DEVELOPMENT

November 22, 2022

Melanie A. Bachman
Zoning Officer
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Request of DISH Wireless LLC for Approval for the Shared Use of an Existing Tower
200 Oronoque Lane
Stratford, CT 06614
Latitude: 41° 15' 5.28" N / Longitude: 73° 07' 1.63" W

Dear Ms. Bachman,

Pursuant to Connecticut General Statues ("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 a new telecommunication tower at 200 Oronoque Lane in Stratford. The existing 150'-0" monopole is owned by the Town of Stratford. The underlying property is owned by the Town of Stratford DISH requests that the Council find that the proposed shared use of the Town of Stratford tower satisfies the criteria of C.G.S. §16-50aa and issue an order approving the proposed shared use. This modification/proposal includes hardware that is both 4G(LE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times. A copy of this filing is being sent to Laura R. Hoydick, Town of Stratford – Mayor, Brian Donovan, Town of Stratford – Building Official, and Jay Habansky, Town of Stratford – Planning & Zoning Administrator.

Background

The existing Town of Stratford facility consists of a 150'-0" monopole within the existing compound. DISH is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. DISH and the Town of Stratford have agreed to the proposed shared use of the 200 Oronoque Lane tower pursuant to mutually acceptable terms and conditions. Likewise, DISH and the Town of Stratford have agreed to the proposed installation of the equipment cabinets on the ground on the Northeast side of the tower within the existing compound. The Town of Stratford has authorized DISH to apply for all necessary permits and approvals that may be required to share the existing tower.

DISH proposes to install 3 antennas, 6 RRU radios, 1 OVP and 1 cable at the 110-foot level. In addition, DISH will install a ground equipment cabinet on a 5ft x 7ft steel equipment platform. Included in the Construction Drawings are DISH's project specifications for locations of all proposed

site improvements. The Construction Drawings also contain specifications for DISH's proposed antennas and ground work.

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 150-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 110-feet.

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

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 1.5980% as evidenced by Exhibit F.

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 Town of Stratford 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 Town of Stratford 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 Town of Stratford 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 Town of Stratford facility other than periodic maintenance. The proposed shared use of the Town of Stratford 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 the Town of Stratford 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 3 antennas, 6 RRU radios, 1 OVP and 1 cable and all related equipment. DISH is not aware of any public safety concerns relative to the proposed sharing of the existing Town of Stratford tower.

DEVELOPMENT

Conclusion

For the reasons discussed above, the proposed shared use of the existing Town of Stratford tower at 200 Oronoque Lane satisfies the criteria stated in C.G.S. §16-50aa and advances the General Assembly's and 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 proposed shared use.

Sincerely,

Michael Jones
President, M+K Development
140 Beach 137th St
Rockaway Beach, NY 11694
732-677-8881

CC:
Laura R. Hoydick, Town of Stratford – Mayor
Brian Donovan, Town of Stratford – Building Official
Jay Habansky, Town of Stratford – Planning & Zoning Administrator.

MK DEVELOPMENT

EXHIBIT A

Letter of Authorization

TOWN OF STRATFORD

Stratford Town Hall, 2725 Main Street, Stratford, CT 06615
Phone: 203-385-4001 • Fax: 203-385-4108
www.townofstratford.com

CHIEF ADMINISTRATIVE OFFICER

Letter of Authorization

November 22, 2022

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

Re: Development Application Letter of Authorization- 200 Oronoque Lane, Stratford, CT 06614
NJJER02052B

Dear Sir/Madam

The Town of Stratford owns the tower facility at 200 Oronoque Lane, Stratford, CT 06614 and identified as Block #20 2, Lot #1 (the "Property"). The Town of Stratford hereby authorizes DISH Wireless LLC ("DISH") and its agent, O4 Innovations and M&K Development LLC, to file applications for the sole purpose of gaining any zoning approval and building permit(s) to install new telecommunications equipment ("Equipment") on an existing monopole on the Property. DISH and its aforementioned agents shall not have authority to agree to any stipulations associated with their business before the Building Department that results in a duty on the part of the Town of Stratford that the Town of Stratford has not expressly permitted in writing.

DISH shall not be permitted to install the Equipment on the property until DISH provides a copy of its building permit from the Town and until DISH complies with any and all requirements set forth in DISH's lease with the Town of Stratford.

Please contact me at ctymniak@townofstratford.com should you have any questions or concerns.

Sincerely,

Chris Tymniak
Chief Administrative Officer - Town of Stratford, CT

MK DEVELOPMENT

EXHIBIT B

Property Card

200 ORONOQUE LN

Location	200 ORONOQUE LN	**Mblu**	60/20 2/ 1/ /
Acct#	1289400	**Owner**	TOWN OF STRATFORD
PBN		**Assessment**	$772,170
Appraisal	$1,103,100	**PID**	13349
Building Count	1	**Sewer Use**	BZZ
EPA Action			

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$775,300	$327,800	$1,103,100

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$542,710	$229,460	$772,170

Owner of Record

Owner	TOWN OF STRATFORD	**Sale Price**	$30,000
Co-Owner	FIRE HOUSE	**Certificate**	
Address	200 ORONOQUE LN STRATFORD, CT 06614-1357	**Book**	0493
		Page	0583
		Sale Date	07/23/1974

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Sale Date**	**Book**	**Page**
TOWN OF STRATFORD	$30,000		07/23/1974	0493	0583
POWELL EFFIE V	$0		03/27/1973	0460	1124

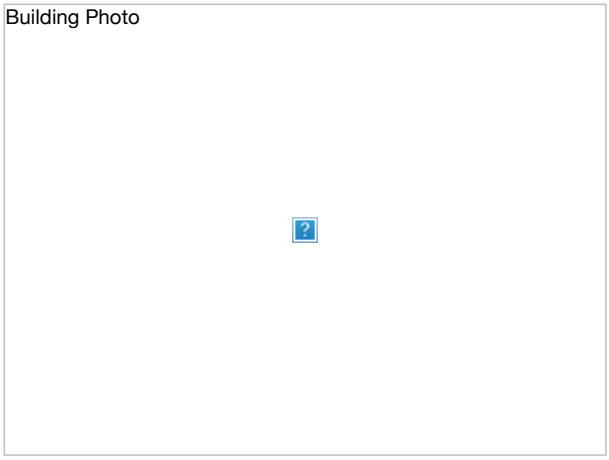
Building Information

Building 1 : Section 1

Year Built: 1978
Living Area: 6,658
Building Percent Good: 78

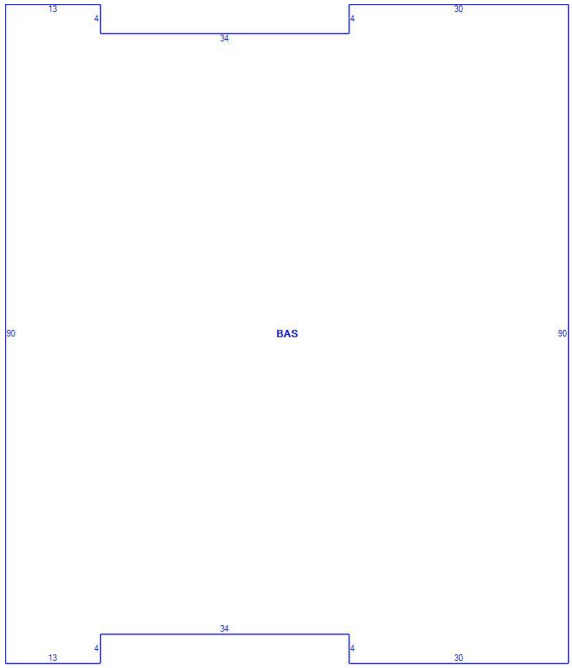
Building Attributes	
Field	**Description**
Style:	Fire Station
Model	Commercial
Grade	B-
Stories:	1 Story
Occupancy	1.00
Exterior Wall 1	Cedar or Redwd
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T&G/Rubber
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Hot Water
AC Type	Central
Struct Class	
Bldg Use	Fire Dept
1st Floor Use:	932
Heat/AC	Heat/AC Split
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Min WL
Rooms/Prtns	Average
Wall Height	16.00
% Comm Wall	

Building Photo



(https://images.vgsi.com/photos/StratfordCTPhotos///0089/IMG_5405_

Building Layout



(ParcelSketch.ashx?pid=13349&bid=13349)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	6,658	6,658
		6,658	6,658

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	932
Description	Fire Dept
Zone	RS-1
Neighborhood	100
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.98
Frontage	0
Depth	0
Assessed Value	$229,460
Appraised Value	$327,800

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV	Paving	AS	Asphalt	3000.00 S.F.	$2,500	1
SHD1	Shed	CF	ConBlk\Frm	180.00 S.F.	$3,100	1
ANTG	Guyed Tower	R	Radio	100.00 L.F.	$12,800	1
LT1	Lights in with pole			6.00 Units	$8,600	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$775,300	$327,800	$1,103,100
2020	$775,300	$327,800	$1,103,100
2019	$775,300	$327,800	$1,103,100

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$542,710	$229,460	$772,170
2020	$542,710	$229,460	$772,170
2019	$542,710	$229,460	$772,170

MK DEVELOPMENT

EXHIBIT C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

NJJER02052B

DISH Wireless L.L.C. SITE ADDRESS:

200 ORONOQUE LANE
STRATFORD, CT 06614

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

SHEET INDEX

SCOPE OF WORK

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

TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED 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 PHOTO

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	TOWN OF STRATFORD
ADDRESS:	2725 MAIN STREET STRATFORD, CT 06615
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	N/A
TOWER APP NUMBER:	N/A
COUNTY:	FAIRFIELD COUNTY
LATITUDE (NAD 83):	41° 15' 5.28" N 41.251475
LONGITUDE (NAD 83):	73° 07' 1.63" W -73.117119
ZONING JURISDICTION:	CT SITING COUNCIL
ZONING DISTRICT:	RS-1
PARCEL NUMBER:	6020020001
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	UNITED ILLUMINATING
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120 (303) 706-5008
TOWER OWNER:	TOWN OF STRATFORD 2725 MAIN STREET STRATFORD, CT 06615
SITE DESIGNER:	M+K DEVELOPMENT 140 BEACH 137TH STREET ROCKAWAY, NY 11694
SITE ACQUISITION:	AUSTIN PAPPAS AUSTIN.PAPPAS@DISH.COM
CONSTRUCTION MANAGER:	OMAR ZEERBAN OMAR.ZEERBAN@DISH.COM
RF ENGINEER:	PAWN MADAHAR PAWN.MADAHAR@DISH.COM

DIRECTIONS

DIRECTIONS FROM 3 ADP BLVD, NJ 07068, USA:

HEAD NORTHEAST TOWARD ADP BLVD, TURN RIGHT TOWARD CHOCTAW WAY, SLIGHT RIGHT ONTO CHOCTAW WAY, USE THE LEFT LANE TO TURN RIGHT ONTO LIVINGSTON AVE, USE THE RIGHT LANE TO TAKE THE RAMP ONTO I-280 E, MERGE ONTO I-280 E, TAKE EXIT 15X AND 16E TOWARD LINCOLN TUNL, MERGE ONTO I-95 N TOLL ROAD, KEEP RIGHT TO STAY ON I-95 N, FOLLOW SIGNS FOR GEORGE WASHINGTON BRG/FORT LEE, KEEP RIGHT TO STAY ON I-95 N, FOLLOW SIGNS FOR US-1 N/US-9 N/GEORGE WASHINGTON BRIDGE, CONTINUE ONTO US-9 N, CONTINUE ONTO I-95 LOWER LEVEL N/U.S. 1 LOWER LEVEL N, TOLL ROAD, KEEP RIGHT TO CONTINUE ON I-95 LOWER LEVEL N/TRANS-MANHATTAN EXPY/U.S. 1 LOWER LEVEL N, CONTINUE STRAIGHT TO STAY ON I-95 LOWER LEVEL N/TRANS-MANHATTAN EXPY/U.S. 1 LOWER LEVEL N, I-95 LOWER LEVEL N/TRANS-MANHATTAN EXPY/U.S. 1 LOWER LEVEL N TURNS SLIGHTLY RIGHT AND BECOMES I-95 N, KEEP LEFT AT THE FORK TO STAY ON I-95 N, FOLLOW SIGNS FOR INTERSTATE 95 N/NEW HAVEN, KEEP LEFT TO STAY ON I-95 N, TAKE EXIT 27A FOR CT-25/CT-8 TOWARD TRUMBULL/WATERBURY, CONTINUE ONTO CT-25 N/CT-8 N, USE THE RIGHT 2 LANES TO TAKE THE CT-8 N EXIT TOWARD CT-15 N/SHELTON/WATERBURY, CONTINUE ONTO CT-8 N, TAKE EXIT 9 TO MERGE ONTO CT-15 N/MERRITT PKWY TOWARD CT-15, TAKE EXIT 53 FOR STATE ROUTE 110 TOWARD STRATFORD SHELTON, USE THE LEFT LANE TO KEEP LEFT AT THE FORK AND FOLLOW SIGNS FOR SHELTON, TURN LEFT ONTO MAIN ST, TURN LEFT ONTO ORONOQUE LN, DESTINATION WILL BE ON THE RIGHT.

VICINITY MAP

NO SCALE

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

M+K DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
GARY J MAGLARAM
11/2/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
PRI	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/13/2022	ISSUED FOR REVIEW
0	11/02/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

NJJER02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE

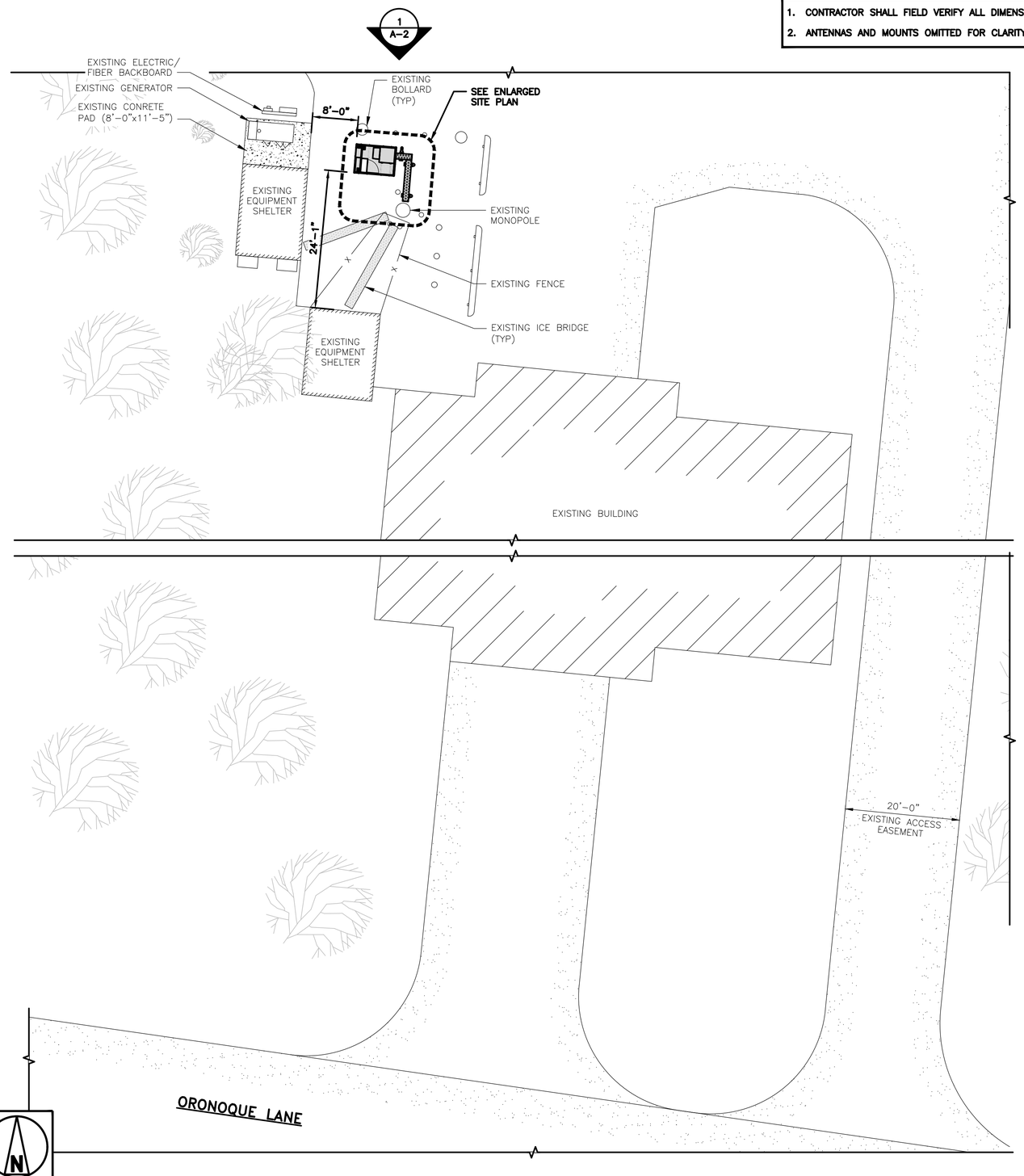
TITLE SHEET

SHEET NUMBER

T-1

NOTES

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



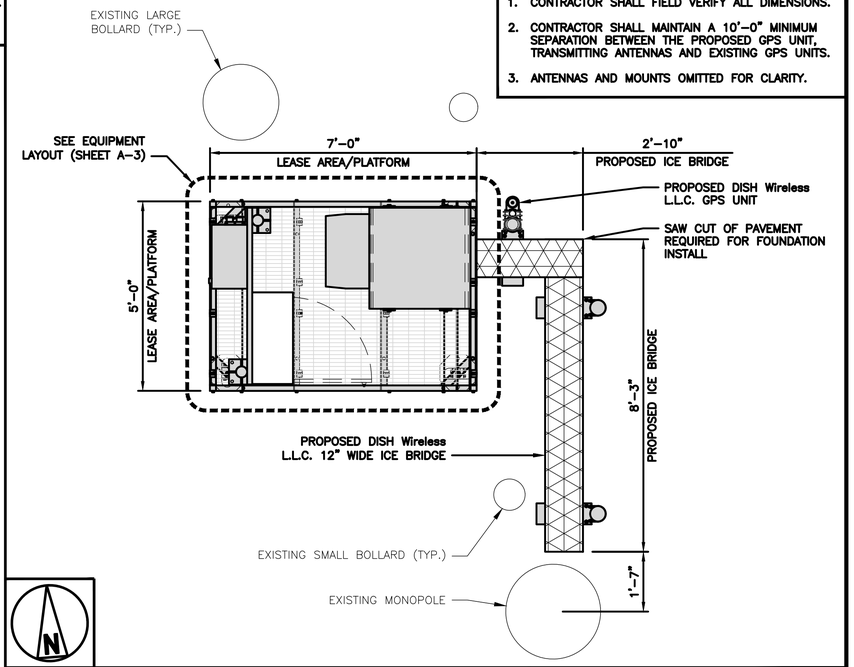
OVERALL SITE PLAN

12' 8' 4' 0 10' 20'
3/32"=1'-0"

1

NOTES

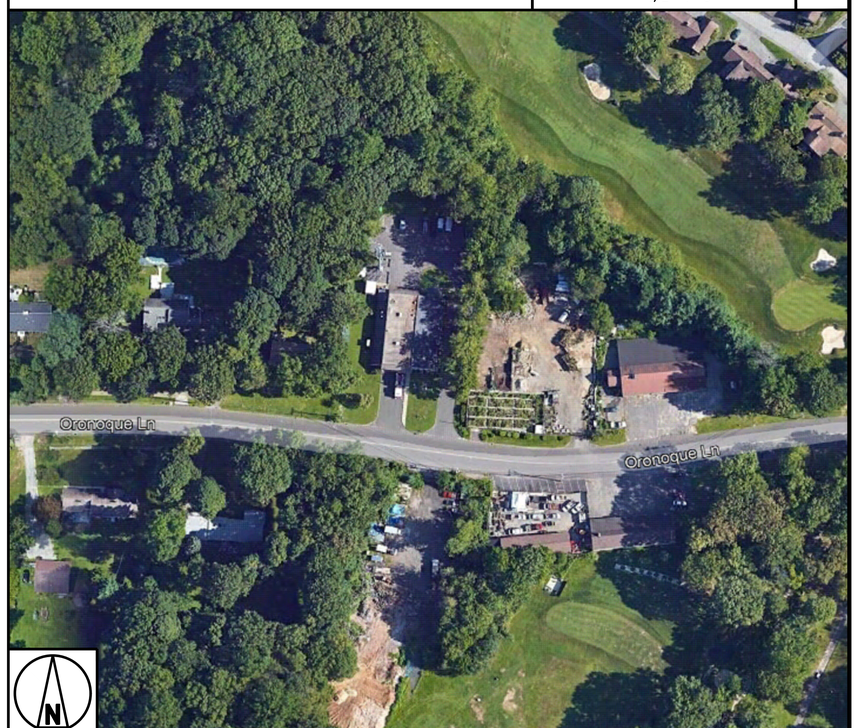
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

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

2



AERIAL PHOTO

NO SCALE

3

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
GARY J MAGLIARO
11/2/2022
33678
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
PRI	---	---

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NJJER02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE

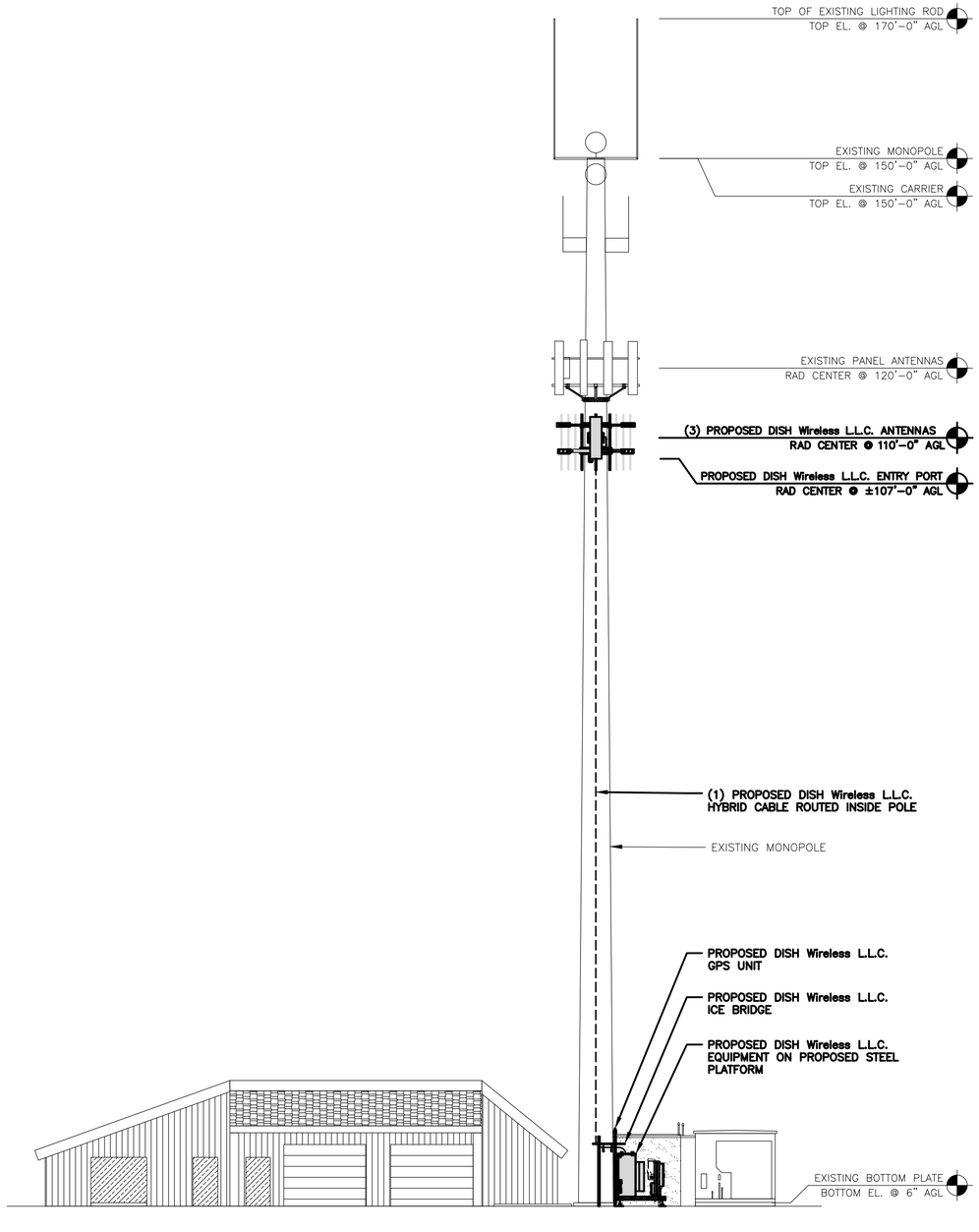
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

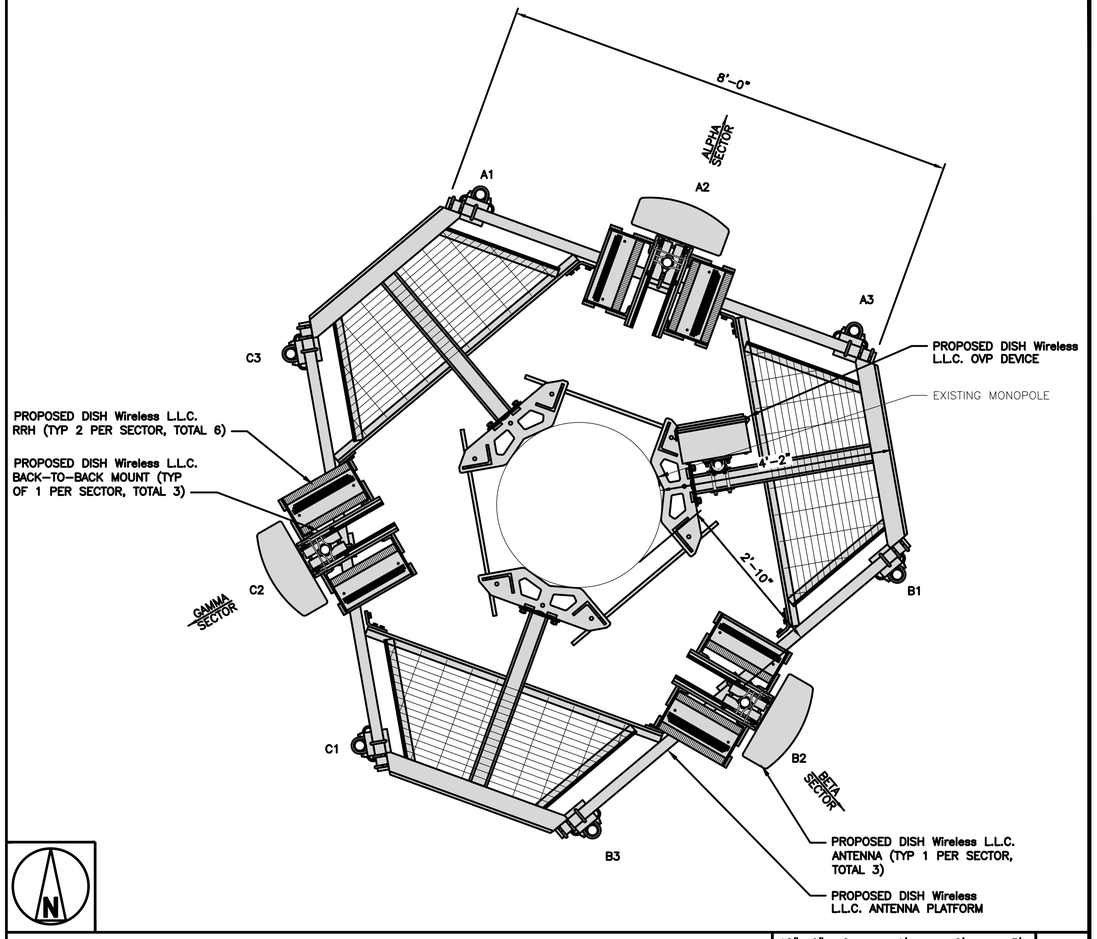
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

12' 8' 4' 0 10' 20'
3/32"=1'-0"

1



ANTENNA LAYOUT

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

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1	--	--	--	--	--	(1) HIGH-CAPACITY HYBRID CABLE (141' LONG)	FUJITSU – TA08025-B605	5G	A2	RAYCAP RDIDC-9181-PF-48
A2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	20°	110'-0"		FUJITSU – TA08025-B604	5G	A2	
A3	--	--	--	--	--		--	--	--	
B1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B605	5G	B2	SHARED W/ALPHA
B2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	120°	110'-0"		FUJITSU – TA08025-B604	5G	B2	
B3	--	--	--	--	--		--	--	--	
C1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B605	5G	C2	SHARED W/ALPHA
C2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	240°	110'-0"		FUJITSU – TA08025-B604	5G	C2	
C3	--	--	--	--	--		--	--	--	

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
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PROJECT INFORMATION
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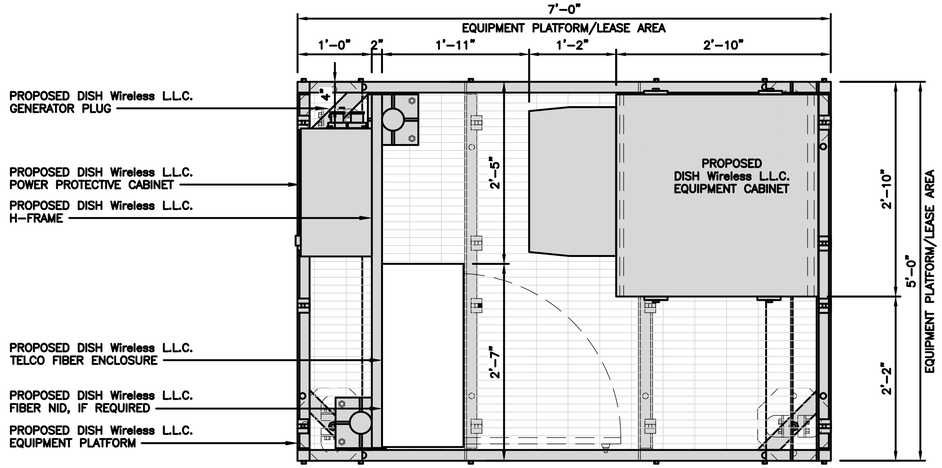
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



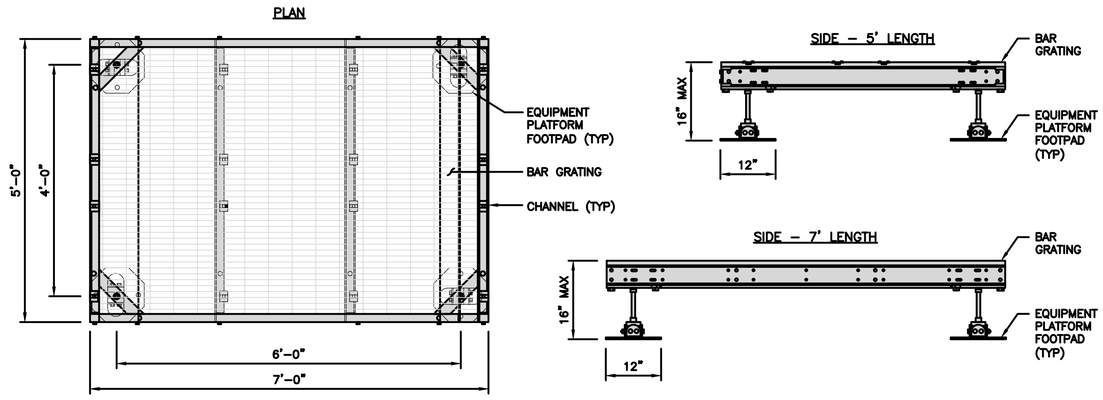
PLATFORM EQUIPMENT PLAN

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"

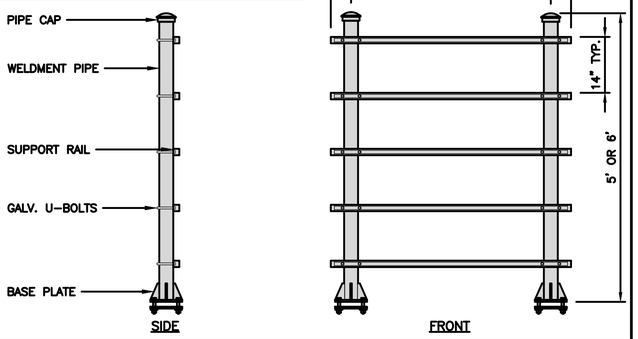


PLATFORM DETAIL

NO SCALE

2

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



H-FRAME DETAIL

NO SCALE

3

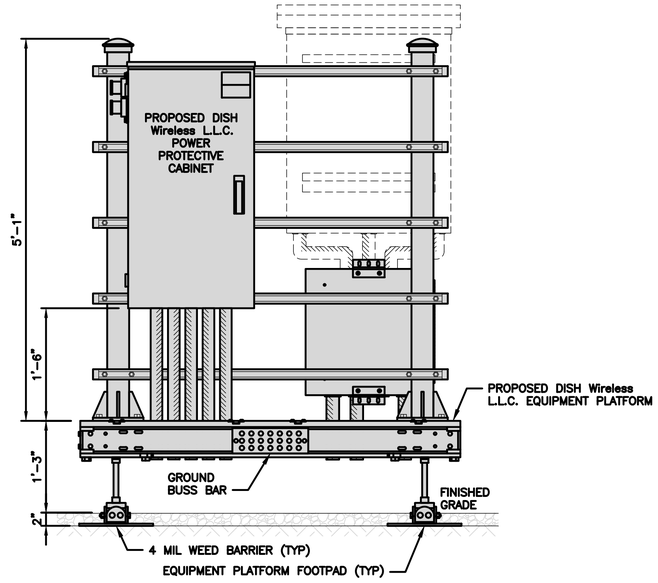
NOT USED

NO SCALE

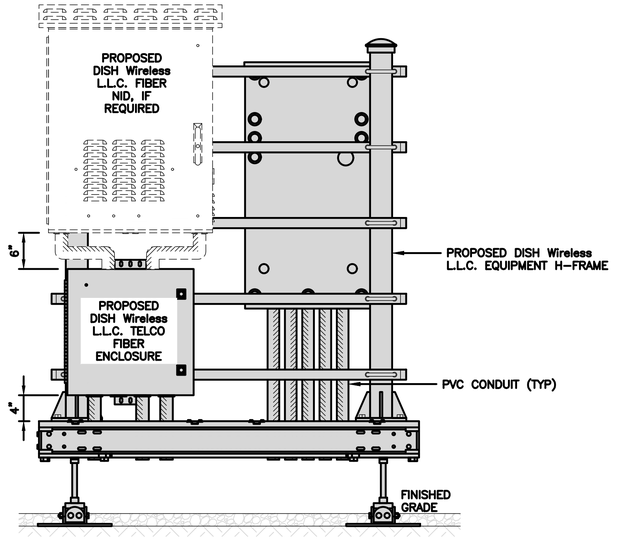
4

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

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

5

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
GARY J MAGLIARAM
11/2/2022
33678
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
PRI	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

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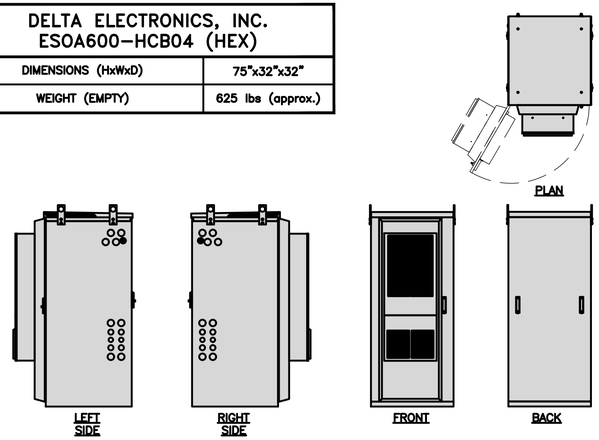
A&E PROJECT NUMBER
NJJER02052B

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

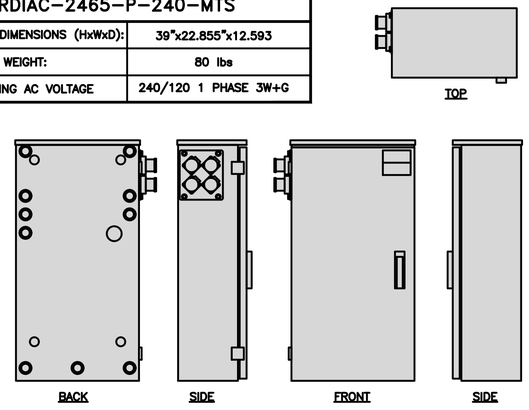
SHEET NUMBER
A-3

DELTA ELECTRONICS, INC. ESOA600-HCB04 (HEX)	
DIMENSIONS (HxWxD)	75"x32"x32"
WEIGHT (EMPTY)	625 lbs (approx.)



CABINET DETAIL | NO SCALE | 1

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

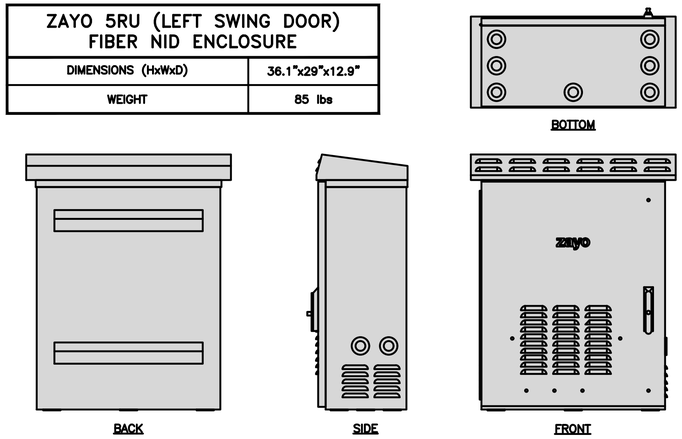


POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

NOT USED | NO SCALE | 3

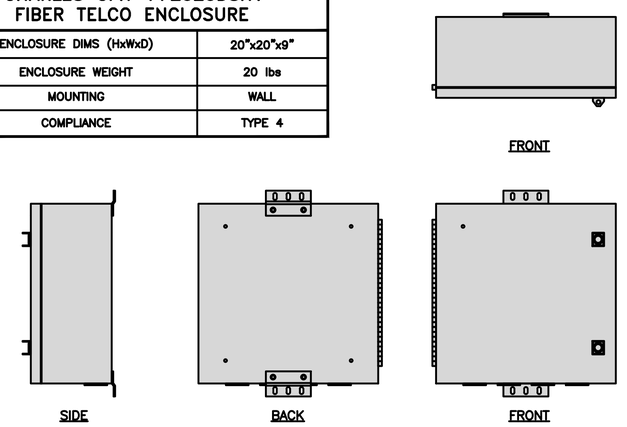
NOT USED | NO SCALE | 4

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



FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

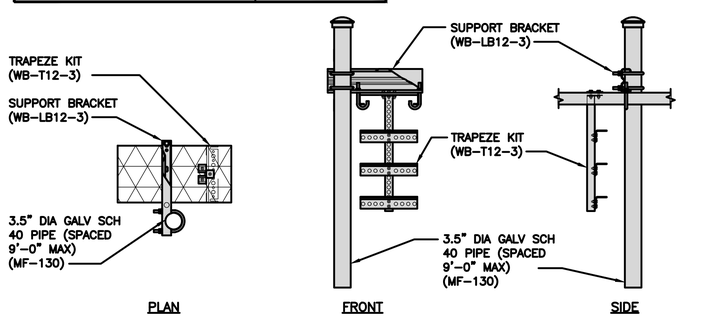
CHARLES CFIT-PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



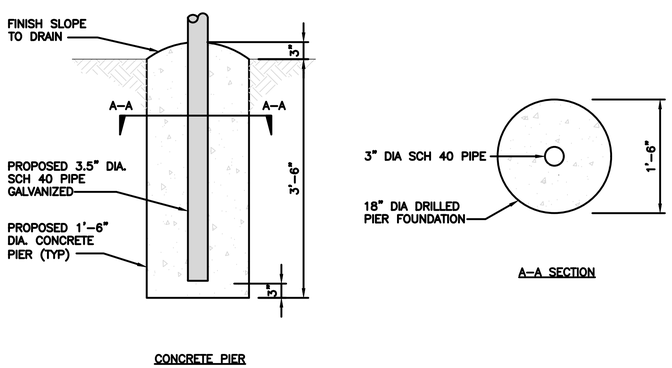
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

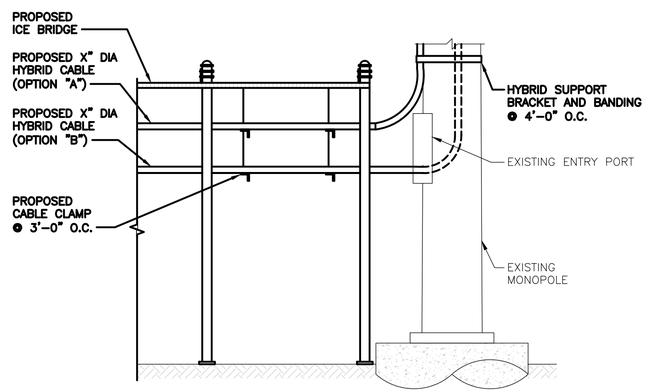
INCLUDED PRODUCTS:	
	WB-T12-3 TRAPEZE KIT, 3 RUNGS
	WB-LB12-3 SUPPORT BRACKET
	MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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RFDS REV #: ---

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DISH Wireless L.L.C.
PROJECT INFORMATION

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200 ORONOQUE LANE
STRATFORD, CT 06614

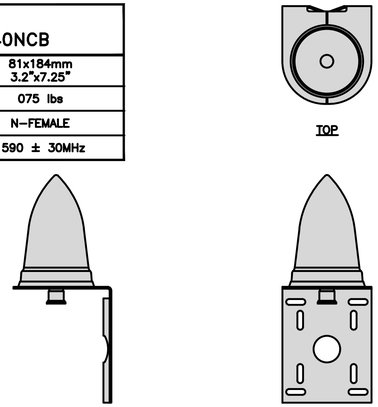
SHEET TITLE

EQUIPMENT DETAILS

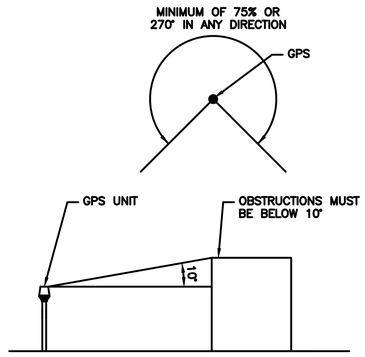
SHEET NUMBER

A-4

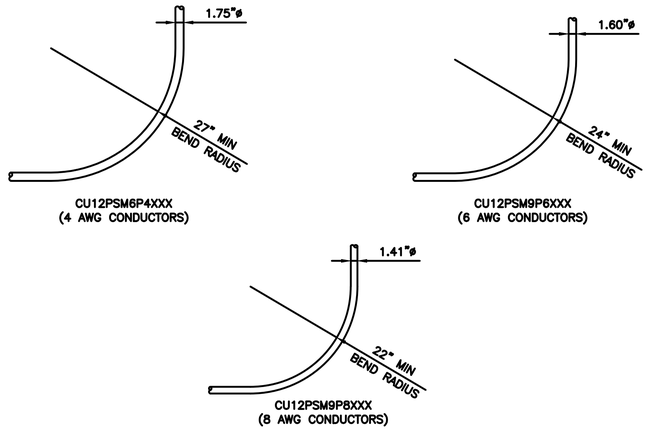
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



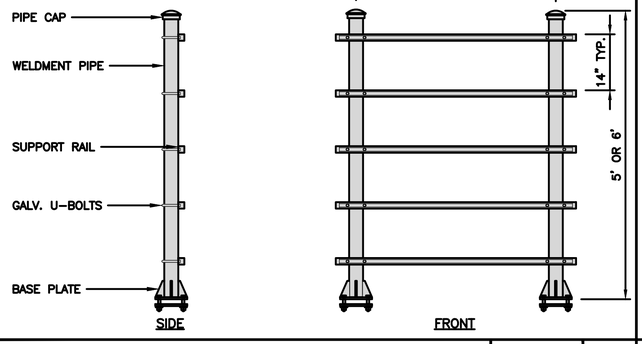
GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

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 | 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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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

DRAWN BY:	CHECKED BY:	APPROVED BY:
PRI	---	---

RFDS REV #: ---

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE

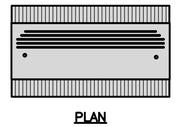
EQUIPMENT DETAILS

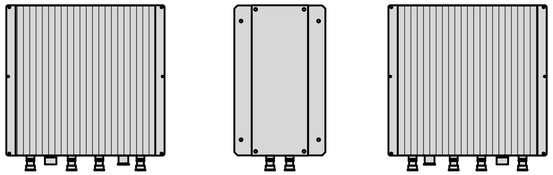
SHEET NUMBER

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

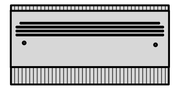

PLAN

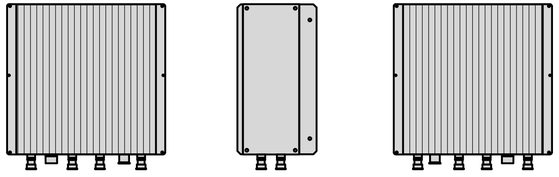

BACK SIDE FRONT

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

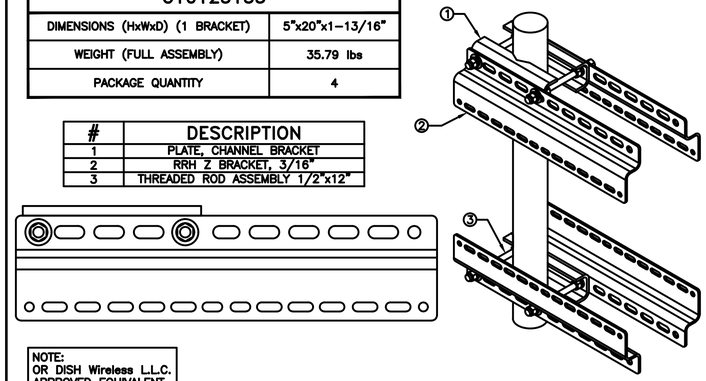

BACK SIDE FRONT

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"



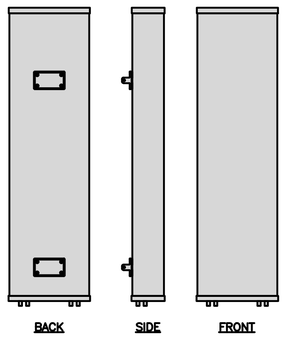
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

COMMSCOPE FFVV-65B-R2

DIMENSIONS (HxWxD)(MM/IN)	1828x498x197 72"x19.6"x7.8"
RF CONNECTOR INTERFACE	4.3-10 FEMALE
WEIGHT	70.8 lbs
WEIGHT WITH BRACKETS	98.1 lbs


PLAN


BACK SIDE FRONT

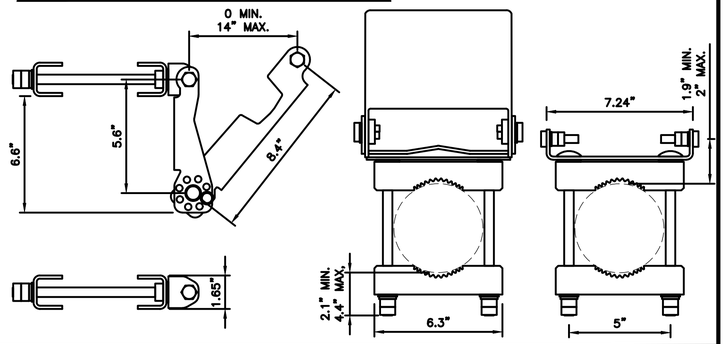
ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

COMMSCOPE ANTENNA BRACKET BSAMNT-3

DIAMETER COMPATIBILITY	2.362" - 4.528"
NET WEIGTH	13.669 lbs

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

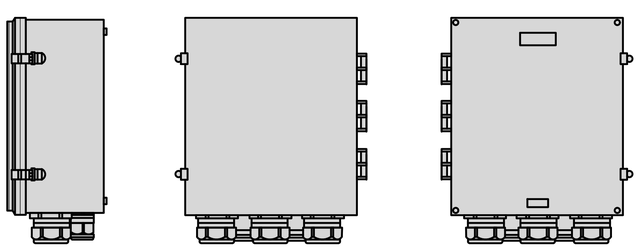


ANTENNA BRACKET DETAIL | NO SCALE | 6

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

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


PLAN

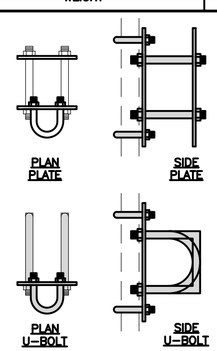

SIDE BACK FRONT

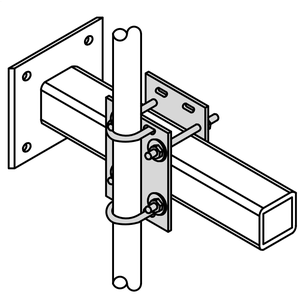
SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

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

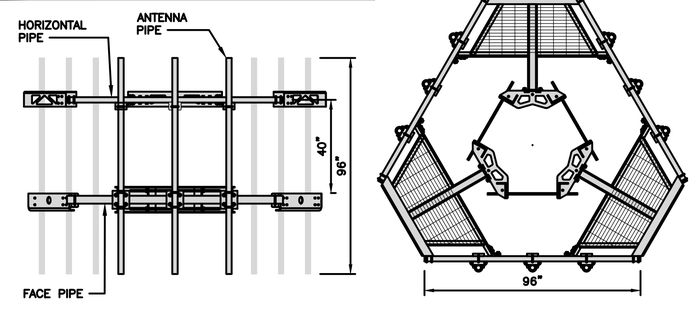


RRH/OVP MOUNT DETAIL | NO SCALE | 8

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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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

MK DEVELOPMENT
140 BEACH 137TH STREET
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STATE OF CONNECTICUT
GARY J MAGNUSON
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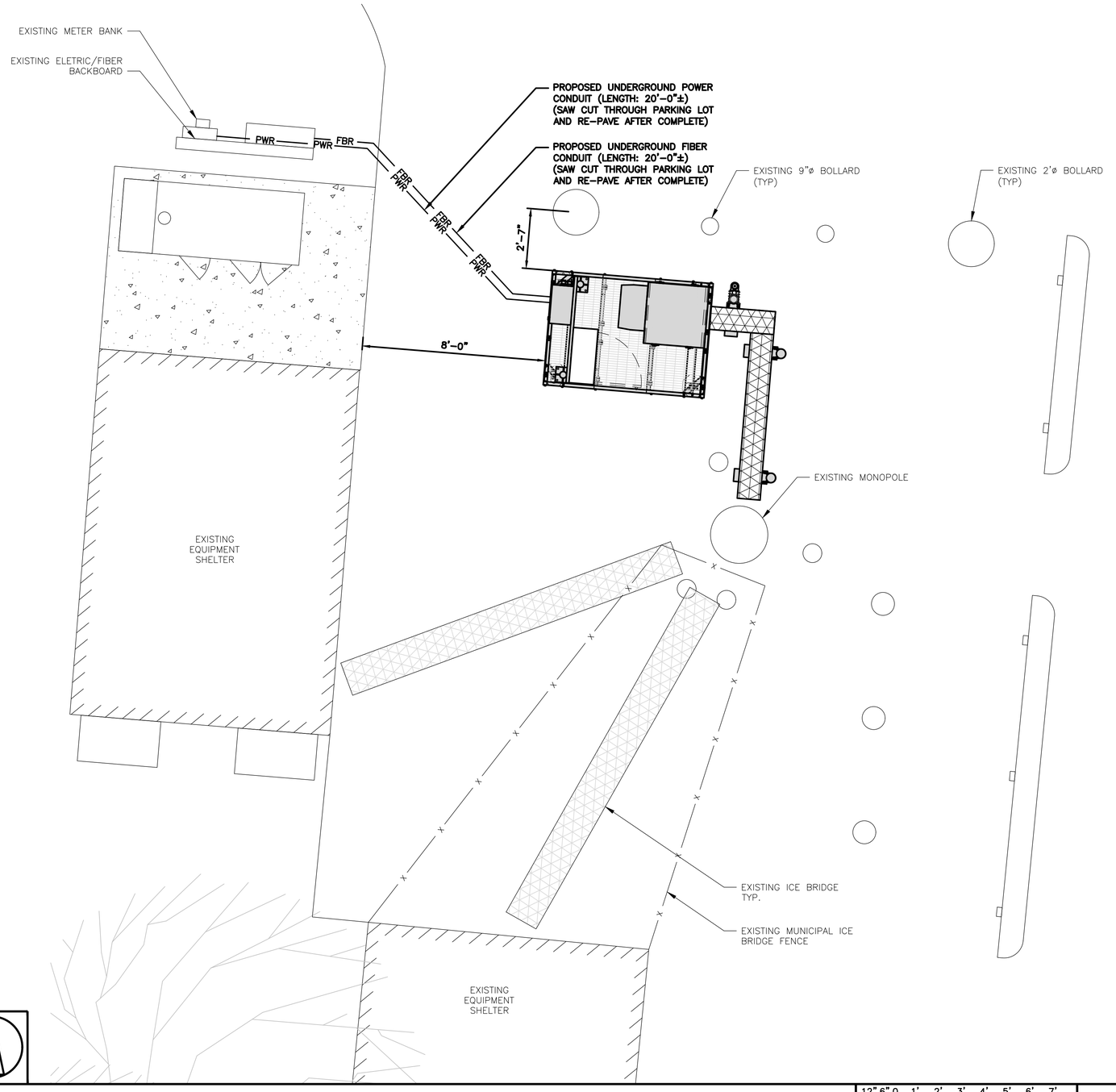
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. THE GROUND LEASE DOES NOT SPECIFY OUR UTILITY RIGHTS. "PWR" AND "FBR" PATH DEPICTED ON A–1 AND E–1 ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLAEASE LOCATE AND FOLLOW EXSITING PATH. IF EXISTING PATH IS NOT AN OPTION PLEASE NOTIFY TOWER OWNER AS FURTHER COORINATION MAY BE NEEDED.



UTILITY ROUTE PLAN

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

1

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

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

ELECTRICAL NOTES

NO SCALE

2

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5701 SOUTH SANTA FE DRIVE
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GARY J MAGLIARO
11/2/2022
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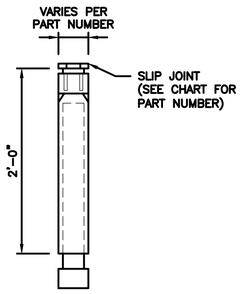
STRATFORD, CT 06614

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"

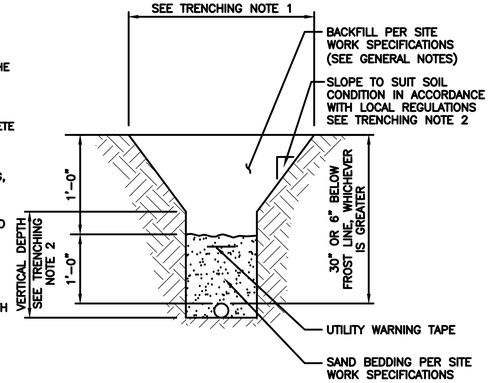


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

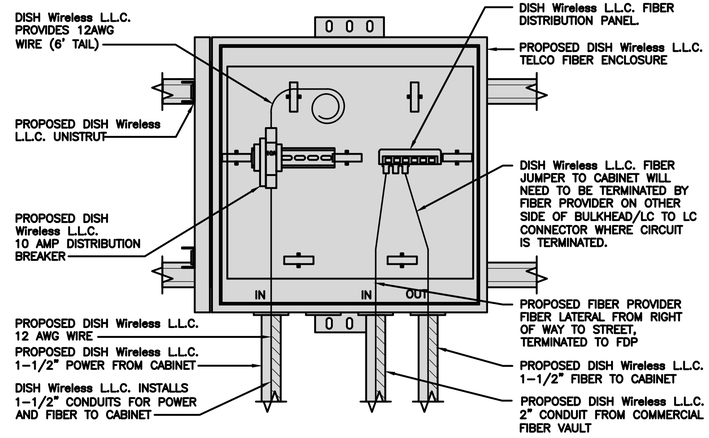
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

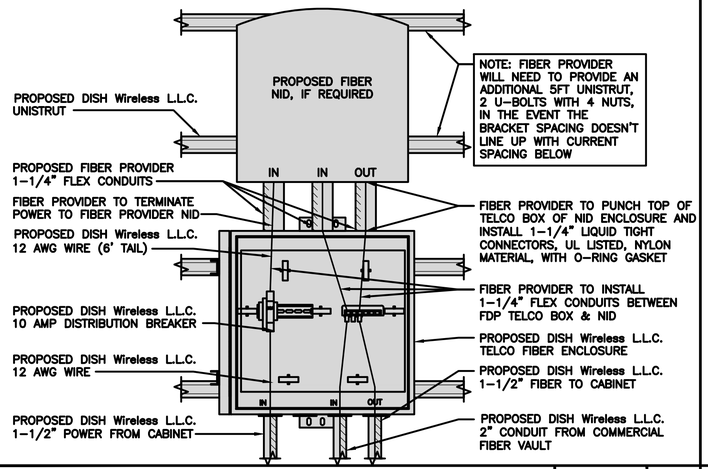
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT 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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CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER

NJJER02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

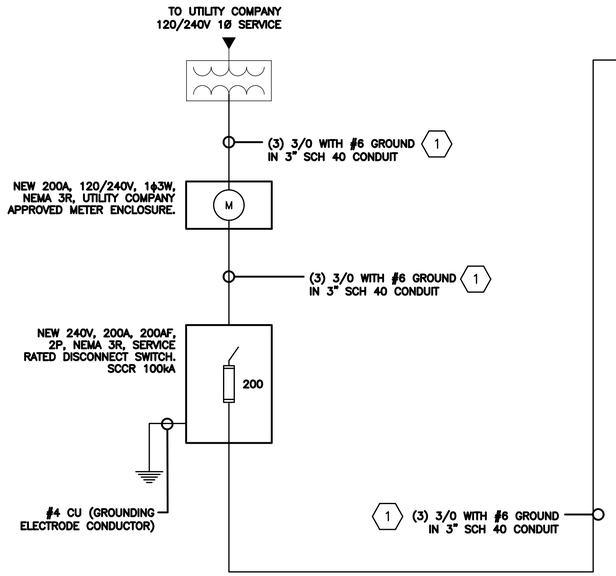
NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

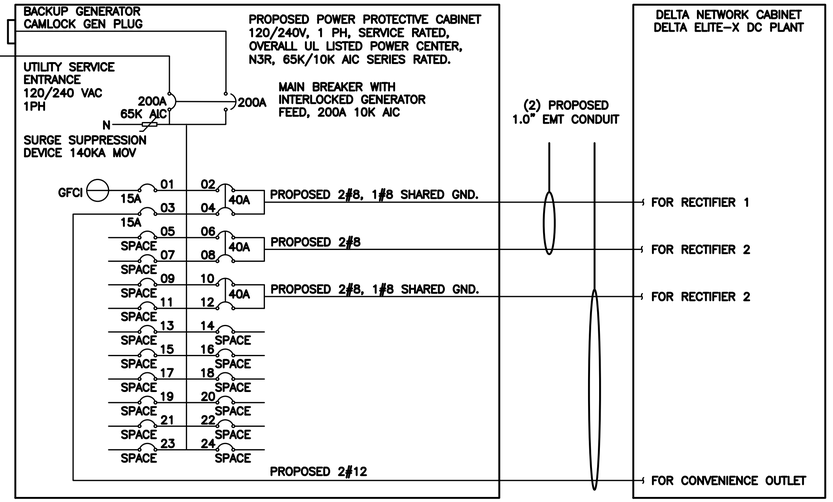
SHEET TITLE

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:
(3) 40A, 2P BREAKER – SQUARE D P/N:Q0240
(2) 15A, 1P BREAKER – SQUARE D P/N:Q0115

SERVICE/FEEDER CONDUCTOR LENGTH TABLE
(BASED ON INDUSTRY STANDARD 3% VOLTAGE DROP AND 5% NEC ALLOWABLE LIMIT)

DESIGN LOADS	CONDUCTOR SIZES					
	250 kcmil AL	300 kcmil AL	3/0 CU	4/0 CU	250 kcmil CU	300 kcmil CU
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (160A) (NEC ARTICLE 220 & 230 3% VOLTAGE DROP)	130'	155'	145'	180'	215'	255'
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (160A) (NEC ARTICLE 220 & 230 5% VOLTAGE DROP)	220'	260'	240'	300'	360'	425'

NOTES:
1. 250 MCM/KCMIL AL + #2 AL GRD MAY BE USED AS A REPLACEMENT FOR 3/0 CU + #6 CU GRD SERVICE CONDUCTOR FROM THE DISH Wireless L.L.C. FIRST MEANS OF DISCONNECT/UTILITY COMPANY MEET-ME POINT. REFER TO VALUES ABOVE TO LIMIT VOLTAGE DROP TO 3%.
2. ALUMINUM/COPPER CONDUCTORS MUST BE RATED 75°C.
3. ALUMINUM TO COPPER BUSS CONNECTIONS MUST MEET AND CONFORM TO ANSI AND BE UL LISTED. USE ANTI CORROSION CONDUCTIVE LUBRICANT ON CONNECTIONS
4. PPC MAIN DISCONNECT CIRCUIT BREAKERS ACCEPT #4 – 300KCMIL AL OR CU CONDUCTORS.
5. VOLTAGE DROP FOR SINGLE METER ENCLOSURE FED FROM TRANSFORMER WITH MULTIPLE CUSTOMERS IS CALCULATED FROM THE TRANSFORMER TO PPC. (SERVICE AND FEEDER CONDUCTOR LENGTH)
6. VOLTAGE DROP FOR MULTI-METER ENCLOSURE IS CALCULATED FROM THE METER TO PPC. (FEEDER CONDUCTOR LENGTH)
7. VOLTAGE DROP CALCULATIONS ARE BASED ON A POWER FACTOR OF 1, A LINE TO GROUND VOLTAGE PER CONDUCTOR OF 120V, NO CORRECTION FACTOR FOR AMBIENT TEMPERATURE OR ADJUSTMENT FACTOR FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A SINGLE CONDUCT OR RACEWAY. A POWER FACTOR LESS THAN 1 OR VOLTAGE LESS THAN 120 WILL RESULT IN SHORTER DISTANCES THAN SHOWN IN TABLE.

NOTES

THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE. (ALL WIRE AND TERMINATION HARDWARE TO BE RATED 75°C)

#12 FOR 20A OCPD WIRE DERATING: 0.8 x 25A = 20.0A
#8 FOR 40A OCPD WIRE DERATING: 0.8 x 50A = 40.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.

1.0" CONDUIT – .3460 SQ. IN AREA
3.0" CONDUIT – 3.538 SQ. IN AREA

(2 CONDUIT): USING THWN-2, CU.
RECTIFIER CONDUCTORS

#8 – 0.0366 SQ. IN X 4 = 0.1464 SQ. IN
#8 – 0.0366 SQ. IN X 1 = 0.0366 SQ. IN <GROUND
TOTAL = 0.1830 SQ. IN

RECTIFIER & GFCI CONDUCTORS

#12 – 0.0133 SQ. IN X 2 = 0.0266 SQ. IN
#8 – 0.0366 SQ. IN X 2 = 0.0732 SQ. IN
#8 – 0.0366 SQ. IN X 1 = 0.0366 SQ. IN <GROUND
TOTAL = 0.1364 SQ. IN

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

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

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

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

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

250kcmil AL – 0.3970 SQ. IN X 3 = 1.191 SQ. IN
#4 AL – 0.0824 SQ. IN X 1 = 0.0824 SQ.IN <GROUND
TOTAL = 1.2734 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

PANEL NAME	LOCATION	VOLTAGE: 240/120 1Ø MAIN C/B: 200 AMPS BUS RATING: 200 AMPS	MOUNTING/ENCLOSURE: SURFACE/NEMA 3R AVAIL. FAULT CURRENT: SHORT CIRCUIT RATING: 65,000 / 10,000 SERIES RATED
DELTA	EQUIPMENT PLATFORM		

AMPS POLES	WIRE & CONDUIT	TYPE	DESCRIPTION	KVA	CKT	A		B	CKT	KVA	DESCRIPTION	TYPE	WIRE & CONDUIT	AMPS POLES
15/1	2 #12, 1 #12G	R	INTERNAL GFCI	0.18	1	1.68			2	1.50	RECTIFIER	EQ	SEE ONE LINE	40/2
15/1	SEE ONE LINE	R	CONVENIENCE OUTLET	0.18	3		1.68		4	1.50		EQ		
			SPACE		5	1.50			6	1.50	RECTIFIER	EQ	SEE ONE LINE	40/2
			SPACE		7		1.50		8	1.50		EQ		
			SPACE		9	1.50			10	1.50	RECTIFIER	EQ	SEE ONE LINE	40/2
			SPACE		11		1.50		12	1.50		EQ		
			SPACE		13				14		SPACE			
			SPACE		15				16		SPACE			
			SPACE		17				18		SPACE			
			SPACE		19				20		SPACE			
			SPACE		21				22		SPACE			
			SPACE		23				24		SPACE			
			PHASED LOAD			4.7		4.7			KVA			

TOTAL CONNECTED LOAD	9.4 kVA	39 A
TOTAL DEMAND LOAD	9.4 kVA	39 A

LOAD TYPE	DESCRIPTION	CONN. LOAD KVA	CONN. LOAD AMPS	DEMAND FACTOR	DESIGN LOAD KVA	DESIGN LOAD AMPS
L	LIGHTING	0.0	0.0	1.25	0.0	0.0
R	RECEPTACLE	0.4	1.5	NEC	0.4	1.5
M	MOTOR	0.0	0.0	NEC	0.0	0.0
H	HEATING	0.0	0.0	1.00	0.0	0.0
AC	HVAC	0.0	0.0	1.00	0.0	0.0
EQ	EQUIPMENT	9.0	37.5	1.00	9.0	37.5
E	EXISTING	0.0	0.0	1.25	0.0	0.0

*ALL EQUIPMENT LOADS CONSIDERED CONTINUOUS LOADS

PANEL SCHEDULE — NO SCALE — 2

NOT USED — NO SCALE — 3

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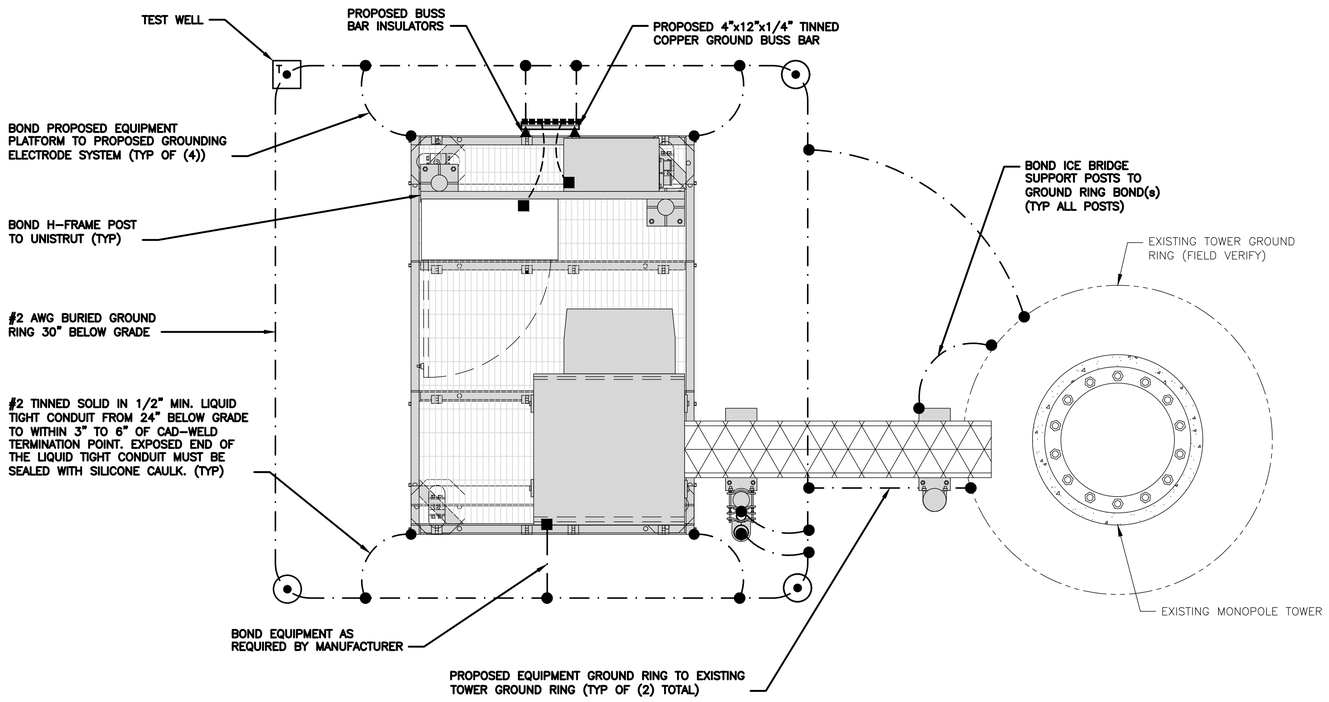
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

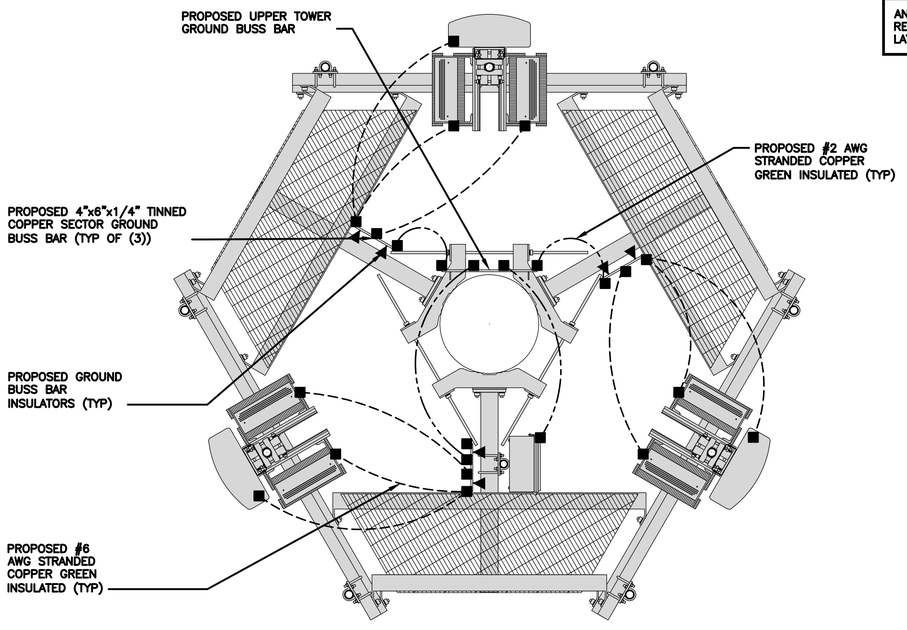
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

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

NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE

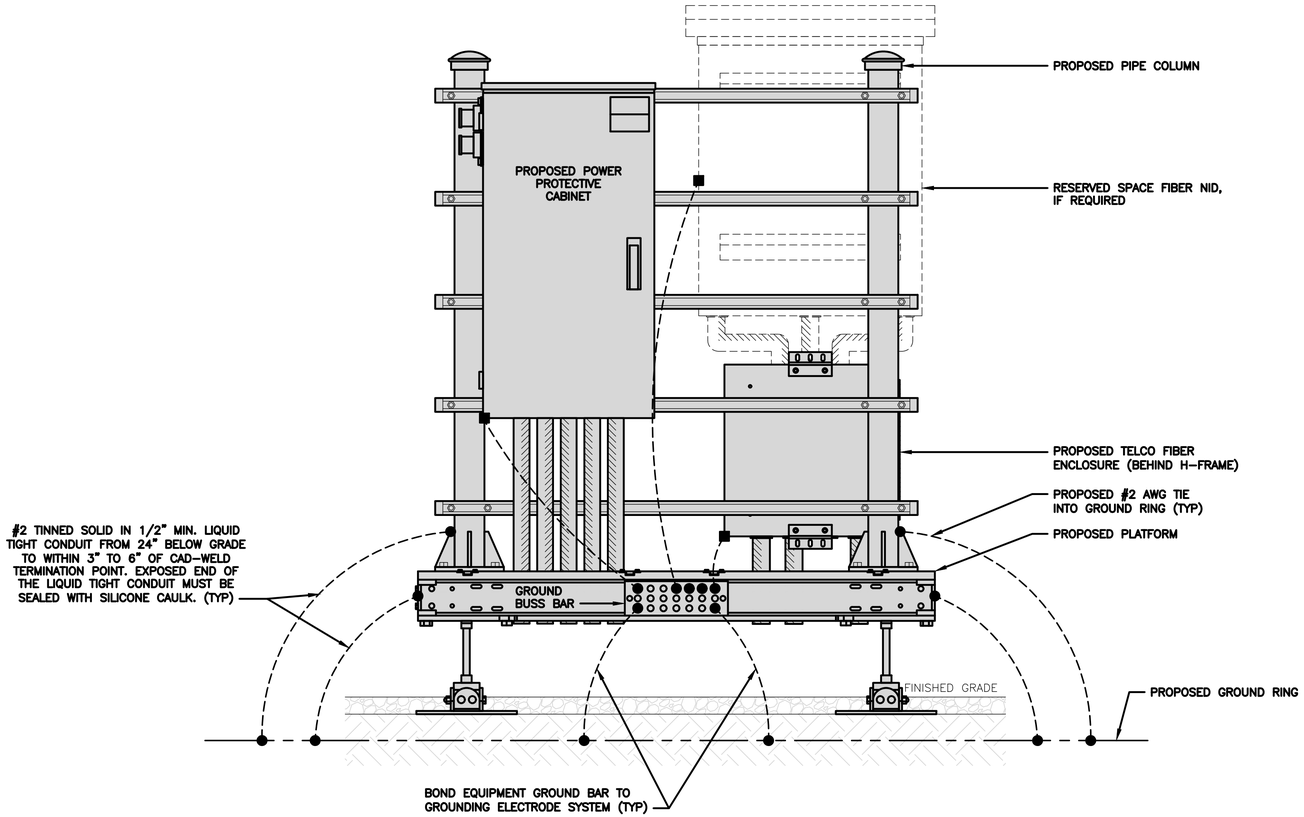
GROUNDING PLANS AND NOTES

SHEET NUMBER

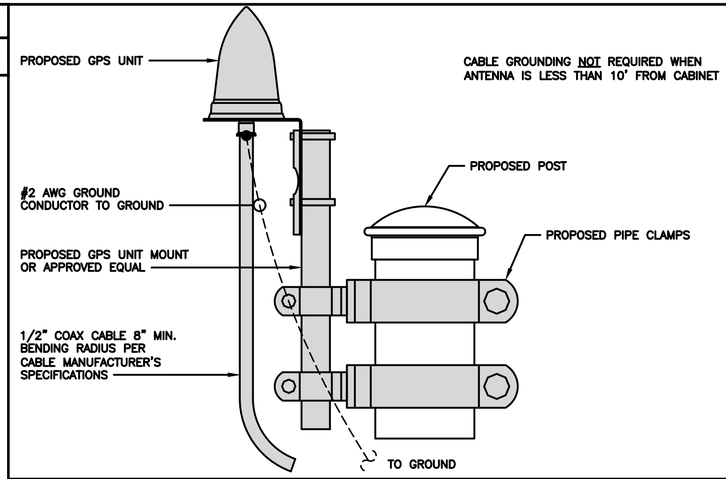
G-1

NOTES

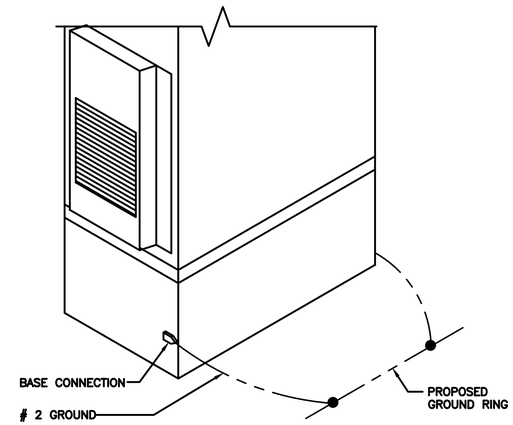
EQUIPMENT CABINET OMITTED FOR CLARITY



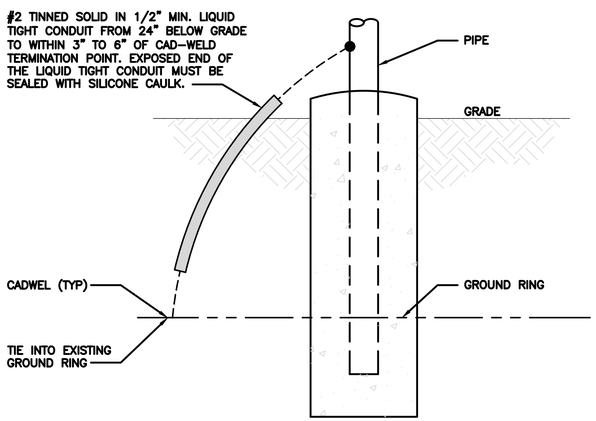
H-FRAME GROUNDING DETAIL | NO SCALE | 1



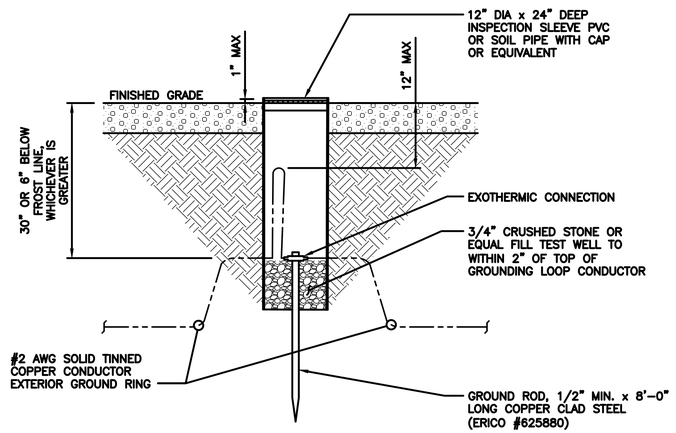
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



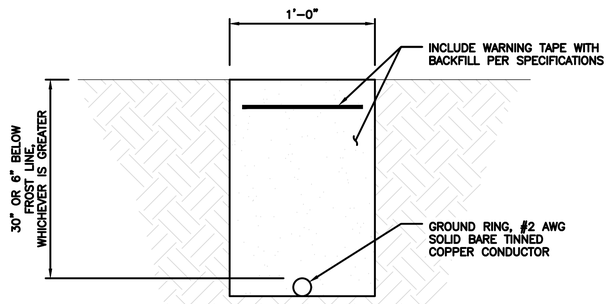
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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

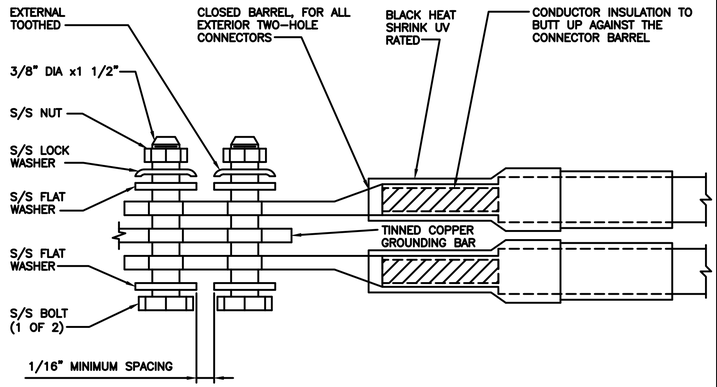
GROUNDING DETAILS

SHEET NUMBER

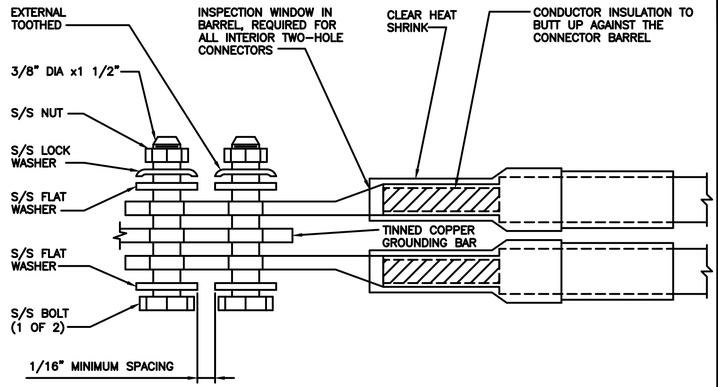
G-2

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).

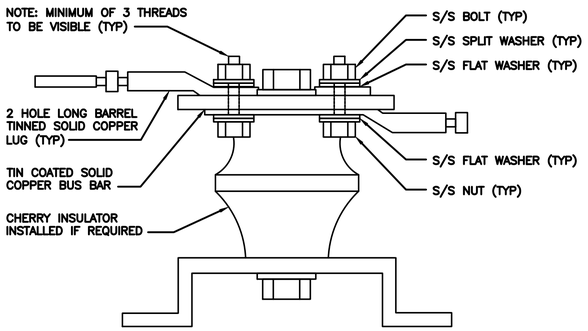
TYPICAL GROUNDING NOTES | NO SCALE | 1



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

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
GARY J MAGLIARO
11/2/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
PRI	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

NJJER02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

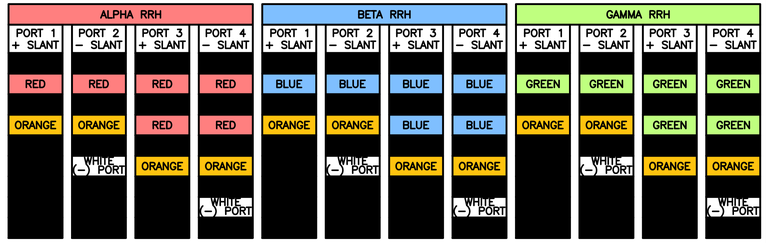
G-3

HYBRID/DISCREET CABLES

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

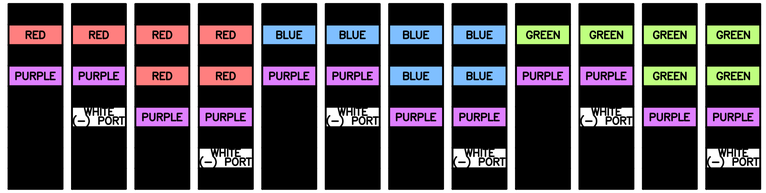
LOW-BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) - OPTIONAL PER MARKET

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



MID-BAND RRH
(AWS BANDS N66+N70)

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



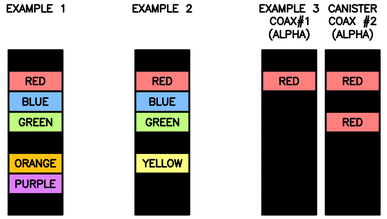
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

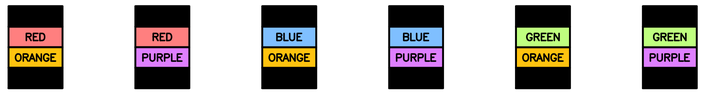
EXAMPLE 2 - HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS.

EXAMPLE 3 - MAIN COAX WITH GROUND MOUNTED RRHs.



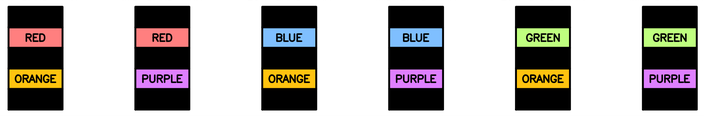
FIBER JUMPERS TO RRHs

LOW-BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.



POWER CABLES TO RRHs

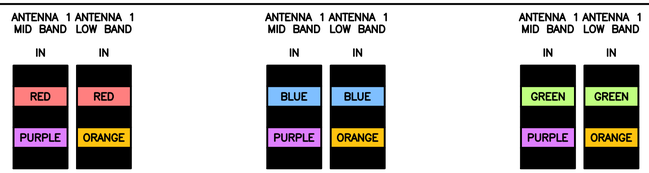
LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

RET CONTROL IS HANDLED BY THE MID-BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA.

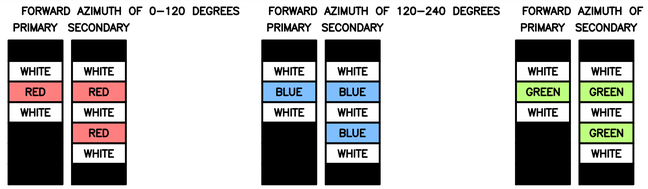
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

dish wireless.
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DISH Wireless L.L.C.
PROJECT INFORMATION
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SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH — $

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

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

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — X X X X

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W W W W W

UNDERGROUND POWER — UGP UGP UGP UGP UGP

UNDERGROUND TELCO — UGT UGT UGT UGT UGT

OVERHEAD POWER — OHP OHP OHP OHP

OVERHEAD TELCO — OHT OHT OHT OHT

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

ABOVE GROUND POWER — AGP AGP AGP AGP AGP

ABOVE GROUND TELCO — AGT AGT AGT AGT AGT

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

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

MK DEVELOPMENT

140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
GARY J MAGNUSON
11/2/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
PRI	---	---

RFDS REV #: ---

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A	09/13/2022	ISSUED FOR REVIEW
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A&E PROJECT NUMBER

NJJER02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

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

SIGN PLACEMENT:

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

NOTES:

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

INFORMATION

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

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

Site ID: _____

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE

Transmitting Antenna(s)

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

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

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

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

CAUTION

Transmitting Antenna(s)

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

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dish

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WARNING

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Site ID: _____

dish

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RF SIGNAGE

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

MK DEVELOPMENT
140 BEACH 137TH STREET
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STRATFORD, CT 06614

SHEET TITLE
RF SIGNAGE

SHEET NUMBER
GN-2

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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GARY J MAGLARAM
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DRAWN BY:	CHECKED BY:	APPROVED BY:
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A&E PROJECT NUMBER

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DISH Wireless L.L.C.
PROJECT INFORMATION

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SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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GARY J MAGLARAM
11/2/2022
33678
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
PRI	---	---

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A&E PROJECT NUMBER

NJJER02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

MK DEVELOPMENT

EXHIBIT D

Structural Analysis

DEVELOPMENT

August 9, 2022

PASS

RE: **Structural Analysis for Tower**

Location: **200 Oronoque lane, CT 06614**

Site ID: **NJJER02052B**

Dish Wireless LLC,

Per your request, we have performed a structural analysis of the existing tower. This site consists of an existing monopole that has multiple carriers co-located on the tower. This review determines if the tower can support the existing and proposed loads.

1.0 Assumptions:

CATEGORY	DATA	CODE
Structure Type	Monopole	
Top of Tower	150'-0"	
Structure Class	IV	ASCE 7-16
Exposure Class	C	ASCE 7-16
Kzt Factor	1.0	ASCE 7-16
Basic Wind Speed	135	ASCE 7-16
Ice Thickness	1"	ASCE 7-16
Ice Windspeed	50 MPH	ASCE 7-16
Seismic Design Category	C	ASCE 7-16
S_{DS}	.218	ASCE 7-16

2.0 Existing Documents:

DOCUMENT	COMPANY	DATE
Proposed Drawings	M&K Development	12/16/2021
Site Visit Photos	M&K Development	8/2/2021
Structural Analysis	Fullerton Engineering	5/31/2022

3.0 Proposed Equipment:

MANUFACTURER	EQUIPMENT	WEIGHTS
CommScope	**(1) MC-PK8-DSH**	**1802 lbs**
CommScope	**(3) FFVV-65B-R2**	**70.54 lbs**
Fujitsu	**(3) TA08025-B604**	**63.9 lbs**
Fujitsu	**(3) TA08025-B605**	**74.9 lbs**
RayCap	**(1) OVP RDIDC-9181-PF-48**	**32 lbs**
CommScope	**(1) HYBRID CABLE**	**N.A.**

Bold represents equipment to be added

It is assumed that all information from the previous analysis performed by Fullerton Engineering on May 31, 2022 is still accurate and correct. If this assumption is not true, please contact our office for an amended report.

We are installing (1) proposed MC-PK8-DSH mount on the existing monopole that will support all the proposed equipment. After performing an analysis on the tower in TNxTower, it has been determined that the tower is **ADEQUATE** for the existing and proposed loads on the structure which passes at 89.1% of its capacity.

This report does not address the structural stability of any other mounts, or portion of the structure, nor does it provide any warranty either express or implied, for any portion of the proposed mount or structure.

Please note that we have not had a professional engineer perform an independent visit to confirm existing structural conditions and the outcome of this analysis is based solely on the information provided in the previous structural analysis, photos and drawing details. If the existing conditions are modified, in disrepair or not properly represented, contact our office immediately for an amended report since this analysis may be inaccurate.

If you have any questions, feel free to contact us at any time.

Sincerely,

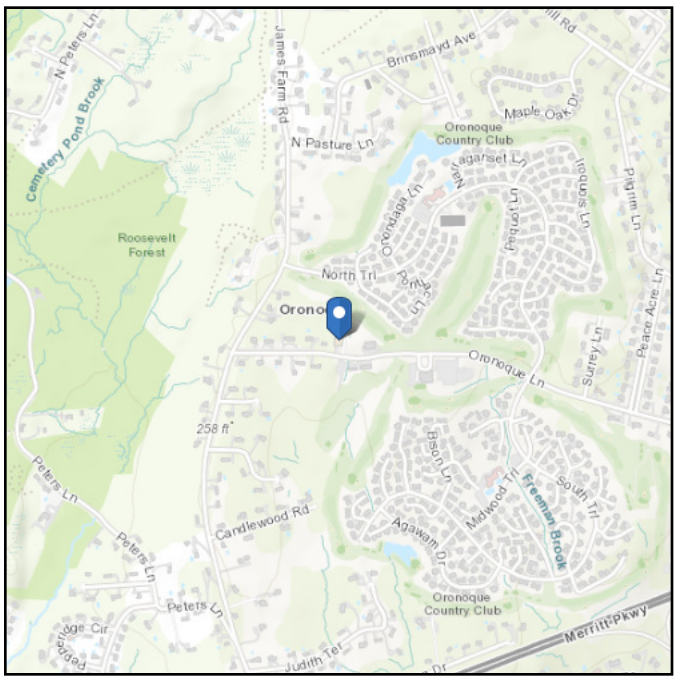
Magaram Engineering

Brett Magaram
Connecticut License # 33678
Brett@MagaramEngineering.com
Phone: 914-450-8416

ASCE 7 Hazards Report

Address:
200 Oronoque Ln
Stratford, Connecticut
06614

Standard:	ASCE/SEI 7-16	**Elevation:**	256.3 ft (NAVD 88)
Risk Category:	IV	**Latitude:**	41.251254
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-73.11699



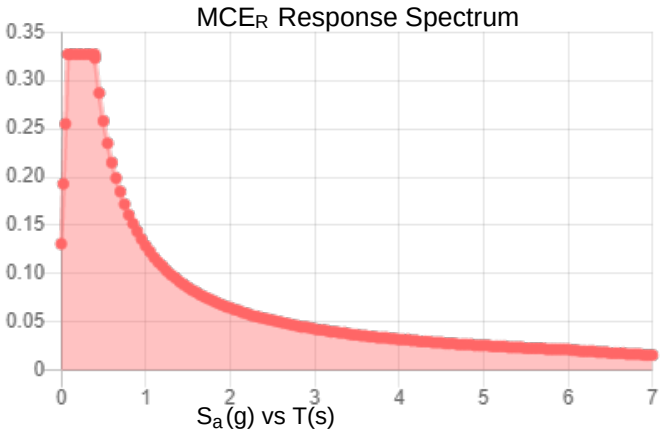
Seismic

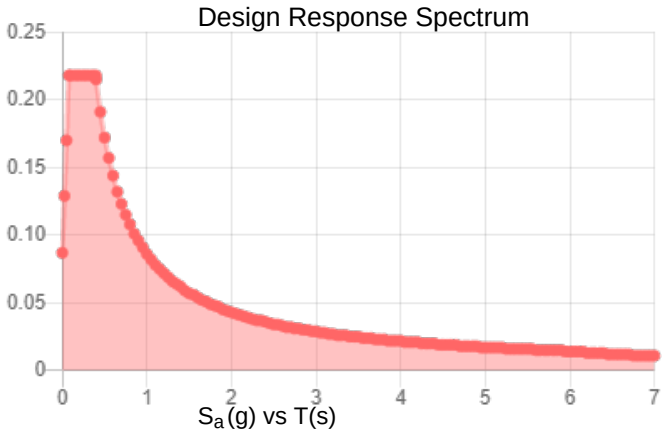
Site Soil Class: D - Default (see Section 11.4.3)

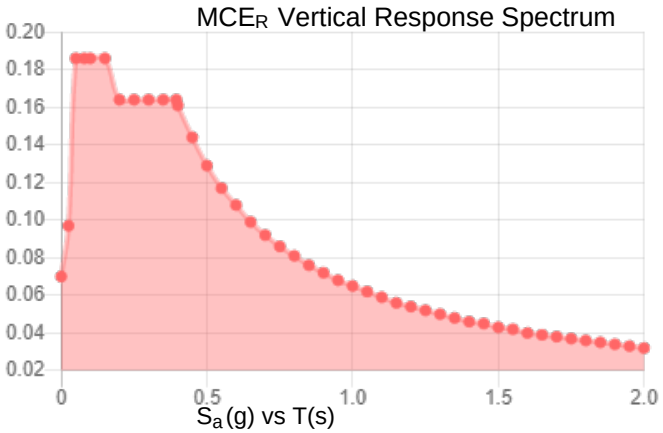
Results:

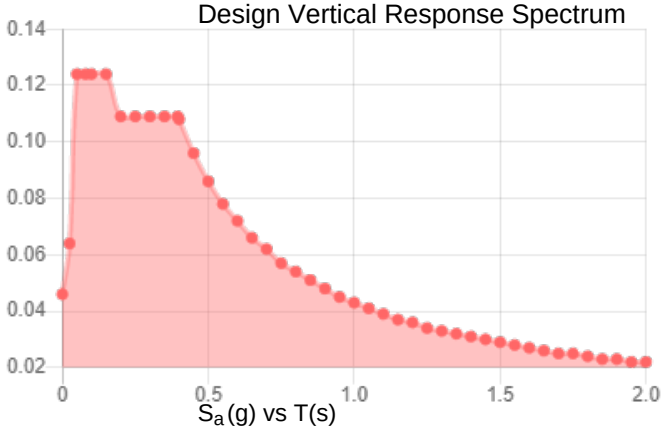
S_S :	0.205	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.115
F_v :	2.4	PGA_M :	0.181
S_{MS} :	0.327	F_{PGA} :	1.569
S_{M1} :	0.129	I_e :	1.5
S_{DS} :	0.218	C_v :	0.709

Seismic Design Category C









Data Accessed: **Tue Aug 09 2022**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

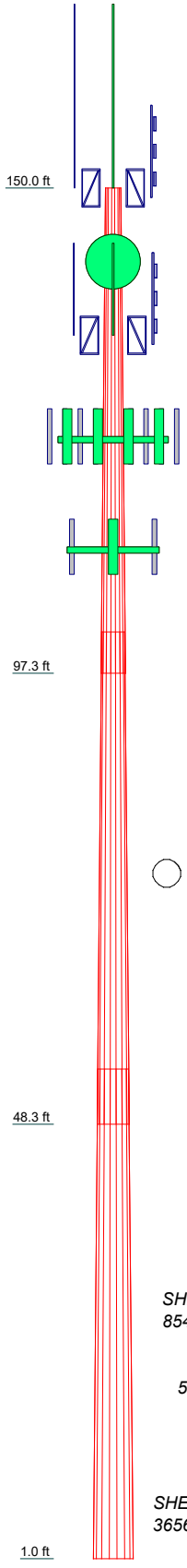
Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Aug 09 2022

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

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

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS												
				Wind Design Parameters								
Municipality	**Ground Snow Load** (psf)	**MCE Spectral Accelerations** (%g)		**Ultimate Design Wind Speeds,** V_{ult} (mph)			**Nominal Design Wind Speeds,** V_{asd} (mph)			**Wind-Borne Debris Regions[1]**		**Hurricane-Prone Regions**
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV	Risk Cat. II & III except Occup I-2	Risk Cat III Occup I-2 & Risk Cat. IV	
Rocky Hill	30	0.181	0.063	115	125	135	89	97	105			Yes
Roxbury	35	0.197	0.065	110	120	125	85	93	97			Yes
Salem	30	0.170	0.060	120	135	140	93	105	108		Type A	Yes
Salisbury	40	0.173	0.065	105	115	120	81	89	93			
Scotland	30	0.172	0.061	120	130	140	93	101	108			Yes
Seymour	30	0.194	0.064	115	125	135	89	97	105			Yes
Sharon	40	0.179	0.065	105	115	120	81	89	93			
Shelton	30	0.199	0.064	115	125	135	89	97	105			Yes
Sherman	35	0.202	0.066	105	115	120	81	89	93			
Simsbury	35	0.179	0.064	110	120	130	85	93	101			Yes
Somers	35	0.174	0.064	115	125	135	89	97	105			Yes
Southbury	35	0.198	0.065	110	120	130	85	93	101			Yes
Southington	30	0.185	0.064	115	125	135	89	97	105			Yes
South Windsor	30	0.178	0.064	115	125	135	89	97	105			Yes
Sprague	30	0.171	0.061	120	130	140	93	101	108		Type A	Yes
Stafford	35	0.173	0.064	115	125	135	89	97	105			Yes
Stamford	30	0.249	0.069	110	120	130	85	93	101			Yes
Sterling	35	0.170	0.061	125	135	145	97	105	112		Type A	Yes
Stonington	30	0.159	0.058	125	140	150	97	108	116	Type B	Type A	Yes
Stratford	30	0.201	0.064	115	125	135	89	97	105		Type B	Yes
Suffield	35	0.176	0.065	110	120	130	85	93	101			Yes
Thomaston	35	0.186	0.064	110	120	130	85	93	101			Yes
Thompson	40	0.172	0.063	120	130	140	93	101	108			Yes
Tolland	35	0.175	0.064	115	125	135	89	97	105			Yes
Torrington	40	0.182	0.065	110	120	125	85	93	97			Yes
Trumbull	30	0.207	0.065	115	125	135	89	97	105			Yes
Union	40	0.172	0.064	115	125	135	89	97	105			Yes
Vernon	30	0.177	0.064	115	125	135	89	97	105			Yes
Voluntown	30	0.168	0.060	125	135	145	97	105	112		Type A	Yes
Wallingford	30	0.183	0.063	115	125	135	89	97	105			Yes
Warren	40	0.186	0.065	105	115	125	81	89	97			
Washington	35	0.192	0.065	105	120	125	81	93	97			Yes
Waterbury	35	0.189	0.064	110	125	130	85	97	101			Yes
Waterford	30	0.161	0.058	125	135	145	97	105	112	Type B	Type A	Yes
Watertown	35	0.189	0.064	110	120	130	85	93	101			Yes
Westbrook	30	0.167	0.059	120	135	145	93	105	112	Type B	Type A	Yes
West Hartford	30	0.181	0.064	115	125	135	89	97	105			Yes
West Haven	30	0.188	0.062	115	125	135	89	97	105		Type B	Yes
Weston	30	0.224	0.067	110	120	130	85	93	101			Yes

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	52.75	18	0.2500	4.50	20.0000	31.7600		3650.5
2	53.50	18	0.3125	6.00	30.2568	42.1900	A572-65	6484.4
3	53.25	18	0.3750		40.2267	52.1000		9875.3
								20010.2



ALL REACTIONS ARE FACTORED

AXIAL 55079 lb

SHEAR 8543 lb *MOMENT 895550 lb-ft*

TORQUE 574 lb-ft
50 mph WIND - 1.0000 in ICE

AXIAL 35492 lb

SHEAR 36561 lb *MOMENT 3714253 lb-ft*

TORQUE 2008 lb-ft
REACTIONS - 135 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
20' Omni (Town)	150	RRUS32 (ATI)	123
20' Omni (Town)	150	Radio 4478 (ATI)	123
8' Dipole (Town)	150	RRU 8843 (ATI)	123
8' Dipole (Town)	150	TPA65R-BU6D (ATI)	123
Pirod 4' Side Mount Standoff (1) (Town)	150	AIR6449 (ATI)	123
Pirod 4' Side Mount Standoff (1) (Town)	150	AIR6419 (ATI)	123
Pirod 4' Side Mount Standoff (1) (Town)	150	DMP65R-BU8DA-K (ATI)	123
Pirod 4' Side Mount Standoff (1) (Town)	150	Radio 4449 (ATI)	123
Andrew HP6	142	RRUS32 (ATI)	123
10' Omni (Town)	134	Radio 4478 (ATI)	123
8' Dipole (Town)	134	RRU 8843 (ATI)	123
8' Dipole (Town)	134	RMQP-NP (12' Platform) (ATI)	123
Pirod 4' Side Mount Standoff (1) (Town)	134	RDIDC-9181-PF-48 (ATI)	123
Pirod 4' Side Mount Standoff (1) (Town)	134	RDIDC-9181-PF-48 (ATI)	123
Pirod 4' Side Mount Standoff (1) (Town)	134	RDIDC-9181-PF-48 (ATI)	123
Pirod 4' Side Mount Standoff (1) (Town)	134	TPA65R-BU6D (ATI)	123
10' Omni (Town)	134	FFVV-65B-R2 (DISH)	111
AIR6449 (ATI)	123	TA08025-B604 (DISH)	111
AIR6419 (ATI)	123	TA08025-B604 (DISH)	111
DMP65R-BU8DA-K (ATI)	123	RDIDC-9181-PF-48 (DISH)	111
Radio 4449 (ATI)	123	FFVV-65B-R2 (DISH)	111
RRUS32 (ATI)	123	TA08025-B604 (DISH)	111
Radio 4478 (ATI)	123	TA08025-B604 (DISH)	111
RRU 8843 (ATI)	123	RDIDC-9181-PF-48 (DISH)	111
TPA65R-BU6D (ATI)	123	MC-PK8-DSH (DISH)	111
AIR6449 (ATI)	123	FFVV-65B-R2 (DISH)	111
AIR6419 (ATI)	123	TA08025-B604 (DISH)	111
DMP65R-BU8DA-K (ATI)	123	TA08025-B604 (DISH)	111
Radio 4449 (ATI)	123	RDIDC-9181-PF-48 (DISH)	111

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

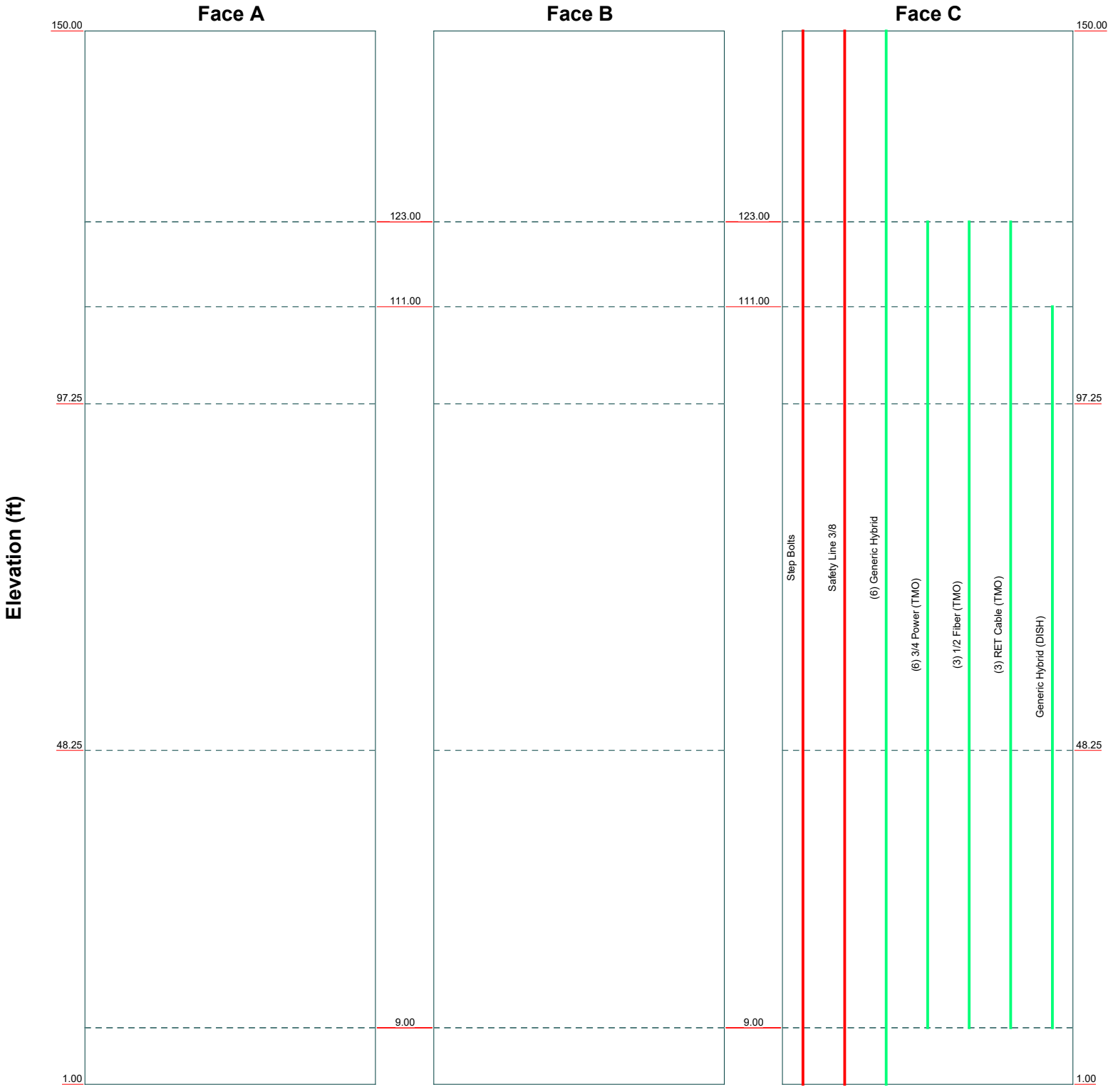
1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 135 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category IV.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Weld together tower sections have flange connections.
8. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Welds are fabricated with ER-70S-6 electrodes.
11. TOWER RATING: 88%

Magaram Engineering
13705 Stone Shadow
Clifton VA
Phone: 914-450-8416
FAX:

Job: *NJJER02052B*			
Project:			
Client: Dish Wireless LLC	Drawn by:		App'd:
Code: TIA-222-H	Date: 09/20/22		Scale: NTS
Path: C:\Users\Brett Laptop 2019\Desktop\Tower Analysis\NJJER02052B Tower Model.eri			Dwg No. E-1

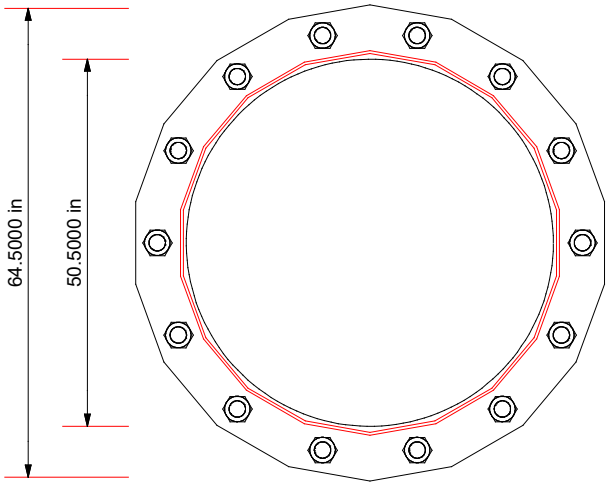
Feed Line Distribution Chart
1' - 150'

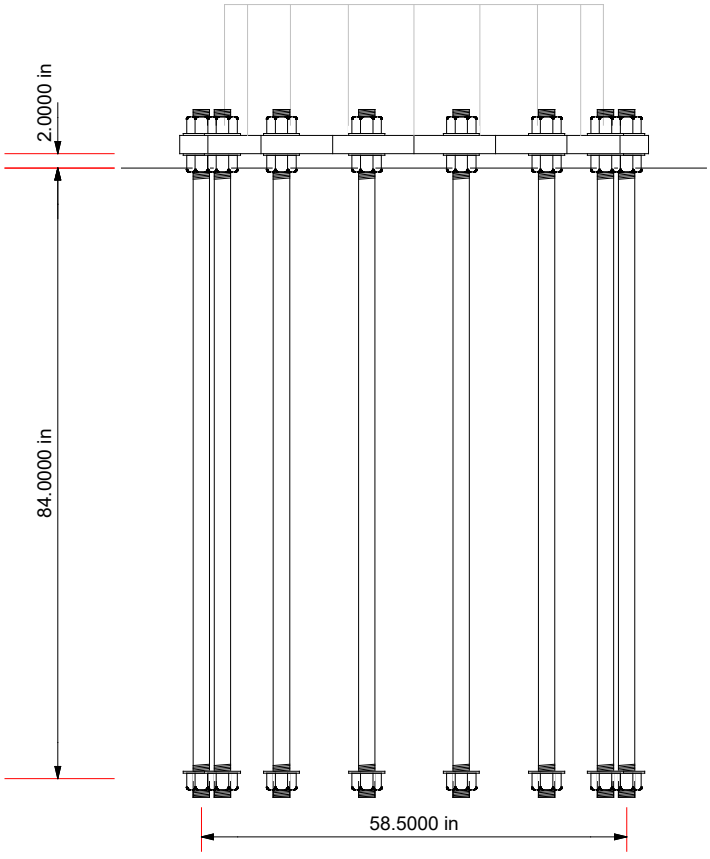
Round | Flat | App In Face | App Out Face | Truss Leg



Magaram Engineering
13705 Stone Shadow
Clifton VA
Phone: 914-450-8416
FAX:

Job: ***NJJER02052B***			
Project:			
Client: Dish Wireless LLC	Drawn by:	App'd:	
Code: TIA-222-H	Date: 08/09/22	Scale: NTS	
Path: C:\Users\Brett Laptop 2019\Desktop\Magaram Engineering\MK Development\NJJER02052B\Tower Analysis\NJJER02052B Tower Model.eri		Dwg No. E-7	





FOUNDATION NOTES

1. Plate thickness is 2.5000 in.
2. Plate grade is A572-50.
3. Anchor bolt grade is A325X.
4. f'c is 3 ksi.

Magaram Engineering
13705 Stone Shadow
Clifton VA
Phone: 914-450-8416
FAX:

Job: ***NJJER02052B***			
Project:			
Client: Dish Wireless LLC	Drawn by:	App'd:	
Code: TIA-222-H	Date: 08/09/22	Scale: NTS	
Path: C:\Users\Brett Laptop 2019\Desktop\Magaram Engineering\MK Development\NJJER02052B\Tower Analysis\NJJER02052B Tower Model.eri		Dwg No. F-1	

Tower Input Data

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

Tower base elevation above sea level: 1.00 ft.
Basic wind speed of 135 mph.
Risk Category IV.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.00-97.25	52.75	4.50	18	20.0000	31.7600	0.2500	1.0000	A572-65 (65 ksi)
L2	97.25-48.25	53.50	6.00	18	30.2568	42.1900	0.3125	1.2500	A572-65 (65 ksi)
L3	48.25-1.00	53.25		18	40.2267	52.1000	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	20.2700	15.6716	772.2994	7.0112	10.1600	76.0137	1545.6150	7.8373	3.0800	12.32
	32.2114	25.0032	3136.3866	11.1861	16.1341	194.3951	6276.9002	12.5040	5.1498	20.599
L2	31.6945	29.7010	3364.6190	10.6302	15.3704	218.9019	6733.6652	14.8533	4.7752	15.281
	42.7926	41.5372	9203.1529	14.8665	21.4325	429.4013	18418.4155	20.7726	6.8754	22.001
L3	42.1479	47.4335	9517.3498	14.1474	20.4352	465.7340	19047.2229	23.7212	6.4199	17.12
	52.8459	61.5657	20810.2424	18.3624	26.4668	786.2772	41647.8674	30.7887	8.5096	22.692

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 150.00-97.25				1	1	1			
L2 97.25-48.25				1	1	1			
L3 48.25-1.00				1	1	1			

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A325X
Anchor bolt size	2.2500 in
Number of bolts	14
Embedment length	84.0000 in
f'_c	3 ksi
Grout space	2.0000 in
Base plate grade	A572-50
Base plate thickness	2.5000 in
Bolt circle diameter	58.5000 in
Outer diameter	64.5000 in
Inner diameter	50.5000 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Step Bolts	C	No	Surface Ar (CaAa)	150.00 - 1.00	1	1	0.000 0.000	0.7500		0.48
Safety Line 3/8	C	No	Surface Ar (CaAa)	150.00 - 1.00	1	1	0.000 0.000	0.3750		0.22

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***									
Generic Hybrid	C	No	No	Inside Pole	150.00 - 1.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.90 1.90 1.90
*									
3/4 Power (TMO)	C	No	No	Inside Pole	123.00 - 9.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.40 0.40 0.40
1/2 Fiber (TMO)	C	No	No	Inside Pole	123.00 - 9.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.15 0.15 0.15
RET Cable (TMO)	C	No	No	Inside Pole	123.00 - 9.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.25 0.25 0.25
*									
Generic Hybrid (DISH)	C	No	No	Inside Pole	111.00 - 9.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.90 1.90 1.90

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	150.00-97.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.934	0.000	757.10
L2	97.25-48.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.513	0.000	862.40
L3	48.25-1.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.316	0.000	787.60

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
L1	150.00-97.25	A	1.425	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	35.992	0.000	1121.93
L2	97.25-48.25	A	1.351	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	33.433	0.000	1201.30
L3	48.25-1.00	A	1.215	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	30.857	0.000	1086.20

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.00-97.25	0.0000	0.8725	0.0000	2.5129
L2	97.25-48.25	0.0000	0.8834	0.0000	2.7206
L3	48.25-1.00	0.0000	0.8893	0.0000	2.7417

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Step Bolts	97.25 - 150.00	1.0000	1.0000
L1	2	Safety Line 3/8	97.25 - 150.00	1.0000	1.0000
L2	1	Step Bolts	48.25 - 97.25	1.0000	1.0000
L2	2	Safety Line 3/8	48.25 - 97.25	1.0000	1.0000
L3	1	Step Bolts	1.00 - 48.25	1.0000	1.0000
L3	2	Safety Line 3/8	1.00 - 48.25	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight lb
20' Omni	A	From Face	4.00	90.0000	150.00	No Ice	6.70	6.70	150.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(Town)			0.00			1/2" Ice	9.04	9.04	199.38
			10.00			1" Ice	11.09	11.09	261.50
20' Omni	C	From Face	4.00	30.0000	150.00	No Ice	6.70	6.70	150.00
(Town)			0.00			1/2" Ice	9.04	9.04	199.38
			10.00			1" Ice	11.09	11.09	261.50
8' Dipole	B	From Face	4.00	90.0000	150.00	No Ice	1.60	1.60	20.00
(Town)			0.00			1/2" Ice	2.42	2.42	32.45
			4.00			1" Ice	3.24	3.24	50.41
8' Dipole	B	From Face	4.00	-90.0000	150.00	No Ice	1.60	1.60	20.00
(Town)			0.00			1/2" Ice	2.42	2.42	32.45
			4.00			1" Ice	3.24	3.24	50.41
10' Omni	A	From Face	4.00	90.0000	134.00	No Ice	3.39	3.39	75.00
(Town)			0.00			1/2" Ice	4.54	4.54	99.95
			5.00			1" Ice	5.30	5.30	131.52
10' Omni	C	From Face	4.00	30.0000	134.00	No Ice	3.39	3.39	75.00
(Town)			0.00			1/2" Ice	4.54	4.54	99.95
			5.00			1" Ice	5.30	5.30	131.52
8' Dipole	B	From Face	4.00	90.0000	134.00	No Ice	1.60	1.60	20.00
(Town)			0.00			1/2" Ice	2.42	2.42	32.45
			4.00			1" Ice	3.24	3.24	50.41
8' Dipole	B	From Face	4.00	-90.0000	134.00	No Ice	1.60	1.60	20.00
(Town)			0.00			1/2" Ice	2.42	2.42	32.45
			4.00			1" Ice	3.24	3.24	50.41
Pirod 4' Side Mount Standoff	A	From Face	2.00	0.0000	150.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
(Town)			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff	B	From Face	2.00	0.0000	150.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
(Town)			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff	C	From Face	2.00	0.0000	150.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
(Town)			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff	C	From Face	2.00	30.0000	150.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
(Town)			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff	A	From Face	2.00	0.0000	134.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
(Town)			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff	B	From Face	2.00	0.0000	134.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
(Town)			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff	C	From Face	2.00	0.0000	134.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
(Town)			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff	C	From Face	2.00	30.0000	134.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
(Town)			0.00			1" Ice	7.10	7.10	128.00
***									
TPA65R-BU6D	A	From Face	4.00	0.0000	123.00	No Ice	13.20	7.52	97.50
(AT&T)			0.00			1/2" Ice	13.91	8.80	192.55
			0.00			1" Ice	14.59	9.93	296.34
AIR6449	A	From Face	4.00	0.0000	123.00	No Ice	5.65	2.42	100.00
(AT&T)			0.00			1/2" Ice	5.96	2.64	140.00
			0.00			1" Ice	6.26	2.87	180.00
AIR6419	A	From Face	4.00	0.0000	123.00	No Ice	3.80	1.94	77.00
(AT&T)			0.00			1/2" Ice	4.05	2.14	104.86
			0.00			1" Ice	4.31	2.34	136.30

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
DMP65R-BU8DA-K	A	From Face	4.00		0.0000	123.00	No Ice	17.87	10.02	148.20
(AT&T)			0.00				1/2" Ice	18.50	11.44	266.88
			0.00				1" Ice	19.14	12.72	395.91
Radio 4449	A	From Face	4.00		0.0000	123.00	No Ice	1.64	1.29	70.00
(AT&T)			0.00				1/2" Ice	1.80	1.44	90.00
			0.00				1" Ice	1.97	1.59	110.00
RRUS32	A	From Face	4.00		0.0000	123.00	No Ice	3.31	2.42	80.00
(AT&T)			0.00				1/2" Ice	3.56	2.64	100.00
			0.00				1" Ice	3.81	2.86	140.00
Radio 4478	A	From Face	4.00		0.0000	123.00	No Ice	1.84	1.06	60.00
(AT&T)			0.00				1/2" Ice	2.01	1.20	80.00
			0.00				1" Ice	2.19	1.34	90.00
RRU 8843	A	From Face	4.00		0.0000	123.00	No Ice	1.64	1.35	72.00
(AT&T)			0.00				1/2" Ice	1.80	1.50	89.60
			0.00				1" Ice	1.97	1.65	109.91
*										
TPA65R-BU6D	B	From Face	4.00		0.0000	123.00	No Ice	13.20	7.52	97.50
(AT&T)			0.00				1/2" Ice	13.91	8.80	192.55
			0.00				1" Ice	14.59	9.93	296.34
AIR6449	B	From Face	4.00		0.0000	123.00	No Ice	5.65	2.42	100.00
(AT&T)			0.00				1/2" Ice	5.96	2.64	140.00
			0.00				1" Ice	6.26	2.87	180.00
AIR6419	B	From Face	4.00		0.0000	123.00	No Ice	3.80	1.94	77.00
(AT&T)			0.00				1/2" Ice	4.05	2.14	104.86
			0.00				1" Ice	4.31	2.34	136.30
DMP65R-BU8DA-K	B	From Face	4.00		0.0000	123.00	No Ice	17.87	10.02	148.20
(AT&T)			0.00				1/2" Ice	18.50	11.44	266.88
			0.00				1" Ice	19.14	12.72	395.91
Radio 4449	B	From Face	4.00		0.0000	123.00	No Ice	1.64	1.29	70.00
(AT&T)			0.00				1/2" Ice	1.80	1.44	90.00
			0.00				1" Ice	1.97	1.59	110.00
RRUS32	B	From Face	4.00		0.0000	123.00	No Ice	3.31	2.42	80.00
(AT&T)			0.00				1/2" Ice	3.56	2.64	100.00
			0.00				1" Ice	3.81	2.86	140.00
Radio 4478	B	From Face	4.00		0.0000	123.00	No Ice	1.84	1.06	60.00
(AT&T)			0.00				1/2" Ice	2.01	1.20	80.00
			0.00				1" Ice	2.19	1.34	90.00
RRU 8843	B	From Face	4.00		0.0000	123.00	No Ice	1.64	1.35	72.00
(AT&T)			0.00				1/2" Ice	1.80	1.50	89.60
			0.00				1" Ice	1.97	1.65	109.91
*										
TPA65R-BU6D	C	From Face	4.00		0.0000	123.00	No Ice	13.20	7.52	97.50
(AT&T)			0.00				1/2" Ice	13.91	8.80	192.55
			0.00				1" Ice	14.59	9.93	296.34
AIR6449	C	From Face	4.00		0.0000	123.00	No Ice	5.65	2.42	100.00
(AT&T)			0.00				1/2" Ice	5.96	2.64	140.00
			0.00				1" Ice	6.26	2.87	180.00
AIR6419	C	From Face	4.00		0.0000	123.00	No Ice	3.80	1.94	77.00
(AT&T)			0.00				1/2" Ice	4.05	2.14	104.86
			0.00				1" Ice	4.31	2.34	136.30
DMP65R-BU8DA-K	C	From Face	4.00		0.0000	123.00	No Ice	17.87	10.02	148.20
(AT&T)			0.00				1/2" Ice	18.50	11.44	266.88
			0.00				1" Ice	19.14	12.72	395.91
Radio 4449	C	From Face	4.00		0.0000	123.00	No Ice	1.64	1.29	70.00
(AT&T)			0.00				1/2" Ice	1.80	1.44	90.00
			0.00				1" Ice	1.97	1.59	110.00
RRUS32	C	From Face	4.00		0.0000	123.00	No Ice	3.31	2.42	80.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(AT&T)			0.00			1/2" Ice	3.56	2.64	100.00
			0.00			1" Ice	3.81	2.86	140.00
Radio 4478	C	From Face	4.00	0.0000	123.00	No Ice	1.84	1.06	60.00
(AT&T)			0.00			1/2" Ice	2.01	1.20	80.00
			0.00			1" Ice	2.19	1.34	90.00
RRU 8843	C	From Face	4.00	0.0000	123.00	No Ice	1.64	1.35	72.00
(AT&T)			0.00			1/2" Ice	1.80	1.50	89.60
			0.00			1" Ice	1.97	1.65	109.91
*									
RMQP-NP (12' Platform)	C	None		0.0000	123.00	No Ice	25.04	25.04	1205.00
(AT&T)						1/2" Ice	29.39	29.39	1475.00
						1" Ice	34.02	34.02	1815.00
***									
FFVV-65B-R2	A	From Face	4.00	0.0000	111.00	No Ice	12.75	7.65	100.00
(DISH)			0.00			1/2" Ice	13.45	8.94	193.24
			0.00			1" Ice	14.12	10.07	295.20
TA08025-B604	A	From Face	4.00	0.0000	111.00	No Ice	1.96	0.98	60.00
(DISH)			0.00			1/2" Ice	2.14	1.11	80.00
			0.00			1" Ice	2.32	1.25	100.00
TA08025-B604	A	From Face	4.00	0.0000	111.00	No Ice	1.96	0.98	60.00
(DISH)			0.00			1/2" Ice	2.14	1.11	80.00
			0.00			1" Ice	2.32	1.25	100.00
RDIDC-9181-PF-48	A	From Face	4.00	0.0000	111.00	No Ice	2.01	1.17	20.00
(DISH)			0.00			1/2" Ice	2.19	1.31	40.00
			0.00			1" Ice	2.38	1.46	60.00
*									
FFVV-65B-R2	B	From Face	4.00	0.0000	111.00	No Ice	12.75	7.65	100.00
(DISH)			0.00			1/2" Ice	13.45	8.94	193.24
			0.00			1" Ice	14.12	10.07	295.20
TA08025-B604	B	From Face	4.00	0.0000	111.00	No Ice	1.96	0.98	60.00
(DISH)			0.00			1/2" Ice	2.14	1.11	80.00
			0.00			1" Ice	2.32	1.25	100.00
TA08025-B604	B	From Face	4.00	0.0000	111.00	No Ice	1.96	0.98	60.00
(DISH)			0.00			1/2" Ice	2.14	1.11	80.00
			0.00			1" Ice	2.32	1.25	100.00
RDIDC-9181-PF-48	B	From Face	4.00	0.0000	111.00	No Ice	2.01	1.17	20.00
(DISH)			0.00			1/2" Ice	2.19	1.31	40.00
			0.00			1" Ice	2.38	1.46	60.00
*									
FFVV-65B-R2	C	From Face	4.00	0.0000	111.00	No Ice	12.75	7.65	100.00
(DISH)			0.00			1/2" Ice	13.45	8.94	193.24
			0.00			1" Ice	14.12	10.07	295.20
TA08025-B604	C	From Face	4.00	0.0000	111.00	No Ice	1.96	0.98	60.00
(DISH)			0.00			1/2" Ice	2.14	1.11	80.00
			0.00			1" Ice	2.32	1.25	100.00
TA08025-B604	C	From Face	4.00	0.0000	111.00	No Ice	1.96	0.98	60.00
(DISH)			0.00			1/2" Ice	2.14	1.11	80.00
			0.00			1" Ice	2.32	1.25	100.00
RDIDC-9181-PF-48	C	From Face	4.00	0.0000	111.00	No Ice	2.01	1.17	20.00
(DISH)			0.00			1/2" Ice	2.19	1.31	40.00
			0.00			1" Ice	2.38	1.46	60.00
*									
MC-PK8-DSH	C	None		0.0000	111.00	No Ice	32.24	32.24	1750.00
(DISH)						1/2" Ice	62.95	62.95	2100.00
						1" Ice	91.66	91.66	2450.00
*									
RDIDC-9181-PF-48	A	From Face	4.00	0.0000	123.00	No Ice	2.01	1.17	20.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(AT&T)			0.00			1/2" Ice	2.19	1.31	40.00
			0.00			1" Ice	2.38	1.46	60.00
RDIDC-9181-PF-48	B	From Face	4.00	0.0000	123.00	No Ice	2.01	1.17	20.00
(AT&T)			0.00			1/2" Ice	2.19	1.31	40.00
			0.00			1" Ice	2.38	1.46	60.00
RDIDC-9181-PF-48	C	From Face	4.00	0.0000	123.00	No Ice	2.01	1.17	20.00
(AT&T)			0.00			1/2" Ice	2.19	1.31	40.00
			0.00			1" Ice	2.38	1.46	60.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
Andrew HP6		Paraboloid w/Shroud (HP)	None		0.0000		142.00	6.00	No Ice	28.27	380.00
									1/2" Ice	29.07	620.00
									1" Ice	29.87	860.00

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1	121.92	1.32	58	115.350	A	0.000	115.350	115.350	100.00	0.000	0.000
150.00-97.25					B	0.000	115.350		100.00	0.000	0.000
					C	0.000	115.350		100.00	5.934	0.000
L2 97.25-48.25	71.97	1.181	52	152.078	A	0.000	152.078	152.078	100.00	0.000	0.000
					B	0.000	152.078		100.00	0.000	0.000
					C	0.000	152.078		100.00	5.513	0.000
L3 48.25-1.00	24.82	0.944	41	187.019	A	0.000	187.019	187.019	100.00	0.000	0.000
					B	0.000	187.019		100.00	0.000	0.000
					C	0.000	187.019		100.00	5.316	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 150.00-97.25	121.92	1.32	8	1.4245	127.873	A	0.000	127.873	127.873	100.00	0.000	0.000
						B	0.000	127.873		100.00	0.000	0.000
						C	0.000	127.873		100.00	35.992	0.000
L2 97.25-48.25	71.97	1.181	7	1.3514	163.711	A	0.000	163.711	163.711	100.00	0.000	0.000
						B	0.000	163.711		100.00	0.000	0.000
						C	0.000	163.711		100.00	33.433	0.000
L3 48.25-1.00	24.82	0.944	6	1.2149	197.661	A	0.000	197.661	197.661	100.00	0.000	0.000
						B	0.000	197.661		100.00	0.000	0.000
						C	0.000	197.661		100.00	30.857	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	121.92	1.32	10	115.350	A	0.000	115.350	115.350	100.00	0.000	0.000
150.00-97.25					B	0.000	115.350		100.00	0.000	0.000
					C	0.000	115.350		100.00	5.934	0.000
L2 97.25-48.25	71.97	1.181	9	152.078	A	0.000	152.078	152.078	100.00	0.000	0.000
					B	0.000	152.078		100.00	0.000	0.000
					C	0.000	152.078		100.00	5.513	0.000
L3 48.25-1.00	24.82	0.944	7	187.019	A	0.000	187.019	187.019	100.00	0.000	0.000
					B	0.000	187.019		100.00	0.000	0.000
					C	0.000	187.019		100.00	5.316	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	757.10	3650.51	A	1	0.73	58	1	1	115.350	5409.46	102.55	C
150.00-97.25			B	1	0.73		1	1	115.350			
			C	1	0.73		1	1	115.350			
L2	862.40	6484.44	A	1	0.73	52	1	1	152.078	6368.53	129.97	C
97.25-48.25			B	1	0.73		1	1	152.078			
			C	1	0.73		1	1	152.078			
L3 48.25-1.00	787.60	9875.25	A	1	0.73	41	1	1	187.019	6197.72	131.17	C
			B	1	0.73		1	1	187.019			
			C	1	0.73		1	1	187.019			
Sum Weight:	2407.10	20010.20						OTM	1253728.6 0 lb-ft	17975.71		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	757.10	3650.51	A	1	0.73	58	1	1	115.350	5409.46	102.55	C
150.00-97.25			B	1	0.73		1	1	115.350			
			C	1	0.73		1	1	115.350			
L2	862.40	6484.44	A	1	0.73	52	1	1	152.078	6368.53	129.97	C
97.25-48.25			B	1	0.73		1	1	152.078			
			C	1	0.73		1	1	152.078			
L3 48.25-1.00	787.60	9875.25	A	1	0.73	41	1	1	187.019	6197.72	131.17	C
			B	1	0.73		1	1	187.019			
			C	1	0.73		1	1	187.019			
Sum Weight:	2407.10	20010.20						OTM	1253728.6 0 lb-ft	17975.71		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	757.10	3650.51	A	1	0.73	58	1	1	115.350	5409.46	102.55	C
150.00-97.25			B	1	0.73		1	1	115.350			
			C	1	0.73		1	1	115.350			
L2	862.40	6484.44	A	1	0.73	52	1	1	152.078	6368.53	129.97	C
97.25-48.25			B	1	0.73		1	1	152.078			
			C	1	0.73		1	1	152.078			
L3 48.25-1.00	787.60	9875.25	A	1	0.73	41	1	1	187.019	6197.72	131.17	C
			B	1	0.73		1	1	187.019			
			C	1	0.73		1	1	187.019			
Sum Weight:	2407.10	20010.20						OTM	1253728.6 0 lb-ft	17975.71		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	1121.93	6183.04	A	1	1.2	8	1	1	127.873	1352.22	25.63	C
150.00-97.25			B	1	1.2		1	1	127.873			
			C	1	1.2		1	1	127.873			
L2	1201.30	9596.59	A	1	1.2	7	1	1	163.114	1540.27	31.43	C
97.25-48.25			B	1	1.2		1	1	163.114			
			C	1	1.2		1	1	163.114			
L3 48.25-1.00	1086.20	13279.71	A	1	1.2	6	1	1	196.586	1469.03	31.09	C
			B	1	1.2		1	1	196.586			
			C	1	1.2		1	1	196.586			
Sum Weight:	3409.43	29059.34						OTM	307818.68 lb-ft	4361.52		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	1121.93	6183.04	A	1	1.2	8	1	1	127.873	1352.22	25.63	C
150.00-97.25			B	1	1.2		1	1	127.873			
			C	1	1.2		1	1	127.873			
L2	1201.30	9596.59	A	1	1.2	7	1	1	163.114	1540.27	31.43	C
97.25-48.25			B	1	1.2		1	1	163.114			
			C	1	1.2		1	1	163.114			
L3 48.25-1.00	1086.20	13279.71	A	1	1.2	6	1	1	196.586	1469.03	31.09	C
			B	1	1.2		1	1	196.586			
			C	1	1.2		1	1	196.586			
Sum Weight:	3409.43	29059.34						OTM	307818.68 lb-ft	4361.52		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	1121.93	6183.04	A	1	1.2	8	1	1	127.873	1352.22	25.63	C
150.00-97.25			B	1	1.2		1	1	127.873			
			C	1	1.2		1	1	127.873			
L2	1201.30	9596.59	A	1	1.2	7	1	1	163.114	1540.27	31.43	C
97.25-48.25			B	1	1.2		1	1	163.114			
			C	1	1.2		1	1	163.114			
L3 48.25-1.00	1086.20	13279.71	A	1	1.2	6	1	1	196.586	1469.03	31.09	C
			B	1	1.2		1	1	196.586			
			C	1	1.2		1	1	196.586			
Sum Weight:	3409.43	29059.34						OTM	307818.68 lb-ft	4361.52		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	757.10	3650.51	A	1	0.73	10	1	1	115.350	956.06	18.12	C
150.00-97.25			B	1	0.73		1	1	115.350			
			C	1	0.73		1	1	115.350			
L2	862.40	6484.44	A	1	0.73	9	1	1	152.078	1125.56	22.97	C
97.25-48.25			B	1	0.73		1	1	152.078			
			C	1	0.73		1	1	152.078			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L3 48.25-1.00	787.60	9875.25	A	1	0.73	7	1	1	187.019	1095.37	23.18	C
			B	1	0.73		1	1	187.019			
			C	1	0.73		1	1	187.019			
Sum Weight:	2407.10	20010.20						OTM	221581.66 lb-ft	3176.99		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	757.10	3650.51	A	1	0.73	10	1	1	115.350	956.06	18.12	C
150.00-97.25			B	1	0.73		1	1	115.350			
			C	1	0.73		1	1	115.350			
L2	862.40	6484.44	A	1	0.73	9	1	1	152.078	1125.56	22.97	C
97.25-48.25			B	1	0.73		1	1	152.078			
			C	1	0.73		1	1	152.078			
L3 48.25-1.00	787.60	9875.25	A	1	0.73	7	1	1	187.019	1095.37	23.18	C
			B	1	0.73		1	1	187.019			
			C	1	0.73		1	1	187.019			
Sum Weight:	2407.10	20010.20						OTM	221581.66 lb-ft	3176.99		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	757.10	3650.51	A	1	0.73	10	1	1	115.350	956.06	18.12	C
150.00-97.25			B	1	0.73		1	1	115.350			
			C	1	0.73		1	1	115.350			
L2	862.40	6484.44	A	1	0.73	9	1	1	152.078	1125.56	22.97	C
97.25-48.25			B	1	0.73		1	1	152.078			
			C	1	0.73		1	1	152.078			
L3 48.25-1.00	787.60	9875.25	A	1	0.73	7	1	1	187.019	1095.37	23.18	C
			B	1	0.73		1	1	187.019			
			C	1	0.73		1	1	187.019			
Sum Weight:	2407.10	20010.20						OTM	221581.66 lb-ft	3176.99		

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	20010.20					
Bracing Weight	0.00					
Total Member Self-Weight	20010.20			803.37	611.44	
Total Weight	29576.40			803.37	611.44	
Wind 0 deg - No Ice		0.00	-36560.91	-3593983.76	611.44	-1062.84
Wind 30 deg - No Ice		18280.46	-31662.68	-3112373.61	-1796782.12	-88.52
Wind 60 deg - No Ice		31662.68	-18280.46	-1796590.19	-3112565.54	909.52
Wind 90 deg - No Ice		36560.91	0.00	803.37	-3594175.69	1663.85
Wind 120 deg - No Ice		31662.68	18280.46	1798196.94	-3112565.54	1972.36
Wind 150 deg - No Ice		18280.46	31662.68	3113980.36	-1796782.12	1752.37
Wind 180 deg - No Ice		0.00	36560.91	3595590.51	611.44	1062.84
Wind 210 deg - No Ice		-18280.46	31662.68	3113980.36	1798005.01	88.52
Wind 240 deg - No Ice		-31662.68	18280.46	1798196.94	3113788.43	-909.52
Wind 270 deg - No Ice		-36560.91	0.00	803.37	3595398.58	-1663.85
Wind 300 deg - No Ice		-31662.68	-18280.46	-1796590.19	3113788.43	-1972.36
Wind 330 deg - No Ice		-18280.46	-31662.68	-3112373.61	1798005.01	-1752.37
Member Ice	9049.14					
Total Weight Ice	48445.11			3279.27	1132.97	
Wind 0 deg - Ice		0.00	-8543.83	-834238.79	1132.97	-118.47
Wind 30 deg - Ice		4271.91	-7399.17	-722032.65	-417626.07	171.37
Wind 60 deg - Ice		7399.17	-4271.91	-415479.76	-724178.95	415.29
Wind 90 deg - Ice		8543.83	0.00	3279.27	-836385.10	547.93
Wind 120 deg - Ice		7399.17	4271.91	422038.30	-724178.95	533.75
Wind 150 deg - Ice		4271.91	7399.17	728591.19	-417626.07	376.56
Wind 180 deg - Ice		0.00	8543.83	840797.34	1132.97	118.47
Wind 210 deg - Ice		-4271.91	7399.17	728591.19	419892.00	-171.37
Wind 240 deg - Ice		-7399.17	4271.91	422038.30	726444.88	-415.29
Wind 270 deg - Ice		-8543.83	0.00	3279.27	838651.03	-547.93
Wind 300 deg - Ice		-7399.17	-4271.91	-415479.76	726444.88	-533.75
Wind 330 deg - Ice		-4271.91	-7399.17	-722032.65	419892.00	-376.56
Total Weight	29576.40			803.37	611.44	
Wind 0 deg - Service		0.00	-6461.71	-634692.22	611.44	-187.84
Wind 30 deg - Service		3230.85	-5596.00	-549573.33	-317056.55	-15.64
Wind 60 deg - Service		5596.00	-3230.85	-317024.22	-549605.67	160.75
Wind 90 deg - Service		6461.71	0.00	643.78	-634724.55	294.07
Wind 120 deg - Service		5596.00	3230.85	318311.78	-549605.67	348.59
Wind 150 deg - Service		3230.85	5596.00	550860.90	-317056.55	309.71
Wind 180 deg - Service		0.00	6461.71	635979.78	611.44	187.84
Wind 210 deg - Service		-3230.85	5596.00	550860.90	318279.44	15.64
Wind 240 deg - Service		-5596.00	3230.85	318311.78	550828.56	-160.75
Wind 270 deg - Service		-6461.71	0.00	643.78	635947.44	-294.07
Wind 300 deg - Service		-5596.00	-3230.85	-317024.22	550828.56	-348.59
Wind 330 deg - Service		-3230.85	-5596.00	-549573.33	318279.44	-309.71

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	150 - 97.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24817.86	1312.69	-2249.85
			Max. Mx	20	-10976.50	607198.30	-747.92
			Max. My	14	-10976.29	693.93	-607282.95
			Max. Vy	20	-24650.29	607198.30	-747.92
			Max. Vx	14	24650.38	693.93	-607282.95
			Max. Torque	10			-2030.66
L2	97.25 - 48.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36596.93	1338.68	-2865.92
			Max. Mx	20	-20089.90	1917564.41	-904.19
			Max. My	14	-20089.80	761.20	-1917713.2

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
							9
			Max. Vy	20	-30541.38	1917564.41	-904.19
			Max. Vx	14	30541.45	761.20	-1917713.2
							9
			Max. Torque	10			-2024.75
L3	48.25 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55078.51	1310.00	-3550.17
			Max. Mx	20	-35450.89	3713477.78	-1006.76
			Max. My	14	-35450.89	773.34	-3713715.2
							0
			Max. Vy	20	-36597.92	3713477.78	-1006.76
			Max. Vx	14	36597.92	773.34	-3713715.2
							0
			Max. Torque	10			-2012.51

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	26	55078.51	-0.50	0.98
	Max. H_x	21	26618.65	36559.29	-0.01
	Max. H_z	3	26618.65	0.00	36559.29
	Max. M_x	2	3711689.69	0.00	36558.53
	Max. M_z	8	3711927.13	-36558.53	-0.01
	Max. Torsion	22	2008.10	31662.59	18280.41
	Min. Vert	15	26618.65	0.00	-36559.29
	Min. H_x	9	26618.65	-36559.29	-0.01
	Min. H_z	15	26618.65	0.00	-36559.29
	Min. M_x	14	-3713715.20	0.00	-36558.53
	Min. M_z	20	-3713477.78	36558.53	-0.01
	Min. Torsion	10	-2008.23	-31662.59	-18280.41

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	29576.40	0.04	-0.05	803.28	611.35	0.01
1.2 Dead+1.0 Wind 0 deg - No Ice	35491.51	-0.00	-36558.53	-3711689.69	772.99	-1102.77
0.9 Dead+1.0 Wind 0 deg - No Ice	26618.65	-0.00	-36559.29	-3679733.22	570.11	-1087.89
1.2 Dead+1.0 Wind 30 deg - No Ice	35491.67	18280.41	-31662.59	-3214529.13	-1855717.69	-113.83
0.9 Dead+1.0 Wind 30 deg - No Ice	26618.75	18280.43	-31662.62	-3186806.74	-1839763.10	-106.88
1.2 Dead+1.0 Wind 60 deg - No Ice	35491.67	31662.59	-18280.41	-1855485.58	-3214763.49	905.46
0.9 Dead+1.0 Wind 60 deg - No Ice	26618.75	31662.62	-18280.43	-1839590.81	-3186980.69	902.64
1.2 Dead+1.0 Wind 90 deg - No Ice	35491.51	36558.53	0.01	1006.22	-3711927.13	1682.32

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
0.9 Dead+1.0 Wind 90 deg - No Ice	26618.65	36559.29	0.01	743.26	-3679909.45	1670.44
1.2 Dead+1.0 Wind 120 deg - No Ice	35491.67	31662.59	18280.41	1857500.18	-3214769.96	2008.23
0.9 Dead+1.0 Wind 120 deg - No Ice	26618.75	31662.62	18280.43	1841078.68	-3186985.47	1990.51
1.2 Dead+1.0 Wind 150 deg - No Ice	35491.67	18280.41	31662.59	3216551.17	-1855724.18	1796.02
0.9 Dead+1.0 Wind 150 deg - No Ice	26618.75	18280.43	31662.62	3188300.11	-1839767.88	1777.22
1.2 Dead+1.0 Wind 180 deg - No Ice	35491.51	-0.00	36558.53	3713715.20	772.97	1102.75
0.9 Dead+1.0 Wind 180 deg - No Ice	26618.65	-0.00	36559.29	3681229.23	570.10	1087.87
1.2 Dead+1.0 Wind 210 deg - No Ice	35491.67	-18280.41	31662.59	3216553.71	1857270.61	113.94
0.9 Dead+1.0 Wind 210 deg - No Ice	26618.75	-18280.43	31662.62	3188301.99	1840908.28	106.96
1.2 Dead+1.0 Wind 240 deg - No Ice	35491.67	-31662.59	18280.41	1857502.71	3216319.36	-905.46
0.9 Dead+1.0 Wind 240 deg - No Ice	26618.75	-31662.62	18280.43	1841080.55	3188128.05	-902.64
1.2 Dead+1.0 Wind 270 deg - No Ice	35491.51	-36558.53	0.01	1006.19	3713477.78	-1682.22
0.9 Dead+1.0 Wind 270 deg - No Ice	26618.65	-36559.29	0.01	743.25	3681053.01	-1670.38
1.2 Dead+1.0 Wind 300 deg - No Ice	35491.67	-31662.59	-18280.41	-1855488.16	3216312.90	-2008.10
0.9 Dead+1.0 Wind 300 deg - No Ice	26618.75	-31662.62	-18280.43	-1839592.71	3188123.28	-1990.43
1.2 Dead+1.0 Wind 330 deg - No Ice	35491.67	-18280.41	-31662.59	-3214531.69	1857264.17	-1796.11
0.9 Dead+1.0 Wind 330 deg - No Ice	26618.75	-18280.43	-31662.62	-3186808.63	1840903.51	-1777.30
1.2 Dead+1.0 Ice+1.0 Temp	55078.51	0.50	-0.98	3550.17	1310.00	0.13
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	55078.49	0.00	-8542.62	-887641.51	1422.01	-145.71
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	55078.50	4271.69	-7398.78	-768317.41	-444354.67	160.51
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	55078.49	7398.13	-4271.32	-441926.28	-770581.21	423.77
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	55078.49	8542.62	-0.01	3790.18	-890010.75	573.51
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	55078.50	7398.78	4271.68	449568.68	-770687.10	569.64
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	55078.50	4271.69	7398.77	775900.64	-444355.44	413.16
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	55078.48	0.00	8542.60	895223.40	1421.99	146.01
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	55078.50	-4271.68	7398.77	775900.41	447200.12	-160.19
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	55078.50	-7398.77	4271.68	449568.44	773531.54	-423.45
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	55078.49	-8542.61	-0.01	3790.15	892854.21	-573.20
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	55078.49	-7398.12	-4271.32	-441926.09	773424.81	-569.31
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	55078.50	-4271.68	-7398.78	-768317.22	447199.38	-412.86
Dead+Wind 0 deg - Service	29576.39	0.00	-6460.72	-652794.78	646.48	-196.50
Dead+Wind 30 deg - Service	29576.39	3230.36	-5595.15	-565223.73	-326173.59	-19.63

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead+Wind 60 deg - Service	29576.39	5595.15	-3230.36	-325975.01	-565422.36	162.49
Dead+Wind 90 deg - Service	29576.39	6460.72	-0.00	845.09	-652993.48	301.09
Dead+Wind 120 deg - Service	29576.39	5595.15	3230.36	327665.24	-565422.47	359.01
Dead+Wind 150 deg - Service	29576.39	3230.36	5595.15	566914.09	-326173.71	320.73
Dead+Wind 180 deg - Service	29576.39	0.00	6460.72	654485.20	646.48	196.52
Dead+Wind 210 deg - Service	29576.39	-3230.36	5595.15	566914.12	327466.68	19.66
Dead+Wind 240 deg - Service	29576.39	-5595.15	3230.36	327665.27	566715.48	-162.47
Dead+Wind 270 deg - Service	29576.39	-6460.72	-0.00	845.09	654286.51	-301.06
Dead+Wind 300 deg - Service	29576.39	-5595.15	-3230.36	-325975.04	566715.37	-358.98
Dead+Wind 330 deg - Service	29576.39	-3230.36	-5595.15	-565223.76	327466.58	-320.71

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-29576.40	0.00	-0.04	29576.40	0.05	0.000%
2	0.00	-35491.68	-36560.91	0.00	35491.51	36558.53	0.005%
3	0.00	-26618.76	-36560.91	0.00	26618.65	36559.29	0.004%
4	18280.46	-35491.68	-31662.68	-18280.41	35491.67	31662.59	0.000%
5	18280.46	-26618.76	-31662.68	-18280.43	26618.75	31662.62	0.000%
6	31662.68	-35491.68	-18280.46	-31662.59	35491.67	18280.41	0.000%
7	31662.68	-26618.76	-18280.46	-31662.62	26618.75	18280.43	0.000%
8	36560.91	-35491.68	0.00	-36558.53	35491.51	-0.01	0.005%
9	36560.91	-26618.76	0.00	-36559.29	26618.65	-0.01	0.004%
10	31662.68	-35491.68	18280.46	-31662.59	35491.67	-18280.41	0.000%
11	31662.68	-26618.76	18280.46	-31662.62	26618.75	-18280.43	0.000%
12	18280.46	-35491.68	31662.68	-18280.41	35491.67	-31662.59	0.000%
13	18280.46	-26618.76	31662.68	-18280.43	26618.75	-31662.62	0.000%
14	0.00	-35491.68	36560.91	0.00	35491.51	-36558.53	0.005%
15	0.00	-26618.76	36560.91	0.00	26618.65	-36559.29	0.004%
16	-18280.46	-35491.68	31662.68	18280.41	35491.67	-31662.59	0.000%
17	-18280.46	-26618.76	31662.68	18280.43	26618.75	-31662.62	0.000%
18	-31662.68	-35491.68	18280.46	31662.59	35491.67	-18280.41	0.000%
19	-31662.68	-26618.76	18280.46	31662.62	26618.75	-18280.43	0.000%
20	-36560.91	-35491.68	0.00	36558.53	35491.51	-0.01	0.005%
21	-36560.91	-26618.76	0.00	36559.29	26618.65	-0.01	0.004%
22	-31662.68	-35491.68	-18280.46	31662.59	35491.67	18280.41	0.000%
23	-31662.68	-26618.76	-18280.46	31662.62	26618.75	18280.43	0.000%
24	-18280.46	-35491.68	-31662.68	18280.41	35491.67	31662.59	0.000%
25	-18280.46	-26618.76	-31662.68	18280.43	26618.75	31662.62	0.000%
26	0.00	-55078.51	0.00	-0.50	55078.51	0.98	0.002%
27	0.00	-55078.51	-8543.83	-0.00	55078.49	8542.62	0.002%
28	4271.91	-55078.51	-7399.17	-4271.69	55078.50	7398.78	0.001%
29	7399.17	-55078.51	-4271.91	-7398.13	55078.49	4271.32	0.002%
30	8543.83	-55078.51	0.00	-8542.62	55078.49	0.01	0.002%
31	7399.17	-55078.51	4271.91	-7398.78	55078.50	-4271.68	0.001%
32	4271.91	-55078.51	7399.17	-4271.69	55078.50	-7398.77	0.001%
33	0.00	-55078.51	8543.83	-0.00	55078.48	-8542.60	0.002%
34	-4271.91	-55078.51	7399.17	4271.68	55078.50	-7398.77	0.001%
35	-7399.17	-55078.51	4271.91	7398.77	55078.50	-4271.68	0.001%
36	-8543.83	-55078.51	0.00	8542.61	55078.49	0.01	0.002%
37	-7399.17	-55078.51	-4271.91	7398.12	55078.49	4271.32	0.002%
38	-4271.91	-55078.51	-7399.17	4271.68	55078.50	7398.78	0.001%
39	0.00	-29576.40	-6461.71	-0.00	29576.39	6460.72	0.003%
40	3230.85	-29576.40	-5596.00	-3230.36	29576.39	5595.15	0.003%
41	5596.00	-29576.40	-3230.85	-5595.15	29576.39	3230.36	0.003%
42	6461.71	-29576.40	0.00	-6460.72	29576.39	0.00	0.003%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
43	5596.00	-29576.40	3230.85	-5595.15	29576.39	-3230.36	0.003%
44	3230.85	-29576.40	5596.00	-3230.36	29576.39	-5595.15	0.003%
45	0.00	-29576.40	6461.71	-0.00	29576.39	-6460.72	0.003%
46	-3230.85	-29576.40	5596.00	3230.36	29576.39	-5595.15	0.003%
47	-5596.00	-29576.40	3230.85	5595.15	29576.39	-3230.36	0.003%
48	-6461.71	-29576.40	0.00	6460.72	29576.39	0.00	0.003%
49	-5596.00	-29576.40	-3230.85	5595.15	29576.39	3230.36	0.003%
50	-3230.85	-29576.40	-5596.00	3230.36	29576.39	5595.15	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	13	0.00005403	0.00011183
3	Yes	13	0.00003643	0.00008605
4	Yes	16	0.00000001	0.00011505
5	Yes	16	0.00000001	0.00008073
6	Yes	16	0.00000001	0.00011392
7	Yes	16	0.00000001	0.00007991
8	Yes	13	0.00005403	0.00012782
9	Yes	13	0.00003643	0.00009811
10	Yes	16	0.00000001	0.00011858
11	Yes	16	0.00000001	0.00008323
12	Yes	16	0.00000001	0.00011295
13	Yes	16	0.00000001	0.00007916
14	Yes	13	0.00005402	0.00011193
15	Yes	13	0.00003642	0.00008611
16	Yes	16	0.00000001	0.00011592
17	Yes	16	0.00000001	0.00008124
18	Yes	16	0.00000001	0.00011710
19	Yes	16	0.00000001	0.00008211
20	Yes	13	0.00005402	0.00012792
21	Yes	13	0.00003642	0.00009817
22	Yes	16	0.00000001	0.00011263
23	Yes	16	0.00000001	0.00007893
24	Yes	16	0.00000001	0.00011821
25	Yes	16	0.00000001	0.00008297
26	Yes	7	0.00000001	0.00001658
27	Yes	13	0.00014620	0.00009728
28	Yes	14	0.00000001	0.00006748
29	Yes	13	0.00014594	0.00014731
30	Yes	13	0.00014621	0.00009876
31	Yes	14	0.00000001	0.00007000
32	Yes	14	0.00000001	0.00006745
33	Yes	13	0.00014626	0.00009869
34	Yes	14	0.00000001	0.00006864
35	Yes	14	0.00000001	0.00007017
36	Yes	13	0.00014625	0.00009947
37	Yes	13	0.00014597	0.00014806
38	Yes	14	0.00000001	0.00006885
39	Yes	12	0.00000001	0.00007103
40	Yes	12	0.00000001	0.00005633
41	Yes	12	0.00000001	0.00005496
42	Yes	12	0.00000001	0.00007142
43	Yes	12	0.00000001	0.00006149

44	Yes	12	0.00000001	0.00005407
45	Yes	12	0.00000001	0.00007141
46	Yes	12	0.00000001	0.00005720
47	Yes	12	0.00000001	0.00005896
48	Yes	12	0.00000001	0.00007173
49	Yes	12	0.00000001	0.00005382
50	Yes	12	0.00000001	0.00006087

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 97.25	21.857	46	1.2298	0.0053
L2	101.75 - 48.25	10.248	46	0.9840	0.0016
L3	54.25 - 1	2.777	46	0.4833	0.0005

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	20' Omni	46	21.857	1.2298	0.0053	59530
142.00	Andrew HP6	46	19.810	1.2011	0.0046	37206
134.00	10' Omni	46	17.784	1.1703	0.0039	18603
123.00	TPA65R-BU6D	46	15.070	1.1210	0.0030	11023
111.00	FFVV-65B-R2	46	12.262	1.0520	0.0021	7631

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 97.25	123.573	14	6.9388	0.0299
L2	101.75 - 48.25	58.072	14	5.5766	0.0088
L3	54.25 - 1	15.749	14	2.7421	0.0026

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	20' Omni	14	123.573	6.9388	0.0299	10899
142.00	Andrew HP6	14	112.033	6.7824	0.0258	6811
134.00	10' Omni	14	100.609	6.6143	0.0218	3403
123.00	TPA65R-BU6D	14	85.300	6.3422	0.0167	2014
111.00	FFVV-65B-R2	14	69.449	5.9585	0.0118	1391

Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	Actual Allowable Ratio Bolt Tension lb	Actual Allowable Ratio Bolt Compression lb	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Ratio
2.5000	14	2.2500	209695.09 292291.37 0.72	214759.53 485203.68 0.44	37.620 45.000 0.84		Plate	0.84 ✔

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 97.25 (1)	TP31.76x20x0.25	52.75	149.00	165.1	24.2071	-10975.50	200631.00	0.055
L2	97.25 - 48.25 (2)	TP42.19x30.2568x0.3125	53.50	149.00	124.2	40.2098	-20089.50	588496.00	0.034
L3	48.25 - 1 (3)	TP52.1x40.2267x0.375	53.25	149.00	97.4	61.5657	-35451.00	1462480.00	0.024

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	150 - 97.25 (1)	TP31.76x20x0.25	607568.33	1051575.00	0.578	0.00	1051575.00	0.000
L2	97.25 - 48.25 (2)	TP42.19x30.2568x0.3125	1918075.00	2274216.67	0.843	0.00	2274216.67	0.000
L3	48.25 - 1 (3)	TP52.1x40.2267x0.375	3714250.00	4344708.33	0.855	0.00	4344708.33	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 97.25 (1)	TP31.76x20x0.25	24654.50	424835.00	0.058	913.51	1135000.00	0.001
L2	97.25 - 48.25 (2)	TP42.19x30.2568x0.3125	30544.50	705682.00	0.043	907.88	2505325.00	0.000
L3	48.25 - 1 (3)	TP52.1x40.2267x0.375	36600.20	1080480.00	0.034	113.94	4894366.67	0.000

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 97.25 (1)	0.055	0.578	0.000	0.058	0.001	0.636 ✔	1.000	4.8.2 ✔
L2	97.25 - 48.25 (2)	0.034	0.843	0.000	0.043	0.000	0.879 ✔	1.000	4.8.2 ✔
L3	48.25 - 1 (3)	0.024	0.855	0.000	0.034	0.000	0.880 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	150 - 97.25	Pole	TP31.76x20x0.25	1	-10975.50	200631.00	63.6	Pass
L2	97.25 - 48.25	Pole	TP42.19x30.2568x0.3125	2	-20089.50	588496.00	87.9	Pass
L3	48.25 - 1	Pole	TP52.1x40.2267x0.375	3	-35451.00	1462480.00	88.0	Pass
							Summary	
						Pole (L3)	88.0	Pass
						Base Plate	83.6	Pass
						RATING =	**88.0**	**Pass**

MK DEVELOPMENT

EXHIBIT E

Antenna Mount Analysis

August 10, 2022

PASS

RE: **Mount Analysis**

Location: **200 Oronoque lane, CT 06614**

Site ID: **NJJER02052B**

Dish Wireless LLC,

Per your request, we have performed a mount analysis of the proposed mount. This site consists of an existing monopole that has multiple carriers co-located on the tower. This review determines if the proposed mount can support the proposed loads.

1.0 Assumptions:

CATEGORY	DATA	CODE
Structure Type	Monopole	
Rad Center	110'-0"	
Structure Class	IV	ASCE 7-16
Exposure Class	C	ASCE 7-16
Kzt Factor	1.0	ASCE 7-16
Basic Wind Speed	135	ASCE 7-16
Ice Thickness	1"	ASCE 7-16
Ice Windspeed	50 MPH	ASCE 7-16
Seismic Design Category	C	ASCE 7-16
S_{DS}	.218	ASCE 7-16

2.0 Existing Documents:

DOCUMENT	COMPANY	DATE
Proposed Drawings	M&K Development	12/16/2021
Site Visit Photos	M&K Development	8/2/2021

3.0 Proposed Equipment:

MANUFACTURER	EQUIPMENT	WEIGHTS
CommScope	**(1) MC-PK8-DSH**	**1802 lbs**
CommScope	**(3) FFVV-65B-R2**	**70.54 lbs**
Fujitsu	**(3) TA08025-B604**	**63.9 lbs**
Fujitsu	**(3) TA08025-B605**	**74.9 lbs**
RayCap	**(1) OVP RDIDC-9181-PF-48**	**32 lbs**
CommScope	**(1) HYBRID CABLE**	**N.A.**

Bold represents equipment to be added

We are installing (1) proposed MC-PK8-DSH mount on the existing monopole that will support all the proposed equipment. After performing an analysis on the mount in RISA-3D, it has been determined that the mount is **ADEQUATE** for the proposed loads.

This report does not address the structural stability of any other mounts, or portion of the structure, nor does it provide any warranty either express or implied, for any portion of the proposed mount or structure.

Please note that we have not had a professional engineer perform an independent visit to confirm existing structural conditions and the outcome of this analysis is based solely on the information provided in the previous structural analysis, photos and drawing details. If the existing conditions are modified, in disrepair or not properly represented, contact our office immediately for an amended report since this analysis may be inaccurate.

If you have any questions, feel free to contact us at any time.

Sincerely,

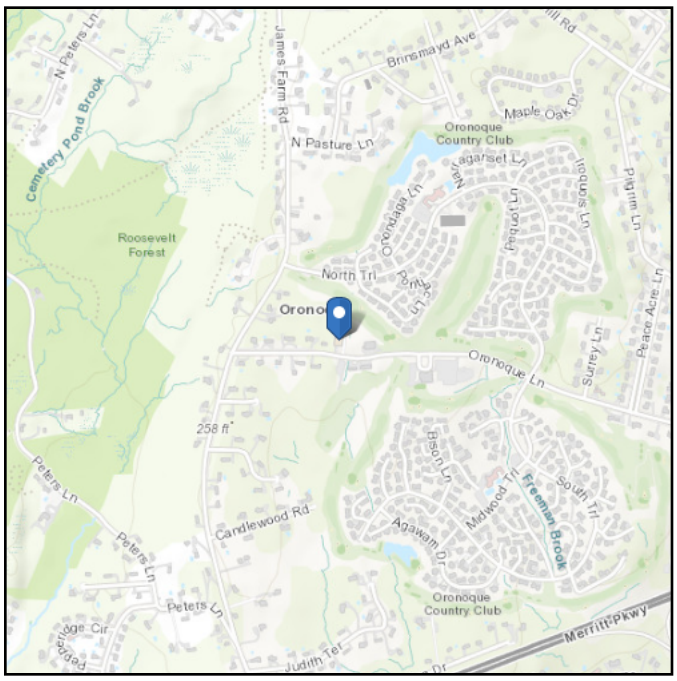
Magaram Engineering

Brett Magaram
Connecticut License # 33678
Brett@MagaramEngineering.com
Phone: 914-450-8416

ASCE 7 Hazards Report

Address:
200 Oronoque Ln
Stratford, Connecticut
06614

Standard:	ASCE/SEI 7-16	**Elevation:**	256.3 ft (NAVD 88)
Risk Category:	IV	**Latitude:**	41.251254
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-73.11699



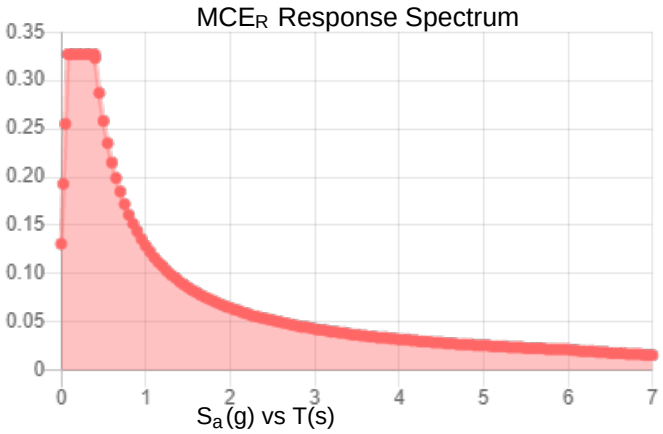
Seismic

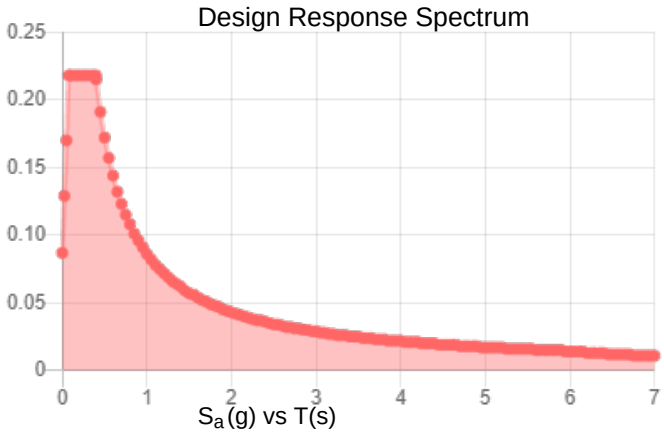
Site Soil Class: D - Default (see Section 11.4.3)

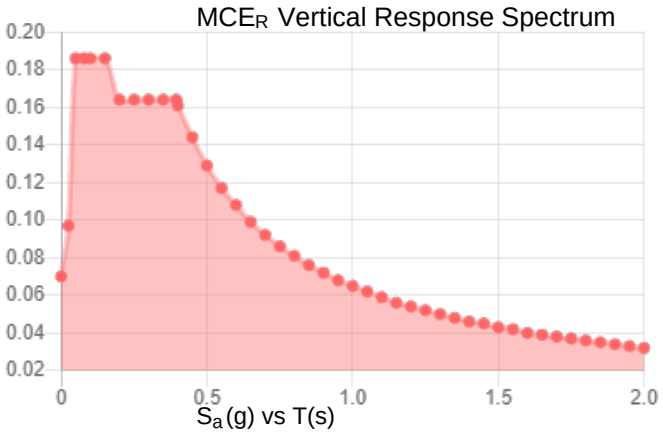
Results:

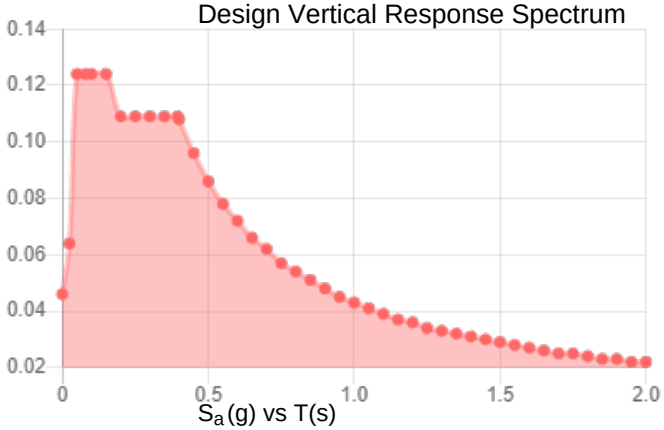
S_S :	0.205	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.115
F_v :	2.4	PGA_M :	0.181
S_{MS} :	0.327	F_{PGA} :	1.569
S_{M1} :	0.129	I_e :	1.5
S_{DS} :	0.218	C_v :	0.709

Seismic Design Category C









Data Accessed: **Tue Aug 09 2022**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

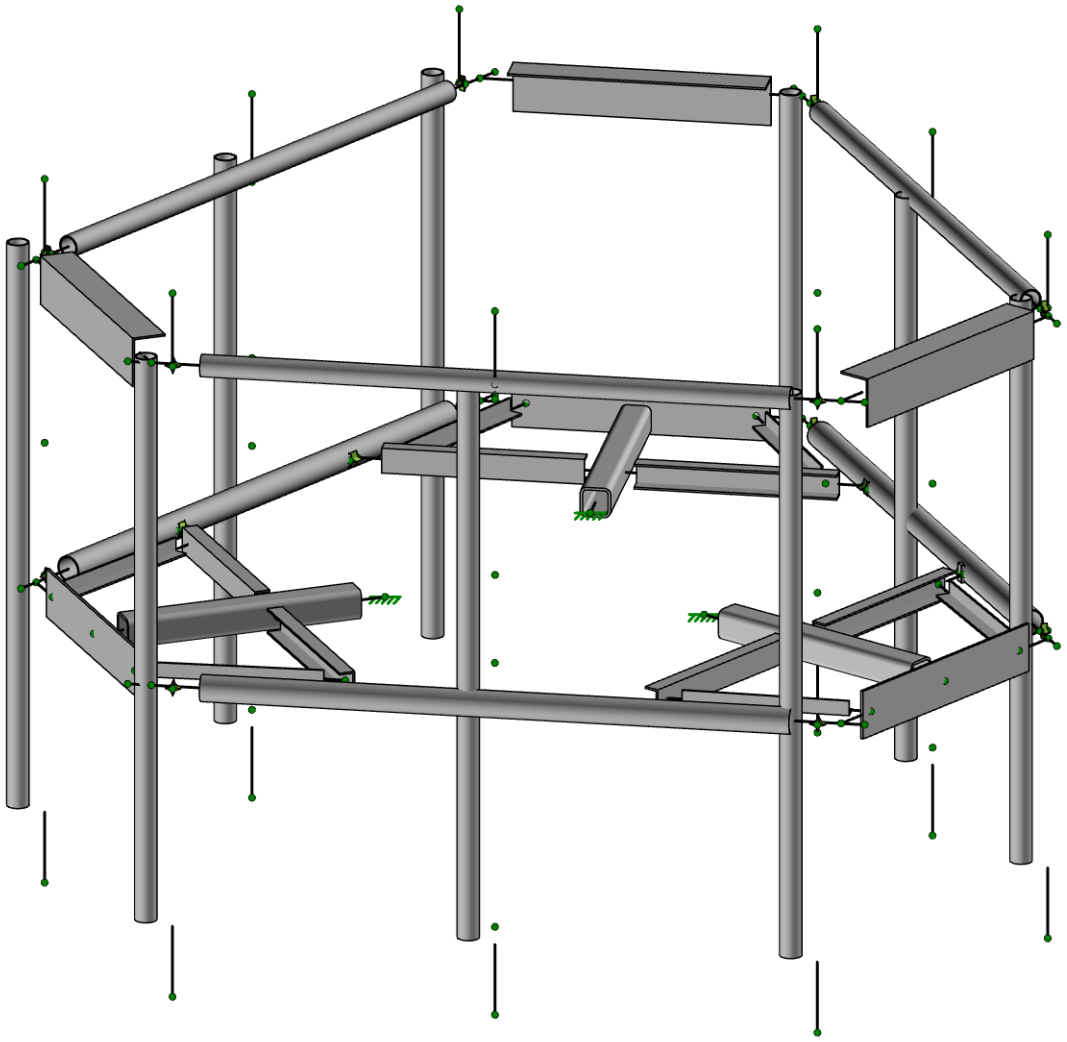
Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Aug 09 2022

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

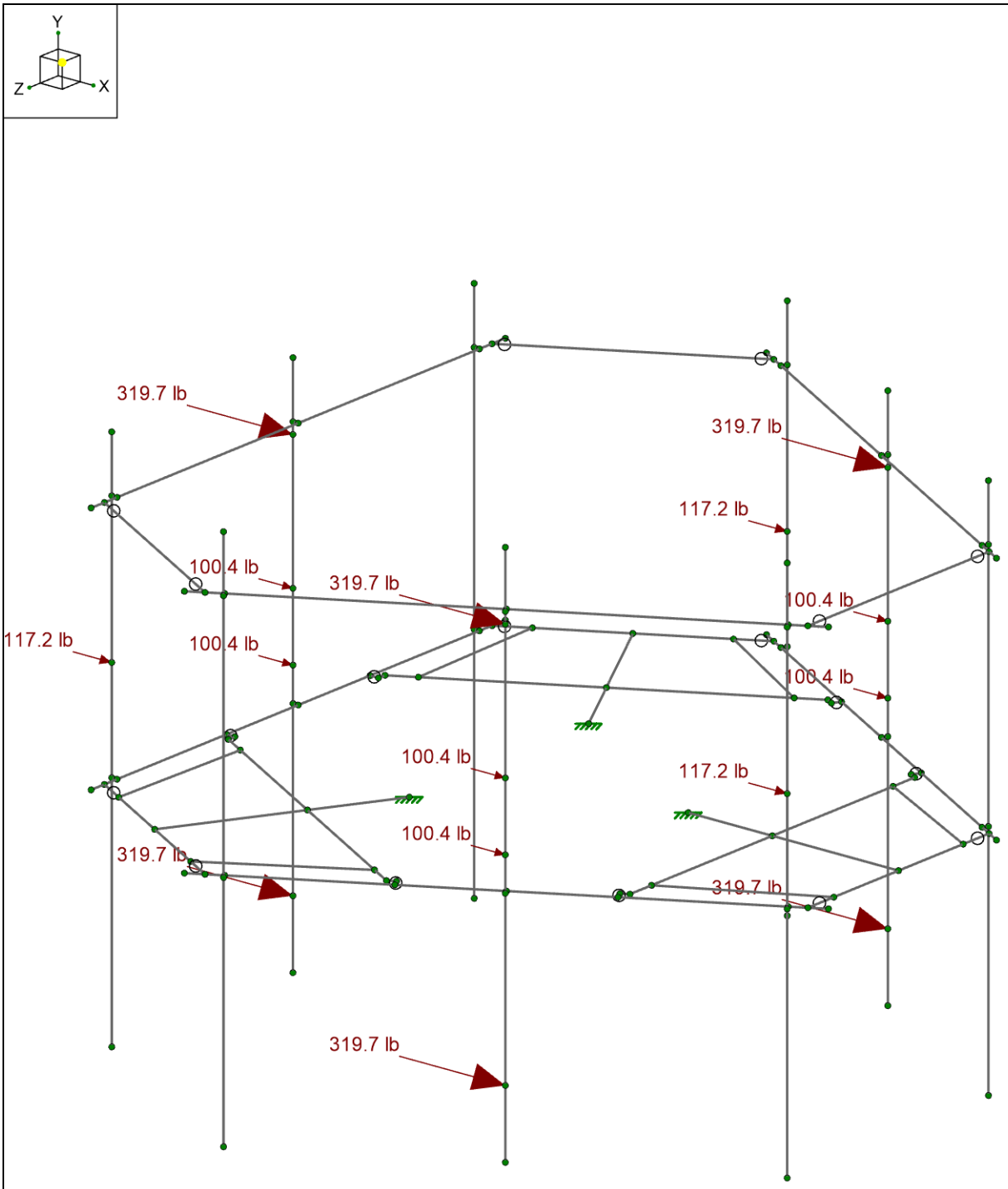
Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from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

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS												
				Wind Design Parameters								
Municipality	**Ground Snow Load** (psf)	**MCE Spectral Accelerations** (%g)		**Ultimate Design Wind Speeds,** V_{ult} (mph)			**Nominal Design Wind Speeds,** V_{asd} (mph)			**Wind-Borne Debris Regions[1]**		**Hurricane-Prone Regions**
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV	Risk Cat. II & III except Occup I-2	Risk Cat III Occup I-2 & Risk Cat. IV	
Rocky Hill	30	0.181	0.063	115	125	135	89	97	105			Yes
Roxbury	35	0.197	0.065	110	120	125	85	93	97			Yes
Salem	30	0.170	0.060	120	135	140	93	105	108		Type A	Yes
Salisbury	40	0.173	0.065	105	115	120	81	89	93			
Scotland	30	0.172	0.061	120	130	140	93	101	108			Yes
Seymour	30	0.194	0.064	115	125	135	89	97	105			Yes
Sharon	40	0.179	0.065	105	115	120	81	89	93			
Shelton	30	0.199	0.064	115	125	135	89	97	105			Yes
Sherman	35	0.202	0.066	105	115	120	81	89	93			
Simsbury	35	0.179	0.064	110	120	130	85	93	101			Yes
Somers	35	0.174	0.064	115	125	135	89	97	105			Yes
Southbury	35	0.198	0.065	110	120	130	85	93	101			Yes
Southington	30	0.185	0.064	115	125	135	89	97	105			Yes
South Windsor	30	0.178	0.064	115	125	135	89	97	105			Yes
Sprague	30	0.171	0.061	120	130	140	93	101	108		Type A	Yes
Stafford	35	0.173	0.064	115	125	135	89	97	105			Yes
Stamford	30	0.249	0.069	110	120	130	85	93	101			Yes
Sterling	35	0.170	0.061	125	135	145	97	105	112		Type A	Yes
Stonington	30	0.159	0.058	125	140	150	97	108	116	Type B	Type A	Yes
Stratford	30	0.201	0.064	115	125	135	89	97	105		Type B	Yes
Suffield	35	0.176	0.065	110	120	130	85	93	101			Yes
Thomaston	35	0.186	0.064	110	120	130	85	93	101			Yes
Thompson	40	0.172	0.063	120	130	140	93	101	108			Yes
Tolland	35	0.175	0.064	115	125	135	89	97	105			Yes
Torrington	40	0.182	0.065	110	120	125	85	93	97			Yes
Trumbull	30	0.207	0.065	115	125	135	89	97	105			Yes
Union	40	0.172	0.064	115	125	135	89	97	105			Yes
Vernon	30	0.177	0.064	115	125	135	89	97	105			Yes
Voluntown	30	0.168	0.060	125	135	145	97	105	112		Type A	Yes
Wallingford	30	0.183	0.063	115	125	135	89	97	105			Yes
Warren	40	0.186	0.065	105	115	125	81	89	97			
Washington	35	0.192	0.065	105	120	125	81	93	97			Yes
Waterbury	35	0.189	0.064	110	125	130	85	97	101			Yes
Waterford	30	0.161	0.058	125	135	145	97	105	112	Type B	Type A	Yes
Watertown	35	0.189	0.064	110	120	130	85	93	101			Yes
Westbrook	30	0.167	0.059	120	135	145	93	105	112	Type B	Type A	Yes
West Hartford	30	0.181	0.064	115	125	135	89	97	105			Yes
West Haven	30	0.188	0.062	115	125	135	89	97	105		Type B	Yes
Weston	30	0.224	0.067	110	120	130	85	93	101			Yes



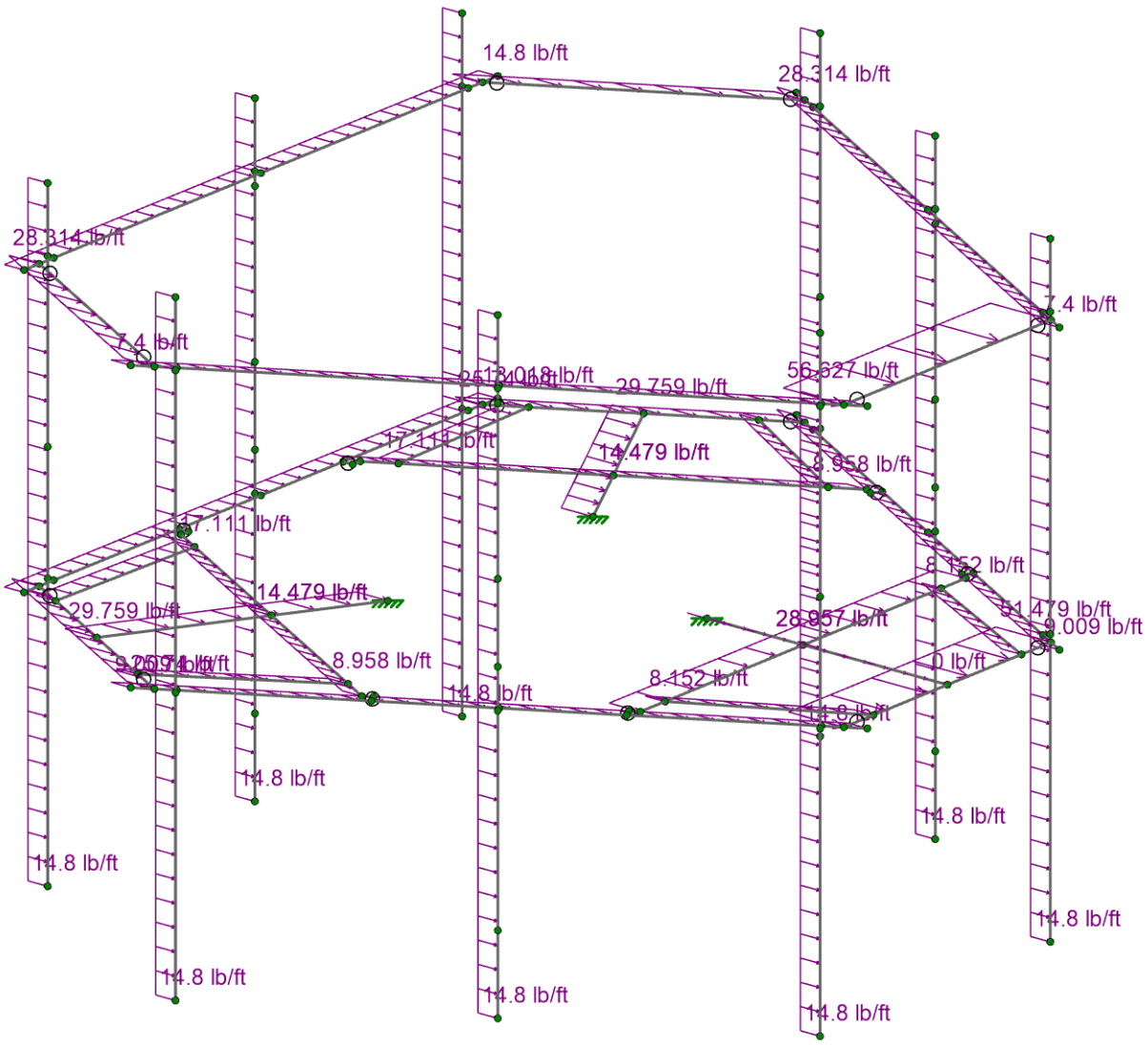
Envelope Only Solution

Magaram Engineering	NJJER02052B	SK-2
BJM		Aug 10, 2022
		NJJER02052B - MA Model.r3d



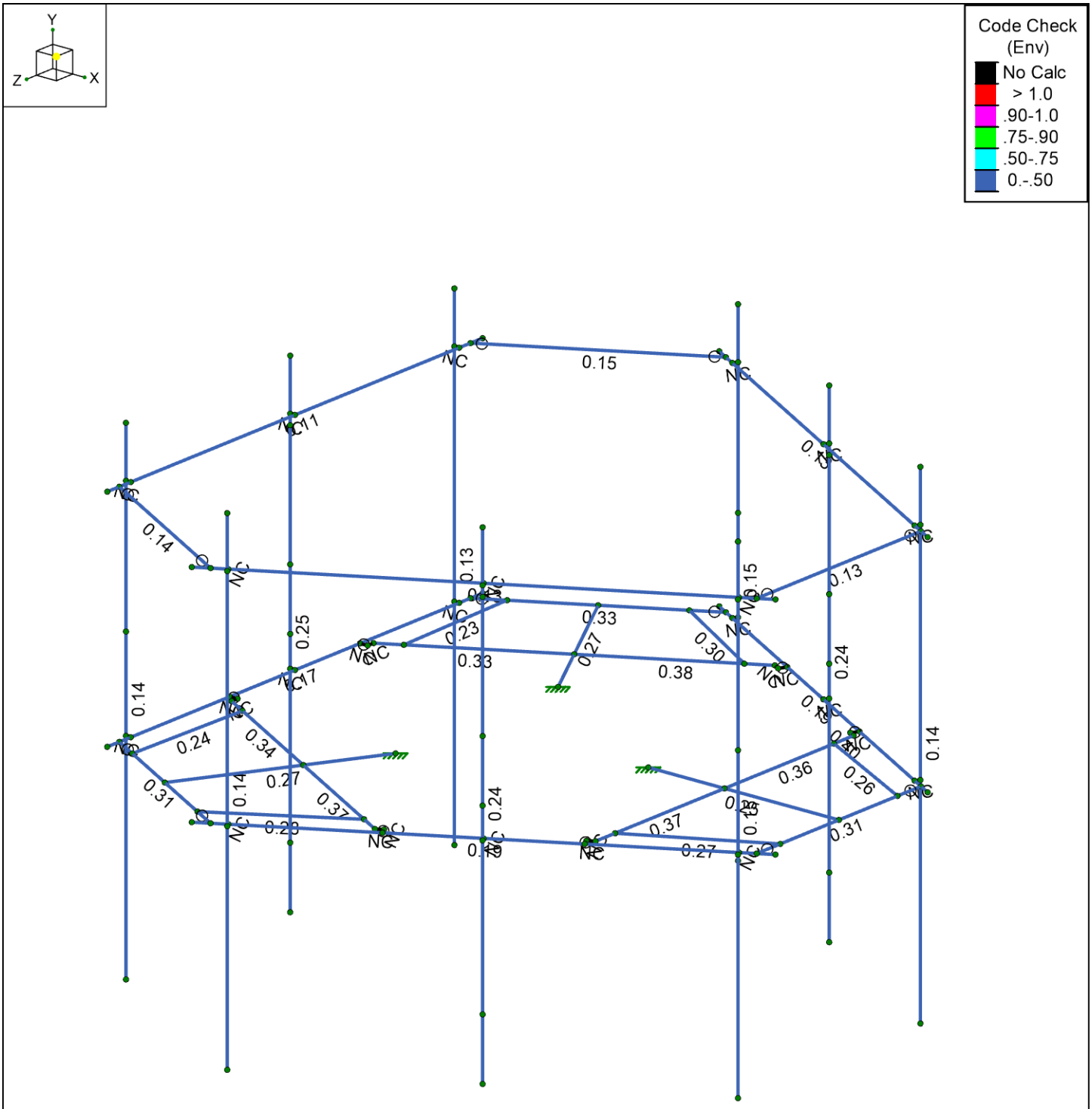
Loads: BLC 3, Telco Wx
Envelope Only Solution

Magaram Engineering	NJJER02052B	SK-3
BJM		Aug 10, 2022
		NJJER02052B - MA Model.r3d



Loads: BLC 12, Mount Wx
Envelope Only Solution

Magaram Engineering	NJJER02052B	SK-4
BJM		Aug 10, 2022
		NJJER02052B - MA Model.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Magaram Engineering	NJJER02052B	SK-1
BJM		Aug 10, 2022
		NJJER02052B - MA Model.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1
9	A500 GR.C	29000	11154	0.3	0.65	0.49	46	1.6	60	1.2
10	A529 Gr. 50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
11	A1011-33Ksi	29000	11154	0.3	0.65	0.49	33	1.5	58	1.2
12	A1011 36 Ksi	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
13	A1018 50 Ksi	29000	11154	0.3	0.65	0.49	50	1.5	65	1.2

General Materials Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Plate Methodology
1	gen_Conc3NW	3155	1372	0.15	0.6	0.145	Isotropic
2	gen_Conc4NW	3644	1584	0.15	0.6	0.145	Isotropic
3	gen_Conc3LW	2085	906	0.15	0.6	0.11	Isotropic
4	gen_Conc4LW	2408	1047	0.15	0.6	0.11	Isotropic
5	gen_Alum	10100	4077	0.3	1.29	0.173	Isotropic
6	gen_Steel	29000	11154	0.3	0.65	0.49	Isotropic
7	gen_Plywood	1800	38	0	0.3	0.035	Isotropic
8	RIGID	1e+6		0.3	0	0	Isotropic

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	6.5"x0.37" Plate	PL6.5x0.375	Beam	None	A1011 36 Ksi	Typical	2.438	0.029	8.582	0.11
2	6"x0.37" Plate	Plate 6x.37	Beam	None	A1011 36 Ksi	Typical	2.22	0.025	6.66	0.097
3	L 2"x2"x1/4"	L2x2x4	Beam	None	A529 Gr. 50	Typical	0.944	0.346	0.346	0.021
4	Face Pipes(3.5x.16)	Pipe3.5x0.165	Beam	None	A500 GR.C	Typical	1.729	2.409	2.409	4.819
5	Antenna Pipes	PIPE_2.5	Beam	None	A500 GR.C	Typical	1.61	1.45	1.45	2.89
6	Channel(3.38x2.06)	C3.38x2.06x0.25	Beam	None	A1011 36 Ksi	Typical	1.75	0.715	3.026	0.034
7	Square Tubing	HSS4X4X6	Beam	None	A500 GR.C	Typical	4.78	10.3	10.3	17.5
8	Handrail Connector	L6.6x4.46x0.25	Beam	None	A1011 36 Ksi	Typical	2.703	4.759	12.473	0.055
9	Handrail	PIPE_2.5	Beam	None	A500 GR.C	Typical	1.61	1.45	1.45	2.89

General Section Sets

	Label	Shape	Type	Material	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	GEN1	RE4X4	Beam	gen_Conc3NW	16	21.333	21.333	31.573
2	RIGID		None	RIGID	1e+06	1e+06	1e+06	1e+06

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M2	P3	P1		Square Tubing	Beam	None	A500 GR.C	Typical
2	M3	P9	P12	270	L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical
3	M4	P10	P11		L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical
4	M5	P7	P8		6.5"x0.37" Plate	Beam	None	A1011 36 Ksi	Typical
5	M7	P14	P13		Square Tubing	Beam	None	A500 GR.C	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
6	M8	P20	P23	270	L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical
7	M9	P21	P22		L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical
8	M10	P18	P19		6.5"x0.37" Plate	Beam	None	A1011 36 Ksi	Typical
9	M12	P25	P24		Square Tubing	Beam	None	A500 GR.C	Typical
10	M13	P31	P34	270	L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical
11	M14	P32	P33		L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical
12	M15	P29	P30		6.5"x0.37" Plate	Beam	None	A1011 36 Ksi	Typical
13	M18	N43	N44		Face Pipes(3.5x.16)	Beam	None	A500 GR.C	Typical
14	MP9	N60	N66		Antenna Pipes	Beam	None	A500 GR.C	Typical
15	MP7	N57	N63		Antenna Pipes	Beam	None	A500 GR.C	Typical
16	M25	N67	N68		Handrail	Beam	None	A500 GR.C	Typical
17	M28	N114A	N113A	180	Handrail Connector	Beam	None	A1011 36 Ksi	Typical
18	M29	N112A	N111A	180	Handrail Connector	Beam	None	A1011 36 Ksi	Typical
19	M30	N116A	N115A	180	Handrail Connector	Beam	None	A1011 36 Ksi	Typical
20	M32	N48A	N70A		RIGID	None	None	RIGID	Typical
21	M35	N45	N69A		RIGID	None	None	RIGID	Typical
22	M36	N51	N71A		RIGID	None	None	RIGID	Typical
23	M39A	N54	N72A		RIGID	None	None	RIGID	Typical
24	M61A	P4	N122A		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
25	M63A	P4	N124B		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
26	M60A	P15	N122B		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
27	M61B	P15	N123A		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
28	M62A	P26	N125		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
29	M63B	P26	N126		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
30	M64	N126A	N125A		RIGID	None	None	RIGID	Typical
31	M65	N126	N125A		RIGID	None	None	RIGID	Typical
32	M66	N129	N128		RIGID	None	None	RIGID	Typical
33	M67	N124B	N128		RIGID	None	None	RIGID	Typical
34	M68	N132	N131		RIGID	None	None	RIGID	Typical
35	M69	N123A	N131		RIGID	None	None	RIGID	Typical
36	M70	N133	N132A		RIGID	None	None	RIGID	Typical
37	M71	N122B	N132A		RIGID	None	None	RIGID	Typical
38	M72	N135	N134		RIGID	None	None	RIGID	Typical
39	M73	N125	N134		RIGID	None	None	RIGID	Typical
40	M74	N138	N137		RIGID	None	None	RIGID	Typical
41	M75	N122A	N137		PL 2.375X0.5	None	None	A36 Gr.36	Typical
42	MP8	N74	N75		Antenna Pipes	Beam	None	A500 GR.C	Typical
43	M43	N72B	N76		RIGID	None	None	RIGID	Typical
44	M44	N73	N77		RIGID	None	None	RIGID	Typical
45	M48	N81A	N82A		Face Pipes(3.5x.16)	Beam	None	A500 GR.C	Typical
46	MP3	N88	N90		Antenna Pipes	Beam	None	A500 GR.C	Typical
47	MP1	N87	N89		Antenna Pipes	Beam	None	A500 GR.C	Typical
48	M51	N91	N92		Handrail	Beam	None	A500 GR.C	Typical
49	M52	N84	N94		RIGID	None	None	RIGID	Typical
50	M53	N83A	N93		RIGID	None	None	RIGID	Typical
51	M54	N85	N95		RIGID	None	None	RIGID	Typical
52	M55	N86	N96		RIGID	None	None	RIGID	Typical
53	M62	N109	N110		Face Pipes(3.5x.16)	Beam	None	A500 GR.C	Typical
54	MP6	N116	N118		Antenna Pipes	Beam	None	A500 GR.C	Typical
55	MP4	N115	N117		Antenna Pipes	Beam	None	A500 GR.C	Typical
56	M65A	N119	N120		Handrail	Beam	None	A500 GR.C	Typical
57	M66A	N112	N122		RIGID	None	None	RIGID	Typical
58	M67A	N111	N121		RIGID	None	None	RIGID	Typical
59	M68A	N113	N123		RIGID	None	None	RIGID	Typical
60	M69A	N114	N124		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
61	MP2	N131A	N132B		Antenna Pipes	Beam	None	A500 GR.C	Typical
62	M68B	N129B	N133B		RIGID	None	None	RIGID	Typical
63	M69B	N130A	N134A		RIGID	None	None	RIGID	Typical
64	MP5	N137A	N138A		Antenna Pipes	Beam	None	A500 GR.C	Typical
65	M71B	N135A	N139		RIGID	None	None	RIGID	Typical
66	M72B	N136	N140		RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Analysis Offset [in]	Seismic DR
1	M2			Yes	N/A		None
2	M3			Yes	N/A		None
3	M4			Yes	N/A		None
4	M5	BenPIN	BenPIN	Yes	Default		None
5	M7			Yes	N/A		None
6	M8			Yes	N/A		None
7	M9			Yes	N/A		None
8	M10	BenPIN	BenPIN	Yes	Default		None
9	M12			Yes	Default		None
10	M13			Yes	N/A		None
11	M14			Yes	N/A		None
12	M15	BenPIN	BenPIN	Yes	Default		None
13	M18			Yes	N/A		None
14	MP9			Yes	N/A	+y+3	None
15	MP7			Yes	N/A	+y+3	None
16	M25			Yes	N/A		None
17	M28	OOOOOX	OOOOOX	Yes	N/A		None
18	M29	OOOOOX	OOOOOX	Yes	N/A		None
19	M30	OOOOOX	OOOOOX	Yes	Default		None
20	M32			Yes	** NA **		None
21	M35			Yes	** NA **		None
22	M36			Yes	** NA **		None
23	M39A			Yes	** NA **		None
24	M61A			Yes	Default		None
25	M63A			Yes	Default		None
26	M60A			Yes	Default		None
27	M61B			Yes	Default		None
28	M62A			Yes	Default		None
29	M63B			Yes	Default		None
30	M64	BenPIN		Yes	** NA **		None
31	M65			Yes	** NA **		None
32	M66	BenPIN		Yes	** NA **		None
33	M67			Yes	** NA **		None
34	M68	BenPIN		Yes	** NA **		None
35	M69			Yes	** NA **		None
36	M70	BenPIN		Yes	** NA **		None
37	M71			Yes	** NA **		None
38	M72	BenPIN		Yes	** NA **		None
39	M73			Yes	** NA **		None
40	M74	BenPIN		Yes	** NA **		None
41	M75			Yes	** NA **		None
42	MP8			Yes	N/A	+y+3	None
43	M43			Yes	** NA **		None
44	M44			Yes	** NA **		None
45	M48			Yes	N/A		None
46	MP3			Yes	N/A	+y+3	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Analysis Offset [in]	Seismic DR
47	MP1			Yes	N/A	+y+3	None
48	M51			Yes	N/A		None
49	M52			Yes	** NA **		None
50	M53			Yes	** NA **		None
51	M54			Yes	** NA **		None
52	M55			Yes	** NA **		None
53	M62			Yes	N/A		None
54	MP6			Yes	N/A	+y+3	None
55	MP4			Yes	N/A	+y+3	None
56	M65A			Yes	N/A		None
57	M66A			Yes	** NA **		None
58	M67A			Yes	** NA **		None
59	M68A			Yes	** NA **		None
60	M69A			Yes	** NA **		None
61	MP2			Yes	N/A	+y+3	None
62	M68B			Yes	** NA **		None
63	M69B			Yes	** NA **		None
64	MP5			Yes	N/A	+y+3	None
65	M71B			Yes	** NA **		None
66	M72B			Yes	** NA **		None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	Function
1	M2	Square Tubing	40	Lbyy	Lateral
2	M3	L 2"x2"x1/4"	27.295	Lbyy	Lateral
3	M4	L 2"x2"x1/4"	27.295	Lbyy	Lateral
4	M5	6.5"x0.37" Plate	42	Lbyy	Lateral
5	M7	Square Tubing	40	Lbyy	Lateral
6	M8	L 2"x2"x1/4"	27.295	Lbyy	Lateral
7	M9	L 2"x2"x1/4"	27.295	Lbyy	Lateral
8	M10	6.5"x0.37" Plate	42	Lbyy	Lateral
9	M12	Square Tubing	40	Lbyy	Lateral
10	M13	L 2"x2"x1/4"	27.295	Lbyy	Lateral
11	M14	L 2"x2"x1/4"	27.295	Lbyy	Lateral
12	M15	6.5"x0.37" Plate	42	Lbyy	Lateral
13	M18	Face Pipes(3.5x.16)	96	Lbyy	Lateral
14	MP9	Antenna Pipes	96	Lbyy	Lateral
15	MP7	Antenna Pipes	96	Lbyy	Lateral
16	M25	Handrail	96	Lbyy	Lateral
17	M28	Handrail Connector	42	Lbyy	Lateral
18	M29	Handrail Connector	42	Lbyy	Lateral
19	M30	Handrail Connector	42	Lbyy	Lateral
20	M61A	Channel(3.38x2.06)	33	Lbyy	Lateral
21	M63A	Channel(3.38x2.06)	33	Lbyy	Lateral
22	M60A	Channel(3.38x2.06)	33	Lbyy	Lateral
23	M61B	Channel(3.38x2.06)	33	Lbyy	Lateral
24	M62A	Channel(3.38x2.06)	33	Lbyy	Lateral
25	M63B	Channel(3.38x2.06)	33	Lbyy	Lateral
26	M75	PL 2.375X0.5	1.5		Lateral
27	MP8	Antenna Pipes	96	Lbyy	Lateral
28	M48	Face Pipes(3.5x.16)	96	Lbyy	Lateral
29	MP3	Antenna Pipes	96	Lbyy	Lateral
30	MP1	Antenna Pipes	96	Lbyy	Lateral
31	M51	Handrail	96	Lbyy	Lateral
32	M62	Face Pipes(3.5x.16)	96	Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lcomp top [in]	Function
33	MP6	Antenna Pipes	96	Lbyy	Lateral
34	MP4	Antenna Pipes	96	Lbyy	Lateral
35	M65A	Handrail	96	Lbyy	Lateral
36	MP2	Antenna Pipes	96	Lbyy	Lateral
37	MP5	Antenna Pipes	96	Lbyy	Lateral

Member RISAConnection Properties

	Label	Shape	Start Conn	End Conn	Start Release	End Release
1	M2	HSS4X4X6	None	None	Fixed	Fixed
2	M3	L2x2x4	None	None	Fixed	Fixed
3	M4	L2x2x4	None	None	Fixed	Fixed
4	M5	PL6.5x0.375	None	None	Pinned	Pinned
5	M7	HSS4X4X6	None	None	Fixed	Fixed
6	M8	L2x2x4	None	None	Fixed	Fixed
7	M9	L2x2x4	None	None	Fixed	Fixed
8	M10	PL6.5x0.375	None	None	Pinned	Pinned
9	M12	HSS4X4X6	None	None	Fixed	Fixed
10	M13	L2x2x4	None	None	Fixed	Fixed
11	M14	L2x2x4	None	None	Fixed	Fixed
12	M15	PL6.5x0.375	None	None	Pinned	Pinned
13	M18	Pipe3.5x0.165	None	None	Fixed	Fixed
14	MP9	PIPE_2.5	None	None	Fixed	Fixed
15	MP7	PIPE_2.5	None	None	Fixed	Fixed
16	M25	PIPE_2.5	None	None	Fixed	Fixed
17	M28	L6.6x4.46x0.25	None	None	Fixed	Fixed
18	M29	L6.6x4.46x0.25	None	None	Fixed	Fixed
19	M30	L6.6x4.46x0.25	None	None	Fixed	Fixed
20	M61A	C3.38x2.06x0.25	None	None	Fixed	Fixed
21	M63A	C3.38x2.06x0.25	None	None	Fixed	Fixed
22	M60A	C3.38x2.06x0.25	None	None	Fixed	Fixed
23	M61B	C3.38x2.06x0.25	None	None	Fixed	Fixed
24	M62A	C3.38x2.06x0.25	None	None	Fixed	Fixed
25	M63B	C3.38x2.06x0.25	None	None	Fixed	Fixed
26	M75	PL 2.375X0.5	None	None	Fixed	Fixed
27	MP8	PIPE_2.5	None	None	Fixed	Fixed
28	M48	Pipe3.5x0.165	None	None	Fixed	Fixed
29	MP3	PIPE_2.5	None	None	Fixed	Fixed
30	MP1	PIPE_2.5	None	None	Fixed	Fixed
31	M51	PIPE_2.5	None	None	Fixed	Fixed
32	M62	Pipe3.5x0.165	None	None	Fixed	Fixed
33	MP6	PIPE_2.5	None	None	Fixed	Fixed
34	MP4	PIPE_2.5	None	None	Fixed	Fixed
35	M65A	PIPE_2.5	None	None	Fixed	Fixed
36	MP2	PIPE_2.5	None	None	Fixed	Fixed
37	MP5	PIPE_2.5	None	None	Fixed	Fixed

Design Size and Code Check Parameters

	Label	Max Axial/Bending Chk	Max Shear Chk
1	Typical	1	1

Concrete Rebar Parameters

	Label	Optimize Rebar ?	Min Flex Bar	Max Flex Bar	Shear Bar	Legs per Stirrup	Top (Column) Cover [in]	Bottom Cover [in]	Side Cover [in]	Top/Bottom Bars	Add'l Side Bars	Shear Bar Spacing [in]
1	Typical	Optimize	#6	#10	#4	2	1.5	1.5	1.5	2	1	12

Deflection Design

	Label	LC	Ratio	LC	Ratio	LC	Ratio
1	Typical	None	N/A	None	N/A	None	N/A

Wall Panel U.C. Parameters

	Label	Max Bending Chk	Max Shear Chk
1	Typical	1	1

Frame / HR Column Seismic Design Rule

	Label	Frame Ductility	Overstrength Reqd
1	OCBF	Minimal	Yes
2	SCBF	High	Yes
3	OMF	Minimal	Yes
4	IMF	Moderate	Yes
5	SMF-RBS	High	Yes
6	SMF-Kaiser	High	Yes

HR Beam Seismic Design Rule

	Label	Connection	Overstrength Reqd	Z Factor	Hinge Location [in]
1	OCBF	Other/None			
2	SCBF	Other/None	Yes		
3	OMF	BUEEP			12
4	IMF	BFP			12
5	SMF-RBS	RBS		0.685	14.625
6	SMF-Kaiser	KBB-B			12

HR Brace Seismic Design Rule

	Label	Overstrength Reqd	KL/r
1	OCBF		
2	SCBF		Yes
3	OMF		
4	IMF		
5	SMF-RBS		
6	SMF-Kaiser		

Connection Design Rules

	Label	Conn Type	Type	Beam Conn	Col/Girder Conn	Eccentricity
1	Col/Bm Single Angle Shear	Shear	Column/Beam Clip Single Angle Shear	Bolted	Bolted	1.5
2	Col/Bm Double Angle Shear	Shear	Column/Beam Clip Double Angle Shear	Bolted	Bolted	0
3	Col/Bm Two Side Clip Angle Shear	Shear	Column/Beam Clip Double Angle (Both Side) Shear	Bolted	Bolted	N/A
4	Col/Bm End Plate Shear	Shear	Column/Beam End-Plate Shear	N/A	Bolted	N/A
5	Col/Bm Shear Tab Shear	Shear	Column/Beam Shear Tab Shear	Bolted	N/A	0
6	Girder/Bm Single Angle Shear	Shear	Girder/Beam Clip Single Angle Shear	Bolted	Bolted	N/A
7	Girder/Bm Double Angle Shear	Shear	Girder/Beam Clip Double Angle Shear	Bolted	Bolted	N/A

Connection Design Rules (Continued)

	Label	Conn Type	Type	Beam Conn	Col/Girder Conn	Eccentricity
8	Grd/Bm Two Side Clip Angle Shear	Shear	Girder/Beam Clip Double Angle (Both Side) Shear	Bolted	Bolted	N/A
9	Girder/Bm End Plate Shear	Shear	Girder/Beam End-Plate Shear	N/A	Bolted	N/A
10	Girder/Bm Shear Tab Shear	Shear	Girder/Beam Shear Tab Shear	Bolted	N/A	N/A
11	Beam Shear Splice	Shear	Beam Shear Tab Splice	Bolted	N/A	N/A
12	Column Shear Splice	Shear	Column Shear Tab Splice	N/A	Bolted	N/A
13	Col/Bm Ext. End Plate Moment	Moment	Column/Beam Extended End-Plate Moment	N/A	N/A	N/A
14	Col/Bm PartExt. End Plate Moment	Moment	Column/Beam Partially Extended End-Plate Moment (Tension side)	N/A	N/A	N/A
15	Col/Bm Flush End Plate Moment	Moment	Column/Beam Flush End-Plate Moment	N/A	N/A	N/A
16	Col/Bm Flange Plate Moment	Moment	Column/Beam Flange Plate Moment	Bolted	N/A	N/A
17	Col/Bm Direct Weld Moment	Moment	Column/Beam Direct Weld Moment	Bolted	N/A	N/A
18	Col/Bm Seismic Moment	Moment	Column/Beam Seismic Moment	N/A	N/A	N/A
19	Beam Moment Plate Splice	Moment	Beam Moment Plate Splice	Bolted	N/A	N/A
20	Column Moment Plate Splice	Moment	Column Moment Plate Splice	N/A	N/A	N/A
21	Beam Direct Weld Moment Splice	Moment	Beam Direct Weld Splice	Bolted	N/A	N/A
22	Col Direct Weld Moment Splice	Moment	Column Direct Weld Splice	N/A	Bolted	N/A
23	Bm Ext. End Plate Moment Splice	Moment	Beam Extended End Plate Splice	Bolted	N/A	N/A
24	Col Ext. End Plate Moment Splice	Moment	Column Extended End Plate Splice	N/A	Bolted	N/A
25	Diagonal Vertical Brace	Brace	Diagonal Vertical Brace	N/A	N/A	N/A
26	Chevron Vertical Brace	Brace	Chevron Vertical Brace	N/A	N/A	N/A
27	Seismic Diagonal Brace	Brace	Diagonal Brace Seismic	N/A	N/A	N/A
28	Seismic Chevron Brace	Brace	Chevron Brace Seismic	N/A	N/A	N/A
29	Knee Brace	Brace	Knee Brace	N/A	N/A	N/A
30	Single Column Base Plate	Baseplate	Single Column Baseplate	N/A	N/A	N/A
31	Base Plate with Vertical Brace	Baseplate	Brace to Column Base Plate	N/A	N/A	N/A
32	HSS Truss Connection	Truss	HSS T-Connection	N/A	N/A	N/A

Node Loads and Enforced Displacements (BLC 1 : Telco DL)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N127	L	Y	-35.25
2	N130	L	Y	-35.25
3	N143	L	Y	-35.25
4	N144	L	Y	-35.25
5	N147	L	Y	-35.25
6	N149	L	Y	-35.25
7	N142	L	Y	-76
8	N146	L	Y	-76
9	N151	L	Y	-76
10	N141	L	Y	-63.9
11	N145	L	Y	-63.9
12	N150	L	Y	-63.9
13	N130B	L	Y	-21.8
14	N131B	L	Y	-21.8
15	N132C	L	Y	-21.8

Node Loads and Enforced Displacements (BLC 2 : Telco DLi)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N127	L	Y	-106.35
2	N130	L	Y	-106.35
3	N143	L	Y	-106.35
4	N144	L	Y	-106.35
5	N147	L	Y	-106.35
6	N149	L	Y	-106.35
7	N142	L	Y	-38.2

Node Loads and Enforced Displacements (BLC 2 : Telco DLi) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
8	N146	L	Y	-38.2
9	N151	L	Y	-38.2
10	N141	L	Y	-37
11	N145	L	Y	-37
12	N150	L	Y	-37
13	N130B	L	Y	-44.7
14	N131B	L	Y	-44.7
15	N132C	L	Y	-44.7

Node Loads and Enforced Displacements (BLC 3 : Telco Wx)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N127	L	X	319.7
2	N130	L	X	319.7
3	N143	L	X	319.7
4	N144	L	X	319.7
5	N147	L	X	319.7
6	N149	L	X	319.7
7	N142	L	X	100.4
8	N146	L	X	100.4
9	N151	L	X	100.4
10	N141	L	X	100.4
11	N145	L	X	100.4
12	N150	L	X	100.4
13	N130B	L	X	117.2
14	N131B	L	X	117.2
15	N132C	L	X	117.2

Node Loads and Enforced Displacements (BLC 4 : Telco Wz)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N127	L	Z	319.7
2	N130	L	Z	319.7
3	N143	L	Z	319.7
4	N144	L	Z	319.7
5	N147	L	Z	319.7
6	N149	L	Z	319.7
7	N142	L	Z	100.4
8	N146	L	Z	100.4
9	N151	L	Z	100.4
10	N141	L	Z	100.4
11	N145	L	Z	100.4
12	N150	L	Z	100.4
13	N130B	L	Z	117.2
14	N131B	L	Z	117.2
15	N132C	L	Z	117.2

Node Loads and Enforced Displacements (BLC 5 : Telco Wxi)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N127	L	X	26.85
2	N130	L	X	26.85
3	N143	L	X	26.85
4	N144	L	X	26.85
5	N147	L	X	26.85

Node Loads and Enforced Displacements (BLC 5 : Telco Wxi) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
6	N149	L	X	26.85
7	N142	L	X	8.7
8	N146	L	X	8.7
9	N151	L	X	8.7
10	N141	L	X	8.7
11	N145	L	X	8.7
12	N150	L	X	8.7
13	N130B	L	X	10.2
14	N131B	L	X	10.2
15	N132C	L	X	10.2

Node Loads and Enforced Displacements (BLC 6 : Telco Wzi)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N127	L	Z	26.85
2	N130	L	Z	26.85
3	N143	L	Z	26.85
4	N144	L	Z	26.85
5	N147	L	Z	26.85
6	N149	L	Z	26.85
7	N142	L	Z	8.7
8	N146	L	Z	8.7
9	N151	L	Z	8.7
10	N141	L	Z	8.7
11	N145	L	Z	8.7
12	N150	L	Z	8.7
13	N130B	L	Z	10.2
14	N131B	L	Z	10.2
15	N132C	L	Z	10.2

Node Loads and Enforced Displacements (BLC 7 : Telco Wxm)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N127	L	X	15.8
2	N130	L	X	15.8
3	N143	L	X	15.8
4	N144	L	X	15.8
5	N147	L	X	15.8
6	N149	L	X	15.8
7	N142	L	X	5
8	N146	L	X	5
9	N151	L	X	5
10	N141	L	X	5
11	N145	L	X	5
12	N150	L	X	5
13	N130B	L	X	5.8
14	N131B	L	X	5.8
15	N132C	L	X	5.8

Node Loads and Enforced Displacements (BLC 8 : Telco Wzm)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N127	L	Z	15.8
2	N130	L	Z	15.8
3	N143	L	Z	15.8

Node Loads and Enforced Displacements (BLC 8 : Telco Wzm) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
4	N144	L	Z	15.8
5	N147	L	Z	15.8
6	N149	L	Z	15.8
7	N142	L	Z	5
8	N146	L	Z	5
9	N151	L	Z	5
10	N141	L	Z	5
11	N145	L	Z	5
12	N150	L	Z	5
13	N130B	L	Z	5.8
14	N131B	L	Z	5.8
15	N132C	L	Z	5.8

Node Loads and Enforced Displacements (BLC 19 : Lm)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N132B	L	Y	-500
2	N138A	L	Y	-500
3	N75	L	Y	-500

Node Loads and Enforced Displacements (BLC 20 : Lv)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N82A	L	Y	-250
2	N92	L	Y	-250
3	N120	L	Y	-250
4	N110	L	Y	-250
5	N68	L	Y	-250
6	N44	L	Y	-250

Member Point Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Distributed	Area(Member)
1	Telco DL	DL		15		
2	Telco DLi	OL1		15		
3	Telco Wx	WLX		15		
4	Telco Wz	WLZ		15		
5	Telco Wxi	WLXP1		15		
6	Telco Wzi	WLZP1		15		
7	Telco Wxm	WLXP2		15		
8	Telco Wzm	WLZP2		15		
9	-	None				
10	Mount DL	DL	-1.1			3
11	Mount DLi	OL1			36	3
12	Mount Wx	WLX			36	
13	Mount Wz	WLZ			36	
14	Mount Wxi	WLXP1			36	
15	Mount Wzi	WLZP1			36	
16	Mount Wxm	WLXP2			36	
17	Mount Wzm	WLZP2			36	
18	-	None				

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Distributed	Area(Member)
19	Lm	None		3		
20	Lv	None		6		
21	BLC 10 Transient Area Loads	None			9	
22	BLC 11 Transient Area Loads	None			9	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	DL	1.4						
2	Wind LCs (Case 1)										
3	1.2D +1.0W (0)	Yes	Y	DL	1.2			WLX	1	WLZ	
4	1.2D + 1.0W (30)	Yes	Y	DL	1.2			WLX	0.866	WLZ	0.5
5	1.2D + 1.0W (45)	Yes	Y	DL	1.2			WLX	0.707	WLZ	0.707
6	1.2D + 1.0W (60)	Yes	Y	DL	1.2			WLX	0.5	WLZ	0.866
7	1.2D + 1.0W (90)	Yes	Y	DL	1.2			WLX		WLZ	1
8	1.2D + 1.0W (120)	Yes	Y	DL	1.2			WLX	-0.5	WLZ	0.866
9	1.2D + 1.0W (135)	Yes	Y	DL	1.2			WLX	-0.707	WLZ	0.707
10	1.2D + 1.0W (150)	Yes	Y	DL	1.2			WLX	-0.866	WLZ	0.5
11	1.2D + 1.0W (180)	Yes	Y	DL	1.2			WLX	-1	WLZ	
12	1.2D + 1.0W (210)	Yes	Y	DL	1.2			WLX	-0.866	WLZ	-0.5
13	1.2D + 1.0W (225)	Yes	Y	DL	1.2			WLX	-0.707	WLZ	-0.707
14	1.2D + 1.0W (240)	Yes	Y	DL	1.2			WLX	-0.5	WLZ	-0.866
15	1.2D + 1.0W (270)	Yes	Y	DL	1.2			WLX		WLZ	-1
16	1.2D + 1.0W (300)	Yes	Y	DL	1.2			WLX	0.5	WLZ	-0.866
17	1.2D + 1.0W (315)	Yes	Y	DL	1.2			WLX	0.707	WLZ	-0.707
18	1.2D + 1.0W (330)	Yes	Y	DL	1.2			WLX	0.866	WLZ	-0.5
19	Uplift LCs (Case 2)										
20	1.2D +1.0W (0)	Yes	Y	DL	0.9			WLX	1	WLZ	
21	1.2D + 1.0W (30)	Yes	Y	DL	0.9			WLX	0.866	WLZ	0.5
22	1.2D + 1.0W (45)	Yes	Y	DL	0.9			WLX	0.707	WLZ	0.707
23	1.2D + 1.0W (60)	Yes	Y	DL	0.9			WLX	0.5	WLZ	0.866
24	1.2D + 1.0W (90)	Yes	Y	DL	0.9			WLX		WLZ	1
25	1.2D + 1.0W (120)	Yes	Y	DL	0.9			WLX	-0.5	WLZ	0.866
26	1.2D + 1.0W (135)	Yes	Y	DL	0.9			WLX	-0.707	WLZ	0.707
27	1.2D + 1.0W (150)	Yes	Y	DL	0.9			WLX	-0.866	WLZ	0.5
28	1.2D + 1.0W (180)	Yes	Y	DL	0.9			WLX	-1	WLZ	
29	1.2D + 1.0W (210)	Yes	Y	DL	0.9			WLX	-0.866	WLZ	-0.5
30	1.2D + 1.0W (225)	Yes	Y	DL	0.9			WLX	-0.707	WLZ	-0.707
31	1.2D + 1.0W (240)	Yes	Y	DL	0.9			WLX	-0.5	WLZ	-0.866
32	1.2D + 1.0W (270)	Yes	Y	DL	0.9			WLX		WLZ	-1
33	1.2D + 1.0W (300)	Yes	Y	DL	0.9			WLX	0.5	WLZ	-0.866
34	1.2D + 1.0W (315)	Yes	Y	DL	0.9			WLX	0.707	WLZ	-0.707
35	1.2D + 1.0W (330)	Yes	Y	DL	0.9			WLX	0.866	WLZ	-0.5
36	Ice LCs (Case 3)										
37	1.2D + 1.0Di +1.0Wi (0)	Yes	Y	DL	1.2	OL1	1	WLXP1	1	WLZP1	
38	1.2D + 1.0W (30)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.866	WLZP1	0.5
39	1.2D + 1.0W (45)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.707	WLZP1	0.707
40	1.2D + 1.0W (60)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.5	WLZP1	0.866
41	1.2D + 1.0W (90)	Yes	Y	DL	1.2	OL1	1	WLXP1		WLZP1	1
42	1.2D + 1.0W (120)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.5	WLZP1	0.866
43	1.2D + 1.0W (135)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.707	WLZP1	0.707
44	1.2D + 1.0W (150)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.866	WLZP1	0.5
45	1.2D + 1.0W (180)	Yes	Y	DL	1.2	OL1	1	WLXP1	-1	WLZP1	
46	1.2D + 1.0W (210)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.866	WLZP1	-0.5
47	1.2D + 1.0W (225)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.707	WLZP1	-0.707
48	1.2D + 1.0W (240)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.5	WLZP1	-0.866

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
49	1.2D + 1.0W (270)	Yes	Y	DL	1.2	OL1	1	WLXP1		WLZP1	-1
50	1.2D + 1.0W (300)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.5	WLZP1	-0.866
51	1.2D + 1.0W (315)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.707	WLZP1	-0.707
52	1.2D + 1.0W (330)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.866	WLZP1	-0.5
53	Maintenance LCs (Case 3)										
54	1.2D + 1.0Di +1.0Wi (0)	Yes	Y	DL	1.2	19	1.5	WLXP2	1	WLZP2	
55	1.2D + 1.0W (30)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.866	WLZP2	0.5
56	1.2D + 1.0W (45)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.707	WLZP2	0.707
57	1.2D + 1.0W (60)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.5	WLZP2	0.866
58	1.2D + 1.0W (90)	Yes	Y	DL	1.2	19	1.5	WLXP2		WLZP2	1
59	1.2D + 1.0W (120)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.5	WLZP2	0.866
60	1.2D + 1.0W (135)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.707	WLZP2	0.707
61	1.2D + 1.0W (150)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.866	WLZP2	0.5
62	1.2D + 1.0W (180)	Yes	Y	DL	1.2	19	1.5	WLXP2	-1	WLZP2	
63	1.2D + 1.0W (210)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.866	WLZP2	-0.5
64	1.2D + 1.0W (225)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.707	WLZP2	-0.707
65	1.2D + 1.0W (240)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.5	WLZP2	-0.866
66	1.2D + 1.0W (270)	Yes	Y	DL	1.2	19	1.5	WLXP2		WLZP2	-1
67	1.2D + 1.0W (300)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.5	WLZP2	-0.866
68	1.2D + 1.0W (315)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.707	WLZP2	-0.707
69	1.2D + 1.0W (330)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.866	WLZP2	-0.5
70	1.2D + 1.5Lv	Yes	Y	DL	1.2	20	1.5				

Load Combination Design

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	1.4D		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Wind LCs (Case 1)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1.2D +1.0W (0)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1.2D + 1.0W (30)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1.2D + 1.0W (45)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1.2D + 1.0W (60)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1.2D + 1.0W (90)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1.2D + 1.0W (120)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1.2D + 1.0W (135)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1.2D + 1.0W (150)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1.2D + 1.0W (180)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1.2D + 1.0W (210)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	1.2D + 1.0W (225)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	1.2D + 1.0W (240)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	1.2D + 1.0W (270)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	1.2D + 1.0W (300)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	1.2D + 1.0W (315)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	1.2D + 1.0W (330)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	Uplift LCs (Case 2)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20	1.2D +1.0W (0)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	1.2D + 1.0W (30)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	1.2D + 1.0W (45)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	1.2D + 1.0W (60)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	1.2D + 1.0W (90)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	1.2D + 1.0W (120)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	1.2D + 1.0W (135)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27	1.2D + 1.0W (150)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	1.2D + 1.0W (180)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29	1.2D + 1.0W (210)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30	1.2D + 1.0W (225)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
31	1.2D + 1.0W (240)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32	1.2D + 1.0W (270)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33	1.2D + 1.0W (300)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34	1.2D + 1.0W (315)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35	1.2D + 1.0W (330)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
36	Ice LCs (Case 3)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	1.2D + 1.0Di +1.0Wi (0)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38	1.2D + 1.0W (30)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39	1.2D + 1.0W (45)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
40	1.2D + 1.0W (60)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41	1.2D + 1.0W (90)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
42	1.2D + 1.0W (120)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
43	1.2D + 1.0W (135)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44	1.2D + 1.0W (150)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
45	1.2D + 1.0W (180)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
46	1.2D + 1.0W (210)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
47	1.2D + 1.0W (225)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
48	1.2D + 1.0W (240)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
49	1.2D + 1.0W (270)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50	1.2D + 1.0W (300)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
51	1.2D + 1.0W (315)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
52	1.2D + 1.0W (330)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
53	Maintenance LCs (Case 3)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
54	1.2D + 1.0Di +1.0Wi (0)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55	1.2D + 1.0W (30)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
56	1.2D + 1.0W (45)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
57	1.2D + 1.0W (60)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
58	1.2D + 1.0W (90)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
59	1.2D + 1.0W (120)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
60	1.2D + 1.0W (135)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
61	1.2D + 1.0W (150)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
62	1.2D + 1.0W (180)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
63	1.2D + 1.0W (210)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
64	1.2D + 1.0W (225)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
65	1.2D + 1.0W (240)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
66	1.2D + 1.0W (270)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
67	1.2D + 1.0W (300)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
68	1.2D + 1.0W (315)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
69	1.2D + 1.0W (330)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
70	1.2D + 1.5Lv		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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

No Data to Print...

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	P24	max	2491.767	29	1808.754	42	1689.388	31	0.548	33	3.26	29	0.344	33
2		min	-2496.001	4	12.932	33	-1688.197	6	-3.508	8	-3.284	4	-2.942	70
3	P13	max	2472.435	27	1810.662	48	1732.208	16	3.983	70	3.288	18	0.35	23
4		min	-2478.269	18	13.186	23	-1732.919	25	-0.538	23	-3.264	27	-2.002	14
5	P1	max	1090.15	11	1737.751	37	2611.208	32	0.274	24	2.898	24	4.03	3
6		min	-1072.942	20	-44.009	28	-2611.52	24	-1.193	70	-2.899	32	-0.811	28
7	Totals:	max	5892.223	11	5128.665	45	5689.786	15						
8		min	-5892.223	20	2003.57	20	-5689.785	24						

Envelope Node Displacements

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	P1	max	0	20	0	28	0	24	0	70	0	32	0	28
2		min	0	11	0	37	0	32	0	24	0	24	0	3
3	P3	max	0	20	0.028	28	0.027	24	3.261e-3	70	4.908e-4	32	1.09e-3	28
4		min	0	11	-0.1	3	-0.027	32	-9.693e-4	24	-4.886e-4	24	-3.576e-3	3
5	P4	max	0	20	0.005	28	0.013	24	1.173e-3	70	9.391e-4	32	6.241e-4	28
6		min	0	11	-0.022	3	-0.013	32	-2.693e-4	24	-9.381e-4	24	-2.413e-3	3
7	P7	max	0.114	21	0.036	29	0.027	24	5.056e-3	24	1.181e-3	13	3.422e-3	10
8		min	-0.114	12	-0.108	4	-0.027	32	-5.133e-3	15	-1.172e-3	22	-2.941e-3	35
9	P8	max	0.113	35	0.034	27	0.027	24	5.275e-3	7	1.179e-3	34	3.614e-3	12
10		min	-0.114	10	-0.17	70	-0.027	32	-5.274e-3	15	-1.182e-3	9	-3.235e-3	21
11	P9	max	0.091	35	-0.012	28	0.014	24	3.58e-3	70	3.573e-3	35	-5.262e-4	23
12		min	-0.092	10	-0.096	70	-0.014	32	9.251e-4	28	-3.603e-3	10	-4.435e-3	70
13	P10	max	0.09	21	-0.011	28	0.014	24	-8.978e-4	28	3.495e-3	12	-5.171e-4	32
14		min	-0.09	12	-0.078	54	-0.014	32	-3.346e-3	54	-3.475e-3	21	-2.074e-3	42
15	P11	max	0.086	21	0.031	29	0.027	24	3.287e-3	70	1.607e-3	30	1.497e-3	28
16		min	-0.087	12	-0.103	4	-0.027	32	-1.224e-3	7	-1.645e-3	5	-1.688e-3	3
17	P12	max	0.088	35	0.03	28	0.027	24	4.048e-3	70	1.503e-3	17	1.546e-3	28
18		min	-0.089	10	-0.145	70	-0.027	32	-1.037e-3	25	-1.447e-3	26	-3.273e-3	70
19	P13	max	0	18	0	23	0	25	0	23	0	27	0	14
20		min	0	27	0	48	0	16	0	70	0	18	0	23
21	P14	max	0.03	18	0.023	23	0.017	26	8.485e-4	22	7.234e-4	26	1.962e-3	15
22		min	-0.03	27	-0.102	14	-0.017	18	-4.497e-3	70	-7.524e-4	17	-1.249e-3	70
23	P15	max	0.013	18	0.004	23	0.007	27	4.378e-4	22	1.096e-3	27	1.213e-3	15
24		min	-0.013	27	-0.023	14	-0.007	18	-2.543e-3	70	-1.112e-3	18	-3.183e-4	24
25	P18	max	0.045	5	0.031	24	0.097	24	2.467e-3	7	1.619e-3	25	6.534e-3	11
26		min	-0.044	30	-0.108	15	-0.097	15	-2.195e-3	32	-1.668e-3	16	-5.507e-3	20
27	P19	max	0.069	4	0.029	22	0.098	22	4.829e-3	8	1.383e-3	28	4.078e-3	11
28		min	-0.069	29	-0.176	70	-0.099	13	-4.574e-3	33	-1.407e-3	3	-3.84e-3	20
29	P20	max	0.053	21	-0.014	22	0.076	22	-9.732e-4	34	3.672e-3	13	-1.327e-4	24
30		min	-0.053	12	-0.095	70	-0.077	13	-5.711e-3	70	-3.658e-3	22	-2.098e-3	66
31	P21	max	0.035	6	-0.012	23	0.077	24	4.878e-4	70	3.252e-3	7	3.893e-3	67
32		min	-0.035	31	-0.08	65	-0.077	15	-5.606e-4	3	-3.25e-3	32	1.094e-3	25
33	P22	max	0.036	4	0.026	23	0.077	24	1.234e-3	22	1.529e-3	25	1.627e-3	15
34		min	-0.035	29	-0.104	14	-0.077	15	-1.629e-3	13	-1.538e-3	16	-3.475e-3	70
35	P23	max	0.058	3	0.027	22	0.076	23	1.426e-3	21	1.582e-3	11	8.926e-4	33
36		min	-0.058	28	-0.151	70	-0.077	14	-5.24e-3	70	-1.525e-3	20	-1.775e-3	70
37	P24	max	0	4	0	33	0	6	0	8	0	4	0	70
38		min	0	29	0	42	0	31	0	33	0	29	0	33
39	P25	max	0.03	4	0.024	33	0.017	4	3.157e-3	9	7.351e-4	4	4.421e-3	70
40		min	-0.029	29	-0.102	8	-0.017	29	-8.733e-4	34	-7.032e-4	30	-7.783e-4	32
41	P26	max	0.013	4	0.004	33	0.007	4	2.1e-3	9	1.111e-3	4	2.104e-3	70
42		min	-0.013	29	-0.023	8	-0.007	29	-4.501e-4	34	-1.093e-3	29	-3.024e-4	32
43	P29	max	0.069	3	0.03	35	0.095	9	4.246e-3	23	1.45e-3	3	3.892e-3	11
44		min	-0.069	28	-0.111	10	-0.094	34	-4.569e-3	14	-1.425e-3	28	-3.821e-3	20
45	P30	max	0.049	17	0.03	32	0.097	7	2.39e-3	24	1.62e-3	6	6.903e-3	11
46		min	-0.048	26	-0.173	70	-0.097	15	-2.518e-3	15	-1.568e-3	31	-5.821e-3	20
47	P31	max	0.037	16	-0.012	33	0.077	7	2.096e-3	70	3.259e-3	24	5.256e-3	70
48		min	-0.037	25	-0.095	70	-0.077	15	-2.708e-4	28	-3.267e-3	15	1.145e-3	31
49	P32	max	0.052	35	-0.014	34	0.075	10	3.498e-3	47	3.567e-3	35	-2.261e-4	32
50		min	-0.052	10	-0.082	60	-0.074	35	9.43e-4	22	-3.596e-3	10	-2.116e-3	58
51	P33	max	0.059	3	0.027	34	0.073	9	1.9e-3	10	1.564e-3	20	2.191e-3	70
52		min	-0.059	28	-0.107	9	-0.072	34	-2.701e-3	70	-1.598e-3	11	-9.692e-4	31
53	P34	max	0.039	18	0.026	33	0.077	7	1.674e-3	9	1.508e-3	6	5.361e-3	70
54		min	-0.038	27	-0.148	70	-0.077	32	-1.26e-3	34	-1.477e-3	31	-1.349e-3	32
55	N43	max	0.043	5	0.038	24	0.097	24	2.467e-3	7	1.619e-3	25	6.534e-3	11

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
56		min	-0.041	30	-0.115	15	-0.097	15	-2.196e-3	32	-1.668e-3	16	-5.507e-3	20
57	N44	max	0.047	17	0.038	32	0.097	7	2.39e-3	24	1.62e-3	6	6.903e-3	11
58		min	-0.045	26	-0.179	70	-0.097	15	-2.518e-3	15	-1.568e-3	31	-5.821e-3	20
59	N45	max	0.047	5	0.024	24	0.097	24	2.486e-3	7	1.588e-3	25	6.547e-3	11
60		min	-0.046	30	-0.102	15	-0.097	15	-2.228e-3	32	-1.638e-3	16	-5.521e-3	20
61	N48A	max	0.051	17	0.023	32	0.097	7	2.425e-3	24	1.595e-3	6	6.917e-3	11
62		min	-0.05	26	-0.168	70	-0.097	15	-2.537e-3	15	-1.542e-3	31	-5.836e-3	20
63	N51	max	0.306	20	0.024	24	0.278	7	2.715e-3	7	2.842e-3	20	6.529e-3	28
64		min	-0.319	11	-0.109	15	-0.275	32	-2.448e-3	32	-2.908e-3	11	-6.754e-3	3
65	N54	max	0.314	20	0.023	32	0.278	7	2.528e-3	25	2.902e-3	11	6.311e-3	28
66		min	-0.326	11	-0.182	70	-0.275	32	-2.609e-3	16	-2.811e-3	20	-6.567e-3	3
67	N57	max	0.233	10	0.025	23	0.013	26	2.033e-3	7	1.588e-3	25	6.092e-3	11
68		min	-0.19	35	-0.104	14	-0.057	70	-1.775e-3	32	-1.638e-3	16	-5.067e-3	20
69	N60	max	0.244	11	0.024	33	0.02	56	1.971e-3	24	1.595e-3	6	6.462e-3	11
70		min	-0.198	20	-0.169	70	-0.08	70	-2.083e-3	15	-1.542e-3	31	-5.382e-3	20
71	N63	max	0.373	20	0.023	24	0.305	7	2.721e-3	7	2.842e-3	20	6.535e-3	28
72		min	-0.384	11	-0.108	15	-0.299	32	-2.455e-3	32	-2.908e-3	11	-6.76e-3	3
73	N66	max	0.379	20	0.023	33	0.303	7	2.533e-3	25	2.902e-3	11	6.317e-3	28
74		min	-0.389	11	-0.181	70	-0.3	32	-2.614e-3	16	-2.811e-3	20	-6.573e-3	3
75	N67	max	0.288	20	0.039	24	0.278	7	2.663e-3	6	3.074e-3	35	6.437e-3	28
76		min	-0.3	11	-0.123	15	-0.275	32	-2.408e-3	31	-3.144e-3	10	-6.664e-3	3
77	N68	max	0.296	20	0.038	32	0.278	7	2.517e-3	25	3.148e-3	11	6.209e-3	28
78		min	-0.307	11	-0.197	70	-0.275	32	-2.59e-3	16	-3.045e-3	20	-6.468e-3	3
79	N111A	max	0.284	20	0.039	29	0.278	24	5.721e-3	24	2.818e-3	8	4.266e-3	10
80		min	-0.292	11	-0.114	4	-0.28	15	-5.872e-3	15	-2.804e-3	33	-4.09e-3	35
81	N112A	max	0.293	20	0.036	27	0.278	24	5.57e-3	7	2.813e-3	6	4.127e-3	12
82		min	-0.295	11	-0.179	70	-0.28	15	-5.524e-3	32	-2.778e-3	31	-4.097e-3	21
83	N113A	max	0.297	20	0.031	24	0.278	7	2.663e-3	6	3.074e-3	35	6.437e-3	28
84		min	-0.31	11	-0.116	15	-0.275	32	-2.408e-3	31	-3.144e-3	10	-6.664e-3	3
85	N114A	max	0.292	20	0.03	22	0.29	7	5.103e-3	8	2.808e-3	17	3.718e-3	27
86		min	-0.304	11	-0.178	70	-0.286	32	-4.971e-3	33	-2.808e-3	9	-3.775e-3	18
87	N115A	max	0.298	20	0.031	34	0.272	24	5.079e-3	23	2.87e-3	13	3.798e-3	29
88		min	-0.303	11	-0.112	9	-0.279	15	-5.281e-3	14	-2.844e-3	22	-4.03e-3	4
89	N116A	max	0.305	20	0.03	32	0.278	7	2.517e-3	25	3.148e-3	11	6.209e-3	28
90		min	-0.317	11	-0.19	70	-0.275	32	-2.59e-3	16	-3.045e-3	20	-6.468e-3	3
91	N69A	max	0.047	5	0.024	23	0.098	24	2.486e-3	7	1.588e-3	25	6.547e-3	11
92		min	-0.046	30	-0.103	14	-0.098	15	-2.228e-3	32	-1.638e-3	16	-5.521e-3	20
93	N70A	max	0.051	17	0.023	33	0.098	7	2.425e-3	24	1.595e-3	6	6.917e-3	11
94		min	-0.05	26	-0.169	70	-0.098	15	-2.537e-3	15	-1.542e-3	31	-5.836e-3	20
95	N71A	max	0.306	20	0.023	24	0.278	7	2.715e-3	7	2.842e-3	20	6.529e-3	28
96		min	-0.319	11	-0.108	15	-0.274	32	-2.448e-3	32	-2.908e-3	11	-6.754e-3	3
97	N72A	max	0.314	20	0.023	33	0.278	7	2.528e-3	25	2.902e-3	11	6.311e-3	28
98		min	-0.326	11	-0.181	70	-0.274	32	-2.609e-3	16	-2.811e-3	20	-6.567e-3	3
99	N122A	max	0.108	21	-0.016	28	0.014	24	-9.317e-4	28	3.522e-3	12	1.006e-3	29
100		min	-0.108	12	-0.095	54	-0.014	32	-3.471e-3	54	-3.507e-3	21	-1.998e-3	4
101	N124B	max	0.109	35	-0.017	28	0.014	24	3.661e-3	70	3.636e-3	35	9.142e-4	27
102		min	-0.11	10	-0.115	70	-0.014	32	9.596e-4	28	-3.66e-3	10	-4.185e-3	70
103	N122B	max	0.043	6	-0.017	23	0.091	24	1.619e-3	70	3.286e-3	7	3.58e-3	66
104		min	-0.043	31	-0.098	65	-0.091	15	-8.802e-4	32	-3.283e-3	32	3.725e-4	24
105	N123A	max	0.062	21	-0.019	22	0.093	22	8.193e-5	22	3.795e-3	13	-3.298e-4	29
106		min	-0.062	12	-0.113	70	-0.093	13	-5.331e-3	70	-3.772e-3	22	-2.658e-3	55
107	N125	max	0.062	35	-0.019	34	0.091	10	2.78e-3	43	3.643e-3	34	-3.419e-4	27
108		min	-0.062	10	-0.1	60	-0.09	35	-1.625e-4	34	-3.675e-3	9	-2.693e-3	69
109	N126	max	0.045	16	-0.017	33	0.091	7	1.786e-3	70	3.3e-3	24	5.171e-3	70
110		min	-0.044	25	-0.113	70	-0.091	15	-1.272e-3	15	-3.308e-3	15	4.465e-4	33

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
111	N125A	max	0.05	16	-0.019	33	0.091	7	1.786e-3	70	3.3e-3	24	5.171e-3	70
112		min	-0.049	25	-0.11	70	-0.091	15	-1.272e-3	15	-3.308e-3	15	4.465e-4	33
113	N126A	max	0.05	16	-0.02	33	0.096	7	1.786e-3	70	1.678e-3	15	6.633e-3	11
114		min	-0.049	25	-0.119	70	-0.096	15	-1.272e-3	15	-1.674e-3	24	-5.5e-3	20
115	N128	max	0.112	35	-0.018	28	0.013	23	3.661e-3	70	3.636e-3	35	9.142e-4	27
116		min	-0.113	10	-0.112	70	-0.013	14	9.596e-4	28	-3.66e-3	10	-4.185e-3	70
117	N129	max	0.117	35	-0.019	28	0.013	24	4.507e-3	6	1.865e-3	10	3.209e-3	13
118		min	-0.118	10	-0.12	70	-0.013	15	-4.51e-3	14	-1.855e-3	35	-2.773e-3	22
119	N131	max	0.059	21	-0.021	22	0.098	22	8.193e-5	22	3.795e-3	13	-3.298e-4	29
120		min	-0.059	12	-0.11	70	-0.098	13	-5.331e-3	70	-3.772e-3	22	-2.658e-3	55
121	N132	max	0.064	21	-0.022	22	0.101	22	4.766e-3	8	1.881e-3	22	2.732e-3	27
122		min	-0.065	12	-0.118	70	-0.101	13	-4.376e-3	33	-1.912e-3	13	-2.832e-3	18
123	N132A	max	0.048	6	-0.019	23	0.091	24	1.619e-3	70	3.286e-3	7	3.58e-3	66
124		min	-0.047	31	-0.099	65	-0.091	15	-8.802e-4	32	-3.283e-3	32	3.725e-4	24
125	N133	max	0.048	6	-0.019	23	0.096	7	1.619e-3	70	1.635e-3	32	6.486e-3	11
126		min	-0.047	31	-0.105	65	-0.096	15	-8.802e-4	32	-1.635e-3	7	-5.375e-3	20
127	N134	max	0.059	35	-0.021	34	0.096	10	2.78e-3	43	3.643e-3	34	-3.419e-4	27
128		min	-0.059	10	-0.101	60	-0.095	35	-1.625e-4	34	-3.675e-3	9	-2.693e-3	69
129	N135	max	0.064	35	-0.022	34	0.099	10	4.209e-3	23	1.877e-3	10	2.675e-3	29
130		min	-0.064	10	-0.107	60	-0.098	35	-4.681e-3	14	-1.835e-3	35	-2.946e-3	4
131	N137	max	0.11	21	-0.018	28	0.012	25	-1.119e-3	27	5.176e-3	12	8.874e-4	29
132		min	-0.111	12	-0.097	54	-0.012	33	-4.331e-3	69	-5.182e-3	21	-2.245e-3	4
133	N138	max	0.118	21	-0.019	28	0.014	24	4.38e-3	25	1.839e-3	21	3.185e-3	9
134		min	-0.118	12	-0.104	54	-0.014	32	-4.475e-3	16	-1.842e-3	12	-2.59e-3	34
135	N72B	max	0.018	3	-0.035	20	0.097	7	1.784e-3	70	3.066e-3	15	6.446e-3	11
136		min	-0.018	28	-0.116	62	-0.097	15	-1.154e-3	32	-3.064e-3	7	-5.278e-3	20
137	N73	max	0.385	20	-0.035	28	0.278	7	2.493e-3	7	3.167e-4	16	8.352e-3	28
138		min	-0.399	11	-0.133	54	-0.275	32	-2.404e-3	32	-3.087e-4	25	-8.415e-3	3
139	N74	max	0.096	11	-0.009	20	0.2	24	3.584e-3	15	4.386e-3	15	1.609e-3	62
140		min	-0.055	20	-0.12	62	-0.204	15	-3.495e-3	24	-4.383e-3	24	-6.734e-4	20
141	N75	max	0.469	20	-0.042	31	0.303	7	2.5e-3	7	3.167e-4	16	8.358e-3	28
142		min	-0.483	11	-0.136	56	-0.298	32	-2.41e-3	32	-3.087e-4	25	-8.421e-3	3
143	N76	max	0.018	3	-0.03	20	0.094	7	1.784e-3	70	3.066e-3	15	6.446e-3	11
144		min	-0.018	28	-0.118	62	-0.094	15	-1.154e-3	32	-3.064e-3	7	-5.278e-3	20
145	N77	max	0.385	20	-0.042	31	0.278	7	2.493e-3	7	3.167e-4	16	8.352e-3	28
146		min	-0.399	11	-0.131	57	-0.274	32	-2.404e-3	32	-3.087e-4	25	-8.415e-3	3
147	N81A	max	0.072	3	0.039	35	0.093	9	4.246e-3	23	1.45e-3	3	3.892e-3	11
148		min	-0.072	28	-0.118	10	-0.091	34	-4.569e-3	14	-1.425e-3	28	-3.821e-3	20
149	N82A	max	0.112	35	0.042	27	0.03	24	5.275e-3	7	1.179e-3	34	3.614e-3	12
150		min	-0.112	10	-0.175	70	-0.03	32	-5.274e-3	15	-1.182e-3	9	-3.235e-3	21
151	N83A	max	0.067	18	0.023	34	0.098	9	4.266e-3	23	1.414e-3	3	3.913e-3	11
152		min	-0.067	27	-0.103	9	-0.096	34	-4.587e-3	14	-1.389e-3	28	-3.83e-3	20
153	N84	max	0.115	35	0.026	27	0.025	24	5.277e-3	7	1.144e-3	34	3.644e-3	12
154		min	-0.116	10	-0.166	70	-0.025	15	-5.286e-3	15	-1.148e-3	9	-3.272e-3	21
155	N85	max	0.3	20	0.023	34	0.278	24	5.137e-3	23	2.547e-3	13	3.958e-3	29
156		min	-0.306	11	-0.105	9	-0.284	15	-5.349e-3	14	-2.552e-3	5	-4.183e-3	4
157	N86	max	0.295	20	0.028	27	0.284	24	5.705e-3	7	2.628e-3	6	4.128e-3	12
158		min	-0.297	11	-0.171	70	-0.286	15	-5.651e-3	32	-2.606e-3	14	-4.094e-3	21
159	N87	max	0.095	12	0.024	34	0.184	12	3.873e-3	23	1.414e-3	3	3.459e-3	11
160		min	-0.092	21	-0.105	9	-0.168	21	-4.193e-3	14	-1.388e-3	28	-3.377e-3	20
161	N88	max	0.122	15	0.024	28	0.182	15	4.823e-3	7	1.145e-3	34	3.251e-3	12
162		min	-0.107	24	-0.165	70	-0.182	7	-4.832e-3	15	-1.149e-3	9	-2.879e-3	21
163	N89	max	0.339	20	0.024	34	0.326	24	5.142e-3	23	2.547e-3	13	3.963e-3	29
164		min	-0.342	11	-0.106	9	-0.335	15	-5.354e-3	14	-2.552e-3	5	-4.188e-3	4
165	N90	max	0.332	20	0.029	28	0.34	24	5.711e-3	7	2.628e-3	6	4.134e-3	12

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
166		min	-0.335	11	-0.171	70	-0.342	15	-5.657e-3	32	-2.606e-3	14	-4.099e-3	21
167	N91	max	0.295	20	0.04	35	0.267	24	5.079e-3	23	2.87e-3	13	3.798e-3	29
168		min	-0.3	11	-0.12	10	-0.274	15	-5.281e-3	14	-2.844e-3	22	-4.03e-3	4
169	N92	max	0.291	20	0.045	27	0.271	24	5.57e-3	7	2.813e-3	6	4.127e-3	12
170		min	-0.294	11	-0.188	70	-0.273	15	-5.524e-3	32	-2.778e-3	31	-4.097e-3	21
171	N93	max	0.068	18	0.023	34	0.098	9	4.266e-3	23	1.414e-3	3	3.913e-3	11
172		min	-0.068	28	-0.103	9	-0.097	34	-4.587e-3	14	-1.389e-3	28	-3.83e-3	20
173	N94	max	0.116	35	0.026	28	0.025	24	5.277e-3	7	1.144e-3	34	3.644e-3	12
174		min	-0.117	10	-0.165	70	-0.026	15	-5.286e-3	15	-1.148e-3	9	-3.272e-3	21
175	N95	max	0.299	20	0.024	34	0.279	24	5.137e-3	23	2.547e-3	13	3.958e-3	29
176		min	-0.304	11	-0.106	9	-0.285	15	-5.349e-3	14	-2.552e-3	5	-4.183e-3	4
177	N96	max	0.296	20	0.029	28	0.283	24	5.705e-3	7	2.628e-3	6	4.128e-3	12
178		min	-0.298	11	-0.171	70	-0.285	15	-5.651e-3	32	-2.606e-3	14	-4.094e-3	21
179	N109	max	0.112	21	0.044	29	0.03	24	5.056e-3	24	1.181e-3	13	3.422e-3	10
180		min	-0.113	12	-0.115	4	-0.03	15	-5.133e-3	15	-1.172e-3	22	-2.941e-3	35
181	N110	max	0.071	4	0.037	21	0.096	23	4.829e-3	8	1.383e-3	28	4.078e-3	11
182		min	-0.071	29	-0.183	70	-0.097	13	-4.574e-3	33	-1.407e-3	3	-3.84e-3	20
183	N111	max	0.116	21	0.028	29	0.025	24	5.066e-3	24	1.144e-3	13	3.451e-3	10
184		min	-0.116	12	-0.102	4	-0.025	32	-5.136e-3	15	-1.135e-3	22	-2.975e-3	35
185	N112	max	0.067	4	0.022	22	0.101	22	4.849e-3	8	1.351e-3	28	4.1e-3	11
186		min	-0.067	29	-0.17	70	-0.102	13	-4.596e-3	33	-1.375e-3	3	-3.848e-3	20
187	N113	max	0.285	20	0.03	29	0.284	24	5.846e-3	24	2.672e-3	8	4.268e-3	10
188		min	-0.293	11	-0.105	4	-0.287	15	-6.002e-3	15	-2.652e-3	33	-4.087e-3	35
189	N114	max	0.294	20	0.022	22	0.295	7	5.175e-3	8	2.527e-3	16	3.878e-3	27
190		min	-0.306	11	-0.172	70	-0.291	32	-5.034e-3	33	-2.497e-3	25	-3.929e-3	18
191	N115	max	0.128	7	0.025	29	0.176	15	4.612e-3	24	1.145e-3	13	3.058e-3	10
192		min	-0.108	32	-0.099	4	-0.173	24	-4.682e-3	15	-1.135e-3	22	-2.582e-3	35
193	N116	max	0.106	10	0.023	22	0.173	35	4.455e-3	8	1.351e-3	28	3.647e-3	11
194		min	-0.096	35	-0.169	70	-0.186	10	-4.203e-3	33	-1.375e-3	3	-3.395e-3	20
195	N117	max	0.323	20	0.031	28	0.342	24	5.852e-3	24	2.672e-3	8	4.274e-3	10
196		min	-0.333	11	-0.106	3	-0.345	15	-6.008e-3	15	-2.652e-3	33	-4.092e-3	35
197	N118	max	0.332	20	0.023	22	0.344	7	5.181e-3	8	2.527e-3	16	3.883e-3	27
198		min	-0.343	11	-0.172	70	-0.339	32	-5.04e-3	33	-2.497e-3	25	-3.934e-3	18
199	N119	max	0.283	20	0.049	29	0.27	24	5.721e-3	24	2.818e-3	8	4.266e-3	10
200		min	-0.291	11	-0.122	4	-0.273	15	-5.872e-3	15	-2.804e-3	33	-4.09e-3	35
201	N120	max	0.289	20	0.038	22	0.284	7	5.103e-3	8	2.808e-3	17	3.718e-3	27
202		min	-0.301	11	-0.185	70	-0.28	32	-4.971e-3	33	-2.808e-3	9	-3.775e-3	18
203	N121	max	0.116	21	0.027	29	0.025	24	5.066e-3	24	1.144e-3	13	3.451e-3	10
204		min	-0.117	12	-0.101	4	-0.025	32	-5.136e-3	15	-1.135e-3	22	-2.975e-3	35
205	N122	max	0.068	4	0.022	22	0.101	22	4.849e-3	8	1.351e-3	28	4.1e-3	11
206		min	-0.068	29	-0.169	70	-0.102	13	-4.596e-3	33	-1.375e-3	3	-3.848e-3	20
207	N123	max	0.286	20	0.031	28	0.283	24	5.846e-3	24	2.672e-3	8	4.268e-3	10
208		min	-0.294	11	-0.106	3	-0.285	15	-6.002e-3	15	-2.652e-3	33	-4.087e-3	35
209	N124	max	0.293	20	0.023	22	0.296	7	5.175e-3	8	2.527e-3	16	3.878e-3	27
210		min	-0.305	11	-0.172	70	-0.292	32	-5.034e-3	33	-2.497e-3	25	-3.929e-3	18
211	N129B	max	0.091	35	-0.035	31	0.054	9	4.224e-3	23	3.667e-3	10	2.927e-3	12
212		min	-0.091	10	-0.117	57	-0.054	34	-4.415e-3	14	-3.639e-3	35	-2.757e-3	21
213	N130A	max	0.315	20	-0.031	29	0.333	24	6.858e-3	23	1.026e-4	70	4.598e-3	12
214		min	-0.318	11	-0.121	55	-0.337	15	-6.876e-3	14	-1.83e-4	7	-4.532e-3	21
215	N131A	max	0.169	35	-0.024	35	0.131	10	2.197e-3	35	3.16e-3	11	2.854e-3	35
216		min	-0.17	10	-0.118	61	-0.122	35	-2.411e-3	10	-3.121e-3	20	-2.965e-3	10
217	N132B	max	0.353	20	-0.023	30	0.395	24	6.863e-3	23	1.026e-4	70	4.603e-3	12
218		min	-0.358	11	-0.127	56	-0.399	15	-6.881e-3	14	-1.83e-4	7	-4.537e-3	21
219	N133B	max	0.088	35	-0.03	31	0.052	9	4.224e-3	23	3.667e-3	10	2.927e-3	12
220		min	-0.088	10	-0.117	57	-0.052	34	-4.415e-3	14	-3.639e-3	35	-2.757e-3	21

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
221	N134A	max	0.315	20	-0.023	30	0.333	24	6.858e-3	23	1.026e-4	70	4.598e-3	12
222		min	-0.319	11	-0.122	56	-0.337	15	-6.876e-3	14	-1.83e-4	7	-4.532e-3	21
223	N135A	max	0.091	21	-0.035	25	0.056	22	4.393e-3	8	3.646e-3	21	2.946e-3	10
224		min	-0.092	12	-0.117	67	-0.056	13	-4.29e-3	33	-3.664e-3	12	-2.609e-3	35
225	N136	max	0.306	20	-0.031	27	0.343	7	6.854e-3	25	3.615e-4	70	4.622e-3	10
226		min	-0.316	11	-0.121	69	-0.343	15	-6.924e-3	16	-1.324e-4	35	-4.402e-3	35
227	N137A	max	0.177	5	-0.023	21	0.118	21	2.205e-3	12	3.024e-3	20	3.006e-3	4
228		min	-0.171	30	-0.118	63	-0.124	12	-2.076e-3	21	-3.053e-3	11	-2.957e-3	29
229	N138A	max	0.343	20	-0.023	26	0.406	7	6.859e-3	25	3.615e-4	70	4.628e-3	10
230		min	-0.355	11	-0.127	68	-0.407	15	-6.929e-3	16	-1.324e-4	35	-4.407e-3	35
231	N139	max	0.088	21	-0.03	25	0.054	22	4.393e-3	8	3.646e-3	21	2.946e-3	10
232		min	-0.089	12	-0.117	67	-0.054	13	-4.29e-3	33	-3.664e-3	12	-2.609e-3	35
233	N140	max	0.306	20	-0.023	26	0.343	7	6.854e-3	25	3.615e-4	70	4.622e-3	10
234		min	-0.316	11	-0.122	68	-0.343	15	-6.924e-3	16	-1.324e-4	35	-4.402e-3	35
235	N127	max	0.135	34	-0.024	35	0.103	11	2.192e-3	35	3.16e-3	11	2.845e-3	35
236		min	-0.135	26	-0.118	61	-0.096	20	-2.406e-3	10	-3.121e-3	20	-2.956e-3	10
237	N130	max	0.307	20	-0.022	29	0.32	24	6.983e-3	23	1.489e-4	30	4.908e-3	12
238		min	-0.31	11	-0.122	55	-0.324	15	-7.006e-3	14	-2.355e-4	5	-4.852e-3	21
239	N141	max	0.101	20	-0.024	29	0.071	25	5.491e-3	23	3.082e-3	10	4.412e-3	12
240		min	-0.103	11	-0.118	55	-0.072	16	-5.65e-3	14	-3.07e-3	35	-4.356e-3	21
241	N142	max	0.166	20	-0.017	29	0.145	24	6.968e-3	24	1.997e-3	27	6.19e-3	11
242		min	-0.168	11	-0.12	55	-0.147	15	-7.076e-3	15	-2.018e-3	18	-6.214e-3	3
243	N143	max	0.298	20	-0.022	26	0.33	7	6.987e-3	25	3.478e-4	70	4.924e-3	10
244		min	-0.307	11	-0.122	68	-0.33	15	-7.051e-3	16	-4.157e-5	32	-4.716e-3	35
245	N144	max	0.142	5	-0.023	21	0.093	21	2.199e-3	12	3.024e-3	20	2.997e-3	4
246		min	-0.136	30	-0.118	63	-0.097	12	-2.071e-3	21	-3.053e-3	11	-2.948e-3	29
247	N145	max	0.1	21	-0.025	27	0.075	6	5.638e-3	8	3.077e-3	4	4.411e-3	10
248		min	-0.102	12	-0.118	69	-0.074	31	-5.561e-3	33	-3.078e-3	12	-4.197e-3	35
249	N146	max	0.162	20	-0.018	27	0.152	7	7.166e-3	7	2.025e-3	4	6.153e-3	11
250		min	-0.166	11	-0.12	69	-0.151	32	-7.133e-3	32	-1.994e-3	29	-6.022e-3	20
251	N147	max	0.368	20	-0.042	29	0.273	7	3.046e-3	7	5.167e-4	15	8.537e-3	28
252		min	-0.383	11	-0.131	55	-0.27	32	-2.958e-3	32	-5.053e-4	24	-8.597e-3	3
253	N149	max	0.077	11	-0.009	20	0.158	24	3.574e-3	15	4.386e-3	15	1.609e-3	62
254		min	-0.047	20	-0.12	62	-0.161	15	-3.484e-3	24	-4.384e-3	24	-6.84e-4	20
255	N150	max	0.055	20	-0.037	20	0.107	7	3.352e-3	7	2.821e-3	15	7.692e-3	11
256		min	-0.061	11	-0.12	62	-0.107	32	-3.263e-3	32	-2.817e-3	24	-6.891e-3	20
257	N151	max	0.151	20	-0.04	28	0.161	7	5.496e-3	7	2.164e-3	15	9.046e-3	11
258		min	-0.163	11	-0.125	54	-0.159	32	-5.414e-3	32	-2.157e-3	24	-8.737e-3	20
259	N130B	max	0.146	20	0.024	33	0.171	7	4.548e-3	7	1.059e-3	10	6.801e-3	11
260		min	-0.157	11	-0.175	70	-0.17	32	-4.392e-3	32	-9.926e-4	35	-6.461e-3	20
261	N131B	max	0.18	20	0.033	28	0.13	24	6.464e-3	24	9.587e-4	4	4.638e-3	28
262		min	-0.184	11	-0.166	70	-0.131	15	-6.545e-3	15	-9.539e-4	12	-4.684e-3	3
263	N132C	max	0.159	20	0.014	22	0.166	7	4.992e-3	8	1.e-3	15	6.086e-3	11
264		min	-0.165	11	-0.172	70	-0.164	32	-4.896e-3	33	-1.006e-3	7	-5.735e-3	20

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 [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M2	HSS4X4X6	0.25	40	5	0.093	40	y	70	188250.474	197892	22.046	22.046	1.882	H1-1b
2	M3	L2x2x4	0.27	0	3	0.024	27.295	y	10	29527.562	42480	0.96	2.19	1.5	H2-1
3	M4	L2x2x4	0.261	0	4	0.024	27.295	z	12	29527.562	42480	0.96	2.19	1.5	H2-1
4	M5	PL6.5x0.375	0.312	21	18	0.103	36.312	y	70	3658.14	78975	0.617	7.866	1.399	H1-1b
5	M7	HSS4X4X6	0.269	40	16	0.094	23.75	y	70	188250.475	197892	22.046	22.046	1.915	H1-1b
6	M8	L2x2x4	0.296	0	13	0.025	0	y	5	29527.563	42480	0.96	2.19	1.5	H2-1
7	M9	L2x2x4	0.23	0	14	0.021	0	z	6	29527.563	42480	0.96	2.19	1.5	H2-1
8	M10	PL6.5x0.375	0.328	21	13	0.101	36.312	y	8	3658.14	78975	0.617	7.695	1.369	H1-1b

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 [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
9	M12	HSS4X4X6	0.268	40	11	0.092	40	y	70	188250.475	197892	22.046	22.046	1.9	H1-1b
10	M13	L2x2x4	0.243	0	8	0.022	0	y	16	29527.562	42480	0.96	2.19	1.5	H2-1
11	M14	L2x2x4	0.283	0	9	0.024	0	z	17	29527.563	42480	0.96	2.19	1.5	H2-1
12	M15	PL6.5x0.375	0.313	21	9	0.102	36.312	y	3	3658.14	78975	0.617	7.517	1.337	H1-1b
13	M18	Pipe3.5x0.165	0.173	31	16	0.063	64		6	45873.009	71580.6	6.338	6.338	1.451	H1-1b
14	MP9	PIPE_2.5	0.144	42	7	0.075	42		5	33487.322	66654	4.727	4.727	1.947	H1-1b
15	MP7	PIPE_2.5	0.134	42	15	0.071	42		17	33487.322	66654	4.727	4.727	1.978	H1-1b
16	M25	PIPE_2.5	0.114	48	16	0.048	90		10	33487.322	66654	4.727	4.727	1.721	H1-1b
17	M28	L6.6x4.46x0.25	0.152	41.562	8	0.021	42	z	17	51170.949	87561	2.465	7.125	1.136	H2-1
18	M29	L6.6x4.46x0.25	0.134	41.562	14	0.018	42	z	6	51170.949	87561	2.465	7.125	1.136	H2-1
19	M30	L6.6x4.46x0.25	0.145	0.437	30	0.021	0	z	12	51170.949	87561	2.465	7.125	1.136	H2-1
20	M61A	C3.38x2.06x0.25	0.358	0	3	0.045	28.187	z	11	47760.074	56700	2.203	5.752	1.629	H1-1b
21	M63A	C3.38x2.06x0.25	0.367	0	3	0.048	28.188	z	11	47760.074	56700	2.203	5.752	1.628	H1-1b
22	M60A	C3.38x2.06x0.25	0.335	0	14	0.043	28.188	z	6	47760.074	56700	2.203	5.752	1.626	H1-1b
23	M61B	C3.38x2.06x0.25	0.375	0	14	0.05	28.188	z	6	47760.074	56700	2.203	5.752	1.629	H1-1b
24	M62A	C3.38x2.06x0.25	0.367	0	9	0.048	28.188	z	17	47760.074	56700	2.203	5.752	1.634	H1-1b
25	M63B	C3.38x2.06x0.25	0.34	0	8	0.045	28.187	z	16	47760.074	56700	2.203	5.752	1.626	H1-1b
26	M75	PL 2.375X0.5	0.398	1.5	5	0.213	0	y	68	38256.871	38475	0.401	1.904	2.165	H1-1b
27	MP8	PIPE_2.5	0.251	42	15	0.096	84		7	33487.322	66654	4.727	4.727	1.718	H1-1b
28	M48	Pipe3.5x0.165	0.185	65	26	0.074	64		16	45873.009	71580.6	6.338	6.338	1.655	H1-1b
29	MP3	PIPE_2.5	0.154	42	18	0.064	60		15	33487.322	66654	4.727	4.727	2.022	H1-1b
30	MP1	PIPE_2.5	0.137	42	10	0.065	42		12	33487.322	66654	4.727	4.727	1.898	H1-1b
31	M51	PIPE_2.5	0.126	90	18	0.049	6		11	33487.322	66654	4.727	4.727	1.816	H1-1b
32	M62	Pipe3.5x0.165	0.187	31	30	0.071	32		5	45873.009	71580.6	6.338	6.338	1.724	H1-1b
33	MP6	PIPE_2.5	0.145	42	12	0.069	42		10	33487.322	66654	4.727	4.727	1.916	H1-1b
34	MP4	PIPE_2.5	0.144	42	4	0.06	42		7	33487.322	66654	4.727	4.727	1.993	H1-1b
35	M65A	PIPE_2.5	0.134	6	4	0.046	90		11	33487.322	66654	4.727	4.727	1.844	H1-1b
36	MP2	PIPE_2.5	0.238	42	18	0.098	42		9	33487.322	66654	4.727	4.727	1.801	H1-1b
37	MP5	PIPE_2.5	0.238	42	4	0.098	42		13	33487.322	66654	4.727	4.727	1.801	H1-1b

Material Take-Off

	Material	Size	Pieces	Length[in]	Weight[K]
1	General Members				
2	RIGID		29	35.1	0
3	Total General		29	35.1	0
4					
5	Hot Rolled Steel				
6	A1011 36 Ksi	C3.38x2.06x0.25	6	198	0.098
7	A1011 36 Ksi	PL6.5x0.375	3	126	0.087
8	A1011 36 Ksi	L6.6x4.46x0.25	3	126	0.097
9	A36 Gr.36	PL 2.375X0.5	1	1.5	0.001
10	A500 GR.C	HSS4X4X6	3	120	0.163
11	A500 GR.C	Pipe3.5x0.165	3	288	0.141
12	A500 GR.C	PIPE_2.5	12	1152	0.526
13	A529 Gr. 50	L2x2x4	6	163.8	0.044
14	Total HR Steel		37	2175.3	1.156

Warning Log

	Message
1	There are members defined as member type: "Beam" that are vertical (or nearly vertical). For proper deflection optimization, change member type to "Column".

MK DEVELOPMENT

EXHIBIT F

NIERS Study

Pinnacle Telecom Group

Professional and Technical Services

Antenna Site FCC RF Compliance Assessment and Report for Municipal Submission

Prepared for:	DISH Wireless, LLC
Site ID:	NJJER02052B
Site Address:	200 Oronoque Lane Stratford, CT
Latitude:	N 41.251475
Longitude:	W 73.117119
Structure type:	Monopole
Report date:	October 11, 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.

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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 200 Oronoque Lane in Stratford, CT. DISH refers to the antenna site by the code "NJJER02052B", 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 AT&T, Stratford EMS, Stratford Fire Department Station and the Town of Stratford. 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 1.5980 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 62 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 three Caution signs and NOC Information signs 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. 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.

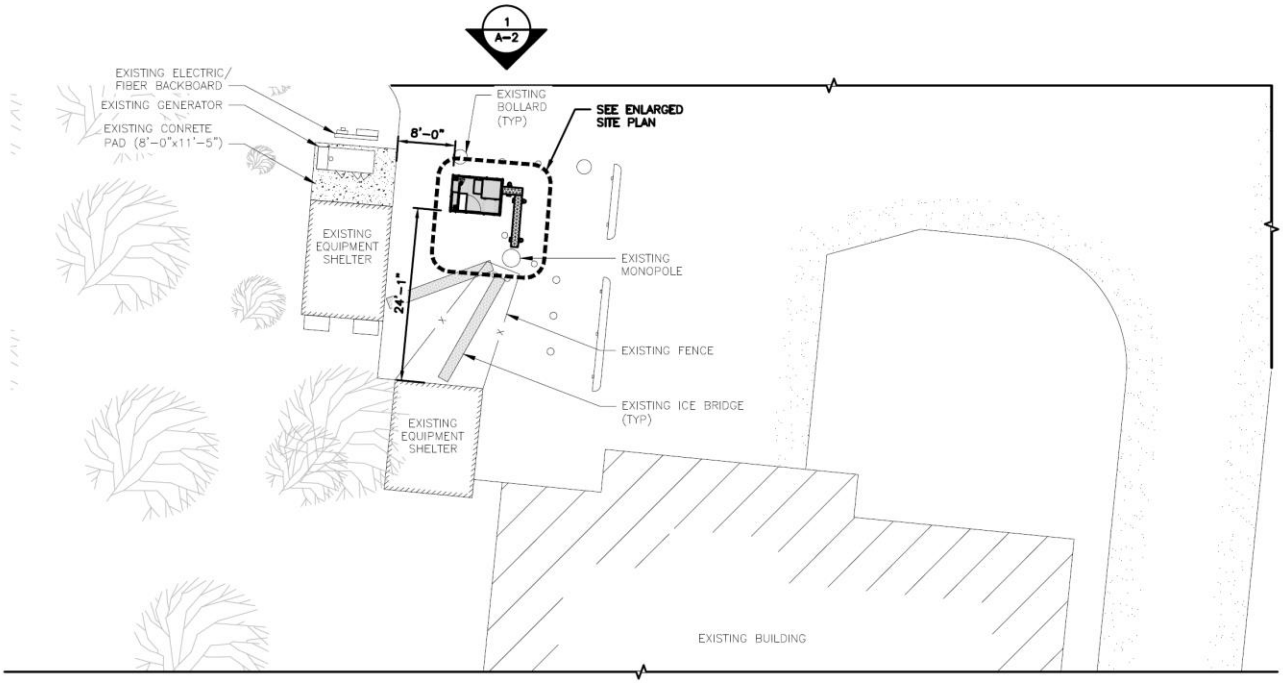
In addition, four Appendices are included. Appendix A provides information on the documents used to prepare the analysis. Appendix B provides background on the FCC MPE limit. Appendix C details the proposed mitigation to satisfy the FCC

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

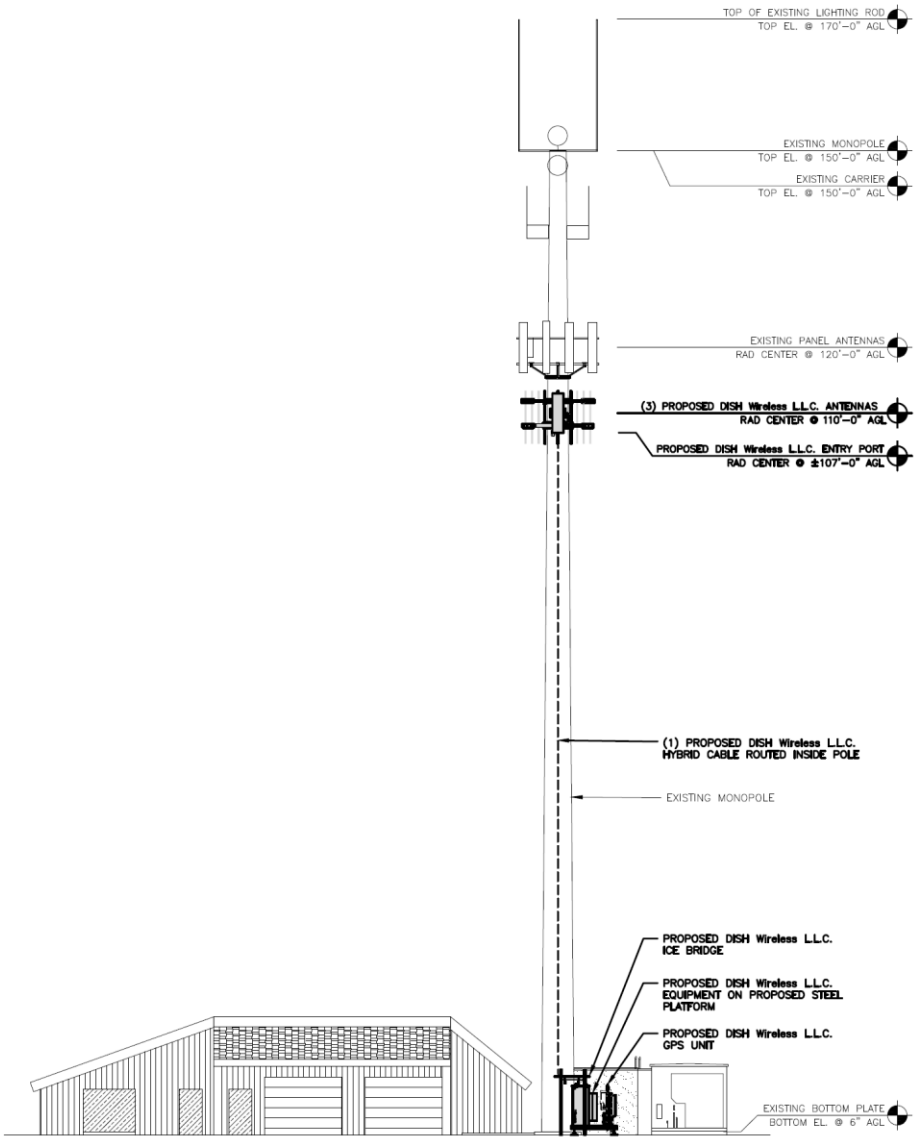
Antenna and Transmission Data

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	110.0	12.46	64	20	2	0
❶	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	110.0	16.66	67	20	2	0
❶	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	110.0	16.66	67	20	2	0
❷	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	110.0	12.46	64	120	2	0
❷	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	110.0	16.66	67	120	2	0
❷	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	110.0	16.66	67	120	2	0
❸	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	110.0	12.46	64	240	2	0
❸	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	110.0	16.66	67	240	4	0
❸	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	110.0	16.66	67	240	4	0

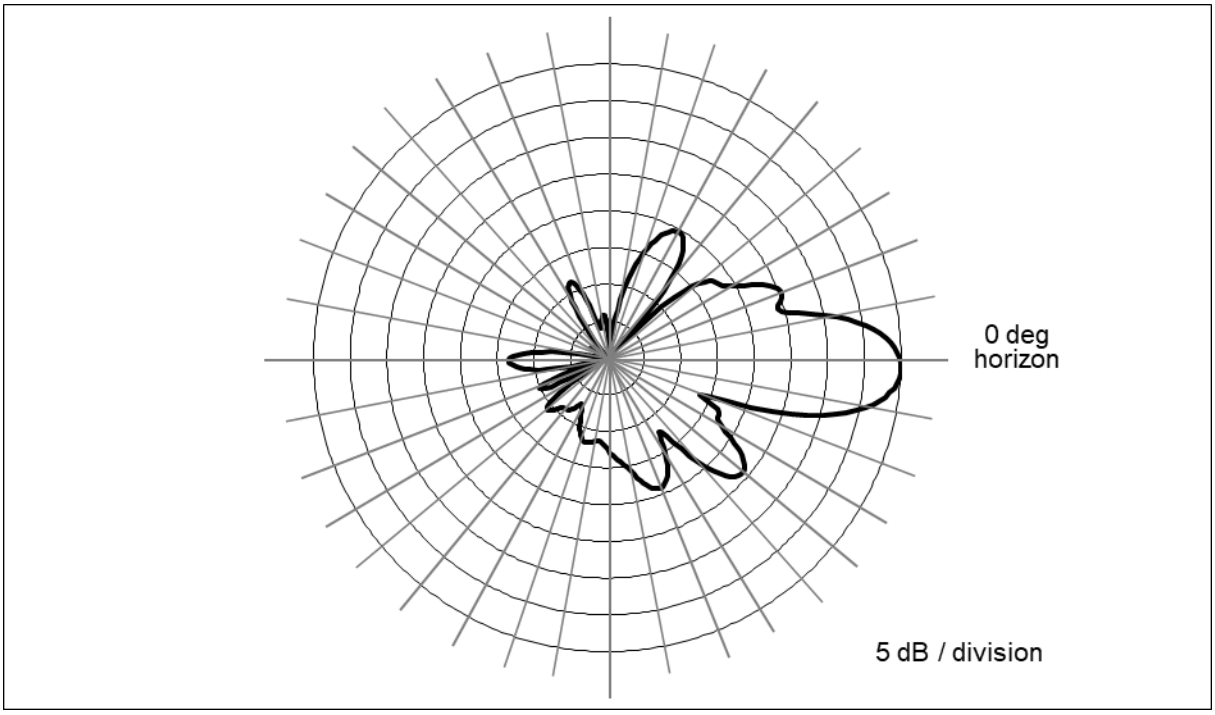
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

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 are existing antenna operations to include in the compliance assessment. For each of the wireless operators, we will conservatively assume operation with maximum channel capacity and at maximum transmitter power per channel to be used by each wireless operator in each of their respective FCC-licensed frequency bands. For each of the other operators, we will rely on the transmission parameters in their respective FCC licenses.

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*
AT&T	Generic	Generic	Panel	700	4945	11.26	N/A
AT&T	Generic	Generic	Panel	850	2400	11.76	N/A
AT&T	Generic	Generic	Panel	1900	5756	15.56	N/A
AT&T	Generic	Generic	Panel	2100	5890	15.66	N/A
AT&T	Generic	Generic	Panel	2300	4131	16.16	N/A
Stratford EMS	Generic	Generic	Omnidirectional	451	175	3.00	N/A
Stratford Fire Department	Generic	Generic	Omnidirectional	4962	41	4.66	N/A
Town of Stratford	Generic	Generic	Omnidirectional	154	60	0.00	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 same height as 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.

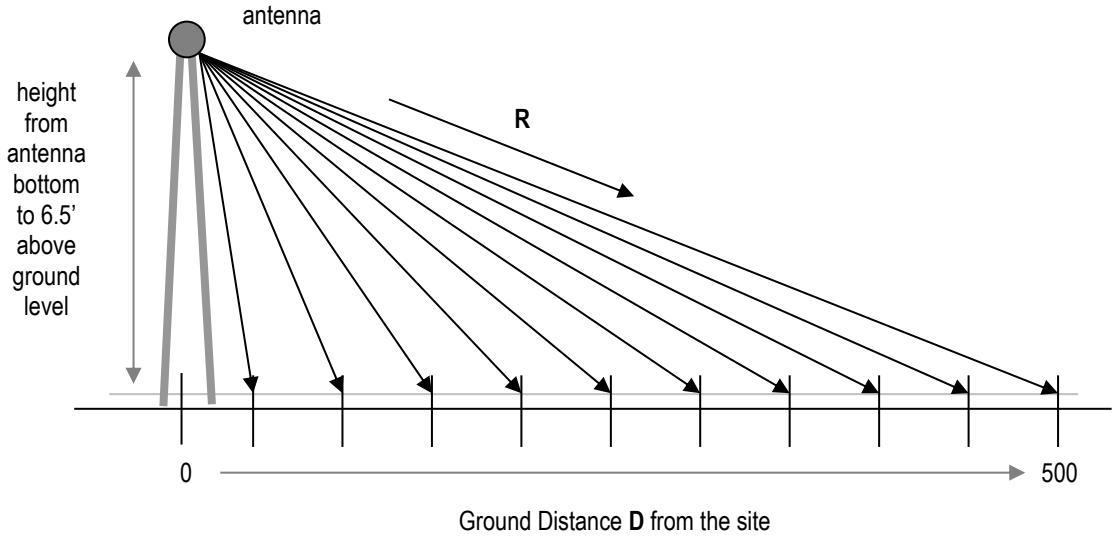


Figure 2. Street-level MPE% Calculation Geometry

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.

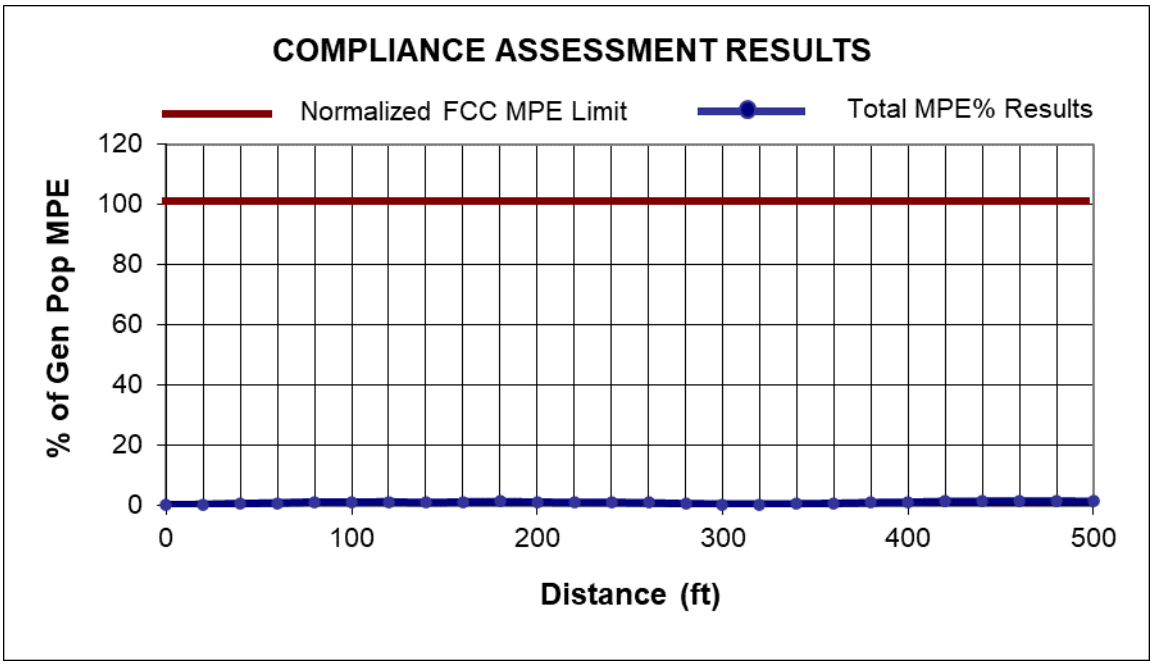
The net result of these assumptions is to intentionally and significantly overstate the calculated RF levels relative to the levels that will actually result from the antenna operations – and the purpose of this conservatism is to allow very "safe-side" conclusions about compliance.

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.

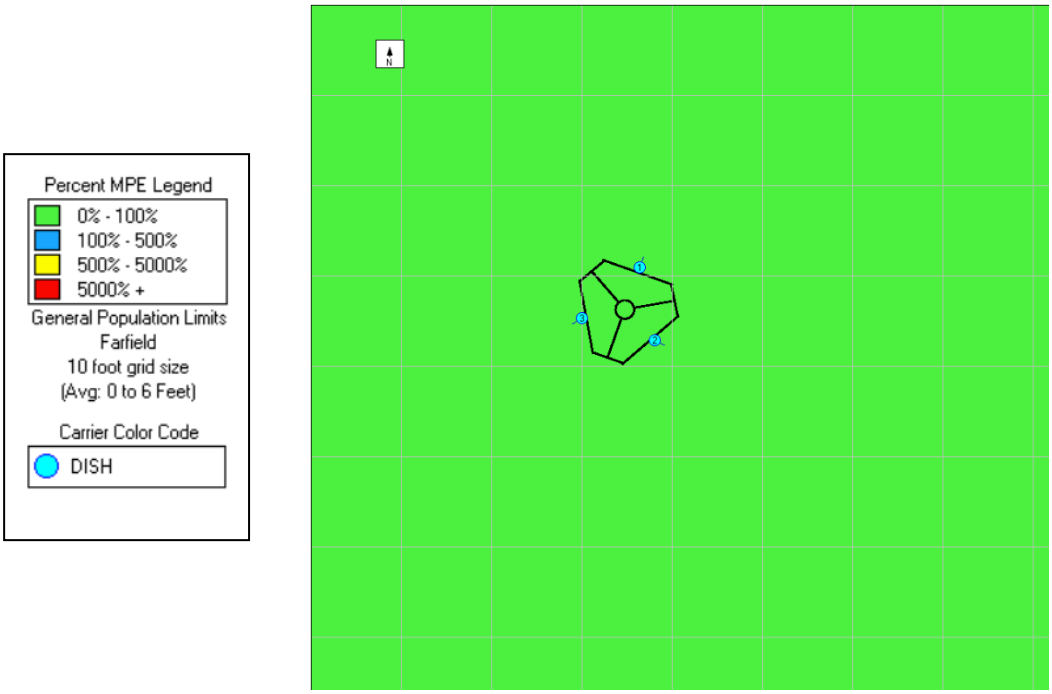
Ground Distance (ft)	DISH 600 MHz MPE%	DISH 2000 MHz MPE%	DISH 2100 MHz MPE%	AT&T MPE%	Stratford EMS MPE%	Stratford Fire Dept. MPE%	Town of Stratford MPE%	Total MPE%
0	0.0482	0.0012	0.0008	0.0901	0.0006	0.0004	0.0004	0.1417
20	0.1031	0.0004	0.0077	0.1160	0.0236	0.0044	0.0394	0.2946
40	0.1955	0.0415	0.0046	0.2238	0.0665	0.0031	0.1303	0.6653
60	0.0682	0.0196	0.0541	0.4009	0.0807	0.0031	0.2285	0.8551
80	0.0667	0.0987	0.1825	0.5220	0.0616	0.0005	0.2962	1.2282
100	0.2542	0.0825	0.0737	0.3601	0.0260	0.0026	0.3293	1.1284
120	0.2866	0.1468	0.3138	0.2302	0.0059	0.0000	0.3313	1.3146
140	0.1431	0.0225	0.0160	0.4801	0.0014	0.0003	0.3106	0.9740
160	0.0608	0.0084	0.0675	0.8550	0.0080	0.0010	0.2851	1.2858
180	0.0340	0.0302	0.0519	0.9684	0.0185	0.0008	0.2568	1.3606
200	0.0275	0.0058	0.0457	0.8533	0.0312	0.0002	0.2326	1.1963
220	0.0177	0.0619	0.0140	0.7007	0.0411	0.0006	0.2071	1.0431
240	0.0094	0.1504	0.0869	0.5775	0.0597	0.0005	0.1855	1.0699
260	0.0101	0.1246	0.0949	0.4758	0.0618	0.0002	0.1634	0.9308
280	0.0369	0.0357	0.0383	0.2663	0.0739	0.0000	0.1481	0.5992
300	0.0643	0.0137	0.0136	0.1600	0.0756	0.0000	0.1320	0.4592
320	0.1029	0.0089	0.0056	0.1184	0.0872	0.0001	0.1182	0.4413
340	0.1521	0.0096	0.0024	0.1659	0.0880	0.0001	0.1063	0.5244
360	0.2119	0.0204	0.0063	0.2791	0.0893	0.0001	0.0984	0.7055
380	0.2802	0.0512	0.0359	0.4399	0.0909	0.0001	0.0893	0.9875
400	0.2545	0.0465	0.0326	0.6146	0.0909	0.0000	0.0814	1.1205
420	0.3234	0.0867	0.0875	0.7776	0.0912	0.0000	0.0745	1.4409
440	0.3957	0.1098	0.1386	0.7127	0.0837	0.0000	0.0684	1.5089
460	**0.3636**	**0.1009**	**0.1274**	**0.8585**	**0.0845**	**0.0001**	**0.0630**	**1.5980**
480	0.4318	0.0820	0.1273	0.7920	0.0837	0.0002	0.0582	1.5752
500	0.3993	0.0758	0.1177	0.7286	0.0775	0.0002	0.0539	1.4530

As indicated, the maximum calculated overall RF level is 1.5980 percent of the FCC MPE limit – well below the 100-percent reference for compliance.

A graph of the overall calculation results, shown below, 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 on the next page.

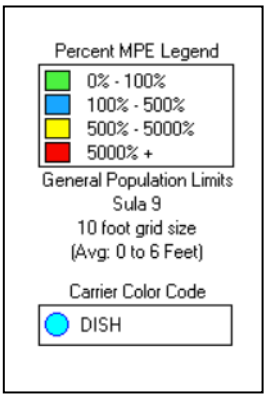


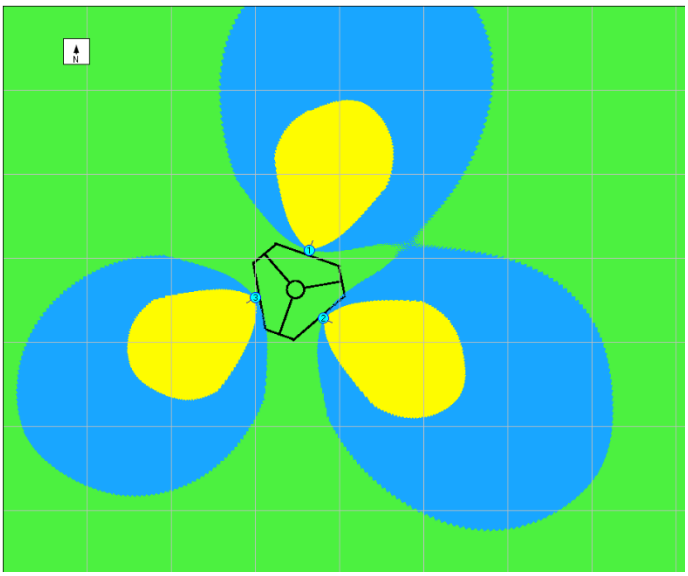
Near-field Analysis

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

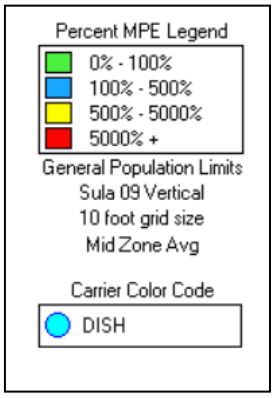
RF levels in the near field of an antenna depend on the power input to the antenna, the antenna's length and horizontal beamwidth, the mounting height of the antenna above the nearby standing level and one's position and distance from the antenna. RF levels in front of a directional antenna are higher 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.

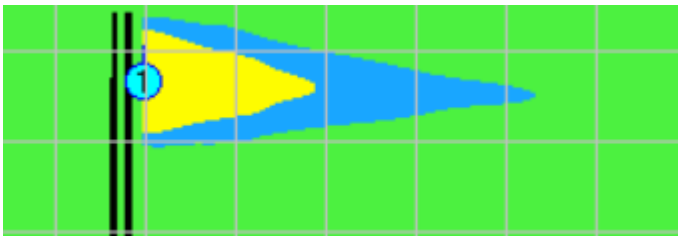
The RoofMaster graphic outputs for the same height as the DISH antennas are reproduced on the next page.





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 1.5980 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 three Caution signs and NOC Information signs be installed at the base of the monopole.

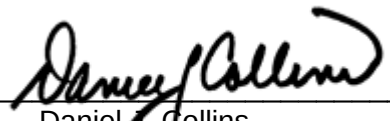
The results of the calculations, along with the described RF mitigation, combine to satisfy the FCC's RF compliance requirements and associated guidelines on compliance.

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.



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

10/11/22
Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: RFDS-NJJER02052B-Preliminary-20211202-v.1_20211203200546

CD: NJJER02052B_PrelimCD_20220915150242

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.

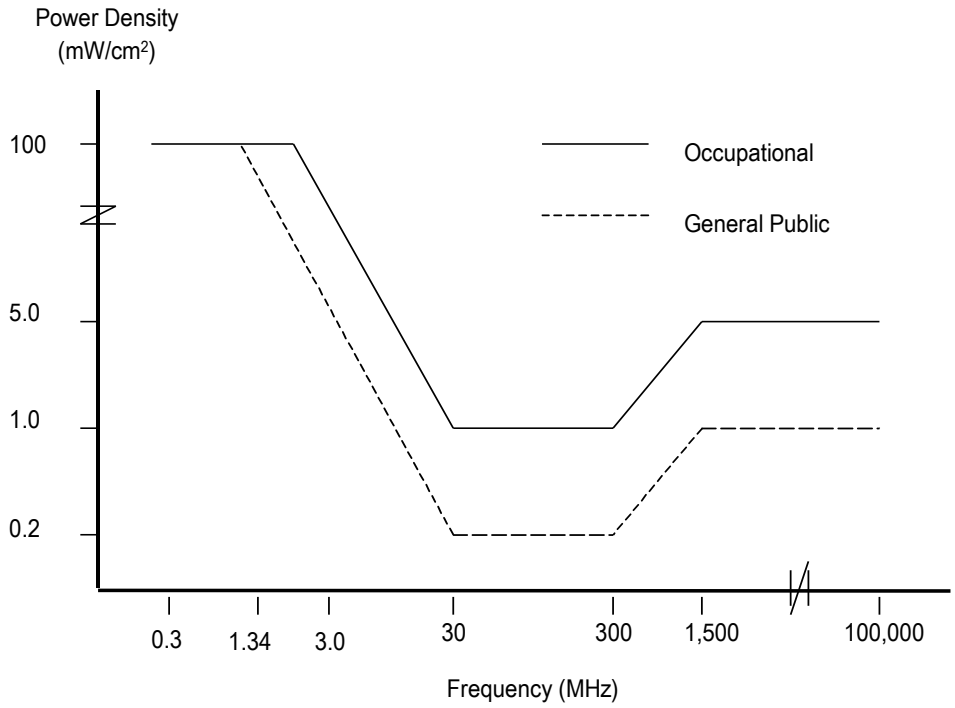
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in 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.

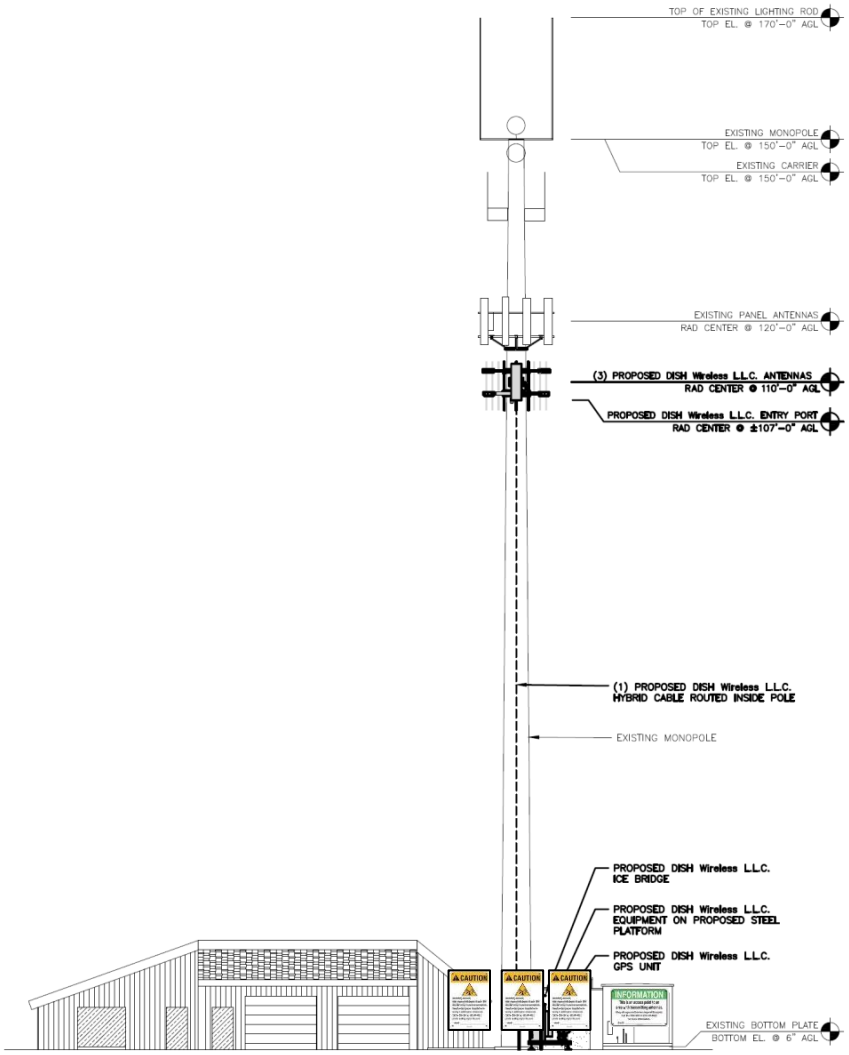
FCC Report and Order, Notice of Proposed Rulemaking, Memorandum Opinion and Order (FCC 19-126), *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies,*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

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



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

MK DEVELOPMENT

EXHIBIT G

Proof of Notification

December 01, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 770621568261

Delivery Information:

Status:	Delivered	**Delivered To:**	Receptionist/Front Desk
Signed for by:	J.JAY	**Delivery Location:**	2725 MAIN ST
Service type:	FedEx 2Day AM		
Special Handling:	Deliver Weekday; Adult Signature Required		STRATFORD, CT, 06615
		Delivery date:	Dec 1, 2022 10:19

Shipping Information:

Tracking number:	770621568261	**Ship Date:**	Nov 29, 2022
		Weight:	2.0 LB/0.91 KG

Recipient:
Jay Habansky- Planning & Zoning, Town of Stratford
2725 MAIN ST
STRATFORD, CT, US, 06615

Shipper:
Michael Jones,
140 Beach 137th Street
ROCKAWAY PARK, NY, US, 11694

Reference NJJER02052B

Thank you for choosing FedEx

December 01, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 770621649887

Delivery Information:

Status:	Delivered	**Delivered To:**	Receptionist/Front Desk
Signed for by:	D.DOMINICK	**Delivery Location:**	2725 MAIN ST
Service type:	FedEx 2Day AM		
Special Handling:	Deliver Weekday; Adult Signature Required		STRATFORD, CT, 06615
		Delivery date:	Dec 1, 2022 10:20

Shipping Information:

Tracking number:	770621649887	**Ship Date:**	Nov 29, 2022
		Weight:	2.0 LB/0.91 KG

Recipient:
Brian Donovan- Building Department, Town of Stratford
2725 MAIN ST
STRATFORD, CT, US, 06615

Shipper:
Michael Jones,
140 Beach 137th Street
ROCKAWAY PARK, NY, US, 11694

Reference NJJER02052B

Thank you for choosing FedEx

December 01, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 770621830542

Delivery Information:

Status:	Delivered	**Delivered To:**	Receptionist/Front Desk
Signed for by:	S.SCALLA	**Delivery Location:**	2725 MAIN ST
Service type:	FedEx 2Day AM		
Special Handling:	Deliver Weekday		STRATFORD, CT, 06615
		Delivery date:	Dec 1, 2022 10:15

Shipping Information:

Tracking number:	770621830542	**Ship Date:**	Nov 29, 2022
		Weight:	0.5 LB/0.23 KG

Recipient:
Mayor Laura Hoydick, Town of Stratford
2725 Main Street
STRATFORD, CT, US, 06615

Shipper:
Michael Jones,
140 Beach 137th Street
ROCKAWAY PARK, NY, US, 11694

Reference NJJER02052B

Thank you for choosing FedEx