



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

January 11, 2023

Michael Jones
President
M+K Development
140 Beach 137th Street
Rockaway Beach, NY 11694
mjones@mandkdevelopment.com

RE: TS-DISH-138-221206 – Dish Wireless, LLC request for an order to approve tower sharing at an existing telecommunications facility located at 200 Oronoque Lane, Stratford, Connecticut.

Dear Michael Jones:

The Connecticut Siting Council (Council) is in receipt of your correspondence of January 10, 2023 submitted in response to the Council's December 20, 2022 notification of an incomplete request for tower sharing with regard to the above-referenced matter.

The submission renders the request for tower sharing complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/lm



January 6, 2023

Melanie A. Bachman
Zoning Officer
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 – NJJER02052B - **TS-DISH-138-221206**
200 Oronoque Lane, Stratford, CT 06614

Dear Ms. Bachman:

In response to your letter dated 12/20/2022 related to the incomplete application submitted and pursuant to Connecticut General Statutes ("C.G.S.") §16-50aa, as amended, DISH Wireless LLC ("DISH") hereby requests an approval from the Connecticut Siting Council ("Council") to approve the shared use by DISH of an existing telecommunication tower at 200 Oronoque Lane in Stratford. We have attached the following updated documents as requested to amend our original application:

- An updated set of Construction Drawings (CD) citing the 2022 Connecticut State Building Code (CSBC).
- An updated Structural Analysis (SA) citing the 2022 CSBC or 2021 IBC.
- An updated Mount Analysis (MA) citing the 2022 CSBC or 2021 IBC.

Please review and advise if there is any other required documentation required to deem this application complete.

Sincerely,

A handwritten signature in black ink, appearing to read 'Michael Jones', is written over a light green background.

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



Amended EXHIBIT C

Construction Drawings



DISH Wireless L.L.C. SITE ID:
NJJER02052B

DISH Wireless L.L.C. SITE ADDRESS:
**200 ORONOQUE LANE
STRATFORD, CT 06614**

| SCOPE OF WORK | |
|---|--|
| THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING: | |
| TOWER SCOPE OF WORK: | |
| <ul style="list-style-type: none"> • INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR) • INSTALL (1) PROPOSED ANTENNA PLATFORM MOUNT • INSTALL PROPOSED JUMPERS • INSTALL (6) PROPOSED RRU_s (2 PER SECTOR) • INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP) • INSTALL (1) PROPOSED HYBRID CABLE | |
| GROUND SCOPE OF WORK: | |
| <ul style="list-style-type: none"> • INSTALL (1) PROPOSED METAL PLATFORM • INSTALL (1) PROPOSED ICE BRIDGE • INSTALL (1) PROPOSED PPC CABINET • INSTALL (1) PROPOSED EQUIPMENT CABINET • INSTALL (1) PROPOSED POWER CONDUIT • INSTALL (1) PROPOSED TELCO CONDUIT • INSTALL (1) PROPOSED TELCO-FIBER BOX • INSTALL (1) PROPOSED GPS UNIT • INSTALL (1) PROPOSED FIBER NID (IF REQUIRED) | |

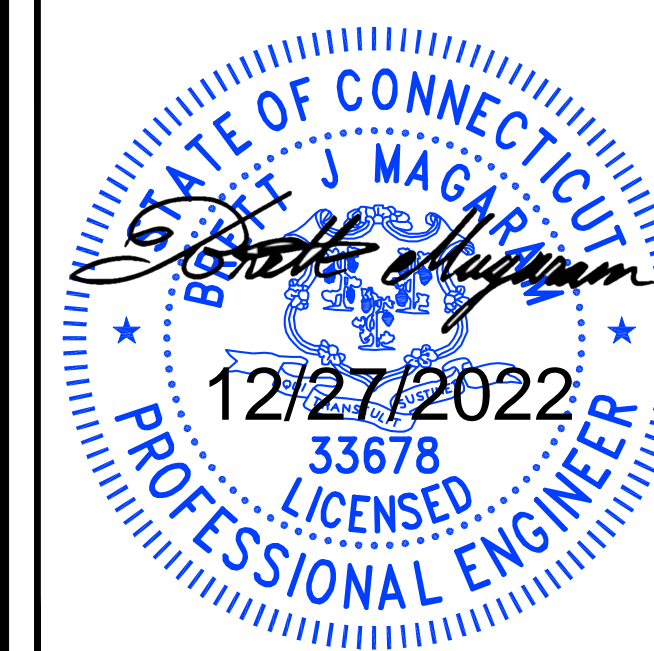
| SITE INFORMATION | PROJECT DIRECTORY |
|---|---|
| PROPERTY OWNER: TOWN OF STRATFORD ADDRESS: 2725 MAIN STREET STRATFORD, CT 06615 | APPLICANT: DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120 (303) 706-5008 |
| TOWER TYPE: MONOPOLE | TOWER OWNER: TOWN OF STRATFORD 2725 MAIN STREET STRATFORD, CT 06615 |
| TOWER CO SITE ID: N/A | |
| TOWER APP NUMBER: N/A | |
| COUNTY: FAIRFIELD COUNTY | SITE DESIGNER: M+K DEVELOPMENT 140 BEACH 137TH STREET ROCKAWAY, NY 11694 |
| LATITUDE (NAD 83): 41° 15' 5.28" N 41.251475 | |
| LONGITUDE (NAD 83): 73° 07' 1.63" W -73.117119 | |
| ZONING JURISDICTION: CT SITING COUNCIL | SITE ACQUISITION: AUSTIN PAPPAS AUSTIN.PAPPAS@DISH.COM |
| ZONING DISTRICT: RS-1 | CONSTRUCTION MANAGER: OMAR ZEERBAN OMAR.ZEERBAN@DISH.COM |
| PARCEL NUMBER: 6020020001 | RF ENGINEER: PAWN MADAHAR PAWN.MADAHAR@DISH.COM |
| OCCUPANCY GROUP: U | |
| CONSTRUCTION TYPE: V-B | |
| POWER COMPANY: UNITED ILLUMINATING | |
| TELEPHONE COMPANY: TBD | |



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



140 BEACH 137TH STREET
ROCKAWAY, NY 11694



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

DRAWN BY: CHECKED BY: APPROVED BY:

GIN --- ---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

| REV | DATE | DESCRIPTION |
|-----|------------|-------------------------|
| A | 06/13/2022 | ISSUED FOR REVIEW |
| 0 | 12/21/2022 | ISSUED FOR CONSTRUCTION |

A&E PROJECT NUMBER
NJJER02052B

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

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

| 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 | 2022 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS |
| MECHANICAL | 2022 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS |
| ELECTRICAL | 2022 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS |

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



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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

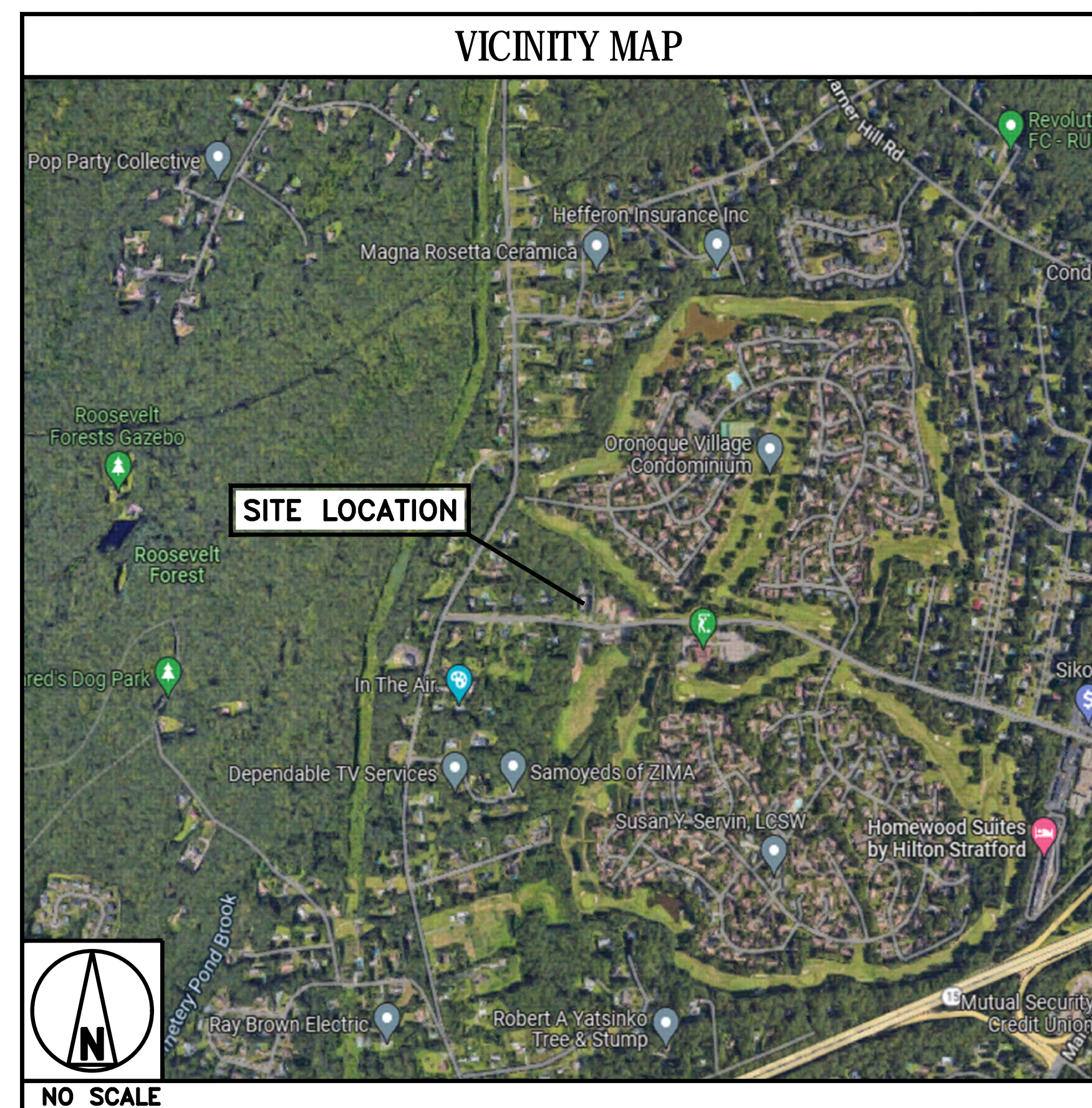
THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE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

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

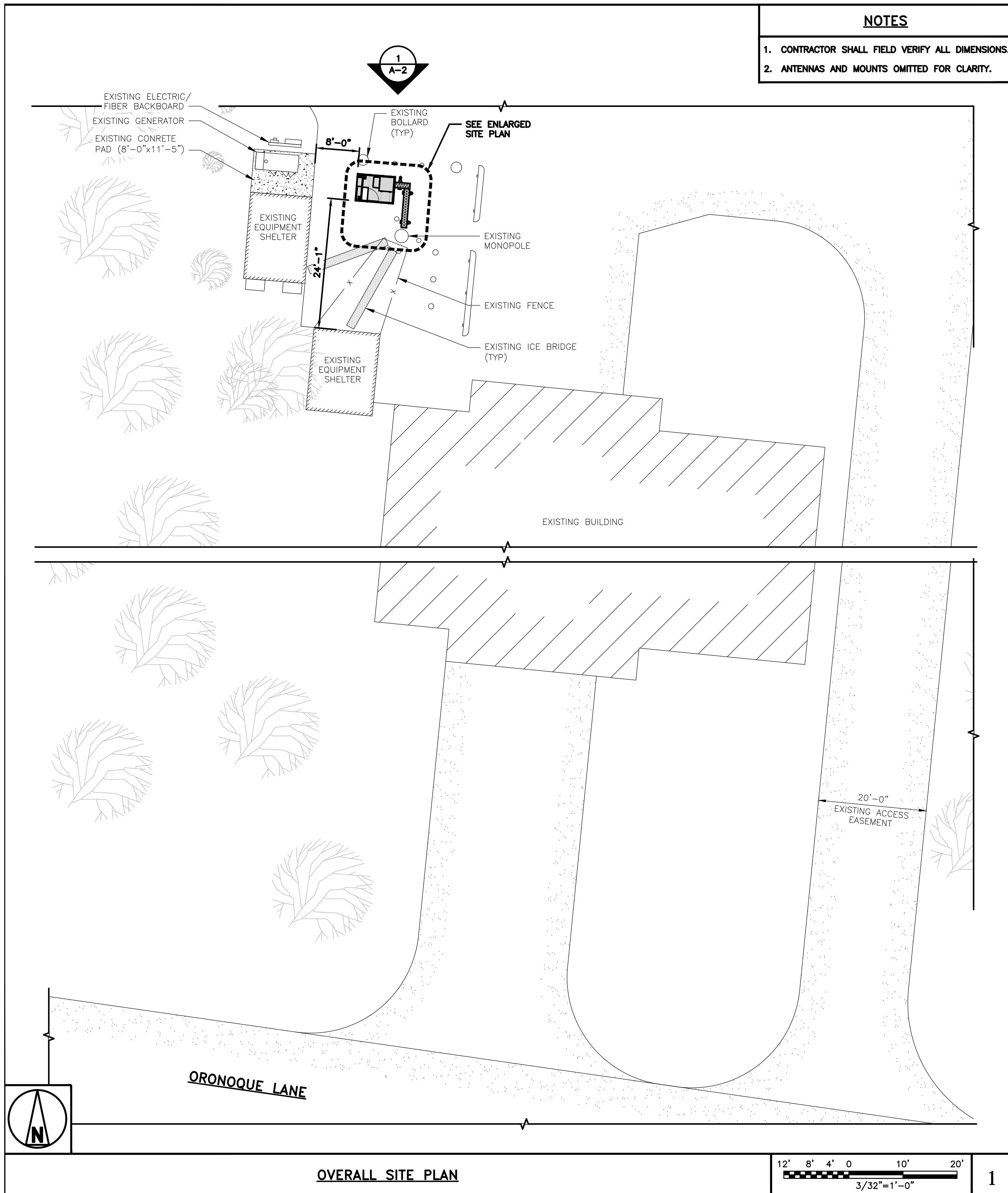
CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

DIRECTIONS

DIRECTIONS FROM 3 ADP BLVD, NJ 07068, USA:
HEAD NORTHEAST TOWARD ADP BLVD, TURN RIGHT TOWARD CHOCCAN WAY, SLIGHT RIGHT ONTO CHOCCAN WAY, USE THE LEFT LANE TO TURN RIGHT ONTO LAMINGTON AVE, USE THE RIGHT LANE TO TAKE THE RAMP ONTO I-280 E, MERGE ONTO I-280 E, TAKE EXIT 15X AND 10E TOWARD LINCOLN TUNN, MERGE ONTO I-95 N TOLL ROAD, KEEP RIGHT TO STAY ON I-95 N, FOLLOW SIGNS FOR GEORGE WASHINGTON BRG/FORT LEE, KEEP RIGHT TO STAY ON I-95 N, FOLLOW SIGNS FOR US-1 N/US-9 N/GEORGE WASHINGTON BRIDGE, CONTINUE ONTO US-9 N, CONTINUE ONTO I-95 LOWER LEVEL N/US. 1 LOWER LEVEL N, TOLL ROAD, KEEP RIGHT TO CONTINUE ON I-95 LOWER LEVEL N/TRANS-MANHATTAN EXPY/US. 1 LOWER LEVEL N, CONTINUE STRAIGHT TO STAY ON I-95 LOWER LEVEL N/TRANS-MANHATTAN EXPY/US. 1 LOWER LEVEL N, I-95 LOWER LEVEL N TURNS SLIGHTLY RIGHT AND BECOMES I-95 N, KEEP LEFT AT THE FORK TO STAY ON I-95 N, FOLLOW SIGNS FOR INTERSTATE 95 N/NEW HAVEN, KEEP LEFT TO STAY ON I-95 N, TAKE EXIT 27A FOR CT-25/CT-8 TOWARD TRUMBULL/WATERBURY, CONTINUE ONTO CT-25 N/CT-8 N, USE THE RIGHT 2 LANES TO TAKE THE CT-8 N EXIT TOWARD CT-15 N/SHELTON/WATERBURY, CONTINUE ONTO CT-8 N, TAKE EXIT 9 TO MERGE ONTO CT-15 N/HERBRYT PRORY TOWARD CT-15, TAKE EXIT 53 FOR STATE ROUTE 110 TOWARD STRATFORD SHELTON, USE THE LEFT LANE TO KEEP LEFT AT THE FORK AND FOLLOW SIGNS FOR SHELTON, TURN LEFT ONTO MAIN ST, TURN LEFT ONTO ORONOQUE LN, DESTINATION WILL BE ON THE RIGHT.

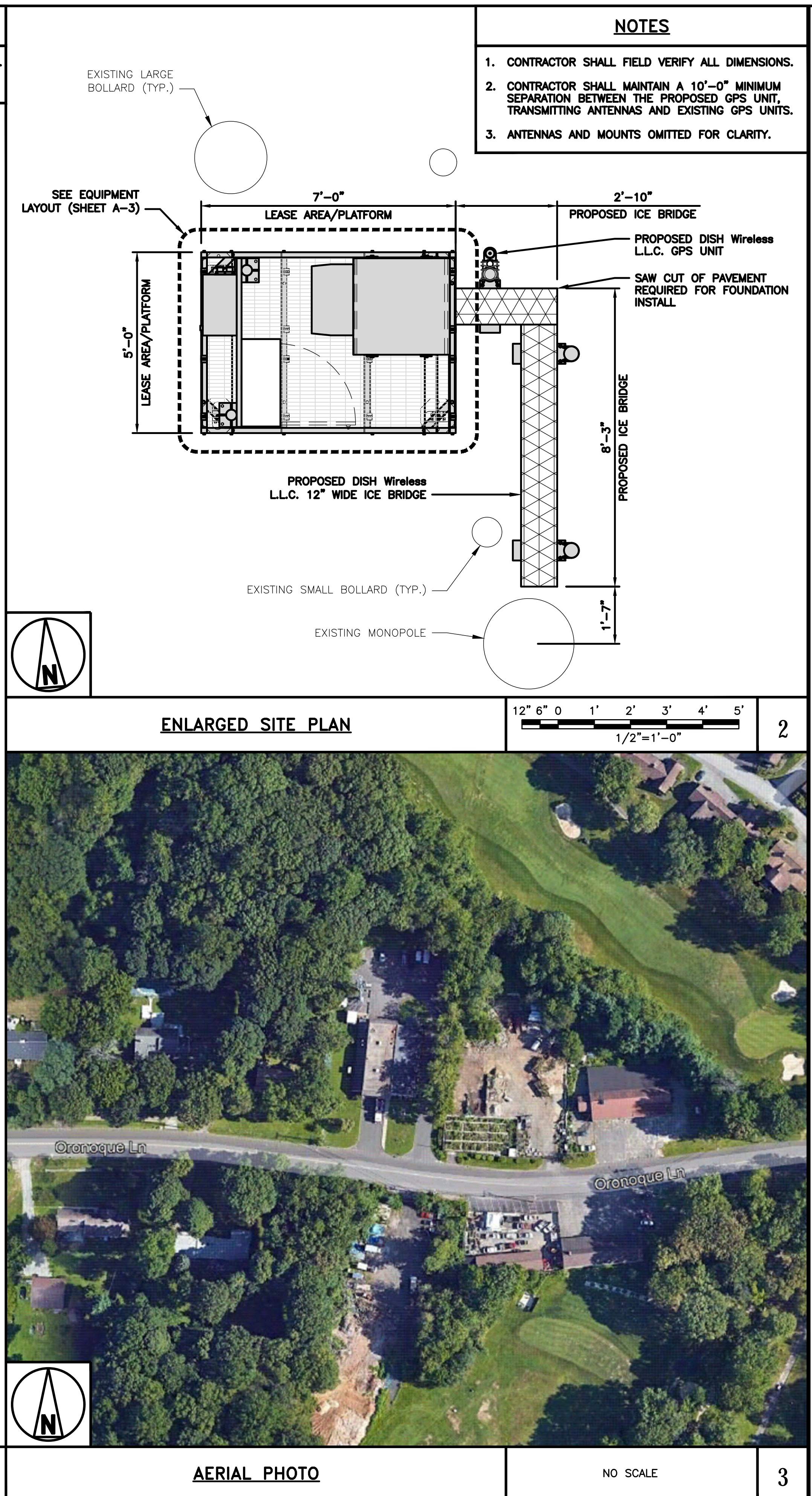


NO SCALE



NOTES

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



NOTES

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

MK DEVELOPMENT

140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
J. MAGAR
12/27/2022
33678
PROFESSIONAL ENGINEER

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

DRAWN BY: GIN | CHECKED BY: --- | APPROVED BY: ---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

| SUBMITTALS | | |
|------------|------------|-------------------------|
| REV | DATE | DESCRIPTION |
| A | 08/13/2022 | ISSUED FOR REVIEW |
| 0 | 12/21/2022 | ISSUED FOR CONSTRUCTION |

A&E PROJECT NUMBER
NJJER02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

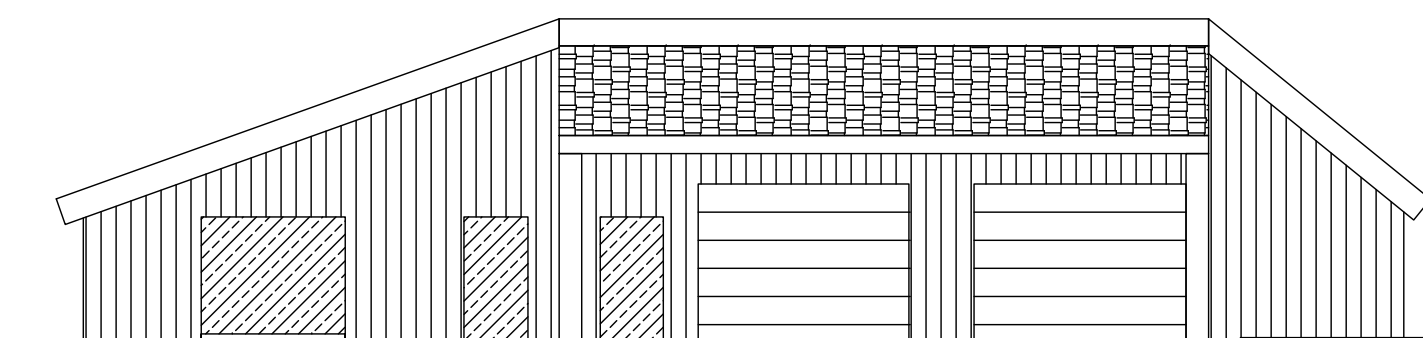
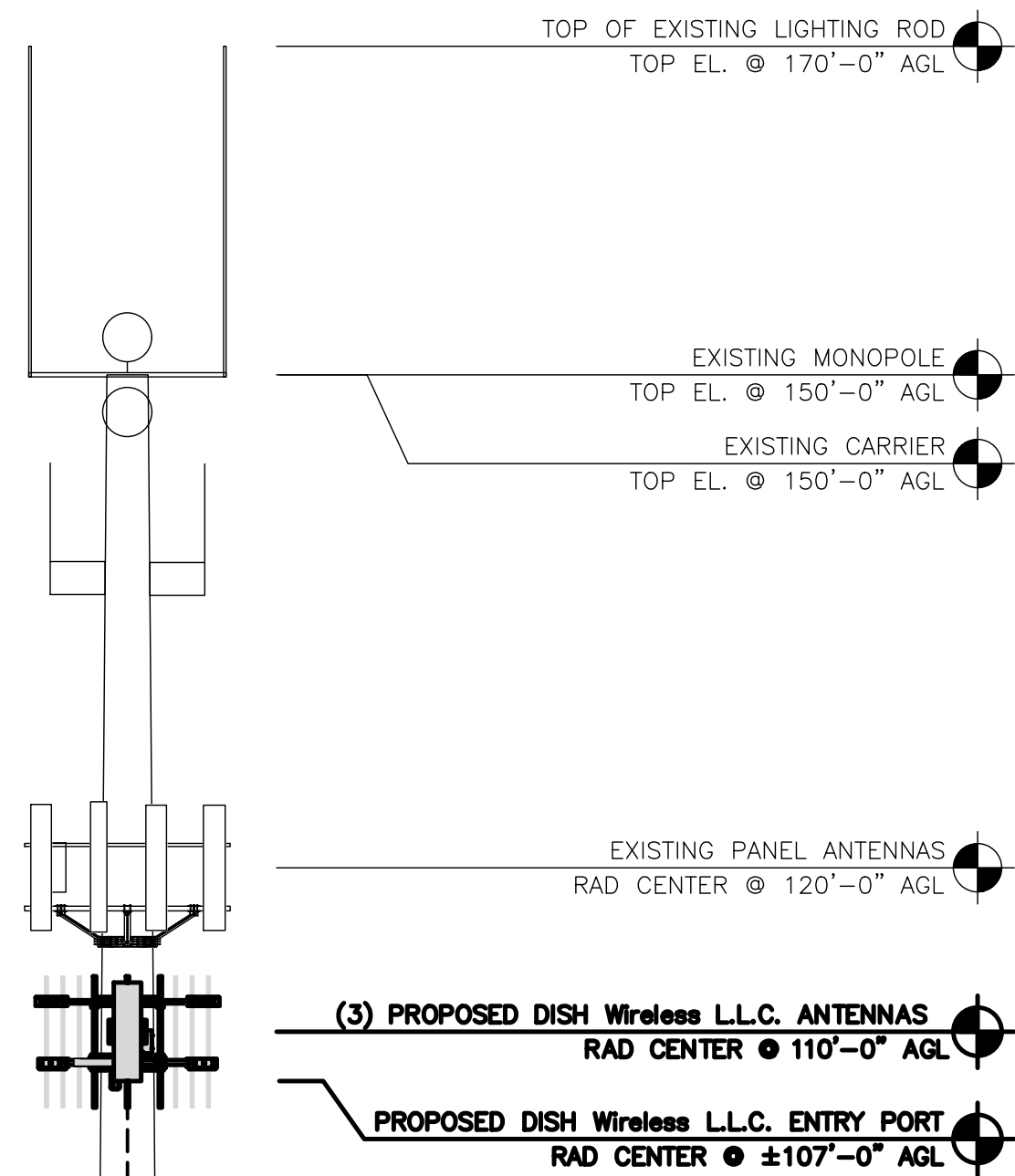
NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

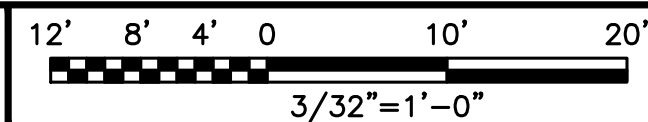
SHEET NUMBER
A-1

NOTES

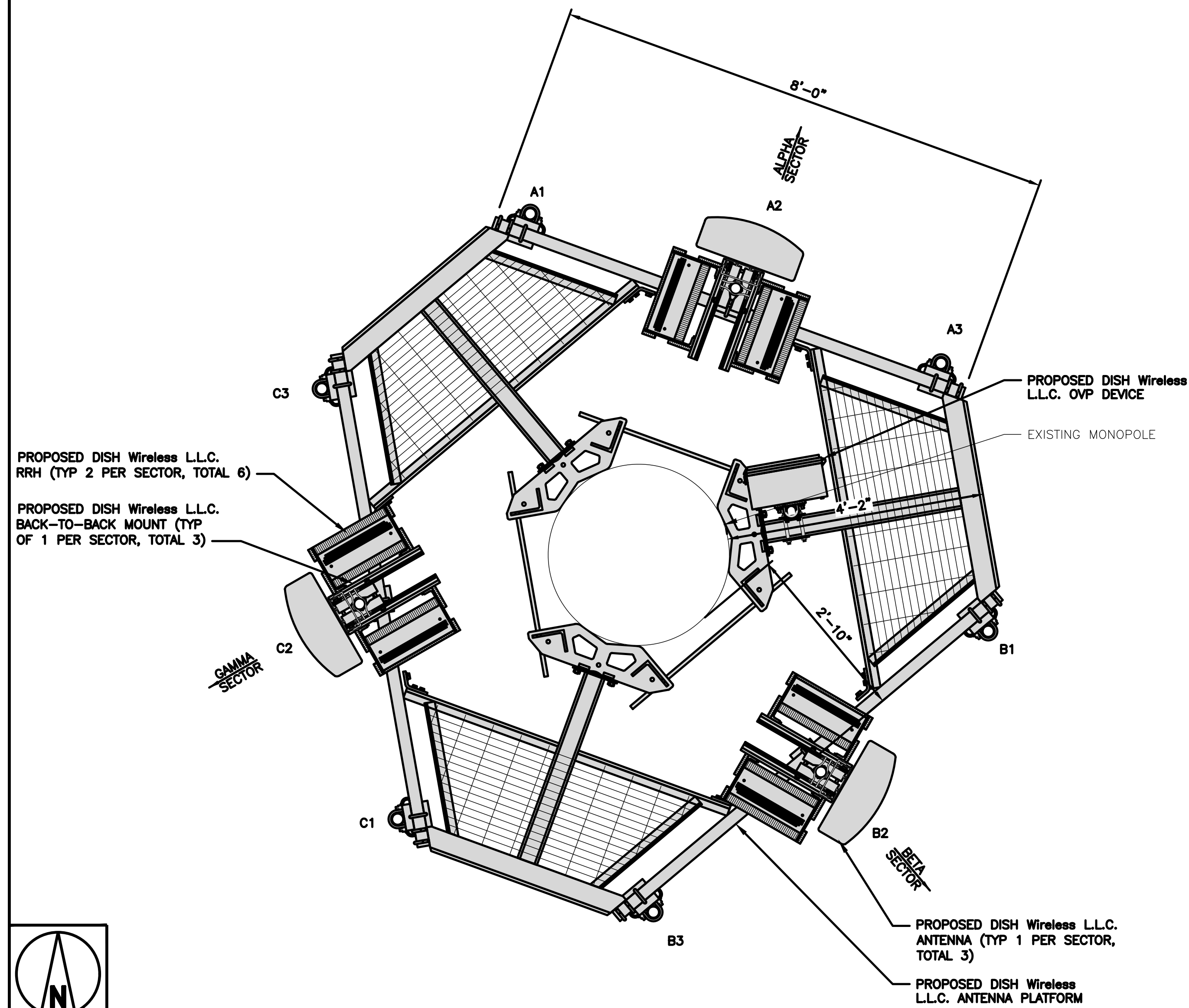
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



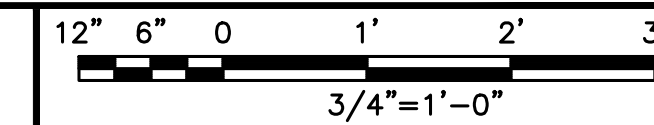
PROPOSED NORTH ELEVATION



1



ANTENNA LAYOUT



2

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

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



140 BEACH 137TH STREET
ROCKAWAY, NY 11694



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GIN --- ---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

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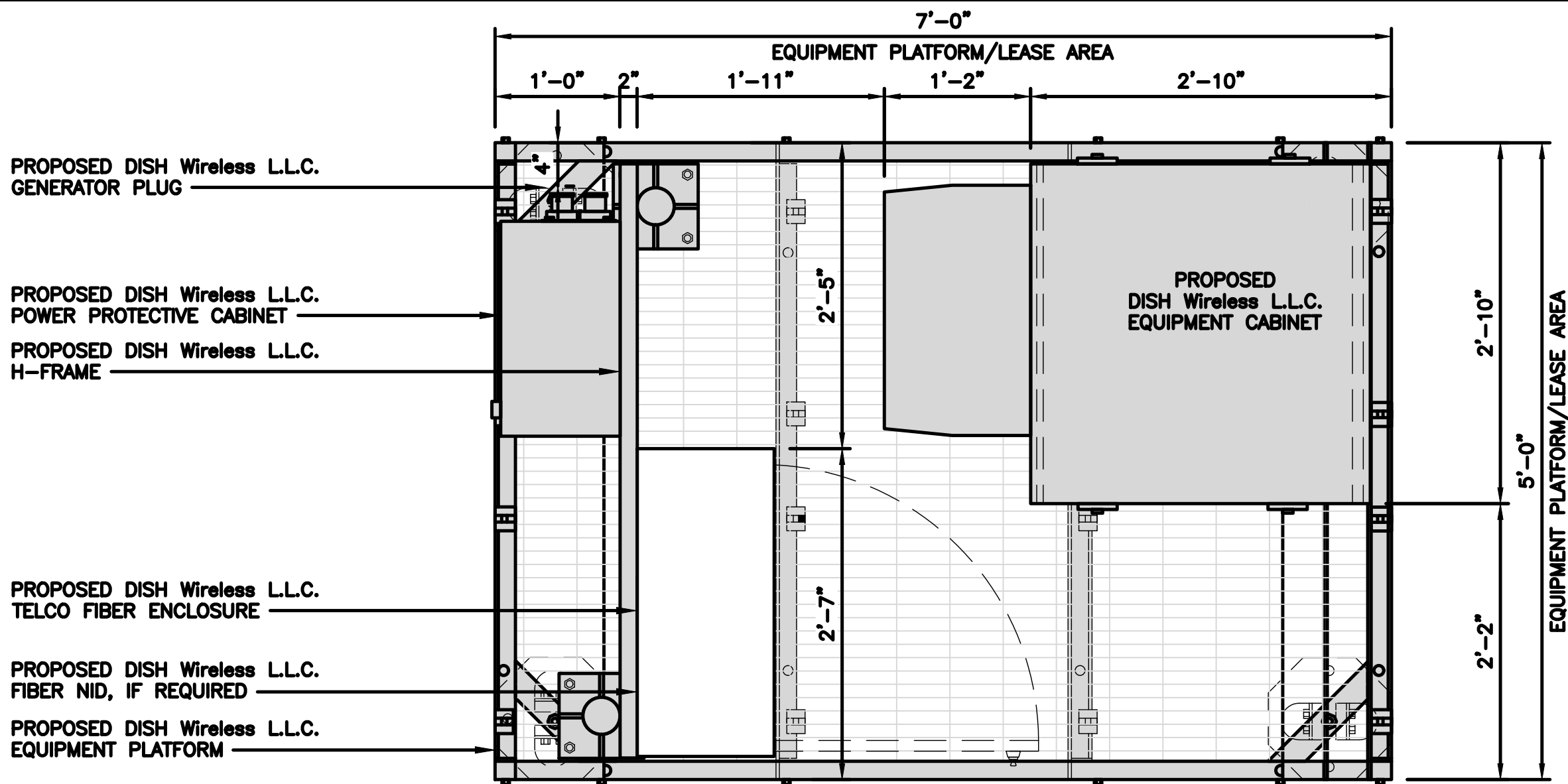
DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

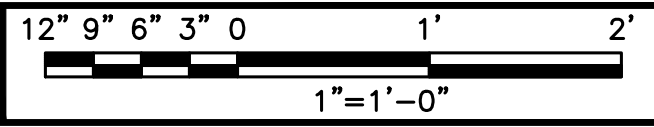
SHEET TITLE
ELEVATION, ANTENNA
LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



PLATFORM EQUIPMENT PLAN

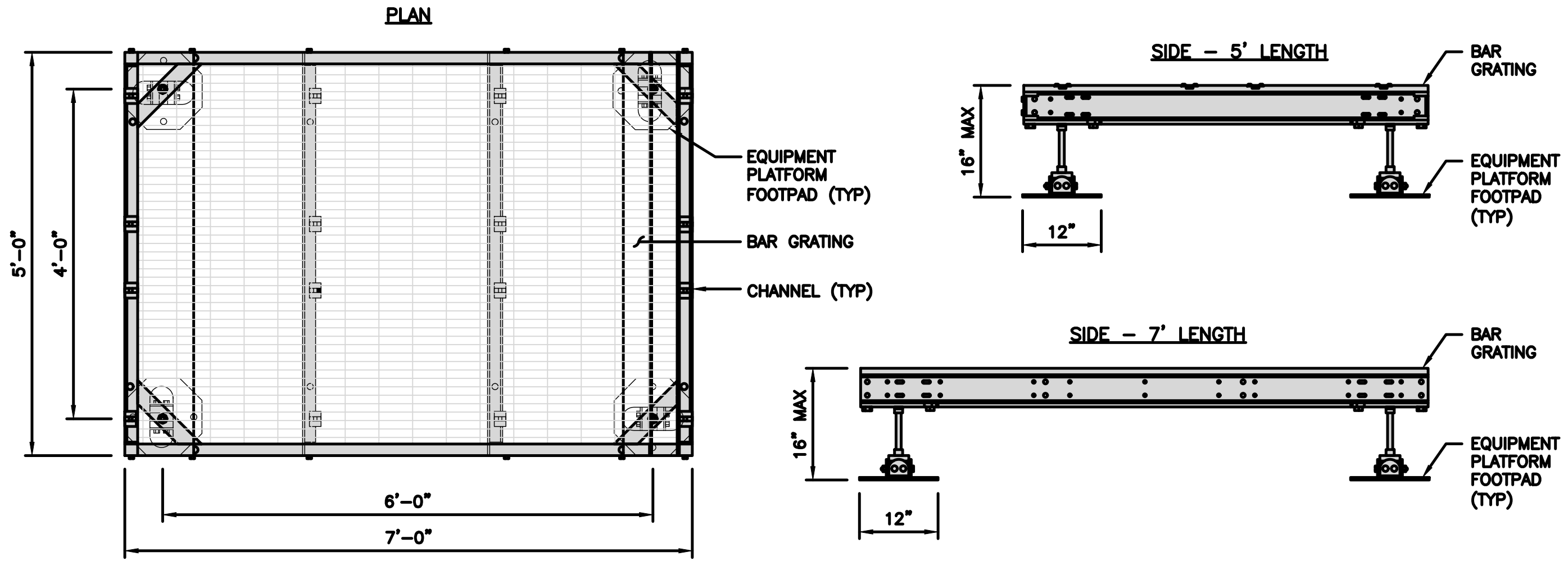


1

COMMSCOPE MTC4045LP
5X7 PLATFORM

| | |
|--------------------|-------------|
| DIMENSIONS (HxWxD) | 16"x84"x60" |
| TOTAL WEIGHT | 423 LBS |

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



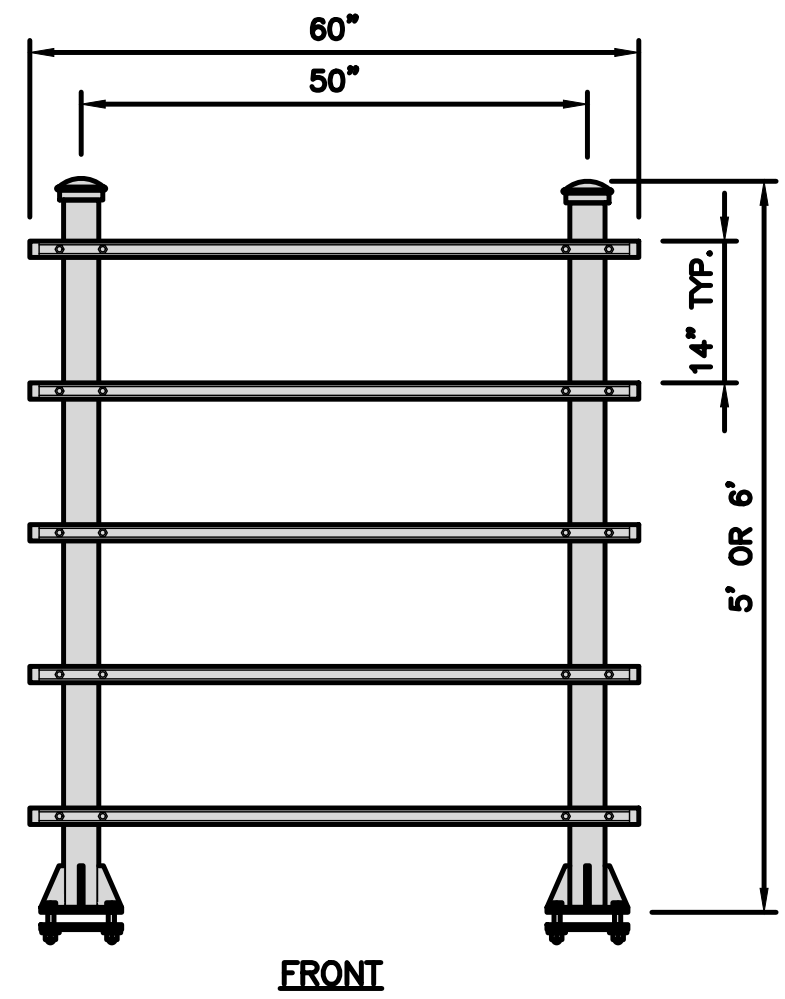
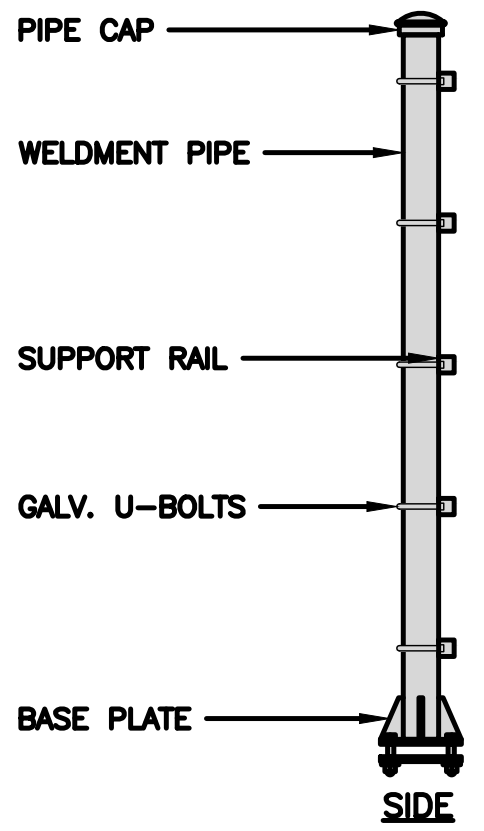
PLATFORM DETAIL

NO SCALE 2

COMMSCOPE MTC4045HFLD
H-FRAME

| | |
|----------------------------|-----------|
| UNISTRUT/SUPPORT RAILS QTY | 5 |
| WEIGHT | 59.74 lbs |

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



H-FRAME DETAIL

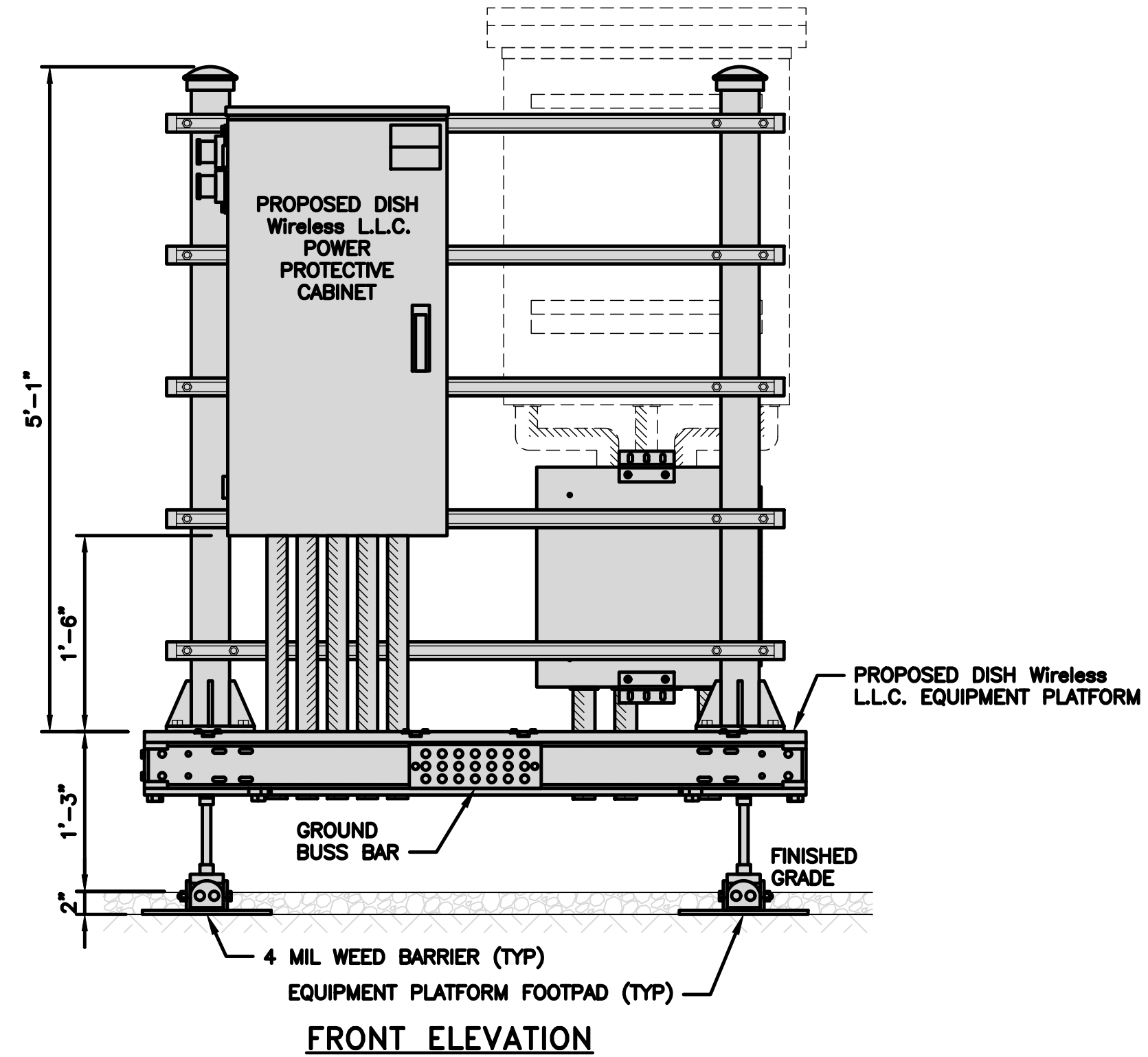
NO SCALE 3

NOT USED

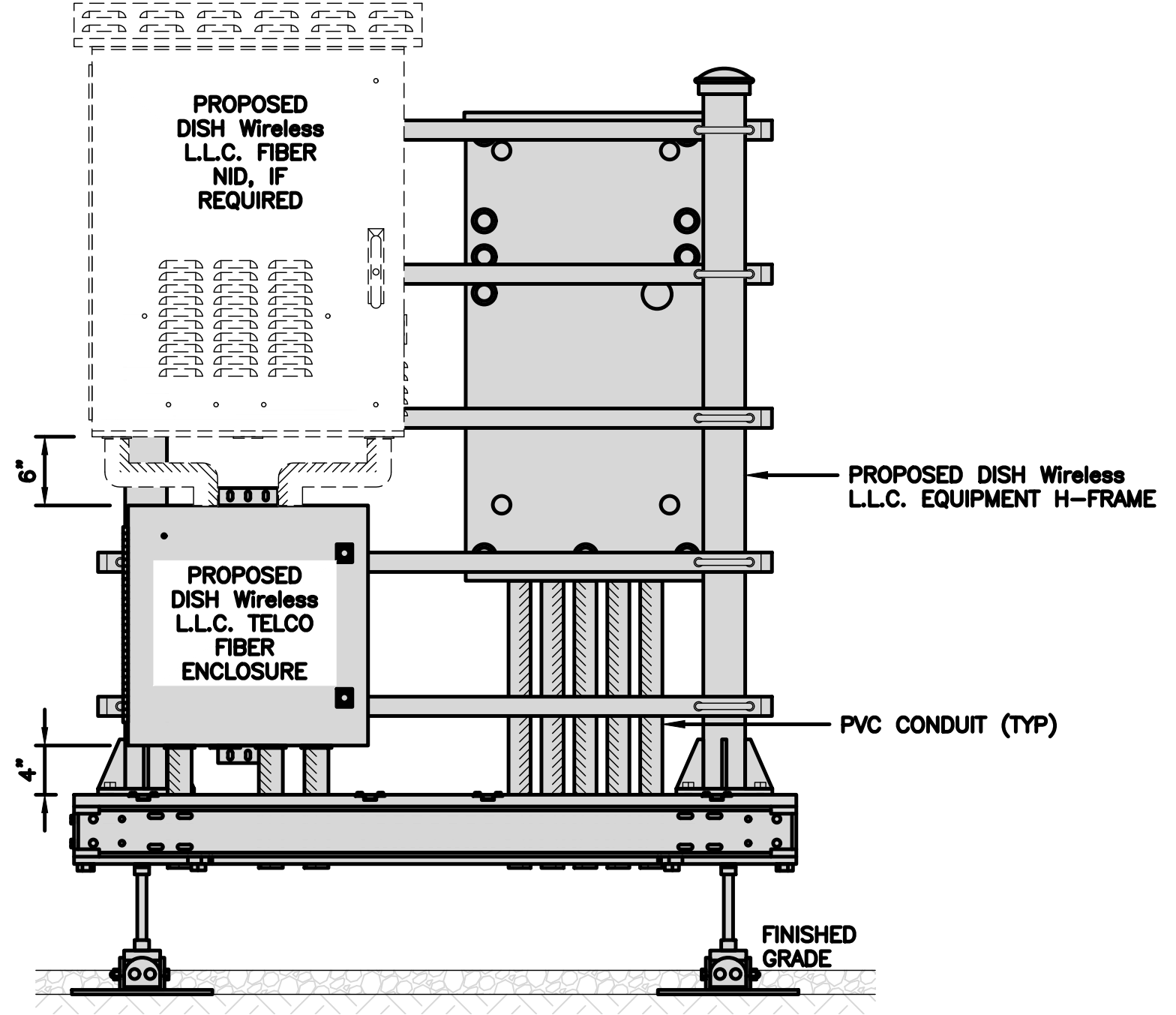
NO SCALE 4

NOTES

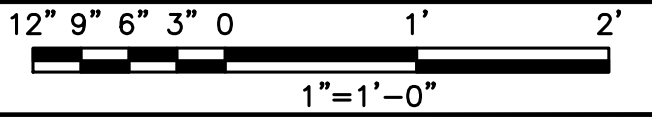
1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
2. WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
3. EQUIPMENT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



FRONT ELEVATION



BACK ELEVATION



5



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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RFDS REV #:

CONSTRUCTION DOCUMENTS

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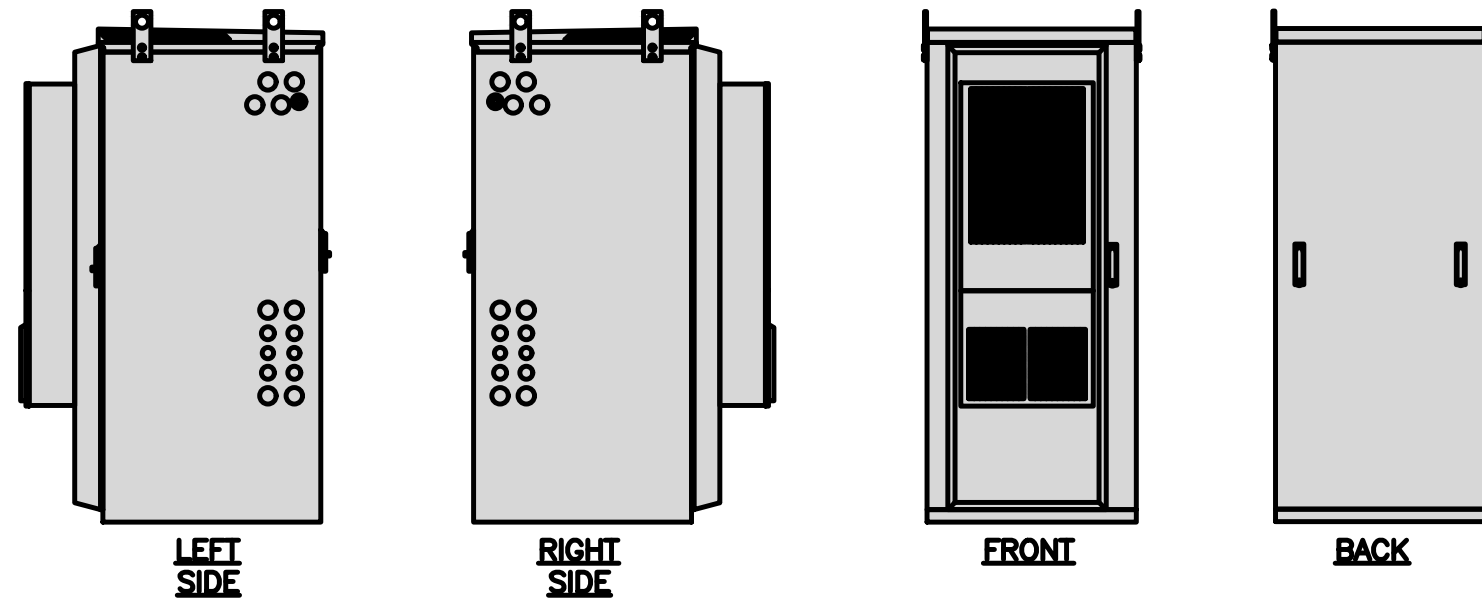
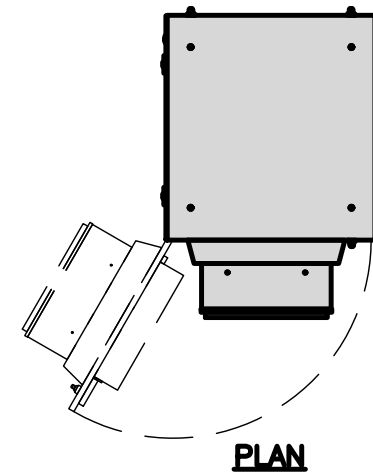
A&E PROJECT NUMBER
NJJER02052B

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

SHEET TITLE
EQUIPMENT PLATFORM AND
H-FRAME DETAILS

SHEET NUMBER
A-3

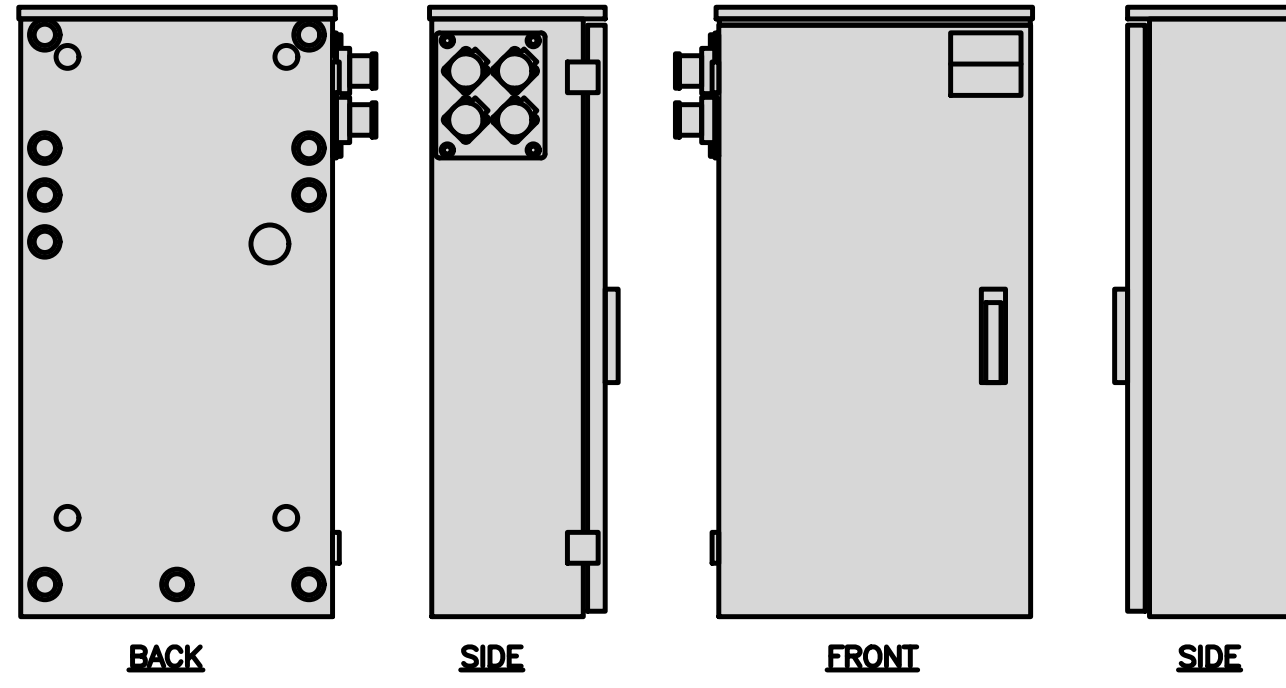
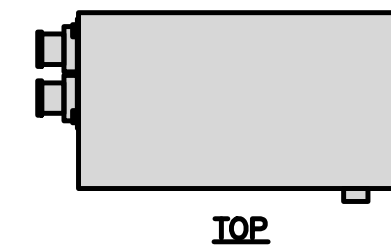
| | |
|--|-------------------|
| DELTA ELECTRONICS, INC. ESOA600-HCB04 (HEX) | |
| DIMENSIONS (HxWxD) | 75"x32"x32" |
| WEIGHT (EMPTY) | 625 lbs (approx.) |



CABINET DETAIL

NO SCALE 1

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



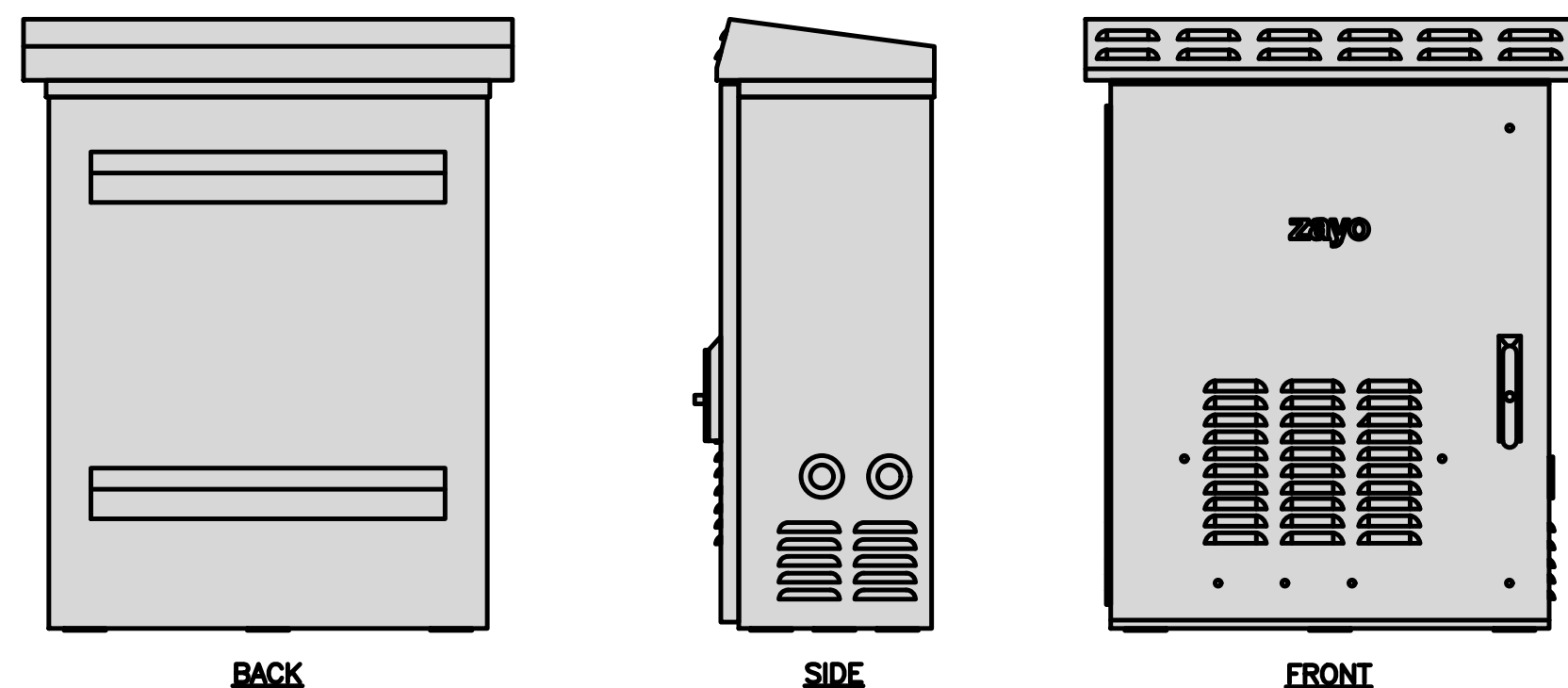
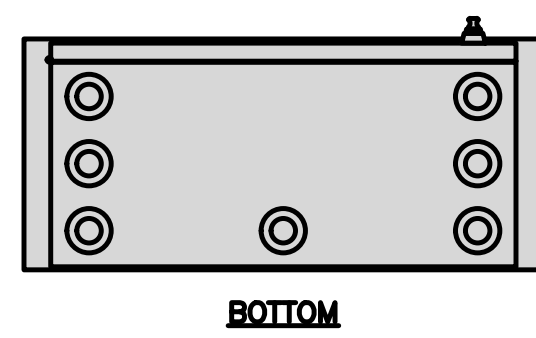
POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE 2

NOT USED

NO SCALE 3

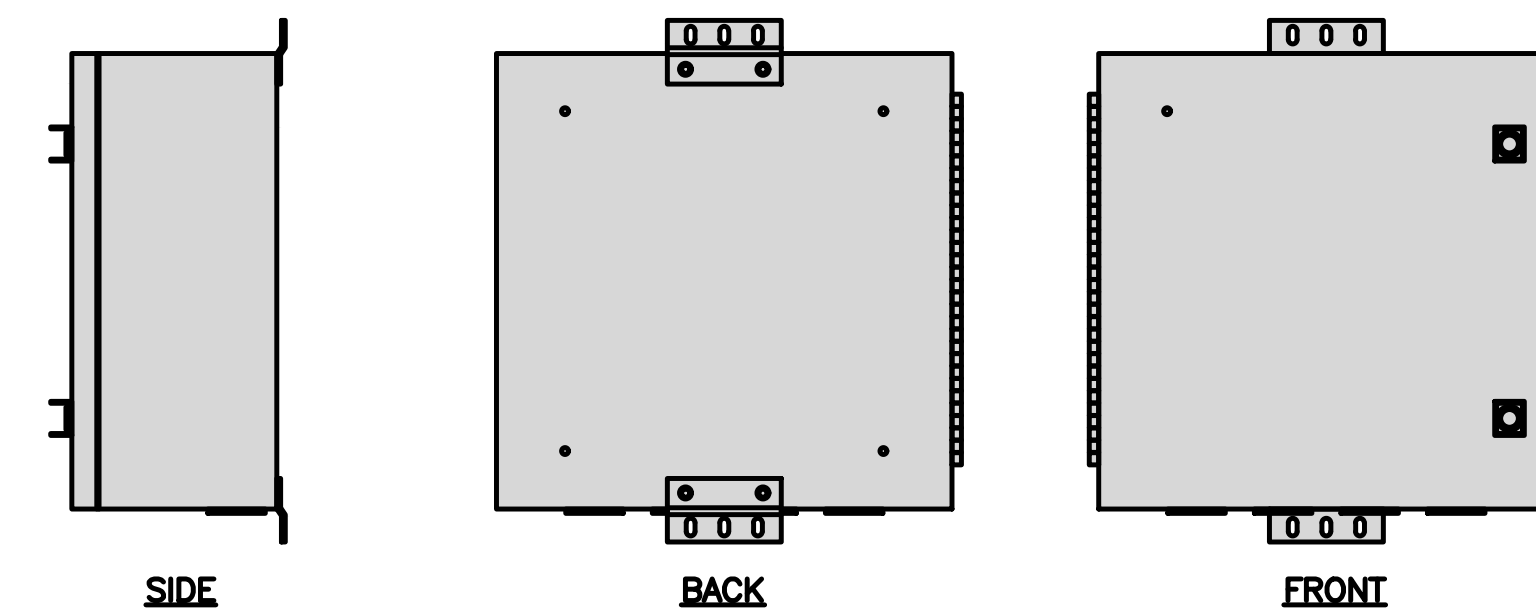
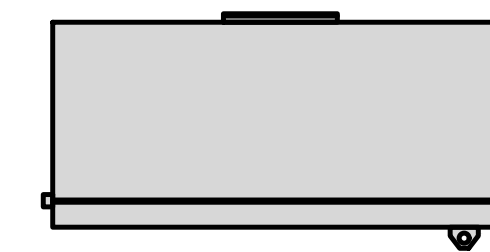
| | |
|---|-----------------|
| ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE | |
| DIMENSIONS (HxWxD) | 36.1"x29"x12.9" |
| WEIGHT | 85 lbs |



FIBER NID ENCLOSURE DETAIL

NO SCALE 5

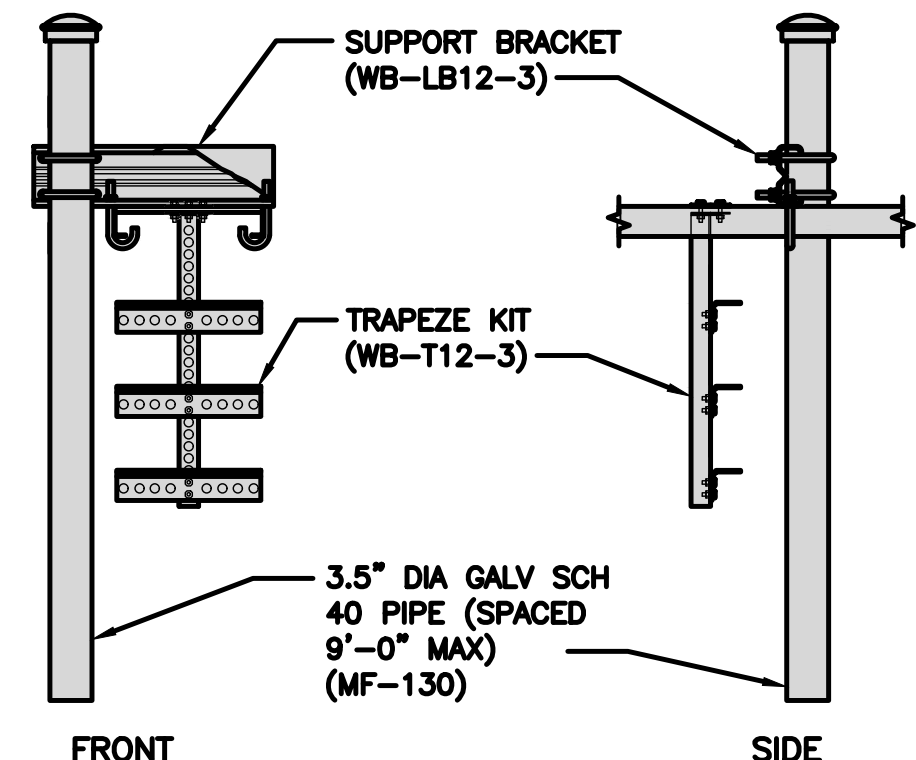
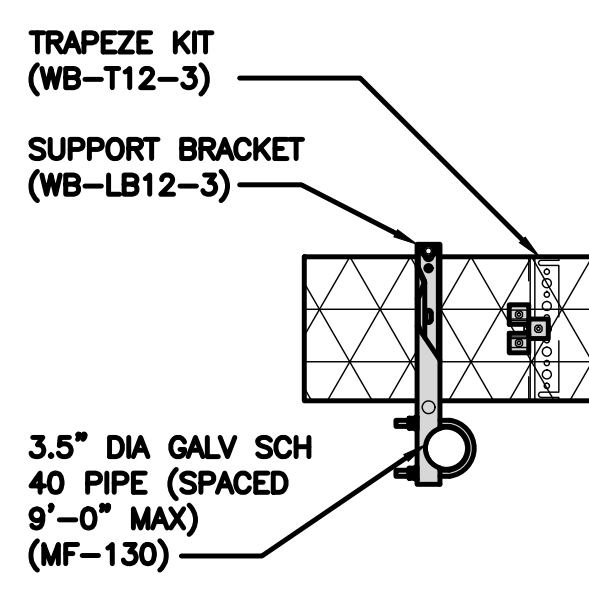
| | |
|--|------------|
| CHARLES CFIT-PF2020DSH1 FIBER TELCO ENCLOSURE | |
| ENCLOSURE DIMS (HxWxD) | 20"x20"x9" |
| ENCLOSURE WEIGHT | 20 lbs |
| MOUNTING | WALL |
| COMPLIANCE | TYPE 4 |



FIBER TELCO ENCLOSURE DETAIL

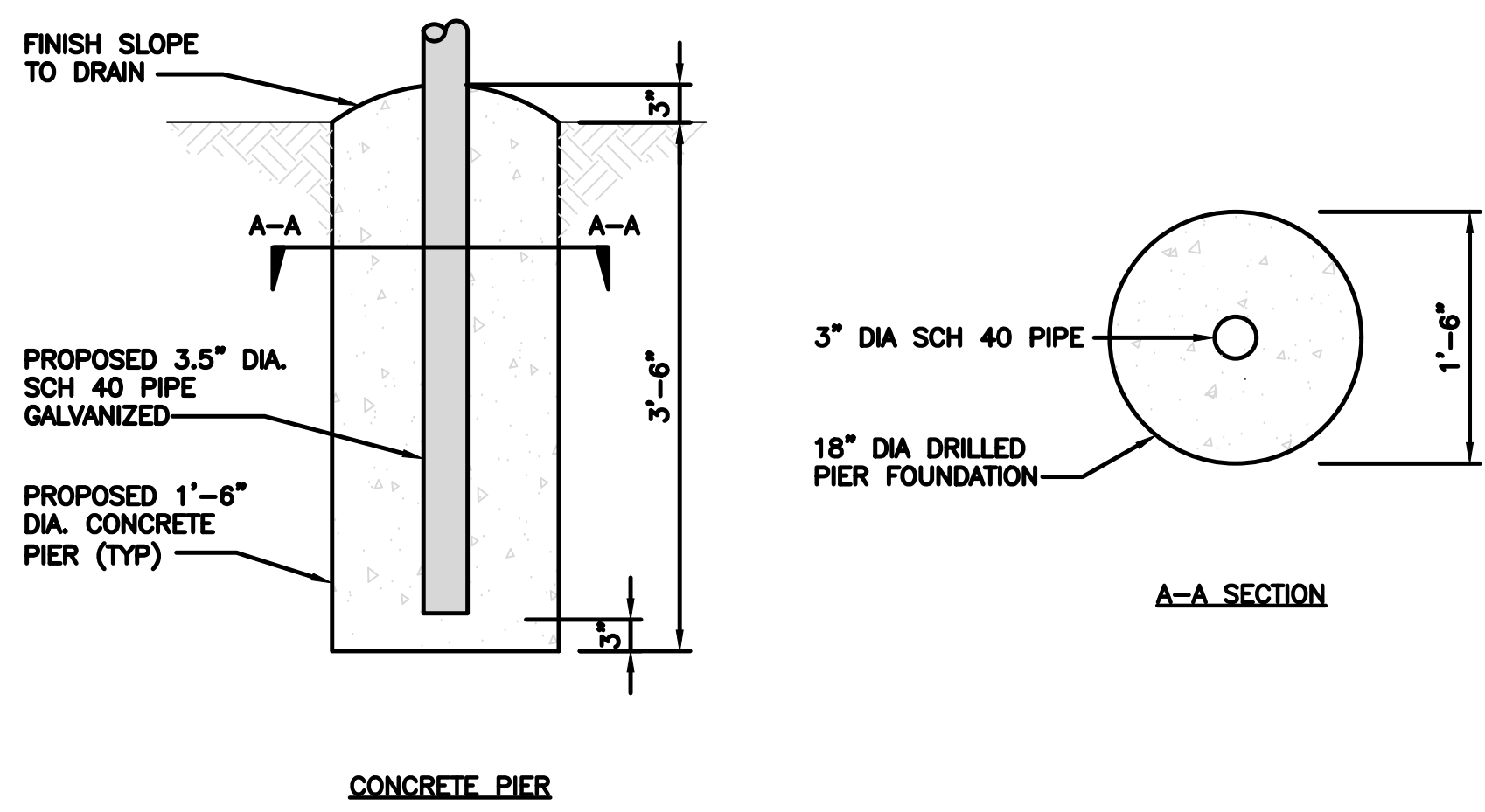
NO SCALE 6

| | | |
|---|-----------|--|
| COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT | | INCLUDED PRODUCTS: WB-T12-3 TRAPEZE KIT, 3 RUNGS WB-LB12-3 SUPPORT BRACKET MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4" |
| DIMENSIONS (HxL) | 160"x10' | |
| WEIGHT/ VOLUME | 325.0 LBS | |
| CABLE RUN (QTY) | 12 | |



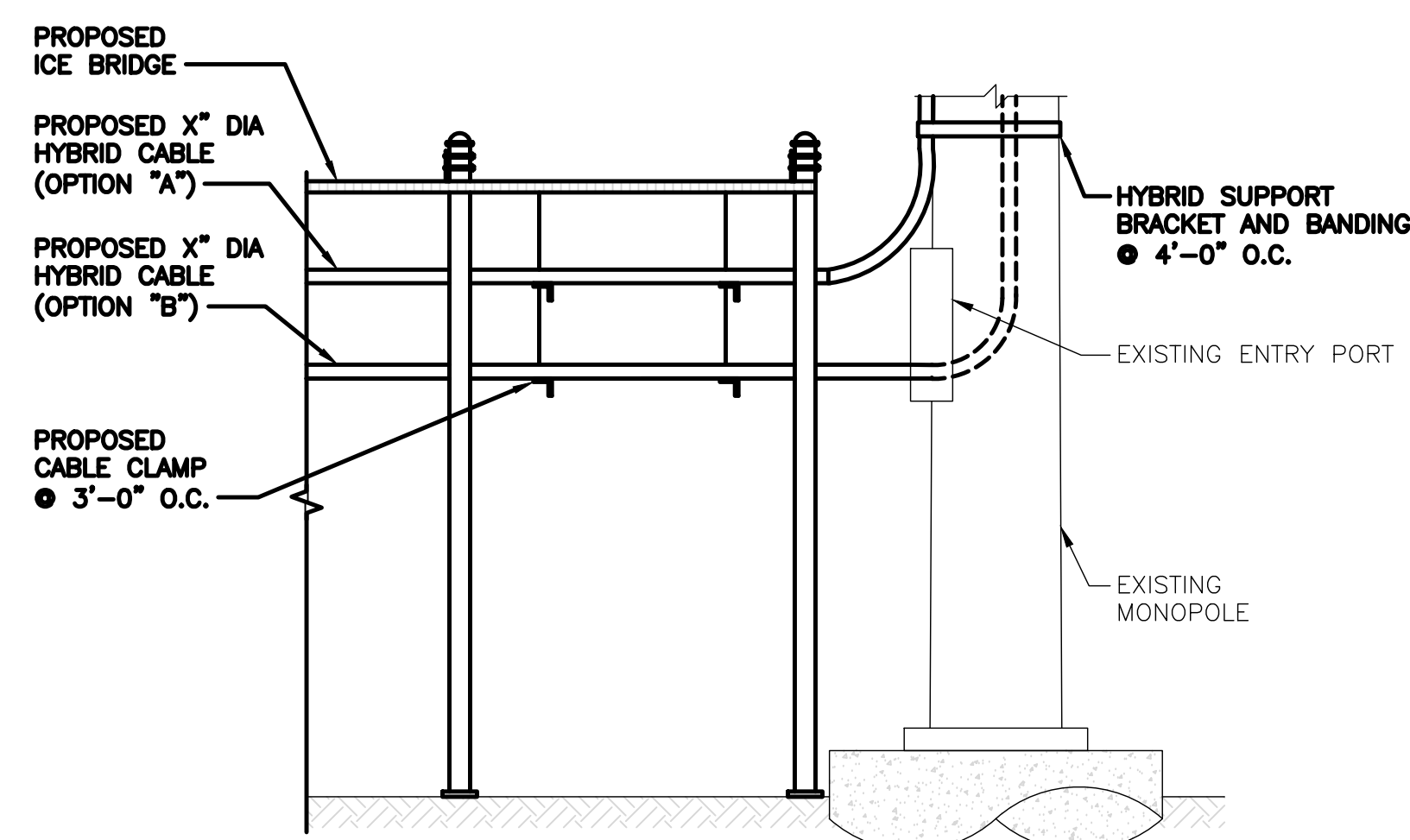
ICE BRIDGE DETAIL

NO SCALE 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE 8



HYBRID CABLE RUN

NO SCALE 9



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CONSTRUCTION DOCUMENTS

| SUBMITTALS | | |
|------------|------------|-------------------------|
| REV | DATE | DESCRIPTION |
| A | 08/13/2022 | ISSUED FOR REVIEW |
| 0 | 12/21/2022 | ISSUED FOR CONSTRUCTION |

A&E PROJECT NUMBER

NJJer02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

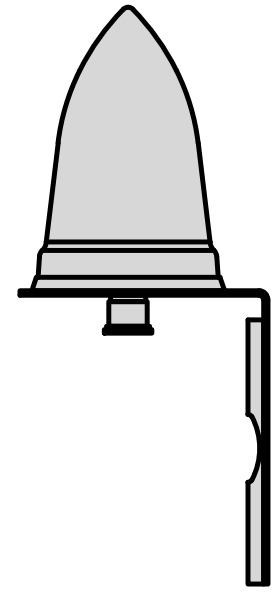
NJJer02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
EQUIPMENT DETAILS

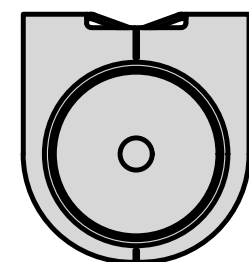
SHEET NUMBER

A-4

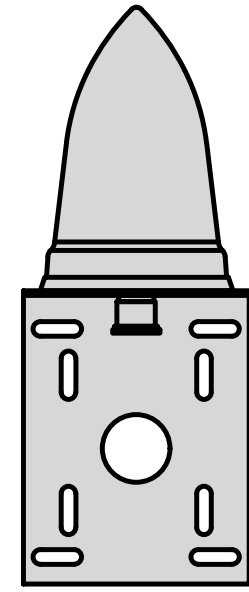
| | |
|--------------------------------------|------------------------|
| PCTEL GPSGL-TMG-SPI-40NCB | |
| DIMENSIONS (DIAxH) MM/INCH | 81x184mm 3.2"x7.25" |
| WEIGHT W/ACCESSORIES | 075 lbs |
| CONNECTOR | N-FEMALE |
| FREQUENCY RANGE | 1590 ± 30MHz |



BACK



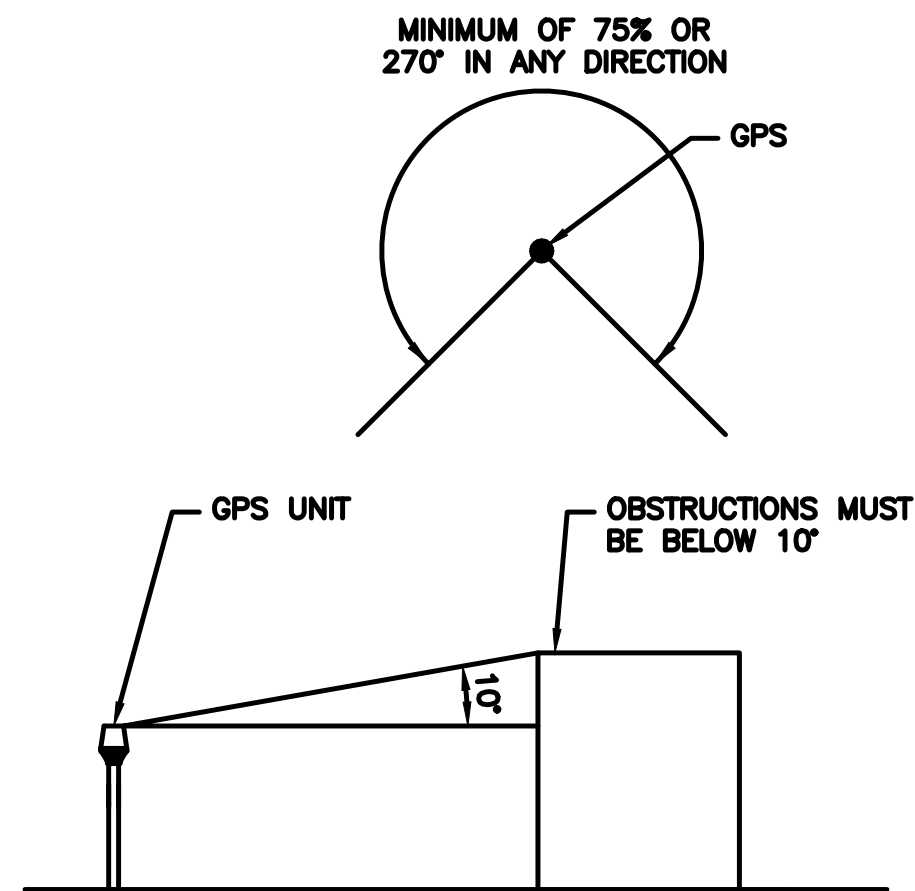
TOP



SIDE

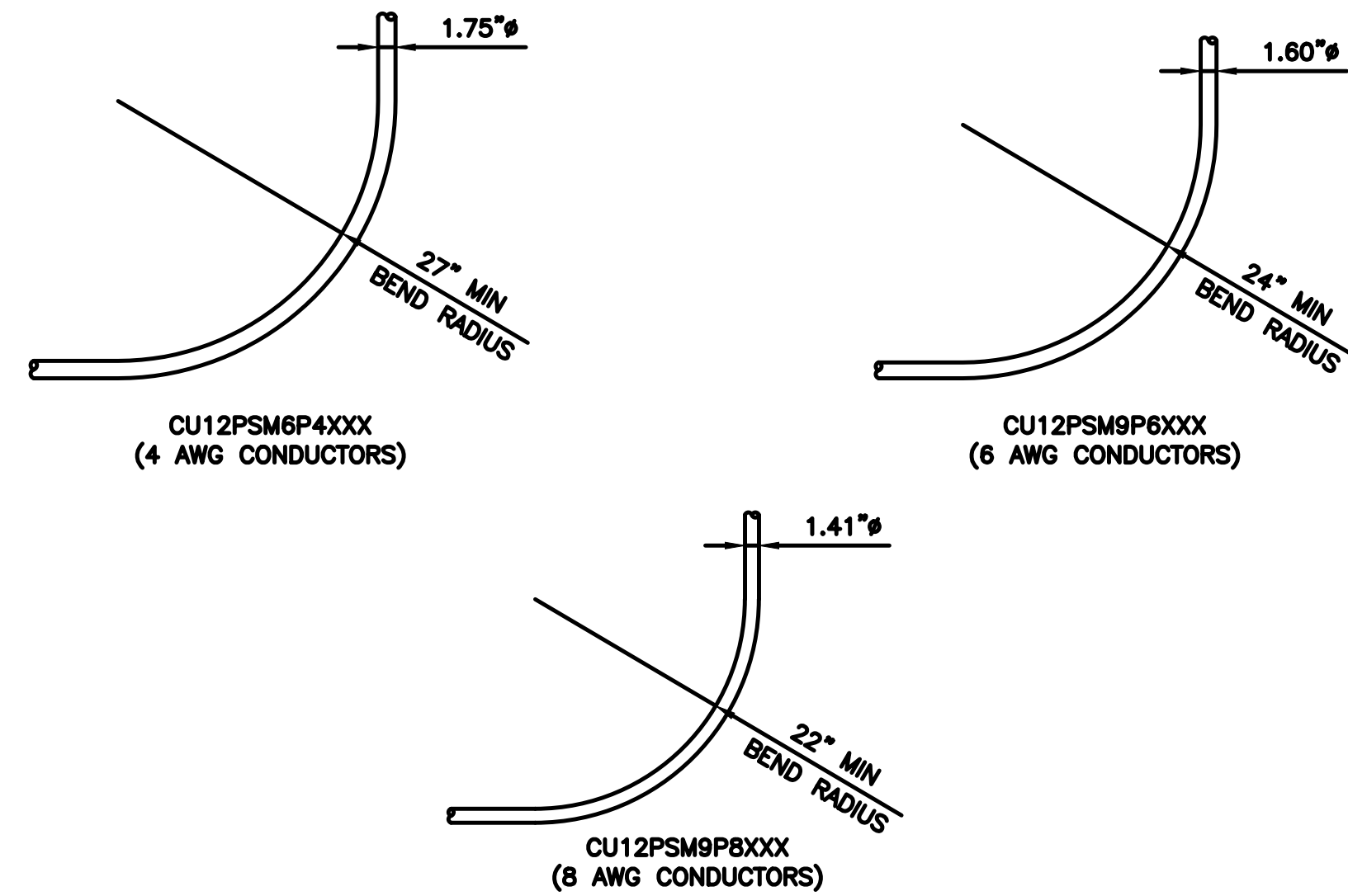
GPS DETAIL

NO SCALE 1



GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE 2

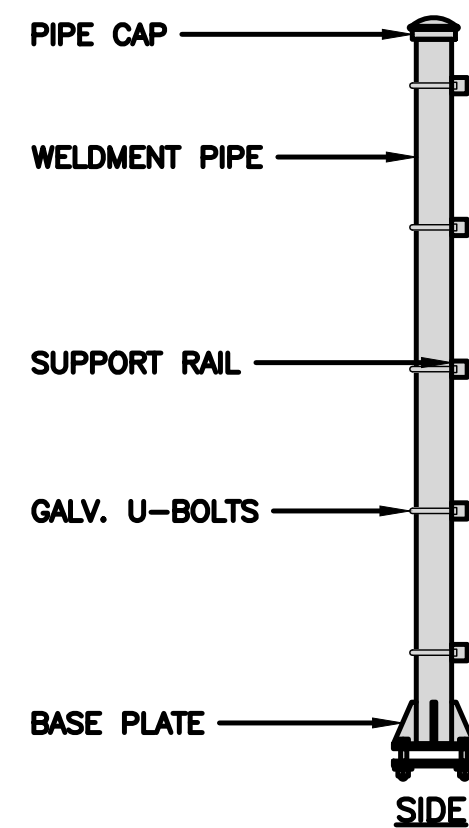


CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUS

NO SCALE 3

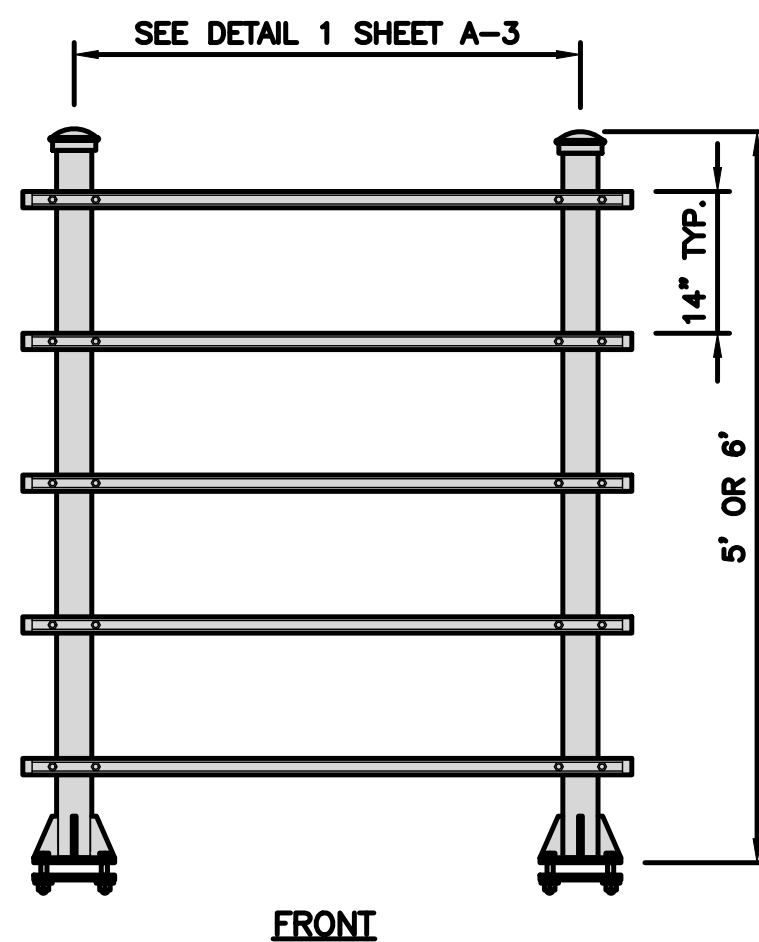
| | |
|--|------------|
| COMMSCOPE MTC4045HFLD H-FRAME | |
| UNISTRUT/SUPPORT RAILS QTY | 5 |
| WEIGHT | ±59.74 lbs |

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



H-FRAME DETAIL

NO SCALE 4



NOT USED

NO SCALE 5

NOT USED

NO SCALE 6

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9

dish
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DEVELOPMENT

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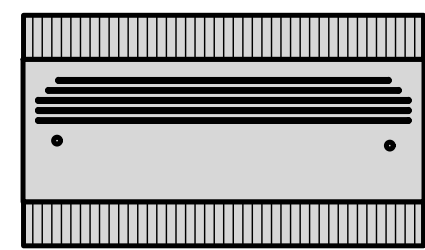
NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
EQUIPMENT DETAILS

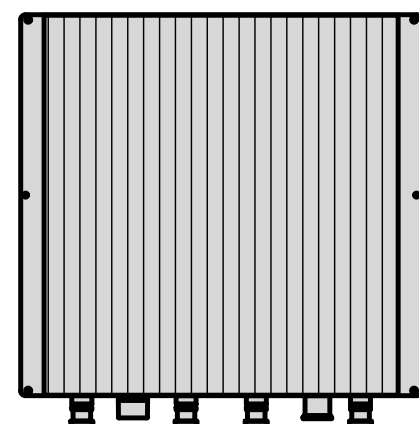
SHEET NUMBER

A-5

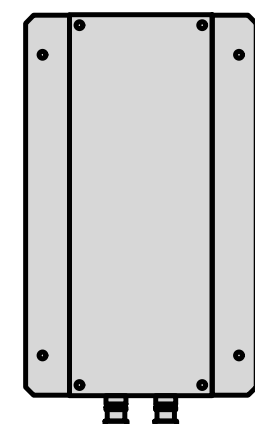
| FUJITSU TRIPLE BAND TA08025-B605 | |
|-------------------------------------|------------------------|
| DIMENSIONS (HxWxD) | 14.9"x15.7"x9" |
| WEIGHT | 74.95 lbs |
| CONNECTOR TYPE | 4.3-10 RF CONNECTOR |
| POWER SUPPLY | DC -58~-36V |



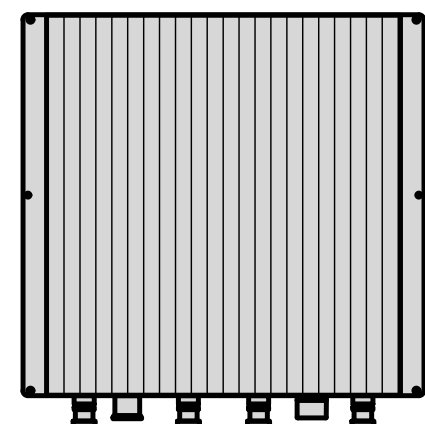
PLAN



BACK



SIDE



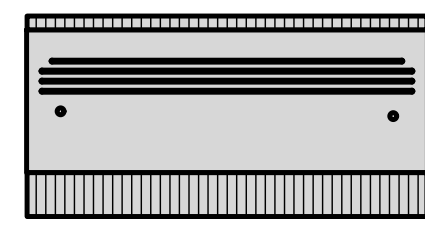
FRONT

RRH DETAIL

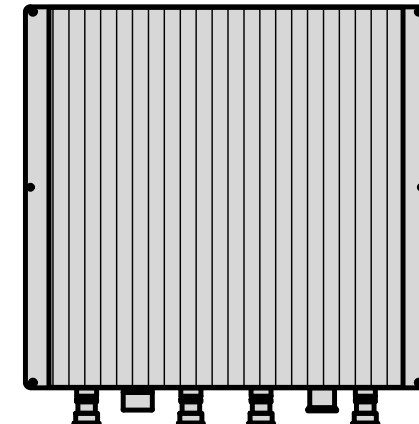
NO SCALE

1

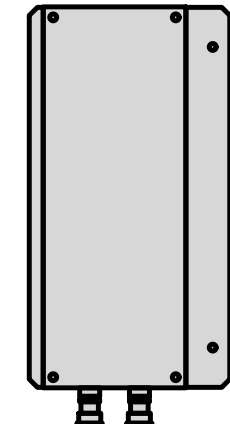
| FUJITSU DUAL BAND TA08025-B604 | |
|-----------------------------------|------------------------|
| DIMENSIONS (HxWxD) | 14.9"x15.7"x7.8" |
| WEIGHT | 63.9 lbs |
| CONNECTOR TYPE | 4.3-10 RF CONNECTOR |
| POWER SUPPLY | DC -58~-36V |



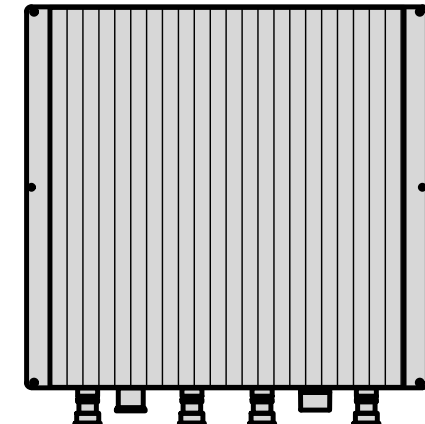
PLAN



BACK



SIDE



FRONT

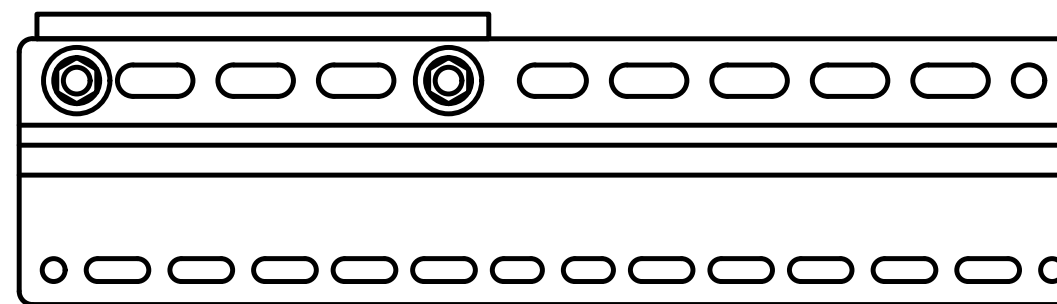
RRH DETAIL

NO SCALE

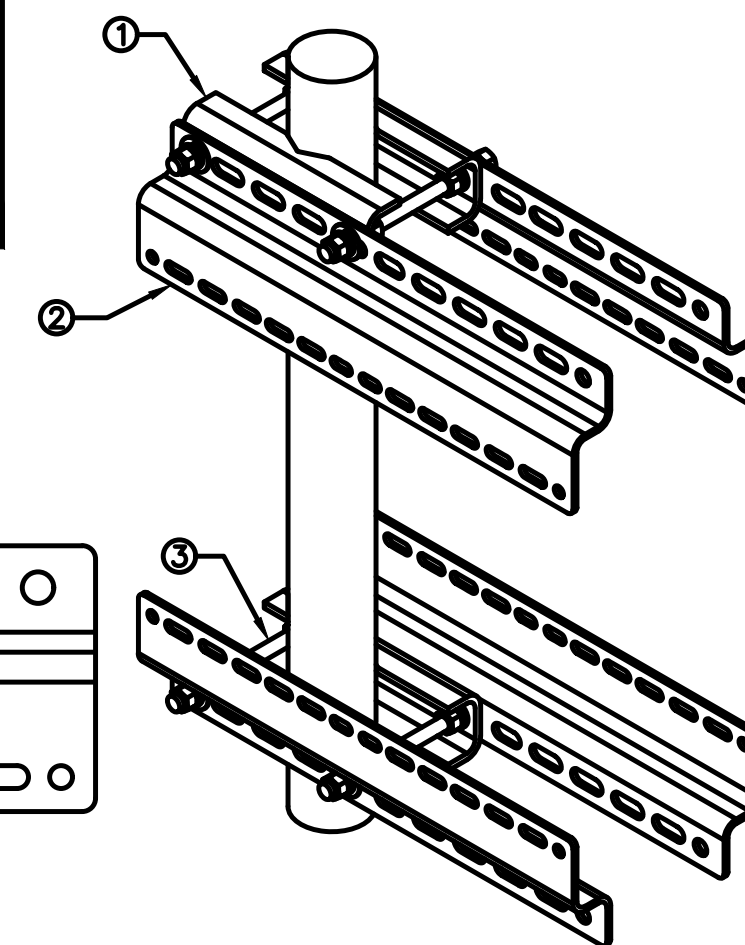
2

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

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



NOTE:
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APPROVED EQUIVALENT

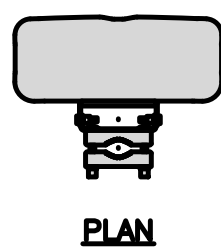


RRH MOUNT DETAIL

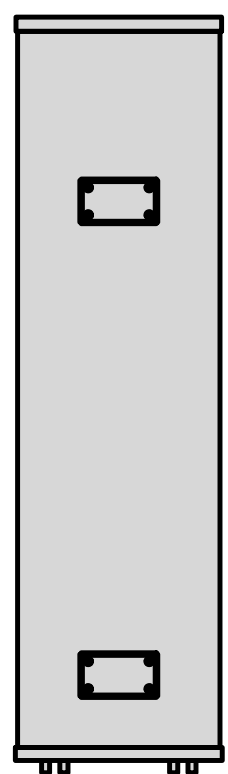
NO SCALE

3

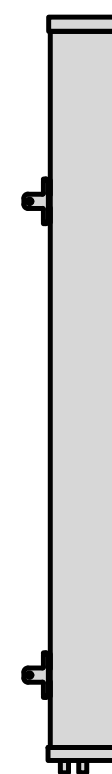
| COMMSCOPE FFVV-65B-R2 | |
|---------------------------|--------------------------------|
| DIMENSIONS (HxWxD)(MM/IN) | 1828x498x197 72"x19.6"x7.8" |
| RF CONNECTOR INTERFACE | 4.3-10 FEMALE |
| WEIGHT | 70.8 lbs |
| WEIGHT WITH BRACKETS | 98.1 lbs |



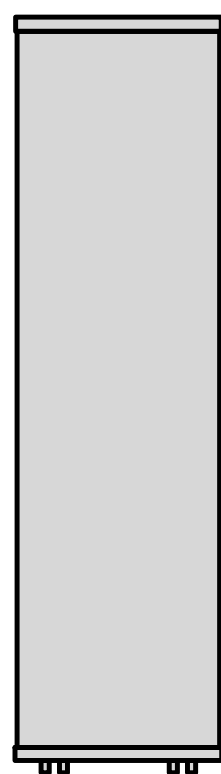
PLAN



BACK



SIDE



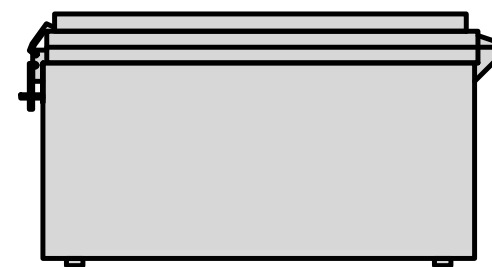
FRONT

ANTENNA DETAIL

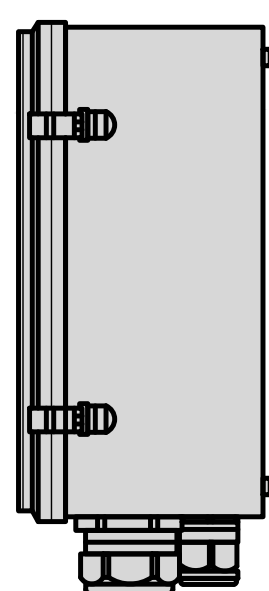
NO SCALE

4

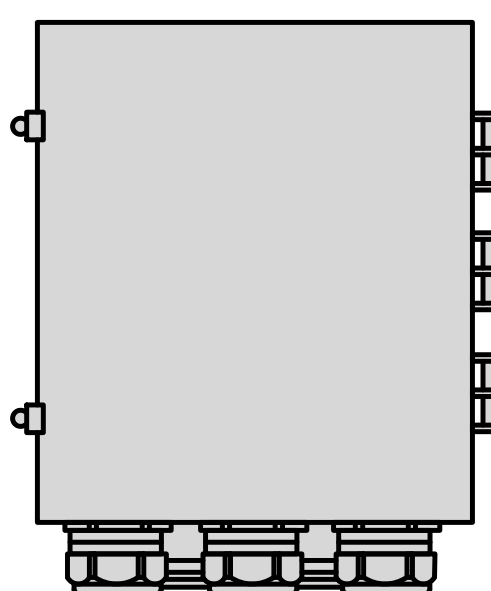
| RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP) | |
|--|---------------------|
| DIMENSIONS (HxWxD) | 18.98"x14.39"x8.15" |
| WEIGHT | 21.82 LBS |



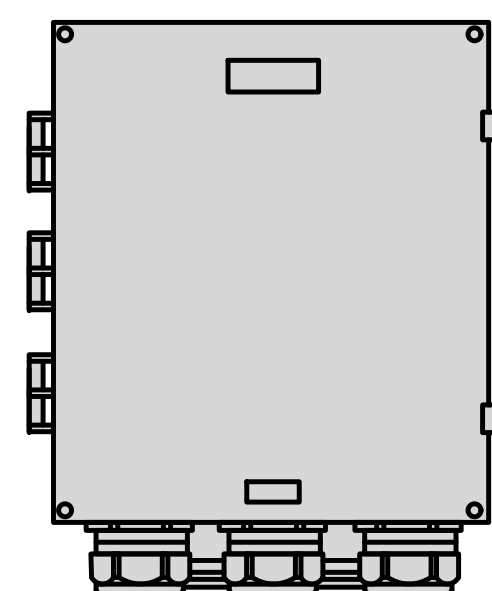
PLAN



SIDE



BACK



FRONT

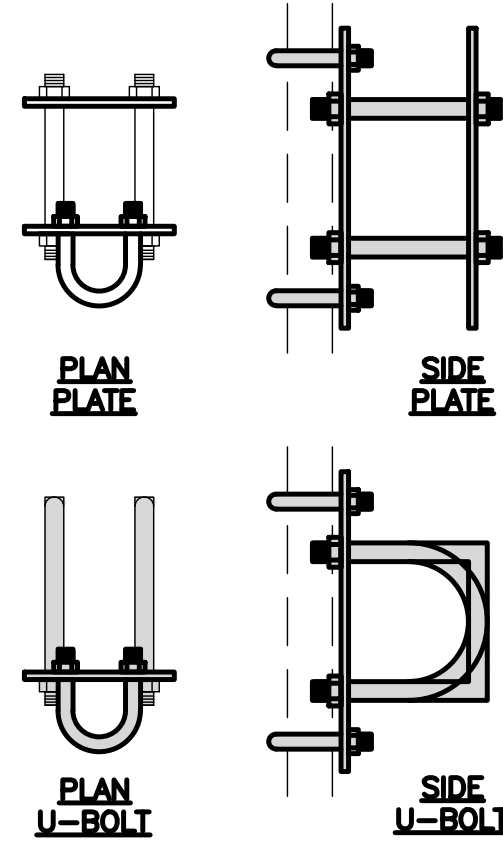
SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

7

| COMMSCOPE XP-2040 CROSSOVER PLATE | |
|--------------------------------------|---------|
| DIMENSIONS (HxW) | 10"x12" |
| WEIGHT | 11 lbs |

NOTE:
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APPROVED EQUIVALENT



PLAN PLATE

SIDE PLATE

PLAN U-BOLT

SIDE U-BOLT

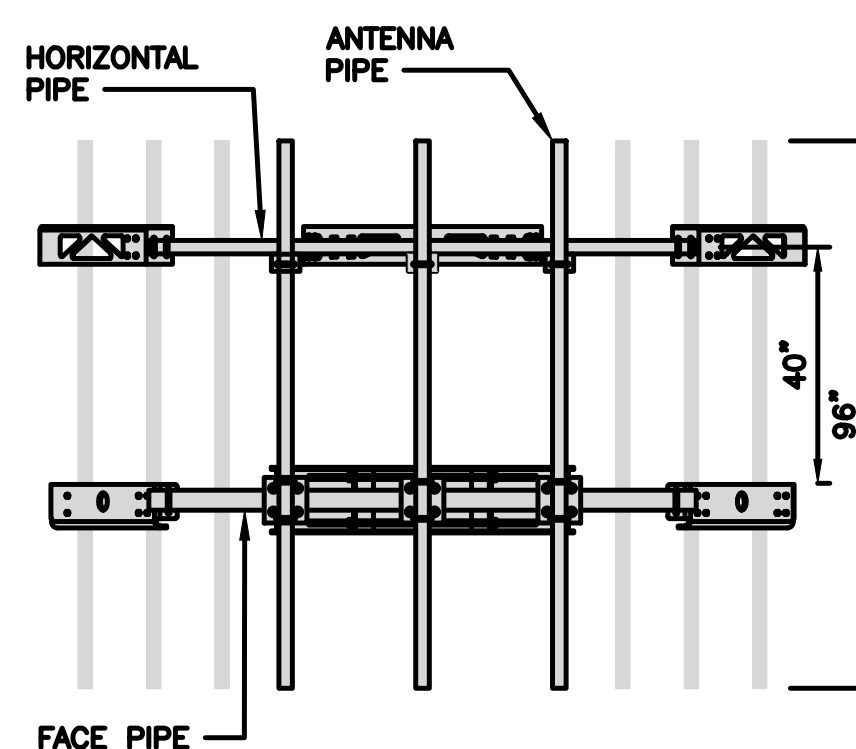
RRH/OVP MOUNT DETAIL

NO SCALE

8

| COMMSCOPE MC-PK8-DSH | |
|-------------------------|-------------|
| FACE WIDTH | 96" |
| WEIGHT | 1373.08 lbs |
| NOTE: 15" TO 38" O.D. | |

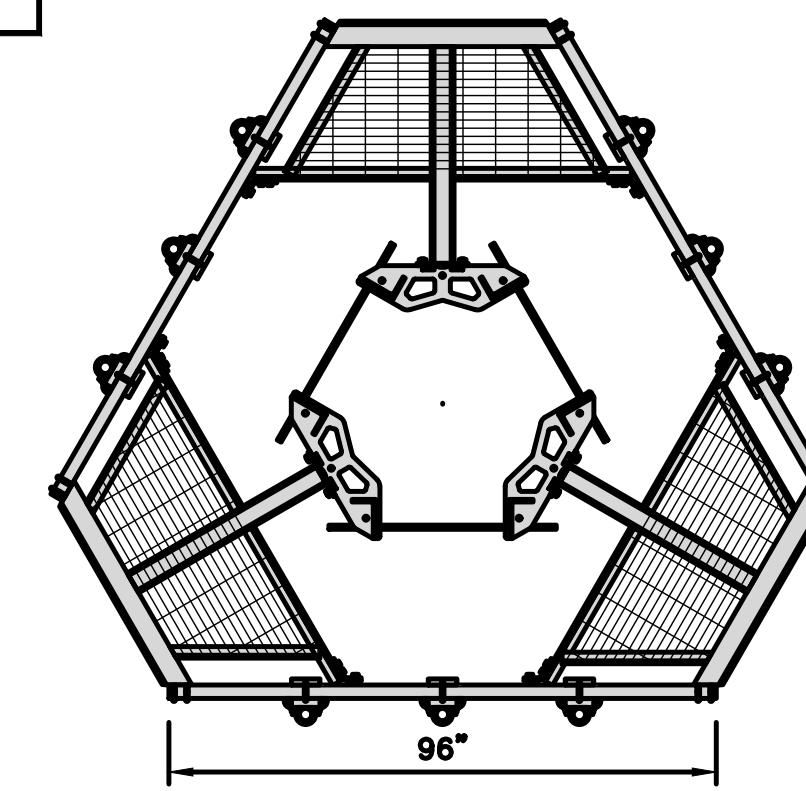
NOTE:
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HORIZONTAL PIPE

ANTENNA PIPE

FACE PIPE



ANTENNA PLATFORM DETAIL

NO SCALE

9

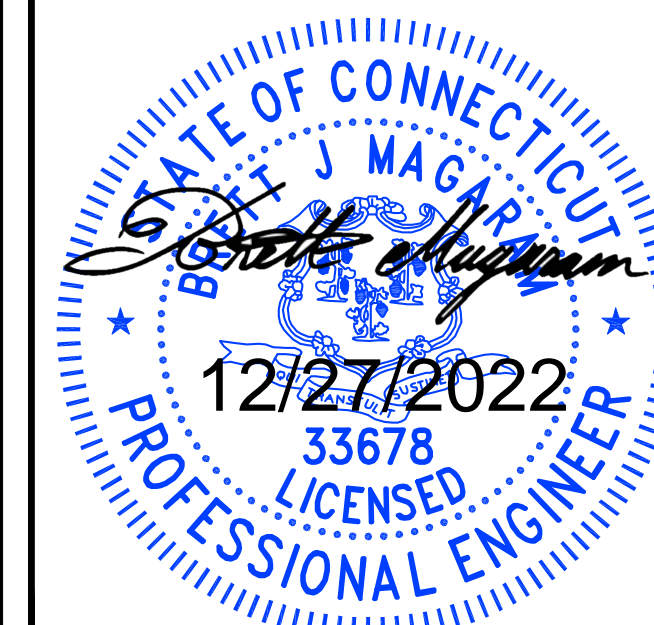
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wireless.

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MK

DEVELOPMENT

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A&E PROJECT NUMBER

NJJer02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJer02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

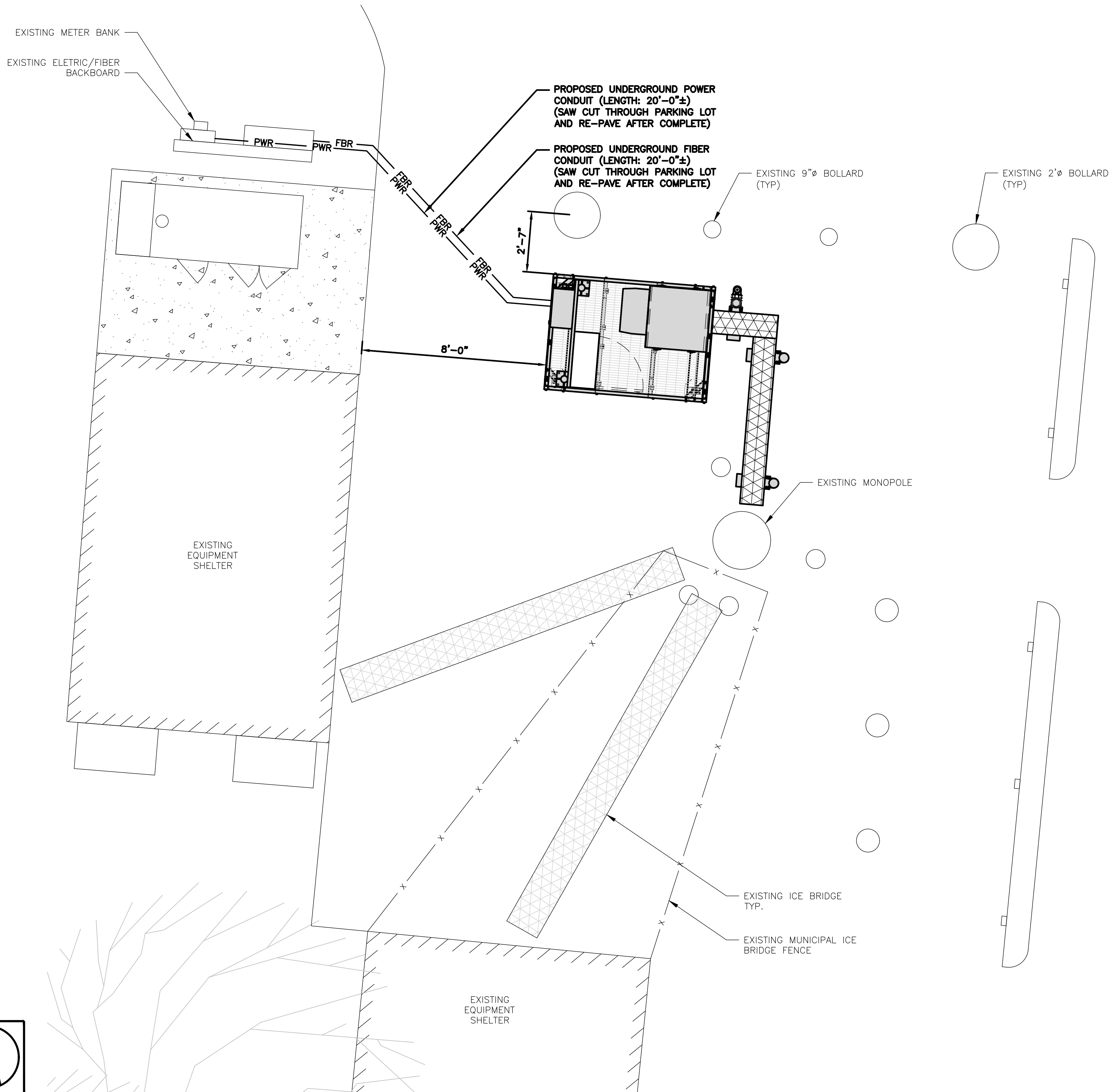
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

A-6

NOTES

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



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.

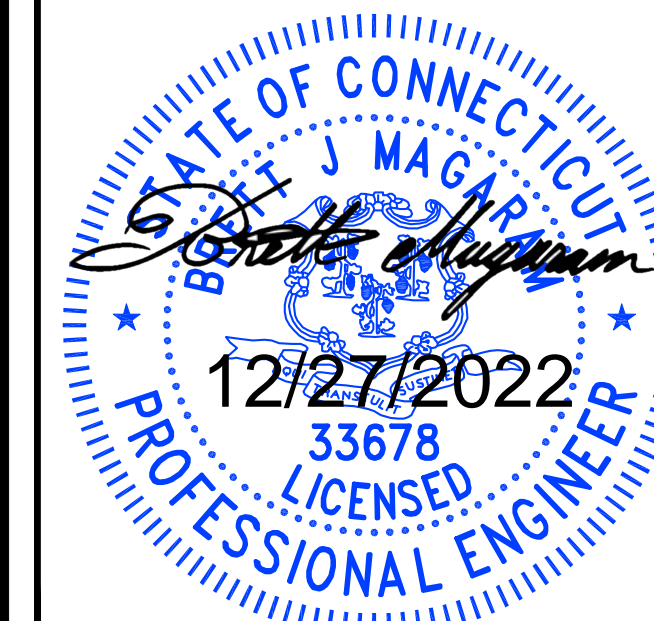
1. CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTOR'S FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, 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



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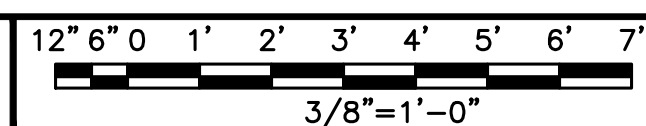
DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

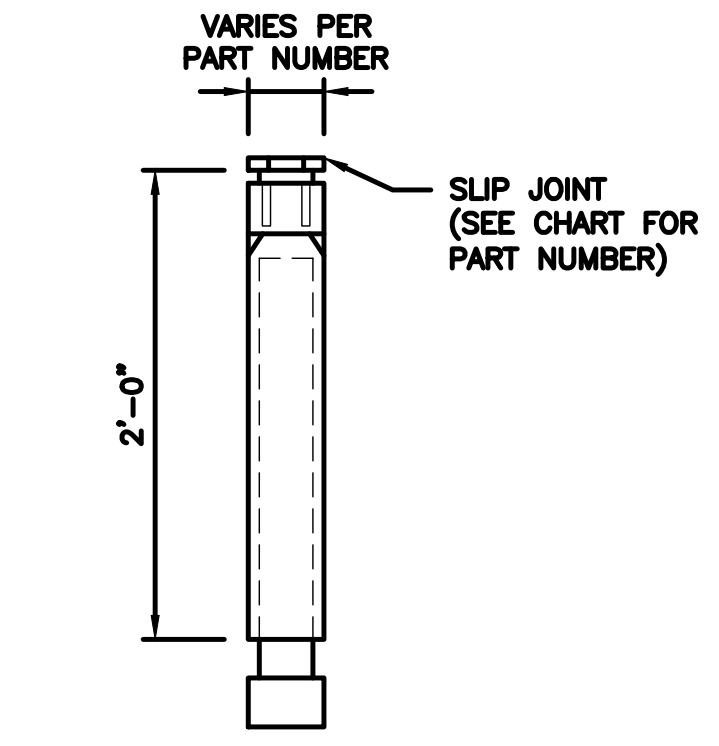
SHEET TITLE
ELECTRICAL/FIBER ROUTE
PLAN AND NOTES

SHEET NUMBER

E-1



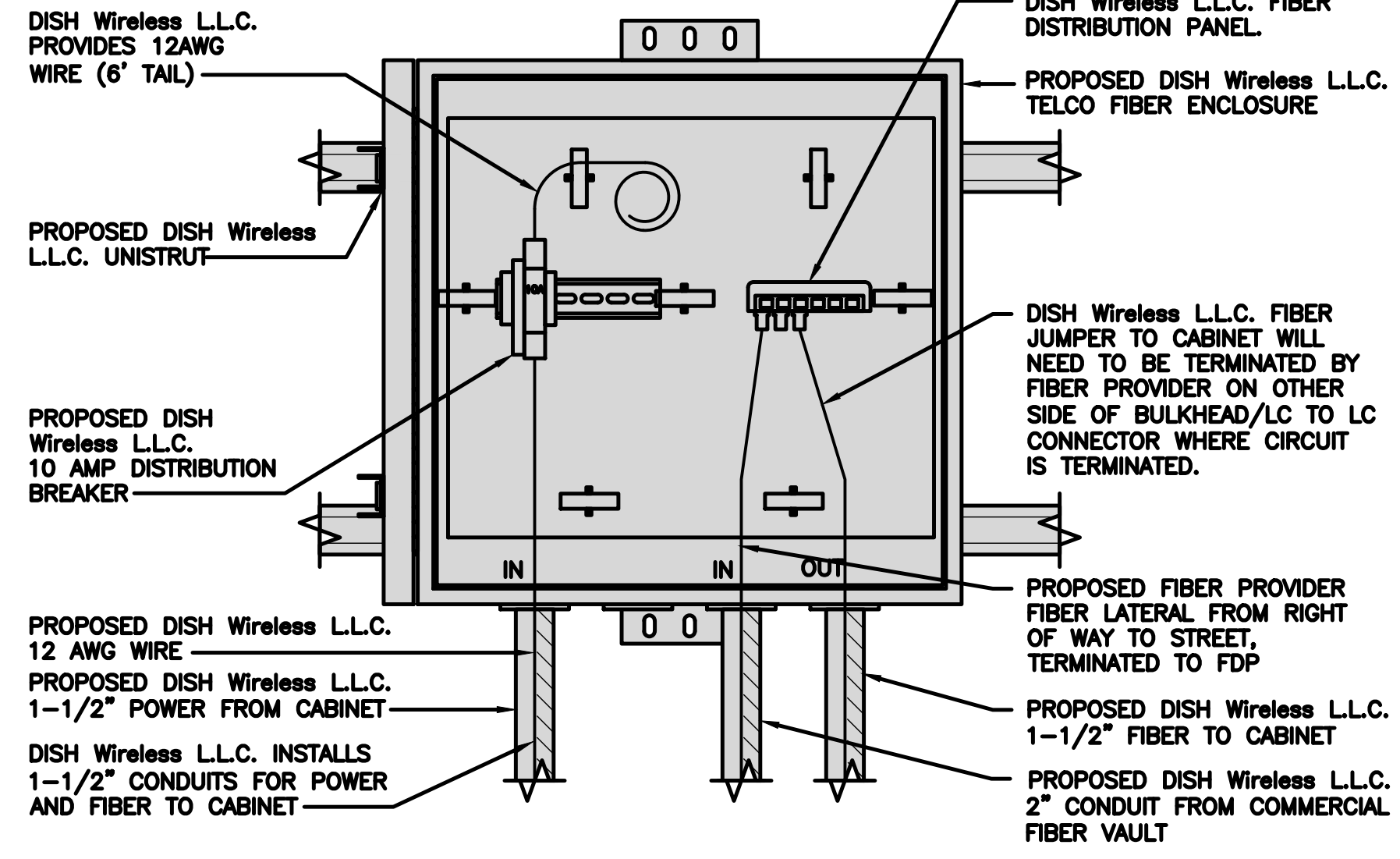
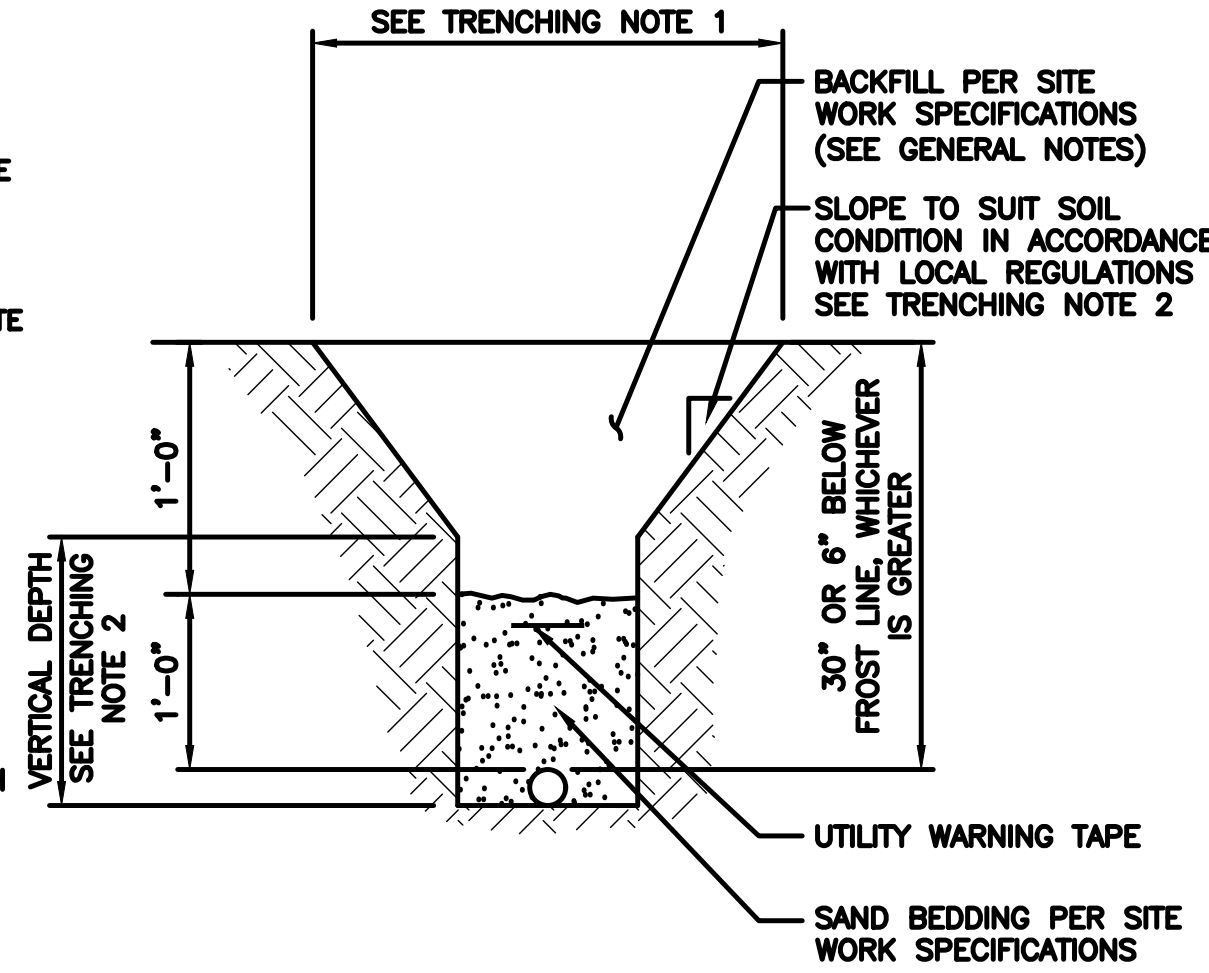
| CARLON EXPANSION FITTINGS | | | | |
|---------------------------|---------------------------------|--------|--------------|---------------|
| COUPLING END PART# | MALE TERMINAL ADAPTER END PART# | SIZE | STD CTN QTY. | TRAVEL LENGTH |
| E945D | E945DX | 1/2" | 20 | 4" |
| E945E | E945EX | 3/4" | 15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



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

TRENCHING NOTES

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



EXPANSION JOINT DETAIL

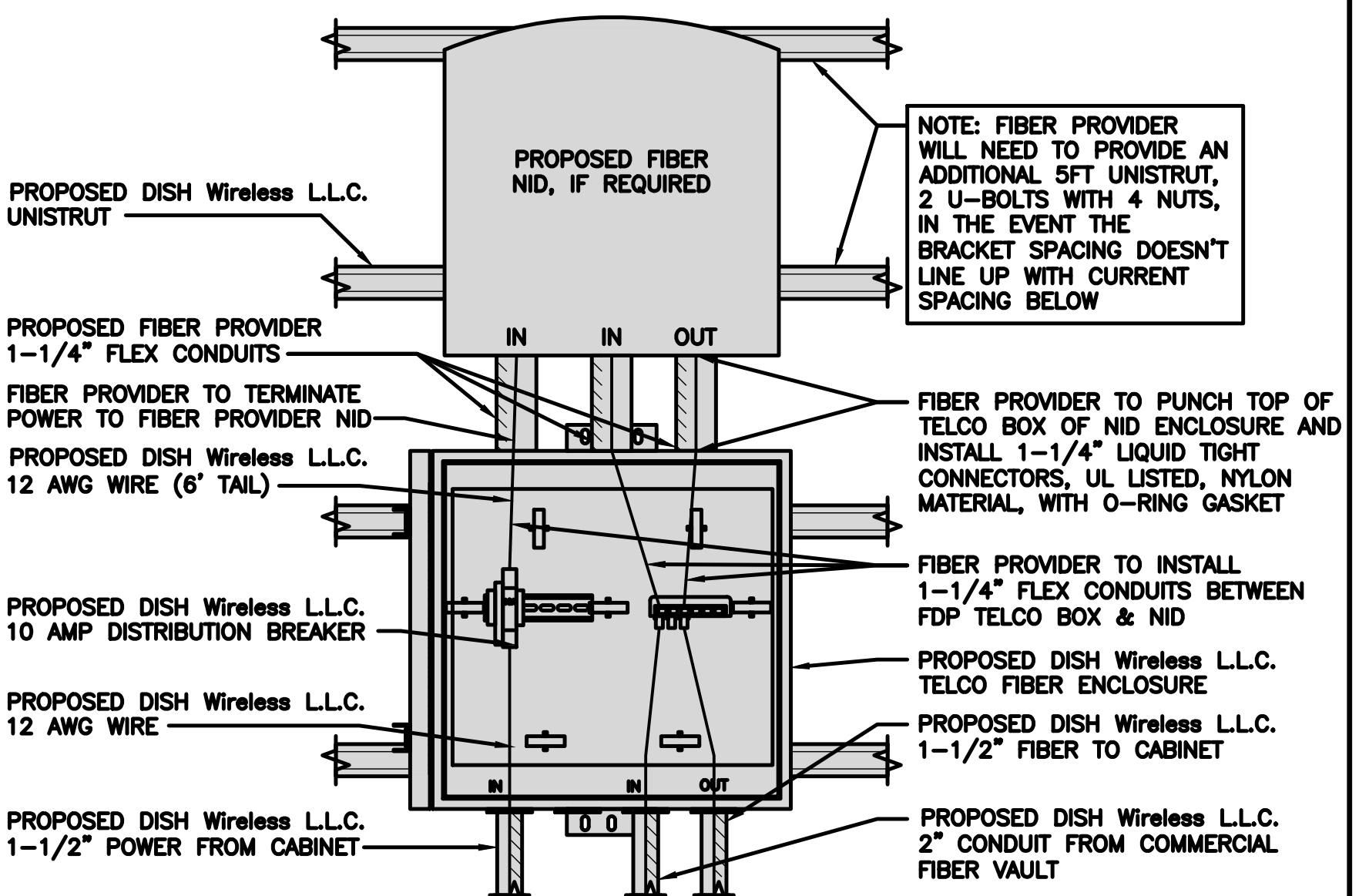
NO SCALE 1

TYPICAL UNDERGROUND TRENCH DETAIL

NO SCALE 2

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 8

NOT USED

NO SCALE 9



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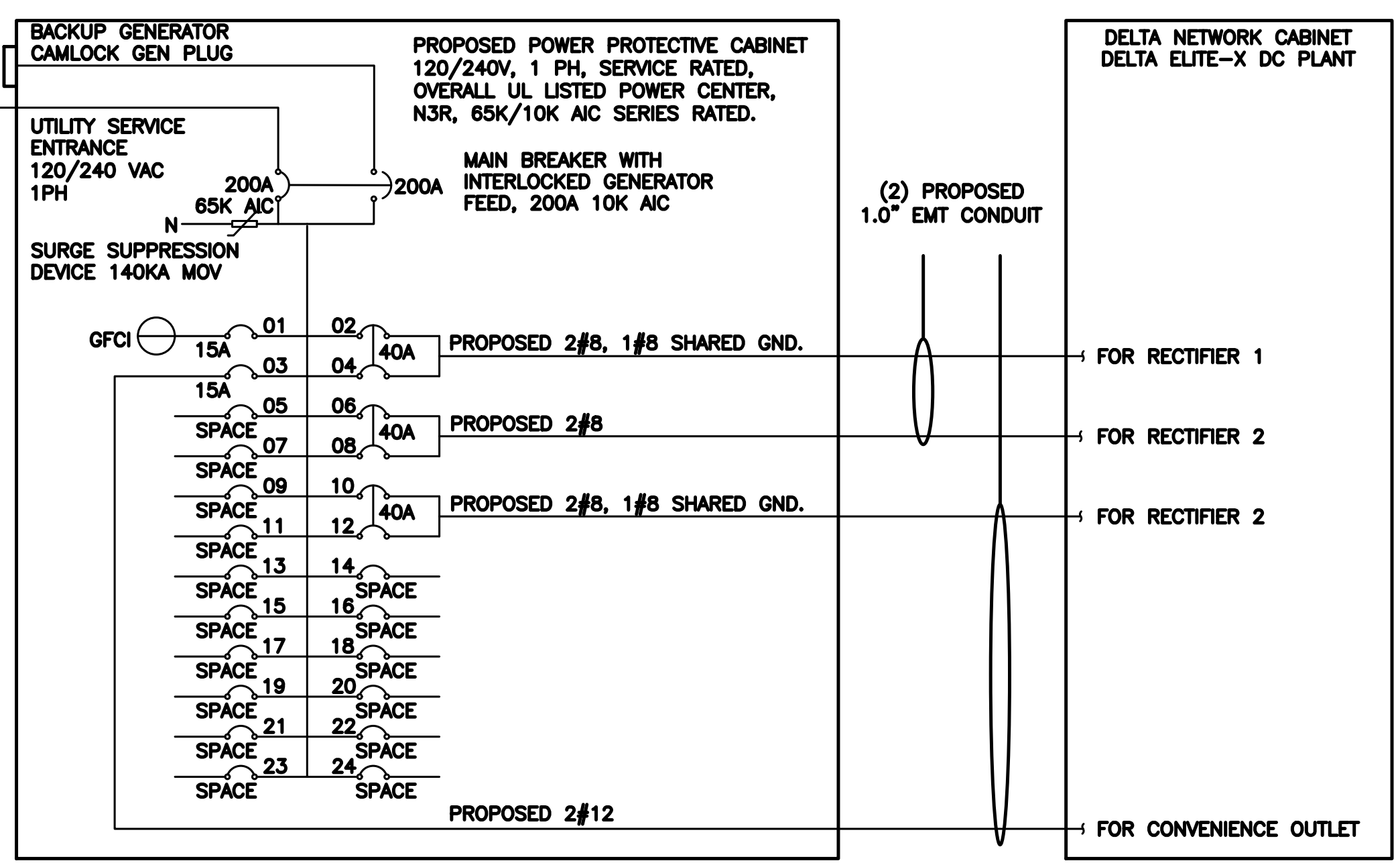
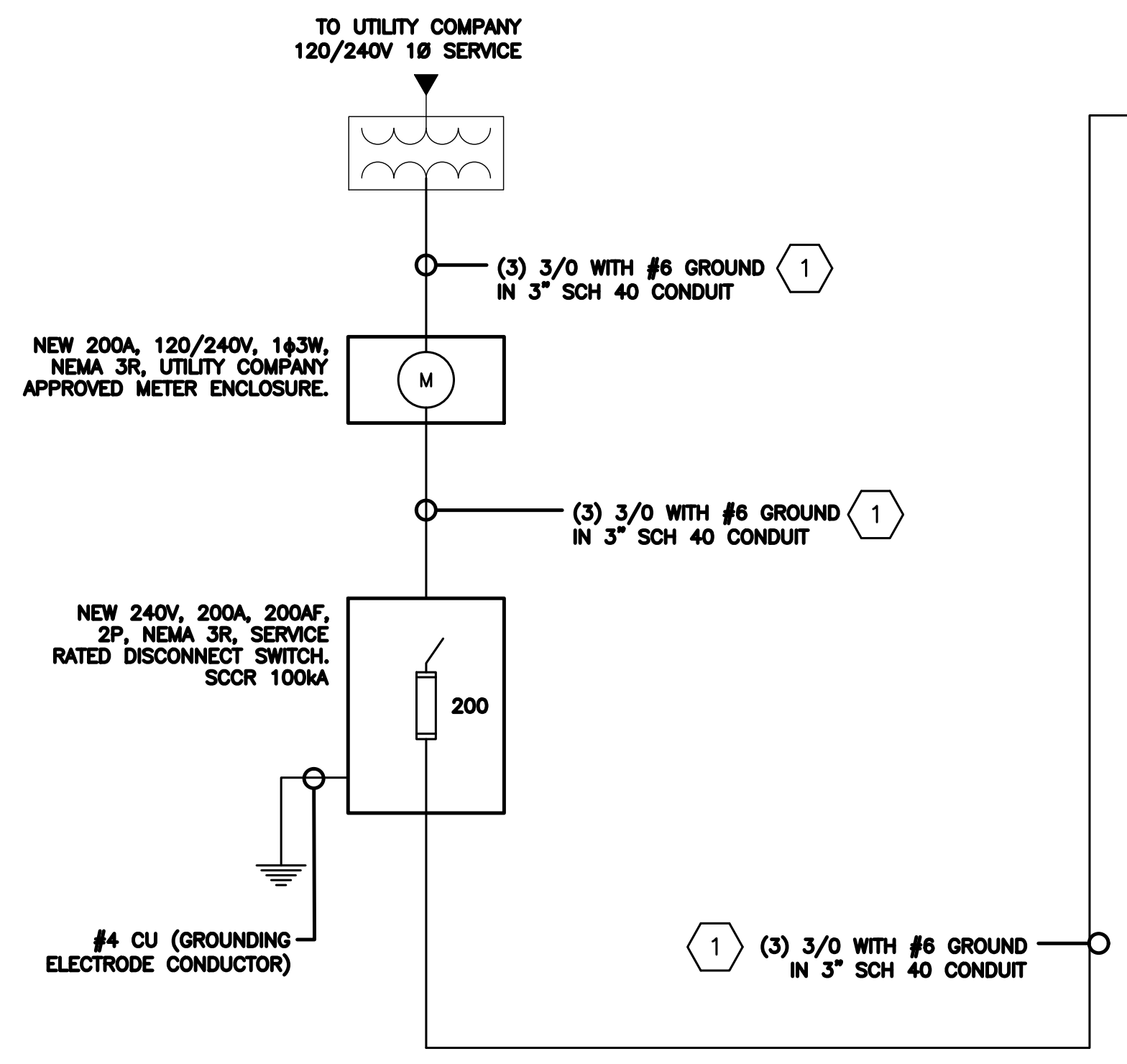
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PROJECT INFORMATION
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200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
ELECTRICAL
DETAILS

SHEET NUMBER

E-2



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

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

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

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

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

NOTES

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

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

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

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

(2 CONDUIT): USING THWN-2, CU.
RECTIFIER CONDUCTORS
#8 - 0.0366 SQ. IN X 4 = 0.1464 SQ. IN
#8 - 0.0366 SQ. IN X 1 = 0.0366 SQ. IN <GROUND
TOTAL = 0.1830 SQ. IN

RECTIFIER & GFCI CONDUCTORS
#12 - 0.0133 SQ. IN X 2 = 0.0266 SQ. IN
#8 - 0.0366 SQ. IN X 2 = 0.0732 SQ. IN
#8 - 0.0366 SQ. IN X 1 = 0.0366 SQ. IN <GROUND
TOTAL = 0.1364 SQ. IN

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

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.
3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.8544 SQ. IN

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

(1) PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, AL.
250kcmil AL - 0.3970 SQ. IN X 3 = 1.191 SQ. IN
#4 AL - 0.0824 SQ. IN X 1 = 0.0824 SQ. IN <GROUND
TOTAL = 1.2734 SQ. IN

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



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CONSTRUCTION DOCUMENTS

SUBMITTALS

| REV | DATE | DESCRIPTION |
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| A | 09/13/2022 | ISSUED FOR REVIEW |
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A&E PROJECT NUMBER
NJJER02052B

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

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

SHEET NUMBER
E-3

PPC ONE-LINE DIAGRAM

NO SCALE 1

| PANEL NAME | | LOCATION | | VOLTAGE: 240/120 1Ø MAIN C/B: 200 AMPS BUS RATING: 200 AMPS | | | | MOUNTING/ENCLOSURE: SURFACE/NEMA 3R AVAIL. FAULT CURRENT: SHORT CIRCUIT RATING: 65,000 / 10,000 SERIES RATED | | | | | |
|-------------|----------------|--------------------|--------------------|---|-----|---------|------|--|------|-------------|------|----------------|------------|
| DELTA | | EQUIPMENT PLATFORM | | | | | | | | | | | |
| AMPS POLES | WIRE & CONDUIT | TYPE | DESCRIPTION | KVA | CKT | A | B | CKT | KVA | DESCRIPTION | TYPE | WIRE & CONDUIT | AMPS POLES |
| 15/1 | 2 #12, 1 #12G | R | INTERNAL GFCI | 0.18 | 1 | 1.68 | 2 | 1.50 | | RECTIFIER | EQ | SEE ONE LINE | 40/2 |
| 15/1 | SEE ONE LINE | R | CONVENIENCE OUTLET | 0.18 | 3 | | 1.68 | 4 | 1.50 | | EQ | | |
| | | | SPACE | | 5 | 1.50 | | 6 | 1.50 | RECTIFIER | EQ | SEE ONE LINE | 40/2 |
| | | | SPACE | | 7 | | | 8 | 1.50 | | EQ | | |
| | | | SPACE | | 9 | 1.50 | | 10 | 1.50 | RECTIFIER | EQ | SEE ONE LINE | 40/2 |
| | | | SPACE | | 11 | | | 12 | 1.50 | | EQ | | |
| | | | SPACE | | 13 | | | 14 | | SPACE | | | |
| | | | SPACE | | 15 | | | 16 | | SPACE | | | |
| | | | SPACE | | 17 | | | 18 | | SPACE | | | |
| | | | SPACE | | 19 | | | 20 | | SPACE | | | |
| | | | SPACE | | 21 | | | 22 | | SPACE | | | |
| | | | SPACE | | 23 | | | 24 | | SPACE | | | |
| PHASED LOAD | | | | 4.7 | | | 4.7 | | | | | | |
| | | | | TOTAL CONNECTED LOAD | | 9.4 kVA | 39 A | | | | | | |
| | | | | TOTAL DEMAND LOAD | | 9.4 kVA | 39 A | | | | | | |

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

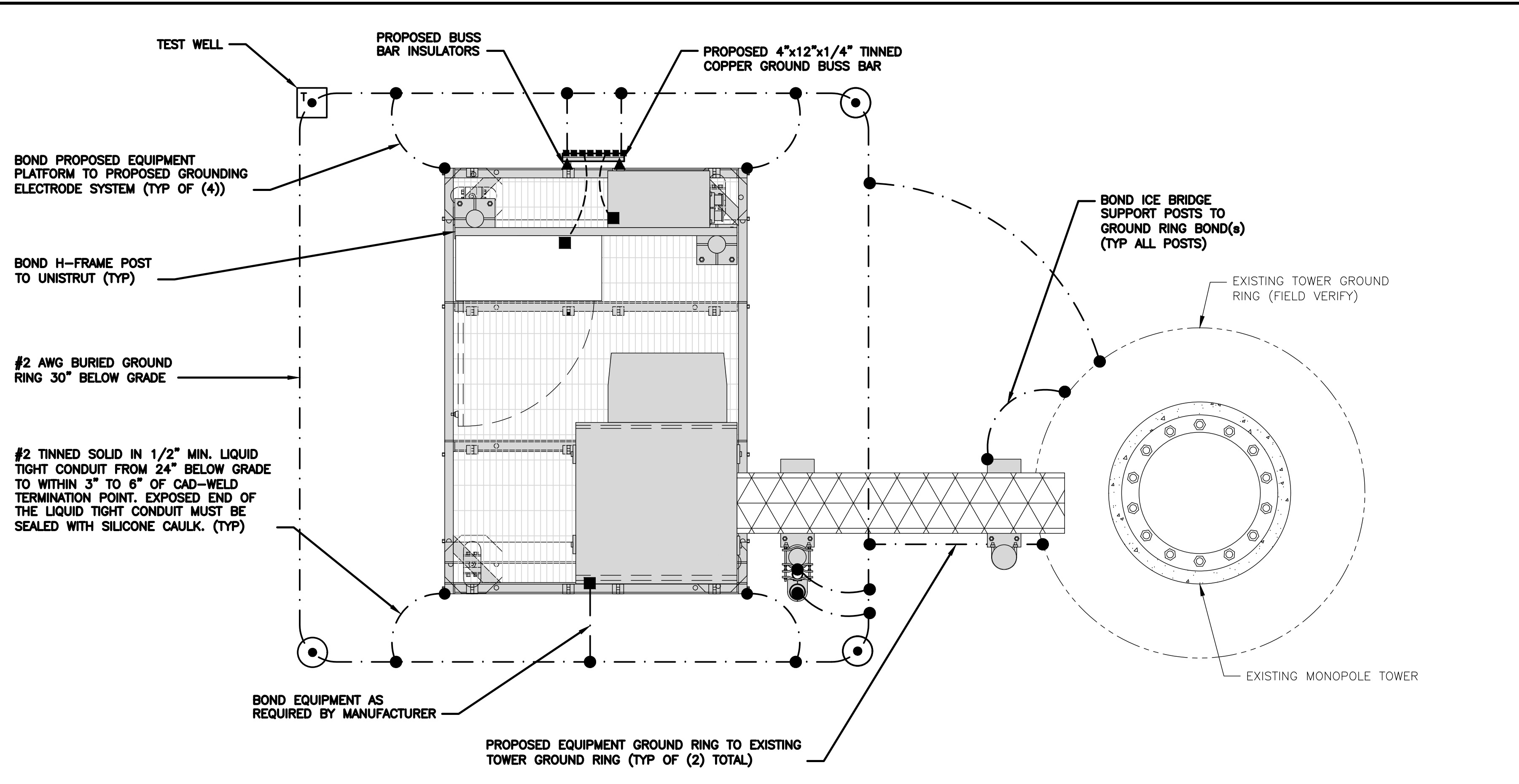
*ALL EQUIPMENT LOADS CONSIDERED CONTINUOUS LOADS

PANEL SCHEDULE

NO SCALE 2

NOT USED

NO SCALE 3

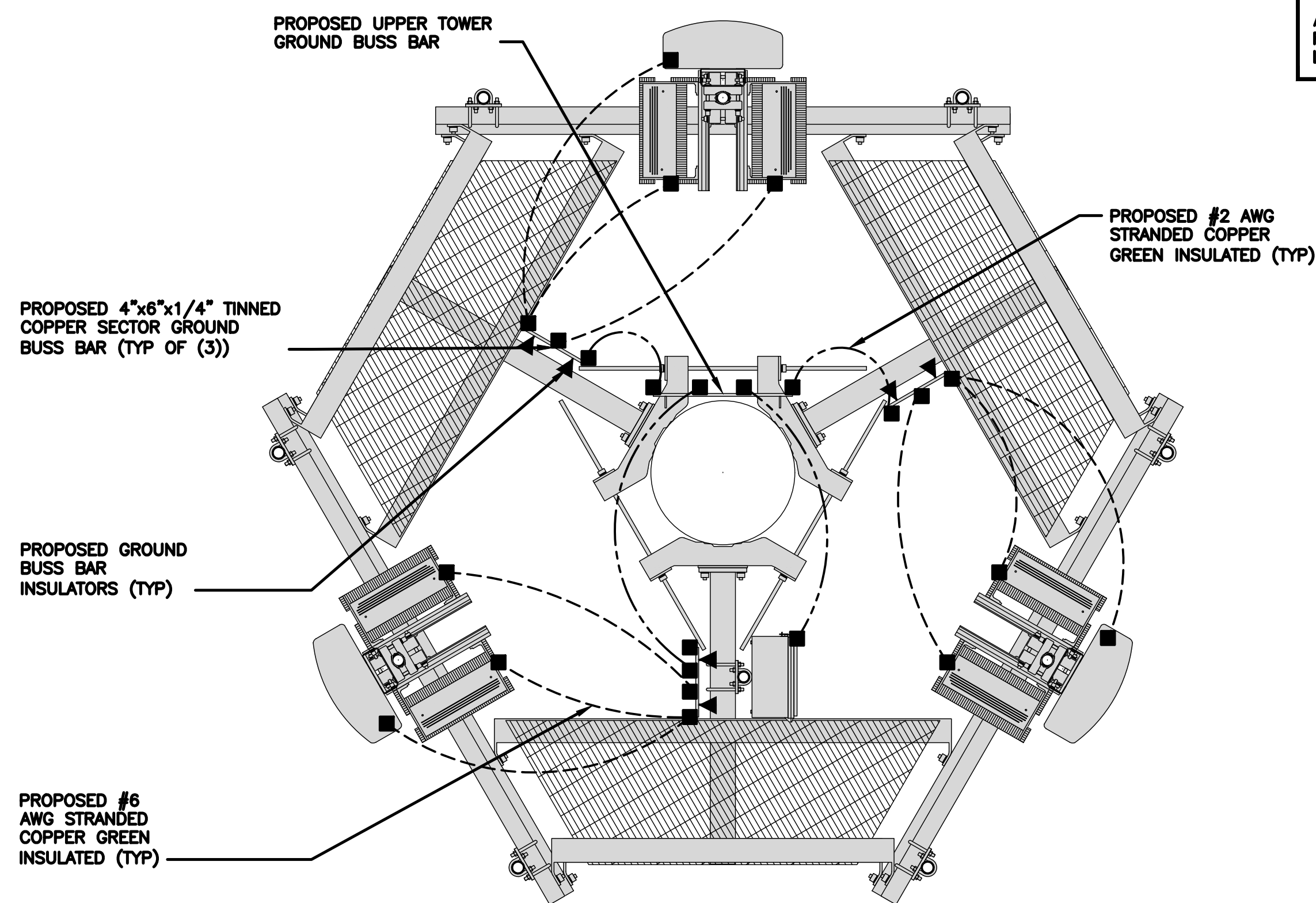


TYPICAL EQUIPMENT GROUNDING PLAN

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
- #2 AWG STRANDED & INSULATED
- ▲ BUSS BAR INSULATOR

GROUNDING LEGEND

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

GROUNDING KEY NOTES

- (A) **EXTERIOR GROUND RING:** #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.
- (B) **TOWER GROUND RING:** THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.
- (C) **INTERIOR GROUND RING:** #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.
- (D) **BOND TO INTERIOR GROUND RING:** #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.
- (E) **GROUND ROD:** UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.
- (F) **CELL REFERENCE GROUND BAR:** POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.
- (G) **HATCH PLATE GROUND BAR:** BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.
- (H) **EXTERIOR CABLE ENTRY PORT GROUND BARS:** LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.
- (I) **TELCO GROUND BAR:** BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.
- (J) **FRAME BONDING:** THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.
- (K) **INTERIOR UNIT BONDS:** METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.
- (L) **FENCE AND GATE GROUNDING:** METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.
- (M) **EXTERIOR UNIT BONDS:** METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE
- (N) **ICE BRIDGE SUPPORTS:** EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.
- (O) **DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR**
- (P) **TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH Wireless L.L.C. GROUNDING NOTES.**

GROUNDING KEY NOTES

NO SCALE 3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



140 BEACH 137TH STREET
ROCKAWAY, NY 11694



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DISH Wireless L.L.C.
PROJECT INFORMATION

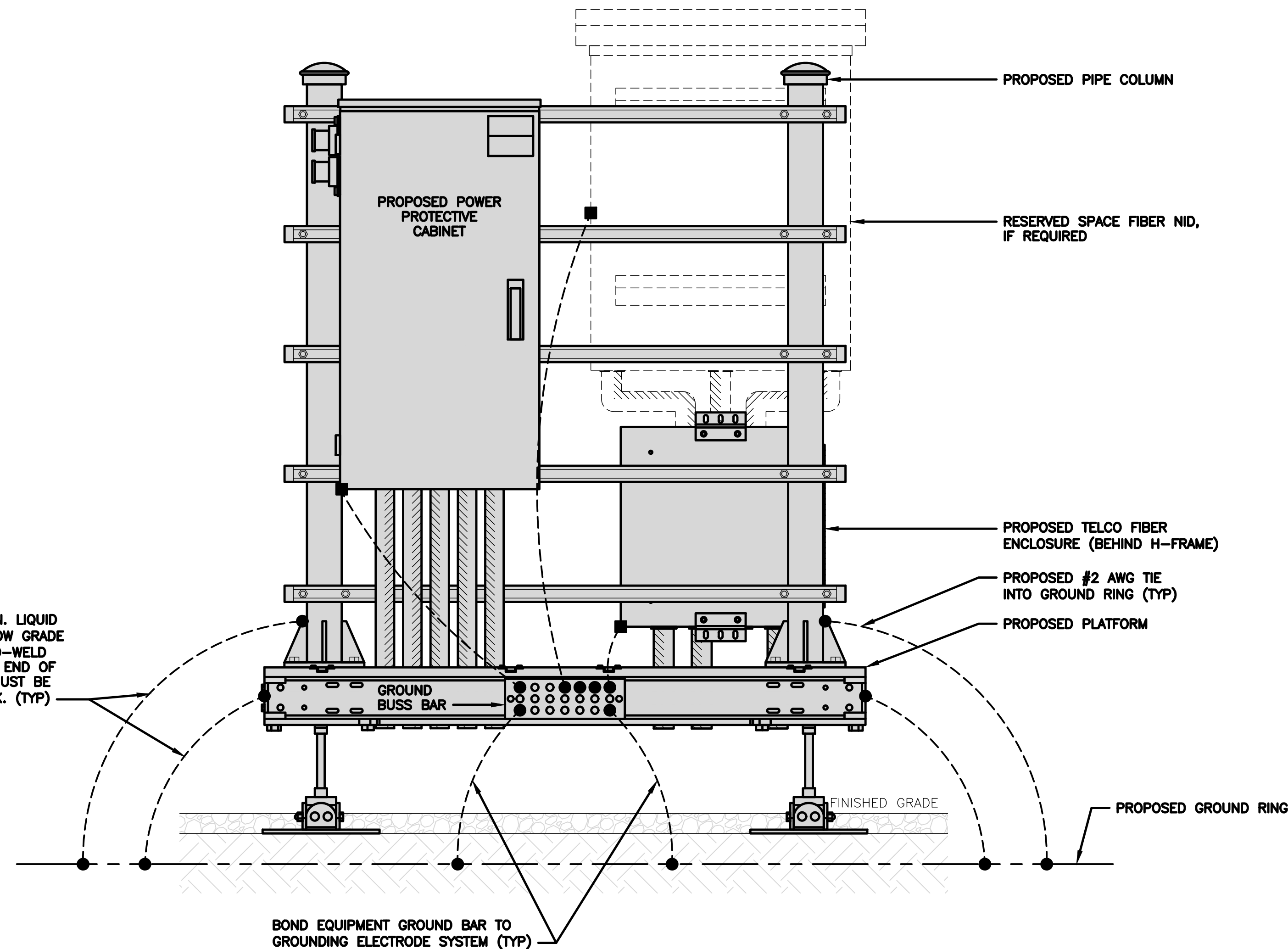
NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
GROUNDING PLANS
AND NOTES

SHEET NUMBER

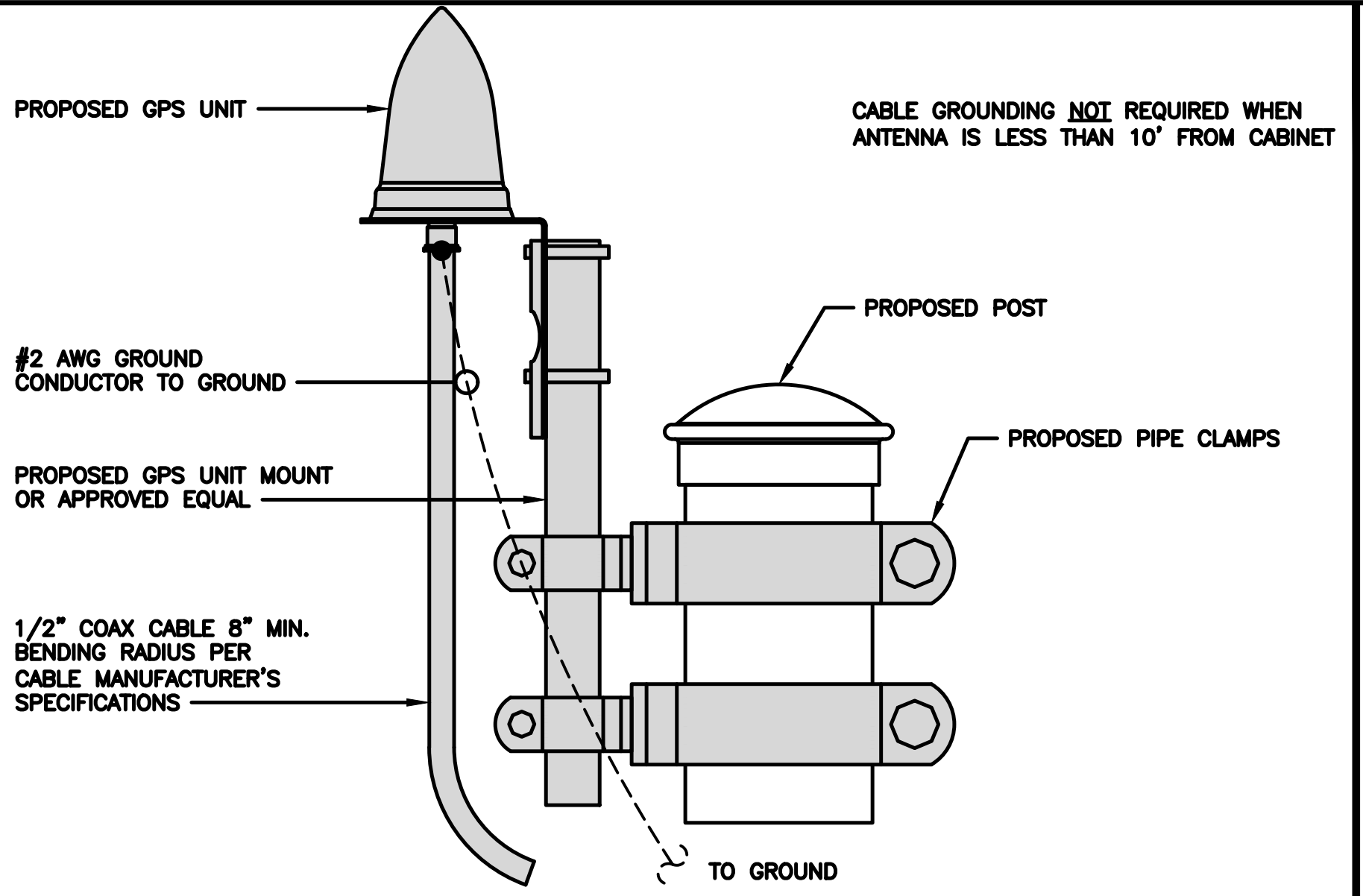
G-1

NOTES
EQUIPMENT CABINET OMITTED FOR CLARITY



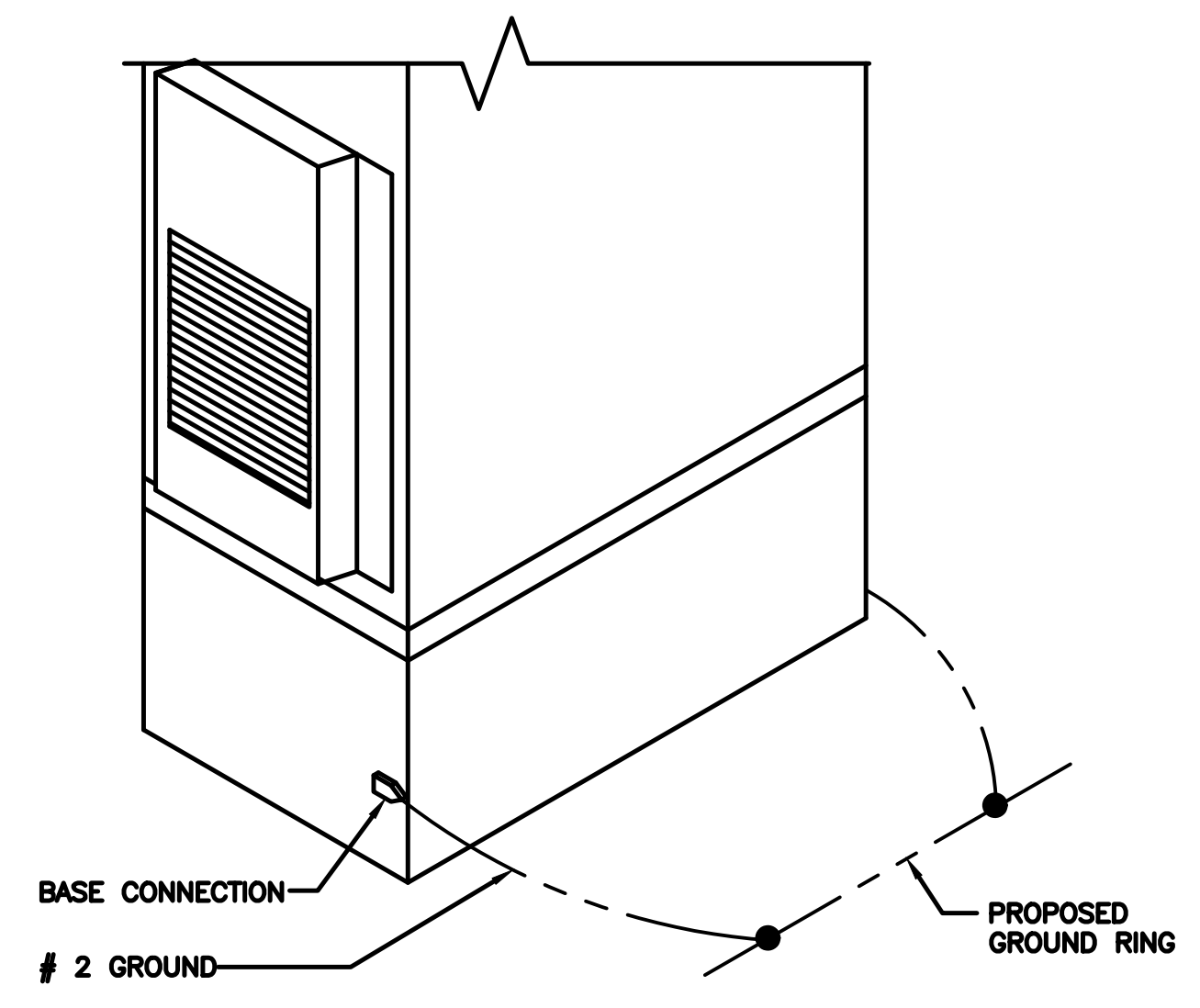
H-FRAME GROUNDING DETAIL

NO SCALE 1



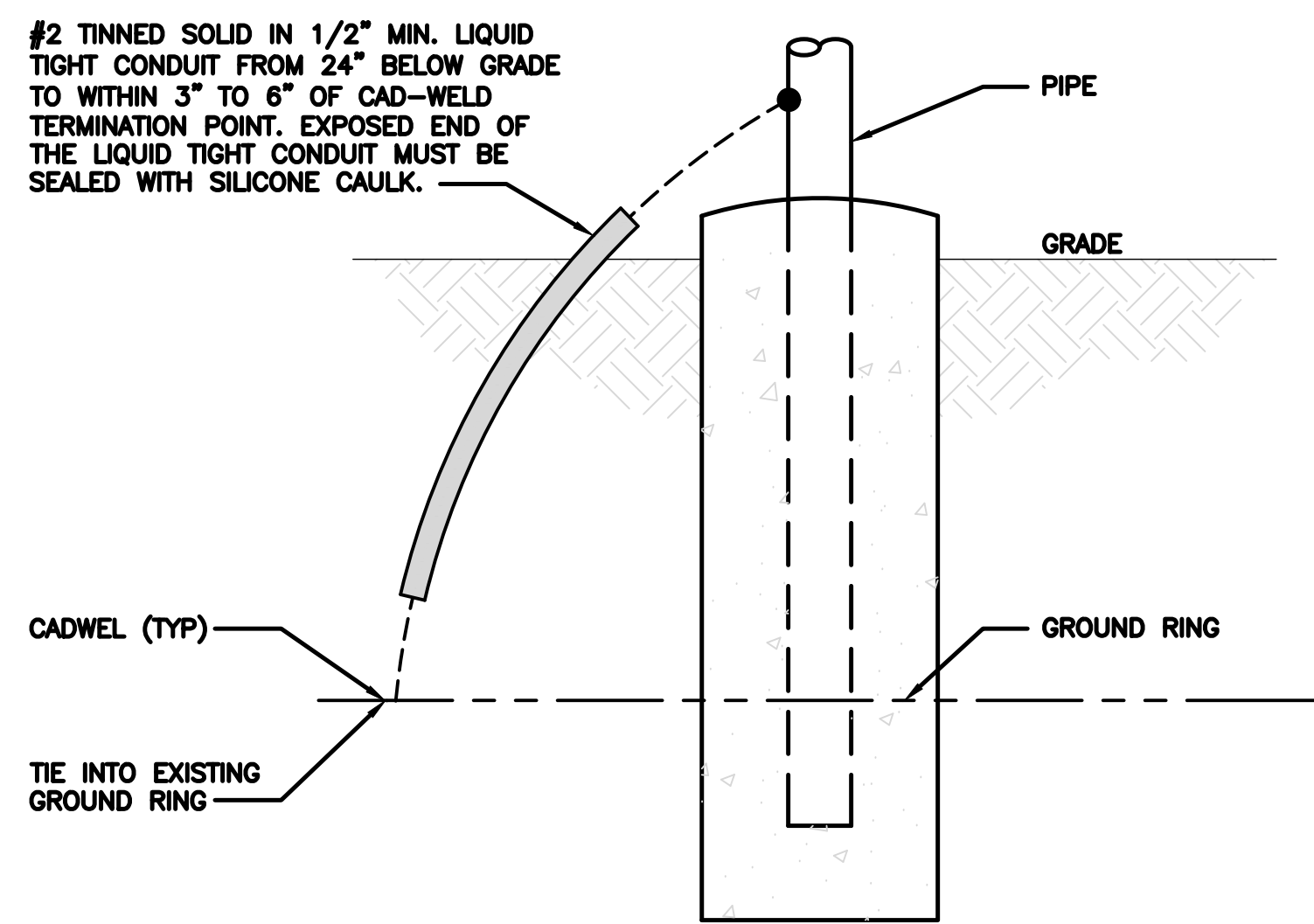
TYPICAL GPS UNIT GROUNDING

NO SCALE 2



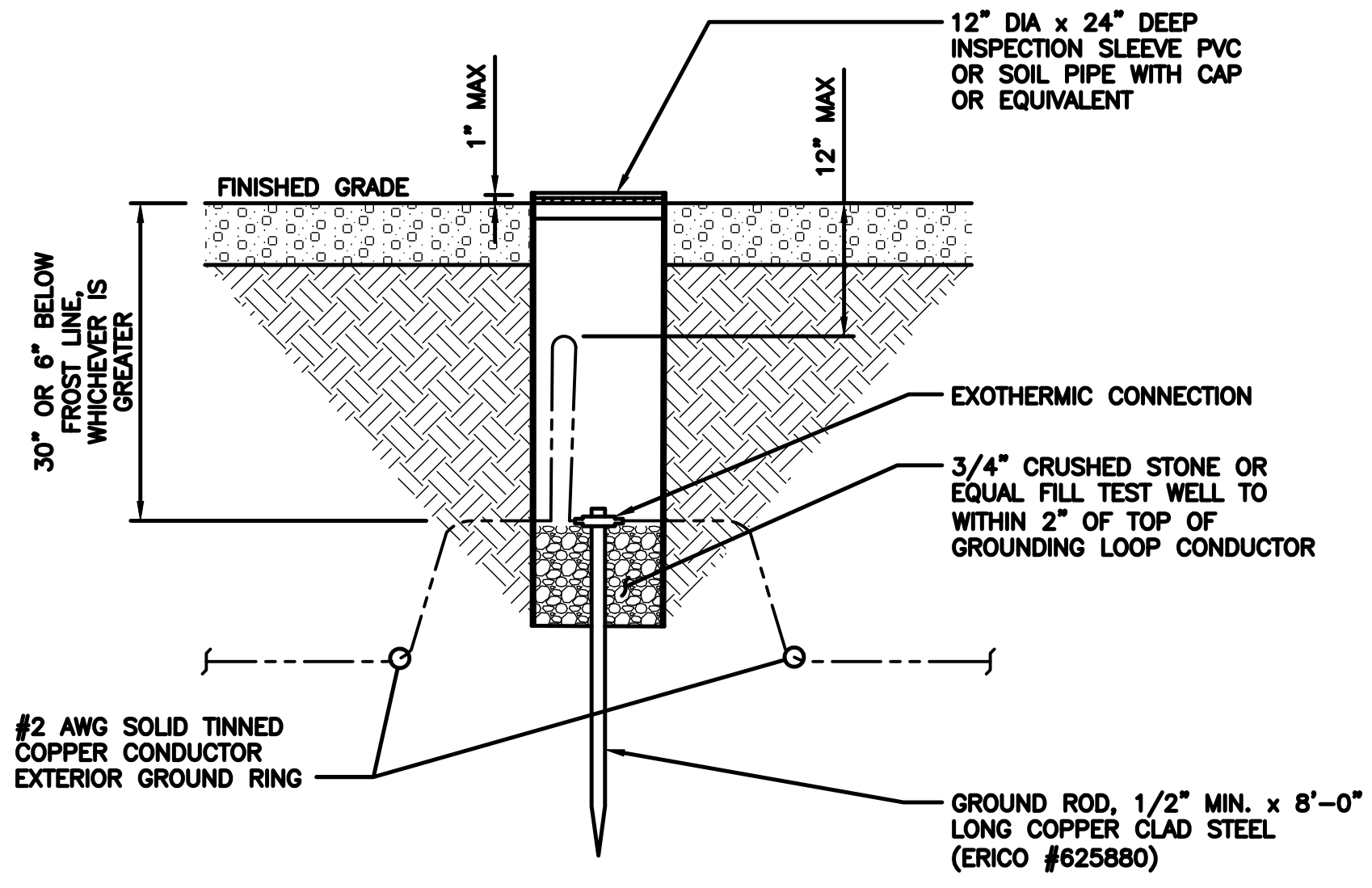
OUTDOOR CABINET GROUNDING

NO SCALE 3



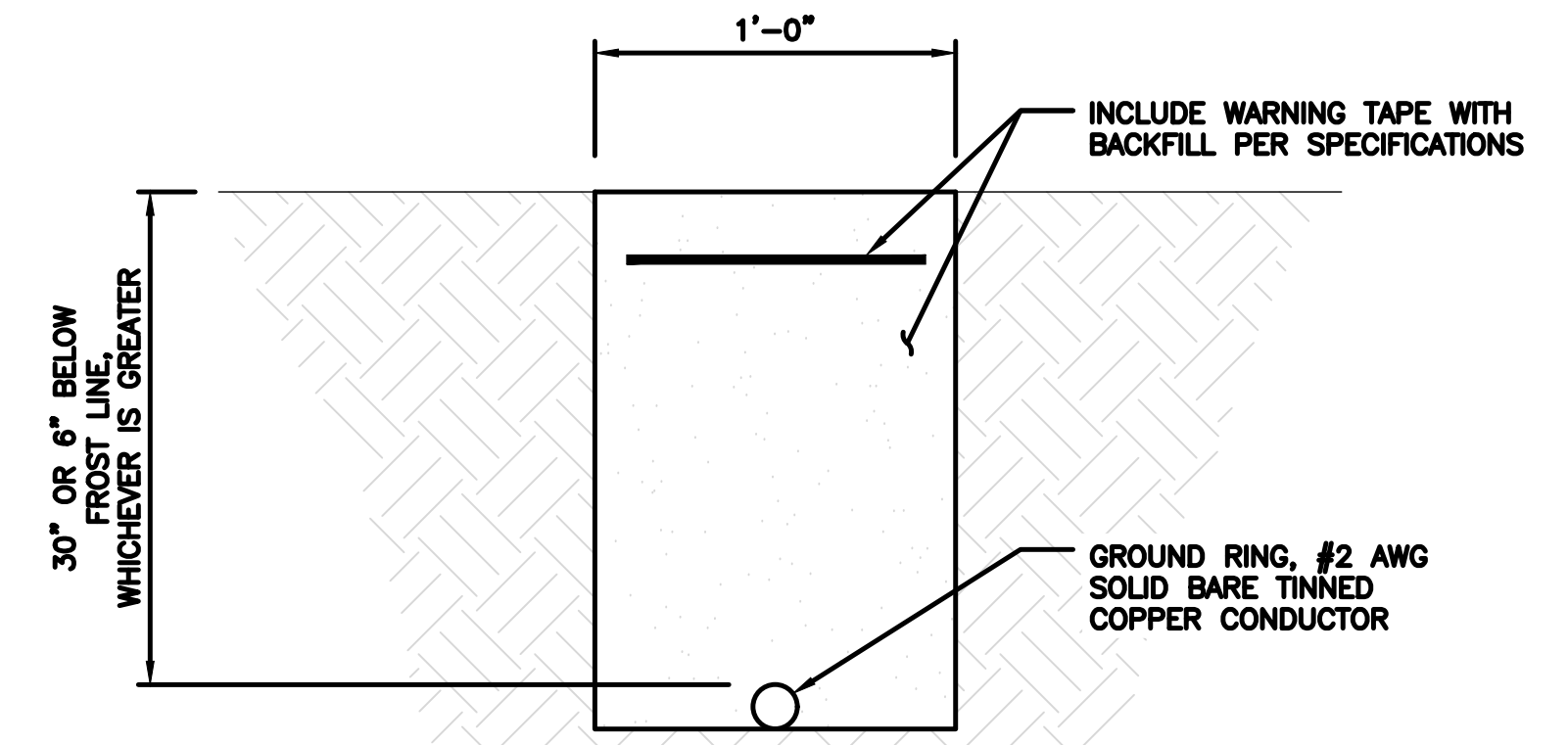
TRANSITIONING GROUND DETAIL

NO SCALE 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE

NO SCALE 5



TYPICAL GROUND RING TRENCH

NO SCALE 6



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



140 BEACH 137TH STREET
ROCKAWAY, NY 11694



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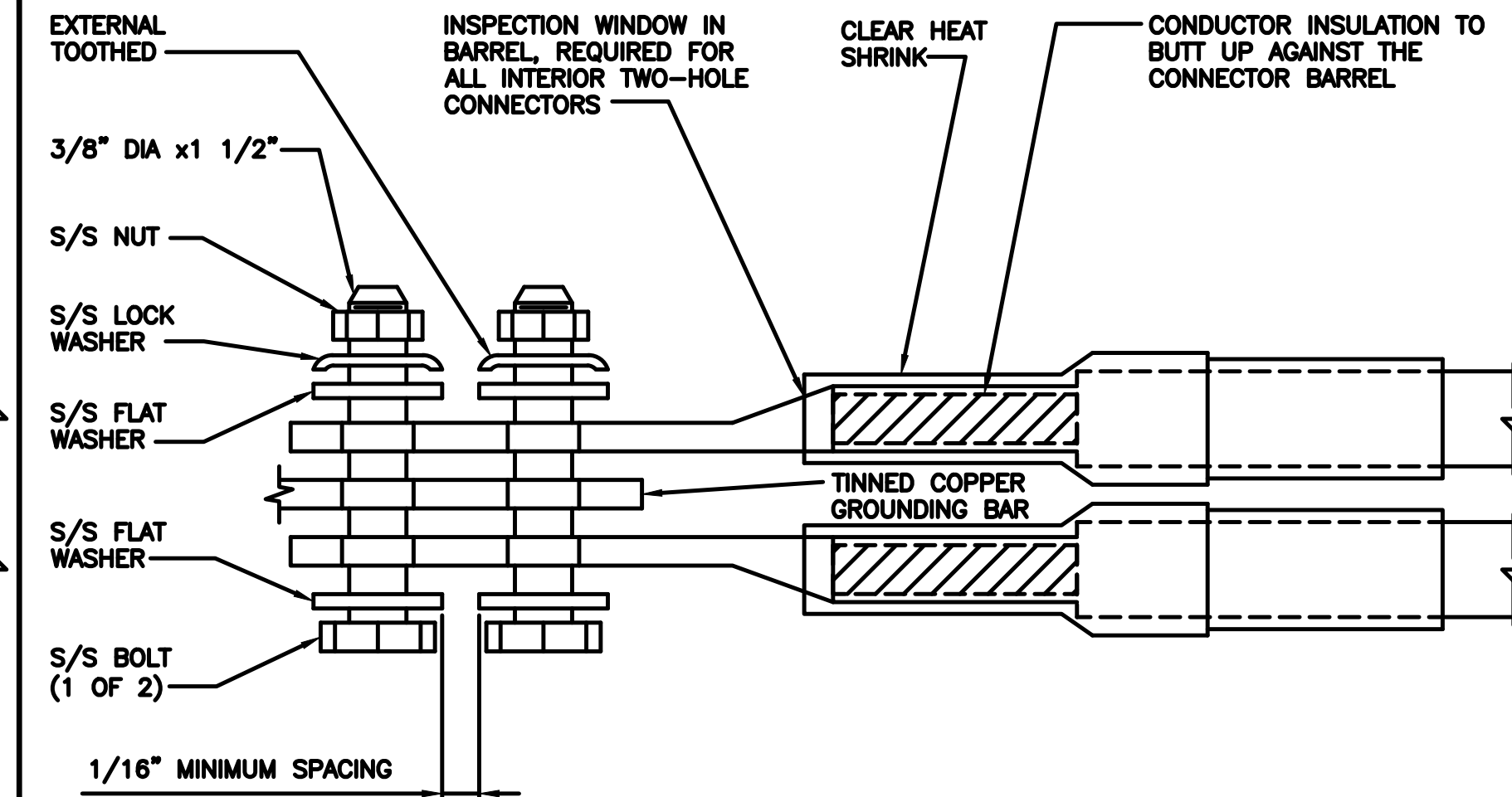
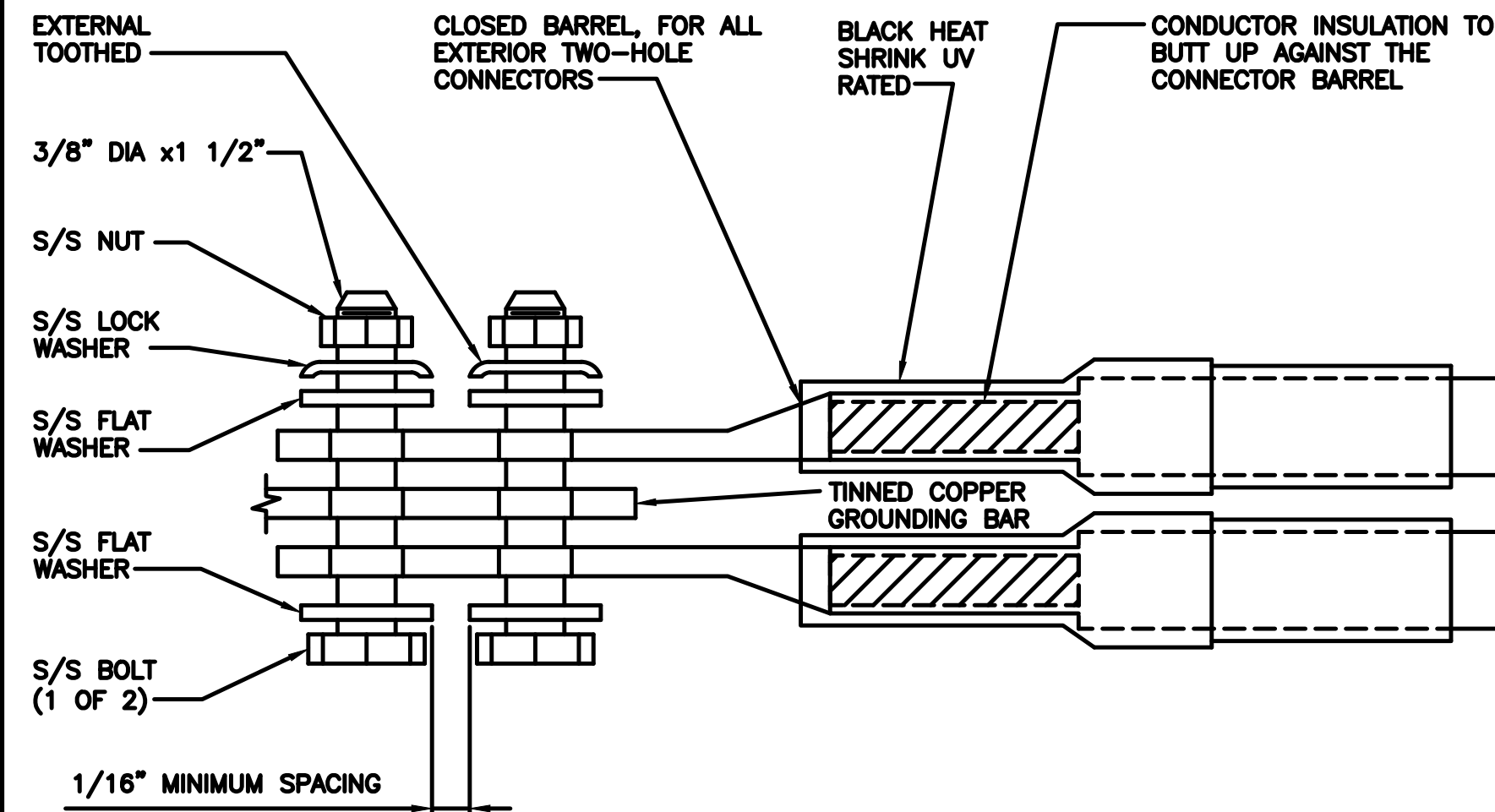
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER

G-2

- 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.
- 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.
- FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
- DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
- NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.
- ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.
- 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

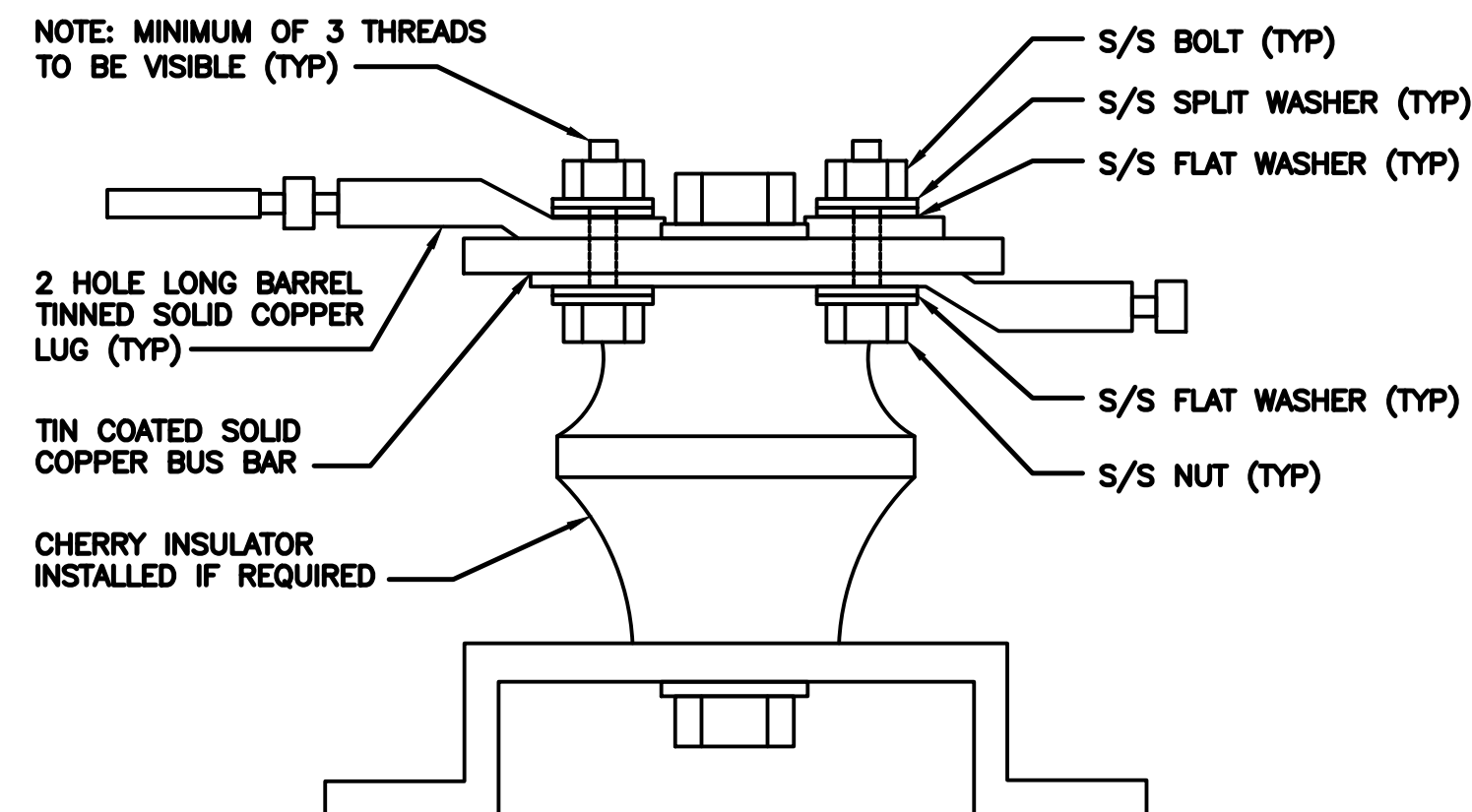
NO SCALE

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

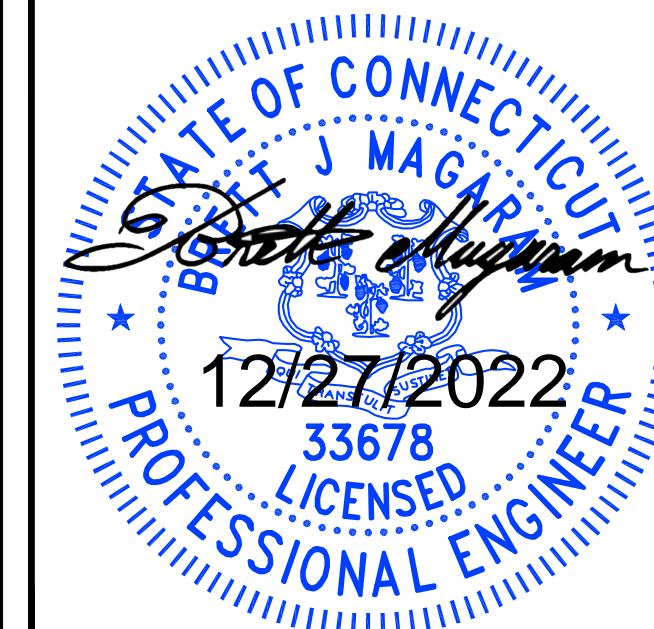
9

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

MK
DEVELOPMENT

140 BEACH 137TH STREET
ROCKAWAY, NY 11694



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NJJER02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER

G-3

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

RF CABLE COLOR CODES

NO SCALE

1

NOT USED

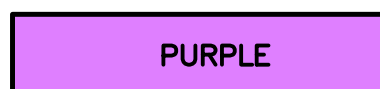
NO SCALE

4

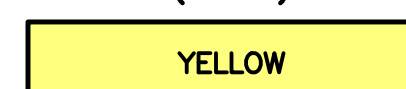
LOW BANDS (N71+N26)
OPTIONAL - (N29)



AWS
(N66+N70+H-BLOCK)



CBRS TECH
(3 GHz)



NEGATIVE SLANT PORT
ON ANT/RRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

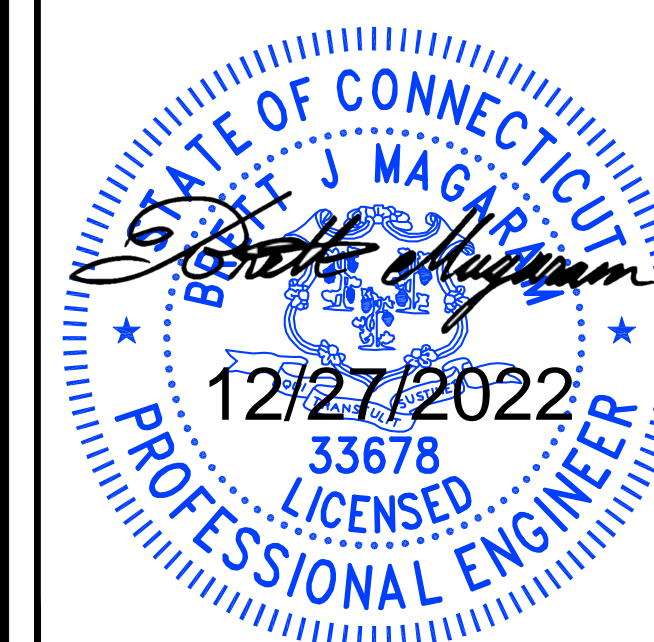
dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



DEVELOPMENT

140 BEACH 137TH STREET
ROCKAWAY, NY 11694



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TO ALTER THIS DOCUMENT.

DRAWN BY: CHECKED BY: APPROVED BY:

GIN

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

| REV | DATE | DESCRIPTION |
|-----|------------|-------------------------|
| A | 08/13/2022 | ISSUED FOR REVIEW |
| 0 | 12/21/2022 | ISSUED FOR CONSTRUCTION |
| | | |
| | | |
| | | |

A&E PROJECT NUMBER

NJJER02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

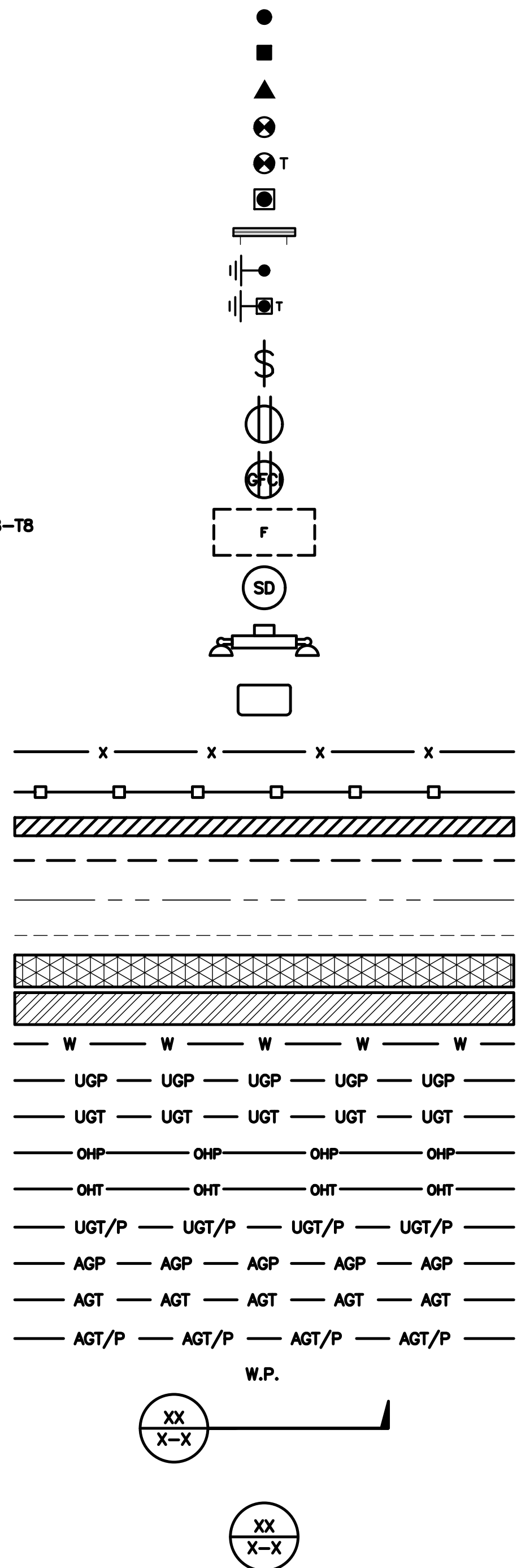
NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
RF
CABLE COLOR CODES

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-TB
 SMOKE DETECTION (DC)
 EMERGENCY LIGHTING (DC)
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
 LED-1-25A400/51K-SR4-120-PE-DBBTXD
 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

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

LEGEND

ABBREVIATIONS



5701 SOUTH SANTA FE DRIVE
 LITTLETON, CO 80120



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RFDS REV #: ---

CONSTRUCTION DOCUMENTS

| SUBMITTALS | | |
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A&E PROJECT NUMBER
 NJJER02052B

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

SHEET TITLE
 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 SIGN IS A METAL SIGN IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C. H-FRAME WITH A SECURE ATTACH METHOD.
- IF EME REPORT IS NOT AVAILABLE AT THE TIME OF CREATION OF CONSTRUCTION DOCUMENTS; PLEASE CONTACT DISH Wireless L.L.C. CONSTRUCTION MANAGER FOR FURTHER INSTRUCTION ON HOW TO PROCEED.

NOTES:

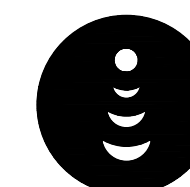
1. FOR DISH Wireless L.L.C. LOGO, SEE DISH Wireless L.L.C. DESIGN SPECIFICATIONS (PROVIDED BY DISH Wireless L.L.C.)
2. SITE ID SHALL BE APPLIED TO SIGNS USING "LASER ENGRAVING" OR ANY OTHER WEATHER RESISTANT METHOD (DISH Wireless L.L.C. APPROVAL REQUIRED)
3. TEXT FOR SIGNAGE SHALL INDICATE CORRECT SITE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

INFORMATION

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

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

Site ID: _____



THIS SIGN IS FOR REFERENCE PURPOSES ONLY

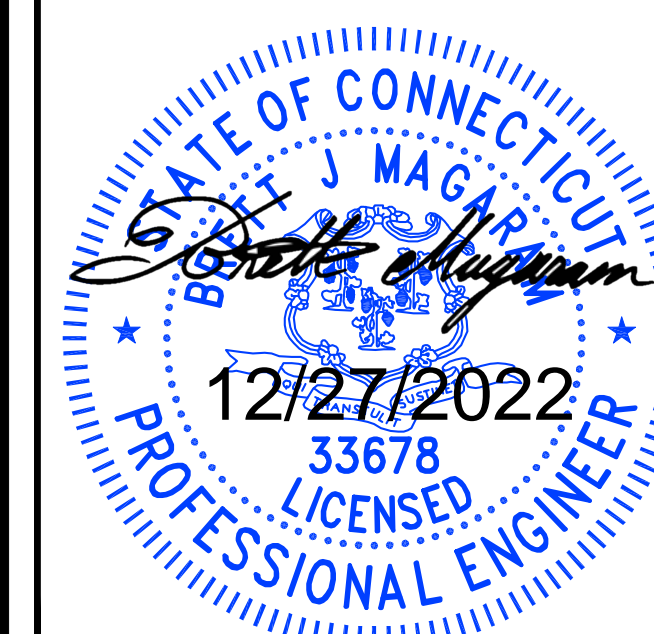


5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



DEVELOPMENT

140 BEACH 137TH STREET
ROCKAWAY, NY 11694



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DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____

GIN: ---

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CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER
NJJER02052B

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

SHEET TITLE
RF SIGNAGE

SHEET NUMBER
GN-2

NOTICE

Transmitting Antenna(s)

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

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

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

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

CAUTION

Transmitting Antenna(s)

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

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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)

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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

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.

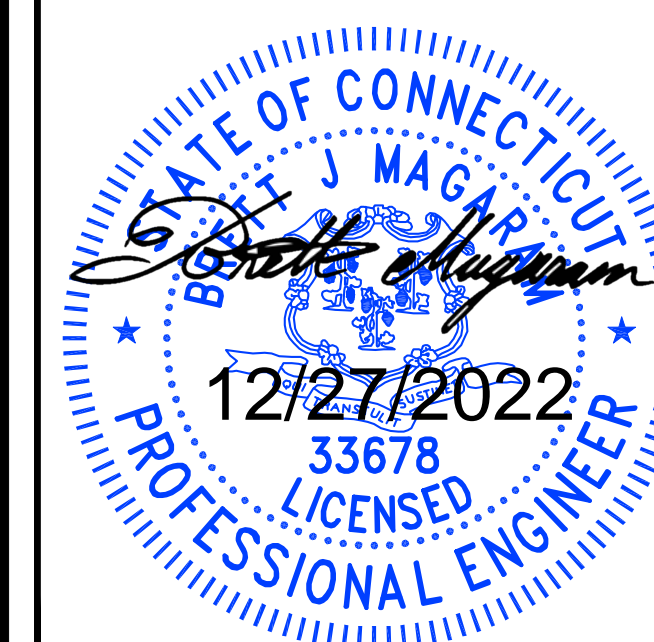


5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



DEVELOPMENT

140 BEACH 137TH STREET
ROCKAWAY, NY 11694



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CONSTRUCTION DOCUMENTS

SUBMITTALS

| REV | DATE | DESCRIPTION |
|-----|------------|-------------------------|
| A | 09/13/2022 | ISSUED FOR REVIEW |
| 0 | 12/21/2022 | ISSUED FOR CONSTRUCTION |
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A&E PROJECT NUMBER
NJJER02052B

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

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-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.

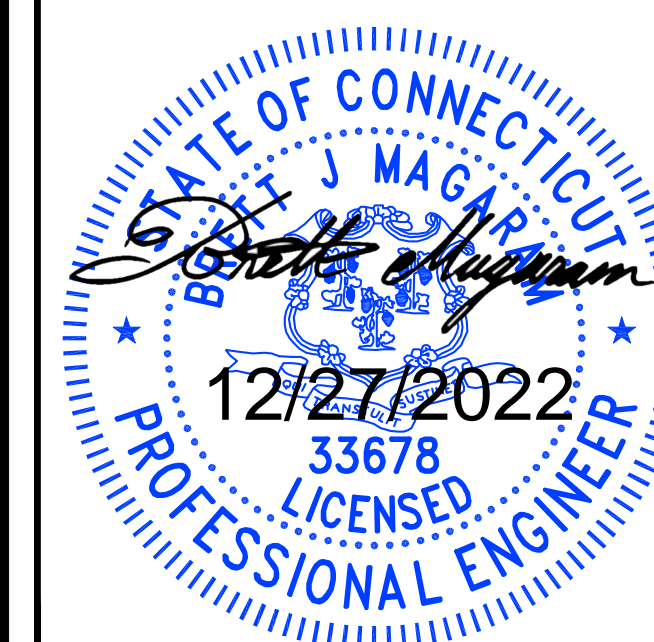
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL 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 SPECIMATE 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.



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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| 0 | 12/21/2022 | ISSUED FOR CONSTRUCTION |
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A&E PROJECT NUMBER
NJJER02052B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02052B
200 ORONOQUE LANE
STRATFORD, CT 06614

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

GROUNDING NOTES:

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



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

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-5



Amended EXHIBIT D

Structural Analysis



August 9, 2022

PASS

RE: **Structural Analysis for Tower**

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

Site ID: **NJJER02052B**

Dish Wireless LLC,

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

1.0 Assumptions:

| CATEGORY | DATA | CODE |
|-------------------------|----------|----------------------|
| Structure Type | Monopole | |
| Top of Tower | 150'-0" | |
| Structure Class | IV | ASCE 7-16 |
| Exposure Class | C | ASCE 7-16 |
| Kzt Factor | 1.0 | ASCE 7-16 |
| Basic Wind Speed | 135 | 2022 Connecticut SBC |
| Ice Thickness | 1" | ASCE 7-16 |
| Ice Windspeed | 50 MPH | ASCE 7-16 |
| Seismic Design Category | C | ASCE 7-16 |
| S _{DS} | .218 | ASCE 7-16 |

2.0 Existing Documents:

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



3.0 Proposed Equipment:

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

Bold represents equipment to be added

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

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

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

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



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

Sincerely,

Magaram Engineering



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

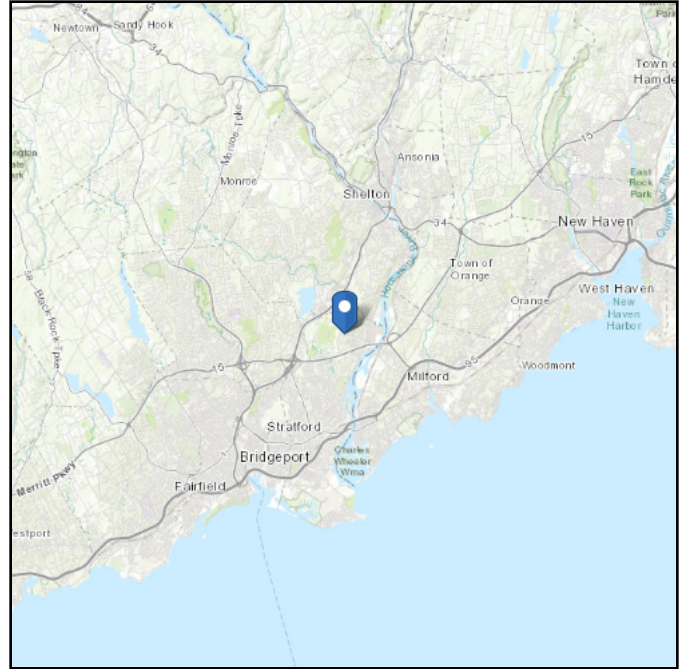
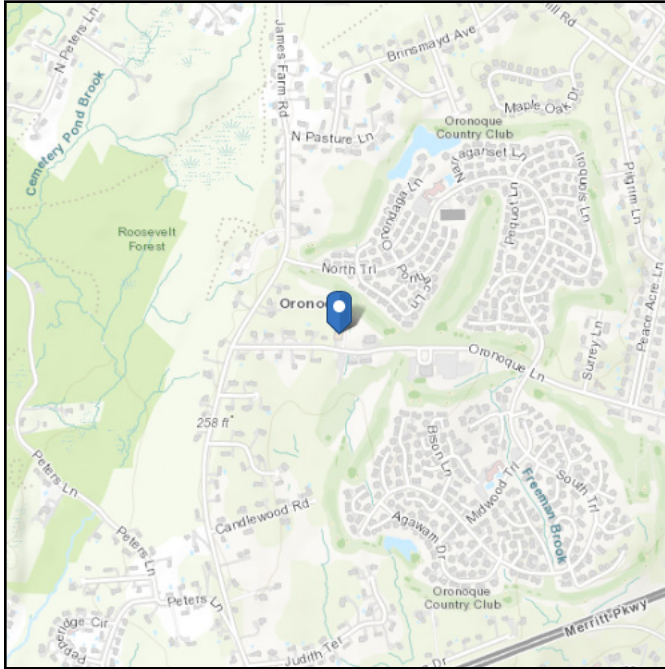


ASCE 7 Hazards Report

Address:
200 Oronoque Ln
Stratford, Connecticut
06614

Standard: ASCE/SEI 7-16
Risk Category: IV
Soil Class: D - Default (see Section 11.4.3)

Elevation: 256.3 ft (NAVD 88)
Latitude: 41.251254
Longitude: -73.11699

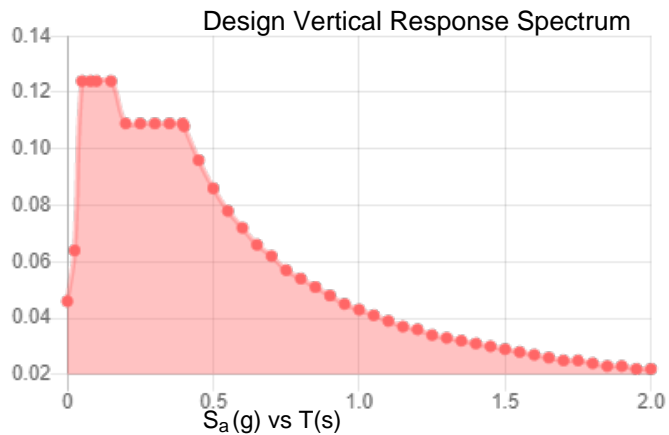
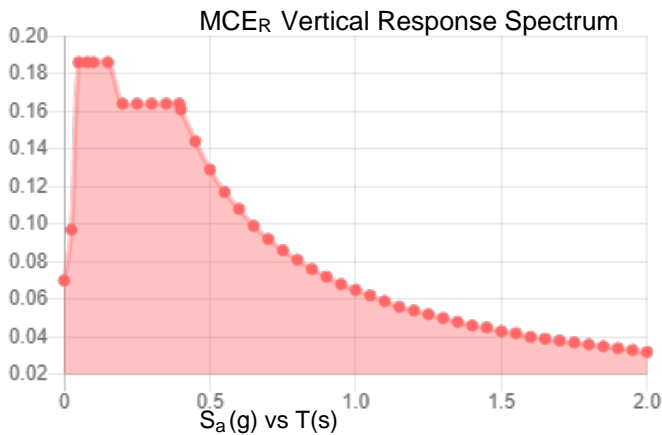
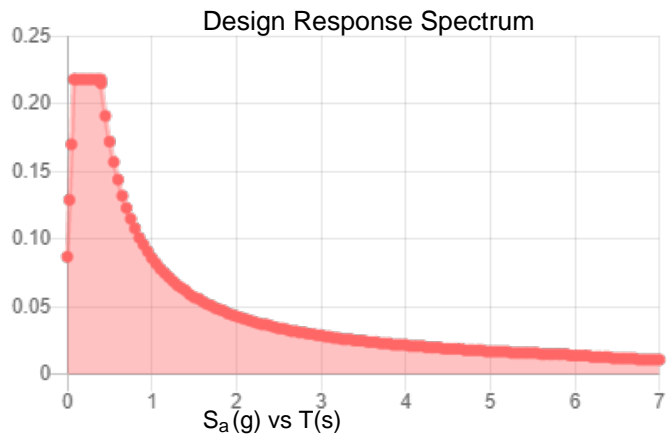
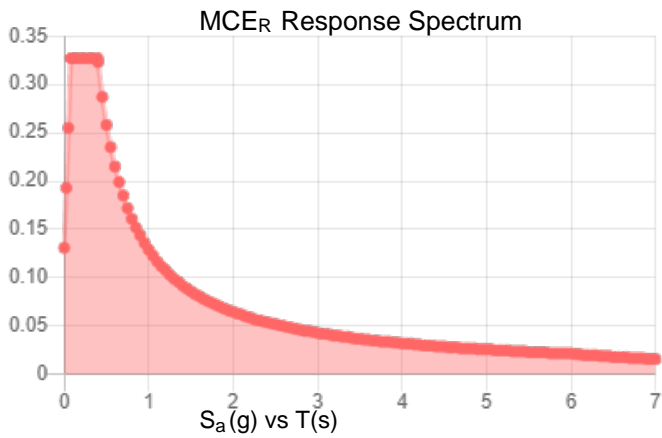


Site Soil Class: D - Default (see Section 11.4.3)

Results:

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

Seismic Design Category C



Data Accessed: Tue Aug 09 2022

Date Source:

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

Ice

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 15 F
Gust Speed 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Tue Aug 09 2022

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

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

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.

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| Municipality | Basic Design Wind Speeds, V (mph) | | | | Allowable Stress Design Wind Speeds, V_{asd} (mph) | | | | Ground Snow Load P_g (psf) | MCE Ground Accelerations | | Wind-Borne Debris Region ¹ | | Hurricane- Prone Region |
|---------------|--|-----------------|---------------------|--------------------|--|-----------------|---------------------|--------------------|--|-----------------------------|--------------|--|-----------------|-------------------------------|
| | Risk Cat. I | Risk Cat. II | Risk Cat. III | Risk Cat. IV | Risk Cat. I | Risk Cat. II | Risk Cat. III | Risk Cat. IV | | S_S (g) | S_I (g) | Risk Cat. III Occup. 1-2 | Risk Cat. IV | |
| Sherman | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 35 | 0.203 | 0.055 | | | |
| Simsbury | 110 | 120 | 125 | 130 | 85 | 93 | 97 | 101 | 35 | 0.177 | 0.054 | | | Yes |
| Somers | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 35 | 0.174 | 0.055 | | | Yes |
| South Windsor | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.183 | 0.055 | | | Yes |
| Southbury | 110 | 120 | 130 | 130 | 85 | 93 | 101 | 101 | 35 | 0.199 | 0.054 | | | Yes |
| Southington | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.196 | 0.055 | | | Yes |
| Sprague | 115 | 125 | 135 | 140 | 89 | 97 | 105 | 108 | 30 | 0.191 | 0.054 | | | Yes |
| Stafford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 35 | 0.176 | 0.055 | | | Yes |
| Stamford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.261 | 0.058 | | Type B | Yes |
| Sterling | 115 | 125 | 135 | 140 | 89 | 97 | 105 | 108 | 35 | 0.187 | 0.054 | | | Yes |
| Stonington | 120 | 130 | 140 | 145 | 93 | 101 | 108 | 112 | 30 | 0.182 | 0.051 | Type B | Type A | Yes |
| Stratford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.206 | 0.054 | | Type B | Yes |
| Suffield | 110 | 120 | 125 | 130 | 85 | 93 | 97 | 101 | 35 | 0.170 | 0.054 | | | Yes |
| Thomaston | 110 | 120 | 125 | 130 | 85 | 93 | 97 | 101 | 35 | 0.184 | 0.054 | | | Yes |
| Thompson | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 40 | 0.185 | 0.056 | | | Yes |
| Tolland | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 35 | 0.182 | 0.055 | | | Yes |
| Torrington | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 40 | 0.175 | 0.054 | | | |
| Trumbull | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.210 | 0.054 | | | Yes |
| Union | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 40 | 0.178 | 0.055 | | | Yes |
| Vernon | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.186 | 0.055 | | | Yes |
| Voluntown | 120 | 130 | 135 | 140 | 93 | 101 | 105 | 108 | 30 | 0.188 | 0.053 | | | Yes |
| Wallingford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.205 | 0.055 | | | Yes |
| Warren | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 40 | 0.179 | 0.054 | | | |
| Washington | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 35 | 0.189 | 0.054 | | | |
| Waterbury | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 35 | 0.193 | 0.054 | | | Yes |
| Waterford | 120 | 130 | 140 | 140 | 93 | 101 | 108 | 108 | 30 | 0.194 | 0.053 | Type B | Type B | Yes |
| Watertown | 110 | 120 | 130 | 130 | 85 | 93 | 101 | 101 | 35 | 0.189 | 0.054 | | | Yes |
| West Hartford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.187 | 0.055 | | | Yes |
| West Haven | 110 | 125 | 130 | 135 | 85 | 97 | 101 | 105 | 30 | 0.200 | 0.053 | Type B | Type B | Yes |
| Westbrook | 115 | 125 | 135 | 140 | 89 | 97 | 105 | 108 | 30 | 0.204 | 0.054 | Type B | Type B | Yes |
| Weston | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.233 | 0.056 | | | Yes |
| Westport | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.232 | 0.056 | | Type B | Yes |

DESIGNED APPURTENANCE LOADING

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

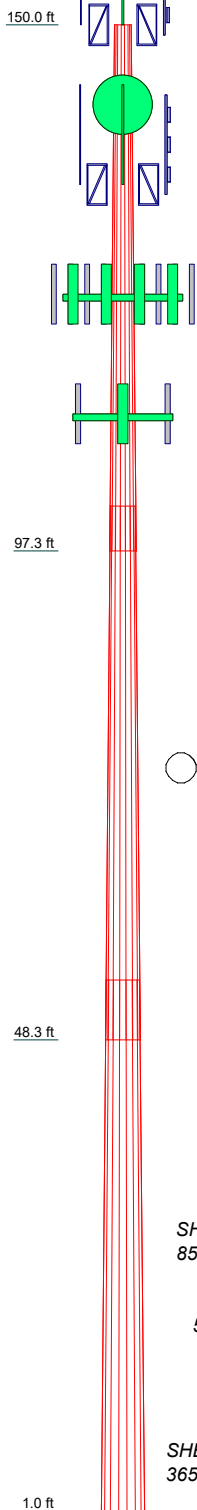
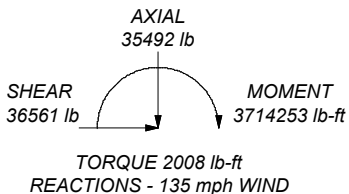
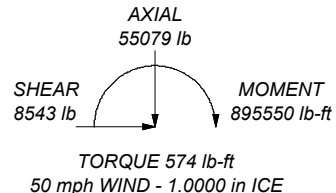
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

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

ALL REACTIONS ARE FACTORED



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

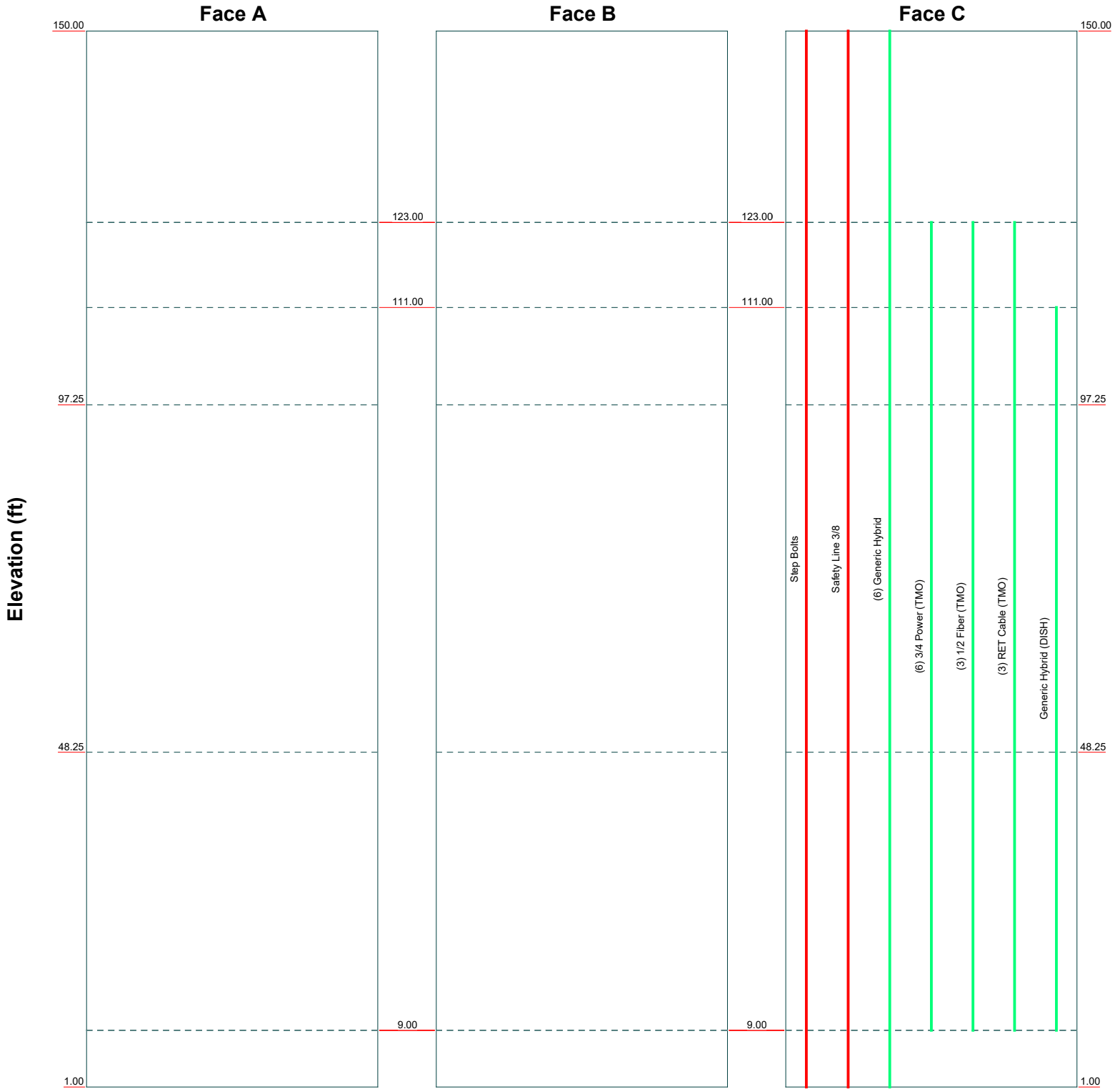
Magaram Engineering
13705 Stone Shadow
Clifton VA
Phone: 914-450-8416
FAX:

| | | |
|---------------------------|----------------|------------|
| Job: NJJER02052B | | |
| Project: | | |
| Client: Dish Wireless LLC | Drawn by: | App'd: |
| Code: TIA-222-H | Date: 09/20/22 | Scale: NTS |
| Path: | Dwg No. E-1 | |

Feed Line Distribution Chart

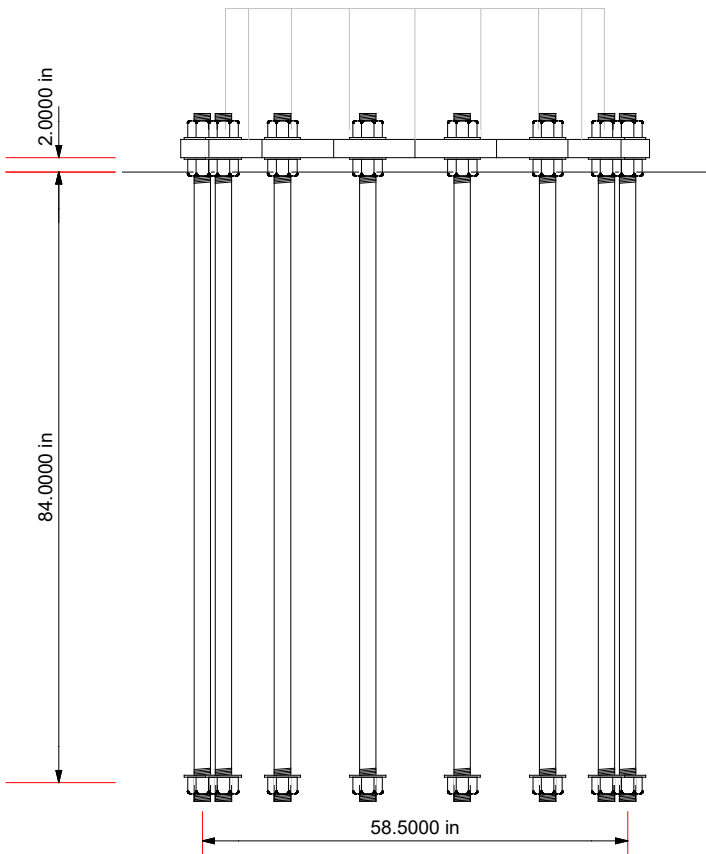
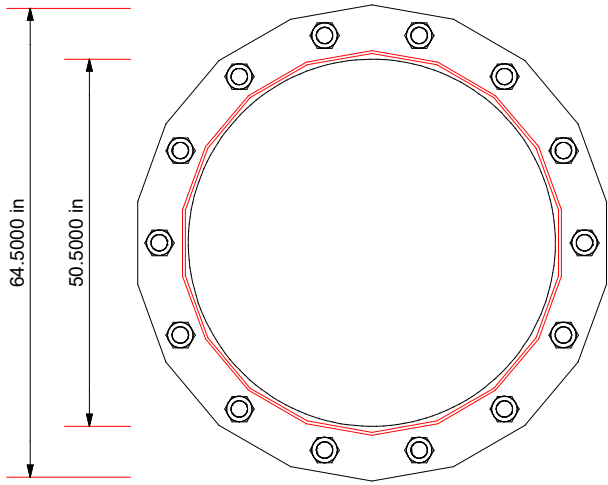
1' - 150'

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



| | | | |
|---|--|-------------------------|---------------------------|
| Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | | Job: NJJER02052B | |
| | | Project: | Client: Dish Wireless LLC |
| Code: TIA-222-H | | Date: 08/09/22 | Scale: NTS |
| Path: | | Dwg No. E-7 | |

C:\Users\Bret.Laize.2019\Desktop\Magaram Engineering\JK Development\NJ\ER02052B\Tower Analysis\NJ\ER02052B Tower Model.dwg



FOUNDATION NOTES

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

| | | | |
|----------------------------------|--|---------------------------|----------------|
| Magaram Engineering | | Job: NJJER02052B | |
| 13705 Stone Shadow Clifton VA | | | |
| Phone: 914-450-8416 | | Client: Dish Wireless LLC | Drawn by: |
| FAX: | | Code: TIA-222-H | Date: 08/09/22 |
| | | Path: | App'd: |
| | | | Scale: NTS |
| | | | Dwg No. F-1 |

| | | |
|--|------------------------------------|----------------------------------|
| tnxTower Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | Job NJJER02052B | Page 1 of 21 |
| | Project | Date 09:15:26 09/20/22 |
| | Client Dish Wireless LLC | Designed by |

Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower base elevation above sea level: 1.00 ft.

Basic wind speed of 135 mph.

Risk Category IV.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Weld together tower sections have flange connections..

Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..

Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..

Welds are fabricated with ER-70S-6 electrodes..

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
| tnxTower Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | Job | NJJER02052B | Page | 2 of 21 |
| | Project | | Date | 09:15:26 09/20/22 |
| | Client | Dish Wireless LLC | Designed by | |

Tapered Pole Section Geometry

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

Tapered Pole Properties

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

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

Monopole Base Plate Data

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

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
| tnxTower Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | Job | NJJER02052B | Page | 3 of 21 |
| | Project | | Date | 09:15:26 09/20/22 |
| | Client | Dish Wireless LLC | Designed by | |

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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

Feed Line/Linear Appurtenances - Entered As Area

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

Feed Line/Linear Appurtenances Section Areas

| Tower Section | Tower Elevation ft | Face | A _R ft ² | A _F ft ² | C _{AA} In Face ft ² | C _{AA} Out Face ft ² | Weight lb |
|---------------|-----------------------|------|-----------------------------------|-----------------------------------|---|--|--------------|
| L1 | 150.00-97.25 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 5.934 | 0.000 | 757.10 |
| L2 | 97.25-48.25 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 5.513 | 0.000 | 862.40 |
| L3 | 48.25-1.00 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 5.316 | 0.000 | 787.60 |

Feed Line/Linear Appurtenances Section Areas - With Ice

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
| tnxTower Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | Job | NJJER02052B | Page | 4 of 21 |
| | Project | | Date | 09:15:26 09/20/22 |
| | Client | Dish Wireless LLC | Designed by | |

| Tower Section | Tower Elevation ft | Face or Leg | Ice Thickness in | A _R ft ² | A _F ft ² | C _{AA} In Face ft ² | C _{AA} Out Face ft ² | Weight lb |
|---------------|-----------------------|-------------|---------------------|-----------------------------------|-----------------------------------|---|--|--------------|
| L1 | 150.00-97.25 | A | 1.425 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 35.992 | 0.000 | 1121.93 |
| L2 | 97.25-48.25 | A | 1.351 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 33.433 | 0.000 | 1201.30 |
| L3 | 48.25-1.00 | A | 1.215 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 30.857 | 0.000 | 1086.20 |

Feed Line Center of Pressure

| Section | Elevation ft | CP _X in | CP _Z in | CP _X Ice in | CP _Z Ice in |
|---------|-----------------|-----------------------|-----------------------|------------------------------|------------------------------|
| L1 | 150.00-97.25 | 0.0000 | 0.8725 | 0.0000 | 2.5129 |
| L2 | 97.25-48.25 | 0.0000 | 0.8834 | 0.0000 | 2.7206 |
| L3 | 48.25-1.00 | 0.0000 | 0.8893 | 0.0000 | 2.7417 |

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

Shielding Factor Ka

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

Discrete Tower Loads

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustment ° | Placement ft | C _{AA} Front ft ² | C _{AA} Side ft ² | Weight lb | |
|-------------|-------------|-------------|---|-------------------------|-----------------|---|--|--------------|--------|
| 20' Omni | A | From Face | 4.00 | 90.0000 | 150.00 | No Ice | 6.70 | 6.70 | 150.00 |

| | | | | | | | | | | |
|--|----------------|--|-------------------|--|--|--|--|--------------------|--|-------------------|
| tnxTower Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | Job | | NJJER02052B | | | | | Page | | 5 of 21 |
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| | Client | | Dish Wireless LLC | | | | | Designed by | | |

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

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
| tnxTower Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | Job | NJJER02052B | Page | 6 of 21 |
| | Project | | Date | 09:15:26 09/20/22 |
| | Client | Dish Wireless LLC | Designed by | |

| <i>Description</i> | <i>Face or Leg</i> | <i>Offset Type</i> | <i>Offsets: Horz Lateral Vert</i> | <i>Azimuth Adjustment</i> | <i>Placement</i> | <i>C_{AA} Front</i> | <i>C_{AA} Side</i> | <i>Weight</i> | |
|-----------------------|--------------------|--------------------|-------------------------------------|---------------------------|------------------|------------------------------|----------------------------|-------------------------|----------------------------|
| | | | <i>ft</i> <i>ft</i> <i>ft</i> | <i>°</i> | <i>ft</i> | <i>ft²</i> | <i>ft²</i> | <i>lb</i> | |
| DMP65R-BU8DA-K (AT&T) | A | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 17.87 18.50 12.72 | 10.02 11.44 12.72 | 148.20 266.88 395.91 |
| Radio 4449 (AT&T) | A | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 1.64 1.80 1.97 | 1.29 1.44 1.59 | 70.00 90.00 110.00 |
| RRUS32 (AT&T) | A | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 3.31 3.56 3.81 | 2.42 2.64 2.86 | 80.00 100.00 140.00 |
| Radio 4478 (AT&T) | A | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 1.84 2.01 2.19 | 1.06 1.20 1.34 | 60.00 80.00 90.00 |
| RRU 8843 (AT&T) | A | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 1.64 1.80 1.97 | 1.35 1.50 1.65 | 72.00 89.60 109.91 |
| * | | | | | | | | | |
| TPA65R-BU6D (AT&T) | B | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 13.20 13.91 14.59 | 7.52 8.80 9.93 | 97.50 192.55 296.34 |
| AIR6449 (AT&T) | B | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 5.65 5.96 6.26 | 2.42 2.64 2.87 | 100.00 140.00 180.00 |
| AIR6419 (AT&T) | B | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 3.80 4.05 4.31 | 1.94 2.14 2.34 | 77.00 104.86 136.30 |
| DMP65R-BU8DA-K (AT&T) | B | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 17.87 18.50 19.14 | 10.02 11.44 12.72 | 148.20 266.88 395.91 |
| Radio 4449 (AT&T) | B | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 1.64 1.80 1.97 | 1.29 1.44 1.59 | 70.00 90.00 110.00 |
| RRUS32 (AT&T) | B | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 3.31 3.56 3.81 | 2.42 2.64 2.86 | 80.00 100.00 140.00 |
| Radio 4478 (AT&T) | B | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 1.84 2.01 2.19 | 1.06 1.20 1.34 | 60.00 80.00 90.00 |
| RRU 8843 (AT&T) | B | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 1.64 1.80 1.97 | 1.35 1.50 1.65 | 72.00 89.60 109.91 |
| * | | | | | | | | | |
| TPA65R-BU6D (AT&T) | C | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 13.20 13.91 14.59 | 7.52 8.80 9.93 | 97.50 192.55 296.34 |
| AIR6449 (AT&T) | C | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 5.65 5.96 6.26 | 2.42 2.64 2.87 | 100.00 140.00 180.00 |
| AIR6419 (AT&T) | C | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 3.80 4.05 4.31 | 1.94 2.14 2.34 | 77.00 104.86 136.30 |
| DMP65R-BU8DA-K (AT&T) | C | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 17.87 18.50 19.14 | 10.02 11.44 12.72 | 148.20 266.88 395.91 |
| Radio 4449 (AT&T) | C | From Face | 4.00 0.00 0.00 | 0.0000 | 123.00 | No Ice 1/2" Ice 1" Ice | 1.64 1.80 1.97 | 1.29 1.44 1.59 | 70.00 90.00 110.00 |
| RRUS32 (AT&T) | C | From Face | 4.00 | 0.0000 | 123.00 | No Ice | 3.31 | 2.42 | 80.00 |

| | | | | | | | | |
|--|----------------|--|--|--|--|--------------------|-------------|--|
| tnxTower Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | Job | | | | | | Page | |
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| | Project | | | | | | Date | |
| Dish Wireless LLC | | | | | | 09:15:26 09/20/22 | | |
| Client | | | | | | Designed by | | |

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

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
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| | Project | | Date | 09:15:26 09/20/22 |
| | Client | Dish Wireless LLC | Designed by | |

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

Dishes

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

Tower Pressures - No Ice

$$G_H = 1.100$$

| Section Elevation | z | K _Z | q _z | A _G | F a c e | A _F | A _R | A _{leg} | Leg % | C _{AA} In Face | C _{AA} Out Face |
|--------------------|--------|----------------|----------------|-----------------|---------|-----------------|-----------------|------------------|--------|-------------------------|--------------------------|
| ft | ft | | psf | ft ² | | ft ² | ft ² | ft ² | | ft ² | ft ² |
| L1 150.00-97.25 | 121.92 | 1.32 | 58 | 115.350 | A | 0.000 | 115.350 | 115.350 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 115.350 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 115.350 | | 100.00 | 5.934 | 0.000 |
| L2 97.25-48.25 | 71.97 | 1.181 | 52 | 152.078 | A | 0.000 | 152.078 | 152.078 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 152.078 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 152.078 | | 100.00 | 5.513 | 0.000 |
| L3 48.25-1.00 | 24.82 | 0.944 | 41 | 187.019 | A | 0.000 | 187.019 | 187.019 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 187.019 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 187.019 | | 100.00 | 5.316 | 0.000 |

Tower Pressure - With Ice

$$G_H = 1.100$$

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
| tnxTower Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | Job | NJJER02052B | Page | 9 of 21 |
| | Project | | Date | 09:15:26 09/20/22 |
| | Client | Dish Wireless LLC | Designed by | |

| Section Elevation ft | z ft | K _Z | q _z psf | t _z in | A _G ft ² | F a c e | A _F ft ² | A _R ft ² | A _{leg} ft ² | Leg % | C _{AA} In Face ft ² | C _{AA} Out Face ft ² |
|-------------------------|---------|----------------|-----------------------|----------------------|-----------------------------------|------------------|-----------------------------------|-----------------------------------|-------------------------------------|----------|--|---|
| L1 150.00-97.25 | 121.92 | 1.32 | 8 | 1.4245 | 127.873 | A | 0.000 | 127.873 | 127.873 | 100.00 | 0.000 | 0.000 |
| | | | | | | B | 0.000 | 127.873 | | 100.00 | 0.000 | 0.000 |
| | | | | | | C | 0.000 | 127.873 | | 100.00 | 35.992 | 0.000 |
| L2 97.25-48.25 | 71.97 | 1.181 | 7 | 1.3514 | 163.711 | A | 0.000 | 163.711 | 163.711 | 100.00 | 0.000 | 0.000 |
| | | | | | | B | 0.000 | 163.711 | | 100.00 | 0.000 | 0.000 |
| | | | | | | C | 0.000 | 163.711 | | 100.00 | 33.433 | 0.000 |
| L3 48.25-1.00 | 24.82 | 0.944 | 6 | 1.2149 | 197.661 | A | 0.000 | 197.661 | 197.661 | 100.00 | 0.000 | 0.000 |
| | | | | | | B | 0.000 | 197.661 | | 100.00 | 0.000 | 0.000 |
| | | | | | | C | 0.000 | 197.661 | | 100.00 | 30.857 | 0.000 |

Tower Pressure - Service

$G_H = 1.100$

| Section Elevation ft | z ft | K _Z | q _z psf | A _G ft ² | F a c e | A _F ft ² | A _R ft ² | A _{leg} ft ² | Leg % | C _{AA} In Face ft ² | C _{AA} Out Face ft ² |
|-------------------------|---------|----------------|-----------------------|-----------------------------------|------------------|-----------------------------------|-----------------------------------|-------------------------------------|----------|--|---|
| L1 150.00-97.25 | 121.92 | 1.32 | 10 | 115.350 | A | 0.000 | 115.350 | 115.350 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 115.350 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 115.350 | | 100.00 | 5.934 | 0.000 |
| L2 97.25-48.25 | 71.97 | 1.181 | 9 | 152.078 | A | 0.000 | 152.078 | 152.078 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 152.078 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 152.078 | | 100.00 | 5.513 | 0.000 |
| L3 48.25-1.00 | 24.82 | 0.944 | 7 | 187.019 | A | 0.000 | 187.019 | 187.019 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 187.019 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 187.019 | | 100.00 | 5.316 | 0.000 |

Tower Forces - No Ice - Wind Normal To Face

| Section Elevation ft | Add Weight lb | Self Weight lb | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F lb | w plf | Ctrl. Face |
|-------------------------|------------------|-------------------|------------------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|----------|----------|---------------|
| L1 150.00-97.25 | 757.10 | 3650.51 | A | 1 | 0.73 | 58 | 1 | 1 | 115.350 | 5409.46 | 102.55 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 115.350 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 115.350 | | | |
| L2 97.25-48.25 | 862.40 | 6484.44 | A | 1 | 0.73 | 52 | 1 | 1 | 152.078 | 6368.53 | 129.97 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 152.078 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 152.078 | | | |
| L3 48.25-1.00 | 787.60 | 9875.25 | A | 1 | 0.73 | 41 | 1 | 1 | 187.019 | 6197.72 | 131.17 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| Sum Weight: | 2407.10 | 20010.20 | | | | | | OTM | 1253728.6 0 lb-ft | 17975.71 | | |

Tower Forces - No Ice - Wind 60 To Face

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
| tnxTower Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | Job | NJJER02052B | Page | 10 of 21 |
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| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|--------------------|------------|-------------|---------|---|----------------|----------------|----------------|----------------|-----------------|----------|--------|------------|
| ft | lb | lb | | | | psf | | | ft ² | lb | plf | |
| L1 150.00-97.25 | 757.10 | 3650.51 | A | 1 | 0.73 | 58 | 1 | 1 | 115.350 | 5409.46 | 102.55 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 115.350 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 115.350 | | | |
| L2 97.25-48.25 | 862.40 | 6484.44 | A | 1 | 0.73 | 52 | 1 | 1 | 152.078 | 6368.53 | 129.97 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 152.078 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 152.078 | | | |
| L3 48.25-1.00 | 787.60 | 9875.25 | A | 1 | 0.73 | 41 | 1 | 1 | 187.019 | 6197.72 | 131.17 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| Sum Weight: | 2407.10 | 20010.20 | | | | | | OTM | 1253728.6 | 17975.71 | | |
| | | | | | | | | | 0 lb-ft | | | |

Tower Forces - No Ice - Wind 90 To Face

| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|--------------------|------------|-------------|---------|---|----------------|----------------|----------------|----------------|-----------------|----------|--------|------------|
| ft | lb | lb | | | | psf | | | ft ² | lb | plf | |
| L1 150.00-97.25 | 757.10 | 3650.51 | A | 1 | 0.73 | 58 | 1 | 1 | 115.350 | 5409.46 | 102.55 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 115.350 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 115.350 | | | |
| L2 97.25-48.25 | 862.40 | 6484.44 | A | 1 | 0.73 | 52 | 1 | 1 | 152.078 | 6368.53 | 129.97 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 152.078 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 152.078 | | | |
| L3 48.25-1.00 | 787.60 | 9875.25 | A | 1 | 0.73 | 41 | 1 | 1 | 187.019 | 6197.72 | 131.17 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| Sum Weight: | 2407.10 | 20010.20 | | | | | | OTM | 1253728.6 | 17975.71 | | |
| | | | | | | | | | 0 lb-ft | | | |

Tower Forces - With Ice - Wind Normal To Face

| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|--------------------|------------|-------------|---------|---|----------------|----------------|----------------|----------------|-----------------|---------|-------|------------|
| ft | lb | lb | | | | psf | | | ft ² | lb | plf | |
| L1 150.00-97.25 | 1121.93 | 6183.04 | A | 1 | 1.2 | 8 | 1 | 1 | 127.873 | 1352.22 | 25.63 | C |
| | | | B | 1 | 1.2 | | 1 | 1 | 127.873 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 127.873 | | | |
| L2 97.25-48.25 | 1201.30 | 9596.59 | A | 1 | 1.2 | 7 | 1 | 1 | 163.114 | 1540.27 | 31.43 | C |
| | | | B | 1 | 1.2 | | 1 | 1 | 163.114 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 163.114 | | | |
| L3 48.25-1.00 | 1086.20 | 13279.71 | A | 1 | 1.2 | 6 | 1 | 1 | 196.586 | 1469.03 | 31.09 | C |
| | | | B | 1 | 1.2 | | 1 | 1 | 196.586 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 196.586 | | | |
| Sum Weight: | 3409.43 | 29059.34 | | | | | | OTM | 307818.68 | 4361.52 | | |
| | | | | | | | | | lb-ft | | | |

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
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Tower Forces - With Ice - Wind 60 To Face

| Section Elevation ft | Add Weight lb | Self Weight lb | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F lb | w plf | Ctrl. Face |
|-------------------------|------------------|-------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|---------|----------|------------|
| L1 150.00-97.25 | 1121.93 | 6183.04 | A | 1 | 1.2 | 8 | 1 | 1 | 127.873 | 1352.22 | 25.63 | C |
| | | | B | 1 | 1.2 | | | | | | | |
| | | | C | 1 | 1.2 | | | | | | | |
| L2 97.25-48.25 | 1201.30 | 9596.59 | A | 1 | 1.2 | 7 | 1 | 1 | 163.114 | 1540.27 | 31.43 | C |
| | | | B | 1 | 1.2 | | | | | | | |
| | | | C | 1 | 1.2 | | | | | | | |
| L3 48.25-1.00 | 1086.20 | 13279.71 | A | 1 | 1.2 | 6 | 1 | 1 | 196.586 | 1469.03 | 31.09 | C |
| | | | B | 1 | 1.2 | | | | | | | |
| | | | C | 1 | 1.2 | | | | | | | |
| Sum Weight: | 3409.43 | 29059.34 | | | | | | OTM | 307818.68 lb-ft | 4361.52 | | |

Tower Forces - With Ice - Wind 90 To Face

| Section Elevation ft | Add Weight lb | Self Weight lb | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F lb | w plf | Ctrl. Face |
|-------------------------|------------------|-------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|---------|----------|------------|
| L1 150.00-97.25 | 1121.93 | 6183.04 | A | 1 | 1.2 | 8 | 1 | 1 | 127.873 | 1352.22 | 25.63 | C |
| | | | B | 1 | 1.2 | | | | | | | |
| | | | C | 1 | 1.2 | | | | | | | |
| L2 97.25-48.25 | 1201.30 | 9596.59 | A | 1 | 1.2 | 7 | 1 | 1 | 163.114 | 1540.27 | 31.43 | C |
| | | | B | 1 | 1.2 | | | | | | | |
| | | | C | 1 | 1.2 | | | | | | | |
| L3 48.25-1.00 | 1086.20 | 13279.71 | A | 1 | 1.2 | 6 | 1 | 1 | 196.586 | 1469.03 | 31.09 | C |
| | | | B | 1 | 1.2 | | | | | | | |
| | | | C | 1 | 1.2 | | | | | | | |
| Sum Weight: | 3409.43 | 29059.34 | | | | | | OTM | 307818.68 lb-ft | 4361.52 | | |

Tower Forces - Service - Wind Normal To Face

| Section Elevation ft | Add Weight lb | Self Weight lb | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F lb | w plf | Ctrl. Face |
|-------------------------|------------------|-------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|---------|----------|------------|
| L1 150.00-97.25 | 757.10 | 3650.51 | A | 1 | 0.73 | 10 | 1 | 1 | 115.350 | 956.06 | 18.12 | C |
| | | | B | 1 | 0.73 | | | | | | | |
| | | | C | 1 | 0.73 | | | | | | | |
| L2 97.25-48.25 | 862.40 | 6484.44 | A | 1 | 0.73 | 9 | 1 | 1 | 152.078 | 1125.56 | 22.97 | C |
| | | | B | 1 | 0.73 | | | | | | | |
| | | | C | 1 | 0.73 | | | | | | | |

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
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| Section Elevation ft | Add Weight lb | Self Weight lb | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F lb | w plf | Ctrl. Face |
|-------------------------|------------------|-------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|---------|----------|------------|
| L3 48.25-1.00 | 787.60 | 9875.25 | A | 1 | 0.73 | 7 | 1 | 1 | 187.019 | 1095.37 | 23.18 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| Sum Weight: | 2407.10 | 20010.20 | | | | | | OTM | 221581.66 lb-ft | 3176.99 | | |

Tower Forces - Service - Wind 60 To Face

| Section Elevation ft | Add Weight lb | Self Weight lb | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F lb | w plf | Ctrl. Face |
|-------------------------|------------------|-------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|---------|----------|------------|
| L1 150.00-97.25 | 757.10 | 3650.51 | A | 1 | 0.73 | 10 | 1 | 1 | 115.350 | 956.06 | 18.12 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 115.350 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 115.350 | | | |
| L2 97.25-48.25 | 862.40 | 6484.44 | A | 1 | 0.73 | 9 | 1 | 1 | 152.078 | 1125.56 | 22.97 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 152.078 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 152.078 | | | |
| L3 48.25-1.00 | 787.60 | 9875.25 | A | 1 | 0.73 | 7 | 1 | 1 | 187.019 | 1095.37 | 23.18 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| Sum Weight: | 2407.10 | 20010.20 | | | | | | OTM | 221581.66 lb-ft | 3176.99 | | |

Tower Forces - Service - Wind 90 To Face

| Section Elevation ft | Add Weight lb | Self Weight lb | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F lb | w plf | Ctrl. Face |
|-------------------------|------------------|-------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|---------|----------|------------|
| L1 150.00-97.25 | 757.10 | 3650.51 | A | 1 | 0.73 | 10 | 1 | 1 | 115.350 | 956.06 | 18.12 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 115.350 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 115.350 | | | |
| L2 97.25-48.25 | 862.40 | 6484.44 | A | 1 | 0.73 | 9 | 1 | 1 | 152.078 | 1125.56 | 22.97 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 152.078 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 152.078 | | | |
| L3 48.25-1.00 | 787.60 | 9875.25 | A | 1 | 0.73 | 7 | 1 | 1 | 187.019 | 1095.37 | 23.18 | C |
| | | | B | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| | | | C | 1 | 0.73 | | 1 | 1 | 187.019 | | | |
| Sum Weight: | 2407.10 | 20010.20 | | | | | | OTM | 221581.66 lb-ft | 3176.99 | | |

Force Totals

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

Load Combinations

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

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
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| | Project | | Date | 09:15:26 09/20/22 |
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| <i>Comb. No.</i> | <i>Description</i> |
|------------------|--|
| 9 | 0.9 Dead+1.0 Wind 90 deg - No Ice |
| 10 | 1.2 Dead+1.0 Wind 120 deg - No Ice |
| 11 | 0.9 Dead+1.0 Wind 120 deg - No Ice |
| 12 | 1.2 Dead+1.0 Wind 150 deg - No Ice |
| 13 | 0.9 Dead+1.0 Wind 150 deg - No Ice |
| 14 | 1.2 Dead+1.0 Wind 180 deg - No Ice |
| 15 | 0.9 Dead+1.0 Wind 180 deg - No Ice |
| 16 | 1.2 Dead+1.0 Wind 210 deg - No Ice |
| 17 | 0.9 Dead+1.0 Wind 210 deg - No Ice |
| 18 | 1.2 Dead+1.0 Wind 240 deg - No Ice |
| 19 | 0.9 Dead+1.0 Wind 240 deg - No Ice |
| 20 | 1.2 Dead+1.0 Wind 270 deg - No Ice |
| 21 | 0.9 Dead+1.0 Wind 270 deg - No Ice |
| 22 | 1.2 Dead+1.0 Wind 300 deg - No Ice |
| 23 | 0.9 Dead+1.0 Wind 300 deg - No Ice |
| 24 | 1.2 Dead+1.0 Wind 330 deg - No Ice |
| 25 | 0.9 Dead+1.0 Wind 330 deg - No Ice |
| 26 | 1.2 Dead+1.0 Ice+1.0 Temp |
| 27 | 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp |
| 28 | 1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp |
| 29 | 1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp |
| 30 | 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp |
| 31 | 1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp |
| 32 | 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp |
| 33 | 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp |
| 34 | 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp |
| 35 | 1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp |
| 36 | 1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp |
| 37 | 1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp |
| 38 | 1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp |
| 39 | Dead+Wind 0 deg - Service |
| 40 | Dead+Wind 30 deg - Service |
| 41 | Dead+Wind 60 deg - Service |
| 42 | Dead+Wind 90 deg - Service |
| 43 | Dead+Wind 120 deg - Service |
| 44 | Dead+Wind 150 deg - Service |
| 45 | Dead+Wind 180 deg - Service |
| 46 | Dead+Wind 210 deg - Service |
| 47 | Dead+Wind 240 deg - Service |
| 48 | Dead+Wind 270 deg - Service |
| 49 | Dead+Wind 300 deg - Service |
| 50 | Dead+Wind 330 deg - Service |

Maximum Member Forces

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

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
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| | Client | Dish Wireless LLC | Designed by | |

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

Maximum Reactions

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

Tower Mast Reaction Summary

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

| | | | | |
|---|----------------|-------------------|-------------|--------------------|
| <p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX:</p> | Job | NJJER02052B | Page | 16 of 21 |
| | Project | | Date | 09:15:26 09/20/22 |
| | Client | Dish Wireless LLC | | Designed by |

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

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
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| | Project | | Date | 09:15:26 09/20/22 |
| | Client | Dish Wireless LLC | Designed by | |

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

Solution Summary

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

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
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| | Client | Dish Wireless LLC | Designed by | |

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

Non-Linear Convergence Results

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

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

Maximum Tower Deflections - Service Wind

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

Critical Deflections and Radius of Curvature - Service Wind

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

Maximum Tower Deflections - Design Wind


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

Critical Deflections and Radius of Curvature - Design Wind

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

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
| tnxTower Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | Job | NJJER02052B | Page | 20 of 21 |
| | Project | | Date | 09:15:26 09/20/22 |
| | Client | Dish Wireless LLC | Designed by | |

Base Plate Design Data

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

Compression Checks

Pole Design Data

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

Pole Bending Design Data

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

Pole Shear Design Data

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

| | | | | |
|--|----------------|-------------------|--------------------|-------------------|
| tnxTower Magaram Engineering 13705 Stone Shadow Clifton VA Phone: 914-450-8416 FAX: | Job | NJJER02052B | Page | 21 of 21 |
| | Project | | Date | 09:15:26 09/20/22 |
| | Client | Dish Wireless LLC | Designed by | |

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

Pole Interaction Design Data

| Section No. | Elevation ft | Ratio P_u ϕP_n | Ratio M_{ux} ϕM_{ux} | Ratio M_{uy} ϕM_{uy} | Ratio V_u ϕV_n | Ratio T_u ϕT_n | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|-------------|----------------------|------------------------------|------------------------------------|------------------------------------|------------------------------|------------------------------|--------------------------|---------------------------|----------|
| L1 | 150 - 97.25 (1) | 0.055 | 0.578 | 0.000 | 0.058 | 0.001 | 0.636 | 1.000 | 4.8.2 ✓ |
| L2 | 97.25 - 48.25 (2) | 0.034 | 0.843 | 0.000 | 0.043 | 0.000 | 0.879 | 1.000 | 4.8.2 ✓ |
| L3 | 48.25 - 1 (3) | 0.024 | 0.855 | 0.000 | 0.034 | 0.000 | 0.880 | 1.000 | 4.8.2 ✓ |

Section Capacity Table

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



Amended EXHIBIT E

Mount Analysis



August 10, 2022

PASS

RE: Mount Analysis
Location: 200 Oronoque lane Stratford, CT 06614
Site ID: NJJER02052B

Dish Wireless LLC,

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

1.0 Assumptions:

| CATEGORY | DATA | CODE |
|-------------------------|----------|----------------------|
| Structure Type | Monopole | |
| Rad Center | 110'-0" | |
| Structure Class | IV | ASCE 7-16 |
| Exposure Class | C | ASCE 7-16 |
| Kzt Factor | 1.0 | ASCE 7-16 |
| Basic Wind Speed | 135 | 2022 Connecticut SBC |
| Ice Thickness | 1" | ASCE 7-16 |
| Ice Windspeed | 50 MPH | ASCE 7-16 |
| Seismic Design Category | C | ASCE 7-16 |
| S _{DS} | .218 | ASCE 7-16 |

2.0 Existing Documents:

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



3.0 Proposed Equipment:

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

Bold represents equipment to be added

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

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

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

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

Sincerely,

Magaram Engineering

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



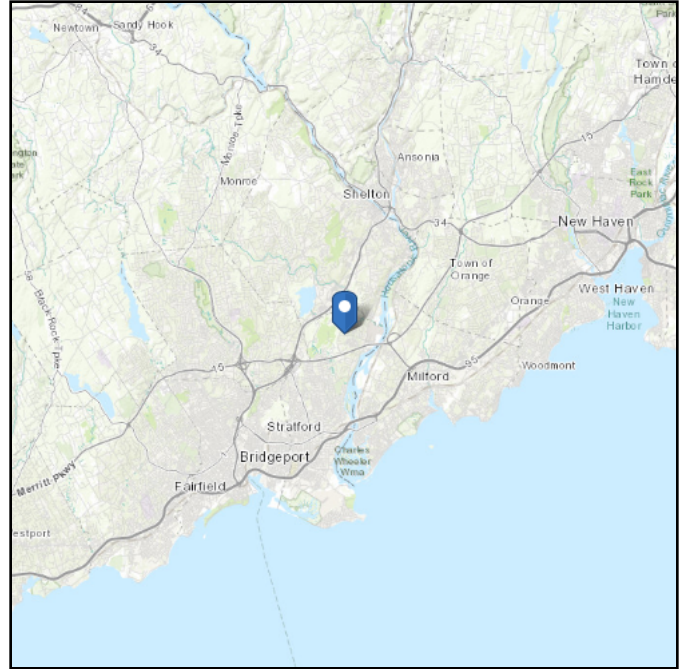
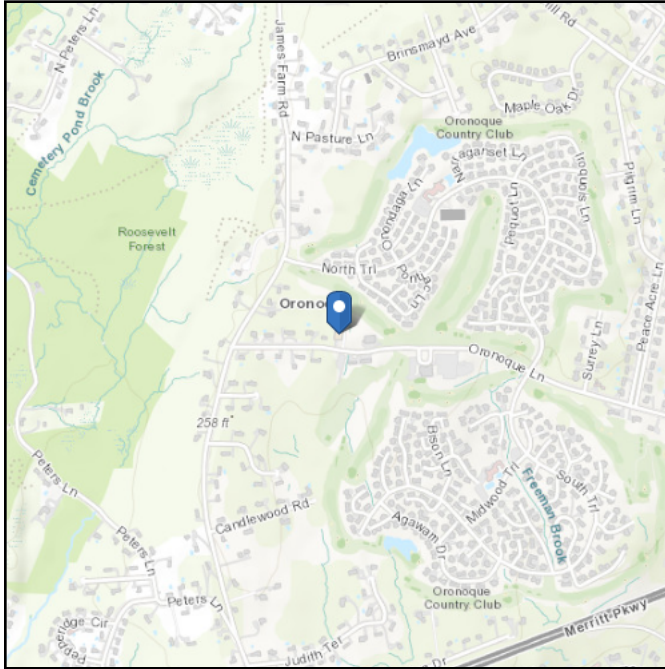


ASCE 7 Hazards Report

Address:
200 Oronoque Ln
Stratford, Connecticut
06614

Standard: ASCE/SEI 7-16
Risk Category: IV
Soil Class: D - Default (see Section 11.4.3)

Elevation: 256.3 ft (NAVD 88)
Latitude: 41.251254
Longitude: -73.11699

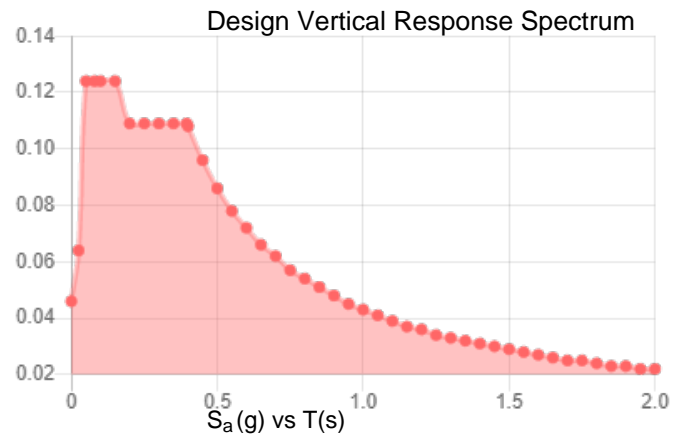
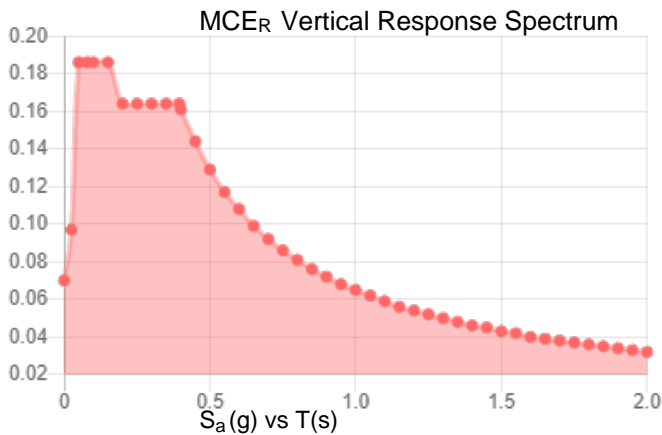
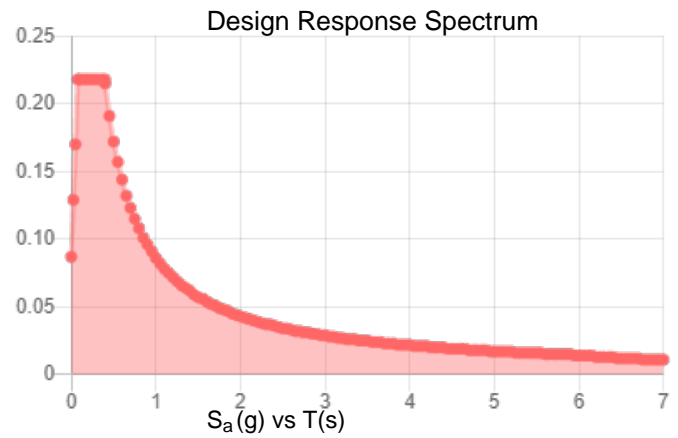
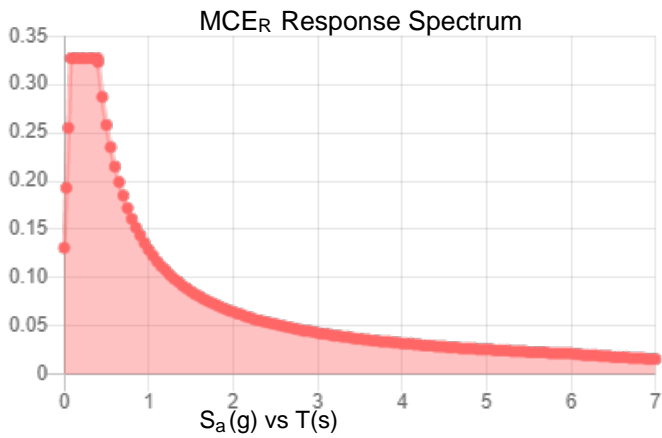


Site Soil Class: D - Default (see Section 11.4.3)

Results:

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

Seismic Design Category C



Data Accessed: Tue Aug 09 2022

Date Source:

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

Ice

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 15 F
Gust Speed 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Tue Aug 09 2022

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

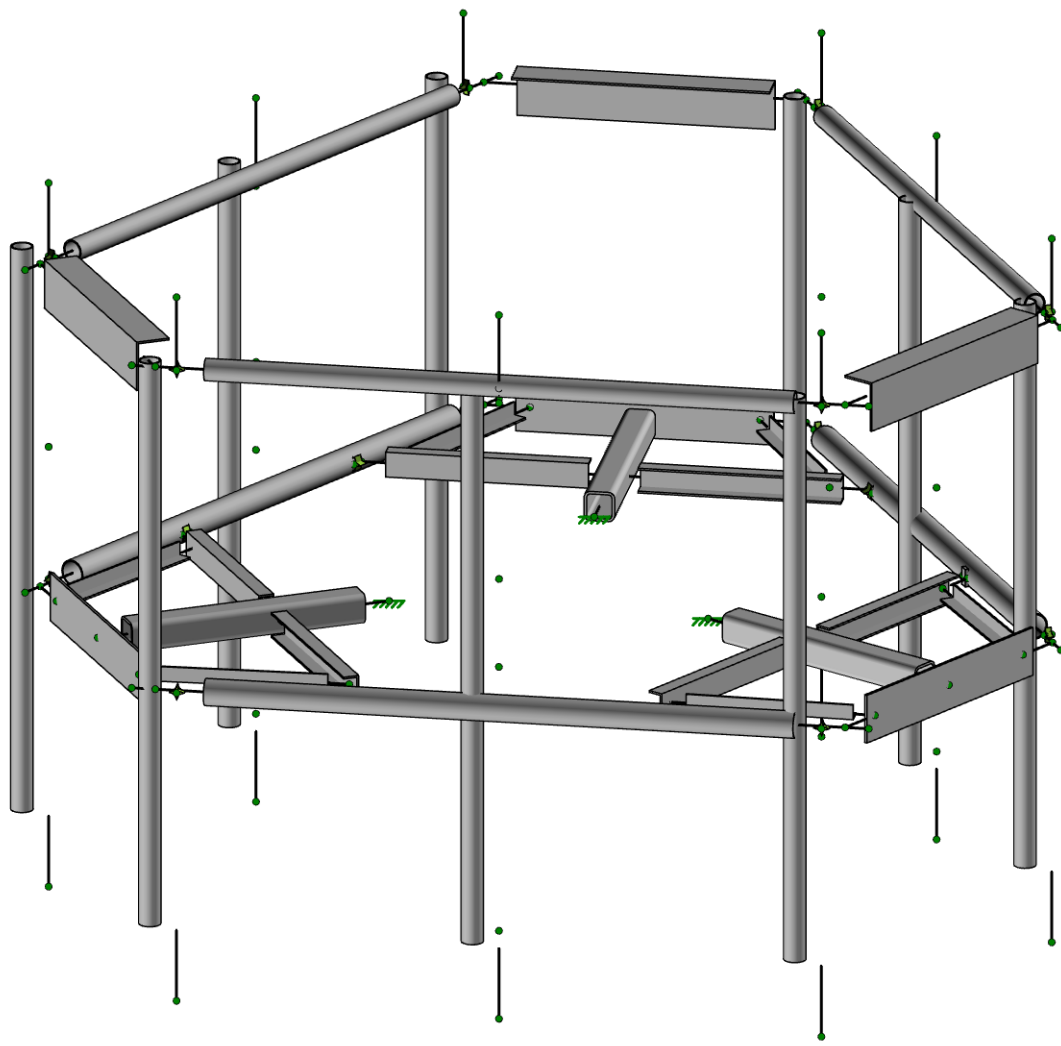
Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from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

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.

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| Municipality | Basic Design Wind Speeds, V (mph) | | | | Allowable Stress Design Wind Speeds, V_{asd} (mph) | | | | Ground Snow Load P_g (psf) | MCE Ground Accelerations | | Wind-Borne Debris Region ¹ | | Hurricane- Prone Region |
|---------------|--|-----------------|---------------------|--------------------|--|-----------------|---------------------|--------------------|--|-----------------------------|--------------|--|-----------------|-------------------------------|
| | Risk Cat. I | Risk Cat. II | Risk Cat. III | Risk Cat. IV | Risk Cat. I | Risk Cat. II | Risk Cat. III | Risk Cat. IV | | S_S (g) | S_I (g) | Risk Cat. III Occup. 1-2 | Risk Cat. IV | |
| Sherman | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 35 | 0.203 | 0.055 | | | |
| Simsbury | 110 | 120 | 125 | 130 | 85 | 93 | 97 | 101 | 35 | 0.177 | 0.054 | | | Yes |
| Somers | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 35 | 0.174 | 0.055 | | | Yes |
| South Windsor | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.183 | 0.055 | | | Yes |
| Southbury | 110 | 120 | 130 | 130 | 85 | 93 | 101 | 101 | 35 | 0.199 | 0.054 | | | Yes |
| Southington | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.196 | 0.055 | | | Yes |
| Sprague | 115 | 125 | 135 | 140 | 89 | 97 | 105 | 108 | 30 | 0.191 | 0.054 | | | Yes |
| Stafford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 35 | 0.176 | 0.055 | | | Yes |
| Stamford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.261 | 0.058 | | Type B | Yes |
| Sterling | 115 | 125 | 135 | 140 | 89 | 97 | 105 | 108 | 35 | 0.187 | 0.054 | | | Yes |
| Stonington | 120 | 130 | 140 | 145 | 93 | 101 | 108 | 112 | 30 | 0.182 | 0.051 | Type B | Type A | Yes |
| Stratford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.206 | 0.054 | | Type B | Yes |
| Suffield | 110 | 120 | 125 | 130 | 85 | 93 | 97 | 101 | 35 | 0.170 | 0.054 | | | Yes |
| Thomaston | 110 | 120 | 125 | 130 | 85 | 93 | 97 | 101 | 35 | 0.184 | 0.054 | | | Yes |
| Thompson | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 40 | 0.185 | 0.056 | | | Yes |
| Tolland | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 35 | 0.182 | 0.055 | | | Yes |
| Torrington | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 40 | 0.175 | 0.054 | | | |
| Trumbull | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.210 | 0.054 | | | Yes |
| Union | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 40 | 0.178 | 0.055 | | | Yes |
| Vernon | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.186 | 0.055 | | | Yes |
| Voluntown | 120 | 130 | 135 | 140 | 93 | 101 | 105 | 108 | 30 | 0.188 | 0.053 | | | Yes |
| Wallingford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.205 | 0.055 | | | Yes |
| Warren | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 40 | 0.179 | 0.054 | | | |
| Washington | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 35 | 0.189 | 0.054 | | | |
| Waterbury | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 35 | 0.193 | 0.054 | | | Yes |
| Waterford | 120 | 130 | 140 | 140 | 93 | 101 | 108 | 108 | 30 | 0.194 | 0.053 | Type B | Type B | Yes |
| Watertown | 110 | 120 | 130 | 130 | 85 | 93 | 101 | 101 | 35 | 0.189 | 0.054 | | | Yes |
| West Hartford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.187 | 0.055 | | | Yes |
| West Haven | 110 | 125 | 130 | 135 | 85 | 97 | 101 | 105 | 30 | 0.200 | 0.053 | Type B | Type B | Yes |
| Westbrook | 115 | 125 | 135 | 140 | 89 | 97 | 105 | 108 | 30 | 0.204 | 0.054 | Type B | Type B | Yes |
| Weston | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.233 | 0.056 | | | Yes |
| Westport | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.232 | 0.056 | | Type B | Yes |



Envelope Only Solution

Magaram Engineering

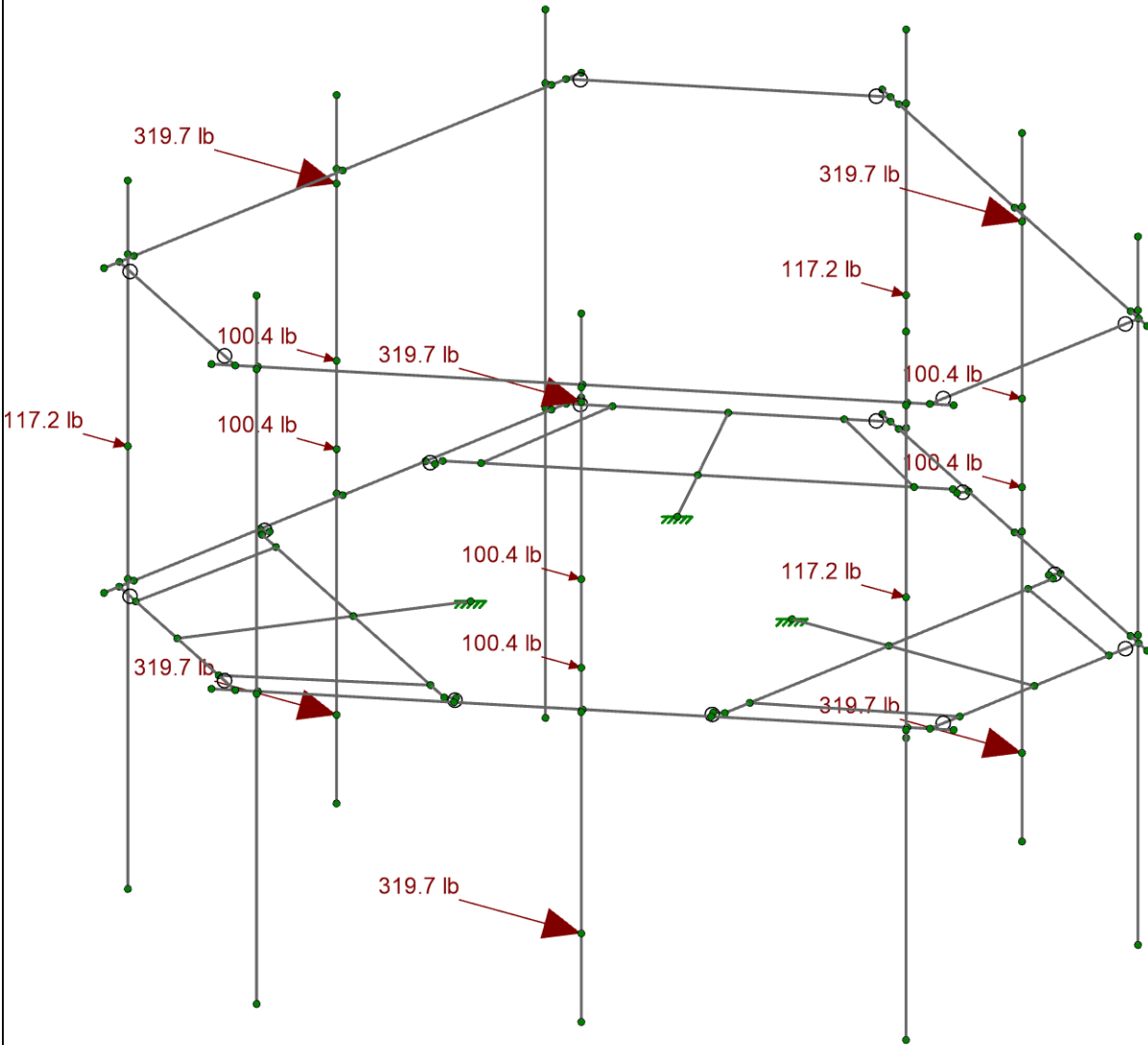
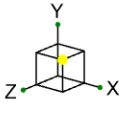
BJM

NJJER02052B

SK-2

Aug 10, 2022

NJJER02052B - MA Model.r3d



Loads: BLC 3, Telco Wx
Envelope Only Solution

Magaram Engineering

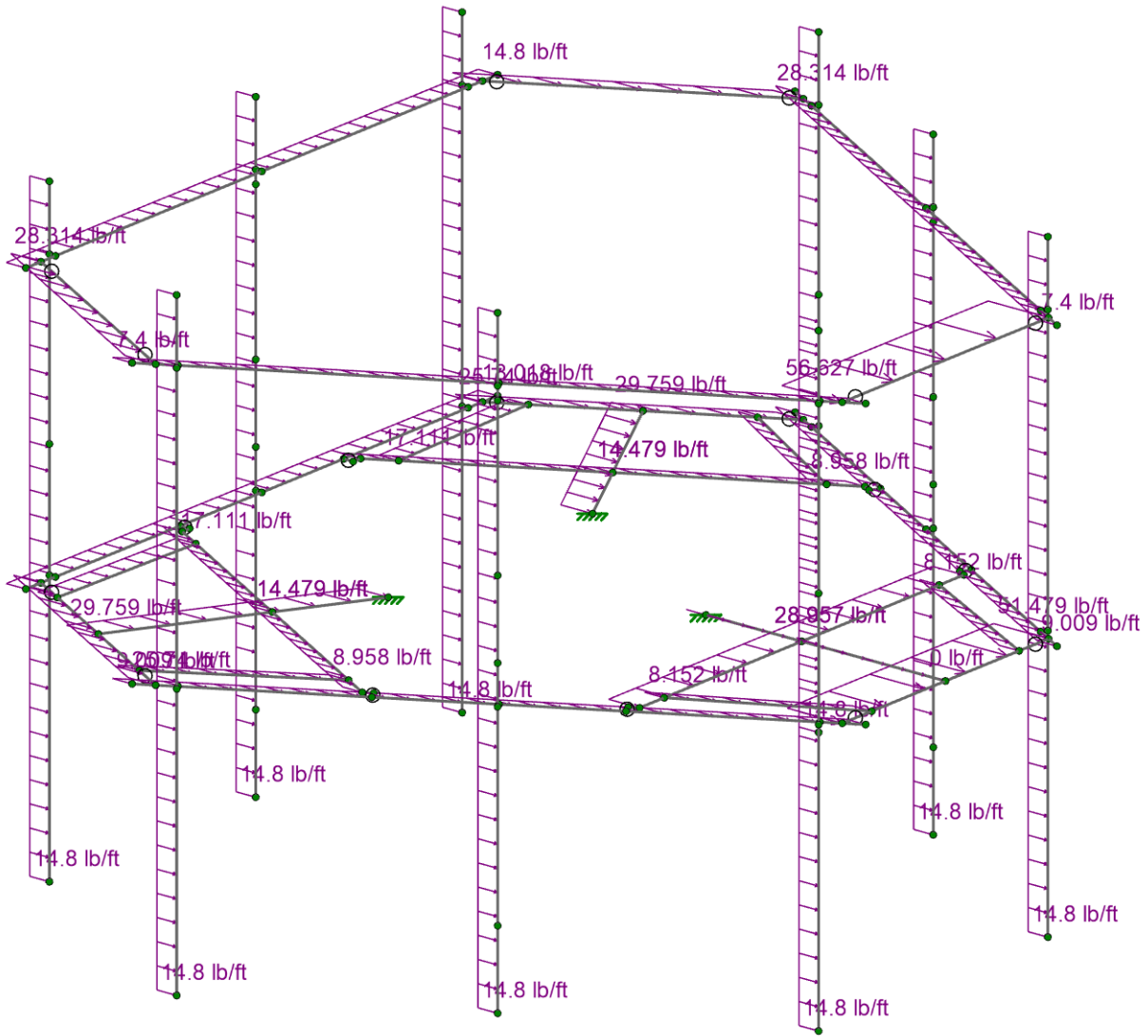
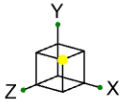
BJM

NJJER02052B

SK-3

Aug 10, 2022

NJJER02052B - MA Model.r3d

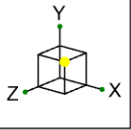


Loads: BLC 12, Mount Wx
Envelope Only Solution

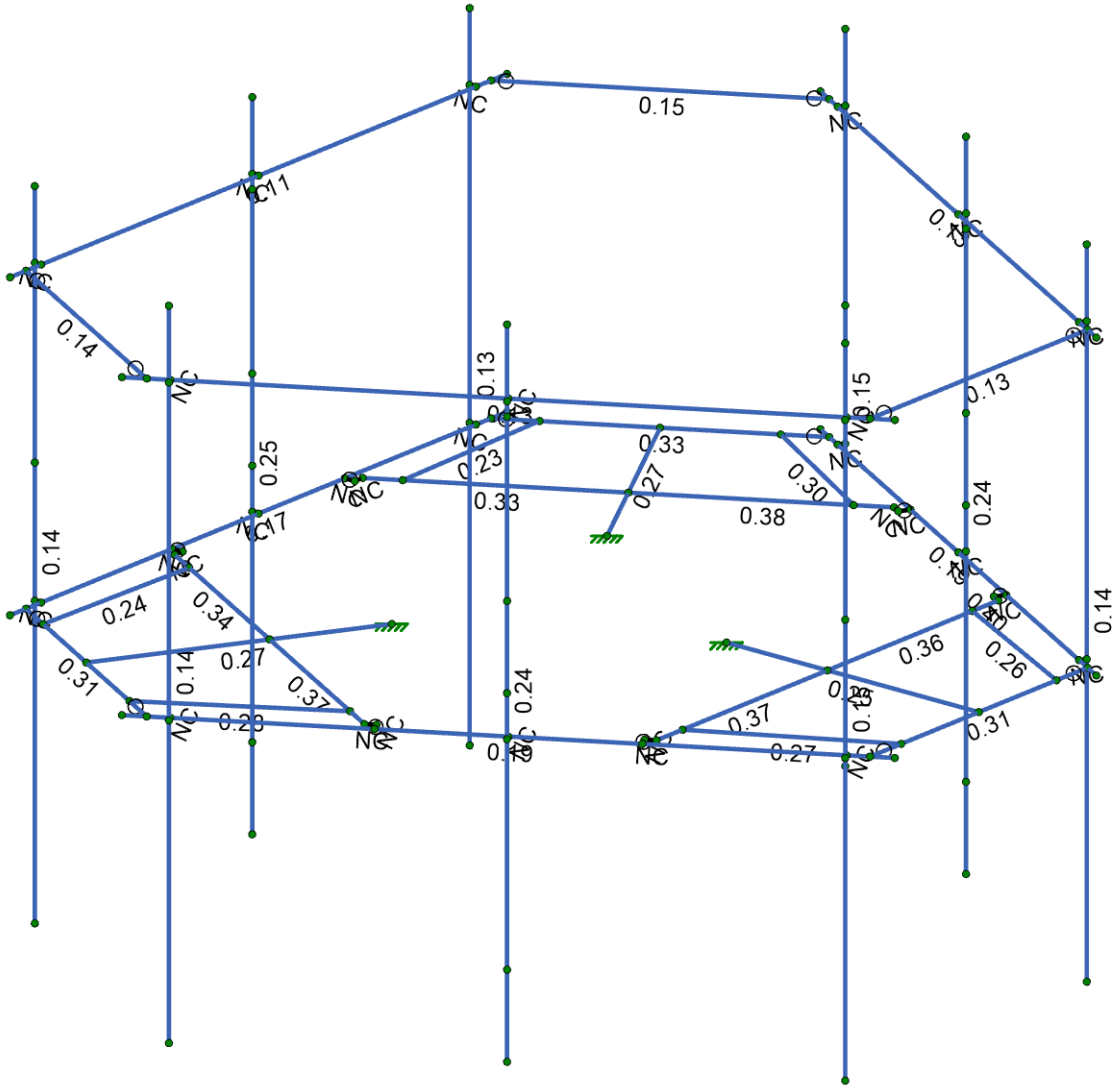
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|---------------------|
| Magaram Engineering |
| BJM |
| |

NJJER02052B

| |
|----------------------------|
| SK-4 |
| Aug 10, 2022 |
| NJJER02052B - MA Model.r3d |



| Code Check (Env) | |
|------------------|---------|
| Black | No Calc |
| Red | > 1.0 |
| Magenta | .90-1.0 |
| Green | .75-.90 |
| Cyan | .50-.75 |
| Blue | 0.-.50 |



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Magaram Engineering

BJM

NJJER02052B

SK-1

Aug 10, 2022

NJJER02052B - MA Model.r3d

Hot Rolled Steel Properties

| | Label | E [ksi] | G [ksi] | Nu | Therm. Coeff. [1e ⁵ F ⁻¹] | Density [k/ft ³] | Yield [ksi] | Ry | Fu [ksi] | Rt |
|----|----------------|---------|---------|-----|--|------------------------------|-------------|-----|----------|-----|
| 1 | 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. [1e ⁵ F ⁻¹] | Density [k/ft ³] | 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 [in ²] | Iyy [in ⁴] | Izz [in ⁴] | J [in ⁴] |
|---|---------------------|-----------------|------|-------------|--------------|-------------|-------------------------|------------------------|------------------------|----------------------|
| 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 [in ²] | Iyy [in ⁴] | Izz [in ⁴] | J [in ⁴] |
|---|-------|-------|------|-------------|-------------------------|------------------------|------------------------|----------------------|
| 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 |

Wall Panel U.C. Parameters

| Label | Max Bending Chk | Max Shear Chk |
|-------|-----------------|---------------|
| 1 | Typical | 1 |

Frame / HR Column Seismic Design Rule

| Label | Frame Ductility | Overstrength Req'd |
|-------|-----------------|--------------------|
| 1 | OCBF | Minimal |
| 2 | SCBF | High |
| 3 | OMF | Minimal |
| 4 | IMF | Moderate |
| 5 | SMF-RBS | High |
| 6 | SMF-Kaiser | High |

HR Beam Seismic Design Rule

| Label | Connection | Overstrength Req'd | 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 Req'd | 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 | 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*s ² /in, lb*s ² *in)] |
|----|------------|---------|-----------|---|
| 1 | N127 | L | Y | -35.25 |
| 2 | N130 | L | Y | -35.25 |
| 3 | N143 | L | Y | -35.25 |
| 4 | N144 | L | Y | -35.25 |
| 5 | N147 | L | Y | -35.25 |
| 6 | N149 | L | Y | -35.25 |
| 7 | N142 | L | Y | -76 |
| 8 | N146 | L | Y | -76 |
| 9 | N151 | L | Y | -76 |
| 10 | N141 | L | Y | -63.9 |
| 11 | N145 | L | Y | -63.9 |
| 12 | N150 | L | Y | -63.9 |
| 13 | N130B | L | Y | -21.8 |
| 14 | N131B | L | Y | -21.8 |
| 15 | N132C | L | Y | -21.8 |

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

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

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

| | Node Label | L, D, M | Direction | Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)] |
|----|------------|---------|-----------|---|
| 8 | N146 | L | Y | -38.2 |
| 9 | N151 | L | Y | -38.2 |
| 10 | N141 | L | Y | -37 |
| 11 | N145 | L | Y | -37 |
| 12 | N150 | L | Y | -37 |
| 13 | N130B | L | Y | -44.7 |
| 14 | N131B | L | Y | -44.7 |
| 15 | N132C | L | Y | -44.7 |

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

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

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

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

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

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

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

| | Node Label | L, D, M | Direction | Magnitude [(lb, k-ft), (in, rad), (lb*s ² /in, lb*s ² *in)] |
|----|------------|---------|-----------|---|
| 6 | N149 | L | X | 26.85 |
| 7 | N142 | L | X | 8.7 |
| 8 | N146 | L | X | 8.7 |
| 9 | N151 | L | X | 8.7 |
| 10 | N141 | L | X | 8.7 |
| 11 | N145 | L | X | 8.7 |
| 12 | N150 | L | X | 8.7 |
| 13 | N130B | L | X | 10.2 |
| 14 | N131B | L | X | 10.2 |
| 15 | N132C | L | X | 10.2 |

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

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

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

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

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

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

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

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

Node Loads and Enforced Displacements (BLC 19 : Lm)

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

Load Combinations (Continued)

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

Load Combination Design

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



Load Combination Design (Continued)

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

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

No Data to Print...

Envelope Node Reactions

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

Envelope Node Displacements

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

Envelope Node Displacements (Continued)

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

Envelope Node Displacements (Continued)

| Node Label | | X [in] | LC | Y [in] | LC | Z [in] | LC | X Rotation [rad] | LC | Y Rotation [rad] | LC | Z Rotation [rad] | LC | |
|------------|-------|--------|--------|--------|--------|--------|--------|------------------|-----------|------------------|-----------|------------------|-----------|----|
| 111 | N125A | max | 0.05 | 16 | -0.019 | 33 | 0.091 | 7 | 1.786e-3 | 70 | 3.3e-3 | 24 | 5.171e-3 | 70 |
| 112 | | min | -0.049 | 25 | -0.11 | 70 | -0.091 | 15 | -1.272e-3 | 15 | -3.308e-3 | 15 | 4.465e-4 | 33 |
| 113 | N126A | max | 0.05 | 16 | -0.02 | 33 | 0.096 | 7 | 1.786e-3 | 70 | 1.678e-3 | 15 | 6.633e-3 | 11 |
| 114 | | min | -0.049 | 25 | -0.119 | 70 | -0.096 | 15 | -1.272e-3 | 15 | -1.674e-3 | 24 | -5.5e-3 | 20 |
| 115 | N128 | max | 0.112 | 35 | -0.018 | 28 | 0.013 | 23 | 3.661e-3 | 70 | 3.636e-3 | 35 | 9.142e-4 | 27 |
| 116 | | min | -0.113 | 10 | -0.112 | 70 | -0.013 | 14 | 9.596e-4 | 28 | -3.66e-3 | 10 | -4.185e-3 | 70 |
| 117 | N129 | max | 0.117 | 35 | -0.019 | 28 | 0.013 | 24 | 4.507e-3 | 6 | 1.865e-3 | 10 | 3.209e-3 | 13 |
| 118 | | min | -0.118 | 10 | -0.12 | 70 | -0.013 | 15 | -4.51e-3 | 14 | -1.855e-3 | 35 | -2.773e-3 | 22 |
| 119 | N131 | max | 0.059 | 21 | -0.021 | 22 | 0.098 | 22 | 8.193e-5 | 22 | 3.795e-3 | 13 | -3.298e-4 | 29 |
| 120 | | min | -0.059 | 12 | -0.11 | 70 | -0.098 | 13 | -5.331e-3 | 70 | -3.772e-3 | 22 | -2.658e-3 | 55 |
| 121 | N132 | max | 0.064 | 21 | -0.022 | 22 | 0.101 | 22 | 4.766e-3 | 8 | 1.881e-3 | 22 | 2.732e-3 | 27 |
| 122 | | min | -0.065 | 12 | -0.118 | 70 | -0.101 | 13 | -4.376e-3 | 33 | -1.912e-3 | 13 | -2.832e-3 | 18 |
| 123 | N132A | max | 0.048 | 6 | -0.019 | 23 | 0.091 | 24 | 1.619e-3 | 70 | 3.286e-3 | 7 | 3.58e-3 | 66 |
| 124 | | min | -0.047 | 31 | -0.099 | 65 | -0.091 | 15 | -8.802e-4 | 32 | -3.283e-3 | 32 | 3.725e-4 | 24 |
| 125 | N133 | max | 0.048 | 6 | -0.019 | 23 | 0.096 | 7 | 1.619e-3 | 70 | 1.635e-3 | 32 | 6.486e-3 | 11 |
| 126 | | min | -0.047 | 31 | -0.105 | 65 | -0.096 | 15 | -8.802e-4 | 32 | -1.635e-3 | 7 | -5.375e-3 | 20 |
| 127 | N134 | max | 0.059 | 35 | -0.021 | 34 | 0.096 | 10 | 2.781e-3 | 43 | 3.643e-3 | 34 | -3.419e-4 | 27 |
| 128 | | min | -0.059 | 10 | -0.101 | 60 | -0.095 | 35 | -1.625e-4 | 34 | -3.675e-3 | 9 | -2.693e-3 | 69 |
| 129 | N135 | max | 0.064 | 35 | -0.022 | 34 | 0.099 | 10 | 4.209e-3 | 23 | 1.877e-3 | 10 | 2.675e-3 | 29 |
| 130 | | min | -0.064 | 10 | -0.107 | 60 | -0.098 | 35 | -4.681e-3 | 14 | -1.835e-3 | 35 | -2.946e-3 | 4 |
| 131 | N137 | max | 0.11 | 21 | -0.018 | 28 | 0.012 | 25 | -1.119e-3 | 27 | 5.176e-3 | 12 | 8.874e-4 | 29 |
| 132 | | min | -0.111 | 12 | -0.097 | 54 | -0.012 | 33 | -4.331e-3 | 69 | -5.182e-3 | 21 | -2.245e-3 | 4 |
| 133 | N138 | max | 0.118 | 21 | -0.019 | 28 | 0.014 | 24 | 4.38e-3 | 25 | 1.839e-3 | 21 | 3.185e-3 | 9 |
| 134 | | min | -0.118 | 12 | -0.104 | 54 | -0.014 | 32 | -4.475e-3 | 16 | -1.842e-3 | 12 | -2.59e-3 | 34 |
| 135 | N72B | max | 0.018 | 3 | -0.035 | 20 | 0.097 | 7 | 1.784e-3 | 70 | 3.066e-3 | 15 | 6.446e-3 | 11 |
| 136 | | min | -0.018 | 28 | -0.116 | 62 | -0.097 | 15 | -1.154e-3 | 32 | -3.064e-3 | 7 | -5.278e-3 | 20 |
| 137 | N73 | max | 0.385 | 20 | -0.035 | 28 | 0.278 | 7 | 2.493e-3 | 7 | 3.167e-4 | 16 | 8.352e-3 | 28 |
| 138 | | min | -0.399 | 11 | -0.133 | 54 | -0.275 | 32 | -2.404e-3 | 32 | -3.087e-4 | 25 | -8.415e-3 | 3 |
| 139 | N74 | max | 0.096 | 11 | -0.009 | 20 | 0.2 | 24 | 3.584e-3 | 15 | 4.386e-3 | 15 | 1.609e-3 | 62 |
| 140 | | min | -0.055 | 20 | -0.12 | 62 | -0.204 | 15 | -3.495e-3 | 24 | -4.383e-3 | 24 | -6.734e-4 | 20 |
| 141 | N75 | max | 0.469 | 20 | -0.042 | 31 | 0.303 | 7 | 2.5e-3 | 7 | 3.167e-4 | 16 | 8.358e-3 | 28 |
| 142 | | min | -0.483 | 11 | -0.136 | 56 | -0.298 | 32 | -2.41e-3 | 32 | -3.087e-4 | 25 | -8.421e-3 | 3 |
| 143 | N76 | max | 0.018 | 3 | -0.03 | 20 | 0.094 | 7 | 1.784e-3 | 70 | 3.066e-3 | 15 | 6.446e-3 | 11 |
| 144 | | min | -0.018 | 28 | -0.118 | 62 | -0.094 | 15 | -1.154e-3 | 32 | -3.064e-3 | 7 | -5.278e-3 | 20 |
| 145 | N77 | max | 0.385 | 20 | -0.042 | 31 | 0.278 | 7 | 2.493e-3 | 7 | 3.167e-4 | 16 | 8.352e-3 | 28 |
| 146 | | min | -0.399 | 11 | -0.131 | 57 | -0.274 | 32 | -2.404e-3 | 32 | -3.087e-4 | 25 | -8.415e-3 | 3 |
| 147 | N81A | max | 0.072 | 3 | 0.039 | 35 | 0.093 | 9 | 4.246e-3 | 23 | 1.45e-3 | 3 | 3.892e-3 | 11 |
| 148 | | min | -0.072 | 28 | -0.118 | 10 | -0.091 | 34 | -4.569e-3 | 14 | -1.425e-3 | 28 | -3.821e-3 | 20 |
| 149 | N82A | max | 0.112 | 35 | 0.042 | 27 | 0.03 | 24 | 5.275e-3 | 7 | 1.179e-3 | 34 | 3.614e-3 | 12 |
| 150 | | min | -0.112 | 10 | -0.175 | 70 | -0.03 | 32 | -5.274e-3 | 15 | -1.182e-3 | 9 | -3.235e-3 | 21 |
| 151 | N83A | max | 0.067 | 18 | 0.023 | 34 | 0.098 | 9 | 4.266e-3 | 23 | 1.414e-3 | 3 | 3.913e-3 | 11 |
| 152 | | min | -0.067 | 27 | -0.103 | 9 | -0.096 | 34 | -4.587e-3 | 14 | -1.389e-3 | 28 | -3.83e-3 | 20 |
| 153 | N84 | max | 0.115 | 35 | 0.026 | 27 | 0.025 | 24 | 5.277e-3 | 7 | 1.144e-3 | 34 | 3.644e-3 | 12 |
| 154 | | min | -0.116 | 10 | -0.166 | 70 | -0.025 | 15 | -5.286e-3 | 15 | -1.148e-3 | 9 | -3.272e-3 | 21 |
| 155 | N85 | max | 0.3 | 20 | 0.023 | 34 | 0.278 | 24 | 5.137e-3 | 23 | 2.547e-3 | 13 | 3.958e-3 | 29 |
| 156 | | min | -0.306 | 11 | -0.105 | 9 | -0.284 | 15 | -5.349e-3 | 14 | -2.552e-3 | 5 | -4.183e-3 | 4 |
| 157 | N86 | max | 0.295 | 20 | 0.028 | 27 | 0.284 | 24 | 5.705e-3 | 7 | 2.628e-3 | 6 | 4.128e-3 | 12 |
| 158 | | min | -0.297 | 11 | -0.171 | 70 | -0.286 | 15 | -5.651e-3 | 32 | -2.606e-3 | 14 | -4.094e-3 | 21 |
| 159 | N87 | max | 0.095 | 12 | 0.024 | 34 | 0.184 | 12 | 3.873e-3 | 23 | 1.414e-3 | 3 | 3.459e-3 | 11 |
| 160 | | min | -0.092 | 21 | -0.105 | 9 | -0.168 | 21 | -4.193e-3 | 14 | -1.388e-3 | 28 | -3.377e-3 | 20 |
| 161 | N88 | max | 0.122 | 15 | 0.024 | 28 | 0.182 | 15 | 4.823e-3 | 7 | 1.145e-3 | 34 | 3.251e-3 | 12 |
| 162 | | min | -0.107 | 24 | -0.165 | 70 | -0.182 | 7 | -4.832e-3 | 15 | -1.149e-3 | 9 | -2.879e-3 | 21 |
| 163 | N89 | max | 0.339 | 20 | 0.024 | 34 | 0.326 | 24 | 5.142e-3 | 23 | 2.547e-3 | 13 | 3.963e-3 | 29 |
| 164 | | min | -0.342 | 11 | -0.106 | 9 | -0.335 | 15 | -5.354e-3 | 14 | -2.552e-3 | 5 | -4.188e-3 | 4 |
| 165 | N90 | max | 0.332 | 20 | 0.029 | 28 | 0.34 | 24 | 5.711e-3 | 7 | 2.628e-3 | 6 | 4.134e-3 | 12 |

Envelope Node Displacements (Continued)

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

Envelope Node Displacements (Continued)

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

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

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

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

| Member | Shape | Code Check | Loc[in] | LC | Shear | Check | Loc[in] | Dir | LC | phi*Pnc [lb] | phi*Pnt [lb] | phi*Mn y-y [k-ft] | phi*Mn z-z [k-ft] | Cb | Eqn |
|--------|-------|-----------------|---------|--------|-------|-------|---------|-----|-----------|--------------|--------------|-------------------|-------------------|-------|-------|
| 9 | M12 | HSS4X4X6 | 0.268 | 40 | 11 | 0.092 | 40 | y | 70 | 188250.475 | 197892 | 22.046 | 22.046 | 1.9 | H1-1b |
| 10 | M13 | L2x2x4 | 0.243 | 0 | 8 | 0.022 | 0 | y | 16 | 29527.562 | 42480 | 0.96 | 2.19 | 1.5 | H2-1 |
| 11 | M14 | L2x2x4 | 0.283 | 0 | 9 | 0.024 | 0 | z | 17 | 29527.563 | 42480 | 0.96 | 2.19 | 1.5 | H2-1 |
| 12 | M15 | PL6.5x0.375 | 0.313 | 21 | 9 | 0.102 | 36.312 | y | 3 | 3658.14 | 78975 | 0.617 | 7.517 | 1.337 | H1-1b |
| 13 | M18 | Pipe3.5x0.165 | 0.173 | 31 | 16 | 0.063 | 64 | 6 | 45873.009 | 71580.6 | 6.338 | 6.338 | 1.451 | H1-1b | |
| 14 | MP9 | PIPE 2.5 | 0.144 | 42 | 7 | 0.075 | 42 | 5 | 33487.322 | 66654 | 4.727 | 4.727 | 1.947 | H1-1b | |
| 15 | MP7 | PIPE 2.5 | 0.134 | 42 | 15 | 0.071 | 42 | 17 | 33487.322 | 66654 | 4.727 | 4.727 | 1.978 | H1-1b | |
| 16 | M25 | PIPE 2.5 | 0.114 | 48 | 16 | 0.048 | 90 | 10 | 33487.322 | 66654 | 4.727 | 4.727 | 1.721 | H1-1b | |
| 17 | M28 | L6.6x4.46x0.25 | 0.152 | 41.562 | 8 | 0.021 | 42 | z | 17 | 51170.949 | 87561 | 2.465 | 7.125 | 1.136 | H2-1 |
| 18 | M29 | L6.6x4.46x0.25 | 0.134 | 41.562 | 14 | 0.018 | 42 | z | 6 | 51170.949 | 87561 | 2.465 | 7.125 | 1.136 | H2-1 |
| 19 | M30 | L6.6x4.46x0.25 | 0.145 | 0.437 | 30 | 0.021 | 0 | z | 12 | 51170.949 | 87561 | 2.465 | 7.125 | 1.136 | H2-1 |
| 20 | M61A | C3.38x2.06x0.25 | 0.358 | 0 | 3 | 0.045 | 28.187 | z | 11 | 47760.074 | 56700 | 2.203 | 5.752 | 1.629 | H1-1b |
| 21 | M63A | C3.38x2.06x0.25 | 0.367 | 0 | 3 | 0.048 | 28.188 | z | 11 | 47760.074 | 56700 | 2.203 | 5.752 | 1.628 | H1-1b |
| 22 | M60A | C3.38x2.06x0.25 | 0.335 | 0 | 14 | 0.043 | 28.188 | z | 6 | 47760.074 | 56700 | 2.203 | 5.752 | 1.626 | H1-1b |
| 23 | M61B | C3.38x2.06x0.25 | 0.375 | 0 | 14 | 0.05 | 28.188 | z | 6 | 47760.074 | 56700 | 2.203 | 5.752 | 1.629 | H1-1b |
| 24 | M62A | C3.38x2.06x0.25 | 0.367 | 0 | 9 | 0.048 | 28.188 | z | 17 | 47760.074 | 56700 | 2.203 | 5.752 | 1.634 | H1-1b |
| 25 | M63B | C3.38x2.06x0.25 | 0.34 | 0 | 8 | 0.045 | 28.187 | z | 16 | 47760.074 | 56700 | 2.203 | 5.752 | 1.626 | H1-1b |
| 26 | M75 | PL 2.375X0.5 | 0.398 | 1.5 | 5 | 0.213 | 0 | y | 68 | 38256.871 | 38475 | 0.401 | 1.904 | 2.165 | H1-1b |
| 27 | MP8 | PIPE 2.5 | 0.251 | 42 | 15 | 0.096 | 84 | 7 | 33487.322 | 66654 | 4.727 | 4.727 | 1.718 | H1-1b | |
| 28 | M48 | Pipe3.5x0.165 | 0.185 | 65 | 26 | 0.074 | 64 | 16 | 45873.009 | 71580.6 | 6.338 | 6.338 | 1.655 | H1-1b | |
| 29 | MP3 | PIPE 2.5 | 0.154 | 42 | 18 | 0.064 | 60 | 15 | 33487.322 | 66654 | 4.727 | 4.727 | 2.022 | H1-1b | |
| 30 | MP1 | PIPE 2.5 | 0.137 | 42 | 10 | 0.065 | 42 | 12 | 33487.322 | 66654 | 4.727 | 4.727 | 1.898 | H1-1b | |
| 31 | M51 | PIPE 2.5 | 0.126 | 90 | 18 | 0.049 | 6 | 11 | 33487.322 | 66654 | 4.727 | 4.727 | 1.816 | H1-1b | |
| 32 | M62 | Pipe3.5x0.165 | 0.187 | 31 | 30 | 0.071 | 32 | 5 | 45873.009 | 71580.6 | 6.338 | 6.338 | 1.724 | H1-1b | |
| 33 | MP6 | PIPE 2.5 | 0.145 | 42 | 12 | 0.069 | 42 | 10 | 33487.322 | 66654 | 4.727 | 4.727 | 1.916 | H1-1b | |
| 34 | MP4 | PIPE 2.5 | 0.144 | 42 | 4 | 0.06 | 42 | 7 | 33487.322 | 66654 | 4.727 | 4.727 | 1.993 | H1-1b | |
| 35 | M65A | PIPE 2.5 | 0.134 | 6 | 4 | 0.046 | 90 | 11 | 33487.322 | 66654 | 4.727 | 4.727 | 1.844 | H1-1b | |
| 36 | MP2 | PIPE 2.5 | 0.238 | 42 | 18 | 0.098 | 42 | 9 | 33487.322 | 66654 | 4.727 | 4.727 | 1.801 | H1-1b | |
| 37 | MP5 | PIPE 2.5 | 0.238 | 42 | 4 | 0.098 | 42 | 13 | 33487.322 | 66654 | 4.727 | 4.727 | 1.801 | H1-1b | |

Material Take-Off

| | Material | Size | Pieces | Length[in] | Weight[K] |
|----|------------------|-----------------|--------|------------|-----------|
| 1 | General Members | | | | |
| 2 | RIGID | | 29 | 35.1 | 0 |
| 3 | Total General | | 29 | 35.1 | 0 |
| 4 | 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".