PROJECT NARRATIVE

April 8, 2022

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

Re: Request of DISH Wireless LLC for an Order to Approve the Shared Use of an Existing Tower
100 Pocono Road, Brookfield, CT 06804
Latitude: 41'27'46.64" / Longitude: -73'23'53.76"

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes ("C.G.S.") §16-50aa, as amended, DISH Wireless LLC ("DISH") hereby requests an order from the Connecticut Siting Council ("Council") to approve the shared use by DISH of an existing telecommunication tower at 100 Pocono Road in Brookfield (the "Property"). The existing 149-foot monopole tower is owned by American Tower Corporation ("ATC"). The underlying property is owned by The Town of Brookfield. DISH requests that the Council find that the proposed shared use of the ATC tower satisfies the criteria of C.G.S. §16-50aa and issue an order approving the proposed shared use. A copy of this filing is being sent to Tara Carr, First Selectwoman for the Town of Brookfield, Demy Parpana, Jr., Town of Brookfield Building Official and The Town of Brookfield as the property owner.

Background

This facility was originally approved by the Council under Docket NO. 467 on October 13, 2016. A copy of this decision is included in this filing. The existing ATC facility consists of a 149-foot monopole tower located within an existing leased area. Verizon Wireless currently maintains antennas at the 146-foot level. Equipment associated with these antennas are located at various positions within the tower and compound.

DISH is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. DISH and ATC have agreed to the proposed shared use of the 100 Pocono Road tower pursuant to mutually acceptable terms and conditions. Likewise, DISH and ATC have agreed to the proposed installation of equipment cabinets on the ground within the existing compound. ATC has authorized DISH to apply for all necessary permits and approvals that may be required to share the existing tower.
(See attached Letter of Authorization)

DISH proposes to install three (3) antennas, (1) Tower platform mount, (6) Remote radio units at the 130-foot level along with, (1) over voltage protection device (OVP) and (1) Hybrid cable. DISH will install an equipment cabinet on a 5'x7' equipment platform. DISH's Construction Drawings provide project specifications for all proposed site improvement locations.
The construction drawings also include specifications for DISH's proposed antenna and groundwork.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the Council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such a shared use." DISH respectfully submits that the shared use of the tower satisfies these criteria.

A. Technical Feasibility. The existing ATC tower is structurally capable of supporting DISH's proposed improvements. The proposed shared use of this tower is, therefore, technically feasible. A Feasibility Structural Analysis Report ("Structural Report") prepared for this project confirms that this tower can support DISH's proposed loading. A copy of the Structural Report has been included in this application.

B. Legal Feasibility. Under C.G.S. § 16-50aa, the Council has been authorized to issue order approving the shared use of an existing tower such as the ATC tower. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. In addition, § 16-50x(a) directs the Council to "give such consideration to the other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under the statutory authority vested in the Council, an order by the Council approving the requested shared use would permit the Applicant to obtain a building permit for the proposed installations.

C. Environmental Feasibility. The proposed shared use of the ATC tower would have a minimal environmental effect for the following reasons:

1. The proposed installation will have no visual impact on the area of the tower. DISH's equipment cabinet would be installed within the existing facility compound. DISH's shared use of this tower therefore will not cause any significant change or alteration in the physical or environmental characteristics of the existing site.

2. Operation of DISH's antennas at this site would not exceed the RF emissions standard adopted by the Federal Communications Commission ("FCC"). Included in the EME report of this filing are the approximation tables that demonstrate that DISH's proposed facility will operate well within the FCC RF emissions safety standards.

3. Under ordinary operating conditions, the proposed installation would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the proposed installations would not generate any increased traffic to the ATC facility other than periodic maintenance. The proposed shared use of the ATC tower, would, therefore, have a minimal environmental effect, and is environmentally feasible.

D. **Economic Feasibility**. As previously mentioned, DISH has entered into an agreement with ATC for the shared use of the existing facility subject to mutually agreeable terms. The proposed tower sharing is, therefore, economically feasible.

E. **Public Safety Concerns**. As discussed above, the tower is structurally capable of supporting DISH's full array of three (3) antennas, (1) Tower platform mount, (6) Remote radio units, (1) over voltage protection device (OVP) and (1) Hybrid cable and all related equipment. DISH is not aware of any public safety concerns relative to the proposed sharing of the existing ATC tower.

Conclusion

For the reasons discussed above, the proposed shared use of the existing ATC tower at 100 Pocono Road satisfies the criteria stated in C.G.S. §16-50aa and advances the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the prosed shared use.

Sincerely,

David Hoogasian

David Hoogasian
Project Manager

LETTER OF AUTHORIZATION

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION

I, Margaret Robinson, Senior Counsel 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.**, its successors and assigns, and/or its agent, **NETWORK BUILDING + CONSULTING** (collectively, the "Licensee") to act as American Tower's non-exclusive agent for the sole purpose of filing and consummating any land-use or building permit application(s) as may be required by the applicable permitting authorities for Licensee's telecommunications' installation.

We understand 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.

*American Tower includes all affiliates and subsidiaries of American Tower Corporation.

Project Number	Site Address	Customer Site Number	Tower Number	Site Name
13685414	5 High Ridge Park Road, Stamford CT	NJJER01080B	302515	SMFR - North
13685427	1069 Connecticut Avenue, Bridgeport CT	NJJER01130A	302469	Bridgeport CT 2
13688395	25 Meridian Ridge Drive, Newton CT	NJJER01081B	302518	Newtown CT 3
13699598	100 Old Redding Road, Redding CT	NJJER01161A	302522	Redding
13699607	22 Titicus Mtn Road, New Fairfield CT	NJJER01162A	88014	New Fairfield
13700310	2 SUNNY LANE, Westport CT	NJJER01082B	411189	CRANBURYSU CT
13700315	515 Morehouse Road, Easton CT	NJJER01097B	207956	Easton
13700320	100 Pocono Road, Brookfield CT	NJJER01099B	209271	Brookfield 2
13700322	320 Old Stagecoach Road, Ridgefield CT	NJJER01100B	209115	Ridgefield 2
13705673	20 Post Office Lane, Westport CT	NJJER01139B	302511	WSPT - South

13709691	180A Bayberry Lane, Westport CT	NJJER01140B	310968	WSPT-WESTPORT REBUILD CT
13709692	1000 Trumbull Avenue, Bridgeport CT	NJJER01150B	383598	Tartaglia
13710333	168 Catoona Lane, Stamford CT	NJJER01123B	88018	Stamford (Katoona)
13712876	23 Stonybrook Road, Stratford CT	NJJER02048A	283420	STONEYBROOK RD CT
13735391	15 Soundview Avenue, Shelton CT	NJJER02055A	415438	Brownson Country Club CT

Print Name: Margaret Robinson
Senior Counsel, American Tower*

LETTER OF AUTHORIZATION
DISH WIRELESS L.L.C., its successors and assigns, and/or its agent, NETWORK BUILDING + CONSULTING

NOTARY BLOCK
Commonwealth of MASSACHUSETTS
County of Middlesex
This instrument was acknowledged before me by Margaret Robinson, Senior Counsel 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 19th day of November 2021.

NOTARY SEAL

MELISSA ANN METZLER
Notary Public
Commonwealth of Massachusetts
My Commission Expires March 14, 2025

Notary Public
My Commission Expires: March 14, 2025

ORIGINAL FACILITY APPROVAL

DOCKET NO. 467 - Homeland Towers, LLC and Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Brookfield Tax Assessor Map E10, Lot 014, 100 Pocono Road, Brookfield, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		October 13, 2016

Decision and Order

Pursuant to Connecticut General Statutes §16-50p and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Homeland Towers, LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 100 Pocono Road, Brookfield, Connecticut.

Unless otherwise approved by the Council, the facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole at a height of 150 feet above ground level to provide the proposed wireless services, sufficient to accommodate the antennas of Cellco Partnership d/b/a Verizon Wireless, the Town of Brookfield and other entities, both public and private. The height of the tower may be extended after the date of this Decision and Order pursuant to regulations of the Federal Communications Commission.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Brookfield for comment and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
   a) final site plan(s) for development of the facility to include specifications for the tower and tower foundation that employ the governing standard in the State of Connecticut for tower design in accordance with the currently adopted International Building Code, antennas, equipment compound including, but not limited to, fence with anti-climb features, radio equipment, access road, utility line, and emergency backup generator;
   b) construction plans for site clearing, grading, landscaping, water drainage and stormwater control, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended; and
   c) hours of construction.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

7. Any request for extension of the time period referred to in Condition 6 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on the Town of Brookfield.

8. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council within 90 days from the one year period of cessation of service. The Certificate Holder may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period.

9. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

10. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.

11. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

12. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

13. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.

14. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.

15. This Certificate may be surrendered by the Certificate Holder upon written notification and approval by the Council.

We hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed in the Service List, dated June 7, 2016, and notice of issuance published in the Yankee Pennysaver.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

CERTIFICATION

The undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in **DOCKET NO. 467** - Homeland Towers, LLC and Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Brookfield Tax Assessor Map E10, Lot 014, 100 Pocono Road, Brookfield, Connecticut, and voted as follows to approve the proposed facility:

Council Members	**Vote Cast**
Robert Stein, Chairman	Yes
James J. Murphy, Jr., Vice Chairman	Yes
Chairman Arthur House Designee: Larry Levesque	Absent
Commissioner Robert Klee Designee: Robert Hannon	Yes
Philip T. Ashton	Yes
Daniel P. Lynch, Jr.	Yes
Michael Harder	Yes
Dr. Michael W. Klemens	Yes

Dated at New Britain, Connecticut, October 13, 2016.

ENGINEERING DRAWINGS

DISH Wireless L.L.C. SITE ID:

NJJER01099B

DISH Wireless L.L.C. SITE ADDRESS:

100 POCONO RD
BROOKFIELD, CT 06804

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 1.61000 (B)(7).

SCOPE OF WORK

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

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

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)

SITE INFORMATION

PROPERTY OWNER:	BROOKFIELD TOWN OF
ADDRESS:	P O BOX 5106 BROOKFIELD, CT 06804
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	209271
TOWER APP NUMBER:	13700320
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41° 27' 46.64" N 41.46295556 N
LONGITUDE (NAD 83):	73° 23' 53.76"W 73.39826667 W
ZONING JURISDICTION:	FAIRFIELD COUNTY
ZONING DISTRICT:	IRC
PARCEL NUMBER:	E10014
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	CROWN

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	AMERICAN TOWER CORPORATION 10 PRESIDENTIAL WAY WOBURN, MA 01801 (781) 926-4500
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	WILLIAM SNIDER william.snider@dish.com
CONST. MANAGER:	VICTOR CORREA victor.correa@dish.com
RF ENGINEER:	MURUGABIRAN JAYAPAL murugabiran.jayapal@dish.com

CONNECTICUT CODE OF COMPLIANCE

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

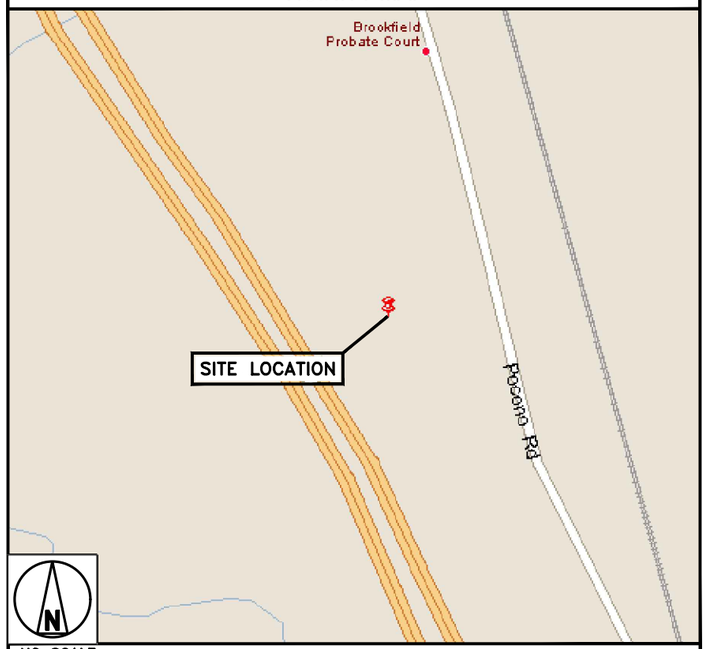
CODE TYPE	CODE
BUILDING	2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM 3 ADP BLVD:
DEPART 3 ADP BLVD ON BECKER FARM RD. TURN RIGHT ONTO CR-527 [LIVINGSTON AVE]. TAKE RAMP (RIGHT) ONTO I-280. *TOLL ROAD* AT EXIT 17B, STAY ON I-280. *TOLL ROAD* TAKE RAMP ONTO I-95 [NEW JERSEY TPKE]. STAY ON I-95 [NEW JERSEY TPKE]. *TOLL ROAD* AT EXIT 73, STAY ON I-95 [NEW JERSEY TPKE]. ENTERING NEW YORK. STAY ON I-95 [US-1]. AT EXIT 3, KEEP STRAIGHT ONTO RAMP. TAKE RAMP (RIGHT) ONTO I-87 [MAJOR DEEGAN EXPY]. AT EXIT 4, TAKE RAMP (RIGHT) ONTO CENTRAL PARK AVE. KEEP RIGHT ONTO RAMP. TAKE RAMP (LEFT) ONTO CROSS COUNTY PKWY. MERGE ONTO HUTCHINSON RIVER PKWY N. KEEP LEFT ONTO I-684. ENTERING CONNECTICUT. ENTERING NEW YORK. AT EXIT 9E, TAKE RAMP (RIGHT) ONTO I-84. ENTERING CONNECTICUT. KEEP LEFT ONTO US-202 [US-7]. ROAD NAME CHANGES TO US-7. AT EXIT 11, KEEP LEFT ONTO RAMP. TURN LEFT ONTO WHITE TURKEY RD. TURN RIGHT ONTO US-202 [FEDERAL RD]. TURN RIGHT ONTO CT-133 [JUNCTION RD]. TURN LEFT ONTO POCONO RD. TURN LEFT ONTO LOCAL ROAD(S) AND ARRIVE AT BROOKFIELD.

VICINITY MAP



SHEET INDEX

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

811

GENERAL NOTES

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

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

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

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

AMERICAN TOWER®
10 PRESIDENTIAL WAY
WOBURN, MA 01801

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
9/28/2021

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
PMK	SR	GLS

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	9/3/21	ISSUED FOR REVIEW
0	9/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
155784.001.01

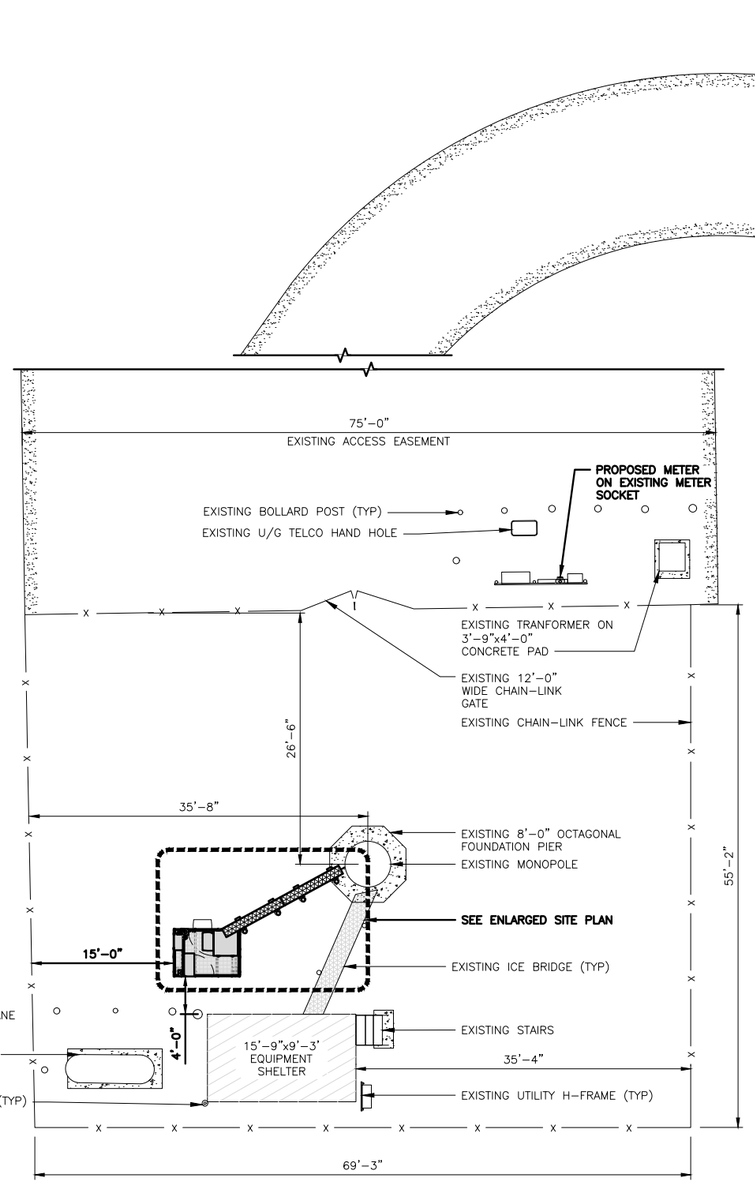
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



1 A-2

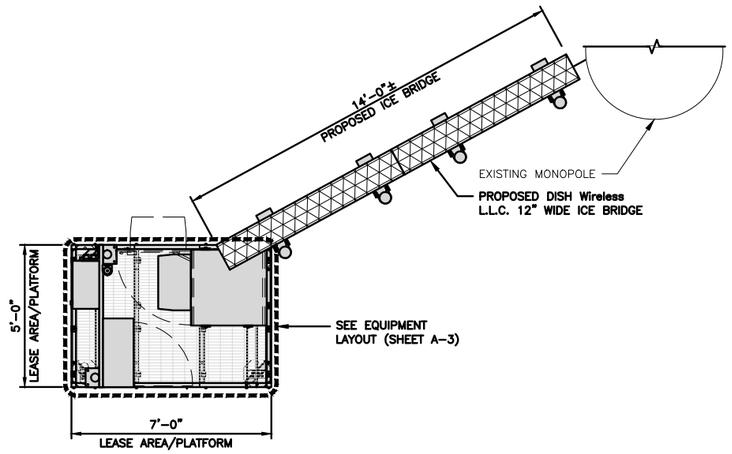
OVERALL SITE PLAN

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

1

NOTES

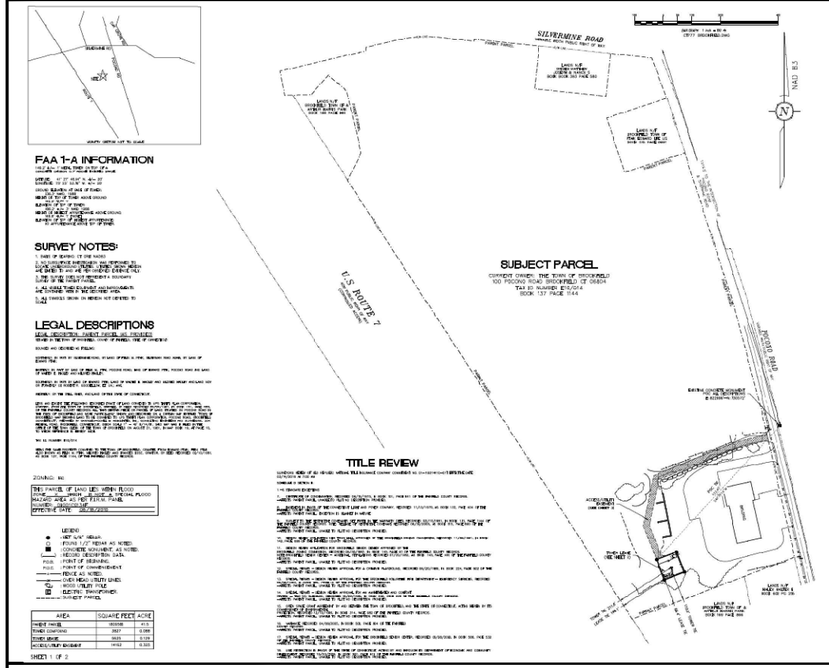
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

2



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

UTILITY NOTE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER®
10 PRESIDENTIAL WAY
WOBURN, MA 01801

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
PMK	SR	GLS

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	9/3/21	ISSUED FOR REVIEW
0	9/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

155784.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

SHEET TITLE

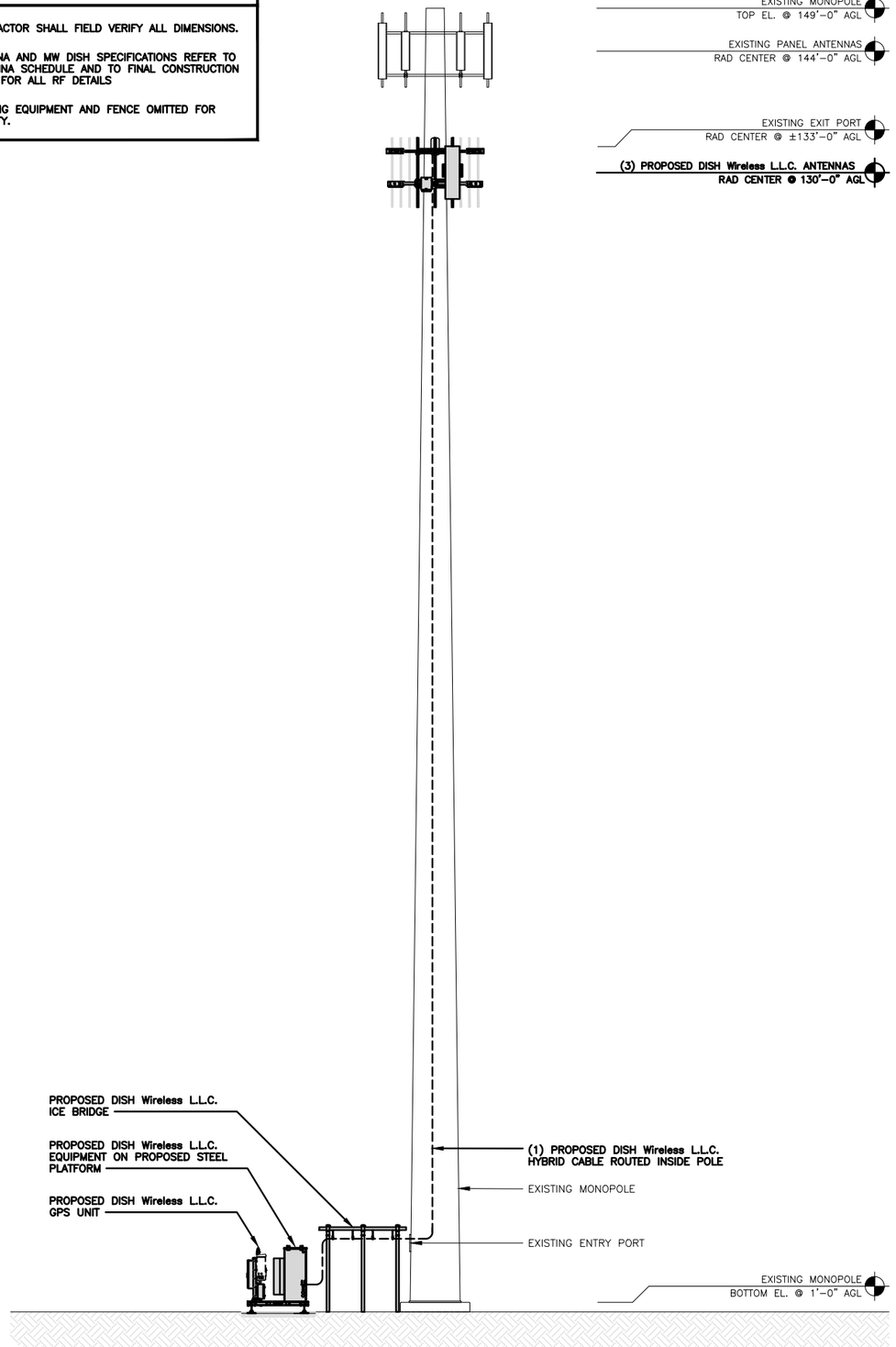
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

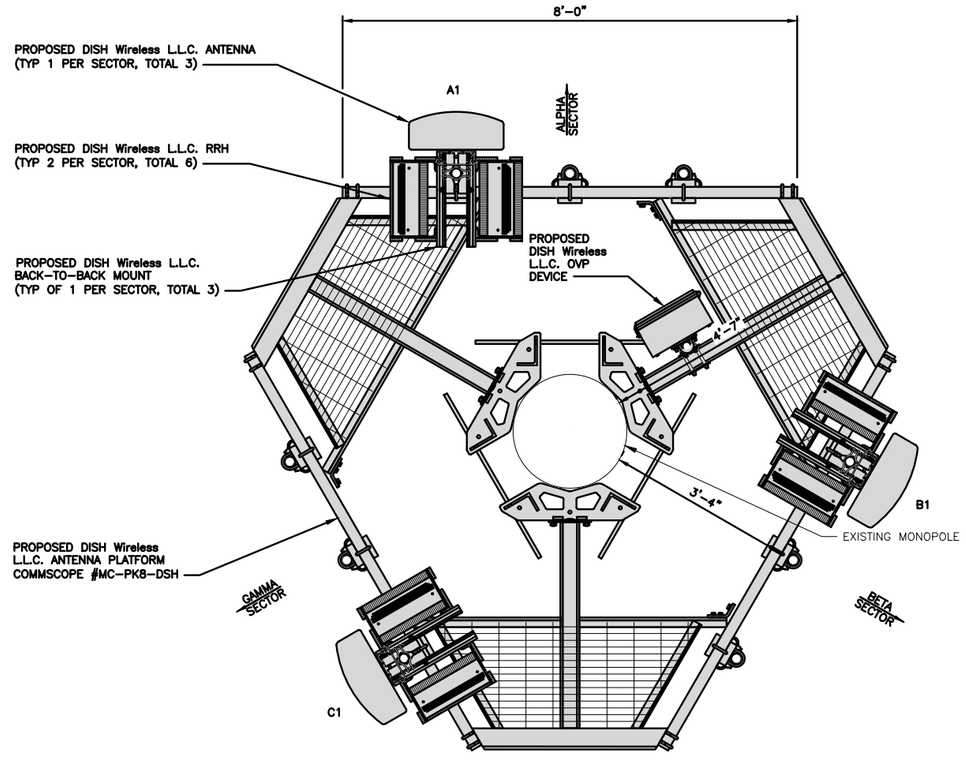
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED SOUTHEAST ELEVATION

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

1



*AZIMUTHS ARE TENTATIVE, NEEDS TO CONFIRM BEFORE CONSTRUCTION STARTS

ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	70°	130'-0"	(1) HIGH-CAPACITY HYBRID CABLE (170' LONG) CU|12PSM9P6-167
BETA	B1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	190°	130'-0"	
GAMMA	C1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	310°	130'-0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU – TA08025-B604	5G
	A1	FUJITSU – TA08025-B605	5G
BETA	B1	FUJITSU – TA08025-B604	5G
	B1	FUJITSU – TA08025-B605	5G
GAMMA	C1	FUJITSU – TA08025-B604	5G
	C1	FUJITSU – TA08025-B605	5G

NOTES

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

OVP		
EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	SIZE (HxWxD)
PROPOSED	RAYCAP-RDIDC-9181-PF-48	18.98"x14.39"x8.15"

ANTENNA SCHEDULE

NO SCALE

3

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9/28/2021

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PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
PMK	SR	GLS

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER

155784.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

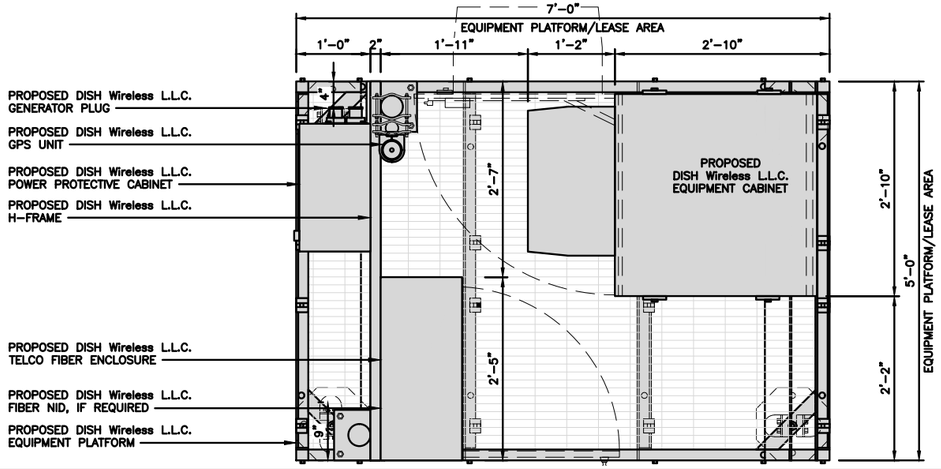
NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



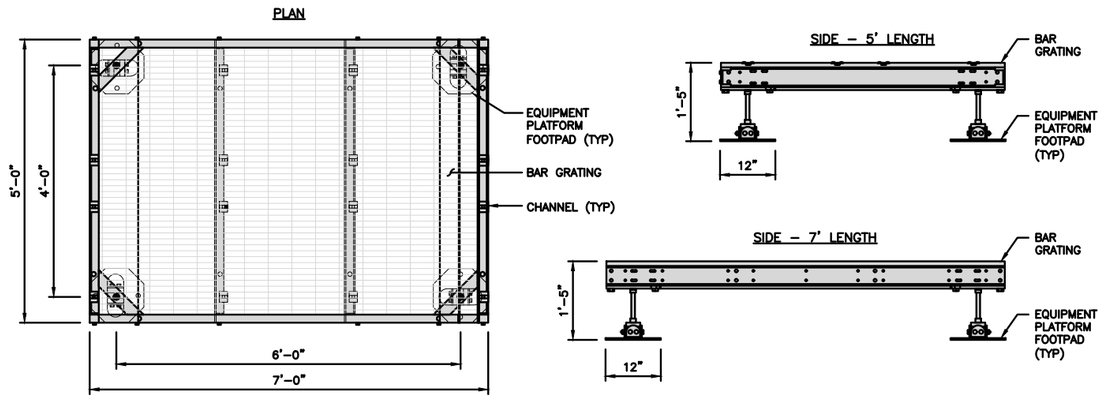
PLATFORM EQUIPMENT PLAN

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

1

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

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



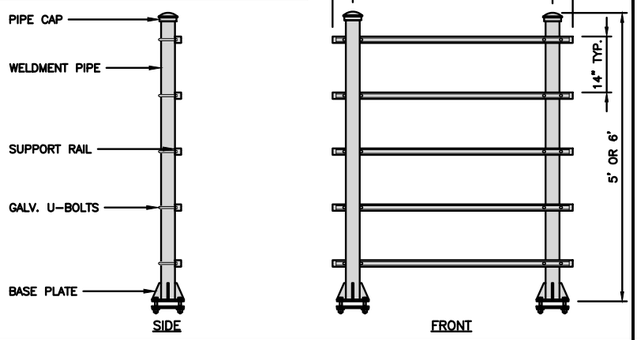
PLATFORM DETAIL

NO SCALE

2

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

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



H-FRAME DETAIL

NO SCALE

3

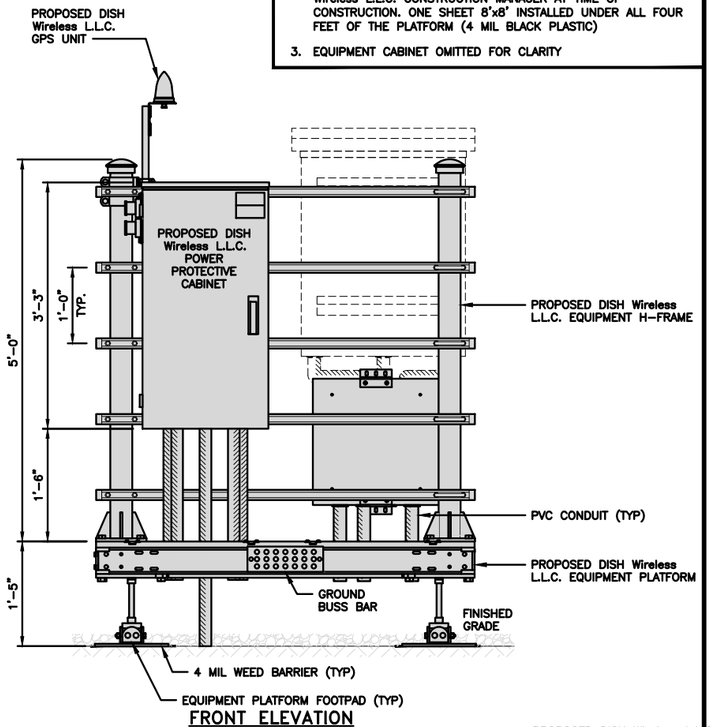
NOT USED

NO SCALE

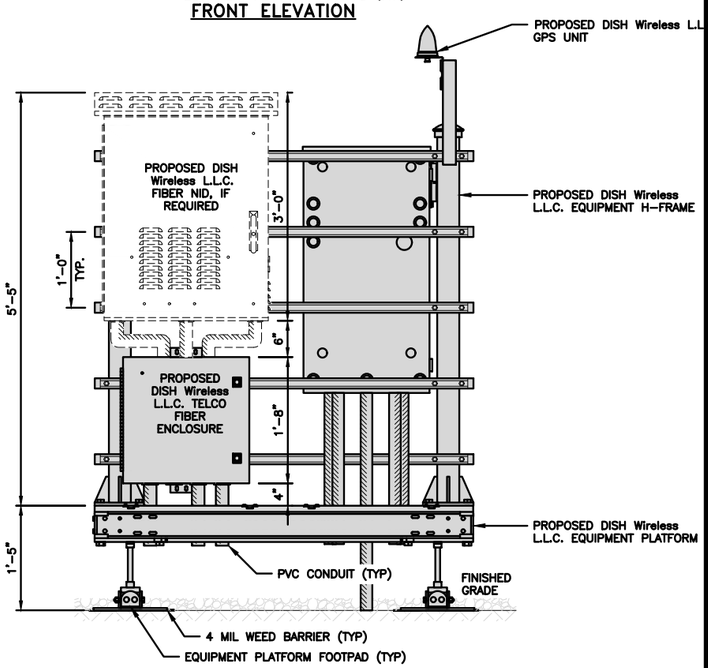
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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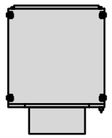
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

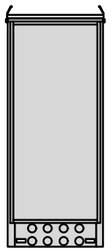
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

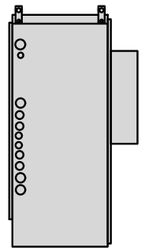
ENERSYS HVAC 2000005995	
DIMENSIONS (HxWxD)	73"x30"x32"
POWER SYSTEM	-48V ALPHA/600A
HVAC	600W
TOTAL WEIGHT (EMPTY)	371 lbs



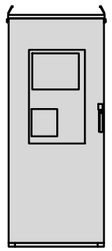
PLAN



BACK



SIDE

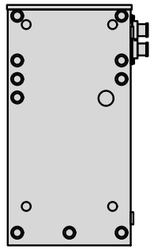


FRONT

CABINET DETAIL | NO SCALE | 1

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

TOP



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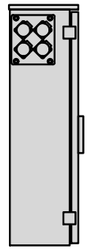
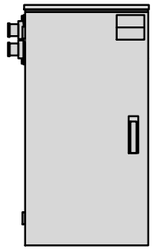
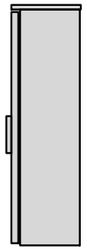


SIDE



FRONT



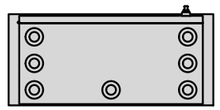
SIDE

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

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	36.1"x29"x12.9"
WEIGHT	85 lbs



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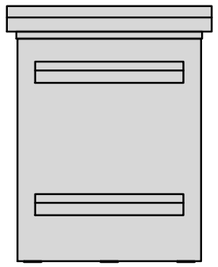

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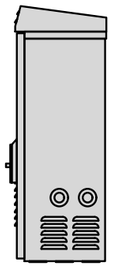
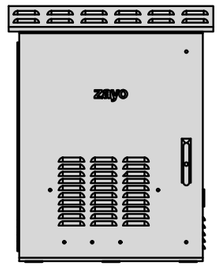


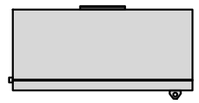
SIDE



FRONT

FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

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



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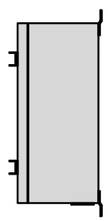
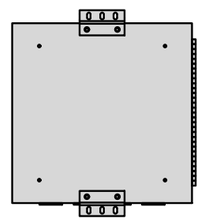


SIDE



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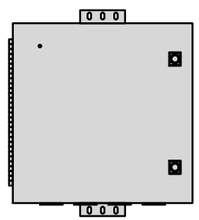
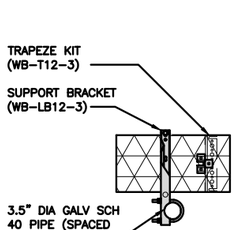


FRONT

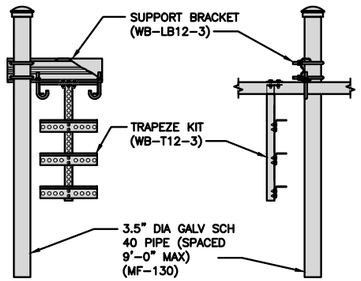
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

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



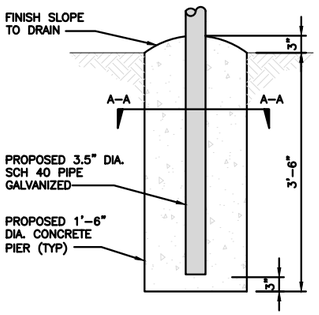
PLAN



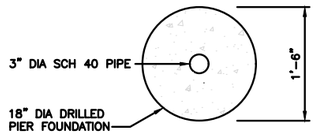
FRONT

SIDE

ICE BRIDGE DETAIL | NO SCALE | 7

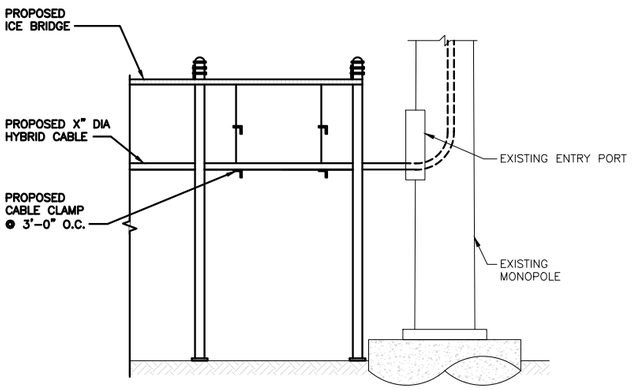


CONCRETE PIER



A-A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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PROJECT INFORMATION

NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

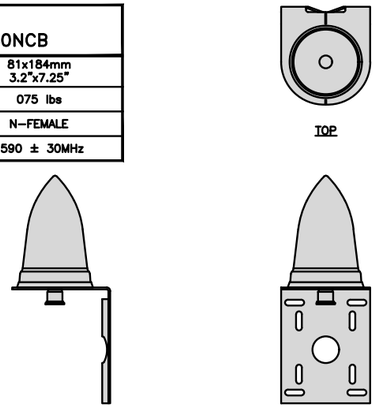
SHEET TITLE

EQUIPMENT DETAILS

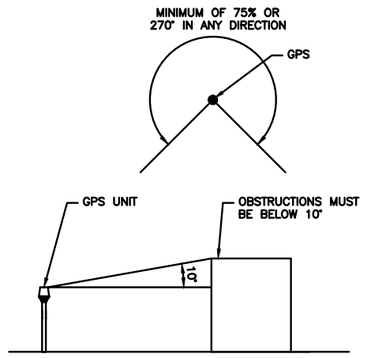
SHEET NUMBER

A-4

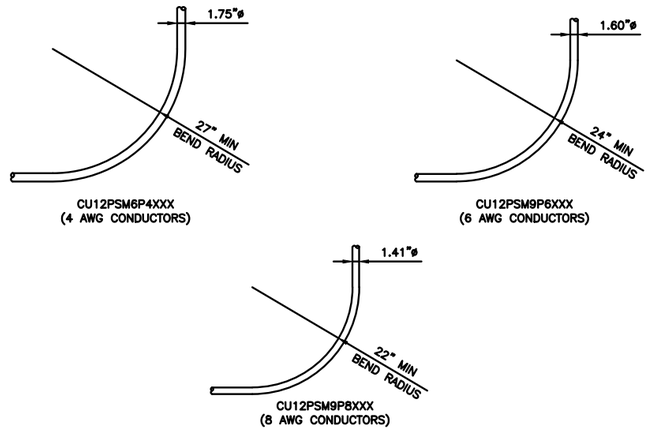
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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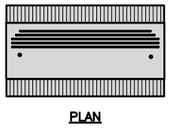
SHEET TITLE
EQUIPMENT DETAILS

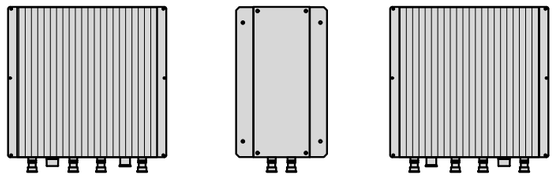
SHEET NUMBER
A-5

FUJITSU TRIPLE BAND TA08025-B605

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



PLAN



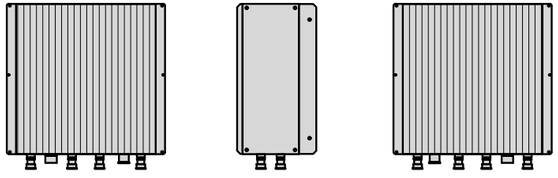
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

FUJITSU DUAL BAND TA08025-B604

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

PLAN



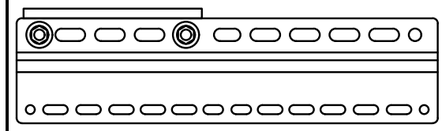
BACK SIDE FRONT

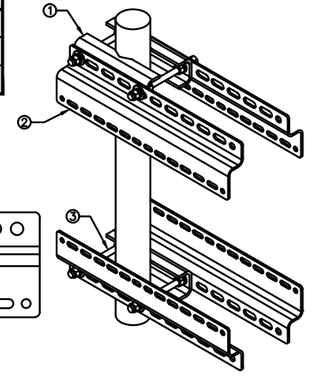
RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z-BRACKET C10123155

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

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



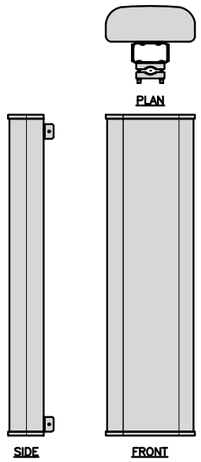


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

JMA MX08FRO665-21

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



PLAN SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

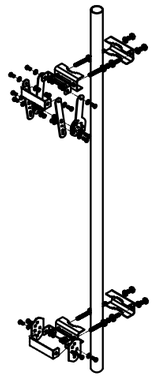
NOT USED | NO SCALE | 5

JMA ANTENNA MOUNT BRACKET #91900318

TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

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

ANTENNA BRACKET NOT PART OF KIT



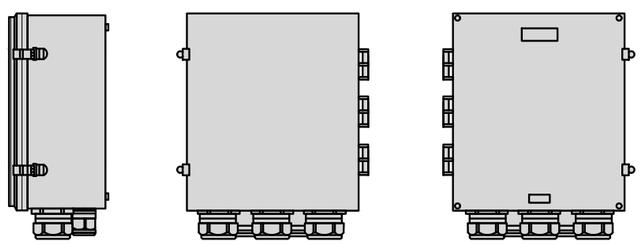
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)

DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS

PLAN



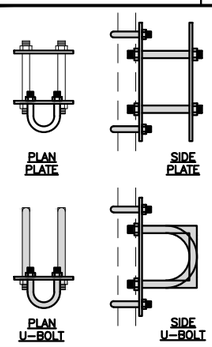
SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

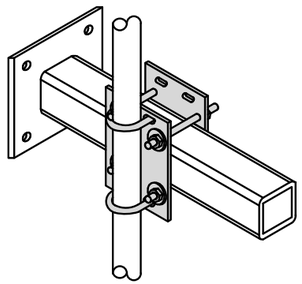
COMMSCOPE XP-2040 CROSSOVER PLATE

DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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



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

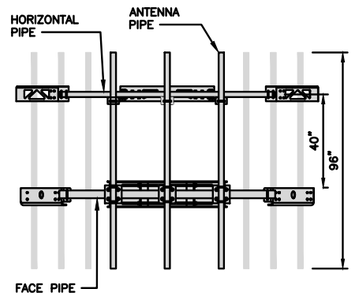


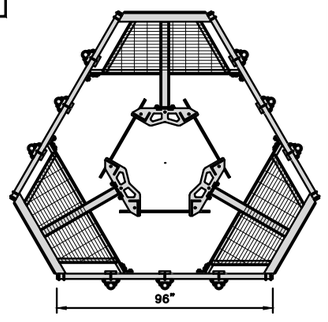
RRH/OVP MOUNT DETAIL | NO SCALE | 8

COMMSCOPE MC-PK8-DSH

FACE WIDTH	96"
WEIGHT	1373.08 lbs
NOTE: 15" TO 38" O.D.	

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





ANTENNA PLATFORM DETAIL | NO SCALE | 9

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PMK	SR	GLS

RFDS REV #: 3

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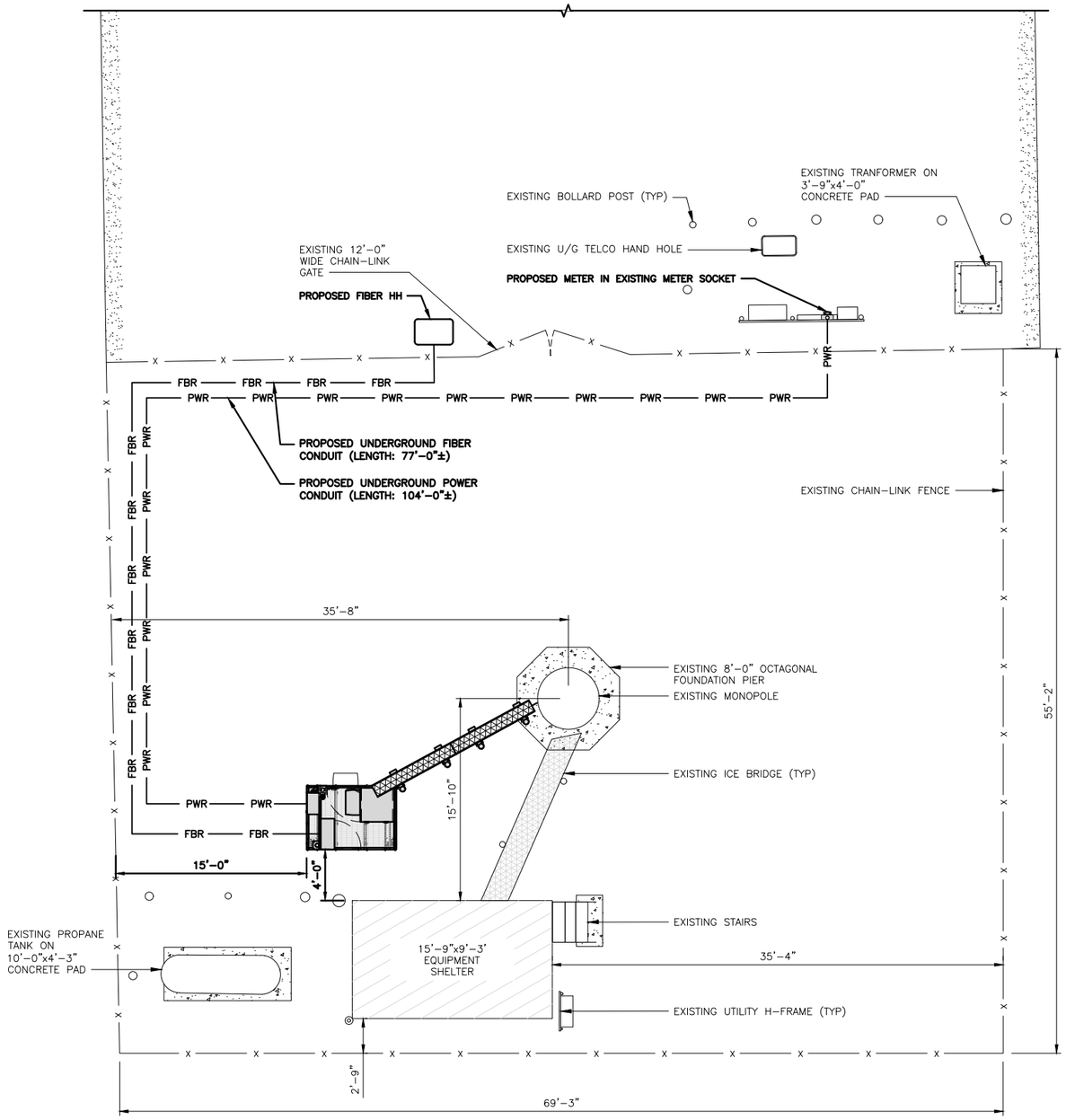
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

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



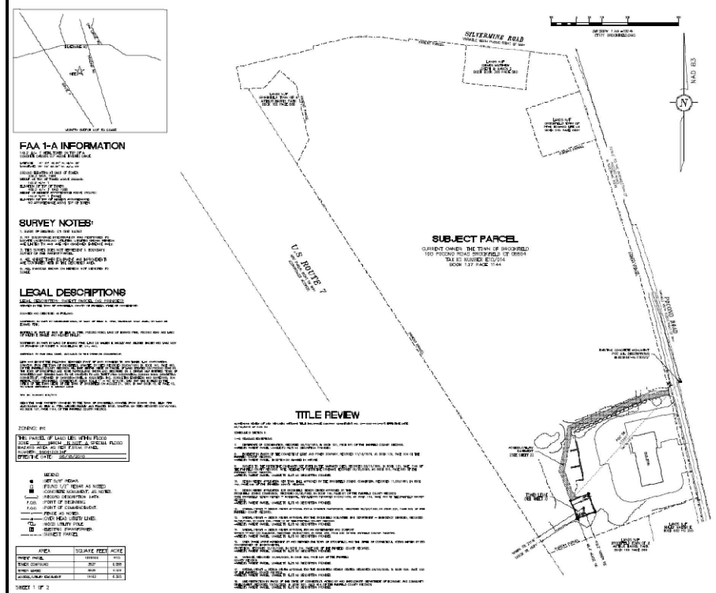
UTILITY ROUTE PLAN

6' 4' 2' 0 5' 10'
3/16"=1'-0"

1

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

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



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

ELECTRICAL NOTES

NO SCALE

2

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

SHEET TITLE

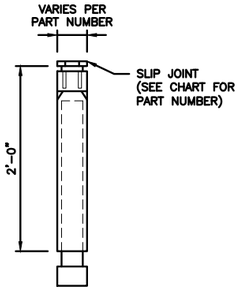
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

CARLON EXPANSION FITTINGS

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

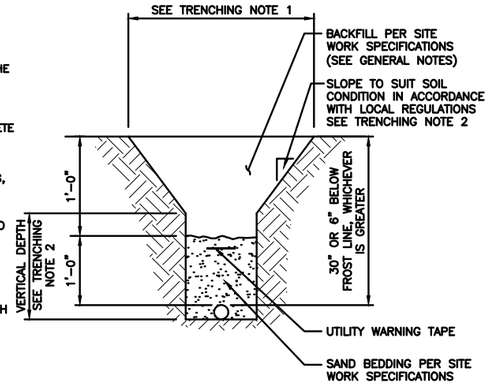


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

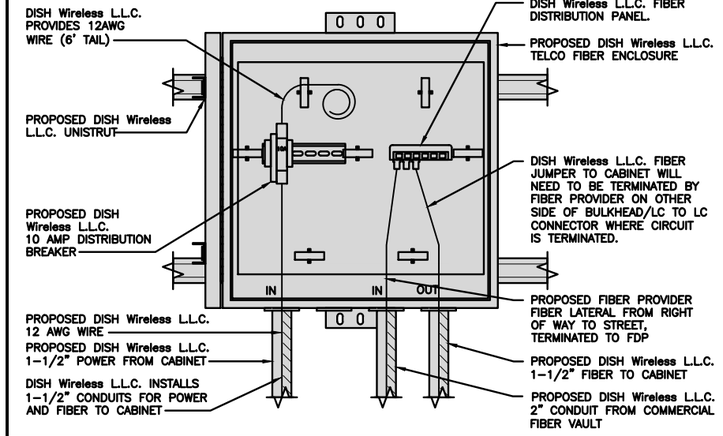
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

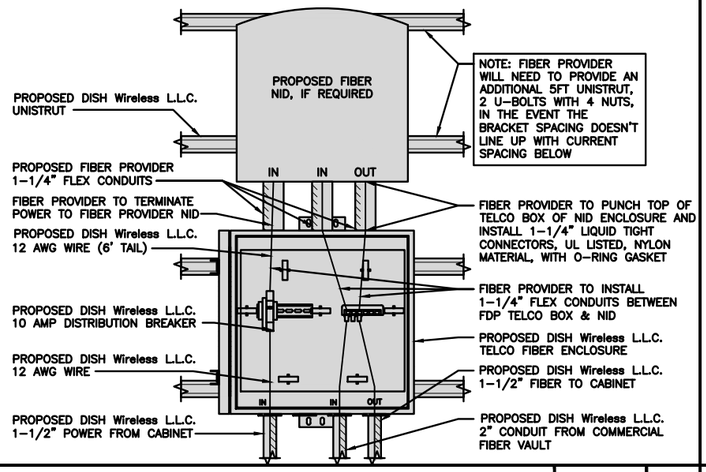
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



DARK TELCO BOX – INTERIOR WIRING LAYOUT | NO SCALE | 3



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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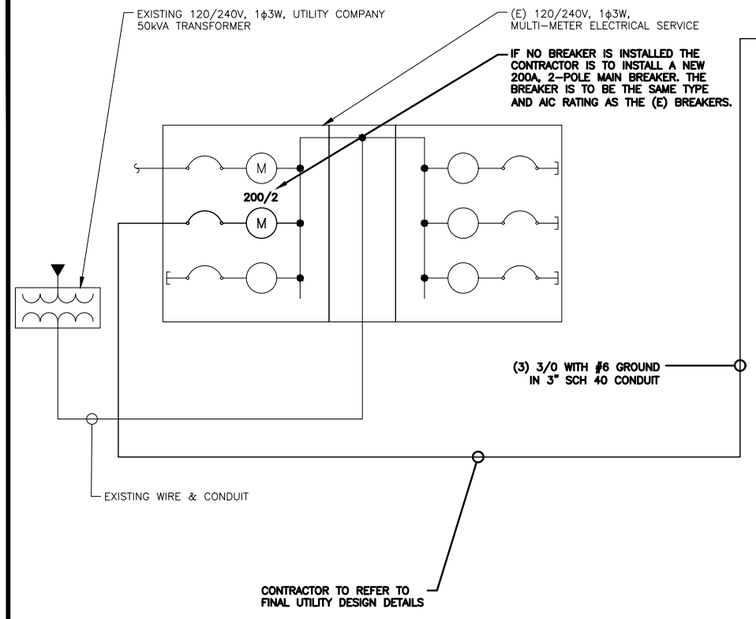
100 POCONO RD
BROOKFIELD, CT 06804

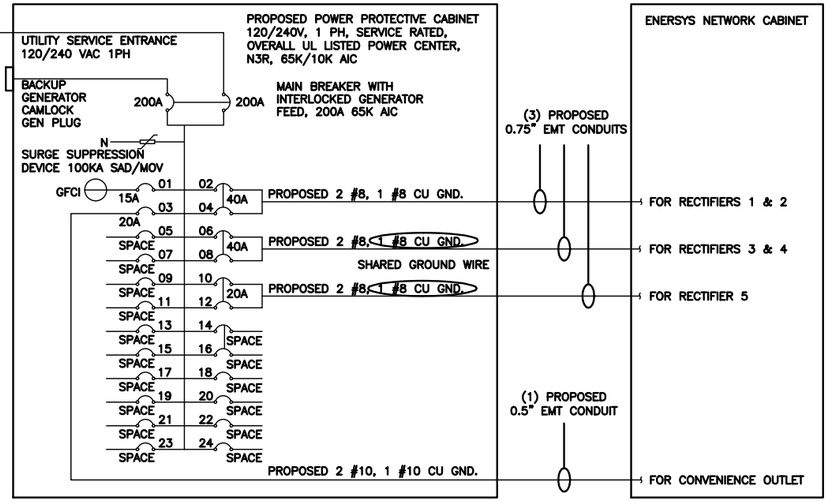
SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2





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

BREAKERS REQUIRED:
(2) 40A, 2P BREAKER - SQUARE D P/N:QO240
(1) 20A, 2P BREAKER - SQUARE D P/N:QO220
(1) 20A, 1P BREAKER - SQUARE D P/N:QO120

NOTES

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

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

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

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

RECTIFIER CONDUCTORS (3 CONDUITS): USING UL1015, CU.

#8 - 0.0552 SQ. IN X 2 = 0.1103 SQ. IN
#8 - 0.0131 SQ. IN X 1 = 0.0131 SQ. IN <BARE GROUND
TOTAL = 0.1234 SQ. IN

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

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

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

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED ENERSYS PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	40A	3840		ENERSYS ALPHA CORDEX
ENERSYS GFCI OUTLET		180	20A	3	B	4			3840	RECTIFIERS 1 & 2
-SPACE-				5	A	6	40A	3840		ENERSYS ALPHA CORDEX
-SPACE-				7	B	8			3840	RECTIFIER 3 & 4
-SPACE-				9	A	10	20A	1920		ENERSYS ALPHA CORDEX
-SPACE-				11	B	12			1920	RECTIFIER 5
-SPACE-				13	A	14				-SPACE-
-SPACE-				15	B	16				-SPACE-
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						9500	9500	
200A MCB, 1ϕ, 24 SPACE, 120/240V			L1		L2					
MB RATING: 65,000 AIC			9680		9680		VOLTAGE AMPS			
			81		81		AMPS			
			81				MAX AMPS			
			102				MAX 125%			

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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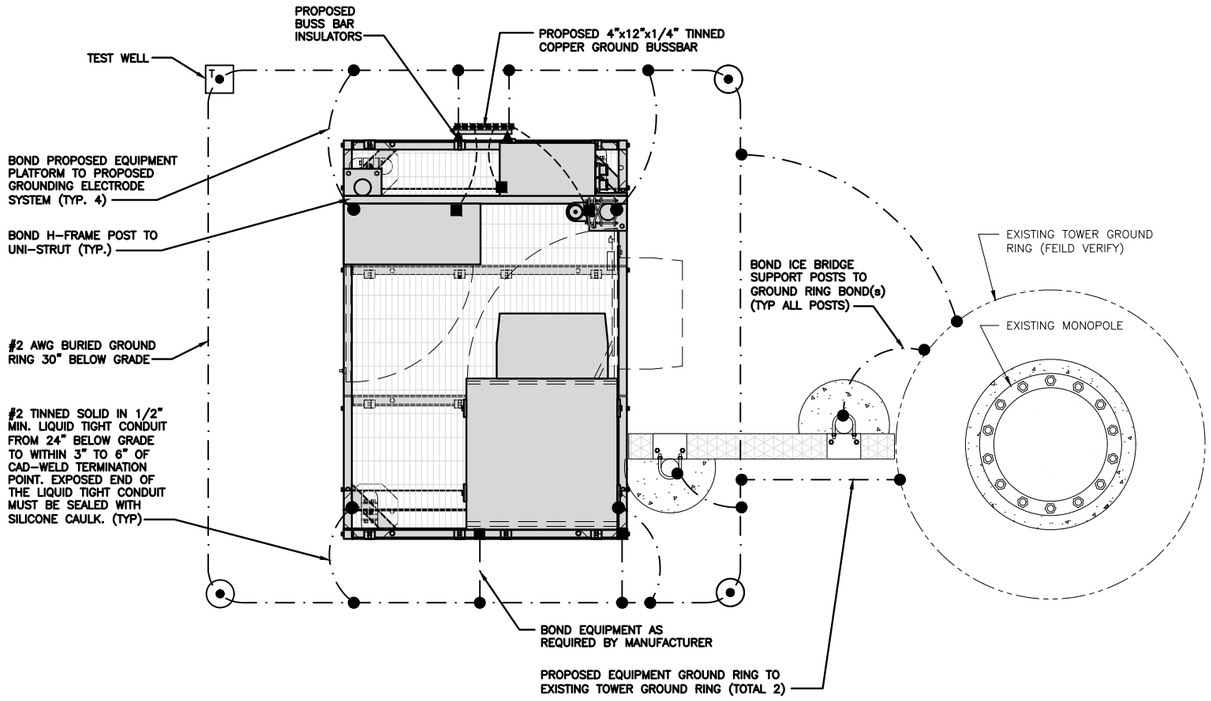
PROJECT INFORMATION
NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

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

SHEET NUMBER
E-3

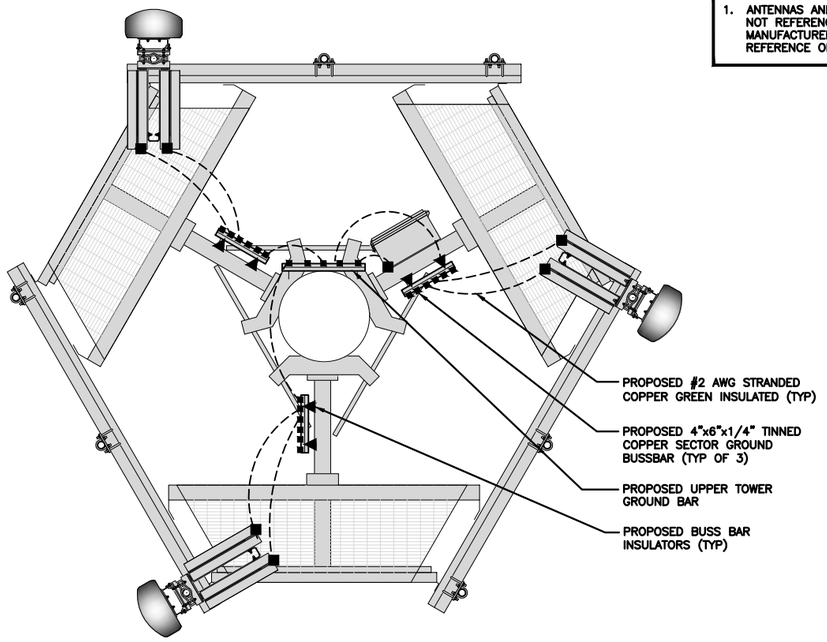


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES

NO SCALE | 3

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STATE OF CONNECTICUT — No. 23924 — LICENSED PROFESSIONAL ENGINEER — 9/28/2021

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
PMK	SR	GLS

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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0	9/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

155784.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

SHEET TITLE

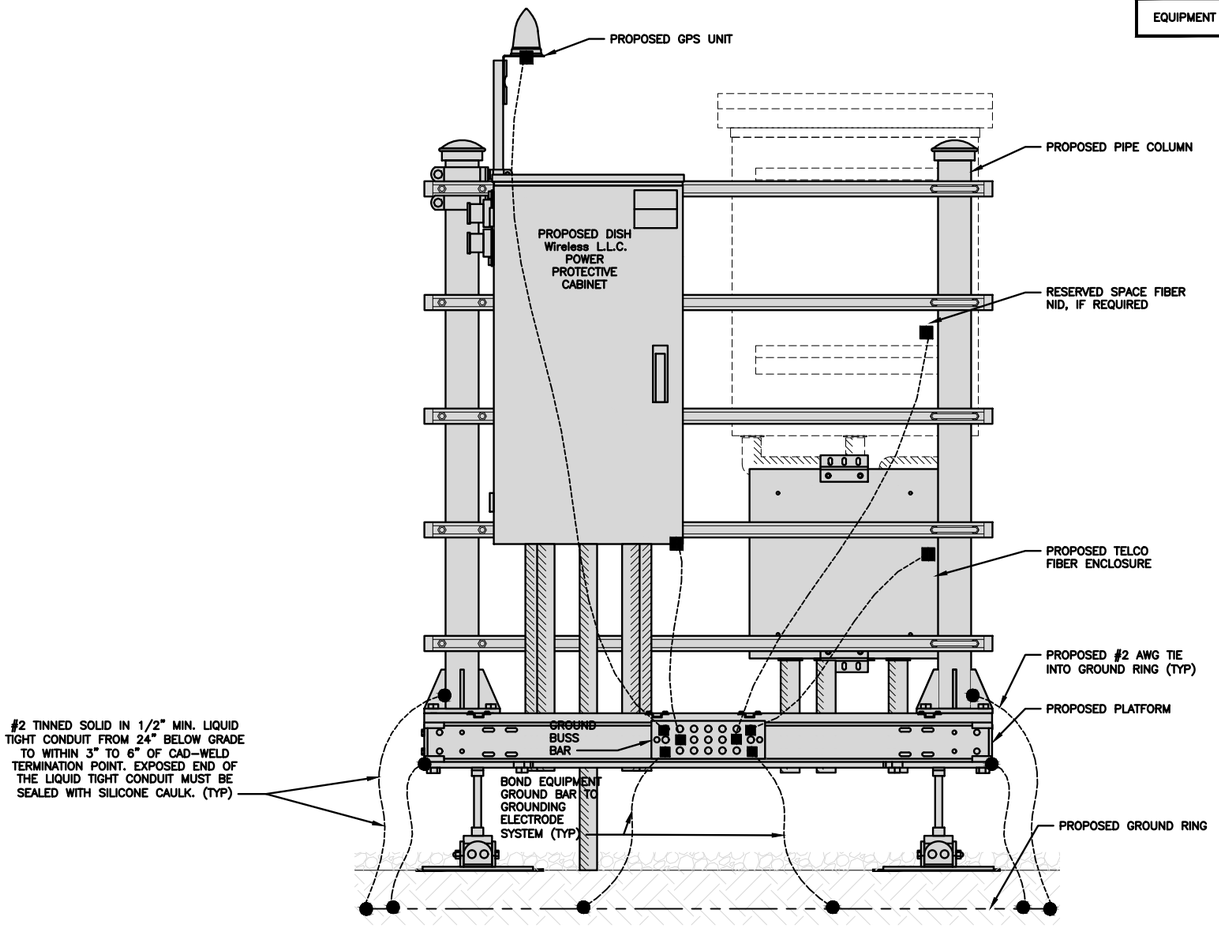
GROUNDING PLANS AND NOTES

SHEET NUMBER

G-1

NOTES

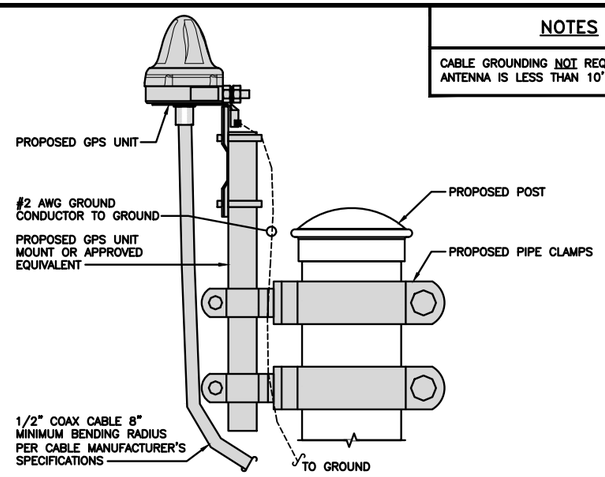
EQUIPMENT CABINET OMITTED FOR CLARITY



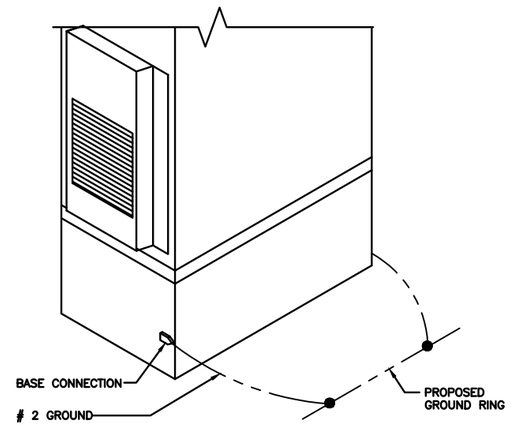
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

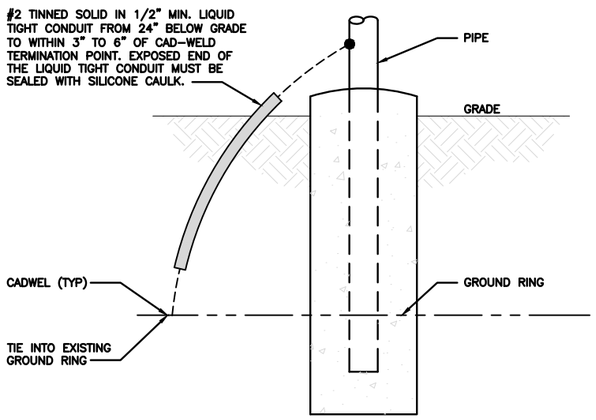
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



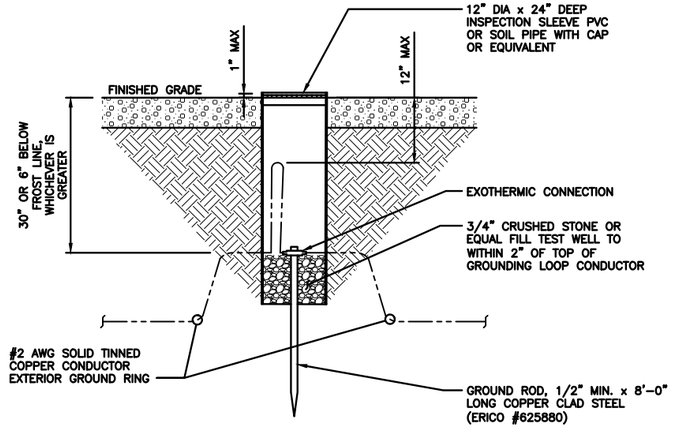
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



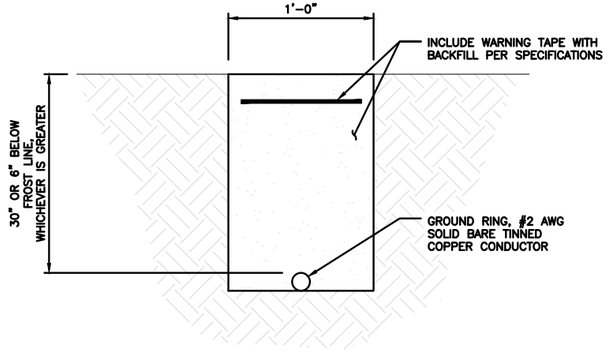
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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SHEET TITLE

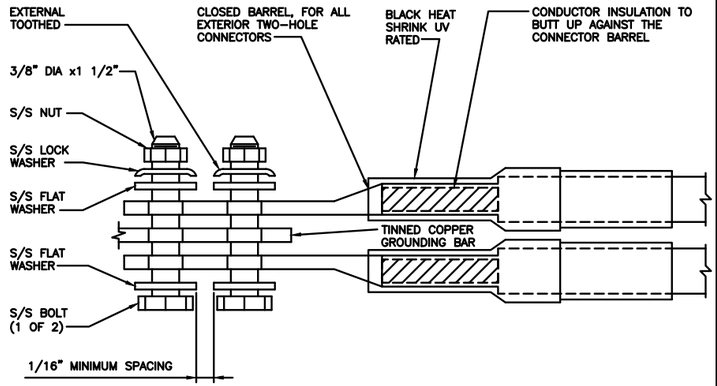
GROUNDING DETAILS

SHEET NUMBER

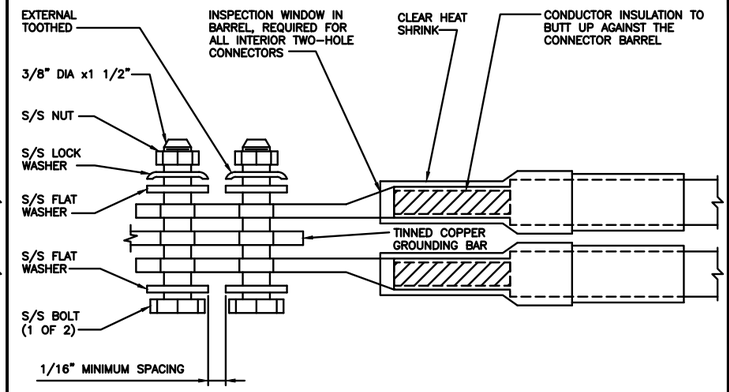
G-2

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

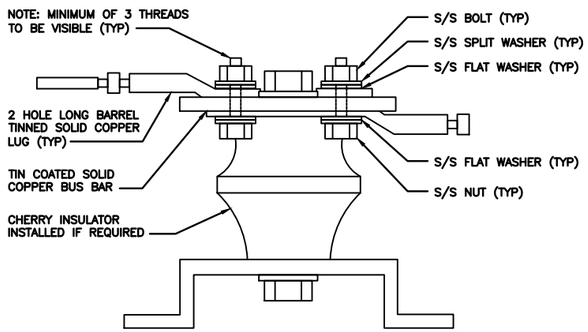
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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PROJECT INFORMATION
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BROOKFIELD, CT 06804

SHEET TITLE
GROUNDING DETAILS

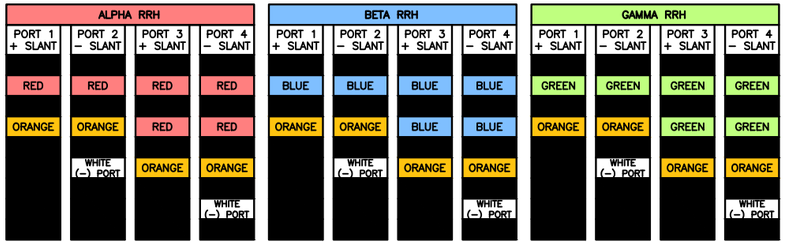
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

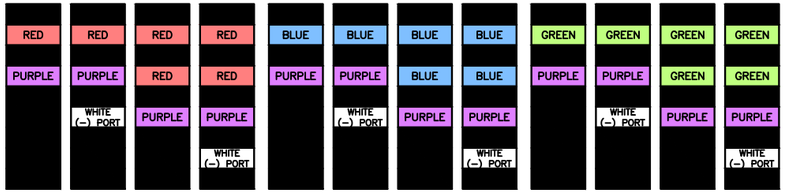
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

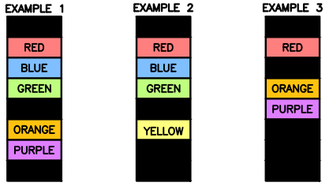


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

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

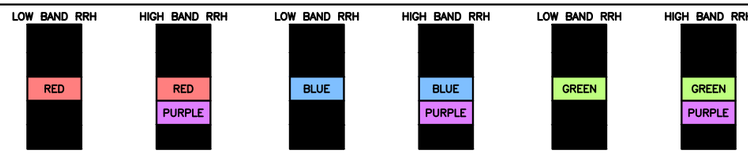
EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS
CBRS ONLY, ALL SECTORS



CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RD DETAILS. FINAL RFDS IS IN NEXSYSONE.

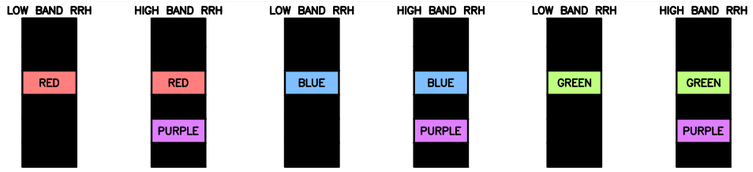
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

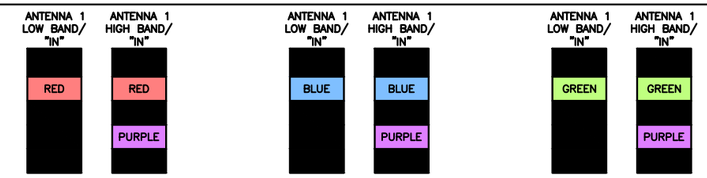


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



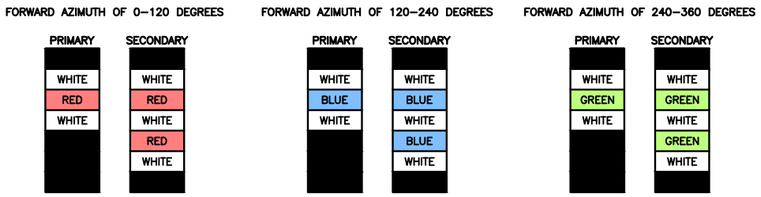
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES	NO SCALE	1

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

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER	NO SCALE	2

NOT USED	NO SCALE	3

NOT USED	NO SCALE	4

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DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8 — F

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — X — X — X — X

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

UNDERGROUND POWER — UGP — UGP — UGP — UGP — UGP

UNDERGROUND TELCO — UGT — UGT — UGT — UGT — UGT

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

UNDERGROUND TELCO/POWER — UGT/P — UGT/P — UGT/P — UGT/P

ABOVE GROUND POWER — AGP — AGP — AGP — AGP — AGP

ABOVE GROUND TELCO — AGT — AGT — AGT — AGT — AGT

ABOVE GROUND TELCO/POWER — AGT/P — AGT/P — AGT/P — AGT/P

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

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BROOKFIELD, CT 06804

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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9/28/2021

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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PMK	SR	GLS

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

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0	9/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

155784.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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9/28/2021

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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PMK	SR	GLS

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER®
10 PRESIDENTIAL WAY
WOBURN, MA 01801

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
9/28/2021

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
PMK	SR	GLS

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	9/3/21	ISSUED FOR REVIEW
0	9/28/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

155784.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01099B
100 POCONO RD
BROOKFIELD, CT 06804

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

ENGINEERING:

STRUCTURAL ANALYSIS

MOUNT ANALYSIS

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**149 ft Monopole**
ATC Site Name	:	**Brookfield 2, CT**
ATC Site Number	:	**209271**
Engineering Number	:	**13700320_C3_02**
Proposed Carrier	:	**DISH WIRELESS L.L.C.**
Carrier Site Name	:	**NJJER01099B**
Carrier Site Number	:	**NJJER01099B**
Site Location	:	**100 Pocono Road** **Brookfield, CT 06804** **41.463, -73.3983**
County	:	**Fairfield**
Date	:	**August 19, 2021**
Max Usage	:	**29%**
Result	:	**Pass**

Prepared By:

Johnny Munoz-Cedeno, EI
Structural Engineer

Johnny Munoz

Reviewed By:

COA : PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 149 ft Monopole to reflect the change in loading by DISH WIRELESS L.L.C..

Supporting Documents

Tower Drawings	Ambor Structures Job #C15019008, dated December 7, 2016
Foundation Drawing	Ambor Structures Job #C15019008, dated December 7, 2016
Geotechnical Report	Nobis Engineering Inc. Project #92230.00, dated November 5, 2016

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	115 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
Crest Height (H):	0 ft
Spectral Response:	Ss = 0.21, S_1 = 0.06
Site Class:	D - Stiff Soil - Default

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
146.0	3	Samsung B5/B13 RRH-BR04C	Triangular Platform with Handrails and Kickers	(2) 1 5/8" Coax	VERIZON WIRELESS
	3	Samsung B2/B66A RRH-BR049			
	3	Samsung MT6407-77A			
	3	Kathrein Scala 800 10735V01			
	6	JMA Wireless MX06FRO660-03			
2.0	2	RFS DB-T1-6Z-8AB-0Z	Flush	-	

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
130.0	1	Commscope RDIDC-9181-PF-48	Triangular Platform with Handrails	(1) 1.75" (44.5mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B605			
	3	Fujitsu TA08025-B604			
	3	JMA Wireless MX08FRO665-21			

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

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	27%	Pass
Shaft	28%	Pass
Base Plate	5%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	1751.4	27%
Axial (Kips)	44.8	11%
Shear (Kips)	18.83	29%

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.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
130.0	Commscope RDIDC-9181-PF-48	DISH WIRELESS L.L.C.	0.408	0.340
	JMA Wireless MX08FRO665-21			
	Fujitsu TA08025-B604			
	Fujitsu TA08025-B605			

***Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H**

Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC 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 Service, PLLC

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

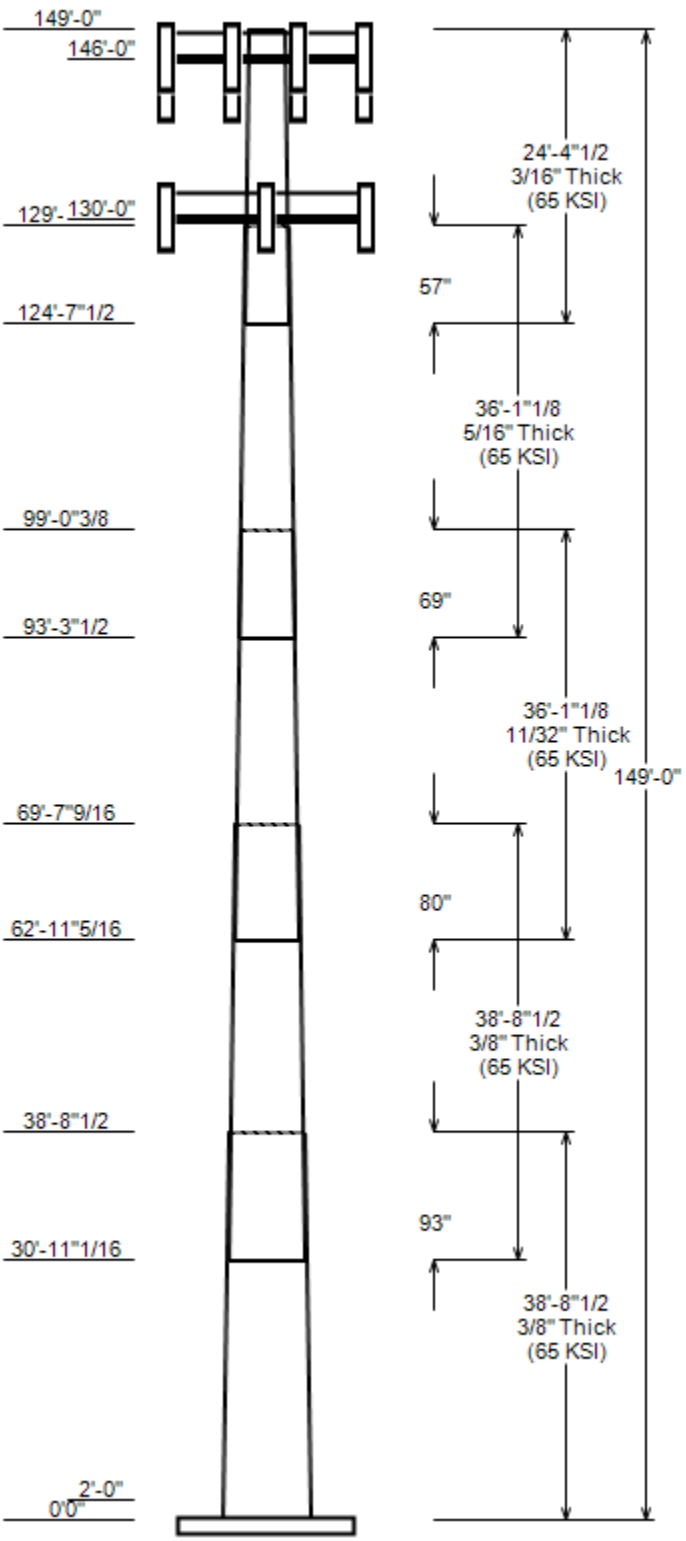
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with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

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, 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 Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

JOB INFORMATION

Asset :	209271, Brookfield 2	Height :	149 ft
Client :	DISH WIRELESS L.L.C.	Base Width :	66.93
Code :	ANSI/TIA-222-H	Shape :	18 Sides



SITE PARAMETERS

Base Elev (ft):	0.00	Structure Class:	II
Taper :	0.29100 (In/ft)	Exposure :	B
Topographic Category :	1	Topographic Feature:	
Topo Method :	Method 1		

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Diameter (in) Across Flats Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	38.711	55.66	66.93	0.375		0.000	18 Sides	65
2	38.711	47.41	58.68	0.375	Slip Joint	93.470	18 Sides	65
3	36.091	39.54	50.05	0.344	Slip Joint	80.280	18 Sides	65
4	36.091	31.33	41.84	0.312	Slip Joint	68.880	18 Sides	65
5	24.375	26.00	33.10	0.188	Slip Joint	57.130	18 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
146.0	146.0	3	Samsung B2/B66A RRH-BR049
146.0	146.0	3	Samsung B5/B13 RRH-BR04C
146.0	146.0	3	Samsung MT6407-77A
146.0	146.0	1	Generic Mount Reinforcement
146.0	144.6	3	Kathrein Scala 800 10735V01
146.0	146.0	6	JMA Wireless MX06FRO660-03
146.0	146.0	1	Generic Round Platform with Ha
130.0	130.0	1	Commscope RDIDC-9181-PF-48
130.0	130.0	3	Fujitsu TA08025-B604
130.0	130.0	3	Fujitsu TA08025-B605
130.0	130.0	3	JMA Wireless MX08FRO665-21
130.0	130.0	1	Generic Flat Platform with Han
2.0	2.0	2	RFS DB-T1-6Z-8AB-0Z

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	146.0	1 5/8" Coax	No
0.0	130.0	1.75" (44.5mm) Hybrid	No

LOAD CASES

1.2D + 1.0W Normal	115 mph wind with no ice
0.9D + 1.0W Normal	115 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Nor	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh Nor	Seismic
0.9D - 1.0Ev + 1.0Eh Nor	Seismic (Reduced DL)
1.0D + 1.0W Service Norm	60 mph Wind with No Ice

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	1751.40	18.83	44.77
0.9D + 1.0W Normal	1742.52	18.83	33.57
1.2D + 1.0Di + 1.0Wi Normal	515.16	5.67	57.73
1.2D + 1.0Ev + 1.0Eh Normal	155.53	1.37	45.78
0.9D - 1.0Ev + 1.0Eh Normal	154.52	1.37	31.42
1.0D + 1.0W Service Normal	425.07	4.58	37.31

DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)

ANALYSIS PARAMETERS

Location:	Fairfield County,CT	Height:	149 ft
Type and Shape:	Taper, 18 Sides	Base Diameter:	66.93 in
Manufacturer:	Undetermined	Top Diameter:	26.00 in
K_d (non-service):	0.95	Taper:	0.2910 in/ft
K_e:	0.99	Rotation:	0.000°

ICE & WIND PARAMETERS

Exposure Category:	B	Design Wind Speed w/o Ice:	115 mph
Risk Category:	II	Design Wind Speed w/Ice:	50 mph
Topo Factor Procedure:	Method 1	Operational Wind Speed:	60 mph
Topographic Category:	1	Design Ice Thickness:	1.00 in
Crest Height:	0 ft	HMSL:	336.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			Period Based on Rayleigh Method (sec):	1.59
T_L (sec):	6	P:	1	$C_{s:}$	0.037
$S_{s:}$	0.212	$S_{1:}$	0.055	C_s Max:	0.037
$F_{a:}$	1.600	$F_{v:}$	2.400	C_s Min:	0.030
$S_{ds:}$	0.226	$S_{d1:}$	0.088		

LOAD CASES

1.2D + 1.0W Normal	115 mph wind with no ice
0.9D + 1.0W Normal	115 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Normal	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh Normal	Seismic
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL)
1.0D + 1.0W Service Normal	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (in)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	38.71	0.3750	65		0.00	9,551	66.93	-0.001	79.21	44,332.0	29.71	178.48	55.66	38.71	65.80	25,413.6	24.41	148.43	0.2911
2-18	38.71	0.3750	65	Slip	93.47	8,258	58.68	30.919	69.40	29,805.2	25.83	156.48	47.41	69.63	55.98	15,650.2	20.53	126.43	0.2911
3-18	36.09	0.3438	65	Slip	80.28	5,956	50.05	62.939	54.24	16,928.6	23.91	145.57	39.54	99.03	42.77	8,304.0	18.52	115.02	0.2911
4-18	36.09	0.3125	65	Slip	68.88	4,418	41.84	93.299	41.19	8,973.4	21.84	133.88	31.33	129.39	30.77	3,741.0	15.92	100.27	0.2911
5-18	24.38	0.1875	65	Slip	57.13	1,449	33.10	124.625	19.58	2,679.3	29.36	176.51	26.00	149.00	15.36	1,293.1	22.69	138.67	0.2911
				Shaft Weight		29,632													

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
146.00	Samsung B2/B66A RRH-BR049	3	0.75	0.000	84.40	1.875	0.50	126.89	2.476	0.50
146.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	3578.74	43.480	1.00
146.00	JMA Wireless MX06FRO660-03	6	0.75	0.000	60.00	9.872	0.71	219.68	11.700	0.71
146.00	Kathrein Scala 800 10735V01	3	0.75	-1.400	30.90	8.635	0.63	131.77	10.602	0.63
146.00	Generic Mount Reinforcement	1	1.00	0.000	200.00	7.500	1.00	328.89	12.487	1.00
146.00	Samsung MT6407-77A	3	0.75	0.000	81.60	4.709	0.61	149.48	5.721	0.61
146.00	Samsung B5/B13 RRH-BR04C	3	0.75	0.000	70.30	1.875	0.50	108.40	2.476	0.50
130.00	Generic Flat Platform with Han	1	1.00	0.000	2500.00	42.400	1.00	3669.61	56.208	1.00
130.00	JMA Wireless MX08FRO665-21	3	0.75	0.000	64.50	12.489	0.64	233.72	14.339	0.64
130.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	102.29	2.568	0.50
130.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	116.25	2.568	0.50
130.00	Commscope RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	0.50	59.37	2.460	0.50
2.00	RFS DB-T1-6Z-8AB-0Z	2	1.00	0.000	44.00	4.800	1.00	94.94	5.375	1.00
Totals	Num Loadings: 13	33			7,081.70			12,050.97		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : 0.00

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	146.00	2	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
0.00	130.00	1	1.75" (44.5mm) Hybrid	1.75	2.72	N	0	0	0	0	0	N	DISH WIRELESS

SEGMENT PROPERTIES

(Max Len: 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.3750	66.930	79.214	44,332.00	29.71	178.48	66.5	1304.6	0.0	0.0
2.00		0.3750	66.348	78.521	43,179.00	29.43	176.93	66.8	1281.8	0.0	536.7
5.00		0.3750	65.475	77.482	41,487.10	29.02	174.60	67.3	1248.0	0.0	796.3
10.00		0.3750	64.019	75.750	38,766.50	28.34	170.72	68.1	1192.7	0.0	1,303.5
15.00		0.3750	62.564	74.018	36,167.60	27.65	166.84	68.9	1138.6	0.0	1,274.1
20.00		0.3750	61.109	72.286	33,687.50	26.97	162.96	69.7	1085.8	0.0	1,244.6
25.00		0.3750	59.654	70.554	31,323.40	26.29	159.08	70.5	1034.2	0.0	1,215.1
30.00		0.3750	58.198	68.822	29,072.60	25.60	155.20	71.3	983.9	0.0	1,185.7
30.92	Bot - Section 2	0.3750	57.930	68.502	28,669.80	25.48	154.48	71.4	974.8	0.0	215.4
35.00		0.3750	56.743	67.090	26,932.30	24.92	151.31	72.1	934.9	0.0	1,894.0
38.71	Top - Section 1	0.3750	56.413	66.697	26,461.90	24.76	150.43	72.3	923.9	0.0	1,689.4
40.00		0.3750	56.038	66.250	25,934.00	24.59	149.43	72.5	911.5	0.0	291.6
45.00		0.3750	54.582	64.518	23,952.60	23.90	145.55	73.3	864.3	0.0	1,112.4
50.00		0.3750	53.127	62.786	22,074.80	23.22	141.67	74.1	818.4	0.0	1,083.0
55.00		0.3750	51.672	61.054	20,297.80	22.53	137.79	74.9	773.7	0.0	1,053.5
60.00		0.3750	50.217	59.322	18,618.80	21.85	133.91	75.7	730.3	0.0	1,024.0
62.94	Bot - Section 3	0.3750	49.360	58.302	17,675.30	21.45	131.63	76.2	705.3	0.0	588.9
65.00		0.3750	48.761	57.590	17,035.00	21.16	130.03	76.5	688.1	0.0	783.1
69.63	Top - Section 2	0.3438	48.100	52.111	15,016.00	22.91	139.91	74.5	614.9	0.0	1,728.3
70.00		0.3438	47.994	51.995	14,915.40	22.85	139.60	74.5	612.1	0.0	65.1
75.00		0.3438	46.538	50.407	13,590.10	22.11	135.36	75.4	575.2	0.0	871.1
80.00		0.3438	45.083	48.819	12,345.70	21.36	131.13	76.3	539.4	0.0	844.1
85.00		0.3438	43.628	47.231	11,179.70	20.61	126.90	77.2	504.7	0.0	817.1
90.00		0.3438	42.172	45.643	10,089.60	19.87	122.67	78	471.2	0.0	790.1
93.29	Bot - Section 4	0.3438	41.214	44.596	9,411.50	19.37	119.88	78.6	449.8	0.0	505.8
95.00		0.3438	40.717	44.055	9,072.70	19.12	118.43	78.9	438.9	0.0	494.9
99.03	Top - Section 3	0.3125	40.168	39.530	7,933.50	20.90	128.54	76.8	389.0	0.0	1,146.5
100.00		0.3125	39.887	39.251	7,766.70	20.74	127.64	77	383.5	0.0	129.5
105.00		0.3125	38.432	37.808	6,941.00	19.92	122.98	78	355.7	0.0	655.5
110.00		0.3125	36.976	36.365	6,176.00	19.10	118.32	78.9	329.0	0.0	631.0
115.00		0.3125	35.521	34.921	5,469.40	18.28	113.67	79.9	303.3	0.0	606.4
120.00		0.3125	34.066	33.478	4,818.80	17.46	109.01	80.9	278.6	0.0	581.9
124.63	Bot - Section 5	0.3125	32.720	32.143	4,265.00	16.70	104.70	81.8	256.7	0.0	516.4
125.00		0.3125	32.610	32.034	4,222.00	16.64	104.35	81.8	255.0	0.0	65.9
129.39	Top - Section 4	0.1875	31.709	18.759	2,354.90	28.06	169.11	68.4	146.3	0.0	754.2
130.00		0.1875	31.530	18.652	2,315.00	27.89	168.16	68.6	144.6	0.0	39.1
135.00		0.1875	30.075	17.786	2,007.30	26.52	160.40	70.2	131.5	0.0	310.0
140.00		0.1875	28.620	16.920	1,728.10	25.15	152.64	71.8	118.9	0.0	295.2
145.00		0.1875	27.164	16.054	1,476.10	23.78	144.88	73.4	107.0	0.0	280.5
146.00		0.1875	26.873	15.881	1,428.80	23.51	143.32	73.8	104.7	0.0	54.3
149.00		0.1875	26.000	15.361	1,293.10	22.69	138.67	74.7	98.0	0.0	159.5
								Totals:			29,633.7

Load Case: 1.2D + 1.0W Normal 115 mph wind with no ice 20 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-44.77	-18.83	0.00	-1,751.4	0.00	1,751.40	4,738.09	1,390.21	8,356.57	6,502.75	0.00	0	0.279
2.00	-44.00	-18.36	0.00	-1,713.8	0.00	1,713.75	4,719.40	1,378.05	8,211.04	6,420.13	0.01	-0.02	0.276
5.00	-43.01	-18.00	0.00	-1,658.7	0.00	1,658.66	4,690.61	1,359.81	7,995.15	6,296.03	0.03	-0.06	0.273
10.00	-41.41	-17.56	0.00	-1,568.6	0.00	1,568.64	4,640.62	1,329.41	7,641.72	6,088.89	0.12	-0.11	0.267
15.00	-39.83	-17.12	0.00	-1,480.9	0.00	1,480.86	4,588.12	1,299.02	7,296.27	5,881.55	0.27	-0.17	0.261
20.00	-38.30	-16.69	0.00	-1,395.3	0.00	1,395.26	4,533.11	1,268.62	6,958.82	5,674.24	0.47	-0.22	0.255
25.00	-36.80	-16.27	0.00	-1,311.8	0.00	1,311.81	4,475.60	1,238.22	6,629.36	5,467.18	0.74	-0.28	0.248
30.00	-35.34	-16.02	0.00	-1,230.5	0.00	1,230.46	4,415.57	1,207.82	6,307.88	5,260.60	1.06	-0.34	0.242
30.92	-35.07	-15.81	0.00	-1,215.7	0.00	1,215.69	4,404.23	1,202.22	6,249.48	5,222.59	1.13	-0.35	0.241
35.00	-32.77	-15.47	0.00	-1,151.2	0.00	1,151.21	4,353.04	1,177.42	5,994.40	5,054.74	1.45	-0.4	0.235
38.71	-30.72	-15.24	0.00	-1,093.8	0.00	1,093.80	4,338.50	1,170.53	5,924.40	5,008.16	1.77	-0.44	0.226
40.00	-30.35	-14.97	0.00	-1,074.2	0.00	1,074.16	4,321.83	1,162.69	5,845.34	4,955.29	1.90	-0.46	0.224
45.00	-28.98	-14.52	0.00	-999.3	0.00	999.32	4,255.57	1,132.29	5,543.72	4,750.90	2.41	-0.51	0.217
50.00	-27.65	-14.07	0.00	-926.7	0.00	926.70	4,186.80	1,101.89	5,250.09	4,547.78	2.97	-0.57	0.211
55.00	-26.35	-13.62	0.00	-856.3	0.00	856.34	4,115.52	1,071.50	4,964.44	4,346.16	3.60	-0.63	0.204
60.00	-25.09	-13.26	0.00	-788.2	0.00	788.24	4,041.73	1,041.10	4,686.79	4,146.27	4.29	-0.69	0.196
62.94	-24.36	-13.03	0.00	-749.2	0.00	749.22	3,997.13	1,023.21	4,527.11	4,029.52	4.73	-0.72	0.192
65.00	-23.41	-12.72	0.00	-722.4	0.00	722.41	3,965.43	1,010.70	4,417.12	3,948.33	5.04	-0.74	0.189
69.63	-21.30	-12.47	0.00	-663.5	0.00	663.47	3,492.12	914.55	3,944.85	3,433.70	5.79	-0.8	0.200
70.00	-21.22	-12.24	0.00	-658.9	0.00	658.89	3,487.33	912.51	3,927.21	3,421.25	5.86	-0.8	0.199
75.00	-20.14	-11.79	0.00	-597.7	0.00	597.71	3,420.64	884.64	3,691.02	3,252.60	6.73	-0.86	0.190
80.00	-19.10	-11.34	0.00	-538.8	0.00	538.78	3,351.45	856.77	3,462.15	3,085.67	7.66	-0.92	0.180
85.00	-18.09	-10.90	0.00	-482.1	0.00	482.09	3,279.75	828.90	3,240.60	2,920.69	8.66	-0.98	0.171
90.00	-17.11	-10.53	0.00	-427.6	0.00	427.62	3,205.54	801.03	3,026.38	2,757.87	9.72	-1.04	0.161
93.29	-16.49	-10.31	0.00	-392.9	0.00	392.93	3,155.28	782.67	2,889.24	2,651.89	10.45	-1.08	0.154
95.00	-15.88	-10.06	0.00	-375.4	0.00	375.35	3,128.82	773.16	2,819.48	2,597.45	10.84	-1.1	0.150
99.03	-14.49	-9.82	0.00	-334.8	0.00	334.77	2,732.94	693.76	2,497.43	2,241.20	11.79	-1.14	0.155
100.00	-14.33	-9.58	0.00	-325.3	0.00	325.28	2,720.25	688.86	2,462.32	2,214.93	12.02	-1.15	0.152
105.00	-13.51	-9.16	0.00	-277.4	0.00	277.40	2,653.08	663.53	2,284.57	2,080.18	13.26	-1.21	0.139
110.00	-12.73	-8.75	0.00	-231.6	0.00	231.62	2,583.40	638.20	2,113.48	1,947.58	14.55	-1.26	0.124
115.00	-11.98	-8.34	0.00	-187.9	0.00	187.88	2,511.21	612.87	1,949.06	1,817.38	15.90	-1.31	0.108
120.00	-11.26	-7.97	0.00	-146.2	0.00	146.16	2,436.51	587.54	1,791.28	1,689.80	17.29	-1.35	0.091
124.63	-10.62	-7.77	0.00	-109.3	0.00	109.32	2,365.18	564.10	1,651.27	1,574.31	18.62	-1.39	0.074
125.00	-10.54	-7.59	0.00	-106.4	0.00	106.40	2,359.30	562.20	1,640.17	1,565.06	18.73	-1.39	0.073
129.39	-9.61	-7.39	0.00	-73.1	0.00	73.11	1,154.81	329.21	937.25	750.40	20.02	-1.42	0.106
130.00	-5.87	-4.66	0.00	-68.6	0.00	68.57	1,151.58	327.35	926.65	744.03	20.20	-1.42	0.097
135.00	-5.49	-4.30	0.00	-45.3	0.00	45.29	1,123.87	312.15	842.60	692.22	21.71	-1.45	0.071
140.00	-5.14	-3.96	0.00	-23.8	0.00	23.79	1,093.66	296.95	762.55	640.60	23.25	-1.48	0.042
145.00	-4.80	-3.75	0.00	-4.0	0.00	4.01	1,060.94	281.75	686.49	589.42	24.81	-1.49	0.012
146.00	-0.19	-0.09	0.00	-0.3	0.00	0.26	1,054.09	278.71	671.76	579.26	25.12	-1.49	0.001
149.00	0.00	-0.08	0.00	0.0	0.00	0.00	1,032.95	269.59	628.52	548.94	26.05	-1.49	0.000

Load Case: 0.9D + 1.0W Normal 115 mph wind with no ice 20 Iterations
Gust Response Factor: 1.10
Dead load Factor: 0.90
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-33.57	-18.83	0.00	-1,742.5	0.00	1,742.52	4,738.09	1,390.21	8,356.57	6,502.75	0.00	0	0.275
2.00	-32.99	-18.36	0.00	-1,704.9	0.00	1,704.86	4,719.40	1,378.05	8,211.04	6,420.13	0.01	-0.02	0.273
5.00	-32.25	-17.99	0.00	-1,649.8	0.00	1,649.80	4,690.61	1,359.81	7,995.15	6,296.03	0.03	-0.06	0.269
10.00	-31.04	-17.53	0.00	-1,559.9	0.00	1,559.86	4,640.62	1,329.41	7,641.72	6,088.89	0.12	-0.11	0.263
15.00	-29.86	-17.09	0.00	-1,472.2	0.00	1,472.21	4,588.12	1,299.02	7,296.27	5,881.55	0.26	-0.17	0.257
20.00	-28.71	-16.65	0.00	-1,386.8	0.00	1,386.78	4,533.11	1,268.62	6,958.82	5,674.24	0.47	-0.22	0.251
25.00	-27.58	-16.22	0.00	-1,303.5	0.00	1,303.54	4,475.60	1,238.22	6,629.36	5,467.18	0.73	-0.28	0.245
30.00	-26.49	-15.97	0.00	-1,222.4	0.00	1,222.45	4,415.57	1,207.82	6,307.88	5,260.60	1.06	-0.34	0.239
30.92	-26.28	-15.75	0.00	-1,207.7	0.00	1,207.73	4,404.23	1,202.22	6,249.48	5,222.59	1.12	-0.35	0.237
35.00	-24.55	-15.41	0.00	-1,143.5	0.00	1,143.48	4,353.04	1,177.42	5,994.40	5,054.74	1.44	-0.39	0.232
38.71	-23.01	-15.18	0.00	-1,086.3	0.00	1,086.31	4,338.50	1,170.53	5,924.40	5,008.16	1.76	-0.44	0.222
40.00	-22.73	-14.90	0.00	-1,066.7	0.00	1,066.74	4,321.83	1,162.69	5,845.34	4,955.29	1.88	-0.45	0.221
45.00	-21.70	-14.45	0.00	-992.2	0.00	992.23	4,255.57	1,132.29	5,543.72	4,750.90	2.39	-0.51	0.214
50.00	-20.70	-14.00	0.00	-920.0	0.00	919.97	4,186.80	1,101.89	5,250.09	4,547.78	2.96	-0.57	0.207
55.00	-19.72	-13.54	0.00	-850.0	0.00	849.98	4,115.52	1,071.50	4,964.44	4,346.16	3.58	-0.62	0.201
60.00	-18.78	-13.18	0.00	-782.3	0.00	782.26	4,041.73	1,041.10	4,686.79	4,146.27	4.27	-0.68	0.193
62.94	-18.23	-12.95	0.00	-743.5	0.00	743.47	3,997.13	1,023.21	4,527.11	4,029.52	4.70	-0.72	0.189
65.00	-17.51	-12.64	0.00	-716.8	0.00	716.83	3,965.43	1,010.70	4,417.12	3,948.33	5.01	-0.74	0.186
69.63	-15.94	-12.40	0.00	-658.3	0.00	658.27	3,492.12	914.55	3,944.85	3,433.70	5.76	-0.79	0.196
70.00	-15.87	-12.16	0.00	-653.7	0.00	653.71	3,487.33	912.51	3,927.21	3,421.25	5.82	-0.8	0.196
75.00	-15.06	-11.70	0.00	-592.9	0.00	592.92	3,420.64	884.64	3,691.02	3,252.60	6.69	-0.86	0.187
80.00	-14.28	-11.26	0.00	-534.4	0.00	534.40	3,351.45	856.77	3,462.15	3,085.67	7.62	-0.92	0.178
85.00	-13.52	-10.81	0.00	-478.1	0.00	478.12	3,279.75	828.90	3,240.60	2,920.69	8.61	-0.97	0.168
90.00	-12.79	-10.45	0.00	-424.1	0.00	424.06	3,205.54	801.03	3,026.38	2,757.87	9.66	-1.03	0.158
93.29	-12.32	-10.23	0.00	-389.6	0.00	389.64	3,155.28	782.67	2,889.24	2,651.89	10.39	-1.07	0.151
95.00	-11.87	-9.98	0.00	-372.2	0.00	372.19	3,128.82	773.16	2,819.48	2,597.45	10.77	-1.09	0.147
99.03	-10.82	-9.75	0.00	-332.0	0.00	331.95	2,732.94	693.76	2,497.43	2,241.20	11.71	-1.13	0.152
100.00	-10.70	-9.50	0.00	-322.5	0.00	322.53	2,720.25	688.86	2,462.32	2,214.93	11.94	-1.14	0.150
105.00	-10.09	-9.08	0.00	-275.0	0.00	275.03	2,653.08	663.53	2,284.57	2,080.18	13.17	-1.2	0.136
110.00	-9.50	-8.67	0.00	-229.6	0.00	229.62	2,583.40	638.20	2,113.48	1,947.58	14.46	-1.25	0.122
115.00	-8.94	-8.27	0.00	-186.3	0.00	186.26	2,511.21	612.87	1,949.06	1,817.38	15.79	-1.3	0.106
120.00	-8.40	-7.90	0.00	-144.9	0.00	144.90	2,436.51	587.54	1,791.28	1,689.80	17.18	-1.34	0.089
124.63	-7.92	-7.70	0.00	-108.4	0.00	108.37	2,365.18	564.10	1,651.27	1,574.31	18.50	-1.38	0.072
125.00	-7.86	-7.52	0.00	-105.5	0.00	105.49	2,359.30	562.20	1,640.17	1,565.06	18.60	-1.38	0.071
129.39	-7.17	-7.32	0.00	-72.5	0.00	72.49	1,154.81	329.21	937.25	750.40	19.88	-1.41	0.103
130.00	-4.37	-4.62	0.00	-68.0	0.00	67.99	1,151.58	327.35	926.65	744.03	20.07	-1.41	0.095
135.00	-4.10	-4.26	0.00	-44.9	0.00	44.90	1,123.87	312.15	842.60	692.22	21.56	-1.44	0.069
140.00	-3.83	-3.92	0.00	-23.6	0.00	23.58	1,093.66	296.95	762.55	640.60	23.09	-1.47	0.040
145.00	-3.57	-3.72	0.00	-4.0	0.00	3.97	1,060.94	281.75	686.49	589.42	24.63	-1.48	0.010
146.00	-0.14	-0.09	0.00	-0.3	0.00	0.26	1,054.09	278.71	671.76	579.26	24.94	-1.48	0.001
149.00	0.00	-0.08	0.00	0.0	0.00	0.00	1,032.95	269.59	628.52	548.94	25.87	-1.48	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi Normal		50 mph wind with 1" radial ice			19 Iterations
Gust Response Factor:	1.10	Ice Dead Load Factor	1.00		
Dead load Factor:	1.20			Ice Importance Factor	1.00
Wind Load Factor:	1.00				

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-57.73	-5.67	0.00	-515.2	0.00	515.16	4,738.09	1,390.21	8,356.57	6,502.75	0.00	0	0.091
2.00	-56.78	-5.55	0.00	-503.8	0.00	503.82	4,719.40	1,378.05	8,211.04	6,420.13	0.00	-0.01	0.091
5.00	-55.61	-5.43	0.00	-487.2	0.00	487.18	4,690.61	1,359.81	7,995.15	6,296.03	0.01	-0.02	0.089
10.00	-53.67	-5.29	0.00	-460.0	0.00	460.02	4,640.62	1,329.41	7,641.72	6,088.89	0.03	-0.03	0.087
15.00	-51.75	-5.16	0.00	-433.6	0.00	433.55	4,588.12	1,299.02	7,296.27	5,881.55	0.08	-0.05	0.085
20.00	-49.87	-5.02	0.00	-407.8	0.00	407.77	4,533.11	1,268.62	6,958.82	5,674.24	0.14	-0.07	0.083
25.00	-48.02	-4.89	0.00	-382.7	0.00	382.67	4,475.60	1,238.22	6,629.36	5,467.18	0.22	-0.08	0.081
30.00	-46.20	-4.81	0.00	-358.2	0.00	358.24	4,415.57	1,207.82	6,307.88	5,260.60	0.31	-0.1	0.079
30.92	-45.87	-4.74	0.00	-353.8	0.00	353.80	4,404.23	1,202.22	6,249.48	5,222.59	0.33	-0.1	0.078
35.00	-43.28	-4.63	0.00	-334.5	0.00	334.47	4,353.04	1,177.42	5,994.40	5,054.74	0.42	-0.12	0.076
38.71	-40.96	-4.56	0.00	-317.3	0.00	317.27	4,338.50	1,170.53	5,924.40	5,008.16	0.52	-0.13	0.073
40.00	-40.51	-4.47	0.00	-311.4	0.00	311.39	4,321.83	1,162.69	5,845.34	4,955.29	0.56	-0.13	0.072
45.00	-38.79	-4.33	0.00	-289.0	0.00	289.02	4,255.57	1,132.29	5,543.72	4,750.90	0.70	-0.15	0.070
50.00	-37.11	-4.19	0.00	-267.4	0.00	267.36	4,186.80	1,101.89	5,250.09	4,547.78	0.87	-0.17	0.068
55.00	-35.47	-4.04	0.00	-246.4	0.00	246.42	4,115.52	1,071.50	4,964.44	4,346.16	1.05	-0.18	0.065
60.00	-33.88	-3.93	0.00	-226.2	0.00	226.21	4,041.73	1,041.10	4,686.79	4,146.27	1.25	-0.2	0.063
62.94	-32.96	-3.85	0.00	-214.6	0.00	214.65	3,997.13	1,023.21	4,527.11	4,029.52	1.38	-0.21	0.062
65.00	-31.87	-3.75	0.00	-206.7	0.00	206.73	3,965.43	1,010.70	4,417.12	3,948.33	1.47	-0.22	0.060
69.63	-29.46	-3.67	0.00	-189.3	0.00	189.33	3,492.12	914.55	3,944.85	3,433.70	1.69	-0.23	0.064
70.00	-29.36	-3.60	0.00	-188.0	0.00	187.99	3,487.33	912.51	3,927.21	3,421.25	1.71	-0.23	0.063
75.00	-27.96	-3.45	0.00	-170.0	0.00	170.00	3,420.64	884.64	3,691.02	3,252.60	1.96	-0.25	0.060
80.00	-26.61	-3.31	0.00	-152.7	0.00	152.74	3,351.45	856.77	3,462.15	3,085.67	2.23	-0.27	0.057
85.00	-25.30	-3.16	0.00	-136.2	0.00	136.21	3,279.75	828.90	3,240.60	2,920.69	2.52	-0.28	0.054
90.00	-24.02	-3.04	0.00	-120.4	0.00	120.39	3,205.54	801.03	3,026.38	2,757.87	2.83	-0.3	0.051
93.29	-23.20	-2.97	0.00	-110.4	0.00	110.37	3,155.28	782.67	2,889.24	2,651.89	3.04	-0.31	0.049
95.00	-22.50	-2.89	0.00	-105.3	0.00	105.30	3,128.82	773.16	2,819.48	2,597.45	3.15	-0.32	0.048
99.03	-20.87	-2.81	0.00	-93.6	0.00	93.65	2,732.94	693.76	2,497.43	2,241.20	3.42	-0.33	0.049
100.00	-20.66	-2.73	0.00	-90.9	0.00	90.93	2,720.25	688.86	2,462.32	2,214.93	3.49	-0.33	0.049
105.00	-19.57	-2.59	0.00	-77.3	0.00	77.27	2,653.08	663.53	2,284.57	2,080.18	3.85	-0.35	0.045
110.00	-18.51	-2.46	0.00	-64.3	0.00	64.30	2,583.40	638.20	2,113.48	1,947.58	4.22	-0.36	0.040
115.00	-17.50	-2.33	0.00	-52.0	0.00	52.00	2,511.21	612.87	1,949.06	1,817.38	4.60	-0.38	0.036
120.00	-16.53	-2.20	0.00	-40.4	0.00	40.37	2,436.51	587.54	1,791.28	1,689.80	5.00	-0.39	0.031
124.63	-15.66	-2.13	0.00	-30.2	0.00	30.19	2,365.18	564.10	1,651.27	1,574.31	5.38	-0.4	0.026
125.00	-15.56	-2.08	0.00	-29.4	0.00	29.39	2,359.30	562.20	1,640.17	1,565.06	5.42	-0.4	0.025
129.39	-14.43	-2.01	0.00	-20.3	0.00	20.29	1,154.81	329.21	937.25	750.40	5.78	-0.4	0.040
130.00	-9.07	-1.32	0.00	-19.1	0.00	19.06	1,151.58	327.35	926.65	744.03	5.84	-0.41	0.034
135.00	-8.46	-1.20	0.00	-12.5	0.00	12.48	1,123.87	312.15	842.60	692.22	6.27	-0.42	0.026
140.00	-7.88	-1.08	0.00	-6.5	0.00	6.50	1,093.66	296.95	762.55	640.60	6.71	-0.42	0.017
145.00	-7.33	-1.01	0.00	-1.1	0.00	1.10	1,060.94	281.75	686.49	589.42	7.15	-0.43	0.009
146.00	-0.31	-0.03	0.00	-0.1	0.00	0.09	1,054.09	278.71	671.76	579.26	7.24	-0.43	0.000
149.00	0.00	-0.03	0.00	0.0	0.00	0.00	1,032.95	269.59	628.52	548.94	7.51	-0.43	0.000

Load Case: 1.0D + 1.0W Service Normal 60 mph Wind with No Ice 19 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.00
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-37.31	-4.58	0.00	-425.1	0.00	425.07	4,738.09	1,390.21	8,356.57	6,502.75	0.00	0	0.073
2.00	-36.67	-4.47	0.00	-415.9	0.00	415.90	4,719.40	1,378.05	8,211.04	6,420.13	0.00	-0.01	0.073
5.00	-35.86	-4.38	0.00	-402.5	0.00	402.49	4,690.61	1,359.81	7,995.15	6,296.03	0.01	-0.01	0.072
10.00	-34.54	-4.27	0.00	-380.6	0.00	380.59	4,640.62	1,329.41	7,641.72	6,088.89	0.03	-0.03	0.070
15.00	-33.24	-4.16	0.00	-359.2	0.00	359.23	4,588.12	1,299.02	7,296.27	5,881.55	0.06	-0.04	0.068
20.00	-31.97	-4.06	0.00	-338.4	0.00	338.41	4,533.11	1,268.62	6,958.82	5,674.24	0.11	-0.05	0.067
25.00	-30.74	-3.95	0.00	-318.1	0.00	318.13	4,475.60	1,238.22	6,629.36	5,467.18	0.18	-0.07	0.065
30.00	-29.53	-3.89	0.00	-298.4	0.00	298.36	4,415.57	1,207.82	6,307.88	5,260.60	0.26	-0.08	0.063
30.92	-29.31	-3.84	0.00	-294.8	0.00	294.77	4,404.23	1,202.22	6,249.48	5,222.59	0.27	-0.08	0.063
35.00	-27.40	-3.76	0.00	-279.1	0.00	279.11	4,353.04	1,177.42	5,994.40	5,054.74	0.35	-0.1	0.062
38.71	-25.69	-3.70	0.00	-265.2	0.00	265.16	4,338.50	1,170.53	5,924.40	5,008.16	0.43	-0.11	0.059
40.00	-25.39	-3.63	0.00	-260.4	0.00	260.39	4,321.83	1,162.69	5,845.34	4,955.29	0.46	-0.11	0.058
45.00	-24.26	-3.53	0.00	-242.2	0.00	242.22	4,255.57	1,132.29	5,543.72	4,750.90	0.58	-0.12	0.057
50.00	-23.15	-3.41	0.00	-224.6	0.00	224.60	4,186.80	1,101.89	5,250.09	4,547.78	0.72	-0.14	0.055
55.00	-22.08	-3.30	0.00	-207.5	0.00	207.52	4,115.52	1,071.50	4,964.44	4,346.16	0.87	-0.15	0.053
60.00	-21.03	-3.22	0.00	-191.0	0.00	191.00	4,041.73	1,041.10	4,686.79	4,146.27	1.04	-0.17	0.051
62.94	-20.43	-3.16	0.00	-181.5	0.00	181.54	3,997.13	1,023.21	4,527.11	4,029.52	1.15	-0.17	0.050
65.00	-19.64	-3.09	0.00	-175.0	0.00	175.03	3,965.43	1,010.70	4,417.12	3,948.33	1.22	-0.18	0.049
69.63	-17.89	-3.03	0.00	-160.7	0.00	160.74	3,492.12	914.55	3,944.85	3,433.70	1.41	-0.19	0.052
70.00	-17.82	-2.97	0.00	-159.6	0.00	159.63	3,487.33	912.51	3,927.21	3,421.25	1.42	-0.19	0.052
75.00	-16.93	-2.86	0.00	-144.8	0.00	144.80	3,420.64	884.64	3,691.02	3,252.60	1.63	-0.21	0.049
80.00	-16.06	-2.75	0.00	-130.5	0.00	130.51	3,351.45	856.77	3,462.15	3,085.67	1.86	-0.22	0.047
85.00	-15.22	-2.64	0.00	-116.8	0.00	116.77	3,279.75	828.90	3,240.60	2,920.69	2.10	-0.24	0.045
90.00	-14.41	-2.55	0.00	-103.6	0.00	103.57	3,205.54	801.03	3,026.38	2,757.87	2.36	-0.25	0.042
93.29	-13.89	-2.50	0.00	-95.2	0.00	95.17	3,155.28	782.67	2,889.24	2,651.89	2.53	-0.26	0.040
95.00	-13.39	-2.44	0.00	-90.9	0.00	90.91	3,128.82	773.16	2,819.48	2,597.45	2.63	-0.27	0.039
99.03	-12.22	-2.38	0.00	-81.1	0.00	81.08	2,732.94	693.76	2,497.43	2,241.20	2.86	-0.28	0.041
100.00	-12.09	-2.32	0.00	-78.8	0.00	78.78	2,720.25	688.86	2,462.32	2,214.93	2.91	-0.28	0.040
105.00	-11.41	-2.22	0.00	-67.2	0.00	67.18	2,653.08	663.53	2,284.57	2,080.18	3.21	-0.29	0.037
110.00	-10.76	-2.12	0.00	-56.1	0.00	56.09	2,583.40	638.20	2,113.48	1,947.58	3.53	-0.31	0.033
115.00	-10.13	-2.02	0.00	-45.5	0.00	45.50	2,511.21	612.87	1,949.06	1,817.38	3.85	-0.32	0.029
120.00	-9.53	-1.93	0.00	-35.4	0.00	35.40	2,436.51	587.54	1,791.28	1,689.80	4.19	-0.33	0.025
124.63	-8.99	-1.88	0.00	-26.5	0.00	26.47	2,365.18	564.10	1,651.27	1,574.31	4.51	-0.34	0.021
125.00	-8.92	-1.84	0.00	-25.8	0.00	25.77	2,359.30	562.20	1,640.17	1,565.06	4.54	-0.34	0.020
129.39	-8.15	-1.79	0.00	-17.7	0.00	17.71	1,154.81	329.21	937.25	750.40	4.85	-0.34	0.031
130.00	-4.98	-1.13	0.00	-16.6	0.00	16.61	1,151.58	327.35	926.65	744.03	4.90	-0.34	0.027
135.00	-4.66	-1.04	0.00	-11.0	0.00	10.97	1,123.87	312.15	842.60	692.22	5.26	-0.35	0.020
140.00	-4.36	-0.96	0.00	-5.8	0.00	5.76	1,093.66	296.95	762.55	640.60	5.64	-0.36	0.013
145.00	-4.07	-0.91	0.00	-1.0	0.00	0.97	1,060.94	281.75	686.49	589.42	6.01	-0.36	0.005
146.00	-0.16	-0.02	0.00	-0.1	0.00	0.06	1,054.09	278.71	671.76	579.26	6.09	-0.36	0.000
149.00	0.00	-0.02	0.00	0.0	0.00	0.00	1,032.95	269.59	628.52	548.94	6.32	-0.36	0.000

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

(Based on ASCE7-16 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S_S):	0.212
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.055
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a:	1.600
Site Coefficient F_v:	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.226
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.088
Seismic Response Coefficient (C_s):	0.037
Upper Limit C_S:	0.037
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	1.590
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.550
Total Unfactored Dead Load:	37.310 k
Seismic Base Shear (E):	1.370 k

1.2D + 1.0Ev + 1.0Eh Normal **Seismic**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
40	147.5	159	362	0.011	15	199
39	145.5	56	124	0.004	5	70
38	142.5	289	620	0.018	25	360
37	137.5	303	617	0.018	25	378
36	132.5	318	611	0.018	25	396
35	129.6927	42	78	0.002	3	52
34	127.1927	773	1,394	0.041	56	963
33	124.8125	68	118	0.004	5	84
32	122.3125	537	910	0.027	37	668
31	117.5	604	963	0.028	39	752
30	112.5	628	937	0.027	38	782
29	107.5	653	907	0.027	36	813
28	102.5	677	874	0.026	35	843
27	99.5169	134	165	0.005	7	167
26	97.0169	1,164	1,380	0.040	55	1,450
25	94.1471	502	569	0.017	23	626
24	91.6471	520	565	0.016	23	648
23	87.5	812	820	0.024	33	1,011
22	82.5	839	774	0.023	31	1,045
21	77.5	866	725	0.021	29	1,078
20	72.5	893	675	0.020	27	1,112
19	69.8164	67	48	0.001	2	83
18	67.3164	1,748	1,178	0.034	47	2,177
17	63.9713	792	493	0.014	20	986
16	61.4713	602	352	0.010	14	749
15	57.5	1,046	552	0.016	22	1,302
14	52.5	1,075	493	0.014	20	1,339
13	47.5	1,105	434	0.013	17	1,376
12	42.5	1,134	375	0.011	15	1,412
11	39.3555	297	87	0.003	4	370
10	36.8555	1,706	452	0.013	18	2,124
9	32.9609	1,912	427	0.012	17	2,381
8	30.4609	219	43	0.001	2	273
7	27.5	1,207	204	0.006	8	1,504

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
6	22.5	1,237	153	0.004	6	1,540
5	17.5	1,266	106	0.003	4	1,577
4	12.5	1,296	65	0.002	3	1,614
3	7.5	1,325	30	0.001	1	1,650
2	3.5	809	6	0.000	0	1,008
1	1	545	1	0.000	0	679
Samsung B5/B13 RRH-BR04C	146	211	471	0.014	19	263
Samsung B2/B66A RRH-BR049	146	253	565	0.016	23	315
Samsung MT6407-77A	146	245	546	0.016	22	305
Generic Mount Reinforcement	146	200	446	0.013	18	249
Kathrein Scala 800 10735V01	146	93	207	0.006	8	115
JMA Wireless MX06FRO660-03	146	360	803	0.024	32	448
Generic Round Platform with Handrails	146	2,500	5,579	0.163	224	3,113
Commscope RDIDC-9181-PF-48	130	22	41	0.001	2	27
Fujitsu TA08025-B605	130	225	420	0.012	17	280
Fujitsu TA08025-B604	130	192	357	0.010	14	239
JMA Wireless MX08FRO665-21	130	194	361	0.011	15	241
Generic Flat Platform with Handrails	130	2,500	4,662	0.136	187	3,113
RFS DB-T1-6Z-8AB-0Z	2	88	0	0.000	0	110
		37,308	34,143	1.000	1,373	46,457

0.9D - 1.0Ev + 1.0Eh Normal **Seismic (Reduced DL)**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
40	147.5	159	362	0.011	15	136
39	145.5	56	124	0.004	5	48
38	142.5	289	620	0.018	25	247
37	137.5	303	617	0.018	25	259
36	132.5	318	611	0.018	25	272
35	129.6927	42	78	0.002	3	36
34	127.1927	773	1,394	0.041	56	661
33	124.8125	68	118	0.004	5	58
32	122.3125	537	910	0.027	37	459
31	117.5	604	963	0.028	39	516
30	112.5	628	937	0.027	38	537
29	107.5	653	907	0.027	36	558
28	102.5	677	874	0.026	35	579
27	99.5169	134	165	0.005	7	114
26	97.0169	1,164	1,380	0.040	55	995
25	94.1471	502	569	0.017	23	429
24	91.6471	520	565	0.016	23	445
23	87.5	812	820	0.024	33	694
22	82.5	839	774	0.023	31	717
21	77.5	866	725	0.021	29	740
20	72.5	893	675	0.020	27	763
19	69.8164	67	48	0.001	2	57
18	67.3164	1,748	1,178	0.034	47	1,495
17	63.9713	792	493	0.014	20	677
16	61.4713	602	352	0.010	14	514
15	57.5	1,046	552	0.016	22	894
14	52.5	1,075	493	0.014	20	919
13	47.5	1,105	434	0.013	17	944
12	42.5	1,134	375	0.011	15	970
11	39.3555	297	87	0.003	4	254
10	36.8555	1,706	452	0.013	18	1,458
9	32.9609	1,912	427	0.012	17	1,634
8	30.4609	219	43	0.001	2	188
7	27.5	1,207	204	0.006	8	1,032
6	22.5	1,237	153	0.004	6	1,057
5	17.5	1,266	106	0.003	4	1,082
4	12.5	1,296	65	0.002	3	1,108
3	7.5	1,325	30	0.001	1	1,133

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
2	3.5	809	6	0.000	0	692
1	1	545	1	0.000	0	466
Samsung B5/B13 RRH-BR04C	146	211	471	0.014	19	180
Samsung B2/B66A RRH-BR049	146	253	565	0.016	23	216
Samsung MT6407-77A	146	245	546	0.016	22	209
Generic Mount Reinforcement	146	200	446	0.013	18	171
Kathrein Scala 800 10735V01	146	93	207	0.006	8	79
JMA Wireless MX06FRO660-03	146	360	803	0.024	32	308
Generic Round Platform with Handrails	146	2,500	5,579	0.163	224	2,137
Commscope RDIDC-9181-PF-48	130	22	41	0.001	2	19
Fujitsu TA08025-B605	130	225	420	0.012	17	192
Fujitsu TA08025-B604	130	192	357	0.010	14	164
JMA Wireless MX08FRO665-21	130	194	361	0.011	15	165
Generic Flat Platform with Handrails	130	2,500	4,662	0.136	187	2,137
RFS DB-T1-6Z-8AB-0Z	2	88	0	0.000	0	75
		37,308	34,143	1.000	1,373	31,890

1.2D + 1.0Ev + 1.0Eh Normal **Seismic**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-45.78	-1.37	0.00	-155.53	0.00	155.53	4,738.09	1,390.21	8,357	6,502.75	0.00	0.00	0.03
2.00	-44.66	-1.37	0.00	-152.78	0.00	152.78	4,719.40	1,378.05	8,211	6,420.13	0.00	0.00	0.03
5.00	-43.01	-1.38	0.00	-148.66	0.00	148.66	4,690.61	1,359.81	7,995	6,296.03	0.00	0.00	0.03
10.00	-41.40	-1.38	0.00	-141.78	0.00	141.78	4,640.62	1,329.41	7,642	6,088.89	0.01	-0.01	0.03
15.00	-39.82	-1.38	0.00	-134.90	0.00	134.90	4,588.12	1,299.02	7,296	5,881.55	0.02	-0.02	0.03
20.00	-38.28	-1.37	0.00	-128.02	0.00	128.02	4,533.11	1,268.62	6,959	5,674.24	0.04	-0.02	0.03
25.00	-36.78	-1.37	0.00	-121.16	0.00	121.16	4,475.60	1,238.22	6,629	5,467.18	0.07	-0.03	0.03
30.00	-36.50	-1.37	0.00	-114.33	0.00	114.33	4,415.57	1,207.82	6,308	5,260.60	0.10	-0.03	0.03
30.92	-34.12	-1.35	0.00	-113.07	0.00	113.07	4,404.23	1,202.22	6,249	5,222.59	0.10	-0.03	0.03
35.00	-32.00	-1.33	0.00	-107.56	0.00	107.56	4,353.04	1,177.42	5,994	5,054.74	0.13	-0.04	0.03
38.71	-31.63	-1.33	0.00	-102.61	0.00	102.61	4,338.50	1,170.53	5,924	5,008.16	0.16	-0.04	0.03
40.00	-30.21	-1.32	0.00	-100.90	0.00	100.90	4,321.83	1,162.69	5,845	4,955.29	0.17	-0.04	0.03
45.00	-28.84	-1.30	0.00	-94.32	0.00	94.32	4,255.57	1,132.29	5,544	4,750.90	0.22	-0.05	0.03
50.00	-27.50	-1.28	0.00	-87.81	0.00	87.81	4,186.80	1,101.89	5,250	4,547.78	0.27	-0.05	0.03
55.00	-26.20	-1.26	0.00	-81.40	0.00	81.40	4,115.52	1,071.50	4,964	4,346.16	0.33	-0.06	0.03
60.00	-25.45	-1.25	0.00	-75.09	0.00	75.09	4,041.73	1,041.10	4,687	4,146.27	0.39	-0.06	0.02
62.94	-24.46	-1.23	0.00	-71.42	0.00	71.42	3,997.13	1,023.21	4,527	4,029.52	0.43	-0.07	0.02
65.00	-22.28	-1.18	0.00	-68.89	0.00	68.89	3,965.43	1,010.70	4,417	3,948.33	0.46	-0.07	0.02
69.63	-22.20	-1.18	0.00	-63.42	0.00	63.42	3,492.12	914.55	3,945	3,433.70	0.53	-0.07	0.03
70.00	-21.09	-1.15	0.00	-62.99	0.00	62.99	3,487.33	912.51	3,927	3,421.25	0.54	-0.07	0.02
75.00	-20.01	-1.12	0.00	-57.23	0.00	57.23	3,420.64	884.64	3,691	3,252.60	0.62	-0.08	0.02
80.00	-18.97	-1.09	0.00	-51.61	0.00	51.61	3,351.45	856.77	3,462	3,085.67	0.71	-0.09	0.02
85.00	-17.96	-1.06	0.00	-46.15	0.00	46.15	3,279.75	828.90	3,241	2,920.69	0.80	-0.09	0.02
90.00	-17.31	-1.04	0.00	-40.85	0.00	40.85	3,205.54	801.03	3,026	2,757.87	0.90	-0.10	0.02
93.29	-16.68	-1.01	0.00	-37.43	0.00	37.43	3,155.28	782.67	2,889	2,651.89	0.97	-0.10	0.02
95.00	-15.23	-0.96	0.00	-35.70	0.00	35.70	3,128.82	773.16	2,819	2,597.45	1.00	-0.10	0.02
99.03	-15.07	-0.95	0.00	-31.84	0.00	31.84	2,732.94	693.76	2,497	2,241.20	1.09	-0.11	0.02
100.00	-14.22	-0.92	0.00	-30.92	0.00	30.92	2,720.25	688.86	2,462	2,214.93	1.11	-0.11	0.02
105.00	-13.41	-0.88	0.00	-26.34	0.00	26.34	2,653.08	663.53	2,285	2,080.18	1.23	-0.11	0.02
110.00	-12.63	-0.84	0.00	-21.95	0.00	21.95	2,583.40	638.20	2,113	1,947.58	1.35	-0.12	0.02
115.00	-11.88	-0.80	0.00	-17.75	0.00	17.75	2,511.21	612.87	1,949	1,817.38	1.48	-0.12	0.01
120.00	-11.21	-0.76	0.00	-13.75	0.00	13.75	2,436.51	587.54	1,791	1,689.80	1.61	-0.13	0.01
124.63	-11.12	-0.76	0.00	-10.22	0.00	10.22	2,365.18	564.10	1,651	1,574.31	1.73	-0.13	0.01
125.00	-10.16	-0.70	0.00	-9.93	0.00	9.93	2,359.30	562.20	1,640	1,565.06	1.75	-0.13	0.01
129.39	-10.11	-0.70	0.00	-6.86	0.00	6.86	1,154.81	329.21	937	750.40	1.87	-0.13	0.02
130.00	-5.81	-0.43	0.00	-6.43	0.00	6.43	1,151.58	327.35	927	744.03	1.88	-0.13	0.01
135.00	-5.44	-0.40	0.00	-4.28	0.00	4.28	1,123.87	312.15	843	692.22	2.03	-0.14	0.01
140.00	-5.08	-0.38	0.00	-2.26	0.00	2.26	1,093.66	296.95	763	640.60	2.17	-0.14	0.01
145.00	-5.01	-0.37	0.00	-0.37	0.00	0.37	1,060.94	281.75	686	589.42	2.32	-0.14	0.01
146.00	0.00	0.00	0.00	0.00	0.00	0.00	1,054.09	278.71	672	579.26	2.35	-0.14	0.00
149.00	0.00	0.00	0.00	0.00	0.00	0.00	1,032.95	269.59	629	548.94	2.43	-0.14	0.00

0.9D - 1.0Ev + 1.0Eh Normal **Seismic (Reduced DL)**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-31.42	-1.37	0.00	-154.52	0.00	154.52	4,738.09	1,390.21	8,357	6,502.75	0.00	0.00	0.03
2.00	-30.66	-1.37	0.00	-151.77	0.00	151.77	4,719.40	1,378.05	8,211	6,420.13	0.00	0.00	0.03
5.00	-29.52	-1.37	0.00	-147.65	0.00	147.65	4,690.61	1,359.81	7,995	6,296.03	0.00	0.00	0.03
10.00	-28.42	-1.37	0.00	-140.79	0.00	140.79	4,640.62	1,329.41	7,642	6,088.89	0.01	-0.01	0.03
15.00	-27.33	-1.37	0.00	-133.92	0.00	133.92	4,588.12	1,299.02	7,296	5,881.55	0.02	-0.01	0.03
20.00	-26.28	-1.37	0.00	-127.06	0.00	127.06	4,533.11	1,268.62	6,959	5,674.24	0.04	-0.02	0.03
25.00	-25.24	-1.36	0.00	-120.22	0.00	120.22	4,475.60	1,238.22	6,629	5,467.18	0.07	-0.03	0.03
30.00	-25.06	-1.36	0.00	-113.42	0.00	113.42	4,415.57	1,207.82	6,308	5,260.60	0.10	-0.03	0.03
30.92	-23.42	-1.34	0.00	-112.16	0.00	112.16	4,404.23	1,202.22	6,249	5,222.59	0.10	-0.03	0.03
35.00	-21.96	-1.33	0.00	-106.68	0.00	106.68	4,353.04	1,177.42	5,994	5,054.74	0.13	-0.04	0.03
38.71	-21.71	-1.32	0.00	-101.76	0.00	101.76	4,338.50	1,170.53	5,924	5,008.16	0.16	-0.04	0.03
40.00	-20.74	-1.31	0.00	-100.05	0.00	100.05	4,321.83	1,162.69	5,845	4,955.29	0.17	-0.04	0.03
45.00	-19.80	-1.29	0.00	-93.51	0.00	93.51	4,255.57	1,132.29	5,544	4,750.90	0.22	-0.05	0.02
50.00	-18.88	-1.27	0.00	-87.04	0.00	87.04	4,186.80	1,101.89	5,250	4,547.78	0.27	-0.05	0.02
55.00	-17.98	-1.25	0.00	-80.67	0.00	80.67	4,115.52	1,071.50	4,964	4,346.16	0.33	-0.06	0.02
60.00	-17.47	-1.24	0.00	-74.41	0.00	74.41	4,041.73	1,041.10	4,687	4,146.27	0.39	-0.06	0.02
62.94	-16.79	-1.22	0.00	-70.76	0.00	70.76	3,997.13	1,023.21	4,527	4,029.52	0.43	-0.07	0.02
65.00	-15.30	-1.17	0.00	-68.25	0.00	68.25	3,965.43	1,010.70	4,417	3,948.33	0.46	-0.07	0.02
69.63	-15.24	-1.17	0.00	-62.83	0.00	62.83	3,492.12	914.55	3,945	3,433.70	0.53	-0.07	0.02
70.00	-14.48	-1.14	0.00	-62.40	0.00	62.40	3,487.33	912.51	3,927	3,421.25	0.53	-0.07	0.02
75.00	-13.74	-1.11	0.00	-56.68	0.00	56.68	3,420.64	884.64	3,691	3,252.60	0.61	-0.08	0.02
80.00	-13.02	-1.08	0.00	-51.11	0.00	51.11	3,351.45	856.77	3,462	3,085.67	0.70	-0.09	0.02
85.00	-12.32	-1.05	0.00	-45.69	0.00	45.69	3,279.75	828.90	3,241	2,920.69	0.79	-0.09	0.02
90.00	-11.88	-1.03	0.00	-40.44	0.00	40.44	3,205.54	801.03	3,026	2,757.87	0.89	-0.10	0.02
93.29	-11.45	-1.01	0.00	-37.05	0.00	37.05	3,155.28	782.67	2,889	2,651.89	0.96	-0.10	0.02
95.00	-10.46	-0.95	0.00	-35.34	0.00	35.34	3,128.82	773.16	2,819	2,597.45	1.00	-0.10	0.02
99.03	-10.34	-0.94	0.00	-31.51	0.00	31.51	2,732.94	693.76	2,497	2,241.20	1.08	-0.11	0.02
100.00	-9.76	-0.91	0.00	-30.60	0.00	30.60	2,720.25	688.86	2,462	2,214.93	1.11	-0.11	0.02
105.00	-9.20	-0.87	0.00	-26.07	0.00	26.07	2,653.08	663.53	2,285	2,080.18	1.22	-0.11	0.02
110.00	-8.67	-0.83	0.00	-21.72	0.00	21.72	2,583.40	638.20	2,113	1,947.58	1.34	-0.12	0.02
115.00	-8.15	-0.79	0.00	-17.57	0.00	17.57	2,511.21	612.87	1,949	1,817.38	1.47	-0.12	0.01
120.00	-7.69	-0.76	0.00	-13.60	0.00	13.60	2,436.51	587.54	1,791	1,689.80	1.60	-0.13	0.01
124.63	-7.64	-0.75	0.00	-10.11	0.00	10.11	2,365.18	564.10	1,651	1,574.31	1.72	-0.13	0.01
125.00	-6.97	-0.69	0.00	-9.83	0.00	9.83	2,359.30	562.20	1,640	1,565.06	1.73	-0.13	0.01
129.39	-6.94	-0.69	0.00	-6.79	0.00	6.79	1,154.81	329.21	937	750.40	1.85	-0.13	0.02
130.00	-3.99	-0.42	0.00	-6.36	0.00	6.36	1,151.58	327.35	927	744.03	1.87	-0.13	0.01
135.00	-3.73	-0.40	0.00	-4.24	0.00	4.24	1,123.87	312.15	843	692.22	2.01	-0.14	0.01
140.00	-3.48	-0.37	0.00	-2.24	0.00	2.24	1,093.66	296.95	763	640.60	2.15	-0.14	0.01
145.00	-3.44	-0.37	0.00	-0.37	0.00	0.37	1,060.94	281.75	686	589.42	2.30	-0.14	0.00
146.00	0.00	0.00	0.00	0.00	0.00	0.00	1,054.09	278.71	672	579.26	2.33	-0.14	0.00
149.00	0.00	0.00	0.00	0.00	0.00	0.00	1,032.95	269.59	629	548.94	2.41	-0.14	0.00

ANALYSIS SUMMARY

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W Normal	18.83	0.00	44.77	0.00	0.00	1751.40	0.00	0.28
0.9D + 1.0W Normal	18.83	0.00	33.57	0.00	0.00	1742.52	0.00	0.28
1.2D + 1.0Di + 1.0Wi Normal	5.67	0.00	57.73	0.00	0.00	515.16	0.00	0.09
1.2D + 1.0Ev + 1.0Eh Normal	1.38	0.00	45.78	0.00	0.00	155.53	0.00	0.03
0.9D - 1.0Ev + 1.0Eh Normal	1.37	0.00	31.42	0.00	0.00	154.52	0.00	0.03
1.0D + 1.0W Service Normal	4.58	0.00	37.31	0.00	0.00	425.07	0.00	0.07

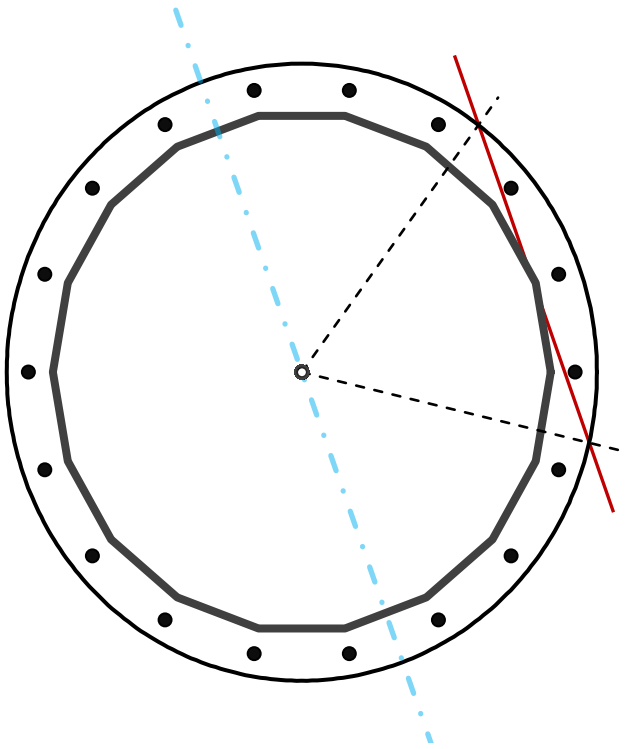
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	66.93	in
Thickness	3/8	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	1,751.4	k-ft
Axial, Pu	44.8	k
Shear, Vu	18.8	k
Neutral Axis	290	°

Report Capacities		
Component	Capacity	Result
Base Plate	5%	Pass
Anchor Rods	27%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ø	80.71	in
Thickness	3 1/8	in
Grade	A572-50	
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	5	in
Applied Moment, Mu	243.0	k
Bending Stress, ϕMn	4874.3	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	18	-
Diameter, ø	2 1/4	in
Bolt Circle	74.8	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	13.1	in
Orientation Offset	0	°
Applied Force, Pu	66.9	k
Anchor Rods, ϕPn	243.6	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	18.8	1751.4	1.00
Anchor Rod Forces	18.8	1751.4	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	78.0108	4.3339	0.2037		43197.93
Bolt	3.9761	3.2477	0.8393	4.5	38344.69
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Round	-
Diameter, D	80.71	in
Thickness, t	3.125	in
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Base Plate Chord	45.105	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	5	-

Anchor Rods		
Anchor Rod Quantity, N	18	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	74.8	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	66.9	k
Applied Shear, Vu	0.3	k
Compressive Capacity, ϕPn	243.6	k
Tensile Capacity, ϕRnt	0.275	OK
Interaction Capacity	0.079	OK

External Base Plate		
Chord Length AA	38.457	in
Additional AA	5.910	in
Section Modulus, Z	108.317	in^3
Applied Moment, Mu	243.0	k-ft
Bending Capacity, ϕMn	4874.3	k-ft
Capacity, Mu/ϕMn	0.050	OK
Chord Length AB	36.594	in
Additional AB	5.910	in
Section Modulus, Z	103.769	in^3
Applied Moment, Mu	145.1	k-ft
Bending Capacity, ϕMn	4669.6	k-ft
Capacity, Mu/ϕMn	0.031	OK
Bend Line Length	44.858	in
Additional Bend Line	0.000	in
Section Modulus, Z	109.515	in^3
Applied Moment, Mu	243.0	k-ft
Bending Capacity, ϕMn	4928.2	k-ft
Capacity, Mu/ϕMn	0.049	OK

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in^3
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Site Name: Brookfield 2, CT
Site Number: 209271
Tower Type: MP
Design Loads (Factored) - Analysis per TIA-222-H Standards

Monolithic Mat & Pier Foundation Analysis

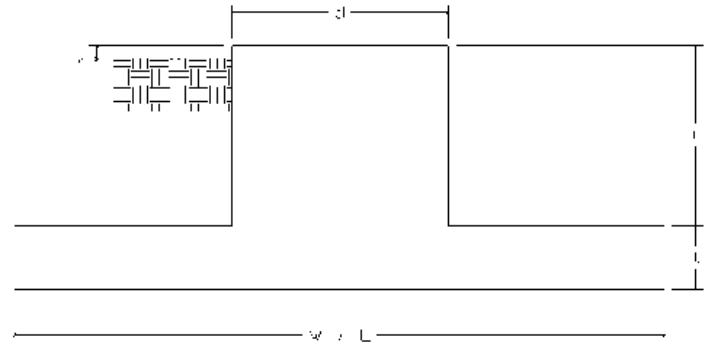
Foundation Analysis Parameters		
Design / Analysis / Mapping:	Analysis	-
Compression/Leg:	44.8	k
Uplift/Leg:	0.0	k
Total Shear:	18.8	k
Moment:	1,751.4	k-ft
Tower + Appurtenance Weight:	44.8	k
Depth to Base of Foundation (l + t - h):	5.5	ft
Diameter of Pier (d):	8	ft
Length of Pier (l):	4	ft
Height of Pier above Ground (h):	0.5	ft
Width of Pad (W):	30	ft
Length of Pad (L):	30	ft
Thickness of Pad (t):	2	ft
Tower Leg Center to Center:	0	ft
Number of Tower Legs:	1	-
Tower Center from Mat Center:	0	ft
Depth Below Ground Surface to Water Table:	19	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Soil Above Water Table:	125	pcf
Unit Weight of Water:	62.4	pcf
Unit Weight of Soil Below Water Table:	62.6	pcf
Friction Angle of Uplift:	15	°
Coefficient of Shear Friction:	0.3	-
Ultimate Compressive Bearing Pressure:	12,000	psf
Ultimate Passive Pressure on Pad Face:	1,687	psf
$f_{Soil\ and\ Concrete\ Weight}$:	0.9	-
f_{Soil}:	0.75	-

Overturning Moment Usage		
Design OTM:	1864.4	k-ft
OTM Resistance:	9928.7	k-ft
Design OTM / OTM Resistance:	19%	Pass

Soil Bearing Pressure Usage		
Net Bearing Pressure:	996	psf
Factored Nominal Bearing Pressure:	9000	psf
Factored Nominal (Net) Bearing Pressure:	11%	Pass
Load Direction Controling Design Bearing Pressure:	*Diagonal to Pad Edge*	

Sliding Factor of Safety		
Ultimate Friction Resistance:	212.8	k
Ultimate Passive Pressure Resistance:	75.9	k
Total Factored Sliding Resistance:	216.5	k
Sliding Design / Sliding Resistance:	9%	Pass

Foundation Steel Parameters		
Shear/Leg (Compression):	12.6	k
Shear/Leg (Uplift):	10.4	k
Concrete Strength (f'_c):	3,000	psi
Pad Tension Steel Depth:	20.38	in
Dead Load Factor:	0.9	-
f_{Shear}:	0.75	-
$f_{Flexure\ /\ Tension}$:	0.9	-
$f_{Compression:}$	0.65	-
b:	0.85	-
Bottom Pad Rebar Size #:	10	-
# of Bottom Pad Rebar:	42	-
Pad Bottom Steel Area:	53.34	in^2
Pad Steel F_y:	60,000	psi
Top Pad Rebar Size #:	10	-
# of Top Pad Rebar:	42	-
Pad Top Steel Area:	53.34	in^2
Pier Rebar Size #:	10	-
Pier Steel Area (Single Bar):	1.27	in^2
# of Pier Rebar:	32	-
Pier Steel F_y:	60,000	psi
Pier Cage Diameter:	87.5	in
Rebar Strain Limit:	0.008	-
Steel Elastic Modulus:	29,000	ksi
Tie Rebar Size #:	5	-
Tie Steel Area (Single Bar):	0.31	in^2
Tie Spacing:	6	in
Tie Steel F_y:	60,000	psi
Clear Cover:	3	in



Pad Strength Capacity			
Factored One Way Shear (V_u):	175.8	k	
One Way Shear Capacity (fV_c):	602.6	k	*ACI 318-14 25.5.5.1*
V_u / fV_c:	29%	Pass	
Load Direction Controling Shear Capacity:	*Parallel to Pad Edge*		
Lower Steel Pad Factored Moment (M_u):	1207.7	k-ft	
Lower Steel Pad Moment Capacity (fM_n):	4535.0	k-ft	*ACI 318-14 22.3.1.1*
M_u / fM_n:	27%	Pass	
Load Direction Controling Flexural Capacity:	*Parallel to Pad Edge*		
Upper Steel Pad Factored Moment (M_u):	361.4	k-ft	
Upper Steel Pad Moment Capacity (fM_n):	4535.0	k-ft	
M_u / fM_n:	8%	Pass	
Lower Pad Flexural Reinforcement Ratio:	0.0073		*OK - ACI 318-14 7.6.1.1 & 8.6.1.1*
Upper Pad Flexural Reinforcement Ratio:	0.0073		*OK - ACI 318-14 7.6.1.1 & 8.6.1.1*
Pad Shrinkage Reinforcement Ratio:	0.0145		*OK - ACI 318-14 24.4.3.2*
Lower Pad Reinforcement Spacing:	8.6	in	*OK - ACI 318-14 7.7.2.3, 8.7.2.2, & 24.4.3.3*
Upper Pad Reinforcement Spacing:	8.6	in	*OK - ACI 318-14 7.7.2.3, 8.7.2.2, & 24.4.3.3*
Ultimate Punching Shear Stress, v_u:	35.18	psi	*ACI 318-14 R8.4.4.2.3*
Nominal Punching Shear Capacity (f_cv_c):	164.3	psi	*ACI 318-14 22.6.5.2*
v_u / f_cv_c:	21%	Pass	
Pier Moment Pad Flexure Transfer Ratio, γ_f:	0.60		*TIA-222-H 9.4.2*
Moment Transfer Effective Flexural Width, B_{eff}:	14.00	ft	*TIA-222-H 9.4.2*
Moment Transfer Through Pad Flexure:	13152.38	k-in	*TIA-222-H 9.4.2*
Moment Transfer Flexural Capacity ($fM_{sc,f}$):	26456.87	k-in	
g_fM_{sc} / $fM_{sc,f}$:	0%	Pass	

Pier Strength Capacity			
Factored Moment in Pier (M_u):	1826.7	k-ft	
Pier Moment Capacity (fM_n):	7829.1	k-ft	
M_u / fM_n:	23%	Pass	
Factored Shear in Pier (V_u):	18.8	k	
Pier Shear Capacity (fV_n):	953.6	k	*ACI 318-14 22.5.1.1*
V_u / fV_c:	2%	Pass	
Pier Shear Reinforcement Ratio:	0.0005		*OK - No Ties Necessary for Shear - ACI11.5.6.1*
Factored Tension in Pier (T_u):	0.0	k	
Pier Tension Capacity (fT_n):	2194.6	k	
T_u / fT_n:	0%	Pass	
Factored Compression in Pier (P_u):	44.8	k	
Pier Compression Capacity (fP_n):	9583.6	k	*ACI 318-14 22.4.2.1*
P_u / fP_n:	0%	Pass	
Pier Compression Reinforcement Ratio:	0.006		*OK - TIA-222-H 9.4.1*
Minimum Depth to Develop Vertical Rebar:	52	in	*ACI 318-14 25.4.2.3*
Minimum Hook Development Length:	28	in	*ACI 318-14 25.4.3.1*
Minimum Mat Thickness / Edge Distance from Pier:	31.0	in	
Minimum Foundation Depth:	7.18	ft	
$M_u/f_BM_n + T_u/f_TT_n$:	23%	Pass	

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

SMJ International

Antenna Mount Analysis Report

ATC Site Name	:	**Brookfield 2, CT**
ATC Site Number	:	**209271**
Engineering Number	:	**13700320_C8_04**
Mount Elevation	:	**130 ft**
Carrier	:	**Dish Wireless L.L.C.**
Carrier Site Name	:	**NJJER01099B**
Carrier Site Number	:	**NJJER01099B**
Site Location	:	**100 Pocono Road** **Brookfield, CT 06804** **41.46295556, -73.39826667**
County	:	**Fairfield**
Date	:	**March 24, 2022**
Max Usage	:	**67%**
Result	:	**Pass**

Prepared By:
Dmitriy Albul
Qualified Engineer

Reviewed By:

STATE OF CONNECTICUT
DMITRIY V. ALBUL
No. 26725
LICENSED
PROFESSIONAL ENGINEER

03-24-22

Table of Contents

Introduction

The purpose of this report is to summarize results of the antenna mount analysis performed for Dish Wireless at 130 ft.

Supporting Documents

Other	Preview Exhibit by American Tower Corporation, dated August 16, 2021
Construction Drawings	B+T Group Project No. 155784.001.01, dated September 28, 2021
Spec Sheet	Commscope MC-PR8-DSH

Analysis

This antenna mount was analyzed using RISA-3D v19 analysis software

Basic Wind Speed:	115 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.0" radial ice concurrent
Codes:	ANSI/TIA-222-H / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Procedure:	Method II
Topographic Feature:	Flat
Crest Height:	0 ft
Crest Length:	0 ft
Spectral Response:	Ss = 0.212, S_1 = 0.055
Site Class:	D - Default
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed. The mount can support the equipment as described in this report. Analysis is based on new Commscope MC-PK8-DSH Mount.

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.

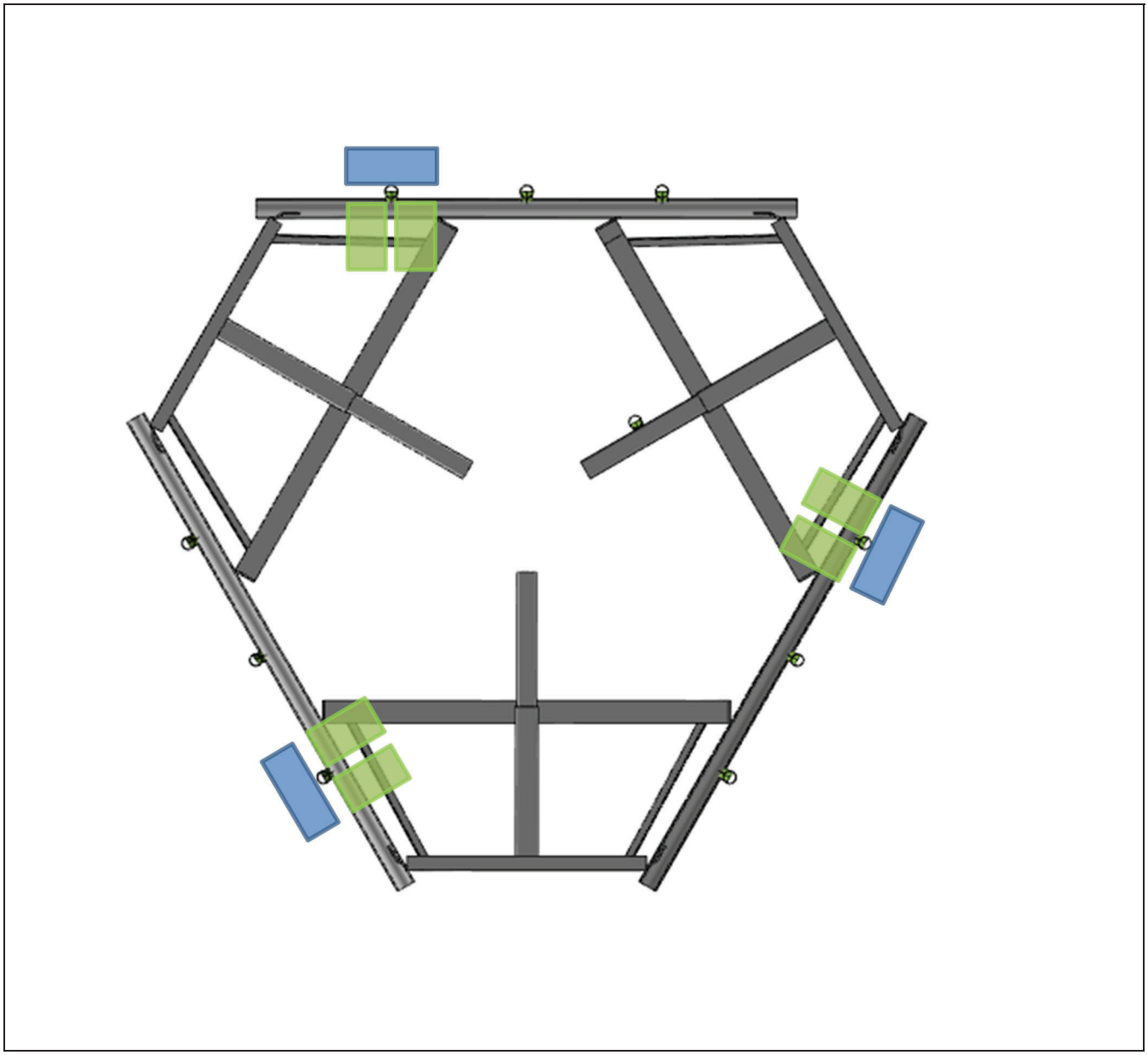
Antenna Loading

Mount Centerline (ft)	Antenna Centerline (ft)	Qty	Antenna Model
130.0	130.0	3	JMA Wireless MX08FRO665-21
		1	Commscope RDIDC-9181-PF-48
		3	Fujitsu TA08025-B605
		3	Fujitsu TA08025-B604

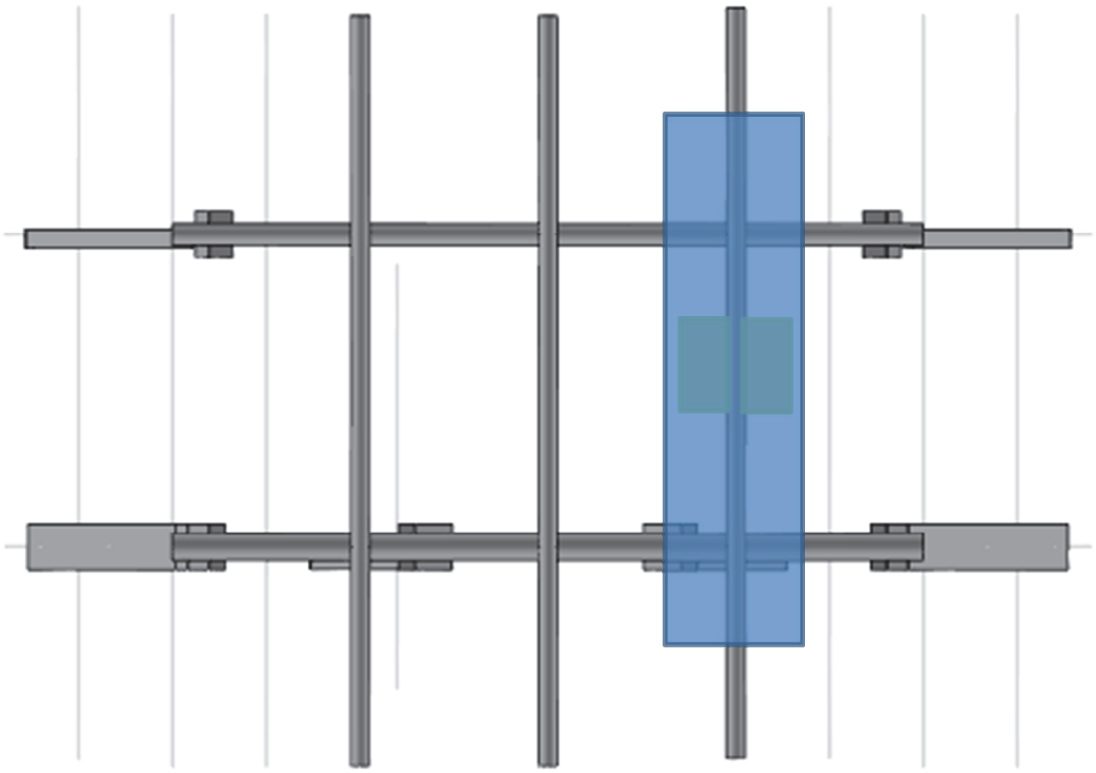
Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Mount Pipes	49%	Pass
Frame Rails	15%	Pass
Handrails	47%	Pass
Arms	38%	Pass
Plates	67%	Pass
Cross Arms	61%	Pass
Angles	14%	Pass
Connections	24%	Pass

Mount Layout



Equipment Layout



Standard Conditions

All engineering services performed by ATC Tower 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 ATC Tower Services, LLC

It is the responsibility of the client to ensure that the information provided to ATC Tower Services, LLC and used in the performance of our engineering services is correct and complete.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

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

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

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

SMJ International

Date:	3/24/2022
Site Name:	Brookfield 2, CT
Project Engineer:	DVA
Project No:	13700320_C8_04
Customer:	American Tower Corporation
Carrier:	T-Mobile

Building Code:	2015	
TIA Standard:	H	
Mount Type:	Platform	
Mount Existing?	Proposed	
Mount Centerline:	130	ft
Superstructure Height:	149	ft
Structure Type:	Tower	

Site Information		
Exposure Category:	B	
Risk Category:	II	
Ground Elevation	336.8	ft
Ultimate Wind Speed:	115	mph
Design Wind Speed:	115	mph
Ice Thickness:	1.00	in
Ice Wind Speed:	50.0	mph
Escalated Ice Thickness:	1.15	in
Topographic Method:	2	
Topographic Category:	1	

Factors	
Gh:	1.000
K_{zmin}:	0.700
K_z:	1.065
K_d:	0.950
K_{zt}:	1.000
Ke:	0.988
Ka:	0.900
I ice:	1.000

q_z:	33.84	psf
Surface Wind Pressure:	0.00	psf

Run Seismic?	Yes
Site Soil:	D (Default)
Short-Period Accel. (Ss):	0.2120
1-Second Accel. (S1):	0.0550
Short-Period Design (SDS):	0.2260
1-Second Design (SD1):	0.0890
Short-Period Coeff. (Fa):	1.6000
1-Second Coeff. (Fv):	2.4000
Cs	0.1130
Cs min	0.0300
Amplification Factor (ap):	1.00
Response Mod. (Rp):	2.50
Overstrength (Ωo):	1.00

Service Wind:	30	mph
Lm (man live load) =	500	lb
Lv (man live load) =	250	lb

Table 1. Equipment Specifications and Wind Pressure

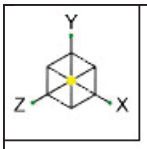
Manufacturer	Model	Elevation	Pipe Label	Weight (lb)	Height (in)	Width (in)	Depth (in)	EPA_N	EPA_T	$EPA_{N\ w/\ ice}$	$EPA_{T\ w/\ ice}$	q_z:	$q_{z\ ice}$:	$q_{z\ live}$:
JMA WIRELESS	MX08FRO665-21	130	4, 58, 49	64.50	72.00	20	8	12.49	5.87	14.23	7.47	33.84	6.40	2.30
COMMSCOPE	RDIDC-9181-PF-48	130	121	21.90	16	14	8.00	1.77	1.05	2.36	1.53	33.84	6.40	2.30
Fujitsu	TA08025-B605	130	4, 58, 49	75.00	15.70	15.00	9.10	1.86	1.16	2.45	1.65	33.84	6.40	2.30
Fujitsu	TA08025-B604	130	4, 58, 49	63.90	15.7	15	7.9	1.86	1.01	2.45	1.49	33.84	6.40	2.30

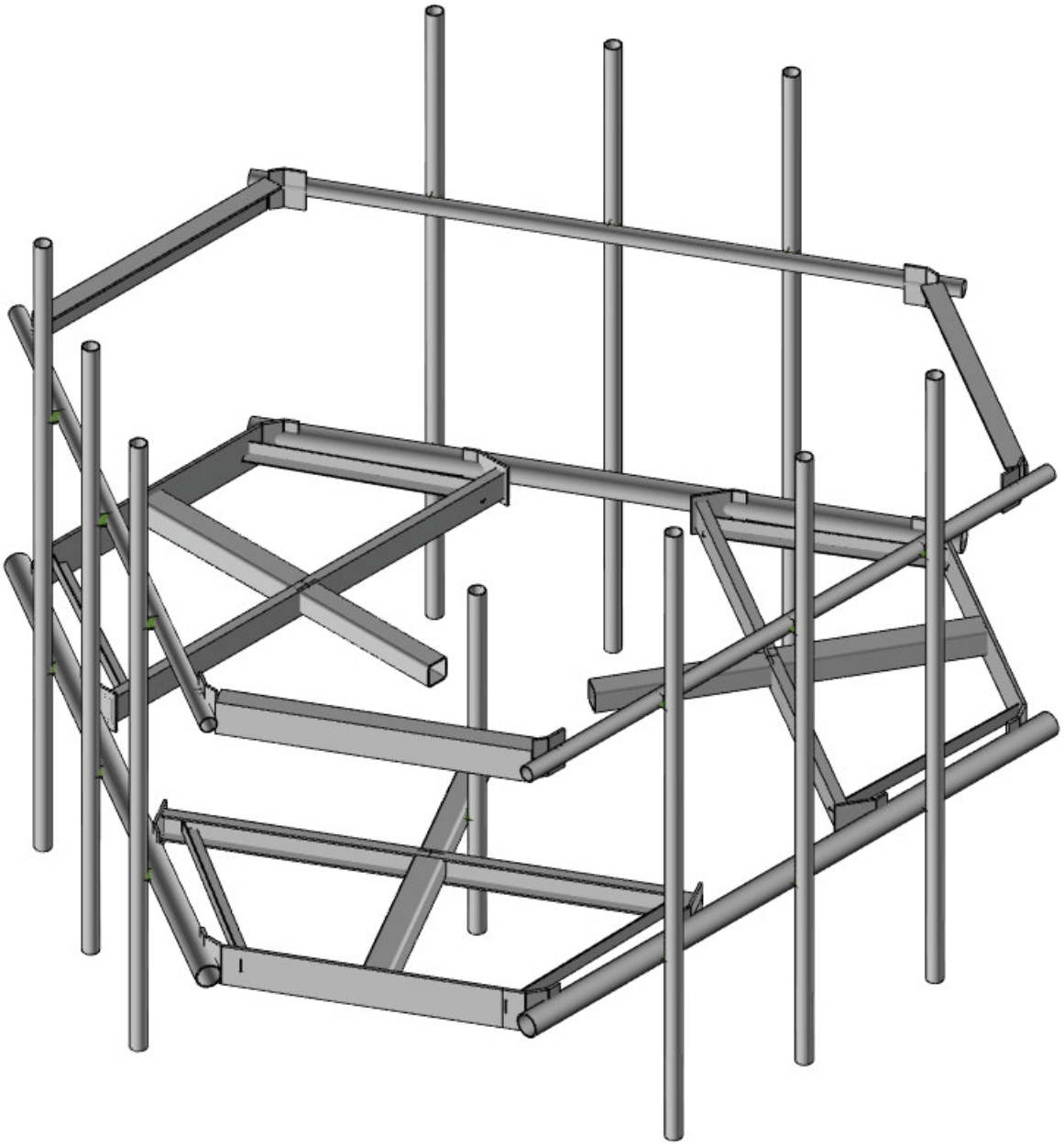
Table 2. Equipment Wind and Seismic Loads

Manufacturer	Model	Wind Load (F_A), lb		Wind Load Ice Case (F_A), lb			Wind Load Service Case		Seismic Load, lb
		0 deg	90 deg	0 deg	90 deg	Ice Weight	0 deg	90 deg	
JMA WIRELESS	MX08FRO665-21	380	179	82	43	195	26	12	7.3
COMMSCOPE	RDIDC-9181-PF-48	54	32	14	9	33	4	2	2.5
Fujitsu	TA08025-B605	57	35	14	10	35	4	2	8.5
Fujitsu	TA08025-B604	57	31	14	9	34	4	2	7.2

Table 3.1. Hot Rolled Member Capacities

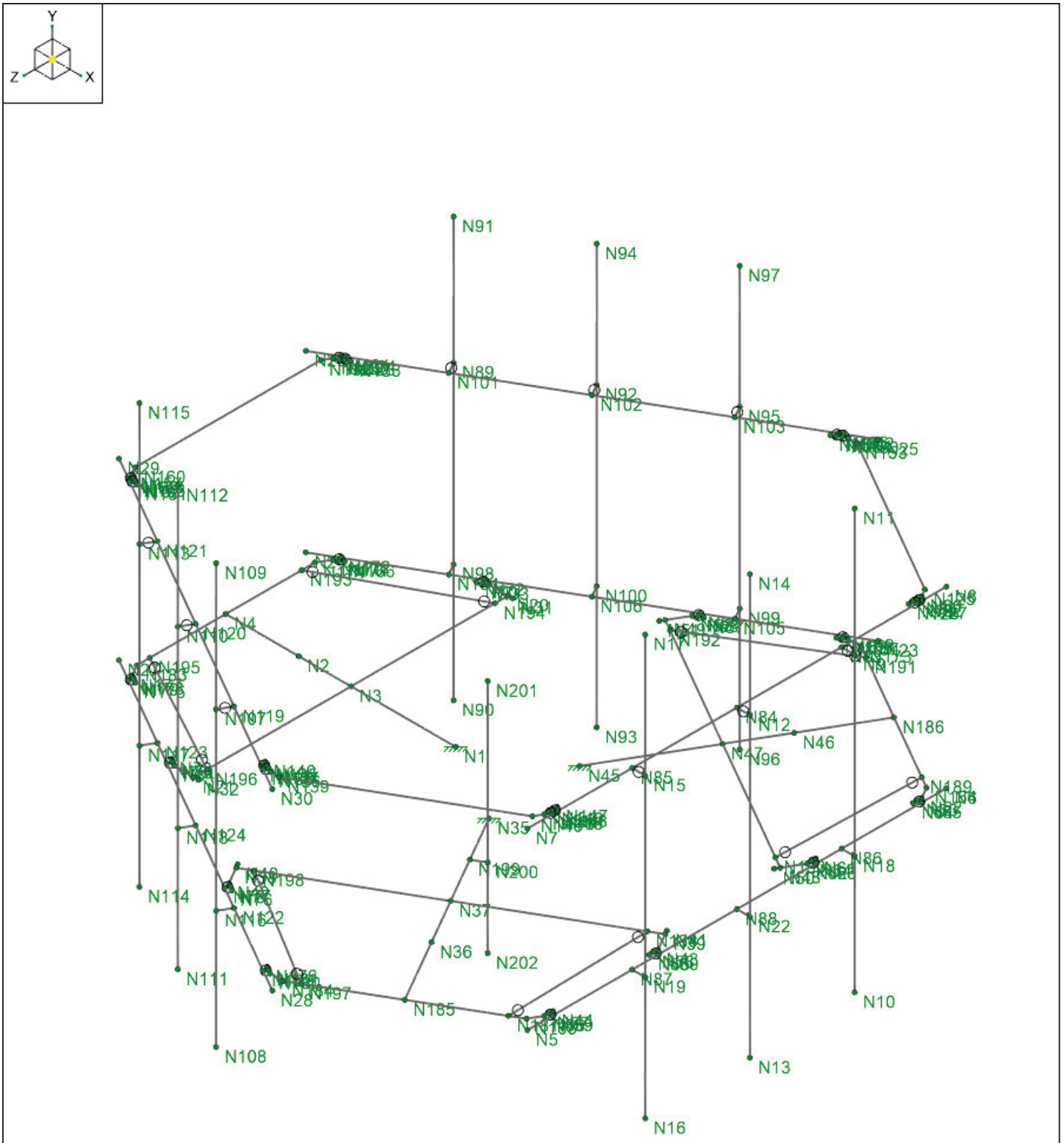
Member Name	Member Shape	Wind load (plf)	Wind Load Ice (plf)	Weight Ice (plf)	Bending Check	Shear Check	Total Capacity	Controlling Capacity
Arm	HSS3.5X3.5X4	19.74	3.73	0.69	38%	7%	38%	67%
Arm 2	HSS4X4X4	22.56	4.27	0.75	10%	9%	10%	
Cross Arm	C4X5.4	22.56	4.27	0.75	61%	5%	61%	
Frame Rail	PIPE_3.0	11.85	2.24	0.69	14%	15%	15%	
Handrail	PIPE_2.0	8.04	1.52	0.56	31%	47%	47%	
Mount Pipe	PIPE_2.0	8.04	1.52	0.56	49%	7%	49%	
Plate	6" x 0.375" Plate	33.84	6.40	0.99	67%	33%	67%	
Plate Bottom	6"x0.5" Plate	33.84	6.40	0.99	59%	11%	59%	
Angle	L5X3X6	28.20	5.33	0.87	14%	7%	14%	
Cross Angles	L2x2x3	11.28	2.13	0.51	6%	2%	6%	





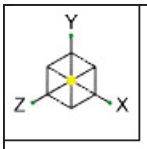
Envelope Only Solution

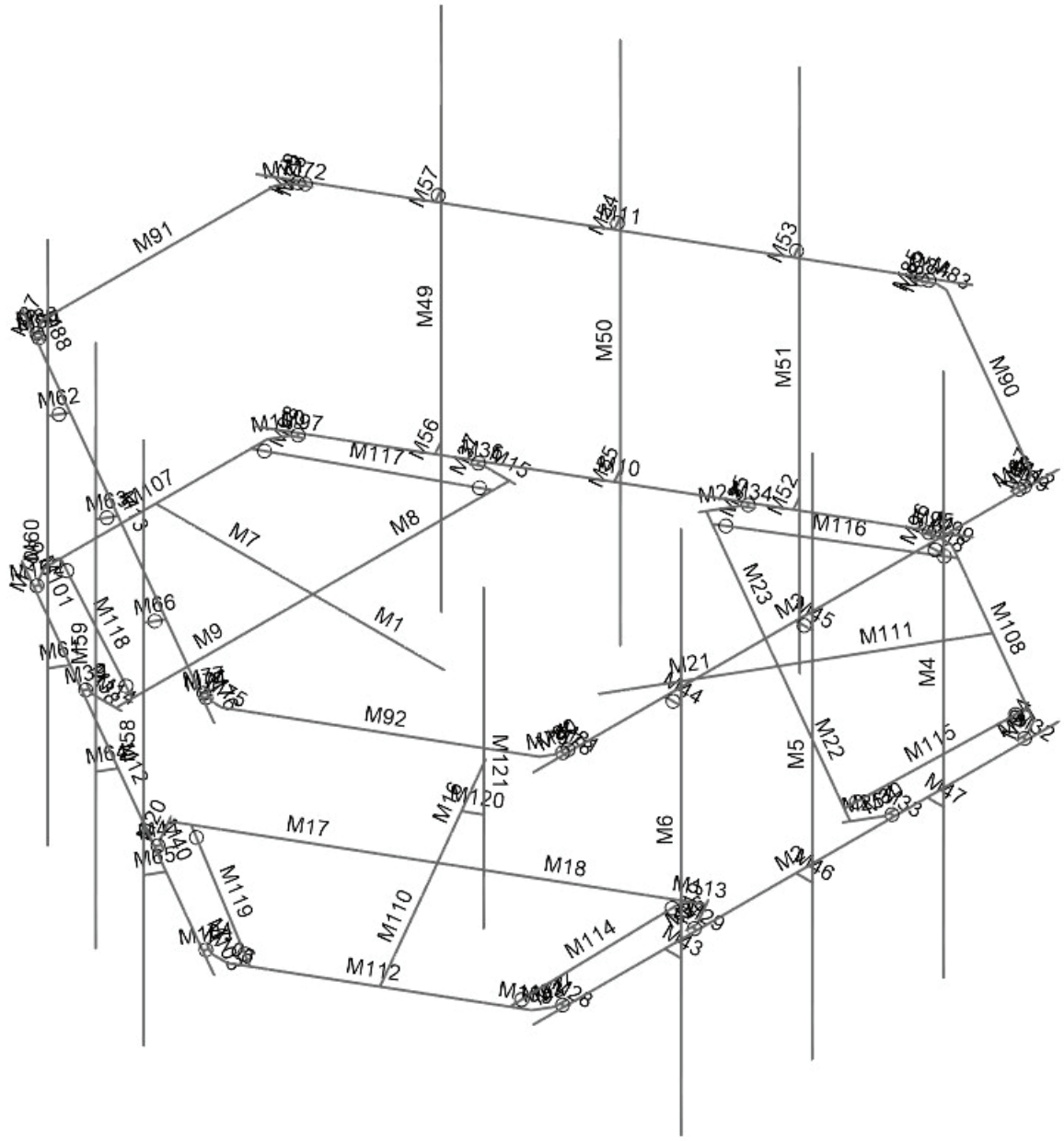
SMJ International, LLC	Brookfield 2, CT	SK-1
DVA		Mar 24, 2022
13700320_C8_04	Platform Model	209271_13700320_C8_04_T-Mob…



Envelope Only Solution

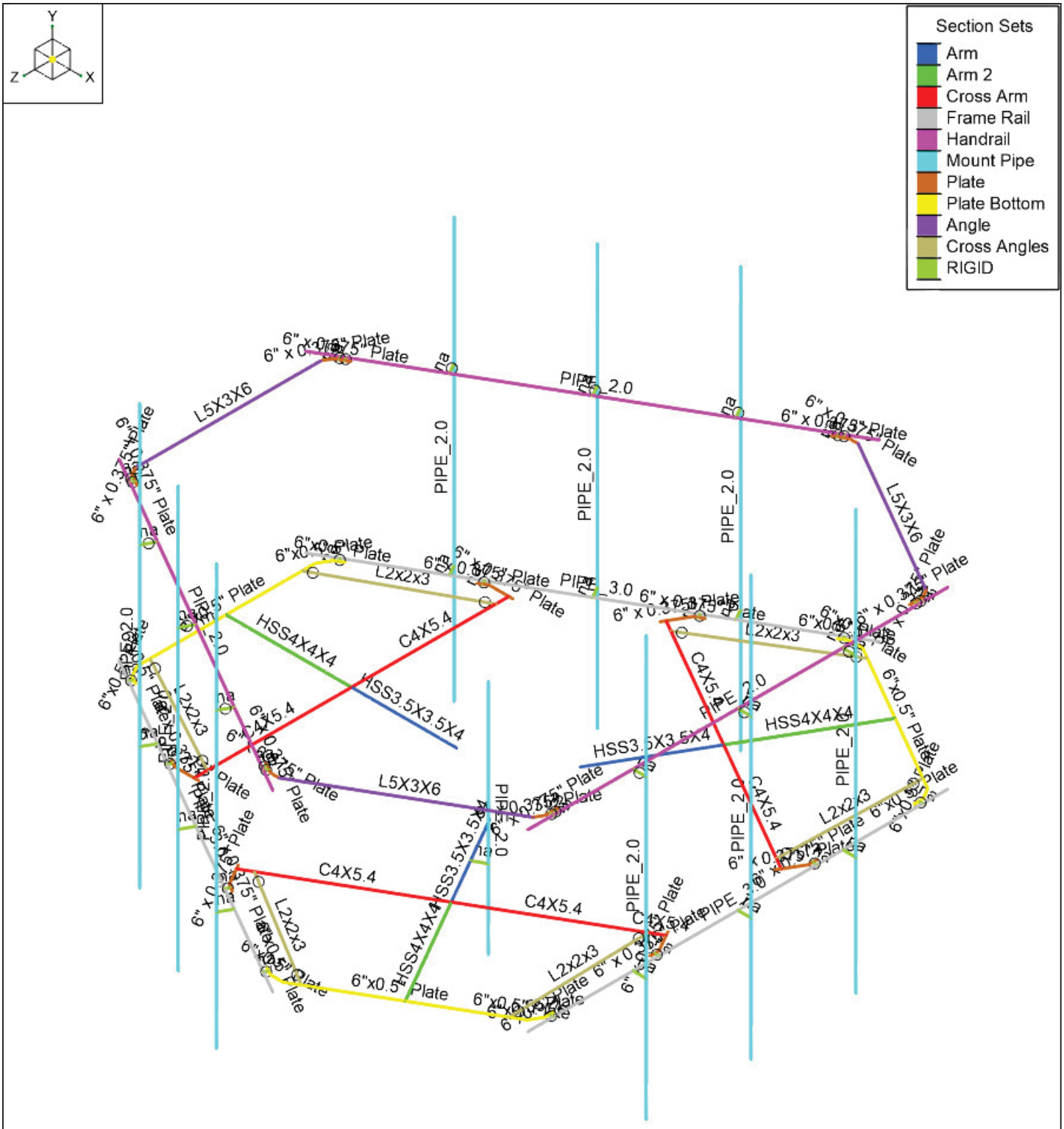
SMJ International, LLC	Brookfield 2, CT	SK-2
DVA		Mar 24, 2022
13700320_C8_04	Joint Labels	209271_13700320_C8_04_T-Mob…





Envelope Only Solution

SMJ International, LLC	Brookfield 2, CT	SK-3
DVA		Mar 24, 2022
13700320_C8_04	Member Labels	209271_13700320_C8_04_T-Mob…



Envelope Only Solution

SMJ International, LLC	Brookfield 2, CT	SK-4
DVA		Mar 24, 2022
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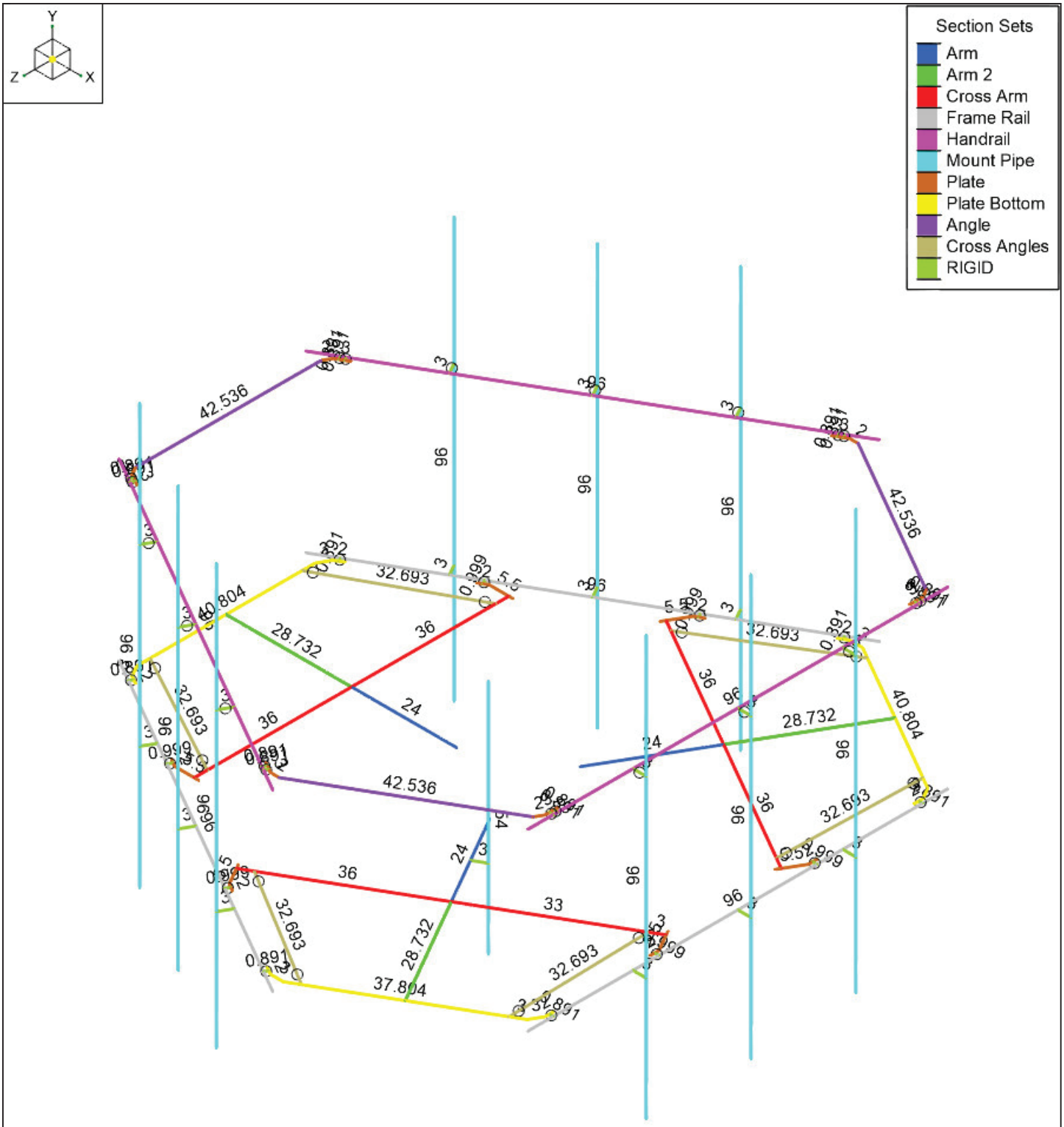
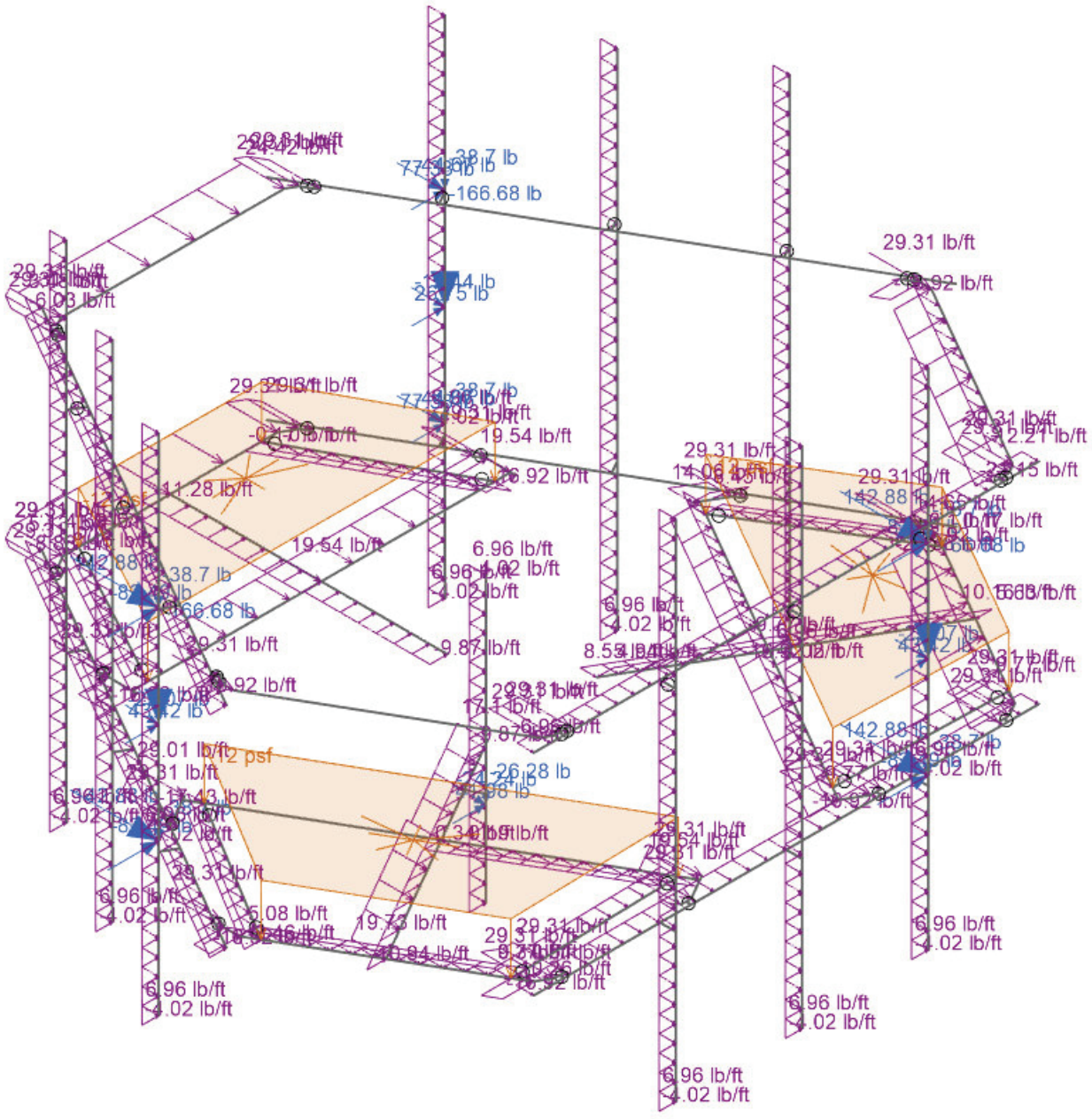


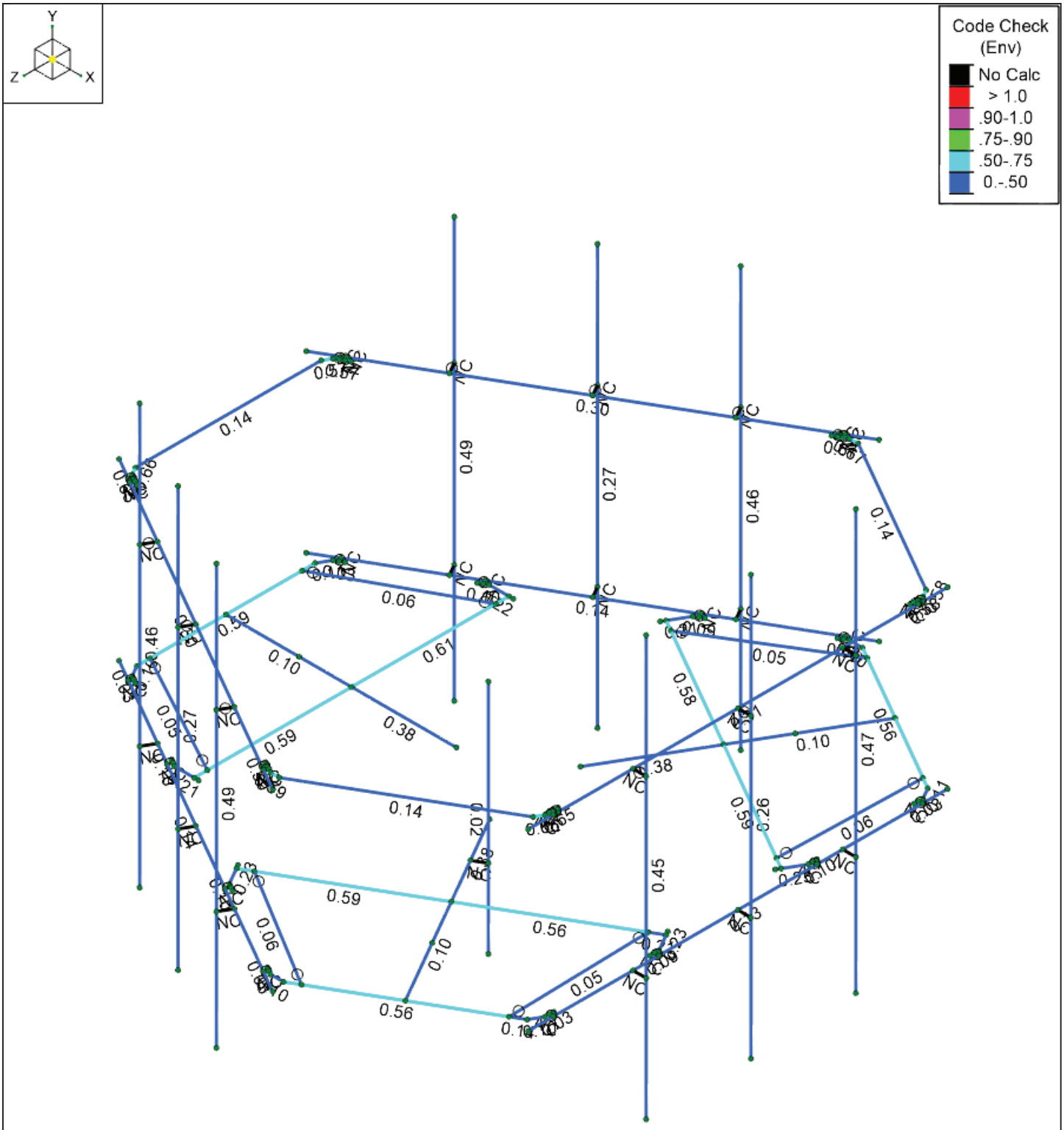
Member Length (in) Displayed
Envelope Only Solution

SMJ International, LLC	Brookfield 2, CT	SK-5
DVA		Mar 24, 2022
13700320_C8_04	Member Lengths	209271_13700320_C8_04_T-Mob…



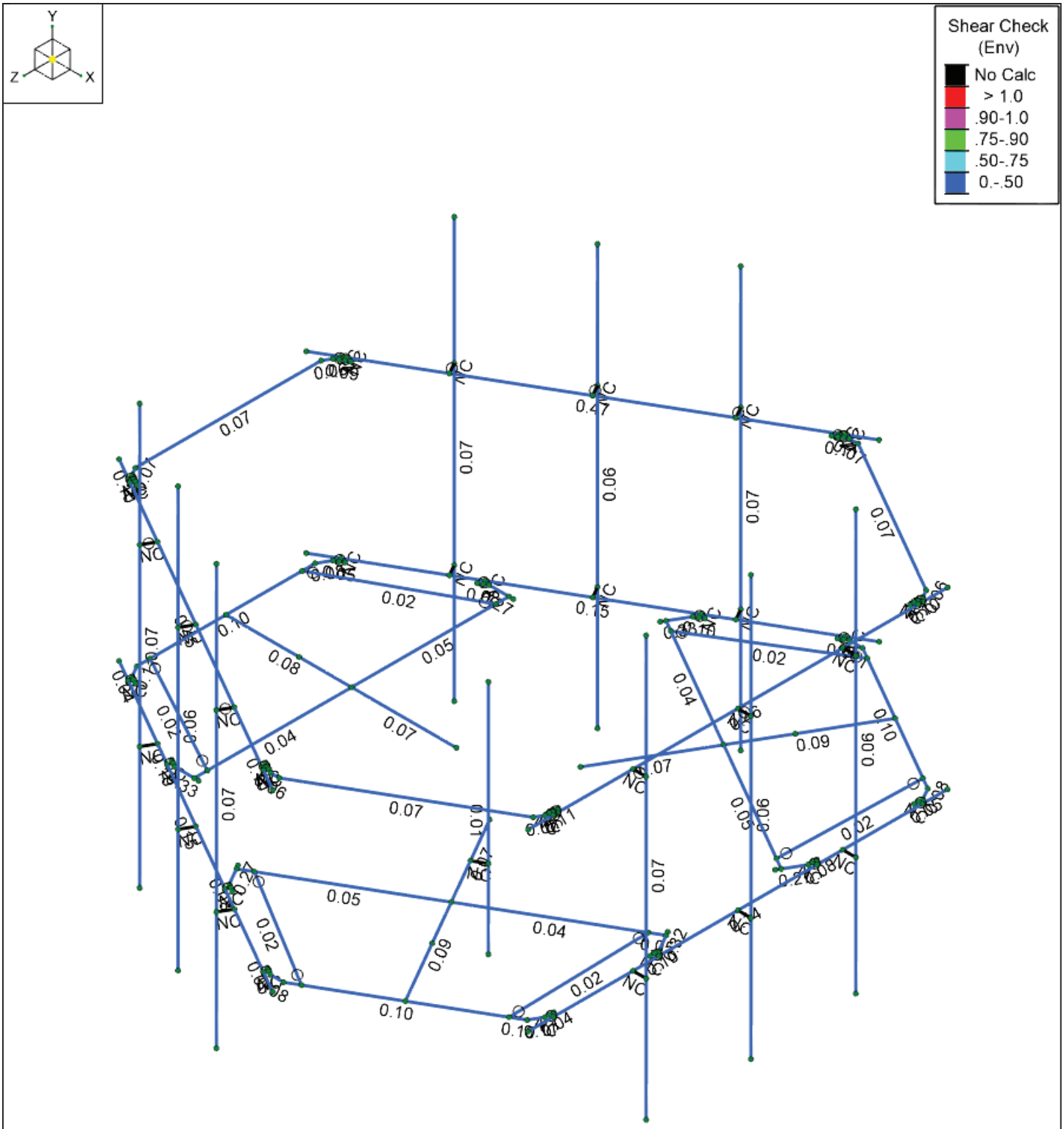
Loads: LC 7, 1.2DL + 1WL AZI 150
Envelope Only Solution

SMJ International, LLC	Brookfield 2, CT	SK-6
DVA		Mar 24, 2022
13700320_C8_04	Controlling Load Case	209271_13700320_C8_04_T-Mob…



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

SMJ International, LLC	Brookfield 2, CT	SK-7
DVA		Mar 24, 2022
13700320_C8_04	Member Bending Check	209271_13700320_C8_04_T-Mob…



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

SMJ International, LLC	Brookfield 2, CT	SK-8
DVA		Mar 24, 2022
13700320_C8_04	Member Shear Check	209271_13700320_C8_04_T-Mob…

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	Yes
Maximum Number of Iterations	3

Processor Core Utilization

Single	No
Multiple (Optimum)	Yes
Maximum	No

Axis

Vertical Global Axis

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ

Plate Axis

Plate Local Axis Orientation	Nodal

Codes

Hot Rolled Steel	AISC 15th (360-16): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 15th (360-16): LRFD
Cold Formed Steel	AISI S100-16: LRFD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-18: LRFD
Temperature	< 100F
Concrete	ACI 318-19
Masonry	TMS 402-16: Strength
Aluminum	AA ADM1-15: LRFD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)

Concrete

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

Column Min Steel	1

Model Settings (Continued)

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 7-16
Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

Site Parameters

S_1 (g)	1
SD_1 (g)	1
SD_S (g)	1
T_L (sec)	5

Structure Characteristics

T Z (sec)	
T X (sec)	
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	3
R X	3
Ω_0Z	1
Ω_0X	1
C_dZ	4
C_dX	4
ρ Z	1
ρ X	1

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N3		Arm	Beam	Tube	A500 Gr.B Rect	Typical
2	M2	N5	N6		Frame Rail	Beam	Pipe	A53 Gr.B	Typical
3	M3	N7	N8		Handrail	HBrace	HSS Pipe	A53 Gr.B	Typical
4	M4	N10	N11		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
5	M5	N13	N14		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
6	M6	N16	N17		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
7	M7	N4	N3		Arm 2	Beam	Tube	A500 Gr.B Rect	Typical
8	M8	N20	N3		Cross Arm	Beam	Channel	A36 Gr.36	Typical
9	M9	N3	N21		Cross Arm	Beam	Channel	A36 Gr.36	Typical
10	M10	N23	N24		Frame Rail	Beam	Pipe	A53 Gr.B	Typical
11	M11	N25	N26		Handrail	HBrace	HSS Pipe	A53 Gr.B	Typical
12	M12	N27	N28		Frame Rail	Beam	Pipe	A53 Gr.B	Typical
13	M13	N29	N30		Handrail	HBrace	HSS Pipe	A53 Gr.B	Typical
14	M14	N32	N34		Plate	Beam	BAR	A36 Gr.36	Typical
15	M15	N31	N33		Plate	Beam	BAR	A36 Gr.36	Typical
16	M16	N35	N37		Arm	Beam	Tube	A500 Gr.B Rect	Typical
17	M17	N38	N37		Cross Arm	Beam	Channel	A36 Gr.36	Typical
18	M18	N37	N188		Cross Arm	Beam	Channel	A36 Gr.36	Typical
19	M19	N41	N43		Plate	Beam	BAR	A36 Gr.36	Typical
20	M20	N40	N42		Plate	Beam	BAR	A36 Gr.36	Typical
21	M21	N45	N47		Arm	Beam	Tube	A500 Gr.B Rect	Typical
22	M22	N48	N47		Cross Arm	Beam	Channel	A36 Gr.36	Typical
23	M23	N47	N49		Cross Arm	Beam	Channel	A36 Gr.36	Typical
24	M24	N51	N53		Plate	Beam	BAR	A36 Gr.36	Typical
25	M25	N50	N52		Plate	Beam	BAR	A36 Gr.36	Typical
26	M26	N43	N55		Plate	Beam	BAR	A36 Gr.36	Typical
27	M27	N44	N56		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
28	M28	N57	N59		RIGID	None	None	RIGID	Typical
29	M29	N58	N60		RIGID	None	None	RIGID	Typical
30	M30	N52	N61		Plate	Beam	BAR	A36 Gr.36	Typical
31	M31	N54	N62		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
32	M32	N63	N65		RIGID	None	None	RIGID	Typical
33	M33	N64	N66		RIGID	None	None	RIGID	Typical
34	M34	N53	N67		Plate	Beam	BAR	A36 Gr.36	Typical
35	M35	N68	N69		RIGID	None	None	RIGID	Typical
36	M36	N33	N70		Plate	Beam	BAR	A36 Gr.36	Typical
37	M37	N71	N72		RIGID	None	None	RIGID	Typical
38	M38	N34	N73		Plate	Beam	BAR	A36 Gr.36	Typical
39	M39	N74	N75		RIGID	None	None	RIGID	Typical
40	M40	N42	N76		Plate	Beam	BAR	A36 Gr.36	Typical
41	M41	N77	N78		RIGID	None	None	RIGID	Typical
42	M42	N81	N82		RIGID	None	None	RIGID	Typical
43	M43	N19	N87		RIGID	None	None	RIGID	Typical
44	M44	N15	N85		RIGID	None	None	RIGID	Typical
45	M45	N12	N84		RIGID	None	None	RIGID	Typical
46	M46	N22	N88		RIGID	None	None	RIGID	Typical
47	M47	N18	N86		RIGID	None	None	RIGID	Typical
48	M48	N9	N83		RIGID	None	None	RIGID	Typical
49	M49	N90	N91		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
50	M50	N93	N94		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
51	M51	N96	N97		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
52	M52	N99	N105		RIGID	None	None	RIGID	Typical
53	M53	N95	N103		RIGID	None	None	RIGID	Typical
54	M54	N92	N102		RIGID	None	None	RIGID	Typical
55	M55	N100	N106		RIGID	None	None	RIGID	Typical
56	M56	N98	N104		RIGID	None	None	RIGID	Typical
57	M57	N89	N101		RIGID	None	None	RIGID	Typical
58	M58	N108	N109		Mount Pipe	Column	Pipe	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
59	M59	N111	N112		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
60	M60	N114	N115		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
61	M61	N117	N123		RIGID	None	None	RIGID	Typical
62	M62	N113	N121		RIGID	None	None	RIGID	Typical
63	M63	N110	N120		RIGID	None	None	RIGID	Typical
64	M64	N118	N124		RIGID	None	None	RIGID	Typical
65	M65	N116	N122		RIGID	None	None	RIGID	Typical
66	M66	N107	N119		RIGID	None	None	RIGID	Typical
67	M67	N125	N80		Plate	Beam	BAR	A36 Gr.36	Typical
68	M68	N80	N126		Plate	Beam	BAR	A36 Gr.36	Typical
69	M69	N79	N127		RIGID	None	None	RIGID	Typical
70	M70	N130	N131		RIGID	None	None	RIGID	Typical
71	M71	N132	N129		Plate	Beam	BAR	A36 Gr.36	Typical
72	M72	N129	N133		Plate	Beam	BAR	A36 Gr.36	Typical
73	M73	N128	N134		RIGID	None	None	RIGID	Typical
74	M74	N137	N138		RIGID	None	None	RIGID	Typical
75	M75	N139	N136		Plate	Beam	BAR	A36 Gr.36	Typical
76	M76	N136	N140		Plate	Beam	BAR	A36 Gr.36	Typical
77	M77	N135	N141		RIGID	None	None	RIGID	Typical
78	M78	N144	N145		RIGID	None	None	RIGID	Typical
79	M79	N146	N143		Plate	Beam	BAR	A36 Gr.36	Typical
80	M80	N143	N147		Plate	Beam	BAR	A36 Gr.36	Typical
81	M81	N142	N148		RIGID	None	None	RIGID	Typical
82	M82	N151	N152		RIGID	None	None	RIGID	Typical
83	M83	N153	N150		Plate	Beam	BAR	A36 Gr.36	Typical
84	M84	N150	N154		Plate	Beam	BAR	A36 Gr.36	Typical
85	M85	N149	N155		RIGID	None	None	RIGID	Typical
86	M86	N158	N159		RIGID	None	None	RIGID	Typical
87	M87	N160	N157		Plate	Beam	BAR	A36 Gr.36	Typical
88	M88	N157	N161		Plate	Beam	BAR	A36 Gr.36	Typical
89	M89	N156	N162		RIGID	None	None	RIGID	Typical
90	M90	N125	N153	180	Angle	HBrace	Single Angle	A36 Gr.36	Typical
91	M91	N132	N160	180	Angle	HBrace	Single Angle	A36 Gr.36	Typical
92	M92	N139	N146	180	Angle	HBrace	Single Angle	A36 Gr.36	Typical
93	M93	N163	N56		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
94	M94	N164	N62		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
95	M95	N165	N167		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
96	M96	N168	N169		RIGID	None	None	RIGID	Typical
97	M97	N166	N170		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
98	M98	N171	N172		RIGID	None	None	RIGID	Typical
99	M99	N173	N167		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
100	M100	N174	N170		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
101	M101	N175	N177		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
102	M102	N178	N179		RIGID	None	None	RIGID	Typical
103	M103	N176	N180		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
104	M104	N181	N182		RIGID	None	None	RIGID	Typical
105	M105	N183	N177		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
106	M106	N184	N180		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
107	M107	N183	N174		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
108	M108	N173	N164		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
109	M109	N163	N187		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
110	M110	N185	N37		Arm 2	Beam	Tube	A500 Gr.B Rect	Typical
111	M111	N186	N47		Arm 2	Beam	Tube	A500 Gr.B Rect	Typical
112	M112	N187	N184		Plate Bottom	Beam	BAR	A36 Gr.36	Typical
113	M113	N188	N39	90	Cross Arm	Beam	Channel	A36 Gr.36	Typical
114	M114	N187	N188	270	Cross Angles	HBrace	Single Angle	A36 Gr.36	Typical
115	M115	N189	N190		Cross Angles	HBrace	Single Angle	A36 Gr.36	Typical
116	M116	N191	N192	270	Cross Angles	HBrace	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
117	M117	N193	N194		Cross Angles	HBrace	Single Angle	A36 Gr.36	Typical
118	M118	N195	N196	270	Cross Angles	HBrace	Single Angle	A36 Gr.36	Typical
119	M119	N197	N198		Cross Angles	HBrace	Single Angle	A36 Gr.36	Typical
120	M120	N199	N200		RIGID	None	None	RIGID	Typical
121	M121	N201	N202		Mount Pipe	Column	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	M1			Yes	Default	None
2	M2			Yes		None
3	M3			Yes	** NA **	None
4	M4			Yes	** NA **	None
5	M5			Yes	** NA **	None
6	M6			Yes	** NA **	None
7	M7			Yes	Default	None
8	M8			Yes	Default	None
9	M9			Yes	Default	None
10	M10			Yes		None
11	M11			Yes	** NA **	None
12	M12			Yes		None
13	M13			Yes	** NA **	None
14	M14			Yes		None
15	M15			Yes		None
16	M16			Yes	Default	None
17	M17			Yes	Default	None
18	M18			Yes	Default	None
19	M19			Yes		None
20	M20			Yes		None
21	M21			Yes	Default	None
22	M22			Yes	Default	None
23	M23			Yes	Default	None
24	M24			Yes		None
25	M25			Yes		None
26	M26			Yes		None
27	M27			Yes	Default	None
28	M28		BenPIN	Yes	** NA **	None
29	M29		BenPIN	Yes	** NA **	None
30	M30			Yes		None
31	M31			Yes	Default	None
32	M32		BenPIN	Yes	** NA **	None
33	M33		BenPIN	Yes	** NA **	None
34	M34			Yes		None
35	M35		BenPIN	Yes	** NA **	None
36	M36			Yes		None
37	M37		BenPIN	Yes	** NA **	None
38	M38			Yes		None
39	M39		BenPIN	Yes	** NA **	None
40	M40			Yes		None
41	M41		BenPIN	Yes	** NA **	None
42	M42		BenPIN	Yes	** NA **	None
43	M43			Yes	** NA **	None
44	M44		BenPIN	Yes	** NA **	None
45	M45		BenPIN	Yes	** NA **	None
46	M46			Yes	** NA **	None
47	M47			Yes	** NA **	None
48	M48		BenPIN	Yes	** NA **	None
49	M49			Yes	** NA **	None
50	M50			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
51	M51			Yes	** NA **	None
52	M52			Yes	** NA **	None
53	M53		BenPIN	Yes	** NA **	None
54	M54		BenPIN	Yes	** NA **	None
55	M55			Yes	** NA **	None
56	M56			Yes	** NA **	None
57	M57		BenPIN	Yes	** NA **	None
58	M58			Yes	** NA **	None
59	M59			Yes	** NA **	None
60	M60			Yes	** NA **	None
61	M61			Yes	** NA **	None
62	M62		BenPIN	Yes	** NA **	None
63	M63		BenPIN	Yes	** NA **	None
64	M64			Yes	** NA **	None
65	M65			Yes	** NA **	None
66	M66		BenPIN	Yes	** NA **	None
67	M67			Yes		None
68	M68			Yes		None
69	M69		BenPIN	Yes	** NA **	None
70	M70		BenPIN	Yes	** NA **	None
71	M71			Yes		None
72	M72			Yes		None
73	M73		BenPIN	Yes	** NA **	None
74	M74		BenPIN	Yes	** NA **	None
75	M75			Yes		None
76	M76			Yes		None
77	M77		BenPIN	Yes	** NA **	None
78	M78		BenPIN	Yes	** NA **	None
79	M79			Yes		None
80	M80			Yes		None
81	M81		BenPIN	Yes	** NA **	None
82	M82		BenPIN	Yes	** NA **	None
83	M83			Yes		None
84	M84			Yes		None
85	M85		BenPIN	Yes	** NA **	None
86	M86		BenPIN	Yes	** NA **	None
87	M87			Yes		None
88	M88			Yes		None
89	M89		BenPIN	Yes	** NA **	None
90	M90			Yes	** NA **	None
91	M91			Yes	** NA **	None
92	M92			Yes	** NA **	None
93	M93			Yes	Default	None
94	M94			Yes	Default	None
95	M95			Yes	Default	None
96	M96		BenPIN	Yes	** NA **	None
97	M97			Yes	Default	None
98	M98		BenPIN	Yes	** NA **	None
99	M99			Yes	Default	None
100	M100			Yes	Default	None
101	M101			Yes	Default	None
102	M102		BenPIN	Yes	** NA **	None
103	M103			Yes	Default	None
104	M104		BenPIN	Yes	** NA **	None
105	M105			Yes	Default	None
106	M106			Yes	Default	None
107	M107			Yes		None
108	M108			Yes		None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
109	M109			Yes		None
110	M110			Yes	Default	None
111	M111			Yes	Default	None
112	M112			Yes		None
113	M113			Yes		None
114	M114	BenPIN	BenPIN	Yes	** NA **	None
115	M115	BenPIN	BenPIN	Yes	** NA **	None
116	M116	BenPIN	BenPIN	Yes	** NA **	None
117	M117	BenPIN	BenPIN	Yes	** NA **	None
118	M118	BenPIN	BenPIN	Yes	** NA **	None
119	M119	BenPIN	BenPIN	Yes	** NA **	None
120	M120			Yes	** NA **	None
121	M121			Yes	** NA **	None

Material Take-Off

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General Members				
2	RIGID		43	79	0
3	Total General		43	79	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	6" x 0.375" Plate	24	75	47.852
7	A36 Gr.36	6"x0.5" Plate	16	152.4	129.656
8	A36 Gr.36	C4X5.4	7	216	96.775
9	A36 Gr.36	L5X3X6	3	127.6	103.489
10	A36 Gr.36	L2x2x3	6	196.2	40.16
11	A500 Gr.B Rect	HSS3.5X3.5X4	3	72	63.899
12	A500 Gr.B Rect	HSS4X4X4	3	86.2	88.59
13	A53 Gr.B	PIPE_2.0	13	1206	348.819
14	A53 Gr.B	PIPE_3.0	3	288	169.05
15	Total HR Steel		78	2419.4	1088.289

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Arm	HSS3.5X3.5X4	Beam	Tube	A500 Gr.B Rect	Typical	2.91	5.04	5.04	8.35
2	Arm 2	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
3	Cross Arm	C4X5.4	Beam	Channel	A36 Gr.36	Typical	1.58	0.312	3.85	0.04
4	Frame Rail	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
5	Handrail	PIPE_2.0	HBrace	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
6	Mount Pipe	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
7	Plate	6" x 0.375" Plate	Beam	BAR	A36 Gr.36	Typical	2.25	0.026	6.75	0.101
8	Plate Bottom	6"x0.5" Plate	Beam	BAR	A36 Gr.36	Typical	3	0.063	9	0.237
9	Angle	L5X3X6	HBrace	Single Angle	A36 Gr.36	Typical	2.86	2.01	7.35	0.141
10	Cross Angles	L2x2x3	HBrace	Single Angle	A36 Gr.36	Typical	0.722	0.271	0.271	0.009

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed	Area(Member)
1	Self Weight	DL		-1		13		3
2	Wind Load AZI 0	WLX				26	248	
3	Wind Load AZI 30	None				26	248	
4	Wind Load AZI 60	None				26	248	
5	Wind Load AZI 90	WLZ				26	248	
6	Wind Load AZI 120	None				26	248	
7	Wind Load AZI 150	None				26	248	
8	Wind Load AZI 180	None				26	248	
9	Wind Load AZI 210	None				26	248	
10	Wind Load AZI 240	None				26	248	

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed	Area(Member)
11	Wind Load AZI 270	None				26	248	
12	Wind Load AZI 300	None				26	248	
13	Wind Load AZI 330	None				26	248	
14	Ice Weight	OL1				13	121	3
15	Ice Wind Load AZI 0	OL2				26	248	
16	Ice Wind Load AZI 30	None				26	248	
17	Ice Wind Load AZI 60	None				26	248	
18	Ice Wind Load AZI 90	OL3				26	248	
19	Ice Wind Load AZI 120	None				26	248	
20	Ice Wind Load AZI 150	None				26	248	
21	Ice Wind Load AZI 180	None				26	248	
22	Ice Wind Load AZI 210	None				26	248	
23	Ice Wind Load AZI 240	None				26	248	
24	Ice Wind Load AZI 270	None				26	248	
25	Ice Wind Load AZI 300	None				26	248	
26	Ice Wind Load AZI 330	None				26	248	
27	Seismic Load X	ELX			-0.113	13		
28	Seismic Load Z	ELZ	-0.113			13		
29	Service Live Loads	LL						
30	Maintenance Load 1	LL				1		
31	Maintenance Load 2	LL				1		
32	Maintenance Load 3	LL				1		
33	Maintenance Load 4	LL				1		
34	Maintenance Load 5	LL				1		
35	Maintenance Load 6	LL				1		
36	Maintenance Load 7	LL				1		
37	Maintenance Load 8	LL				1		
38	Maintenance Load 9	LL				1		
39	Maintenance Load 10	LL				1		
40	Maintenance Load 11	LL				1		
41	Maintenance Load 12	LL				1		
42	Maintenance Load 13	LL				1		
43	Maintenance Load 14	LL				1		
44	Maintenance Load 15	LL				1		
45	Maintenance Load 16	LL				1		
46	Maintenance Load 17	LL				1		
47	Maintenance Load 18	LL				1		
48	BLC 1 Transient Area Loads	None					27	
49	BLC 14 Transient Area Loads	None					27	

Load Combinations

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

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
17	0.9DL + 1WL AZI 90	Yes	Y	1	0.9	5	1		
18	0.9DL + 1WL AZI 120	Yes	Y	1	0.9	6	1		
19	0.9DL + 1WL AZI 150	Yes	Y	1	0.9	7	1		
20	0.9DL + 1WL AZI 180	Yes	Y	1	0.9	8	1		
21	0.9DL + 1WL AZI 210	Yes	Y	1	0.9	9	1		
22	0.9DL + 1WL AZI 240	Yes	Y	1	0.9	10	1		
23	0.9DL + 1WL AZI 270	Yes	Y	1	0.9	11	1		
24	0.9DL + 1WL AZI 300	Yes	Y	1	0.9	12	1		
25	0.9DL + 1WL AZI 330	Yes	Y	1	0.9	13	1		
26	1.2D + 1.0Di	Yes	Y	1	1.2	14	1		
27	1.2D + 1.0Di +1.0Wi AZI 0	Yes	Y	1	1.2	14	1	15	1
28	1.2D + 1.0Di +1.0Wi AZI 30	Yes	Y	1	1.2	14	1	16	1
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y	1	1.2	14	1	17	1
30	1.2D + 1.0Di +1.0Wi AZI 90	Yes	Y	1	1.2	14	1	18	1
31	1.2D + 1.0Di +1.0Wi AZI 120	Yes	Y	1	1.2	14	1	19	1
32	1.2D + 1.0Di +1.0Wi AZI 150	Yes	Y	1	1.2	14	1	20	1
33	1.2D + 1.0Di +1.0Wi AZI 180	Yes	Y	1	1.2	14	1	21	1
34	1.2D + 1.0Di +1.0Wi AZI 210	Yes	Y	1	1.2	14	1	22	1
35	1.2D + 1.0Di +1.0Wi AZI 240	Yes	Y	1	1.2	14	1	23	1
36	1.2D + 1.0Di +1.0Wi AZI 270	Yes	Y	1	1.2	14	1	24	1
37	1.2D + 1.0Di +1.0Wi AZI 300	Yes	Y	1	1.2	14	1	25	1
38	1.2D + 1.0Di +1.0Wi AZI 330	Yes	Y	1	1.2	14	1	26	1
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.245	27	1	28	
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.245	27	0.866	28	0.5
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.245	27	0.5	28	0.866
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.245	27		28	1
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.245	27	-0.5	28	0.866
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.245	27	-0.866	28	0.5
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.245	27	-1	28	
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.245	27	-0.866	28	-0.5
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.245	27	-0.5	28	-0.866
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.245	27		28	-1
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.245	27	0.5	28	-0.866
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.245	27	0.866	28	-0.5
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.855	27	1	28	
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.855	27	0.866	28	0.5
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.855	27	0.5	28	0.866
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.855	27		28	1
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.855	27	-0.5	28	0.866
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.855	27	-0.866	28	0.5
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.855	27	-1	28	
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.855	27	-0.866	28	-0.5
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.855	27	-0.5	28	-0.866
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.855	27		28	-1
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.855	27	0.5	28	-0.866
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.855	27	0.866	28	-0.5
63	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 0	Yes	Y	1	1	2	0.068	29	1.5
64	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 30	Yes	Y	1	1	3	0.068	29	1.5
65	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 60	Yes	Y	1	1	4	0.068	29	1.5
66	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 90	Yes	Y	1	1	5	0.068	29	1.5
67	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 120	Yes	Y	1	1	6	0.068	29	1.5
68	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 150	Yes	Y	1	1	7	0.068	29	1.5
69	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 180	Yes	Y	1	1	8	0.068	29	1.5
70	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 210	Yes	Y	1	1	9	0.068	29	1.5
71	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 240	Yes	Y	1	1	10	0.068	29	1.5
72	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 270	Yes	Y	1	1	11	0.068	29	1.5
73	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 300	Yes	Y	1	1	12	0.068	29	1.5
74	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 330	Yes	Y	1	1	13	0.068	29	1.5

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-in]	LC	MY [lb-in]	LC	MZ [lb-in]	LC
1	N1	max	1241.498	2	1407.714	27	630.411	17	5058.964	11	20200.249	17	10420.086	20
2		min	-1274.461	8	36.727	20	-633.188	23	-2759.907	17	-19984.291	23	-50490.342	2
3	N35	max	764.155	14	1484.165	35	1177.018	5	7647.588	16	21877.553	25	23942.106	10
4		min	-751.922	20	87.275	16	-1148.249	23	-44334.841	10	-21644.694	19	-5406.881	16
5	N45	max	896.258	2	1407.737	31	1001.147	6	42353.443	6	20783.737	21	26018.35	6
6		min	-878.025	20	55.59	24	-1022.974	12	-8725.889	24	-20570.156	15	-3839.473	24
7	Totals:	max	2900.785	14	3951.005	34	2722.133	5						
8		min	-2900.774	20	1728.479	53	-2722.178	11						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-in]	phi*Mn z-z [lb-in]	Cb	Eqn
1	M83	6" x 0.375" Plate	0.669	0	7	0.068	2	y	3	71601.756	72900	6834.391	109350	1.091	H1-1b
2	M84	6" x 0.375" Plate	0.667	0	8	0.108	1	z	8	70011.307	72900	6834.391	109350	1.42	H1-1b
3	M87	6" x 0.375" Plate	0.659	0	3	0.066	2	y	11	71601.756	72900	6834.391	109350	1.103	H1-1b
4	M79	6" x 0.375" Plate	0.658	0	11	0.068	2	y	7	71601.756	72900	6834.391	109350	1.105	H1-1b
5	M80	6" x 0.375" Plate	0.655	0	12	0.106	1	z	12	70011.307	72900	6834.391	109350	1.423	H1-1b
6	M88	6" x 0.375" Plate	0.646	0	3	0.105	1	z	4	70011.307	72900	6834.391	109350	1.609	H1-1b
7	M8	C4X5.4	0.609	36	2	0.05	19.875	y	38	36236.75	51192	14402.565	74196	1.619	H1-1b
8	M17	C4X5.4	0.595	36	10	0.05	19.875	y	34	36236.75	51192	14402.565	74196	1.62	H1-1b
9	M107	6"x0.5" Plate	0.594	20.402	2	0.098	20.402	y	12	8480.415	97200	12150	145800	1.347	H1-1b
10	M76	6" x 0.375" Plate	0.594	0	8	0.097	1	z	2	70011.307	72900	6834.391	109350	1.393	H1-1b
11	M9	C4X5.4	0.594	0	2	0.042	33	z	2	36236.75	51192	14402.565	74196	1.612	H1-1b
12	M75	6" x 0.375" Plate	0.593	2	8	0.058	2	y	7	71601.756	72900	6834.391	109350	1.015	H1-1b
13	M22	C4X5.4	0.587	36	6	0.05	19.875	y	30	36236.75	51192	14402.565	74196	1.619	H1-1b
14	M68	6" x 0.375" Plate	0.584	1	4	0.095	1	z	10	70011.307	72900	6834.391	109350	1.394	H1-1b
15	M67	6" x 0.375" Plate	0.582	2	4	0.058	2	y	3	71601.756	72900	6834.391	109350	1.016	H1-1b
16	M23	C4X5.4	0.578	0	6	0.04	33	z	6	36236.75	51192	14402.565	74196	1.612	H1-1b
17	M72	6" x 0.375" Plate	0.57	0	12	0.093	1	z	6	70011.307	72900	6834.391	109350	1.395	H1-1b
18	M71	6" x 0.375" Plate	0.57	2	12	0.056	2	y	11	71601.756	72900	6834.391	109350	1.017	H1-1b
19	M108	6"x0.5" Plate	0.564	20.402	6	0.098	20.402	y	4	8480.415	97200	12150	145800	1.345	H1-1b
20	M18	C4X5.4	0.564	0	10	0.04	12.719	y	36	38292.702	51192	14402.565	74196	1.537	H1-1b
21	M112	6"x0.5" Plate	0.559	17.721	10	0.097	0	y	7	9879.78	97200	12150	145800	1.367	H1-1b
22	M58	PIPE_2.0	0.488	27	9	0.067	27		2	14916.096	32130	22459.5	22459.5	3	H1-1b
23	M49	PIPE_2.0	0.487	27	13	0.065	27		6	14916.096	32130	22459.5	22459.5	2.348	H1-1b
24	M4	PIPE_2.0	0.473	27	5	0.064	27		10	14916.096	32130	22459.5	22459.5	2.739	H1-1b
25	M60	PIPE_2.0	0.465	28	9	0.072	28		9	14916.096	32130	22459.5	22459.5	3	H1-1b
26	M51	PIPE_2.0	0.464	28	13	0.073	28		13	14916.096	32130	22459.5	22459.5	3	H1-1b
27	M6	PIPE_2.0	0.449	28	5	0.07	28		5	14916.096	32130	22459.5	22459.5	2.675	H1-1b
28	M21	HSS3.5X3.5X4	0.38	0	7	0.07	0	y	29	117808.754	120474	144900	144900	1.353	H1-1b
29	M16	HSS3.5X3.5X4	0.379	0	11	0.073	12	y	33	117808.754	120474	144900	144900	1.362	H1-1b
30	M1	HSS3.5X3.5X4	0.378	0	3	0.069	0	y	37	117808.754	120474	144900	144900	1.351	H1-1b
31	M3	PIPE_2.0	0.308	72	8	0.462	6		12	14916.096	32130	22459.5	22459.5	1.218	H1-1b
32	M13	PIPE_2.0	0.305	72	12	0.453	6		4	14916.096	32130	22459.5	22459.5	1.232	H1-1b
33	M11	PIPE_2.0	0.303	72	4	0.47	6		8	14916.096	32130	22459.5	22459.5	1.21	H1-1b
34	M50	PIPE_2.0	0.266	28	7	0.063	28		7	14916.096	32130	22459.5	22459.5	3	H1-1b
35	M59	PIPE_2.0	0.266	28	3	0.063	28		3	14916.096	32130	22459.5	22459.5	3	H1-1b
36	M5	PIPE_2.0	0.257	28	11	0.061	28		11	14916.096	32130	22459.5	22459.5	2.44	H1-1b
37	M19	6" x 0.375" Plate	0.232	1.031	13	0.324	1.031	y	32	63636.986	72900	6834.391	109350	2.115	H1-1b
38	M25	6" x 0.375" Plate	0.231	1.031	3	0.273	1.031	y	34	63636.986	72900	6834.391	109350	2.149	H1-1b
39	M20	6" x 0.375" Plate	0.229	1.031	7	0.27	1.031	y	38	63636.986	72900	6834.391	109350	2.149	H1-1b
40	M15	6" x 0.375" Plate	0.224	1.031	11	0.27	1.031	y	30	63636.986	72900	6834.391	109350	2.148	H1-1b
41	M24	6" x 0.375" Plate	0.214	1.031	9	0.33	1.031	y	28	63636.986	72900	6834.391	109350	2.107	H1-1b
42	M113	C4X5.4	0.211	0	32	0.048	0	y	10	51044.628	51192	14402.565	74196	1.071	H1-1b
43	M14	6" x 0.375" Plate	0.21	1.031	5	0.331	1.031	y	36	63636.986	72900	6834.391	109350	2.099	H1-1b
44	M90	L5X3X6	0.144	42.536	7	0.068	42.536	z	3	73754.069	92664	33847.661	112082.515	1.5	H2-1
45	M109	6"x0.5" Plate	0.144	3	10	0.098	0	y	7	95014.386	97200	12150	145800	1.2	H1-1b
46	M91	L5X3X6	0.142	42.536	3	0.066	42.536	z	11	73754.069	92664	33847.661	112082.515	1.5	H2-1
47	M92	L5X3X6	0.141	42.536	11	0.068	42.536	z	7	73754.069	92664	33847.661	112082.515	1.5	H2-1

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-in]	phi*Mn z-z [lb-in]	Cb	Eqn
48	M12	PIPE_3.0	0.136	24	9	0.146	24		8	60482.561	65205	68985	68985	1.226	H1-1b
49	M10	PIPE_3.0	0.135	24	13	0.145	72		7	60482.561	65205	68985	68985	1.232	H1-1b
50	M2	PIPE_3.0	0.13	72	5	0.141	72		11	60482.561	65205	68985	68985	1	H1-1b
51	M100	6"x0.5" Plate	0.11	0	2	0.075	0	y	12	95014.417	97200	12150	145800	1.571	H1-1b
52	M94	6"x0.5" Plate	0.105	0	7	0.075	0	y	4	95014.417	97200	12150	145800	1.319	H1-1b
53	M106	6"x0.5" Plate	0.105	0	10	0.078	0	y	8	95014.417	97200	12150	145800	1.577	H1-1b
54	M105	6"x0.5" Plate	0.105	0	2	0.106	3	y	10	95014.417	97200	12150	145800	1.327	H1-1b
55	M36	6" x 0.375" Plate	0.102	1	8	0.082	0	y	30	71601.728	72900	6834.391	109350	1.347	H1-1b
56	M93	6"x0.5" Plate	0.1	0	10	0.106	3	y	6	95014.417	97200	12150	145800	1.313	H1-1b
57	M7	HSS4X4X4	0.1	28.732	2	0.085	28.732	y	11	136210.45	139518	194166	194166	1.744	H1-1b
58	M99	6"x0.5" Plate	0.1	0	6	0.108	3	y	2	95014.417	97200	12150	145800	1.328	H1-1b
59	M40	6" x 0.375" Plate	0.099	1	4	0.082	0	y	38	71601.728	72900	6834.391	109350	1.347	H1-1b
60	M110	HSS4X4X4	0.098	28.732	10	0.087	28.732	y	7	136210.45	139518	194166	194166	1.745	H1-1b
61	M30	6" x 0.375" Plate	0.097	1	12	0.083	0	y	34	71601.728	72900	6834.391	109350	1.347	H1-1b
62	M111	HSS4X4X4	0.097	28.732	6	0.087	28.732	y	3	136210.45	139518	194166	194166	1.745	H1-1b
63	M38	6" x 0.375" Plate	0.096	1	2	0.099	0	y	37	71601.728	72900	6834.391	109350	1.348	H1-1b
64	M34	6" x 0.375" Plate	0.093	1	6	0.098	0	y	28	71601.728	72900	6834.391	109350	1.348	H1-1b
65	M26	6" x 0.375" Plate	0.093	1	10	0.097	0	y	33	71601.728	72900	6834.391	109350	1.348	H1-1b
66	M117	L2x2x3	0.061	16.346	3	0.017	32.693	z	5	16128.431	23392.8	6692.599	14060.074	1.136	H2-1
67	M115	L2x2x3	0.06	16.346	7	0.017	32.693	z	9	16128.431	23392.8	6692.599	14060.074	1.136	H2-1
68	M119	L2x2x3	0.059	16.346	11	0.017	32.693	z	13	16128.431	23392.8	6692.599	14060.074	1.136	H2-1
69	M118	L2x2x3	0.05	16.346	2	0.021	32.693	z	36	16128.431	23392.8	6692.599	14060.074	1.136	H2-1
70	M114	L2x2x3	0.049	16.346	9	0.021	32.693	z	32	16128.431	23392.8	6692.599	14060.074	1.136	H2-1
71	M116	L2x2x3	0.048	16.346	6	0.021	32.693	z	28	16128.431	23392.8	6692.599	14060.074	1.136	H2-1
72	M97	6"x0.5" Plate	0.033	2	3	0.05	2	y	13	96222.477	97200	12150	145800	2.085	H1-1b
73	M31	6"x0.5" Plate	0.033	2	7	0.049	2	y	4	96222.477	97200	12150	145800	1.935	H1-1b
74	M101	6"x0.5" Plate	0.032	2	8	0.044	1	y	10	96222.477	97200	12150	145800	1.381	H1-1b
75	M103	6"x0.5" Plate	0.032	2	11	0.05	2	y	8	96222.477	97200	12150	145800	2.012	H1-1b
76	M95	6"x0.5" Plate	0.031	2	12	0.045	1	y	2	96222.477	97200	12150	145800	1.379	H1-1b
77	M27	6"x0.5" Plate	0.031	2	4	0.043	1	y	6	96222.477	97200	12150	145800	1.379	H1-1b
78	M121	PIPE_2.0	0.02	36	10	0.007	36		8	25203.832	32130	22459.5	22459.5	2.231	H1-1b

SMJ International

BOLT CONNECTION CALCULATION

BOLT PROPERTIES

Date:	3/24/2022
Site:	*Brookfield 2, CT*
Engineer:	*DVA*
Project No:	*13700320_C8_04*
Description:	*Top Connection*

Bolt Capacity Equation	TIA-222-H	
Connection Type	Steel	
Bolt Size, **d**	5/8	in
Threads per Inch, **n**	11	
Steel Grade	A325	
Bolt Ultimate Tensile Stress, $\mathbf{F_u}$	120	ksi
Threads Exclusion	N	
Shear Plane	1	

Net Bolt Cross-Sectional Area, **An**	0.226	in^2
Gross Bolt Cross-Sectional Area, **Ag**	0.307	in^2
Tensile Steel Strength (per bolt), $\mathbf{\varphi R_{nt}}$	20340	lbs
Shear Steel Strength (per bolt), $\mathbf{\varphi R_{nv}}$	13806	lbs

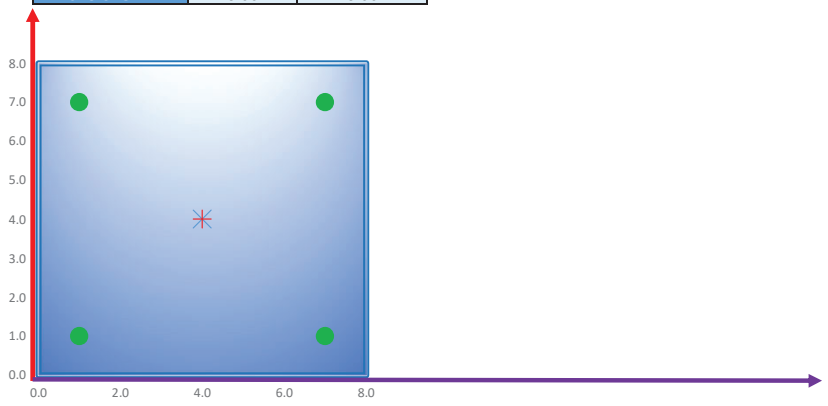
BOLT CONNECTION CALCULATION

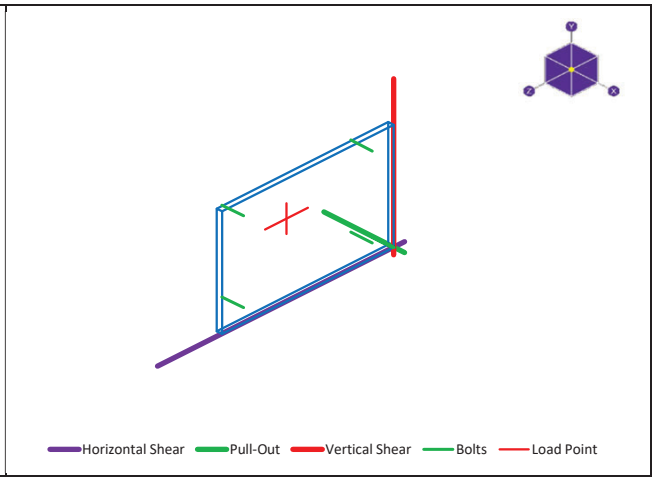
BOLT GROUP CHECK

Date:	*3/24/2022*
Site:	*Brookfield 2, CT*
Engineer:	*DVA*
Project No:	*13700320_C8_04*
Description:	*Top Connection*

SMJ International

	X	Y
Start Coordinates:	0.00	0.00
Dimensions:	8.00	8.00





	Risa LC:	3							
		Coordinates, (in.)			Loads (lbs, lb-in)					
No.	***Load Point Label***	***X***	***Y***	***Z***	***Shear, Px***	***Shear, Py***	***Axial, Pz***	***Moment, Mx***	***Moment, My***	***Moment, Mz***
1	N1	4.00	4.00	1.00	-303.67	-1280.44	1128.97	46844.47	-7313.34	-318.50

	Bolts Q-ty:	4							
		Bolt Coordinates (in.)		Bolt Loads (lbs)		Bolt Usage (%)				
No.	***Bolt Type***	***X***	***Y***	***Axial***	***Shear***	***Tensile Usage***	***Shear Usage***	***Combined Usage***	***Controlling Usage***	***Max. Usage***
1	Main Type	1.00	1.00	-4362.90	339.21	0.0%	2.5%	2.5%	Steel Shear	2.46%
2	Main Type	1.00	7.00	3657.89	345.10	18.0%	2.5%	18.0%	Steel Tension	17.98%
3	Main Type	7.00	1.00	-3093.40	313.17	0.0%	2.3%	2.3%	Steel Shear	2.27%
4	Main Type	7.00	7.00	4927.39	319.54	24.2%	2.3%	24.2%	Steel Tension	24.22%

Total Capacity of Bolt Group: 24.2%

U-Bolt Connection	No

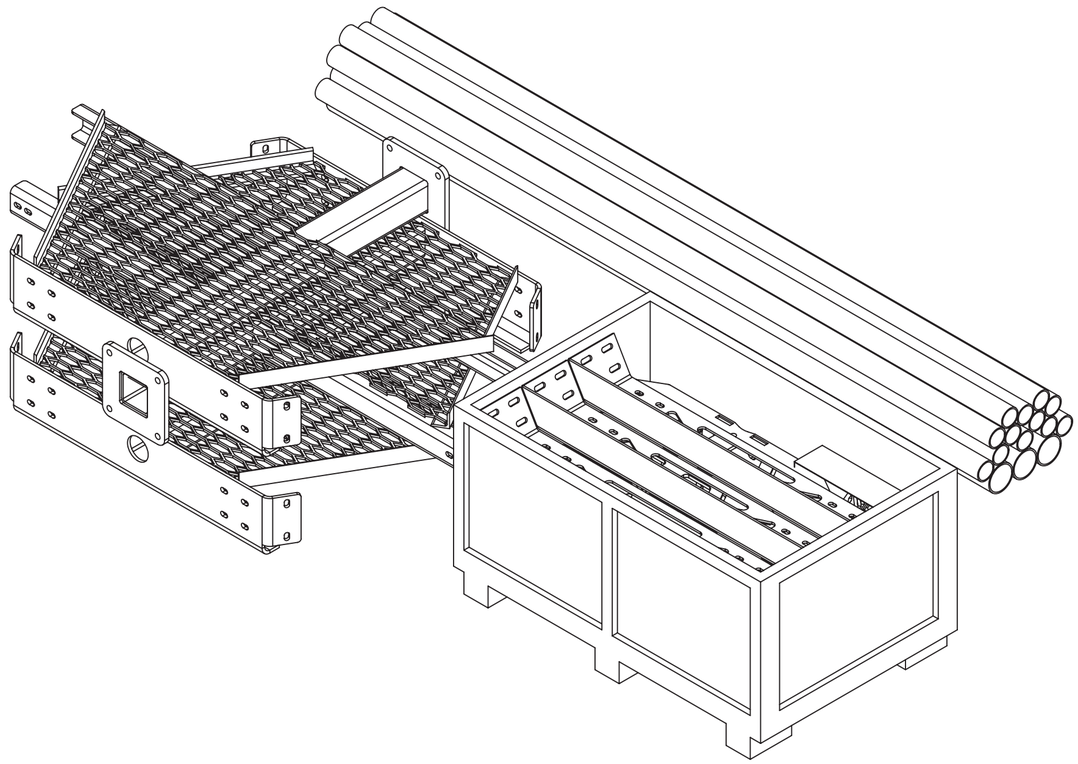
REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
A	10272PC	INITIAL RELEASE	HDAI	03/08/2021

NOTES:

1.0 GENERAL
- 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS
- 1.2 FOR PATENTS, SEE WWW.CS-PAT.COM

2.0 DESIGN NOTES
3.0 MANUFACTURING/SPECIAL REQUIREMENTS
4.0 TEST
5.0 PACKAGING

FOR BOM ENTRY ONLY



PATENT PENDING

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT	NOTE NO.
1	MTC3006SB	STEEL BUNDLE FOR SNUB NOSE PLATFORM	1	462.92 LBS	
2	MCPK8CHWK	HARDWARE KIT FOR MC-PK8-C	1	523.54 LBS	
3	MT54796	3.50" OD X 96" GALV PIPE	3	48.54 LBS	
4	MT651096154	2.375"OD X 96" SCHD 40 PIPE	12	23.05 LBS	

DENSITY		lbs/in³
MASS	1484.04	lbs
VOLUME		in³
SURFACE AREA		in²
HEIGHT	96"	
LENGTH	46"	
WIDTH	29'	

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES
1 PLACE .X ± .25
2 PLACE .XX ± 0.12
3 PLACE .XXX ± 0.06
ANGLES ± 2°

SAP MATERIAL MASTER: MC-PK8-DSH

FINISH: GALV A123

MATERIAL: A500, A1011/A1018

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET PER ANSI Y 14.5M-1994

	NAME	DATE
CE	MRC	02/17/20
RW	ROGHANSON	03/11/2021
AD	BCROSS	03/11/2021
RE	FA1024	02/27/2020

ECN 10272PC

TITLE: LOW PROFILE PLATFORM FACE

SCALE: 1:32

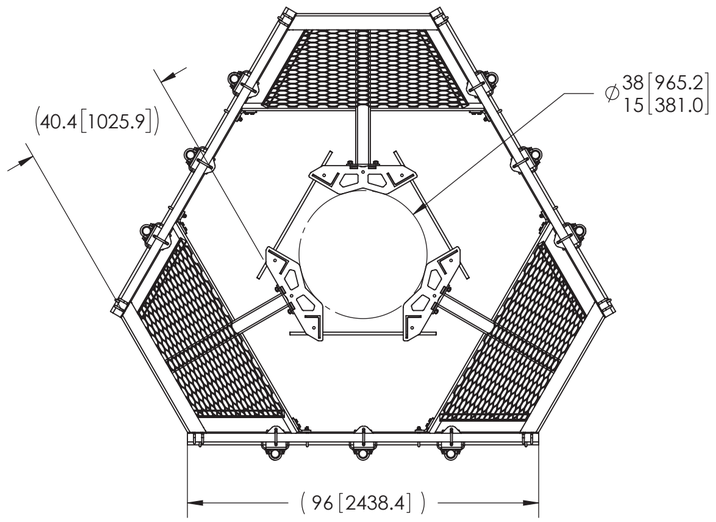
DOCUMENT NO.: MC-PK8-DSH

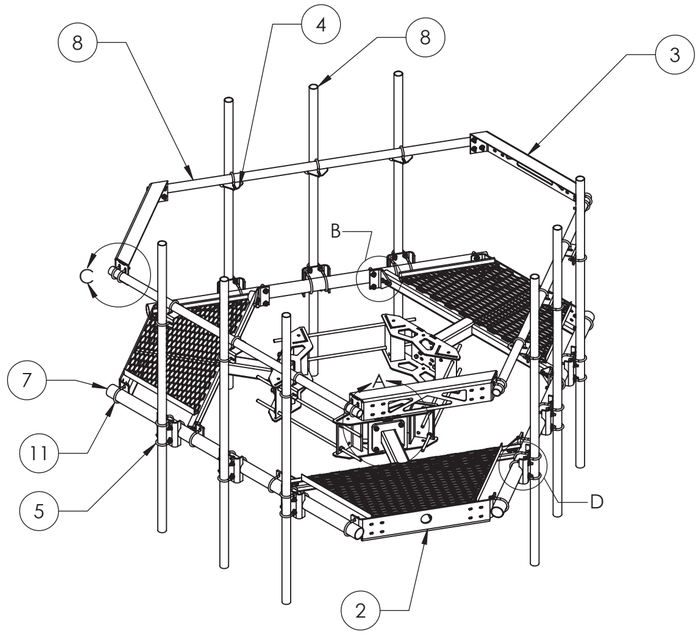
SIZE: C

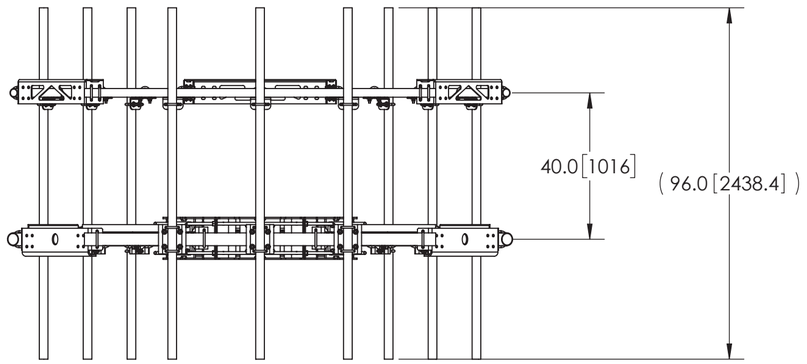
Auth Group: INSL

MODEL			DRAWING			SHEET
VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	
00	AD	A	00	AD	A	1 OF 3

NOTES:







ITEM	PART NO.	DESCRIPTION	QTY.
1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1
2	MTC300602	SECTOR WELDMENT FOR SNUB NOSE PLATFORM	3
3	MT195801	Corner Weldment Snub Nose Handrail	3
4	XAU01	ANGLE, CROSSOVER, 1.9-3.5" X 1.9-3.5" OD	9
5	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	48
6	GB-0520A	5/8" X 2" GALV BOLT KIT (A325)	12
7	MT54796	3.50" OD X 96" GALV PIPE	3
8	MT651096154	2.375"OD X 96" SCHD 40 PIPE	12
9	MT21701	PIPE MOUNT PLATE	9
10	GWF-04	1/2" GALV FLAT WASHER	12
11	GUB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12
12	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	18
13	MTC300618	MOUNTING PLATE FOR MT-196	6
14	GB-04205	1/2" X 2" GALV BOLT KIT	12

COMMSCOPE, INC. OF NORTH CAROLINA

TITLE

LOW PROFILE PLATFORM FACE

SIZE	SCALE	DOCUMENT NO.			
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		DRAWING			SHEET
		VERSION	STATUS	REVISION	
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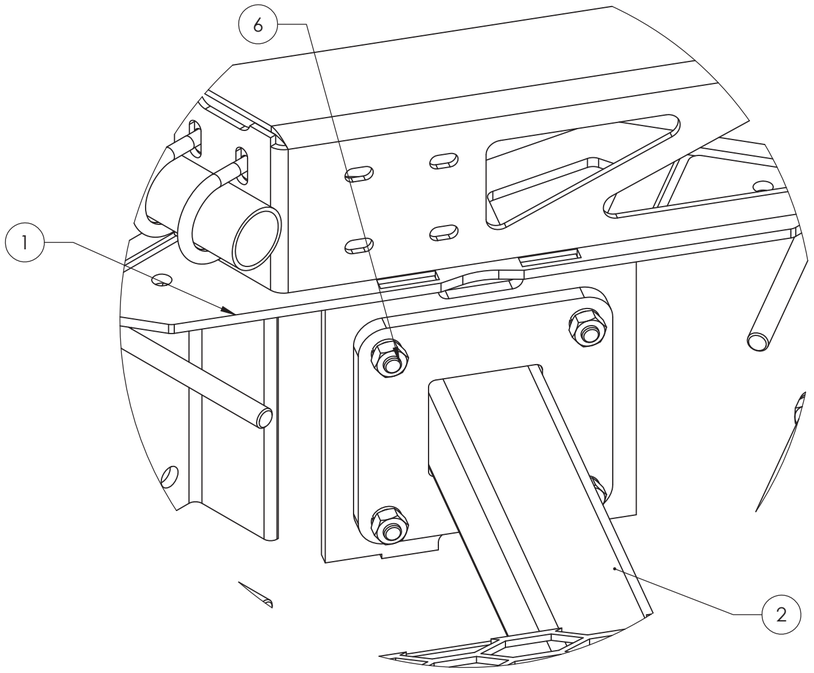

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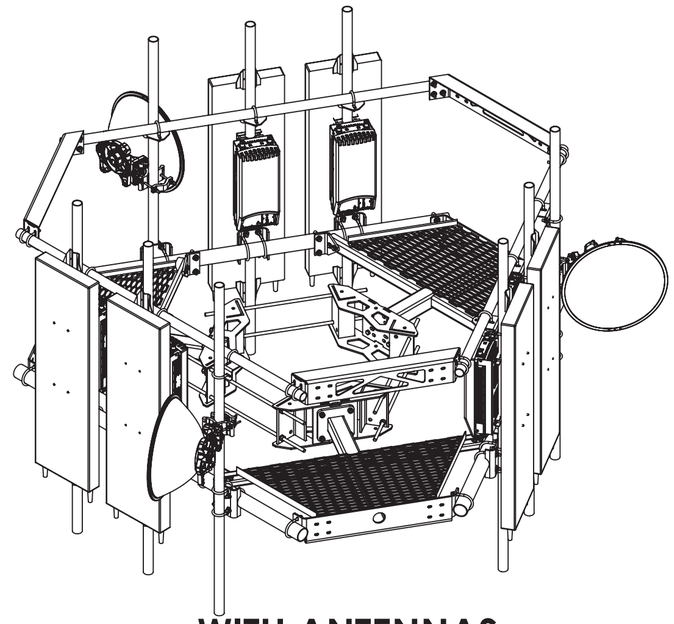
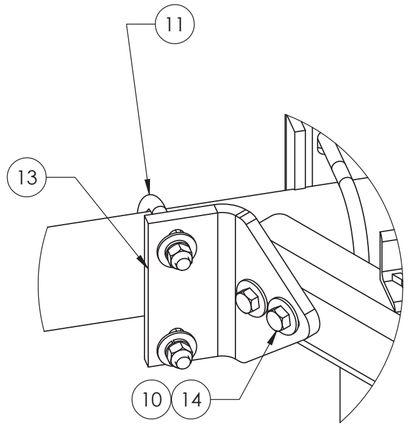


WITH ANTENNAS



DETAIL B
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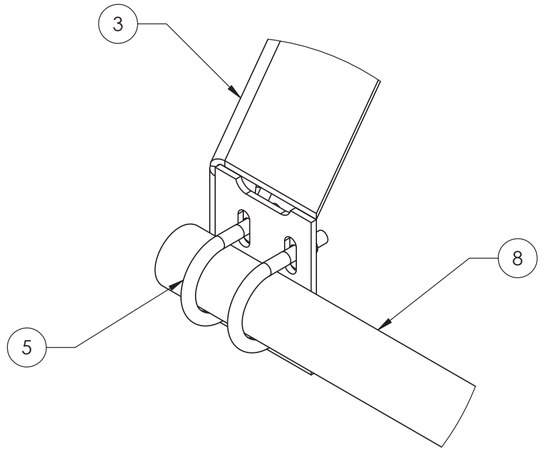
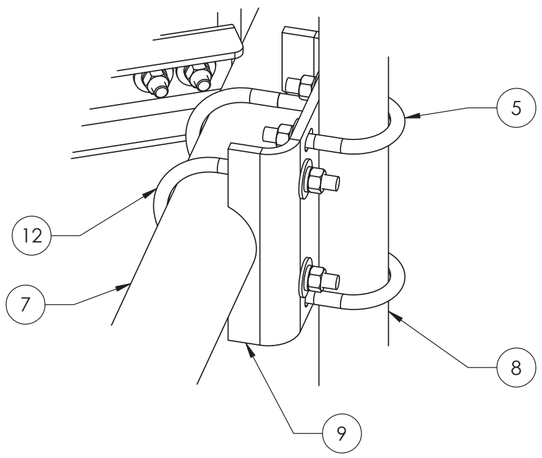


DETAIL C
SCALE 1 : 4



DETAIL D
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COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: LOW PROFILE PLATFORM FACE			
SIZE: C	SCALE: 1:24	DOCUMENT NO.: MC-PK8-DSH	
		DRAWING: VERSION 00 / STATUS AD / REVISION A	SHEET: 3 OF 3

POWER DENSITY STUDY

Pinnacle Telecom Group

Professional and Technical Services

Telecom Consulting

Antenna Site FCC RF Compliance Assessment and Report for Municipal Submission

Prepared for:	Dish Wireless, LLC
Site ID:	NJJER01099B
Site Address:	100 Pocono Road Brookfield, CT
Latitude:	N 41.46295556
Longitude:	W 73.39826667
Structure type:	Monopole
Report date:	March 7, 2022
Compliance Conclusion:	Dish Wireless, LLC will be in compliance with the rules and regulations as described in OET Bulletin 65, following the implementation of the proposed mitigation as detailed in the report.

14 Ridgedale Avenue - Suite 260 • Cedar Knolls, NJ 07927 • 973-451-1630

Contents

Introduction and Summary

At the request of Dish Wireless, LLC ("Dish"), Pinnacle Telecom Group has performed an independent expert assessment of radiofrequency (RF) levels and related FCC compliance for proposed wireless base station antenna operations on an existing monopole located at 100 Pocono Road in Brookfield, CT. Dish refers to the antenna site by the code "NJJER01099B", and its proposed operation involves directional panel antennas and transmission in the 600 MHz, 2000 MHz and 2100 MHz frequency bands licensed to it by the FCC.

The FCC requires all wireless antenna operators to perform an assessment of potential human exposure to radiofrequency (RF) fields emanating from all the transmitting antennas at a site whenever antenna operations are added or modified, and to ensure compliance with the Maximum Permissible Exposure (MPE) limit in the FCC's regulations. In this case, the compliance assessment needs to take into account the RF effects of other existing antenna operations at the site by Verizon Wireless. Note that FCC regulations require any future antenna collocators to assess and assure continuing compliance based on the cumulative effects of all then-proposed and then-existing antennas at the site.

This report describes a mathematical analysis of RF levels resulting around the site in areas of unrestricted public access, that is, at street level around the site. The compliance analysis employs a standard FCC formula for calculating the effects of the antennas in a very conservative manner, in order to overstate the RF levels and to ensure "safe-side" conclusions regarding compliance with the FCC limit for safe continuous exposure of the general public.

The results of a compliance assessment can be described in layman's terms by expressing the calculated RF levels as simple percentages of the FCC MPE limit. If the normalized reference for that limit is 100 percent, then calculated RF levels higher than 100 percent indicate the MPE limit is exceeded and there is a need to mitigate the potential exposure. On the other hand, calculated RF levels consistently below 100 percent serve as a clear and sufficient demonstration of compliance with the MPE limit. We can (and will) also describe the overall worst-case result via the "plain-English" equivalent "times-below-the-limit" factor.

The result of the RF compliance assessment in this case is as follows:

- At street level, the conservatively calculated maximum RF level from the combination of proposed and existing antenna operations at the site is 0.8217 percent (i.e., less than 9/10^{ths} of one percent) of the FCC general population MPE limit – well below the 100-percent reference for compliance. In other words, the worst-case calculated RF level – intentionally and significantly overstated by the calculations – is still more than 121 times below the FCC limit for safe, continuous exposure of the general public.
- A supplemental analysis of the RF levels at the same height as the Dish antennas indicate that the FCC MPE limit is potentially exceeded. Therefore, it is recommended that two Caution signs be installed six feet below the antennas. In addition, NOC Information signs are to be installed at the base of the monopole.
- The results of the calculations, along with the proposed mitigation, combine to satisfy the FCC requirements and associated guidelines on RF compliance at street level around the site and on the subject roof. Moreover, because of the significant conservatism incorporated in the analysis, RF levels actually caused by the antennas will be lower than these calculations indicate.

The remainder of this report provides the following:

- relevant technical data on the proposed Dish antenna operations at the site, as well as on the other existing antenna operations;
- a description of the applicable FCC mathematical model for calculating RF levels, and application of the relevant technical data to that model;
- analysis of the results of the calculations against the FCC MPE limit, and the compliance conclusion for the site.

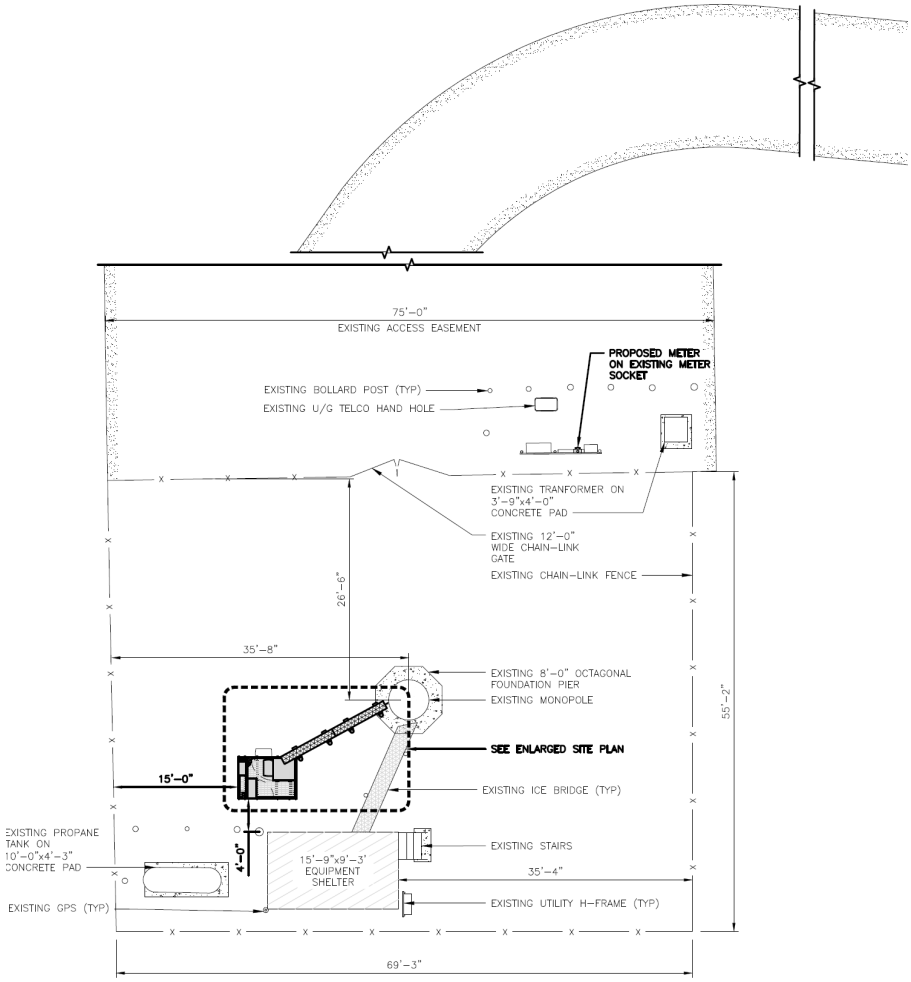
In addition, four Appendices are included. Appendix A provides information on the documents used to prepare the analysis. Appendix B provides background on the FCC MPE limit. Appendix C details the proposed mitigation to satisfy the FCC

requirements and associated guidelines on RF compliance. Appendix D provides a summary of the qualifications of the expert certifying FCC compliance for this site.

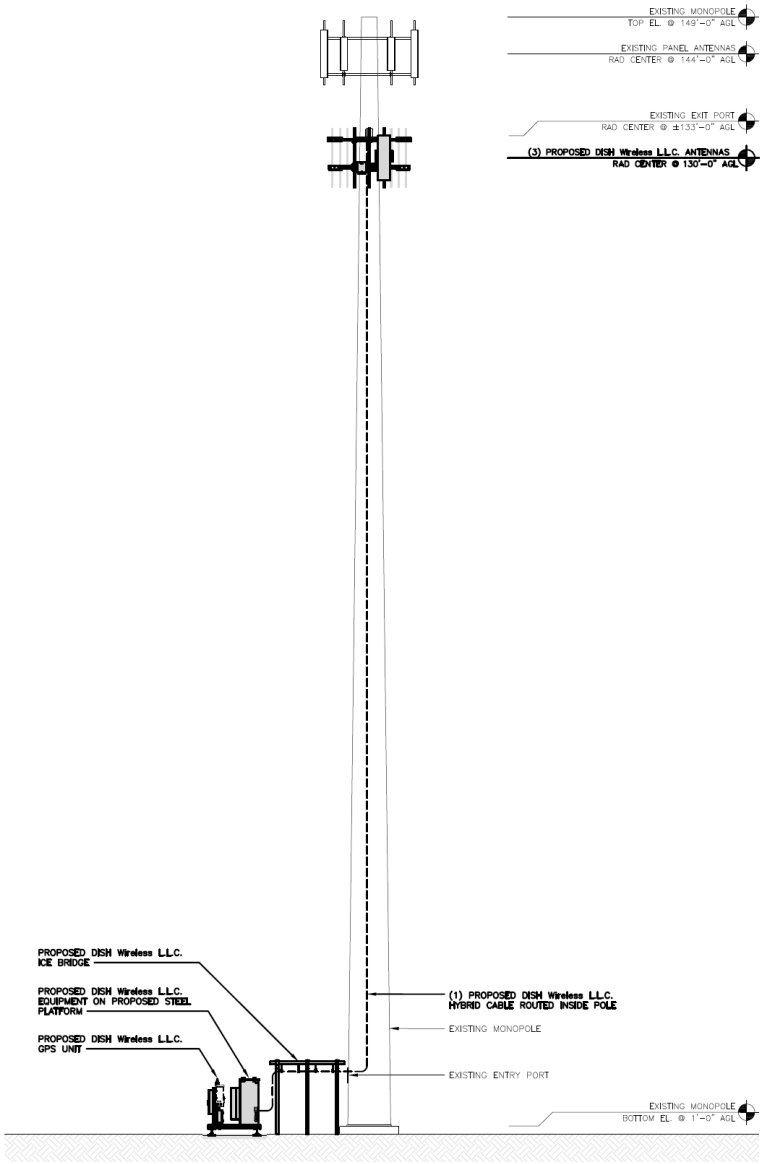
Antenna and Transmission Data

The plan and elevation views that follow, extracted from the site drawings, illustrate the mounting positions of the Dish antennas at the site.

Plan View:



Elevation View:



The table that follows summarizes the relevant data for the proposed Dish antenna operations. Note that the “Z” height references the centerline of the antenna.

Ant. ID	Carrier	Antenna Manufacturer	Antenna Model	Type	Freq (MHz)	Ant. Dim. (ft.)	Total Input Power (watts)	Total ERP (watts)	Z AGL (ft)	Ant. Gain (dBd)	B/W	Azimuth	EDT	MDT
❶	Dish	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	130	12.46	64	70	2	0
❶	Dish	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	130	16.66	67	70	2	0
❶	Dish	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	130	16.66	67	70	2	0
❷	Dish	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	130	12.46	64	190	2	0
❷	Dish	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	130	16.66	67	190	2	0
❷	Dish	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	130	16.66	67	190	2	0
❸	Dish	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	130	12.46	64	310	2	0
❸	Dish	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	130	16.66	67	310	2	0
❸	Dish	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	130	16.66	67	310	2	0

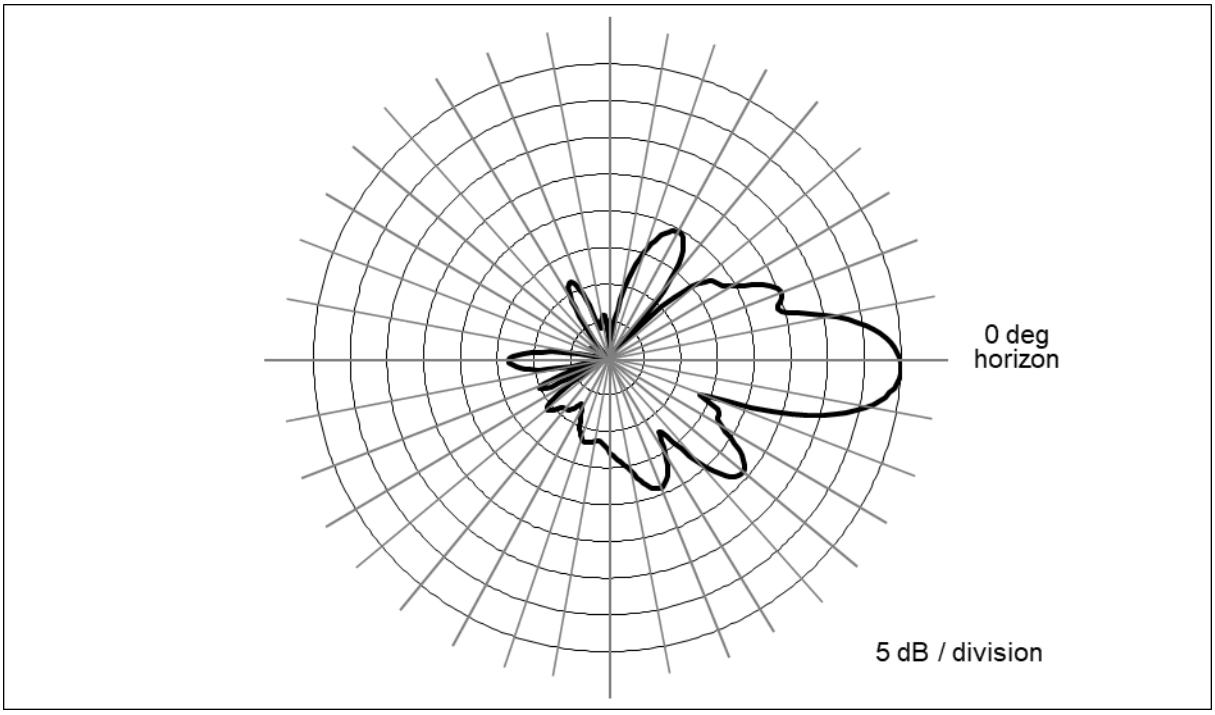
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

By way of illustration, Figure 1 that follows shows the vertical-plane radiation pattern of the proposed antenna model in the 600 MHz frequency band. In this type of antenna radiation pattern diagram, the antenna is effectively pointed at the three o'clock position (the horizon) and the relative strength of the pattern at different angles is described using decibel units.

Note that the use of a decibel scale to describe the relative pattern at different angles actually serves to significantly understate the actual focusing effects of the antenna. Where the antenna pattern reads 20 dB the relative RF energy emitted at the corresponding downward angle is 1/100th of the maximum that occurs in the main beam (at 0 degrees); at 30 dB, the energy is only 1/1000th of the maximum.

Finally, note that the automatic pattern-scaling feature of our internal software may skew side-by-side visual comparisons of different antenna models, or even different parties' depictions of the same antenna model.

Figure 1. Commscope FFVV-65B-R2 – 600 MHz Vertical-plane Pattern



As noted at the outset, there is an existing wireless antenna operation by Verizon Wireless to include in the compliance assessment and we will conservatively assume operation with maximum channel capacity and at maximum transmitter power per channel to be used in each of its FCC-licensed frequency bands.

The table that follows summarizes the relevant data for the collocated antenna operations.

Carrier	*Antenna Manufacturer*	*Antenna Model*	*Type*	*Freq (MHz)*	*Total ERP (watts)*	*Ant. Gain (dBd)*	*Azimuth*
Verizon Wireless	Generic	Generic	Panel	746	2400	11.76	N/A
Verizon Wireless	Generic	Generic	Panel	869	5166	12.36	N/A
Verizon Wireless	Generic	Generic	Panel	1900	5372	15.26	N/A
Verizon Wireless	Generic	Generic	Panel	2100	5625	15.46	N/A

Compliance Analysis

FCC Office of Engineering and Technology Bulletin 65 ("OET Bulletin 65") provides guidelines for mathematical models to calculate the RF levels at various points around transmitting antennas. Different models apply in different areas around antennas, with one model applying to street level around a site, and another applying to the rooftop near the antennas. We will address each area of interest in turn in the subsections that follow.

Street Level Analysis

At street-level around an antenna site (in what is called the "far field" of the antennas), the RF levels are directly proportional to the total antenna input power and the relative antenna gain in the downward direction of interest – and the levels are otherwise inversely proportional to the square of the straight-line distance to the antenna.

Conservative calculations also assume the potential RF exposure is enhanced by reflection of the RF energy from the intervening ground. Our calculations will assume a 100% "perfect", mirror-like reflection, which is the absolute worst-case scenario.

The formula for street-level compliance assessment for any given wireless antenna operation is as follows:

$$MPE\% = (100 * Chans * TxPower * 10^{(Gmax-Vdisc/10)} * 4) / (MPE * 4\pi * R^2)$$

where

MPE%	=	RF level, expressed as a percentage of the MPE limit applicable to continuous exposure of the general public
100	=	factor to convert the raw result to a percentage
Chans	=	maximum number of RF channels per sector
TxPower	=	maximum transmitter power per channel, in milliwatts

$10^{(Gmax-Vdisc/10)}$	=	numeric equivalent of the relative antenna gain in the downward direction of interest; data on the antenna vertical-plane pattern is taken from manufacturer specifications
4	=	factor to account for a 100-percent-efficient energy reflection from the ground, and the squared relationship between RF field strength and power density ($2^2 = 4$)
MPE	=	FCC general population MPE limit
R	=	straight-line distance from the RF source to the point of interest, centimeters

The MPE% calculations are performed out to a distance of 500 feet from the facility to points 6.5 feet (approximately two meters, the FCC-recommended standing height) off the ground, as illustrated in Figure 2, below.

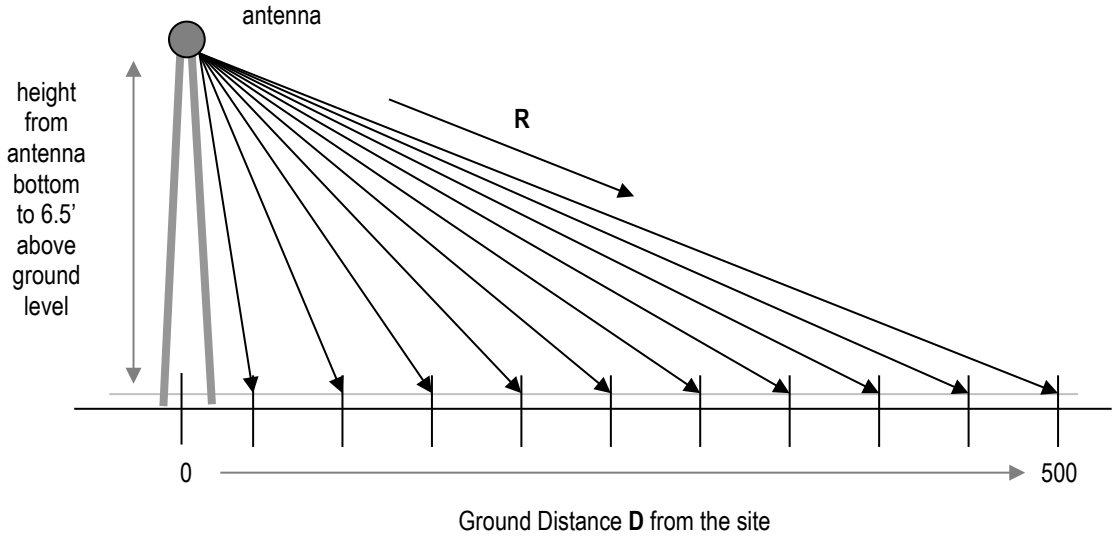


Figure 2. Street-level MPE% Calculation Geometry

It is popularly understood that the farther away one is from an antenna, the lower the RF level – which is generally but not universally correct. The results of MPE% calculations fairly close to the site will reflect the variations in the vertical-plane antenna pattern as well as the variation in straight-line distance to the antenna.

Therefore, RF levels may actually increase slightly with increasing distance within the range of zero to 500 feet from the site. As the distance approaches 500 feet and beyond, though, the antenna pattern factor becomes less significant, the RF levels become primarily distance-controlled and, as a result, the RF levels generally decrease with increasing distance. In any case, the RF levels more than 500 feet from a wireless antenna site are well understood to be sufficiently low to be comfortably in compliance.

According to the FCC, when directional antennas (such as panels) are used, compliance assessments are based on the RF effect of a single (facing) antenna sector, as the effects of directional antennas pointed away from the point(s) of interest are considered insignificant. If the different parameters apply in the different sectors, compliance is based on the worst-case parameters.

Street level FCC compliance for a collocated antenna site is assessed in the following manner. At each distance point along the ground, an MPE% calculation is made for each antenna operation (including each frequency band), and the sum of the individual MPE% contributions at each point is compared to 100 percent, the normalized reference for compliance with the MPE limit. We refer to the sum of the individual MPE% contributions as “total MPE%”, and any calculated total MPE% result exceeding 100 percent is, by definition, higher than the FCC limit and represents non-compliance and a need to mitigate the potential exposure. If all results are consistently below 100 percent, on the other hand, that set of results serves as a clear and sufficient demonstration of compliance with the MPE limit.

Note that the following conservative methodology and assumptions are incorporated into the MPE% calculations on a general basis:

1. The antennas are assumed to be operating continuously at maximum power and maximum channel capacity.
2. The power-attenuation effects of shadowing or other obstructions to the line-of-sight path from the antenna to the point of interest are ignored.
3. The calculations intentionally minimize the distance factor (R) by assuming a 6’6” human and performing the calculations from the bottom (rather than

the centerline) of each operator's lowest-mounted antenna, as applicable.

4. The calculations also conservatively take into account, when applicable, the different technical characteristics and related RF effects of the use of multiple antennas for transmission in the same frequency band.
5. The RF exposure at ground level is assumed to be 100-percent enhanced (increased) via a "perfect" field reflection from the intervening ground.

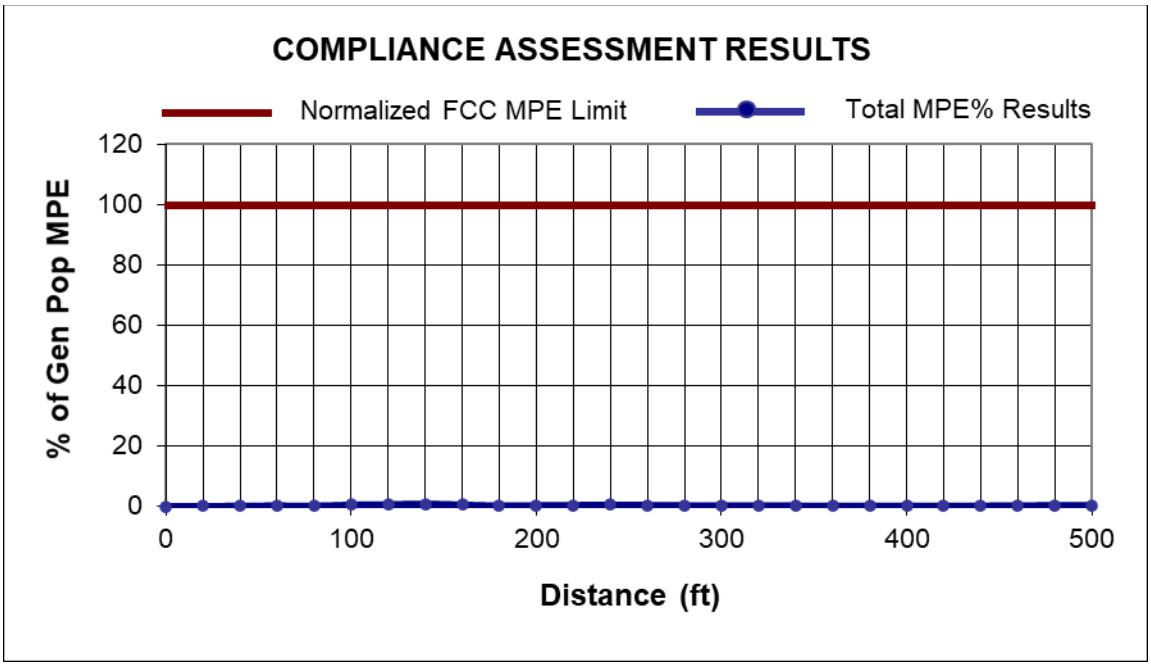
The net result of these assumptions is to intentionally and significantly overstate the calculated RF levels relative to the levels that will actually result from the antenna operations – and the purpose of this conservatism is to allow very "safe-side" conclusions about compliance.

The table that follows provides the results of the MPE% calculations for each antenna operation, with the overall worst-case calculated result highlighted in bold in the last column. Note that the transmission parameters for each Dish antenna sector are identical, and the calculations reflect the worst-case result for any/all sectors.

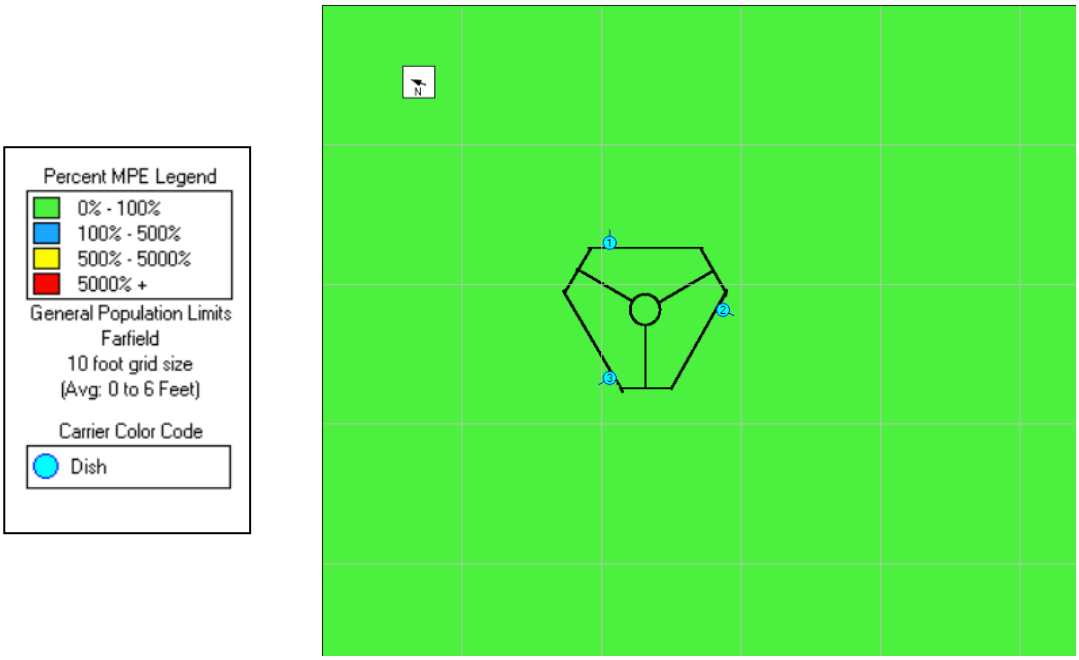
Ground Distance (ft)	Dish 600 MHz MPE%	Dish 2000 MHz MPE%	Dish 2100 MHz MPE%	Verizon Wireless MPE%	Total MPE%
0	0.0335	0.0016	0.0003	0.0179	0.0533
20	0.0605	0.0021	0.0025	0.0224	0.0875
40	0.1297	0.0076	0.0306	0.0495	0.2174
60	0.0960	0.0586	0.0236	0.1012	0.2794
80	0.0248	0.0133	0.0486	0.1266	0.2133
100	0.0624	0.1911	0.1511	0.1251	0.5297
120	0.1767	0.1302	0.2610	0.0971	0.6650
140	**0.2130**	**0.1935**	**0.2370**	**0.1782**	**0.8217**
160	0.1268	0.0437	0.1417	0.2450	0.5572
180	0.0584	0.0193	0.0034	0.2033	0.2844
200	0.0326	0.0171	0.0414	0.2585	0.3496
220	0.0226	0.0265	0.0143	0.3811	0.4445
240	0.0191	0.0739	0.0619	0.3942	0.5491
260	0.0126	0.0243	0.0943	0.3388	0.4700
280	0.0085	0.0102	0.0533	0.2845	0.3565
300	0.0075	0.0639	0.0177	0.1890	0.2781
320	0.0131	0.0841	0.0507	0.1305	0.2784
340	0.0251	0.0722	0.0819	0.0804	0.2596
360	0.0446	0.0404	0.0826	0.0229	0.1905
380	0.0728	0.0130	0.0554	0.0236	0.1648
400	0.1095	0.0035	0.0247	0.0435	0.1812
420	0.1001	0.0032	0.0226	0.0398	0.1657
440	0.1423	0.0031	0.0072	0.0785	0.2311
460	0.1915	0.0025	0.0024	0.1352	0.3316
480	0.1768	0.0023	0.0022	0.2119	0.3932
500	0.2280	0.0047	0.0014	0.1964	0.4305

As indicated, the maximum calculated overall RF level is 0.8217 percent of the FCC MPE limit – well below the 100-percent reference for compliance.

A graph of the overall calculation results, provide on the next page, perhaps provides a clearer *visual* illustration of the relative compliance of the calculated RF levels. The line representing the overall calculation results shows an obviously clear, consistent margin to the FCC MPE limit.



The graphic output for the areas at street level surrounding the site is reproduced below.

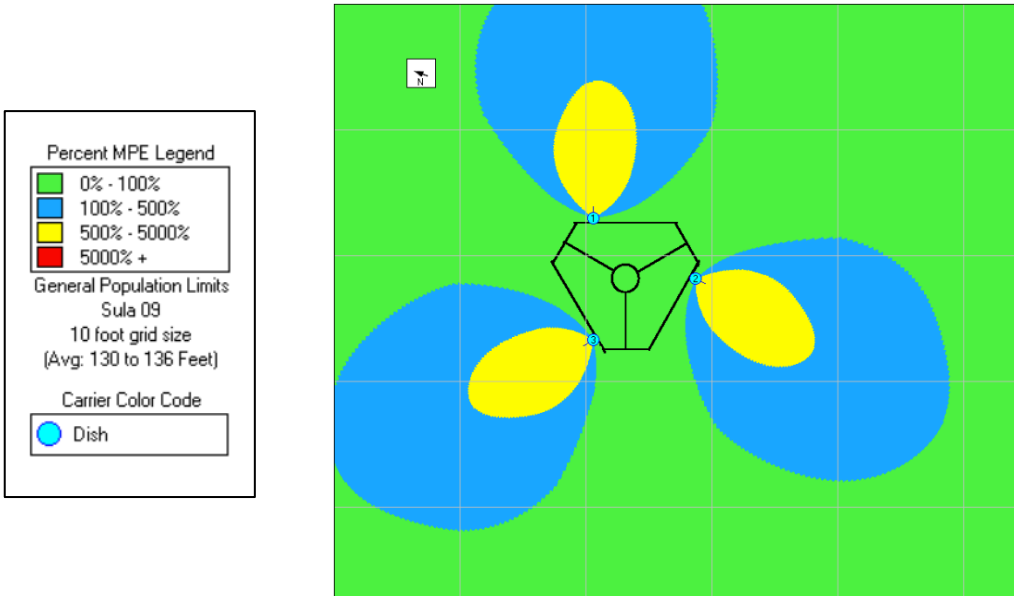


Near-field Analysis

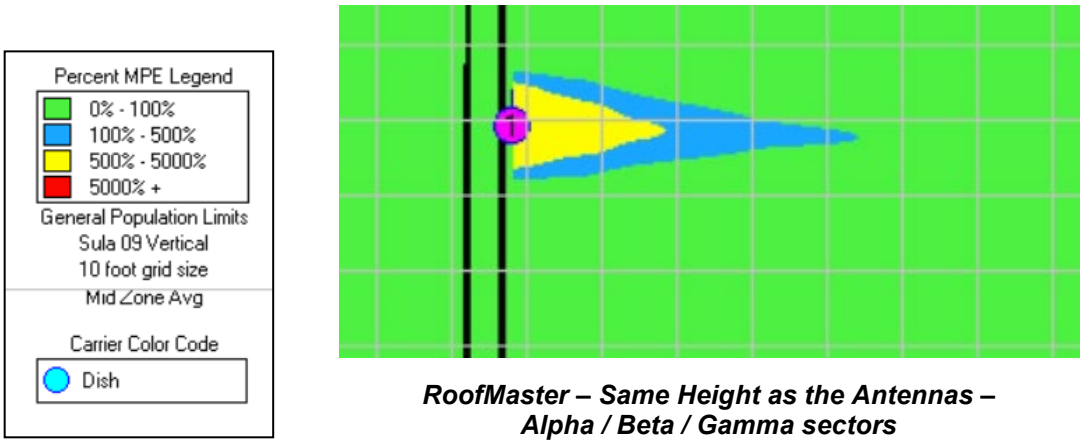
The compliance analysis for the same height as the antennas is performed using the RoofMaster program by Waterford Consultants.

RF levels in the near field of an antenna depend on the power input to the antenna, the antenna's length and horizontal beamwidth, the mounting height of the antenna above nearby roof, and one's position and distance from the antenna. RF levels in front of a directional antenna are higher than they are to the sides or rear, and in any given horizontal direction are inversely proportional to the straight-line distance to the antenna.

The RoofMaster graphic outputs for the same height as the Dish antennas are reproduced on the next page.



RoofMaster – Same Height as the Antennas – Alpha / Beta / Gamma sectors



RoofMaster – Same Height as the Antennas – Alpha / Beta / Gamma sectors

Compliance Conclusion

According to the FCC, the MPE limit has been constructed in such a manner that continuous human exposure to RF fields up to and including 100 percent of the MPE limit is acceptable and safe.

The conservative analysis in this case shows that the maximum calculated RF level from the combination of proposed and existing antenna operations at street level around the site is 0.8217 percent of the FCC general population MPE limit. At the same height as the antennas, the analysis shows that the calculated RF levels potentially exceed the FCC MPE limit. Per Dish guidelines, and consistent with FCC guidance on compliance, it is recommended that two Caution signs be installed six feet below the antennas. In addition, NOC Information signs be installed at the base of the monopole.

The results of the calculations, along with the described RF mitigation, combine to satisfy the FCC's RF compliance requirements and associated guidelines on compliance.

Moreover, because of the extremely conservative calculation methodology and operational assumptions we applied in the analysis, RF levels actually caused by the antennas will be significantly lower than the calculation results here indicate.

Certification

It is the policy of Pinnacle Telecom Group that all FCC RF compliance assessments are reviewed, approved, and signed by the firm's Chief Technical Officer who certifies as follows:

1. I have read and fully understand the FCC regulations concerning RF safety and the control of human exposure to RF fields (47 CFR 1.1301 *et seq*).
2. To the best of my knowledge, the statements and information disclosed in this report are true, complete and accurate.
3. The analysis of site RF compliance provided herein is consistent with the applicable FCC regulations, additional guidelines issued by the FCC, and industry practice.
4. The results of the analysis indicate that the subject antenna operations will be in compliance with the FCC regulations concerning the control of potential human exposure to the RF emissions from antennas.

3/7/22

Daniel J. Collins
Chief Technical Officer
Pinnacle Telecom Group, LLC

Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: RFDS-NJJER01099B-Final-20211004-v.0_20211004090704

CD: NJJER01099B_FinalStampedCDs_20210928133621

Appendix B. Background on the FCC MPE Limit

As directed by the Telecommunications Act of 1996, the FCC has established limits for maximum continuous human exposure to RF fields.

The FCC maximum permissible exposure (MPE) limits represent the consensus of federal agencies and independent experts responsible for RF safety matters. Those agencies include the National Council on Radiation Protection and Measurements (NCRP), the Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), the American National Standards Institute (ANSI), the Environmental Protection Agency (EPA), and the Food and Drug Administration (FDA). In formulating its guidelines, the FCC also considered input from the public and technical community – notably the Institute of Electrical and Electronics Engineers (IEEE).

The FCC's RF exposure guidelines are incorporated in Section 1.301 *et seq* of its Rules and Regulations (47 CFR 1.1301-1.1310). Those guidelines specify MPE limits for both occupational and general population exposure.

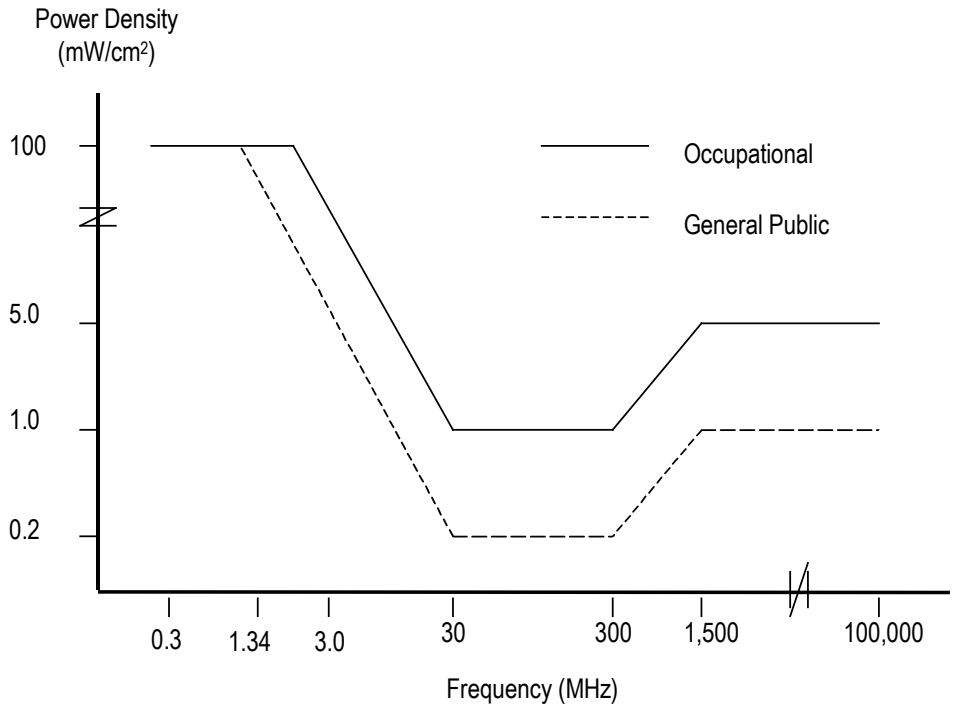
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in the form of heat). The occupational MPE guidelines incorporate a safety factor of 10 or greater with respect to RF levels known to represent a health hazard, and an additional safety factor of five is applied to the MPE limits for general population exposure. Thus, the general population MPE limit has a built-in safety factor of more than 50. The limits were constructed to appropriately protect humans of both sexes and all ages and sizes and under all conditions – and continuous exposure at levels equal to or below the applicable MPE limits is considered to result in no adverse health effects or even health risk.

The reason for *two* tiers of MPE limits is based on an understanding and assumption that members of the general public are unlikely to have had appropriate RF safety training and may not be aware of the exposures they receive; occupational exposure in controlled environments, on the other hand, is assumed to involve individuals who have had such training, are aware of the exposures, and know how to maintain a safe personal work environment.

The FCC's RF exposure limits are expressed in two equivalent forms, using alternative units of field strength (expressed in volts per meter, or V/m), and power density (expressed in milliwatts per square centimeter, or mW/cm^2). The table on the next page lists the FCC limits for both occupational and general population exposures, using the mW/cm^2 reference, for the different radio frequency ranges.

Frequency Range (F) (MHz)	Occupational Exposure (mW/cm^2)	General Public Exposure (mW/cm^2)
0.3 - 1.34	100	100
1.34 - 3.0	100	$180 / F^2$
3.0 - 30	$900 / F^2$	$180 / F^2$
30 - 300	1.0	0.2
300 - 1,500	F / 300	F / 1500
1,500 - 100,000	5.0	1.0

The diagram below provides a graphical illustration of both the FCC's occupational and general population MPE limits.



Because the FCC's RF exposure limits are frequency-shaped, the exact MPE limits applicable to the instant situation depend on the frequency range used by the systems of interest.

The most appropriate method of determining RF compliance is to calculate the RF power density attributable to a particular system and compare that to the MPE limit applicable to the operating frequency in question. The result is usually expressed as a percentage of the MPE limit.

For potential exposure from multiple systems, the respective percentages of the MPE limits are added, and the total percentage compared to 100 (percent of the limit). If the result is less than 100, the total exposure is in compliance; if it is more than 100, exposure mitigation measures are necessary to achieve compliance.

Note that the FCC "categorically excludes" all "non-building-mounted" wireless antenna operations whose mounting heights are more than 10 meters (32.8 feet) from the routine requirement to demonstrate compliance with the MPE limit, because such operations "are deemed, individually and cumulatively, to have no significant effect on the human environment". The categorical exclusion also applies to *all* point-to-point antenna operations, regardless of the type of structure they're mounted on. Note that the FCC considers any facility qualifying for the categorical exclusion to be automatically in compliance.

In addition, FCC Rules and Regulations Section 1.1307(b)(3) describes a provision known in the industry as "the 5% rule". It describes that when a specific location – like a spot on a rooftop – is subject to an overall exposure level exceeding the applicable MPE limit, operators with antennas whose MPE% contributions at the point of interest are less than 5% are exempted from the obligation otherwise shared by all operators to bring the site into compliance, and those antennas are automatically deemed by the FCC to satisfy the rooftop compliance requirement.

FCC References on RF Compliance

47 CFR, FCC Rules and Regulations, Part 1 (Practice and Procedure), Section 1.1310 (Radiofrequency radiation exposure limits).

FCC Second Memorandum Opinion and Order and Notice of Proposed Rulemaking (FCC 97-303), *In the Matter of Procedures for Reviewing Requests for Relief From State and Local Regulations Pursuant to Section 332(c)(7)(B)(v) of the Communications Act of 1934 (WT Docket 97-192), Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation (ET Docket 93-62), and Petition for Rulemaking of the Cellular Telecommunications Industry Association Concerning Amendment of the Commission's Rules to Preempt State and Local Regulation of Commercial Mobile Radio Service Transmitting Facilities*, released August 25, 1997.

FCC First Memorandum Opinion and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released December 24, 1996.

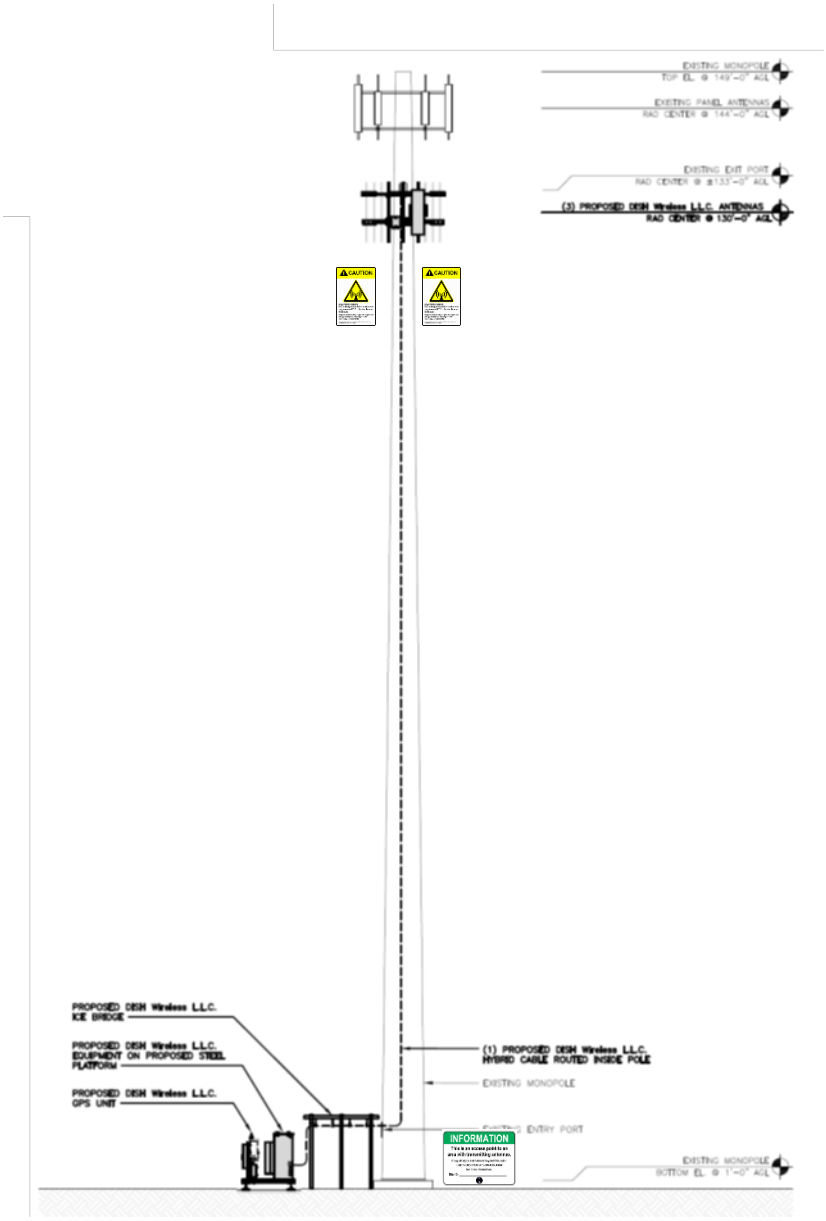
FCC Report and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released August 1, 1996.

FCC Report and Order, Notice of Proposed Rulemaking, Memorandum Opinion and Order (FCC 19-126), *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies,* released December 4, 2019.

FCC Office of Engineering and Technology (OET) Bulletin 65, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields”, Edition 97-01, August 1997.

FCC Office of Engineering and Technology (OET) Bulletin 56, “Questions and Answers About Biological Effects and Potential Hazards of RF Radiation”, edition 4, August 1999.

Appendix C. Proposed Signage



NOC Information Sign		Caution Sign	
Guidelines Sign		Warning Sign	
Notice Sign			

Appendix D. Summary of Expert Qualifications

Daniel J. Collins, Chief Technical Officer, Pinnacle Telecom Group, LLC

Synopsis:	• 40+ years of experience in all aspects of wireless system engineering, related regulation, and RF exposure • Has performed or led RF exposure compliance assessments on more than 20,000 antenna sites since the latest FCC regulations went into effect in 1997 • Has provided testimony as an RF compliance expert more than 1,500 times since 1997 • Have been accepted as an FCC compliance expert in New York, New Jersey, Connecticut, Pennsylvania and more than 40 other states, as well as by the FCC
Education:	• B.E.E., City College of New York (Sch. Of Eng.), 1971 • M.B.A., 1982, Fairleigh Dickinson University, 1982 • Bronx High School of Science, 1966
Current Responsibilities:	• Leads all PTG staff work involving RF safety and FCC compliance, microwave and satellite system engineering, and consulting on wireless technology and regulation
Prior Experience:	• Edwards & Kelcey, VP – RF Engineering and Chief Information Technology Officer, 1996-99 • Bellcore (a Bell Labs offshoot after AT&T's 1984 divestiture), Executive Director – Regulation and Public Policy, 1983-96 • AT&T (Corp. HQ), Division Manager – RF Engineering, and Director – Radio Spectrum Management, 1977-83 • AT&T Long Lines, Group Supervisor – Microwave Radio System Design, 1972-77
Specific RF Safety / Compliance Experience:	• Involved in RF exposure matters since 1972 • Have had lead corporate responsibility for RF safety and compliance at AT&T, Bellcore, Edwards & Kelcey, and PTG • While at AT&T, helped develop the mathematical models for calculating RF exposure levels • Have been relied on for compliance by all major wireless carriers, as well as by the federal government, several state and local governments, equipment manufacturers, system integrators, and other consulting / engineering firms
Other Background:	• Author, *Microwave System Engineering* (AT&T, 1974) • Co-author and executive editor, *A Guide to New Technologies and Services* (Bellcore, 1993) • National Spectrum Management Association (NSMA) – former three-term President and Chairman of the Board of Directors; was founding member, twice-elected Vice President, long-time member of the Board, and was named an NSMA Fellow in 1991 • Have published more than 35 articles in industry magazines

UNDERLYING PROPERTY INFORMATION

100 POCONO RD

Location	100 POCONO RD	**Mblu**	E10/ / 014/ /
Acct#	72100000	**Owner**	BROOKFIELD TOWN OF
Assessment	$10,110,880	**Appraisal**	$14,444,100
PID	3634	**Building Count**	5

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$10,637,720	$3,806,380	$14,444,100

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$7,446,410	$2,664,470	$10,110,880

Owner of Record

Owner	BROOKFIELD TOWN OF	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	PO BOX 5106 BROOKFIELD, CT 06804	**Book & Page**	786/258
		Sale Date	03/15/2021
		Instrument	

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
BROOKFIELD TOWN OF	$0		786/258		03/15/2021
BROOKFIELD TOWN OF	$0		784/886	15	02/23/2021
BROOKFIELD TOWN OF	$0		137/1144		01/01/1900

Building Information

Building 1 : Section 1

Year Built: 1982
Living Area: 29,727

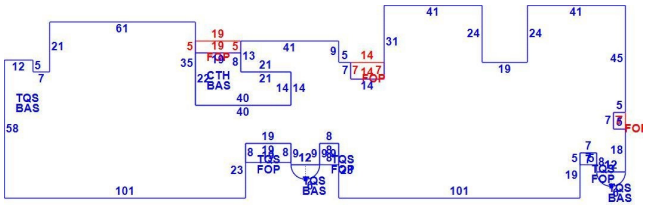
Building Attributes

Field	Description
Style:	Town Hall
Model	Comm/Ind
Grade	A
Stories:	1.75
Occupancy	1.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Hip
Roof Cover	Asphalt Shingl
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	Ceram Clay Til
Heating Fuel	Oil
Heating Type	Forced Air
AC Type	Heat Pump
Struct Class	
Bldg Use	Town Hall
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	901
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil & WL
Rooms/Prtns	Average
Wall Height	12.00
% Comn Wall	0.00

Building Photo

(http://images.vgsi.com/photos/BrookfieldCTPhotos///0035/P1010120_353

Building Layout



(ParcelSketch.ashx?pid=3634&bid=3634)

Building Sub-Areas (sq ft)			
Code	Description	Gross Area	Living Area
BAS	First Floor	17,181	17,181
TQS	Three Quarter Story	16,728	12,546
CTH	Cathedral	712	0
FOP	Porch, Open	487	0
		35,108	29,727

Building 2 : Section 1

Year Built: 1982
Living Area: 12,300

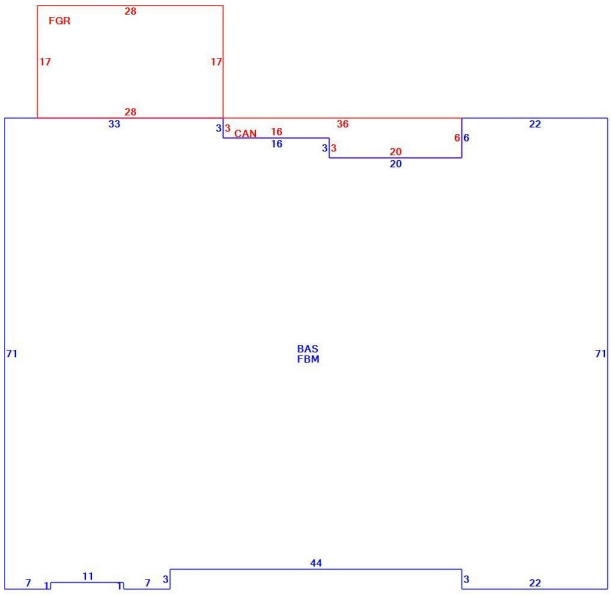
Building Attributes : Bldg 2 of 5	
Field	Description
Style:	Police Station
Model	Ind/Comm
Grade	A
Stories:	1
Occupancy	1.00

Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Hip
Roof Cover	Asphalt Shingl
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Vinyl/Asphalt
Interior Floor 2	Carpet
Heating Fuel	Oil
Heating Type	Hot Water
AC Type	Central
Struct Class	
Bldg Use	
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	9011
Heat/AC	Heat/AC Split
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil & WL
Rooms/Prtns	Average
Wall Height	12.00
% Comn Wall	0.00

Building Photo

(http://images.vgsi.com/photos/BrookfieldCTPhotos///0035/P1010121_353

Building Layout



(ParcelSketch.ashx?pid=3634&bid=7178)

Building Sub-Areas (sq ft)			
Code	Description	Gross Area	Living Area
BAS	First Floor	6,150	6,150
FBM	Finished Basement	6,150	6,150
CAN	Canopy	168	0
FGR	Garage	476	0
		12,944	12,300

Building 3 : Section 1

Year Built: 2010
Living Area: 6,659

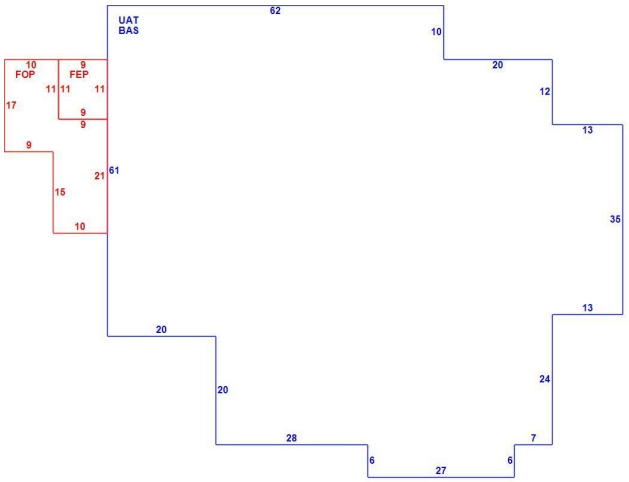
Building Attributes : Bldg 3 of 5	
Field	Description

Style:	Office Bldg
Model	Ind/Comm
Grade	A
Stories:	1
Occupancy	1.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Hip
Roof Cover	Asphalt Shingl
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Vinyl/Asphalt
Interior Floor 2	Carpet
Heating Fuel	Oil
Heating Type	Forced Air
AC Type	Central
Struct Class	
Bldg Use	Mun Bldg Com
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	901I
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil & WL
Rooms/Prtns	Average
Wall Height	12.00
% Comn Wall	0.00

Building Photo

(http://images.vgsi.com/photos/BrookfieldCTPhotos///0035/P1010122_353

Building Layout



(ParcelSketch.ashx?pid=3634&bid=7179)

Building Sub-Areas (sq ft)			
Code	Description	Gross Area	Living Area
BAS	First Floor	6,659	6,659
FEP	Enclosed Porch	99	0
FOP	Porch, Open	374	0
UAT	Unfinished Attic	6,659	0
		13,791	6,659

Building 4 : Section 1

Year Built: 1982
Living Area: 21,423

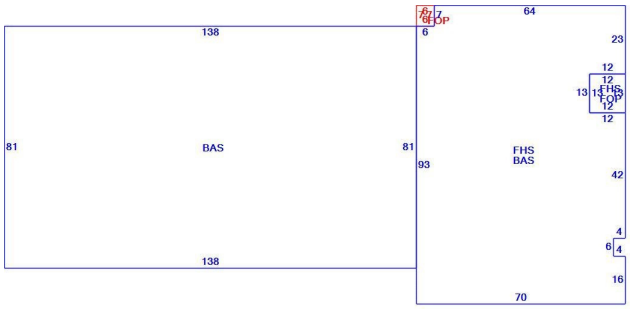
Building Attributes : Bldg 4 of 5	
Field	Description
Style:	Fire Station
Model	Ind/Comm
Grade	A

Stories:	1.5
Occupancy	1.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Gambrel
Roof Cover	Asphalt Shingl
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	Vinyl/Asphalt
Heating Fuel	Gas/Propane
Heating Type	Forced Air
AC Type	Central
Struct Class	
Bldg Use	Vol Fire Dep
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	901I
Heat/AC	Heat/AC Split
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil/Mn WL
Rooms/Prtns	Average
Wall Height	16.00
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/BrookfieldCTPhotos///0035/P1010123_353

Building Layout



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Building Sub-Areas (sq ft)			
Code	Description	Gross Area	Living Area
BAS	First Floor	17,956	17,956
FHS	Finished Half Story	6,934	3,467
FOP	Porch, Open	198	0
		25,088	21,423

Building 5 : Section 1

Year Built: 1959
Living Area: 1,663

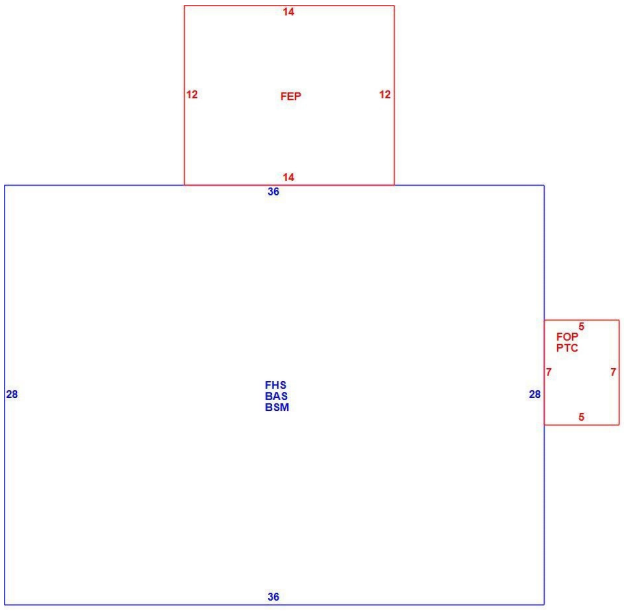
Building Attributes : Bldg 5 of 5	
Field	Description
Style:	Cape Cod
Model	Residential
Grade:	C
Stories:	1 1/2 Stories
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	

Roof Structure:	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Plywood Panel
Interior Wall 2	Plaster
Interior Flr 1	Hardwood
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	Unit/AC
Total Bedrooms:	3 Bedrooms
Total Bathrooms	2
Total Half Baths:	0
Total Xtra Fixtrs:	2
Total Rooms:	6 Rooms
Bath Style:	Average
Kitchen Style:	Average
Kitchens	1
Whirlpool Tub	
Hot Tubs	
Fireplaces	
Fin Bsmt Area	
Fin Bsmt Quality	
Bsmt Garages	
Fireplace	
Fndtn Cndtn	
Basement	

Building Photo

(http://images.vgsi.com/photos/BrookfieldCTPhotos///0036/P1010198_367

Building Layout



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Building Sub-Areas (sq ft)			
Code	Description	Gross Area	Living Area
BAS	First Floor	1,008	1,008
FHS	Finished Half Story	1,008	655
BSM	Basement	1,008	0
FEP	Enclosed Porch	168	0
FOP	Porch, Open	35	0
PTC	Patio - Concrete	35	0
		3,262	1,663

Extra Features

Extra Features

Code	Description	Size	Value	Bldg #
SPR	Sprinklers	6659.00 S.F.	$11,850	3
ELV1	Elevator Commercial	1.00 Units	$17,500	2
ELV1	Elevator Commercial	1.00 Units	$12,500	1

Land

Land Use

Use Code 930
Description Town Hall
Zone I-1 HO

Land Line Valuation

Size (Acres) 45.15
Depth
Assessed Value $2,664,470
Appraised Value $3,806,380

Outbuildings

Outbuildings						
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN4	Fence 8'			190.00 L.F.	$2,310	2
PAV1	Paving Asph.			48000.00 S.F.	$77,760	4
PAV1	Paving Asph.			72000.00 S.F.	$116,640	1
LT1	Light 1			4.00 Units	$4,800	4
LT2	Light 2			3.00 Units	$5,400	1
PAV1	Paving Asph.			21000.00 S.F.	$34,020	2
LT1	Light 1			11.00 Units	$13,200	1
LT2	Light 2			2.00 Units	$3,600	4
SHD3	Comm Shed	FR		336.00 S.F.	$26,460	2
FOP	Open Porch	FR	Frame	600.00 S.F.	$12,150	1
BTH3	Com Bth Hse	CB	CindBk/Frame	588.00 S.F.	$59,540	1
LTF	Football Lights			4.00 Per Field	$219,600	1
GAR2	Garage w Lft	FR	Frame	864.00 S.F.	$43,090	5
GEN	Generator			1.00 Units	$0	1
PER	Pergola			396.00 S.F.	$3,560	1
SHD3	Comm Shed	CB		672.00 S.F.	$32,760	2
LT1	Light 1			4.00 Units	$4,800	3
PAT1	Patio	CR	Concrete	364.00 S.F.	$1,750	3
GEN	Generator			1.00 Units	$0	4
CT1	Cell Tower			1.00 Units	$0	4

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$10,637,720	$3,806,380	$14,444,100
2020	$9,961,120	$6,629,400	$16,590,520

2019	$9,960,710	$6,629,400	$16,590,110
2018	$9,960,710	$6,629,400	$16,590,110

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$7,446,410	$2,664,470	$10,110,880
2020	$6,972,790	$4,640,580	$11,613,370
2019	$6,972,500	$4,640,580	$11,613,080
2018	$6,972,500	$4,640,580	$11,613,080

NOTIFICATIONS

April 18, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 776557301468

Delivery Information:

Status:	Delivered	**Delivered To:**	Shipping/Receiving
Signed for by:	Signature not required	**Delivery Location:**	100 POCONO RD
Service type:	FedEx 2Day		
Special Handling:	Deliver Weekday		BROOKFIELD, CT, 06804
		Delivery date:	Apr 14, 2022 11:10

Shipping Information:

Tracking number:	776557301468	**Ship Date:**	Apr 12, 2022
		Weight:	1.0 LB/0.45 KG

Recipient:
Town of Brookfield,
100 Pocono Road
BROOKFIELD, CT, US, 06804

Shipper:
Corey Milan, NB+C
100 Apollo Dr.
Suite 303
CHELMSFORD, MA, US, 01824

Reference 100814

Thank you for choosing FedEx

April 18, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 776556444846

Delivery Information:

Status:	Delivered	**Delivered To:**	Shipping/Receiving
Signed for by:	Signature not required	**Delivery Location:**	100 POCONO RD
Service type:	FedEx 2Day		
Special Handling:	Deliver Weekday		BROOKFIELD, CT, 06804
		Delivery date:	Apr 14, 2022 11:10

Shipping Information:

Tracking number:	776556444846	**Ship Date:**	Apr 12, 2022
		Weight:	1.0 LB/0.45 KG

Recipient:
Tara Carr - First Selectwoman,
100 Pocono Road
BROOKFIELD, CT, US, 06804

Shipper:
Corey Milan, NB+C
100 Apollo Dr.
Suite 303
CHELMSFORD, MA, US, 01824

Reference 100814

Thank you for choosing FedEx

April 18, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 776556490661

Delivery Information:

Status:	Delivered	**Delivered To:**	Shipping/Receiving
Signed for by:	Signature not required	**Delivery Location:**	100 POCONO RD
Service type:	FedEx 2Day		
Special Handling:	Deliver Weekday		BROOKFIELD, CT, 06804
		Delivery date:	Apr 14, 2022 11:10

Shipping Information:

Tracking number:	776556490661	**Ship Date:**	Apr 12, 2022
		Weight:	1.0 LB/0.45 KG

Recipient:
Demy Parpana, Jr. - Bldg Official,
100 Pocono Road
Room 103
BROOKFIELD, CT, US, 06804

Shipper:
Corey Milan, NB+C
100 Apollo Dr.
Suite 303
CHELMSFORD, MA, US, 01824

Reference 100814

Thank you for choosing FedEx