



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

March 17, 2022

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

RE: Tower Share Application
20 Great Oak Road, Oxford, CT 06478
Latitude: 41.426388
Longitude: -73.144166
Site #: 876361_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 20 Great Oak Road, Oxford, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 117-foot level of the existing 150-foot monopole, 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 fenced compound. Included are plans by Kimley Horn, dated March 3, 2022, Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated September 22, 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 Oxford on November 18, 1999. Please see attached.

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 George R. Temple, First Selectman and Steven Macary, Zoning Enforcement Official for the Town of Oxford, as well as the tower owner (Crown Castle) and property owner (Town of Oxford).

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 150-feet and the Dish Wireless LLC antennas will be located at a centerline height of 117-feet.
2. The proposed modifications will not result in an increase of the site boundary as depicted on the attached site plan.



NSS **NORTHEAST**
SITE SOLUTIONS

Turnkey Wireless Development

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 15.33% 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 in Oxford. 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 117-foot level of the existing 150-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 Oxford.

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



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SITE SOLUTIONS
Turnkey Wireless Development

Attachments

Cc: George R. Temple, First Selectman & Property Owner
Oxford Town Hall
486 Oxford Road
Oxford, CT 06478

Ugxp"UO cect {\ GQ
Oxford Town Hall
486 Oxford Road
Oxford, CT 06478

Crown Castle – Tower Owner

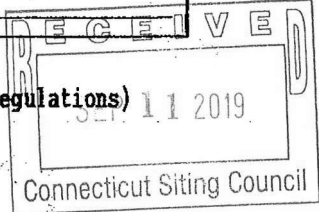
Exhibit A

Original Facility Approval

PLANNING & ZONING COMMISSION

TOWN OF OXFORD
486 Oxford Road
Oxford, CT 06478
(203) 888-2543

Z#: Z-99-182
Date Rec'd: 9/23/99
Date on Agenda: _____
65-Day Expiration: _____



ZONING PERMIT APPLICATION

(This permit is hereby applied for in accordance with the requirements of the Oxford Zoning Regulations)

Property Identification

Street Address: 20 Great Oak Road
Subdivision Name: _____ Date Approved: _____
Map: 21 Block: 61 Lot: 1A Zoning district: Municipal Property

Owner/Applicant

Owner Name: TOWN OF OXFORD
Owner Address: 486 Oxford Road, Oxford, Connecticut 06478
Owner Telephone: (203) 888-2543

Applicant Name: SPRINT SPECTRUM L.P.
Applicant Address: 9 Barnes Industrial Road, Wallingford, CT 06492
Applicant Telephone: (203) 294-5644

Alison - (500) 509-6583

Miscellaneous Information

Special Exception: Article 10 Section 8.4 Yes No
Site Plan Approval: Article _____ Section _____ Yes No
Estimated Cost of Construction: \$200,000
Variance Granted: _____ Date Granted: _____

Signatures/Authorization

Application for Zoning Permit approval as described herein is hereby made. The Oxford Planning & Zoning Commission and its technical staff are authorized to enter the property for the purpose of evaluating this application.

Permit Void If: a) Work or activity not commenced within 1 year of the date of issuance or b) Authorized construction not completed within 2 years of the date of issuance.

This permit, if issued, is based upon the plot plan submitted. Falsification, by misrepresentation or omission, or failure to comply with the conditions of approval of this permit constitute a violation of the Oxford Zoning Regulations.

Paul T. Schuber
Property Owner or Agent

9-2-99
Date

Purpose

- New Home
- Addition
- Garage
- Cottage Business
- Swimming Pool IG AG
- Sign
- Shed
- Barn
- Change of Use
- Excavating/Filling
- Trailer
- Other *wireless tel communication tower/facility*

Use

- Single-Family Residence
- Multi-Family Residence
- Commercial
- Industrial
- Residential/POD
- Other _____

Required Approvals and Dates *40813*

- Inland Wetlands *9/23/99 (mm)*
- P.D.D.H. _____
- Fire Marshal _____
- Z.B.A. _____
- W.P.C.A. _____
- Floodplain _____
- Copy of Deed *9/2/99 (mm)*
- Driveway _____
- Erosion Control Plan _____
- Plot Plan * *Rev 9/21/99*
- Other _____

\$180.00 Town Fee *450 + 5/E 01/24*
\$10.00 State Fee *30 - zoning fee*
\$190.00 Total Fee *(mm)*

*Draw plot plan of proposed construction and attach. Plan must show property boundaries and dimensions; location of proposed buildings on property with respect to boundaries; location of existing buildings on property; outside dimensions of all buildings proposed or now existing; location of water supply; location of sewage system. All copies must have a complete sketch. Construction and use must be exactly as described in this application. If later changes from this plan are desired prior approval of an amended application is necessary.

Denied Approved By: Kelley Weymer/Kee Date: 11-18-99
Title: ZFO

per P&Z Comm. mtg of 11-18-99 (mm)
ZPA-1
(Adopted 5/15/97)

Exhibit B

Property Card

20 GREAT OAK RD

Location 20 GREAT OAK RD

Mblu 21/ 61/ 1A/ CELL/

Acct# O041290C

Owner STC FIVE LLC

Assessment \$425,200

Appraisal \$607,400

PID 5982

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$607,400	\$0	\$607,400

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$425,200	\$0	\$425,200

Owner of Record

Owner STC FIVE LLC
Co-Owner C/O CROWN CASTLE
Address 4017 WASHINGTON RD
PMB 331
MCMURRAY , PA 15317

Sale Price \$0
Book & Page 000/ 000
Sale Date 10/01/2010
Instrument

Ownership History

Ownership History				
Owner	Sale Price	Book & Page	Instrument	Sale Date
STC FIVE LLC	\$0	000/ 000		10/01/2010

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: \$0
Building Percent Good:
Replacement Cost
Less Depreciation: \$0

Building Attributes

Field	Description
Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Extra Kitchens	
Fireplace(s)	
Extra Opening(s)	
Gas Fireplace(s)	
Blocked FPL(s)	
Woodstove(s)	
Bsmt Garage(s)	
SF Fin Bsmt	
FBM Quality	
Dormer LF	
Int Millwork	
Ext Millwork	
Foundation	

Building Photo



(<http://images.vgsi.com/photos/OxfordCTPhotos/A00\01\26\16.jpg>)

Building Layout

Building Layout

(http://images.vgsi.com/photos/OxfordCTPhotos/Sketches/5982_20227.jpg)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code 307
Description Cell Tower
Zone
Neighborhood 090
Alt Land Appr Category No

Land Line Valuation

Size (Acres) 0
Frontage
Depth
Assessed Value \$0
Appraised Value \$0

Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
CELL	Cell Site			3 SITES	\$528,000	1
SHD4	Cell Shed			288 S.F.	\$77,800	1
FN5	Fence 10'			240 L.F.	\$1,600	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2019	\$607,400	\$0	\$607,400
2018	\$607,400	\$0	\$607,400
2017	\$607,400	\$0	\$607,400

Assessment			
Valuation Year	Improvements	Land	Total
2019	\$425,200	\$0	\$425,200
2018	\$425,200	\$0	\$425,200
2017	\$425,200	\$0	\$425,200



Property Information

Owner	OXFORD TOWN OF
Address	49 GREAT OAK RD
Mailing Address	486 OXFORD RD OXFORD , CT 06478
Land Use	- Exempt Comm/Res
Land Class	E

Census Tract	
Neighborhood	050
Zoning	
Acreage	139.13
Utilities	
Lot Setting/ Desc	/

Photo



PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings	6004900	4203400
Outbuildings	44200	30900
Improvements	6130200	4291100
Extras	81100	56800
Land	0	0
Total	12490100	8743100
Previous		

Construction Details

Year Built	
Stories	1.00
Building Style	School
Building Use	Comm/Ind
Building Condition	Good
Total Rooms	
Bedrooms	
Full Bathrooms	0
Half Bathrooms	
Bath Style	n/a
Kitchen Style	n/a
Roof Style	Gable
Roof Cover	Achitectual

EXTERIOR WALLS:

Primary	Brick Veneer
Secondary	Pre-finish Metl

INTERIOR WALLS:

Primary	Drywall/Sheet
Secondary	

FLOORS:

Primary	Inlaid Sht Gds
Secondary	

HEATING/AC:

Heating Type	Forced Air-Duc
Heating Fuel	Oil
AC Type	Partial

BUILDING AREA:

Effective Building Area	
Gross Building Area	
Total Living Area	

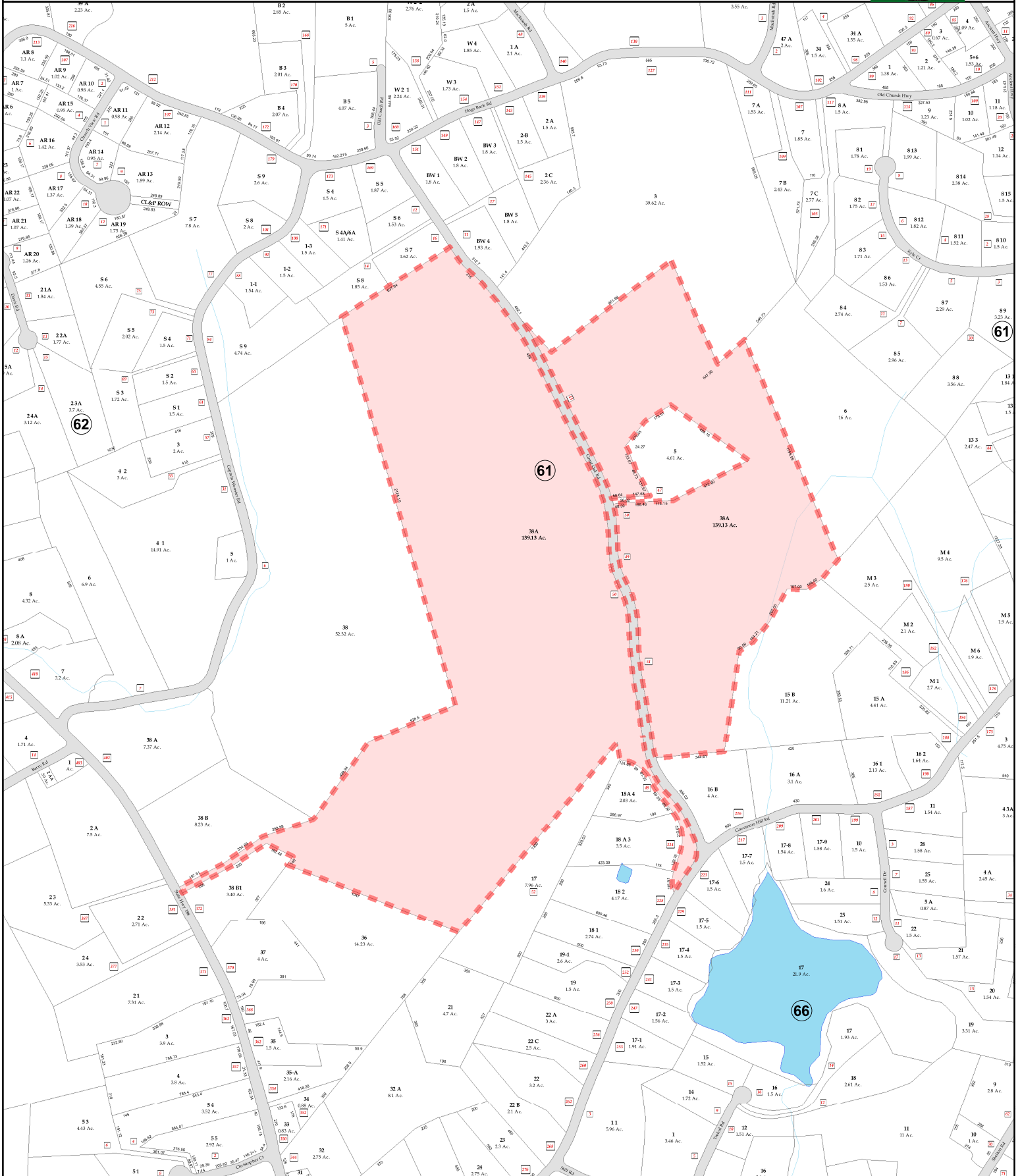
SALES HISTORY:

Sale Date	8/6/2012
Sale Price	
Book/ Page	377/ 25

Town of Oxford, Connecticut - Assessment Parcel Map

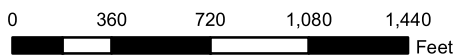
Parcel: 21-61-38A

Location: 49 GREAT OAK RD



Approximate Scale: 1 inch = 700 feet

Map Produced: February 2021



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

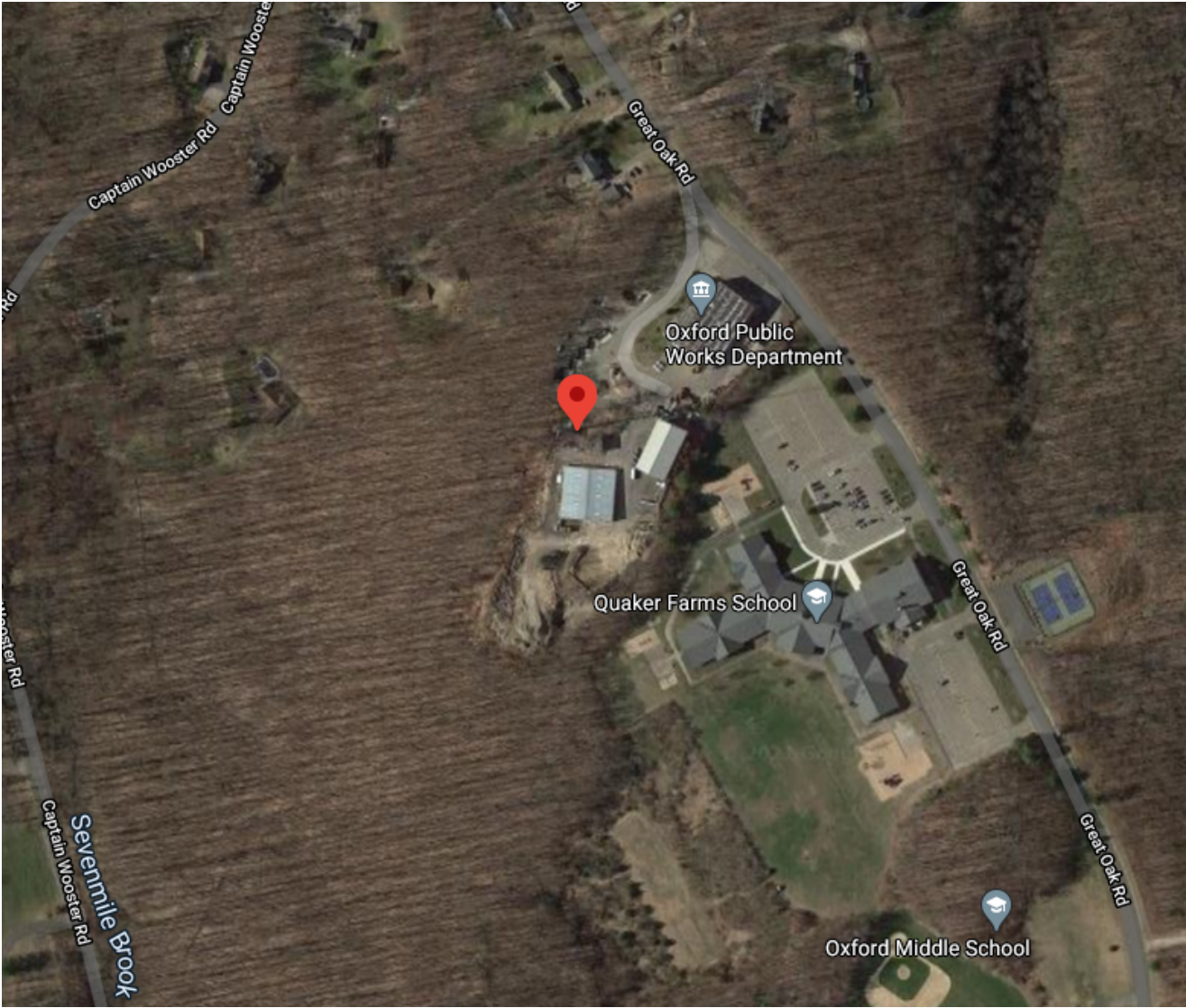


Exhibit C

Construction Drawings



DISH Wireless L.L.C. SITE ID:

BOHVN00168A

DISH Wireless L.L.C. SITE ADDRESS:

**20 GREAT OAK RD.
OXFORD, CT 06478**

SCOPE OF WORK
<p>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:</p> <p>TOWER SCOPE OF WORK:</p> <ul style="list-style-type: none"> • 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 <p>GROUND SCOPE OF WORK:</p> <ul style="list-style-type: none"> • INSTALL (1) PROPOSED METAL PLATFORM • INSTALL (1) PROPOSED ICE BRIDGE • INSTALL (1) PROPOSED PPC CABINET • INSTALL (1) PROPOSED EQUIPMENT CABINET • INSTALL (1) PROPOSED POWER CONDUIT • INSTALL (1) PROPOSED TELCO CONDUIT • INSTALL (1) PROPOSED TELCO-FIBER BOX • INSTALL (1) PROPOSED GPS UNIT • INSTALL (1) PROPOSED FIBER NID (IF REQUIRED) • DISH Wireless L.L.C. TO UTILIZE EXISTING EMPTY METER SOCKET "D" & DISCONNECT

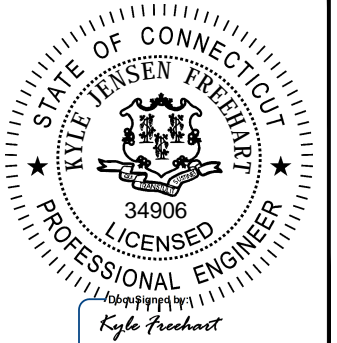
SITE INFORMATION	PROJECT DIRECTORY
<p>PROPERTY OWNER: TOWN OF OXFORD ADDRESS: 50 GREAT OAK RD. OXFORD, CT 06478</p> <p>TOWER TYPE: MONOPOLE</p> <p>CROWN CASTLE SITE ID: 876361</p> <p>CROWN CASTLE APP NUMBER: 553385 COUNTY: NEW HAVEN</p> <p>LATITUDE (NAD 83): 41° 25' 34.91" N 41.426364° N LONGITUDE (NAD 83): 73° 8' 39.33" W 73.144258° W</p> <p>ZONING JURISDICTION: CONNECTICUT SITING COUNCIL ZONING DISTRICT: RESA</p> <p>PARCEL NUMBER: 21/61/38A</p> <p>OCCUPANCY GROUP: U</p> <p>CONSTRUCTION TYPE: II-B</p> <p>POWER COMPANY: CONNECTICUT LIGHT & POWER CO TELEPHONE COMPANY: LIGHTOWER</p>	<p>APPLICANT: DISH WIRELESS, L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120</p> <p>TOWER OWNER: CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377</p> <p>SITE DESIGNER: KIMLEY-HORN & ASSOCIATES 3875 EMBASSY PKWY, SUITE 280 AKRON, OH 44333 (216) 505-7771 COA #: PEC.0000738</p> <p>SITE ACQUISITION: VICTOR NUNEZ (917) 563-3682</p> <p>CONSTRUCTION MANAGER: JAVIER SOTO JAVIER.SOTO@DISH.COM</p> <p>RF ENGINEER: SYED ZAIDI SYED.ZAIDI@DISH.COM</p>



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601



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

DRAWN BY: DRD	CHECKED BY: MCK	APPROVED BY: MCK
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RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	03/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLC-16449

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00168A
20 GREAT OAK RD.
OXFORD, CT 06478

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

SITE PHOTO



UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM
CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

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

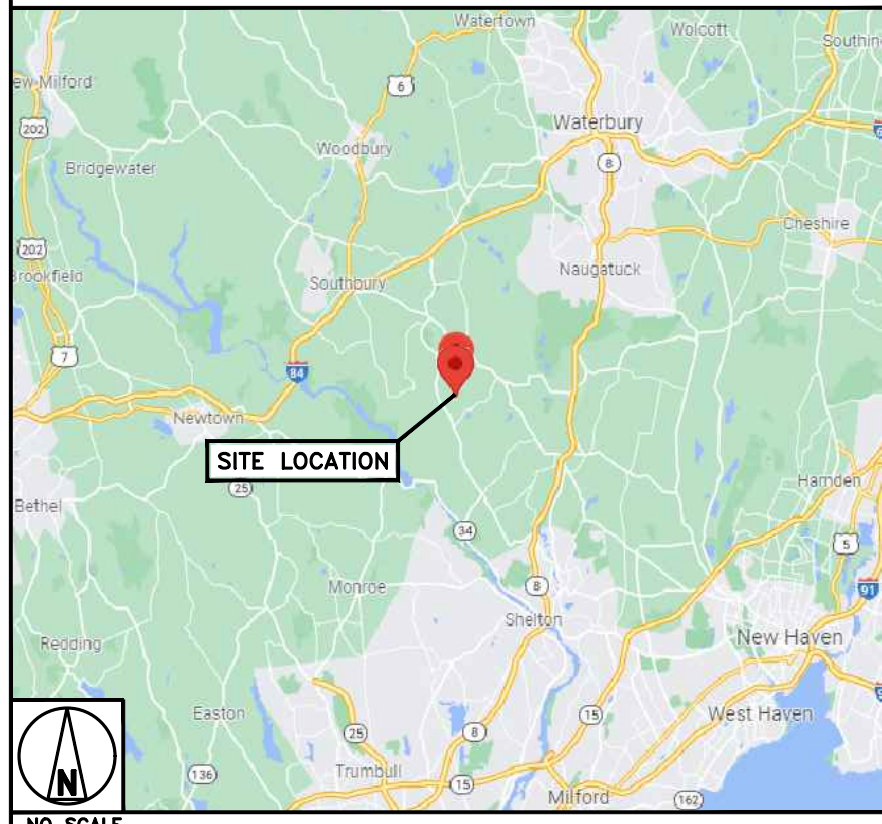
11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

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

DIRECTIONS

DIRECTIONS FROM WATERBURY-OXFORD AIRPORT:
x TAKE AIRPORT ROAD TO CHRISTIAN ST
x CONTINUE ON CHRISTIAN ST TO HOGS BACK RD
x CONTINUE ON HOGS BACK RD. DRIVE TO GREAT OAK RD

VICINITY MAP



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

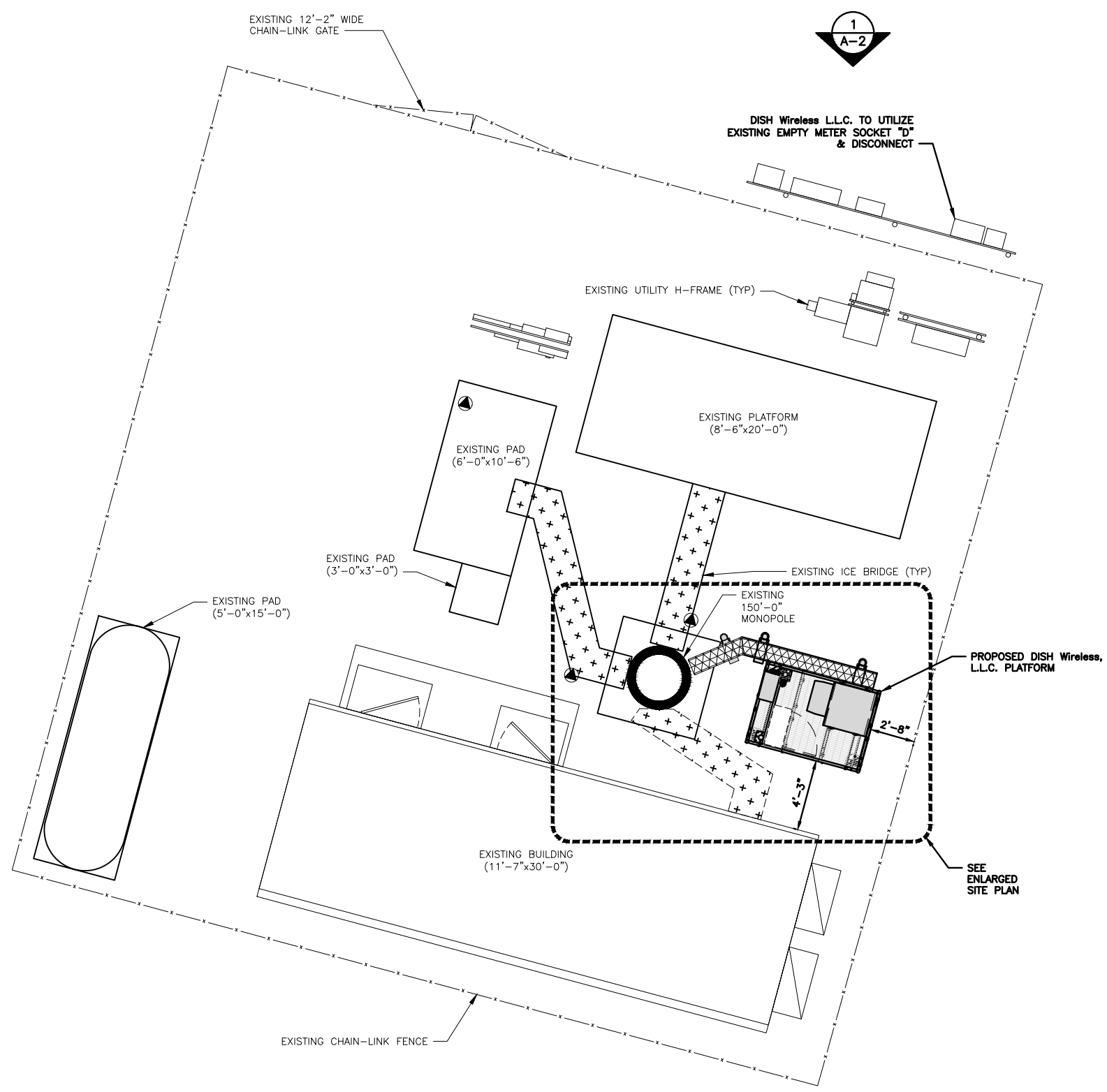
CODE TYPE	CODE
BUILDING	2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS

SHEET INDEX

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

NOTES

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



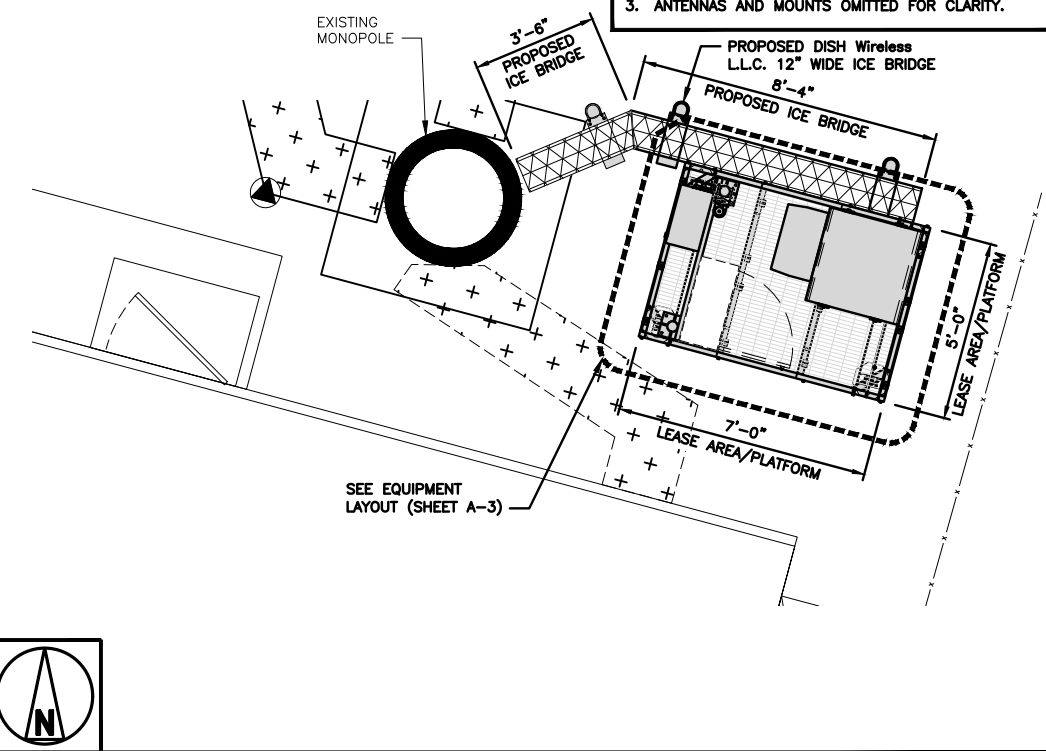
OVERALL SITE PLAN

Scale: 1/4" = 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.



OVERALL UTILITY ROUTE PLAN

Scale: NO SCALE

2



OVERALL UTILITY ROUTE PLAN

Scale: NO SCALE

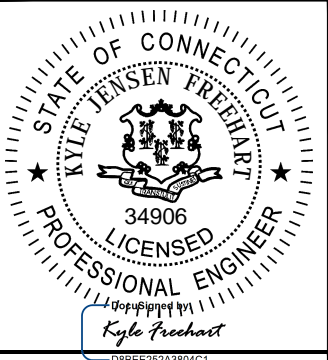
3



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LITTLETON, CO 80120



COA #: PEC.0000738
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DRAWN BY: DRD | CHECKED BY: MCK | APPROVED BY: MCK

RFDS REV #: ---

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SHEET TITLE
OVERALL AND ENLARGED
SITE PLAN

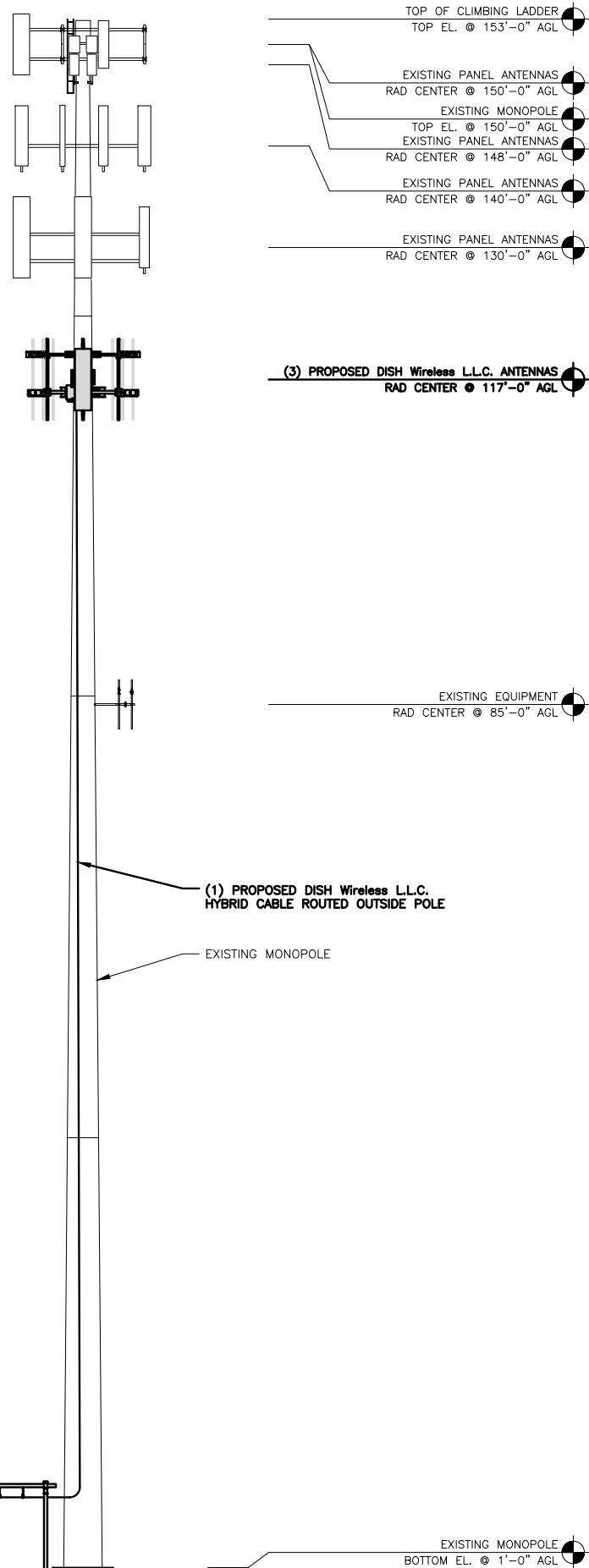
SHEET NUMBER
A-1



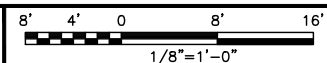
NOTES

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.

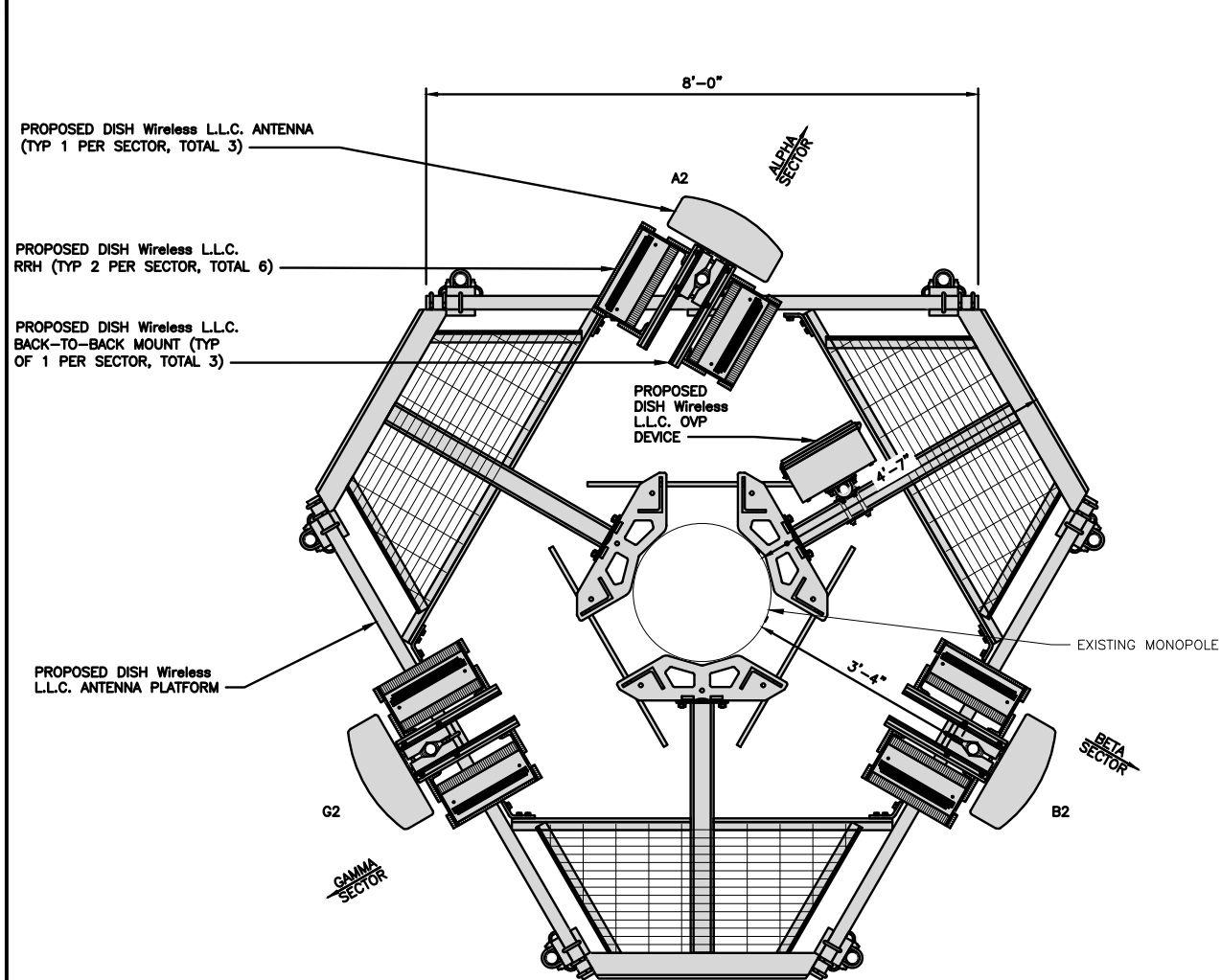
KIMLEY-HORN HAS NOT ANALYZED THE PROPOSED ANTENNA MOUNT(S) TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR PROPOSED CARRIER LOADING. MOUNT ANALYSIS TO BE DONE BY OTHERS.



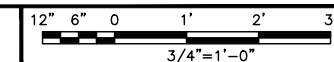
PROPOSED NORTH ELEVATION



1



ANTENNA LAYOUT



2

SECTOR	POSITION	ANTENNA					TRANSMISSION CABLE	
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A2	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	30°	117'-0"	(1) HIGH-CAPACITY HYBRID CABLE (155'-0" LONG)
BETA	B2	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	120°	117'-0"	
GAMMA	G2	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	240°	117'-0"	

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY	
ALPHA	A1	FUJITSU - TA08025-B604	5G	1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. 2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.
	A1	FUJITSU - TA08025-B605	5G	
BETA	B1	FUJITSU - TA08025-B604	5G	
	B1	FUJITSU - TA08025-B605	5G	
GAMMA	G1	FUJITSU - TA08025-B604	5G	
	G1	FUJITSU - TA08025-B605	5G	

ANTENNA SCHEDULE

NO SCALE

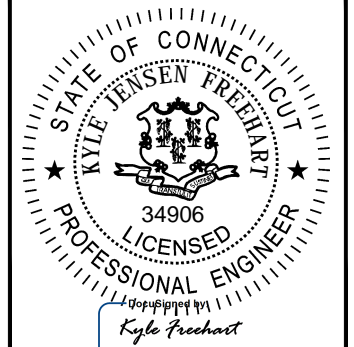
3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601



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DRAWN BY: DRD
CHECKED BY: MCK
APPROVED BY: MCK

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	03/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLC-16449

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00168A
20 GREAT OAK RD.
OXFORD, CT 06478

SHEET TITLE
ELEVATION, ANTENNA
LAYOUT AND SCHEDULE

SHEET NUMBER

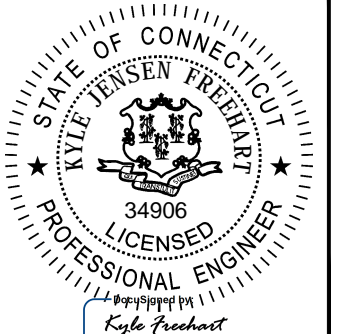
A-2



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LITTLETON, CO 80120



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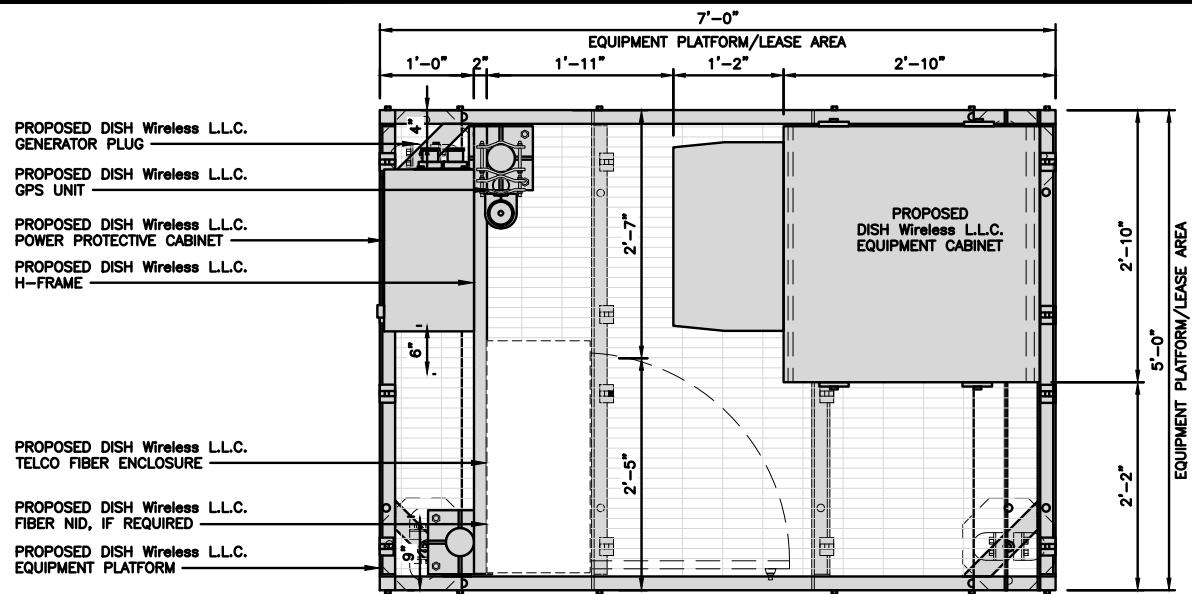
BOHVN00168A
20 GREAT OAK RD.
OXFORD, CT 06478

SHEET TITLE
EQUIPMENT PLATFORM AND
H-FRAME DETAILS

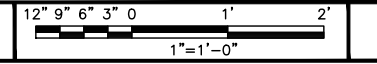
SHEET NUMBER
A-3

NOTES

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

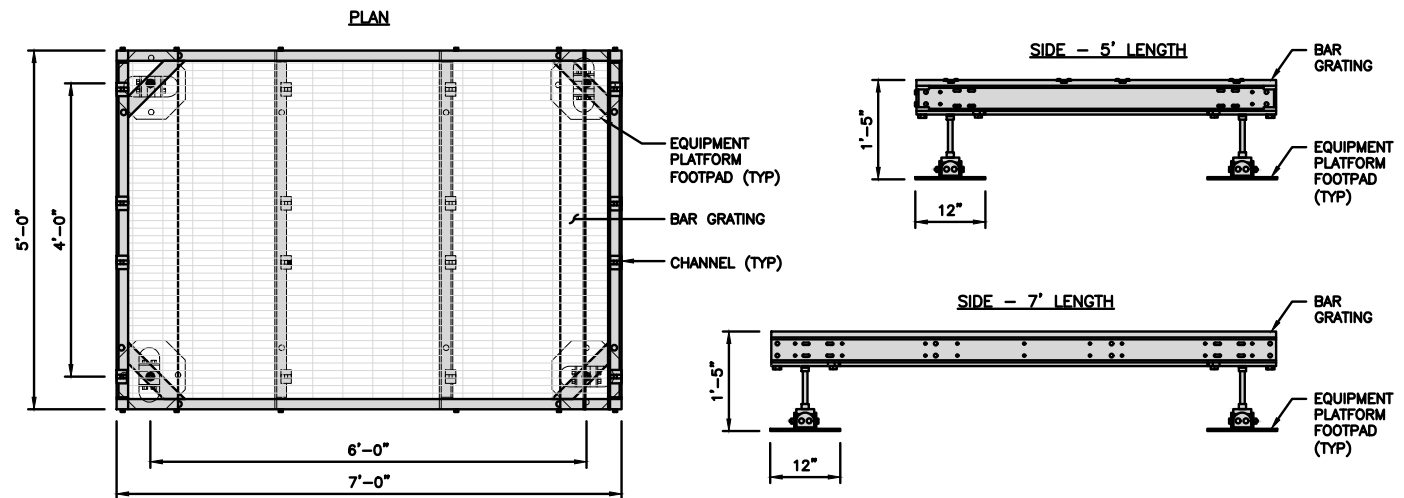


PLATFORM EQUIPMENT PLAN



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

NOTE:
1. GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"
2. PLATFORM TO BE LEVEL WITHIN 1"

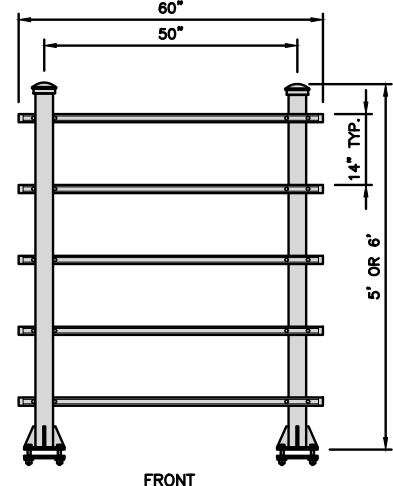
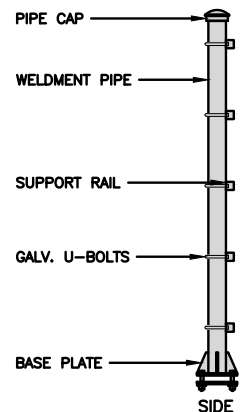


PLATFORM DETAIL

NO SCALE 2

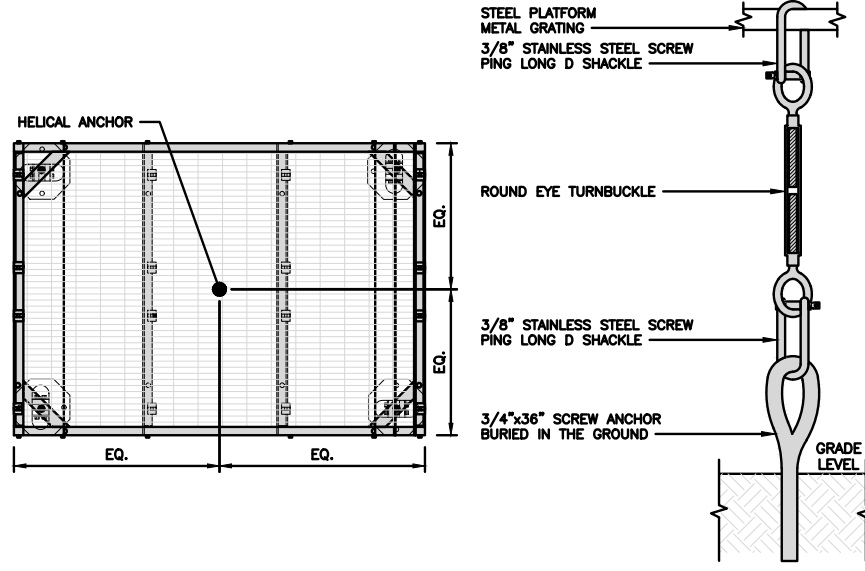
COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs

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



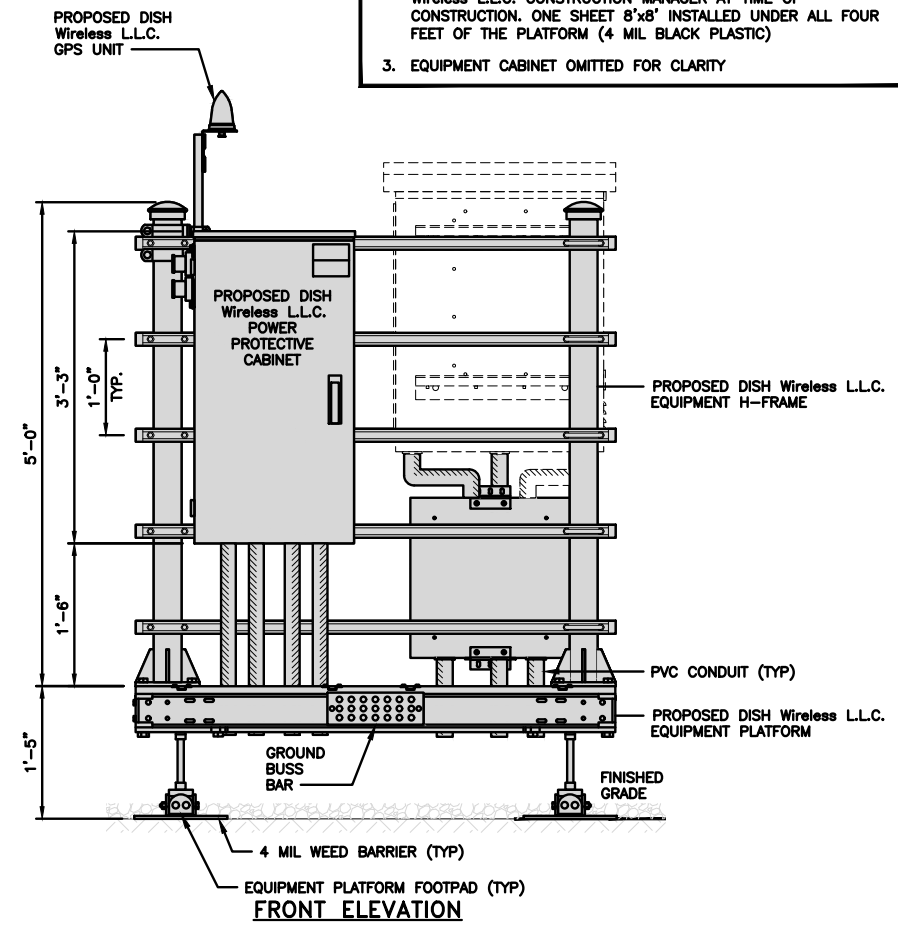
H-FRAME DETAIL

NO SCALE 3

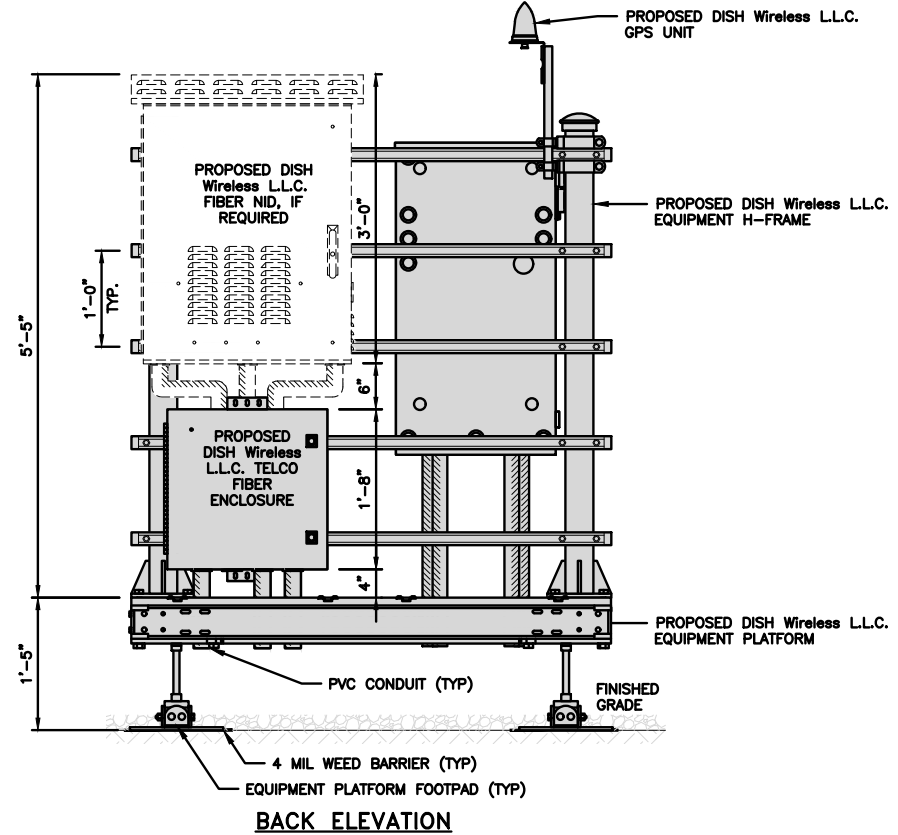


PLATFORM ANCHORAGE DETAIL

NO SCALE 4

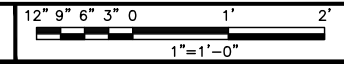


FRONT ELEVATION



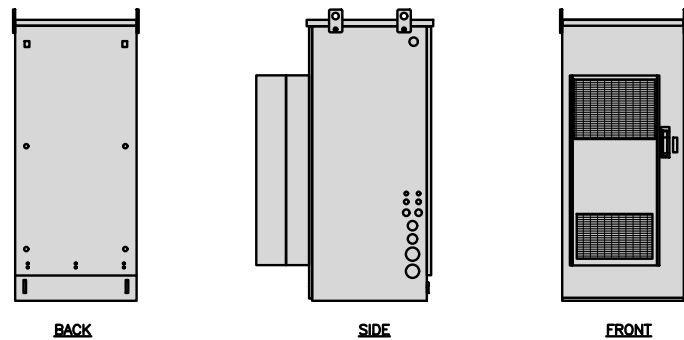
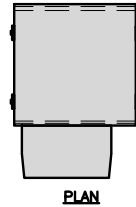
BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION



NO SCALE 5

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

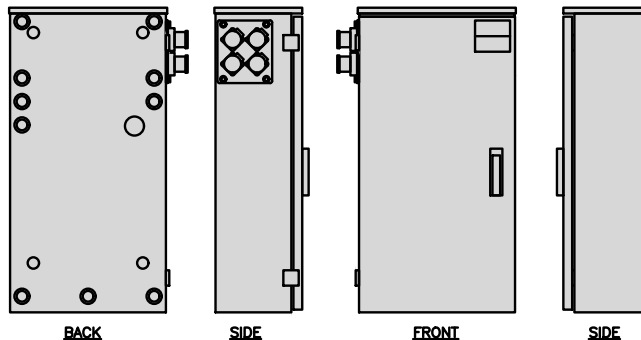
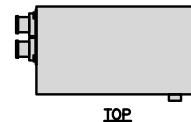


CABINET DETAIL

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



POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

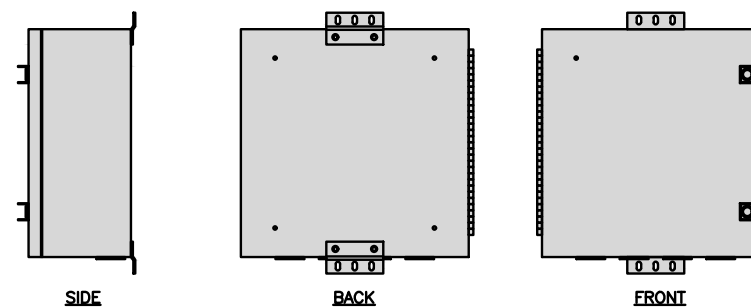
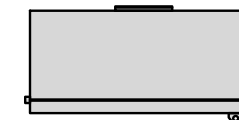
2

NOT USED

NO SCALE

3

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



FIBER TELCO ENCLOSURE DETAIL

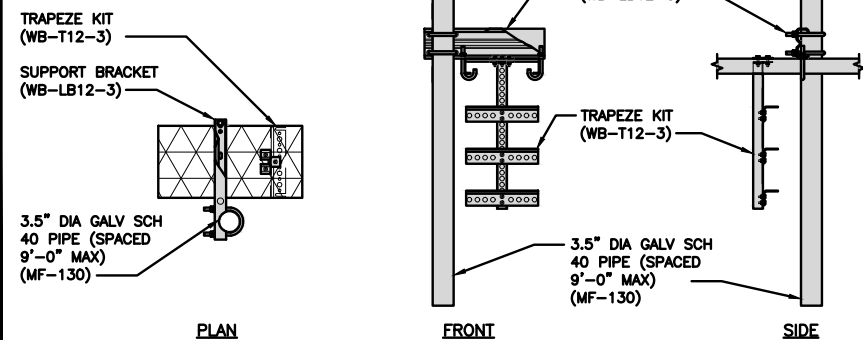
NO SCALE

6

COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT

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

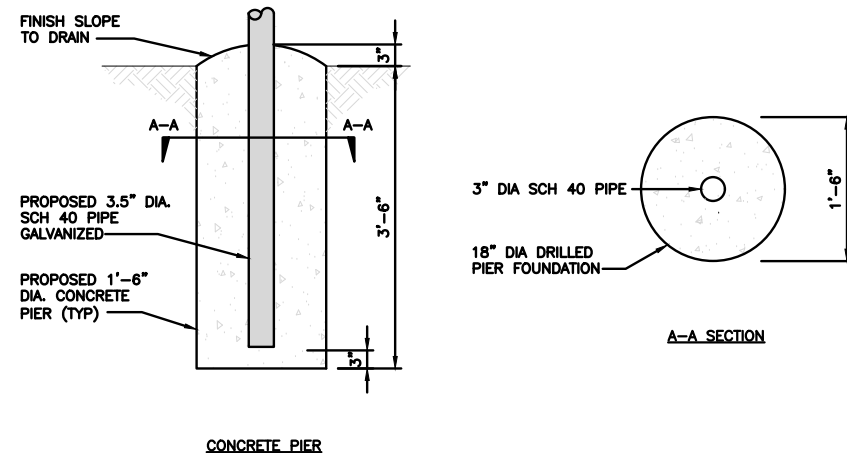
INCLUDED PRODUCTS:	WB-T12-3 TRAPEZE KIT, 3 RUNGS
	WB-LB12-3 SUPPORT BRACKET
	MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"



ICE BRIDGE DETAIL

NO SCALE

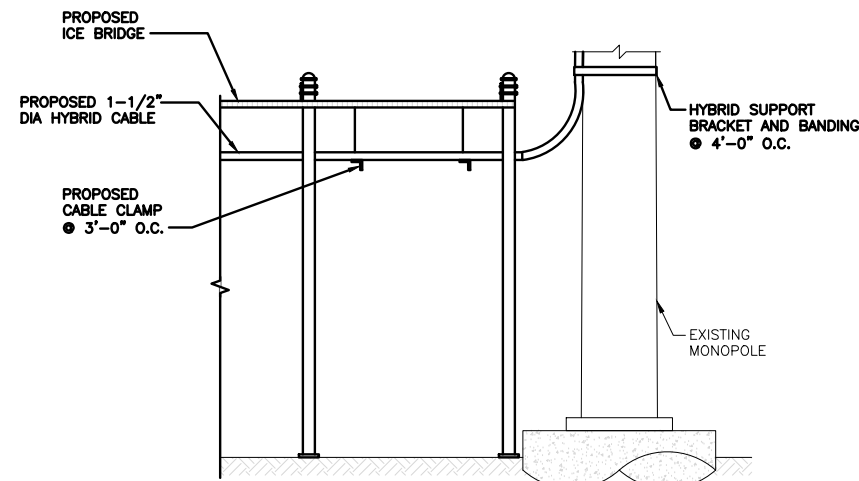
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TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

8



HYBRID CABLE RUN

NO SCALE

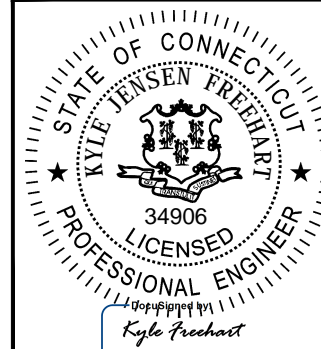
9



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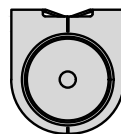
A&E PROJECT NUMBER
KHCLC-16449

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00168A
20 GREAT OAK RD.
OXFORD, CT 06478

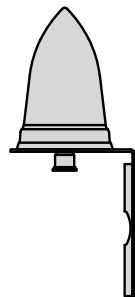
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

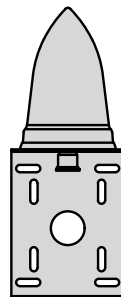
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



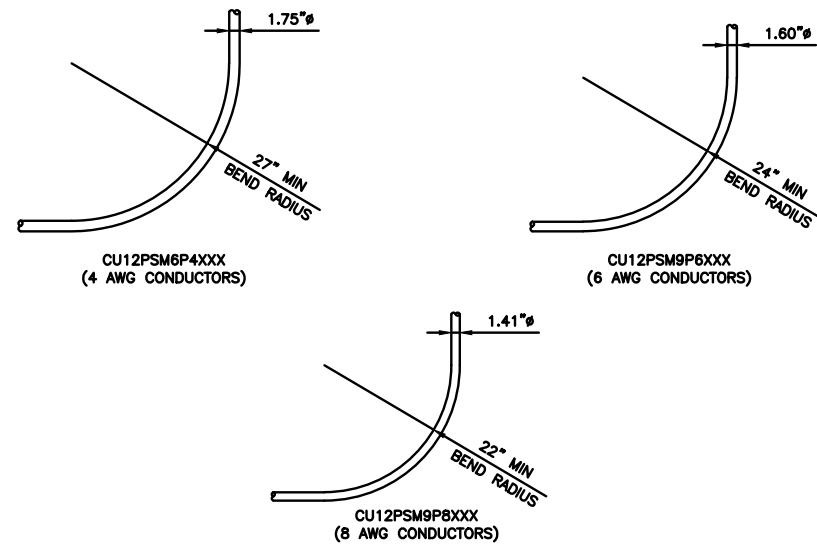
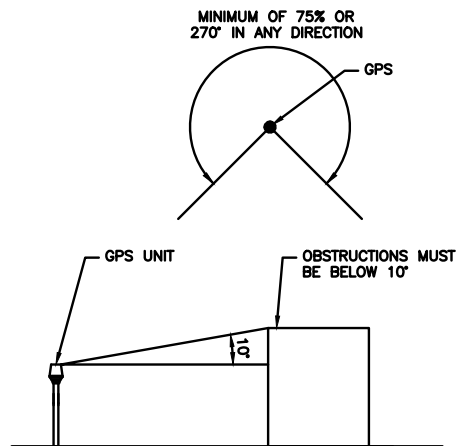
TOP



BACK



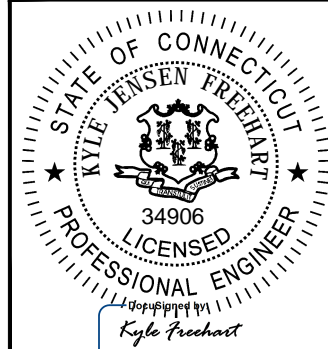
SIDE



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BOHVN00168A
20 GREAT OAK RD.
OXFORD, CT 06478

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

GPS DETAIL

NO SCALE

1

GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE

2

CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUS

NO SCALE

3

NOT USED

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

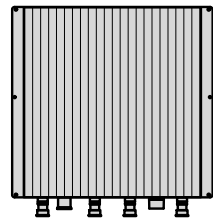
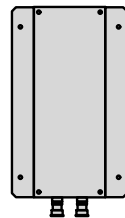
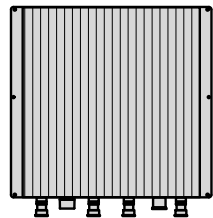
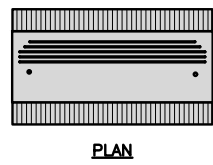
8

NOT USED

NO SCALE

9

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

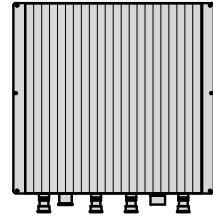
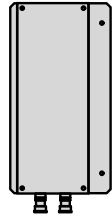
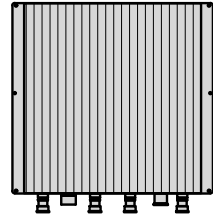
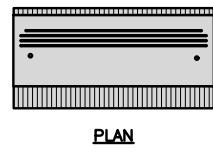


BACK

SIDE

FRONT

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



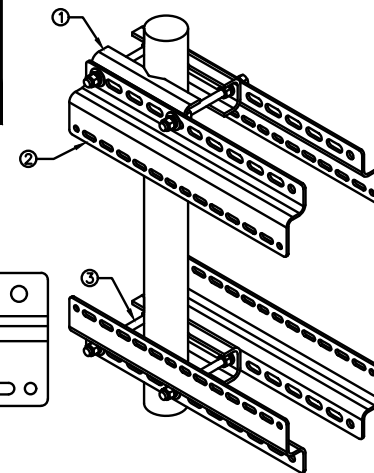
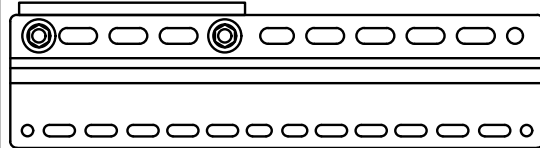
BACK

SIDE

FRONT

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 DETAIL

NO SCALE

1

RRH DETAIL

NO SCALE

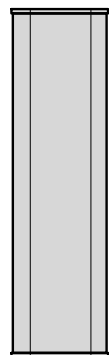
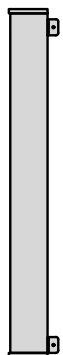
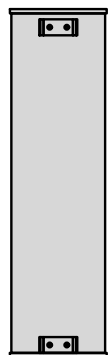
2

RRH MOUNT DETAIL

NO SCALE

3

JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	82.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



BACK

SIDE

FRONT

ANTENNA DETAIL

NO SCALE

4

NOT USED

NO SCALE

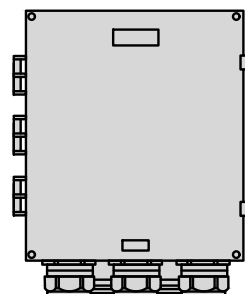
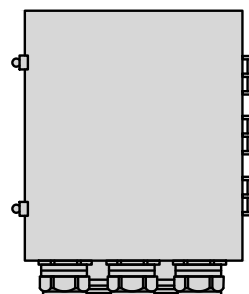
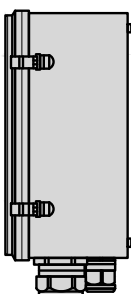
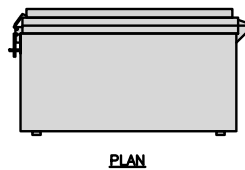
5

ANTENNA BRACKET DETAIL

NO SCALE

6

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



SIDE

BACK

FRONT

SURGE SUPPRESSION DETAIL (OVP)

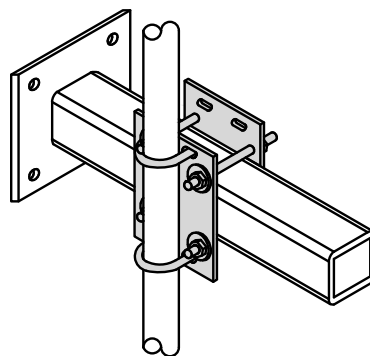
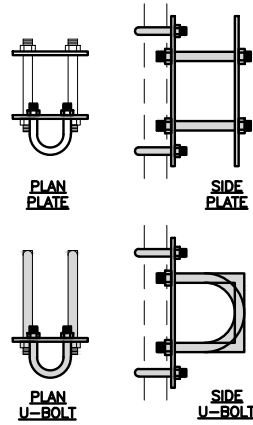
NO SCALE

7

COMMSCOPE XP-2040
CROSSOVER PLATE

DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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



PLAN U-BOLT

SIDE U-BOLT

RRH/OVP MOUNT DETAIL

NO SCALE

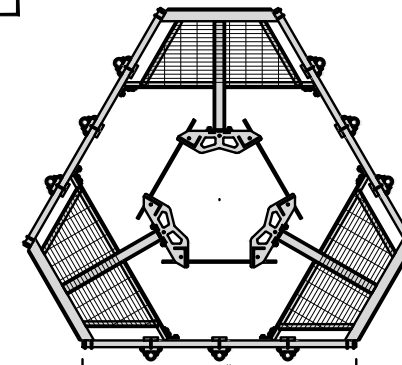
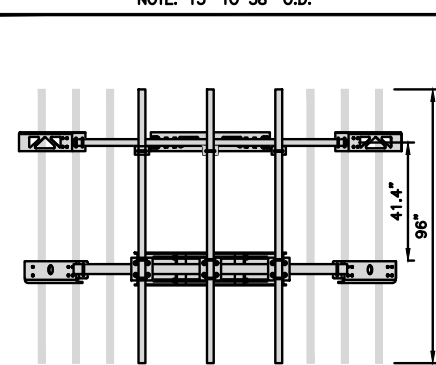
8

COMMSCOPE
MC-PK8-DSH

FACE WIDTH	96"
WEIGHT	1373.08 lbs

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

NOTE: 15" TO 38" O.D.



ANTENNA PLATFORM DETAIL

NO SCALE

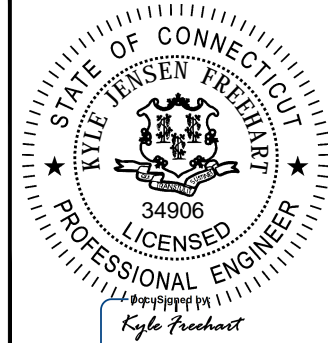
9



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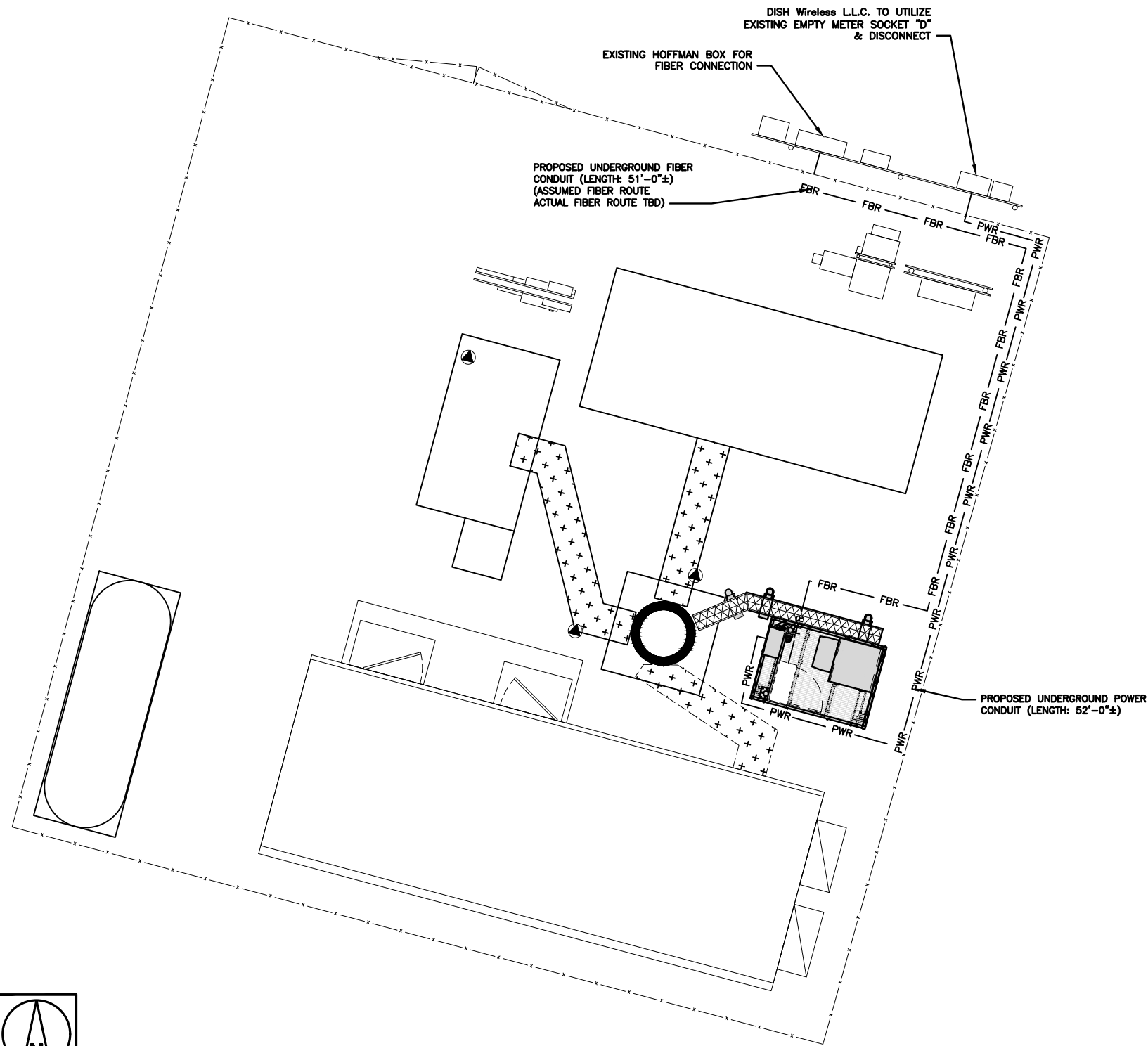
SHEET TITLE
EQUIPMENT DETAILS

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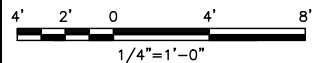
A-6

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. THE GROUND LEASE PROVIDES BROAD/BLANKET UTILITY RIGHTS. "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS NOT AN OPTION, PLEASE NOTIFY TOWER OWNER AS FURTHER COORDINATION MAY BE NEEDED.



UTILITY ROUTE PLAN



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

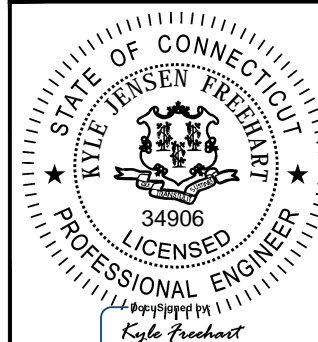
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CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER
KHCL-16449

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00168A
20 GREAT OAK RD.
OXFORD, CT 06478

SHEET TITLE
**ELECTRICAL/FIBER ROUTE
PLAN AND NOTES**

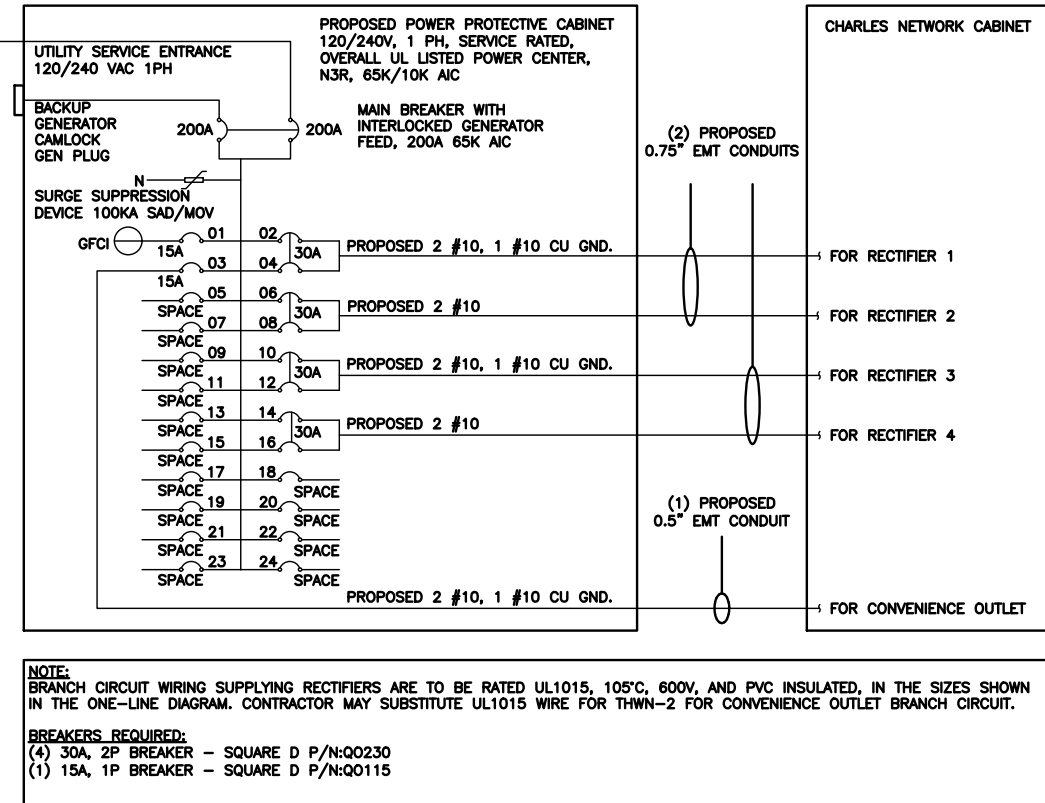
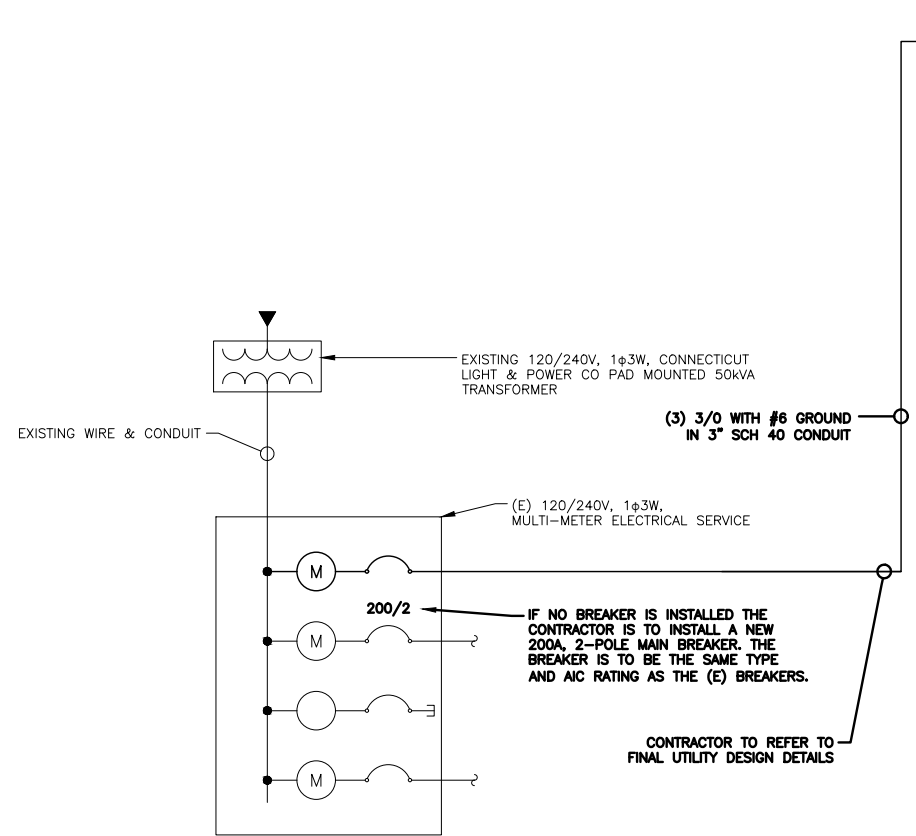
SHEET NUMBER

E-1

NOT USED

NO SCALE

3



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

BREAKERS REQUIRED:
(4) 30A, 2P BREAKER - SQUARE D P/N:Q0230
(1) 15A, 1P BREAKER - SQUARE D P/N:Q0115

PPC ONE-LINE DIAGRAM

NO SCALE 1

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

PANEL SCHEDULE

NO SCALE 2

NOT USED

NO SCALE 3

NOTES

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUIT AND FEEDERS COMPLY WITH THE NEC (LISTED ON T-1) ARTICLE 210.19(A)(1) FPN NO. 4.

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

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

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

CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN-2, CU.
#10 - 0.0211 SQ. IN X 2 = 0.0422 SQ. IN
#10 - 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND
TOTAL = 0.0633 SQ. IN

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

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.
#10 - 0.0266 SQ. IN X 4 = 0.1064 SQ. IN
#10 - 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND
TOTAL = 0.1146 SQ. IN

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

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.
3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.8544 SQ. IN

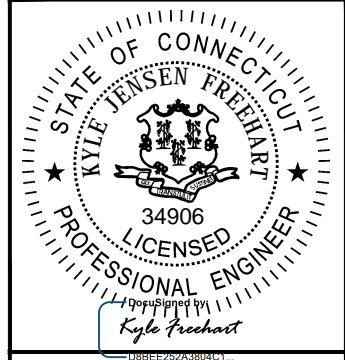
3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.



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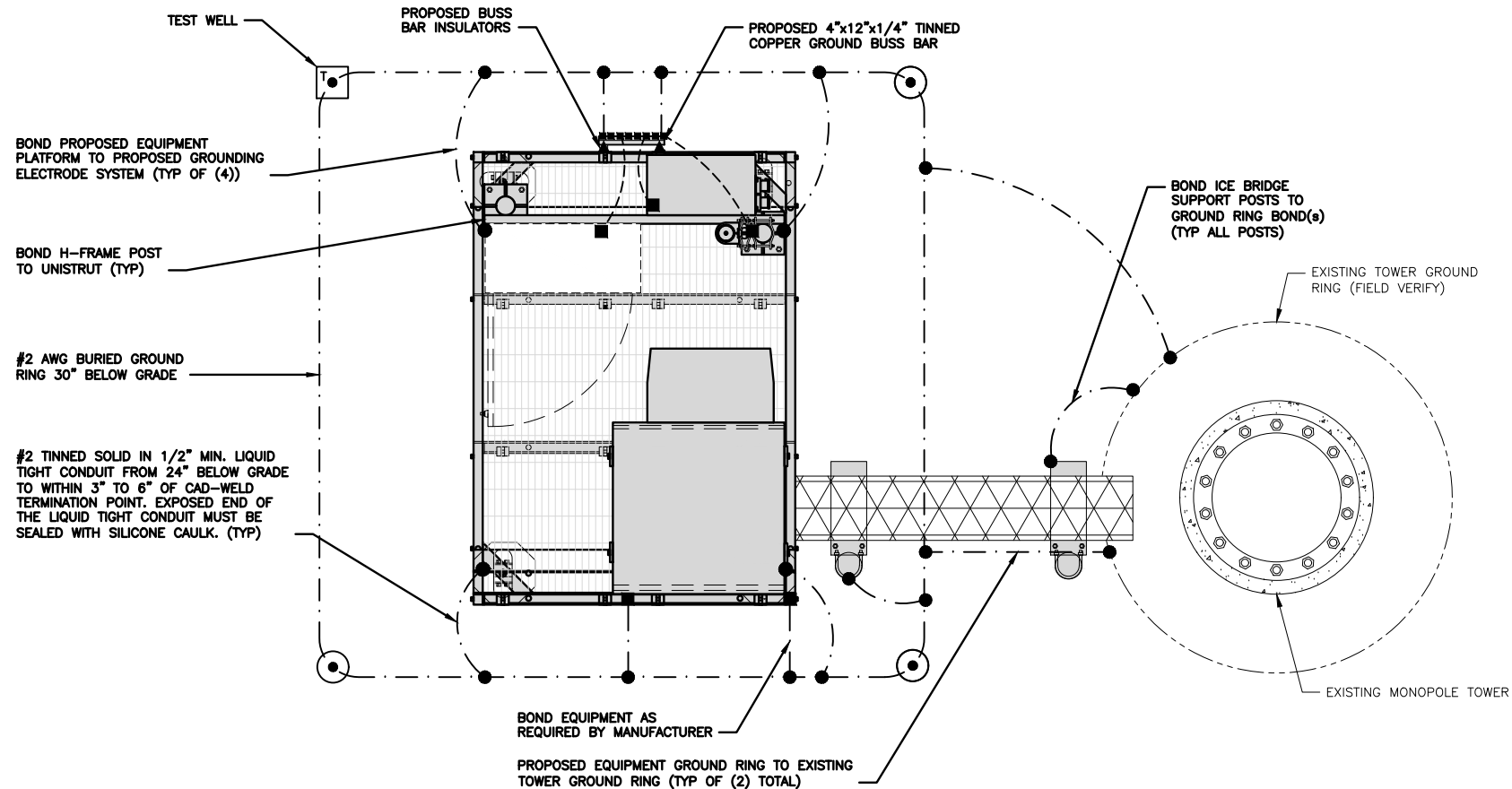
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REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER
KHCLC-16449

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00168A
20 GREAT OAK RD.
OXFORD, CT 06478

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

SHEET NUMBER
E-3

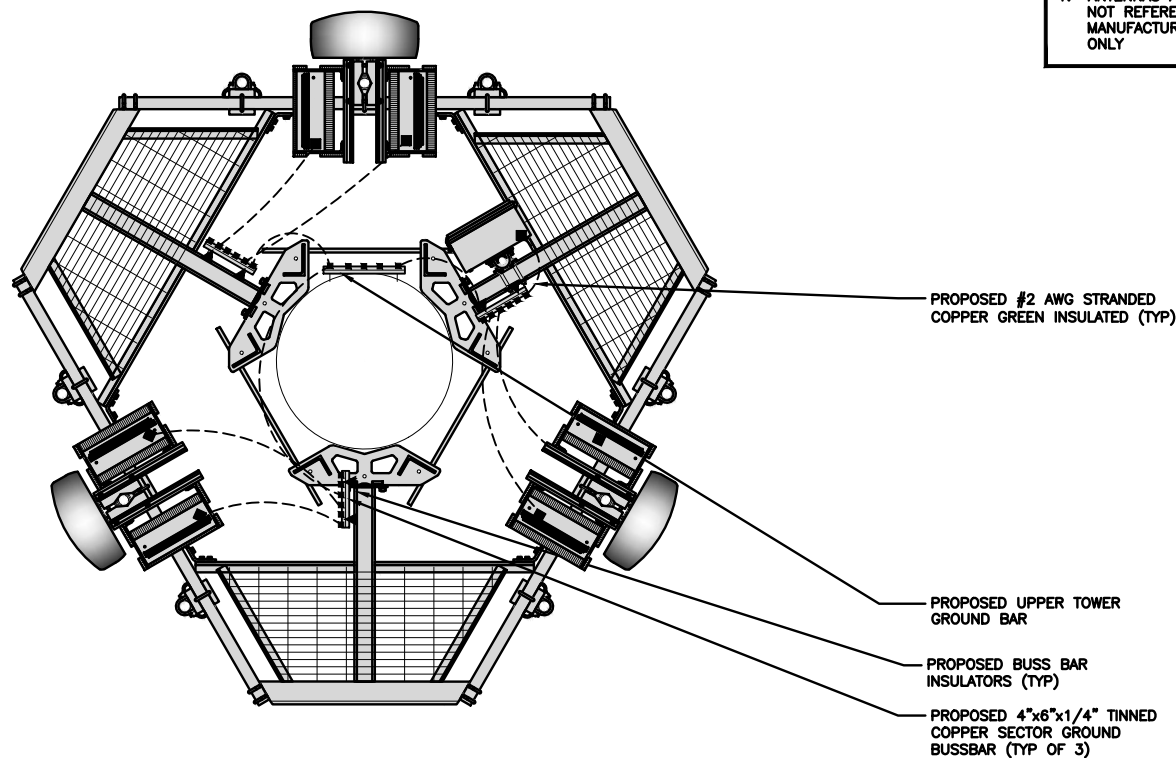


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1

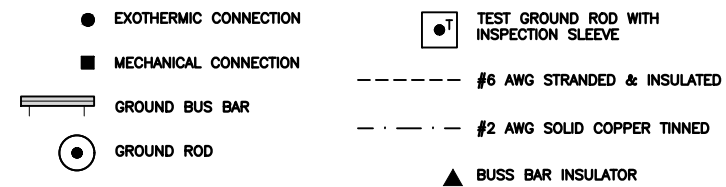
NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



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

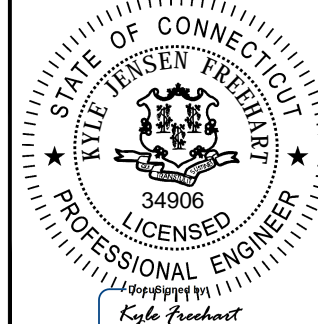
NO SCALE 3



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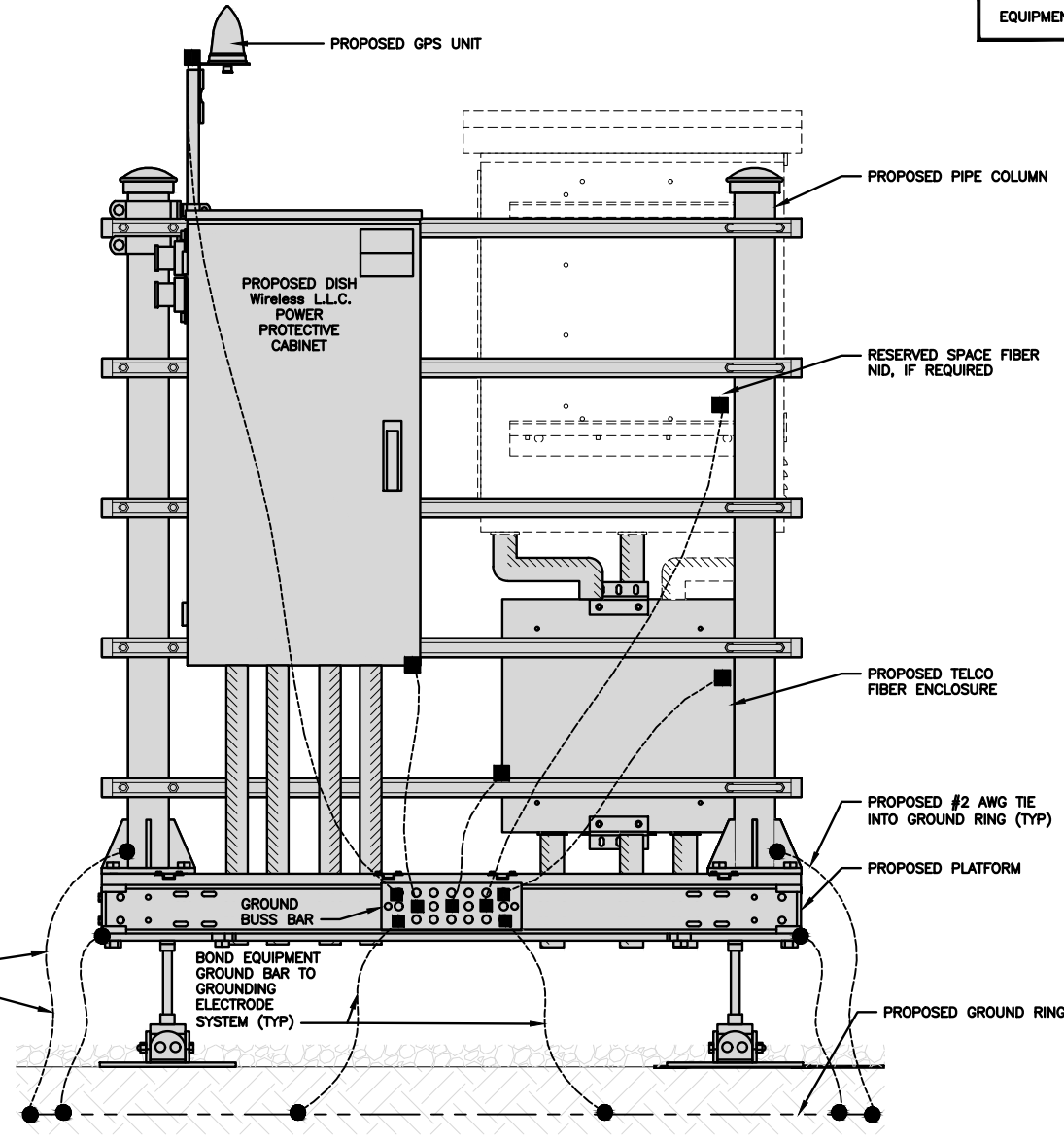
BOHVN00168A
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OXFORD, CT 06478

SHEET TITLE
GROUNDING PLANS
AND NOTES

SHEET NUMBER

G-1

NOTES
EQUIPMENT CABINET OMITTED FOR CLARITY

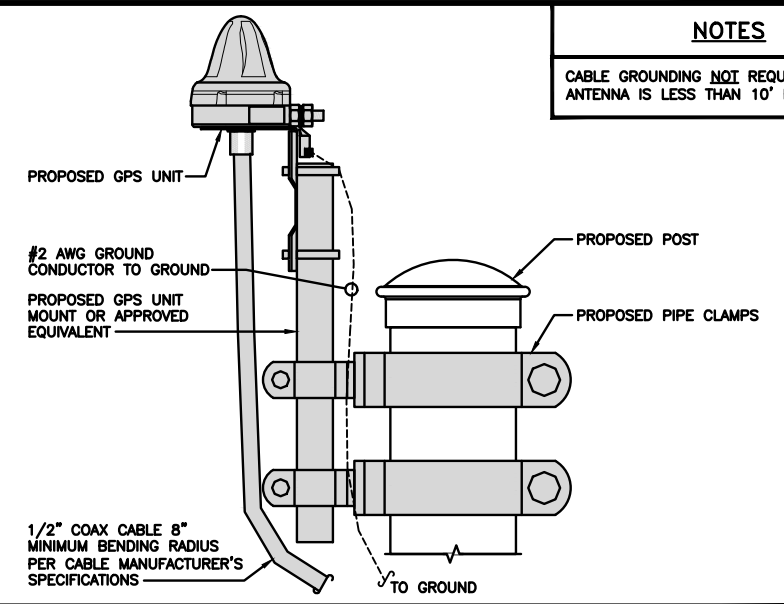


#2 TINNED SOLID IN 1/2" MIN. LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK. (TYP)

H-FRAME GROUNDING DETAIL

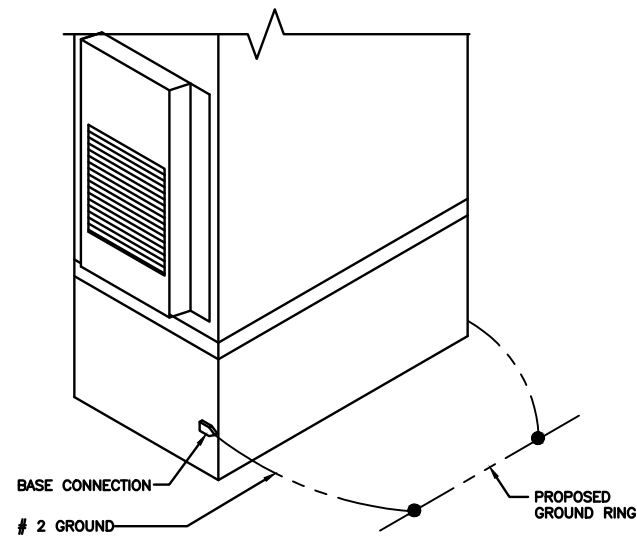
NO SCALE 1

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



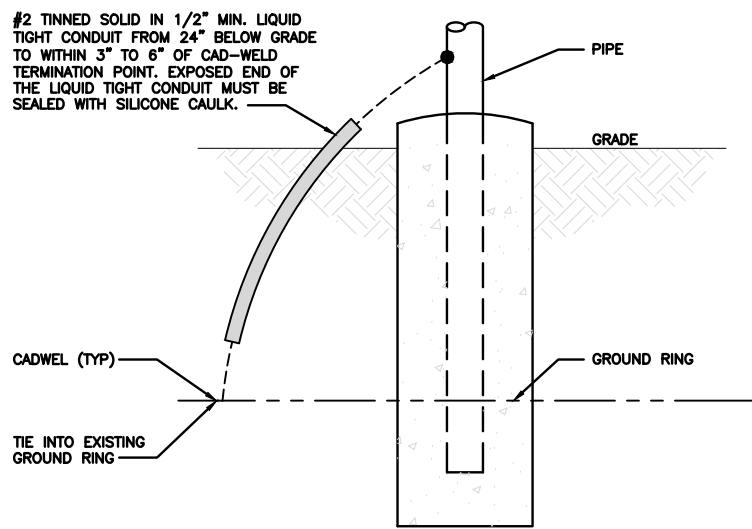
TYPICAL GPS UNIT GROUNDING

NO SCALE 2



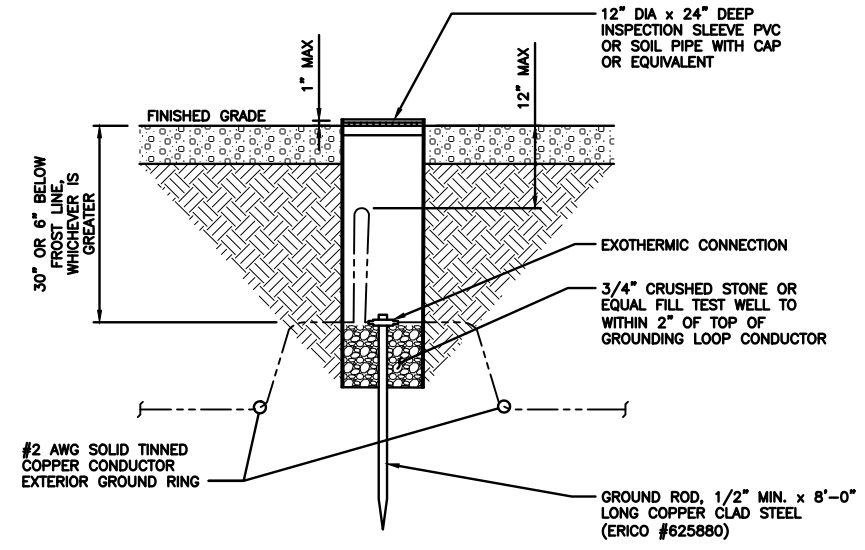
OUTDOOR CABINET GROUNDING

NO SCALE 3



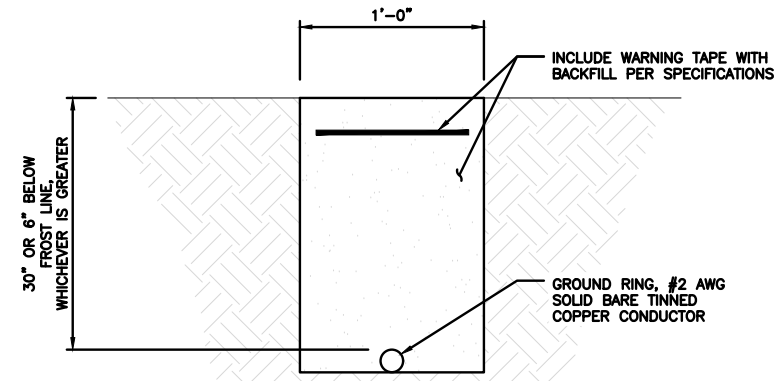
TRANSITIONING GROUND DETAIL

NO SCALE 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE

NO SCALE 5



TYPICAL GROUND RING TRENCH

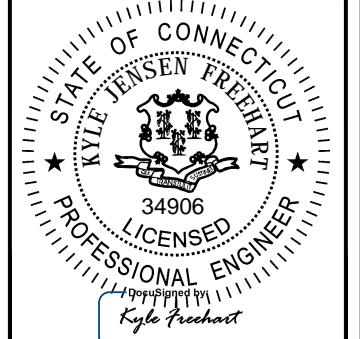
NO SCALE 6



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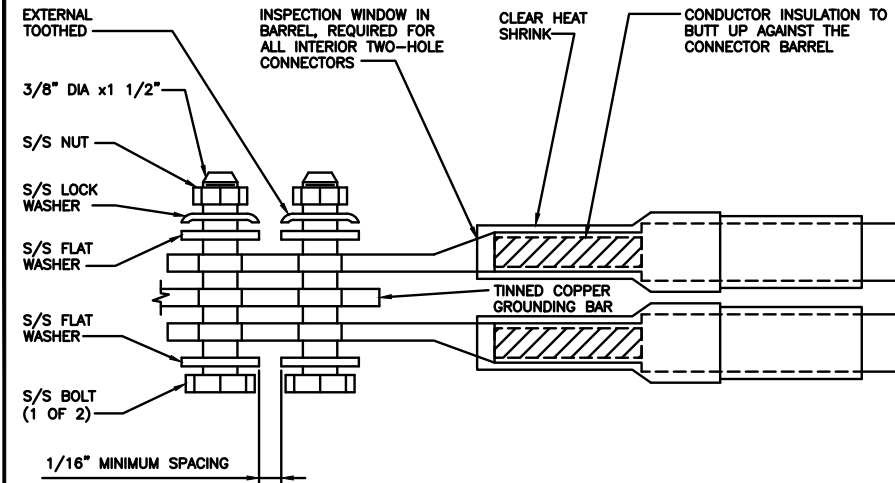
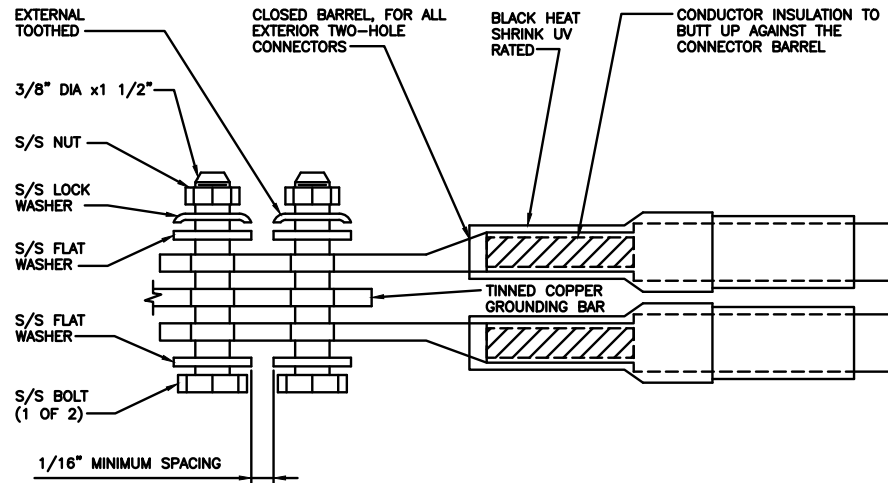
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SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-2

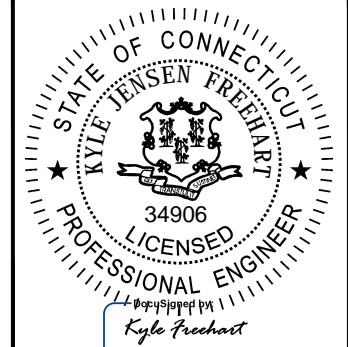
1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR. ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS,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



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SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER

G-3

TYPICAL GROUNDING NOTES

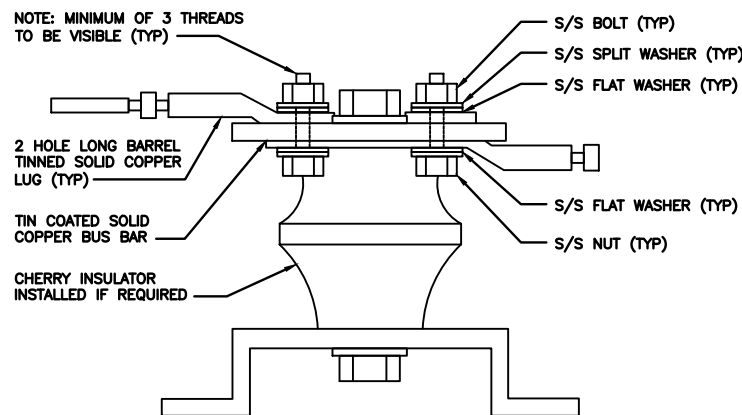
NO SCALE 1

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

RF JUMPER COLOR CODING		3/4" TAPE WIDTHS WITH 3/4" SPACING											
<p>LOW-BAND RRH - (600MHz N71 BASEBAND) + (850MHz N26 BAND) + (700MHz N29 BAND) - OPTIONAL PER MARKET</p> <p>ADD FREQUENCY COLOR TO SECTOR BAND (CBRS WILL USE YELLOW BANDS)</p>	ALPHA RRH				BETA RRH				GAMMA RRH				
	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	
	RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN	
	ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN	
		WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE	
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT	WHITE (-) PORT	
<p>MID-BAND RRH - (AWS BANDS N66+N70)</p> <p>ADD FREQUENCY COLOR TO SECTOR BAND (CBRS WILL USE YELLOW BANDS)</p>	RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN	
	PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN	
		WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE	
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT	WHITE (-) PORT	
<p>HYBRID/DISCREET CABLES</p> <p>INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS</p> <p>EXAMPLE 1 - HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS</p> <p>EXAMPLE 2 - HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS</p>	EXAMPLE 1	EXAMPLE 2	EXAMPLE 3										
	RED	RED	RED										
	BLUE	BLUE											
	GREEN	GREEN											
	ORANGE	YELLOW											
	PURPLE												
<p>FIBER JUMPERS TO RRHs</p> <p>LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY</p>	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH							
	RED	RED	BLUE	BLUE	GREEN	GREEN							
		PURPLE		PURPLE		PURPLE							
<p>POWER CABLES TO RRHs</p> <p>LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY</p>	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH							
	RED	RED	BLUE	BLUE	GREEN	GREEN							
		PURPLE		PURPLE		PURPLE							
<p>RET MOTORS AT ANTENNAS</p>	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"							
	RED	RED	BLUE	BLUE	GREEN	GREEN							
		PURPLE		PURPLE		PURPLE							
<p>MICROWAVE RADIO LINKS</p> <p>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.</p> <p>MICROWAVE CABLES WILL REQUIRE P-TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID'S</p>	FORWARD AZIMUTH OF 0-120 DEGREES		FORWARD AZIMUTH OF 120-240 DEGREES		FORWARD AZIMUTH OF 240-360 DEGREES								
	PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY							
	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE							
	RED	RED	BLUE	BLUE	GREEN	GREEN							
	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE							
		RED		WHITE		WHITE							
		WHITE		BLUE		GREEN							
		WHITE		WHITE		WHITE							
		WHITE		WHITE		WHITE							

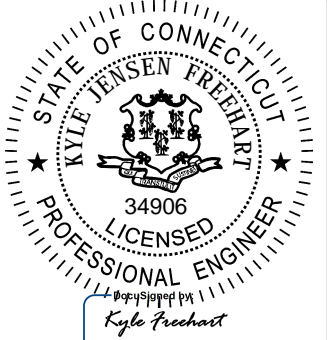
<p>LOW BANDS (N71+N26) OPTIONAL - (N29)</p> <p>ORANGE</p>	<p>AWS (N66+N70+H-BLOCK)</p> <p>PURPLE</p>	
<p>CBRS TECH (3 GHz)</p> <p>YELLOW</p>	<p>NEGATIVE SLANT PORT ON ANT/RRH</p> <p>WHITE</p>	
<p>ALPHA SECTOR</p> <p>RED</p>	<p>BETA SECTOR</p> <p>BLUE</p>	<p>GAMMA SECTOR</p> <p>GREEN</p>
COLOR IDENTIFIER	NO SCALE	2
NOT USED	NO SCALE	3
RF CABLE COLOR CODES	NO SCALE	4



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



COA #: PEC.0000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601



STATE OF CONNECTICUT
KYLE JENSEN-FREHART
34906
LICENSED PROFESSIONAL ENGINEER
KYLE F. FREHART
DBEE252A3804C1

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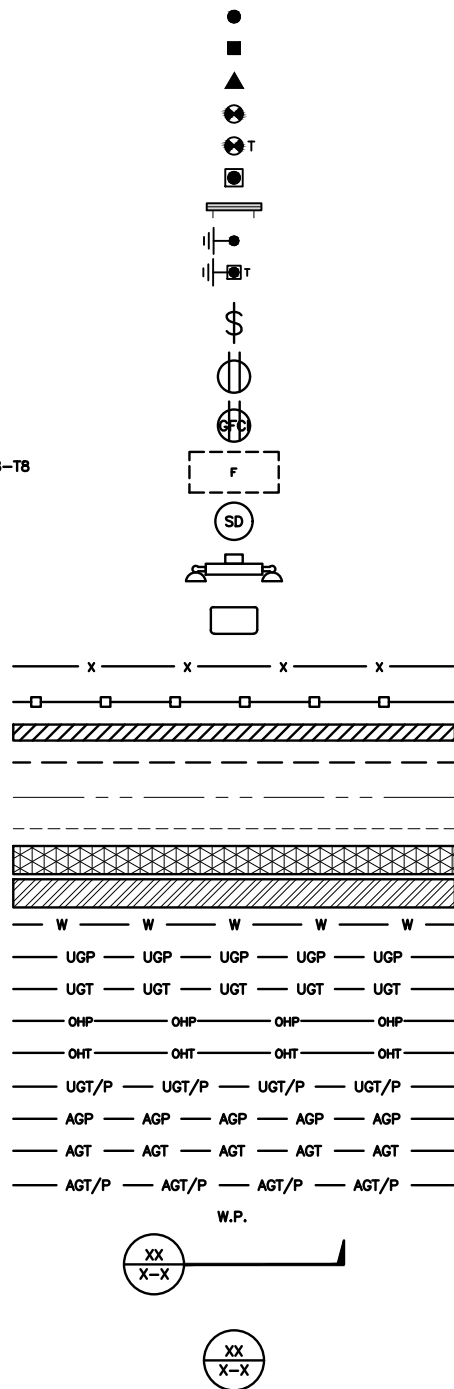
DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00168A
20 GREAT OAK RD.
OXFORD, CT 06478

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

EXOTHERMIC CONNECTION
 MECHANICAL CONNECTION
 BUSS BAR INSULATOR
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 EXOTHERMIC WITH INSPECTION SLEEVE
 GROUNDING BAR
 GROUND ROD
 TEST GROUND ROD WITH INSPECTION SLEEVE
 SINGLE POLE SWITCH
 DUPLEX RECEPTACLE
 DUPLEX GFCI RECEPTACLE
 FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8
 SMOKE DETECTION (DC)
 EMERGENCY LIGHTING (DC)
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
 LED-1-25A400/51K-SR4-120-PE-DBBTD
 CHAIN LINK FENCE
 WOOD/WROUGHT IRON FENCE
 WALL STRUCTURE
 LEASE AREA
 PROPERTY LINE (PL)
 SETBACKS
 ICE BRIDGE
 CABLE TRAY
 WATER LINE
 UNDERGROUND POWER
 UNDERGROUND TELCO
 OVERHEAD POWER
 OVERHEAD TELCO
 UNDERGROUND TELCO/POWER
 ABOVE GROUND POWER
 ABOVE GROUND TELCO
 ABOVE GROUND TELCO/POWER
 WORKPOINT
 SECTION REFERENCE
 DETAIL REFERENCE



LEGEND

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

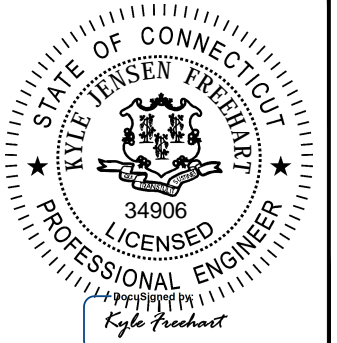
ABBREVIATIONS



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DISH Wireless L.L.C.
 PROJECT INFORMATION
 BOHVN00168A
 20 GREAT OAK RD.
 OXFORD, CT 06478

SHEET TITLE
 LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

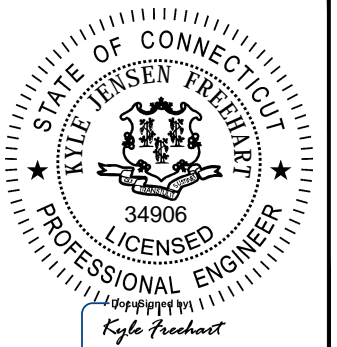
1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
CARRIER: DISH Wireless L.L.C.
TOWER OWNER: TOWER OWNER
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED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



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PROJECT INFORMATION

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20 GREAT OAK RD.
OXFORD, CT 06478

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

ELECTRICAL INSTALLATION NOTES:

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

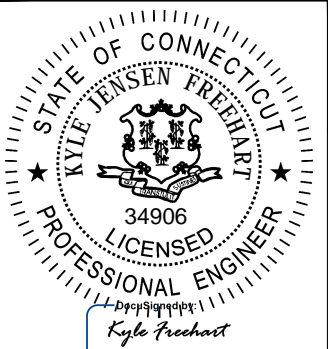
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL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



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LITTLETON, CO 80120



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DRD	MCK	MCK

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	03/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLC-16449

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00168A
20 GREAT OAK RD.
OXFORD, CT 06478

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

GROUNDING NOTES:

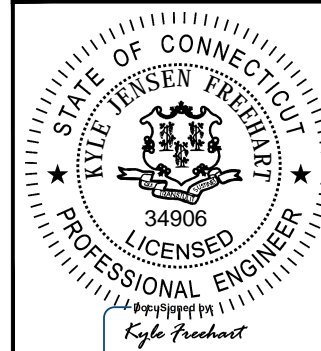
1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING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



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DRAWN BY: CHECKED BY: APPROVED BY:

DRD MCK MCK

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER
KHCLC-16449

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00168A
20 GREAT OAK RD.
OXFORD, CT 06478

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

Certificate Of Completion

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Document Pages: 18	Signatures: 18
Certificate Pages: 1	Initials: 0
AutoNav: Enabled	Envelope Originator:
Envelope Stamping: Enabled	Manuel JaraPerez
Time Zone: (UTC-05:00) Eastern Time (US & Canada)	401 Fayetteville St.
	Suite 600
	Raleigh, NC 27601
	Manuel.JaraPerez@kimley-horn.com
	IP Address: 208.127.231.172


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Kyle Freehart
 kyle.freehart@kimley-horn.com
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Signature

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Editor Delivery Events	Status	Timestamp
Agent Delivery Events	Status	Timestamp
Intermediary Delivery Events	Status	Timestamp
Certified Delivery Events	Status	Timestamp
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Completed	Security Checked	3/7/2022 12:46:12 PM
Payment Events	Status	Timestamps

Exhibit D

Structural Analysis Report

Date: **September 22, 2021**



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

Subject: **Structural Analysis Report**

Carrier Designation: **DISH Network Co-Locate**
Site Number: BOHVN00168A
Site Name: CT-CCI-T-876361

Crown Castle Designation: **BU Number:** 876361
Site Name: SEYMOUR 2 / OXFORD TOWN GARAGE
JDE Job Number: 645186
Work Order Number: 1962852
Order Number: 553385 Rev. 1

Engineering Firm Designation: **Crown Castle Project Number:** 1962852

Site Data: **20 Great Oak Rd., OXFORD, NEW HAVEN County, CT**
Latitude 41° 25' 34.91", Longitude -73° 8' 39.33"
150 Foot - Monopole Tower

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

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

LC5: Proposed Equipment Configuration

Sufficient Capacity-93.7%

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 117 mph. 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: 2021.09.22 12:16:36
-04'00'

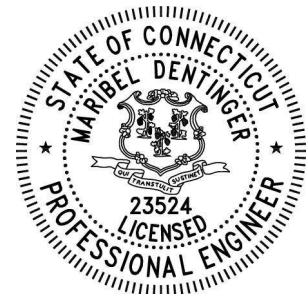


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1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC.. 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:	117 mph
Exposure Category:	B
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)
117.0	117.0	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)
150.0	150.0	3	ericsson	AIR6449 B41_T-MOBILE	4	1-5/8
		3	ericsson	RADIO 4415 B66A_CCIV3		
		3	ericsson	RADIO 4424 B25_TMO		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO		
		1	tower mounts	Miscellaneous [NA 507-3]		
		1	tower mounts	Platform Mount [LP 604-1]		
148.0	148.0	3	alcatel lucent	1900MHz RRH (65MHz)	-	-
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	800MHZ RRH		
		1	tower mounts	Pipe Mount [PM 601-3]		
140.0	140.0	6	antel	LPA-80063-6CF-EDIN-2 w/ Mount Pipe	18	1-5/8
		3	commscope	CBC78T-DS-43-2X		
		6	commscope	JAHH-65B-R3B 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)
		1	raycap	RVZDC-6627-PF-48		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
		1	tower mounts	Platform Mount [LP 714-1]		
		3	vzw	Sub6 Antenna - VZS01 w/ Mount Pipe		
130.0	131.0	2	andrew	SBNH-1D6565C w/ Mount Pipe	2 4 12	3/8 3/4 1-1/4
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 8843 B2/B66A		
		2	kathrein	80010965 w/ Mount Pipe		
		4	kathrein_	80010966 w/ Mount Pipe		
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8C-EV		
	1	raycap	DC6-48-60-18-8F			
	130.0	1	tower mounts	Platform Mount [LP 305-1_HR-1]		
85.0	86.0	1	lucent	KS24019-L112A	1	1/2
		1	lucent	KS24019-L112D		
	85.0	1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1532984	CCISITES
4-POST-MODIFICATION INSPECTION	3772404	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1446979	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3354881	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
150 - 145	Pole	TP16.08x15x0.1875	Pole	11.7%	Pass
145 - 140	Pole	TP17.16x16.08x0.1875	Pole	20.7%	Pass
140 - 135	Pole	TP18.239x17.16x0.1875	Pole	37.0%	Pass
135 - 130	Pole	TP19.319x18.239x0.1875	Pole	50.0%	Pass
130 - 126.59	Pole	TP20.74x19.319x0.1875	Pole	62.4%	Pass
126.59 - 121.59	Pole	TP20.744x19.68x0.25	Pole	57.4%	Pass
121.59 - 117	Pole	TP21.72x20.744x0.25	Pole	65.0%	Pass
117 - 116.75	Pole + Reinf.	TP21.773x21.72x0.5625	Reinf. 6 Tension Rupture	45.3%	Pass
116.75 - 111.75	Pole + Reinf.	TP22.836x21.773x0.55	Reinf. 6 Tension Rupture	52.5%	Pass
111.75 - 106.75	Pole + Reinf.	TP23.899x22.836x0.525	Reinf. 6 Tension Rupture	58.8%	Pass
106.75 - 101.75	Pole + Reinf.	TP24.962x23.899x0.5125	Reinf. 6 Tension Rupture	64.4%	Pass
101.75 - 96.75	Pole + Reinf.	TP26.026x24.962x0.5	Reinf. 6 Tension Rupture	69.3%	Pass
96.75 - 91.75	Pole + Reinf.	TP27.089x26.026x0.4875	Reinf. 6 Tension Rupture	74.0%	Pass
91.75 - 90.04	Pole + Reinf.	TP28.32x27.089x0.4875	Reinf. 6 Tension Rupture	75.5%	Pass
90.04 - 84.96	Pole + Reinf.	TP28.035x26.952x0.675	Reinf. 5 Tension Rupture	58.6%	Pass
84.96 - 79.96	Pole + Reinf.	TP29.1x28.035x0.6625	Reinf. 5 Tension Rupture	61.5%	Pass
79.96 - 74.96	Pole + Reinf.	TP30.165x29.1x0.6375	Reinf. 5 Tension Rupture	64.1%	Pass
74.96 - 69.96	Pole + Reinf.	TP31.23x30.165x0.625	Reinf. 5 Tension Rupture	66.6%	Pass
69.96 - 64.96	Pole + Reinf.	TP32.296x31.23x0.6125	Reinf. 5 Tension Rupture	68.8%	Pass
64.96 - 60.5	Pole + Reinf.	TP33.246x32.296x0.6	Reinf. 5 Tension Rupture	70.6%	Pass
60.5 - 60.25	Pole + Reinf.	TP33.299x33.246x0.6	Reinf. 4 Tension Rupture	70.7%	Pass
60.25 - 55.25	Pole + Reinf.	TP34.364x33.299x0.5875	Reinf. 4 Tension Rupture	72.6%	Pass
55.25 - 50.25	Pole + Reinf.	TP35.43x34.364x0.5875	Reinf. 4 Tension Rupture	74.2%	Pass
50.25 - 47.58	Pole + Reinf.	TP37.1x35.43x0.575	Reinf. 4 Tension Rupture	75.0%	Pass
47.58 - 41.41	Pole + Reinf.	TP36.687x35.374x0.6375	Reinf. 4 Tension Rupture	71.1%	Pass
41.41 - 36.41	Pole + Reinf.	TP37.751x36.687x0.625	Reinf. 4 Tension Rupture	72.1%	Pass
36.41 - 31.41	Pole + Reinf.	TP38.815x37.751x0.625	Reinf. 4 Tension Rupture	73.0%	Pass
31.41 - 30.5	Pole + Reinf.	TP39.009x38.815x0.6125	Reinf. 4 Tension Rupture	73.2%	Pass
30.5 - 30.25	Pole + Reinf.	TP39.062x39.009x0.6125	Reinf. 3 Tension Rupture	73.2%	Pass

30.25 - 25.25	Pole + Reinf.	TP40.126x39.062x0.6125	Reinf. 3 Tension Rupture	74.0%	Pass
25.25 - 20.25	Pole + Reinf.	TP41.19x40.126x0.6	Reinf. 3 Tension Rupture	74.6%	Pass
20.25 - 18	Pole + Reinf.	TP41.669x41.19x0.6	Reinf. 3 Tension Rupture	74.9%	Pass
18 - 17.75	Pole + Reinf.	TP41.722x41.669x0.5563	Reinf. 1 Tension Rupture	77.0%	Pass
17.75 - 12.75	Pole + Reinf.	TP42.786x41.722x0.55	Reinf. 1 Tension Rupture	77.5%	Pass
12.75 - 7.75	Pole + Reinf.	TP43.851x42.786x0.55	Reinf. 1 Tension Rupture	78.0%	Pass
7.75 - 3.92	Pole + Reinf.	TP44.667x43.851x0.5375	Reinf. 1 Tension Rupture	78.2%	Pass
3.92 - 3.67	Pole + Reinf.	TP44.72x44.667x0.525	Reinf. 7 Tension Yield	77.0%	Pass
3.67 - 0	Pole + Reinf.	TP45.5x44.72x0.5125	Reinf. 7 Tension Yield	77.2%	Pass
				Summary	
			Pole	65.0%	Pass
			Reinforcement	78.2%	Pass
			Overall	78.2%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	69.9	Pass
1	Base Plate	0	76.5	Pass
1	Base Foundation (Structure)	0	93.7	Pass
1	Base Foundation (Soil Interaction)	0	83.1	Pass

Structure Rating (max from all components) =	93.7%
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Notes:

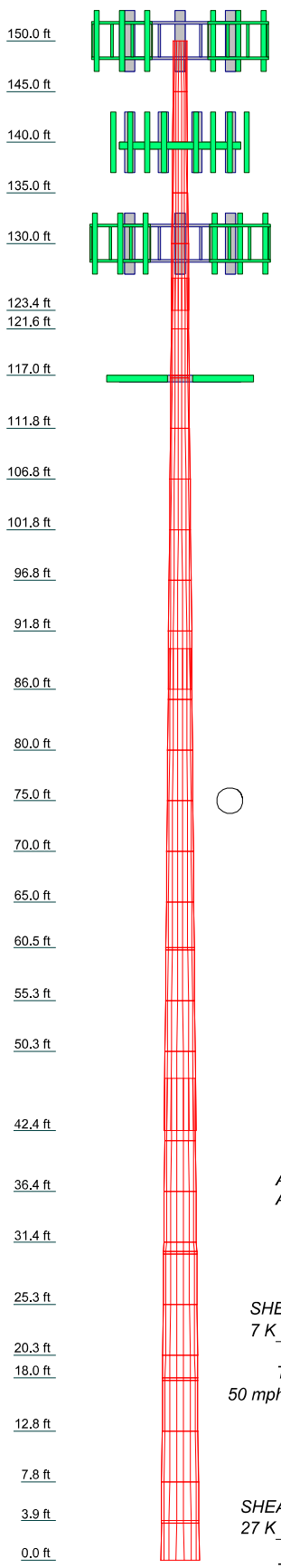
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

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

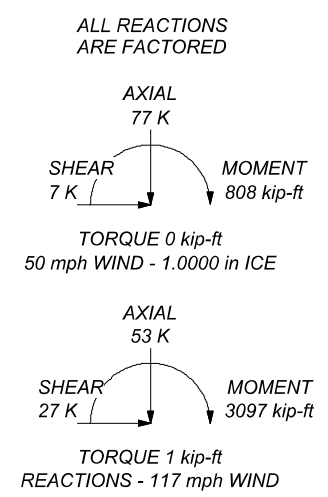
Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
2	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
3	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
4	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
5	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
6	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
7	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
8	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
9	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
10	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
11	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
12	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
13	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
14	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
15	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
16	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
17	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
18	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
19	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
20	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
21	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
22	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
23	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
24	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
25	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
26	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
27	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
28	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
29	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
30	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
31	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
32	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
33	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
34	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
35	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
36	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
37	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
38	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
39	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
40	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
41	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
42	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
43	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
44	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2
45	5.00	18	0.1875	3.17	18.2393	17.1595	A572-65	0.2



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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 117 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: 78.2%



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

Job: **BU 876361**
 Project:
 Client: Crown Castle
 Code: TIA-222-H
 Path:
 Drawn by: KGebremariam
 Date: 09/21/21
 App'd:
 Scale: NTS
 Dwg No. E-1

C:\Users\KGebremariam\Desktop\Work Area\876361\WO-1982852 - SA\Prod\876361 R.dwg

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: 734.00 ft.
- Basic wind speed of 117 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.0000 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: 78.2%.
- 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 Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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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	150.00-145.00	5.00	0.00	18	15.0000	16.0798	0.1875	0.7500	A572-65 (65 ksi)
L2	145.00-140.00	5.00	0.00	18	16.0798	17.1595	0.1875	0.7500	A572-65 (65 ksi)
L3	140.00-135.00	5.00	0.00	18	17.1595	18.2393	0.1875	0.7500	A572-65 (65 ksi)
L4	135.00-130.00	5.00	0.00	18	18.2393	19.3190	0.1875	0.7500	A572-65 (65 ksi)
L5	130.00-123.42	6.58	3.17	18	19.3190	20.7400	0.1875	0.7500	A572-65 (65 ksi)
L6	123.42-121.59	5.00	0.00	18	19.6804	20.7436	0.2500	1.0000	A572-65 (65 ksi)
L7	121.59-117.00	4.59	0.00	18	20.7436	21.7197	0.2500	1.0000	A572-65 (65 ksi)
L8	117.00-116.75	0.25	0.00	18	21.7197	21.7728	0.5625	2.2500	A572-65 (65 ksi)
L9	116.75-111.75	5.00	0.00	18	21.7728	22.8360	0.5500	2.2000	A572-65 (65 ksi)
L10	111.75-106.75	5.00	0.00	18	22.8360	23.8992	0.5250	2.1000	A572-65 (65 ksi)
L11	106.75-101.75	5.00	0.00	18	23.8992	24.9624	0.5125	2.0500	A572-65 (65 ksi)
L12	101.75-96.75	5.00	0.00	18	24.9624	26.0256	0.5000	2.0000	A572-65 (65 ksi)
L13	96.75-91.75	5.00	0.00	18	26.0256	27.0888	0.4875	1.9500	A572-65 (65 ksi)
L14	91.75-85.96	5.79	4.08	18	27.0888	28.3200	0.4875	1.9500	A572-65 (65 ksi)
L15	85.96-84.96	5.08	0.00	18	26.9524	28.0347	0.6750	2.7000	A572-65 (65 ksi)
L16	84.96-79.96	5.00	0.00	18	28.0347	29.1000	0.6625	2.6500	A572-65 (65 ksi)
L17	79.96-74.96	5.00	0.00	18	29.1000	30.1652	0.6375	2.5500	A572-65 (65 ksi)
L18	74.96-69.96	5.00	0.00	18	30.1652	31.2305	0.6250	2.5000	A572-65 (65 ksi)
L19	69.96-64.96	5.00	0.00	18	31.2305	32.2957	0.6125	2.4500	A572-65 (65 ksi)
L20	64.96-60.50	4.46	0.00	18	32.2957	33.2459	0.6000	2.4000	A572-65 (65 ksi)
L21	60.50-60.25	0.25	0.00	18	33.2459	33.2992	0.6000	2.4000	A572-65 (65 ksi)
L22	60.25-55.25	5.00	0.00	18	33.2992	34.3644	0.5875	2.3500	A572-65 (65 ksi)
L23	55.25-50.25	5.00	0.00	18	34.3644	35.4297	0.5875	2.3500	A572-65 (65 ksi)
L24	50.25-42.41	7.84	5.17	18	35.4297	37.1000	0.5750	2.3000	A572-65 (65 ksi)
L25	42.41-41.41	6.17	0.00	18	35.3735	36.6867	0.6375	2.5500	A572-65 (65 ksi)
L26	41.41-36.41	5.00	0.00	18	36.6867	37.7508	0.6250	2.5000	A572-65 (65 ksi)
L27	36.41-31.41	5.00	0.00	18	37.7508	38.8150	0.6250	2.5000	A572-65 (65 ksi)
L28	31.41-30.50	0.91	0.00	18	38.8150	39.0087	0.6125	2.4500	A572-65 (65 ksi)
L29	30.50-30.25	0.25	0.00	18	39.0087	39.0619	0.6125	2.4500	A572-65 (65 ksi)
L30	30.25-25.25	5.00	0.00	18	39.0619	40.1260	0.6125	2.4500	A572-65 (65 ksi)
L31	25.25-20.25	5.00	0.00	18	40.1260	41.1902	0.6000	2.4000	A572-65 (65 ksi)
L32	20.25-18.00	2.25	0.00	18	41.1902	41.6691	0.6000	2.4000	A572-65 (65 ksi)
L33	18.00-17.75	0.25	0.00	18	41.6691	41.7223	0.5563	2.2250	A572-65 (65 ksi)
L34	17.75-12.75	5.00	0.00	18	41.7223	42.7864	0.5500	2.2000	A572-65 (65 ksi)
L35	12.75-7.75	5.00	0.00	18	42.7864	43.8506	0.5500	2.2000	A572-65

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
L36	7.75-3.92	3.83	0.00	18	43.8506	44.6666	0.5375	2.1500	(65 ksi) A572-65
L37	3.92-3.67	0.25	0.00	18	44.6666	44.7198	0.5250	2.1000	(65 ksi) A572-65
L38	3.67-0.00	3.67		18	44.7198	45.5000	0.5125	2.0500	(65 ksi) A572-65

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	15.2025	8.8153	244.3603	5.2584	7.6200	32.0683	489.0422	4.4085	2.3100	12.32
	16.2989	9.4579	301.7884	5.6418	8.1685	36.9453	603.9739	4.7298	2.5000	13.334
L2	16.2989	9.4579	301.7884	5.6418	8.1685	36.9453	603.9739	4.7298	2.5000	13.334
	17.3953	10.1005	367.5751	6.0251	8.7170	42.1674	735.6339	5.0512	2.6901	14.347
L3	17.3953	10.1005	367.5751	6.0251	8.7170	42.1674	735.6339	5.0512	2.6901	14.347
	18.4917	10.7431	442.2884	6.4084	9.2656	47.7347	885.1589	5.3726	2.8801	15.361
L4	18.4917	10.7431	442.2884	6.4084	9.2656	47.7347	885.1589	5.3726	2.8801	15.361
	19.5881	11.3857	526.4962	6.7917	9.8141	53.6471	1053.6852	5.6939	3.0702	16.374
L5	19.5881	11.3857	526.4962	6.7917	9.8141	53.6471	1053.6852	5.6939	3.0702	16.374
	21.0310	12.2313	652.7391	7.2961	10.5359	61.9537	1306.3371	6.1168	3.3202	17.708
L6	20.6299	15.4180	735.4139	6.8978	9.9977	73.5586	1471.7954	7.7105	3.0238	12.095
	21.0251	16.2617	862.8618	7.2752	10.5378	81.8828	1726.8590	8.1324	3.2109	12.844
L7	21.0251	16.2617	862.8618	7.2752	10.5378	81.8828	1726.8590	8.1324	3.2109	12.844
	22.0161	17.0362	992.1089	7.6217	11.0336	89.9172	1985.5232	8.5197	3.3827	13.531
L8	21.9679	37.7734	2136.1830	7.5108	11.0336	193.6074	4275.1769	18.8903	2.8327	5.036
	22.0219	37.8684	2152.3258	7.5297	11.0606	194.5942	4307.4837	18.9378	2.8420	5.052
L9	22.0238	37.0487	2108.2193	7.5341	11.0606	190.6064	4219.2126	18.5279	2.8640	5.207
	23.1034	38.9047	2441.2044	7.9115	11.6007	210.4361	4885.6210	19.4560	3.0511	5.548
L10	23.1073	37.1780	2338.0914	7.9204	11.6007	201.5475	4679.2593	18.5925	3.0951	5.896
	24.1869	38.9496	2688.5283	8.2978	12.1408	221.4457	5380.5942	19.4785	3.2823	6.252
L11	24.1888	38.0426	2628.7286	8.3023	12.1408	216.5202	5260.9161	19.0249	3.3043	6.447
	25.2684	39.7721	3003.7944	8.6797	12.6809	236.8754	6011.5412	19.8898	3.4914	6.812
L12	25.2704	38.8218	2935.0281	8.6842	12.6809	231.4526	5873.9181	19.4146	3.5134	7.027
	26.3500	40.5091	3334.5936	9.0616	13.2210	252.2193	6673.5750	20.2584	3.7005	7.401
L13	26.3519	39.5158	3256.0076	9.0660	13.2210	246.2752	6516.2995	19.7616	3.7225	7.636
	27.4315	41.1609	3679.8343	9.4435	13.7611	267.4081	7364.5106	20.5844	3.9096	8.02
L14	27.4315	41.1609	3679.8343	9.4435	13.7611	267.4081	7364.5106	20.5844	3.9096	8.02
	28.6817	43.0659	4214.7871	9.8805	14.3866	292.9670	8435.1202	21.5371	4.1263	8.464
L15	28.1467	56.2981	4911.3028	9.3285	13.6918	358.7031	9829.0680	28.1544	3.5556	5.268
	28.3631	58.6168	5543.4889	9.7127	14.2416	389.2452	11094.272	29.3140	3.7461	5.55
L16	28.3650	57.5576	5448.2925	9.7171	14.2416	382.5608	10903.754	28.7843	3.7681	5.688
	29.4467	59.7976	6109.4655	10.0953	14.7828	413.2824	12226.969	29.9045	3.9556	5.971
L17	29.4505	57.5917	5894.4381	10.1042	14.7828	398.7366	11796.632	28.8013	3.9996	6.274
	30.5322	59.7471	6581.3410	10.4823	15.3239	429.4812	13171.341	29.8792	4.1871	6.568
L18	30.5342	58.6004	6460.4929	10.4868	15.3239	421.5950	12929.486	29.3058	4.2091	6.735
	31.6158	60.7136	7184.9150	10.8649	15.8651	452.8761	14379.284	30.3626	4.3966	7.035
L19	31.6178	59.5236	7049.8476	10.8694	15.8651	444.3626	14108.971	29.7675	4.4186	7.214
	32.6994	61.5946	7811.5728	11.2475	16.4062	476.1346	15633.424	30.8031	4.6060	7.52
L20	32.7014	60.3613	7661.2136	11.2520	16.4062	466.9699	15332.508	30.1864	4.6280	7.713
	33.6662	62.1709	8371.1006	11.5893	16.8889	495.6561	16753.216	31.0914	4.7953	7.992
L21	33.6662	62.1709	8371.1006	11.5893	16.8889	495.6561	16753.216	31.0914	4.7953	7.992

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
	33.7203	62.2723	8412.1407	11.6082	16.9160	497.2894	16835.350	31.1421	4.8047	8.008
L22	33.7223	60.9983	8246.3376	11.6126	16.9160	487.4878	16503.525	30.5049	4.8267	8.216
	34.8039	62.9847	9078.4786	11.9908	17.4571	520.0440	18168.902	31.4983	5.0141	8.535
L23	34.8039	62.9847	9078.4786	11.9908	17.4571	520.0440	18168.902	31.4983	5.0141	8.535
	35.8856	64.9711	9964.7981	12.3690	17.9983	553.6528	19942.708	32.4917	5.2016	8.854
L24	35.8875	63.6115	9763.2816	12.3734	17.9983	542.4563	19539.410	31.8118	5.2236	9.085
	37.5836	66.6600	11235.253	12.9664	18.8468	596.1359	22485.291	33.3363	5.5176	9.596
L25	36.9382	70.2858	10714.333	12.3313	17.9698	596.2426	21442.764	35.1496	5.1037	8.006
	37.1543	72.9428	11975.985	12.7975	18.6368	642.5974	23967.730	36.4784	5.3349	8.368
L26	37.1562	71.5374	11753.380	12.8019	18.6368	630.6530	23522.226	35.7755	5.3569	8.571
	38.2368	73.6484	12824.885	13.1797	19.1774	668.7489	25666.646	36.8312	5.5441	8.871
L27	38.2368	73.6484	12824.885	13.1797	19.1774	668.7489	25666.646	36.8312	5.5441	8.871
	39.3174	75.7594	13959.610	13.5574	19.7180	707.9621	27937.589	37.8869	5.7314	9.17
L28	39.3193	74.2685	13693.855	13.5619	19.7180	694.4844	27405.730	37.1413	5.7534	9.393
	39.5160	74.6450	13903.185	13.6306	19.8164	701.5997	27824.665	37.3296	5.7875	9.449
L29	39.5160	74.6450	13903.185	13.6306	19.8164	701.5997	27824.665	37.3296	5.7875	9.449
	39.5700	74.7485	13961.065	13.6495	19.8434	703.5609	27940.500	37.3813	5.7969	9.464
L30	39.5700	74.7485	13961.065	13.6495	19.8434	703.5609	27940.500	37.3813	5.7969	9.464
	40.6506	76.8173	15152.631	14.0273	20.3840	743.3582	30325.200	38.4159	5.9842	9.77
L31	40.6525	75.2734	14857.485	14.0317	20.3840	728.8789	29734.520	37.6438	6.0062	10.01
	41.7331	77.2999	16090.099	14.4095	20.9246	768.9556	32201.369	38.6573	6.1935	10.322
L32	41.7331	77.2999	16090.099	14.4095	20.9246	768.9556	32201.369	38.6573	6.1935	10.322
	42.2193	78.2119	16666.320	14.5795	21.1679	787.3401	33354.570	39.1134	6.2778	10.463
L33	42.2261	72.5862	15500.499	14.5950	21.1679	732.2651	31021.394	36.3000	6.3548	11.424
	42.2801	72.6801	15560.758	14.6139	21.1949	734.1743	31141.991	36.3470	6.3641	11.441
L34	42.2810	71.8744	15392.927	14.6162	21.1949	726.2559	30806.108	35.9440	6.3751	11.591
	43.3616	73.7321	16617.594	14.9939	21.7355	764.5371	33257.054	36.8731	6.5624	11.932
L35	43.3616	73.7321	16617.594	14.9939	21.7355	764.5371	33257.054	36.8731	6.5624	11.932
	44.4422	75.5898	17905.553	15.3717	22.2761	803.8016	35834.667	37.8021	6.7497	12.272
L36	44.4441	73.8932	17513.768	15.3761	22.2761	786.2138	35050.581	36.9536	6.7717	12.599
	45.2727	75.2853	18522.378	15.6658	22.6906	816.3015	37069.129	37.6498	6.9153	12.866
L37	45.2746	73.5553	18107.003	15.6703	22.6906	797.9954	36237.833	36.7846	6.9373	13.214
	45.3286	73.6439	18172.560	15.6891	22.7176	799.9317	36369.033	36.8290	6.9467	13.232
L38	45.3306	71.9109	17754.937	15.6936	22.7176	781.5485	35533.237	35.9623	6.9687	13.597
	46.1228	73.1800	18711.724	15.9706	23.1140	809.5407	37448.071	36.5970	7.1060	13.865

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L1 150.00-145.00				1	1	1			
L2 145.00-140.00				1	1	1			
L3 140.00-135.00				1	1	1			
L4 135.00-130.00				1	1	1			
L5 130.00-123.42				1	1	1			
L6 123.42-121.59				1	1	1			
L7 121.59-117.00				1	1	1			
L8 117.00-116.75				1	1	0.898612			
L9 116.75-111.75				1	1	0.89636			
L10 111.75-106.75				1	1	0.916986			
L11 106.75-101.75				1	1	0.919236			
L12 101.75-96.75				1	1	0.923336			
L13 96.75-91.75				1	1	0.929213			
L14 91.75-85.96				1	1	0.923598			
L15 85.96-84.96				1	1	0.902606			
L16 84.96-79.96				1	1	0.902452			
L17 79.96-74.96				1	1	0.920899			
L18 74.96-69.96				1	1	0.923643			
L19 69.96-64.96				1	1	0.927586			
L20 64.96-60.50				1	1	0.934147			
L21 60.50-60.25				1	1	0.933474			
L22 60.25-55.25				1	1	0.939691			
L23 55.25-50.25				1	1	0.927224			
L24 50.25-42.41				1	1	0.940561			
L25 42.41-41.41				1	1	0.940886			
L26 41.41-36.41				1	1	0.94907			
L27 36.41-31.41				1	1	0.939344			
L28 31.41-30.50				1	1	0.956455			
L29 30.50-30.25				1	1	0.955979			
L30 30.25-25.25				1	1	0.946722			
L31 25.25-20.25				1	1	0.957196			
L32 20.25-18.00				1	1	0.953322			
L33 18.00-17.75				1	1	1.02675			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L34 17.75-12.75				1	1	1.02928			
L35 12.75-7.75				1	1	1.02074			
L36 7.75-3.92				1	1	1.03777			
L37 3.92-3.67				1	1	1.00315			
L38 3.67-0.00				1	1	1.0222			

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 r	Perimeter r	Weight plf
*** HB158-21U6S24-xxM_TMO(1-5/8) ***	A	No	Surface Ar (CaAa)	150.00 - 0.00	4	4	0.000 0.000	1.9960		2.50
*** LDF7-50A(1-5/8) ***	C	No	Surface Ar (CaAa)	140.00 - 0.00	6	6	0.000 0.000	1.9800		0.82
*** LDF4-50A(1/2) ***	A	No	Surface Ar (CaAa)	85.00 - 0.00	2	2	0.500 0.500	0.6300		0.15
*** (Area) Aero MP3-06 (H) ***	A	No	Surface Af (CaAa)	90.50 - 0.00	1	1	0.000 0.000	6.8900	18.9800	0.00
(Area) Aero MP3-06 (H)	B	No	Surface Af (CaAa)	90.50 - 0.00	1	1	0.000 0.000	6.8900	18.9800	0.00
(Area) Aero MP3-06 (H)	C	No	Surface Af (CaAa)	90.50 - 15.50	1	1	0.000 0.000	6.8900	18.9800	0.00
(Area) Aero MP3-06 (H) *	C	No	Surface Af (CaAa)	20.50 - 0.00	1	1	0.000 0.000	6.8900	18.9800	0.00
(Area) Aero MP3-05 (H) ***	A	No	Surface Af (CaAa)	118.00 - 88.00	1	1	0.000 0.000	5.3300	14.8400	0.00
(Area) Aero MP3-05 (H)	B	No	Surface Af (CaAa)	118.00 - 88.00	1	1	0.000 0.000	5.3300	14.8400	0.00
(Area) Aero MP3-05 (H) ***	C	No	Surface Af (CaAa)	118.00 - 88.00	1	1	0.000 0.000	5.3300	14.8400	0.00
*** CU12PSM9P6XXX(1-1/2) ***	B	No	Surface Ar (CaAa)	117.00 - 0.00	1	1	-0.410 -0.400	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 _A A _A ft ² /ft	Weight plf
LDF7-50A(1-5/8) ***	C	No	No	Inside Pole	140.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.82 0.82 0.82
LDF6-50A(1-1/4) ***	A	No	No	Inside Pole	130.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.60 0.60 0.60
FB-L98B-002-75000(3/8) ***	A	No	No	Inside Pole	130.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.06 0.06 0.06

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
FB-L98B-034-XXX(3/8)	A	No	No	Inside Pole	130.00 -0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	A	No	No	Inside Pole	130.00 -0.00	4	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	130.00 -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} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	150.00-145.00	A	0.000	0.000	3.992	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	145.00-140.00	A	0.000	0.000	3.992	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	140.00-135.00	A	0.000	0.000	3.992	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.940	0.000	0.07
L4	135.00-130.00	A	0.000	0.000	3.992	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.940	0.000	0.07
L5	130.00-123.42	A	0.000	0.000	5.253	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	7.817	0.000	0.10
L6	123.42-121.59	A	0.000	0.000	1.461	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.174	0.000	0.03
L7	121.59-117.00	A	0.000	0.000	4.553	0.000	0.09
		B	0.000	0.000	0.888	0.000	0.00
		C	0.000	0.000	6.341	0.000	0.07
L8	117.00-116.75	A	0.000	0.000	0.422	0.000	0.00
		B	0.000	0.000	0.262	0.000	0.00
		C	0.000	0.000	0.519	0.000	0.00
L9	116.75-111.75	A	0.000	0.000	8.434	0.000	0.10
		B	0.000	0.000	5.242	0.000	0.01
		C	0.000	0.000	10.382	0.000	0.08
L10	111.75-106.75	A	0.000	0.000	8.434	0.000	0.10
		B	0.000	0.000	5.242	0.000	0.01
		C	0.000	0.000	10.382	0.000	0.08
L11	106.75-101.75	A	0.000	0.000	8.434	0.000	0.10
		B	0.000	0.000	5.242	0.000	0.01
		C	0.000	0.000	10.382	0.000	0.08
L12	101.75-96.75	A	0.000	0.000	8.434	0.000	0.10
		B	0.000	0.000	5.242	0.000	0.01
		C	0.000	0.000	10.382	0.000	0.08
L13	96.75-91.75	A	0.000	0.000	8.434	0.000	0.10
		B	0.000	0.000	5.242	0.000	0.01
		C	0.000	0.000	10.382	0.000	0.08
L14	91.75-85.96	A	0.000	0.000	13.167	0.000	0.11
		B	0.000	0.000	9.471	0.000	0.01
		C	0.000	0.000	15.423	0.000	0.09
L15	85.96-84.96	A	0.000	0.000	1.952	0.000	0.02
		B	0.000	0.000	1.308	0.000	0.00
		C	0.000	0.000	2.336	0.000	0.02
L16	84.96-79.96	A	0.000	0.000	10.364	0.000	0.10

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	11.682	0.000	0.08
L17	79.96-74.96	A	0.000	0.000	10.364	0.000	0.10
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	11.682	0.000	0.08
L18	74.96-69.96	A	0.000	0.000	10.364	0.000	0.10
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	11.682	0.000	0.08
L19	69.96-64.96	A	0.000	0.000	10.364	0.000	0.10
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	11.682	0.000	0.08
L20	64.96-60.50	A	0.000	0.000	9.244	0.000	0.09
		B	0.000	0.000	5.835	0.000	0.01
		C	0.000	0.000	10.420	0.000	0.07
L21	60.50-60.25	A	0.000	0.000	0.518	0.000	0.00
		B	0.000	0.000	0.327	0.000	0.00
		C	0.000	0.000	0.584	0.000	0.00
L22	60.25-55.25	A	0.000	0.000	10.364	0.000	0.10
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	11.682	0.000	0.08
L23	55.25-50.25	A	0.000	0.000	10.364	0.000	0.10
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	11.682	0.000	0.08
L24	50.25-42.41	A	0.000	0.000	16.250	0.000	0.16
		B	0.000	0.000	10.257	0.000	0.02
		C	0.000	0.000	18.317	0.000	0.12
L25	42.41-41.41	A	0.000	0.000	2.073	0.000	0.02
		B	0.000	0.000	1.308	0.000	0.00
		C	0.000	0.000	2.336	0.000	0.02
L26	41.41-36.41	A	0.000	0.000	10.364	0.000	0.10
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	11.682	0.000	0.08
L27	36.41-31.41	A	0.000	0.000	10.364	0.000	0.10
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	11.682	0.000	0.08
L28	31.41-30.50	A	0.000	0.000	1.886	0.000	0.02
		B	0.000	0.000	1.191	0.000	0.00
		C	0.000	0.000	2.126	0.000	0.01
L29	30.50-30.25	A	0.000	0.000	0.518	0.000	0.00
		B	0.000	0.000	0.327	0.000	0.00
		C	0.000	0.000	0.584	0.000	0.00
L30	30.25-25.25	A	0.000	0.000	10.364	0.000	0.10
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	11.682	0.000	0.08
L31	25.25-20.25	A	0.000	0.000	10.364	0.000	0.10
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	11.969	0.000	0.08
L32	20.25-18.00	A	0.000	0.000	4.664	0.000	0.04
		B	0.000	0.000	2.944	0.000	0.01
		C	0.000	0.000	7.840	0.000	0.03
L33	18.00-17.75	A	0.000	0.000	0.518	0.000	0.00
		B	0.000	0.000	0.327	0.000	0.00
		C	0.000	0.000	0.871	0.000	0.00
L34	17.75-12.75	A	0.000	0.000	10.364	0.000	0.10
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	14.265	0.000	0.08
L35	12.75-7.75	A	0.000	0.000	10.364	0.000	0.10
		B	0.000	0.000	6.542	0.000	0.01
		C	0.000	0.000	11.682	0.000	0.08
L36	7.75-3.92	A	0.000	0.000	7.947	0.000	0.08
		B	0.000	0.000	5.016	0.000	0.01
		C	0.000	0.000	8.958	0.000	0.06
L37	3.92-3.67	A	0.000	0.000	0.518	0.000	0.00
		B	0.000	0.000	0.327	0.000	0.00
		C	0.000	0.000	0.584	0.000	0.00
L38	3.67-0.00	A	0.000	0.000	7.599	0.000	0.07
		B	0.000	0.000	4.796	0.000	0.01
		C	0.000	0.000	8.565	0.000	0.06

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 _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	150.00-145.00	A	0.987	0.000	0.000	6.224	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	145.00-140.00	A	0.984	0.000	0.000	6.220	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	140.00-135.00	A	0.980	0.000	0.000	6.215	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.650	0.000	0.14
L4	135.00-130.00	A	0.977	0.000	0.000	6.211	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.646	0.000	0.14
L5	130.00-123.42	A	0.972	0.000	0.000	8.166	0.000	0.19
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	11.371	0.000	0.18
L6	123.42-121.59	A	0.969	0.000	0.000	2.271	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	3.162	0.000	0.05
L7	121.59-117.00	A	0.967	0.000	0.000	6.772	0.000	0.14
		B		0.000	0.000	1.082	0.000	0.01
		C		0.000	0.000	9.007	0.000	0.13
L8	117.00-116.75	A	0.965	0.000	0.000	0.580	0.000	0.01
		B		0.000	0.000	0.359	0.000	0.00
		C		0.000	0.000	0.702	0.000	0.01
L9	116.75-111.75	A	0.962	0.000	0.000	11.597	0.000	0.18
		B		0.000	0.000	7.166	0.000	0.06
		C		0.000	0.000	14.032	0.000	0.17
L10	111.75-106.75	A	0.958	0.000	0.000	11.587	0.000	0.18
		B		0.000	0.000	7.158	0.000	0.06
		C		0.000	0.000	14.022	0.000	0.17
L11	106.75-101.75	A	0.954	0.000	0.000	11.577	0.000	0.18
		B		0.000	0.000	7.149	0.000	0.06
		C		0.000	0.000	14.012	0.000	0.17
L12	101.75-96.75	A	0.949	0.000	0.000	11.567	0.000	0.18
		B		0.000	0.000	7.140	0.000	0.06
		C		0.000	0.000	14.002	0.000	0.17
L13	96.75-91.75	A	0.944	0.000	0.000	11.556	0.000	0.18
		B		0.000	0.000	7.130	0.000	0.06
		C		0.000	0.000	13.991	0.000	0.17
L14	91.75-85.96	A	0.938	0.000	0.000	17.238	0.000	0.23
		B		0.000	0.000	12.114	0.000	0.09
		C		0.000	0.000	20.057	0.000	0.22
L15	85.96-84.96	A	0.935	0.000	0.000	2.584	0.000	0.04
		B		0.000	0.000	1.684	0.000	0.01
		C		0.000	0.000	3.056	0.000	0.04
L16	84.96-79.96	A	0.932	0.000	0.000	14.779	0.000	0.20
		B		0.000	0.000	8.405	0.000	0.07
		C		0.000	0.000	15.263	0.000	0.18
L17	79.96-74.96	A	0.926	0.000	0.000	14.759	0.000	0.19
		B		0.000	0.000	8.393	0.000	0.07
		C		0.000	0.000	15.249	0.000	0.18
L18	74.96-69.96	A	0.920	0.000	0.000	14.738	0.000	0.19
		B		0.000	0.000	8.381	0.000	0.07
		C		0.000	0.000	15.236	0.000	0.18
L19	69.96-64.96	A	0.913	0.000	0.000	14.715	0.000	0.19
		B		0.000	0.000	8.368	0.000	0.07
		C		0.000	0.000	15.221	0.000	0.17
L20	64.96-60.50	A	0.906	0.000	0.000	13.105	0.000	0.17
		B		0.000	0.000	7.452	0.000	0.06
		C		0.000	0.000	13.564	0.000	0.16
L21	60.50-60.25	A	0.903	0.000	0.000	0.734	0.000	0.01
		B		0.000	0.000	0.417	0.000	0.00
		C		0.000	0.000	0.760	0.000	0.01
L22	60.25-55.25	A	0.899	0.000	0.000	14.665	0.000	0.19
		B		0.000	0.000	8.339	0.000	0.06

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		in	ft ²	ft ²	ft ²	ft ²	K
		C		0.000	0.000	15.189	0.000	0.17
L23	55.25-50.25	A	0.891	0.000	0.000	14.637	0.000	0.19
		B		0.000	0.000	8.323	0.000	0.06
		C		0.000	0.000	15.171	0.000	0.17
L24	50.25-42.41	A	0.879	0.000	0.000	22.888	0.000	0.30
		B		0.000	0.000	13.015	0.000	0.10
		C		0.000	0.000	23.747	0.000	0.27
L25	42.41-41.41	A	0.871	0.000	0.000	2.919	0.000	0.04
		B		0.000	0.000	1.660	0.000	0.01
		C		0.000	0.000	3.029	0.000	0.03
L26	41.41-36.41	A	0.864	0.000	0.000	14.543	0.000	0.19
		B		0.000	0.000	8.270	0.000	0.06
		C		0.000	0.000	15.111	0.000	0.17
L27	36.41-31.41	A	0.852	0.000	0.000	14.502	0.000	0.19
		B		0.000	0.000	8.246	0.000	0.06
		C		0.000	0.000	15.084	0.000	0.17
L28	31.41-30.50	A	0.845	0.000	0.000	2.634	0.000	0.03
		B		0.000	0.000	1.498	0.000	0.01
		C		0.000	0.000	2.742	0.000	0.03
L29	30.50-30.25	A	0.843	0.000	0.000	0.723	0.000	0.01
		B		0.000	0.000	0.411	0.000	0.00
		C		0.000	0.000	0.753	0.000	0.01
L30	30.25-25.25	A	0.835	0.000	0.000	14.443	0.000	0.18
		B		0.000	0.000	8.212	0.000	0.06
		C		0.000	0.000	15.046	0.000	0.17
L31	25.25-20.25	A	0.819	0.000	0.000	14.385	0.000	0.18
		B		0.000	0.000	8.180	0.000	0.06
		C		0.000	0.000	15.337	0.000	0.17
L32	20.25-18.00	A	0.805	0.000	0.000	6.451	0.000	0.08
		B		0.000	0.000	3.668	0.000	0.03
		C		0.000	0.000	9.686	0.000	0.09
L33	18.00-17.75	A	0.799	0.000	0.000	0.716	0.000	0.01
		B		0.000	0.000	0.407	0.000	0.00
		C		0.000	0.000	1.075	0.000	0.01
L34	17.75-12.75	A	0.787	0.000	0.000	14.273	0.000	0.18
		B		0.000	0.000	8.115	0.000	0.06
		C		0.000	0.000	17.875	0.000	0.18
L35	12.75-7.75	A	0.756	0.000	0.000	14.166	0.000	0.18
		B		0.000	0.000	8.054	0.000	0.05
		C		0.000	0.000	14.868	0.000	0.16
L36	7.75-3.92	A	0.715	0.000	0.000	10.751	0.000	0.13
		B		0.000	0.000	6.112	0.000	0.04
		C		0.000	0.000	11.329	0.000	0.12
L37	3.92-3.67	A	0.685	0.000	0.000	0.696	0.000	0.01
		B		0.000	0.000	0.396	0.000	0.00
		C		0.000	0.000	0.735	0.000	0.01
L38	3.67-0.00	A	0.636	0.000	0.000	10.079	0.000	0.12
		B		0.000	0.000	5.730	0.000	0.03
		C		0.000	0.000	10.704	0.000	0.11

Feed Line Center of Pressure

Section	Elevation	CP _X	CP _Z	CP _X	CP _Z
	ft	in	in	Ice	Ice
				in	in
L1	150.00-145.00	-3.4513	-1.9926	-2.6901	-1.5532
L2	145.00-140.00	-3.5298	-2.0379	-2.7693	-1.5989
L3	140.00-135.00	-2.2122	2.5206	-1.7815	1.8322
L4	135.00-130.00	-2.2840	2.6026	-1.8452	1.8983
L5	130.00-123.42	-2.3634	2.6932	-1.9160	1.9721
L6	123.42-121.59	-2.3957	2.7301	-1.9451	2.0021
L7	121.59-117.00	-2.0717	2.3610	-1.7814	1.8347
L8	117.00-116.75	-1.2747	1.2235	-1.2005	0.9145
L9	116.75-111.75	-1.2974	1.2451	-1.2217	0.9311
L10	111.75-106.75	-1.3398	1.2858	-1.2615	0.9624

Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
L11	106.75-101.75	-1.3814	1.3256	-1.3005	0.9931
L12	101.75-96.75	-1.4221	1.3645	-1.3387	1.0234
L13	96.75-91.75	-1.4620	1.4027	-1.3761	1.0531
L14	91.75-85.96	-1.1841	1.1360	-1.1883	0.9106
L15	85.96-84.96	-1.3504	1.2856	-1.3219	0.9931
L16	84.96-79.96	-1.3496	1.0486	-1.2672	0.4995
L17	79.96-74.96	-1.3844	1.0752	-1.2998	0.5143
L18	74.96-69.96	-1.4186	1.1013	-1.3318	0.5292
L19	69.96-64.96	-1.4522	1.1270	-1.3633	0.5443
L20	64.96-60.50	-1.4834	1.1508	-1.3926	0.5588
L21	60.50-60.25	-1.4988	1.1626	-1.4070	0.5661
L22	60.25-55.25	-1.5158	1.1755	-1.4229	0.5743
L23	55.25-50.25	-1.5478	1.2000	-1.4529	0.5902
L24	50.25-42.41	-1.5881	1.2307	-1.4905	0.6112
L25	42.41-41.41	-1.5974	1.2378	-1.4993	0.6146
L26	41.41-36.41	-1.6158	1.2519	-1.5166	0.6302
L27	36.41-31.41	-1.6461	1.2750	-1.5449	0.6485
L28	31.41-30.50	-1.6638	1.2885	-1.5613	0.6597
L29	30.50-30.25	-1.6672	1.2911	-1.5646	0.6620
L30	30.25-25.25	-1.6828	1.3030	-1.5791	0.6726
L31	25.25-20.25	-1.7001	1.4678	-1.5982	0.8005
L32	20.25-18.00	-1.5216	3.8616	-1.4773	2.6562
L33	18.00-17.75	-1.5282	3.8780	-1.4835	2.6706
L34	17.75-12.75	-1.6523	2.5812	-1.5754	1.6586
L35	12.75-7.75	-1.7830	1.3795	-1.6723	0.7634
L36	7.75-3.92	-1.8074	1.3981	-1.6950	0.8021
L37	3.92-3.67	-1.8186	1.4067	-1.7055	0.8281
L38	3.67-0.00	-1.8292	1.4148	-1.7155	0.8676

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	4	HB158-21U6S24-xxM_TMO(1-5/8)	145.00 -	1.0000	1.0000
			150.00		
L2	4	HB158-21U6S24-xxM_TMO(1-5/8)	140.00 -	1.0000	1.0000
			145.00		
L3	4	HB158-21U6S24-xxM_TMO(1-5/8)	135.00 -	1.0000	1.0000
			140.00		
L3	6	LDF7-50A(1-5/8)	135.00 -	1.0000	1.0000
			140.00		
L4	4	HB158-21U6S24-xxM_TMO(1-5/8)	130.00 -	1.0000	1.0000
			135.00		
L4	6	LDF7-50A(1-5/8)	130.00 -	1.0000	1.0000
			135.00		
L5	4	HB158-21U6S24-xxM_TMO(1-5/8)	123.42 -	1.0000	1.0000
			130.00		
L5	6	LDF7-50A(1-5/8)	123.42 -	1.0000	1.0000
			130.00		
L6	4	HB158-21U6S24-xxM_TMO(1-5/8)	121.59 -	1.0000	1.0000
			123.42		
L6	6	LDF7-50A(1-5/8)	121.59 -	1.0000	1.0000
			123.42		
L7	4	HB158-21U6S24-xxM_TMO(1-5/8)	117.00 -	1.0000	1.0000
			121.59		
L7	6	LDF7-50A(1-5/8)	117.00 -	1.0000	1.0000
			121.59		
L7	22	(Area) Aero MP3-05 (H)	117.00 -	1.0000	1.0000
			118.00		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L7	23	(Area) Aero MP3-05 (H)	117.00 - 118.00	1.0000	1.0000
L7	24	(Area) Aero MP3-05 (H)	117.00 - 118.00	1.0000	1.0000
L8	4	HB158-21U6S24- xxM_TMO(1-5/8)	116.75 - 117.00	1.0000	1.0000
L8	6	LDF7-50A(1-5/8)	116.75 - 117.00	1.0000	1.0000
L8	22	(Area) Aero MP3-05 (H)	116.75 - 117.00	1.0000	1.0000
L8	23	(Area) Aero MP3-05 (H)	116.75 - 117.00	1.0000	1.0000
L8	24	(Area) Aero MP3-05 (H)	116.75 - 117.00	1.0000	1.0000
L8	26	CU12PSM9P6XXX(1-1/2)	116.75 - 117.00	1.0000	1.0000
L9	4	HB158-21U6S24- xxM_TMO(1-5/8)	111.75 - 116.75	1.0000	1.0000
L9	6	LDF7-50A(1-5/8)	111.75 - 116.75	1.0000	1.0000
L9	22	(Area) Aero MP3-05 (H)	111.75 - 116.75	1.0000	1.0000
L9	23	(Area) Aero MP3-05 (H)	111.75 - 116.75	1.0000	1.0000
L9	24	(Area) Aero MP3-05 (H)	111.75 - 116.75	1.0000	1.0000
L9	26	CU12PSM9P6XXX(1-1/2)	111.75 - 116.75	1.0000	1.0000
L10	4	HB158-21U6S24- xxM_TMO(1-5/8)	106.75 - 111.75	1.0000	1.0000
L10	6	LDF7-50A(1-5/8)	106.75 - 111.75	1.0000	1.0000
L10	22	(Area) Aero MP3-05 (H)	106.75 - 111.75	1.0000	1.0000
L10	23	(Area) Aero MP3-05 (H)	106.75 - 111.75	1.0000	1.0000
L10	24	(Area) Aero MP3-05 (H)	106.75 - 111.75	1.0000	1.0000
L10	26	CU12PSM9P6XXX(1-1/2)	106.75 - 111.75	1.0000	1.0000
L11	4	HB158-21U6S24- xxM_TMO(1-5/8)	101.75 - 106.75	1.0000	1.0000
L11	6	LDF7-50A(1-5/8)	101.75 - 106.75	1.0000	1.0000
L11	22	(Area) Aero MP3-05 (H)	101.75 - 106.75	1.0000	1.0000
L11	23	(Area) Aero MP3-05 (H)	101.75 - 106.75	1.0000	1.0000
L11	24	(Area) Aero MP3-05 (H)	101.75 - 106.75	1.0000	1.0000
L11	26	CU12PSM9P6XXX(1-1/2)	101.75 - 106.75	1.0000	1.0000
L12	4	HB158-21U6S24- xxM_TMO(1-5/8)	96.75 - 101.75	1.0000	1.0000
L12	6	LDF7-50A(1-5/8)	96.75 - 101.75	1.0000	1.0000
L12	22	(Area) Aero MP3-05 (H)	96.75 - 101.75	1.0000	1.0000
L12	23	(Area) Aero MP3-05 (H)	96.75 - 101.75	1.0000	1.0000
L12	24	(Area) Aero MP3-05 (H)	96.75 - 101.75	1.0000	1.0000
L12	26	CU12PSM9P6XXX(1-1/2)	96.75 - 101.75	1.0000	1.0000
L13	4	HB158-21U6S24- xxM_TMO(1-5/8)	91.75 - 96.75	1.0000	1.0000
L13	6	LDF7-50A(1-5/8)	91.75 - 96.75	1.0000	1.0000
L13	22	(Area) Aero MP3-05 (H)	91.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			96.75		
L13	23	(Area) Aero MP3-05 (H)	91.75 - 96.75	1.0000	1.0000
L13	24	(Area) Aero MP3-05 (H)	91.75 - 96.75	1.0000	1.0000
L13	26	CU12PSM9P6XXX(1-1/2)	91.75 - 96.75	1.0000	1.0000
L14	4	HB158-21U6S24-xxM_TMO(1-5/8)	85.96 - 91.75	1.0000	1.0000
L14	6	LDF7-50A(1-5/8)	85.96 - 91.75	1.0000	1.0000
L14	17	(Area) Aero MP3-06 (H)	85.96 - 90.50	1.0000	1.0000
L14	18	(Area) Aero MP3-06 (H)	85.96 - 90.50	1.0000	1.0000
L14	19	(Area) Aero MP3-06 (H)	85.96 - 90.50	1.0000	1.0000
L14	22	(Area) Aero MP3-05 (H)	88.00 - 91.75	1.0000	1.0000
L14	23	(Area) Aero MP3-05 (H)	88.00 - 91.75	1.0000	1.0000
L14	24	(Area) Aero MP3-05 (H)	88.00 - 91.75	1.0000	1.0000
L14	26	CU12PSM9P6XXX(1-1/2)	85.96 - 91.75	1.0000	1.0000
L15	4	HB158-21U6S24-xxM_TMO(1-5/8)	84.96 - 85.96	1.0000	1.0000
L15	6	LDF7-50A(1-5/8)	84.96 - 85.96	1.0000	1.0000
L15	15	LDF4-50A(1/2)	84.96 - 85.00	1.0000	1.0000
L15	17	(Area) Aero MP3-06 (H)	84.96 - 85.96	1.0000	1.0000
L15	18	(Area) Aero MP3-06 (H)	84.96 - 85.96	1.0000	1.0000
L15	19	(Area) Aero MP3-06 (H)	84.96 - 85.96	1.0000	1.0000
L15	26	CU12PSM9P6XXX(1-1/2)	84.96 - 85.96	1.0000	1.0000
L16	4	HB158-21U6S24-xxM_TMO(1-5/8)	79.96 - 84.96	1.0000	1.0000
L16	6	LDF7-50A(1-5/8)	79.96 - 84.96	1.0000	1.0000
L16	15	LDF4-50A(1/2)	79.96 - 84.96	1.0000	1.0000
L16	17	(Area) Aero MP3-06 (H)	79.96 - 84.96	1.0000	1.0000
L16	18	(Area) Aero MP3-06 (H)	79.96 - 84.96	1.0000	1.0000
L16	19	(Area) Aero MP3-06 (H)	79.96 - 84.96	1.0000	1.0000
L16	26	CU12PSM9P6XXX(1-1/2)	79.96 - 84.96	1.0000	1.0000
L17	4	HB158-21U6S24-xxM_TMO(1-5/8)	74.96 - 79.96	1.0000	1.0000
L17	6	LDF7-50A(1-5/8)	74.96 - 79.96	1.0000	1.0000
L17	15	LDF4-50A(1/2)	74.96 - 79.96	1.0000	1.0000
L17	17	(Area) Aero MP3-06 (H)	74.96 - 79.96	1.0000	1.0000
L17	18	(Area) Aero MP3-06 (H)	74.96 - 79.96	1.0000	1.0000
L17	19	(Area) Aero MP3-06 (H)	74.96 - 79.96	1.0000	1.0000
L17	26	CU12PSM9P6XXX(1-1/2)	74.96 - 79.96	1.0000	1.0000
L18	4	HB158-21U6S24-xxM_TMO(1-5/8)	69.96 - 74.96	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L18	6	LDF7-50A(1-5/8)	69.96 - 74.96	1.0000	1.0000
L18	15	LDF4-50A(1/2)	69.96 - 74.96	1.0000	1.0000
L18	17	(Area) Aero MP3-06 (H)	69.96 - 74.96	1.0000	1.0000
L18	18	(Area) Aero MP3-06 (H)	69.96 - 74.96	1.0000	1.0000
L18	19	(Area) Aero MP3-06 (H)	69.96 - 74.96	1.0000	1.0000
L18	26	CU12PSM9P6XXX(1-1/2)	69.96 - 74.96	1.0000	1.0000
L19	4	HB158-21U6S24- xxM_TMO(1-5/8)	64.96 - 69.96	1.0000	1.0000
L19	6	LDF7-50A(1-5/8)	64.96 - 69.96	1.0000	1.0000
L19	15	LDF4-50A(1/2)	64.96 - 69.96	1.0000	1.0000
L19	17	(Area) Aero MP3-06 (H)	64.96 - 69.96	1.0000	1.0000
L19	18	(Area) Aero MP3-06 (H)	64.96 - 69.96	1.0000	1.0000
L19	19	(Area) Aero MP3-06 (H)	64.96 - 69.96	1.0000	1.0000
L19	26	CU12PSM9P6XXX(1-1/2)	64.96 - 69.96	1.0000	1.0000
L20	4	HB158-21U6S24- xxM_TMO(1-5/8)	60.50 - 64.96	1.0000	1.0000
L20	6	LDF7-50A(1-5/8)	60.50 - 64.96	1.0000	1.0000
L20	15	LDF4-50A(1/2)	60.50 - 64.96	1.0000	1.0000
L20	17	(Area) Aero MP3-06 (H)	60.50 - 64.96	1.0000	1.0000
L20	18	(Area) Aero MP3-06 (H)	60.50 - 64.96	1.0000	1.0000
L20	19	(Area) Aero MP3-06 (H)	60.50 - 64.96	1.0000	1.0000
L20	26	CU12PSM9P6XXX(1-1/2)	60.50 - 64.96	1.0000	1.0000
L21	4	HB158-21U6S24- xxM_TMO(1-5/8)	60.25 - 60.50	1.0000	1.0000
L21	6	LDF7-50A(1-5/8)	60.25 - 60.50	1.0000	1.0000
L21	15	LDF4-50A(1/2)	60.25 - 60.50	1.0000	1.0000
L21	17	(Area) Aero MP3-06 (H)	60.25 - 60.50	1.0000	1.0000
L21	18	(Area) Aero MP3-06 (H)	60.25 - 60.50	1.0000	1.0000
L21	19	(Area) Aero MP3-06 (H)	60.25 - 60.50	1.0000	1.0000
L21	26	CU12PSM9P6XXX(1-1/2)	60.25 - 60.50	1.0000	1.0000
L22	4	HB158-21U6S24- xxM_TMO(1-5/8)	55.25 - 60.25	1.0000	1.0000
L22	6	LDF7-50A(1-5/8)	55.25 - 60.25	1.0000	1.0000
L22	15	LDF4-50A(1/2)	55.25 - 60.25	1.0000	1.0000
L22	17	(Area) Aero MP3-06 (H)	55.25 - 60.25	1.0000	1.0000
L22	18	(Area) Aero MP3-06 (H)	55.25 - 60.25	1.0000	1.0000
L22	19	(Area) Aero MP3-06 (H)	55.25 - 60.25	1.0000	1.0000
L22	26	CU12PSM9P6XXX(1-1/2)	55.25 - 60.25	1.0000	1.0000
L23	4	HB158-21U6S24-	50.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L23	6	xxM_TMO(1-5/8) LDF7-50A(1-5/8)	55.25 50.25 - 55.25	1.0000	1.0000
L23	15	LDF4-50A(1/2)	50.25 - 55.25	1.0000	1.0000
L23	17	(Area) Aero MP3-06 (H)	50.25 - 55.25	1.0000	1.0000
L23	18	(Area) Aero MP3-06 (H)	50.25 - 55.25	1.0000	1.0000
L23	19	(Area) Aero MP3-06 (H)	50.25 - 55.25	1.0000	1.0000
L23	26	CU12PSM9P6XXX(1-1/2)	50.25 - 55.25	1.0000	1.0000
L24	4	HB158-21U6S24- xxM_TMO(1-5/8)	42.41 - 50.25	1.0000	1.0000
L24	6	LDF7-50A(1-5/8)	42.41 - 50.25	1.0000	1.0000
L24	15	LDF4-50A(1/2)	42.41 - 50.25	1.0000	1.0000
L24	17	(Area) Aero MP3-06 (H)	42.41 - 50.25	1.0000	1.0000
L24	18	(Area) Aero MP3-06 (H)	42.41 - 50.25	1.0000	1.0000
L24	19	(Area) Aero MP3-06 (H)	42.41 - 50.25	1.0000	1.0000
L24	26	CU12PSM9P6XXX(1-1/2)	42.41 - 50.25	1.0000	1.0000
L25	4	HB158-21U6S24- xxM_TMO(1-5/8)	41.41 - 42.41	1.0000	1.0000
L25	6	LDF7-50A(1-5/8)	41.41 - 42.41	1.0000	1.0000
L25	15	LDF4-50A(1/2)	41.41 - 42.41	1.0000	1.0000
L25	17	(Area) Aero MP3-06 (H)	41.41 - 42.41	1.0000	1.0000
L25	18	(Area) Aero MP3-06 (H)	41.41 - 42.41	1.0000	1.0000
L25	19	(Area) Aero MP3-06 (H)	41.41 - 42.41	1.0000	1.0000
L25	26	CU12PSM9P6XXX(1-1/2)	41.41 - 42.41	1.0000	1.0000
L26	4	HB158-21U6S24- xxM_TMO(1-5/8)	36.41 - 41.41	1.0000	1.0000
L26	6	LDF7-50A(1-5/8)	36.41 - 41.41	1.0000	1.0000
L26	15	LDF4-50A(1/2)	36.41 - 41.41	1.0000	1.0000
L26	17	(Area) Aero MP3-06 (H)	36.41 - 41.41	1.0000	1.0000
L26	18	(Area) Aero MP3-06 (H)	36.41 - 41.41	1.0000	1.0000
L26	19	(Area) Aero MP3-06 (H)	36.41 - 41.41	1.0000	1.0000
L26	26	CU12PSM9P6XXX(1-1/2)	36.41 - 41.41	1.0000	1.0000
L27	4	HB158-21U6S24- xxM_TMO(1-5/8)	31.41 - 36.41	1.0000	1.0000
L27	6	LDF7-50A(1-5/8)	31.41 - 36.41	1.0000	1.0000
L27	15	LDF4-50A(1/2)	31.41 - 36.41	1.0000	1.0000
L27	17	(Area) Aero MP3-06 (H)	31.41 - 36.41	1.0000	1.0000
L27	18	(Area) Aero MP3-06 (H)	31.41 - 36.41	1.0000	1.0000
L27	19	(Area) Aero MP3-06 (H)	31.41 - 36.41	1.0000	1.0000
L27	26	CU12PSM9P6XXX(1-1/2)	31.41 - 36.41	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L28	4	HB158-21U6S24-xxM_TMO(1-5/8)	30.50 - 31.41	1.0000	1.0000
L28	6	LDF7-50A(1-5/8)	30.50 - 31.41	1.0000	1.0000
L28	15	LDF4-50A(1/2)	30.50 - 31.41	1.0000	1.0000
L28	17	(Area) Aero MP3-06 (H)	30.50 - 31.41	1.0000	1.0000
L28	18	(Area) Aero MP3-06 (H)	30.50 - 31.41	1.0000	1.0000
L28	19	(Area) Aero MP3-06 (H)	30.50 - 31.41	1.0000	1.0000
L28	26	CU12PSM9P6XXX(1-1/2)	30.50 - 31.41	1.0000	1.0000
L29	4	HB158-21U6S24-xxM_TMO(1-5/8)	30.25 - 30.50	1.0000	1.0000
L29	6	LDF7-50A(1-5/8)	30.25 - 30.50	1.0000	1.0000
L29	15	LDF4-50A(1/2)	30.25 - 30.50	1.0000	1.0000
L29	17	(Area) Aero MP3-06 (H)	30.25 - 30.50	1.0000	1.0000
L29	18	(Area) Aero MP3-06 (H)	30.25 - 30.50	1.0000	1.0000
L29	19	(Area) Aero MP3-06 (H)	30.25 - 30.50	1.0000	1.0000
L29	26	CU12PSM9P6XXX(1-1/2)	30.25 - 30.50	1.0000	1.0000
L30	4	HB158-21U6S24-xxM_TMO(1-5/8)	25.25 - 30.25	1.0000	1.0000
L30	6	LDF7-50A(1-5/8)	25.25 - 30.25	1.0000	1.0000
L30	15	LDF4-50A(1/2)	25.25 - 30.25	1.0000	1.0000
L30	17	(Area) Aero MP3-06 (H)	25.25 - 30.25	1.0000	1.0000
L30	18	(Area) Aero MP3-06 (H)	25.25 - 30.25	1.0000	1.0000
L30	19	(Area) Aero MP3-06 (H)	25.25 - 30.25	1.0000	1.0000
L30	26	CU12PSM9P6XXX(1-1/2)	25.25 - 30.25	1.0000	1.0000
L31	4	HB158-21U6S24-xxM_TMO(1-5/8)	20.25 - 25.25	1.0000	1.0000
L31	6	LDF7-50A(1-5/8)	20.25 - 25.25	1.0000	1.0000
L31	15	LDF4-50A(1/2)	20.25 - 25.25	1.0000	1.0000
L31	17	(Area) Aero MP3-06 (H)	20.25 - 25.25	1.0000	1.0000
L31	18	(Area) Aero MP3-06 (H)	20.25 - 25.25	1.0000	1.0000
L31	19	(Area) Aero MP3-06 (H)	20.25 - 25.25	1.0000	1.0000
L31	20	(Area) Aero MP3-06 (H)	20.25 - 20.50	1.0000	1.0000
L31	26	CU12PSM9P6XXX(1-1/2)	20.25 - 25.25	1.0000	1.0000
L32	4	HB158-21U6S24-xxM_TMO(1-5/8)	18.00 - 20.25	1.0000	1.0000
L32	6	LDF7-50A(1-5/8)	18.00 - 20.25	1.0000	1.0000
L32	15	LDF4-50A(1/2)	18.00 - 20.25	1.0000	1.0000
L32	17	(Area) Aero MP3-06 (H)	18.00 - 20.25	1.0000	1.0000
L32	18	(Area) Aero MP3-06 (H)	18.00 - 20.25	1.0000	1.0000
L32	19	(Area) Aero MP3-06 (H)	18.00 - 20.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			20.25		
L32	20	(Area) Aero MP3-06 (H)	18.00 - 20.25	1.0000	1.0000
L32	26	CU12PSM9P6XXX(1-1/2)	18.00 - 20.25	1.0000	1.0000
L33	4	HB158-21U6S24-xxM_TMO(1-5/8)	17.75 - 18.00	1.0000	1.0000
L33	6	LDF7-50A(1-5/8)	17.75 - 18.00	1.0000	1.0000
L33	15	LDF4-50A(1/2)	17.75 - 18.00	1.0000	1.0000
L33	17	(Area) Aero MP3-06 (H)	17.75 - 18.00	1.0000	1.0000
L33	18	(Area) Aero MP3-06 (H)	17.75 - 18.00	1.0000	1.0000
L33	19	(Area) Aero MP3-06 (H)	17.75 - 18.00	1.0000	1.0000
L33	20	(Area) Aero MP3-06 (H)	17.75 - 18.00	1.0000	1.0000
L33	26	CU12PSM9P6XXX(1-1/2)	17.75 - 18.00	1.0000	1.0000
L34	4	HB158-21U6S24-xxM_TMO(1-5/8)	12.75 - 17.75	1.0000	1.0000
L34	6	LDF7-50A(1-5/8)	12.75 - 17.75	1.0000	1.0000
L34	15	LDF4-50A(1/2)	12.75 - 17.75	1.0000	1.0000
L34	17	(Area) Aero MP3-06 (H)	12.75 - 17.75	1.0000	1.0000
L34	18	(Area) Aero MP3-06 (H)	12.75 - 17.75	1.0000	1.0000
L34	19	(Area) Aero MP3-06 (H)	15.50 - 17.75	1.0000	1.0000
L34	20	(Area) Aero MP3-06 (H)	12.75 - 17.75	1.0000	1.0000
L34	26	CU12PSM9P6XXX(1-1/2)	12.75 - 17.75	1.0000	1.0000
L35	4	HB158-21U6S24-xxM_TMO(1-5/8)	7.75 - 12.75	1.0000	1.0000
L35	6	LDF7-50A(1-5/8)	7.75 - 12.75	1.0000	1.0000
L35	15	LDF4-50A(1/2)	7.75 - 12.75	1.0000	1.0000
L35	17	(Area) Aero MP3-06 (H)	7.75 - 12.75	1.0000	1.0000
L35	18	(Area) Aero MP3-06 (H)	7.75 - 12.75	1.0000	1.0000
L35	20	(Area) Aero MP3-06 (H)	7.75 - 12.75	1.0000	1.0000
L35	26	CU12PSM9P6XXX(1-1/2)	7.75 - 12.75	1.0000	1.0000
L36	4	HB158-21U6S24-xxM_TMO(1-5/8)	3.92 - 7.75	1.0000	1.0000
L36	6	LDF7-50A(1-5/8)	3.92 - 7.75	1.0000	1.0000
L36	15	LDF4-50A(1/2)	3.92 - 7.75	1.0000	1.0000
L36	17	(Area) Aero MP3-06 (H)	3.92 - 7.75	1.0000	1.0000
L36	18	(Area) Aero MP3-06 (H)	3.92 - 7.75	1.0000	1.0000
L36	20	(Area) Aero MP3-06 (H)	3.92 - 7.75	1.0000	1.0000
L36	26	CU12PSM9P6XXX(1-1/2)	3.92 - 7.75	1.0000	1.0000
L37	4	HB158-21U6S24-xxM_TMO(1-5/8)	3.67 - 3.92	1.0000	1.0000
L37	6	LDF7-50A(1-5/8)	3.67 - 3.92	1.0000	1.0000
L37	15	LDF4-50A(1/2)	3.67 - 3.92	1.0000	1.0000
L37	17	(Area) Aero MP3-06 (H)	3.67 - 3.92	1.0000	1.0000
L37	18	(Area) Aero MP3-06 (H)	3.67 - 3.92	1.0000	1.0000
L37	20	(Area) Aero MP3-06 (H)	3.67 - 3.92	1.0000	1.0000
L37	26	CU12PSM9P6XXX(1-1/2)	3.67 - 3.92	1.0000	1.0000
L38	4	HB158-21U6S24-xxM_TMO(1-5/8)	0.00 - 3.67	1.0000	1.0000
L38	6	LDF7-50A(1-5/8)	0.00 - 3.67	1.0000	1.0000
L38	15	LDF4-50A(1/2)	0.00 - 3.67	1.0000	1.0000
L38	17	(Area) Aero MP3-06 (H)	0.00 - 3.67	1.0000	1.0000
L38	18	(Area) Aero MP3-06 (H)	0.00 - 3.67	1.0000	1.0000
L38	20	(Area) Aero MP3-06 (H)	0.00 - 3.67	1.0000	1.0000
L38	26	CU12PSM9P6XXX(1-1/2)	0.00 - 3.67	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
L7	22	(Area) Aero MP3-05 (H)	117.00 - 118.00	Auto	0.3689
L7	23	(Area) Aero MP3-05 (H)	117.00 - 118.00	Auto	0.3689
L7	24	(Area) Aero MP3-05 (H)	117.00 - 118.00	Auto	0.3689
L8	22	(Area) Aero MP3-05 (H)	116.75 - 117.00	Auto	0.4677
L8	23	(Area) Aero MP3-05 (H)	116.75 - 117.00	Auto	0.4677
L8	24	(Area) Aero MP3-05 (H)	116.75 - 117.00	Auto	0.4677
L9	22	(Area) Aero MP3-05 (H)	111.75 - 116.75	Auto	0.4451
L9	23	(Area) Aero MP3-05 (H)	111.75 - 116.75	Auto	0.4451
L9	24	(Area) Aero MP3-05 (H)	111.75 - 116.75	Auto	0.4451
L10	22	(Area) Aero MP3-05 (H)	106.75 - 111.75	Auto	0.4017
L10	23	(Area) Aero MP3-05 (H)	106.75 - 111.75	Auto	0.4017
L10	24	(Area) Aero MP3-05 (H)	106.75 - 111.75	Auto	0.4017
L11	22	(Area) Aero MP3-05 (H)	101.75 - 106.75	Auto	0.3625
L11	23	(Area) Aero MP3-05 (H)	101.75 - 106.75	Auto	0.3625
L11	24	(Area) Aero MP3-05 (H)	101.75 - 106.75	Auto	0.3625
L12	22	(Area) Aero MP3-05 (H)	96.75 - 101.75	Auto	0.3233
L12	23	(Area) Aero MP3-05 (H)	96.75 - 101.75	Auto	0.3233
L12	24	(Area) Aero MP3-05 (H)	96.75 - 101.75	Auto	0.3233
L13	22	(Area) Aero MP3-05 (H)	91.75 - 96.75	Auto	0.2840
L13	23	(Area) Aero MP3-05 (H)	91.75 - 96.75	Auto	0.2840
L13	24	(Area) Aero MP3-05 (H)	91.75 - 96.75	Auto	0.2840
L14	17	(Area) Aero MP3-06 (H)	85.96 - 90.50	Auto	0.4134
L14	18	(Area) Aero MP3-06 (H)	85.96 - 90.50	Auto	0.4134
L14	19	(Area) Aero MP3-06 (H)	85.96 - 90.50	Auto	0.4134
L14	22	(Area) Aero MP3-05 (H)	88.00 - 91.75	Auto	0.2533
L14	23	(Area) Aero MP3-05 (H)	88.00 - 91.75	Auto	0.2533
L14	24	(Area) Aero MP3-05 (H)	88.00 - 91.75	Auto	0.2533
L15	17	(Area) Aero MP3-06 (H)	84.96 - 85.96	Auto	0.4590
L15	18	(Area) Aero MP3-06 (H)	84.96 - 85.96	Auto	0.4590

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L15	19	(Area) Aero MP3-06 (H)	84.96 - 85.96	Auto	0.4590
L16	17	(Area) Aero MP3-06 (H)	79.96 - 84.96	Auto	0.4395
L16	18	(Area) Aero MP3-06 (H)	79.96 - 84.96	Auto	0.4395
L16	19	(Area) Aero MP3-06 (H)	79.96 - 84.96	Auto	0.4395
L17	17	(Area) Aero MP3-06 (H)	74.96 - 79.96	Auto	0.4059
L17	18	(Area) Aero MP3-06 (H)	74.96 - 79.96	Auto	0.4059
L17	19	(Area) Aero MP3-06 (H)	74.96 - 79.96	Auto	0.4059
L18	17	(Area) Aero MP3-06 (H)	69.96 - 74.96	Auto	0.3755
L18	18	(Area) Aero MP3-06 (H)	69.96 - 74.96	Auto	0.3755
L18	19	(Area) Aero MP3-06 (H)	69.96 - 74.96	Auto	0.3755
L19	17	(Area) Aero MP3-06 (H)	64.96 - 69.96	Auto	0.3451
L19	18	(Area) Aero MP3-06 (H)	64.96 - 69.96	Auto	0.3451
L19	19	(Area) Aero MP3-06 (H)	64.96 - 69.96	Auto	0.3451
L20	17	(Area) Aero MP3-06 (H)	60.50 - 64.96	Auto	0.3162
L20	18	(Area) Aero MP3-06 (H)	60.50 - 64.96	Auto	0.3162
L20	19	(Area) Aero MP3-06 (H)	60.50 - 64.96	Auto	0.3162
L21	17	(Area) Aero MP3-06 (H)	60.25 - 60.50	Auto	0.3033
L21	18	(Area) Aero MP3-06 (H)	60.25 - 60.50	Auto	0.3033
L21	19	(Area) Aero MP3-06 (H)	60.25 - 60.50	Auto	0.3033
L22	17	(Area) Aero MP3-06 (H)	55.25 - 60.25	Auto	0.2859
L22	18	(Area) Aero MP3-06 (H)	55.25 - 60.25	Auto	0.2859
L22	19	(Area) Aero MP3-06 (H)	55.25 - 60.25	Auto	0.2859
L23	17	(Area) Aero MP3-06 (H)	50.25 - 55.25	Auto	0.2587
L23	18	(Area) Aero MP3-06 (H)	50.25 - 55.25	Auto	0.2587
L23	19	(Area) Aero MP3-06 (H)	50.25 - 55.25	Auto	0.2587
L24	17	(Area) Aero MP3-06 (H)	42.41 - 50.25	Auto	0.2205
L24	18	(Area) Aero MP3-06 (H)	42.41 - 50.25	Auto	0.2205
L24	19	(Area) Aero MP3-06 (H)	42.41 - 50.25	Auto	0.2205
L25	17	(Area) Aero MP3-06 (H)	41.41 - 42.41	Auto	0.2284
L25	18	(Area) Aero MP3-06 (H)	41.41 - 42.41	Auto	0.2284
L25	19	(Area) Aero MP3-06 (H)	41.41 - 42.41	Auto	0.2284
L26	17	(Area) Aero MP3-06 (H)	36.41 - 41.41	Auto	0.2089
L26	18	(Area) Aero MP3-06 (H)	36.41 - 41.41	Auto	0.2089
L26	19	(Area) Aero MP3-06 (H)	36.41 - 41.41	Auto	0.2089

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L27	17	(Area) Aero MP3-06 (H)	31.41 - 36.41	Auto	0.1817
L27	18	(Area) Aero MP3-06 (H)	31.41 - 36.41	Auto	0.1817
L27	19	(Area) Aero MP3-06 (H)	31.41 - 36.41	Auto	0.1817
L28	17	(Area) Aero MP3-06 (H)	30.50 - 31.41	Auto	0.1625
L28	18	(Area) Aero MP3-06 (H)	30.50 - 31.41	Auto	0.1625
L28	19	(Area) Aero MP3-06 (H)	30.50 - 31.41	Auto	0.1625
L29	17	(Area) Aero MP3-06 (H)	30.25 - 30.50	Auto	0.1593
L29	18	(Area) Aero MP3-06 (H)	30.25 - 30.50	Auto	0.1593
L29	19	(Area) Aero MP3-06 (H)	30.25 - 30.50	Auto	0.1593
L30	17	(Area) Aero MP3-06 (H)	25.25 - 30.25	Auto	0.1451
L30	18	(Area) Aero MP3-06 (H)	25.25 - 30.25	Auto	0.1451
L30	19	(Area) Aero MP3-06 (H)	25.25 - 30.25	Auto	0.1451
L31	17	(Area) Aero MP3-06 (H)	20.25 - 25.25	Auto	0.1147
L31	18	(Area) Aero MP3-06 (H)	20.25 - 25.25	Auto	0.1147
L31	19	(Area) Aero MP3-06 (H)	20.25 - 25.25	Auto	0.1147
L31	20	(Area) Aero MP3-06 (H)	20.25 - 20.50	Auto	0.1018
L32	17	(Area) Aero MP3-06 (H)	18.00 - 20.25	Auto	0.0950
L32	18	(Area) Aero MP3-06 (H)	18.00 - 20.25	Auto	0.0950
L32	19	(Area) Aero MP3-06 (H)	18.00 - 20.25	Auto	0.0950
L32	20	(Area) Aero MP3-06 (H)	18.00 - 20.25	Auto	0.0950
L33	17	(Area) Aero MP3-06 (H)	17.75 - 18.00	Auto	0.0770
L33	18	(Area) Aero MP3-06 (H)	17.75 - 18.00	Auto	0.0770
L33	19	(Area) Aero MP3-06 (H)	17.75 - 18.00	Auto	0.0770
L33	20	(Area) Aero MP3-06 (H)	17.75 - 18.00	Auto	0.0770
L34	17	(Area) Aero MP3-06 (H)	12.75 - 17.75	Auto	0.0611
L34	18	(Area) Aero MP3-06 (H)	12.75 - 17.75	Auto	0.0611
L34	19	(Area) Aero MP3-06 (H)	15.50 - 17.75	Auto	0.0686
L34	20	(Area) Aero MP3-06 (H)	12.75 - 17.75	Auto	0.0611
L35	17	(Area) Aero MP3-06 (H)	7.75 - 12.75	Auto	0.0340
L35	18	(Area) Aero MP3-06 (H)	7.75 - 12.75	Auto	0.0340
L35	20	(Area) Aero MP3-06 (H)	7.75 - 12.75	Auto	0.0340
L36	17	(Area) Aero MP3-06 (H)	3.92 - 7.75	Auto	0.0071
L36	18	(Area) Aero MP3-06 (H)	3.92 - 7.75	Auto	0.0071
L36	20	(Area) Aero MP3-06 (H)	3.92 - 7.75	Auto	0.0071
L37	17	(Area) Aero MP3-06 (H)	3.67 - 3.92	Auto	0.0000
L37	18	(Area) Aero MP3-06 (H)	3.67 - 3.92	Auto	0.0000
L37	20	(Area) Aero MP3-06 (H)	3.67 - 3.92	Auto	0.0000
L38	17	(Area) Aero MP3-06 (H)	0.00 - 3.67	Auto	0.0000
L38	18	(Area) Aero MP3-06 (H)	0.00 - 3.67	Auto	0.0000
L38	20	(Area) Aero MP3-06 (H)	0.00 - 3.67	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
150					
APX16DWV-16DWV-S-E-A20	A	From Leg	4.00 -6.00 0.00	10.0000	150.00
APX16DWV-16DWV-S-E-A20	B	From Leg	4.00 -6.00 0.00	10.0000	150.00
APX16DWV-16DWV-S-E-A20	C	From Leg	4.00 -6.00 0.00	40.0000	150.00
APXVAALL24_43-U-NA20_TMO	A	From Leg	4.00 0.00 0.00	10.0000	150.00
APXVAALL24_43-U-NA20_TMO	B	From Leg	4.00 0.00 0.00	10.0000	150.00
APXVAALL24_43-U-NA20_TMO	C	From Leg	4.00 0.00 0.00	40.0000	150.00
AIR6449 B41_T-MOBILE	A	From Leg	4.00 6.00 0.00	10.0000	150.00
AIR6449 B41_T-MOBILE	B	From Leg	4.00 6.00 0.00	10.0000	150.00
AIR6449 B41_T-MOBILE	C	From Leg	4.00 6.00 0.00	40.0000	150.00
RADIO 4415 B66A_CCIV3	A	From Leg	4.00 -6.00 0.00	10.0000	150.00
RADIO 4415 B66A_CCIV3	B	From Leg	4.00 -6.00 0.00	10.0000	150.00
RADIO 4415 B66A_CCIV3	C	From Leg	4.00 -6.00 0.00	40.0000	150.00
RADIO 4424 B25_TMO	A	From Leg	4.00 0.00 0.00	10.0000	150.00
RADIO 4424 B25_TMO	B	From Leg	4.00 0.00 0.00	10.0000	150.00
RADIO 4424 B25_TMO	C	From Leg	4.00 0.00 0.00	40.0000	150.00
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.00 0.00 0.00	10.0000	150.00
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.00 0.00 0.00	10.0000	150.00
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00 0.00 0.00	40.0000	150.00
8' Ladder	C	From Leg	2.00	0.0000	150.00

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft
			Horz Lateral ft	Vert ft		
				2.00		
				-2.00		
2.4" Dia. x 10.5' Mount Pipe	A	From Leg	4.00	0.00	0.0000	150.00
			0.00	0.00		
2.4" Dia. x 10.5' Mount Pipe	B	From Leg	4.00	0.00	0.0000	150.00
			0.00	0.00		
2.4" Dia. x 10.5' Mount Pipe	C	From Leg	4.00	0.00	0.0000	150.00
			0.00	0.00		
Miscellaneous [NA 507-3]	C	None			0.0000	150.00
Platform Mount [LP 604-1]	C	None			0.0000	150.00
148						
1900MHz RRH (65MHz)	A	From Leg	1.00	0.00	-30.0000	148.00
			0.00	0.00		
1900MHz RRH (65MHz)	B	From Leg	1.00	0.00	-30.0000	148.00
			0.00	0.00		
1900MHz RRH (65MHz)	C	From Leg	1.00	0.00	0.0000	148.00
			0.00	0.00		
800 EXTERNAL NOTCH FILTER	A	From Leg	1.00	0.00	-30.0000	148.00
			0.00	0.00		
800 EXTERNAL NOTCH FILTER	B	From Leg	1.00	0.00	-30.0000	148.00
			0.00	0.00		
800 EXTERNAL NOTCH FILTER	C	From Leg	1.00	0.00	0.0000	148.00
			0.00	0.00		
800MHZ RRH	A	From Leg	1.00	0.00	-30.0000	148.00
			0.00	0.00		
800MHZ RRH	B	From Leg	1.00	0.00	-30.0000	148.00
			0.00	0.00		
800MHZ RRH	C	From Leg	1.00	0.00	0.0000	148.00
			0.00	0.00		
Pipe Mount [PM 601-3]	C	None			0.0000	148.00
140						
(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	A	From Leg	4.00	0.00	30.0000	140.00
			0.00	0.00		
(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	140.00
			0.00	0.00		
(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	140.00
			0.00	0.00		
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00	-1.00	30.0000	140.00
			0.00	0.00		
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00	-1.00	0.0000	140.00
			0.00	0.00		
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00	-1.00	0.0000	140.00
			0.00	0.00		
Sub6 Antenna- VZS01 w/ Mount Pipe	A	From Leg	4.00	3.00	30.0000	140.00
			0.00	0.00		
Sub6 Antenna- VZS01 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	140.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			3.00		
			0.00		
Sub6 Antenna-VZS01 w/ Mount Pipe	C	From Leg	4.00	0.0000	140.00
			3.00		
			0.00		
CBC78T-DS-43-2X	A	From Leg	4.00	30.0000	140.00
			-7.00		
			0.00		
CBC78T-DS-43-2X	B	From Leg	4.00	0.0000	140.00
			-7.00		
			0.00		
CBC78T-DS-43-2X	C	From Leg	4.00	0.0000	140.00
			-7.00		
			0.00		
RFV01U-D2A	A	From Leg	4.00	30.0000	140.00
			-3.00		
			0.00		
RFV01U-D2A	B	From Leg	4.00	0.0000	140.00
			-3.00		
			0.00		
RFV01U-D2A	C	From Leg	4.00	0.0000	140.00
			-3.00		
			0.00		
RFV01U-D1A	A	From Leg	4.00	30.0000	140.00
			0.00		
			0.00		
RFV01U-D1A	B	From Leg	4.00	0.0000	140.00
			0.00		
			0.00		
RFV01U-D1A	C	From Leg	4.00	0.0000	140.00
			0.00		
			0.00		
RVZDC-6627-PF-48	A	From Leg	4.00	30.0000	140.00
			7.00		
			0.00		
Platform Mount [LP 714-1] ***130***	C	None		0.0000	140.00
SBNH-1D6565C w/ Mount Pipe	A	From Leg	4.00	0.0000	130.00
			-6.00		
			1.00		
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00	0.0000	130.00
			-6.00		
			1.00		
SBNH-1D6565C w/ Mount Pipe	C	From Leg	4.00	0.0000	130.00
			-6.00		
			1.00		
(2) 80010966 w/ Mount Pipe	A	From Leg	4.00	0.0000	130.00
			3.00		
			1.00		
(2) 80010966 w/ Mount Pipe	B	From Leg	4.00	0.0000	130.00
			3.00		
			1.00		
(2) 80010965 w/ Mount Pipe	C	From Leg	4.00	0.0000	130.00
			3.00		
			1.00		
RRUS 8843 B2/B66A	A	From Leg	4.00	0.0000	130.00
			6.00		
			1.00		
RRUS 8843 B2/B66A	B	From Leg	4.00	0.0000	130.00
			6.00		
			1.00		
RRUS 8843 B2/B66A	C	From Leg	4.00	0.0000	130.00
			6.00		
			1.00		
RRUS 4449 B5/B12	A	From Leg	4.00	0.0000	130.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
			1.00		
RRUS 4449 B5/B12	B	From Leg	4.00	0.0000	130.00
			0.00		
			1.00		
RRUS 4449 B5/B12	C	From Leg	4.00	0.0000	130.00
			0.00		
			1.00		
DC6-48-60-18-8F	B	From Leg	4.00	0.0000	130.00
			0.00		
			1.00		
DC6-48-60-18-8C-EV	C	From Leg	4.00	0.0000	130.00
			0.00		
			1.00		
Pipe Mount [PM601-3]	C	None		0.0000	130.00
Platform Mount [LP 305-1_HR-1]	C	None		0.0000	130.00
85					
KS24019-L112D	A	From Leg	3.00	0.0000	85.00
			0.00		
			1.00		
KS24019-L112A	A	From Leg	3.00	0.0000	85.00
			0.00		
			1.00		
Side Arm Mount [SO 701-1]	A	From Leg	1.50	0.0000	85.00
			0.00		
			0.00		

Commscope MC-PK8-DSH	C	None		0.0000	117.00
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
TA08025-B604	A	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
TA08025-B604	B	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
TA08025-B604	C	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
TA08025-B605	A	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
TA08025-B605	B	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
TA08025-B605	C	From Leg	4.00	0.0000	117.00
			0.00		
			0.00		
RDIDC-9181-PF-48	A	From Leg	4.00	0.0000	117.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
			0.00		

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	150 - 145	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.26	0.56	0.11
			Max. Mx	20	-4.07	24.80	2.07
			Max. My	2	-4.12	2.10	23.88
			Max. Vy	20	-5.27	24.80	2.07
			Max. Vx	2	-5.17	2.10	23.88
			Max. Torque	22			1.85
L2	145 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.67	0.64	0.15
			Max. Mx	20	-4.32	51.70	4.01
			Max. My	2	-4.36	4.07	50.25
			Max. Vy	20	-5.48	51.70	4.01
			Max. Vx	2	-5.38	4.07	50.25
			Max. Torque	22			1.85
L3	140 - 135	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.75	-0.01	0.61
			Max. Mx	20	-8.00	105.90	5.67
			Max. My	2	-8.09	5.47	103.89
			Max. Vy	20	-10.99	105.90	5.67
			Max. Vx	2	-10.80	5.47	103.89
			Max. Torque	22			1.85
L4	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.35	0.07	0.57
			Max. Mx	20	-8.42	161.39	7.22
			Max. My	2	-8.51	7.09	158.37
			Max. Vy	20	-11.20	161.39	7.22
			Max. Vx	2	-11.00	7.09	158.37
			Max. Torque	23			1.30
L5	130 - 123.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.67	-0.15	0.01
			Max. Mx	20	-12.17	214.92	8.32
			Max. My	2	-12.28	8.25	211.24
			Max. Vy	20	-15.07	214.92	8.32
			Max. Vx	2	-14.89	8.25	211.24
			Max. Torque	23			1.56
L6	123.42 - 121.59	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.68	-0.07	-0.03
			Max. Mx	20	-12.91	290.90	10.09
			Max. My	2	-13.01	10.08	286.23
			Max. Vy	20	-15.31	290.90	10.09
			Max. Vx	2	-15.12	10.08	286.23
			Max. Torque	23			1.56
L7	121.59 - 117	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.42	0.01	-0.07
			Max. Mx	20	-13.51	361.51	11.71
			Max. My	2	-13.62	11.76	355.91
			Max. Vy	20	-15.47	361.51	11.71
			Max. Vx	2	-15.27	11.76	355.91
			Max. Torque	23			1.55
L8	117 - 116.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.37	0.01	0.26
			Max. Mx	20	-16.55	366.04	11.90
			Max. My	2	-16.67	11.85	360.50
			Max. Vy	20	-18.13	366.04	11.90
			Max. Vx	2	-17.92	11.85	360.50
			Max. Torque	23			1.40
L9	116.75 - 111.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.65	0.08	0.23
			Max. Mx	20	-17.49	458.00	13.69
			Max. My	2	-17.64	13.69	450.73
			Max. Vy	20	-18.65	458.00	13.69
			Max. Vx	2	-18.18	13.69	450.73
			Max. Torque	23			1.39

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L10	111.75 - 106.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.96	0.15	0.20
			Max. Mx	20	-18.46	552.55	15.49
			Max. My	2	-18.64	15.54	542.18
			Max. Vy	20	-19.17	552.55	15.49
			Max. Vx	2	-18.42	15.54	542.18
L11	106.75 - 101.75	Pole	Max. Torque	23			1.39
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.28	0.22	0.18
			Max. Mx	20	-19.47	649.69	17.28
			Max. My	2	-19.66	17.38	634.81
			Max. Vy	20	-19.69	649.69	17.28
L12	101.75 - 96.75	Pole	Max. Vx	2	-18.65	17.38	634.81
			Max. Torque	23			1.39
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.63	0.30	0.15
			Max. Mx	20	-20.50	749.40	19.07
			Max. My	2	-20.71	19.21	728.61
L13	96.75 - 91.75	Pole	Max. Vy	20	-20.20	749.40	19.07
			Max. Vx	2	-18.88	19.21	728.61
			Max. Torque	23			1.39
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.00	0.38	0.12
			Max. Mx	20	-21.57	851.15	20.85
L14	91.75 - 85.96	Pole	Max. My	2	-21.78	21.04	823.53
			Max. Vy	20	-20.51	851.15	20.85
			Max. Vx	2	-19.11	21.04	823.53
			Max. Torque	23			1.39
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.50	0.40	0.11
L15	85.96 - 84.96	Pole	Max. Mx	20	-21.93	886.37	21.46
			Max. My	2	-22.14	21.67	856.25
			Max. Vy	20	-20.70	886.37	21.46
			Max. Vx	2	-19.19	21.67	856.25
			Max. Torque	23			1.39
			Max Tension	1	0.00	0.00	0.00
L16	84.96 - 79.96	Pole	Max. Compression	26	-42.16	0.49	0.43
			Max. Mx	20	-24.00	993.21	23.51
			Max. My	2	-24.23	23.53	954.83
			Max. Vy	20	-21.42	993.21	23.51
			Max. Vx	2	-19.57	23.53	954.83
			Max. Torque	23			1.39
L17	79.96 - 74.96	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.88	0.58	0.41
			Max. Mx	20	-25.35	1101.74	25.30
			Max. My	2	-25.60	25.36	1053.25
			Max. Vy	20	-21.99	1101.74	25.30
			Max. Vx	2	-19.82	25.36	1053.25
L18	74.96 - 69.96	Pole	Max. Torque	23			1.23
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.63	0.68	0.39
			Max. Mx	20	-26.74	1213.06	27.08
			Max. My	2	-26.99	27.19	1152.93
			Max. Vy	20	-22.55	1213.06	27.08
L18	74.96 - 69.96	Pole	Max. Vx	2	-20.07	27.19	1152.93
			Max. Torque	23			1.23
			Max Tension	1	0.00	0.00	0.00
L18	74.96 - 69.96	Pole	Max. Compression	26	-47.41	0.79	0.36
			Max. Mx	20	-28.16	1327.15	28.85
			Max. My	2	-28.41	29.01	1253.83

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L19	69.96 - 64.96	Pole	Max. Vy	20	-23.10	1327.15	28.85
			Max. Vx	2	-20.31	29.01	1253.83
			Max. Torque	23			1.23
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.21	0.89	0.34
L20	64.96 - 60.5	Pole	Max. Mx	20	-29.60	1443.99	30.62
			Max. My	2	-29.86	30.83	1355.91
			Max. Vy	20	-23.64	1443.99	30.62
			Max. Vx	2	-20.55	30.83	1355.91
			Max. Torque	23			1.23
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.84	0.99	0.31
			Max. Mx	20	-30.92	1550.04	32.19
			Max. My	2	-31.16	32.45	1447.95
			Max. Vy	20	-23.92	1550.04	32.19
L21	60.5 - 60.25	Pole	Max. Vx	2	-20.75	32.45	1447.95
			Max. Torque	23			1.23
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.93	0.99	0.31
			Max. Mx	20	-31.01	1556.02	32.28
			Max. My	2	-31.25	32.54	1453.13
			Max. Vy	20	-23.93	1556.02	32.28
			Max. Vx	2	-20.75	32.54	1453.13
			Max. Torque	23			1.23
			Max Tension	1	0.00	0.00	0.00
L22	60.25 - 55.25	Pole	Max. Compression	26	-52.78	1.11	0.29
			Max. Mx	20	-32.51	1676.41	34.03
			Max. My	2	-32.73	34.35	1557.43
			Max. Vy	20	-24.23	1676.41	34.03
			Max. Vx	2	-20.98	34.35	1557.43
			Max. Torque	23			1.23
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.66	1.22	0.26
			Max. Mx	20	-34.04	1798.26	35.77
			Max. My	2	-34.24	36.15	1662.80
L23	55.25 - 50.25	Pole	Max. Vy	20	-24.51	1798.26	35.77
			Max. Vx	2	-21.19	36.15	1662.80
			Max. Torque	23			1.23
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.67	1.28	0.25
			Max. Mx	20	-34.86	1863.89	36.70
			Max. My	2	-35.06	37.11	1719.50
			Max. Vy	20	-24.66	1863.89	36.70
			Max. Vx	2	-21.31	37.11	1719.50
			Max. Torque	23			1.22
L24	50.25 - 42.41	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.69	1.43	0.21
			Max. Mx	20	-38.20	2017.49	38.84
			Max. My	2	-38.39	39.32	1852.07
			Max. Vy	20	-25.11	2017.49	38.84
			Max. Vx	2	-21.67	39.32	1852.07
			Max. Torque	23			1.22
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.76	1.55	0.18
			Max. Mx	20	-39.93	2143.66	40.57
L25	42.41 - 41.41	Pole	Max. My	2	-40.09	41.10	1960.84
			Max. Vy	20	-25.36	2143.66	40.57
			Max. Vx	2	-21.86	41.10	1960.84
			Max. Torque	23			1.22
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.69	1.43	0.21
			Max. Mx	20	-38.20	2017.49	38.84
			Max. My	2	-38.39	39.32	1852.07
			Max. Vy	20	-25.11	2017.49	38.84
			Max. Vx	2	-21.67	39.32	1852.07
L26	41.41 - 36.41	Pole	Max. Torque	23			1.22
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.85	1.67	0.16
			Max. Mx	20	-41.68	2271.00	42.29
			Max. My	2	-40.09	41.10	1960.84
			Max. Vy	20	-25.36	2143.66	40.57
			Max. Vx	2	-21.86	41.10	1960.84
			Max. Torque	23			1.22
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.85	1.67	0.16
L27	36.41 - 31.41	Pole	Max. Mx	20	-41.68	2271.00	42.29
			Max. My	2	-40.09	41.10	1960.84

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft			
L28	31.41 -30.5	Pole	Max. My	2	-41.82	42.88	2070.54			
			Max. Vy	20	-25.59	2271.00	42.29			
			Max. Vx	2	-22.04	42.88	2070.54			
			Max. Torque	23			1.22			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-64.24	1.69	0.15			
			Max. Mx	20	-42.00	2294.30	42.60			
			Max. My	2	-42.14	43.20	2090.60			
			Max. Vy	20	-25.62	2294.30	42.60			
			Max. Vx	2	-22.07	43.20	2090.60			
L29	30.5 -30.25	Pole	Max. Torque	23			1.22			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-64.34	1.70	0.15			
			Max. Mx	20	-42.10	2300.71	42.69			
			Max. My	2	-42.24	43.29	2096.11			
			Max. Vy	20	-25.63	2300.71	42.69			
			Max. Vx	2	-22.07	43.29	2096.11			
			Max. Torque	23			1.22			
			Max Tension	1	0.00	0.00	0.00			
			L30	30.25 -25.25	Pole	Max. Compression	26	-66.46	1.83	0.12
Max. Mx	20	-43.88				2429.39	44.39			
Max. My	2	-43.99				45.05	2206.86			
Max. Vy	20	-25.84				2429.39	44.39			
Max. Vx	2	-22.25				45.05	2206.86			
Max. Torque	23						1.22			
Max Tension	1	0.00				0.00	0.00			
L31	25.25 -20.25	Pole				Max. Compression	26	-68.61	1.95	0.09
						Max. Mx	20	-45.69	2559.10	46.08
						Max. My	2	-45.79	46.81	2318.43
			Max. Vy	20	-26.05	2559.10	46.08			
			Max. Vx	2	-22.41	46.81	2318.43			
			Max. Torque	23			1.22			
			Max Tension	1	0.00	0.00	0.00			
			L32	20.25 -18	Pole	Max. Compression	26	-69.60	2.01	0.05
						Max. Mx	20	-46.51	2617.94	46.84
						Max. My	2	-46.60	47.59	2368.90
Max. Vy	20	-26.27				2617.94	46.84			
Max. Vx	2	-22.48				47.59	2368.90			
Max. Torque	21						1.24			
Max Tension	1	0.00				0.00	0.00			
L33	18 -17.75	Pole				Max. Compression	26	-69.71	2.02	0.05
						Max. Mx	20	-46.61	2624.51	46.92
						Max. My	2	-46.70	47.68	2374.52
			Max. Vy	20	-26.28	2624.51	46.92			
			Max. Vx	2	-22.48	47.68	2374.52			
			Max. Torque	21			1.25			
			Max Tension	1	0.00	0.00	0.00			
			L34	17.75 -12.75	Pole	Max. Compression	26	-71.90	2.15	-0.01
						Max. Mx	20	-48.46	2756.44	48.60
						Max. My	2	-48.53	49.41	2487.27
Max. Vy	20	-26.49				2756.44	48.60			
Max. Vx	2	-22.64				49.41	2487.27			
Max. Torque	21						1.25			
Max Tension	1	0.00				0.00	0.00			
L35	12.75 -7.75	Pole				Max. Compression	26	-74.08	2.28	-0.04
						Max. Mx	20	-50.35	2889.32	50.25
						Max. My	2	-50.39	51.13	2600.77
			Max. Vy	20	-26.67	2889.32	50.25			
			Max. Vx	2	-22.79	51.13	2600.77			
			Max. Torque	21			1.25			
			Max Tension	1	0.00	0.00	0.00			
			L36	7.75 -3.916	Pole	Max. Compression	26	-75.76	2.38	-0.06
						Max. Mx	20	-51.81	2991.80	51.51
						Max. My	2	-51.83	52.43	2688.30
Max. Vy	20	-26.81				2991.80	51.51			
Max. Vx	2	-22.91				52.43	2688.30			

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L37	3.916 - 3.666	Pole	Max. Torque	21			1.25
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.87	2.39	-0.06
			Max. Mx	20	-51.91	2998.50	51.59
			Max. My	2	-51.93	52.52	2694.02
			Max. Vy	20	-26.79	2998.50	51.59
			Max. Vx	2	-22.89	52.52	2694.02
L38	3.666 - 0	Pole	Max. Torque	21			1.25
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.40	2.48	-0.08
			Max. Mx	20	-53.26	3096.97	52.79
			Max. My	2	-53.26	53.76	2778.13
			Max. Vy	20	-26.93	3096.97	52.79
			Max. Vx	2	-23.01	53.76	2778.13
			Max. Torque	21			1.25

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	77.40	6.67	0.06
	Max. H _x	20	53.27	26.90	0.32
	Max. H _z	2	53.27	0.32	22.99
	Max. M _x	2	2778.13	0.32	22.99
	Max. M _z	8	3093.39	-26.90	-0.32
	Max. Torsion	21	1.25	26.90	0.32
	Min. Vert	25	39.95	11.83	20.09
	Min. H _x	8	53.27	-26.90	-0.32
	Min. H _z	15	39.95	-0.32	-22.99
	Min. M _x	14	-2776.54	-0.32	-22.99
	Min. M _z	20	-3096.97	26.90	0.32
	Min. Torsion	9	-1.22	-26.90	-0.32

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overtuning Moment, M _x kip-ft	Overtuning Moment, M _z kip-ft	Torque kip-ft
Dead Only	44.39	0.00	0.00	-0.61	1.41	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	53.27	-0.32	-22.99	-2778.13	53.76	-0.57
0.9 Dead+1.0 Wind 0 deg - No Ice	39.95	-0.32	-22.99	-2729.64	52.24	-0.58
1.2 Dead+1.0 Wind 30 deg - No Ice	53.27	11.65	-20.42	-2437.96	-1382.80	0.03
0.9 Dead+1.0 Wind 30 deg - No Ice	39.95	11.65	-20.42	-2395.73	-1359.47	0.03
1.2 Dead+1.0 Wind 60 deg - No Ice	53.27	19.83	-11.22	-1344.56	-2390.62	0.62
0.9 Dead+1.0 Wind 60 deg - No Ice	39.95	19.83	-11.22	-1321.10	-2349.54	0.62
1.2 Dead+1.0 Wind 90 deg - No Ice	53.27	26.90	0.32	51.12	-3093.39	1.21
0.9 Dead+1.0 Wind 90 deg - No Ice	39.95	26.90	0.32	50.30	-3041.70	1.22
1.2 Dead+1.0 Wind 120 deg - No Ice	53.27	20.15	11.77	1432.70	-2442.21	1.19
0.9 Dead+1.0 Wind 120 deg - No Ice	39.95	20.15	11.77	1407.89	-2400.11	1.20

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 150 deg - No Ice	53.27	11.83	20.09	2431.81	-1440.22	1.04
0.9 Dead+1.0 Wind 150 deg - No Ice	39.95	11.83	20.09	2389.70	-1415.49	1.04
1.2 Dead+1.0 Wind 180 deg - No Ice	53.27	0.32	22.99	2776.54	-50.18	0.60
0.9 Dead+1.0 Wind 180 deg - No Ice	39.95	0.32	22.99	2728.48	-49.61	0.60
1.2 Dead+1.0 Wind 210 deg - No Ice	53.27	-11.65	20.42	2436.36	1386.41	-0.01
0.9 Dead+1.0 Wind 210 deg - No Ice	39.95	-11.65	20.42	2394.55	1362.13	-0.01
1.2 Dead+1.0 Wind 240 deg - No Ice	53.27	-19.83	11.22	1342.93	2394.24	-0.62
0.9 Dead+1.0 Wind 240 deg - No Ice	39.95	-19.83	11.22	1319.91	2352.20	-0.63
1.2 Dead+1.0 Wind 270 deg - No Ice	53.27	-26.90	-0.32	-52.79	3096.97	-1.24
0.9 Dead+1.0 Wind 270 deg - No Ice	39.95	-26.90	-0.32	-51.52	3044.34	-1.25
1.2 Dead+1.0 Wind 300 deg - No Ice	53.27	-20.15	-11.77	-1434.35	2445.77	-1.21
0.9 Dead+1.0 Wind 300 deg - No Ice	39.95	-20.15	-11.77	-1409.10	2402.73	-1.22
1.2 Dead+1.0 Wind 330 deg - No Ice	53.27	-11.83	-20.09	-2433.43	1443.77	-1.03
0.9 Dead+1.0 Wind 330 deg - No Ice	39.95	-11.83	-20.09	-2390.88	1418.10	-1.04
1.2 Dead+1.0 Ice+1.0 Temp	77.40	-0.00	-0.00	0.08	2.48	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	77.40	-0.06	-6.32	-770.99	13.82	-0.15
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	77.40	3.11	-5.44	-662.14	-374.50	-0.04
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	77.40	5.45	-3.10	-375.87	-661.75	0.08
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	77.40	6.67	0.06	11.12	-802.66	0.20
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	77.40	5.52	3.22	395.14	-672.84	0.22
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	77.40	3.22	5.50	673.29	-393.73	0.22
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	77.40	0.06	6.32	771.04	-8.38	0.15
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	77.40	-3.11	5.44	662.20	379.94	0.04
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	77.40	-5.45	3.10	375.92	667.19	-0.08
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	77.40	-6.67	-0.06	-11.08	808.10	-0.21
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	77.40	-5.52	-3.22	-395.09	678.28	-0.22
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	77.40	-3.22	-5.50	-673.24	399.16	-0.22
Dead+Wind 0 deg - Service	44.39	-0.08	-5.70	-682.24	14.22	-0.15
Dead+Wind 30 deg - Service	44.39	2.89	-5.06	-598.79	-338.33	0.01
Dead+Wind 60 deg - Service	44.39	4.92	-2.78	-330.43	-585.61	0.16
Dead+Wind 90 deg - Service	44.39	6.67	0.08	12.07	-758.44	0.32
Dead+Wind 120 deg - Service	44.39	4.99	2.92	351.16	-598.34	0.31
Dead+Wind 150 deg - Service	44.39	2.93	4.98	596.37	-352.40	0.27
Dead+Wind 180 deg - Service	44.39	0.08	5.70	680.93	-11.24	0.15
Dead+Wind 210 deg - Service	44.39	-2.89	5.06	597.47	341.31	-0.01
Dead+Wind 240 deg - Service	44.39	-4.92	2.78	329.11	588.59	-0.16
Dead+Wind 270 deg - Service	44.39	-6.67	-0.08	-13.39	761.41	-0.32

Load Combination	Vertical	Shear _x	Shear _z	Overtuning Moment, M _x	Overtuning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 300 deg-Service	44.39	-4.99	-2.92	-352.47	601.31	-0.31
Dead+Wind 330 deg-Service	44.39	-2.93	-4.98	-597.69	355.37	-0.27

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-44.39	0.00	0.00	44.39	0.00	0.000%
2	-0.32	-53.27	-22.99	0.32	53.27	22.99	0.000%
3	-0.32	-39.95	-22.99	0.32	39.95	22.99	0.000%
4	11.65	-53.27	-20.42	-11.65	53.27	20.42	0.000%
5	11.65	-39.95	-20.42	-11.65	39.95	20.42	0.000%
6	19.83	-53.27	-11.22	-19.83	53.27	11.22	0.000%
7	19.83	-39.95	-11.22	-19.83	39.95	11.22	0.000%
8	26.90	-53.27	0.32	-26.90	53.27	-0.32	0.000%
9	26.90	-39.95	0.32	-26.90	39.95	-0.32	0.000%
10	20.15	-53.27	11.77	-20.15	53.27	-11.77	0.000%
11	20.15	-39.95	11.77	-20.15	39.95	-11.77	0.000%
12	11.83	-53.27	20.09	-11.83	53.27	-20.09	0.000%
13	11.83	-39.95	20.09	-11.83	39.95	-20.09	0.000%
14	0.32	-53.27	22.99	-0.32	53.27	-22.99	0.000%
15	0.32	-39.95	22.99	-0.32	39.95	-22.99	0.000%
16	-11.65	-53.27	20.42	11.65	53.27	-20.42	0.000%
17	-11.65	-39.95	20.42	11.65	39.95	-20.42	0.000%
18	-19.83	-53.27	11.22	19.83	53.27	-11.22	0.000%
19	-19.83	-39.95	11.22	19.83	39.95	-11.22	0.000%
20	-26.90	-53.27	-0.32	26.90	53.27	0.32	0.000%
21	-26.90	-39.95	-0.32	26.90	39.95	0.32	0.000%
22	-20.15	-53.27	-11.77	20.15	53.27	11.77	0.000%
23	-20.15	-39.95	-11.77	20.15	39.95	11.77	0.000%
24	-11.83	-53.27	-20.09	11.83	53.27	20.09	0.000%
25	-11.83	-39.95	-20.09	11.83	39.95	20.09	0.000%
26	0.00	-77.40	0.00	0.00	77.40	0.00	0.000%
27	-0.06	-77.40	-6.32	0.06	77.40	6.32	0.000%
28	3.11	-77.40	-5.44	-3.11	77.40	5.44	0.000%
29	5.45	-77.40	-3.10	-5.45	77.40	3.10	0.000%
30	6.67	-77.40	0.06	-6.67	77.40	-0.06	0.000%
31	5.52	-77.40	3.22	-5.52	77.40	-3.22	0.000%
32	3.22	-77.40	5.50	-3.22	77.40	-5.50	0.000%
33	0.06	-77.40	6.32	-0.06	77.40	-6.32	0.000%
34	-3.11	-77.40	5.44	3.11	77.40	-5.44	0.000%
35	-5.45	-77.40	3.10	5.45	77.40	-3.10	0.000%
36	-6.67	-77.40	-0.06	6.67	77.40	0.06	0.000%
37	-5.52	-77.40	-3.22	5.52	77.40	3.22	0.000%
38	-3.22	-77.40	-5.50	3.22	77.40	5.50	0.000%
39	-0.08	-44.39	-5.70	0.08	44.39	5.70	0.000%
40	2.89	-44.39	-5.06	-2.89	44.39	5.06	0.000%
41	4.92	-44.39	-2.78	-4.92	44.39	2.78	0.000%
42	6.67	-44.39	0.08	-6.67	44.39	-0.08	0.000%
43	4.99	-44.39	2.92	-4.99	44.39	-2.92	0.000%
44	2.93	-44.39	4.98	-2.93	44.39	-4.98	0.000%
45	0.08	-44.39	5.70	-0.08	44.39	-5.70	0.000%
46	-2.89	-44.39	5.06	2.89	44.39	-5.06	0.000%
47	-4.92	-44.39	2.78	4.92	44.39	-2.78	0.000%
48	-6.67	-44.39	-0.08	6.67	44.39	0.08	0.000%
49	-4.99	-44.39	-2.92	4.99	44.39	2.92	0.000%
50	-2.93	-44.39	-4.98	2.93	44.39	4.98	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	0.00021119
3	Yes	6	0.00000001	0.00007382
4	Yes	7	0.00000001	0.00021470
5	Yes	6	0.00000001	0.00093744
6	Yes	7	0.00000001	0.00020579
7	Yes	6	0.00000001	0.00090004
8	Yes	6	0.00000001	0.00027306
9	Yes	6	0.00000001	0.00009515
10	Yes	7	0.00000001	0.00023155
11	Yes	7	0.00000001	0.00005614
12	Yes	7	0.00000001	0.00022122
13	Yes	6	0.00000001	0.00096369
14	Yes	6	0.00000001	0.00009624
15	Yes	5	0.00000001	0.00055375
16	Yes	7	0.00000001	0.00021436
17	Yes	6	0.00000001	0.00093546
18	Yes	7	0.00000001	0.00021220
19	Yes	6	0.00000001	0.00092986
20	Yes	5	0.00000001	0.00074719
21	Yes	5	0.00000001	0.00029281
22	Yes	7	0.00000001	0.00022118
23	Yes	6	0.00000001	0.00096239
24	Yes	7	0.00000001	0.00023098
25	Yes	7	0.00000001	0.00005592
26	Yes	4	0.00000001	0.00000833
27	Yes	7	0.00000001	0.00018046
28	Yes	7	0.00000001	0.00022340
29	Yes	7	0.00000001	0.00022347
30	Yes	7	0.00000001	0.00018520
31	Yes	7	0.00000001	0.00023664
32	Yes	7	0.00000001	0.00023407
33	Yes	7	0.00000001	0.00017993
34	Yes	7	0.00000001	0.00022458
35	Yes	7	0.00000001	0.00022520
36	Yes	7	0.00000001	0.00018596
37	Yes	7	0.00000001	0.00023611
38	Yes	7	0.00000001	0.00023800
39	Yes	5	0.00000001	0.00010355
40	Yes	5	0.00000001	0.00057389
41	Yes	5	0.00000001	0.00052841
42	Yes	5	0.00000001	0.00014488
43	Yes	5	0.00000001	0.00067115
44	Yes	5	0.00000001	0.00059278
45	Yes	5	0.00000001	0.00007836
46	Yes	5	0.00000001	0.00057217
47	Yes	5	0.00000001	0.00057720
48	Yes	5	0.00000001	0.00010313
49	Yes	5	0.00000001	0.00059738
50	Yes	5	0.00000001	0.00066998

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	28.914	48	1.9339	0.0127
L2	145 - 140	26.895	48	1.9177	0.0096
L3	140 - 135	24.907	48	1.8771	0.0071
L4	135 - 130	22.974	48	1.8094	0.0057
L5	130 - 123.42	21.128	48	1.7131	0.0045
L6	126.59 - 121.59	19.933	48	1.6324	0.0036
L7	121.59 - 117	18.258	48	1.5524	0.0029
L8	117 - 116.75	16.819	48	1.4397	0.0022
L9	116.75 - 111.75	16.744	48	1.4368	0.0022

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L10	111.75 - 106.75	15.272	48	1.3736	0.0019
L11	106.75 - 101.75	13.870	48	1.3035	0.0017
L12	101.75 - 96.75	12.544	48	1.2291	0.0015
L13	96.75 - 91.75	11.298	48	1.1512	0.0012
L14	91.75 - 85.96	10.135	48	1.0707	0.0011
L15	90.04 - 84.96	9.756	48	1.0432	0.0010
L16	84.96 - 79.96	8.666	48	1.0019	0.0009
L17	79.96 - 74.96	7.650	48	0.9387	0.0008
L18	74.96 - 69.96	6.701	48	0.8740	0.0007
L19	69.96 - 64.96	5.820	48	0.8090	0.0007
L20	64.96 - 60.5	5.007	48	0.7440	0.0006
L21	60.5 - 60.25	4.339	48	0.6858	0.0005
L22	60.25 - 55.25	4.303	48	0.6826	0.0005
L23	55.25 - 50.25	3.622	48	0.6175	0.0004
L24	50.25 - 42.41	3.009	48	0.5538	0.0004
L25	47.58 - 41.41	2.709	48	0.5197	0.0003
L26	41.41 - 36.41	2.062	48	0.4763	0.0003
L27	36.41 - 31.41	1.595	48	0.4172	0.0003
L28	31.41 - 30.5	1.188	48	0.3596	0.0002
L29	30.5 - 30.25	1.120	48	0.3492	0.0002
L30	30.25 - 25.25	1.102	48	0.3463	0.0002
L31	25.25 - 20.25	0.769	48	0.2896	0.0002
L32	20.25 - 18	0.496	48	0.2333	0.0001
L33	18 - 17.75	0.392	48	0.2084	0.0001
L34	17.75 - 12.75	0.381	48	0.2055	0.0001
L35	12.75 - 7.75	0.197	48	0.1467	0.0001
L36	7.75 - 3.916	0.073	48	0.0895	0.0001
L37	3.916 - 3.666	0.019	48	0.0458	0.0000
L38	3.666 - 0	0.016	48	0.0429	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	APX16DWV-16DWV-S-E-A20	48	28.914	1.9339	0.0130	9440
148.00	1900MHz RRH (65MHz)	48	28.105	1.9291	0.0117	9440
140.00	(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	48	24.907	1.8771	0.0073	5168
130.00	SBNH-1D6565C w/ Mount Pipe	48	21.128	1.7131	0.0046	2702
117.00	Commscope MC-PK8-DSH	48	16.819	1.4397	0.0023	3031
85.00	KS24019-L112D	48	8.674	1.0022	0.0009	5290

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	117.686	20	7.8756	0.0495
L2	145 - 140	109.487	20	7.8146	0.0376
L3	140 - 135	101.405	20	7.6530	0.0275
L4	135 - 130	93.546	20	7.3782	0.0213
L5	130 - 123.42	86.036	20	6.9863	0.0167
L6	126.59 - 121.59	81.172	20	6.6573	0.0134
L7	121.59 - 117	74.357	20	6.3309	0.0110
L8	117 - 116.75	68.500	20	5.8714	0.0084
L9	116.75 - 111.75	68.193	20	5.8593	0.0083
L10	111.75 - 106.75	62.201	20	5.6016	0.0073
L11	106.75 - 101.75	56.492	20	5.3155	0.0063
L12	101.75 - 96.75	51.091	20	5.0117	0.0055
L13	96.75 - 91.75	46.015	20	4.6940	0.0047

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L14	91.75 - 85.96	41.276	20	4.3655	0.0040
L15	90.04 - 84.96	39.734	20	4.2529	0.0038
L16	84.96 - 79.96	35.292	20	4.0845	0.0035
L17	79.96 - 74.96	31.154	20	3.8264	0.0031
L18	74.96 - 69.96	27.288	20	3.5623	0.0028
L19	69.96 - 64.96	23.699	20	3.2972	0.0025
L20	64.96 - 60.5	20.387	20	3.0318	0.0022
L21	60.5 - 60.25	17.667	20	2.7946	0.0019
L22	60.25 - 55.25	17.521	20	2.7815	0.0019
L23	55.25 - 50.25	14.749	20	2.5159	0.0017
L24	50.25 - 42.41	12.252	20	2.2561	0.0015
L25	47.58 - 41.41	11.029	20	2.1171	0.0013
L26	41.41 - 36.41	8.395	20	1.9400	0.0012
L27	36.41 - 31.41	6.491	20	1.6990	0.0010
L28	31.41 - 30.5	4.835	20	1.4644	0.0009
L29	30.5 - 30.25	4.560	20	1.4218	0.0008
L30	30.25 - 25.25	4.486	20	1.4101	0.0008
L31	25.25 - 20.25	3.131	20	1.1789	0.0007
L32	20.25 - 18	2.017	20	0.9494	0.0005
L33	18 - 17.75	1.594	20	0.8482	0.0005
L34	17.75 - 12.75	1.550	20	0.8362	0.0005
L35	12.75 - 7.75	0.800	20	0.5970	0.0003
L36	7.75 - 3.916	0.297	20	0.3642	0.0002
L37	3.916 - 3.666	0.076	20	0.1861	0.0001
L38	3.666 - 0	0.067	20	0.1744	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	APX16DWV-16DWV-S-E-A20	20	117.686	7.8756	0.0535	2494
148.00	1900MHz RRH (65MHz)	20	114.399	7.8580	0.0483	2494
140.00	(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	20	101.405	7.6530	0.0305	1334
130.00	SBNH-1D6565C w/ Mount Pipe	20	86.036	6.9863	0.0197	685
117.00	Commscope MC-PK8-DSH	20	68.500	5.8714	0.0097	760
85.00	KS24019-L112D	20	35.327	4.0859	0.0039	1308

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 145 (1)	TP16.0798x15x0.1875	5.00	0.00	0.0	9.4579	-4.05	553.29	0.007
L2	145 - 140 (2)	TP17.1595x16.0798x0.1875	5.00	0.00	0.0	10.100	-4.30	590.88	0.007
L3	140 - 135 (3)	TP18.2393x17.1595x0.1875	5.00	0.00	0.0	10.743	-8.01	628.47	0.013
L4	135 - 130 (4)	TP19.319x18.2393x0.1875	5.00	0.00	0.0	11.385	-8.43	666.06	0.013
L5	130 - 123.42 (5)	TP20.74x19.319x0.1875	6.58	0.00	0.0	11.823	-12.19	691.70	0.018
L6	123.42 - 121.59 (6)	TP20.7436x19.6804x0.25	5.00	0.00	0.0	16.261	-12.93	951.31	0.014
L7	121.59 - 117	TP21.7197x20.7436x0.25	4.59	0.00	0.0	17.036	-13.55	996.62	0.014

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	(7)					2			
L8	117 - 116.75	TP21.7728x21.7197x0.56	0.25	0.00	0.0	37.868	-16.60	2215.30	0.007
	(8)	25				4			
L9	116.75 - 111.75 (9)	TP22.836x21.7728x0.55	5.00	0.00	0.0	38.904	-17.57	2275.92	0.008
	(9)					7			
L10	111.75 - 106.75 (10)	TP23.8992x22.836x0.525	5.00	0.00	0.0	38.949	-18.57	2278.55	0.008
	(10)					6			
L11	106.75 - 101.75 (11)	TP24.9624x23.8992x0.51	5.00	0.00	0.0	39.772	-19.60	2326.67	0.008
	(11)	25				1			
L12	101.75 - 96.75 (12)	TP26.0256x24.9624x0.5	5.00	0.00	0.0	40.509	-20.50	2369.79	0.009
	(12)					1			
L13	96.75 - 91.75 (13)	TP27.0888x26.0256x0.48	5.00	0.00	0.0	41.160	-21.57	2407.91	0.009
	(13)	75				9			
L14	91.75 - 85.96 (14)	TP28.32x27.0888x0.4875	5.79	0.00	0.0	41.723	-21.93	2440.83	0.009
	(14)					5			
L15	85.96 - 84.96 (15)	TP28.0347x26.9524x0.67	5.08	0.00	0.0	58.616	-24.00	3429.09	0.007
	(15)	5				8			
L16	84.96 - 79.96 (16)	TP29.1x28.0347x0.6625	5.00	0.00	0.0	59.797	-25.35	3498.16	0.007
	(16)					6			
L17	79.96 - 74.96 (17)	TP30.1652x29.1x0.6375	5.00	0.00	0.0	59.747	-26.74	3495.21	0.008
	(17)					1			
L18	74.96 - 69.96 (18)	TP31.2305x30.1652x0.62	5.00	0.00	0.0	60.713	-28.16	3551.75	0.008
	(18)	5				6			
L19	69.96 - 64.96 (19)	TP32.2957x31.2305x0.61	5.00	0.00	0.0	61.594	-29.60	3603.28	0.008
	(19)	25				6			
L20	64.96 - 60.5 (20)	TP33.2459x32.2957x0.6	4.46	0.00	0.0	62.170	-30.92	3637.00	0.009
	(20)					9			
L21	60.5 - 60.25 (21)	TP33.2992x33.2459x0.6	0.25	0.00	0.0	62.272	-31.01	3642.93	0.009
	(21)					3			
L22	60.25 - 55.25 (22)	TP34.3644x33.2992x0.58	5.00	0.00	0.0	62.984	-32.51	3684.61	0.009
	(22)	75				7			
L23	55.25 - 50.25 (23)	TP35.4297x34.3644x0.58	5.00	0.00	0.0	64.971	-34.04	3800.81	0.009
	(23)	75				1			
L24	50.25 - 42.41 (24)	TP37.1x35.4297x0.575	7.84	0.00	0.0	64.649	-34.86	3782.01	0.009
	(24)					7			
L25	42.41 - 41.41 (25)	TP36.6867x35.3735x0.63	6.17	0.00	0.0	72.942	-38.20	4267.16	0.009
	(25)	75				8			
L26	41.41 - 36.41 (26)	TP37.7508x36.6867x0.62	5.00	0.00	0.0	73.648	-39.93	4308.43	0.009
	(26)	5				4			
L27	36.41 - 31.41 (27)	TP38.815x37.7508x0.625	5.00	0.00	0.0	75.759	-41.68	4431.93	0.009
	(27)					4			
L28	31.41 - 30.5 (28)	TP39.0087x38.815x0.612	0.91	0.00	0.0	74.645	-42.00	4366.74	0.010
	(28)	5				0			
L29	30.5 - 30.25 (29)	TP39.0619x39.0087x0.61	0.25	0.00	0.0	74.748	-42.10	4372.79	0.010
	(29)	25				5			
L30	30.25 - 25.25 (30)	TP40.126x39.0619x0.612	5.00	0.00	0.0	75.162	-42.47	4396.99	0.010
	(30)	5				2			
L31	25.25 - 20.25 (31)	TP41.1902x40.126x0.6	5.00	0.00	0.0	75.273	-43.90	4403.49	0.010
	(31)					4			
L32	20.25 - 18 (32)	TP41.6691x41.1902x0.6	2.25	0.00	0.0	77.299	-45.71	4522.05	0.010
	(32)					9			
L33	18 - 17.75 (33)	TP41.7223x41.6691x0.55	0.25	0.00	0.0	72.586	-46.52	4246.29	0.011
	(33)	63				2			
L34	17.75 - 12.75 (34)	TP42.7864x41.7223x0.55	5.00	0.00	0.0	71.874	-46.63	4204.65	0.011
	(34)					4			
L35	12.75 - 7.75 (35)	TP43.8506x42.7864x0.55	5.00	0.00	0.0	73.732	-48.48	4313.33	0.011
	(35)					1			
L36	7.75 - 3.916 (36)	TP44.6666x43.8506x0.53	3.83	0.00	0.0	73.893	-50.37	4322.75	0.012
	(36)	75				2			
L37	3.916 - 3.666 (37)	TP44.7198x44.6666x0.52	0.25	0.00	0.0	73.555	-51.83	4302.98	0.012
	(37)	5				3			
L38	3.666 - 0 (38)	TP45.5x44.7198x0.5125	3.67	0.00	0.0	71.910	-51.93	4206.79	0.012
	(38)					9			

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{rx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M_{uy} kip-ft	ϕM_{ry} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L1	150 - 145 (1)	TP16.0798x15x0.1875	26.12	228.74	0.114	0.00	228.74	0.000
L2	145 - 140 (2)	TP17.1595x16.0798x0.1875	54.47	261.07	0.209	0.00	261.07	0.000
L3	140 - 135 (3)	TP18.2393x17.1595x0.1875	109.71	294.64	0.372	0.00	294.64	0.000
L4	135 - 130 (4)	TP19.319x18.2393x0.1875	166.08	326.33	0.509	0.00	326.33	0.000
L5	130 - 123.42 (5)	TP20.74x19.319x0.1875	220.26	348.54	0.632	0.00	348.54	0.000
L6	123.42 - 121.59 (6)	TP20.7436x19.6804x0.25	297.22	506.96	0.586	0.00	506.96	0.000
L7	121.59 - 117 (7)	TP21.7197x20.7436x0.25	368.70	556.70	0.662	0.00	556.70	0.000
L8	117 - 116.75 (8)	TP21.7728x21.7197x0.5625	373.33	1204.78	0.310	0.00	1204.78	0.000
L9	116.75 - 111.75 (9)	TP22.836x21.7728x0.55	465.44	1302.86	0.357	0.00	1302.86	0.000
L10	111.75 - 106.75 (10)	TP23.8992x22.836x0.525	558.77	1371.03	0.408	0.00	1371.03	0.000
L11	106.75 - 101.75 (11)	TP24.9624x23.8992x0.5125	653.28	1466.56	0.445	0.00	1466.56	0.000
L12	101.75 - 96.75 (12)	TP26.0256x24.9624x0.5	749.64	1561.55	0.480	0.00	1561.55	0.000
L13	96.75 - 91.75 (13)	TP27.0888x26.0256x0.4875	851.41	1655.59	0.514	0.00	1655.59	0.000
L14	91.75 - 85.96 (14)	TP28.32x27.0888x0.4875	886.63	1701.58	0.521	0.00	1701.58	0.000
L15	85.96 - 84.96 (15)	TP28.0347x26.9524x0.675	993.49	2409.92	0.412	0.00	2409.92	0.000
L16	84.96 - 79.96 (16)	TP29.1x28.0347x0.6625	1102.03	2558.73	0.431	0.00	2558.73	0.000
L17	79.96 - 74.96 (17)	TP30.1652x29.1x0.6375	1213.36	2659.03	0.456	0.00	2659.03	0.000
L18	74.96 - 69.96 (18)	TP31.2305x30.1652x0.625	1327.47	2803.87	0.473	0.00	2803.87	0.000
L19	69.96 - 64.96 (19)	TP32.2957x31.2305x0.6125	1444.31	2947.87	0.490	0.00	2947.87	0.000
L20	64.96 - 60.5 (20)	TP33.2459x32.2957x0.6	1550.37	3068.73	0.505	0.00	3068.73	0.000
L21	60.5 - 60.25 (21)	TP33.2992x33.2459x0.6	1556.35	3078.84	0.505	0.00	3078.84	0.000
L22	60.25 - 55.25 (22)	TP34.3644x33.2992x0.5875	1676.76	3219.72	0.521	0.00	3219.72	0.000
L23	55.25 - 50.25 (23)	TP35.4297x34.3644x0.5875	1798.62	3427.80	0.525	0.00	3427.80	0.000
L24	50.25 - 42.41 (24)	TP37.1x35.4297x0.575	1864.26	3469.91	0.537	0.00	3469.91	0.000
L25	42.41 - 41.41 (25)	TP36.6867x35.3735x0.6375	2017.87	3978.48	0.507	0.00	3978.48	0.000
L26	41.41 - 36.41 (26)	TP37.7508x36.6867x0.625	2144.04	4140.39	0.518	0.00	4140.39	0.000
L27	36.41 - 31.41 (27)	TP38.815x37.7508x0.625	2271.40	4383.17	0.518	0.00	4383.17	0.000
L28	31.41 - 30.5 (28)	TP39.0087x38.815x0.6125	2294.70	4343.78	0.528	0.00	4343.78	0.000
L29	30.5 - 30.25 (29)	TP39.0619x39.0087x0.6125	2301.11	4355.93	0.528	0.00	4355.93	0.000
L30	30.25 - 25.25 (30)	TP40.126x39.0619x0.6125	2326.76	4404.66	0.528	0.00	4404.66	0.000
L31	25.25 - 20.25 (31)	TP41.1902x40.126x0.6	2429.79	4512.68	0.538	0.00	4512.68	0.000
L32	20.25 - 18 (32)	TP41.6691x41.1902x0.6	2559.52	4760.80	0.538	0.00	4760.80	0.000
L33	18 - 17.75 (33)	TP41.7223x41.6691x0.5563	2618.36	4533.63	0.578	0.00	4533.63	0.000
L34	17.75 - 12.75 (34)	TP42.7864x41.7223x0.55	2624.93	4496.43	0.584	0.00	4496.43	0.000
L35	12.75 - 7.75	TP43.8506x42.7864x0.55	2756.87	4733.44	0.582	0.00	4733.44	0.000

Section No.	Elevation	Size	M_{ux}	ϕM_{rx}	Ratio	M_{uy}	ϕM_{ry}	Ratio
	ft		kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{rx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ry}}$
L36	(35) 7.75 - 3.916	TP44.6666x43.8506x0.53	2889.76	4867.65	0.594	0.00	4867.65	0.000
L37	(36) 3.916 - 3.666	TP44.7198x44.6666x0.52	2992.24	4940.59	0.606	0.00	4940.59	0.000
L38	(37) 3.666 - 0 (38)	TP45.5x44.7198x0.5125	2998.94	4838.76	0.620	0.00	4838.76	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual	ϕV_n	Ratio	Actual	ϕT_n	Ratio
	ft		V_u K	K	$\frac{V_u}{\phi V_n}$	T_u kip-ft	kip-ft	$\frac{T_u}{\phi T_n}$
L1	150 - 145 (1)	TP16.0798x15x0.1875	5.56	165.99	0.033	1.85	231.01	0.008
L2	145 - 140 (2)	TP17.1595x16.0798x0.18	5.77	177.26	0.033	1.85	263.47	0.007
L3	(3) 140 - 135	TP18.2393x17.1595x0.18	11.17	188.54	0.059	1.30	298.06	0.004
L4	(4) 135 - 130	TP19.319x18.2393x0.187	11.37	199.82	0.057	1.30	334.78	0.004
L5	(5) 130 - 123.42	TP20.74x19.319x0.1875	15.27	207.51	0.074	1.55	361.05	0.004
L6	(6) 123.42 - 121.59	TP20.7436x19.6804x0.25	15.51	285.39	0.054	1.55	512.20	0.003
L7	(7) 121.59 - 117	TP21.7197x20.7436x0.25	15.66	298.99	0.052	1.55	562.15	0.003
L8	(8) 117 - 116.75	TP21.7728x21.7197x0.56	18.30	664.59	0.028	1.39	1234.47	0.001
L9	(9) 116.75 - 111.75	TP22.836x21.7728x0.55	18.55	682.78	0.027	1.39	1332.58	0.001
L10	(10) 111.75 - 106.75	TP23.8992x22.836x0.525	18.79	683.57	0.027	1.39	1399.26	0.001
L11	(11) 106.75 - 101.75	TP24.9624x23.8992x0.51	19.02	698.00	0.027	1.39	1494.56	0.001
L12	(12) 101.75 - 96.75	TP26.0256x24.9624x0.5	20.20	710.94	0.028	1.32	1589.22	0.001
L13	(13) 96.75 - 91.75	TP27.0888x26.0256x0.48	20.51	722.37	0.028	1.32	1682.85	0.001
L14	(14) 91.75 - 85.96	TP28.32x27.0888x0.4875	20.70	732.25	0.028	1.33	1729.17	0.001
L15	(15) 85.96 - 84.96	TP28.0347x26.9524x0.67	21.43	1028.73	0.021	1.34	2464.85	0.001
L16	(16) 84.96 - 79.96	TP29.1x28.0347x0.6625	21.99	1049.45	0.021	1.17	2613.56	0.000
L17	(17) 79.96 - 74.96	TP30.1652x29.1x0.6375	22.55	1048.56	0.022	1.18	2711.47	0.000
L18	(18) 74.96 - 69.96	TP31.2305x30.1652x0.62	23.10	1065.52	0.022	1.20	2855.89	0.000
L19	(19) 69.96 - 64.96	TP32.2957x31.2305x0.61	23.64	1080.98	0.022	1.21	2999.36	0.000
L20	(20) 64.96 - 60.5	TP33.2459x32.2957x0.6	23.92	1091.10	0.022	1.21	3119.42	0.000
L21	(21) 60.5 - 60.25	TP33.2992x33.2459x0.6	23.94	1092.88	0.022	1.21	3129.60	0.000
L22	(22) 60.25 - 55.25	TP34.3644x33.2992x0.58	24.23	1105.38	0.022	1.21	3269.73	0.000
L23	(23) 55.25 - 50.25	TP35.4297x34.3644x0.58	24.52	1140.24	0.022	1.21	3479.22	0.000
L24	(24) 50.25 - 42.41	TP37.1x35.4297x0.575	24.66	1134.60	0.022	1.21	3519.78	0.000
L25	(25) 42.41 - 41.41	TP36.6867x35.3735x0.63	25.12	1280.15	0.020	1.21	4041.43	0.000
L26	(26) 41.41 - 36.41	TP37.7508x36.6867x0.62	25.36	1292.53	0.020	1.21	4202.39	0.000
L27	(27) 36.41 - 31.41	TP38.815x37.7508x0.625	25.59	1329.58	0.019	1.21	4446.76	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio V_u ϕV_n	Actual T_u kip-ft	ϕT_n kip-ft	Ratio T_u ϕT_n
L28	31.41 - 30.5 (28)	TP39.0087x38.815x0.612 5	25.63	1310.02	0.020	1.21	4405.00	0.000
L29	30.5 - 30.25 (29)	TP39.0619x39.0087x0.61 25	25.63	1311.84	0.020	1.21	4417.22	0.000
L30	30.25 - 25.25 (30)	TP40.126x39.0619x0.612 5	25.72	1326.36	0.019	1.21	4466.26	0.000
L31	25.25 - 20.25 (31)	TP41.1902x40.126x0.6	25.89	1328.16	0.019	1.21	4572.79	0.000
L32	20.25 - 18 (32)	TP41.6691x41.1902x0.6	26.16	1364.62	0.019	1.22	4822.33	0.000
L33	18 - 17.75 (33)	TP41.7223x41.6691x0.55 63	26.28	1275.54	0.021	1.24	4586.57	0.000
L34	17.75 - 12.75 (34)	TP42.7864x41.7223x0.55	26.33	1267.92	0.021	1.24	4548.17	0.000
L35	12.75 - 7.75 (35)	TP43.8506x42.7864x0.55	26.53	1300.52	0.020	1.24	4786.31	0.000
L36	7.75 - 3.916 (36)	TP44.6666x43.8506x0.53 75	26.72	1304.97	0.020	1.24	4919.04	0.000
L37	3.916 - 3.666 (37)	TP44.7198x44.6666x0.52 5	26.80	1292.45	0.021	1.24	4990.21	0.000
L38	3.666 - 0 (38)	TP45.5x44.7198x0.5125	26.85	1269.46	0.021	1.24	4885.91	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 145 (1)	0.007	0.114	0.000	0.033	0.008	0.123	1.050	4.8.2
L2	145 - 140 (2)	0.007	0.209	0.000	0.033	0.007	0.217	1.050	4.8.2
L3	140 - 135 (3)	0.013	0.372	0.000	0.059	0.004	0.389	1.050	4.8.2
L4	135 - 130 (4)	0.013	0.509	0.000	0.057	0.004	0.525	1.050	4.8.2
L5	130 - 123.42 (5)	0.018	0.632	0.000	0.074	0.004	0.656	1.050	4.8.2
L6	123.42 - 121.59 (6)	0.014	0.586	0.000	0.054	0.003	0.603	1.050	4.8.2
L7	121.59 - 117 (7)	0.014	0.662	0.000	0.052	0.003	0.679	1.050	4.8.2
L8	117 - 116.75 (8)	0.007	0.310	0.000	0.028	0.001	0.318	1.050	4.8.2
L9	116.75 - 111.75 (9)	0.008	0.357	0.000	0.027	0.001	0.366	1.050	4.8.2
L10	111.75 - 106.75 (10)	0.008	0.408	0.000	0.027	0.001	0.417	1.050	4.8.2
L11	106.75 - 101.75 (11)	0.008	0.445	0.000	0.027	0.001	0.455	1.050	4.8.2
L12	101.75 - 96.75 (12)	0.009	0.480	0.000	0.028	0.001	0.490	1.050	4.8.2
L13	96.75 - 91.75 (13)	0.009	0.514	0.000	0.028	0.001	0.524	1.050	4.8.2
L14	91.75 - 85.96 (14)	0.009	0.521	0.000	0.028	0.001	0.531	1.050	4.8.2
L15	85.96 - 84.96 (15)	0.007	0.412	0.000	0.021	0.001	0.420	1.050	4.8.2
L16	84.96 - 79.96 (16)	0.007	0.431	0.000	0.021	0.000	0.438	1.050	4.8.2
L17	79.96 - 74.96 (17)	0.008	0.456	0.000	0.022	0.000	0.464	1.050	4.8.2
L18	74.96 - 69.96 (18)	0.008	0.473	0.000	0.022	0.000	0.482	1.050	4.8.2
L19	69.96 - 64.96 (19)	0.008	0.490	0.000	0.022	0.000	0.499	1.050	4.8.2
L20	64.96 - 60.5 (20)	0.009	0.505	0.000	0.022	0.000	0.514	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
L21	60.5 - 60.25 (21)	0.009	0.505	0.000	0.022	0.000	0.515	1.050	4.8.2
L22	60.25 - 55.25 (22)	0.009	0.521	0.000	0.022	0.000	0.530	1.050	4.8.2
L23	55.25 - 50.25 (23)	0.009	0.525	0.000	0.022	0.000	0.534	1.050	4.8.2
L24	50.25 - 42.41 (24)	0.009	0.537	0.000	0.022	0.000	0.547	1.050	4.8.2
L25	42.41 - 41.41 (25)	0.009	0.507	0.000	0.020	0.000	0.517	1.050	4.8.2
L26	41.41 - 36.41 (26)	0.009	0.518	0.000	0.020	0.000	0.527	1.050	4.8.2
L27	36.41 - 31.41 (27)	0.009	0.518	0.000	0.019	0.000	0.528	1.050	4.8.2
L28	31.41 - 30.5 (28)	0.010	0.528	0.000	0.020	0.000	0.538	1.050	4.8.2
L29	30.5 - 30.25 (29)	0.010	0.528	0.000	0.020	0.000	0.538	1.050	4.8.2
L30	30.25 - 25.25 (30)	0.010	0.528	0.000	0.019	0.000	0.538	1.050	4.8.2
L31	25.25 - 20.25 (31)	0.010	0.538	0.000	0.019	0.000	0.549	1.050	4.8.2
L32	20.25 - 18 (32)	0.010	0.538	0.000	0.019	0.000	0.548	1.050	4.8.2
L33	18 - 17.75 (33)	0.011	0.578	0.000	0.021	0.000	0.589	1.050	4.8.2
L34	17.75 - 12.75 (34)	0.011	0.584	0.000	0.021	0.000	0.595	1.050	4.8.2
L35	12.75 - 7.75 (35)	0.011	0.582	0.000	0.020	0.000	0.594	1.050	4.8.2
L36	7.75 - 3.916 (36)	0.012	0.594	0.000	0.020	0.000	0.606	1.050	4.8.2
L37	3.916 - 3.666 (37)	0.012	0.606	0.000	0.021	0.000	0.618	1.050	4.8.2
L38	3.666 - 0 (38)	0.012	0.620	0.000	0.021	0.000	0.633	1.050	4.8.2

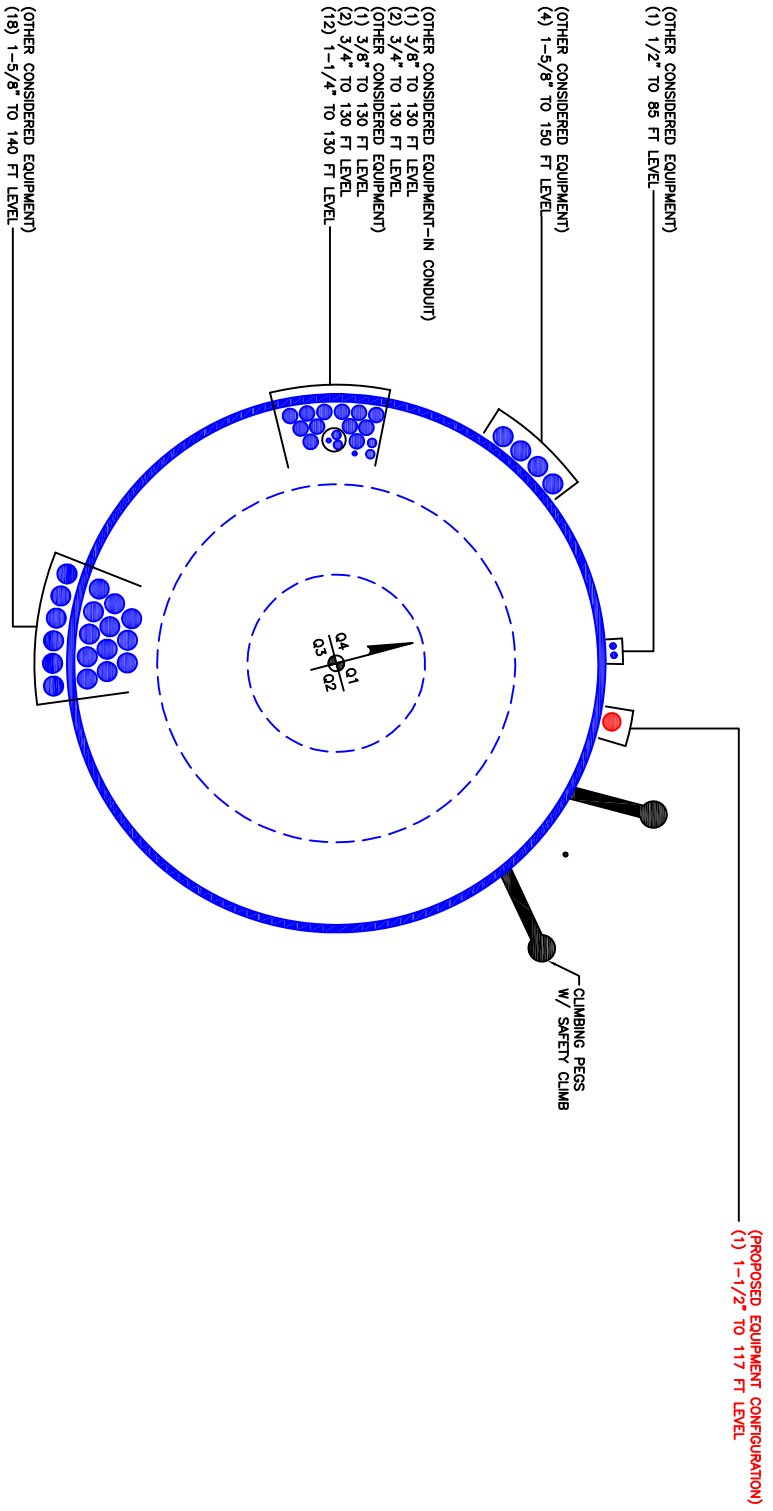
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 145	Pole	TP16.0798x15x0.1875	1	-4.05	580.95	11.7	Pass
L2	145 - 140	Pole	TP17.1595x16.0798x0.1875	2	-4.30	620.42	20.7	Pass
L3	140 - 135	Pole	TP18.2393x17.1595x0.1875	3	-8.01	659.89	37.1	Pass
L4	135 - 130	Pole	TP19.319x18.2393x0.1875	4	-8.43	699.36	50.0	Pass
L5	130 - 123.42	Pole	TP20.74x19.319x0.1875	5	-12.19	726.28	62.4	Pass
L6	123.42 - 121.59	Pole	TP20.7436x19.6804x0.25	6	-12.93	998.87	57.4	Pass
L7	121.59 - 117	Pole	TP21.7197x20.7436x0.25	7	-13.55	1046.45	64.7	Pass
L8	117 - 116.75	Pole	TP21.7728x21.7197x0.5625	8	-16.60	2326.06	30.3	Pass
L9	116.75 - 111.75	Pole	TP22.836x21.7728x0.55	9	-17.57	2389.72	34.8	Pass
L10	111.75 - 106.75	Pole	TP23.8992x22.836x0.525	10	-18.57	2392.48	39.7	Pass
L11	106.75 - 101.75	Pole	TP24.9624x23.8992x0.5125	11	-19.60	2443.00	43.3	Pass
L12	101.75 - 96.75	Pole	TP26.0256x24.9624x0.5	12	-20.50	2488.28	46.6	Pass
L13	96.75 - 91.75	Pole	TP27.0888x26.0256x0.4875	13	-21.57	2528.31	49.9	Pass
L14	91.75 - 85.96	Pole	TP28.32x27.0888x0.4875	14	-21.93	2562.87	50.6	Pass
L15	85.96 - 84.96	Pole	TP28.0347x26.9524x0.675	15	-24.00	3600.54	40.0	Pass
L16	84.96 - 79.96	Pole	TP29.1x28.0347x0.6625	16	-25.35	3673.07	41.8	Pass
L17	79.96 - 74.96	Pole	TP30.1652x29.1x0.6375	17	-26.74	3669.97	44.2	Pass
L18	74.96 - 69.96	Pole	TP31.2305x30.1652x0.625	18	-28.16	3729.34	45.9	Pass
L19	69.96 - 64.96	Pole	TP32.2957x31.2305x0.6125	19	-29.60	3783.44	47.5	Pass
L20	64.96 - 60.5	Pole	TP33.2459x32.2957x0.6	20	-30.92	3818.85	49.0	Pass
L21	60.5 - 60.25	Pole	TP33.2992x33.2459x0.6	21	-31.01	3825.08	49.0	Pass
L22	60.25 - 55.25	Pole	TP34.3644x33.2992x0.5875	22	-32.51	3868.84	50.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	σP_{allow} K	% Capacity	Pass Fail	
L23	55.25 - 50.25	Pole	TP35.4297x34.3644x0.5875	23	-34.04	3990.85	50.9	Pass	
L24	50.25 - 42.41	Pole	TP37.1x35.4297x0.575	24	-34.86	3971.11	52.1	Pass	
L25	42.41 - 41.41	Pole	TP36.6867x35.3735x0.6375	25	-38.20	4480.52	49.2	Pass	
L26	41.41 - 36.41	Pole	TP37.7508x36.6867x0.625	26	-39.93	4523.85	50.2	Pass	
L27	36.41 - 31.41	Pole	TP38.815x37.7508x0.625	27	-41.68	4653.53	50.3	Pass	
L28	31.41 - 30.5	Pole	TP39.0087x38.815x0.6125	28	-42.00	4585.08	51.3	Pass	
L29	30.5 - 30.25	Pole	TP39.0619x39.0087x0.6125	29	-42.10	4591.43	51.3	Pass	
L30	30.25 - 25.25	Pole	TP40.126x39.0619x0.6125	30	-42.47	4616.84	51.3	Pass	
L31	25.25 - 20.25	Pole	TP41.1902x40.126x0.6	31	-43.90	4623.66	52.3	Pass	
L32	20.25 - 18	Pole	TP41.6691x41.1902x0.6	32	-45.71	4748.15	52.2	Pass	
L33	18 - 17.75	Pole	TP41.7223x41.6691x0.5563	33	-46.52	4458.60	56.1	Pass	
L34	17.75 - 12.75	Pole	TP42.7864x41.7223x0.55	34	-46.63	4414.88	56.7	Pass	
L35	12.75 - 7.75	Pole	TP43.8506x42.7864x0.55	35	-48.48	4529.00	56.6	Pass	
L36	7.75 - 3.916	Pole	TP44.6666x43.8506x0.5375	36	-50.37	4538.89	57.7	Pass	
L37	3.916 - 3.666	Pole	TP44.7198x44.6666x0.525	37	-51.83	4518.13	58.9	Pass	
L38	3.666 - 0	Pole	TP45.5x44.7198x0.5125	38	-51.93	4417.13	60.2	Pass	
							Summary		
							Pole (L7)	64.7	Pass
							RATING =	64.7	Pass

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

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Site BU: 876361
Work Order: 1963852



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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	150	26.58	3.17	18	15	20.74	0.1875	Auto	A572-65
2	126.59	40.63	4.08	18	19.68	28.32	0.25	Auto	A572-65
3	90.04	47.63	5.17	18	26.95	37.1	0.3125	Auto	A572-65
4	47.58	47.58	0	18	35.37	45.5	0.375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	3.916	30.5	channel	MP3-06 (1.1875in)	2																		
2	3.916	18	channel	MP3-06 (1.1875in)	1																		
3	18	30.5	channel	MP3-06 (1.1875in)	1																		
4	30.5	60.5	channel	MP3-06 (1.1875in)	3																		
5	60.5	89	channel	MP3-06 (1.1875in)	3																		
6	89	117	channel	MP3-05 (1.1875in)	3																		
7	0	3.916	plate	TS 1.25"X2.8125"	6																		
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
2	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
3	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
4	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
5	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
6	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
7	1.25	2.8125	3.51563	1.40625	Welded	n/a	None	n/a	0.000	3.516	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)
TS 1.25"X2.8125"	Top	1	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	80	CJP Groove	6	0.625	45	0.5	51	0.375	-

TNX Geometry Input

Increment (ft): [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	150 - 145	5		18	15.000	16.080	0.1875	A572-65	1.000
2	145 - 140	5		18	16.080	17.160	0.1875	A572-65	1.000
3	140 - 135	5		18	17.160	18.239	0.1875	A572-65	1.000
4	135 - 130	5		18	18.239	19.319	0.1875	A572-65	1.000
5	130 - 126.59	6.58	3.17	18	19.319	20.740	0.1875	A572-65	1.000
6	126.59 - 121.59	5		18	19.680	20.744	0.25	A572-65	1.000
7	121.59 - 117	4.59		18	20.744	21.720	0.25	A572-65	1.000
8	117 - 116.75	0.25		18	21.720	21.773	0.5625	A572-65	0.899
9	116.75 - 111.75	5		18	21.773	22.836	0.55	A572-65	0.896
10	111.75 - 106.75	5		18	22.836	23.899	0.525	A572-65	0.917
11	106.75 - 101.75	5		18	23.899	24.962	0.5125	A572-65	0.919
12	101.75 - 96.75	5		18	24.962	26.026	0.5	A572-65	0.923
13	96.75 - 91.75	5		18	26.026	27.089	0.4875	A572-65	0.929
14	91.75 - 90.04	5.79	4.08	18	27.089	28.320	0.4875	A572-65	0.924
15	90.04 - 84.96	5.08		18	26.952	28.035	0.675	A572-65	0.903
16	84.96 - 79.96	5		18	28.035	29.100	0.6625	A572-65	0.902
17	79.96 - 74.96	5		18	29.100	30.165	0.6375	A572-65	0.921
18	74.96 - 69.96	5		18	30.165	31.230	0.625	A572-65	0.924
19	69.96 - 64.96	5		18	31.230	32.296	0.6125	A572-65	0.928
20	64.96 - 60.5	4.46		18	32.296	33.246	0.6	A572-65	0.934
21	60.5 - 60.25	0.25		18	33.246	33.299	0.6	A572-65	0.933
22	60.25 - 55.25	5		18	33.299	34.364	0.5875	A572-65	0.940
23	55.25 - 50.25	5		18	34.364	35.430	0.5875	A572-65	0.927
24	50.25 - 47.58	7.84	5.17	18	35.430	37.100	0.575	A572-65	0.941
25	47.58 - 41.41	6.17		18	35.374	36.687	0.6375	A572-65	0.941
26	41.41 - 36.41	5		18	36.687	37.751	0.625	A572-65	0.949
27	36.41 - 31.41	5		18	37.751	38.815	0.625	A572-65	0.939
28	31.41 - 30.5	0.91		18	38.815	39.009	0.6125	A572-65	0.956
29	30.5 - 30.25	0.25		18	39.009	39.062	0.6125	A572-65	0.956
30	30.25 - 25.25	5		18	39.062	40.126	0.6125	A572-65	0.947
31	25.25 - 20.25	5		18	40.126	41.190	0.6	A572-65	0.957
32	20.25 - 18	2.25		18	41.190	41.669	0.6	A572-65	0.953
33	18 - 17.75	0.25		18	41.669	41.722	0.55625	A572-65	1.027
34	17.75 - 12.75	5		18	41.722	42.786	0.55	A572-65	1.029
35	12.75 - 7.75	5		18	42.786	43.851	0.55	A572-65	1.021
36	7.75 - 3.916	3.834		18	43.851	44.667	0.5375	A572-65	1.038
37	3.916 - 3.666	0.25		18	44.667	44.720	0.525	A572-65	1.003
38	3.666 - 0	3.666		18	44.720	45.500	0.5125	A572-65	1.022

TNX Section Forces

Increment (ft):		TNX Output		
	5	P _u	M _{ux} (kip-ft)	V _u (K)
	Section Height (ft)	(K)		
1	150 - 145	4.05	26.12	5.56
2	145 - 140	4.30	54.47	5.77
3	140 - 135	8.01	109.71	11.17
4	135 - 130	8.43	166.08	11.37
5	130 - 126.59	12.19	220.26	15.27
6	126.59 - 121.59	12.93	297.22	15.51
7	121.59 - 117	16.80	368.76	17.97
8	117 - 116.75	16.60	373.34	18.30
9	116.75 - 111.75	17.57	465.44	18.55
10	111.75 - 106.75	18.57	558.77	18.79
11	106.75 - 101.75	19.60	653.28	19.02
12	101.75 - 96.75	20.50	749.64	20.20
13	96.75 - 91.75	21.57	851.41	20.51
14	91.75 - 90.04	21.93	886.63	20.70
15	90.04 - 84.96	24.00	993.49	21.43
16	84.96 - 79.96	25.35	1102.03	21.99
17	79.96 - 74.96	26.74	1213.36	22.55
18	74.96 - 69.96	28.16	1327.47	23.10
19	69.96 - 64.96	29.60	1444.31	23.64
20	64.96 - 60.5	30.92	1550.37	23.92
21	60.5 - 60.25	31.01	1556.35	23.94
22	60.25 - 55.25	32.51	1676.76	24.23
23	55.25 - 50.25	34.04	1798.62	24.52
24	50.25 - 47.58	34.86	1864.26	24.66
25	47.58 - 41.41	38.20	2017.86	25.12
26	41.41 - 36.41	39.93	2144.04	25.36
27	36.41 - 31.41	41.68	2271.40	25.59
28	31.41 - 30.5	42.00	2294.70	25.63
29	30.5 - 30.25	42.10	2301.10	25.63
30	30.25 - 25.25	43.88	2429.79	25.85
31	25.25 - 20.25	45.69	2559.51	26.05
32	20.25 - 18	46.51	2618.36	26.27
33	18 - 17.75	46.61	2624.93	26.28
34	17.75 - 12.75	48.46	2756.86	26.50
35	12.75 - 7.75	50.35	2889.76	26.67
36	7.75 - 3.916	51.81	2992.25	26.81
37	3.916 - 3.666	51.91	2998.95	26.80
38	3.666 - 0	53.26	3097.42	26.93

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP16.08x15x0.1875	Pole	11.7%	Pass
145 - 140	Pole	TP17.16x16.08x0.1875	Pole	20.7%	Pass
140 - 135	Pole	TP18.239x17.16x0.1875	Pole	37.0%	Pass
135 - 130	Pole	TP19.319x18.239x0.1875	Pole	50.0%	Pass
130 - 126.59	Pole	TP20.74x19.319x0.1875	Pole	62.4%	Pass
126.59 - 121.59	Pole	TP20.744x19.68x0.25	Pole	57.4%	Pass
121.59 - 117	Pole	TP21.72x20.744x0.25	Pole	65.0%	Pass
117 - 116.75	Pole + Reinf.	TP21.773x21.72x0.5625	Reinf. 6 Tension Rupture	45.3%	Pass
116.75 - 111.75	Pole + Reinf.	TP22.836x21.773x0.55	Reinf. 6 Tension Rupture	52.5%	Pass
111.75 - 106.75	Pole + Reinf.	TP23.899x22.836x0.525	Reinf. 6 Tension Rupture	58.8%	Pass
106.75 - 101.75	Pole + Reinf.	TP24.962x23.899x0.5125	Reinf. 6 Tension Rupture	64.4%	Pass
101.75 - 96.75	Pole + Reinf.	TP26.026x24.962x0.5	Reinf. 6 Tension Rupture	69.3%	Pass
96.75 - 91.75	Pole + Reinf.	TP27.089x26.026x0.4875	Reinf. 6 Tension Rupture	74.0%	Pass
91.75 - 90.04	Pole + Reinf.	TP28.32x27.089x0.4875	Reinf. 6 Tension Rupture	75.5%	Pass
90.04 - 84.96	Pole + Reinf.	TP28.035x26.952x0.675	Reinf. 5 Tension Rupture	58.6%	Pass
84.96 - 79.96	Pole + Reinf.	TP29.1x28.035x0.6625	Reinf. 5 Tension Rupture	61.5%	Pass
79.96 - 74.96	Pole + Reinf.	TP30.165x29.1x0.6375	Reinf. 5 Tension Rupture	64.1%	Pass
74.96 - 69.96	Pole + Reinf.	TP31.23x30.165x0.625	Reinf. 5 Tension Rupture	66.6%	Pass
69.96 - 64.96	Pole + Reinf.	TP32.296x31.23x0.6125	Reinf. 5 Tension Rupture	68.8%	Pass
64.96 - 60.5	Pole + Reinf.	TP33.246x32.296x0.6	Reinf. 5 Tension Rupture	70.6%	Pass
60.5 - 60.25	Pole + Reinf.	TP33.299x33.246x0.6	Reinf. 4 Tension Rupture	70.7%	Pass
60.25 - 55.25	Pole + Reinf.	TP34.364x33.299x0.5875	Reinf. 4 Tension Rupture	72.6%	Pass
55.25 - 50.25	Pole + Reinf.	TP35.43x34.364x0.5875	Reinf. 4 Tension Rupture	74.2%	Pass
50.25 - 47.58	Pole + Reinf.	TP37.1x35.43x0.575	Reinf. 4 Tension Rupture	75.0%	Pass
47.58 - 41.41	Pole + Reinf.	TP36.687x35.374x0.6375	Reinf. 4 Tension Rupture	71.1%	Pass
41.41 - 36.41	Pole + Reinf.	TP37.751x36.687x0.625	Reinf. 4 Tension Rupture	72.1%	Pass
36.41 - 31.41	Pole + Reinf.	TP38.815x37.751x0.625	Reinf. 4 Tension Rupture	73.0%	Pass
31.41 - 30.5	Pole + Reinf.	TP39.009x38.815x0.6125	Reinf. 4 Tension Rupture	73.2%	Pass
30.5 - 30.25	Pole + Reinf.	TP39.062x39.009x0.6125	Reinf. 3 Tension Rupture	73.2%	Pass
30.25 - 25.25	Pole + Reinf.	TP40.126x39.062x0.6125	Reinf. 3 Tension Rupture	74.0%	Pass
25.25 - 20.25	Pole + Reinf.	TP41.19x40.126x0.6	Reinf. 3 Tension Rupture	74.6%	Pass
20.25 - 18	Pole + Reinf.	TP41.669x41.19x0.6	Reinf. 3 Tension Rupture	74.9%	Pass
18 - 17.75	Pole + Reinf.	TP41.722x41.669x0.5563	Reinf. 1 Tension Rupture	77.0%	Pass
17.75 - 12.75	Pole + Reinf.	TP42.786x41.722x0.55	Reinf. 1 Tension Rupture	77.5%	Pass
12.75 - 7.75	Pole + Reinf.	TP43.851x42.786x0.55	Reinf. 1 Tension Rupture	78.0%	Pass
7.75 - 3.92	Pole + Reinf.	TP44.667x43.851x0.5375	Reinf. 1 Tension Rupture	78.2%	Pass
3.92 - 3.67	Pole + Reinf.	TP44.72x44.667x0.525	Reinf. 7 Tension Yield	77.0%	Pass
3.67 - 0	Pole + Reinf.	TP45.5x44.72x0.5125	Reinf. 7 Tension Yield	77.2%	Pass
				Summary	
			Pole	65.0%	Pass
			Reinforcement	78.2%	Pass
			Overall	78.2%	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
150 - 145	302	n/a	302	9.46	n/a	9.46	11.7%							
145 - 140	367	n/a	367	10.10	n/a	10.10	20.7%							
140 - 135	442	n/a	442	10.74	n/a	10.74	37.0%							
135 - 130	526	n/a	526	11.39	n/a	11.39	50.0%							
130 - 126.59	589	n/a	589	11.82	n/a	11.82	62.4%							
126.59 - 121.59	863	n/a	863	16.26	n/a	16.26	57.4%							
121.59 - 117	992	n/a	992	17.04	n/a	17.04	65.0%							
117 - 116.75	999	1166	2165	17.08	16.95	34.03	29.7%						45.3%	
116.75 - 111.75	1155	1274	2429	17.92	16.95	34.87	34.6%						52.5%	
111.75 - 106.75	1326	1386	2712	18.76	16.95	35.71	38.8%						58.8%	
106.75 - 101.75	1512	1503	3016	19.61	16.95	36.56	43.0%						64.4%	
101.75 - 96.75	1716	1625	3342	20.45	16.95	37.40	46.8%						69.3%	
96.75 - 91.75	1937	1752	3690	21.30	16.95	38.25	50.6%						74.0%	
91.75 - 90.04	2017	1797	3814	21.58	16.95	38.53	51.9%						75.5%	
90.04 - 84.96	2669	2864	5533	27.50	25.41	52.91	39.5%					58.6%		
84.96 - 79.96	2989	3070	6059	28.55	25.41	53.96	41.5%					61.5%		
79.96 - 74.96	3333	3283	6616	29.61	25.41	55.02	43.5%					64.1%		
74.96 - 69.96	3702	3504	7206	30.67	25.41	56.08	45.6%					66.6%		
69.96 - 64.96	4098	3731	7829	31.72	25.41	57.13	47.6%					68.8%		
64.96 - 60.5	4475	3940	8415	32.66	25.41	58.07	49.3%					70.6%		
60.5 - 60.25	4496	3952	8448	32.72	25.41	58.13	49.4%				70.7%			
60.25 - 55.25	4946	4194	9140	33.77	25.41	59.18	51.2%				72.6%			
55.25 - 50.25	5425	4442	9867	34.83	25.41	60.24	52.9%				74.2%			
50.25 - 47.58	5693	4578	10271	35.39	25.41	60.80	53.8%				75.0%			
47.58 - 41.41	7197	4745	11942	43.22	25.41	68.63	48.9%				71.1%			
41.41 - 36.41	7849	5009	12858	44.48	25.41	69.89	50.0%				72.1%			
36.41 - 31.41	8538	5281	13819	45.75	25.41	71.16	51.0%				73.0%			
31.41 - 30.5	8668	5331	13999	45.98	25.41	71.39	51.2%				73.2%			
30.5 - 30.25	8704	5345	14048	46.05	25.41	71.46	51.3%	73.2%		73.2%				
30.25 - 25.25	9442	5625	15067	47.31	25.41	72.72	52.2%	74.0%		74.0%				
25.25 - 20.25	10221	5912	16133	48.58	25.41	73.99	53.1%	74.6%		74.6%				
20.25 - 18	10585	6044	16629	49.15	25.41	74.56	53.5%	74.9%		74.9%				
18 - 17.75	10656	4933	15589	49.21	25.41	74.62	60.0%	77.0%	73.8%					
17.75 - 12.75	11499	5176	16675	50.48	25.41	75.89	60.8%	77.5%	74.4%					
12.75 - 7.75	12385	5426	17811	51.74	25.41	77.15	61.6%	78.0%	74.8%					
7.75 - 3.92	13094	5621	18716	52.72	25.41	78.13	62.2%	78.2%	75.1%					
3.92 - 3.67	13125	4899	18025	52.78	21.09	73.87	64.0%							77.0%
3.67 - 0	13830	5062	18891	53.71	21.09	74.80	64.5%							77.2%

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

Monopole Base Plate Connection

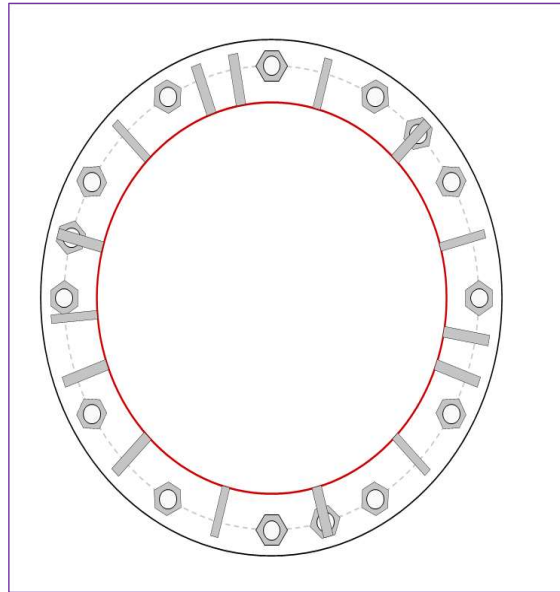


Site Info	
BU #	876361
Site Name	bur 2 / Oxford Town G
Order #	553385 Rev# 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{gr} (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	3097.00
Axial Force (kips)	53.00
Shear Force (kips)	27.00

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
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Anchor Rod Data
 GROUP 1: (12) 2-1/4" ϕ bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 54" BC
 GROUP 2: (3) 2-1/4" ϕ bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 54" BC

Base Plate Data
 60" OD x 1.75" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data
 Group 1: (6) 18"H x 6"W x 1"T, Notch: 0.75"
 plate: Fy= 65 ksi ; weld: Fy= 80 ksi
 horiz. weld: 0.375" groove, 45° dbl bevel, 0.5" fillet
 vert. weld: 0.375" fillet

Group 2: (6) 51"H x 6"W x 1.25"T, Notch: 0.75"
 plate: Fy= 65 ksi ; weld: Fy= 80 ksi
 horiz. weld: 0.5" groove, 45° dbl bevel, 0.625" fillet
 vert. weld: 0.375" fillet

Group 3: (3) 30"H x 6"W x 1.25"T, Notch: 0.75"
 plate: Fy= 65 ksi ; weld: Fy= 80 ksi
 horiz. weld: 0.5" groove, 45° dbl bevel, 0.625" fillet
 vert. weld: 0.375" fillet

Pole Data
 45.5" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Anchor Rod Summary (units of kips, kip-in)
 GROUP 1:
 Pu_t = 178.98 ϕPn_t = 243.75 **Stress Rating**
 Vu = 2.25 ϕVn = 149.1 **69.9%**
 Mu = n/a ϕMn = n/a **Pass**

GROUP 2:
 Pu_t = 183.4 ϕPn_t = 304.69 **Stress Rating**
 Vu = 0 ϕVn = 186.38 **57.3%**
 Mu = 0 ϕMn = 179.4 **Pass**

Base Plate Summary
 Max Stress (ksi): 43.38 (Roark's Flexural)
 Allowable Stress (ksi): 54
 Stress Rating: **76.5%** **Pass**

Stiffener Summary
 Horizontal Weld: **74.7%** **Pass**
 Vertical Weld: **33.1%** **Pass**
 Plate Flexure+Shear: **7.3%** **Pass**
 Plate Tension+Shear: **33.1%** **Pass**
 Plate Compression: **34.7%** **Pass**

Pole Summary
 Punching Shear: **10.3%** **Pass**

Pier and Pad Foundation



BU #: 876361
 Site Name: Seymour 2 / Oxford
 App. Number: 553385 Rev # 1

TIA-222 Revision: H
 Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	53	kips
Base Shear, Vu_{comp} :	27	kips
Moment, M_u :	3097	ft-kips
Tower Height, H :	150	ft
BP Dist. Above Fdn, bp_{dist} :	4.5	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	177.27	27.00	14.5%	Pass
Bearing Pressure (ksf)	9.00	3.87	43.0%	Pass
Overturing (kip*ft)	3966.60	3296.13	83.1%	Pass
Pier Flexure (Comp.) (kip*ft)	3259.06	3205.00	93.7%	Pass
Pier Compression (kip)	17184.96	78.92	0.4%	Pass
Pad Flexure (kip*ft)	3555.96	1671.91	44.8%	Pass
Pad Shear - 1-way (kips)	667.70	286.32	40.8%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	0.0%	Pass
Flexural 2-way (Comp) (kip*ft)	3964.87	1923.00	46.2%	Pass

Pier Properties		
Pier Shape:	Square	
Pier Diameter, $dpier$:	6	ft
Ext. Above Grade, E :	1	ft
Pier Rebar Size, Sc :	8	
Pier Rebar Quantity, mc :	30	
Pier Tie/Spiral Size, St :	4	
Pier Tie/Spiral Quantity, mt :	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

*Rating per TIA-222-H Section 15.5

Structural Rating*:	93.7%
Soil Rating*:	83.1%

Pad Properties		
Depth, D :	6	ft
Pad Width, W_1 :	21.5	ft
Pad Thickness, T :	3	ft
Pad Rebar Size (Top dir.2), Sp_{top2} :	8	
Pad Rebar Quantity (Top dir. 2), mp_{top2} :	20	
Pad Rebar Size (Bottom dir. 2), Sp_2 :	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2 :	33	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, Fy :	60	ksi
Concrete Compressive Strength, $F'c$:	3	ksi
Dry Concrete Density, δc :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	120	pcf
Ultimate Gross Bearing, $Qult$:	12,000	ksf
Cohesion, Cu :		ksf
Friction Angle, ϕ :	30	degrees
SPT Blow Count, N_{blows} :	60	
Base Friction, μ :		
Neglected Depth, N :	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	N/A	ft

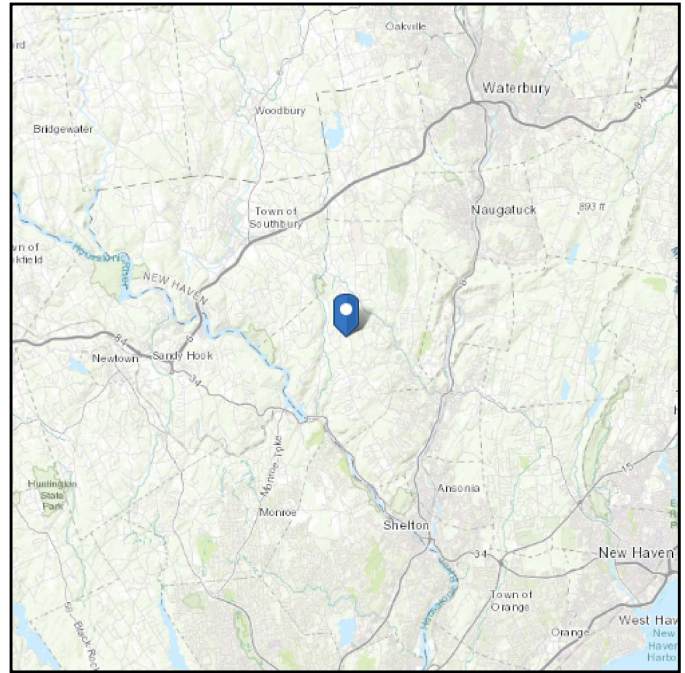
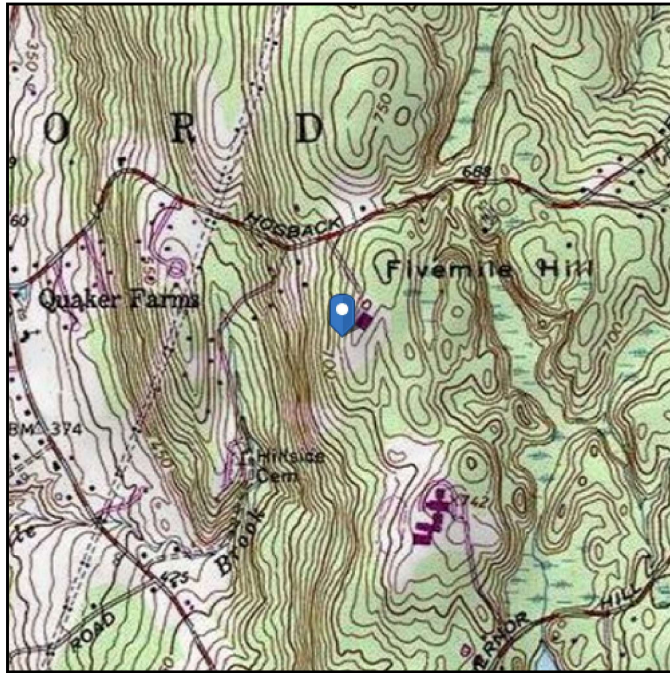
<--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 0 ft (NAVD 88)
Latitude: 41.426364
Longitude: -73.144258



Wind

Results:

Wind Speed:	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 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: Tue Sep 21 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).

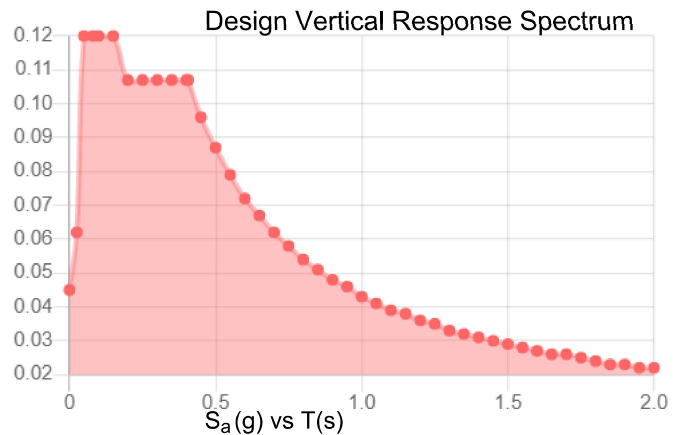
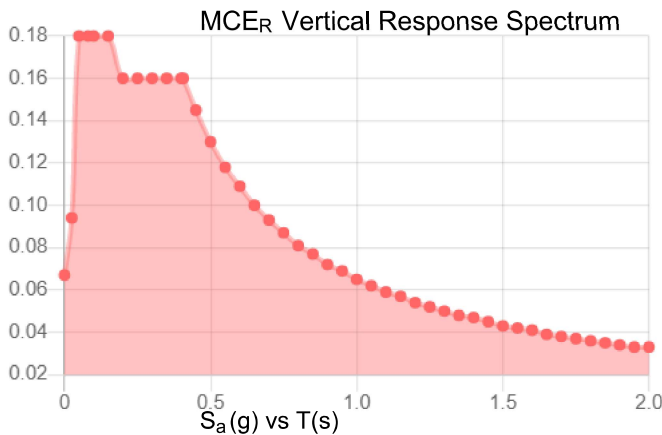
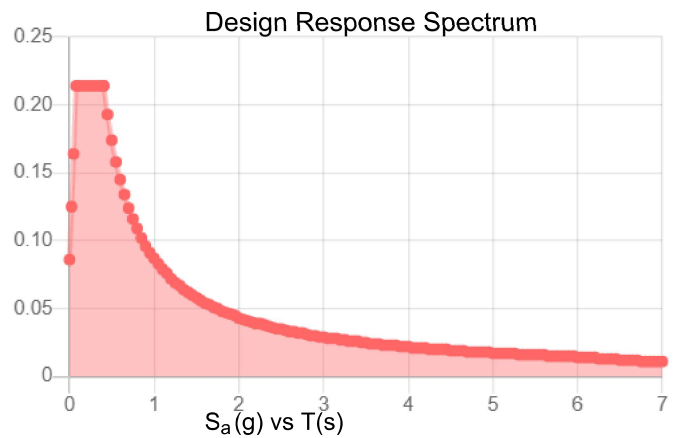
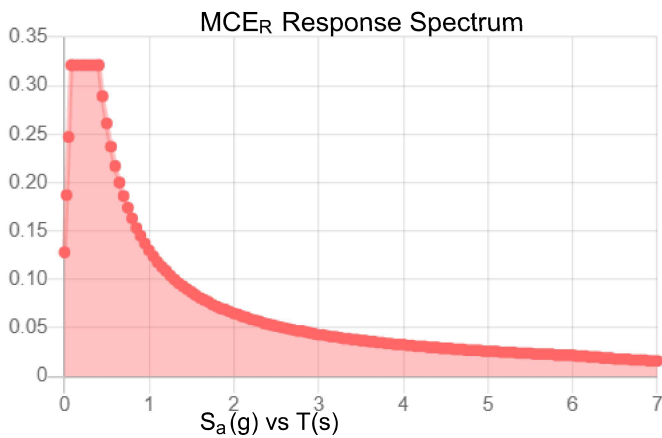
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.2	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.112
F_v :	2.4	PGA _M :	0.177
S_{MS} :	0.321	F_{PGA} :	1.576
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.214	C_v :	0.701

Seismic Design Category B



Data Accessed:

Tue Sep 21 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: Tue Sep 21 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.

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Exhibit E

Mount Analysis

Date: **September 13, 2021**

Jacob Montoya
Crown Castle
2055 S. Stearman Dr.
Chandler, AZ 85286
(408) 298-9641



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: BOHVN00168A
Carrier Site Name: CT-CCI-T-876361

Crown Castle Designation: **Crown Castle BU Number:** 876361
Crown Castle Site Name: Seymour 2 / Oxford Town Garage
Crown Castle JDE Job Number: 645186
Crown Castle Order Number: 553385 Rev. 1

Engineering Firm Designation: **Trylon Report Designation:** 191466

Site Data: **20 Great Oak Rd., Oxford, New Haven County, CT, 06478**
Latitude 41°25'34.91" Longitude -73°8'39.33"

Structure Information: **Tower Height & Type:** **150.0 ft Monopole**
Mount Elevation: **117.0 ft**
Mount Type: **8.0 ft Platform**

Dear Jacob Montoya,

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 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Aura Baltoiu

Respectfully Submitted by:
Jinshan Wang, P.E.

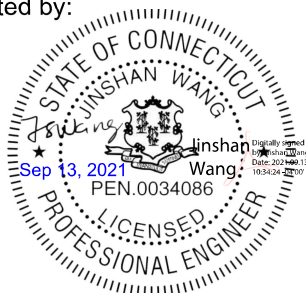


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Supplemental Drawings

1) INTRODUCTION

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

2) ANALYSIS CRITERIA

Building Code:	2015 IBC/ 2018 CTSCB
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.196
Seismic S₁:	0.064
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
117.0	117.0	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	553385, 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. Tylon should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Mount Pipe(s)	MP3	117.0	30.4	Pass
	Horizontal(s)	H1		9.4	Pass
	Standoff(s)	M2		50.0	Pass
	Bracing(s)	M1		35.7	Pass
	Handrail(s)	M19		15.5	Pass
	Plate(s)	M5		21.2	Pass
	Mount Connection(s)	-		20.5	Pass

Structure Rating (max from all components) =	50.0%
---	--------------

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

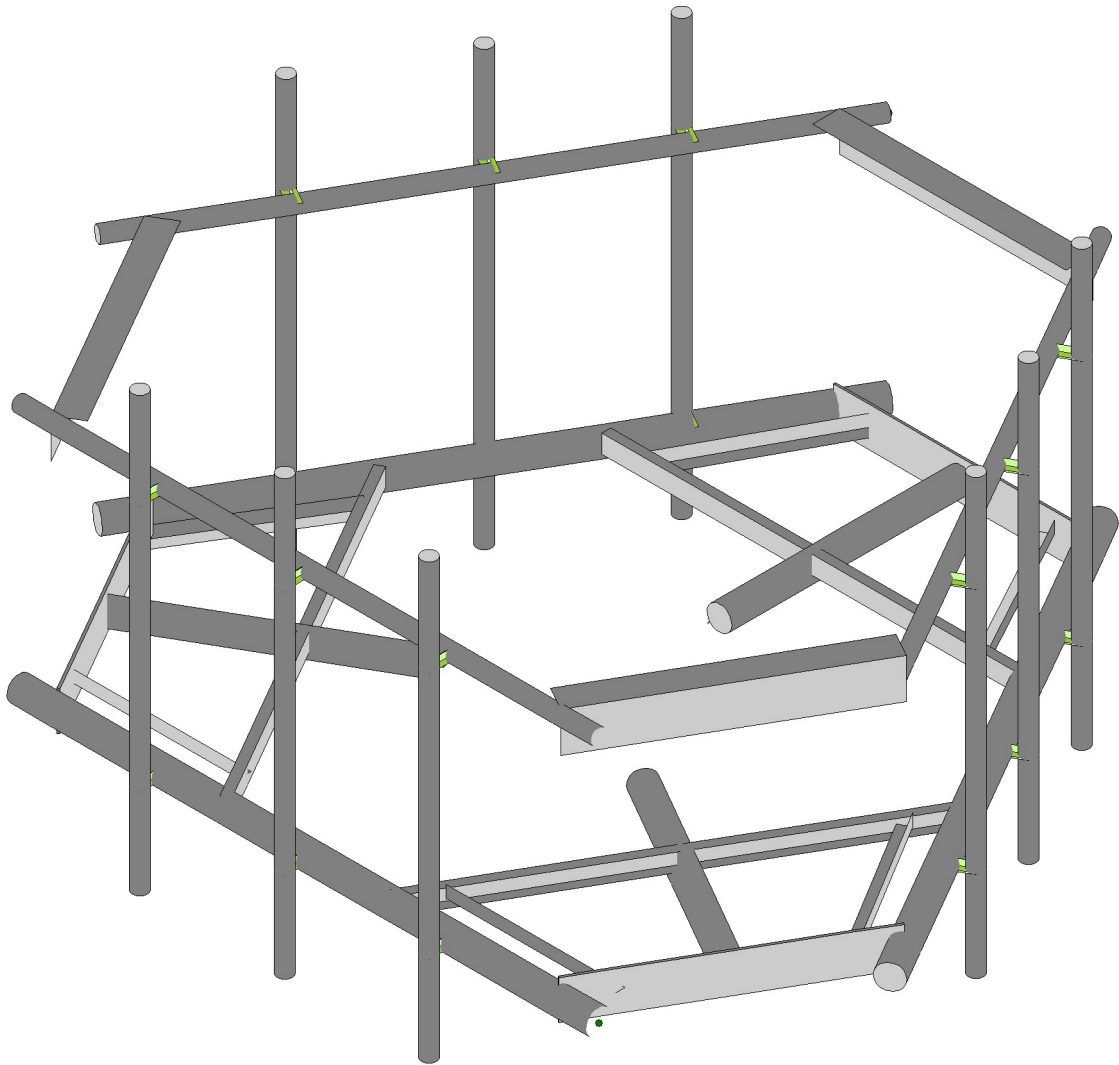
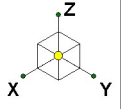
4.1) Recommendations

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.

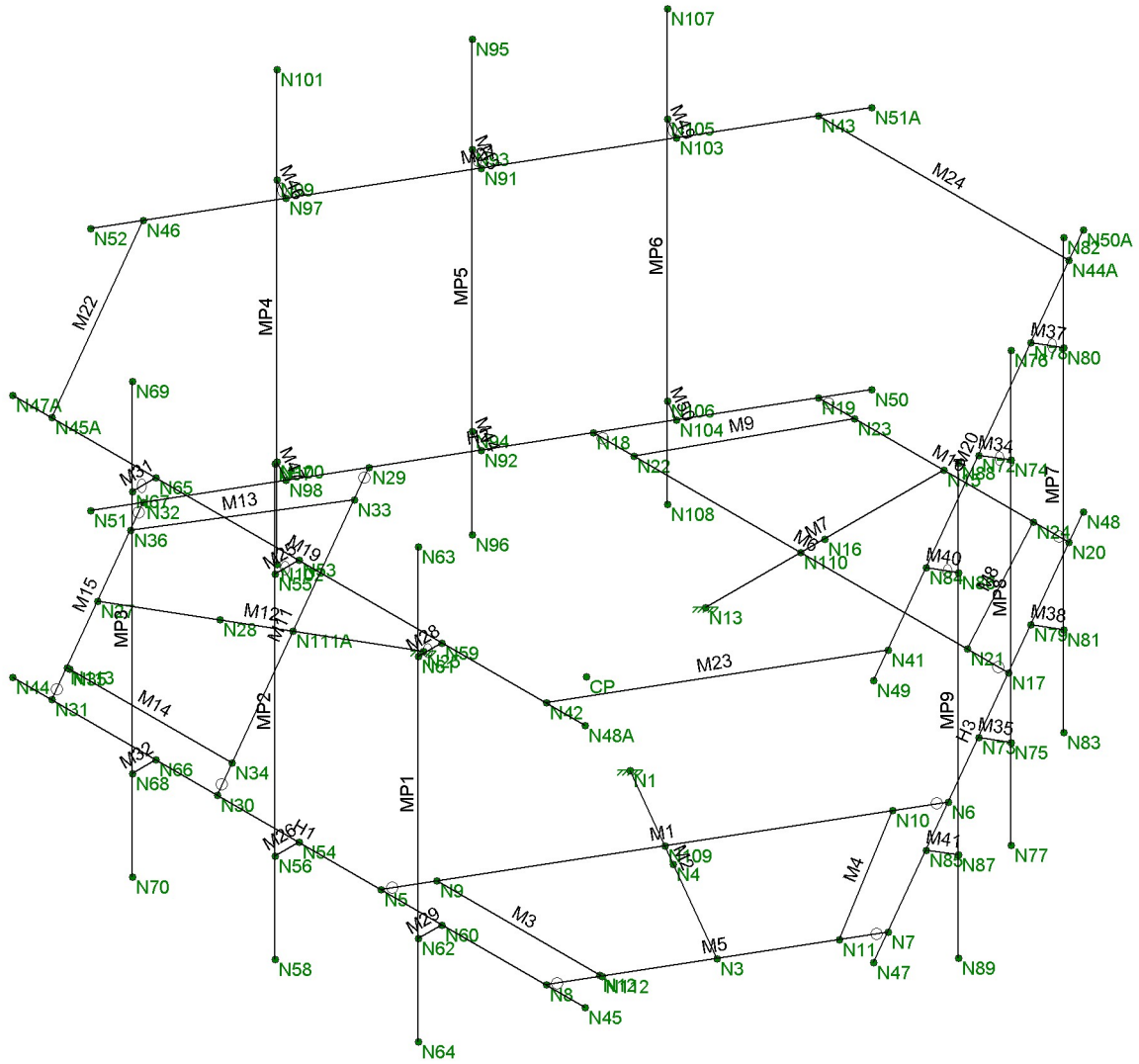
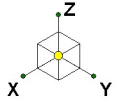
No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A
WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	876361	SK - 1
AB		Sept 9, 2021 at 10:37 AM
191466		876361_loaded.r3d



Envelope Only Solution

Trylon	876361	SK - 2
AB		Sept 9, 2021 at 10:37 AM
191466		876361_loaded.r3d

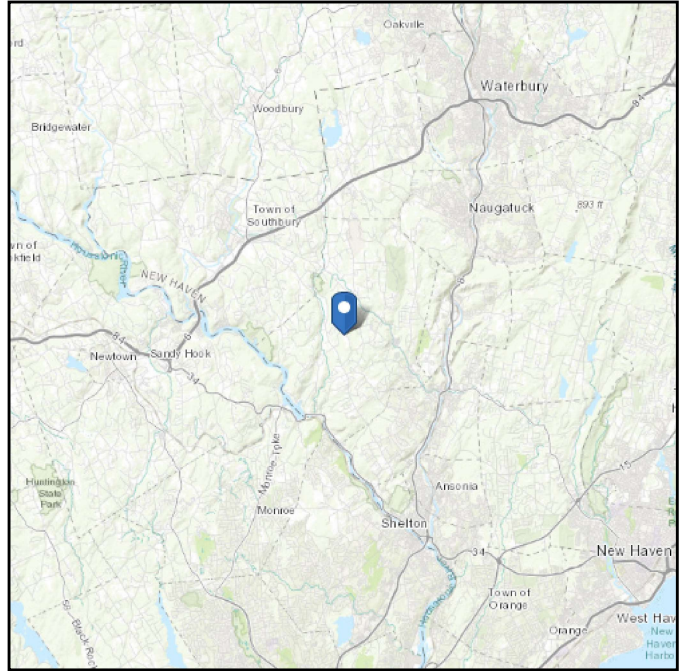
APPENDIX B
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 734.07 ft (NAVD 88)
Latitude: 41.426364
Longitude: -73.144258

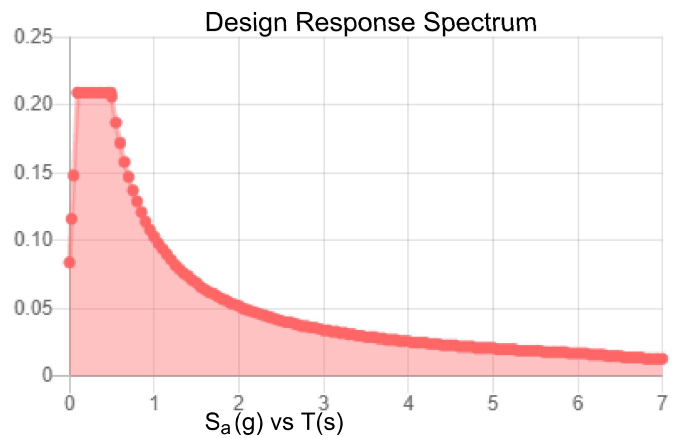
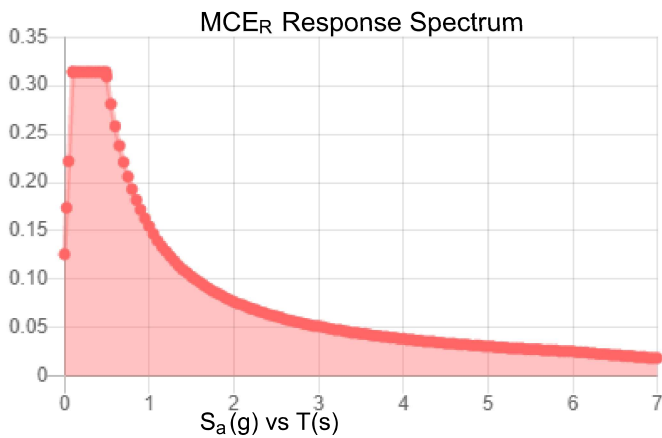


Site Soil Class: D - Stiff Soil

Results:

S_s :	0.196	S_{DS} :	0.209
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.104
S_{MS} :	0.314	PGA _M :	0.165
S_{M1} :	0.155	F _{PGA} :	1.592
		I_e :	1

Seismic Design Category B



Data Accessed:

Thu Sep 09 2021

Date Source:

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

Ice

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

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

Date Accessed: Thu Sep 09 2021

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

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

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Trylon

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

TIA LOAD CALCULATOR 2.1

PROJECT DATA	
Job Code:	191466
Carrier Site ID:	BOHVN00168A
Carrier Site Name:	CT-CCI-T-876361

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

STRUCTURE DETAILS		
Mount Type:	Sector Frame	--
Mount Elevation:	117.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	150.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	734.07	ft.

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

WIND PARAMETERS		
Design Wind Speed:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.03	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (G_h):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	38.25	psf
Ground Elevation Factor (K_e):	0.97	--

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}):	38.25	psf
Mount Ice Thickness (t_{iz}):	1.70	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	68.84	psf
Round Member Pressure:	41.31	psf
Ice Wind Pressure:	7.26	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel. (S_s):	0.196	g
1 Second Accel. (S_1):	0.064	g
Short Period Des. (S_{DS}):	0.21	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (C_s):	0.10	--
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

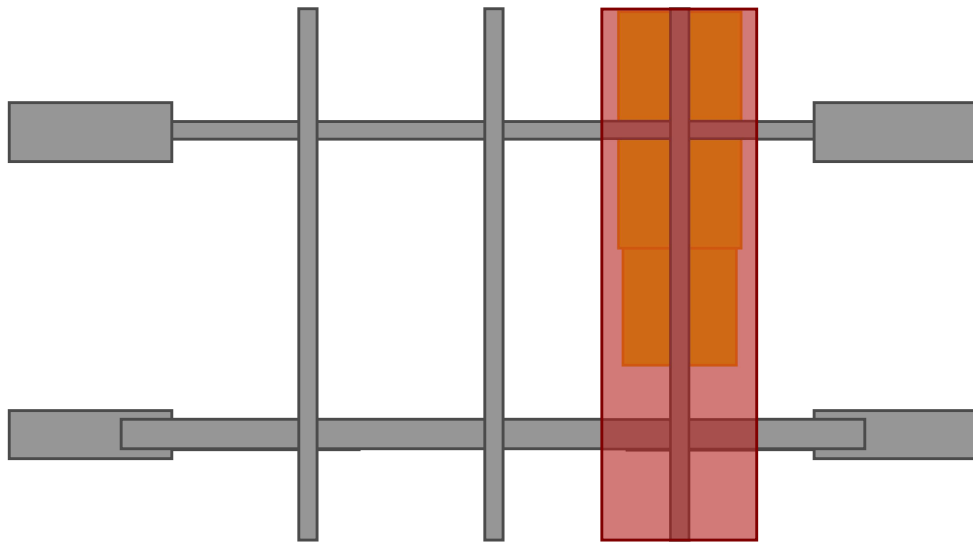
#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 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

ELEVATION VIEW



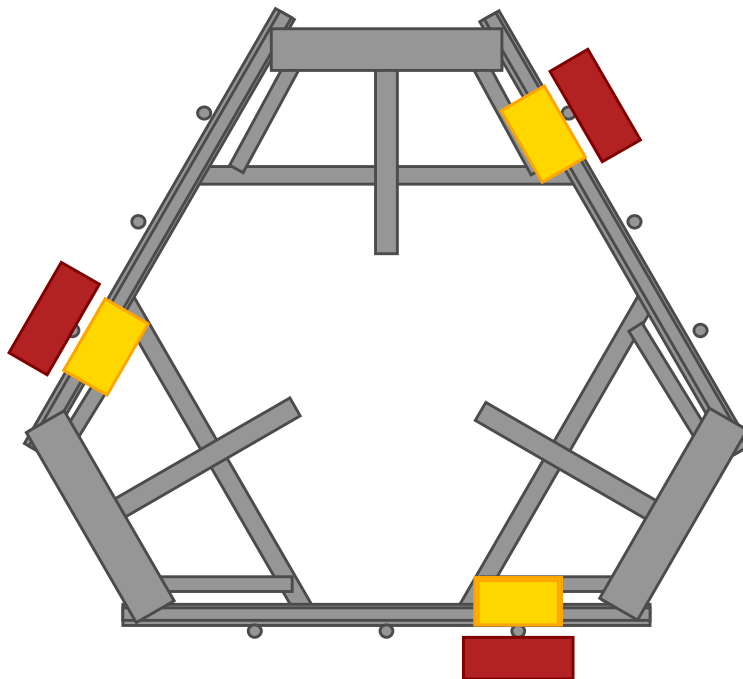
MP3

MP2

MP1

*Elevation View Shows Alpha Sector Only

PLAN VIEW



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)
RISAC Connection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-12: LRFD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM 1-10: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

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

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/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	6.6x4.46x0.25	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



Company : Trylon
 Designer : AB
 Job Number : 191466
 Model Name : 876361

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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 R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X057	Beam	None	A653 SS Gr33	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 Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu..	Area (M...	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	-.125				13			
24	Seismic Load Y	ELY		-.125			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			



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Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu..	Area(M...)	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						13		
44	BLC 12 Transient Area Loads	None						13		

Load Combinations

	Description	Solve	PD...	SR...	B... Factor	BLC	Factor	B...Fa..	B...Fa..	BLC	Fa..B...	Fa..B...	Fa..B...	Fa..B...	Fa..B...	Fa..B...	Fa..B...
1	1.4DL	Yes	Y	DL	1.4												
2	1.2DL + 1WL 0 AZI	Yes	Y	DL	1.2	2	1	3	4	1							
3	1.2DL + 1WL 30 AZI	Yes	Y	DL	1.2	2	.866	3	.5	5	1						
4	1.2DL + 1WL 45 AZI	Yes	Y	DL	1.2	2	.707	3	.707	6	1						
5	1.2DL + 1WL 60 AZI	Yes	Y	DL	1.2	2	.5	3	.866	7	1						
6	1.2DL + 1WL 90 AZI	Yes	Y	DL	1.2	2		3	1	8	1						
7	1.2DL + 1WL 120 AZI	Yes	Y	DL	1.2	2	-.5	3	.866	9	1						
8	1.2DL + 1WL 135 AZI	Yes	Y	DL	1.2	2	-.707	3	.707	10	1						
9	1.2DL + 1WL 150 AZI	Yes	Y	DL	1.2	2	-.866	3	.5	11	1						
10	1.2DL + 1WL 180 AZI	Yes	Y	DL	1.2	2	-1	3		4	-1						
11	1.2DL + 1WL 210 AZI	Yes	Y	DL	1.2	2	-.866	3	-.5	5	-1						
12	1.2DL + 1WL 225 AZI	Yes	Y	DL	1.2	2	-.707	3	-.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	-.707	3	.707	10	1						
25	0.9DL + 1WL 150 AZI	Yes	Y	DL	.9	2	-.866	3	.5	11	1						
26	0.9DL + 1WL 180 AZI	Yes	Y	DL	.9	2	-1	3		4	-1						
27	0.9DL + 1WL 210 AZI	Yes	Y	DL	.9	2	-.866	3	-.5	5	-1						
28	0.9DL + 1WL 225 AZI	Yes	Y	DL	.9	2	-.707	3	-.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 + 1WL...	Yes	Y	DL	1.2	OL1	1	13	1	14	15	1					
35	1.2DL + 1DLi + 1WL...	Yes	Y	DL	1.2	OL1	1	13	.866	14	.5	16	1				
36	1.2DL + 1DLi + 1WL...	Yes	Y	DL	1.2	OL1	1	13	.707	14	.707	17	1				



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Load Combinations (Continued)

	Description	Solve	PD...	SR...	B...	Factor	BLC	Factor	B...	Fa...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
37	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1						
38	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13		14	1	19	1						
39	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1						
40	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	-.7	14	.707	21	1						
41	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	-.8	14	.5	22	1						
42	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	-1	14		15	-1						
43	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	-.8	14	-.5	16	-1						
44	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	-.7	14	-.7	17	-1						
45	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.8	18	-1						
46	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13		14	-1	19	-1						
47	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.8	20	-1						
48	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.7	21	-1						
49	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1						
50	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	1	24											
51	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	.866	24	.5										
52	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	.707	24	.707										
53	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	.5	24	.866										
54	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23		24	1										
55	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	-.5	24	.866										
56	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	-.707	24	.707										
57	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	-.866	24	.5										
58	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	-1	24											
59	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	-.866	24	-.5										
60	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	-.707	24	-.7										
61	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	-.5	24	-.8										
62	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23		24	-1										
63	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	.5	24	-.8										
64	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	.707	24	-.7										
65	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.242	23	.866	24	-.5										
66	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	1	24											
67	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	.866	24	.5										
68	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	.707	24	.707										
69	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	.5	24	.866										
70	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23		24	1										
71	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	-.5	24	.866										
72	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	-.707	24	.707										
73	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	-.866	24	.5										
74	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	-1	24											
75	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	-.866	24	-.5										
76	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	-.707	24	-.7										
77	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	-.5	24	-.8										
78	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23		24	-1										
79	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	.5	24	-.8										
80	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	23	.707	24	-.7										
81	(0.9-0.2Sds)DL + 1...	Yes	Y		DL	.858	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...	SR...	B...	Factor	BLC	Factor	B...	Fa...	B...	Fa...	BLC	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 + 1...	Yes	Y		DL	1.2	34	1.5	2	.058	3		4	.058						
92	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.05	3	.029	5	.058						
93	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.041	3	.041	6	.058						
94	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.029	3	.05	7	.058						
95	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2		3	.058	8	.058						
96	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-0...	3	.05	9	.058						
97	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-0...	3	.041	10	.058						
98	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-05	3	.029	11	.058						
99	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-0...	3		4	-0...						
100	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-05	3	-0...	5	-0...						
101	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-0...	3	-0...	6	-0...						
102	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-0...	3	-05	7	-0...						
103	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2		3	-0...	8	-0...						
104	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.029	3	-05	9	-0...						
105	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.041	3	-0...	10	-0...						
106	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.05	3	-0...	11	-0...						
107	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.058	3		4	.058						
108	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.05	3	.029	5	.058						
109	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.041	3	.041	6	.058						
110	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.029	3	.05	7	.058						
111	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2		3	.058	8	.058						
112	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-0...	3	.05	9	.058						
113	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-0...	3	.041	10	.058						
114	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-05	3	.029	11	.058						
115	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-0...	3		4	-0...						
116	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-05	3	-0...	5	-0...						
117	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-0...	3	-0...	6	-0...						
118	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-0...	3	-05	7	-0...						
119	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2		3	-0...	8	-0...						
120	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.029	3	-05	9	-0...						
121	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.041	3	-0...	10	-0...						
122	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.05	3	-0...	11	-0...						
123	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.058	3		4	.058						
124	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.05	3	.029	5	.058						
125	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.041	3	.041	6	.058						
126	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.029	3	.05	7	.058						
127	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2		3	.058	8	.058						
128	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-0...	3	.05	9	.058						
129	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-0...	3	.041	10	.058						
130	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-05	3	.029	11	.058						
131	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-0...	3		4	-0...						
132	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-05	3	-0...	5	-0...						
133	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-0...	3	-0...	6	-0...						
134	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-0...	3	-05	7	-0...						
135	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2		3	-0...	8	-0...						
136	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.029	3	-05	9	-0...						
137	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.041	3	-0...	10	-0...						
138	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.05	3	-0...	11	-0...						
139	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.058	3		4	.058						
140	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.05	3	.029	5	.058						



Company : Trylon
 Designer : AB
 Job Number : 191466
 Model Name : 876361

Sept 10, 2021
 6:10 AM
 Checked By: JW

Load Combinations (Continued)

	Description	Solve	PD...	SR...	B...	Factor	BLC	Factor	B...	Fa...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	
141	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.041	3	.041	6	.058							
142	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.029	3	.05	7	.058							
143	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2		3	.058	8	.058							
144	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-0...	3	.05	9	.058							
145	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-0...	3	.041	10	.058							
146	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-05	3	.029	11	.058							
147	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-0...	3		4	-0...							
148	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-05	3	-0...	5	-0...							
149	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-0...	3	-0...	6	-0...							
150	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-0...	3	-05	7	-0...							
151	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2		3	-0...	8	-0...							
152	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.029	3	-05	9	-0...							
153	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.041	3	-0...	10	-0...							
154	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.05	3	-0...	11	-0...							
155	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.058	3		4	.058							
156	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.05	3	.029	5	.058							
157	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.041	3	.041	6	.058							
158	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.029	3	.05	7	.058							
159	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2		3	.058	8	.058							
160	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-0...	3	.05	9	.058							
161	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-0...	3	.041	10	.058							
162	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-05	3	.029	11	.058							
163	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-0...	3		4	-0...							
164	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-05	3	-0...	5	-0...							
165	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-0...	3	-0...	6	-0...							
166	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-0...	3	-05	7	-0...							
167	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2		3	-0...	8	-0...							
168	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.029	3	-05	9	-0...							
169	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.041	3	-0...	10	-0...							
170	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.05	3	-0...	11	-0...							
171	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.058	3		4	.058							
172	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.05	3	.029	5	.058							
173	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.041	3	.041	6	.058							
174	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.029	3	.05	7	.058							
175	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2		3	.058	8	.058							
176	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-0...	3	.05	9	.058							
177	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-0...	3	.041	10	.058							
178	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-05	3	.029	11	.058							
179	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-0...	3		4	-0...							
180	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-05	3	-0...	5	-0...							
181	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-0...	3	-0...	6	-0...							
182	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-0...	3	-05	7	-0...							
183	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2		3	-0...	8	-0...							
184	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.029	3	-05	9	-0...							
185	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.041	3	-0...	10	-0...							
186	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.05	3	-0...	11	-0...							
187	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.058	3		4	.058							
188	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.05	3	.029	5	.058							
189	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.041	3	.041	6	.058							
190	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.029	3	.05	7	.058							
191	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2		3	.058	8	.058							
192	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-0...	3	.05	9	.058							

Load Combinations (Continued)

	Description	Solve	PD...	SR...	B...	Factor	BLC	Factor	B...	Fa...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	
193	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-0...	3	.041	10	.058							
194	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-05	3	.029	11	.058							
195	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-0...	3		4	-0...							
196	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-05	3	-0...	5	-0...							
197	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-0...	3	-0...	6	-0...							
198	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-0...	3	-05	7	-0...							
199	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2		3	-0...	8	-0...							
200	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.029	3	-05	9	-0...							
201	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.041	3	-0...	10	-0...							
202	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.05	3	-0...	11	-0...							
203	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.058	3		4	.058							
204	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.05	3	.029	5	.058							
205	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.041	3	.041	6	.058							
206	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.029	3	.05	7	.058							
207	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2		3	.058	8	.058							
208	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-0...	3	.05	9	.058							
209	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-0...	3	.041	10	.058							
210	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-05	3	.029	11	.058							
211	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-0...	3		4	-0...							
212	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-05	3	-0...	5	-0...							
213	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-0...	3	-0...	6	-0...							
214	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-0...	3	-05	7	-0...							
215	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2		3	-0...	8	-0...							
216	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.029	3	-05	9	-0...							
217	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.041	3	-0...	10	-0...							
218	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.05	3	-0...	11	-0...							
219	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.058	3		4	.058							
220	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.05	3	.029	5	.058							
221	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.041	3	.041	6	.058							
222	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.029	3	.05	7	.058							
223	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2		3	.058	8	.058							
224	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-0...	3	.05	9	.058							
225	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-0...	3	.041	10	.058							
226	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-05	3	.029	11	.058							
227	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-0...	3		4	-0...							
228	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-05	3	-0...	5	-0...							
229	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-0...	3	-0...	6	-0...							
230	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-0...	3	-05	7	-0...							
231	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2		3	-0...	8	-0...							
232	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.029	3	-05	9	-0...							
233	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.041	3	-0...	10	-0...							
234	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.05	3	-0...	11	-0...							

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N25	max	1344.42	3	857.5	20	1908.11	39	309.02	30	330.77	33	1591.84	19
2		min	-1337.68	27	-861.02	12	-21.17	31	-3544.55	38	-1983.87	41	-1597.67	11
3	N1	max	1392.47	17	796.36	8	1960.28	45	3492.47	45	380.85	19	1632.02	25
4		min	-1392.04	25	-788.07	32	-11.12	21	-251.72	21	-2368.17	43	-1638.73	17
5	N13	max	299.15	18	1365.67	22	1860.35	34	709.5	167	3948.75	34	1343.87	30



Company : Trylon
 Designer : AB
 Job Number : 191466
 Model Name : 876361

Sept 10, 2021
 6:10 AM
 Checked By: JW

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	-306.58	10	-1370.33	14	-49.73	26	-588.63	223	-401.31	26	-1348.83	6
7	Totals:	max	2663.6	18	2487.73	6	5343.8	36					
8	min	-2663.6	10	-2487.72	30	1361.73	76						

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

Member	Shape	Code Check	Loc[in]	LC	Shear	Lo...	phi*P	phi*P	phi*M	phi*M	Eqn				
1	M2	PIPE 3.5	.526	40	45	.172	40	9	64491...	78750	7953...	7953...	H1-1b		
2	M12	PIPE 3.5	.508	40	39	.164	40	3	64491...	78750	7953...	7953...	H1-1b		
3	M7	PIPE 3.5	.497	40	34	.155	40	14	64491...	78750	7953...	7953...	H1-1b		
4	M1	C3X5	.375	34.86	45	.137	63...	y	41	32858...	47628	981.26	4104	H1-1b	
5	M11	C3X5	.371	34.86	41	.136	63...	y	35	32858...	47628	981.26	4104	H1-1b	
6	M6	C3X5	.355	34.86	35	.131	63...	y	46	32858...	47628	981.26	4104	H1-1b	
7	MP3	PIPE 2.0	.320	57	5	.035	57	10	20866...	32130	1871...	1871...	1	H1-1b	
8	MP9	PIPE 2.0	.319	57	10	.033	57	3	20866...	32130	1871...	1871...	H1-1b		
9	MP8	PIPE 2.0	.314	57	10	.038	57	14	20866...	32130	1871...	1871...	H1-1b		
10	MP2	PIPE 2.0	.312	57	5	.045	57	9	20866...	32130	1871...	1871...	1	H1-1b	
11	MP1	PIPE 2.0	.307	57	16	.038	57	17	20866...	32130	1871...	1871...	H1-1b		
12	MP5	PIPE 2.0	.296	57	16	.045	57	3	20866...	32130	1871...	1871...	H1-1b		
13	MP6	PIPE 2.0	.294	57	7	.033	57	8	20866...	32130	1871...	1871...	1	H1-1b	
14	MP4	PIPE 2.0	.286	57	11	.036	57	11	20866...	32130	1871...	1871...	H1-1b		
15	MP7	PIPE 2.0	.284	57	10	.028	57	9	20866...	32130	1871...	1871...	H1-1b		
16	M5	6.5"x0.37" Plate	.223	21	12	.100	21	y	42	27548...	75757	583.96	6639	H1-1b	
17	M15	6.5"x0.37" Plate	.222	21	7	.098	21	y	37	27548...	75757	583.96	6376.6	H1-1b	
18	M10	6.5"x0.37" Plate	.221	21	2	.093	21	y	48	27548...	75757	583.96	6404	H1-1b	
19	M19	PIPE 2.0	.157	72	10	.163	72	2	14916...	32130	1871...	1871...	H1-1b		
20	M21	PIPE 2.0	.155	72	5	.161	72	13	14916...	32130	1871...	1871...	H1-1b		
21	M20	PIPE 2.0	.147	72	15	.159	72	8	14916...	32130	1871...	1871...	H1-1b		
22	M3	L2x2x3	.135	0	3	.024	0	z	49	18084...	23392	557.72	1179	1	H2-1
23	M13	L2x2x3	.134	0	14	.026	0	z	43	18084...	23392	557.72	1182	1	H2-1
24	M8	L2x2x3	.111	0	9	.025	0	z	38	18084...	23392	557.72	1182	1	H2-1
25	H1	PIPE 3.5	.098	72	121	.099	24	10	60666...	78750	7953...	7953...	1	H1-1b	
26	M4	L2x2x3	.098	0	13	.029	0	y	42	18084...	23392	557.72	1182	1	H2-1
27	H2	PIPE 3.5	.095	72	212	.091	24	5	60666...	78750	7953...	7953...	1	H1-1b	
28	H3	PIPE 3.5	.095	72	158	.097	24	16	60666...	78750	7953...	7953...	1	H1-1b	
29	M9	L2x2x3	.084	0	2	.028	0	y	47	18084...	23392	557.72	1182	1	H2-1
30	M14	L2x2x3	.083	0	8	.027	0	y	36	18084...	23392	557.72	1179	1	H2-1
31	M22	6.6x4.46x0.25	.082	0	21	.036	42	z	4	51170...	87561	2464	7125	1	H2-1
32	M23	6.6x4.46x0.25	.080	0	26	.036	0	y	9	51170...	87561	2464	7125	1	H2-1
33	M24	6.6x4.46x0.25	.073	0	32	.034	0	y	14	51170...	87561	2464	7125	1	H2-1

Envelope AISI 100-12: LRFD Cold Formed Steel Code Checks

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

APPENDIX D
ADDITIONAL CALCUATIONS

BOLT TOOL 1.5.2

Project Data	
Job Code:	191466
Carrier Site ID:	BOHVN00168A
Carrier Site Name:	CT-CCI-T-876361

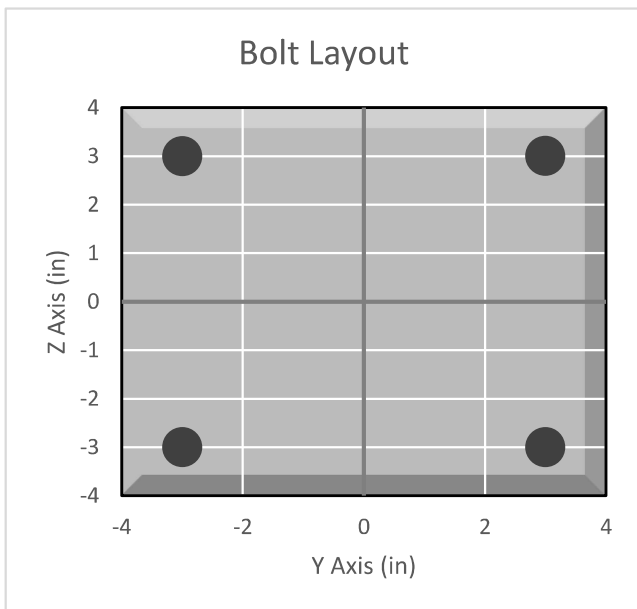
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	AISC

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

Connection Description
Mount to Tower

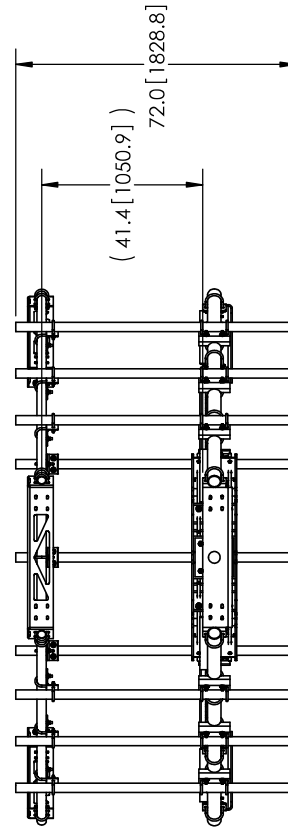
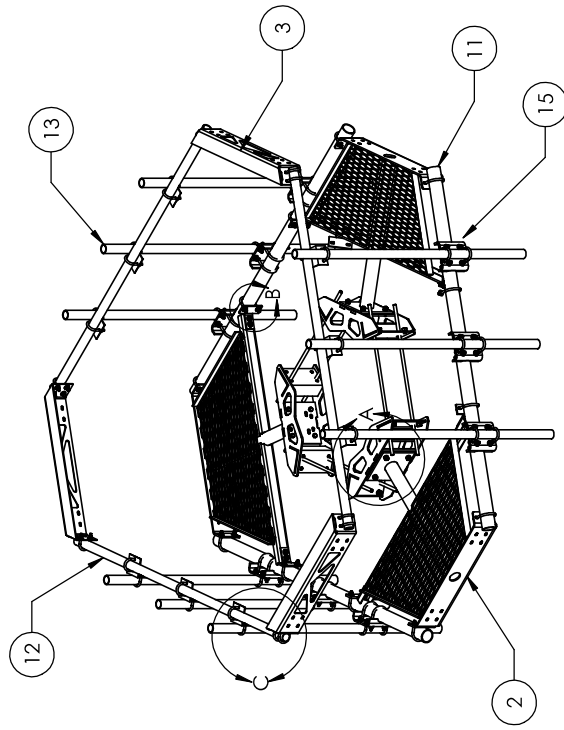
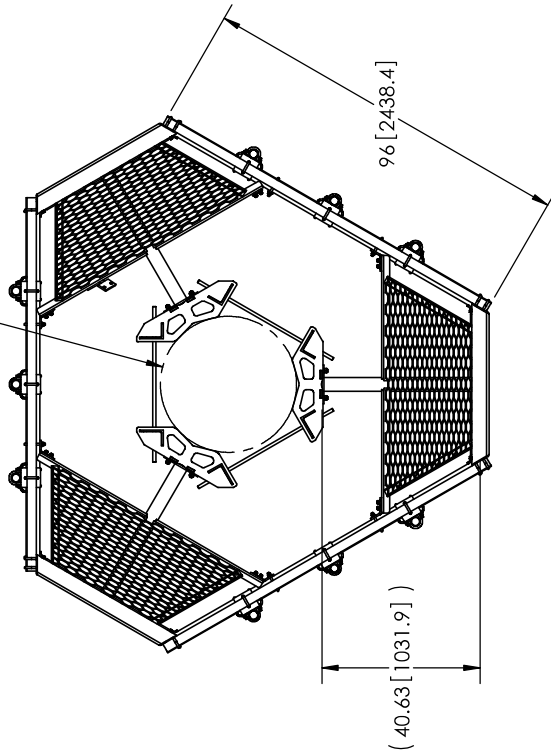
Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	4377.7	lbs
Shear Force (V_u):	729.3	lbs
Tension Usage:	20.5%	--
Shear Usage:	5.0%	--
Interaction:	20.5%	Pass
Controlling Member:	M2	--
Controlling LC:	42	--

*Rating per TIA-222-H Section 15.5



APPENDIX E
SUPPLEMENTAL DRAWINGS

ϕ 38 [965.2]
15 [381.0]



ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
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	MT1195801	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	GW-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	MT154796	3.50" OD X 96" GALV PIPE	3	60.28 LBS
12	MT-651-96	ϕ 2.375" OD X 96" PIPE	3	29.07 LBS
13	MT-651	2.375" OD x 72" PIPE	9	21.80 LBS
14	MT119617	MT1196 Pipe Mount Plate	6	2.49 LBS
15	MT21701	PIPE MOUNT PLATE	9	7.93 LBS

These drawings and specifications are the property of Andrew Corporation and may be used only for the specific application intended in writing by Andrew Corporation.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

X = ± .12
XX = ± .06
XXX = ± .03

ANGLES ±7
FRACTIONS ±1/32

REMOVE BURRS AND BREAK EDGES 0.05

DO NOT SCALE THIS PRINT

Scale: 2 of 3
MSM
NTS
A36, A53
10/18/11
REVISION
C
136127 LBS

MC-PK8-C
25" OD Snub Nose MT-196
ASSEMBLY DRAWING

WESTCHESTER, IL. 60154
U.S.A.

ANDREW®

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

Exhibit F

Power Density/RF Emissions Report

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

Dish Wireless Existing Facility

Site ID: BOHVN00168A

876361

20 Great Oak Road
Oxford, Connecticut 06478

November 19, 2021

EBI Project Number: 6221007201

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	15.53%

November 19, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00168A - 876361

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **20 Great Oak Road in Oxford, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

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

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 20 Great Oak Road in Oxford, 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 117 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):	117 feet	Height (AGL):	117 feet	Height (AGL):	117 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 AI MPE %:	1.92%	Antenna BI MPE %:	1.92%	Antenna CI MPE %:	1.92%

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	1.92%
T-Mobile	8.96%
Nextel	0.19%
Sprint	1.36%
AT&T	1.69%
Verizon	1.41%
Site Total MPE % :	15.53%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.92%
Dish Wireless Sector B Total:	1.92%
Dish Wireless Sector C Total:	1.92%
Site Total MPE % :	15.53%

Dish Wireless Maximum MPE Power Values (Sector A)							
Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	117.0	2.61	600 MHz n71	400	0.65%
Dish Wireless 1900 MHz n70	4	542.70	117.0	6.33	1900 MHz n70	1000	0.63%
Dish Wireless 2190 MHz n66	4	542.70	117.0	6.33	2190 MHz n66	1000	0.63%
						Total:	1.92%

• 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:	1.92%
Sector B:	1.92%
Sector C:	1.92%
Dish Wireless Maximum MPE % (Sector A):	1.92%
Site Total:	15.53%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **15.53%** 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:
20 GREAT OAK RD., OXFORD, CT 06478**

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:

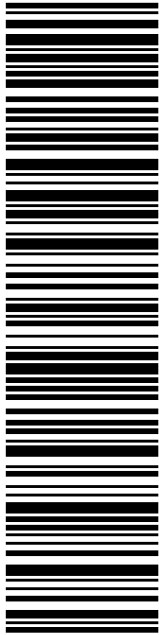
Crown Site ID/Name: 876361/SEYMOUR 2 / OXFORD TOWN GARAGE
Customer Site ID: BOHVN00168A/CT-CCI-T-876361
Site Address: 20 Great Oak Rd., OXFORD, CT 06478

Crown Castle

By:  _____ Date: 3/14/2022
Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



USPS TRACKING #

9405 5036 9930 0196 1191 03

Electronic Rate Approved #038555749

P

usps.com 9405 5036 9930 0196 1191 03 0089 5000 0031 4586
US POSTAGE
 Flat Rate Envoy

U.S. POSTAGE PAID
click-n-ship®

Mailed from 01566

Click-N-Ship®

PRIORITY MAIL 2-DAY™

Expected Delivery Date: 03/21/22
 Re#: DS-876361
0006

R013

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



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 0196 1191 03

Trans. #: 559097575	Priority Mail® Postage: \$8.95
Print Date: 03/17/2022	Total: \$8.95
Ship Date: 03/17/2022	
Expected Delivery Date: 03/21/2022	

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


Re#: DS-876361

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



**UNITED STATES
POSTAL SERVICE®**

Click-N-Ship®

P

usps.com 9405 5036 9930 0196 1191 34 0089 5000 0010 6478
\$8.95
US POSTAGE
 Flat Rate Envoy

U.S. POSTAGE PAID
Click-N-Ship®

03/17/2022 Mailed from 01566

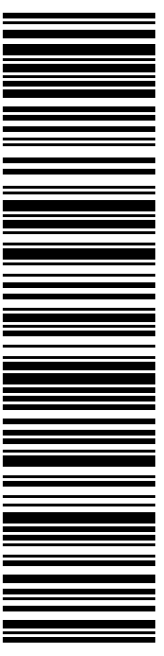
PRIORITY MAIL 2-DAY™

Expected Delivery Date: 03/21/22
 Ref#: CR-876361
0006

R001

SHIP TO:
 GEORGE TEMPLE
 486 OXFORD RD
 OXFORD CT 06478-1298

USPS TRACKING #



9405 5036 9930 0196 1191 34

Electronic Rate Approved #038555749



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 0196 1191 34

Trans. #: 559097575	Priority Mail® Postage: \$8.95
Print Date: 03/17/2022	Total: \$8.95
Ship Date: 03/17/2022	
Expected Delivery Date: 03/21/2022	

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

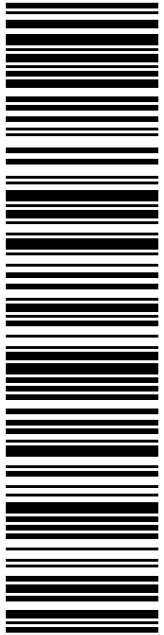
Ref#: CR-876361

To: GEORGE TEMPLE
 486 OXFORD RD
 OXFORD CT 06478-1298

* 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



USPS TRACKING #

9405 5036 9930 0196 1191 41

Electronic Rate Approved #038555749

P

03/17/2022

U.S. POSTAGE PAID

click-n-ship®

U.S. POSTAGE
Flat Rate Env
\$8.95

usps.com 9405 5036 9930 0196 1191 41 0089 5000 0010 6478


Mailed from 01566

PRIORITY MAIL 2-DAY™

Expected Delivery Date: 03/21/22
Re#: DS-876361
0006

R001

SHIP TO: STEVEN S MACARY
ZONING ENFORCEMENT OFFICER
486 OXFORD RD
OXFORD CT 06478-1298



Click-N-Ship®

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

UNITED STATES
POSTAL SERVICE®



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 0196 1191 41

Trans. #: 559097575	Priority Mail® Postage: \$8.95
Print Date: 03/17/2022	Total: \$8.95
Ship Date: 03/17/2022	
Expected Delivery Date: 03/21/2022	

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

Re#: DS-876361

To: STEVEN S MACARY
ZONING ENFORCEMENT OFFICER
486 OXFORD RD
OXFORD CT 06478-1298

* 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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876361
Crown Dish



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

03/18/2022

03:20 PM

Product	Qty	Unit Price	Price
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Prepaid Mail	1		\$0.00
West Henrietta, NY 14586			
Weight: 0 lb 1.90 oz			
Acceptance Date:			
Fri 03/18/2022			
Tracking #:			
9405 5036 9930 0196 1191 03			

Prepaid Mail	1		\$0.00
Oxford, CT 06478			
Weight: 0 lb 8.30 oz			
Acceptance Date:			
Fri 03/18/2022			
Tracking #:			
9405 5036 9930 0196 1191 41			

Prepaid Mail	1		\$0.00
Oxford, CT 06478			
Weight: 0 lb 8.30 oz			
Acceptance Date:			
Fri 03/18/2022			
Tracking #:			
9405 5036 9930 0196 1191 34			

Grand Total:			\$0.00
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Every household in the U.S. is now
eligible to receive a second set
of 4 free test kits.
Go to www.covidtests.gov