NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

October 26, 2021

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

RE: Tower Share Application
201 Granite Road, Guilford CT 06437
Latitude: 41.291972
Longitude: 72.732661
Site# 842864_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 201 Granite Road in Guilford, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 5G MHz antenna and six (6) RRUs, at the 77-foot level of the existing 110-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, dated August 24, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated May 29, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Town of Guilford Planning and Zoning on December 10, 2003. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Matthew T. Hoey III, First Selectman, and George Kral Town Planner for the Town of Guilford, as well as the tower owner (Crown Castle) and property owner (Gables Winterfell)

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 110-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 77-feet.

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

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

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4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 29.38% as evidenced by Exhibit F.

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

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

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this monopole in Guilford. 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 77-foot level of the existing 110-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 guyed 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 Guilford.

Sincerely,

Denise Sabo

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

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Turnkey Wireless Development

Attachments cc:

Matthew T. Hoey III, First Selectman
Town of Guilford Selectman's Office
31 Park Street, Guilford CT 06437

George Kral, Guilford Town Planner
Town of Guilford Planning & Zoning
50 Boston Street, Guilford CT 06437

Gables Winterfell, Property Owner
590 Madison Ave 34the Fl, New York NY 10022

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

Town of Guilford
Building Permit - Zoning Compliance Permit

Permit No. 03-2511

(BP)	$1,400.00
(EF)	$22.40
Total Fee Paid	$1,422.40
Date Issued:	**12/10/2003**

INLAND WETLANDS PERMIT

This building permit is issued pursuant to the Connecticut Building codes and is subject to the provisions thereof. It is issued on the basis of the application submitted and approved and is valid only for the work indicated in Item 4.

1. **Location** Street: Granite Road Street No. 201

   Assessor's Map No: 71 Assessor's Lot No. 11

   Subdivision Name: _____ Lot No. _____

2. **Owner** Name: Guilford Retirement Residence Ltd. Partnership
   c/o Deloitte/Touche LLP PTS
   Mailing Address: 925 4th Avenue, Suite 3300, Seattle, WA 98104-1126

3. **TYPE OF CONSTRUCTION:**
   1:2:3:4:5:
   OCCUPANCY LOAD _____
   USE GROUP

   NATURE OF WORK:

X	New Construction	_____	Moving of Structure
_____	Addition	_____	Demolition
_____	Alteration	_____	Rehabilitation
_____	Repair	_____	Other

4. **TYPE OF WORK:** (This permit is valid only for boxes checked.)

Structural	X	Insulation	_____
Electrical	_____	Oil Burner	_____
Heating and Ventilation	_____	Sewage Disposal*	_____
Plumbing	_____	Gal. Septic Tank Required	_____
Swimming Pool	_____	Sq. ft. leaching area required**	_____
Other	_____	Water Conditioning	_____

* In accordance with CT State Public Health Code
** Reserve seepage are equal to area used in required

Cell Tower

Permit valid one year. Permit will expire if work is not started within six months from date of issuance. Upon written request and payment of $15.00 fee, permit may be renewed for six months at the discretion of the Building Officials. Required building inspections are 1)temporary electric service 2)footing 3) rough electrical, HVAC, plumbing and framing 4) insulation 5) permanent electrical 6) final.

CALL 453-8029 Monday-Friday 8:30 A.M. - 4:30 P.M. to SCHEDULE INSPECTIONS. 24 HOUR ADVANCE NOTICE IS REQUIRED. There is a charge for certificate of occupancy.

PROPERTY OWNER IS RESPONSIBLE TO SCHEDULE A FINAL INSPECTION.

The following special conditions must be met:

1. Approved by CT Siting Council - Regina Reid, Zoning Enforcement Officer
2. Per Site Plan LLC, A. Rafael Martinez, L.S. 10/18/01 Rev. 12/5/03 - Mark Damiani, Ass't Town Engineer
3. Acceptance report by Engineer of record at project completion - William Thody, Building Official II
4. Compliance with all applicable Statutes, Codes, Standards & Regulations constitutes approval of this project - Coleman C. Bushnell, Deputy Fire Marshal

This permit is issued with a red field card which must be conspicuously posted on the site. Neither the Town of Guilford nor any authorized agent assume any responsibility for the construction or maintenance of any facility built under this permit.

William Thody	Regina Reid	Mark Damiani	Dennis Johnson
Building Official II	Zoning Enforcement Officer Inland Wetlands Officer	Asst. Town Engineer	Director of Health

1-Original * 2-File* 3-Fire Marshal* 4-Contractor* 5-Assessor's Office* 6-Planning & Zoning *

Exhibit B

Property Card

All information is for assessment purposes only. Assessments are calculated at 70% of the estimated October 1, 2017 market value which was the date of the last revaluation as completed by eQuality Valuation Services, LLC.

Information on the Property Records for the Municipality of Guilford was last updated on 10/28/2021.

Parcel Information

Location:	201 GRANITE RD	Map and Parcel:	071011	Census Tract:	1902
Zoning:	R-8	Developer's Map:		Developer's Lot:	
Total Acreage:	58.31	Farm, Forest, Open Space Acres:		Unique ID:	6477

Value Information

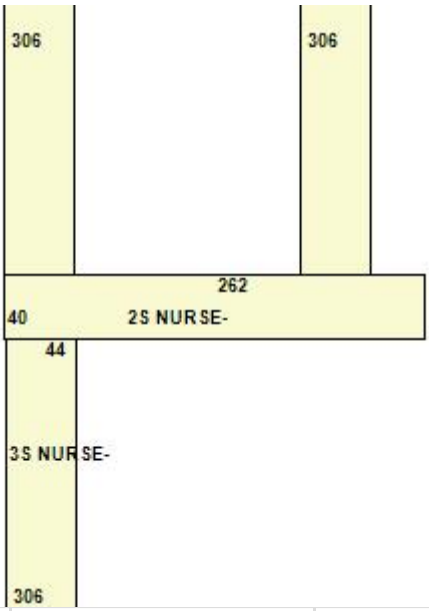
	Appraised Value	Assessed Value
Land	1,008,000	705,600
Buildings	15,192,510	10,634,760
Detached Outbuildings	311,200	217,840
Total	16,511,710	11,558,200

Owner's Information

Owner's Data
WINTERFELL GABLES (CT) OWNER LLC 590 MADISON AVE 34TH FL NEW YORK NY 10022

Building 1

Photo Not Available



Category:	ELDERLY	Use:	NURSING HOME	GLA:	142,136
Stories:	2.00	Construction:	AVERAGE	Year Built:	1993
Condition:	AVERAGE	Heating:	FHA	Fuel:	GAS
Cooling Percent:	100%	Siding:	STUCCO	Roof Material:	METAL

Special Features

WET SPRINKLERS	142136

Attached Components

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
PAVING	1993			8,000

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Sale Price
WINTERFELL GABLES (CT) OWNER LLC	0884	0672	05/26/2015	Warranty Deed	$32,535,600
HARVEST GUILFORD RET RES LLC	0741	1146	03/23/2007	Warranty Deed	$15,751,149

Town of Guilford, Connecticut - Assessment Parcel Map

Unique ID: **6477** Address: 201 GRANITE RD

N

Approximate Scale: **1 inch = 300 feet**

0 210 420 Feet

Map Produced:
August 2021

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

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOHVN00016A

DISH Wireless L.L.C. SITE ADDRESS:

201 GRANITE ROAD
GUILFORD, CT 06437

CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

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

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

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

SITE PHOTO

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	WINTERFELL GABLES
ADDRESS:	590 MADISON AVENUE NEW YORK, NY 10022
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	842864
TOWER APP NUMBER:	553360
COUNTY:	NEW HAVEN
LATITUDE (NAD 83):	41° 17' 31.14" N 41.291972 N
LONGITUDE (NAD 83):	72° 43' 58.28" W 72.732861 W
ZONING JURISDICTION:	TOWN OF GUILFORD
ZONING DISTRICT:	R-5
PARCEL NUMBER:	071011
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	NORTHEAST UTILITIES
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

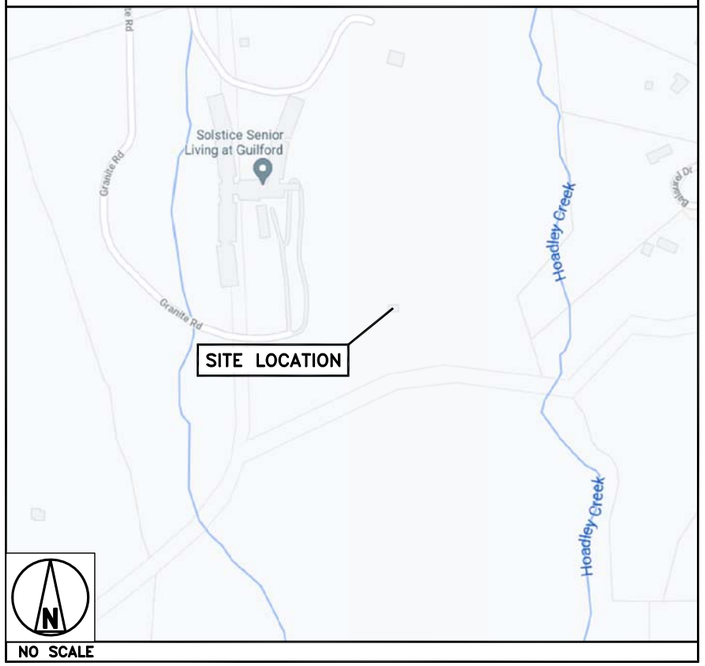
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	INFINIGY 2500 W. HIGGINS RD. STE. 500 HOFFMAN ESTATES, IL 60169 (847) 648-4068
SITE ACQUISITION:	NICHOLAS CURRY NICHOLAS.CURRY@CROWNCASTLE.COM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

DIRECTIONS

DIRECTIONS FROM TWEED NEW HAVEN AIRPORT:

DEPART AND HEAD (NORTHEAST), TURN LEFT, AVIS RENT A CAR ON THE CORNER, TURN RIGHT, TURN RIGHT TOWARD BURR ST, BUDGET CAR RENTAL ON THE CORNER, TURN RIGHT ONTO BURR ST, KEEP STRAIGHT TO GET ONTO DODGE AVE, TURN LEFT ONTO THOMPSON AVE, KEEP STRAIGHT TO GET ONTO CT-100 / HIGH ST, TAKE THE RAMP ON THE RIGHT FOR I-95 NORTH AND HEAD TOWARD NEW LONDON, AT EXIT 56, HEAD RIGHT ON THE RAMP FOR LEETES ISLAND RD TOWARD STONY CREEK, TURN LEFT ONTO LEETES ISLAND RD, TURN RIGHT ONTO US-1 N / E MAIN ST, TURN RIGHT ONTO MOOSE HILL RD, KEEP STRAIGHT TO GET ONTO TOWNER SWAMP RD, ARRIVE AT 201 GRANITE ROAD GUILFORD, CT 06437

VICINITY MAP



NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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WWW.INFINIGY.COM

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/24/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/23/2021	ISSUED FOR REVIEW
0	08/24/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

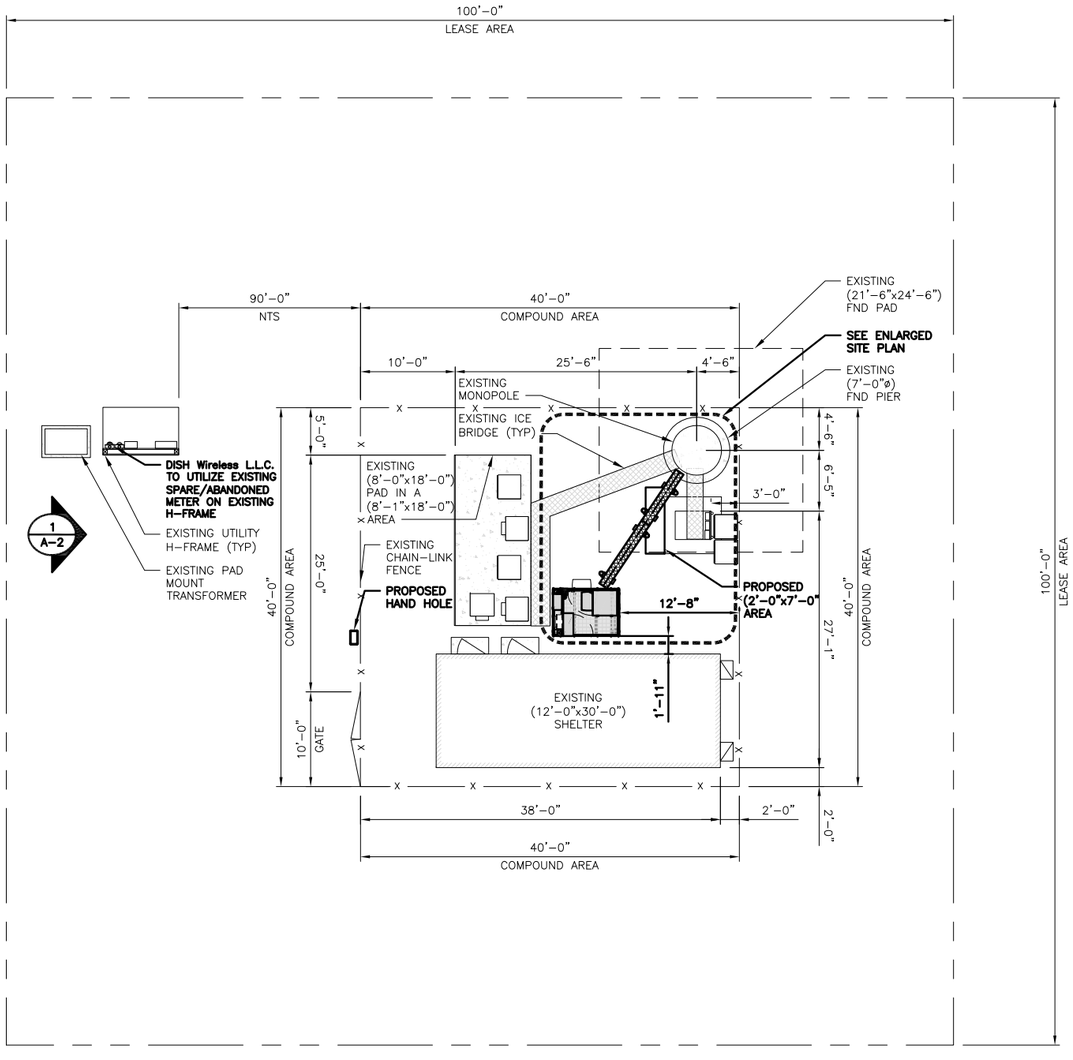
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00016A
201 GRANITE ROAD
GUILFORD, CT 06437

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



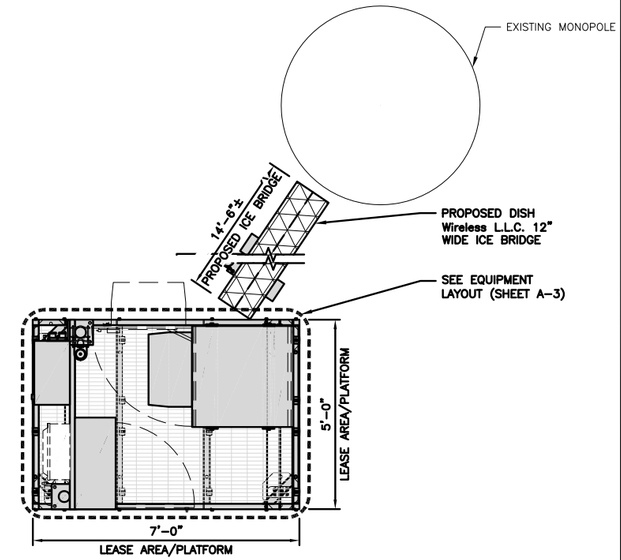
OVERALL SITE PLAN

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

1

NOTES

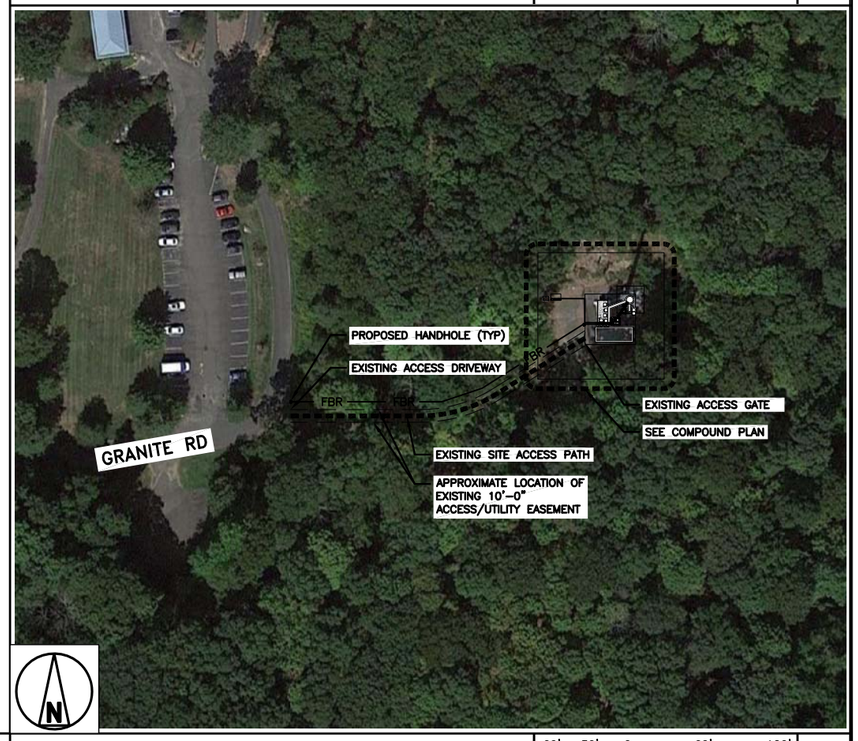
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

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

2



SITE PLAN

60' 30' 0 60' 120'
1"=60'

3

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STATE OF CONNECTICUT
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DRAWN BY:	CHECKED BY:	APPROVED BY:
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A&E PROJECT NUMBER

6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00016A
201 GRANITE ROAD
GUILFORD, CT 06437

SHEET TITLE

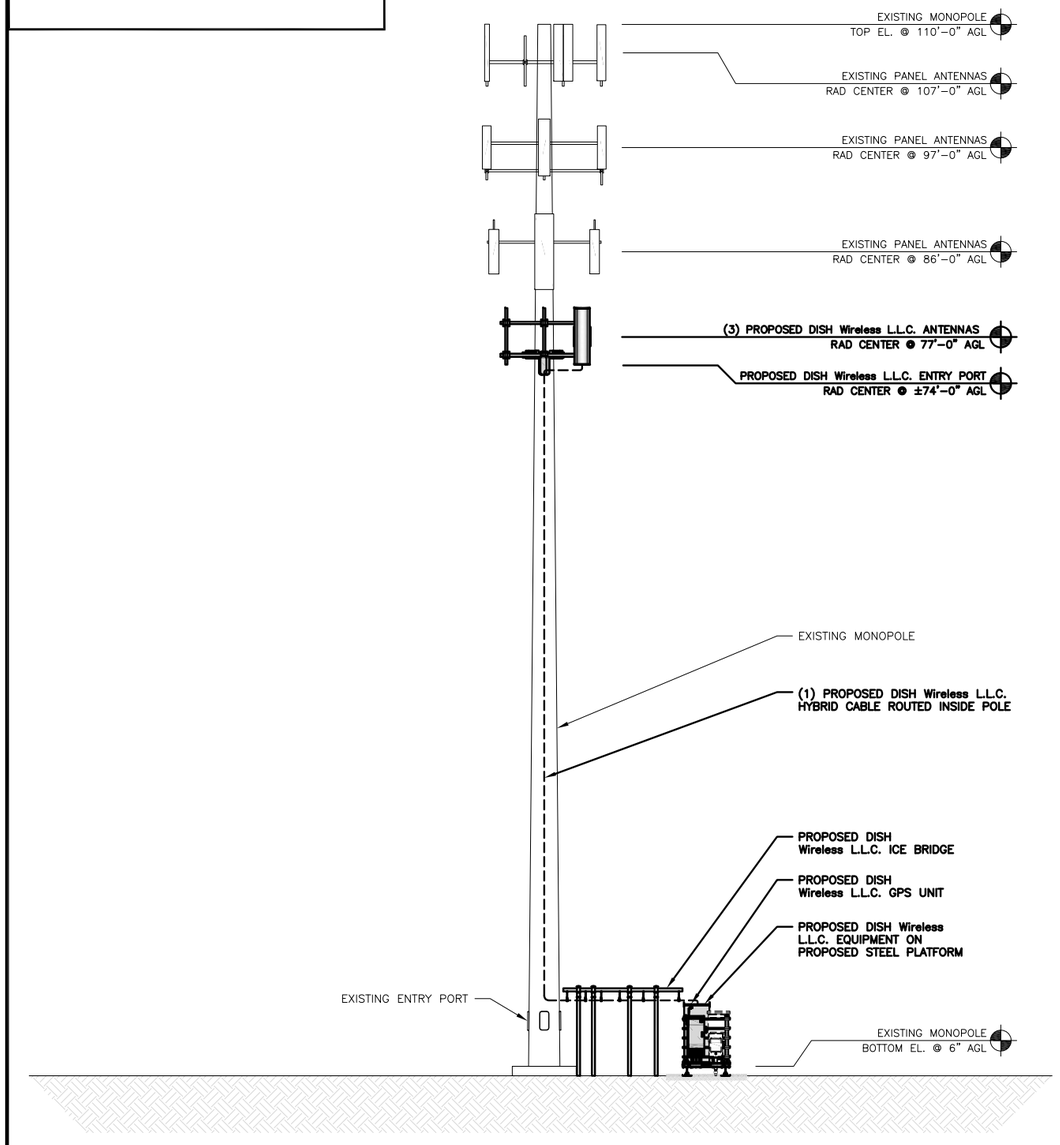
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

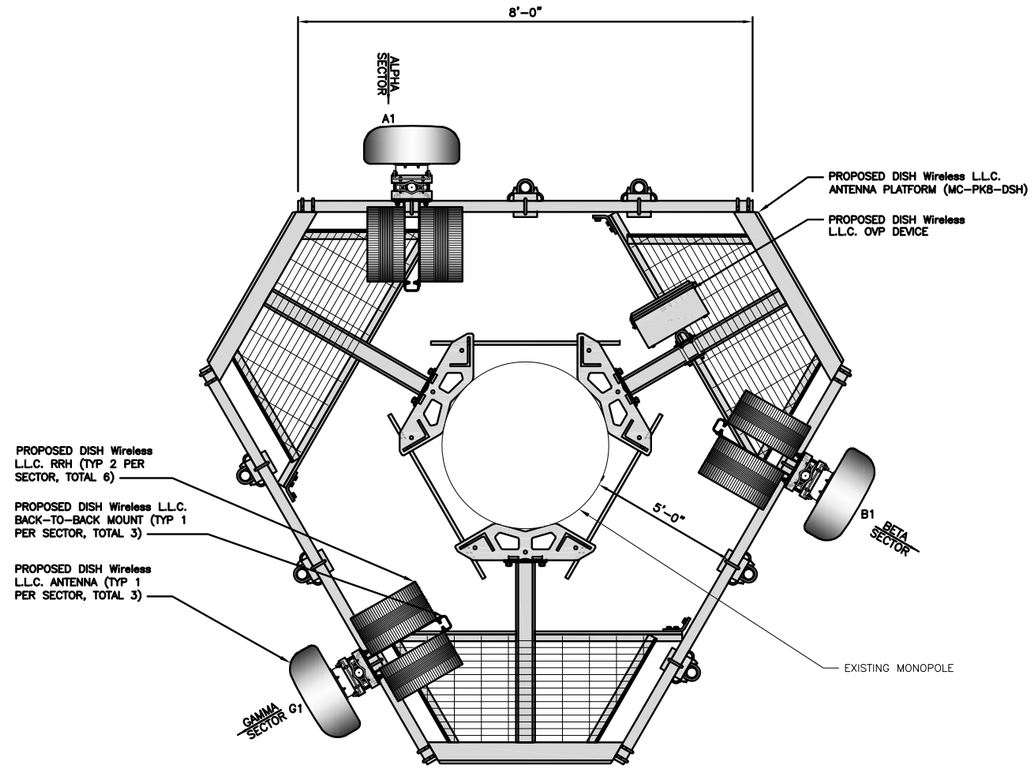
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR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



PROPOSED WEST ELEVATION

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

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	0°	77'-0"	(1) HIGH-CAPACITY HYBRID CABLE (120' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	120°	77'-0"	
GAMMA	G1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	240°	77'-0"	

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

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

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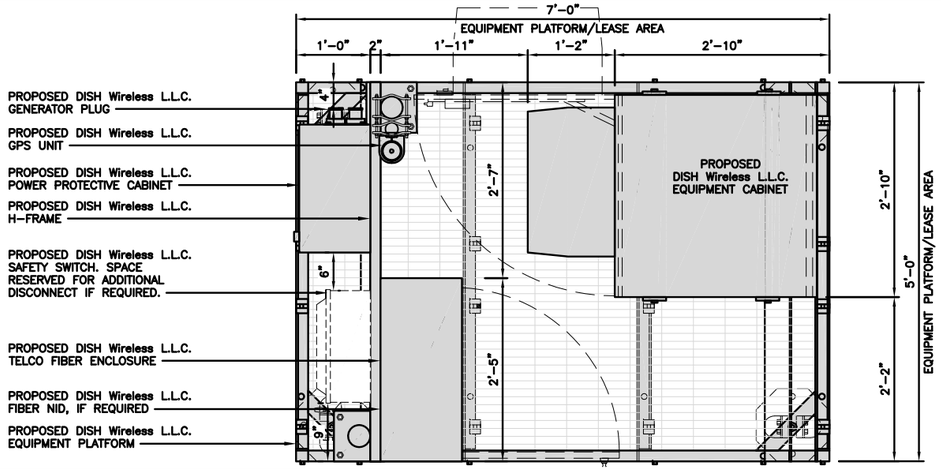
BOHVN00016A
201 GRANITE ROAD
GUILFORD, CT 06437

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



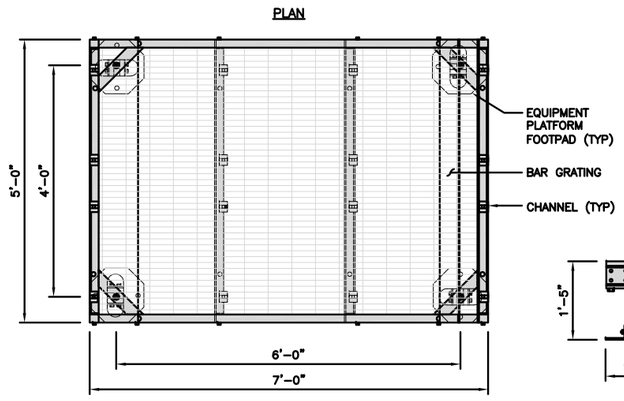
PLATFORM EQUIPMENT PLAN

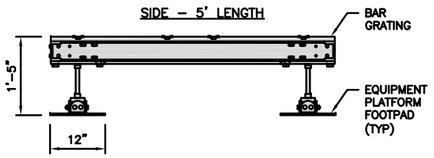
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

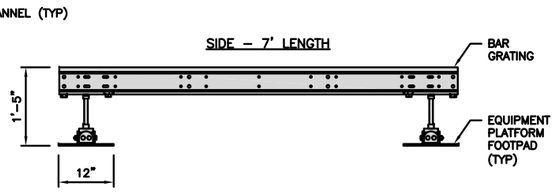
1

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

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

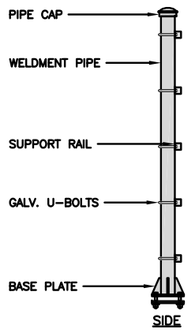






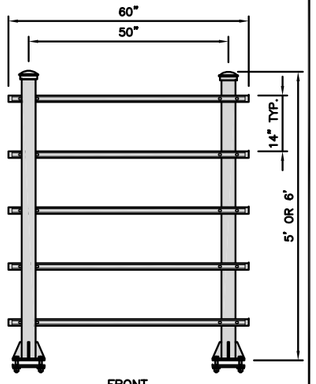
PLATFORM DETAIL | NO SCALE | 2

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



SIDE

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



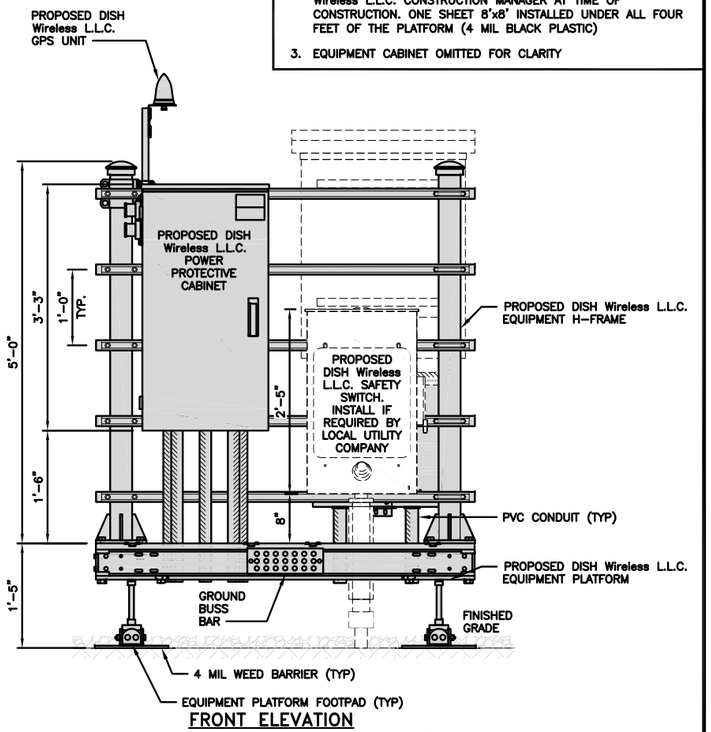
FRONT

H-FRAME DETAIL | NO SCALE | 3

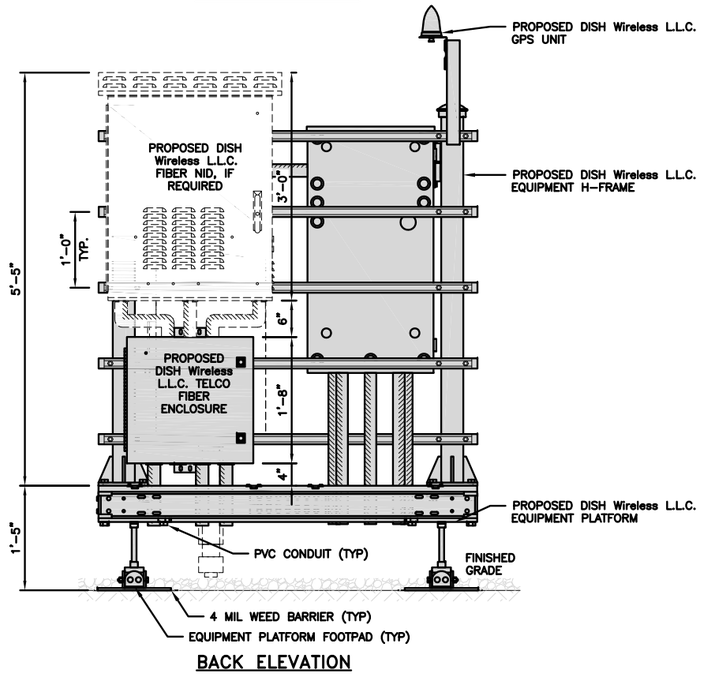
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

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SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/24/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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0	08/24/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

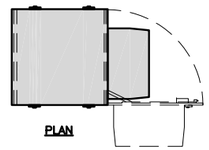
BOHVN00016A
201 GRANITE ROAD
GUILFORD, CT 06437

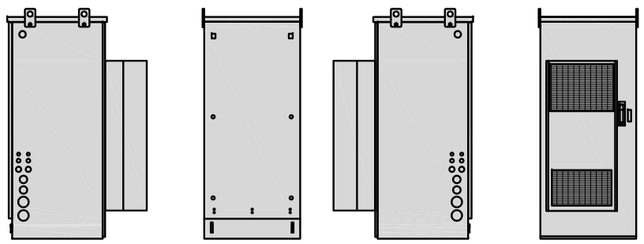
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

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

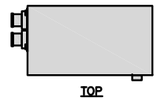


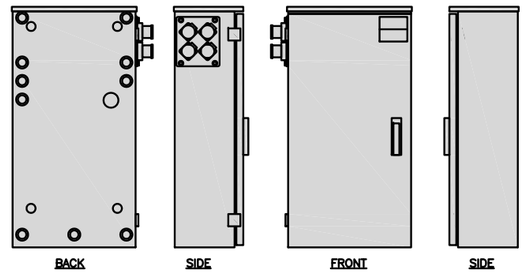


CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC–2465–P–240–MTS

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

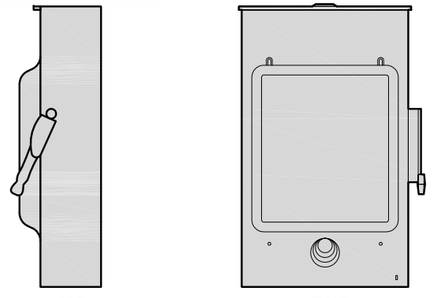




POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

SQUARE D SAFETY SWITCHES D224NRB

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

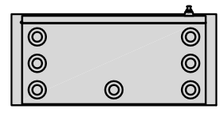


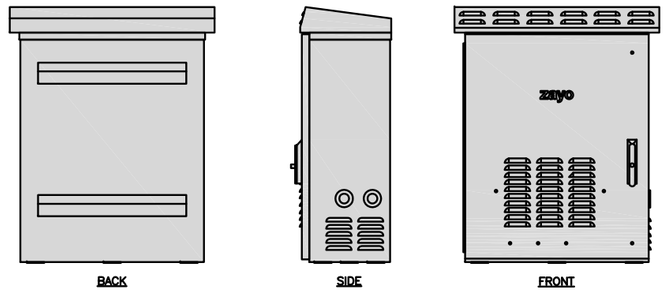
SAFETY SWITCH DETAIL | NO SCALE | 3

NOT USED | NO SCALE | 4

ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE

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

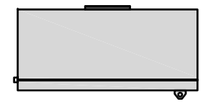




FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE

ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4

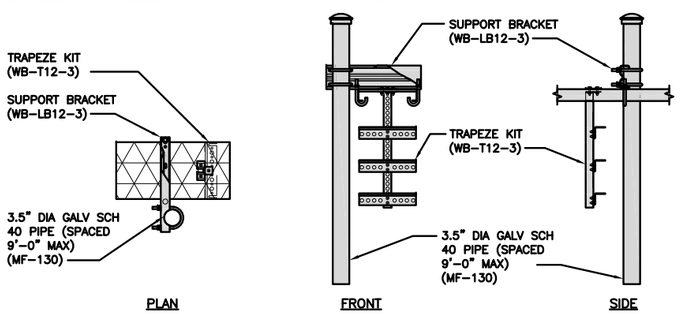


FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

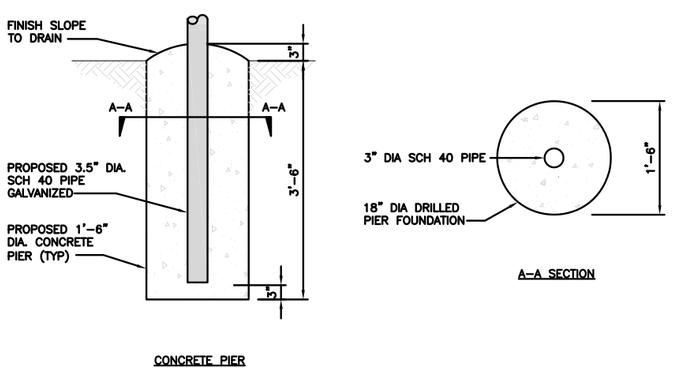
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT

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

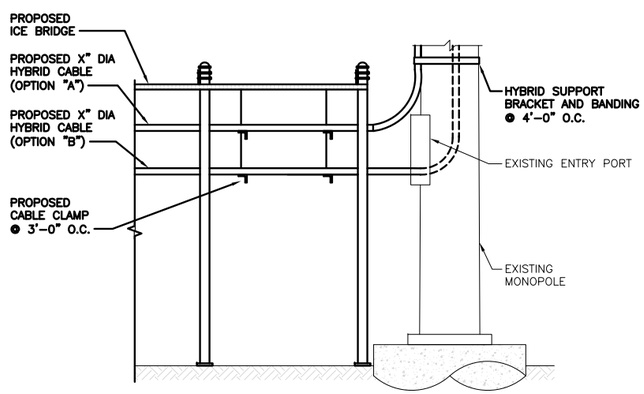
INCLUDED PRODUCTS:
- WB–T12–3 TRAPEZE KIT, 3 RUNGS
- WB–LB12–3 SUPPORT BRACKET
- MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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SHUHEI SAKAMOTO
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8/24/2021

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

RFDS REV #: N/A

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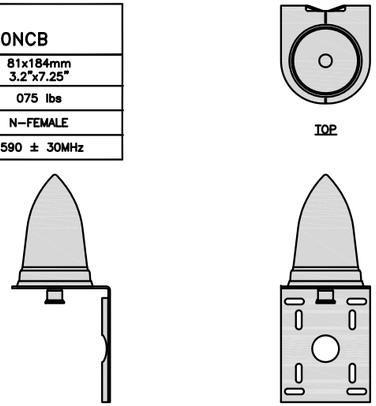
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00016A
201 GRANITE ROAD
GUILFORD, CT 06437

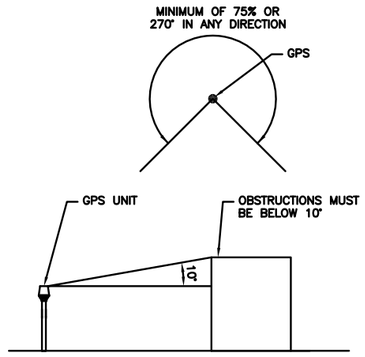
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

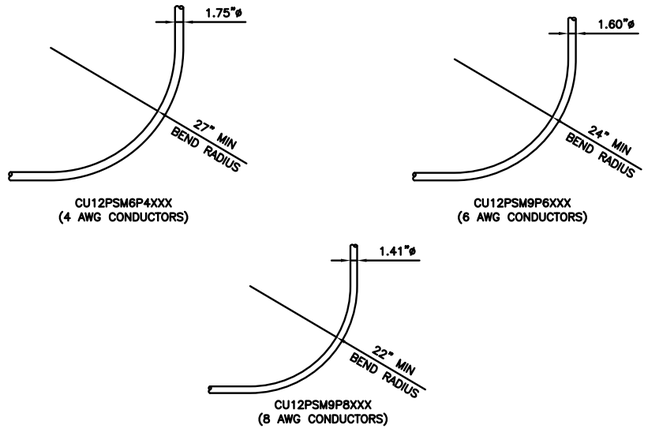
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



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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LICENSED PROFESSIONAL ENGINEER
8/24/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: N/A

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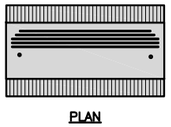
PROJECT INFORMATION
BOHVN00016A
201 GRANITE ROAD
GUILFORD, CT 06437

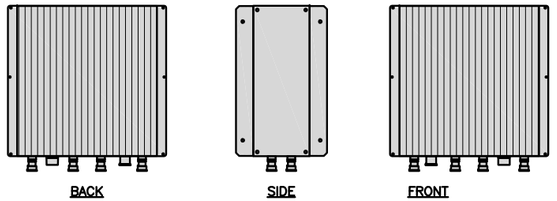
SHEET TITLE
EQUIPMENT DETAILS

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



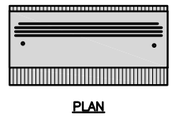
PLAN



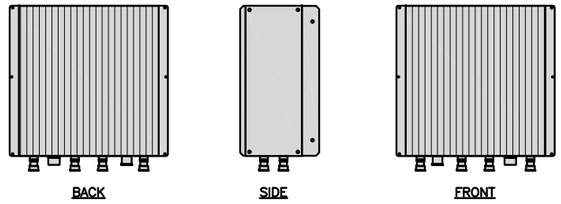
BACK SIDE FRONT

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

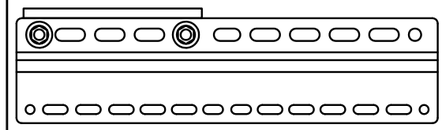


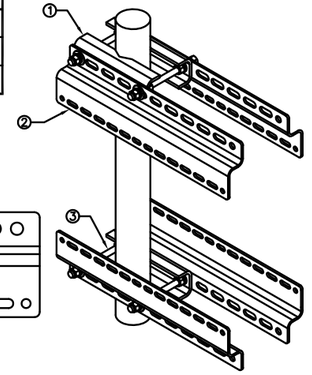
BACK SIDE FRONT

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:
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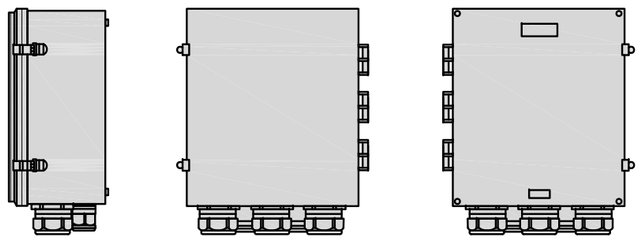
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

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

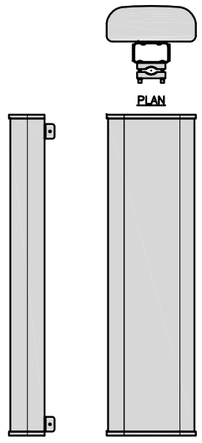
PLAN



SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 4

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

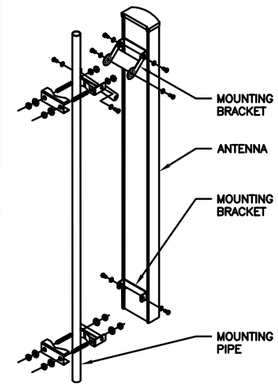


PLAN SIDE FRONT

ANTENNA DETAIL | NO SCALE | 5

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

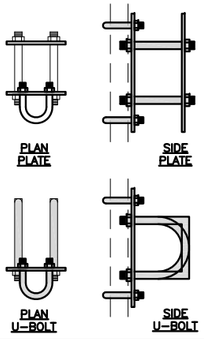
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



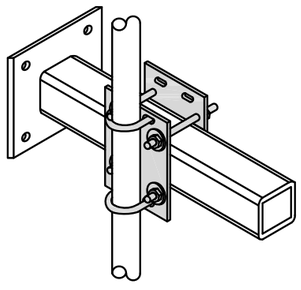
ANTENNA MOUNTING DETAIL | NO SCALE | 6

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

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



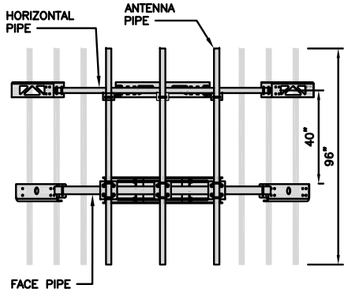
PLAN PLATE SIDE PLATE
PLAN U-BOLT SIDE U-BOLT

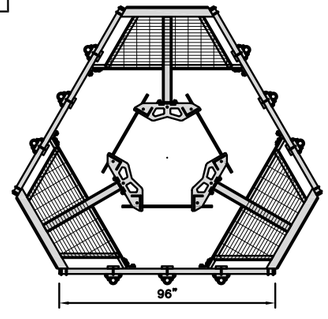


RRH/OVP MOUNT DETAIL | NO SCALE | 7

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

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





ANTENNA PLATFORM DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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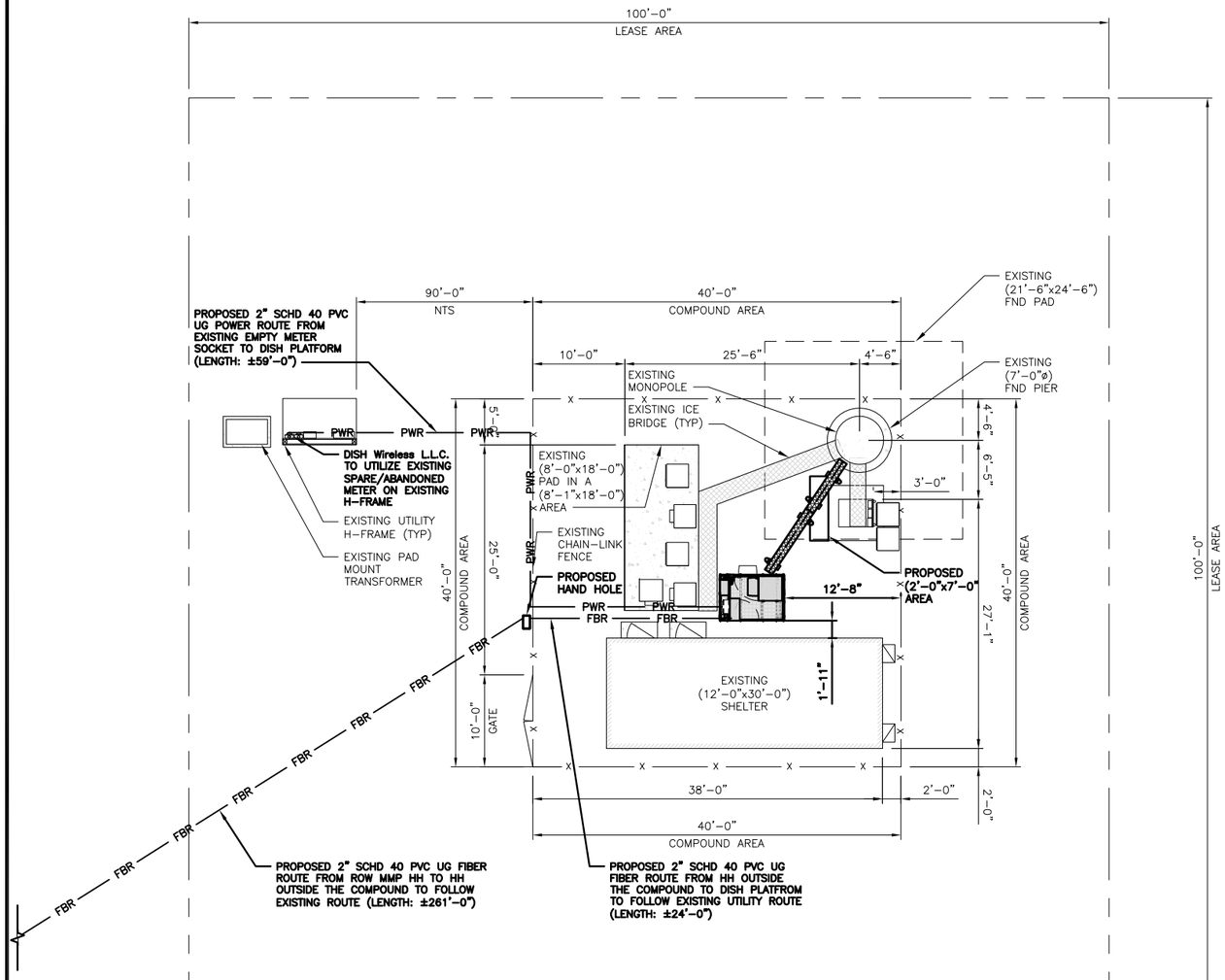
201 GRANITE ROAD
GUILFORD, CT 06437

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

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



UTILITY ROUTE PLAN

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

1

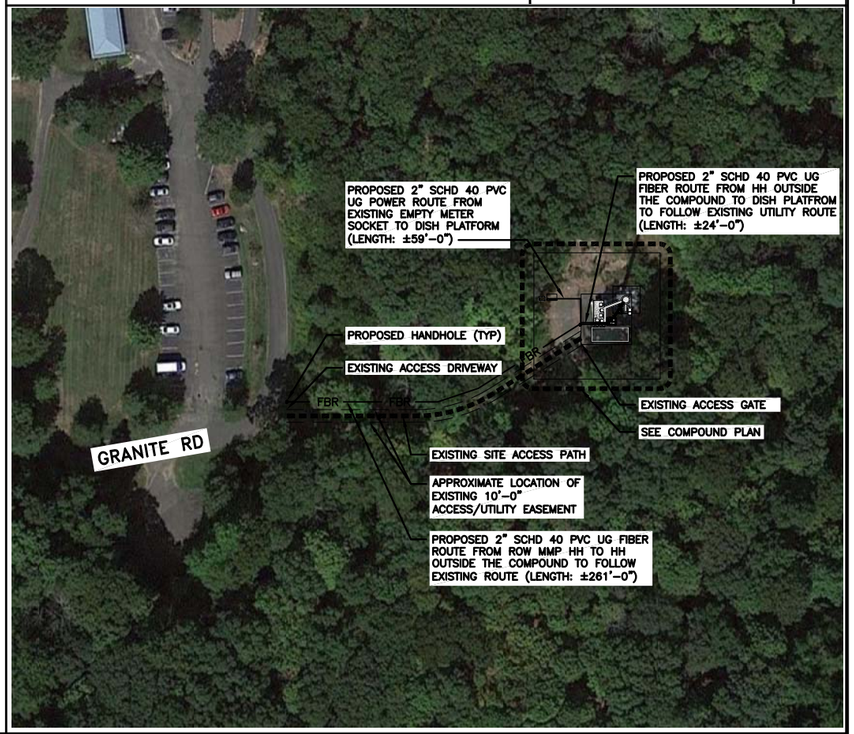
DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND −48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY −48V.

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

ELECTRICAL NOTES

2

ELECTRICAL NOTES



ELECTRICAL NOTES

60' 30' 0 60' 120'
1"=60'

3

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SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/24/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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0	08/24/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

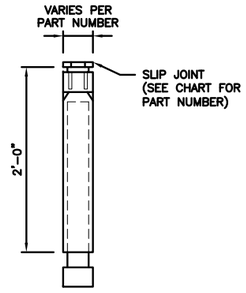
DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00016A
201 GRANITE ROAD
GUILFORD, CT 06437

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"

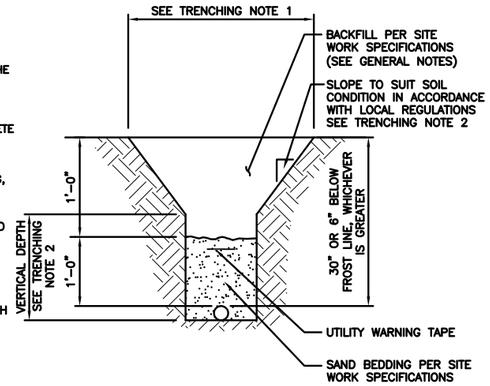


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

EXPANSION JOINT DETAIL | NO SCALE | 1

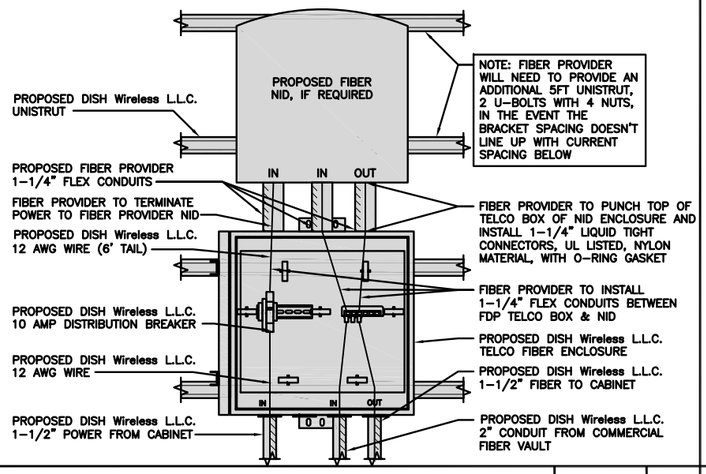
TRENCHING NOTES

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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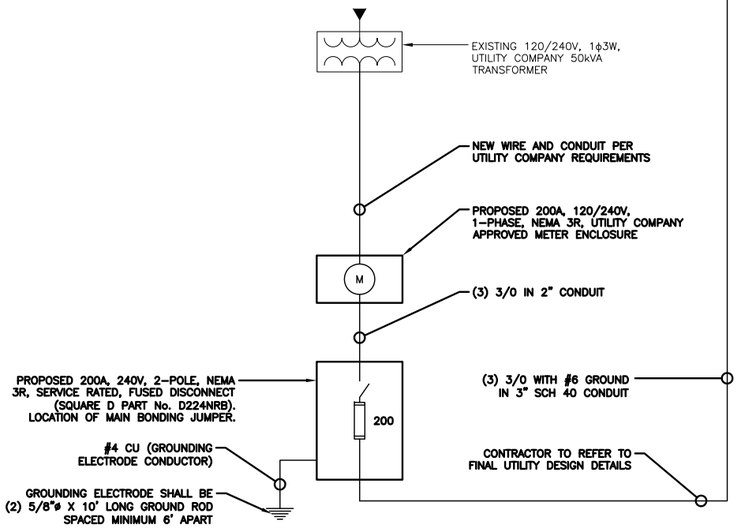
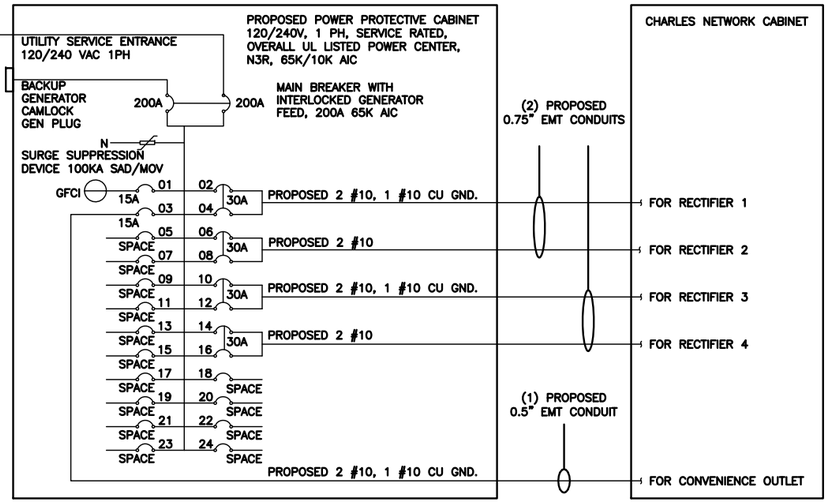
GUILFORD, CT 06437

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2





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

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

NOTES

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

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

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

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

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

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

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

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

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

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

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

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

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

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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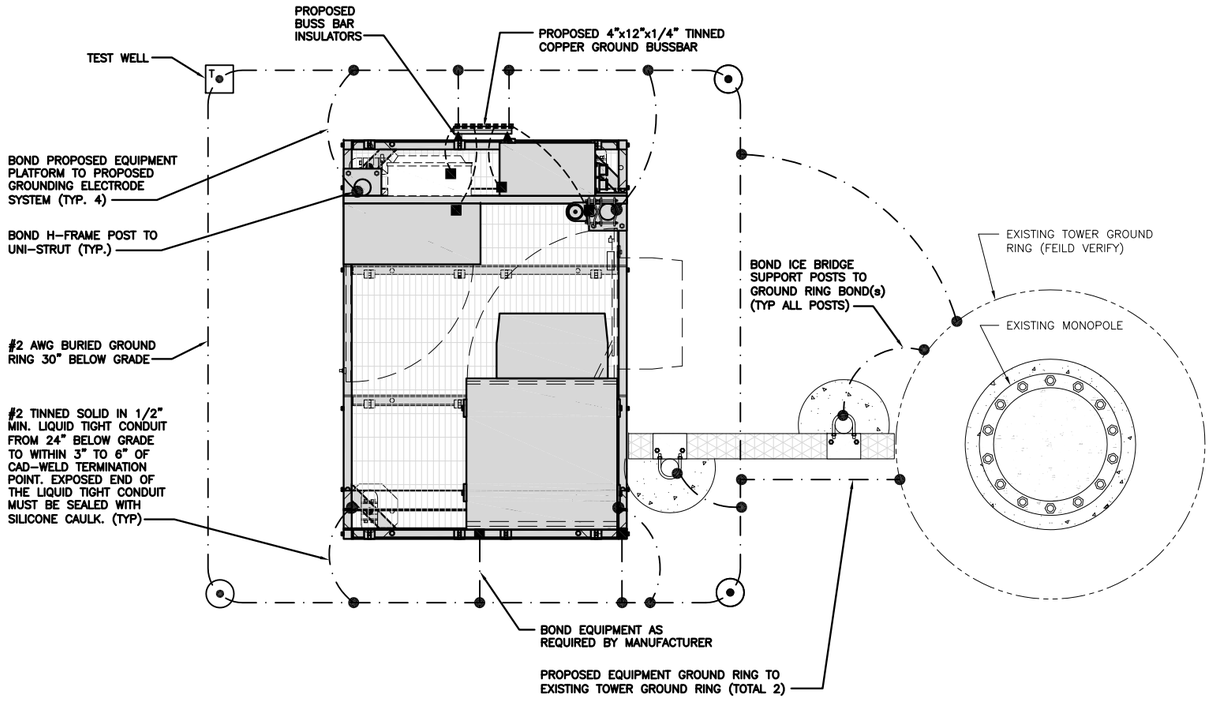
GUILFORD, CT 06437

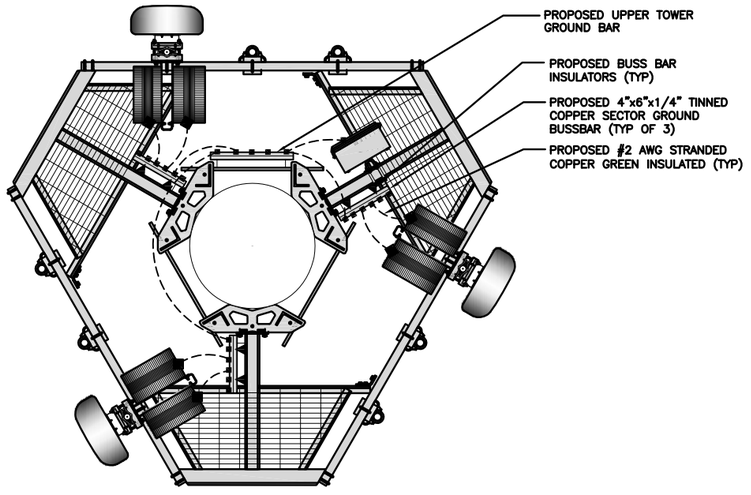
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES

NO SCALE | 3

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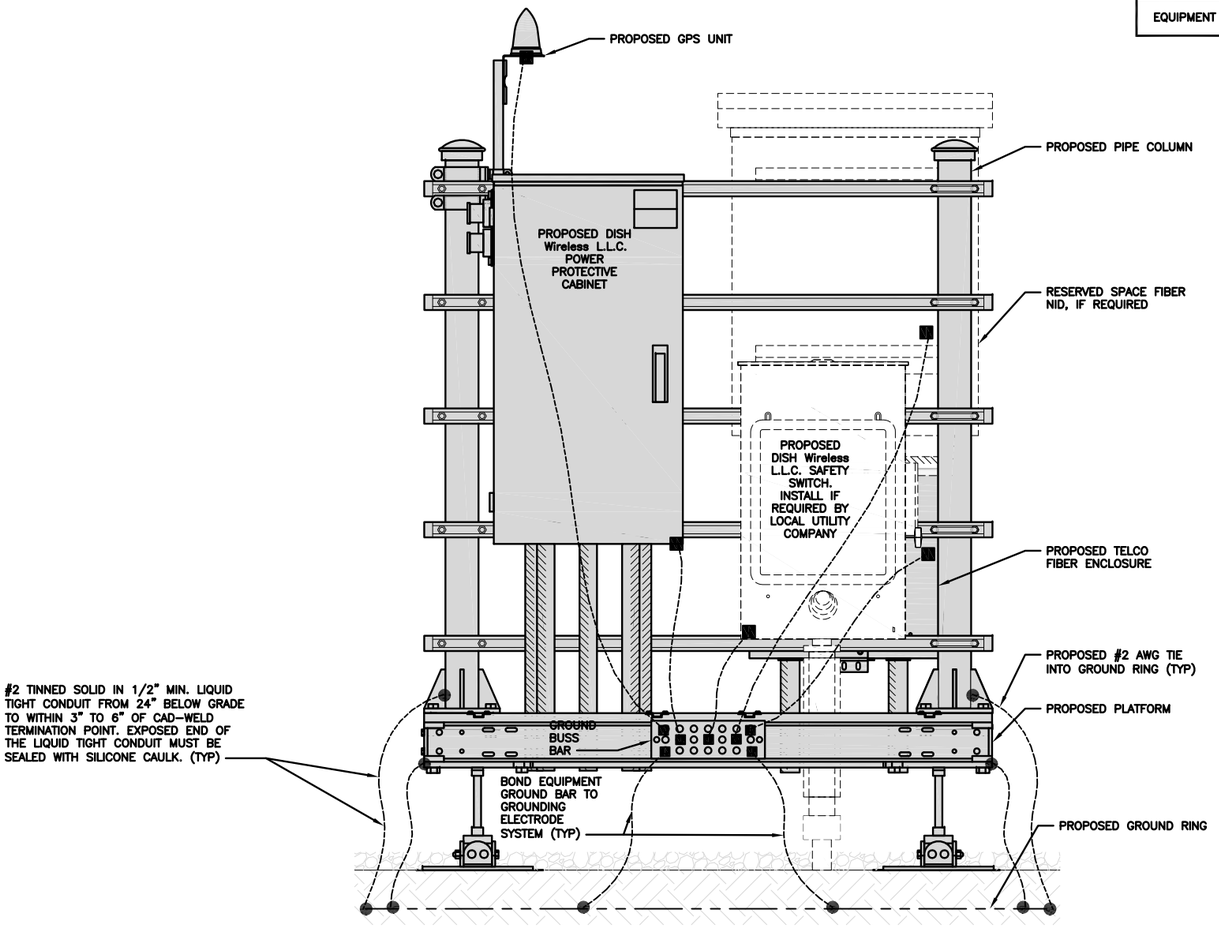
GUILFORD, CT 06437

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

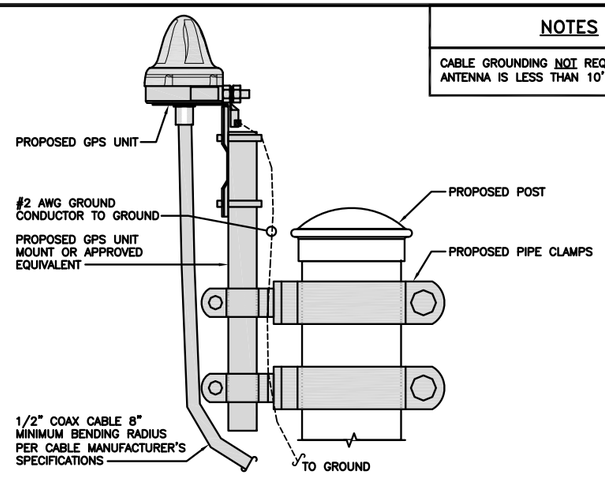
EQUIPMENT CABINET OMITTED FOR CLARITY



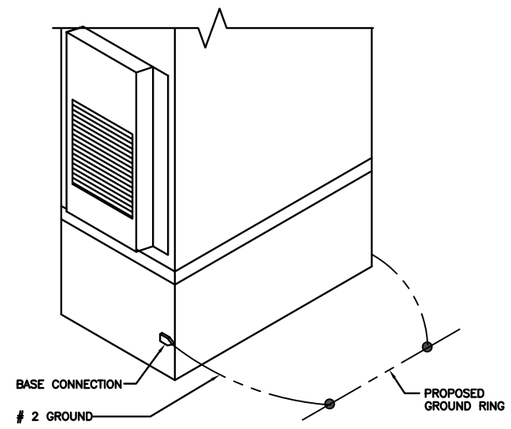
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

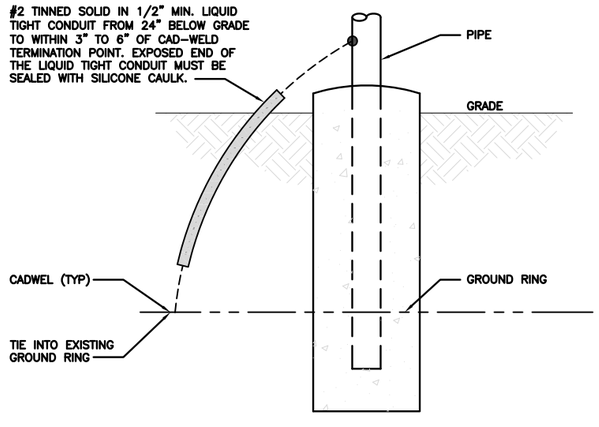
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



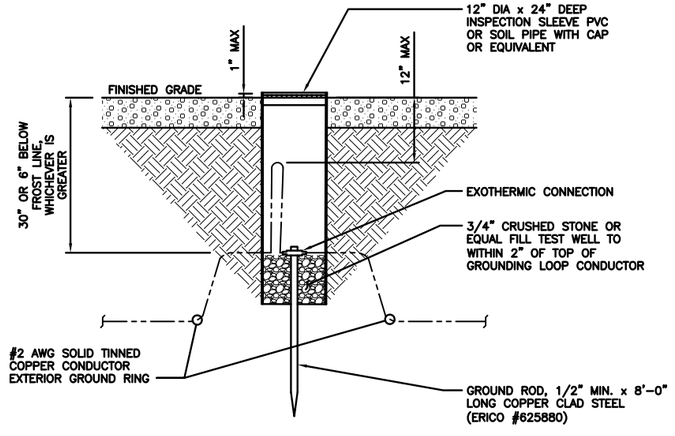
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



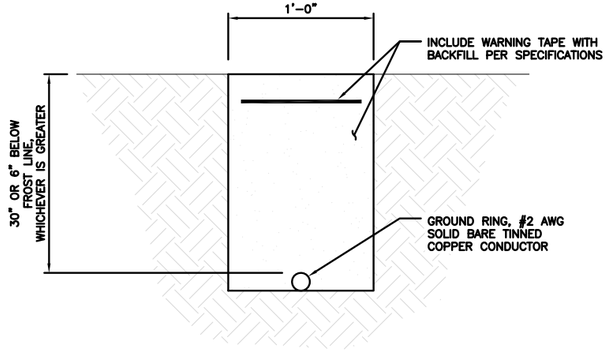
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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A	08/23/2021	ISSUED FOR REVIEW
0	08/24/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00016A
201 GRANITE ROAD
GUILFORD, CT 06437

SHEET TITLE

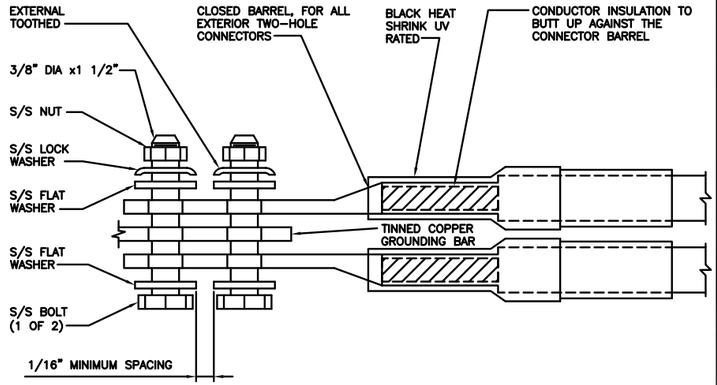
GROUNDING DETAILS

SHEET NUMBER

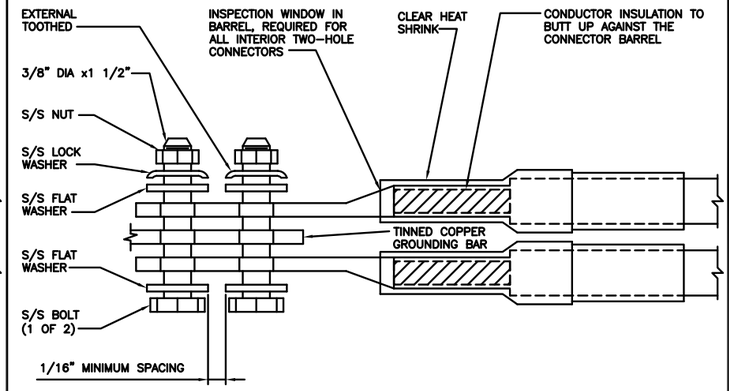
G-2

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).

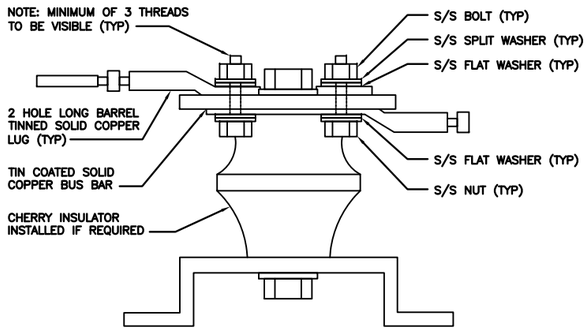
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/24/2021

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

RFDS REV #: N/A

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SHEET TITLE
GROUNDING DETAILS

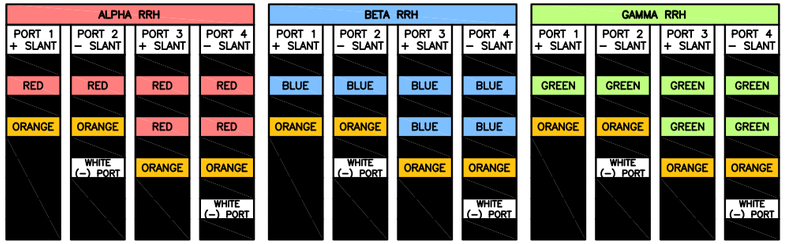
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

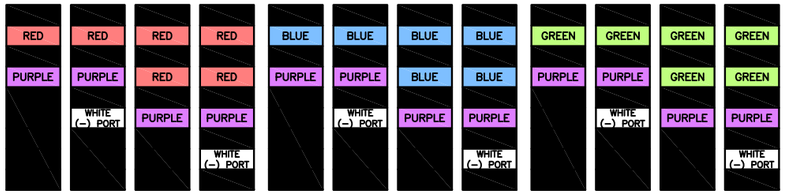
LOW–BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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)

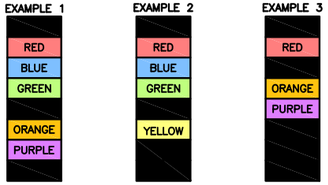


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

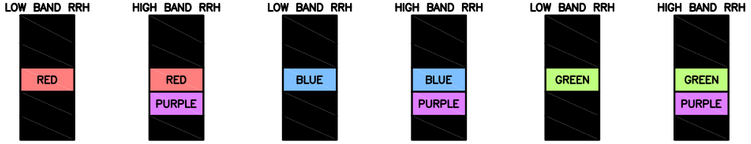
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW–BANDS AND MID–BANDS

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



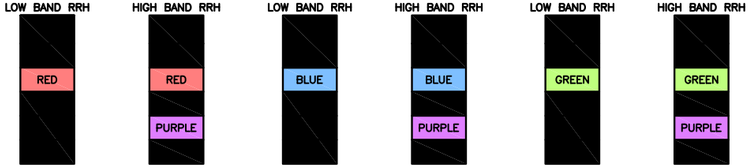
FIBER JUMPERS TO RRHs

LOW–BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

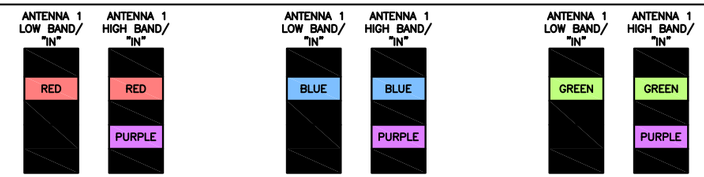


POWER CABLES TO RRHs

LOW–BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



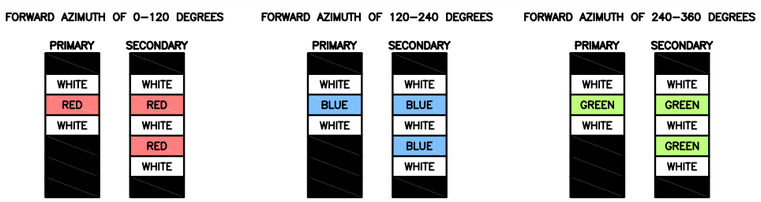
RET MOTORS AT ANTENNAS



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

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SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

ABBREVIATIONS

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

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SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/24/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER

6039–Z0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00016A
201 GRANITE ROAD
GUILFORD, CT 06437

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
8/24/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

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A	06/23/2021	ISSUED FOR REVIEW
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A&E PROJECT NUMBER

6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00016A
201 GRANITE ROAD
GUILFORD, CT 06437

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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GUILFORD, CT 06437

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **May 29, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOHVN00016A
	Site Name:	CT-CCI-T-842864
Crown Castle Designation:	**BU Number:**	842864
	Site Name:	GUILFORD SW
	JDE Job Number:	645143
	Work Order Number:	1966128
	Order Number:	553360 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1966128
Site Data:	**201 GRANITE ROAD, GUILFORD, NEW HAVEN County, CT**	
	Latitude *41° 17' 31.14"*, Longitude *-72° 43' 58.28"*	
	109 Foot - Monopole Tower	

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

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

LC5: Proposed Equipment Configuration **Sufficient Capacity – 46.5%**

This analysis has been performed in accordance with the 2018 Connecticut Building Code based upon an ultimate 3-second gust wind speed of 130 mph. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Rohit Soni

Respectfully submitted by:

Digitally signed by Bradley E Byrom
Date: 2021.05.31 09:12:52 -04'00'

Bradley E. Byrom, P.E., S.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 109 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC..

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	130 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
77.0	77.0	3	fujitsu	TA08025-B604	1	1-3/8
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
106.0	107.0	3	amphenol	BXA-171063-12CF-EDIN-X w/ Mount Pipe	2	1-5/8
		3	amphenol	BXA-70063-6CF-EDIN-X w/ Mount Pipe		
		6	commscope	NHH-65B-R2B w/ Mount Pipe		
		2	raycap	RRFDC-3315-PF-48		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
	106.0	1	tower mounts	Platform Mount [LP 303-1]		
96.0	97.0	1	andrew	SBNHH-1D65A w/ Mount Pipe	12 3 1 2	1-1/4 1/2 3/8 3/4
		2	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 32 B2		
		6	powerwave technologies	7770.00 w/ Mount Pipe		
	96.0	6	powerwave technologies	7020.00		
		12	powerwave	LGP21401		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
			technologies			
		2	raycap	DC6-48-60-18-8F		
		1	tower mounts	Miscellaneous [NA 507-3]		
		1	tower mounts	Platform Mount [LP 303-1]		
87.0	87.0	1		Perfect Vision - PV-PKBK Kicker Kit	3	1-5/8
		1		Perfect Vision - PV-RM1240 Collar Mount		
		1		SitePro1- PRK-SFS Reinforcement kit		
		1	tower mounts	T-Arm Mount [TA 602-3]		
	86.0	3	ericsson	AIR -32 B2A/B66AA w/ Mount Pipe		
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4713222	CCISITES
4-POST-MODIFICATION INSPECTION	5415537	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4492141	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4492171	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	4492170	CCISITES
4-MOUNT REINFORCEMENT DESIGN DRAWING DATA	8484555	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.9.0), 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
L1	109 - 99	Pole	TP24x24x0.375	1	-4.012	920.561	5.4	Pass
L2	99 - 79	Pole	TP30.53x26.42x0.313	2	-13.652	1841.017	15.4	Pass
L3	79 - 59	Pole	TP34.64x30.53x0.313	3	-19.929	2091.421	29.9	Pass
L4	59 - 46.93	Pole	TP37.12x34.64x0.313	4	-21.155	2178.183	34.0	Pass
L5	46.93 - 32.07	Pole	TP39.495x35.439x0.375	5	-26.215	2860.126	35.8	Pass
L6	32.07 - 12.07	Pole	TP43.552x39.495x0.375	6	-30.979	3156.709	41.7	Pass
L7	12.07 - 0	Pole	TP46x43.552x0.375	7	-33.849	3335.692	44.6	Pass
							Summary	
						Pole (L7)	44.6	Pass
						Rating =	44.6	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	38.4	Pass
1	Base Plate	0	46.5	Pass
1	Base Foundation (Structure)	0	43.6	Pass
1	Base Foundation (Soil Interaction)	0	41.5	Pass
1	Flange Bolts	99	3.0	Pass
1	Flange Plate	99	12.7	Pass

Structure Rating (max from all components) =	**46.5%**

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

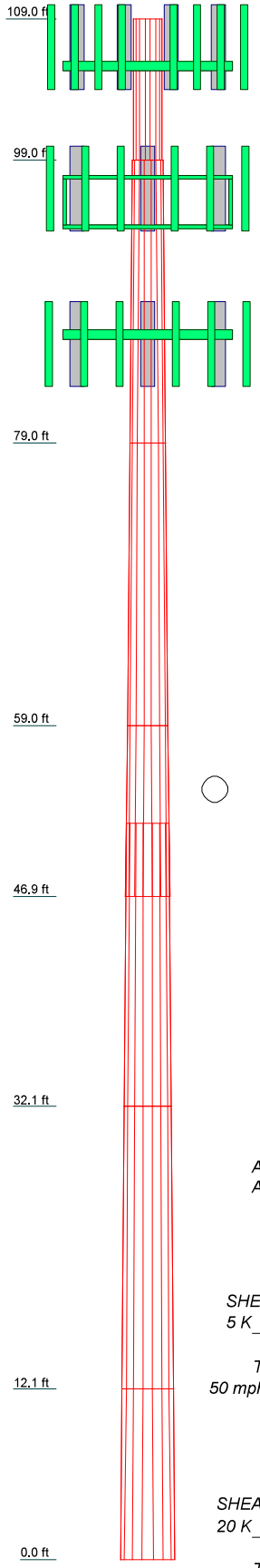
4.1) Recommendations

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

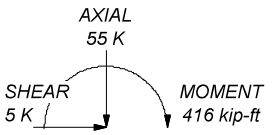
APPENDIX A

TNXTOWER OUTPUT

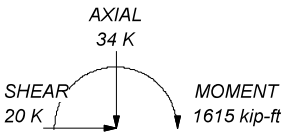
Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.000	0	0.375		24.000	24.000	A53-B-35	0.9
2	20.000	18	0.313		26.420	30.530		1.9
3	20.000	18	0.313		30.530	34.640		2.2
4	12.070	18	0.313	5.140	34.640	37.120	A572-65	1.4
5	20.000	18	0.375		35.439	39.495		3.0
6	20.000	18	0.375		39.495	43.552		3.3
7	12.070	18	0.375		43.552	46.000		2.2
								15.0



ALL REACTIONS ARE FACTORED



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



TORQUE 1 kip-ft
REACTIONS - 130 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 44.6%

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

Job: **842864**			
Project:			
Client: Crown Castle	Drawn by: RSoni		App'd:
Code: TIA-222-H	Date: 05/29/21		Scale: NTS
Path: C:\Work Area\842864\WO 1966128 - SA\Prod\842864_RPA.eri			Dwg No. E-1

Tower Input Data

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

- Tower is located in New Haven County, Connecticut.
- Tower base elevation above sea level: 106.000 ft.
- Basic wind speed of 130 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.000 ft.
- Nominal ice thickness of 1.500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.000 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50.000 °F.
- Deflections calculated using a wind speed of 60 mph.
- TIA-222-H Annex S.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.05.
- 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.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	109.000-99.000	10.000	0.000	Round	24.000	24.000	0.375		A53-B-35 (35 ksi)
L2	99.000-79.000	20.000	0.000	18	26.420	30.530	0.313	1.250	A572-65 (65 ksi)
L3	79.000-59.000	20.000	0.000	18	30.530	34.640	0.313	1.250	A572-65 (65 ksi)
L4	59.000-46.930	12.070	5.140	18	34.640	37.120	0.313	1.250	A572-65 (65 ksi)
L5	46.930-32.070	20.000	0.000	18	35.439	39.495	0.375	1.500	A572-65 (65 ksi)
L6	32.070-12.070	20.000	0.000	18	39.495	43.552	0.375	1.500	A572-65 (65 ksi)
L7	12.070-0.000	12.070		18	43.552	46.000	0.375	1.500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	24.000	27.833	1942.299	8.354	12.000	161.858	3884.597	13.908	0.000	0
	24.000	27.833	1942.299	8.354	12.000	161.858	3884.597	13.908	0.000	0
L2	26.779	25.895	2229.925	9.268	13.421	166.147	4462.784	12.950	4.100	13.12
	30.953	29.972	3457.511	10.727	15.509	222.933	6919.572	14.989	4.823	15.434
L3	30.953	29.972	3457.511	10.727	15.509	222.933	6919.572	14.989	4.823	15.434
	35.126	34.048	5068.853	12.186	17.597	288.053	10144.376	17.027	5.547	17.749
L4	35.126	34.048	5068.853	12.186	17.597	288.053	10144.376	17.027	5.547	17.749
	37.644	36.508	6248.897	13.067	18.857	331.384	12506.016	18.258	5.983	19.146
L5	36.986	41.735	6482.632	12.448	18.003	360.088	12973.795	20.871	5.577	14.873
	40.047	46.563	9002.908	13.888	20.064	448.718	18017.663	23.286	6.291	16.776
L6	40.047	46.563	9002.908	13.888	20.064	448.718	18017.663	23.286	6.291	16.776
	44.166	51.391	12104.006	15.328	22.124	547.090	24223.939	25.701	7.005	18.68
L7	44.166	51.391	12104.006	15.328	22.124	547.090	24223.939	25.701	7.005	18.68
	46.652	54.305	14281.844	16.197	23.368	611.171	28582.480	27.158	7.436	19.829

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 109.000-99.000				1	1	1			
L2 99.000-79.000				1	1	1			
L3 79.000-59.000				1	1	1			
L4 59.000-46.930				1	1	1			
L5 46.930-32.070				1	1	1			
L6 32.070-12.070				1	1	1			
L7 12.070-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
***										
Step Bolts	B	No	Surface Ar (CaAa)	109.000 - 8.000	1	1	0.000 0.200	0.375		0.002
***										

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 klf
****									
HB158-1-08U8-S8J18(1-5/8)	B	No	No	Inside Pole	106.000 - 8.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
***									
LDF4-50A(1/2)	C	No	No	Inside Pole	96.000 - 8.000	3	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
LDF6-50A(1-1/4)	C	No	No	Inside Pole	96.000 - 8.000	12	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
FB-L98-002-XXX(3/8)	C	No	No	Inside Pole	96.000 - 8.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	96.000 - 8.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
2" Rigid Conduit	C	No	No	Inside Pole	96.000 - 8.000	1	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
***									
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	C	No	No	Inside Pole	87.000 - 8.000	1	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
HCS 6X12 4AWG(1-5/8)	C	No	No	Inside Pole	87.000 - 8.000	2	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
							2" Ice	0.000	0.002
***									
***									
CU12PSM9P8XXX (1-3/8)	C	No	No	Inside Pole	77.000 - 0.000	1	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
							2" Ice	0.000	0.002
***									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	109.000-99.000	A	0.000	0.000	0.000	0.000	0.000

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.375	0.000	0.038
		C	0.000	0.000	0.000	0.000	0.000
L2	99.000-79.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.750	0.000	0.092
		C	0.000	0.000	0.000	0.000	0.246
L3	79.000-59.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.750	0.000	0.092
		C	0.000	0.000	0.000	0.000	0.381
L4	59.000-46.930	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.453	0.000	0.056
		C	0.000	0.000	0.000	0.000	0.232
L5	46.930-32.070	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.557	0.000	0.068
		C	0.000	0.000	0.000	0.000	0.285
L6	32.070-12.070	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.750	0.000	0.092
		C	0.000	0.000	0.000	0.000	0.384
L7	12.070-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.153	0.000	0.019
		C	0.000	0.000	0.000	0.000	0.091

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	109.000-99.000	A	1.430	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	3.235	0.000	0.070
		C		0.000	0.000	0.000	0.000	0.000
L2	99.000-79.000	A	1.408	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	6.380	0.000	0.153
		C		0.000	0.000	0.000	0.000	0.246
L3	79.000-59.000	A	1.372	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	6.239	0.000	0.151
		C		0.000	0.000	0.000	0.000	0.381
L4	59.000-46.930	A	1.337	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	3.679	0.000	0.089
		C		0.000	0.000	0.000	0.000	0.232
L5	46.930-32.070	A	1.298	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	4.530	0.000	0.110
		C		0.000	0.000	0.000	0.000	0.285
L6	32.070-12.070	A	1.224	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	5.645	0.000	0.140
		C		0.000	0.000	0.000	0.000	0.384
L7	12.070-0.000	A	1.075	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.028	0.000	0.026
		C		0.000	0.000	0.000	0.000	0.091

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	109.000-99.000	0.351	-0.114	1.246	-0.405
L2	99.000-79.000	0.287	-0.093	1.255	-0.408
L3	79.000-59.000	0.287	-0.093	1.257	-0.408
L4	59.000-46.930	0.287	-0.093	1.248	-0.406
L5	46.930-32.070	0.287	-0.093	1.259	-0.409
L6	32.070-12.070	0.287	-0.093	1.187	-0.386
L7	12.070-0.000	0.096	-0.031	0.371	-0.120

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	15	Step Bolts	99.00 - 109.00	1.0000	1.0000
L2	15	Step Bolts	79.00 - 99.00	1.0000	1.0000
L3	15	Step Bolts	59.00 - 79.00	1.0000	1.0000
L4	15	Step Bolts	46.93 - 59.00	1.0000	1.0000
L5	15	Step Bolts	32.07 - 46.93	1.0000	1.0000
L6	15	Step Bolts	12.07 - 32.07	1.0000	1.0000
L7	15	Step Bolts	8.00 - 12.07	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
***					
BXA-70063-6CF-EDIN-X w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	106.000
BXA-70063-6CF-EDIN-X w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	106.000
BXA-70063-6CF-EDIN-X w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	106.000
BXA-171063-12CF-EDIN-X w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	106.000
BXA-171063-12CF-EDIN-X w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	106.000
BXA-171063-12CF-EDIN-X w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	106.000
(2) NHH-65B-R2B w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	106.000
(2) NHH-65B-R2B w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	106.000
(2) NHH-65B-R2B w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	106.000
RRFDC-3315-PF-48	A	From Leg	4.000	0.000	106.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.000 1.000		
RRFDC-3315-PF-48	C	From Leg	4.000 0.000	0.000	106.000
			1.000		
RFV01U-D2A	A	From Leg	4.000 0.000	0.000	106.000
			1.000		
RFV01U-D2A	B	From Leg	4.000 0.000	0.000	106.000
			1.000		
RFV01U-D2A	C	From Leg	4.000 0.000	0.000	106.000
			1.000		
RFV01U-D1A	A	From Leg	4.000 0.000	0.000	106.000
			1.000		
RFV01U-D1A	B	From Leg	4.000 0.000	0.000	106.000
			1.000		
RFV01U-D1A	C	From Leg	4.000 0.000	0.000	106.000
			1.000		
Platform Mount [LP 303-1]	C	None		0.000	106.000
***					
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	96.000
			1.000		
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	96.000
			1.000		
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	96.000
			1.000		
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	96.000
			1.000		
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	96.000
			1.000		
SBNHH-1D65A w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	96.000
			1.000		
(4) LGP21401	A	From Leg	4.000 0.000	0.000	96.000
			0.000		
(4) LGP21401	B	From Leg	4.000 0.000	0.000	96.000
			0.000		
(4) LGP21401	C	From Leg	4.000 0.000	0.000	96.000
			0.000		
(2) 7020.00	A	From Leg	4.000 0.000	0.000	96.000
			0.000		
(2) 7020.00	B	From Leg	4.000 0.000	0.000	96.000
			0.000		
(2) 7020.00	C	From Leg	4.000 0.000	0.000	96.000
			0.000		
RRUS 32 B2	A	From Leg	4.000 0.000	0.000	96.000
			1.000		
RRUS 32 B2	B	From Leg	4.000	0.000	96.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.000 1.000		
RRUS 32 B2	C	From Leg	4.000 0.000	0.000	96.000
			1.000		
RRUS 11	A	From Leg	4.000 0.000	0.000	96.000
			1.000		
RRUS 11	B	From Leg	4.000 0.000	0.000	96.000
			1.000		
RRUS 11	C	From Leg	4.000 0.000	0.000	96.000
			1.000		
DC6-48-60-18-8F	A	From Leg	4.000 0.000	0.000	96.000
			0.000		
DC6-48-60-18-8F	C	From Leg	4.000 0.000	0.000	96.000
			0.000		
Platform Mount [LP 303-1]	C	None		0.000	96.000
Miscellaneous [NA 507-3]	C	None		0.000	96.000
***					
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	87.000
			-1.000		
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	87.000
			-1.000		
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	87.000
			-1.000		
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	87.000
			-1.000		
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	87.000
			-1.000		
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	87.000
			-1.000		
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	87.000
			-1.000		
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	87.000
			-1.000		
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	87.000
			-1.000		
RADIO 4449 B12/B71	A	From Leg	4.000 0.000	0.000	87.000
			-1.000		
RADIO 4449 B12/B71	B	From Leg	4.000 0.000	0.000	87.000
			-1.000		
RADIO 4449 B12/B71	C	From Leg	4.000 0.000	0.000	87.000
			-1.000		
Perfect Vision - PV-PKBK Kicker Kit	C	None		0.000	87.000
SitePro1- PRK-SFS Reinforcement kit	C	None		0.000	87.000
Perfect Vision - PV-RM1240 Collar Mount	C	None		0.000	87.000
T-Arm Mount [TA 602-3]	C	None		0.000	87.000
****					
***					

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
Commscope MC-PK8-DSH	C	None		0.000	77.000
8' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	77.000
8' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	77.000
8' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	77.000
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	77.000
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	77.000
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	77.000
TA08025-B604	A	From Leg	4.000 0.000 0.000	0.000	77.000
TA08025-B604	B	From Leg	4.000 0.000 0.000	0.000	77.000
TA08025-B604	C	From Leg	4.000 0.000 0.000	0.000	77.000
TA08025-B605	A	From Leg	4.000 0.000 0.000	0.000	77.000
TA08025-B605	B	From Leg	4.000 0.000 0.000	0.000	77.000
TA08025-B605	C	From Leg	4.000 0.000 0.000	0.000	77.000
RDIDC-9181-PF-48	B	From Leg	4.000 0.000 0.000	0.000	77.000
***					

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

Comb. No.	Description
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	109 - 99	Pole	Max Tension	20	0.000	-0.000	-0.000
			Max. Compression	26	-8.601	0.527	0.362
			Max. Mx	20	-4.013	27.863	-0.041
			Max. My	2	-4.012	-0.009	27.993
			Max. Vy	20	-3.770	27.863	-0.041
			Max. Vx	2	-3.791	-0.009	27.993
			Max. Torque	4			0.386
L2	99 - 79	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-27.573	1.228	0.899
			Max. Mx	20	-13.658	208.267	-0.898
			Max. My	2	-13.654	-0.865	209.540
			Max. Vy	20	-12.393	208.267	-0.898
			Max. Vx	2	-12.455	-0.865	209.540
			Max. Torque	4			1.256
L3	79 - 59	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-37.444	0.696	0.738
			Max. Mx	20	-19.934	516.848	-1.752
			Max. My	2	-19.930	-1.855	519.225
			Max. Vy	20	-16.449	516.848	-1.752
			Max. Vx	2	-16.496	-1.855	519.225
			Max. Torque	4			1.256
L4	59 - 46.93	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.070	0.649	0.765
			Max. Mx	20	-21.159	632.479	-2.015

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-21.156	-2.152	635.212
			Max. Vy	20	-16.942	632.479	-2.015
			Max. Vx	2	-16.988	-2.152	635.212
			Max. Torque	4			1.036
L5	46.93 - 32.07	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-45.632	0.507	0.847
			Max. Mx	20	-26.218	985.963	-2.767
			Max. My	2	-26.216	-3.008	989.721
			Max. Vy	8	18.373	-985.875	3.333
			Max. Vx	2	-18.419	-3.008	989.721
			Max. Torque	4			1.035
L6	32.07 - 12.07	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.543	0.362	0.931
			Max. Mx	8	-30.981	-1365.910	4.161
			Max. My	2	-30.980	-3.864	1370.632
			Max. Vy	8	19.647	-1365.910	4.161
			Max. Vx	2	-19.692	-3.864	1370.632
			Max. Torque	4			1.035
L7	12.07 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.022	0.334	0.947
			Max. Mx	8	-33.849	-1607.701	4.634
			Max. My	2	-33.849	-4.345	1612.953
			Max. Vy	8	20.436	-1607.701	4.634
			Max. Vx	2	-20.481	-4.345	1612.953
			Max. Torque	4			1.035

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	55.022	0.000	0.000
	Max. H_x	20	33.855	20.427	-0.038
	Max. H_z	2	33.855	-0.038	20.471
	Max. M_x	2	1612.953	-0.038	20.471
	Max. M_z	8	1607.701	-20.427	0.038
	Max. Torsion	4	1.035	-10.247	17.747
	Min. Vert	11	25.391	-17.671	-10.202
	Min. H_x	8	33.855	-20.427	0.038
	Min. H_z	14	33.855	0.038	-20.471
	Min. M_x	14	-1612.279	0.038	-20.471
	Min. M_z	20	-1607.612	20.427	-0.038
	Min. Torsion	16	-1.035	10.247	-17.747

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	28.213	0.000	0.000	-0.269	-0.040	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	33.855	0.038	-20.471	-1612.953	-4.345	-0.894
0.9 Dead+1.0 Wind 0 deg - No Ice	25.391	0.038	-20.471	-1601.063	-4.298	-0.891
1.2 Dead+1.0 Wind 30 deg - No Ice	33.855	10.247	-17.747	-1399.051	-807.596	-1.035
0.9 Dead+1.0 Wind 30 deg - No Ice	25.391	10.247	-17.747	-1388.724	-801.672	-1.031
1.2 Dead+1.0 Wind 60 deg -	33.855	17.709	-10.269	-810.367	-1394.464	-0.898

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 60 deg - No Ice	25.391	17.709	-10.269	-804.347	-1384.249	-0.895
1.2 Dead+1.0 Wind 90 deg - No Ice	33.855	20.427	-0.038	-4.634	-1607.701	-0.519
0.9 Dead+1.0 Wind 90 deg - No Ice	25.391	20.427	-0.038	-4.511	-1595.930	-0.517
1.2 Dead+1.0 Wind 120 deg - No Ice	33.855	17.671	10.202	802.252	-1390.170	0.000
0.9 Dead+1.0 Wind 120 deg - No Ice	25.391	17.671	10.202	796.469	-1379.992	0.000
1.2 Dead+1.0 Wind 150 deg - No Ice	33.855	10.180	17.709	1394.085	-800.152	0.519
0.9 Dead+1.0 Wind 150 deg - No Ice	25.391	10.180	17.709	1383.968	-794.292	0.518
1.2 Dead+1.0 Wind 180 deg - No Ice	33.855	-0.038	20.471	1612.279	4.252	0.898
0.9 Dead+1.0 Wind 180 deg - No Ice	25.391	-0.038	20.471	1600.564	4.226	0.895
1.2 Dead+1.0 Wind 210 deg - No Ice	33.855	-10.247	17.747	1398.381	807.502	1.035
0.9 Dead+1.0 Wind 210 deg - No Ice	25.391	-10.247	17.747	1388.226	801.601	1.031
1.2 Dead+1.0 Wind 240 deg - No Ice	33.855	-17.709	10.269	809.697	1394.374	0.894
0.9 Dead+1.0 Wind 240 deg - No Ice	25.391	-17.709	10.269	803.850	1384.180	0.891
1.2 Dead+1.0 Wind 270 deg - No Ice	33.855	-20.427	0.038	3.963	1607.612	0.516
0.9 Dead+1.0 Wind 270 deg - No Ice	25.391	-20.427	0.038	4.013	1595.862	0.514
1.2 Dead+1.0 Wind 300 deg - No Ice	33.855	-17.671	-10.202	-802.926	1390.081	-0.000
0.9 Dead+1.0 Wind 300 deg - No Ice	25.391	-17.671	-10.202	-796.969	1379.924	-0.000
1.2 Dead+1.0 Wind 330 deg - No Ice	33.855	-10.180	-17.709	-1394.760	800.061	-0.516
0.9 Dead+1.0 Wind 330 deg - No Ice	25.391	-10.180	-17.709	-1384.469	794.222	-0.514
1.2 Dead+1.0 Ice+1.0 Temp	55.022	0.000	0.000	-0.947	0.334	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	55.022	0.006	-5.225	-415.768	-0.295	-0.197
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	55.022	2.614	-4.528	-360.545	-207.178	-0.227
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	55.022	4.522	-2.617	-208.990	-358.444	-0.197
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	55.022	5.218	-0.006	-1.711	-413.561	-0.114
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	55.022	4.516	2.607	205.750	-357.760	-0.000
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	55.022	2.604	4.522	357.806	-205.994	0.114
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	55.022	-0.006	5.225	413.712	1.073	0.197
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	55.022	-2.614	4.528	358.490	207.957	0.227
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	55.022	-4.522	2.617	206.935	359.223	0.197
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	55.022	-5.218	0.006	-0.344	414.340	0.113
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	55.022	-4.516	-2.607	-207.805	358.539	-0.000
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	55.022	-2.604	-4.522	-359.861	206.772	-0.114
Dead+Wind 0 deg - Service	28.213	0.008	-4.110	-322.637	-0.895	-0.187
Dead+Wind 30 deg - Service	28.213	2.057	-3.563	-279.878	-161.464	-0.216
Dead+Wind 60 deg - Service	28.213	3.556	-2.062	-162.201	-278.778	-0.187
Dead+Wind 90 deg - Service	28.213	4.101	-0.008	-1.137	-321.404	-0.108
Dead+Wind 120 deg -	28.213	3.548	2.048	160.157	-277.920	0.000

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
Service						
Dead+Wind 150 deg - Service	28.213	2.044	3.556	278.462	-159.978	0.108
Dead+Wind 180 deg - Service	28.213	-0.008	4.110	322.079	0.820	0.187
Dead+Wind 210 deg - Service	28.213	-2.057	3.563	279.320	161.389	0.216
Dead+Wind 240 deg - Service	28.213	-3.556	2.062	161.643	278.704	0.187
Dead+Wind 270 deg - Service	28.213	-4.101	0.008	0.579	321.330	0.108
Dead+Wind 300 deg - Service	28.213	-3.548	-2.048	-160.715	277.846	-0.000
Dead+Wind 330 deg - Service	28.213	-2.044	-3.556	-279.020	159.903	-0.108

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-28.213	0.000	0.000	28.213	0.000	0.000%
2	0.038	-33.855	-20.471	-0.038	33.855	20.471	0.000%
3	0.038	-25.391	-20.471	-0.038	25.391	20.471	0.000%
4	10.247	-33.855	-17.747	-10.247	33.855	17.747	0.000%
5	10.247	-25.391	-17.747	-10.247	25.391	17.747	0.000%
6	17.709	-33.855	-10.269	-17.709	33.855	10.269	0.000%
7	17.709	-25.391	-10.269	-17.709	25.391	10.269	0.000%
8	20.427	-33.855	-0.038	-20.427	33.855	0.038	0.000%
9	20.427	-25.391	-0.038	-20.427	25.391	0.038	0.000%
10	17.671	-33.855	10.202	-17.671	33.855	-10.202	0.000%
11	17.671	-25.391	10.202	-17.671	25.391	-10.202	0.000%
12	10.180	-33.855	17.709	-10.180	33.855	-17.709	0.000%
13	10.180	-25.391	17.709	-10.180	25.391	-17.709	0.000%
14	-0.038	-33.855	20.471	0.038	33.855	-20.471	0.000%
15	-0.038	-25.391	20.471	0.038	25.391	-20.471	0.000%
16	-10.247	-33.855	17.747	10.247	33.855	-17.747	0.000%
17	-10.247	-25.391	17.747	10.247	25.391	-17.747	0.000%
18	-17.709	-33.855	10.269	17.709	33.855	-10.269	0.000%
19	-17.709	-25.391	10.269	17.709	25.391	-10.269	0.000%
20	-20.427	-33.855	0.038	20.427	33.855	-0.038	0.000%
21	-20.427	-25.391	0.038	20.427	25.391	-0.038	0.000%
22	-17.671	-33.855	-10.202	17.671	33.855	10.202	0.000%
23	-17.671	-25.391	-10.202	17.671	25.391	10.202	0.000%
24	-10.180	-33.855	-17.709	10.180	33.855	17.709	0.000%
25	-10.180	-25.391	-17.709	10.180	25.391	17.709	0.000%
26	0.000	-55.022	0.000	0.000	55.022	0.000	0.000%
27	0.006	-55.022	-5.225	-0.006	55.022	5.225	0.000%
28	2.614	-55.022	-4.528	-2.614	55.022	4.528	0.000%
29	4.522	-55.022	-2.617	-4.522	55.022	2.617	0.000%
30	5.218	-55.022	-0.006	-5.218	55.022	0.006	0.000%
31	4.516	-55.022	2.607	-4.516	55.022	-2.607	0.000%
32	2.604	-55.022	4.522	-2.604	55.022	-4.522	0.000%
33	-0.006	-55.022	5.225	0.006	55.022	-5.225	0.000%
34	-2.614	-55.022	4.528	2.614	55.022	-4.528	0.000%
35	-4.522	-55.022	2.617	4.522	55.022	-2.617	0.000%
36	-5.218	-55.022	0.006	5.218	55.022	-0.006	0.000%
37	-4.516	-55.022	-2.607	4.516	55.022	2.607	0.000%
38	-2.604	-55.022	-4.522	2.604	55.022	4.522	0.000%
39	0.008	-28.213	-4.110	-0.008	28.213	4.110	0.000%
40	2.057	-28.213	-3.563	-2.057	28.213	3.563	0.000%
41	3.556	-28.213	-2.062	-3.556	28.213	2.062	0.000%
42	4.101	-28.213	-0.008	-4.101	28.213	0.008	0.000%
43	3.548	-28.213	2.048	-3.548	28.213	-2.048	0.000%
44	2.044	-28.213	3.556	-2.044	28.213	-3.556	0.000%
45	-0.008	-28.213	4.110	0.008	28.213	-4.110	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
46	-2.057	-28.213	3.563	2.057	28.213	-3.563	0.000%
47	-3.556	-28.213	2.062	3.556	28.213	-2.062	0.000%
48	-4.101	-28.213	0.008	4.101	28.213	-0.008	0.000%
49	-3.548	-28.213	-2.048	3.548	28.213	2.048	0.000%
50	-2.044	-28.213	-3.556	2.044	28.213	3.556	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00072461
3	Yes	4	0.00000001	0.00047469
4	Yes	5	0.00000001	0.00022110
5	Yes	5	0.00000001	0.00010601
6	Yes	5	0.00000001	0.00024824
7	Yes	5	0.00000001	0.00011972
8	Yes	4	0.00000001	0.00052119
9	Yes	4	0.00000001	0.00033380
10	Yes	5	0.00000001	0.00022964
11	Yes	5	0.00000001	0.00011058
12	Yes	5	0.00000001	0.00022282
13	Yes	5	0.00000001	0.00010711
14	Yes	4	0.00000001	0.00081337
15	Yes	4	0.00000001	0.00053416
16	Yes	5	0.00000001	0.00025096
17	Yes	5	0.00000001	0.00012109
18	Yes	5	0.00000001	0.00022232
19	Yes	5	0.00000001	0.00010668
20	Yes	4	0.00000001	0.00043873
21	Yes	4	0.00000001	0.00027700
22	Yes	5	0.00000001	0.00023020
23	Yes	5	0.00000001	0.00011078
24	Yes	5	0.00000001	0.00023854
25	Yes	5	0.00000001	0.00011497
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00019518
28	Yes	5	0.00000001	0.00020836
29	Yes	5	0.00000001	0.00020838
30	Yes	5	0.00000001	0.00019313
31	Yes	5	0.00000001	0.00020581
32	Yes	5	0.00000001	0.00020586
33	Yes	5	0.00000001	0.00019347
34	Yes	5	0.00000001	0.00020837
35	Yes	5	0.00000001	0.00020785
36	Yes	5	0.00000001	0.00019447
37	Yes	5	0.00000001	0.00020845
38	Yes	5	0.00000001	0.00020890
39	Yes	4	0.00000001	0.00004925
40	Yes	4	0.00000001	0.00008028
41	Yes	4	0.00000001	0.00009887
42	Yes	4	0.00000001	0.00004207
43	Yes	4	0.00000001	0.00008238
44	Yes	4	0.00000001	0.00007857
45	Yes	4	0.00000001	0.00004960
46	Yes	4	0.00000001	0.00010186
47	Yes	4	0.00000001	0.00007963
48	Yes	4	0.00000001	0.00004177
49	Yes	4	0.00000001	0.00008300
50	Yes	4	0.00000001	0.00009068

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	109 - 99	6.993	40	0.492	0.002
L2	99 - 79	5.964	40	0.489	0.001
L3	79 - 59	3.981	40	0.449	0.001
L4	59 - 46.93	2.284	40	0.353	0.001
L5	52.07 - 32.07	1.802	40	0.311	0.000
L6	32.07 - 12.07	0.693	40	0.206	0.000
L7	12.07 - 0	0.098	40	0.078	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
106.000	BXA-70063-6CF-EDIN-X w/ Mount Pipe	40	6.683	0.492	0.002	176010
96.000	(2) 7770.00 w/ Mount Pipe	40	5.658	0.486	0.001	53727
87.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	40	4.753	0.471	0.001	24845
77.000	Commscope MC-PK8-DSH	40	3.795	0.442	0.001	15506

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	109 - 99	34.984	4	2.462	0.008
L2	99 - 79	29.838	4	2.447	0.007
L3	79 - 59	19.917	4	2.246	0.004
L4	59 - 46.93	11.427	4	1.769	0.002
L5	52.07 - 32.07	9.012	4	1.557	0.002
L6	32.07 - 12.07	3.467	4	1.028	0.001
L7	12.07 - 0	0.492	4	0.389	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
106.000	BXA-70063-6CF-EDIN-X w/ Mount Pipe	4	33.437	2.460	0.008	36433
96.000	(2) 7770.00 w/ Mount Pipe	4	28.304	2.433	0.007	10930
87.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	4	23.779	2.359	0.006	4996
77.000	Commscope MC-PK8-DSH	4	18.984	2.210	0.004	3108

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	109 - 99 (1)	TP24x24x0.375	10.000	0.000	0.0	27.833	-4.012	876.725	0.005
L2	99 - 79 (2)	TP30.53x26.42x0.313	20.000	0.000	0.0	29.972	-13.652	1753.350	0.008
L3	79 - 59 (3)	TP34.64x30.53x0.313	20.000	0.000	0.0	34.048	-19.929	1991.830	0.010
L4	59 - 46.93 (4)	TP37.12x34.64x0.313	12.070	0.000	0.0	35.461	-21.155	2074.460	0.010
L5	46.93 - 32.07 (5)	TP39.495x35.439x0.375	20.000	0.000	0.0	46.563	-26.215	2723.930	0.010
L6	32.07 - 12.07 (6)	TP43.552x39.495x0.375	20.000	0.000	0.0	51.391	-30.979	3006.390	0.010
L7	12.07 - 0 (7)	TP46x43.552x0.375	12.070	0.000	0.0	54.305	-33.849	3176.850	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	109 - 99 (1)	TP24x24x0.375	27.993	538.742	0.052	0.000	538.742	0.000
L2	99 - 79 (2)	TP30.53x26.42x0.313	210.011	1374.583	0.153	0.000	1374.583	0.000
L3	79 - 59 (3)	TP34.64x30.53x0.313	520.270	1717.283	0.303	0.000	1717.283	0.000
L4	59 - 46.93 (4)	TP37.12x34.64x0.313	636.426	1841.283	0.346	0.000	1841.283	0.000
L5	46.93 - 32.07 (5)	TP39.495x35.439x0.375	991.425	2713.625	0.365	0.000	2713.625	0.000
L6	32.07 - 12.07 (6)	TP43.552x39.495x0.375	1372.817	3216.650	0.427	0.000	3216.650	0.000
L7	12.07 - 0 (7)	TP46x43.552x0.375	1615.408	3531.475	0.457	0.000	3531.475	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	109 - 99 (1)	TP24x24x0.375	3.791	263.018	0.014	0.334	546.307	0.001
L2	99 - 79 (2)	TP30.53x26.42x0.313	12.486	526.006	0.024	1.256	1391.958	0.001
L3	79 - 59 (3)	TP34.64x30.53x0.313	16.519	597.548	0.028	1.036	1796.350	0.001
L4	59 - 46.93 (4)	TP37.12x34.64x0.313	17.011	622.337	0.027	1.036	1948.483	0.001
L5	46.93 - 32.07 (5)	TP39.495x35.439x0.375	18.441	817.180	0.023	1.035	2799.625	0.000
L6	32.07 - 12.07 (6)	TP43.552x39.495x0.375	19.714	901.917	0.022	1.035	3410.342	0.000
L7	12.07 - 0 (7)	TP46x43.552x0.375	20.503	953.056	0.022	1.035	3808.033	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	109 - 99 (1)	0.005	0.052	0.000	0.014	0.001	0.057	1.050	4.8.2
L2	99 - 79 (2)	0.008	0.153	0.000	0.024	0.001	0.161	1.050	4.8.2
L3	79 - 59 (3)	0.010	0.303	0.000	0.028	0.001	0.314	1.050	4.8.2
L4	59 - 46.93 (4)	0.010	0.346	0.000	0.027	0.001	0.357	1.050	4.8.2
L5	46.93 - 32.07 (5)	0.010	0.365	0.000	0.023	0.000	0.375	1.050	4.8.2
L6	32.07 - 12.07 (6)	0.010	0.427	0.000	0.022	0.000	0.438	1.050	4.8.2
L7	12.07 - 0 (7)	0.011	0.457	0.000	0.022	0.000	0.469	1.050	4.8.2

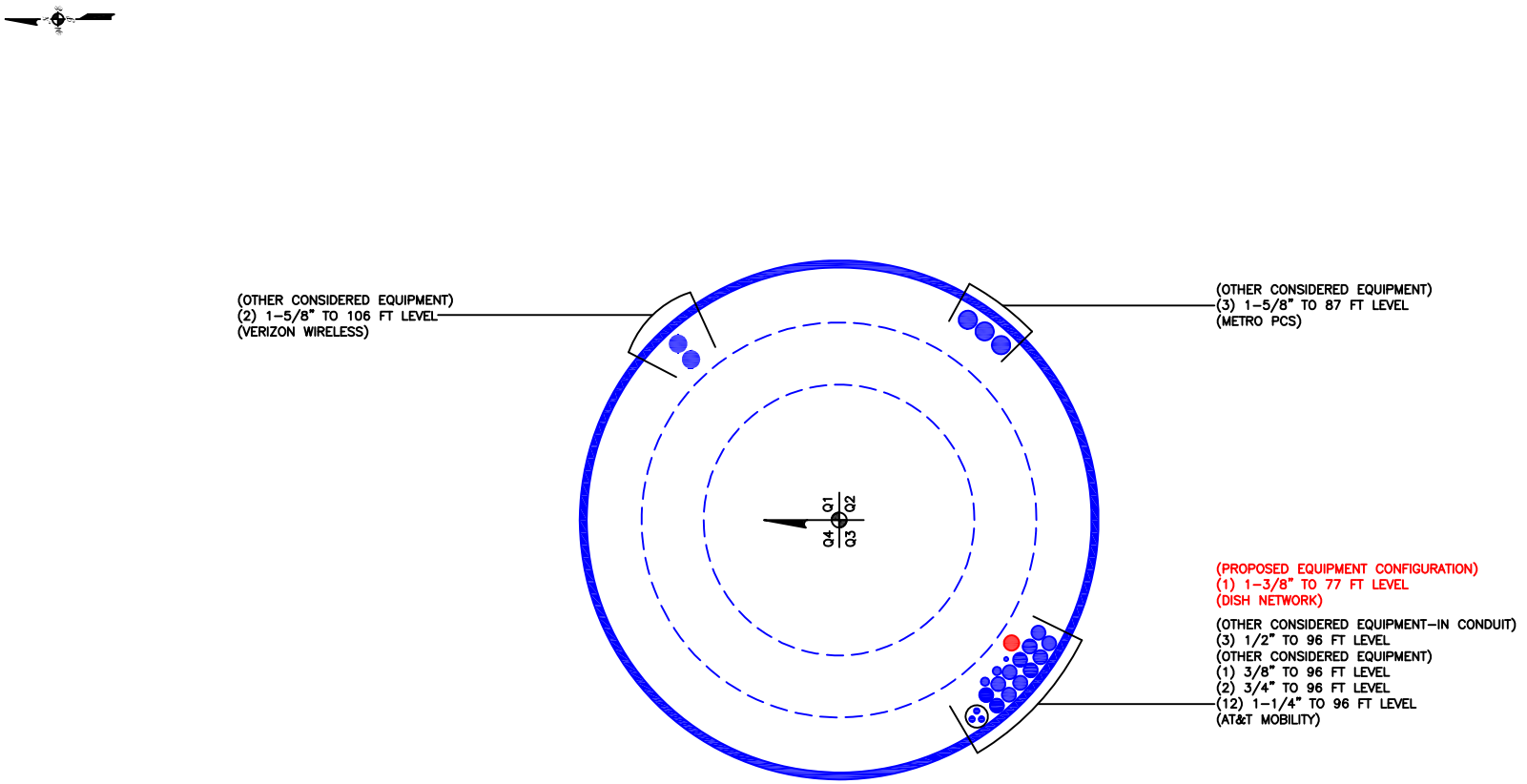
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	109 - 99	Pole	TP24x24x0.375	1	-4.012	920.561	5.4	Pass
L2	99 - 79	Pole	TP30.53x26.42x0.313	2	-13.652	1841.017	15.4	Pass
L3	79 - 59	Pole	TP34.64x30.53x0.313	3	-19.929	2091.421	29.9	Pass
L4	59 - 46.93	Pole	TP37.12x34.64x0.313	4	-21.155	2178.183	34.0	Pass
L5	46.93 - 32.07	Pole	TP39.495x35.439x0.375	5	-26.215	2860.126	35.8	Pass
L6	32.07 - 12.07	Pole	TP43.552x39.495x0.375	6	-30.979	3156.709	41.7	Pass
L7	12.07 - 0	Pole	TP46x43.552x0.375	7	-33.849	3335.692	44.6	Pass
							Summary	
						Pole (L7)	44.6	Pass
						RATING =	**44.6**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(2) 1-5/8" TO 106 FT LEVEL
(VERIZON WIRELESS)
(OTHER CONSIDERED EQUIPMENT)
(3) 1-5/8" TO 87 FT LEVEL
(METRO PCS)
Q1
Q2
Q4
Q3
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-3/8" TO 77 FT LEVEL
(DISH NETWORK)
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(3) 1/2" TO 96 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 96 FT LEVEL
(2) 3/4" TO 96 FT LEVEL
(12) 1-1/4" TO 96 FT LEVEL
(AT&T MOBILITY)

APPENDIX C

ADDITIONAL CALCULATIONS

Monopole Flange Plate Connection

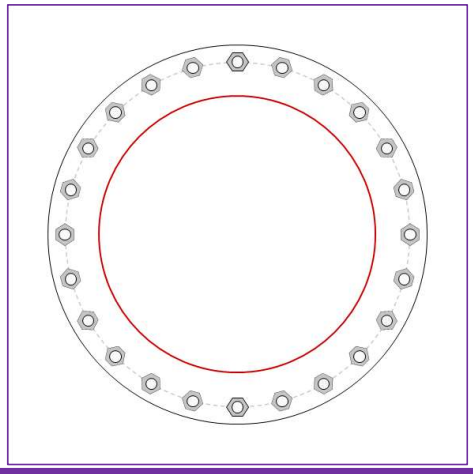
Elevation = 99 ft.

BU #	842864
Site Name	GUILFORD SW
Order #	553360 Rev 1
TIA-222 Revision	H

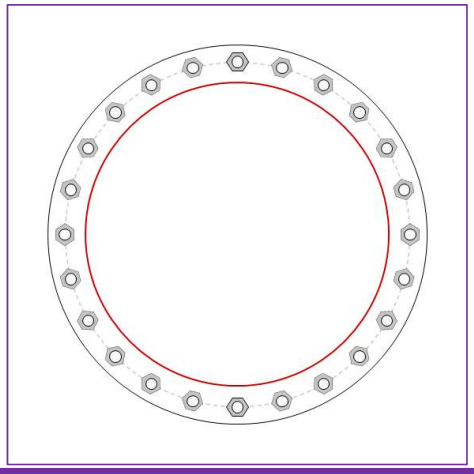
Applied Loads	
Moment (kip-ft)	27.99
Axial Force (kips)	4.01
Shear Force (kips)	3.79

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(24) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 30" BC

Top Plate Data

33" OD x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

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

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

24" x 0.375" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	1.70	
Allowable (kips)	54.54	
Stress Rating:	**3.0%**	Pass

Top Plate Capacity

Max Stress (ksi):	4.32	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**12.7%**	Pass
Tension Side Stress Rating:	**5.9%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	1.14	(Flexural)
Allowable Stress (ksi):	54.00	
Stress Rating:	**2.0%**	Pass
Tension Side Stress Rating:	**0.9%**	Pass

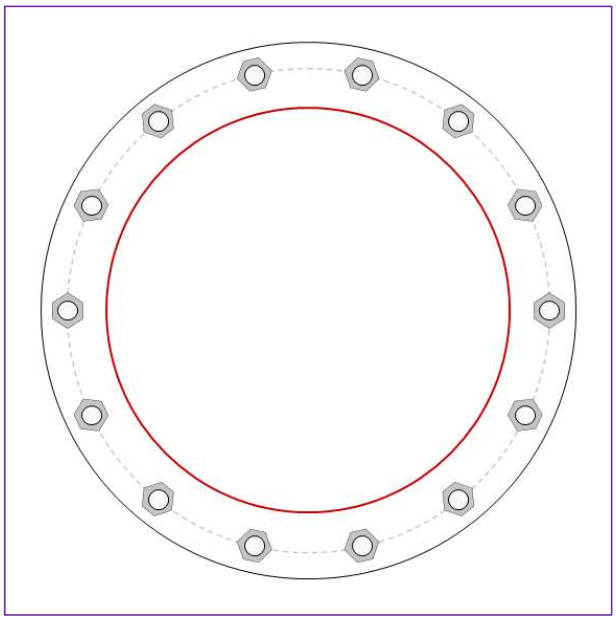
Monopole Base Plate Connection

Site Info	
BU #	842864
Site Name	GUILFORD SW
Order #	553360 Rev 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.25

Applied Loads	
Moment (kip-ft)	1615.41
Axial Force (kips)	33.85
Shear Force (kips)	20.50

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(14) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 55" BC

Base Plate Data

61" OD x 2" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

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

Analysis Results

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

Pu_t = 98.21	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.46	ϕVn = 149.1	**38.4%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	26.35	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**46.5%**	**Pass**

Pier and Pad Foundation

BU # :	842864
Site Name:	GUILFORD SW
App. Number:	553360 Rev 1

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	33.85	kips
Base Shear, Vu_comp:	20.49	kips
Moment, M_u:	1615.41	ft-kips
Tower Height, **H**:	109	ft
BP Dist. Above Fdn, bp_{dist}:	2.5	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	7	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	30	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	4	in

Pad Properties		
Depth, **D**:	7	ft
Pad Width, W_1:	21.5	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	30	
Pad Clear Cover, cc_{pad}:	3	in

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

Soil Properties		
Total Soil Unit Weight, γ:	115	pcf
Ultimate Net Bearing, Qnet:	16.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	6	
Base Friction, μ:	0.5	
Neglected Depth, **N**:	3.50	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	None	ft

<--Toggle between Gross and Net

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating**	**Check**
Lateral (Sliding) (kips)	251.47	20.49	**8.1%**	**Pass**
Bearing Pressure (ksf)	12.60	2.26	**18.0%**	**Pass**
*Overturning (kip*ft)*	4296.85	1783.60	**41.5%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	3942.93	1717.86	**43.6%**	**Pass**
Pier Compression (kip)	31187.52	77.95	**0.2%**	**Pass**
*Pad Flexure (kip*ft)*	3273.03	533.88	**16.3%**	**Pass**
Pad Shear - 1-way (kips)	770.99	94.99	**12.3%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.019	**10.2%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	4841.25	1030.72	**21.3%**	**Pass**

Structural Rating:	**43.6%**
Soil Rating:	**41.5%**

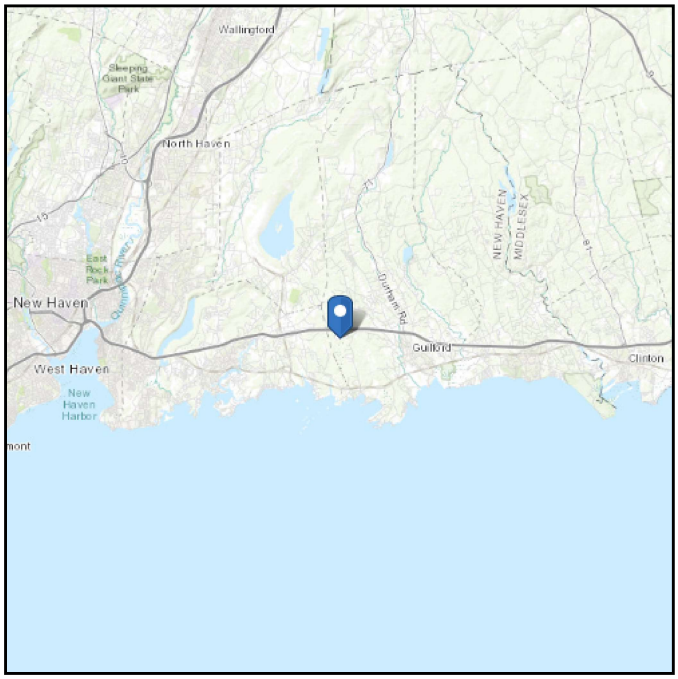
Version 4.1.0

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 105.75 ft (NAVD 88)
Latitude: 41.291983
Longitude: -72.732856



Wind

Results:

Wind Speed:	130 mph Per Jurisdiction
10-year MRI	78 Vmph
25-year MRI	88 Vmph
50-year MRI	95 Vmph
100-year MRI	104 Vmph

Data Accessed: Tue May 25 2021

Date Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

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 7-10 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 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

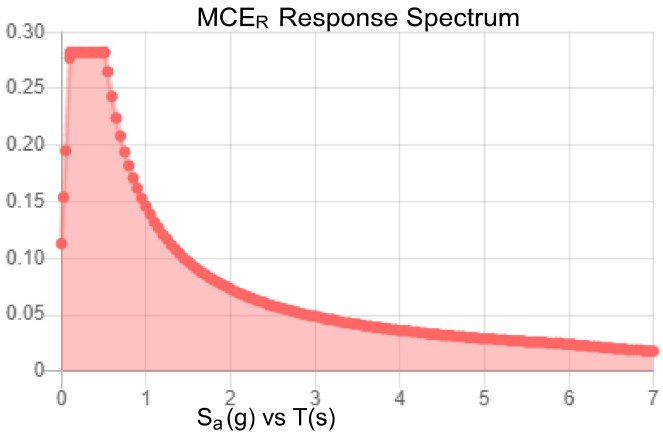
Seismic

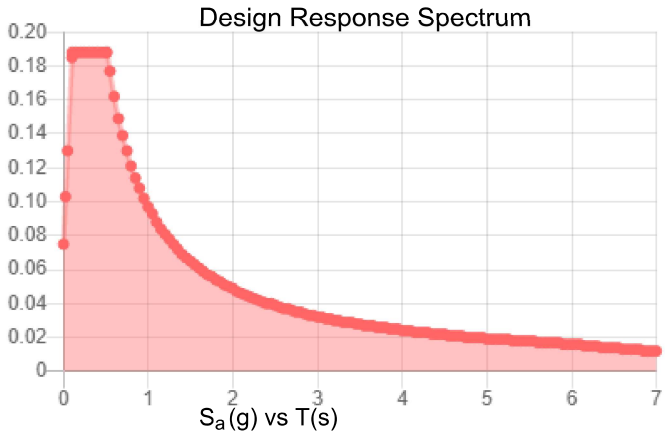
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.176	S_{DS} :	0.188
S_1 :	0.061	S_{D1} :	0.097
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.09
S_{MS} :	0.282	PGA_M :	0.145
S_{M1} :	0.146	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Tue May 25 2021

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue May 25 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.

Exhibit E

Mount Analysis

Date: **July 29, 2021**

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

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

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	**Dish Network Dish 5G**	
	Carrier Site Number:	BOHVN00016A
	Carrier Site Name:	CT-CCI-T-842864
Crown Castle Designation:	**Crown Castle BU Number:**	842864
	Crown Castle Site Name:	GUILFORD SW
	Crown Castle JDE Job Number:	645143
	Crown Castle Order Number:	553360 Rev. 1
Engineering Firm Designation:	**Trylon Report Designation:**	189032
Site Data:	**201 Granite Road, Guilford, New Haven County, CT, 06437 Latitude 41°17'31.14" Longitude -72°43'58.28"**	
Structure Information:	**Tower Height & Type:**	**109.0 ft Monopole**
	Mount Elevation:	**77.0 ft**
	Mount Type:	**8.0 ft Platform**

Dear Darcy Tarr,

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

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

Platform **Sufficient***

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

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

Mount analysis prepared by: Marius Balan

Respectfully Submitted by:
Cliff Abernathy, P.E.

Cliff Abernathy
Digitally signed by Cliff Abernathy
Date: 2021.07.29 14:46:10 -04'00'

TABLE OF CONTENTS

1) INTRODUCTION

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

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	130 mph
Exposure Category:	B
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.176
Seismic S_1:	0.061
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
77.0	77.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Platform **[Commscope MC-PK8-C]**
		3	FUJITSU	TA08025-B604	
		3	FUJITSU	TA08025-B605	
		1	RAYCAP	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	Dish Network Application	553360, Rev. 1	CCI Sites
Mount Manufacturer Drawings	Commscope	MC-PK8-C	Trylon

3.1) Analysis Method

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

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

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

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP4	77.0	22.1	Pass
	Horizontal(s)	H2		11.7	Pass
	Standoff(s)	M7		43.5	Pass
	Bracing(s)	M11		35.0	Pass
	Plate(s)	M10		18.1	Pass
	Handrail(s)	M19		9.0	Pass
	Mount Connection(s)	-		17.6	Pass

Structure Rating (max from all components) =	43.5%

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

4.1) Recommendations

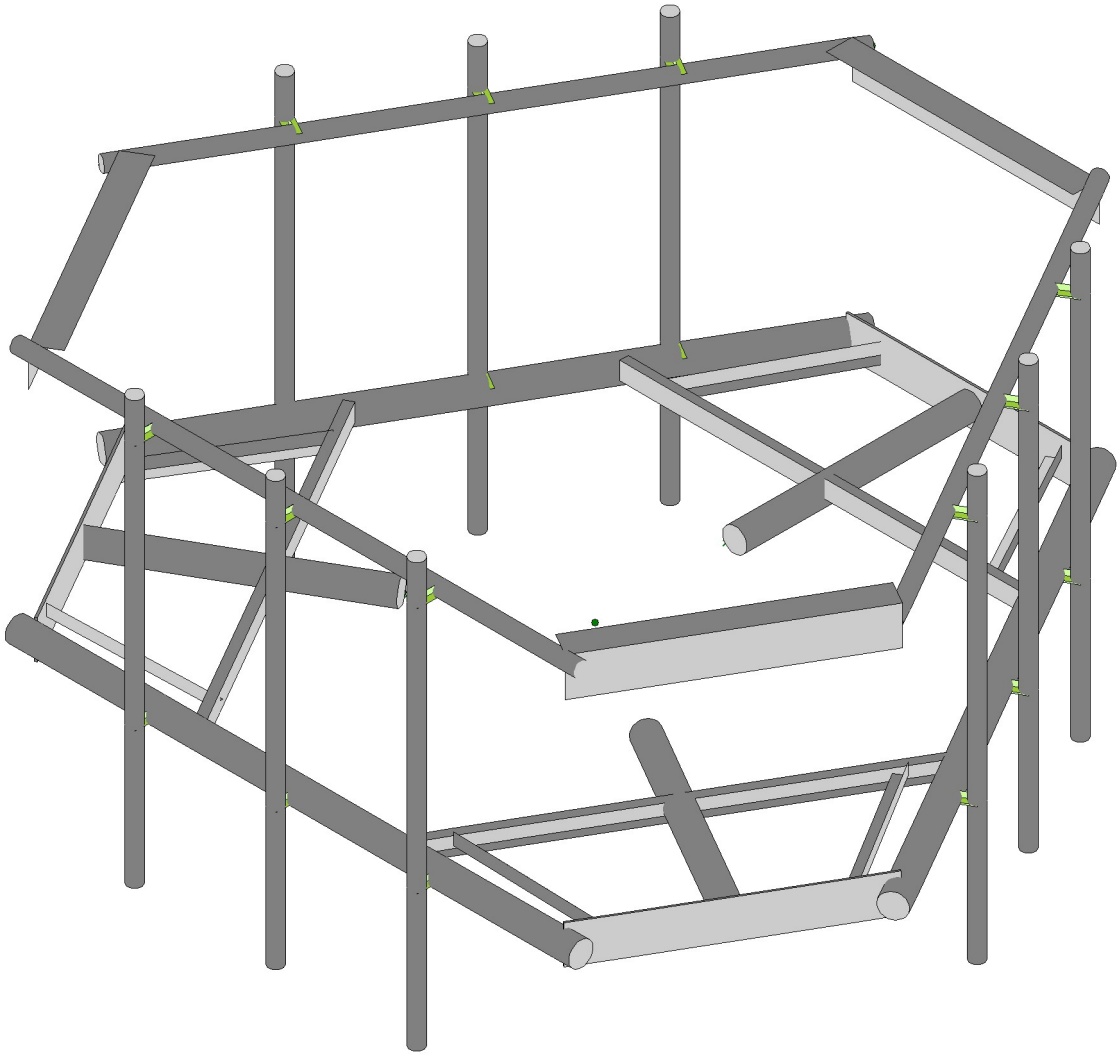
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope, part no MC-PK8-C.

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

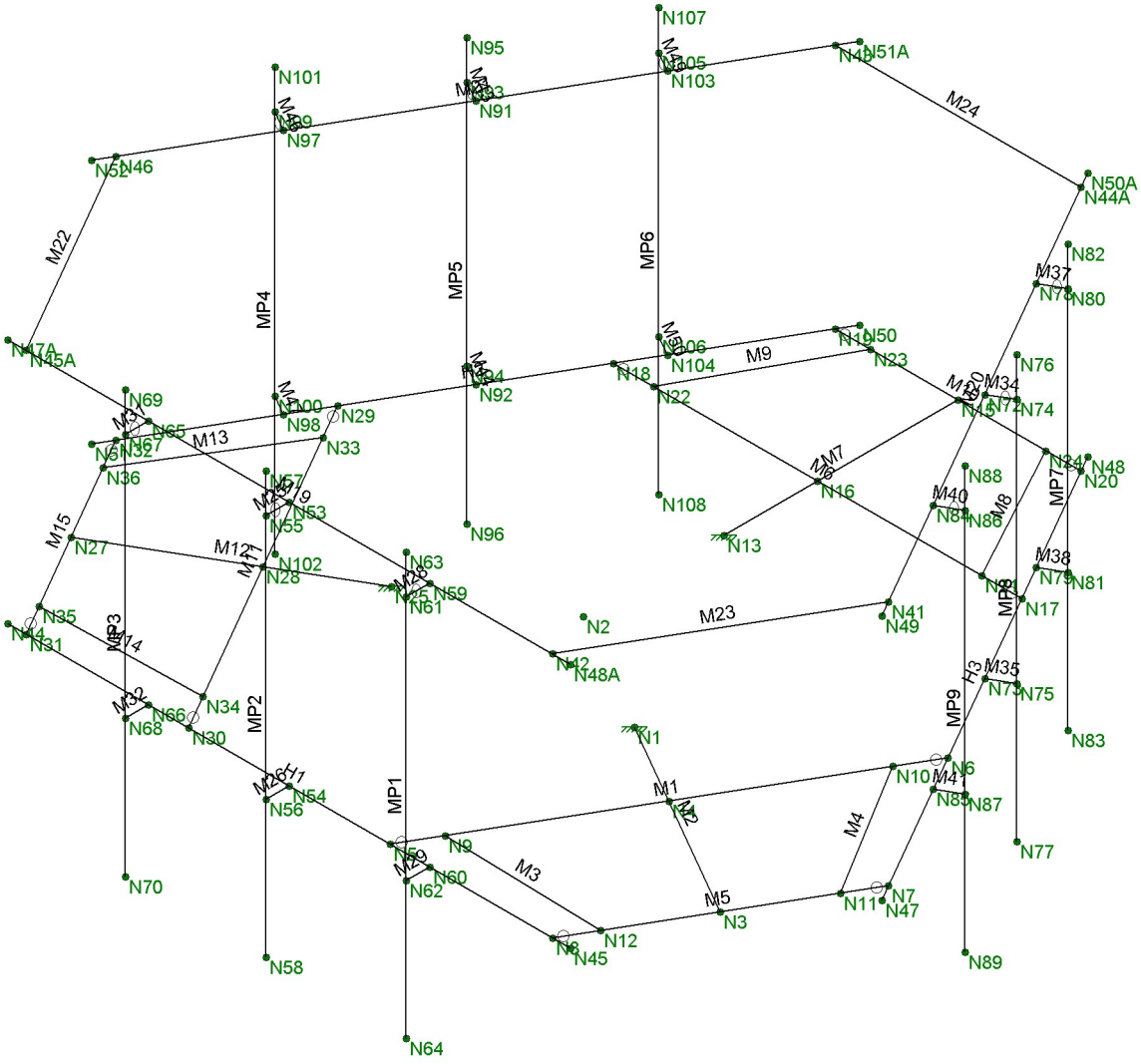
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	842864	SK - 1
MB		July 28, 2021 at 1:33 PM
189032		842864.r3d



Envelope Only Solution

Trylon	842864	SK - 2
MB		July 28, 2021 at 1:33 PM
189032		842864.r3d

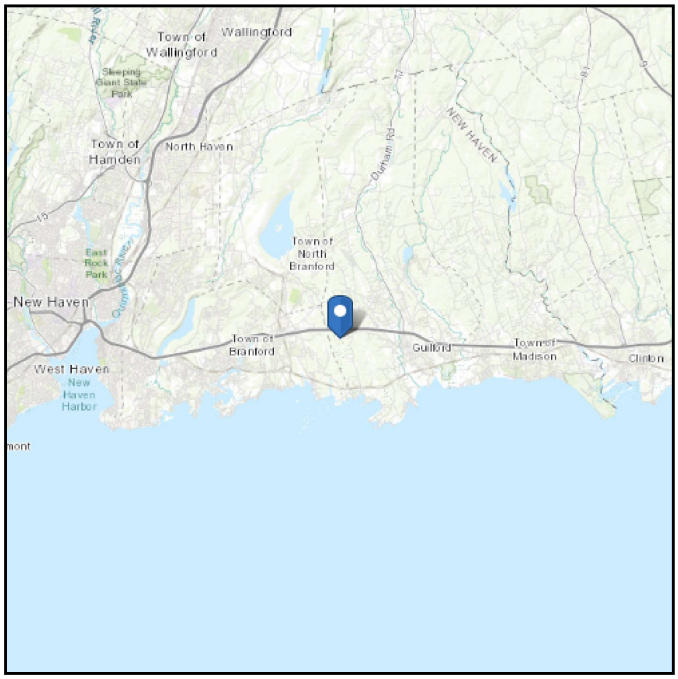
APPENDIX B

SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	105.75 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.291983
Soil Class:	D - Stiff Soil	**Longitude:**	-72.732856



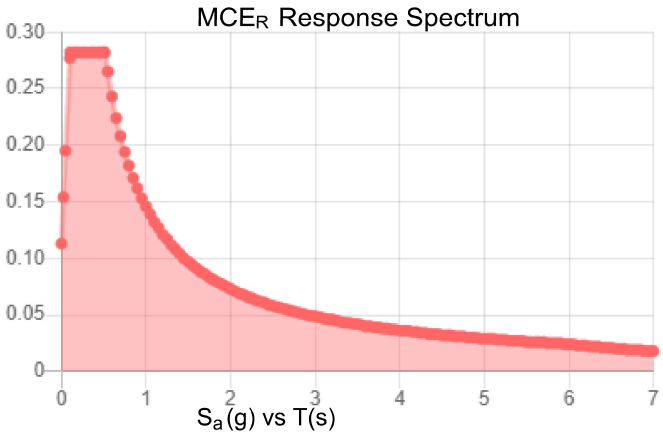
Seismic

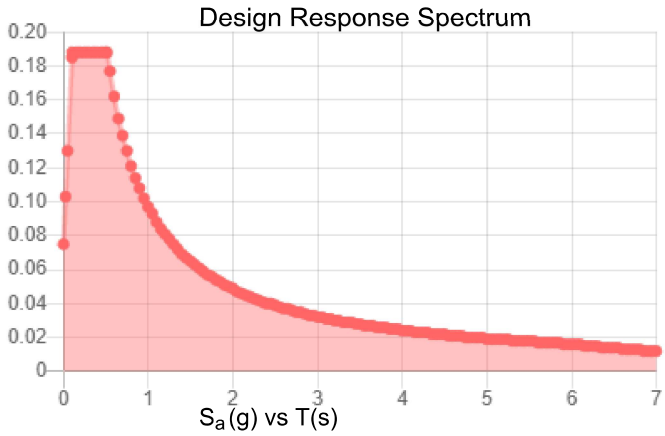
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.176	S_{DS} :	0.188
S_1 :	0.061	S_{D1} :	0.097
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.09
S_{MS} :	0.282	PGA_M :	0.145
S_{M1} :	0.146	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Jul 28 2021

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Wed Jul 28 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.

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

TIA LOAD CALCULATOR 2.0

PROJECT DATA	
Job Code:	189032
Carrier Site ID:	BOHVN00016A
Carrier Site Name:	CT-CCI-T-842864

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

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	77.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	109.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	105.75	ft.

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

WIND PARAMETERS		
Design Wind Speed:	130	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	0.92	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	37.55	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	37.55	psf
Mount Ice Thickness (t_{iz}):	1.63	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	67.59	psf
Round Member Pressure:	40.55	psf
Ice Wind Pressure:	7.12	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.176	g
1 Second Accel (S_1):	0.061	g
Short Period Des. (S_{DS}):	0.19	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.09	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

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

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

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

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

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

EQUIPMENT LOADING

Appurtenance Name/Location	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
MX08FRO665-21	3	77	No Ice	8.01	3.21	82.50
MP2/MP5/MP8, 0/120/240	--	--	w/ Ice	9.62	4.62	265.94
TA08025-B604	3	77	No Ice	1.96	0.98	63.90
MP2/MP5/MP8, 0/120/240	--	--	w/ Ice	2.36	1.29	64.97
TA08025-B605	3	77	No Ice	1.96	1.13	75.00
MP2/MP5/MP8, 0/120/240	--	--	w/ Ice	2.36	1.45	69.25
RDIDC-9181-PF-48	1	77	No Ice	2.01	1.17	21.85
MP/MP5/MP, 0/120/240	--	--	w/ Ice	2.42	1.50	68.24
			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			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

Appurtenance Name/Location	Qty.	Elevation [ft]	--	EPA_N (ft2)	EPA_T (ft2)	Weight (lbs)
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
MX08FRO665-21	3	77	1.00	0.92	0.95	1.63	37.55	5.55
TA08025-B604	3	77	1.00	0.92	0.95	1.63	37.55	5.55
TA08025-B605	3	77	1.00	0.92	0.95	1.63	37.55	5.55
RDIDC-9181-PF-48	1	77	1.00	0.92	0.95	1.63	37.55	5.55

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
MX08FRO665-21	3	No Ice	270.70	149.04	230.15	108.48	230.15	149.04
MP2/MP5/MP8, 0/120/240	--	w/ Ice	48.10	29.36	41.85	23.11	41.85	29.36
TA08025-B604	3	No Ice	66.36	41.46	58.06	33.16	58.06	41.46
MP2/MP5/MP8, 0/120/240	--	w/ Ice	11.80	7.79	10.47	6.45	10.47	7.79
TA08025-B605	3	No Ice	66.36	45.22	59.31	38.17	59.31	45.22
MP2/MP5/MP8, 0/120/240	--	w/ Ice	11.80	8.39	10.67	7.26	10.67	8.39
RDIDC-9181-PF-48	1	No Ice	67.99	46.61	60.86	39.48	60.86	46.61
MP/MP5/MP, 0/120/240	--	w/ Ice	12.08	8.66	10.94	7.52	10.94	8.66
		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						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

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

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	Weight [lbs]	F_p [lbs]
MX08FRO665-21	3	77	82.5	9.29
TA08025-B604	3	77	63.9	7.20
TA08025-B605	3	77	75	8.45
RDIDC-9181-PF-48	1	77	21.85	2.46

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	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	None
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[psi]	Ry	Fu[psi]	Rt
1	A992	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65	.49	50000	1.4	65000	1.3

Cold Formed Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	6.5"x0.37" Plate	6.5"x0.37" Plate	Beam	RECT	A36 Gr.36	Typical	2.405	.027	8.468	.106
2	L2x2x3	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
3	PIPE 3.5	PIPE 3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
4	C3X5	C3X5	Beam	Channel	A36 Gr.36	Typical	1.47	.241	1.85	.043
5	PIPE 2.0	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	L6.6"X4.46"X0.25"	L6.6"X4.46"X0.25"	Beam	Single Angle	A36 Gr.36	Typical	2.703	4.759	12.473	.055

Cold Formed Steel Section Sets

	Label	Shape	Type	Design Li...	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X057	Beam	None	A653 S S Gr33	Typical	.581	.057	4.41	.00063

Joint Boundary Conditions

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

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL			-1		20		3	
2	Structure Wind X	WLX						33		
3	Structure Wind Y	WLY						33		
4	Wind Load 0 AZI	WLX					20			
5	Wind Load 30 AZI	None					40			
6	Wind Load 45 AZI	None					40			
7	Wind Load 60 AZI	None					40			
8	Wind Load 90 AZI	WLY					20			
9	Wind Load 120 AZI	None					40			
10	Wind Load 135 AZI	None					40			
11	Wind Load 150 AZI	None					40			
12	Ice Weight	OL1					20	33	3	
13	Structure Ice Wind X	OL2						33		
14	Structure Ice Wind Y	OL3						33		
15	Ice Wind Load 0 AZI	OL2					20			
16	Ice Wind Load 30 AZI	None					40			
17	Ice Wind Load 45 AZI	None					40			
18	Ice Wind Load 60 AZI	None					40			
19	Ice Wind Load 90 AZI	OL3					20			
20	Ice Wind Load 120 AZI	None					40			
21	Ice Wind Load 135 AZI	None					40			
22	Ice Wind Load 150 AZI	None					40			
23	Seismic Load X	ELX	-.113				20			
24	Seismic Load Y	ELY		-.113			20			
25	Live Load 1 (Lv)	LL				1				
26	Live Load 2 (Lv)	LL				1				
27	Live Load 3 (Lv)	LL				1				
28	Live Load 4 (Lv)	LL				1				
29	Live Load 5 (Lv)	LL				1				
30	Live Load 6 (Lv)	LL				1				
31	Maintenance Load 1 (Lm)	None				1				
32	Maintenance Load 2 (Lm)	None				1				
33	Maintenance Load 3 (Lm)	None				1				
34	Maintenance Load 4 (Lm)	None				1				
35	Maintenance Load 5 (Lm)	None				1				
36	Maintenance Load 6 (Lm)	None				1				
37	Maintenance Load 7 (Lm)	None				1				
38	Maintenance Load 8 (Lm)	None				1				

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
39	Maintenance Load 9 (Lm)	None				1				
40	BLC 1 Transient Area Loads	None						9		
41	BLC 12 Transient Area Loa...	None						9		

Load Combinations

	Description	S...	P...	S...	B...	Factor	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 A...	Yes	Y		DL	1.2	O...	1	13	1	14		15	1												
35	1.2DL + 1DLi + 1WLi 30 ...	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1												
36	1.2DL + 1DLi + 1WLi 45 ...	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1												
37	1.2DL + 1DLi + 1WLi 60 ...	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1WLi 90 ...	Yes	Y		DL	1.2	O...	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1WLi 12...	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DLi + 1WLi 13...	Yes	Y		DL	1.2	O...	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DLi + 1WLi 15...	Yes	Y		DL	1.2	O...	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DLi + 1WLi 18...	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1												
43	1.2DL + 1DLi + 1WLi 21...	Yes	Y		DL	1.2	O...	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DLi + 1WLi 22...	Yes	Y		DL	1.2	O...	1	13	-.707	14	-.707	17	-1												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
45	1.2DL + 1DLi + 1W Li 24...	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DLi + 1W Li 27...	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1												
47	1.2DL + 1DLi + 1W Li 30...	Yes	Y		DL	1.2	O...	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DLi + 1W Li 31...	Yes	Y		DL	1.2	O...	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DLi + 1W Li 33...	Yes	Y		DL	1.2	O...	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds) + 1.0E 0 AZI	Yes	Y		DL	1.238	E...	1	E...																	
51	(1.2+0.2Sds) + 1.0E 30 ...	Yes	Y		DL	1.238	E...	.866	E...	.5																
52	(1.2+0.2Sds) + 1.0E 45 ...	Yes	Y		DL	1.238	E...	.707	E...	.707																
53	(1.2+0.2Sds) + 1.0E 60 ...	Yes	Y		DL	1.238	E...	.5	E...	.866																
54	(1.2+0.2Sds) + 1.0E 90 ...	Yes	Y		DL	1.238	E...		E...	1																
55	(1.2+0.2Sds) + 1.0E 120 ...	Yes	Y		DL	1.238	E...	-.5	E...	.866																
56	(1.2+0.2Sds) + 1.0E 135 ...	Yes	Y		DL	1.238	E...	-.707	E...	.707																
57	(1.2+0.2Sds) + 1.0E 150 ...	Yes	Y		DL	1.238	E...	-.866	E...	.5																
58	(1.2+0.2Sds) + 1.0E 180 ...	Yes	Y		DL	1.238	E...	-1	E...																	
59	(1.2+0.2Sds) + 1.0E 210 ...	Yes	Y		DL	1.238	E...	-.866	E...	-.5																
60	(1.2+0.2Sds) + 1.0E 225 ...	Yes	Y		DL	1.238	E...	-.707	E...	-.707																
61	(1.2+0.2Sds) + 1.0E 240 ...	Yes	Y		DL	1.238	E...	-.5	E...	-.866																
62	(1.2+0.2Sds) + 1.0E 270 ...	Yes	Y		DL	1.238	E...		E...	-1																
63	(1.2+0.2Sds) + 1.0E 300 ...	Yes	Y		DL	1.238	E...	.5	E...	-.866																
64	(1.2+0.2Sds) + 1.0E 315 ...	Yes	Y		DL	1.238	E...	.707	E...	-.707																
65	(1.2+0.2Sds) + 1.0E 330 ...	Yes	Y		DL	1.238	E...	.866	E...	-.5																
66	(0.9-0.2Sds) + 1.0E 0 AZI	Yes	Y		DL	.862	E...	1	E...																	
67	(0.9-0.2Sds) + 1.0E 30 A...	Yes	Y		DL	.862	E...	.866	E...	.5																
68	(0.9-0.2Sds) + 1.0E 45 A...	Yes	Y		DL	.862	E...	.707	E...	.707																
69	(0.9-0.2Sds) + 1.0E 60 A...	Yes	Y		DL	.862	E...	.5	E...	.866																
70	(0.9-0.2Sds) + 1.0E 90 A...	Yes	Y		DL	.862	E...		E...	1																
71	(0.9-0.2Sds) + 1.0E 120 ...	Yes	Y		DL	.862	E...	-.5	E...	.866																
72	(0.9-0.2Sds) + 1.0E 135 ...	Yes	Y		DL	.862	E...	-.707	E...	.707																
73	(0.9-0.2Sds) + 1.0E 150 ...	Yes	Y		DL	.862	E...	-.866	E...	.5																
74	(0.9-0.2Sds) + 1.0E 180 ...	Yes	Y		DL	.862	E...	-1	E...																	
75	(0.9-0.2Sds) + 1.0E 210 ...	Yes	Y		DL	.862	E...	-.866	E...	-.5																
76	(0.9-0.2Sds) + 1.0E 225 ...	Yes	Y		DL	.862	E...	-.707	E...	-.707																
77	(0.9-0.2Sds) + 1.0E 240 ...	Yes	Y		DL	.862	E...	-.5	E...	-.866																
78	(0.9-0.2Sds) + 1.0E 270 ...	Yes	Y		DL	.862	E...		E...	-1																
79	(0.9-0.2Sds) + 1.0E 300 ...	Yes	Y		DL	.862	E...	.5	E...	-.866																
80	(0.9-0.2Sds) + 1.0E 315 ...	Yes	Y		DL	.862	E...	.707	E...	-.707																
81	(0.9-0.2Sds) + 1.0E 330 ...	Yes	Y		DL	.862	E...	.866	E...	-.5																
82	1.2D + 1.5 Lv1	Yes	Y		DL	1.2	25	1.5																		
83	1.2D + 1.5 Lv2	Yes	Y		DL	1.2	26	1.5																		
84	1.2D + 1.5 Lv3	Yes	Y		DL	1.2	27	1.5																		
85	1.2D + 1.5 Lv4	Yes	Y		DL	1.2	28	1.5																		
86	1.2D + 1.5 Lv5	Yes	Y		DL	1.2	29	1.5																		
87	1.2D + 1.5 Lv6	Yes	Y		DL	1.2	30	1.5																		
88	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	4	.053	2	.053	3													
89	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	5	.053	2	.046	3	.027												
90	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	6	.053	2	.038	3	.038												
91	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	7	.053	2	.027	3	.046												
92	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	8	.053	2	3.2...	3	.053												
93	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	9	.053	2	-.027	3	.046												
94	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	10	.053	2	-.038	3	.038												
95	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	11	.053	2	-.046	3	.027												
96	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	4	.053	2	-.053	3	6.5...												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
97	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	5	.053	2	-.046	3	-.027										
98	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	6	.053	2	-.038	3	-.038										
99	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	7	.053	2	-.027	3	-.046										
100	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	8	.053	2	-9....	3	-.053										
101	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	9	.053	2	.027	3	-.046										
102	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	10	.053	2	.038	3	-.038										
103	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	11	.053	2	.046	3	-.027										
104	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	4	.053	2	.053	3											
105	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	5	.053	2	.046	3	.027										
106	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	6	.053	2	.038	3	.038										
107	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	7	.053	2	.027	3	.046										
108	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	8	.053	2	3.2...	3	.053										
109	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	9	.053	2	-.027	3	.046										
110	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	10	.053	2	-.038	3	.038										
111	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	11	.053	2	-.046	3	.027										
112	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	4	.053	2	-.053	3	6.5...										
113	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	5	.053	2	-.046	3	-.027										
114	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	6	.053	2	-.038	3	-.038										
115	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	7	.053	2	-.027	3	-.046										
116	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	8	.053	2	-9....	3	-.053										
117	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	9	.053	2	.027	3	-.046										
118	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	10	.053	2	.038	3	-.038										
119	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	32	1.5	11	.053	2	.046	3	-.027										
120	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	4	.053	2	.053	3											
121	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	5	.053	2	.046	3	.027										
122	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	6	.053	2	.038	3	.038										
123	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	7	.053	2	.027	3	.046										
124	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	8	.053	2	3.2...	3	.053										
125	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	9	.053	2	-.027	3	.046										
126	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	10	.053	2	-.038	3	.038										
127	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	11	.053	2	-.046	3	.027										
128	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	4	.053	2	-.053	3	6.5...										
129	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	5	.053	2	-.046	3	-.027										
130	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	6	.053	2	-.038	3	-.038										
131	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	7	.053	2	-.027	3	-.046										
132	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	8	.053	2	-9....	3	-.053										
133	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	9	.053	2	.027	3	-.046										
134	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	10	.053	2	.038	3	-.038										
135	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	33	1.5	11	.053	2	.046	3	-.027										
136	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	4	.053	2	.053	3											
137	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	5	.053	2	.046	3	.027										
138	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	6	.053	2	.038	3	.038										
139	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	7	.053	2	.027	3	.046										
140	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	8	.053	2	3.2...	3	.053										
141	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	9	.053	2	-.027	3	.046										
142	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	10	.053	2	-.038	3	.038										
143	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	11	.053	2	-.046	3	.027										
144	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	4	.053	2	-.053	3	6.5...										
145	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	5	.053	2	-.046	3	-.027										
146	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	6	.053	2	-.038	3	-.038										
147	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	7	.053	2	-.027	3	-.046										
148	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	8	.053	2	-9....	3	-.053										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
149	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	9	.053	2	.027	3	-.046												
150	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	10	.053	2	.038	3	-.038												
151	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	34	1.5	11	.053	2	.046	3	-.027												
152	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	4	.053	2	.053	3													
153	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	5	.053	2	.046	3	.027												
154	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	6	.053	2	.038	3	.038												
155	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	7	.053	2	.027	3	.046												
156	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	8	.053	2	3.2...	3	.053												
157	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	9	.053	2	-.027	3	.046												
158	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	10	.053	2	-.038	3	.038												
159	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	11	.053	2	-.046	3	.027												
160	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	4	.053	2	-.053	3	6.5...												
161	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	5	.053	2	-.046	3	-.027												
162	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	6	.053	2	-.038	3	-.038												
163	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	7	.053	2	-.027	3	-.046												
164	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	8	.053	2	-9....	3	-.053												
165	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	9	.053	2	.027	3	-.046												
166	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	10	.053	2	.038	3	-.038												
167	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	35	1.5	11	.053	2	.046	3	-.027												
168	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	4	.053	2	.053	3													
169	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	5	.053	2	.046	3	.027												
170	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	6	.053	2	.038	3	.038												
171	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	7	.053	2	.027	3	.046												
172	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	8	.053	2	3.2...	3	.053												
173	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	9	.053	2	-.027	3	.046												
174	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	10	.053	2	-.038	3	.038												
175	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	11	.053	2	-.046	3	.027												
176	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	4	.053	2	-.053	3	6.5...												
177	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	5	.053	2	-.046	3	-.027												
178	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	6	.053	2	-.038	3	-.038												
179	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	7	.053	2	-.027	3	-.046												
180	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	8	.053	2	-9....	3	-.053												
181	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	9	.053	2	.027	3	-.046												
182	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	10	.053	2	.038	3	-.038												
183	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	36	1.5	11	.053	2	.046	3	-.027												
184	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	4	.053	2	.053	3													
185	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	5	.053	2	.046	3	.027												
186	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	6	.053	2	.038	3	.038												
187	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	7	.053	2	.027	3	.046												
188	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	8	.053	2	3.2...	3	.053												
189	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	9	.053	2	-.027	3	.046												
190	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	10	.053	2	-.038	3	.038												
191	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	11	.053	2	-.046	3	.027												
192	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	4	.053	2	-.053	3	6.5...												
193	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	5	.053	2	-.046	3	-.027												
194	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	6	.053	2	-.038	3	-.038												
195	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	7	.053	2	-.027	3	-.046												
196	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	8	.053	2	-9....	3	-.053												
197	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	9	.053	2	.027	3	-.046												
198	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	10	.053	2	.038	3	-.038												
199	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	11	.053	2	.046	3	-.027												
200	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	4	.053	2	.053	3													

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
201	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	5	.053	2	.046	3	.027														
202	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	6	.053	2	.038	3	.038														
203	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	7	.053	2	.027	3	.046														
204	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	8	.053	2	3.2...	3	.053														
205	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	9	.053	2	-.027	3	.046														
206	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	10	.053	2	-.038	3	.038														
207	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	11	.053	2	-.046	3	.027														
208	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	4	.053	2	-.053	3	6.5...														
209	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	5	.053	2	-.046	3	-.027														
210	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	6	.053	2	-.038	3	-.038														
211	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	7	.053	2	-.027	3	-.046														
212	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	8	.053	2	-9....	3	-.053														
213	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	9	.053	2	.027	3	-.046														
214	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	10	.053	2	.038	3	-.038														
215	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	11	.053	2	.046	3	-.027														
216	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	4	.053	2	.053	3															
217	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	5	.053	2	.046	3	.027														
218	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	6	.053	2	.038	3	.038														
219	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	7	.053	2	.027	3	.046														
220	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	8	.053	2	3.2...	3	.053														
221	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	9	.053	2	-.027	3	.046														
222	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	10	.053	2	-.038	3	.038														
223	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	11	.053	2	-.046	3	.027														
224	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	4	.053	2	-.053	3	6.5...														
225	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	5	.053	2	-.046	3	-.027														
226	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	6	.053	2	-.038	3	-.038														
227	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	7	.053	2	-.027	3	-.046														
228	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	8	.053	2	-9....	3	-.053														
229	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	9	.053	2	.027	3	-.046														
230	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	10	.053	2	.038	3	-.038														
231	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	11	.053	2	.046	3	-.027														

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N25	max	1312.128	3	791.209	20	1795.922	39	-137.929	31	87.771	33	1488.13	19
2		min	-1308.841	27	-797.418	12	171.489	31	-3178.645	39	-1874.187	127	-1488.684	11
3	N1	max	1264.374	17	774.818	8	1724.281	45	3010.974	46	88.916	19	1438.412	25
4		min	-1260.623	25	-768.37	32	156.147	21	95.421	21	-1861.518	95	-1438.423	33
5	N13	max	335.553	18	1354.871	22	1797.972	34	561.371	194	3633.842	34	1287.105	14
6		min	-342.789	10	-1355.178	14	155.8	26	-622.909	172	97.069	26	-1286.531	22
7	Totals:	max	2592.988	2	2465.211	22	5170.893	43						
8		min	-2592.988	26	-2465.212	14	1367.852	67						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Lo...	...	...	phi*P...	phi*P...	phi*M...	phi*M...	...	Eqn
1	M7	PIPE 3.5	.457	0	34	.141	0		...	6449...	78750	7953...	7953...	...	H1-1b
2	M12	PIPE 3.5	.456	0	39	.141	0		...	6449...	78750	7953...	7953...	...	H1-1b
3	M2	PIPE 3.5	.437	0	45	.137	0		95	6449...	78750	7953...	7953...	...	H1-1b
4	M6	C3X5	.368	34.856	34	.129	63....	y	45	3710...	47628	981.2...	4104	...	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Lo...	...	...	phi*P ...	phi*P ...	phi*M...	phi*M...	...	Eqn
5	M11	C3X5	.368	34.856	38	.130	6.5...	y	45	3710...	47628	981.2...	4104	...	H1-1b
6	M1	C3X5	.346	34.856	46	.125	63....	y	39	3710...	47628	981.2...	4104	...	H1-1b
7	MP4	PIPE_2.0	.233	48	10	.023	48		5	2086...	32130	1871....	1871....	1	H1-1b
8	MP1	PIPE_2.0	.231	48	15	.027	48		11	2086...	32130	1871....	1871....	....	H1-1b
9	MP5	PIPE_2.0	.231	48	10	.035	48		10	2086...	32130	1871....	1871....	1	H1-1b
10	MP3	PIPE_2.0	.231	48	5	.028	48		9	2086...	32130	1871....	1871....	1	H1-1b
11	MP9	PIPE_2.0	.230	48	10	.024	48		15	2086...	32130	1871....	1871....	....	H1-1b
12	MP8	PIPE_2.0	.228	48	10	.034	48		10	2086...	32130	1871....	1871....	....	H1-1b
13	MP2	PIPE_2.0	.228	48	15	.035	48		5	2086...	32130	1871....	1871....	....	H1-1b
14	MP6	PIPE_2.0	.214	48	16	.028	48		4	2086...	32130	1871....	1871....	....	H1-1b
15	MP7	PIPE_2.0	.211	48	4	.029	48		16	2086...	32130	1871....	1871....	1	H1-1b
16	M10	6.5"x0.37" Pl...	.191	21	2	.080	21	y	47	3513....	77922	600.6...	6216....	....	H1-1b
17	M15	6.5"x0.37" Pl...	.191	21	7	.080	21	y	42	3513....	77922	600.6...	6236....	....	H1-1b
18	M5	6.5"x0.37" Pl...	.185	21	13	.077	21	y	42	3513....	77922	600.6...	6245....	....	H1-1b
19	M13	L2x2x3	.129	0	31	.028	0	z	43	2096...	2339...	557.7...	1182....	1	H2-1
20	M4	L2x2x3	.123	0	13	.027	0	y	41	2096...	2339...	557.7...	1182....	1	H2-1
21	H2	PIPE_3.5	.123	48	159	.059	72		4	6066...	78750	7953....	7953....	1	H1-1b
22	H1	PIPE_3.5	.120	48	105	.063	24		10	6066...	78750	7953....	7953....	1	H1-1b
23	H3	PIPE_3.5	.120	48	207	.061	24		16	6066...	78750	7953....	7953....	1	H1-1b
24	M9	L2x2x3	.116	0	2	.028	0	y	46	2096...	2339...	557.7...	1182....	1	H2-1
25	M8	L2x2x3	.109	0	26	.028	0	z	38	2096...	2339...	557.7...	1182....	1	H2-1
26	M14	L2x2x3	.104	0	8	.028	0	y	35	2096...	2339...	557.7...	1182....	1	H2-1
27	M3	L2x2x3	.104	0	20	.027	0	z	49	2096...	2339...	557.7...	1182....	1	H2-1
28	M19	PIPE_2.0	.095	24	10	.084	72		2	1491...	32130	1871....	1871....	....	H1-1b
29	M20	PIPE_2.0	.093	24	16	.081	24		7	1491...	32130	1871....	1871....	....	H1-1b
30	M21	PIPE_2.0	.093	72	4	.081	24		12	1491...	32130	1871....	1871....	....	H1-1b
31	M24	L6.6"X4.46"X...	.036	21	18	.025	0	y	14	5117...	87561	2464....	7125....	1	H2-1
32	M22	L6.6"X4.46"X...	.032	2.625	22	.027	42	y	11	5117...	87561	2464....	7125....	1	H2-1
33	M23	L6.6"X4.46"X...	.032	39.812	30	.027	0	y	9	5117...	87561	2464....	7125....	1	H2-1

Envelope None Cold Formed Steel Code Checks

Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc[i...	Dir	LC	Pn[lb]	Tn[lb]	Mnyy[l...	Mnzz[l...	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCUATIONS

Trylon

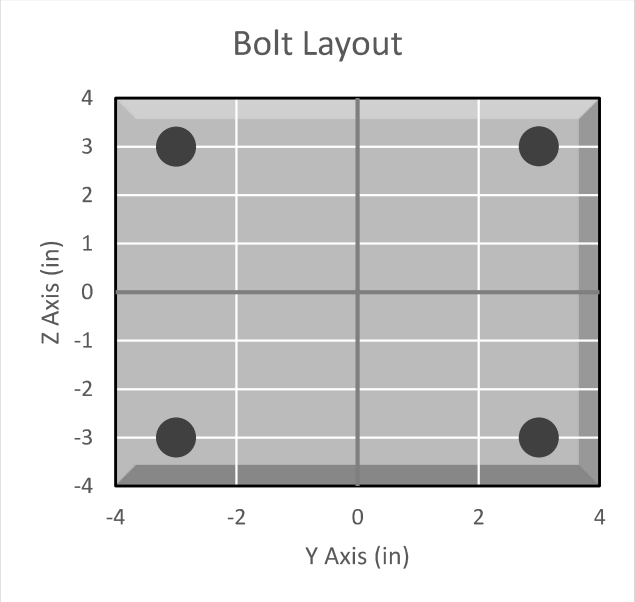
Analysis date: 7/28/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	189032
Carrier Site ID:	BOHVN00016A
Carrier Site Name:	CT-CCI-T-842864

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

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



Connection Description
Standoff to Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	3763.0	lbs
Shear Force (V_u):	454.7	lbs
Tension Usage:	17.6%	--
Shear Usage:	3.1%	--
Interaction:	17.6%	Pass
Controlling Member:	M12	--
Controlling LC:	42	--

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

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

APPENDIX E

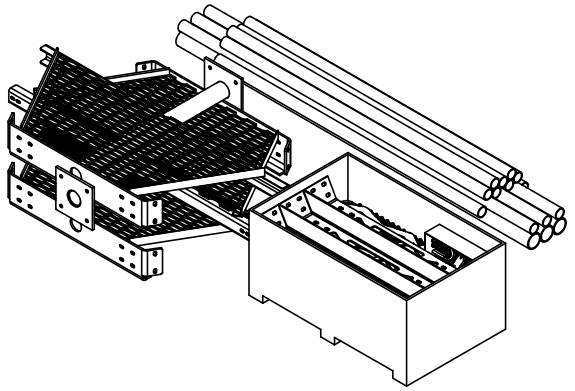
SUPPLEMENTAL DRAWINGS

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

C

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

FOR BOM ENTRY ONLY

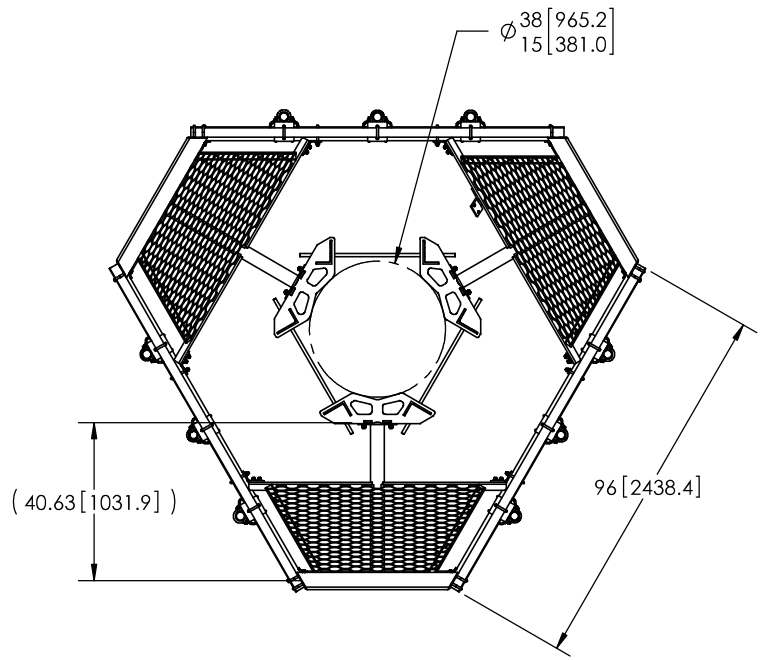


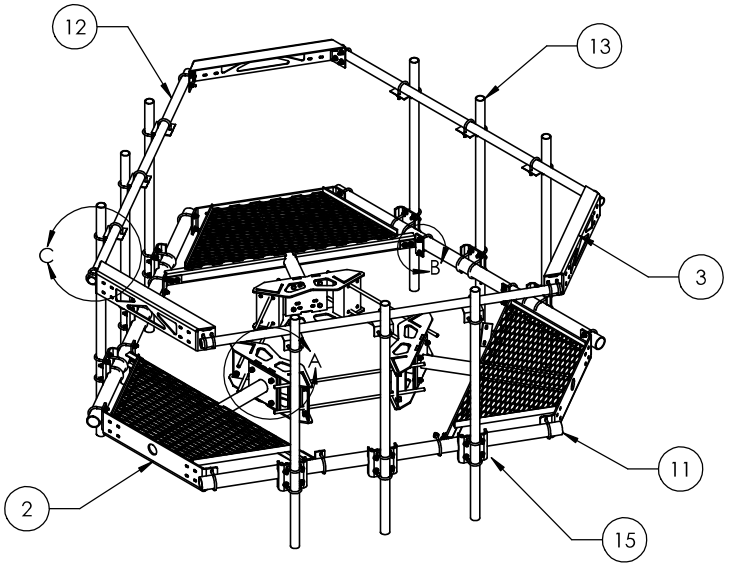
NOTES:
1. CUSTOMER ASSEMBLY SHEETS 2–3.

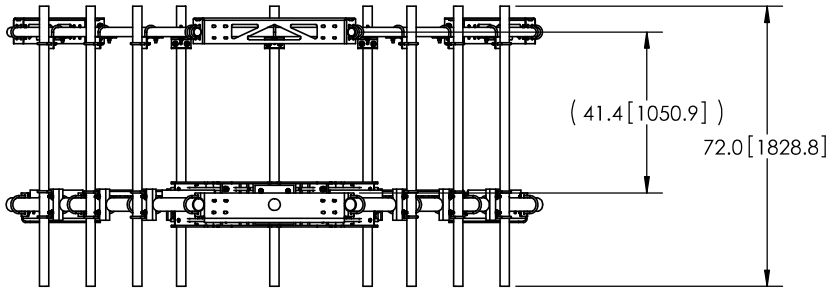
ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03
REMOVE BURRS AND BREAK EDGES .005

DO NOT SCALE THIS PRINT

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





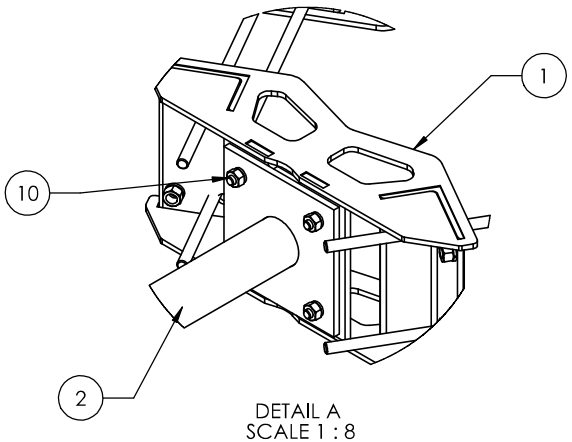


ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
C				
1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1	230.42 LBS
2	MTC300601	Low Profile Co-Location Platform Snub Nose	3	134.21 LBS
3	MT195801	Corner Weldment Snub Nose Handrail	3	27.10 LBS
4	XA2020.01	CROSS OVER ANGLE	9	2.65 LBS
5	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT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

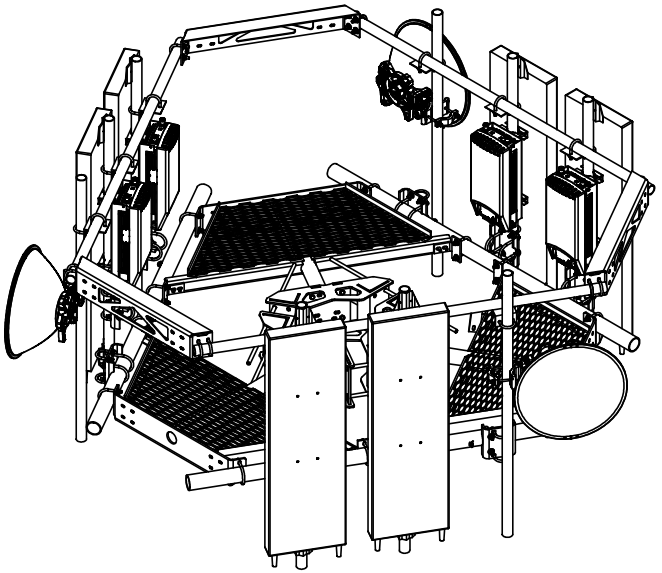
NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.
2. WILL FIT MONOPOLES 15"–38" OD.

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

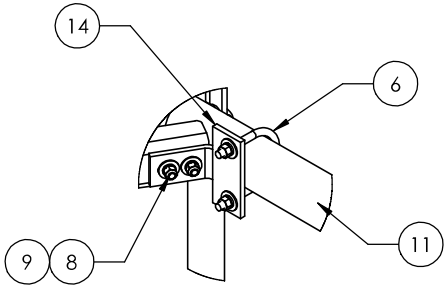
DRAWN BY: MSM	SHEET: 2 of 3	PART NUMBER: MC-PK8-C	
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: 25" OD Snub Nose MT-196	
DATE: 10/18/11	MATERIAL: A36, A53	DRAWING TYPE: ASSEMBLY DRAWING	
REVISION: C	FINISH: GALV A123	WEIGHT: 1361.27 LBS	ANDREW® WESTCHESTER, IL. 60154 U.S.A.



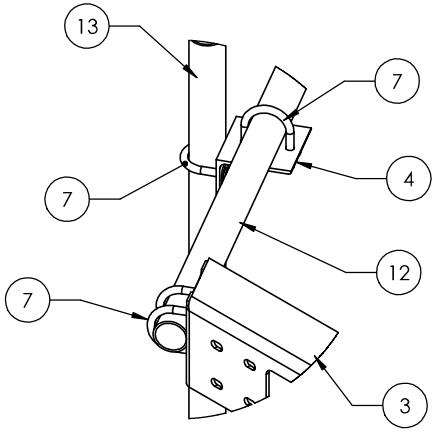
DETAIL A
SCALE 1 : 8



WITH ANTENNAS



DETAIL B
SCALE 1 : 8



DETAIL C
SCALE 1 : 8

NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

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

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

ANDREW®
WESTCHESTER, IL. 60154
U.S.A.

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOHVN00016A

842864
201 Granite Road
Guilford, Connecticut 06437

October 26, 2021

EBI Project Number: 6221006487

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**29.38%**

October 26, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00016A - 842864

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **201 Granite Road** in **Guilford, 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 201 Granite Road in Guilford, 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 77 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):	77 feet	Height (AGL):	77 feet	Height (AGL):	77 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 %:	**4.69%**	Antenna B1 MPE %:	**4.69%**	Antenna C1 MPE %:	**4.69%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	4.69%
AT&T	5.82%
T-Mobile	10.19%
Verizon	8.68%
Site Total MPE % :	29.38%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	4.69%
Dish Wireless Sector B Total:	4.69%
Dish Wireless Sector C Total:	4.69%
Site Total MPE % :	29.38%

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	77.0	6.38	600 MHz n71	400	1.60%
Dish Wireless 1900 MHz n70	4	542.70	77.0	15.48	1900 MHz n70	1000	1.55%
Dish Wireless 2190 MHz n66	4	542.70	77.0	15.48	2190 MHz n66	1000	1.55%
						Total:	**4.69%**

• 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:	4.69%
Sector B:	4.69%
Sector C:	4.69%
Dish Wireless Maximum MPE % (Sector A):	4.69%
Site Total:	29.38%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **29.38%** 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:
201 GRANITE ROAD, GUILFORD, CT 06437

NCWPCS MPL 31- YEAR SITES TOWER HOLDING ("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: 842864/GUILFORD SW
Customer Site ID: BOHVN00016A/CT-CCI-T-842864
Site Address: 201 GRANITE ROAD, GUILFORD, CT 06437

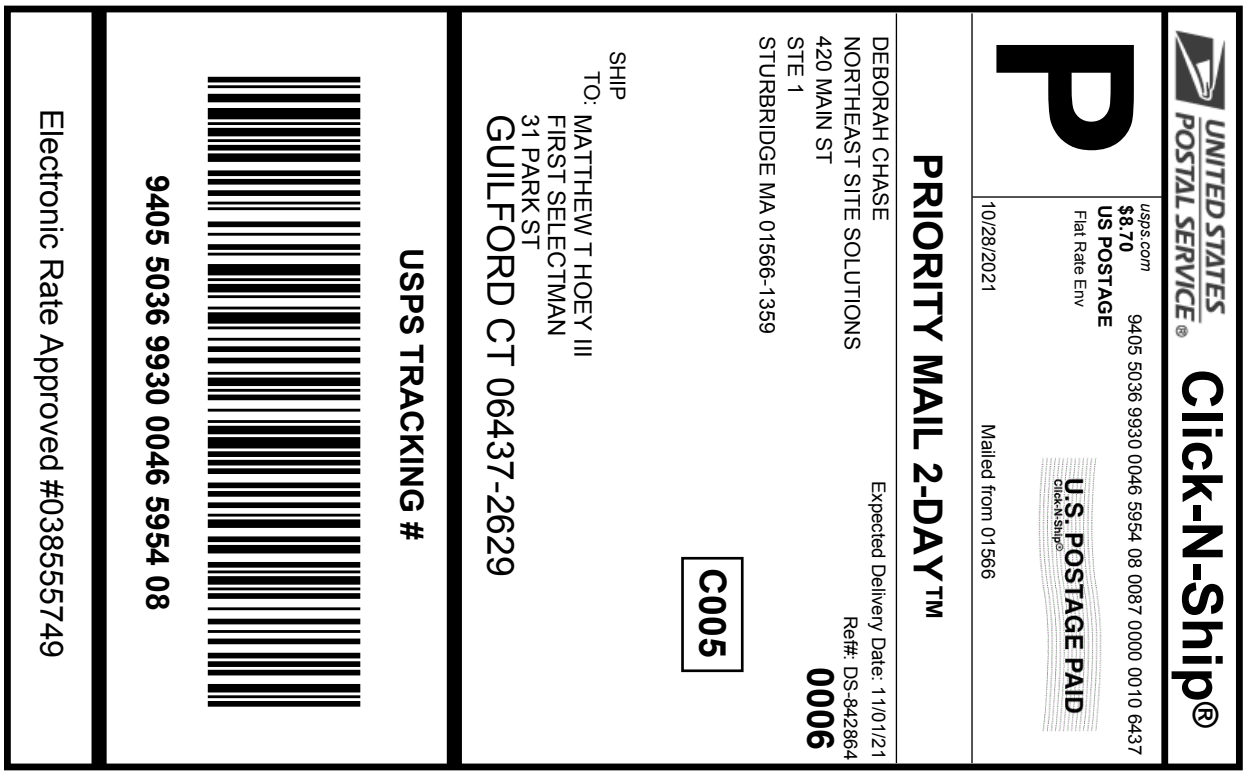
Crown Castle

By: _____ Date: 10/26/21

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0046 5954 08

Trans. #:	547086410
Print Date:	10/28/2021
Ship Date:	10/28/2021
Expected Delivery Date:	11/01/2021

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

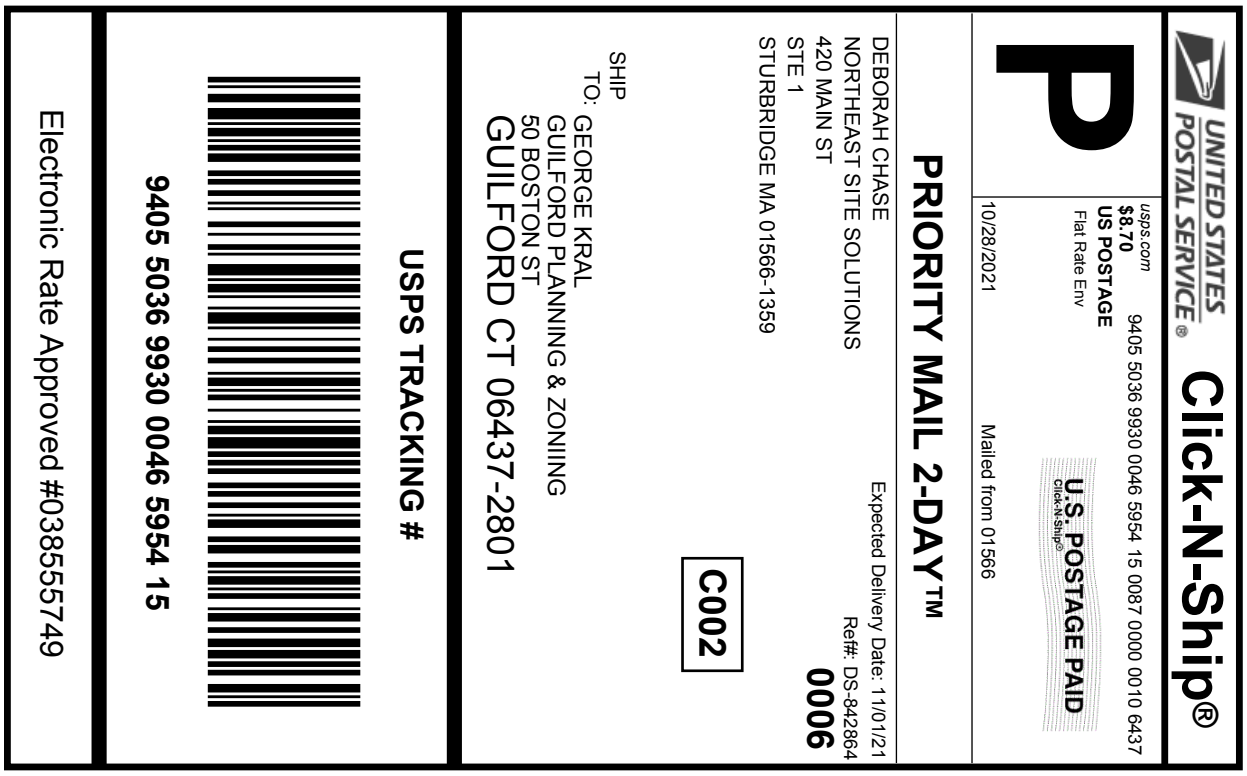
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-842864

To: MATTHEW T HOEY III
FIRST SELECTMAN
31 PARK ST
GUILFORD CT 06437-2629

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

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



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USPS TRACKING # :
9405 5036 9930 0046 5954 15

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

Ref#: DS-842864

To: GEORGE KRAL
GUILFORD PLANNING & ZONIING
50 BOSTON ST
GUILFORD CT 06437-2801

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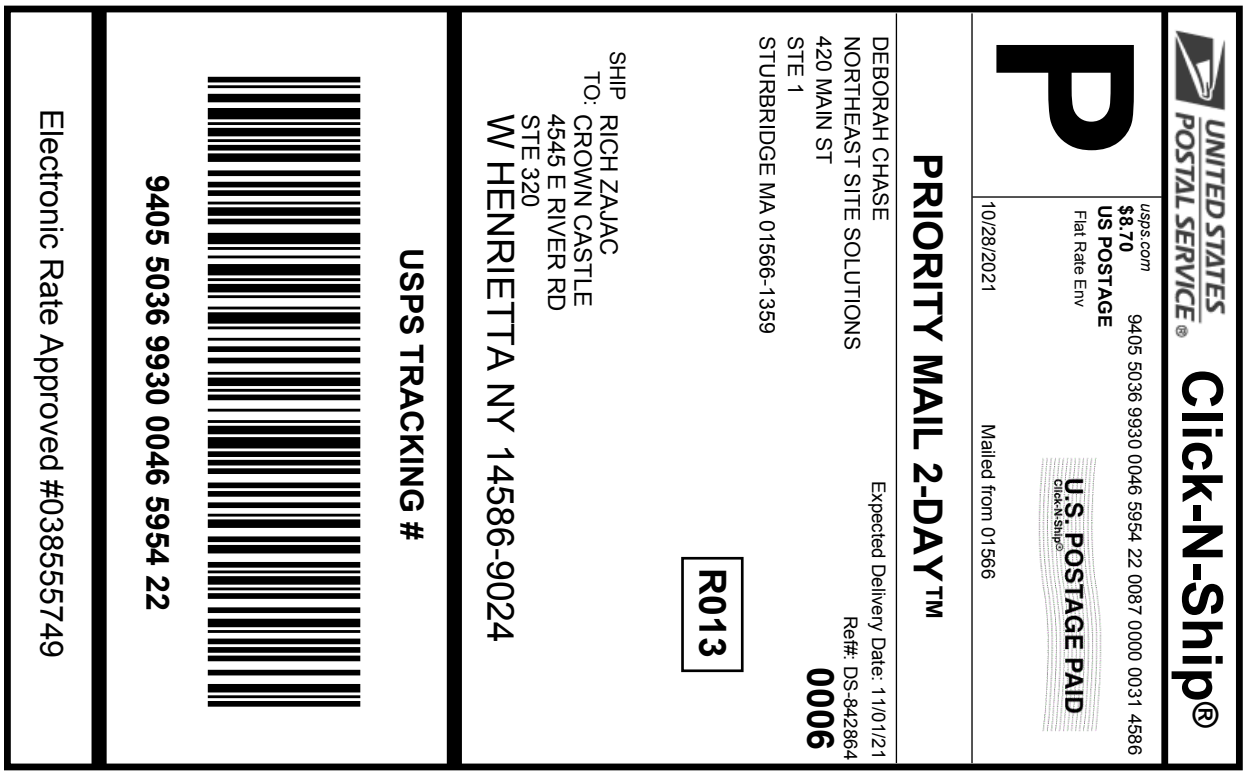

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From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-842864

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

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

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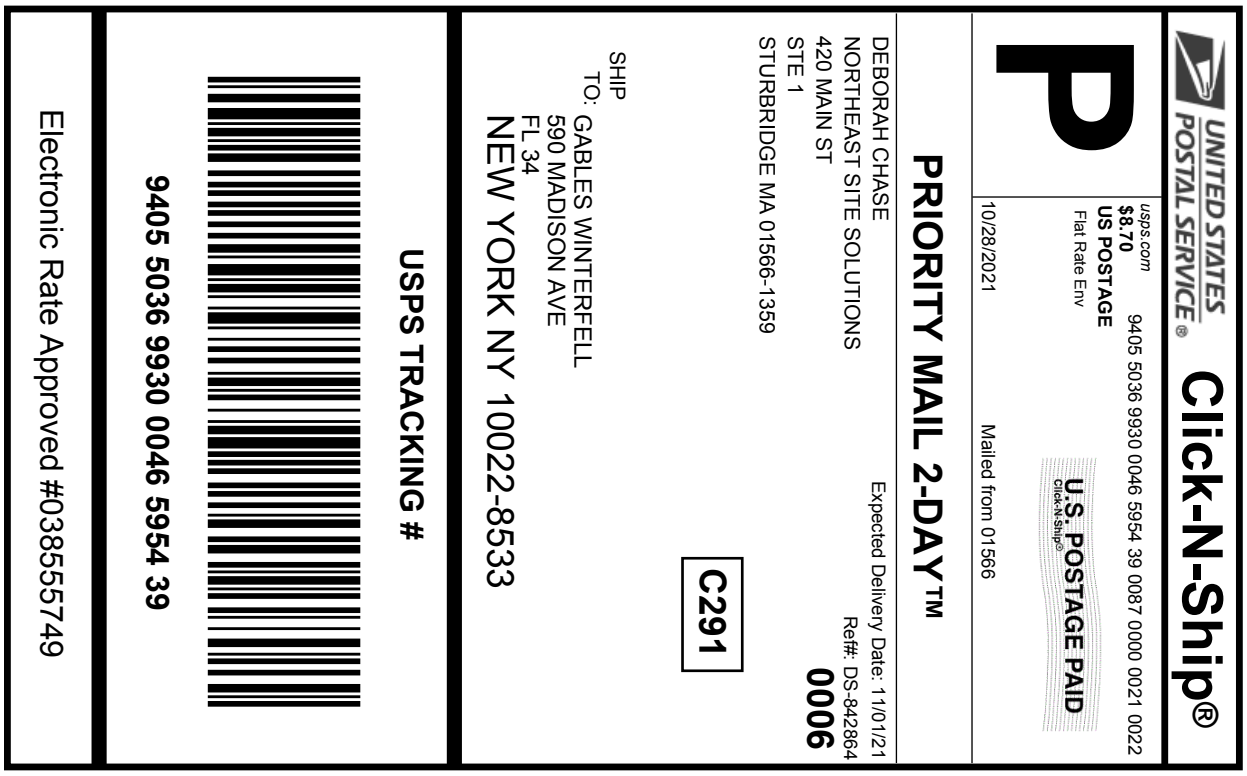

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Total:	**$8.70**

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

Ref#: DS-842864

To: GABLES WINTERFELL
590 MADISON AVE
FL 34
NEW YORK NY 10022-8533

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842864

UNITED STATES POSTAL SERVICE.

UNIONVILLE
24 MILL ST
UNIONVILLE, CT 06085-9998
(800)275-8777

10/29/2021 02:27 PM

Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Fri 10/29/2021 Tracking #: 9405 5036 9930 0046 5954 22	1		$0.00
Prepaid Mail New York, NY 10022 Weight: 0 lb 11.00 oz Acceptance Date: Fri 10/29/2021 Tracking #: 9405 5036 9930 0046 5954 39	1		$0.00
Prepaid Mail Guilford, CT 06437 Weight: 0 lb 11.00 oz Acceptance Date: Fri 10/29/2021 Tracking #: 9405 5036 9930 0046 5954 08	1		$0.00
Prepaid Mail Guilford, CT 06437 Weight: 0 lb 11.00 oz Acceptance Date: Fri 10/29/2021 Tracking #: 9405 5036 9930 0046 5954 15	1		$0.00
Grand Total:			$0.00

****