DEVELOPMENT

8/24/2022

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

RE: Request of DISH Wireless LLC for an Order to Approve the Shared Use of an Existing Tower
623 - 627 Honeyspot Road, Stratford, CT 06615
Latitude: 41.176965° N / Longitude: -73.146356° W

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes ("C.G.S.") §16-50aa, as amended, DISH Wireless LLC ("DISH") hereby requests an order from the Connecticut Siting Council ("Council") to approve the shared use by DISH of an existing telecommunication tower at 627 Honeyspot Road in Stratford (the "Property"). The existing 102' 9" Monopole tower is owned by Becker LLC. The underlying property is owned by Becker LLC. DISH requests that the Council find that the proposed shared use of the Becker LLC 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 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 Jay Habansky, Planning & Zoning Administrator – City of Stratford, Brian Donovan, Building Official – City of Stratford, John Becker, Member – Becker LLC.

Background

The existing Becker LLC facility consists of a 102'-9" Monopole tower within a 3,816 sq.ft area. DISH is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. DISH and Becker LLC have agreed to the proposed shared use of the 627 Honeyspot Road tower pursuant to mutually acceptable terms and conditions. Likewise, DISH and Becker LLC have agreed to the proposed installation of equipment cabinets on the ground on the Southwest side of the tower within the existing compound. Becker LLC 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 62'-2"-foot level. In addition, DISH will install a ground equipment cabinet on a 8' x 10' 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 102'-9"; Dish Wireless LLC proposed antennas will be located at a center line height of 62'-2".

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 13.02% 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 Becker LLC 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 Becker LLC 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 Becker LLC 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 Becker LLC facility other than periodic maintenance. The proposed shared use of the Becker LLC 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 Becker LLC 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 Becker LLC tower.

DEVELOPMENT

Conclusion

For the reasons discussed above, the proposed shared use of the existing Becker LLC tower at 627 Honeyspot Road 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

MK DEVELOPMENT

EXHIBIT A

Letter of Authorization

Letter of Authorization

July 11, 2022

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

Re: Development Application Letter of Authorization- 627 Honeyspot Road, Stratford, CT 06615
NJJER02049C

Dear Sir/Madam

Becker, LLC owns the tower facility at 623-627 Honeyspot Road, Bridgeport, CT 06605 and identified as Block #6, Lot 128,129 and 130 (the "Property"). Becker, LLC 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 Self Support Tower 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 Becker, LLC. that Becker, LLC 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 Becker, LLC.

Please contact me at 203-375-9094 or johnbecker@com-tronics.com should you have any questions or concerns.

Sincerely,

John Becker
Member
Becker, LLC

MK DEVELOPMENT

EXHIBIT B

Property Card

623 HONEYSPOT RD

Location	623 HONEYSPOT RD	**Mblu**	30/6 12/ 6/ /
Acct#	0795100	**Owner**	BECKER LLC
PBN		**Assessment**	$802,690
Appraisal	$1,146,700	**PID**	8228
Building Count	1	**Sewer Use**	BZZ
EPA Action			

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$932,200	$214,500	$1,146,700

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$652,540	$150,150	$802,690

Owner of Record

Owner	BECKER LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	951 BEAVER DAM RD STRATFORD, CT 06614	**Book**	3374
		Page	0243
		Sale Date	04/20/2010
		Instrument	04

Ownership History

Ownership History						
Owner	**Sale Price**	**Certificate**	**Instrument**	**Sale Date**	**Book**	**Page**
BECKER LLC	$0		04	04/20/2010	3374	0243
BECKER JOHN & DEBORAH (SV)	$54,000		UNKQ	07/17/1984	0597	0087
TOTH JOHN S & CAROL A (SV)	$47,000		UNKQ	09/24/1982	0573	0794
PAOLA FRANK & ROSALIE (SV)	$24,000		UNKQ	03/21/1969	0448	0174

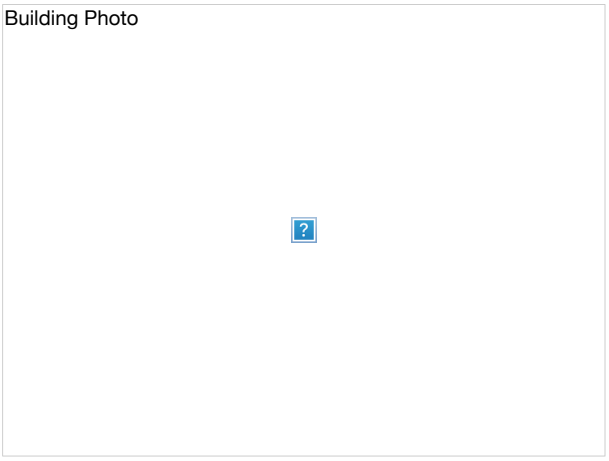
Building Information

Building 1 : Section 1

Year Built: 1985
Living Area: 2,616
Building Percent Good: 74

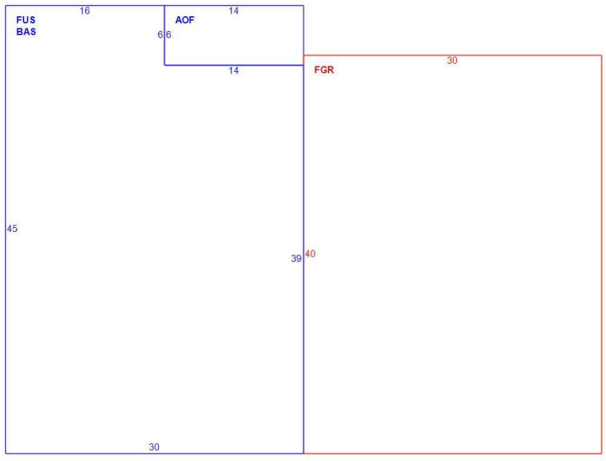
Building Attributes	
Field	**Description**
Style:	Telephone Bldg
Model	Commercial
Grade	B
Stories:	1 Story
Occupancy	1.00
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Built Up
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Vinyl/Asphalt
Interior Floor 2	Concr-Finished
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Partial
Struct Class	
Bldg Use	Tel Rel Tw
1st Floor Use:	434
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Walls
Rooms/Prtns	Average
Wall Height	10.00
% Comm Wall	

Building Photo



(https://images.vgsi.com/photos/StratfordCTPhotos///0088/IMG_0057_

Building Layout



(ParcelSketch.ashx?pid=8228&bid=8228)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,266	1,266
FUS	Finished Upper Story	1,266	1,266
AOF	Office Area	84	84
FGR	Garage	1,200	0
		3,816	2,616

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
A/C	Air Condition	1866.00 S.F.	$3,600	1

MEZ1	Mezzanine - Unfin	144.00 S.F.	$1,500	1

Land

Land Use

Use Code	322
Description	Gar/Off
Zone	CA
Neighborhood	100
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.22
Frontage	0
Depth	0
Assessed Value	$150,150
Appraised Value	$214,500

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV	Paving	AS	Asphalt	4000.00 S.F.	$4,000	1
CTR	Cell Recievers			4.00 Units	$698,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$932,200	$214,500	$1,146,700
2020	$932,200	$214,500	$1,146,700
2019	$932,200	$214,500	$1,146,700

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$652,540	$150,150	$802,690
2020	$652,540	$150,150	$802,690
2019	$652,540	$150,150	$802,690

MK DEVELOPMENT

EXHIBIT C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

NJJER02049C

DISH Wireless L.L.C. SITE ADDRESS:

627 HONEYSPOT ROAD
STRATFORD, CT 06615

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 RRHs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED 8'-0" X 10'-0" EQUIPMENT PLATFORM
- INSTALL (2) PROPOSED W8X10 STEEL I BEAMS
- INSTALL (1) PROPOSED 6" WIDE CABLE TRAY
- INSTALL (1) PROPOSED 2'-0" WIDE CABLE TRAY
- INSTALL (1) PROPOSED 3'-0" WIDE CABLE TRAY
- 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 STEP-OVER
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)

SITE INFORMATION

PROPERTY OWNER:	BECKER LLC
ADDRESS:	951 BEAVER DAM RD STRATFORD CT, 6614
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	N/A
TOWER APP NUMBER:	N/A
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41° 10' 35.92" N 41.176921 N
LONGITUDE (NAD 83):	73° 08' 45.70" W 73.146052 W
ZONING JURISDICTION:	FAIRFIELD COUNTY
ZONING DISTRICT:	C1
PARCEL NUMBER:	3006120006
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	UNITED ILLUMINATING
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	BECKER, LLC 951 BEAVER DAM RD STRATFORD, CT 06614
SITE DESIGNER:	M+K DEVELOPMENT 140 BEACH 137TH STREET ROCKAWAY, NY 11694
SITE ACQUISITION:	ALEXIS ELAGMI ALEXIS.ELAGMI@DISH.COM
CONSTRUCTION MANAGER:	OMAR ZEERBAN OMAR.ZEERBAN@DISH.COM
RF ENGINEER:	MURUGABIRAN JAYAPAL MURUGABIRAN.JAYAPAL@DISH.COM

CONNECTICUT CODE OF COMPLIANCE

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

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

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM 3 ADP BLVD, NJ 07068, USA:

HEAD SOUTHEAST ON GREAT MEADOW RD, TURN LEFT TOWARD GREAT MEADOW RD, TURN RIGHT ONTO GREAT HEAD NORTHEAST TOWARD ADP BLVD. TURN LEFT ONTO ADP BLVD. TURN RIGHT TOWARD 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. KEEP RIGHT TO STAY ON I-95 N, FOLLOW SIGNS FOR GEORGE WASHINGTON BRG/FORT LEE. ENTERING NEW YORK. KEEP RIGHT TO CONTINUE ON I-95 LOWER LEVEL N/TRANS-MANHATTAN EXPY/U.S. 1 LOWER LEVEL 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. ENTERING CONNECTICUT. TAKE EXIT 31 FOR HONEYSPOT RD. TURN RIGHT ONTO HONEYSPOT RD. TURN LEFT ONTO COLUMBUS AVE. DESTINATION WILL BE ON THE RIGHT.

VICINITY MAP

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.

SHEET INDEX

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

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

STATE OF CONNECTICUT
BRIJ MAGAN
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION

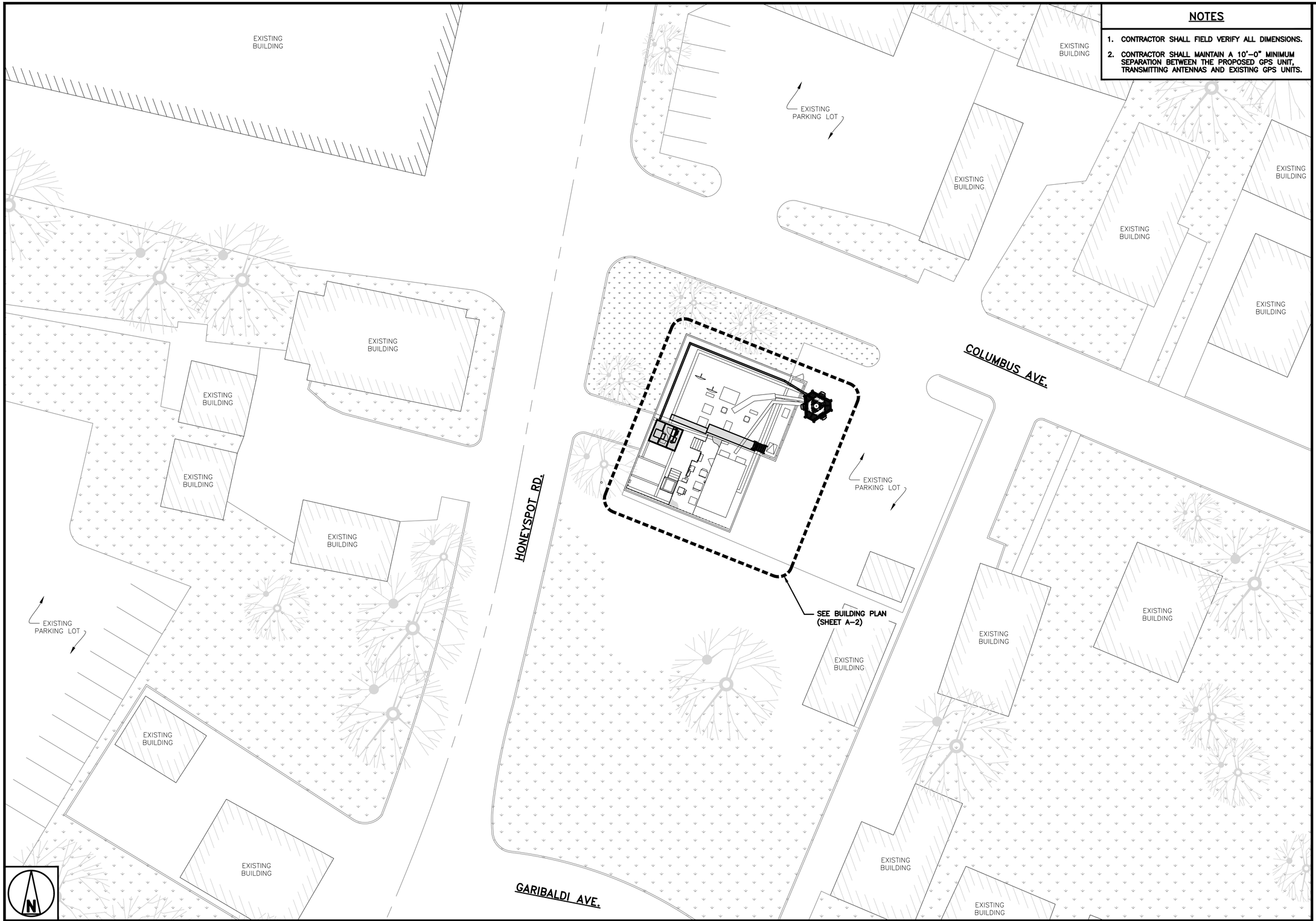
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-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.

OVERALL SITE PLAN

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

1

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

MK DEVELOPMENT

140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGUIRE
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE

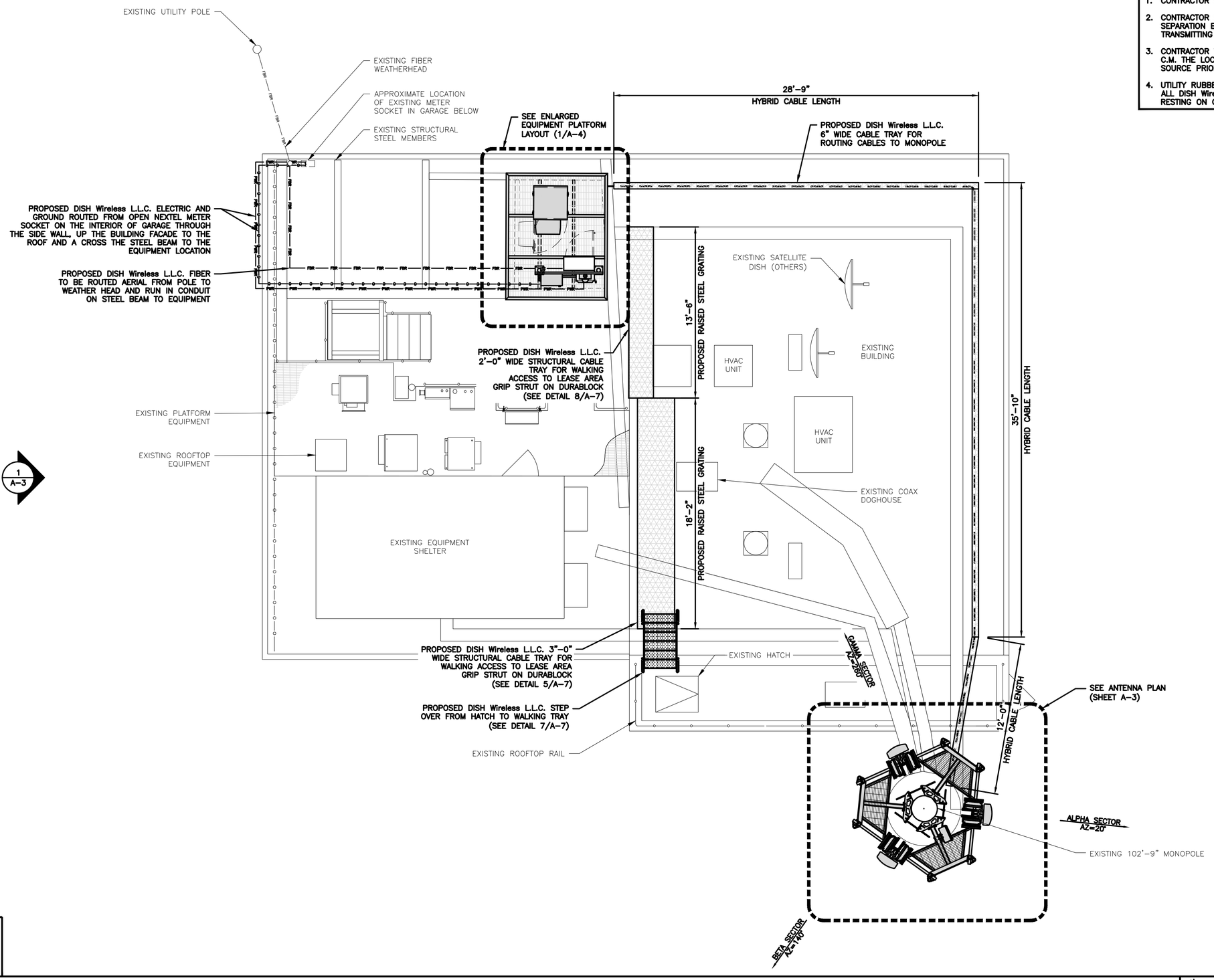
OVERALL SITE PLAN

SHEET NUMBER

A-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. CONTRACTOR TO VERIFY WITH DISH Wireless L.L.C. C.M. THE LOCATION OF THE POWER AND FIBER SOURCE PRIOR TO CONSTRICTION.
4. UTILITY RUBBER MAT TO BE IN STALLED UNDER ALL DISH Wireless L.L.C. EQUIPMENT THAT IS RESTING ON OR AFFIXED TO ROOF MEMBRANE



ENLARGED BUILDING PLAN

4' 2' 0 4' 8'
1/4"=1'-0"

1

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGUIRE
8/25/2022
33678
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

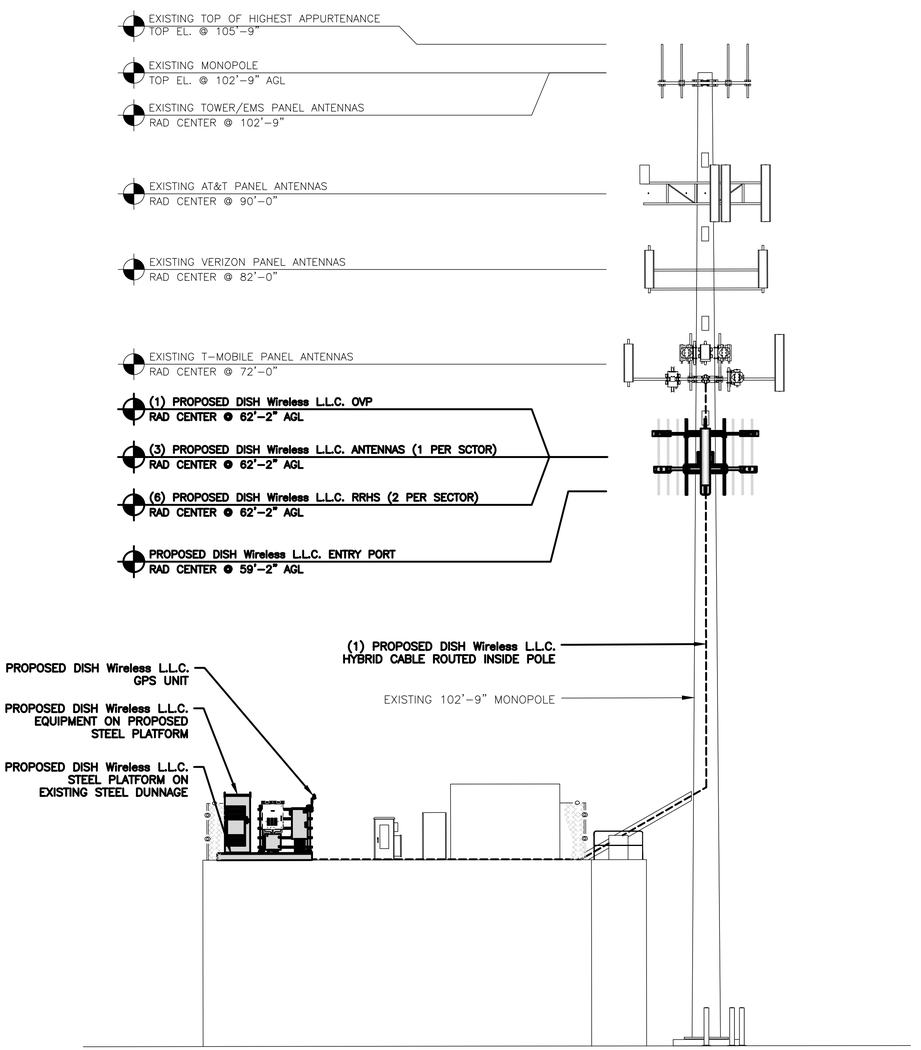
REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE
ENLARGED BUILDING PLAN

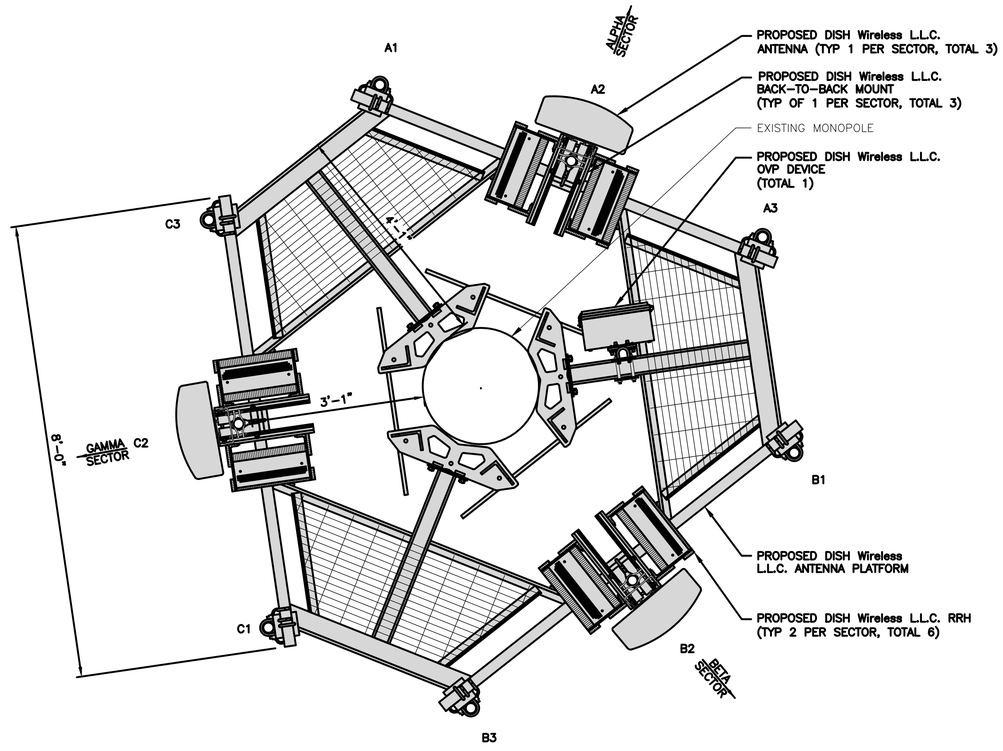
SHEET NUMBER
A-2



ELEVATION

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

1



ANTENNA LAYOUT

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

2

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. ALPHA SECTOR SHOWN TYPICAL FOR BETA AND GAMMA SECTORS.

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 (125' LONG)	–	–	–	RAYCAP – RDIDC-9181-PF-48
A2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	20°	62'-2"		FUJITSU – TA08025-B604 FUJITSU – TA08025-B605	N70/N66 N71/N29	A2	
A3	–	–	–	–	–		–	–	–	
B1	–	–	–	–	–	SHARED WITH ALPHA	–	–	–	SHARED WITH ALPHA
B2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	140°	62'-2"		FUJITSU – TA08025-B604 FUJITSU – TA08025-B605	N70/N66 N71/N29	B2	
B3	–	–	–	–	–		–	–	–	
C1	–	–	–	–	–	SHARED WITH ALPHA	–	–	–	SHARED WITH ALPHA
C2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	260°	62'-2"		FUJITSU – TA08025-B604 FUJITSU – TA08025-B605	N70/N66 N71/N29	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
BRIAN J MAGNAN
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
NJJER02049C

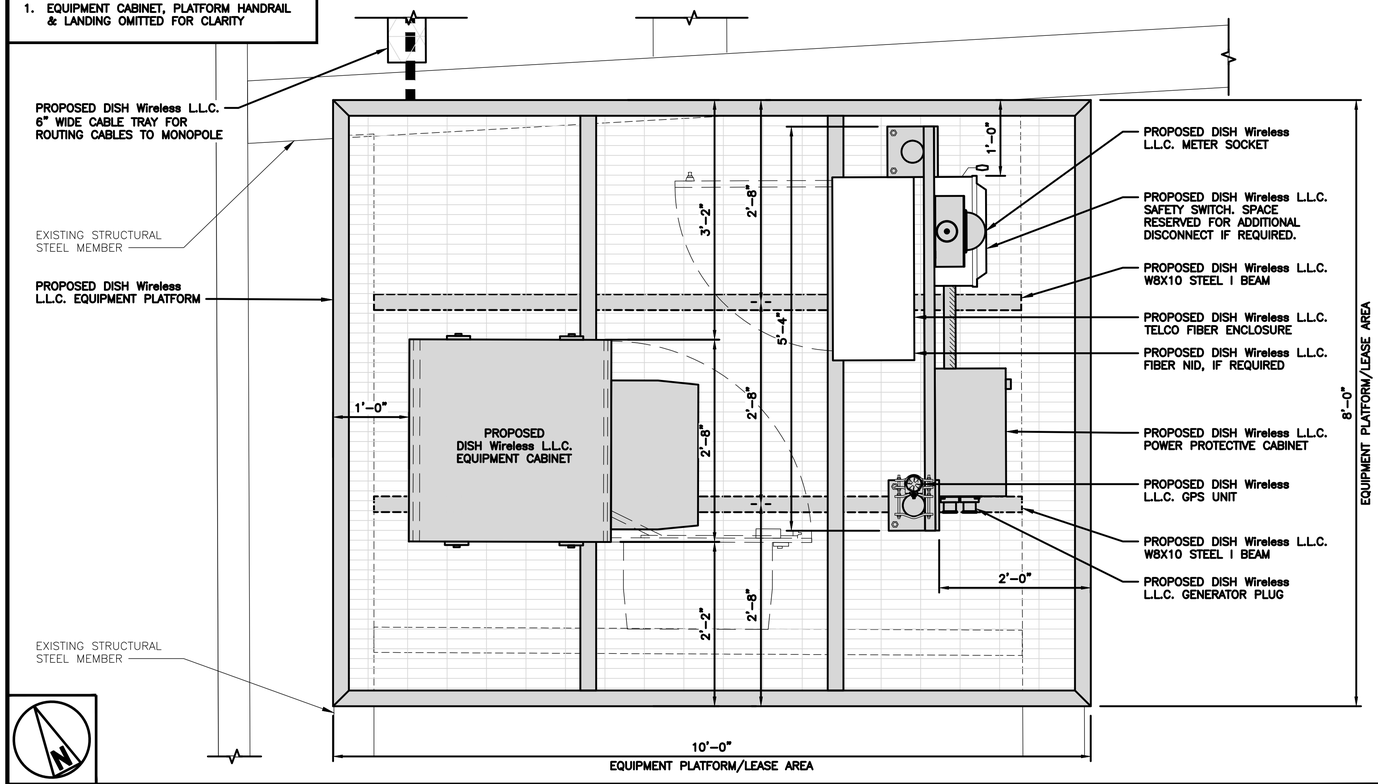
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE
ANTENNA PLAN AND ELEVATION

SHEET NUMBER
A-3

NOTES

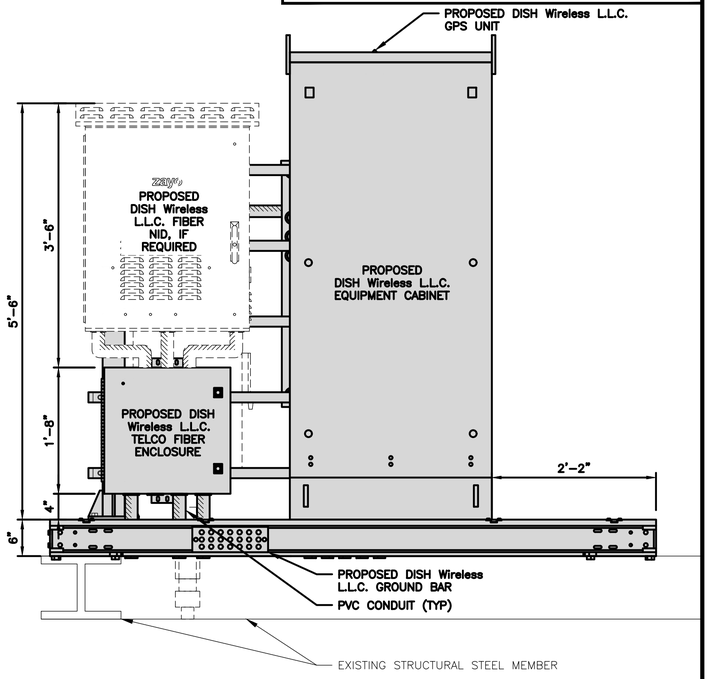
1. EQUIPMENT CABINET, PLATFORM HANDRAIL & LANDING OMITTED FOR CLARITY



NO SCALE | 1 | H-FRAME EQUIPMENT ELEVATION | 12" 9" 6" 3" 0 1' 2" 1"=1'-0" | 3

NOTES

1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
2. EQUIPMENT CABINET OMITTED FOR CLARITY

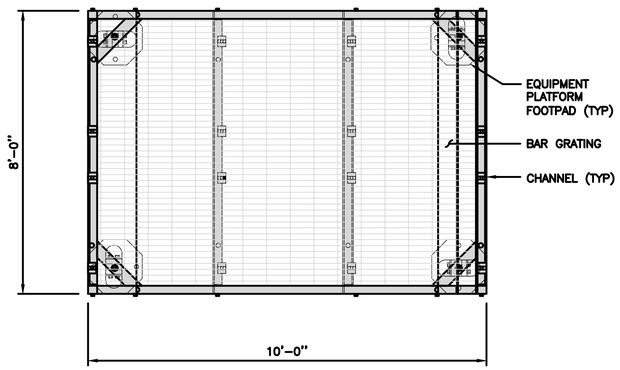


SIDE ELEVATION

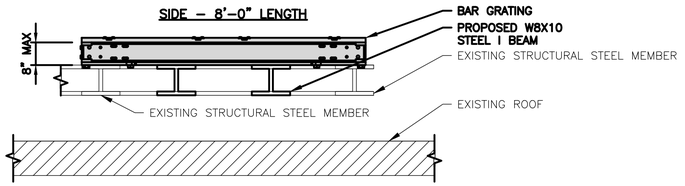
EQP810 STEEL PLATFORM	
TOTAL WEIGHT	±1017.8 lbs
MAX LOAD CAPACITY	10,000 lbs

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

TOP

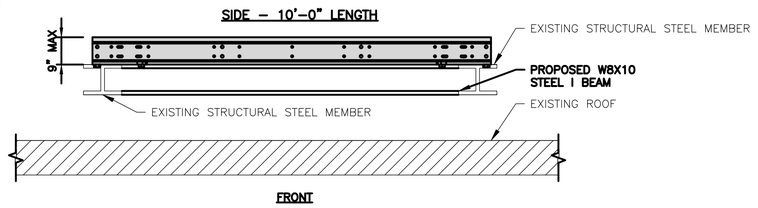


SIDE – 8'-0" LENGTH

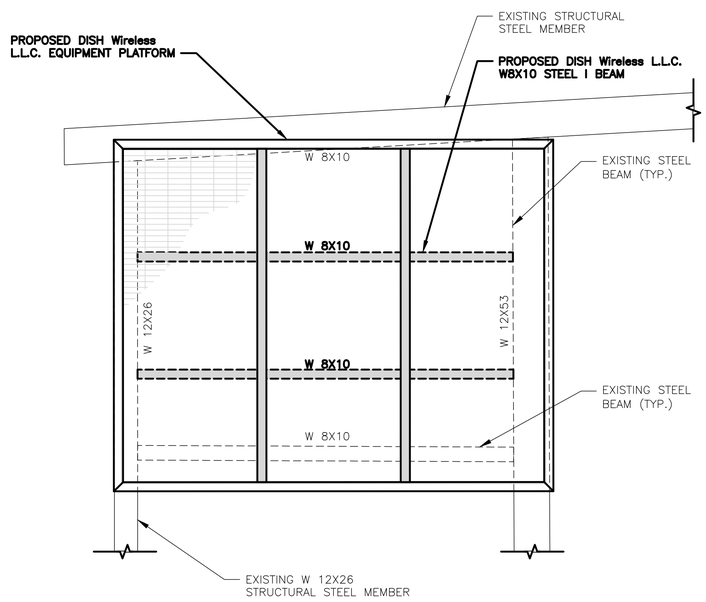


SIDE

SIDE – 10'-0" LENGTH



FRONT



STEEL FRAMING PLAN | NO SCALE | 2 | STEEL FRAMING PLATFORM PLAN | NO SCALE | 4

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGNAN
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

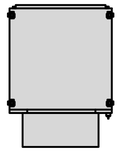
A&E PROJECT NUMBER
NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

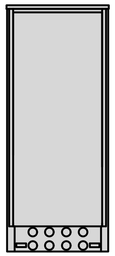
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-4

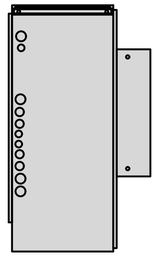
ENERSYS HEX 20000059996	
DIMENSIONS (HxWxD)	73"x30"x32"
POWER SYSTEM	-48V ALPHA/600A
HEATER	800W
TOTAL WEIGHT (EMPTY)	376 lbs



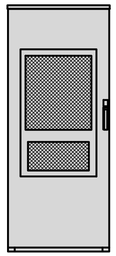
PLAN



BACK



SIDE

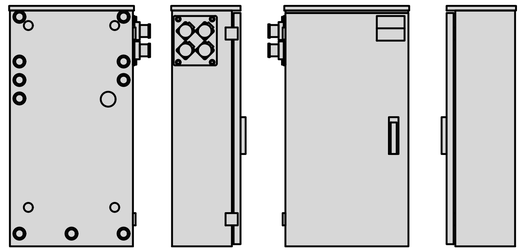


FRONT

CABINET DETAIL | NO SCALE | 1

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

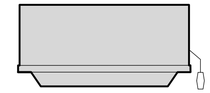
TOP



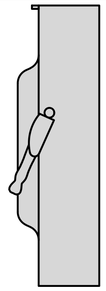
BACK SIDE FRONT SIDE

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

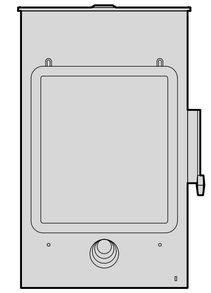
SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E-2875



TOP



SIDE

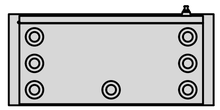


FRONT

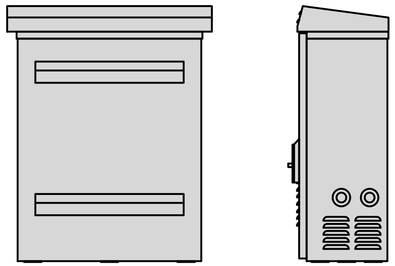
SAFETY SWITCH DETAIL | NO SCALE | 3

NOT USED | NO SCALE | 4

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



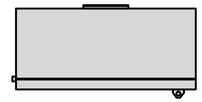
BOTTOM



BACK SIDE FRONT

FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

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



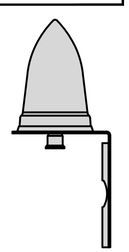
FRONT

SIDE BACK FRONT

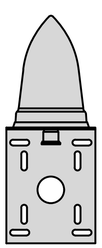
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

TOP

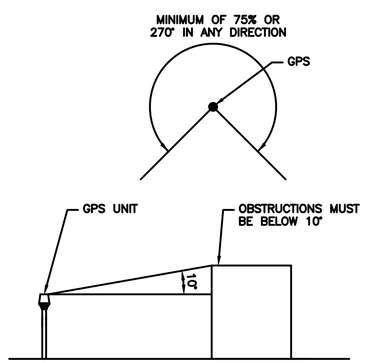


BACK

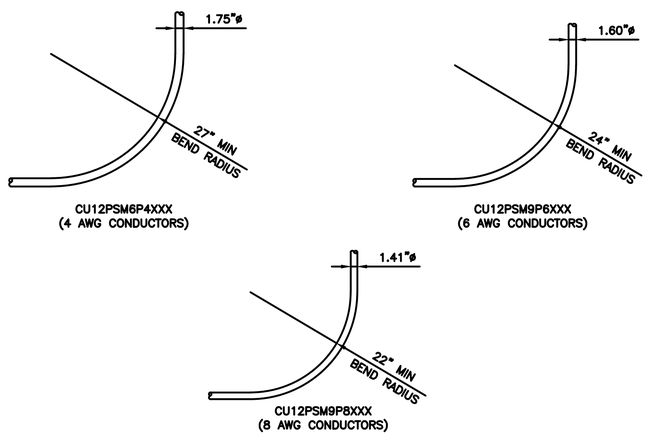


SIDE

GPS DETAIL | NO SCALE | 7



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 8



CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUSES | 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
BRIAN J MAGNAN
8/25/2022
33678
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
NJJER02049C

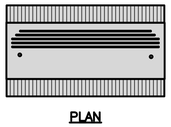
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

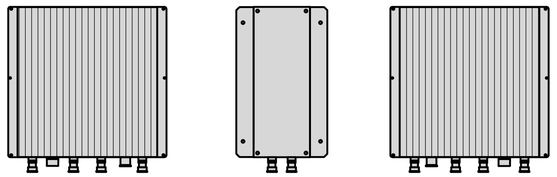
SHEET TITLE
EQUIPMENT DETAILS

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

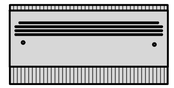

PLAN

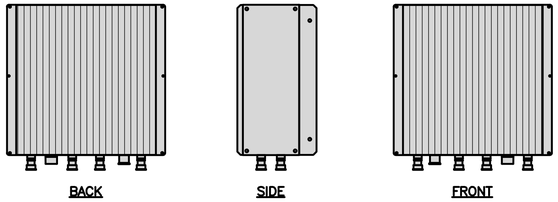

BACK SIDE FRONT

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

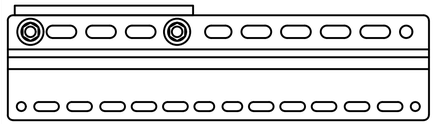

BACK SIDE FRONT

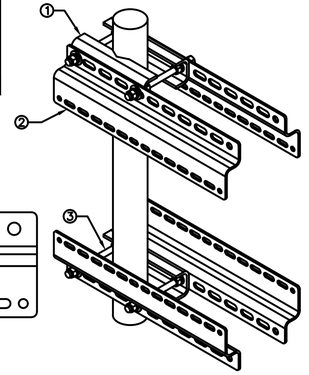
RRH DETAIL | NO SCALE | 2

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"





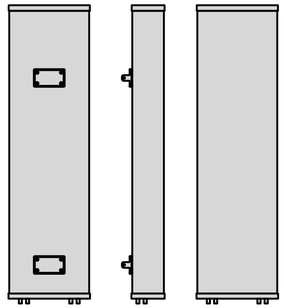
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

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

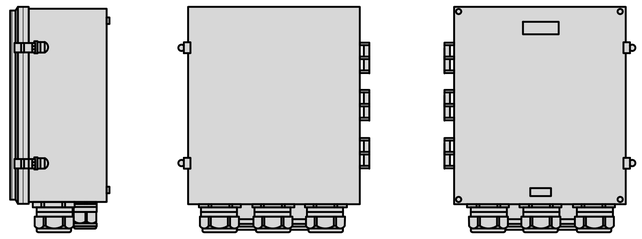

BACK SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

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

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


PLAN

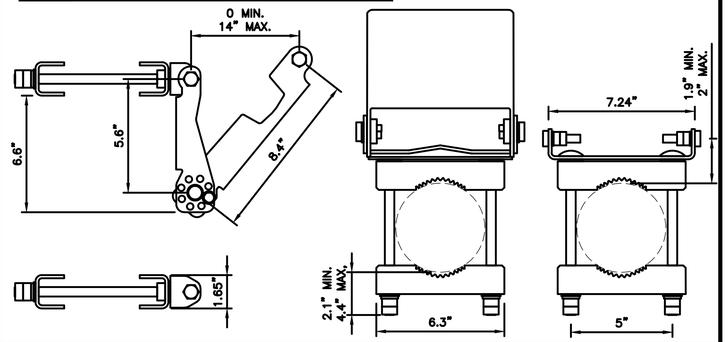

SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 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

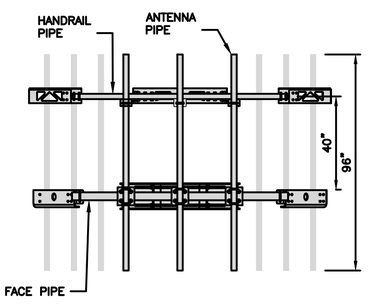


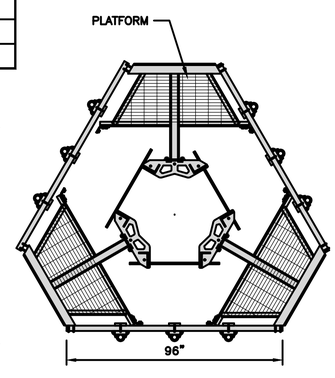
ANTENNA BRACKET DETAIL | NO SCALE | 6

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



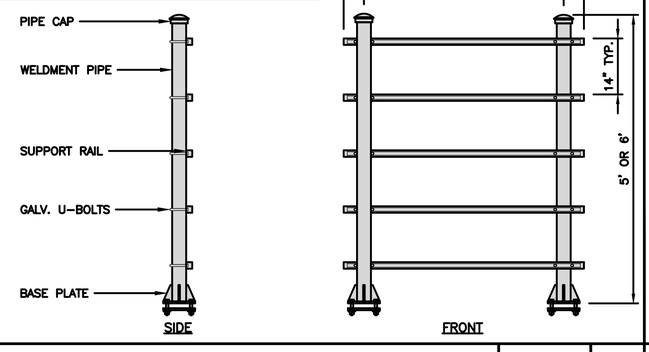


ANTENNA PLATFORM DETAIL | NO SCALE | 7

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 | 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
BRIAN J MAGNAN
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

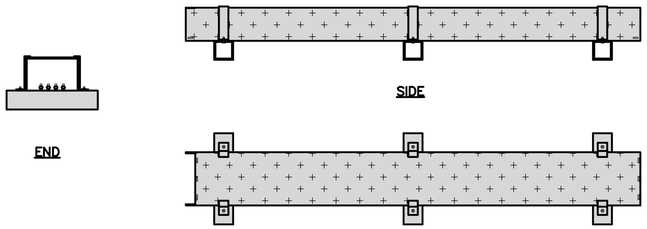
A&E PROJECT NUMBER
NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE
EQUIPMENT DETAILS

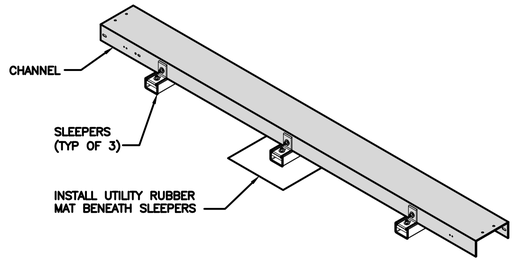
SHEET NUMBER
A-6

COMMSCOPE RT-CB4D ROOFTOP COVER KIT		MOUNTING	NON-PENETRATING
DIMENSIONS (HxWxL)	7"x 6"x 96"	INCLUDED PRODUCTS:	RTCB4D.01 CHANNEL (1)
WEIGHT/ VOLUME	85.98 LBS		MT-F1598 SLEEPERS (3)
CABLE RUN (QTY)	4		RTCUH HARDWARE
			RTHC.01 HOLD-DOWN CLAMPS (6)



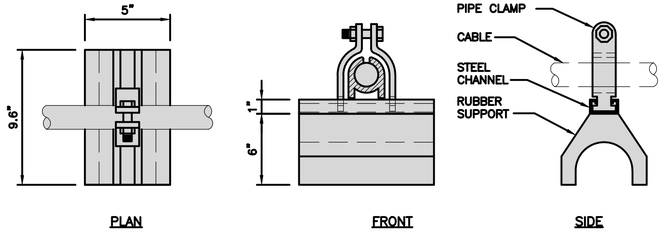
ROOF MOUNTED CABLE TRAY | NO SCALE | 1

COMMSCOPE MT-F1543 ROOFTOP CABLE BRIDGE KIT	
DIMENSIONS (HxWxL)	7"x6"x96"
WEIGHT	112.3 lbs
CABLE RUN, QUANTITY	8
NOTE: NON-PENETRATING, 12-GAUGE COVER, OR APPROVED EQUAL. INCLUDES: CHANNEL, HARDWARE AND (3) SLEEPERS	



ROOF MOUNTED CABLE BRIDGE | NO SCALE | 2

DURA BLOK DB10 ROOFTOP CABLE SUPPORT	
DIMENSIONS (HxWxL)	5"x6"x9.6"
WEIGHT/ VOLUME	5.28 LBS
ULTIMATE LOAD CAPACITY	500 LBS
NOTE: NON-PENETRATING	



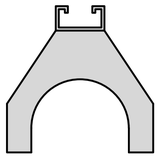
ROOF MOUNTED CABLE SUPPORT | NO SCALE | 3

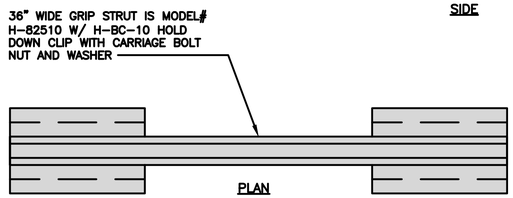
CABLE TRAY NOTES:

1. THE ANTENNA CONTRACTOR IS RESPONSIBLE FOR PROVIDING A COMPLETE CABLE TRAY SYSTEM. PROVIDE ALL HARDWARE AND ATTACHMENTS AS INDICATED ON THE DRAWINGS AS REQUIRED FOR A COMPLETE INSTALLATION. ALL CABLE TRAY SYSTEM COMPONENTS SHALL BE ALUMINUM UNLESS OTHERWISE NOTED. THE CONTRACTOR MAY SUBSTITUTE SPECIFIED CABLE TRAY WITH PERMISSION FROM THE ENGINEER.
2. CABLE TRAY: 6" DEEP (5" LOADING DEPTH), SERIES 46 ALUMINUM, AS MANUFACTURED BY B-LINE SYSTEMS, INC. REFER TO THE ROOF PLAN AND CABLE TRAY SCHEDULE FOR CABLE TRAY LOCATIONS, WIDTHS AND REQUIRED FITTINGS.
3. PROVIDE TROUGH/LADDER DROP-OUT SECTIONS AT BEGINNING AND END OF CABLE TRAY RUNS AS NECESSARY TO PREVENT MECHANICAL DAMAGE TO THE CABLES. PROVIDE DROP-OUT BUSHINGS WHERE SIGNAL CABLES AND/OR GROUND WIRES EXIT CABLE TRAY.
4. PROVIDE ALL REQUIRED HARDWARE FOR MOUNTING AND SUPPORTING CABLE TRAY INCLUDING, BUT NOT LIMITED TO LAG BOLTS, EXPANSION ANCHORS, UNISTRUT SUPPORTS, THREADED RODS, BOLTS, WASHERS, TYWRAPS, HOISTING GRIPS, ETC. USE STAINLESS STEEL HARDWARE WHERE ALUMINUM IS IN CONTACT WITH GALVANIZED STEEL.
5. FOR ALL CABLE TRAY RUNS ON THE ROOF, STENCIL A LABEL EVERY 20'-0" ON THE CABLE TRAY COVERS WHICH READS "DO NOT STAND - ANTENNA SIGNAL CABLES".
6. ALL CABLE TRAY MOUNTED TO EXTERIOR WALLS SHALL BE PAINTED TO MATCH COLOR OF EXISTING WALL.
7. ALL SECTIONS OF CABLE TRAY ROUTED ON ROOF SHALL BE COLOR CODED ORANGE WITH CONTINUOUS, DURABLE, AND WEATHERPROOF REFLECTIVE OR LUMINESCENT MARKINGS AS PER SECTION 504.4.2 OF NYC FIRE CODE.

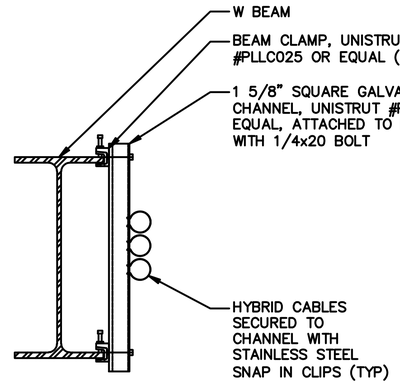
CABLE TRAY SCHEDULE & NOTES | NO SCALE | 4

DURA BLOK DB10-36 WITH B22 CHANNEL	
DIMENSIONS (HxWxL)	5-5/8"x6"x36"
WEIGHT/ VOLUME	14.36 LBS
NOTE: NON-PENETRATING	



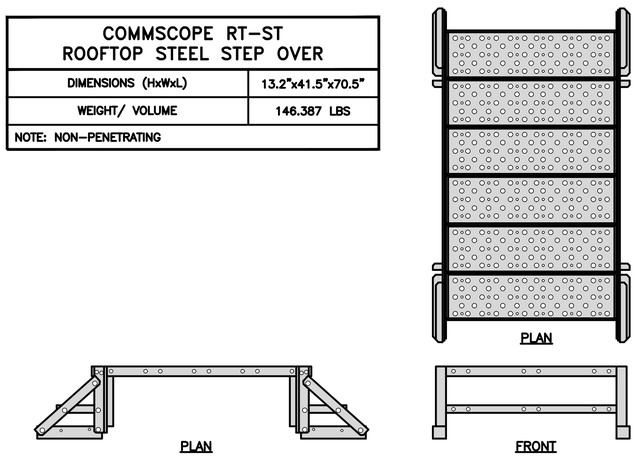


DURA BLOK DB10-36 DETAIL | NO SCALE | 5



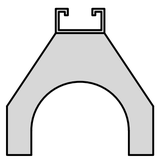
CABLE ROUTING DETAIL ALONG STEEL | NO SCALE | 6

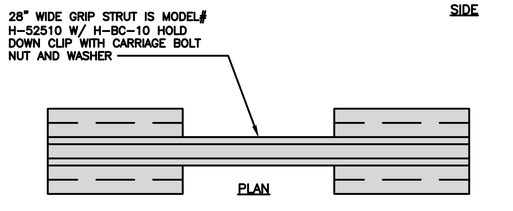
COMMSCOPE RT-ST ROOFTOP STEEL STEP OVER	
DIMENSIONS (HxWxL)	13.2"x41.5"x70.5"
WEIGHT/ VOLUME	146.387 LBS
NOTE: NON-PENETRATING	



ROOFTOP STEEL STEP OVER DETAIL | NO SCALE | 7

DURA BLOK DB10-28 WITH B22 CHANNEL	
DIMENSIONS (HxWxL)	5-5/8"x6"x28"
WEIGHT/ VOLUME	13.16 LBS
NOTE: NON-PENETRATING	





DURA BLOK DB10-28 DETAIL | 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
BRIAN J MAGUIRE
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
NJJER02049C

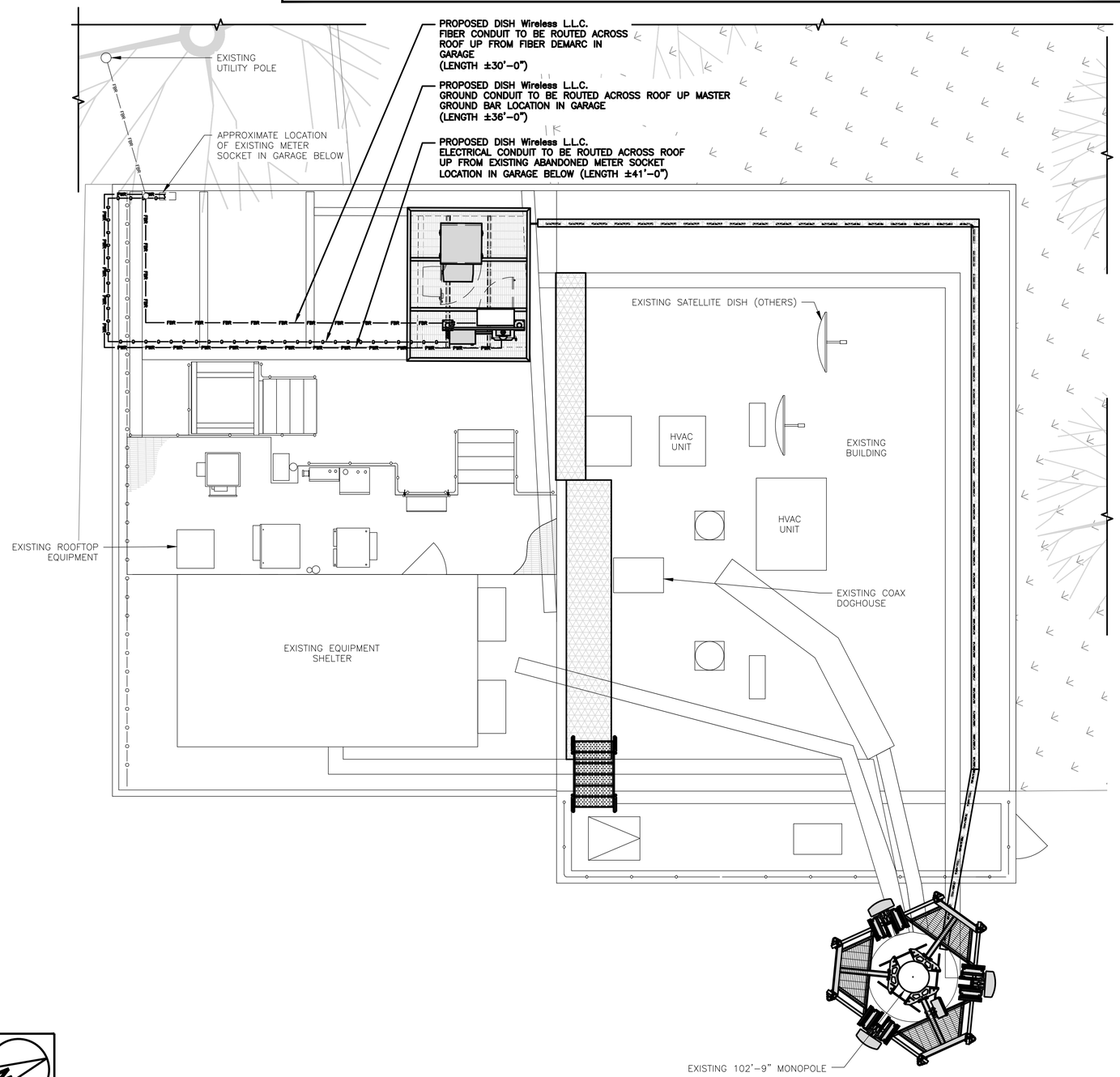
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE
CONDUIT ROUTING DETAILS

SHEET NUMBER
A-7

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

4' 2' 0 4' 8'
1/4"=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

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGUIRE
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
NJJER02049C

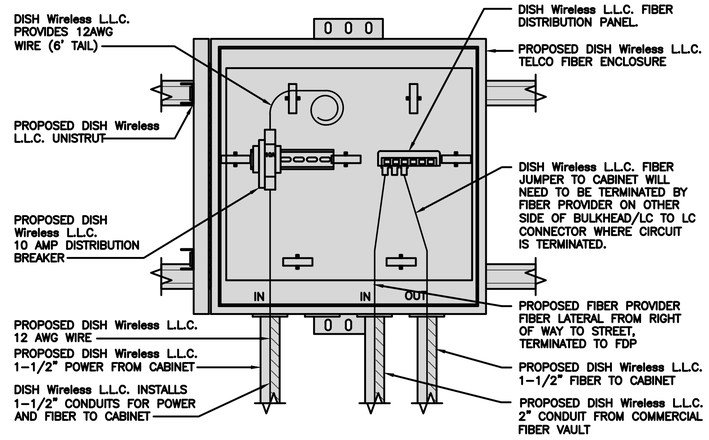
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

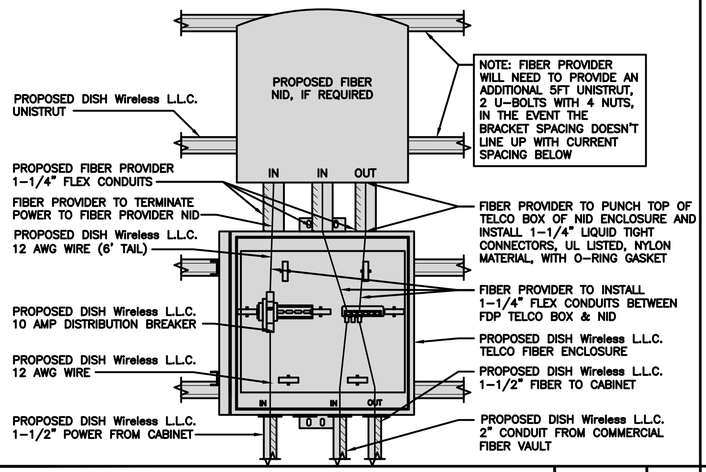
SHEET NUMBER
E-1

NOT USED | NO SCALE | 1

NOT USED | 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

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGUIRE
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION

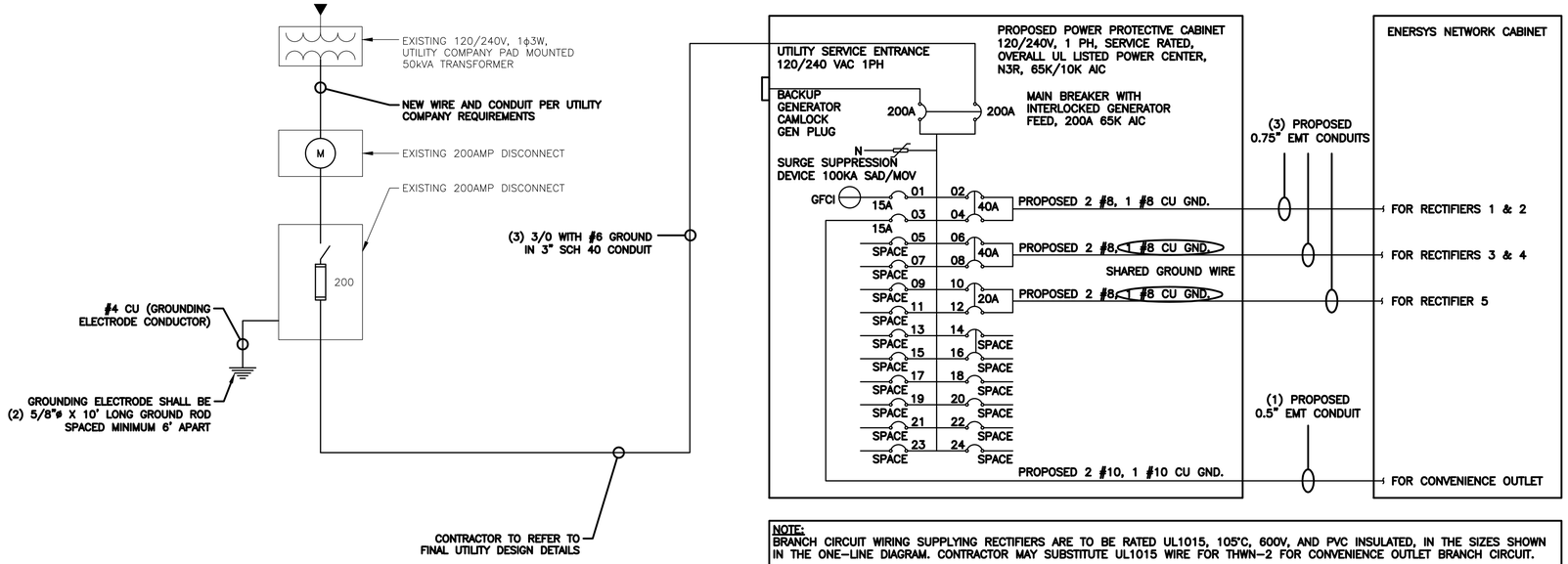
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



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

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

NOTES

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUIT AND FEEDERS COMPLY WITH THE NEC (LISTED ON T-1) ARTICLE 210.19(A)(1) FPN NO. 4.

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

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

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

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

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

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

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

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

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

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED ENERSYS PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	40A	3840		ENERSYS ALPHA CORDEX
ENERSYS GFCI OUTLET		180	15A	3	B	4			3840	RECTIFIERS 1 & 2
-SPACE-				5	A	6	40A	3840		ENERSYS ALPHA CORDEX
-SPACE-				7	B	8			3840	RECTIFIER 3 & 4
-SPACE-				9	A	10	20A	1920		ENERSYS ALPHA CORDEX
-SPACE-				11	B	12			1920	RECTIFIER 5
-SPACE-				13	A	14				-SPACE-
-SPACE-				15	B	16				-SPACE-
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						9600	9600	
200A MCB, 1ϕ, 24 SPACE, 120/240V			L1		L2					
MB RATING: 65,000 AIC			9780		9780		VOLTAGE AMPS			
			81		81		AMPS			
			81				MAX AMPS			
			102				MAX 125%			

PANEL SCHEDULE

NO SCALE | 2

NOT USED

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
BRIAN J MAGNAN
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

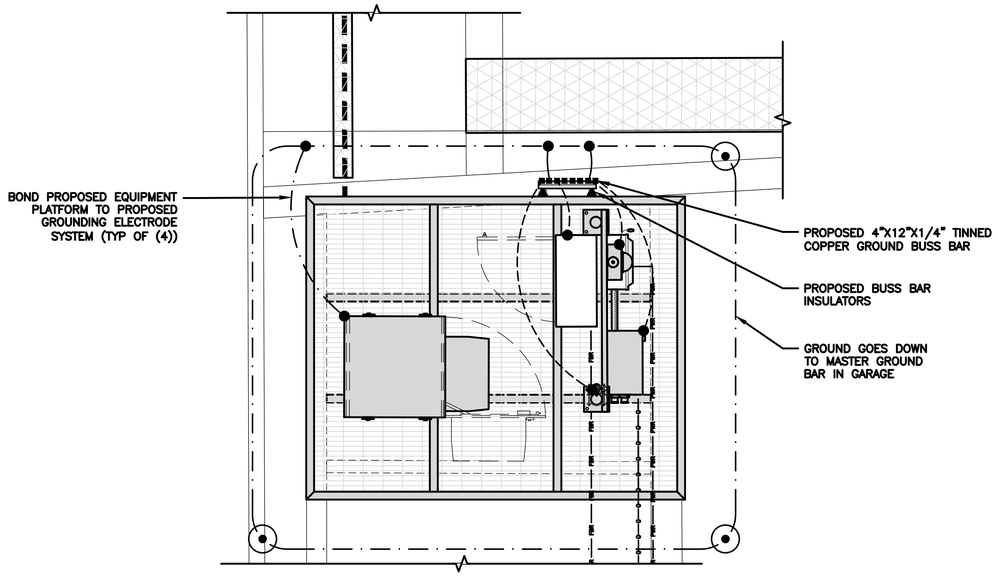
REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

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

SHEET NUMBER
E-3

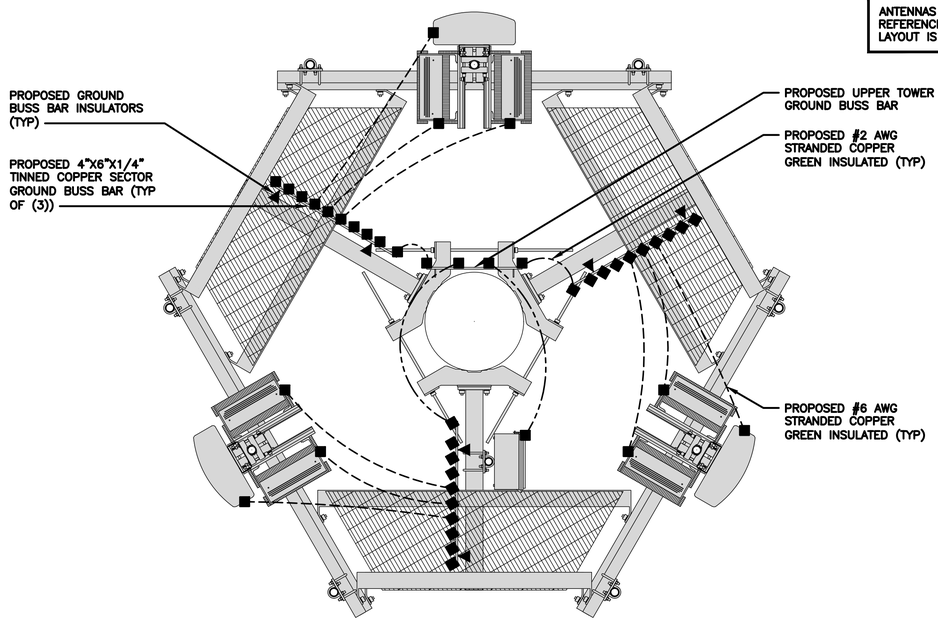


TYPICAL ROOFTOP EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO TOWER STEEL.

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

GROUNDING KEY NOTES

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
BRIAN J MAGUIRE
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE

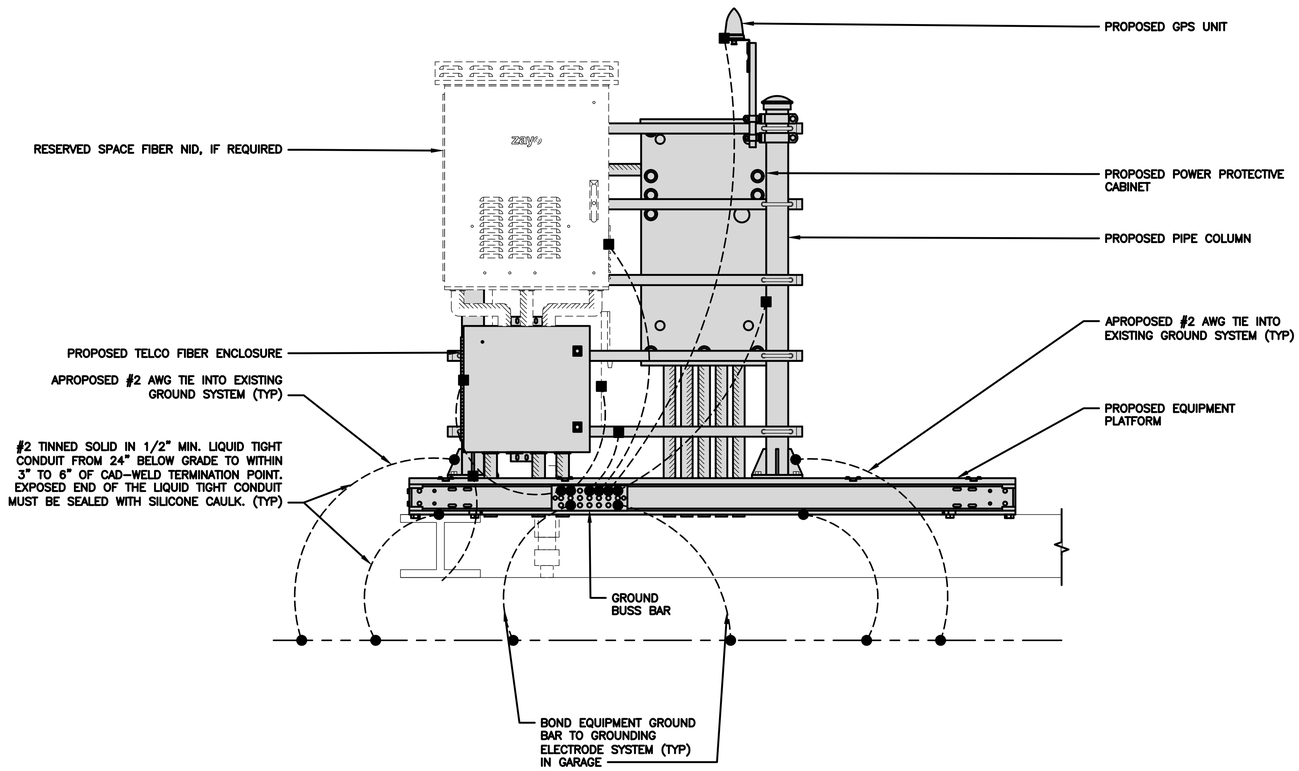
GROUNDING PLANS AND NOTES

SHEET NUMBER

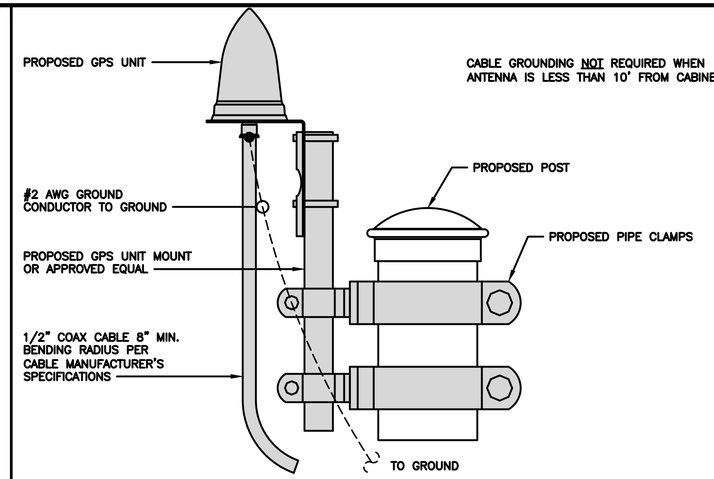
G-1

NOTES

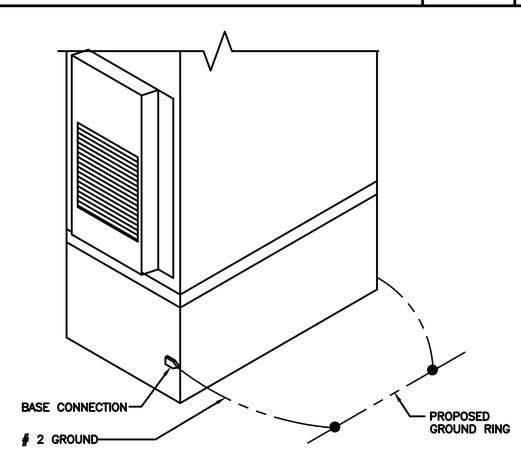
- EQUIPMENT CABINET, GENERATOR & PLATFORM HANDRAIL AND ACCESS LANDING OMITTED FOR CLARITY
- CONCRETE CAISSON TO BE BURIED AT LEAST 30" OR 6" BELOW FROST LINE (WHICHEVER IS GREATER)



H-FRAME GROUNDING DETAIL | NO SCALE | 1



TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



OUTDOOR CABINET GROUNDING | NO SCALE | 3

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGNAN
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE

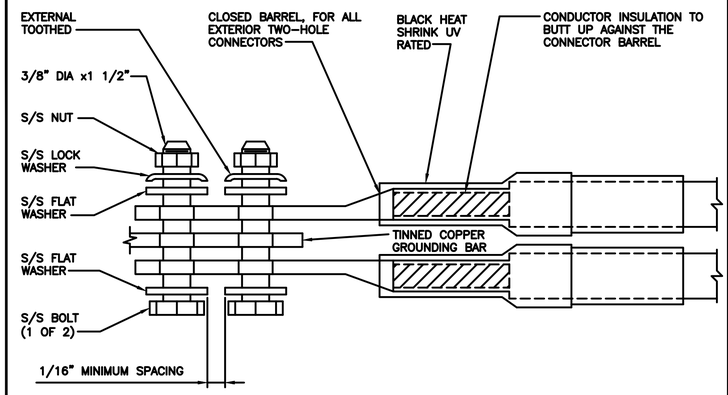
GROUNDING DETAILS

SHEET NUMBER

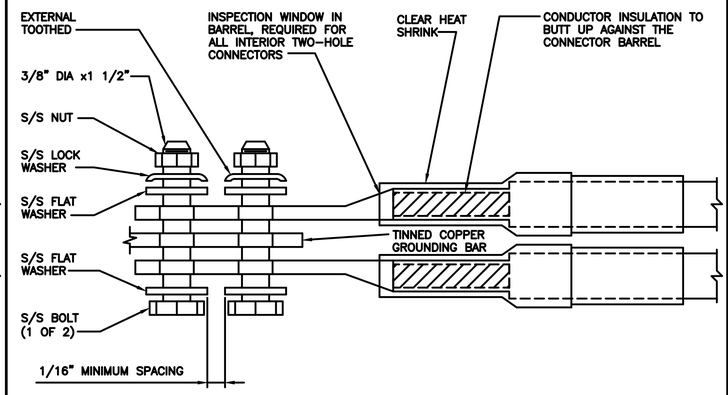
G-2

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).

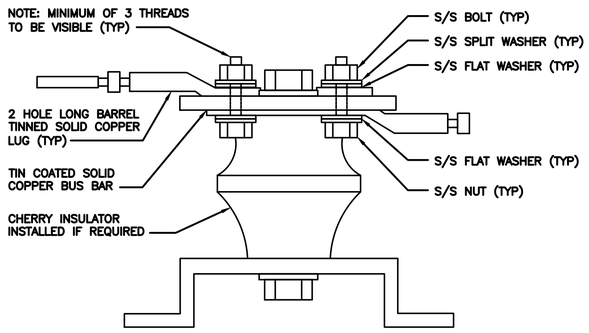
TYPICAL GROUNDING NOTES | NO SCALE | 1



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
BRIAN J MAGNAN
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

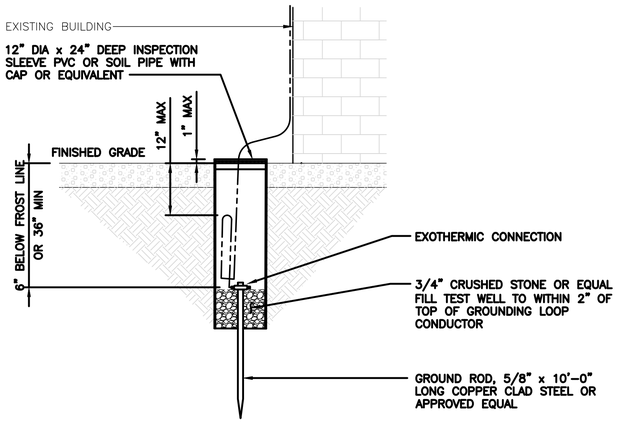
REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE
GROUNDING DETAILS

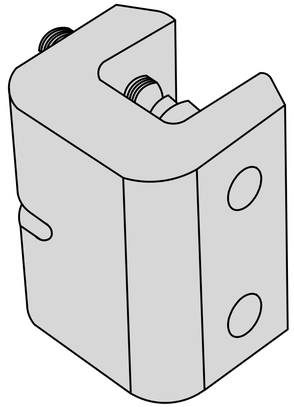
SHEET NUMBER
G-3



TYPICAL GROUND ROD WITH INSPECTION SLEEVE DETAIL | NO SCALE | 1

PANDUIT GUBC500-6 UNIVERSAL BEAM GROUNDING, CLAMP	
COPPER CONDUCTOR SIZE RANGE AWG	#6-500
FLANGE THICKNESS INCHES	0.250-0.675
STUD SIZE INCHES	1/2"
THREAD SIZE	1/2"-13
DIMENSIONS (LxWxH)	3.15"x 2.13"x 2.50"

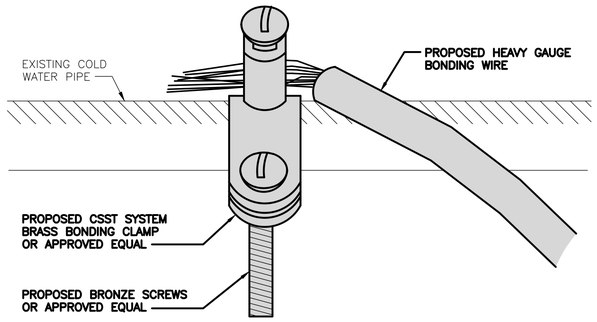
NOTE:
1. UNIVERSAL, FITS ON A WIDE RANGE OF STANDARD (ANGLED) AND WIDE FLANGE (PARALLEL) STRUCTURAL STEEL BEAMS.
2. UL 467 LISTED FOR GROUNDING AND BONDING ONLY



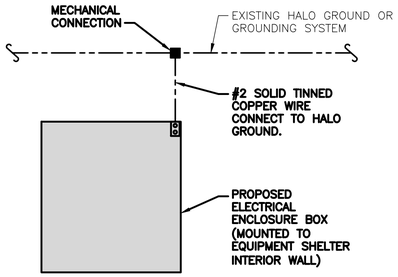
BUILDING STEEL GROUNDING DETAIL | NO SCALE | 2

NOTE

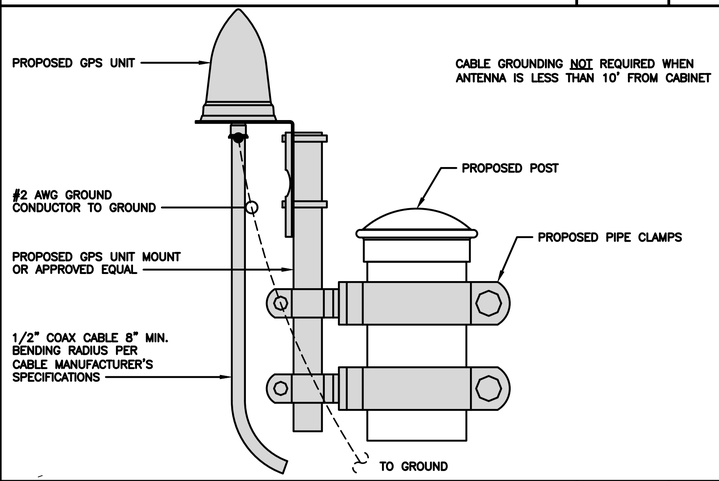
REMOVE ANY PAINT ON PIPE OR FITTING SURFACE UNDER BONDING CLAMP.



TYPICAL COLD WATER CONDUIT GROUNDING DETAIL | NO SCALE | 3



TYPICAL INDOOR ELECTRICAL ENCLOSURE BOX GROUNDING DETAIL | NO SCALE | 4



TYPICAL GPS UNIT GROUNDING | 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
BRIAN J MAGISTRO
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

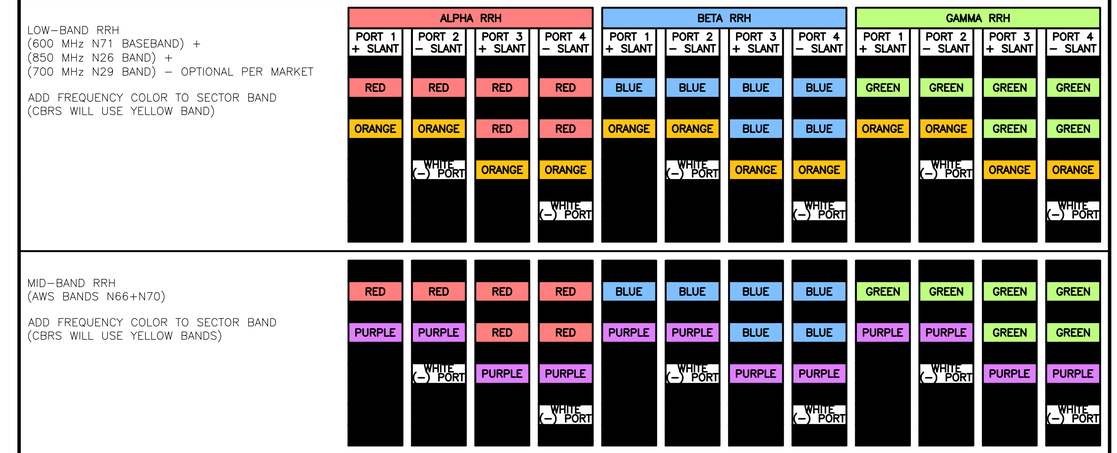
A&E PROJECT NUMBER
NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-4

HYBRID/DISCREET CABLES — 3/4" TAPE WIDTHS WITH 3/4" SPACING



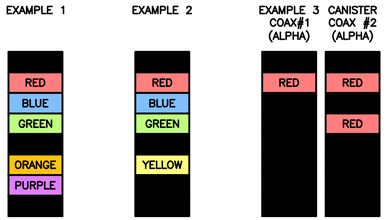
HYBRID/DISCREET CABLES

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.

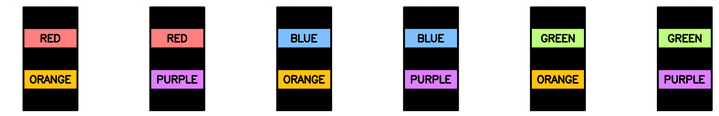


FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

POWER CABLES TO RRHs

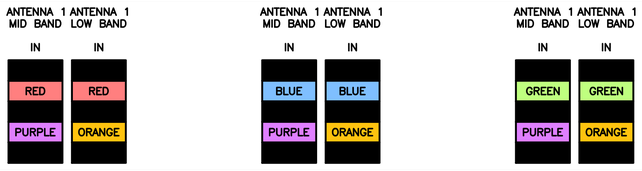
LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

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

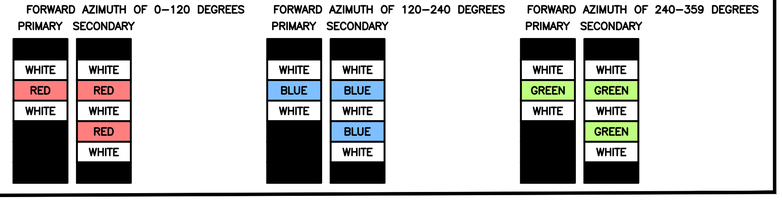
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



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.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGNAN
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER
RF-1

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

LEGEND

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

ABBREVIATIONS

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

MK DEVELOPMENT

140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGUIRE
8/25/2022
33678
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

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.

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

WARNING

Transmitting Antenna(s)

Radio frequency fields beyond this point *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

RF SIGNAGE

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGNAN
33678
LICENSED PROFESSIONAL ENGINEER
8/25/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

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.

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGUIRE
33678
LICENSED PROFESSIONAL ENGINEER
8/25/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

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.

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGUIRE
8/25/2022
33678
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

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.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRIAN J MAGUIRE
8/25/2022
33678
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JOA	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	07/12/2022	ISSUED FOR REVIEW
0	08/25/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

NJJER02049C

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02049C
627 HONEYSPOT RD.
STRATFORD, CT 06615

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

MK DEVELOPMENT

EXHIBIT D

Structural Analysis

DEVELOPMENT

June 14, 2022

PASS

RE: **Structural Analysis for Tower**

Location: **627 Honeyspot Road Stratford, CT 06615**

Site ID: **NJJER02049C**

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	
RAD Center	62-2"	
Structure Class	II	ASCE 7-16
Exposure Class	B	ASCE 7-16
Kzt Factor	1.0	ASCE 7-16
Basic Wind Speed	125	ASCE 7-16
Ice Thickness	1"	ASCE 7-16
Ice Windspeed	50 MPH	ASCE 7-16
Seismic Design Category	B	ASCE 7-16
S_{DS}	.221	ASCE 7-16

2.0 Existing Documents:

DOCUMENT	COMPANY	DATE
Proposed Drawings	M&K Development	3/02/2022
Site Visit Photos	M&K Development	1/26/2022
Existing Structural Analysis	Centerline Communication	10/27/2021

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

It is assumed that all information from the previous analysis performed by Centerline on October 27, 2021 is still accurate and correct. We have been informed that the top empty mounts will be removed from the tower and we have excluded them from our analysis. If these assumptions are 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 83.6% 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,

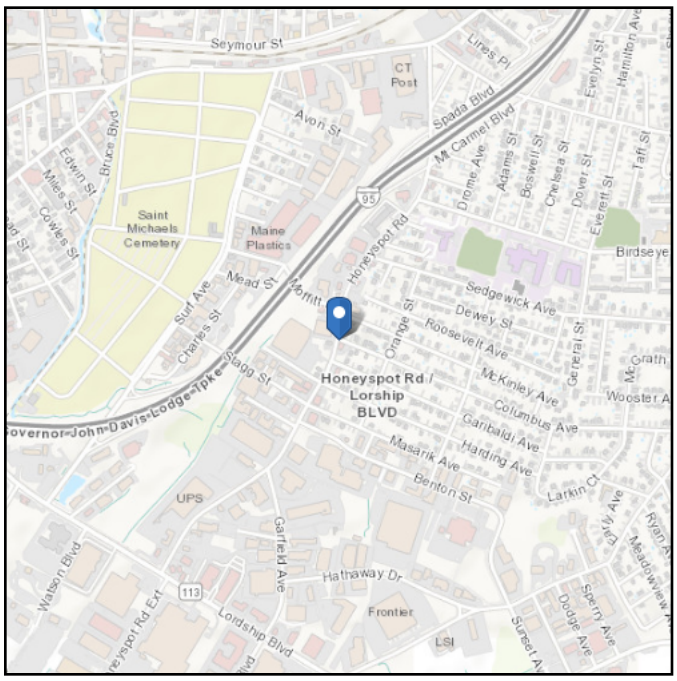
Magaram Engineering

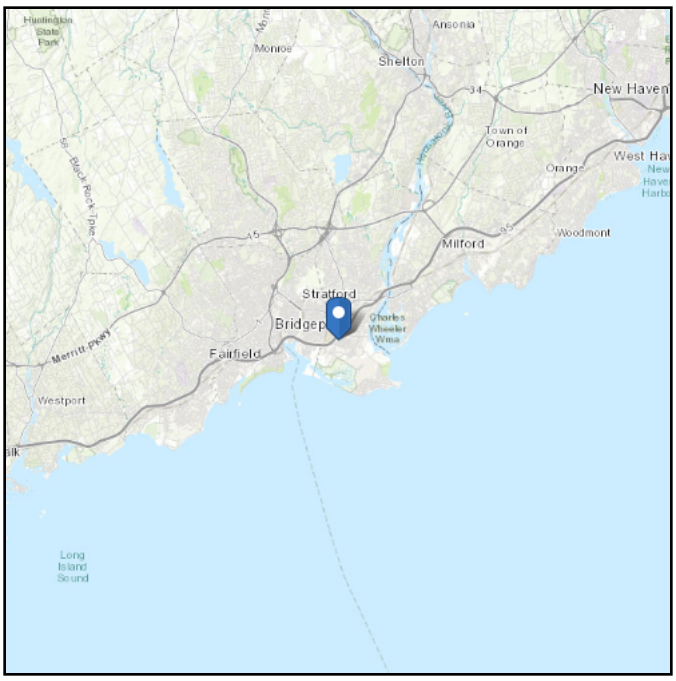
Brett Magaram
Connecticut License # 33678
Brett@MagaramEngineering.com
Phone: 914-450-8416

ASCE 7 Hazards Report

Address:
627 Honeyspot Rd
Stratford, Connecticut
06615

Standard:	ASCE/SEI 7-16	**Elevation:**	11.56 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.177042
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-73.146241





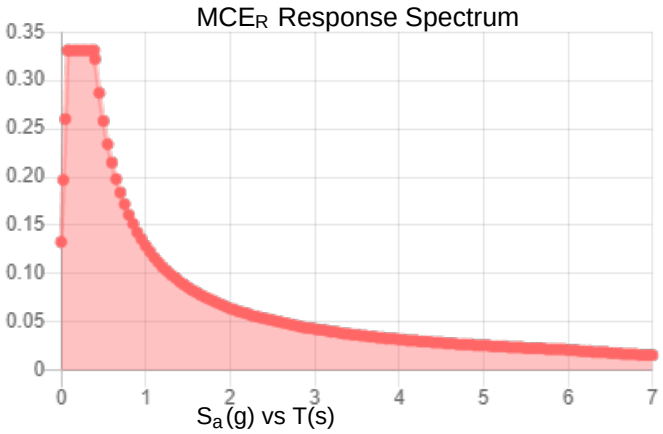
Seismic

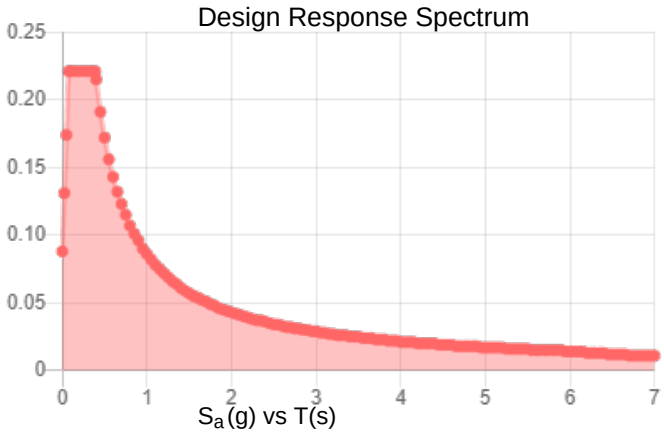
Site Soil Class: D - Default (see Section 11.4.3)

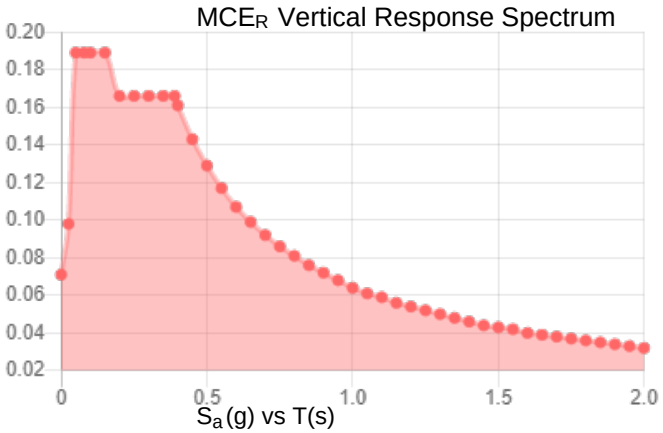
Results:

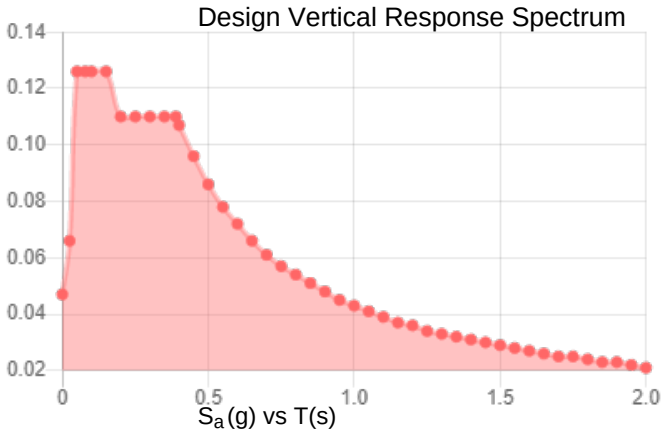
S_S :	0.207	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.117
F_v :	2.4	PGA_M :	0.184
S_{MS} :	0.331	F_{PGA} :	1.565
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.221	C_v :	0.714

Seismic Design Category B









Data Accessed: **Tue May 17 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 May 17 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.

Snow

Results:

Ground Snow Load, p_g:	30 lb/ft^2
Elevation:	11.6 ft
Data Source:	ASCE/SEI 7-16, Table 7.2-8
Date Accessed:	Tue May 17 2022

Values provided are ground snow loads. In areas designated "case study required," extreme local variations in ground snow loads preclude mapping at this scale. Site-specific case studies are required to establish ground snow loads at elevations not covered.

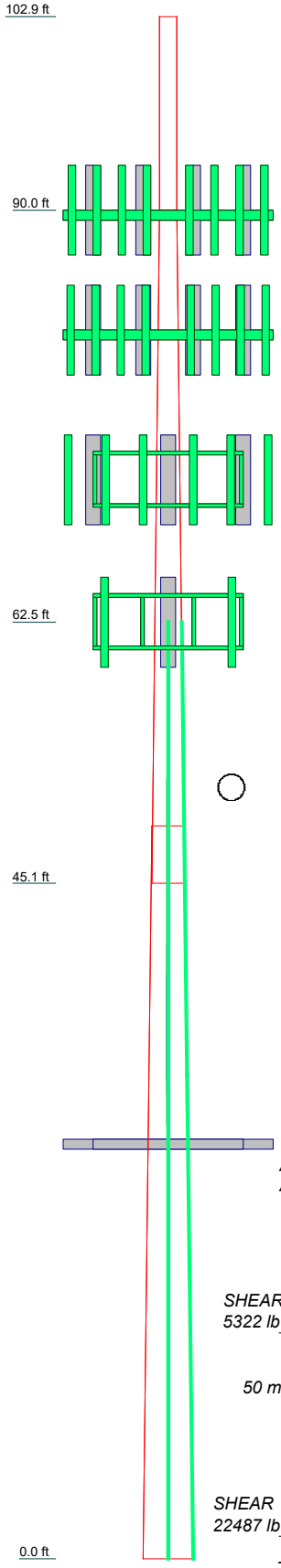
The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

(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	1	2	3						
Length (ft)	12.920	44.920	48.920						440.2
Number of Sides	1	18	18						
Thickness (in)	0.250	0.250	0.313						
Socket Length (ft)		3.840							
Top Dia (in)	13.000	13.000	25.113						
Bot Dia (in)	13.000	26.793	40.000						
Grade	A53-B-35			A572-65					2382.9
Tube Length (ft)				30.250	32.250				
Reinf Size				4x1 1/4	4.25 x 1.25				
Reinf Grade						A572-65			5323.9
Weight (lb)									8147.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
7770	90	BXA-70063-6CF-EDIN-X	82
AM-X-CD-16-65-00T	90	VZS01	82
80010965	90	B2/B66a RRH-BR049	82
QS66512-2	90	B5/B13 RRH-BR04C	82
RRUS32	90	(2) MX06FRO660-03	82
RRUS4478 B14	90	BXA-70063-6CF-EDIN-X	82
RRUS32 B2	90	VZS01	82
RRUS 4426 B66	90	B2/B66a RRH-BR049	82
RRUS 11 B12	90	B5/B13 RRH-BR04C	82
DC6-48-60-18-8F	90	Platform	82
(2) LGP 17201	90	Ladder	82
(2) DBC0061F1V51-2	90	APXVAALL24_43-U-NA20 [P2.0][96"] (TMO)	72
(2) TPX-070821	90		
7770	90	AIR 6449 B41 [P2.0][96"] (TMO)	72
AM-X-CD-16-65-00T	90	VV-65A-R1 [P2.0][96"] (TMO)	72
80010965	90	RRU 4480 B71+B85 (TMO)	72
QS66512-2	90	RRU 4460 B25+B66 (TMO)	72
RRUS32	90	APXVAALL24_43-U-NA20 [P2.0][96"] (TMO)	72
RRUS4478 B14	90		
RRUS32 B2	90	AIR 6449 B41 [P2.0][96"] (TMO)	72
RRUS 4426 B66	90	VV-65A-R1 [P2.0][96"] (TMO)	72
RRUS 11 B12	90	RRU 4480 B71+B85 (TMO)	72
DC6-48-60-18-8F	90	RRU 4460 B25+B66 (TMO)	72
(2) LGP 17201	90	APXVAALL24_43-U-NA20 [P2.0][96"] (TMO)	72
(2) DBC0061F1V51-2	90		
(2) TPX-070821	90	AIR 6449 B41 [P2.0][96"] (TMO)	72
7770	90	VV-65A-R1 [P2.0][96"] (TMO)	72
AM-X-CD-16-65-00T	90	RRU 4480 B71+B85 (TMO)	72
80010965	90	RRU 4460 B25+B66 (TMO)	72
QS66512-2	90	F4P-HRK8 (TMO)	72
RRUS32	90	F4P-8W (TMO)	72
RRUS4478 B14	90	FFVV-65B-R2 (DISH)	62.5
RRUS32 B2	90	TA08025-B604 (DISH)	62.5
RRUS 4426 B66	90	TA08025-B605 (DISH)	62.5
RRUS 11 B12	90	FFVV-65B-R2 (DISH)	62.5
DC6-48-60-18-8F	90	TA08025-B604 (DISH)	62.5
(2) LGP 17201	90	TA08025-B605 (DISH)	62.5
(2) DBC0061F1V51-2	90	FFVV-65B-R2 (DISH)	62.5
(2) TPX-070821	90	TA08025-B604 (DISH)	62.5
Platform	90	TA08025-B605 (DISH)	62.5
Ladder	90	MC-PK8-DSH (8ft Snub Nose Platform) (DISH)	62.5
(2) MX06FRO660-03	82	(3) 10' x 3" Omni	28
BXA-70063-6CF-EDIN-X	82	GPS	28
VZS01	82	(2) Gen 5' T-Arm	28
B2/B66a RRH-BR049	82	Gen 14' T-Arm	28
B5/B13 RRH-BR04C	82	20' x 3" Omni	28
(2) DB-B1-6C-12AB-0Z	82	(2) 10' x 3" Omni	28
(2) MX06FRO660-03	82		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A572-65	65 ksi	80 ksi

ALL REACTION
ARE FACTORE

AXIAL
55541 lb
SHEAR
5322 lb
TORQUE 679 lb
50 mph WIND - 1.00

AXIAL
35961 lb
SHEAR
22487 lb

TORQUE 2471 lb-ft
REACTIONS - 125 mph WIND

TOWER DESIGN NOTES

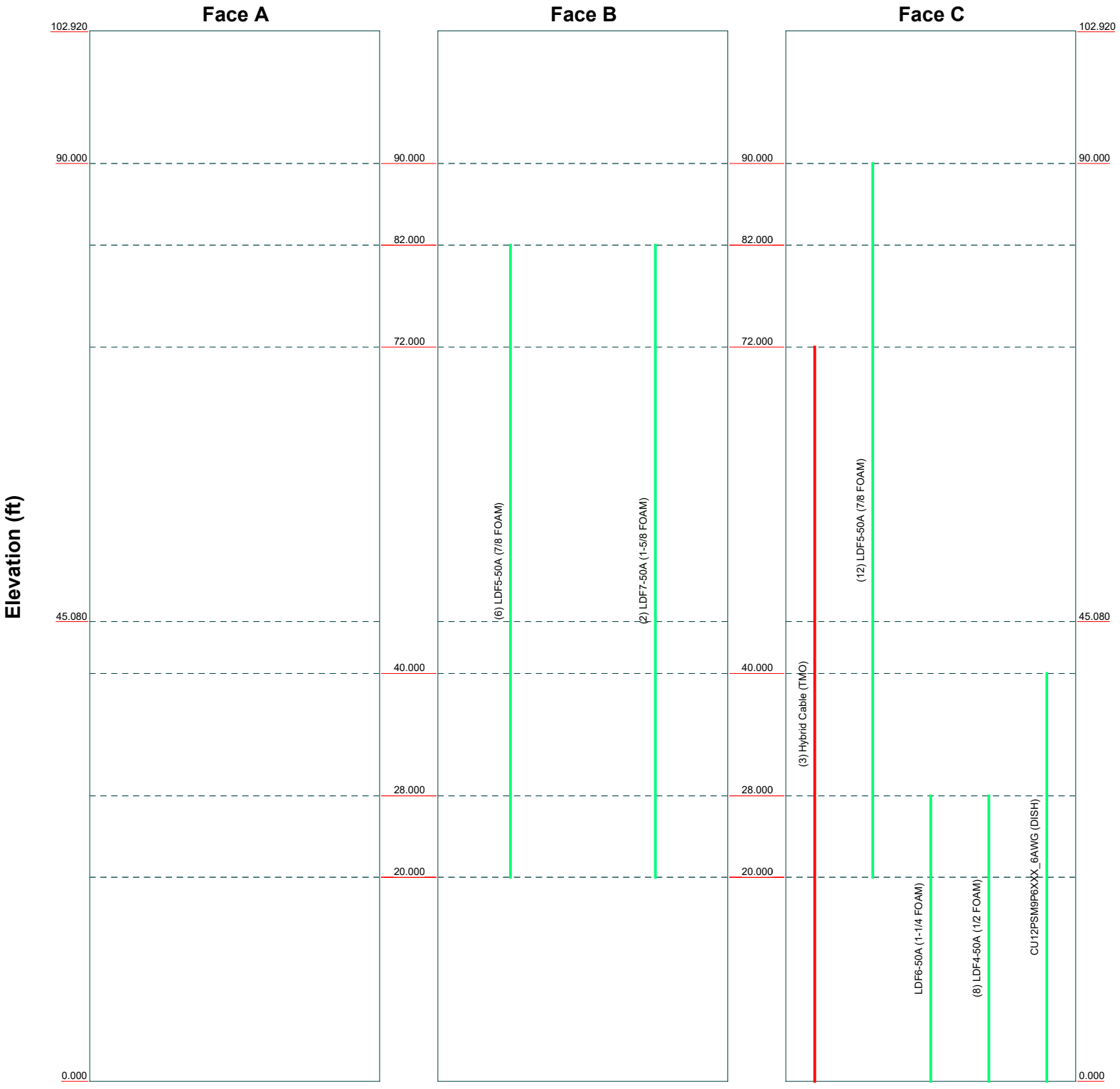
1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.000 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: 83.6%
1633259 lb-ft

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

Job: ***NJJER02049C***			
Project:			
Client: DISH WIRELESS LLC	Drawn by:	App'd:	
Code: TIA-222-H	Date: 06/14/22	Scale: NTS	
Path: C:\Users\Brett Laptop 2019\Desktop\Magaram Engineering\MK Development\NJJER02049C\Tower Analysis\NJJER02049C 6.14.2022.eri		Dwg No. E-1	

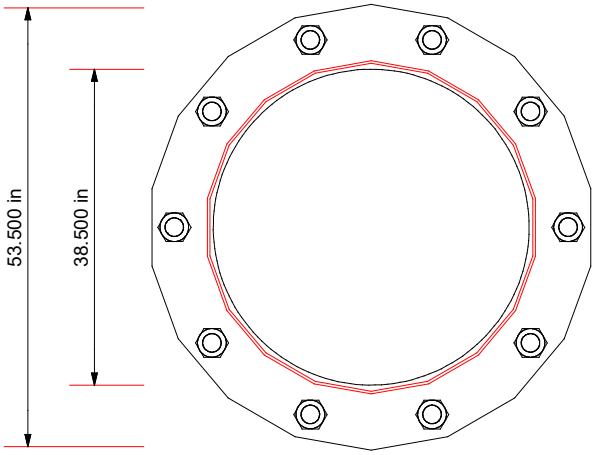
Feed Line Distribution Chart
0' - 102'11-1/32"

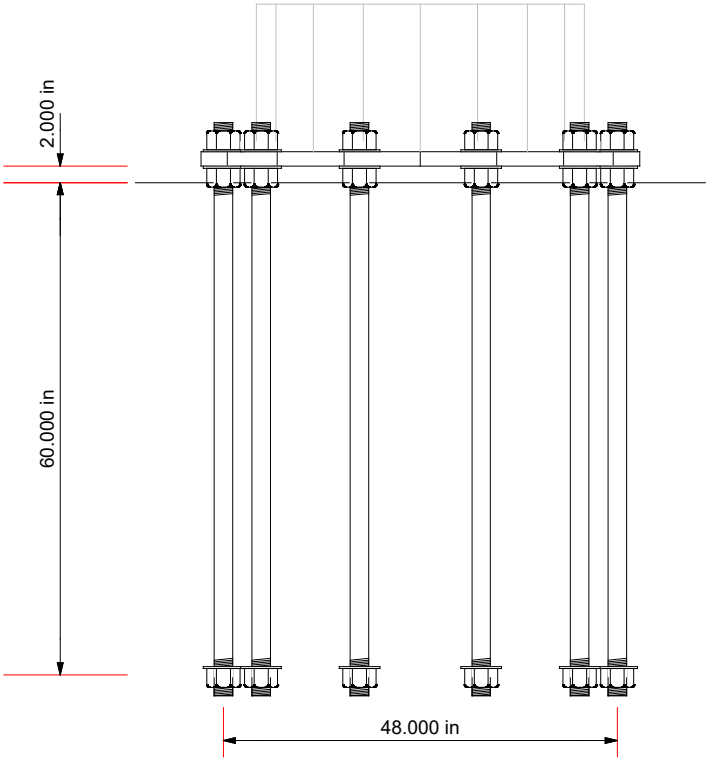
Round | Flat | App In Face | App Out Face | Truss Leg



Magaram Engineering
4491 Holly Avenue
Fairfax, VA
Phone: 914-450-8416
FAX:

Job:		
Project:		
Client:	Drawn by:	App'd:
Code: TIA-222-H	Date: 05/25/22	Scale: NTS
Path: C:\Users\Brett Laptop 2019\Desktop\Magaram Engineering\MK Development\NJJER02049C\Tower Analysis\NJJER02049C.eri		Dwg No. E-7





FOUNDATION NOTES

1. Plate thickness is 1.750 in.
2. Plate grade is A572-60.
3. Anchor bolt grade is A615-75.
4. f'c is 4 ksi.

Magaram Engineering
4491 Holly Avenue
Fairfax, VA
Phone: 914-450-8416
FAX:

Job:		
Project:		
Client:	Drawn by:	App'd:
Code: TIA-222-H	Date: 05/25/22	Scale: NTS
Path: C:\Users\Brett Laptop 2019\Desktop\Magaram Engineering\MK Development\NJJER02049C\Tower Analysis\NJJER02049C.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: 0.000 ft.
Basic wind speed of 125 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 1.000 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	102.920-90.000	12.920	0.000	Round	13.000	13.000	0.250		A53-B-35 (35 ksi)
L2	90.000-45.080	44.920	3.840	18	13.000	26.793	0.250	1.000	A572-65 (65 ksi)
L3	45.080-0.000	48.920		18	25.113	40.000	0.313	1.250	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	13.000	10.014	203.562	4.509	6.500	31.317	407.125	5.004	0.000	0
	13.000	10.014	203.562	4.509	6.500	31.317	407.125	5.004	0.000	0
L2	13.162	10.117	207.785	4.526	6.604	31.464	415.844	5.060	1.848	7.392
	27.167	21.061	1874.605	9.423	13.611	137.731	3751.677	10.533	4.275	17.102
L3	26.639	24.599	1911.609	8.804	12.758	149.840	3825.733	12.302	3.870	12.384
	40.569	39.365	7833.496	14.089	20.320	385.507	15677.299	19.686	6.490	20.768

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 102.920-90.000				1	1	1			
L2 90.000-45.080				1	1	1			
L3 45.080-0.000				1	1	1			

Pole Reinforcing Data

Height Above Base ft	Segment Length ft	No. of Segments	Offset in	Grade	Type	Size	Unbraced Length ft	K	Bolt Hole Dia. in	Bolts per Row	Shear Lag Factor U
32.250	30.250	4	0.000	A572-65 (65 ksi)	Flat Bar	4x1 1/4	2.000	1.00	0.750	1	1.000
0.000	32.250	4	0.000	A572-65 (65 ksi)	Flat Bar	4.25 x 1.25	2.000	1.00	0.750	1	1.000

Monopole Base Plate Data

Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	2.250 in
Number of bolts	10
Embedment length	60.000 in
f'_c	4.000 ksi
Grout space	2.000 in
Base plate grade	A572-60
Base plate thickness	1.750 in
Bolt circle diameter	48.000 in
Outer diameter	53.500 in
Inner diameter	38.500 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*
Hybrid Cable (TMO)	C	Yes	Surface Ar (CaAa)	72.000 - 0.000	3	3	0.000 0.000	1.980		0.820

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*
*									
LDF5-50A (7/8 FOAM)	C	No	Yes	Inside Pole	90.000 - 20.000	12	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.330 0.330 0.330
LDF5-50A (7/8 FOAM)	B	No	Yes	Inside Pole	82.000 - 20.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.330 0.330 0.330
LDF7-50A (1-5/8 FOAM)	B	No	Yes	Inside Pole	82.000 - 20.000	2	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.820 0.820 0.820
LDF6-50A (1-1/4 FOAM)	C	No	Yes	Inside Pole	28.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.660 0.660 0.660
LDF4-50A (1/2 FOAM)	C	No	Yes	Inside Pole	28.000 - 0.000	8	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.150 0.150 0.150
*									
CU12PSM9P6XXX_6AWG (DISH)	C	No	Yes	Inside Pole	40.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	2.346 2.346 2.346

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	102.920-90.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L2	90.000-45.080	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	133.650
		C	0.000	0.000	15.990	0.000	244.106
L3	45.080-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	90.790
		C	0.000	0.000	26.778	0.000	356.134

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	102.920-90.000	A	1.113	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L2	90.000-45.080	A	1.071	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	133.650
		C		0.000	0.000	27.195	0.000	457.968
L3	45.080-0.000	A	0.957	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	90.790
		C		0.000	0.000	45.541	0.000	714.264

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L2	1	Hybrid Cable	45.08 - 72.00	1.0000	1.0000
L3	1	Hybrid Cable	0.00 - 45.08	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
***									
7770	A	From Leg	4.000	0.000	90.000	No Ice	5.750	4.250	60.000
			0.000			1/2" Ice	6.180	5.010	100.000
			0.000			1" Ice	6.610	5.710	160.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
AM-X-CD-16-65-00T	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	8.260 8.820 9.350	6.360 7.540 8.430	70.000 140.000 210.000
80010965	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	14.050 14.690 15.300	7.630 8.900 9.960	140.000 230.000 340.000
QS66512-2	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	8.370 8.930 10.550	8.460 9.660 10.550	140.000 210.000 300.000
RRUS32	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	2.860 3.080 3.320	1.780 1.970 2.170	60.000 80.000 100.000
RRUS4478 B14	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	2.020 2.200 2.390	1.250 1.400 1.550	60.000 80.000 100.000
RRUS32 B2	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	2.740 2.960 3.190	1.670 1.860 2.050	50.000 70.000 100.000
RRUS 4426 B66	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	1.640 1.800 1.970	0.730 0.840 0.980	50.000 60.000 80.000
RRUS 11 B12	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	2.830 3.040 3.260	1.180 1.330 1.480	50.000 70.000 100.000
DC6-48-60-18-8F	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	1.210 1.890 2.110	1.210 1.890 2.110	30.000 50.000 80.000
(2) LGP 17201	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	1.670 1.830 2.000	0.470 0.570 0.680	30.000 40.000 60.000
(2) DBC0061F1V51-2	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	0.210 0.280 0.350	0.410 0.500 0.590	10.000 20.000 30.000
(2) TPX-070821	A	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	0.470 0.560 0.660	0.100 0.150 0.200	10.000 15.000 20.000
* 7770	B	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	5.750 6.180 6.610	4.250 5.010 5.710	60.000 100.000 160.000
AM-X-CD-16-65-00T	B	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	8.260 8.820 9.350	6.360 7.540 8.430	70.000 140.000 210.000
80010965	B	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	14.050 14.690 15.300	7.630 8.900 9.960	140.000 230.000 340.000
QS66512-2	B	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	8.370 8.930 10.550	8.460 9.660 10.550	140.000 210.000 300.000
RRUS32	B	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	2.860 3.080 3.320	1.780 1.970 2.170	60.000 80.000 100.000
RRUS4478 B14	B	From Leg	4.000 0.000 0.000	0.000	90.000	No Ice 1/2" Ice 1" Ice	2.020 2.200 2.390	1.250 1.400 1.550	60.000 80.000 100.000
RRUS32 B2	B	From Leg	4.000 0.000	0.000	90.000	No Ice 1/2" Ice	2.740 2.960	1.670 1.860	50.000 70.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.000			1" Ice	3.190	2.050	100.000
RRUS 4426 B66	B	From Leg	4.000	0.000	90.000	No Ice	1.640	0.730	50.000
			0.000			1/2" Ice	1.800	0.840	60.000
			0.000			1" Ice	1.970	0.980	80.000
RRUS 11 B12	B	From Leg	4.000	0.000	90.000	No Ice	2.830	1.180	50.000
			0.000			1/2" Ice	3.040	1.330	70.000
			0.000			1" Ice	3.260	1.480	100.000
DC6-48-60-18-8F	B	From Leg	4.000	0.000	90.000	No Ice	1.210	1.210	30.000
			0.000			1/2" Ice	1.890	1.890	50.000
			0.000			1" Ice	2.110	2.110	80.000
(2) LGP 17201	B	From Leg	4.000	0.000	90.000	No Ice	1.670	0.470	30.000
			0.000			1/2" Ice	1.830	0.570	40.000
			0.000			1" Ice	2.000	0.680	60.000
(2) DBC0061F1V51-2	B	From Leg	4.000	0.000	90.000	No Ice	0.210	0.410	10.000
			0.000			1/2" Ice	0.280	0.500	20.000
			0.000			1" Ice	0.350	0.590	30.000
(2) TPX-070821	B	From Leg	4.000	0.000	90.000	No Ice	0.470	0.100	10.000
			0.000			1/2" Ice	0.560	0.150	15.000
			0.000			1" Ice	0.660	0.200	20.000
* 7770	C	From Leg	4.000	0.000	90.000	No Ice	5.750	4.250	60.000
			0.000			1/2" Ice	6.180	5.010	100.000
			0.000			1" Ice	6.610	5.710	160.000
AM-X-CD-16-65-00T	C	From Leg	4.000	0.000	90.000	No Ice	8.260	6.360	70.000
			0.000			1/2" Ice	8.820	7.540	140.000
			0.000			1" Ice	9.350	8.430	210.000
80010965	C	From Leg	4.000	0.000	90.000	No Ice	14.050	7.630	140.000
			0.000			1/2" Ice	14.690	8.900	230.000
			0.000			1" Ice	15.300	9.960	340.000
QS66512-2	C	From Leg	4.000	0.000	90.000	No Ice	8.370	8.460	140.000
			0.000			1/2" Ice	8.930	9.660	210.000
			0.000			1" Ice	10.550	10.550	300.000
RRUS32	C	From Leg	4.000	0.000	90.000	No Ice	2.860	1.780	60.000
			0.000			1/2" Ice	3.080	1.970	80.000
			0.000			1" Ice	3.320	2.170	100.000
RRUS4478 B14	C	From Leg	4.000	0.000	90.000	No Ice	2.020	1.250	60.000
			0.000			1/2" Ice	2.200	1.400	80.000
			0.000			1" Ice	2.390	1.550	100.000
RRUS32 B2	C	From Leg	4.000	0.000	90.000	No Ice	2.740	1.670	50.000
			0.000			1/2" Ice	2.960	1.860	70.000
			0.000			1" Ice	3.190	2.050	100.000
RRUS 4426 B66	C	From Leg	4.000	0.000	90.000	No Ice	1.640	0.730	50.000
			0.000			1/2" Ice	1.800	0.840	60.000
			0.000			1" Ice	1.970	0.980	80.000
RRUS 11 B12	C	From Leg	4.000	0.000	90.000	No Ice	2.830	1.180	50.000
			0.000			1/2" Ice	3.040	1.330	70.000
			0.000			1" Ice	3.260	1.480	100.000
DC6-48-60-18-8F	C	From Leg	4.000	0.000	90.000	No Ice	1.210	1.210	30.000
			0.000			1/2" Ice	1.890	1.890	50.000
			0.000			1" Ice	2.110	2.110	80.000
(2) LGP 17201	C	From Leg	4.000	0.000	90.000	No Ice	1.670	0.470	30.000
			0.000			1/2" Ice	1.830	0.570	40.000
			0.000			1" Ice	2.000	0.680	60.000
(2) DBC0061F1V51-2	C	From Leg	4.000	0.000	90.000	No Ice	0.210	0.410	10.000
			0.000			1/2" Ice	0.280	0.500	20.000
			0.000			1" Ice	0.350	0.590	30.000
(2) TPX-070821	C	From Leg	4.000	0.000	90.000	No Ice	0.470	0.100	10.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.000				1/2" Ice	0.560	0.150	15.000
			0.000				1" Ice	0.660	0.200	20.000
*										
Platform	C	None			0.000	90.000	No Ice	41.000	41.000	2500.000
							1/2" Ice	56.000	56.000	3000.000
							1" Ice	71.000	71.000	3500.000
Ladder	C	None			0.000	90.000	No Ice	7.070	7.070	40.000
							1/2" Ice	9.730	9.730	70.000
							1" Ice	11.190	11.190	80.000
***										
(2) MX06FRO660-03	A	From Leg	4.000		0.000	82.000	No Ice	10.110	8.990	100.000
			0.000				1/2" Ice	10.680	10.150	190.000
			0.000				1" Ice	11.220	11.030	290.000
BXA-70063-6CF-EDIN-X	A	From Leg	4.000		0.000	82.000	No Ice	7.810	5.800	60.000
			0.000				1/2" Ice	8.360	6.950	120.000
			0.000				1" Ice	8.870	7.820	190.000
VZS01	A	From Leg	4.000		0.000	82.000	No Ice	5.910	3.740	120.000
			0.000				1/2" Ice	6.720	4.790	170.000
			0.000				1" Ice	7.440	5.700	220.000
B2/B66a RRH-BR049	A	From Leg	4.000		0.000	82.000	No Ice	1.880	1.010	70.000
			0.000				1/2" Ice	2.050	1.140	90.000
			0.000				1" Ice	2.220	1.280	110.000
B5/B13 RRH-BR04C	A	From Leg	4.000		0.000	82.000	No Ice	1.880	1.010	70.000
			0.000				1/2" Ice	2.050	1.140	90.000
			0.000				1" Ice	2.220	1.280	110.000
(2) DB-B1-6C-12AB-0Z	A	From Leg	4.000		0.000	82.000	No Ice	3.360	2.190	30.000
			0.000				1/2" Ice	3.600	2.400	60.000
			0.000				1" Ice	3.840	2.610	90.000
*										
(2) MX06FRO660-03	B	From Leg	4.000		0.000	82.000	No Ice	10.110	8.990	100.000
			0.000				1/2" Ice	10.680	10.150	190.000
			0.000				1" Ice	11.220	11.030	290.000
BXA-70063-6CF-EDIN-X	B	From Leg	4.000		0.000	82.000	No Ice	7.810	5.800	60.000
			0.000				1/2" Ice	8.360	6.950	120.000
			0.000				1" Ice	8.870	7.820	190.000
VZS01	B	From Leg	4.000		0.000	82.000	No Ice	5.910	3.740	120.000
			0.000				1/2" Ice	6.720	4.790	170.000
			0.000				1" Ice	7.440	5.700	220.000
B2/B66a RRH-BR049	B	From Leg	4.000		0.000	82.000	No Ice	1.880	1.010	70.000
			0.000				1/2" Ice	2.050	1.140	90.000
			0.000				1" Ice	2.220	1.280	110.000
B5/B13 RRH-BR04C	B	From Leg	4.000		0.000	82.000	No Ice	1.880	1.010	70.000
			0.000				1/2" Ice	2.050	1.140	90.000
			0.000				1" Ice	2.220	1.280	110.000
*										
(2) MX06FRO660-03	C	From Leg	4.000		0.000	82.000	No Ice	10.110	8.990	100.000
			0.000				1/2" Ice	10.680	10.150	190.000
			0.000				1" Ice	11.220	11.030	290.000
BXA-70063-6CF-EDIN-X	C	From Leg	4.000		0.000	82.000	No Ice	7.810	5.800	60.000
			0.000				1/2" Ice	8.360	6.950	120.000
			0.000				1" Ice	8.870	7.820	190.000
VZS01	C	From Leg	4.000		0.000	82.000	No Ice	5.910	3.740	120.000
			0.000				1/2" Ice	6.720	4.790	170.000
			0.000				1" Ice	7.440	5.700	220.000
B2/B66a RRH-BR049	C	From Leg	4.000		0.000	82.000	No Ice	1.880	1.010	70.000
			0.000				1/2" Ice	2.050	1.140	90.000
			0.000				1" Ice	2.220	1.280	110.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
B5/B13 RRH-BR04C	C	From Leg	4.000	0.000	0.000	82.000	No Ice	1.880	1.010	70.000
			0.000				1/2" Ice	2.050	1.140	90.000
			0.000				1" Ice	2.220	1.280	110.000
*										
Platform	C	None			0.000	82.000	No Ice	41.000	41.000	2500.000
							1/2" Ice	56.000	56.000	3000.000
							1" Ice	71.000	71.000	3500.000
Ladder	C	None			0.000	82.000	No Ice	7.070	7.070	40.000
							1/2" Ice	9.730	9.730	70.000
							1" Ice	11.190	11.190	80.000
***										
APXVAALL24_43-U-NA20 [P2.0][96"] (TMO)	A	From Leg	4.000	0.000	0.000	72.000	No Ice	20.267	10.644	179.100
			0.000				1/2" Ice	20.915	12.070	312.118
			0.000				1" Ice	21.570	13.348	455.740
AIR 6449 B41 [P2.0][96"] (TMO)	A	From Leg	4.000	0.000	0.000	72.000	No Ice	6.927	4.316	132.200
			0.000				1/2" Ice	7.772	5.370	191.882
			0.000				1" Ice	8.522	6.275	257.858
VV-65A-R1 [P2.0][96"] (TMO)	A	From Leg	4.000	0.000	0.000	72.000	No Ice	6.704	4.631	53.000
			0.000				1/2" Ice	7.423	5.800	107.657
			0.000				1" Ice	8.082	6.821	169.212
RRU 4480 B71+B85 (TMO)	A	From Leg	4.000	0.000	0.000	72.000	No Ice	2.878	1.397	81.000
			0.000				1/2" Ice	3.091	1.558	102.854
			0.000				1" Ice	3.312	1.727	127.832
RRU 4460 B25+B66 (TMO)	A	From Leg	4.000	0.000	0.000	72.000	No Ice	2.564	1.976	109.000
			0.000				1/2" Ice	2.764	2.156	134.383
			0.000				1" Ice	2.971	2.343	163.033
*										
APXVAALL24_43-U-NA20 [P2.0][96"] (TMO)	B	From Leg	4.000	0.000	0.000	72.000	No Ice	20.267	10.644	179.100
			0.000				1/2" Ice	20.915	12.070	312.118
			0.000				1" Ice	21.570	13.348	455.740
AIR 6449 B41 [P2.0][96"] (TMO)	B	From Leg	4.000	0.000	0.000	72.000	No Ice	6.927	4.316	132.200
			0.000				1/2" Ice	7.772	5.370	191.882
			0.000				1" Ice	8.522	6.275	257.858
VV-65A-R1 [P2.0][96"] (TMO)	B	From Leg	4.000	0.000	0.000	72.000	No Ice	6.704	4.631	53.000
			0.000				1/2" Ice	7.423	5.800	107.657
			0.000				1" Ice	8.082	6.821	169.212
RRU 4480 B71+B85 (TMO)	B	From Leg	4.000	0.000	0.000	72.000	No Ice	2.878	1.397	81.000
			0.000				1/2" Ice	3.091	1.558	102.854
			0.000				1" Ice	3.312	1.727	127.832
RRU 4460 B25+B66 (TMO)	B	From Leg	4.000	0.000	0.000	72.000	No Ice	2.564	1.976	109.000
			0.000				1/2" Ice	2.764	2.156	134.383
			0.000				1" Ice	2.971	2.343	163.033
*										
APXVAALL24_43-U-NA20 [P2.0][96"] (TMO)	C	From Leg	4.000	0.000	0.000	72.000	No Ice	20.267	10.644	179.100
			0.000				1/2" Ice	20.915	12.070	312.118
			0.000				1" Ice	21.570	13.348	455.740
AIR 6449 B41 [P2.0][96"] (TMO)	C	From Leg	4.000	0.000	0.000	72.000	No Ice	6.927	4.316	132.200
			0.000				1/2" Ice	7.772	5.370	191.882
			0.000				1" Ice	8.522	6.275	257.858
VV-65A-R1 [P2.0][96"] (TMO)	C	From Leg	4.000	0.000	0.000	72.000	No Ice	6.704	4.631	53.000
			0.000				1/2" Ice	7.423	5.800	107.657
			0.000				1" Ice	8.082	6.821	169.212
RRU 4480 B71+B85 (TMO)	C	From Leg	4.000	0.000	0.000	72.000	No Ice	2.878	1.397	81.000
			0.000				1/2" Ice	3.091	1.558	102.854
			0.000				1" Ice	3.312	1.727	127.832
RRU 4460 B25+B66 (TMO)	C	From Leg	4.000	0.000	0.000	72.000	No Ice	2.564	1.976	109.000
			0.000				1/2" Ice	2.764	2.156	134.383

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.000			1" Ice	2.971	2.343	163.033
*									
F4P-HRK8 (TMO)	C	None		0.000	72.000	No Ice	7.250	7.250	465.000
						1/2" Ice	9.860	9.860	551.000
						1" Ice	11.760	11.760	670.000
F4P-8W (TMO)	C	None		0.000	72.000	No Ice	42.430	42.430	2283.000
						1/2" Ice	52.000	52.000	2912.000
						1" Ice	64.650	64.650	3796.000
***									
(2) Gen 5' T-Arm	A	From Leg	1.000	0.000	28.000	No Ice	2.720	2.720	50.000
			0.000			1/2" Ice	4.910	4.910	90.000
			0.000			1" Ice	7.100	7.100	130.000
Gen 14' T-Arm	A	From Leg	1.000	0.000	28.000	No Ice	3.500	1.600	340.000
			0.000			1/2" Ice	5.250	2.400	410.000
			0.000			1" Ice	7.880	3.600	490.000
20' x 3" Omni	A	From Leg	1.000	0.000	28.000	No Ice	6.000	6.000	100.000
			0.000			1/2" Ice	8.033	8.033	143.168
			14.000			1" Ice	10.083	10.083	199.011
(2) 10' x 3" Omni	A	From Leg	1.000	0.000	28.000	No Ice	3.000	3.000	15.000
			0.000			1/2" Ice	4.033	4.033	36.788
			8.000			1" Ice	5.027	5.027	65.142
(3) 10' x 3" Omni	A	From Leg	1.000	0.000	28.000	No Ice	3.000	3.000	15.000
			0.000			1/2" Ice	4.033	4.033	36.788
			6.000			1" Ice	5.027	5.027	65.142
GPS	A	From Leg	1.000	0.000	28.000	No Ice	0.260	0.260	5.000
			0.000			1/2" Ice	0.320	0.320	10.000
			2.000			1" Ice	0.390	0.390	15.000
***									
FFVV-65B-R2 (DISH)	A	From Leg	4.000	0.000	62.500	No Ice	12.746	7.650	100.000
			0.000			1/2" Ice	13.448	8.935	193.240
			0.000			1" Ice	14.118	10.072	295.199
TA08025-B604 (DISH)	A	From Leg	4.000	0.000	62.500	No Ice	1.964	0.981	63.930
			0.000			1/2" Ice	2.138	1.112	80.681
			0.000			1" Ice	2.320	1.250	100.127
TA08025-B605 (DISH)	A	From Leg	4.000	0.000	62.500	No Ice	1.964	1.129	74.950
			0.000			1/2" Ice	2.138	1.267	92.924
			0.000			1" Ice	2.320	1.411	113.670
*									
FFVV-65B-R2 (DISH)	B	From Leg	4.000	0.000	62.500	No Ice	12.746	7.650	100.000
			0.000			1/2" Ice	13.448	8.935	193.240
			0.000			1" Ice	14.118	10.072	295.199
TA08025-B604 (DISH)	B	From Leg	4.000	0.000	62.500	No Ice	1.964	0.981	63.930
			0.000			1/2" Ice	2.138	1.112	80.681
			0.000			1" Ice	2.320	1.250	100.127
TA08025-B605 (DISH)	B	From Leg	4.000	0.000	62.500	No Ice	1.964	1.129	74.950
			0.000			1/2" Ice	2.138	1.267	92.924
			0.000			1" Ice	2.320	1.411	113.670
*									
FFVV-65B-R2 (DISH)	C	From Leg	4.000	0.000	62.500	No Ice	12.746	7.650	100.000
			0.000			1/2" Ice	13.448	8.935	193.240
			0.000			1" Ice	14.118	10.072	295.199
TA08025-B604 (DISH)	C	From Leg	4.000	0.000	62.500	No Ice	1.964	0.981	63.930
			0.000			1/2" Ice	2.138	1.112	80.681
			0.000			1" Ice	2.320	1.250	100.127
TA08025-B605 (DISH)	C	From Leg	4.000	0.000	62.500	No Ice	1.964	1.129	74.950
			0.000			1/2" Ice	2.138	1.267	92.924
			0.000			1" Ice	2.320	1.411	113.670

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
* MC-PK8-DSH (8ft Snub Nose Platform) (DISH)	C	None		0.000	62.500	No Ice 1/2" Ice 1" Ice	37.590 41.460 53.080	37.590 41.460 53.080	1727.000 1766.500 2280.600

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 102.920-90.000	96.460	0.978	37.168	13.997	A	0.000	13.997	13.997	100.00	0.000	0.000
					B	0.000	13.997		100.00	0.000	0.000
					C	0.000	13.997		100.00	0.000	0.000
L2 90.000-45.080	65.461	0.876	33.101	75.483	A	0.000	75.483	75.483	100.00	0.000	0.000
					B	0.000	75.483		100.00	0.000	0.000
					C	0.000	75.483		100.00	15.990	0.000
L3 45.080-0.000	21.157	0.7	26.979	126.239	A	0.000	126.239	126.239	100.00	0.000	0.000
					B	0.000	126.239		100.00	0.000	0.000
					C	0.000	126.239		100.00	26.778	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 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 102.920-90.000	96.460	0.978	5.947	1.113	16.394	A	0.000	16.394	16.394	100.00	0.000	0.000
						B	0.000	16.394		100.00	0.000	0.000
						C	0.000	16.394		100.00	0.000	0.000
L2 90.000-45.080	65.461	0.876	5.296	1.071	83.500	A	0.000	83.500	83.500	100.00	0.000	0.000
						B	0.000	83.500		100.00	0.000	0.000
						C	0.000	83.500		100.00	27.195	0.000
L3 45.080-0.000	21.157	0.7	4.317	0.957	134.285	A	0.000	134.285	134.285	100.00	0.000	0.000
						B	0.000	134.285		100.00	0.000	0.000
						C	0.000	134.285		100.00	45.541	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	96.460	0.978	7.662	13.997	A	0.000	13.997	13.997	100.00	0.000	0.000
102.920-90.00					B	0.000	13.997		100.00	0.000	0.000
0					C	0.000	13.997		100.00	0.000	0.000
L2	65.461	0.876	6.824	75.483	A	0.000	75.483	75.483	100.00	0.000	0.000
90.000-45.080					B	0.000	75.483		100.00	0.000	0.000
					C	0.000	75.483		100.00	15.990	0.000
L3	21.157	0.7	5.562	126.239	A	0.000	126.239	126.239	100.00	0.000	0.000
45.080-0.000					B	0.000	126.239		100.00	0.000	0.000
					C	0.000	126.239		100.00	26.778	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	0.000	440.249	A	1	0.6	37.16	1	1	13.997	343.351	26.575	C
102.920-90.00			B	1	0.6	8	1	1	13.997			
0			C	1	0.6		1	1	13.997			
L2	377.757	2382.878	A	1	0.73	33.10	1	1	75.483	2006.347	44.665	C
90.000-45.080			B	1	0.73	1	1	1	75.483			
			C	1	0.73		1	1	75.483			
L3	446.923	9714.912	A	1	0.73	26.97	1	1	126.239	2734.880	60.667	C
45.080-0.000			B	1	0.73	9	1	1	126.239			
			C	1	0.73		1	1	126.239			
Sum Weight:	824.680	12538.038						OTM	222318.07 9 lb-ft	5084.578		

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 ft²	F lb	w plf	Ctrl. Face
L1	0.000	440.249	A	1	0.6	37.16	1	1	13.997	343.351	26.575	C
102.920-90.00			B	1	0.6	8	1	1	13.997			
0			C	1	0.6		1	1	13.997			
L2	377.757	2382.878	A	1	0.73	33.10	1	1	75.483	2006.347	44.665	C
90.000-45.080			B	1	0.73	1	1	1	75.483			
			C	1	0.73		1	1	75.483			
L3	446.923	9714.912	A	1	0.73	26.97	1	1	126.239	2734.880	60.667	C
45.080-0.000			B	1	0.73	9	1	1	126.239			
			C	1	0.73		1	1	126.239			
Sum Weight:	824.680	12538.038						OTM	222318.07 9 lb-ft	5084.578		

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 ft²	F lb	w plf	Ctrl. Face
L1	0.000	440.249	A	1	0.6	37.16	1	1	13.997	343.351	26.575	C
102.920-90.00			B	1	0.6	8	1	1	13.997			
0			C	1	0.6		1	1	13.997			
L2	377.757	2382.878	A	1	0.73	33.10	1	1	75.483	2006.347	44.665	C
90.000-45.080			B	1	0.73	1	1	1	75.483			
			C	1	0.73		1	1	75.483			
L3	446.923	9714.912	A	1	0.73	26.97	1	1	126.239	2734.880	60.667	C
45.080-0.000			B	1	0.73	9	1	1	126.239			
			C	1	0.73		1	1	126.239			
Sum Weight:	824.680	12538.038						OTM	222318.07 9 lb-ft	5084.578		

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 ft²	F lb	w plf	Ctrl. Face
L1	0.000	688.246	A	1	1.2	5.947	1	1	16.394	128.690	9.961	C
102.920-90.00			B	1	1.2		1	1	16.394			
0			C	1	1.2		1	1	16.394			
L2	591.618	3627.845	A	1	1.2	5.296	1	1	83.500	583.746	12.995	C
90.000-45.080			B	1	1.2		1	1	83.500			
			C	1	1.2		1	1	83.500			
L3	805.054	13069.704	A	1	1.2	4.317	1	1	133.426	760.260	16.865	C
45.080-0.000			B	1	1.2		1	1	133.426			
			C	1	1.2		1	1	133.426			
Sum Weight:	1396.672	17385.796						OTM	66710.585 lb-ft	1472.696		

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 ft²	F lb	w plf	Ctrl. Face
L1	0.000	688.246	A	1	1.2	5.947	1	1	16.394	128.690	9.961	C
102.920-90.00			B	1	1.2		1	1	16.394			
0			C	1	1.2		1	1	16.394			
L2	591.618	3627.845	A	1	1.2	5.296	1	1	83.500	583.746	12.995	C
90.000-45.080			B	1	1.2		1	1	83.500			
			C	1	1.2		1	1	83.500			
L3	805.054	13069.704	A	1	1.2	4.317	1	1	133.426	760.260	16.865	C
45.080-0.000			B	1	1.2		1	1	133.426			
			C	1	1.2		1	1	133.426			

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
Sum Weight:	1396.672	17385.796						OTM	66710.585 lb-ft	1472.696		

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	0.000	688.246	A	1	1.2	5.947	1	1	16.394	128.690	9.961	C
102.920-90.00			B	1	1.2		1	1	16.394			
0			C	1	1.2		1	1	16.394			
L2	591.618	3627.845	A	1	1.2	5.296	1	1	83.500	583.746	12.995	C
90.000-45.080			B	1	1.2		1	1	83.500			
			C	1	1.2		1	1	83.500			
L3	805.054	13069.704	A	1	1.2	4.317	1	1	133.426	760.260	16.865	C
45.080-0.000			B	1	1.2		1	1	133.426			
			C	1	1.2		1	1	133.426			
Sum Weight:	1396.672	17385.796						OTM	66710.585 lb-ft	1472.696		

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	0.000	440.249	A	1	0.728	7.662	1	1	13.997	85.882	6.647	C
102.920-90.00			B	1	0.728		1	1	13.997			
0			C	1	0.728		1	1	13.997			
L2	377.757	2382.878	A	1	0.73	6.824	1	1	75.483	413.603	9.208	C
90.000-45.080			B	1	0.73		1	1	75.483			
			C	1	0.73		1	1	75.483			
L3	446.923	9714.912	A	1	0.73	5.562	1	1	126.239	563.788	12.506	C
45.080-0.000			B	1	0.73		1	1	126.239			
			C	1	0.73		1	1	126.239			
Sum Weight:	824.680	12538.038						OTM	47286.978 lb-ft	1063.274		

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	0.000	440.249	A	1	0.728	7.662	1	1	13.997	85.882	6.647	C
102.920-90.00			B	1	0.728		1	1	13.997			
0			C	1	0.728		1	1	13.997			
L2	377.757	2382.878	A	1	0.73	6.824	1	1	75.483	413.603	9.208	C
90.000-45.080			B	1	0.73		1	1	75.483			
			C	1	0.73		1	1	75.483			
L3	446.923	9714.912	A	1	0.73	5.562	1	1	126.239	563.788	12.506	C
45.080-0.000			B	1	0.73		1	1	126.239			
			C	1	0.73		1	1	126.239			
Sum Weight:	824.680	12538.038						OTM	47286.978 lb-ft	1063.274		

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	0.000	440.249	A	1	0.728	7.662	1	1	13.997	85.882	6.647	C
102.920-90.00			B	1	0.728		1	1	13.997			
0			C	1	0.728		1	1	13.997			
L2	377.757	2382.878	A	1	0.73	6.824	1	1	75.483	413.603	9.208	C
90.000-45.080			B	1	0.73		1	1	75.483			
			C	1	0.73		1	1	75.483			
L3	446.923	9714.912	A	1	0.73	5.562	1	1	126.239	563.788	12.506	C
45.080-0.000			B	1	0.73		1	1	126.239			
			C	1	0.73		1	1	126.239			
Sum Weight:	824.680	12538.038						OTM	47286.978 lb-ft	1063.274		

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	8147.036					
Bracing Weight	4391.002					
Total Member Self-Weight	12538.038			-1711.861	0.000	
Total Weight	29967.258			-1711.861	0.000	
Wind 0 deg - No Ice		0.000	-22487.780	-1573284.556	0.000	0.000
Wind 30 deg - No Ice		11179.560	-19474.989	-1362733.739	-782012.321	-1241.503
Wind 60 deg - No Ice		19363.566	-11243.890	-787498.209	-1354485.072	-2150.346
Wind 90 deg - No Ice		22359.120	0.000	-1711.861	-1564024.641	-2483.006
Wind 120 deg - No Ice		19363.566	11243.890	784074.487	-1354485.072	-2150.346
Wind 150 deg - No Ice		11179.560	19474.989	1359310.017	-782012.321	-1241.503
Wind 180 deg - No Ice		0.000	22487.780	1569860.835	0.000	0.000
Wind 210 deg - No Ice		-11179.560	19474.989	1359310.017	782012.321	1241.503
Wind 240 deg - No Ice		-19363.566	11243.890	784074.487	1354485.072	2150.346

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
Wind 270 deg - No Ice		-22359.120	0.000	-1711.861	1564024.641	2483.006
Wind 300 deg - No Ice		-19363.566	-11243.890	-787498.209	1354485.072	2150.346
Wind 330 deg - No Ice		-11179.560	-19474.989	-1362733.739	782012.321	1241.503
Member Ice	4847.758					
Total Weight Ice	49429.001			-3871.320	0.000	
Wind 0 deg - Ice		0.000	-5322.447	-366196.360	0.000	0.000
Wind 30 deg - Ice		2645.140	-4609.374	-317654.009	-180378.817	-341.332
Wind 60 deg - Ice		4581.517	-2661.223	-185033.840	-312425.275	-591.204
Wind 90 deg - Ice		5290.281	0.000	-3871.320	-360757.634	-682.663
Wind 120 deg - Ice		4581.517	2661.223	177291.200	-312425.275	-591.204
Wind 150 deg - Ice		2645.140	4609.374	309911.369	-180378.817	-341.332
Wind 180 deg - Ice		0.000	5322.447	358453.720	0.000	0.000
Wind 210 deg - Ice		-2645.140	4609.374	309911.369	180378.817	341.332
Wind 240 deg - Ice		-4581.517	2661.223	177291.200	312425.275	591.204
Wind 270 deg - Ice		-5290.281	0.000	-3871.320	360757.634	682.663
Wind 300 deg - Ice		-4581.517	-2661.223	-185033.840	312425.275	591.204
Wind 330 deg - Ice		-2645.140	-4609.374	-317654.009	180378.817	341.332
Total Weight	29967.258			-1711.861	0.000	
Wind 0 deg - Service		0.000	-4650.898	-327144.127	0.000	0.000
Wind 30 deg - Service		2312.188	-4027.796	-283544.471	-161938.127	-255.933
Wind 60 deg - Service		4004.826	-2325.449	-164427.994	-280485.065	-443.288
Wind 90 deg - Service		4624.375	0.000	-1711.861	-323876.255	-511.865
Wind 120 deg - Service		4004.826	2325.449	161004.272	-280485.065	-443.288
Wind 150 deg - Service		2312.188	4027.796	280120.749	-161938.127	-255.933
Wind 180 deg - Service		0.000	4650.898	323720.406	0.000	0.000
Wind 210 deg - Service		-2312.188	4027.796	280120.749	161938.127	255.933
Wind 240 deg - Service		-4004.826	2325.449	161004.272	280485.065	443.288
Wind 270 deg - Service		-4624.375	0.000	-1711.861	323876.255	511.865
Wind 300 deg - Service		-4004.826	-2325.449	-164427.994	280485.065	443.288
Wind 330 deg - Service		-2312.188	-4027.796	-283544.471	161938.127	255.933

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
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

Comb. No.	Description
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	102.92 - 90	Pole	Max Tension	8	0.022	0.002	-0.865
			Max. Compression	26	-776.294	0.000	-2.105
			Max. Mx	20	-499.565	2477.200	1.813
			Max. My	2	-499.500	0.000	2477.797
			Max. Vy	20	-383.482	2477.200	1.813
			Max. Vx	2	-383.570	0.000	2477.797
			Max. Torque	10			-0.000
L2	90 - 45.08	Pole	Max Tension	27	87366.362	0.000	26885.521
			Max. Compression	26	-31540.865	0.000	1037.995
			Max. Mx	8	-17762.499	-332058.804	376.944
			Max. My	2	-17758.624	0.000	333847.502
			Max. Vy	8	16754.956	-332058.804	376.944
			Max. Vx	2	-16828.227	0.000	333847.502
			Max. Torque	21			-628.474
L3	45.08 - 0	Pole	Max Tension	27	97419.388	0.000	119991.127
			Max. Compression	1	-18671.018	0.000	1060.327
			Max. Mx	20	-13564.111	1074896.059	1315.978
			Max. My	2	-13511.861	0.000	1083042.362
			Max. Vy	9	18461.919	-1065548.303	979.175

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	15	18790.820	0.000	-1071369.485
			Max. Torque	9			2470.446
	32.25 - 62.5	Reinforcing	Max Tension	20	122161.670	-0.796	111.019
			Max. Compression	20	-131384.670	0.333	100.144
			Max. Mx	2	121312.483	1237.458	0.000
			Max. My	20	121544.741	-0.878	137.592
			Max. Vy	14	24.254	-1237.098	0.000
			Max. Vx	20	-15.807	-0.878	137.592
	0 - 32.25	Reinforcing	Max Tension	2	160189.364	1839.844	0.000
			Max. Compression	2	-170686.323	0.000	0.000
			Max. Mx	2	160189.364	1839.844	0.000
			Max. My	20	159730.509	-1.908	191.767
			Max. Vy	2	65.553	1839.844	0.000
			Max. Vx	20	14.435	-1.908	191.767

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	1	18671.018	0.000	-4.712
	Max. H_x	21	8183.185	18455.279	-5.169
	Max. H_z	3	8138.846	0.000	18776.437
	Max. M_x	2	1083042.362	0.000	18769.346
	Max. M_z	8	1074896.059	-18446.591	-6.542
	Max. Torsion	9	2469.363	-18455.279	-5.169
	Min. Vert	27	-89503.868	0.000	4776.584
	Min. H_x	9	8183.185	-18455.279	-5.169
	Min. H_z	15	8182.539	0.000	-18784.146
	Min. M_x	14	-1080408.379	0.000	-18779.591
	Min. M_z	20	-1074896.059	18446.591	-6.542
	Min. Torsion	21	-2469.363	18455.279	-5.169
Reinf @ Azimuth 90 deg	Max. Vert	8	170200.358	-181.071	-2.485
	Max. H_x	20	-158984.174	3861.669	3.261
	Max. H_z	12	87879.474	-601.374	929.029
	Min. Vert	20	-158984.174	3861.669	3.261
	Min. H_x	30	74988.611	-742.239	-2.930
	Min. H_z	4	87893.630	-601.420	-932.190
Reinf @ Azimuth 0 deg	Max. Vert	2	170686.289	0.000	120.956
	Max. H_x	6	88251.609	888.322	575.071
	Max. H_z	27	75531.248	0.000	732.106
	Min. Vert	14	-158973.754	0.000	-3813.614
	Min. H_x	22	88251.609	-888.322	575.071
	Min. H_z	14	-158973.754	0.000	-3813.614
Reinf @ Azimuth 270 deg	Max. Vert	20	170200.358	181.071	-2.485
	Max. H_x	36	74988.611	742.239	-2.930
	Max. H_z	16	87879.474	601.374	929.029
	Min. Vert	8	-158984.174	-3861.669	3.261
	Min. H_x	8	-158984.174	-3861.669	3.261
	Min. H_z	24	87893.630	601.420	-932.190
Reinf @ Azimuth	Max. Vert	14	170186.242	0.000	-126.737

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
180 deg					
	Max. H_x	10	87761.501	882.827	-574.948
	Max. H_z	2	-159443.920	0.000	3830.665
	Min. Vert	2	-159443.920	0.000	3830.665
	Min. H_x	18	87761.501	-882.827	-574.948
	Min. H_z	33	74486.977	0.000	-727.709

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	29967.258	0.000	-0.000	-1711.873	0.000	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	35960.672	0.000	-22486.889	-1633259.342	0.000	0.000
0.9 Dead+1.0 Wind 0 deg - No Ice	26970.508	0.000	-22487.193	-1616990.755	0.000	0.000
1.2 Dead+1.0 Wind 30 deg - No Ice	35960.697	11179.414	-19474.734	-1414778.207	-811797.914	-1161.870
0.9 Dead+1.0 Wind 30 deg - No Ice	26970.524	11179.467	-19474.825	-1400598.788	-803932.111	-1164.587
1.2 Dead+1.0 Wind 60 deg - No Ice	35960.697	19363.306	-11243.747	-817720.060	-1406075.008	-2067.554
0.9 Dead+1.0 Wind 60 deg - No Ice	26970.524	19363.400	-11243.798	-809303.006	-1392451.292	-2070.690
1.2 Dead+1.0 Wind 90 deg - No Ice	35960.671	22358.216	-0.003	-2118.438	-1623536.910	-2469.930
0.9 Dead+1.0 Wind 90 deg - No Ice	26970.507	22358.524	-0.002	-1574.350	-1607826.130	-2471.334
1.2 Dead+1.0 Wind 120 deg - No Ice	35960.697	19363.308	11243.745	813479.807	-1406068.758	-2210.461
0.9 Dead+1.0 Wind 120 deg - No Ice	26970.524	19363.400	11243.797	806151.879	-1392446.700	-2209.761
1.2 Dead+1.0 Wind 150 deg - No Ice	35960.697	11179.415	19474.734	1410530.705	-811791.653	-1308.037
0.9 Dead+1.0 Wind 150 deg - No Ice	26970.524	11179.468	19474.825	1397442.327	-803927.508	-1306.727
1.2 Dead+1.0 Wind 180 deg - No Ice	35960.672	0.000	22486.891	1629008.337	0.000	0.000
0.9 Dead+1.0 Wind 180 deg - No Ice	26970.508	0.000	22487.194	1613831.687	0.000	0.000
1.2 Dead+1.0 Wind 210 deg - No Ice	35960.697	-11179.415	19474.734	1410530.705	811791.653	1308.037
0.9 Dead+1.0 Wind 210 deg - No Ice	26970.524	-11179.468	19474.825	1397442.327	803927.508	1306.727
1.2 Dead+1.0 Wind 240 deg - No Ice	35960.697	-19363.308	11243.745	813479.807	1406068.758	2210.461
0.9 Dead+1.0 Wind 240 deg - No Ice	26970.524	-19363.400	11243.797	806151.879	1392446.700	2209.761
1.2 Dead+1.0 Wind 270 deg - No Ice	35960.671	-22358.216	-0.003	-2118.438	1623536.910	2469.930
0.9 Dead+1.0 Wind 270 deg - No Ice	26970.507	-22358.524	-0.002	-1574.350	1607826.130	2471.334
1.2 Dead+1.0 Wind 300 deg - No Ice	35960.697	-19363.306	-11243.747	-817720.060	1406075.008	2067.554
0.9 Dead+1.0 Wind 300 deg - No Ice	26970.524	-19363.400	-11243.798	-809303.006	1392451.292	2070.690

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
1.2 Dead+1.0 Wind 330 deg - No Ice	35960.697	-11179.414	-19474.734	-1414778.207	811797.914	1161.870
0.9 Dead+1.0 Wind 330 deg - No Ice	26970.524	-11179.467	-19474.825	-1400598.788	803932.111	1164.587
1.2 Dead+1.0 Ice+1.0 Temp	55540.967	0.000	0.907	-4208.041	0.000	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	55540.968	0.000	-5321.974	-390451.266	0.000	0.000
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	55540.968	2644.903	-4608.964	-338744.350	-192190.211	-335.352
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	55540.968	4581.107	-2660.985	-197478.428	-332883.084	-583.902
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	55540.968	5289.806	0.006	-4505.682	-384380.039	-679.038
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	55540.968	4581.107	2660.996	188466.801	-332882.633	-592.227
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	55540.968	2644.904	4608.976	329732.200	-192189.759	-343.687
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	55540.968	0.000	5321.986	381438.853	0.000	0.000
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	55540.968	-2644.904	4608.976	329732.200	192189.759	343.687
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	55540.968	-4581.107	2660.996	188466.801	332882.633	592.227
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	55540.968	-5289.806	0.006	-4505.682	384380.039	679.038
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	55540.968	-4581.107	-2660.985	-197478.428	332883.084	583.902
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	55540.968	-2644.903	-4608.964	-338744.350	192190.211	335.352
Dead+Wind 0 deg - Service	29967.254	0.000	-4650.466	-337569.794	0.000	0.000
Dead+Wind 30 deg - Service	29967.254	2311.970	-4027.422	-292580.307	-167120.202	-252.339
Dead+Wind 60 deg - Service	29967.254	4004.449	-2325.233	-169666.715	-289460.592	-439.394
Dead+Wind 90 deg - Service	29967.254	4623.940	0.002	-1763.632	-334240.177	-511.034
Dead+Wind 120 deg - Service	29967.254	4004.450	2325.236	166139.335	-289460.392	-445.743
Dead+Wind 150 deg - Service	29967.254	2311.970	4027.426	289052.696	-167120.002	-258.695
Dead+Wind 180 deg - Service	29967.254	0.000	4650.471	334042.068	0.000	0.000
Dead+Wind 210 deg - Service	29967.254	-2311.970	4027.426	289052.696	167120.002	258.695
Dead+Wind 240 deg - Service	29967.254	-4004.450	2325.236	166139.335	289460.392	445.743
Dead+Wind 270 deg - Service	29967.254	-4623.940	0.002	-1763.632	334240.177	511.034
Dead+Wind 300 deg - Service	29967.254	-4004.449	-2325.233	-169666.715	289460.592	439.394
Dead+Wind 330 deg - Service	29967.254	-2311.970	-4027.422	-292580.307	167120.202	252.339

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.000	-29967.258	0.000	0.000	29967.258	0.000	0.000%
2	0.000	-35960.709	-22487.780	0.000	35960.672	22486.889	0.002%
3	0.000	-26970.532	-22487.780	0.000	26970.508	22487.193	0.002%
4	11179.560	-35960.709	-19474.989	-11179.414	35960.697	19474.734	0.001%
5	11179.560	-26970.532	-19474.989	-11179.467	26970.524	19474.825	0.001%
6	19363.566	-35960.709	-11243.890	-19363.306	35960.697	11243.747	0.001%
7	19363.566	-26970.532	-11243.890	-19363.400	26970.524	11243.798	0.001%
8	22359.120	-35960.709	0.000	-22358.216	35960.671	0.003	0.002%
9	22359.120	-26970.532	0.000	-22358.524	26970.507	0.002	0.002%
10	19363.566	-35960.709	11243.890	-19363.308	35960.697	-11243.745	0.001%
11	19363.566	-26970.532	11243.890	-19363.400	26970.524	-11243.797	0.001%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
12	11179.560	-35960.709	19474.989	-11179.415	35960.697	-19474.734	0.001%
13	11179.560	-26970.532	19474.989	-11179.468	26970.524	-19474.825	0.001%
14	0.000	-35960.709	22487.780	0.000	35960.672	-22486.891	0.002%
15	0.000	-26970.532	22487.780	0.000	26970.508	-22487.194	0.002%
16	-11179.560	-35960.709	19474.989	11179.415	35960.697	-19474.734	0.001%
17	-11179.560	-26970.532	19474.989	11179.468	26970.524	-19474.825	0.001%
18	-19363.566	-35960.709	11243.890	19363.308	35960.697	-11243.745	0.001%
19	-19363.566	-26970.532	11243.890	19363.400	26970.524	-11243.797	0.001%
20	-22359.120	-35960.709	0.000	22358.216	35960.671	0.003	0.002%
21	-22359.120	-26970.532	0.000	22358.524	26970.507	0.002	0.002%
22	-19363.566	-35960.709	-11243.890	19363.306	35960.697	11243.747	0.001%
23	-19363.566	-26970.532	-11243.890	19363.400	26970.524	11243.798	0.001%
24	-11179.560	-35960.709	-19474.989	11179.414	35960.697	19474.734	0.001%
25	-11179.560	-26970.532	-19474.989	11179.467	26970.524	19474.825	0.001%
26	0.000	-55540.973	0.000	0.000	55540.967	-0.907	0.002%
27	0.000	-55540.973	-5322.447	0.000	55540.968	5321.974	0.001%
28	2645.140	-55540.973	-4609.374	-2644.903	55540.968	4608.964	0.001%
29	4581.517	-55540.973	-2661.223	-4581.107	55540.968	2660.985	0.001%
30	5290.281	-55540.973	0.000	-5289.806	55540.968	-0.006	0.001%
31	4581.517	-55540.973	2661.223	-4581.107	55540.968	-2660.996	0.001%
32	2645.140	-55540.973	4609.374	-2644.904	55540.968	-4608.976	0.001%
33	0.000	-55540.973	5322.447	0.000	55540.968	-5321.986	0.001%
34	-2645.140	-55540.973	4609.374	2644.904	55540.968	-4608.976	0.001%
35	-4581.517	-55540.973	2661.223	4581.107	55540.968	-2660.996	0.001%
36	-5290.281	-55540.973	0.000	5289.806	55540.968	-0.006	0.001%
37	-4581.517	-55540.973	-2661.223	4581.107	55540.968	2660.985	0.001%
38	-2645.140	-55540.973	-4609.374	2644.903	55540.968	4608.964	0.001%
39	0.000	-29967.258	-4650.898	0.000	29967.254	4650.466	0.001%
40	2312.188	-29967.258	-4027.796	-2311.970	29967.254	4027.422	0.001%
41	4004.826	-29967.258	-2325.449	-4004.449	29967.254	2325.233	0.001%
42	4624.375	-29967.258	0.000	-4623.940	29967.254	-0.002	0.001%
43	4004.826	-29967.258	2325.449	-4004.450	29967.254	-2325.236	0.001%
44	2312.188	-29967.258	4027.796	-2311.970	29967.254	-4027.426	0.001%
45	0.000	-29967.258	4650.898	0.000	29967.254	-4650.471	0.001%
46	-2312.188	-29967.258	4027.796	2311.970	29967.254	-4027.426	0.001%
47	-4004.826	-29967.258	2325.449	4004.450	29967.254	-2325.236	0.001%
48	-4624.375	-29967.258	0.000	4623.940	29967.254	-0.002	0.001%
49	-4004.826	-29967.258	-2325.449	4004.449	29967.254	2325.233	0.001%
50	-2312.188	-29967.258	-4027.796	2311.970	29967.254	4027.422	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	13	0.00000001	0.00010899
3	Yes	13	0.00000001	0.00007394
4	Yes	14	0.00000001	0.00012409
5	Yes	14	0.00000001	0.00008233
6	Yes	14	0.00000001	0.00013623
7	Yes	14	0.00000001	0.00009072
8	Yes	13	0.00000001	0.00011931
9	Yes	13	0.00000001	0.00008135
10	Yes	14	0.00000001	0.00012177
11	Yes	14	0.00000001	0.00008082
12	Yes	14	0.00000001	0.00013152

13	Yes	14	0.00000001	0.00008757
14	Yes	13	0.00000001	0.00010894
15	Yes	13	0.00000001	0.00007392
16	Yes	14	0.00000001	0.00013152
17	Yes	14	0.00000001	0.00008757
18	Yes	14	0.00000001	0.00012177
19	Yes	14	0.00000001	0.00008082
20	Yes	13	0.00000001	0.00011931
21	Yes	13	0.00000001	0.00008135
22	Yes	14	0.00000001	0.00013623
23	Yes	14	0.00000001	0.00009072
24	Yes	14	0.00000001	0.00012409
25	Yes	14	0.00000001	0.00008233
26	Yes	6	0.00000001	0.00001703
27	Yes	13	0.00000001	0.00003507
28	Yes	13	0.00000001	0.00003689
29	Yes	13	0.00000001	0.00003740
30	Yes	13	0.00000001	0.00003537
31	Yes	13	0.00000001	0.00003644
32	Yes	13	0.00000001	0.00003625
33	Yes	13	0.00000001	0.00003420
34	Yes	13	0.00000001	0.00003625
35	Yes	13	0.00000001	0.00003644
36	Yes	13	0.00000001	0.00003537
37	Yes	13	0.00000001	0.00003740
38	Yes	13	0.00000001	0.00003689
39	Yes	12	0.00000001	0.00014487
40	Yes	12	0.00000001	0.00014452
41	Yes	12	0.00000001	0.00014652
42	Yes	12	0.00000001	0.00014691
43	Yes	12	0.00000001	0.00014486
44	Yes	12	0.00000001	0.00014430
45	Yes	12	0.00000001	0.00014385
46	Yes	12	0.00000001	0.00014430
47	Yes	12	0.00000001	0.00014486
48	Yes	12	0.00000001	0.00014691
49	Yes	12	0.00000001	0.00014652
50	Yes	12	0.00000001	0.00014452

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
L1	102.92 - 90	10.795	39	0.942	0.003
L2	90 - 45.08	8.250	39	0.938	0.003
L3	48.92 - 0	2.214	39	0.437	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation	*Appurtenance*	*Gov. Load Comb.*	*Deflection*	*Tilt*	*Twist*	*Radius of Curvature*
ft			*in*	°	°	*ft*
90.000	7770	39	8.250	0.938	0.003	7699
82.000	(2) MX06FRO660-03	39	6.785	0.887	0.003	6301
72.000	APXVAALL24_43-U-NA20	39	5.128	0.774	0.003	5357

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
	[P2.0][96"]					
62.500	FFVV-65B-R2	39	3.761	0.637	0.002	4690
28.000	(2) Gen 5' T-Arm	39	0.805	0.207	0.000	6954

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	102.92 - 90	52.184	2	4.547	0.017
L2	90 - 45.08	39.904	2	4.532	0.017
L3	48.92 - 0	10.714	2	2.118	0.006

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
90.000	7770	2	39.904	4.532	0.017	1634
82.000	(2) MX06FRO660-03	2	32.831	4.286	0.016	1328
72.000	APXVAALL24_43-U-NA20 [P2.0][96"]	2	24.818	3.741	0.013	1121
62.500	FFVV-65B-R2	2	18.201	3.082	0.010	976
28.000	(2) Gen 5' T-Arm	2	3.889	1.003	0.002	1436

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
1.750	10	2.250	101652.263 243576.145 0.42	104354.636 404336.400 0.26	43.386 54.000 0.80		Plate	0.80 ✔

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	102.92 - 90 (1)	TP13x13x0.25	12.920	102.920	273.9	10.014	-499.592	30149.199	0.017
L2	90 - 45.08 (2)	TP26.793x13x0.25	44.920	102.920	164.2	16.817	-17758.600	140996.000	0.126
L3	45.08 - 0 (3)	TP40x25.113x0.313	48.920	102.920	87.7	39.365	-13511.900	1109320.000	0.012

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	102.92 - 90 (1)	TP13x13x0.25	2482.250	106695.000	0.023	0.000	106695.000	0.000
L2	90 - 45.08 (2)	TP26.793x13x0.25	333847.500	542403.333	0.615	0.000	542403.333	0.000
L3	45.08 - 0 (3)	TP40x25.113x0.313	1083041.667	2195616.667	0.493	0.000	2195616.667	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	102.92 - 90 (1)	TP13x13x0.25	387.966	94630.703	0.004	0.000	106077.500	0.000
L2	90 - 45.08 (2)	TP26.793x13x0.25	16828.199	288495.000	0.058	0.000	547797.500	0.000
L3	45.08 - 0 (3)	TP40x25.113x0.313	18780.500	690856.000	0.027	0.000	2401166.667	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	102.92 - 90 (1)	0.017	0.023	0.000	0.004	0.000	0.040 ✔	1.000	4.8.2 ✔
L2	90 - 45.08 (2)	0.126	0.615	0.000	0.058	0.000	0.745 ✔	1.000	4.8.2 ✔
L3	45.08 - 0 (3)	0.012	0.493	0.000	0.027	0.000	0.506 ✔	1.000	4.8.2 ✔

Reinforcing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L3	62.5 - 32.25	4x1 1/4	30.252	2.000	66.5 K=1.00	5.000	-131385.000	192094.000	0.684 [1]
L3	32.25 - 0	4.25 x 1.25	32.253	2.000	66.5 K=1.00	5.313	-170686.000	204100.000	0.836 [1]

[1] $P_u / \phi P_n$ controls

Reinforcing 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 $\frac{M_{uy}}{\phi M_{ny}}$
L3	62.5 - 32.25	4x1 1/4	0.333	24375.000	0.000	-100.143	7617.191	0.013
L3	32.25 - 0	4.25 x 1.25	0.000	27517.083	0.000	0.000	8093.258	0.000

Reinforcing Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L3	62.5 - 32.25	4x1 1/4	0.684	0.000	0.013	0.684 [1] ✔	1.000	4.8.1 ✔
L3	32.25 - 0	4.25 x 1.25	0.836	0.000	0.000	0.836 [1] ✔	1.000	4.8.1 ✔

[1] $P_u / \phi P_n$ controls

Tension Checks

Reinforcing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L3	62.5 - 32.25	4x1 1/4	30.252	2.000	66.5	4.063	122162.000	243750.000	0.501 [1]
L3	32.25 - 0	4.25 x 1.25	32.253	2.000	66.5	4.375	160189.000	262500.000	0.610 [1]

[1] $P_u / \phi P_n$ controls

Reinforcing 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 $\frac{M_{uy}}{\phi M_{ny}}$
L3	62.5 - 32.25	4x1 1/4	-0.796	24375.000	0.000	111.018	7617.191	0.015
L3	32.25 - 0	4.25 x 1.25	1839.842	27517.083	0.067	0.000	8093.258	0.000

Reinforcing Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L3	62.5 - 32.25	4x1 1/4	0.501	0.000	0.015	0.501 [1] ✔	1.000	4.8.1 ✔
L3	32.25 - 0	4.25 x 1.25	0.610	0.067	0.000	0.610 [1] ✔	1.000	4.8.1 ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	102.92 - 90	Pole	TP13x13x0.25	1	-499.592	30149.199	4.0	Pass
L2	90 - 45.08	Pole	TP26.793x13x0.25	2	-17758.600	140996.000	74.5	Pass
L3	45.08 - 0	Pole	TP40x25.113x0.313	3	89765.102	2302850.000	50.6	Pass
	62.5 - 32.25	Reinforcing	4x1 1/4	8	-131385.000	192094.000	68.4	Pass
	32.25 - 0	Reinforcing	4.25 x 1.25	5	-170686.000	204100.000	83.6	Pass
							Summary	
						Pole (L2)	74.5	Pass
						Reinforcing (L3)	83.6	Pass
						Base Plate	80.3	Pass
						RATING =	**83.6**	**Pass**

MK DEVELOPMENT

EXHIBIT E

Antenna Mount Analysis

May 17, 2022

PASS

RE: **Structural Analysis for Antenna Mounts**

Location: **627 Honeyspot Road Stratford, CT 06615**

Site ID: **NJJER02049C**

Dish Wireless LLC,

Per your request, we have performed a structural analysis of the proposed antenna mount and equipment platform. This site consists of one (1) proposed antenna mount that will be installed on the existing monopole and equipment that will be installed on the existing steel platform on the roof of the building. This review determines if the antenna mount and platform can support the proposed loads.

1.0 Assumptions:

CATEGORY	DATA	CODE
Structure Type	Monopole	
RAD Center	62-2”	
Structure Class	II	ASCE 7-16
Exposure Class	C	ASCE 7-16
Kzt Factor	1.0	ASCE 7-16
Basic Wind Speed	125	ASCE 7-16
Ice Thickness	1”	ASCE 7-16
Ice Windspeed	50 MPH	ASCE 7-16
Seismic Design Category	B	ASCE 7-16
S_{DS}	.221	ASCE 7-16

2.0 Existing Documents:

DOCUMENT	COMPANY	DATE
Proposed Drawings	M&K Development	3/02/2022
Site Visit Photos	M&K Development	1/26/2022

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**
Enersys	**(1) 2000005996 Cabinet (39 RU)**	**376 lbs**
Varies	**In Cabinet Equipment**	**256 lbs**
Varies	**H-Frame Equipment**	**185 lbs**
CommScope	**(1) Hybrid Cable**	**N.A.**

Bold represents equipment to be added

We are installing (1) proposed MC-PK8-DSH mounts on the existing monopole. After performing an analysis on the proposed mount, it has been determined that it is **ADEQUATE** for the proposed loads on the structure which passes at 35% capacity.

The equipment will be mounted on an existing steel platform on the roof of the building. We will install another W8x10 steel beam on the platform and have our equipment span between the two W8x10 beams. The steel platform is shared by other carriers but previously supported a Nextel shelter. The shelter had a larger dead load and wind load than the proposed equipment. After modeling this section of the steel platform and by engineering judgement the platform is **ADEQUATE** for the proposed equipment.

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 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

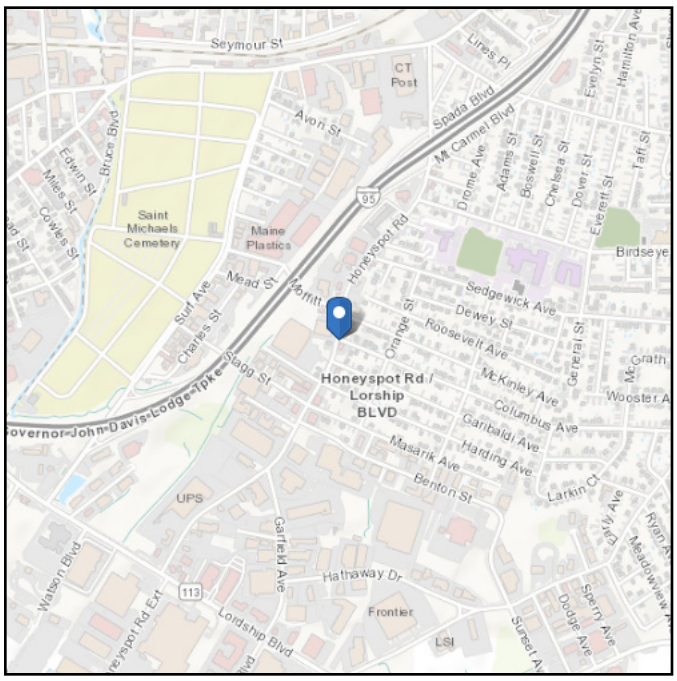
Brett Magaram
Connecticut License # 33678
Brett@MagaramEngineering.com
Phone: 914-450-8416

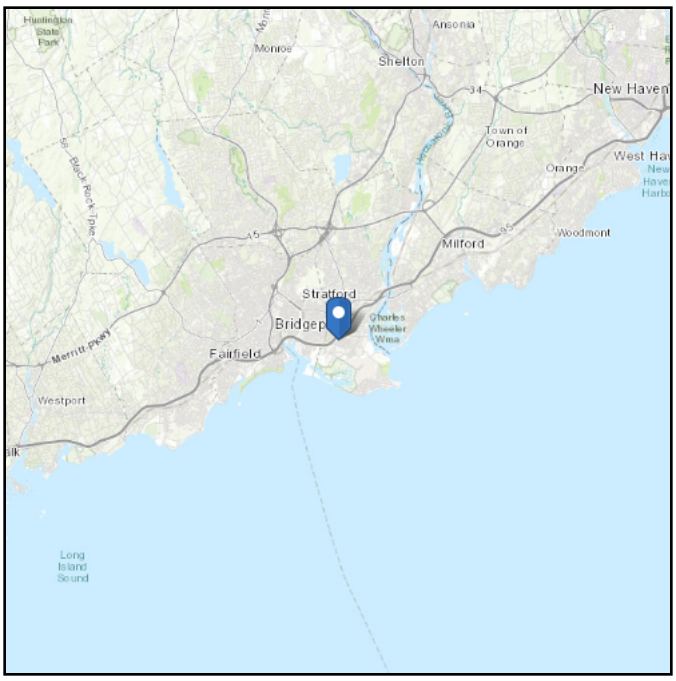
(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS												
				Wind Design Parameters								
Municipality	**Ground Snow Load** (psf)	**MCE Spectral Accelerations** (%g)		**Ultimate Design Wind Speeds,** V_{ult} (mph)			**Nominal Design Wind Speeds,** V_{asd} (mph)			**Wind-Borne Debris 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

ASCE 7 Hazards Report

Address:
627 Honeyspot Rd
Stratford, Connecticut
06615

Standard:	ASCE/SEI 7-16	**Elevation:**	11.56 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.177042
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-73.146241





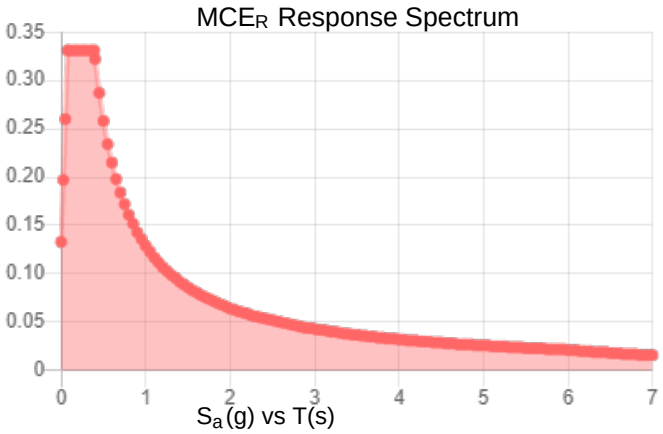
Seismic

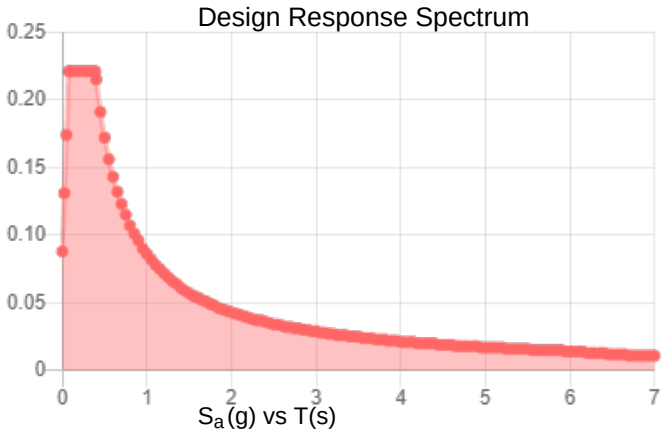
Site Soil Class: D - Default (see Section 11.4.3)

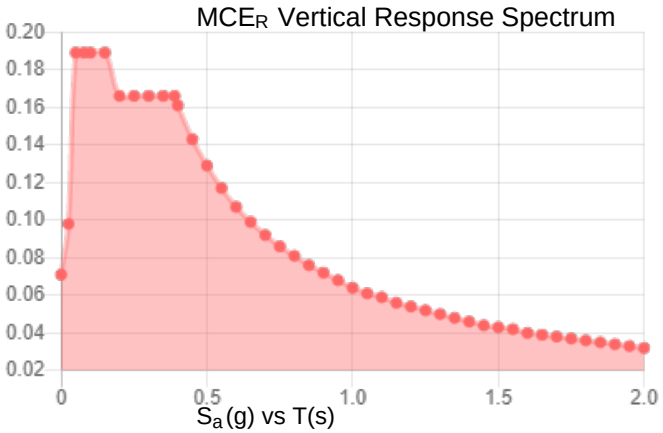
Results:

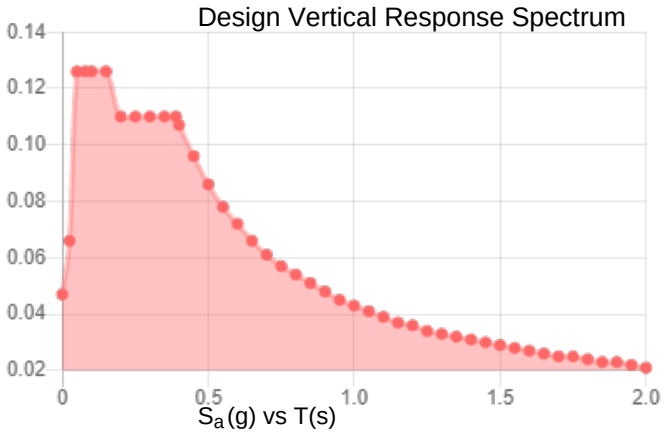
S_S :	0.207	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.117
F_v :	2.4	PGA_M :	0.184
S_{MS} :	0.331	F_{PGA} :	1.565
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.221	C_v :	0.714

Seismic Design Category B









Data Accessed: **Tue May 17 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 May 17 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.

Snow

Results:

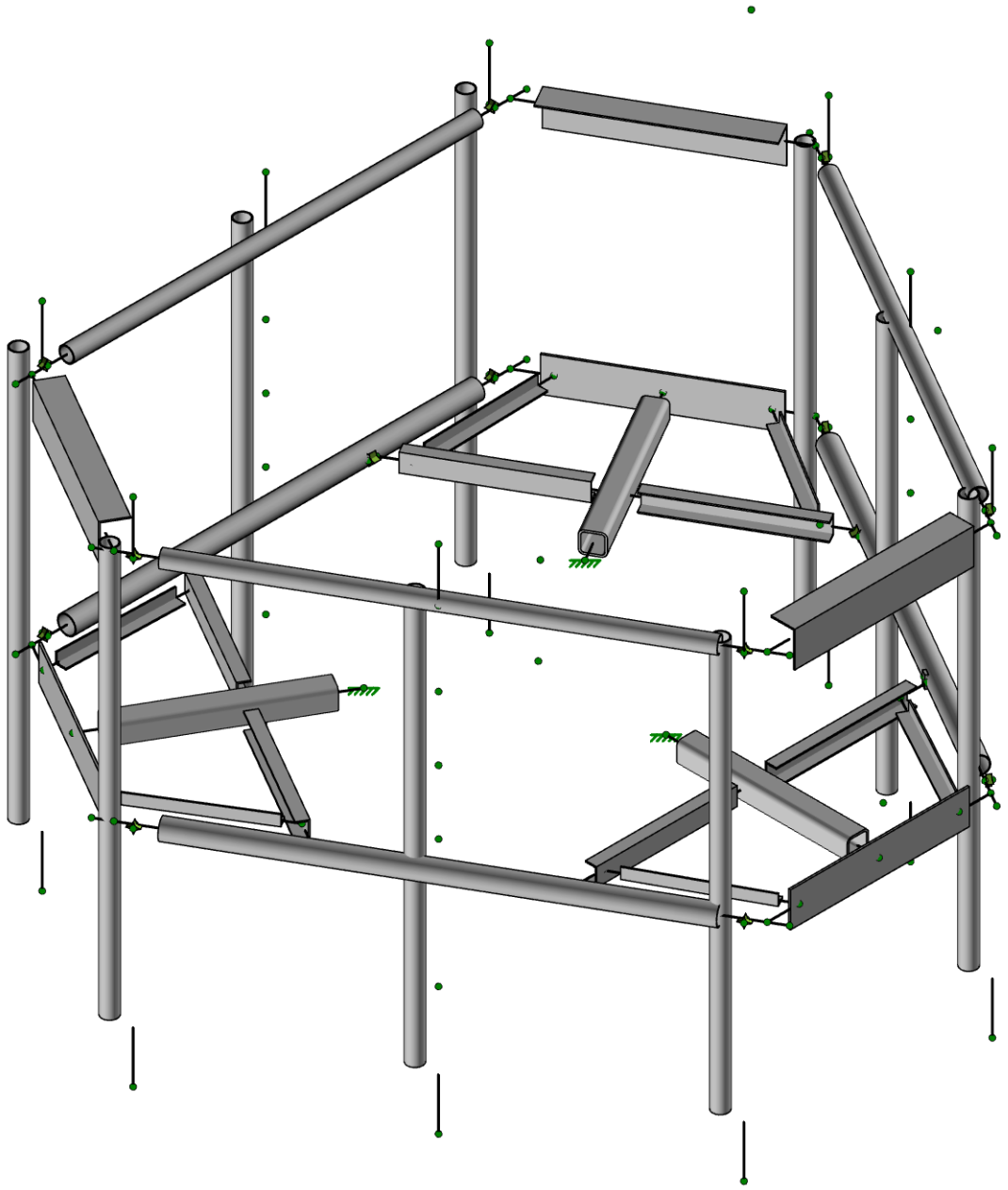
Ground Snow Load, p_g:	30 lb/ft^2
Elevation:	11.6 ft
Data Source:	ASCE/SEI 7-16, Table 7.2-8
Date Accessed:	Tue May 17 2022

Values provided are ground snow loads. In areas designated "case study required," extreme local variations in ground snow loads preclude mapping at this scale. Site-specific case studies are required to establish ground snow loads at elevations not covered.

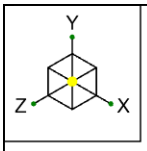
The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

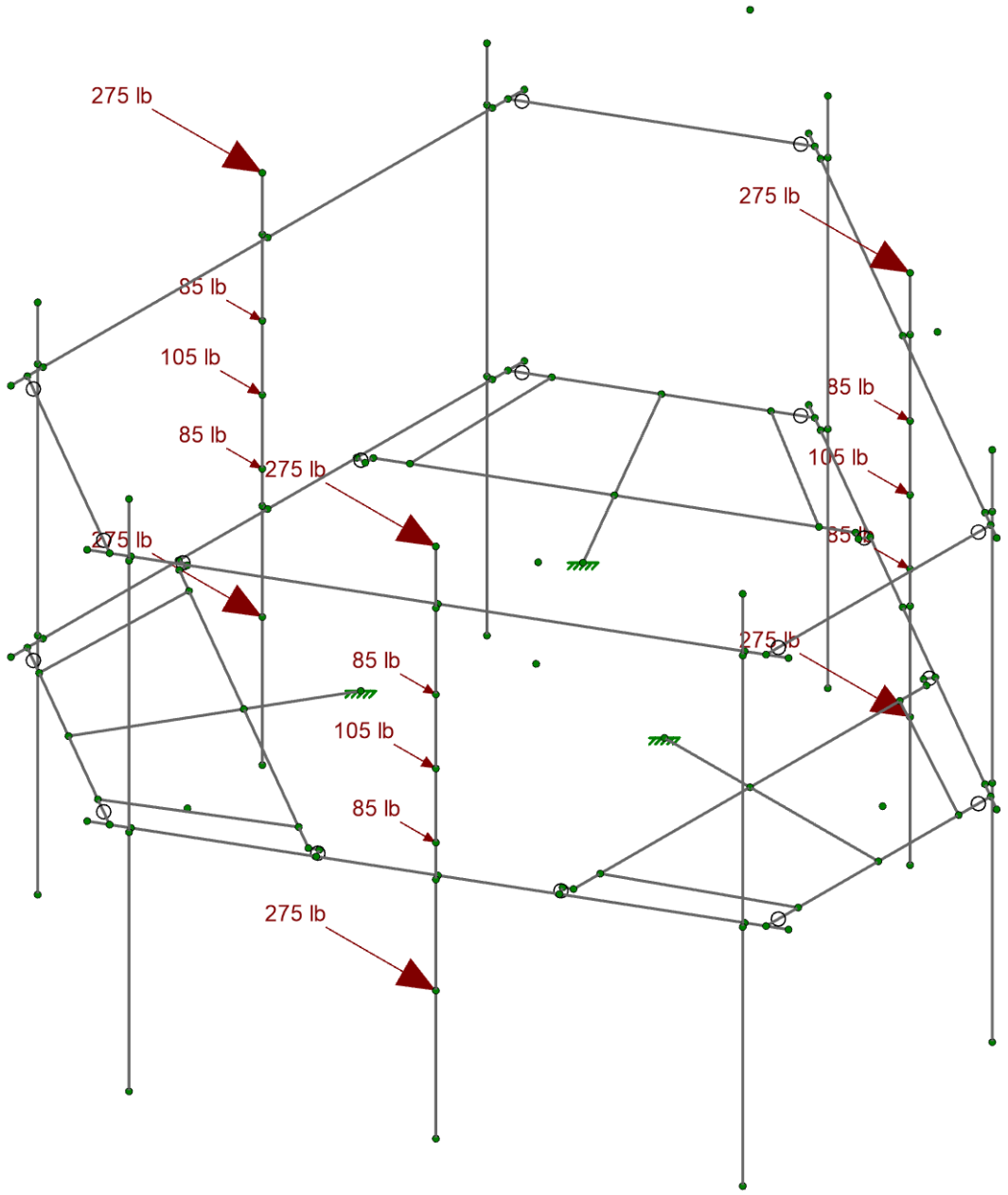
ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.



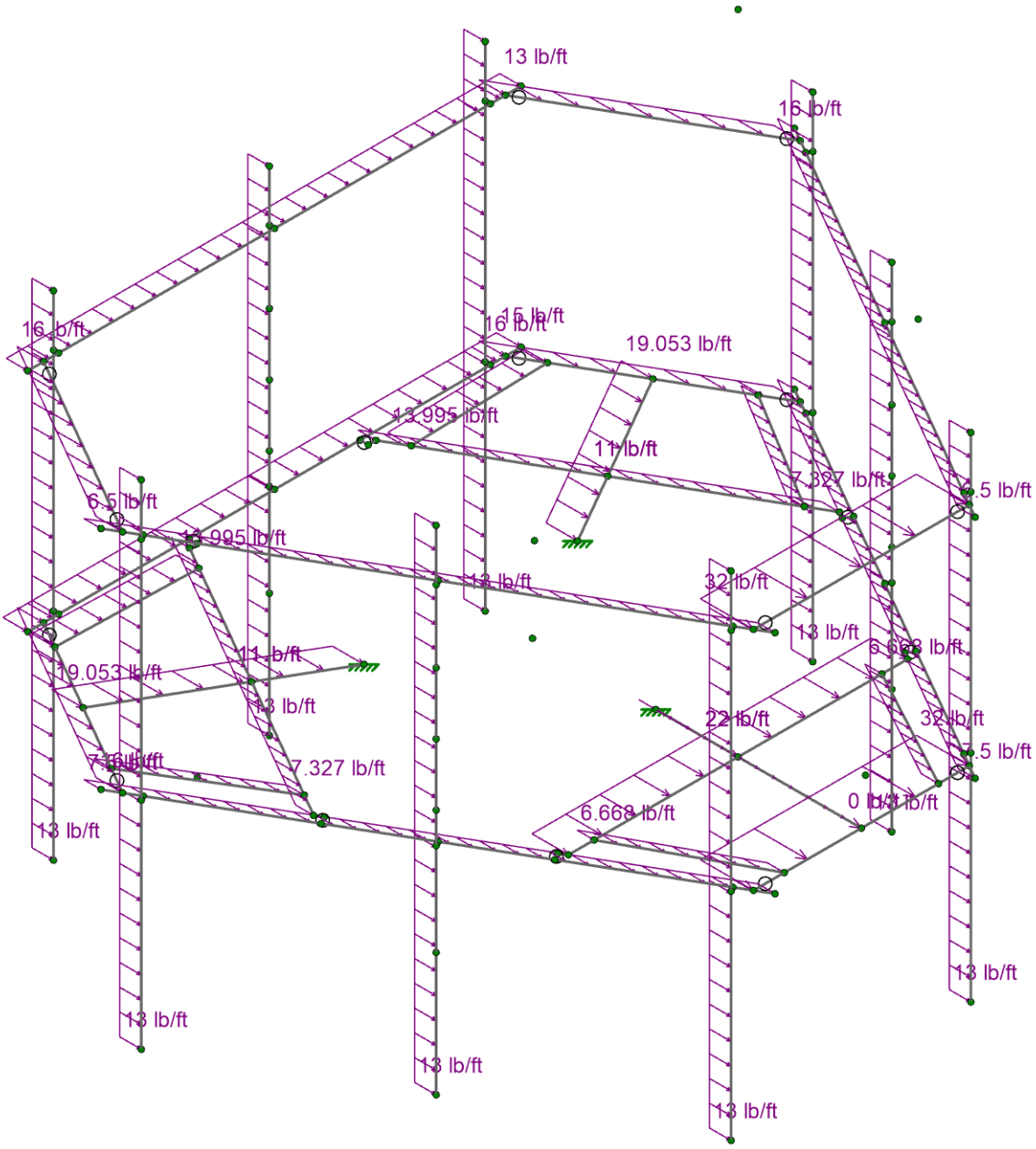
Magaram Engineering	NJJER02049C	SK-1
BJM		May 17, 2022
		NJJER02049C 5.17.2022.r3d





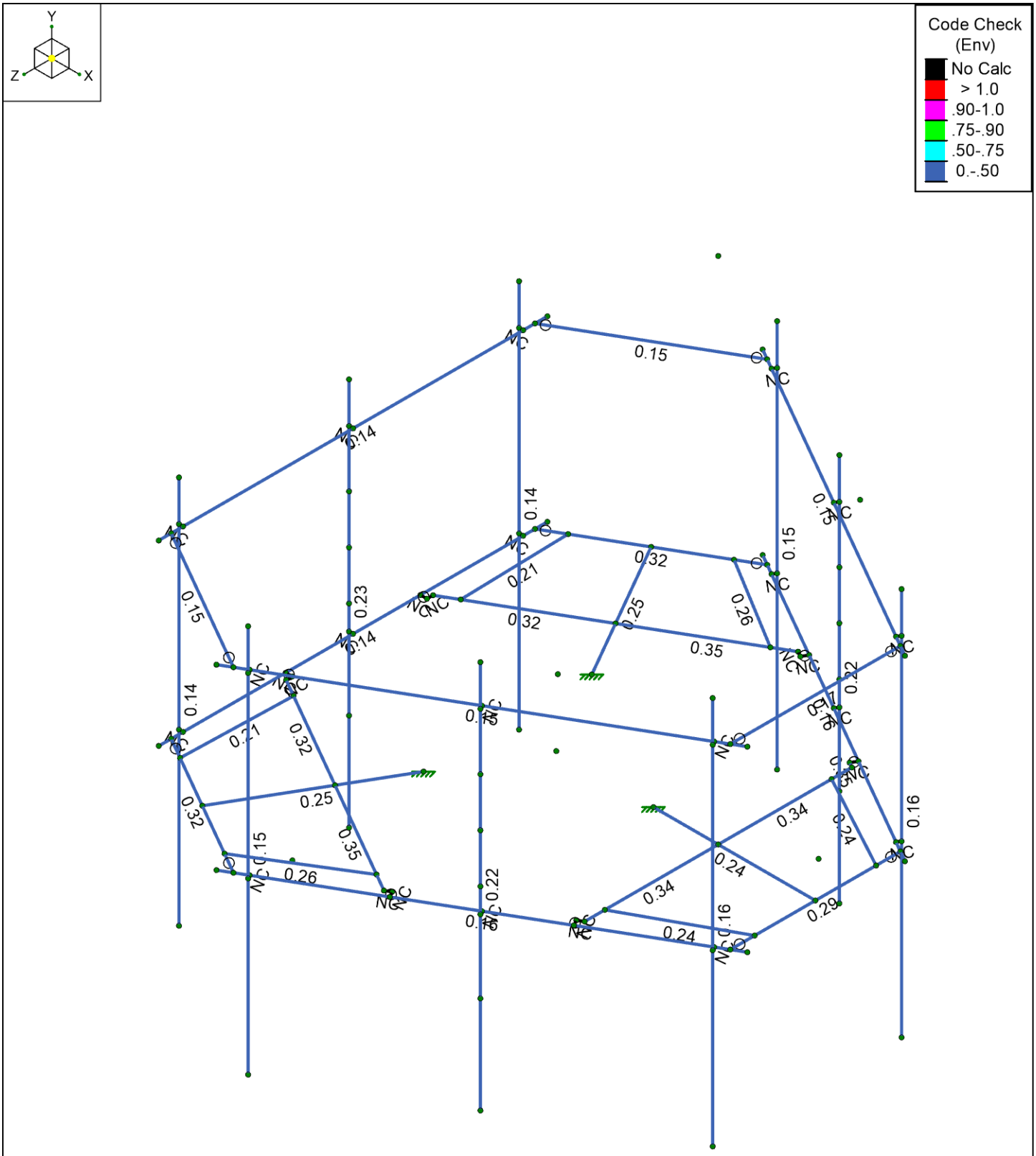
Loads: BLC 3, Telco Wx

Magaram Engineering	NJJER02049C	SK-2
BJM		May 17, 2022
		NJJER02049C 5.17.2022.r3d



Loads: BLC 12, Mount Wx

Magaram Engineering	NJJER02049C	SK-3
BJM		May 17, 2022
		NJJER02049C 5.17.2022.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Magaram Engineering	NJJER02049C	SK-4
BJM		May 17, 2022
		NJJER02049C 5.17.2022.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	N132B	L	Y	-35
2	N127	L	Y	-35
3	N130	L	Y	-65
4	N141	L	Y	-75
5	N142	L	Y	-35
6	N143	L	Y	-65
7	N138A	L	Y	-35
8	N144	L	Y	-35
9	N145	L	Y	-75
10	N146	L	Y	-35
11	N147	L	Y	-65
12	N75	L	Y	-35
13	N149	L	Y	-35
14	N150	L	Y	-75
15	N151	L	Y	-35

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	N132B	L	Y	-90
2	N127	L	Y	-90
3	N130	L	Y	-30
4	N141	L	Y	-30
5	N142	L	Y	-35
6	N144	L	Y	-90
7	N138A	L	Y	-90

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	N143	L	Y	-30
9	N145	L	Y	-30
10	N146	L	Y	-35
11	N149	L	Y	-90
12	N75	L	Y	-90
13	N147	L	Y	-30
14	N150	L	Y	-30
15	N151	L	Y	-35

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	N132B	L	X	275
2	N127	L	X	275
3	N130	L	X	85
4	N141	L	X	85
5	N142	L	X	105
6	N144	L	X	275
7	N138A	L	X	275
8	N143	L	X	85
9	N145	L	X	85
10	N146	L	X	105
11	N149	L	X	275
12	N75	L	X	275
13	N147	L	X	85
14	N150	L	X	85
15	N151	L	X	105

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	N132B	L	Z	275
2	N127	L	Z	275
3	N130	L	Z	85
4	N141	L	Z	85
5	N142	L	Z	105
6	N144	L	Z	275
7	N138A	L	Z	275
8	N143	L	Z	85
9	N145	L	Z	85
10	N146	L	Z	105
11	N149	L	Z	275
12	N75	L	Z	275
13	N147	L	Z	85
14	N150	L	Z	85
15	N151	L	Z	105

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	N132B	L	X	60
2	N127	L	X	60
3	N130	L	X	20
4	N141	L	X	20
5	N142	L	X	21

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	N144	L	X	60
7	N138A	L	X	60
8	N143	L	X	20
9	N145	L	X	20
10	N146	L	X	21
11	N149	L	X	60
12	N75	L	X	60
13	N147	L	X	20
14	N150	L	X	20
15	N151	L	X	21

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	N132B	L	Z	60
2	N127	L	Z	60
3	N130	L	Z	20
4	N141	L	Z	20
5	N142	L	Z	21
6	N144	L	Z	60
7	N138A	L	Z	60
8	N143	L	Z	20
9	N145	L	Z	20
10	N146	L	Z	21
11	N149	L	Z	60
12	N75	L	Z	60
13	N147	L	Z	20
14	N150	L	Z	20
15	N151	L	Z	21

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	N132B	L	X	60
2	N127	L	X	60
3	N130	L	X	20
4	N141	L	X	20
5	N142	L	X	21
6	N144	L	X	60
7	N138A	L	X	60
8	N143	L	X	20
9	N145	L	X	20
10	N146	L	X	21
11	N149	L	X	60
12	N75	L	X	60
13	N147	L	X	20
14	N150	L	X	20
15	N151	L	X	21

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	N132B	L	Z	60
2	N127	L	Z	60
3	N130	L	Z	20

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	N141	L	Z	20
5	N142	L	Z	21
6	N144	L	Z	60
7	N138A	L	Z	60
8	N143	L	Z	20
9	N145	L	Z	20
10	N146	L	Z	21
11	N149	L	Z	60
12	N75	L	Z	60
13	N147	L	Z	20
14	N150	L	Z	20
15	N151	L	Z	21

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	1998.632	29	1924.987	42	1378.221	31	0.881	33	2.48	29	0.528	33
2		min	-2002.748	4	-120.537	33	-1378.432	6	-3.908	8	-2.506	4	-2.923	70
3	P13	max	2000.222	27	1926.737	48	1380.817	16	3.984	70	2.509	18	0.528	23
4		min	-2004.372	18	-119.913	23	-1380.585	25	-0.88	23	-2.483	27	-2.249	14
5	P1	max	903.802	11	1851.786	37	2169.785	32	0.401	7	2.292	24	4.41	3
6		min	-888.432	20	-167.409	28	-2169.787	24	-1.156	70	-2.293	32	-1.151	28
7	Totals:	max	4803.422	11	5061.531	45	4655.16	32						
8		min	-4803.418	20	2038.133	20	-4655.161	7						

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	7	0	24	0	3
3	P2	max	0	70	0	70	0	70	0	70	0	70	0	70
4		min	0	1	0	1	0	1	0	1	0	1	0	1
5	P3	max	0	20	0.036	28	0.018	24	3.164e-3	70	2.147e-4	32	1.401e-3	28
6		min	0	11	-0.109	3	-0.018	32	-1.289e-3	7	-2.144e-4	24	-3.908e-3	3
7	P4	max	0	20	0.007	28	0.01	24	1.138e-3	70	6.851e-4	32	8.308e-4	28
8		min	0	11	-0.025	3	-0.01	32	-3.941e-4	7	-6.85e-4	24	-2.637e-3	3
9	P7	max	0.1	21	0.046	29	0.018	24	6.232e-3	24	8.18e-4	12	3.999e-3	10
10		min	-0.101	12	-0.123	4	-0.018	32	-6.296e-3	15	-8.095e-4	21	-3.528e-3	35
11	P8	max	0.099	35	0.046	27	0.018	24	6.297e-3	7	8.523e-4	35	4.006e-3	12
12		min	-0.099	10	-0.168	70	-0.018	32	-6.241e-3	32	-8.602e-4	10	-3.541e-3	21
13	P9	max	0.078	35	-0.007	28	0.011	24	3.608e-3	70	3.102e-3	35	-2.359e-4	26
14		min	-0.079	10	-0.097	70	-0.011	32	7.712e-4	28	-3.125e-3	10	-4.372e-3	70
15	P10	max	0.077	21	-0.007	28	0.011	24	-7.631e-4	28	3.042e-3	12	-2.039e-4	30
16		min	-0.078	12	-0.085	55	-0.011	32	-3.544e-3	54	-3.017e-3	21	-2.275e-3	39
17	P11	max	0.076	21	0.04	29	0.018	24	3.178e-3	70	1.354e-3	30	1.819e-3	28
18		min	-0.076	12	-0.115	4	-0.018	32	-1.604e-3	7	-1.4e-3	5	-2.082e-3	3
19	P12	max	0.076	35	0.04	27	0.018	24	3.94e-3	70	1.294e-3	17	1.857e-3	28
20		min	-0.077	10	-0.144	70	-0.018	32	-1.351e-3	24	-1.254e-3	26	-3.186e-3	70
21	P13	max	0	18	0	23	0	25	0	23	0	27	0	14
22		min	0	27	0	48	0	16	0	70	0	18	0	23
23	P14	max	0.019	18	0.033	23	0.011	27	1.194e-3	22	3.427e-4	26	2.305e-3	15
24		min	-0.019	27	-0.112	14	-0.011	18	-4.456e-3	70	-3.756e-4	17	-1.162e-3	70
25	P15	max	0.009	18	0.006	23	0.005	27	6.557e-4	22	7.642e-4	27	1.389e-3	15
26		min	-0.009	27	-0.025	14	-0.005	18	-2.534e-3	70	-7.826e-4	18	-4.373e-4	24
27	P18	max	0.039	6	0.041	24	0.083	7	2.626e-3	7	1.168e-3	24	7.899e-3	11
28		min	-0.038	31	-0.123	15	-0.083	15	-2.373e-3	32	-1.221e-3	15	-6.826e-3	20
29	P19	max	0.058	4	0.042	22	0.084	22	5.68e-3	8	9.204e-4	28	4.441e-3	11
30		min	-0.058	29	-0.174	70	-0.086	13	-5.356e-3	33	-9.492e-4	3	-4.341e-3	20
31	P20	max	0.045	21	-0.009	22	0.065	22	-7.754e-4	21	3.173e-3	12	-3.723e-4	25
32		min	-0.045	12	-0.096	70	-0.066	13	-5.675e-3	70	-3.148e-3	21	-2.237e-3	66
33	P21	max	0.031	6	-0.008	24	0.065	24	4.851e-4	70	2.83e-3	7	4.169e-3	66
34		min	-0.031	31	-0.087	66	-0.065	15	-6.061e-4	16	-2.825e-3	32	7.649e-4	24
35	P22	max	0.03	5	0.036	23	0.065	24	1.591e-3	22	1.229e-3	25	2.033e-3	15
36		min	-0.029	30	-0.117	14	-0.065	15	-1.958e-3	13	-1.246e-3	16	-3.358e-3	70
37	P23	max	0.047	4	0.038	22	0.065	22	1.793e-3	21	1.321e-3	11	1.173e-3	33
38		min	-0.046	28	-0.15	70	-0.066	13	-5.095e-3	70	-1.28e-3	20	-1.734e-3	70
39	P24	max	0	4	0	33	0	6	0	8	0	4	0	70
40		min	0	29	0	42	0	31	0	33	0	29	0	33
41	P25	max	0.019	4	0.033	33	0.011	4	3.582e-3	9	3.756e-4	5	4.342e-3	70
42		min	-0.019	29	-0.112	8	-0.011	29	-1.196e-3	34	-3.427e-4	30	-1.004e-3	32
43	P26	max	0.009	4	0.006	33	0.005	4	2.353e-3	9	7.809e-4	4	2.079e-3	70
44		min	-0.009	29	-0.025	8	-0.005	29	-6.57e-4	34	-7.625e-4	29	-4.372e-4	32
45	P29	max	0.057	18	0.042	34	0.085	9	5.364e-3	23	9.422e-4	3	4.443e-3	11
46		min	-0.057	27	-0.126	9	-0.084	34	-5.689e-3	14	-9.134e-4	28	-4.342e-3	20
47	P30	max	0.039	16	0.041	32	0.083	7	2.373e-3	24	1.227e-3	7	7.899e-3	11
48		min	-0.038	25	-0.171	70	-0.083	15	-2.626e-3	15	-1.174e-3	32	-6.825e-3	20
49	P31	max	0.031	16	-0.008	32	0.065	7	2.025e-3	70	2.824e-3	24	5.256e-3	70
50		min	-0.031	25	-0.096	70	-0.065	32	-2.93e-4	31	-2.829e-3	15	7.625e-4	32
51	P32	max	0.044	35	-0.009	34	0.065	10	3.741e-3	45	3.108e-3	35	-3.752e-4	31
52		min	-0.044	10	-0.089	60	-0.065	34	7.554e-4	35	-3.133e-3	10	-2.228e-3	58
53	P33	max	0.046	3	0.038	34	0.065	9	2.377e-3	10	1.268e-3	20	2.116e-3	70
54		min	-0.046	28	-0.121	9	-0.064	34	-2.61e-3	70	-1.309e-3	11	-1.252e-3	14
55	P34	max	0.03	17	0.036	33	0.065	7	1.958e-3	9	1.248e-3	6	5.219e-3	70

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	-0.029	26	-0.147	70	-0.065	32	-1.592e-3	34	-1.23e-3	31	-1.588e-3	32
57	N43	max	0.037	6	0.049	24	0.083	7	2.626e-3	7	1.168e-3	24	7.899e-3	11
58		min	-0.035	31	-0.13	15	-0.083	15	-2.373e-3	32	-1.221e-3	15	-6.826e-3	20
59	N44	max	0.036	16	0.049	32	0.083	7	2.373e-3	24	1.227e-3	7	7.899e-3	11
60		min	-0.035	25	-0.177	70	-0.083	15	-2.626e-3	15	-1.174e-3	32	-6.825e-3	20
61	N45	max	0.042	6	0.034	24	0.083	7	2.647e-3	7	1.146e-3	24	7.915e-3	11
62		min	-0.041	31	-0.116	15	-0.083	15	-2.409e-3	32	-1.201e-3	15	-6.842e-3	20
63	N48A	max	0.042	16	0.034	32	0.083	7	2.408e-3	24	1.207e-3	7	7.914e-3	11
64		min	-0.041	25	-0.166	70	-0.083	15	-2.647e-3	15	-1.152e-3	32	-6.841e-3	20
65	N51	max	0.337	20	0.033	24	0.272	7	2.917e-3	6	3.978e-3	20	7.344e-3	28
66		min	-0.349	11	-0.123	15	-0.272	15	-2.693e-3	31	-4.034e-3	11	-7.642e-3	3
67	N54	max	0.337	20	0.033	32	0.272	7	2.692e-3	25	4.042e-3	11	7.342e-3	28
68		min	-0.349	11	-0.181	70	-0.272	15	-2.916e-3	16	-3.987e-3	20	-7.64e-3	3
69	N57	max	0.3	11	0.035	23	0.012	29	2.248e-3	7	1.146e-3	24	7.514e-3	11
70		min	-0.254	20	-0.118	14	-0.056	70	-2.01e-3	32	-1.201e-3	15	-6.443e-3	20
71	N60	max	0.3	11	0.035	33	0.026	54	2.01e-3	24	1.207e-3	7	7.514e-3	11
72		min	-0.254	20	-0.168	70	-0.077	70	-2.248e-3	15	-1.152e-3	32	-6.442e-3	20
73	N63	max	0.413	20	0.033	23	0.301	7	2.921e-3	6	3.978e-3	20	7.349e-3	28
74		min	-0.423	11	-0.123	14	-0.298	32	-2.698e-3	31	-4.034e-3	11	-7.648e-3	3
75	N66	max	0.413	20	0.033	33	0.298	24	2.697e-3	25	4.042e-3	11	7.347e-3	28
76		min	-0.422	11	-0.18	70	-0.301	15	-2.92e-3	16	-3.987e-3	20	-7.645e-3	3
77	N67	max	0.312	20	0.05	24	0.272	7	2.874e-3	6	4.225e-3	20	7.241e-3	28
78		min	-0.324	11	-0.139	15	-0.272	15	-2.659e-3	31	-4.293e-3	11	-7.543e-3	3
79	N68	max	0.312	20	0.05	32	0.272	7	2.658e-3	25	4.302e-3	11	7.239e-3	28
80		min	-0.324	11	-0.195	70	-0.272	15	-2.873e-3	16	-4.234e-3	20	-7.54e-3	3
81	N111A	max	0.285	20	0.05	29	0.308	7	6.501e-3	24	4.013e-3	8	4.746e-3	10
82		min	-0.29	11	-0.129	4	-0.308	15	-6.642e-3	15	-4.05e-3	16	-4.625e-3	35
83	N112A	max	0.285	20	0.05	27	0.308	7	6.642e-3	7	4.043e-3	6	4.756e-3	12
84		min	-0.29	11	-0.177	70	-0.308	15	-6.503e-3	32	-4.005e-3	14	-4.634e-3	21
85	N113A	max	0.325	20	0.041	24	0.272	7	2.874e-3	6	4.225e-3	20	7.241e-3	28
86		min	-0.337	11	-0.131	15	-0.272	15	-2.659e-3	31	-4.293e-3	11	-7.543e-3	3
87	N114A	max	0.305	20	0.042	22	0.296	7	6.043e-3	8	4.071e-3	17	4.218e-3	27
88		min	-0.314	11	-0.176	70	-0.291	32	-5.865e-3	33	-4.055e-3	9	-4.421e-3	18
89	N115A	max	0.305	20	0.043	34	0.291	24	5.873e-3	23	4.062e-3	13	4.221e-3	29
90		min	-0.313	11	-0.128	9	-0.296	15	-6.051e-3	14	-4.076e-3	5	-4.422e-3	4
91	N116A	max	0.325	20	0.041	32	0.272	7	2.658e-3	25	4.302e-3	11	7.239e-3	28
92		min	-0.337	11	-0.188	70	-0.272	15	-2.873e-3	16	-4.234e-3	20	-7.54e-3	3
93	N69A	max	0.042	6	0.034	23	0.084	24	2.647e-3	7	1.146e-3	24	7.915e-3	11
94		min	-0.041	31	-0.117	14	-0.084	15	-2.409e-3	32	-1.201e-3	15	-6.842e-3	20
95	N70A	max	0.042	16	0.034	33	0.084	7	2.408e-3	24	1.207e-3	7	7.914e-3	11
96		min	-0.041	25	-0.167	70	-0.084	32	-2.647e-3	15	-1.152e-3	32	-6.841e-3	20
97	N71A	max	0.337	20	0.033	23	0.272	7	2.917e-3	6	3.978e-3	20	7.344e-3	28
98		min	-0.349	11	-0.123	14	-0.272	15	-2.693e-3	31	-4.034e-3	11	-7.642e-3	3
99	N72A	max	0.337	20	0.033	33	0.272	7	2.692e-3	25	4.042e-3	11	7.342e-3	28
100		min	-0.349	11	-0.18	70	-0.272	15	-2.916e-3	16	-3.987e-3	20	-7.64e-3	3
101	N122A	max	0.093	21	-0.011	28	0.011	24	-7.912e-4	28	3.089e-3	12	1.394e-3	29
102		min	-0.093	12	-0.103	54	-0.011	32	-3.675e-3	54	-3.069e-3	21	-2.476e-3	4
103	N124B	max	0.094	35	-0.011	28	0.011	24	3.726e-3	54	3.173e-3	35	1.413e-3	27
104		min	-0.095	10	-0.115	70	-0.011	32	7.999e-4	28	-3.194e-3	10	-4.087e-3	70
105	N122B	max	0.038	6	-0.012	24	0.078	7	1.631e-3	7	2.89e-3	7	3.981e-3	66
106		min	-0.037	31	-0.105	66	-0.078	15	-1.144e-3	32	-2.883e-3	32	5.917e-5	24
107	N123A	max	0.053	21	-0.013	22	0.079	22	5.889e-4	22	3.284e-3	13	-3.427e-4	29
108		min	-0.053	12	-0.114	70	-0.08	13	-5.277e-3	70	-3.256e-3	22	-2.862e-3	55
109	N125	max	0.052	35	-0.013	34	0.079	10	3.24e-3	43	3.21e-3	34	-3.399e-4	27
110		min	-0.053	10	-0.108	60	-0.078	34	-5.912e-4	34	-3.238e-3	9	-2.854e-3	69

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	N126	max	0.038	16	-0.012	32	0.078	7	1.686e-3	70	2.881e-3	24	5.159e-3	70
112		min	-0.037	25	-0.114	70	-0.078	15	-1.631e-3	15	-2.888e-3	15	5.889e-5	32
113	N125A	max	0.042	16	-0.014	32	0.078	7	1.686e-3	70	2.881e-3	24	5.159e-3	70
114		min	-0.042	25	-0.111	70	-0.078	15	-1.631e-3	15	-2.888e-3	15	5.889e-5	32
115	N126A	max	0.042	16	-0.014	32	0.082	7	1.686e-3	70	1.519e-3	15	8.355e-3	11
116		min	-0.042	25	-0.119	70	-0.082	15	-1.631e-3	15	-1.516e-3	24	-7.181e-3	20
117	N128	max	0.097	35	-0.013	28	0.01	23	3.726e-3	54	3.173e-3	35	1.413e-3	27
118		min	-0.097	10	-0.112	70	-0.01	14	7.999e-4	28	-3.194e-3	10	-4.087e-3	70
119	N129	max	0.101	35	-0.013	28	0.01	24	6.077e-3	6	1.64e-3	10	4.159e-3	13
120		min	-0.102	10	-0.121	70	-0.01	32	-5.993e-3	31	-1.635e-3	35	-3.565e-3	22
121	N131	max	0.051	21	-0.016	22	0.084	22	5.889e-4	22	3.284e-3	13	-3.427e-4	29
122		min	-0.051	12	-0.111	70	-0.084	13	-5.277e-3	70	-3.256e-3	22	-2.862e-3	55
123	N132	max	0.055	21	-0.016	22	0.086	22	6.279e-3	8	1.669e-3	21	3.553e-3	27
124		min	-0.055	12	-0.119	70	-0.087	13	-5.797e-3	33	-1.71e-3	12	-3.808e-3	18
125	N132A	max	0.042	6	-0.014	24	0.078	7	1.631e-3	7	2.89e-3	7	3.981e-3	66
126		min	-0.042	31	-0.106	66	-0.078	15	-1.144e-3	32	-2.883e-3	32	5.917e-5	24
127	N133	max	0.042	6	-0.014	24	0.082	7	1.631e-3	7	1.519e-3	32	8.356e-3	11
128		min	-0.042	31	-0.113	66	-0.082	15	-1.144e-3	32	-1.522e-3	7	-7.182e-3	20
129	N134	max	0.05	35	-0.015	34	0.083	9	3.24e-3	43	3.21e-3	34	-3.399e-4	27
130		min	-0.05	10	-0.109	60	-0.083	34	-5.912e-4	34	-3.238e-3	9	-2.854e-3	69
131	N135	max	0.055	35	-0.016	34	0.086	9	5.809e-3	23	1.716e-3	10	3.558e-3	29
132		min	-0.055	10	-0.116	60	-0.085	34	-6.289e-3	14	-1.675e-3	35	-3.809e-3	4
133	N137	max	0.095	21	-0.013	28	0.01	8	-9.494e-4	28	4.607e-3	12	1.289e-3	29
134		min	-0.096	12	-0.104	54	-0.01	33	-4.582e-3	54	-4.605e-3	21	-2.749e-3	4
135	N138	max	0.102	21	-0.013	28	0.011	24	5.98e-3	25	1.658e-3	21	4.153e-3	9
136		min	-0.102	12	-0.112	54	-0.011	32	-6.068e-3	16	-1.662e-3	12	-3.557e-3	34
137	N72B	max	0.015	3	-0.037	20	0.083	7	1.828e-3	7	2.652e-3	15	8.645e-3	11
138		min	-0.014	28	-0.119	62	-0.083	15	-1.828e-3	15	-2.652e-3	7	-7.405e-3	20
139	N73	max	0.446	20	-0.038	28	0.272	7	2.936e-3	7	2.822e-4	7	1.001e-2	28
140		min	-0.46	11	-0.137	54	-0.272	15	-2.935e-3	15	-2.826e-4	15	-1.015e-2	3
141	N74	max	0.285	11	-0.023	20	0.067	24	1.73e-3	70	3.334e-3	15	6.82e-3	11
142		min	-0.238	20	-0.125	62	-0.074	70	-1.054e-4	15	-3.334e-3	7	-5.755e-3	20
143	N75	max	0.55	20	-0.044	20	0.307	7	3.35e-3	7	2.443e-4	70	1.038e-2	28
144		min	-0.563	11	-0.139	62	-0.307	15	-3.35e-3	15	-9.726e-5	24	-1.062e-2	3
145	N76	max	0.015	3	-0.03	20	0.08	7	1.828e-3	7	2.652e-3	15	8.645e-3	11
146		min	-0.014	28	-0.123	62	-0.08	15	-1.828e-3	15	-2.652e-3	7	-7.405e-3	20
147	N77	max	0.446	20	-0.042	20	0.272	7	2.936e-3	7	2.822e-4	7	1.001e-2	28
148		min	-0.46	11	-0.135	62	-0.272	15	-2.935e-3	15	-2.826e-4	15	-1.015e-2	3
149	N80	max	0	70	0	70	0	70	0	70	0	70	0	70
150		min	0	1	0	1	0	1	0	1	0	1	0	1
151	N81A	max	0.059	18	0.05	35	0.083	9	5.364e-3	23	9.422e-4	3	4.443e-3	11
152		min	-0.058	27	-0.135	10	-0.081	34	-5.689e-3	14	-9.134e-4	28	-4.341e-3	20
153	N82A	max	0.097	35	0.054	27	0.019	24	6.297e-3	7	8.523e-4	35	4.006e-3	12
154		min	-0.098	10	-0.173	70	-0.019	32	-6.241e-3	32	-8.602e-4	10	-3.541e-3	21
155	N83A	max	0.056	18	0.034	34	0.087	9	5.388e-3	23	9.118e-4	3	4.465e-3	11
156		min	-0.056	27	-0.119	9	-0.086	34	-5.711e-3	14	-8.831e-4	28	-4.351e-3	20
157	N84	max	0.1	35	0.038	27	0.017	24	6.3e-3	7	8.24e-4	35	4.04e-3	12
158		min	-0.101	10	-0.164	70	-0.017	32	-6.252e-3	32	-8.323e-4	10	-3.58e-3	21
159	N85	max	0.308	20	0.034	34	0.298	24	5.935e-3	23	3.71e-3	31	4.404e-3	29
160		min	-0.317	11	-0.12	9	-0.304	15	-6.122e-3	14	-3.755e-3	6	-4.598e-3	4
161	N86	max	0.287	20	0.04	27	0.317	7	6.812e-3	7	3.832e-3	6	4.757e-3	12
162		min	-0.292	11	-0.169	70	-0.317	15	-6.666e-3	32	-3.804e-3	14	-4.63e-3	21
163	N87	max	0.137	12	0.035	34	0.228	12	5.043e-3	23	9.116e-4	3	4.066e-3	11
164		min	-0.132	21	-0.12	9	-0.213	21	-5.365e-3	14	-8.829e-4	28	-3.956e-3	21
165	N88	max	0.143	15	0.035	27	0.233	32	5.901e-3	7	8.241e-4	35	3.694e-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	-0.124	24	-0.164	70	-0.235	7	-5.853e-3	32	-8.324e-4	10	-3.235e-3	21
167	N89	max	0.351	20	0.035	34	0.354	24	5.94e-3	23	3.71e-3	31	4.409e-3	29
168		min	-0.357	11	-0.121	9	-0.362	15	-6.127e-3	14	-3.755e-3	6	-4.603e-3	4
169	N90	max	0.33	20	0.04	28	0.384	7	6.817e-3	7	3.832e-3	6	4.762e-3	12
170		min	-0.336	11	-0.169	70	-0.382	15	-6.672e-3	32	-3.804e-3	14	-4.634e-3	21
171	N91	max	0.301	20	0.051	34	0.282	24	5.873e-3	23	4.062e-3	13	4.221e-3	29
172		min	-0.309	11	-0.136	9	-0.288	15	-6.051e-3	14	-4.076e-3	5	-4.422e-3	4
173	N92	max	0.282	20	0.06	27	0.298	7	6.642e-3	7	4.043e-3	6	4.756e-3	12
174		min	-0.287	11	-0.186	70	-0.298	15	-6.503e-3	32	-4.005e-3	14	-4.634e-3	21
175	N93	max	0.057	18	0.034	34	0.087	9	5.388e-3	23	9.118e-4	3	4.465e-3	11
176		min	-0.056	27	-0.119	9	-0.086	34	-5.711e-3	14	-8.831e-4	28	-4.351e-3	20
177	N94	max	0.101	35	0.037	27	0.017	24	6.3e-3	7	8.24e-4	35	4.04e-3	12
178		min	-0.101	10	-0.164	70	-0.017	32	-6.252e-3	32	-8.323e-4	10	-3.58e-3	21
179	N95	max	0.306	20	0.035	34	0.3	24	5.935e-3	23	3.71e-3	31	4.404e-3	29
180		min	-0.315	11	-0.121	9	-0.305	15	-6.122e-3	14	-3.755e-3	6	-4.598e-3	4
181	N96	max	0.289	20	0.04	28	0.315	7	6.812e-3	7	3.832e-3	6	4.757e-3	12
182		min	-0.294	11	-0.169	70	-0.316	15	-6.666e-3	32	-3.804e-3	14	-4.63e-3	21
183	N106	max	0	70	0	70	0	70	0	70	0	70	0	70
184		min	0	1	0	1	0	1	0	1	0	1	0	1
185	N109	max	0.099	21	0.054	29	0.019	24	6.232e-3	24	8.18e-4	12	3.999e-3	10
186		min	-0.099	12	-0.13	4	-0.019	32	-6.296e-3	15	-8.095e-4	21	-3.528e-3	35
187	N110	max	0.059	4	0.05	21	0.082	22	5.68e-3	8	9.204e-4	28	4.441e-3	11
188		min	-0.059	29	-0.181	70	-0.084	13	-5.356e-3	33	-9.492e-4	3	-4.341e-3	20
189	N111	max	0.101	21	0.038	29	0.017	24	6.244e-3	24	7.904e-4	12	4.032e-3	10
190		min	-0.102	12	-0.116	4	-0.017	32	-6.299e-3	15	-7.815e-4	21	-3.567e-3	35
191	N112	max	0.057	4	0.034	22	0.087	22	5.702e-3	8	8.901e-4	28	4.463e-3	11
192		min	-0.056	29	-0.168	70	-0.088	13	-5.38e-3	33	-9.189e-4	3	-4.351e-3	20
193	N113	max	0.287	20	0.04	29	0.317	7	6.663e-3	24	3.813e-3	8	4.747e-3	10
194		min	-0.292	11	-0.12	4	-0.317	15	-6.811e-3	15	-3.84e-3	16	-4.621e-3	35
195	N114	max	0.309	20	0.034	22	0.304	7	6.114e-3	8	3.753e-3	16	4.401e-3	27
196		min	-0.317	11	-0.17	70	-0.299	32	-5.927e-3	33	-3.707e-3	25	-4.597e-3	18
197	N115	max	0.144	7	0.035	29	0.235	15	5.845e-3	24	7.906e-4	12	3.687e-3	10
198		min	-0.125	32	-0.113	4	-0.233	24	-5.9e-3	15	-7.817e-4	21	-3.223e-3	34
199	N116	max	0.136	10	0.035	22	0.213	35	5.356e-3	8	8.9e-4	28	4.064e-3	11
200		min	-0.132	35	-0.168	70	-0.228	10	-5.035e-3	33	-9.187e-4	3	-3.954e-3	35
201	N117	max	0.33	20	0.04	28	0.382	7	6.668e-3	24	3.813e-3	8	4.752e-3	10
202		min	-0.336	11	-0.12	3	-0.384	15	-6.816e-3	15	-3.84e-3	16	-4.626e-3	35
203	N118	max	0.351	20	0.035	22	0.362	7	6.119e-3	8	3.753e-3	16	4.406e-3	27
204		min	-0.358	11	-0.17	70	-0.355	32	-5.932e-3	33	-3.707e-3	25	-4.602e-3	18
205	N119	max	0.283	20	0.06	29	0.298	7	6.501e-3	24	4.013e-3	8	4.746e-3	10
206		min	-0.288	11	-0.139	4	-0.298	15	-6.642e-3	15	-4.05e-3	16	-4.625e-3	35
207	N120	max	0.301	20	0.051	22	0.288	7	6.043e-3	8	4.071e-3	17	4.218e-3	27
208		min	-0.31	11	-0.182	70	-0.283	32	-5.865e-3	33	-4.055e-3	9	-4.421e-3	18
209	N121	max	0.102	21	0.037	29	0.017	24	6.244e-3	24	7.904e-4	12	4.032e-3	10
210		min	-0.102	12	-0.115	4	-0.017	32	-6.299e-3	15	-7.815e-4	21	-3.567e-3	35
211	N122	max	0.057	4	0.034	22	0.087	22	5.702e-3	8	8.901e-4	28	4.463e-3	11
212		min	-0.057	29	-0.168	70	-0.088	13	-5.38e-3	33	-9.189e-4	3	-4.351e-3	20
213	N123	max	0.289	20	0.04	28	0.315	7	6.663e-3	24	3.813e-3	8	4.747e-3	10
214		min	-0.294	11	-0.12	3	-0.316	15	-6.811e-3	15	-3.84e-3	16	-4.621e-3	35
215	N124	max	0.307	20	0.035	22	0.306	7	6.114e-3	8	3.753e-3	16	4.401e-3	27
216		min	-0.315	11	-0.17	70	-0.3	32	-5.927e-3	33	-3.707e-3	25	-4.597e-3	18
217	N128A	max	0	70	0	70	0	70	0	70	0	70	0	70
218		min	0	1	0	1	0	1	0	1	0	1	0	1
219	N133A	max	0	70	0	70	0	70	0	70	0	70	0	70
220		min	0	1	0	1	0	1	0	1	0	1	0	1

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	N124A	max	0	70	0	70	0	70	0	70	0	70	0	70
222		min	0	1	0	1	0	1	0	1	0	1	0	1
223	N129B	max	0.078	35	-0.036	31	0.047	9	6.168e-3	23	3.172e-3	10	4.159e-3	12
224		min	-0.079	10	-0.121	57	-0.046	34	-6.316e-3	14	-3.149e-3	35	-3.876e-3	21
225	N130A	max	0.324	20	-0.032	29	0.387	7	8.456e-3	6	6.42e-4	35	5.562e-3	12
226		min	-0.33	11	-0.125	56	-0.388	15	-8.391e-3	31	-7.356e-4	10	-5.448e-3	21
227	N131A	max	0.131	15	-0.031	32	0.205	13	4.675e-3	23	2.831e-3	10	2.814e-3	14
228		min	-0.125	24	-0.122	58	-0.199	22	-4.822e-3	14	-2.808e-3	35	-2.713e-3	23
229	N132B	max	0.373	20	-0.022	30	0.47	7	8.815e-3	6	8.863e-4	34	5.865e-3	12
230		min	-0.38	11	-0.134	56	-0.47	15	-8.75e-3	31	-9.763e-4	9	-5.85e-3	4
231	N133B	max	0.075	35	-0.029	31	0.045	9	6.168e-3	23	3.172e-3	10	4.159e-3	12
232		min	-0.076	10	-0.122	57	-0.045	34	-6.316e-3	14	-3.149e-3	35	-3.876e-3	21
233	N134A	max	0.324	20	-0.023	30	0.387	7	8.456e-3	6	6.42e-4	35	5.562e-3	12
234		min	-0.33	11	-0.128	56	-0.388	15	-8.391e-3	31	-7.356e-4	10	-5.448e-3	21
235	N135A	max	0.079	21	-0.036	25	0.048	22	6.304e-3	8	3.15e-3	21	4.152e-3	10
236		min	-0.079	12	-0.121	67	-0.048	13	-6.156e-3	33	-3.173e-3	12	-3.873e-3	35
237	N136	max	0.324	20	-0.032	27	0.388	7	8.378e-3	25	7.376e-4	12	5.557e-3	10
238		min	-0.33	11	-0.126	68	-0.387	15	-8.446e-3	16	-6.428e-4	21	-5.442e-3	35
239	N137A	max	0.131	7	-0.031	24	0.198	34	4.81e-3	8	2.81e-3	21	2.806e-3	8
240		min	-0.126	32	-0.122	66	-0.204	9	-4.663e-3	33	-2.832e-3	12	-2.709e-3	33
241	N138A	max	0.374	20	-0.022	26	0.471	7	8.737e-3	25	9.768e-4	13	5.86e-3	10
242		min	-0.381	11	-0.134	68	-0.47	15	-8.805e-3	16	-8.855e-4	22	-5.844e-3	18
243	N139	max	0.076	21	-0.029	25	0.046	22	6.304e-3	8	3.15e-3	21	4.152e-3	10
244		min	-0.076	12	-0.123	67	-0.046	13	-6.156e-3	33	-3.173e-3	12	-3.873e-3	35
245	N140	max	0.325	20	-0.023	26	0.389	7	8.378e-3	25	7.376e-4	12	5.557e-3	10
246		min	-0.331	11	-0.129	68	-0.387	15	-8.446e-3	16	-6.428e-4	21	-5.442e-3	35
247	N127	max	0.08	16	-0.031	32	0.094	12	4.739e-3	23	2.831e-3	10	2.852e-3	14
248		min	-0.077	25	-0.122	58	-0.091	21	-4.887e-3	14	-2.808e-3	35	-2.751e-3	23
249	N130	max	0.245	20	-0.019	29	0.271	24	8.593e-3	6	4.204e-4	28	6.657e-3	12
250		min	-0.25	11	-0.128	55	-0.273	15	-8.589e-3	14	-4.776e-4	3	-6.62e-3	21
251	N141	max	0.093	20	-0.024	29	0.072	24	7.161e-3	23	2.572e-3	10	5.381e-3	12
252		min	-0.095	11	-0.124	55	-0.073	15	-7.277e-3	14	-2.565e-3	35	-5.223e-3	21
253	N142	max	0.164	20	-0.019	29	0.167	24	8.282e-3	23	1.446e-3	27	6.682e-3	11
254		min	-0.168	11	-0.127	55	-0.169	15	-8.336e-3	14	-1.47e-3	18	-6.589e-3	21
255	N143	max	0.245	20	-0.019	27	0.273	7	8.575e-3	8	4.757e-4	3	6.651e-3	10
256		min	-0.25	11	-0.129	69	-0.271	32	-8.582e-3	16	-4.176e-4	28	-6.613e-3	35
257	N144	max	0.08	6	-0.031	24	0.091	35	4.875e-3	8	2.81e-3	21	2.844e-3	8
258		min	-0.077	31	-0.122	66	-0.094	10	-4.728e-3	33	-2.832e-3	12	-2.747e-3	33
259	N145	max	0.093	20	-0.025	27	0.074	7	7.263e-3	8	2.566e-3	21	5.374e-3	10
260		min	-0.096	11	-0.124	69	-0.073	32	-7.15e-3	33	-2.573e-3	12	-5.218e-3	35
261	N146	max	0.165	20	-0.019	27	0.17	7	8.322e-3	8	1.471e-3	4	6.678e-3	11
262		min	-0.169	11	-0.127	69	-0.168	32	-8.27e-3	33	-1.446e-3	29	-6.583e-3	35
263	N147	max	0.301	20	-0.044	20	0.217	7	5.347e-3	7	8.69e-4	32	1.043e-2	11
264		min	-0.317	11	-0.131	62	-0.217	15	-5.347e-3	15	-8.692e-4	24	-1.046e-2	3
265	N149	max	0.12	11	-0.023	20	0.07	24	1.73e-3	70	3.334e-3	15	6.895e-3	11
266		min	-0.099	20	-0.125	62	-0.07	32	-1.796e-4	15	-3.334e-3	7	-5.83e-3	20
267	N150	max	0.063	20	-0.036	20	0.096	7	3.723e-3	7	2.386e-3	15	9.528e-3	11
268		min	-0.069	11	-0.124	62	-0.096	15	-3.723e-3	15	-2.386e-3	7	-8.678e-3	20
269	N151	max	0.177	20	-0.042	20	0.152	7	5.609e-3	7	1.714e-3	15	1.042e-2	11
270		min	-0.191	11	-0.127	62	-0.152	15	-5.609e-3	15	-1.715e-3	7	-1.008e-2	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	0.241	40	17	0.092	40	y	70	188250.474	197892	22.046	22.046	1.883	H1-1b
2	M3	L2x2x4	0.241	0	18	0.022	27.295	y	10	29527.562	42480	0.96	2.19	1.5	H2-1

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

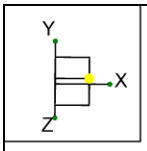
	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
3	M4	L2x2x4	0.238	0	4	0.022	27.295	z	12	29527.562	42480	0.96	2.19	1.5	H2-1
4	M5	PL6.5x0.375	0.294	21	18	0.111	36.312	y	14	3658.14	78975	0.617	7.812	1.39	H1-1b
5	M7	HSS4X4X6	0.249	40	15	0.092	40	y	70	188250.475	197892	22.046	22.046	1.862	H1-1b
6	M8	L2x2x4	0.259	0	13	0.022	0	y	5	29527.563	42480	0.96	2.19	1.5	H2-1
7	M9	L2x2x4	0.208	0	15	0.02	27.295	y	70	29527.563	42480	0.96	2.19	1.5	H2-1
8	M10	PL6.5x0.375	0.32	21	13	0.111	5.687	y	3	3658.14	78975	0.617	7.616	1.355	H1-1b
9	M12	HSS4X4X6	0.249	40	7	0.091	40	y	70	188250.475	197892	22.046	22.046	1.862	H1-1b
10	M13	L2x2x4	0.207	0	7	0.02	27.295	y	15	29527.562	42480	0.96	2.19	1.5	H2-1
11	M14	L2x2x4	0.256	0	9	0.022	0	z	17	29527.563	42480	0.96	2.19	1.5	H2-1
12	M15	PL6.5x0.375	0.318	21	9	0.111	36.312	y	3	3658.14	78975	0.617	7.616	1.355	H1-1b
13	M18	Pipe3.5x0.165	0.141	65	31	0.058	48		14	45873.009	71580.6	6.338	6.338	1.481	H1-1b
14	MP9	PIPE_2.5	0.145	42	7	0.076	42		4	33487.322	66654	4.727	4.727	2.057	H1-1b
15	MP7	PIPE_2.5	0.145	42	15	0.076	42		18	33487.322	66654	4.727	4.727	2.057	H1-1b
16	M25	PIPE_2.5	0.135	48	17	0.06	90		10	33487.322	66654	4.727	4.727	1.78	H1-1b
17	M28	L6.6x4.46x0.25	0.154	41.562	24	0.024	42	z	10	51170.949	87561	2.465	7.125	1.136	H2-1
18	M29	L6.6x4.46x0.25	0.17	0.438	26	0.021	42	z	15	51170.949	87561	2.465	7.125	1.136	H2-1
19	M30	L6.6x4.46x0.25	0.154	0.437	32	0.024	0	z	12	51170.949	87561	2.465	7.125	1.136	H2-1
20	M61A	C3.38x2.06x0.25	0.339	0	3	0.043	28.187	y	63	47760.074	56700	2.203	5.752	1.628	H1-1b
21	M63A	C3.38x2.06x0.25	0.341	0	3	0.046	28.188	y	61	47760.074	56700	2.203	5.752	1.628	H1-1b
22	M60A	C3.38x2.06x0.25	0.318	0	14	0.043	28.188	y	58	47760.074	56700	2.203	5.752	1.626	H1-1b
23	M61B	C3.38x2.06x0.25	0.351	0	13	0.046	28.188	y	56	47760.074	56700	2.203	5.752	1.634	H1-1b
24	M62A	C3.38x2.06x0.25	0.349	0	9	0.044	28.188	z	17	47760.074	56700	2.203	5.752	1.634	H1-1b
25	M63B	C3.38x2.06x0.25	0.318	0	8	0.045	28.187	y	67	47760.074	56700	2.203	5.752	1.626	H1-1b
26	M75	PL 2.375X0.5	0.352	1.5	5	0.227	0	y	69	38256.871	38475	0.401	1.904	2.191	H1-1b
27	MP8	PIPE_2.5	0.227	42	15	0.075	72		15	33487.322	66654	4.727	4.727	1.545	H1-1b
28	M48	Pipe3.5x0.165	0.159	65	9	0.075	48		11	45873.009	71580.6	6.338	6.338	1.523	H1-1b
29	MP3	PIPE_2.5	0.156	42	18	0.068	42		15	33487.322	66654	4.727	4.727	2.009	H1-1b
30	MP1	PIPE_2.5	0.147	42	10	0.072	42		12	33487.322	66654	4.727	4.727	1.916	H1-1b
31	M51	PIPE_2.5	0.145	90	17	0.057	6		11	33487.322	66654	4.727	4.727	1.794	H1-1b
32	M62	Pipe3.5x0.165	0.157	31	13	0.075	48		11	45873.009	71580.6	6.338	6.338	1.521	H1-1b
33	MP6	PIPE_2.5	0.147	42	12	0.072	42		10	33487.322	66654	4.727	4.727	1.916	H1-1b
34	MP4	PIPE_2.5	0.156	42	4	0.068	42		7	33487.322	66654	4.727	4.727	2.009	H1-1b
35	M65A	PIPE_2.5	0.145	6	5	0.057	90		11	33487.322	66654	4.727	4.727	1.794	H1-1b
36	MP2	PIPE_2.5	0.217	42	18	0.097	42		9	33487.322	66654	4.727	4.727	2.004	H1-1b
37	MP5	PIPE_2.5	0.216	42	4	0.097	42		13	33487.322	66654	4.727	4.727	2.004	H1-1b

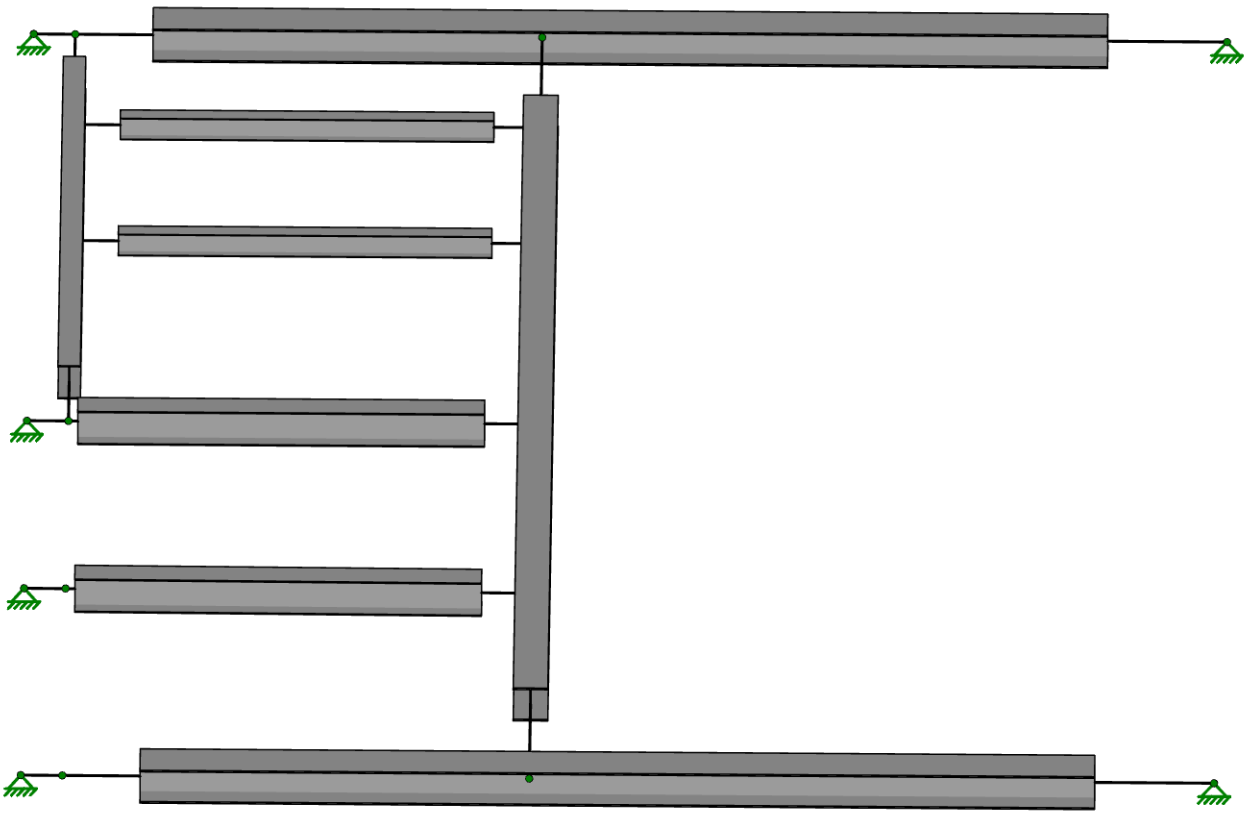
Material Take-Off

	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

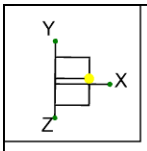
Warning Log

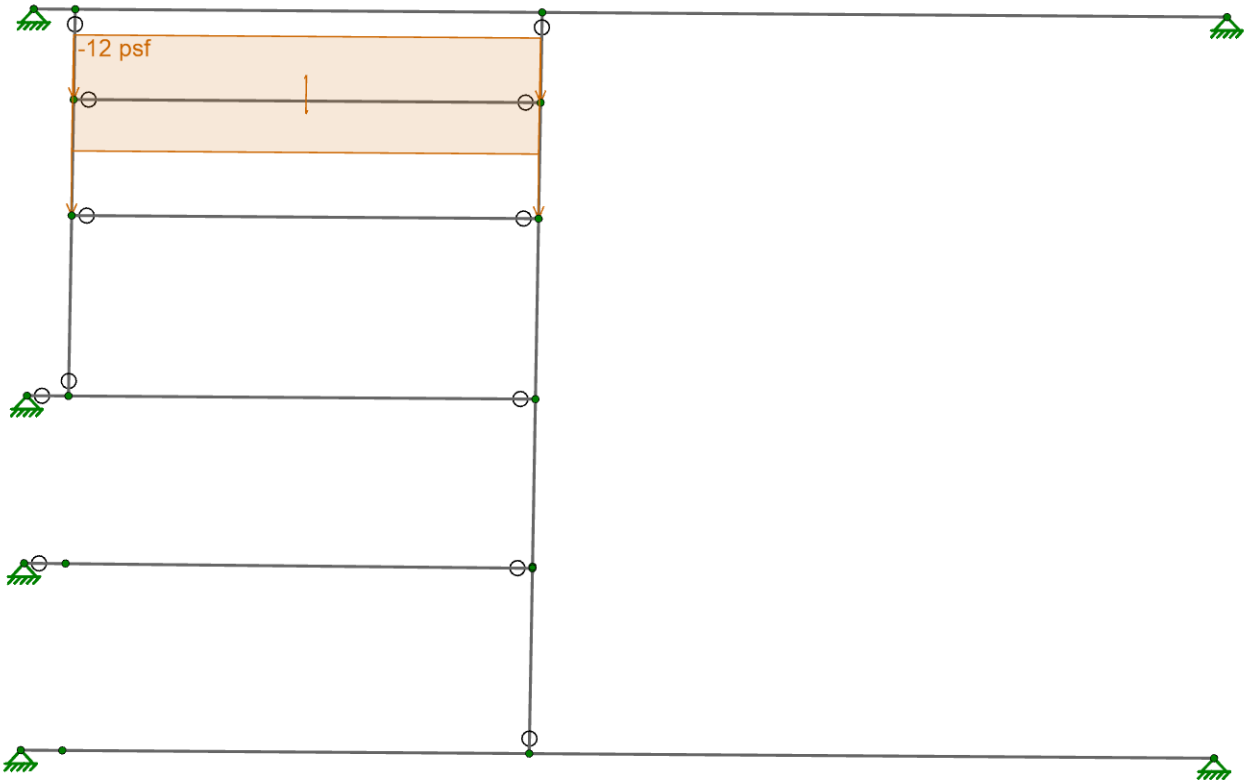
	Message
1	There are members defined as member type: "Beam" that are vertical (or nearly vertical). For proper deflection optimization, change member type to "Column".





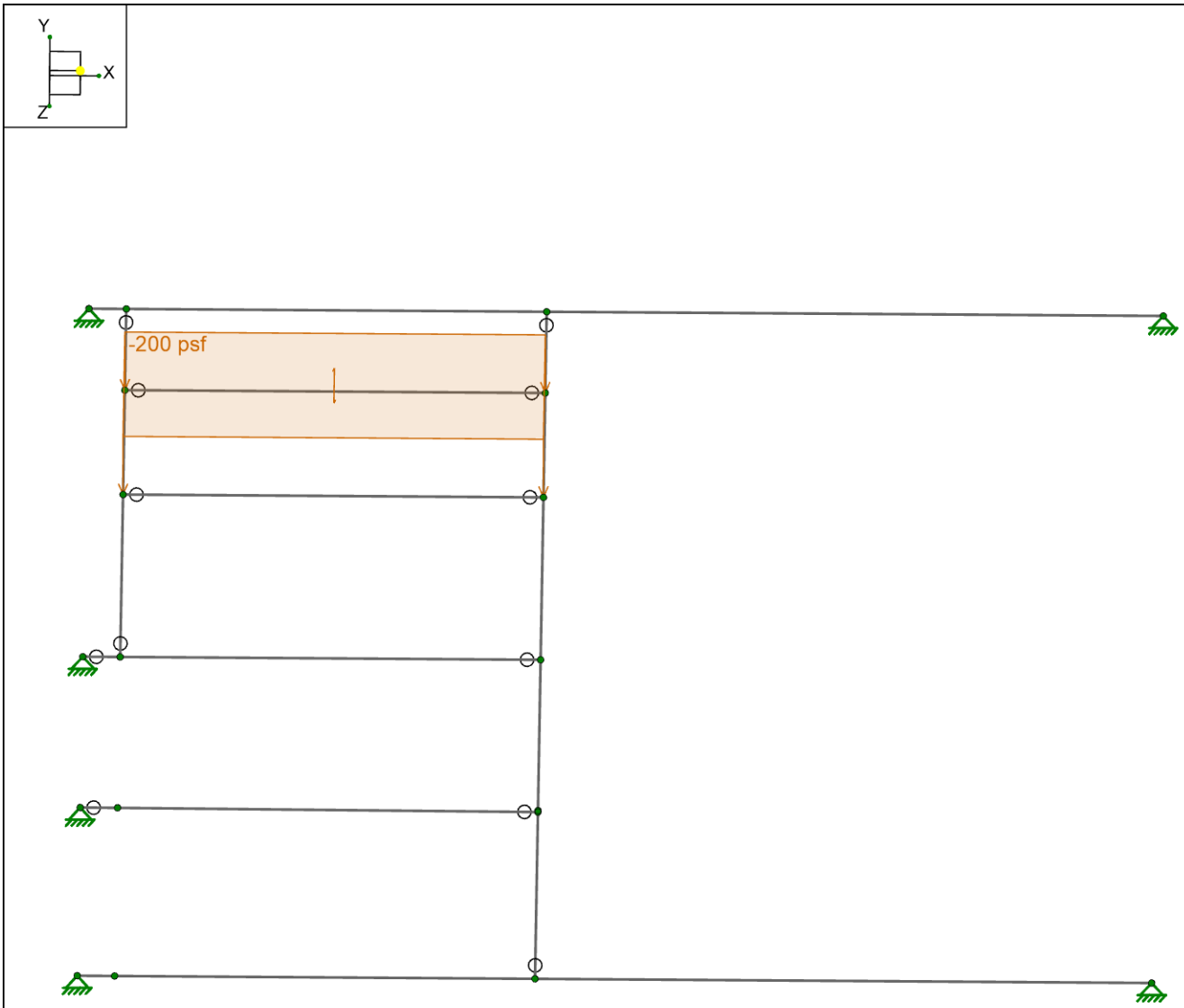
Magaram Engineering	NJJER02049C	SK-10
BJM		May 17, 2022
		NJJER02049C Platform 5.17.20…





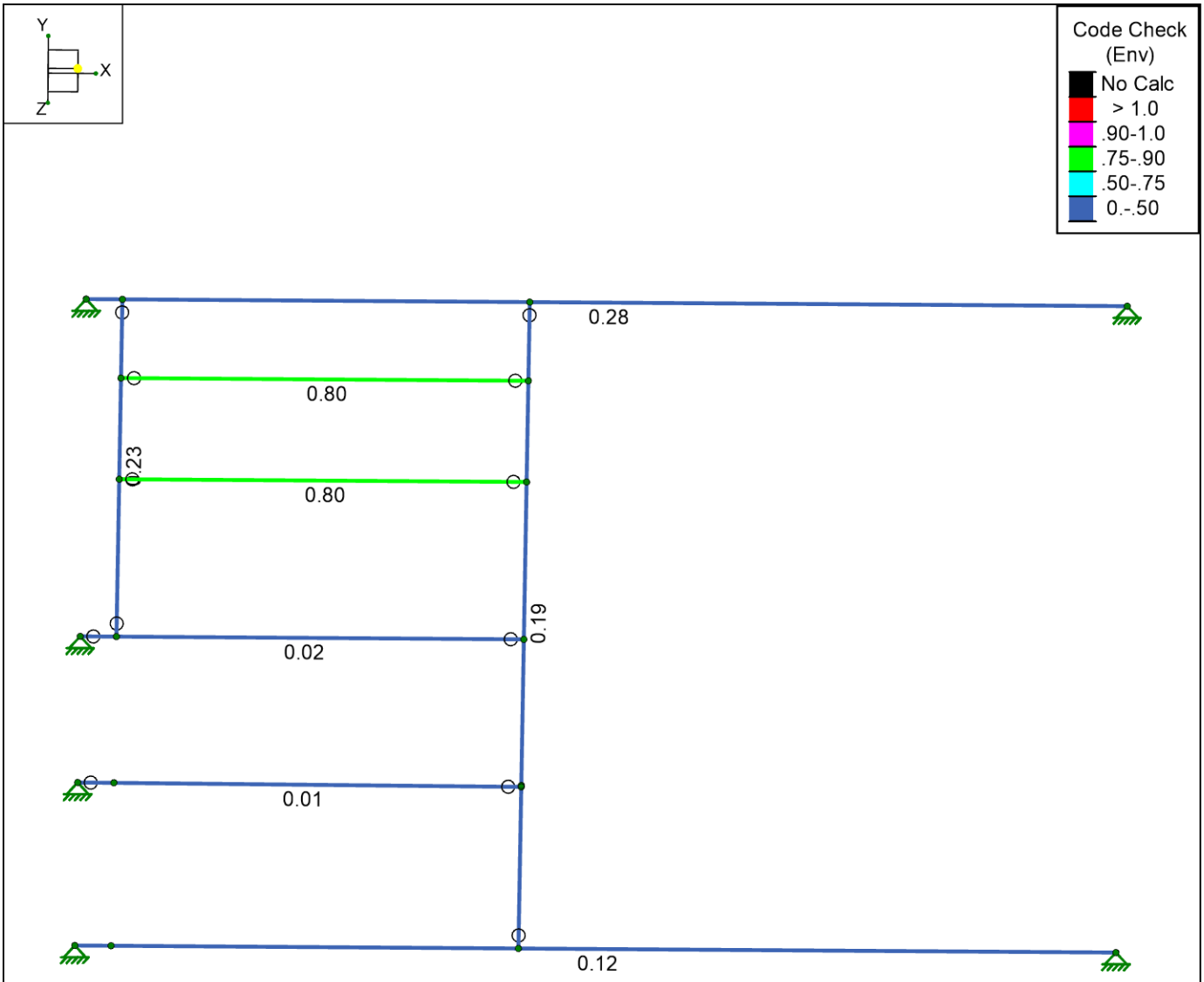
Loads: BLC 1, DL

Magaram Engineering	NJJER02049C	SK-11
BJM		May 17, 2022
		NJJER02049C Platform 5.17.20…



Loads: BLC 7, RLL

Magaram Engineering	NJJER02049C	SK-12
BJM		May 17, 2022
		NJJER02049C Platform 5.17.20…



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Magaram Engineering	NJJER02049C	SK-13
BJM		May 17, 2022
		NJJER02049C Platform 5.17.20…

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

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	10600	4077	0.3	1.29	0.173	Isotropic
6	gen_Steel	29000	11154	0.3	0.65	0.49	Isotropic
7	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	HR1A	W8X10	Beam	None	A992	Typical	2.96	2.09	30.8	0.043

General Section Sets

	Label	Shape	Type	Material	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	GEN1A	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	Section/Shape	Type	Design List	Material	Design Rule
1	M2	N3	N4	W12X53	Beam	Wide Flange	A572 Gr.50	Typical
2	M3	N1	N9	W12X26	Beam	Wide Flange	A572 Gr.50	Typical
3	M5	N5	N6	W8X10	Beam	Wide Flange	A572 Gr.50	Typical
4	M6	N7	N8	W8X10	Beam	Wide Flange	A572 Gr.50	Typical
5	M8	N13	N14	W12X53	Beam	Wide Flange	A572 Gr.50	Typical
6	M9	N15	N10	W12X26	Beam	Wide Flange	A572 Gr.50	Typical
7	M7	N17	N18	W12X26	Beam	Wide Flange	A572 Gr.50	Typical
8	M10	N16	N19	W12X53	Beam	Wide Flange	A572 Gr.50	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	M2	BenPIN	BenPIN	Yes	Default	None
2	M3	BenPIN	BenPIN	Yes	Default	None
3	M5	BenPIN	BenPIN	Yes	Default	None
4	M6	BenPIN	BenPIN	Yes	Default	None
5	M8			Yes	Default	None
6	M9	BenPIN	BenPIN	Yes	Default	None
7	M7	BenPIN	BenPIN	Yes	Default	None
8	M10			Yes	Default	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
1	M2	W12X53	28.75	Lbyy	Lateral
2	M3	W12X26	15	Lbyy	Lateral
3	M5	W8X10	11.25	Lbyy	Lateral
4	M6	W8X10	11.25	Lbyy	Lateral
5	M8	W12X53	28.75	Lbyy	Lateral
6	M9	W12X26	12.25	Lbyy	Lateral
7	M7	W12X26	12.25	Lbyy	Lateral
8	M10	W12X53	28.75	Lbyy	Lateral

Member RISAConnection Properties

	Label	Shape	Start Conn	End Conn	Start Release	End Release
1	M2	W12X53	None	None	Pinned	Pinned
2	M3	W12X26	None	None	Pinned	Pinned
3	M5	W8X10	None	None	Pinned	Pinned
4	M6	W8X10	None	None	Pinned	Pinned
5	M8	W12X53	None	None	Fixed	Fixed
6	M9	W12X26	None	None	Pinned	Pinned
7	M7	W12X26	None	None	Pinned	Pinned
8	M10	W12X53	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	1	240	2	360	3	240

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 Clip Angle	Shear	Column/Beam Clip Double Angle Shear	Welded	Bolted	1.5
2	Col/Bm Shear Tab	Shear	Column/Beam Shear Tab Shear	Bolted	N/A	3
3	Girder/Bm Clip Angle	Shear	Girder/Beam Clip Single Angle Shear	Welded	Bolted	N/A
4	Girder/Bm Shear Tab	Shear	Girder/Beam Shear Tab Shear	Bolted	N/A	N/A
5	Flange Plate Moment	Moment	Column/Beam Flange Plate Moment	Bolted	N/A	N/A
6	End-Plate Moment	Moment	Column/Beam Extended End-Plate Moment	N/A	N/A	N/A
7	Col Shear Splice	Shear	Column Shear Tab Splice	N/A	Bolted	N/A
8	Col Moment Splice	Moment	Column Moment Plate Splice	N/A	N/A	N/A
9	Diagonal Brace	Brace	Diagonal Vertical Brace	N/A	N/A	N/A
10	Chevron Brace	Brace	Chevron Vertical Brace	N/A	N/A	N/A

Nodal Loads and Enforced Displacements

No Data to Print...

Member Point Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Distributed	Area(Member)
1	DL	DL	-1		1
2	WLz	WL			
3	IL	SL			
4	WLiz	WL			
5	WLx	WL			
6	WLix	WL			
7	RLL	RLL			1
8	BLC 1 Transient Area Loads	None		2	
9	BLC 7 Transient Area Loads	None		2	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
1	DL	Yes	Y	1	1.4	1			
2	DL+.5RLL	Yes	Y	1	1.2	7	0.5		
3	D+.5RLL+.5Wlz	Yes	Y	1	1.2	7	1.6	2	0.5
4	D+.5RLL+.5Wlx	Yes	Y	1	1.2	7	1.6	5	0.5
5	D+Wz+.5RLL	Yes	Y	1	1.2	7	0.5	2	1
6	D+Wx+.5RLL	Yes	Y	1	1.2	7	0.5	5	1

Load Combination Design

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	DL		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	DL+.5RLL		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	D+.5RLL+.5Wlz		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	D+.5RLL+.5Wlx		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	D+Wz+.5RLL		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	D+Wx+.5RLL		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	N13	max	0	6	10894.349	4	0	6	0	6	0	6	0	6
2		min	0	1	2665.214	1	0	1	0	1	0	1	0	1
3	N14	max	0	6	4548.143	4	0	6	0	6	0	6	0	6
4		min	0	1	1822.109	1	0	1	0	1	0	1	0	1
5	N16	max	0	6	2654.213	4	0	6	0	6	0	6	0	6
6		min	0	1	1923.468	1	0	1	0	1	0	1	0	1
7	N15	max	0	6	3434.325	4	0	6	0	6	LOCKED		LOCKED	
8		min	0	1	679.904	1	0	1	0	1	LOCKED		LOCKED	
9	N17	max	0	6	223.221	1	0	6	0	6	LOCKED		LOCKED	
10		min	0	1	191.332	3	0	1	0	1	LOCKED		LOCKED	
11	N19	max	0	6	2206.599	4	0	6	0	6	0	6	0	6
12		min	0	1	1693.237	2	0	1	0	1	0	1	0	1
13	N3	max	NC		NC		NC		LOCKED		NC		NC	
14		min	NC		NC		NC		LOCKED		NC		NC	
15	N2	max	NC		NC		NC		LOCKED		NC		NC	
16		min	NC		NC		NC		LOCKED		NC		NC	
17	Totals:	max	0	6	23928.962	4	0	6						
18		min	0	1	9017.122	1	0	1						

Envelope Node Displacements

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	0	6	-0.031	1	0	6	0	6	0	6	-2.469e-3	1
2		min	0	1	-0.098	3	0	1	0	1	0	1	-7.828e-3	3
3	N2	max	0	6	-0.027	1	0	6	0	6	0	6	-2.215e-3	1
4		min	0	1	-0.04	3	0	1	0	1	0	1	-3.248e-3	3
5	N3	max	0	6	-0.267	1	0	6	0	6	0	6	-4.859e-4	1
6		min	0	1	-0.837	3	0	1	0	1	0	1	-1.373e-3	3
7	N4	max	0	6	-0.242	1	0	6	0	6	0	6	-4.533e-4	1
8		min	0	1	-0.356	3	0	1	0	1	0	1	-6.435e-4	3

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
9	N5	max	0	6	-0.048	1	0	6	2.469e-3	4	0	6	-2.617e-3	1
10		min	0	1	-0.238	3	0	1	3.122e-4	1	0	1	-7.931e-3	3
11	N6	max	0	6	-0.335	1	0	6	3.986e-3	4	0	6	-4.819e-4	1
12		min	0	1	-1.033	3	0	1	1.478e-3	1	0	1	-1.284e-3	3
13	N7	max	0	6	-0.056	1	0	6	-9.844e-6	1	0	6	-2.807e-3	1
14		min	0	1	-0.296	3	0	1	-4.918e-4	3	0	1	-8.063e-3	3
15	N8	max	0	6	-0.403	1	0	6	1.644e-3	4	0	6	-4.768e-4	1
16		min	0	1	-1.194	3	0	1	9.568e-4	1	0	1	-1.17e-3	3
17	N9	max	0	6	-0.038	1	0	6	-2.011e-4	1	0	6	-3.102e-3	1
18		min	0	1	-0.101	3	0	1	-2.348e-3	3	0	1	-8.268e-3	3
19	N10	max	0	6	-0.437	1	0	6	-2.011e-4	1	0	6	-4.689e-4	1
20		min	0	1	-1.155	3	0	1	-2.348e-3	3	0	1	-9.923e-4	3
21	N11	max	0	6	-0.032	1	0	6	-1.212e-3	1	0	6	-2.66e-3	1
22		min	0	1	-0.071	3	0	1	-4.956e-3	3	0	1	-5.904e-3	3
23	N12	max	0	6	-0.379	1	0	6	-1.215e-3	1	0	6	-4.615e-4	1
24		min	0	1	-0.857	3	0	1	-4.963e-3	3	0	1	-8.274e-4	3
25	N13	max	0	6	0	1	0	6	0	6	0	6	-2.489e-3	1
26		min	0	1	0	3	0	1	0	1	0	1	-7.908e-3	3
27	N14	max	0	6	0	1	0	6	0	6	0	6	6.973e-3	4
28		min	0	1	0	3	0	1	0	1	0	1	2.324e-3	1
29	N15	max	0	6	0	1	0	6	-2.011e-4	1	0	6	0	6
30		min	0	1	0	3	0	1	-2.348e-3	3	0	1	0	1
31	N16	max	0	6	0	1	0	6	0	6	0	6	-2.228e-3	1
32		min	0	1	0	3	0	1	0	1	0	1	-3.267e-3	3
33	N17	max	0	6	0	4	0	6	-1.225e-3	1	0	6	0	4
34		min	0	1	0	1	0	1	-4.986e-3	3	0	1	0	1
35	N18	max	0	6	-0.378	1	0	6	-1.223e-3	1	0	6	-4.615e-4	1
36		min	0	1	-0.854	3	0	1	-4.982e-3	3	0	1	-8.259e-4	3
37	N19	max	0	6	0	6	0	6	0	6	0	6	3.047e-3	4
38		min	0	1	0	3	0	1	0	1	0	1	2.12e-3	1

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M2	W12X53	0.191	8.086	4	0.065	0	y	4	181830.681	702000	109.125	225.87	1.251	H1-1b
2	M3	W12X26	0.232	7.969	4	0.066	0	y	4	120626.003	344250	30.637	103.091	1.191	H1-1b
3	M5	W8X10	0.799	5.625	4	0.108	11.25	y	4	25907.088	133200	6.119	15.138	1.136	H1-1b
4	M6	W8X10	0.799	5.625	4	0.108	11.25	y	4	25907.088	133200	6.119	15.138	1.136	H1-1b
5	M8	W12X53	0.275	12.279	4	0.087	0	y	4	181830.681	702000	109.125	240.879	1.334	H1-1b
6	M9	W12X26	0.024	1.021	4	0.041	0	y	4	171177.59	344250	30.637	139.5	1.37	H1-1b
7	M7	W12X26	0.006	6.125	1	0.003	12.25	y	1	171174.477	344250	30.637	115.922	1.136	H1-1b
8	M10	W12X53	0.117	12.279	4	0.021	0	y	4	181830.681	702000	109.125	236.262	1.308	H1-1b

Material Take-Off

	Material	Size	Pieces	Length[ft]	Weight[K]
1	Hot Rolled Steel				
2	A572 Gr.50	W12X26	3	39.5	1.028
3	A572 Gr.50	W12X53	3	86.2	4.578
4	A572 Gr.50	W8X10	2	22.5	0.227
5	Total HR Steel		8	148.3	5.833

Warning Log

No Data to Print...

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:	NJJER02049C
Site Address:	627 Honeyspot Road Stratford, CT
Latitude:	N 41.176921
Longitude:	W 73.146052
Structure type:	Monopole
Report date:	July 27, 2022
Compliance Conclusion:	DISH Wireless, LLC will be in compliance with the rules and regulations as described in OET Bulletin 65, following the implementation of the proposed mitigation as detailed in the report.

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

Contents

Introduction and Summary

At the request of DISH Wireless, LLC ("DISH"), Pinnacle Telecom Group has performed an independent expert assessment of radiofrequency (RF) levels and related FCC compliance for proposed wireless base station antenna operations on an existing monopole located at 627 Honeyspot Road in Stratford, CT. DISH refers to the antenna site by the code "NJJER02049C", 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, T-Mobile and Verizon Wireless. Note that while the site drawings indicate there may be other antennas at the site, a search of FCC records indicates there are no other licensed transmitting antenna operations to include in the compliance assessment for the site. 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 13.0192 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 seven times below the FCC limit for safe, continuous exposure of the general public.
- A supplemental analysis of the RF levels at the same height as the DISH antennas indicate that the FCC MPE limit is potentially exceeded. Therefore, it is recommended that two Caution signs 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.

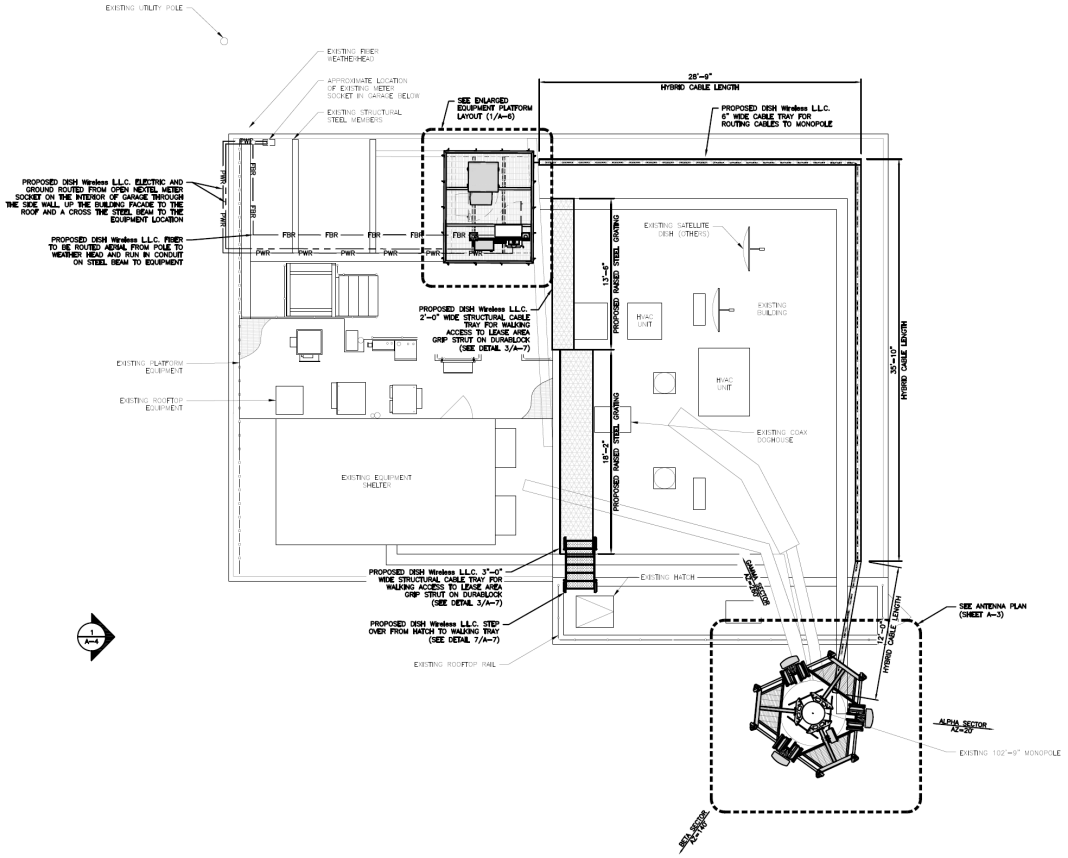
In addition, four Appendices are included. Appendix A provides information on the documents used to prepare the analysis. Appendix B provides background on the

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.

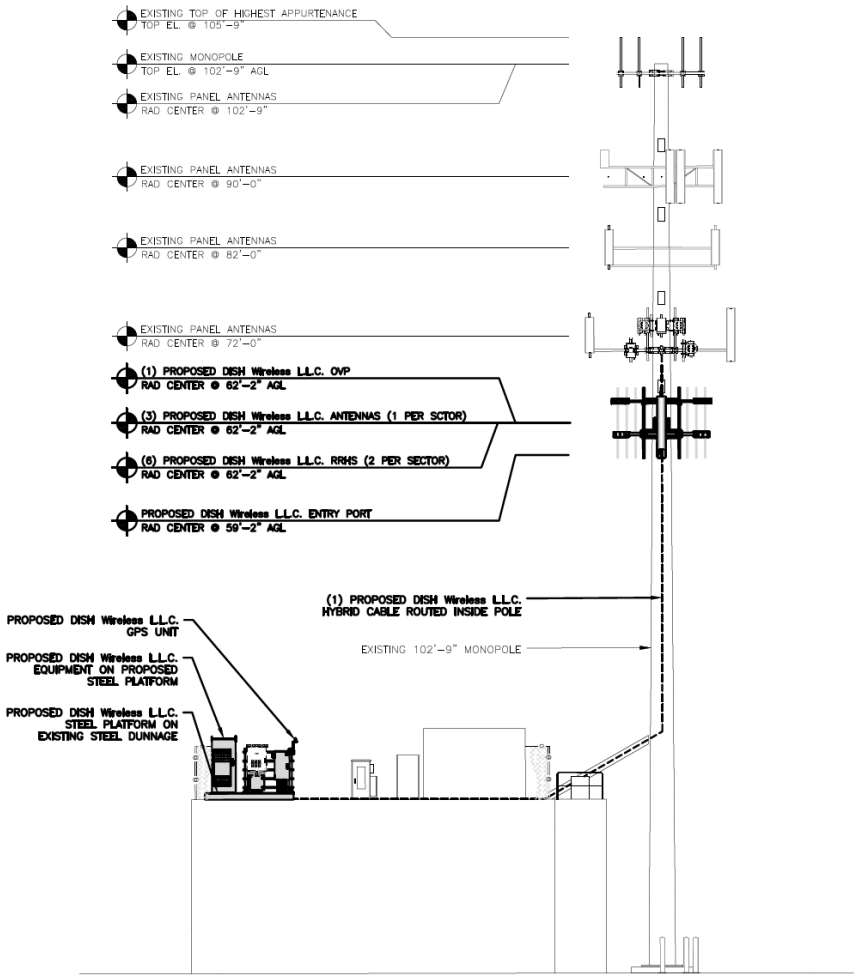
Antenna and Transmission Data

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	62' 2"	12.46	64	20	2	0
❶	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	62' 2"	16.66	67	20	2	0
❶	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	62' 2"	16.66	67	20	2	0
❷	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	62' 2"	12.46	64	140	2	0
❷	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	62' 2"	16.66	67	140	2	0
❷	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	62' 2"	16.66	67	140	2	0
❸	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	62' 2"	12.46	64	260	2	0
❸	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	62' 2"	16.66	67	260	2	0
❸	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	62' 2"	16.66	67	260	2	0

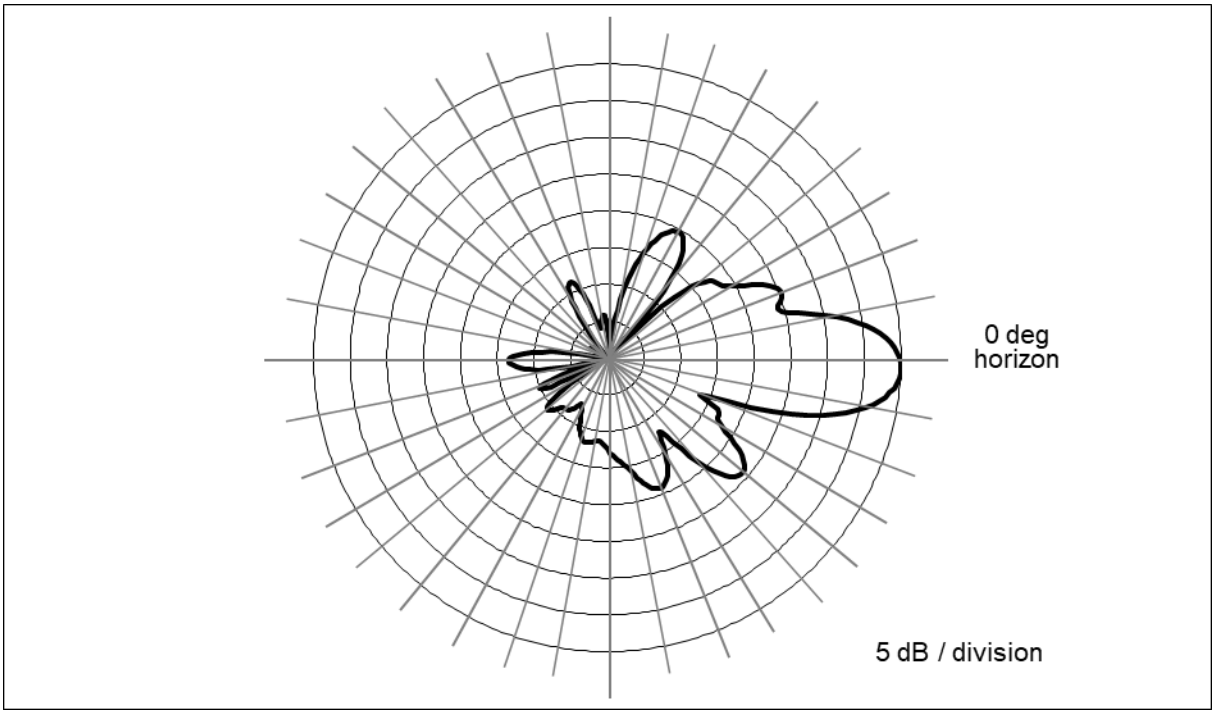
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

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

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

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

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



As noted at the outset, there are other existing wireless 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.

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
T-Mobile	Generic	Generic	Panel	600	3163	12.96	N/A
T-Mobile	Generic	Generic	Panel	700	867	13.36	N/A
T-Mobile	Generic	Generic	Panel	1900	4123	15.36	N/A
T-Mobile	Generic	Generic	Panel	1900	1452	15.60	N/A
T-Mobile	Generic	Generic	Panel	2100	4626	15.86	N/A
T-Mobile	Generic	Generic	Panel	1900	1419	15.50	N/A
T-Mobile	Generic	Generic	Panel	2500	12804	22.35	N/A
Verizon Wireless	Generic	Generic	Panel	746	2400	11.76	N/A
Verizon Wireless	Generic	Generic	Panel	869	5166	12.36	N/A
Verizon Wireless	Generic	Generic	Panel	1900	5372	15.26	N/A
Verizon Wireless	Generic	Generic	Panel	2100	5625	15.46	N/A

Compliance Analysis

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

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.

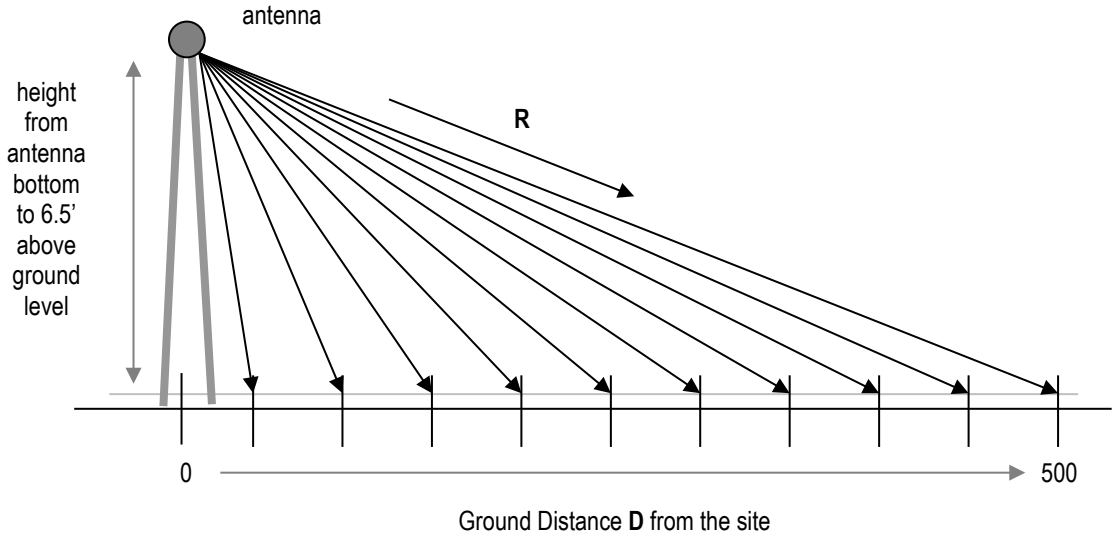


Figure 2. Street-level MPE% Calculation Geometry

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.

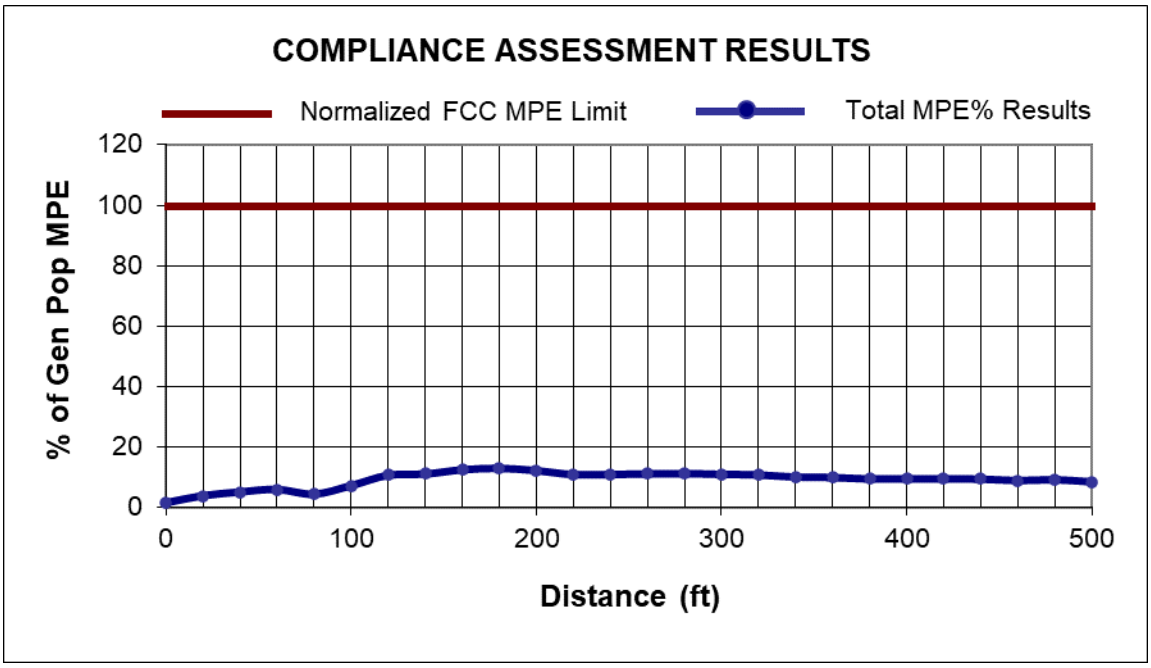
The net result of these assumptions is to intentionally and significantly overstate the calculated RF levels relative to the levels that will actually result from the antenna operations – and the purpose of this conservatism is to allow very "safe-side" conclusions about compliance.

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.

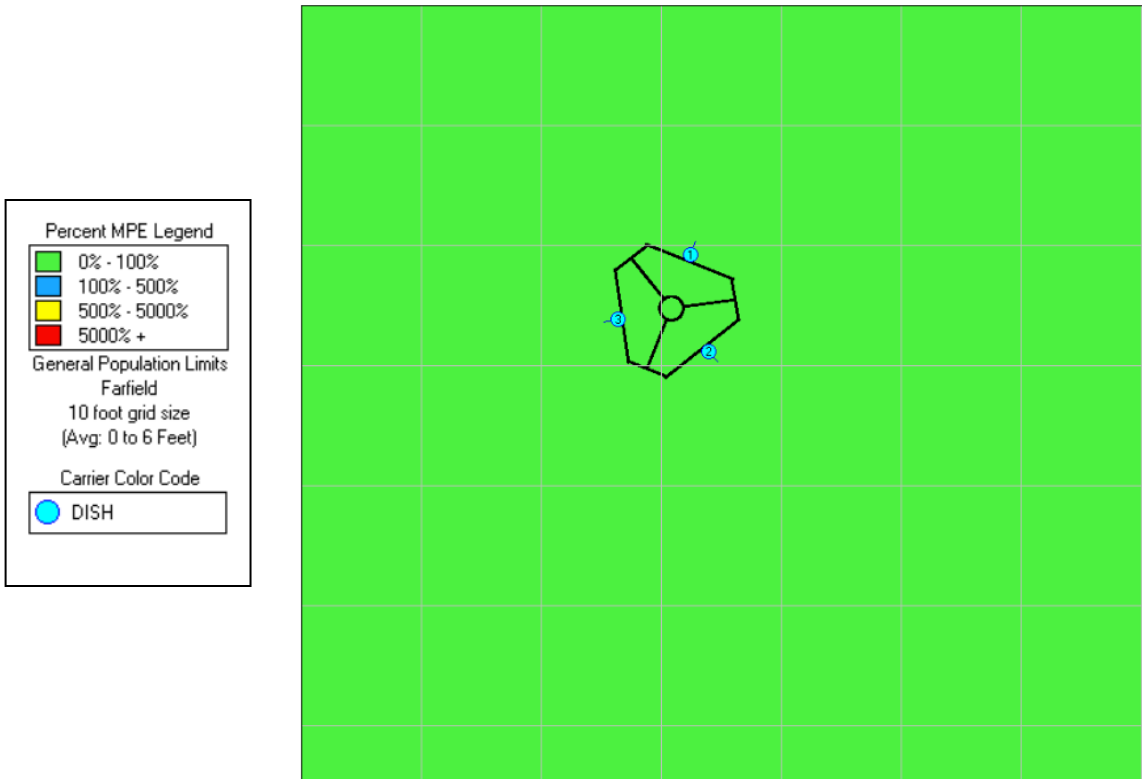
Ground Distance (ft)	DISH 600 MHz MPE%	DISH 2000 MHz MPE%	DISH 2100 MHz MPE%	AT&T MPE%	T-Mobile MPE%	Verizon Wireless MPE%	Total MPE%
0	0.1755	0.0083	0.0013	0.1690	0.9976	0.0508	1.4025
20	0.7126	0.0529	0.1542	0.3062	2.4532	0.1268	3.8059
40	0.1809	0.8432	0.1746	0.6402	2.8145	0.4064	5.0598
60	1.1376	0.9759	1.1732	0.9624	1.3807	0.2987	5.9285
80	0.2984	0.0989	0.0171	0.4722	2.6293	0.7988	4.3147
100	0.1112	0.3144	0.1278	0.7302	5.2763	0.6358	7.1957
120	0.0461	0.0555	0.2883	1.5462	7.7155	1.0250	10.6766
140	0.0685	0.4396	0.2649	1.7005	7.7748	0.8483	11.0966
160	0.2267	0.2051	0.4196	1.3225	9.9144	0.4464	12.5347
180	**0.5435**	**0.0174**	**0.1226**	**1.0361**	**11.1210**	**0.1786**	**13.0192**
200	1.0121	0.0130	0.0126	0.6931	10.4990	0.0451	12.2749
220	1.1786	0.0241	0.0074	0.2979	9.2813	0.1277	10.9170
240	1.3352	0.0867	0.0333	0.3307	8.9282	0.2300	10.9441
260	1.4757	0.1872	0.1097	0.5340	8.2408	0.5805	11.1279
280	1.5922	0.2418	0.1938	0.8114	7.6357	0.7602	11.2351
300	1.6826	0.1825	0.1992	1.0967	6.8423	0.9602	10.9635
320	1.4842	0.1610	0.1757	1.3467	6.4619	1.1577	10.7872
340	1.5458	0.0516	0.0954	1.5735	5.7789	1.0314	10.0766
360	1.3823	0.0461	0.0853	1.8285	5.3629	1.2222	9.9273
380	1.4177	0.0299	0.0340	1.6493	4.9070	1.3970	9.4349
400	1.2818	0.0270	0.0308	1.9837	4.8027	1.2652	9.3912
420	1.1645	0.0245	0.0280	2.4719	4.4200	1.4081	9.5170
440	1.1812	0.1931	0.1361	2.2596	4.3344	1.2864	9.3908
460	1.0820	0.1769	0.1246	2.0731	4.2682	1.1797	8.9045
480	0.9948	0.1626	0.1146	2.6392	3.9259	1.3413	9.1784
500	0.9176	0.1500	0.1057	2.4376	3.6230	1.2383	8.4722

As indicated, the maximum calculated overall RF level is 13.0192 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.

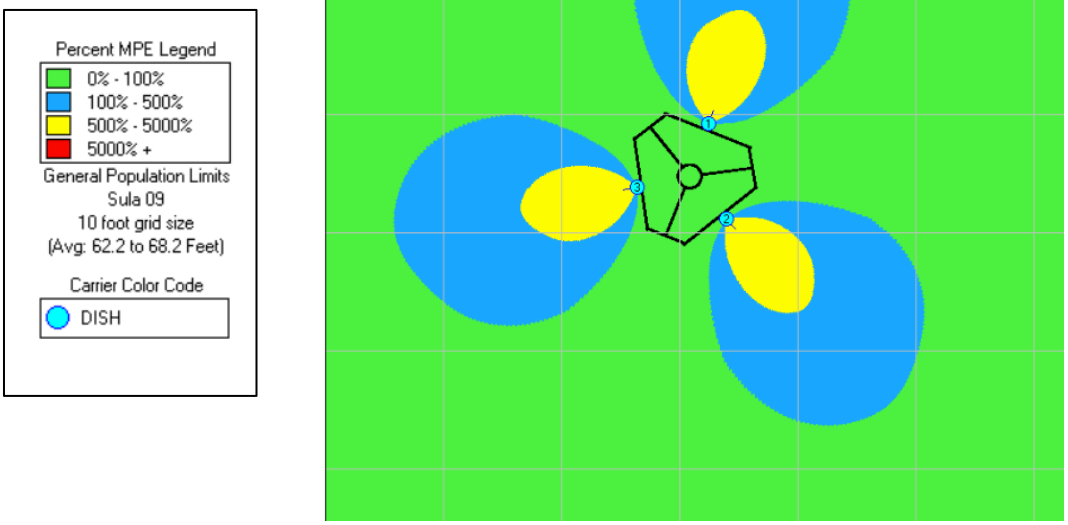


Near-field Analysis

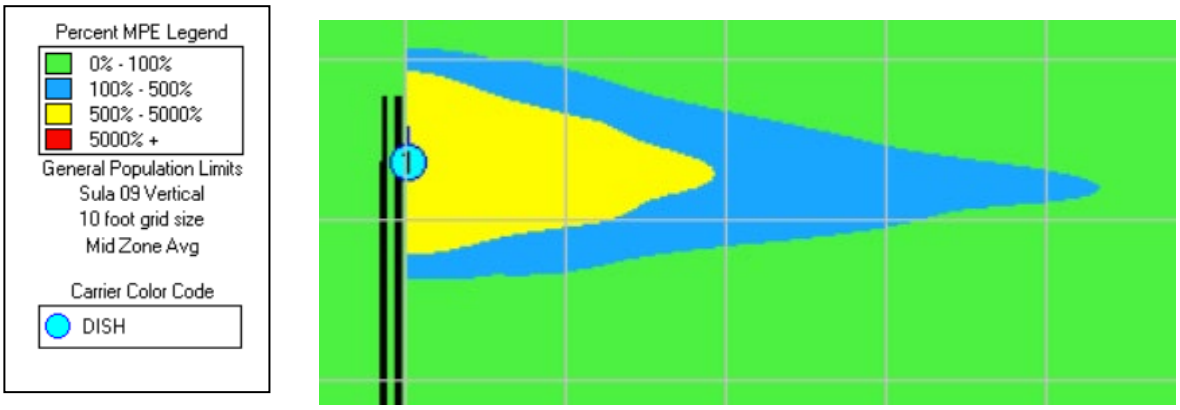
The compliance analysis for the same height as the antennas is performed using the RoofMaster program by Waterford Consultants.

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, 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 13.0192 percent of the FCC general population MPE limit. At the same height as the antennas, the analysis shows that the calculated RF levels potentially exceed the FCC MPE limit. Per DISH guidelines, and consistent with FCC guidance on compliance, it is recommended that two Caution signs 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.

7/27/22

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

Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: RFDS-NJJER02049C-Preliminary-20211210-v.1_20211210172201

CD: NJJER02049C_PrelimCD_20220712191440

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.

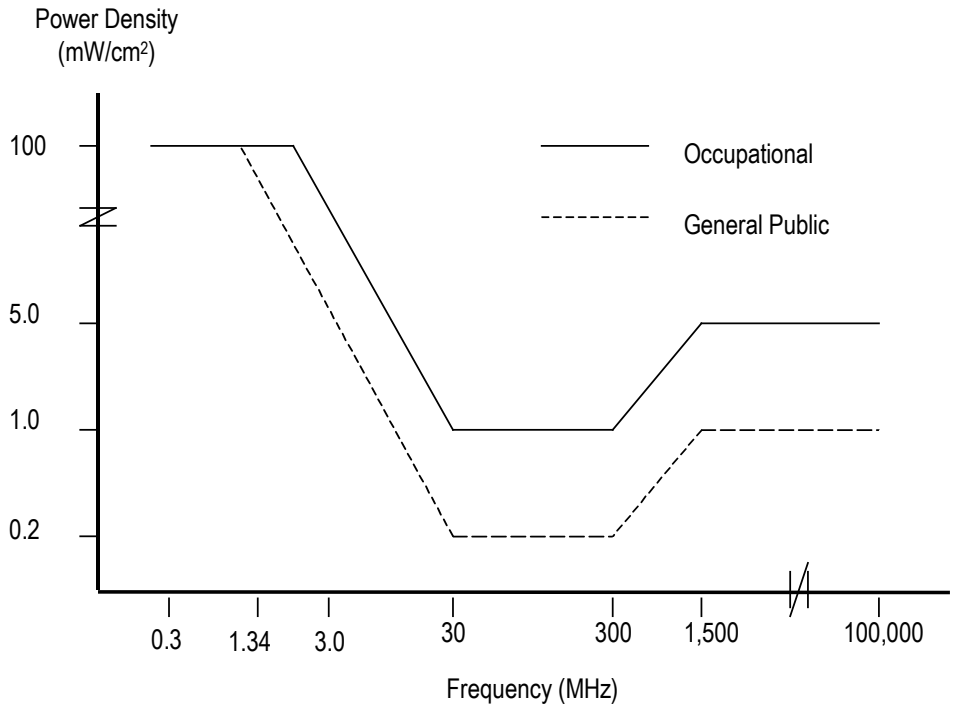
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in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

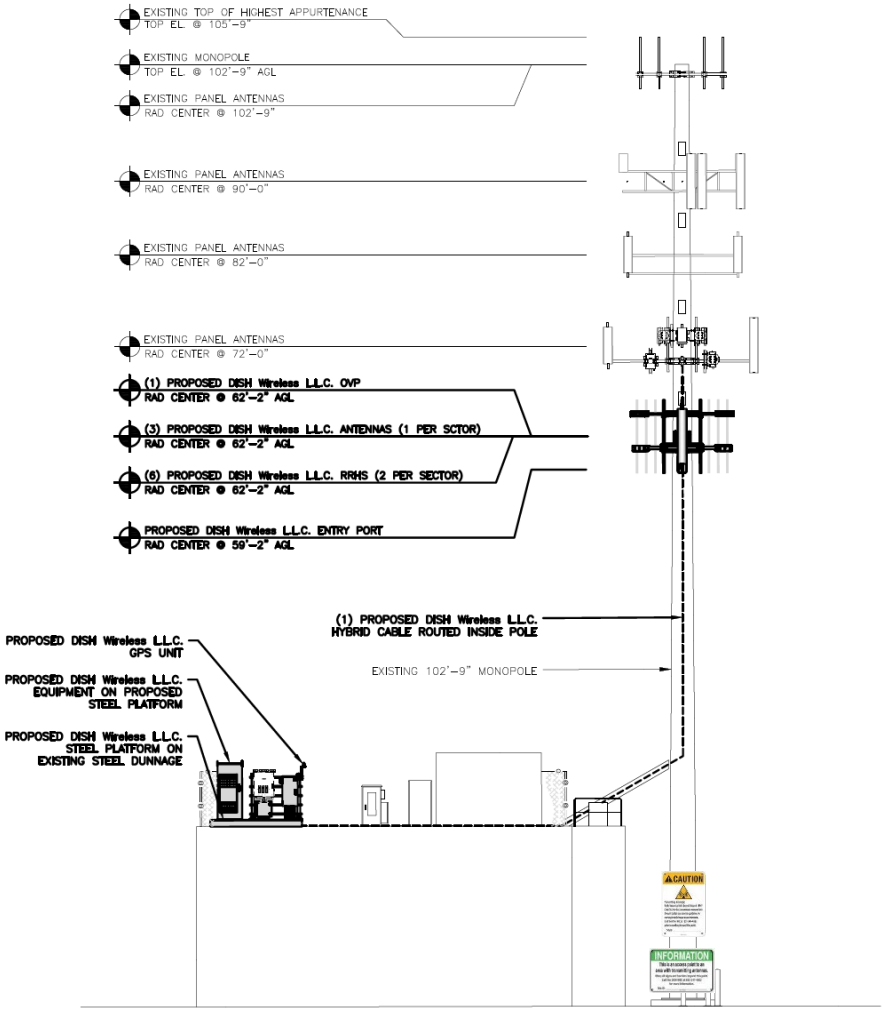
FCC Report and Order, Notice of Proposed Rulemaking, Memorandum Opinion and Order (FCC 19-126), *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies,* 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	2	0	1	0	
Alpha	0	0	0	0	0	0	
Beta	0	0	0	0	0	0	
Gamma	0	0	0	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

September 02, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 777793086068

Delivery Information:

Status:	Delivered	**Delivered To:**	Receptionist/Front Desk
Signed for by:	J.BECKER	**Delivery Location:**	627 HONEYSPOT RD
Service type:	FedEx 2Day AM		
Special Handling:	Deliver Weekday		STRATFORD, CT, 06615
		Delivery date:	Sep 1, 2022 09:54

Shipping Information:

Tracking number:	777793086068	**Ship Date:**	Aug 30, 2022
		Weight:	3.0 LB/1.36 KG

Recipient:
John Becker, Becker LLC
627 Honeyspot Road
STRATFORD, CT, US, 06615

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

Reference NJJER02049C

Thank you for choosing FedEx

September 02, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 777793276040

Delivery Information:

Status:	Delivered	**Delivered To:**	Receptionist/Front Desk
Signed for by:	D.BREMEN	**Delivery Location:**	2725 MAIN ST
Service type:	FedEx 2Day AM		
Special Handling:	Deliver Weekday; Adult Signature Required		STRATFORD, CT, 06615
		Delivery date:	Sep 1, 2022 10:32

Shipping Information:

Tracking number:	777793276040	**Ship Date:**	Aug 30, 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 NJJER02049C

Signature Proof of Delivery is not currently available for this Tracking Number. Availability of signature images may take up to 5 days after delivery date. Please try later, or contact Customer Service at 1.800.Go.FedEx(R) 800.463.3339.

Thank you for choosing FedEx

September 02, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 777793307775

Delivery Information:

Status:	Delivered	**Delivered To:**	Receptionist/Front Desk
Signed for by:	D.BREMEN	**Delivery Location:**	2725 MAIN ST
Service type:	FedEx 2Day AM		
Special Handling:	Deliver Weekday; Adult Signature Required		STRATFORD, CT, 06615
		Delivery date:	Sep 1, 2022 10:32

Shipping Information:

Tracking number:	777793307775	**Ship Date:**	Aug 30, 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 NJJER02049C

Signature Proof of Delivery is not currently available for this Tracking Number. Availability of signature images may take up to 5 days after delivery date. Please try later, or contact Customer Service at 1.800.Go.FedEx(R) 800.463.3339.

Thank you for choosing FedEx