NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

March 31, 2022

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

RE: Tower Share Application
204 Burwell Road, West Haven, CT 06516
Latitude: 41.295338
Longitude: -72.97332
Site #: 870694_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 204 Burwell Road, West Haven, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 150-foot level of the existing 180-foot tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within a 7' x 5' lease area within the existing fenced compound. Included are plans by Kimley Horn, dated March 22, 2022, Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated March 21, 2022, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was originally approved by the Town of West Haven, but a copy of the decision was not available.

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 Mayor Nancy R. Rossi, and Christopher Soto, Director of Planning and Development for the Town of West Haven, as well as the tower owner (Crown Castle) and property owner (Florence S. Burwell, Jo B. Hollis and Dana C. Hollis Revocable Trust).

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 180-feet and the Dish Wireless LLC antennas will be located at a centerline height of 150-feet.

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

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. The combined site operations will result in a total power density of 21.2% 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 tower 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 tower in West Haven. 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 150-foot level of the existing 180-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 West Haven.

Sincerely,

Denise Sabo

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

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments

Cc: Mayor Nancy R. Rossi
City Hall
355 Main Street
3rd Floor
West Haven, CT 06516

Christopher Soto, Director of Planning and Development
City Hall
355 Main Street
1st Floor
West Haven, CT 06516

Florence S. Burwell, Jo B. Hollis and Dana C. Hollis Revocable Trust, Property Owner
4302 S. Rimview Way
Boise, ID 83716

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

Please refer to the cover letter

Exhibit B

Property Card

City of West Haven, CT

Property Listing Report

Map Block Lot	064-0314-0-0000	Building #	1	Section #	1	Account	00001807

Property Information

Property Location	204 BURWELL RD
Owner	BURWELL FLORENCE S 1/2 INT & HOLLIS JO B
Co-Owner	REV TRUST DANA C 1/2 INT
Mailing Address	4302 S RIMVIEW WAY BOISE ID 83716
Land Use	431V TEL REL TW MDL-00
Land Class	I
Zoning Code	R2
Census Tract	

Street Index	C400
Acreage	8.57
Utilities	All Public
Lot Setting/Desc	Urban Level,Steep
Additional Info	

Photo

Sketch

Primary Construction Details

Year Built	0
Stories	
Building Style	UNKNOWN
Building Use	Vacant
Building Condition	
Occupancy	
Extra Fixtures	0
Bath Style	NA
Kitchen Style	NA
AC Type	
Heating Type	
Heating Fuel	

Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Total Rooms	0
Roof Style	
Roof Cover	
Interior Floors 1	
Interior Floors 2	
Exterior Walls	
Exterior Walls 2	NA
Interior Walls	
Interior Walls 2	NA

(*Industrial / Commercial Details)

Building Desc.	TEL REL TW
Building Grade	NA
Heat / AC	NA
Frame Type	NA
Baths / Plumbing	NA
Ceiling / Wall	NA
Rooms / Prtns	NA
Wall Height	NA
First Floor Use	NA

Report Created On 4/1/2022

City of West Haven, CT

Property Listing Report

Map Block Lot	064-0314-0-0000	Building #	1	Section #	1	Account	00001807

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Extras	0	0
Improvements		
Outbuildings	0	0
Land	608500	425950
Total	608500	425950

Outbuilding and Extra Features

Type	Description

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	0	0

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
BURWELL FLORENCE S 1/2 INT & HOLLIS JO B	1746/0455	2015-08-05	0
BURWELL RODNEY T 1/2 EST OF & HOLLIS	1743/0563	2015-06-25	0
BURWELL RODNEY T 1/2 + HOLLIS JOANNE B	1479/0512	2006-07-14	0
BURWELL RODNEY T 1/2 + HOLLIS	0565/0354		0

Report Created On 4/1/2022

City of West Haven

Geographic Information System (GIS)

Date Printed: 4/1/2022

MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The City of West Haven and its mapping contractors assume no legal responsibility for the information contained herein.

Approximate Scale: 1 inch = 200 feet

0 200 Feet

N W E S

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOHVN00160A

DISH Wireless L.L.C. SITE ADDRESS:

2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

SCOPE OF WORK

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

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

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)
- DISH Wireless, L.L.C. TO UTILIZE EXISTING DEFUNCT METER

SITE INFORMATION

PROPERTY OWNER:	BURWELL HILL AGENCY
ADDRESS:	4302 S RIMVIEW WAY BOISE, ID 83716
TOWER TYPE:	SELF-SUPPORT
CROWN CASTLE SITE ID:	870694
CROWN CASTLE APP NUMBER:	553442
COUNTY:	NEW HAVEN
LATITUDE (NAD 83):	41° 17' 45.40" N 41.295944° N
LONGITUDE (NAD 83):	72° 58' 23.60" W 72.973222° W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	R2 – SINGLE FAMILY DETACHED RESIDENCE
PARCEL NUMBER:	64 314 CELL B
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	CONNECTICUT LIGHT & POWER
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

APPLICANT:	DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE USA, INC 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	KIMLEY-HORN & ASSOCIATES 3875 EMBASSY PKWY, SUITE 280 AKRON, OH 44333 (216) 505-7771 COA #: PEC.0000738
SITE ACQUISITION:	VICTOR NUNEZ (917) 563-3682
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	SYED ZAIDI SYED.ZAIDI@DISH.COM

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

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM THE TWEED NEW HAVEN AIRPORT:

GET ON I-95 S FROM FORT HALE RD, TOWNSEND AVE AND WOODWARD AVE. FOLLOW I-95 S TO CT-122 N/1ST AVE IN WEST HAVEN. TAKE EXIT 43 FROM I-95 S. TURN RIGHT ONTO CT-122 N/1ST AVE. TURN LEFT ONTO BOSTON POST RD. CONTINUE ON FAIRFAX ST. DRIVE TO BURWELL RD.

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

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

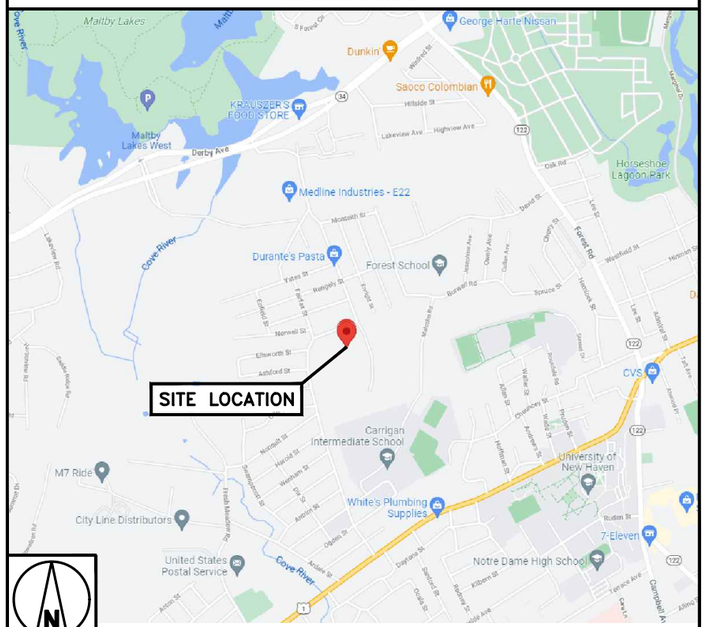
GENERAL NOTES

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.

VICINITY MAP



NO SCALE

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

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

STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Kyle Freehart
D8BEE252A3804C1...

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	03/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLE-16451

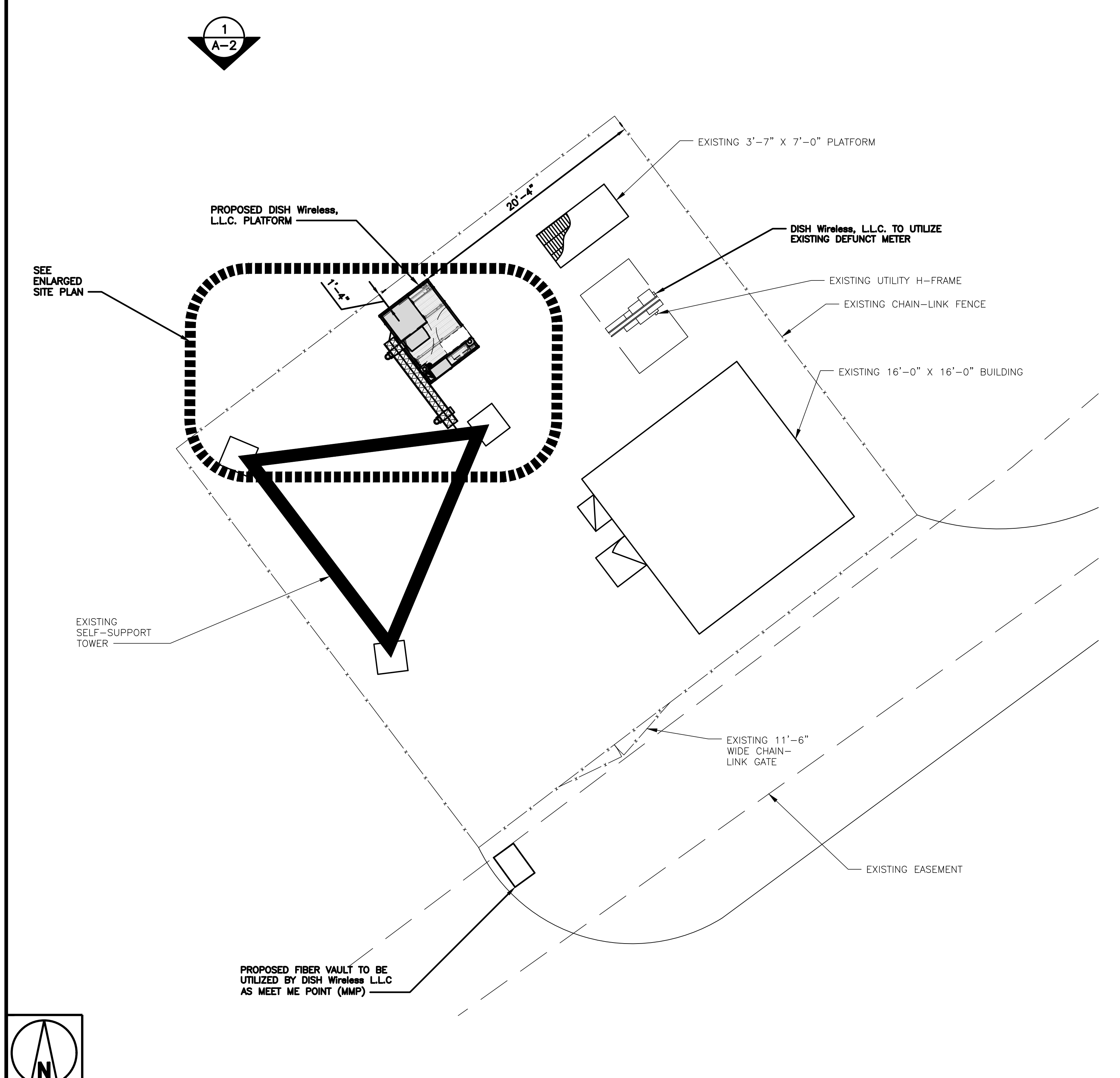
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00160A
2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

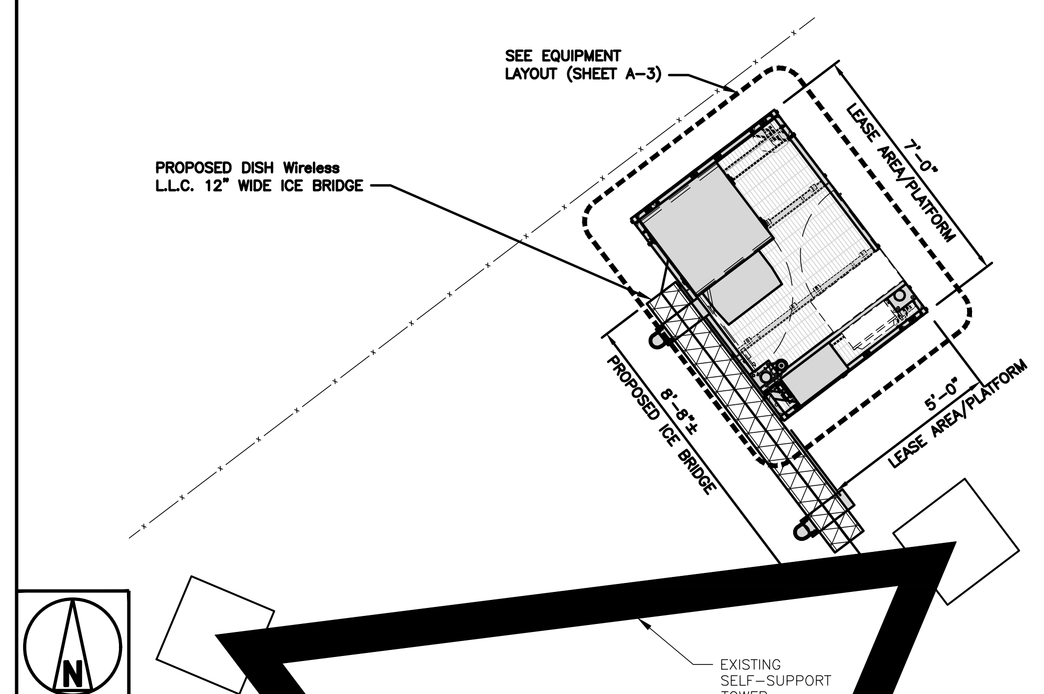
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



OVERALL SITE PLAN — 6' 4' 2' 0 5' 10' — 3/16"=1'-0" — 1

NOTES

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



ENLARGED SITE PLAN — 12" 6" 0 1' 2' 3' 4' 5' 6' 7' — 3/8"=1'-0" — 2

OVERALL UTILITY ROUTE PLAN — NO SCALE — 3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn

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

STATE OF CONNECTICUT — KYLE JENSEN FREEHART — 34906 — LICENSED PROFESSIONAL ENGINEER

DocuSigned by: Kyle Freehart

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

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PROJECT INFORMATION
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WEST HAVEN, CT 06516

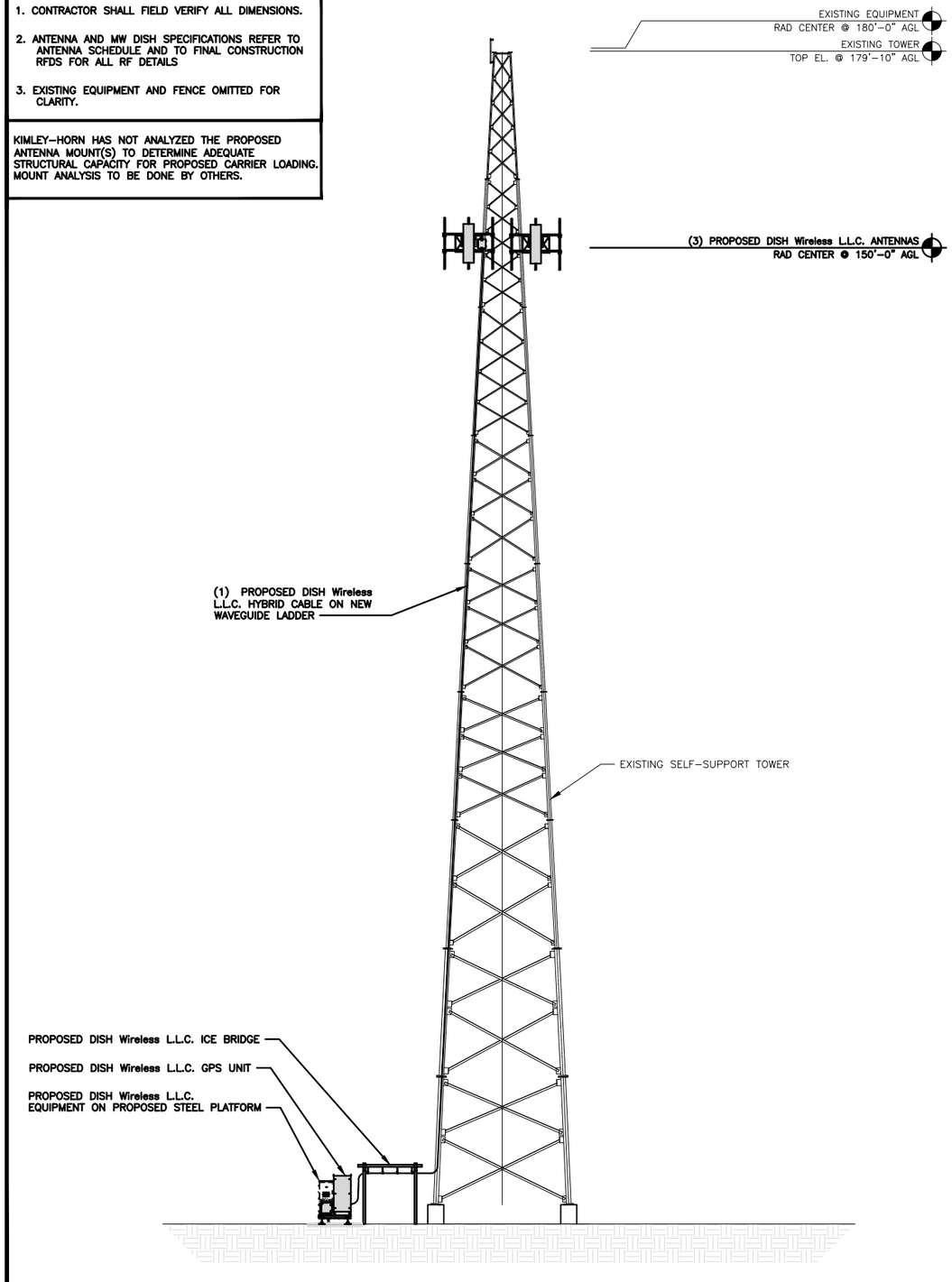
SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

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.

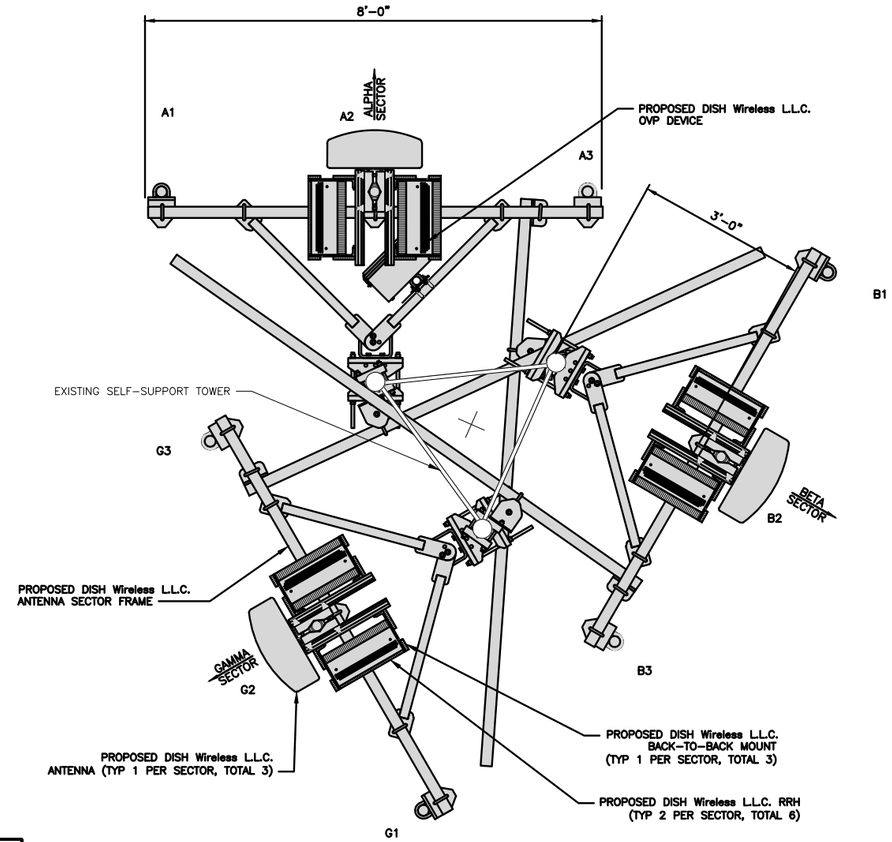
KIMLEY–HORN HAS NOT ANALYZED THE PROPOSED ANTENNA MOUNT(S) TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR PROPOSED CARRIER LOADING. MOUNT ANALYSIS TO BE DONE BY OTHERS.



PROPOSED NORTH ELEVATION

12' 8' 4' 0 10' 20'
3/32"=1'–0"

1



ANTENNA LAYOUT

12" 6" 0 1' 2' 3'
3/4"=1'–0"

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1	–	–	–	–	–	(1) HIGH–CAPACITY HYBRID CABLE (185'–0" LONG)	FUJITSU – TA08025–B604	5G	A2	RAYCAP RDIDC–9181–PF–48
A2	PROPOSED	JMA – MX08FRO665–21	5G	0°	150'–0"		FUJITSU – TA08025–B605	5G	A2	
A3	–	–	–	–	–		–	–	–	
B1	–	–	–	–	–	SHARED W/ALPHA	FUJITSU – TA08025–B604	5G	B2	SHARED W/ALPHA
B2	PROPOSED	JMA – MX08FRO665–21	5G	120°	150'–0"		FUJITSU – TA08025–B605	5G	B2	
B3	–	–	–	–	–		–	–	–	
C1	–	–	–	–	–	SHARED W/ALPHA	FUJITSU – TA08025–B604	5G	C2	SHARED W/ALPHA
C2	PROPOSED	JMA – MX08FRO665–21	5G	240°	150'–0"		FUJITSU – TA08025–B605	5G	C2	
C3	–	–	–	–	–		–	–	–	

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

dish wireless.
5701 SOUTH SANTA FE DRIVE
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WJW	MCK	---

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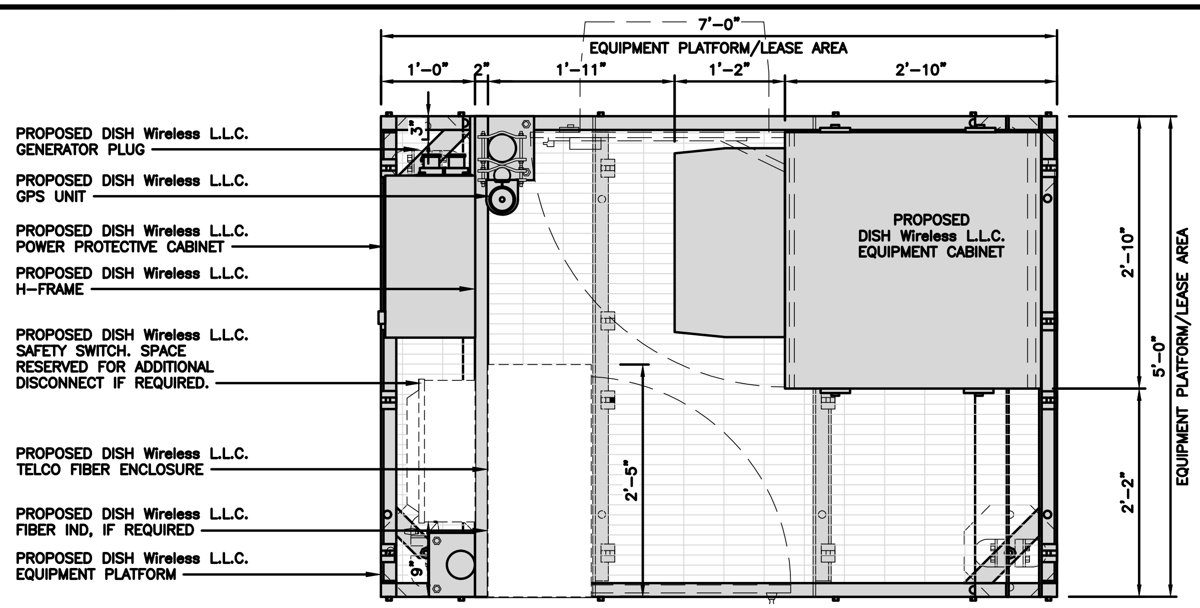
WEST HAVEN, CT 06516

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

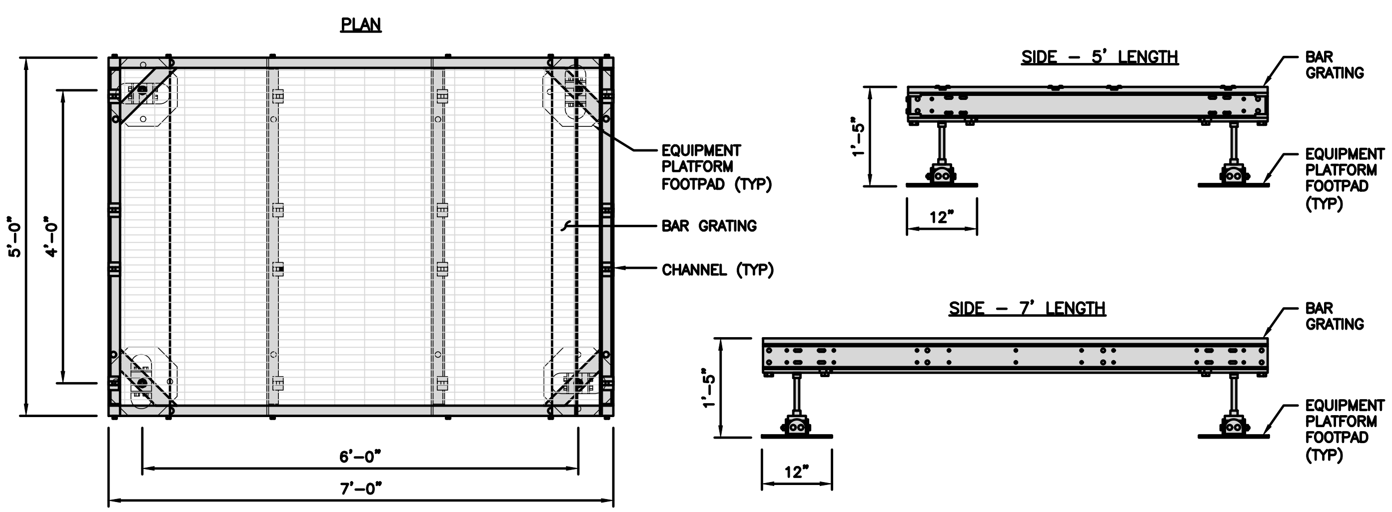
SHEET NUMBER
A-2



PLATFORM EQUIPMENT PLAN — 12" 9" 6" 3" 0 1' 2' — 1"=1'-0" — 1

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

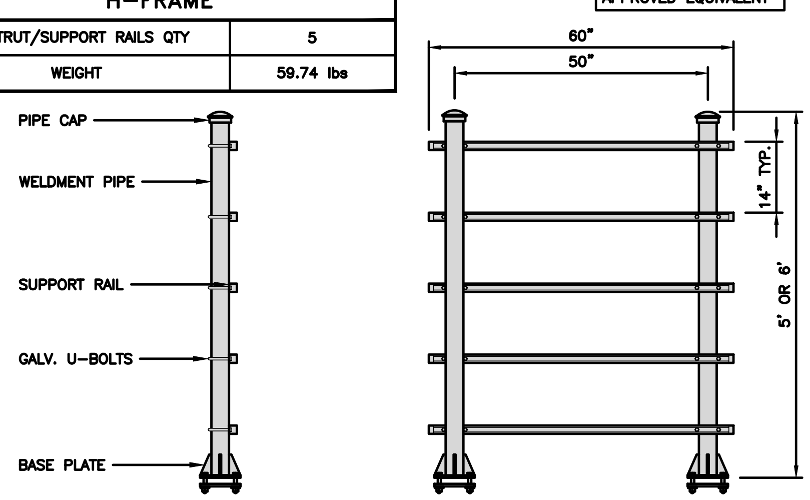
NOTE:
1. GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"
2. PLATFORM TO BE LEVEL WITHIN 1"



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

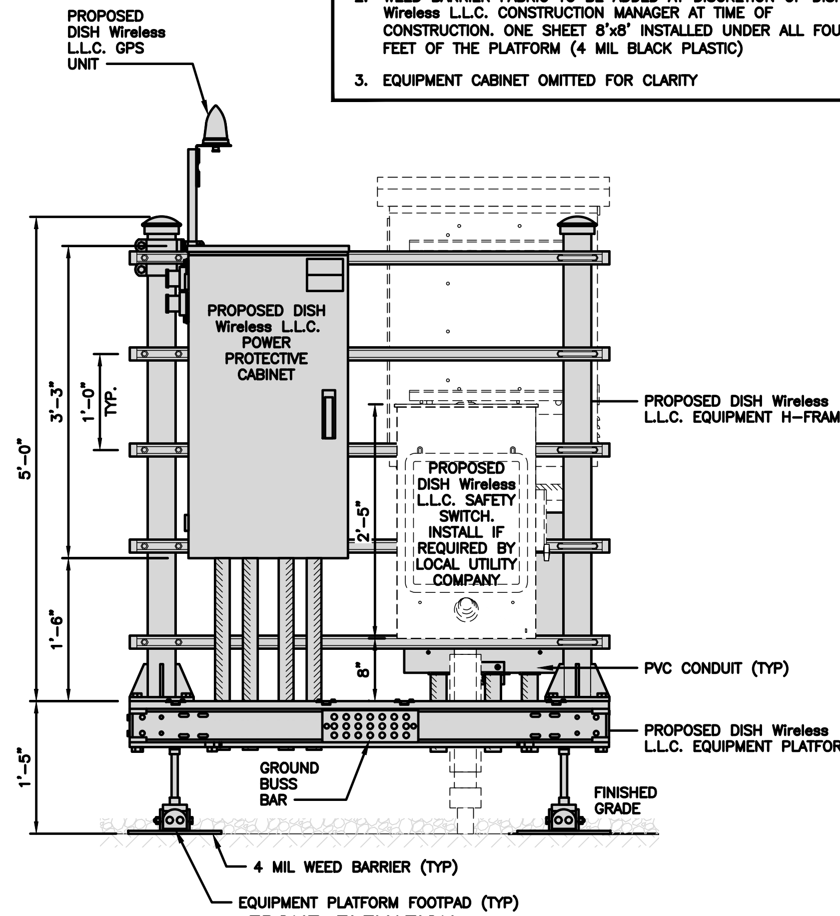


H-FRAME DETAIL — NO SCALE — 3

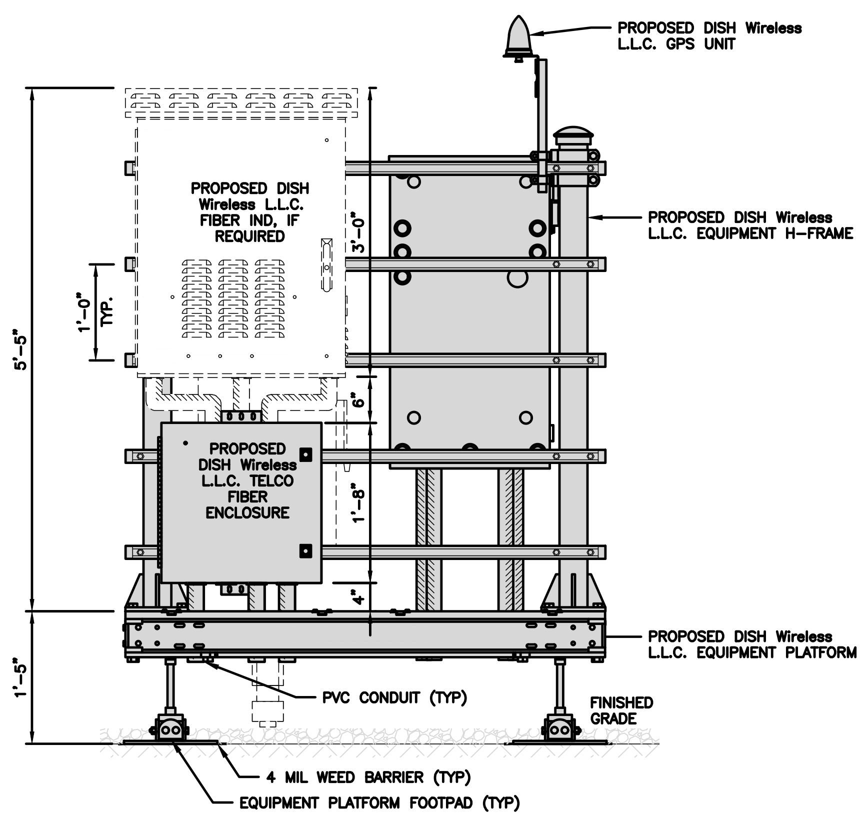
NOT USED — NO SCALE — 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

dish wireless.

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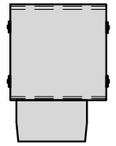
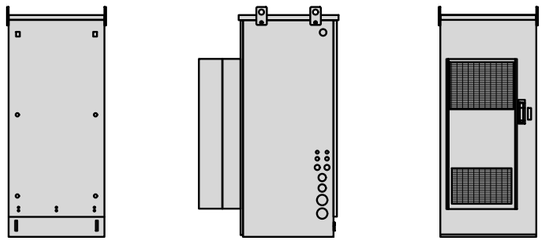
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

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

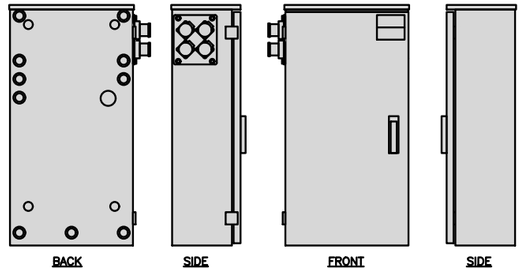

PLAN


BACK SIDE FRONT

CABINET DETAIL | NO SCALE | 1

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

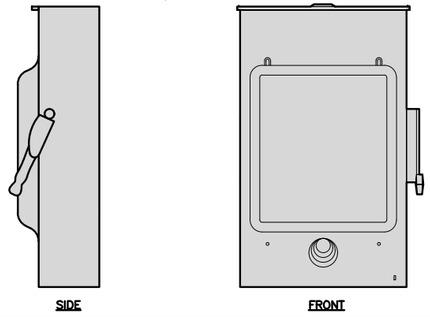

TOP


BACK SIDE FRONT SIDE

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

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


TOP

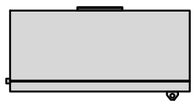

SIDE FRONT

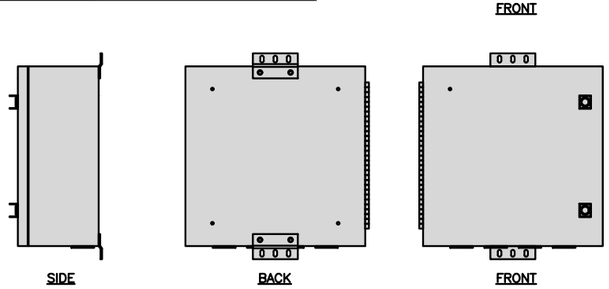
SAFETY SWITCH DETAIL | NO SCALE | 3

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

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

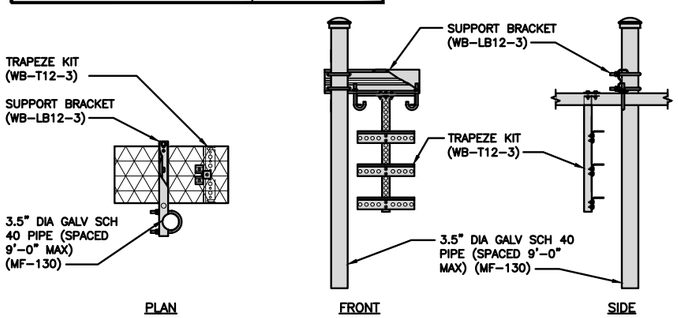

FRONT


SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

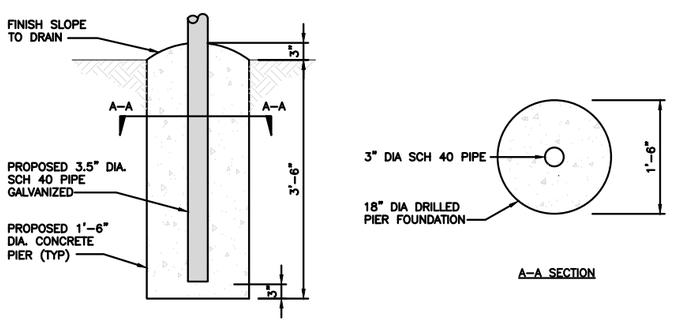
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



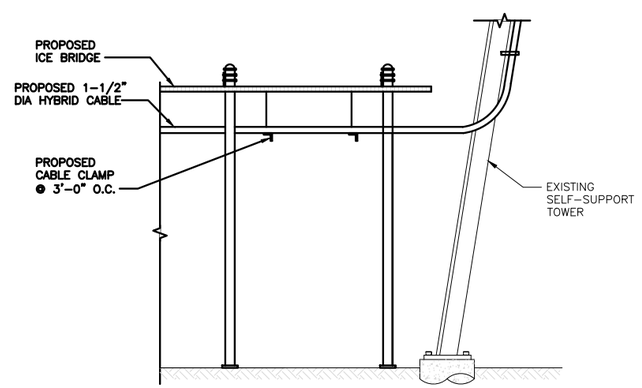
PLAN FRONT SIDE

ICE BRIDGE DETAIL | NO SCALE | 7



CONCRETE PIER A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED PROFESSIONAL ENGINEER
Docusigned by: Kyle Freehart

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

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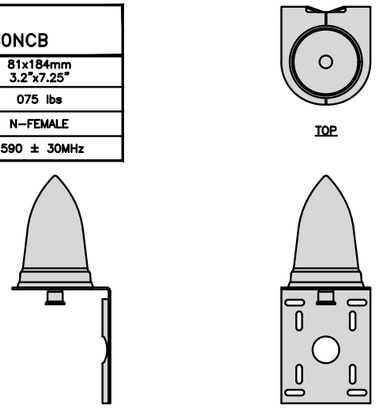
A&E PROJECT NUMBER
KHCLE–16451

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00160A
2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

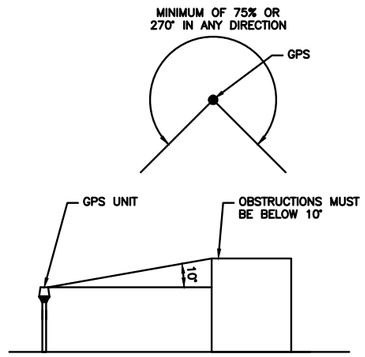
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

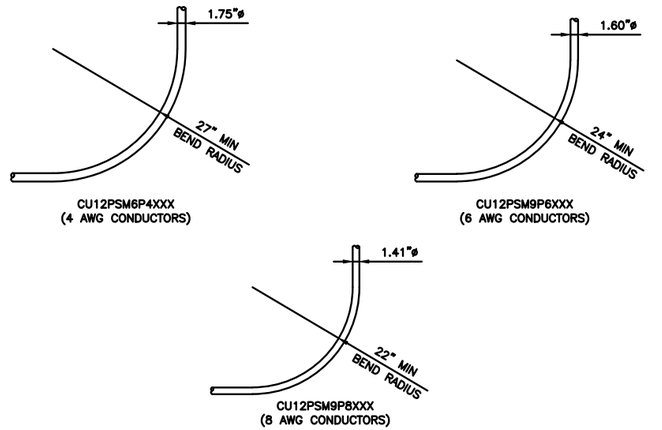
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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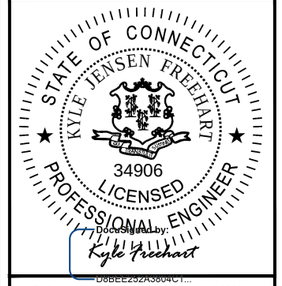
LITTLETON, CO 80120

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



DocuSigned by:
Kyle Freehart
06BEE282A380467...

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

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BOHVN00160A
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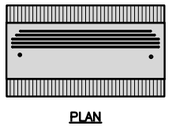
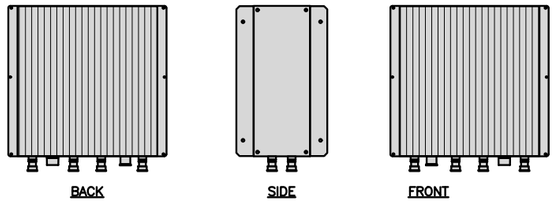
WEST HAVEN, CT 06516

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

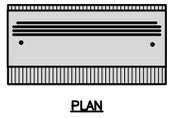
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V

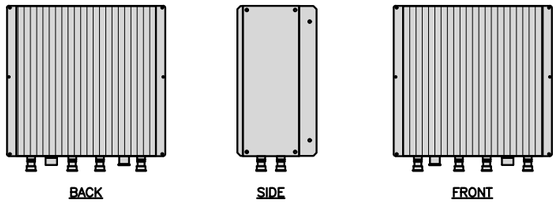

PLAN


BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

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

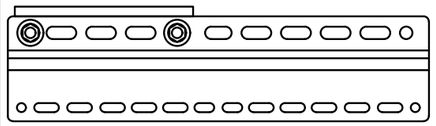

PLAN

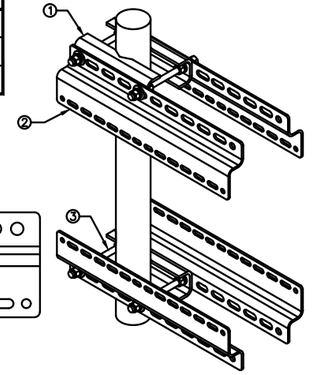

BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

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

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



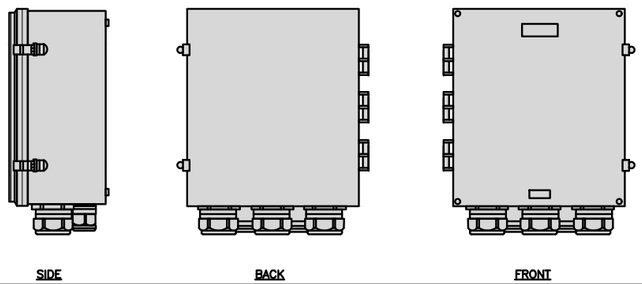


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

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

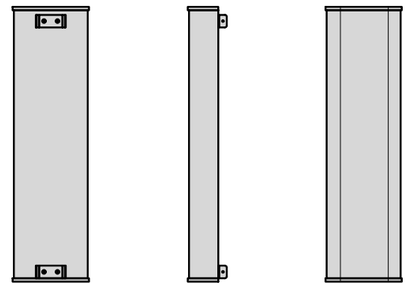

PLAN


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 4

JMA 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


PLAN


BACK SIDE FRONT

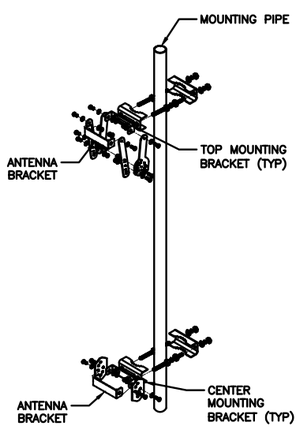
ANTENNA DETAIL | NO SCALE | 5

NOT USED | NO SCALE | 6

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

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

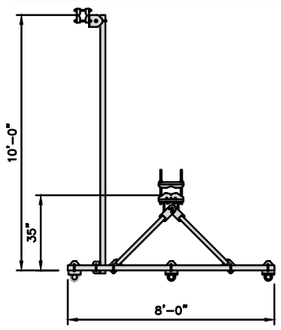
ANTENNA BRACKET NOT PART OF KIT

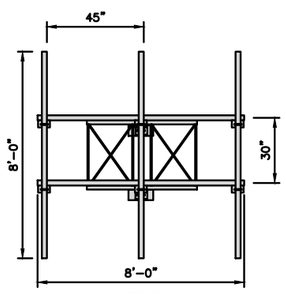


ANTENNA BRACKET DETAIL | NO SCALE | 7

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

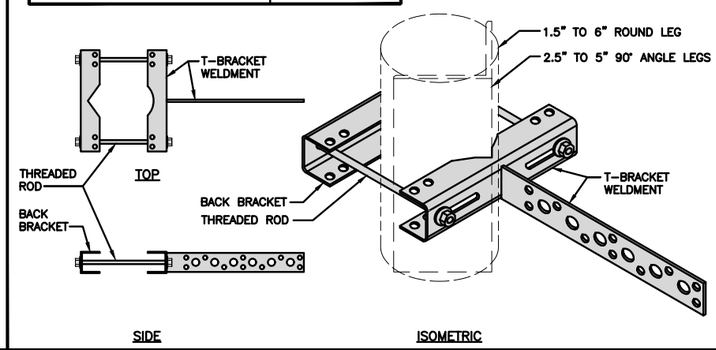
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT





ANTENNA FRAME DETAIL | NO SCALE | 8

SITEPRO1 T600 UNIVERSAL T-BRACKET	
DIMENSIONS (HxWxL)	2.25"x10.0"x15.25"
WEIGHT/ VOLUME	5.60 LBS



VERTICAL CABLE SUPPORT DETAIL | NO SCALE | 9

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COA #: PEC.0000738
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RALEIGH, NC 27601

STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED PROFESSIONAL ENGINEER
Docusigned by: Kyle Freehart
D8BEE252A3804C1...

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

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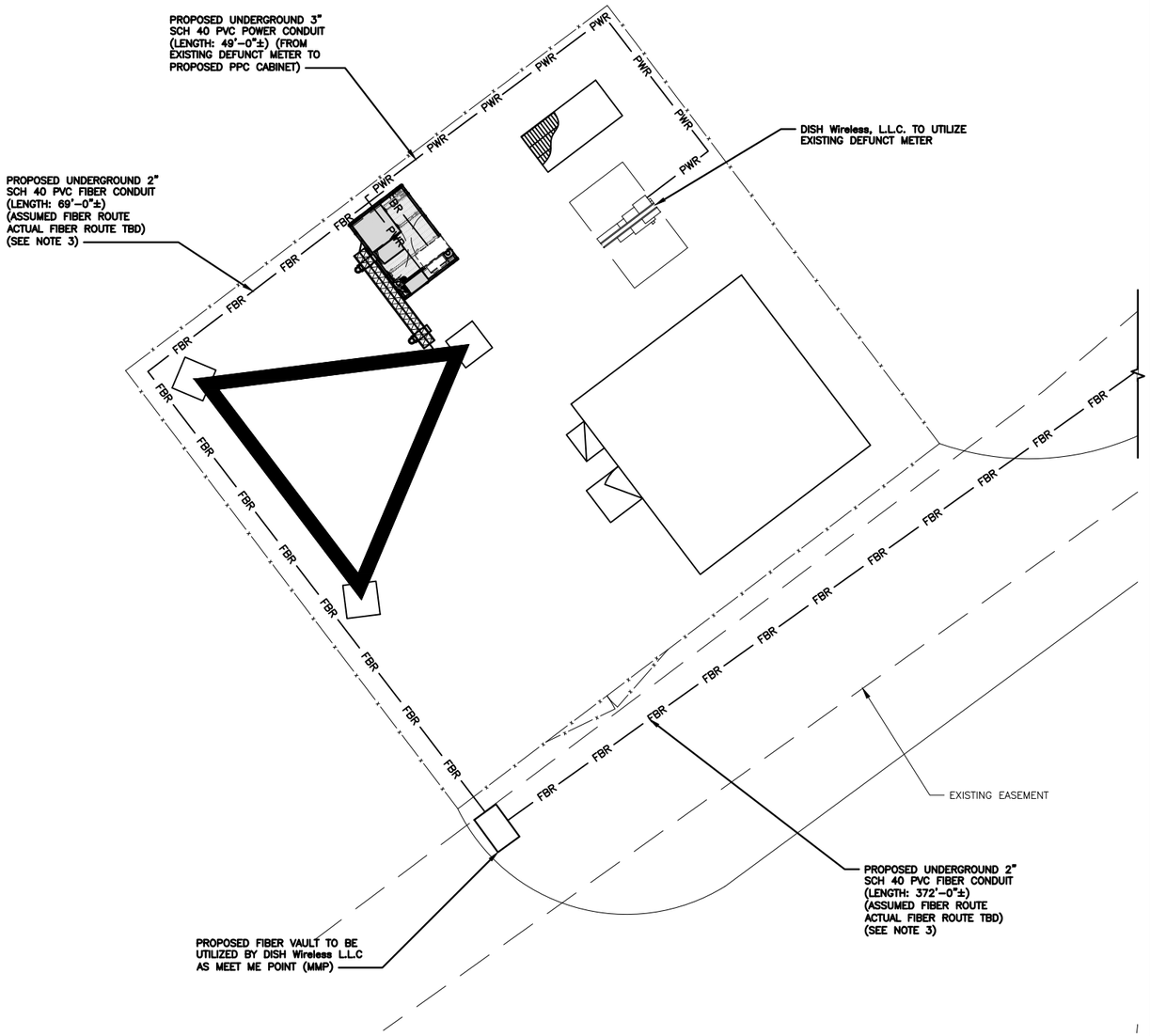
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00160A
2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

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



N

UTILITY ROUTE PLAN

6' 4' 2' 0 5' 10'
3/16"=1'–0"

1

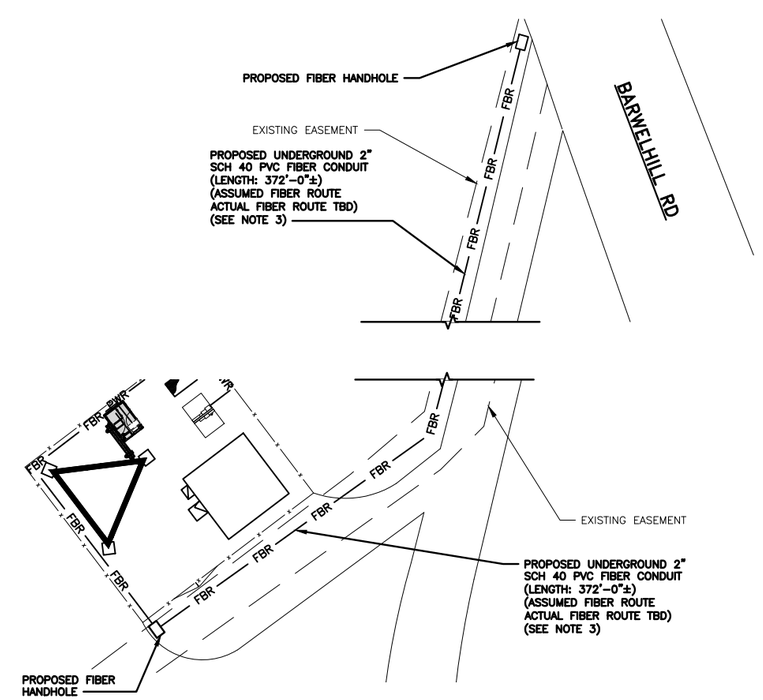
DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND –48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY –48V.

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

ELECTRICAL NOTES

NO SCALE

2



OVERALL UTILITY ROUTE PLAN

16' 12' 8' 4' 0 16' 32'
1/16"=1'–0"

3

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5701 SOUTH SANTA FE DRIVE
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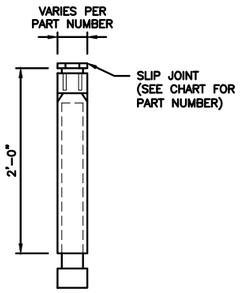
SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

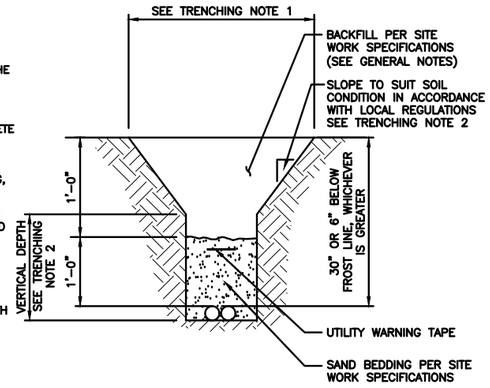


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

EXPANSION JOINT DETAIL | NO SCALE | 1

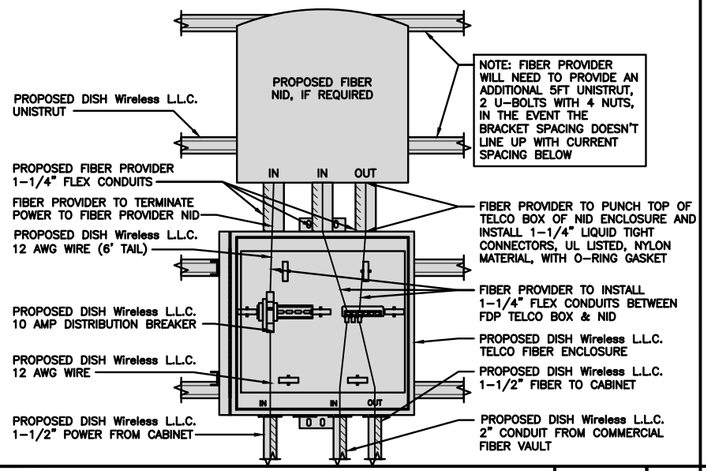
TRENCHING NOTES

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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2

NOT USED | NO SCALE | 3



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED PROFESSIONAL ENGINEER

Docusigned by:
Kyle Freehart
D8BEE252A3804C1...

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
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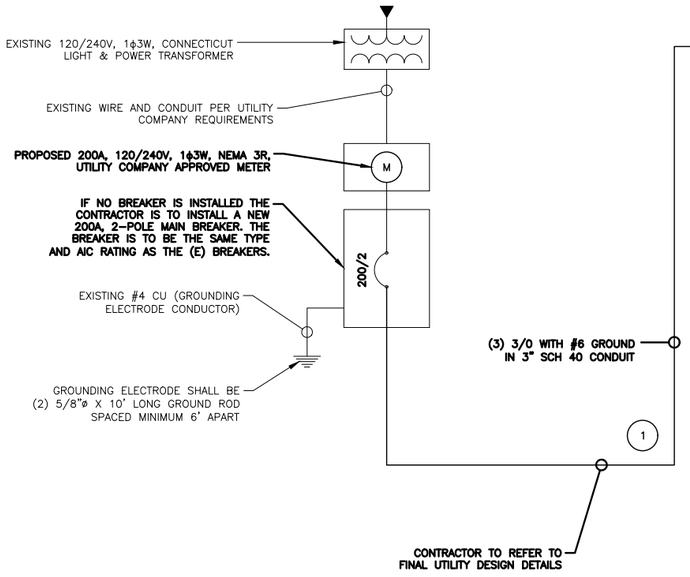
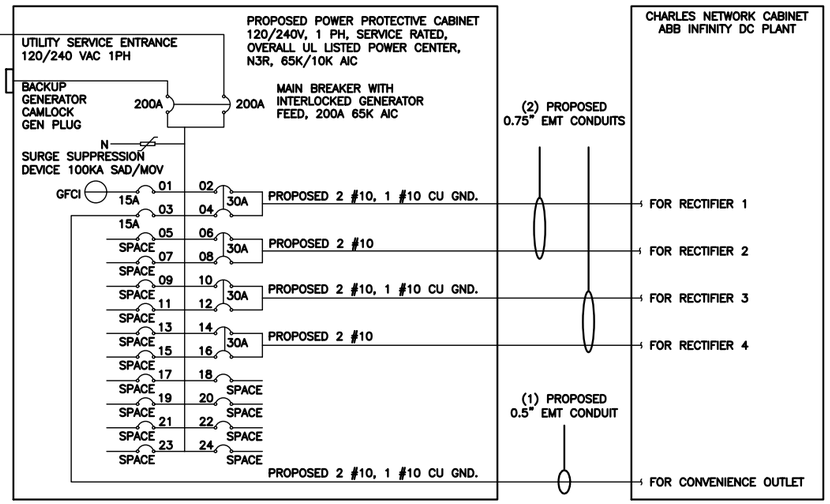
A&E PROJECT NUMBER
KHCLE-16451

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00160A
2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2





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

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

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.

1 **OPTIONAL ALUMINUM SERVICE CONDUCTOR:**
- 4/0 AL + #2 GRD MAY BE USED INSTEAD OF 3/0 CU + #6 GRD IF THE TOTAL LENGTH OF THE CONDUCTOR IS LESS THAN 300 FT FROM THE TRANSFORMER.
- ALUMINUM CONDUCTORS MUST BE 90°C TO CARRY THE FULL 200A LOAD REQUIRED
- ALUMINUM TO COPPER BUSS CONNECTIONS MUST MEET AND CONFORM TO ANSI AND BE UL LISTED. USE ANTI CORROSION CONDUCTIVE LUBRICANT ON CONNECTIONS

PPC ONE-LINE DIAGRAM | NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

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

PANEL SCHEDULE | NO SCALE | 2

SHORT CIRCUIT CALCULATIONS | NO SCALE | 3

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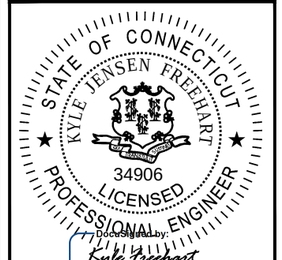

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

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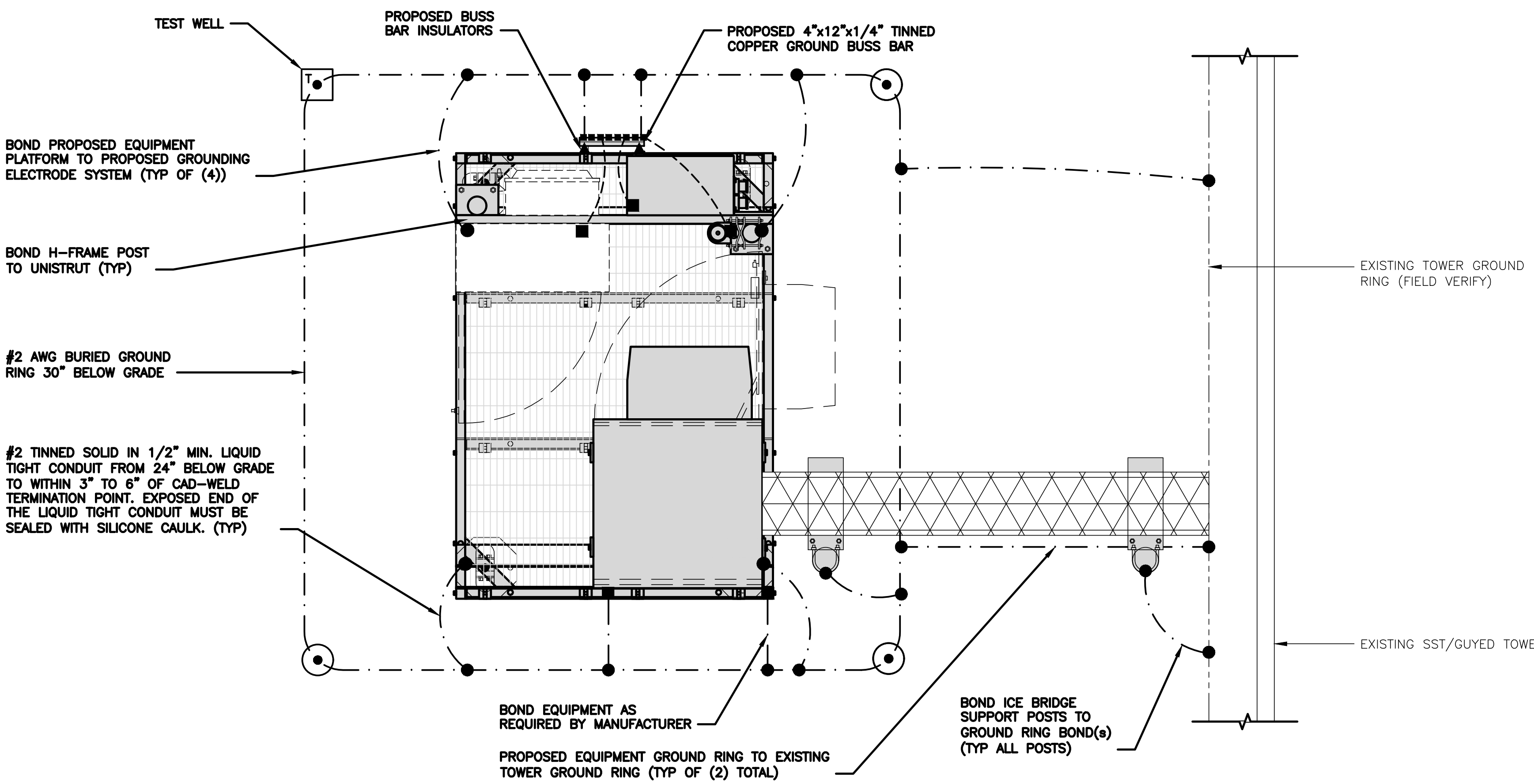
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00160A
2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

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

SHEET NUMBER
E-3

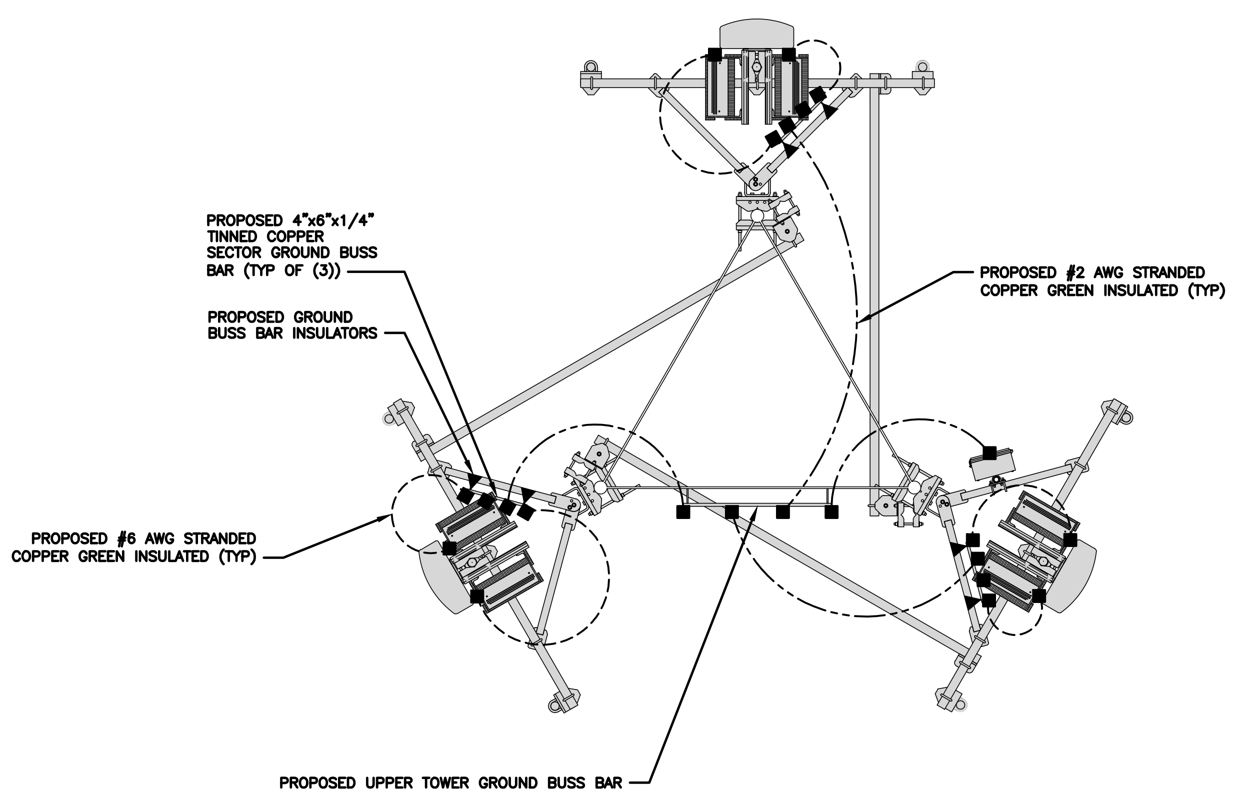


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

GROUNDING LEGEND

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

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 TOWER STEEL.

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

GROUNDING KEY NOTES

NO SCALE | 3

dish wireless.

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STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED PROFESSIONAL ENGINEER

DocuSigned by: Kyle Freehart

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

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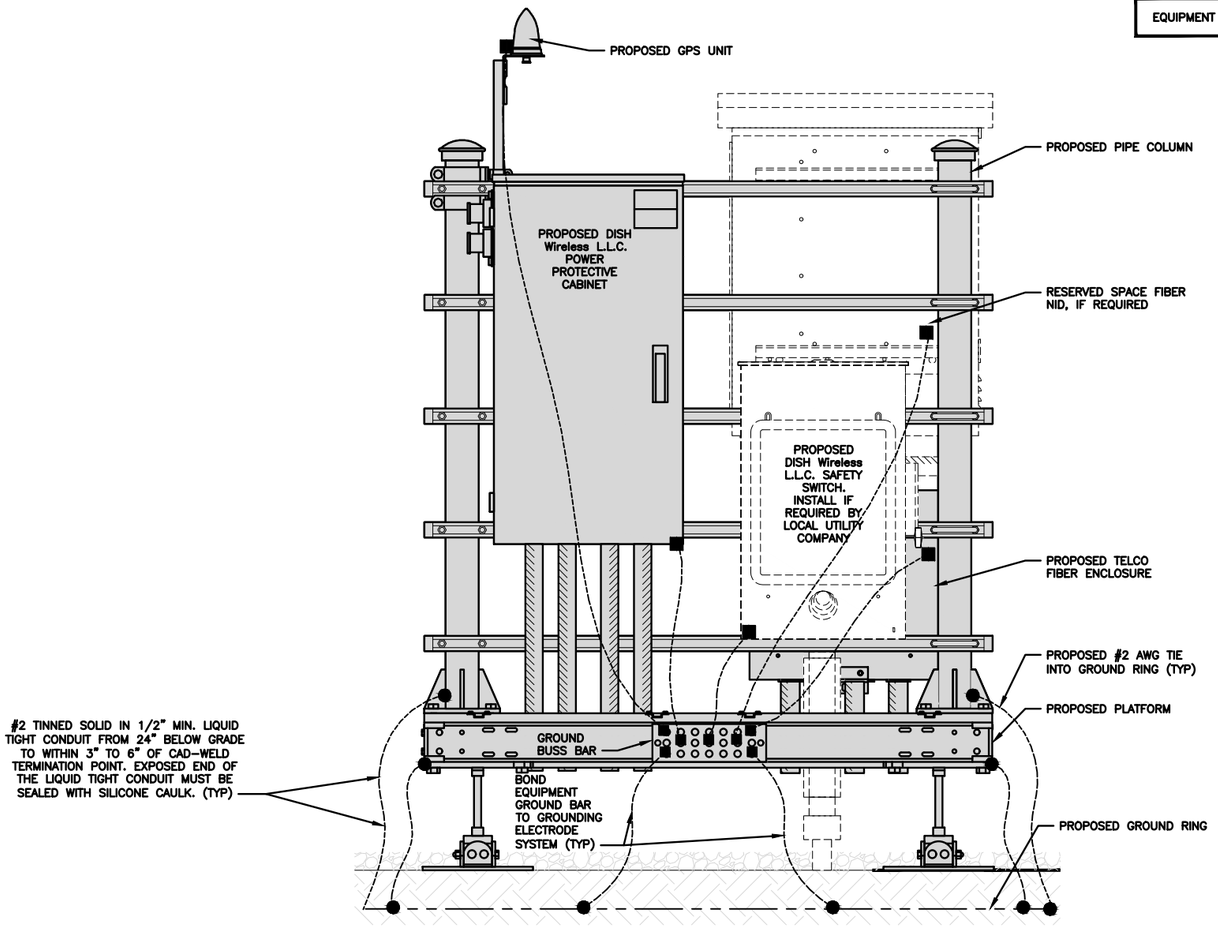
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00160A
2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

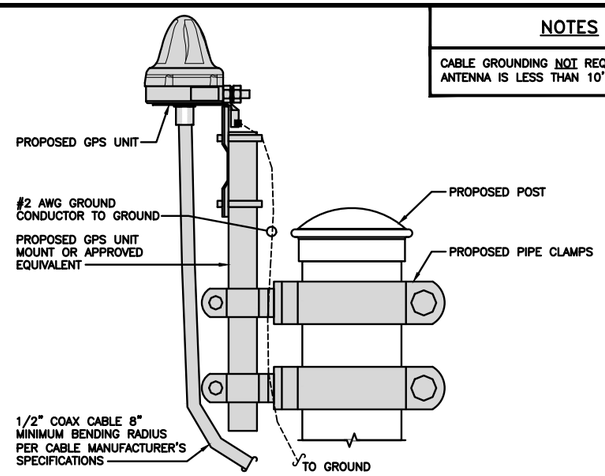
EQUIPMENT CABINET OMITTED FOR CLARITY



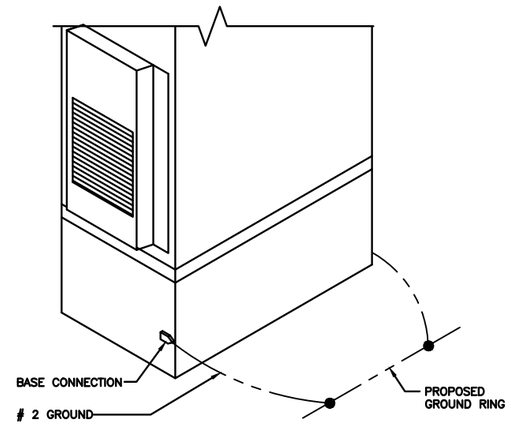
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

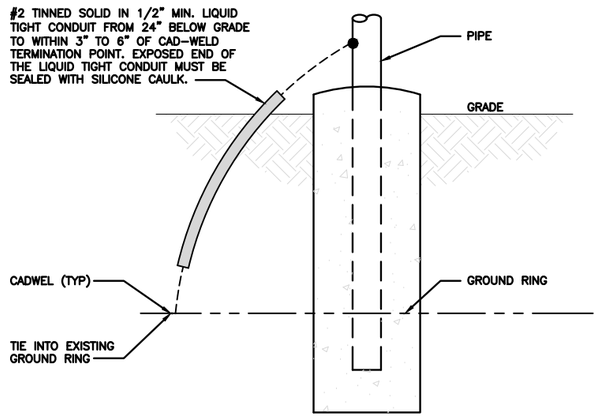
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



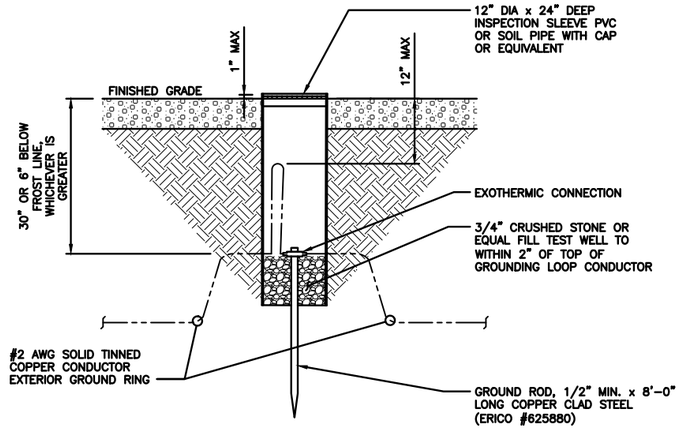
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



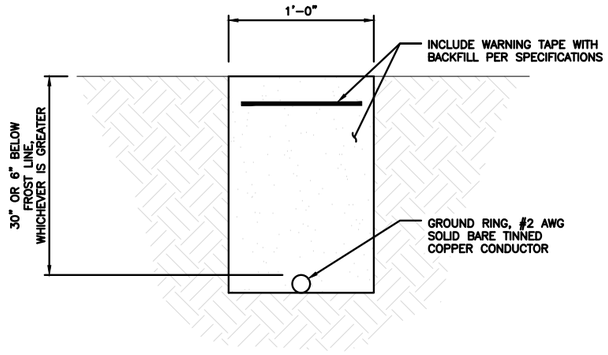
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED PROFESSIONAL ENGINEER

DocuSigned by: Kyle Freehart
08BEE252A980MC1...

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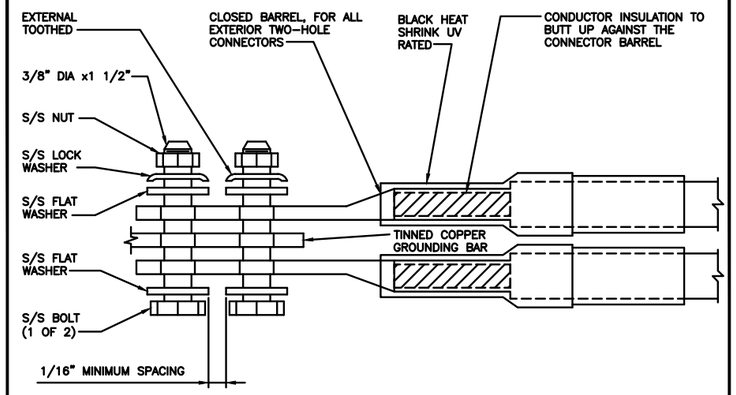
WEST HAVEN, CT 06516

SHEET TITLE
GROUNDING DETAILS

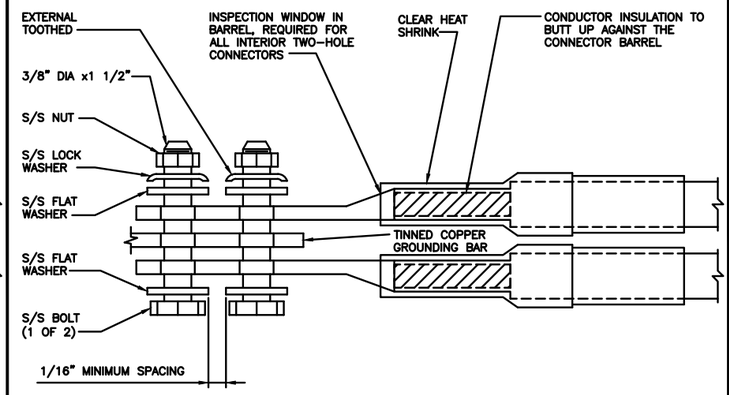
SHEET NUMBER
G-2

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

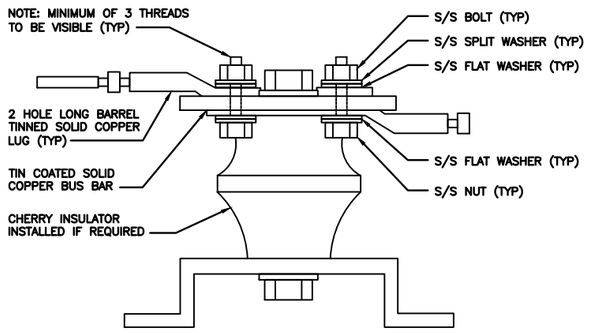
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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SHEET TITLE
GROUNDING DETAILS

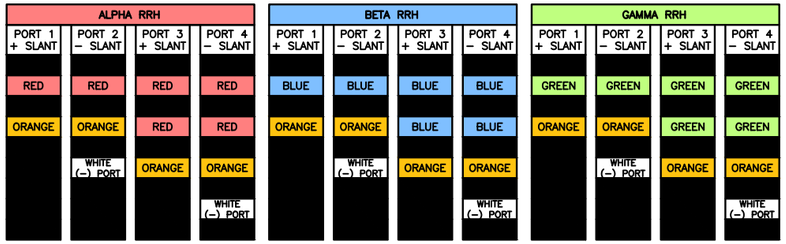
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

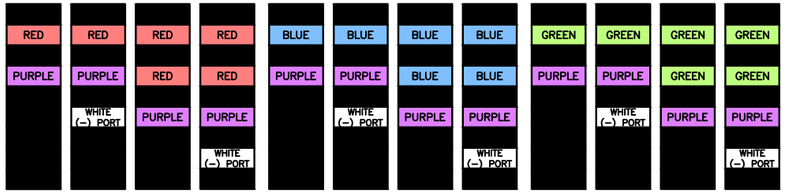
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

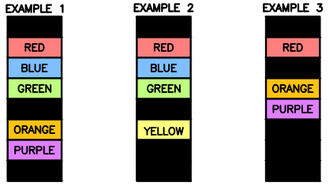


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

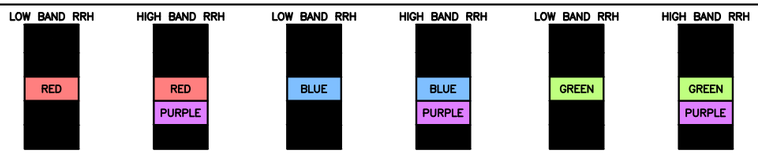
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



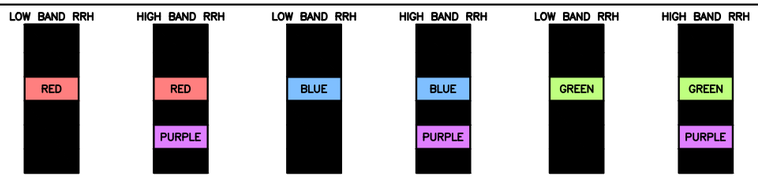
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

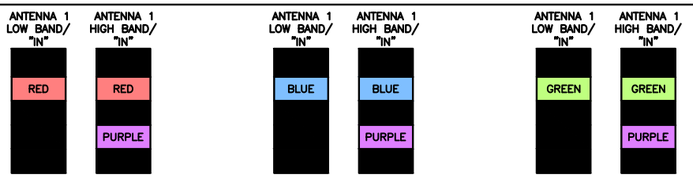


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



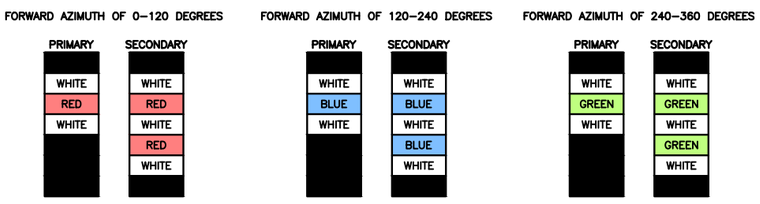
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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

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

STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED PROFESSIONAL ENGINEER
DocuSigned by: Kyle Freehart
D8BEE252A3804C1...

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	03/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLE-16451

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00160A
2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION	●
MECHANICAL CONNECTION	■
BUSS BAR INSULATOR	▲
CHEMICAL ELECTROLYTIC GROUNDING SYSTEM	
TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM	T
EXOTHERMIC WITH INSPECTION SLEEVE	
GROUNDING BAR	
GROUND ROD	
TEST GROUND ROD WITH INSPECTION SLEEVE	T
SINGLE POLE SWITCH	$
DUPLEX RECEPTACLE	
DUPLEX GFCI RECEPTACLE	GFCI
FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8	F
SMOKE DETECTION (DC)	SD
EMERGENCY LIGHTING (DC)	
SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED-1-25A400/51K-SR4-120-PE-DDBTXD	
CHAIN LINK FENCE	— x — x — x — x —
WOOD/WROUGHT IRON FENCE	
WALL STRUCTURE	
LEASE AREA	
PROPERTY LINE (PL)	
SETBACKS	
ICE BRIDGE	
CABLE TRAY	
WATER LINE	— W — W — W — W — W —
UNDERGROUND POWER	— UGP — UGP — UGP — UGP — UGP —
UNDERGROUND TELCO	— UGT — UGT — UGT — UGT — UGT —
OVERHEAD POWER	— OHP — OHP — OHP — OHP —
OVERHEAD TELCO	— OHT — OHT — OHT — OHT —
UNDERGROUND TELCO/POWER	— UGT/P — UGT/P — UGT/P — UGT/P —
ABOVE GROUND POWER	— AGP — AGP — AGP — AGP — AGP —
ABOVE GROUND TELCO	— AGT — AGT — AGT — AGT — AGT —
ABOVE GROUND TELCO/POWER	— AGT/P — AGT/P — AGT/P — AGT/P —
WORKPOINT	W.P.
SECTION REFERENCE	XX / X-X
DETAIL REFERENCE	XX / X-X

ABBREVIATIONS

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
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Kimley»Horn

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

STATE OF CONNECTICUT · KYLE JENSEN FREEHART · 34906 · LICENSED · PROFESSIONAL ENGINEER

DocuSigned by: Kyle Freehart

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	03/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
KHCLE-16451

DISH Wireless L.L.C. PROJECT INFORMATION
BOHVN00160A
2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

SHEET TITLE
LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn

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

STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Kyle Freehart
06BEE252A380467...

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

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A&E PROJECT NUMBER

KHCLE–16451

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00160A
2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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LITTLETON, CO 80120

Kimley»Horn

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

STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED
PROFESSIONAL ENGINEER

DocuSigned by:
Kyle Freehart
D8BEE252A3804C1...

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	03/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

KHCLE–16451

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00160A
2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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LITTLETON, CO 80120

Kimley»Horn

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

STATE OF CONNECTICUT
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34906
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DocuSigned by:
Kyle Freehart
06BEE292A380467...

DRAWN BY:	CHECKED BY:	APPROVED BY:
WJW	MCK	---

RFDS REV #: ---

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00160A
2014 AND 240 BURWELL ROAD
WEST HAVEN, CT 06516

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

DocuSign

Certificate Of Completion

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Envelope Summary Events	Status	Timestamps
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Completed	Security Checked	3/11/2022 9:20:39 AM

Payment Events	Status	Timestamps

Exhibit D

Structural Analysis Report

Date: **September 07, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOHVN00160A
	Site Name:	CT-CCI-T-870694
Crown Castle Designation:	**BU Number:**	870694
	Site Name:	West Haven (Burwell Hill)
	JDE Job Number:	645687
	Work Order Number:	1962907
	Order Number:	553442 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1962907
Site Data:	**2014 and 240 Burwell Road, West Haven, NEW HAVEN County, CT** **Latitude *41° 17' 45.4"*, Longitude *-72° 58' 23.6"*** **180 Foot - Self Support Tower**	

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

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

LC7: Proposed Equipment Configuration **Sufficient Capacity – 89.3%**

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Fabiaye Arinyedokiari / MAS

Respectfully submitted by:

Digitally signed by Maham Barimani
Date: 2021.09.13 16:06:08 -04'00'

STATE OF CONNECTICUT
MAHAM BARIMANI
30501
LICENSED
PROFESSIONAL ENGINEER

Maham Barimani, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 180 ft Self Support tower designed by ROHN.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.0 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)
150.0	150.0	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 MTC3975083 (3)		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
180.0	180.0	1	tower mounts	Pipe Mount [PM 601-1]	-	-
160.0	160.0	6	jma wireless	MX06FRO660-03 w/ Mount Pipe	5	1-5/8
		1	raycap	RVZDC-6627-PF-48		
		2	samsung telecommunications	RFV01U-D1A		
		2	samsung telecommunications	RFV01U-D2A		
		2	tower mounts	Sector Mount [SM 703-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2207330	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1301528	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1301402	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.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	180 - 160	Leg	Pipe 2.375" x 0.154" (2 STD)	2	-2.14	38.65	5.5	Pass
T2	160 - 140	Leg	Pipe 2.375" x 0.154" (2 STD)	39	-18.25	38.65	47.2	Pass
T3	140 - 120	Leg	Pipe 2.875" x 0.276" (2.5 XS)	72	-32.81	78.15	42.0	Pass
T4	120 - 100	Leg	Pipe 2.875" x 0.276" (2.5 XS)	99	-45.43	61.44	73.9	Pass
T5	100 - 80	Leg	Pipe 3.5" x 0.300" (3 XS)	120	-58.20	99.06	58.8	Pass
T6	80 - 60	Leg	Pipe 3.5" x 0.300" (3 XS)	139	-71.17	99.06	71.9	Pass
T7	60 - 40	Leg	Pipe 4" x 0.318" (3.5 XS)	160	-83.62	93.61	89.3	Pass
T8	40 - 20	Leg	Pipe 4.5" x 0.337" (4 XS)	175	-97.19	128.28	75.8	Pass
T9	20 - 0	Leg	Pipe 4.5" x 0.337" (4 XS)	190	-110.53	128.28	86.2	Pass
T1	180 - 160	Diagonal	L 1.5 x 1.5 x 1/8	7	-0.40	7.79	5.2	Pass
T2	160 - 140	Diagonal	L 1.5 x 1.5 x 1/8	45	-2.20	4.92	44.6	Pass
T3	140 - 120	Diagonal	L 1.5 x 1.5 x 1/8	78	-2.24	2.90	77.3	Pass
T4	120 - 100	Diagonal	L 2 x 2 x 1/8	105	-2.55	4.32	59.0	Pass
T5	100 - 80	Diagonal	L 2 x 2 x 1/8	126	-2.71	3.33	81.5	Pass
T6	80 - 60	Diagonal	L 3 x 3 x 3/16	147	-3.15	13.23	23.8	Pass
T7	60 - 40	Diagonal	L 3 x 3 x 3/8	168	-3.83	16.79	22.8	Pass
T8	40 - 20	Diagonal	L 3 x 3 x 3/8	183	-4.14	14.14	29.3	Pass
T9	20 - 0	Diagonal	L 3.5 x 3.5 x 1/4	198	-4.56	13.40	34.0	Pass
T1	180 - 160	Top Girt	L 1.5 x 1.5 x 1/8	4	-0.02	9.10	0.2	Pass
							Summary	
						Leg (T7)	89.3	Pass
						Diagonal (T5)	81.5	Pass
						Top Girt (T1)	0.2	Pass
						Bolt Checks	64.5	Pass
						Rating =	89.3	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	60.4	Pass
1	Base Foundation (Structure)	0	50.2	Pass
1	Base Foundation (Soil Interaction)	0	80.2	Pass

Structure Rating (max from all components) =	89.3%

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

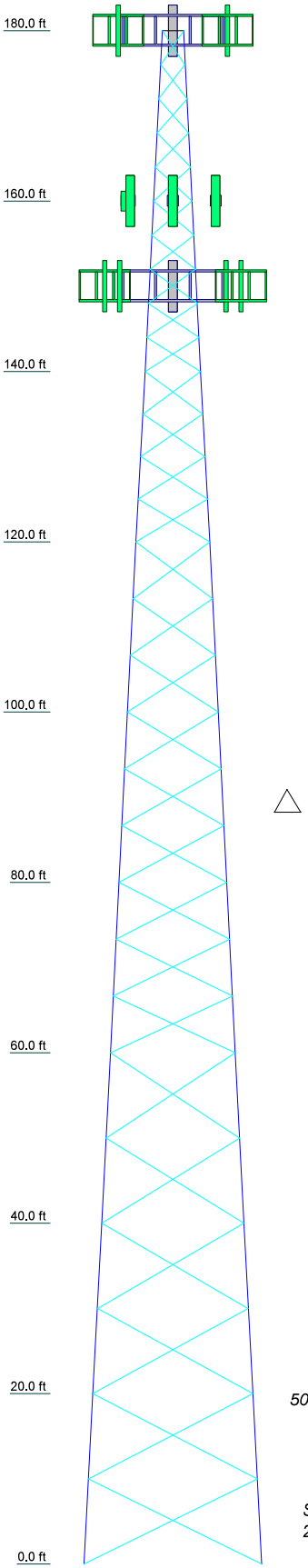
4.1) Recommendations

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	T1	T2	T3	T4	T5	T6	T7	T8	T9	
Legs	Pipe 2.375" x 0.154" (2 STD)		Pipe 2.875" x 0.276" (2.5 XS)		Pipe 3.5" x 0.300" (3 XS)		Pipe 4" x 0.318" (3.5 XS)		Pipe 4.5" x 0.337" (4 XS)	
Leg Grade	A618-50									
Diagonals	L 1.5 x 1.5 x 1/8			L 2 x 2 x 1/8		L 3 x 3 x 3/16		L 3 x 3 x 3/8		L 3.5 x 3.5 x 1/4
Diagonal Grade	A36						A572-50			
Top Girts	L 1.5 x 1.5 x 1/8					N.A.				
Face Width (ft)	2.5	4.53125	6.5625	8.59375	10.625	12.6563	14.6875	16.7188	18.75	20.7813
# Panels @ (ft)	10 @ 4		4 @ 5		9 @ 6.66667			6 @ 10		
Weight (K)	0.4	0.5	0.8	0.8	1.1	1.7	2.5	2.8	2.6	13.1



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A618-50	50 ksi	70 ksi	A572-50	50 ksi	65 ksi
A36	36 ksi	58 ksi			

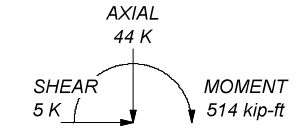
TOWER DESIGN NOTES

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 120 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: 89.3%

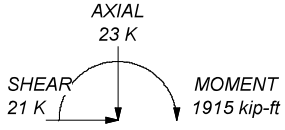
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 114 K
SHEAR: 13 K

UPLIFT: -94 K
SHEAR: 11 K



TORQUE 6 kip-ft
50 mph WIND - 1.0000 in ICE



TORQUE 22 kip-ft
REACTIONS - 120 mph WIND

Crown Castle
2000 Corporate Drive
Canonsburg, PA
The Pathway to Possible
Phone: (724) 416-2000
FAX:

Job: 870694			
Project:			
Client: Crown Castle	Drawn by: Mishka Stueber		App'd:
Code: TIA-222-H	Date: 09/07/21		Scale: NTS
Path: C:\Working\870694\WO 1962907 - SA\QA\870694.eri			Dwg No. E-1

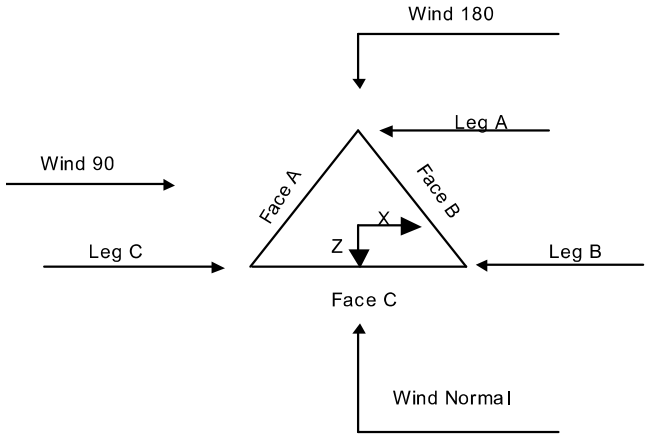
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 2.50 ft at the top and 20.78 ft at the base.
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: 276.00 ft.
- Basic wind speed of 120 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.
- Deflections calculated using a wind speed of 60 mph.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.00-160.00		06N	2.50	1	20.00
T2	160.00-140.00		07KDH	4.53	1	20.00
T3	140.00-120.00		08N422	6.56	1	20.00
T4	120.00-100.00		09N117	8.59	1	20.00
T5	100.00-80.00		10N083	10.63	1	20.00
T6	80.00-60.00		11N076	12.66	1	20.00
T7	60.00-40.00		12NH	14.69	1	20.00
T8	40.00-20.00		13NTB	16.72	1	20.00
T9	20.00-0.00		14NH	18.75	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	180.00-160.00	4.00	X Brace	No	No	0.0000	0.0000
T2	160.00-140.00	4.00	X Brace	No	No	0.0000	0.0000
T3	140.00-120.00	5.00	X Brace	No	No	0.0000	0.0000
T4	120.00-100.00	6.67	X Brace	No	No	0.0000	0.0000
T5	100.00-80.00	6.67	X Brace	No	No	0.0000	0.0000
T6	80.00-60.00	6.67	X Brace	No	No	0.0000	0.0000
T7	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T8	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T9	20.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-160.00	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)
T2 160.00-140.00	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)
T3 140.00-120.00	Pipe	Pipe 2.875" x 0.276" (2.5 XS)	A618-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)
T4 120.00-100.00	Pipe	Pipe 2.875" x 0.276" (2.5 XS)	A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T5 100.00-80.00	Pipe	Pipe 3.5" x 0.300" (3 XS)	A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T6 80.00-60.00	Pipe	Pipe 3.5" x 0.300" (3 XS)	A618-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A572-50 (50 ksi)
T7 60.00-40.00	Pipe	Pipe 4" x 0.318" (3.5 XS)	A618-50 (50 ksi)	Single Angle	L 3 x 3 x 3/8	A572-50 (50 ksi)
T8 40.00-20.00	Pipe	Pipe 4.5" x 0.337" (4 XS)	A618-50 (50 ksi)	Single Angle	L 3 x 3 x 3/8	A572-50 (50 ksi)
T9 20.00-0.00	Pipe	Pipe 4.5" x 0.337" (4 XS)	A618-50 (50 ksi)	Single Angle	L 3.5 x 3.5 x 1/4	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-160.00	Equal Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 180.00-160.00	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T2 160.00-140.00	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T3 140.00-120.00	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T4 120.00-100.00	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T5 100.00-80.00	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T6 80.00-60.00	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T7 60.00-40.00	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T8 40.00-20.00	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T9 20.00-0.00	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 180.00-160.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 160.00-140.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 140.00-120.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 120.00-100.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 100.00-80.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 80.00-60.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 60.00-40.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 40.00-20.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 20.00-0.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	U	Diagonal Net Width Deduct in	U	Top Girt Net Width Deduct in	U	Bottom Girt Net Width Deduct in	U	Mid Girt Net Width Deduct in	U	Long Horizontal Net Width Deduct in	U	Short Horizontal Net Width Deduct in	U
T1 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal Net Width Deduct in	U	Redundant Diagonal Net Width Deduct in	U	Redundant Sub-Diagonal Net Width Deduct in	U	Redundant Sub-Horizontal Net Width Deduct in	U	Redundant Vertical Net Width Deduct in	U	Redundant Hip Net Width Deduct in	U	Redundant Hip Diagonal Net Width Deduct in	U
T1 180.00-160.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 160.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T3 140.00-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 120.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 100.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 40.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180.00-160.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T2 160.00-140.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T3 140.00-120.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T4 120.00-100.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T5 100.00-80.00	Flange	0.8750 A325N	4	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T6 80.00-60.00	Flange	0.8750 A325N	4	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T7 60.00-40.00	Flange	0.8750 A325N	4	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T8 40.00-20.00	Flange	0.8750 A325N	4	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T9 20.00-0.00	Flange	1.0000 A354-BC	0	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A(1-5/8)	B	No	No	Ar (CaAa)	160.00 - 0.00	0.0000	-0.45	5	3	1.0000 1.9800	1.9800		0.82
1.5" flat Cable Ladder Rail *****	B	No	No	Af (CaAa)	160.00 - 0.00	0.0000	-0.45	2	2	12.0000 0.5000	1.5000		1.80
1.5" flat Cable Ladder Rail *****	B	No	No	Af (CaAa)	131.00 - 0.00	0.0000	0.4	2	2	10.0000 0.5000	1.5000		1.80
CU12PSM9P	A	No	No	Ar (CaAa)	150.00 -	0.0000	0.5	1	1	1.6000	1.6000		2.35

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
6XXX(1-1/2)					0.00								
******													
***													

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
******								
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-160.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	0.000	0.000	1.600	0.000	0.02
		B	0.000	0.000	29.800	0.000	0.15
		C	0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	0.000	0.000	3.200	0.000	0.05
		B	0.000	0.000	35.300	0.000	0.19
		C	0.000	0.000	0.000	0.000	0.00
T4	120.00-100.00	A	0.000	0.000	3.200	0.000	0.05
		B	0.000	0.000	39.800	0.000	0.23
		C	0.000	0.000	0.000	0.000	0.00
T5	100.00-80.00	A	0.000	0.000	3.200	0.000	0.05
		B	0.000	0.000	39.800	0.000	0.23
		C	0.000	0.000	0.000	0.000	0.00
T6	80.00-60.00	A	0.000	0.000	3.200	0.000	0.05
		B	0.000	0.000	39.800	0.000	0.23
		C	0.000	0.000	0.000	0.000	0.00
T7	60.00-40.00	A	0.000	0.000	3.200	0.000	0.05
		B	0.000	0.000	39.800	0.000	0.23
		C	0.000	0.000	0.000	0.000	0.00
T8	40.00-20.00	A	0.000	0.000	3.200	0.000	0.05
		B	0.000	0.000	39.800	0.000	0.23
		C	0.000	0.000	0.000	0.000	0.00
T9	20.00-0.00	A	0.000	0.000	3.200	0.000	0.05
		B	0.000	0.000	39.800	0.000	0.23
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-160.00	A	1.001	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	0.989	0.000	0.000	3.578	0.000	0.05

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	49.639	0.000	0.62
		C		0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	0.975	0.000	0.000	7.100	0.000	0.11
		B		0.000	0.000	59.217	0.000	0.73
		C		0.000	0.000	0.000	0.000	0.00
T4	120.00-100.00	A	0.959	0.000	0.000	7.035	0.000	0.11
		B		0.000	0.000	66.855	0.000	0.82
		C		0.000	0.000	0.000	0.000	0.00
T5	100.00-80.00	A	0.940	0.000	0.000	6.959	0.000	0.11
		B		0.000	0.000	66.416	0.000	0.81
		C		0.000	0.000	0.000	0.000	0.00
T6	80.00-60.00	A	0.916	0.000	0.000	6.866	0.000	0.10
		B		0.000	0.000	65.879	0.000	0.79
		C		0.000	0.000	0.000	0.000	0.00
T7	60.00-40.00	A	0.886	0.000	0.000	6.744	0.000	0.10
		B		0.000	0.000	65.181	0.000	0.77
		C		0.000	0.000	0.000	0.000	0.00
T8	40.00-20.00	A	0.842	0.000	0.000	6.568	0.000	0.10
		B		0.000	0.000	64.165	0.000	0.74
		C		0.000	0.000	0.000	0.000	0.00
T9	20.00-0.00	A	0.754	0.000	0.000	6.217	0.000	0.09
		B		0.000	0.000	62.149	0.000	0.68
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.00-160.00	0.0000	0.0000	0.0000	0.0000
T2	160.00-140.00	1.0219	-13.1503	0.9458	-12.6403
T3	140.00-120.00	3.3223	-14.7748	3.3470	-14.2426
T4	120.00-100.00	5.2474	-15.1860	5.5514	-14.9129
T5	100.00-80.00	5.6046	-16.4656	6.0201	-16.4038
T6	80.00-60.00	4.9620	-15.0639	5.7268	-16.0630
T7	60.00-40.00	6.0452	-18.2590	6.8892	-19.2829
T8	40.00-20.00	6.2783	-19.0936	7.1965	-20.2875
T9	20.00-0.00	6.0762	-18.7540	7.0854	-20.2603

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	1	LDF7-50A(1-5/8)	140.00 - 160.00	0.6000	0.6000
T2	3	1.5" flat Cable Ladder Rail	140.00 - 160.00	0.6000	0.6000
T2	13	CU12PSM9P6XXX(1-1/2)	140.00 - 150.00	0.6000	0.6000
T3	1	LDF7-50A(1-5/8)	120.00 - 140.00	0.6000	0.6000
T3	3	1.5" flat Cable Ladder Rail	120.00 - 140.00	0.6000	0.6000
T3	11	1.5" flat Cable Ladder Rail	120.00 - 131.00	0.6000	0.6000
T3	13	CU12PSM9P6XXX(1-1/2)	120.00 - 140.00	0.6000	0.6000
T4	1	LDF7-50A(1-5/8)	100.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	3	1.5" flat Cable Ladder Rail	120.00 100.00 - 120.00	0.6000	0.6000
T4	11	1.5" flat Cable Ladder Rail	120.00 100.00 - 120.00	0.6000	0.6000
T4	13	CU12PSM9P6XXX(1-1/2)	120.00 100.00 - 120.00	0.6000	0.6000
T5	1	LDF7-50A(1-5/8)	120.00 80.00 - 100.00	0.6000	0.6000
T5	3	1.5" flat Cable Ladder Rail	100.00 80.00 - 100.00	0.6000	0.6000
T5	11	1.5" flat Cable Ladder Rail	100.00 80.00 - 100.00	0.6000	0.6000
T5	13	CU12PSM9P6XXX(1-1/2)	100.00 80.00 - 100.00	0.6000	0.6000
T6	1	LDF7-50A(1-5/8)	100.00 60.00 - 80.00	0.6000	0.6000
T6	3	1.5" flat Cable Ladder Rail	80.00 60.00 - 80.00	0.6000	0.6000
T6	11	1.5" flat Cable Ladder Rail	80.00 60.00 - 80.00	0.6000	0.6000
T6	13	CU12PSM9P6XXX(1-1/2)	80.00 60.00 - 80.00	0.6000	0.6000
T7	1	LDF7-50A(1-5/8)	80.00 40.00 - 60.00	0.6000	0.6000
T7	3	1.5" flat Cable Ladder Rail	60.00 40.00 - 60.00	0.6000	0.6000
T7	11	1.5" flat Cable Ladder Rail	60.00 40.00 - 60.00	0.6000	0.6000
T7	13	CU12PSM9P6XXX(1-1/2)	60.00 40.00 - 60.00	0.6000	0.6000
T8	1	LDF7-50A(1-5/8)	60.00 20.00 - 40.00	0.6000	0.6000
T8	3	1.5" flat Cable Ladder Rail	40.00 20.00 - 40.00	0.6000	0.6000
T8	11	1.5" flat Cable Ladder Rail	40.00 20.00 - 40.00	0.6000	0.6000
T8	13	CU12PSM9P6XXX(1-1/2)	40.00 20.00 - 40.00	0.6000	0.6000
T9	1	LDF7-50A(1-5/8)	0.00 - 20.00	0.6000	0.6000
T9	3	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T9	11	1.5" flat Cable Ladder Rail	0.00 - 20.00	0.6000	0.6000
T9	13	CU12PSM9P6XXX(1-1/2)	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pipe Mount [PM 601-1]	B	From Leg	2.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	1.32 1.58 1.84	1.32 1.58 1.84	0.07 0.08 0.09
***** *** 160 R *** (3) MX06FRO660-03 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	6.54 7.06 7.60	5.55 6.05 6.57	0.10 0.18 0.28

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
(3) MX06FRO660-03 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.54 7.06 7.60	5.55 6.05 6.57	0.10 0.18 0.28
(3) RFV01U-D1A	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12
RFV01U-D1A	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12
RVZDC-6627-PF-48	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.30	2.51 2.73 2.95	0.03 0.06 0.10
Sector Mount [SM 703-1]	A	None		0.0000	160.00	No Ice 1/2" Ice 1" Ice	12.30 17.20 22.10	10.20 14.30 18.40	0.35 0.49 0.63
Sector Mount [SM 703-1]	C	None		0.0000	160.00	No Ice 1/2" Ice 1" Ice	12.30 17.20 22.10	10.20 14.30 18.40	0.35 0.49 0.63
***** ***** *****									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
RDIDC-9181-PF-48	A	From Leg	4.00	0.0000	150.00	No Ice	2.31	1.29	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	2.50	1.45	0.04
			0.00			1" Ice	2.70	1.61	0.06
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.0000	150.00	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.0000	150.00	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.0000	150.00	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
Commscope MTC3975083 (3)	C	None		0.0000	150.00	No Ice	23.85	23.85	1.26
						1/2" Ice	34.12	34.12	1.80
						1" Ice	44.39	44.39	2.35
****** ***									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft^2	Weight K
***										

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

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 160	Leg	Max Tension	15	1.56	0.01	-0.01
			Max. Compression	10	-2.14	0.04	0.00
			Max. Mx	2	-2.03	0.04	-0.01
			Max. My	24	-0.12	-0.00	0.07
			Max. Vy	22	-0.03	0.00	0.00
			Max. Vx	4	-0.06	0.00	0.00
		Diagonal	Max Tension	7	0.35	0.00	0.00
			Max. Compression	18	-0.40	0.00	0.00
			Max. Mx	37	-0.08	0.01	0.00
			Max. My	4	0.24	0.00	-0.00
			Max. Vy	37	0.01	0.01	0.00
			Max. Vx	4	0.00	0.00	0.00
		Top Girt	Max Tension	6	0.02	0.00	0.00
			Max. Compression	3	-0.02	0.00	0.00
			Max. Mx	26	-0.00	-0.00	0.00
			Max. My	26	-0.00	0.00	0.00
			Max. Vy	26	0.01	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
T2	160 - 140	Leg	Max Tension	23	13.60	0.02	-0.01
			Max. Compression	2	-18.25	0.04	-0.00
			Max. Mx	14	6.71	0.39	0.00
			Max. My	8	-2.62	-0.02	-0.39
			Max. Vy	14	-0.79	-0.03	0.02
			Max. Vx	6	1.00	0.02	-0.06
		Diagonal	Max Tension	16	2.35	0.00	0.00
			Max. Compression	16	-2.32	0.00	0.00
			Max. Mx	27	0.26	0.01	0.00
			Max. My	4	-1.80	-0.00	0.00
			Max. Vy	37	0.01	0.01	0.00
			Max. Vx	4	-0.00	0.00	0.00
T3	140 - 120	Leg	Max Tension	7	26.95	-0.05	0.01
			Max. Compression	2	-32.81	0.07	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	19	-31.83	0.07	-0.02
			Max. My	20	-2.69	-0.00	-0.11
			Max. Vy	14	0.03	-0.07	0.00
			Max. Vx	20	0.06	-0.00	-0.11
		Diagonal	Max Tension	16	2.32	0.00	0.00
			Max. Compression	16	-2.32	0.00	0.00
			Max. Mx	37	0.29	0.01	-0.00
			Max. My	29	-0.52	0.01	0.00
			Max. Vy	37	0.01	0.01	-0.00
			Max. Vx	29	-0.00	0.00	0.00
T4	120 - 100	Leg	Max Tension	7	38.43	-0.07	0.02
			Max. Compression	2	-45.43	0.07	-0.01
			Max. Mx	19	-44.48	0.08	-0.02
			Max. My	20	-3.05	-0.01	-0.11
			Max. Vy	19	-0.03	0.07	-0.02
			Max. Vx	20	0.05	-0.01	-0.11
		Diagonal	Max Tension	16	2.50	0.00	0.00
			Max. Compression	18	-2.55	0.00	0.00
			Max. Mx	37	0.47	0.03	0.00
			Max. My	30	-0.53	0.02	0.00
			Max. Vy	37	0.02	0.03	0.00
			Max. Vx	30	-0.00	0.00	0.00
T5	100 - 80	Leg	Max Tension	7	49.76	-0.08	0.01
			Max. Compression	2	-58.20	0.16	-0.01
			Max. Mx	18	-58.08	0.16	-0.03
			Max. My	8	-4.43	0.00	0.16
			Max. Vy	19	-0.05	0.16	-0.03
			Max. Vx	8	-0.06	0.00	0.16
		Diagonal	Max Tension	16	2.67	0.00	0.00
			Max. Compression	18	-2.71	0.00	0.00
			Max. Mx	37	0.34	0.04	-0.00
			Max. My	36	0.50	0.03	-0.00
			Max. Vy	37	0.03	0.04	-0.00
			Max. Vx	36	0.00	0.00	0.00
T6	80 - 60	Leg	Max Tension	7	60.76	-0.09	0.01
			Max. Compression	18	-71.17	0.20	-0.03
			Max. Mx	18	-71.17	0.20	-0.03
			Max. My	8	-4.52	0.00	0.16
			Max. Vy	19	-0.05	0.19	-0.03
			Max. Vx	20	0.06	0.00	-0.16
		Diagonal	Max Tension	16	3.01	0.00	0.00
			Max. Compression	18	-3.15	0.00	0.00
			Max. Mx	29	0.35	0.08	0.01
			Max. My	37	-0.77	0.07	-0.01
			Max. Vy	29	0.05	0.08	0.01
			Max. Vx	37	0.00	0.00	0.00
T7	60 - 40	Leg	Max Tension	7	70.64	-0.15	0.04
			Max. Compression	18	-83.62	0.25	-0.03
			Max. Mx	18	-83.62	0.25	-0.03
			Max. My	20	-4.76	-0.02	-0.33
			Max. Vy	19	-0.06	0.25	-0.03
			Max. Vx	8	0.10	-0.02	0.33
		Diagonal	Max Tension	16	3.62	0.00	0.00
			Max. Compression	18	-3.83	0.00	0.00
			Max. Mx	29	0.62	0.16	-0.02
			Max. My	30	0.72	0.15	0.02
			Max. Vy	29	0.08	0.16	-0.02
			Max. Vx	30	-0.00	0.00	0.00
T8	40 - 20	Leg	Max Tension	7	81.12	-0.17	0.03
			Max. Compression	18	-97.19	0.27	-0.02
			Max. Mx	18	-97.19	0.27	-0.02
			Max. My	8	-7.32	-0.03	0.42
			Max. Vy	18	-0.06	0.27	-0.02
			Max. Vx	8	0.11	-0.03	0.42
		Diagonal	Max Tension	16	3.84	0.00	0.00
			Max. Compression	18	-4.14	0.00	0.00
			Max. Mx	28	0.63	0.19	-0.02
			Max. My	30	0.77	0.18	0.02
			Max. Vy	28	0.08	0.19	-0.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T9	20 - 0	Leg	Max. Vx	30	-0.00	0.00	0.00
			Max Tension	7	91.43	-0.21	0.04
			Max. Compression	18	-110.53	0.00	0.00
			Max. Mx	18	-104.06	0.27	-0.02
			Max. My	8	-8.25	-0.03	0.50
			Max. Vy	14	-0.08	-0.22	0.02
			Max. Vx	8	0.12	-0.03	0.50
		Diagonal	Max Tension	18	4.13	0.00	0.00
			Max. Compression	18	-4.56	0.00	0.00
			Max. Mx	28	0.63	0.20	-0.03
			Max. My	30	0.79	0.19	0.03
			Max. Vy	28	0.08	0.20	-0.03
			Max. Vx	30	-0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	113.94	10.86	-6.87
	Max. H_x	18	113.94	10.86	-6.87
	Max. H_z	7	-94.00	-8.94	5.74
	Min. Vert	7	-94.00	-8.94	5.74
	Min. H_x	7	-94.00	-8.94	5.74
	Min. H_z	18	113.94	10.86	-6.87
Leg B	Max. Vert	10	111.21	-10.58	-6.75
	Max. H_x	23	-91.01	8.66	5.61
	Max. H_z	23	-91.01	8.66	5.61
	Min. Vert	23	-91.01	8.66	5.61
	Min. H_x	10	111.21	-10.58	-6.75
	Min. H_z	10	111.21	-10.58	-6.75
Leg A	Max. Vert	2	113.40	0.09	12.64
	Max. H_x	20	7.93	2.02	0.68
	Max. H_z	2	113.40	0.09	12.64
	Min. Vert	15	-91.22	-0.09	-10.37
	Min. H_x	9	6.88	-2.02	0.58
	Min. H_z	15	-91.22	-0.09	-10.37

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	19.14	-0.00	-0.00	-12.07	-1.35	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	22.97	0.06	-20.12	-1903.08	-11.18	3.31
0.9 Dead+1.0 Wind 0 deg - No Ice	17.22	0.06	-20.12	-1899.46	-10.78	3.31
1.2 Dead+1.0 Wind 30 deg - No Ice	22.97	9.55	-16.56	-1589.22	-909.17	-8.10
0.9 Dead+1.0 Wind 30 deg - No Ice	17.22	9.55	-16.56	-1585.60	-908.76	-8.10
1.2 Dead+1.0 Wind 60 deg - No Ice	22.97	16.22	-9.44	-918.30	-1545.13	-18.18
0.9 Dead+1.0 Wind 60 deg - No Ice	17.22	16.22	-9.44	-914.68	-1544.73	-18.18
1.2 Dead+1.0 Wind 90 deg - No Ice	22.97	19.00	-0.06	-24.04	-1800.16	-22.18
0.9 Dead+1.0 Wind 90 deg - No Ice	17.22	19.00	-0.06	-20.42	-1799.75	-22.18
1.2 Dead+1.0 Wind 120 deg	22.97	17.32	10.01	921.54	-1620.03	-19.33

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
- No Ice						
0.9 Dead+1.0 Wind 120 deg - No Ice	17.22	17.32	10.01	925.16	-1619.62	-19.33
1.2 Dead+1.0 Wind 150 deg - No Ice	22.97	8.63	15.09	1435.22	-825.94	-8.07
0.9 Dead+1.0 Wind 150 deg - No Ice	17.22	8.63	15.09	1438.84	-825.53	-8.07
1.2 Dead+1.0 Wind 180 deg - No Ice	22.97	-0.06	18.38	1741.34	7.94	-3.31
0.9 Dead+1.0 Wind 180 deg - No Ice	17.22	-0.06	18.38	1744.96	8.34	-3.31
1.2 Dead+1.0 Wind 210 deg - No Ice	22.97	-9.55	16.56	1560.27	905.92	8.10
0.9 Dead+1.0 Wind 210 deg - No Ice	17.22	-9.55	16.56	1563.89	906.33	8.10
1.2 Dead+1.0 Wind 240 deg - No Ice	22.97	-17.73	10.31	955.73	1656.87	18.18
0.9 Dead+1.0 Wind 240 deg - No Ice	17.22	-17.73	10.31	959.35	1657.28	18.18
1.2 Dead+1.0 Wind 270 deg - No Ice	22.97	-19.00	0.06	-4.92	1796.91	22.18
0.9 Dead+1.0 Wind 270 deg - No Ice	17.22	-19.00	0.06	-1.30	1797.31	22.18
1.2 Dead+1.0 Wind 300 deg - No Ice	22.97	-15.81	-9.14	-884.11	1501.79	19.33
0.9 Dead+1.0 Wind 300 deg - No Ice	17.22	-15.81	-9.14	-880.49	1502.20	19.33
1.2 Dead+1.0 Wind 330 deg - No Ice	22.97	-8.63	-15.09	-1464.18	822.69	8.07
0.9 Dead+1.0 Wind 330 deg - No Ice	17.22	-8.63	-15.09	-1460.56	823.09	8.07
1.2 Dead+1.0 Ice	43.84	-0.00	-0.00	-40.24	-4.99	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	43.84	0.01	-4.89	-514.31	-6.74	1.05
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	43.84	2.38	-4.13	-444.74	-238.21	-1.68
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	43.84	4.08	-2.37	-273.28	-404.60	-4.28
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	43.84	4.75	-0.01	-41.98	-468.41	-5.50
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	43.84	4.21	2.43	195.29	-412.38	-5.03
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	43.84	2.18	3.80	335.81	-219.77	-2.44
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	43.84	-0.01	4.61	413.54	-3.25	-1.05
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	43.84	-2.38	4.13	364.26	228.23	1.68
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	43.84	-4.32	2.51	202.95	412.18	4.28
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	43.84	-4.75	0.01	-38.49	458.43	5.50
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	43.84	-3.97	-2.30	-265.62	384.82	5.03
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	43.84	-2.18	-3.80	-416.28	209.78	2.44
Dead+Wind 0 deg - Service	19.14	0.02	-5.30	-509.07	-3.87	0.87
Dead+Wind 30 deg - Service	19.14	2.51	-4.36	-426.47	-240.18	-2.13
Dead+Wind 60 deg - Service	19.14	4.27	-2.48	-249.91	-407.54	-4.79
Dead+Wind 90 deg - Service	19.14	5.00	-0.02	-14.58	-474.65	-5.84
Dead+Wind 120 deg - Service	19.14	4.56	2.63	234.26	-427.25	-5.09
Dead+Wind 150 deg - Service	19.14	2.27	3.97	369.43	-218.28	-2.12
Dead+Wind 180 deg - Service	19.14	-0.02	4.84	449.99	1.16	-0.87
Dead+Wind 210 deg - Service	19.14	-2.51	4.36	402.34	237.47	2.13
Dead+Wind 240 deg -	19.14	-4.67	2.71	243.25	435.09	4.79

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Service						
Dead+Wind 270 deg - Service	19.14	-5.00	0.02	-9.55	471.94	5.84
Dead+Wind 300 deg - Service	19.14	-4.16	-2.40	-240.92	394.28	5.09
Dead+Wind 330 deg - Service	19.14	-2.27	-3.97	-393.57	215.57	2.12

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-19.14	0.00	0.00	19.14	0.00	0.000%
2	0.06	-22.97	-20.12	-0.06	22.97	20.12	0.000%
3	0.06	-17.22	-20.12	-0.06	17.22	20.12	0.000%
4	9.55	-22.97	-16.56	-9.55	22.97	16.56	0.000%
5	9.55	-17.22	-16.56	-9.55	17.22	16.56	0.000%
6	16.22	-22.97	-9.44	-16.22	22.97	9.44	0.000%
7	16.22	-17.22	-9.44	-16.22	17.22	9.44	0.000%
8	19.00	-22.97	-0.06	-19.00	22.97	0.06	0.000%
9	19.00	-17.22	-0.06	-19.00	17.22	0.06	0.000%
10	17.32	-22.97	10.01	-17.32	22.97	-10.01	0.000%
11	17.32	-17.22	10.01	-17.32	17.22	-10.01	0.000%
12	8.63	-22.97	15.09	-8.63	22.97	-15.09	0.000%
13	8.63	-17.22	15.09	-8.63	17.22	-15.09	0.000%
14	-0.06	-22.97	18.38	0.06	22.97	-18.38	0.000%
15	-0.06	-17.22	18.38	0.06	17.22	-18.38	0.000%
16	-9.55	-22.97	16.56	9.55	22.97	-16.56	0.000%
17	-9.55	-17.22	16.56	9.55	17.22	-16.56	0.000%
18	-17.73	-22.97	10.31	17.73	22.97	-10.31	0.000%
19	-17.73	-17.22	10.31	17.73	17.22	-10.31	0.000%
20	-19.00	-22.97	0.06	19.00	22.97	-0.06	0.000%
21	-19.00	-17.22	0.06	19.00	17.22	-0.06	0.000%
22	-15.81	-22.97	-9.14	15.81	22.97	9.14	0.000%
23	-15.81	-17.22	-9.14	15.81	17.22	9.14	0.000%
24	-8.63	-22.97	-15.09	8.63	22.97	15.09	0.000%
25	-8.63	-17.22	-15.09	8.63	17.22	15.09	0.000%
26	0.00	-43.84	0.00	0.00	43.84	0.00	0.000%
27	0.01	-43.84	-4.89	-0.01	43.84	4.89	0.000%
28	2.38	-43.84	-4.13	-2.38	43.84	4.13	0.000%
29	4.08	-43.84	-2.37	-4.08	43.84	2.37	0.000%
30	4.75	-43.84	-0.01	-4.75	43.84	0.01	0.000%
31	4.21	-43.84	2.43	-4.21	43.84	-2.43	0.000%
32	2.18	-43.84	3.80	-2.18	43.84	-3.80	0.000%
33	-0.01	-43.84	4.61	0.01	43.84	-4.61	0.000%
34	-2.38	-43.84	4.13	2.38	43.84	-4.13	0.000%
35	-4.32	-43.84	2.51	4.32	43.84	-2.51	0.000%
36	-4.75	-43.84	0.01	4.75	43.84	-0.01	0.000%
37	-3.97	-43.84	-2.30	3.97	43.84	2.30	0.000%
38	-2.18	-43.84	-3.80	2.18	43.84	3.80	0.000%
39	0.02	-19.14	-5.30	-0.02	19.14	5.30	0.000%
40	2.51	-19.14	-4.36	-2.51	19.14	4.36	0.000%
41	4.27	-19.14	-2.48	-4.27	19.14	2.48	0.000%
42	5.00	-19.14	-0.02	-5.00	19.14	0.02	0.000%
43	4.56	-19.14	2.63	-4.56	19.14	-2.63	0.000%
44	2.27	-19.14	3.97	-2.27	19.14	-3.97	0.000%
45	-0.02	-19.14	4.84	0.02	19.14	-4.84	0.000%
46	-2.51	-19.14	4.36	2.51	19.14	-4.36	0.000%
47	-4.67	-19.14	2.71	4.67	19.14	-2.71	0.000%
48	-5.00	-19.14	0.02	5.00	19.14	-0.02	0.000%
49	-4.16	-19.14	-2.40	4.16	19.14	2.40	0.000%
50	-2.27	-19.14	-3.97	2.27	19.14	3.97	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	4.247	39	0.2114	0.0549
T2	160 - 140	3.363	39	0.2087	0.0569
T3	140 - 120	2.526	39	0.1768	0.0375
T4	120 - 100	1.814	39	0.1505	0.0240
T5	100 - 80	1.230	39	0.1184	0.0159
T6	80 - 60	0.764	39	0.0926	0.0082
T7	60 - 40	0.421	39	0.0649	0.0048
T8	40 - 20	0.192	39	0.0411	0.0033
T9	20 - 0	0.054	39	0.0207	0.0018

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Pipe Mount [PM 601-1]	39	4.247	0.2114	0.0549	539570
160.00	(3) MX06FRO660-03 w/ Mount Pipe	39	3.363	0.2087	0.0569	123952
150.00	MX08FRO665-21 w/ Mount Pipe	39	2.933	0.1943	0.0485	52709

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	15.696	2	0.7702	0.2088
T2	160 - 140	12.488	19	0.7580	0.2161
T3	140 - 120	9.432	19	0.6529	0.1425
T4	120 - 100	6.794	19	0.5583	0.0912
T5	100 - 80	4.618	19	0.4413	0.0605
T6	80 - 60	2.873	19	0.3462	0.0312
T7	60 - 40	1.584	19	0.2432	0.0183
T8	40 - 20	0.724	19	0.1543	0.0125
T9	20 - 0	0.207	19	0.0779	0.0069

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Pipe Mount [PM 601-1]	2	15.696	0.7702	0.2088	221169
160.00	(3) MX06FRO660-03 w/ Mount Pipe	19	12.488	0.7580	0.2161	47581
150.00	MX08FRO665-21 w/ Mount Pipe	19	10.925	0.7108	0.1842	16051

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325N	0.6250	4	0.39	20.34	0.019	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	0.35	3.47	0.102	1.05	Member Block Shear
		Top Girt	A325N	0.5000	1	0.02	3.47	0.007	1.05	Member Block Shear
T2	160	Leg	A325N	0.6250	4	3.40	20.34	0.167	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	2.35	3.47	0.677	1.05	Member Block Shear
T3	140	Leg	A325N	0.6250	4	6.74	20.34	0.331	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	2.32	3.47	0.669	1.05	Member Block Shear
T4	120	Leg	A325N	0.6250	4	9.61	20.34	0.472	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	2.50	4.13	0.605	1.05	Member Bearing
T5	100	Leg	A325N	0.8750	4	12.44	41.56	0.299	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	2.67	4.13	0.647	1.05	Member Bearing
T6	80	Leg	A325N	0.8750	4	15.19	41.56	0.366	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	3.01	8.78	0.343	1.05	Member Bearing
T7	60	Leg	A325N	0.8750	4	17.66	41.56	0.425	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	3.83	13.81	0.277	1.05	Bolt Shear
T8	40	Leg	A325N	0.8750	4	20.28	41.56	0.488	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	4.14	13.81	0.300	1.05	Bolt Shear
T9	20	Diagonal	A325N	0.6250	1	4.13	11.70	0.353	1.05	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	Pipe 2.375" x 0.154" (2 STD)	20.03	4.01	61.1 K=1.00	1.0745	-2.14	36.81	0.058 [1]
T2	160 - 140	Pipe 2.375" x 0.154" (2 STD)	20.03	4.01	61.1 K=1.00	1.0745	-18.25	36.81	0.496 [1]
T3	140 - 120	Pipe 2.875" x 0.276" (2.5 XS)	20.03	5.01	65.0 K=1.00	2.2535	-32.81	74.43	0.441 [1]
T4	120 - 100	Pipe 2.875" x 0.276" (2.5 XS)	20.03	6.68	86.7 K=1.00	2.2535	-45.43	58.51	0.776 [1]
T5	100 - 80	Pipe 3.5" x 0.300" (3 XS)	20.03	6.68	70.5 K=1.00	3.0159	-58.20	94.34	0.617 [1]
T6	80 - 60	Pipe 3.5" x 0.300" (3 XS)	20.03	6.68	70.5 K=1.00	3.0159	-71.17	94.34	0.754 [1]
T7	60 - 40	Pipe 4" x 0.318" (3.5 XS)	20.03	10.02	92.0 K=1.00	3.6784	-83.62	89.15	0.938 [1]
T8	40 - 20	Pipe 4.5" x 0.337" (4 XS)	20.03	10.02	81.4 K=1.00	4.4074	-97.19	122.17	0.795 [1]
T9	20 - 0	Pipe 4.5" x 0.337" (4 XS)	20.03	10.02	81.4 K=1.00	4.4074	-110.53	122.17	0.905 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L 1.5 x 1.5 x 1/8	5.89	2.85	116.5 K=1.01	0.3594	-0.40	7.42	0.054 [1]
T2	160 - 140	L 1.5 x 1.5 x 1/8	7.51	3.66	148.1 K=1.00	0.3594	-2.20	4.69	0.469 [1]
T3	140 - 120	L 1.5 x 1.5 x 1/8	9.72	4.77	193.1 K=1.00	0.3594	-2.24	2.76	0.811 [1]
T4	120 - 100	L 2 x 2 x 1/8	12.26	6.08	183.7 K=1.00	0.4844	-2.55	4.11	0.619 [1]
T5	100 - 80	L 2 x 2 x 1/8	14.01	6.93	209.1 K=1.00	0.4844	-2.71	3.17	0.856 [1]
T6	80 - 60	KL/R > 200 (C) - 126 L 3 x 3 x 3/16	15.82	7.82	157.3 K=1.00	1.0898	-3.15	12.60	0.250 [1]
T7	60 - 40	L 3 x 3 x 3/8	19.05	9.51	194.4 K=1.00	2.1100	-3.83	15.99	0.239 [1]
T8	40 - 20	L 3 x 3 x 3/8	20.81	10.36	211.8 K=1.00	2.1100	-4.14	13.47	0.307 [1]
T9	20 - 0	KL/R > 200 (C) - 183 L 3.5 x 3.5 x 1/4	22.61	11.26	194.7 K=1.00	1.6900	-4.56	12.76	0.357 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L 1.5 x 1.5 x 1/8	2.50	2.09	102.4 K=1.21	0.3594	-0.02	8.67	0.003 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	Pipe 2.375" x 0.154" (2 STD)	20.03	4.01	61.1	1.0745	1.56	48.35	0.032 [1]
T2	160 - 140	Pipe 2.375" x 0.154" (2 STD)	20.03	4.01	61.1	1.0745	13.60	48.35	0.281 [1]
T3	140 - 120	Pipe 2.875" x 0.276" (2.5 XS)	20.03	5.01	65.0	2.2535	26.95	101.41	0.266 [1]
T4	120 - 100	Pipe 2.875" x 0.276" (2.5 XS)	20.03	6.68	86.7	2.2535	38.43	101.41	0.379 [1]
T5	100 - 80	Pipe 3.5" x 0.300" (3 XS)	20.03	6.68	70.5	3.0159	49.76	135.72	0.367 [1]
T6	80 - 60	Pipe 3.5" x 0.300" (3 XS)	20.03	6.68	70.5	3.0159	60.76	135.72	0.448 [1]
T7	60 - 40	Pipe 4" x 0.318" (3.5 XS)	20.03	10.02	92.0	3.6784	70.64	165.53	0.427 [1]
T8	40 - 20	Pipe 4.5" x 0.337" (4 XS)	20.03	10.02	81.4	4.4074	81.12	198.34	0.409 [1]
T9	20 - 0	Pipe 4.5" x 0.337" (4 XS)	20.03	10.02	81.4	4.4074	91.43	198.34	0.461 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L 1.5 x 1.5 x 1/8	5.89	2.85	76.1	0.2109	0.35	9.18	0.039 [1]
T2	160 - 140	L 1.5 x 1.5 x 1/8	7.17	3.49	92.7	0.2109	2.35	9.18	0.256 [1]
T3	140 - 120	L 1.5 x 1.5 x 1/8	8.45	4.14	109.5	0.2109	2.32	9.18	0.253 [1]
T4	120 - 100	L 2 x 2 x 1/8	12.26	6.08	118.6	0.3047	2.50	13.25	0.189 [1]
T5	100 - 80	L 2 x 2 x 1/8	14.01	6.93	134.7	0.3047	2.67	13.25	0.202 [1]
T6	80 - 60	L 3 x 3 x 3/16	15.82	7.82	101.4	0.7119	3.01	34.71	0.087 [1]
T7	60 - 40	L 3 x 3 x 3/8	19.05	9.51	126.5	1.3716	3.62	66.86	0.054 [1]
T8	40 - 20	L 3 x 3 x 3/8	20.81	10.36	137.7	1.3716	3.84	66.86	0.057 [1]
T9	20 - 0	L 3.5 x 3.5 x 1/4	21.70	10.81	120.2	1.1269	4.13	54.94	0.075 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L 1.5 x 1.5 x 1/8	2.50	2.09	59.4	0.2109	0.02	9.18	0.003 [1]

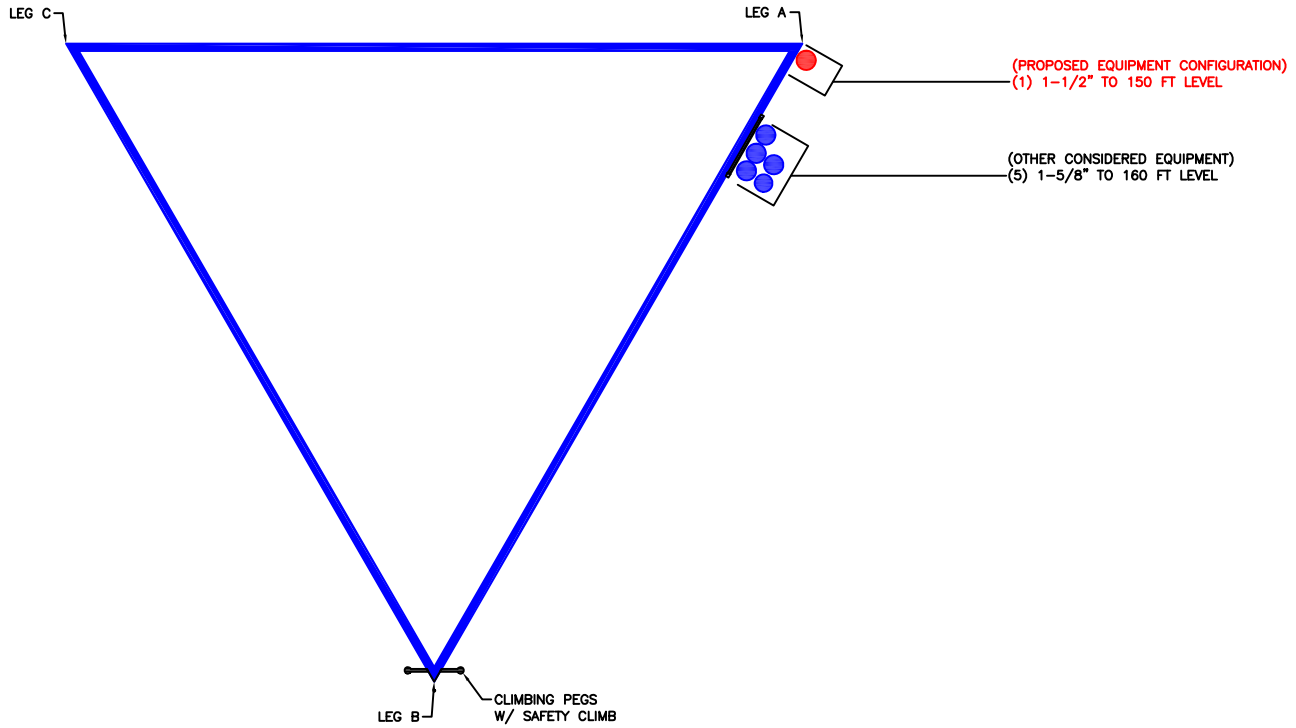
[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	180 - 160	Leg	Pipe 2.375" x 0.154" (2 STD)	2	-2.14	38.65	5.5	Pass
T2	160 - 140	Leg	Pipe 2.375" x 0.154" (2 STD)	39	-18.25	38.65	47.2	Pass
T3	140 - 120	Leg	Pipe 2.875" x 0.276" (2.5 XS)	72	-32.81	78.15	42.0	Pass
T4	120 - 100	Leg	Pipe 2.875" x 0.276" (2.5 XS)	99	-45.43	61.44	73.9	Pass
T5	100 - 80	Leg	Pipe 3.5" x 0.300" (3 XS)	120	-58.20	99.06	58.8	Pass
T6	80 - 60	Leg	Pipe 3.5" x 0.300" (3 XS)	139	-71.17	99.06	71.9	Pass
T7	60 - 40	Leg	Pipe 4" x 0.318" (3.5 XS)	160	-83.62	93.61	89.3	Pass
T8	40 - 20	Leg	Pipe 4.5" x 0.337" (4 XS)	175	-97.19	128.28	75.8	Pass
T9	20 - 0	Leg	Pipe 4.5" x 0.337" (4 XS)	190	-110.53	128.28	86.2	Pass
T1	180 - 160	Diagonal	L 1.5 x 1.5 x 1/8	7	-0.40	7.79	5.2	Pass
T2	160 - 140	Diagonal	L 1.5 x 1.5 x 1/8	45	-2.20	4.92	44.6	Pass
T3	140 - 120	Diagonal	L 1.5 x 1.5 x 1/8	78	-2.24	2.90	77.3	Pass
T4	120 - 100	Diagonal	L 2 x 2 x 1/8	105	-2.55	4.32	59.0	Pass
T5	100 - 80	Diagonal	L 2 x 2 x 1/8	126	-2.71	3.33	81.5	Pass
T6	80 - 60	Diagonal	L 3 x 3 x 3/16	147	-3.15	13.23	23.8	Pass
T7	60 - 40	Diagonal	L 3 x 3 x 3/8	168	-3.83	16.79	22.8	Pass
T8	40 - 20	Diagonal	L 3 x 3 x 3/8	183	-4.14	14.14	29.3	Pass
T9	20 - 0	Diagonal	L 3.5 x 3.5 x 1/4	198	-4.56	13.40	34.0	Pass
T1	180 - 160	Top Girt	L 1.5 x 1.5 x 1/8	4	-0.02	9.10	0.2	Pass
							Summary	
						Leg (T7)	89.3	Pass
						Diagonal (T5)	81.5	Pass
						Top Girt (T1)	0.2	Pass
						Bolt Checks	64.5	Pass
						RATING =	**89.3**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


LEG C
LEG A
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 150 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(5) 1-5/8" TO 160 FT LEVEL
LEG B
CLIMBING PEGS
W/ SAFETY CLIMB

APPENDIX C

ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity

Site Info	
BU #	870694
Site Name	Vest Haven (Burwell Hil
Order #	553442 REV 0

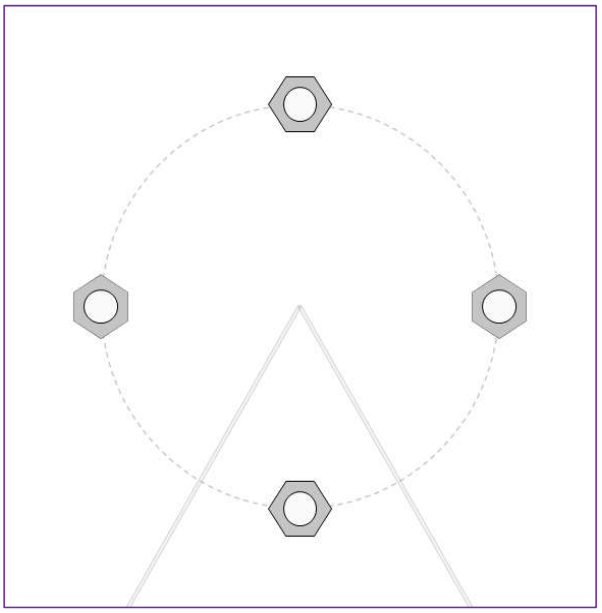
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	113.94	94.00
Shear Force (kips)	12.85	10.62

**TIA-222-H Section 15.5 Applied*

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

**Anchor Rod Eccentricity Applied*



Connection Properties

Anchor Rod Data

(4) 1" ø bolts (A354-BC N; Fy=109 ksi, Fu=125 ksi)

l_{ar} (in): 2

Analysis Results

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

Pu_c = 28.49	ϕPn_c = 77.05	**Stress Rating**
Vu = 3.21	ϕVn = 34.67	**60.4%**
Mu = 4.18	ϕMn = 16.35	**Pass**

Pier and Pad Foundation

BU # :	870694
Site Name:	West Haven (Burw
App. Number:	553442 REV 0

TIA-222 Revision:	H
Tower Type:	Self Support

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

Superstructure Analysis Reactions

Compression, P_{comp}:	113.94	kips
Compression Shear, Vu_comp:	12.85	kips
Uplift, P_{uplift}:	94	kips
Uplift Shear, V_{u_uplift}:	10.62	kips
Tower Height, **H**:	180	ft
Base Face Width, **BW**:	20.78	ft
BP Dist. Above Fdn, bp_{dist}:	3	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	2.5	ft
Ext. Above Grade, **E**:	2.33	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	6	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	8	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	9	ft
Pad Width, W_1:	6	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	6	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	7	
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:	130	pcf
Ultimate Gross Bearing, Qult:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	40	degrees
SPT Blow Count, N_{blows}:	90	
Base Friction, μ:	0.4	
Neglected Depth, **N**:	3.30	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Uplift (kips)	111.66	94.00	**80.2%**	**Pass**
Lateral (Sliding) (kips)	74.61	10.62	**13.6%**	**Pass**
Bearing Pressure (ksf)	22.50	4.74	**20.1%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	314.42	107.04	**32.4%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	167.83	88.46	**50.2%**	**Pass**
Pier Compression (kip)	1335.00	123.31	**8.8%**	**Pass**
*Pad Flexure (kip*ft)*	434.81	29.98	**6.6%**	**Pass**
Pad Shear - 1-way (kips)	188.55	0.00	**0.0%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	869.62	64.22	**7.0%**	**Pass**
Pad Shear - 2-way (Uplift) (ksi)	0.164	0.016	**9.5%**	**Pass**
*Flexural 2-way (Tension) (kip*ft)*	869.62	53.08	**5.8%**	**Pass**

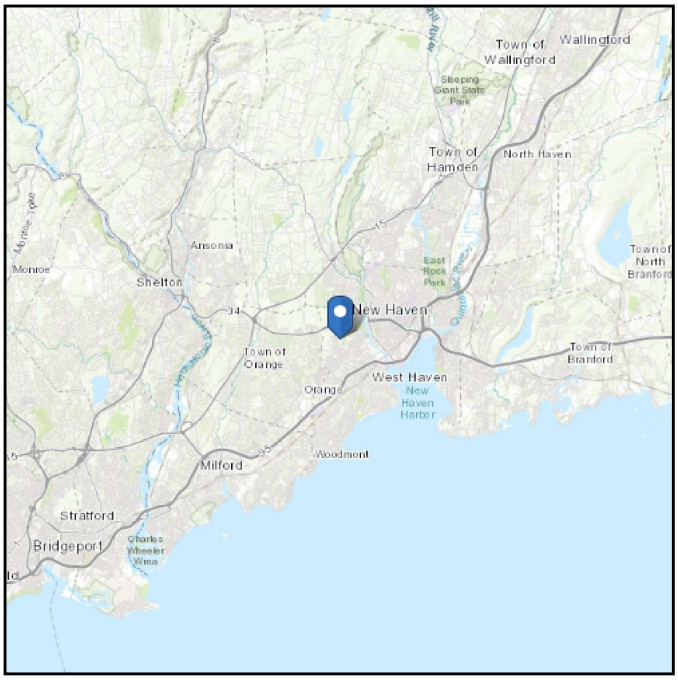
**Rating per TIA-222-H Section 15.5*

Structural Rating*:	**50.2%**
Soil Rating*:	**80.2%**

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Elevation:**	276.44 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.295944
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-72.973222



Wind

Results:

Wind Speed:	120 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	91 Vmph
100-year MRI	98 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Tue Sep 07 2021

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

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

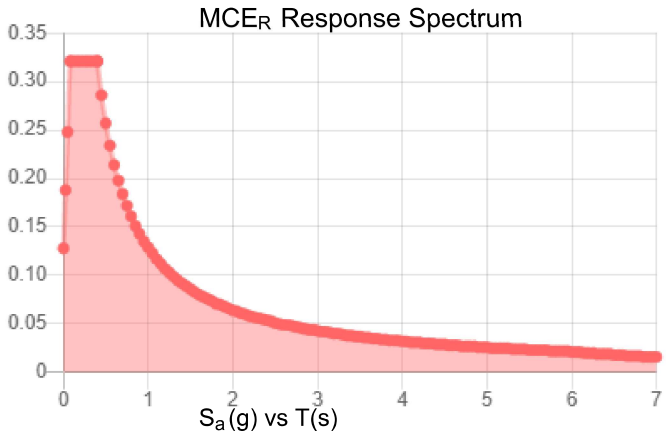
Seismic

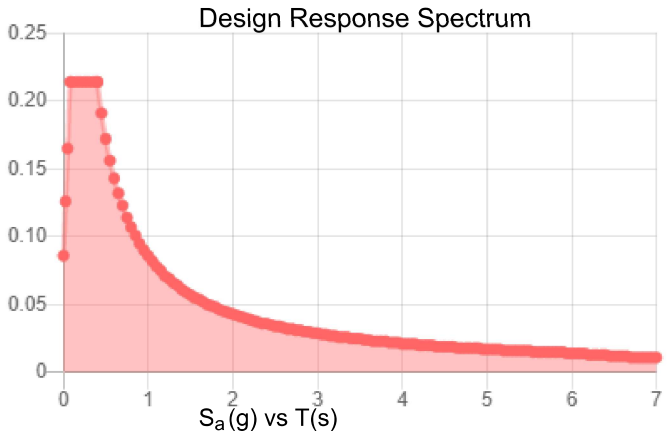
Site Soil Class: D - Default (see Section 11.4.3)

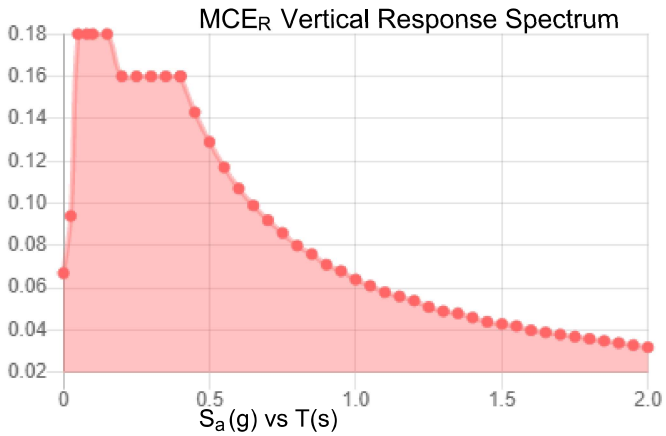
Results:

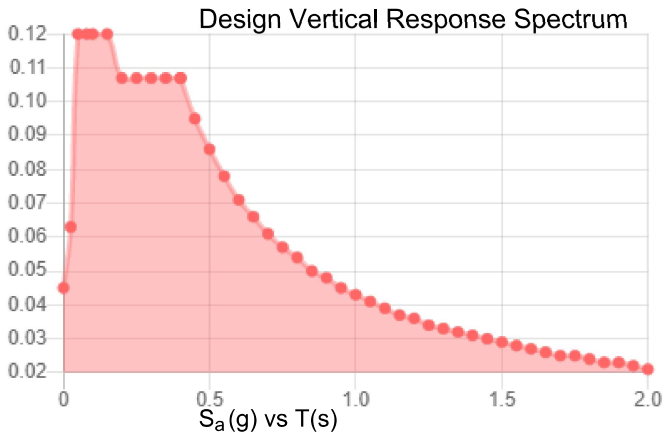
S_S :	0.2	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.112
F_v :	2.4	PGA_M :	0.177
S_{MS} :	0.321	F_{PGA} :	1.575
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.214	C_v :	0.701

Seismic Design Category B









Data Accessed: Tue Sep 07 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 07 2021

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

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

Exhibit E

Mount Analysis

Date: **November 4, 2021**

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

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

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	**DISH Network Dish 5G**	
	Carrier Site Number:	BOHVN00160A
	Carrier Site Name:	CT-CCI-T-870694
Crown Castle Designation:	**Crown Castle BU Number:**	870694
	Crown Castle Site Name:	West Haven (Burwell Hill)
	Crown Castle JDE Job Number:	645687
	Crown Castle Order Number:	553442 Rev. 1
Engineering Firm Designation:	**Trylon Report Designation:**	195637
Site Data:	**2014 and 240 Burwell Road, West Haven, New Haven County, CT, 06516 Latitude 41°17'45.40" Longitude -72°58'23.60"**	
Structure Information:	**Tower Height & Type:**	**180.0 ft Self Support**
	Mount Elevation:	**150.0 ft**
	Mount Type:	**8.0 ft Sector Frame**

Dear Michael McWilliams,

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

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

Sector Frame **Sufficient***

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

This analysis utilizes an ultimate 3-second gust wind speed of 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: Vlad Barbu

Respectfully Submitted by:
Cliff Abernathy, P.E.

11/04/2021

TABLE OF CONTENTS

1) INTRODUCTION

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

2) ANALYSIS CRITERIA

Building Code:	2015 IBC/2018 CTSBC
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:	0.188
Seismic S_1:	0.062
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
150.0	150.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Sector Frame **[Commscope MTC3975083]**
		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	553442, Rev. 1	CCI Sites
Mount Manufacturer Drawings	Commscope	MTC3975083	Trylon

3.1) Analysis Method

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

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

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

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Mount Pipe(s)	MP1	150.0	23.9	Pass
	Horizontal(s)	TH		38.5	Pass
	Standoff(s)	SA4		36.0	Pass
	Bracing(s)	B3		29.0	Pass
	Vertical(s)	V4		23.5	Pass
	Tieback(s)	MP25		10.3	Pass
	Mount Connection(s)	-		54.2	Pass

Structure Rating (max from all components) =	54.2%

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

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb)[3]	Notes
N56A	Proposed	1,495.7	Leg	Pipe 2.375"x0.154"(2STD)	1,840.5	1

Notes:
1) Tieback connection point is within 25% of either end of the connected tower member
2) Tieback connection point is NOT within 25% of either end of the connected tower member
3) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

4.1) Recommendations

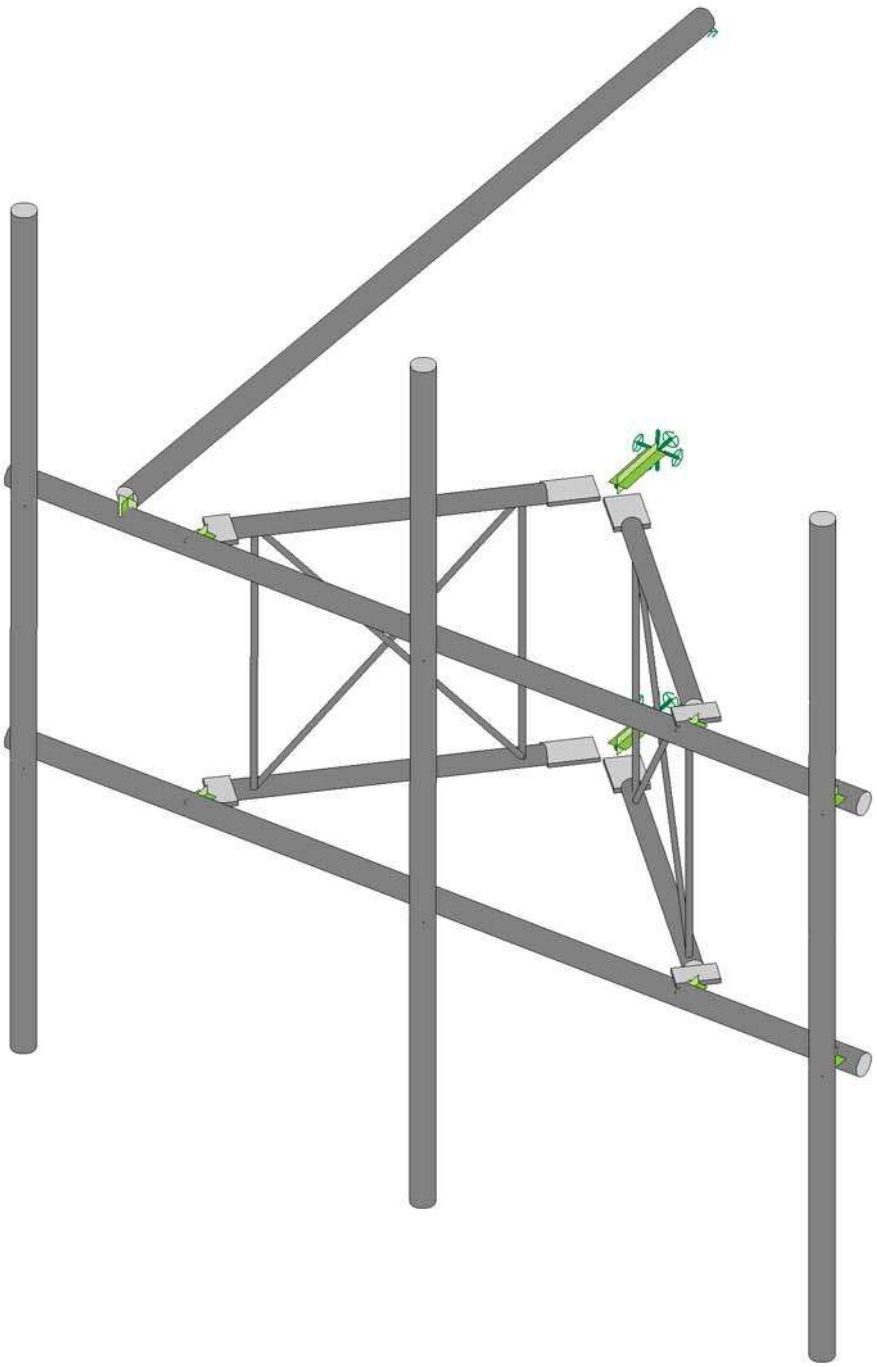
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope, MTC3975083.

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

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

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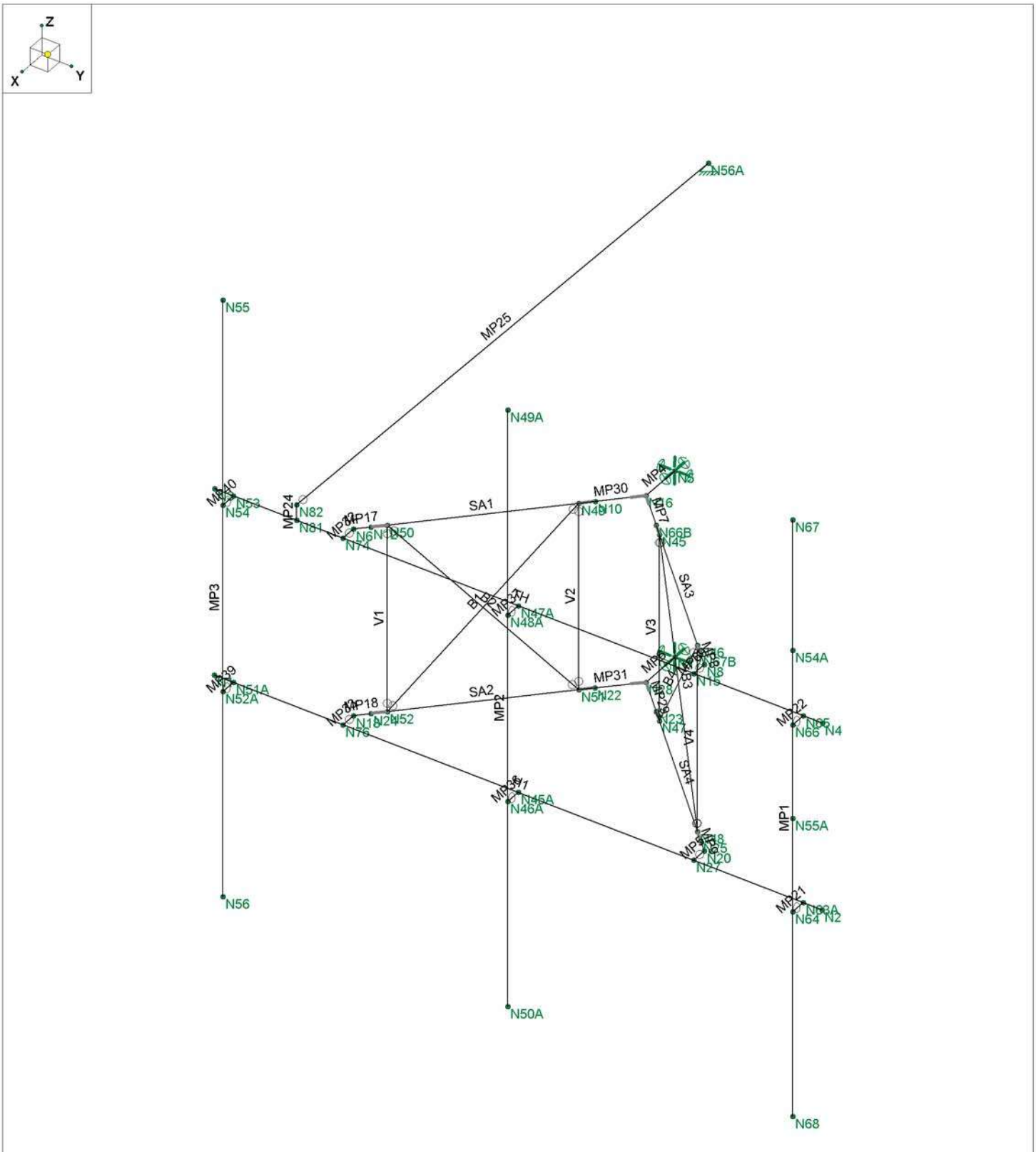

Envelope Only Solution

Trylon	870694	SK - 2
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APPENDIX B

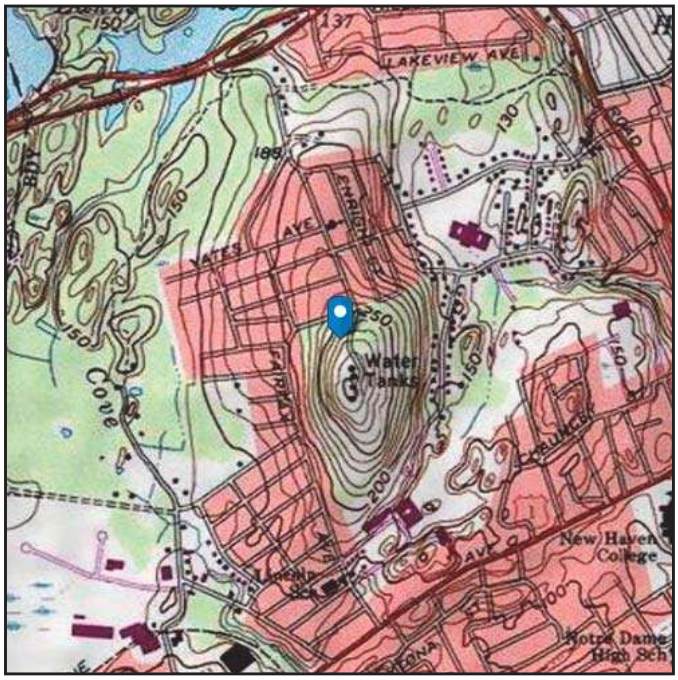
SOFTWARE INPUT CALCULATIONS

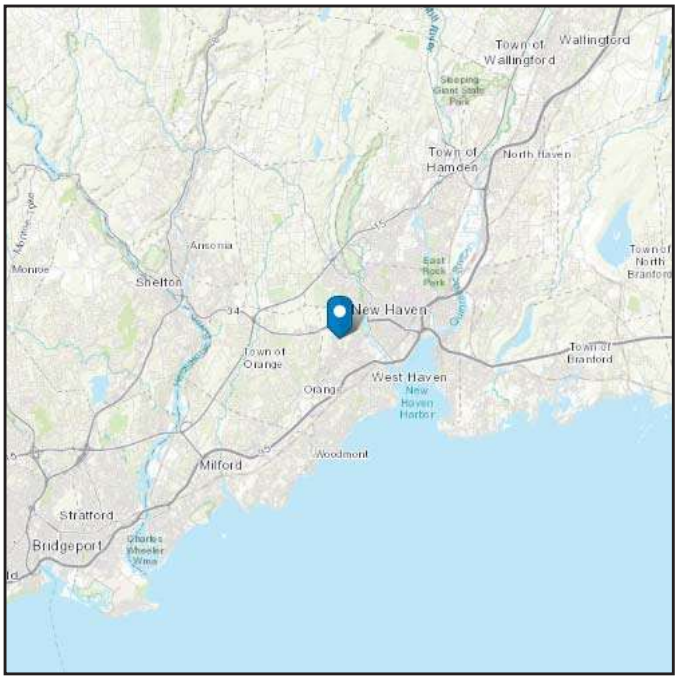
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 276.44 ft (NAVD 88)
Latitude: 41.295944
Longitude: -72.973222





Ice

Results:

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

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

Date Accessed: Wed Nov 03 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:	195637
Carrier Site ID:	BOHVN00160A
Carrier Site Name:	CT-CCI-T-870694

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

STRUCTURE DETAILS		
Mount Type:	Sector Frame	--
Mount Elevation:	150.0	ft.
Number of Sectors:	3	--
Structure Type:	Self Support Tower	--
Structure Height:	180.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default	--
Ground Elevation:	276.44	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):	1.11	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	41.75	psf
Ground Elevation Factor (K_e):	0.99	--

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}):	41.75	psf
Mount Ice Thickness (t_{iz}):	1.75	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	75.14	psf
Round Member Pressure:	45.08	psf
Ice Wind Pressure:	7.56	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.188	g
1 Second Accel (S_1):	0.062	g
Short Period Des. (S_{DS}):	0.20	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.10	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

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

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

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

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

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

EQUIPMENT LOADING

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
MX08FRO665-21	1	150	No Ice	8.01	3.21	82.50
--	--	--	w/ Ice	9.62	4.62	287.00
TA08025-B604	1	150	No Ice	8.01	3.21	63.90
--	--	--	w/ Ice	9.62	4.62	70.60
TA08025-B605	1	150	No Ice	8.01	3.21	75.00
--	--	--	w/ Ice	9.62	4.62	75.21
RDIDC-9181-PF-48	1	150	No Ice	2.01	1.17	21.85
--	--	--	w/ Ice	2.45	1.53	74.12
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
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			No Ice			
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			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
MX08FRO665-21	1	150	1.00	1.11	0.95	1.75	41.75	6.68
TA08025-B604	1	150	1.00	1.11	0.95	1.75	41.75	6.68
TA08025-B605	1	150	1.00	1.11	0.95	1.75	41.75	6.68
RDIDC-9181-PF-48	1	150	1.00	1.11	0.95	1.75	41.75	6.68

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
MX08FRO665-21	1	No Ice	300.94	165.69	255.86	120.60	255.86	165.69
--	--	w/ Ice	57.84	35.30	50.32	27.79	50.32	35.30
TA08025-B604	1	No Ice	300.94	165.69	255.86	120.60	255.86	165.69
--	--	w/ Ice	57.84	35.30	50.32	27.79	50.32	35.30
TA08025-B605	1	No Ice	300.94	165.69	255.86	120.60	255.86	165.69
--	--	w/ Ice	57.84	35.30	50.32	27.79	50.32	35.30
RDIDC-9181-PF-48	1	No Ice	75.59	51.81	67.66	43.89	67.66	51.81
--	--	w/ Ice	14.71	10.57	13.33	9.19	13.33	10.57
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
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		No Ice						
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		No Ice						
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		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

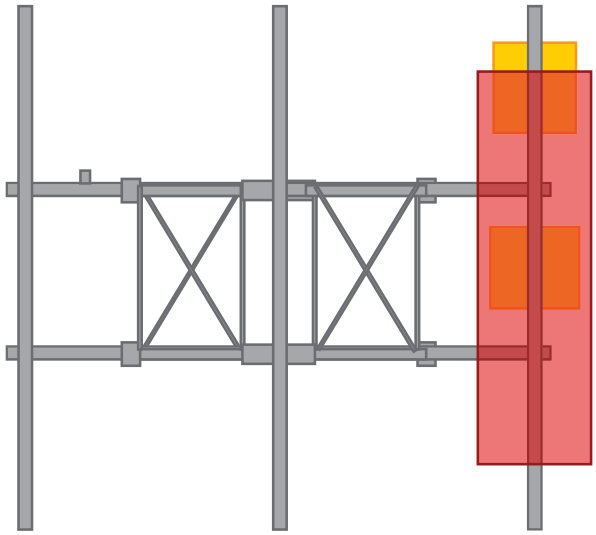
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

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

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	*Qty.*	*Elevation [ft]*	*Weight [lbs]*	F_p [lbs]
MX08FRO665-21	1	150	82.5	9.93
TA08025-B604	1	150	63.9	7.69
TA08025-B605	1	150	75	9.02
RDIDC-9181-PF-48	1	150	21.85	2.63

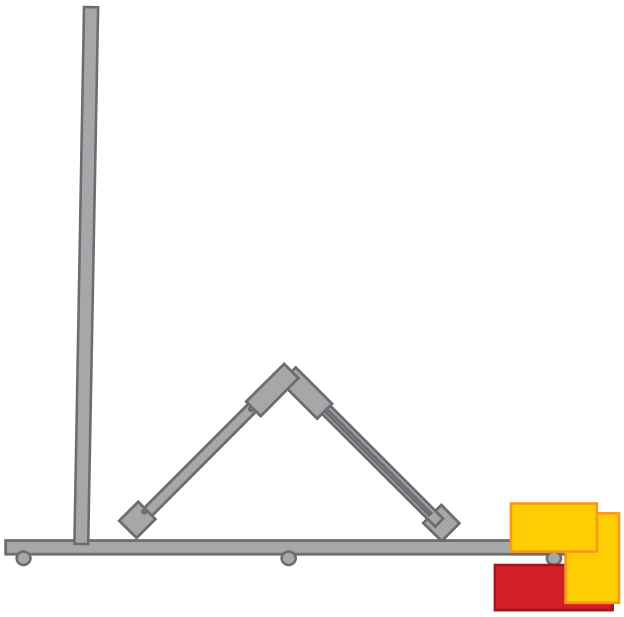
ELEVATION VIEW



MP3 MP2 MP1 MP8 MP1

*Elevation View Shows Alpha Sector Only

PLAN VIEW



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

Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
MX08FRO665-21	1	150	MP1	0
TA08025-B604	1	150	MP1	90
TA08025-B605	1	150	MP1	90
RDIDC-9181-PF-48	1	150	MP1	0

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

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

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
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 7-16
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	A500 Gr. C-46	29000	11154	.3	.65	.49	46	1.5	62	1.2
9	A529 GR.50	29000	11154	.3	.65	.49	50	1.5	65	1.2

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33	45
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50	65

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	MT-651-96	Pipe 2.375"x0.12"	Beam	Pipe	A500 Gr. C-46	Typical	.85	.542	.542	1.084
2	PIPE 1.5	PIPE 1.5	Beam	Pipe	A500 Gr. C-46	Typical	.749	.293	.293	.586
3	SR 5/8	SR 5/8	Beam	BAR	A529 GR.50	Typical	.307	.007	.007	.015
4	3.5x0.5	3.5x0.5	Beam	RECT	A529 GR.50	Typical	1.75	.036	1.786	.133
5	4.25x0.5	4.25x0.5	Beam	RECT	A529 GR.50	Typical	2.125	.044	3.199	.164

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
6	SR 1/2"	SR 1/2"	Beam	BAR	A529 GR.50	Typical	.196	.003	.003	.006

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1	162T125-18	Beam	None	A653 SS Gr33	Typical	.078	.013	.042	9e-6

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	N5	Reaction	Reaction	Reaction	Reaction	Reaction	
2	N17	Reaction	Reaction	Reaction	Reaction	Reaction	
3	N56A	Reaction	Reaction	Reaction			

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL			-1		5			
2	Structure Wind X	WLX						39		
3	Structure Wind Y	WLY						39		
4	Wind Load 0 AZI	WLX					10			
5	Wind Load 30 AZI	None					10			
6	Wind Load 45 AZI	None					10			
7	Wind Load 60 AZI	None					10			
8	Wind Load 90 AZI	WLY					10			
9	Wind Load 120 AZI	None					10			
10	Wind Load 135 AZI	None					10			
11	Wind Load 150 AZI	None					10			
12	Ice Weight	OL1					5	39		
13	Ice Structure Wind X	OL2						39		
14	Ice Structure Wind Y	OL3						39		
15	Ice Wind Load 0 AZI	OL2					10			
16	Ice Wind Load 30 AZI	None					10			
17	Ice Wind Load 45 AZI	None					10			
18	Ice Wind Load 60 AZI	None					10			
19	Ice Wind Load 90 AZI	OL3					10			
20	Ice Wind Load 120 AZI	None					10			
21	S	None					10			
22	Ice Wind Load 150 AZI	None					10			
23	Seismic Load X	ELX	-.12				5			
24	Seismic Load Y	ELY		-.12			5			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
39	Maintenance Load 12 (Lm)	None					1			
49	Maintenance Load 22 (Lm)	None					1			
52	Maintenance Load 25 (Lm)	None					1			

Load Combinations

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
1	1.4DL	Yes	Y		DL	1.4																				
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1														
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1														
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1														
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1														
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1														
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1														
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.707	3	.707	10	1														
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.866	3	.5	11	1														
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1														
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1														
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1														
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1														
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1														
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1														
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1														
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1														
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1														
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1														
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1														
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1														
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1														
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1														
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.707	3	.707	10	1														
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.866	3	.5	11	1														
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1														
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1														
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1														
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1														
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1														
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.866	9	-1														
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.707	10	-1														
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1														
34	1.2DL + 1DLi + 1WLi 0 AZI	Yes	Y		DL	1.2	O...	1	13	1	14		15	1												
35	1.2DL + 1DLi + 1WLi 30 AZI	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1												
36	1.2DL + 1DLi + 1WLi 45 AZI	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1												
37	1.2DL + 1DLi + 1WLi 60 AZI	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1WLi 90 AZI	Yes	Y		DL	1.2	O...	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1WLi 120 A..	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DLi + 1WLi 135 A..	Yes	Y		DL	1.2	O...	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DLi + 1WLi 150 A..	Yes	Y		DL	1.2	O...	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DLi + 1WLi 180 A..	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1												
43	1.2DL + 1DLi + 1WLi 210 A..	Yes	Y		DL	1.2	O...	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DLi + 1WLi 225 A..	Yes	Y		DL	1.2	O...	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1DLi + 1WLi 240 A..	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DLi + 1WLi 270 A..	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1												
47	1.2DL + 1DLi + 1WLi 300 A..	Yes	Y		DL	1.2	O...	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DLi + 1WLi 315 A..	Yes	Y		DL	1.2	O...	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DLi + 1WLi 330 A..	Yes	Y		DL	1.2	O...	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	1.24	23	1	24																	
51	(1.2+0.2Sds)DL + 1E 30 AZI	Yes	Y		DL	1.24	23	.866	24	.5																

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
52	(1.2+0.2Sds)DL + 1E 45 AZI	Yes	Y		DL	1.24	23	.707	24	.707																
53	(1.2+0.2Sds)DL + 1E 60 AZI	Yes	Y		DL	1.24	23	.5	24	.866																
54	(1.2+0.2Sds)DL + 1E 90 AZI	Yes	Y		DL	1.24	23		24	1																
55	(1.2+0.2Sds)DL + 1E 120 A...	Yes	Y		DL	1.24	23	-.5	24	.866																
56	(1.2+0.2Sds)DL + 1E 135 A...	Yes	Y		DL	1.24	23	-.707	24	.707																
57	(1.2+0.2Sds)DL + 1E 150 A...	Yes	Y		DL	1.24	23	-.866	24	.5																
58	(1.2+0.2Sds)DL + 1E 180 A...	Yes	Y		DL	1.24	23	-1	24																	
59	(1.2+0.2Sds)DL + 1E 210 A...	Yes	Y		DL	1.24	23	-.866	24	-.5																
60	(1.2+0.2Sds)DL + 1E 225 A...	Yes	Y		DL	1.24	23	-.707	24	-.707																
61	(1.2+0.2Sds)DL + 1E 240 A...	Yes	Y		DL	1.24	23	-.5	24	-.866																
62	(1.2+0.2Sds)DL + 1E 270 A...	Yes	Y		DL	1.24	23		24	-1																
63	(1.2+0.2Sds)DL + 1E 300 A...	Yes	Y		DL	1.24	23	.5	24	-.866																
64	(1.2+0.2Sds)DL + 1E 315 A...	Yes	Y		DL	1.24	23	.707	24	-.707																
65	(1.2+0.2Sds)DL + 1E 330 A...	Yes	Y		DL	1.24	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	.86	23	1	24																	
67	(0.9-0.2Sds)DL + 1E 30 AZI	Yes	Y		DL	.86	23	.866	24	.5																
68	(0.9-0.2Sds)DL + 1E 45 AZI	Yes	Y		DL	.86	23	.707	24	.707																
69	(0.9-0.2Sds)DL + 1E 60 AZI	Yes	Y		DL	.86	23	.5	24	.866																
70	(0.9-0.2Sds)DL + 1E 90 AZI	Yes	Y		DL	.86	23		24	1																
71	(0.9-0.2Sds)DL + 1E 120 AZI	Yes	Y		DL	.86	23	-.5	24	.866																
72	(0.9-0.2Sds)DL + 1E 135 AZI	Yes	Y		DL	.86	23	-.707	24	.707																
73	(0.9-0.2Sds)DL + 1E 150 AZI	Yes	Y		DL	.86	23	-.866	24	.5																
74	(0.9-0.2Sds)DL + 1E 180 AZI	Yes	Y		DL	.86	23	-1	24																	
75	(0.9-0.2Sds)DL + 1E 210 AZI	Yes	Y		DL	.86	23	-.866	24	-.5																
76	(0.9-0.2Sds)DL + 1E 225 AZI	Yes	Y		DL	.86	23	-.707	24	-.707																
77	(0.9-0.2Sds)DL + 1E 240 AZI	Yes	Y		DL	.86	23	-.5	24	-.866																
78	(0.9-0.2Sds)DL + 1E 270 AZI	Yes	Y		DL	.86	23		24	-1																
79	(0.9-0.2Sds)DL + 1E 300 AZI	Yes	Y		DL	.86	23	.5	24	-.866																
80	(0.9-0.2Sds)DL + 1E 315 AZI	Yes	Y		DL	.86	23	.707	24	-.707																
81	(0.9-0.2Sds)DL + 1E 330 AZI	Yes	Y		DL	.86	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 + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	28	1.5	2	.058	3		4	.058												
86	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	28	1.5	2	.05	3	.029	5	.058												
87	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	28	1.5	2	.041	3	.041	6	.058												
88	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	28	1.5	2	.029	3	.05	7	.058												
89	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	28	1.5	2		3	.058	8	.058												
90	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	28	1.5	2	-.029	3	.05	9	.058												
91	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	28	1.5	2	-.041	3	.041	10	.058												
92	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	28	1.5	2	-.05	3	.029	11	.058												
93	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	28	1.5	2	-.058	3		4	-.058												
94	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	28	1.5	2	-.05	3	-.029	5	-.058												
95	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	28	1.5	2	-.041	3	-.041	6	-.058												
96	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	28	1.5	2	-.029	3	-.05	7	-.058												
97	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	28	1.5	2		3	-.058	8	-.058												
98	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	28	1.5	2	.029	3	-.05	9	-.058												
99	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	28	1.5	2	.041	3	-.041	10	-.058												
100	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	28	1.5	2	.05	3	-.029	11	-.058												
101	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	29	1.5	2	.058	3		4	.058												
102	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	29	1.5	2	.05	3	.029	5	.058												
103	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	29	1.5	2	.041	3	.041	6	.058												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
104	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	29	1.5	2	.029	3	.05	7	.058												
105	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	29	1.5	2		3	.058	8	.058												
106	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	29	1.5	2	-.029	3	.05	9	.058												
107	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	29	1.5	2	-.041	3	.041	10	.058												
108	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	29	1.5	2	-.05	3	.029	11	.058												
109	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	29	1.5	2	-.058	3		4	-.058												
110	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	29	1.5	2	-.05	3	-.029	5	-.058												
111	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	29	1.5	2	-.041	3	-.041	6	-.058												
112	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	29	1.5	2	-.029	3	-.05	7	-.058												
113	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	29	1.5	2		3	-.058	8	-.058												
114	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	29	1.5	2	.029	3	-.05	9	-.058												
115	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	29	1.5	2	.041	3	-.041	10	-.058												
116	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	29	1.5	2	.05	3	-.029	11	-.058												
117	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	30	1.5	2	.058	3		4	.058												
118	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	30	1.5	2	.05	3	.029	5	.058												
119	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	30	1.5	2	.041	3	.041	6	.058												
120	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	30	1.5	2	.029	3	.05	7	.058												
121	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	30	1.5	2		3	.058	8	.058												
122	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	30	1.5	2	-.029	3	.05	9	.058												
123	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	30	1.5	2	-.041	3	.041	10	.058												
124	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	30	1.5	2	-.05	3	.029	11	.058												
125	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	30	1.5	2	-.058	3		4	-.058												
126	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	30	1.5	2	-.05	3	-.029	5	-.058												
127	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	30	1.5	2	-.041	3	-.041	6	-.058												
128	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	30	1.5	2	-.029	3	-.05	7	-.058												
129	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	30	1.5	2		3	-.058	8	-.058												
130	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	30	1.5	2	.029	3	-.05	9	-.058												
131	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	30	1.5	2	.041	3	-.041	10	-.058												
132	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	30	1.5	2	.05	3	-.029	11	-.058												
133	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	31	1.5	2	.058	3		4	.058												
134	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	31	1.5	2	.05	3	.029	5	.058												
135	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	31	1.5	2	.041	3	.041	6	.058												
136	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	31	1.5	2	.029	3	.05	7	.058												
137	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	31	1.5	2		3	.058	8	.058												
138	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	31	1.5	2	-.029	3	.05	9	.058												
139	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	31	1.5	2	-.041	3	.041	10	.058												
140	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	31	1.5	2	-.05	3	.029	11	.058												
141	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	31	1.5	2	-.058	3		4	-.058												
142	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	31	1.5	2	-.05	3	-.029	5	-.058												
143	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	31	1.5	2	-.041	3	-.041	6	-.058												
144	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	31	1.5	2	-.029	3	-.05	7	-.058												
145	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	31	1.5	2		3	-.058	8	-.058												
146	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	31	1.5	2	.029	3	-.05	9	-.058												
147	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	31	1.5	2	.041	3	-.041	10	-.058												
148	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	31	1.5	2	.05	3	-.029	11	-.058												
149	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	32	1.5	2	.058	3		4	.058												
150	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	32	1.5	2	.05	3	.029	5	.058												
151	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	32	1.5	2	.041	3	.041	6	.058												
152	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	32	1.5	2	.029	3	.05	7	.058												
153	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	32	1.5	2		3	.058	8	.058												
154	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	32	1.5	2	-.029	3	.05	9	.058												
155	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	32	1.5	2	-.041	3	.041	10	.058												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
156	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	32	1.5	2	-.05	3	.029	11	.058												
157	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	32	1.5	2	-.058	3		4	-.058												
158	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	32	1.5	2	-.05	3	-.029	5	-.058												
159	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	32	1.5	2	-.041	3	-.041	6	-.058												
160	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	32	1.5	2	-.029	3	-.05	7	-.058												
161	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	32	1.5	2		3	-.058	8	-.058												
162	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	32	1.5	2	.029	3	-.05	9	-.058												
163	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	32	1.5	2	.041	3	-.041	10	-.058												
164	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	32	1.5	2	.05	3	-.029	11	-.058												
165	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	33	1.5	2	.058	3		4	.058												
166	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	33	1.5	2	.05	3	.029	5	.058												
167	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	33	1.5	2	.041	3	.041	6	.058												
168	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	33	1.5	2	.029	3	.05	7	.058												
169	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	33	1.5	2		3	.058	8	.058												
170	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	33	1.5	2	-.029	3	.05	9	.058												
171	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	33	1.5	2	-.041	3	.041	10	.058												
172	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	33	1.5	2	-.05	3	.029	11	.058												
173	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	33	1.5	2	-.058	3		4	-.058												
174	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	33	1.5	2	-.05	3	-.029	5	-.058												
175	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	33	1.5	2	-.041	3	-.041	6	-.058												
176	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	33	1.5	2	-.029	3	-.05	7	-.058												
177	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	33	1.5	2		3	-.058	8	-.058												
178	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	33	1.5	2	.029	3	-.05	9	-.058												
179	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	33	1.5	2	.041	3	-.041	10	-.058												
180	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	33	1.5	2	.05	3	-.029	11	-.058												
181	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	34	1.5	2	.058	3		4	.058												
182	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	34	1.5	2	.05	3	.029	5	.058												
183	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	34	1.5	2	.041	3	.041	6	.058												
184	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	34	1.5	2	.029	3	.05	7	.058												
185	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	34	1.5	2		3	.058	8	.058												
186	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	34	1.5	2	-.029	3	.05	9	.058												
187	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	34	1.5	2	-.041	3	.041	10	.058												
188	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	.029	11	.058												
189	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	34	1.5	2	-.058	3		4	-.058												
190	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	-.029	5	-.058												
191	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	34	1.5	2	-.041	3	-.041	6	-.058												
192	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	34	1.5	2	-.029	3	-.05	7	-.058												
193	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	34	1.5	2		3	-.058	8	-.058												
194	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	34	1.5	2	.029	3	-.05	9	-.058												
195	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	34	1.5	2	.041	3	-.041	10	-.058												
196	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	34	1.5	2	.05	3	-.029	11	-.058												
197	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	35	1.5	2	.058	3		4	.058												
198	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	35	1.5	2	.05	3	.029	5	.058												
199	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	35	1.5	2	.041	3	.041	6	.058												
200	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	35	1.5	2	.029	3	.05	7	.058												
201	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	35	1.5	2		3	.058	8	.058												
202	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	35	1.5	2	-.029	3	.05	9	.058												
203	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	35	1.5	2	-.041	3	.041	10	.058												
204	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	.029	11	.058												
205	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	35	1.5	2	-.058	3		4	-.058												
206	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	-.029	5	-.058												
207	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	35	1.5	2	-.041	3	-.041	6	-.058												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
208	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	35	1.5	2	-.029	3	-.05	7	-.058												
209	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	35	1.5	2		3	-.058	8	-.058												
210	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	35	1.5	2	.029	3	-.05	9	-.058												
211	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	35	1.5	2	.041	3	-.041	10	-.058												
212	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	35	1.5	2	.05	3	-.029	11	-.058												
213	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	36	1.5	2	.058	3		4	.058												
214	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	36	1.5	2	.05	3	.029	5	.058												
215	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	36	1.5	2	.041	3	.041	6	.058												
216	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	36	1.5	2	.029	3	.05	7	.058												
217	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	36	1.5	2		3	.058	8	.058												
218	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	36	1.5	2	-.029	3	.05	9	.058												
219	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	36	1.5	2	-.041	3	.041	10	.058												
220	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	36	1.5	2	-.05	3	.029	11	.058												
221	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	36	1.5	2	-.058	3		4	-.058												
222	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	36	1.5	2	-.05	3	-.029	5	-.058												
223	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	36	1.5	2	-.041	3	-.041	6	-.058												
224	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	36	1.5	2	-.029	3	-.05	7	-.058												
225	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	36	1.5	2		3	-.058	8	-.058												
226	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	36	1.5	2	.029	3	-.05	9	-.058												
227	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	36	1.5	2	.041	3	-.041	10	-.058												
228	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	36	1.5	2	.05	3	-.029	11	-.058												
229	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	37	1.5	2	.058	3		4	.058												
230	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	37	1.5	2	.05	3	.029	5	.058												
231	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	37	1.5	2	.041	3	.041	6	.058												
232	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	37	1.5	2	.029	3	.05	7	.058												
233	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	37	1.5	2		3	.058	8	.058												
234	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	37	1.5	2	-.029	3	.05	9	.058												
235	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	37	1.5	2	-.041	3	.041	10	.058												
236	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	37	1.5	2	-.05	3	.029	11	.058												
237	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	37	1.5	2	-.058	3		4	-.058												
238	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	37	1.5	2	-.05	3	-.029	5	-.058												
239	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	37	1.5	2	-.041	3	-.041	6	-.058												
240	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	37	1.5	2	-.029	3	-.05	7	-.058												
241	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	37	1.5	2		3	-.058	8	-.058												
242	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	37	1.5	2	.029	3	-.05	9	-.058												
243	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	37	1.5	2	.041	3	-.041	10	-.058												
244	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	37	1.5	2	.05	3	-.029	11	-.058												
245	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	38	1.5	2	.058	3		4	.058												
246	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	38	1.5	2	.05	3	.029	5	.058												
247	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	38	1.5	2	.041	3	.041	6	.058												
248	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	38	1.5	2	.029	3	.05	7	.058												
249	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	38	1.5	2		3	.058	8	.058												
250	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	38	1.5	2	-.029	3	.05	9	.058												
251	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	38	1.5	2	-.041	3	.041	10	.058												
252	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	38	1.5	2	-.05	3	.029	11	.058												
253	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	38	1.5	2	-.058	3		4	-.058												
254	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	38	1.5	2	-.05	3	-.029	5	-.058												
255	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	38	1.5	2	-.041	3	-.041	6	-.058												
256	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	38	1.5	2	-.029	3	-.05	7	-.058												
257	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	38	1.5	2		3	-.058	8	-.058												
258	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	38	1.5	2	.029	3	-.05	9	-.058												
259	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	38	1.5	2	.041	3	-.041	10	-.058												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
260	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	38	1.5	2	.05	3	-.029	11	-.058												
261	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	39	1.5	2	.058	3		4	.058												
262	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	39	1.5	2	.05	3	.029	5	.058												
263	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	39	1.5	2	.041	3	.041	6	.058												
264	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	39	1.5	2	.029	3	.05	7	.058												
265	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	39	1.5	2		3	.058	8	.058												
266	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	39	1.5	2	-.029	3	.05	9	.058												
267	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	39	1.5	2	-.041	3	.041	10	.058												
268	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	39	1.5	2	-.05	3	.029	11	.058												
269	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	39	1.5	2	-.058	3		4	-.058												
270	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	39	1.5	2	-.05	3	-.029	5	-.058												
271	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	39	1.5	2	-.041	3	-.041	6	-.058												
272	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	39	1.5	2	-.029	3	-.05	7	-.058												
273	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	39	1.5	2		3	-.058	8	-.058												
274	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	39	1.5	2	.029	3	-.05	9	-.058												
275	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	39	1.5	2	.041	3	-.041	10	-.058												
276	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	39	1.5	2	.05	3	-.029	11	-.058												
277	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	40	1.5	2	.058	3		4	.058												
278	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	40	1.5	2	.05	3	.029	5	.058												
279	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	40	1.5	2	.041	3	.041	6	.058												
280	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	40	1.5	2	.029	3	.05	7	.058												
281	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	40	1.5	2		3	.058	8	.058												
282	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	40	1.5	2	-.029	3	.05	9	.058												
283	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	40	1.5	2	-.041	3	.041	10	.058												
284	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	40	1.5	2	-.05	3	.029	11	.058												
285	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	40	1.5	2	-.058	3		4	-.058												
286	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	40	1.5	2	-.05	3	-.029	5	-.058												
287	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	40	1.5	2	-.041	3	-.041	6	-.058												
288	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	40	1.5	2	-.029	3	-.05	7	-.058												
289	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	40	1.5	2		3	-.058	8	-.058												
290	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	40	1.5	2	.029	3	-.05	9	-.058												
291	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	40	1.5	2	.041	3	-.041	10	-.058												
292	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	40	1.5	2	.05	3	-.029	11	-.058												
293	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	41	1.5	2	.058	3		4	.058												
294	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	41	1.5	2	.05	3	.029	5	.058												
295	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	41	1.5	2	.041	3	.041	6	.058												
296	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	41	1.5	2	.029	3	.05	7	.058												
297	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	41	1.5	2		3	.058	8	.058												
298	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	41	1.5	2	-.029	3	.05	9	.058												
299	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	41	1.5	2	-.041	3	.041	10	.058												
300	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	41	1.5	2	-.05	3	.029	11	.058												
301	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	41	1.5	2	-.058	3		4	-.058												
302	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	41	1.5	2	-.05	3	-.029	5	-.058												
303	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	41	1.5	2	-.041	3	-.041	6	-.058												
304	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	41	1.5	2	-.029	3	-.05	7	-.058												
305	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	41	1.5	2		3	-.058	8	-.058												
306	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	41	1.5	2	.029	3	-.05	9	-.058												
307	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	41	1.5	2	.041	3	-.041	10	-.058												
308	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	41	1.5	2	.05	3	-.029	11	-.058												
309	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	42	1.5	2	.058	3		4	.058												
310	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	42	1.5	2	.05	3	.029	5	.058												
311	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	42	1.5	2	.041	3	.041	6	.058												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
312	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	42	1.5	2	.029	3	.05	7	.058														
313	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	42	1.5	2		3	.058	8	.058														
314	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	42	1.5	2	-.029	3	.05	9	.058														
315	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	42	1.5	2	-.041	3	.041	10	.058														
316	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	42	1.5	2	-.05	3	.029	11	.058														
317	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	42	1.5	2	-.058	3		4	-.058														
318	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	42	1.5	2	-.05	3	-.029	5	-.058														
319	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	42	1.5	2	-.041	3	-.041	6	-.058														
320	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	42	1.5	2	-.029	3	-.05	7	-.058														
321	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	42	1.5	2		3	-.058	8	-.058														
322	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	42	1.5	2	.029	3	-.05	9	-.058														
323	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	42	1.5	2	.041	3	-.041	10	-.058														
324	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	42	1.5	2	.05	3	-.029	11	-.058														
325	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	43	1.5	2	.058	3		4	.058														
326	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	43	1.5	2	.05	3	.029	5	.058														
327	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	43	1.5	2	.041	3	.041	6	.058														
328	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	43	1.5	2	.029	3	.05	7	.058														
329	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	43	1.5	2		3	.058	8	.058														
330	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	43	1.5	2	-.029	3	.05	9	.058														
331	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	43	1.5	2	-.041	3	.041	10	.058														
332	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	43	1.5	2	-.05	3	.029	11	.058														
333	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	43	1.5	2	-.058	3		4	-.058														
334	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	43	1.5	2	-.05	3	-.029	5	-.058														
335	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	43	1.5	2	-.041	3	-.041	6	-.058														
336	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	43	1.5	2	-.029	3	-.05	7	-.058														
337	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	43	1.5	2		3	-.058	8	-.058														
338	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	43	1.5	2	.029	3	-.05	9	-.058														
339	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	43	1.5	2	.041	3	-.041	10	-.058														
340	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	43	1.5	2	.05	3	-.029	11	-.058														
341	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	44	1.5	2	.058	3		4	.058														
342	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	44	1.5	2	.05	3	.029	5	.058														
343	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	44	1.5	2	.041	3	.041	6	.058														
344	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	44	1.5	2	.029	3	.05	7	.058														
345	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	44	1.5	2		3	.058	8	.058														
346	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	44	1.5	2	-.029	3	.05	9	.058														
347	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	44	1.5	2	-.041	3	.041	10	.058														
348	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	44	1.5	2	-.05	3	.029	11	.058														
349	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	44	1.5	2	-.058	3		4	-.058														
350	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	44	1.5	2	-.05	3	-.029	5	-.058														
351	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	44	1.5	2	-.041	3	-.041	6	-.058														
352	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	44	1.5	2	-.029	3	-.05	7	-.058														
353	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	44	1.5	2		3	-.058	8	-.058														
354	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	44	1.5	2	.029	3	-.05	9	-.058														
355	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	44	1.5	2	.041	3	-.041	10	-.058														
356	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	44	1.5	2	.05	3	-.029	11	-.058														
357	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	45	1.5	2	.058	3		4	.058														
358	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	45	1.5	2	.05	3	.029	5	.058														
359	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	45	1.5	2	.041	3	.041	6	.058														
360	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	45	1.5	2	.029	3	.05	7	.058														
361	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	45	1.5	2		3	.058	8	.058														
362	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	45	1.5	2	-.029	3	.05	9	.058														
363	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	45	1.5	2	-.041	3	.041	10	.058														

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
364	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	45	1.5	2	-.05	3	.029	11	.058												
365	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	45	1.5	2	-.058	3		4	-.058												
366	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	45	1.5	2	-.05	3	-.029	5	-.058												
367	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	45	1.5	2	-.041	3	-.041	6	-.058												
368	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	45	1.5	2	-.029	3	-.05	7	-.058												
369	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	45	1.5	2		3	-.058	8	-.058												
370	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	45	1.5	2	.029	3	-.05	9	-.058												
371	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	45	1.5	2	.041	3	-.041	10	-.058												
372	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	45	1.5	2	.05	3	-.029	11	-.058												
373	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	46	1.5	2	.058	3		4	.058												
374	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	46	1.5	2	.05	3	.029	5	.058												
375	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	46	1.5	2	.041	3	.041	6	.058												
376	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	46	1.5	2	.029	3	.05	7	.058												
377	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	46	1.5	2		3	.058	8	.058												
378	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	46	1.5	2	-.029	3	.05	9	.058												
379	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	46	1.5	2	-.041	3	.041	10	.058												
380	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	46	1.5	2	-.05	3	.029	11	.058												
381	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	46	1.5	2	-.058	3		4	-.058												
382	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	46	1.5	2	-.05	3	-.029	5	-.058												
383	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	46	1.5	2	-.041	3	-.041	6	-.058												
384	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	46	1.5	2	-.029	3	-.05	7	-.058												
385	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	46	1.5	2		3	-.058	8	-.058												
386	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	46	1.5	2	.029	3	-.05	9	-.058												
387	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	46	1.5	2	.041	3	-.041	10	-.058												
388	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	46	1.5	2	.05	3	-.029	11	-.058												
389	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	47	1.5	2	.058	3		4	.058												
390	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	47	1.5	2	.05	3	.029	5	.058												
391	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	47	1.5	2	.041	3	.041	6	.058												
392	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	47	1.5	2	.029	3	.05	7	.058												
393	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	47	1.5	2		3	.058	8	.058												
394	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	47	1.5	2	-.029	3	.05	9	.058												
395	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	47	1.5	2	-.041	3	.041	10	.058												
396	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	47	1.5	2	-.05	3	.029	11	.058												
397	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	47	1.5	2	-.058	3		4	-.058												
398	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	47	1.5	2	-.05	3	-.029	5	-.058												
399	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	47	1.5	2	-.041	3	-.041	6	-.058												
400	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	47	1.5	2	-.029	3	-.05	7	-.058												
401	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	47	1.5	2		3	-.058	8	-.058												
402	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	47	1.5	2	.029	3	-.05	9	-.058												
403	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	47	1.5	2	.041	3	-.041	10	-.058												
404	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	47	1.5	2	.05	3	-.029	11	-.058												
405	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	48	1.5	2	.058	3		4	.058												
406	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	48	1.5	2	.05	3	.029	5	.058												
407	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	48	1.5	2	.041	3	.041	6	.058												
408	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	48	1.5	2	.029	3	.05	7	.058												
409	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	48	1.5	2		3	.058	8	.058												
410	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	48	1.5	2	-.029	3	.05	9	.058												
411	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	48	1.5	2	-.041	3	.041	10	.058												
412	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	48	1.5	2	-.05	3	.029	11	.058												
413	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	48	1.5	2	-.058	3		4	-.058												
414	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	48	1.5	2	-.05	3	-.029	5	-.058												
415	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	48	1.5	2	-.041	3	-.041	6	-.058												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
416	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	48	1.5	2	-.029	3	-.05	7	-.058												
417	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	48	1.5	2		3	-.058	8	-.058												
418	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	48	1.5	2	.029	3	-.05	9	-.058												
419	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	48	1.5	2	.041	3	-.041	10	-.058												
420	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	48	1.5	2	.05	3	-.029	11	-.058												
421	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	49	1.5	2	.058	3		4	.058												
422	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	49	1.5	2	.05	3	.029	5	.058												
423	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	49	1.5	2	.041	3	.041	6	.058												
424	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	49	1.5	2	.029	3	.05	7	.058												
425	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	49	1.5	2		3	.058	8	.058												
426	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	49	1.5	2	-.029	3	.05	9	.058												
427	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	49	1.5	2	-.041	3	.041	10	.058												
428	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	49	1.5	2	-.05	3	.029	11	.058												
429	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	49	1.5	2	-.058	3		4	-.058												
430	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	49	1.5	2	-.05	3	-.029	5	-.058												
431	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	49	1.5	2	-.041	3	-.041	6	-.058												
432	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	49	1.5	2	-.029	3	-.05	7	-.058												
433	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	49	1.5	2		3	-.058	8	-.058												
434	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	49	1.5	2	.029	3	-.05	9	-.058												
435	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	49	1.5	2	.041	3	-.041	10	-.058												
436	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	49	1.5	2	.05	3	-.029	11	-.058												
437	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	50	1.5	2	.058	3		4	.058												
438	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	50	1.5	2	.05	3	.029	5	.058												
439	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	50	1.5	2	.041	3	.041	6	.058												
440	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	50	1.5	2	.029	3	.05	7	.058												
441	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	50	1.5	2		3	.058	8	.058												
442	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	50	1.5	2	-.029	3	.05	9	.058												
443	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	50	1.5	2	-.041	3	.041	10	.058												
444	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	50	1.5	2	-.05	3	.029	11	.058												
445	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	50	1.5	2	-.058	3		4	-.058												
446	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	50	1.5	2	-.05	3	-.029	5	-.058												
447	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	50	1.5	2	-.041	3	-.041	6	-.058												
448	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	50	1.5	2	-.029	3	-.05	7	-.058												
449	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	50	1.5	2		3	-.058	8	-.058												
450	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	50	1.5	2	.029	3	-.05	9	-.058												
451	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	50	1.5	2	.041	3	-.041	10	-.058												
452	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	50	1.5	2	.05	3	-.029	11	-.058												
453	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	51	1.5	2	.058	3		4	.058												
454	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	51	1.5	2	.05	3	.029	5	.058												
455	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	51	1.5	2	.041	3	.041	6	.058												
456	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	51	1.5	2	.029	3	.05	7	.058												
457	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	51	1.5	2		3	.058	8	.058												
458	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	51	1.5	2	-.029	3	.05	9	.058												
459	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	51	1.5	2	-.041	3	.041	10	.058												
460	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	51	1.5	2	-.05	3	.029	11	.058												
461	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	51	1.5	2	-.058	3		4	-.058												
462	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	51	1.5	2	-.05	3	-.029	5	-.058												
463	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	51	1.5	2	-.041	3	-.041	6	-.058												
464	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	51	1.5	2	-.029	3	-.05	7	-.058												
465	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	51	1.5	2		3	-.058	8	-.058												
466	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	51	1.5	2	.029	3	-.05	9	-.058												
467	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	51	1.5	2	.041	3	-.041	10	-.058												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
468	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	51	1.5	2	.05	3	-.029	11	-.058												
469	1.2DL + 1.5Lm + 1Wm 0 A...	Yes	Y		DL	1.2	52	1.5	2	.058	3		4	.058												
470	1.2DL + 1.5Lm + 1Wm 30 ...	Yes	Y		DL	1.2	52	1.5	2	.05	3	.029	5	.058												
471	1.2DL + 1.5Lm + 1Wm 45 ...	Yes	Y		DL	1.2	52	1.5	2	.041	3	.041	6	.058												
472	1.2DL + 1.5Lm + 1Wm 60 ...	Yes	Y		DL	1.2	52	1.5	2	.029	3	.05	7	.058												
473	1.2DL + 1.5Lm + 1Wm 90 ...	Yes	Y		DL	1.2	52	1.5	2		3	.058	8	.058												
474	1.2DL + 1.5Lm + 1Wm 120...	Yes	Y		DL	1.2	52	1.5	2	-.029	3	.05	9	.058												
475	1.2DL + 1.5Lm + 1Wm 135...	Yes	Y		DL	1.2	52	1.5	2	-.041	3	.041	10	.058												
476	1.2DL + 1.5Lm + 1Wm 150...	Yes	Y		DL	1.2	52	1.5	2	-.05	3	.029	11	.058												
477	1.2DL + 1.5Lm + 1Wm 180...	Yes	Y		DL	1.2	52	1.5	2	-.058	3		4	-.058												
478	1.2DL + 1.5Lm + 1Wm 210...	Yes	Y		DL	1.2	52	1.5	2	-.05	3	-.029	5	-.058												
479	1.2DL + 1.5Lm + 1Wm 225...	Yes	Y		DL	1.2	52	1.5	2	-.041	3	-.041	6	-.058												
480	1.2DL + 1.5Lm + 1Wm 240...	Yes	Y		DL	1.2	52	1.5	2	-.029	3	-.05	7	-.058												
481	1.2DL + 1.5Lm + 1Wm 270...	Yes	Y		DL	1.2	52	1.5	2		3	-.058	8	-.058												
482	1.2DL + 1.5Lm + 1Wm 300...	Yes	Y		DL	1.2	52	1.5	2	.029	3	-.05	9	-.058												
483	1.2DL + 1.5Lm + 1Wm 315...	Yes	Y		DL	1.2	52	1.5	2	.041	3	-.041	10	-.058												
484	1.2DL + 1.5Lm + 1Wm 330...	Yes	Y		DL	1.2	52	1.5	2	.05	3	-.029	11	-.058												

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	N5	max	1667.064	32	646.86	473	880.135	34	275.897	266	-140.965	26	0	484
2		min	-2477.427	8	-1378.928	273	178.729	26	-133.106	482	-733.083	34	0	1
3	N17	max	1555.96	34	1367.591	265	759.38	42	237.606	266	-139.128	18	0	484
4		min	-51.576	27	-633.992	481	176.844	18	-106.13	482	-629.987	42	0	1
5	N56A	max	1494.176	7	22.092	20	48.544	39	0	484	0	484	0	484
6		min	-1489.379	15	-21.99	28	9.806	79	0	1	0	1	0	1
7	Totals:	max	1073.018	18	1124.447	6	1679.502	39						
8		min	-1073.028	10	-1124.442	30	380.527	79						

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

	Member	Shape	Code Che...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [...	phi*Pnt [l...	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	TH	Pipe 2.375"x...	.405	75	9	.363	20		7	25576.36	35194.76	2107.188	2107.188	1	H1-1b
2	SA4	PIPE_1.5	.378	27.813	265	.099	27.813		2...	26562.555	31008.6	1452.45	1452.45	2...	H1-1b
3	H1	Pipe 2.375"x...	.372	76	264	.203	48		7	25576.36	35194.76	2107.188	2107.188	1	H1-1b
4	MP9	4.25x0.5	.371	.209	269	.083	.209	y	4...	91350.775	95625	996.094	8466.799	2...	H1-1b
5	MP8	4.25x0.5	.368	.209	261	.080	2.512	y	4...	91350.775	95625	996.094	8375.153	1	H1-1b
6	SA3	PIPE_1.5	.339	27.813	266	.101	27.813		2...	26562.555	31008.6	1452.45	1452.45	2...	H1-1b
7	MP7	3.5x0.5	.327	0	269	.100	4.814	y	4...	75230.005	78750	820.313	5704.512	1	H1-1b
8	B3	SR 1/2"	.305	0	275	.019	0		7	1056.759	8835.75	73.632	73.632	1	H1-1a*
9	MP29	3.5x0.5	.290	0	265	.102	0	y	4...	75230.005	78750	820.313	5742.188	1...	H1-1b
10	SA2	PIPE_1.5	.267	27.813	481	.078	27.813		4...	26562.555	31008.6	1452.45	1452.45	2...	H1-1b
11	MP17	4.25x0.5	.265	.209	483	.085	.209	y	4...	91350.775	95625	996.094	8466.799	1...	H1-1b
12	MP18	4.25x0.5	.265	.209	476	.085	2.512	y	4...	91350.775	95625	996.094	8375.153	1	H1-1b
13	MP1	Pipe 2.375"x...	.251	33	9	.049	33		9	12048.353	35194.76	2107.188	2107.188	1	H1-1b
14	V4	SR 5/8	.247	10.938	261	.055	0		15	4158.806	13815	134.4	134.4	1	H1-1a
15	SA1	PIPE_1.5	.243	2.188	474	.079	2.188		4...	26562.555	31008.6	1452.45	1452.45	2...	H1-1b
16	V3	SR 5/8	.232	19.063	269	.057	0		7	4158.806	13815	134.4	134.4	1	H1-1a
17	B1	SR 1/2"	.215	0	474	.020	0		7	1056.759	8835.75	73.632	73.632	1	H1-1a*
18	MP30	3.5x0.5	.208	0	474	.105	0	y	4...	75230.005	78750	820.313	5742.188	1...	H1-1b

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

	Member	Shape	Code Che...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [..	phi*Pnt [l..	phi*Mn y...	phi*Mn z...	Cb	Eqn
19	MP31	3.5x0.5	.181	0	482	.105	4.814	y	4...	75230.005	78750	820.313	5704.512	1	H1-1b
20	V1	SR 5/8	.175	0	469	.048	0		15	4158.806	13815	134.4	134.4	1	H1-1b*
21	MP3	Pipe 2.375"x...	.169	63	7	.126	63		7	12048.353	35194.76	2107.188	2107.188	1	H1-1b
22	V2	SR 5/8	.163	30	475	.058	0		7	4158.806	13815	134.4	134.4	1	H1-1b*
23	MP2	Pipe 2.375"x...	.120	33	9	.194	33		7	12048.353	35194.76	2107.188	2107.188	1	H1-1b
24	MP25	Pipe 2.375"x...	.109	0	7	.005	94.66		46	13661.924	35194.76	2107.188	2107.188	1...	H1-1b*
25	B2	SR 1/2"	.014	0	266	.025	0		7	1056.759	8835.75	73.632	73.632	1	H1-1b*
26	B4	SR 1/2"	.000	0	484	.027	0		7	1056.759	8835.75	73.632	73.632	1	H1-1a

Envelope AISI S100-16: LRFD Cold Formed Steel Code Checks

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

APPENDIX D

ADDITIONAL CALCUATIONS

Trylon

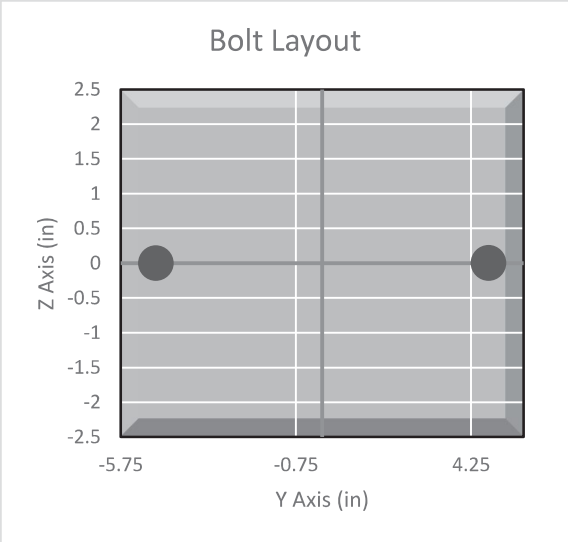
Analysis date: 11/4/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	195637
Carrier Site ID:	BOHVN00160A
Carrier Site Name:	CT-CCI-T-870694

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

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.75	in
Grade:	A36	--
Yield Strength (Fy):	36	ksi
Ultimate Strength (Fu):	58	ksi
Number of Bolts:	2	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	9.5	in



Connection Description
Mount to Tower

Bolt Check*		
Tensile Capacity (ϕT_n):	14549.0	lbs
Shear Capacity (ϕV_n):	9608.9	lbs
Tension Force (T_u):	573.3	lbs
Shear Force (V_u):	974.9	lbs
Tension Usage:	3.8%	--
Shear Usage:	9.7%	--
Interaction:	9.7%	Pass
Controlling Member:	MP4	--
Controlling LC:	273	--

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

Slip Check*		
Sliding Capacity (ϕR_{ns}):	9444.2	lbs
Torsion Capacity (ϕR_{nr}):	3738.3	lb-ft
Sliding Force (V_{us}):	873.1	lbs
Torsional Force (T_{ur}):	0.0	lb-ft
Sliding Usage:	8.8%	--
Torsion Usage:	0.0%	--
Interaction:	8.8%	Pass
Controlling Member:	MP4	--
Controlling LC:	40	--

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

Trylon

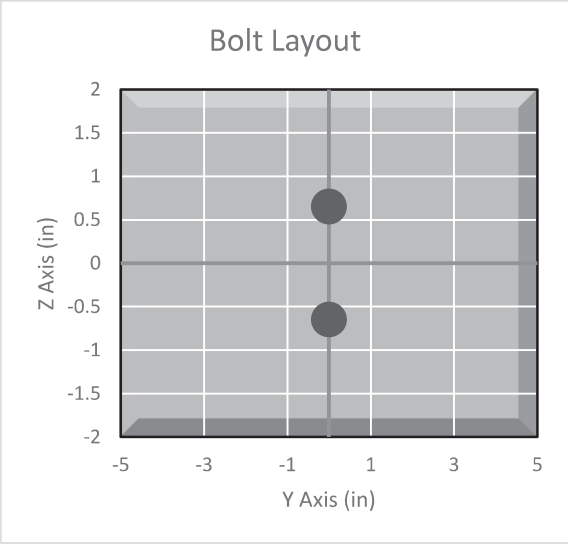
Analysis date: 11/4/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	195637
Carrier Site ID:	BOHVN00160A
Carrier Site Name:	CT-CCI-T-870694

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:	2	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in



Connection Description
Stand off to Tower Connection Kit

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	0.0	lbs
Shear Force (V_u):	7863.7	lbs
Tension Usage:	0.0%	--
Shear Usage:	54.2%	--
Interaction:	54.2%	Pass
Controlling Member:	MP6	--
Controlling LC:	265	--

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

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

APPENDIX E

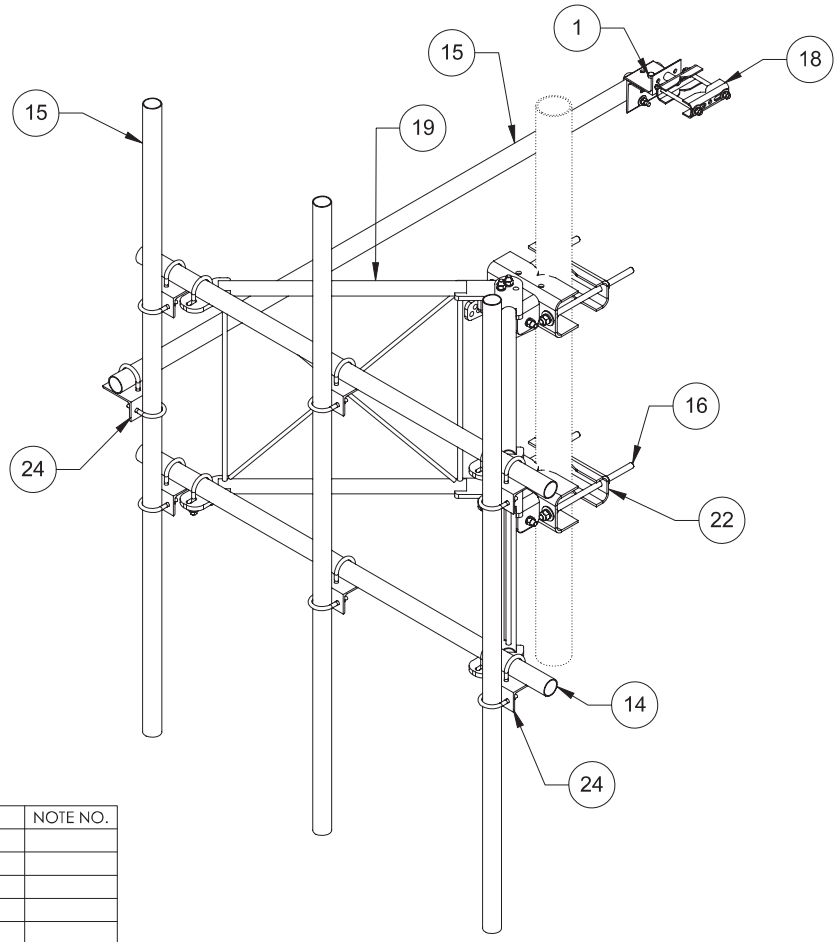
SUPPLEMENTAL DRAWINGS

NOTES:
1.0 ALL METRIC DIMENSIONS ARE IN BRACKETS.

REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
PRE		REVIEW	DRH	01/28/21

www.Talleycom.com | Sales@Talleycom.com | 800.949.7079

TALLEY®



ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT	NOTE NO.
1	GB-04125	1/2" X 1-1/4" GALV BOLT KIT	1	0.12 LBS	
2	GB-04265	1/2" X 2-3/4" GALV BOLT KIT	1	0.20 LBS	
3	GB-05225	5/8" X 2-1/4" GALV BOLT KIT	8	0.28 LBS	
4	GB-05305	5/8" X 3" GALV BOLT KIT	4	0.35 LBS	
5	GN-04	1/2" GALV HEX NUT	4	0.04 LBS	
6	GN-06	3/4" GALV HEX NUT	12	0.15 LBS	
7	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	19	0.56 LBS	
8	GWF-04	1/2" GALV FLAT WASHER	4	0.03 LBS	
9	GWF-05	5/8" GALV FLAT WASHER	4	0.06 LBS	
10	GWF-06	3/4" GALV FLAT WASHER	8	0.10 LBS	
11	GWL-04	1/2" GALV LOCK WASHER	4	0.01 LBS	
12	GWL-06	3/4" GALV LOCK WASHER	8	0.04 LBS	
13	MT-379-8	1/2" X 8" GALV THREADED ROD	2	0.44 LBS	
14	MT-651-96	2.375" OD x 96" PIPE	2	17.29 LBS	
15	MT-651-96	Ø2.375" OD X 96" PIPE	4	23.05 LBS	
16	MT38416	Threaded Rod Galv 3/4" x 16"	4	1.99 LBS	
17	OS15034	3/4" X 1-1/2" OFFSET COLLAR	1	0.14 LBS	
18	SAB01	FORMED CLAMP	2	1.35 LBS	
19	SFV01	WELDMENT, SF-V STANDOFF ARM	2	36.81 LBS	
20	SFV02	SFV AZIMUTH BRACKET	3	6.70 LBS	
21	SFV03	SFV TAPER BRACKET	1	7.49 LBS	
22	SMU2080.06	CLAMP PLATE	2	6.96 LBS	
23	SMU208004	MOUNT	2	12.15 LBS	
24	XA2020.01	ANTENNA MOUNT ANGLE	9	2.65 LBS	

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

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES
0 PLACE X ± .25 | 2 PLACE .XX ± .06
1 PLACE .X ± .12 | ANGLES ± 2°

SAP MATERIAL MASTER: MTC3975083

FINISH: GALV A123

MATERIAL: A1011/A1018, A500, A529

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS INTERPRET PER ASME Y14.5M-1994 HANDBOOK TECHNICAL DRAWINGS, VOLUMES 1 & 2, THIRD EDITION (2002)

	NAME	DATE
CE	RDLS	7/14/17
RW		
RV		
AD		
RE	TP	7/14/17
ECN		

TITLE: SECTOR FRAME, 8' FACE, (3) 96" PIPES

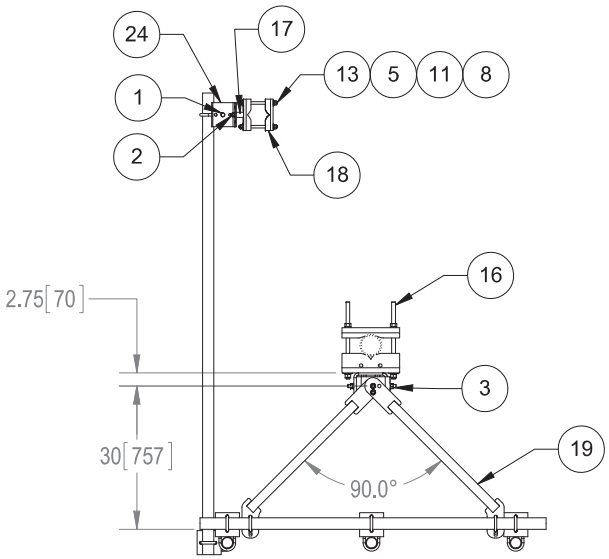
SCALE: 1:12

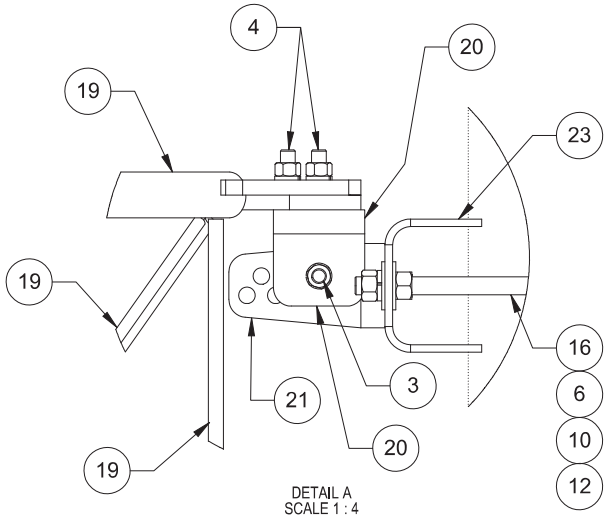
DOCUMENT NO.: MTC3975083

SIZE	WORK AREA	MODEL			DRAWING			SHEET
		VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	
C							PRE	1 OF 2

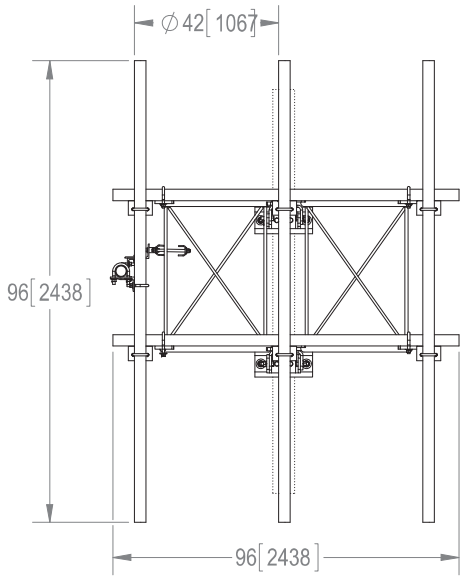
NOTES:

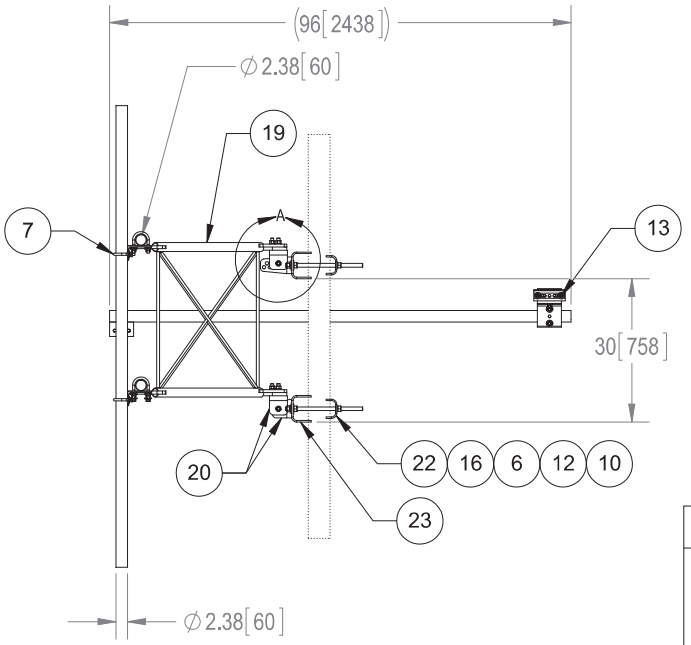
1.0 ALL METRIC DIMENSIONS ARE IN BRACKETS.





DETAIL A
SCALE 1 : 4





COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: **SECTOR FRAME, 8' FACE, (3) 96" PIPES**			
SIZE: C	SCALE: 1:20	DOCUMENT NO.: **MTC3975083**	
		DRAWING VERSION / STATUS / REVISION: PRE	SHEET: 2 OF 2

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOHVN00160A

870694
2014 and 240 Burwell Road
West Haven, Connecticut 06516

November 19, 2021

EBI Project Number: 6221007195

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**21.20%**

November 19, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00160A - 870694

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **2014 and 240 Burwell Road** in **West Haven, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 2014 and 240 Burwell Road in West Haven, 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 150 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):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna A1 MPE %:	**1.14%**	Antenna B1 MPE %:	**1.14%**	Antenna C1 MPE %:	**1.14%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.14%
Verizon	13.74%
AT&T	5.04%
SoCT Gas	0.49%
WHvn Police	0.03%
Sprint	0.76%
Site Total MPE % :	21.20%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.14%
Dish Wireless Sector B Total:	1.14%
Dish Wireless Sector C Total:	1.14%
Site Total MPE % :	21.20%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	150.0	1.55	600 MHz n71	400	0.39%
Dish Wireless 1900 MHz n70	4	542.70	150.0	3.76	1900 MHz n70	1000	0.38%
Dish Wireless 2190 MHz n66	4	542.70	150.0	3.76	2190 MHz n66	1000	0.38%
						Total:	**1.14%**

• 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:	1.14%
Sector B:	1.14%
Sector C:	1.14%
Dish Wireless Maximum MPE % (Sector A):	1.14%
Site Total:	21.20%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **21.20%** 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:
2014 AND 240 BURWELL ROAD, WEST HAVEN, CT 06516

PINNACLE TOWERS 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:	**870694/West Haven (Burwell Hill)**
Customer Site ID:	**BOHVN00160A/CT-CCI-T-870694**
Site Address:	**2014 and 240 Burwell Road, West Haven, CT 06516**

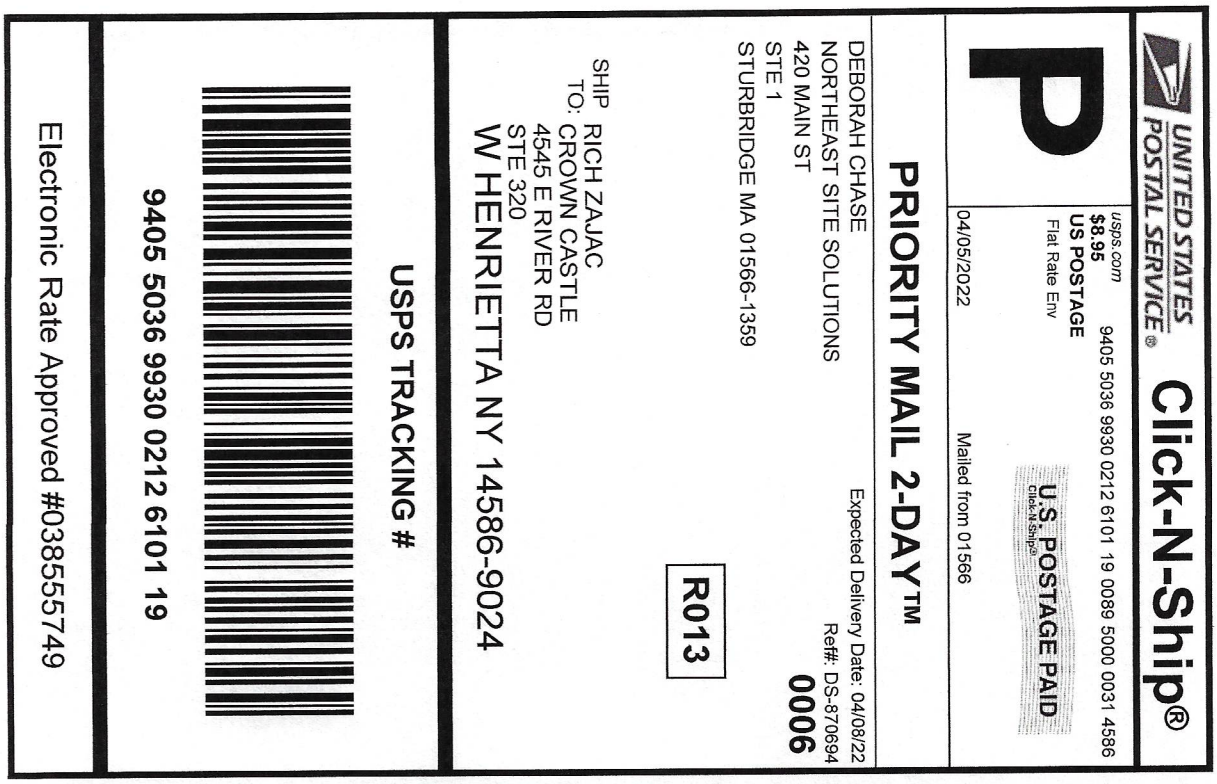
Crown Castle

By: _____ Date: 3/14/2022

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



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Instructions

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USPS TRACKING # :
9405 5036 9930 0212 6101 19

Trans. #:	560467833
Print Date:	04/05/2022
Ship Date:	04/05/2022
Expected Delivery Date:	04/08/2022

Priority Mail® Postage:	$8.95
Total:	$8.95

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

Ref#: DS-870694

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

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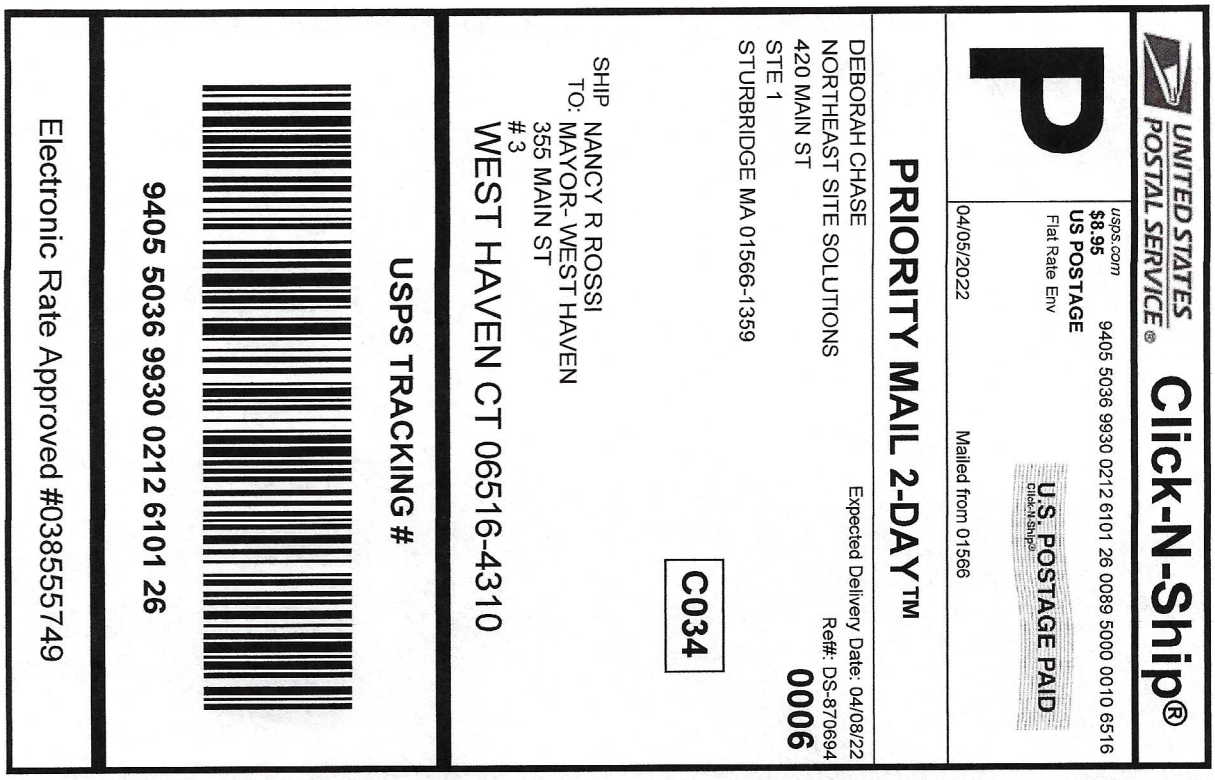

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0212 6101 26

Trans. #:	560467833	Priority Mail® Postage:	$8.95
Print Date:	04/05/2022	Total:	$8.95
Ship Date:	04/05/2022		
Expected Delivery Date:	04/08/2022		

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

Ref#: DS-870694

To: NANCY R ROSSI
MAYOR- WEST HAVEN
355 MAIN ST
3
WEST HAVEN CT 06516-4310

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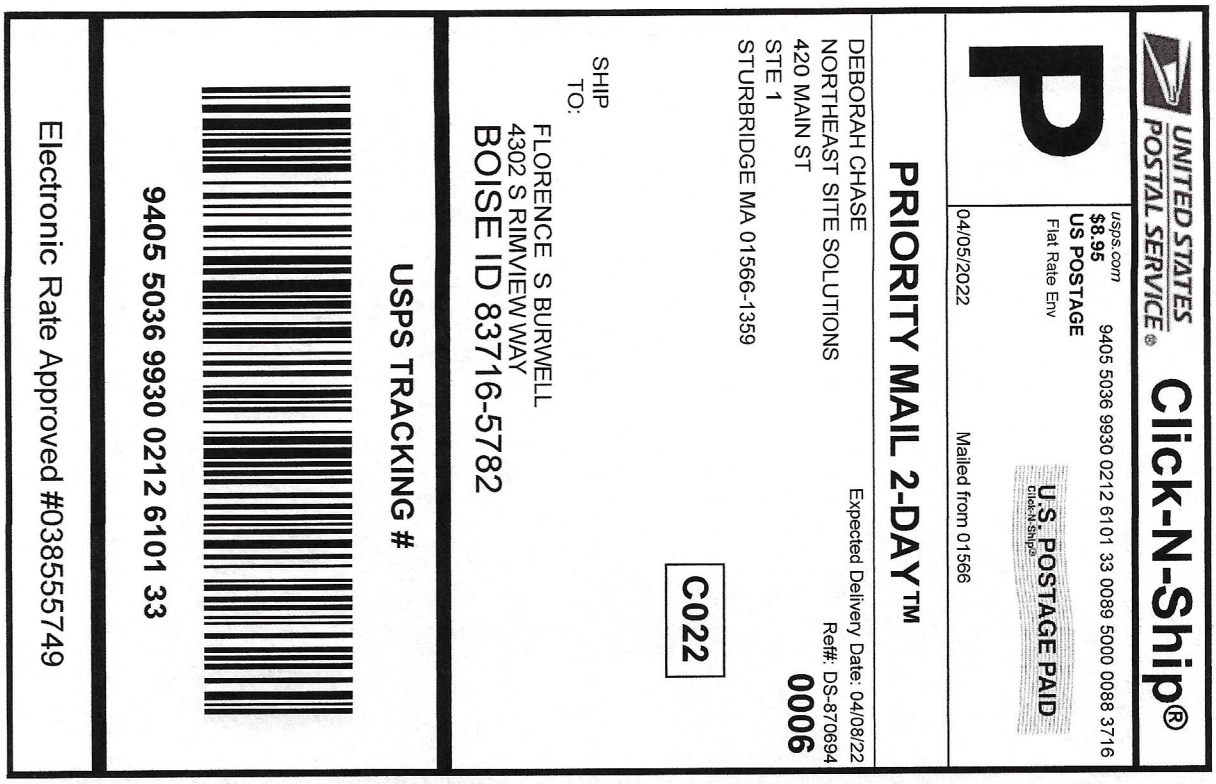

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USPS TRACKING # :
9405 5036 9930 0212 6101 33

Trans. #:	560467833
Print Date:	04/05/2022
Ship Date:	04/05/2022
Expected Delivery Date:	04/08/2022

Priority Mail® Postage:	$8.95
Total:	$8.95

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

Ref#: DS-870694

To: FLORENCE S BURWELL
4302 S RIMVIEW WAY
BOISE ID 83716-5782

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

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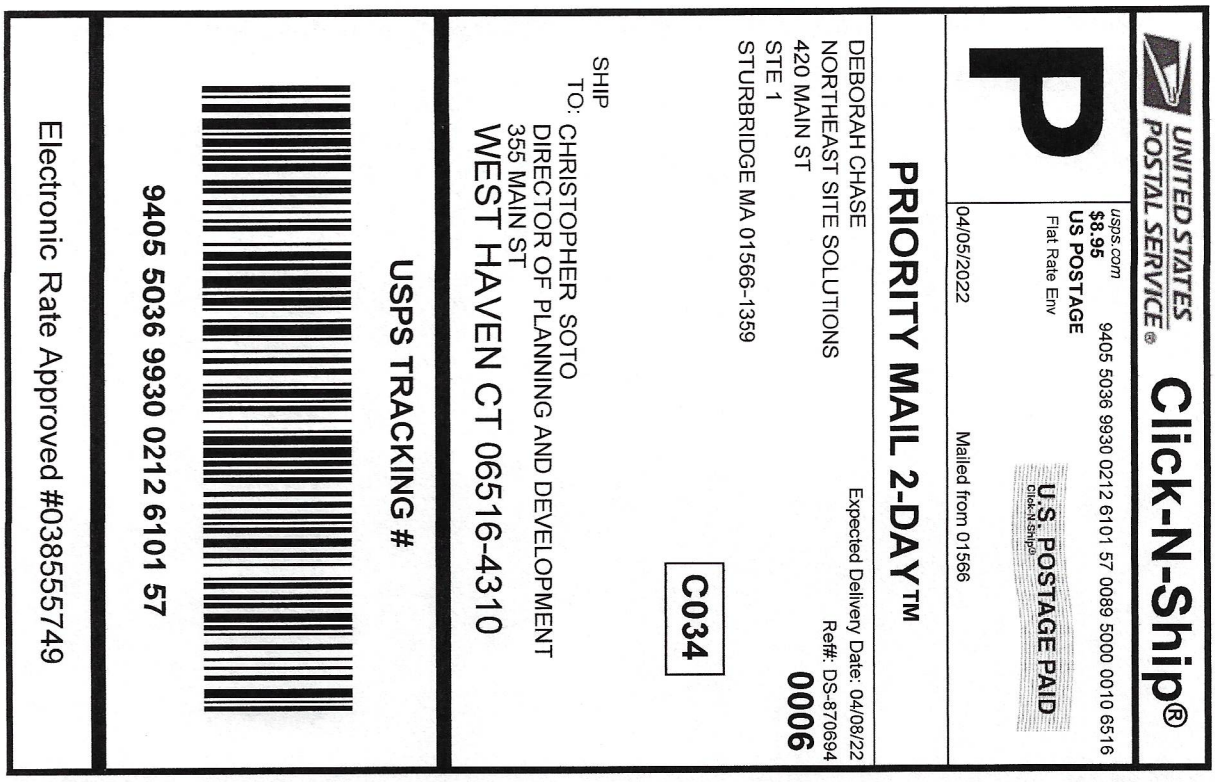

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Trans. #:	560467833
Print Date:	04/05/2022
Ship Date:	04/05/2022
Expected Delivery Date:	04/08/2022

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

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

Ref#: DS-870694

To: CHRISTOPHER SOTO
DIRECTOR OF PLANNING AND DEVELOPMENT
355 MAIN ST
WEST HAVEN CT 06516-4310

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870694 Crown
078h

UNITED STATES POSTAL SERVICE.

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

04/05/2022 03:19 PM

Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 1.90 oz Acceptance Date: Tue 04/05/2022 Tracking #: 9405 5036 9930 0212 6101 19	1		$0.00
Prepaid Mail Boise, ID 83716 Weight: 0 lb 9.40 oz Acceptance Date: Tue 04/05/2022 Tracking #: 9405 5036 9930 0212 6101 33	1		$0.00
Prepaid Mail West Haven, CT 06516 Weight: 0 lb 9.40 oz Acceptance Date: Tue 04/05/2022 Tracking #: 9405 5036 9930 0212 6101 26	1		$0.00
Prepaid Mail West Haven, CT 06516 Weight: 0 lb 9.50 oz Acceptance Date: Tue 04/05/2022 Tracking #: 9405 5036 9930 0212 6101 57	1		$0.00

Grand Total: $0.00

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