



August 20, 2022

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

Re: Tower Share Application – Dish Site 14117988
Dish Wireless Telecommunications Facility @ 1375 North Road, Killingly, CT 06241

Dear Ms. Bachman,

Dish Wireless is proposing a new wireless telecommunications facility on an existing tower at the above referenced address. Enclosed please find Check Number 034916 in the amount of Six Hundred and Twenty Five Dollars (\$625.00); an original and two (2) copies of the following documents: the CSC Exempt Mod letter; a Letter of Authorization from tower owner; a GIS map of the property; an email from the town advising that no records of tower approval can be found; a set of Construction Drawings; a Structural Analysis Report; an Antenna Mount Analysis Report; an EME Study Report; and three (3) Notice Confirmations.

I will email a .pdf copy of these documents to the Council.

If you have any questions, please feel free to contact me; I can be reached at 443-677-0144 or via email at jmandrews@clinellc.com. Thank you for your kind cooperation in this matter

Respectfully Submitted,


Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144



September 16, 2022

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

Re: Tower Share Application – Dish Site 14117988
Dish Wireless Telecommunications Facility @ 1375 North Road, Killingly, CT 06241

Dear Ms. Bachman,

Dish Wireless ("Dish") is proposing a wireless telecommunications facility on an existing lattice tower at 1375 North Road, Killingly, CT 06241 (Latitude: 41.87155083, Longitude: -71.82156976) and within the existing fenced compound. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by American Tower Corporation. The Director of Planning and Development for the Town of Killingly has no record of the original approval for the tower (correspondence copy enclosed).

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and to install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at two hundred thirty (230) feet as more particularly detailed and described on the enclosed Construction Drawings.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish's intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A §16-50j-73, a copy of this letter is being sent to the following individuals: American Tower Corporation as Tower Owner; American Tower Corporation as Property Owner; Mary Calorio as the Town Manager for Killingly and Ann-Marie L. Aubrey, the Town of Killingly Director of Planning & Development.

The applicant's proposal falls squarely within those activities explicitly provided for in R.C.S.A. §16-50j-89. Specifically:

1. The proposed modifications will NOT result in an increase in the height of the existing structure.
2. The proposed modifications will NOT require an extension of the site boundary.
3. The proposed modifications will NOT increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will NOT increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Please see the RF emissions calculation for DISH's facility enclosed herewith.
5. The proposed modifications will NOT cause an ineligible change or alteration in the physical or environmental characteristics of the site.



6. The existing structure and its foundation can support the proposed loading. Please see the enclosed structural analysis.

Connecticut General Statute 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish 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's proposed loading (see attached Structural Analysis).
- 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. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish to obtain a building permit for the proposed installation. Further, a Letter of Authorization is attached, authorizing Dish 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 equipment at the 230-foot level of the existing 300-foot tower would have an insignificant visual impact on the area around the tower. Dish ground equipment would be installed within the existing facility compound. The Dish shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by the attached EME study, 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 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 with this tower sharing application.
- E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting the proposed loading. Dish is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish's 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 the area.



For the foregoing reasons, Dish respectfully requests that the Council approve this request for the shared use of this tower located at 1375 North Road, Killingly, CT 06241.

If you have any questions, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Jack Andrews".

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

Enclosures:

- Exhibit 1 – Letter of Authorization from tower owner
- Exhibit 2 – GIS Map
- Exhibit 3 – Construction Drawings
- Exhibit 4 – Structural Analysis Report
- Exhibit 5 – Antenna Mount Analysis Report
- Exhibit 6 – EME Study Report
- Exhibit 7 – Director of Planning and Development email 9/8/22
- Exhibit 8 – (4) Notice Confirmations

cc:

American Tower Corporation - Tower Owner and Property Owner
Mary Calorio - Killingly Town Manager
Ann-Marie L. Aubrey - Killingly Director of Planning & Development



LETTER OF AUTHORIZATION FOR PERMITTING

ATC SITE#/NAME/PROJECT: 88011 / EAST KILLINGLY NORTH / 14117988

SITE ADDRESS: 1375 NORTH RD, DAYVILLE, CT 06241

APN: KILL-000050-000000-000003

LICENSEE: DISH WIRELESS L.L.C. dba DISH WIRELESS L.L.C.

SITE ACQUISITION VENDOR: CENTERLINE COMMUNICATIONS LLC

I, Margaret Robinson, Vice President, UST Legal for American Tower*, owner/operator of the tower facility located at the address identified above (the "Tower Facility"), do hereby authorize **DISH WIRELESS L.L.C. dba DISH WIRELESS L.L.C.** their successors and assigns, and/or their agent, (collectively, the "Licensee") to act as American Tower's non-exclusive agent for the sole purpose of filing and consummating any land-use, building, or electrical permit application(s) as may be required by the applicable permitting authorities for Licensee's telecommunications' installation on the Tower Facility.

American Tower understands that this application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by Licensee only of conditions related to Licensee's installation and any such conditions of approval or modifications will be Licensee's sole responsibility.

Signature:

Print Name: Margaret Robinson
Vice President, UST Legal
American Tower*

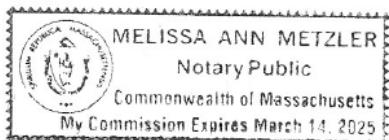
NOTARY BLOCK

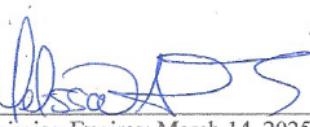
Commonwealth of MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Vice President, UST Legal for American Tower*, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

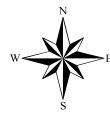
WITNESS my hand and official seal, this 10th day of August, 2022

NOTARY SEAL



Notary Public 
My Commission Expires: March 14, 2025

* American Tower is defined as American Tower Corporation and any of its affiliates or subsidiaries.



September 16, 2022

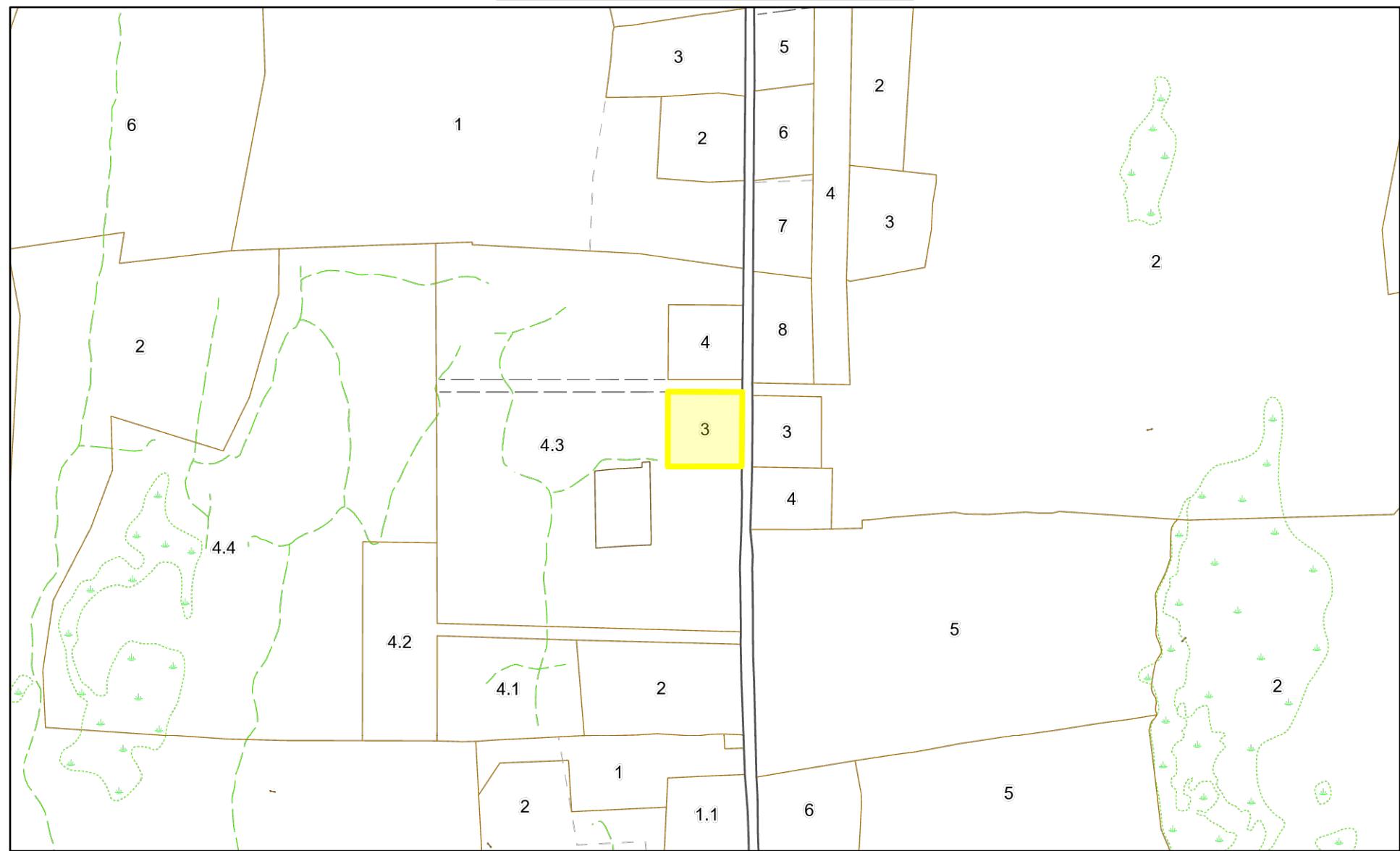
Killingly, CT

1 inch = 561 Feet

0 561 1122 1683



www.cai-tech.com



Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

From: [Ann-Marie Aubrey](#)
To: [John Andrews](#)
Subject: RE: [Town of Killingly CT] CSC Antenna Collocation at 1375 North Road (Sent by Jack Andrews, jmandrews@clinellc.com)
Date: Thursday, September 8, 2022 3:11:43 PM

Dear Mr. Andrews;

The Tower dates back beyond the late 2005 / early 2006. The file for that Tower is quite extensive, and even though I could not verify the exact date the Tower was approved, there have been numerous applications by mobile communication companies to change out and update their antenna's on the Tower, and all of those applications had to go before the Connecticut Siting Council. So this is a well-known Tower at a well-known location. I believe the Tower was actually constructed in the early to late 1990's.

If there is anything further I can assist you with, please let me know.

Sincerely,

Ann-Marie L. Aubrey
Director, Planning and Development
Killingly Town Hall
172 Main Street
Killingly, CT 06239
(t) 860-779-5311
(f) 860-779-5381
(email) aaubrey@killinglyct.gov

-----Original Message-----

From: John Andrews <jmandrews@clinellc.com>
Sent: Thursday, September 8, 2022 2:02 PM
To: Ann-Marie Aubrey <aaubrey@killinglyct.gov>
Subject: RE: [Town of Killingly CT] CSC Antenna Collocation at 1375 North Road (Sent by Jack Andrews, jmandrews@clinellc.com)

Ms. Aubrey - Have you had any success in locating any prior approval for the tower 1375 North Road?

Based on the illegible dates on the Permit I sent, it was likely in late 2005 or the first half of '06.

Thank you for your assistance.

John Andrews Jr. | Project Manager
10130 Donleigh Drive, Columbia, MD 21046 Centerline Communications
750 W Center St, Suite 301 | West Bridgewater, MA 02379
Mobile: 443.677.0144
jmandrews@clinellc.com | https://link.edgepilot.com/s/f2b0836e/BSZ-PIx57E_DFJmX_cDp5g?u=http://www.centerlinecommunications.com/

-----Original Message-----

From: Ann-Marie Aubrey <aaubrey@killinglyct.gov>
Sent: Thursday, September 1, 2022 6:32 PM
To: John Andrews <jmandrews@clinellc.com>
Subject: RE: [Town of Killingly CT] CSC Antenna Collocation at 1375 North Road (Sent by Jack Andrews,



DISH Wireless L.L.C. SITE ID:

BOBOS00031B

DISH Wireless L.L.C. SITE ADDRESS:

**1375 NORTH ROAD
KILLINGLY, CT 06241-1404**

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-0	SURVEY
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	RF SIGNAGE
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES
GN-5	GENERAL NOTES

SCOPE OF WORK	
THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:	
TOWER SCOPE OF WORK:	
<ul style="list-style-type: none"> • INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR) • INSTALL (3) PROPOSED ANTENNA SECTOR FRAME MOUNTS (1 PER SECTOR) • INSTALL PROPOSED JUMPERS • INSTALL (6) PROPOSED RRUs (2 PER SECTOR) • INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP) • INSTALL (1) PROPOSED HYBRID CABLE 	
GROUND SCOPE OF WORK:	
<ul style="list-style-type: none"> • INSTALL (1) PROPOSED METAL PLATFORM • INSTALL (1) PROPOSED ICE BRIDGE • INSTALL (1) PROPOSED PPC CABINET • INSTALL (1) PROPOSED EQUIPMENT CABINET • INSTALL (1) PROPOSED POWER CONDUIT • INSTALL (2) PROPOSED TELCO CONDUIT • INSTALL (1) PROPOSED TELCO-FIBER BOX • INSTALL (1) PROPOSED GPS UNIT • INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED) • INSTALL (1) PROPOSED CIENA BOX (IF REQUIRED) • INSTALL (1) PROPOSED METER SOCKET • INSTALL (1) PROPOSED POWER BOOSTER FOR HYBRID CABLE 	
NOTE: THE SCOPE OF THIS PROJECT DOES NOT INCLUDE MODIFICATIONS TO THE TOWER STRUCTURE OR FOUNDATION. A SEPARATE BUILDING PERMIT APPLICATION WILL BE SUBMITTED FOR ANY TOWER MODIFICATIONS.	

SITE INFORMATION		PROJECT DIRECTORY	
PROPERTY OWNER:	AMERICAN TOWERS INC.	APPLICANT:	DISH Wireless L.L.C.
ADDRESS:	PO BOX 723597		5701 SOUTH SANTA FE DRIVE
	ATLANTA, GA 31139		LITTLETON, CO 80120
			(303) 706-5008
TOWER TYPE:	SELF SUPPORT	TOWER OWNER:	AMERICAN TOWER
TOWER CO SITE ID:	88011		10 PRESIDENTIAL WAY
			WOBURN, MA 01801
TOWER APP NUMBER:	14117988	ENGINEER:	NB+C ENGINEERING SERVICES, LLC.
COUNTY:	WINDHAM		8601 SIX FORKS ROAD, SUITE 540
LATITUDE (NAD 83):	41.87155083		RALEIGH, NC 27615
LONGITUDE (NAD 83):	-71.82156976		
ZONING JURISDICTION:	TOWN OF KILLINGLY	SITE ACQUISITION:	JULIE CHAREST
ZONING DISTRICT:	RD		JULIE.CHAREST@DISH.COM
PARCEL NUMBER:	050-003-000	CONSTRUCTION MANAGER:	CHAD WILCOX
OCCUPANCY GROUP:	U		CHAD.WILCOX@DISH.COM
CONSTRUCTION TYPE:	II-B	RF ENGINEER:	DIPESH PARIKH
POWER COMPANY:	EVERSOURCE ENERGY/56002 888.783.6617		DIPESH.PARIKH@DISH.COM
TELEPHONE COMPANY:	TBD		



DRAWN BY: **CT** CHECKED BY: **BIW** APPROVED BY: **BIW**

RFDS REV #: **1**

CONSTRUCTION DOCUMENTS

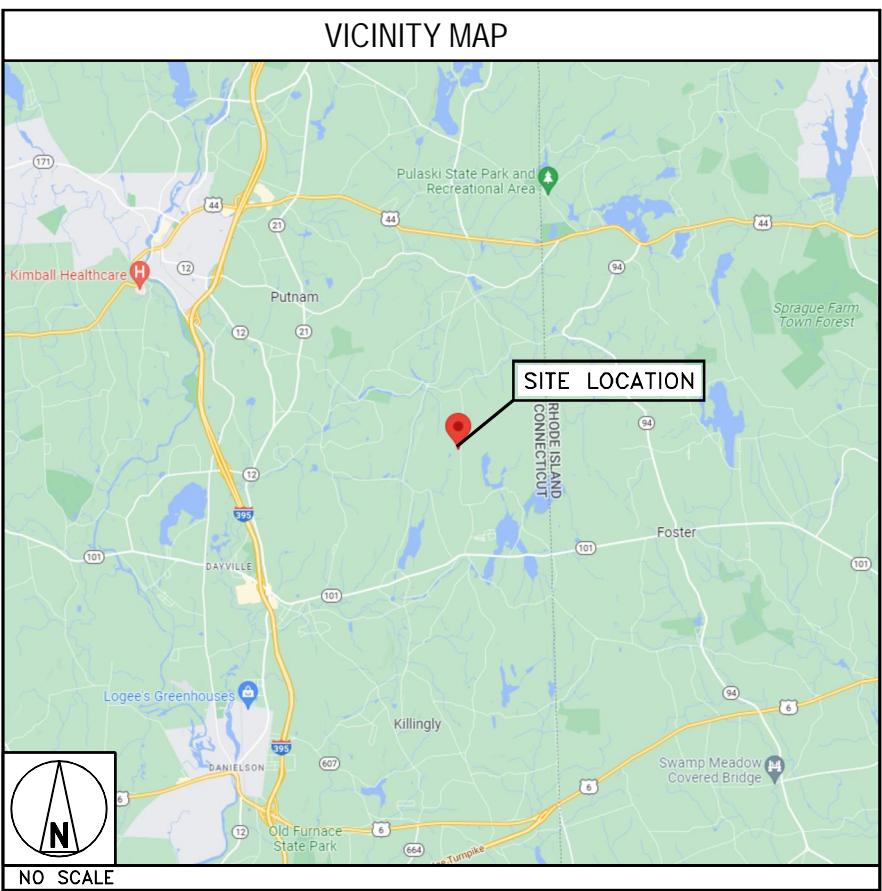
SUBMITTALS		
REV	DATE	DESCRIPTION
A	07/14/2022	ISSUED FOR REVIEW
O	08/03/2022	ISSUED FOR CONSTRUCTION



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.	
THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.6100 (B)(7).	
11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED	

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

DIRECTIONS	
	TAKE ROUTE 395 TO EXIT 97. AT END OF THE RAMP, TAKE A LEFT ONTO 44 EAST. AFTER YOU CROSS FIVE MILE RIVER, GO ABOUT ANOTHER .5 MILES AND TAKE A RIGHT ONTO EAST PUTNAM ROAD. AT THE 3RD STOP SIGN, TAKE A LEFT. LOOK FOR NORTH ROAD ON YOUR RIGHT. TAKE NORTH ROAD. TOWER IS ON THE RIGHT.



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.

A&E PROJECT NUMBER
88011-14117988

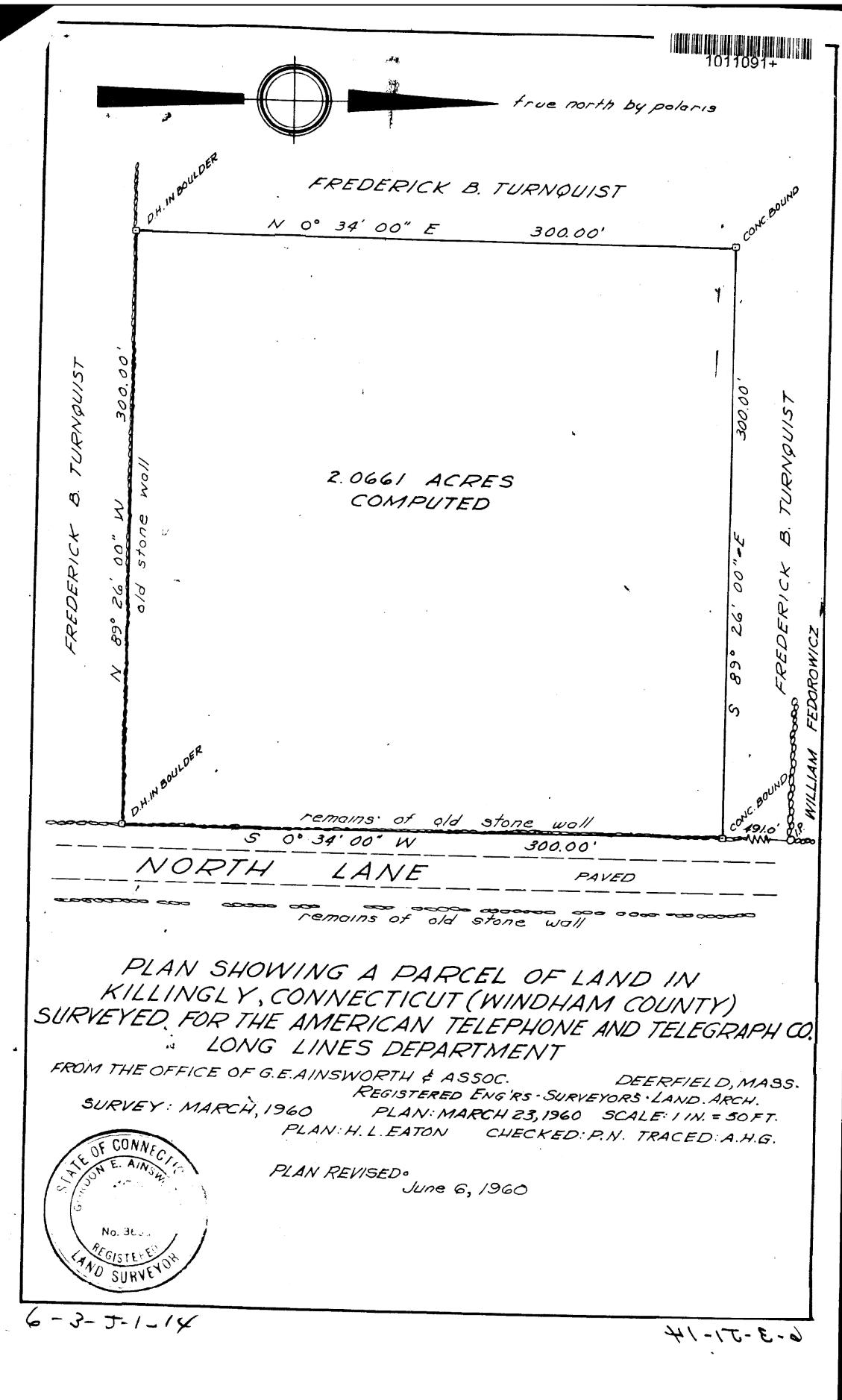
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

1. THE SURVEY PROVIDED ON THIS SHEET IS PROVIDED FOR REFERENCE ONLY. THE UTILITY ROUTE AND EXISTING EASEMENTS MUST BE VERIFIED PRIOR TO CONSTRUCTION.



EXISTING SURVEY (BY OTHERS)

NO SCALE

1

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

NB+C
TOTALLY COMMITTED.
NB+C ENGINEERING SERVICES, LLC.
8601 SIX FORKS ROAD, SUITE 540
RALEIGH, NC 27615
(919) 657-9131

DRAWN BY:	CHECKED BY:	APPROVED BY:
CT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/14/2022	ISSUED FOR REVIEW
O	08/03/2022	ISSUED FOR CONSTRUCTION



08/03/2022

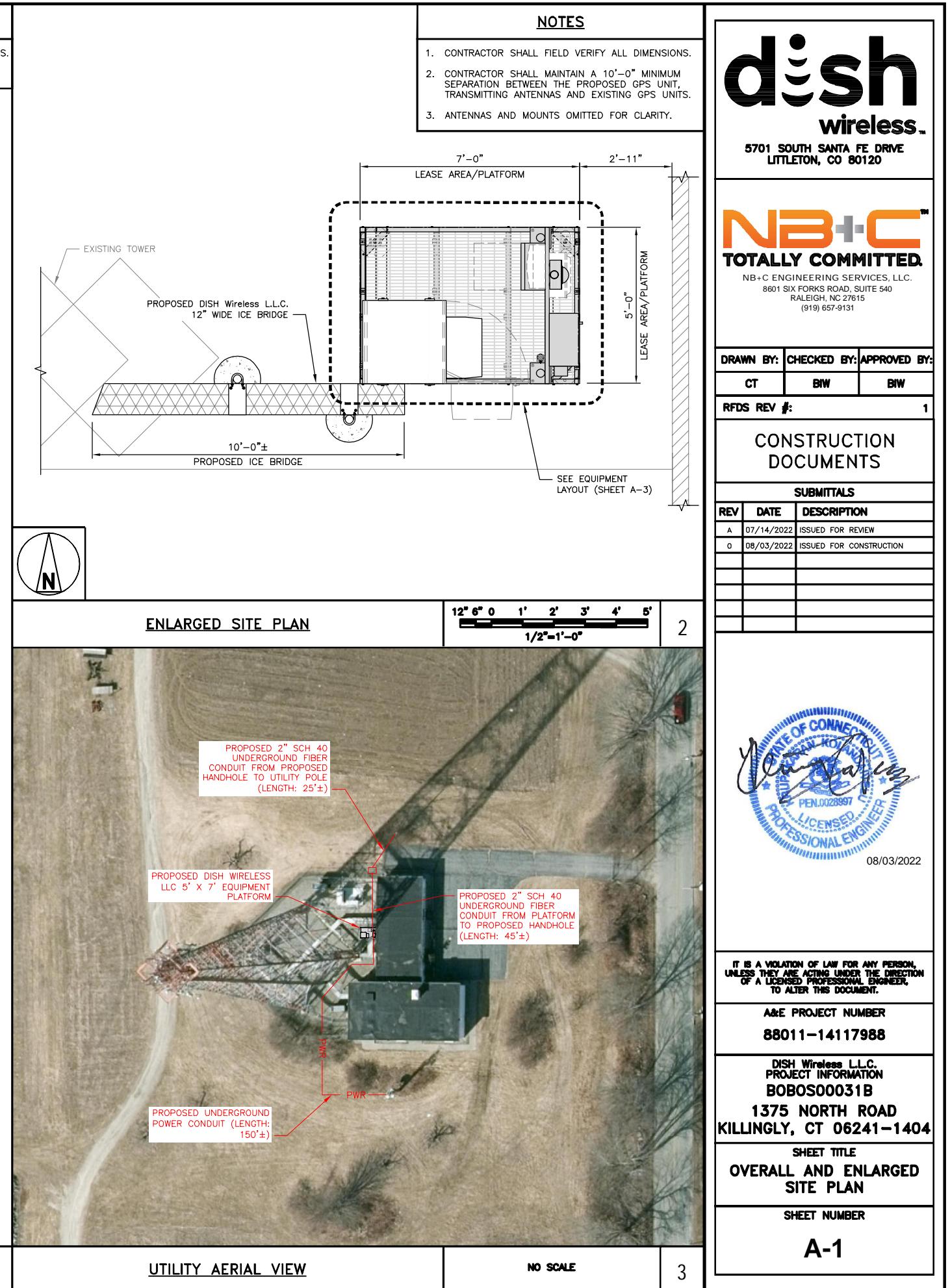
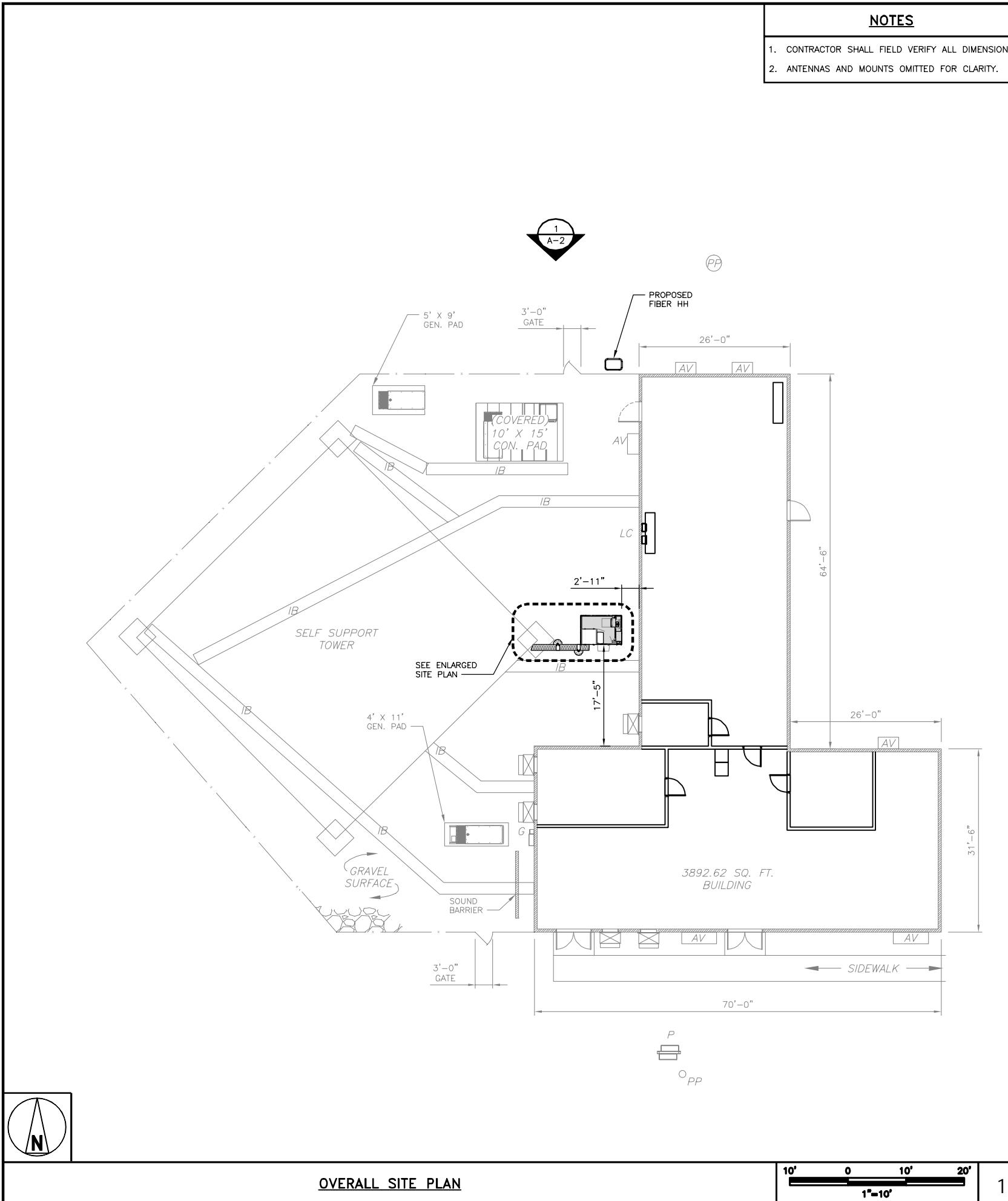
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A&E PROJECT NUMBER
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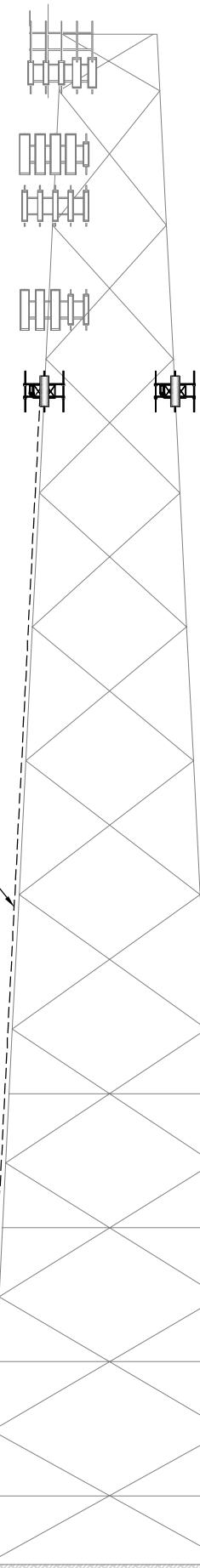
DISH Wireless LLC.
PROJECT INFORMATION
BOBOS00031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404

SHEET TITLE
SURVEY

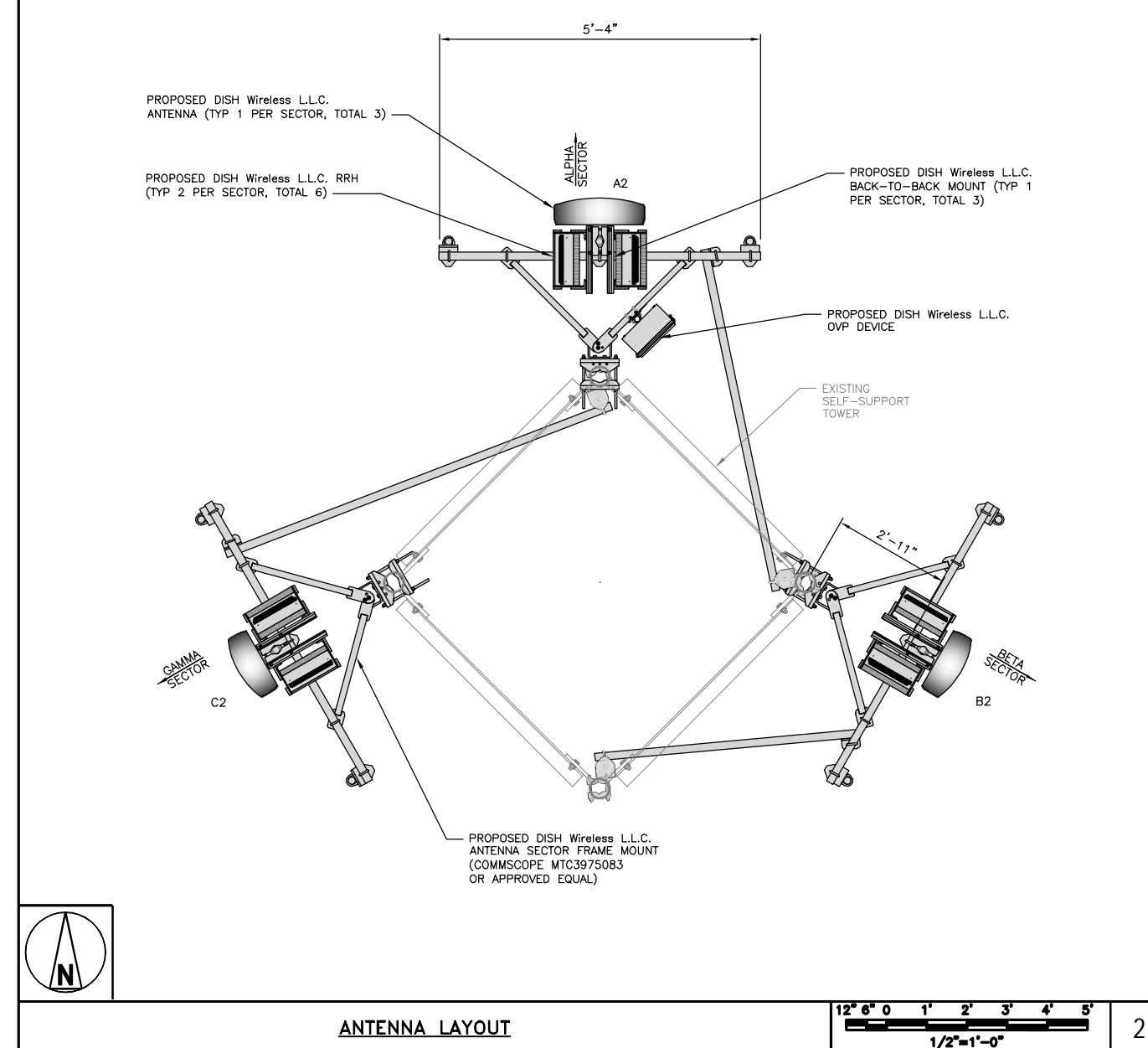
SHEET NUMBER
A-0



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.	



T.O. EXISTING HIGHEST APPURTENANCE ELEV 305.62'	EXISTING CARRIER ANTENNAS ELEV 303'
EXISTING CARRIER ANTENNAS ELEV 292.4'	T.O. EXISTING TOWER ELEV 287.5'
EXISTING CARRIER ANTENNAS ELEV 276.5'	
EXISTING CARRIER ANTENNAS ELEV 266.3'	
EXISTING CARRIER ANTENNAS ELEV 246'	
(3) PROPOSED DISH Wireless L.L.C. ANTENNAS RAD CENTER @ 230'-0" AGL	



ANTENNA LAYOUT										12' 6" 0" 1' 2' 3' 4' 5'	1/2"=1'-0"	2
SECTOR POS.	EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	TRANSMISSION CABLE	RRH	RRH POS.	OVP	MANUFACTURER MODEL		
A1	--	--	--	--	--	(1) HIGH-CAPACITY HYBRID CABLE (290' LONG)	TA08025-B604	5G	A2	(1) RAYCAP RDIDC-9181-PF-48		
A2	PROPOSED	FFVV-65B-R2	5G	0'	230'-0"		TA08025-B605	5G	A2			
A3	--	--	--	--	--		--	--	--			
B1	--	--	--	--	--	SHARED W/ALPHA	TA08025-B604	5G	B2	SHARED W/ALPHA		
B2	PROPOSED	FFVV-65B-R2	5G	120'	230'-0"		TA08025-B605	5G	B2			
B3	--	--	--	--	--		--	--	--			
C1	--	--	--	--	--	SHARED W/ALPHA	TA08025-B604	5G	C2	SHARED W/ALPHA		
C2	PROPOSED	FFVV-65B-R2	5G	240'	230'-0"		TA08025-B605	5G	C2			
C3	--	--	--	--	--		--	--	--			

NOTES

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

PROPOSED NORTHEAST ELEVATION

16' 12' 8' 4' 0" 16' 32'
1/16"=1'-0"

1

ANTENNA SCHEDULE

NO SCALE

3

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

NB+C
TOTALLY COMMITTED.
NB+C ENGINEERING SERVICES, LLC.
8601 SIX FORKS ROAD, SUITE 540
RALEIGH, NC 27615
(919) 657-9131

DRAWN BY: **CT** CHECKED BY: **BIW** APPROVED BY: **BIW**

RFDS REV #: **1**

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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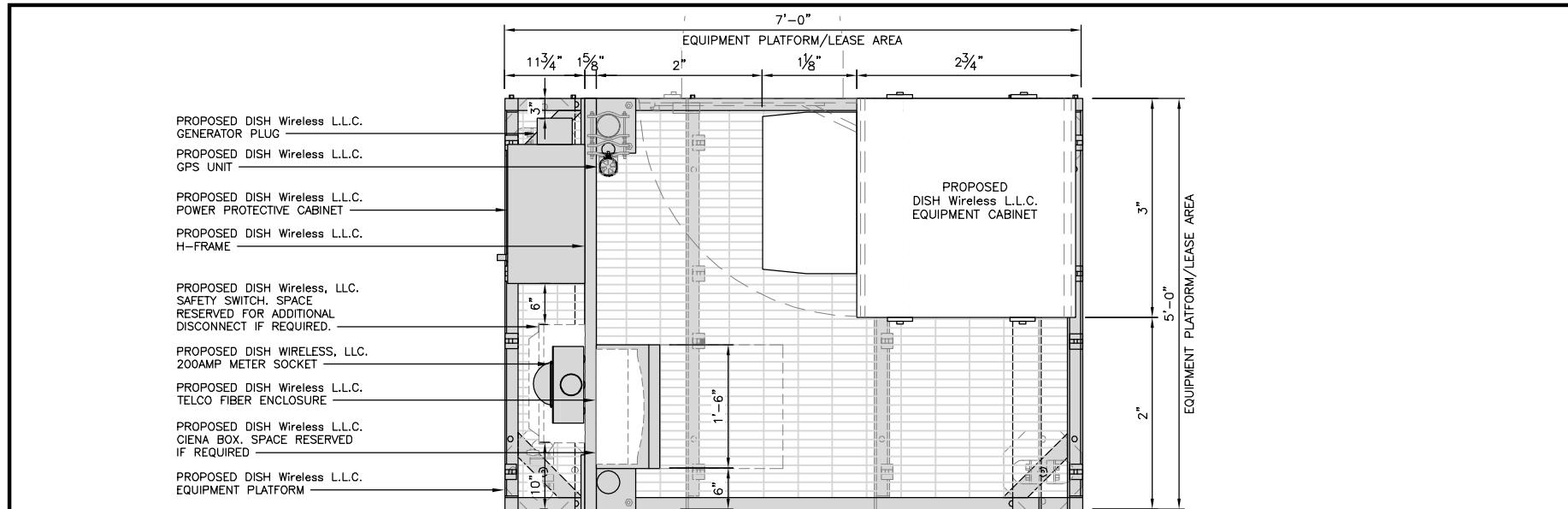
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A&E PROJECT NUMBER
88011-14117988

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



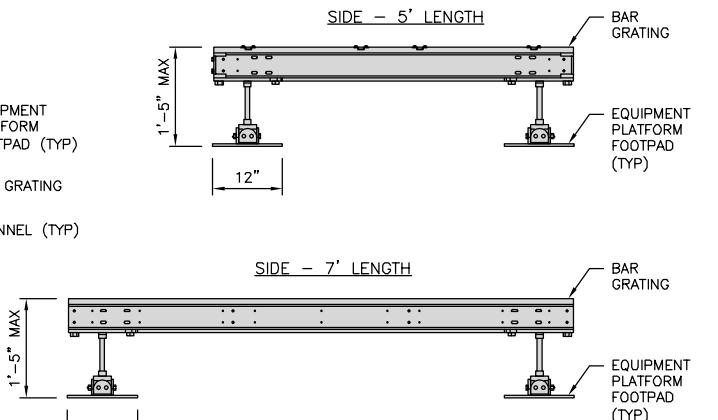
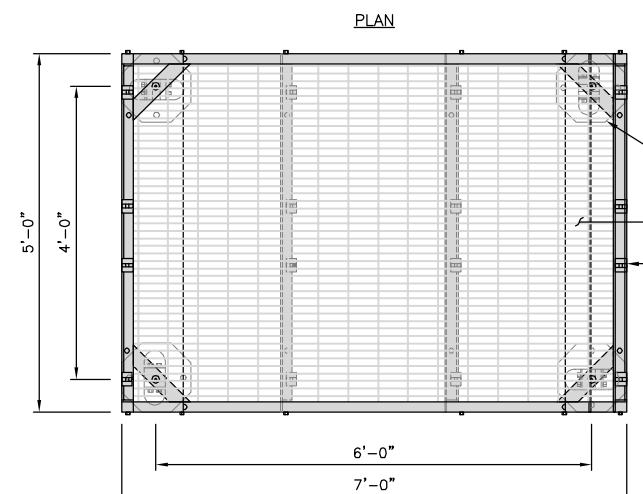
PLATFORM EQUIPMENT PLAN

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

1

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

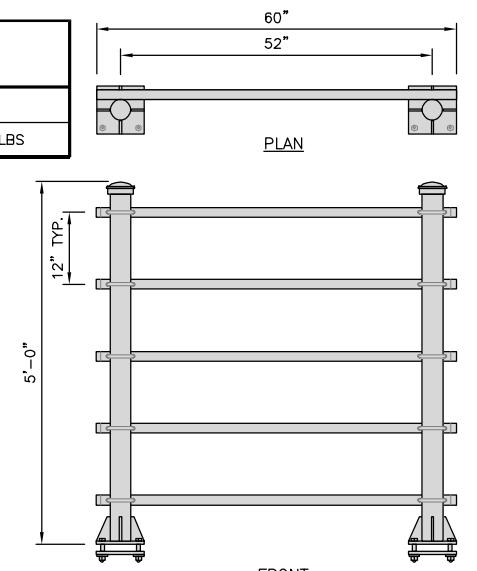
NOTE:
PLATFORM TO BE WITHIN 1' OF
LEVEL



PLATFORM DETAIL

NO SCALE 2

KENWOOD T1701KT5-5S H-FRAME	
UNISTRUT/SUPPORT RAIL	5
WEIGHT/ VOLUME	173.6 LBS

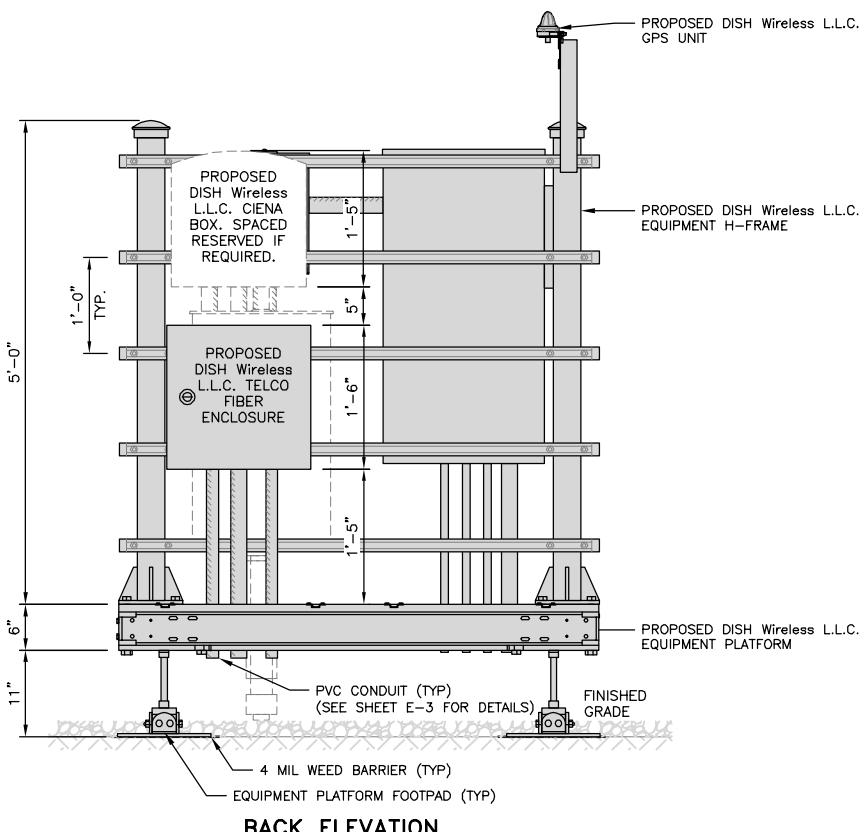
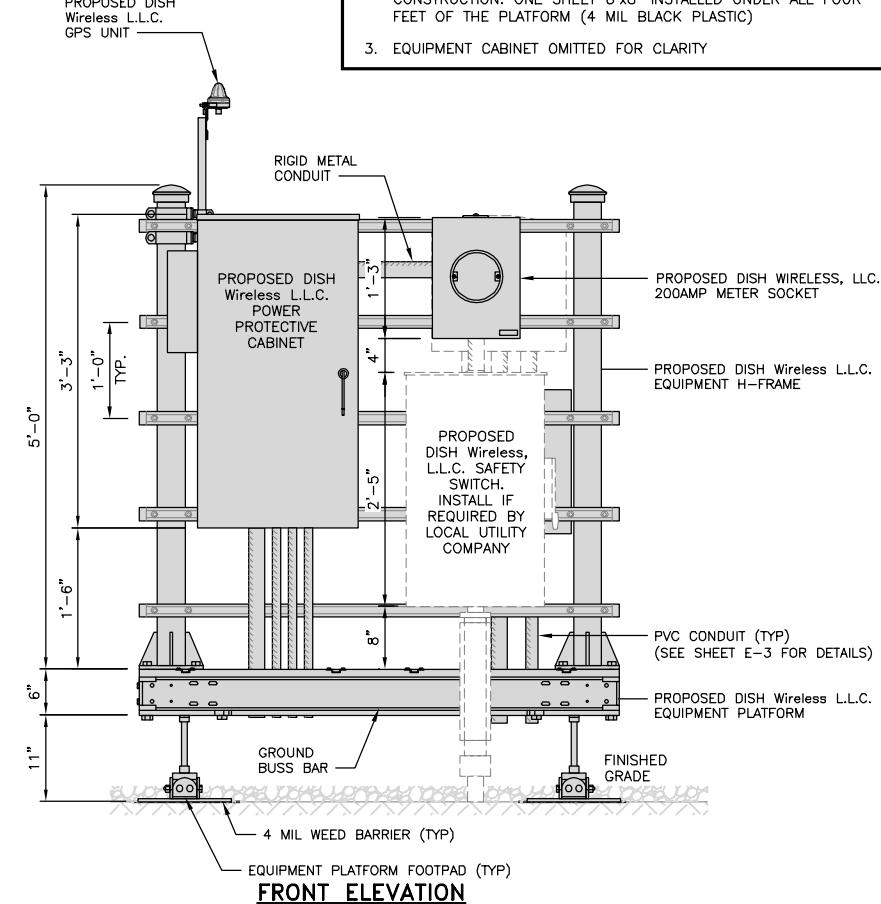


H-FRAME DETAIL

NO SCALE 3

NOT USED

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



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

H-FRAME EQUIPMENT ELEVATION

4

5

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

NB+C
TOTALLY COMMITTED.
NB+C ENGINEERING SERVICES, LLC.
8601 SIX FORKS ROAD, SUITE 540
RALEIGH, NC 27615
(919) 657-9131

DRAWN BY: **CT** CHECKED BY: **BIW** APPROVED BY: **BIW**

RFDS REV #: **1**

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/14/2022	ISSUED FOR REVIEW
O	08/03/2022	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
LICENSING BOARD
PEN.0128897

08/03/2022

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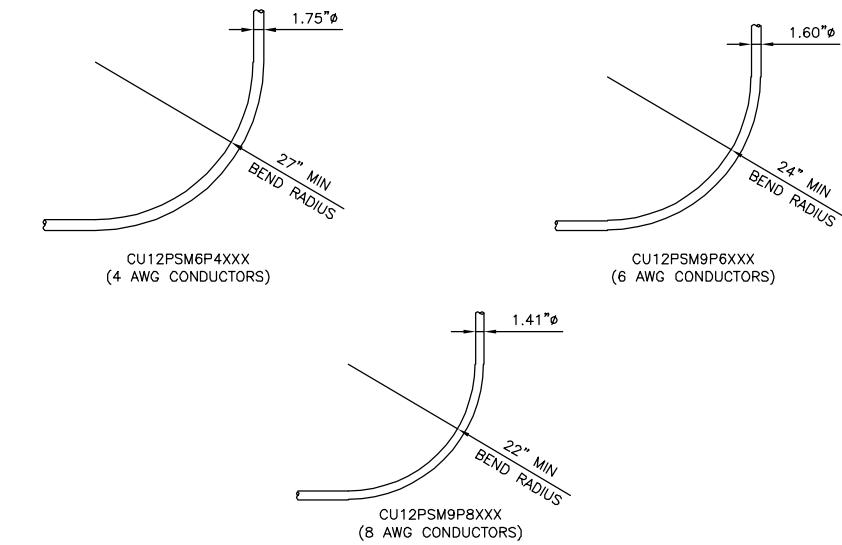
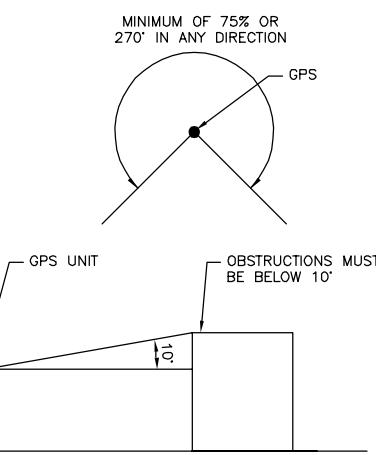
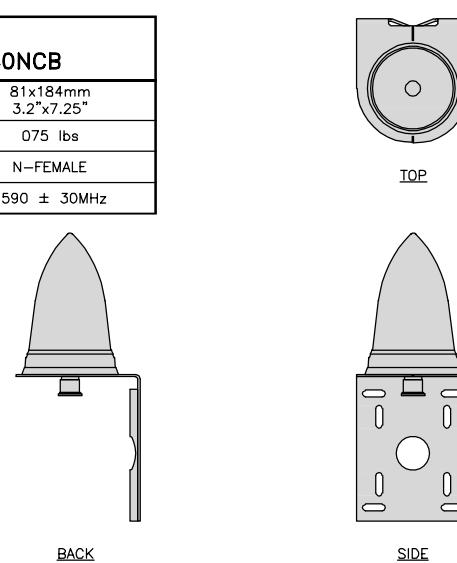
A&E PROJECT NUMBER
88011-14117988

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404

SHEET TITLE
**EQUIPMENT PLATFORM
AND H-FRAME DETAILS**

SHEET NUMBER
A-3

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



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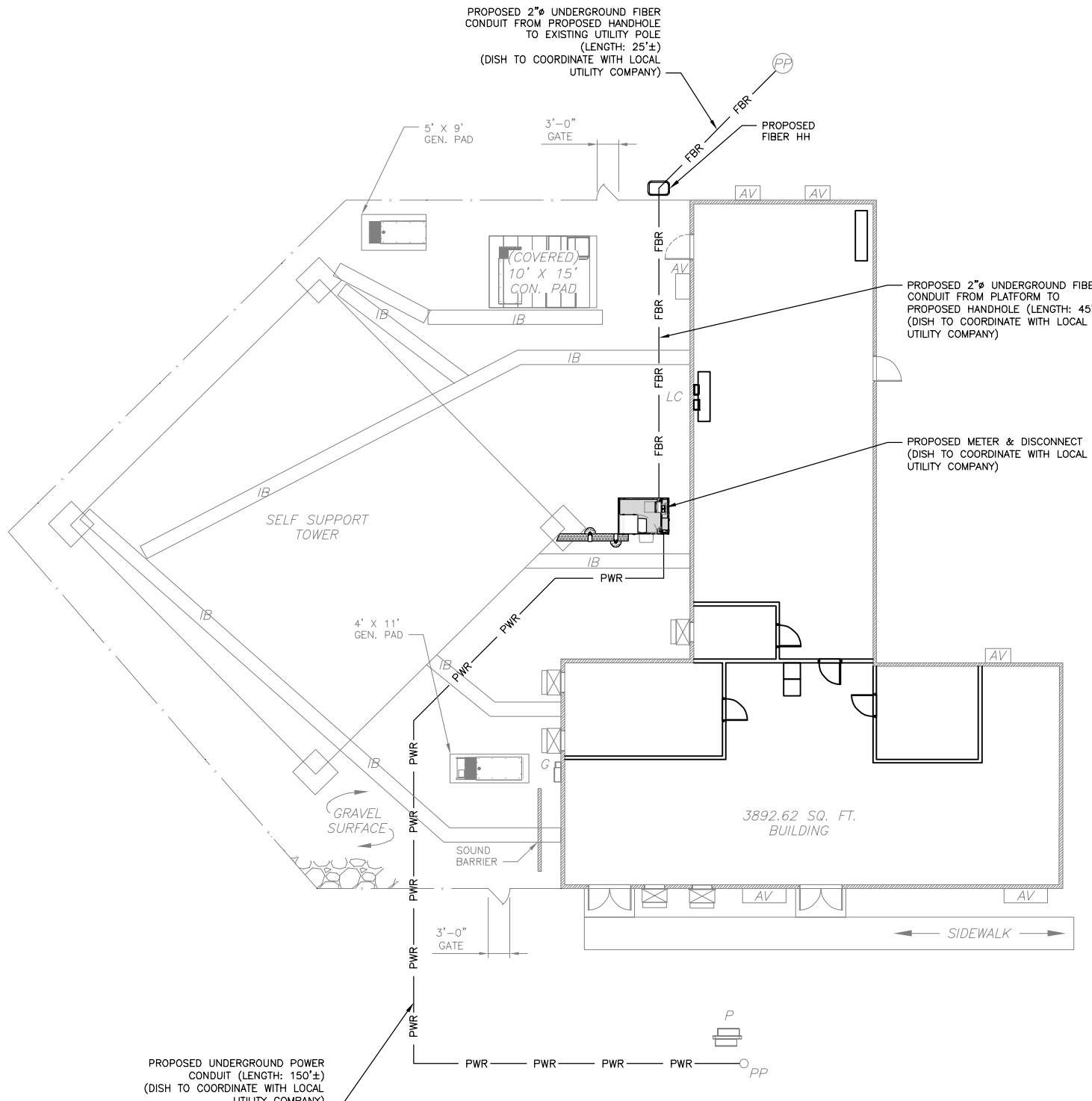
DISH Wireless LLC.
PROJECT INFORMATION
BOBOS00031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

<u>GPS DETAIL</u>	NO SCALE	1	<u>GPS MINIMUM SKY VIEW REQUIREMENTS</u>	NO SCALE	2	<u>CABLES UNLIMITED HYBRID CABLE</u> MINIMUM BEND RADIUSES	NO SCALE	3
<u>NOT USED</u>	NO SCALE	4	<u>NOT USED</u>	NO SCALE	5	<u>NOT USED</u>	NO SCALE	6
<u>NOT USED</u>	NO SCALE	7	<u>NOT USED</u>	NO SCALE	8	<u>NOT USED</u>	NO SCALE	9

<u>NOT USED</u>	NO SCALE	7	<u>NOT USED</u>	NO SCALE	8	<u>NOT USED</u>	NO SCALE	9
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NOTES

- 1. THE EASEMENT RIGHTS FOR THIS SITE DO NOT INCLUDE A SPECIFIED AREA FOR THE LOCATION OF UTILITIES. CONSTRUCTION CONTRACTOR MUST FIELD VERIFY THE APPROPRIATENESS OF ALL PROPOSED UTILITY ROUTES
- 2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
- 3. GC TO REFER TO FINAL UTILITY COORDINATION DOCUMENT FOR ALL MEET ME POINTS AND ROUTING DETAILS.

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

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

ELECTRICAL NOTES

NO SCALE

2



UTILITY ROUTE PLAN

1

OVERALL UTILITY EASEMENT AERIAL VIEW

NO SCALE

3

E-1

08/03/2022

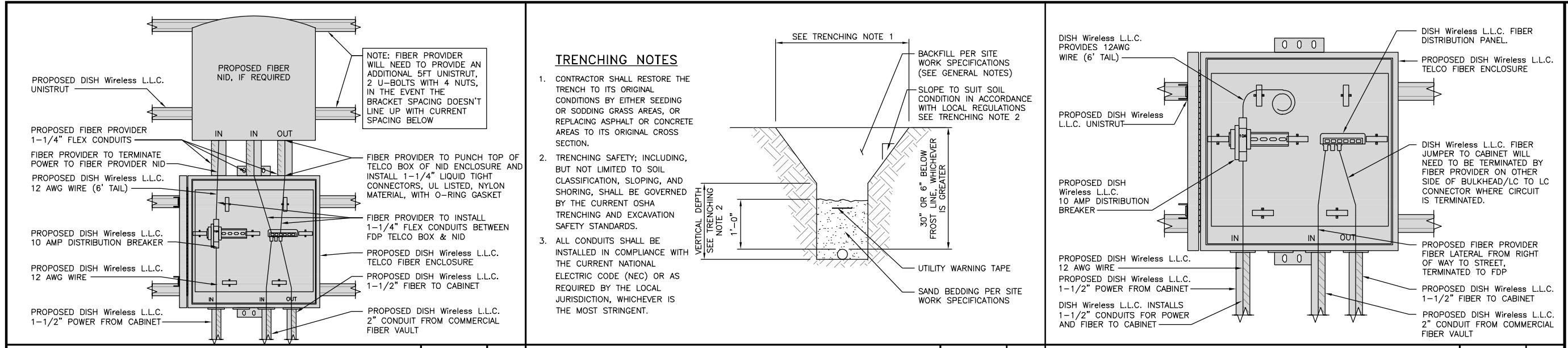
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DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404

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

SHEET NUMBER



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

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ELECTRICAL DETAILS

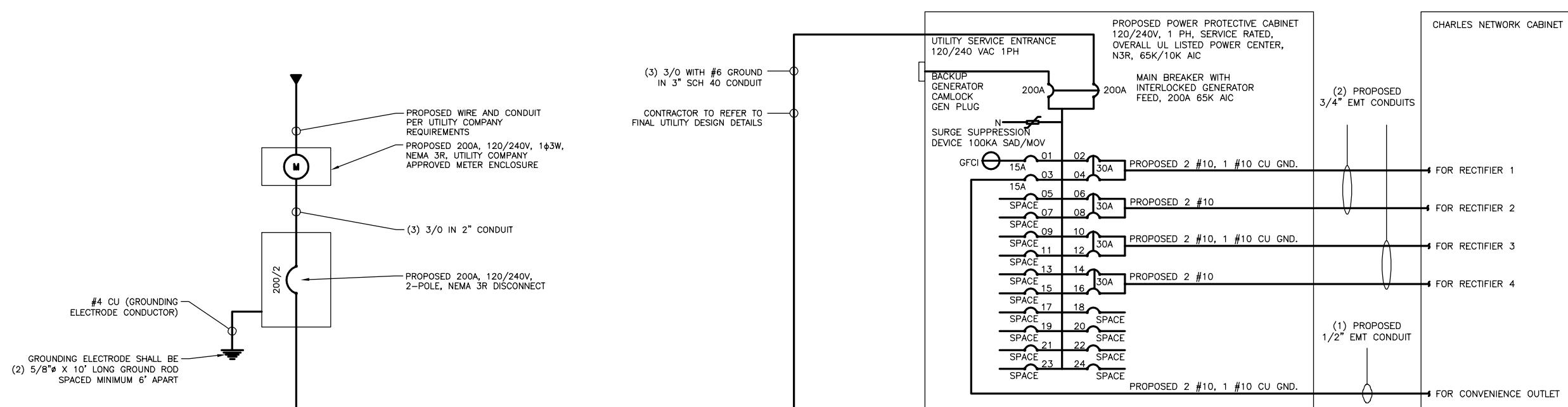
SHEET NUMBER
E-2

<u>LIT TELCO BOX - INTERIOR WIRING LAYOUT (OPTIONAL)</u>	NO SCALE	1	<u>TYPICAL UNDERGROUND TRENCH DETAIL</u>	NO SCALE	2	<u>DARK TELCO BOX - INTERIOR WIRING LAYOUT</u>	NO SCALE	3
<u>NOT USED</u>	NO SCALE	4	<u>NOT USED</u>	NO SCALE	5	<u>NOT USED</u>	NO SCALE	6
<u>NOT USED</u>	NO SCALE	7	<u>NOT USED</u>	NO SCALE	8	<u>NOT USED</u>	NO SCALE	9

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

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

PPC ONE-LINE DIAGRAM

NO SCALE 1

PROPOSED CHARLES PANEL SCHEDULE								
LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)
	L1	L2						
PPC GFCI OUTLET	180		15A	1	A	2	30A	2000
CHARLES GFCI OUTLET	180		15A	3	B	4		2000
–SPACE–				5	A	6	30A	2000
–SPACE–				7	B	8		2000
–SPACE–				9	A	10	30A	2000
–SPACE–				11	B	12		2000
–SPACE–				13	A	14	30A	2000
–SPACE–				15	B	16		2000
–SPACE–				17	A	18		–SPACE–
–SPACE–				19	B	20		–SPACE–
–SPACE–				21	A	22		–SPACE–
–SPACE–				23	B	24		–SPACE–
VOLTAGE AMPS	180	180						8000 8000
200A MCB, 1 $\frac{1}{2}$, 24 SPACE, 120/240V	L1	L2						
MB RATING: 65,000 AIC	8180	8180						
	69	69						
	69							MAX AMPS
	87							MAX 125%

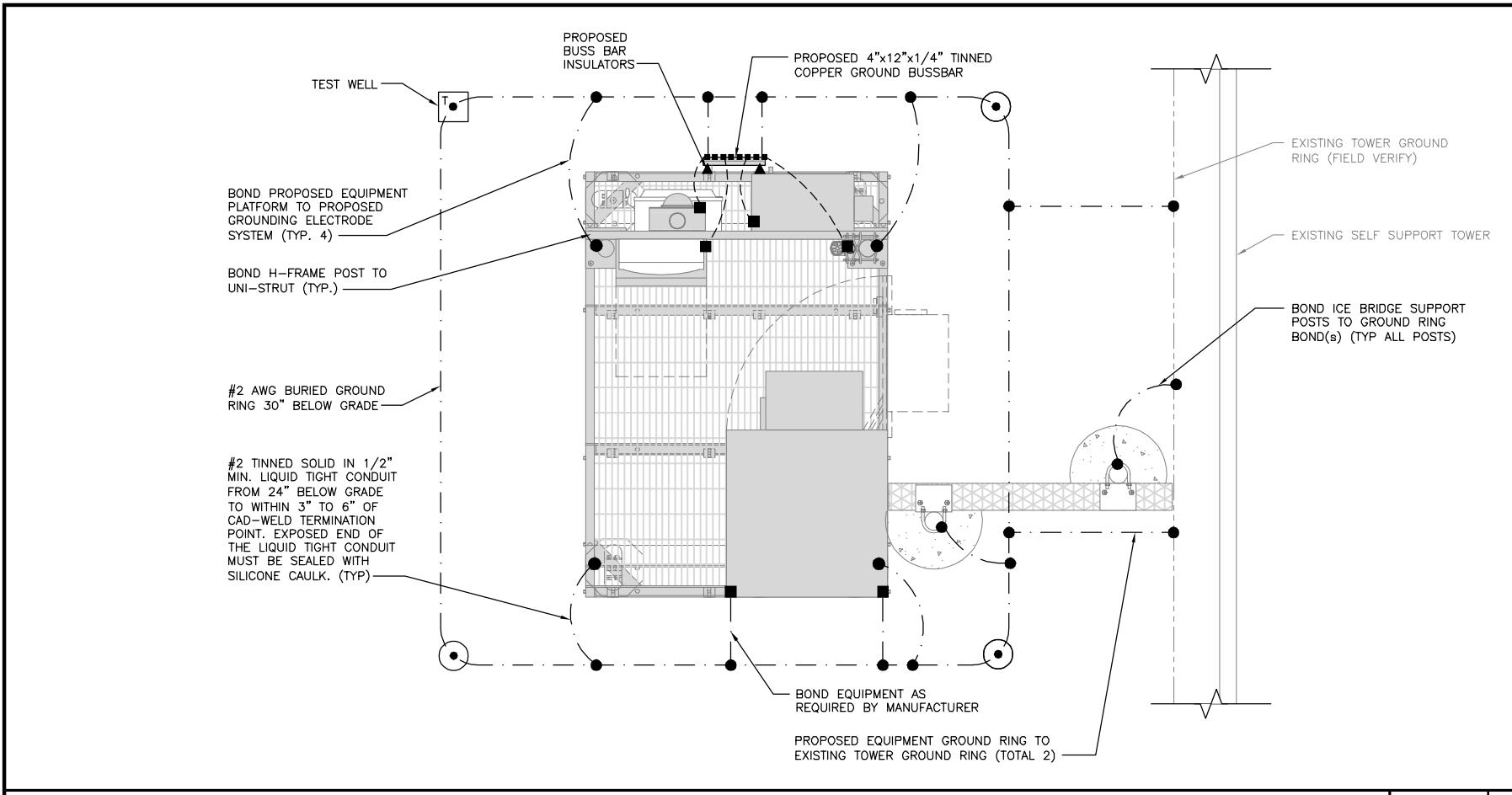
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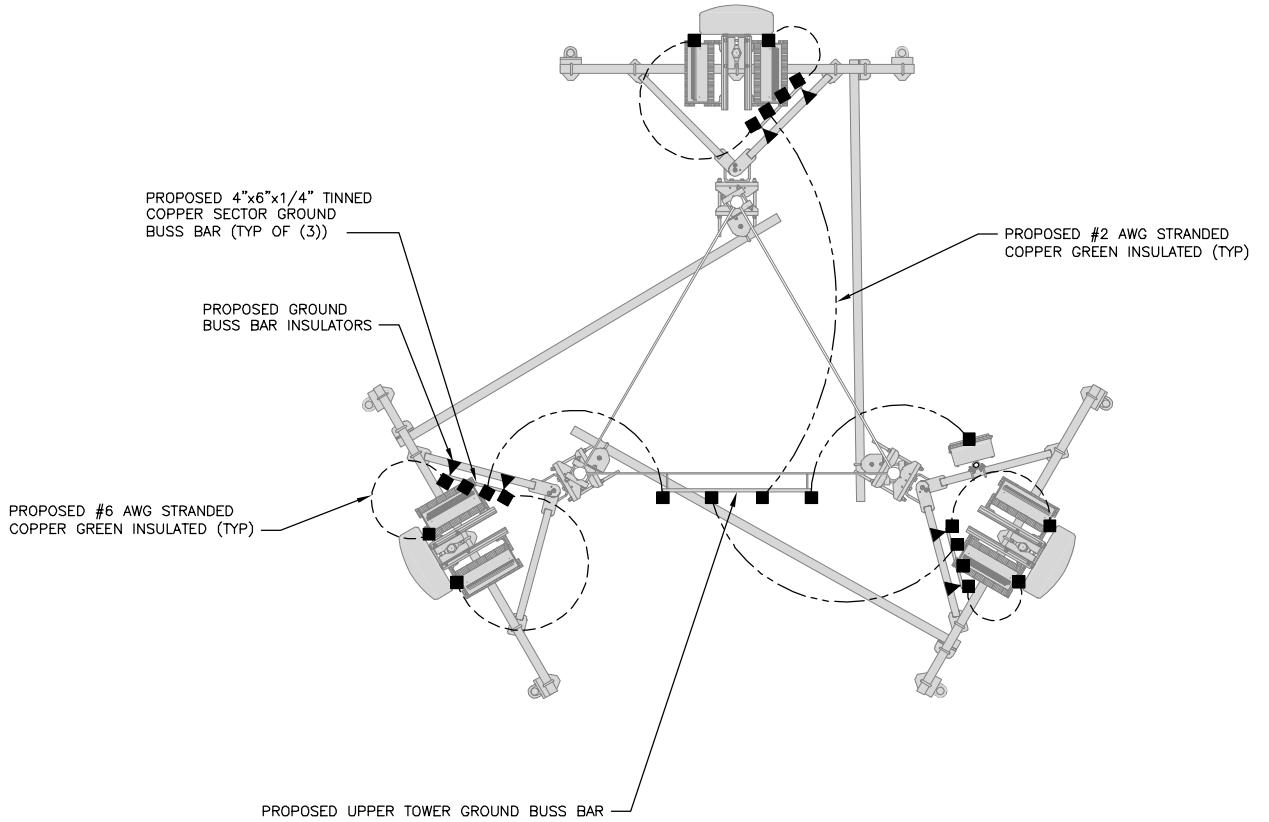
SHEET TITLE
ELECTRICAL ONE-LINE AND PANEL SCHEDULE

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2

GROUNDING KEY NOTES

● EXOTHERMIC CONNECTION	■ MECHANICAL CONNECTION
■ GROUND BUS BAR	— #2 AWG STRANDED & INSULATED
● GROUND ROD	— #2 AWG SOLID COPPER TINNED
▲ BUSS BAR INSULATOR	

GROUNDING LEGEND

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

GROUNDING KEY NOTES

- (A) EXTERIOR GROUND RING: #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.
- (B) TOWER GROUND RING: THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.
- (C) INTERIOR GROUND RING: #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.
- (D) BOND TO INTERIOR GROUND RING: #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.
- (E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 5/8" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.
- (F) CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.
- (G) HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.
- (H) EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.
- (I) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.
- (K) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENT'S METAL FRAMEWORK.
- (L) INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITHIN 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 L.L.C. GROUNDING NOTES.

dish
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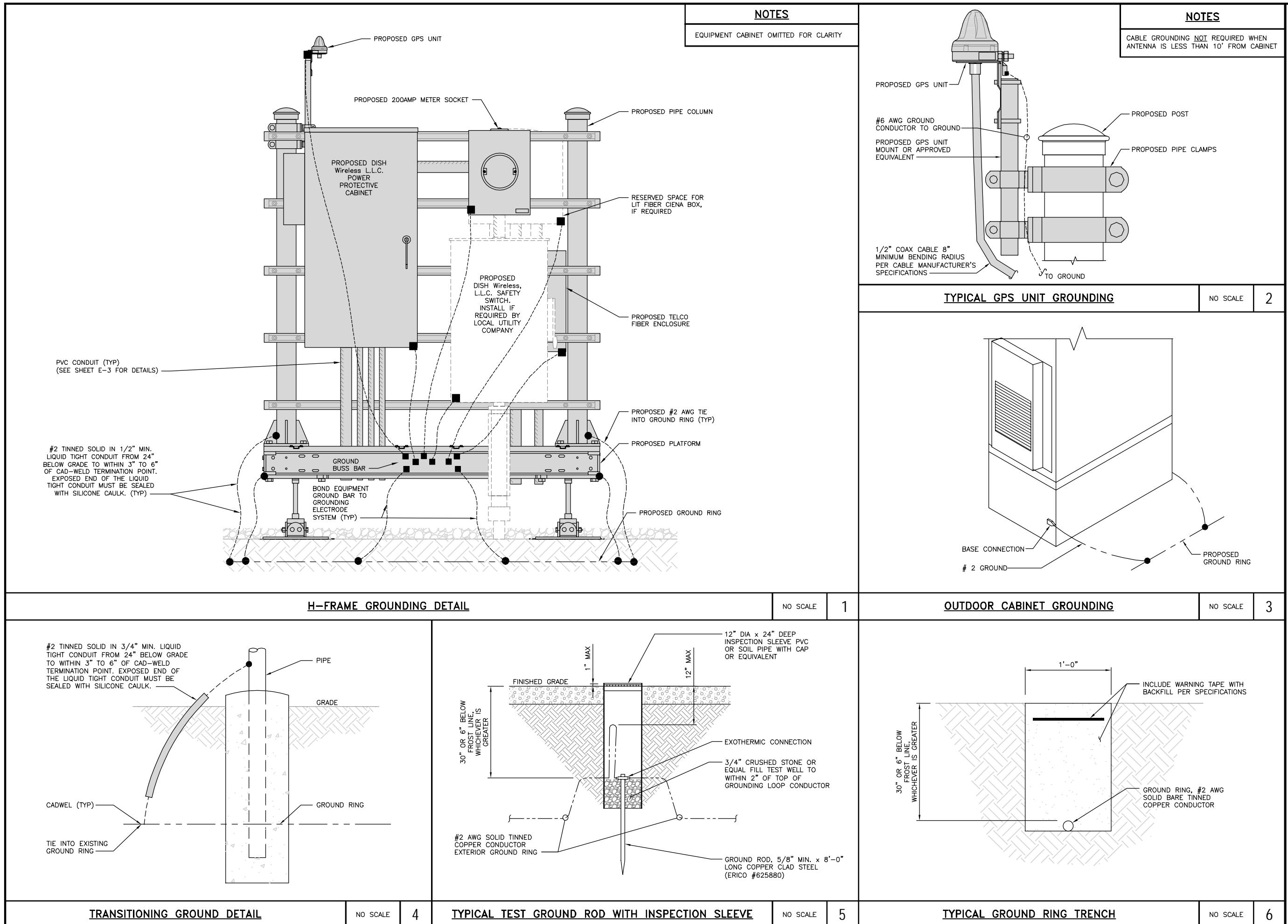
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DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404

SHEET TITLE
GROUNDING PLAN AND NOTES

SHEET NUMBER
G-1

3



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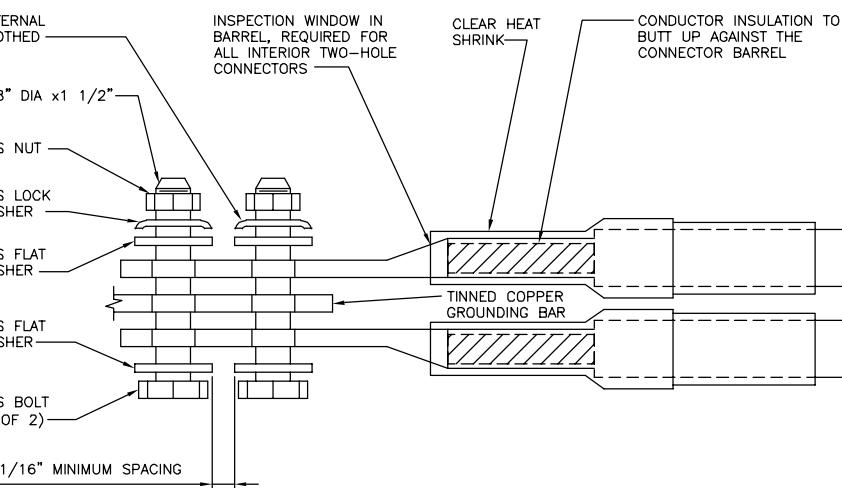
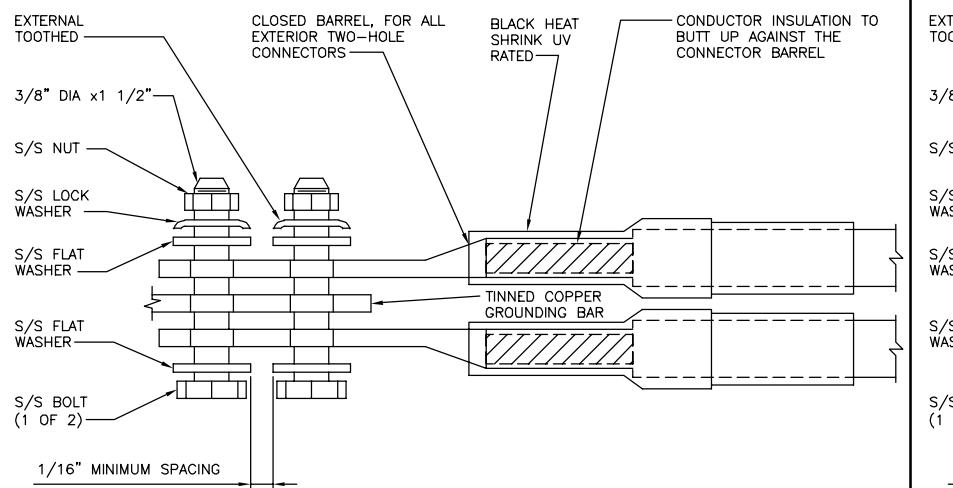
SHEET TITLE

GROUNDING DETAILS

STREET 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

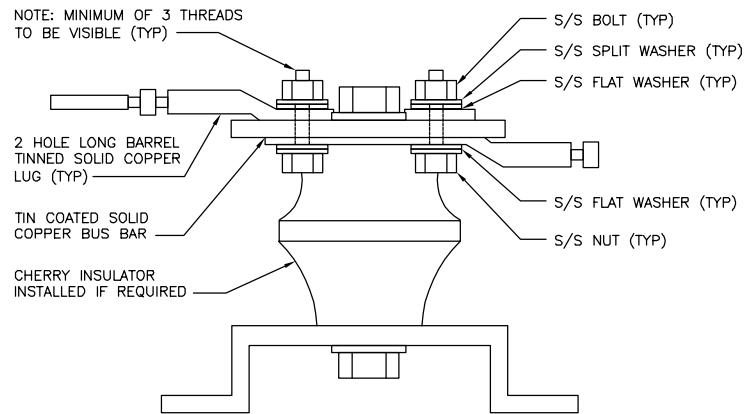
NO SCALE

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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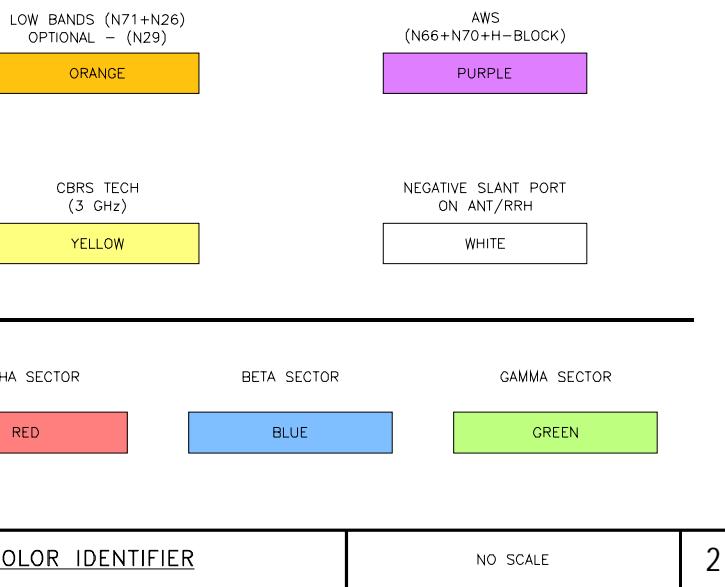
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SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-3

HYBRID/DISCREET CABLES																	
3/4" TAPE WIDTHS WITH 3/4" SPACING																	
LOW-BAND RRH (600 MHz N71 BASEBAND) + (850 MHz N26 BAND) + (700 MHz N29 BAND) - OPTIONAL PER MARKET ADD FREQUENCY COLOR TO SECTOR BAND (CBRS WILL USE YELLOW BAND)																	
ALPHA RRH 																	
BETA RRH 																	
GAMMA RRH 																	
MID-BAND RRH (AWS BANDS N66+N70) ADD FREQUENCY COLOR TO SECTOR BAND (CBRS WILL USE YELLOW BAND)																	
HYBRID/DISCREET CABLES INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS. EXAMPLE 1 - HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS. EXAMPLE 2 - HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS. EXAMPLE 3 - MAIN COAX WITH GROUND MOUNTED RRHs.																	
EXAMPLE 1 																	
EXAMPLE 2 																	
EXAMPLE 3 CANISTER COAX#1 (ALPHA) COAX#2 (ALPHA) 																	
FIBER JUMPERS TO RRHs LOW-BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.																	
LOW BAND RRH			MID BAND RRH			LOW BAND RRH			MID BAND RRH								
POWER CABLES TO RRHs LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY																	
LOW BAND RRH			MID BAND RRH			LOW BAND RRH			MID BAND RRH								
RET MOTORS AT ANTENNAS RET CONTROL IS HANDLED BY THE MID-BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA. SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.																	
ANTENNA 1 ANTENNA 1 MID BAND LOW BAND				ANTENNA 1 ANTENNA 1 MID BAND LOW BAND				ANTENNA 1 ANTENNA 1 MID BAND LOW BAND									
IN		IN		IN		IN		IN		IN							
MICROWAVE RADIO LINKS LINKS WILL HAVE A 1.5-2 INCH WHITE WRAP WITH THE AZIMUTH COLOR OVERLAPPING IN THE MIDDLE. ADD ADDITIONAL SECTOR COLOR BANDS FOR EACH ADDITIONAL MW RADIO. MICROWAVE CABLES WILL REQUIRE P-TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID's.																	
FORWARD AZIMUTH OF 0-120 DEGREES PRIMARY SECONDARY				FORWARD AZIMUTH OF 120-240 DEGREES PRIMARY SECONDARY				FORWARD AZIMUTH OF 240-359 DEGREES PRIMARY SECONDARY									



NOT USED	NO SCALE	3
08/03/2022		
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.		
A&E PROJECT NUMBER 88011-141117988		
DISH Wireless, L.L.C. PROJECT INFORMATION BOBOS00031B 1375 NORTH ROAD KILLINGLY, CT 06241-1404		
SHEET TITLE RF CABLE COLOR CODES		
SHEET NUMBER RF-1		
NOT USED	NO SCALE	4



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

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

The logo for Dish Wireless, featuring the word "dish" in a large, bold, lowercase sans-serif font with a stylized "i", and "wireless." in a smaller, lowercase sans-serif font below it. Below the logo is the address "5701 SOUTH SANTA FE DRIVE" on the first line, "LITTLETON, CO 80120" on the second line, and a small "FAX 303-979-4444" on the third line.

The logo for NB+C Engineering Services, LLC. It features the letters 'NB+C' in a large, bold, orange font with a black outline. Below this, the words 'TOTALLY COMMITTED.' are written in a smaller, bold, black font. Underneath the tagline, the company name 'NB+C ENGINEERING SERVICES, LLC.' is in a smaller black font, followed by the address '8601 SIX FORKS ROAD, SUITE 540' and the city 'RALEIGH, NC 27215'.

NB+C ENGINEERING SERVICES, LLC.
8601 SIX FORKS ROAD, SUITE 540
RALEIGH, NC 27615
(919) 657-9131

DRAWN BY:	CHECKED BY:	APPROVED BY:
CT	BIW	BIW

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/14/2022	ISSUED FOR REVIEW
O	08/03/2022	ISSUED FOR CONSTRUCTION



08/03/2022

IT IS A VIOLATION OF LAW FOR ANY PERSON,
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TO ALTER THIS DOCUMENT.

A&E PROJECT NUMBER
88011-14117988

DISH Wireless LLC.
PROJECT INFORMATION
BOBOS0031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404

SHEET TITLE
LEGEND AND
ABBREVIATIONS

SHEET NUMBER

GN-1

LEGEND

ABBREVIATIONS

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

SIGN PLACEMENT:

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

NOTES:

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

INFORMATION

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

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

Site ID: _____



THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE



Transmitting Antenna(s)

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

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

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

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

CAUTION



Transmitting Antenna(s)

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

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Site ID: _____

dish

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WARNING



Transmitting Antenna(s)

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Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

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

NB+C
TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.
8601 SIX FORKS ROAD, SUITE 540
RALEIGH, NC 27615
(919) 657-9131

DRAWN BY: **CT** CHECKED BY: **BIW** APPROVED BY: **BIW**

RFDS REV #: **1**

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV DATE DESCRIPTION
A 07/14/2022 ISSUED FOR REVIEW
0 08/03/2022 ISSUED FOR CONSTRUCTION



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A&E PROJECT NUMBER
88011-14117988

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404

SHEET TITLE
RF SIGNAGE

SHEET NUMBER
GN-2

SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

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



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CT BIW BIW

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CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER
88011-14117988

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

- 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.
- UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
- 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.
- 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.
- 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 (F_y) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
 #4 BARS AND SMALLER 40 ksi
 #5 BARS AND LARGER 60 ksi
- 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"
- 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:

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
 - ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
 - 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.
- 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.
- 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).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- TIE WRAPS ARE NOT ALLOWED.
- 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.
- 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.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- 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.
- 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).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNTOWARDS (WIREMOLD SPECMATE WIREWAY).
- SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- 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.
- 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.
- 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.
- 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.
- THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- 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.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.".
- ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



DRAWN BY:	CHECKED BY:	APPROVED BY:
CT	BIW	BIW
RFDS REV #:		
1		
CONSTRUCTION DOCUMENTS		
SUBMITTALS		
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A&E PROJECT NUMBER
88011-14117988
DISH Wireless L.L.C. PROJECT INFORMATION
BOBOS00031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404
SHEET TITLE
GENERAL NOTES
SHEET NUMBER
GN-4

GROUNDING NOTES:

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

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
 - A. ASTM A-572, GRADE 50 – ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE
 - B. ASTM A-36 – ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.
 - C. ASTM A-500, GRADE B – HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)
 - D. ASTM A-325, TYPE SC OR N – ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS
 - E. ASTM F-1554 07 – ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE
3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.
5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
6. CONNECTIONS:
 - A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
 - B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
 - C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
 - D. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.
 - E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
 - F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
 - G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING $\frac{1}{2}$ " BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.
 - H. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.
 - I. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND DISH NETWORK PROJECT MANAGER IN WRITING



DRAWN BY:	CHECKED BY:	APPROVED BY:
CT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER
88011-14117988

DISH Wireless LLC.
PROJECT INFORMATION
BOBOS00031B
1375 NORTH ROAD
KILLINGLY, CT 06241-1404

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-5

**STRUCTURAL ANALYSIS REPORT
MONOPOLE TOWER**

FORESITE LLC

•Architects •Engineers •Surveyors
Complete A&E services for wireless telecommunications industry

Prepared for:

dish
WIRELESS[®] 5701 South Santa Fe Drive
Littleton, CO 80120



Site ID: BOBOS00031B

Address:

**1375 North Road
Killingly, CT 06241**

Date: 08/03/2022

Submitted by:

Foresite LLC.

462 Walnut Street, Suite 1
Newton, MA 02460
Phone: 617-5273031

Date: 8/3/2022

To: Dish Wireless LLC
5701 South Santa Fe Drive
Littleton, CO 80120

Subject: Mount Structural Analysis Report

Dish Wireless LLC Designation: Site ID: BOBOS00031B

EFI Designation: Project Number: 049.03637 - 2275028

Site Data: 1375 North Road, Killingly, CT 06241
Latitude 41.87155083°, Longitude -71.82156976 °

EFI Global, Inc. is pleased to submit this “**Mount Structural Analysis Report**” to determine the structural capacity of the antenna mounts utilized by Dish Wireless LLC at the above referenced site.

The purpose of the analysis is to determine acceptability of the mount stress level for the changes proposed by Dish Wireless LLC under the following load case we have determined the mounts to have:

Proposed Equipment	Adequate Capacity (43.3%)
Note: See Analysis Criteria for loading configuration	

The analysis has been performed in accordance with TIA-222-G Standard and the 2018 Connecticut State Building Code (2015 IBC).

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

Sincerely,
EFI Global, Inc.
License No: PEC0001245

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057



1) ANALYSIS CRITERIA

The analysis was performed for the proposed appurtenances as specified in the loading information referenced below, and per the following loading criteria of Table 1.

Table 1 – Loading and Analysis Criteria

Rad Center	230'
Structure Type	Self-Support Tower
Exposure Category	B
Basic Wind Speed	$130 * \sqrt{0.6} = 100.7 \text{ mph (ASD)}$
Ice Loading	0.75" with 50 mph Wind
Risk Category	II
Topographic Factor	$K_{zt} = 1.0$

Table 1.1 – Proposed and Final Appurtenance Configuration

Qty	Model
3	Commscope FFVV-65B-R2 – Antennas
3	Fujitsu TA08025-B605 – RRUs*
3	Fujitsu TA08025-B604 – RRUs*
1	Raycap RDIDC-9181-PF-48 – Junction Box

*To be mounted behind antennas.

Table 1.2 – Assumed Material Properties

Member Type	ASTM Material Designation	F _y (ksi)	F _u (ksi)
Pipes	A53 Gr. B	35	60
Angles/Channels	A36	36	58
Rectangular HSS	A500 Gr. B - 46	46	58
Round HSS	A500 Gr. B - 42	42	58
Others (UNO)	A572 Gr. 50	50	65

2) ANALYSIS PROCEDURE

The analysis is based on the following information:

Table 2 – Documents

Document	Provided By	Date
Construction Drawings	NB+C	07/14/2022
Structural Analysis Report	American Tower Corporation	07/14/2022
RFDS	Dish Wireless	06/24/2022

2.1) Analysis Method

Risa-3D, a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses for various loading cases. Selected output from the analysis is included in the Appendix.

2.2) Analysis Conditions and Assumptions

- 1) The mount was built and installed in accordance with the manufacturer's specifications.
- 2) The mount has been maintained and will be maintained in accordance with the manufacturer's specifications. All structural members and connections of the mount are in good condition and can achieve theoretical strength.
- 3) The configuration of antennas is as specified in "1) Analysis Criteria".
- 4) The analysis was performed for the subject mount only. It does not include an evaluation of the other mounts or the tower, which should be analyzed by others.
- 5) The evaluation does not include any antenna rigging loads. The equipment should not be rigged using the subject antenna mount as the support.
- 6) The analysis includes a minimum 250 lbf maintenance point load at the worst-case location on the mount, as well as a minimum 250 lbf maintenance point load at each antenna location in conjunction with a 30 mph wind load.
- 7) Any steel grating represented in this model is for loading purposes only and it is not considered to provide any structural restraint or support.
- 8) Member sizes per available mount specifications and assumed based on our experience with similar structures. Please refer to calculation output in the appendix of this report for sizes and lengths assumed.
- 9) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

EFI Global, Inc. (EFI), must be notified immediately if any of these assumptions are discovered to be incorrect. The results of this analysis may be affected if any of the assumptions are not valid or have been made in error.

3) ANALYSIS RESULTS AND CONCLUSION

The analysis results are shown on the table below.

Table 3.1 – Mount Component Stresses vs. Capacity

Component	% Capacity	Pass / Fail
Horizontal Face Pipe	<20.0	Pass
Horizontal Standoff Pipe	36.1	Pass
Diagonal Standoff Solid Rod	43.3	Pass
Vertical Standoff Solid Rod	<20.0	Pass
Mount Pipes	<20.0	Pass
Tie-back	<20.0	Pass

Sector Mounts: The proposed sector mounts have **adequate** capacity for the proposed changes by Dish Wireless LLC. For the code specified load combinations and as a maximum, the mount members are stressed to **43.3%** of their structural capacities.

EFI Global, Inc. has assumed that Commscope Sector Frame, TW, SFG21, 8FT, 3 Ant Pipe (P/N: MTC3975083, Specs attached) will be installed at this site prior to the equipment installation proposed in this analysis. The analysis also assumes the following:

- The mount centerline is equal to the RAD centerline.
- The three (3) 96" long 2.5 STD mount pipes are equally spaced along the face.
- (1) 48" long 2.0 STD OVP Box mount pipe should be installed at the standoff V-arm to attach OVP Box. The pipe should be connected to the V-arm using Valmont/Site Pro 1 Crossover Clamp Set (P/N: SSCK) at each connection point.

APPENDIX

**INPUT LOADS
ANALYSIS OUTPUT
MOUNT SPECS**

CLIENT: Foresite LLC
 PROJECT: BOBOS00031B DISH
 SUBJECT: Antenna Loads - G Code with Sections 16 Revisions

Tower Height	300.00	ft	Type of Mount	Sector	▼
Basic Wind Speed, V _b	100.7	mph (=Ultimate Speed*sqrt(0.6))			
Basic Wind Speed with Ice, V _i	50	mph			
Maintanence Load Factor, L _{FM}	0.0888	Load Factor for Maint. Load Cases (Basic Wind Speed=30 mph)			
Design Ice Thickness, t _i	0.75	inches			

Table 2-3 Importance Factors

Structure Classification	Wind Load Without Ice	Wind Load With Ice	Ice Thickness	Earthquake
II	1	1	1	1

Table 2-4 Exposure Category Coefficients

Exposure Category	Z _g	α	K _{zmin}	K _e	m
B	1200	7	0.7	0.9	0.55

Table 2-5 Topographic Categories

K_{zt} 1.000

Table 2-2 Wind Directionality Factor, K_d

Structure Type	K _d	DOES NOT CHANGE
Lattice Tower	0.95	DOES NOT CHANGE

Gust Effect Factor G_h

Structure Type	G _h	DOES NOT CHANGE
Lattice Tower	1.00	DOES NOT CHANGE

Shielding Factor, K_a

Structure Type	K _a	DOES NOT CHANGE
Lattice Tower	0.90	DOES NOT CHANGE

CLIENT: Foresite LLC
PROJECT: BOBOS00031B DISH
SUBJECT: Antenna Loads - G Code with Sections 16 Revisions

Antenna AND Mount Without Ice															Pounds							
Mounting Pole	Height (ft)	Model Number	#	Weight (lbs)	H (in)	*W (in)	D (in)	Ka	**A _N (ft ²)	***A _T (ft ²)	Aspect (FRONT)	Aspect (SIDE)	C _a (FRONT)	C _a (SIDE)	K _z	q _z (psf)	Wind Load (Front)	Wind Load (Side)	Dead Load	Total Wind Load (Front)	Total Wind Load (Side)	Total Dead Load
Pos. 1	230.00	Commscope FFVV-65B-R2	1	70.8	72.0	19.6	7.8	0.90	9.80	3.90	3.67	9.23	1.25	1.47	1.254	30.9	341.5	160.0	70.8	341	219	210
	230.00	Fujitsu TA08025-B605	1	75.0	15.0	N/A	9.1	0.90	-	0.94	-	1.65	-	1.20	1.254	30.9	0.0	31.4	74.95			
	230.00	Fujitsu TA08025-B604	1	63.9	15.0	N/A	7.9	0.90	-	0.82	-	1.90	-	1.20	1.254	30.9	0.0	27.3	63.93			
	Empty			0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
	Empty			0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0	171	110	105
Standoff	230.00	Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0	71	42	22
		Raycap RDIDC-9181-PF-48	1	21.9	19.0	16.2	9.6	0.90	2.13	1.27	1.17	1.97	1.20	1.20	1.254	30.9	71.3	42.4	21.85			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0			
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0	36	22	11

* Enter N/A in the W column for front shielded apertures.

** A_N is the product of H and W

*** A_T is the product of H and D

DL 232

Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	*** Ca	K _z	q _z (psf)	Wind Load (PLF)	
	230.00	2.5 STD Pipe	12.00	2.88	0.00	-	1.20	1.254	27.8	8.0
	230.00	2.0 STD Pipe	12.00	2.38	0.00	-	1.20	1.254	27.8	6.6
	230.00	1.5 STD Pipe	12.00	1.90	0.00	-	1.20	1.254	27.8	5.3
	230.00	0.5 SR	12.00	0.50	0.00	-	1.20	1.254	27.8	1.4
	230.00	0.625 SR	12.00	0.63	0.00	-	1.20	1.254	27.8	1.7
	230.00	L(4X4)	0.00	4.00	4.00	-	-	-	-	-
	230.00	L(2.5X2.5)	0.00	2.50	2.50	-	-	-	-	-
	230.00	L(1.5X1.5)	0.00	1.50	1.50	-	-	-	-	-
	230.00	HSS 4.5X4.5	0.00	4.50	4.50	-	-	-	-	-
	230.00	HSS 4X4	0.00	4.00	4.00	-	-	-	-	-
	230.00	PL0.5X4	0.00	0.50	4.00	-	-	-	-	-
	230.00	PL0.375X0.875	0.00	0.38	0.88	-	-	-	-	-
	230.00	PL0.875X0.375	0.00	0.88	0.38	-	-	-	-	-
	230.00	Double Angle (LL3x3x4x0)	0.00	3.00	3.00	-	-	-	-	-
	230.00	Channel (2.5X1.4)	0.00	5.60	2.60	-	-	-	-	-
	230.00	Channel (5.6X3.1)	0.00	5.60	3.10	-	-	-	-	-

* The dimension L is the longest dimension of the member

** The dimension W is the height or width of the member that resists wind load

*** Ca will equal 1.2 for round members and 2.0 for flat members

CLIENT: Foresite LLC
 PROJECT: BOBOS00031B DISH
 SUBJECT: Antenna Loads - G Code with Sections 16 Revisions

				ti (in)	1.821431	K _z 1.2142871	reduction 0.24654	Pounds																
Antenna AND Mount With Ice				H (in)	W (in)	D (in)	K _a	*A _N (ft ²)	*A _T (ft ²)	*Volume Ice (ft ³)	*Weight Ice (lbs)	**C _a (FRONT)	**C _a (SIDE)	K _z	q _z (psf)	Ice Wind Load (Front)	Ice Wind Load (Side)	Combined Wind Load (Front)	Combined Wind Load (Side)	Ice Dead Load	**Total Wind Load (Front)	**Total Wind Load (Side)	Total Ice Load	
Mounting Pole	Height (ft)	Model Number	#	H (in)	W (in)	D (in)	K _a	*A _N (ft ²)	*A _T (ft ²)	*Volume Ice (ft ³)	*Weight Ice (lbs)	**C _a (FRONT)	**C _a (SIDE)	K _z	q _z (psf)	Ice Wind Load (Front)	Ice Wind Load (Side)	Combined Wind Load (Front)	Combined Wind Load (Side)	Ice Dead Load	**Total Wind Load (Front)	**Total Wind Load (Side)	Total Ice Load	
Pos. 1	230.00	Commscope FFVV-65B-R2	1	72.0	19.6	7.8	0.90	2.41	2.11	5.27	295.26	0.70	0.70	1.254	7.6	11.6	10.1	95.8	49.6	295	96	71	449	
	230.00	Fujitsu TA08025-B605	1	15.0	15.8	9.1	0.90	-	0.70	1.42	79.33	0.70	0.70	1.254	7.6	0.0	3.4	0.0	11.1	79				
	230.00	Fujitsu TA08025-B604	1	15.0	15.8	7.9	0.90	-	0.67	1.33	74.51	0.70	0.70	1.254	7.6	0.0	3.2	0.0	9.9	75				
	Empty	-	-	-	-	0.90	-	-	-	0.00	-	-	-	-	-	0.0	0.0	0.0	0.0	0				
	Empty	-	-	-	-	0.90	-	-	-	0.00	-	-	-	-	-	0.0	0.0	0.0	0.0	0	48	36	225	
Standoff	230.00	Empty	-	-	-	-	0.90	-	-	-	0.00	-	-	-	-	-	0.0	0.0	0.0	0.0	0	22	14	97
		Raycap RDIDC-9181-PF-48	1	19.0	16.2	9.6	0.90	0.98	0.82	1.73	97.14	0.70	0.70	1.254	7.6	4.7	3.9	22.3	14.4	97				
		Empty	-	-	-	-	0.90	-	-	-	0.00	-	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty	-	-	-	-	0.90	-	-	-	0.00	-	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty	-	-	-	-	0.90	-	-	-	0.00	-	-	-	-	-	0.0	0.0	0.0	0.0	0	12	8	49

* A_N, A_T, Volume Ice and Weight Ice are calculated per unit

** C_a will equal 1.2 for all ice load calculations

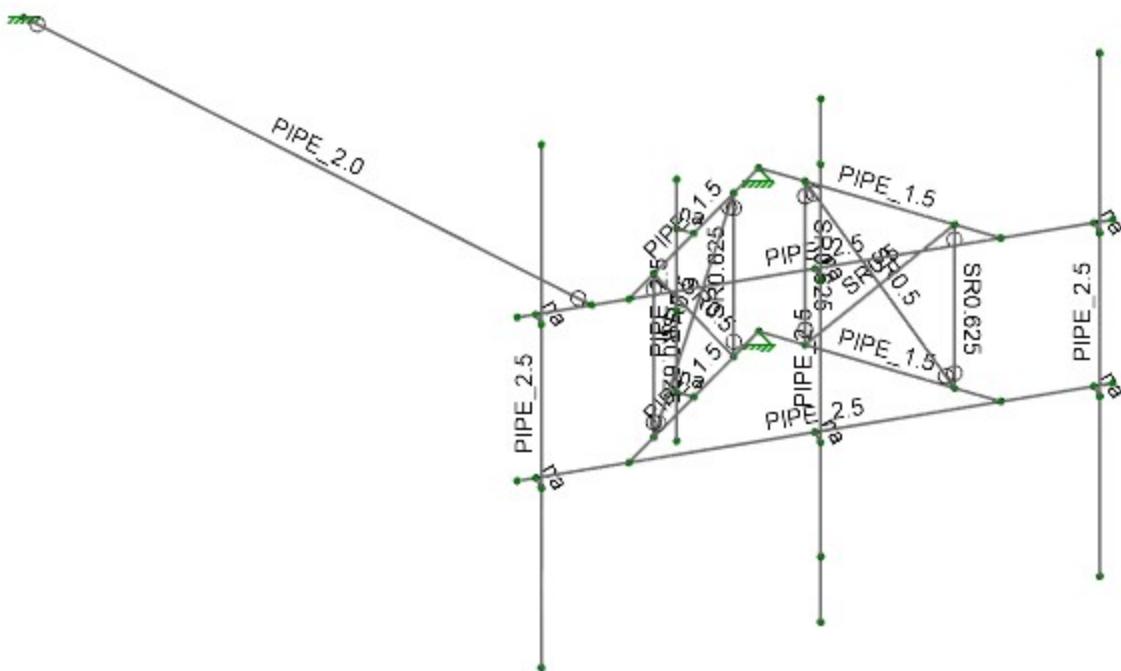
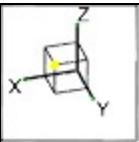
				*L (in)	**W (in)	D (in)	***A _N (ft ²)	Volume Ice (ft ³)	Weight Ice (lbs)	****C _a (FRONT)	K _z	q _z (psf)	Ice Wind Load (Front)	Combined Wind Load (Front)	Ice Dead Load
Mount	Height (ft)	Member													
	230.00	2.5 STD Pipe		12.00	2.88	0.00	0.47	0.19	10.45	1.20	1.254	6.9	3.9	5.8	10.5
	230.00	2.0 STD Pipe		12.00	2.38	0.00	0.46	0.17	9.34	1.20	1.254	6.9	3.8	5.4	9.3
	230.00	1.5 STD Pipe		12.00	1.90	0.00	0.44	0.15	8.28	1.20	1.254	6.9	3.7	5.0	8.3
	230.00	0.5 SR		12.00	0.50	0.00	0.41	0.09	5.17	1.20	1.254	6.9	3.4	3.7	5.2
	230.00	0.625 SR		12.00	0.63	0.00	0.41	0.10	5.44	1.20	1.254	6.9	3.4	3.8	5.4
	230.00	L(4X4)		0.00	4.00	4.00	-	-	-	-	-	-	-	-	-
	230.00	L(2.5X2.5)		0.00	2.50	2.50	-	-	-	-	-	-	-	-	-
	230.00	L(1.5X1.5)		0.00	1.50	1.50	-	-	-	-	-	-	-	-	-
	230.00	HSS 4.5X4.5		0.00	4.50	4.50	-	-	-	-	-	-	-	-	-
	230.00	HSS 4X4		0.00	4.00	4.00	-	-	-	-	-	-	-	-	-
	230.00	PL0.5X4		0.00	0.50	4.00	-	-	-	-	-	-	-	-	-
	230.00	PL0.375X0.875		0.00	0.38	0.88	-	-	-	-	-	-	-	-	-
	230.00	PL0.875X0.375		0.00	0.88	0.38	-	-	-	-	-	-	-	-	-
	230.00	Double Angle (LL3x3x4x0)		0.00	3.00	3.00	-	-	-	-	-	-	-	-	-
	230.00	Channel (2.5X1.4)		0.00	5.60	2.60	-	-	-	-	-	-	-	-	-
	230.00	Channel (5.6X3.1)		0.00	5.60	3.10	-	-	-	-	-	-	-	-	-

* The dimension L is the longest dimension of the member

** The dimension W is the height or width of the member that resists wind load

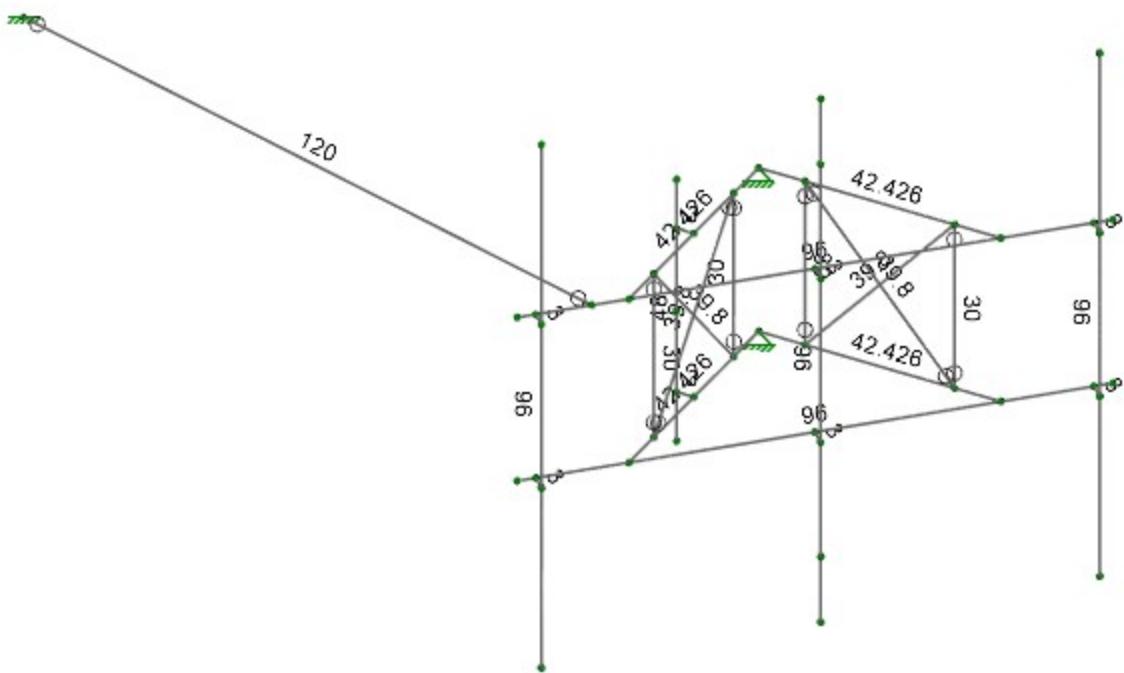
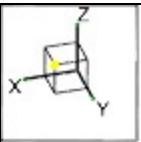
*** A_N is the area of ice built up on the LW plane

**** C_a will equal 1.2 for all ice load calculations



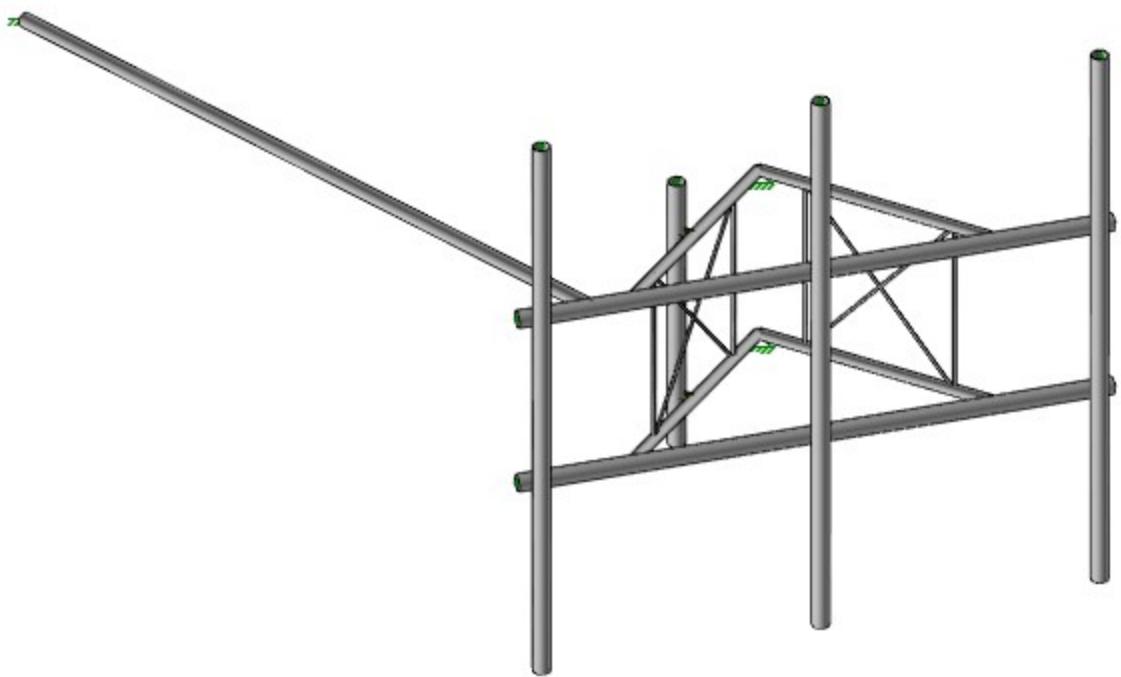
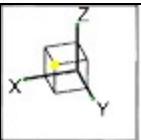
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Member Length (in) Displayed
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SK

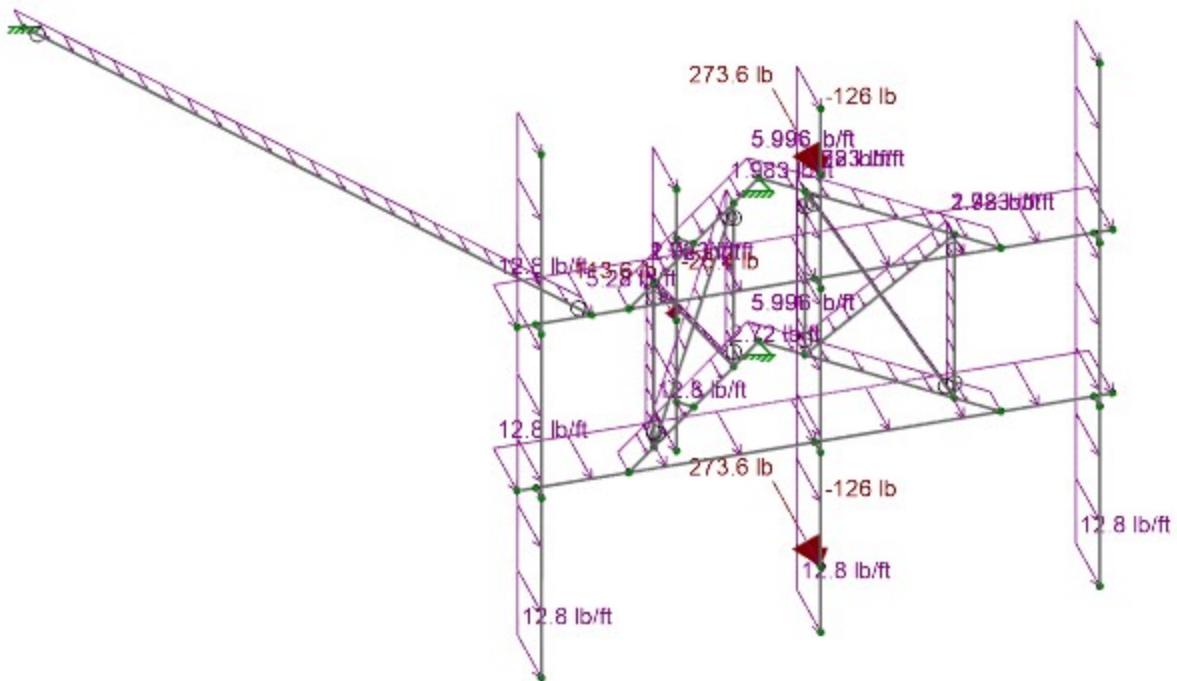
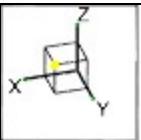
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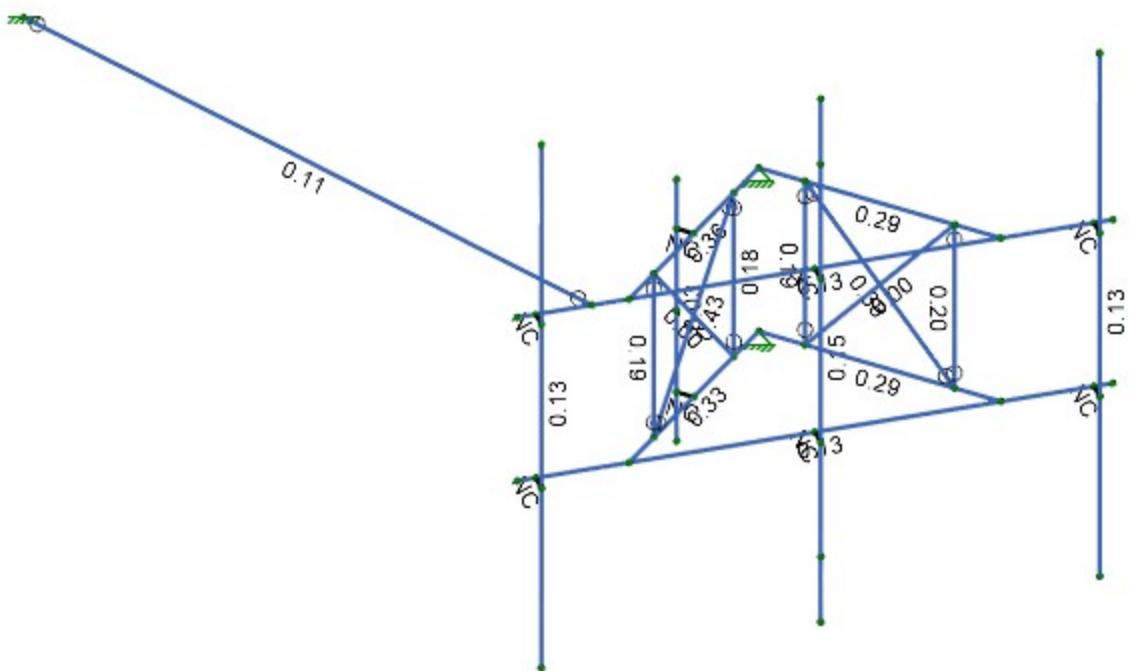
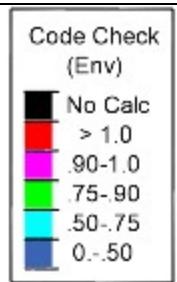
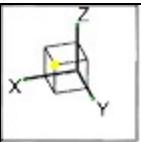
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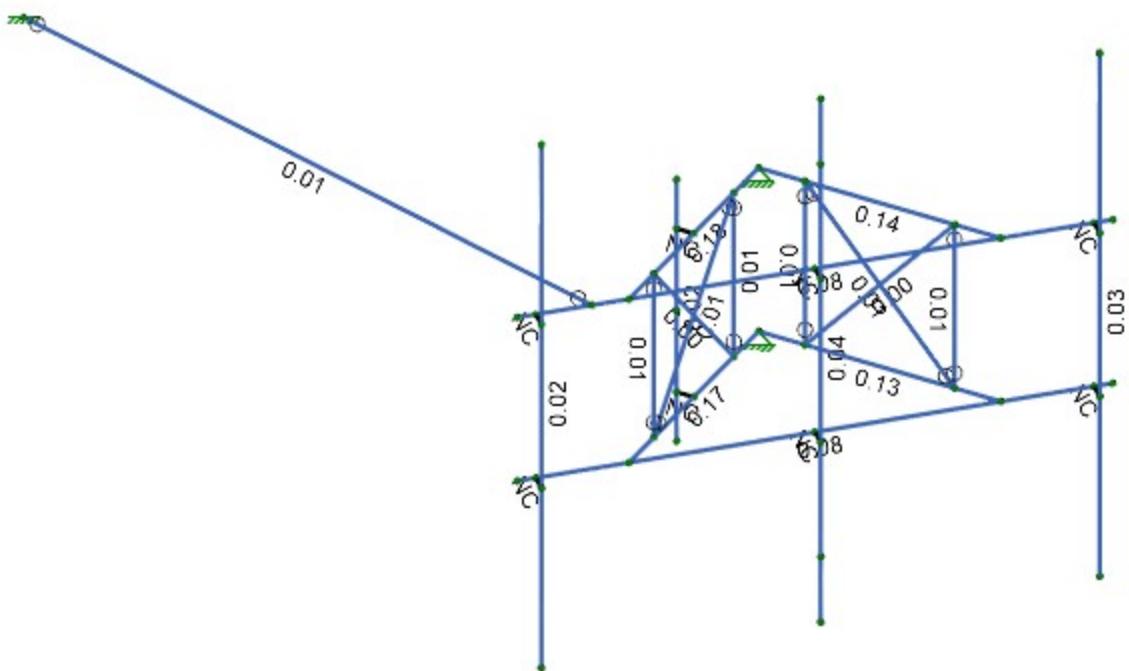
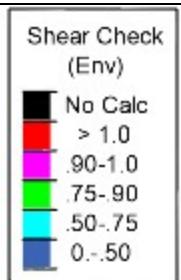
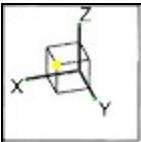
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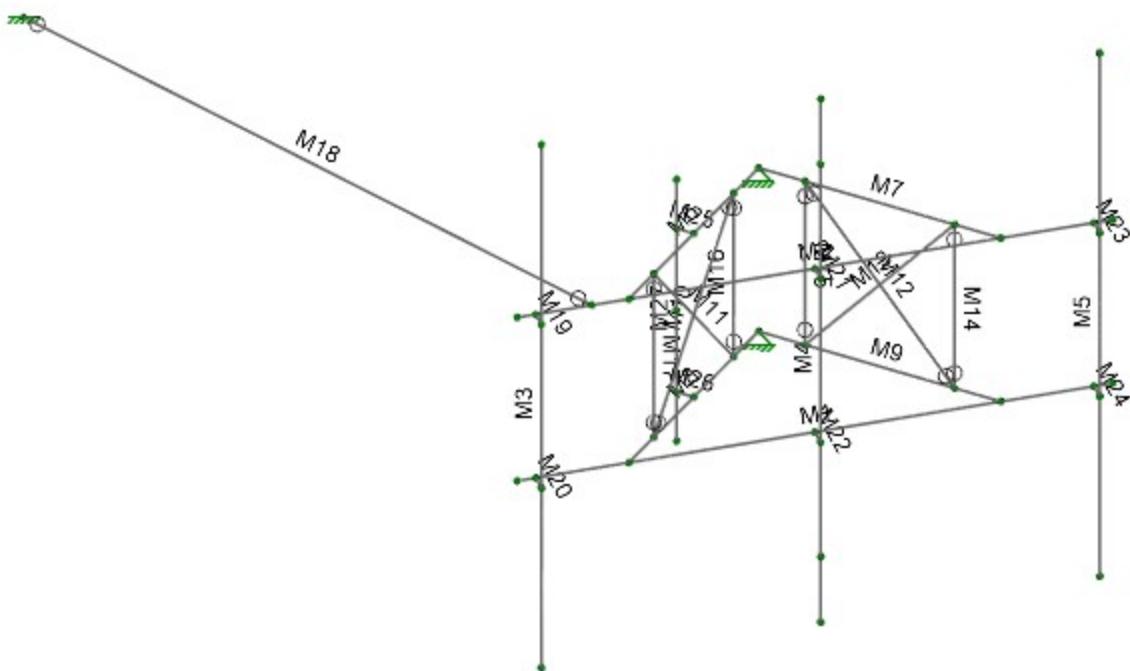
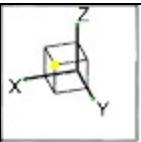
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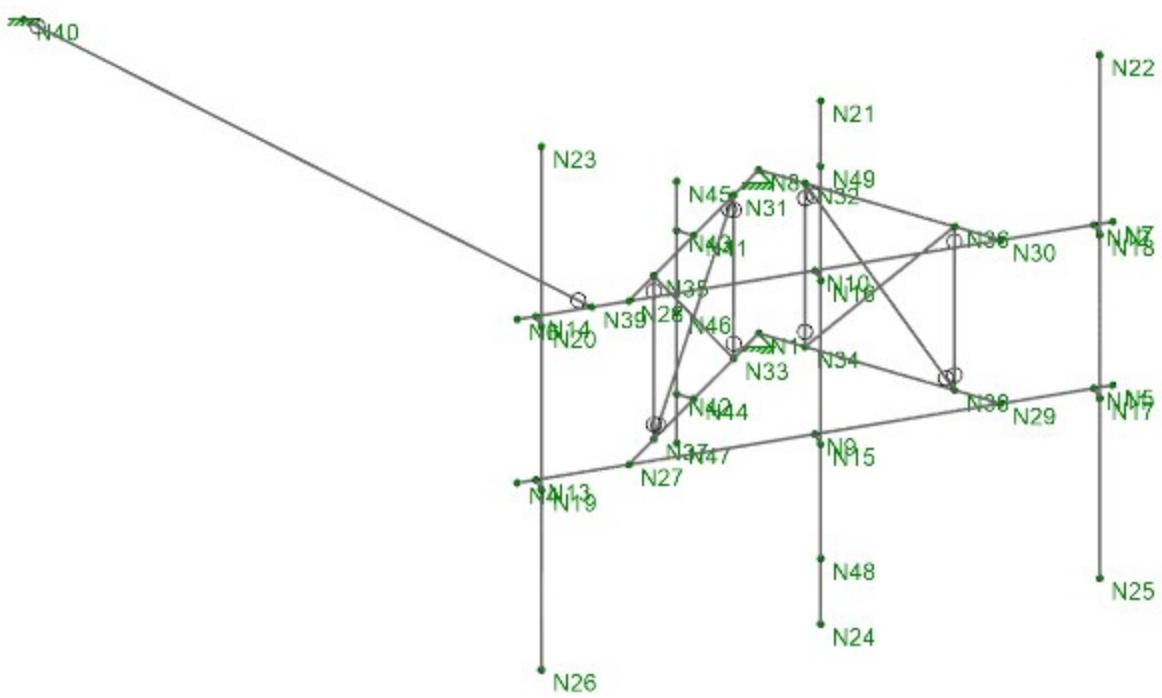
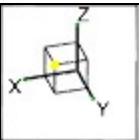
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SK		Aug 03, 2022
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Model Settings

Solution

Members

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in ²)	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	No
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	Z
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XY
---------------------------------	----

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): ASD
Cold Formed Steel	AISI NAS-01: LRFD
Stiffness Adjustment	Yes (Iterative)
Wood	AF&PA NDS-05/08: ASD
Temperature	< 100F
Concrete	ACI 318-05
Masonry	ACI 530-05: ASD
Aluminum	AA ADM1-05: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)

Concrete

Column Design

Analysis Methodology	Exact Integration Method
Parmer 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
List forces which were ignored for design in the Detail Report	Yes

Rebar

Model Settings (Continued)

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 7-05
Occupancy Cat	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)	-1

Structure Characteristics

T Z (sec)	
T X (sec)	
C _X	0.035
C _{Exp. Z}	0.75
C _{Exp. X}	0.75
R Z	8.5
R X	8.5
Ω _Z	1
Ω _X	1
C _o Z	4
C _o X	4
p Z	1
p X	1

Project Grid Lines

No Data to Print...

Hot Rolled Steel Properties

Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e ⁵ °F ⁻¹]	Density [k/ft ³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	50	1.1	65	1.2
3	A992	29000	11154	0.3	0.65	50	1.1	65	1.2
4	A500 Gr.42	29000	11154	0.3	0.65	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	0.3	0.65	46	1.2	58	1.1
6	A53 Gr.B	29000	11154	0.3	0.65	35	1.5	60	1.2

Member Primary Data

Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule	
1	M7	N8	N30	PIPE 1.5	Beam	HSS Pipe	A53 Gr.B	Typical
2	M8	N1	N27	PIPE 1.5	Beam	HSS Pipe	A53 Gr.B	Typical
3	M9	N1	N29	PIPE 1.5	Beam	HSS Pipe	A53 Gr.B	Typical
4	M6	N8	N28	PIPE 1.5	Beam	HSS Pipe	A53 Gr.B	Typical
5	M18	N39	N40	PIPE 2.0	Beam	HSS Pipe	A53 Gr.B	Typical
6	M4	N24	N21	PIPE 2.5	Beam	HSS Pipe	A53 Gr.B	Typical
7	M1	N4	N5	PIPE 2.5	Beam	HSS Pipe	A53 Gr.B	Typical
8	M2	N6	N7	PIPE 2.5	Beam	HSS Pipe	A53 Gr.B	Typical
9	M5	N25	N22	PIPE 2.5	Beam	HSS Pipe	A53 Gr.B	Typical
10	M3	N26	N23	PIPE 2.5	Beam	HSS Pipe	A53 Gr.B	Typical
11	M27	N47	N45	PIPE 2.5	Beam	HSS Pipe	A53 Gr.B	Typical
12	M26	N44	N42	RIGID	None	None	LINK	Typical
13	M25	N41	N43	RIGID	None	None	LINK	Typical
14	M19	N14	N20	RIGID	None	None	LINK	Typical
15	M21	N10	N16	RIGID	None	None	LINK	Typical
16	M20	N13	N19	RIGID	None	None	LINK	Typical
17	M24	N11	N17	RIGID	None	None	LINK	Typical
18	M23	N12	N18	RIGID	None	None	LINK	Typical
19	M22	N9	N15	RIGID	None	None	LINK	Typical
20	M10	N31	N37	SR0.5	Beam	BAR	A36 Gr.36	Typical
21	M13	N36	N34	SR0.5	Beam	BAR	A36 Gr.36	Typical
22	M12	N32	N38	SR0.5	Beam	BAR	A36 Gr.36	Typical
23	M11	N35	N33	SR0.5	Beam	BAR	A36 Gr.36	Typical
24	M14	N36	N38	SR0.625	Beam	BAR	A36 Gr.36	Typical
25	M15	N32	N34	SR0.625	Beam	BAR	A36 Gr.36	Typical
26	M17	N35	N37	SR0.625	Beam	BAR	A36 Gr.36	Typical
27	M16	N33	N31	SR0.625	Beam	BAR	A36 Gr.36	Typical

Member Advanced Data

Label	I Release	J Release	T/C Only	Physical	Deflection Ratio Options	Seismic DR
1	M7			Yes	Default	None
2	M8			Yes	Default	None
3	M9			Yes	Default	None
4	M6			Yes	Default	None
5	M18	BenPIN	BenPIN	Yes	Default	None
6	M4			Yes	Default	None
7	M1			Yes	Default	None
8	M2			Yes	Default	None
9	M5			Yes	Default	None
10	M3			Yes	Default	None
11	M27			Yes	Default	None
12	M26			Yes	** NA **	None
13	M25			Yes	** NA **	None
14	M19			Yes	** NA **	None
15	M21			Yes	** NA **	None
16	M20			Yes	** NA **	None

Member Advanced Data (Continued)

Label	I Release	J Release	T/C Only	Physical	Deflection Ratio Options	Seismic DR
17 M24				Yes	** NA **	None
18 M23				Yes	** NA **	None
19 M22				Yes	** NA **	None
20 M10	BenPIN	BenPIN		Yes	Default	None
21 M13			Tension Only	Yes	Default	None
22 M12	BenPIN	BenPIN		Yes	Default	None
23 M11			Tension Only	Yes	Default	None
24 M14	BenPIN	BenPIN		Yes	Default	None
25 M15	BenPIN	BenPIN		Yes	Default	None
26 M17	BenPIN	BenPIN		Yes	Default	None
27 M16	BenPIN	BenPIN		Yes	Default	None

Hot Rolled Steel Design Parameters

Label	Shape	Length [in]	Lcomp top [in]	K y-y	K z-z	Function
1 M7	PIPE_1.5	42.426	Lbyy			Lateral
2 M8	PIPE_1.5	42.426	Lbyy			Lateral
3 M9	PIPE_1.5	42.426	Lbyy			Lateral
4 M6	PIPE_1.5	42.426	Lbyy			Lateral
5 M18	PIPE_2.0	120	Lbyy			Lateral
6 M4	PIPE_2.5	96	Lbyy			Lateral
7 M1	PIPE_2.5	96	Lbyy			Lateral
8 M2	PIPE_2.5	96	Lbyy			Lateral
9 M5	PIPE_2.5	96	Lbyy			Lateral
10 M3	PIPE_2.5	96	Lbyy			Lateral
11 M27	PIPE_2.5	48	Lbyy			Lateral
12 M10	SR0.5	39.8	Lbyy	0.7	0.7	Lateral
13 M13	SR0.5	39.8	Lbyy			Lateral
14 M12	SR0.5	39.8	Lbyy	0.7	0.7	Lateral
15 M11	SR0.5	39.8	Lbyy			Lateral
16 M14	SR0.625	30	Lbyy	0.7	0.7	Lateral
17 M15	SR0.625	30	Lbyy	0.7	0.7	Lateral
18 M17	SR0.625	30	Lbyy	0.7	0.7	Lateral
19 M16	SR0.625	30	Lbyy	0.7	0.7	Lateral

Node Coordinates

Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1 N1	0	0	0	
2 N4	48	30	0	
3 N5	-48	30	0	
4 N6	48	30	30	
5 N7	-48	30	30	
6 N8	0	0	30	
7 N9	0	30	0	
8 N10	0	30	30	
9 N11	-45	30	0	
10 N12	-45	30	30	
11 N13	45	30	0	
12 N14	45	30	30	
13 N15	0	33	0	
14 N16	0	33	30	
15 N17	-45	33	0	
16 N18	-45	33	30	
17 N19	45	33	0	
18 N20	45	33	30	
19 N21	0	33	63	
20 N22	-45	33	63	
21 N23	45	33	63	
22 N24	0	33	-33	
23 N25	-45	33	-33	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
24	N26	45	33	-33	
25	N27	30	30	0	
26	N28	30	30	30	
27	N29	-30	30	0	
28	N30	-30	30	30	
29	N31	5.753021	5.753021	30	
30	N32	-5.753021	5.753021	30	
31	N33	5.753021	5.753021	0	
32	N34	-5.753021	5.753021	0	
33	N35	24.246692	24.246692	30	
34	N36	-24.246692	24.246692	30	
35	N37	24.246692	24.246692	0	
36	N38	-24.246692	24.246692	0	
37	N39	36	30	30	
38	N40	96	-73.923048	30	
39	N43	17.12132	12.87868	30	
40	N41	15	15	30	
41	N42	17.12132	12.87868	0	
42	N44	15	15	0	
43	N45	17.12132	12.87868	39	
44	N47	17.12132	12.87868	-9	
45	N46	17.12132	12.87868	15	
46	N48	0	33	-21	
47	N49	0	33	51	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N40	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N8	Reaction	Reaction	Reaction			
3	N1	Reaction	Reaction	Reaction			

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed
1	DEAD LOAD	None	-1	3	
2	DEAD LOAD ICE	None		3	19
3	WIND LOAD (NO ICE) FRONT	None		3	19
4	WIND LOAD (NO ICE) SIDE	None		3	19
5	WIND LOAD (ICE) FRONT	None		3	19
6	WIND LOAD (ICE) SIDE	None		3	19
7	LIVE LOAD1	None	1		
8	LIVE LOAD2	None		1	
9	LIVE LOAD3	None			
10	MAINTENANCE LOAD1	None		1	
11	MAINTENANCE LOAD2	None		1	
12	MAINTENANCE LOAD3	None		1	
13	MAINTENANCE LOAD4	None			

Node Loads and Enforced Displacements (BLC 1 : DEAD LOAD)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s^2/in, lb*s^2*in)]
1	N49	L	Z	-105
2	N48	L	Z	-105
3	N46	L	Z	-22

Node Loads and Enforced Displacements (BLC 2 : DEAD LOAD ICE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s^2/in, lb*s^2*in)]
1	N49	L	Z	-225
2	N48	L	Z	-225
3	N46	L	Z	-97

Node Loads and Enforced Displacements (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s^2/in, lb*s^2*in)]
1	N49	L	Y	171
2	N48	L	Y	171
3	N46	L	Y	71

Node Loads and Enforced Displacements (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s^2/in, lb*s^2*in)]
1	N49	L	X	110
2	N48	L	X	110
3	N46	L	X	42

Node Loads and Enforced Displacements (BLC 5 : WIND LOAD (ICE) FRONT)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s^2/in, lb*s^2*in)]
1	N49	L	Y	48
2	N48	L	Y	48
3	N46	L	Y	22

Node Loads and Enforced Displacements (BLC 6 : WIND LOAD (ICE) SIDE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s^2/in, lb*s^2*in)]
1	N49	L	X	36
2	N48	L	X	36
3	N46	L	X	14

Node Loads and Enforced Displacements (BLC 7 : LIVE LOAD1)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s^2/in, lb*s^2*in)]
1	N5	L	Z	-250

Node Loads and Enforced Displacements (BLC 8 : LIVE LOAD2)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s^2/in, lb*s^2*in)]
1	N4	L	Z	-250

Node Loads and Enforced Displacements (BLC 10 : MAINTENANCE LOAD1)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s^2/in, lb*s^2*in)]
1	N25	L	Z	-500

Node Loads and Enforced Displacements (BLC 11 : MAINTENANCE LOAD2)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s^2/in, lb*s^2*in)]
1	N24	L	Z	-500

Node Loads and Enforced Displacements (BLC 12 : MAINTENANCE LOAD3)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)]
1	N26	L	Z	-500

Member Point Loads

No Data to Print...

Member Distributed Loads (BLC 2 : DEAD LOAD ICE)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M7	Z	-8.3	-8.3	0	%100
2	M8	Z	-8.3	-8.3	0	%100
3	M9	Z	-8.3	-8.3	0	%100
4	M6	Z	-8.3	-8.3	0	%100
5	M18	Z	-9.3	-9.3	0	%100
6	M4	Z	-10.5	-10.5	0	%100
7	M1	Z	-10.5	-10.5	0	%100
8	M2	Z	-10.5	-10.5	0	%100
9	M5	Z	-10.5	-10.5	0	%100
10	M3	Z	-10.5	-10.5	0	%100
11	M27	Z	-10.5	-10.5	0	%100
12	M10	Z	-5.2	-5.2	0	%100
13	M13	Z	-5.2	-5.2	0	%100
14	M12	Z	-5.2	-5.2	0	%100
15	M11	Z	-5.2	-5.2	0	%100
16	M14	Z	-5.4	-5.4	0	%100
17	M15	Z	-5.4	-5.4	0	%100
18	M17	Z	-5.4	-5.4	0	%100
19	M16	Z	-5.4	-5.4	0	%100

Member Distributed Loads (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M7	PY	5.3	5.3	0	%100
2	M8	PY	5.3	5.3	0	%100
3	M9	PY	5.3	5.3	0	%100
4	M6	PY	5.3	5.3	0	%100
5	M18	PY	6.6	6.6	0	%100
6	M4	PY	8	8	0	%100
7	M1	PY	8	8	0	%100
8	M2	PY	8	8	0	%100
9	M5	PY	8	8	0	%100
10	M3	PY	8	8	0	%100
11	M27	PY	8	8	0	%100
12	M10	PY	1.4	1.4	0	%100
13	M13	PY	1.4	1.4	0	%100
14	M12	PY	1.4	1.4	0	%100
15	M11	PY	1.4	1.4	0	%100
16	M14	PY	1.7	1.7	0	%100
17	M15	PY	1.7	1.7	0	%100
18	M17	PY	1.7	1.7	0	%100
19	M16	PY	1.7	1.7	0	%100

Member Distributed Loads (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M7	PX	5.3	5.3	0	%100
2	M8	PX	5.3	5.3	0	%100
3	M9	PX	5.3	5.3	0	%100
4	M6	PX	5.3	5.3	0	%100
5	M18	PX	6.6	6.6	0	%100

Member Distributed Loads (BLC 4 : WIND LOAD (NO ICE) SIDE) (Continued)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
6	M4	PX	8	8	0 %100
7	M1	PX	8	8	0 %100
8	M2	PX	8	8	0 %100
9	M5	PX	8	8	0 %100
10	M3	PX	8	8	0 %100
11	M27	PX	8	8	0 %100
12	M10	PX	1.4	1.4	0 %100
13	M13	PX	1.4	1.4	0 %100
14	M12	PX	1.4	1.4	0 %100
15	M11	PX	1.4	1.4	0 %100
16	M14	PX	1.7	1.7	0 %100
17	M15	PX	1.7	1.7	0 %100
18	M17	PX	1.7	1.7	0 %100
19	M16	PX	1.7	1.7	0 %100

Member Distributed Loads (BLC 5 : WIND LOAD (ICE) FRONT)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M7	PY	5	5	0 %100
2	M8	PY	5	5	0 %100
3	M9	PY	5	5	0 %100
4	M6	PY	5	5	0 %100
5	M18	PY	5.4	5.4	0 %100
6	M4	PY	5.8	5.8	0 %100
7	M1	PY	5.8	5.8	0 %100
8	M2	PY	5.8	5.8	0 %100
9	M5	PY	5.8	5.8	0 %100
10	M3	PY	5.8	5.8	0 %100
11	M27	PY	5.8	5.8	0 %100
12	M10	PY	3.7	3.7	0 %100
13	M13	PY	3.7	3.7	0 %100
14	M12	PY	3.7	3.7	0 %100
15	M11	PY	3.7	3.7	0 %100
16	M14	PY	3.8	3.8	0 %100
17	M15	PY	3.8	3.8	0 %100
18	M17	PY	3.8	3.8	0 %100
19	M16	PY	3.8	3.8	0 %100

Member Distributed Loads (BLC 6 : WIND LOAD (ICE) SIDE)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M7	PX	5	5	0 %100
2	M8	PX	5	5	0 %100
3	M9	PX	5	5	0 %100
4	M6	PX	5	5	0 %100
5	M18	PX	5.4	5.4	0 %100
6	M4	PX	5.8	5.8	0 %100
7	M1	PX	5.8	5.8	0 %100
8	M2	PX	5.8	5.8	0 %100
9	M5	PX	5.8	5.8	0 %100
10	M3	PX	5.8	5.8	0 %100
11	M27	PX	5.8	5.8	0 %100
12	M10	PX	3.7	3.7	0 %100
13	M13	PX	3.7	3.7	0 %100
14	M12	PX	3.7	3.7	0 %100
15	M11	PX	3.7	3.7	0 %100
16	M14	PX	3.8	3.8	0 %100
17	M15	PX	3.8	3.8	0 %100
18	M17	PX	3.8	3.8	0 %100
19	M16	PX	3.8	3.8	0 %100

Member Area Loads

No Data to Print...

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DL + WL (NO ICE) 0 Degree	Yes	Y	1	1.2			3	1.6		
2	DL + WL (NO ICE) 30 Degree	Yes	Y	1	1.2			3	1.386	4	0.8
3	DL + WL (NO ICE) 60 Degree	Yes	Y	1	1.2			3	0.8	4	1.386
4	DL + WL (NO ICE) 90 Degree	Yes	Y	1	1.2					4	1.6
5	DL + WL (NO ICE) 120 Degree	Yes	Y	1	1.2			3	-0.8	4	1.386
6	DL + WL (NO ICE) 150 Degree	Yes	Y	1	1.2			3	-1.386	4	0.8
7	DL + WL (NO ICE) 180 Degree	Yes	Y	1	1.2			3	-1.6		
8	DL + WL (NO ICE) 210 Degree	Yes	Y	1	1.2			3	-1.386	4	-0.8
9	DL + WL (NO ICE) 240 Degree	Yes	Y	1	1.2			3	-0.8	4	-1.386
10	DL + WL (NO ICE) 270 Degree	Yes	Y	1	1.2					4	-1.6
11	DL + WL (NO ICE) 300 Degree	Yes	Y	1	1.2			3	0.8	4	-1.386
12	DL + WL (NO ICE) 330 Degree	Yes	Y	1	1.2			3	1.386	4	-0.8
13	DL + DL ICE + WL (ICE) 0 Degree	Yes	Y	1	1.2	2	1	5	1		
14	DL + DL ICE + WL (ICE) 30 Degree	Yes	Y	1	1.2	2	1	5	0.866	6	0.5
15	DL + DL ICE + WL (ICE) 60 Degree	Yes	Y	1	1.2	2	1	5	0.5	6	0.866
16	DL + DL ICE + WL (ICE) 90 Degree	Yes	Y	1	1.2	2	1			6	1
17	DL + DL ICE + WL (ICE) 120 Degree	Yes	Y	1	1.2	2	1	5	-0.5	6	0.866
18	DL + DL ICE + WL (ICE) 150 Degree	Yes	Y	1	1.2	2	1	5	-0.866	6	0.5
19	DL + DL ICE + WL (ICE) 180 Degree	Yes	Y	1	1.2	2	1	5	-1		
20	DL + DL ICE + WL (ICE) 210 Degree	Yes	Y	1	1.2	2	1	5	-0.866	6	-0.5
21	DL + DL ICE + WL (ICE) 240 Degree	Yes	Y	1	1.2	2	1	5	-0.5	6	-0.866
22	DL + DL ICE + WL (ICE) 270 Degree	Yes	Y	1	1.2	2	1			6	-1
23	DL + DL ICE + WL (ICE) 300 Degree	Yes	Y	1	1.2	2	1	5	0.5	6	-0.866
24	DL + DL ICE + WL (ICE) 330 Degree	Yes	Y	1	1.2	2	1	5	0.866	6	-0.5
25	DEAD LOAD + LIVE LOAD1	Yes	Y	1	1.2					7	1.5
26	DEAD LOAD + LIVE LOAD2	Yes	Y	1	1.2					8	1.5
27	DEAD LOAD + LIVE LOAD3	Yes	Y	1	1.2					9	1.5
28	DL + MAIN L1+30MPH WL FRONT	Yes	Y	1	1.2	10	1.5	3	0.089		
29	DL + MAIN L2+30MPH WL FRONT	Yes	Y	1	1.2	11	1.5	3	0.089		
30	DL + MAIN L3+30MPH WL FRONT	Yes	Y	1	1.2	12	1.5	3	0.089		
31	DL + MAIN L4+30MPH WL FRONT	Yes	Y	1	1.2	13	1.5	3	0.089		
32	DL + MAIN L1+30MPH WL SIDE	Yes	Y	1	1.2	10	1.5	4	0.089		
33	DL + MAIN L2+30MPH WL SIDE	Yes	Y	1	1.2	11	1.5	4	0.089		
34	DL + MAIN L3+30MPH WL SIDE	Yes	Y	1	1.2	12	1.5	4	0.089		
35	DL + MAIN L4+30MPH WL SIDE	Yes	Y	1	1.2	13	1.5	4	0.089		
36	DL + MAIN L1+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	10	1.5	3	-0.089		
37	DL + MAIN L2+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	11	1.5	3	-0.089		
38	DL + MAIN L3+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	12	1.5	3	-0.089		
39	DL + MAIN L4+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	13	1.5	3	-0.089		
40	DL + MAIN L1+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	10	1.5	4	-0.089		
41	DL + MAIN L2+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	11	1.5	4	-0.089		
42	DL + MAIN L3+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	12	1.5	4	-0.089		
43	DL + MAIN L4+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	13	1.5	4	-0.089		

Envelope Node Reactions

	Node Label	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N40	max	335.218	10	501.146	4	67.491	22	0.01	30	0.003	36	0
2		min	-335.028	4	-501.363	10	20.743	5	-0.002	36	-0.017	30	0
3	N8	max	1078.584	40	169.073	8	1041.988	23	0	43	0	43	0
4		min	-1182.772	34	-2102.568	14	335.139	3	0	1	0	1	0
5	N1	max	1195.861	42	2051.789	19	912.774	17	0	43	0	43	0
6		min	-1091.875	32	-49.273	1	297.89	9	0	1	0	1	0
7	Totals:	max	1007.366	10	1415.118	7	2018.073	22					
8		min	-1007.366	4	-1415.118	1	675.709	4					

Envelope Node Displacements

Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC	
1	N1	max	0	32	0	1	0	9	-2.456e-3	3	4.463e-3	42	1.564e-3	11
2		min	0	42	0	19	0	17	-7.599e-3	22	-2.753e-3	32	-1.613e-3	5
3	N4	max	0.03	32	0.036	42	0	32	1.009e-3	11	1.932e-3	42	9.086e-4	7
4		min	-0.033	42	-0.041	32	-0.148	42	-1.184e-3	32	-1.007e-3	32	-9.261e-4	1
5	N5	max	0.03	32	0.046	5	0.012	42	4.21e-4	25	1.277e-3	42	1.49e-3	12
6		min	-0.033	42	-0.057	11	-0.133	32	-1.503e-3	42	-1.704e-3	32	-1.244e-3	6
7	N6	max	0.008	5	0.016	6	0	32	9.951e-4	10	1.799e-3	42	1.105e-3	6
8		min	-0.007	11	-0.014	12	-0.148	42	-1.157e-3	32	-1.033e-3	32	-9.998e-4	12
9	N7	max	0.008	5	0.032	6	0.012	42	5.267e-4	5	1.277e-3	42	1.298e-3	12
10		min	-0.007	11	-0.028	12	-0.132	32	-1.488e-3	42	-1.638e-3	32	-1.431e-3	6
11	N8	max	0	34	0	14	0	3	-2.614e-3	3	4.724e-3	42	7.503e-4	11
12		min	0	40	0	8	0	23	-8.055e-3	22	-2.961e-3	32	-5.968e-4	5
13	N9	max	0.03	32	0.029	1	-0.031	7	1.308e-3	1	1.341e-3	42	1.115e-3	10
14		min	-0.033	42	-0.035	7	-0.1	13	-1.889e-3	7	-1.118e-3	32	-1.008e-3	4
15	N10	max	0.008	5	0.034	1	-0.029	1	1.339e-3	7	1.348e-3	42	5.234e-4	11
16		min	-0.007	11	-0.03	7	-0.101	19	-1.865e-3	1	-1.094e-3	36	-5.274e-4	5
17	N11	max	0.03	32	0.042	5	0.008	42	4.21e-4	25	1.277e-3	42	1.49e-3	12
18		min	-0.033	42	-0.052	11	-0.128	32	-1.503e-3	42	-1.704e-3	32	-1.244e-3	6
19	N12	max	0.008	5	0.028	6	0.008	42	5.267e-4	5	1.277e-3	42	1.298e-3	12
20		min	-0.007	11	-0.024	12	-0.128	32	-1.488e-3	42	-1.638e-3	32	-1.432e-3	6
21	N13	max	0.03	32	0.034	42	-0.003	32	1.009e-3	11	1.932e-3	42	9.087e-4	7
22		min	-0.033	42	-0.04	32	-0.142	42	-1.184e-3	32	-1.007e-3	32	-9.263e-4	1
23	N14	max	0.008	5	0.012	6	-0.003	32	9.951e-4	10	1.799e-3	42	1.105e-3	6
24		min	-0.007	11	-0.011	12	-0.142	42	-1.157e-3	32	-1.033e-3	32	-1.e-3	12
25	N15	max	0.033	32	0.029	1	-0.034	12	1.308e-3	1	1.341e-3	42	1.115e-3	10
26		min	-0.036	42	-0.035	7	-0.102	18	-1.889e-3	7	-1.118e-3	32	-1.008e-3	4
27	N16	max	0.01	5	0.034	1	-0.034	12	1.339e-3	7	1.348e-3	42	5.234e-4	11
28		min	-0.009	11	-0.03	7	-0.102	18	-1.865e-3	1	-1.094e-3	36	-5.274e-4	5
29	N17	max	0.031	32	0.042	5	0.004	42	4.21e-4	25	1.277e-3	42	1.49e-3	12
30		min	-0.035	42	-0.052	11	-0.127	32	-1.503e-3	42	-1.704e-3	32	-1.244e-3	6
31	N18	max	0.012	5	0.028	6	0.004	42	5.267e-4	5	1.277e-3	42	1.298e-3	12
32		min	-0.011	11	-0.024	12	-0.127	32	-1.488e-3	42	-1.638e-3	32	-1.432e-3	6
33	N19	max	0.032	32	0.034	42	-0.007	32	1.009e-3	11	1.932e-3	42	9.087e-4	7
34		min	-0.035	42	-0.04	32	-0.141	42	-1.184e-3	32	-1.007e-3	32	-9.263e-4	1
35	N20	max	0.005	4	0.012	6	-0.007	32	9.951e-4	10	1.799e-3	42	1.105e-3	6
36		min	-0.005	10	-0.011	12	-0.141	42	-1.157e-3	32	-1.033e-3	32	-1.e-3	12
37	N21	max	0.05	34	0.148	1	-0.034	12	3.325e-3	7	1.418e-3	34	5.234e-4	11
38		min	-0.039	40	-0.126	7	-0.102	18	-3.851e-3	1	-1.177e-3	10	-5.274e-4	5
39	N22	max	0.044	42	0.048	42	0.004	42	6.217e-4	5	1.266e-3	42	1.298e-3	12
40		min	-0.053	32	0.002	25	-0.127	32	-1.489e-3	42	-1.627e-3	32	-1.432e-3	6
41	N23	max	0.061	42	0.043	4	-0.007	32	1.069e-3	9	1.789e-3	42	1.105e-3	6
42		min	-0.033	32	-0.038	10	-0.141	42	-1.178e-3	3	-1.023e-3	32	-1.e-3	12
43	N24	max	0.093	4	0.124	1	-0.034	12	3.289e-3	1	2.393e-3	10	1.115e-3	10
44		min	-0.105	10	-0.149	7	-0.102	18	-3.869e-3	7	-2.188e-3	4	-1.008e-3	4
45	N25	max	0.088	32	0.048	4	0.004	42	4.85e-4	3	1.288e-3	42	1.49e-3	12
46		min	-0.078	42	-0.095	42	-0.128	32	-1.502e-3	42	-1.694e-3	32	-1.244e-3	6
47	N26	max	0.065	32	0.061	10	-0.007	32	1.104e-3	11	1.919e-3	42	9.087e-4	7
48		min	-0.098	42	-0.079	32	-0.142	42	-1.278e-3	5	-1.017e-3	32	-9.263e-4	1
49	N27	max	0.03	32	0.029	10	-0.018	32	5.217e-4	12	2.464e-3	42	1.166e-3	8
50		min	-0.033	42	-0.031	32	-0.105	42	-1.063e-3	6	-1.057e-3	32	-1.014e-3	2
51	N28	max	0.008	5	0.007	12	-0.019	32	5.725e-4	9	2.397e-3	42	1.338e-3	6
52		min	-0.007	11	-0.006	6	-0.107	42	-1.053e-3	3	-1.072e-3	32	-1.402e-3	12
53	N29	max	0.03	32	0.025	4	-0.01	10	1.041e-4	2	1.492e-3	42	1.698e-3	12
54		min	-0.033	42	-0.034	42	-0.094	32	-1.665e-3	21	-2.22e-3	32	-1.538e-3	6
55	N30	max	0.008	5	0.009	5	-0.012	10	2.816e-4	6	1.505e-3	42	1.372e-3	12
56		min	-0.007	11	-0.007	11	-0.095	32	-1.603e-3	23	-2.17e-3	32	-1.419e-3	6
57	N31	max	0.005	5	0.006	12	-0.012	32	-1.78e-3	11	3.595e-3	42	1.174e-3	12
58		min	-0.006	11	-0.004	6	-0.059	22	-5.766e-3	17	-2.029e-3	32	-9.523e-4	6
59	N32	max	0.002	4	0.002	4	-0.006	10	-2.049e-3	5	4.012e-3	42	3.707e-4	9
60		min	-0.003	40	-0.003	10	-0.045	32	-6.819e-3	22	-2.376e-3	32	-3.502e-4	3
61	N33	max	0.011	5	0.01	11	-0.011	32	-1.805e-3	11	3.614e-3	42	1.825e-3	11

Envelope Node Displacements (Continued)

Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC	
62		min	-0.01	11	-0.011	5	-0.056	22	-5.537e-3	13	-1.863e-3	32	-1.965e-3	5
63	N34	max	0.009	32	0.008	4	-0.005	10	-1.952e-3	3	3.79e-3	42	1.273e-3	10
64		min	-0.008	10	-0.008	10	-0.042	32	-6.45e-3	22	-2.19e-3	32	-1.237e-3	32
65	N35	max	0.013	5	0.014	12	-0.018	4	3.388e-4	10	2.08e-3	42	6.83e-4	6
66		min	-0.013	11	-0.012	6	-0.088	42	-1.088e-3	32	-1.04e-3	32	-9.311e-4	12
67	N36	max	0.005	3	0.007	3	-0.01	10	-2.652e-4	5	2.085e-3	42	4.772e-4	12
68		min	-0.005	9	-0.005	9	-0.076	32	-2.551e-3	22	-1.748e-3	32	-5.797e-4	6
69	N37	max	0.028	5	0.029	11	-0.017	4	1.767e-4	11	2.068e-3	42	9.538e-4	38
70		min	-0.03	11	-0.029	5	-0.085	42	-1.062e-3	32	-1.034e-3	32	-5.415e-4	2
71	N38	max	0.027	32	0.022	32	-0.009	10	-5.864e-4	3	2.001e-3	42	1.04e-3	11
72		min	-0.028	42	-0.029	42	-0.073	32	-2.597e-3	21	-1.908e-3	32	-8.1e-4	5
73	N39	max	0.008	5	0.002	7	-0.012	32	7.335e-4	9	2.449e-3	42	1.291e-3	6
74		min	-0.007	11	-0.001	1	-0.122	42	-1.077e-3	32	-1.029e-3	32	-1.236e-3	12
75	N40	max	0	4	0	10	0	5	0	36	0	30	0	43
76		min	0	10	0	4	0	22	0	30	0	36	0	1
77	N43	max	0.012	6	0.017	12	-0.014	32	4.66e-4	42	6.202e-4	42	6.437e-4	12
78		min	-0.014	12	-0.014	6	-0.09	22	-1.136e-3	32	-1.048e-3	32	-6.366e-4	6
79	N41	max	0.013	6	0.016	12	-0.019	4	4.66e-4	42	6.202e-4	42	6.437e-4	12
80		min	-0.015	12	-0.013	6	-0.091	22	-1.136e-3	32	-1.048e-3	32	-6.366e-4	6
81	N42	max	0.023	5	0.026	11	-0.014	32	5.773e-4	42	7.485e-4	42	9.63e-4	11
82		min	-0.023	11	-0.028	5	-0.09	22	-1.088e-3	32	-9.883e-4	32	-9.012e-4	5
83	N44	max	0.025	5	0.024	11	-0.018	4	5.773e-4	42	7.485e-4	42	9.63e-4	11
84		min	-0.025	11	-0.026	5	-0.09	22	-1.088e-3	32	-9.883e-4	32	-9.012e-4	5
85	N45	max	0.009	38	0.017	28	-0.014	32	4.66e-4	42	6.2e-4	42	6.437e-4	12
86		min	-0.017	28	-0.01	6	-0.09	22	-1.136e-3	32	-1.048e-3	32	-6.366e-4	6
87	N47	max	0.029	32	0.028	11	-0.014	32	5.773e-4	42	7.487e-4	42	9.63e-4	11
88		min	-0.025	11	-0.034	32	-0.09	22	-1.088e-3	32	-9.885e-4	32	-9.012e-4	5
89	N46	max	0.018	5	0.022	11	-0.014	32	6.047e-4	42	6.561e-4	42	7.867e-4	11
90		min	-0.019	11	-0.021	5	-0.09	22	-9.35e-4	32	-8.422e-4	32	-7.523e-4	5
91	N48	max	0.067	4	0.085	1	-0.034	12	3.28e-3	1	2.384e-3	10	1.115e-3	10
92		min	-0.076	10	-0.103	7	-0.102	18	-3.86e-3	7	-2.178e-3	4	-1.008e-3	4
93	N49	max	0.033	34	0.102	1	-0.034	12	3.316e-3	7	1.417e-3	34	5.234e-4	11
94		min	-0.025	40	-0.086	7	-0.102	18	-3.842e-3	1	-1.168e-3	10	-5.274e-4	5

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

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn	
1	M7	PIPE_1.5	0.291	7.955	32	0.137	0	17	18642.87	23593.5	1.105	1.105	1.71	H1-1b
2	M8	PIPE_1.5	0.327	8.397	42	0.167	0	19	18642.87	23593.5	1.105	1.105	1.489	H1-1b
3	M9	PIPE_1.5	0.29	8.397	32	0.126	0	18	18642.87	23593.5	1.105	1.105	1.701	H1-1b
4	M6	PIPE_1.5	0.361	7.955	42	0.182	0	23	18642.87	23593.5	1.105	1.105	1.761	H1-1b
5	M18	PIPE_2.0	0.105	60	16	0.014	120	30	9836.597	32130	1.872	1.872	1.136	H1-1b
6	M4	PIPE_2.5	0.149	63	7	0.035	33	42	30038.461	50715	3.596	3.596	1.532	H1-1b
7	M1	PIPE_2.5	0.134	48	33	0.078	18	42	30038.461	50715	3.596	3.596	1.554	H1-1b
8	M2	PIPE_2.5	0.127	48	41	0.076	18	30	30038.461	50715	3.596	3.596	1.58	H1-1b
9	M5	PIPE_2.5	0.129	33	36	0.027	63	40	30038.461	50715	3.596	3.596	3	H1-1b
10	M3	PIPE_2.5	0.132	33	38	0.024	63	34	30038.461	50715	3.596	3.596	3	H1-1b
11	M27	PIPE_2.5	0.028	39	28	0.019	9	32	44490.956	50715	3.596	3.596	1.79	H1-1b
12	M10	SR0.5	0.433	19.9	21	0.009	39.8	28	873.175	6350.4	0.052	0.052	1.136	H1-1a
13	M13	SR0.5	0	39.8	43	0	39.8	43	427.856	6350.4	0.052	0.052	1	H1-1a
14	M12	SR0.5	0.381	19.9	17	0.012	39.8	15	873.175	6350.4	0.052	0.052	1.136	H1-1a
15	M11	SR0.5	0	39.8	43	0	39.8	43	427.856	6350.4	0.052	0.052	1	H1-1a
16	M14	SR0.625	0.196	30	36	0.006	30	42	3836.995	9940.196	0.104	0.104	1.136	H1-1b*
17	M15	SR0.625	0.194	30	32	0.009	30	32	3836.995	9940.196	0.104	0.104	1	H1-1b*
18	M17	SR0.625	0.194	30	38	0.008	30	22	3836.995	9940.196	0.104	0.104	1.136	H1-1b*
19	M16	SR0.625	0.184	0	42	0.014	30	32	3836.995	9940.196	0.104	0.104	1	H1-1b*

NOTES:

1.0 GENERAL

1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS

1.2 FOR PATENT INFO :<https://www.cs-pat.com>

2.0 DESIGN NOTES

3.0 MANUFACTURING/SPECIAL REQUIREMENTS

3.1 TIGHTEN ALL BOLTS SECURING FLAT PLATES BY THE TURN-OF-NUT METHOD. TIGHTEN ALL U-BOLTS USING TURN-OF-NUT METHOD WITH ATTENTION TO LEAVE EQUAL DISTANCE AND EQUAL FORCE ON EACH LEG OF THE U-BOLT.

4.0 TEST

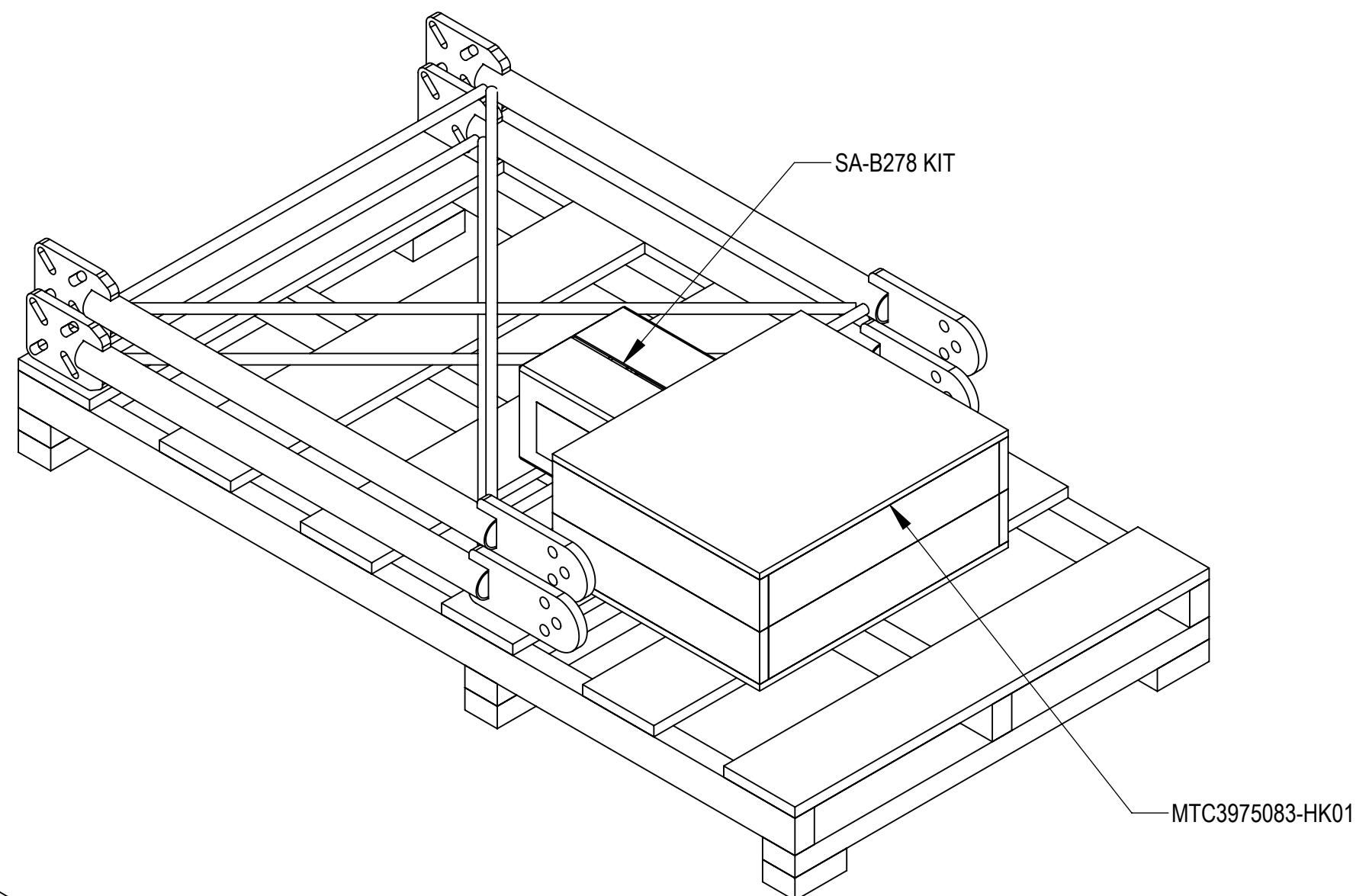
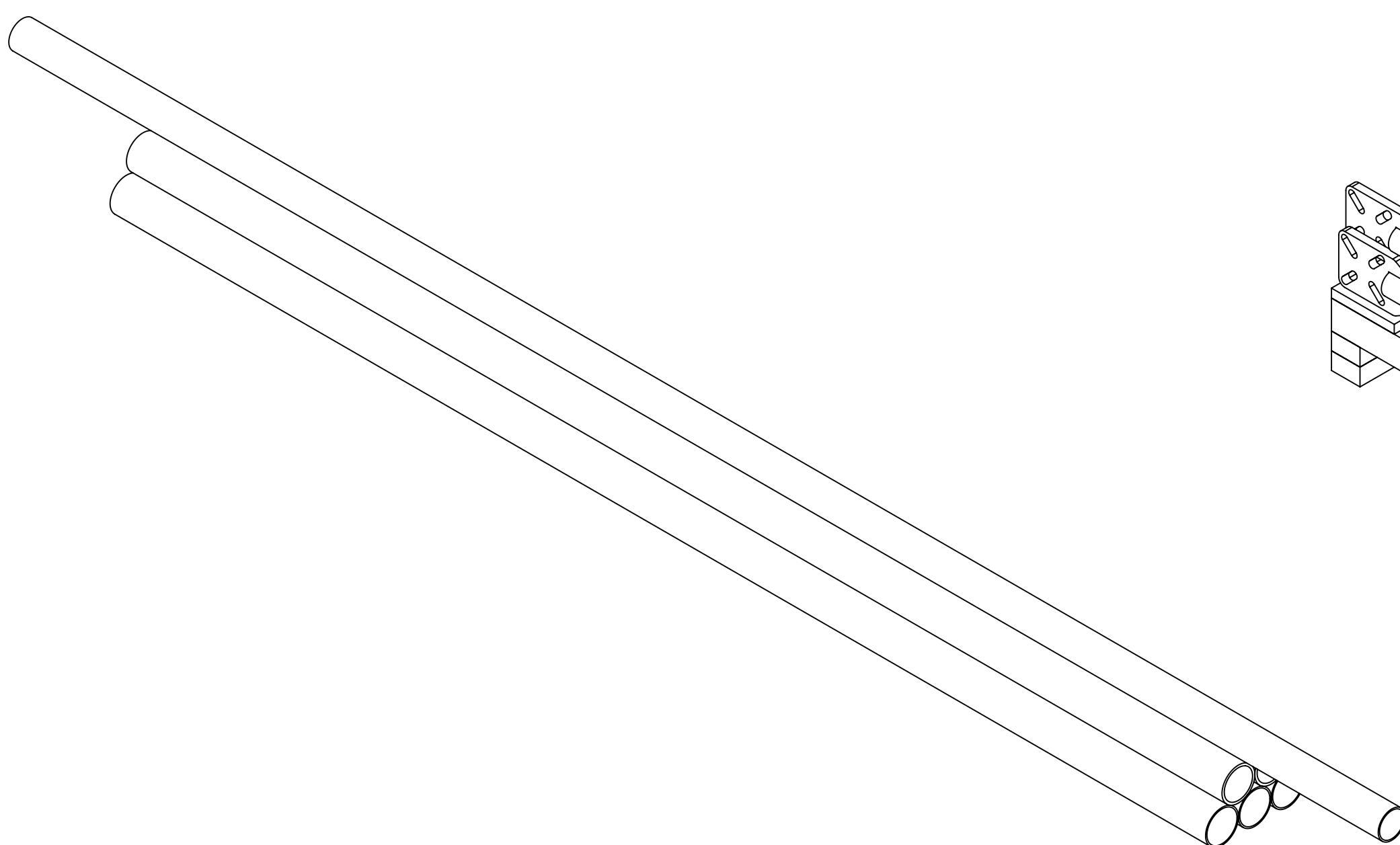
5.0 PACKAGING

5.1 PACKAGING SHALL MEET COMMSCOPE REQUIREMENTS PER DOCUMENT IS-PL-3005

5.2 PRINTED DOCUMENT TO BE PLACED INSIDE POLYBAG AND THEN IN SHIPPING CONTAINER

5.3 EXTRA HARDWARE MAY BE SUPPLIED, BAGGED AND SHIPPED.

REVISIONS				
REV.	IPS	DESCRIPTION	BY	DATE
A	10191PC	NEW RELEASED.	RJC	3/17/2021
B	14462PC	UPDATED PALLET60X32 WAS 48X32 AND WOOD CRATE CR171407 WAS CR2080A	MS1288	8/26/2021
C	40140041CMO	DELETED NOTE 2.1; UPDATED NOTE 3.1; UPDATED MODEL; ADDED NOTES FOR TOWER LEG IN SHEET 3	YX1027	12/17/2021



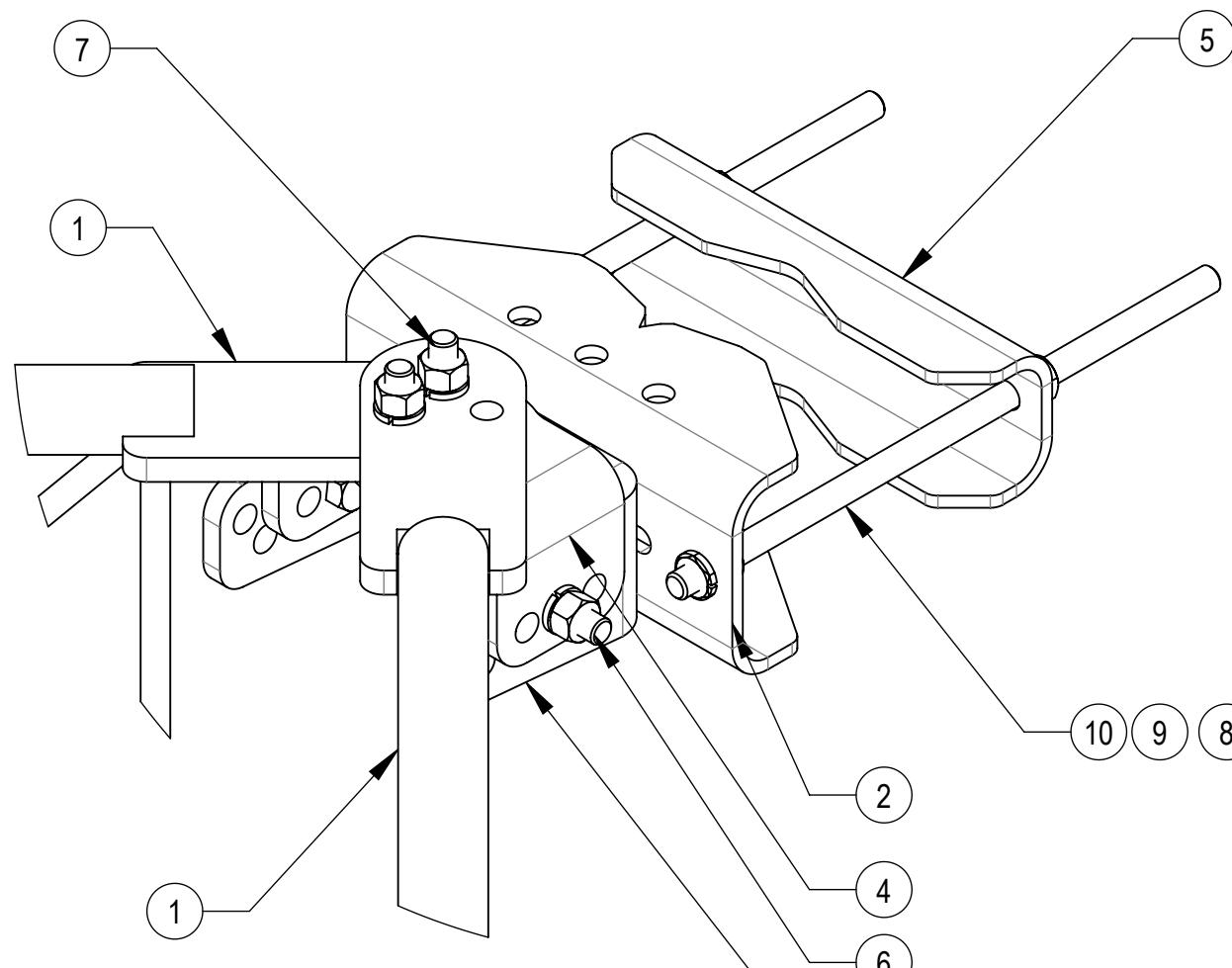
PB01TEA0308B0208K

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COMMSCOPE, INC. OF NORTH CAROLINA			
TOLERANCES		SAP MATERIAL MASTER	
0 PLACE X± .25			2 PLACE .xx± 0.06
1 PLACE .x± 0.12			ANGLES ± 2°
FINISH GALV A123		MATERIAL SEE BOM	
TITLE SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET PER ANSI Y14.5M-1994	NAME	DATE	SCALE
CE XZ1054	03/02/2021		DOCUMENT NO.
RW YX1027	12/16/2021		MTC3975083
AD BCROSS	12/17/2021		
RE BCROSS	12/17/2021		
ECN 10191PC			
HEIGHT	SIZE	MODEL	DRAWING
LENGTH	Auth Group	INSL	
WIDTH		VERSION STATUS REVISION	VERSION STATUS REVISION
	C	00 RE B	00 RE C

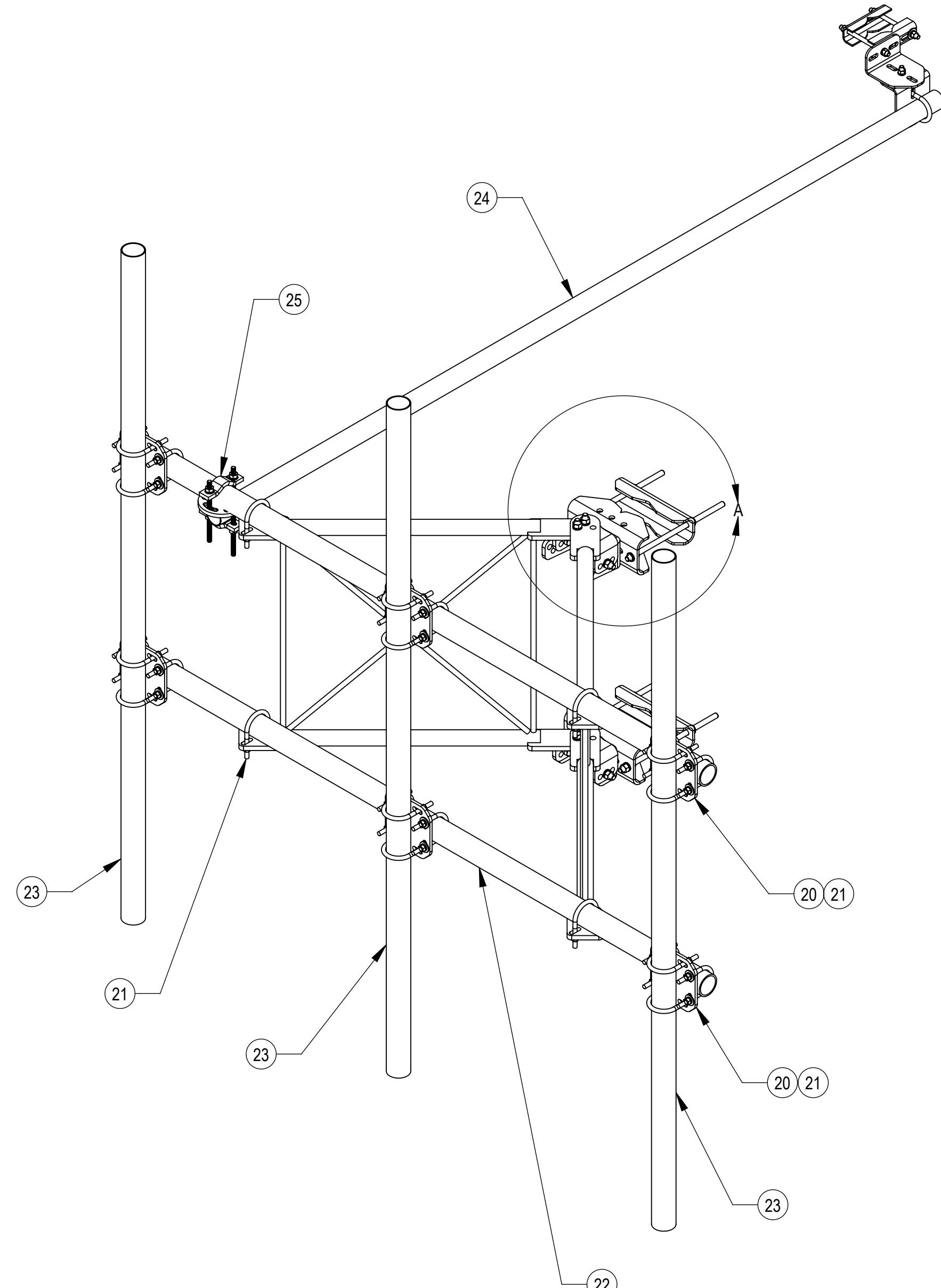
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET PER ANSI Y14.5M-1994	NAME	DATE	TITLE			SCALE	DOCUMENT NO.	SHEET
			HEIGHT	SIZE	MODEL			
			LENGTH	Auth Group	INSL	VERSION	STATUS	REVISION
			WIDTH			00	RE	C

NOTES:



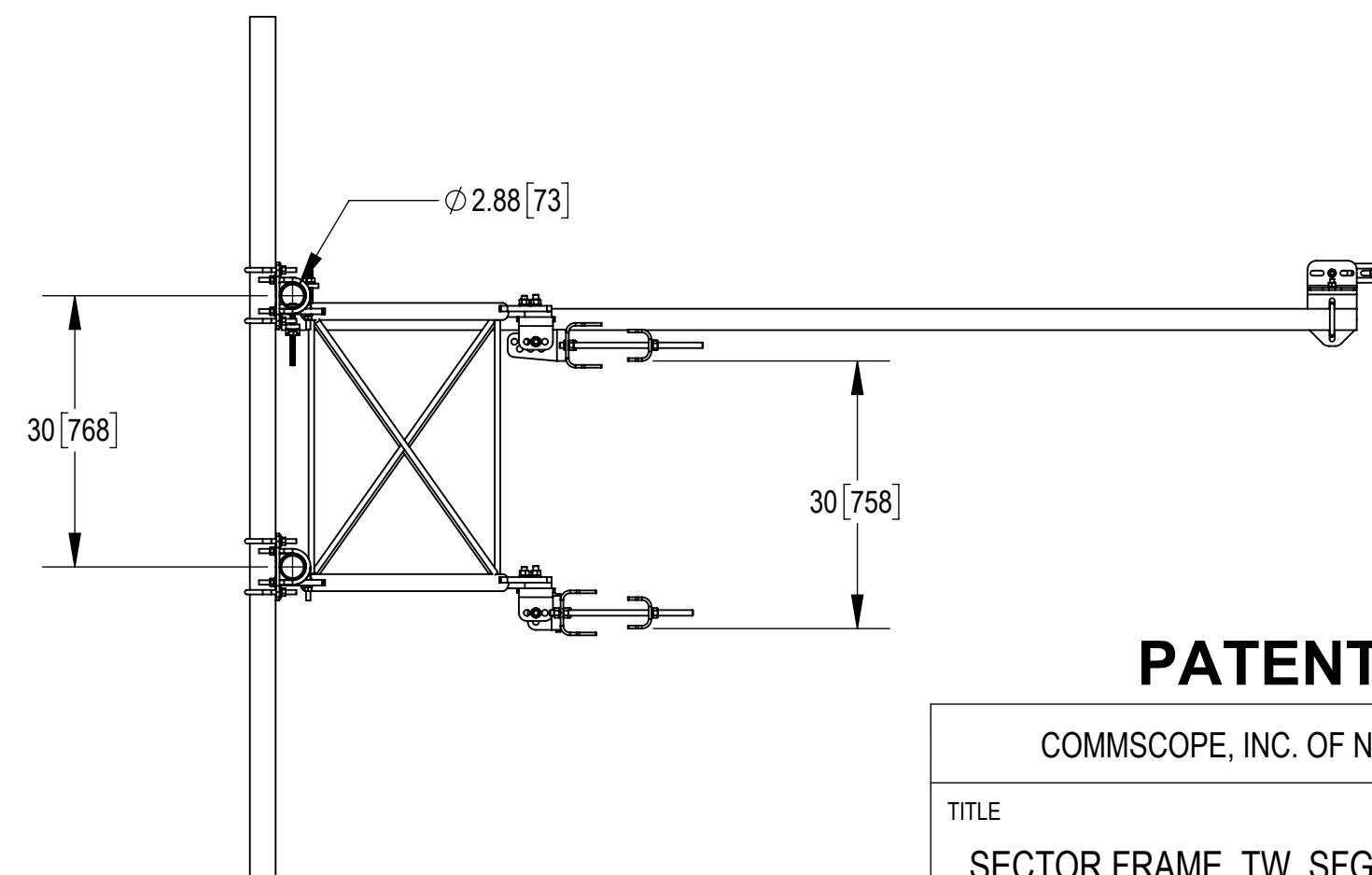
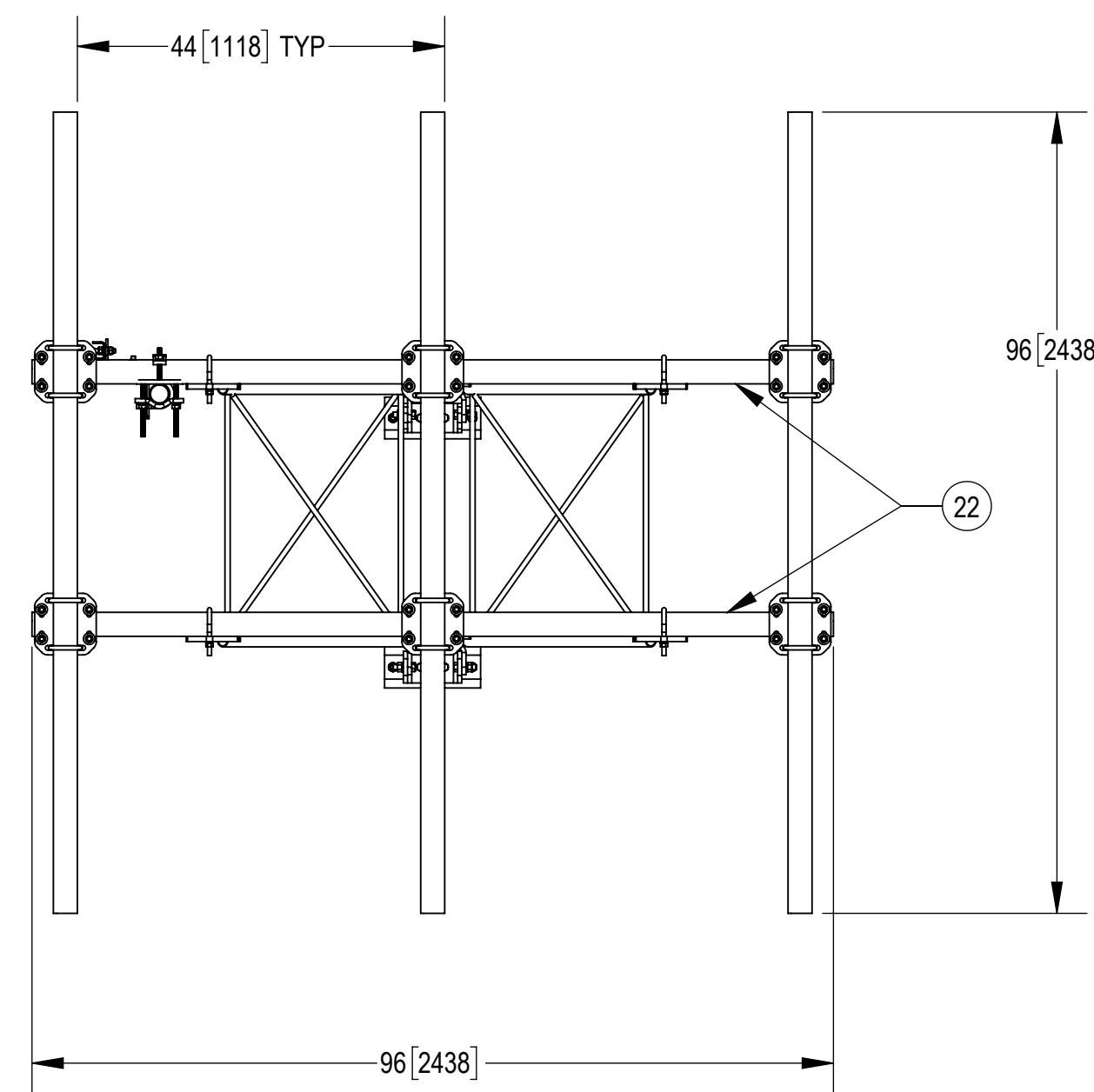
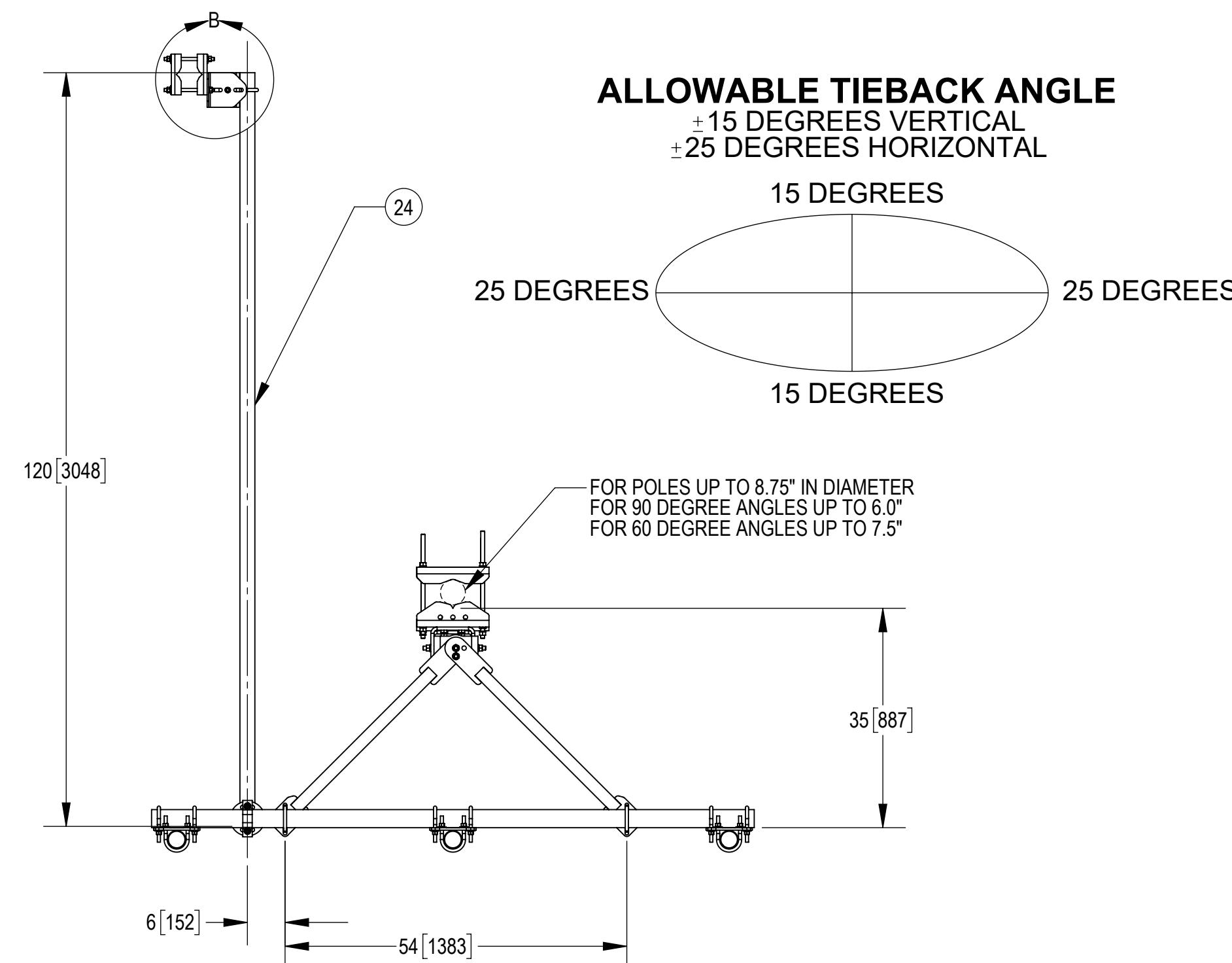
BOM IS FOR REFERENCE ONLY, PART NUMBER SUBSTITUTIONS MAY BE MADE

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	NOTE NO.
1	SFV01	WELDMENT, SF-V STANDOFF ARM	2	
2	MTC397522	CLAMP, FRONT MOUNTING	2	
3	SFV03	SFV TAPER BRACKET	1	
4	SFV02	SFV AZIMUTH BRACKET	3	
5	MTC397521	CLAMP, BACK	2	
6	GB-05225	5/8" X 2-1/4" GALV BOLT KIT	8	
7	GB-05305	5/8" X 3" GALV BOLT KIT	4	
8	GWL-05	5/8" GALV LOCK WASHER	8	
9	GN-05	5/8" GALV HEX NUT	12	
10	MT-382-16	5/8" X 16" GALV THREADED ROD	4	
11	GWF04A	1/2" GALV FLAT WASHER (A325)	6	
12	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	1	
13	XAU01	ANGLE, CROSSOVER, 1.9-3.5" X 1.9-3.5" OD	2	
14	SAB01	FORMED CLAMP	2	
15	MT-379-8	1/2" X 8" GALV THREADED ROD	2	
16	GB-04145	1/2" X 1-1/2" GALV BOLT KIT	1	
17	GWF-04	1/2" GALV FLAT WASHER	52	
18	GWL-04	1/2" GALV LOCK WASHER	41	
19	GN-04	1/2" GALV HEX NUT	41	
20	XPU01	PLATE, CROSSOVER, 1.9-3.5" X 1.9-3.5" OD	6	
21	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	28	
22	MT54696	Ø 2.875" O.D. X 96" PIPE	2	
23	MT54696120	Ø 2.88" X 96" GALV PIPE	3	
24	MT-651-120	2.375" OD X 120" PIPE	1	
25	XP-R	CROSSOVER PLATE, ROUND, UP TO 3.5" OD	1	



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TITLE		
SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE		
SIZE	SCALE	DOCUMENT NO.
C	1:12	MTC3975083
DRAWING		SHEET
VERSION	STATUS	REVISION
02	RE	C
2 OF 7		

NOTES:

**PATENT PENDING**

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TITLE
SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE

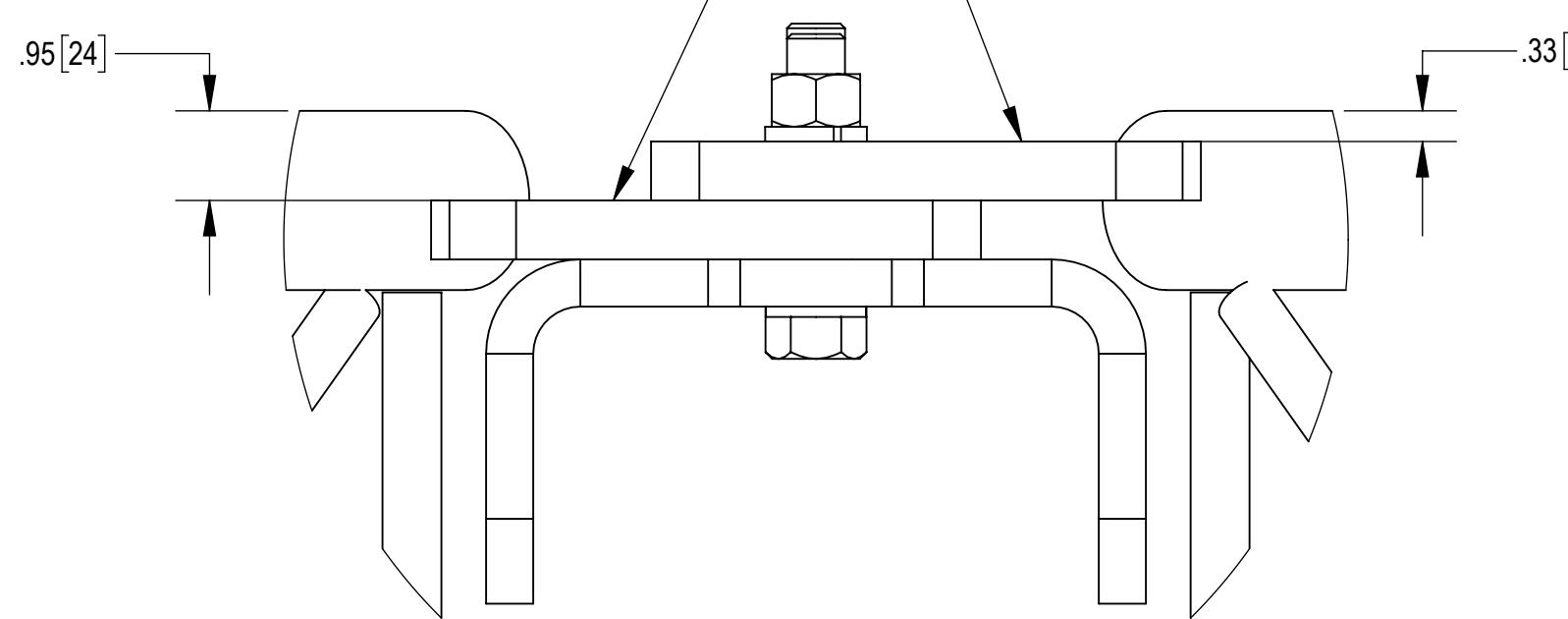
SIZE C SCALE 1:20 DOCUMENT NO. MTC3975083

DRAWING	VERSION STATUS REVISION			SHEET 3 OF 7
	02	RE	C	
02	RE	C		

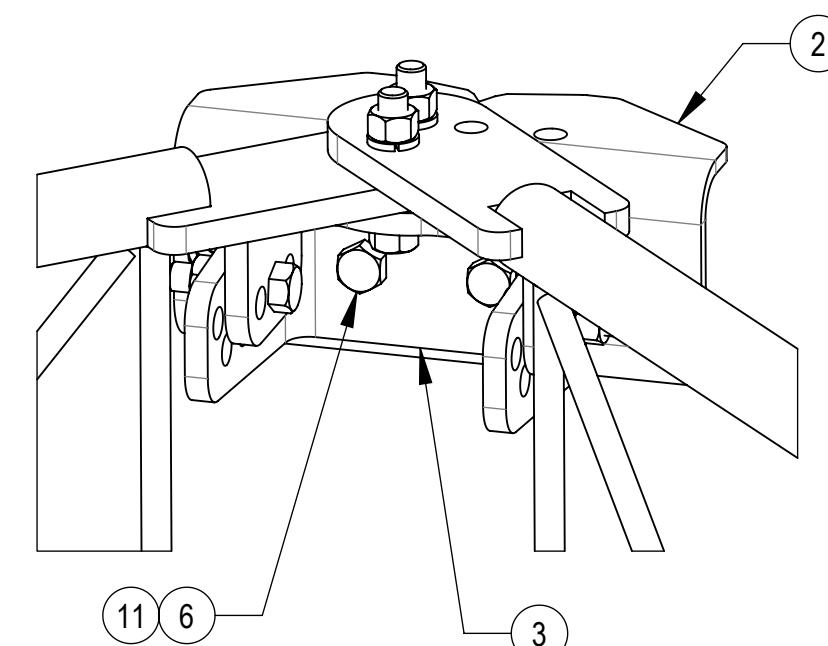
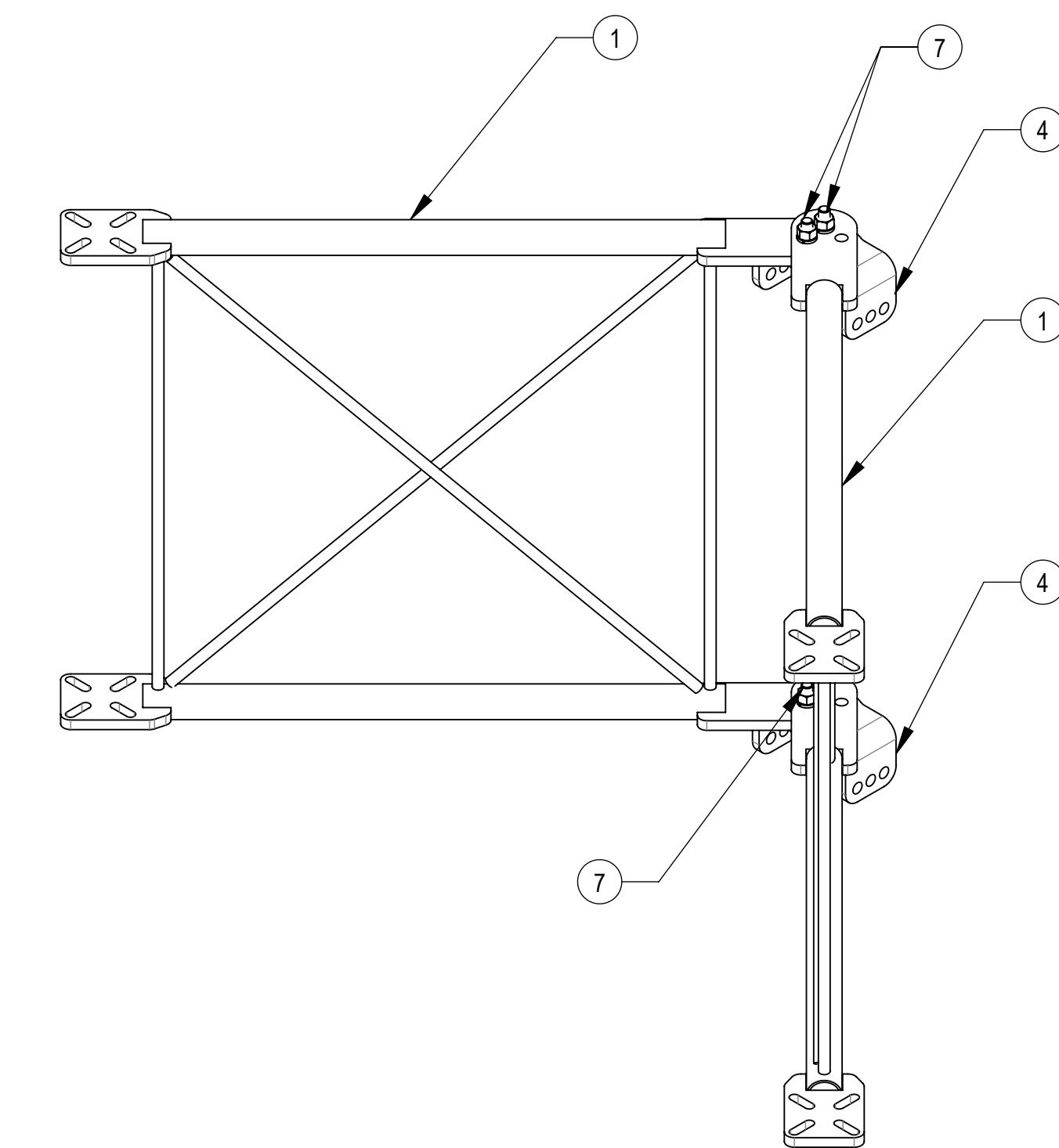
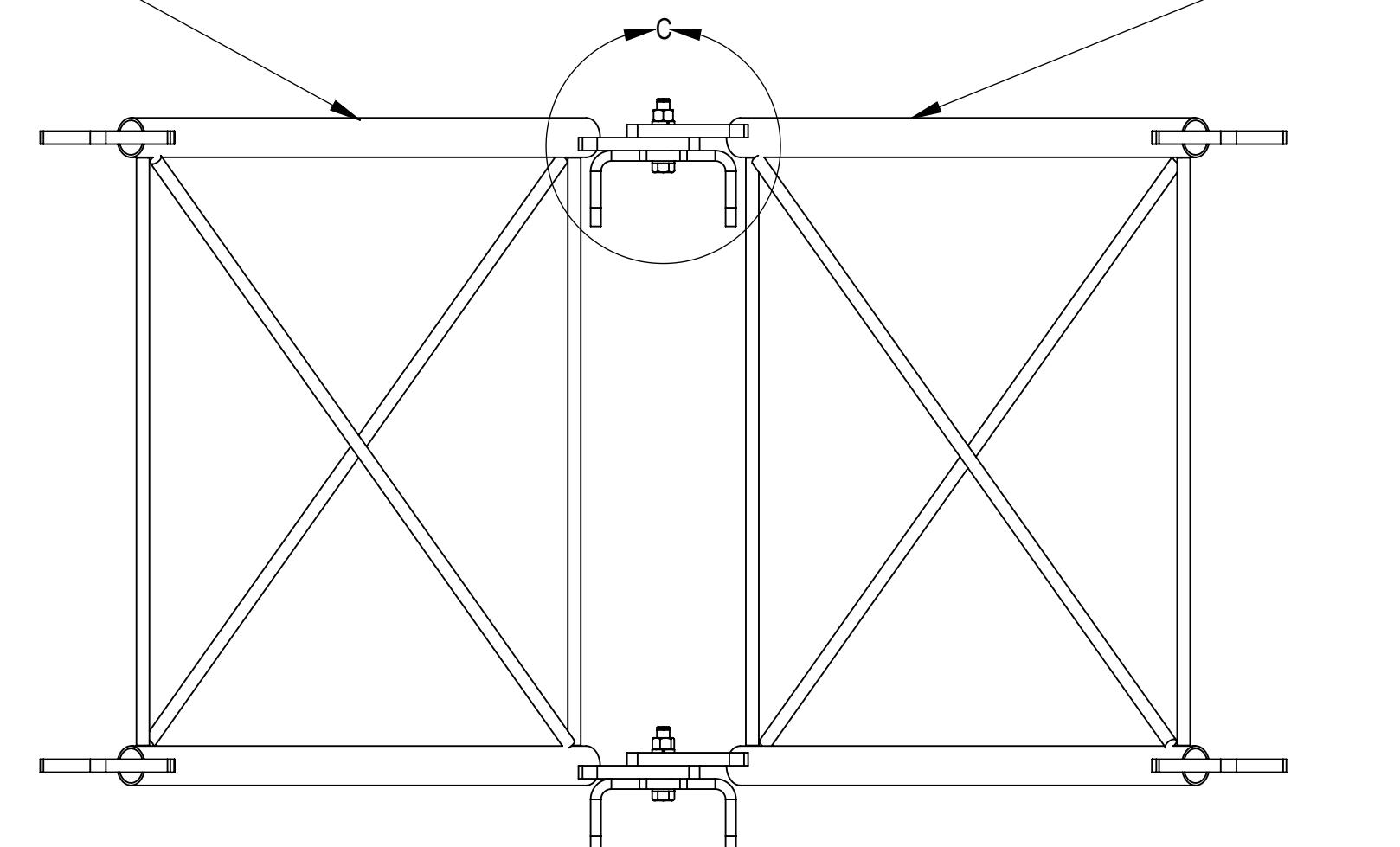
NOTES:

STEP1: ATTACH STANOFF ARMS (SFV01) TO AZIMUTH BRACKETS (SFV02) USING BOLT KITS (GB-05305)

LOWER ARM "UPSIDE DOWN" **UPPER ARM "RIGHT SIDE UP"**



**STANOFF ARM ORIENTATION IS CRITICAL!
WHEN ASSEMBLED, ARMS SHOULD BE LEVEL
WITH EACH OTHER. ALSO SEE DETAIL C ABOVE**



ISO ROTATED VIEW

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TITLE
SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE

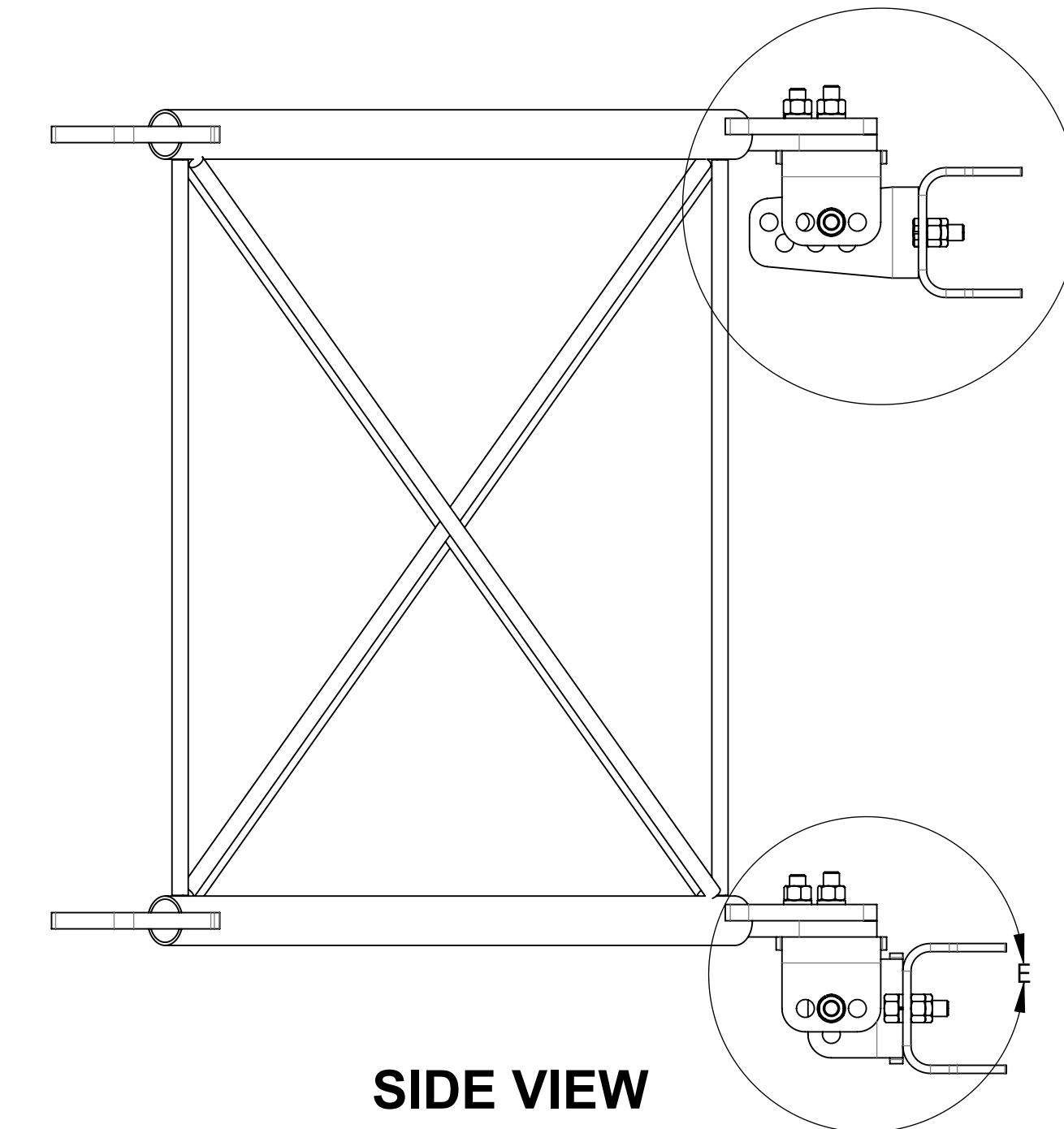
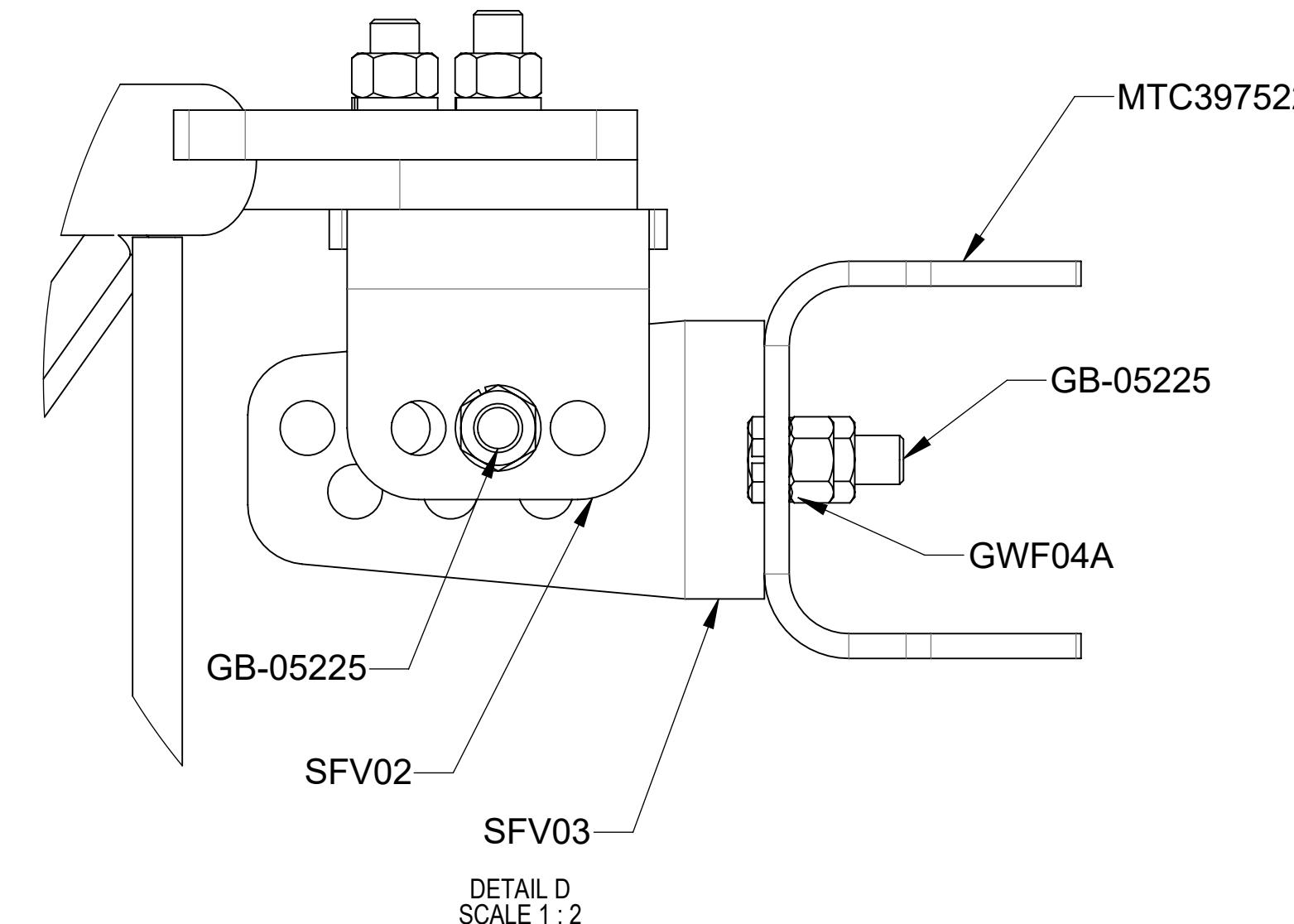
SIZE C SCALE 1:8 DOCUMENT NO. MTC3975083

DRAWING	VERSION			STATUS	REVISION	SHEET
	02	RE	C			
						4 OF 7

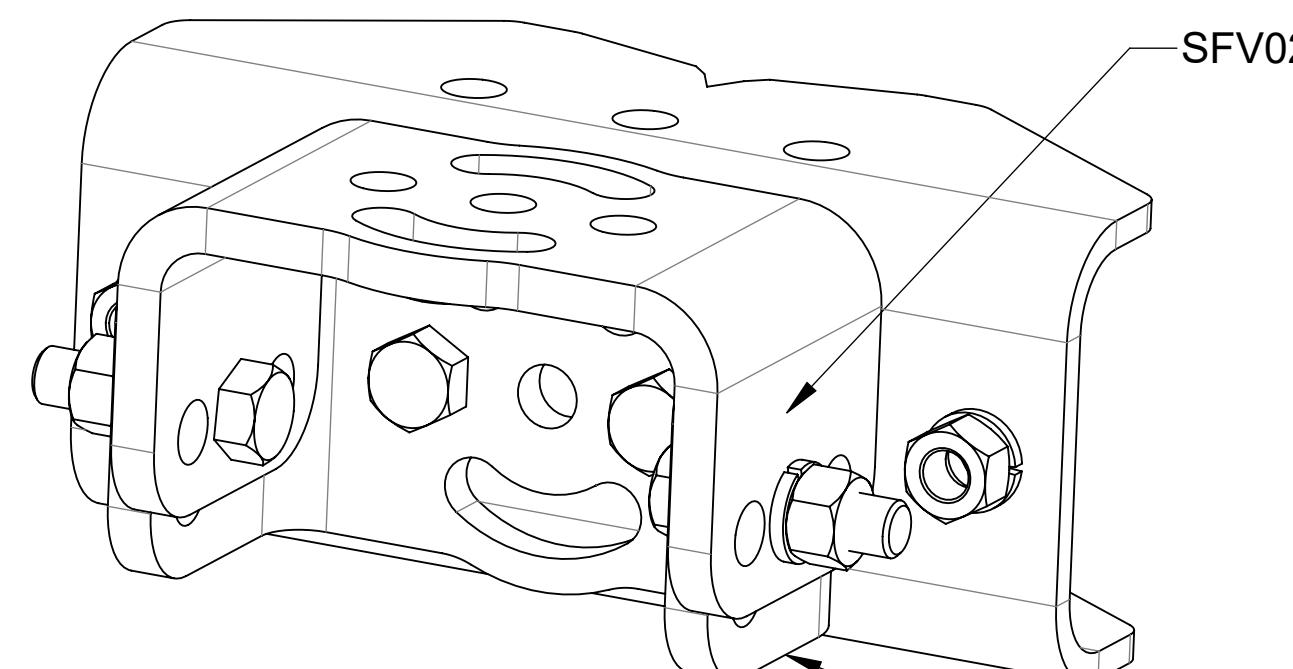
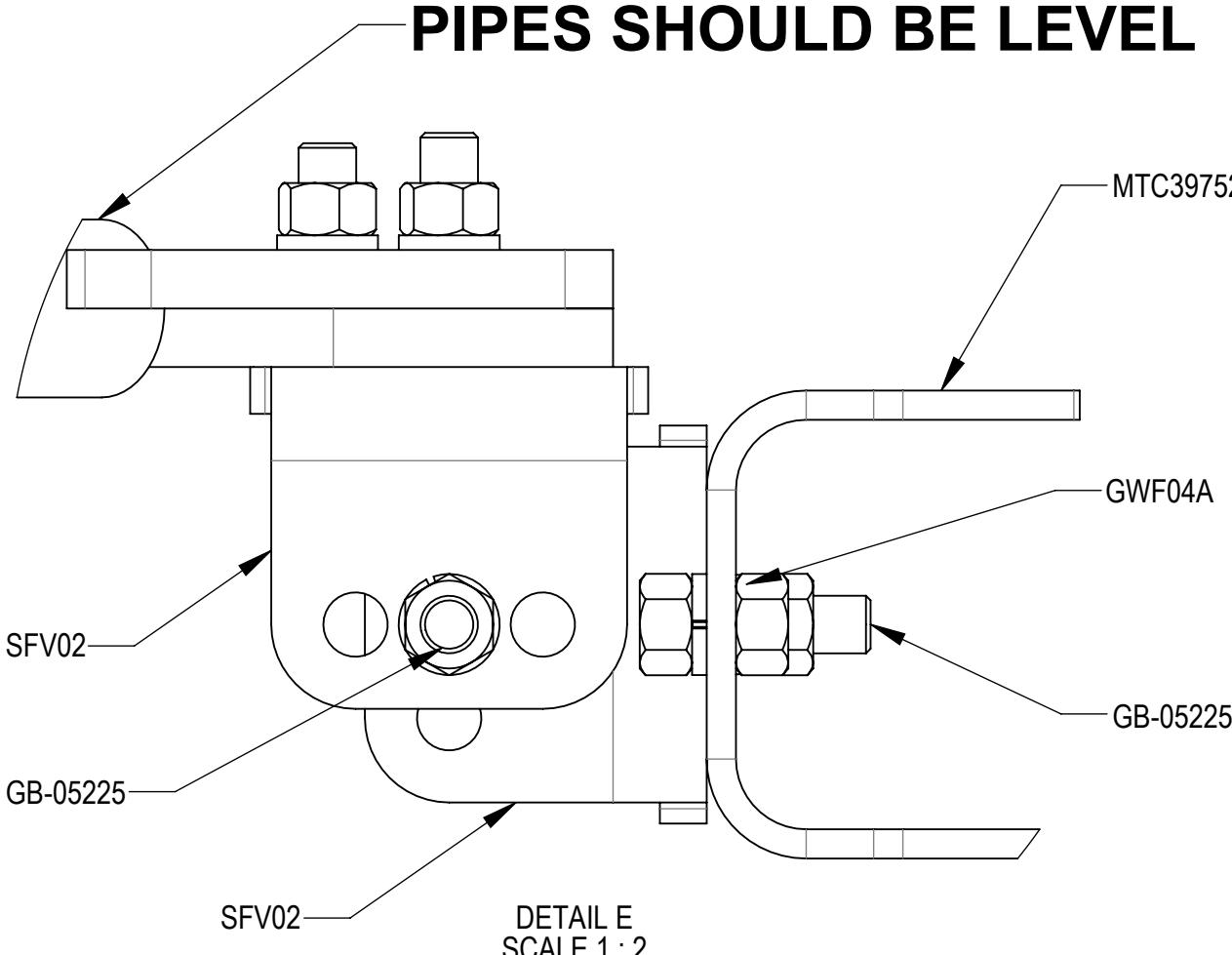
NOTES:

STEP 2A: ON TOP, ATTACH TAPER BRACKET (SFV03) TO AZIMUTH BRACKET (SFV02) USING BOLT KITS (GB-05225). SEE ISO ROTATED VIEW. ATTACH TAPER BRACKET (SFV03) TO CLAMP, FRONT MTG (MTC397522) USING BOLT KITS (GB-05225).

STEP 2B: ON BOTTOM, ATTACH AZIMUTH BRACKET (SFV02) TO AZIMUTH BRACKET (SFV02) USING BOLT KITS (GB-05225). ATTACH AZIMUTH BRACKET (SFV02) TO CLAMP, FRONT MTG (MTC397522) USING BOLT KITS(GB-05225).



**STANDOFF ARM ORIENTATION
IS CRITICAL! WHEN ASSEMBLED,
PIPES SHOULD BE LEVEL**



ISO ROTATED VIEW

PATENT PENDING

COMMSCOPE, INC. OF NORTH CAROLINA

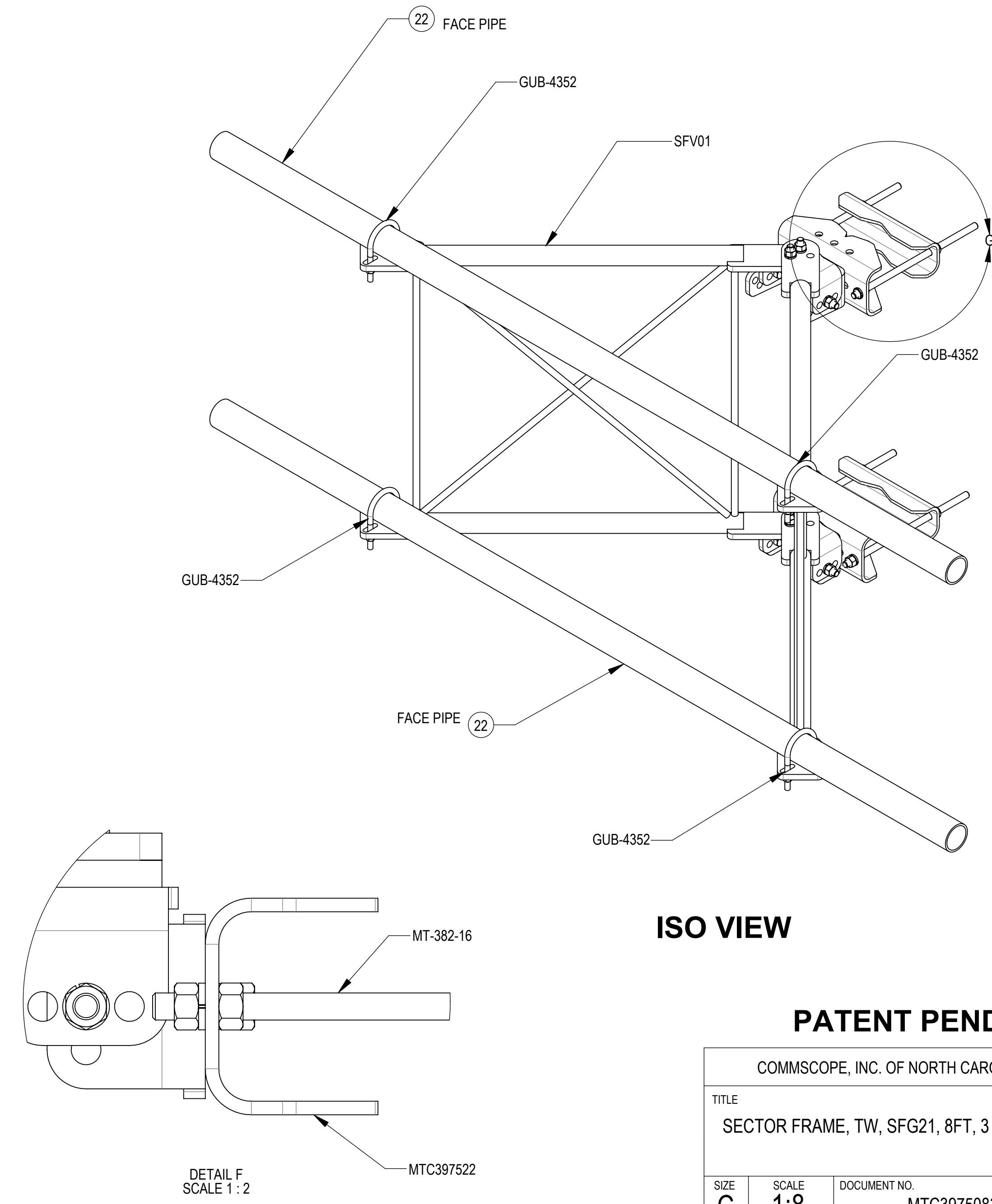
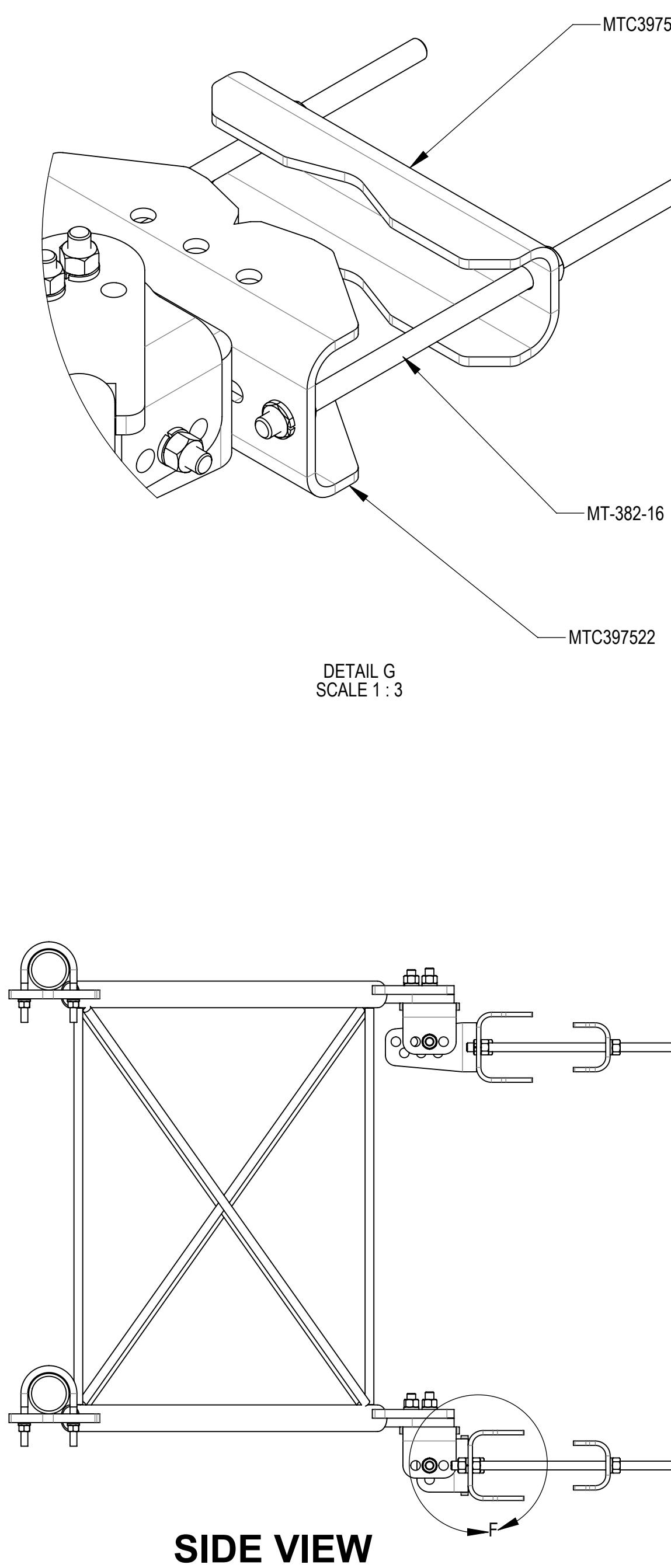
TITLE
SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE

SIZE C SCALE 1:4 DOCUMENT NO. MTC3975083

VERSION	STATUS	REVISION	SHEET
02	RE	C	5 OF 7

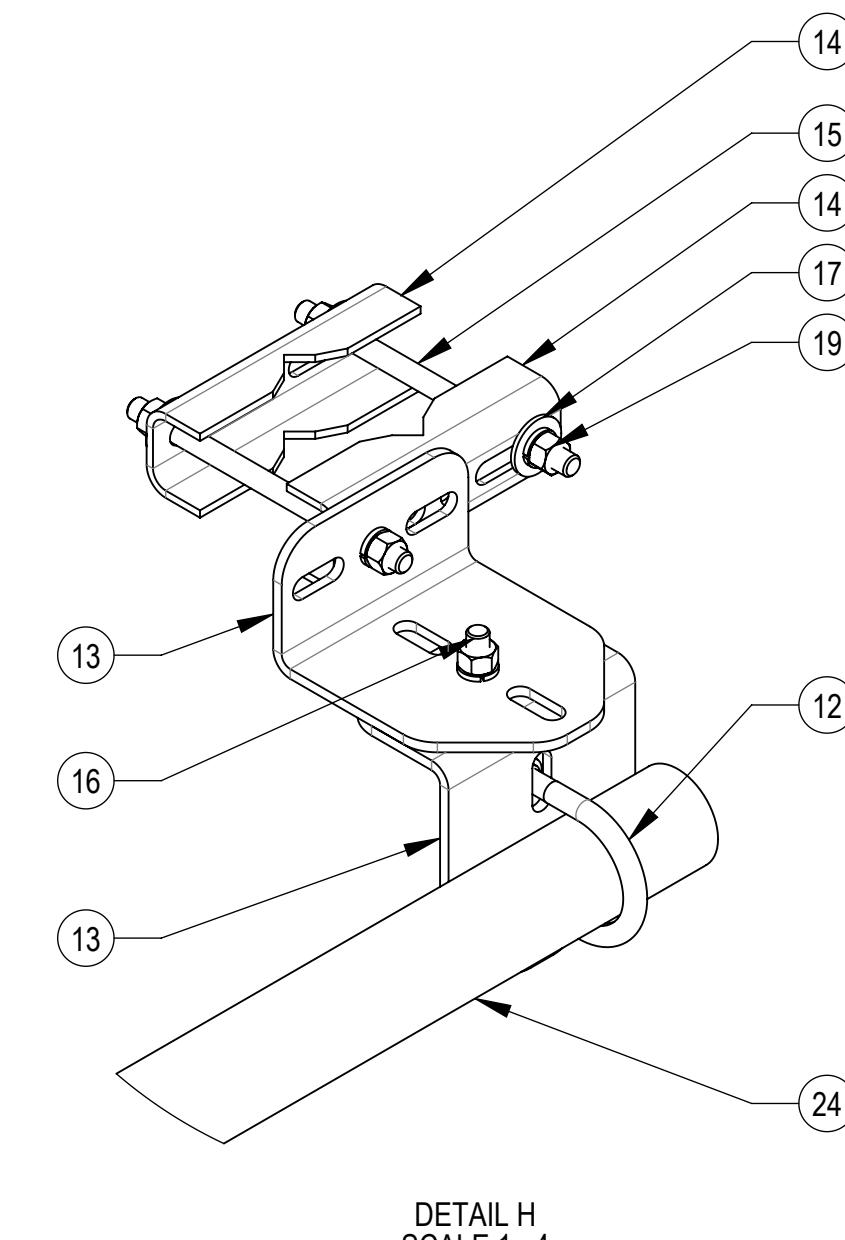
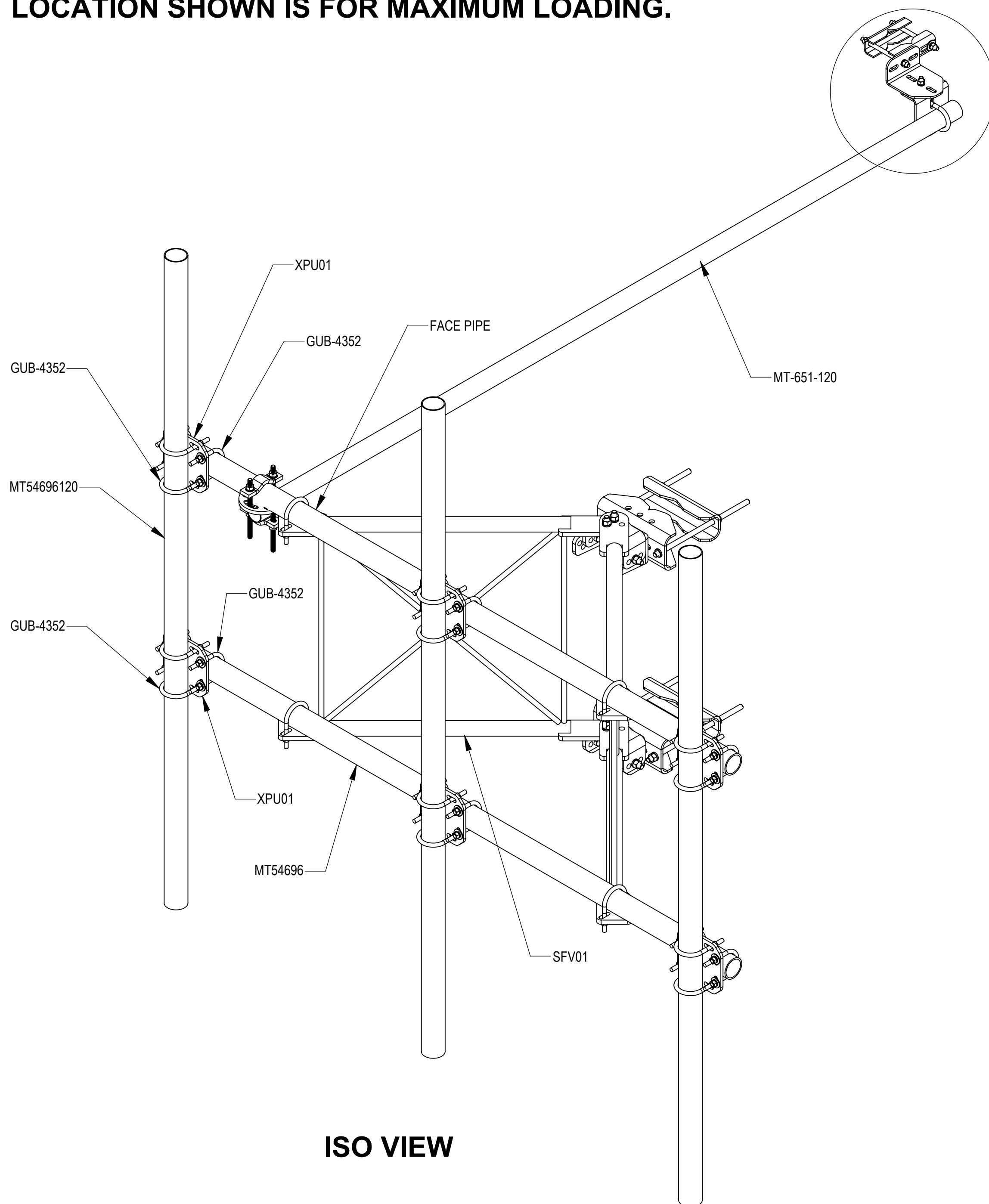
NOTES:

STEP 3: ATTACH FACE PIPES TO STANOFF ARMS (SFV01) USING U-BOLTS (GUB-4240).



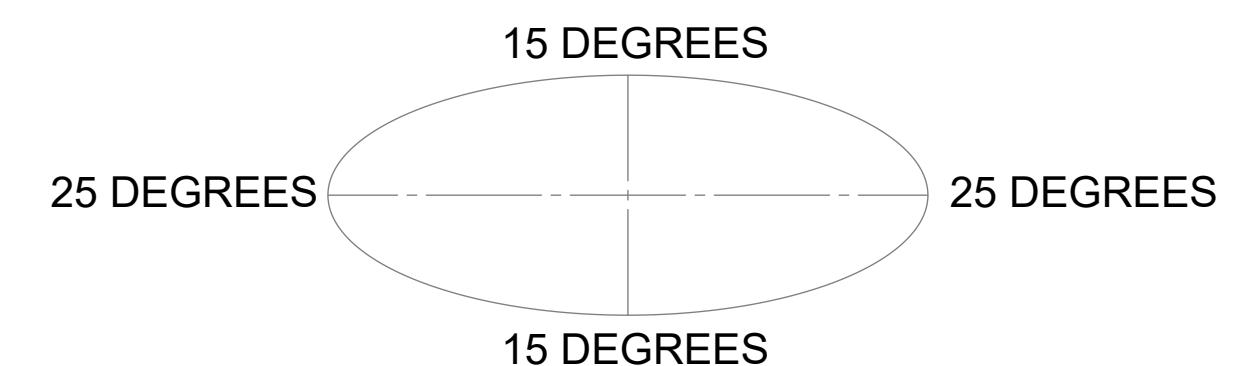
NOTES:

**STEP 4: ATTACH ANTENNA PIPES & TIE BACK PIPE (MT-651-120) TO FACE PIPES
USING CROSSOVER BRACKETS (XAU01) AND U-BOLTS (GUB-4240).
LOCATION SHOWN IS FOR MAXIMUM LOADING.**



ALLOWABLE TIEBACK ANGLE

± 15 DEGREES VERTICAL
 ± 25 DEGREES HORIZONTAL



PATENT PENDING

COMMSCOPE, INC. OF NORTH CAROLINA

TITLE
SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE

SIZE C SCALE 1:10 DOCUMENT NO.
MTC3975083

Radio Frequency - Electromagnetic Energy (RF-EME) Report

Site No. BOBOS00031B
North Road Tower
1375 North Road
Killingly, Connecticut 06241
41° 52' 17.49" N, -71° 49' 17.56" W NAD83

EBI Project No. 6222005284
September 6, 2022



Prepared for:
Dish Wireless

Prepared by:



TABLE OF CONTENTS

EXECUTIVE SUMMARY	I
1.0 INTRODUCTION	2
2.0 SITE DESCRIPTION	2
3.0 WORST-CASE PREDICTIVE MODELING	5
4.0 MITIGATION/SITE CONTROL OPTIONS	6
5.0 SUMMARY AND CONCLUSIONS	6
6.0 LIMITATIONS	7

APPENDICES

APPENDIX A CERTIFICATIONS

APPENDIX B RADIO FREQUENCY ELECTROMAGNETIC ENERGY SAFETY / SIGNAGE PLANS

APPENDIX C FEDERAL COMMUNICATIONS COMMISSION (FCC) REQUIREMENTS

REFERENCE DOCUMENTS (NOT ATTACHED)

CDs: BOBOS00031B_FINALSTAMPEDCDs_20220803134707

RFDS: RFDS-BOBOS00031B-FINAL-20220808-v.3_20220808105333

EXECUTIVE SUMMARY

Purpose of Report

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by Dish Wireless to conduct radio frequency electromagnetic (RF-EME) modeling for Dish Wireless Site BOBOS00031B located at 1375 North Road in Killingly, Connecticut to determine RF-EME exposure levels from proposed Dish Wireless communications equipment at this site. As described in greater detail in Appendix C of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for the general public and for occupational activities. This report summarizes the results of RF-EME modeling in relation to relevant FCC RF-EME compliance standards for limiting human exposure to RF-EME fields.

Statement of Compliance

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

As presented in the sections below, based on worst-case predictive modeling, there are no modeled areas on any accessible rooftop or ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site.

At the nearest walking/working surfaces to the Dish Wireless antennas, the maximum power density generated by the DISH antennas is approximately **0.01** percent of the FCC's general public limit (**0.00** percent of the FCC's occupational limit).

The composite exposure level from all carriers on this site is approximately **0.03** percent of the FCC's general public limit (**0.01** percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

Recommended control measures are outlined in Section 4.0 and within the Site Safety Plan (attached); Dish Wireless should also provide procedures to shut down and lockout/tagout this wireless equipment in accordance with their own standard operating protocol. Non-telecom workers who will be working in areas of exceedance are required to contact Dish Wireless since only DISH has the ability to lockout/tagout the facility, or to authorize others to do so.

1.0 INTRODUCTION

Radio frequency waves are electromagnetic waves from the portion of the electromagnetic spectrum at frequencies lower than visible light and microwaves. The wavelengths of radio waves range from thousands of meters to around 30 centimeters. These wavelengths correspond to frequencies as low as 3 cycles per second (or hertz [Hz]) to as high as one gigahertz (one billion cycles per second).

Personal Communication (PCS) facilities used by Dish Wireless in this area will potentially operate within a frequency range of 600 to 5000 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed a distance above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of in areas in the immediate vicinity of the antennas.

MPE limits do not represent levels where a health risk exists, since they are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size or health.

2.0 SITE DESCRIPTION

This project site includes the following proposed wireless telecommunication antennas on a tower located at 1375 North Road in Killingly, Connecticut.

Ant #	Operator	Antenna Make	Antenna Model	Frequency (MHz)	Azimuth (deg.)	Mechanical Downtilt (deg.)	Horizontal Beamwidth (Degrees)	Aperture (feet)	Total Power Input (Watts)	Antenna Gain (dBi)	Total ERP (Watts)	Total EIRP (Watts)
1	Dish	Commscope	FFVV-65B-R2 02DT 600 PRELIM	600	0	0	67	6.0	120	11.1	1377.78	2259.57
1	Dish	Commscope	FFVV-65B-R2 02DT 1900 PRELIM	1900	0	0	70	6.0	160	15.52	5083.00	8336.12
1	Dish	Commscope	FFVV-65B-R2 02DT 2100 PRELIM	2100	0	0	65	6.0	160	16.04	5729.54	9396.45
2	Dish	Commscope	FFVV-65B-R2 02DT 600 PRELIM	600	120	0	67	6.0	120	11.1	1377.78	2259.57
2	Dish	Commscope	FFVV-65B-R2 02DT 1900 PRELIM	1900	120	0	70	6.0	160	15.52	5083.00	8336.12
2	Dish	Commscope	FFVV-65B-R2 02DT 2100 PRELIM	2100	120	0	65	6.0	160	16.04	5729.54	9396.45
3	Dish	Commscope	FFVV-65B-R2 02DT 600 PRELIM	600	240	0	67	6.0	120	11.1	1377.78	2259.57
3	Dish	Commscope	FFVV-65B-R2 02DT 1900 PRELIM	1900	240	0	70	6.0	160	15.52	5083.00	8336.12
3	Dish	Commscope	FFVV-65B-R2 02DT 2100 PRELIM	2100	240	0	65	6.0	160	16.04	5729.54	9396.45
4	Sprint	GENERIC	PANEL 6FT 00DT 850	850	0	0	66	6.0	100	12.62	1828.10	2998.08
5	Sprint	GENERIC	PANEL 6FT 00DT 1900	1900	0	0	66	6.0	160	15.84	6139.32	10068.48
6	Sprint	GENERIC	PANEL 6FT 00DT 2500	2500	0	0	60	6.0	120	14.49	3374.28	5533.82
7	Sprint	GENERIC	PANEL 6FT 00DT 850	850	0	0	66	6.0	100	12.62	1828.10	2998.08
8	Sprint	GENERIC	PANEL 6FT 00DT 850	850	120	0	66	6.0	100	12.62	1828.10	2998.08
9	Sprint	GENERIC	PANEL 6FT 00DT 1900	1900	120	0	66	6.0	160	15.84	6139.32	10068.48
10	Sprint	GENERIC	PANEL 6FT 00DT 2500	2500	120	0	60	6.0	120	14.49	3374.28	5533.82
11	Sprint	GENERIC	PANEL 6FT 00DT 850	850	120	0	66	6.0	100	12.62	1828.10	2998.08

12	Sprint	GENERIC	PANEL 6FT 00DT 850	850	240	0	66	6.0	100	12.62	1828.10	2998.08
13	Sprint	GENERIC	PANEL 6FT 00DT 1900	1900	240	0	66	6.0	160	15.84	6139.32	10068.48
14	Sprint	GENERIC	PANEL 6FT 00DT 2500	2500	240	0	60	6.0	120	14.49	3374.28	5533.82
15	Sprint	GENERIC	PANEL 6FT 00DT 850	850	240	0	66	6.0	100	12.62	1828.10	2998.08
16	T-Mobile	GENERIC	PANEL 6FT 00DT 600	600	0	0	68	6.0	60	12.33	1026.01	1682.66
17	T-Mobile	GENERIC	PANEL 6FT 00DT 700	700	0	0	68	6.0	60	12.33	1026.01	1682.66
18	T-Mobile	GENERIC	PANEL 6FT 00DT 1900	1900	0	0	66	6.0	120	15.84	4604.49	7551.36
19	T-Mobile	GENERIC	PANEL 6FT 00DT 2100	2100	0	0	63	6.0	120	16.39	5226.14	8570.87
20	T-Mobile	GENERIC	PANEL 6FT 00DT 600	600	120	0	68	6.0	60	12.33	1026.01	1682.66
21	T-Mobile	GENERIC	PANEL 6FT 00DT 700	700	120	0	68	6.0	60	12.33	1026.01	1682.66
22	T-Mobile	GENERIC	PANEL 6FT 00DT 1900	1900	120	0	66	6.0	120	15.84	4604.49	7551.36
23	T-Mobile	GENERIC	PANEL 6FT 00DT 2100	2100	120	0	63	6.0	120	16.39	5226.14	8570.87
24	T-Mobile	GENERIC	PANEL 6FT 00DT 600	600	240	0	68	6.0	60	12.33	1026.01	1682.66
25	T-Mobile	GENERIC	PANEL 6FT 00DT 700	700	240	0	68	6.0	60	12.33	1026.01	1682.66
26	T-Mobile	GENERIC	PANEL 6FT 00DT 1900	1900	240	0	66	6.0	120	15.84	4604.49	7551.36
27	T-Mobile	GENERIC	PANEL 6FT 00DT 2100	2100	240	0	63	6.0	120	16.39	5226.14	8570.87
28	Verizon	GENERIC	PANEL 6FT 00DT 850	850	0	0	66	6.0	160	12.62	2924.96	4796.93
29	Verizon	GENERIC	PANEL 6FT 00DT 1900	1900	0	0	66	6.0	160	15.84	6139.32	10068.48
30	Verizon	GENERIC	PANEL 6FT 00DT 2100	2100	0	0	63	6.0	160	16.39	6968.19	11427.83
31	Verizon	GENERIC	PANEL 6FT 00DT 700	700	0	0	68	6.0	160	12.33	2736.02	4487.08
32	Verizon	GENERIC	PANEL 6FT 00DT 850	850	120	0	66	6.0	160	12.62	2924.96	4796.93
33	Verizon	GENERIC	PANEL 6FT 00DT 1900	1900	120	0	66	6.0	160	15.84	6139.32	10068.48
34	Verizon	GENERIC	PANEL 6FT 00DT 2100	2100	120	0	63	6.0	160	16.39	6968.19	11427.83
35	Verizon	GENERIC	PANEL 6FT 00DT 700	700	120	0	68	6.0	160	12.33	2736.02	4487.08
36	Verizon	GENERIC	PANEL 6FT 00DT 850	850	240	0	66	6.0	160	12.62	2924.96	4796.93
37	Verizon	GENERIC	PANEL 6FT 00DT 1900	1900	240	0	66	6.0	160	15.84	6139.32	10068.48
38	Verizon	GENERIC	PANEL 6FT 00DT 2100	2100	240	0	63	6.0	160	16.39	6968.19	11427.83
39	Verizon	GENERIC	PANEL 6FT 00DT 700	700	240	0	68	6.0	160	12.33	2736.02	4487.08
40	AT&T	GENERIC	PANEL 6FT 00DT 700	700	0	0	68	6.0	160	12.33	2736.02	4487.08
40	AT&T	GENERIC	PANEL 6FT 00DT 850	850	0	0	66	6.0	160	12.62	2924.96	4796.93
41	AT&T	GENERIC	PANEL 6FT 00DT 700	700	0	0	68	6.0	80	12.33	1368.01	2243.54
41	AT&T	GENERIC	PANEL 6FT 00DT 1900	1900	0	0	66	6.0	160	15.84	6139.32	10068.48
42	AT&T	GENERIC	PANEL 6FT 00DT 2100	2100	0	0	63	6.0	160	16.39	6968.19	11427.83
42	AT&T	GENERIC	PANEL 6FT 00DT 2300	2300	0	0	58	6.0	100	16.22	4187.94	6868.21
43	AT&T	GENERIC	PANEL 6FT 00DT 700	700	120	0	68	6.0	160	12.33	2736.02	4487.08
43	AT&T	GENERIC	PANEL 6FT 00DT 850	850	120	0	66	6.0	160	12.62	2924.96	4796.93
44	AT&T	GENERIC	PANEL 6FT 00DT 700	700	120	0	68	6.0	80	12.33	1368.01	2243.54
44	AT&T	GENERIC	PANEL 6FT 00DT 1900	1900	120	0	66	6.0	160	15.84	6139.32	10068.48
45	AT&T	GENERIC	PANEL 6FT 00DT 2100	2100	120	0	63	6.0	160	16.39	6968.19	11427.83
45	AT&T	GENERIC	PANEL 6FT 00DT 2300	2300	120	0	58	6.0	100	16.22	4187.94	6868.21
46	AT&T	GENERIC	PANEL 6FT 00DT 700	700	240	0	68	6.0	160	12.33	2736.02	4487.08
46	AT&T	GENERIC	PANEL 6FT 00DT 850	850	240	0	66	6.0	160	12.62	2924.96	4796.93
47	AT&T	GENERIC	PANEL 6FT 00DT 700	700	240	0	68	6.0	80	12.33	1368.01	2243.54
47	AT&T	GENERIC	PANEL 6FT 00DT 1900	1900	240	0	66	6.0	160	15.84	6139.32	10068.48
48	AT&T	GENERIC	PANEL 6FT 00DT 2100	2100	240	0	63	6.0	160	16.39	6968.19	11427.83
48	AT&T	GENERIC	PANEL 6FT 00DT 2300	2300	240	0	58	6.0	100	16.22	4187.94	6868.21

• Note there is 1 Dish Wireless antenna per sector at this site. For clarity, the different frequencies for each antenna are entered on separate lines.

Ant #	NAME	X	Y	Antenna Radiation Centerline	Z-Height Adjacent Building	Z-Height Ground
1	Dish	44.4	83.0	230.0	213.6	230.0
2	Dish	89.2	23.0	230.0	213.6	230.0
3	Dish	0.4	24.2	230.0	213.6	230.0
4	Sprint	24.7	78.9	287.5	271.1	287.5
5	Sprint	40.7	78.1	287.5	271.1	287.5
6	Sprint	47.7	78.1	287.5	271.1	287.5
7	Sprint	62.5	78.9	287.5	271.1	287.5
8	Sprint	95.8	41.5	287.5	271.1	287.5
9	Sprint	87.9	28.8	287.5	271.1	287.5
10	Sprint	83.4	23.4	287.5	271.1	287.5
11	Sprint	74.8	8.6	287.5	271.1	287.5
12	Sprint	11.9	9.0	287.5	271.1	287.5
13	Sprint	5.3	23.4	287.5	271.1	287.5
14	Sprint	1.6	30.4	287.5	271.1	287.5
15	Sprint	7.8	41.9	287.5	271.1	287.5
16	T-Mobile	57.9	72.7	277.0	260.6	277.0
17	T-Mobile	60.0	61.6	277.0	260.6	277.0
18	T-Mobile	62.1	49.7	277.0	260.6	277.0
19	T-Mobile	65.3	40.7	277.0	260.6	277.0
20	T-Mobile	72.3	15.6	277.0	260.6	277.0
21	T-Mobile	61.2	14.8	277.0	260.6	277.0
22	T-Mobile	49.7	13.6	277.0	260.6	277.0
23	T-Mobile	38.6	13.2	277.0	260.6	277.0
24	T-Mobile	5.3	44.0	277.0	260.6	277.0
25	T-Mobile	20.1	47.7	277.0	260.6	277.0
26	T-Mobile	31.6	52.2	277.0	260.6	277.0
27	T-Mobile	41.9	56.7	277.0	260.6	277.0
28	Verizon	60.0	66.6	266.0	249.6	266.0
29	Verizon	61.2	55.5	266.0	249.6	266.0
30	Verizon	63.3	45.6	266.0	249.6	266.0
31	Verizon	68.6	35.8	266.0	249.6	266.0
32	Verizon	78.1	15.2	266.0	249.6	266.0
33	Verizon	66.6	15.6	266.0	249.6	266.0
34	Verizon	55.5	14.4	266.0	249.6	266.0
35	Verizon	44.0	13.2	266.0	249.6	266.0
36	Verizon	0.8	41.5	266.0	249.6	266.0
37	Verizon	12.3	45.6	266.0	249.6	266.0
38	Verizon	25.5	51.0	266.0	249.6	266.0
39	Verizon	38.2	54.7	266.0	249.6	266.0
40	AT&T	39.9	68.6	246.0	229.6	246.0
41	AT&T	48.9	68.6	246.0	229.6	246.0
42	AT&T	78.9	35.3	246.0	229.6	246.0
43	AT&T	74.4	24.7	246.0	229.6	246.0
44	AT&T	12.3	24.7	246.0	229.6	246.0
45	AT&T	5.3	36.6	246.0	229.6	246.0
46	AT&T	138.9	239.6	246.0	229.6	246.0

47	AT&T	138.9	231.4	246.0	229.6	246.0
48	AT&T	138.9	223.2	246.0	229.6	246.0

• Note the Z-Height represents the distance from the antenna centerline in feet.

The above tables contain an inventory of proposed Dish Wireless antennas and other carrier antennas if sufficient information was available to model them. Note that EBI uses an assumed set of antenna specifications and powers for unknown and other carrier antennas for modeling purposes. The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general population/uncontrolled exposure limits for members of the general public that may be exposed to antenna fields. While access to this site is considered controlled, the analysis has considered exposures with respect to both controlled and uncontrolled limits as an untrained worker may access adjacent rooftop locations. Additional information regarding controlled/uncontrolled exposure limits is provided in Appendix C. Appendix B presents a site safety plan that provides a plan view of the tower with antenna locations.

3.0 WORST-CASE PREDICTIVE MODELING

EBI has performed theoretical MPE modeling using RoofMaster™ software to estimate the worst-case power density at the site's nearby broadcast levels resulting from operation of the antennas. RoofMaster™ is a widely-used predictive modeling program that has been developed by Waterford Consultants to predict RF power density values for rooftop and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. Using the computational methods set forth in Federal Communications Commission (FCC) Office of Engineering & Technology (OET) Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" (OET-65), RoofMaster™ calculates predicted power density in a scalable grid based on the contributions of all RF sources characterized in the study scenario. At each grid location, the cumulative power density is expressed as a percentage of the FCC limits. Manufacturer antenna pattern data is utilized in these calculations. RoofMaster™ models consist of the Far Field model as specified in OET-65 and an implementation of the OET-65 Cylindrical Model (Sula9). The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

For this report, EBI utilized antenna and power data provided by Dish Wireless and compared the resultant worst-case MPE levels to the FCC's occupational/controlled exposure limits outlined in OET Bulletin 65. The assumptions used in the modeling are based upon information provided by Dish Wireless and information gathered from other sources. Elevations of walking/working surfaces were estimated based on elevations provided and available aerial imagery. Sector orientation assignments were made assuming coverage is directed to areas of site. Changes to antenna mount heights or placement will impact site compliance. The parameters used for modeling are summarized in the Site Description antenna inventory table in Section 2.0.

Sprint, T-Mobile, Verizon, and AT&T also have antennas on the tower. Information about these antennas was included in the modeling analysis.

Based on worst-case predictive modeling, there are no modeled areas on any accessible rooftop or ground-level walking/working surface related to the proposed Dish Wireless antennas that exceed the FCC's occupational or general public exposure limits at this site. At the nearest walking/working surfaces to the Dish Wireless antennas, the maximum power density generated by the Dish Wireless antennas is approximately 0.01 percent of the FCC's general public limit (0.00 percent of the FCC's occupational limit). The composite exposure level from all carriers on this site is approximately 0.03 percent of the

FCC's general public limit (0.01 percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

The Site Safety Plan also presents areas where Dish Wireless antennas contribute greater than 5% of the applicable MPE limit for a site. A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

There are no modeled areas on the rooftop and ground that exceed the FCC's limits for general public or occupational exposure in front of the other carrier antennas.

The inputs used in the modeling are summarized in the Site Description antenna inventory table in Section 2.0. A graphical representation of the RoofMaster™ modeling results is presented in Appendix B. Microwave dish antennas are designed for point-to-point operations at the elevations of the installed equipment rather than ground level coverage. The maximum power density generated by all carrier antennas, including microwaves and panel antennas, is included in the modeling results presented within this report.

4.0 MITIGATION/SITE CONTROL OPTIONS

EBI's modeling indicates that there are no areas in front of the Dish Wireless antennas that exceed the FCC standards for occupational or general public exposure. All exposures above the FCC's safe limits require that individuals be elevated above the rooftop and/or ground. In order to alert people accessing the tower, a Caution sign and an NOC Information sign are recommended for installation 10 feet above ground level at the base of the tower.

Barriers are recommended for installation when possible to block access to the areas in front of the antennas that exceed the FCC general public and/or occupational limits. Barriers may consist of rope, chain, or fencing. Painted stripes should only be used as a last resort. There are no barriers recommended at this site. Barriers are not recommended for installation because there are no exceedances on any walking/working surface.

These protocols and recommended control measures have been summarized and included with a graphic representation of the antennas and associated signage and control areas in a RF-EME Site Safety Plan, which is included as Appendix B. Individuals and workers accessing the tower should be provided with a copy of the attached Site Safety Plan, made aware of the posted signage, and signify their understanding of the Site Safety Plan.

To reduce the risk of exposure, EBI recommends that access to areas associated with the active antenna installation be restricted and secured where possible.

Implementation of the signage recommended in the Site Safety Plan and in this report will bring this site into compliance with the FCC's rules and regulations.

5.0 SUMMARY AND CONCLUSIONS

EBI has prepared a Radiofrequency – Electromagnetic Energy (RF-EME) Compliance Report for telecommunications equipment installed by Dish Wireless Site Number BOBOS0003IB located at 1375 North Road in Killingly, Connecticut to determine worst-case predicted RF-EME exposure levels from wireless communications equipment installed at this site. This report summarizes the results of RF-EME modeling in relation to relevant Federal Communications Commission (FCC) RF-EME compliance standards for limiting human exposure to RF-EME fields.

As presented in the sections above, based on the FCC criteria, there are no modeled areas on any accessible rooftop or ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site.

Workers should be informed about the presence and locations of antennas and their associated fields. Recommended control measures are outlined in Section 4.0 and within the Site Safety Plan (attached); Dish Wireless should also provide procedures to shut down and lockout/tagout this wireless equipment in accordance with their own standard operating protocol. Non-telecom workers who will be working in areas of exceedance are required to contact Dish Wireless since only Dish Wireless has the ability to lockout/tagout the facility, or to authorize others to do so.

6.0 LIMITATIONS

This report was prepared for the use of Dish Wireless. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by EBI are based solely on the information provided by the client. The observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to EBI so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

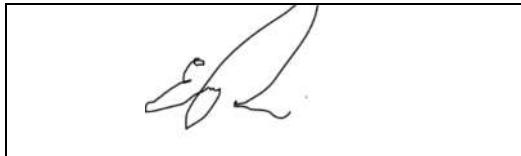
Appendix A

Certifications

Preparer Certification

I, Eduardo Rosales, state that:

- I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.
- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified “occupational” under the FCC regulations.
- I am fully aware of and familiar with the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation.
- I have reviewed the data provided by the client and incorporated it into this Site Compliance Report such that the information contained in this report is true and accurate to the best of my knowledge.

A handwritten signature in black ink, appearing to read "Eduardo Rosales", is enclosed within a thin black rectangular border.

Reviewed and Approved by:



sealed 07sep2022 mike@h2dc.com
H2DC PLLC CT CoA#: PEC.0001714

Michael McGuire
Electrical Engineer
mike@h2dc.com

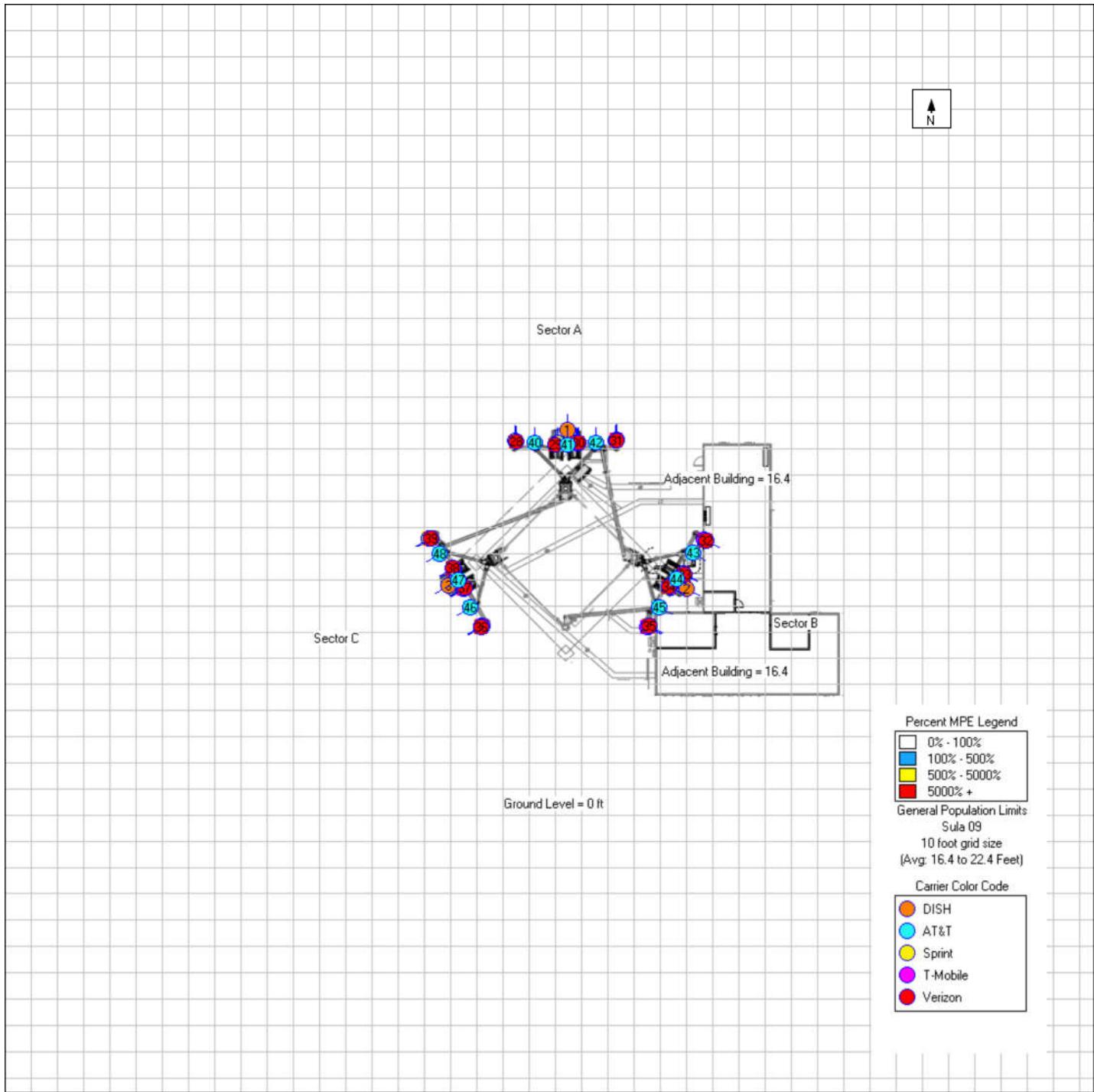
Note that EBI's scope of work is limited to an evaluation of the Radio Frequency – Electromagnetic Energy (RF-EME) field generated by the antennas and broadcast equipment noted in this report. The engineering and design of the building and related structures, as well as the impact of the antennas and broadcast equipment on the structural integrity of the building, are specifically excluded from EBI's scope of work.

Appendix B

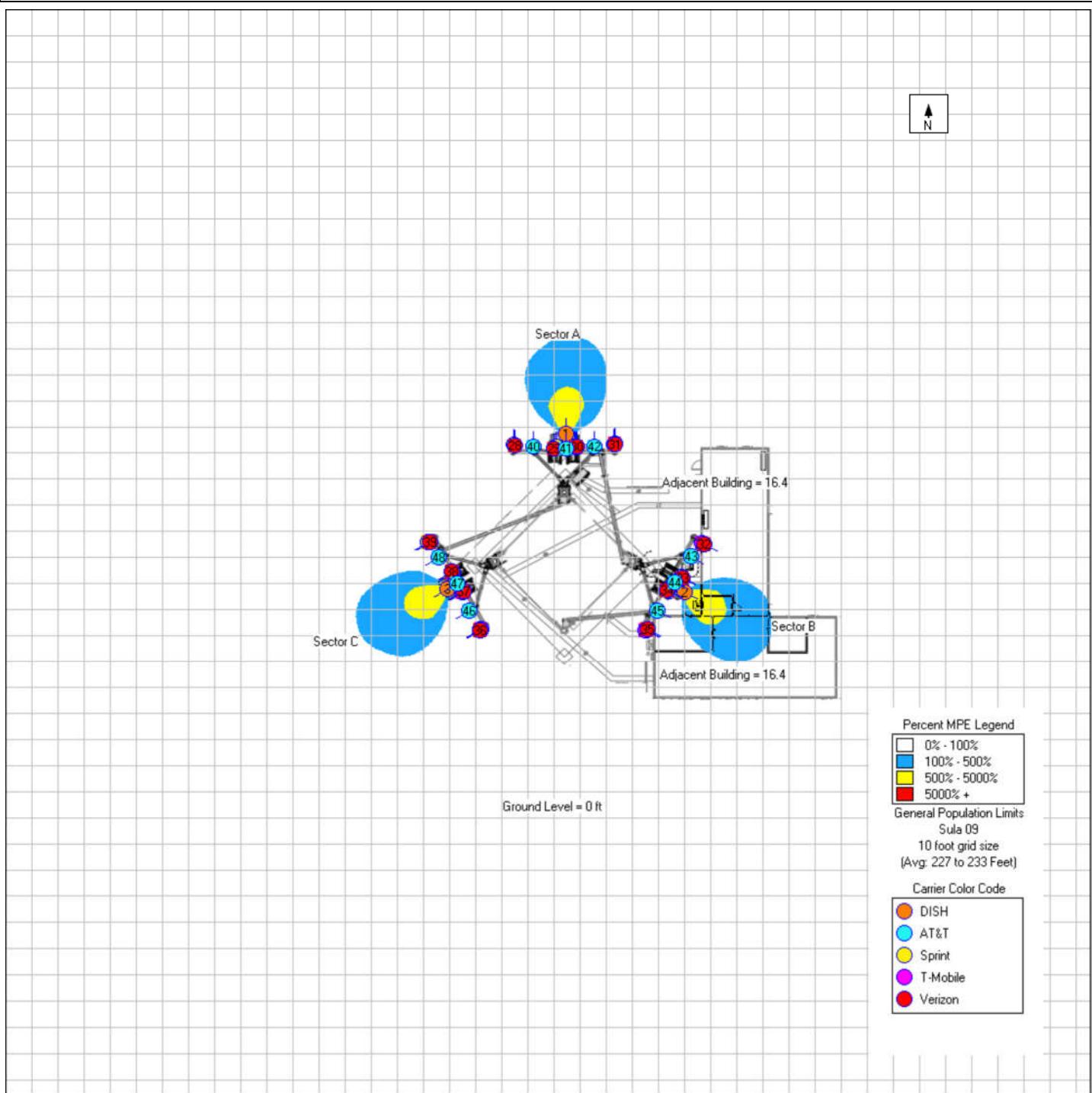
Radio Frequency Electromagnetic Energy

Safety Information and Signage Plans

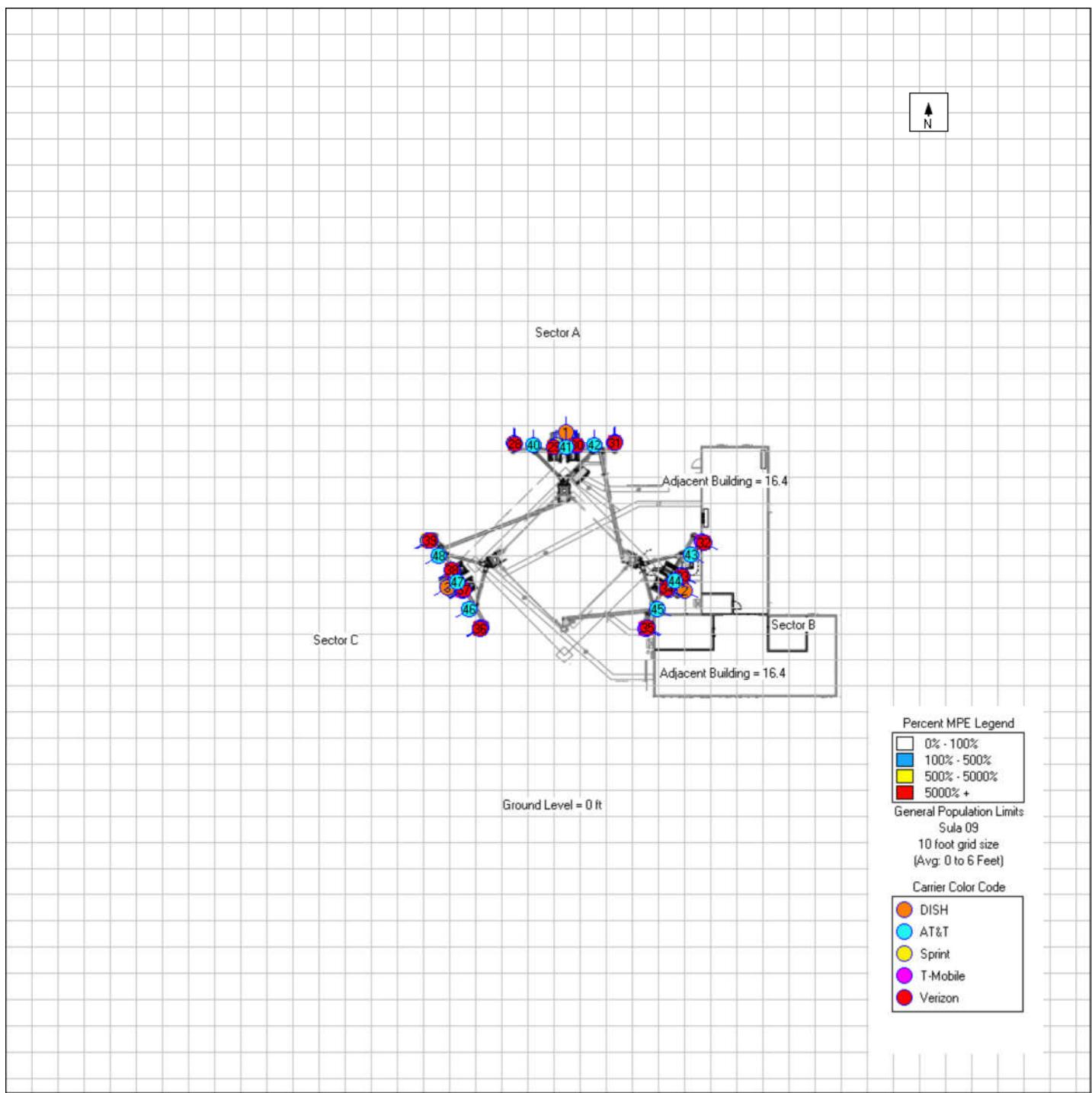
Nearest Walking Surface (Main Roof Level) Simulation



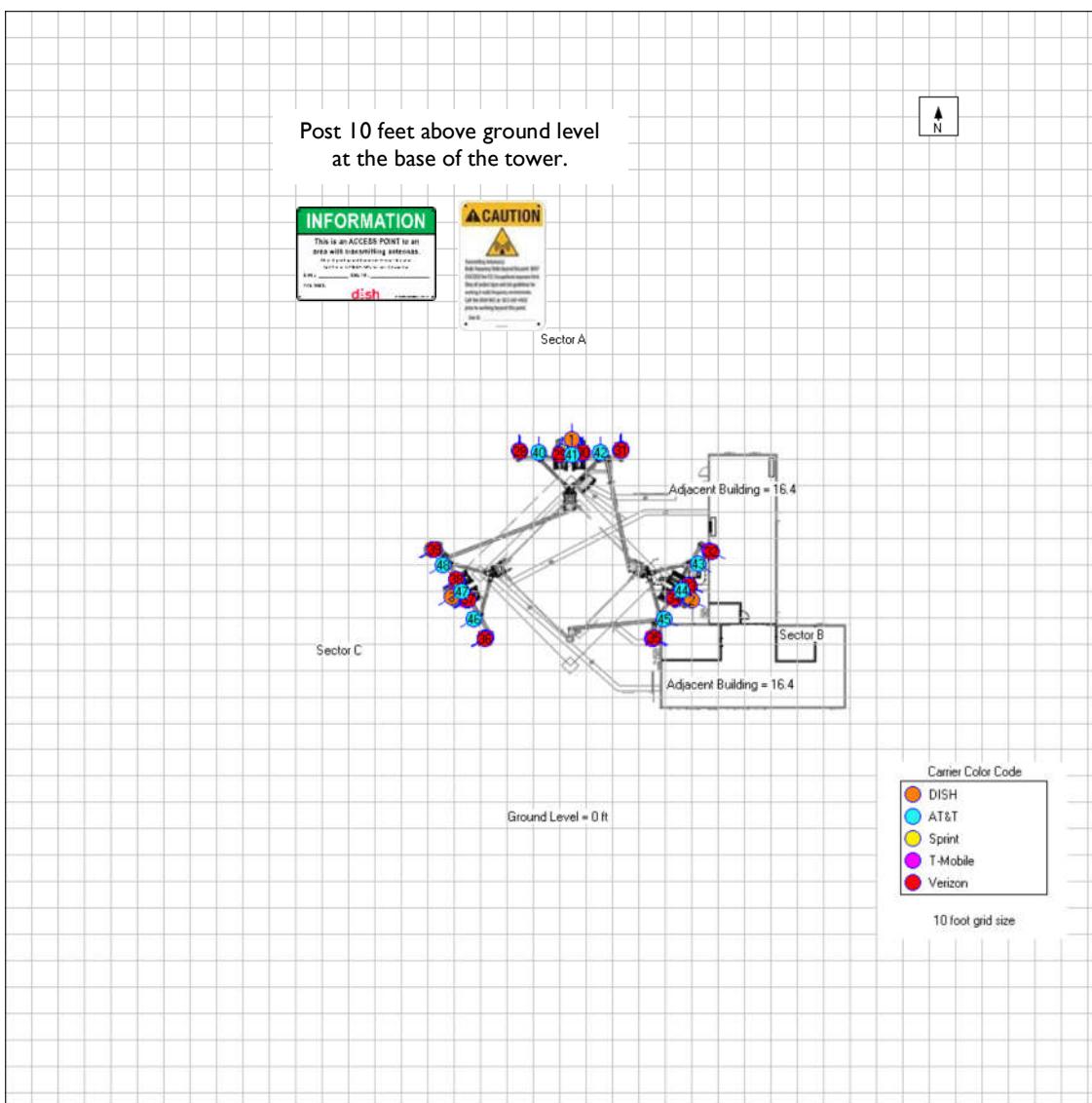
Antenna Face Level Simulation



Ground Level Simulation



Dish Wireless Safety (Signage) Plan



Final Compliance Configuration						
	GUIDELINES	NOTICE	CAUTION	WARNING	NOC INFO	BARRIER/MARKER
Access Point(s)	0	0	1	0	1	0 N/A
Alpha	0	0	0	0	0	0 N/A
Beta	0	0	0	0	0	0 N/A
Gamma	0	0	0	0	0	0 N/A

Sign	Posting Instructions	Required Signage / Mitigation
	NOC Information Information signs are used to provide contact information for any questions or concerns for personnel accessing the site.	Securely post 10 feet above ground level at the base of the tower in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.
	Guidelines Informational sign used to notify workers that there are active antennas installed and provide guidelines for working in RF environments.	Signage not required.
	Notice Used to notify individuals they are entering an area where the power density emitted from transmitting antennas may exceed the FCC's MPE limit for the general public or occupational exposures.	Signage Not Needed
	Caution Used to notify individuals that they are entering a hot spot where either the general public or occupational FCC's MPE limit is or could be exceeded.	Securely post 10 feet above ground level at the base of the tower in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.
	Warning Used to notify individuals that they are entering a hot zone where the occupational FCC's MPE limit has been exceeded by 10x.	Signage Not Needed

Appendix C
Federal Communications
Commission (FCC) Requirements

The FCC has established Maximum Permissible Exposure (MPE) limits for human exposure to Radiofrequency Electromagnetic (RF-EME) energy fields, based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

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 public/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.

General public/uncontrolled exposure limits apply to situations in which the general public 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 public 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.

Table I and Figure I (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are "time-averaged" limits to reflect different durations resulting from controlled and uncontrolled exposures.

The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm²). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm²) and an uncontrolled MPE of 1 mW/cm² for equipment operating in the 1900 MHz frequency range. For the Dish Wireless equipment operating at 600 MHz or 850 MHz, the FCC's occupational MPE is 2.83 mW/cm² and an uncontrolled MPE of 0.57 mW/cm². For the Dish Wireless equipment operating at 1900 MHz, the FCC's occupational MPE is 5.0 mW/cm² and an uncontrolled MPE limit of 1.0 mW/cm². These limits are considered protective of these populations.

Table 1: Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time [E] ² , [H] ² , or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6

(B) Limits for General Public/Uncontrolled Exposure

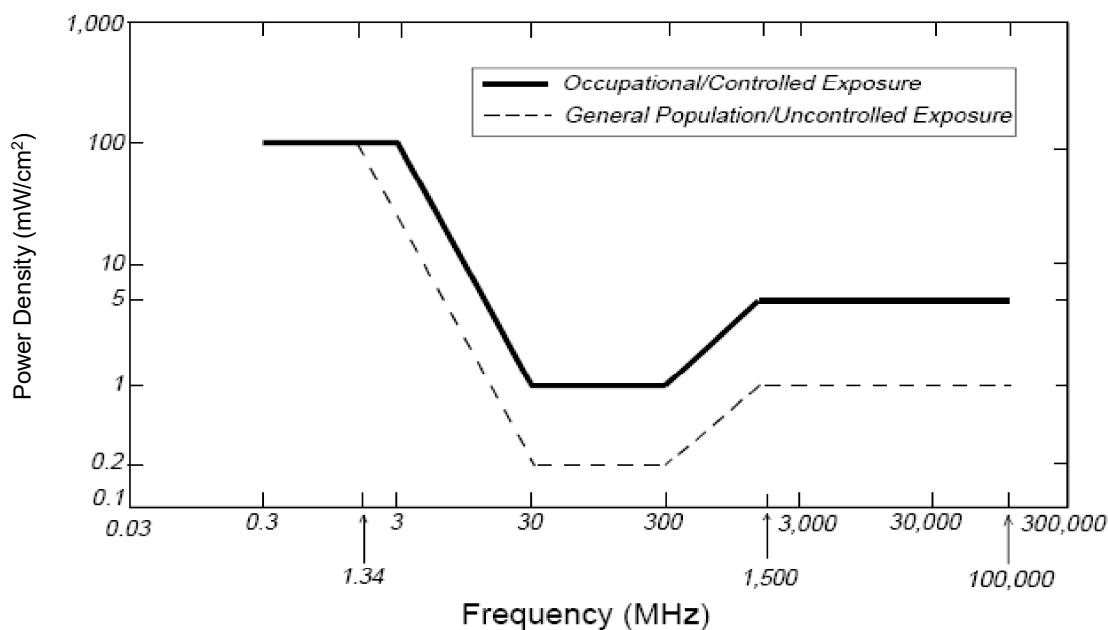
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time [E] ² , [H] ² , or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)

* Plane-wave equivalent power density

Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)

Plane-wave Equivalent Power Density



Based on the above, the most restrictive thresholds for exposures of unlimited duration to RF energy for several personal wireless services are summarized below:

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Microwave (Point-to-Point)	5,000 - 80,000 MHz	5.00 mW/cm ²	1.00 mW/cm ²
Broadband Radio (BRS)	2,600 MHz	5.00 mW/cm ²	1.00 mW/cm ²
Wireless Communication (WCS)	2,300 MHz	5.00 mW/cm ²	1.00 mW/cm ²
Advanced Wireless (AWS)	2,100 MHz	5.00 mW/cm ²	1.00 mW/cm ²
Personal Communication (PCS)	1,950 MHz	5.00 mW/cm ²	1.00 mW/cm ²
Cellular Telephone	870 MHz	2.90 mW/cm ²	0.58 mW/cm ²
Specialized Mobile Radio (SMR)	855 MHz	2.85 mW/cm ²	0.57 mW/cm ²
Long Term Evolution (LTE)	700 MHz	2.33 mW/cm ²	0.47 mW/cm ²
Most Restrictive Frequency Range	30-300 MHz	1.00 mW/cm ²	0.20 mW/cm ²

MPE limits are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

Personal Communication (PCS) facilities used by Dish Wireless in this area will potentially operate within a frequency range of 600 to 2100 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.

FCC Compliance Requirement

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.



Structural Analysis Report

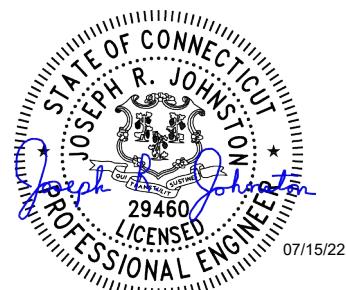
Structure : 287.5 ft Self Support Tower
ATC Site Name : EAST KILLINGLY NORTH, CT
ATC Site Number : 88011
Engineering Number : 14117988_C3_03
Proposed Carrier : DISH WIRELESS L.L.C.
Carrier Site Name : BOBOS00031B
Carrier Site Number : BOBOS00031B
Site Location : 1375 North Road
Killingly, CT 06241-1404
41.8716, -71.8216
County : Windham
Date : July 14, 2022
Max Usage : 95%
Result : Pass

Prepared By:

Tiffany Ta
Airosmith Engineering

A handwritten signature of Tiffany Ta.

Reviewed By:



COA : PEC.0001553

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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 287.5 ft Self Support tower to reflect the change in loading by DISH WIRELESS L.L.C..

Supporting Documents

Tower Drawings	CSEI Analysis, ATC Eng. #26726321, dated September 13, 2006
Foundation Drawing	CSEI Analysis, ATC Eng. #26726321, dated September 13, 2006
Geotechnical Report	FDH Velocitel Project #17PXNW1600, dated February 27, 2017
Modifications	ATC Project #45432633, dated July 9, 2010 ATC Project #OAA686695_C6_04, dated November 28, 2016

Analysis

The tower was analyzed using Power Line Systems, Inc. tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	122 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
298.6	1	Procom CXL 900-3LW	Side Arm	(1) 7/8" Coax	SIGFOX S.A.
297.0	1	Generic 5" x 3" x 2" Cavity Filter			
	1	Generic Low Noise Amplifier			
292.8	3	Commscope NNVV-65B-R4	Side Arm	(4) 1 1/4" Hybriflex Cable	SPRINT NEXTEL
292.7	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
292.6	3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
292.4	3	RFS APXVTM14-ALU-I20	Sector Frame	(4) 1 1/4" Hybriflex Cable (4) 1 5/8" Hybriflex	T-MOBILE
290.5	6	Alcatel-Lucent RRH2x50-08			
277.0	4	Commscope CBC1923Q-43			
	4	Ericsson RRUS 4415 B25			
	4	Ericsson RRUS 11 B4			
	4	Ericsson RRUS 11 B12			
	4	Ericsson Air6449 B41			
	4	Ericsson AIR32 B66Aa/B2a			
	4	RFS APXVAARR24_43-U-NA20			
	4	Commscope CBC6AE7LQ-DS-43			
	4	Ericsson Radio 4478 B71			
266.0	2	Raycap RRFDC-3315-PF-48	Sector Frame	(1) 1 1/4" Hybriflex Cable (12) 1 5/8" Coax	VERIZON WIRELESS
	3	Samsung B2/B66A RRH-BR049			
	6	Commscope SBNHH-1D65B			
	6	Amphenol Antel LPA-80063-4CF-EDIN-X			
	3	Samsung B5/B13 RRH-BR04C			
246.0	2	Raycap DC6-48-60-18-8F	Sector Frame	(2) 0.39" (10mm) Fiber Trunk (4) 0.82" (20.8mm) 8 AWG 6 (12) 2 1/4" Coax (2) 2" conduit	AT&T MOBILITY
	3	Ericsson RRUS 8843 B2, B66A			
	3	Ericsson RRUS 4478 B14			
	3	Ericsson RRUS 4449 B5, B12			
	6	Powerwave Allgon LGP21901			
	3	CCI DMP65R-BU8D			
	3	CCI OPA65R-BU8D			
	3	Powerwave Allgon P65-16-XLH-RR			
	3	Powerwave Allgon TT19-08BP111-001			
210.0	1	Andrew DB264	Leg	(1) 7/8" Coax	US DEPT OF JUSTICE

Equipment to be Removed

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
No loading was considered as removed as part of this analysis.					

Proposed Equipment

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
230.0	1	Raycap RDIDC-9181-PF-48	Sector Frame	(1) 1.75" (44.5mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B605			
	3	Fujitsu TA08025-B604			
	3	Commscope FFVV-65B-R2			

¹Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines on the tower face with the least number of existing lines.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	72%	Pass
Diagonals	95%	Pass
Truss Diagonals	70%	Pass
Horizontals	62%	Pass
Truss Horizontals	71%	Pass
Anchor Bolts	46%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	306.2	66%
Download (kips)	429.2	9%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Standard Conditions

All engineering services performed by A.T. Engineering Services LLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Services LLC

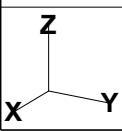
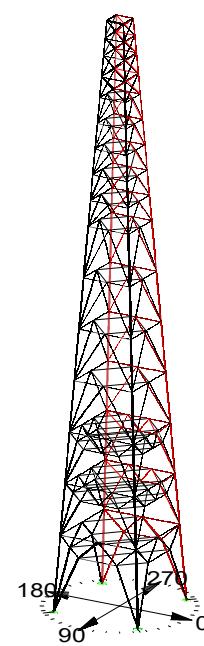
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Services LLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Services LLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

American Tower Corp., Project: "14117988"
Tower Version 16.73, 3:04:39 PM Wednesday, July 13, 2022
Undeformed geometry displayed



100 (ft)

Project Name : 88011 - East Killingly North, CT
 Project Notes: OAa720744.C3-02 - E-Mobile
 Project File : X:\C-E\East_Killingly North, CT (88011)\14117988 DISH WIRELESS L.L.C\14117988_03_CUST_STR\14117988.tow
 Date run : 2:49:20 PM Wednesday, July 13, 2022
 by : Tower Version 16.73
 Licensed to : American Tower Corp.
 Successfully performed nonlinear analysis
 The model has 0 warnings.

Model check option: ANSI/ITA 222-G-1
 Connection rupture check: Not Checked
 Crossing diagonal check: Fixed
 Included angle check: None
 Climbing load check: None
 Redundant members checked with: Actual Force
 Loads from file: X:\C-E\East_Killingly North, CT (88011)\14117988 DISH WIRELESS L.L.C\14117988_03_CUST_STR\14117988.eia

*** Analysis Results:

Maximum element usage is 95.39% for Angle "D 13X" in load case "W -90"

Foundation Design Forces For All Load Cases:

Note: loads are factored.

Load Case	Foundation	Axial	Shear	Bending	Foundation
Description	Force	Force	Moment	Usage	
	(kips)	(kips)	(ft-k)	%	
W 0	OP	310.13	44.12	3.62	0.00
W 0	OX	305.35	43.39	3.40	0.00
W 0	OXY	-186.75	32.42	3.90	0.00
W 0	OX	-186.75	41.07	4.07	0.00
W 180	OP	183.28	32.74	4.15	0.00
W 180	OX	-183.28	32.31	3.97	0.00
W 180	OXY	303.21	43.37	3.44	0.00
W 180	OY	307.07	43.98	3.68	0.00
W 45	OP	429.17	58.57	2.48	0.00
W 45	OX	305.35	43.39	4.15	0.00
W 45	OXY	-306.16	49.06	4.09	0.00
W 45	OY	60.06	18.20	4.35	0.00
W -45	OP	63.89	19.05	4.57	0.00
W -45	OX	425.08	58.20	2.53	0.00
W -45	OXY	-304.92	49.11	4.16	0.00
W -45	OY	-304.68	49.11	4.16	0.00
W 90	OP	310.13	44.12	3.63	0.00
W 90	OX	-185.62	32.84	4.07	0.00
W 90	OXY	-186.72	32.42	3.89	0.00
W 90	OY	303.35	43.39	3.40	0.00
W -90	OP	183.29	32.74	4.15	0.00
W -90	OX	307.09	43.98	3.68	0.00
W -90	OXY	303.20	43.37	3.46	0.00
W -90	OY	-183.80	32.31	3.97	0.00
W 0 Ice	OP	150.89	18.81	1.30	0.00
W 0 Ice	OX	150.09	18.81	1.30	0.00
W 0 Ice	OXY	271.50	2.90	2.08	0.00
W 0 Ice	OY	30.27	2.96	2.16	0.00
W 180 Ice	OP	33.55	3.25	2.24	0.00
W 180 Ice	OX	30.73	3.16	2.17	0.00
W 180 Ice	OXY	144.01	18.43	1.35	0.00
W 180 Ice	OY	30.73	3.16	2.28	0.00
W 45 Ice	OP	180.11	22.68	0.79	0.00
W 45 Ice	OX	88.63	10.67	1.84	0.00
W 45 Ice	OXY	-1.62	3.06	2.21	0.00
W 45 Ice	OY	88.61	10.66	1.84	0.00
W -45 Ice	OP	99.00	10.67	1.84	0.00
W -45 Ice	OX	176.43	22.45	0.73	0.00
W -45 Ice	OXY	85.81	10.61	1.78	0.00
W -45 Ice	OY	1.25	2.96	2.28	0.00
W 90 Ice	OP	150.89	18.81	1.30	0.00
W 90 Ice	OX	30.39	2.97	2.16	0.00
W 90 Ice	OXY	271.50	2.90	2.08	0.00
W 90 Ice	OY	147.04	18.50	1.19	0.00
W -90 Ice	OP	33.58	3.25	2.24	0.00
W -90 Ice	OX	147.48	18.65	1.28	0.00
W -90 Ice	OXY	144.01	18.43	1.16	0.00
W -90 Ice	OY	30.67	3.15	2.17	0.00

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint	Long.	Tran.	Vert.	Shear	Tran.	Long.	Bending	Vert.	Found.	
Label	Force	Force	Force	Force	Moment	Moment	Moment	Moment	Moment	Usage	
	(kips)	(kips)	(kips)	(kips)	(ft-k)	(ft-k)	(ft-k)	(ft-k)	(ft-k)	%	
W 0	OP	-39.16	+20.33	-310.13	44.12	-1.30	-3.38	3.62	-1.90	0.00	
W 0	OX	-38.15	-68.68	-305.35	43.39	1.08	-3.23	3.40	1.91	0.00	
W 0	OXY	-28.93	-14.62	186.71	32.42	0.28	-3.88	3.90	1.74	0.00	
W 0	OY	-29.61	14.21	185.64	32.84	-0.23	-4.06	4.15	-1.74	0.00	
W 0	OP	-180.00	-180.00	-180.00	32.42	-0.24	-4.14	4.15	-1.72	0.00	
W 180	OX	28.93	-14.38	183.86	32.31	0.29	-3.96	3.97	-1.75	0.00	
W 180	OXY	38.19	20.58	-303.21	43.37	1.07	3.30	3.46	-1.92	0.00	
W 180	OY	39.11	-20.11	-307.07	43.98	-1.29	3.44	3.68	1.91	0.00	
W 45	OP	-41.41	-41.41	-429.17	58.57	1.76	-1.76	2.48	-0.00	0.00	
W 45	OX	-18.59	-18.59	-18.59	58.57	1.85	-1.85	4.35	2.60	0.00	
W 45	OXY	-34.69	-34.69	-30.16	49.06	1.89	-1.89	4.09	2.60	0.00	
W 45	OY	-8.64	-16.02	-60.05	18.20	2.44	-3.60	4.35	-2.66	0.00	
W 45	OP	-16.83	8.91	-63.89	19.05	-3.78	-2.56	4.57	-2.66	0.00	
W 45	OX	-40.64	41.61	-425.00	58.28	-1.92	-1.64	2.53	0.00	0.00	
W 45	OXY	-8.17	15.78	-58.92	17.76	-2.42	-3.47	4.23	2.68	0.00	
W 45	OY	-20.05	-20.05	-20.05	49.06	1.76	-1.76	4.16	2.68	0.00	
W 90	OP	-20.32	-39.17	-310.13	44.12	1.32	-3.38	3.63	1.90	0.00	
W 90	OX	14.20	-29.61	185.62	32.84	4.06	0.22	4.07	1.71	0.00	
W 90	OXY	-14.63	-28.93	186.70	32.42	3.88	-0.28	3.87	-1.74	0.00	
W 90	OY	20.68	-38.15	-305.32	43.39	3.22	-1.08	3.40	-1.91	0.00	
W 90	OP	-13.11	-34.69	-34.69	32.42	-0.24	-4.12	4.12	-1.71	0.00	
W 90	OX	-20.11	-34.69	-307.09	43.98	-0.24	-3.68	4.36	-1.91	0.00	
W 90	OXY	-20.57	38.18	-303.20	43.37	-3.29	-1.07	3.46	-1.92	0.00	
W 90	OY	-14.39	28.93	183.88	32.31	-3.96	-0.29	3.97	1.75	0.00	
W 0 Ice	OP	-15.40	-10.81	-150.89	18.81	-1.29	0.18	1.30	-0.45	0.00	
W 0 Ice	OX	-14.98	10.81	-147.07	18.50	1.17	0.20	1.19	0.44	0.00	
W 0 Ice	OXY	-1.12	-1.12	-1.12	2.97	-0.20	-2.02	2.28	-0.00	0.00	
W 0 Ice	OY	-1.12	-2.74	-30.27	2.96	-0.98	-1.92	2.16	-0.42	0.00	
W 180 Ice	OP	1.10	-3.06	-33.58	3.25	-0.98	2.01	2.24	0.44	0.00	
W 180 Ice	OX	1.14	2.94	-30.70	3.16	0.92	1.96	2.17	-0.45	0.00	
W 180 Ice	OXY	15.01	10.70	-144.01	18.43	1.15	-0.11	1.16	-0.45	0.00	
W 180 Ice	OY	15.05	-15.50	-15.50	47.42	18.63	-1.26	0.09	1.16	0.46	0.00
W 45 Ice	OP	-43.04	-16.04	-16.04	22.48	-0.26	-0.79	0.79	-0.00	0.00	
W 45 Ice	OX	-9.98	-3.78	-88.63	10.67	1.81	0.33	1.84	0.65	0.00	
W 45 Ice	OXY	-2.18	1.62	3.08	1.57	-1.57	2.21	0.00	0.00	0.00	
W 45 Ice	OY	3.78	-9.97	-88.61	10.66	-0.33	-1.81	1.84	-0.65	0.00	
W 45 Ice	OP	-10.42	-3.74	-92.24	11.07	-1.93	0.30	1.94	-0.66	0.00	
W 45 Ice	OX	-10.42	-3.74	-92.24	11.07	-1.93	0.30	1.94	-0.66	0.00	
W 45 Ice	OXY	3.73	9.93	-85.81	10.61	0.26	-1.76	1.78	0.67	0.00	
W 45 Ice	OY	-2.04	2.14	-1.25	2.96	-1.64	-1.60	2.28	0.02	0.00	
W 90 Ice	OP	-10.81	-15.40	-150.89	18.81	-0.18	1.29	1.30	0.45	0.00	
W 90 Ice	OX	-2.75	-1.10	-30.30	2.97	1.92	0.98	2.16	0.42	0.00	
W 90 Ice	OXY	-1.12	-1.12	-1.12	2.87	-0.87	-0.87	2.91	-0.00	0.00	
W 90 Ice	OY	10.87	-19.98	-47.04	18.50	-0.20	1.19	-0.44	0.00	0.00	
W -90 Ice	OP	-3.06	1.10	33.58	3.25	-2.01	0.98	2.24	-0.44	0.00	
W -90 Ice	OX	-10.57	15.36	-147.46	18.65	0.09	1.28	1.28	-0.46	0.00	
W -90 Ice	OXY	10.70	15.00	-144.01	18.43	0.11	-1.15	1.16	0.45	0.00	
W -90 Ice	OY	2.94	1.14	-30.67	3.15	-1.96	-0.92	2.17	0.45	0.00	

Summary of Joint Support Reactions For All Load Cases in Direction of Leg:

Load Case	Support	Origin	Leg	Force	Residual Shear	Residual Shear	Residual Shear	Residual Shear	Total	Total	Total
Joint	Joint	Joint	Member	Leg	Perpendicular	Horizontal	Horizontal	Horizontal	Long.	Tran.	Vert.
				(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)
W 0	OP	IP	L 1P	312.628	19.766	19.808	19.785	0.948	-39.16	-20.33	-310.13
W 0	OX	IP	L 1P	307.824	19.097	19.140	19.074	-1.599	-38.15	20.68	-305.35
W 0	OXY	IPX	L 1Y	-188.692	17.475	17.520	17.269	2.958	-28.93	-14.62	186.71
W 0	OY	IP	L 1Y	-187.646	18.19	18.195	18.007	-18.008	-28.93	14.21	186.74
W 180	OP	IP	L 1P	186.243	18.284	18.247	18.251	-2.523	-29.60	14.17	183.28
W 180	OX	IP	L 1X	-185.843	17.636	17.681	17.443	2.895	28.93	-14.38	183.86
W 180	OXY	IPX	L 1X	305.688	19.268	19.312	-19.244	-1.620	38.19	20.56	-303.21
W 180	OY	IP	L 1X	309.561	19.907	19.949	-19.928	0.927	39.11	-20.11	-307.07
W 45	OP	IP	L 1P	432.659	20.567	20.647	14.596	14.603	-41.42	-41.42	-429.17
W 45	OX	IP	L 1X	186.748	17.444	17.444	17.				

W	90	OXY	1XY	L	I XY	188,689	17,472	17,518	2,962	17,265	-14.63	-28.93	
W	90	OY	1Y	L	I Y	307,796	19,095	19,138	-1,605	19,070	20.68	-38.15	
W	-90	OY	1P	L	I P	185,287	18,284	18,329	-2,525	18,154	13.98	29.61	
W	-90	OX	1X	L	I X	309,589	19,910	19,952	0.921	19,931	-20.11	39.12	
W	90	OXY	1XY	L	I XY	305,684	19,264	19,308	-1,625	19,239	20.57	38.18	
W	90	OY	1Y	L	I Y	186,864	17,632	17,676	2,899	17,438	-19.39	38.18	
W	0	Ice	1P	L	I P	511,934	6.08	6.126	5.948	5.181	-10.45	10.81	
W	0	Ice	1P	L	I X	148,107	6,008	6,026	5,788	-1,678	-14.98	10.87	
W	0	Ice	OXY	L	I XY	27,489	2,988	2,990	2,834	-0.954	-1.12	-1.67	
W	0	Ice	OY	L	I Y	30,256	3,129	3,132	3,014	0.852	-1.12	-2.74	
W	180	Ice	OP	1P	L	I P	33,575	3,335	3,338	-3,197	0.959	11.10	-3.06
W	180	Ice	OY	1X	L	I X	69,692	3,221	3,223	-3,056	-1,026	-1.12	2.94
W	180	OXY	1XY	L	I XY	144,654	6,524	6,562	-4,444	-1,557	15.01	-1.01	
W	180	OY	1Y	L	I Y	148,475	6,282	6,299	-6,151	1,359	15.36	-10.57	
W	45	Ice	OP	1P	L	I P	181,410	6,740	6,766	4,783	4,786	-16.04	-16.04
W	45	Ice	OX	1X	L	I X	89,145	4,772	4,775	4,438	1,762	-9.98	3.78
W	45	Ice	OXY	1XY	L	I XY	-1,888	2,923	2,935	2,075	2,075	-2.18	-2.18
W	45	Ice	OY	1Y	L	I Y	89,118	4,770	4,773	1,763	4,437	3.78	-9.97
W	45	Ice	OP	1P	L	I P	171,656	5,078	5,056	4,656	2,027	-17.01	-17.01
W	45	Ice	OY	1X	L	I X	177,720	6,837	6,864	4,650	-5,049	-15.67	16.07
W	45	Ice	OXY	1XY	L	I XY	86,328	4,849	4,852	1,627	-4,571	3.73	9.93
W	45	Ice	OY	1Y	L	I Y	0,982	3,054	3,066	2,120	-2,214	-2.04	2.14
W	90	Ice	OP	1P	L	I P	151,934	6,110	6,127	1,379	5,970	-18.11	15.40
W	90	Ice	OX	1X	L	I X	30,282	3,131	3,134	0,853	3,016	-2.75	-1.12
W	90	Ice	OXY	1XY	L	I XY	140,490	2,948	2,990	-2,950	2,833	-1.12	1.12
W	90	Ice	OY	1Y	L	I Y	148,079	6,009	6,027	-1,680	5,788	10.87	-1.98
W	90	Ice	OP	1P	L	I P	33,574	3,335	3,338	0,959	-3,198	-3.06	1.10
W	90	Ice	OX	1X	L	I X	148,502	6,281	6,299	1,358	-6,151	-10.57	15.36
W	90	Ice	OXY	1XY	L	I XY	145,054	6,224	6,242	-1,699	-6,007	10.70	15.00
W	90	Ice	OY	1Y	L	I Y	30,666	3,219	3,222	-1,025	-3,054	2.94	1.14

OVERTURNING MOMENT SUMMARY FOR ALL LOAD CASES:

Load Case	Transverse	Longitudinal	Torsional	Resultant		Transverse	Longitudinal	Vertical
				Moment (ft-k)	Moment (ft-k)			
W 0	131,362	-22189,466	55,072	22189,855	0,065	135,854	243,131	
W 180	99,667	21955,762	-55,075	21955,952	-0,049	-135,834	243,131	
W 45	16517,101	-16518,192	-0,547	23359,480	100,767	100,767	243,131	
W -45	-16279,237	-16502,142	78,266	23180,471	-100,726	100,709	243,131	
W 90	22188,380	-132,454	55,847	22188,776	135,854	0,065	243,131	
W 0	-21955,762	59,854	55,854	21957,948	-135,834	-0,049	243,131	
W 0	143,400	-5395,400	-5395,400	143,400	0,000	135,854	243,131	
W 180	142,400	5102,307	-14,470	5101,774	-0,010	-32,606	355,729	
W 45	4081,731	-4082,962	-0,131	5773,284	24,412	24,412	355,729	
W -45	-3790,625	-4079,608	17,735	5568,845	-24,404	24,400	355,729	
W 90	5394,106	-149,295	-12,656	5396,732	32,611	0,013	355,729	
W 90	-5104,003	-142,798	12,656	5106,000	-32,606	-0,010	355,729	

EIA Sections Information:

Section Label	Top (ft)	Bottom (ft)	Z Count	Joint Count	Member Width (ft)	Top Width (ft)	Bottom Width (ft)	Gross Area (ft ²)	Cross Factor	Face Factor	Face Factor	Area Adjust Factor	Adjust Factor	Load Factor
278.9-287.5	287.500	278.917	8	20	9.00	81.95	81.85	1.1220	1.1220	1.3460	1.3460			
278.7-329.9	329.900	278.917	8	16	10.00	11.15	91.06	1.1510	1.2150	1.2150	1.2150			
260.2-270.7	270.700	260.167	8	16	10.00	11.15	91.06	1.1510	1.1510	1.1510	1.1510			
250.0-260.2	260.167	250.000	12	24	12.42	13.69	132.69	1.2030	1.2030	1.2030	1.2030			
237.5-250.0	250.000	237.500	16	24	13.69	15.25	180.84	1.2010	1.2010	1.2010	1.2010			
225.0-237.5	237.500	225.000	16	24	15.25	16.81	200.38	1.2070	1.2070	1.2070	1.2070			
212.5-225.0	225.000	212.500	16	24	16.81	18.37	219.89	1.2130	1.2130	1.2130	1.2130			
200.0-212.5	212.500	200.000	16	24	18.37	19.93	239.41	1.2200	1.2200	1.2200	1.2200			
187.5-200.0	200.000	187.500	16	24	20.00	21.56	258.56	1.2270	1.2270	1.2270	1.2270			
162.5-187.5	187.500	162.500	16	24	21.50	24.40	276.45	1.2550	1.2550	1.2550	1.2550			
137.5-162.5	162.500	137.500	16	24	24.62	27.74	654.55	1.2700	1.2700	1.2700	1.2700			
112.5-137.5	137.500	112.500	16	24	27.74	30.87	732.65	1.2790	1.2790	1.2790	1.2790			
87.50-112.5	112.500	87.500	20	32	30.87	33.99	810.75	1.2930	1.2930	1.2930	1.2930			
62.50-87.50	87.500	62.500	36	76	33.99	37.12	888.88	1.2300	1.2300	1.2300	1.2300			
37.50-62.50	62.500	37.500	36	68	37.12	40.24	966.95	1.2330	1.2330	1.2330	1.2330			
0.000-37.50	37.500	0.000	20	40	40.24	44.93	1084.85	1.2600	1.2600	1.2600	1.2600			

Printed capacities do not include the strength factor entered for each load case. The Group Summary reports on the member and load case that resulted in maximum usage which may not necessarily be the same as that which produces maximum force.

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength	Max Usage Control	Max Comp. In Member	Comp. Comp. Force	Comp. Comp. Load	Comp. Comp. Connect. Connect.	Comp. Comp. Shear Capacity	Comp. Comp. Bearing Capacity	RLX RLW RLZ L/r	RLX RLW RLZ L/r	KL/w Length Curve No. Comp. Member	No. Bolt Comp.		
(ksi)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(ft)	
Leg S1	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	71.88	Comp	71.88	L 1P -351.586	W 45	489.100	0.000	0.000	0.250	0.250	0.250	72.40	72.40 37.646 1
Leg S2	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	55.79	Comp	55.79	L 2P -305.097	W 45	546.890	0.000	0.000	0.281	0.281	0.281	54.29	54.29 25.097 1
Leg S3	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	53.69	Comp	53.69	L 3P -263.328	W 45	490.440	0.000	0.000	0.281	0.281	0.281	54.29	54.29 25.097 1
Leg S4	L 8" x 8" x 0.7575"	SAE	8X8X0.75	36.0	52.10	Comp	52.10	L 5P -255.964	W 45	415.366	0.000	0.000	0.333	0.333	0.333	63.53	63.53 25.097 1
Leg S5	L 8" x 8" x 0.7575"	SAE	8X8X0.75	36.0	49.61	Comp	49.61	L 6P -178.279	W 45	359.362	0.000	0.000	0.333	0.333	0.333	63.53	63.53 25.097 1
Leg S7	L 8" x 8" x 0.625"	SAE	8X8X0.63	36.0	46.69	Comp	46.69	L 7P -141.134	W 45	302.310	0.000	0.000	0.333	0.333	0.333	63.53	63.53 25.097 1
Leg S8	L 6" x 6" x 0.7575"	SAE	6X6X0.75	36.0	45.91	Comp	45.91	L 8P -121.459	W 45	264.577	0.000	0.000	0.500	0.500	0.500	64.35	64.35 12.549 1
Leg S9	L 6" x 6" x 0.7575"	SAE	6X6X0.75	36.0	44.82	Comp	44.82	L 9P -101.489	W 45	227.070	0.000	0.000	0.500	0.500	0.500	64.35	64.35 12.549 1
Leg S11	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	41.29	Comp	41.29	L 10P -83.161	W 45	202.141	0.000	0.000	0.500	0.500	0.500	63.81	63.81 12.549 1
Leg S12	L 6" x 6" x 0.4375"	SAE	6X6X0.44	36.0	29.49	Comp	29.49	L 12P -46.946	W 45	159.217	0.000	0.000	0.500	0.500	0.500	63.27	63.27 12.549 1
Leg S13	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	27.92	Comp	27.92	L 13P -36.974	W 45	132.416	0.000	0.000	0.500	0.500	0.500	62.11	62.11 10.207 1
Leg S14	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	19.15	Comp	19.15	L 14P -25.360	W 45	132.416	0.000	0.000	0.500	0.500	0.500	62.11	62.11 10.207 1
Leg S15	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	17.50	Comp	17.50	L 15P -16.200	W 45	132.416	0.000	0.000	0.500	0.500	0.500	61.01	61.01 10.207 1
Leg S16	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	5.79	Comp	5.79	L 16P -5.599	W 45	96.704	0.000	0.000	0.500	0.500	0.500	52.01	52.01 8.616 1
Diaq S1	B/L 15" x 8" x 0.3125"	DAS	5X5X0.31	36.0	32.39	Comp	32.39	D 2X -56.745	W 90	175.176	0.000	0.000	0.316	0.316	0.316	74.36	74.36 30.789 1
Diaq S2	B/L 12" x 8" x 0.3125"	DAS	3.5X2X0.31	36.0	66.17	Comp	66.17	D 4X -43.614	W 90	65.915	0.000	0.000	0.320	0.320	0.320	107.64	107.64 20.603 1
Diaq S3	B/L 12" x 8" x 0.3125"	DAS	3.5X2X0.31	36.0	67.47	Comp	67.47	D 6X -43.644	W 90	64.682	0.000	0.000	0.320	0.320	0.320	105.80	105.80 20.250 1
Diaq S4	B/L 12" x 8" x 0.3125"	DAS	3.5X2X0.31	36.0	67.47	Comp	67.47	D 8X -43.644	W 90	64.682	0.000	0.000	0.320	0.320	0.320	104.71	104.71 20.250 1
Diaq S5	B/L 12" x 8" x 0.3125"	DAS	3X2X0.31	36.0	70.37	Comp	70.37	D 9X -28.716	W 90	40.806	0.000	0.000	0.300	0.300	0.300	122.17	122.17 29.422 1
Diaq S7	B/L 12" x 8" x 0.3125"	DAS	3X2X0.31	36.0	72.54	Comp	72.54	D 11X -27.903	W 90	38.465	0.000	0.000	0.320	0.320	0.320	146.02	146.02 136.00 28.633 6
Diaq S8	B/L 12" x 8" x 0.3125"	DAS	3X2X0.31	36.0	95.39	Comp	95.39	D 13X -27.360	W 90	28.683	0.000	0.000	0.320	0.320	0.320	147.83	147.83 117.11 27.910 6
Diaq S9	B/L 12" x 8" x 0.3125"	DAS	2.5X2X0.31	36.0	64.06	Comp	64.06	D 15X -16.295	W 90	25.438	0.000	0.000	0.500	0.500	0.500	165.43	165.43 148.55 16.504 6
Diaq S10	B/L 12" x 8" x 0.3125"	DAS	2.5X2X0.31	36.0	55.58	Comp	55.58	D 17X -15.208	W 90	25.438	0.000	0.000	0.500	0.500	0.500	161.06	161.06 16.504 6
Diaq S11	B/L 12" x 8" x 0.3125"	DAS	2.5X2X0.31	36.0	55.58	Comp	55.58	D 18X -15.208	W 90	17.132	0.000	0.000	0.500	0.500	0.500	139.73	139.73 16.504 6
Diaq S12	B/L 12" x 8" x 0.3125"	DAS	2.5X2X0.31	36.0	80.86	Comp	80.86	D 21X -14.565	W 90	18.013	0.000	0.000	0.500	0.500	0.500	193.58	193.58 165.25 15.083 6
Diaq S13	B/L 12" x 8" x 0.3125"	DAS	2.5X2X0.31	36.0	69.66	Comp	69.66	D 23P -13.167	W 90	18.903	0.000	0.000	0.500	0.500	0.500	188.16	188.16 143.662 6
Diaq S14	L 3.5" x 3.5" x 0.25"	SAS	3.5X3.5X0.25	36.0	29.62	Comp	29.62	D 26P -7.094	W 90	23.950	0.000	0.000	0.520	0.520	0.520	142.03	142.03 16.556 5
Diaq S15	L 3.5" x 3.5" x 0.25"	SAS	3.5X3.5X0.25	36.0	26.98	Comp	26.98	D 28P -7.123	W 90	26.995	0.000	0.000	0.520	0.520	0.520	140.03	140.03 15.574 5
Diaq S16	L 3" x 3" x 0.25"	SAS	3X3X0.25	36.0	59.00	Comp	59.00	D 30P -5.000	W 90	26.995	0.000	0.000	0.500	0.500	0.500	125.37	125.37 11.293 5
Horiz 1	B/L 15" x 5.5" x 2.5" x 0.25"	DAS	3.5X2X0.25	36.0	58.09	Comp	58.09	H 2Y -34.443	W 45	59.296	0.000	0.000	0.500	0.500	0.500	110.75	110.75 20.120 1
Horiz 2	B/L 15" x 5.5" x 2.5" x 0.25"	DAS	3.5X2X0.25	36.0	58.25	Comp	58.25	H 3P -29.717	W 45	51.012	0.000	0.000	0.940	0.940	0.940	124.94	124.94 132.72 6
Horiz 3	B/L 13" x 5.5" x 2.5" x 0.25"	DAS	3X2X0.25	36.0	61.84	Comp	61.84	H 5P -27.769	W 90	44.906	0.000	0.000	0.940	0.940	0.940	135.25	135.25 12.311 3
Horiz 4	B/L 13" x 5.5" x 2.5" x 0.25"	DAS	3X2X0.25	36.0	61.84	Comp	61.84	H 7P -27.769	W 90	44.906	0.000	0.000	0.940	0.940	0.940	134.34	134.34 12.311 3
Horiz 5	B/L 13" x 5.5" x 2.5" x 0.25"	DAS	3X2X0.25	36.0	42.02	Comp	42.02	H 9P -13.227	W 90	31.478	0.000	0.000	1.000	1.000	1.000	176.15	154.53 13.872 6
Horiz 6	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	46.51	Comp	46.51	H 11P -11.716	W 90	25.191	0.000	0.000	1.000	1.000	1.000	192.09	164.34 12.310 6
Horiz 7	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	35.71	Comp	35.71	H 13P -10.891	W 90	30.501	0.000	0.000	1.000	1.000	1.000	167.72	149.35 10.748 6
Horiz 8	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	28.41	Comp	28.41	H 15P -9.605	W 90	33.809	0.000	0.000	1.000	1.000	1.000	155.53	141.85 9.967 6
Horiz 9	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	26.98	Comp	26.98	H 17P -8.500	W 90	36.900	0.000	0.000	1.000	1.000	1.000	147.41	147.41 9.967 6
Horiz 10	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	18.40	Comp	18.40	H 19P -7.776	W 90	42.269	0.000	0.000	1.000	1.000	1.000	131.16	126.86 8.045 6
Horiz 11	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	16.18	Comp	16.18	H 21P -7.682	W 90	47.493	0.000	0.000	1.000	1.000	1.000	118.97	118.97 7.624 1
Horiz 12	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	10.55	Comp	10.55	H 23P -5.787	W 90	54.881	0.000	0.000	1.000	1.000	1.000	106.78	106.78 6.843 1
Horiz 13	L 3" x 2.5" x 0.25"	SAS	3X2X0.25	36.0	7.83	Comp	7.83	H 25P -0.786	W 0	20.261	0.000	0.000	0.500	0.500	0.500	141.09	136.11 12.416 3
Horiz 14	L 3" x 2.5" x 0.25"	SAS	3X2X0.25	36.0	2.40	Comp	2.40	H 27P -0.239	W 0	72.388	0.000	0.000	0.500	0.500	0.500	76.76	76.76 11.145 1
Horiz 15	L 3" x 2.5" x 0.25"	SAS	3X2X0.25	36.0	0.00	Comp	0.00	H 29P -0.239	W 0	72.388	0.000	0.000	0.500	0.500	0.500	114.73	114.73 7.32 3
Horiz 16	C8x11.5	C8x11.5	C8x11.5	36.0	0.71	Comp	0.71	H 31X -0.210	W 29	29.726	0.000	0.000	1.000	1.000	1.000	160.27	160.27 10.000 1
LD 1	B/L 12" x 5.5" x 3.5" x 0.25"	DAS	3.5X3.5X0.25	36.0	38.91	Comp	38.91	LD 1X -21.650	W 90	55.648	0.000	0.000	0.920	0.920	0.920	139.40	131.93 13.764 6
LD 2	B/L 12" x 4" x 3" x 0.25"	DAS	4X4X0.31	36.0	35.53	Comp	35.53	LD 3X -51.417	W 90	92.955	0.000	0.000	0.920	0.920	0.920	122.54	121.56 13.764 6
LD 4	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	36.99	Comp	36.99	LD 5X -20.203	W 45	48.424	0.000	0.000	0.920	0.920	0.920	145.94	141.55 11.044 6
LD 5	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	36.05	Comp	36.05	LD 6X -22.05	W 45	48.424	0.000	0.000	0.920	0.920	0.920	133.50	133.50 10.000 1
LD 6	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	3X2X0.25	36.0	64.67	Comp	64.67	LD 11P -30.063	W 90	46.488	0.000	0.000	0.920	0.920	0.920	116.15	116.15 11.5 9.374 1
LD 7	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	66.31	Comp	66.31	LD 13X -21.645	W 45	32.642	0.000	0.000	0.920	0.920	0.920	147.01	136.61 10.440 6
LD 8	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	60.38	Comp	60.38	LD 15X -28.185	W 90	46.676	0.000	0.000	0.920	0.920	0.920	111.55	111.55 11.5 7.922 1
LD 9	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	44.43	Comp	44.43	LD 17P -29.388	W 90	66.140	0.000	0.000	0.920	0.920	0.920	107.31	107.31 9.039 1
LD 10	B/L 12" x 5.5" x 2.5" x 0.25"	DAS	2.5X2X0.25	36.0	44.43	Comp	44.43	LD 19P -30.581	W 90	66.140	0.000	0.000	100.00	100.00	100.00	199.00	199.00 10.000 1
LD 11	B/L 12" x 5.5" x 2																

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength	Max Usage	Max Usage	Tension In	Tension Member	Tension Section	Net Connect	Tension Connect	Tension Connect	Tension Rupture	Tension Length	No. Member	No. Bolts	Hole Diam.
				(ksi)	(%)	(%)	(ksi)	(%)	(%)	(%)	(%)	(%)	(%)	(ft)	(in)		
Leg S1	L 8"	"x" 8"	1.125"	SAE	8X8X1.12	36.0	71.88	Comp	42.86	1. LXXY	232.317	W 45	54.0	0.051	0.000	0.000	37.546
Leg S2	L 8"	"x" 8"	1.125"	SAE	8X8X1.12	36.0	55.79	Comp	40.43	1. LXXY	239.042	W 45	45.0	0.051	0.000	0.000	25.077
Leg S3	L 8"	"x" 8"	1.125"	SAE	8X8X1.1	36.0	53.69	Comp	39.08	1. LXXY	189.552	W 45	48.5	0.051	0.000	0.000	25.077

Leg S4	L 8" x 8" x 0.875"	SAE 8X8X0.88	36.0 61.14	Comp 43.19	L 4XY 185.155	W 45	428.651	0.000	0.000	0.000 25.097	0.000	0
Leg S5	L 8" x 8" x 0.875"	SAE 8X8X0.88	36.0 62.10	Comp 36.22	L 5XY 155.655	W 45	428.651	0.000	0.000	0.000 25.097	0.000	0
Leg S6	L 8" x 8" x 0.75"	SAE 8X8X0.75	36.0 49.61	Comp 33.95	L 6XY 125.854	W 45	370.655	0.000	0.000	0.000 25.097	0.000	0
Leg S7	L 6" x 8" x 0.625"	SAE 6X8X0.63	36.0 46.69	Comp 30.63	L 7XY 95.372	W 45	311.364	0.000	0.000	0.000 25.097	0.000	0
Leg S8	L 6" x 6" x 0.5625"	SAE 6X6X0.56	36.0 45.98	Comp 29.51	L 8XY 80.710	W 45	273.456	0.000	0.000	0.000 12.549	0.000	0
Leg S9	L 6" x 6" x 0.5625"	SAE 6X6X0.56	36.0 45.98	Comp 29.51	L 9XY 74.074	W 45	208.332	0.000	0.000	0.000 12.549	0.000	0
Leg S10	L 6" x 6" x 0.5625"	SAE 6X6X0.56	36.0 32.34	Comp 17.43	L 11XY 36.321	W 45	108.332	0.000	0.000	0.000 12.549	0.000	0
Leg S11	L 6" x 6" x 0.5625"	SAE 6X6X0.56	36.0 32.34	Comp 17.43	L 11XY 22.271	W 45	163.944	0.000	0.000	0.000 12.549	0.000	0
Leg S12	L 5" x 6" x 0.4375"	SAE 5X6X0.44	36.0 29.49	Comp 13.58	L 12XY 16.980	W 45	135.432	0.000	0.000	0.000 10.207	0.000	0
Leg S13	L 5" x 5" x 0.4375"	SAE 5X5X0.44	36.0 27.99	Comp 12.54	L 13XY 16.980	W 45	135.432	0.000	0.000	0.000 10.207	0.000	0
Leg S14	L 5" x 5" x 0.4375"	SAE 5X5X0.44	36.0 19.15	Comp 5.59	L 14XY 7.564	W 45	135.432	0.000	0.000	0.000 10.207	0.000	0
Leg S15	L 5" x 5" x 0.3125"	SAE 5X5X0.31	36.0 13.12	Comp 2.59	L 15XY 4.582	W 45	98.000	0.000	0.000	0.000 8.616	0.000	0
Leg S16	L 5" x 5" x 0.3125"	SAE 5X5X0.31	36.0 10.19	Comp 0.00	L 16XY 0.000	W 45	98.172	0.000	0.000	0.000 8.616	0.000	0
Diag S1	B/B L8" x 5" x 0.3125"	DAE 5X8X0.31	36.0 32.39	Comp 25.06	L 17P 49.127	W 90	196.020	0.000	0.000	0.000 30.789	0.000	0
Diag S2	B/B L2.5" x 3" x 0.25"	DAE 3.5X2.5X0.25	36.0 66.17	Comp 39.25	D 4P 36.625	W 90	93.312	0.000	0.000	0.000 20.603	0.000	0
Diag S3	B/B L2.5" x 3" x 0.25"	DAE 3.5X2.5X0.25	36.0 67.47	Comp 38.82	D 6P 36.221	W 90	93.312	0.000	0.000	0.000 20.250	0.000	0
Diag S4	B/B L2.5" x 3" x 0.25"	DAE 3.5X2.5X0.25	36.0 73.17	Comp 30.77	D 7P 26.222	W 90	85.212	0.000	0.000	0.000 30.301	0.000	0
Diag S5	B/B L2.5" x 3" x 0.25"	DAE 3.5X2.5X0.25	36.0 73.17	Comp 30.77	D 8P 26.222	W 90	85.212	0.000	0.000	0.000 30.422	0.000	0
Diag S6	B/B L2.5" x 3" x 0.25"	DAE 3.5X2.5X0.25	36.0 72.54	Comp 30.32	D 11P 25.837	W 90	85.212	0.000	0.000	0.000 28.633	0.000	0
Diag S7	B/B L2.5" x 3" x 0.25"	DAE 3.5X2.5X0.25	36.0 59.39	Comp 30.42	D 13P 25.923	W 90	85.212	0.000	0.000	0.000 27.910	0.000	0
Diag S8	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 64.00	Comp 19.65	D 15P 15.152	W 90	77.112	0.000	0.000	0.000 16.504	0.000	0
Diag S9	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 56.81	Comp 17.94	D 17P 14.194	W 90	77.112	0.000	0.000	0.000 16.006	0.000	0
Diag S10	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 85.58	Comp 19.94	D 19P 13.763	W 90	77.112	0.000	0.000	0.000 15.533	0.000	0
Diag S11	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 69.06	Comp 19.94	D 20P 13.556	W 90	69.000	0.000	0.000	0.000 15.463	0.000	0
Diag S12	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 69.66	Comp 18.03	D 23X 12.446	W 90	69.012	0.000	0.000	0.000 14.662	0.000	0
Diag S13	L 3.5" x 3" x 0.25"	SAE 3.5X3.5X0.25	36.0 29.62	Comp 9.80	D 26P 5.365	W 90	54.756	0.000	0.000	0.000 16.556	0.000	0
Diag S14	L 3.5" x 3" x 0.25"	SAE 3.5X3.5X0.25	36.0 26.92	Comp 6.69	D 28P 5.272	W 90	54.756	0.000	0.000	0.000 15.574	0.000	0
Diag S15	L 3" x 3" x 0.25"	SAE 3.5X3.5X0.25	36.0 20.22	Comp 6.69	D 29P 3.122	W 0	46.656	0.000	0.000	0.000 13.657	0.000	0
Horiz S1	L 6" x 6" x 0.25"	SAE 3.5X3.5X0.25	36.0 51.53	Comp 23.97	L 7P 14.669	W 90	46.656	0.000	0.000	0.000 12.624	0.000	0
Horiz S2	B/B L3.5" x 2" x 0.25"	DAE 3.5X2.5X0.25	36.0 58.09	Comp 38.80	H 1P 36.201	W 90	93.312	0.000	0.000	0.000 20.120	0.000	0
Horiz S3	B/B L3.5" x 2" x 0.25"	DAE 3.5X2.5X0.25	36.0 58.25	Comp 36.58	H 3P 34.135	W 90	93.312	0.000	0.000	0.000 12.372	0.000	0
Horiz S4	B/B L3.5" x 2" x 0.25"	DAE 3.5X2.5X0.25	36.0 61.83	Comp 36.17	H 5P 30.820	W 90	85.212	0.000	0.000	0.000 11.331	0.000	0
Horiz S5	B/B L3.5" x 2" x 0.25"	DAE 3.5X2.5X0.25	36.0 51.62	Comp 17.21	H 7P 14.669	W 90	85.212	0.000	0.000	0.000 15.434	0.000	0
Horiz S6	B/B L3.5" x 2" x 0.25"	DAE 3.5X2.5X0.25	36.0 51.62	Comp 17.21	H 9P 13.565	W 90	85.212	0.000	0.000	0.000 15.434	0.000	0
Horiz S7	B/B L3.5" x 2" x 0.25"	DAE 3.5X2.5X0.25	36.0 46.11	Comp 15.46	H 11X 12.310	W 90	77.112	0.000	0.000	0.000 12.310	0.000	0
Horiz S8	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 35.71	Comp 14.58	H 13P 11.242	W 90	77.112	0.000	0.000	0.000 10.748	0.000	0
Horiz S9	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 28.41	Comp 12.69	H 15P 9.785	W 90	77.112	0.000	0.000	0.000 9.967	0.000	0
Horiz S10	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 22.99	Comp 11.59	H 17P 8.938	W 90	77.112	0.000	0.000	0.000 9.186	0.000	0
Horiz S11	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 18.49	Comp 10.44	H 19X 8.049	W 90	77.112	0.000	0.000	0.000 8.405	0.000	0
Horiz S12	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 10.48	Comp 10.04	H 21X 7.624	W 90	77.112	0.000	0.000	0.000 7.624	0.000	0
Horiz S13	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 10.55	Comp 8.90	H 23P 6.850	W 90	77.112	0.000	0.000	0.000 6.843	0.000	0
Horiz S14	L 3" x 2.5" x 0.25"	SAE 3.5X2.5X0.25	36.0 7.83	Tens 7.83	H 25P 3.324	W 0	42.444	0.000	0.000	0.000 12.416	0.000	0
Horiz S15	L 3" x 2.5" x 0.25"	DAE 3.5X2.5X0.25	36.0 2.43	Tens 2.40	H 27P 2.045	W 0	45.212	0.000	0.000	0.000 11.145	0.000	0
Horiz S16	L 3" x 2.5" x 0.25"	DAE 3.5X2.5X0.25	36.0 2.91	Tens 2.91	H 29P 1.234	W 0	42.444	0.000	0.000	0.000 10.073	0.000	0
Horiz S17	L 3" x 2.5" x 0.25"	DAE 3.5X2.5X0.25	36.0 4.07	Comp 3.02	H 31P 1.440	W 0	109.524	0.000	0.000	0.000 10.070	0.000	0
Horiz S18	B/B L3.5" x 3" x 0.25"	DAE 3.5X3.5X0.25	36.0 1.91	Comp 23.74	LD 1P 25.288	W 45	10.452	0.000	0.000	0.000 13.764	0.000	0
LD 1	B/B L4" x 4" x 0.3125"	DAE 4X4X0.31	36.0 55.31	Comp 30.38	LD 3P 47.248	W 90	155.520	0.000	0.000	0.000 13.764	0.000	0
LD 2	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 69.61	Comp 26.21	LD 8Y 18.090	W 45	69.012	0.000	0.000	0.000 11.004	0.000	0
LD 3	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 62.05	Comp 35.35	LD 9Y 24.398	W 90	69.012	0.000	0.000	0.000 8.060	0.000	0
LD 4	B/B L3" x 2" x 0.25"	DAE 3.5X2.5X0.25	36.0 64.67	Comp 40.24	LD 11P 31.031	W 90	77.112	0.000	0.000	0.000 9.374	0.000	0
LD 5	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 2.10	Comp 2.10	LD 12P 1.430	W 90	69.012	0.000	0.000	0.000 10.400	0.000	0
LD 6	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 60.38	Comp 34.97	LD 15P 24.135	W 90	69.012	0.000	0.000	0.000 7.322	0.000	0
LD 7	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 60.38	Comp 34.97	LD 15P 24.135	W 90	69.012	0.000	0.000	0.000 7.322	0.000	0
LD 8	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 44.43	Comp 32.34	LD 17X 30.174	W 90	93.312	0.000	0.000	0.000 9.039	0.000	0
LD 9	B/B L3" x 3" x 0.25"	DAE 3.5X3.5X0.25	36.0 19.80	Tens 19.80	LD 1Y 15.266	W 0	77.112	0.000	0.000	0.000 20.120	0.000	0
LN 1	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 19.80	Tens 19.80	LD 1Y 15.266	W 0	77.112	0.000	0.000	0.000 20.120	0.000	0
LN 2	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 71.12	Comp 22.83	LD 4Y 19.454	W -45	85.212	0.000	0.000	0.000 10.104	0.000	0
LN 3	B/B L2.5" x 2" x 0.25"	DAE 2.5X2.5X0.25	36.0 63.40	Comp 22.87	LD 6Y 19.484	W -45	85.212	0.000	0.000	0.000 9.291	0.000	0
DUM 1	Dummy Bracing Member	DUM 0.1X0.1X1	36.0 0.00	Comp 0.00	BR 9X 0.831	W -45	0.324	0.000	0.000	0.000 19.618	0.000	0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Element Usage %	Label	Type
W 0	94.48	D 14P	Angle
W 180	95.34	D 14Y	Angle
W 45	71.88	L 1P	Angle
W -45	74.08	D 13X	Angle
W 90	94.55	D 13P	Angle
W -90	94.59	D 13P	Angle
W 0 Ice	26.31	L 1P	Angle
W 180 Ice	26.91	D 14Y	Angle
W 45 Ice	31.13	L 1P	Angle
W -45 Ice	30.31	L 1X	Angle
W 90 Ice	31.31	Angle	
W -90 Ice	26.91	D 13X	Angle

*** End of Report

Site #:		880011		Name:		East Killingly North, CT		Engineer:		Tiffany,Ta		Wind speed:		No Ic: 132 mph		Ice: 150 mph		Taper:		-0.124974		Taper Change:		287.5 ft		
Joint	Label	Symmetry	Code	X Coord	(ft)	Y Coord	(ft)	Z Coord	(ft)	X Disp.	Y Disp.	Z Disp.	Rest.	X Rot.	Y Rot.	Z Rot.	Rest.	Drop	Sub-Brace	(Y or Blank)	# Vert	Court	1 - Z-Elev.	0 - W-Elev.	# Sub-Brace	3
0		XY-Symmetry		22.465		22.465		0	Fixed	Fixed	Fixed	Fixed	Fixed	Free	Free	Free	Free	3	9.375	37.5	1	2	2	37.5	40.24347426	3
1		XY-Symmetry		20.12173913		20.12173913		37.5	Free	Free	Free	Free	Free	Free	Free	Free	Free	7.030	25	2	2	3	37.5	39.94783243	3	
2		XY-Symmetry		23.22173913		23.22173913		62.5	Free	Free	Free	Free	Free	Free	Free	Free	Free	7.030	25	2	3	3	87.5	33.99478261	2	
3		XY-Symmetry		16.9973913		16.9973913		87.5	Free	Free	Free	Free	Free	Free	Free	Free	Free	7.030	25	2	4	4	87.5	33.99478261	2	
4		XY-Symmetry		15.4321739		15.4321739		112.5	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	5	5	5	112.5	30.87033478	2	
5		XY-Symmetry		13.87034348		13.87034348		137.5	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	6	6	6	137.5	27.74605996	2	
6		XY-Symmetry		13.78034348		13.78034348		137.5	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	7	7	7	137.5	27.74605996	2	
7		XY-Symmetry		10.74869565		10.74869565		187.5	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	8	8	8	187.5	21.4973913	1	
8		XY-Symmetry		9.967608696		9.967608696		200	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	9	9	9	200	19.93521739	1	
9		XY-Symmetry		9.18608696		9.18608696		212.5	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	10	10	10	212.5	18.68604848	1	
10		XY-Symmetry		8.40534783		8.40534783		225	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	11	11	11	225	16.81086957	1	
11		XY-Symmetry		7.624374826		7.624374826		237.5	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	12	12	12	237.5	15.24869565	1	
12		XY-Symmetry		6.84276087		6.84276087		250	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	13	13	13	250	13.68852174	1	
13		XY-Symmetry		6.306232087		6.306232087		260.334	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	14	14	14	260.334	12.33352174	1	
14		XY-Symmetry		5.572651096		5.572651096		270.334	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	15	15	15	270.334	11.14530219	1	
15		XY-Symmetry		5.036325548		5.036325548		278.917	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	16	16	16	278.917	10.07265111	1	
16		XY-Symmetry		4.5		4.5		287.5	Free	Free	Free	Free	Free	Free	Free	Free	Free	25	25	17	17	17	287.5	9	1	

Legs

Site No.:	88011
Engineer:	Tiffany.Ta
Date:	07/13/2022
Carrier:	Dish Wireless L.L.C.

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape	Diameter or Length (in)	Thickness ^[2] (in)	F _y (ksi)
1	0.000-37.50	L	8	1.125	36
2	37.50-62.50	L	8	1.125	36
3	62.50-87.50	L	8	1	36
4	87.50-112.5	L	8	0.875	36
5	112.5-137.5	L	8	0.875	36
6	137.5-162.5	L	8	0.75	36
7	162.5-187.5	L	8	0.625	36
8	187.5-200.0	L	6	0.75	36
9	200.0-212.5	L	6	0.75	36
10	212.5-225.0	L	6	0.5625	36
11	225.0-237.5	L	6	0.5625	36
12	237.5-250.0	L	6	0.4375	36
13	250.0-260.2	L	5	0.4375	36
14	260.2-270.3	L	5	0.4375	36
15	270.3-278.9	L	5	0.3125	36
16	278.9-287.5	L	5	0.3125	36

Notes:

^[1] Type of Leg Shape: **R** = Round or **P** = Bent Plate or **S** = Schifflerized Angle. **L** = Even Leg

^[2] For Solid Round Leg Shapes Thickness Equals Zero.

^[3] Adjust for Bent Plate Leg Shapes.

Diagonals

Site No.:	88011
Engineer:	Tiffany.Ta
Date:	07/13/2022
Carrier:	Dish Wireless L.L.C.

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape ^[1]	Diameter ^[2] (in)	Web Length ^[3] (in)	Flange Length ^[3] (in)	Thickness (in)	F _y (ksi)	Is Diag. Tension Only? (Y/N)
1	0.000-37.50	2L	5	5	0.3125	36		
2	37.50-62.50	2L	2.5	3.5	0.25	36		
3	62.50-87.50	2L	2.5	3.5	0.25	36		
4	87.50-112.5	2L	2.5	3	0.25	36		
5	112.5-137.5	2L	2.5	3	0.25	36		
6	137.5-162.5	2L	2.5	3	0.25	36		
7	162.5-187.5	2L	2.5	3	0.25	36		
8	187.5-200.0	2L	2.5	2.5	0.25	36		
9	200.0-212.5	2L	2.5	2.5	0.25	36		
10	212.5-225.0	2L	2.5	2	0.25	36		
11	225.0-237.5	2L	2.5	2	0.25	36		
12	237.5-250.0	2L	2.5	2	0.25	36		
13	250.0-260.2	L	3.5	3.5	0.25	36		
14	260.2-270.3	L	3.5	3.5	0.25	36		
15	270.3-278.9	L	3	3	0.25	36		
16	278.9-287.5	L	3	3	0.25	36		

Notes:

[1] Type of Diagonal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Horizontals

Site No.:	88011
Engineer:	Tiffany.Ta
Date:	07/13/2022
Carrier:	Dish Wireless L.L.C.

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape ^[1]	Diameter ^[2] (in)	Web Length ^[3] (in)	Flange Length ^[3] (in)	Thickness (in)	F _y (ksi)	B/B Spacing (in.)
1	0.000-37.50	2L		3.5	2.5	0.25	36	
2	37.50-62.50	2L		3.5	2.5	0.25	36	
3	62.50-87.50	2L		3	2.5	0.25	36	
4	87.50-112.5	2L		3	2.5	0.25	36	
5	112.5-137.5	2L		3	2.5	0.25	36	
6	137.5-162.5	2L		2.5	2.5	0.25	36	
7	162.5-187.5	2L		2.5	2.5	0.25	36	
8	187.5-200.0	2L		2.5	2.5	0.25	36	
9	200.0-212.5	2L		2.5	2.5	0.25	36	
10	212.5-225.0	2L		2.5	2.5	0.25	36	
11	225.0-237.5	2L		2.5	2.5	0.25	36	
12	237.5-250.0	2L		2.5	2.5	0.25	36	
13	250.0-260.2	L		3	2.5	0.25	36	
14	260.2-270.3	2L		3	2.5	0.25	36	
15	270.3-278.9	L		3	2.5	0.25	36	
16	278.9-287.5	C		8	11.5		36	

Notes:

^[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle, **2L** = Double-Angle, **C** = Channel, **W** = W Shape

^[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

^[3] Applies to Single-Angle and Double-Angle Shapes only.

^[4] Applies to Double-Angle Shapes only.

^[5] Applies to Single-Angle Shapes only.

Built-up Diagonals

Site No.:	88011
Engineer:	Tiffany.Ta
Date:	07/13/2022
Carrier:	Dish Wireless L.L.C.

When inputting thickness values, include all decimal places.

Input diags. from left to center & from base section upward.

Tower Built-up Diag. #	Section Elevations (ft)	Type of Shape	Diameter ^[2] (in)	Web Length ^[3] (in)	Flange Length ^[3] (in)	Thickness (in)	F _y (ksi)
1	0.000-37.50	2L		3.5	3.5	0.25	36
2	0.000-37.50	2L		4	4	0.3125	36
3	37.50-62.50	2L		2.5	2	0.25	36
4	37.50-62.50	2L		2.5	2	0.25	36
5	37.50-62.50	2L		3	2	0.25	36
6	62.50-87.50	2L		2.5	2	0.25	36
7	62.50-87.50	2L		2.5	2	0.25	36
8	62.50-87.50	2L		3	3	0.25	36

Notes:

^[1] Type of Diagonal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

^[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

^[3] Applies to Single-Angle and Double-Angle Shapes only.

^[4] Applies to Double-Angle Shapes only.

^[5] Applies to Single-Angle Shapes only.

Built-up Horizontals

Site No.:	88011
Engineer:	Tiffany.Ta
Date:	07/13/2022
Carrier:	Dish Wireless L.L.C.

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape	Diameter ^[2] (in)	Web Length ^[3] (in)	Flange Length ^[3] (in)	Thickness (in)	F _y (ksi)	Is Horiz. Tension Only? (Y/N)
1	0.000-37.50	2L		2.5	2.5	0.25	36	
2	37.50-62.50	2L		2.5	3	0.25	36	
3	62.50-87.50	2L		2.5	3	0.25	36	Y

Notes:

^[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

^[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

^[3] Applies to Single-Angle and Double-Angle Shapes only.

^[4] Applies to Double-Angle Shapes only.

^[5] Applies to Single-Angle Shapes only.

Site No:	88011
Engineer:	Tiffany Ta
Date:	07/13/22
Carrier:	Dish Wireless L.L.C.

Ke	0.962111
α	7
z_0	$K_{r, \max}$
K_r	2.01
K_r	0.7
K_r	1200
K_r	$K_{r, \min}$
K_r	0.9

Site No:	88011
Engineer:	Tiffany Ta
Date:	07/13/22
Carrier:	Dish Wireless L.L.C.

Description	From (ft)	To (ft)	Quantity	Shape	Width or Diameter** (in)	Perimeter (in/ft)	Unit (ft)	In Face Zone?	Include in Wind Load (Yes/No)	Coax (p. 2 of 2)													
										Tia Code	Exposure Category	Topo Cat:	Ke	α	z_0	$K_{r, \max}$	$K_{r, \min}$	K_r	Perimeter	Unit (ft/ft)	In Face Zone (Yes/No)	Include in Wind Load (Yes/No)	
1 Ladder	0	17	1	Flat	1.5	6.0	ft	No	Yes	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes	
2 COAX CASE	8.3333	33.3333	2	Round	12	37.7	in	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
3 COAX CASE	8.3333	33.3333	2	Round	12	37.7	in	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
4 WG1	5	266	1	Flat	2	8.0	6	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
5 WG2	5	246	1	Flat	2	8.0	6	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
6 WG3	5	277	1	Flat	2	8.0	6	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
7 SIGFOX	5	287.5	1	Round	1.98	6.2	0.82	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
8 ATT1	5	237.5	1	Flat	1.5	16.3	4	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
9 TM01	5	277	1	Flat	3.06	16.3	4	No	No	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
10 TM02	5	277	1	Flat	3.06	16.3	4	No	No	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
11 VEW1	5	266	1	Round	1.54	4.8	1	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
12 VEW2	5	266	6	Round	1.98	6.2	0.82	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
13 ATT1	5	246	2	Round	0.39	1.2	0.17	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
14 ATT2	5	246	4	Round	0.82	2.6	0.62	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
15 ATT3	5	246	2	Round	2.38	7.5	3.65	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
16 ATT4	5	246	5	Round	2.38	7.5	3.65	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
17 ATT5	5	246	6	Round	2.38	7.5	3.65	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
18 VEW3	5	266	5	Round	1.98	6.2	0.82	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
19 DISH	5	230	1	Round	1.500	5.5	2.72	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
20 US DOI	5	210	1	Round	1.500	3.4	0.33	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes

*Note: Actual block width multiplied by 0.75 (1.5 block drag factor actual divided by 2.0)

Description	From (ft)	To (ft)	Quantity	Face #	Face Width (in)	Coax Shape (Block / Flat / rad)	% Exposed	Spacing (in)	Shape (Round/Rat)	Block Width (ft/cool)	Block Depth (ft/cool)	Perimeter	Unit (ft/ft)	In Face Zone (Yes/No)	Include in Wind Load (Yes/No)								
										Tia Code	Exposure Category	Topo Cat:	Ke	α	z_0	$K_{r, \max}$	$K_{r, \min}$	K_r					
1 Ladder	0	17	1	Flat	1.5	6.0	ft	No	Yes	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes	
2 COAX CASE	8.3333	33.3333	2	Round	12	37.7	in	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
3 COAX CASE	8.3333	33.3333	2	Round	12	37.7	in	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
4 WG1	5	266	1	Flat	2	8.0	6	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
5 WG2	5	246	1	Flat	2	8.0	6	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
6 WG3	5	277	1	Flat	2	8.0	6	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
7 SIGFOX	5	287.5	1	Round	1.98	6.2	0.82	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
8 ATT1	5	237.5	1	Flat	1.5	16.3	4	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
9 TM01	5	277	1	Flat	3.06	16.3	4	No	No	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
10 TM02	5	277	1	Flat	3.06	16.3	4	No	No	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
11 VEW1	5	266	1	Round	1.54	4.8	1	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
12 VEW2	5	266	6	Round	1.98	6.2	0.82	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
13 ATT1	5	246	2	Round	0.39	1.2	0.17	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
14 ATT2	5	246	4	Round	0.82	2.6	0.62	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
15 ATT3	5	246	2	Round	2.38	7.5	3.65	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
16 ATT4	5	246	5	Round	2.38	7.5	3.65	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
17 ATT5	5	246	6	Round	2.38	7.5	3.65	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
18 VEW3	5	266	5	Round	1.98	6.2	0.82	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
19 DISH	5	230	1	Round	1.500	5.5	2.72	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes
20 US DOI	5	210	1	Round	1.500	3.4	0.33	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	Yes	Yes

Fac

Task: Determine Point Loads

Tower Height:	287.5	ft
Gh:	0.85	
Wind Speed:	122	mph,Vult
Ice Wind Speed:	50	
Ice Density:	56	
Tower Type:	5	

Ice Thick:	1	in
Topographic Category (1-4):	1	
Exposure Category (B-D):	B	
Risk Category (1-4):	2	
Height of Crest (H) if Topo Cat. >1:	0	ft
Load Factor; Wind:	1	
Load Factor; Dead:	1.2	

Rooftop Speed Up Factor (Ks)	1
Ground Elevation (AMSL)	1067 ft
Topographic Factor Procedure	Method 1

Site No.:
Engineer:
Date:
Carrier:

No.	Carrier	Elevation (ft)	Quantity	# of Azimuths	Proposed?	Manufacturer	Model	Height (in)	Width (in)	Depth (in)	Weight (lbs/ea)	Flat/Round (F/R)	Reduction	C _A C _C (ft ²)	Weight (k)	Ka	
1		287.5	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000	80.00	9.00	1	
2		287.5	1	4			Platform w/ HR	0.0001	0.0001	0.0001	0.0001	F	0.000	1.00	80.00	9.00	1
3		270	1	1			Catwalk	0.0001	0.0001	0.0001	0.0001	F	0.000	1.00	70.00	8.00	1
4		237.5	1	1			Rest Platform	0.0001	0.0001	0.0001	0.0001	F	0.000	1.00	15.00	0.50	1
5		200	1	1			Access Platform	0.0001	0.0001	0.0001	0.0001	F	0.000	1.00	45.00	5.00	1
6		187.5	1	1			Rest Platform	0.0001	0.0001	0.0001	0.0001	F	0.000	1.00	15.00	0.50	1
7		187.5	1	1			Rest Platform	0.0001	0.0001	0.0001	0.0001	F	0.000	1.00	15.00	0.50	1
8		187.5	1	1			Access Platform	0.0001	0.0001	0.0001	0.0001	F	0.000	1.00	45.00	5.00	1
9		187.5	1	1			Rest Platform	0.0001	0.0001	0.0001	0.0001	F	0.000	1.00	15.00	0.50	1
10	Sprint Nextel	287.5	6	3		Alcatel-Lucent	RRH2x50-08	15.7	13	9.8	52.9	F	0.500	0.500	2.32	0.06	0.8
11	Sprint Nextel	287.5	3	3		Alcatel-Lucent	1900 MHz 4X45 RRH	26.1	18.6	6.7	70	F	0.500	0.500	6.37	0.06	0.8
12	Sprint Nextel	287.5	3	3		RFS	TD-RRH8x20-25 w/ Solar Shield	72	19.6	7.8	77.4	F	0.640	0.750	14.40	0.30	0.75
13	Sprint Nextel	287.5	3	3		Commscope	Round Sector Frame	10.5	7.1	7	23.6	F	0.500	0.500	0.50	0.06	0.8
14	T-Mobile	277	4	4		Ericsson	Radio 4478 B71	19.7	17	7.2	50.7	F	0.500	0.500	1.65	0.06	0.8
15	T-Mobile	277	4	4		Ericsson	RRUS 11 B12	15	13.2	5.4	46	F	0.500	0.500	2.79	0.05	0.8
16	T-Mobile	277	4	4		Ericsson	RRU32 B66A/B2a	56.6	12.9	8.7	132.2	F	0.780	0.780	0.55	0.07	0.8
17	AT&T Mobility	246	6	3		Powervave Algon	Flat Sector Frame	4	6	3	5.5	F	0.500	0.500	17.90	0.40	0.75
18	AT&T Mobility	246	2	2		Raycap	LGCP12001	14.9	13.2	10.9	72	F	0.570	0.570	1.26	0.02	0.8
19	AT&T Mobility	246	3	3		Ericsson	DCS-48-60-18-8F	16.5	13.4	7.7	59.9	F	0.500	0.500	0.55	0.02	0.8
20	AT&T Mobility	246	3	3		Powervave Algon	RRUS 4478 B14	17.9	13.2	9.4	71	F	0.500	0.500	8.13	0.05	0.8
21	US DOJ	210	1	1		Ericsson	P65-16-XLU-RR	-	0.0001	0.0001	0.0001	F	0.670	0.670	17.90	0.40	0.75
22	US DOJ	210	1	1		Andrew	RRUS 4449 B5, B12	-	0.0001	0.0001	0.0001	F	0.000	0.000	5.63	0.04	1
23	Dish Wireless L.L.C.	230	1	1	Proposed	Raycap	Flat Side Arm	-	0.0001	0.0001	0.0001	F	0.000	0.000	6.30	0.15	1
24	Dish Wireless L.L.C.	230	3	3	Proposed	Fujitsu	DB264	-	0.0001	0.0001	0.0001	F	0.000	0.000	1.96	0.08	0.8
25	Dish Wireless L.L.C.	230	3	3	Proposed	Fujitsu	TA08025-6B605	15.7	15	7.9	63.9	F	0.500	0.500	12.27	0.07	0.8
26	SIGFOX S.A.	290	1	1		Commscope	FFV-65B-R2	0.0001	0.0001	0.0001	0.0001	F	0.000	0.000	0.00	0.00	1
27	SIGFOX S.A.	290	1	1		Procom	CXL 900-3LW	5.3	3.2	1.9	1.5	F	1.000	1.000	0.13	0.00	1
28	Verizon Wireless	266	3	3		Samsung	5" x 3" x 2" Cavity Filter	5	4	2	2	F	1.000	1.000	0.00	0.00	1
29	Verizon Wireless	266	1	1		Samsung	B2/866A RRH-BR049	19.2	15.7	10.3	26.9	F	0.670	0.670	6.30	0.15	1
30	Verizon Wireless	266	3	3		Amphenol Antel	B5/B13 RRH-BR04C	19.2	15.7	10.3	20	F	0.750	0.750	0.00	0.00	0.8
31	Verizon Wireless	266	2	2		Raycap	LPA-80063-4CF-EDIN-X	19.2	15.7	10.3	26.9	F	0.670	0.670	17.90	0.40	0.75
32	Verizon Wireless	266	1	1		Commscope	Flat Sector Frames	19.2	15.7	10.3	20	F	0.670	0.670	1.60	0.00	1
33	AT&T Mobility	246	3	3		CCI	RRF-3315-PF-48	72.7	11.9	7.1	50.7	F	0.690	0.690	0.00	0.00	1
34	Dish Wireless L.L.C.	230	1	1		Ericsson	Side Arm	96	20.7	7.7	95.7	F	0.630	0.630	18.09	0.08	0.8
35	Dish Wireless L.L.C.	230	3	3	Proposed	Ericsson	Air6449 B41	33.1	20.6	8.6	104	F	0.630	0.630	20.24	0.13	0.8
36	T-Mobile	277	4	4		RFS	APXVAARR24_43-U-NA20	-	-	-	-	-	-	-	-	-	1
37																	1
38																	1
39																	1
40																	1
41																	1
42																	1
43																	1
44																	1
45																	1
46																	1
47																	1
48																	1
49																	1
50																	1

No.	Elevation (ft)	C _A C _C (ft ²)	C _A C _C (Ice) (ft ²)	Force (lb)	Force (Ice) (lb)	Weight (lb)	Weight (Ice) (lb)	60 Azimuths		Force mean	F (Ice) mean	Height Flag	Sum of Forces (No.)	
								Mult.	60 Az.				60 Az.	180 Az.
1	287.5	0.00	0.00	0.000	0.000	0	0	1.00	1.00	1557.30	353.12	1.5034783	2831.461175	
2	287.5	80.00	108.00	2831.461	642.044	10800	14040	1.00	1.00	43.46	9.83	#DIV/0!	223.3031856	
3	270	70.00	94.50	2433.470	551.798	9600	12480	1.00	1.00	94.50	22.08	#DIV/0!	2433.470402	
4	237.5	0.00	0.00	0.000	0.000	0	0	1.00	1.00	0.00	0.00	#DIV/0!	502.6954551	
5	200	15.00	20.25	502.695	113.988	600	780	1.00	1.00	276.48	62.69	1.5042105	1435.827684	
6	187.5	0.00	0.00	0.000	0.000	0	0	1.00	1.00	787.71	179.07	1.5050000	1992.969629	
7	187.5	15.00	20.25	113.769	257.086	6000	7800	1.00	1.00	623.57	141.40	1.5072737	1133.769121	
8	187.5	45.00	60.75	296.666	67.270	600	780	1.00	1.00	163.17	37.00	1.5142956	296.666667	
9	187.5	15.00	20.25	#VALUE!	#VALUE!	0	0	1.00	1.00	#VALUE!	#VALUE!	1.5266677	296.6655693	
10	287.5	4.08	6.20	144.475	36.828	381	499	1.00	1.00	79.46	20.26	#DIV/0!	#DIV/0!	
11	287.5	2.78	3.76	171.820	40.148	216	281	1.00	1.00	43.36	9.83	#DIV/0!	223.3031856	
12	287.5	4.85	6.75	171.820	40.148	252	386	1.00	1.00	94.50	22.08	#DIV/0!	2433.470402	
13	277	10.09	13.62	285.697	64.783	202	263	1.00	1.00	157.13	35.63	#DIV/0!	680.8200261	
14	277	18.85	23.87	667.107	141.010	277	376	1.00	1.00	366.11	78.05	#DIV/0!	1395.430124	
15	277	23.40	32.81	649.243	146.266	1000	1404	1.00	1.00	354.77	80.95	1.5034783	1992.969629	
16	277	1.14	1.77	40.038	10.408	113	154	1.00	1.00	22.02	5.72	1.5034793	1133.989594	
17	277	2.64	3.56	156.372	37.724	243	351	1.00	1.00	40.68	9.22	1.5		

19	246	2.21	3.32	74.846	18.899	216	300	1.00	41.17	10.39	1.5040660
20	246	4.36	5.89	118.054	26.769	64	83	1.00	64.93	14.72	1.5040650
21	246	2.36	3.53	79.984	20.065	256	353	1.00	43.99	11.04	1.5040660
22	246	26.98	36.43	685.092	155.347	1440	1872	1.00	376.80	85.44	1.5040650
23	210	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5040660
24	210	5.63	7.60	182.160	41.305	48	62	1.00	100.19	22.72	1.5047619
25	210	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5047629
26	210	6.30	8.51	203.838	46.221	180	234	1.00	112.11	25.42	1.5047619
27	230	1.49	2.24	49.589	12.494	26	73	1.00	27.27	6.87	1.5047629
28	230	2.35	3.18	62.546	14.183	270	351	1.00	34.40	7.80	1.5043478
29	230	2.36	3.51	78.203	19.580	230	318	1.00	43.01	10.77	1.5043488
30	230	18.85	25.45	500.718	113.340	255	331	1.00	275.39	62.45	1.5047478
31	290	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5034483
32	290	0.13	0.18	4.113	1.046	2	2	1.00	2.54	0.58	1.5034483
33	290	0.14	0.37	5.015	2.199	2	6	1.00	2.76	1.21	1.5034483
34	290	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5034483
35	290	0.17	0.41	5.913	2.433	2	7	1.00	3.25	1.34	1.5034483
36	290	6.30	8.51	223.530	50.686	180	234	1.00	122.94	27.88	1.5034483
37	266	2.25	3.37	77.886	19.604	304	408	1.00	42.84	10.78	1.5034493
38	266	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5037594
39	266	2.25	3.37	77.886	19.604	253	345	1.00	42.84	10.78	1.5037604
40	266	0.00	0.00	0.000	0.000	0	0	1.00	420.94	95.10	1.5037604
41	266	22.11	29.74	765.340	172.910	144	325	1.00	385.31	87.37	1.5037594
42	266	26.98	36.43	700.564	158.855	1440	1872	1.00	51.27	12.51	1.5037604
43	266	2.69	3.91	93.216	22.739	65	135	1.00	0.00	0.00	1.5037594
44	266	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5037594
45	266	27.07	33.43	937.034	194.945	365	603	1.00	513.67	106.92	1.5037594
46	266	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5037594
47	246	27.02	32.70	914.703	185.937	345	748	1.00	503.09	102.37	1.5037604
48	246	27.35	36.92	740.685	167.953	275	358	1.00	407.38	92.37	1.5040650
49	230	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5040660
50	230	30.21	40.78	752.298	170.586	1440	1872	1.00	413.76	93.82	1.5043478
51	277	11.46	15.55	401.152	91.453	499	717	1.00	220.63	50.30	1.5043488
52	277	40.80	55.09	1143.129	259.208	614	798	1.00	628.72	142.56	1.5036101
53					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036111
54					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036111
55					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036121
56					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036121
57					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036131
58					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036141
59					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036141
60					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036151
61					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036161
62					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036161
63					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036171
64					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036171
65					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036181
66					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036181
67					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036191
68					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036201
69					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036201
70					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036211
71					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036211
72					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036221
73					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036231
74					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036241
75					#VALUE!			1.00	#VALUE!	#VALUE!	1.5036251

Foundation

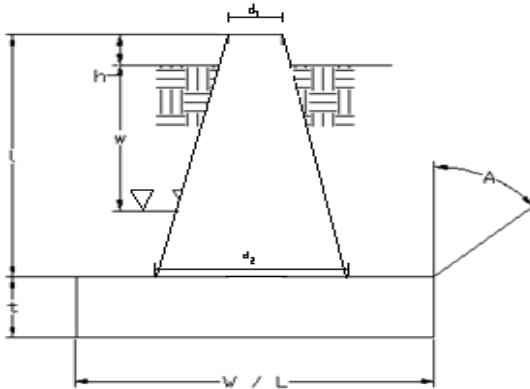
Design Loads (Factored)

Compression/Leg:	429.17	k
Uplift/Leg:	306.16	k
Shear/Leg:	58.57	k

Site No.:	88011
Engineer:	Tiffany.Ta
Date:	07/13/22
Carrier:	Dish Wireless L.L.C.

Face Width @ Top of Pier (d_1):	3.50	ft
Face Width @ Bottom of Pier (d_2):	7.50	ft
Total Length of Pier (l):	8.50	ft
Height of Pedestal Above Ground (h):	0.50	ft
Width of Pad (W):	14.75	ft
Length of Pad (L):	14.75	ft
Thickness of Pad (t):	3.25	ft
Water Table Depth (w):	99.00	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil (Above Water Table):	120.0	pcf
Unit Weight of Soil (Below Water Table):	57.6	pcf
Friction Angle of Uplift (A):	30	°
Ultimate Compressive Bearing Pressure:	30000	psf
Ultimate Skin Friction:	1007	psf

Volume Pier (Total):	268.46	ft ³
Volume Pad (Total):	707.08	ft ³
Volume Soil (Total):	2747.35	ft ³
Volume Pier (Buoyant):	0.00	ft ³
Volume Pad (Buoyant):	0.00	ft ³
Volume Soil (Buoyant):	0.00	ft ³
Weight Pier:	40.27	k
Weight Pad:	106.06	k
Weight Soil:	329.68	k
Uplift Skin Friction:	144.82	k



Uplift Check

ϕs Uplift Resistance (k)	Ratio	Result
465.62	0.66	OK

Axial Check

ϕs Axial Resistance (k)	Ratio	Result
4895.16	0.09	OK

Anchor Bolt Check

Bolt Diameter (in)	2.25
# of Bolts	6
Steel Grade	A36
Steel Fy	36
Steel Fu	58
Detail Type	C

Usage Ratio	Result
0.46	OK



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Woburn, MA

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Track your package

Data provided by USPS



Tracking number 9505510391962260655351

Delivered

September 19, 12:13PM
Danielson, CT

View details on USPS

Call 1-800-275-8777

Track another package

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USPS Tracking® - The Basics

USPS Tracking® service provides end-to-end item tracking. This article provides in-depth information on how to use the service, what information the service ...



September 16, 2022

Kristin Dubowski
Project Manager, Site Development
American Tower Corporation
10 Presidential Way
Woburn, MA 01801

Re: Tower Share Application – Dish Site 14117988
Dish Wireless Telecommunications Facility @ 1375 North Road, Killingly, CT 06241

Dear Ms. Dubowski,

Dish Wireless ("Dish") is proposing a wireless telecommunications facility on an existing lattice tower at 1375 North Road, Killingly, CT 06241 (Latitude: 41.87155083, Longitude: -71.82156976) and within the existing fenced compound. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by American Tower Corporation. The Director of Planning and Development for the Town of Killingly has no record of the original approval for the tower (correspondence copy enclosed).

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and to install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at two hundred thirty (230) feet as more particularly detailed and described on the enclosed Construction Drawings.

This letter is intended to serve as the required notice to both the property owner and the tower owner. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73, the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RCSA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Jack Andrews".
Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046

Enclosures

Jack Andrews, Zoning Manager • 10130 Donleigh Drive, Columbia, MD 21046 • (443) 677-0144
Centerline Communications • 750 W Center Street, Suite 301, W Bridgewater, MA 02379



September 16, 2022

Ann-Marie L. Aubrey, Director of Planning & Development.
Killingly Town Hall
172 Main Street / 2nd floor
Killingly, CT 06239

Re: Tower Share Application – Dish Site 14117988
Dish Wireless Telecommunications Facility @ 1375 North Road, Killingly, CT 06241

Dear Director Aubrey:

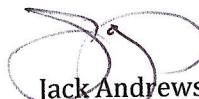
Dish Wireless ("Dish") is proposing a wireless telecommunications facility on an existing lattice tower at 1375 North Road, Killingly, CT 06241 (Latitude: 41.87155083, Longitude: -71.82156976) and within the existing fenced compound. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by American Tower Corporation. The Director of Planning and Development for the Town of Killingly has no record of the original approval for the tower (correspondence copy enclosed).

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and to install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at two hundred thirty (230) feet as more particularly detailed and described on the enclosed Construction Drawings.

This letter is intended to serve as the required notice to the municipal planning agency. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RCSA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,



Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
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September 16, 2022

Town Manager Mary Calorio
Killingly Town Hall
172 Main Street / 2nd floor
Killingly, CT 06239

Re: Tower Share Application – Dish Site 14117988
Dish Wireless Telecommunications Facility @ 1375 North Road, Killingly, CT 06241

Dear Town Manager Calorio:

Dish Wireless ("Dish") is proposing a wireless telecommunications facility on an existing lattice tower at 1375 North Road, Killingly, CT 06241 (Latitude: 41.87155083, Longitude: -71.82156976) and within the existing fenced compound. The monopole tower is owned and operated by American Tower Corporation. The subject property is owned by American Tower Corporation. The Director of Planning and Development for the Town of Killingly has no record of the original approval for the tower (correspondence copy enclosed).

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and to install three (3) antennas, a single antenna mount, six (6) RRUs, and cables on the existing tower at two hundred thirty (230) feet as more particularly detailed and described on the enclosed Construction Drawings.

This letter is intended to serve as the required notice to the Chief Executive of the Town of Killingly. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,


Jack Andrews
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10130 Donleigh Drive
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