NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

April 14, 2022

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

RE: Tower Share Application
21 Acorn Road, Branford, CT 06405
Latitude: 41.293086
Longitude: -72.762886
Site #: 876316_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 21 Acorn Road, Branford, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 126-foot level of the existing 147-foot monopole tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within a 7' x 5' lease area within the existing building. Included are plans by Infinigy, dated April 6, 2022, Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated September 23, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Town of Branford Planning & Zoning Commission on September 4, 1997. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to James Cosgrove, First Selectman and Harry Smith, Town Planner for the Town of Branford as well as the tower owner (Crown Castle) and property owner (21 Acorn Road LLC).

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the existing tower is 147-feet and the Dish Wireless LLC antennas will be located at a center line height of 126-feet.

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

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. The combined site operations will result in a total power density of 21.13% 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 submits 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 tower in Branford. 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 126-foot level of the existing 147-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 Branford.

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: James Cosgrove, First Selectman
Town of Branford
1019 Main Street
Branford, CT 06405

Harry Smith, Town Planner
Town of Branford
1019 Main Street
Branford, CT 06405

21 Acorn Road LLC
21 Acorn Road
Branford, CT 06405

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

H5/3/10

PLANNING AND ZONING COMMISSION
TOWN OF BRANFORD TOWN HALL DRIVE P.O. BOX 150
Branford, Connecticut 06405 488-1255

NOTICE OF DECISION

September 5, 1997

Sprint PCS
9 Barnes Industrial Road
Wallingford, Connecticut 06492

SUBJECT: Special Exception APPLICATION: #97-5.1

LOCATION: 21 Acorn Road

OWNER OF RECORD: Altrio Investment Group

Dear Sir:

At a meeting of the Branford Planning & Zoning Commission held on Thursday, September 4, 1997, the Commission voted to:

X Approve your above subject application with the conditions noted below.

Very truly yours,

Shirley Rasmussen
Town Planner

NOTE: This Special Exception shall become effective only after it is filed on the Land Records in the office of the Town Clerk.

1. Prior to issuance of a building permit, revise landscape plan to show plantings 5 to 6 feet in height on all four sides of the equipment area. 36" only 8 plants on two sides only

2. All users of the telecommunications facility must demonstrate compliance with current FCC regulations for electromagnetic frequency emissions and any future changes in these standards.

3. The owner of the telecommunications facility shall provide for and encourage co-location of other antennae on the facility.

NOTE: Special Exception shall become null and void in the event the applicant fails to obtain a building permit within one (1) year of date of approval.
(Per Section 31.7 of the Branford Zoning Regulations)

CC: Attorney John Knuff

Exhibit B

Property Card

21 ACORN RD

Location	21 ACORN RD	**Mblu**	H05/000 003/ 00010/ /
Acct#	008133	**Owner**	21 ACORN ROAD LLC
Assessment	$778,360	**Appraisal**	$1,111,770
PID	1176	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$626,560	$485,210	$1,111,770

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$438,680	$339,680	$778,360

Owner of Record

Owner	21 ACORN ROAD LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	21 ACORN RD BRANFORD, CT 06405	**Book & Page**	1279/0300

Sale Date	03/17/2020
Instrument	3

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
21 ACORN ROAD LLC	$0		1279/0300	3	03/17/2020
ALTRIO INVESTMENT GROUP LLC	$0		0568/0731		04/08/1994

Building Information

Building 1 : Section 1

Year Built:	2001
Living Area:	10,912
Replacement Cost:	$698,920
Building Percent Good:	70
Replacement Cost Less Depreciation:	$489,200

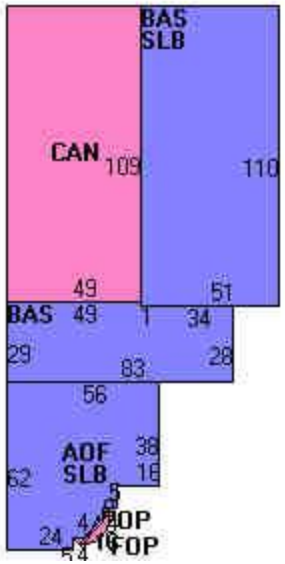
Building Attributes	
Field	**Description**
Style:	Warehouse
Model	Ind/Comm
Grade	B
Stories:	1
Occupancy	1.00
Exterior Wall 1	Concr/Cinder

Building Photo

(http://images.vgsi.com/photos/BranfordCTPhotos//\0031\ACORN%20RD%2_31344.jpg)

Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T&G/Rubber
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	None
Struct Class	
Bldg Use	COMM WHS MDL96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3160
Heat/AC	HEAT/AC SPLIT
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	NONE
Rooms/Prtns	AVERAGE
Wall Height	17.00
% Comn Wall	0.00

Building Layout



(http://images.vgsi.com/photos/BranfordCTPhotos//Sketches/1176_1176.jp

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	7,983	7,983
AOF	Office	2,929	2,929
CAN	Canopy	5,341	0
FOP	Porch, Open	80	0
SLB	Slab	8,539	0
		24,872	10,912

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
SPR1	SPRINKLERS-WET	13324.00 S.F.	$14,000	1
SPR2	WET/CONCEALED	2928.00 S.F.	$4,100	1
A/C	AIR CONDITION	2928.00 S.F.	$4,500	1
GEN4	GEN 100+ KW PRMT BKP	0.00 UNITS	$30,000	1

Land

Land Use

Use Code	3160
Description	COMM WHS MDL96
Zone	IG-2
Neighborhood	350
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	1.56
Frontage	
Depth	
Assessed Value	$339,680
Appraised Value	$485,210

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	PAVING-ASPHALT			21000.00 S.F.	$24,300	1
FN3	FENCE-6' CHAIN			500.00 L.F.	$3,500	1

Valuation History

Appraisal

Valuation Year	Improvements	Land	Total
2021	$626,560	$485,210	$1,111,770
2019	$626,560	$485,210	$1,111,770
2018	$507,600	$428,300	$935,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$438,680	$339,680	$778,360
2019	$438,680	$339,680	$778,360
2018	$355,300	$299,900	$655,200

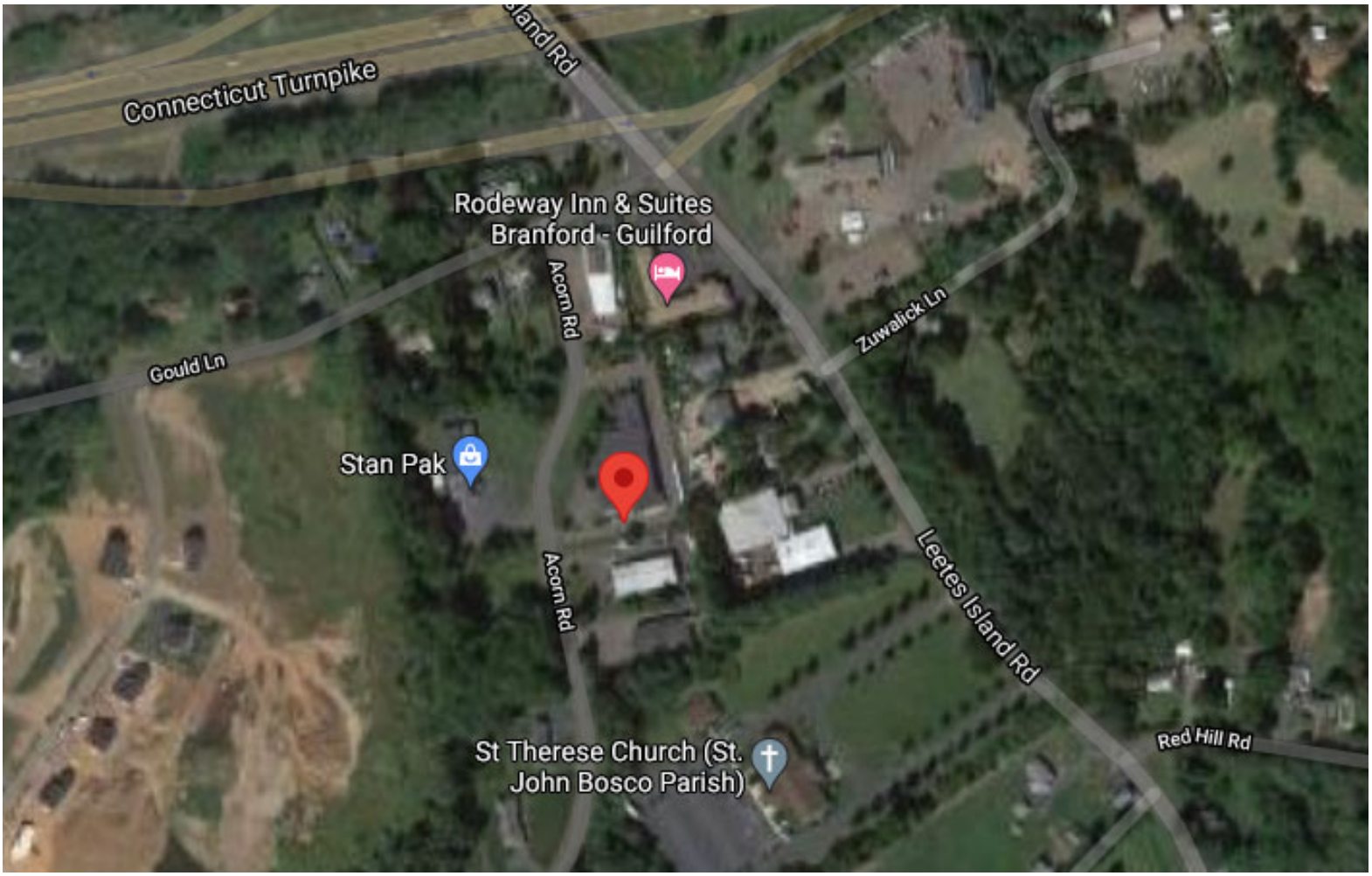

Connecticut Turnpike
Rodeway Inn & Suites
Branford - Guilford
Acorn Rd
Zuwallick Ln
Gould Ln
Stan Pak
Acorn Rd
Leetes Island Rd
St Therese Church (St.
John Bosco Parish)
Red Hill Rd

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOHVN00164A

DISH Wireless L.L.C. SITE ADDRESS:

21 ACORN ROAD, BRANFORD, CT 06405

CONNECTICUT CODE OF COMPLIANCE

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

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

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
LS1	SITE SURVEY
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
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	RF SIGNAGE
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES
GN-5	GENERAL NOTES

SCOPE OF WORK

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

TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED ANTENNA PLATFORM MOUNT
- 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 FIBER NID (IF REQUIRED)
- EXISTING METER SOCKET TO BE UTILIZE

SITE PHOTO

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	21 ACORN ROAD LLC
ADDRESS:	21 ACORN RD BRANFORD, CT 06405
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	876316
TOWER APP NUMBER:	553381
COUNTY:	NEW HAVEN
LATITUDE (NAD 83):	41° 17' 35.1" N 41.293072
LONGITUDE (NAD 83):	72° 45' 46.4" W -72.76288889
ZONING JURISDICTION:	CT-CONNECTICUR SITTING COUNCIL
ZONING DISTRICT:	TBD
PARCEL NUMBER:	TBD
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	CONNECTICUT LIGHT AND POWER (EVERSOURCE)
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

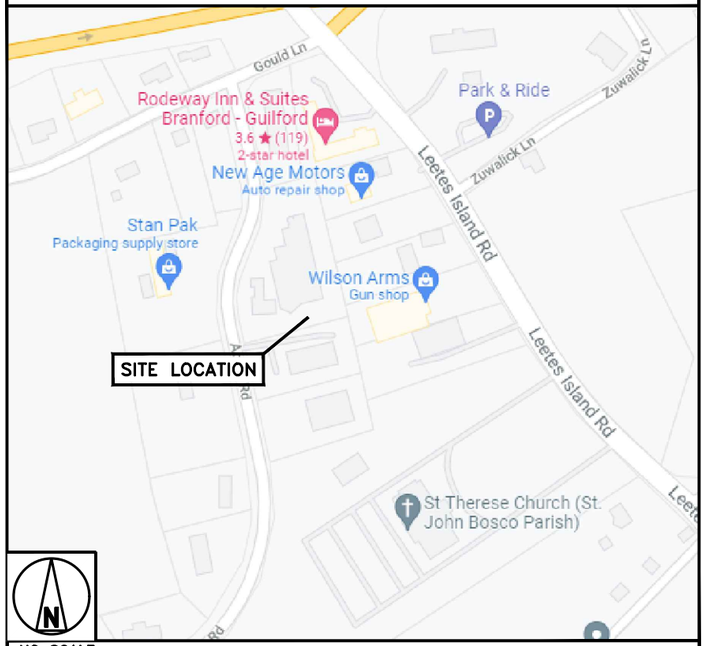
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	INFINIGY ENGINEERING, PLLC 2500 W. HIGGINS RD. SUITE 500 HOFFMAN ESTATES, IL 60169 (847) 648-4068
SITE ACQUISITION:	NICHOLAS CURRY (980) 430-8582
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	SYED ZAIDI SYED.ZAIDI@DISH.COM

DIRECTIONS

DIRECTIONS FROM TWEED NEW HAVEN AIRPORT:

DEPART AND HEAD (NORTHEAST), AVIS RENT A CAR ON THE CORNER, TURN RIGHT TOWARD BURR ST, BUDGET CAR RENTAL ON THE CORNER, TURN RIGHT ONTO BURR ST, KEEP STRAIGHT TO GET ONTO DODGE AVE, TURN LEFT ONTO THOMPSON AVE, KEEP STRAIGHT TO GET ONTO CT-100 / HIGH ST, TAKE THE RAMP ON THE RIGHT FOR I-95 NORTH AND HEAD TOWARD NEW LONDON, AT EXIT 56, HEAD RIGHT ON THE RAMP FOR LEETES ISLAND RD TOWARD STONY CREEK, BEAR RIGHT ONTO GOULD LN, THEN IMMEDIATELY TURN RIGHT ONTO GOULD LN, TURN LEFT ONTO ACORN RD, TURN LEFT, ARRIVE AT, 21 ACORN ROAD, BRANFORD CT 06405.

VICINITY MAP



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 SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
4/6/2022

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/13/2020	ISSUED FOR REVIEW
0	04/05/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

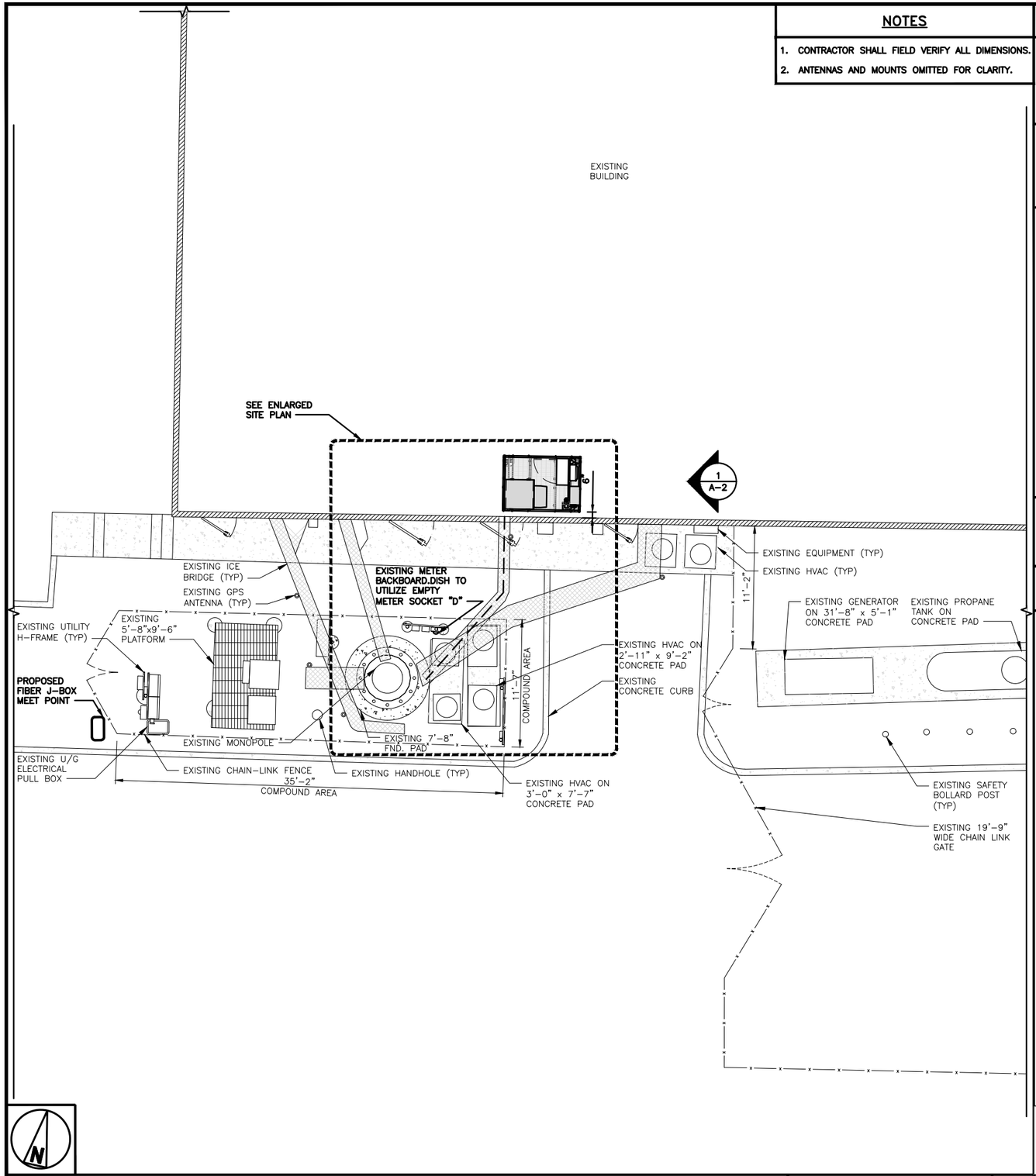
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



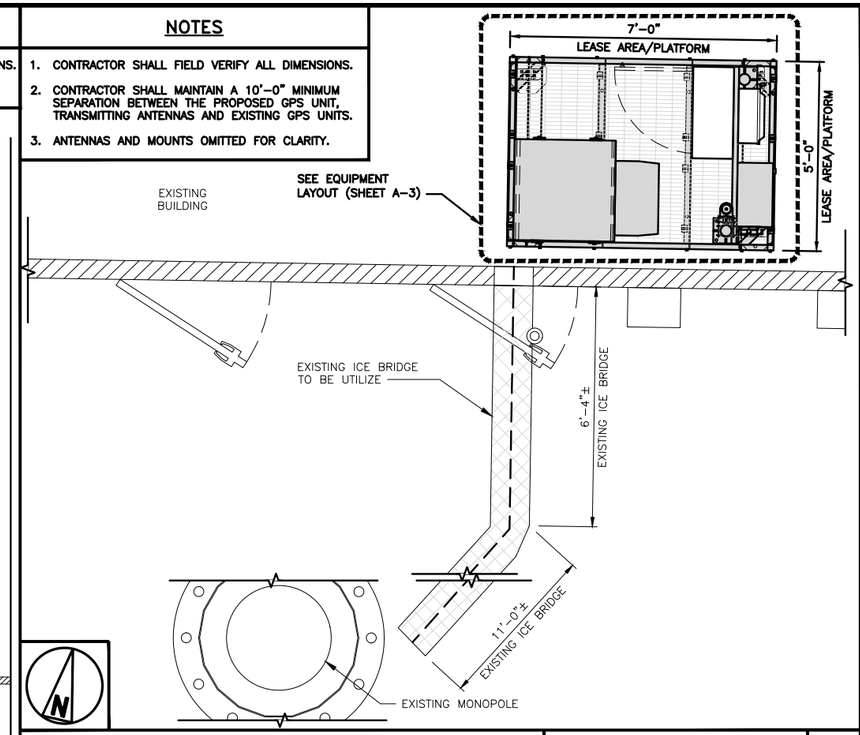
OVERALL SITE PLAN

6' 4' 2' 0 5' 10'
3/16"=1'-0"

1

NOTES

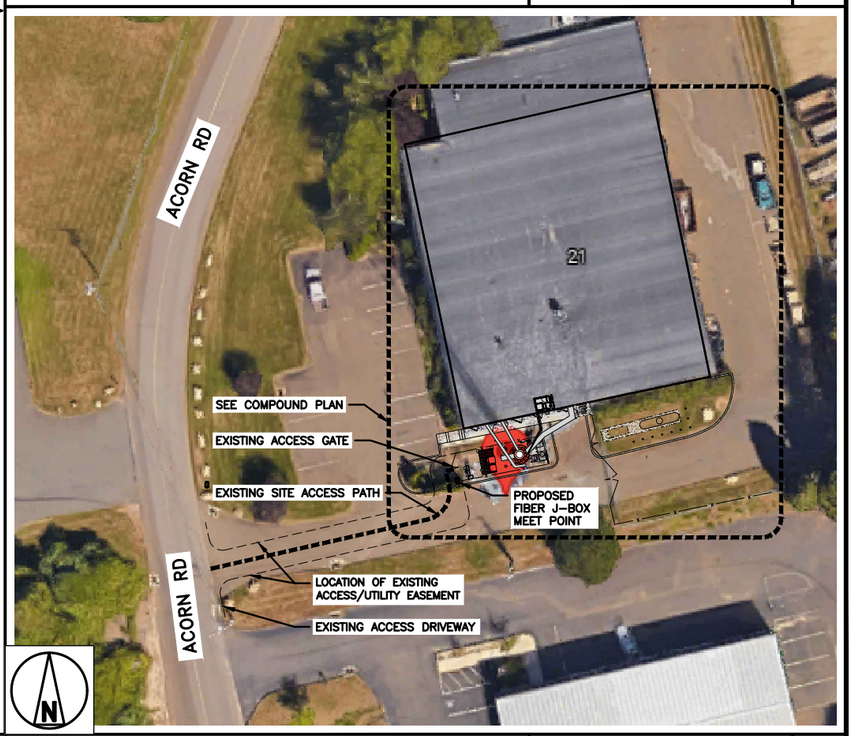
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

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

2



SITE PLAN

30' 20' 10' 0 30' 60'
1"=30'

3

dish wireless.
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STATE OF CONNECTICUT
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4/6/2022

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

SHEET TITLE

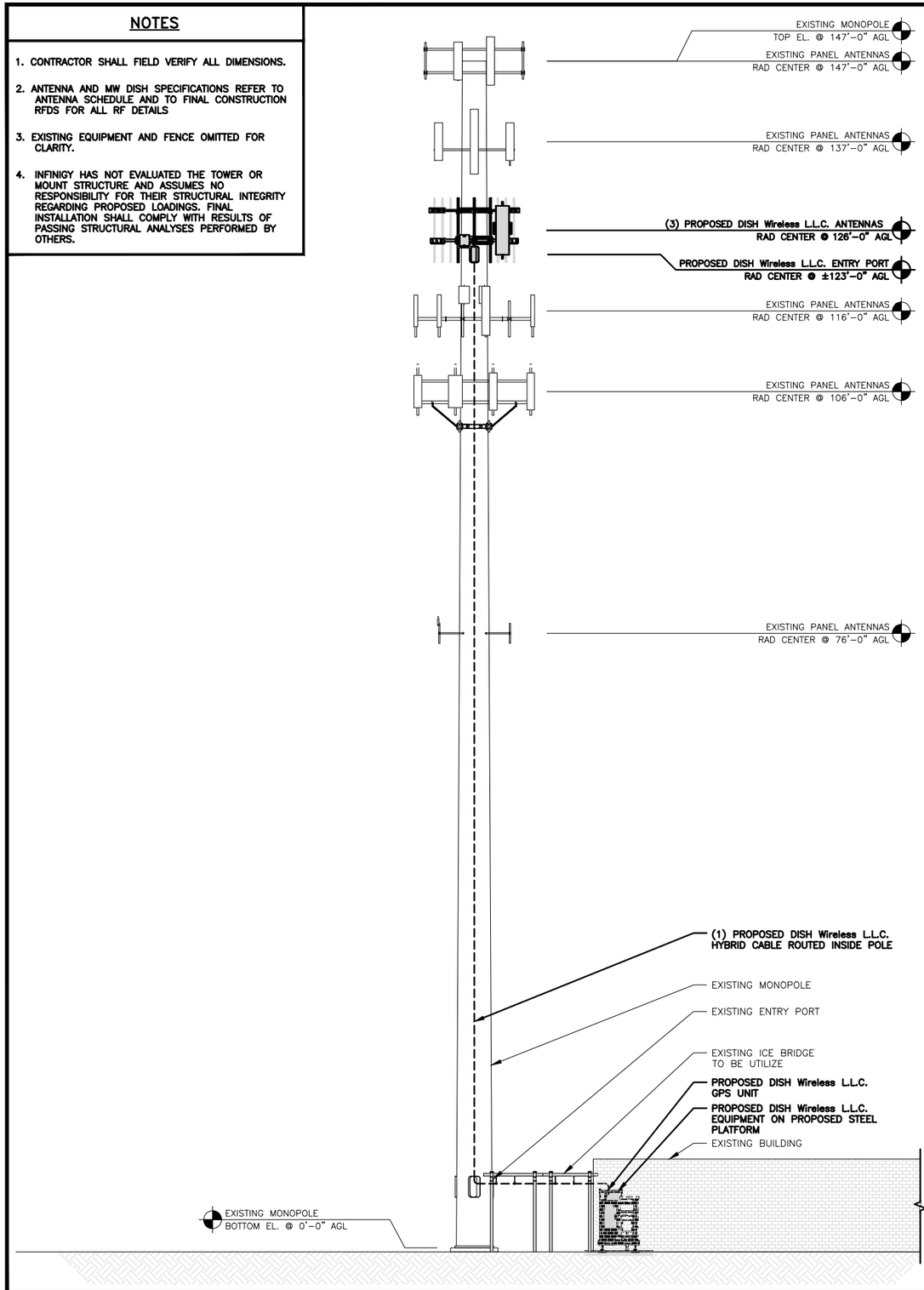
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

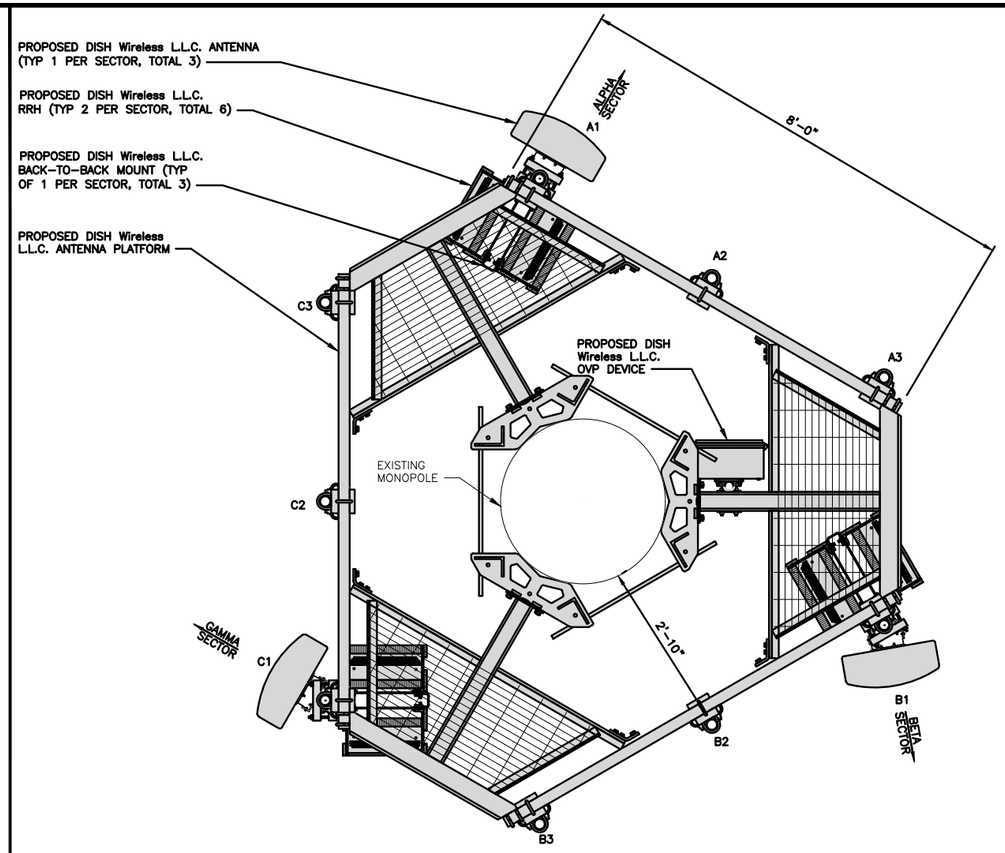
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY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



PROPOSED EAST ELEVATION

6' 4' 2' 0 5' 10'
3/16"=1'-0"

1



ANTENNA LAYOUT

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

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1	PROPOSED	JMAWIRELESS – MX08FRO665-21	5G	30°	126'-0"	(1) HIGH-CAPACITY HYBRID CABLE (149' LONG)	FUJITSU – TA08025-B604	5G	A1	RAYCAP-RDIDC-9181-PF-48
A2	--	--	--	--	--		FUJITSU – TA08025-B605	5G	A1	
A3	--	--	--	--	--		--	--	--	
B1	PROPOSED	JMAWIRELESS – MX08FRO665-21	5G	170°	126'-0"	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	B1	SHARED W/ALPHA
B2	--	--	--	--	--		FUJITSU – TA08025-B605	5G	B1	
B3	--	--	--	--	--		--	--	--	
C1	PROPOSED	JMAWIRELESS – MX08FRO665-21	5G	300°	126'-0"	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	C1	SHARED W/ALPHA
C2	--	--	--	--	--		FUJITSU – TA08025-B605	5G	C1	
C3	--	--	--	--	--		--	--	--	

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

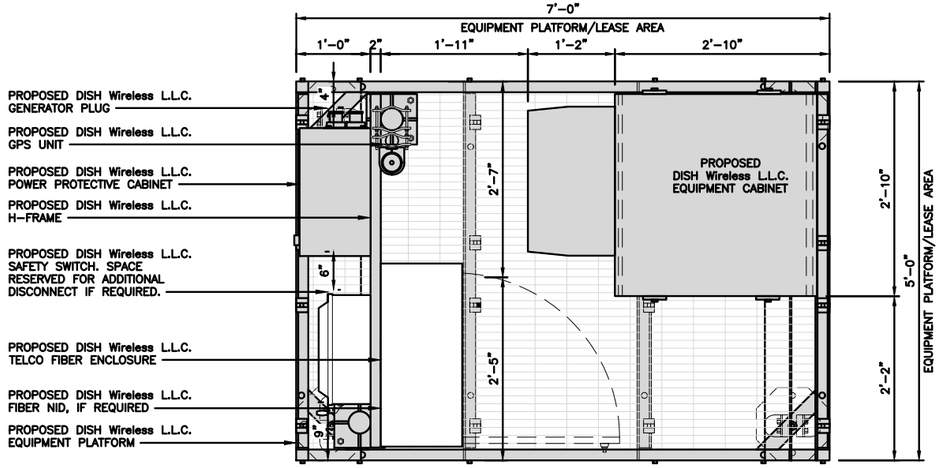
REV	DATE	DESCRIPTION
A	09/13/2020	ISSUED FOR REVIEW
0	04/05/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



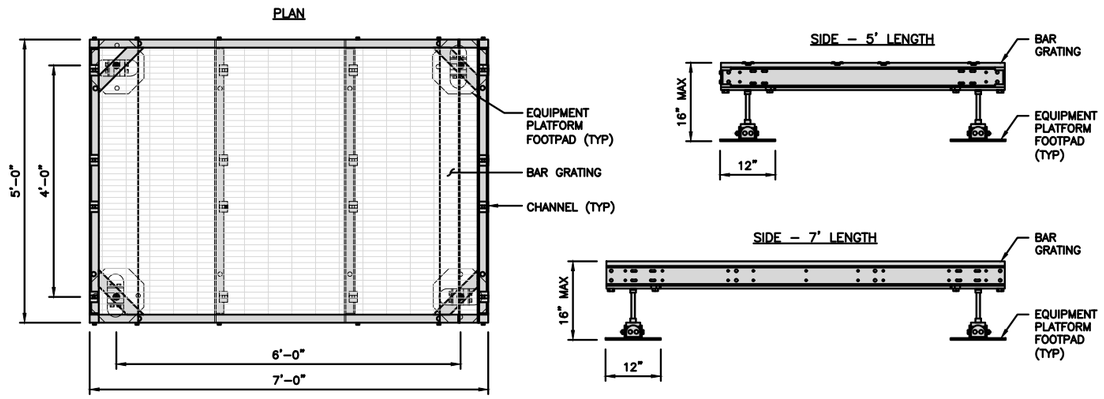
PLATFORM EQUIPMENT PLAN

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"



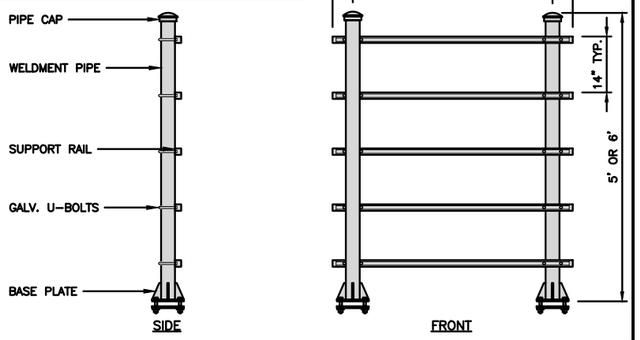
PLATFORM DETAIL

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

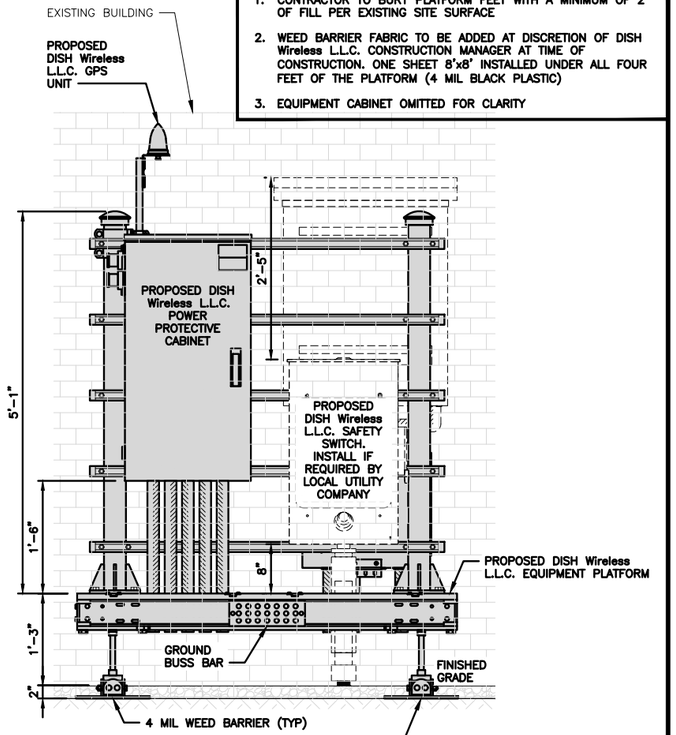
NOT USED

NO SCALE

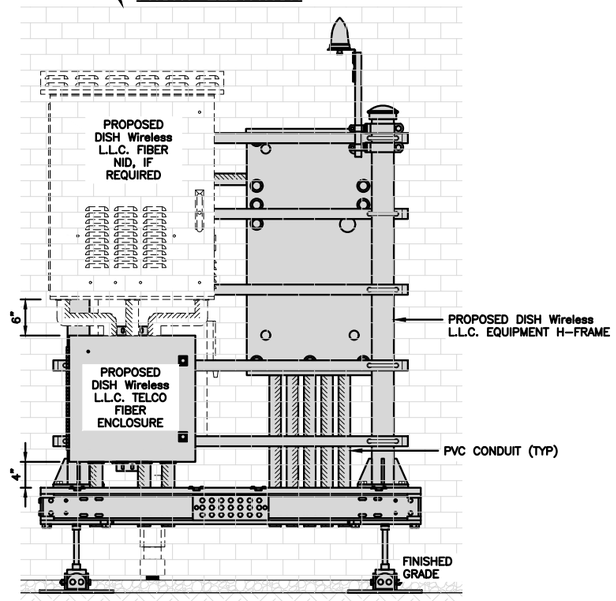
4

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

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
4/6/2022

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

RFDS REV #: N/A

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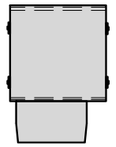
DISH Wireless L.L.C.
PROJECT INFORMATION

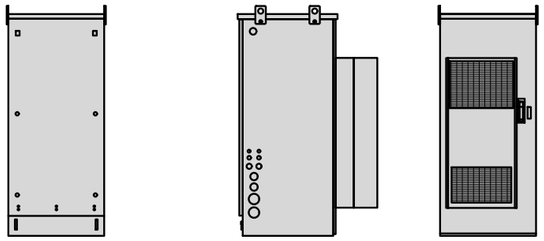
BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD)	74"x32"x32"
POWER PLANT	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 lbs

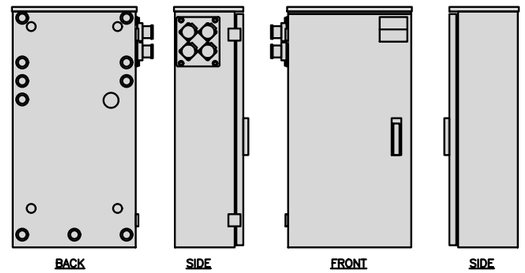

PLAN


BACK SIDE FRONT

CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC–2465–P–240–MTS	
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G

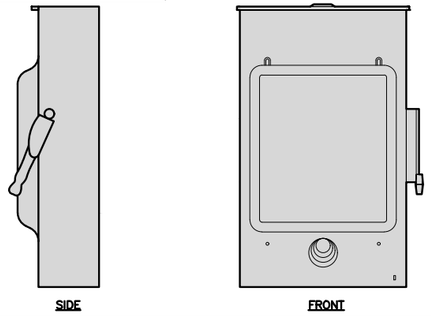

TOP


BACK SIDE FRONT SIDE

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

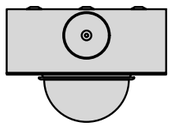
SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E–2875

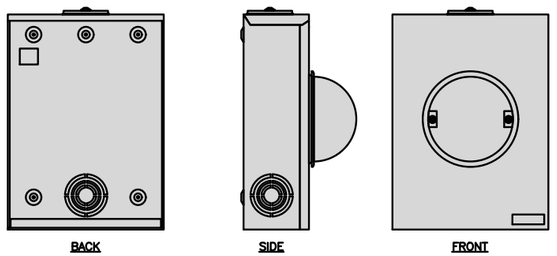

TOP


SIDE FRONT

SAFETY SWITCH DETAIL | NO SCALE | 3

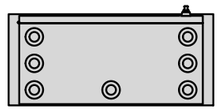
EATON METER SOCKET UNRRS213BEUSE	
DIMENSIONS (HxWxD)	16"x12"x6"
TYPE	RING
AMPERAGE RATING	200 CONT. AMP
WEIGHT	18 lbs

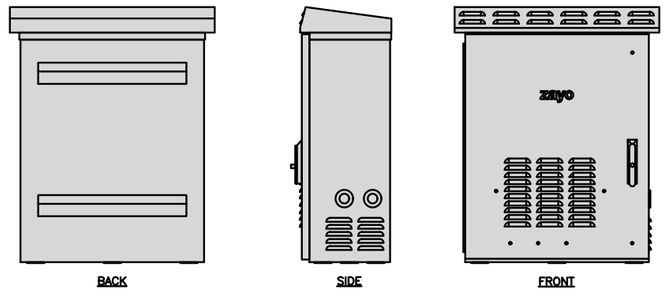

TOP


BACK SIDE FRONT

METER BANK DETAIL | NO SCALE | 4

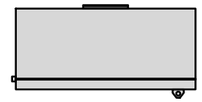
ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	36.1"x29"x12.9"
WEIGHT	85 lbs

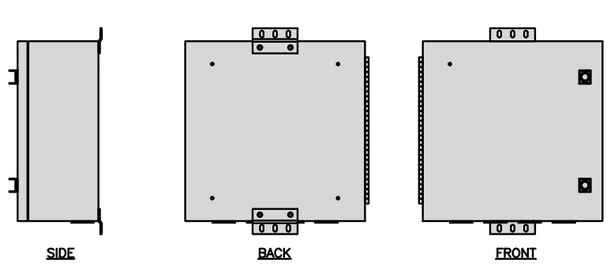

BOTTOM


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

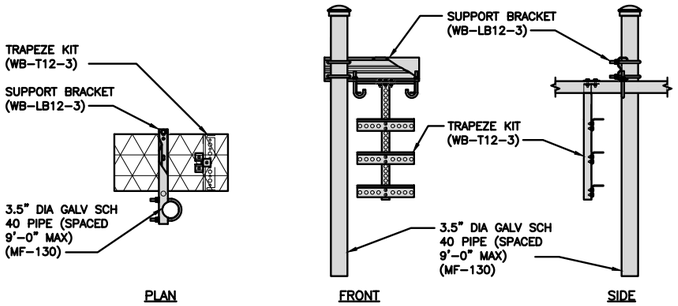

FRONT


SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

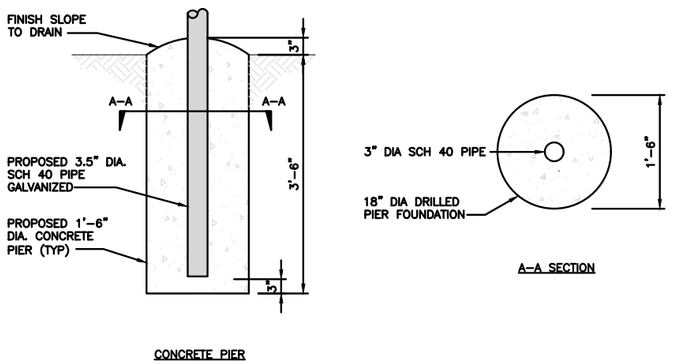
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



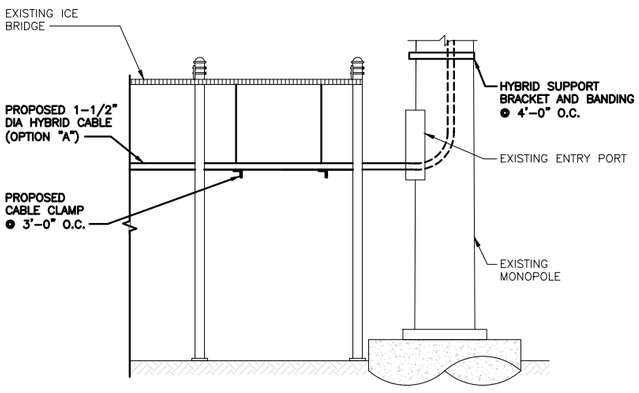
PLAN FRONT SIDE

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

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4/6/2022

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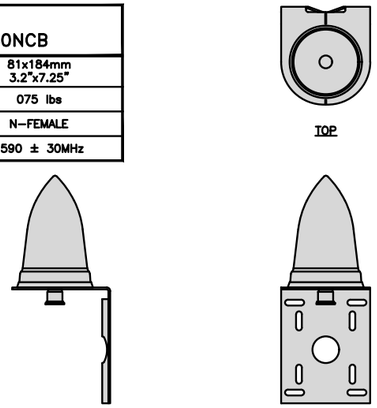
BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

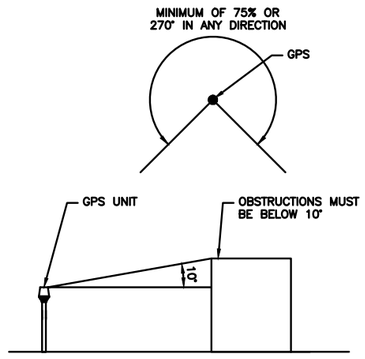
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

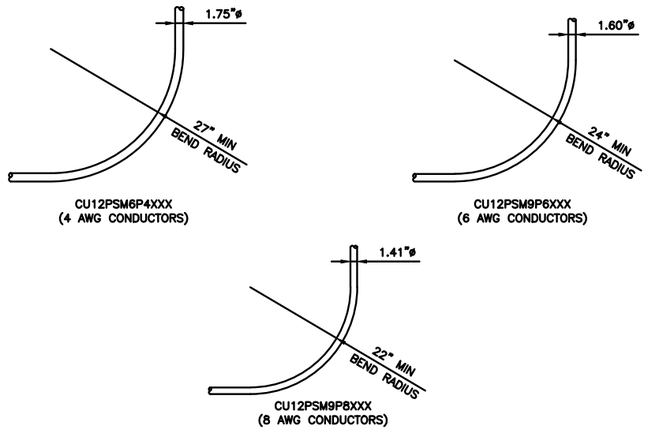
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



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

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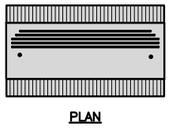
SHEET TITLE
EQUIPMENT DETAILS

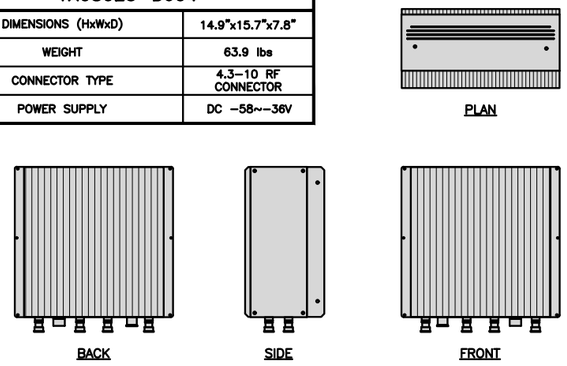
SHEET NUMBER
A-5

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



RRH DETAIL | NO SCALE | 1

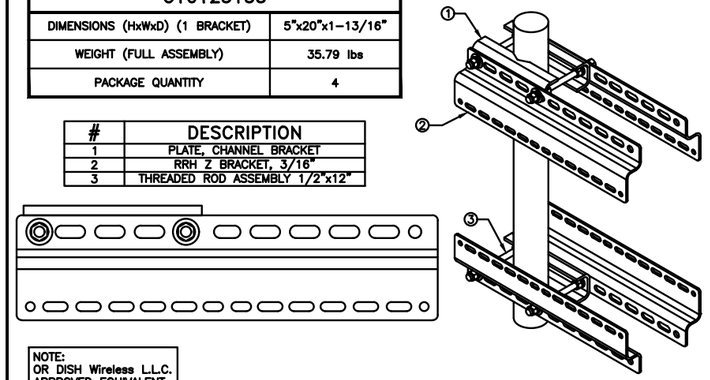
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



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

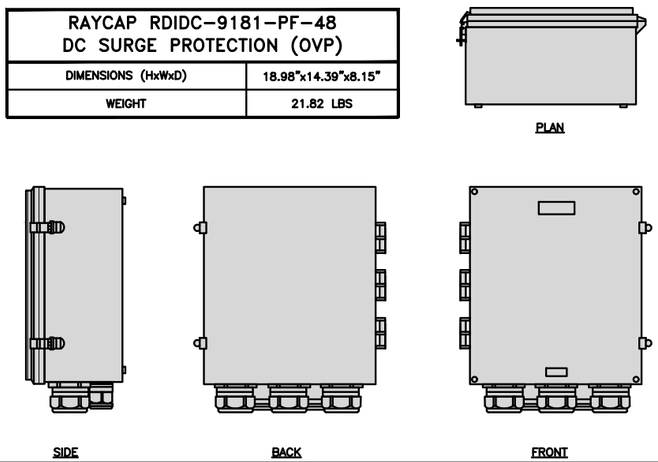
#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



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

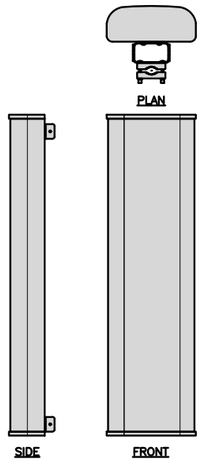
RRH MOUNT DETAIL | NO SCALE | 3

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



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

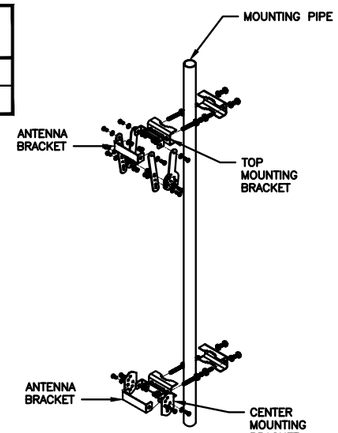


ANTENNA DETAIL | NO SCALE | 5

JMA ANTENNA MOUNT BRACKET #91900318	
TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-,6-, AND 8-FOOT ANTENNAS

ANTENNA BRACKET NOT PART OF KIT

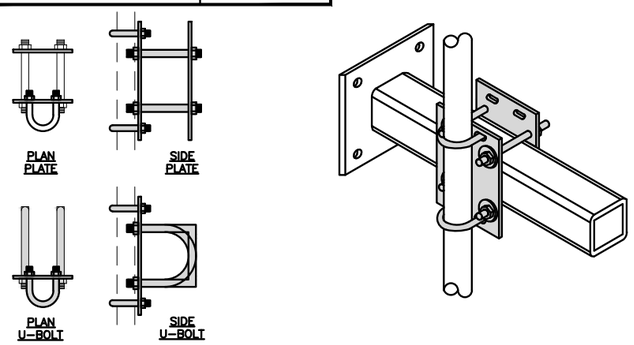


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

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

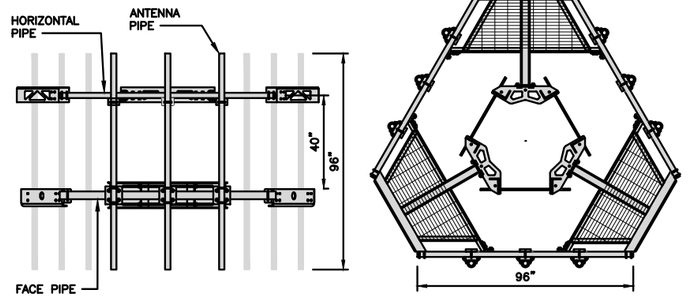
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



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

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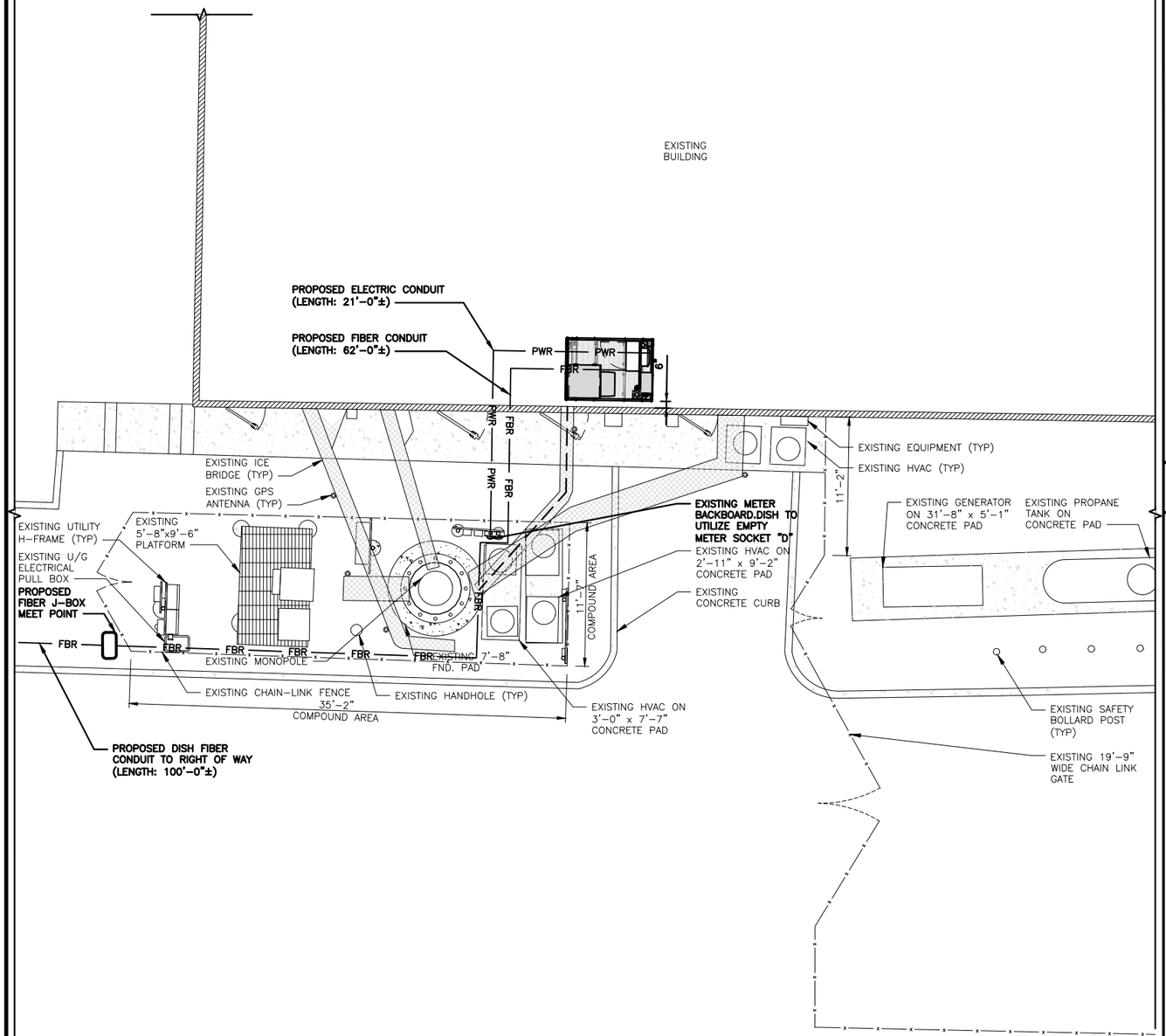
BRANFORD, CT 06405

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.
3. DUE TO UTILITY EASEMENT RIGHTS SPECIFIED IN THE GROUND LEASE, CUSTOMER MAY INSTALL EQUIPMENT WITHIN SPECIFIED UTILITY EASEMENT AREA. "PWR" AND "FBR" PATH DEPICTED ON A–1 AND E–1 REPRESENT PLANNED ROUTING BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO A SURVEY, EXHIBITS, METES AND BOUNDS OF THE UTILITY EASEMENT, FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPETY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS MATERIALLY INCONSISTENT WITH "PWR" AND "FBR" PATH DEPICTED ON A–1 AND E–1 AND SAID VARIANCE IS NOT NOTED ON CDs, PLEASE NOTIFY TOWER OWNER AS FURTHER COORDINATION MAY BE NEEDED.



UTILITY ROUTE PLAN

6' 4' 2' 0 5' 10'
3/16"=1'–0"

1

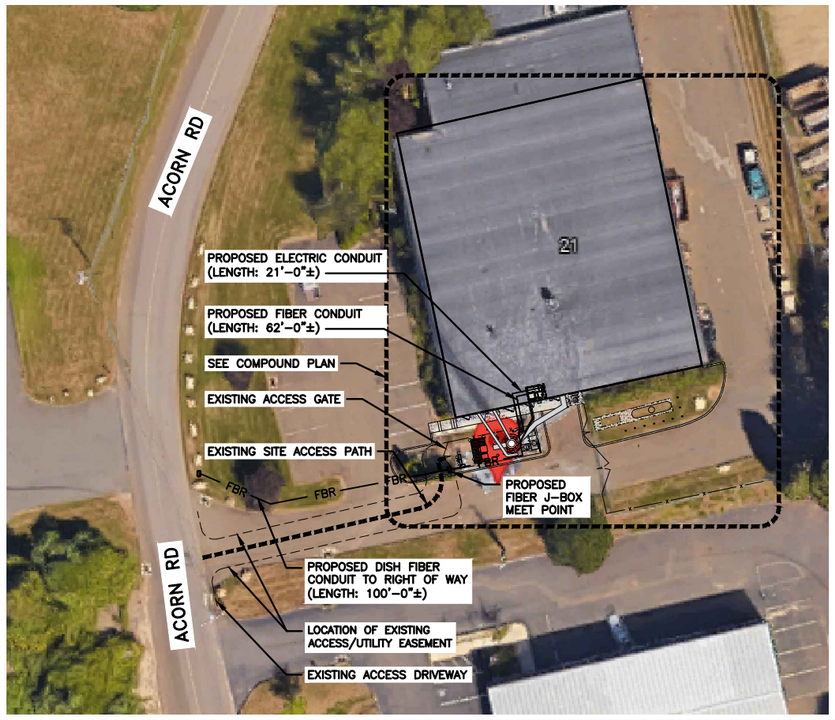
DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND –48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY –48V.

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

NO SCALE

2



OVERALL UTILITY ROUTE PLAN

30' 20' 10' 0 30' 60'
1"=30'

3

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
4/6/2022

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/13/2020	ISSUED FOR REVIEW
0	04/05/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039–Z0001–C

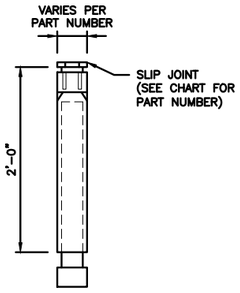
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

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"

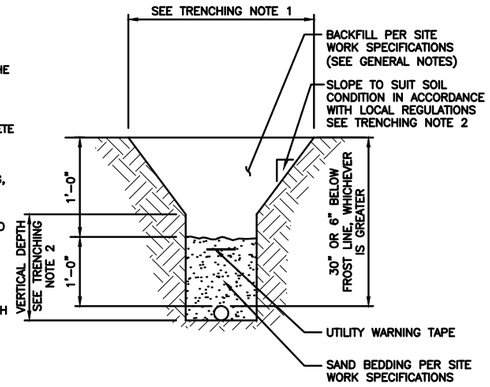


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

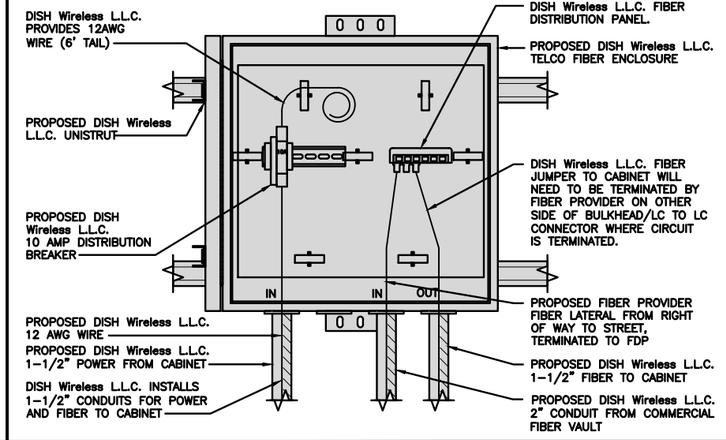
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

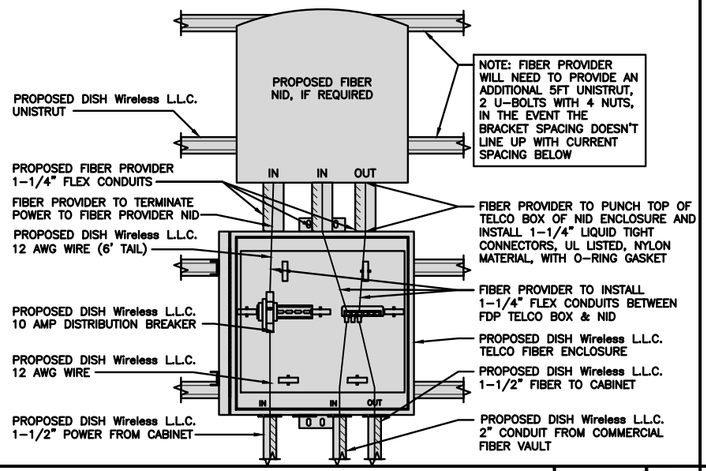
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT 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



DARK TELCO BOX – INTERIOR WIRING LAYOUT | NO SCALE | 3



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

DISH Wireless L.L.C. TEMPLATE VERSION 48 – 2/21/2022

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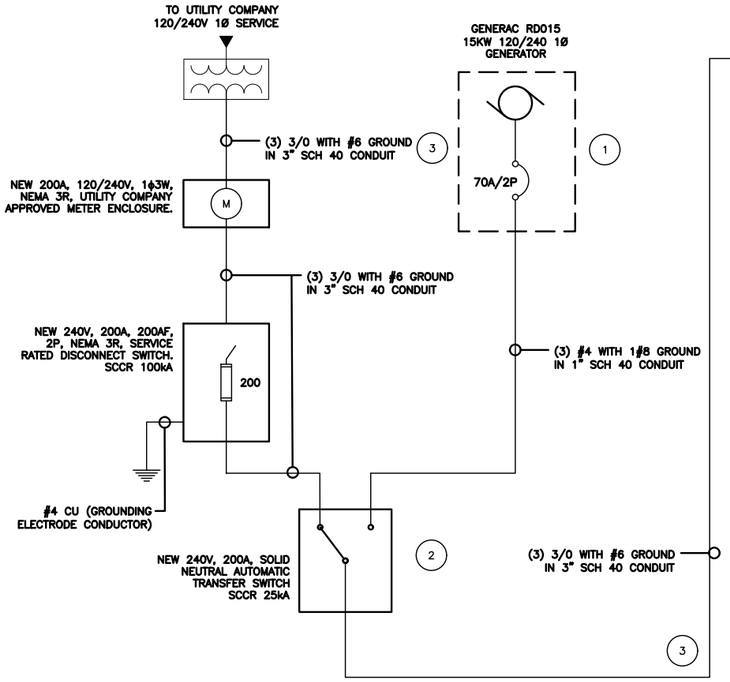
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

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: (OR EQUIVALENT MANUFACTURER)
(4) 30A, 2P BREAKER – SQUARE D P/N:QO230
(2) 20A, 1P BREAKER – SQUARE D P/N:QO120
(2) 15A, 1P BREAKER – SQUARE D P/N:QO115

PPC ONE-LINE DIAGRAM — NO SCALE — 1

NOTES

THE (3) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE. (ALL WIRE AND TERMINATION HARDWARE TO BE RATED 75°C)
#12 FOR 20A OCPD WIRE DERATING: 0.8 x 25A = 20.0A
#10 FOR 30A OCPD WIRE DERATING: 0.8 x 35A = 28.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.
.5" CONDUIT – .1220 SQ. IN AREA
.75" CONDUIT – .2130 SQ. IN AREA
3.0" CONDUIT – 3.538 SQ. IN AREA

RECTIFIER CONDUCTORS (2 CONDUIT): USING THWN-2, CU.

#10	– 0.0211 SQ. IN X 4 =	0.844 SQ. IN
#10	– 0.0211 SQ. IN X 1 =	0.0211 SQ. IN <GROUND
TOTAL		= 0.1055 SQ. IN

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

GENERATOR ACCESSORIES CONDUCTORS (1 CONDUIT): USING THWN-2, CU.

#12	– 0.0133 SQ. IN X 2 =	0.0266 SQ. IN
#12	– 0.0133 SQ. IN X 1 =	0.0133 SQ. IN <GROUND
TOTAL		= 0.0399 SQ. IN

.5" 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.

KEYNOTES

1. PROVIDE GENERATOR WITH EMERGENCY SHUNT TRIP BUTTON LOCATED IN READILY ACCESABLE LOCATION.
2. GENERAC GTS 200A TRANSFER SWITCH. OPTIONAL EMERGENCY SYSTEM IS "NOT" SEPERATELY DERIVED. DO NOT BOND NEUTRAL AT GENERTOR.
3. OPTIONAL ALUMINUM SERVICE CONDUCTOR:
   - 4/0 AL + #2 GRD MAY BE USED INSTEAD OF 3/0 CU + #6 GRD IF THE TOTAL LENGTH OF THE CONDUCTOR IS LESS THAN 300 FT FROM THE TRANSFORMER.
   - ALUMINUM CONDUCTORS MUST BE 90°C TO CARRY THE FULL 200A LOAD REQUIRED
   - ALUMINUM TO COPPER BUSS CONNECTIONS MUST MEET AND CONFORM TO ANSI AND BE UL LISTED. USE ANTI CORROSION CONDUCTIVE LUBRICANT ON CONNECTIONS

PANEL NAME	LOCATION	VOLTAGE: 240/120 1Ø MAIN C/B: 200 AMPS BUS RATING: 200 AMPS	MOUNTING/ENCLOSURE: SURFACE/NEMA 3R AVAIL. FAULT CURRENT: SHORT CIRCUIT RATING: 65,000 / 10,000 SERIES RATED
CHARLES	EQUIPMENT PLATFORM		

AMPS POLES	WIRE & CONDUIT	TYPE	DESCRIPTION	KVA	CKT	A		B	CKT	KVA	DESCRIPTION	TYPE	WIRE & CONDUIT	AMPS POLES
15/1	2 #12, 1 #12G	R	INTERNAL GFCI	0.18	1	2.18			2	2.00	RECTIFIER	EQ	SEE ONE LINE	30/2
15/1	SEE ONE LINE	R	CONVENIENCE OUTLET	0.18	3			2.18	4	2.00		EQ		
			SPACE		5	2.00			6	2.00	RECTIFIER	EQ	SEE ONE LINE	30/2
			SPACE		7			2.00	8	2.00		EQ		
			SPACE		9	2.00			10	2.00	RECTIFIER	EQ	SEE ONE LINE	30/2
			SPACE		11			2.00	12	2.00		EQ		
			SPACE		13	2.00			14	2.00	RECTIFIER	EQ	SEE ONE LINE	30/2
			SPACE		15			2.00	16	2.00		EQ		
			SPACE		17	1.00			18	1.00	GEN BATT CHARGER	EQ	2 #12, 1 #12G, 1/2"C	20/1
			SPACE		19			1.00	20	1.00	GEN HEATER	EQ	2 #12, 1 #12G, 1/2"C	20/1
			SPACE		21				22		SPACE			
			SPACE		23				24		SPACE			
				PHASED LOAD		9.2		9.2		KVA				

TOTAL CONNECTED LOAD	18.4 kVA	77 A
TOTAL DEMAND LOAD	18.4 kVA	77 A

LOAD TYPE	DESCRIPTION	CONN. LOAD KVA	CONN. LOAD AMPS	DEMAND FACTOR	DESIGN LOAD KVA	DESIGN LOAD AMPS
L	LIGHTING	0.0	0.0	1.25	0.0	0.0
R	RECEPTACLE	0.4	1.5	NEC	0.4	1.5
M	MOTOR	0.0	0.0	NEC	0.0	0.0
H	HEATING	0.0	0.0	1.00	0.0	0.0
AC	HVAC	0.0	0.0	1.00	0.0	0.0
EQ	EQUIPMENT	18.0	75.0	1.00	18.0	75.0
E	EXISTING	0.0	0.0	1.25	0.0	0.0

*ALL EQUIPMENT LOADS CONSIDERED CONTINUOUS LOADS

PANEL SCHEDULE — NO SCALE — 2

SHORT CIRCUIT CALCULATIONS — NO SCALE — 3

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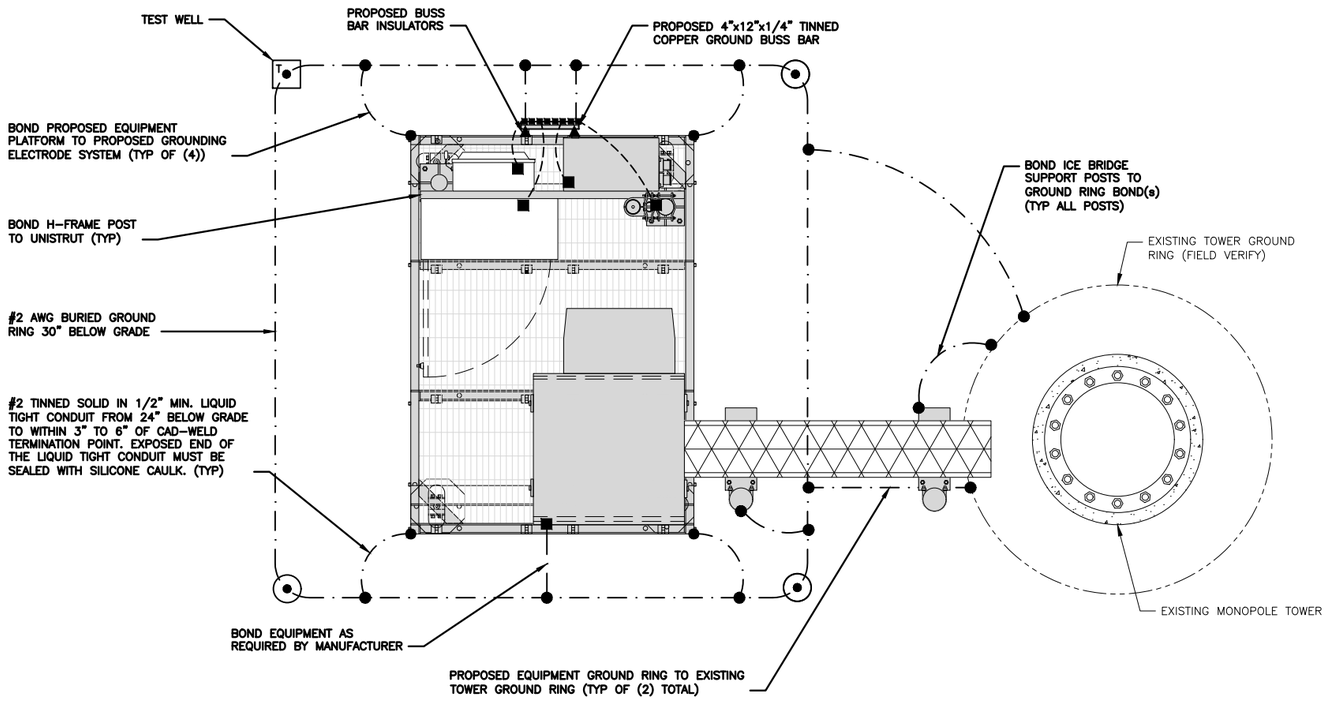
6039-Z0001-C

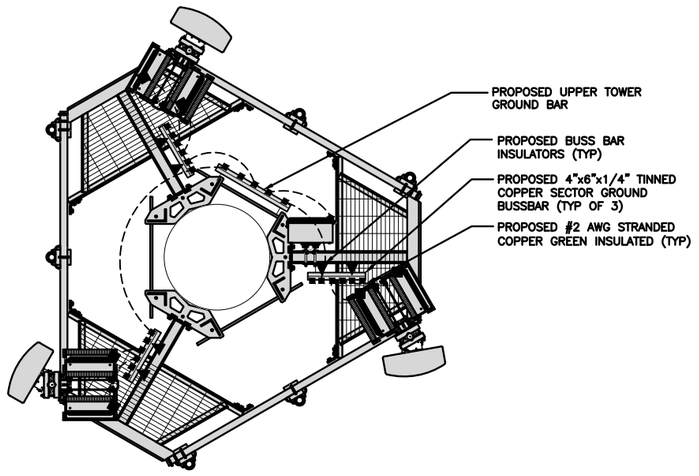
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

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

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

NOTES

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

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES | NO SCALE | 3

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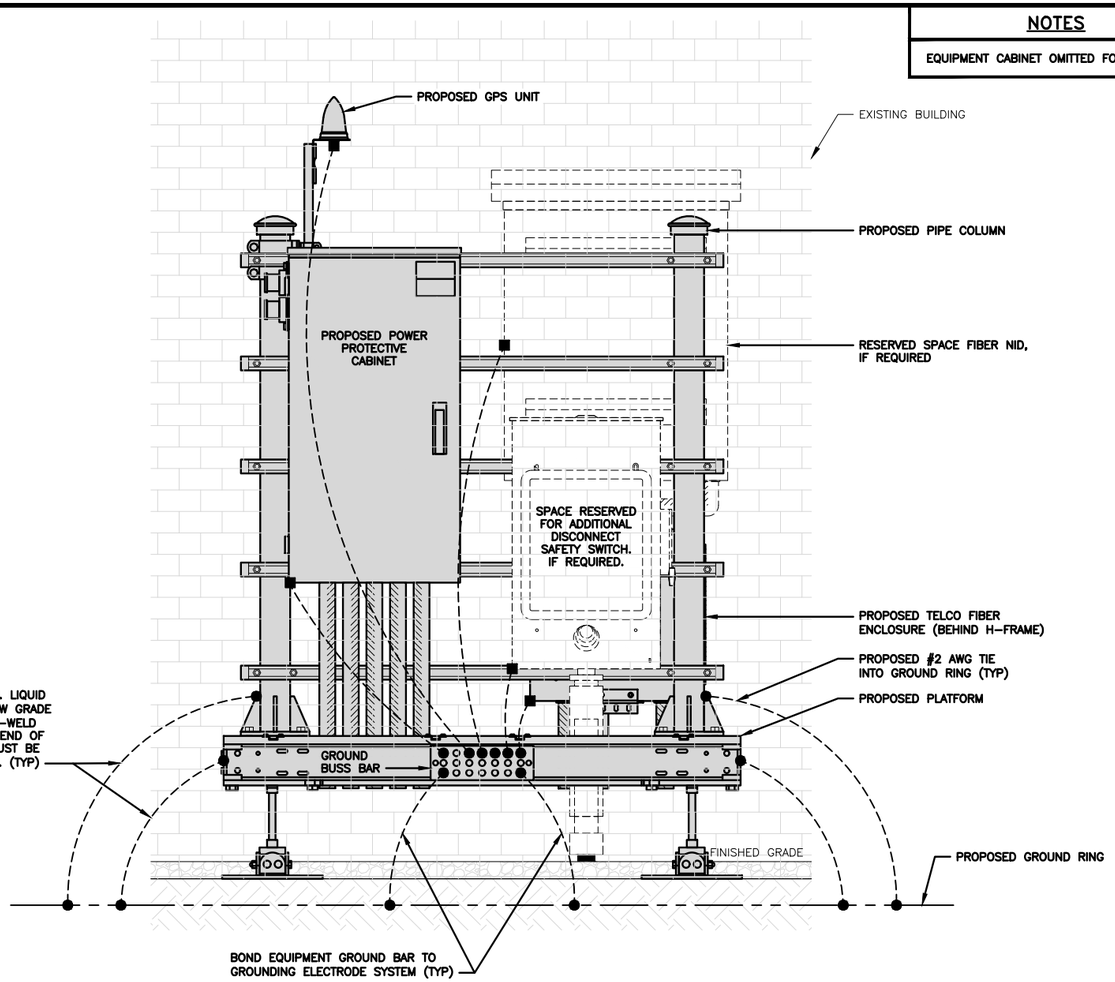
21 ACORN ROAD
BRANFORD, CT 06405

SHEET TITLE
GROUNDING PLANS AND NOTES

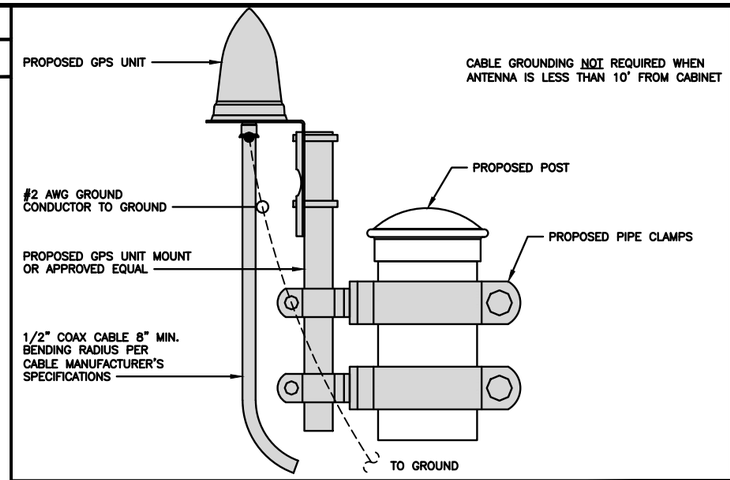
SHEET NUMBER
G-1

NOTES

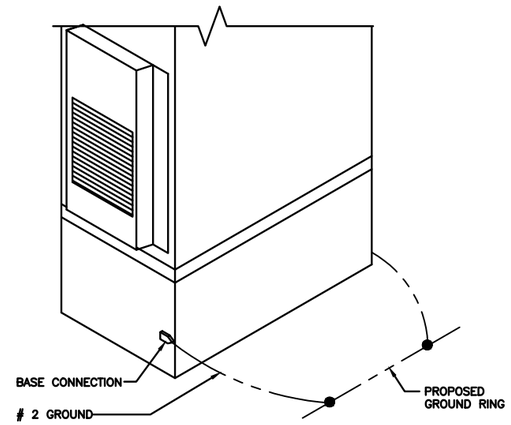
EQUIPMENT CABINET OMITTED FOR CLARITY



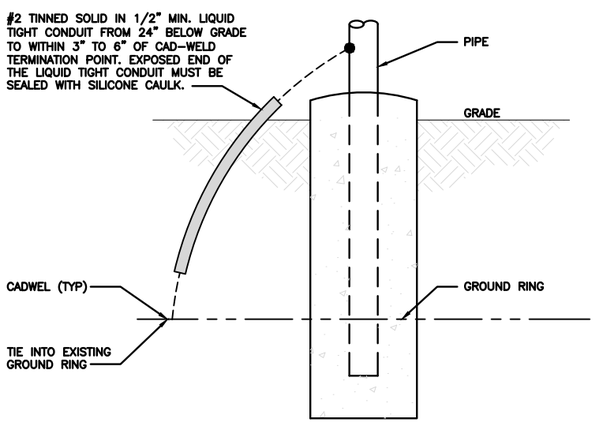
H-FRAME GROUNDING DETAIL | NO SCALE | 1



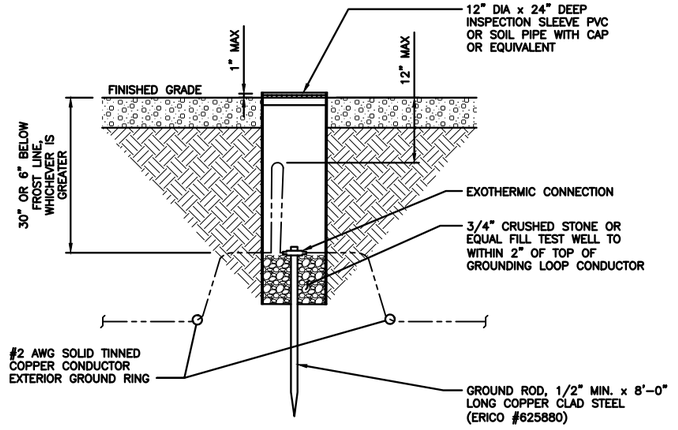
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



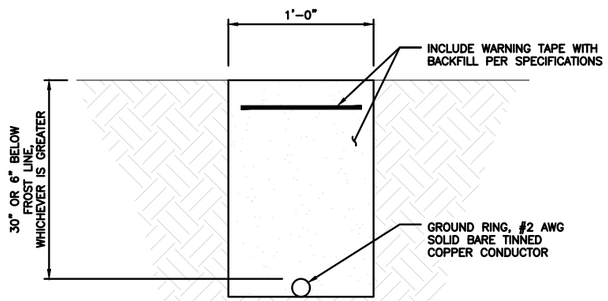
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

DISH Wireless L.L.C. TEMPLATE VERSION 48 – 2/21/2022

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
4/6/2022

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/13/2020	ISSUED FOR REVIEW
0	04/05/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

SHEET TITLE

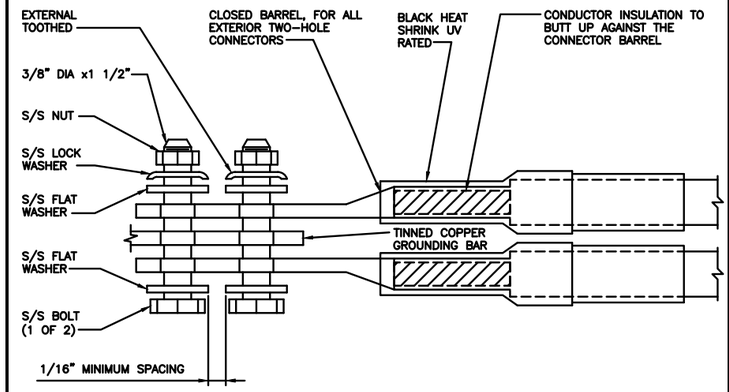
GROUNDING DETAILS

SHEET NUMBER

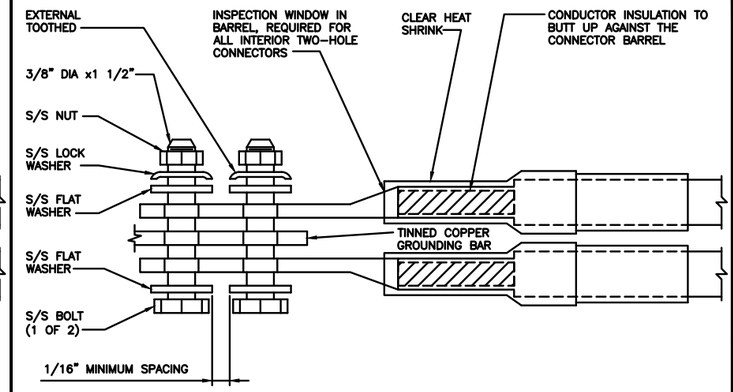
G-2

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

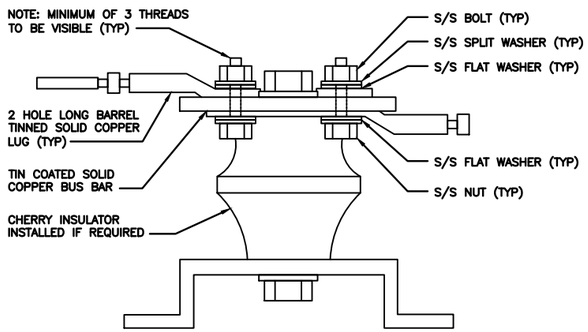
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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BRANFORD, CT 06405

SHEET TITLE
GROUNDING DETAILS

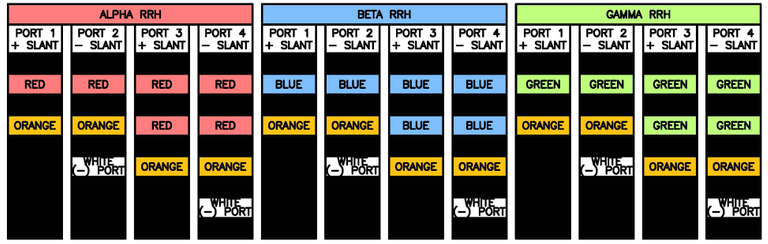
SHEET NUMBER
G-3

HYBRID/DISCREET CABLES

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

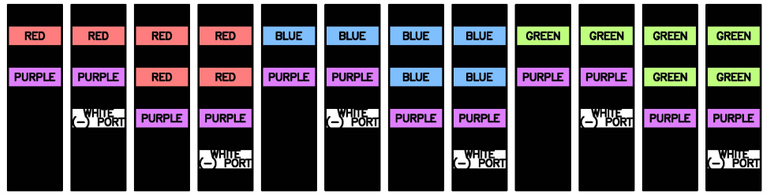
LOW-BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH
(AWS BANDS N66+N70)

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



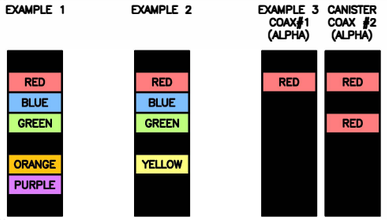
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

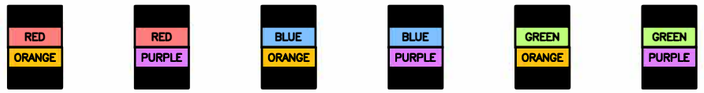
EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS.

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



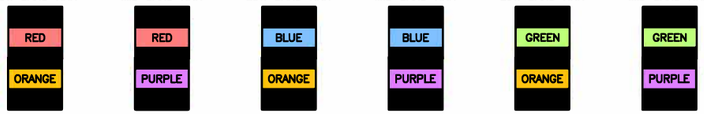
FIBER JUMPERS TO RRHs

LOW-BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.



POWER CABLES TO RRHs

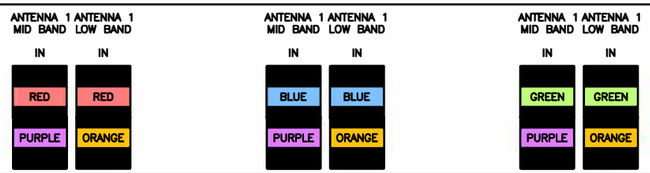
LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

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

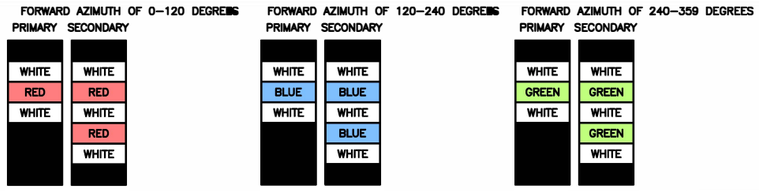
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



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

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RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH — $

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

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

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — X — X — X — X

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

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

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

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

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

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

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

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

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

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PROJECT INFORMATION

BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

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

SIGN PLACEMENT:

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

NOTES:

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

INFORMATION

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

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

Site ID: BOBDL00011C

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE

Transmitting Antenna(s)

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

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

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

Site ID: BOBDL00011C

dish

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RF SIGNAGE

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SHEET TITLE
RF SIGNAGE

SHEET NUMBER
GN-2

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
4/6/2022

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/13/2020	ISSUED FOR REVIEW
0	04/05/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

6039–Z0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
4/6/2022

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

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A	09/13/2020	ISSUED FOR REVIEW
0	04/05/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

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

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
4/6/2022

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/13/2020	ISSUED FOR REVIEW
0	04/05/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00164A
21 ACORN ROAD
BRANFORD, CT 06405

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

Exhibit D

Structural Analysis Report

Date: **September 23, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOHVN00164A
	Site Name:	CT-CCI-T-876316
Crown Castle Designation:	**BU Number:**	876316
	Site Name:	SECONDINO PROPERTY
	JDE Job Number:	645173
	Work Order Number:	1964043
	Order Number:	553381 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1964043
Site Data:	**21 Acorn Road, BRANFORD, NEW HAVEN County, CT**	
	Latitude *41° 17' 35.06"*, Longitude *-72° 45' 46.4"*	
	147 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:

LC7: Proposed Equipment Configuration **Sufficient Capacity-94.0%**

This analysis utilizes an ultimate 3-second gust wind speed of 122 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Kibreab Gebremariam

Respectfully submitted by:

Maribel Dentinger
Maribel Dentinger, P.E.
Senior Project Engineer

Maribel Dentinger
Digitally signed by Maribel Dentinger
Date: 2021.09.23 18:04:12 -04'00'

STATE OF CONNECTICUT
MARIBEL DENTINGER
23524
LICENSED
PROFESSIONAL ENGINEER

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1) INTRODUCTION

This tower is a 147 ft Monopole tower designed by SUMMIT. 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:	122 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 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)
126.0	126.0	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	147.0	3	alcatel lucent	1900MHZ RRH (65MHZ)	1 3	5/8 1-1/4
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	800MHZ RRH		
		3	alcatel lucent	TD-RRH8X20-25		
		9	rfs celwave	ACU-A20-N		
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
		1	tower mounts	Miscellaneous [NA 510-3]		
		1	tower mounts	Platform Mount [LP 1201-1]		
136.0	137.0	3	ericsson	RADIO 4415 B66A	3	1-5/8
		3	ericsson	RADIO 4424 B25_TMOV1		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
	136.0	1	tower mounts	RMQP-469-HK		
118.0	118.0	2	raycap	RRFDC-3315-PF-48	2	1-1/4
115.0	116.0	2	antel	LPA-80063/6CF w/ Mount Pipe	6	1-5/8
		2	antel	LPA-80080/4CF w/ Mount Pipe		
		3	commscope	CBC78T-DS-43-2X		
		6	commscope	JAHH-65B-R3B w/ Mount Pipe		
		2	rfs celwave	APL868013-42T0 w/ Mount Pipe		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
		3	vzw	Sub6 Antenna - VZS01 w/ Mount Pipe		
	115.0	1	tower mounts	Platform Mount [LP 714-1]		
106.0	106.0	3	andrew	SBNHH-1D65A w/ Mount Pipe	2 1 2 4 12	17/64 3/8 3/4 7/8 1-1/4
		3	cci antennas	DMP65R-BU4D w/ Mount Pipe		
		3	cci antennas	TPA-65R-BU4AA-K w/ Mount Pipe		
		3	ericsson	RADIO 4449 B5/B12		
		3	ericsson	RRUS 32 B2_CCIV2		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 4426 B66		
		3	ericsson	RRUS 4478 B14		
		6	powerwave technologies	7020.00		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		3	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 1201-1_KCKR-HR-1]		
76.0	77.0	1	kathrein	OG-860/1920/GPS-A	-	-
		1	lucent	KS24019-L112A		
	76.0	1	tower mounts	Side Arm Mount [SO 701-3]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1529736	CCISITES
4-POST-MODIFICATION INSPECTION	2031904	CCISITES
4-POST-MODIFICATION INSPECTION	2417887	CCISITES
4-POST-MODIFICATION INSPECTION	7151513	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1632435	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1632399	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6823303	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2251030	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
147 - 142	Pole	TP22.85x22x0.25	Pole	4.7%	Pass
142 - 137	Pole	TP23.7x22.85x0.25	Pole	8.6%	Pass
137 - 132	Pole	TP24.55x23.7x0.25	Pole	16.0%	Pass
132 - 127	Pole	TP25.4x24.55x0.25	Pole	22.6%	Pass
127 - 122	Pole	TP26.251x25.4x0.25	Pole	31.0%	Pass
122 - 117	Pole	TP27.101x26.251x0.25	Pole	38.8%	Pass
117 - 112	Pole	TP27.951x27.101x0.25	Pole	49.1%	Pass
112 - 108.75	Pole	TP29.141x27.951x0.25	Pole	55.6%	Pass
108.75 - 103.75	Pole	TP28.854x28.003x0.3125	Pole	53.4%	Pass
103.75 - 98.75	Pole	TP29.704x28.854x0.3125	Pole	61.9%	Pass

98.75 - 93.75	Pole	TP30.554x29.704x0.3125	Pole	69.6%	Pass
93.75 - 89.67	Pole	TP31.248x30.554x0.3125	Pole	75.3%	Pass
89.67 - 89.42	Pole	TP31.291x31.248x0.3125	Pole	75.6%	Pass
89.42 - 88.08	Pole	TP31.518x31.291x0.3125	Pole	77.5%	Pass
88.08 - 87.83	Pole + Reinf.	TP31.56x31.518x0.5125	Reinf. 5 Tension Rupture	65.8%	Pass
87.83 - 85.83	Pole + Reinf.	TP31.9x31.56x0.5125	Reinf. 5 Tension Rupture	68.2%	Pass
85.83 - 85.58	Pole + Reinf.	TP31.943x31.9x0.5125	Reinf. 3 Tension Rupture	68.5%	Pass
85.58 - 84.5	Pole + Reinf.	TP32.127x31.943x0.5125	Reinf. 5 Tension Rupture	69.8%	Pass
84.5 - 84.25	Pole + Reinf.	TP32.17x32.127x0.475	Reinf. 3 Tension Rupture	72.1%	Pass
84.25 - 79.25	Pole + Reinf.	TP33.02x32.17x0.4625	Reinf. 3 Tension Rupture	77.7%	Pass
79.25 - 78	Pole + Reinf.	TP33.955x33.02x0.4625	Reinf. 3 Tension Rupture	79.1%	Pass
78 - 72.75	Pole + Reinf.	TP33.5x32.607x0.5625	Reinf. 2 Tension Rupture	75.6%	Pass
72.75 - 67.75	Pole + Reinf.	TP34.35x33.5x0.5625	Reinf. 2 Tension Rupture	79.8%	Pass
67.75 - 63.08	Pole + Reinf.	TP35.144x34.35x0.55	Reinf. 2 Tension Rupture	83.4%	Pass
63.08 - 62.83	Pole + Reinf.	TP35.187x35.144x0.7125	Reinf. 10 Tension Rupture	68.4%	Pass
62.83 - 57.83	Pole + Reinf.	TP36.037x35.187x0.7	Reinf. 10 Tension Rupture	71.6%	Pass
57.83 - 52.83	Pole + Reinf.	TP36.887x36.037x0.6875	Reinf. 10 Tension Rupture	74.7%	Pass
52.83 - 47.83	Pole + Reinf.	TP37.737x36.887x0.6875	Reinf. 10 Tension Rupture	77.5%	Pass
47.83 - 47.5	Pole + Reinf.	TP38.601x37.737x0.675	Reinf. 10 Tension Rupture	77.7%	Pass
47.5 - 42.5	Pole + Reinf.	TP37.894x37.043x0.75	Reinf. 10 Tension Rupture	76.2%	Pass
42.5 - 37.5	Pole + Reinf.	TP38.744x37.894x0.7375	Reinf. 10 Tension Rupture	78.5%	Pass
37.5 - 32.75	Pole + Reinf.	TP39.551x38.744x0.7375	Reinf. 10 Tension Rupture	80.6%	Pass
32.75 - 32.5	Pole + Reinf.	TP39.594x39.551x0.7875	Reinf. 3 Tension Rupture	74.3%	Pass
32.5 - 27.5	Pole + Reinf.	TP40.444x39.594x0.775	Reinf. 3 Tension Rupture	76.1%	Pass
27.5 - 22.5	Pole + Reinf.	TP41.294x40.444x0.7625	Reinf. 8 Tension Rupture	77.9%	Pass
22.5 - 17.5	Pole + Reinf.	TP42.144x41.294x0.7625	Reinf. 8 Tension Rupture	79.6%	Pass
17.5 - 12.5	Pole + Reinf.	TP42.995x42.144x0.75	Reinf. 8 Tension Rupture	81.2%	Pass
12.5 - 8.08	Pole + Reinf.	TP43.746x42.995x0.7375	Reinf. 8 Tension Rupture	82.5%	Pass
8.08 - 7.83	Pole + Reinf.	TP43.788x43.746x0.8	Reinf. 3 Tension Rupture	80.4%	Pass
7.83 - 6.42	Pole + Reinf.	TP44.029x43.788x0.7875	Reinf. 3 Tension Rupture	80.8%	Pass
6.42 - 6.17	Pole + Reinf.	TP44.071x44.029x0.775	Reinf. 3 Tension Rupture	81.1%	Pass
6.17 - 3.25	Pole + Reinf.	TP44.567x44.071x0.7625	Reinf. 3 Tension Rupture	81.9%	Pass
3.25 - 3	Pole + Reinf.	TP44.61x44.567x0.7875	Reinf. 1 Tension Rupture	77.2%	Pass
3 - 2	Pole + Reinf.	TP44.78x44.61x0.7875	Reinf. 1 Tension Rupture	77.4%	Pass
2 - 1.75	Pole + Reinf.	TP44.822x44.78x0.775	Reinf. 11 Tension Yield	73.8%	Pass
1.75 - 0	Pole + Reinf.	TP45.12x44.822x0.775	Reinf. 11 Tension Yield	74.2%	Pass
				Summary	
			Pole	77.5%	Pass
			Reinforcement	83.4%	Pass
			Overall	83.4%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	94.0	Pass
1	Base Plate	0	78.9	Pass
1	Base Foundation (Structure)	0	54.3	Pass
1	Base Foundation (Soil Interaction)	0	56.6	Pass

Structure Rating (max from all components) =	94%

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

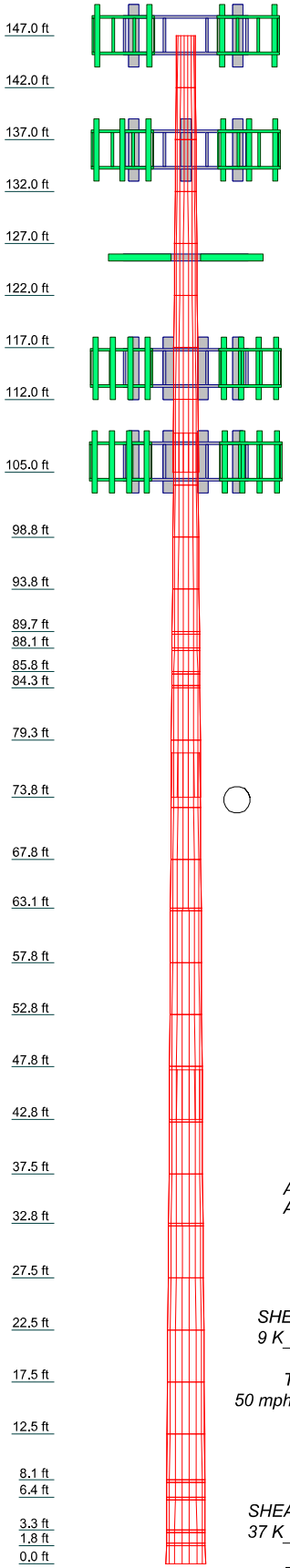
4.1) Recommendations

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

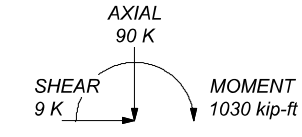
APPENDIX A

TNXTOWER OUTPUT

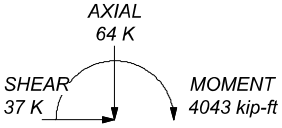
Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
Length (ft)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	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
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	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.4625	0.4625	0.5625	0.5625	0.5500	0.5500	0.7000	0.6875	0.6875	0.6750	0.6750	0.7375	0.7375	0.7500	0.7500	0.7625	0.7625	0.7500	0.7375	0.7375	0.7375	0.7375	0.7375	0.7375	0.7375	0.7375	0.7375
Socket Length (ft)								3.75													4.25								4.75																		
Top Dia (in)	22.0000	22.8501	23.7002	24.5504	25.4005	26.2506	27.1007	27.9508	28.8008	29.7039	30.5541	31.4043	32.2544	33.1046	33.9547	34.8049	35.6550	36.5052	37.3553	38.2055	39.0556	39.9058	40.7559	41.6061	42.4562	43.3064	44.1565	45.0067	45.8568	46.7070	47.5571	48.4073	49.2574	50.1076	50.9577	51.8079	52.6580	53.5082	54.3583	55.2085	56.0586	56.9088	57.7589	58.6091	59.4592	60.3094
Bot Dia (in)	22.8501	23.7002	24.5504	25.4005	26.2506	27.1007	27.9508	29.1410	29.8530	30.5541	31.4043	32.2544	33.1046	33.9547	34.8049	35.6550	36.5052	37.3553	38.2055	39.0556	39.9058	40.7559	41.6061	42.4562	43.3064	44.1565	45.0067	45.8568	46.7070	47.5571	48.4073	49.2574	50.1076	50.9577	51.8079	52.6580	53.5082	54.3583	55.2085	56.0586	56.9088	57.7589	58.6091	59.4592	60.3094	61.1595
Grade	A607-60																																														
Weight (K)	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.8	0.9	1.0	1.0	0.9	1.0	1.3	1.3	1.3	1.4	1.5	1.5	1.4	1.6	1.7	1.7	1.7	1.5	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1



ALL REACTIONS ARE FACTORED



TORQUE 1 kip-ft
50 mph WIND - 1.0000 in ICE



TORQUE 4 kip-ft
REACTIONS - 122 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 122 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 83.4%

CROWN CASTLE
The pathway to Possible

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

Job: **BU 876316**			
Project:			
Client: Crown Castle	Drawn by: KGebremariam		App'd:
Code: TIA-222-H	Date: 09/23/21		Scale: NTS
Path: C:\Users\KGebremariam\Desktop\Work Area\876316\WO 1964043 - SA\Prod\876316-R.eri			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 New Haven County, Connecticut.
- Tower base elevation above sea level: 115.00 ft.
- Basic wind speed of 122 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 1.0000 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: 83.4%.
- 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	147.00-142.00	5.00	0.00	18	22.0000	22.8501	0.2500	1.0000	A607-60 (60 ksi)
L2	142.00-137.00	5.00	0.00	18	22.8501	23.7002	0.2500	1.0000	A607-60 (60 ksi)
L3	137.00-132.00	5.00	0.00	18	23.7002	24.5504	0.2500	1.0000	A607-60 (60 ksi)
L4	132.00-127.00	5.00	0.00	18	24.5504	25.4005	0.2500	1.0000	A607-60 (60 ksi)
L5	127.00-122.00	5.00	0.00	18	25.4005	26.2506	0.2500	1.0000	A607-60 (60 ksi)
L6	122.00-117.00	5.00	0.00	18	26.2506	27.1007	0.2500	1.0000	A607-60 (60 ksi)
L7	117.00-112.00	5.00	0.00	18	27.1007	27.9508	0.2500	1.0000	A607-60 (60 ksi)
L8	112.00-105.00	7.00	3.75	18	27.9508	29.1410	0.2500	1.0000	A607-60 (60 ksi)
L9	105.00-103.75	5.00	0.00	18	28.0034	28.8536	0.3125	1.2500	A607-60 (60 ksi)
L10	103.75-98.75	5.00	0.00	18	28.8536	29.7039	0.3125	1.2500	A607-60 (60 ksi)
L11	98.75-93.75	5.00	0.00	18	29.7039	30.5541	0.3125	1.2500	A607-60 (60 ksi)
L12	93.75-89.67	4.08	0.00	18	30.5541	31.2484	0.3125	1.2500	A607-60 (60 ksi)
L13	89.67-89.42	0.25	0.00	18	31.2484	31.2909	0.3125	1.2500	A607-60 (60 ksi)
L14	89.42-88.08	1.33	0.00	18	31.2909	31.5177	0.3125	1.2500	A607-60 (60 ksi)
L15	88.08-87.83	0.25	0.00	18	31.5177	31.5603	0.5125	2.0500	A607-60 (60 ksi)
L16	87.83-85.83	2.00	0.00	18	31.5603	31.9003	0.5125	2.0500	A607-60 (60 ksi)
L17	85.83-85.58	0.25	0.00	18	31.9003	31.9429	0.5125	2.0500	A607-60 (60 ksi)
L18	85.58-84.50	1.08	0.00	18	31.9429	32.1270	0.5125	2.0500	A607-60 (60 ksi)
L19	84.50-84.25	0.25	0.00	18	32.1270	32.1695	0.4750	1.9000	A607-60 (60 ksi)
L20	84.25-79.25	5.00	0.00	18	32.1695	33.0198	0.4625	1.8500	A607-60 (60 ksi)
L21	79.25-73.75	5.50	4.25	18	33.0198	33.9550	0.4625	1.8500	A607-60 (60 ksi)
L22	73.75-72.75	5.25	0.00	18	32.6073	33.5000	0.5625	2.2500	A607-60 (60 ksi)
L23	72.75-67.75	5.00	0.00	18	33.5000	34.3502	0.5625	2.2500	A607-60 (60 ksi)
L24	67.75-63.08	4.67	0.00	18	34.3502	35.1442	0.5500	2.2000	A607-60 (60 ksi)
L25	63.08-62.83	0.25	0.00	18	35.1442	35.1867	0.7125	2.8500	A607-60 (60 ksi)
L26	62.83-57.83	5.00	0.00	18	35.1867	36.0369	0.7000	2.8000	A607-60 (60 ksi)
L27	57.83-52.83	5.00	0.00	18	36.0369	36.8871	0.6875	2.7500	A607-60 (60 ksi)
L28	52.83-47.83	5.00	0.00	18	36.8871	37.7372	0.6875	2.7500	A607-60 (60 ksi)
L29	47.83-42.75	5.08	4.75	18	37.7372	38.6010	0.6750	2.7000	A607-60 (60 ksi)
L30	42.75-42.50	5.00	0.00	18	37.0433	37.8935	0.7500	3.0000	A607-60 (60 ksi)
L31	42.50-37.50	5.00	0.00	18	37.8935	38.7437	0.7375	2.9500	A607-60 (60 ksi)
L32	37.50-32.75	4.75	0.00	18	38.7437	39.5514	0.7375	2.9500	A607-60 (60 ksi)
L33	32.75-32.50	0.25	0.00	18	39.5514	39.5939	0.7875	3.1500	A607-60 (60 ksi)
L34	32.50-27.50	5.00	0.00	18	39.5939	40.4440	0.7750	3.1000	A607-60 (60 ksi)
L35	27.50-22.50	5.00	0.00	18	40.4440	41.2942	0.7625	3.0500	A607-60

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
									(60 ksi)
L36	22.50-17.50	5.00	0.00	18	41.2942	42.1444	0.7625	3.0500	A607-60 (60 ksi)
L37	17.50-12.50	5.00	0.00	18	42.1444	42.9946	0.7500	3.0000	A607-60 (60 ksi)
L38	12.50-8.08	4.42	0.00	18	42.9946	43.7456	0.7375	2.9500	A607-60 (60 ksi)
L39	8.08-7.83	0.25	0.00	18	43.7456	43.7881	0.8000	3.2000	A607-60 (60 ksi)
L40	7.83-6.42	1.42	0.00	18	43.7881	44.0289	0.7875	3.1500	A607-60 (60 ksi)
L41	6.42-6.17	0.25	0.00	18	44.0289	44.0714	0.7750	3.1000	A607-60 (60 ksi)
L42	6.17-3.25	2.92	0.00	18	44.0714	44.5674	0.7625	3.0500	A607-60 (60 ksi)
L43	3.25-3.00	0.25	0.00	18	44.5674	44.6099	0.7875	3.1500	A607-60 (60 ksi)
L44	3.00-2.00	1.00	0.00	18	44.6099	44.7799	0.7875	3.1500	A607-60 (60 ksi)
L45	2.00-1.75	0.25	0.00	18	44.7799	44.8224	0.7750	3.1000	A607-60 (60 ksi)
L46	1.75-0.00	1.75		18	44.8224	45.1200	0.7750	3.1000	A607-60 (60 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	22.3008	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728
	23.1641	17.9332	1157.2217	8.0230	11.6079	99.6929	2315.9661	8.9683	3.5816	14.326
L2	23.1641	17.9332	1157.2217	8.0230	11.6079	99.6929	2315.9661	8.9683	3.5816	14.326
	24.0273	18.6078	1292.7845	8.3248	12.0397	107.3766	2587.2702	9.3057	3.7312	14.925
L3	24.0273	18.6078	1292.7845	8.3248	12.0397	107.3766	2587.2702	9.3057	3.7312	14.925
	24.8905	19.2823	1438.5414	8.6266	12.4716	115.3455	2878.9756	9.6430	3.8809	15.523
L4	24.8905	19.2823	1438.5414	8.6266	12.4716	115.3455	2878.9756	9.6430	3.8809	15.523
	25.7538	19.9569	1594.8617	8.9284	12.9034	123.5997	3191.8219	9.9803	4.0305	16.122
L5	25.7538	19.9569	1594.8617	8.9284	12.9034	123.5997	3191.8219	9.9803	4.0305	16.122
	26.6170	20.6315	1762.1150	9.2302	13.3353	132.1391	3526.5487	10.3177	4.1801	16.72
L6	26.6170	20.6315	1762.1150	9.2302	13.3353	132.1391	3526.5487	10.3177	4.1801	16.72
	27.4802	21.3060	1940.6710	9.5320	13.7672	140.9638	3883.8955	10.6550	4.3297	17.319
L7	27.4802	21.3060	1940.6710	9.5320	13.7672	140.9638	3883.8955	10.6550	4.3297	17.319
	28.3435	21.9806	2130.8991	9.8338	14.1990	150.0736	4264.6021	10.9924	4.4793	17.917
L8	28.3435	21.9806	2130.8991	9.8338	14.1990	150.0736	4264.6021	10.9924	4.4793	17.917
	29.5520	22.9250	2417.5313	10.2563	14.8036	163.3067	4838.2436	11.4647	4.6888	18.755
L9	29.0347	27.4659	2660.7625	9.8303	14.2257	187.0387	5325.0261	13.7356	4.3786	14.012
	29.2505	28.3092	2913.4545	10.1321	14.6576	198.7668	5830.7426	14.1573	4.5282	14.49
L10	29.2505	28.3092	2913.4545	10.1321	14.6576	198.7668	5830.7426	14.1573	4.5282	14.49
	30.1139	29.1526	3181.6592	10.4339	15.0896	210.8516	6367.5048	14.5791	4.6779	14.969
L11	30.1139	29.1526	3181.6592	10.4339	15.0896	210.8516	6367.5048	14.5791	4.6779	14.969
	30.9772	29.9959	3465.8386	10.7358	15.5215	223.2931	6936.2377	15.0008	4.8275	15.448
L12	30.9772	29.9959	3465.8386	10.7358	15.5215	223.2931	6936.2377	15.0008	4.8275	15.448
	31.6822	30.6845	3710.0702	10.9822	15.8742	233.7173	7425.0221	15.3452	4.9497	15.839
L13	31.6822	30.6845	3710.0702	10.9822	15.8742	233.7173	7425.0221	15.3452	4.9497	15.839
	31.7254	30.7267	3725.3861	10.9973	15.8958	234.3633	7455.6741	15.3663	4.9572	15.863
L14	31.7254	30.7267	3725.3861	10.9973	15.8958	234.3633	7455.6741	15.3663	4.9572	15.863
	31.9557	30.9517	3807.8246	11.0779	16.0110	237.8254	7620.6597	15.4788	4.9971	15.991
L15	31.9249	50.4354	6125.5276	11.0069	16.0110	382.5822	12259.1153	25.2225	4.6451	9.064
	31.9681	50.5046	6150.7583	11.0220	16.0326	383.6406	12309.6100	25.2571	4.6526	9.078
L16	31.9681	50.5046	6150.7583	11.0220	16.0326	383.6406	12309.6100	25.2571	4.6526	9.078
	32.3134	51.0578	6355.1029	11.1427	16.2054	392.1602	12718.5680	25.5338	4.7125	9.195
L17	32.3134	51.0578	6355.1029	11.1427	16.2054	392.1602	12718.568	25.5338	4.7125	9.195

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
	32.3566	51.1270	6380.9598	11.1578	16.2270	393.2318	12770.3150	25.5683	4.7199	9.21
L18	32.3566	51.1270	6380.9598	11.1578	16.2270	393.2318	12770.3157	25.5683	4.7199	9.21
	32.5436	51.4265	6493.7817	11.2232	16.3205	397.8906	12996.1081	25.7182	4.7524	9.273
L19	32.5493	47.7202	6040.0696	11.2365	16.3205	370.0905	12088.0868	23.8646	4.8184	10.144
	32.5925	47.7842	6064.4393	11.2516	16.3421	371.0926	12136.8583	23.8967	4.8258	10.16
L20	32.5944	46.5451	5911.8380	11.2560	16.3421	361.7547	11831.4549	23.2770	4.8478	10.482
	33.4578	47.7932	6400.2843	11.5578	16.7740	381.5591	12808.9902	23.9012	4.9975	10.805
L21	33.4578	47.7932	6400.2843	11.5578	16.7740	381.5591	12808.9902	23.9012	4.9975	10.805
	34.4075	49.1662	6967.8502	11.8898	17.2491	403.9535	13944.8690	24.5877	5.1621	11.161
L22	33.7573	57.2120	7422.3235	11.3759	16.5645	448.0859	14854.4135	28.6114	4.7489	8.442
	33.9300	58.8058	8060.0585	11.6928	17.0180	473.6198	16130.7225	29.4085	4.9060	8.722
L23	33.9300	58.8058	8060.0585	11.6928	17.0180	473.6198	16130.7225	29.4085	4.9060	8.722
	34.7933	60.3236	8700.4359	11.9946	17.4499	498.5958	17412.3200	30.1675	5.0556	8.988
L24	34.7952	59.0049	8516.5381	11.9991	17.4499	488.0572	17044.2826	29.5081	5.0776	9.232
	35.6015	60.3911	9130.9799	12.2809	17.8533	511.4461	18273.9746	30.2013	5.2174	9.486
L25	35.5765	77.8665	11662.8608	12.2233	17.8533	653.2623	23341.0678	38.9406	4.9314	6.921
	35.6196	77.9626	11706.1101	12.2383	17.8749	654.8926	23427.6234	38.9887	4.9389	6.932
L26	35.6215	76.6226	11513.2544	12.2428	17.8749	644.1034	23041.6583	38.3186	4.9609	7.087
	36.4848	78.5115	12385.8944	12.5446	18.3067	676.5756	24788.0865	39.2632	5.1105	7.301
L27	36.4868	77.1368	12177.6317	12.5490	18.3067	665.1994	24371.2869	38.5757	5.1325	7.465
	37.3500	78.9920	13077.5657	12.8508	18.7386	697.8935	26172.3391	39.5035	5.2821	7.683
L28	37.3500	78.9920	13077.5657	12.8508	18.7386	697.8935	26172.3391	39.5035	5.2821	7.683
	38.2133	80.8471	14020.7792	13.1527	19.1705	731.3722	28060.0073	40.4313	5.4318	7.901
L29	38.2153	79.4040	13779.7938	13.1571	19.1705	718.8016	27577.7194	39.7095	5.4538	8.08
	39.0924	81.2546	14765.8777	13.4637	19.6093	753.0035	29551.1848	40.6350	5.6058	8.305
L30	38.3192	86.3963	14377.6008	12.8841	18.8180	764.0338	28774.1200	43.2064	5.1996	6.933
	38.3624	88.4201	15411.8439	13.1859	19.2499	800.6192	30843.9672	44.2185	5.3493	7.132
L31	38.3643	86.9757	15170.2855	13.1904	19.2499	788.0707	30360.5324	43.4961	5.3713	7.283
	39.2276	88.9658	16235.6382	13.4922	19.6818	824.9064	32492.6396	44.4914	5.5209	7.486
L32	39.2276	88.9658	16235.6382	13.4922	19.6818	824.9064	32492.6396	44.4914	5.5209	7.486
	40.0477	90.8564	17292.8563	13.7789	20.0921	860.6799	34608.4670	45.4369	5.6630	7.679
L33	40.0400	96.8912	18393.9844	13.7612	20.0921	915.4840	36812.1721	48.4548	5.5750	7.079
	40.0832	96.9975	18454.5638	13.7763	20.1137	917.5129	36933.4105	48.5080	5.5825	7.089
L34	40.0851	95.4886	18179.1901	13.7807	20.1137	903.8221	36382.3008	47.7534	5.6045	7.232
	40.9484	97.5799	19399.971	14.0825	20.5456	944.2410	38825.470	48.7992	5.7542	7.425

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
			8				5			
L35	40.9503	96.0363	19105.118	14.0869	20.5456	929.8898	38235.375	48.0273	5.7762	7.575
			1				2			
	41.8136	98.0938	20359.593	14.3888	20.9775	970.5462	40745.977	49.0562	5.9258	7.772
			7				1			
L36	41.8136	98.0938	20359.593	14.3888	20.9775	970.5462	40745.977	49.0562	5.9258	7.772
			7				1			
	42.6769	100.1514	21667.815	14.6906	21.4093	1012.0726	43364.142	50.0852	6.0754	7.968
			5				0			
L37	42.6788	98.5393	21331.924	14.6950	21.4093	996.3836	42691.918	49.2790	6.0974	8.13
			5				2			
	43.5421	100.5632	22673.475	14.9968	21.8412	1038.1040	45376.785	50.2911	6.2470	8.329
			7				8			
L38	43.5441	98.9164	22315.381	15.0013	21.8412	1021.7087	44660.126	49.4676	6.2690	8.5
			9				9			
	44.3067	100.6745	23526.503	15.2679	22.2228	1058.6666	47083.964	50.3468	6.4012	8.68
			7				3			
L39	44.2970	109.0475	25409.177	15.2457	22.2228	1143.3849	50851.789	54.5341	6.2912	7.864
			6				2			
	44.3402	109.1554	25484.704	15.2608	22.2444	1145.6702	51002.942	54.5881	6.2987	7.873
			4				2			
L40	44.3421	107.4811	25108.396	15.2652	22.2444	1128.7532	50249.830	53.7508	6.3207	8.026
			0				4			
	44.5866	108.0829	25532.523	15.3507	22.3667	1141.5432	51098.643	54.0517	6.3631	8.08
			6				5			
L41	44.5885	106.3981	25149.042	15.3551	22.3667	1124.3980	50331.177	53.2091	6.3851	8.239
			7				1			
	44.6317	106.5026	25223.263	15.3702	22.3883	1126.6286	50479.715	53.2614	6.3926	8.248
			0				4			
L42	44.6336	104.8151	24837.936	15.3747	22.3883	1109.4175	49708.555	52.4175	6.4146	8.413
			4				3			
	45.1373	106.0155	25701.110	15.5507	22.6402	1135.1964	51436.039	53.0178	6.5019	8.527
			9				9			
L43	45.1334	109.4289	26498.349	15.5419	22.6402	1170.4098	53031.566	54.7249	6.4579	8.2
			6				4			
	45.1766	109.5352	26575.611	15.5570	22.6618	1172.7039	53186.191	54.7780	6.4653	8.21
			5				8			
L44	45.1766	109.5352	26575.611	15.5570	22.6618	1172.7039	53186.191	54.7780	6.4653	8.21
			5				8			
	45.3492	109.9602	26886.160	15.6173	22.7482	1181.9025	53807.699	54.9905	6.4953	8.248
			8				2			
L45	45.3512	108.2455	26481.957	15.6218	22.7482	1164.1340	52998.760	54.1330	6.5173	8.409
			3				2			
	45.3943	108.3501	26558.776	15.6368	22.7698	1166.4036	53152.499	54.1853	6.5247	8.419
			1				0			
L46	45.3943	108.3501	26558.776	15.6368	22.7698	1166.4036	53152.499	54.1853	6.5247	8.419
			1				0			
	45.6965	109.0820	27100.671	15.7425	22.9210	1182.3533	54237.002	54.5514	6.5771	8.487
			6				9			

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 147.00-142.00				1	1	1			
L2 142.00-137.00				1	1	1			
L3 137.00-132.00				1	1	1			
L4 132.00-127.00				1	1	1			
L5 127.00-122.00				1	1	1			
L6 122.00-117.00				1	1	1			
L7 117.00-112.00				1	1	1			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	in					in	in	in
L8 112.00-105.00				1	1	1			
L9 105.00-103.75				1	1	1			
L10 103.75-98.75				1	1	1			
L11 98.75-93.75				1	1	1			
L12 93.75-89.67				1	1	1			
L13 89.67-89.42				1	1	1			
L14 89.42-88.08				1	1	1			
L15 88.08-87.83				1	1	0.949309			
L16 87.83-85.83				1	1	0.94563			
L17 85.83-85.58				1	1	0.945176			
L18 85.58-84.50				1	1	0.943222			
L19 84.50-84.25				1	1	1.016			
L20 84.25-79.25				1	1	1.03345			
L21 79.25-73.75				1	1	1.03113			
L22 73.75-72.75				1	1	0.958709			
L23 72.75-67.75				1	1	0.951361			
L24 67.75-63.08				1	1	0.965948			
L25 63.08-62.83				1	1	0.979776			
L26 62.83-57.83				1	1	0.985815			
L27 57.83-52.83				1	1	0.992629			
L28 52.83-47.83				1	1	0.982368			
L29 47.83-42.75				1	1	0.99955			
L30 42.75-42.50				1	1	0.983527			
L31 42.50-37.50				1	1	0.990764			
L32 37.50-32.75				1	1	0.982492			
L33 32.75-32.50				1	1	0.986624			
L34 32.50-27.50				1	1	0.992833			
L35 27.50-22.50				1	1	0.999667			
L36 22.50-17.50				1	1	0.990917			
L37 17.50-12.50				1	1	0.998599			
L38 12.50-8.08				1	1	1.00785			
L39 8.08-7.83				1	1	1.03361			
L40 7.83-6.42				1	1	1.04696			
L41 6.42-6.17				1	1	1.01			
L42 6.17-3.25				1	1	1.02114			
L43 3.25-3.00				1	1	0.963188			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	in					in	in	in
L44 3.00-2.00				1	1	0.961613			
L45 2.00-1.75				1	1	0.989369			
L46 1.75-0.00				1	1	0.986518			

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
147										
HB058-M12-XXXF(5/8)	A	No	Surface Ar (CaAa)	147.00 - 0.00	1	1	-0.167 -0.167	0.8400		0.24
HB158-21U6S24-xxM_TMO(1-5/8)	B	No	Surface Ar (CaAa)	136.00 - 0.00	3	3	0.333 0.333	1.9960		2.50
***										
(Area) Aero MP3-05 (H)	A	No	Surface Af (CaAa)	10.50 - 0.00	1	1	-0.167 -0.167	5.3300	14.8400	0.00
(Area) Aero MP3-05 (H)	C	No	Surface Af (CaAa)	10.50 - 0.00	1	1	0.500 0.500	5.3300	14.8400	0.00
****										
(Area) Aero MP3-05 (H)	A	No	Surface Af (CaAa)	79.00 - 4.00	1	1	-0.333 -0.333	5.3300	14.8400	0.00
****										
(Area) Aero MP3-05 (H)	C	No	Surface Af (CaAa)	90.50 - 0.00	1	1	-0.333 -0.333	5.3300	14.8400	0.00
(Area) Aero MP3-05 (H)	B	No	Surface Af (CaAa)	90.50 - 0.00	1	1	-0.333 -0.333	5.3300	14.8400	0.00
****										
(Area) Aero MP3-05 (H)	C	No	Surface Af (CaAa)	88.25 - 73.25	1	1	0.500 0.500	5.3300	14.8400	0.00
(Area) Aero MP3-05 (H)	A	No	Surface Af (CaAa)	92.08 - 82.08	1	1	-0.333 -0.333	5.3300	14.8400	0.00
****										
(Area) CCI-65FP-065125 (H)	A	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.167 0.167	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	B	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.333 0.333	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	C	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.167 0.167	6.5000	15.5000	0.00
***										
(Area) CCI-65FP-060100 (H)	A	No	Surface Af (CaAa)	65.58 - 35.50	1	1	0.167 0.167	6.0000	14.0000	0.00
(Area) CCI-65FP-060100 (H)	B	No	Surface Af (CaAa)	65.58 - 35.50	1	1	0.333 0.333	6.0000	14.0000	0.00
(Area) CCI-65FP-060100 (H)	C	No	Surface Af (CaAa)	65.58 - 35.50	1	1	0.167 0.167	6.0000	14.0000	0.00
**********										
**										
CU12PSM9P6XXX(1-1/2)	A	No	Surface Ar (CaAa)	126.00 - 0.00	1	1	0.490 0.500	1.6000		2.35
**										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
HB114-1-0813U4-M5J(1-1/4)	A	No	No	Inside Pole	147.00 - 0.00	3	No Ice 1/2" Ice	0.00 0.00	1.20 1.20

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							1" Ice	0.00	1.20
136									
118									
HFT1208-24S26(1-1/4)	B	No	No	Inside Pole	118.00 - 0.00	2	No Ice	0.00	1.17
							1/2" Ice	0.00	1.17
							1" Ice	0.00	1.17
115									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	115.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
106									
LDF2-50A(3/8)	C	No	No	Inside Pole	106.00 - 0.00	1	No Ice	0.00	0.08
							1/2" Ice	0.00	0.08
							1" Ice	0.00	0.08
LDF6-50A(1-1/4)	C	No	No	Inside Pole	106.00 - 0.00	12	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
6-8AWG 3 PAIR(7/8)	C	No	No	Inside Pole	106.00 - 0.00	4	No Ice	0.00	0.68
							1/2" Ice	0.00	0.68
							1" Ice	0.00	0.68
A-DQZNB2YN1750N(17/64)	C	No	No	Inside Pole	106.00 - 0.00	2	No Ice	0.00	0.03
							1/2" Ice	0.00	0.03
							1" Ice	0.00	0.03
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	106.00 - 0.00	2	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
2" Flexible Conduit	C	No	No	Inside Pole	106.00 - 0.00	1	No Ice	0.00	0.34
							1/2" Ice	0.00	0.34
							1" Ice	0.00	0.34
**********									
**									

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	147.00-142.00	A	0.000	0.000	0.420	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	142.00-137.00	A	0.000	0.000	0.420	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	137.00-132.00	A	0.000	0.000	0.420	0.000	0.02
		B	0.000	0.000	2.395	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.00
L4	132.00-127.00	A	0.000	0.000	0.420	0.000	0.02
		B	0.000	0.000	2.994	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L5	127.00-122.00	A	0.000	0.000	1.060	0.000	0.03
		B	0.000	0.000	2.994	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L6	122.00-117.00	A	0.000	0.000	1.220	0.000	0.03
		B	0.000	0.000	2.994	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L7	117.00-112.00	A	0.000	0.000	1.220	0.000	0.03
		B	0.000	0.000	2.994	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.00
L8	112.00-105.00	A	0.000	0.000	1.708	0.000	0.04
		B	0.000	0.000	4.192	0.000	0.10
		C	0.000	0.000	0.000	0.000	0.01
L9	105.00-103.75	A	0.000	0.000	0.305	0.000	0.01

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
		B	0.000	0.000	0.749	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.01
L10	103.75-98.75	A	0.000	0.000	1.220	0.000	0.03
		B	0.000	0.000	2.994	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.06
L11	98.75-93.75	A	0.000	0.000	1.220	0.000	0.03
		B	0.000	0.000	2.994	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.06
L12	93.75-89.67	A	0.000	0.000	2.998	0.000	0.03
		B	0.000	0.000	3.185	0.000	0.06
		C	0.000	0.000	0.740	0.000	0.05
L13	89.67-89.42	A	0.000	0.000	0.268	0.000	0.00
		B	0.000	0.000	0.372	0.000	0.00
		C	0.000	0.000	0.222	0.000	0.00
L14	89.42-88.08	A	0.000	0.000	1.431	0.000	0.01
		B	0.000	0.000	1.984	0.000	0.02
		C	0.000	0.000	1.333	0.000	0.02
L15	88.08-87.83	A	0.000	0.000	0.268	0.000	0.00
		B	0.000	0.000	0.372	0.000	0.00
		C	0.000	0.000	0.444	0.000	0.00
L16	87.83-85.83	A	0.000	0.000	2.145	0.000	0.01
		B	0.000	0.000	2.974	0.000	0.03
		C	0.000	0.000	3.553	0.000	0.02
L17	85.83-85.58	A	0.000	0.000	0.268	0.000	0.00
		B	0.000	0.000	0.372	0.000	0.00
		C	0.000	0.000	0.444	0.000	0.00
L18	85.58-84.50	A	0.000	0.000	1.162	0.000	0.01
		B	0.000	0.000	1.611	0.000	0.02
		C	0.000	0.000	1.924	0.000	0.01
L19	84.50-84.25	A	0.000	0.000	0.268	0.000	0.00
		B	0.000	0.000	0.372	0.000	0.00
		C	0.000	0.000	0.444	0.000	0.00
L20	84.25-79.25	A	0.000	0.000	3.015	0.000	0.03
		B	0.000	0.000	7.436	0.000	0.07
		C	0.000	0.000	8.883	0.000	0.06
L21	79.25-73.75	A	0.000	0.000	6.006	0.000	0.03
		B	0.000	0.000	8.179	0.000	0.08
		C	0.000	0.000	9.772	0.000	0.06
L22	73.75-72.75	A	0.000	0.000	1.132	0.000	0.01
		B	0.000	0.000	1.487	0.000	0.01
		C	0.000	0.000	1.333	0.000	0.01
L23	72.75-67.75	A	0.000	0.000	5.662	0.000	0.03
		B	0.000	0.000	7.436	0.000	0.07
		C	0.000	0.000	4.442	0.000	0.06
L24	67.75-63.08	A	0.000	0.000	7.788	0.000	0.03
		B	0.000	0.000	9.445	0.000	0.07
		C	0.000	0.000	6.649	0.000	0.05
L25	63.08-62.83	A	0.000	0.000	0.533	0.000	0.00
		B	0.000	0.000	0.622	0.000	0.00
		C	0.000	0.000	0.472	0.000	0.00
L26	62.83-57.83	A	0.000	0.000	10.662	0.000	0.03
		B	0.000	0.000	12.436	0.000	0.07
		C	0.000	0.000	9.442	0.000	0.06
L27	57.83-52.83	A	0.000	0.000	10.662	0.000	0.03
		B	0.000	0.000	12.436	0.000	0.07
		C	0.000	0.000	9.442	0.000	0.06
L28	52.83-47.83	A	0.000	0.000	10.662	0.000	0.03
		B	0.000	0.000	12.436	0.000	0.07
		C	0.000	0.000	9.442	0.000	0.06
L29	47.83-42.75	A	0.000	0.000	10.832	0.000	0.03
		B	0.000	0.000	12.635	0.000	0.07
		C	0.000	0.000	9.593	0.000	0.06
L30	42.75-42.50	A	0.000	0.000	0.533	0.000	0.00
		B	0.000	0.000	0.622	0.000	0.00
		C	0.000	0.000	0.472	0.000	0.00
L31	42.50-37.50	A	0.000	0.000	10.662	0.000	0.03
		B	0.000	0.000	12.436	0.000	0.07
		C	0.000	0.000	9.442	0.000	0.06
L32	37.50-32.75	A	0.000	0.000	10.358	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
		B	0.000	0.000	12.043	0.000	0.07
		C	0.000	0.000	9.199	0.000	0.05
L33	32.75-32.50	A	0.000	0.000	0.554	0.000	0.00
		B	0.000	0.000	0.643	0.000	0.00
		C	0.000	0.000	0.493	0.000	0.00
L34	32.50-27.50	A	0.000	0.000	11.078	0.000	0.03
		B	0.000	0.000	12.852	0.000	0.07
		C	0.000	0.000	9.858	0.000	0.06
L35	27.50-22.50	A	0.000	0.000	11.078	0.000	0.03
		B	0.000	0.000	12.852	0.000	0.07
		C	0.000	0.000	9.858	0.000	0.06
L36	22.50-17.50	A	0.000	0.000	11.078	0.000	0.03
		B	0.000	0.000	12.852	0.000	0.07
		C	0.000	0.000	9.858	0.000	0.06
L37	17.50-12.50	A	0.000	0.000	11.078	0.000	0.03
		B	0.000	0.000	12.852	0.000	0.07
		C	0.000	0.000	9.858	0.000	0.06
L38	12.50-8.08	A	0.000	0.000	11.827	0.000	0.03
		B	0.000	0.000	11.354	0.000	0.07
		C	0.000	0.000	10.749	0.000	0.05
L39	8.08-7.83	A	0.000	0.000	0.765	0.000	0.00
		B	0.000	0.000	0.643	0.000	0.00
		C	0.000	0.000	0.704	0.000	0.00
L40	7.83-6.42	A	0.000	0.000	4.333	0.000	0.01
		B	0.000	0.000	3.640	0.000	0.02
		C	0.000	0.000	3.987	0.000	0.02
L41	6.42-6.17	A	0.000	0.000	0.765	0.000	0.00
		B	0.000	0.000	0.643	0.000	0.00
		C	0.000	0.000	0.704	0.000	0.00
L42	6.17-3.25	A	0.000	0.000	8.259	0.000	0.02
		B	0.000	0.000	7.498	0.000	0.04
		C	0.000	0.000	8.213	0.000	0.03
L43	3.25-3.00	A	0.000	0.000	0.543	0.000	0.00
		B	0.000	0.000	0.643	0.000	0.00
		C	0.000	0.000	0.704	0.000	0.00
L44	3.00-2.00	A	0.000	0.000	2.171	0.000	0.01
		B	0.000	0.000	2.570	0.000	0.01
		C	0.000	0.000	2.816	0.000	0.01
L45	2.00-1.75	A	0.000	0.000	0.543	0.000	0.00
		B	0.000	0.000	0.643	0.000	0.00
		C	0.000	0.000	0.704	0.000	0.00
L46	1.75-0.00	A	0.000	0.000	3.800	0.000	0.01
		B	0.000	0.000	4.498	0.000	0.03
		C	0.000	0.000	4.927	0.000	0.02

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	147.00-142.00	A	0.985	0.000	0.000	1.405	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	142.00-137.00	A	0.982	0.000	0.000	1.402	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	137.00-132.00	A	0.978	0.000	0.000	1.398	0.000	0.03
		B		0.000	0.000	3.972	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.00
L4	132.00-127.00	A	0.975	0.000	0.000	1.395	0.000	0.03
		B		0.000	0.000	4.961	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L5	127.00-122.00	A	0.971	0.000	0.000	2.807	0.000	0.05
		B		0.000	0.000	4.956	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L6	122.00-117.00	A	0.967	0.000	0.000	3.153	0.000	0.06

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
		B		0.000	0.000	4.951	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.00
L7	117.00-112.00	A	0.963	0.000	0.000	3.145	0.000	0.06
		B		0.000	0.000	4.946	0.000	0.10
		C		0.000	0.000	0.000	0.000	0.00
L8	112.00-105.00	A	0.957	0.000	0.000	4.389	0.000	0.08
		B		0.000	0.000	6.915	0.000	0.15
		C		0.000	0.000	0.000	0.000	0.01
L9	105.00-103.75	A	0.954	0.000	0.000	0.784	0.000	0.01
		B		0.000	0.000	1.235	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.01
L10	103.75-98.75	A	0.951	0.000	0.000	3.122	0.000	0.06
		B		0.000	0.000	4.931	0.000	0.11
		C		0.000	0.000	0.000	0.000	0.06
L11	98.75-93.75	A	0.946	0.000	0.000	3.112	0.000	0.06
		B		0.000	0.000	4.925	0.000	0.11
		C		0.000	0.000	0.000	0.000	0.06
L12	93.75-89.67	A	0.941	0.000	0.000	4.786	0.000	0.06
		B		0.000	0.000	4.914	0.000	0.09
		C		0.000	0.000	0.897	0.000	0.05
L13	89.67-89.42	A	0.939	0.000	0.000	0.388	0.000	0.00
		B		0.000	0.000	0.515	0.000	0.01
		C		0.000	0.000	0.269	0.000	0.00
L14	89.42-88.08	A	0.938	0.000	0.000	2.070	0.000	0.02
		B		0.000	0.000	2.747	0.000	0.04
		C		0.000	0.000	1.614	0.000	0.03
L15	88.08-87.83	A	0.938	0.000	0.000	0.388	0.000	0.00
		B		0.000	0.000	0.515	0.000	0.01
		C		0.000	0.000	0.537	0.000	0.01
L16	87.83-85.83	A	0.936	0.000	0.000	3.101	0.000	0.04
		B		0.000	0.000	4.116	0.000	0.06
		C		0.000	0.000	4.295	0.000	0.05
L17	85.83-85.58	A	0.935	0.000	0.000	0.387	0.000	0.00
		B		0.000	0.000	0.514	0.000	0.01
		C		0.000	0.000	0.537	0.000	0.01
L18	85.58-84.50	A	0.934	0.000	0.000	1.678	0.000	0.02
		B		0.000	0.000	2.228	0.000	0.03
		C		0.000	0.000	2.325	0.000	0.03
L19	84.50-84.25	A	0.934	0.000	0.000	0.387	0.000	0.00
		B		0.000	0.000	0.514	0.000	0.01
		C		0.000	0.000	0.537	0.000	0.01
L20	84.25-79.25	A	0.931	0.000	0.000	5.099	0.000	0.07
		B		0.000	0.000	10.278	0.000	0.14
		C		0.000	0.000	10.727	0.000	0.12
L21	79.25-73.75	A	0.925	0.000	0.000	9.011	0.000	0.10
		B		0.000	0.000	11.291	0.000	0.16
		C		0.000	0.000	11.787	0.000	0.14
L22	73.75-72.75	A	0.921	0.000	0.000	1.687	0.000	0.02
		B		0.000	0.000	2.053	0.000	0.03
		C		0.000	0.000	1.608	0.000	0.02
L23	72.75-67.75	A	0.917	0.000	0.000	8.412	0.000	0.09
		B		0.000	0.000	10.247	0.000	0.14
		C		0.000	0.000	5.358	0.000	0.09
L24	67.75-63.08	A	0.910	0.000	0.000	10.793	0.000	0.10
		B		0.000	0.000	12.512	0.000	0.15
		C		0.000	0.000	7.954	0.000	0.10
L25	63.08-62.83	A	0.907	0.000	0.000	0.714	0.000	0.01
		B		0.000	0.000	0.807	0.000	0.01
		C		0.000	0.000	0.563	0.000	0.01
L26	62.83-57.83	A	0.903	0.000	0.000	14.273	0.000	0.12
		B		0.000	0.000	16.118	0.000	0.17
		C		0.000	0.000	11.247	0.000	0.12
L27	57.83-52.83	A	0.895	0.000	0.000	14.242	0.000	0.12
		B		0.000	0.000	16.093	0.000	0.17
		C		0.000	0.000	11.232	0.000	0.12
L28	52.83-47.83	A	0.887	0.000	0.000	14.208	0.000	0.12
		B		0.000	0.000	16.066	0.000	0.17
		C		0.000	0.000	11.215	0.000	0.12
L29	47.83-42.75	A	0.877	0.000	0.000	14.398	0.000	0.12

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
		B		0.000	0.000	16.292	0.000	0.17
		C		0.000	0.000	11.375	0.000	0.12
L30	42.75-42.50	A	0.872	0.000	0.000	0.709	0.000	0.01
		B		0.000	0.000	0.802	0.000	0.01
		C		0.000	0.000	0.560	0.000	0.01
L31	42.50-37.50	A	0.866	0.000	0.000	14.128	0.000	0.11
		B		0.000	0.000	16.000	0.000	0.17
		C		0.000	0.000	11.175	0.000	0.12
L32	37.50-32.75	A	0.855	0.000	0.000	13.608	0.000	0.11
		B		0.000	0.000	15.395	0.000	0.16
		C		0.000	0.000	10.824	0.000	0.11
L33	32.75-32.50	A	0.849	0.000	0.000	0.724	0.000	0.01
		B		0.000	0.000	0.818	0.000	0.01
		C		0.000	0.000	0.578	0.000	0.01
L34	32.50-27.50	A	0.842	0.000	0.000	14.446	0.000	0.11
		B		0.000	0.000	16.337	0.000	0.16
		C		0.000	0.000	11.542	0.000	0.12
L35	27.50-22.50	A	0.827	0.000	0.000	14.385	0.000	0.11
		B		0.000	0.000	16.288	0.000	0.16
		C		0.000	0.000	11.512	0.000	0.12
L36	22.50-17.50	A	0.808	0.000	0.000	14.312	0.000	0.11
		B		0.000	0.000	16.228	0.000	0.16
		C		0.000	0.000	11.475	0.000	0.12
L37	17.50-12.50	A	0.786	0.000	0.000	14.220	0.000	0.11
		B		0.000	0.000	16.154	0.000	0.16
		C		0.000	0.000	11.429	0.000	0.11
L38	12.50-8.08	A	0.756	0.000	0.000	14.703	0.000	0.10
		B		0.000	0.000	14.187	0.000	0.14
		C		0.000	0.000	12.288	0.000	0.11
L39	8.08-7.83	A	0.737	0.000	0.000	0.933	0.000	0.01
		B		0.000	0.000	0.800	0.000	0.01
		C		0.000	0.000	0.798	0.000	0.01
L40	7.83-6.42	A	0.729	0.000	0.000	5.273	0.000	0.04
		B		0.000	0.000	4.523	0.000	0.04
		C		0.000	0.000	4.515	0.000	0.04
L41	6.42-6.17	A	0.720	0.000	0.000	0.929	0.000	0.01
		B		0.000	0.000	0.797	0.000	0.01
		C		0.000	0.000	0.796	0.000	0.01
L42	6.17-3.25	A	0.700	0.000	0.000	10.014	0.000	0.07
		B		0.000	0.000	9.261	0.000	0.09
		C		0.000	0.000	9.257	0.000	0.08
L43	3.25-3.00	A	0.672	0.000	0.000	0.662	0.000	0.00
		B		0.000	0.000	0.789	0.000	0.01
		C		0.000	0.000	0.790	0.000	0.01
L44	3.00-2.00	A	0.657	0.000	0.000	2.639	0.000	0.02
		B		0.000	0.000	3.147	0.000	0.03
		C		0.000	0.000	3.152	0.000	0.03
L45	2.00-1.75	A	0.638	0.000	0.000	0.656	0.000	0.00
		B		0.000	0.000	0.784	0.000	0.01
		C		0.000	0.000	0.786	0.000	0.01
L46	1.75-0.00	A	0.591	0.000	0.000	4.536	0.000	0.03
		B		0.000	0.000	5.433	0.000	0.05
		C		0.000	0.000	5.457	0.000	0.04

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	147.00-142.00	-0.6561	-0.1152	-1.1704	-0.2055
L2	142.00-137.00	-0.6566	-0.1153	-1.1739	-0.2061
L3	137.00-132.00	2.5108	0.4409	1.6577	0.2911
L4	132.00-127.00	3.0971	0.5439	2.1446	0.3766
L5	127.00-122.00	2.9465	-0.2137	2.0354	-0.4433
L6	122.00-117.00	2.9310	-0.3927	2.0300	-0.6387

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L7	117.00-112.00	2.9549	-0.3964	2.0550	-0.6454
L8	112.00-105.00	2.9824	-0.4007	2.0840	-0.6529
L9	105.00-103.75	2.9884	-0.4016	2.0900	-0.6550
L10	103.75-98.75	3.0020	-0.4038	2.1054	-0.6569
L11	98.75-93.75	3.0232	-0.4071	2.1282	-0.6623
L12	93.75-89.67	1.0655	0.7946	1.0642	0.1112
L13	89.67-89.42	1.6818	-0.3472	1.6245	-0.6490
L14	89.42-88.08	1.2134	-0.4444	1.2564	-0.7214
L15	88.08-87.83	-1.6347	-1.0248	-1.0496	-1.1641
L16	87.83-85.83	-1.6423	-1.0301	-1.0539	-1.1686
L17	85.83-85.58	-1.6499	-1.0354	-1.0582	-1.1731
L18	85.58-84.50	-1.6544	-1.0385	-1.0607	-1.1758
L19	84.50-84.25	-1.6588	-1.0416	-1.0631	-1.1784
L20	84.25-79.25	-0.6310	-2.2640	-0.2572	-2.0472
L21	79.25-73.75	-1.7601	-1.0357	-1.2309	-1.0631
L22	73.75-72.75	-0.2495	-0.6028	-0.0207	-0.7260
L23	72.75-67.75	1.5977	-0.2161	1.4216	-0.4342
L24	67.75-63.08	1.0396	0.6900	1.0138	0.3324
L25	63.08-62.83	0.7194	1.2063	0.7555	0.8138
L26	62.83-57.83	0.7262	1.2187	0.7619	0.8220
L27	57.83-52.83	0.7390	1.2423	0.7740	0.8376
L28	52.83-47.83	0.7517	1.2657	0.7861	0.8532
L29	47.83-42.75	0.7644	1.2891	0.7982	0.8690
L30	42.75-42.50	0.7600	1.2811	0.7945	0.8645
L31	42.50-37.50	0.7666	1.2932	0.8014	0.8742
L32	37.50-32.75	0.7469	1.3648	0.7915	0.9322
L33	32.75-32.50	0.7304	1.4112	0.7820	0.9708
L34	32.50-27.50	0.7365	1.4239	0.7881	0.9802
L35	27.50-22.50	0.7479	1.4480	0.7999	0.9983
L36	22.50-17.50	0.7593	1.4720	0.8119	1.0171
L37	17.50-12.50	0.7706	1.4957	0.8244	1.0372
L38	12.50-8.08	-1.6616	1.1776	-1.1528	0.8329
L39	8.08-7.83	-3.3416	0.9531	-2.6026	0.6789
L40	7.83-6.42	-3.3503	0.9555	-2.6089	0.6822
L41	6.42-6.17	-3.3590	0.9580	-2.6153	0.6857
L42	6.17-3.25	-3.0557	0.6116	-2.3111	0.3737
L43	3.25-3.00	-2.0404	-0.5171	-1.3447	-0.6060
L44	3.00-2.00	-2.0443	-0.5182	-1.3486	-0.6026
L45	2.00-1.75	-2.0482	-0.5192	-1.3530	-0.5981
L46	1.75-0.00	-2.0545	-0.5210	-1.3619	-0.5855

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	HB058-M12-XXXF(5/8)	142.00 - 147.00	1.0000	1.0000
L2	2	HB058-M12-XXXF(5/8)	137.00 - 142.00	1.0000	1.0000
L3	2	HB058-M12-XXXF(5/8)	132.00 - 137.00	1.0000	1.0000
L3	6	HB158-21U6S24-xxM_TMO(1-5/8)	132.00 - 136.00	1.0000	1.0000
L4	2	HB058-M12-XXXF(5/8)	127.00 - 132.00	1.0000	1.0000
L4	6	HB158-21U6S24-xxM_TMO(1-5/8)	127.00 - 132.00	1.0000	1.0000
L5	2	HB058-M12-XXXF(5/8)	122.00 - 127.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L5	6	HB158-21U6S24-xxM_TMO(1-5/8)	122.00 - 127.00	1.0000	1.0000
L5	41	CU12PSM9P6XXX(1-1/2)	122.00 - 126.00	1.0000	1.0000
L6	2	HB058-M12-XXXF(5/8)	117.00 - 122.00	1.0000	1.0000
L6	6	HB158-21U6S24-xxM_TMO(1-5/8)	117.00 - 122.00	1.0000	1.0000
L6	41	CU12PSM9P6XXX(1-1/2)	117.00 - 122.00	1.0000	1.0000
L7	2	HB058-M12-XXXF(5/8)	112.00 - 117.00	1.0000	1.0000
L7	6	HB158-21U6S24-xxM_TMO(1-5/8)	112.00 - 117.00	1.0000	1.0000
L7	41	CU12PSM9P6XXX(1-1/2)	112.00 - 117.00	1.0000	1.0000
L8	2	HB058-M12-XXXF(5/8)	105.00 - 112.00	1.0000	1.0000
L8	6	HB158-21U6S24-xxM_TMO(1-5/8)	105.00 - 112.00	1.0000	1.0000
L8	41	CU12PSM9P6XXX(1-1/2)	105.00 - 112.00	1.0000	1.0000
L9	2	HB058-M12-XXXF(5/8)	103.75 - 105.00	1.0000	1.0000
L9	6	HB158-21U6S24-xxM_TMO(1-5/8)	103.75 - 105.00	1.0000	1.0000
L9	41	CU12PSM9P6XXX(1-1/2)	103.75 - 105.00	1.0000	1.0000
L10	2	HB058-M12-XXXF(5/8)	98.75 - 103.75	1.0000	1.0000
L10	6	HB158-21U6S24-xxM_TMO(1-5/8)	98.75 - 103.75	1.0000	1.0000
L10	41	CU12PSM9P6XXX(1-1/2)	98.75 - 103.75	1.0000	1.0000
L11	2	HB058-M12-XXXF(5/8)	93.75 - 98.75	1.0000	1.0000
L11	6	HB158-21U6S24-xxM_TMO(1-5/8)	93.75 - 98.75	1.0000	1.0000
L11	41	CU12PSM9P6XXX(1-1/2)	93.75 - 98.75	1.0000	1.0000
L12	2	HB058-M12-XXXF(5/8)	89.67 - 93.75	1.0000	1.0000
L12	6	HB158-21U6S24-xxM_TMO(1-5/8)	89.67 - 93.75	1.0000	1.0000
L12	24	(Area) Aero MP3-05 (H)	89.67 - 90.50	1.0000	1.0000
L12	25	(Area) Aero MP3-05 (H)	89.67 - 90.50	1.0000	1.0000
L12	28	(Area) Aero MP3-05 (H)	89.67 - 92.08	1.0000	1.0000
L12	41	CU12PSM9P6XXX(1-1/2)	89.67 - 93.75	1.0000	1.0000
L13	2	HB058-M12-XXXF(5/8)	89.42 - 89.67	1.0000	1.0000
L13	6	HB158-21U6S24-xxM_TMO(1-5/8)	89.42 - 89.67	1.0000	1.0000
L13	24	(Area) Aero MP3-05 (H)	89.42 - 89.67	1.0000	1.0000
L13	25	(Area) Aero MP3-05 (H)	89.42 - 89.67	1.0000	1.0000
L13	28	(Area) Aero MP3-05 (H)	89.42 - 89.67	1.0000	1.0000
L13	41	CU12PSM9P6XXX(1-1/2)	89.42 - 89.67	1.0000	1.0000
L14	2	HB058-M12-XXXF(5/8)	88.08 - 89.42	1.0000	1.0000
L14	6	HB158-21U6S24-xxM_TMO(1-5/8)	88.08 - 89.42	1.0000	1.0000
L14	24	(Area) Aero MP3-05 (H)	88.08 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			89.42		
L14	25	(Area) Aero MP3-05 (H)	88.08 - 89.42	1.0000	1.0000
L14	27	(Area) Aero MP3-05 (H)	88.08 - 88.25	1.0000	1.0000
L14	28	(Area) Aero MP3-05 (H)	88.08 - 89.42	1.0000	1.0000
L14	41	CU12PSM9P6XXX(1-1/2)	88.08 - 89.42	1.0000	1.0000
L15	2	HB058-M12-XXXF(5/8)	87.83 - 88.08	1.0000	1.0000
L15	6	HB158-21U6S24-xxM_TMO(1-5/8)	87.83 - 88.08	1.0000	1.0000
L15	24	(Area) Aero MP3-05 (H)	87.83 - 88.08	1.0000	1.0000
L15	25	(Area) Aero MP3-05 (H)	87.83 - 88.08	1.0000	1.0000
L15	27	(Area) Aero MP3-05 (H)	87.83 - 88.08	1.0000	1.0000
L15	28	(Area) Aero MP3-05 (H)	87.83 - 88.08	1.0000	1.0000
L15	41	CU12PSM9P6XXX(1-1/2)	87.83 - 88.08	1.0000	1.0000
L16	2	HB058-M12-XXXF(5/8)	85.83 - 87.83	1.0000	1.0000
L16	6	HB158-21U6S24-xxM_TMO(1-5/8)	85.83 - 87.83	1.0000	1.0000
L16	24	(Area) Aero MP3-05 (H)	85.83 - 87.83	1.0000	1.0000
L16	25	(Area) Aero MP3-05 (H)	85.83 - 87.83	1.0000	1.0000
L16	27	(Area) Aero MP3-05 (H)	85.83 - 87.83	1.0000	1.0000
L16	28	(Area) Aero MP3-05 (H)	85.83 - 87.83	1.0000	1.0000
L16	41	CU12PSM9P6XXX(1-1/2)	85.83 - 87.83	1.0000	1.0000
L17	2	HB058-M12-XXXF(5/8)	85.58 - 85.83	1.0000	1.0000
L17	6	HB158-21U6S24-xxM_TMO(1-5/8)	85.58 - 85.83	1.0000	1.0000
L17	24	(Area) Aero MP3-05 (H)	85.58 - 85.83	1.0000	1.0000
L17	25	(Area) Aero MP3-05 (H)	85.58 - 85.83	1.0000	1.0000
L17	27	(Area) Aero MP3-05 (H)	85.58 - 85.83	1.0000	1.0000
L17	28	(Area) Aero MP3-05 (H)	85.58 - 85.83	1.0000	1.0000
L17	41	CU12PSM9P6XXX(1-1/2)	85.58 - 85.83	1.0000	1.0000
L18	2	HB058-M12-XXXF(5/8)	84.50 - 85.58	1.0000	1.0000
L18	6	HB158-21U6S24-xxM_TMO(1-5/8)	84.50 - 85.58	1.0000	1.0000
L18	24	(Area) Aero MP3-05 (H)	84.50 - 85.58	1.0000	1.0000
L18	25	(Area) Aero MP3-05 (H)	84.50 - 85.58	1.0000	1.0000
L18	27	(Area) Aero MP3-05 (H)	84.50 - 85.58	1.0000	1.0000
L18	28	(Area) Aero MP3-05 (H)	84.50 - 85.58	1.0000	1.0000
L18	41	CU12PSM9P6XXX(1-1/2)	84.50 - 85.58	1.0000	1.0000
L19	2	HB058-M12-XXXF(5/8)	84.25 - 84.50	1.0000	1.0000
L19	6	HB158-21U6S24-xxM_TMO(1-5/8)	84.25 - 84.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L19	24	(Area) Aero MP3-05 (H)	84.25 - 84.50	1.0000	1.0000
L19	25	(Area) Aero MP3-05 (H)	84.25 - 84.50	1.0000	1.0000
L19	27	(Area) Aero MP3-05 (H)	84.25 - 84.50	1.0000	1.0000
L19	28	(Area) Aero MP3-05 (H)	84.25 - 84.50	1.0000	1.0000
L19	41	CU12PSM9P6XXX(1-1/2)	84.25 - 84.50	1.0000	1.0000
L20	2	HB058-M12-XXXF(5/8)	79.25 - 84.25	1.0000	1.0000
L20	6	HB158-21U6S24-xxM_TMO(1-5/8)	79.25 - 84.25	1.0000	1.0000
L20	24	(Area) Aero MP3-05 (H)	79.25 - 84.25	1.0000	1.0000
L20	25	(Area) Aero MP3-05 (H)	79.25 - 84.25	1.0000	1.0000
L20	27	(Area) Aero MP3-05 (H)	79.25 - 84.25	1.0000	1.0000
L20	28	(Area) Aero MP3-05 (H)	82.08 - 84.25	1.0000	1.0000
L20	41	CU12PSM9P6XXX(1-1/2)	79.25 - 84.25	1.0000	1.0000
L21	2	HB058-M12-XXXF(5/8)	73.75 - 79.25	1.0000	1.0000
L21	6	HB158-21U6S24-xxM_TMO(1-5/8)	73.75 - 79.25	1.0000	1.0000
L21	22	(Area) Aero MP3-05 (H)	73.75 - 79.00	1.0000	1.0000
L21	24	(Area) Aero MP3-05 (H)	73.75 - 79.25	1.0000	1.0000
L21	25	(Area) Aero MP3-05 (H)	73.75 - 79.25	1.0000	1.0000
L21	27	(Area) Aero MP3-05 (H)	73.75 - 79.25	1.0000	1.0000
L21	41	CU12PSM9P6XXX(1-1/2)	73.75 - 79.25	1.0000	1.0000
L22	2	HB058-M12-XXXF(5/8)	72.75 - 73.75	1.0000	1.0000
L22	6	HB158-21U6S24-xxM_TMO(1-5/8)	72.75 - 73.75	1.0000	1.0000
L22	22	(Area) Aero MP3-05 (H)	72.75 - 73.75	1.0000	1.0000
L22	24	(Area) Aero MP3-05 (H)	72.75 - 73.75	1.0000	1.0000
L22	25	(Area) Aero MP3-05 (H)	72.75 - 73.75	1.0000	1.0000
L22	27	(Area) Aero MP3-05 (H)	73.25 - 73.75	1.0000	1.0000
L22	41	CU12PSM9P6XXX(1-1/2)	72.75 - 73.75	1.0000	1.0000
L23	2	HB058-M12-XXXF(5/8)	67.75 - 72.75	1.0000	1.0000
L23	6	HB158-21U6S24-xxM_TMO(1-5/8)	67.75 - 72.75	1.0000	1.0000
L23	22	(Area) Aero MP3-05 (H)	67.75 - 72.75	1.0000	1.0000
L23	24	(Area) Aero MP3-05 (H)	67.75 - 72.75	1.0000	1.0000
L23	25	(Area) Aero MP3-05 (H)	67.75 - 72.75	1.0000	1.0000
L23	41	CU12PSM9P6XXX(1-1/2)	67.75 - 72.75	1.0000	1.0000
L24	2	HB058-M12-XXXF(5/8)	63.08 - 67.75	1.0000	1.0000
L24	6	HB158-21U6S24-xxM_TMO(1-5/8)	63.08 - 67.75	1.0000	1.0000
L24	22	(Area) Aero MP3-05 (H)	63.08 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			67.75		
L24	24	(Area) Aero MP3-05 (H)	63.08 - 67.75	1.0000	1.0000
L24	25	(Area) Aero MP3-05 (H)	63.08 - 67.75	1.0000	1.0000
L24	34	(Area) CCI-65FP-060100 (H)	63.08 - 65.58	1.0000	1.0000
L24	35	(Area) CCI-65FP-060100 (H)	63.08 - 65.58	1.0000	1.0000
L24	36	(Area) CCI-65FP-060100 (H)	63.08 - 65.58	1.0000	1.0000
L24	41	CU12PSM9P6XXX(1-1/2)	63.08 - 67.75	1.0000	1.0000
L25	2	HB058-M12-XXXF(5/8)	62.83 - 63.08	1.0000	1.0000
L25	6	HB158-21U6S24-xxM_TMO(1-5/8)	62.83 - 63.08	1.0000	1.0000
L25	22	(Area) Aero MP3-05 (H)	62.83 - 63.08	1.0000	1.0000
L25	24	(Area) Aero MP3-05 (H)	62.83 - 63.08	1.0000	1.0000
L25	25	(Area) Aero MP3-05 (H)	62.83 - 63.08	1.0000	1.0000
L25	34	(Area) CCI-65FP-060100 (H)	62.83 - 63.08	1.0000	1.0000
L25	35	(Area) CCI-65FP-060100 (H)	62.83 - 63.08	1.0000	1.0000
L25	36	(Area) CCI-65FP-060100 (H)	62.83 - 63.08	1.0000	1.0000
L25	41	CU12PSM9P6XXX(1-1/2)	62.83 - 63.08	1.0000	1.0000
L26	2	HB058-M12-XXXF(5/8)	57.83 - 62.83	1.0000	1.0000
L26	6	HB158-21U6S24-xxM_TMO(1-5/8)	57.83 - 62.83	1.0000	1.0000
L26	22	(Area) Aero MP3-05 (H)	57.83 - 62.83	1.0000	1.0000
L26	24	(Area) Aero MP3-05 (H)	57.83 - 62.83	1.0000	1.0000
L26	25	(Area) Aero MP3-05 (H)	57.83 - 62.83	1.0000	1.0000
L26	34	(Area) CCI-65FP-060100 (H)	57.83 - 62.83	1.0000	1.0000
L26	35	(Area) CCI-65FP-060100 (H)	57.83 - 62.83	1.0000	1.0000
L26	36	(Area) CCI-65FP-060100 (H)	57.83 - 62.83	1.0000	1.0000
L26	41	CU12PSM9P6XXX(1-1/2)	57.83 - 62.83	1.0000	1.0000
L27	2	HB058-M12-XXXF(5/8)	52.83 - 57.83	1.0000	1.0000
L27	6	HB158-21U6S24-xxM_TMO(1-5/8)	52.83 - 57.83	1.0000	1.0000
L27	22	(Area) Aero MP3-05 (H)	52.83 - 57.83	1.0000	1.0000
L27	24	(Area) Aero MP3-05 (H)	52.83 - 57.83	1.0000	1.0000
L27	25	(Area) Aero MP3-05 (H)	52.83 - 57.83	1.0000	1.0000
L27	34	(Area) CCI-65FP-060100 (H)	52.83 - 57.83	1.0000	1.0000
L27	35	(Area) CCI-65FP-060100 (H)	52.83 - 57.83	1.0000	1.0000
L27	36	(Area) CCI-65FP-060100 (H)	52.83 - 57.83	1.0000	1.0000
L27	41	CU12PSM9P6XXX(1-1/2)	52.83 - 57.83	1.0000	1.0000
L28	2	HB058-M12-XXXF(5/8)	47.83 - 52.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L28	6	HB158-21U6S24-xxM_TMO(1-5/8)	47.83 - 52.83	1.0000	1.0000
L28	22	(Area) Aero MP3-05 (H)	47.83 - 52.83	1.0000	1.0000
L28	24	(Area) Aero MP3-05 (H)	47.83 - 52.83	1.0000	1.0000
L28	25	(Area) Aero MP3-05 (H)	47.83 - 52.83	1.0000	1.0000
L28	34	(Area) CCI-65FP-060100 (H)	47.83 - 52.83	1.0000	1.0000
L28	35	(Area) CCI-65FP-060100 (H)	47.83 - 52.83	1.0000	1.0000
L28	36	(Area) CCI-65FP-060100 (H)	47.83 - 52.83	1.0000	1.0000
L28	41	CU12PSM9P6XXX(1-1/2)	47.83 - 52.83	1.0000	1.0000
L29	2	HB058-M12-XXXF(5/8)	42.75 - 47.83	1.0000	1.0000
L29	6	HB158-21U6S24-xxM_TMO(1-5/8)	42.75 - 47.83	1.0000	1.0000
L29	22	(Area) Aero MP3-05 (H)	42.75 - 47.83	1.0000	1.0000
L29	24	(Area) Aero MP3-05 (H)	42.75 - 47.83	1.0000	1.0000
L29	25	(Area) Aero MP3-05 (H)	42.75 - 47.83	1.0000	1.0000
L29	34	(Area) CCI-65FP-060100 (H)	42.75 - 47.83	1.0000	1.0000
L29	35	(Area) CCI-65FP-060100 (H)	42.75 - 47.83	1.0000	1.0000
L29	36	(Area) CCI-65FP-060100 (H)	42.75 - 47.83	1.0000	1.0000
L29	41	CU12PSM9P6XXX(1-1/2)	42.75 - 47.83	1.0000	1.0000
L30	2	HB058-M12-XXXF(5/8)	42.50 - 42.75	1.0000	1.0000
L30	6	HB158-21U6S24-xxM_TMO(1-5/8)	42.50 - 42.75	1.0000	1.0000
L30	22	(Area) Aero MP3-05 (H)	42.50 - 42.75	1.0000	1.0000
L30	24	(Area) Aero MP3-05 (H)	42.50 - 42.75	1.0000	1.0000
L30	25	(Area) Aero MP3-05 (H)	42.50 - 42.75	1.0000	1.0000
L30	34	(Area) CCI-65FP-060100 (H)	42.50 - 42.75	1.0000	1.0000
L30	35	(Area) CCI-65FP-060100 (H)	42.50 - 42.75	1.0000	1.0000
L30	36	(Area) CCI-65FP-060100 (H)	42.50 - 42.75	1.0000	1.0000
L30	41	CU12PSM9P6XXX(1-1/2)	42.50 - 42.75	1.0000	1.0000
L31	2	HB058-M12-XXXF(5/8)	37.50 - 42.50	1.0000	1.0000
L31	6	HB158-21U6S24-xxM_TMO(1-5/8)	37.50 - 42.50	1.0000	1.0000
L31	22	(Area) Aero MP3-05 (H)	37.50 - 42.50	1.0000	1.0000
L31	24	(Area) Aero MP3-05 (H)	37.50 - 42.50	1.0000	1.0000
L31	25	(Area) Aero MP3-05 (H)	37.50 - 42.50	1.0000	1.0000
L31	34	(Area) CCI-65FP-060100 (H)	37.50 - 42.50	1.0000	1.0000
L31	35	(Area) CCI-65FP-060100 (H)	37.50 - 42.50	1.0000	1.0000
L31	36	(Area) CCI-65FP-060100 (H)	37.50 - 42.50	1.0000	1.0000
L31	41	CU12PSM9P6XXX(1-1/2)	37.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			42.50		
L32	2	HB058-M12-XXXF(5/8)	32.75 - 37.50	1.0000	1.0000
L32	6	HB158-21U6S24-xxM_TMO(1-5/8)	32.75 - 37.50	1.0000	1.0000
L32	22	(Area) Aero MP3-05 (H)	32.75 - 37.50	1.0000	1.0000
L32	24	(Area) Aero MP3-05 (H)	32.75 - 37.50	1.0000	1.0000
L32	25	(Area) Aero MP3-05 (H)	32.75 - 37.50	1.0000	1.0000
L32	30	(Area) CCI-65FP-065125 (H)	32.75 - 35.50	1.0000	1.0000
L32	31	(Area) CCI-65FP-065125 (H)	32.75 - 35.50	1.0000	1.0000
L32	32	(Area) CCI-65FP-065125 (H)	32.75 - 35.50	1.0000	1.0000
L32	34	(Area) CCI-65FP-060100 (H)	35.50 - 37.50	1.0000	1.0000
L32	35	(Area) CCI-65FP-060100 (H)	35.50 - 37.50	1.0000	1.0000
L32	36	(Area) CCI-65FP-060100 (H)	35.50 - 37.50	1.0000	1.0000
L32	41	CU12PSM9P6XXX(1-1/2)	32.75 - 37.50	1.0000	1.0000
L33	2	HB058-M12-XXXF(5/8)	32.50 - 32.75	1.0000	1.0000
L33	6	HB158-21U6S24-xxM_TMO(1-5/8)	32.50 - 32.75	1.0000	1.0000
L33	22	(Area) Aero MP3-05 (H)	32.50 - 32.75	1.0000	1.0000
L33	24	(Area) Aero MP3-05 (H)	32.50 - 32.75	1.0000	1.0000
L33	25	(Area) Aero MP3-05 (H)	32.50 - 32.75	1.0000	1.0000
L33	30	(Area) CCI-65FP-065125 (H)	32.50 - 32.75	1.0000	1.0000
L33	31	(Area) CCI-65FP-065125 (H)	32.50 - 32.75	1.0000	1.0000
L33	32	(Area) CCI-65FP-065125 (H)	32.50 - 32.75	1.0000	1.0000
L33	41	CU12PSM9P6XXX(1-1/2)	32.50 - 32.75	1.0000	1.0000
L34	2	HB058-M12-XXXF(5/8)	27.50 - 32.50	1.0000	1.0000
L34	6	HB158-21U6S24-xxM_TMO(1-5/8)	27.50 - 32.50	1.0000	1.0000
L34	22	(Area) Aero MP3-05 (H)	27.50 - 32.50	1.0000	1.0000
L34	24	(Area) Aero MP3-05 (H)	27.50 - 32.50	1.0000	1.0000
L34	25	(Area) Aero MP3-05 (H)	27.50 - 32.50	1.0000	1.0000
L34	30	(Area) CCI-65FP-065125 (H)	27.50 - 32.50	1.0000	1.0000
L34	31	(Area) CCI-65FP-065125 (H)	27.50 - 32.50	1.0000	1.0000
L34	32	(Area) CCI-65FP-065125 (H)	27.50 - 32.50	1.0000	1.0000
L34	41	CU12PSM9P6XXX(1-1/2)	27.50 - 32.50	1.0000	1.0000
L35	2	HB058-M12-XXXF(5/8)	22.50 - 27.50	1.0000	1.0000
L35	6	HB158-21U6S24-xxM_TMO(1-5/8)	22.50 - 27.50	1.0000	1.0000
L35	22	(Area) Aero MP3-05 (H)	22.50 - 27.50	1.0000	1.0000
L35	24	(Area) Aero MP3-05 (H)	22.50 - 27.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L35	25	(Area) Aero MP3-05 (H)	22.50 - 27.50	1.0000	1.0000
L35	30	(Area) CCI-65FP-065125 (H)	22.50 - 27.50	1.0000	1.0000
L35	31	(Area) CCI-65FP-065125 (H)	22.50 - 27.50	1.0000	1.0000
L35	32	(Area) CCI-65FP-065125 (H)	22.50 - 27.50	1.0000	1.0000
L35	41	CU12PSM9P6XXX(1-1/2)	22.50 - 27.50	1.0000	1.0000
L36	2	HB058-M12-XXXF(5/8)	17.50 - 22.50	1.0000	1.0000
L36	6	HB158-21U6S24-xxM_TMO(1-5/8)	17.50 - 22.50	1.0000	1.0000
L36	22	(Area) Aero MP3-05 (H)	17.50 - 22.50	1.0000	1.0000
L36	24	(Area) Aero MP3-05 (H)	17.50 - 22.50	1.0000	1.0000
L36	25	(Area) Aero MP3-05 (H)	17.50 - 22.50	1.0000	1.0000
L36	30	(Area) CCI-65FP-065125 (H)	17.50 - 22.50	1.0000	1.0000
L36	31	(Area) CCI-65FP-065125 (H)	17.50 - 22.50	1.0000	1.0000
L36	32	(Area) CCI-65FP-065125 (H)	17.50 - 22.50	1.0000	1.0000
L36	41	CU12PSM9P6XXX(1-1/2)	17.50 - 22.50	1.0000	1.0000
L37	2	HB058-M12-XXXF(5/8)	12.50 - 17.50	1.0000	1.0000
L37	6	HB158-21U6S24-xxM_TMO(1-5/8)	12.50 - 17.50	1.0000	1.0000
L37	22	(Area) Aero MP3-05 (H)	12.50 - 17.50	1.0000	1.0000
L37	24	(Area) Aero MP3-05 (H)	12.50 - 17.50	1.0000	1.0000
L37	25	(Area) Aero MP3-05 (H)	12.50 - 17.50	1.0000	1.0000
L37	30	(Area) CCI-65FP-065125 (H)	12.50 - 17.50	1.0000	1.0000
L37	31	(Area) CCI-65FP-065125 (H)	12.50 - 17.50	1.0000	1.0000
L37	32	(Area) CCI-65FP-065125 (H)	12.50 - 17.50	1.0000	1.0000
L37	41	CU12PSM9P6XXX(1-1/2)	12.50 - 17.50	1.0000	1.0000
L38	2	HB058-M12-XXXF(5/8)	8.08 - 12.50	1.0000	1.0000
L38	6	HB158-21U6S24-xxM_TMO(1-5/8)	8.08 - 12.50	1.0000	1.0000
L38	19	(Area) Aero MP3-05 (H)	8.08 - 10.50	1.0000	1.0000
L38	20	(Area) Aero MP3-05 (H)	8.08 - 10.50	1.0000	1.0000
L38	22	(Area) Aero MP3-05 (H)	8.08 - 12.50	1.0000	1.0000
L38	24	(Area) Aero MP3-05 (H)	8.08 - 12.50	1.0000	1.0000
L38	25	(Area) Aero MP3-05 (H)	8.08 - 12.50	1.0000	1.0000
L38	30	(Area) CCI-65FP-065125 (H)	8.08 - 12.50	1.0000	1.0000
L38	31	(Area) CCI-65FP-065125 (H)	8.08 - 12.50	1.0000	1.0000
L38	32	(Area) CCI-65FP-065125 (H)	8.08 - 12.50	1.0000	1.0000
L38	41	CU12PSM9P6XXX(1-1/2)	8.08 - 12.50	1.0000	1.0000
L39	2	HB058-M12-XXXF(5/8)	7.83 - 8.08	1.0000	1.0000
L39	6	HB158-21U6S24-xxM_TMO(1-5/8)	7.83 - 8.08	1.0000	1.0000
L39	19	(Area) Aero MP3-05 (H)	7.83 - 8.08	1.0000	1.0000
L39	20	(Area) Aero MP3-05 (H)	7.83 - 8.08	1.0000	1.0000
L39	22	(Area) Aero MP3-05 (H)	7.83 - 8.08	1.0000	1.0000
L39	24	(Area) Aero MP3-05 (H)	7.83 - 8.08	1.0000	1.0000
L39	25	(Area) Aero MP3-05 (H)	7.83 - 8.08	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L39	30	(Area) CCI-65FP-065125 (H)	7.83 - 8.08	1.0000	1.0000
L39	31	(Area) CCI-65FP-065125 (H)	7.83 - 8.08	1.0000	1.0000
L39	32	(Area) CCI-65FP-065125 (H)	7.83 - 8.08	1.0000	1.0000
L39	41	CU12PSM9P6XXX(1-1/2)	7.83 - 8.08	1.0000	1.0000
L40	2	HB058-M12-XXXF(5/8)	6.42 - 7.83	1.0000	1.0000
L40	6	HB158-21U6S24-xxM_TMO(1-5/8)	6.42 - 7.83	1.0000	1.0000
L40	19	(Area) Aero MP3-05 (H)	6.42 - 7.83	1.0000	1.0000
L40	20	(Area) Aero MP3-05 (H)	6.42 - 7.83	1.0000	1.0000
L40	22	(Area) Aero MP3-05 (H)	6.42 - 7.83	1.0000	1.0000
L40	24	(Area) Aero MP3-05 (H)	6.42 - 7.83	1.0000	1.0000
L40	25	(Area) Aero MP3-05 (H)	6.42 - 7.83	1.0000	1.0000
L40	30	(Area) CCI-65FP-065125 (H)	6.42 - 7.83	1.0000	1.0000
L40	31	(Area) CCI-65FP-065125 (H)	6.42 - 7.83	1.0000	1.0000
L40	32	(Area) CCI-65FP-065125 (H)	6.42 - 7.83	1.0000	1.0000
L40	41	CU12PSM9P6XXX(1-1/2)	6.42 - 7.83	1.0000	1.0000
L41	2	HB058-M12-XXXF(5/8)	6.17 - 6.42	1.0000	1.0000
L41	6	HB158-21U6S24-xxM_TMO(1-5/8)	6.17 - 6.42	1.0000	1.0000
L41	19	(Area) Aero MP3-05 (H)	6.17 - 6.42	1.0000	1.0000
L41	20	(Area) Aero MP3-05 (H)	6.17 - 6.42	1.0000	1.0000
L41	22	(Area) Aero MP3-05 (H)	6.17 - 6.42	1.0000	1.0000
L41	24	(Area) Aero MP3-05 (H)	6.17 - 6.42	1.0000	1.0000
L41	25	(Area) Aero MP3-05 (H)	6.17 - 6.42	1.0000	1.0000
L41	30	(Area) CCI-65FP-065125 (H)	6.17 - 6.42	1.0000	1.0000
L41	31	(Area) CCI-65FP-065125 (H)	6.17 - 6.42	1.0000	1.0000
L41	32	(Area) CCI-65FP-065125 (H)	6.17 - 6.42	1.0000	1.0000
L41	41	CU12PSM9P6XXX(1-1/2)	6.17 - 6.42	1.0000	1.0000
L42	2	HB058-M12-XXXF(5/8)	3.25 - 6.17	1.0000	1.0000
L42	6	HB158-21U6S24-xxM_TMO(1-5/8)	3.25 - 6.17	1.0000	1.0000
L42	19	(Area) Aero MP3-05 (H)	3.25 - 6.17	1.0000	1.0000
L42	20	(Area) Aero MP3-05 (H)	3.25 - 6.17	1.0000	1.0000
L42	22	(Area) Aero MP3-05 (H)	4.00 - 6.17	1.0000	1.0000
L42	24	(Area) Aero MP3-05 (H)	3.25 - 6.17	1.0000	1.0000
L42	25	(Area) Aero MP3-05 (H)	3.25 - 6.17	1.0000	1.0000
L42	30	(Area) CCI-65FP-065125 (H)	3.25 - 6.17	1.0000	1.0000
L42	31	(Area) CCI-65FP-065125 (H)	3.25 - 6.17	1.0000	1.0000
L42	32	(Area) CCI-65FP-065125 (H)	3.25 - 6.17	1.0000	1.0000
L42	41	CU12PSM9P6XXX(1-1/2)	3.25 - 6.17	1.0000	1.0000
L43	2	HB058-M12-XXXF(5/8)	3.00 - 3.25	1.0000	1.0000
L43	6	HB158-21U6S24-xxM_TMO(1-5/8)	3.00 - 3.25	1.0000	1.0000
L43	19	(Area) Aero MP3-05 (H)	3.00 - 3.25	1.0000	1.0000
L43	20	(Area) Aero MP3-05 (H)	3.00 - 3.25	1.0000	1.0000
L43	24	(Area) Aero MP3-05 (H)	3.00 - 3.25	1.0000	1.0000
L43	25	(Area) Aero MP3-05 (H)	3.00 - 3.25	1.0000	1.0000
L43	30	(Area) CCI-65FP-065125 (H)	3.00 - 3.25	1.0000	1.0000
L43	31	(Area) CCI-65FP-065125 (H)	3.00 - 3.25	1.0000	1.0000
L43	32	(Area) CCI-65FP-065125 (H)	3.00 - 3.25	1.0000	1.0000
L43	41	CU12PSM9P6XXX(1-1/2)	3.00 - 3.25	1.0000	1.0000
L44	2	HB058-M12-XXXF(5/8)	2.00 - 3.00	1.0000	1.0000
L44	6	HB158-21U6S24-xxM_TMO(1-5/8)	2.00 - 3.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L44	19	(Area) Aero MP3-05 (H)	2.00 - 3.00	1.0000	1.0000
L44	20	(Area) Aero MP3-05 (H)	2.00 - 3.00	1.0000	1.0000
L44	24	(Area) Aero MP3-05 (H)	2.00 - 3.00	1.0000	1.0000
L44	25	(Area) Aero MP3-05 (H)	2.00 - 3.00	1.0000	1.0000
L44	30	(Area) CCI-65FP-065125 (H)	2.00 - 3.00	1.0000	1.0000
L44	31	(Area) CCI-65FP-065125 (H)	2.00 - 3.00	1.0000	1.0000
L44	32	(Area) CCI-65FP-065125 (H)	2.00 - 3.00	1.0000	1.0000
L44	41	CU12PSM9P6XXX(1-1/2)	2.00 - 3.00	1.0000	1.0000
L45	2	HB058-M12-XXXF(5/8)	1.75 - 2.00	1.0000	1.0000
L45	6	HB158-21U6S24-xxM_TMO(1-5/8)	1.75 - 2.00	1.0000	1.0000
L45	19	(Area) Aero MP3-05 (H)	1.75 - 2.00	1.0000	1.0000
L45	20	(Area) Aero MP3-05 (H)	1.75 - 2.00	1.0000	1.0000
L45	24	(Area) Aero MP3-05 (H)	1.75 - 2.00	1.0000	1.0000
L45	25	(Area) Aero MP3-05 (H)	1.75 - 2.00	1.0000	1.0000
L45	30	(Area) CCI-65FP-065125 (H)	1.75 - 2.00	1.0000	1.0000
L45	31	(Area) CCI-65FP-065125 (H)	1.75 - 2.00	1.0000	1.0000
L45	32	(Area) CCI-65FP-065125 (H)	1.75 - 2.00	1.0000	1.0000
L45	41	CU12PSM9P6XXX(1-1/2)	1.75 - 2.00	1.0000	1.0000
L46	2	HB058-M12-XXXF(5/8)	0.00 - 1.75	1.0000	1.0000
L46	6	HB158-21U6S24-xxM_TMO(1-5/8)	0.00 - 1.75	1.0000	1.0000
L46	19	(Area) Aero MP3-05 (H)	0.00 - 1.75	1.0000	1.0000
L46	20	(Area) Aero MP3-05 (H)	0.00 - 1.75	1.0000	1.0000
L46	24	(Area) Aero MP3-05 (H)	0.00 - 1.75	1.0000	1.0000
L46	25	(Area) Aero MP3-05 (H)	0.00 - 1.75	1.0000	1.0000
L46	30	(Area) CCI-65FP-065125 (H)	0.00 - 1.75	1.0000	1.0000
L46	31	(Area) CCI-65FP-065125 (H)	0.00 - 1.75	1.0000	1.0000
L46	32	(Area) CCI-65FP-065125 (H)	0.00 - 1.75	1.0000	1.0000
L46	41	CU12PSM9P6XXX(1-1/2)	0.00 - 1.75	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
L12	24	(Area) Aero MP3-05 (H)	89.67 - 90.50	Auto	0.0737
L12	25	(Area) Aero MP3-05 (H)	89.67 - 90.50	Auto	0.0737
L12	28	(Area) Aero MP3-05 (H)	89.67 - 92.08	Auto	0.0781
L13	24	(Area) Aero MP3-05 (H)	89.42 - 89.67	Auto	0.0706
L13	25	(Area) Aero MP3-05 (H)	89.42 - 89.67	Auto	0.0706
L13	28	(Area) Aero MP3-05 (H)	89.42 - 89.67	Auto	0.0706
L14	24	(Area) Aero MP3-05 (H)	88.08 - 89.42	Auto	0.0662
L14	25	(Area) Aero MP3-05 (H)	88.08 -	Auto	0.0662

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L14	27	(Area) Aero MP3-05 (H)	89.42 - 88.08	Auto	0.0629
L14	28	(Area) Aero MP3-05 (H)	88.25 - 88.08	Auto	0.0662
L15	24	(Area) Aero MP3-05 (H)	89.42 - 87.83	Auto	0.1278
L15	25	(Area) Aero MP3-05 (H)	88.08 - 87.83	Auto	0.1278
L15	27	(Area) Aero MP3-05 (H)	88.08 - 87.83	Auto	0.1278
L15	28	(Area) Aero MP3-05 (H)	88.08 - 87.83	Auto	0.1278
L16	24	(Area) Aero MP3-05 (H)	88.08 - 85.83	Auto	0.1215
L16	25	(Area) Aero MP3-05 (H)	87.83 - 85.83	Auto	0.1215
L16	27	(Area) Aero MP3-05 (H)	87.83 - 85.83	Auto	0.1215
L16	28	(Area) Aero MP3-05 (H)	87.83 - 85.83	Auto	0.1215
L17	24	(Area) Aero MP3-05 (H)	87.83 - 85.58	Auto	0.1152
L17	25	(Area) Aero MP3-05 (H)	85.83 - 85.58	Auto	0.1152
L17	27	(Area) Aero MP3-05 (H)	85.83 - 85.58	Auto	0.1152
L17	28	(Area) Aero MP3-05 (H)	85.83 - 85.58	Auto	0.1152
L18	24	(Area) Aero MP3-05 (H)	85.83 - 84.50	Auto	0.1114
L18	25	(Area) Aero MP3-05 (H)	85.58 - 84.50	Auto	0.1114
L18	27	(Area) Aero MP3-05 (H)	85.58 - 84.50	Auto	0.1114
L18	28	(Area) Aero MP3-05 (H)	85.58 - 84.50	Auto	0.1114
L19	24	(Area) Aero MP3-05 (H)	85.58 - 84.25	Auto	0.0953
L19	25	(Area) Aero MP3-05 (H)	84.50 - 84.25	Auto	0.0953
L19	27	(Area) Aero MP3-05 (H)	84.50 - 84.25	Auto	0.0953
L19	28	(Area) Aero MP3-05 (H)	84.50 - 84.25	Auto	0.0953
L20	24	(Area) Aero MP3-05 (H)	84.50 - 79.25	Auto	0.0764
L20	25	(Area) Aero MP3-05 (H)	84.25 - 79.25	Auto	0.0764
L20	27	(Area) Aero MP3-05 (H)	84.25 - 79.25	Auto	0.0764
L20	28	(Area) Aero MP3-05 (H)	84.25 - 82.08	Auto	0.0844
L21	22	(Area) Aero MP3-05 (H)	84.25 - 73.75	Auto	0.0462
L21	24	(Area) Aero MP3-05 (H)	79.00 - 73.75	Auto	0.0469
L21	25	(Area) Aero MP3-05 (H)	79.25 - 73.75	Auto	0.0469
L21	27	(Area) Aero MP3-05 (H)	79.25 - 73.75	Auto	0.0469
L22	22	(Area) Aero MP3-05 (H)	79.25 - 72.75	Auto	0.0824
L22	24	(Area) Aero MP3-05 (H)	73.75 - 72.75	Auto	0.0824
L22	25	(Area) Aero MP3-05 (H)	73.75 - 72.75	Auto	0.0824
L22	27	(Area) Aero MP3-05 (H)	73.75 - 73.25	Auto	0.0838

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L23	22	(Area) Aero MP3-05 (H)	73.75 - 67.75	Auto	0.0655
L23	24	(Area) Aero MP3-05 (H)	72.75 - 67.75	Auto	0.0655
L23	25	(Area) Aero MP3-05 (H)	72.75 - 67.75	Auto	0.0655
L24	22	(Area) Aero MP3-05 (H)	72.75 - 63.08	Auto	0.0342
L24	24	(Area) Aero MP3-05 (H)	67.75 - 63.08	Auto	0.0342
L24	25	(Area) Aero MP3-05 (H)	67.75 - 63.08	Auto	0.0342
L24	34	(Area) CCI-65FP-060100 (H)	67.75 - 63.08	Auto	0.1367
L24	35	(Area) CCI-65FP-060100 (H)	65.58 - 63.08	Auto	0.1367
L24	36	(Area) CCI-65FP-060100 (H)	65.58 - 63.08	Auto	0.1367
L25	22	(Area) Aero MP3-05 (H)	65.58 - 62.83	Auto	0.0741
L25	24	(Area) Aero MP3-05 (H)	63.08 - 62.83	Auto	0.0741
L25	25	(Area) Aero MP3-05 (H)	63.08 - 62.83	Auto	0.0741
L25	34	(Area) CCI-65FP-060100 (H)	63.08 - 62.83	Auto	0.1775
L25	35	(Area) CCI-65FP-060100 (H)	63.08 - 62.83	Auto	0.1775
L25	36	(Area) CCI-65FP-060100 (H)	63.08 - 62.83	Auto	0.1775
L26	22	(Area) Aero MP3-05 (H)	63.08 - 57.83	Auto	0.0552
L26	24	(Area) Aero MP3-05 (H)	62.83 - 57.83	Auto	0.0552
L26	25	(Area) Aero MP3-05 (H)	62.83 - 57.83	Auto	0.0552
L26	34	(Area) CCI-65FP-060100 (H)	62.83 - 57.83	Auto	0.1607
L26	35	(Area) CCI-65FP-060100 (H)	62.83 - 57.83	Auto	0.1607
L26	36	(Area) CCI-65FP-060100 (H)	62.83 - 57.83	Auto	0.1607
L27	22	(Area) Aero MP3-05 (H)	57.83 - 52.83	Auto	0.0230
L27	24	(Area) Aero MP3-05 (H)	57.83 - 52.83	Auto	0.0230
L27	25	(Area) Aero MP3-05 (H)	57.83 - 52.83	Auto	0.0230
L27	34	(Area) CCI-65FP-060100 (H)	57.83 - 52.83	Auto	0.1321
L27	35	(Area) CCI-65FP-060100 (H)	57.83 - 52.83	Auto	0.1321
L27	36	(Area) CCI-65FP-060100 (H)	57.83 - 52.83	Auto	0.1321
L28	22	(Area) Aero MP3-05 (H)	52.83 - 47.83	Auto	0.0014
L28	24	(Area) Aero MP3-05 (H)	52.83 - 47.83	Auto	0.0014
L28	25	(Area) Aero MP3-05 (H)	52.83 - 47.83	Auto	0.0014
L28	34	(Area) CCI-65FP-060100 (H)	52.83 - 47.83	Auto	0.1072
L28	35	(Area) CCI-65FP-060100 (H)	52.83 - 47.83	Auto	0.1072
L28	36	(Area) CCI-65FP-060100 (H)	52.83 - 47.83	Auto	0.1072
L29	22	(Area) Aero MP3-05 (H)	47.83 - 42.75	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L29	24	(Area) Aero MP3-05 (H)	47.83 - 42.75	Auto	0.0000
L29	25	(Area) Aero MP3-05 (H)	47.83 - 42.75	Auto	0.0000
L29	34	(Area) CCI-65FP-060100 (H)	47.83 - 42.75	Auto	0.0784
L29	35	(Area) CCI-65FP-060100 (H)	47.83 - 42.75	Auto	0.0784
L29	36	(Area) CCI-65FP-060100 (H)	47.83 - 42.75	Auto	0.0784
L30	22	(Area) Aero MP3-05 (H)	47.83 - 42.50	Auto	0.0000
L30	24	(Area) Aero MP3-05 (H)	42.75 - 42.50	Auto	0.0000
L30	25	(Area) Aero MP3-05 (H)	42.75 - 42.50	Auto	0.0000
L30	34	(Area) CCI-65FP-060100 (H)	42.75 - 42.50	Auto	0.1091
L30	35	(Area) CCI-65FP-060100 (H)	42.75 - 42.50	Auto	0.1091
L30	36	(Area) CCI-65FP-060100 (H)	42.75 - 42.50	Auto	0.1091
L31	22	(Area) Aero MP3-05 (H)	42.75 - 37.50	Auto	0.0000
L31	24	(Area) Aero MP3-05 (H)	42.50 - 37.50	Auto	0.0000
L31	25	(Area) Aero MP3-05 (H)	42.50 - 37.50	Auto	0.0000
L31	34	(Area) CCI-65FP-060100 (H)	42.50 - 37.50	Auto	0.0923
L31	35	(Area) CCI-65FP-060100 (H)	42.50 - 37.50	Auto	0.0923
L31	36	(Area) CCI-65FP-060100 (H)	42.50 - 37.50	Auto	0.0923
L32	22	(Area) Aero MP3-05 (H)	37.50 - 32.75	Auto	0.0000
L32	24	(Area) Aero MP3-05 (H)	37.50 - 32.75	Auto	0.0000
L32	25	(Area) Aero MP3-05 (H)	37.50 - 32.75	Auto	0.0000
L32	30	(Area) CCI-65FP-065125 (H)	37.50 - 32.75	Auto	0.1351
L32	31	(Area) CCI-65FP-065125 (H)	35.50 - 32.75	Auto	0.1351
L32	32	(Area) CCI-65FP-065125 (H)	35.50 - 32.75	Auto	0.1351
L32	34	(Area) CCI-65FP-060100 (H)	35.50 - 37.50	Auto	0.0749
L32	35	(Area) CCI-65FP-060100 (H)	35.50 - 37.50	Auto	0.0749
L32	36	(Area) CCI-65FP-060100 (H)	35.50 - 37.50	Auto	0.0749
L33	22	(Area) Aero MP3-05 (H)	32.50 - 32.75	Auto	0.0000
L33	24	(Area) Aero MP3-05 (H)	32.50 - 32.75	Auto	0.0000
L33	25	(Area) Aero MP3-05 (H)	32.50 - 32.75	Auto	0.0000
L33	30	(Area) CCI-65FP-065125 (H)	32.50 - 32.75	Auto	0.1417
L33	31	(Area) CCI-65FP-065125 (H)	32.50 - 32.75	Auto	0.1417
L33	32	(Area) CCI-65FP-065125 (H)	32.50 - 32.75	Auto	0.1417
L34	22	(Area) Aero MP3-05 (H)	27.50 - 32.50	Auto	0.0000
L34	24	(Area) Aero MP3-05 (H)	27.50 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L34	25	(Area) Aero MP3-05 (H)	32.50 27.50 - 32.50	Auto	0.0000
L34	30	(Area) CCI-65FP-065125 (H)	27.50 - 32.50	Auto	0.1263
L34	31	(Area) CCI-65FP-065125 (H)	27.50 - 32.50	Auto	0.1263
L34	32	(Area) CCI-65FP-065125 (H)	27.50 - 32.50	Auto	0.1263
L35	22	(Area) Aero MP3-05 (H)	22.50 - 27.50	Auto	0.0000
L35	24	(Area) Aero MP3-05 (H)	22.50 - 27.50	Auto	0.0000
L35	25	(Area) Aero MP3-05 (H)	22.50 - 27.50	Auto	0.0000
L35	30	(Area) CCI-65FP-065125 (H)	22.50 - 27.50	Auto	0.0999
L35	31	(Area) CCI-65FP-065125 (H)	22.50 - 27.50	Auto	0.0999
L35	32	(Area) CCI-65FP-065125 (H)	22.50 - 27.50	Auto	0.0999
L36	22	(Area) Aero MP3-05 (H)	17.50 - 22.50	Auto	0.0000
L36	24	(Area) Aero MP3-05 (H)	17.50 - 22.50	Auto	0.0000
L36	25	(Area) Aero MP3-05 (H)	17.50 - 22.50	Auto	0.0000
L36	30	(Area) CCI-65FP-065125 (H)	17.50 - 22.50	Auto	0.0768
L36	31	(Area) CCI-65FP-065125 (H)	17.50 - 22.50	Auto	0.0768
L36	32	(Area) CCI-65FP-065125 (H)	17.50 - 22.50	Auto	0.0768
L37	22	(Area) Aero MP3-05 (H)	12.50 - 17.50	Auto	0.0000
L37	24	(Area) Aero MP3-05 (H)	12.50 - 17.50	Auto	0.0000
L37	25	(Area) Aero MP3-05 (H)	12.50 - 17.50	Auto	0.0000
L37	30	(Area) CCI-65FP-065125 (H)	12.50 - 17.50	Auto	0.0504
L37	31	(Area) CCI-65FP-065125 (H)	12.50 - 17.50	Auto	0.0504
L37	32	(Area) CCI-65FP-065125 (H)	12.50 - 17.50	Auto	0.0504
L38	19	(Area) Aero MP3-05 (H)	8.08 - 10.50	Auto	0.0000
L38	20	(Area) Aero MP3-05 (H)	8.08 - 10.50	Auto	0.0000
L38	22	(Area) Aero MP3-05 (H)	8.08 - 12.50	Auto	0.0000
L38	24	(Area) Aero MP3-05 (H)	8.08 - 12.50	Auto	0.0000
L38	25	(Area) Aero MP3-05 (H)	8.08 - 12.50	Auto	0.0000
L38	30	(Area) CCI-65FP-065125 (H)	8.08 - 12.50	Auto	0.0254
L38	31	(Area) CCI-65FP-065125 (H)	8.08 - 12.50	Auto	0.0254
L38	32	(Area) CCI-65FP-065125 (H)	8.08 - 12.50	Auto	0.0254
L39	19	(Area) Aero MP3-05 (H)	7.83 - 8.08	Auto	0.0000
L39	20	(Area) Aero MP3-05 (H)	7.83 - 8.08	Auto	0.0000
L39	22	(Area) Aero MP3-05 (H)	7.83 - 8.08	Auto	0.0000
L39	24	(Area) Aero MP3-05 (H)	7.83 - 8.08	Auto	0.0000
L39	25	(Area) Aero MP3-05 (H)	7.83 - 8.08	Auto	0.0000
L39	30	(Area) CCI-65FP-065125 (H)	7.83 - 8.08	Auto	0.0315
L39	31	(Area) CCI-65FP-065125 (H)	7.83 - 8.08	Auto	0.0315
L39	32	(Area) CCI-65FP-065125 (H)	7.83 - 8.08	Auto	0.0315
L40	19	(Area) Aero MP3-05 (H)	6.42 - 7.83	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L40	20	(Area) Aero MP3-05 (H)	6.42 - 7.83	Auto	0.0000
L40	22	(Area) Aero MP3-05 (H)	6.42 - 7.83	Auto	0.0000
L40	24	(Area) Aero MP3-05 (H)	6.42 - 7.83	Auto	0.0000
L40	25	(Area) Aero MP3-05 (H)	6.42 - 7.83	Auto	0.0000
L40	30	(Area) CCI-65FP-065125 (H)	6.42 - 7.83	Auto	0.0243
L40	31	(Area) CCI-65FP-065125 (H)	6.42 - 7.83	Auto	0.0243
L40	32	(Area) CCI-65FP-065125 (H)	6.42 - 7.83	Auto	0.0243
L41	19	(Area) Aero MP3-05 (H)	6.17 - 6.42	Auto	0.0000
L41	20	(Area) Aero MP3-05 (H)	6.17 - 6.42	Auto	0.0000
L41	22	(Area) Aero MP3-05 (H)	6.17 - 6.42	Auto	0.0000
L41	24	(Area) Aero MP3-05 (H)	6.17 - 6.42	Auto	0.0000
L41	25	(Area) Aero MP3-05 (H)	6.17 - 6.42	Auto	0.0000
L41	30	(Area) CCI-65FP-065125 (H)	6.17 - 6.42	Auto	0.0171
L41	31	(Area) CCI-65FP-065125 (H)	6.17 - 6.42	Auto	0.0171
L41	32	(Area) CCI-65FP-065125 (H)	6.17 - 6.42	Auto	0.0171
L42	19	(Area) Aero MP3-05 (H)	3.25 - 6.17	Auto	0.0000
L42	20	(Area) Aero MP3-05 (H)	3.25 - 6.17	Auto	0.0000
L42	22	(Area) Aero MP3-05 (H)	4.00 - 6.17	Auto	0.0000
L42	24	(Area) Aero MP3-05 (H)	3.25 - 6.17	Auto	0.0000
L42	25	(Area) Aero MP3-05 (H)	3.25 - 6.17	Auto	0.0000
L42	30	(Area) CCI-65FP-065125 (H)	3.25 - 6.17	Auto	0.0064
L42	31	(Area) CCI-65FP-065125 (H)	3.25 - 6.17	Auto	0.0064
L42	32	(Area) CCI-65FP-065125 (H)	3.25 - 6.17	Auto	0.0064
L43	19	(Area) Aero MP3-05 (H)	3.00 - 3.25	Auto	0.0000
L43	20	(Area) Aero MP3-05 (H)	3.00 - 3.25	Auto	0.0000
L43	24	(Area) Aero MP3-05 (H)	3.00 - 3.25	Auto	0.0000
L43	25	(Area) Aero MP3-05 (H)	3.00 - 3.25	Auto	0.0000
L43	30	(Area) CCI-65FP-065125 (H)	3.00 - 3.25	Auto	0.0059
L43	31	(Area) CCI-65FP-065125 (H)	3.00 - 3.25	Auto	0.0059
L43	32	(Area) CCI-65FP-065125 (H)	3.00 - 3.25	Auto	0.0059
L44	19	(Area) Aero MP3-05 (H)	2.00 - 3.00	Auto	0.0000
L44	20	(Area) Aero MP3-05 (H)	2.00 - 3.00	Auto	0.0000
L44	24	(Area) Aero MP3-05 (H)	2.00 - 3.00	Auto	0.0000
L44	25	(Area) Aero MP3-05 (H)	2.00 - 3.00	Auto	0.0000
L44	30	(Area) CCI-65FP-065125 (H)	2.00 - 3.00	Auto	0.0030
L44	31	(Area) CCI-65FP-065125 (H)	2.00 - 3.00	Auto	0.0030
L44	32	(Area) CCI-65FP-065125 (H)	2.00 - 3.00	Auto	0.0030
L45	19	(Area) Aero MP3-05 (H)	1.75 - 2.00	Auto	0.0000
L45	20	(Area) Aero MP3-05 (H)	1.75 - 2.00	Auto	0.0000
L45	24	(Area) Aero MP3-05 (H)	1.75 - 2.00	Auto	0.0000
L45	25	(Area) Aero MP3-05 (H)	1.75 - 2.00	Auto	0.0000
L45	30	(Area) CCI-65FP-065125 (H)	1.75 - 2.00	Auto	0.0000
L45	31	(Area) CCI-65FP-065125 (H)	1.75 - 2.00	Auto	0.0000
L45	32	(Area) CCI-65FP-065125 (H)	1.75 - 2.00	Auto	0.0000
L46	19	(Area) Aero MP3-05 (H)	0.00 - 1.75	Auto	0.0000
L46	20	(Area) Aero MP3-05 (H)	0.00 - 1.75	Auto	0.0000
L46	24	(Area) Aero MP3-05 (H)	0.00 - 1.75	Auto	0.0000
L46	25	(Area) Aero MP3-05 (H)	0.00 - 1.75	Auto	0.0000
L46	30	(Area) CCI-65FP-065125 (H)	0.00 - 1.75	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L46	31	(Area) CCI-65FP-065125 (H)	0.00 - 1.75	Auto	0.0000
L46	32	(Area) CCI-65FP-065125 (H)	0.00 - 1.75	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
147					
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 -6.00 0.00	-20.0000	147.00
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 -6.00 0.00	20.0000	147.00
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 -6.00 0.00	0.0000	147.00
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 2.00 0.00	-20.0000	147.00
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 2.00 0.00	20.0000	147.00
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 2.00 0.00	0.0000	147.00
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00 -6.00 0.00	-20.0000	147.00
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00 -6.00 0.00	20.0000	147.00
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00 -6.00 0.00	0.0000	147.00
800MHZ RRH	A	From Leg	4.00 -6.00 0.00	-20.0000	147.00
800MHZ RRH	B	From Leg	4.00 -6.00 0.00	20.0000	147.00
800MHZ RRH	C	From Leg	4.00 -6.00 0.00	0.0000	147.00
(3) ACU-A20-N	A	From Leg	4.00 -6.00 0.00	-20.0000	147.00
(3) ACU-A20-N	B	From Leg	4.00 -6.00 0.00	20.0000	147.00
(3) ACU-A20-N	C	From Leg	4.00 -6.00 0.00	0.0000	147.00
1900MHZ RRH (65MHZ)	A	From Leg	4.00	-20.0000	147.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			-6.00 0.00		
1900MHZ RRH (65MHZ)	B	From Leg	4.00 -6.00	20.0000	147.00
			0.00		
1900MHZ RRH (65MHZ)	C	From Leg	4.00 -6.00	0.0000	147.00
			0.00		
TD-RRH8X20-25	A	From Leg	4.00 2.00	-20.0000	147.00
			0.00		
TD-RRH8X20-25	B	From Leg	4.00 2.00	20.0000	147.00
			0.00		
TD-RRH8X20-25	C	From Leg	4.00 2.00	0.0000	147.00
			0.00		
(2) 2.4" Dia x 6-ft Pipe	A	From Leg	4.00 2.00	0.0000	147.00
			0.00		
(2) 2.4" Dia x 6-ft Pipe	B	From Leg	4.00 2.00	0.0000	147.00
			0.00		
(2) 2.4" Dia x 6-ft Pipe	C	From Leg	4.00 2.00	0.0000	147.00
			0.00		
Miscellaneous [NA 510-3]	C	None		0.0000	147.00
Platform Mount [LP 1201-1]	C	None		0.0000	147.00
136					
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 -6.00	30.0000	136.00
			1.00		
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 -6.00	30.0000	136.00
			1.00		
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 -6.00	30.0000	136.00
			1.00		
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.00 -2.00	30.0000	136.00
			1.00		
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.00 -2.00	30.0000	136.00
			1.00		
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.00 -2.00	30.0000	136.00
			1.00		
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.00 6.00	30.0000	136.00
			1.00		
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.00 6.00	30.0000	136.00
			1.00		
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.00 6.00	30.0000	136.00
			1.00		
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.00 -6.00	30.0000	136.00
			1.00		
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.00 -6.00	30.0000	136.00
			1.00		
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00 -6.00	30.0000	136.00
			1.00		

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
RADIO 4415 B66A	A	From Leg	4.00 -2.00 1.00	30.0000	136.00
RADIO 4415 B66A	B	From Leg	4.00 -2.00 1.00	30.0000	136.00
RADIO 4415 B66A	C	From Leg	4.00 -2.00 1.00	30.0000	136.00
RADIO 4424 B25_TMOV1	A	From Leg	4.00 6.00 1.00	30.0000	136.00
RADIO 4424 B25_TMOV1	B	From Leg	4.00 6.00 1.00	30.0000	136.00
RADIO 4424 B25_TMOV1	C	From Leg	4.00 6.00 1.00	30.0000	136.00
2.4" x 8' Pipe	A	From Leg	4.00 2.00 0.00	30.0000	136.00
2.4" x 8' Pipe	B	From Leg	4.00 2.00 0.00	30.0000	136.00
2.4" x 8' Pipe	C	From Leg	4.00 2.00 0.00	30.0000	136.00
RMQP-469-HK	C	None		0.0000	136.00
118					
RRFDC-3315-PF-48	A	From Leg	1.00 0.00 0.00	0.0000	118.00
RRFDC-3315-PF-48	B	From Leg	1.00 0.00 0.00	0.0000	118.00
115					
(2) LPA-80080/4CF w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	30.0000	115.00
(2) LPA-80063/6CF w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	30.0000	115.00
(2) APL868013-42T0 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	30.0000	115.00
Sub6 Antenna - VZS01 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	30.0000	115.00
Sub6 Antenna - VZS01 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	30.0000	115.00
Sub6 Antenna - VZS01 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	30.0000	115.00
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	30.0000	115.00
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	30.0000	115.00
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	30.0000	115.00
CBC78T-DS-43-2X	A	From Leg	4.00 -6.00	30.0000	115.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
CBC78T-DS-43-2X	B	From Leg	1.00 4.00 -6.00	30.0000	115.00
CBC78T-DS-43-2X	C	From Leg	1.00 4.00 -6.00	30.0000	115.00
RFV01U-D1A	A	From Leg	1.00 4.00 3.00	30.0000	115.00
RFV01U-D1A	B	From Leg	1.00 4.00 3.00	30.0000	115.00
RFV01U-D1A	C	From Leg	1.00 4.00 3.00	30.0000	115.00
RFV01U-D2A	A	From Leg	1.00 4.00 6.00	30.0000	115.00
RFV01U-D2A	B	From Leg	1.00 4.00 6.00	30.0000	115.00
RFV01U-D2A	C	From Leg	1.00 4.00 6.00	30.0000	115.00
(2) 2.4" Dia x 4-ft Mount Pipe	A	From Leg	1.00 4.00 0.00	0.0000	115.00
(2) 2.4" Dia x 4-ft Mount Pipe	B	From Leg	1.00 4.00 0.00	0.0000	115.00
(2) 2.4" Dia x 4-ft Mount Pipe	C	From Leg	1.00 4.00 0.00	0.0000	115.00
Platform Mount [LP 714-1] ***106***	C	None	1.00	0.0000	115.00
7770.00 w/ Mount Pipe	A	From Leg	4.00 -6.00 0.00	35.0000	106.00
7770.00 w/ Mount Pipe	B	From Leg	4.00 -6.00 0.00	23.0000	106.00
7770.00 w/ Mount Pipe	C	From Leg	4.00 -6.00 0.00	23.0000	106.00
SBNHH-1D65A w/ Mount Pipe	A	From Leg	4.00 -2.00 0.00	23.0000	106.00
SBNHH-1D65A w/ Mount Pipe	B	From Leg	4.00 -2.00 0.00	45.0000	106.00
SBNHH-1D65A w/ Mount Pipe	C	From Leg	4.00 -2.00 0.00	23.0000	106.00
DMP65R-BU4D w/ Mount Pipe	A	From Leg	4.00 2.00 0.00	23.0000	106.00
DMP65R-BU4D w/ Mount Pipe	B	From Leg	4.00 2.00 0.00	45.0000	106.00
DMP65R-BU4D w/ Mount Pipe	C	From Leg	4.00 2.00 0.00	23.0000	106.00
TPA-65R-BU4AA-K w/ Mount Pipe	A	From Leg	4.00 6.00	23.0000	106.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
TPA-65R-BU4AA-K w/ Mount Pipe	B	From Leg	0.00 4.00 6.00	45.0000	106.00
TPA-65R-BU4AA-K w/ Mount Pipe	C	From Leg	0.00 4.00 6.00	23.0000	106.00
(2) LGP21401	A	From Leg	0.00 4.00 -6.00	35.0000	106.00
(2) LGP21401	B	From Leg	0.00 4.00 -6.00	23.0000	106.00
(2) LGP21401	C	From Leg	0.00 4.00 -6.00	23.0000	106.00
(2) 7020.00	A	From Leg	0.00 4.00 -6.00	35.0000	106.00
(2) 7020.00	B	From Leg	0.00 4.00 -6.00	23.0000	106.00
(2) 7020.00	C	From Leg	0.00 4.00 -6.00	23.0000	106.00
RRUS 32 B2_CCIV2	A	From Leg	0.00 4.00 -2.00	23.0000	106.00
RRUS 32 B2_CCIV2	B	From Leg	0.00 4.00 -2.00	45.0000	106.00
RRUS 32 B2_CCIV2	C	From Leg	0.00 4.00 -2.00	23.0000	106.00
RADIO 4449 B5/B12	A	From Leg	0.00 4.00 2.00	23.0000	106.00
RADIO 4449 B5/B12	B	From Leg	0.00 4.00 2.00	45.0000	106.00
RADIO 4449 B5/B12	C	From Leg	0.00 4.00 2.00	23.0000	106.00
RRUS 4478 B14	A	From Leg	0.00 4.00 2.00	23.0000	106.00
RRUS 4478 B14	B	From Leg	0.00 4.00 2.00	45.0000	106.00
RRUS 4478 B14	C	From Leg	0.00 4.00 2.00	23.0000	106.00
RRUS 4426 B66	A	From Leg	0.00 4.00 6.00	23.0000	106.00
RRUS 4426 B66	B	From Leg	0.00 4.00 6.00	45.0000	106.00
RRUS 4426 B66	C	From Leg	0.00 4.00 6.00	23.0000	106.00
RRUS 32 B30	A	From Leg	0.00 4.00 6.00	23.0000	106.00
RRUS 32 B30	B	From Leg	0.00 4.00	45.0000	106.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			6.00 0.00		
RRUS 32 B30	C	From Leg	4.00 6.00 0.00	23.0000	106.00
DC6-48-60-18-8F	A	From Leg	4.00 2.00 0.00	23.0000	106.00
DC6-48-60-18-8F	B	From Leg	4.00 2.00 0.00	45.0000	106.00
DC6-48-60-18-8F	C	From Leg	4.00 2.00 0.00	23.0000	106.00
Platform Mount [LP 1201-1_KCKR-HR-1]	C	None		0.0000	106.00
76					
OG-860/1920/GPS-A	B	From Leg	3.00 0.00 1.00	0.0000	76.00
KS24019-L112A	C	From Leg	3.00 0.00 1.00	0.0000	76.00
Side Arm Mount [SO 701-3]	C	None		0.0000	76.00
****					
Commscope MC-PK8-DSH	C	None		0.0000	126.00
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	126.00
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	126.00
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	126.00
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	126.00
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	126.00
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	126.00
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	126.00
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	126.00
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	126.00
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	126.00
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	126.00
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	126.00
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	126.00
******					

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+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	147 - 142	Pole	Max Tension	26	0.00	0.00	-0.00
			Max. Compression	26	-8.20	0.00	0.01
			Max. Mx	20	-4.45	24.44	0.41

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	-4.43	0.50	24.95
			Max. Vy	8	5.09	-24.43	-0.48
			Max. Vx	2	-5.19	0.50	24.95
			Max. Torque	13			0.74
L2	142 - 137	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.76	0.01	0.02
			Max. Mx	20	-4.81	50.87	0.86
			Max. My	2	-4.79	0.94	51.91
			Max. Vy	8	5.49	-50.87	-0.93
			Max. Vx	2	-5.60	0.94	51.91
			Max. Torque	13			0.74
L3	137 - 132	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.69	-0.06	0.07
			Max. Mx	8	-9.29	-101.73	-1.36
			Max. My	2	-9.27	1.35	103.30
			Max. Vy	8	10.75	-101.73	-1.36
			Max. Vx	2	-10.86	1.35	103.30
			Max. Torque	13			0.74
L4	132 - 127	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.36	-0.14	0.13
			Max. Mx	8	-9.74	-156.55	-1.79
			Max. My	2	-9.71	1.75	158.65
			Max. Vy	8	11.17	-156.55	-1.79
			Max. Vx	2	-11.28	1.75	158.65
			Max. Torque	13			0.74
L5	127 - 122	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.97	-0.20	0.53
			Max. Mx	8	-13.09	-228.01	-2.13
			Max. My	2	-13.06	2.16	230.95
			Max. Vy	8	15.22	-228.01	-2.13
			Max. Vx	2	-15.38	2.16	230.95
			Max. Torque	10			0.89
L6	122 - 117	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.90	-0.44	0.72
			Max. Mx	8	-13.66	-305.49	-2.57
			Max. My	2	-13.62	2.55	309.21
			Max. Vy	8	15.90	-305.49	-2.57
			Max. Vx	2	-16.08	2.55	309.21
			Max. Torque	12			1.11
L7	117 - 112	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.67	-1.75	0.31
			Max. Mx	8	-17.61	-407.52	-3.67
			Max. My	2	-17.57	3.60	411.66
			Max. Vy	8	22.18	-407.52	-3.67
			Max. Vx	2	-22.32	3.60	411.66
			Max. Torque	14			3.56
L8	112 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.20	-1.79	0.36
			Max. Mx	8	-18.03	-480.00	-4.41
			Max. My	2	-18.00	4.32	484.61
			Max. Vy	8	22.43	-480.00	-4.41
			Max. Vx	2	-22.57	4.32	484.61
			Max. Torque	14			3.56
L9	105 - 103.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.03	-1.86	0.45
			Max. Mx	8	-24.19	-606.10	-5.39
			Max. My	2	-24.13	5.31	611.75
			Max. Vy	8	28.56	-606.10	-5.39
			Max. Vx	2	-28.85	5.31	611.75
			Max. Torque	14			4.22
L10	103.75 - 98.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.05	-1.93	0.54
			Max. Mx	8	-25.09	-749.79	-6.11
			Max. My	2	-25.04	6.02	756.86
			Max. Vy	8	28.93	-749.79	-6.11
			Max. Vx	2	-29.21	6.02	756.86
			Max. Torque	14			4.22
L11	98.75 -	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	93.75						
			Max. Compression	26	-46.09	-2.00	0.63
			Max. Mx	8	-26.03	-895.24	-6.84
			Max. My	2	-25.98	6.73	903.74
			Max. Vy	8	29.27	-895.24	-6.84
			Max. Vx	2	-29.56	6.73	903.74
			Max. Torque	14			4.21
L12	93.75 - 89.667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.98	-2.02	0.70
			Max. Mx	8	-26.82	-1015.28	-7.43
			Max. My	2	-26.77	7.31	1024.95
			Max. Vy	8	29.54	-1015.28	-7.43
			Max. Vx	2	-29.84	7.31	1024.95
			Max. Torque	14			4.21
L13	89.667 - 89.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.04	-2.03	0.70
			Max. Mx	8	-26.88	-1022.66	-7.47
			Max. My	2	-26.84	7.35	1032.41
			Max. Vy	8	29.55	-1022.66	-7.47
			Max. Vx	2	-29.84	7.35	1032.41
			Max. Torque	14			4.21
L14	89.417 - 88.083	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.35	-2.04	0.72
			Max. Mx	8	-27.13	-1062.14	-7.66
			Max. My	2	-27.08	7.53	1072.28
			Max. Vy	8	29.65	-1062.14	-7.66
			Max. Vx	2	-29.96	7.53	1072.28
			Max. Torque	14			4.21
L15	88.083 - 87.833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.43	-2.04	0.72
			Max. Mx	8	-27.21	-1069.55	-7.69
			Max. My	2	-27.17	7.57	1079.77
			Max. Vy	8	29.66	-1069.55	-7.69
			Max. Vx	2	-29.96	7.57	1079.77
			Max. Torque	14			4.21
L16	87.833 - 85.833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.06	-2.04	0.74
			Max. Mx	8	-27.71	-1129.03	-7.98
			Max. My	2	-27.67	7.85	1139.88
			Max. Vy	8	29.83	-1129.03	-7.98
			Max. Vx	2	-30.15	7.85	1139.88
			Max. Torque	14			4.21
L17	85.833 - 85.583	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.13	-2.04	0.74
			Max. Mx	8	-27.79	-1136.49	-8.02
			Max. My	2	-27.74	7.89	1147.41
			Max. Vy	8	29.84	-1136.49	-8.02
			Max. Vx	2	-30.16	7.89	1147.41
			Max. Torque	14			4.20
L18	85.583 - 84.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.47	-2.04	0.75
			Max. Mx	8	-28.05	-1168.86	-8.17
			Max. My	2	-28.01	8.04	1180.13
			Max. Vy	8	29.94	-1168.86	-8.17
			Max. Vx	2	-30.27	8.04	1180.13
			Max. Torque	14			4.20
L19	84.5 - 84.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.55	-2.04	0.75
			Max. Mx	8	-28.13	-1176.34	-8.21
			Max. My	2	-28.08	8.08	1187.70
			Max. Vy	8	29.95	-1176.34	-8.21
			Max. Vx	2	-30.28	8.08	1187.70

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	14			4.20
L20	84.25 - 79.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.11	-2.08	0.79
			Max. Mx	8	-29.43	-1327.07	-8.92
			Max. My	2	-29.38	8.78	1340.09
			Max. Vy	8	30.35	-1327.07	-8.92
			Max. Vx	2	-30.68	8.78	1340.09
			Max. Torque	14			4.20
L21	79.25 - 73.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.50	-2.08	0.80
			Max. Mx	8	-29.75	-1365.06	-9.10
			Max. My	2	-29.71	8.96	1378.49
			Max. Vy	8	30.45	-1365.06	-9.10
			Max. Vx	2	-30.78	8.96	1378.49
			Max. Torque	14			4.20
L22	73.75 - 72.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.67	-2.10	0.80
			Max. Mx	8	-32.32	-1526.83	-9.86
			Max. My	2	-32.28	9.70	1542.10
			Max. Vy	8	31.14	-1526.83	-9.86
			Max. Vx	2	-31.50	9.70	1542.10
			Max. Torque	14			4.24
L23	72.75 - 67.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.38	-2.15	0.89
			Max. Mx	8	-33.80	-1683.42	-10.56
			Max. My	2	-33.75	10.41	1700.57
			Max. Vy	8	31.52	-1683.42	-10.56
			Max. Vx	2	-31.90	10.41	1700.57
			Max. Torque	14			4.24
L24	67.75 - 63.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.03	-2.21	0.96
			Max. Mx	8	-35.20	-1831.35	-11.22
			Max. My	2	-35.16	11.06	1850.40
			Max. Vy	8	31.86	-1831.35	-11.22
			Max. Vx	2	-32.28	11.06	1850.40
			Max. Torque	14			4.23
L25	63.08 - 62.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.14	-2.21	0.97
			Max. Mx	8	-35.30	-1839.31	-11.25
			Max. My	2	-35.27	11.10	1858.47
			Max. Vy	8	31.87	-1839.31	-11.25
			Max. Vx	2	-32.29	11.10	1858.47
			Max. Torque	14			4.23
L26	62.83 - 57.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.35	-2.27	1.05
			Max. Mx	8	-37.16	-1999.67	-11.95
			Max. My	2	-37.12	11.79	2021.06
			Max. Vy	8	32.28	-1999.67	-11.95
			Max. Vx	2	-32.75	11.79	2021.06
			Max. Torque	14			4.23
L27	57.83 - 52.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.57	-2.34	1.13
			Max. Mx	8	-39.04	-2162.01	-12.64
			Max. My	2	-39.01	12.49	2185.86
			Max. Vy	8	32.67	-2162.01	-12.64
			Max. Vx	2	-33.18	12.49	2185.86
			Max. Torque	14			4.23
L28	52.83 - 47.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.82	-2.40	1.21
			Max. Mx	8	-40.96	-2326.27	-13.34

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	-40.92	13.18	2352.76
			Max. Vy	8	33.05	-2326.27	-13.34
			Max. Vx	2	-33.59	13.18	2352.76
			Max. Torque	14			4.23
L29	47.83 - 42.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.97	-2.41	1.21
			Max. Mx	8	-41.09	-2337.18	-13.38
			Max. My	2	-41.06	13.23	2363.85
			Max. Vy	8	33.06	-2337.18	-13.38
			Max. Vx	2	-33.61	13.23	2363.85
			Max. Torque	14			4.23
L30	42.75 - 42.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.13	-2.47	1.30
			Max. Mx	8	-44.66	-2503.78	-14.07
			Max. My	2	-44.62	13.92	2533.27
			Max. Vy	8	33.57	-2503.78	-14.07
			Max. Vx	2	-34.14	13.92	2533.27
			Max. Torque	14			4.23
L31	42.5 - 37.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.54	-2.54	1.38
			Max. Mx	8	-46.74	-2672.45	-14.76
			Max. My	2	-46.71	14.61	2704.94
			Max. Vy	8	33.91	-2672.45	-14.76
			Max. Vx	2	-34.53	14.61	2704.94
			Max. Torque	14			4.23
L32	37.5 - 32.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.86	-2.60	1.46
			Max. Mx	8	-48.76	-2834.22	-15.40
			Max. My	2	-48.73	15.26	2869.68
			Max. Vy	8	34.22	-2834.22	-15.40
			Max. Vx	2	-34.86	15.26	2869.68
			Max. Torque	14			4.23
L33	32.75 - 32.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.99	-2.60	1.46
			Max. Mx	8	-48.89	-2842.77	-15.44
			Max. My	2	-48.86	15.29	2878.39
			Max. Vy	8	34.22	-2842.77	-15.44
			Max. Vx	2	-34.86	15.29	2878.39
			Max. Torque	14			4.23
L34	32.5 - 27.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.59	-2.67	1.54
			Max. Mx	8	-51.15	-3014.68	-16.11
			Max. My	2	-51.13	15.98	3053.59
			Max. Vy	8	34.55	-3014.68	-16.11
			Max. Vx	2	-35.22	15.98	3053.59
			Max. Torque	14			4.23
L35	27.5 - 22.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.21	-2.74	1.63
			Max. Mx	8	-53.45	-3188.08	-16.79
			Max. My	2	-53.43	16.66	3230.41
			Max. Vy	8	34.83	-3188.08	-16.79
			Max. Vx	2	-35.53	16.66	3230.41
			Max. Torque	14			4.22
L36	22.5 - 17.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.84	-2.81	1.71
			Max. Mx	8	-55.78	-3362.83	-17.45
			Max. My	2	-55.77	17.33	3408.70
			Max. Vy	8	35.09	-3362.83	-17.45
			Max. Vx	2	-35.81	17.33	3408.70
			Max. Torque	14			4.22
L37	17.5 - 12.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.49	-2.88	1.80
			Max. Mx	8	-58.14	-3538.80	-18.11
			Max. My	2	-58.13	18.00	3588.30
			Max. Vy	8	35.32	-3538.80	-18.11
			Max. Vx	2	-36.05	18.00	3588.30
			Max. Torque	14			4.22
L38	12.5 - 8.083	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-85.86	-2.90	1.86
			Max. Mx	8	-60.24	-3695.15	-18.69
			Max. My	2	-60.23	18.59	3747.98
			Max. Vy	8	35.51	-3695.15	-18.69
			Max. Vx	2	-36.28	18.59	3747.98
			Max. Torque	14			4.22
L39	8.083 - 7.833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.01	-2.90	1.86
			Max. Mx	8	-60.39	-3704.03	-18.72
			Max. My	2	-60.38	18.63	3757.05
			Max. Vy	8	35.50	-3704.03	-18.72
			Max. Vx	2	-36.27	18.63	3757.05
			Max. Torque	14			4.22
L40	7.833 - 6.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.85	-2.89	1.87
			Max. Mx	8	-61.11	-3754.35	-18.91
			Max. My	2	-61.11	18.81	3808.48
			Max. Vy	8	35.59	-3754.35	-18.91
			Max. Vx	2	-36.38	18.81	3808.48
			Max. Torque	14			4.22
L41	6.417 - 6.167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.99	-2.89	1.88
			Max. Mx	8	-61.26	-3763.24	-18.94
			Max. My	2	-61.25	18.85	3817.57
			Max. Vy	8	35.58	-3763.24	-18.94
			Max. Vx	2	-36.37	18.85	3817.57
			Max. Torque	14			4.22
L42	6.167 - 3.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.63	-2.89	1.91
			Max. Mx	8	-62.71	-3867.21	-19.32
			Max. My	2	-62.71	19.23	3923.90
			Max. Vy	8	35.73	-3867.21	-19.32
			Max. Vx	2	-36.55	19.23	3923.90
			Max. Torque	14			4.22
L43	3.25 - 3	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.77	-2.89	1.91
			Max. Mx	8	-62.85	-3876.13	-19.35
			Max. My	2	-62.85	19.26	3933.03
			Max. Vy	8	35.71	-3876.13	-19.35
			Max. Vx	2	-36.53	19.26	3933.03
			Max. Torque	14			4.22
L44	3 - 2	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.31	-2.90	1.92
			Max. Mx	8	-63.34	-3911.87	-19.48
			Max. My	2	-63.34	19.40	3969.59
			Max. Vy	8	35.77	-3911.87	-19.48
			Max. Vx	2	-36.59	19.40	3969.59
			Max. Torque	14			4.22
L45	2 - 1.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.45	-2.90	1.92
			Max. Mx	8	-63.47	-3920.81	-19.51
			Max. My	2	-63.47	19.43	3978.74
			Max. Vy	8	35.76	-3920.81	-19.51
			Max. Vx	2	-36.59	19.43	3978.74
			Max. Torque	14			4.22
L46	1.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-90.41	-2.92	1.94
			Max. Mx	8	-64.33	-3983.47	-19.74
			Max. My	2	-64.33	19.66	4042.84
			Max. Vy	8	35.87	-3983.47	-19.74
			Max. Vx	2	-36.70	19.66	4042.84
			Max. Torque	14			4.22

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	90.41	0.02	9.14
	Max. H_x	20	64.36	35.83	0.14
	Max. H_z	2	64.36	0.14	36.66
	Max. M_x	2	4042.84	0.14	36.66
	Max. M_z	8	3983.47	-35.83	-0.14
	Max. Torsion	14	4.22	-0.14	-36.66
	Min. Vert	19	48.27	30.96	-17.93
	Min. H_x	8	64.36	-35.83	-0.14
	Min. H_z	14	64.36	-0.14	-36.66
	Min. M_x	14	-4040.21	-0.14	-36.66
	Min. M_z	20	-3980.58	35.83	0.14
	Min. Torsion	2	-4.22	0.14	36.66

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	53.63	0.00	0.00	-1.04	-1.13	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	64.36	-0.14	-36.66	-4042.84	19.66	4.22
0.9 Dead+1.0 Wind 0 deg - No Ice	48.27	-0.14	-36.66	-3987.32	19.68	4.21
1.2 Dead+1.0 Wind 30 deg - No Ice	64.36	17.80	-31.19	-3469.04	-1974.18	3.31
0.9 Dead+1.0 Wind 30 deg - No Ice	48.27	17.80	-31.19	-3421.21	-1946.85	3.31
1.2 Dead+1.0 Wind 60 deg - No Ice	64.36	30.96	-17.93	-1991.29	-3439.49	1.52
0.9 Dead+1.0 Wind 60 deg - No Ice	48.27	30.96	-17.93	-1963.73	-3392.06	1.52
1.2 Dead+1.0 Wind 90 deg - No Ice	64.36	35.83	0.14	19.74	-3983.47	-0.69
0.9 Dead+1.0 Wind 90 deg - No Ice	48.27	35.83	0.14	19.74	-3928.57	-0.68
1.2 Dead+1.0 Wind 120 deg - No Ice	64.36	31.10	18.17	2025.05	-3460.39	-2.71
0.9 Dead+1.0 Wind 120 deg - No Ice	48.27	31.10	18.17	1997.58	-3412.64	-2.70
1.2 Dead+1.0 Wind 150 deg - No Ice	64.36	18.04	31.33	3487.32	-2010.55	-4.00
0.9 Dead+1.0 Wind 150 deg - No Ice	48.27	18.04	31.33	3439.85	-1982.64	-4.00
1.2 Dead+1.0 Wind 180 deg - No Ice	64.36	0.14	36.66	4040.21	-22.43	-4.22
0.9 Dead+1.0 Wind 180 deg - No Ice	48.27	0.14	36.66	3985.37	-21.73	-4.22
1.2 Dead+1.0 Wind 210 deg - No Ice	64.36	-17.80	31.19	3466.37	1971.37	-3.31
0.9 Dead+1.0 Wind 210 deg - No Ice	48.27	-17.80	31.19	3419.24	1944.78	-3.30
1.2 Dead+1.0 Wind 240 deg - No Ice	64.36	-30.96	17.93	1988.63	3436.62	-1.51
0.9 Dead+1.0 Wind 240 deg - No Ice	48.27	-30.96	17.93	1961.75	3389.95	-1.51
1.2 Dead+1.0 Wind 270 deg - No Ice	64.36	-35.83	-0.14	-22.36	3980.58	0.69
0.9 Dead+1.0 Wind 270 deg - No Ice	48.27	-35.83	-0.14	-21.68	3926.45	0.69
1.2 Dead+1.0 Wind 300 deg - No Ice	64.36	-31.10	-18.17	-2027.62	3457.54	2.70
0.9 Dead+1.0 Wind 300 deg	48.27	-31.10	-18.17	-1999.49	3410.54	2.70

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
- No Ice 1.2 Dead+1.0 Wind 330 deg	64.36	-18.04	-31.33	-3489.90	2007.76	3.99
- No Ice 0.9 Dead+1.0 Wind 330 deg	48.27	-18.04	-31.33	-3441.76	1980.58	3.99
- No Ice 1.2 Dead+1.0 Ice+1.0 Temp	90.41	0.00	-0.00	-1.94	-2.92	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	90.41	-0.02	-9.14	-1030.42	0.37	0.82
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	90.41	4.53	-7.90	-890.91	-511.59	0.66
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	90.41	7.87	-4.55	-513.23	-887.31	0.33
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	90.41	9.10	0.02	1.43	-1026.10	-0.09
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	90.41	7.89	4.59	515.15	-890.79	-0.48
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	90.41	4.57	7.93	890.29	-517.62	-0.75
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	90.41	0.02	9.14	1026.33	-6.59	-0.82
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	90.41	-4.53	7.90	886.81	505.37	-0.66
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	90.41	-7.87	4.55	509.13	881.08	-0.33
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	90.41	-9.10	-0.02	-5.53	1019.87	0.09
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	90.41	-7.89	-4.59	-519.25	884.56	0.48
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	90.41	-4.57	-7.93	-894.38	511.39	0.75
Dead+Wind 0 deg - Service	53.63	-0.03	-8.35	-915.20	3.56	0.97
Dead+Wind 30 deg - Service	53.63	4.06	-7.11	-785.37	-447.38	0.76
Dead+Wind 60 deg - Service	53.63	7.06	-4.09	-451.15	-778.76	0.35
Dead+Wind 90 deg - Service	53.63	8.17	0.03	3.66	-901.80	-0.16
Dead+Wind 120 deg - Service	53.63	7.09	4.14	457.20	-783.52	-0.62
Dead+Wind 150 deg - Service	53.63	4.11	7.14	787.94	-455.61	-0.92
Dead+Wind 180 deg - Service	53.63	0.03	8.35	913.01	-5.95	-0.97
Dead+Wind 210 deg - Service	53.63	-4.06	7.11	783.19	444.99	-0.76
Dead+Wind 240 deg - Service	53.63	-7.06	4.09	448.97	776.37	-0.35
Dead+Wind 270 deg - Service	53.63	-8.17	-0.03	-5.84	899.41	0.16
Dead+Wind 300 deg - Service	53.63	-7.09	-4.14	-459.38	781.12	0.62
Dead+Wind 330 deg - Service	53.63	-4.11	-7.14	-790.12	453.22	0.92

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	-53.63	0.00	0.00	53.63	0.00	0.000%
2	-0.14	-64.36	-36.66	0.14	64.36	36.66	0.000%
3	-0.14	-48.27	-36.66	0.14	48.27	36.66	0.000%
4	17.80	-64.36	-31.19	-17.80	64.36	31.19	0.000%
5	17.80	-48.27	-31.19	-17.80	48.27	31.19	0.000%
6	30.96	-64.36	-17.93	-30.96	64.36	17.93	0.000%
7	30.96	-48.27	-17.93	-30.96	48.27	17.93	0.000%
8	35.83	-64.36	0.14	-35.83	64.36	-0.14	0.000%
9	35.83	-48.27	0.14	-35.83	48.27	-0.14	0.000%
10	31.10	-64.36	18.17	-31.10	64.36	-18.17	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
11	31.10	-48.27	18.17	-31.10	48.27	-18.17	0.000%
12	18.04	-64.36	31.33	-18.04	64.36	-31.33	0.000%
13	18.04	-48.27	31.33	-18.04	48.27	-31.33	0.000%
14	0.14	-64.36	36.66	-0.14	64.36	-36.66	0.000%
15	0.14	-48.27	36.66	-0.14	48.27	-36.66	0.000%
16	-17.80	-64.36	31.19	17.80	64.36	-31.19	0.000%
17	-17.80	-48.27	31.19	17.80	48.27	-31.19	0.000%
18	-30.96	-64.36	17.93	30.96	64.36	-17.93	0.000%
19	-30.96	-48.27	17.93	30.96	48.27	-17.93	0.000%
20	-35.83	-64.36	-0.14	35.83	64.36	0.14	0.000%
21	-35.83	-48.27	-0.14	35.83	48.27	0.14	0.000%
22	-31.10	-64.36	-18.17	31.10	64.36	18.17	0.000%
23	-31.10	-48.27	-18.17	31.10	48.27	18.17	0.000%
24	-18.04	-64.36	-31.33	18.04	64.36	31.33	0.000%
25	-18.04	-48.27	-31.33	18.04	48.27	31.33	0.000%
26	0.00	-90.41	0.00	-0.00	90.41	0.00	0.000%
27	-0.02	-90.41	-9.14	0.02	90.41	9.14	0.000%
28	4.53	-90.41	-7.90	-4.53	90.41	7.90	0.000%
29	7.87	-90.41	-4.55	-7.87	90.41	4.55	0.000%
30	9.10	-90.41	0.02	-9.10	90.41	-0.02	0.000%
31	7.89	-90.41	4.59	-7.89	90.41	-4.59	0.000%
32	4.57	-90.41	7.93	-4.57	90.41	-7.93	0.000%
33	0.02	-90.41	9.14	-0.02	90.41	-9.14	0.000%
34	-4.53	-90.41	7.90	4.53	90.41	-7.90	0.000%
35	-7.87	-90.41	4.55	7.87	90.41	-4.55	0.000%
36	-9.10	-90.41	-0.02	9.10	90.41	0.02	0.000%
37	-7.89	-90.41	-4.59	7.89	90.41	4.59	0.000%
38	-4.57	-90.41	-7.93	4.57	90.41	7.93	0.000%
39	-0.03	-53.63	-8.35	0.03	53.63	8.35	0.000%
40	4.06	-53.63	-7.11	-4.06	53.63	7.11	0.000%
41	7.06	-53.63	-4.09	-7.06	53.63	4.09	0.000%
42	8.17	-53.63	0.03	-8.17	53.63	-0.03	0.000%
43	7.09	-53.63	4.14	-7.09	53.63	-4.14	0.000%
44	4.11	-53.63	7.14	-4.11	53.63	-7.14	0.000%
45	0.03	-53.63	8.35	-0.03	53.63	-8.35	0.000%
46	-4.06	-53.63	7.11	4.06	53.63	-7.11	0.000%
47	-7.06	-53.63	4.09	7.06	53.63	-4.09	0.000%
48	-8.17	-53.63	-0.03	8.17	53.63	0.03	0.000%
49	-7.09	-53.63	-4.14	7.09	53.63	4.14	0.000%
50	-4.11	-53.63	-7.14	4.11	53.63	7.14	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	6	0.00000001	0.00016035
3	Yes	6	0.00000001	0.00005619
4	Yes	7	0.00000001	0.00012909
5	Yes	6	0.00000001	0.00066406
6	Yes	7	0.00000001	0.00012055
7	Yes	6	0.00000001	0.00061868
8	Yes	5	0.00000001	0.00040528
9	Yes	5	0.00000001	0.00014849
10	Yes	7	0.00000001	0.00012130
11	Yes	6	0.00000001	0.00062176
12	Yes	7	0.00000001	0.00013289
13	Yes	6	0.00000001	0.00068326
14	Yes	6	0.00000001	0.00021656
15	Yes	6	0.00000001	0.00007531
16	Yes	7	0.00000001	0.00011760
17	Yes	6	0.00000001	0.00060307
18	Yes	7	0.00000001	0.00012520
19	Yes	6	0.00000001	0.00064405
20	Yes	5	0.00000001	0.00099851

21	Yes	5	0.00000001	0.00045446
22	Yes	7	0.00000001	0.00013012
23	Yes	6	0.00000001	0.00066890
24	Yes	7	0.00000001	0.00011948
25	Yes	6	0.00000001	0.00061177
26	Yes	4	0.00000001	0.00017485
27	Yes	6	0.00000001	0.00079279
28	Yes	6	0.00000001	0.00097388
29	Yes	6	0.00000001	0.00096331
30	Yes	6	0.00000001	0.00078851
31	Yes	6	0.00000001	0.00096889
32	Yes	6	0.00000001	0.00098151
33	Yes	6	0.00000001	0.00078955
34	Yes	6	0.00000001	0.00094946
35	Yes	6	0.00000001	0.00095440
36	Yes	6	0.00000001	0.00078055
37	Yes	6	0.00000001	0.00097139
38	Yes	6	0.00000001	0.00096428
39	Yes	5	0.00000001	0.00016328
40	Yes	5	0.00000001	0.00048946
41	Yes	5	0.00000001	0.00040803
42	Yes	5	0.00000001	0.00008022
43	Yes	5	0.00000001	0.00040946
44	Yes	5	0.00000001	0.00051719
45	Yes	5	0.00000001	0.00017170
46	Yes	5	0.00000001	0.00038769
47	Yes	5	0.00000001	0.00044641
48	Yes	5	0.00000001	0.00008301
49	Yes	5	0.00000001	0.00048640
50	Yes	5	0.00000001	0.00040098

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 142	23.902	39	1.4514	0.0065
L2	142 - 137	22.385	39	1.4478	0.0063
L3	137 - 132	20.875	39	1.4378	0.0061
L4	132 - 127	19.379	39	1.4198	0.0059
L5	127 - 122	17.907	39	1.3921	0.0057
L6	122 - 117	16.469	39	1.3551	0.0055
L7	117 - 112	15.074	39	1.3083	0.0054
L8	112 - 105	13.733	39	1.2519	0.0049
L9	108.75 - 103.75	12.896	39	1.2093	0.0044
L10	103.75 - 98.75	11.648	39	1.1677	0.0041
L11	98.75 - 93.75	10.462	39	1.0956	0.0035
L12	93.75 - 89.667	9.356	39	1.0155	0.0029
L13	89.667 - 89.417	8.518	39	0.9451	0.0025
L14	89.417 - 88.083	8.468	39	0.9407	0.0025
L15	88.083 - 87.833	8.209	39	0.9170	0.0024
L16	87.833 - 85.833	8.161	39	0.9142	0.0024
L17	85.833 - 85.583	7.783	39	0.8915	0.0023
L18	85.583 - 84.5	7.736	39	0.8886	0.0022
L19	84.5 - 84.25	7.536	39	0.8761	0.0022
L20	84.25 - 79.25	7.490	39	0.8730	0.0022
L21	79.25 - 73.75	6.610	39	0.8071	0.0019
L22	78 - 72.75	6.401	39	0.7902	0.0018
L23	72.75 - 67.75	5.551	39	0.7507	0.0017
L24	67.75 - 63.08	4.798	39	0.6885	0.0014
L25	63.08 - 62.83	4.154	39	0.6282	0.0013
L26	62.83 - 57.83	4.121	39	0.6257	0.0013
L27	57.83 - 52.83	3.493	39	0.5735	0.0011
L28	52.83 - 47.83	2.920	39	0.5200	0.0010
L29	47.83 - 42.75	2.404	39	0.4662	0.0008
L30	47.5 - 42.5	2.372	39	0.4626	0.0008
L31	42.5 - 37.5	1.901	39	0.4344	0.0008
L32	37.5 - 32.75	1.475	39	0.3807	0.0006

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L33	32.75 - 32.5	1.121	39	0.3300	0.0005
L34	32.5 - 27.5	1.104	39	0.3275	0.0005
L35	27.5 - 22.5	0.788	39	0.2767	0.0004
L36	22.5 - 17.5	0.525	39	0.2255	0.0003
L37	17.5 - 12.5	0.315	39	0.1747	0.0003
L38	12.5 - 8.083	0.159	39	0.1235	0.0002
L39	8.083 - 7.833	0.066	39	0.0780	0.0001
L40	7.833 - 6.417	0.062	39	0.0756	0.0001
L41	6.417 - 6.167	0.041	39	0.0621	0.0001
L42	6.167 - 3.25	0.038	39	0.0597	0.0001
L43	3.25 - 3	0.011	39	0.0309	0.0000
L44	3 - 2	0.009	39	0.0286	0.0000
L45	2 - 1.75	0.004	39	0.0191	0.0000
L46	1.75 - 0	0.003	39	0.0167	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	APXVSPP18-C-A20 w/ Mount Pipe	39	23.902	1.4514	0.0065	41664
136.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	39	20.574	1.4349	0.0060	18726
126.00	Commscope MC-PK8-DSH	39	17.616	1.3855	0.0057	8385
118.00	RRFDC-3315-PF-48	39	15.349	1.3182	0.0054	5844
115.00	(2) LPA-80080/4CF w/ Mount Pipe	39	14.531	1.2876	0.0052	5060
106.00	7770.00 w/ Mount Pipe	39	12.203	1.1864	0.0042	5556
76.00	OG-860/1920/GPS-A	39	6.072	0.7721	0.0017	6362

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 142	105.705	2	6.4359	0.0290
L2	142 - 137	98.997	2	6.4200	0.0279
L3	137 - 132	92.320	2	6.3754	0.0270
L4	132 - 127	85.706	2	6.2955	0.0260
L5	127 - 122	79.197	2	6.1723	0.0252
L6	122 - 117	72.837	2	6.0080	0.0245
L7	117 - 112	66.670	2	5.7999	0.0238
L8	112 - 105	60.740	2	5.5496	0.0215
L9	108.75 - 103.75	57.035	2	5.3601	0.0196
L10	103.75 - 98.75	51.516	2	5.1752	0.0179
L11	98.75 - 93.75	46.272	2	4.8546	0.0153
L12	93.75 - 89.667	41.380	2	4.4979	0.0129
L13	89.667 - 89.417	37.671	2	4.1846	0.0111
L14	89.417 - 88.083	37.452	2	4.1649	0.0110
L15	88.083 - 87.833	36.304	2	4.0597	0.0104
L16	87.833 - 85.833	36.092	2	4.0472	0.0104
L17	85.833 - 85.583	34.419	2	3.9462	0.0099
L18	85.583 - 84.5	34.213	2	3.9335	0.0098
L19	84.5 - 84.25	33.328	2	3.8783	0.0095
L20	84.25 - 79.25	33.125	2	3.8644	0.0095
L21	79.25 - 73.75	29.233	2	3.5723	0.0082
L22	78 - 72.75	28.308	2	3.4975	0.0079
L23	72.75 - 67.75	24.549	2	3.3222	0.0072
L24	67.75 - 63.08	21.215	2	3.0469	0.0063
L25	63.08 - 62.83	18.367	2	2.7796	0.0055

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L26	62.83 - 57.83	18.222	2	2.7683	0.0054
L27	57.83 - 52.83	15.444	2	2.5374	0.0048
L28	52.83 - 47.83	12.912	2	2.3004	0.0042
L29	47.83 - 42.75	10.628	2	2.0621	0.0036
L30	47.5 - 42.5	10.486	2	2.0460	0.0036
L31	42.5 - 37.5	8.406	2	1.9211	0.0033
L32	37.5 - 32.75	6.519	2	1.6838	0.0028
L33	32.75 - 32.5	4.956	2	1.4591	0.0023
L34	32.5 - 27.5	4.880	2	1.4480	0.0023
L35	27.5 - 22.5	3.481	2	1.2234	0.0019
L36	22.5 - 17.5	2.319	2	0.9968	0.0015
L37	17.5 - 12.5	1.393	2	0.7721	0.0011
L38	12.5 - 8.083	0.703	2	0.5458	0.0008
L39	8.083 - 7.833	0.291	2	0.3447	0.0005
L40	7.833 - 6.417	0.273	2	0.3342	0.0005
L41	6.417 - 6.167	0.183	2	0.2745	0.0004
L42	6.167 - 3.25	0.169	2	0.2638	0.0004
L43	3.25 - 3	0.047	2	0.1367	0.0002
L44	3 - 2	0.040	2	0.1261	0.0002
L45	2 - 1.75	0.018	2	0.0843	0.0001
L46	1.75 - 0	0.014	2	0.0737	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	APXVSPP18-C-A20 w/ Mount Pipe	2	105.705	6.4359	0.0290	9634
136.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	2	90.991	6.3625	0.0268	4329
126.00	Commscope MC-PK8-DSH	2	77.912	6.1428	0.0251	1936
118.00	RRFDC-3315-PF-48	2	67.886	5.8441	0.0240	1347
115.00	(2) LPA-80080/4CF w/ Mount Pipe	2	64.265	5.7082	0.0231	1164
106.00	7770.00 w/ Mount Pipe	2	53.971	5.2585	0.0186	1275
76.00	OG-860/1920/GPS-A	2	26.851	3.4174	0.0076	1446

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 $\frac{P_u}{\phi P_n}$
L1	147 - 142 (1)	TP22.8501x22x0.25	5.00	0.00	0.0	17.9332	-4.43	968.39	0.005
L2	142 - 137 (2)	TP23.7002x22.8501x0.25	5.00	0.00	0.0	18.6078	-4.78	1004.82	0.005
L3	137 - 132 (3)	TP24.5504x23.7002x0.25	5.00	0.00	0.0	19.2823	-9.26	1041.25	0.009
L4	132 - 127 (4)	TP25.4005x24.5504x0.25	5.00	0.00	0.0	19.9569	-9.71	1077.67	0.009
L5	127 - 122 (5)	TP26.2506x25.4005x0.25	5.00	0.00	0.0	20.6315	-13.05	1114.10	0.012
L6	122 - 117 (6)	TP27.1007x26.2506x0.25	5.00	0.00	0.0	21.3060	-13.61	1150.53	0.012
L7	117 - 112 (7)	TP27.9508x27.1007x0.25	5.00	0.00	0.0	21.980	-17.55	1186.95	0.015

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L8	112 - 105 (8)	TP29.141x27.9508x0.25	7.00	0.00	0.0	22.4196	-17.98	1210.63	0.015
L9	105 - 103.75 (9)	TP28.8536x28.0034x0.3125	5.00	0.00	0.0	28.3092	-24.13	1528.70	0.016
L10	103.75 - 98.75 (10)	TP29.7039x28.8536x0.3125	5.00	0.00	0.0	29.1526	-25.03	1574.24	0.016
L11	98.75 - 93.75 (11)	TP30.5541x29.7039x0.3125	5.00	0.00	0.0	29.9959	-25.97	1619.78	0.016
L12	93.75 - 89.667 (12)	TP31.2484x30.5541x0.3125	4.08	0.00	0.0	30.6845	-26.77	1656.96	0.016
L13	89.667 - 89.417 (13)	TP31.2909x31.2484x0.3125	0.25	0.00	0.0	30.7267	-26.84	1659.24	0.016
L14	89.417 - 88.083 (14)	TP31.5177x31.2909x0.3125	1.33	0.00	0.0	30.9517	-27.08	1671.39	0.016
L15	88.083 - 87.833 (15)	TP31.5603x31.5177x0.5125	0.25	0.00	0.0	50.5046	-27.17	2727.25	0.010
L16	87.833 - 85.833 (16)	TP31.9003x31.5603x0.5125	2.00	0.00	0.0	51.0578	-27.67	2757.12	0.010
L17	85.833 - 85.583 (17)	TP31.9429x31.9003x0.5125	0.25	0.00	0.0	51.1270	-27.74	2760.86	0.010
L18	85.583 - 84.5 (18)	TP32.127x31.9429x0.5125	1.08	0.00	0.0	51.4265	-28.01	2777.03	0.010
L19	84.5 - 84.25 (19)	TP32.1695x32.127x0.475	0.25	0.00	0.0	47.7842	-28.08	2580.35	0.011
L20	84.25 - 79.25 (20)	TP33.0198x32.1695x0.4625	5.00	0.00	0.0	47.7932	-29.38	2580.83	0.011
L21	79.25 - 73.75 (21)	TP33.955x33.0198x0.4625	5.50	0.00	0.0	48.1053	-29.71	2597.68	0.011
L22	73.75 - 72.75 (22)	TP33.5x32.6073x0.5625	5.25	0.00	0.0	58.8058	-32.28	3175.51	0.010
L23	72.75 - 67.75 (23)	TP34.3502x33.5x0.5625	5.00	0.00	0.0	60.3236	-33.76	3257.48	0.010
L24	67.75 - 63.08 (24)	TP35.1442x34.3502x0.55	4.67	0.00	0.0	60.3911	-35.16	3261.12	0.011
L25	63.08 - 62.83 (25)	TP35.1867x35.1442x0.7125	0.25	0.00	0.0	77.9626	-35.27	4209.98	0.008
L26	62.83 - 57.83 (26)	TP36.0369x35.1867x0.7	5.00	0.00	0.0	78.5115	-37.13	4239.62	0.009
L27	57.83 - 52.83 (27)	TP36.8871x36.0369x0.6875	5.00	0.00	0.0	78.9920	-39.02	4265.57	0.009
L28	52.83 - 47.83 (28)	TP37.7372x36.8871x0.6875	5.00	0.00	0.0	80.8471	-40.93	4365.75	0.009
L29	47.83 - 42.75 (29)	TP38.601x37.7372x0.675	5.08	0.00	0.0	79.5242	-41.07	4294.31	0.010
L30	42.75 - 42.5 (30)	TP37.8935x37.0433x0.75	5.00	0.00	0.0	88.4201	-44.62	4774.69	0.009
L31	42.5 - 37.5 (31)	TP38.7437x37.8935x0.7375	5.00	0.00	0.0	88.9658	-46.71	4804.16	0.010
L32	37.5 - 32.75 (32)	TP39.5514x38.7437x0.7375	4.75	0.00	0.0	90.8564	-48.73	4906.25	0.010
L33	32.75 - 32.5 (33)	TP39.5939x39.5514x0.7875	0.25	0.00	0.0	96.9975	-48.86	5237.86	0.009
L34	32.5 - 27.5 (34)	TP40.444x39.5939x0.775	5.00	0.00	0.0	97.5799	-51.13	5269.31	0.010
L35	27.5 - 22.5 (35)	TP41.2942x40.444x0.7625	5.00	0.00	0.0	98.0938	-53.43	5297.07	0.010
L36	22.5 - 17.5 (36)	TP42.1444x41.2942x0.7625	5.00	0.00	0.0	100.1510	-55.77	5408.18	0.010
L37	17.5 - 12.5 (37)	TP42.9946x42.1444x0.75	5.00	0.00	0.0	100.5630	-58.13	5430.41	0.011
L38	12.5 - 8.083 (38)	TP43.7456x42.9946x0.7375	4.42	0.00	0.0	100.6740	-60.23	5436.42	0.011
L39	8.083 - 7.833 (39)	TP43.7881x43.7456x0.8	0.25	0.00	0.0	109.1550	-60.38	5894.39	0.010
L40	7.833 - 6.417 (40)	TP44.0289x43.7881x0.7875	1.42	0.00	0.0	108.0830	-61.11	5836.48	0.010
L41	6.417 - 6.167 (41)	TP44.0714x44.0289x0.775	0.25	0.00	0.0	106.5030	-61.25	5751.14	0.011

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L42	6.167 - 3.25 (42)	TP44.5674x44.0714x0.7625	2.92	0.00	0.0	106.0150	-62.71	5724.84	0.011
L43	3.25 - 3 (43)	TP44.6099x44.5674x0.7875	0.25	0.00	0.0	109.5350	-62.85	5914.90	0.011
L44	3 - 2 (44)	TP44.7799x44.6099x0.7875	1.00	0.00	0.0	109.9600	-63.34	5937.85	0.011
L45	2 - 1.75 (45)	TP44.8224x44.7799x0.775	0.25	0.00	0.0	108.3500	-63.47	5850.91	0.011
L46	1.75 - 0 (46)	TP45.12x44.8224x0.775	1.75	0.00	0.0	109.0820	-64.33	5890.43	0.011

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	147 - 142 (1)	TP22.8501x22x0.25	25.20	569.75	0.044	0.00	569.75	0.000
L2	142 - 137 (2)	TP23.7002x22.8501x0.25	52.41	613.66	0.085	0.00	613.66	0.000
L3	137 - 132 (3)	TP24.5504x23.7002x0.25	104.03	659.20	0.158	0.00	659.20	0.000
L4	132 - 127 (4)	TP25.4005x24.5504x0.25	159.61	703.27	0.227	0.00	703.27	0.000
L5	127 - 122 (5)	TP26.2506x25.4005x0.25	232.09	745.67	0.311	0.00	745.67	0.000
L6	122 - 117 (6)	TP27.1007x26.2506x0.25	310.51	788.87	0.394	0.00	788.87	0.000
L7	117 - 112 (7)	TP27.9508x27.1007x0.25	413.67	832.83	0.497	0.00	832.83	0.000
L8	112 - 105 (8)	TP29.141x27.9508x0.25	487.12	861.78	0.565	0.00	861.78	0.000
L9	105 - 103.75 (9)	TP28.8536x28.0034x0.3125	614.79	1135.95	0.541	0.00	1135.95	0.000
L10	103.75 - 98.75 (10)	TP29.7039x28.8536x0.3125	760.13	1205.02	0.631	0.00	1205.02	0.000
L11	98.75 - 93.75 (11)	TP30.5541x29.7039x0.3125	907.26	1276.12	0.711	0.00	1276.12	0.000
L12	93.75 - 89.667 (12)	TP31.2484x30.5541x0.3125	1028.67	1335.00	0.771	0.00	1335.00	0.000
L13	89.667 - 89.417 (13)	TP31.2909x31.2484x0.3125	1036.13	1338.26	0.774	0.00	1338.26	0.000
L14	89.417 - 88.083 (14)	TP31.5177x31.2909x0.3125	1076.06	1355.65	0.794	0.00	1355.65	0.000
L15	88.083 - 87.833 (15)	TP31.5603x31.5177x0.5125	1083.55	2192.51	0.494	0.00	2192.51	0.000
L16	87.833 - 85.833 (16)	TP31.9003x31.5603x0.5125	1143.70	2241.19	0.510	0.00	2241.19	0.000
L17	85.833 - 85.583 (17)	TP31.9429x31.9003x0.5125	1151.24	2247.32	0.512	0.00	2247.32	0.000
L18	85.583 - 84.5 (18)	TP32.127x31.9429x0.5125	1183.97	2273.94	0.521	0.00	2273.94	0.000
L19	84.5 - 84.25 (19)	TP32.1695x32.127x0.475	1191.54	2120.79	0.562	0.00	2120.79	0.000
L20	84.25 - 79.25 (20)	TP33.0198x32.1695x0.4625	1343.95	2180.61	0.616	0.00	2180.61	0.000
L21	79.25 - 73.75 (21)	TP33.955x33.0198x0.4625	1382.35	2209.38	0.626	0.00	2209.38	0.000
L22	73.75 - 72.75 (22)	TP33.5x32.6073x0.5625	1545.88	2706.73	0.571	0.00	2706.73	0.000
L23	72.75 - 67.75 (23)	TP34.3502x33.5x0.5625	1704.13	2849.47	0.598	0.00	2849.47	0.000
L24	67.75 - 63.08 (24)	TP35.1442x34.3502x0.5525	1853.62	2922.92	0.634	0.00	2922.92	0.000
L25	63.08 - 62.83 (25)	TP35.1867x35.1442x0.7125	1861.67	3742.71	0.497	0.00	3742.71	0.000
L26	62.83 - 57.83 (26)	TP36.0369x35.1867x0.7	2023.68	3866.63	0.523	0.00	3866.63	0.000
L27	57.83 - 52.83 (27)	TP36.8871x36.0369x0.6875	2187.68	3988.46	0.549	0.00	3988.46	0.000
L28	52.83 - 47.83 (28)	TP37.7372x36.8871x0.6875	2353.58	4179.79	0.563	0.00	4179.79	0.000
L29	47.83 - 42.75	TP38.601x37.7372x0.675	2364.60	4120.51	0.574	0.00	4120.51	0.000

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 $\frac{M_{uy}}{\phi M_{ny}}$
	(29)							
L30	42.75 - 42.5 (30)	TP37.8935x37.0433x0.75	2533.31	4575.54	0.554	0.00	4575.54	0.000
L31	42.5 - 37.5 (31)	TP38.7437x37.8935x0.73 75	2704.97	4714.34	0.574	0.00	4714.34	0.000
L32	37.5 - 32.75 (32)	TP39.5514x38.7437x0.73 75	2869.72	4918.78	0.583	0.00	4918.78	0.000
L33	32.75 - 32.5 (33)	TP39.5939x39.5514x0.78 75	2878.43	5243.58	0.549	0.00	5243.58	0.000
L34	32.5 - 27.5 (34)	TP40.444x39.5939x0.775	3053.63	5396.34	0.566	0.00	5396.34	0.000
L35	27.5 - 22.5 (35)	TP41.2942x40.444x0.762 5	3230.45	5546.68	0.582	0.00	5546.68	0.000
L36	22.5 - 17.5 (36)	TP42.1444x41.2942x0.76 25	3408.75	5783.99	0.589	0.00	5783.99	0.000
L37	17.5 - 12.5 (37)	TP42.9946x42.1444x0.75	3588.35	5932.77	0.605	0.00	5932.77	0.000
L38	12.5 - 8.083 (38)	TP43.7456x42.9946x0.73 75	3748.03	6050.28	0.619	0.00	6050.28	0.000
L39	8.083 - 7.833 (39)	TP43.7881x43.7456x0.8	3757.10	6547.51	0.574	0.00	6547.51	0.000
L40	7.833 - 6.417 (40)	TP44.0289x43.7881x0.78 75	3808.53	6523.92	0.584	0.00	6523.92	0.000
L41	6.417 - 6.167 (41)	TP44.0714x44.0289x0.77 5	3817.62	6438.68	0.593	0.00	6438.68	0.000
L42	6.167 - 3.25 (42)	TP44.5674x44.0714x0.76 25	3923.94	6487.65	0.605	0.00	6487.65	0.000
L43	3.25 - 3 (43)	TP44.6099x44.5674x0.78 75	3933.07	6702.00	0.587	0.00	6702.00	0.000
L44	3 - 2 (44)	TP44.7799x44.6099x0.78 75	3969.63	6754.57	0.588	0.00	6754.57	0.000
L45	2 - 1.75 (45)	TP44.8224x44.7799x0.77 5	3978.78	6666.00	0.597	0.00	6666.00	0.000
L46	1.75 - 0 (46)	TP45.12x44.8224x0.775	4042.89	6757.15	0.598	0.00	6757.15	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	147 - 142 (1)	TP22.8501x22x0.25	5.24	290.52	0.018	0.74	574.99	0.001
L2	142 - 137 (2)	TP23.7002x22.8501x0.25	5.65	301.45	0.019	0.74	619.07	0.001
L3	137 - 132 (3)	TP24.5504x23.7002x0.25	10.91	312.37	0.035	0.74	664.76	0.001
L4	132 - 127 (4)	TP25.4005x24.5504x0.25	11.33	323.30	0.035	0.74	712.09	0.001
L5	127 - 122 (5)	TP26.2506x25.4005x0.25	15.42	334.23	0.046	0.87	761.04	0.001
L6	122 - 117 (6)	TP27.1007x26.2506x0.25	16.14	345.16	0.047	1.11	811.62	0.001
L7	117 - 112 (7)	TP27.9508x27.1007x0.25	22.48	356.09	0.063	3.29	863.83	0.004
L8	112 - 105 (8)	TP29.141x27.9508x0.25	22.74	363.19	0.063	3.29	898.63	0.004
L9	105 - 103.75 (9)	TP28.8536x28.0034x0.31 25	28.91	458.61	0.063	4.02	1146.29	0.004
L10	103.75 - 98.75 (10)	TP29.7039x28.8536x0.31 25	29.27	472.27	0.062	4.02	1215.60	0.003
L11	98.75 - 93.75 (11)	TP30.5541x29.7039x0.31 25	29.61	485.93	0.061	4.00	1286.95	0.003
L12	93.75 - 89.667 (12)	TP31.2484x30.5541x0.31 25	29.88	497.09	0.060	4.00	1346.72	0.003
L13	89.667 - 89.417 (13)	TP31.2909x31.2484x0.31 25	29.89	497.77	0.060	4.00	1350.43	0.003
L14	89.417 - 88.083 (14)	TP31.5177x31.2909x0.31 25	29.99	501.42	0.060	4.00	1370.28	0.003
L15	88.083 - 87.833 (15)	TP31.5603x31.5177x0.51 25	29.99	818.17	0.037	4.00	2224.63	0.002
L16	87.833 - 85.833 (16)	TP31.9003x31.5603x0.51 25	30.17	827.14	0.036	4.00	2273.63	0.002
L17	85.833 -	TP31.9429x31.9003x0.51	30.18	828.26	0.036	4.00	2279.78	0.002

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 $\frac{T_u}{\phi T_n}$
	85.583 (17)	25						
L18	85.583 - 84.5 (18)	TP32.127x31.9429x0.5125	30.28	833.11	0.036	4.00	2306.58	0.002
L19	84.5 - 84.25 (19)	TP32.1695x32.127x0.475	30.29	774.11	0.039	4.00	2148.64	0.002
L20	84.25 - 79.25 (20)	TP33.0198x32.1695x0.4625	30.69	774.25	0.040	3.99	2207.54	0.002
L21	79.25 - 73.75 (21)	TP33.955x33.0198x0.4625	30.78	779.30	0.040	3.99	2236.46	0.002
L22	73.75 - 72.75 (22)	TP33.5x32.6073x0.5625	31.47	952.65	0.033	4.01	2747.93	0.001
L23	72.75 - 67.75 (23)	TP34.3502x33.5x0.5625	31.85	977.24	0.033	4.00	2891.62	0.001
L24	67.75 - 63.08 (24)	TP35.1442x34.3502x0.55	32.20	978.34	0.033	4.00	2963.96	0.001
L25	63.08 - 62.83 (25)	TP35.1867x35.1442x0.7125	32.20	1262.99	0.025	4.00	3813.07	0.001
L26	62.83 - 57.83 (26)	TP36.0369x35.1867x0.7	32.62	1271.89	0.026	4.00	3936.02	0.001
L27	57.83 - 52.83 (27)	TP36.8871x36.0369x0.6875	33.01	1279.67	0.026	4.00	4056.78	0.001
L28	52.83 - 47.83 (28)	TP37.7372x36.8871x0.6875	33.38	1309.72	0.025	4.00	4249.57	0.001
L29	47.83 - 42.75 (29)	TP38.601x37.7372x0.675	33.40	1288.29	0.026	4.00	4187.77	0.001
L30	42.75 - 42.5 (30)	TP37.8935x37.0433x0.75	34.14	1432.41	0.024	4.22	4659.39	0.001
L31	42.5 - 37.5 (31)	TP38.7437x37.8935x0.7375	34.53	1441.25	0.024	4.22	4797.03	0.001
L32	37.5 - 32.75 (32)	TP39.5514x38.7437x0.7375	34.86	1471.87	0.024	4.22	5003.08	0.001
L33	32.75 - 32.5 (33)	TP39.5939x39.5514x0.7875	34.86	1571.36	0.022	4.22	5340.21	0.001
L34	32.5 - 27.5 (34)	TP40.444x39.5939x0.775	35.22	1580.79	0.022	4.22	5491.70	0.001
L35	27.5 - 22.5 (35)	TP41.2942x40.444x0.7625	35.53	1589.12	0.022	4.22	5640.68	0.001
L36	22.5 - 17.5 (36)	TP42.1444x41.2942x0.7625	35.81	1622.45	0.022	4.22	5879.80	0.001
L37	17.5 - 12.5 (37)	TP42.9946x42.1444x0.75	36.05	1629.12	0.022	4.22	6027.05	0.001
L38	12.5 - 8.083 (38)	TP43.7456x42.9946x0.7375	36.28	1630.93	0.022	4.22	6142.77	0.001
L39	8.083 - 7.833 (39)	TP43.7881x43.7456x0.8	36.27	1768.32	0.021	4.22	6657.16	0.001
L40	7.833 - 6.417 (40)	TP44.0289x43.7881x0.7875	36.38	1750.94	0.021	4.22	6630.58	0.001
L41	6.417 - 6.167 (41)	TP44.0714x44.0289x0.775	36.37	1725.34	0.021	4.22	6541.95	0.001
L42	6.167 - 3.25 (42)	TP44.5674x44.0714x0.7625	36.55	1717.45	0.021	4.22	6588.51	0.001
L43	3.25 - 3 (43)	TP44.6099x44.5674x0.7875	36.53	1774.47	0.021	4.22	6809.97	0.001
L44	3 - 2 (44)	TP44.7799x44.6099x0.7875	36.59	1781.35	0.021	4.22	6862.91	0.001
L45	2 - 1.75 (45)	TP44.8224x44.7799x0.775	36.59	1755.27	0.021	4.22	6770.87	0.001
L46	1.75 - 0 (46)	TP45.12x44.8224x0.775	36.70	1767.13	0.021	4.22	6862.67	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	147 - 142 (1)	0.005	0.044	0.000	0.018	0.001	0.049	1.050	4.8.2
L2	142 - 137 (2)	0.005	0.085	0.000	0.019	0.001	0.091	1.050	4.8.2
L3	137 - 132 (3)	0.009	0.158	0.000	0.035	0.001	0.168	1.050	4.8.2
L4	132 - 127 (4)	0.009	0.227	0.000	0.035	0.001	0.237	1.050	4.8.2
L5	127 - 122 (5)	0.012	0.311	0.000	0.046	0.001	0.325	1.050	4.8.2
L6	122 - 117 (6)	0.012	0.394	0.000	0.047	0.001	0.408	1.050	4.8.2
L7	117 - 112 (7)	0.015	0.497	0.000	0.063	0.004	0.516	1.050	4.8.2
L8	112 - 105 (8)	0.015	0.565	0.000	0.063	0.004	0.584	1.050	4.8.2
L9	105 - 103.75 (9)	0.016	0.541	0.000	0.063	0.004	0.561	1.050	4.8.2
L10	103.75 - 98.75 (10)	0.016	0.631	0.000	0.062	0.003	0.651	1.050	4.8.2
L11	98.75 - 93.75 (11)	0.016	0.711	0.000	0.061	0.003	0.731	1.050	4.8.2
L12	93.75 - 89.667 (12)	0.016	0.771	0.000	0.060	0.003	0.791	1.050	4.8.2
L13	89.667 - 89.417 (13)	0.016	0.774	0.000	0.060	0.003	0.794	1.050	4.8.2
L14	89.417 - 88.083 (14)	0.016	0.794	0.000	0.060	0.003	0.814	1.050	4.8.2
L15	88.083 - 87.833 (15)	0.010	0.494	0.000	0.037	0.002	0.506	1.050	4.8.2
L16	87.833 - 85.833 (16)	0.010	0.510	0.000	0.036	0.002	0.522	1.050	4.8.2
L17	85.833 - 85.583 (17)	0.010	0.512	0.000	0.036	0.002	0.524	1.050	4.8.2
L18	85.583 - 84.5 (18)	0.010	0.521	0.000	0.036	0.002	0.532	1.050	4.8.2
L19	84.5 - 84.25 (19)	0.011	0.562	0.000	0.039	0.002	0.574	1.050	4.8.2
L20	84.25 - 79.25 (20)	0.011	0.616	0.000	0.040	0.002	0.629	1.050	4.8.2
L21	79.25 - 73.75 (21)	0.011	0.626	0.000	0.040	0.002	0.639	1.050	4.8.2
L22	73.75 - 72.75 (22)	0.010	0.571	0.000	0.033	0.001	0.582	1.050	4.8.2
L23	72.75 - 67.75 (23)	0.010	0.598	0.000	0.033	0.001	0.610	1.050	4.8.2
L24	67.75 - 63.08 (24)	0.011	0.634	0.000	0.033	0.001	0.646	1.050	4.8.2
L25	63.08 - 62.83 (25)	0.008	0.497	0.000	0.025	0.001	0.506	1.050	4.8.2
L26	62.83 - 57.83 (26)	0.009	0.523	0.000	0.026	0.001	0.533	1.050	4.8.2
L27	57.83 - 52.83 (27)	0.009	0.549	0.000	0.026	0.001	0.558	1.050	4.8.2
L28	52.83 - 47.83 (28)	0.009	0.563	0.000	0.025	0.001	0.573	1.050	4.8.2
L29	47.83 - 42.75 (29)	0.010	0.574	0.000	0.026	0.001	0.584	1.050	4.8.2
L30	42.75 - 42.5 (30)	0.009	0.554	0.000	0.024	0.001	0.564	1.050	4.8.2
L31	42.5 - 37.5 (31)	0.010	0.574	0.000	0.024	0.001	0.584	1.050	4.8.2
L32	37.5 - 32.75 (32)	0.010	0.583	0.000	0.024	0.001	0.594	1.050	4.8.2
L33	32.75 - 32.5 (33)	0.009	0.549	0.000	0.022	0.001	0.559	1.050	4.8.2
L34	32.5 - 27.5 (34)	0.010	0.566	0.000	0.022	0.001	0.576	1.050	4.8.2
L35	27.5 - 22.5 (35)	0.010	0.582	0.000	0.022	0.001	0.593	1.050	4.8.2
L36	22.5 - 17.5 (36)	0.010	0.589	0.000	0.022	0.001	0.600	1.050	4.8.2
L37	17.5 - 12.5 (37)	0.011	0.605	0.000	0.022	0.001	0.616	1.050	4.8.2
L38	12.5 - 8.083 (38)	0.011	0.619	0.000	0.022	0.001	0.631	1.050	4.8.2
L39	8.083 - 7.833	0.010	0.574	0.000	0.021	0.001	0.585	1.050	4.8.2

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	(39)								
L40	7.833 - 6.417 (40)	0.010	0.584	0.000	0.021	0.001	0.595	1.050	4.8.2
L41	6.417 - 6.167 (41)	0.011	0.593	0.000	0.021	0.001	0.604	1.050	4.8.2
L42	6.167 - 3.25 (42)	0.011	0.605	0.000	0.021	0.001	0.616	1.050	4.8.2
L43	3.25 - 3 (43)	0.011	0.587	0.000	0.021	0.001	0.598	1.050	4.8.2
L44	3 - 2 (44)	0.011	0.588	0.000	0.021	0.001	0.599	1.050	4.8.2
L45	2 - 1.75 (45)	0.011	0.597	0.000	0.021	0.001	0.608	1.050	4.8.2
L46	1.75 - 0 (46)	0.011	0.598	0.000	0.021	0.001	0.610	1.050	4.8.2

Section Capacity Table

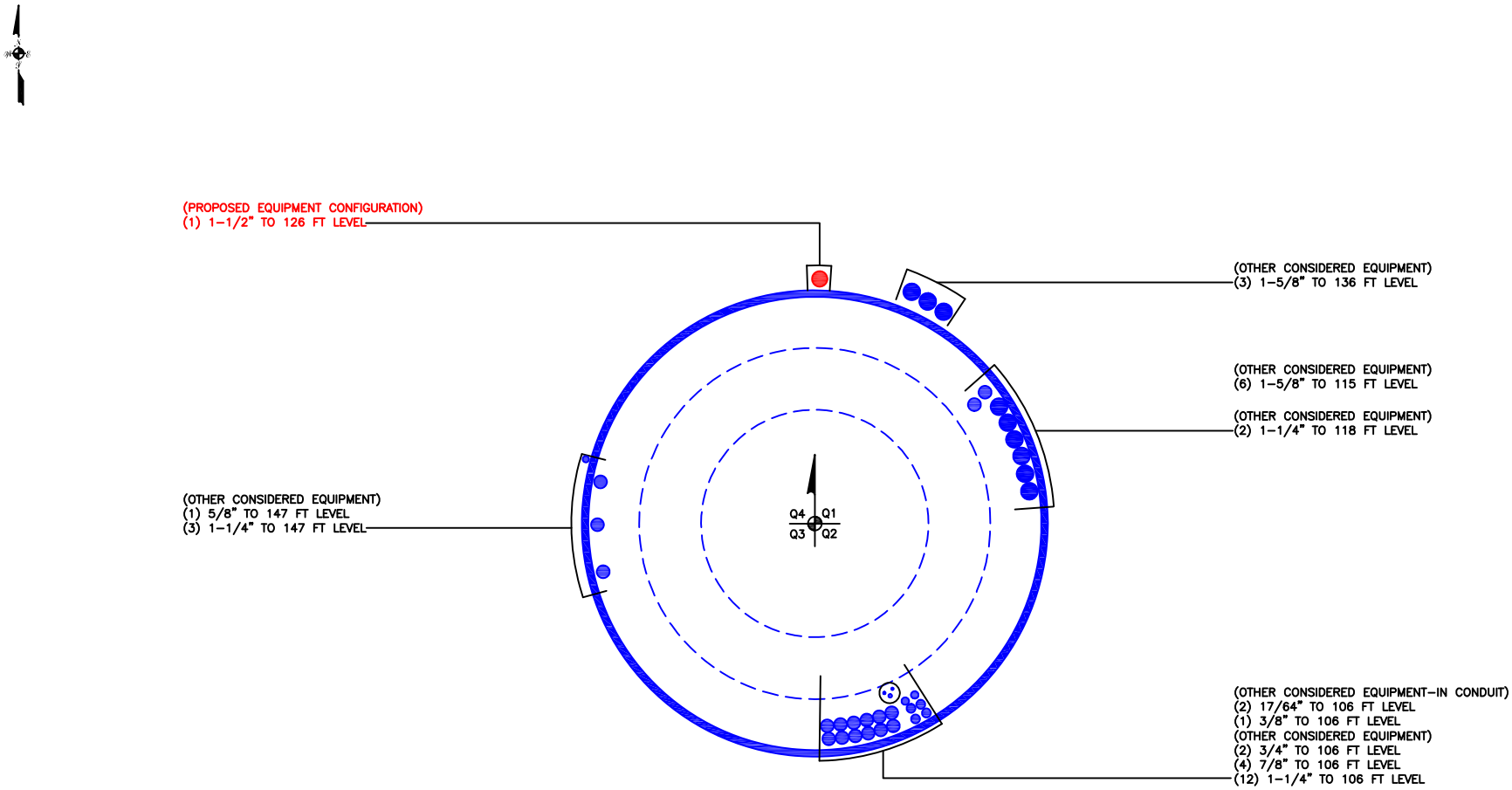
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	147 - 142	Pole	TP22.8501x22x0.25	1	-4.43	1016.81	4.7	Pass
L2	142 - 137	Pole	TP23.7002x22.8501x0.25	2	-4.78	1055.06	8.6	Pass
L3	137 - 132	Pole	TP24.5504x23.7002x0.25	3	-9.26	1093.31	16.0	Pass
L4	132 - 127	Pole	TP25.4005x24.5504x0.25	4	-9.71	1131.55	22.6	Pass
L5	127 - 122	Pole	TP26.2506x25.4005x0.25	5	-13.05	1169.80	31.0	Pass
L6	122 - 117	Pole	TP27.1007x26.2506x0.25	6	-13.61	1208.06	38.8	Pass
L7	117 - 112	Pole	TP27.9508x27.1007x0.25	7	-17.55	1246.30	49.1	Pass
L8	112 - 105	Pole	TP29.141x27.9508x0.25	8	-17.98	1271.16	55.7	Pass
L9	105 - 103.75	Pole	TP28.8536x28.0034x0.3125	9	-24.13	1605.13	53.5	Pass
L10	103.75 - 98.75	Pole	TP29.7039x28.8536x0.3125	10	-25.03	1652.95	62.0	Pass
L11	98.75 - 93.75	Pole	TP30.5541x29.7039x0.3125	11	-25.97	1700.77	69.6	Pass
L12	93.75 - 89.667	Pole	TP31.2484x30.5541x0.3125	12	-26.77	1739.81	75.3	Pass
L13	89.667 - 89.417	Pole	TP31.2909x31.2484x0.3125	13	-26.84	1742.20	75.7	Pass
L14	89.417 - 88.083	Pole	TP31.5177x31.2909x0.3125	14	-27.08	1754.96	77.5	Pass
L15	88.083 - 87.833	Pole	TP31.5603x31.5177x0.5125	15	-27.17	2863.61	48.2	Pass
L16	87.833 - 85.833	Pole	TP31.9003x31.5603x0.5125	16	-27.67	2894.98	49.7	Pass
L17	85.833 - 85.583	Pole	TP31.9429x31.9003x0.5125	17	-27.74	2898.90	49.9	Pass
L18	85.583 - 84.5	Pole	TP32.127x31.9429x0.5125	18	-28.01	2915.88	50.7	Pass
L19	84.5 - 84.25	Pole	TP32.1695x32.127x0.475	19	-28.08	2709.37	54.7	Pass
L20	84.25 - 79.25	Pole	TP33.0198x32.1695x0.4625	20	-29.38	2709.87	59.9	Pass
L21	79.25 - 73.75	Pole	TP33.955x33.0198x0.4625	21	-29.71	2727.56	60.8	Pass
L22	73.75 - 72.75	Pole	TP33.5x32.6073x0.5625	22	-32.28	3334.29	55.5	Pass
L23	72.75 - 67.75	Pole	TP34.3502x33.5x0.5625	23	-33.76	3420.35	58.1	Pass
L24	67.75 - 63.08	Pole	TP35.1442x34.3502x0.55	24	-35.16	3424.18	61.5	Pass
L25	63.08 - 62.83	Pole	TP35.1867x35.1442x0.7125	25	-35.27	4420.48	48.2	Pass
L26	62.83 - 57.83	Pole	TP36.0369x35.1867x0.7	26	-37.13	4451.60	50.7	Pass
L27	57.83 - 52.83	Pole	TP36.8871x36.0369x0.6875	27	-39.02	4478.85	53.2	Pass
L28	52.83 - 47.83	Pole	TP37.7372x36.8871x0.6875	28	-40.93	4584.04	54.6	Pass
L29	47.83 - 42.75	Pole	TP38.601x37.7372x0.675	29	-41.07	4509.03	55.6	Pass
L30	42.75 - 42.5	Pole	TP37.8935x37.0433x0.75	30	-44.62	5013.42	53.7	Pass
L31	42.5 - 37.5	Pole	TP38.7437x37.8935x0.7375	31	-46.71	5044.37	55.6	Pass
L32	37.5 - 32.75	Pole	TP39.5514x38.7437x0.7375	32	-48.73	5151.56	56.6	Pass
L33	32.75 - 32.5	Pole	TP39.5939x39.5514x0.7875	33	-48.86	5499.75	53.2	Pass
L34	32.5 - 27.5	Pole	TP40.444x39.5939x0.775	34	-51.13	5532.78	54.9	Pass
L35	27.5 - 22.5	Pole	TP41.2942x40.444x0.7625	35	-53.43	5561.92	56.5	Pass
L36	22.5 - 17.5	Pole	TP42.1444x41.2942x0.7625	36	-55.77	5678.59	57.2	Pass
L37	17.5 - 12.5	Pole	TP42.9946x42.1444x0.75	37	-58.13	5701.93	58.7	Pass
L38	12.5 - 8.083	Pole	TP43.7456x42.9946x0.7375	38	-60.23	5708.24	60.1	Pass
L39	8.083 - 7.833	Pole	TP43.7881x43.7456x0.8	39	-60.38	6189.11	55.7	Pass
L40	7.833 - 6.417	Pole	TP44.0289x43.7881x0.7875	40	-61.11	6128.30	56.6	Pass
L41	6.417 - 6.167	Pole	TP44.0714x44.0289x0.775	41	-61.25	6038.70	57.5	Pass
L42	6.167 - 3.25	Pole	TP44.5674x44.0714x0.7625	42	-62.71	6011.08	58.7	Pass
L43	3.25 - 3	Pole	TP44.6099x44.5674x0.7875	43	-62.85	6210.64	56.9	Pass
L44	3 - 2	Pole	TP44.7799x44.6099x0.7875	44	-63.34	6234.74	57.0	Pass
L45	2 - 1.75	Pole	TP44.8224x44.7799x0.775	45	-63.47	6143.46	57.9	Pass
L46	1.75 - 0	Pole	TP45.12x44.8224x0.775	46	-64.33	6184.95	58.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
							Summary	
						Pole (L14)	77.5	Pass
						RATING =	**77.5**	**Pass**

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

APPENDIX B

BASE LEVEL DRAWING


(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 126 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(3) 1-5/8" TO 136 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 115 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1-1/4" TO 118 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 5/8" TO 147 FT LEVEL
(3) 1-1/4" TO 147 FT LEVEL
Q4 Q1
Q3 Q2
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(2) 17/64" TO 106 FT LEVEL
(1) 3/8" TO 106 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 3/4" TO 106 FT LEVEL
(4) 7/8" TO 106 FT LEVEL
(12) 1-1/4" TO 106 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 876316

Work Order: 1964043

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	147	42	3.75	18	22	29.141	0.25	Auto	A607-60
2	108.75	35	4.25	18	28.00	33.955	0.3125	Auto	A607-60
3	78	35.25	4.75	18	32.61	38.601	0.375	Auto	A607-60
4	47.5	47.5	0	18	37.04	45.12	0.4375	Auto	A607-60

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	2	8.083	channel	MP3-05 (1.25in) Welde	2					x		x											
2	6.417	76.583	channel	MP3-05 (1.25in)	1						x												
3	2	88.083	channel	MP3-05 (1.25in) Welde	2												x						x
4	75.667	85.833	channel	MP3-05 (1.25in)	1							x											
5	84.5	89.667	channel	MP3-05 (1.25in)	1						x												
6	0	3.25	plate	TS 1 6.5"X1.25"	2	c									2.5								
7	0	3.25	plate	TS2 6.5"X1.25"	1														x				
8	3.25	32.75	plate	CCI-SFP-065125	2			x						x									
9	3.25	32.75	plate	WCFP-065125	1														x				
10	32.75	63.08	plate	CCI-AFP-060100	3			x						x					x				
11	0	2	plate	TS 3.2"X1.25"	6																		
12																							

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	5.33	2.09	5.65	0.79	Welded	n/a	PC 8.8 - M20 (100)	29.000	18.000	4.994	1.2500	A572-65
2	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	4.994	1.2500	A572-65
3	5.33	2.09	5.65	0.79	Welded	n/a	PC 8.8 - M20 (100)	29.000	18.000	4.994	1.2500	A572-65
4	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	4.994	1.2500	A572-65
5	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	4.994	1.2500	A572-65
6	1.25	5.75	7.1875	2.875	Welded	n/a	None	n/a	0.000	7.188	0.0000	A572-65
7	1.25	5.75	7.1875	2.875	Welded	n/a	None	n/a	0.000	7.188	0.0000	A572-65
8	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
9	6.5	1.25	8.125	0.625	Welded	n/a	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
10	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
11	1.25	3.2	4	1.6	Welded	n/a	None	n/a	0.000	4.000	0.0000	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
MP3-05 (1.25in) Welded	Top	10	N	3	2	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	70	None	-	-	-	-	18	0.375	-
WCFP-065125	Top	11	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	70	None	-	-	-	-	29	0.375	-
TS 1 6.5"X1.25"	Top	1	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	80	CJP Groove	5.75	0.625	45	0.625	78	0.375	-
TS2 6.5"X1.25"	Top	1	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	80	CJP Groove	5.75	0.625	45	0.625	78	0.375	-
TS 3.2"X1.25"	Top	1	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	70	PJP Groove	5.25	0.5	45	0.5	42	0.313	-

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	147 - 142	5		18	22.000	22.850	0.25	A607-60	1.000
2	142 - 137	5		18	22.850	23.700	0.25	A607-60	1.000
3	137 - 132	5		18	23.700	24.550	0.25	A607-60	1.000
4	132 - 127	5		18	24.550	25.400	0.25	A607-60	1.000
5	127 - 122	5		18	25.400	26.251	0.25	A607-60	1.000
6	122 - 117	5		18	26.251	27.101	0.25	A607-60	1.000
7	117 - 112	5		18	27.101	27.951	0.25	A607-60	1.000
8	112 - 108.75	7	3.75	18	27.951	29.141	0.25	A607-60	1.000
9	108.75 - 103.75	5		18	28.003	28.854	0.3125	A607-60	1.000
10	103.75 - 98.75	5		18	28.854	29.704	0.3125	A607-60	1.000
11	98.75 - 93.75	5		18	29.704	30.554	0.3125	A607-60	1.000
12	93.75 - 89.667	4.083		18	30.554	31.248	0.3125	A607-60	1.000
13	89.667 - 89.417	0.25		18	31.248	31.291	0.3125	A607-60	1.000
14	89.417 - 88.083	1.334		18	31.291	31.518	0.3125	A607-60	1.000
15	88.083 - 87.833	0.25		18	31.518	31.560	0.5125	A607-60	0.949
16	87.833 - 85.833	2		18	31.560	31.900	0.5125	A607-60	0.946
17	85.833 - 85.583	0.25		18	31.900	31.943	0.5125	A607-60	0.945
18	85.583 - 84.5	1.083		18	31.943	32.127	0.5125	A607-60	0.943
19	84.5 - 84.25	0.25		18	32.127	32.170	0.475	A607-60	1.016
20	84.25 - 79.25	5		18	32.170	33.020	0.4625	A607-60	1.033
21	79.25 - 78	5.5	4.25	18	33.020	33.955	0.4625	A607-60	1.031
22	78 - 72.75	5.25		18	32.607	33.500	0.5625	A607-60	0.959
23	72.75 - 67.75	5		18	33.500	34.350	0.5625	A607-60	0.951
24	67.75 - 63.08	4.67		18	34.350	35.144	0.55	A607-60	0.966
25	63.08 - 62.83	0.25		18	35.144	35.187	0.7125	A607-60	0.980
26	62.83 - 57.83	5		18	35.187	36.037	0.7	A607-60	0.986
27	57.83 - 52.83	5		18	36.037	36.887	0.6875	A607-60	0.993
28	52.83 - 47.83	5		18	36.887	37.737	0.6875	A607-60	0.982
29	47.83 - 47.5	5.08	4.75	18	37.737	38.601	0.675	A607-60	1.000
30	47.5 - 42.5	5		18	37.043	37.894	0.75	A607-60	0.984
31	42.5 - 37.5	5		18	37.894	38.744	0.7375	A607-60	0.991
32	37.5 - 32.75	4.75		18	38.744	39.551	0.7375	A607-60	0.982
33	32.75 - 32.5	0.25		18	39.551	39.594	0.7875	A607-60	0.987
34	32.5 - 27.5	5		18	39.594	40.444	0.775	A607-60	0.993
35	27.5 - 22.5	5		18	40.444	41.294	0.7625	A607-60	1.000
36	22.5 - 17.5	5		18	41.294	42.144	0.7625	A607-60	0.991
37	17.5 - 12.5	5		18	42.144	42.995	0.75	A607-60	0.999
38	12.5 - 8.083	4.417		18	42.995	43.746	0.7375	A607-60	1.008
39	8.083 - 7.833	0.25		18	43.746	43.788	0.8	A607-60	1.034
40	7.833 - 6.417	1.416		18	43.788	44.029	0.7875	A607-60	1.047
41	6.417 - 6.167	0.25		18	44.029	44.071	0.775	A607-60	1.010
42	6.167 - 3.25	2.917		18	44.071	44.567	0.7625	A607-60	1.021
43	3.25 - 3	0.25		18	44.567	44.610	0.7875	A607-60	0.963
44	3 - 2	1		18	44.610	44.780	0.7875	A607-60	0.962
45	2 - 1.75	0.25		18	44.780	44.822	0.775	A607-60	0.989
46	1.75 - 0	1.75		18	44.822	45.120	0.775	A607-60	0.987

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	147 - 142	4.43	25.20	5.24
2	142 - 137	4.78	52.41	5.65
3	137 - 132	9.26	104.03	10.91
4	132 - 127	9.71	159.61	11.33
5	127 - 122	13.05	232.09	15.42
6	122 - 117	13.61	310.51	16.14
7	117 - 112	17.55	413.67	22.48
8	112 - 108.75	17.98	487.12	22.74
9	108.75 - 103.75	24.13	614.79	28.91
10	103.75 - 98.75	25.03	760.13	29.27
11	98.75 - 93.75	25.97	907.25	29.61
12	93.75 - 89.667	26.77	1028.66	29.88
13	89.667 - 89.417	26.84	1036.13	29.89
14	89.417 - 88.083	27.08	1076.06	29.99
15	88.083 - 87.833	27.17	1083.55	29.99
16	87.833 - 85.833	27.67	1143.70	30.17
17	85.833 - 85.583	27.74	1151.24	30.18
18	85.583 - 84.5	28.01	1183.97	30.28
19	84.5 - 84.25	28.08	1191.54	30.29
20	84.25 - 79.25	29.38	1343.95	30.69
21	79.25 - 78	29.71	1382.35	30.78
22	78 - 72.75	32.28	1545.87	31.47
23	72.75 - 67.75	33.76	1704.13	31.85
24	67.75 - 63.08	35.16	1853.62	32.20
25	63.08 - 62.83	35.27	1861.66	32.20
26	62.83 - 57.83	37.13	2023.68	32.62
27	57.83 - 52.83	39.02	2187.67	33.01
28	52.83 - 47.83	40.93	2353.58	33.38
29	47.83 - 47.5	41.07	2364.60	33.40
30	47.5 - 42.5	44.62	2533.31	34.14
31	42.5 - 37.5	46.71	2704.97	34.53
32	37.5 - 32.75	48.73	2869.72	34.86
33	32.75 - 32.5	48.86	2878.44	34.86
34	32.5 - 27.5	51.13	3053.63	35.22
35	27.5 - 22.5	53.43	3230.45	35.53
36	22.5 - 17.5	55.77	3408.75	35.81
37	17.5 - 12.5	58.13	3588.35	36.05
38	12.5 - 8.083	60.23	3748.03	36.28
39	8.083 - 7.833	60.38	3757.10	36.27
40	7.833 - 6.417	61.11	3808.52	36.38
41	6.417 - 6.167	61.25	3817.62	36.37
42	6.167 - 3.25	62.71	3923.94	36.55
43	3.25 - 3	62.85	3933.08	36.53
44	3 - 2	63.34	3969.64	36.59
45	2 - 1.75	63.47	3978.78	36.59
46	1.75 - 0	64.33	4042.89	36.70

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
147 - 142	Pole	TP22.85x22x0.25	Pole	4.7%	Pass
142 - 137	Pole	TP23.7x22.85x0.25	Pole	8.6%	Pass
137 - 132	Pole	TP24.55x23.7x0.25	Pole	16.0%	Pass
132 - 127	Pole	TP25.4x24.55x0.25	Pole	22.6%	Pass
127 - 122	Pole	TP26.251x25.4x0.25	Pole	31.0%	Pass
122 - 117	Pole	TP27.101x26.251x0.25	Pole	38.8%	Pass
117 - 112	Pole	TP27.951x27.101x0.25	Pole	49.1%	Pass
112 - 108.75	Pole	TP29.141x27.951x0.25	Pole	55.6%	Pass
108.75 - 103.75	Pole	TP28.854x28.003x0.3125	Pole	53.4%	Pass
103.75 - 98.75	Pole	TP29.704x28.854x0.3125	Pole	61.9%	Pass
98.75 - 93.75	Pole	TP30.554x29.704x0.3125	Pole	69.6%	Pass
93.75 - 89.67	Pole	TP31.248x30.554x0.3125	Pole	75.3%	Pass
89.67 - 89.42	Pole	TP31.291x31.248x0.3125	Pole	75.6%	Pass
89.42 - 88.08	Pole	TP31.518x31.291x0.3125	Pole	77.5%	Pass
88.08 - 87.83	Pole + Reinf.	TP31.56x31.518x0.5125	Reinf. 5 Tension Rupture	65.8%	Pass
87.83 - 85.83	Pole + Reinf.	TP31.9x31.56x0.5125	Reinf. 5 Tension Rupture	68.2%	Pass
85.83 - 85.58	Pole + Reinf.	TP31.943x31.9x0.5125	Reinf. 3 Tension Rupture	68.5%	Pass
85.58 - 84.5	Pole + Reinf.	TP32.127x31.943x0.5125	Reinf. 5 Tension Rupture	69.8%	Pass
84.5 - 84.25	Pole + Reinf.	TP32.17x32.127x0.475	Reinf. 3 Tension Rupture	72.1%	Pass
84.25 - 79.25	Pole + Reinf.	TP33.02x32.17x0.4625	Reinf. 3 Tension Rupture	77.7%	Pass
79.25 - 78	Pole + Reinf.	TP33.955x33.02x0.4625	Reinf. 3 Tension Rupture	79.1%	Pass
78 - 72.75	Pole + Reinf.	TP33.5x32.607x0.5625	Reinf. 2 Tension Rupture	75.6%	Pass
72.75 - 67.75	Pole + Reinf.	TP34.35x33.5x0.5625	Reinf. 2 Tension Rupture	79.8%	Pass
67.75 - 63.08	Pole + Reinf.	TP35.144x34.35x0.55	Reinf. 2 Tension Rupture	83.4%	Pass
63.08 - 62.83	Pole + Reinf.	TP35.187x35.144x0.7125	Reinf. 10 Tension Rupture	68.4%	Pass
62.83 - 57.83	Pole + Reinf.	TP36.037x35.187x0.7	Reinf. 10 Tension Rupture	71.6%	Pass
57.83 - 52.83	Pole + Reinf.	TP36.887x36.037x0.6875	Reinf. 10 Tension Rupture	74.7%	Pass
52.83 - 47.83	Pole + Reinf.	TP37.737x36.887x0.6875	Reinf. 10 Tension Rupture	77.5%	Pass
47.83 - 47.5	Pole + Reinf.	TP38.601x37.737x0.675	Reinf. 10 Tension Rupture	77.7%	Pass
47.5 - 42.5	Pole + Reinf.	TP37.894x37.043x0.75	Reinf. 10 Tension Rupture	76.2%	Pass
42.5 - 37.5	Pole + Reinf.	TP38.744x37.894x0.7375	Reinf. 10 Tension Rupture	78.5%	Pass
37.5 - 32.75	Pole + Reinf.	TP39.551x38.744x0.7375	Reinf. 10 Tension Rupture	80.6%	Pass
32.75 - 32.5	Pole + Reinf.	TP39.594x39.551x0.7875	Reinf. 3 Tension Rupture	74.3%	Pass
32.5 - 27.5	Pole + Reinf.	TP40.444x39.594x0.775	Reinf. 3 Tension Rupture	76.1%	Pass
27.5 - 22.5	Pole + Reinf.	TP41.294x40.444x0.7625	Reinf. 8 Tension Rupture	77.9%	Pass
22.5 - 17.5	Pole + Reinf.	TP42.144x41.294x0.7625	Reinf. 8 Tension Rupture	79.6%	Pass
17.5 - 12.5	Pole + Reinf.	TP42.995x42.144x0.75	Reinf. 8 Tension Rupture	81.2%	Pass
12.5 - 8.08	Pole + Reinf.	TP43.746x42.995x0.7375	Reinf. 8 Tension Rupture	82.5%	Pass
8.08 - 7.83	Pole + Reinf.	TP43.788x43.746x0.8	Reinf. 3 Tension Rupture	80.4%	Pass
7.83 - 6.42	Pole + Reinf.	TP44.029x43.788x0.7875	Reinf. 3 Tension Rupture	80.8%	Pass
6.42 - 6.17	Pole + Reinf.	TP44.071x44.029x0.775	Reinf. 3 Tension Rupture	81.1%	Pass
6.17 - 3.25	Pole + Reinf.	TP44.567x44.071x0.7625	Reinf. 3 Tension Rupture	81.9%	Pass
3.25 - 3	Pole + Reinf.	TP44.61x44.567x0.7875	Reinf. 1 Tension Rupture	77.2%	Pass
3 - 2	Pole + Reinf.	TP44.78x44.61x0.7875	Reinf. 1 Tension Rupture	77.4%	Pass
2 - 1.75	Pole + Reinf.	TP44.822x44.78x0.775	Reinf. 11 Tension Yield	73.8%	Pass
1.75 - 0	Pole + Reinf.	TP45.12x44.822x0.775	Reinf. 11 Tension Yield	74.2%	Pass
				Summary	
			Pole	77.5%	Pass
			Reinforcement	83.4%	Pass
			Overall	83.4%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*											
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
147 - 142	1157	n/a	1157	17.93	n/a	17.93	4.7%											
142 - 137	1292	n/a	1292	18.61	n/a	18.61	8.6%											
137 - 132	1438	n/a	1438	19.28	n/a	19.28	16.0%											
132 - 127	1594	n/a	1594	19.96	n/a	19.96	22.6%											
127 - 122	1761	n/a	1761	20.63	n/a	20.63	31.0%											
122 - 117	1940	n/a	1940	21.31	n/a	21.31	38.8%											
117 - 112	2130	n/a	2130	21.98	n/a	21.98	49.1%											
112 - 108.75	2260	n/a	2260	22.42	n/a	22.42	55.6%											
108.75 - 103.75	2912	n/a	2912	28.31	n/a	28.31	53.4%											
103.75 - 98.75	3181	n/a	3181	29.15	n/a	29.15	61.9%											
98.75 - 93.75	3465	n/a	3465	29.99	n/a	29.99	69.6%											
93.75 - 89.67	3709	n/a	3709	30.68	n/a	30.68	75.3%											
89.67 - 89.42	3724	n/a	3724	30.73	n/a	30.73	75.6%											
89.42 - 88.08	3807	n/a	3807	30.95	n/a	30.95	77.5%											
88.08 - 87.83	3822	2338	6160	30.99	16.95	47.94	47.5%			65.8%		65.8%						
87.83 - 85.83	3948	2386	6334	31.33	16.95	48.28	49.4%			68.2%		68.2%						
85.83 - 85.58	3964	2392	6356	31.37	16.95	48.32	49.6%			68.5%		68.5%						
85.58 - 84.5	4034	2418	6452	31.55	16.95	48.50	50.6%			69.8%		69.8%						
84.5 - 84.25	4062	1973	6035	31.60	16.95	48.55	57.1%			72.1%	69.0%							
84.25 - 79.25	4396	2074	6469	32.44	16.95	49.39	62.0%			77.7%	74.5%							
79.25 - 78	4482	2099	6581	32.65	16.95	49.60	63.2%			79.1%	75.8%							
78 - 72.75	5464	2618	8082	39.43	16.95	56.38	54.5%		75.6%	75.6%								
72.75 - 67.75	5895	2746	8641	40.44	16.95	57.39	57.6%		79.8%	79.8%								
67.75 - 63.08	6318	2868	9187	41.38	16.95	58.33	60.2%		83.4%	83.4%								
63.08 - 62.83	6350	5315	11665	41.43	34.95	76.38	49.4%		64.3%	67.3%							68.4%	
62.83 - 57.83	6826	5564	12390	42.45	34.95	77.40	51.7%		67.3%	70.5%							71.6%	
57.83 - 52.83	7326	5818	13145	43.46	34.95	78.41	53.9%		70.1%	73.4%							74.7%	
52.83 - 47.83	7850	6079	13928	44.47	34.95	79.42	56.1%		72.8%	76.2%							77.5%	
47.83 - 47.5	7885	6096	13981	44.54	34.95	79.49	56.3%		73.0%	76.3%							77.7%	
47.5 - 42.5	9225	6129	15354	52.01	34.95	86.96	54.8%		71.5%	74.5%							76.2%	
42.5 - 37.5	9868	6396	16263	53.19	34.95	88.14	56.5%		73.7%	76.7%							78.5%	
37.5 - 32.75	10505	6655	17159	54.31	34.95	89.26	58.0%		75.6%	78.7%							80.6%	
32.75 - 32.5	10545	7805	18350	54.37	41.33	95.70	54.7%		70.6%	74.3%					74.2%	71.8%		
32.5 - 27.5	11246	8130	19376	55.55	41.33	96.88	56.1%		72.4%	76.1%					76.1%	73.7%		
27.5 - 22.5	11978	8461	20440	56.73	41.33	98.06	57.5%		74.1%	77.9%					77.9%	75.5%		
22.5 - 17.5	12741	8799	21541	57.91	41.33	99.24	58.7%		75.7%	79.5%					79.6%	77.2%		
17.5 - 12.5	13536	9144	22680	59.09	41.33	100.42	59.9%		77.2%	81.0%					81.2%	78.7%		
12.5 - 8.08	14265	9455	23719	60.14	41.33	101.46	60.9%		78.4%	82.3%					82.5%	80.0%		
8.08 - 7.83	14441	11059	25500	60.20	52.63	112.82	58.7%	63.2%	60.0%	80.4%					74.1%	74.4%		
7.83 - 6.42	14682	11177	25859	60.53	52.63	113.15	59.1%	63.6%	60.4%	80.8%					74.5%	74.8%		
6.42 - 6.17	14649	10631	25280	60.59	46.98	107.56	60.2%	71.6%		81.1%					77.7%	77.8%		
6.17 - 3.25	15153	10864	26017	61.28	46.98	108.25	60.9%	72.3%		81.9%					78.5%	78.6%		
3.25 - 3	15118	11589	26706	61.34	44.16	105.50	57.5%	77.2%		73.1%			68.3%	73.0%				
3 - 2	15293	11671	26964	61.57	44.16	105.74	57.7%	77.4%		73.4%			68.6%	73.2%				
2 - 1.75	15477	11213	26691	61.63	45.56	107.19	62.3%						64.3%	73.4%				73.8%
1.75 - 0	15790	11350	27140	62.05	45.56	107.61	62.8%						64.7%	73.8%				74.2%

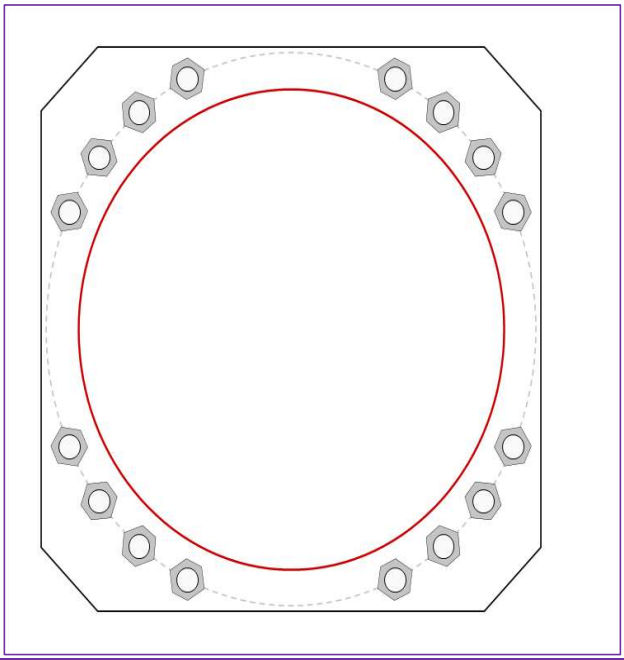
Note: Section capacity checked using 5 degree increments.
Rating per TIA-222-H Section 15.5.

Monopole Base Plate Connection

Site Info	
BU #	876316
Site Name	Secondino Property
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	1.75

Applied Loads	
Moment (kip-ft)	4043.00
Axial Force (kips)	64.00
Shear Force (kips)	37.00



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 52" BC

Anchor Spacing: 6 in

Base Plate Data

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

Stiffener Data

N/A

Pole Data

45.12" x 0.4375" 18-sided pole (A572-60; Fy=60 ksi, Fu=75 ksi)

Analysis Results

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

Pu_t = 229.07	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.31	ϕVn = 149.1	**94.0%**
Mu = n/a	ϕMn = n/a	Pass

Base Plate Summary

Max Stress (ksi):	35.5	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**78.9%**	Pass

Drilled Pier Foundation

BU # :	876316
Site Name:	Secondino Property
Order Number:	
TIA-222 Revison:	H
Tower Type:	Monopole

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☑
Override Critical Depth:	☐

Go to Soil Calculations

Applied Loads	Comp.	Uplift
Moment (kip-ft)	4043	
Axial Force (kips)	64	
Shear Force (kips)	37	

Material Properties			Rebar 2, Fy Override (ksi)	Rebar 3, Fy Override (ksi)
Concrete Strength, f'c:	3	ksi		
Rebar Strength, Fy:	60	ksi		
Tie Yield Strength, Fyt:	40	ksi		

Pier Design Data		
Depth	22.5	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 22.5' below grade		
Pier Diameter	7	ft
Rebar Quantity	32	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing	18	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	5.78	-
Soil Safety Factor	2.24	-
Max Moment (kip-ft)	4307.29	-
Rating*	*56.6%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	202.37	-
End Bearing (kips)	1723.16	-
Weight of Concrete (kips)	111.77	-
Total Capacity (kips)	1925.53	-
Axial (kips)	175.77	-
Rating*	*8.7%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	5.59	-
Critical Moment (kip-ft)	4306.74	-
Critical Moment Capacity	7549.10	-
Rating*	*54.3%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	18.89	-
Critical Shear (kip)	339.85	-
Critical Shear Capacity	767.74	-
Rating*	*42.2%*	-

Shear-Friction Methodology is Applied

Structural Foundation Rating*	**54.3%**
Soil Interaction Rating*	**56.6%**

*Rating per TIA-222-H Section 15.5

Soil Profile

Groundwater Depth	6	# of Layers	9

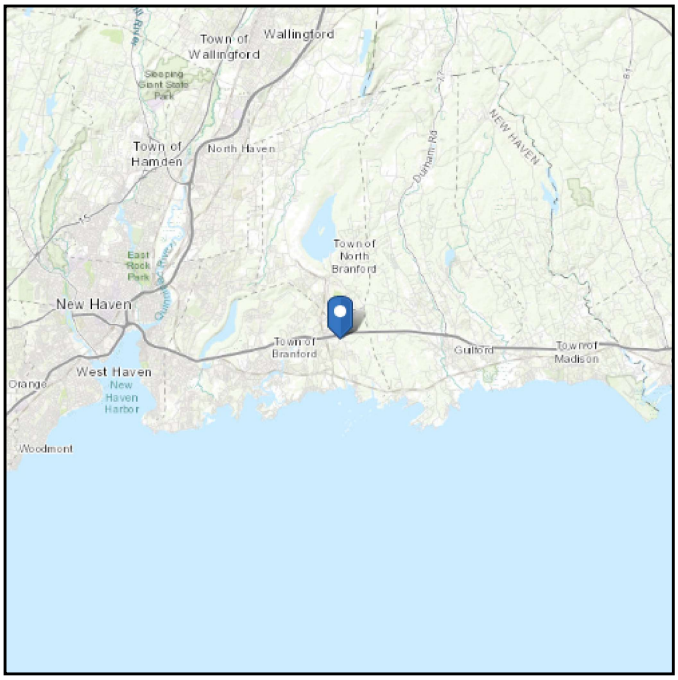
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Net Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	116	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	3.5	0.5	115	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	3.5	5	1.5	115	150	0	38	0.000	0.000	0.18	0.18			Cohesionless
4	5	6	1	116	150	0	41	0.000	0.000	0.28	0.28			Cohesionless
5	6	7	1	54	87.6	0	41	0.000	0.000	0.28	0.28			Cohesionless
6	7	10	3	55	87.6	0	45	0.000	0.000	0.38	0.38			Cohesionless
7	10	15	5	55	87.6	0	45	0.00	0.00	0.48	0.48			Cohesionless
8	15	20	5	55	87.6	3.25	0	1.78	1.78	1.20	1.20			Cohesive
9	20	22.5	2.5	55	87.6	0	45	0.00	0.00	0.76	0.76	58.1		Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 115.09 ft (NAVD 88)
Latitude: 41.293072
Longitude: -72.762889



Wind

Results:

Wind Speed:	122 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	93 Vmph
100-year MRI	99 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:	Thu Sep 23 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.

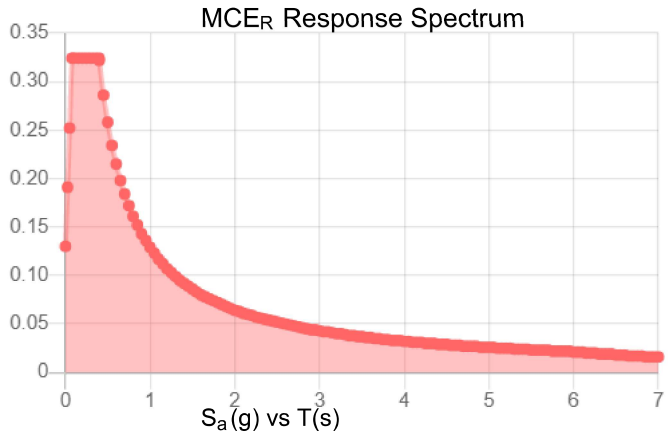
Seismic

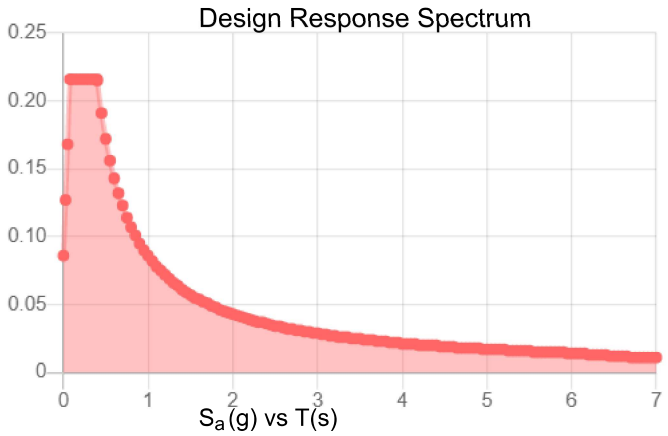
Site Soil Class: D - Stiff Soil

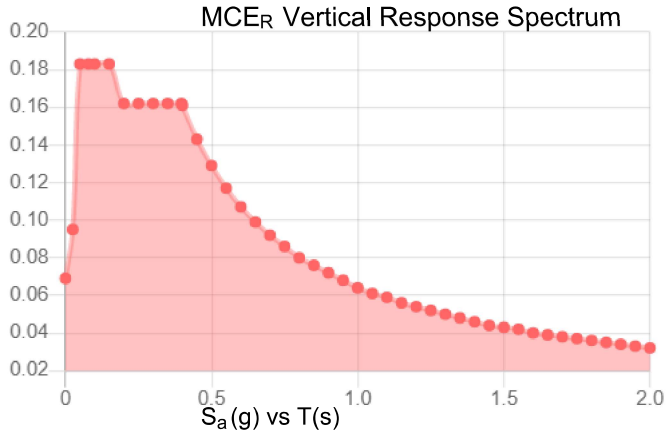
Results:

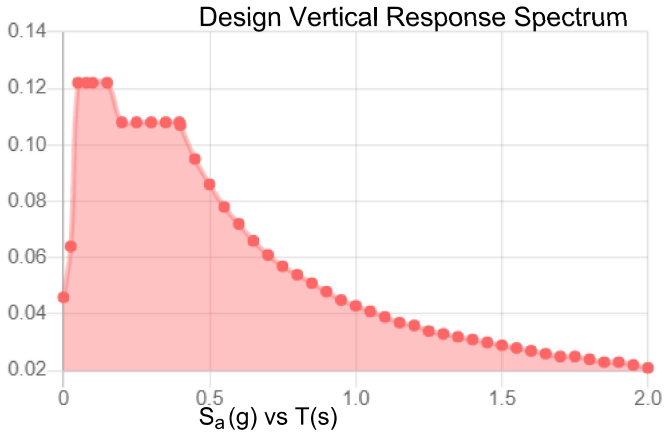
S_S :	0.203	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.113
F_v :	2.4	PGA_M :	0.178
S_{MS} :	0.324	F_{PGA} :	1.573
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.216	C_v :	0.705

Seismic Design Category B









Data Accessed: Thu Sep 23 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:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Sep 23 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.

Exhibit E

Mount Analysis

Date: **September 15, 2021**

Michael McWilliams
Crown Castle
8000 Avalon Blvd, Suite 700
Alpharetta, GA 30009
(770) 375-4936

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

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	**Dish Network Dish 5G**	
	Carrier Site Number:	BOHVN00164A
	Carrier Site Name:	CT-CCI-T-876316
Crown Castle Designation:	**Crown Castle BU Number:**	876316
	Crown Castle Site Name:	SECONDINO PROPERTY
	Crown Castle JDE Job Number:	645173
	Crown Castle Order Number:	553381 Rev. 1
Engineering Firm Designation:	**Trylon Report Designation:**	191859
Site Data:	**21 Acorn Road, Branford, New Haven County, CT, 06405** **Latitude 41°17'35.06" Longitude -72°45'46.40"**	
Structure Information:	**Tower Height & Type:**	**147.0 ft Monopole**
	Mount Elevation:	**126.0 ft**
	Mount Type:	**8.0 ft Platform**

Dear Michael McWilliams,

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: Ionela Neamtu

Respectfully Submitted by:
Cliff Abernathy, P.E.

09/15/2021

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1) INTRODUCTION

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

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 CTSBS
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	130 mph
Exposure Category:	C
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	1.50 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.180
Seismic S_1:	0.061
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
126.0	126.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Platform **[Commscope, MC−PK8−C]**
		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	553381, Rev. 1	CCI Sites
Mount Manufacturer Drawings	Commscope	MC−PK8−C	Trylon

3.1) Analysis Method

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

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

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

3.2) Assumptions

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

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

This analysis may be affected if any assumptions are not valid or have been made in error. 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)	MP1	126.0	38.6	Pass
	Horizontal(s)	H3		12.4	Pass
	Standoff(s)	M2		48.4	Pass
	Plan Bracing(s)	M1		37.2	Pass
	Handrail(s)	M21		14.3	Pass
	Plate(s)	M10		28.6	Pass
	Mount Connection(s)	--		20.0	Pass

Structure Rating (max from all components) =	48.4%

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

4.1) Recommendations

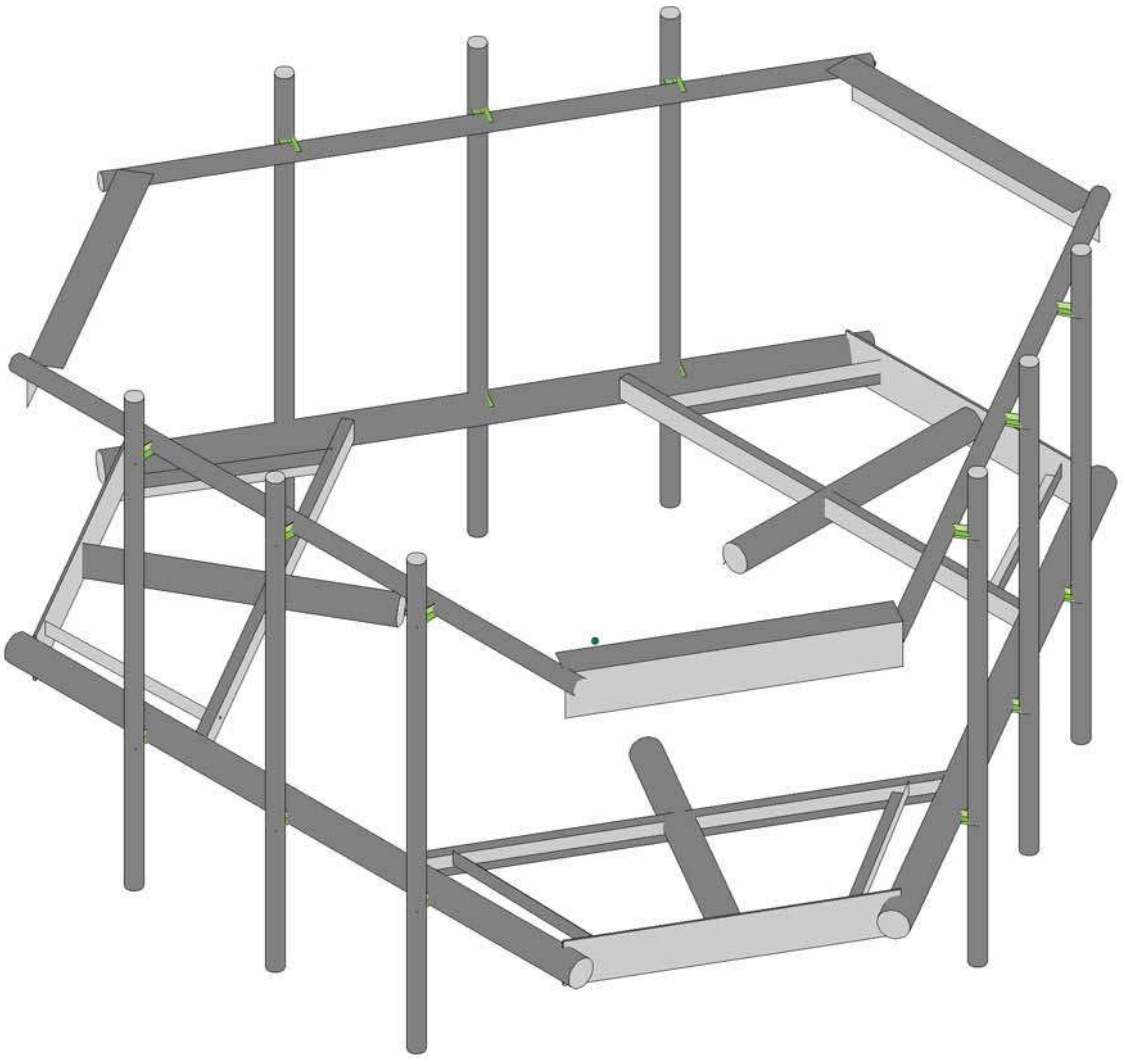
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope, MC-PK8-C.

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

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

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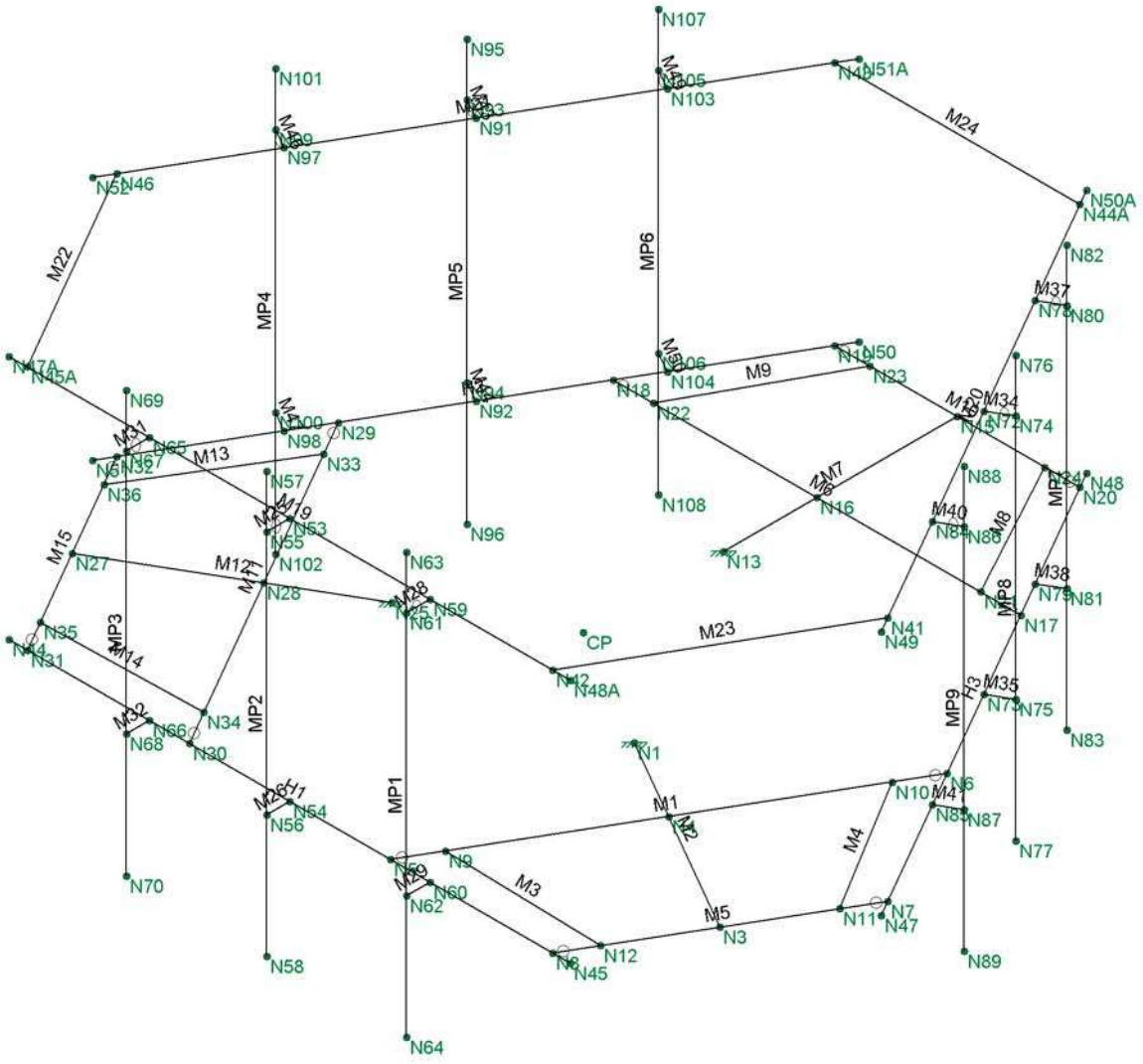

Envelope Only Solution

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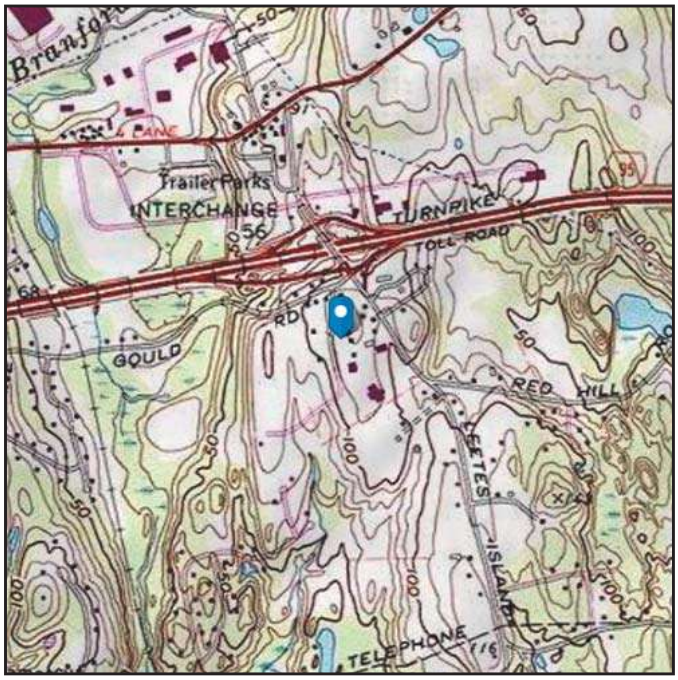
APPENDIX B

SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	115.09 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.293072
Soil Class:	D - Stiff Soil	**Longitude:**	-72.762889



Ice

Results:

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

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

Date Accessed: Wed Sep 15 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 2.1

PROJECT DATA	
Job Code:	191859
Carrier Site ID:	876316
Carrier Site Name:	SECONDINO PROPERTY

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

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	126.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	147.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	115.09	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):	1.33	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	54.38	psf
Ground Elevation Factor (K_e):	1.00	--

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}):	54.38	psf
Mount Ice Thickness (t_{iz}):	1.72	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	97.89	psf
Round Member Pressure:	58.74	psf
Ice Wind Pressure:	7.48	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.180	g
1 Second Accel (S_1):	0.061	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):	0.10	--
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	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
MX08FRO665-21	3	126	No Ice	8.01	3.21	82.50
--	--	--	w/ Ice	9.62	4.62	281.32
TA08025-B604	3	126	No Ice	1.96	0.98	63.90
--	--	--	w/ Ice	2.38	1.31	69.08
TA08025-B605	3	126	No Ice	1.96	1.13	75.00
--	--	--	w/ Ice	2.38	1.47	73.59
RDIDC-9181-PF-48	1	126	No Ice	2.01	1.17	21.85
--	--	--	w/ Ice	2.44	1.52	72.53
			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 LOADING [CONT.]

Appurtenance Name	Qty.	Elevation [ft]	--	EPA_N (ft2)	EPA_T (ft2)	Weight (lbs)
			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	126	1.00	1.33	0.95	1.72	54.38	8.05
TA08025-B604	3	126	1.00	1.33	0.95	1.72	54.38	8.05
TA08025-B605	3	126	1.00	1.33	0.95	1.72	54.38	8.05
RDIDC-9181-PF-48	1	126	1.00	1.33	0.95	1.72	54.38	8.05

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	392.06	215.85	333.32	157.12	333.32	215.85
--	--	w/ Ice	69.66	42.52	60.62	33.47	60.62	42.52
TA08025-B604	3	No Ice	96.11	60.04	84.08	48.02	84.08	60.04
--	--	w/ Ice	17.26	11.41	15.31	9.47	15.31	11.41
TA08025-B605	3	No Ice	96.11	65.49	85.90	55.28	85.90	65.49
--	--	w/ Ice	17.26	12.30	15.60	10.64	15.60	12.30
RDIDC-9181-PF-48	1	No Ice	98.47	67.50	88.15	57.18	88.15	67.50
--	--	w/ Ice	17.65	12.68	15.99	11.02	15.99	12.68
		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						

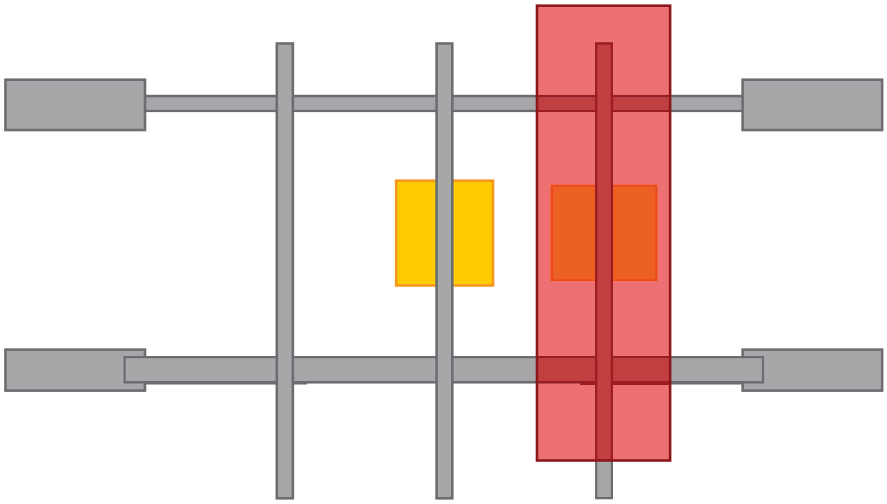
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
		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	126	82.5	9.50
TA08025-B604	3	126	63.9	7.36
TA08025-B605	3	126	75	8.64
RDIDC-9181-PF-48	1	126	21.85	2.52

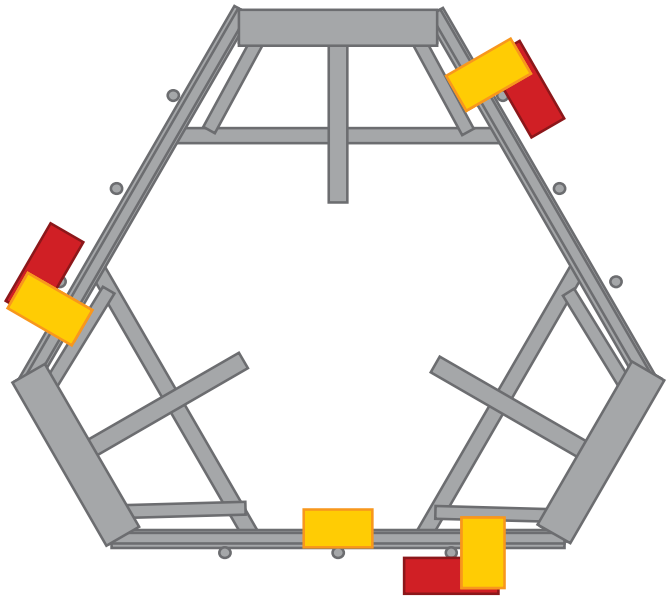
ELEVATION VIEW



MP3 MP2 MP1

*Elevation View Shows Alpha Sector Only

PLAN VIEW



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

Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
MX08FRO665-21	3	126	MP1/MP4/MP7	0/120/240
TA08025-B604	3	126	MP1/MP4/MP7	90/210/330
TA08025-B605	3	126	MP1/MP4/MP7	90/210/330
RDIDC-9181-PF-48	1	126	MP2	0

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	Z
Global Member Orientation Plane	XY
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	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - 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 (/1E5 F)	Density[k/ft^3]	Yield[psi]	Ry	Fu[psi]	Rt
1	A992	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65	.49	50000	1.4	65000	1.3

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[psi]	Fu[psi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33000	45000
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50000	65000

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	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	L6.6"X4.46"X0.25"	Beam	Single Angle	A36 Gr.36	Typical	2.702	4.759	12.473	.055
7	Horizontals	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
8	Mount Pipes	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X057	Beam	None	A653 SS ...	Typical	.581	.057	4.41	.00063

Joint Boundary Conditions

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

Basic Load Cases

	BLC Description	Category	X Gravi...	Y Gravi...	Z Gravity	Joint	Point	Distrib...	Area(Memb...	Surface...
1	Self Weight	DL			-1		13		3	
2	Structure Wind X	WLX						51		
3	Structure Wind Y	WLY						51		
4	Wind Load 0 AZI	WLX					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	WLY					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	
13	Ice Structure Wind X	OL2						51		
14	Ice Structure Wind Y	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 X	ELX	-.115				13			
24	Seismic Load Y	ELY		-.115			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			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravi...	Y Gravi...	Z Gravity	Joint	Point	Distrib...	Area(Memb...	Surface...
34	Maintenance Load 1 (Lm)	None					1			
35	Maintenance Load 2 (Lm)	None					1			
36	Maintenance Load 3 (Lm)	None					1			
37	Maintenance Load 4 (Lm)	None					1			
38	Maintenance Load 5 (Lm)	None					1			
39	Maintenance Load 6 (Lm)	None					1			
40	Maintenance Load 7 (Lm)	None					1			
41	Maintenance Load 8 (Lm)	None					1			
42	Maintenance Load 9 (Lm)	None					1			
43	BLC 1 Transient Area Loads	None						9		
44	BLC 12 Transient Area Loads	None						9		

Load Combinations

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL	Yes	Y		DL	1.4																		
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1												
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1												
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1												
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1												
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1												
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1												
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.7...	3	.707	10	1												
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.8...	3	.5	11	1												
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1												
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.8...	3	-.5	5	-1												
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.7...	3	-.7...	6	-1												
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.8...	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	-.8...	9	-1												
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.7...	10	-1												
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1												
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1												
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1												
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1												
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1												
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1												
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1												
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.7...	3	.707	10	1												
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.8...	3	.5	11	1												
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1												
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.8...	3	-.5	5	-1												
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.7...	3	-.7...	6	-1												
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.8...	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	-.8...	9	-1												
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.7...	10	-1												
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1												
34	1.2DL + 1DLi + 1WLi 0...	Yes	Y		DL	1.2	O...	1	13	1	14		15	1										
35	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1										
36	1.2DL + 1DLi + 1WLi 4...	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1										

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
37	1.2DL + 1DLi + 1WLi 6...	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1										
38	1.2DL + 1DLi + 1WLi 9...	Yes	Y		DL	1.2	O...	1	13		14	1	19	1										
39	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1										
40	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-.7...	14	.707	21	1										
41	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-.8...	14	.5	22	1										
42	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1										
43	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13	-.8...	14	-.5	16	-1										
44	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13	-.7...	14	-.7...	17	-1										
45	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.8...	18	-1										
46	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1										
47	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	1	13	.5	14	-.8...	20	-1										
48	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	1	13	.707	14	-.7...	21	-1										
49	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	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	-.7...	24	.707														
57	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	-.8...	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	-.8...	24	-.5														
60	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	-.7...	24	-.7...														
61	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	-.5	24	-.8...														
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	-.8...														
64	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.2...	23	.707	24	-.7...														
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														
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	-.7...	24	.707														
73	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.862	23	-.8...	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	-.8...	24	-.5														
76	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.862	23	-.7...	24	-.7...														
77	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.862	23	-.5	24	-.8...														
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	-.8...														
80	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.862	23	.707	24	-.7...														
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																

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
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 + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	.053	3		4	.053										
92	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	.046	3	.027	5	.053										
93	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	.038	3	.038	6	.053										
94	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	.027	3	.046	7	.053										
95	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2		3	.053	8	.053										
96	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	.046	9	.053										
97	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	.038	10	.053										
98	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	.027	11	.053										
99	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3		4	-.053										
100	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	-.0...	5	-.053										
101	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	-.0...	6	-.053										
102	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	-.0...	7	-.053										
103	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2		3	-.0...	8	-.053										
104	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	.027	3	-.0...	9	-.053										
105	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	.038	3	-.0...	10	-.053										
106	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	34	1.5	2	.046	3	-.0...	11	-.053										
107	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	.053	3		4	.053										
108	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	.046	3	.027	5	.053										
109	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	.038	3	.038	6	.053										
110	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	.027	3	.046	7	.053										
111	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2		3	.053	8	.053										
112	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	.046	9	.053										
113	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	.038	10	.053										
114	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	.027	11	.053										
115	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3		4	-.053										
116	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	-.0...	5	-.053										
117	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	-.0...	6	-.053										
118	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	-.0...	7	-.053										
119	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2		3	-.0...	8	-.053										
120	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	.027	3	-.0...	9	-.053										
121	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	.038	3	-.0...	10	-.053										
122	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	35	1.5	2	.046	3	-.0...	11	-.053										
123	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	.053	3		4	.053										
124	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	.046	3	.027	5	.053										
125	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	.038	3	.038	6	.053										
126	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	.027	3	.046	7	.053										
127	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2		3	.053	8	.053										
128	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	.046	9	.053										
129	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	.038	10	.053										
130	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	.027	11	.053										
131	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3		4	-.053										
132	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	-.0...	5	-.053										
133	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	-.0...	6	-.053										
134	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	-.0...	7	-.053										
135	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2		3	-.0...	8	-.053										
136	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	.027	3	-.0...	9	-.053										
137	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	.038	3	-.0...	10	-.053										
138	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	36	1.5	2	.046	3	-.0...	11	-.053										
139	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.053	3		4	.053										
140	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.046	3	.027	5	.053										

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
141	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.038	3	.038	6	.053										
142	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.027	3	.046	7	.053										
143	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2		3	.053	8	.053										
144	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	.046	9	.053										
145	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	.038	10	.053										
146	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	.027	11	.053										
147	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3		4	-.053										
148	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	-.0...	5	-.053										
149	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	-.0...	6	-.053										
150	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	-.0...	7	-.053										
151	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2		3	-.0...	8	-.053										
152	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.027	3	-.0...	9	-.053										
153	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.038	3	-.0...	10	-.053										
154	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.046	3	-.0...	11	-.053										
155	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.053	3		4	.053										
156	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.046	3	.027	5	.053										
157	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.038	3	.038	6	.053										
158	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.027	3	.046	7	.053										
159	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2		3	.053	8	.053										
160	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	.046	9	.053										
161	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	.038	10	.053										
162	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	.027	11	.053										
163	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3		4	-.053										
164	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	-.0...	5	-.053										
165	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	-.0...	6	-.053										
166	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	-.0...	7	-.053										
167	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2		3	-.0...	8	-.053										
168	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.027	3	-.0...	9	-.053										
169	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.038	3	-.0...	10	-.053										
170	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.046	3	-.0...	11	-.053										
171	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	.053	3		4	.053										
172	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	.046	3	.027	5	.053										
173	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	.038	3	.038	6	.053										
174	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	.027	3	.046	7	.053										
175	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2		3	.053	8	.053										
176	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	.046	9	.053										
177	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	.038	10	.053										
178	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	.027	11	.053										
179	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3		4	-.053										
180	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	-.0...	5	-.053										
181	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	-.0...	6	-.053										
182	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	-.0...	7	-.053										
183	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2		3	-.0...	8	-.053										
184	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	.027	3	-.0...	9	-.053										
185	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	.038	3	-.0...	10	-.053										
186	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	.046	3	-.0...	11	-.053										
187	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	.053	3		4	.053										
188	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	.046	3	.027	5	.053										
189	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	.038	3	.038	6	.053										
190	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	.027	3	.046	7	.053										
191	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2		3	.053	8	.053										
192	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	.046	9	.053										

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
193	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	.038	10	.053										
194	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	.027	11	.053										
195	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3		4	-.053										
196	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	-.0...	5	-.053										
197	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	-.0...	6	-.053										
198	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	-.0...	7	-.053										
199	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2		3	-.0...	8	-.053										
200	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	.027	3	-.0...	9	-.053										
201	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	.038	3	-.0...	10	-.053										
202	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	40	1.5	2	.046	3	-.0...	11	-.053										
203	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	.053	3		4	.053										
204	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	.046	3	.027	5	.053										
205	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	.038	3	.038	6	.053										
206	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	.027	3	.046	7	.053										
207	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2		3	.053	8	.053										
208	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	.046	9	.053										
209	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	.038	10	.053										
210	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	.027	11	.053										
211	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3		4	-.053										
212	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	-.0...	5	-.053										
213	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	-.0...	6	-.053										
214	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	-.0...	7	-.053										
215	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2		3	-.0...	8	-.053										
216	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	.027	3	-.0...	9	-.053										
217	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	.038	3	-.0...	10	-.053										
218	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	41	1.5	2	.046	3	-.0...	11	-.053										
219	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	.053	3		4	.053										
220	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	.046	3	.027	5	.053										
221	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	.038	3	.038	6	.053										
222	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	.027	3	.046	7	.053										
223	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2		3	.053	8	.053										
224	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	.046	9	.053										
225	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	.038	10	.053										
226	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	.027	11	.053										
227	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3		4	-.053										
228	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	-.0...	5	-.053										
229	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	-.0...	6	-.053										
230	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	-.0...	7	-.053										
231	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2		3	-.0...	8	-.053										
232	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	.027	3	-.0...	9	-.053										
233	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	.038	3	-.0...	10	-.053										
234	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	42	1.5	2	.046	3	-.0...	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	1794.6327	3	1182.8412	20	1930.2507	39	440.3349	31	464.8732	33	2118.9158	19
2		min	-1788.1426	27	-1188.1246	12	-82.2234	31	-3549.4271	39	-1976.0695	130	-2121.5966	11
3	N1	max	1841.6746	17	1077.835	8	1930.2838	45	3362.5594	45	488.1401	19	2118.3203	25
4		min	-1839.6716	25	-1069.8381	32	-82.2462	21	-425.8826	21	-2297.8997	43	-2122.328	17
5	N13	max	501.4446	18	1798.3005	22	1859.548	34	755.886	167	3889.5636	34	1754.9566	30

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
6		min	-510.465	10	-1800.7846	14	-121.3603	26	-621.2985	223	-598.727	26	-1758.3325	6
7	Totals:	max	3786.2878	18	3539.4516	6	5377.3014	41						
8		min	-3786.2881	10	-3539.4512	30	1367.2128	81						

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

	Member	Shape	Code Check	Loc...	L...	She...	Loc...	...	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn ...	Cb	Eqn
1	M2	PIPE 3.5	.508	40	45	.201	40		9	64491.4237	78750	7953.75	7953.75	2.1...	H1-1b
2	M12	PIPE 3.5	.508	40	39	.195	40		3	64491.4237	78750	7953.75	7953.75	2.1...	H1-1b
3	M7	PIPE 3.5	.490	40	34	.179	40		14	64491.4237	78750	7953.75	7953.75	2.1...	H1-1b
4	MP1	PIPE 2.0	.405	51	14	.047	51		15	20866.7334	32130	1871.625	1871.625	2.4...	H1-1b
5	MP4	PIPE 2.0	.397	51	10	.049	51		11	20866.7334	32130	1871.625	1871.625	1	H1-1b
6	M1	C3X5	.393	34....	45	.137	63....	y	40	32858.7668	47628	981.263	4104	1.3...	H1-1b
7	M11	C3X5	.387	34....	40	.139	63....	y	35	32858.7668	47628	981.263	4104	1.3...	H1-1b
8	MP7	PIPE 2.0	.385	51	3	.039	51		2	20866.7334	32130	1871.625	1871.625	1	H1-1b
9	MP2	PIPE 2.0	.380	51	6	.055	51		8	20866.7334	32130	1871.625	1871.625	1	H1-1b
10	MP3	PIPE 2.0	.376	51	5	.037	51		10	20866.7334	32130	1871.625	1871.625	1	H1-1b
11	M6	C3X5	.371	34....	34	.132	63....	y	46	32858.7668	47628	981.263	4104	1.3...	H1-1b
12	MP9	PIPE 2.0	.371	51	10	.032	51		3	20866.7334	32130	1871.625	1871.625	1.6...	H1-1b
13	MP8	PIPE 2.0	.354	51	10	.042	51		11	20866.7334	32130	1871.625	1871.625	1.9...	H1-1b
14	MP5	PIPE 2.0	.346	51	17	.051	51		3	20866.7334	32130	1871.625	1871.625	2.2...	H1-1b
15	MP6	PIPE 2.0	.340	51	16	.034	51		8	20866.7334	32130	1871.625	1871.625	2.2...	H1-1b
16	M10	6.5"x0.37" Plate	.301	21	2	.095	21	y	48	27548.2459	75757.5	583.9628	6344.1...	1.1...	H1-1b
17	M15	6.5"x0.37" Plate	.299	21	7	.097	21	y	37	27548.2459	75757.5	583.9628	6312.0...	1.1...	H1-1b
18	M5	6.5"x0.37" Plate	.288	21	12	.099	21	y	42	27548.2459	75757.5	583.9628	6573.407	1.2...	H1-1b
19	M13	L2x2x3	.217	0	14	.027	0	z	43	18084.2002	23392.8	557.7166	1182.4...	1	H2-1
20	M3	L2x2x3	.203	0	3	.028	0	z	49	18084.2002	23392.8	557.7166	1182.4...	1	H2-1
21	M8	L2x2x3	.197	0	10	.026	0	z	38	18084.2002	23392.8	557.7166	1182.4...	1	H2-1
22	M4	L2x2x3	.174	0	13	.029	0	y	41	18084.2002	23392.8	557.7166	1182.4...	1	H2-1
23	M9	L2x2x3	.155	0	2	.028	0	y	46	18084.2002	23392.8	557.7166	1182.4...	1	H2-1
24	M21	PIPE 2.0	.150	72....	5	.142	72....		13	14916.0955	32130	1871.625	1871.625	1.4...	H1-1b
25	M20	PIPE 2.0	.149	24....	16	.141	72....		8	14916.0955	32130	1871.625	1871.625	1.5...	H1-1b
26	M19	PIPE 2.0	.149	72....	10	.147	72....		2	14916.0955	32130	1871.625	1871.625	1.4...	H1-1b
27	M14	L2x2x3	.145	0	7	.030	0	y	36	18084.2002	23392.8	557.7166	1182.4...	1	H2-1
28	H3	PIPE 3.5	.130	31....	10	.108	24....		16	60666.1271	78750	7953.75	7953.75	1.1...	H1-1b
29	H1	PIPE 3.5	.128	31....	5	.114	24....		10	60666.1271	78750	7953.75	7953.75	1.0...	H1-1b
30	H2	PIPE 3.5	.124	31....	15	.102	24....		5	60666.1271	78750	7953.75	7953.75	1.1...	H1-1b
31	M22	L6.6"X4.46"X0.25"	.077	0	21	.041	42	z	4	51170.9499	87561	2464.81...	7125.3...	1	H2-1
32	M23	L6.6"X4.46"X0.25"	.069	0	26	.040	0	y	9	51170.9499	87561	2464.81...	7125.3...	1	H2-1
33	M24	L6.6"X4.46"X0.25"	.061	0	32	.037	0	y	14	51170.9499	87561	2464.81...	7125.3...	1	H2-1

Envelope AISI S100-12: LRFD Cold Formed Steel Code Checks

Member	Shape	Code...	Loc[in]	LC	Shear...	Loc[in]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mn...	phi*Mn...	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...																

APPENDIX D

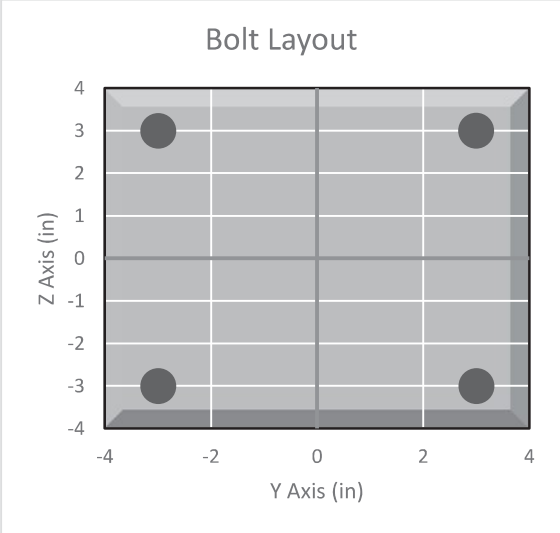
ADDITIONAL CALCUATIONS

BOLT TOOL 1.5.2

Project Data	
Job Code:	191859
Carrier Site ID:	876316
Carrier Site Name:	SECONDINO PROPERTY

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

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:	No	--
Double Shear:	No	--
Connection Pipe Size:	-	in



Connection Description
Standoff to Monopole

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	17257.3	lbs
Tension Force (T_u):	4272.2	lbs
Shear Force (V_u):	722.3	lbs
Tension Usage:	20.0%	--
Shear Usage:	4.0%	--
Interaction:	20.0%	Pass
Controlling Member:	M2	--
Controlling LC:	42	--

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

APPENDIX E

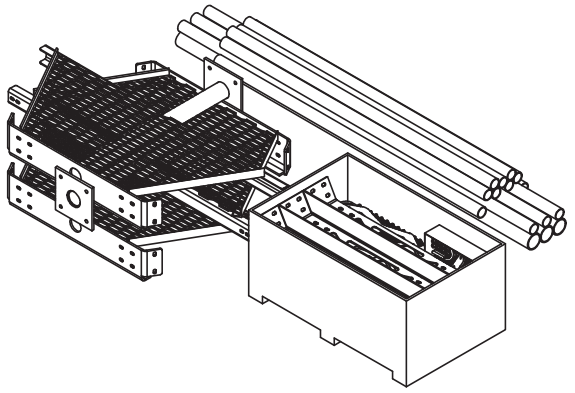
SUPPLEMENTAL DRAWINGS

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

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.

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	

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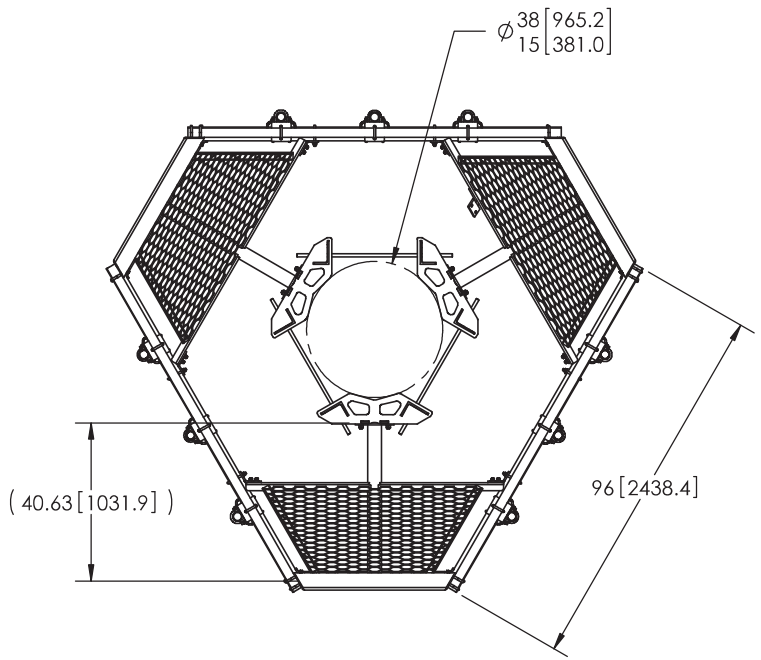
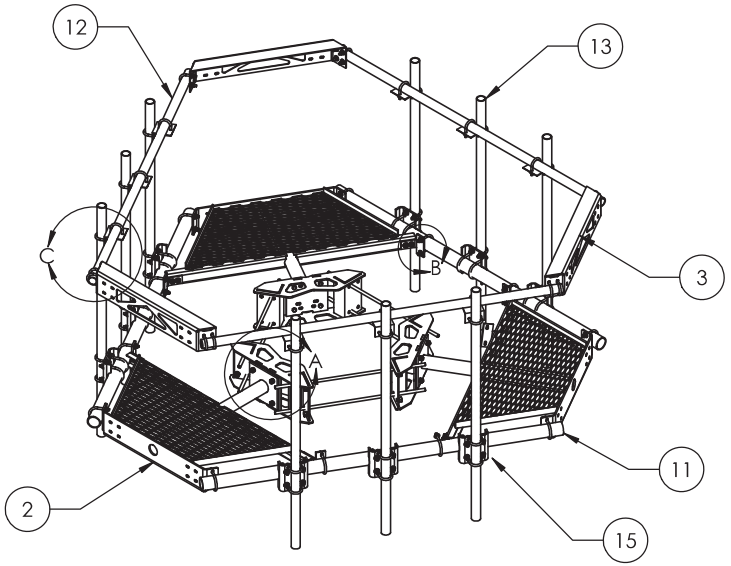
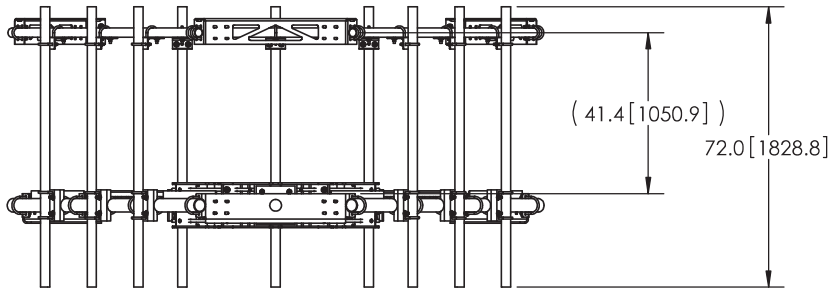
U.S.A.







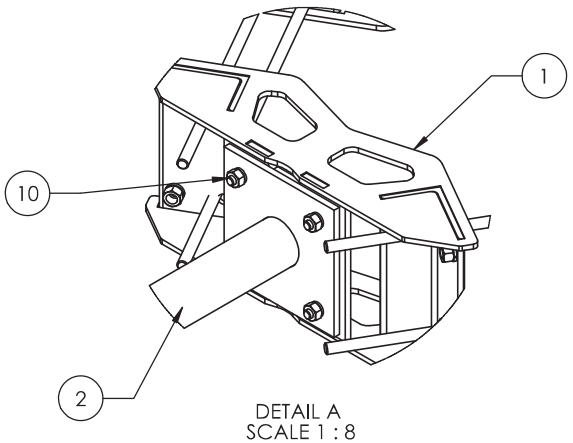
ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
C				
1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1	230.42 LBS
2	MTC300601	Low Profile Co-Location Platform Snub Nose	3	134.21 LBS
3	MT195801	Corner Weldment Snub Nose Handrail	3	27.10 LBS
4	XA2020.01	CROSS OVER ANGLE	9	2.65 LBS
5	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	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.

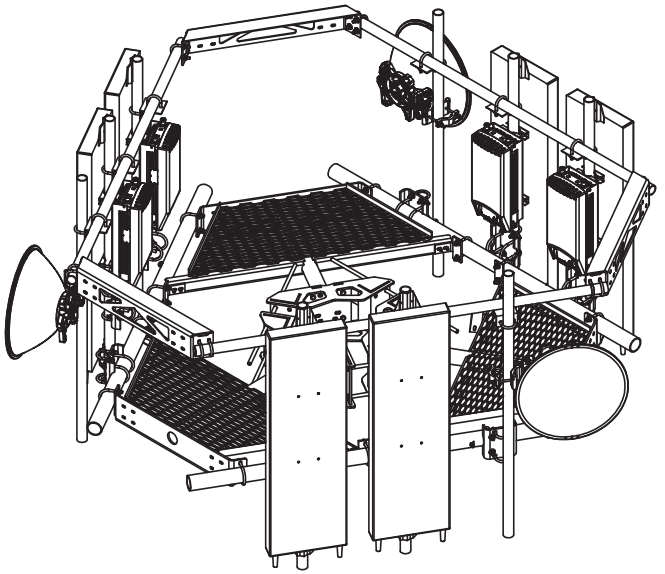
ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03
REMOVE BURRS AND BREAK EDGES .005

DO NOT SCALE THIS PRINT

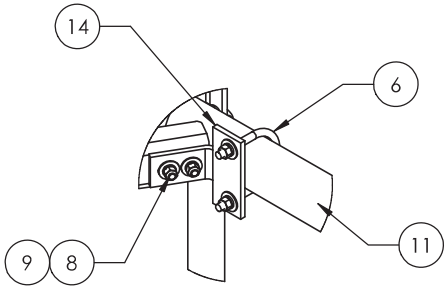
DRAWN BY: MSM	SHEET: 2 of 3	PART NUMBER: MC-PK8-C	
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: 25" OD Snub Nose MT-196	
DATE: 10/18/11	MATERIAL: A36, A53	DRAWING TYPE: ASSEMBLY DRAWING	
REVISION: C	FINISH: GALV A123	WEIGHT: 1361.27 LBS	ANDREW® WESTCHESTER, IL. 60154 U.S.A.



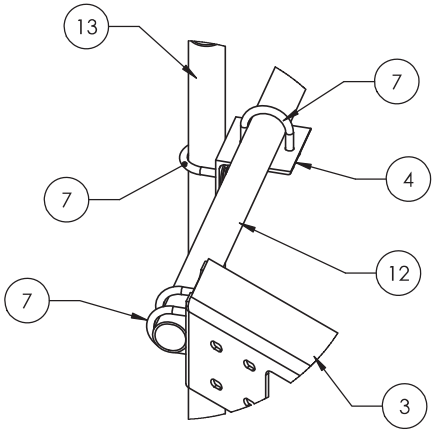
DETAIL A
SCALE 1 : 8



WITH ANTENNAS



DETAIL B
SCALE 1 : 8



DETAIL C
SCALE 1 : 8

NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

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	

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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: BOHVN00164A

876316
21 Acorn Road
Branford, Connecticut 06405

November 19, 2021

EBI Project Number: 6221007198

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**21.13%**

November 19, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00164A - 876316

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **21 Acorn Road** in **Branford, 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 21 Acorn Road in Branford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

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

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

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

6) The antennas used in this modeling are the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerline of the proposed antennas is 126 feet above ground level (AGL).

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

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	126 feet	Height (AGL):	126 feet	Height (AGL):	126 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna A1 MPE %:	**1.64%**	Antenna B1 MPE %:	**1.64%**	Antenna C1 MPE %:	**1.64%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.64%
AT&T	8.96%
T-Mobile	5.94%
Verizon	3.9%
Sprint	0.32%
Nextel	0.37%
Site Total MPE % :	21.13%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.64%
Dish Wireless Sector B Total:	1.64%
Dish Wireless Sector C Total:	1.64%
Site Total MPE % :	21.13%

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	126.0	2.23	600 MHz n71	400	0.56%
Dish Wireless 1900 MHz n70	4	542.70	126.0	5.42	1900 MHz n70	1000	0.54%
Dish Wireless 2190 MHz n66	4	542.70	126.0	5.42	2190 MHz n66	1000	0.54%
						Total:	**1.64%**

• 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:	1.64%
Sector B:	1.64%
Sector C:	1.64%
Dish Wireless Maximum MPE % (Sector A):	1.64%
Site Total:	21.13%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **21.13%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Letter of Authorization

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

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

Crown Castle Letter of Authorization

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

Re: Tower Share Application
Crown Castle telecommunications site at:
21 ACORN ROAD, BRANFORD, CT 06405

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

Crown Site ID/Name: **876316/SECONDINO PROPERTY**
Customer Site ID: **BOHVN00164A/CT-CCI-T-876316**
Site Address: **21 Acorn Road, BRANFORD, CT 06405**

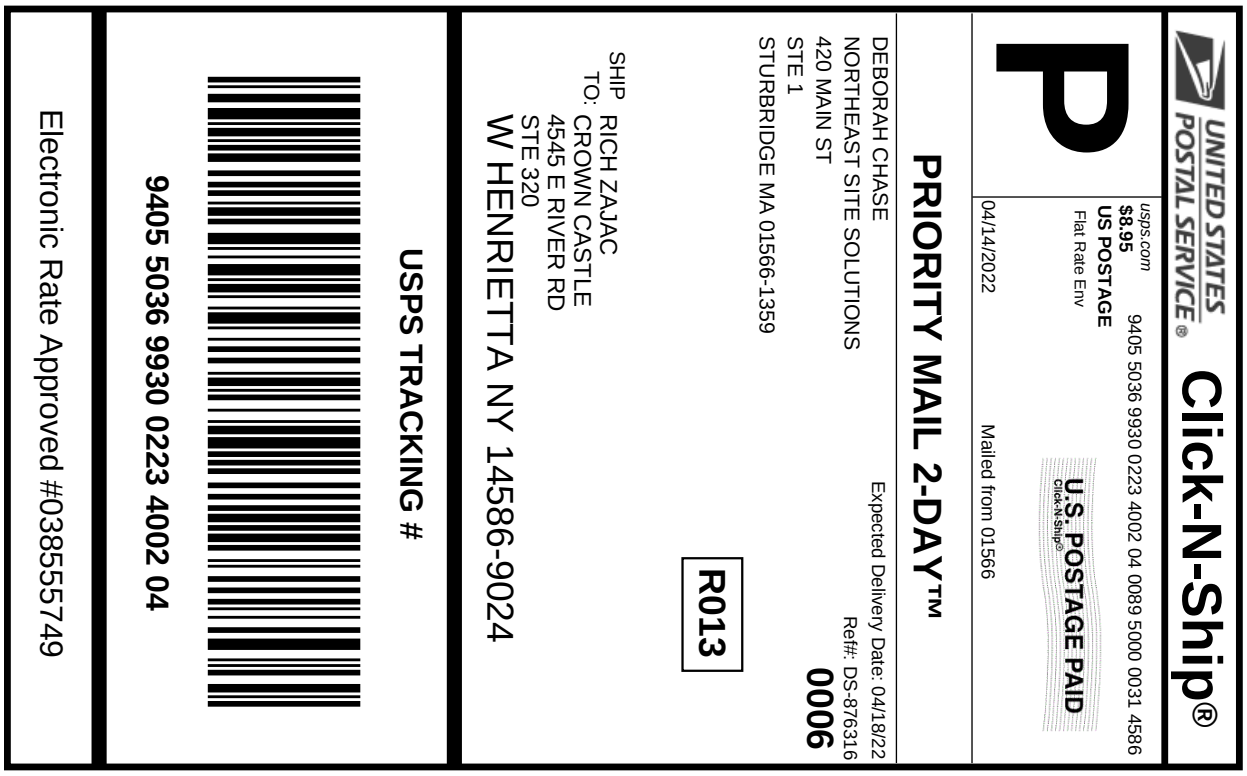
Crown Castle

By: _____ Date: 4/12/2022

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 0223 4002 04

Trans. #:	561351183
Print Date:	04/14/2022
Ship Date:	04/14/2022
Expected Delivery Date:	04/18/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

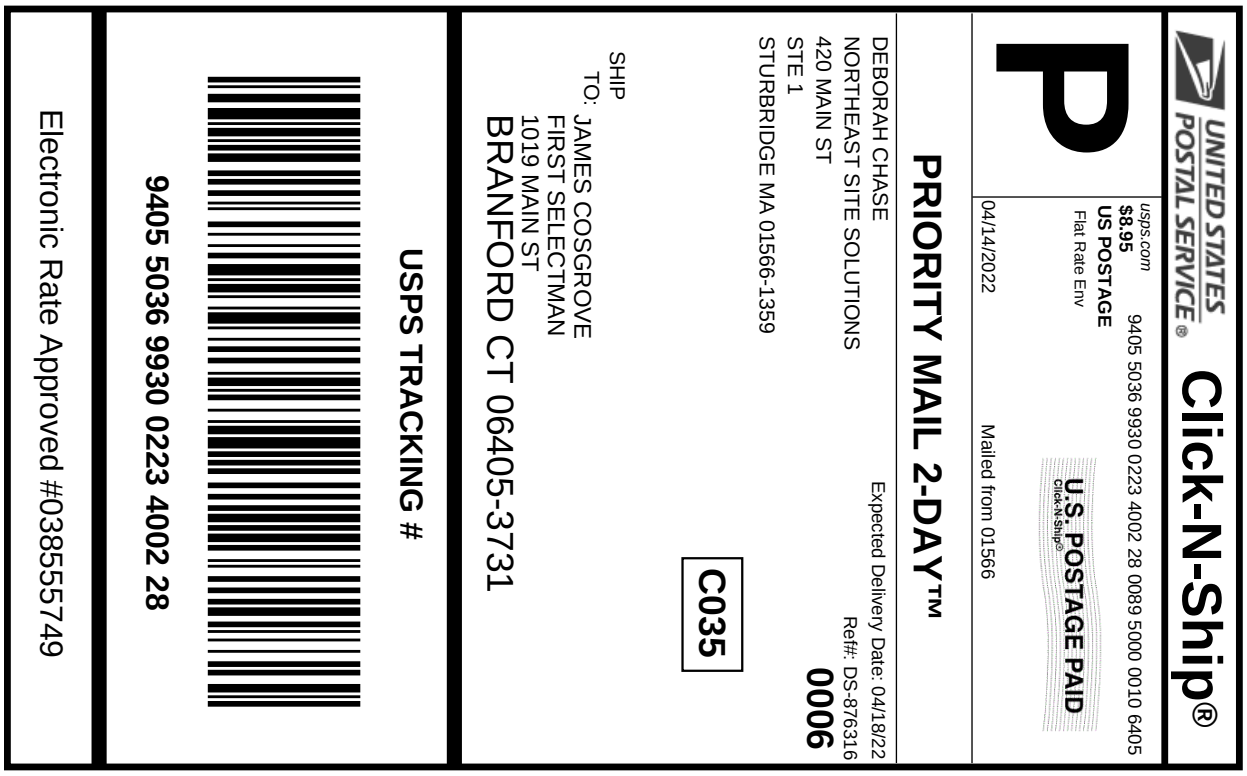
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-876316

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



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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0223 4002 28

Trans. #:	561351183
Print Date:	04/14/2022
Ship Date:	04/14/2022
Expected Delivery Date:	04/18/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: DS-876316

To: JAMES COSGROVE
FIRST SELECTMAN
1019 MAIN ST
BRANFORD CT 06405-3731

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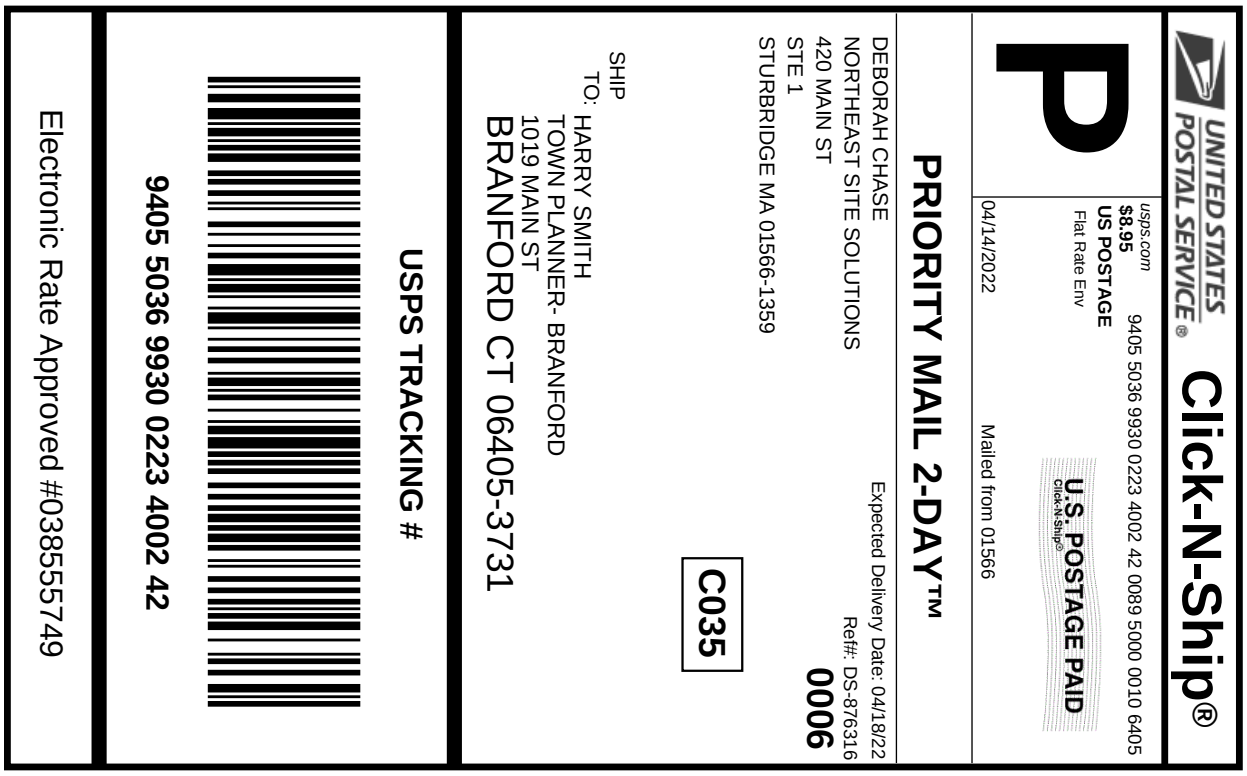

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0223 4002 42

Trans. #:	561351183
Print Date:	04/14/2022
Ship Date:	04/14/2022
Expected Delivery Date:	04/18/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: DS-876316

To: HARRY SMITH
TOWN PLANNER- BRANFORD
1019 MAIN ST
BRANFORD CT 06405-3731

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

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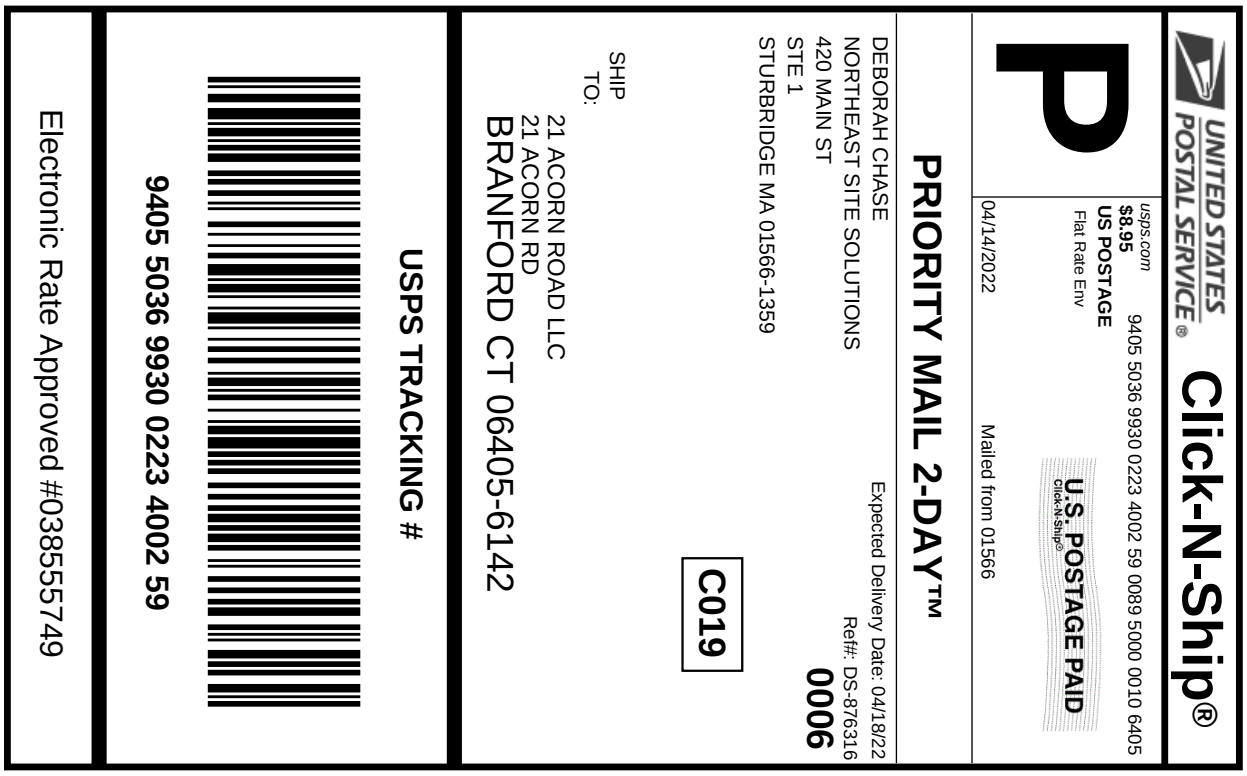

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0223 4002 59

Trans. #:	561351183
Print Date:	04/14/2022
Ship Date:	04/14/2022
Expected Delivery Date:	04/18/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: DS-876316

To: 21 ACORN ROAD LLC
21 ACORN RD
BRANFORD CT 06405-6142

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87636 Crown
D28

UNITED STATES POSTAL SERVICE.

FARMINGTON
210 MAIN ST
FARMINGTON, CT 06032-9998
(800)275-8777

04/15/2022 04:13 PM

Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Fri 04/15/2022 Tracking #: 9405 5036 9930 0223 4002 04	1		$0.00
Prepaid Mail Branford, CT 06405 Weight: 0 lb 9.10 oz Acceptance Date: Fri 04/15/2022 Tracking #: 9405 5036 9930 0223 4002 59	1		$0.00
Prepaid Mail Branford, CT 06405 Weight: 0 lb 9.00 oz Acceptance Date: Fri 04/15/2022 Tracking #: 9405 5036 9930 0223 4002 28	1		$0.00
Prepaid Mail Branford, CT 06405 Weight: 0 lb 9.10 oz Acceptance Date: Fri 04/15/2022 Tracking #: 9405 5036 9930 0223 4002 42	1		$0.00
Grand Total:			$0.00