100
14	M14	SZ	-95.223	-95.223	0	%100
15	M15	SZ	-95.223	-95.223	0	%100
16	H1	SZ	-57.134	-57.134	0	%100
17	H3	SZ	-57.134	-57.134	0	%100
18	H2	SZ	-57.134	-57.134	0	%100
19	M19	SZ	-57.134	-57.134	0	%100
20	M20	SZ	-57.134	-57.134	0	%100
21	M21	SZ	-57.134	-57.134	0	%100
22	M22	SZ	-95.223	-95.223	0	%100
23	M23	SZ	-95.223	-95.223	0	%100
24	M24	SZ	-95.223	-95.223	0	%100
25	M25	SZ	-95.223	-95.223	0	%100
26	M26	SZ	-95.223	-95.223	0	%100
27	MP2	SZ	-57.134	-57.134	0	%100
28	M28	SZ	-95.223	-95.223	0	%100
29	M29	SZ	-95.223	-95.223	0	%100
30	MP1	SZ	-57.134	-57.134	0	%100
31	M31	SZ	-95.223	-95.223	0	%100
32	M32	SZ	-95.223	-95.223	0	%100
33	MP3	SZ	-57.134	-57.134	0	%100
34	M34	SZ	-95.223	-95.223	0	%100
35	M35	SZ	-95.223	-95.223	0	%100
36	MP8	SZ	-57.134	-57.134	0	%100
37	M37	SZ	-95.223	-95.223	0	%100
38	M38	SZ	-95.223	-95.223	0	%100
39	MP7	SZ	-57.134	-57.134	0	%100
40	M40	SZ	-95.223	-95.223	0	%100
41	M41	SZ	-95.223	-95.223	0	%100
42	MP9	SZ	-57.134	-57.134	0	%100
43	M43	SZ	-95.223	-95.223	0	%100
44	M44	SZ	-95.223	-95.223	0	%100
45	MP5	SZ	-57.134	-57.134	0	%100
46	M46	SZ	-95.223	-95.223	0	%100
47	M47	SZ	-95.223	-95.223	0	%100
48	MP4	SZ	-57.134	-57.134	0	%100
49	M49	SZ	-95.223	-95.223	0	%100
50	M50	SZ	-95.223	-95.223	0	%100
51	MP6	SZ	-57.134	-57.134	0	%100

Member Distributed Loads (BLC 3 : Structure Wind X)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	SX	-95.223	-95.223	0	%100
2	M2	SX	-57.134	-57.134	0	%100
3	M3	SX	-95.223	-95.223	0	%100
4	M4	SX	-95.223	-95.223	0	%100
5	M5	SX	-95.223	-95.223	0	%100
6	M6	SX	-95.223	-95.223	0	%100
7	M7	SX	-57.134	-57.134	0	%100
8	M8	SX	-95.223	-95.223	0	%100
9	M9	SX	-95.223	-95.223	0	%100
10	M10	SX	-95.223	-95.223	0	%100
11	M11	SX	-95.223	-95.223	0	%100
12	M12	SX	-57.134	-57.134	0	%100
13	M13	SX	-95.223	-95.223	0	%100
14	M14	SX	-95.223	-95.223	0	%100
15	M15	SX	-95.223	-95.223	0	%100
16	H1	SX	-57.134	-57.134	0	%100
17	H3	SX	-57.134	-57.134	0	%100
18	H2	SX	-57.134	-57.134	0	%100
19	M19	SX	-57.134	-57.134	0	%100
20	M20	SX	-57.134	-57.134	0	%100
21	M21	SX	-57.134	-57.134	0	%100
22	M22	SX	-95.223	-95.223	0	%100
23	M23	SX	-95.223	-95.223	0	%100
24	M24	SX	-95.223	-95.223	0	%100
25	M25	SX	-95.223	-95.223	0	%100
26	M26	SX	-95.223	-95.223	0	%100
27	MP2	SX	-57.134	-57.134	0	%100
28	M28	SX	-95.223	-95.223	0	%100
29	M29	SX	-95.223	-95.223	0	%100
30	MP1	SX	-57.134	-57.134	0	%100
31	M31	SX	-95.223	-95.223	0	%100
32	M32	SX	-95.223	-95.223	0	%100
33	MP3	SX	-57.134	-57.134	0	%100
34	M34	SX	-95.223	-95.223	0	%100
35	M35	SX	-95.223	-95.223	0	%100
36	MP8	SX	-57.134	-57.134	0	%100
37	M37	SX	-95.223	-95.223	0	%100
38	M38	SX	-95.223	-95.223	0	%100
39	MP7	SX	-57.134	-57.134	0	%100
40	M40	SX	-95.223	-95.223	0	%100
41	M41	SX	-95.223	-95.223	0	%100
42	MP9	SX	-57.134	-57.134	0	%100
43	M43	SX	-95.223	-95.223	0	%100
44	M44	SX	-95.223	-95.223	0	%100
45	MP5	SX	-57.134	-57.134	0	%100
46	M46	SX	-95.223	-95.223	0	%100
47	M47	SX	-95.223	-95.223	0	%100
48	MP4	SX	-57.134	-57.134	0	%100
49	M49	SX	-95.223	-95.223	0	%100
50	M50	SX	-95.223	-95.223	0	%100
51	MP6	SX	-57.134	-57.134	0	%100

Member Distributed Loads (BLC 12 : Ice Weight)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	Y	-10.552	-10.552	0	%100
2	M2	Y	-11.899	-11.899	0	%100
3	M3	Y	-9.456	-9.456	0	%100
4	M4	Y	-9.456	-9.456	0	%100
5	M5	Y	-17.134	-17.134	0	%100
6	M6	Y	-10.552	-10.552	0	%100
7	M7	Y	-11.899	-11.899	0	%100
8	M8	Y	-9.456	-9.456	0	%100
9	M9	Y	-9.456	-9.456	0	%100
10	M10	Y	-17.134	-17.134	0	%100
11	M11	Y	-10.552	-10.552	0	%100
12	M12	Y	-11.899	-11.899	0	%100
13	M13	Y	-9.456	-9.456	0	%100
14	M14	Y	-9.456	-9.456	0	%100
15	M15	Y	-17.134	-17.134	0	%100
16	H1	Y	-11.899	-11.899	0	%100
17	H3	Y	-11.899	-11.899	0	%100
18	H2	Y	-11.899	-11.899	0	%100
19	M19	Y	-8.511	-8.511	0	%100
20	M20	Y	-8.511	-8.511	0	%100
21	M21	Y	-8.511	-8.511	0	%100
22	M22	Y	-20.185	-20.185	0	%100
23	M23	Y	-20.185	-20.185	0	%100
24	M24	Y	-20.185	-20.185	0	%100
25	M25	Y	0	0	0	%100
26	M26	Y	0	0	0	%100
27	MP2	Y	-8.511	-8.511	0	%100
28	M28	Y	0	0	0	%100
29	M29	Y	0	0	0	%100
30	MP1	Y	-8.511	-8.511	0	%100
31	M31	Y	0	0	0	%100
32	M32	Y	0	0	0	%100
33	MP3	Y	-8.511	-8.511	0	%100
34	M34	Y	0	0	0	%100
35	M35	Y	0	0	0	%100
36	MP8	Y	-8.511	-8.511	0	%100
37	M37	Y	0	0	0	%100
38	M38	Y	0	0	0	%100
39	MP7	Y	-8.511	-8.511	0	%100
40	M40	Y	0	0	0	%100
41	M41	Y	0	0	0	%100
42	MP9	Y	-8.511	-8.511	0	%100
43	M43	Y	0	0	0	%100
44	M44	Y	0	0	0	%100
45	MP5	Y	-8.511	-8.511	0	%100
46	M46	Y	0	0	0	%100
47	M47	Y	0	0	0	%100
48	MP4	Y	-8.511	-8.511	0	%100
49	M49	Y	0	0	0	%100
50	M50	Y	0	0	0	%100
51	MP6	Y	-8.511	-8.511	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	SZ	-14.753	-14.753	0	%100
2	M2	SZ	-13.552	-13.552	0	%100
3	M3	SZ	-16.136	-16.136	0	%100
4	M4	SZ	-16.136	-16.136	0	%100
5	M5	SZ	-11.146	-11.146	0	%100
6	M6	SZ	-14.753	-14.753	0	%100
7	M7	SZ	-13.552	-13.552	0	%100
8	M8	SZ	-16.136	-16.136	0	%100
9	M9	SZ	-16.136	-16.136	0	%100
10	M10	SZ	-11.146	-11.146	0	%100
11	M11	SZ	-14.753	-14.753	0	%100
12	M12	SZ	-13.552	-13.552	0	%100
13	M13	SZ	-16.136	-16.136	0	%100
14	M14	SZ	-16.136	-16.136	0	%100
15	M15	SZ	-11.146	-11.146	0	%100
16	H1	SZ	-13.552	-13.552	0	%100
17	H3	SZ	-13.552	-13.552	0	%100
18	H2	SZ	-13.552	-13.552	0	%100
19	M19	SZ	-17.821	-17.821	0	%100
20	M20	SZ	-17.821	-17.821	0	%100
21	M21	SZ	-17.821	-17.821	0	%100
22	M22	SZ	-10.442	-10.442	0	%100
23	M23	SZ	-10.442	-10.442	0	%100
24	M24	SZ	-10.442	-10.442	0	%100
25	M25	SZ	0	0	0	%100
26	M26	SZ	0	0	0	%100
27	MP2	SZ	-17.821	-17.821	0	%100
28	M28	SZ	0	0	0	%100
29	M29	SZ	0	0	0	%100
30	MP1	SZ	-17.821	-17.821	0	%100
31	M31	SZ	0	0	0	%100
32	M32	SZ	0	0	0	%100
33	MP3	SZ	-17.821	-17.821	0	%100
34	M34	SZ	0	0	0	%100
35	M35	SZ	0	0	0	%100
36	MP8	SZ	-17.821	-17.821	0	%100
37	M37	SZ	0	0	0	%100
38	M38	SZ	0	0	0	%100
39	MP7	SZ	-17.821	-17.821	0	%100
40	M40	SZ	0	0	0	%100
41	M41	SZ	0	0	0	%100
42	MP9	SZ	-17.821	-17.821	0	%100
43	M43	SZ	0	0	0	%100
44	M44	SZ	0	0	0	%100
45	MP5	SZ	-17.821	-17.821	0	%100
46	M46	SZ	0	0	0	%100
47	M47	SZ	0	0	0	%100
48	MP4	SZ	-17.821	-17.821	0	%100
49	M49	SZ	0	0	0	%100
50	M50	SZ	0	0	0	%100
51	MP6	SZ	-17.821	-17.821	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	SX	-14.753	-14.753	0	%100
2	M2	SX	-13.552	-13.552	0	%100
3	M3	SX	-16.136	-16.136	0	%100
4	M4	SX	-16.136	-16.136	0	%100
5	M5	SX	-11.146	-11.146	0	%100
6	M6	SX	-14.753	-14.753	0	%100
7	M7	SX	-13.552	-13.552	0	%100
8	M8	SX	-16.136	-16.136	0	%100
9	M9	SX	-16.136	-16.136	0	%100
10	M10	SX	-11.146	-11.146	0	%100
11	M11	SX	-14.753	-14.753	0	%100
12	M12	SX	-13.552	-13.552	0	%100
13	M13	SX	-16.136	-16.136	0	%100
14	M14	SX	-16.136	-16.136	0	%100
15	M15	SX	-11.146	-11.146	0	%100
16	H1	SX	-13.552	-13.552	0	%100
17	H3	SX	-13.552	-13.552	0	%100
18	H2	SX	-13.552	-13.552	0	%100
19	M19	SX	-17.821	-17.821	0	%100
20	M20	SX	-17.821	-17.821	0	%100
21	M21	SX	-17.821	-17.821	0	%100
22	M22	SX	-10.442	-10.442	0	%100
23	M23	SX	-10.442	-10.442	0	%100
24	M24	SX	-10.442	-10.442	0	%100
25	M25	SX	0	0	0	%100
26	M26	SX	0	0	0	%100
27	MP2	SX	-17.821	-17.821	0	%100
28	M28	SX	0	0	0	%100
29	M29	SX	0	0	0	%100
30	MP1	SX	-17.821	-17.821	0	%100
31	M31	SX	0	0	0	%100
32	M32	SX	0	0	0	%100
33	MP3	SX	-17.821	-17.821	0	%100
34	M34	SX	0	0	0	%100
35	M35	SX	0	0	0	%100
36	MP8	SX	-17.821	-17.821	0	%100
37	M37	SX	0	0	0	%100
38	M38	SX	0	0	0	%100
39	MP7	SX	-17.821	-17.821	0	%100
40	M40	SX	0	0	0	%100
41	M41	SX	0	0	0	%100
42	MP9	SX	-17.821	-17.821	0	%100
43	M43	SX	0	0	0	%100
44	M44	SX	0	0	0	%100
45	MP5	SX	-17.821	-17.821	0	%100
46	M46	SX	0	0	0	%100
47	M47	SX	0	0	0	%100
48	MP4	SX	-17.821	-17.821	0	%100
49	M49	SX	0	0	0	%100
50	M50	SX	0	0	0	%100
51	MP6	SX	-17.821	-17.821	0	%100

Member Distributed Loads (BLC 43 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M12	Y	-10.921	-10.921	0	23.596
2	M13	Y	-5.504	-5.504	3.828	27.295
3	M14	Y	-5.504	-5.504	3.828	27.295
4	M7	Y	-10.921	-10.921	0	23.596
5	M8	Y	-5.504	-5.504	3.828	27.295
6	M9	Y	-5.504	-5.504	3.828	27.295
7	M2	Y	-10.921	-10.921	0	23.596
8	M3	Y	-5.504	-5.504	3.828	27.295
9	M4	Y	-5.504	-5.504	3.828	27.295

Member Distributed Loads (BLC 44 : BLC 12 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M12	Y	-28.977	-28.977	0	23.596
2	M13	Y	-14.603	-14.603	3.828	27.295
3	M14	Y	-14.603	-14.603	3.828	27.295
4	M7	Y	-28.977	-28.977	0	23.596
5	M8	Y	-14.603	-14.603	3.828	27.295
6	M9	Y	-14.603	-14.603	3.828	27.295
7	M2	Y	-28.977	-28.977	0	23.596
8	M3	Y	-14.603	-14.603	3.828	27.295
9	M4	Y	-14.603	-14.603	3.828	27.295

Member Area Loads (BLC 1 : Self Weight)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N35	N36	N33	N34	Y	Two Way	-6
2	N22	N23	N24	N21	Y	Two Way	-6
3	N10	N11	N12	N9	Y	Two Way	-6

Member Area Loads (BLC 12 : Ice Weight)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N35	N36	N33	N34	Y	Two Way	-15.92
2	N22	N23	N24	N21	Y	Two Way	-15.92
3	N10	N11	N12	N9	Y	Two Way	-15.92

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Self Weight	DL		-1			13		3	
2	Structure Wind Z	WLZ						51		
3	Structure Wind X	WLX						51		
4	Wind Load 0 AZI	WLZ					26			
5	Wind Load 30 AZI	None					26			
6	Wind Load 45 AZI	None					26			
7	Wind Load 60 AZI	None					26			
8	Wind Load 90 AZI	WLX					26			
9	Wind Load 120 AZI	None					26			
10	Wind Load 135 AZI	None					26			
11	Wind Load 150 AZI	None					26			
12	Ice Weight	OL1					13	51	3	

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
13	Ice Structure Wind Z	OL2						51		
14	Ice Structure Wind X	OL3						51		
15	Ice Wind Load 0 AZI	OL2					26			
16	Ice Wind Load 30 AZI	None					26			
17	Ice Wind Load 45 AZI	None					26			
18	Ice Wind Load 60 AZI	None					26			
19	Ice Wind Load 90 AZI	OL3					26			
20	Ice Wind Load 120 AZI	None					26			
21	Ice Wind Load 135 AZI	None					26			
22	Ice Wind Load 150 AZI	None					26			
23	Seismic Load Z	ELZ			-.113		13			
24	Seismic Load X	ELX	-.113				13			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Live Load 4 (Lv)	None					1			
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			
34	Maintenance Load 1 (...	None					1			
35	Maintenance Load 2 (...	None					1			
36	Maintenance Load 3 (...	None					1			
37	Maintenance Load 4 (...	None					1			
38	Maintenance Load 5 (...	None					1			
39	Maintenance Load 6 (...	None					1			
40	Maintenance Load 7 (...	None					1			
41	Maintenance Load 8 (...	None					1			
42	Maintenance Load 9 (...	None					1			
43	BLC 1 Transient Area...	None						9		
44	BLC 12 Transient Are...	None						9		

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	1.4DL	Yes	Y		DL	1.4																				
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1														
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1														
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1														
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1														
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1														
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1														
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.707	3	.707	10	1														
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.866	3	.5	11	1														
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1														
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1														
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1														
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1														
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1														
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1														

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1														
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1														
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1														
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1														
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1														
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1														
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1														
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1														
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.707	3	.707	10	1														
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.866	3	.5	11	1														
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1														
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1														
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1														
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1														
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1														
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.866	9	-1														
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.707	10	-1														
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1														
34	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	1	14		15	1												
35	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	.866	14	.5	16	1												
36	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	.707	14	.707	17	1												
37	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	-1	14		15	-1												
43	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13		14	-1	19	-1												
47	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DLi + 1WLi ...	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	1	24																	
51	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	.866	24	.5																
52	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	.707	24	.707																
53	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	.5	24	.866																
54	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23		24	1																
55	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	-.5	24	.866																
56	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	-.707	24	.707																
57	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	-.866	24	.5																
58	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	-1	24																	
59	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	-.866	24	-.5																
60	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	-.707	24	-.707																
61	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	-.5	24	-.866																
62	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23		24	-1																
63	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	.5	24	-.866																
64	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	.707	24	-.707																
65	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E 0...	Yes	Y		DL	.862	23	1	24																	
67	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.862	23	.866	24	.5																

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
68	(0.9-0.2Sds)DL + 1E 4..	Yes	Y		DL	.862	23	.707	24	.707																
69	(0.9-0.2Sds)DL + 1E 6..	Yes	Y		DL	.862	23	.5	24	.866																
70	(0.9-0.2Sds)DL + 1E 9..	Yes	Y		DL	.862	23		24	1																
71	(0.9-0.2Sds)DL + 1E 1..	Yes	Y		DL	.862	23	-.5	24	.866																
72	(0.9-0.2Sds)DL + 1E 1..	Yes	Y		DL	.862	23	-.707	24	.707																
73	(0.9-0.2Sds)DL + 1E 1..	Yes	Y		DL	.862	23	-.866	24	.5																
74	(0.9-0.2Sds)DL + 1E 1..	Yes	Y		DL	.862	23	-1	24																	
75	(0.9-0.2Sds)DL + 1E 2..	Yes	Y		DL	.862	23	-.866	24	-.5																
76	(0.9-0.2Sds)DL + 1E 2..	Yes	Y		DL	.862	23	-.707	24	-.707																
77	(0.9-0.2Sds)DL + 1E 2..	Yes	Y		DL	.862	23	-.5	24	-.866																
78	(0.9-0.2Sds)DL + 1E 2..	Yes	Y		DL	.862	23		24	-1																
79	(0.9-0.2Sds)DL + 1E 3..	Yes	Y		DL	.862	23	.5	24	-.866																
80	(0.9-0.2Sds)DL + 1E 3..	Yes	Y		DL	.862	23	.707	24	-.707																
81	(0.9-0.2Sds)DL + 1E 3..	Yes	Y		DL	.862	23	.866	24	-.5																
82	1.2DL + 1Lv1	Yes	Y		DL	1.2	25	1.5																		
83	1.2DL + 1Lv2	Yes	Y		DL	1.2	26	1.5																		
84	1.2DL + 1Lv3	Yes	Y		DL	1.2	27	1.5																		
85	1.2DL + 1Lv4	Yes	Y		DL	1.2	28	1.5																		
86	1.2DL + 1Lv5	Yes	Y		DL	1.2	29	1.5																		
87	1.2DL + 1Lv6	Yes	Y		DL	1.2	30	1.5																		
88	1.2DL + 1Lv7	Yes	Y		DL	1.2	31	1.5																		
89	1.2DL + 1Lv8	Yes	Y		DL	1.2	32	1.5																		
90	1.2DL + 1Lv9	Yes	Y		DL	1.2	33	1.5																		
91	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	.053	3		4	.053												
92	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	.046	3	.027	5	.053												
93	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	.038	3	.038	6	.053												
94	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	.027	3	.046	7	.053												
95	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2		3	.053	8	.053												
96	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.027	3	.046	9	.053												
97	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.038	3	.038	10	.053												
98	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.046	3	.027	11	.053												
99	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.053	3		4	-.053												
100	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.046	3	-.027	5	-.053												
101	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.038	3	-.038	6	-.053												
102	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.027	3	-.046	7	-.053												
103	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2		3	-.053	8	-.053												
104	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	.027	3	-.046	9	-.053												
105	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	.038	3	-.038	10	-.053												
106	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	.046	3	-.027	11	-.053												
107	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.053	3		4	.053												
108	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.046	3	.027	5	.053												
109	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.038	3	.038	6	.053												
110	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.027	3	.046	7	.053												
111	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2		3	.053	8	.053												
112	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.027	3	.046	9	.053												
113	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.038	3	.038	10	.053												
114	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.046	3	.027	11	.053												
115	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.053	3		4	-.053												
116	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.046	3	-.027	5	-.053												
117	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.038	3	-.038	6	-.053												
118	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.027	3	-.046	7	-.053												
119	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2		3	-.053	8	-.053												

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
120	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.027	3	-.046	9	-.053												
121	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.038	3	-.038	10	-.053												
122	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.046	3	-.027	11	-.053												
123	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.053	3		4	.053												
124	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.046	3	.027	5	.053												
125	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.038	3	.038	6	.053												
126	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.027	3	.046	7	.053												
127	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2		3	.053	8	.053												
128	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.027	3	.046	9	.053												
129	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.038	3	.038	10	.053												
130	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.046	3	.027	11	.053												
131	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.053	3		4	-.053												
132	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.046	3	-.027	5	-.053												
133	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.038	3	-.038	6	-.053												
134	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.027	3	-.046	7	-.053												
135	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2		3	-.053	8	-.053												
136	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.027	3	-.046	9	-.053												
137	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.038	3	-.038	10	-.053												
138	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.046	3	-.027	11	-.053												
139	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.053	3		4	.053												
140	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.046	3	.027	5	.053												
141	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.038	3	.038	6	.053												
142	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.027	3	.046	7	.053												
143	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2		3	.053	8	.053												
144	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.027	3	.046	9	.053												
145	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.038	3	.038	10	.053												
146	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.046	3	.027	11	.053												
147	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.053	3		4	-.053												
148	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.046	3	-.027	5	-.053												
149	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.038	3	-.038	6	-.053												
150	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.027	3	-.046	7	-.053												
151	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2		3	-.053	8	-.053												
152	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.027	3	-.046	9	-.053												
153	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.038	3	-.038	10	-.053												
154	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.046	3	-.027	11	-.053												
155	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.053	3		4	.053												
156	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.046	3	.027	5	.053												
157	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.038	3	.038	6	.053												
158	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.027	3	.046	7	.053												
159	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2		3	.053	8	.053												
160	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.027	3	.046	9	.053												
161	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.038	3	.038	10	.053												
162	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.046	3	.027	11	.053												
163	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.053	3		4	-.053												
164	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.046	3	-.027	5	-.053												
165	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.038	3	-.038	6	-.053												
166	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.027	3	-.046	7	-.053												
167	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2		3	-.053	8	-.053												
168	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.027	3	-.046	9	-.053												
169	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.038	3	-.038	10	-.053												
170	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.046	3	-.027	11	-.053												
171	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.053	3		4	.053												

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
172	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.046	3	.027	5	.053												
173	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.038	3	.038	6	.053												
174	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.027	3	.046	7	.053												
175	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2		3	.053	8	.053												
176	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.027	3	.046	9	.053												
177	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.038	3	.038	10	.053												
178	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.046	3	.027	11	.053												
179	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.053	3		4	-.053												
180	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.046	3	-.027	5	-.053												
181	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.038	3	-.038	6	-.053												
182	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.027	3	-.046	7	-.053												
183	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2		3	-.053	8	-.053												
184	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.027	3	-.046	9	-.053												
185	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.038	3	-.038	10	-.053												
186	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.046	3	-.027	11	-.053												
187	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.053	3		4	.053												
188	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.046	3	.027	5	.053												
189	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.038	3	.038	6	.053												
190	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.027	3	.046	7	.053												
191	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2		3	.053	8	.053												
192	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.027	3	.046	9	.053												
193	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.038	3	.038	10	.053												
194	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.046	3	.027	11	.053												
195	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.053	3		4	-.053												
196	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.046	3	-.027	5	-.053												
197	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.038	3	-.038	6	-.053												
198	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.027	3	-.046	7	-.053												
199	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2		3	-.053	8	-.053												
200	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.027	3	-.046	9	-.053												
201	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.038	3	-.038	10	-.053												
202	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.046	3	-.027	11	-.053												
203	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	.053	3		4	.053												
204	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	.046	3	.027	5	.053												
205	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	.038	3	.038	6	.053												
206	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	.027	3	.046	7	.053												
207	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2		3	.053	8	.053												
208	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	-.027	3	.046	9	.053												
209	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	-.038	3	.038	10	.053												
210	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	-.046	3	.027	11	.053												
211	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	-.053	3		4	-.053												
212	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	-.046	3	-.027	5	-.053												
213	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	-.038	3	-.038	6	-.053												
214	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	-.027	3	-.046	7	-.053												
215	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2		3	-.053	8	-.053												
216	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	.027	3	-.046	9	-.053												
217	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	.038	3	-.038	10	-.053												
218	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	.046	3	-.027	11	-.053												
219	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	.053	3		4	.053												
220	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	.046	3	.027	5	.053												
221	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	.038	3	.038	6	.053												
222	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	.027	3	.046	7	.053												
223	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2		3	.053	8	.053												

Load Combinations (Continued)

	Description	So..	P ...	S ...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
224	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	-.027	3	.046	9	.053										
225	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	-.038	3	.038	10	.053										
226	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	-.046	3	.027	11	.053										
227	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	-.053	3		4	-.053										
228	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	-.046	3	-.027	5	-.053										
229	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	-.038	3	-.038	6	-.053										
230	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	-.027	3	-.046	7	-.053										
231	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2		3	-.053	8	-.053										
232	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	.027	3	-.046	9	-.053										
233	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	.038	3	-.038	10	-.053										
234	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	42	1.5	2	.046	3	-.027	11	-.053										

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N25	max	1184.485	20	1939.113	39	1788.46	3	511.501	33	2118.67	19	498.417	30
2		min	-1189.035	12	-101.729	31	-1782.261	27	-1993.526	130	-2121.526	11	-3570.753	38
3	N1	max	1063.7	8	1990.258	45	1872.012	17	558.671	19	2161.433	25	3488.327	45
4		min	-1055.785	32	-92.773	21	-1870.134	25	-2390.327	43	-2165.703	17	-452.486	21
5	N13	max	1821.068	22	1894.772	34	482.436	18	3963.244	34	1782.34	30	764.849	14
6		min	-1824.085	14	-138.902	26	-490.857	10	-654.471	26	-1785.069	6	-647.437	22
7	Totals:	max	3444.115	22	5446.056	41	3684.511	18						
8		min	-3444.115	30	1426.935	81	-3684.513	10						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M2	PIPE 3.5	.527	40	45	.213	40		9	75262.68	78750	7953.75	7953.75	2....	H1-1b
2	M12	PIPE 3.5	.510	40	39	.205	40		3	75262.68	78750	7953.75	7953.75	2....	H1-1b
3	M7	PIPE 3.5	.499	40	34	.190	40		14	75262.68	78750	7953.75	7953.75	2....	H1-1b
4	MP1	PIPE 2.0	.413	57	16	.053	57		16	20866.7...	32130	1871.625	1871.625	1....	H1-1b
5	M11	C3X5	.401	34.856	6	.140	63.177	y	35	11202.9...	47628	981.263	4104	1....	H1-1b
6	M1	C3X5	.401	34.856	44	.141	63.177	y	41	11202.9...	47628	981.263	4104	1....	H1-1b
7	MP3	PIPE 2.0	.401	57	5	.045	57		10	20866.7...	32130	1871.625	1871.625	1....	H1-1b
8	MP9	PIPE 2.0	.399	57	10	.033	57		3	20866.7...	32130	1871.625	1871.625	1....	H1-1b
9	MP4	PIPE 2.0	.385	57	11	.056	57		11	20866.7...	32130	1871.625	1871.625	1....	H1-1b
10	M6	C3X5	.382	34.856	34	.135	63.177	y	46	37027.8...	47628	981.263	4020.228	1	H1-1b
11	MP2	PIPE 2.0	.381	57	5	.059	57		9	20866.7...	32130	1871.625	1871.625	1....	H1-1b
12	MP8	PIPE 2.0	.381	57	10	.047	57		10	20866.7...	32130	1871.625	1871.625	1....	H1-1b
13	MP7	PIPE 2.0	.370	57	10	.045	57		9	20866.7...	32130	1871.625	1871.625	1....	H1-1b
14	MP5	PIPE 2.0	.354	57	16	.057	57		3	20866.7...	32130	1871.625	1871.625	1....	H1-1b
15	MP6	PIPE 2.0	.353	57	15	.039	57		5	20866.7...	32130	1871.625	1871.625	1....	H1-1b
16	M10	6.5"x0.37" P...	.304	21	2	.096	21	y	48	3513.807	75757.5	583.963	6328.115	1....	H1-1b
17	M15	6.5"x0.37" P...	.300	21	7	.098	21	y	37	3513.807	75757.5	583.963	6291.053	1....	H1-1b
18	M5	6.5"x0.37" P...	.295	21	12	.103	21	y	42	3513.807	75757.5	583.963	6584.63	1....	H1-1b
19	M13	L2x2x3	.213	0	14	.028	0	z	43	18051.7...	23392.8	557.717	1239.29	2....	H2-1
20	M3	L2x2x3	.205	0	3	.028	0	z	49	18051.7...	23392.8	557.717	1239.29	2....	H2-1
21	M22	L6 5/8x4 7/...	.194	0	21	.038	42	y	11	15453.0...	66065.6...	1040.591	3031.076	1....	H2-1
22	M19	PIPE 2.0	.185	72	10	.161	72		2	14916.0...	32130	1871.625	1871.625	1....	H1-1b
23	M23	L6 5/8x4 7/...	.184	0	26	.038	42	y	17	15453.0...	66065.6...	1040.591	3031.076	1....	H2-1
24	M8	L2x2x3	.183	0	9	.027	0	z	38	18051.7...	23392.8	557.717	1239.29	2....	H2-1

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

	Member	Shape	Code Check	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn y...	phi*Mn z...	Cb	Eqn
25	M4	L2x2x3	.168	0	13	.030	0	y	41	18051.7...	23392.8	557.717	1239.29	2....	H2-1
26	M21	PIPE_2.0	.168	72	5	.151	72		13	14916.0...	32130	1871.625	1871.625	1....	H1-1b
27	M20	PIPE_2.0	.160	24	16	.151	72		8	14916.0...	32130	1871.625	1871.625	1....	H1-1b
28	M24	L6 5/8x4 7/...	.155	0	32	.035	42	y	6	15453.0...	66065.6...	1040.591	3031.076	1....	H2-1
29	M9	L2x2x3	.150	0	2	.029	0	y	47	18051.7...	23392.8	557.717	1239.29	2....	H2-1
30	M14	L2x2x3	.138	0	7	.030	0	y	36	18051.7...	23392.8	557.717	1239.29	2....	H2-1
31	H3	PIPE_3.5	.127	31	10	.119	24		16	60666.0...	78750	7953.75	7953.75	1....	H1-1b
32	H1	PIPE_3.5	.124	31	5	.124	24		10	60666.0...	78750	7953.75	7953.75	1....	H1-1b
33	H2	PIPE_3.5	.120	31	15	.111	24		5	60666.0...	78750	7953.75	7953.75	1....	H1-1b

APPENDIX D

ADDITIONAL CALCUATIONS

Trylon

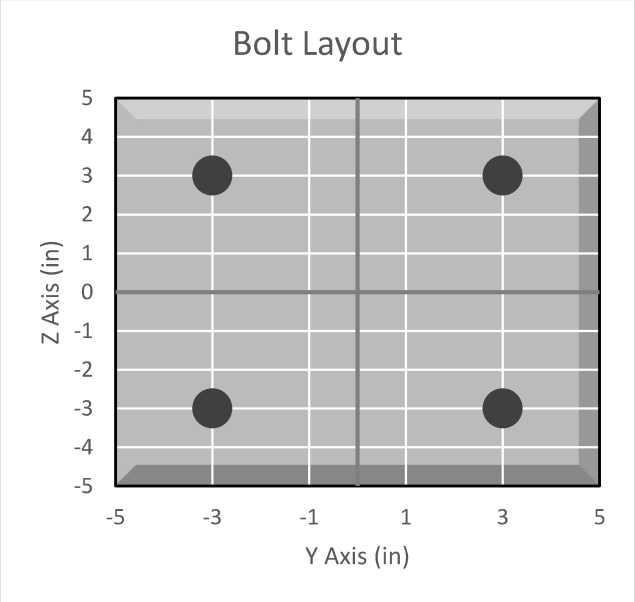
Analysis date: 7/31/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	189206
Carrier Site ID:	842856
Carrier Site Name:	ANDOVER NORTH

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

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



Connection Description
Standoff to Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	4413.0	lbs
Shear Force (V_u):	752.4	lbs
Tension Usage:	20.7%	--
Shear Usage:	5.2%	--
Interaction:	20.7%	Pass
Controlling Member:	M2	--
Controlling LC:	42	--

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

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

APPENDIX E

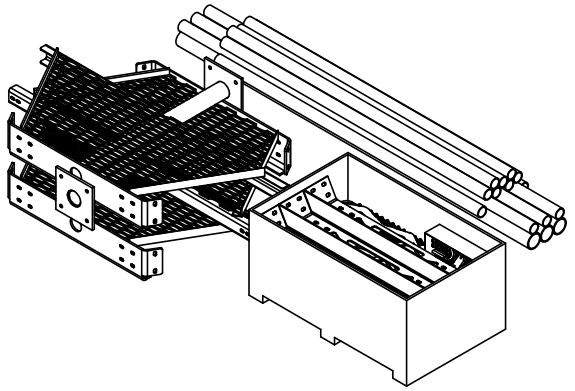
SUPPLEMENTAL DRAWINGS

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

C

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

FOR BOM ENTRY ONLY



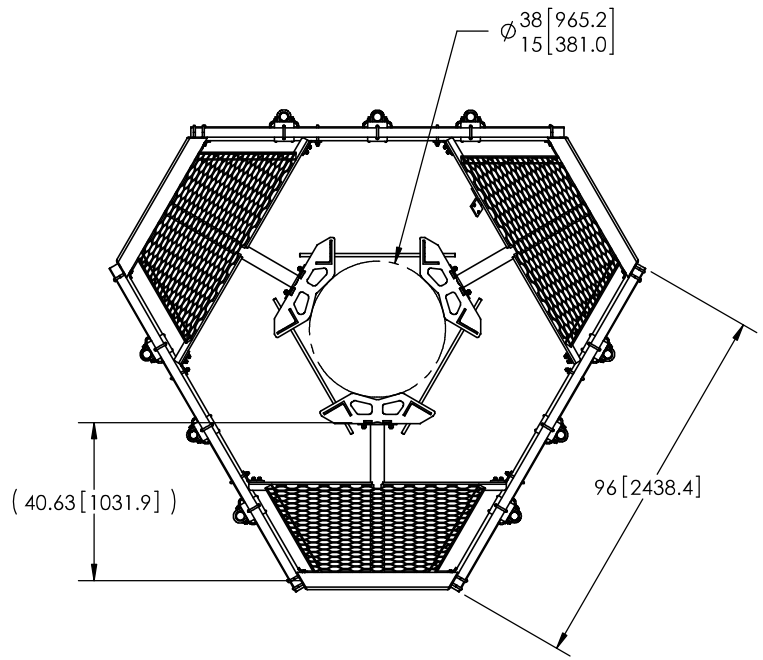
NOTES:
1. CUSTOMER ASSEMBLY SHEETS 2–3.

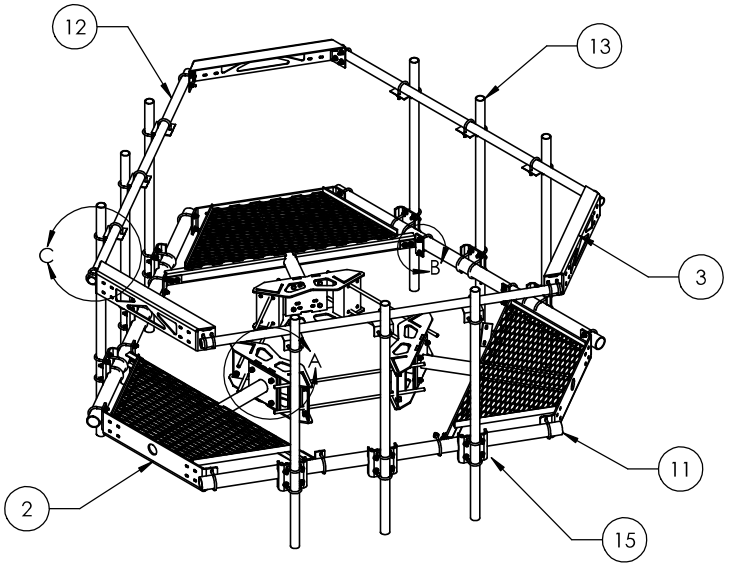
These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew Corporation.

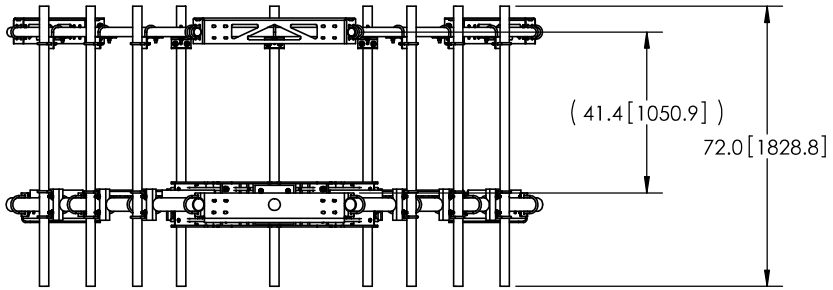
ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03
REMOVE BURRS AND BREAK EDGES .005

DO NOT SCALE THIS PRINT

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







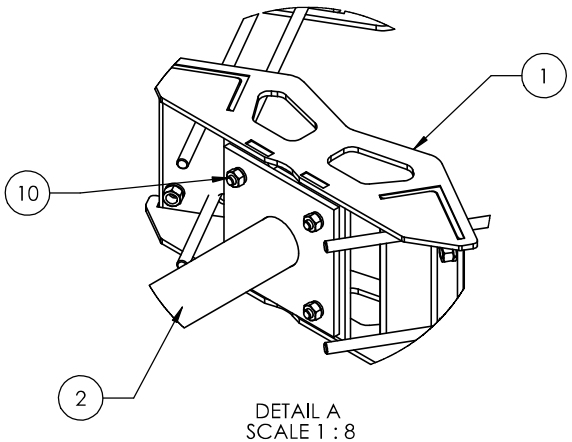
ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
C 1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1	230.42 LBS
2	MTC300601	Low Profile Co-Location Platform Snub Nose	3	134.21 LBS
3	MT195801	Corner Weldment Snub Nose Handrail	3	27.10 LBS
4	XA2020.01	CROSS OVER ANGLE	9	2.65 LBS
5	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	18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

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

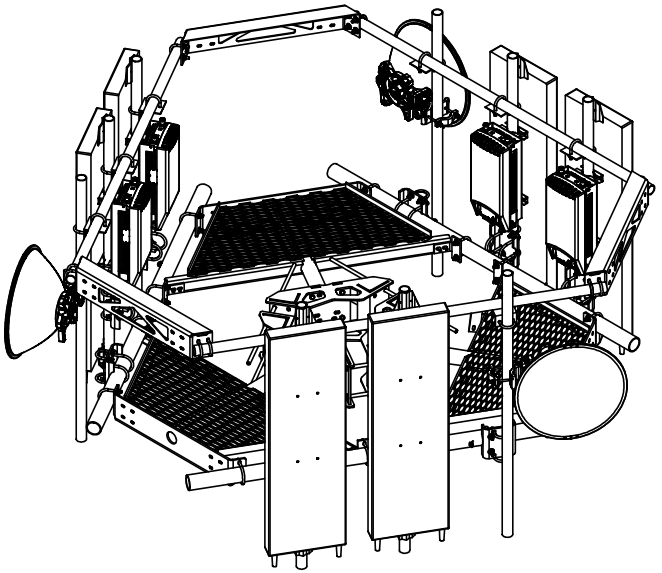
These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew Corporation.

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

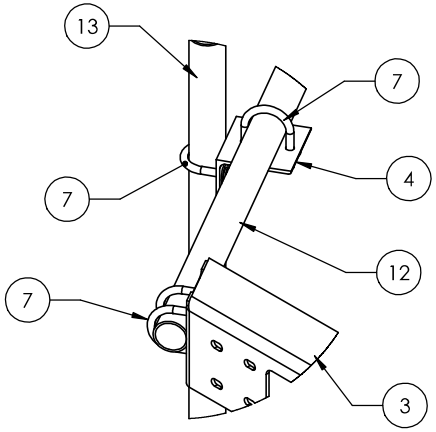
DRAWN BY: MSM	SHEET: 2 of 3	PART NUMBER: MC-PK8-C	
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: 25" OD Snub Nose MT-196	
DATE: 10/18/11	MATERIAL: A36, A53	DRAWING TYPE: ASSEMBLY DRAWING	
REVISION: C	FINISH: GALV A123	WEIGHT: 1361.27 LBS	ANDREW® WESTCHESTER, IL. 60154 U.S.A.



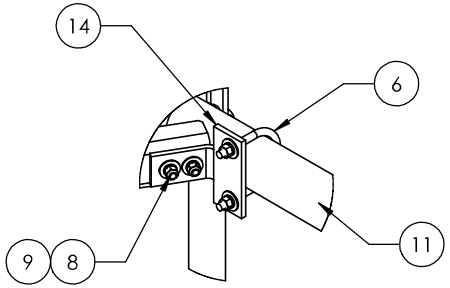
DETAIL A
SCALE 1 : 8



WITH ANTENNAS



DETAIL C
SCALE 1 : 8



DETAIL B
SCALE 1 : 8

NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew Corporation.

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

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

ANDREW®
WESTCHESTER, IL. 60154
U.S.A.

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOBDL00063A

842856
122 Jonathan Trumbull Highway (Route 6)
Andover, Connecticut 06232

October 6, 2021

EBI Project Number: 6221005711

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**10.24%**

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

October 6, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00063A - 842856

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **122 Jonathan Trumbull Highway (Route 6)** in **Andover, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 122 Jonathan Trumbull Highway (Route 6) in Andover, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

6) The antenna mounting height centerline of the proposed antennas is 120 feet above ground level (AGL).

7) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz
Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd
Height (AGL):	120 feet	Height (AGL):	120 feet	Height (AGL):	120 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts
ERP (W):	3,065.51	ERP (W):	3,065.51	ERP (W):	3,065.51
Antenna A1 MPE %:	**1.22%**	Antenna B1 MPE %:	**1.22%**	Antenna C1 MPE %:	**1.22%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.22%
Verizon	4.92%
AT&T	1.57%
T-Mobile	2.09%
Metro PCS	0.44%
Site Total MPE % :	10.24%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.22%
Dish Wireless Sector B Total:	1.22%
Dish Wireless Sector C Total:	1.22%
Site Total MPE % :	10.24%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	120.0	2.48	600 MHz n71	400	0.62%
Dish Wireless 1900 MHz n70	4	542.70	120.0	6.01	1900 MHz n70	1000	0.60%
						Total:	**1.22%**

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

Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	1.22%
Sector B:	1.22%
Sector C:	1.22%
Dish Wireless Maximum MPE % (Sector A):	1.22%
Site Total:	10.24%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.24%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Letter of Authorization

CROWN CASTLE

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

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

Crown Castle Letter of Authorization

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

Re: Tower Share Application
Crown Castle telecommunications site at:
122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6), ANDOVER, CT 06232

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

Crown Site ID/Name: 842856/ANDOVER NORTH
Customer Site ID: BOBDL00063A/CT-CCI-T-842856
Site Address: 122 JONATHAN TRUMBULL HIGHWAY (ROUTE 6), ANDOVER, CT 06232

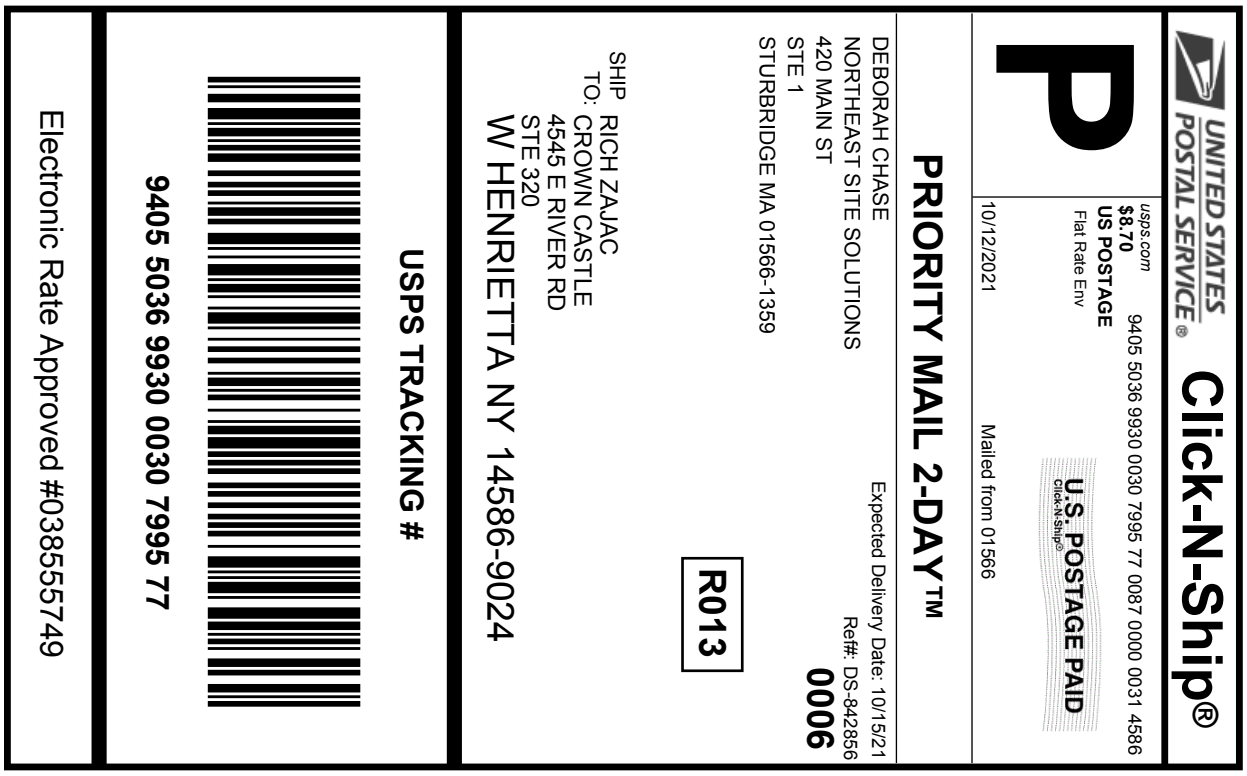
Crown Castle

By: _____ Date: 10/11/2021

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0030 7995 77

Trans. #:	545804203
Print Date:	10/12/2021
Ship Date:	10/12/2021
Expected Delivery Date:	10/15/2021

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

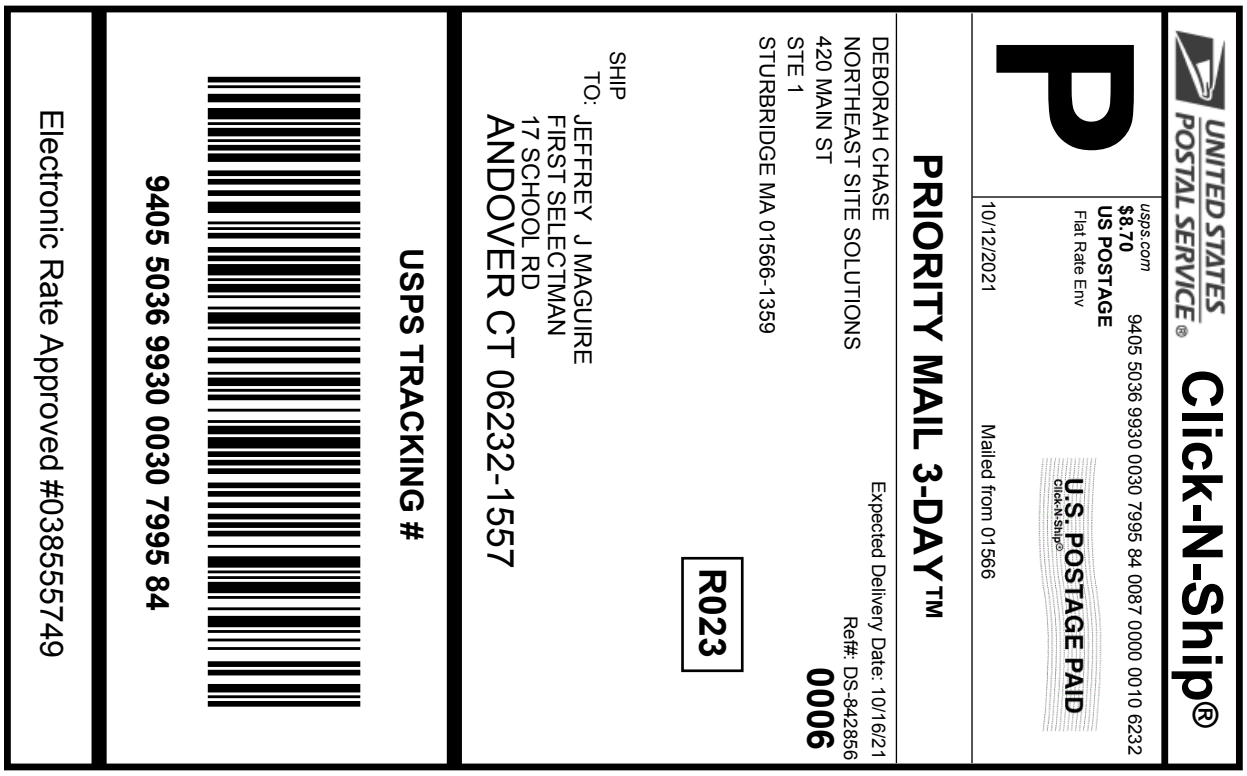
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-842856

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

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0030 7995 84

Trans. #:	545804203
Print Date:	10/12/2021
Ship Date:	10/12/2021
Expected Delivery Date:	10/16/2021

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

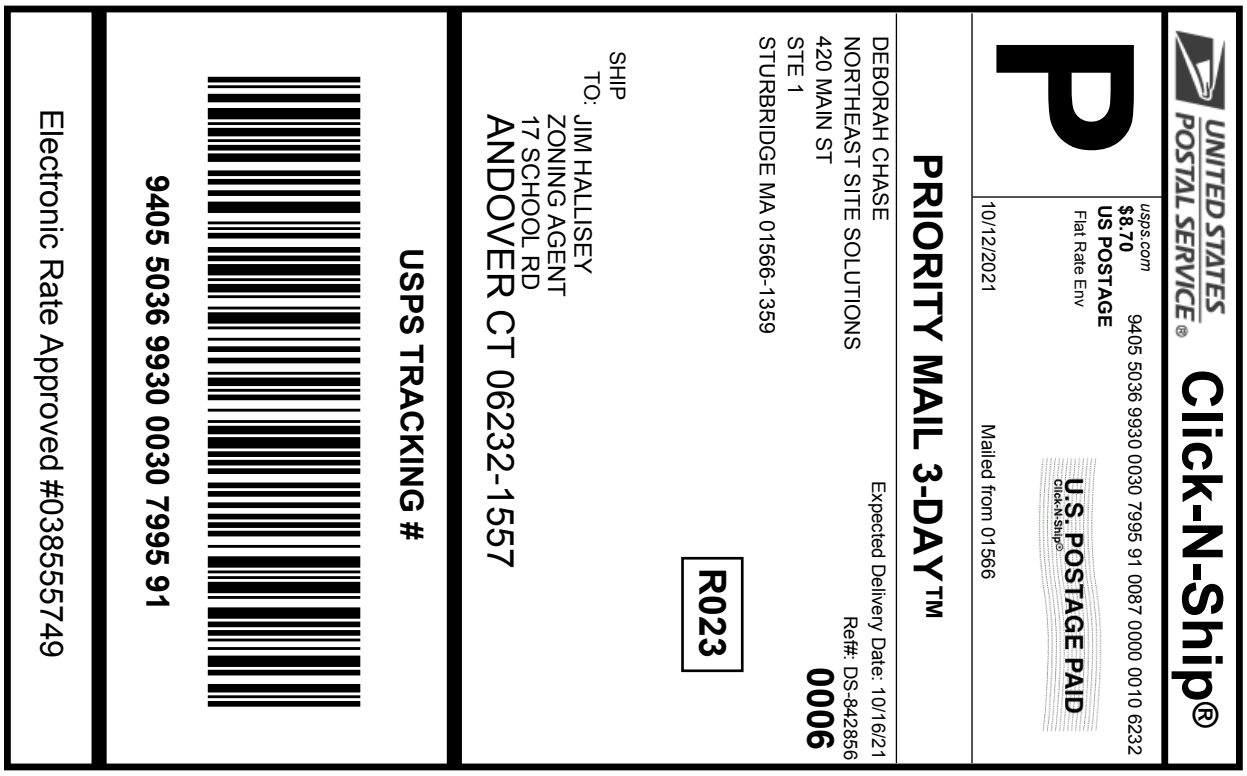
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-842856

To: JEFFREY J MAGUIRE
FIRST SELECTMAN
17 SCHOOL RD
ANDOVER CT 06232-1557

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0030 7995 91

Trans. #:	545804203
Print Date:	10/12/2021
Ship Date:	10/12/2021
Expected Delivery Date:	10/16/2021

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

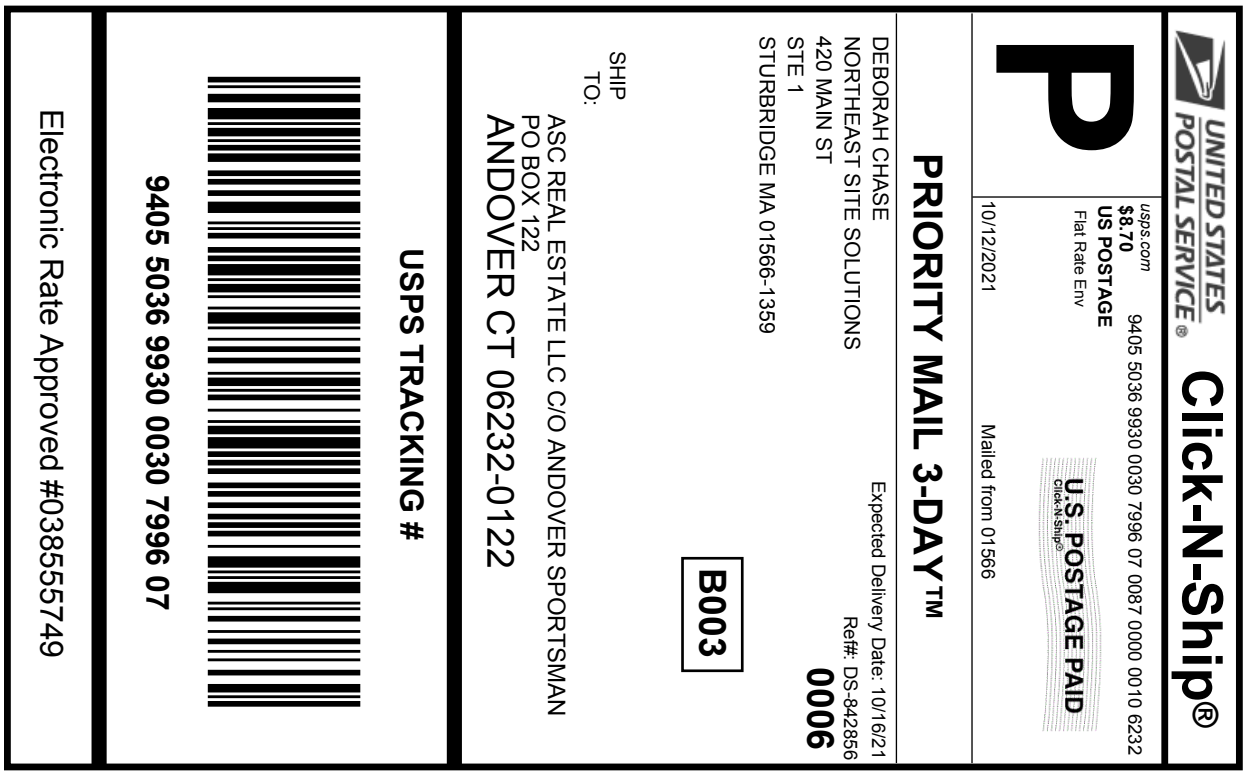
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-842856

To: JIM HALLISEY
ZONING AGENT
17 SCHOOL RD
ANDOVER CT 06232-1557

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0030 7996 07

Trans. #:	545804203
Print Date:	10/12/2021
Ship Date:	10/12/2021
Expected Delivery Date:	10/16/2021

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

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

Ref#: DS-842856

To: ASC REAL ESTATE LLC C/O ANDOVER SPORTSMAN CLUB
PO BOX 122
ANDOVER CT 06232-0122

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

842-856

UNITED STATES POSTAL SERVICE.

NEW BRITAIN
135 CHESTNUT ST
NEW BRITAIN, CT 06050-9998
(800)275-8777

10/14/2021 12:54 PM

Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Thu 10/14/2021 Tracking #: 9405 5036 9930 0030 7995 77	1		$0.00
Prepaid Mail Andover, CT 06232 Weight: 0 lb 14.30 oz Acceptance Date: Thu 10/14/2021 Tracking #: 9405 5036 9930 0030 7996 07	1		$0.00
Prepaid Mail Andover, CT 06232 Weight: 0 lb 14.30 oz Acceptance Date: Thu 10/14/2021 Tracking #: 9405 5036 9930 0030 7995 91	1		$0.00
Prepaid Mail Andover, CT 06232 Weight: 0 lb 14.40 oz Acceptance Date: Thu 10/14/2021 Tracking #: 9405 5036 9930 0030 7995 84	1		$0.00
Grand Total:			$0.00