



Northeast Site Solutions  
Denise Sabo  
4 Angela's Way, Burlington CT 06013  
[denise@northeastsitesolutions.com](mailto:denise@northeastsitesolutions.com)

November 19, 2021

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

RE: Tower Share Application  
1021 Straits Turnpike, Middlebury, CT 06770  
aka 1 Service Road, Middlebury, CT 06770  
Latitude: 41.5358 N  
Longitude: -73.0892 W  
Site# BOHVN00175A\_Dish\_Middlebury\_TS\_Zoning

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 1021 Straits Turnpike, Middlebury, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/19005G MHz antenna and six (6) RRUs, at the 138-foot level of the existing 199-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, stamped October 22, 2021, Exhibit C. Also included is a structural analysis prepared by Tower Engineering Professionals, Inc., dated March 12, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Town of Middlebury, Zoning Permit No. 16981, approve September 3, 1999. 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 The Honorable Edward B. St. John, First Selectman, Town of Middlebury, Curtis S. Bosco, Zoning Enforcement Officer, Town of Middlebury, as well as the property owner Town of Middlebury and Phoenix Tower International, tower owner.

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 modifications will not result in an increase in the height of the existing structure. The top of the tower is 199-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 138 feet.
2. The proposed modification will not result in the increase of the site boundary as depicted on the attached site plan.

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



4.The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total density of 17.62% as evidenced by Exhibit F.

Connecticut General Statutes 16-50-aa 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 in 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 support tower in Middlebury. 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 138-foot level of the existing 199-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 share application.

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

Sincerely,

Denise Sabo

Denise Sabo  
Mobile: 203-435-3640  
Fax: 413-521-0558  
Office: Angela's Way, Burlington CT 06013

Email: denise@northeastitesolutions.com



Attachments

Cc: The Honorable Edward B. St. John  
First Selectman  
Town of Middlebury  
1212 Whittemore Road  
Middlebury, CT 06762

Curtis S. Bosco, Zoning Enforcement Officer  
Town of Middlebury  
Zoning Office  
1212 Whittemore Road  
Middlebury, CT 06762

Town of Middlebury  
1212 Whittemore Road  
Middlebury, CT 06762

Phoenix Tower International, Tower Owner

# Exhibit A

## **Original Facility Approval**

16981

APPLICATION FOR PERMIT

TOWN OF MIDDLEBURY

LOCATION OF JOB	FEE SCHEDULE	TYPE OF JOB
4-06 425 MAP LOT BLOCK 1021 Straits Turnpike NO. STREET NAME Middlebury CT 06762 TOWN STATE ZIP	BUILDING OFFICIAL MAY REQUIRE AFFIDAVIT OF ACTUAL VALUE	<input type="checkbox"/> BUILDING <input type="checkbox"/> ELECTRIC <input type="checkbox"/> PLUMBING <input type="checkbox"/> MECHANICAL <input type="checkbox"/> NEW <input checked="" type="checkbox"/> ADDITION <input type="checkbox"/> REPAIR <input type="checkbox"/> ALTERATION <input type="checkbox"/> DEMOLITION <input type="checkbox"/> CHANGE OF USE

OWNER	VALUE - FEE	REQUIREMENTS
Town of Middlebury LAST NAME FIRST NAME PO Box 392 NO. STREET NAME Middlebury CT 06762 TOWN STATE ZIP	\$100,000 CONSTRUCTION VALUE \$800.00 FEE AMOUNT	<input type="checkbox"/> ZONING <input type="checkbox"/> HEALTH DEPT. <input type="checkbox"/> FIRE MARSHAL <input type="checkbox"/> PLOT PLAN <input type="checkbox"/> INSURANCE PROOF (W.C.) <input type="checkbox"/> HISTORICAL APPROVAL <input type="checkbox"/> FLOOD PLAIN APPROVAL <input type="checkbox"/> TWO SETS OF PLANS

APPLICANT	DECISION	TYPE OF BUILDING
Nextel Communications LAST NAME FIRST NAME 100 Corporate Place NO. STREET NAME Rocky Hill CT 06067 TOWN STATE ZIP	APPLICATION IS HEREBY <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED Sept. 3 1999 DATE CODE OFFICIAL <i>[Signature]</i>	CONSTRUCTION TYPE <u>3C - MASONRY</u> USE GROUP <u>UTILITY</u>

BUILDER / CONTRACTOR INFORMATION	
Anthony's Blng. Co INC NAME 953 Putnam Pike NO. STREET NAME Cheshire CT 02814 TOWN STATE ZIP	00900617 LICENSE OR REGISTRATION NUMBER AND CLASS 6,30, 2000 (401) 567-0600 EXPIRATION DATE CONTRACTOR TELEPHONE <i>[Signature]</i> CONTRACTOR SIGNATURE

Need + Insurance Certificate

PERMITS EXPIRE ONE YEAR FROM DATE OF ISSUE

REMARKS OR A BRIEF DESCRIPTION OF WORK PROPOSED:  
 Installation of an unmanned wireless telecommunications facility at an existing Omnipoint Communications site. A 10' x 20' pre-fabricated concrete equipment shelter and 12 wireless panel antennas will be installed. New telco. and electric services will be run from the existing demarc. and meter bank.

THIS IS TO CERTIFY THAT I AM THE OWNER OR AUTHORIZED AGENT FOR THE OWNER. ALL WORK COVERED BY THIS APPLICATION HAS BEEN AUTHORIZED BY THE OWNER OF THE ABOVE DESCRIBED PROPERTY AND WILL BE DONE ACCORDING TO THE CONNECTICUT BASIC BUILDING CODE. AS THE APPLICANT I UNDERSTAND THAT A FINAL INSPECTION AND A CERTIFICATE OF USE AND OR OCCUPANCY IS REQUIRED BEFORE OCCUPANCY OR USE.

FEE PAID BY:  
 CK NO. 22225  
 AMOUNT \$800.00

8/24/99  
 DATE

*[Signature]*  
 APPLICANT SIGNATURE

Dep 10.00 pd ck# 22279

# Exhibit B

## **Property Card**



Property Information

Property Location	1 SERVICE ROAD
Owner	MIDDLEBURY TOWN OF
Co-Owner	(TOWN GARAGE/DOG POUND/TRANSFER/PUBLIC W <b>W</b> )
Mailing Address	1 SERVICE RD MIDDLEBURY CT 06762
Land Use	331 Mun Garage
Land Class	E
Zoning Code	CA40
Census Tract	3441

Neighborhood	C100
Acres	4
Utilities	Electric
Lot Setting/Desc	Level
Additional Info	

Photo



Sketch



Primary Construction Details

Year Built	1981
Stories	1
Building Style	Pre-Eng Garage
Building Use	Comm/Ind
Building Condition	C
Floors	Concrete
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Gable
Roof Cover	Enam Metal

Exterior Walls	Pre-Finish Metal
Interior Walls	Minimum
Heating Type	Hot Air-No Duc
Heating Fuel	Gas
AC Type	Partial
Gross Bldg Area	16672
Total Living Area	8180



Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	936800	666200
Extras	48800	34100
Improvements	1460900	1015300
Outbuildings	486800	326000
Land	532000	414400
Total	2042300	1429700

Outbuilding and Extra Items

Type	Description
Implement Shed	286.00 S.F.
Implement Shed	380.00 S.F.
Paving-Asphalt	20000.00 S.F.
Cell Tower	1.00 Units
Sprinklers- Wet	8180.00 S.F.
4' Chain Fence	6000.00 L.F.
Sprinklers- Wet	952.00 S.F.
Partial AC	3242.00 S.F.
Sprinklers- Wet	17621.00 S.F.
Implement Shed	200.00 S.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Unfinished Upper Story	400	0
First Floor	7780	7780
Slab	7780	0
Office	400	400
Utility Storage	262	0
Total Area	16572	8180

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
MIDDLEBURY TOWN OF	40/ 13	7/21/1944	0

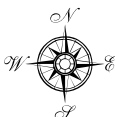
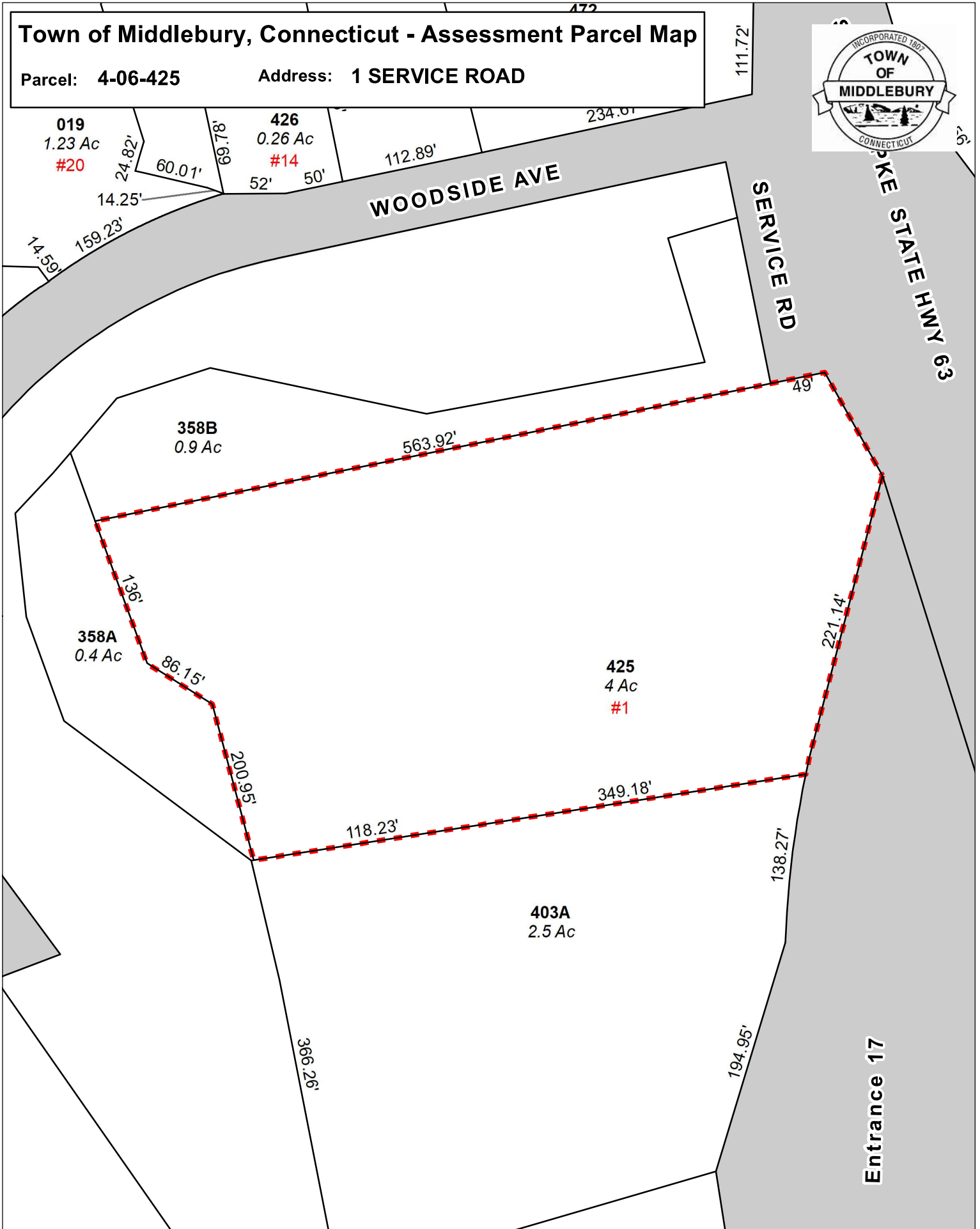
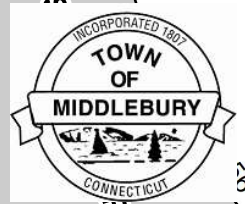




# Town of Middlebury, Connecticut - Assessment Parcel Map

Parcel: **4-06-425**

Address: **1 SERVICE ROAD**



Approximate Scale: 1 inch = 100 feet

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

Map Produced May 2020

# Exhibit C

## **Construction Drawings**



DISH WIRELESS, LLC. SITE ID:

**BOHVN00175A**

DISH WIRELESS, LLC. SITE ADDRESS:

**1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762**

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:	
<b>TOWER SCOPE OF WORK:</b>	
<ul style="list-style-type: none"> <li>• INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)</li> <li>• INSTALL (3) PROPOSED ANTENNA PLATFORM (1 PER SECTOR)</li> <li>• INSTALL PROPOSED JUMPERS</li> <li>• INSTALL (6) PROPOSED RRUs (2 PER SECTOR)</li> <li>• INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)</li> <li>• INSTALL (1) PROPOSED HYBRID CABLE</li> </ul>	
<b>GROUND SCOPE OF WORK:</b>	
<ul style="list-style-type: none"> <li>• INSTALL (1) PROPOSED METAL PLATFORM</li> <li>• INSTALL (1) PROPOSED ICE BRIDGE</li> <li>• INSTALL (1) PROPOSED PPC CABINET</li> <li>• INSTALL (1) PROPOSED EQUIPMENT CABINET</li> <li>• INSTALL (1) PROPOSED POWER CONDUIT</li> <li>• INSTALL (1) PROPOSED TELCO CONDUIT</li> <li>• INSTALL (1) PROPOSED TELCO-FIBER BOX</li> <li>• INSTALL (1) PROPOSED GPS UNIT</li> <li>• INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)</li> <li>• INSTALL (1) PROPOSED CIENA BOX (IF REQUIRED)</li> <li>• INSTALL (1) PROPOSED METER SOCKET</li> </ul>	

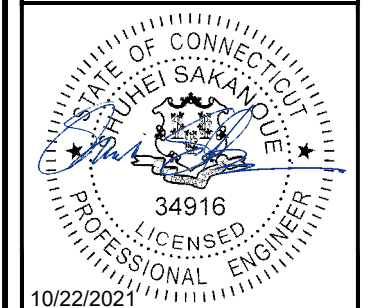
SITE INFORMATION		PROJECT DIRECTORY	
PROPERTY OWNER:	PHOENIX TOWERS INTERNATIONAL	APPLICANT:	DISH WIRELESS, LLC.
ADDRESS:	1021 STRAITS TURNPIKE MIDDLEBURY, CT 06762		5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER TYPE:	SELF SUPPORT TOWER	TOWER OWNER:	PHOENIX TOWERS INTERNATIONAL
TOWER CO SITE ID:	CT-1003PTI		999 YAMATO ROAD, SUITE 100 BOCA RATON, FL 33431
TOWER APP NUMBER:	TBD	SITE DESIGNER:	INFINIGY
COUNTY:	NEW HAVEN		1033 WATERVLJET SHAKER RD ALBANY, NY 12205 (518) 690-0790
LATITUDE (NAD 83):	41° 32' 08.9" N 41.5358 N	SITE ACQUISITION:	MATT BANDLE TBD
LONGITUDE (NAD 83):	-73° 05' 21.1" W -73.0892 W	CONSTRUCTION MANAGER:	JAVIER SOTO TBD
ZONING JURISDICTION:	CSC	RF ENGINEER:	SYED ZAIDI Syed.zaidi@DISH.COM
ZONING DISTRICT:	NEW HAVEN		
PARCEL NUMBER:	TBD		
OCCUPANCY GROUP:	U		
CONSTRUCTION TYPE:	V-B		
POWER COMPANY:	EVERSOURCE		
TELEPHONE COMPANY:	AT&T		



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM



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

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

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
0	09/26/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS

A&E PROJECT NUMBER  
1197-F0001-C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOHVN00175A  
TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

SHEET TITLE  
TITLE SHEET

SHEET NUMBER  
**T-1**



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

**GENERAL NOTES**

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

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

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

**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

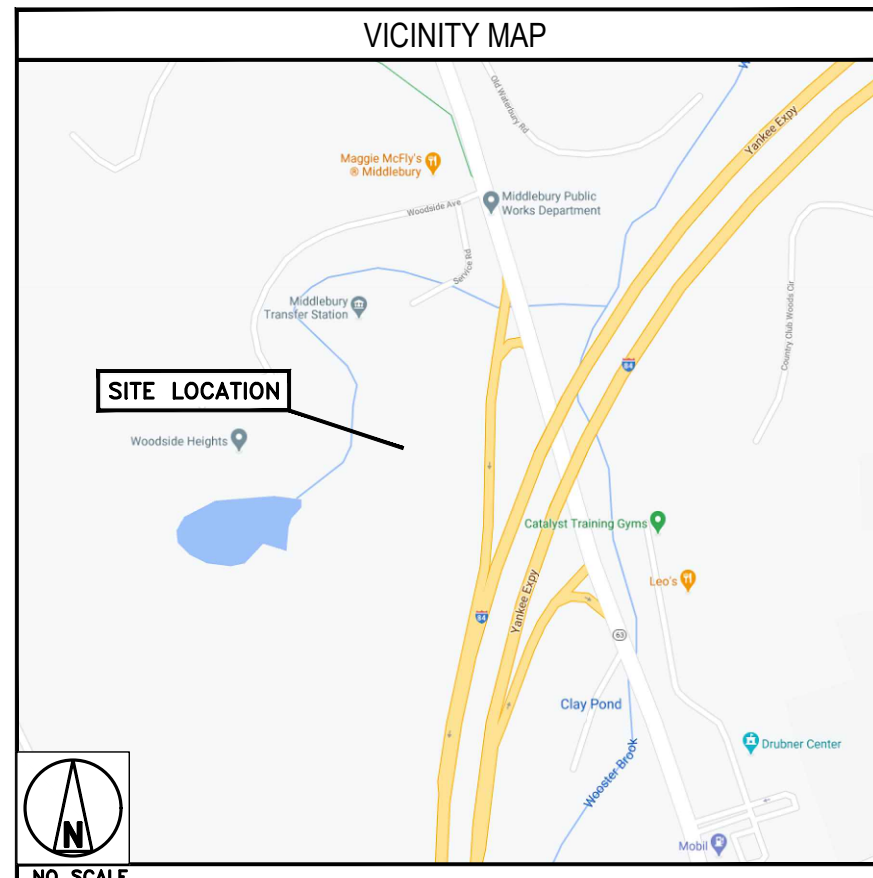
**SHEET INDEX**

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

**DIRECTIONS**

**DIRECTIONS FROM DANBURY MUNICIPAL AIRPORT:**

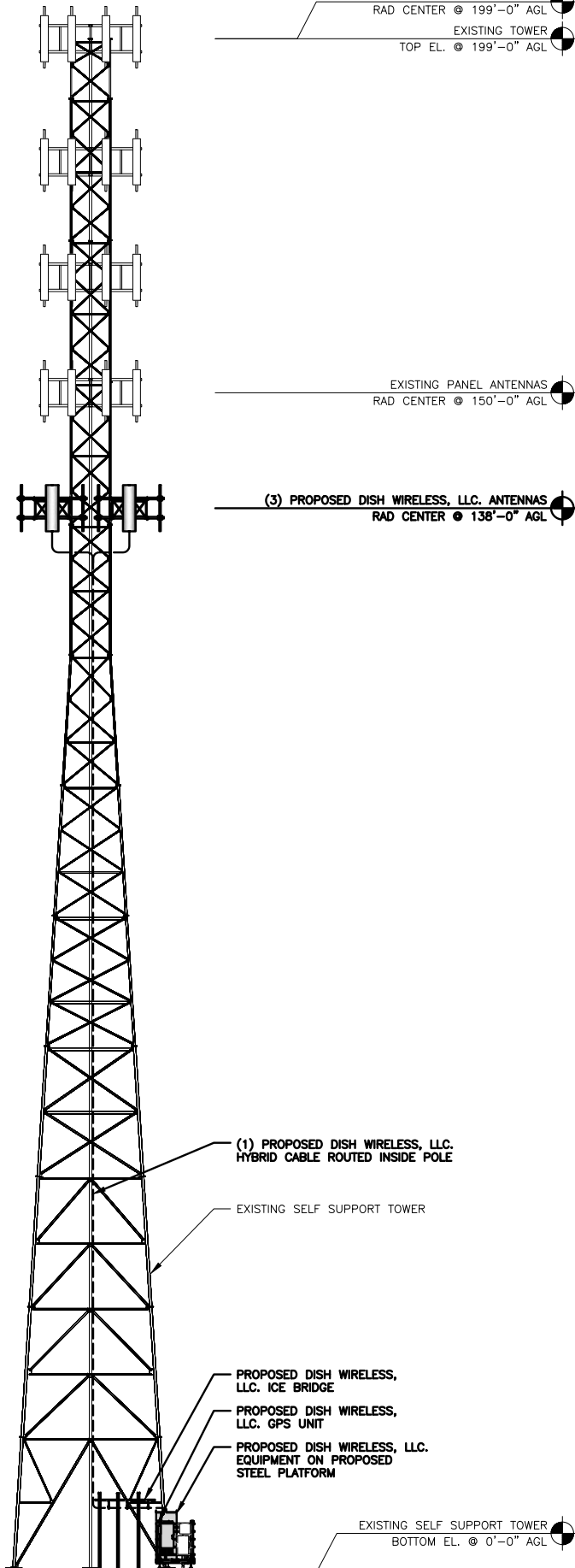
HEAD EAST ON WIBLING RD TOWARD SUGAR HOLLOW RD, TURN RIGHT ONTO SUGAR HOLLOW RD TURN LEFT ONTO WOOSTER HEIGHTS, TAKE THE RAMP ON THE LEFT FOR US-7 N, TAKE THE RAMP ON THE RIGHT FOR US-7 NORTH / I-84 EAST AND HEAD TOWARD NEW MILFORD / WATERBURY, TAKE THE RAMP ON THE RIGHT FOR I-84 EAST AND HEAD TOWARD WATERBURY, AT EXIT 17, HEAD RIGHT ON THE RAMP FOR CT-63 TOWARD AMUSEMENT PARK / WATERTOWN, TURN LEFT ONTO CT-63 / BRADLEYVILLE RD TURN LEFT ONTO WOODSIDE AVE, TURN LEFT ONTO SERVICE RD, TURN LEFT, ARRIVE AT, 1021 STRAITS TURNPIKE, MIDDLEBURY, CT 06762



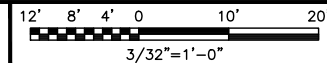


**NOTES**

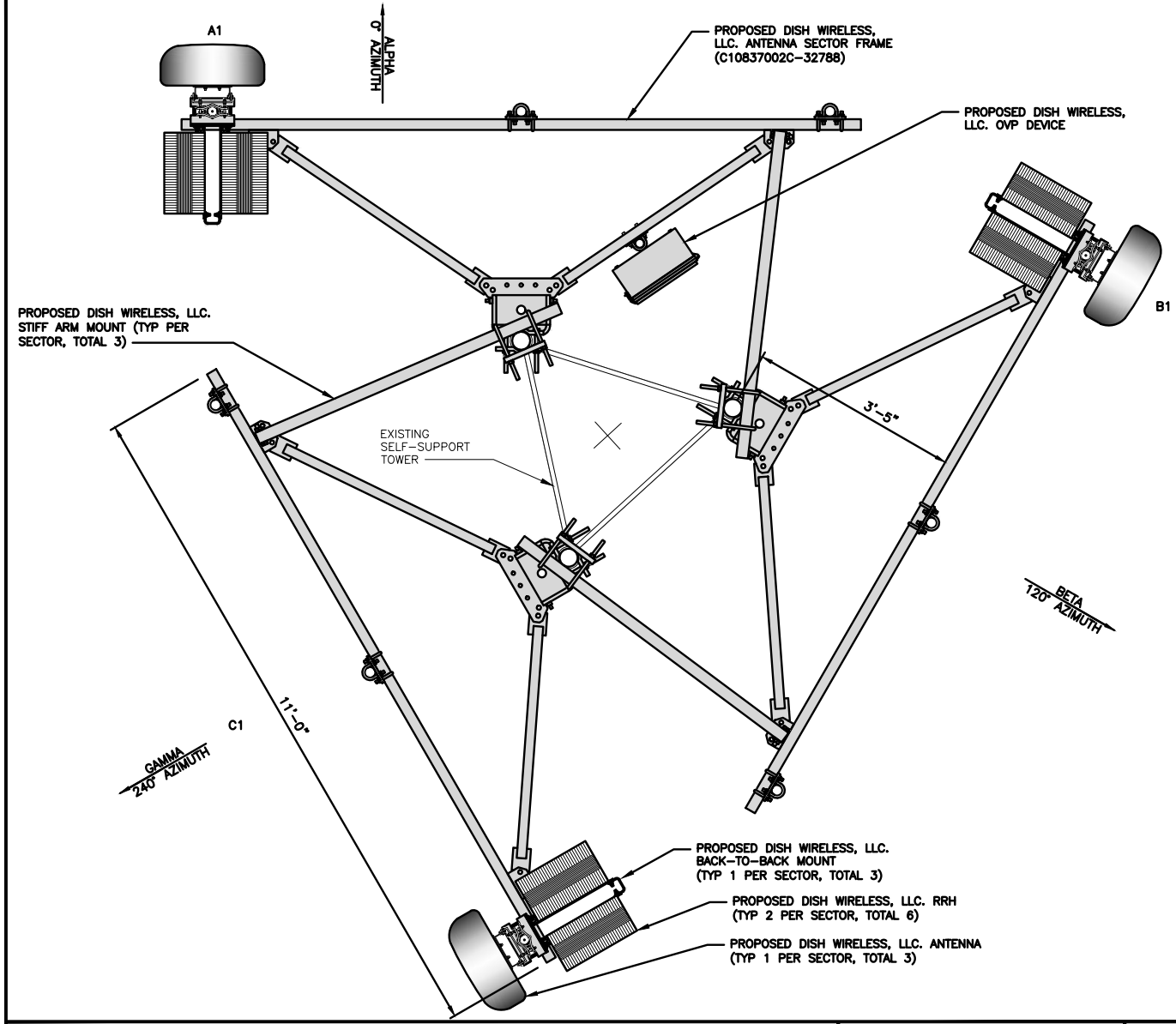
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. BASED ON THE MOUNT ANALYSIS COMPLETED BY INFINIGY DATED 08/03/2021, THE EXISTING ANTENNA MOUNTS ARE CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT CONFIGURATION
5. FOR ADDITIONAL TOWER STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY TOWER ENGINEERING PROFESSIONALS, INC. DATED: 03/12/21



**PROPOSED NORTH ELEVATION**



1



**ANTENNA LAYOUT**

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS - MX08FRO665-21	5G	72.0" x 20.0"	0°	138'-0"	(1) HIGH-CAPACITY HYBRID CABLE (168' LONG)
BETA	B1	PROPOSED	JMA WIRELESS - MX08FRO665-21	5G	72.0" x 20.0"	120°	138'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS - MX08FRO665-21	5G	72.0" x 20.0"	240°	138'-0"	

**NOTES**

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA OR 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.

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY	
ALPHA	A1	FUJITSU - TA08025-B604	5G	1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. 2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.
	A1	FUJITSU - TA08025-B605	5G	
BETA	B1	FUJITSU - TA08025-B604	5G	
	B1	FUJITSU - TA08025-B605	5G	
GAMMA	C1	FUJITSU - TA08025-B604	5G	
	C1	FUJITSU - TA08025-B605	5G	

**ANTENNA SCHEDULE**

NO SCALE

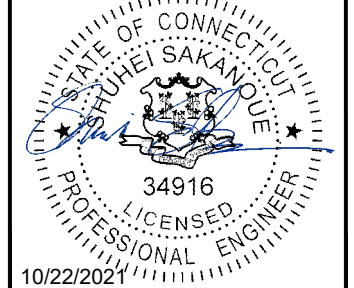
3



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM



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

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
0	09/28/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS

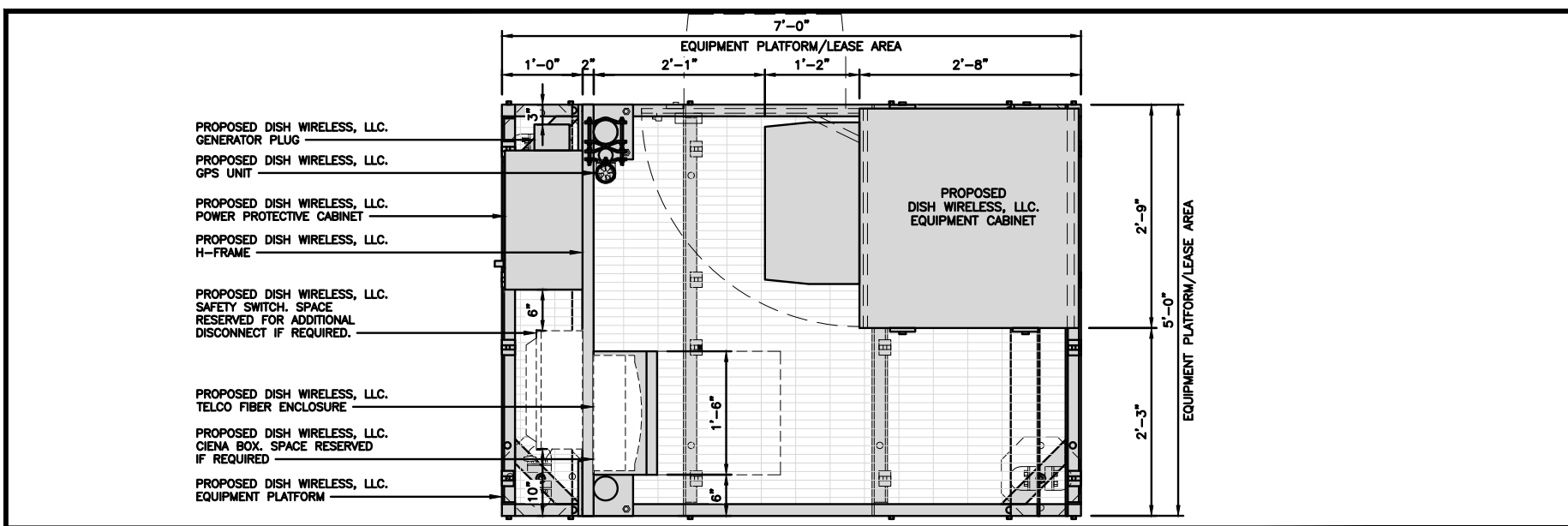
A&E PROJECT NUMBER  
1197-F0001-C

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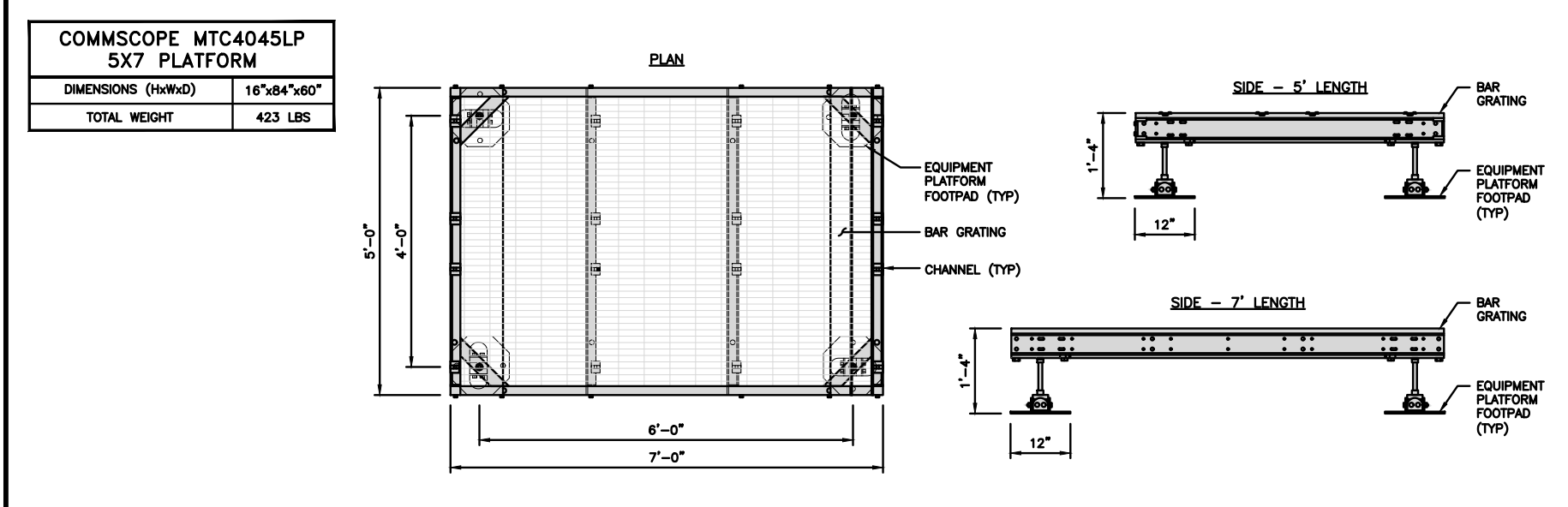
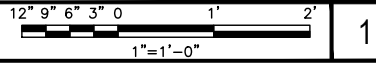
SHEET TITLE  
ELEVATION, ANTENNA  
LAYOUT AND SCHEDULE

SHEET NUMBER

**A-2**

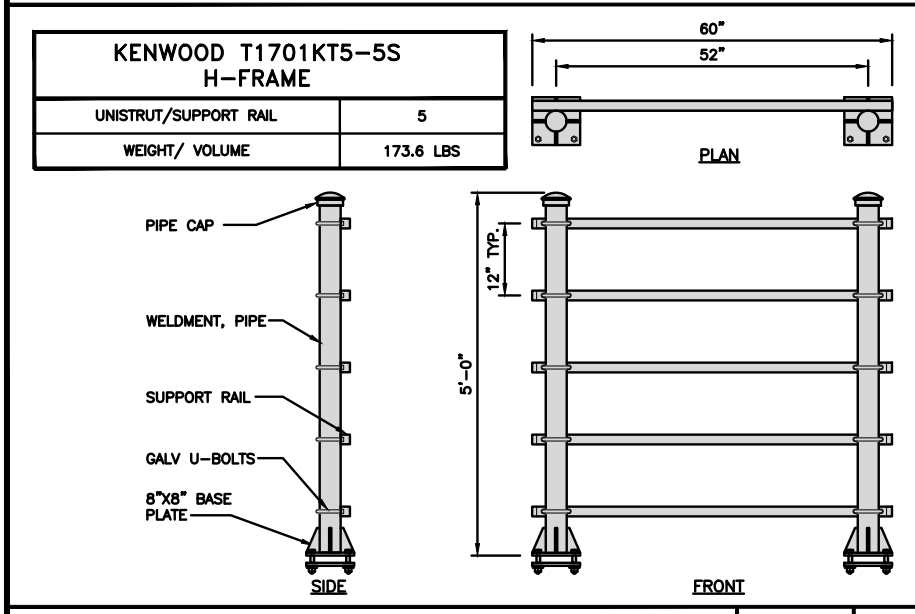


PLATFORM EQUIPMENT PLAN



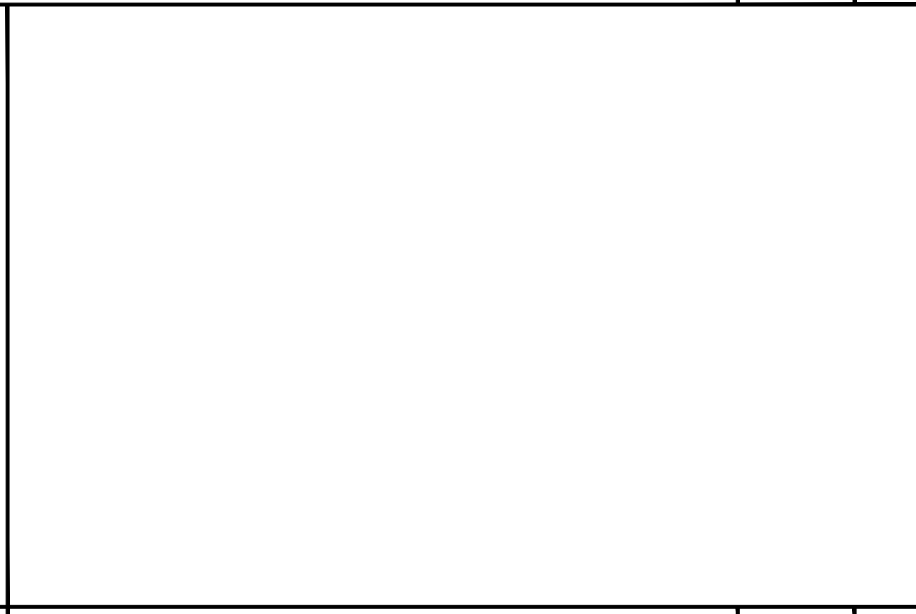
PLATFORM DETAIL

NO SCALE 2



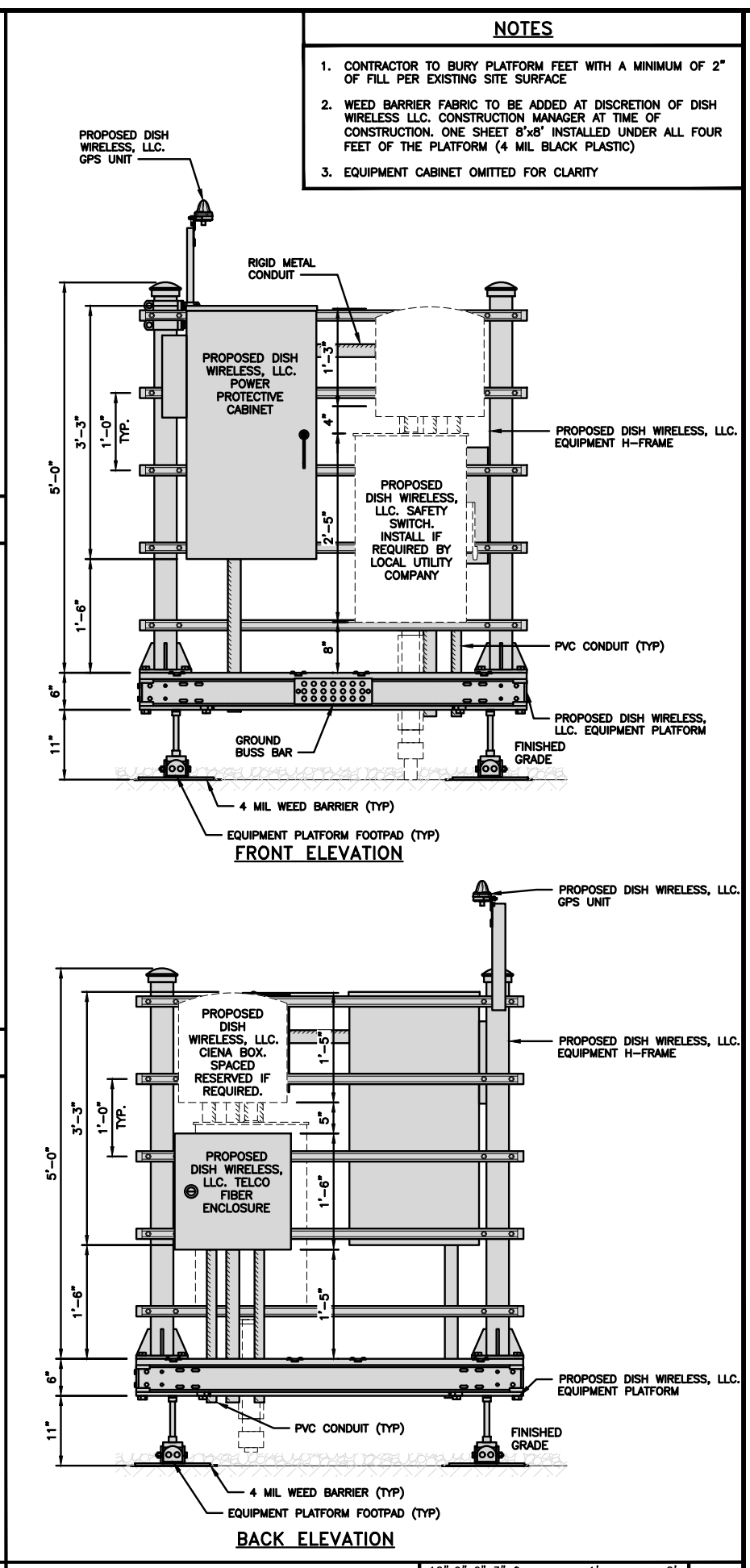
H-FRAME DETAIL

NO SCALE 3

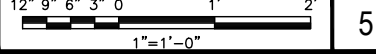


NOT USED

NO SCALE 4



H-FRAME EQUIPMENT ELEVATION



5

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

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RCD	SS	CJW

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

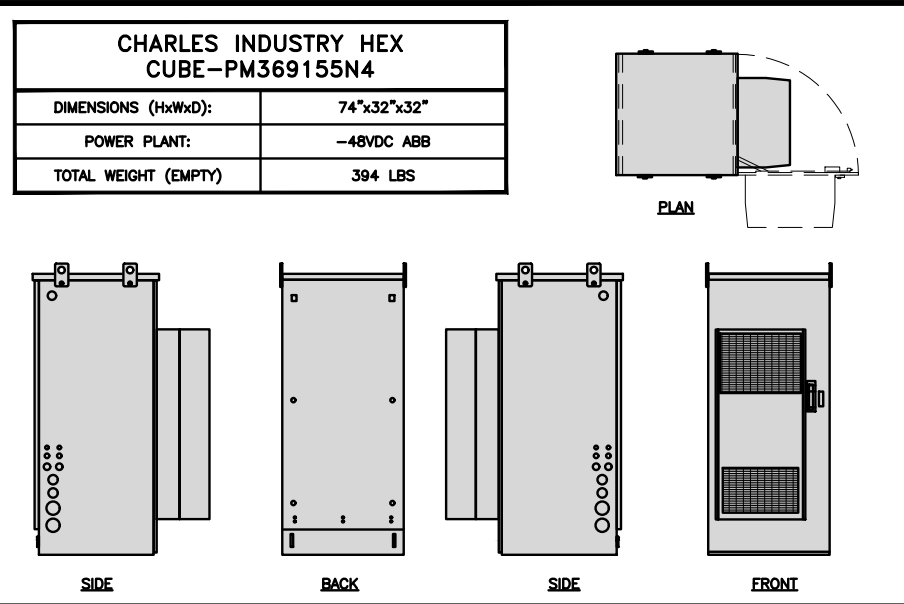
SUBMITTALS		
REV	DATE	DESCRIPTION
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1	10/18/21	REVISED PER COMMENTS

A&E PROJECT NUMBER  
1197-F0001-C

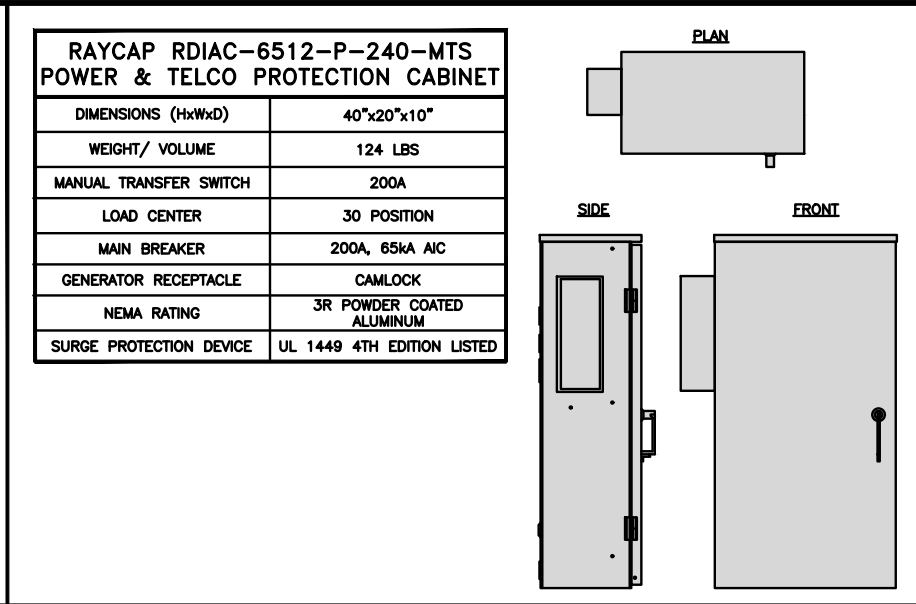
DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOHVN00175A  
TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

SHEET TITLE  
EQUIPMENT PLATFORM AND  
H-FRAME DETAILS

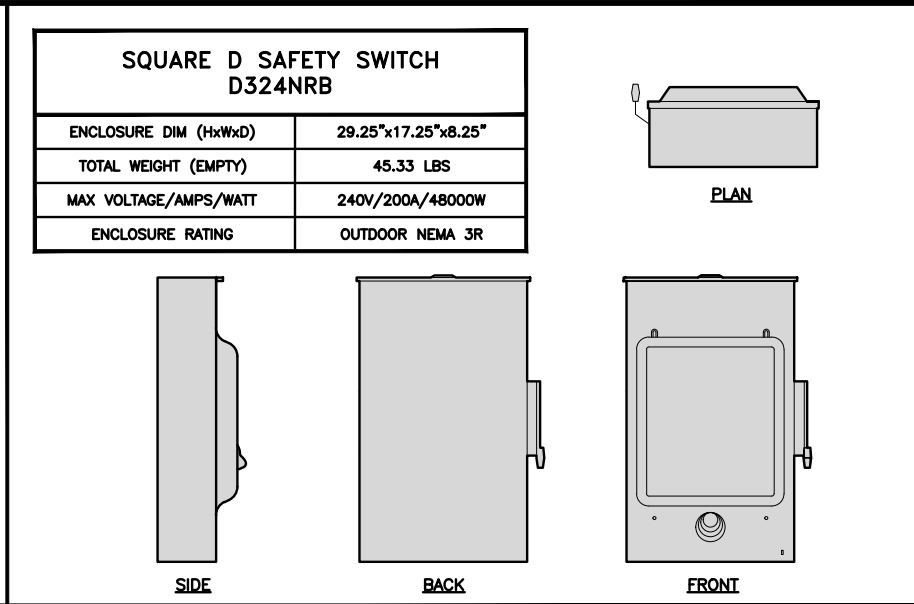
SHEET NUMBER  
**A-3**



**CABINET DETAIL**      NO SCALE      1



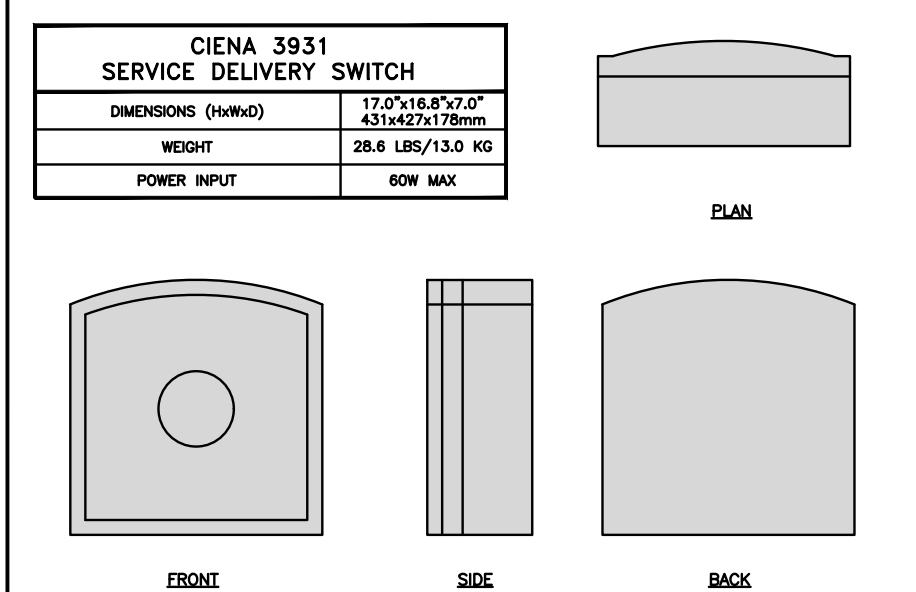
**POWER PROTECTION CABINET (PPC) DETAIL**      NO SCALE      2



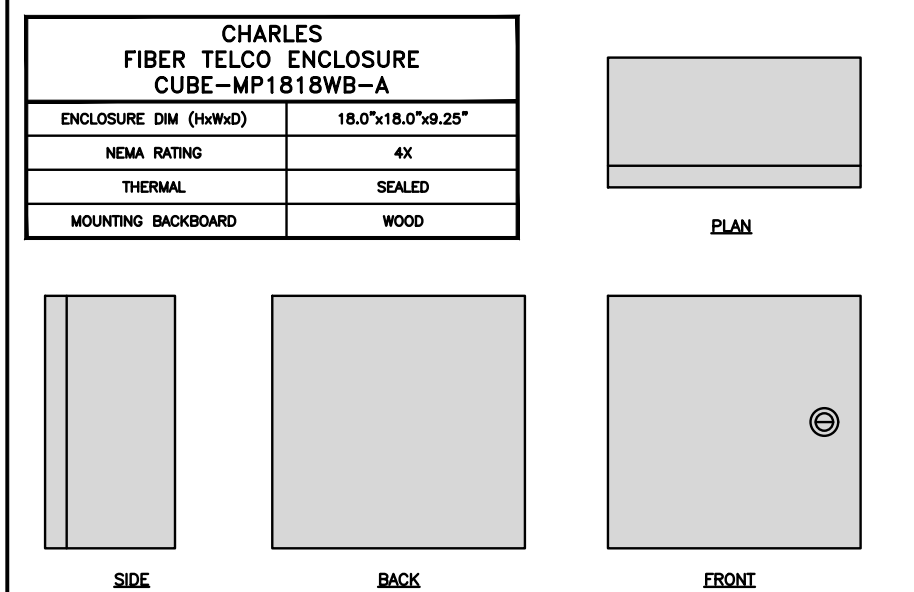
**SAFETY SWITCH**      NO SCALE      3



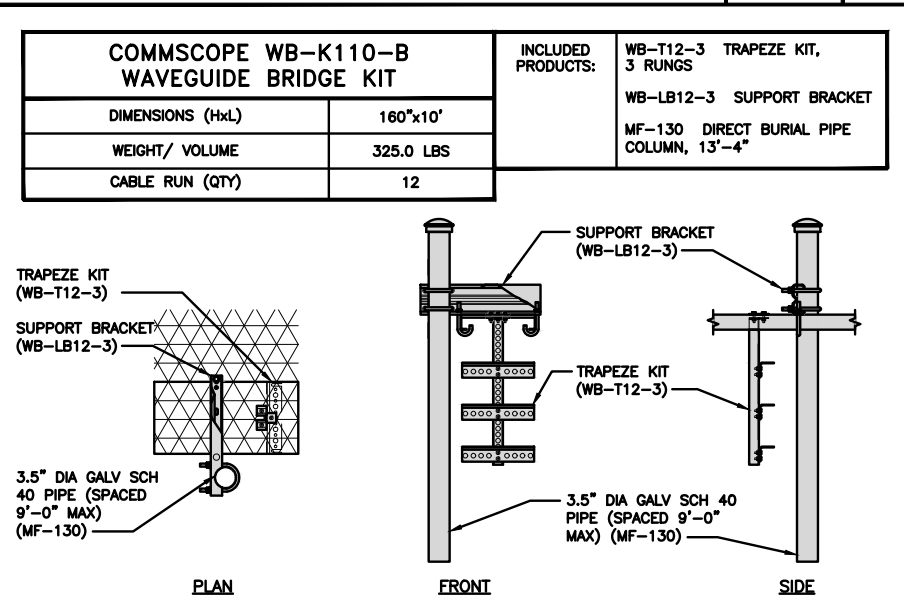
**NOT USED**      NO SCALE      4



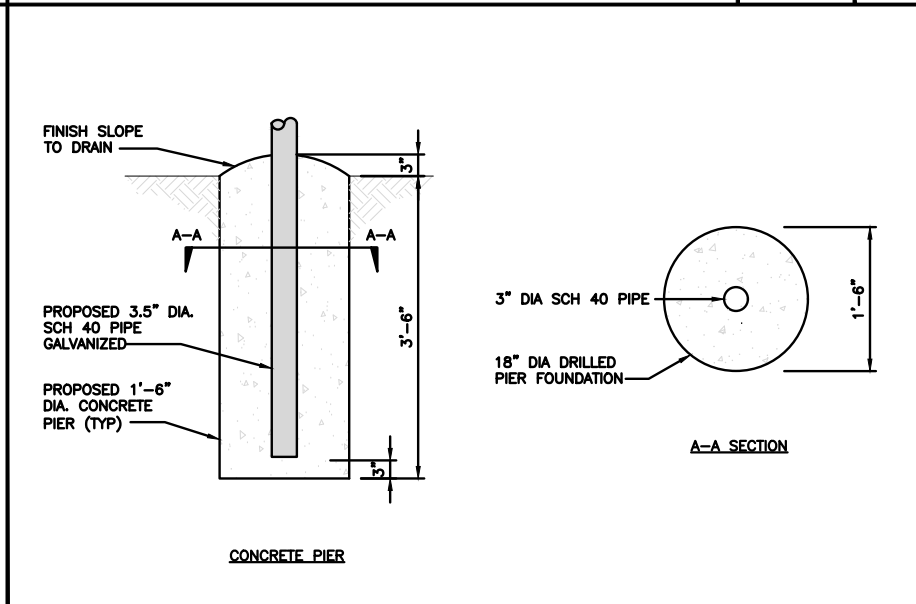
**CIENA DETAIL**      NO SCALE      5



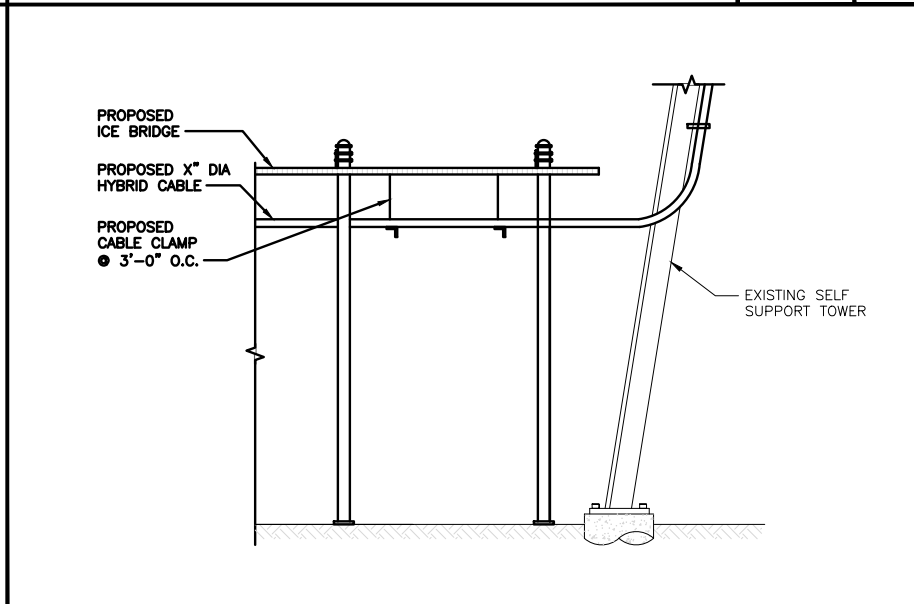
**FIBER TELCO ENCLOSURE DETAIL**      NO SCALE      6



**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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RFDS REV #: N/A

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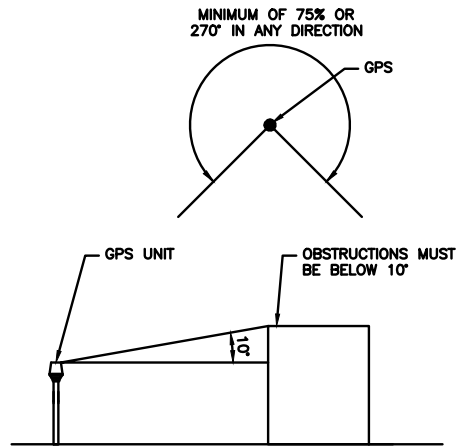
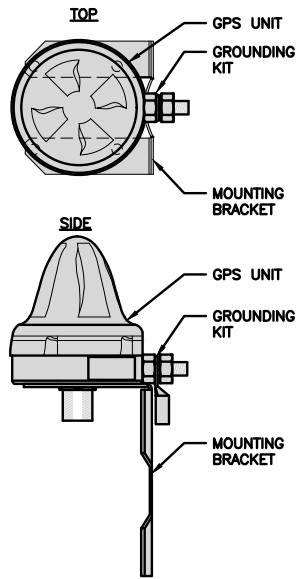
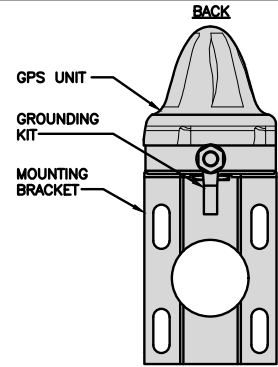
DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOHVN00175A  
TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
**A-4**



ROSENBERGER GPSGLONASS-36-N-S	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz



GPS ANTENNA DETAIL NO SCALE 1

GPS MINIMUM SKY VIEW REQUIREMENTS NO SCALE 2

NOT USED 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

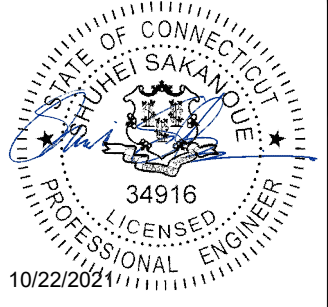
NOT USED NO SCALE 9



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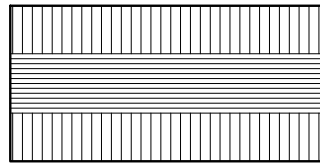
A&E PROJECT NUMBER  
1197-F0001-C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
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TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

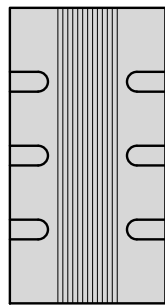
SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
**A-5**

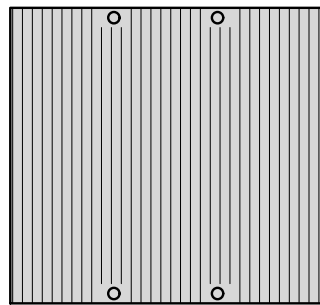
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE



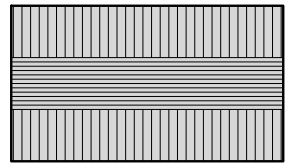
FRONT

REMOTE RADIO HEAD DETAIL

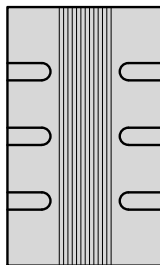
NO SCALE

1

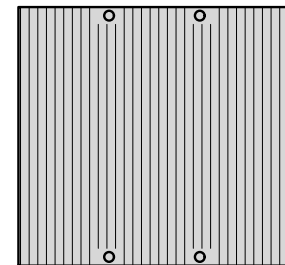
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE



FRONT

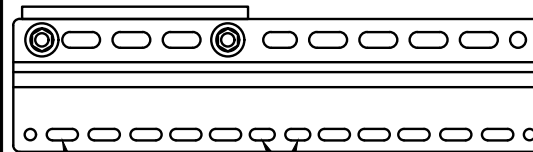
REMOTE RADIO HEAD DETAIL

NO SCALE

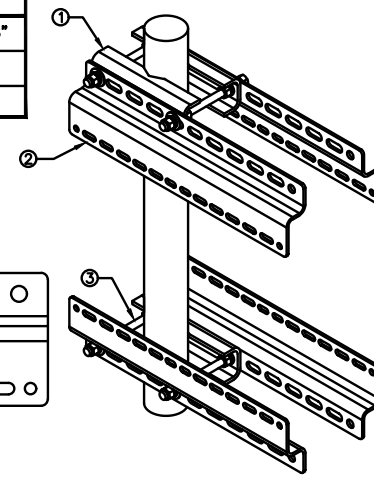
2

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

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



11MM x 30MM SLOTS  
40MM ON CENTER  
11MM x 24MM SLOTS



REMOTE RADIO MOUNT DETAIL

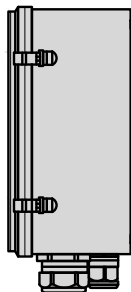
NO SCALE

3

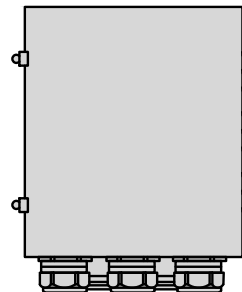
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



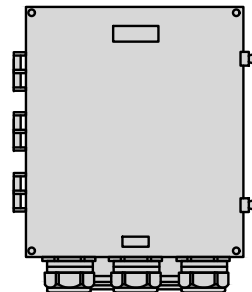
PLAN



SIDE



BACK



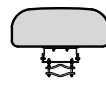
FRONT

SURGE SUPPRESSION DETAIL

NO SCALE

4

JMA WIRELESS MX08FR0665-20 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	54 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



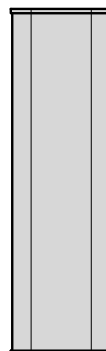
PLAN



BACK



SIDE



FRONT

ANTENNA DETAIL

NO SCALE

5

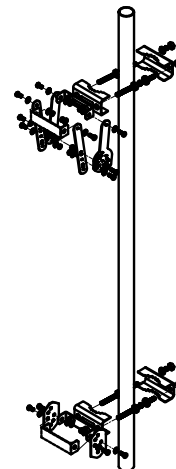
NOTES

FINAL ANTENNA SPECIFICATIONS TO BE CONFIRMED BY GC

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

NOTE:  
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-, 6-, AND 8-FOOT ANTENNAS  
ANTENNA BRACKET NOT PART OF KIT

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

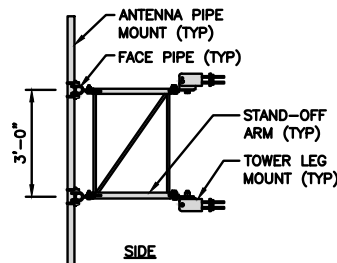


ANTENNA BRACKET DETAIL

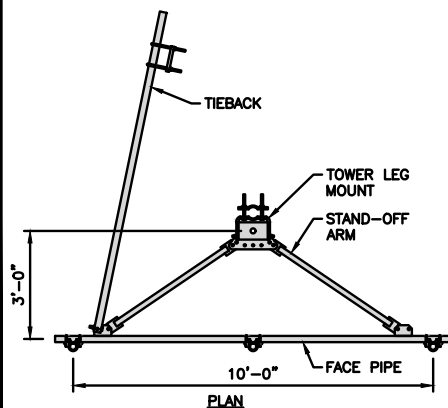
NO SCALE

6

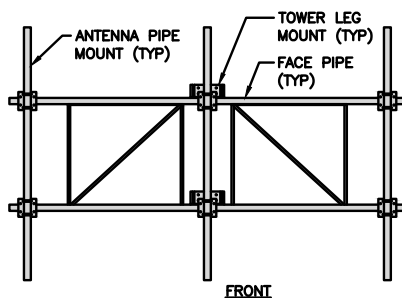
SABRE INDUSTRIES C10837002C-32788 HD V-BOOM ASSEMBLY WITH TIEBACK	
FACE SIZE	10'-0"
WEIGHT	676 LB
TOWER LEG SIZE	1-1/2" TO 5-9/16" DIA ROUND LEG



SIDE



PLAN



FRONT

ANTENNA FRAME DETAIL

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

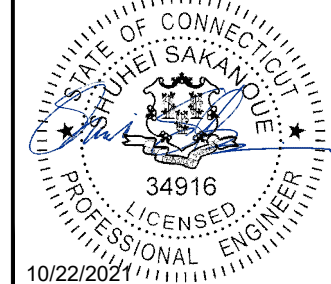
9

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DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOHVN00175A  
TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

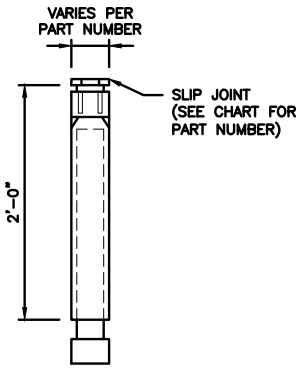
SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
**A-6**



**CARLON EXPANSION FITTINGS**

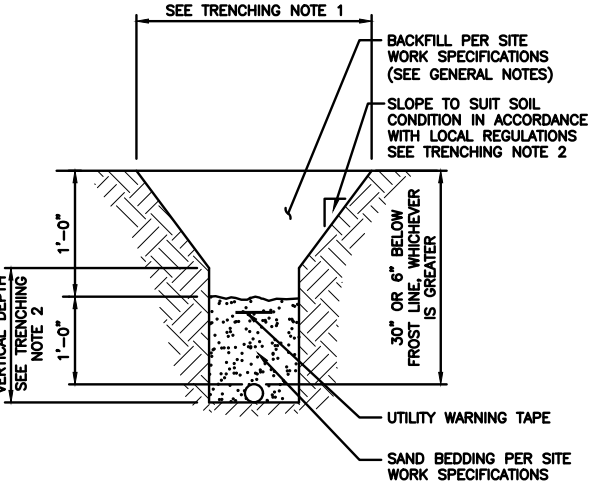
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N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

**TRENCHING NOTES**

- 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.
- TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
- 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.



**EXPANSION JOINT DETAIL**

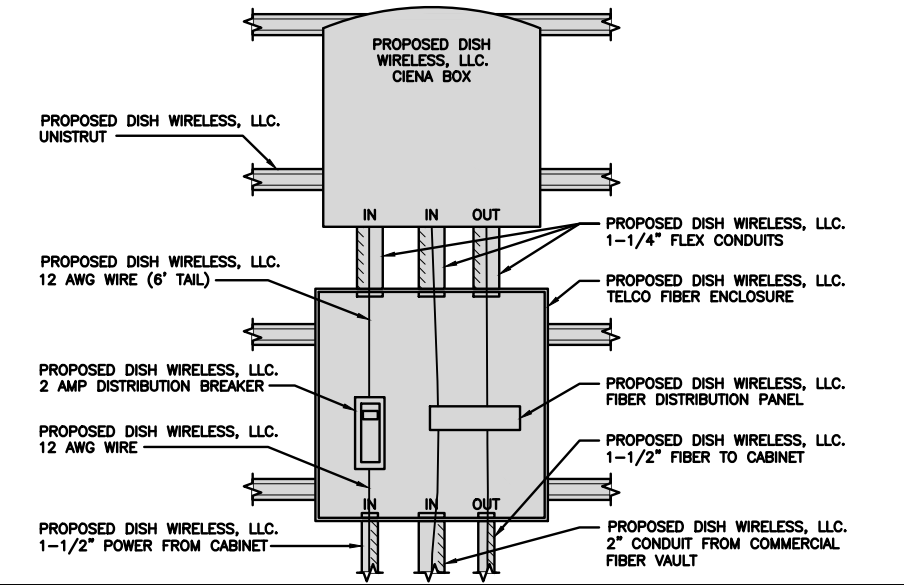
NO SCALE 1

**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**

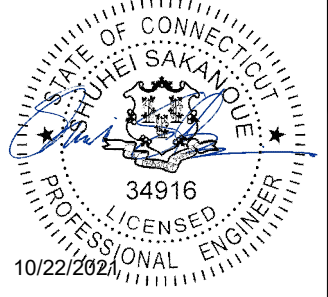
NO SCALE 9



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RFDS REV #:	N/A	

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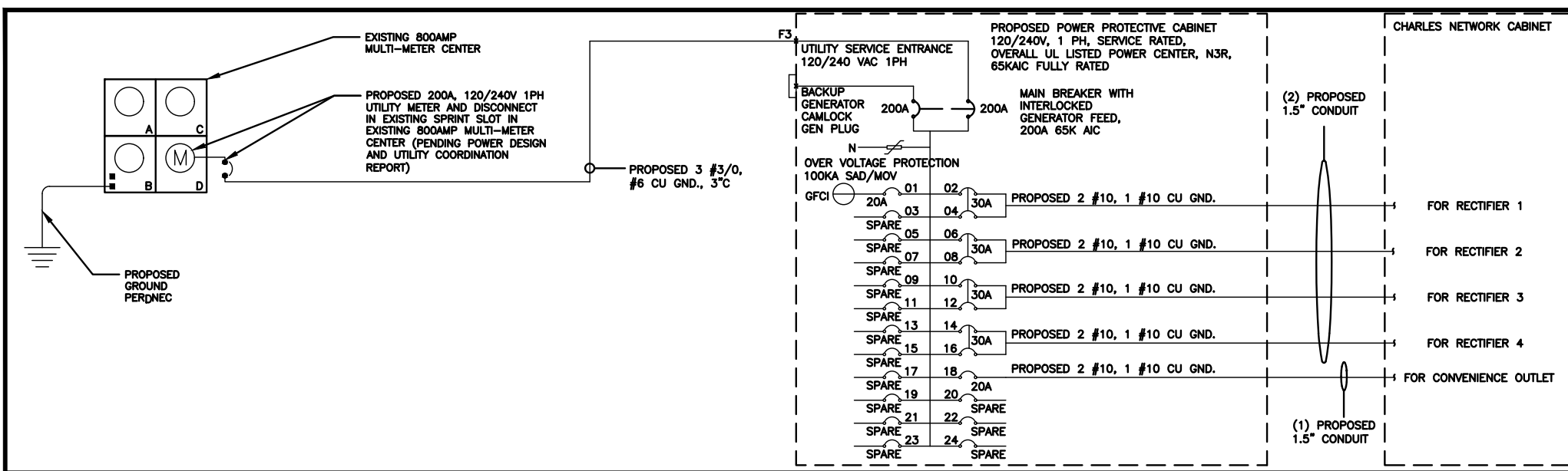
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PROJECT INFORMATION  
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TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

SHEET TITLE  
ELECTRICAL  
DETAILS

SHEET NUMBER  
**E-2**



**NOTES**

THERE ARE A TOTAL OF (10) CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT. ADJUSTABLE FACTOR OF 50% PER NEC TABLE 310.15(B)(3)(c) SHALL APPLY.

#10 FOR 15A/1P BREAKER: 0.5 x 40A = 15.0A  
#8 FOR 20A-25A/2P BREAKER: 0.5 x 55A = 27.5A

CONDUIT SIZING: ASSUME 1.5" EMT AT 40% FILL PER NEC 358, TABLE 4 - 0.814A SQ. IN AREA

WIRES: USING THWN-2, CU. (INCLUDING 3 GROUND WIRES)  
#6 - 0.0507 SQ. IN X 8 = 0.4056 SQ. IN  
#8 - 0.0366 SQ. IN X 2 = 0.0732 SQ. IN  
#10 - 0.0211 SQ. IN X 4 = 0.0844 SQ. IN <GROUND  
#12 - 0.0133 SQ. IN X 1 = 0.0133 SQ. IN <GROUND

TOTAL = 0.5765 SQ. IN

1.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OR (15) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

CONDUIT SIZING: ASSUME 3.0" SCH 40 PVC AT 40% FILL PER NEC 352, TABLE 4 - 1.216A SQ. IN AREA

WIRES: USING THHN, CU. (INCLUDING 2 GROUND WIRES)  
#3/0 - 0.1318 SQ. IN X 3 = 0.3954 SQ. IN  
#2 - 0.0521 SQ. IN X 1 = 0.0521 SQ. IN

TOTAL = 0.4475 SQ. IN

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

(CHARLES ABB GE INFINITY DC PLANT) WITH MULTI-METER CENTER 120V240V 1PH SOURCE

NO SCALE 1

**PROPOSED PANEL SCHEDULE**

LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED
	L1	L2						L1	L2	
-SPARE-				1	A	2		2880	2880	ABB/GE INFINITY RECTIFIER 1
-SPARE-				3	B	4	30A	2880	2880	ABB/GE INFINITY RECTIFIER 1
-SPARE-				5	A	6		2880	2880	ABB/GE INFINITY RECTIFIER 2
-SPARE-				7	B	8	30A	2880	2880	ABB/GE INFINITY RECTIFIER 2
-SPARE-				9	A	10		2880	2880	ABB/GE INFINITY RECTIFIER 3
-SPARE-				11	B	12	30A	2880	2880	ABB/GE INFINITY RECTIFIER 3
-SPARE-				13	A	14		2880	2880	ABB/GE INFINITY RECTIFIER 4
-SPARE-				15	B	16	30A	2880	2880	ABB/GE INFINITY RECTIFIER 4
-SPARE-				17	A	18	20A	1920		CHARLES GFCI OUTLET
-SPARE-				19	B	20				-SPARE-
-SPARE-				21	A	22				-SPARE-
-SPARE-				23	B	24				-SPARE-
VOLT AMPS								13440	11520	
200A MCB, 1φ, 3W, 120/240V				L1	L2					
MB RATING: 65,000 AIC				13440	11520			VOLT AMPS		
				140	96			AMPS		
								140		MAX AMPS
								175		MAX 125%

PANEL SCHEDULE (CHARLES ABB GE INFINITY DC PLANT) WITH MULTI-METER CENTER 120V240V 1PH SOURCE

NO SCALE 2

NOT USED

NO SCALE 3

FAULT CALCULATIONS

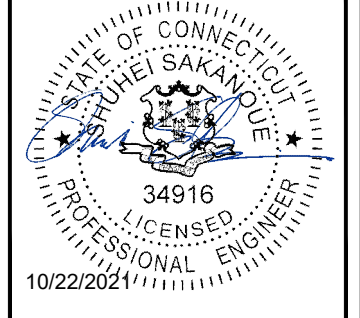
NO SCALE 4



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RCD SS CJW

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

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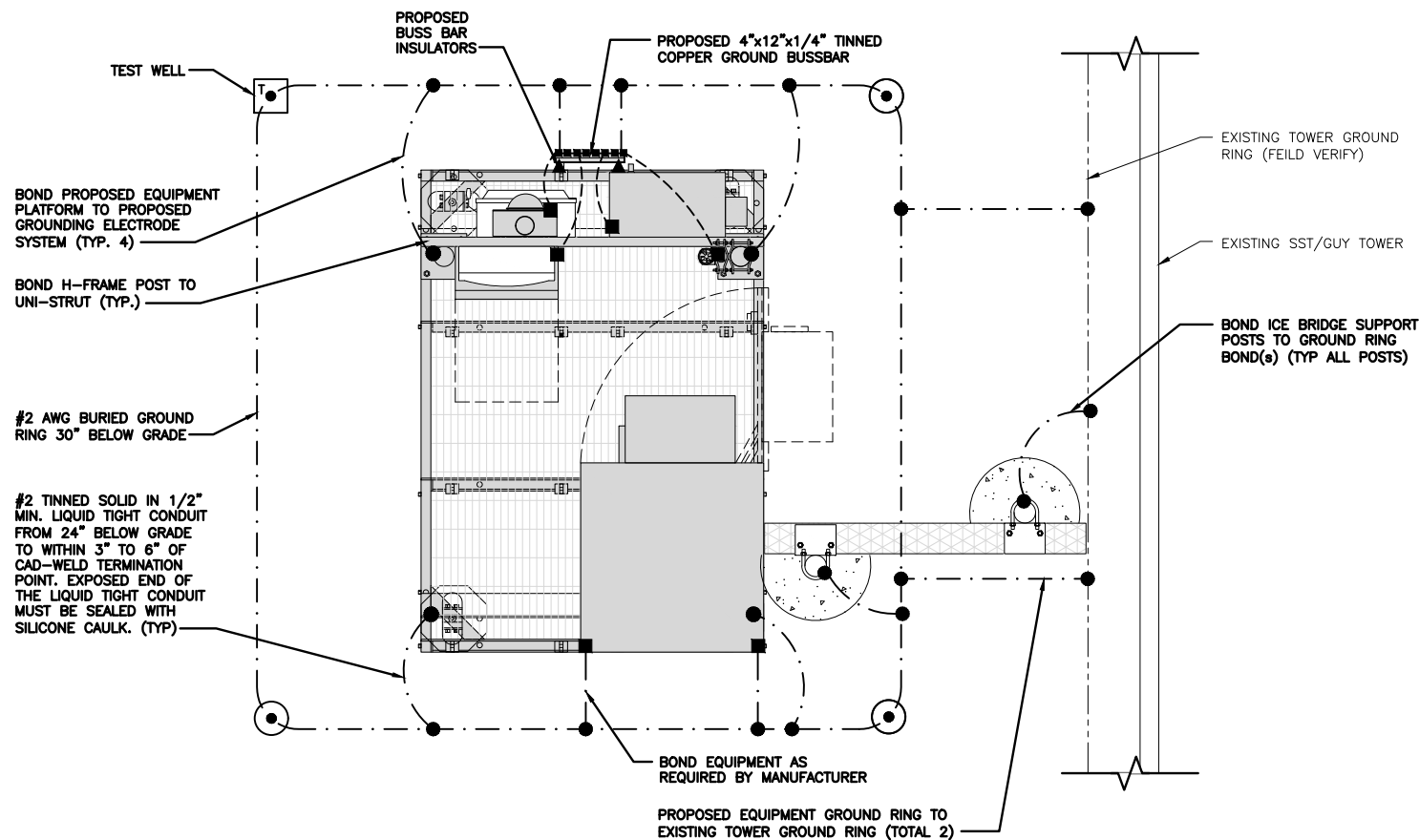
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A&E PROJECT NUMBER  
1197-F0001-C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOHVN00175A  
TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

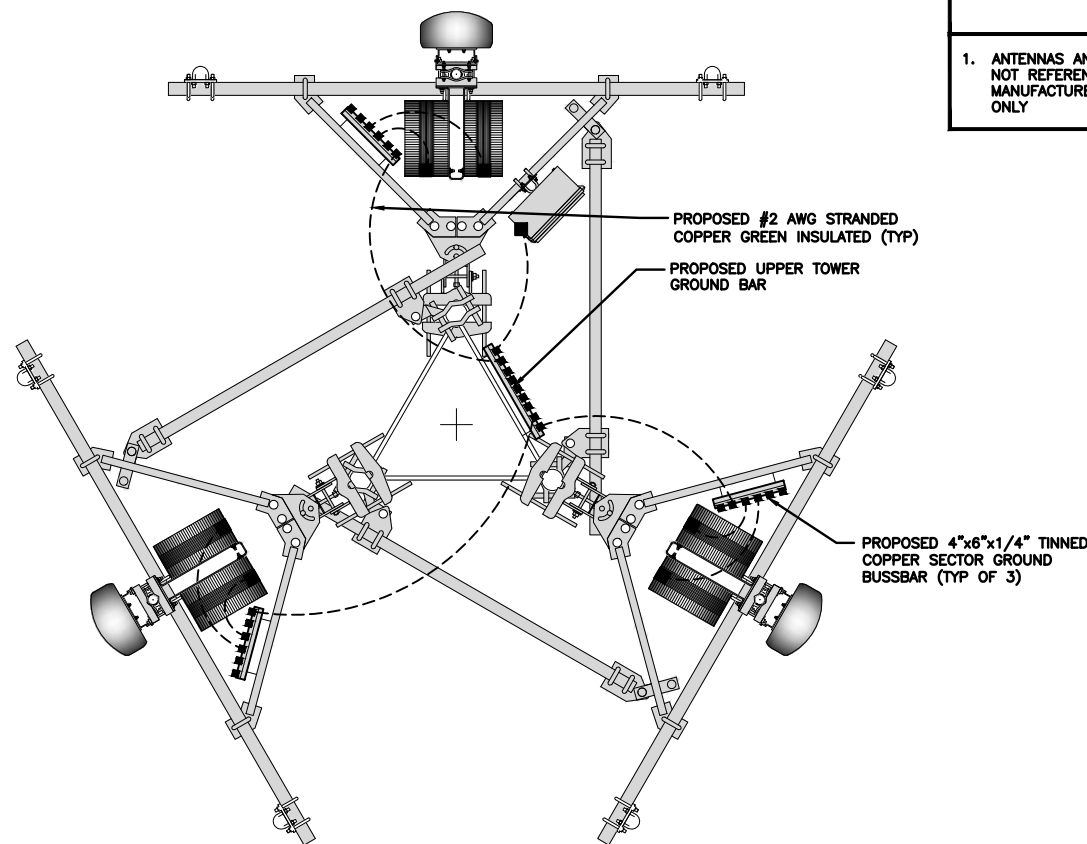
SHEET TITLE  
ELECTRICAL ONE-LINE, FAULT  
CALCS & PANEL SCHEDULE

SHEET NUMBER  
**E-3**



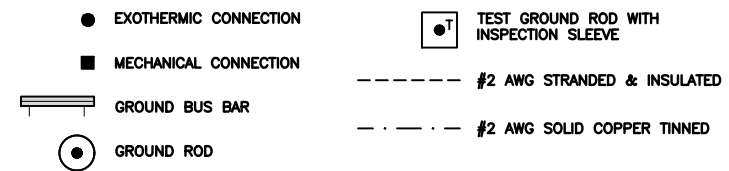
TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



GROUNDING LEGEND

- GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
- CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH WIRELESS, LLC. GROUNDING AND BONDING REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.
- 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 GROUND 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.
- (J) **TELCO GROUND BAR:** BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.
- (K) **FRAME BONDING:** THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.
- (L) **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.
- (M) **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.
- (N) **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.
- (P) **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.
- (Q) **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.**
- (R) **TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH WIRELESS, LLC. GROUNDING NOTES.**

GROUNDING KEY NOTES

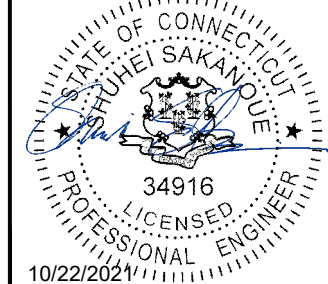
NO SCALE 3



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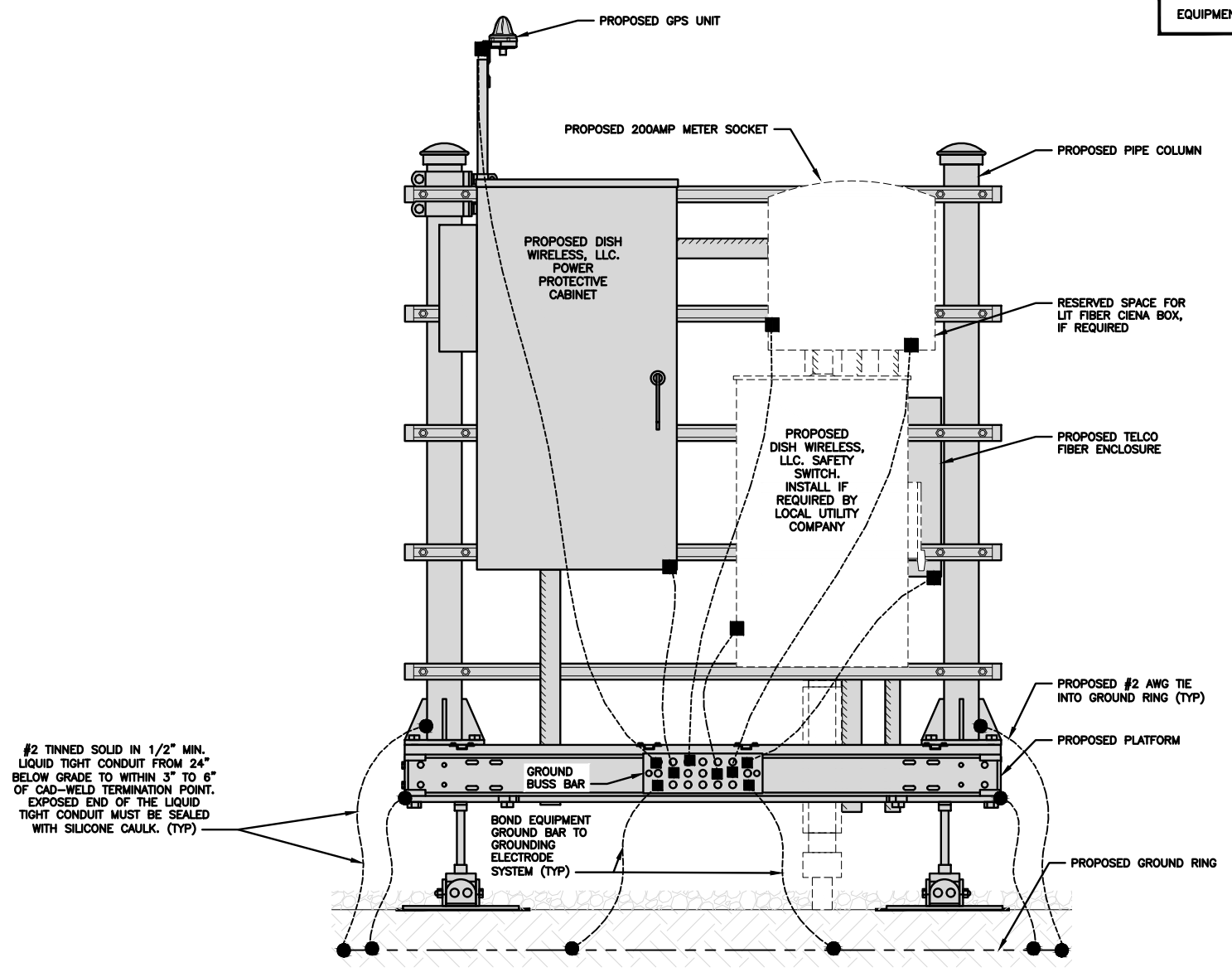
DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOHVN00175A  
TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

SHEET TITLE  
GROUNDING PLANS  
AND NOTES

SHEET NUMBER

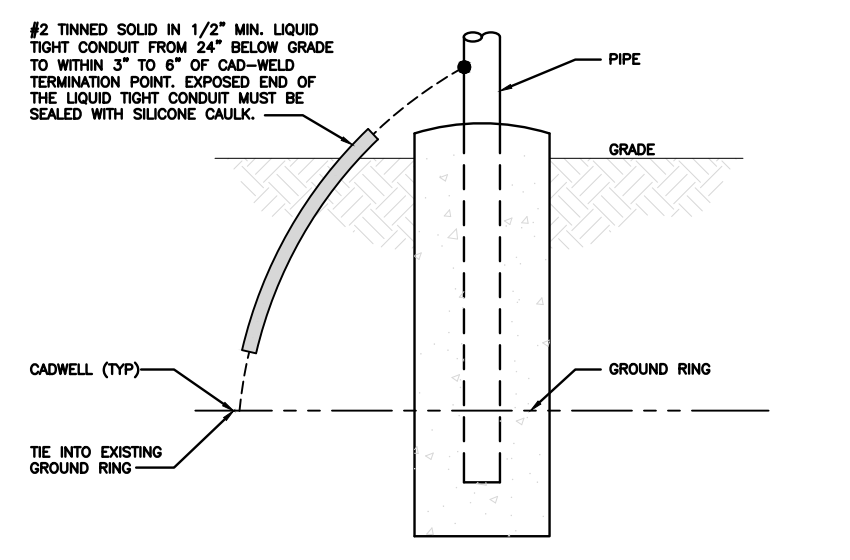
G-1

**NOTES**  
EQUIPMENT CABINET OMITTED FOR CLARITY



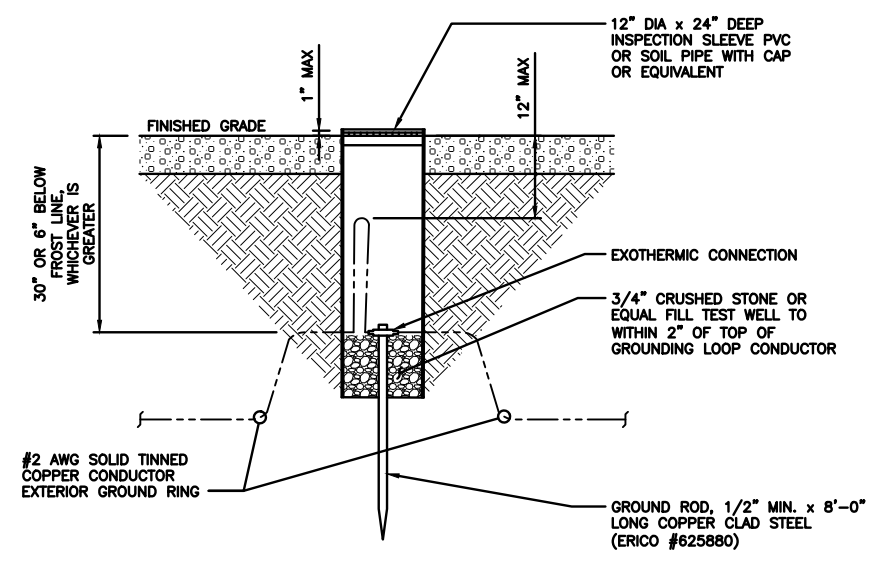
**H-FRAME GROUNDING DETAIL**

NO SCALE 1



**TRANSITIONING GROUND DETAIL**

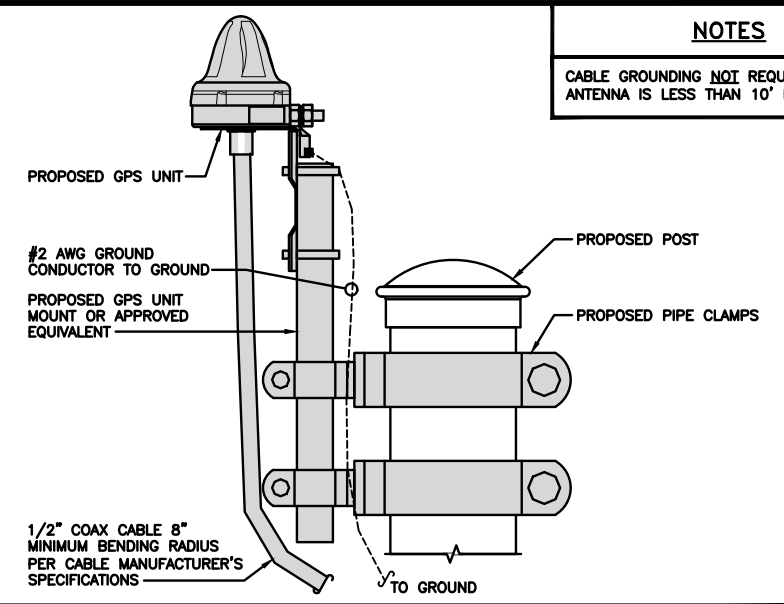
NO SCALE 4



**TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE**

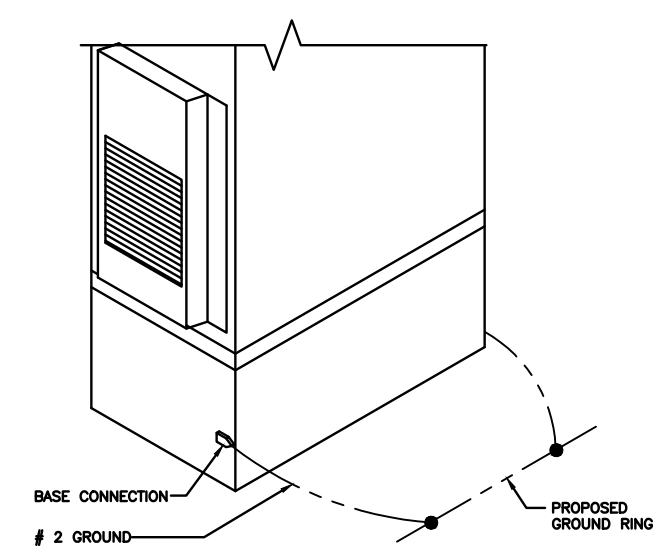
NO SCALE 5

**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

**NOT USED**

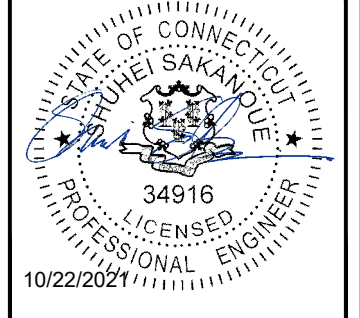
NO SCALE 6



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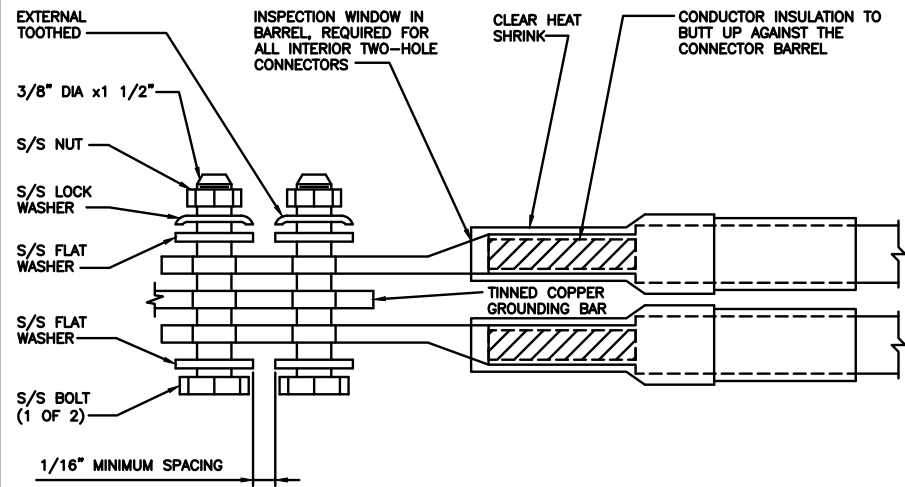
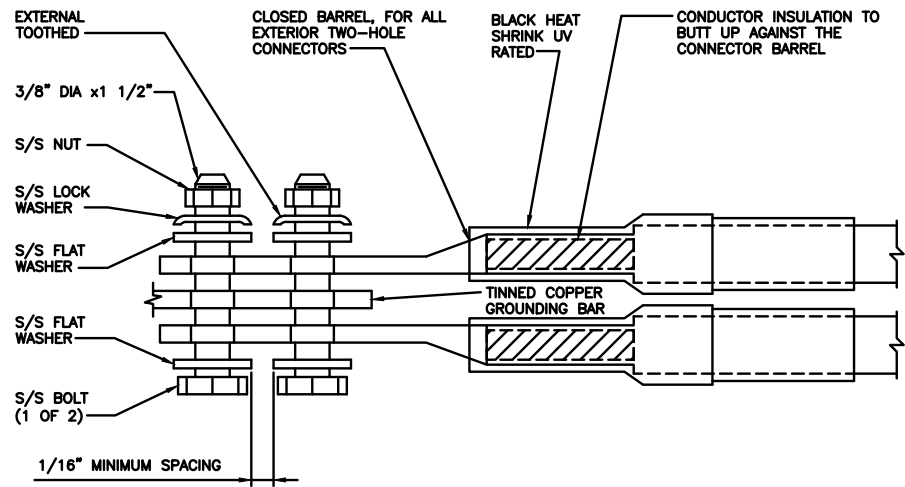
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TBD  
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MIDDLEBURY, CT 06762

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

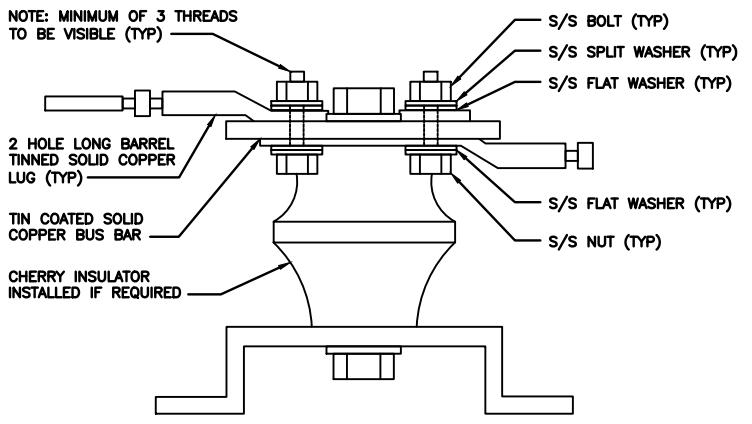
NO SCALE 1

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

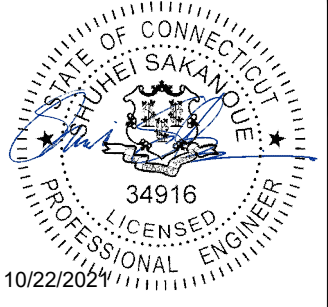
NO SCALE 9



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PROJECT INFORMATION  
BOHVN00175A  
TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

SHEET TITLE  
GROUNDING DETAILS

SHEET NUMBER  
**G-3**

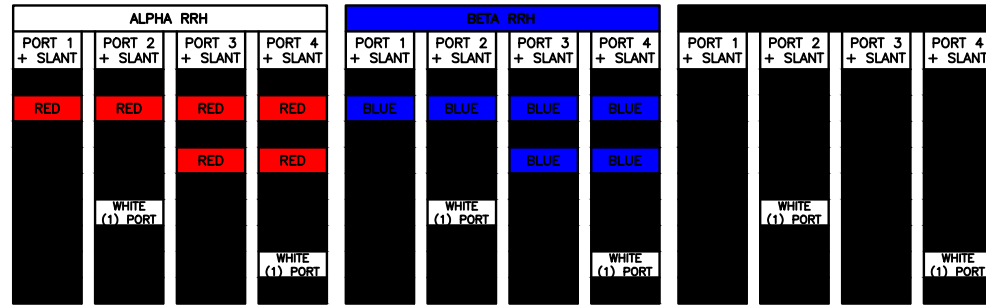


**RF JUMPER COLOR CODING**

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

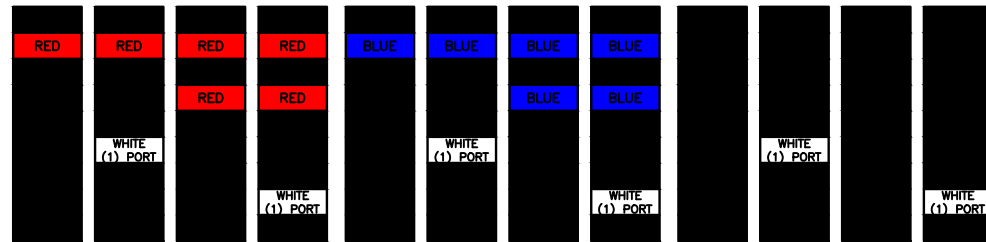
LOW-BAND RRH -  
(600MHz N71 BASEBAND) +  
(850MHz N26 BAND) +  
(700MHz N29 BAND) - OPTIONAL PER MARKET

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)

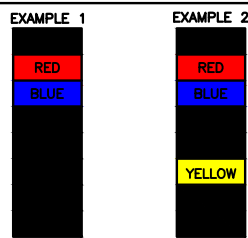


**HYBRID/DISCREET CABLES**

INCLUDE SECTOR BANDS BEING SUPPORTED AS LONG WITH FREQUENCY BANDS

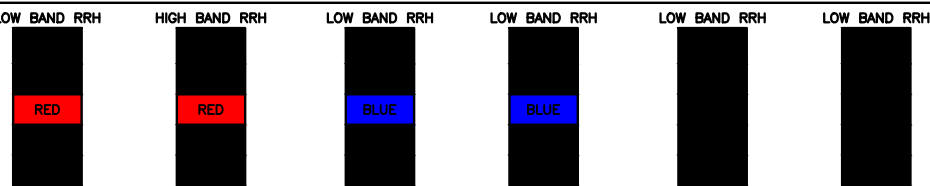
EXAMPLE 1 - HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



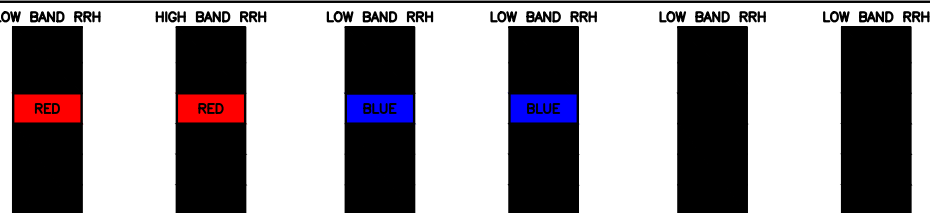
**HYBRID/DISCREET CABLES**

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

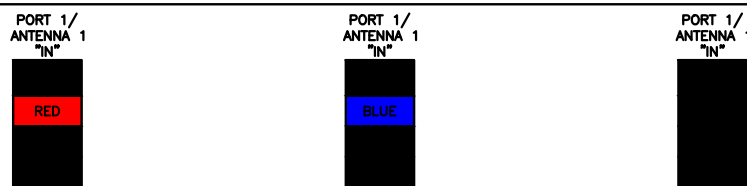


**POWER CABLES TO RRHs**

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



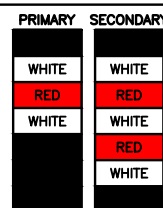
**RET MOTORS AT ANTENNAS**



**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 CABINETS 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-N28)  
OPTIONAL - (N29)



AWS  
(N65+N70+H-BLOCK)



CBRS TECH  
(3 GHz)



NEGATIVE SLANT PORT  
ON ANTRRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE 2

NOT USED

NO SCALE 3

NOT USED

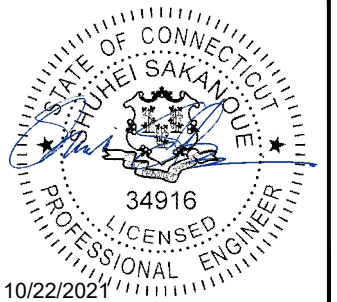
NO SCALE 4



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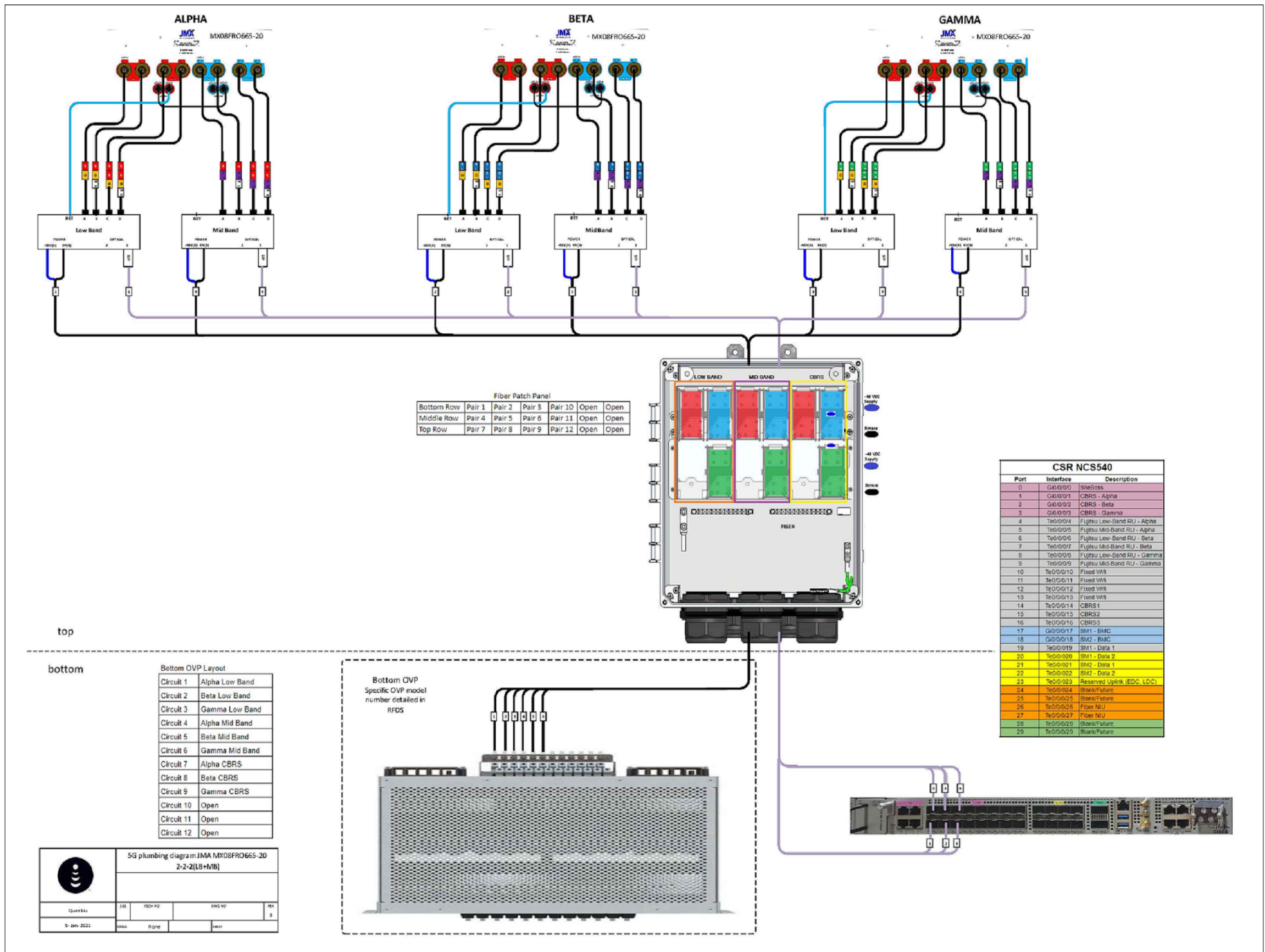
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BOHVN00175A  
TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

SHEET TITLE  
RF  
CABLE COLOR CODE

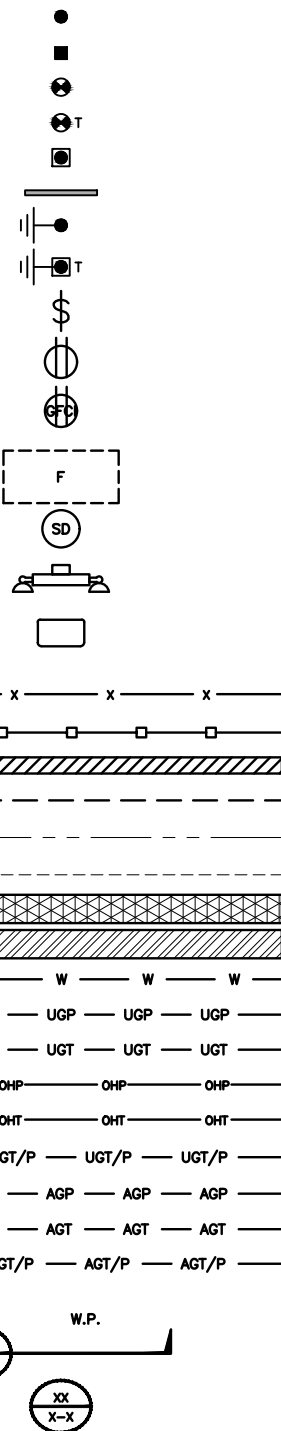
SHEET NUMBER

RF-1

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EXOTHERMIC CONNECTION  
 MECHANICAL CONNECTION  
 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-DEBTD  
 CHAIN LINK FENCE  
 WOOD/WROUGHT IRON FENCE  
 WALL STRUCTURE  
 LEASE AREA  
 PROPERTY LINE (PL)  
 SETBACKS  
 ICE BRIDGE  
 CABLE TRAY  
 WATER LINE  
 UNDERGROUND POWER  
 UNDERGROUND TELCO  
 OVERHEAD POWER  
 OVERHEAD TELCO  
 UNDERGROUND TELCO/POWER  
 ABOVE GROUND POWER  
 ABOVE GROUND TELCO  
 ABOVE GROUND TELCO/POWER  
 WORKPOINT  
 SECTION REFERENCE  
 DETAIL REFERENCE



**LEGEND**

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

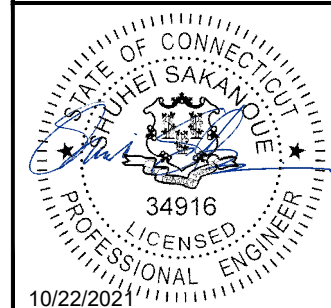
**ABBREVIATIONS**



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 TO ALTER THIS DOCUMENT.

DRAWN BY: RCD  
 CHECKED BY: SS  
 APPROVED BY: CJW  
 RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
0	09/26/21	ISSUED FOR PERMIT
1	10/16/21	REVISED PER COMMENTS

A&E PROJECT NUMBER  
 1197-F0001-C

DISH WIRELESS, LLC.  
 PROJECT INFORMATION  
 BOHVN00175A  
 TBD  
 1021 STRAITS TURNPIKE  
 MIDDLEBURY, CT 06762

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, LLC. AND TOWER OWNER NOC & THE DISH WIRELESS, LLC. AND TOWER OWNER CONSTRUCTION MANAGER.
2. "LOOK UP" – DISH WIRELESS, LLC. 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, LLC. AND DISH WIRELESS, LLC. 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, LLC. 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, LLC. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, LLC. 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, LLC. 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, LLC. 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:**

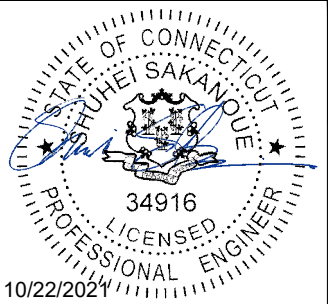
1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION  
CARRIER: DISH WIRELESS, LLC.  
TOWER OWNER: TOWER OWNER
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY 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, LLC. 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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DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
0	09/28/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS

A&E PROJECT NUMBER  
1197-F0001-C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOHVN00175A  
TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

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.

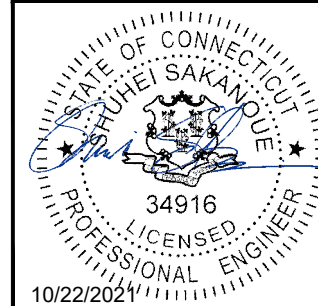
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL 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, LLC. 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, LLC."
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



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

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
0	09/28/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS

A&E PROJECT NUMBER  
1197-F0001-C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOHVN00175A  
TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
**GN-3**

**GROUNDING NOTES:**

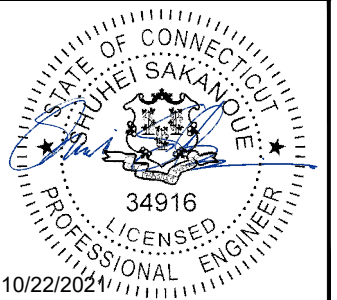
1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (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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RCD	SS	CJW

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

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BOHVN00175A  
TBD  
1021 STRAITS TURNPIKE  
MIDDLEBURY, CT 06762

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
**GN-4**

# Exhibit D

## **Structural Analysis Report**

Date: **March 12, 2021**

David Rodriguez  
Phoenix Tower International  
999 Yamato Road, Suite 100  
Boca Raton, FL 33431  
(561) 257-0557



Tower Engineering Professionals, Inc.  
326 Tryon Road  
Raleigh, NC 27603  
(919) 661-6351  
[structures@tepgroup.net](mailto:structures@tepgroup.net)

**Subject: Structural Analysis Report**

**Carrier Designation:** *Dish Co-Locate*  
**Carrier Site Number & Name:** BOHVN00175A  
**Carrier Project Number/Name:** BOHVN00175A

**Phoenix Tower Designation:** **PTI Site Number:** US-CT-1003  
**PTI Site Name:** Straits Turnpike

**Engineering Firm Designation:** **TEP Project Number:** 25628.511278

**Site Data:** **1021 Straits Turnpike, Middlebury, New Haven County, CT 06762**  
**Latitude 41° 32' 8.75", Longitude -73° 05' 21.16"**  
**195 Foot - Self Supporting Tower**

Dear David Rodriguez,

*Tower Engineering Professionals, Inc.* 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:

LC1: Existing + Proposed + Future Loading

Note: See Table 1 for the existing, proposed, and future loading

**Sufficient Capacity**

Structure Capacity	Foundation Capacity
95.0%	81.3%

The analysis has been performed in accordance with the ANSI/TIA-222-H-2017 Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures and the 2018 Connecticut State Building Code.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Table 1 and the attached drawings for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals, Inc.*, appreciate the opportunity of providing our continuing professional services to you and *Phoenix Tower International*. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Stephen J. Lee

Respectfully submitted by:

Aaron T. Rucker, P.E.



03/12/2021



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## 1) INTRODUCTION

This tower is a 195-ft self supporting tower designed by Fred A. Nudd Corporation in May of 1998. The tower was originally designed for a wind speed of 85 mph per ANSI/EIA/TIA-222-F. TEP visited the site in June of 2010 to gather existing steel and appurtenance information. This tower has been modified multiple times in the past to accommodate additional loading. All other information provided to TEP was assumed to be accurate and complete.

## 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	125 mph
<b>Exposure Category:</b>	B
<b>Topographic Category:</b>	1 (Kzt = 1.0)
<b>Ice Thickness:</b>	1.5 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Seismic Design Category:</b>	B
<b>Seismic Ss:</b>	0.191
<b>Seismic S1:</b>	0.064
<b>Service Wind Speed:</b>	60 mph

**Table 1 - Existing, Proposed, and Future Antenna and Cable Information**

Existing/ Proposed	Elevation	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size (in)	Coax <sup>1</sup> Location	Owner/ Tenant
<i>Future</i>	<i>195.0</i>	-	<i>T-Mobile Future Loading<sup>2</sup></i>	-	2	1-5/8	<i>AB Face</i>	<i>T-Mobile</i>
Existing	195.0	3	Ericsson AIR 6449 B41	(3) 12.5' Sector Frames	18 <sup>3</sup> 4	1-5/8 <sup>3</sup> Hybrid	AB Face	T-Mobile
		3	Ericsson Radio 4415 B25					
		3	Commscope SDX1926Q-43					
		3	RFS APXVAAR24-43-U-NA20					
		3	Ericsson AIR 32 KRD901146-1_B66A_B2A					
		3	Ericsson Radio 4449 B71/B12					
<i>Reserved</i>	<i>185.0</i>	<i>2</i>	<i>CCI DMP65R-BU8DA</i>	(3) 15.0' T-Frames with Catwalk and MT195-14 Handrail Kit	<i>6</i>	<i>7/8"Ø DC</i>	<i>CA Face</i>	<i>AT&amp;T</i>
		<i>4</i>	<i>CCI DMP65R-BU6DA</i>					
		<i>3</i>	<i>Ericsson 4449 B5/B12</i>					
		<i>3</i>	<i>Ericsson 4478 B14</i>					
		<i>3</i>	<i>Ericsson 8843 B2/B66A</i>					
		<i>1</i>	<i>Raycap DC6-48-60-0-8C-EV</i>					
Existing	185.0	3	Powerwave 7770	MT195-14 Handrail Kit	12 2	1-5/8 3/8"Ø Fiber	CA Face	AT&T
		3	Andrew SBNHH-1D65A					
		6	Powerwave LGP 13519					
		3	Ericsson RRUS-32 B30					
		2	Raycap DC6-48-60-18-8F					

**Table 1 - Existing, Proposed, and Future Antenna and Cable Information (continued)**

Existing/ Proposed	Elevation	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size (in)	Coax <sup>1</sup> Location	Owner/ Tenant
Existing	169.0	2	Antel BXA-70063-6CF	(3) 15.0' T-Frames with Catwalk	12 1	1-5/8 Fiber	AB Face	Verizon
		4	Decibel DB844G65ZAXY					
		1	Antel BXA 70080/6CF					
		2	Decibel DB846F65ZAXY					
		6	RFSFD9R6004/2C-3L					
		3	Alcatel Lucent RRH2x60-AWS					
		3	Alcatel Lucent RRH2x60-PCS					
		1	RFS DB-T1-6Z-8AB-0Z					
		6	HBXX-6517DS-A2M					
Existing	153.0	3	Commscope DT465B-2XR	(3) 12.0' Sector Frames	4	1-1/4" Hybridflex	BC Face	Sprint
		3	ALU TD-RRH8x20-25 w/ Solar Shield					
		3	ALU RRH2x50-08					
		3	RFS APXVSPP18-C-A20					
		3	ALU RRH 1900 4x45 65MHz					
		3	ALU 2x50W 800 MHz RRH					
<b>Future</b>	<b>138.0</b>	-	<b>Dish Future Loading</b>		-	-	-	<b>Dish</b>
<b>Proposed</b>	<b>138.0</b>	<b>3</b>	<b>JMA MX08FRO665-20</b>	<b>(3) Sabre HD V- Boom Sectors</b>	<b>1</b>	<b>1.6" Ø</b>	<b>BC Face</b>	<b>Dish</b>
		<b>3</b>	<b>Fujitsu TA08025-B605</b>					
		<b>3</b>	<b>Fujitsu TA08025-B604</b>					
		<b>1</b>	<b>Junction Box</b>					
Existing	75.5	1	GPS Antenna	4.5' Standoff	1	5/8"Ø	BC Face	Unknown

Notes:

- 1) See "Appendix B – Coax Configuration" for feed line configuration.
- 2) T-Mobile Future Loading consists of 955.40 in<sup>2</sup> of wind area and (2) feed lines at the 195-ft level.
- 3) (12) 1-5/8 of the (18) 1-5/8 are considered reserved loading in this analysis.
- 4) (3) Ericsson KRY-112-71 are considered reserved loading in this analysis.
- 5) Dish Future Loading consists of 5,523.34 in<sup>2</sup> of wind area at the 138-ft level.

**Table 2(a) - Detailed Future Loading Information – T-Mobile**

Existing/ Proposed	Elevation (ft)	Wind Area (in <sup>2</sup> ) (includes Ca factors)	Weight (lb)	Qty Coax	Coax Size	% Capacity	Owner/ Tenant
<b>Proposed</b>	<b>195</b>	<b>3,452.03</b>	<b>520.47</b>	<b>1</b>	<b>Hybrid</b>	<b>86.6</b>	<b>T-Mobile</b>
Existing	195	20,575.54	2,710.93	18 3	1-5/8 Hybrid	86.6	T-Mobile
<i>To Be Removed</i>	195	2,982.97	187.80	-	-	-	T-Mobile
<b>Future</b>	<b>195</b>	<b>955.40</b>	<b>138.18</b>	<b>2</b>	<b>1-5/8</b>	<b>-</b>	<b>T-Mobile</b>
Total	195	22,000.00	3,181.78	20 4	1-5/8 Hybrid	88.5	T-Mobile

Notes:

- 1) T-Mobile Future Loading and capacities based on previous SA TEP No. 25628.442076

**Table 2(b) - Detailed Future Loading Information – Dish**

Existing/ Proposed	Elevation (ft)	Wind Area (in <sup>2</sup> ) (includes Ca factors)	Weight (lb)	Qty Coax	Coax Size	% Capacity	Owner/ Tenant
<b>Proposed</b>	<b>138</b>	<b>10,025.76</b>	<b>2,092.35</b>	<b>1</b>	<b>1.6"</b>	<b>95.0</b>	<b>Dish</b>
Existing	138	-	-	-	-	-	Dish
<i>To Be Removed</i>	138	-	-	-	-	-	<i>Dish</i>
<b>Future</b>	<b>138</b>	<b>4,974.24</b>	<b>1,038.111</b>	<b>-</b>	<b>-</b>	<b>95.0</b>	<b>Dish</b>
Total	138	15,000.00	3,235.87	1	1.6"	95.0	Dish

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Remarks	Source
Tower and Foundation Drawings	Fred A. Nudd Corporation, dated May 6, 1998 Project No. 5974	PTI
Structural Modification Drawings	Fred A. Nudd Corporation, dated April 30, 1999 Drawing No. 99-6726-1	PTI
Steel and Appurtenance Mapping	Tower Engineering Professionals, Inc., dated June 3, 2010 TEP No. 102056	TEP
Post Modification Inspection	Tower Engineering Professionals, Inc., dated April 21, 2011 TEP No. 102056	TEP
Geotechnical Report	Dr. Clarence Welti, P.E., P.C., dated April 17, 1998 Project No. 25628	PTI
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated August 29, 2011 TEP No. 102056	TEP
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated July 26, 2012 TEP No. 102056	TEP
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated August 1, 2013 TEP No. 25628.4865	TEP
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated August 24, 2016 TEP No. 25628.93911	TEP
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated April 19, 2016 TEP No. 25628.47301	TEP
Post Modification Inspection	Tower Engineering Professionals, Inc., dated October 26, 2016 TEP No. 25628.58752	TEP
Previous Structural Analysis	Tower Engineering Professionals, Inc., dated September 10, 2020 TEP No. 25628.442076	TEP
Correspondence	Correspondence with Phoenix Tower International regarding the existing, proposed, and future loading.	PTI

#### 3.1) Analysis Method

tnxTower (version 8.0.7.5), 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.

### 3.2) Assumptions

- 1) The tower and foundation were built and maintained in accordance with the manufacturer's specification.
- 2) The configuration of existing antennas, transmission cables, mounts and other appurtenances are as specified in the tower mapping report by TEP.
- 3) Unless specified by the client or tower mapping, the location of the existing and proposed coax is assumed by TEP and listed in Table 1.
- 4) All tower components are in sufficient condition to carry their full design capacity.
- 5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
- 6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals 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 (lb)	ØP_allow (lb)	% Capacity	Pass / Fail
T1	195 - 180	Leg	PIPE 2.5 STD (SCH 40)	1	-38173.80	74059.12	51.5	Pass
T2	180 - 175	Leg	PIPE 2.5 STD (SCH 40)	43	-42570.40	80957.20	52.6	Pass
T3	175 - 170	Leg	PIPE 2.5 STD (SCH 40)	55	-54194.30	81066.08	66.9	Pass
T4	170 - 160	Leg	2-1/2SCH40 w/ 3SCH80 Half Sleeve	67	Note 1	Note 1	81.4	Pass
T5	160 - 150	Leg	Pipe 3.5 Std (SCH40)	88	-102369.00	133278.59	76.8	Pass
T6	150 - 140	Leg	3.5SCH40 w/ 4SCH40 Half Sleeve	109	Note 1	Note 1	74.8	Pass
T7	140 - 133.333	Leg	5 STD w/ 6 XH Half Sleeve	130	Note 1	Note 1	56.4	Pass
T8	133.333 - 126.667	Leg	5 STD w/ 6 XH Half Sleeve	139	Note 1	Note 1	56.4	Pass
T9	126.667 - 120	Leg	5 STD w/ 6 XH Half Sleeve	148	Note 1	Note 1	56.4	Pass
T10	120 - 113.333	Leg	Pipe 6 STD	157	-192251.00	282257.84	68.1	Pass
T11	113.333 - 106.667	Leg	Pipe 6 STD	169	-208061.00	282290.39	73.7	Pass
T12	106.667 - 100	Leg	Pipe 6 STD	181	-222679.00	282318.74	78.9	Pass
T13	100 - 80	Leg	6 STD w/ 7 XH Half Sleeve	193	Note 1	Note 1	62.1	Pass
T14	80 - 60	Leg	Pipe 8 STD	223	-308167.00	411193.63	74.9	Pass
T15	60 - 50	Leg	Pipe 8 STD	244	-322365.00	421200.13	76.5	Pass
T16	50 - 40	Leg	Pipe 8 STD	256	-342100.00	421253.68	81.2	Pass
T17	40 - 20	Leg	Pipe 8 EH	268	-380593.00	576516.12	66.0	Pass
T18	20 - 0	Leg	Pipe 8 EH	283	-415472.00	577189.17	72.0 72.7 (b)	Pass
T1	195 - 180	Diagonal	5/8	14	9917.55	10437.21	95.0	Pass
T2	180 - 175	Diagonal	L1 1/2x1 1/2x3/16	51	-4554.13	10303.15	44.2 77.3 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ØP_allow (lb)	% Capacity	Pass / Fail
T3	175 - 170	Diagonal	L2x2x3/16	63	-3661.53	18093.28	20.2 50.6 (b)	Pass
T4	170 - 160	Diagonal	2L1 1/2x1 1/2x3/16x1/4	84	-5653.35	29692.00	19.0 59.7 (b)	Pass
T5	160 - 150	Diagonal	2L2x2x3/16x1/4	96	-6437.31	42662.23	15.1 70.9 (b)	Pass
T6	150 - 140	Diagonal	2L2x2x3/16x1/4	114	-5966.87	40665.03	14.7 66.7 (b)	Pass
T7	140 - 133.333	Diagonal	L2 1/2x2 1/2x1/4	133	-6827.67	24892.98	27.4 49.8 (b)	Pass
T8	133.333 - 126.667	Diagonal	L2 1/2x2 1/2x1/4	142	-7371.02	22767.36	32.4 54.0 (b)	Pass
T9	126.667 - 120	Diagonal	L2 1/2x2 1/2x3/16	151	-7065.54	15740.23	44.9 84.8 (b)	Pass
T10	120 - 113.333	Diagonal	L3x3x1/4	160	-8774.50	30888.79	28.4 58.4 (b)	Pass
T11	113.333 - 106.667	Diagonal	L3x3x1/4	172	-8551.47	28895.68	29.6 57.8 (b)	Pass
T12	106.667 - 100	Diagonal	L2 1/2x2 1/2x1/4	184	-8881.35	15373.78	57.8 60.4 (b)	Pass
T13	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	205	-8920.81	36323.59	24.6 33.2 (b)	Pass
T14	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	226	-8413.59	28986.72	29.0 34.4 (b)	Pass
T15	60 - 50	Diagonal	L3x3x5/16	247	-11429.60	18196.81	62.8	Pass
T16	50 - 40	Diagonal	L3x3x5/16	259	-11040.90	16846.72	65.5	Pass
T17	40 - 20	Diagonal	L4x4x3/8	271	-10315.50	38479.45	26.8 35.6 (b)	Pass
T18	20 - 0	Diagonal	L5x5x5/16	286	-11528.50	51837.13	22.2 39.8 (b)	Pass
T1	195 - 180	Horizontal	L1 1/2x1 1/2x3/16	18	-5475.74	9640.76	56.8	Pass
T2	180 - 175	Secondary Horizontal	L2x2x3/16	52	738.26	19675.95	3.8 10.3 (b)	Pass
T3	175 - 170	Secondary Horizontal	L2x2x3/16	64	941.07	19675.95	4.8 13.1 (b)	Pass
T4	170 - 160	Secondary Horizontal	L2x2x3/16	76	-1371.74	19156.30	7.2 19.1 (b)	Pass
T5	160 - 150	Secondary Horizontal	L2x2x3/16	97	-1778.06	17984.61	9.9 24.8 (b)	Pass
T6	150 - 140	Secondary Horizontal	L2x2x3/16	120	-2221.79	16658.04	13.3 31.0 (b)	Pass
T10	120 - 113.333	Secondary Horizontal	L3x3x3/16	166	-3336.36	26358.46	12.7 40.6 (b)	Pass
T11	113.333 - 106.667	Secondary Horizontal	L3x3x3/16	178	-3611.75	25488.01	14.2 43.9 (b)	Pass
T12	106.667 - 100	Secondary Horizontal	L3x3x3/16	190	-3864.78	24590.26	15.7 47.0 (b)	Pass
T13	100 - 80	Secondary Horizontal	L3x3x1/4	202	-4629.28	27498.45	16.8 31.7 (b)	Pass
T15	60 - 50	Secondary Horizontal	L4x4x3/8	253	-5591.70	61409.77	9.1 38.6 (b)	Pass
T16	50 - 40	Secondary Horizontal	L4x4x1/4	265	-5934.16	39562.21	15.0 39.4 (b)	Pass
T1	195 - 180	Top Girt	L1 1/2x1 1/2x3/16	6	-1677.34	9640.76	17.4	Pass
T1	195 - 180	Bottom Girt	L1 1/2x1 1/2x3/16	9	-3317.43	9640.76	34.4	Pass
							Summary	
						Leg (T16)	81.2	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ØP_allow (lb)	% Capacity	Pass / Fail
						Diagonal (T1)	95.0	Pass
						Horizontal (T1)	56.8	Pass
						Secondary Horizontal (T12)	47.0	Pass
						Top Girt (T1)	17.4	Pass
						Bottom Girt (T1)	34.4	Pass
						Bolt Checks	84.8	Pass
						<b>RATING =</b>	<b>95.0</b>	<b>Pass</b>

**Table 5 - Component Stresses vs. Capacity**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	92.1	Pass
1,2	Base Foundation - Soil Interaction	-	25.9	Pass
1,2	Base Foundation - Structural	-	81.3	Pass

Notes:

- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
- 2) Rating per TIA-222-H Section 15.5

<b>Structure Rating (max from all components) =</b>	<b>95.0%</b>
---	--------------

**Table 6 - Dish Twist/Sway Results for 60 mph Service Wind Speed**

Elevation (ft)	Dish Model	Beam Deflection		
		Deflection (in)	Tilt (deg)	Twist (deg)
-	-	-	-	-

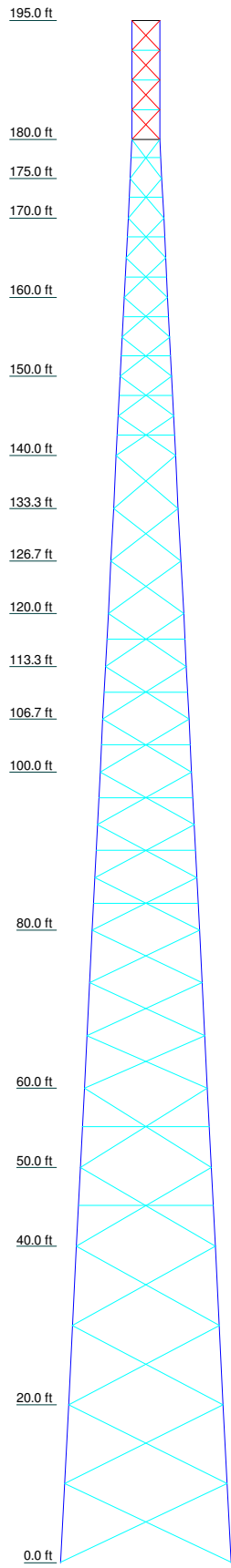
**4.1) Recommendations**

- 1) If the load differs from that described in Table 1 of this report, "Appendix B – Coax Configuration" or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
- 2) The tower and its foundation have sufficient capacity to carry the existing, proposed, and future loads. No modifications are required at this time.

**APPENDIX A**  
**TNXTOWER OUTPUT**



Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18
Legs	PIPE 2.5 STD (SCH 40)			A	B	C	D	E										
Leg Grade	A572-55	A572-55	A500-50	A53-B-35	A572-55	A500-50	A500-46	A53-B-42	A572-55	A572-55	A572-55	A572-55	A53-B-42	A572-55	A572-55	A572-55	A572-55	A572-55
Diagonals	SR 5/8		2L2x2x3/16x1/4	H			L2 1/2x2 1/2x1/4	L3 1/2x3 1/2x1/4	L3x3x1/4	L3x3x1/4	L3x3x1/4	L3x3x1/4	L3x3x1/4	L3 1/2x3 1/2x1/4	L3x3x5/16	L4x4x3/8	L4x4x3/8	L5x5x5/16
Diagonal Grade																		
Top Girts	L1 1/2x1 1/2x3/16																	
Bottom Girts	L1 1/2x1 1/2x3/16																	
Horizontals																		
Sec. Horizontals																		
Face Width (ft)																		
# Panels @ (ft)																		
Weight (lb)																		



**SYMBOL LIST**

MARK	SIZE	MARK	SIZE
A	2-1/2SCH40 w/ 3SCH80 Half Sleeve	F	L1 1/2x1 1/2x3/16
B	Pipe 3.5 Std (SCH40)	G	L2x2x3/16
C	3.5SCH40 w/ 4SCH40 Half Sleeve	H	2L1 1/2x1 1/2x3/16x1/4
D	5 STD w/ 6 XH Half Sleeve	I	L2 1/2x2 1/2x3/16
E	6 STD w/ 7 XH Half Sleeve	J	L2 1/2x2 1/2x1/4

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-55	55 ksi	70 ksi	A500-50	50 ksi	62 ksi
A36	36 ksi	58 ksi	A500-46	46 ksi	62 ksi
A53-B-35	35 ksi	60 ksi	A53-B-42	42 ksi	63 ksi

**TOWER DESIGN NOTES**

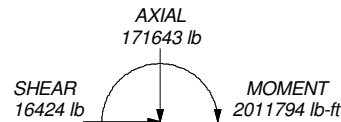
1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft

ALL REACTIONS ARE FACTORED

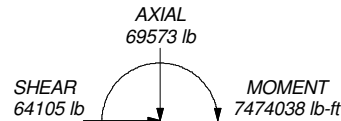
MAX. CORNER REACTIONS AT BASE:

DOWN: 424598 lb  
SHEAR: 41156 lb

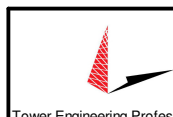
UPLIFT: -371758 lb  
SHEAR: 36376 lb



TORQUE 10477 lb-ft  
50 mph WIND - 1.5000 in ICE



TORQUE 41269 lb-ft  
REACTIONS - 125 mph WIND



**Tower Engineering Professionals, Inc.**

326 Tryon Road  
Raleigh, NC 27603  
Phone: (919) 661-6351  
FAX: (919) 661-6350

Job: **US-CT-1003 - Straits Turnpike**

Project: **TEP No. 25628.511278**

Client: Phoenix Tower International

Drawn by: sjlee

App'd:

Code: TIA-222-H

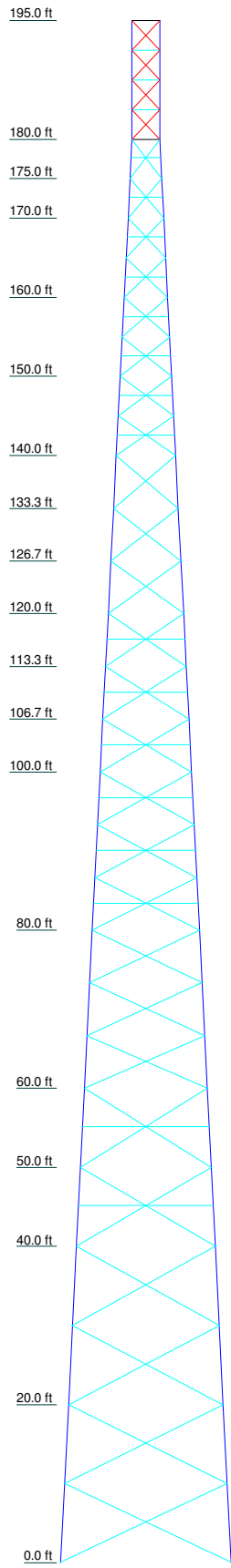
Date: 03/12/21

Scale: NTS

Path:

Dwg No. E-1

Section	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pipe 8 EH	Pipe 8 STD	Pipe 8 STD	Pipe 8 STD	Pipe 6 STD	Pipe 6 STD	Pipe 6 STD	Pipe 6 STD	Pipe 6 STD	Pipe 6 STD	Pipe 6 STD	Pipe 6 STD	Pipe 6 STD	Pipe 6 STD	Pipe 6 STD	PIPE 2.5 STD (SCH 40)	PIPE 2.5 STD (SCH 40)	PIPE 2.5 STD (SCH 40)
Leg Grade	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55	A572-55
Diagonals	L5x5x5/16	L4x4x3/8	L3x3x5/16	L3x3x5/16	L3x3x1/4	L3x3x1/4	L3x3x1/4	L3x3x1/4	L3x3x1/4	L3x3x1/4	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x1/4	2L2x2x3/16x1/4	2L2x2x3/16x1/4	SR 5/8
Diagonal Grade																		
Top Girts																		
Bottom Girts																		
Horizontals																		
Sec. Horizontals																		
Face Width (ft)	21.5	19.5	17.5	15.5	13.5	11.5	10.8333	10.1667	9.5	8.83333	8.16667	7.5	6.5	5.5	4.5	4	4	4
# Panels @ (ft)	2 @ 9.95833	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10
Weight (lb)	30525.2	5428.7	5066.4	2011.3	3770.0	4394.0	820.6	862.9	838.1	788.4	842.1	820.5	1040.7	817.6	710.7	214.0	181.8	484.2



### DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Sector Mount [SM 802-3]	195	RRUS 8843 B2/B66A	185
HSS Top Mount	195	(2) HBXX-6517DS-A2M w/ Mount Pipe	169
KRY 112 71	195	RRH2x60-AWS	169
KRY 112 71	195	RRH2x60-AWS	169
KRY 112 71	195	RRH2x60-AWS	169
KRY 112 71	195	RRH2x60-AWS	169
APXVAARR24_43-U-NA20 w/ MP	195	RRH2X60-PCS	169
APXVAARR24_43-U-NA20 w/ MP	195	RRH2X60-PCS	169
APXVAARR24_43-U-NA20 w/ MP	195	RRH2X60-PCS	169
AIR -32 B2A/B66AA w/ Mount Pipe	195	BXA-70080/6CF w/ Mount Pipe	169
AIR -32 B2A/B66AA w/ Mount Pipe	195	DB846F65ZAXY w/Mount Pipe	169
AIR -32 B2A/B66AA w/ Mount Pipe	195	DB846F65ZAXY w/Mount Pipe	169
RADIO 4449 B12/B71	195	(2) FD9R6004	169
RADIO 4449 B12/B71	195	(2) FD9R6004	169
RADIO 4449 B12/B71	195	(2) FD9R6004	169
KRY 112 71	195	(2) HBXX-6517DS-A2M w/ Mount Pipe	169
KRY 112 71	195	(3) Sector Mounts 169-ft	169
KRY 112 71	195	(2) BXA-70063/6CF w/ Mount Pipe	169
AIR6449 B41 w/ Mount Pipe	195	(2) DB844G65ZAXY w/Mount Pipe	169
AIR6449 B41 w/ Mount Pipe	195	(2) DB844G65ZAXY w/Mount Pipe	169
AIR6449 B41 w/ Mount Pipe	195	DB-B1/T1 w/ Mount Pipe	169
RADIO 4415	195	(2) HBXX-6517DS-A2M w/ Mount Pipe	169
RADIO 4415	195	DT465B-2XR w/ Mount Pipe	153
RADIO 4415	195	DT465B-2XR w/ Mount Pipe	153
E14 F05P85 / SDX1926Q-43	195	DT465B-2XR w/ Mount Pipe	153
E14 F05P85 / SDX1926Q-43	195	RRH2x50-08	153
E14 F05P85 / SDX1926Q-43	195	RRH2x50-08	153
TMO Future Loading	195	RRH2x50-08	153
(3) Sector Mounts 185-ft	185	800MHZ 2X50W RRH	153
Miscellaneous [NA 510-1]	185	800MHZ 2X50W RRH	153
7770.00 w/ Mount Pipe	185	800MHZ 2X50W RRH	153
7770.00 w/ Mount Pipe	185	PCS 1900MHz 4x45W-65MHz	153
7770.00 w/ Mount Pipe	185	PCS 1900MHz 4x45W-65MHz	153
(2) LGP13519	185	PCS 1900MHz 4x45W-65MHz	153
(2) LGP13519	185	TD-RRH8x20-25	153
(2) LGP13519	185	TD-RRH8x20-25	153
RRUS-32 B30	185	TD-RRH8x20-25	153
RRUS-32 B30	185	Sector Mount [SM 502-3]	153
RRUS-32 B30	185	APXVSP18-C-A20 w/ Mount Pipe	153
DC6-48-60-18-8F	185	APXVSP18-C-A20 w/ Mount Pipe	153
DC6-48-60-18-8F	185	APXVSP18-C-A20 w/ Mount Pipe	153
DC6-48-60-0-8C-EV	185	Sabre 12' HD V-Boom Mounts (3) (C10857001C)	138
SBNHH-1D65A w/ Mount Pipe	185	MX08FRO665-20 w/ Mount Pipe	138
SBNHH-1D65A w/ Mount Pipe	185	MX08FRO665-20 w/ Mount Pipe	138
SBNHH-1D65A w/ Mount Pipe	185	MX08FRO665-20 w/ Mount Pipe	138
(2) DMP65R-BU6D w/ Mount Pipe	185	TA08025-B604	138
(2) DMP65R-BU6D w/ Mount Pipe	185	TA08025-B604	138
(2) DMP65R-BU8D w/ Mount Pipe	185	TA08025-B604	138
RRUS 4449 B5/B12	185	TA08025-B605	138
RRUS 4449 B5/B12	185	TA08025-B605	138
RRUS 4478 B14	185	TA08025-B605	138
RRUS 4478 B14	185	Junction Box	138
RRUS 4478 B14	185	Dish Future Loading	138
RRUS 8843 B2/B66A	185	1.75" Dia x 5-ft Pipe	75.5
RRUS 8843 B2/B66A	185	GPS0015	75.5

### SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2-1/2SCH40 w/ 3SCH80 Half Sleeve	F	L1 1/2x1 1/2x3/16
B	Pipe 3.5 Std (SCH40)	G	L2x2x3/16
C	3.5SCH40 w/ 4SCH40 Half Sleeve	H	2L1 1/2x1 1/2x3/16x1/4
D	5 STD w/ 6 XH Half Sleeve	I	L2 1/2x2 1/2x3/16
E	6 STD w/ 7 XH Half Sleeve	J	L2 1/2x2 1/2x1/4

### 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 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft

**Tower Engineering Professionals, Inc.**

326 Tryon Road  
Raleigh, NC 27603  
Phone: (919) 661-6351  
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Job: **US-CT-1003 - Straits Turnpike**

Project: **TEP No. 25628.511278**

Client: Phoenix Tower International	Drawn by: sjlee	App'd:
Code: TIA-222-H	Date: 03/12/21	Scale: NTS
Path:		Dwg No. E-1

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<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> US-CT-1003 - Straits Turnpike	<b>Page</b> 1 of 40
	<b>Project</b> TEP No. 25628.511278	<b>Date</b> 13:04:28 03/12/21
	<b>Client</b> Phoenix Tower International	<b>Designed by</b> sjlee

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> US-CT-1003 - Straits Turnpike	<b>Page</b> 2 of 40
	<b>Project</b> TEP No. 25628.511278	<b>Date</b> 13:04:28 03/12/21
	<b>Client</b> Phoenix Tower International	<b>Designed by</b> sjlee

### Tower Input Data

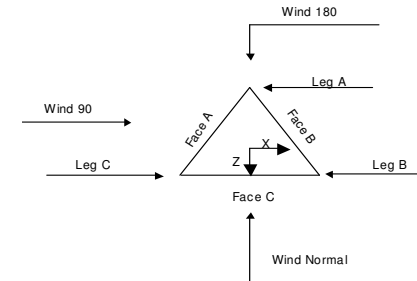
The main tower is a 3x free standing tower with an overall height of 195.00 ft above the ground line. The base of the tower is set at an elevation of 0.00 ft above the ground line. The face width of the tower is 3.50 ft at the top and 21.50 ft at the base. This tower is designed using the TIA-222-H standard.

The following design criteria apply:

- Tower is located in New Haven County, Connecticut.
- Tower base elevation above sea level: 432.77 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used:  $K_{es}(F_w) = 0.95$ ,  $K_{es}(t_i) = 0.85$ .
- Stress ratio used in tower member design is 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

### Options

- |  |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li>Consider Moments - Legs</li> <li>Consider Moments - Horizontals</li> <li>Consider Moments - Diagonals</li> <li>Use Moment Magnification</li> <li>Use Code Stress Ratios</li> <li>Use Code Safety Factors - Guys</li> <li>Escalate Ice</li> <li>Always Use Max Kz</li> <li>Use Special Wind Profile</li> <li>Include Bolts In Member Capacity</li> <li>Leg Bolts Are At Top Of Section</li> <li>Secondary Horizontal Braces Leg</li> <li>Use Diamond Inner Bracing (4 Sided)</li> <li>SR Members Have Cut Ends</li> <li>SR Members Are Concentric</li> </ul> | <ul style="list-style-type: none"> <li>Distribute Leg Loads As Uniform</li> <li>Assume Legs Pinned</li> <li>Assume Rigid Index Plate</li> <li>Use Clear Spans For Wind Area</li> <li>Use Clear Spans For KL/r</li> <li>Retention Guys To Initial Tension</li> <li>Bypass Mast Stability Checks</li> <li>Use Azimuth Dish Coefficients</li> <li>Project Wind Area of Appurt.</li> <li>Autoscale Torque Arm Areas</li> <li>Add IBC .6D+W Combination</li> <li>Sort Capacity Reports By Component</li> <li>Triangulate Diamond Inner Bracing</li> <li>Treat Feed Line Bundles As Cylinder</li> <li>Ignore KL/ry For 60 Deg. Angle Legs</li> </ul> | <ul style="list-style-type: none"> <li>Use ASCE 10 X-Brace Ly Rules</li> <li>Calculate Redundant Bracing Forces</li> <li>Ignore Redundant Members in FEA</li> <li>SR Leg Bolts Resist Compression</li> <li>All Leg Panels Have Same Allowable</li> <li>Offset Girt At Foundation</li> <li>Consider Feed Line Torque</li> <li>Include Angle Block Shear Check</li> <li>Use TIA-222-H Bracing Resist. Exemption</li> <li>Use TIA-222-H Tension Splice Exemption</li> <li>Poles</li> <li>Include Shear-Torsion Interaction</li> <li>Always Use Sub-Critical Flow</li> <li>Use Top Mounted Sockets</li> <li>Pole Without Linear Attachments</li> <li>Pole With Shroud Or No Appurtenances</li> <li>Outside and Inside Corner Radii Are Known</li> </ul> |
|--|--|---|



**Triangular Tower**

### Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	195.00-180.00			3.50	1	15.00
T2	180.00-175.00			3.50	1	5.00
T3	175.00-170.00			4.00	1	5.00
T4	170.00-160.00			4.50	1	10.00
T5	160.00-150.00			5.50	1	10.00
T6	150.00-140.00			6.50	1	10.00
T7	140.00-133.33			7.50	1	6.67
T8	133.33-126.67			8.17	1	6.67
T9	126.67-120.00			8.83	1	6.67
T10	120.00-113.33			9.50	1	6.67
T11	113.33-106.67			10.17	1	6.67
T12	106.67-100.00			10.83	1	6.67
T13	100.00-80.00			11.50	1	20.00
T14	80.00-60.00			13.50	1	20.00
T15	60.00-50.00			15.50	1	10.00
T16	50.00-40.00			16.50	1	10.00
T17	40.00-20.00			17.50	1	20.00
T18	20.00-0.00			19.50	1	20.00

### Tower Section Geometry (cont'd)

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	3 of 40
	<b>Project</b>	TEP No. 25628.511278	<b>Date</b>	13:04:28 03/12/21
	<b>Client</b>	Phoenix Tower International	<b>Designed by</b>	sjlee

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	4 of 40
	<b>Project</b>	TEP No. 25628.511278	<b>Date</b>	13:04:28 03/12/21
	<b>Client</b>	Phoenix Tower International	<b>Designed by</b>	sjlee

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft		No	Yes	in	in
T1	195.00-180.00	3.75	TX Brace	No	Yes	0.0000	0.0000
T2	180.00-175.00	5.00	X Brace	No	Yes	0.0000	0.0000
T3	175.00-170.00	5.00	X Brace	No	Yes	0.0000	0.0000
T4	170.00-160.00	5.00	X Brace	No	Yes	0.0000	0.0000
T5	160.00-150.00	5.00	X Brace	No	Yes	0.0000	0.0000
T6	150.00-140.00	5.00	X Brace	No	Yes	0.0000	0.0000
T7	140.00-133.33	6.67	X Brace	No	No	0.0000	0.0000
T8	133.33-126.67	6.67	X Brace	No	No	0.0000	0.0000
T9	126.67-120.00	6.67	X Brace	No	No	0.0000	0.0000
T10	120.00-113.33	6.67	X Brace	No	Yes	0.0000	0.0000
T11	113.33-106.67	6.67	X Brace	No	Yes	0.0000	0.0000
T12	106.67-100.00	6.67	X Brace	No	Yes	0.0000	0.0000
T13	100.00-80.00	6.67	X Brace	No	Yes	0.0000	0.0000
T14	80.00-60.00	6.67	X Brace	No	No	0.0000	0.0000
T15	60.00-50.00	10.00	X Brace	No	Yes	0.0000	0.0000
T16	50.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T17	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T18	20.00-0.00	9.96	X Brace	No	No	0.0000	1.0000

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T18 20.00-0.00	Pipe	Pipe 8 EH	(55 ksi) A572-55 (55 ksi)	Equal Angle	L5x5x5/16	(36 ksi) A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
ft						
T1 195.00-180.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
ft							
T1 195.00-180.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 195.00-180.00	Pipe	PIPE 2.5 STD (SCH 40)	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T2 180.00-175.00	Pipe	PIPE 2.5 STD (SCH 40)	A572-55 (55 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 175.00-170.00	Pipe	PIPE 2.5 STD (SCH 40)	A572-55 (55 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 170.00-160.00	Arbitrary Shape	2-1/2SCH40 w/ 3SCH80 Half Sleeve	A53-B-35 (35 ksi)	Double Equal Angle	2L1 1/2x1 1/2x3/16x1/4	A36 (36 ksi)
T5 160.00-150.00	Pipe	Pipe 3.5 Std (SCH40)	A572-55 (55 ksi)	Double Angle	2L2x2x3/16x1/4	A36 (36 ksi)
T6 150.00-140.00	Arbitrary Shape	3.5SCH40 w/ 4SCH40 Half Sleeve	A500-50 (50 ksi)	Double Angle	2L2x2x3/16x1/4	A36 (36 ksi)
T7 140.00-133.33	Arbitrary Shape	5 STD w/ 6 XH Half Sleeve	A500-46 (46 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 133.33-126.67	Arbitrary Shape	5 STD w/ 6 XH Half Sleeve	A500-46 (46 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 126.67-120.00	Arbitrary Shape	5 STD w/ 6 XH Half Sleeve	A500-46 (46 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T10 120.00-113.33	Pipe	Pipe 6 STD	A572-55 (55 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T11 113.33-106.67	Pipe	Pipe 6 STD	A572-55 (55 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T12 106.67-100.00	Pipe	Pipe 6 STD	A572-55 (55 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T13 100.00-80.00	Arbitrary Shape	6 STD w/ 7 XH Half Sleeve	A53-B-42 (42 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T14 80.00-60.00	Pipe	Pipe 8 STD	A572-55 (55 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T15 60.00-50.00	Pipe	Pipe 8 STD	A572-55 (55 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T16 50.00-40.00	Pipe	Pipe 8 STD	A572-55 (55 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T17 40.00-20.00	Pipe	Pipe 8 EH	A572-55	Equal Angle	L4x4x3/8	A36

### Tower Section Geometry (cont'd)

Tower Elevation	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
ft						
T2 180.00-175.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 175.00-170.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 170.00-160.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T5 160.00-150.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T6 150.00-140.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T10 120.00-113.33	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T11 113.33-106.67	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T12 106.67-100.00	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T13 100.00-80.00	Equal Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T15 60.00-50.00	Equal Angle	L4x4x3/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)



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	<b>Client</b> Phoenix Tower International	<b>Designed by</b> sjlee

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Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T4 170.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 160.00-150.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 150.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 140.00-133.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 133.33-126.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 126.67-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 120.00-113.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 113.33-106.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 106.67-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 60.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 50.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T18 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Leg Connection Type	Leg Bolt Size	No.	Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
				Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T8	Flange	1.0000	0	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
133.33-126.67		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T9	Flange	1.0000	8	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
126.67-120.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10	Flange	1.0000	0	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
120.00-113.33		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T11	Flange	1.0000	0	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
113.33-106.67		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T12	Flange	1.0000	8	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
106.67-100.00		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T13	Flange	1.2500	8	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.7500	1
100.00-80.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T14	Flange	1.2500	8	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.7500	0
80.00-60.00		A325N		A325N		A325N		A325N		A325N		A325N		A325X	
T15	Flange	1.2500	0	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
60.00-50.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T16	Flange	1.2500	8	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.7500	1
50.00-40.00		A325N		A325N		A325N		A325N		A325N		A325N		A325X	
T17	Flange	1.2500	8	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
40.00-20.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T18 20.00-0.00	Flange	1.5000	8	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
		A36		A325N		A325N		A325N		A325N		A325N		A325N	

**Tower Section Geometry (cont'd)**

Tower Elevation ft	Leg Connection Type	Leg Bolt Size	No.	Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
				Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 195.00-180.00	Flange	0.7500	4	0.0000	0	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2 180.00-175.00	Flange	0.7500	0	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3 175.00-170.00	Flange	0.7500	0	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T4 170.00-160.00	Flange	0.7500	6	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5 160.00-150.00	Flange	1.0000	0	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T6 150.00-140.00	Flange	1.0000	6	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7 140.00-133.33	Flange	1.0000	0	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
		A325N		A325X		A325N		A325N		A325N		A325N		A325N	

**Feed Line/Linear Appurtenances - Entered As Round Or Flat**

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A (1-5/8 FOAM)	B	No	No	Ar (CaAa)	169.00 - 8.00	-2.0000	0.35	12	12	0.5000	1.9800	0.82
HB158-1-08U 8-S8J18(1-5/8)	B	No	No	Ar (CaAa)	169.00 - 8.00	-4.0000	0.29	1	1	0.5000	0.0001	1.30
WG Rail 1.5x1.5x1/4	B	No	No	Af (CaAa)	170.00 - 8.00	-2.0000	0.35	2	2	36.5000	1.5000	2.40
1 5/8" Hybrid	B	No	No	Ar (CaAa)	195.00 - 8.00	0.0000	0	4	4	0.5000	1.6250	0.75
WG Rail 1.5x1.5x3/16	B	No	No	Af (CaAa)	195.00 - 0.00	0.0000	0	2	2	36.0000	1.5000	1.81
LDF7-50A (1-5/8 FOAM)	B	No	No	Ar (CaAa)	195.00 - 8.00	0.0000	0	20	9	0.5000	1.9800	0.82
5/8" dia. coax	C	No	No	Ar (CaAa)	75.50 - 10.00	0.0000	0	1	1	0.5000	0.6250	0.15
1 1/4 Hybrid Cable	C	No	No	Ar (CaAa)	153.00 - 10.00	0.0000	0.04	4	4	0.5000	1.2500	1.44
WG Rail 1.5x1.5x3/16	C	No	No	Af (CaAa)	160.00 - 0.00	0.0000	0.1	2	2	35.0000	1.5000	1.81
LDF7-50A	A	No	No	Ar (CaAa)	185.00 - 0.00	0.0000	0.3	12	6	0.5000	1.9800	0.82

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
(1-5/8 FOAM) 7/16" Fiber Cable (24 fibers Max)	A	No	No	Ar (CaAa)	8.00 - 8.00	0.0000	0.375	2	2	0.5000	0.4375		0.03
LDF5-50A (7/8 FOAM) WG Rail 1.5x1.5x1/8	A	No	No	Ar (CaAa)	185.00 - 8.00	0.0000	0.3	6	3	0.5000	1.0900		0.33
***	A	No	No	Af (CaAa)	185.00 - 2.00	0.0000	0.3	2	2	34.0000	1.5000		1.23
Safety Line 3/8	A	No	No	Ar (CaAa)	195.00 - 0.00	0.0000	0.5	1	1	0.3750	0.3750		0.22
Step Pegs (5/8" SR) 7-in. w/30" step	A	No	No	Ar (CaAa)	195.00 - 0.00	0.0000	0.5	1	1	0.3500	0.3500		0.49
Step Pegs (5/8" SR) 7-in. w/30" step	B	No	No	Ar (CaAa)	60.00 - 0.00	0.0000	0.5	1	1	0.3500	0.3500		0.49
Step Pegs (5/8" SR) 7-in. w/30" step	C	No	No	Ar (CaAa)	60.00 - 0.00	0.0000	0.5	1	1	0.3500	0.3500		0.49
****	B	No	No	Af (CaAa)	170.00 - 8.00	-2.0000	0.35	1	1	0.5000	0.0001		1.31
Rung L1.5x1.5x1/8 (36.25"w, 34"s)	B	No	No	Af (CaAa)	181.00 - 0.00	0.0000	0	1	1	0.5000	0.0001		1.29
Rung L1.5x1.5x1/8 (36"w, 34"s)	C	No	No	Af (CaAa)	160.00 - 0.00	0.0000	0.1	1	1	0.5000	0.0001		1.05
Rung L2x1.5x1/8 (35"w, 48"s)	A	No	No	Af (CaAa)	180.00 - 2.00	0.0000	0.3	1	1	0.5000	0.0001		1.29
****	C	No	No	Ar (CaAa)	138.00 - 10.00	0.0000	0	1	1	1.5840	1.6000		0.62

**Feed Line/Linear Appurtenances - Entered As Area**

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C <sub>A</sub> A <sub>N</sub> ft <sup>2</sup> /ft	Weight plf
****								
****								
****								
***								

**Feed Line/Linear Appurtenances Section Areas**

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>N</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>N</sub> Out Face ft <sup>2</sup>	Weight lb
T1	195.00-180.00	A	0.000	0.000	19.175	0.000	82.31
		B	0.000	0.000	76.650	0.000	346.59
		C	0.000	0.000	0.000	0.000	0.00
T2	180.00-175.00	A	0.000	0.000	18.450	0.000	81.71
		B	0.000	0.000	25.550	0.000	121.58
		C	0.000	0.000	0.000	0.000	0.00
T3	175.00-170.00	A	0.000	0.000	18.450	0.000	81.71
		B	0.000	0.000	25.550	0.000	121.58
		C	0.000	0.000	0.000	0.000	0.00
T4	170.00-160.00	A	0.000	0.000	36.900	0.000	163.42
		B	0.000	0.000	77.484	0.000	404.54
		C	0.000	0.000	0.000	0.000	0.00
T5	160.00-150.00	A	0.000	0.000	36.900	0.000	163.42
		B	0.000	0.000	79.860	0.000	415.68
		C	0.000	0.000	6.500	0.000	63.90
T6	150.00-140.00	A	0.000	0.000	36.900	0.000	163.42
		B	0.000	0.000	79.860	0.000	415.68
		C	0.000	0.000	10.000	0.000	104.11
T7	140.00-133.33	A	0.000	0.000	24.600	0.000	108.95
		B	0.000	0.000	53.240	0.000	277.12
		C	0.000	0.000	7.413	0.000	72.30
T8	133.33-126.67	A	0.000	0.000	24.600	0.000	108.95
		B	0.000	0.000	53.240	0.000	277.12
		C	0.000	0.000	7.733	0.000	73.55
T9	126.67-120.00	A	0.000	0.000	24.600	0.000	108.95
		B	0.000	0.000	53.240	0.000	277.12
		C	0.000	0.000	7.733	0.000	73.55
T10	120.00-113.33	A	0.000	0.000	24.600	0.000	108.95
		B	0.000	0.000	53.240	0.000	277.12
		C	0.000	0.000	7.733	0.000	73.55
T11	113.33-106.67	A	0.000	0.000	24.600	0.000	108.95
		B	0.000	0.000	53.240	0.000	277.12
		C	0.000	0.000	7.733	0.000	73.55
T12	106.67-100.00	A	0.000	0.000	24.600	0.000	108.95
		B	0.000	0.000	53.240	0.000	277.12
		C	0.000	0.000	7.733	0.000	73.55
T13	100.00-80.00	A	0.000	0.000	73.800	0.000	326.84
		B	0.000	0.000	159.721	0.000	831.36
		C	0.000	0.000	23.200	0.000	220.64
T14	80.00-60.00	A	0.000	0.000	73.800	0.000	326.84
		B	0.000	0.000	159.721	0.000	831.36
		C	0.000	0.000	24.169	0.000	222.97
T15	60.00-50.00	A	0.000	0.000	36.900	0.000	163.42
		B	0.000	0.000	80.210	0.000	420.55
		C	0.000	0.000	12.575	0.000	116.69
T16	50.00-40.00	A	0.000	0.000	36.900	0.000	163.42
		B	0.000	0.000	80.210	0.000	420.55
		C	0.000	0.000	12.575	0.000	116.69
T17	40.00-20.00	A	0.000	0.000	73.800	0.000	326.84
		B	0.000	0.000	160.421	0.000	841.10
		C	0.000	0.000	25.150	0.000	233.38
T18	20.00-0.00	A	0.000	0.000	47.860	0.000	224.29
		B	0.000	0.000	100.533	0.000	547.88
		C	0.000	0.000	17.925	0.000	168.23

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	<b>Client</b>	Phoenix Tower International	<b>Designed by</b>	sjlee

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### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	$A_R$	$A_F$	$C_{AA}$	$C_{AA}$	Weight lb
				$ft^2$	$ft^2$	In Face $ft^2$	Out Face $ft^2$	
T1	195.00-180.00	A	1.517	0.000	0.000	36.874	0.000	514.78
		B		0.000	0.000	89.575	0.000	1581.34
		C		0.000	0.000	0.000	0.000	0.00
T2	180.00-175.00	A	1.509	0.000	0.000	31.514	0.000	473.74
		B		0.000	0.000	31.222	0.000	560.42
		C		0.000	0.000	0.000	0.000	0.00
T3	175.00-170.00	A	1.504	0.000	0.000	31.471	0.000	472.46
		B		0.000	0.000	31.195	0.000	559.23
		C		0.000	0.000	0.000	0.000	0.00
T4	170.00-160.00	A	1.498	0.000	0.000	62.806	0.000	940.95
		B		0.000	0.000	115.705	0.000	1912.99
		C		0.000	0.000	0.000	0.000	0.00
T5	160.00-150.00	A	1.488	0.000	0.000	62.617	0.000	935.42
		B		0.000	0.000	119.866	0.000	1962.94
		C		0.000	0.000	17.821	0.000	294.33
T6	150.00-140.00	A	1.478	0.000	0.000	62.416	0.000	929.58
		B		0.000	0.000	119.635	0.000	1952.47
		C		0.000	0.000	26.809	0.000	416.93
T7	140.00-133.33	A	1.470	0.000	0.000	41.492	0.000	616.30
		B		0.000	0.000	79.621	0.000	1295.51
		C		0.000	0.000	19.937	0.000	304.90
T8	133.33-126.67	A	1.462	0.000	0.000	41.393	0.000	613.43
		B		0.000	0.000	79.507	0.000	1290.36
		C		0.000	0.000	20.789	0.000	315.50
T9	126.67-120.00	A	1.455	0.000	0.000	41.289	0.000	610.44
		B		0.000	0.000	79.387	0.000	1284.98
		C		0.000	0.000	20.731	0.000	313.76
T10	120.00-113.33	A	1.447	0.000	0.000	41.180	0.000	607.30
		B		0.000	0.000	79.261	0.000	1279.34
		C		0.000	0.000	20.671	0.000	311.94
T11	113.33-106.67	A	1.438	0.000	0.000	41.065	0.000	604.01
		B		0.000	0.000	79.129	0.000	1273.41
		C		0.000	0.000	20.607	0.000	310.02
T12	106.67-100.00	A	1.429	0.000	0.000	40.944	0.000	600.55
		B		0.000	0.000	78.990	0.000	1267.17
		C		0.000	0.000	20.539	0.000	308.01
T13	100.00-80.00	A	1.410	0.000	0.000	122.037	0.000	1779.03
		B		0.000	0.000	236.053	0.000	3760.69
		C		0.000	0.000	61.175	0.000	910.90
T14	80.00-60.00	A	1.375	0.000	0.000	120.617	0.000	1739.08
		B		0.000	0.000	234.420	0.000	3688.40
		C		0.000	0.000	65.615	0.000	942.10
T15	60.00-50.00	A	1.342	0.000	0.000	59.644	0.000	851.07
		B		0.000	0.000	119.479	0.000	1843.26
		C		0.000	0.000	36.165	0.000	499.52
T16	50.00-40.00	A	1.315	0.000	0.000	59.103	0.000	836.21
		B		0.000	0.000	118.804	0.000	1815.20
		C		0.000	0.000	35.758	0.000	488.87
T17	40.00-20.00	A	1.263	0.000	0.000	116.087	0.000	1615.01
		B		0.000	0.000	234.963	0.000	3521.59
		C		0.000	0.000	69.919	0.000	936.77
T18	20.00-0.00	A	1.132	0.000	0.000	77.732	0.000	1025.49
		B		0.000	0.000	148.513	0.000	2117.80
		C		0.000	0.000	47.357	0.000	620.74

### Feed Line Center of Pressure

Section	Elevation ft	$CP_x$	$CP_z$	$CP_x$	$CP_z$
		in	in	Ice in	Ice in
T1	195.00-180.00	4.9146	-6.6215	3.2072	-5.8286
T2	180.00-175.00	2.7248	-8.9238	2.0042	-8.8737
T3	175.00-170.00	2.8251	-9.4987	2.1752	-9.7215
T4	170.00-160.00	6.4497	-6.0191	5.9462	-6.6769
T5	160.00-150.00	6.4518	-5.2472	5.8969	-5.5138
T6	150.00-140.00	6.8879	-5.6545	6.3774	-5.8406
T7	140.00-133.33	6.4149	-5.3988	6.6853	-5.9640
T8	133.33-126.67	6.8261	-5.6659	7.1226	-6.2001
T9	126.67-120.00	7.2473	-6.0232	7.5853	-6.6017
T10	120.00-113.33	8.0977	-6.5121	8.0296	-6.8292
T11	113.33-106.67	8.4492	-6.8220	8.4322	-7.1795
T12	106.67-100.00	9.1314	-7.3293	8.9807	-7.6229
T13	100.00-80.00	9.0315	-7.4416	9.2900	-7.9771
T14	80.00-60.00	10.8938	-8.6964	10.9385	-8.8453
T15	60.00-50.00	11.6277	-9.0765	11.4419	-8.0309
T16	50.00-40.00	12.0683	-9.4626	11.9235	-8.3965
T17	40.00-20.00	13.4450	-10.4611	13.3136	-9.3506
T18	20.00-0.00	9.1145	-8.2358	9.6967	-8.5928

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line	$K_a$	$K_a$
			Segment Elev.	No Ice	Ice
T1	6	1 5/8" Hybrid	180.00 -	0.6000	0.4557
			195.00		
T1	9	WG Rail 1.5x1.5x3/16	180.00 -	0.6000	0.4557
			195.00		
T1	11	LDF7-50A (1-5/8 FOAM)	180.00 -	0.6000	0.4557
			195.00		
T1	21	LDF7-50A (1-5/8 FOAM)	180.00 -	0.6000	0.4557
			185.00		
T1	22	7/16" Fiber Cable (24 fibers Max)	180.00 -	0.6000	0.4557
			185.00		
T1	24	LDF5-50A (7/8 FOAM)	180.00 -	0.6000	0.4557
			185.00		
T1	25	WG Rail 1.5x1.5x1/8	180.00 -	0.6000	0.4557
			185.00		
T1	32	Safety Line 3/8	180.00 -	0.6000	0.4557
			195.00		
T1	33	Step Pegs (5/8" SR) 7-in. w/30" step	180.00 -	0.6000	0.4557
			195.00		
T1	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	180.00 -	0.6000	0.4557
			181.00		
T2	6	1 5/8" Hybrid	175.00 -	0.6000	0.4913
			180.00		
T2	9	WG Rail 1.5x1.5x3/16	175.00 -	0.6000	0.4913
			180.00		
T2	11	LDF7-50A (1-5/8 FOAM)	175.00 -	0.6000	0.4913
			180.00		
T2	21	LDF7-50A (1-5/8 FOAM)	175.00 -	0.6000	0.4913
			180.00		
T2	22	7/16" Fiber Cable (24 fibers)	175.00 -	0.6000	0.4913
			175.00 -		



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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T2	24	(Max) LDF5-50A (7/8 FOAM)	180.00 175.00 -	0.6000	0.4913
T2	25	WG Rail 1.5x1.5x1/8	180.00 175.00 -	0.6000	0.4913
T2	32	Safety Line 3/8	180.00 175.00 -	0.6000	0.4913
T2	33	Step Pegs (5/8" SR) 7-in. w/30" step	180.00 175.00 -	0.6000	0.4913
T2	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	180.00 175.00 -	0.6000	0.4913
T2	47	Rung L1.5x1.5x1/8 (36"w, 34"s)	180.00 170.00 -	0.6000	0.4913
T3	6	1 5/8" Hybrid	170.00 - 175.00	0.6000	0.5042
T3	9	WG Rail 1.5x1.5x3/16	170.00 - 175.00	0.6000	0.5042
T3	11	LDF7-50A (1-5/8 FOAM)	170.00 - 175.00	0.6000	0.5042
T3	21	LDF7-50A (1-5/8 FOAM)	170.00 - 175.00	0.6000	0.5042
T3	22	7/16" Fiber Cable (24 fibers Max)	170.00 - 175.00	0.6000	0.5042
T3	24	LDF5-50A (7/8 FOAM)	170.00 - 175.00	0.6000	0.5042
T3	25	WG Rail 1.5x1.5x1/8	170.00 - 175.00	0.6000	0.5042
T3	32	Safety Line 3/8	170.00 - 175.00	0.6000	0.5042
T3	33	Step Pegs (5/8" SR) 7-in. w/30" step	170.00 - 175.00	0.6000	0.5042
T3	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	170.00 - 175.00	0.6000	0.5042
T3	47	Rung L1.5x1.5x1/8 (36"w, 34"s)	170.00 - 175.00	0.6000	0.5042
T4	1	LDF7-50A (1-5/8 FOAM)	160.00 - 169.00	0.6000	0.5443
T4	2	HB158-1-08U8-S8J18( 1-5/8)	160.00 - 169.00	0.6000	0.5443
T4	3	WG Rail 1.5x1.5x1/4	160.00 - 170.00	0.6000	0.5443
T4	6	1 5/8" Hybrid	160.00 - 170.00	0.6000	0.5443
T4	9	WG Rail 1.5x1.5x3/16	160.00 - 170.00	0.6000	0.5443
T4	11	LDF7-50A (1-5/8 FOAM)	160.00 - 170.00	0.6000	0.5443
T4	21	LDF7-50A (1-5/8 FOAM)	160.00 - 170.00	0.6000	0.5443
T4	22	7/16" Fiber Cable (24 fibers Max)	160.00 - 170.00	0.6000	0.5443
T4	24	LDF5-50A (7/8 FOAM)	160.00 - 170.00	0.6000	0.5443
T4	25	WG Rail 1.5x1.5x1/8	160.00 - 170.00	0.6000	0.5443
T4	32	Safety Line 3/8	160.00 - 170.00	0.6000	0.5443
T4	33	Step Pegs (5/8" SR) 7-in. w/30" step	160.00 - 170.00	0.6000	0.5443
T4	42	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	160.00 - 170.00	0.6000	0.5443
T4	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	160.00 - 170.00	0.6000	0.5443

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T4	47	(34"s) Rung L1.5x1.5x1/8 (36"w, 34"s)	170.00 160.00 - 170.00	0.6000	0.5443
T5	1	LDF7-50A (1-5/8 FOAM)	150.00 - 160.00	0.6000	0.5658
T5	2	HB158-1-08U8-S8J18( 1-5/8)	150.00 - 160.00	0.6000	0.5658
T5	3	WG Rail 1.5x1.5x1/4	150.00 - 160.00	0.6000	0.5658
T5	6	1 5/8" Hybrid	150.00 - 160.00	0.6000	0.5658
T5	9	WG Rail 1.5x1.5x3/16	150.00 - 160.00	0.6000	0.5658
T5	11	LDF7-50A (1-5/8 FOAM)	150.00 - 160.00	0.6000	0.5658
T5	14	1 1/4 Hybriflex Cable	150.00 - 153.00	0.6000	0.5658
T5	15	WG Rail 1.5x1.5x3/16	150.00 - 160.00	0.6000	0.5658
T5	21	LDF7-50A (1-5/8 FOAM)	150.00 - 160.00	0.6000	0.5658
T5	22	7/16" Fiber Cable (24 fibers Max)	150.00 - 160.00	0.6000	0.5658
T5	24	LDF5-50A (7/8 FOAM)	150.00 - 160.00	0.6000	0.5658
T5	25	WG Rail 1.5x1.5x1/8	150.00 - 160.00	0.6000	0.5658
T5	32	Safety Line 3/8	150.00 - 160.00	0.6000	0.5658
T5	33	Step Pegs (5/8" SR) 7-in. w/30" step	150.00 - 160.00	0.6000	0.5658
T5	42	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	150.00 - 160.00	0.6000	0.5658
T5	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	150.00 - 160.00	0.6000	0.5658
T5	45	Rung L2x1.5x1/8 (35"w, 48"s)	150.00 - 160.00	0.6000	0.5658
T5	47	Rung L1.5x1.5x1/8 (36"w, 34"s)	150.00 - 160.00	0.6000	0.5658
T6	1	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.5872
T6	2	HB158-1-08U8-S8J18( 1-5/8)	140.00 - 150.00	0.6000	0.5872
T6	3	WG Rail 1.5x1.5x1/4	140.00 - 150.00	0.6000	0.5872
T6	6	1 5/8" Hybrid	140.00 - 150.00	0.6000	0.5872
T6	9	WG Rail 1.5x1.5x3/16	140.00 - 150.00	0.6000	0.5872
T6	11	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.5872
T6	14	1 1/4 Hybriflex Cable	140.00 - 150.00	0.6000	0.5872
T6	15	WG Rail 1.5x1.5x3/16	140.00 - 150.00	0.6000	0.5872
T6	21	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.5872
T6	22	7/16" Fiber Cable (24 fibers Max)	140.00 - 150.00	0.6000	0.5872
T6	24	LDF5-50A (7/8 FOAM)	140.00 - 150.00	0.6000	0.5872
T6	25	WG Rail 1.5x1.5x1/8	140.00 - 150.00	0.6000	0.5872

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T6	32	Safety Line 3/8	150.00		
			140.00 -	0.6000	0.5872
			150.00		
T6	33	Step Pegs (5/8" SR) 7-in. w/30" step	140.00 -	0.6000	0.5872
			150.00		
T6	42	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	140.00 -	0.6000	0.5872
			150.00		
T6	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	140.00 -	0.6000	0.5872
			150.00		
T6	45	Rung L2x1.5x1/8 (35"w, 48"s)	140.00 -	0.6000	0.5872
			150.00		
T6	47	Rung L1.5x1.5x1/8 (36"w, 34"s)	140.00 -	0.6000	0.5872
			150.00		
T7	1	LDF7-50A (1-5/8 FOAM)	133.33 -	0.6000	0.6000
			140.00		
T7	2	HB158-1-08U8-S8J18( 1-5/8)	133.33 -	0.6000	0.6000
			140.00		
T7	3	WG Rail 1.5x1.5x1/4	133.33 -	0.6000	0.6000
			140.00		
T7	6	1 5/8" Hybrid	133.33 -	0.6000	0.6000
			140.00		
T7	9	WG Rail 1.5x1.5x3/16	133.33 -	0.6000	0.6000
			140.00		
T7	11	LDF7-50A (1-5/8 FOAM)	133.33 -	0.6000	0.6000
			140.00		
T7	14	1 1/4 Hybriflex Cable	133.33 -	0.6000	0.6000
			140.00		
T7	15	WG Rail 1.5x1.5x3/16	133.33 -	0.6000	0.6000
			140.00		
T7	21	LDF7-50A (1-5/8 FOAM)	133.33 -	0.6000	0.6000
			140.00		
T7	22	7/16" Fiber Cable (24 fibers Max)	133.33 -	0.6000	0.6000
			140.00		
T7	24	LDF5-50A (7/8 FOAM)	133.33 -	0.6000	0.6000
			140.00		
T7	25	WG Rail 1.5x1.5x1/8	133.33 -	0.6000	0.6000
			140.00		
T7	32	Safety Line 3/8	133.33 -	0.6000	0.6000
			140.00		
T7	33	Step Pegs (5/8" SR) 7-in. w/30" step	133.33 -	0.6000	0.6000
			140.00		
T7	42	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	133.33 -	0.6000	0.6000
			140.00		
T7	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	133.33 -	0.6000	0.6000
			140.00		
T7	45	Rung L2x1.5x1/8 (35"w, 48"s)	133.33 -	0.6000	0.6000
			140.00		
T7	47	Rung L1.5x1.5x1/8 (36"w, 34"s)	133.33 -	0.6000	0.6000
			140.00		
T7	49	1.6" Feedline	133.33 -	0.6000	0.6000
			138.00		
T8	1	LDF7-50A (1-5/8 FOAM)	126.67 -	0.6000	0.6000
			133.33		
T8	2	HB158-1-08U8-S8J18( 1-5/8)	126.67 -	0.6000	0.6000
			133.33		
T8	3	WG Rail 1.5x1.5x1/4	126.67 -	0.6000	0.6000
			133.33		
T8	6	1 5/8" Hybrid	126.67 -	0.6000	0.6000
			133.33		
T8	9	WG Rail 1.5x1.5x3/16	126.67 -	0.6000	0.6000
			133.33		
T8	11	LDF7-50A (1-5/8 FOAM)	126.67 -	0.6000	0.6000
			133.33		
T8	14	1 1/4 Hybriflex Cable	120.00 -	0.6000	0.6000
			126.67		
T8	15	WG Rail 1.5x1.5x3/16	120.00 -	0.6000	0.6000
			126.67		
T8	21	LDF7-50A (1-5/8 FOAM)	120.00 -	0.6000	0.6000
			126.67		
T8	22	7/16" Fiber Cable (24 fibers Max)	120.00 -	0.6000	0.6000
			126.67		
T8	24	LDF5-50A (7/8 FOAM)	120.00 -	0.6000	0.6000
			126.67		
T8	25	WG Rail 1.5x1.5x1/8	120.00 -	0.6000	0.6000
			126.67		
T8	32	Safety Line 3/8	120.00 -	0.6000	0.6000
			126.67		
T8	33	Step Pegs (5/8" SR) 7-in. w/30" step	120.00 -	0.6000	0.6000
			126.67		
T8	42	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	120.00 -	0.6000	0.6000
			126.67		
T8	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	120.00 -	0.6000	0.6000
			126.67		
T8	45	Rung L2x1.5x1/8 (35"w, 48"s)	120.00 -	0.6000	0.6000
			126.67		
T8	47	Rung L1.5x1.5x1/8 (36"w, 34"s)	120.00 -	0.6000	0.6000
			126.67		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T8	14	1 1/4 Hybriflex Cable	133.33		
			126.67 -	0.6000	0.6000
			133.33		
T8	15	WG Rail 1.5x1.5x3/16	126.67 -	0.6000	0.6000
			133.33		
T8	21	LDF7-50A (1-5/8 FOAM)	126.67 -	0.6000	0.6000
			133.33		
T8	22	7/16" Fiber Cable (24 fibers Max)	126.67 -	0.6000	0.6000
			133.33		
T8	24	LDF5-50A (7/8 FOAM)	126.67 -	0.6000	0.6000
			133.33		
T8	25	WG Rail 1.5x1.5x1/8	126.67 -	0.6000	0.6000
			133.33		
T8	32	Safety Line 3/8	126.67 -	0.6000	0.6000
			133.33		
T8	33	Step Pegs (5/8" SR) 7-in. w/30" step	126.67 -	0.6000	0.6000
			133.33		
T8	42	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	126.67 -	0.6000	0.6000
			133.33		
T8	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	126.67 -	0.6000	0.6000
			133.33		
T8	45	Rung L2x1.5x1/8 (35"w, 48"s)	126.67 -	0.6000	0.6000
			133.33		
T8	47	Rung L1.5x1.5x1/8 (36"w, 34"s)	126.67 -	0.6000	0.6000
			133.33		
T8	49	1.6" Feedline	126.67 -	0.6000	0.6000
			133.33		
T9	1	LDF7-50A (1-5/8 FOAM)	120.00 -	0.6000	0.6000
			126.67		
T9	2	HB158-1-08U8-S8J18( 1-5/8)	120.00 -	0.6000	0.6000
			126.67		
T9	3	WG Rail 1.5x1.5x1/4	120.00 -	0.6000	0.6000
			126.67		
T9	6	1 5/8" Hybrid	120.00 -	0.6000	0.6000
			126.67		
T9	9	WG Rail 1.5x1.5x3/16	120.00 -	0.6000	0.6000
			126.67		
T9	11	LDF7-50A (1-5/8 FOAM)	120.00 -	0.6000	0.6000
			126.67		
T9	14	1 1/4 Hybriflex Cable	120.00 -	0.6000	0.6000
			126.67		
T9	15	WG Rail 1.5x1.5x3/16	120.00 -	0.6000	0.6000
			126.67		
T9	21	LDF7-50A (1-5/8 FOAM)	120.00 -	0.6000	0.6000
			126.67		
T9	22	7/16" Fiber Cable (24 fibers Max)	120.00 -	0.6000	0.6000
			126.67		
T9	24	LDF5-50A (7/8 FOAM)	120.00 -	0.6000	0.6000
			126.67		
T9	25	WG Rail 1.5x1.5x1/8	120.00 -	0.6000	0.6000
			126.67		
T9	32	Safety Line 3/8	120.00 -	0.6000	0.6000
			126.67		
T9	33	Step Pegs (5/8" SR) 7-in. w/30" step	120.00 -	0.6000	0.6000
			126.67		
T9	42	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	120.00 -	0.6000	0.6000
			126.67		
T9	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	120.00 -	0.6000	0.6000
			126.67		
T9	45	Rung L2x1.5x1/8 (35"w, 48"s)	120.00 -	0.6000	0.6000
			126.67		
T9	47	Rung L1.5x1.5x1/8 (36"w, 34"s)	120.00 -	0.6000	0.6000
			126.67		

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	17 of 40
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<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	18 of 40
	<b>Project</b>	TEP No. 25628.511278	<b>Date</b>	13:04:28 03/12/21
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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
		34"s	126.67		
T9	49	1.6" Feedline	120.00 - 126.67	0.6000	0.6000
T10	1	LDF7-50A (1-5/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T10	2	HB158-1-08U8-S8J18( 1-5/8)	113.33 - 120.00	0.6000	0.6000
T10	3	WG Rail 1.5x1.5x1/4	113.33 - 120.00	0.6000	0.6000
T10	6	1 5/8" Hybrid	113.33 - 120.00	0.6000	0.6000
T10	9	WG Rail 1.5x1.5x3/16	113.33 - 120.00	0.6000	0.6000
T10	11	LDF7-50A (1-5/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T10	14	1 1/4 Hybriflex Cable	113.33 - 120.00	0.6000	0.6000
T10	15	WG Rail 1.5x1.5x3/16	113.33 - 120.00	0.6000	0.6000
T10	21	LDF7-50A (1-5/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T10	22	7/16" Fiber Cable (24 fibers Max)	113.33 - 120.00	0.6000	0.6000
T10	24	LDF5-50A (7/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T10	25	WG Rail 1.5x1.5x1/8	113.33 - 120.00	0.6000	0.6000
T10	32	Safety Line 3/8	113.33 - 120.00	0.6000	0.6000
T10	33	Step Pegs (5/8" SR) 7-in. w/30" step	113.33 - 120.00	0.6000	0.6000
T10	42	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	113.33 - 120.00	0.6000	0.6000
T10	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	113.33 - 120.00	0.6000	0.6000
T10	45	Rung L2x1.5x1/8 (35"w, 48"s)	113.33 - 120.00	0.6000	0.6000
T10	47	Rung L1.5x1.5x1/8 (36"w, 34"s)	113.33 - 120.00	0.6000	0.6000
T10	49	1.6" Feedline	113.33 - 120.00	0.6000	0.6000
T11	1	LDF7-50A (1-5/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T11	2	HB158-1-08U8-S8J18( 1-5/8)	106.67 - 113.33	0.6000	0.6000
T11	3	WG Rail 1.5x1.5x1/4	106.67 - 113.33	0.6000	0.6000
T11	6	1 5/8" Hybrid	106.67 - 113.33	0.6000	0.6000
T11	9	WG Rail 1.5x1.5x3/16	106.67 - 113.33	0.6000	0.6000
T11	11	LDF7-50A (1-5/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T11	14	1 1/4 Hybriflex Cable	106.67 - 113.33	0.6000	0.6000
T11	15	WG Rail 1.5x1.5x3/16	106.67 - 113.33	0.6000	0.6000
T11	21	LDF7-50A (1-5/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T11	22	7/16" Fiber Cable (24 fibers Max)	106.67 - 113.33	0.6000	0.6000
T11	24	LDF5-50A (7/8 FOAM)	106.67 - 113.33	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			113.33		
T11	25	WG Rail 1.5x1.5x1/8	106.67 - 113.33	0.6000	0.6000
T11	32	Safety Line 3/8	106.67 - 113.33	0.6000	0.6000
T11	33	Step Pegs (5/8" SR) 7-in. w/30" step	106.67 - 113.33	0.6000	0.6000
T11	42	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	106.67 - 113.33	0.6000	0.6000
T11	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	106.67 - 113.33	0.6000	0.6000
T11	45	Rung L2x1.5x1/8 (35"w, 48"s)	106.67 - 113.33	0.6000	0.6000
T11	47	Rung L1.5x1.5x1/8 (36"w, 34"s)	106.67 - 113.33	0.6000	0.6000
T11	49	1.6" Feedline	106.67 - 113.33	0.6000	0.6000
T12	1	LDF7-50A (1-5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T12	2	HB158-1-08U8-S8J18( 1-5/8)	100.00 - 106.67	0.6000	0.6000
T12	3	WG Rail 1.5x1.5x1/4	100.00 - 106.67	0.6000	0.6000
T12	6	1 5/8" Hybrid	100.00 - 106.67	0.6000	0.6000
T12	9	WG Rail 1.5x1.5x3/16	100.00 - 106.67	0.6000	0.6000
T12	11	LDF7-50A (1-5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T12	14	1 1/4 Hybriflex Cable	100.00 - 106.67	0.6000	0.6000
T12	15	WG Rail 1.5x1.5x3/16	100.00 - 106.67	0.6000	0.6000
T12	21	LDF7-50A (1-5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T12	22	7/16" Fiber Cable (24 fibers Max)	100.00 - 106.67	0.6000	0.6000
T12	24	LDF5-50A (7/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T12	25	WG Rail 1.5x1.5x1/8	100.00 - 106.67	0.6000	0.6000
T12	32	Safety Line 3/8	100.00 - 106.67	0.6000	0.6000
T12	33	Step Pegs (5/8" SR) 7-in. w/30" step	100.00 - 106.67	0.6000	0.6000
T12	42	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	100.00 - 106.67	0.6000	0.6000
T12	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	100.00 - 106.67	0.6000	0.6000
T12	45	Rung L2x1.5x1/8 (35"w, 48"s)	100.00 - 106.67	0.6000	0.6000
T12	47	Rung L1.5x1.5x1/8 (36"w, 34"s)	100.00 - 106.67	0.6000	0.6000
T12	49	1.6" Feedline	100.00 - 106.67	0.6000	0.6000
T13	1	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T13	2	HB158-1-08U8-S8J18( 1-5/8)	80.00 - 100.00	0.6000	0.6000
T13	3	WG Rail 1.5x1.5x1/4	80.00 - 100.00	0.6000	0.6000
T13	6	1 5/8" Hybrid	80.00 - 100.00	0.6000	0.6000
T13	9	WG Rail 1.5x1.5x3/16	80.00 - 100.00	0.6000	0.6000
T13	11	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T13	14	1 1/4 Hybriflex Cable	80.00 - 100.00	0.6000	0.6000

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	19 of 40
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<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	20 of 40
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	<b>Client</b>	Phoenix Tower International	<b>Designed by</b>	sjlee

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T13	15	WG Rail 1.5x1.5x3/16	80.00 - 100.00	0.6000	0.6000
T13	21	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T13	22	7/16" Fiber Cable (24 fibers Max)	80.00 - 100.00	0.6000	0.6000
T13	24	LDF5-50A (7/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T13	25	WG Rail 1.5x1.5x1/8	80.00 - 100.00	0.6000	0.6000
T13	32	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T13	33	Step Pegs (5/8" SR) 7-in. w/30" step	80.00 - 100.00	0.6000	0.6000
T13	42	Rung L1.5x1.5x1/8 (36.25" w. 34"s)	80.00 - 100.00	0.6000	0.6000
T13	44	Rung L1.5x1.5x1/8 (36" w. 34"s)	80.00 - 100.00	0.6000	0.6000
T13	45	Rung L2x1.5x1/8 (35" w. 48"s)	80.00 - 100.00	0.6000	0.6000
T13	47	Rung L1.5x1.5x1/8 (36" w. 34"s)	80.00 - 100.00	0.6000	0.6000
T13	49	1.6" Feedline	80.00 - 100.00	0.6000	0.6000
T14	1	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T14	2	HB158-1-08U8-S8J18( 1-5/8)	60.00 - 80.00	0.6000	0.6000
T14	3	WG Rail 1.5x1.5x1/4	60.00 - 80.00	0.6000	0.6000
T14	6	1 5/8" Hybrid	60.00 - 80.00	0.6000	0.6000
T14	9	WG Rail 1.5x1.5x3/16	60.00 - 80.00	0.6000	0.6000
T14	11	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T14	13	5/8" dia. coax	60.00 - 75.50	0.6000	0.6000
T14	14	1 1/4 Hybriflex Cable	60.00 - 80.00	0.6000	0.6000
T14	15	WG Rail 1.5x1.5x3/16	60.00 - 80.00	0.6000	0.6000
T14	21	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T14	22	7/16" Fiber Cable (24 fibers Max)	60.00 - 80.00	0.6000	0.6000
T14	24	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T14	25	WG Rail 1.5x1.5x1/8	60.00 - 80.00	0.6000	0.6000
T14	32	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T14	33	Step Pegs (5/8" SR) 7-in. w/30" step	60.00 - 80.00	0.6000	0.6000
T14	42	Rung L1.5x1.5x1/8 (36.25" w. 34"s)	60.00 - 80.00	0.6000	0.6000
T14	44	Rung L1.5x1.5x1/8 (36" w. 34"s)	60.00 - 80.00	0.6000	0.6000
T14	45	Rung L2x1.5x1/8 (35" w. 48"s)	60.00 - 80.00	0.6000	0.6000
T14	47	Rung L1.5x1.5x1/8 (36" w. 34"s)	60.00 - 80.00	0.6000	0.6000
T14	49	1.6" Feedline	60.00 - 80.00	0.6000	0.6000
T15	1	LDF7-50A (1-5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T15	2	HB158-1-08U8-S8J18( 1-5/8)	50.00 - 60.00	0.6000	0.6000
T15	3	WG Rail 1.5x1.5x1/4	50.00 - 60.00	0.6000	0.6000
T15	6	1 5/8" Hybrid	50.00 - 60.00	0.6000	0.6000
T15	9	WG Rail 1.5x1.5x3/16	50.00 - 60.00	0.6000	0.6000
T15	11	LDF7-50A (1-5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T15	13	5/8" dia. coax	50.00 - 60.00	0.6000	0.6000
T15	14	1 1/4 Hybriflex Cable	50.00 - 60.00	0.6000	0.6000
T15	15	WG Rail 1.5x1.5x3/16	50.00 - 60.00	0.6000	0.6000
T15	21	LDF7-50A (1-5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T15	22	7/16" Fiber Cable (24 fibers Max)	50.00 - 60.00	0.6000	0.6000
T15	24	LDF5-50A (7/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T15	25	WG Rail 1.5x1.5x1/8	50.00 - 60.00	0.6000	0.6000
T15	32	Safety Line 3/8	50.00 - 60.00	0.6000	0.6000
T15	33	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 60.00	0.6000	0.6000
T15	34	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T15	35	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 60.00	0.6000	0.6000
T15	42	Rung L1.5x1.5x1/8 (36.25" w. 34"s)	50.00 - 60.00	0.6000	0.6000
T15	44	Rung L1.5x1.5x1/8 (36" w. 34"s)	50.00 - 60.00	0.6000	0.6000
T15	45	Rung L2x1.5x1/8 (35" w. 48"s)	50.00 - 60.00	0.6000	0.6000
T15	47	Rung L1.5x1.5x1/8 (36" w. 34"s)	50.00 - 60.00	0.6000	0.6000
T15	49	1.6" Feedline	50.00 - 60.00	0.6000	0.6000
T16	1	LDF7-50A (1-5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T16	2	HB158-1-08U8-S8J18( 1-5/8)	40.00 - 50.00	0.6000	0.6000
T16	3	WG Rail 1.5x1.5x1/4	40.00 - 50.00	0.6000	0.6000
T16	6	1 5/8" Hybrid	40.00 - 50.00	0.6000	0.6000
T16	9	WG Rail 1.5x1.5x3/16	40.00 - 50.00	0.6000	0.6000
T16	11	LDF7-50A (1-5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T16	13	5/8" dia. coax	40.00 - 50.00	0.6000	0.6000
T16	14	1 1/4 Hybriflex Cable	40.00 - 50.00	0.6000	0.6000
T16	15	WG Rail 1.5x1.5x3/16	40.00 - 50.00	0.6000	0.6000
T16	21	LDF7-50A (1-5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T16	22	7/16" Fiber Cable (24 fibers Max)	40.00 - 50.00	0.6000	0.6000
T16	24	LDF5-50A (7/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T16	25	WG Rail 1.5x1.5x1/8	40.00 - 50.00	0.6000	0.6000
T16	32	Safety Line 3/8	40.00 - 50.00	0.6000	0.6000
T16	33	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T16	34	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T16	35	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T16	42	Rung L1.5x1.5x1/8 (36.25" w. 34"s)	40.00 - 50.00	0.6000	0.6000
T16	44	Rung L1.5x1.5x1/8 (36" w. 34"s)	40.00 - 50.00	0.6000	0.6000
T16	45	Rung L2x1.5x1/8 (35" w. 48"s)	40.00 - 50.00	0.6000	0.6000
T16	47	Rung L1.5x1.5x1/8 (36" w. 34"s)	40.00 - 50.00	0.6000	0.6000
T16	49	1.6" Feedline	40.00 - 50.00	0.6000	0.6000
T17	1	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T17	2	HB158-1-08U8-S8J18( 1-5/8)	20.00 - 40.00	0.6000	0.6000
T17	3	WG Rail 1.5x1.5x1/4	20.00 - 40.00	0.6000	0.6000
T17	6	1 5/8" Hybrid	20.00 - 40.00	0.6000	0.6000
T17	9	WG Rail 1.5x1.5x3/16	20.00 - 40.00	0.6000	0.6000
T17	11	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T17	13	5/8" dia. coax	20.00 - 40.00	0.6000	0.6000
T17	14	1 1/4 Hybriflex Cable	20.00 - 40.00	0.6000	0.6000
T17	15	WG Rail 1.5x1.5x3/16	20.00 - 40.00	0.6000	0.6000
T17	21	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T17	22	7/16" Fiber Cable (24 fibers Max)	20.00 - 40.00	0.6000	0.6000
T17	24	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T17	25	WG Rail 1.5x1.5x1/8	20.00 - 40.00	0.6000	0.6000
T17	32	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T17	33	Step Pegs (5/8" SR) 7-in. w/30" step	20.00 - 40.00	0.6000	0.6000
T17	34	Step Pegs (5/8" SR) 7-in. w/30" step	20.00 - 40.00	0.6000	0.6000
T17	35	Step Pegs (5/8" SR) 7-in. w/30" step	20.00 - 40.00	0.6000	0.6000

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	21 of 40
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	<b>Client</b>	Phoenix Tower International	<b>Designed by</b>	sjlee

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	22 of 40
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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T17	42	w/30" step Rung L1.5x1.5x1/8 (36.25" w, 34"s)	20.00 - 40.00	0.6000	0.6000
T17	44	Rung L1.5x1.5x1/8 (36" w, 34"s)	20.00 - 40.00	0.6000	0.6000
T17	45	Rung L2x1.5x1/8 (35" w, 48"s)	20.00 - 40.00	0.6000	0.6000
T17	47	Rung L1.5x1.5x1/8 (36" w, 34"s)	20.00 - 40.00	0.6000	0.6000
T17	49	1.6" Feedline	20.00 - 40.00	0.6000	0.6000
T18	1	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T18	2	HB158-1-08U8-S8J18 (1-5/8)	8.00 - 20.00	0.6000	0.6000
T18	3	WG Rail 1.5x1.5x1/4	8.00 - 20.00	0.6000	0.6000
T18	6	1 5/8" Hybrid	8.00 - 20.00	0.6000	0.6000
T18	9	WG Rail 1.5x1.5x3/16	0.00 - 20.00	0.6000	0.6000
T18	11	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T18	13	5/8" dia. coax	10.00 - 20.00	0.6000	0.6000
T18	14	1 1/4 Hybriflex Cable	10.00 - 20.00	0.6000	0.6000
T18	15	WG Rail 1.5x1.5x3/16	0.00 - 20.00	0.6000	0.6000
T18	21	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T18	22	7/16" Fiber Cable (24 fibers Max)	8.00 - 20.00	0.6000	0.6000
T18	24	LDF5-50A (7/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T18	25	WG Rail 1.5x1.5x1/8	2.00 - 20.00	0.6000	0.6000
T18	32	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T18	33	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 20.00	0.6000	0.6000
T18	34	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 20.00	0.6000	0.6000
T18	35	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 20.00	0.6000	0.6000
T18	42	Rung L1.5x1.5x1/8 (36.25" w, 34"s)	8.00 - 20.00	0.6000	0.6000
T18	44	Rung L1.5x1.5x1/8 (36" w, 34"s)	0.00 - 20.00	0.6000	0.6000
T18	45	Rung L2x1.5x1/8 (35" w, 48"s)	0.00 - 20.00	0.6000	0.6000
T18	47	Rung L1.5x1.5x1/8 (36" w, 34"s)	2.00 - 20.00	0.6000	0.6000
T18	49	1.6" Feedline	10.00 - 20.00	0.6000	0.6000

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horiz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>aA</sub> Front ft <sup>2</sup>	C <sub>sA</sub> Side ft <sup>2</sup>	Weight lb	
1.75" Dia x 5-ft Pipe	C	From Leg	2.25	0.0000	75.50	No Ice	0.88	0.88	12.00
			0.00			1/2" Ice	1.32	1.32	19.06
			0.00			1" Ice	1.63	1.63	29.51
			0.00			2" Ice	2.28	2.28	61.18
GPS0015	C	From Leg	4.50	0.0000	75.50	No Ice	0.08	0.08	0.50

Description	Face or Leg	Offset Type	Offsets: Horiz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>aA</sub> Front ft <sup>2</sup>	C <sub>sA</sub> Side ft <sup>2</sup>	Weight lb	
****			0.00		1/2" Ice	0.13	0.13	2.29	
			0.75			1" Ice	0.19	0.19	4.89
			0.75			2" Ice	0.33	0.33	13.15
****									
Sector Mount [SM 502-3]	C	None		0.0000	153.00	No Ice	33.02	33.02	1673.10
APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	5.00	0.0000	153.00	1/2" Ice	47.36	47.36	2223.90
			0.00			1" Ice	61.70	61.70	2774.70
			0.00			2" Ice	90.38	90.38	3876.30
			0.00			No Ice	8.02	6.71	78.90
APXVSP18-C-A20 w/ Mount Pipe	B	From Leg	5.00	0.0000	153.00	1/2" Ice	8.48	7.66	144.31
			0.00			1" Ice	8.94	8.49	217.47
			0.00			2" Ice	9.89	10.20	390.34
			0.00			No Ice	8.02	6.71	78.90
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	5.00	0.0000	153.00	1/2" Ice	8.48	7.66	144.31
			0.00			1" Ice	8.94	8.49	217.47
			0.00			2" Ice	9.89	10.20	390.34
			0.00			No Ice	8.02	6.71	78.90
DT465B-2XR w/ Mount Pipe	A	From Leg	5.00	0.0000	153.00	No Ice	9.34	7.63	83.52
			0.00			1/2" Ice	9.91	8.82	160.00
			0.00			1" Ice	10.44	9.72	244.63
			0.00			2" Ice	11.53	11.54	442.00
DT465B-2XR w/ Mount Pipe	B	From Leg	5.00	0.0000	153.00	No Ice	9.34	7.63	83.52
			0.00			1/2" Ice	9.91	8.82	160.00
			0.00			1" Ice	10.44	9.72	244.63
			0.00			2" Ice	11.53	11.54	442.00
DT465B-2XR w/ Mount Pipe	C	From Leg	5.00	0.0000	153.00	No Ice	9.34	7.63	83.52
			0.00			1/2" Ice	9.91	8.82	160.00
			0.00			1" Ice	10.44	9.72	244.63
			0.00			2" Ice	11.53	11.54	442.00
RRH2x50-08	A	From Leg	5.00	0.0000	153.00	No Ice	1.70	1.28	52.90
			0.00			1/2" Ice	1.86	1.43	69.91
			0.00			1" Ice	2.03	1.58	89.61
			0.00			2" Ice	2.40	1.91	137.85
RRH2x50-08	B	From Leg	5.00	0.0000	153.00	No Ice	1.70	1.28	52.90
			0.00			1/2" Ice	1.86	1.43	69.91
			0.00			1" Ice	2.03	1.58	89.61
			0.00			2" Ice	2.40	1.91	137.85
RRH2x50-08	C	From Leg	5.00	0.0000	153.00	No Ice	1.70	1.28	52.90
			0.00			1/2" Ice	1.86	1.43	69.91
			0.00			1" Ice	2.03	1.58	89.61
			0.00			2" Ice	2.40	1.91	137.85
800MHZ 2X50W RRH	A	From Leg	5.00	0.0000	153.00	No Ice	2.13	1.77	53.00
			0.00			1/2" Ice	2.32	1.95	74.19
			0.00			1" Ice	2.51	2.13	98.39
			0.00			2" Ice	2.92	2.51	156.61
800MHZ 2X50W RRH	B	From Leg	5.00	0.0000	153.00	No Ice	2.13	1.77	53.00
			0.00			1/2" Ice	2.32	1.95	74.19
			0.00			1" Ice	2.51	2.13	98.39
			0.00			2" Ice	2.92	2.51	156.61
800MHZ 2X50W RRH	C	From Leg	5.00	0.0000	153.00	No Ice	2.13	1.77	53.00
			0.00			1/2" Ice	2.32	1.95	74.19
			0.00			1" Ice	2.51	2.13	98.39
			0.00			2" Ice	2.92	2.51	156.61

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	23 of 40
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	<b>Client</b>	Phoenix Tower International	<b>Designed by</b>	sjlee

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	24 of 40
	<b>Project</b>	TEP No. 25628.511278	<b>Date</b>	13:04:28 03/12/21
	<b>Client</b>	Phoenix Tower International	<b>Designed by</b>	sjlee

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>FA</sub> Front ft <sup>2</sup>	C <sub>SA</sub> Side ft <sup>2</sup>	Weight lb	
PCS 1900MHz 4x45W-65MHz	A	From Leg	5.00	0.0000	153.00	No Ice	2.32	2.24	60.00
			0.00			1/2" Ice	2.53	2.44	83.13
			0.00			1" Ice	2.74	2.65	109.50
						2" Ice	3.19	3.09	172.72
						No Ice	2.32	2.24	60.00
PCS 1900MHz 4x45W-65MHz	B	From Leg	5.00	0.0000	153.00	No Ice	2.32	2.44	60.00
			0.00			1/2" Ice	2.53	2.44	83.13
			0.00			1" Ice	2.74	2.65	109.50
						2" Ice	3.19	3.09	172.72
						No Ice	2.32	2.24	60.00
PCS 1900MHz 4x45W-65MHz	C	From Leg	5.00	0.0000	153.00	No Ice	2.32	2.44	60.00
			0.00			1/2" Ice	2.53	2.44	83.13
			0.00			1" Ice	2.74	2.65	109.50
						2" Ice	3.19	3.09	172.72
						No Ice	2.32	2.24	60.00
TD-RRH8x20-25	A	From Leg	5.00	0.0000	153.00	No Ice	3.70	1.29	66.00
			0.00			1/2" Ice	3.95	1.46	89.94
			0.00			1" Ice	4.20	1.64	117.22
						2" Ice	4.72	2.02	182.59
						No Ice	3.70	1.29	66.00
TD-RRH8x20-25	B	From Leg	5.00	0.0000	153.00	No Ice	3.70	1.29	66.00
			0.00			1/2" Ice	3.95	1.46	89.94
			0.00			1" Ice	4.20	1.64	117.22
						2" Ice	4.72	2.02	182.59
						No Ice	3.70	1.29	66.00
TD-RRH8x20-25	C	From Leg	5.00	0.0000	153.00	No Ice	3.70	1.29	66.00
			0.00			1/2" Ice	3.95	1.46	89.94
			0.00			1" Ice	4.20	1.64	117.22
						2" Ice	4.72	2.02	182.59
						No Ice	3.70	1.29	66.00
****									
(3) Sector Mounts 169-ft	C	None		0.0000	169.00	No Ice	21.56	21.56	1395.40
						1/2" Ice	29.77	29.77	2140.10
						1" Ice	37.98	37.98	2884.80
						2" Ice	54.40	54.40	4374.20
(2) BXA-70063/6CF w/ Mount Pipe	A	From Leg	5.00	0.0000	169.00	No Ice	7.59	5.18	38.90
			0.00			1/2" Ice	8.04	6.11	95.39
			0.00			1" Ice	8.50	6.92	159.37
			0.00			2" Ice	9.44	8.59	313.07
(2) DB844G65ZAXY w/Mount Pipe	B	From Leg	5.00	0.0000	169.00	No Ice	5.05	5.28	41.55
			0.00			1/2" Ice	5.68	6.31	92.81
			0.00			1" Ice	6.19	7.06	150.42
			0.00			2" Ice	7.23	8.58	288.32
(2) DB844G65ZAXY w/Mount Pipe	C	From Leg	5.00	0.0000	169.00	No Ice	5.05	5.28	41.55
			0.00			1/2" Ice	5.68	6.31	92.81
			0.00			1" Ice	6.19	7.06	150.42
			0.00			2" Ice	7.23	8.58	288.32
DB-B1/T1 w/ Mount Pipe	C	From Leg	5.00	0.0000	169.00	No Ice	4.88	4.18	57.55
			0.00			1/2" Ice	5.61	5.12	107.53
			0.00			1" Ice	6.16	5.77	163.14
			0.00			2" Ice	7.27	7.12	294.91
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	5.00	0.0000	169.00	No Ice	8.77	6.96	67.23
			0.00			1/2" Ice	9.34	8.18	136.85
			0.00			1" Ice	9.89	9.14	214.64
			0.00			2" Ice	10.99	11.02	398.47
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg	5.00	0.0000	169.00	No Ice	8.77	6.96	67.23
			0.00			1/2" Ice	9.34	8.18	136.85
			0.00			1" Ice	9.89	9.14	214.64
			0.00			2" Ice	10.99	11.02	398.47
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	5.00	0.0000	169.00	No Ice	8.77	6.96	67.23
			0.00			1/2" Ice	9.34	8.18	136.85
			0.00			1" Ice	9.89	9.14	214.64
			0.00			2" Ice	10.99	11.02	398.47

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>FA</sub> Front ft <sup>2</sup>	C <sub>SA</sub> Side ft <sup>2</sup>	Weight lb	
RRH2x60-AWS	A	From Leg	5.00	0.0000	169.00	No Ice	3.50	1.82	60.00
			0.00			1/2" Ice	3.76	2.05	82.72
			0.00			1" Ice	4.03	2.29	109.06
						2" Ice	4.58	2.79	173.43
						No Ice	3.50	1.82	60.00
RRH2x60-AWS	B	From Leg	5.00	0.0000	169.00	No Ice	3.50	1.82	60.00
			0.00			1/2" Ice	3.76	2.05	82.72
			0.00			1" Ice	4.03	2.29	109.06
						2" Ice	4.58	2.79	173.43
						No Ice	3.50	1.82	60.00
RRH2x60-AWS	C	From Leg	5.00	0.0000	169.00	No Ice	3.50	1.82	60.00
			0.00			1/2" Ice	3.76	2.05	82.72
			0.00			1" Ice	4.03	2.29	109.06
						2" Ice	4.58	2.79	173.43
						No Ice	3.50	1.82	60.00
RRH2X60-PCS	A	From Leg	5.00	0.0000	169.00	No Ice	2.20	1.72	55.00
			0.00			1/2" Ice	2.39	1.90	75.35
			0.00			1" Ice	2.59	2.09	98.71
						2" Ice	3.01	2.48	155.23
						No Ice	2.20	1.72	55.00
RRH2X60-PCS	B	From Leg	5.00	0.0000	169.00	No Ice	2.20	1.72	55.00
			0.00			1/2" Ice	2.39	1.90	75.35
			0.00			1" Ice	2.59	2.09	98.71
						2" Ice	3.01	2.48	155.23
						No Ice	2.20	1.72	55.00
RRH2X60-PCS	C	From Leg	5.00	0.0000	169.00	No Ice	2.20	1.72	55.00
			0.00			1/2" Ice	2.39	1.90	75.35
			0.00			1" Ice	2.59	2.09	98.71
						2" Ice	3.01	2.48	155.23
						No Ice	2.20	1.72	55.00
BXA-70080/6CF w/ Mount Pipe	A	From Leg	5.00	0.0000	169.00	No Ice	7.59	5.54	42.90
			0.00			1/2" Ice	8.04	6.48	100.79
			0.00			1" Ice	8.50	7.30	166.25
						2" Ice	9.44	8.99	323.17
						No Ice	7.27	7.82	46.55
DB846F65ZAXY w/Mount Pipe	B	From Leg	5.00	0.0000	169.00	No Ice	7.27	7.82	46.55
			0.00			1/2" Ice	7.83	9.01	113.93
			0.00			1" Ice	8.35	9.91	189.25
						2" Ice	9.40	11.73	367.34
						No Ice	7.27	7.82	46.55
DB846F65ZAXY w/Mount Pipe	C	From Leg	5.00	0.0000	169.00	No Ice	7.27	7.82	46.55
			0.00			1/2" Ice	7.83	9.01	113.93
			0.00			1" Ice	8.35	9.91	189.25
						2" Ice	9.40	11.73	367.34
						No Ice	7.27	7.82	46.55
(2) FD9R6004	A	From Leg	5.00	0.0000	169.00	No Ice	0.37	0.08	3.10
			0.00			1/2" Ice	0.45	0.14	5.40
			0.00			1" Ice	0.54	0.20	8.79
			0.00			2" Ice	0.75	0.34	19.61
(2) FD9R6004	B	From Leg	5.00	0.0000	169.00	No Ice	0.37	0.08	3.10
			0.00			1/2" Ice	0.45	0.14	5.40
			0.00			1" Ice	0.54	0.20	8.79
			0.00			2" Ice	0.75	0.34	19.61
(2) FD9R6004	C	From Leg	5.00	0.0000	169.00	No Ice	0.37	0.08	3.10
			0.00			1/2" Ice	0.45	0.14	5.40
			0.00			1" Ice	0.54	0.20	8.79
			0.00			2" Ice	0.75	0.34	19.61
****									
(3) Sector Mounts 185-ft	C	None		0.0000	185.00	No Ice	21.56	21.56	1395.40
						1/2" Ice	29.77	29.77	2140.10
						1" Ice	37.98	37.98	2884.80
						2" Ice	54.40	54.40	4374.20
Miscellaneous [NA 510-1]	C	None		0.0000	185.00	No Ice	6.00	6.00	255.70
						1/2" Ice	8.50	8.50	339.50
						1" Ice	11.00	11.00	409.12
						2" Ice	16.00	16.00	562.54

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	25 of 40
	<b>Project</b>	TEP No. 25628.511278	<b>Date</b>	13:04:28 03/12/21
	<b>Client</b>	Phoenix Tower International	<b>Designed by</b>	sjlee

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	US-CT-1003 - Straits Turnpike	<b>Page</b>	26 of 40
	<b>Project</b>	TEP No. 25628.511278	<b>Date</b>	13:04:28 03/12/21
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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AS</sub> Side ft <sup>2</sup>	Weight lb
7770.00 w/ Mount Pipe	A	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 5.84 1/2" Ice 6.32 1" Ice 6.77	4.35 5.20 5.92	56.90 105.42 160.42
7770.00 w/ Mount Pipe	B	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 5.84 1/2" Ice 6.32 1" Ice 6.77	4.35 5.20 5.92	56.90 105.42 160.42
7770.00 w/ Mount Pipe	C	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 5.84 1/2" Ice 6.32 1" Ice 6.77	4.35 5.20 5.92	56.90 105.42 160.42
(2) LGP13519	A	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 0.30 1/2" Ice 0.38 1" Ice 0.47	0.29 0.41 0.54	8.04 12.97 19.68
(2) LGP13519	B	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 0.30 1/2" Ice 0.38 1" Ice 0.47	0.29 0.41 0.54	8.04 12.97 19.68
(2) LGP13519	C	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 0.30 1/2" Ice 0.38 1" Ice 0.47	0.29 0.41 0.54	8.04 12.97 19.68
RRUS-32 B30	A	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 3.31 1/2" Ice 3.56 1" Ice 3.81	2.42 2.64 2.86	77.00 104.93 136.47
RRUS-32 B30	B	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 3.31 1/2" Ice 3.56 1" Ice 3.81	2.42 2.64 2.86	77.00 104.93 136.47
RRUS-32 B30	C	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 3.31 1/2" Ice 3.56 1" Ice 3.81	2.42 2.64 2.86	77.00 104.93 136.47
DC6-48-60-18-8F	A	From Leg	0.50 0.00 3.00	0.0000	185.00	No Ice 1.21 1/2" Ice 1.89 1" Ice 2.11	1.21 1.89 2.11	32.80 54.76 79.58
DC6-48-60-18-8F	B	From Leg	0.50 0.00 3.00	0.0000	185.00	No Ice 1.21 1/2" Ice 1.89 1" Ice 2.11	1.21 1.89 2.11	32.80 54.76 79.58
DC6-48-60-0-8C-EV	C	From Leg	0.50 0.00 3.00	0.0000	185.00	No Ice 1.14 1/2" Ice 1.79 1" Ice 2.00	1.14 1.79 2.00	26.20 46.58 69.76
SBNHH-1D65A w/ Mount Pipe	A	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 6.29 1/2" Ice 6.74 1" Ice 7.20	5.59 6.31 7.03	68.24 126.00 191.24
SBNHH-1D65A w/ Mount Pipe	B	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 6.29 1/2" Ice 6.74 1" Ice 7.20	5.59 6.31 7.03	68.24 126.00 191.24
SBNHH-1D65A w/ Mount	C	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 6.29 1/2" Ice 6.74 1" Ice 7.20	5.59 6.31 7.03	68.24 126.00 191.24

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AS</sub> Side ft <sup>2</sup>	Weight lb
Pipe			0.00 0.00 3.00			No Ice 6.74 1" Ice 7.20 2" Ice 8.14	6.31 7.03 8.51	126.00 191.24 342.55
(2) DMP65R-BU6D w/ Mount Pipe	A	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 12.95 1/2" Ice 13.55 1" Ice 14.11	7.26 8.43 9.31	104.71 196.98 297.77
(2) DMP65R-BU6D w/ Mount Pipe	B	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 12.95 1/2" Ice 13.55 1" Ice 14.11	7.26 8.43 9.31	104.71 196.98 297.77
(2) DMP65R-BU8D w/ Mount Pipe	C	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 18.11 1/2" Ice 18.84 1" Ice 19.59	10.26 11.78 13.33	128.55 249.84 381.67
RRUS 4449 B5/B12	A	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 1.97 1/2" Ice 2.14 1" Ice 2.33	1.41 1.56 1.73	71.00 89.51 110.84
RRUS 4449 B5/B12	B	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 1.97 1/2" Ice 2.14 1" Ice 2.33	1.41 1.56 1.73	71.00 89.51 110.84
RRUS 4449 B5/B12	C	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 1.97 1/2" Ice 2.14 1" Ice 2.33	1.41 1.56 1.73	71.00 89.51 110.84
RRUS 4478 B14	A	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 1.84 1/2" Ice 2.01 1" Ice 2.19	1.06 1.20 1.34	59.90 75.78 94.29
RRUS 4478 B14	B	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 1.84 1/2" Ice 2.01 1" Ice 2.19	1.06 1.20 1.34	59.90 75.78 94.29
RRUS 4478 B14	C	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 1.84 1/2" Ice 2.01 1" Ice 2.19	1.06 1.20 1.34	59.90 75.78 94.29
RRUS 8843 B2/B66A	A	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 1.64 1/2" Ice 1.80 1" Ice 1.97	1.35 1.50 1.65	72.00 89.60 109.91
RRUS 8843 B2/B66A	B	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 1.64 1/2" Ice 1.80 1" Ice 1.97	1.35 1.50 1.65	72.00 89.60 109.91
RRUS 8843 B2/B66A	C	From Leg	5.00 0.00 3.00	0.0000	185.00	No Ice 1.64 1/2" Ice 1.80 1" Ice 1.97	1.35 1.50 1.65	72.00 89.60 109.91
****								
Sector Mount [SM 802-3]	C	None		0.0000	195.00	No Ice 24.41 1/2" Ice 31.39 1" Ice 38.37	24.41 31.39 38.37	930.00 1362.00 1794.00
HSS Top Mount	C	None		0.0000	195.00	No Ice 52.33 1" Ice 8.08	52.33 8.08	2658.00 328.90

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	<b>Project</b>	TEP No. 25628.511278	<b>Date</b>	13:04:28 03/12/21
	<b>Client</b>	Phoenix Tower International	<b>Designed by</b>	sjlee

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	<b>Project</b>	TEP No. 25628.511278	<b>Date</b>	13:04:28 03/12/21
	<b>Client</b>	Phoenix Tower International	<b>Designed by</b>	sjlee

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>N</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>S</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight lb
KRY 112 71	A	From Leg	1/2" Ice	0.0000	195.00	9.70	9.70	415.20
			1" Ice			11.32	11.32	501.50
			2" Ice			14.56	14.56	674.10
			No Ice			0.63	0.61	18.07
KRY 112 71	B	From Leg	1/2" Ice	0.0000	195.00	0.75	0.79	26.97
			1" Ice			0.89	0.99	38.22
			2" Ice			1.18	1.44	69.33
			No Ice			0.63	0.61	18.07
KRY 112 71	C	From Leg	1/2" Ice	0.0000	195.00	0.75	0.79	26.97
			1" Ice			0.89	0.99	38.22
			2" Ice			1.18	1.44	69.33
			No Ice			0.63	0.61	18.07
APXVAARR24_43-U-NA20 w/ MP	A	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			20.24	10.79	157.20
APXVAARR24_43-U-NA20 w/ MP	B	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			20.24	10.79	157.20
APXVAARR24_43-U-NA20 w/ MP	C	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			20.24	10.79	157.20
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			6.75	6.07	153.07
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			6.75	6.07	153.07
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			6.75	6.07	153.07
RADIO 4449 B12/B71	A	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			1.64	1.15	75.00
RADIO 4449 B12/B71	B	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			1.64	1.15	75.00
RADIO 4449 B12/B71	C	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			1.64	1.15	75.00
KRY 112 71	A	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			0.63	0.61	18.07
KRY 112 71	B	From Leg	1/2" Ice	0.0000	195.00	0.75	0.79	26.97
			1" Ice			0.89	0.99	38.22
			2" Ice			1.18	1.44	69.33
			No Ice			0.63	0.61	18.07
KRY 112 71	B	From Leg	1/2" Ice	0.0000	195.00	0.75	0.79	26.97
			1" Ice			0.89	0.99	38.22
			2" Ice			1.18	1.44	69.33
			No Ice			0.63	0.61	18.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>N</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>S</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight lb
KRY 112 71	C	From Leg	0.00	0.0000	195.00	0.89	0.99	38.22
			1" Ice			1.18	1.44	69.33
			2" Ice			1.48	1.84	86.44
			No Ice			0.63	0.61	18.07
AIR6449 B41 w/ Mount Pipe	A	From Leg	1/2" Ice	0.0000	195.00	0.75	0.79	26.97
			1" Ice			0.89	0.99	38.22
			2" Ice			1.18	1.44	69.33
			No Ice			0.63	0.61	18.07
AIR6449 B41 w/ Mount Pipe	B	From Leg	1/2" Ice	0.0000	195.00	0.75	0.79	26.97
			1" Ice			0.89	0.99	38.22
			2" Ice			1.18	1.44	69.33
			No Ice			0.63	0.61	18.07
AIR6449 B41 w/ Mount Pipe	C	From Leg	1/2" Ice	0.0000	195.00	0.75	0.79	26.97
			1" Ice			0.89	0.99	38.22
			2" Ice			1.18	1.44	69.33
			No Ice			0.63	0.61	18.07
RADIO 4415	A	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			20.24	10.79	157.20
RADIO 4415	B	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			20.24	10.79	157.20
RADIO 4415	C	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			20.24	10.79	157.20
E14 F05P85 / SDX1926Q-43	A	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			0.24	0.10	6.17
E14 F05P85 / SDX1926Q-43	B	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			0.24	0.10	6.17
E14 F05P85 / SDX1926Q-43	C	From Leg	1/2" Ice	0.0000	195.00	3.00	0.0000	195.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			0.24	0.10	6.17
****	C	None	0.0000	195.00	No Ice	6.63	6.63	138.18
1" Ice					7.31	7.31	201.85	
2" Ice					7.99	7.99	265.51	
No Ice					9.35	9.35	392.85	
*****	C	None	0.0000	138.00	No Ice	15.85	15.85	1335.00
1" Ice					23.23	23.23	1602.00	
2" Ice					30.61	30.61	1869.00	
No Ice					45.37	45.37	2403.00	
MX08FRO665-20 w/ Mount Pipe	A	From Leg	1/2" Ice	0.0000	138.00	3.00	0.0000	138.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			12.73	7.53	97.55
MX08FRO665-20 w/ Mount Pipe	B	From Leg	1/2" Ice	0.0000	138.00	3.00	0.0000	138.00
			1" Ice			0.00	0.00	0.00
			2" Ice			0.00	0.00	0.00
			No Ice			12.73	7.53	97.55



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	<b>Project</b>	TEP No. 25628.511278	<b>Date</b>	13:04:28 03/12/21
	<b>Client</b>	Phoenix Tower International	<b>Designed by</b>	sjlee

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
Pipe			0.00		1/2" Ice	13.33	8.72	189.83
			0.00		1" Ice	13.89	9.62	290.67
					2" Ice	15.05	11.45	521.65
MX08FRO665-20 w/ Mount Pipe	C	From Leg	3.00	0.0000	No Ice	12.73	7.53	97.55
			0.00		1/2" Ice	13.33	8.72	189.83
					1" Ice	13.89	9.62	290.67
					2" Ice	15.05	11.45	521.65
TA08025-B604	A	From Leg	3.00	0.0000	No Ice	1.96	0.98	63.90
			0.00		1/2" Ice	2.14	1.11	80.65
					1" Ice	2.32	1.25	100.10
					2" Ice	2.71	1.55	147.85
TA08025-B604	B	From Leg	3.00	0.0000	No Ice	1.96	0.98	63.90
			0.00		1/2" Ice	2.14	1.11	80.65
					1" Ice	2.32	1.25	100.10
					2" Ice	2.71	1.55	147.85
TA08025-B604	C	From Leg	3.00	0.0000	No Ice	1.96	0.98	63.90
			0.00		1/2" Ice	2.14	1.11	80.65
					1" Ice	2.32	1.25	100.10
					2" Ice	2.71	1.55	147.85
TA08025-B605	A	From Leg	3.00	0.0000	No Ice	1.96	1.13	75.00
			0.00		1/2" Ice	2.14	1.27	92.97
					1" Ice	2.32	1.41	113.72
					2" Ice	2.71	1.72	164.31
TA08025-B605	B	From Leg	3.00	0.0000	No Ice	1.96	1.13	75.00
			0.00		1/2" Ice	2.14	1.27	92.97
					1" Ice	2.32	1.41	113.72
					2" Ice	2.71	1.72	164.31
TA08025-B605	C	From Leg	3.00	0.0000	No Ice	1.96	1.13	75.00
			0.00		1/2" Ice	2.14	1.27	92.97
					1" Ice	2.32	1.41	113.72
					2" Ice	2.71	1.72	164.31
Junction Box	C	From Leg	1.00	0.0000	No Ice	3.81	1.37	48.00
			0.00		1/2" Ice	4.06	1.55	72.33
					1" Ice	4.32	1.74	100.07
					2" Ice	4.85	2.14	166.55
Dish Future Loading	C	None		0.0000	No Ice	34.54	34.54	1038.11
					1/2" Ice	39.74	39.74	1371.70
					1" Ice	44.94	44.94	1705.29
					2" Ice	55.34	55.34	2372.46
*								
*								
*								

Comb. No.	Description
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

### 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

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	195 - 180	7.388	42	0.4316	0.0475
T2	180 - 175	5.977	42	0.4028	0.0260
T3	175 - 170	5.558	42	0.3772	0.0252
T4	170 - 160	5.176	42	0.3490	0.0240
T5	160 - 150	4.470	42	0.3156	0.0230
T6	150 - 140	3.850	42	0.2695	0.0219
T7	140 - 133.333	3.311	42	0.2380	0.0205

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Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T8	133.333 - 126.667	2.978	42	0.2272	0.0194
T9	126.667 - 120	2.660	42	0.2160	0.0182
T10	120 - 113.333	2.355	42	0.2046	0.0166
T11	113.333 - 106.667	2.074	42	0.1866	0.0155
T12	106.667 - 100	1.819	42	0.1682	0.0144
T13	100 - 80	1.588	42	0.1499	0.0130
T14	80 - 60	0.997	47	0.1223	0.0098
T15	60 - 50	0.536	47	0.0851	0.0064
T16	50 - 40	0.365	47	0.0666	0.0050
T17	40 - 20	0.233	47	0.0481	0.0035
T18	20 - 0	0.066	47	0.0239	0.0017

### Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
195.00	Sector Mount [SM 802-3]	42	7.388	0.4316	0.0475	26404
185.00	(3) Sector Mounts 185-ft	42	6.430	0.4184	0.0304	13202
169.00	(3) Sector Mounts 169-ft	42	5.103	0.3446	0.0239	16684
153.00	Sector Mount [SM 502-3]	42	4.027	0.2836	0.0223	13495
138.00	Sabre 12' HD V-Boom Mounts (3) (C10857001C)	42	3.209	0.2344	0.0202	30434
75.50	1.75" Dia x 5-ft Pipe	47	0.881	0.1154	0.0091	37100

### Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	195 - 180	30.639	18	1.7966	0.1712
T2	180 - 175	24.789	18	1.6665	0.1075
T3	175 - 170	23.052	18	1.5613	0.1040
T4	170 - 160	21.471	18	1.4447	0.0994
T5	160 - 150	18.548	18	1.3059	0.0952
T6	150 - 140	15.984	18	1.1148	0.0903
T7	140 - 133.333	13.750	18	0.9849	0.0846
T8	133.333 - 126.667	12.373	18	0.9404	0.0802
T9	126.667 - 120	11.055	18	0.8943	0.0752
T10	120 - 113.333	9.790	18	0.8473	0.0686
T11	113.333 - 106.667	8.627	18	0.7728	0.0640
T12	106.667 - 100	7.567	18	0.6971	0.0594
T13	100 - 80	6.610	18	0.6213	0.0537
T14	80 - 60	4.149	18	0.5072	0.0405
T15	60 - 50	2.231	18	0.3532	0.0266
T16	50 - 40	1.516	18	0.2764	0.0205
T17	40 - 20	0.969	18	0.1998	0.0145
T18	20 - 0	0.274	18	0.0993	0.0070

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### Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
195.00	Sector Mount [SM 802-3]	18	30.639	1.7966	0.1712	6609
185.00	(3) Sector Mounts 185-ft	18	26.663	1.7340	0.1204	3304
169.00	(3) Sector Mounts 169-ft	18	21.166	1.4262	0.0986	4077
153.00	Sector Mount [SM 502-3]	18	16.714	1.1732	0.0920	3282
138.00	Sabre 12' HD V-Boom Mounts (3) (C10857001C)	18	13.330	0.9699	0.0834	7432
75.50	1.75" Dia x 5-ft Pipe	18	3.668	0.4785	0.0375	8997

### Bolt Design Data

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of Bolts	Maximum Load per Bolt	Allowable Load per Bolt	Ratio Load Allowable	Allowable Ratio	Criteria
	ft			in		lb	lb			
T1	195	Leg	A325N	0.7500	4	5057.45	30101.40	0.168	1.05	Bolt Tension
T2	180	Diagonal	A325N	0.5000	1	3804.68	4689.84	0.811	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	738.26	6830.86	0.108	1.05	Member Block Shear
T3	175	Diagonal	A325X	0.5000	1	3848.72	7245.70	0.531	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	941.07	6830.86	0.138	1.05	Member Block Shear
T4	170	Leg	A325N	0.7500	6	11671.50	30101.40	0.388	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	5178.62	8265.00	0.627	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	1371.74	6830.86	0.201	1.05	Member Block Shear
T5	160	Diagonal	A325X	0.5000	1	6153.84	8265.00	0.745	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	1778.06	6830.86	0.260	1.05	Member Block Shear
T6	150	Leg	A325N	1.0000	6	19124.20	54517.00	0.351	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	5786.15	8265.00	0.700	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	2221.79	6830.86	0.325	1.05	Member Block Shear
T7	140	Diagonal	A325X	0.6250	1	6653.53	12712.50	0.523	1.05	Member Block Shear
T8	133.333	Diagonal	A325X	0.6250	1	7205.27	12712.50	0.567	1.05	Member Block Shear
T9	126.667	Leg	A325N	1.0000	8	19892.30	54517.00	0.365	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	6974.79	7830.00	0.891	1.05	Member Bearing
T10	120	Diagonal	A325X	0.6250	1	7998.52	13050.00	0.613	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	3336.36	7830.00	0.426	1.05	Member Bearing
T11	113.333	Diagonal	A325X	0.6250	1	7919.43	13050.00	0.607	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	3611.75	7830.00	0.461	1.05	Member Bearing
T12	106.667	Leg	A325N	1.0000	8	24945.80	54517.00	0.458	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	8064.90	12712.50	0.634	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	3864.78	7830.00	0.494	1.05	Member Bearing
T13	100	Leg	A325N	1.2500	8	29764.00	87219.80	0.341	1.05	Bolt Tension
		Diagonal	A325N	0.6250	2	4052.69	11622.70	0.349	1.05	Member Block

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria
T14	80	Secondary Horizontal Leg	A325N	0.7500	1	4629.28	13898.40	0.333	1.05	Shear
		Horizontal Leg	A325N	1.2500	8	34283.80	87219.80	0.393	1.05	Member Block Shear
		Diagonal	A325N	0.6250	2	4192.15	11622.70	0.361	1.05	Bolt Tension
T15	60	Diagonal	A325N	0.6250	2	5714.80	13805.80	0.414	1.05	Member Block Shear
		Secondary Horizontal Leg	A325N	0.6250	1	5591.70	13805.80	0.405	1.05	Bolt Shear
T16	50	Secondary Horizontal Leg	A325N	1.2500	8	37921.90	87219.80	0.435	1.05	Bolt Tension
		Diagonal	A325N	0.6250	2	5520.46	13805.80	0.400	1.05	Bolt Shear
		Secondary Horizontal Leg	A325X	0.7500	1	5934.16	14355.00	0.413	1.05	Member Bearing
T17	40	Diagonal	A325N	1.2500	8	41987.90	87219.80	0.481	1.05	Bolt Tension
		Secondary Horizontal Leg	A325N	0.6250	2	5157.75	13805.80	0.374	1.05	Bolt Shear
T18	20	Diagonal	A36	1.5000	8	46656.40	61128.30	0.763	1.05	Bolt Tension
		Diagonal	A325N	0.6250	2	5764.27	13805.80	0.418	1.05	Bolt Shear

Section No.	Elevation ft	Size	L ft	L <sub>n</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>n</sub> lb	φP <sub>n</sub> lb	Ratio P <sub>n</sub> / φP <sub>n</sub>
T15	60 - 50	Pipe 8 STD	10.02	5.16	K=1.00 21.1	8.3993	-322365.00	401143.00	0.804 <sup>1</sup>
T16	50 - 40	Pipe 8 STD	10.02	5.16	K=1.00 21.1	8.3993	-342100.00	401194.00	0.853 <sup>1</sup>
T17	40 - 20	Pipe 8 EH	20.03	10.02	K=1.00 41.8	12.7627	-380593.00	549063.00	0.693 <sup>1</sup>
T18	20 - 0	Pipe 8 EH	20.03	9.97	K=1.00 41.6	12.7627	-415472.00	549704.00	0.756 <sup>1</sup>

<sup>1</sup> P<sub>n</sub> / φP<sub>n</sub> controls

### Compression Checks

### Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>n</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>n</sub> lb	φP <sub>n</sub> lb	Ratio P <sub>n</sub> / φP <sub>n</sub>
T1	195 - 180	PIPE 2.5 STD (SCH 40)	15.00	3.75	47.4 K=1.00	1.7072	-38173.80	70532.50	0.541 <sup>1</sup>
T2	180 - 175	PIPE 2.5 STD (SCH 40)	5.01	2.67	33.8 K=1.00	1.7072	-42570.40	77102.10	0.552 <sup>1</sup>
T3	175 - 170	PIPE 2.5 STD (SCH 40)	5.01	2.65	33.5 K=1.00	1.7072	-54194.30	77205.80	0.702 <sup>1</sup>
T4	170 - 160	2-1/2SCH40 w/ 3SCH80 Half Sleeve	10.02	2.62	34.2 K=1.00	3.2590	-79029.10	96687.00	0.817 <sup>1</sup>
T5	160 - 150	Pipe 3.5 Std (SCH40)	10.02	2.60	23.4 K=1.00	2.6795	-102369.00	126932.00	0.806 <sup>1</sup>
T6	150 - 140	3.5SCH40 w/ 4SCH40 Half Sleeve	10.02	2.59	23.8 K=1.00	4.2666	-128041.00	184209.00	0.695 <sup>1</sup>
T7	140 - 133.333	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4 K=1.00	8.5023	-144226.00	306442.00	0.471 <sup>1</sup>
T8	133.333 - 126.667	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4 K=1.00	8.5023	-161298.00	306442.00	0.526 <sup>1</sup>
T9	126.667 - 120	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4 K=1.00	8.5023	-178293.00	306442.00	0.582 <sup>1</sup>
T10	120 - 113.333	Pipe 6 STD	6.68	3.45	18.4 K=1.00	5.5813	-192251.00	268817.00	0.715 <sup>1</sup>
T11	113.333 - 106.667	Pipe 6 STD	6.68	3.44	18.4 K=1.00	5.5813	-208061.00	268848.00	0.774 <sup>1</sup>
T12	106.667 - 100	Pipe 6 STD	6.68	3.44	18.4 K=1.00	5.5813	-222679.00	268875.00	0.828 <sup>1</sup>
T13	100 - 80	6 STD w/ 7 XH Half Sleeve	20.03	3.42	19.5 K=1.00	11.1800	-266939.00	412800.00	0.647 <sup>1</sup>
T14	80 - 60	Pipe 8 STD	20.03	6.68	27.3	8.3993	-308167.00	391613.00	0.787 <sup>1</sup>

### Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>n</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>n</sub> lb	φP <sub>n</sub> lb	Ratio P <sub>n</sub> / φP <sub>n</sub>
T2	180 - 175	L1 1/2x1 1/2x3/16	6.25	3.03	124.0	0.5273	-4554.13	9812.52	0.464 <sup>1</sup>
T3	175 - 170	L2x2x3/16	6.56	3.18	K=1.00 102.5	0.7150	-3661.53	17231.70	0.212 <sup>1</sup>
T4	170 - 160	2L1 1/2x1 1/2x3/16x1/4	6.90	3.36	K=1.06 88.3 K=1.00	1.0547	-5653.35	28278.10	0.200 <sup>1</sup>
T5	160 - 150	2L 'a' > 19.4307 in - 84 2L2x2x3/16x1/4	8.01	3.83	76.6 K=1.00	1.4297	-6437.31	40630.70	0.158 <sup>1</sup>
T6	150 - 140	2L 'a' > 22.0154 in - 96 2L2x2x3/16x1/4	8.81	4.22	84.4 K=1.00	1.4297	-5966.87	38728.60	0.154 <sup>1</sup>
T7	140 - 133.333	2L 'a' > 24.2504 in - 114 L2 1/2x2 1/2x1/4	10.29	4.87	119.2 K=1.00	1.1900	-6827.67	23707.60	0.288 <sup>1</sup>
T8	133.333 - 126.667	L2 1/2x2 1/2x1/4	10.80	5.13	125.3 K=1.00	1.1900	-7371.02	21683.20	0.340 <sup>1</sup>
T9	126.667 - 120	L2 1/2x2 1/2x3/16	11.34	5.41	131.3 K=1.00	0.9023	-7065.54	14990.70	0.471 <sup>1</sup>
T10	120 - 113.333	L3x3x1/4	11.88	5.67	117.3 K=1.01	1.4400	-8774.50	29417.90	0.298 <sup>1</sup>
T11	113.333 - 106.667	L3x3x1/4	12.44	5.95	122.1 K=1.00	1.4400	-8551.47	27519.70	0.311 <sup>1</sup>
T12	106.667 - 100	L2 1/2x2 1/2x1/4	13.01	6.24	152.5 K=1.00	1.1900	-8881.35	14641.70	0.607 <sup>1</sup>
T13	100 - 80	L3 1/2x3 1/2x1/4	14.17	6.72	117.1 K=1.01	1.6900	-8920.81	34593.90	0.258 <sup>1</sup>
T14	80 - 60	L3 1/2x3 1/2x1/4	16.57	7.88	132.4 K=0.97	1.6900	-8413.59	27606.40	0.305 <sup>1</sup>
T15	60 - 50	L3x3x5/16	18.87	9.11	171.5 K=0.91	1.7800	-11429.60	17330.30	0.660 <sup>1</sup>
T16	50 - 40	L3x3x5/16	19.73	9.54	178.2 K=0.91	1.7800	-11040.90	16044.50	0.688 <sup>1</sup>
T17	40 - 20	L4x4x3/8	21.47	10.41	149.5 K=0.94	2.8600	-10315.50	36647.10	0.281 <sup>1</sup>
T18	20 - 0	L5x5x5/16	23.24	11.30	132.5 K=0.97	3.0300	-11528.50	49368.70	0.234 <sup>1</sup>

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<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L <sub>w</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio P <sub>u</sub> / φP <sub>n</sub>
	ft		ft	ft		in <sup>2</sup>	lb	lb	φP <sub>n</sub>
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	128.2	0.5273	-5475.74	9181.68	0.596 <sup>1</sup>
					K=0.96				

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Secondary Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L <sub>w</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio P <sub>u</sub> / φP <sub>n</sub>
	ft		ft	ft		in <sup>2</sup>	lb	lb	φP <sub>n</sub>
T2	180 - 175	L2x2x3/16	3.73	1.63	84.8	0.7150	-738.26	19923.20	0.037 <sup>1</sup>
					K=1.71				
T3	175 - 170	L2x2x3/16	4.24	1.88	88.6	0.7150	-941.07	19386.80	0.049 <sup>1</sup>
					K=1.55				
T4	170 - 160	L2x2x3/16	5.24	2.38	96.2	0.7150	-1371.74	18244.10	0.075 <sup>1</sup>
					K=1.33				
T5	160 - 150	L2x2x3/16	6.24	2.83	103.2	0.7150	-1778.06	17128.20	0.104 <sup>1</sup>
					K=1.20				
T6	150 - 140	L2x2x3/16	7.24	3.31	110.5	0.7150	-2221.79	15864.80	0.140 <sup>1</sup>
					K=1.09				
T10	120 - 113.333	L3x3x3/16	9.82	4.52	105.5	1.0900	-3336.36	25103.30	0.133 <sup>1</sup>
					K=1.16				
T11	113.333 - 106.667	L3x3x3/16	10.49	4.85	108.8	1.0900	-3611.75	24274.30	0.149 <sup>1</sup>
					K=1.11				
T12	106.667 - 100	L3x3x3/16	11.16	5.18	112.2	1.0900	-3864.78	23419.30	0.165 <sup>1</sup>
					K=1.08				
T13	100 - 80	L3x3x1/4	13.16	6.12	125.4	1.4400	-4629.28	26189.00	0.177 <sup>1</sup>
					K=1.00				
T15	60 - 50	L4x4x3/8	15.98	7.51	117.2	2.8600	-5591.70	58485.50	0.096 <sup>1</sup>
					K=1.02				
T16	50 - 40	L4x4x1/4	16.99	7.99	120.6	1.9400	-5934.16	37678.30	0.157 <sup>1</sup>
					K=1.00				

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L <sub>w</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio P <sub>u</sub> / φP <sub>n</sub>
	ft		ft	ft		in <sup>2</sup>	lb	lb	φP <sub>n</sub>
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	128.2	0.5273	-1677.34	9181.68	0.183 <sup>1</sup>
					K=0.96				

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<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Bottom Girt Design Data (Compression)

Section No.	Elevation	Size	L	L <sub>w</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio P <sub>u</sub> / φP <sub>n</sub>
	ft		ft	ft		in <sup>2</sup>	lb	lb	φP <sub>n</sub>
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	128.2	0.5273	-3317.43	9181.68	0.361 <sup>1</sup>
					K=0.96				

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Tension Checks

### Leg Design Data (Tension)

Section No.	Elevation	Size	L	L <sub>w</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio P <sub>u</sub> / φP <sub>n</sub>
	ft		ft	ft		in <sup>2</sup>	lb	lb	φP <sub>n</sub>
T1	195 - 180	PIPE 2.5 STD (SCH 40)	15.00	3.75	47.4	1.7072	20229.80	84508.30	0.239 <sup>1</sup>
T2	180 - 175	PIPE 2.5 STD (SCH 40)	5.01	2.34	29.5	1.7072	38058.10	84508.30	0.450 <sup>1</sup>
T3	175 - 170	PIPE 2.5 STD (SCH 40)	5.01	2.36	29.8	1.7072	47889.70	84508.30	0.567 <sup>1</sup>
T4	170 - 160	2-1/2SCH40 w/ 3SCH80 Half Sleeve	10.02	2.38	31.1	3.2590	70079.60	102659.00	0.683 <sup>1</sup>
T5	160 - 150	Pipe 3.5 Sid (SCH40)	10.02	2.40	21.6	2.6795	91476.80	132637.00	0.690 <sup>1</sup>
T6	150 - 140	3.5SCH40 w/ 4SCH40 Half Sleeve	10.02	2.42	22.2	4.2666	114834.00	191997.00	0.598 <sup>1</sup>
T7	140 - 133.333	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4	8.5023	128632.00	351995.00	0.365 <sup>1</sup>
T8	133.333 - 126.667	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4	8.5023	143534.00	351995.00	0.408 <sup>1</sup>
T9	126.667 - 120	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4	8.5023	159138.00	351995.00	0.452 <sup>1</sup>
T10	120 - 113.333	Pipe 6 STD	6.68	3.23	17.2	5.5813	172262.00	276277.00	0.624 <sup>1</sup>
T11	113.333 - 106.667	Pipe 6 STD	6.68	3.23	17.3	5.5813	186504.00	276277.00	0.675 <sup>1</sup>
T12	106.667 - 100	Pipe 6 STD	6.68	3.24	17.3	5.5813	199805.00	276277.00	0.723 <sup>1</sup>
T13	100 - 80	6 STD w/ 7 XH Half Sleeve	20.03	3.25	18.6	11.1800	238328.00	422604.00	0.564 <sup>1</sup>
T14	80 - 60	Pipe 8 STD	20.03	6.68	27.3	8.3993	274270.00	415763.00	0.660 <sup>1</sup>
T15	60 - 50	Pipe 8 STD	10.02	4.85	19.8	8.3993	286778.00	415763.00	0.690 <sup>1</sup>
T16	50 - 40	Pipe 8 STD	10.02	4.86	19.9	8.3993	303714.00	415763.00	0.730 <sup>1</sup>
T17	40 - 20	Pipe 8 EH	20.03	10.02	41.8	12.7627	335903.00	631755.00	0.532 <sup>1</sup>
T18	20 - 0	Pipe 8 EH	20.03	0.08	0.3	12.7627	373251.00	631755.00	0.591 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Diagonal Design Data (Tension)

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Section No.	Elevation	Size	L	L <sub>w</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio
									P <sub>u</sub>
			ft	ft	in <sup>2</sup>		lb	lb	φP <sub>n</sub>
T1	195 - 180	5/8	5.13	4.78	366.9	0.3068	9917.55	9940.20	0.998 <sup>1</sup>
T2	180 - 175	L1 1/2x1 1/2x3/16	6.25	3.03	82.4	0.3076	3804.68	13381.30	0.284 <sup>1</sup>
T3	175 - 170	L2x2x3/16	6.56	3.18	64.0	0.4484	3848.72	19503.60	0.197 <sup>1</sup>
T4	170 - 160	2L1 1/2x1 1/2x3/16x1/4	6.90	3.36	91.1	0.6152	5178.62	26762.70	0.194 <sup>1</sup>
		2L 'a' > 19.4307 in - 83							
T5	160 - 150	2L2x2x3/16x1/4	8.01	3.83	76.8	0.8965	6153.84	38997.10	0.158 <sup>1</sup>
		2L 'a' > 22.0154 in - 96							
T6	150 - 140	2L2x2x3/16x1/4	8.40	4.02	80.3	0.8965	5786.15	38997.10	0.148 <sup>1</sup>
		2L 'a' > 23.1042 in - 122							
T7	140 - 133.333	L2 1/2x2 1/2x1/4	10.29	4.87	78.0	0.7519	6653.53	32706.60	0.203 <sup>1</sup>
T8	133.333 - 126.667	L2 1/2x2 1/2x1/4	10.80	5.13	82.1	0.7519	7205.27	32706.60	0.220 <sup>1</sup>
T9	126.667 - 120	L2 1/2x2 1/2x3/16	11.34	5.41	85.3	0.5713	6974.79	24851.10	0.281 <sup>1</sup>
T10	120 - 113.333	L3x3x1/4	11.88	5.67	75.3	0.9394	7998.52	40862.80	0.196 <sup>1</sup>
T11	113.333 - 106.667	L3x3x1/4	12.44	5.95	78.9	0.9394	7919.43	40862.80	0.194 <sup>1</sup>
T12	106.667 - 100	L2 1/2x2 1/2x1/4	13.01	6.24	99.5	0.7519	8064.90	32706.60	0.247 <sup>1</sup>
T13	100 - 80	L3 1/2x3 1/2x1/4	14.17	6.72	76.1	1.1269	8105.38	49019.10	0.165 <sup>1</sup>
T14	80 - 60	L3 1/2x3 1/2x1/4	16.57	7.88	88.9	1.1269	8384.30	49019.10	0.171 <sup>1</sup>
T15	60 - 50	L3x3x5/16	18.87	9.11	121.6	1.1592	10276.40	50426.00	0.204 <sup>1</sup>
T16	50 - 40	L3x3x5/16	19.73	9.54	127.3	1.1592	9892.49	50426.00	0.196 <sup>1</sup>
T17	40 - 20	L4x4x3/8	20.59	9.98	99.3	1.9341	9427.92	84131.70	0.112 <sup>1</sup>
T18	20 - 0	L5x5x5/16	23.24	11.30	87.9	2.0967	10273.40	91207.30	0.113 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L <sub>w</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio
									P <sub>u</sub>
			ft	ft	in <sup>2</sup>		lb	lb	φP <sub>n</sub>
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	661.19	17085.90	0.039 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Secondary Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L <sub>w</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio
									P <sub>u</sub>
			ft	ft	in <sup>2</sup>		lb	lb	φP <sub>n</sub>
T2	180 - 175	L2x2x3/16	3.73	1.63	67.9	0.4308	738.26	18739.00	0.039 <sup>1</sup>
T3	175 - 170	L2x2x3/16	4.24	1.88	77.7	0.4308	941.07	18739.00	0.050 <sup>1</sup>
T4	170 - 160	L2x2x3/16	5.24	2.38	97.2	0.4308	1371.74	18739.00	0.073 <sup>1</sup>
T5	160 - 150	L2x2x3/16	6.24	2.83	114.9	0.4308	1778.06	18739.00	0.095 <sup>1</sup>
T6	150 - 140	L2x2x3/16	7.24	3.31	133.5	0.4308	2221.79	18739.00	0.119 <sup>1</sup>
T10	120 - 113.333	L3x3x3/16	9.82	4.52	118.5	0.7120	3336.36	30973.40	0.108 <sup>1</sup>
T11	113.333 - 106.667	L3x3x3/16	10.49	4.85	127.0	0.7120	3611.75	30973.40	0.117 <sup>1</sup>
T12	106.667 - 100	L3x3x3/16	11.16	5.18	135.5	0.7120	3864.78	30973.40	0.125 <sup>1</sup>
T13	100 - 80	L3x3x1/4	13.16	6.12	162.3	0.9159	4629.28	39843.30	0.116 <sup>1</sup>
T15	60 - 50	L4x4x3/8	15.98	7.51	148.9	1.9341	5591.70	84131.70	0.066 <sup>1</sup>

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Section No.	Elevation	Size	L	L <sub>w</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio
									P <sub>u</sub>
			ft	ft	in <sup>2</sup>		lb	lb	φP <sub>n</sub>
T16	50 - 40	L4x4x1/4	16.99	7.99	156.2	1.2909	5934.16	56155.80	0.106 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L <sub>w</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio
									P <sub>u</sub>
			ft	ft	in <sup>2</sup>		lb	lb	φP <sub>n</sub>
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	836.78	17085.90	0.049 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Section Capacity Table

Section No.	Elevation	Component Type	Size	Critical Element	P	φP <sub>allow</sub>	% Capacity	Pass
								lb
T1	195 - 180	Leg	PIPE 2.5 STD (SCH 40)	1	-38173.80	74059.12	51.5	Pass
T2	180 - 175	Leg	PIPE 2.5 STD (SCH 40)	43	-42570.40	80957.20	52.6	Pass
T3	175 - 170	Leg	PIPE 2.5 STD (SCH 40)	55	-54194.30	81066.08	66.9	Pass
T4	170 - 160	Leg	2-1/2SCH40 w/ 3SCH80 Half Sleeve	67	Note 1	Note 1	81.4	Pass
T5	160 - 150	Leg	Pipe 3.5 Std (SCH40)	88	-102369.00	133278.59	76.8	Pass
T6	150 - 140	Leg	3.5SCH40 w/ 4SCH40 Half Sleeve	109	Note 1	Note 1	74.8	Pass
T7	140 - 133.333	Leg	5 STD w/ 6 XH Half Sleeve	130	Note 1	Note 1	56.4	Pass
T8	133.333 - 126.667	Leg	5 STD w/ 6 XH Half Sleeve	139	Note 1	Note 1	56.4	Pass
T9	126.667 - 120	Leg	5 STD w/ 6 XH Half Sleeve	148	Note 1	Note 1	56.4	Pass
T10	120 - 113.333	Leg	Pipe 6 STD	157	-192251.00	282257.84	68.1	Pass
T11	113.333 - 106.667	Leg	Pipe 6 STD	169	-208061.00	282290.39	73.7	Pass
T12	106.667 - 100	Leg	Pipe 6 STD	181	-222679.00	282318.74	78.9	Pass
T13	100 - 80	Leg	6 STD w/ 7 XH Half Sleeve	193	Note 1	Note 1	62.1	Pass
T14	80 - 60	Leg	Pipe 8 STD	223	-308167.00	411193.63	74.9	Pass
T15	60 - 50	Leg	Pipe 8 STD	244	-322365.00	421200.13	76.5	Pass
T16	50 - 40	Leg	Pipe 8 STD	256	-342100.00	421253.68	81.2	Pass
T17	40 - 20	Leg	Pipe 8 EH	268	-380593.00	576516.12	66.0	Pass
T18	20 - 0	Leg	Pipe 8 EH	283	-415472.00	577189.17	72.7 (b)	Pass
T1	195 - 180	Diagonal	5/8	14	9917.55	10437.21	95.0	Pass
T2	180 - 175	Diagonal	L1 1/2x1 1/2x3/16	51	-4554.13	10303.15	44.2	Pass
							77.3 (b)	
T3	175 - 170	Diagonal	L2x2x3/16	63	-3661.53	18093.28	20.2	Pass
							50.6 (b)	
T4	170 - 160	Diagonal	2L1 1/2x1 1/2x3/16x1/4	84	-5653.35	29692.00	19.0	Pass
							59.7 (b)	
T5	160 - 150	Diagonal	2L2x2x3/16x1/4	96	-6437.31	42662.23	15.1	Pass
							70.9 (b)	
T6	150 - 140	Diagonal	2L2x2x3/16x1/4	114	-5966.87	40665.03	14.7	Pass
							66.7 (b)	

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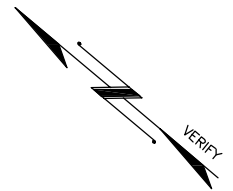
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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
T7	140 - 133.333	Diagonal	L2 1/2x2 1/2x1/4	133	-6827.67	24892.98	27.4	Pass
							49.8 (b)	
T8	133.333 - 126.667	Diagonal	L2 1/2x2 1/2x1/4	142	-7371.02	22767.36	32.4	Pass
							54.0 (b)	
T9	126.667 - 120	Diagonal	L2 1/2x2 1/2x3/16	151	-7065.54	15740.23	44.9	Pass
							84.8 (b)	
T10	120 - 113.333	Diagonal	L3x3x1/4	160	-8774.50	30888.79	28.4	Pass
							58.4 (b)	
T11	113.333 - 106.667	Diagonal	L3x3x1/4	172	-8551.47	28895.68	29.6	Pass
							57.8 (b)	
T12	106.667 - 100	Diagonal	L2 1/2x2 1/2x1/4	184	-8881.35	15373.78	57.8	Pass
							60.4 (b)	
T13	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	205	-8920.81	36323.59	24.6	Pass
							33.2 (b)	
T14	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	226	-8413.59	28986.72	29.0	Pass
							34.4 (b)	
T15	60 - 50	Diagonal	L3x3x5/16	247	-11429.60	18196.81	62.8	Pass
T16	50 - 40	Diagonal	L3x3x5/16	259	-11040.90	16846.72	65.5	Pass
T17	40 - 20	Diagonal	L4x4x3/8	271	-10315.50	38479.45	26.8	Pass
							35.6 (b)	
T18	20 - 0	Diagonal	L5x5x5/16	286	-11528.50	51837.13	22.2	Pass
							39.8 (b)	
T1	195 - 180	Horizontal	L1 1/2x1 1/2x3/16	18	-5475.74	9640.76	56.8	Pass
T2	180 - 175	Secondary Horizontal	L2x2x3/16	52	738.26	19675.95	3.8	Pass
							10.3 (b)	
T3	175 - 170	Secondary Horizontal	L2x2x3/16	64	941.07	19675.95	4.8	Pass
							13.1 (b)	
T4	170 - 160	Secondary Horizontal	L2x2x3/16	76	-1371.74	19156.30	7.2	Pass
							19.1 (b)	
T5	160 - 150	Secondary Horizontal	L2x2x3/16	97	-1778.06	17984.61	9.9	Pass
							24.8 (b)	
T6	150 - 140	Secondary Horizontal	L2x2x3/16	120	-2221.79	16658.04	13.3	Pass
							31.0 (b)	
T10	120 - 113.333	Secondary Horizontal	L3x3x3/16	166	-3336.36	26358.46	12.7	Pass
							40.6 (b)	
T11	113.333 - 106.667	Secondary Horizontal	L3x3x3/16	178	-3611.75	25488.01	14.2	Pass
							43.9 (b)	
T12	106.667 - 100	Secondary Horizontal	L3x3x3/16	190	-3864.78	24590.26	15.7	Pass
							47.0 (b)	
T13	100 - 80	Secondary Horizontal	L3x3x1/4	202	-4629.28	27498.45	16.8	Pass
							31.7 (b)	
T15	60 - 50	Secondary Horizontal	L4x4x3/8	253	-5591.70	61409.77	9.1	Pass
							38.6 (b)	
T16	50 - 40	Secondary Horizontal	L4x4x1/4	265	-5934.16	39562.21	15.0	Pass
							39.4 (b)	
T1	195 - 180	Top Girt	L1 1/2x1 1/2x3/16	6	-1677.34	9640.76	17.4	Pass
T1	195 - 180	Bottom Girt	L1 1/2x1 1/2x3/16	9	-3317.43	9640.76	34.4	Pass
							Summary	
							Leg (T16)	81.2
							Diagonal	95.0
							(T1)	
							Horizontal	56.8
							(T1)	
							Secondary	47.0
							Horizontal	
							(T12)	
							Top Girt	17.4
							(T1)	
							Bottom Girt	34.4
							(T1)	
							Bolt Checks	84.8

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
<b>RATING =</b>								<b>95.0</b>
<b>Pass</b>								

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**APPENDIX B**  
**COAX CONFIGUARTION**



EXISTING - (AT&T)  
 (12) 1 5/8" TO 188-FT  
 (2) 3/8" Ø FIBER TO 188-FT  
 (6) 7/8" Ø DC TO 188-FT

EXISTING - (T-MOBILE)  
 (6) 1 5/8" TO 195-FT  
 (4) HYBRID TO 195-FT  
 RESERVED - (T-MOBILE)  
 (12) 1 5/8" TO 195-FT  
 FUTURE - (T-MOBILE)  
 (2) 1 5/8" TO 195-FT

EXISTING - (VERIZON)  
 (12) 1 5/8" TO 169-FT  
 (1) FIBER - TO 169-FT

PROPOSED - (DISH)  
 (1) 1.6" Ø TO 138-FT

EXISTING - (UNKNOWN)  
 (1) 5/8" Ø TO 75.5-FT

EXISTING - (SPRINT)  
 (4) 1 1/4" Ø HYBRID TO 152-FT

## COAX CONFIGURATION - N.T.S.

PREPARED BY:

**TOWER ENGINEERING PROFESSIONALS**  
 326 TRYON RD  
 RALEIGH, NC 27603  
 (919) 661-6351  
 www.tepgroup.net

PREPARED FOR:



**PHOENIX  
TOWER**  
INTERNATIONAL

999 YAMATO ROAD, SUITE 100  
 BOCA RATON, FL 33431

PROJECT INFORMATION:

**STRAITS TURNPIKE  
SITE #: US-CT-1003**

1021 STRAITS TURNPIKE  
 MIDDLEBURY, CT 06762  
 (NEW HAVEN COUNTY)

REVISION: 0

TEP JOB #: 25628.511278

SHEET NUMBER:

**C-1**



**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

Project Name: Straits Turnpike  
 Project Number: TEP No. 25628.511278  
 Client Site Number: US-CT-1003  
 Elevation: 160 - 170ft

Engineer: SJL  
 Check: TWC  
 Date: 3/12/2021  
 CODE: TIA-H

**Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F**

$\phi_{cL}$  = 0.90 - LRFD strength reduction factor (leg, compression)  
 $\phi_{TL}$  = 0.90 - LRFD strength reduction factor (leg, tension)  
 $\phi_{cS}$  = 0.90 - LRFD strength reduction factor (sleeve, compression)  
 $\phi_{TS}$  = 0.90 - LRFD strength reduction factor (sleeve, tension)  
 $\phi_w$  = 0.75 - LRFD strength reduction factor (weld shear)  
 $\phi_v$  = 0.75 - LRFD strength reduction factor (shear)  
 Mast St.: 1.00 - from trnTower

**Input - Loads**

$P_{initial}$ : 4.23 kips - force from initial load (no wind)  
 $P_{wind}$ : 79.03 kips - force due to final loading including reinforcement  
 $T_u$ : 70.08 kips - maximum load on leg

**Quick Check**

Weld Size: OK  
 Weld Connection: 24.8%  
 Crushing Check: 49.6%  
 Leg Comp. Check: 50.2%  
 Sleeve Check: 72.5%  
 Built-up Check: 81.4%  
 Slenderness Check: OK  
 Leg Tension Check: 66.0%

**Input - Tower Leg** 2.5 STD

K: 1.00 - effective length factor for leg  
 $L_u$ : 2.64 ft - unbraced length of tower leg  
 $F_{y_{leg}}$ : 55.00 ksi - minimum specified yield strength of tower leg  
 $F_{u_{leg}}$ : 70.00 ksi - minimum specified ultimate strength of tower leg  
 $r$ : 0.95 in - minimum radius of gyration of tower leg  
 $A_{leg}$ : 1.70 in<sup>2</sup> - area of tower leg  
 $D_i$ : 2.47 in - inside diameter of tower leg  
 $t_{leg}$ : 0.203 in - thickness of tower leg  
 $f'_c$ : 0.00 ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

\*TIA-222-H Section 15.5 applied

**Input - Sleeve R/F** 3 X5 Gap Check: OK

$F_{y_{sleeve}}$ : 35.00 ksi - minimum specified yield strength of sleeve r/f  
 $F_{u_{sleeve}}$ : 60.00 ksi - minimum specified ultimate strength of sleeve r/f  
 $r_{x_{sleeve}}$ : 0.50 in - minimum radius of gyration of sleeve r/f about the x-axis  
 $r_{y_{sleeve}}$ : 1.14 in - minimum radius of gyration of sleeve r/f about the y-axis  
 $A_{sleeve}$ : 1.51 in<sup>2</sup> - area of sleeve r/f  
 $t_{sleeve}$ : 0.300 in - thickness of sleeve r/f

Termination: Connected to Flange

**Input - Sleeve Connection to Leg**

a: 12.00 in - spacing of connectors connecting the sleeve to the leg  
 D: 3.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)  
 Length //: 12.00 in - length of weld on each side of the leg at the termination  
 Length ⊥: 5.50 in - length of weld at the bottom/top of the leg sleeve at termination ( $\pi D/2$ )  
 No: 2.00 - number of longitudinal welds per end of the leg (typically near side # far side, so 2)  
 $F_{EXX}$ : 70.00 ksi - weld electrode classification  
 Width: 3.50 in - maximum width of the built-up leg  
 Gap: 0.00 in - length of leg considered for crushing

**Input - Built-up Leg Section** 2.5 STD w/3 X5 Half Sleeve

$r_{x_{bu}}$ : 0.92 in - minimum radius of gyration of the built-up section about the x-axis  
 $r_{y_{bu}}$ : 1.04 in - minimum radius of gyration of the built-up section about the y-axis

**Input - Grouted Leg**

$E_c$ : 0 ksi - Modulus of Elasticity of Grout  
 $E_{leg}$ : 29,000 ksi - Modulus of Elasticity of Leg  
 $E_{sleeve}$ : 29,000 ksi - Modulus of Elasticity of Sleeve

Project Name: Straits Turnpike  
 Project Number: TEP No. 25628.511278  
 Client Site Number: US-CT-1003  
 Elevation: 140 - 150ft

Engineer: SJL  
 Check: TWC  
 Date: 3/12/2021  
 CODE: TIA-H

**Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F**

$\phi_{cL}$  = 0.90 - LRFD strength reduction factor (leg, compression) Mast St.: 1.00 - from trnTower  
 $\phi_{TL}$  = 0.90 - LRFD strength reduction factor (leg, tension)  
 $\phi_{cS}$  = 0.90 - LRFD strength reduction factor (sleeve, compression)  
 $\phi_{TS}$  = 0.90 - LRFD strength reduction factor (sleeve, tension)  
 $\phi_w$  = 0.75 - LRFD strength reduction factor (weld shear)  
 $\phi_v$  = 0.75 - LRFD strength reduction factor (shear)

**Input - Loads**

$P_{initial}$ : 6.22 kips - force from initial load (no wind)  
 $P_{wind}$ : 128.04 kips - force due to final loading including reinforcement  
 $T_u$ : 114.83 kips - maximum load on leg

**Quick Check**

Weld Size: OK  
 Weld Connection: 29.9%  
 Crushing Check: 59.4%  
 Leg Comp. Check: 59.8%  
 Sleeve Check: 61.9%  
 Built-up Check: 74.8%  
 Slenderness Check: Decrease Connector Spacing  
 Leg Tension Check: 57.0%

**Input - Tower Leg** 3.5 STD

K: 1.00 - effective length factor for leg  
 $L_u$ : 2.60 ft - unbraced length of tower leg  
 $F_{y_{leg}}$ : 55.00 ksi - minimum specified yield strength of tower leg  
 $F_{u_{leg}}$ : 70.00 ksi - minimum specified ultimate strength of tower leg  
 $r$ : 1.34 in - minimum radius of gyration of tower leg  
 $A_{leg}$ : 2.68 in<sup>2</sup> - area of tower leg  
 $D_i$ : 3.55 in - inside diameter of tower leg  
 $t_{leg}$ : 0.226 in - thickness of tower leg  
 $f'_c$ : 0.00 ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

\*TIA-222-H Section 15.5 applied

**Input - Sleeve R/F** 4 STD Gap Check: OK

$F_{y_{sleeve}}$ : 50.00 ksi - minimum specified yield strength of sleeve r/f  
 $F_{u_{sleeve}}$ : 62.00 ksi - minimum specified ultimate strength of sleeve r/f  
 $r_{x_{sleeve}}$ : 0.66 in - minimum radius of gyration of sleeve r/f about the x-axis  
 $r_{y_{sleeve}}$ : 1.51 in - minimum radius of gyration of sleeve r/f about the y-axis  
 $A_{sleeve}$ : 1.59 in<sup>2</sup> - area of sleeve r/f  
 $t_{sleeve}$ : 0.237 in - thickness of sleeve r/f

Termination: Connected to Flange

**Input - Sleeve Connection to Leg**

a: 12.00 in - spacing of connectors connecting the sleeve to the leg  
 D: 3.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)  
 Length //: 12.00 in - length of weld on each side of the leg at the termination  
 Length ⊥: 7.07 in - length of weld at the bottom/top of the leg sleeve at termination ( $\pi D/2$ )  
 No: 2.00 - number of longitudinal welds per end of the leg (typically near side & far side, so 2)  
 $F_{EXX}$ : 70.00 ksi - weld electrode classification  
 Width: 4.50 in - maximum width of the built-up leg  
 Gap: 0.00 in - length of leg considered for crushing

**Input - Built-up Leg Section** 3.5 STD w/4 STD Half Sleeve

$r_{x_{bu}}$ : 1.31 in - minimum radius of gyration of the built-up section about the x-axis  
 $r_{y_{bu}}$ : 1.40 in - minimum radius of gyration of the built-up section about the y-axis

**Input - Grouted Leg**

$E_c$ : 0 ksi - Modulus of Elasticity of Grout  
 $E_{leg}$ : 29,000 ksi - Modulus of Elasticity of Leg  
 $E_{sleeve}$ : 29,000 ksi - Modulus of Elasticity of Sleeve

Project Name: Straits Turnpike  
 Project Number: TEP No. 25628.511278  
 Client Site Number: US-CT-1003  
 Elevation: 120 - 140ft

Engineer: SJL  
 Check: TWC  
 Date: 3/12/2021  
 CODE: TIA-H

**Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F**

$\phi_{cL}$  = 0.90 - LRFD strength reduction factor (leg, compression)  
 $\phi_{TL}$  = 0.90 - LRFD strength reduction factor (leg, tension)  
 $\phi_{cS}$  = 0.90 - LRFD strength reduction factor (sleeve, compression)  
 $\phi_{TS}$  = 0.90 - LRFD strength reduction factor (sleeve, tension)  
 $\phi_w$  = 0.75 - LRFD strength reduction factor (weld shear)  
 $\phi_v$  = 0.75 - LRFD strength reduction factor (shear)  
 Mast St.: 1.00 - from trnTower

**Input - Loads**

$P_{initial}$ : 7.64 kips - force from initial load (no wind)  
 $P_{wind}$ : 178.29 kips - force due to final loading including reinforcement  
 $T_u$ : 159.14 kips - maximum load on leg

**Quick Check**

Weld Size: OK  
 Weld Connection: 29.1%  
 Crushing Check: 42.0%  
 Leg Comp. Check: 42.3%  
 Sleeve Check: 47.0%  
 Built-up Check: 56.4%  
 Slenderness Check: OK  
 Leg Tension Check: 43.1%

**Input - Tower Leg** 5 STD

$K$ : 1.00 - effective length factor for leg  
 $L_u$ : 6.68 ft - unbraced length of tower leg  
 $F_{y_{leg}}$ : 55.00 ksi - minimum specified yield strength of tower leg  
 $F_{u_{leg}}$ : 70.00 ksi - minimum specified ultimate strength of tower leg  
 $r$ : 1.88 in - minimum radius of gyration of tower leg  
 $A_{leg}$ : 4.30 in<sup>2</sup> - area of tower leg  
 $D_i$ : 5.05 in - inside diameter of tower leg  
 $t_{leg}$ : 0.258 in - thickness of tower leg  
 $f'_c$ : 0.00 ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

\*TIA-222-H Section 15.5 applied

**Input - Sleeve R/F** 6 XH Gap Check: OK

$F_{y_{sleeve}}$ : 46.00 ksi - minimum specified yield strength of sleeve r/f  
 $F_{u_{sleeve}}$ : 62.00 ksi - minimum specified ultimate strength of sleeve r/f  
 $r_{x_{sleeve}}$ : 0.96 in - minimum radius of gyration of sleeve r/f about the x-axis  
 $r_{y_{sleeve}}$ : 2.19 in - minimum radius of gyration of sleeve r/f about the y-axis  
 $A_{sleeve}$ : 4.20 in<sup>2</sup> - area of sleeve r/f  
 $t_{sleeve}$ : 0.432 in - thickness of sleeve r/f

Termination: Connected to Flange

**Input - Sleeve Connection to Leg**

$a$ : 15.50 in - spacing of connectors connecting the sleeve to the leg  
 $D$ : 5.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)  
 Length //: 12.00 in - length of weld on each side of the leg at the termination  
 Length ⊥: 10.41 in - length of weld at the bottom/top of the leg sleeve at termination ( $\pi D/2$ )  
 $N_o$ : 2.00 - number of longitudinal welds per end of the leg (typically near side # far side, so 2)  
 $F_{EXX}$ : 70.00 ksi - weld electrode classification  
 Width: 6.63 in - maximum width of the built-up leg  
 Gap: 0.00 in - length of leg considered for crushing

**Input - Built-up Leg Section** 5 STD w/6 XH Half Sleeve

$r_{x_{bu}}$ : 1.77 in - minimum radius of gyration of the built-up section about the x-axis  
 $r_{y_{bu}}$ : 2.04 in - minimum radius of gyration of the built-up section about the y-axis

**Input - Grouted Leg**

$E_c$ : 0 ksi - Modulus of Elasticity of Grout  
 $E_{leg}$ : 29,000 ksi - Modulus of Elasticity of Leg  
 $E_{sleeve}$ : 29,000 ksi - Modulus of Elasticity of Sleeve

Project Name: Straits Turnpike  
 Project Number: TEP No. 25628.511278  
 Client Site Number: US-CT-1003  
 Elevation: 80 - 100ft

Engineer: SJL  
 Check: TWC  
 Date: 3/12/2021  
 CODE: TIA-H

**Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F**

$\phi_{cL}$  = 0.90 - LRFD strength reduction factor (leg, compression) Mast St.: 1.00 - from trnTower  
 $\phi_{TL}$  = 0.90 - LRFD strength reduction factor (leg, tension)  
 $\phi_{cS}$  = 0.90 - LRFD strength reduction factor (sleeve, compression)  
 $\phi_{TS}$  = 0.90 - LRFD strength reduction factor (sleeve, tension)  
 $\phi_w$  = 0.75 - LRFD strength reduction factor (weld shear)  
 $\phi_v$  = 0.75 - LRFD strength reduction factor (shear)

**Input - Loads**

$P_{initial}$ : 10.90 kips - force from initial load (no wind)  
 $P_{wind}$ : 266.94 kips - force due to final loading including reinforcement  
 $T_u$ : 238.33 kips - maximum load on leg

**Quick Check**

Weld Size: OK  
 Weld Connection: 41.8%  
 Crushing Check: 47.8%  
 Leg Comp. Check: 47.9%  
 Sleeve Check: 58.1%  
 Built-up Check: 62.1%  
 Slenderness Check: OK  
 Leg Tension Check: 53.7%

**Input - Tower Leg** 6 STD

K: 1.00 - effective length factor for leg  
 $L_u$ : 3.43 ft - unbraced length of tower leg  
 $F_{y_{leg}}$ : 55.00 ksi - minimum specified yield strength of tower leg  
 $F_{u_{leg}}$ : 70.00 ksi - minimum specified ultimate strength of tower leg  
 $r$ : 2.25 in - minimum radius of gyration of tower leg  
 $A_{leg}$ : 5.58 in<sup>2</sup> - area of tower leg  
 $D_i$ : 6.07 in - inside diameter of tower leg  
 $t_{leg}$ : 0.280 in - thickness of tower leg  
 $f'_c$ : 0.00 ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

\*TIA-222-H Section 15.5 applied

**Input - Sleeve R/F** 7 XH Gap Check: OK

$F_{y_{sleeve}}$ : 42.00 ksi - minimum specified yield strength of sleeve r/f  
 $F_{u_{sleeve}}$ : 63.00 ksi - minimum specified ultimate strength of sleeve r/f  
 $r_{x_{sleeve}}$ : 1.10 in - minimum radius of gyration of sleeve r/f about the x-axis  
 $r_{y_{sleeve}}$ : 2.53 in - minimum radius of gyration of sleeve r/f about the y-axis  
 $A_{sleeve}$ : 5.60 in<sup>2</sup> - area of sleeve r/f  
 $t_{sleeve}$ : 0.500 in - thickness of sleeve r/f

Termination: Connected to Flange

**Input - Sleeve Connection to Leg**

a: 12.00 in - spacing of connectors connecting the sleeve to the leg  
 D: 5.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)  
 Length //: 12.00 in - length of weld on each side of the leg at the termination  
 Length ⊥: 11.98 in - length of weld at the bottom/top of the leg sleeve at termination ( $\pi D/2$ )  
 No: 2.00 - number of longitudinal welds per end of the leg (typically near side # far side, so 2)  
 $F_{EXX}$ : 70.00 ksi - weld electrode classification  
 Width: 7.63 in - maximum width of the built-up leg  
 Gap: 0.00 in - length of leg considered for crushing

**Input - Built-up Leg Section** 6 STD w/7 XH Half Sleeve

$r_{x_{bu}}$ : 2.10 in - minimum radius of gyration of the built-up section about the x-axis  
 $r_{y_{bu}}$ : 2.39 in - minimum radius of gyration of the built-up section about the y-axis

**Input - Grouted Leg**

$E_c$ : 0 ksi - Modulus of Elasticity of Grout  
 $E_{leg}$ : 29,000 ksi - Modulus of Elasticity of Leg  
 $E_{sleeve}$ : 29,000 ksi - Modulus of Elasticity of Sleeve

# Self Support Anchor Rod Capacity



Site Info	
BU #	US-CT-1003
Site Name	Straits Turnpike
Order #	25628.511278

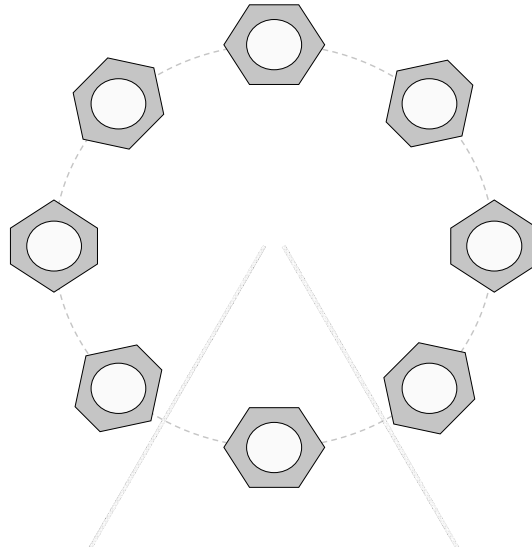
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	424.60	371.76
Shear Force (kips)	41.16	36.38

\*TIA-222-H Section 15.5 Applied

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

\*Anchor Rod Eccentricity Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data	
(8) 1-1/2" $\phi$ bolts (A36 N; Fy=36 ksi, Fu=58 ksi)	
$l_{ar}$ (in): 0	

Anchor Rod Summary		(units of kips, kip-in)
Pu_c = 53.07	$\phi Pn_c = 57.26$	<b>Stress Rating</b>
Vu = 5.14	$\phi Vn = 25.76$	<b>92.1%</b>
Mu = n/a	$\phi Mn = n/a$	<b>Pass</b>

# Pier and Pad Foundation



BU # : US-CT-1003  
 Site Name: Straits Turnpike  
 App. Number: 25628.511278

TIA-222 Revision: H  
 Tower Type: Self Support

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

Superstructure Analysis Reactions		
Compression, $P_{comp}$ :	424.598	kips
Compression Shear, $V_{u,comp}$ :	41.156	kips
Uplift, $P_{uplift}$ :	371.758	kips
Uplift Shear, $V_{u,uplift}$ :	36.376	kips
Tower Height, $H$ :	195	ft
Base Face Width, $BW$ :	21.5	ft
BP Dist. Above Fdn, $bp_{dist}$ :	0	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
<i>Uplift (kips)</i>	1365.49	371.76	25.9%	Pass
<i>Lateral (Sliding) (kips)</i>	526.43	36.38	6.6%	Pass
<i>Bearing Pressure (ksf)</i>	9.88	1.93	18.6%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	1258.15	233.19	17.7%	Pass
<i>Pier Flexure (Tension) (kip*ft)</i>	241.52	206.11	81.3%	Pass
<i>Pier Compression (kip)</i>	7637.76	440.92	5.5%	Pass
<i>Pad Flexure (kip*ft)</i>	5161.39	1363.18	25.2%	Pass
<i>Pad Shear - 1-way (kips)</i>	1415.26	141.02	9.5%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.164	0.027	15.4%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	4946.30	139.91	2.7%	Pass
<i>Pad Shear - 2-way (Uplift) (ksi)</i>	0.164	0.028	16.3%	Pass
<i>Flexural 2-way (Tension) (kip*ft)</i>	4946.30	123.66	2.4%	Pass

\*Rating per TIA-222-H Section 15.5

Soil Rating*:	25.9%
Structural Rating*:	81.3%

Pier Properties		
Pier Shape:	Square	
Pier Diameter, $dpier$ :	4	ft
Ext. Above Grade, $E$ :	0.25	ft
Pier Rebar Size, $Sc$ :	8	
Pier Rebar Quantity, $mc$ :	11	
Pier Tie/Spiral Size, $St$ :	4	
Pier Tie/Spiral Quantity, $mt$ :	4	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, $cc_{pier}$ :	3	in

Pad Properties		
Depth, $D$ :	9.416	ft
Pad Width, $W_1$ :	33	ft
Pad Thickness, $T$ :	4	ft
Pad Rebar Size (Bottom dir. 2), $Sp_2$ :	8	
Pad Rebar Quantity (Bottom dir. 2), $mp_2$ :	34	
Pad Clear Cover, $cc_{pad}$ :	3	in

Material Properties		
Rebar Grade, $F_y$ :	60	ksi
Concrete Compressive Strength, $F'_c$ :	3	ksi
Dry Concrete Density, $\delta_c$ :	150	pcf

Soil Properties		
Total Soil Unit Weight, $\gamma$ :	125	pcf
Ultimate Net Bearing, $Q_{net}$ :	12.000	ksf
Cohesion, $C_u$ :		ksf
Friction Angle, $\phi$ :	30	degrees
SPT Blow Count, $N_{blows}$ :		
Base Friction, $\mu$ :		
Neglected Depth, $N$ :	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, $gw$ :	13	ft

<--Toggle between Gross and Net

# Exhibit E

## **Mount Analysis**



## Mount Analysis Report

August 3, 2021

Dish Wireless Site Number	BOHVN00175A
Job Number	2039-Z5555C
Client	Northeast Site Solutions
Carrier	Dish Wireless
Site Location	1021 Straits Turnpike, Middlebury, CT 06762 41.5358 N NAD83 73.0892 W NAD83
Mount Centerline EL.	138 ft
Mount Classification	Sector Frame
Structural Usage Ratio	<b>16%</b>
Overall Result	<b>Pass</b>

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA and ASCE code requirements. The proposed antenna mounts for the proposed carrier are therefore deemed **adequate** to support the final loading configuration as listed in this report.



08-03-21

Dmitriy Albul, P.E.  
Engineering Consultant to Infinigy

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Introduction.....	3
Supporting Documentation.....	3
Analysis Code Requirements.....	3
Conclusion.....	3
Final Configuration Loading.....	4
Structure Usages.....	4
Assumptions and Limitations.....	4
Calculations.....	Appended

**Introduction**

Infinigy Engineering has been requested to perform a mount analysis of proposed antenna mount from the Dish Wireless equipment. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 19.0. analysis software.

**Supporting Documentation**

<b>Mount Details</b>	Mount Specification Sabre Industries C10837002C-32788
<b>Construction Drawings</b>	Infinigy Engineering PLLC, Job No. 2039-Z5555C, dated April 13, 2021
<b>RF Design Sheet</b>	Dish Wireless, dated February 15, 2021

**Analysis Code Requirements**

Wind Speed	125 mph (3-second Gust, Vult.)
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 0.75" ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2018 Connecticut State Building Code (2015 IBC)
Structure Class	II
Exposure Category	B
Topographic Method	Method 2
Topographic Category	1
Spectral Response	Ss=0.186, S1=0.062
Site Class	D – Default (Assumed)
HMSL	432.77 ft.

**Conclusion**

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The proposed antenna mounts are therefore deemed adequate to support the final loading configuration as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Dmitriy Albul, P.E.  
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 1033 Watervliet Shaker Road, Albany, NY 12205  
 (O) (518) 690-0790 | (M) (518) 669-4428  
[www.infinigy.com](http://www.infinigy.com)

**Final Configuration Loading**

Mount CL (ft)	Rad. HT (ft)	Vert. O/S (ft)	Horiz. O/S (ft)*	Qty	Appurtenance	Carrier
138.0	138.0	-	5	3	JMA MX08FRO665-20	Dish Wireless
			5	3	Fujitsu TA08025-B605	
			5	3	Fujitsu TA08025-B604	
			-	1	Raycap RDIDC-9181-PF-48	

\*Horizontal Offset is defined as the distance from the left most edge of the mount face horizontal when viewed facing the tower.

**Structure Usages**

Plates	11%	Pass
Frame Rail	16%	Pass
Arms	4%	Pass
Mount Pipes	16%	Pass
Stabilizer	4%	Pass
Bracing	7%	Pass
Connections	8%	Pass
<b>Rating</b>	<b>16%</b>	Pass

**Assumptions and Limitations**

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of “like new” and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure’s condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the proposed carriers mount structure only and does not reflect adequacy of the existing tower, other mounts, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.

Date:	7/30/2021
Site Name:	BOHVN00175A
Project Engineer:	DVA
Project No.:	2039-25555C
Customer:	Northeast Site Solutions
Carrier:	Dish Wireless

Building Code:	2015	
ASCE Standard:	ASCE 7-10	
TIA Standard:	G	
Mount Type:	Sector Frame	
Mount Centerline:	138	ft
Superstructure Height:	199	ft
Structure Type:	Tower	

Factors	
Gh:	1.000
K <sub>zmin</sub> :	0.700
K <sub>z</sub> :	1.083
K <sub>d</sub> :	0.950
K <sub>z1</sub> :	1.000
Ka:	0.900
I <sub>wind</sub> :	1.000
I <sub>ice</sub> :	1.000

q <sub>z</sub> :	24.70	psf
Surface Wind Pressure:	0.00	psf

Site Information		
Exposure Category:	B	
Risk Category:	II	
Ultimate Wind Speed:	125	mph
Design Wind Speed:	97	mph
Ice Thickness:	0.75	in
Ice Wind Speed:	50.0	mph
Escalated Ice Thickness:	1.73	in
Topographic Method:	2	
Topographic Category:	1	

Run Seismic?	
Run Seismic?	Yes
Site Soil:	D (Default)
Short-Period Accel. (Ss):	0.1870
1-Second Accel. (S1):	0.0630
Short-Period Design (SDS):	0.2000
1-Second Design (SD1):	0.1010
Short-Period Coeff. (Fa):	1.6000
1-Second Coeff. (Fv):	2.4000
Cs	0.1000
Cs min	0.0300
Amplification Factor (ap):	1.00
Response Mod. (Rp):	2.50
Overstrength (Do):	1.00

Service Wind:	30.0	mph
Lm (man live load) =	500.0	lb
Lv (man live load) =	250.0	lb

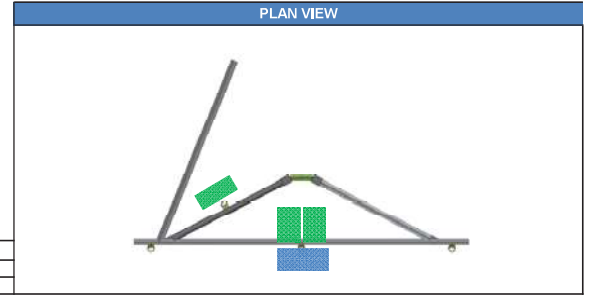
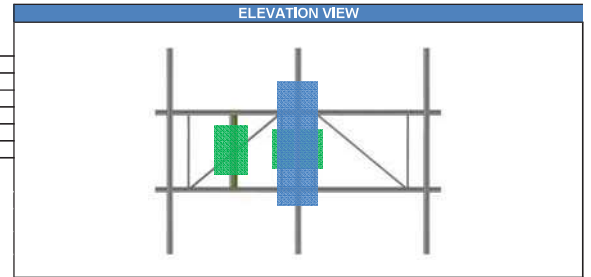


Table 1. Equipment Specifications and Wind Pressure

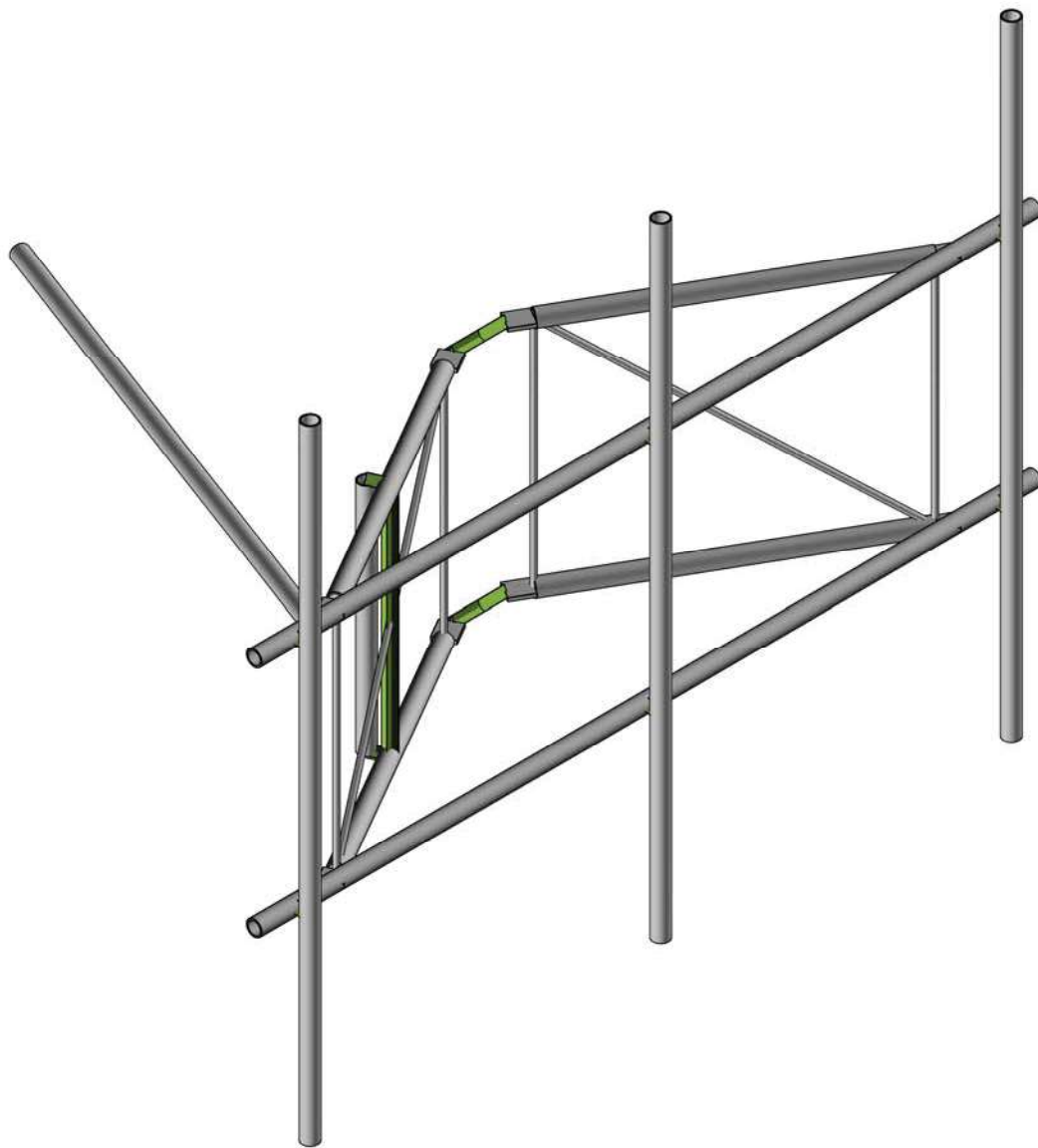
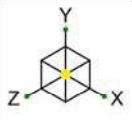
Manufacturer	Model	Elevation	Pipe Label	Weight (lb)	Height (in)	Width (in)	Depth (in)	EPA <sub>N</sub>	EPA <sub>E</sub>	EPA <sub>N/W/ICE</sub>	EPA <sub>E/W/ICE</sub>	q <sub>z</sub> <sup>+</sup>	q <sub>z,ice</sub> <sup>+</sup>	q <sub>z,live</sub> <sup>+</sup>
JMA WIRELESS	MX08FRO665-20	138	31	54.00	72	20	8	8.01	3.21	8.80	3.90	24.70	6.59	2.37
FUJITSU	TA08025-B605	138	31	74.95	15.75	14.96	9.06	1.86	1.16	2.79	1.93	24.70	6.59	2.37
FUJITSU	TA08025-B604	138	31	63.93	15.75	14.96	7.87	1.86	1.01	2.79	1.76	24.70	6.59	2.37
RAYCAP	RDIDC-9181-PF-48	138	38	21.85	16	14	8	1.77	1.05	2.69	1.80	24.70	6.59	2.37

Table 2. Equipment Wind and Seismic Loads

Manufacturer	Model	Wind Load (F <sub>w</sub> ), lb		Wind Load Ice Case (F <sub>w</sub> ), lb			Wind Load Service Case	Seismic	
JMA WIRELESS	MX08FRO665-20	178	71	52	23	302	17	7	5.4
FUJITSU	TA08025-B605	41	26	17	11	55	4	2	7.5
FUJITSU	TA08025-B604	41	23	17	10	53	4	2	6.4
RAYCAP	RDIDC-9181-PF-48	39	23	16	11	51	4	2	2.2

Table 3. Member Capacities

Member Name	Member Shape	Wind load (plf)	Wind Load Ice (plf)	Weight Ice (plf)	Bending Check	Shear Check	Total Capacity	Controlling Capacity
Mount Pipes	PIPE 2.0	5.87	1.56	1.05	16%	3%	16%	16%
Stabilizer	PIPE 2.0	5.87	1.56	1.05	4%	0%	4%	
Bracing	0.75" SR	1.85	0.49	0.76	7%	1%	7%	
Arms	PIPE 2.0X	5.87	1.56	1.05	4%	1%	4%	
Frame Rails	PIPE 2.0X	5.87	1.56	1.05	16%	4%	16%	
Plates	3"x.5"	12.35	3.29	1.16	11%	7%	11%	



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DVA

2039-Z5555C

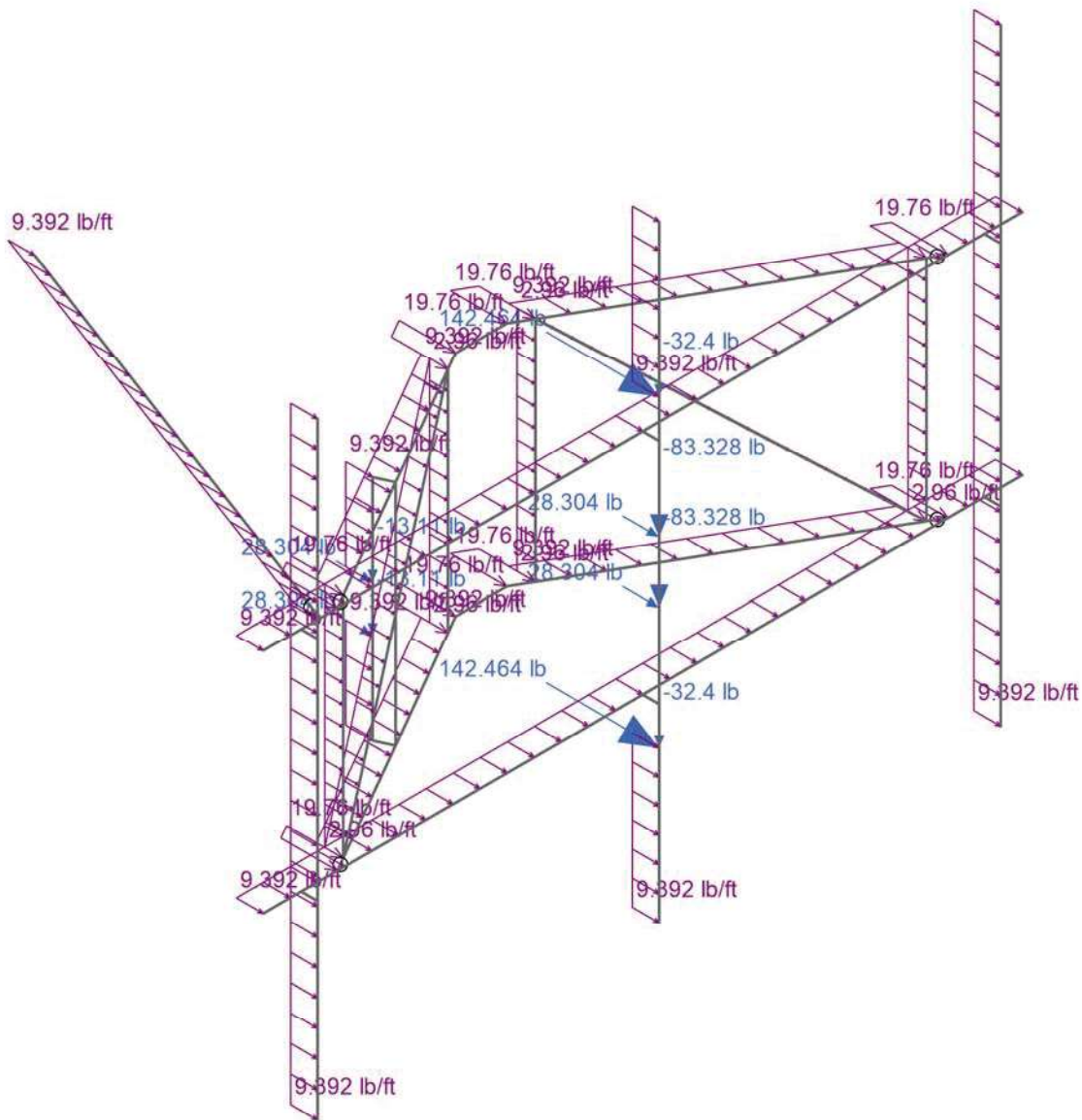
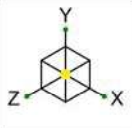
BOHVN00175A

Proposed Configuration Model

SK-1

Jul 30, 2021

BOHVN00175A.R3D

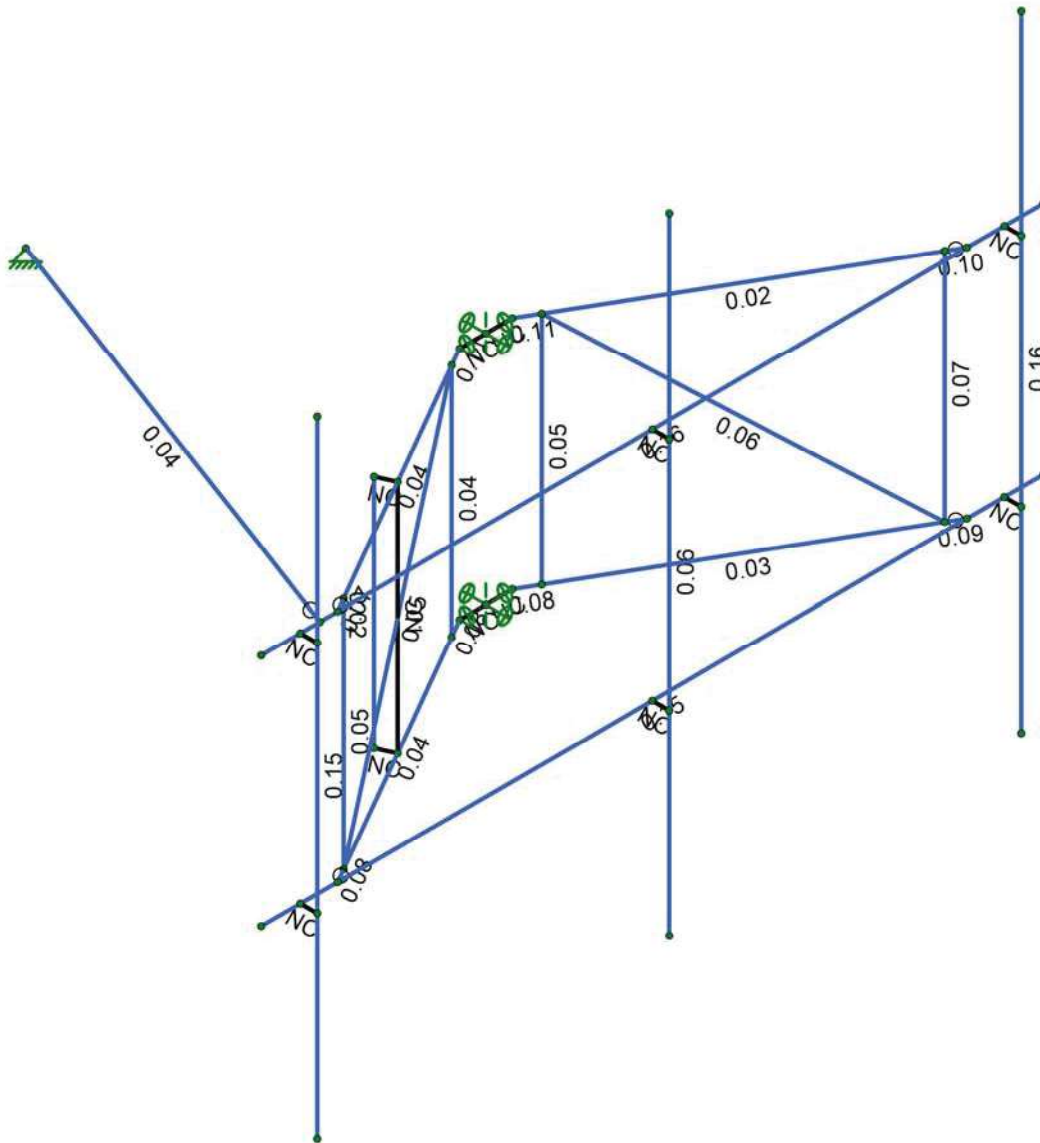
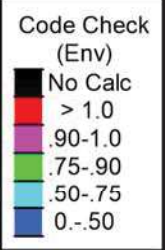
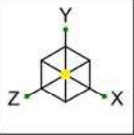


Loads: LC 8, 1.2DL + 1.6WL AZI 180  
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2039-Z5555C

BOHVN00175A  
Controlling Load Case

SK-2  
Jul 30, 2021  
BOHVN00175A.R3D



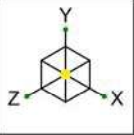
Member Code Checks Displayed (Enveloped)  
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BOHVN00175A  
Member Bending Check

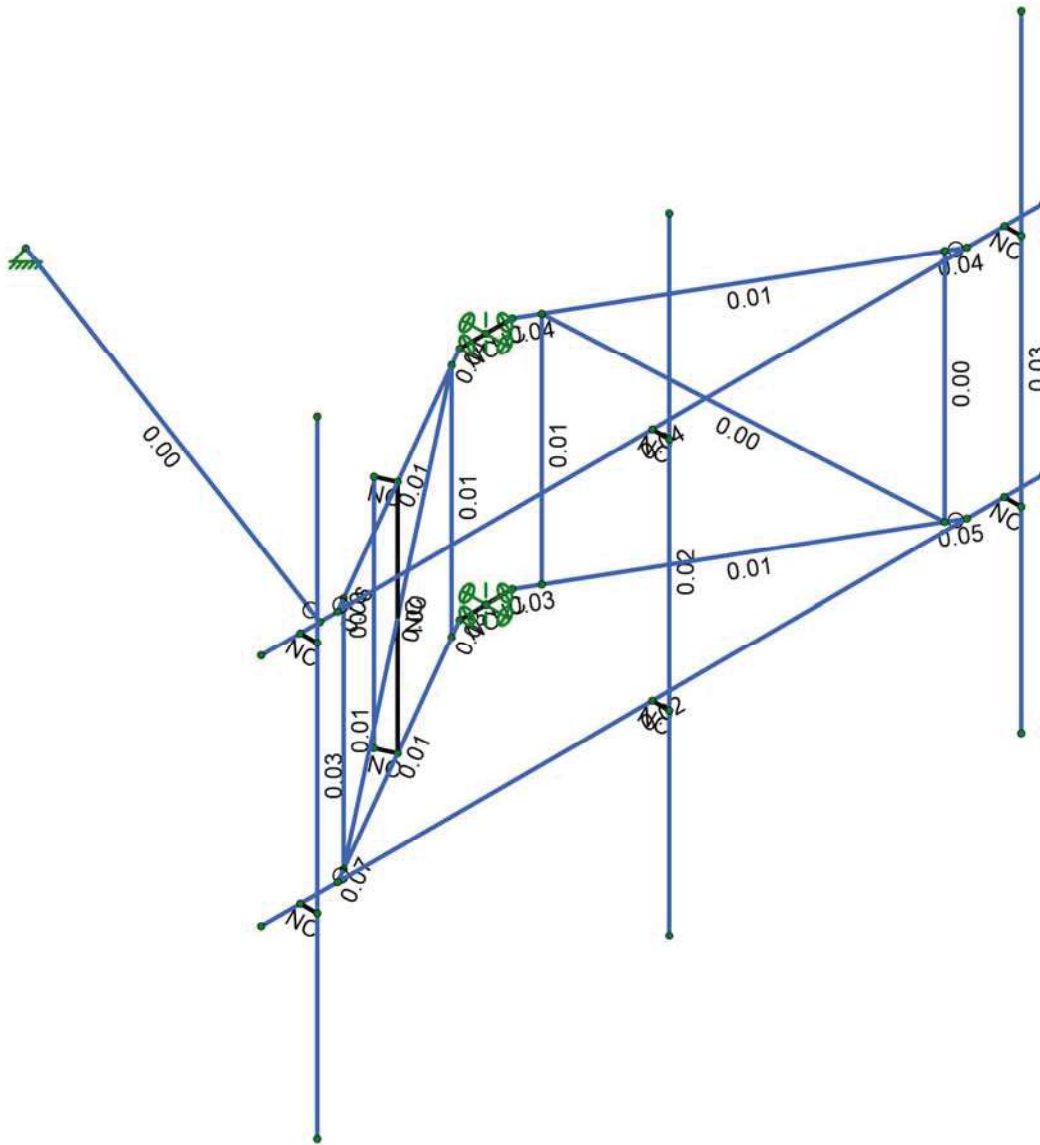
SK-3  
Jul 30, 2021  
BOHVN00175A.R3D





Shear Check (Env)

- No Calc
- > 1.0
- .90-1.0
- .75-.90
- .50-.75
- 0.-.50



Member Shear Checks Displayed (Enveloped)  
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BOHVN00175A  
Member Shear Check

SK-4  
Jul 30, 2021  
BOHVN00175A.R3D

**Model Settings**

**Solution**

Members

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in <sup>2</sup> )	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes

Wall Panels

Approximate Mesh Size (in)	12
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3

Processor Core Utilization

Single	No
Multiple (Optimum)	Yes
Maximum	No

**Axis**

Vertical Global Axis

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ
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Plate Axis

Plate Local Axis Orientation	Nodal
------------------------------	-------

**Codes**

Hot Rolled Steel	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): LRFD
Cold Formed Steel	AISI S100-12: LRFD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-12: ASD
Temperature	< 100F
Concrete	ACI 318-11
Masonry	ACI 530-11: Strength
Aluminum	AA ADM1-10: LRFD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)

**Concrete**

Column Design

Analysis Methodology	Exact Integration Method
Parame Beta Factor	0.65

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No

**Model Settings (Continued)**

List forces which were ignored for design in the Detail Report	Yes
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**Rebar**

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No

**Shear Reinforcement**

Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

**Seismic**

RISA-3D Seismic Load Options

Code	ASCE 7-10
Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

**Site Parameters**

$S_1$ (g)	1
$SD_1$ (g)	1
$SD_s$ (g)	1
$T_L$ (sec)	5

**Structure Characteristics**

T Z (sec)	
T X (sec)	
$C_x$	0.02
$C_{Exp. Z}$	0.75
$C_{Exp. X}$	0.75
R Z	3
R X	3
$\Omega_z$	1
$\Omega_x$	1
$C_d Z$	4
$C_d X$	4
$\rho Z$	1
$\rho X$	1

**Member Primary Data**

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N3		RIGID	None	None	RIGID	Typical
2	M2	N5	N8		Arms	Beam	Pipe	A500 Gr.C	Typical
3	M3	N2	N4		RIGID	None	None	RIGID	Typical
4	M4	N6	N7		Arms	Beam	Pipe	A500 Gr.C	Typical
5	M5	N8	N7		Bracing	VBrace	BAR	A572 Gr.50	Typical
6	M6	N5	N6		Bracing	VBrace	BAR	A572 Gr.50	Typical
7	M7	N6	N8		Bracing	VBrace	BAR	A572 Gr.50	Typical
8	M8	N1	N9		RIGID	None	None	RIGID	Typical
9	M9	N2	N10		RIGID	None	None	RIGID	Typical
10	M10	N16	N12		Frame Rails	Beam	Pipe	A500 Gr.C	Typical
11	M11	N15	N11		Frame Rails	Beam	Pipe	A500 Gr.C	Typical
12	M12	N7	N19	90	Plates	Beam	BAR	A572 Gr.50	Typical
13	M13	N8	N20	90	Plates	Beam	BAR	A572 Gr.50	Typical
14	M14	N4	N6	90	Plates	Beam	BAR	A572 Gr.50	Typical
15	M15	N3	N5	90	Plates	Beam	BAR	A572 Gr.50	Typical
16	M16	N21	N24		Arms	Beam	Pipe	A500 Gr.C	Typical
17	M17	N22	N23		Arms	Beam	Pipe	A500 Gr.C	Typical
18	M18	N24	N23		Bracing	VBrace	BAR	A572 Gr.50	Typical
19	M19	N21	N22		Bracing	VBrace	BAR	A572 Gr.50	Typical
20	M20	N22	N24		Bracing	VBrace	BAR	A572 Gr.50	Typical
21	M21	N23	N25	90	Plates	Beam	BAR	A572 Gr.50	Typical
22	M22	N24	N26	90	Plates	Beam	BAR	A572 Gr.50	Typical
23	M23	N10	N22	90	Plates	Beam	BAR	A572 Gr.50	Typical
24	M24	N9	N21	90	Plates	Beam	BAR	A572 Gr.50	Typical
25	M25	N28	N27		Stabilizer	HBrace	Pipe	A53 Gr.B	Typical
26	M26	N29	N30	24.12	RIGID	None	None	RIGID	Typical
27	M27	N32	N30		RIGID	None	None	RIGID	Typical
28	M28	N29	N31		RIGID	None	None	RIGID	Typical
29	M29	N37	N38		Mount Pipes	Column	Pipe	A53 Gr.B	Typical
30	M30	N41	N42		Mount Pipes	Column	Pipe	A53 Gr.B	Typical
31	M31	N45	N46		Mount Pipes	Column	Pipe	A53 Gr.B	Typical
32	M32	N17	N39		RIGID	None	None	RIGID	Typical
33	M33	N18	N40		RIGID	None	None	RIGID	Typical
34	M34	N34	N44		RIGID	None	None	RIGID	Typical
35	M35	N33	N43		RIGID	None	None	RIGID	Typical
36	M36	N14	N36		RIGID	None	None	RIGID	Typical
37	M37	N13	N35		RIGID	None	None	RIGID	Typical
38	M38	N32	N31		Mount Pipes	Column	Pipe	A53 Gr.B	Typical

**Material Take-Off**

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General Members				
2	RIGID		13	73.3	0
3	Total General		13	73.3	0
4					
5	Hot Rolled Steel				
6	A500 Gr.C	PIPE_2.0X	6	421	179.753
7	A53 Gr.B	PIPE_2.0	5	401	115.982
8	A572 Gr.50	0.75" SR	6	259.6	32.543
9	A572 Gr.50	3"x.5"	8	23.2	9.889
10	Total HR Steel		25	1104.9	338.168

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed
1	Self Weight	DL		-1		8	
2	Wind Load AZI 0	WLX				16	80
3	Wind Load AZI 30	None				16	80
4	Wind Load AZI 60	None				16	80
5	Wind Load AZI 90	WLZ				16	80
6	Wind Load AZI 120	None				16	80
7	Wind Load AZI 150	None				16	80
8	Wind Load AZI 180	None				16	80
9	Wind Load AZI 210	None				16	80
10	Wind Load AZI 240	None				16	80
11	Wind Load AZI 270	None				16	80
12	Wind Load AZI 300	None				16	80
13	Wind Load AZI 330	None				16	80
14	Ice Weight	OL1				8	38
15	Ice Wind Load AZI 0	OL2				16	80
16	Ice Wind Load AZI 30	None				16	80
17	Ice Wind Load AZI 60	None				16	80
18	Ice Wind Load AZI 90	OL3				16	80
19	Ice Wind Load AZI 120	None				16	80
20	Ice Wind Load AZI 150	None				16	80
21	Ice Wind Load AZI 180	None				16	80
22	Ice Wind Load AZI 210	None				16	80
23	Ice Wind Load AZI 240	None				16	80
24	Ice Wind Load AZI 270	None				16	80
25	Ice Wind Load AZI 300	None				16	80
26	Ice Wind Load AZI 330	None				16	80
27	Seismic Load X	ELX			-0.1	8	
28	Seismic Load Z	ELZ	-0.1			8	
29	Service Live Loads	LL					
30	Maintenance Load 1	LL				1	
31	Maintenance Load 2	LL				1	
32	Maintenance Load 3	LL				1	
33	Maintenance Load 4	LL				1	
34	Maintenance Load 5	LL				1	
35	Maintenance Load 6	LL				1	

**Load Combinations**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4DL	Yes	Y	1	1.4				
2	1.2DL + 1.6WL AZI 0	Yes	Y	1	1.2	2	1.6		
3	1.2DL + 1.6WL AZI 30	Yes	Y	1	1.2	3	1.6		
4	1.2DL + 1.6WL AZI 60	Yes	Y	1	1.2	4	1.6		
5	1.2DL + 1.6WL AZI 90	Yes	Y	1	1.2	5	1.6		
6	1.2DL + 1.6WL AZI 120	Yes	Y	1	1.2	6	1.6		
7	1.2DL + 1.6WL AZI 150	Yes	Y	1	1.2	7	1.6		
8	1.2DL + 1.6WL AZI 180	Yes	Y	1	1.2	8	1.6		
9	1.2DL + 1.6WL AZI 210	Yes	Y	1	1.2	9	1.6		
10	1.2DL + 1.6WL AZI 240	Yes	Y	1	1.2	10	1.6		
11	1.2DL + 1.6WL AZI 270	Yes	Y	1	1.2	11	1.6		
12	1.2DL + 1.6WL AZI 300	Yes	Y	1	1.2	12	1.6		
13	1.2DL + 1.6WL AZI 330	Yes	Y	1	1.2	13	1.6		
14	0.9DL + 1.6WL AZI 0	Yes	Y	1	0.9	2	1.6		
15	0.9DL + 1.6WL AZI 30	Yes	Y	1	0.9	3	1.6		
16	0.9DL + 1.6WL AZI 60	Yes	Y	1	0.9	4	1.6		
17	0.9DL + 1.6WL AZI 90	Yes	Y	1	0.9	5	1.6		
18	0.9DL + 1.6WL AZI 120	Yes	Y	1	0.9	6	1.6		
19	0.9DL + 1.6WL AZI 150	Yes	Y	1	0.9	7	1.6		

**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
20	0.9DL + 1.6WL AZI 180	Yes	Y	1	0.9	8	1.6		
21	0.9DL + 1.6WL AZI 210	Yes	Y	1	0.9	9	1.6		
22	0.9DL + 1.6WL AZI 240	Yes	Y	1	0.9	10	1.6		
23	0.9DL + 1.6WL AZI 270	Yes	Y	1	0.9	11	1.6		
24	0.9DL + 1.6WL AZI 300	Yes	Y	1	0.9	12	1.6		
25	0.9DL + 1.6WL AZI 330	Yes	Y	1	0.9	13	1.6		
26	1.2D + 1.0Di	Yes	Y	1	1.2	14	1		
27	1.2D + 1.0Di + 1.0Wi AZI 0	Yes	Y	1	1.2	14	1	15	1
28	1.2D + 1.0Di + 1.0Wi AZI 30	Yes	Y	1	1.2	14	1	16	1
29	1.2D + 1.0Di + 1.0Wi AZI 60	Yes	Y	1	1.2	14	1	17	1
30	1.2D + 1.0Di + 1.0Wi AZI 90	Yes	Y	1	1.2	14	1	18	1
31	1.2D + 1.0Di + 1.0Wi AZI 120	Yes	Y	1	1.2	14	1	19	1
32	1.2D + 1.0Di + 1.0Wi AZI 150	Yes	Y	1	1.2	14	1	20	1
33	1.2D + 1.0Di + 1.0Wi AZI 180	Yes	Y	1	1.2	14	1	21	1
34	1.2D + 1.0Di + 1.0Wi AZI 210	Yes	Y	1	1.2	14	1	22	1
35	1.2D + 1.0Di + 1.0Wi AZI 240	Yes	Y	1	1.2	14	1	23	1
36	1.2D + 1.0Di + 1.0Wi AZI 270	Yes	Y	1	1.2	14	1	24	1
37	1.2D + 1.0Di + 1.0Wi AZI 300	Yes	Y	1	1.2	14	1	25	1
38	1.2D + 1.0Di + 1.0Wi AZI 330	Yes	Y	1	1.2	14	1	26	1
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.24	27	1	28	
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.24	27	0.866	28	0.5
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.24	27	0.5	28	0.866
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.24	27		28	1
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.24	27	-0.5	28	0.866
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.24	27	-0.866	28	0.5
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.24	27	-1	28	
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.24	27	-0.866	28	-0.5
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.24	27	-0.5	28	-0.866
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.24	27		28	-1
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.24	27	0.5	28	-0.866
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.24	27	0.866	28	-0.5
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.86	27	1	28	
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.86	27	0.866	28	0.5
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.86	27	0.5	28	0.866
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.86	27		28	1
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.86	27	-0.5	28	0.866
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.86	27	-0.866	28	0.5
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.86	27	-1	28	
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.86	27	-0.866	28	-0.5
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.86	27	-0.5	28	-0.866
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.86	27		28	-1
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.86	27	0.5	28	-0.866
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.86	27	0.866	28	-0.5
63	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 0	Yes	Y	1	1	2	0.096	29	1.5
64	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 30	Yes	Y	1	1	3	0.096	29	1.5
65	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 60	Yes	Y	1	1	4	0.096	29	1.5
66	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 90	Yes	Y	1	1	5	0.096	29	1.5
67	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 120	Yes	Y	1	1	6	0.096	29	1.5
68	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 150	Yes	Y	1	1	7	0.096	29	1.5
69	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 180	Yes	Y	1	1	8	0.096	29	1.5
70	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 210	Yes	Y	1	1	9	0.096	29	1.5
71	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 240	Yes	Y	1	1	10	0.096	29	1.5
72	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 270	Yes	Y	1	1	11	0.096	29	1.5
73	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 300	Yes	Y	1	1	12	0.096	29	1.5
74	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 330	Yes	Y	1	1	13	0.096	29	1.5
75	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.154
76	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.154
77	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.154

**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
78	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.154
79	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.154
80	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.154
81	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.154
82	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.154
83	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.154
84	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.154
85	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.154
86	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.154
87	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	35	1.5	2	0.154
88	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	35	1.5	3	0.154
89	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	35	1.5	4	0.154
90	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	35	1.5	5	0.154
91	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	35	1.5	6	0.154
92	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	35	1.5	7	0.154
93	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	35	1.5	8	0.154
94	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	35	1.5	9	0.154
95	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	35	1.5	10	0.154
96	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	35	1.5	11	0.154
97	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	35	1.5	12	0.154
98	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	35	1.5	13	0.154
99	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	36	1.5	2	0.154
100	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	36	1.5	3	0.154
101	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	36	1.5	4	0.154
102	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	36	1.5	5	0.154
103	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	36	1.5	6	0.154
104	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	36	1.5	7	0.154
105	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	36	1.5	8	0.154
106	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	36	1.5	9	0.154
107	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	36	1.5	10	0.154
108	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	36	1.5	11	0.154
109	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	36	1.5	12	0.154
110	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	36	1.5	13	0.154
111	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	37	1.5	2	0.154
112	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	37	1.5	3	0.154
113	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	37	1.5	4	0.154
114	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	37	1.5	5	0.154
115	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	37	1.5	6	0.154
116	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	37	1.5	7	0.154
117	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	37	1.5	8	0.154
118	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	37	1.5	9	0.154
119	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	37	1.5	10	0.154
120	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	37	1.5	11	0.154
121	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	37	1.5	12	0.154
122	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	37	1.5	13	0.154
123	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	38	1.5	2	0.154
124	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	38	1.5	3	0.154
125	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	38	1.5	4	0.154
126	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	38	1.5	5	0.154
127	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	38	1.5	6	0.154
128	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	38	1.5	7	0.154
129	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	38	1.5	8	0.154
130	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	38	1.5	9	0.154
131	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	38	1.5	10	0.154
132	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	38	1.5	11	0.154
133	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	38	1.5	12	0.154
134	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	38	1.5	13	0.154
135	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	39	1.5	2	0.154

**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
136	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	39	1.5	3	0.154
137	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	39	1.5	4	0.154
138	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	39	1.5	5	0.154
139	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	39	1.5	6	0.154
140	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	39	1.5	7	0.154
141	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	39	1.5	8	0.154
142	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	39	1.5	9	0.154
143	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	39	1.5	10	0.154
144	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	39	1.5	11	0.154
145	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	39	1.5	12	0.154
146	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	39	1.5	13	0.154

**Envelope Node Reactions**

Node Label	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-in]	LC	MY [lb-in]	LC	MZ [lb-in]	LC		
1	N2	max	356.234	15	750.209	36	578.458	91	1216.91	97	0	146	933.495	38
2		min	-1049.083	9	281.812	53	-643.741	12	-696.809	6	0	1	301.738	18
3	N1	max	914.054	2	479.952	30	370.535	6	775.819	97	0	146	696.205	37
4		min	-222.583	20	183.918	59	-557.922	97	-482.807	6	0	1	202.831	18
5	N28	max	480.088	24	18.394	31	148.13	24	0	146	0	146	0	146
6		min	-484.441	18	9.575	57	-149.621	18	0	1	0	1	0	1
7	Totals:	max	1100.636	2	1248.273	35	760.943	18						
8		min	-1100.636	20	475.494	52	-822.242	12						

**Envelope AISC 14TH (360-10): LRFD Member Steel Code Checks**

Member	Shape	Code	Check Loc[in]	LC	Shear	Check Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-in]	phi*Mn z-z [lb-in]	Cb	Eqn	
1	M11	PIPE_2.0X	0.164	60	8	0.038	10	12	12974.268	57960	39909.6	39909.6	1.893	H1-1b	
2	M29	PIPE_2.0	0.156	66	37	0.027	30	79	14916.096	32130	22459.5	22459.5	2.873	H1-1b	
3	M10	PIPE_2.0X	0.155	60	8	0.022	115	94	12974.268	57960	39909.6	39909.6	1.88	H1-1b	
4	M30	PIPE_2.0	0.155	66	31	0.029	66	6	14916.096	32130	22459.5	22459.5	1.966	H1-1b	
5	M14	3"x.5"	0.114	0	88	0.035	0	y	4	64929.826	67500	8460	50625	1.037	H1-1b
6	M23	3"x.5"	0.111	0	32	0.037	0	y	12	64929.826	67500	8460	50625	1.151	H1-1b
7	M12	3"x.5"	0.099	0	98	0.044	2.5	y	32	66023.816	67500	8460	50625	1.673	H1-1b
8	M13	3"x.5"	0.087	0	94	0.046	2.5	y	29	66023.816	67500	8460	50625	1.683	H1-1b
9	M24	3"x.5"	0.081	0	38	0.035	0	y	12	64929.826	67500	8460	50625	1.243	H1-1b
10	M22	3"x.5"	0.08	0	32	0.067	2.5	y	38	66023.816	67500	8460	50625	1.748	H1-1b
11	M15	3"x.5"	0.078	0	94	0.03	3.313	y	31	64929.826	67500	8460	50625	1.035	H1-1b
12	M21	3"x.5"	0.071	0	29	0.063	2.5	y	34	66023.816	67500	8460	50625	1.667	H1-1b
13	M5	0.75" SR	0.067	0	98	0.003	36	6	5691.919	19890	3072	3072	2.056	H1-1b*	
14	M31	PIPE_2.0	0.06	66	6	0.023	66	13	14916.096	32130	22459.5	22459.5	2.122	H1-1b	
15	M7	0.75" SR	0.057	0	97	0.003	57.824	12	2206.248	19890	3072	3072	2.624	H1-1b*	
16	M18	0.75" SR	0.05	0	28	0.006	36	6	5691.919	19890	3072	3072	2.318	H1-1b*	
17	M20	0.75" SR	0.048	0	31	0.003	57.824	4	2206.248	19890	3072	3072	2.238	H1-1b*	
18	M6	0.75" SR	0.048	0	95	0.006	0	12	5691.919	19890	3072	3072	2.341	H1-1b*	
19	M17	PIPE_2.0X	0.041	22.625	6	0.012	45.25	35	45905.544	57960	39909.6	39909.6	1.257	H1-1b	
20	M25	PIPE_2.0	0.041	38.498	12	0.003	76.996	6	19612.716	32130	22459.5	22459.5	1.136	H1-1b	
21	M16	PIPE_2.0X	0.04	22.625	13	0.013	45.25	37	45905.544	57960	39909.6	39909.6	1.466	H1-1b	
22	M19	0.75" SR	0.038	0	31	0.006	0	12	5691.919	19890	3072	3072	2.317	H1-1b*	
23	M2	PIPE_2.0X	0.026	45.25	98	0.008	45.25	29	45905.544	57960	39909.6	39909.6	2.543	H1-1b	
24	M4	PIPE_2.0X	0.022	0	9	0.008	45.25	31	45905.544	57960	39909.6	39909.6	1.621	H1-1b	
25	M38	PIPE_2.0	0.015	36	7	0.004	36	13	28843.414	32130	22459.5	22459.5	2.341	H1-1b	



## BOLT CONNECTION CALCULATION

### BOLT PROPERTIES

<b>Date:</b>	7/30/2021
<b>Site:</b>	BOHVN00175A
<b>Engineer:</b>	DVA
<b>Project No:</b>	2039-Z5555C
<b>Connection Location:</b>	Arm to Tower

Bolt Capacity Equation	TIA-222-G	
Connection Type	Steel	
Bolt Size, <b>d</b>	1/2	in
Threads per Inch, <b>n</b>	13	
Steel Grade	A307	
Bolt Ultimate Tensile Stress, <b>F<sub>u</sub></b>	60	ksi
Threads Exclusion	N	
Shear Plane	1	
Net Bolt Cross-Sectional Area, <b>A<sub>n</sub></b>	0.142	in <sup>2</sup>
Gross Bolt Cross-Sectional Area, <b>A<sub>g</sub></b>	0.196	in <sup>2</sup>
Tensile Steel Strength (per bolt), <b>φR<sub>nt</sub></b>	6385	lbs
Shear Steel Strength (per bolt), <b>φR<sub>nv</sub></b>	3976	lbs

**BOLT CONNECTION CALCULATION**  
**BOLT GROUP CHECK**

Date: 7/30/2021  
 Contractor: Infinigy Engineering, PLLC  
 Site: BOHVN00175A  
 Engineer: DVA  
 Project No: 2039-Z5555C  
 Connection Location: Arm to Tower

Loads Properties	
Controlling LC:	89
Load Point Number:	N2
X-Coordinate (in.)	4.00
Y-Coordinate (in.)	2.00
Z-Coordinate (in.)	0.00
Shear Load, Px (lbs)	0
Shear Load, Py (lbs)	0
Shear Load, Pz (lbs)	0
Axial Load, Pz (lbs)	599,000
Moment, Mx (lb-in)	-666,000
Moment, My (lb-in)	0,000
Moment, Mz (lb-in)	1139,000

Member Properties		
	X	Y
Start Coordinates:	0.0	0.0
Dimensions:	8.0	4.0

Number of Bolts: 4

No.	Bolt Type	Bolt Coordinates		Bolt Loads		Steel Bolt Usage		Max. Capacity
		Xo (in)	Yo (in)	Axial (lbs)	Shear (lbs)	Tension	Shear	
1	Main Type	1.00	1.00	316.25	186.47	5.0%	4.7%	5.0%
2	Main Type	7.00	3.00	-16.75	268.78	0.0%	6.8%	6.8%
3	Main Type	1.00	3.00	-16.75	135.74	0.0%	3.4%	3.4%
4	Main Type	7.00	1.00	316.25	297.64	5.0%	7.5%	7.5%

**Bolt Group Properties:**

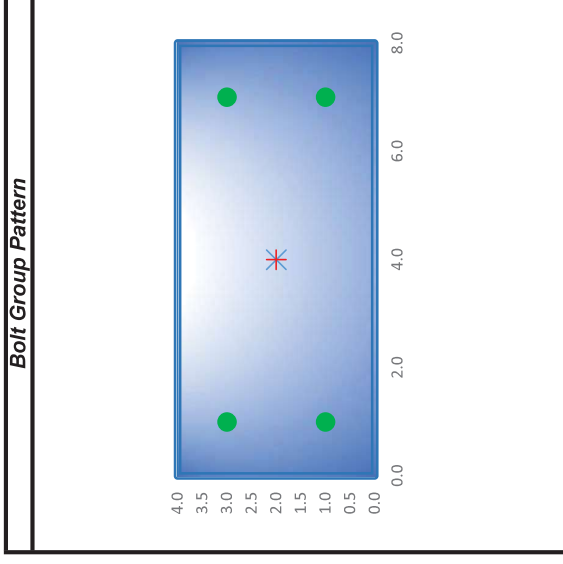
Xc =	4.00	in.
Yc =	2.00	in.
Ic,y =	7.07	in.^2
Ic,x =	0.79	in.^2
Ic,xy =	7.85	in.^2

**Loads at Center of Gravity of Bolt Group:**

Pz =	599.00	lbs
Px =	-574.00	lbs
Py =	-630.00	lbs
Mx =	-666.00	lb-in
My =	0.00	lb-in
Mz =	1139.00	lb-in

U-bolt Connection: No

Total Capacity of Bolt Group: 7.5%





## THD 10' V-Boom Assembly with Tieback (Tier 1, 2, 3)

**\*Sector Frame Option 2**- This is a secondary approved mount if the primary is not available\*

C10837002C



- **C10837002C-32788 V-Boom Sector Frame**
- 10' THD V-Boom Sector Mount with Tieback
- Face Width = 10', Stiff Arm = 1
- Includes (3) 2-7/8" OD x 8' Antenna
- Mounting Pipes and all associated hardware
- Kit weight – 610 lbs



# Exhibit F

## **Power Density/RF Emissions Report**



# Radio Frequency Emissions Analysis Report



**Site ID: BOHVN00175A**

PTI Straits Turnpike  
1021 Straits Turnpike  
Middlebury, CT 06762

**October 12, 2021**

**Fox Hill Telecom Project Number: 210624**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>17.62 %</b>



October 12, 2021

Dish Wireless  
5701 South Santa Fe Drive  
Littleton, CO 80120

Emissions Analysis for Site: **BOHVN00175A – PTI Straits Turnpike**

Fox Hill Telecom, Inc (“Fox Hill”) was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **1021 Straits Turnpike, Middlebury, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and antenna installation located on this property are within specified federal limits.

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

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

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

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



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

Additional details can be found in FCC OET 65.



## CALCULATIONS

Calculations were performed for the proposed radio system installation for **Dish** on the subject site located at **1021 Straits Turnpike, Middlebury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since **Dish** 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
5G	600 MHz	4	61.5
5G	1900 MHz (PCS)	4	40
5G	2100 MHz (AWS)	4	40

*Table 1: Channel Data Table*





The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	JMA MX08FRO665-21	138
B	1	JMA MX08FRO665-21	138
C	1	JMA MX08FRO665-21	138

*Table 2: Antenna Data*

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



## RESULTS

Per the calculations completed for the proposed **Dish** configurations *Table 3* shows resulting emissions power levels and percentages of the FCC’s allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	JMA MX08FRO665-21	600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	11.45 / 16.15 / 16.65	12	566	17,426.72	4.66
Sector A Composite MPE%							<b>4.66</b>
Antenna B1	JMA MX08FRO665-21	600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	11.45 / 16.15 / 16.65	12	566	17,426.72	4.66
Sector B Composite MPE%							<b>4.66</b>
Antenna C1	JMA MX08FRO665-21	600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	11.45 / 16.15 / 16.65	12	566	17,426.72	4.66
Sector C Composite MPE%							<b>4.66</b>

*Table 3: Dish Emissions Levels*



The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum **Dish** MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each **Dish** Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE%
Dish – Max Per Sector Value	<b>4.66 %</b>
AT&T	2.57 %
Pocket (now MetroPCS)	0.35 %
Verizon Wireless	1.74 %
T-Mobile	6.19 %
Sprint	2.11 %
<b>Site Total MPE %:</b>	<b>17.62 %</b>

*Table 4: All Carrier MPE Contributions*

Dish Sector A Total:	4.66 %
Dish Sector B Total:	4.66 %
Dish Sector C Total:	4.66 %
Site Total:	17.62 %

*Table 5: Site MPE Summary*



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

Dish _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Dish 600 MHz 5G	4	858.77	138	7.09	600 MHz	400	1.77%
Dish 1900 MHz (PCS) 5G	4	1,648.39	138	13.60	1900 MHz (PCS)	1000	1.36%
Dish 2100 MHz (AWS) 5G	4	1,849.52	138	15.26	2100 MHz (AWS)	1000	1.53%
						<b>Total:</b>	<b>4.66%</b>

*Table 6: Dish Maximum Sector MPE Power Values*



## 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 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 Sector	Power Density Value (%)
Sector A:	4.66 %
Sector B:	4.66 %
Sector C:	4.66 %
Dish Maximum Total (per sector):	4.66 %
Site Total:	17.62 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **17.62 %** 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.

Scott Heffernan  
Principal RF Engineer  
**Fox Hill Telecom, Inc**  
Holden, MA 01520  
(978)660-3998

# Exhibit G

## **Letter of Authorization**



**PHOENIX  
TOWER**  
INTERNATIONAL

Phoenix Tower International  
999 Yamato Rd, Suite 100  
Boca Raton, FL 33431  
Phone: 561.257.0557  
Fax: 561.257.0558

Phoenix Tower International - 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

1021 Straits Turnpike, Middlebury,  
New Haven CT 06762 United States

Phoenix Tower International ("Phoenix Tower") 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:

**PTI Site ID/Name:** US-CT-1003 / Straits Turnpike  
**Customer Site ID:** BOHVN00175A  
**Site Address:** 1021 Straits Turnpike, Middlebury, New Haven CT 06762  
**Project Name:** US-CT-1003\_DISH\_SLA\_  
**Duration of the Authorization:** 90 days from the date of issuance

**Phoenix Tower International**

By:   
Name: Joshua Wade  
Title: General Counsel

Date: 11/11/2021

# Exhibit H

## Recipient Mailings



BOHVN00175A



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

11/17/2021 02:56 PM

Product	Qty	Unit Price	Price
Prepaid Mail Boca Raton, FL 33431 Weight: 0 lb 2.00 oz Acceptance Date: Wed 11/17/2021 Tracking #: 9405 5036 9930 0064 8072 31	1		\$0.00
Prepaid Mail Middlebury, CT 06762 Weight: 0 lb 10.60 oz Acceptance Date: Wed 11/17/2021 Tracking #: 9405 5036 9930 0064 8072 00	1		\$0.00
Prepaid Mail Middlebury, CT 06762 Weight: 0 lb 10.70 oz Acceptance Date: Wed 11/17/2021 Tracking #: 9405 5036 9930 0064 8072 17	1		\$0.00
Prepaid Mail Middlebury, CT 06762 Weight: 0 lb 10.60 oz Acceptance Date: Wed 11/17/2021 Tracking #: 9405 5036 9930 0064 8072 24	1		\$0.00
Grand Total:			\$0.00



**P**

usps.com 9405 5036 9930 0064 8072 31 0087 0000 0063 3431  
US POSTAGE \$8.70  
Flat Rate Env  
U.S. POSTAGE PAID  
Mailed from 01566 10001000  
11/17/2021

**PRIORITY MAIL 2-DAY™**

DEBORAH CHASE  
NORTHEAST SITE SOLUTIONS  
420 MAIN ST  
STE 1  
STURBRIDGE MA 01566-1359  
Expected Delivery Date: 11/20/21

**C006**

SHIP TO:  
PHOENIX TOWER INTERNATIONAL  
999 W YAMATO RD  
STE 100  
BOCA RATON FL 33431-4478

**USPS TRACKING #**



**9405 5036 9930 0064 8072 31**

Electronic Rate Approved #038555749



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**9405 5036 9930 0064 8072 31**

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Print Date:	11/17/2021	Total:	<b>\$8.70</b>
Ship Date:	11/17/2021		
Expected Delivery Date:	11/20/2021		

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

**To:** PHOENIX TOWER INTERNATIONAL  
999 W YAMATO RD  
STE 100  
BOCA RATON FL 33431-4478

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Flat Rate Env  
U.S. POSTAGE PAID  
11/17/2021 Mailed from 01566 10001000

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NORTHEAST SITE SOLUTIONS  
420 MAIN ST  
STE 1  
STURBRIDGE MA 01566-1359  
Expected Delivery Date: 11/20/21  
**0006**

**R014**

SHIP TO: THE HONORABLE EDWARD B ST. JOHN  
TOWN OF MIDDLEBURY, FIRST SELECTMAN  
1212 WHITTEMORE RD  
MIDDLEBURY CT 06762-2425

**USPS TRACKING #**



**9405 5036 9930 0064 8072 00**

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Print Date:	11/17/2021	Total:	<b>\$8.70</b>
Ship Date:	11/17/2021		
Expected Delivery Date:	11/20/2021		

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STURBRIDGE MA 01566-1359

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TOWN OF MIDDLEBURY, FIRST SELECTMAN  
1212 WHITTEMORE RD  
MIDDLEBURY CT 06762-2425

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usps.com 9405 5036 9930 0064 8072 17 0087 0000 0010 6762  
US POSTAGE \$8.70  
Flat Rate Env  
11/17/2021 Mailed from 01566 10001000



PRIORITY MAIL 2-DAY™

DEBORAH CHASE  
NORTHEAST SITE SOLUTIONS  
420 MAIN ST  
STE 1  
STURBRIDGE MA 01566-1359  
Expected Delivery Date: 11/20/21  
0006

R014

SHIP TO: CURTIS S BOSCO  
TOWN OF MIDDLEBURY, ZONING ENFORCEMENT  
1212 WHITTEMORE RD  
MIDDLEBURY CT 06762-2425

USPS TRACKING #



9405 5036 9930 0064 8072 17

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9405 5036 9930 0064 8072 17

Trans. #:	548572036	Priority Mail® Postage:	\$8.70
Print Date:	11/17/2021	Total:	\$8.70
Ship Date:	11/17/2021		
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From: DEBORAH CHASE  
NORTHEAST SITE SOLUTIONS  
420 MAIN ST  
STE 1  
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To: CURTIS S BOSCO  
TOWN OF MIDDLEBURY, ZONING ENFORCEMENT  
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STE 1  
STURBRIDGE MA 01566-1359

Expected Delivery Date: 11/20/21

**0006**

**R014**

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TOWN OF MIDDLEBURY  
1212 WHITTEMORE RD  
MIDDLEBURY CT 06762-2425

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**9405 5036 9930 0064 8072 24**

Trans. #:	548572036	Priority Mail® Postage:	<b>\$8.70</b>
Print Date:	11/17/2021	Total:	<b>\$8.70</b>
Ship Date:	11/17/2021		
Expected			
Delivery Date:	11/20/2021		

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