Northeast Site Solutions
Carolyn Seeley
1053 Farmington Ave, Unit G,
Farmington CT 06032
cseeley@northeastsitesolutions.com

January 13, 2022

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Tower Share Application
82 Lovely St, Unionville CT
Latitude: 41.7614 N
Longitude: -72.8875 W
Site#: BOBDL00107A

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 82 Lovely St, Unionville, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 5G MHz antenna and six (6) RRUs, at the 88-foot level of the existing 100-foot monopole tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, dated December 8, 2021, Exhibit C. Also included is a structural analysis prepared by Armor Tower Engineering, dated September 7, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Town of Farmington, see attached email and decision approval dated July 15, 1953. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Kathleen A Blonski, Town Manager for the Town of Farmington, Shannon P.E. Rutherford, Town Planner for the Town of Farmington, as well as the property owner Southern New England and EIP Communications LLC, tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure. The top of the tower is 100-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 88-feet.

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

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

4.The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total density of 36.76% as evidenced by Exhibit F.

Connecticut General Statutes 16-50-aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish Wireless LLC respectfully indicates that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included in Exhibit D.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this monopole in Unionville. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a letter of Authorization is included as Exhibit G, authorizing Dish Wireless LLC to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 88-foot level of the existing 100-foot tower would have an insignificant visual impact on the area around the monopole. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. Economic Feasibility. Dish Wireless LLC will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist Dish Wireless LLC with this tower share application.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Dish Wireless LLC proposed loading. Dish Wireless LLC is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Unionville.

Sincerely,

Carolyn Seeley
Mobile: 978-760-5577
Fax: 413-521-0558
Office: 1053 Farmington Ave, Unit G, Farmington CT 06032
Email: cseeley@northeastsitesolutions.com

Attachments
Cc:
Kathleen A Blonski, Town Manager
Town of Farmington
1 Monteith Drive
Farmington, CT 06032

Shannon P.E. Rutherford
Town Planner
Town of Farmington
1 Monteith Drive
Farmington, CT 06032

Southern New England, Property Owner
401 Merritt 7
Norwalk, CT 06851

EIP Communications LLC, Tower Owner
Two Allegheny Center
Nova Tower 2, Suite 703
Pittsburgh, PA 15212

# Exhibit A

## Original Facility Approval

Victoria Masse <victoria@northeastsitesolutions.com>

# Dish Wireless- Request for Original Tower Approval- 82 Lovely St, Farmington CT

**Sandra Michaud** <michauds@farmington-ct.org> Wed, Jan 12, 2022 at 11:50 AM
To: Victoria Masse <victoria@northeastsitesolutions.com>, Russ Arnold <ArnoldR@farmington-ct.org>, Shannon Rutherford <rutherfords@farmington-ct.org>, Bruce Cyr <cyrb@farmington-ct.org>
Cc: Carolyn Seeley <cseeley@northeastsitesolutions.com>, Jason Berry <jberry@northeastsitesolutions.com>, Chuck Regulbuto <chuck@northeastsitesolutions.com>

Good morning Victoria

I have researched the Town Planning & Zoning Office records for the zoning approval of the original build at 82 Lovely Street. Although I could not locate the original site plan, I was able to obtain a copy of the 1953 Town Plan & Zoning Commission minutes and decision letter.

In 1964 a Special Exception was granted for an addition and then in 1969 a Special Exception was granted for the installation of a 100-foot radio tower. Those plans are attached to this email.

If you need anything additional from the Planning Office please let me know.

Thank you

Sandy

*Sandra Michaud*

*Land Use Coordinator*

*Planning Division*

*Town of Farmington*

1 Monteith Drive

Farmington, CT 06032

*(860) 675-2325*

**From:** Victoria Masse <victoria@northeastsitesolutions.com>
**Sent:** Tuesday, January 11, 2022 4:39 PM
**To:** Russ Arnold <ArnoldR@farmington-ct.org>; Shannon Rutherford <rutherfords@farmington-ct.org>; Bruce Cyr <cyrb@farmington-ct.org>; Sandra Michaud <michauds@farmington-ct.org>
**Cc:** Carolyn Seeley <cseeley@northeastsitesolutions.com>; Jason Berry <jberry@northeastsitesolutions.com>; Chuck Regulbuto <chuck@northeastsitesolutions.com>
**Subject:** Dish Wireless- Request for Original Tower Approval- 82 Lovely St, Farmington CT

Good Afternoon,

[Quoted text hidden]

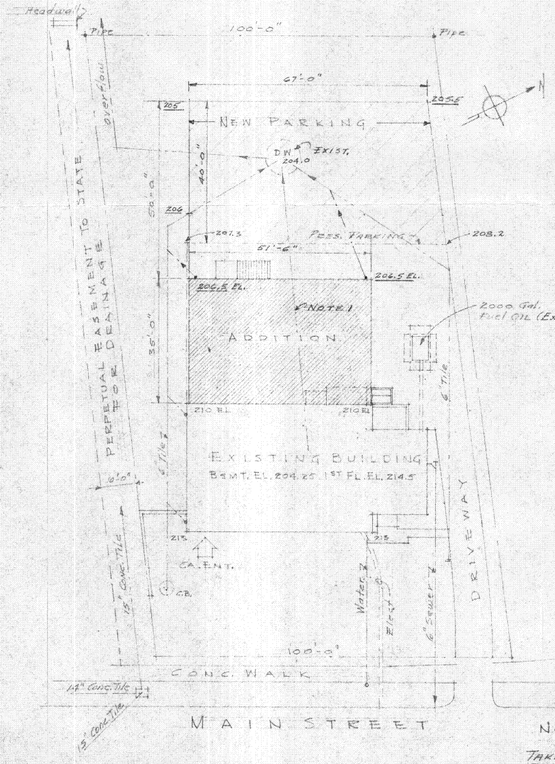
**4 attachments**

**1953 Decision Letter.pdf**
126K

**TPZ Minutes 07-13-1953 - Utility Company.pdf**
418K

**Z6922 - Special Exception for 100 foot radio tower.pdf**
526K

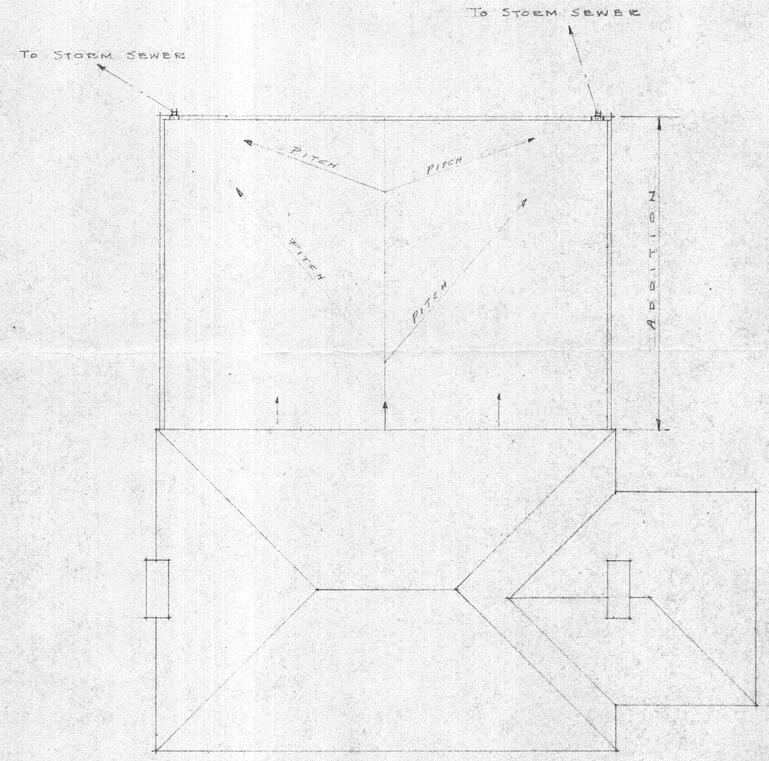
**Z6414 - Special Exception for Addition.pdf**
3022K



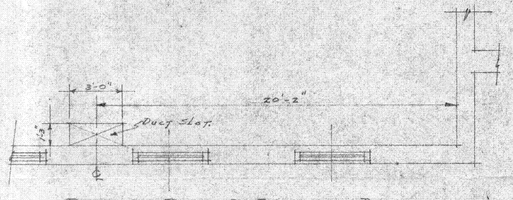

NOTE:
EXTREME CARE SHOULD BE TAKEN DURING EXCAVATION TO PROTECT DRAIN TILE

000 = NEW ELEVATIONS

PLOT PLAN
SCALE 1" = 20'-0"




ROOF PLAN
SCALE 1/8" = 1'-0"

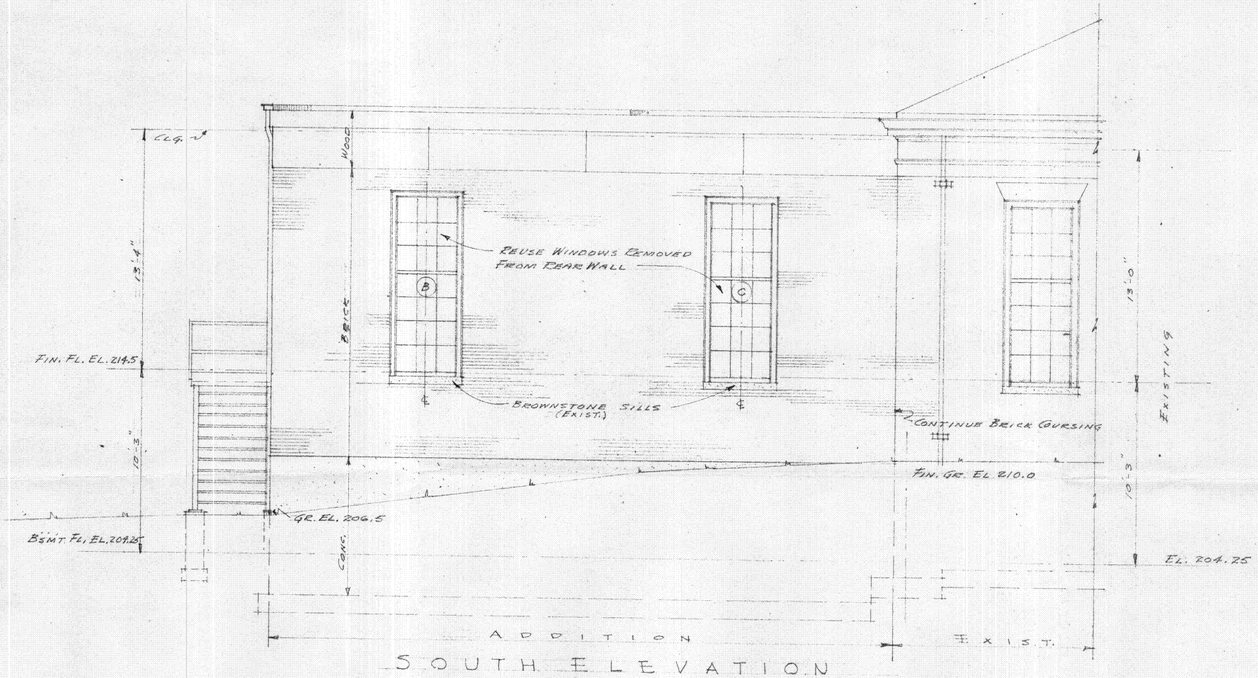



PARTIAL PLAN OF EXISTING BUILDING SHOWING LOCATION OF A NEW DUCT SLOT TO BE CUT IN FIRST FLOOR
SCALE 1/4" = 1'-0"

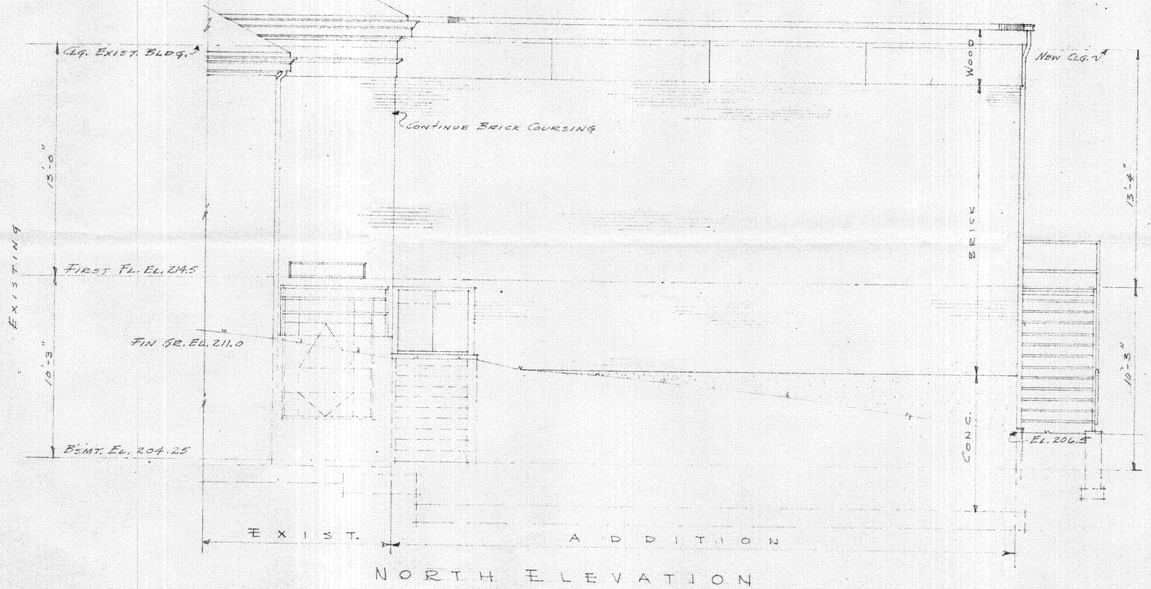
The Southern New England Telephone Co.

| FARMINGTON ADD. | |
|---|---|
| DATE: | SCALE: As Shown |
| DRAWN BY: | |
| REVISIONS: | |

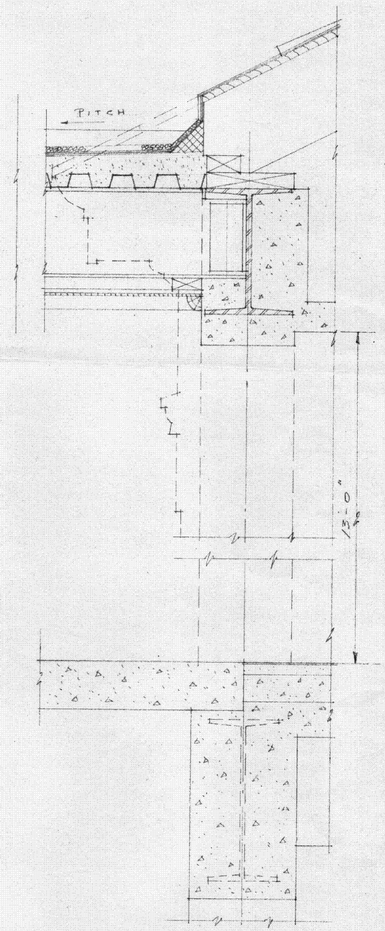
26414-1




SOUTH ELEVATION



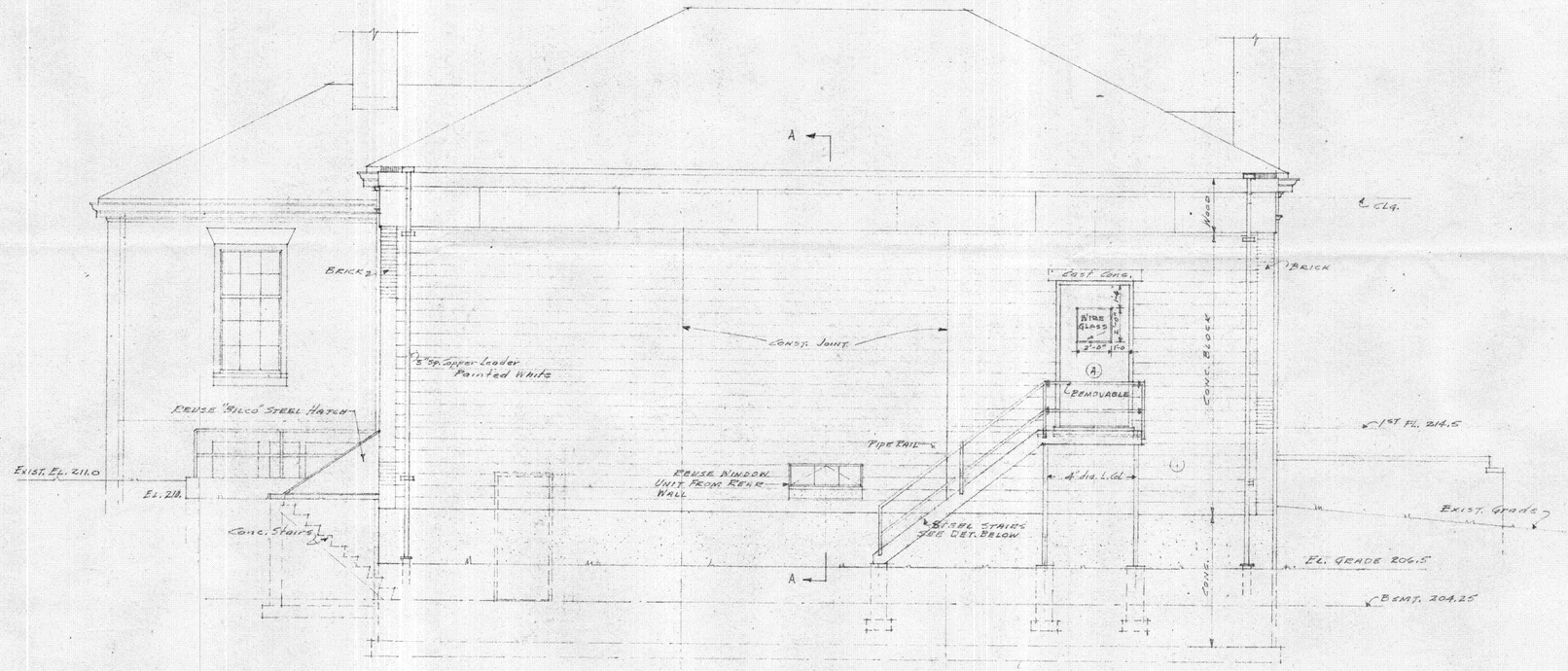

NORTH ELEVATION



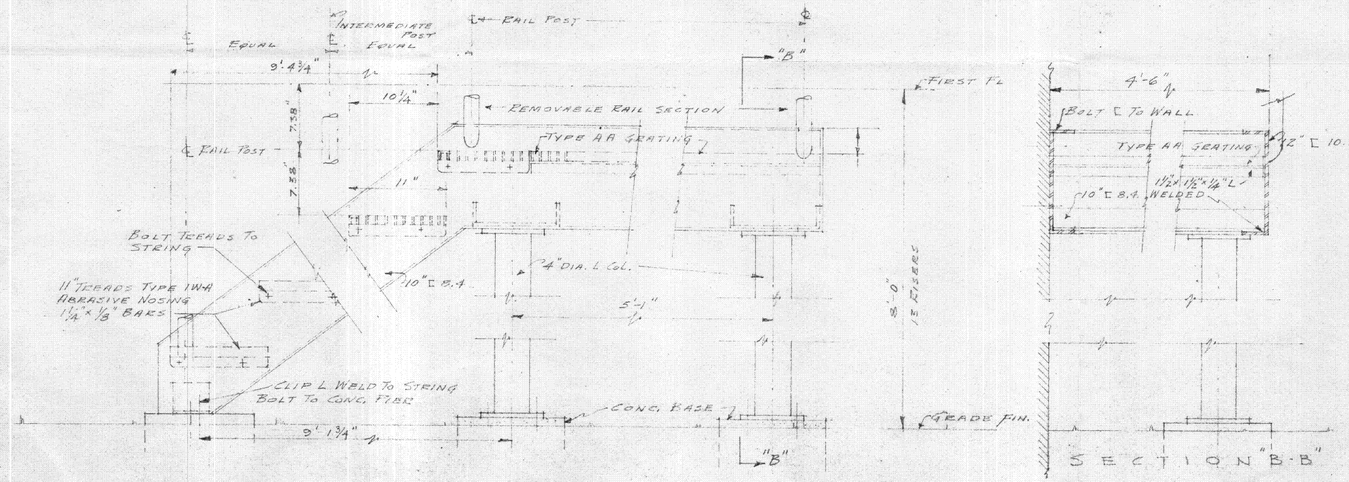

The Southern New England Telephone Co.

| FARMINGTON ADD. | |
|---|---|
| DATE: SCALE: 1/4"=1'-0" | 3 |
| DRAWN BY: | |
| REVISIONS: | |

26414-2




WEST ELEVATION



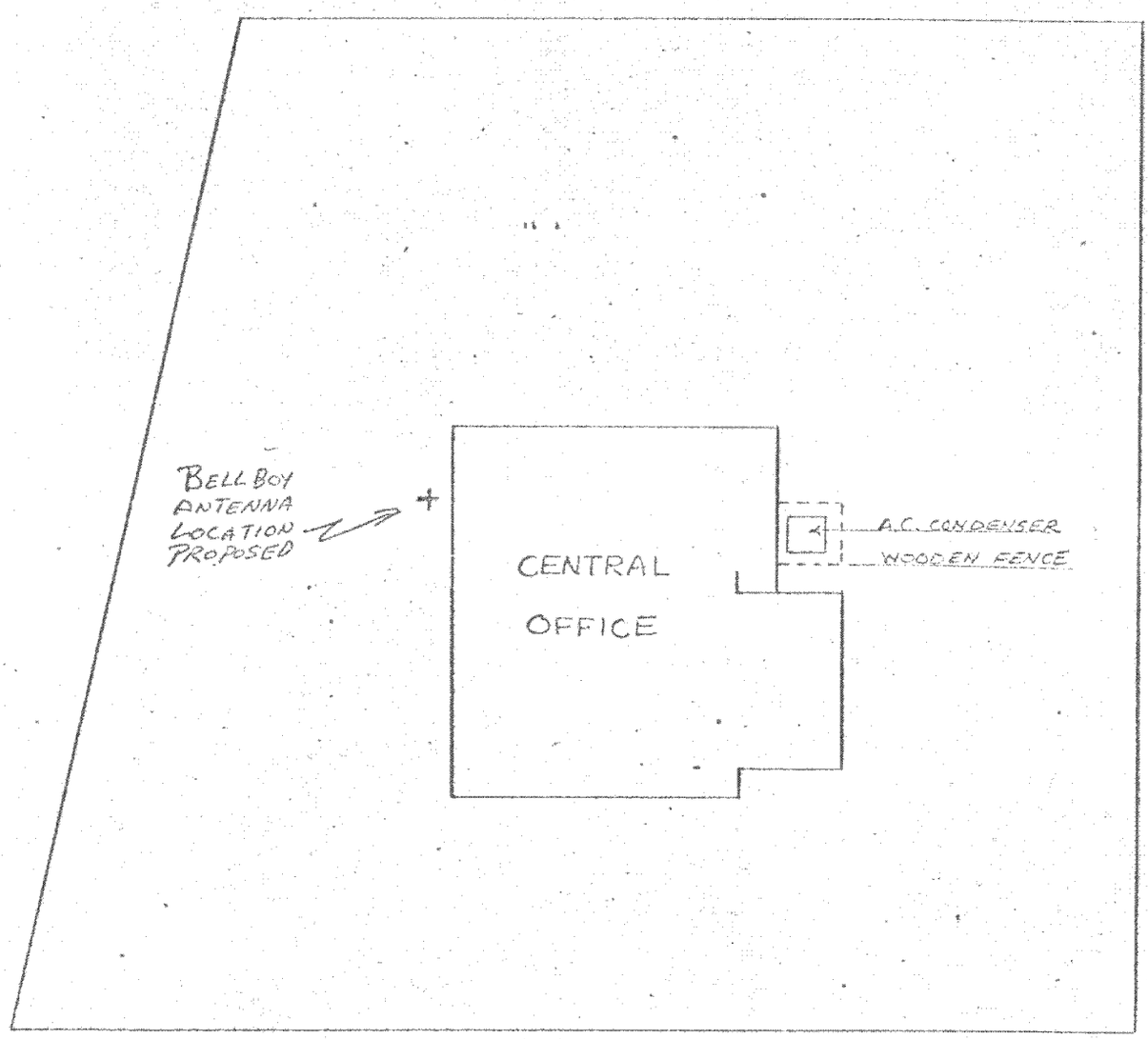

PLATFORM & STAIR DETAIL
SCALE 1½" = 1'-0"

SECTION "B-B"

The Southern New England Telephone Co.

| FARMINGTON | ADD. |
|---|---|
| DATE: SCALE: As Shown. | 4 |
| DRAWN BY: | |
| REVISIONS: | |

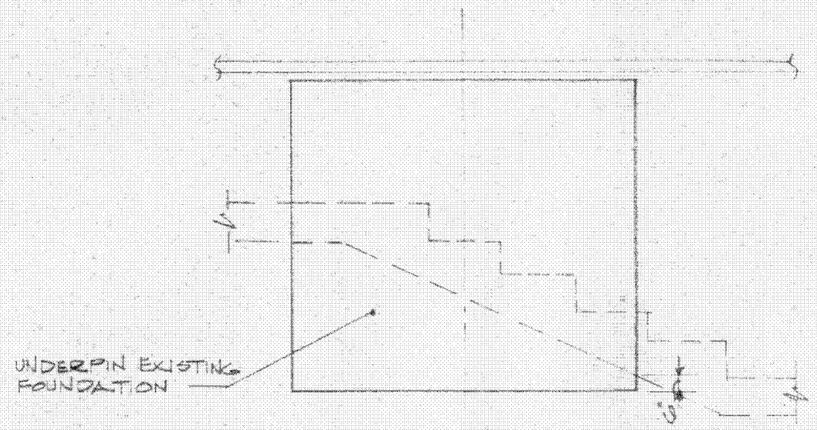
Z-6914-3



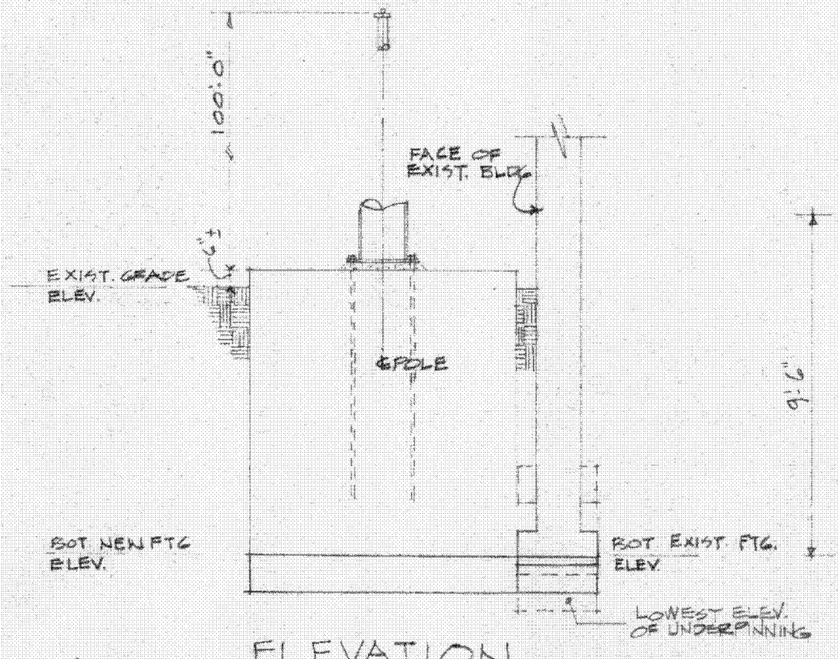

Z-6922

THE SOUTHERN NEW ENGLAND TELEPHONE COMPANY — SPACE PLANNING ENGINEER

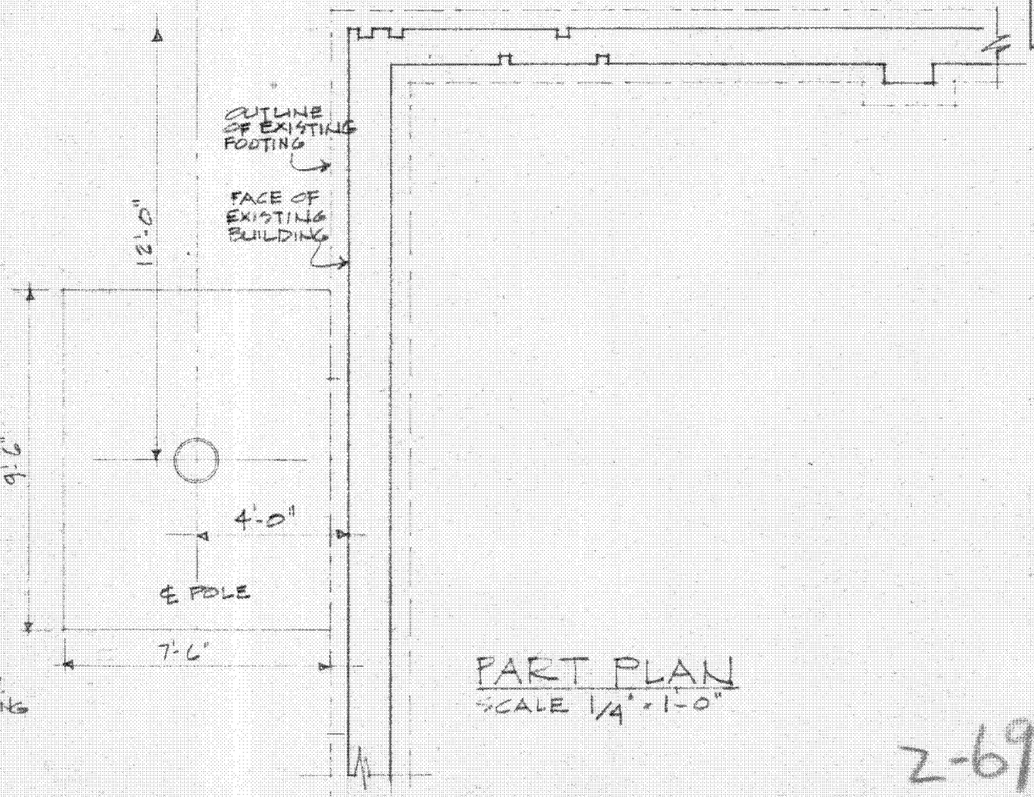
| | | |
|---|---|---|
| FARMINGTON-UNIONVILLE CENTRAL OFFICE | ASSIGN. AREA | ISSUED 12-18-61 |
| 82 LOVELY STREET | GROSS AREA | REVISED 9-26-62 |
| PLOT FLOOR PLAN | SCALE 1"=30' | ENG'R. EPP |



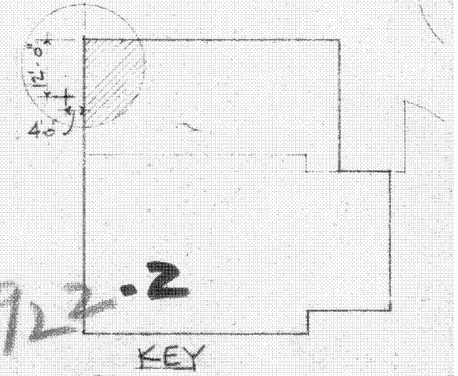

NOTE:
SEE DWG. 68-64-8 FOR ANCHORAGE DETAIL AND GENERAL NOTES




ELEVATION
SCALE 1/4"=1-0"




PART PLAN
SCALE 1/4"=1-0"




2-6922-2

STATE OF CONNECTICUT
HENRY PFISTERER
REGISTERED
PROFESSIONAL ENGINEER

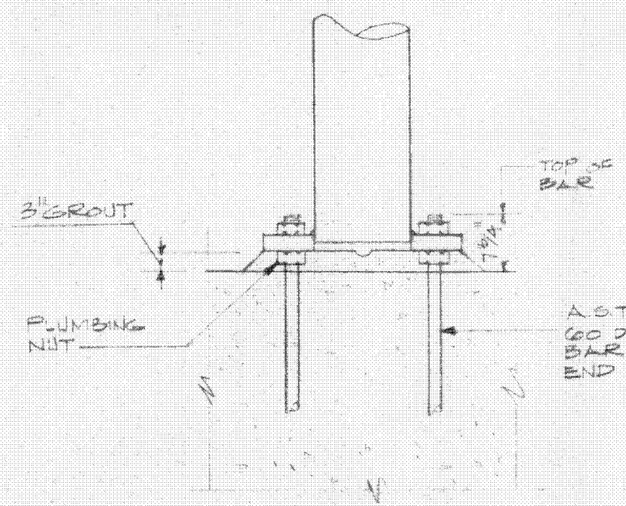
FARMINGTON-UNIONVILLE

THE SOUTHERN NEW ENGLAND TELEPHONE COMPANY

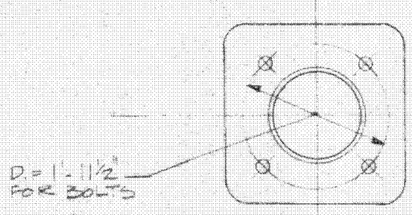
# POLE ANTENNA FOUNDATION

HERY A. PFISTERER
AND ASSOCIATES ENGINEERS
424 CHAPEL ST. NEW HAVEN, CONN.

| | |
|---|---|
| DRAWN BY: G.H. | DRAWING NO. |
| CH'KD. BY: W.K | 68-64-5 |
| SCALE: AS NOTED | |
| DATE: 4-1-69 | |




TYPICAL BASE FOR 100' POLE




TYPICAL BOLT LAYOUT

GENERAL NOTES:

1. Detail for Antenna Pole Bases shown on Drawing RA-542-E1, The Union Metal Manufacturing Company, Canton, Ohio.
2. Concrete to have 3500 p.s.i. compressive strength at 28 days. Slump range 2" to 4". Coarse and fine aggregate to conform to ASTM C33. Min. cement content 6.25 sacks per cu. yd. Provide 5% air by use of air-entraining agent.
3. Cement - Type I or Type II. Reinf. bars (including S18 used for anchorage) ASTM A-615, Grade 60.
4. Conform to "Building Code Requirements for Concrete Construction", ACI 318-63, for fabricating, details of construction and erection.
5. Cover for bars - 1-1/2"; 2" for bars over #5 size.
6. Forms - plywood coated with lacquer or non-staining mineral oil; rough lumber may be used below grade.
7. Finish - float finish.
8. Backfill - Well graded run-of-bank gravel or acceptable granular material from excavation. Compact in layers not over 8" thick for full height. Use finer material or sand, if necessary, between foundation and present walls similarly placed and tamped in layers.
9. Excavation depth and foundation bearing to be approved by SNET Co. Engineer before placing concrete. Bearing to be on natural undisturbed material.

GENERAL REQUIREMENTS

THE SOUTHERN NEW ENGLAND TELEPHONE COMPANY

POLE ANTENNA FOUNDATION

HENRY A. PFISTERER AND ASSOCIATES ENGINEERS
424 CHAPEL ST. NEW HAVEN CONN.

| | |
|---|---|
| DRAWN BY: | DRAWING NO. |
| CH'KD. BY: | 68-64-8 |
| SCALE: AS NOTED | |
| DATE: 4-1-69 | |

2692 I-3

PUBLIC HEARING, TOWN PLAN AND ZONING COMMISSION, TOWN HALL, UNIONVILLE, JULY 13, 1953

The Public Hearing was called to order at 8:05 P.M. by Mrs. E. P. Dunne, Chairman. The Notice of Public Hearing was read by Mr. Sturdivant, Secretary, which is to hear the application of The Southern New England Telephone Company for authority to erect a branch office building on a parcel of land owned by Mae Y. Ritchie, located at the Northeast corner of Lovely Street and Sylvan Avenue, Unionville, with a frontage of about 180 feet on Lovely Street and 170 feet on Sylvan Avenue. The Notice was published in the Farmington Valley Herald, issues of July 2 and 9.

Charles F. Maloney, Building Engineer, represented the Telephone Company. He presented a plot plan showing location of the proposed building, keeping to the 40 ft. building line. The building would be 34' x 40' with 11' wing. He said the reason for it is to keep up with telephone growth; the most economical solution is a building in Unionville. It would be residential in character and appearance. They are not asking for a change of zone. The public will not be allowed in the building, just equipment, no business office, no storage, no motor vehicles, no sheds. A small area in back for a truck to come in to maintain the equipment, 2 or 3 trips a week. It will not be a disgrace to the neighborhood but will blend in with it; brick construction, fireproof, look like a large house; there are a number of trees on the property, they will blend it in with the trees.

Donald Lee who owns adjoining property asked if there are 2 lots in the plot. Mr. Maloney said he thinks 3 and this will take in all 3. The building would be put in the middle with good side yard clearance as they don't want anything right next to them that might be a fire hazard, don't want to take a chance on the equipment.

Harold Cromack spoke definitely in favor of the building.

Mr. Lee spoke in favor of it, as closest property owner.

Fred Anderson who also lives next to it favored it.

Ed Marsh, Sylvan Avenue, is in favor of it.

Mrs. Dunne asked if the building will be similar to the one in Farmington. Mr. Maloney said it will not and showed pictures of other buildings of similar size to the one proposed for Unionville.

Miss Martin of Sylvan Avenue asked what protection a property owner has buying in a residential district if the Commission makes these variances, or exceptions. Couldn't anyone come in and be given permission to have some other sort of business? After a bit of discussion Mr. Beach told her this is a permitted use under the zoning regulations after a Public Hearing; it is not a change of zone. Mr. Grouten added the Telephone Company could not sell the building for some other purpose after they have used it for a while.

Mr. Gunther said the area referred to is the only section he knows of where there is no commercial use of property. He wonders if this is the beginning of the end. Mr. Beach repeated his explanation. Mr. Gunther asked why this spot was chosen. Mr. Maloney said in the picking of a location all the lines are brought to a common center

TELEPHONE COMPANY HEARING, JULY 13, 1953-2

and this was it.

Mr. Lee asked if this is the last piece of available frontage from the center to the Avon Line on Lovely Street. Mr. Gunther said there is one more piece, between Parsons' and Hayes' but he thinks the town took it over for drainage.

Mr. Hodge said there was a sewer right of way there but the land has never been purchased by the Town.

Harry Simons asked if there would be any form of overhead service in connection with the building. Mr. Maloney said it will all be underground service into the building entirely, it will have no effect on television, that is guaranteed. He thinks Mr. Simons is thinking of a sub-station. The Telephone Company only uses 48 volts for the operation of the equipment.

The hearing was declared closed at 8:20 P.M.

Grace Sturdevant
Secretary

Transcribed by Marion N. Keefe

July 15, 1953

The Southern New England Telephone Company
227 Church Street
New Haven, Connecticut

Att: Charles F. Maloney, Building Engineer

Gentlemen:

Your application for authority to erect a branch office building on a parcel of land located at the northeast corner of Lovely Street and Sylvan Avenue, Unionville, after being properly advertised, was presented at a Public Hearing in the Town Hall, Unionville, July 13, 1953.

Immediately following the Public Hearing, the Town Plan and Zoning Commission met in executive session, when your application was discussed further.

The members of the Commission voted unanimously to grant your application for authority to erect a branch office building on the parcel of land above referred to.

Very truly yours,

Secretary, Farmington
Town Plan and Zoning Commission

gs:mnk

# Exhibit B

## Property Card

# Town of Farmington, CT

## Property Listing Report

| Map Block Lot | 006 1 | Building # | 1 | Unique Identifier | 11350082 |
|---|---|---|---|---|---|

## Property Information

| | |
|---|---|
| Property Location | 82 LOVELY ST |
| Mailing Address | 401 MERRITT 7 - TAX DEPT<br>NORWALK CT 06851 |
| Land Use | Utility Building |
| Zoning Code | R20 |
| Neighborhood | 95 |

| | |
|---|---|
| Owner | SOUTHERN NEW ENGLAND |
| Co-Owner | |
| Book / Page | 0114/0169 |
| Land Class | Commercial |
| Census Tract | 4603 |
| Acreage | 0.67 |

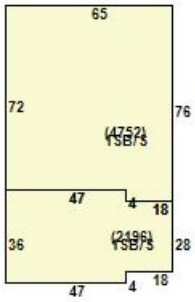
## Valuation Summary

(Assessed value = 70% of Appraised Value)

| Item | Appraised | Assessed |
|---|---|---|
| Buildings | 359244 | 251470 |
| Outbuildings | 0 | 0 |
| Land | 243880 | 170720 |
| Total | 603124 | 422190 |

## Utility Information

| | |
|---|---|
| Electric | No |
| Gas | No |
| Sewer | No |
| Public Water | No |
| Well | No |




## Primary Construction Details

| | |
|---|---|
| Year Built | 1965 |
| Building Desc. | Commercial |
| Building Style | |
| Stories | 1 |
| Exterior Walls | Brick |
| Exterior Walls 2 | |
| Interior Walls | Painted Concrete |
| Interior Walls 2 | |
| Interior Floors 1 | Tile |
| Interior Floors 2 | |

| | |
|---|---|
| Heating Fuel | Natural Gas |
| Heating Type | FHA |
| AC Type | Central |
| Bedrooms | 0 |
| Full Bathrooms | 0 |
| Half Bathrooms | 0 |
| Extra Fixtures | 0 |
| Total Rooms | 0 |
| Bath Style | NA |
| Kitchen Style | |
| Occupancy | 0 |

| | |
|---|---|
| Building Use | Light Industrial |
| Building Condition | Average |
| Frame Type | C+ |
| Fireplaces | 0 |
| Bsmt Gar | 0 |
| Fin Bsmt Area | |
| Fin Bsmt Quality | |
| Building Grade | 0 |
| Roof Style | |
| Roof Cover | Arch Shingles |

Report Created On 4/9/2020

# Town of Farmington, CT

**Property Listing Report** | Map Block Lot **006 1** | Building # **1** | Unique Identifier **11350082**

## Detached Outbuildings

| Type | Description | Area (sq ft) | Condition | Year Built |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
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## Attached Extra Features

| Type | Description | Area (sq ft) | Condition | Year Built |
|---|---|---|---|---|
| | | | | |
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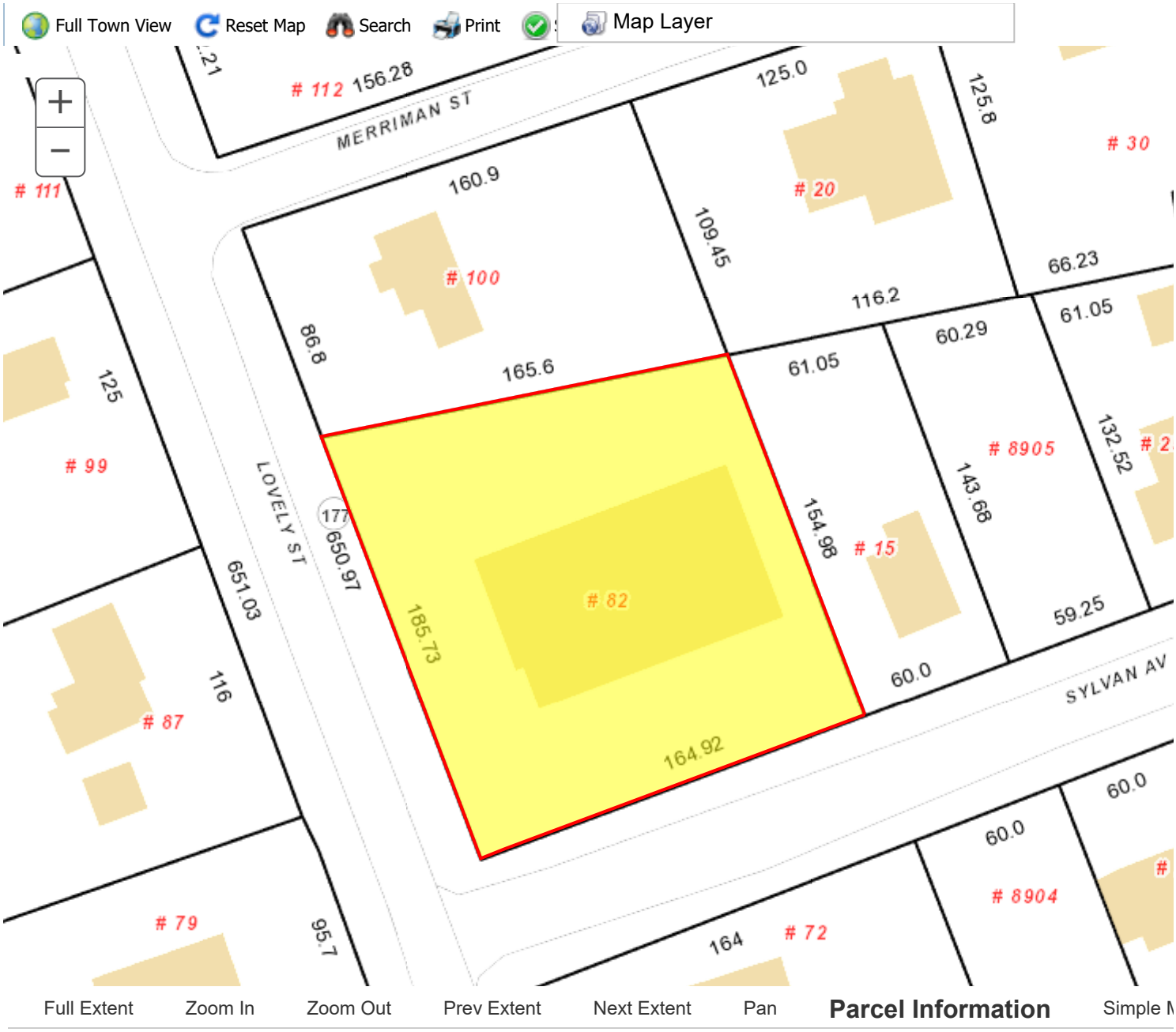
## Sales History

| Owner of Record | Book/ Page | Sale Date | Sale Price |
|---|---|---|---|
| SOUTHERN NEW ENGLAND | 0114_0169 | 1/1/1900 | 0 |

Report Created On **4/9/2020**




MapXpress v1.2

# Exhibit C

**Construction Drawings**

DISH WIRELESS, LLC. SITE ID:

# BOBDL00107A

DISH WIRELESS, LLC. SITE ADDRESS:

# 82 LOVELY ST
# UNIONVILLE, CT 06085

## SCOPE OF WORK

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

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

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

## SITE INFORMATION

| | |
|---|---|
| PROPERTY OWNER: | SOUTHERN NEW ENGLAND |
| ADDRESS: | 82 LOVELY STREET<br>FARMINGTON, CT 06085 |
| TOWER TYPE: | MONOPOLE |
| TOWER CO SITE ID: | TBD |
| TOWER APP NUMBER: | 550445 |
| COUNTY: | HARTFORD |
| LATITUDE (NAD 83): | 41° 45' 40.97" N<br>41.7614 N |
| LONGITUDE (NAD 83): | 72° 53' 15.18" W<br>-72.8875 W |
| ZONING JURISDICTION: | R20 |
| ZONING DISTRICT: | 95 |
| PARCEL NUMBER: | 006 1 |
| OCCUPANCY GROUP: | U |
| CONSTRUCTION TYPE: | V-B |
| POWER COMPANY: | TBD |
| TELEPHONE COMPANY: | AT&T |

## PROJECT DIRECTORY

| | |
|---|---|
| APPLICANT: | DISH WIRELESS, LLC.<br>5701 SOUTH SANTA FE DRIVE<br>LITTLETON, CO 80120 |
| TOWER OWNER: | EIP COMMUNICATIONS I, LLC<br>TWO ALLEGHENY CENTER<br>NOVA TOWER 2, SUITE 703<br>PITTSBURGH PA 15212 |
| SITE DESIGNER: | INFINIGY<br>1033 WATERVLIET SHAKER RD<br>ALBANY, NY 12205<br>(518) 690-0790 |
| SITE ACQUISITION: | APRIL PARROTT<br>TBD |
| CONSTRUCTION MANAGER: | JAVIER SOTO<br>TBD |
| RF ENGINEER: | TBD<br>TBD |

## CONNECTICUT CODE COMPLIANCE

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

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

## SITE PHOTO

## DIRECTIONS

**DIRECTIONS FROM ORLANDO SANFORD INTERNATIONAL AIRPORT:**

DEPART AND HEAD TOWARD MASSACO ST, TURN RIGHT ONTO MASSACO ST, TURN RIGHT ONTO US-202 W / CT-10 / HOPMEADOW ST, TURN RIGHT ONTO CT-167 / WEST ST, TURN LEFT TO STAY ON CT-167 / BUSHY HILL RD, TURN RIGHT ONTO HOLLISTER DR, TURN LEFT ONTO CT-177 / LOVELY ST, ARRIVE AT, 82 LOVELY ST, UNIONVILLE, CT 06085

## 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 PLATEFROM AND H-FRAME DETAILS |
| | |
| A-4 | EQUIPMENT DETAILS |
| A-5 | EQUIPMENT DETAILS |
| A-6 | EQUIPMENT DETAILS |
| | |
| E-1 | ELECTRICAL 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 |
| RF-2 | RF PLUMBING DIAGRAM |
| | |
| GN-1 | LEGEND AND ABBREVIATIONS |
| GN-2 | GENERAL NOTES |
| GN-3 | GENERAL NOTES |
| GN-4 | GENERAL NOTES |

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811

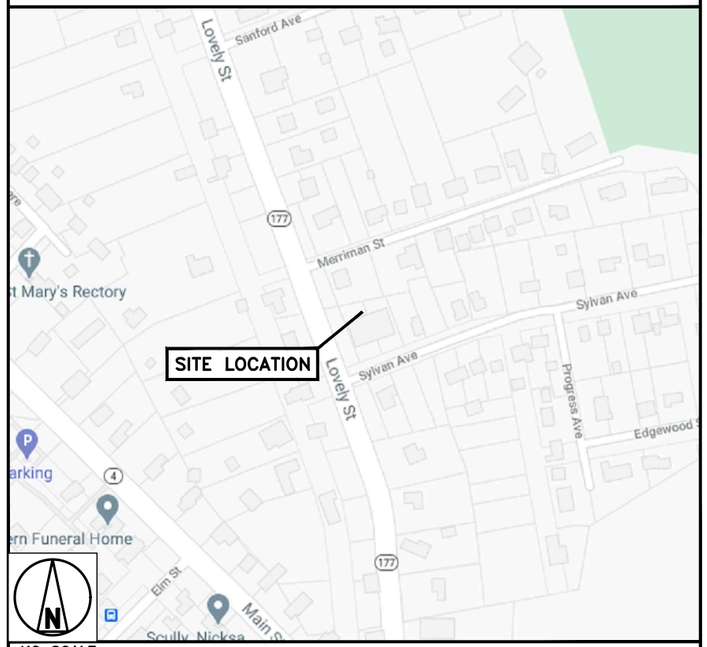
## GENERAL NOTES

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

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

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

## VICINITY MAP




NO SCALE


dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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STATE OF CONNECTICUT
YUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
12/8/2021



| DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|
| RCD | SS | CJW |

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

SUBMITTALS

| REV | DATE | DESCRIPTION |
|---|---|---|
| 0 | 10/25/21 | ISSUED FOR PERMIT |
| 1 | 11/16/21 | REVISED PER COMMENTS |
| 2 | 12/08/21 | REVISED PER COMMENTS |

A&E PROJECT NUMBER
1197-F0001-C

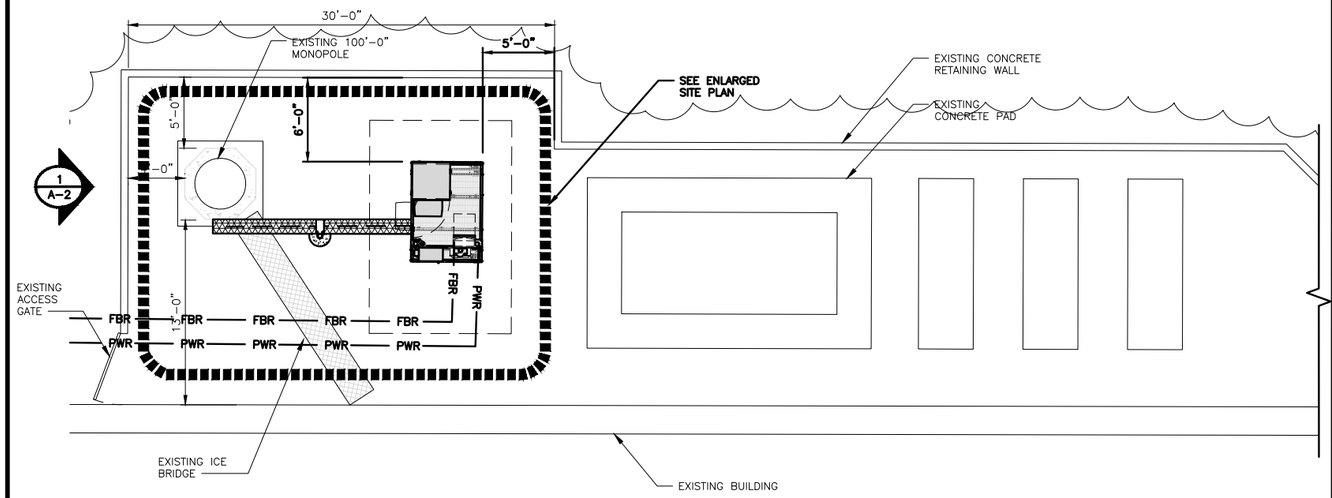
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE
TITLE SHEET

SHEET NUMBER
**T-1**

## NOTES

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



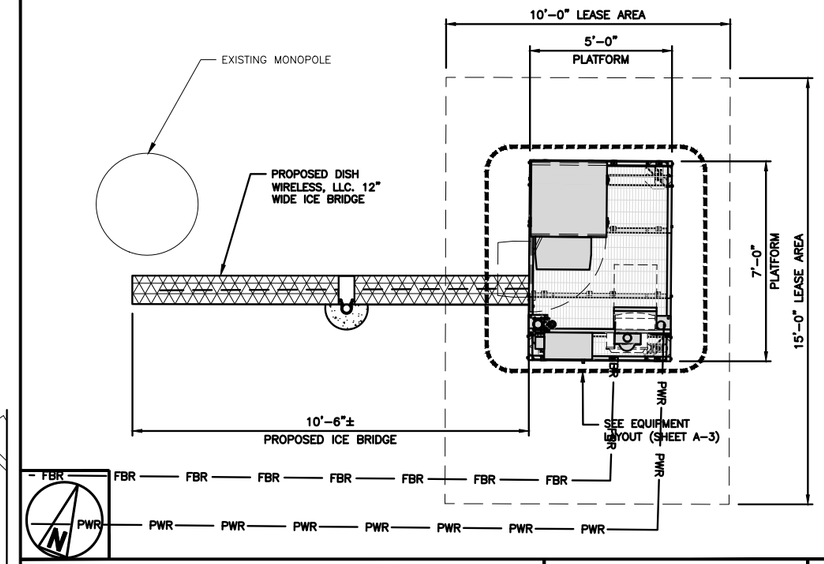

## COMPOUND PLAN

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

1

## NOTES

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




## ENLARGED SITE PLAN

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

2


## SITE PLAN

50' 25' 0 50' 100'
1"=50'

3

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| DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|
| RCD | SS | CJW |

RFDS REV #: N/A

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A&E PROJECT NUMBER
1197-F0001-C

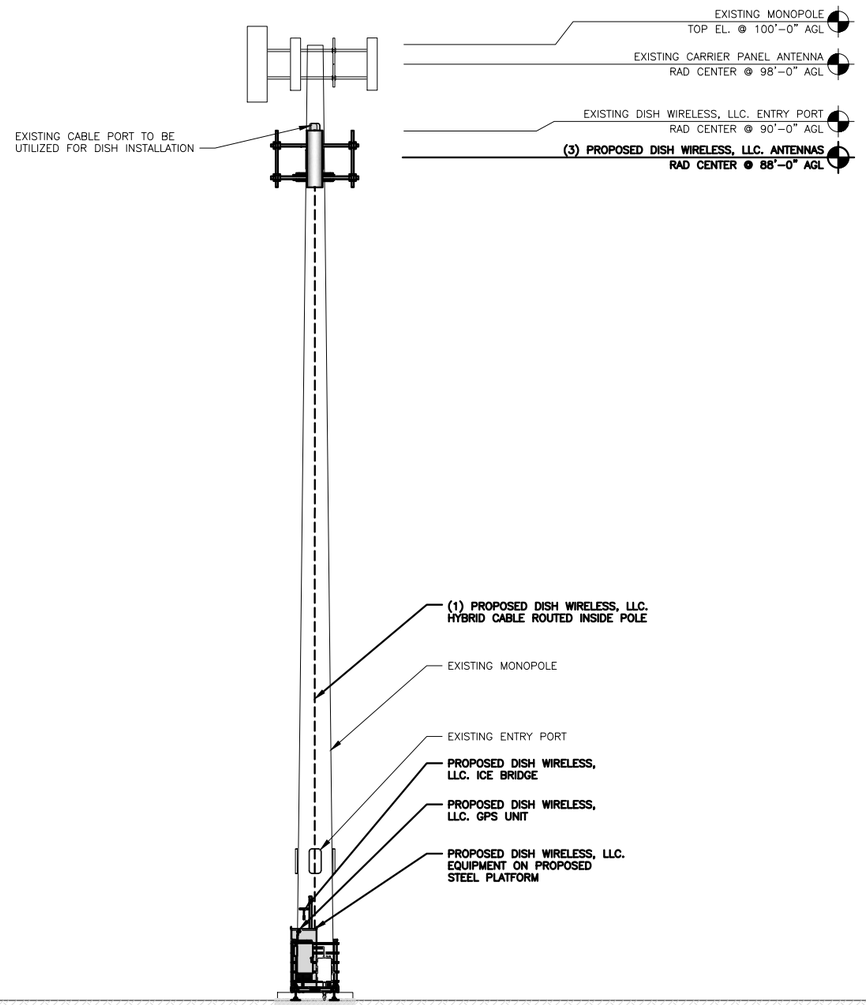
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
**A-1**

## NOTES

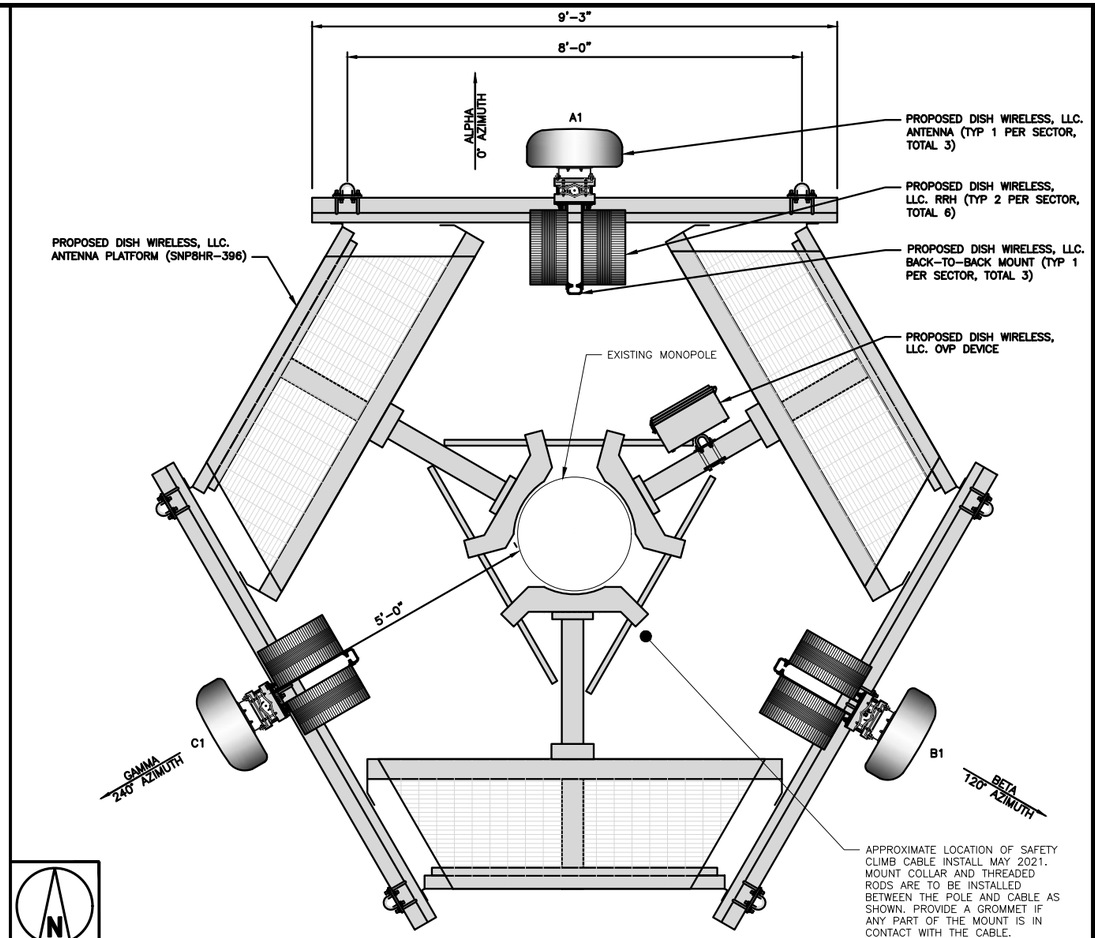
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. BASED ON THE MOUNT ANALYSIS COMPLETED BY INFINIGY DATED 07/30/2021. THE EXISTING ANTENNA MOUNTS ARE CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT CONFIGURATION
5. FOR ADDITIONAL TOWER STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY ARMOR TOWER DATED: 09/17/21




PROPOSED WEST ELEVATION

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

1




ANTENNA LAYOUT

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

2

| SECTOR | POSITION | ANTENNA | | | | | | TRANSMISSION CABLE |
|---|---|---|---|---|---|---|---|---|
| | | EXISTING OR PROPOSED | MANUFACTURER – MODEL NUMBER | TECHNOLOGY | SIZE (HxW) | AZMUITH | RAD CENTER | FEED LINE TYPE AND LENGTH |
| ALPHA | A1 | PROPOSED | JMA WIRELESS – MX08FRO665-20 | 5G | 72.0" x 20.0" | 0° | 88'-0" | (1) HIGH-CAPACITY HYBRID CABLE (TBD) |
| BETA | B1 | PROPOSED | JMA WIRELESS – MX08FRO665-20 | 5G | 72.0" x 20.0" | 120° | 88'-0" | |
| GAMMA | C1 | PROPOSED | JMA WIRELESS – MX08FRO665-20 | 5G | 72.0" x 20.0" | 240° | 88'-0" | |

NOTES
1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA OR 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.

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

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

ANTENNA SCHEDULE

NO SCALE

3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12/8/2021



| DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|
| RCD | SS | CJW |

RFDS REV #: N/A

## CONSTRUCTION DOCUMENTS

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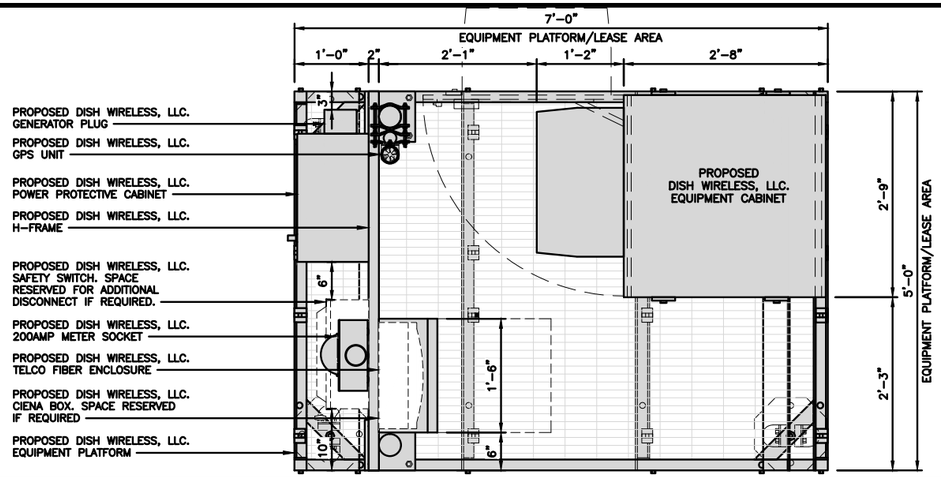
1197-F0001-C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
**A-2**

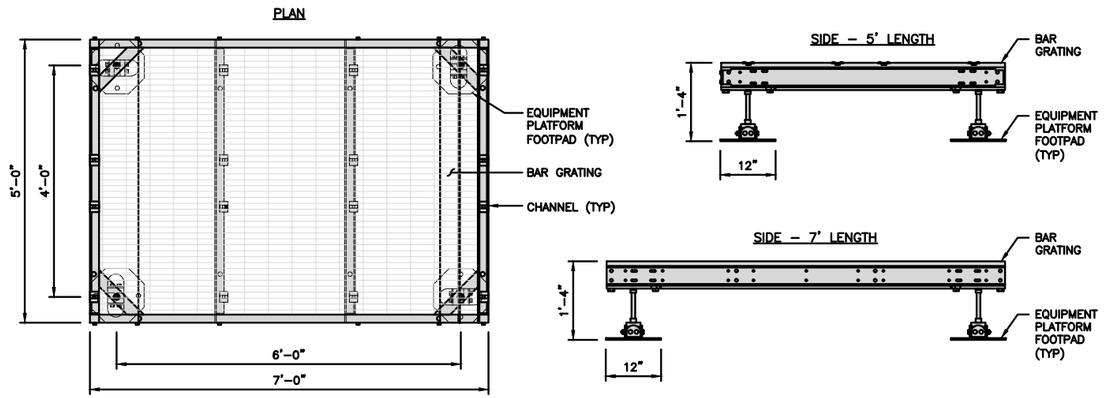



PLATFORM EQUIPMENT PLAN

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

1

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

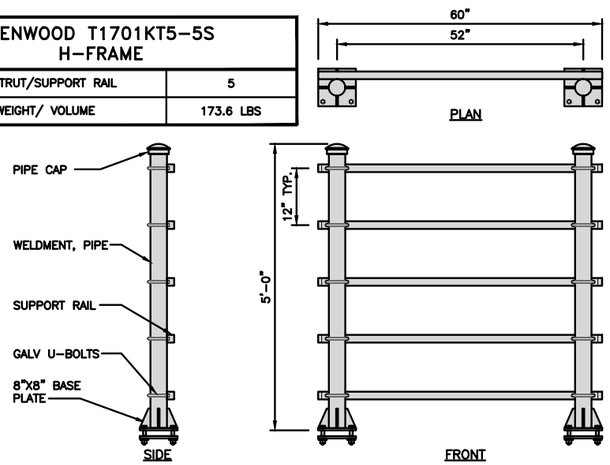



PLATFORM DETAIL

NO SCALE

2

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




H-FRAME DETAIL

NO SCALE

3

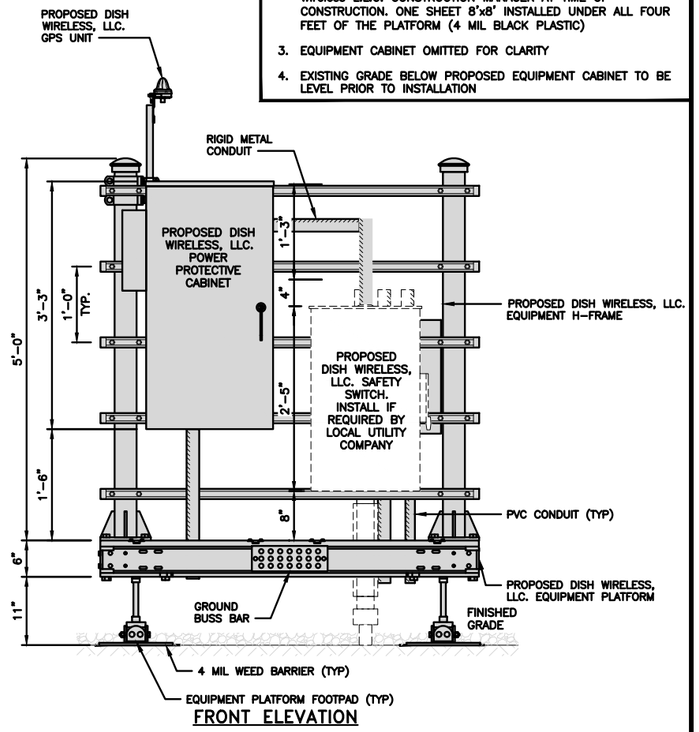
NOT USED

NO SCALE

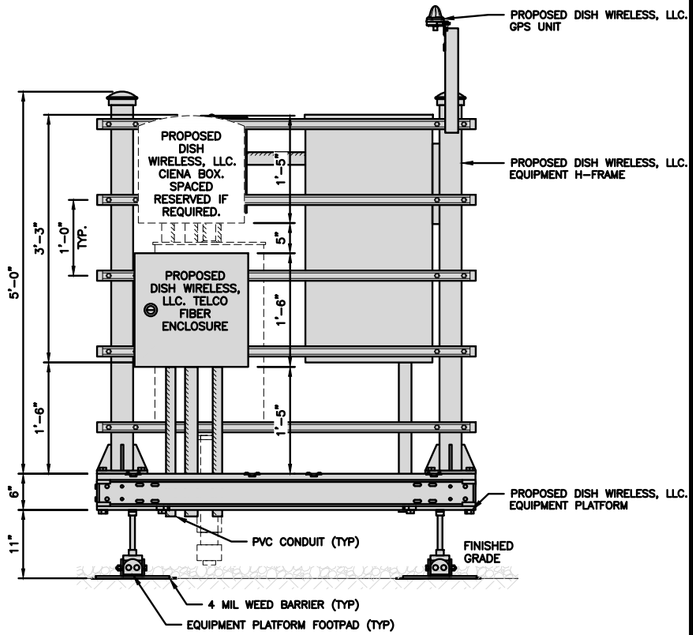
4

## 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
4. EXISTING GRADE BELOW PROPOSED EQUIPMENT CABINET TO BE LEVEL PRIOR TO INSTALLATION




FRONT ELEVATION




BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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| RCD | SS | CJW |

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

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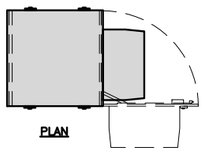
A&E PROJECT NUMBER
1197-F0001-C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

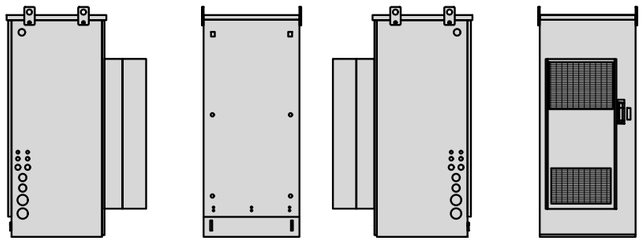
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

| CHARLES INDUSTRY HEX CUBE–PM369155N4 | |
|---|---|
| DIMENSIONS (HxWxD): | 74"x32"x32" |
| POWER PLANT: | –48VDC ABB |
| TOTAL WEIGHT (EMPTY) | 394 LBS |



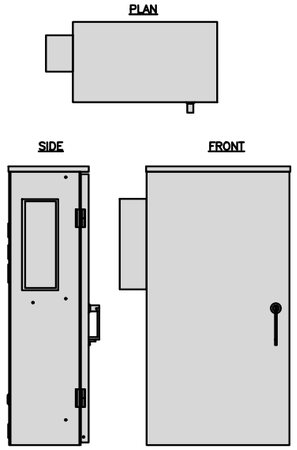
PLAN



SIDE BACK SIDE FRONT

CABINET DETAIL | NO SCALE | 1

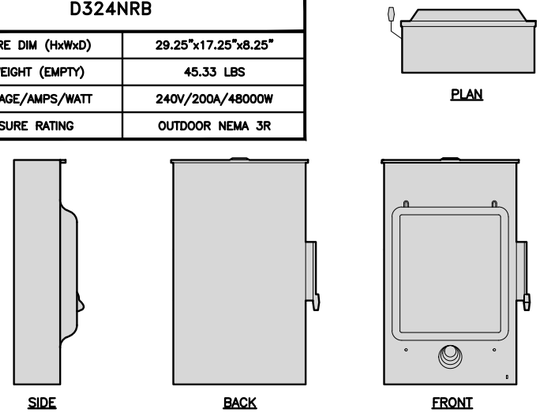
| RAYCAP RDIAC–6512–P–240–MTS POWER & TELCO PROTECTION CABINET | |
|---|---|
| DIMENSIONS (HxWxD) | 40"x20"x10" |
| WEIGHT/ VOLUME | 124 LBS |
| MANUAL TRANSFER SWITCH | 200A |
| LOAD CENTER | 30 POSITION |
| MAIN BREAKER | 200A, 65kA AIC |
| GENERATOR RECEPTACLE | CAMLOCK |
| NEMA RATING | 3R POWDER COATED ALUMINUM |
| SURGE PROTECTION DEVICE | UL 1449 4TH EDITION LISTED |



PLAN SIDE FRONT

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

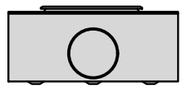
| SQUARE D SAFETY SWITCH D324NRB | |
|---|---|
| ENCLOSURE DIM (HxWxD) | 29.25"x17.25"x8.25" |
| TOTAL WEIGHT (EMPTY) | 45.33 LBS |
| MAX VOLTAGE/AMPS/WATT | 240V/200A/48000W |
| ENCLOSURE RATING | OUTDOOR NEMA 3R |



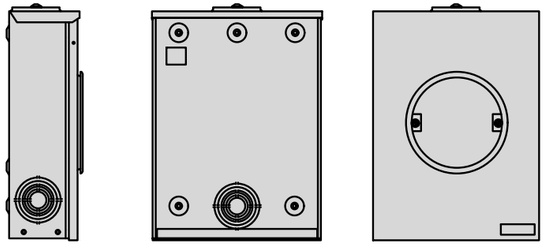
PLAN SIDE BACK FRONT

SAFETY SWITCH | NO SCALE | 3

| EATON METER SOCKET UNRRS213BEUSE | |
|---|---|
| METER SOCKET TYPE | RING |
| ENCLOSURE DIM (HxWxD) | 16"x12"x6" |
| MAIN AMPERE RATING | 200A |
| WEIGHT | 18 LBS |



PLAN

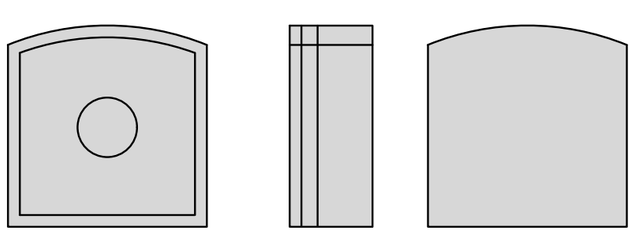


SIDE BACK FRONT

METER SOCKET DETAIL | NO SCALE | 4

| CIENA 3931 SERVICE DELIVERY SWITCH | |
|---|---|
| DIMENSIONS (HxWxD) | 17.0"x16.8"x7.0" 431x427x178mm |
| WEIGHT | 28.6 LBS/13.0 KG |
| POWER INPUT | 60W MAX |

PLAN

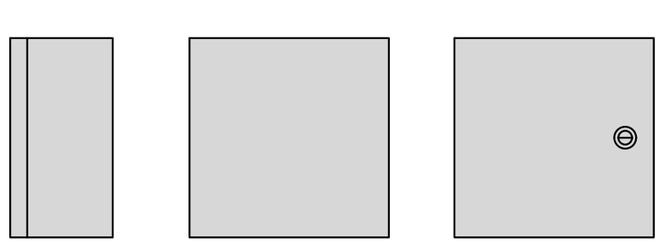


FRONT SIDE BACK

CIENA DETAIL | NO SCALE | 5

| CHARLES FIBER TELCO ENCLOSURE CUBE–MP1818WB–A | |
|---|---|
| ENCLOSURE DIM (HxWxD) | 18.0"x18.0"x9.25" |
| NEMA RATING | 4X |
| THERMAL | SEALED |
| MOUNTING BACKBOARD | WOOD |

PLAN

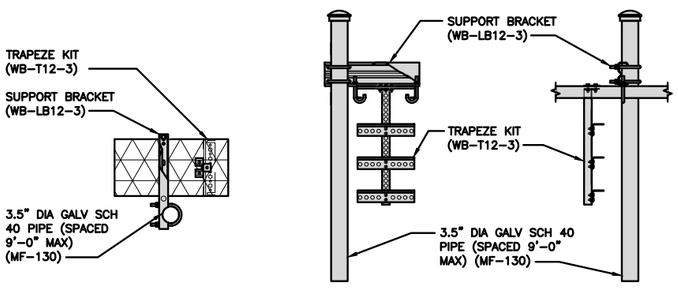


SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

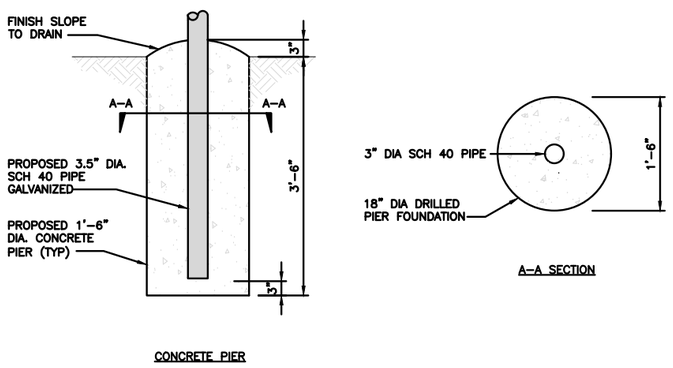
| COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT | |
|---|---|
| DIMENSIONS (HxL) | 160"x10' |
| WEIGHT/ VOLUME | 325.0 LBS |
| CABLE RUN (QTY) | 12 |

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



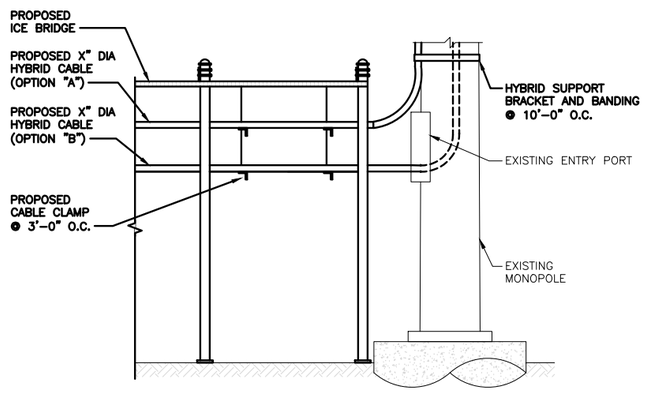

PLAN FRONT SIDE

ICE BRIDGE DETAIL | NO SCALE | 7




CONCRETE PIER A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8




HYBRID CABLE RUN | NO SCALE | 9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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
12/8/2021



| DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|
| RCD | SS | CJW |

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

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| 1 | 11/16/21 | REVISED PER COMMENTS |
| 2 | 12/08/21 | REVISED PER COMMENTS |

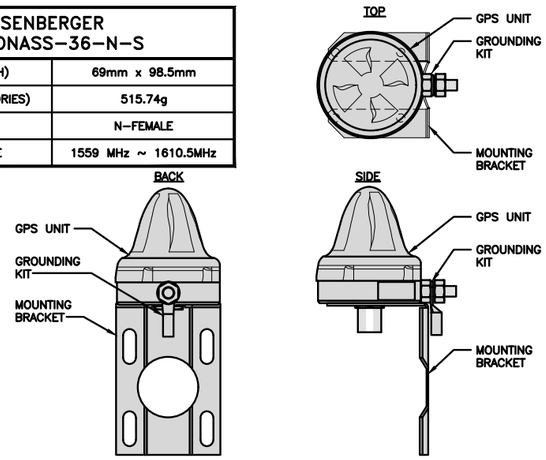
A&E PROJECT NUMBER
1197–F0001–C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

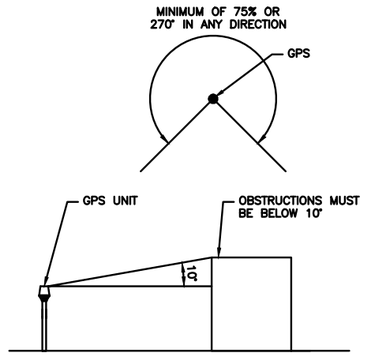
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

| ROSENBERGER GPSGLONASS-36-N-S | |
|---|---|
| DIMENSION (DIA x H) | 69mm x 98.5mm |
| WEIGHT (WITH ACCESSORIES) | 515.74g |
| CONNECTOR | N-FEMALE |
| FREQUENCY RANGE | 1559 MHz ~ 1610.5MHz |




GPS ANTENNA DETAIL | NO SCALE | 1




GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9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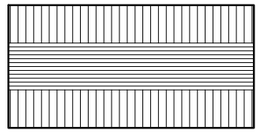
82 LOVELY ST
UNIONVILLE, CT 06085

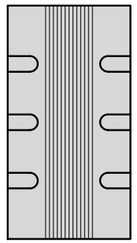
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

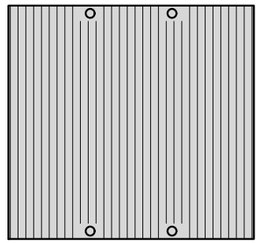
| FUJITSU TA08025-B604 RRH | |
|---|---|
| DIMENSIONS (HxWxD) (KG/IN) | 380x400x200/14.9"x15.7"x7.8" |
| WEIGHT(KG,LB)/ VOLUME | 29kg,63.9lb/ 30L |
| POWER SUPPLY | DC-58~-36V |



PLAN



SIDE



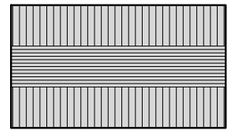
FRONT

**NOTES**

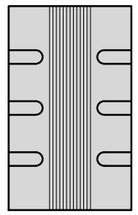
FINAL RRH SPECIFICATIONS TO BE CONFIRMED BY GC

REMOTE RADIO HEAD DETAIL | NO SCALE | 1

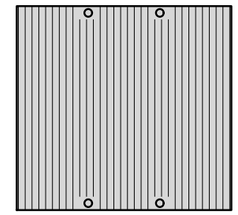
| FUJITSU TA08025-B605 RRH | |
|---|---|
| DIMENSIONS (HxWxD) (KG/IN) | 380x400x230/14.9"x15.7"x9.0" |
| WEIGHT(KG,LB)/ VOLUME | 34kg,74.9lb/ 35L |
| POWER SUPPLY | DC-58~-36V |



PLAN



SIDE



FRONT

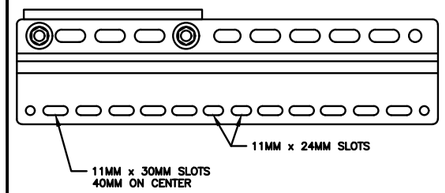
**NOTES**

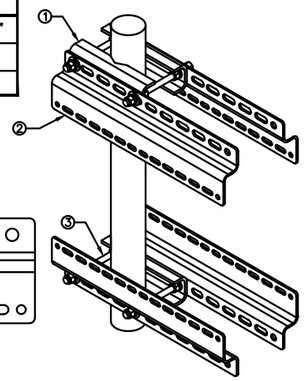
FINAL RRH SPECIFICATIONS TO BE CONFIRMED BY GC

REMOTE RADIO HEAD DETAIL | NO SCALE | 2

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

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

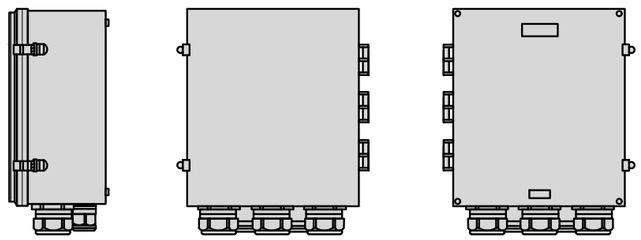



REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

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

PLAN

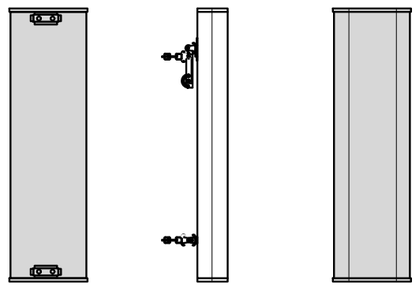


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL | NO SCALE | 4

| JMA WIRELESS MX08FRO665-20 ANTENNA | |
|---|---|
| DIMENSIONS (HxWxD) | 72.0"x20.0"x8.0" |
| TOTAL WEIGHT | 54 LB |
| RF PORTS, CONNECTOR TYPE | 8 x 4.3-10 FEMALE |

PLAN

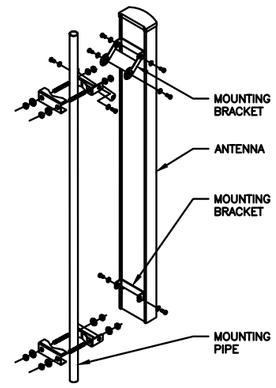


**NOTES**

FINAL ANTENNA SPECIFICATIONS TO BE CONFIRMED BY GC

ANTENNA DETAIL | NO SCALE | 5

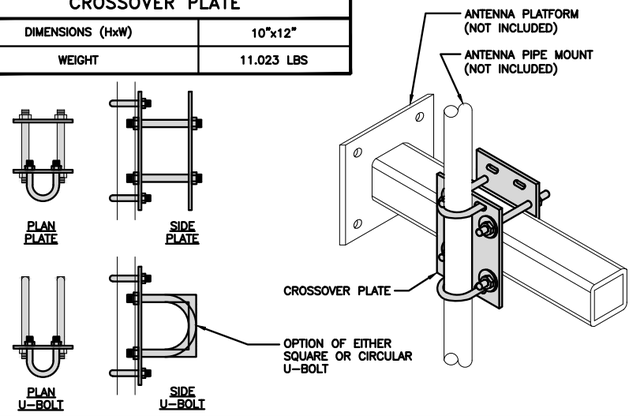
| JMA MOUNTING BRACKET | |
|---|---|
| WIDTH | 5" |
| DEPTH | 2" |
| HEIGHT | 8" |
| TOTAL WEIGHT | 1.5 lbs |
| HOUSING MATERIAL | ASA/ABS/ALUMINUM |
| RADOME COLOR | LIGHT GRAY |
| CONNECTOR | 1x8-PIN DAISY CHAIN |




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

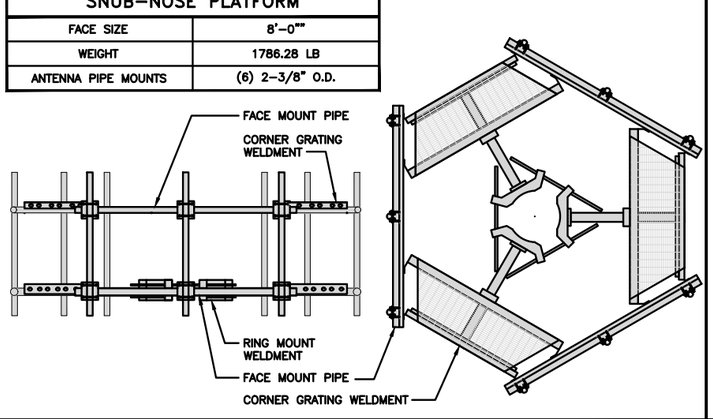
ANTENNA MOUNTING DETAIL | NO SCALE | 6

| COMMSCOPE XP-2040 CROSSOVER PLATE | |
|---|---|
| DIMENSIONS (HxW) | 10"x12" |
| WEIGHT | 11.023 LBS |




RRH/OVP MOUNT DETAIL | NO SCALE | 7

| SITEPRO1 SNP8HR-396 SNUB-NOSE PLATFORM | |
|---|---|
| FACE SIZE | 8'-0"" |
| WEIGHT | 1786.28 LB |
| ANTENNA PIPE MOUNTS | (6) 2-3/8" O.D. |




ANTENNA PLATFORM DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9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DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE

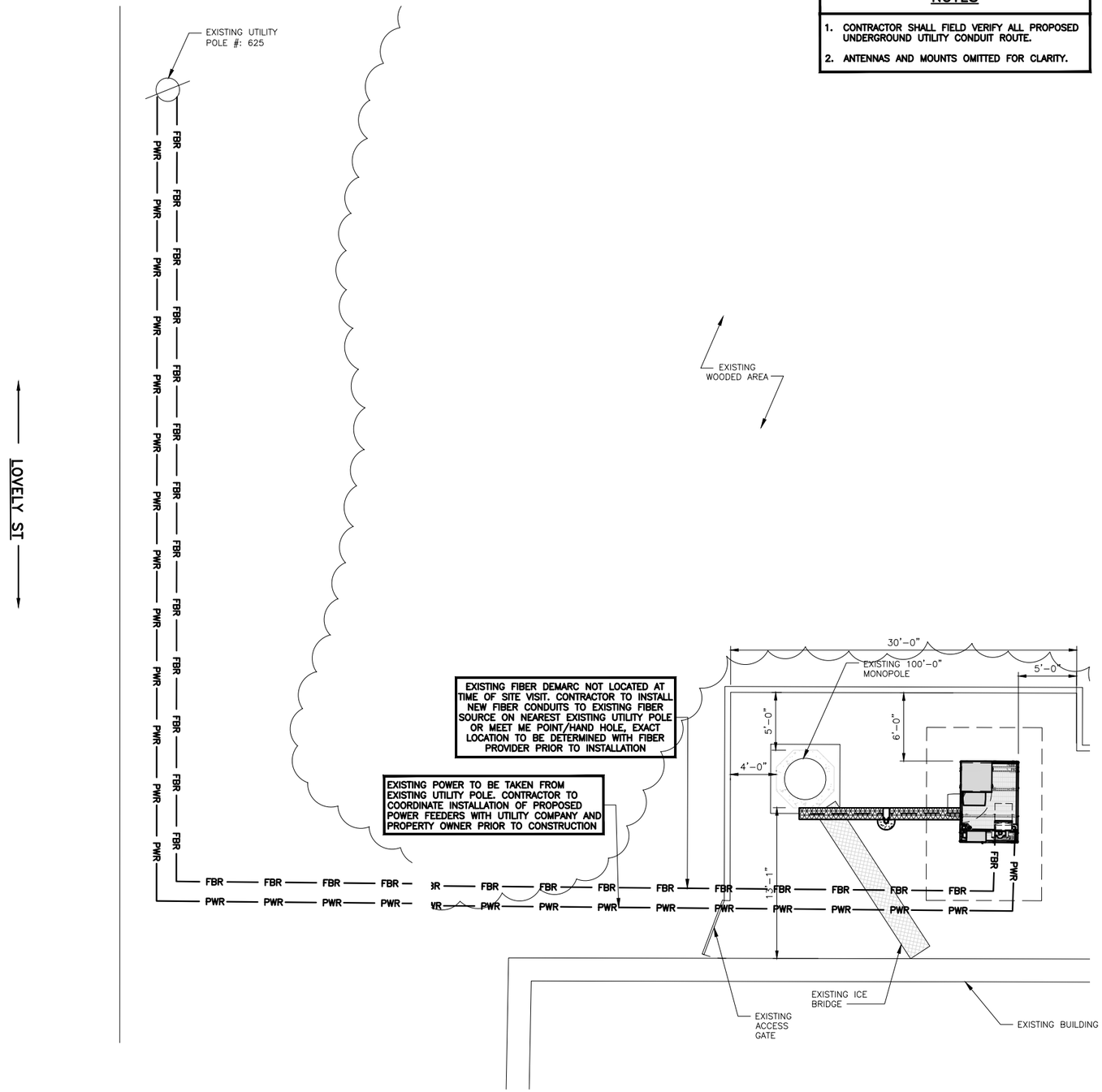
EQUIPMENT DETAILS

SHEET NUMBER

**A-6**

## NOTES

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




## UTILITY ROUTE PLAN

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

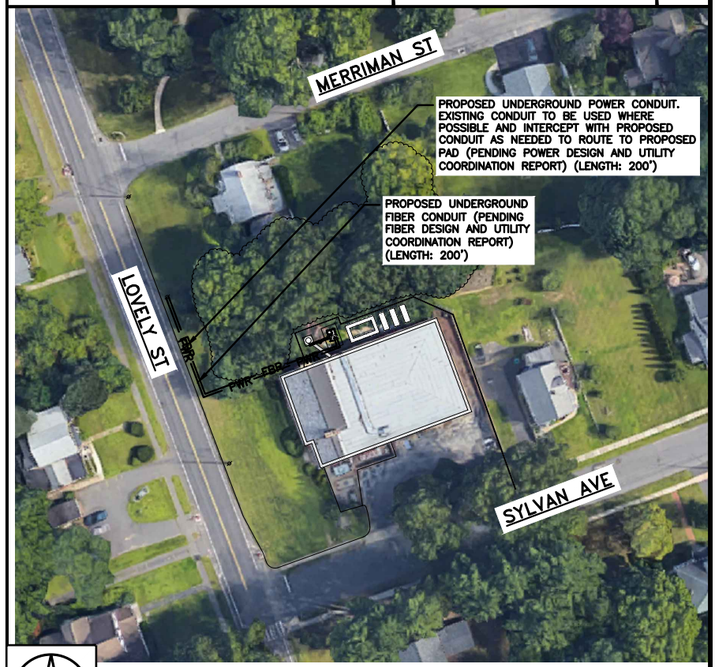
1

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

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

## ELECTRICAL NOTES

2




## OVERALL UTILITY ROUTE PLAN

50' 25' 0 50' 100'
1"=50'

3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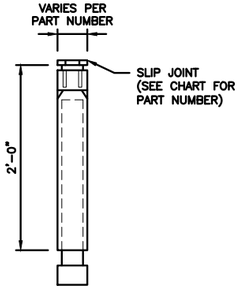
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
**E-1**

## CARLON EXPANSION FITTINGS

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

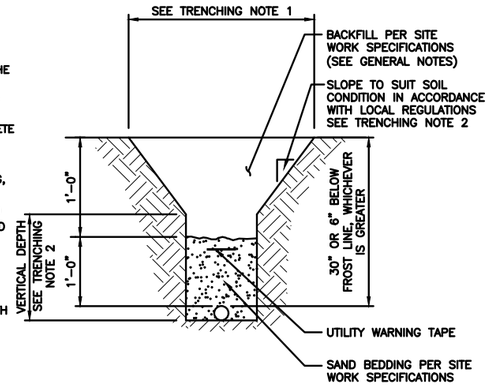



NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

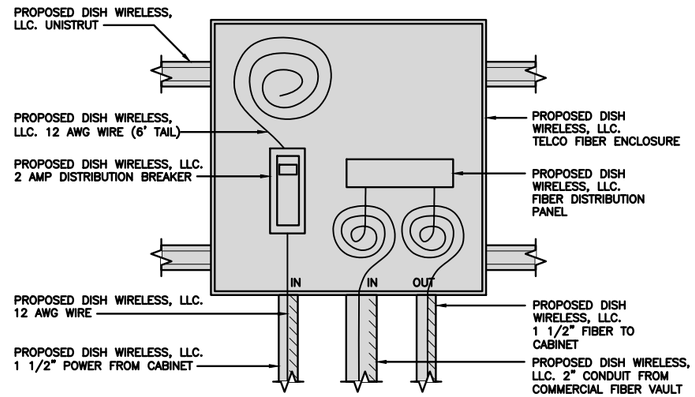
EXPANSION JOINT DETAIL | NO SCALE | 1

## TRENCHING NOTES

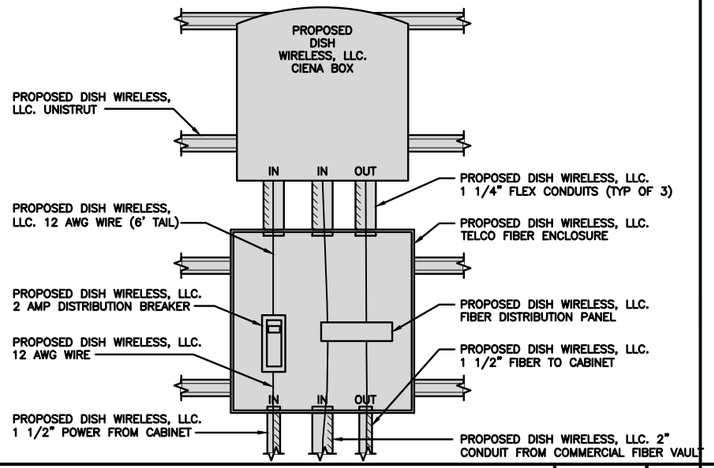
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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




TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2




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




LIT TELCO BOX – INTERIOR WIRING LAYOUT | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9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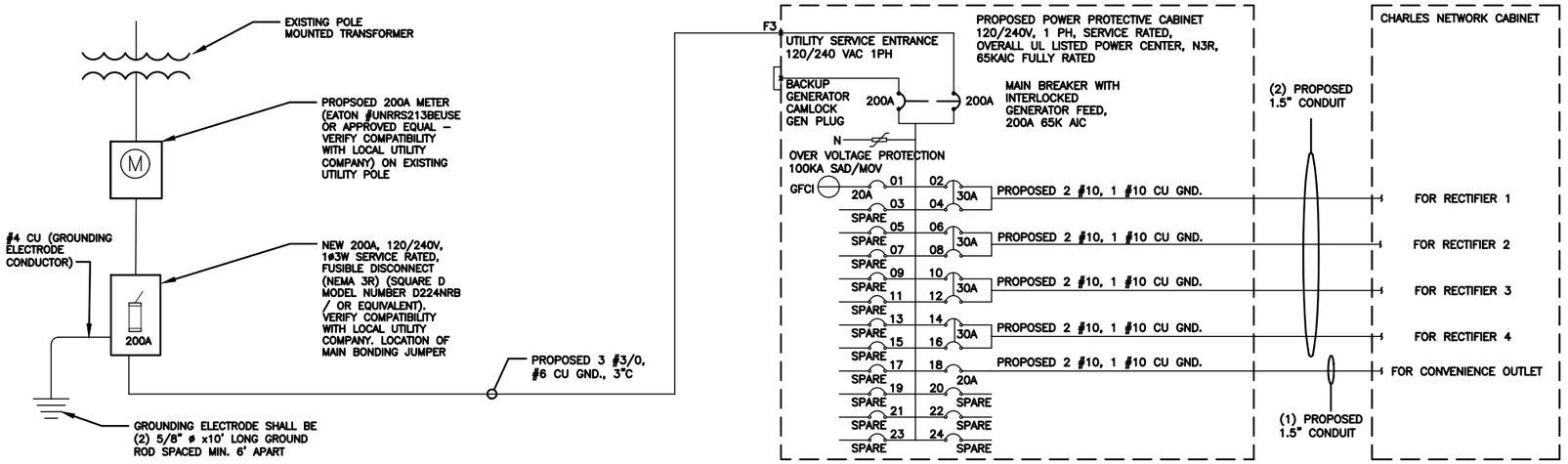
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
**E-2**




## NOTES

THERE ARE A TOTAL OF (10) CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT. ADJUSTABLE FACTOR OF 50% PER NEC TABLE 310.15(B)(3)(a) SHALL APPLY.

#10 FOR 15A/1P BREAKER: 0.5 x 40A = 15.0A
#8 FOR 20A–25A/2P BREAKER: 0.5 x 55A = 27.5A

CONDUIT SIZING: ASSUME 1.5" EMT
AT 40% FILL PER NEC 358, TABLE 4 – 0.814A SQ. IN AREA

WIRES: USING THWN–2, CU. (INCLUDING 3 GROUND WIRES)
#6 – 0.0507 SQ. IN X 8 = 0.4056 SQ. IN
#8 – 0.0366 SQ. IN X 2 = 0.0732 SQ. IN
#10 – 0.0211 SQ. IN X 4 = 0.0844 SQ. IN <GROUND
#12 – 0.0133 SQ. IN X 1 = 0.0133 SQ. IN <GROUND
TOTAL = 0.5765 SQ. IN

1.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OR (15) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

CONDUIT SIZING: ASSUME 3.0" SCH 40 PVC
AT 40% FILL PER NEC 352,TABLE 4 – 1.216A SQ. IN AREA

WIRES: USING THHN, CU. (INCLUDING 2 GROUND WIRES)
#3/0 – 0.1318 SQ. IN X 3 = 0.3954 SQ. IN
#2 – 0.0521 SQ. IN X 1 = 0.0521 SQ. IN
TOTAL = 0.4475 SQ. IN

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

## (CHARLES ABB GE INFINITY DC PLANT) WITH MULTI–METER CENTER 120V240V 1PH SOURCE

NO SCALE | 1

### PROPOSED PANEL SCHEDULE

| LOAD SERVED | VOLT AMPS (WATTS) L1 | VOLT AMPS (WATTS) L2 | TRIP | CKT # | PHASE | CKT # | TRIP | VOLT AMPS (WATTS) L1 | VOLT AMPS (WATTS) L2 | LOAD SERVED |
|---|---|---|---|---|---|---|---|---|---|---|
| –SPARE– | | | | 1 | A | 2 | 30A | 2880 | | ABB/GE INFINITY RECTIFIER 1 |
| –SPARE– | | | | 3 | B | 4 | | | 2880 | |
| –SPARE– | | | | 5 | A | 6 | 30A | 2880 | | ABB/GE INFINITY RECTIFIER 2 |
| –SPARE– | | | | 7 | B | 8 | | | 2880 | |
| –SPARE– | | | | 9 | A | 10 | 30A | 2880 | | ABB/GE INFINITY RECTIFIER 3 |
| –SPARE– | | | | 11 | B | 12 | | | 2880 | |
| –SPARE– | | | | 13 | A | 14 | 30A | 2880 | | ABB/GE INFINITY RECTIFIER 4 |
| –SPARE– | | | | 15 | B | 16 | | | 2880 | |
| –SPARE– | | | | 17 | A | 18 | 20A | 1920 | | CHARLES GFCI OUTLET |
| –SPARE– | | | | 19 | B | 20 | | | | –SPARE– |
| –SPARE– | | | | 21 | A | 22 | | | | –SPARE– |
| –SPARE– | | | | 23 | B | 24 | | | | –SPARE– |
| VOLT AMPS | | | | | | | | 13440 | 11520 | |

| 200A MCB, 1ϕ, 3W, 120/240V | L1 | L2 | |
|---|---|---|---|
| MB RATING: 65,000 AIC | 13440 | 11520 | VOLT AMPS |
| | 140 | 96 | AMPS |
| | 140 | | MAX AMPS |
| | 175 | | MAX 125% |

## PANEL SCHEDULE
## (CHARLES ABB GE INFINITY DC PLANT) WITH MULTI–METER CENTER 120V240V 1PH SOURCE

NO SCALE | 2

## NOT USED

NO SCALE | 3

## NOT USED

NO SCALE | 4

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34916
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12/8/2021



| DRAWN BY: | CHECKED BY: | APPROVED BY: |
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| RCD | SS | CJW |

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

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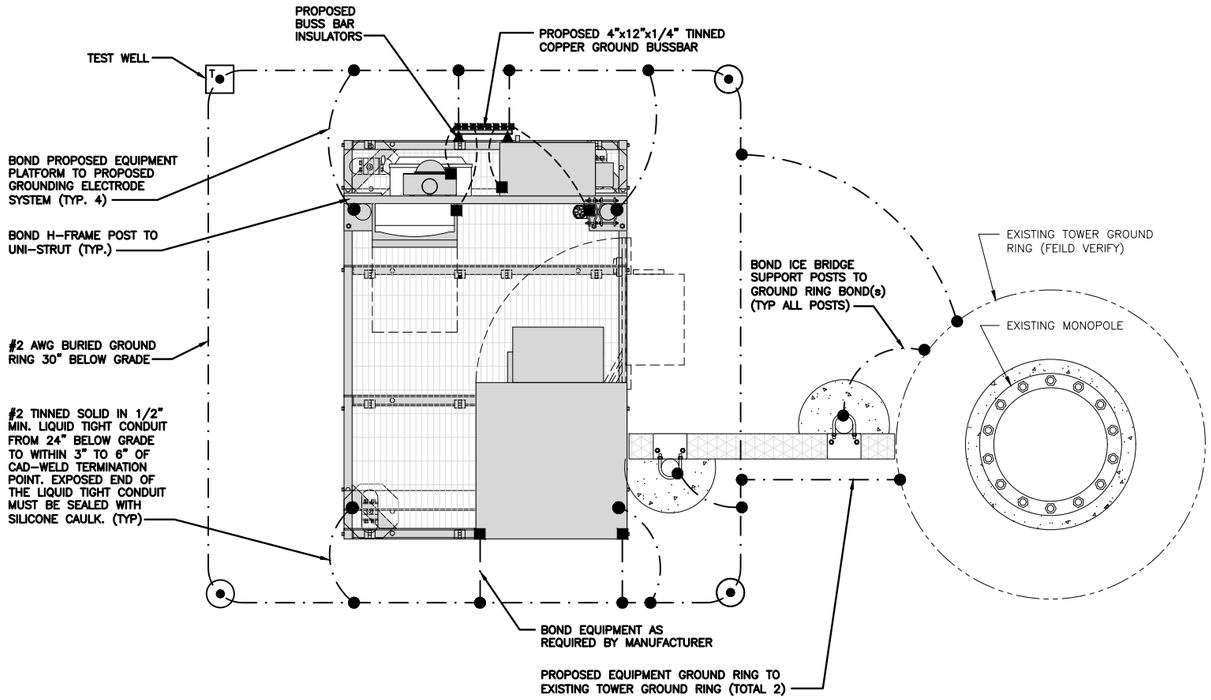
A&E PROJECT NUMBER
1197–F0001–C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

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

SHEET NUMBER
**E-3**

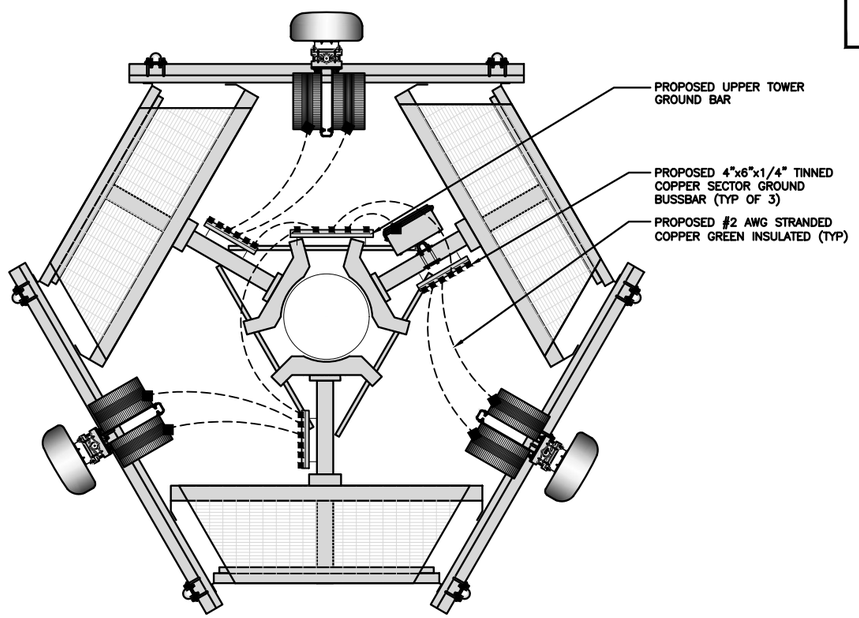



## TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

### NOTES

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




## TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

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

## 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, LLC. 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.

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

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

(L) 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.

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

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

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

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

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

REFER TO DISH WIRELESS, LLC. GROUNDING NOTES.

## GROUNDING KEY NOTES

NO SCALE | 3

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RFDS REV #: N/A

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A&E PROJECT NUMBER
1197-F0001-C

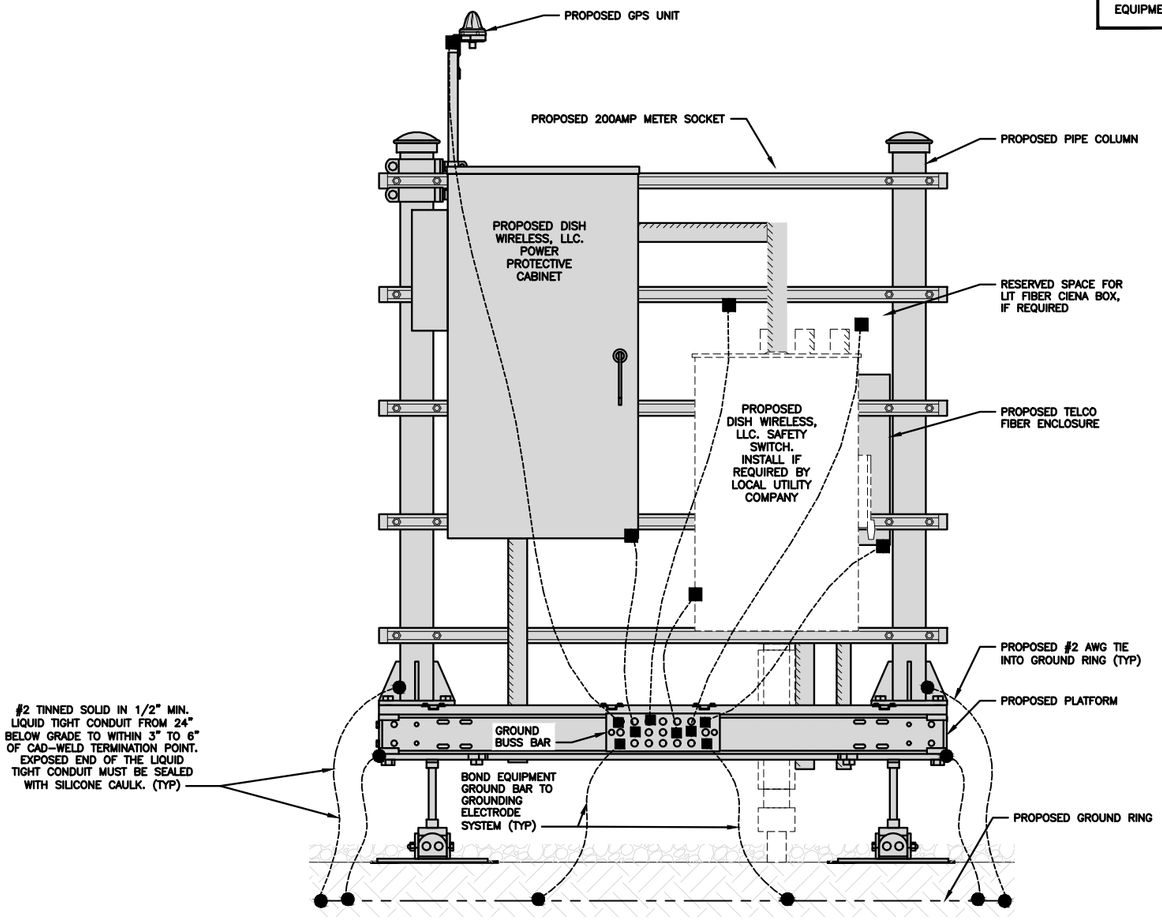
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

## NOTES

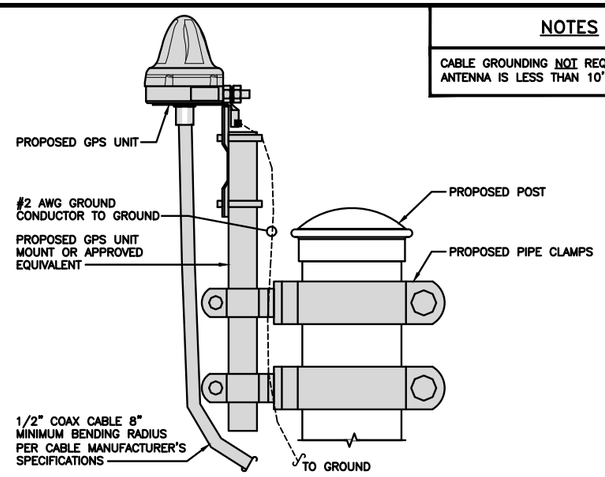
EQUIPMENT CABINET OMITTED FOR CLARITY



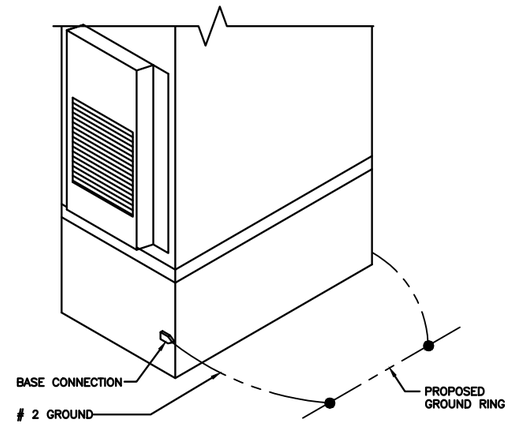

H-FRAME GROUNDING DETAIL | NO SCALE | 1

## NOTES

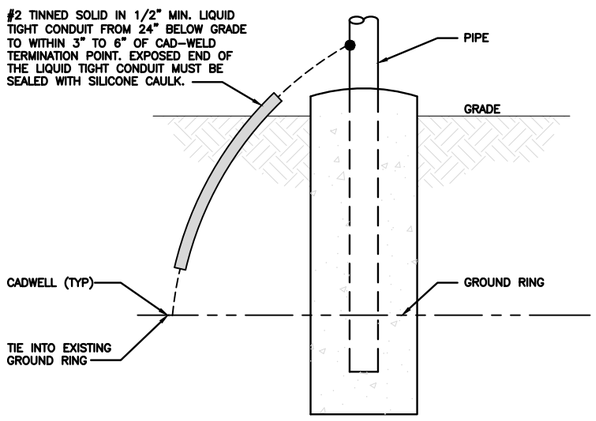
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



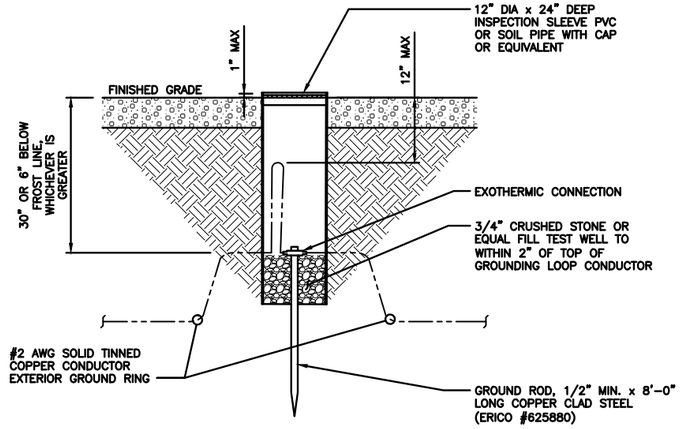

TYPICAL GPS UNIT GROUNDING | NO SCALE | 2




OUTDOOR CABINET GROUNDING | NO SCALE | 3




TRANSITIONING GROUND DETAIL | NO SCALE | 4




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

NOT USED | NO SCALE | 6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DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE

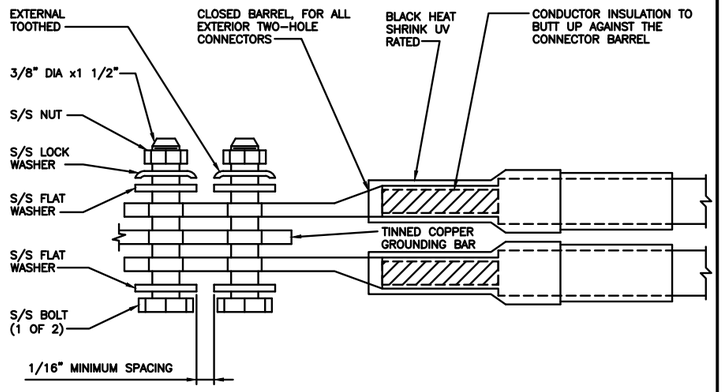
GROUNDING DETAILS

SHEET NUMBER

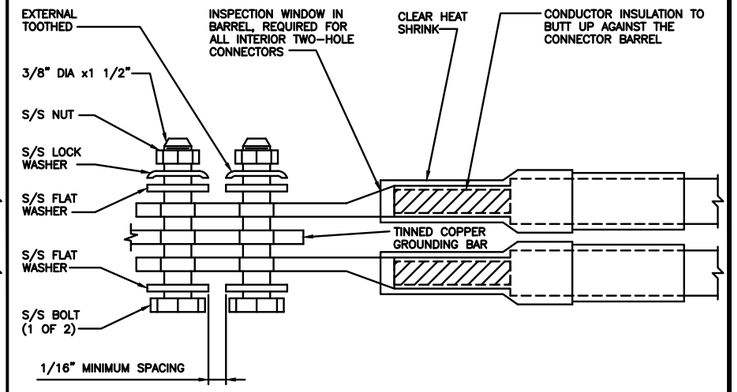
**G-2**

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

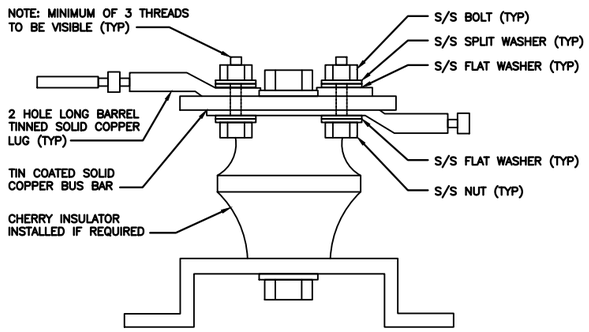
TYPICAL GROUNDING NOTES | NO SCALE | 1




TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2




TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3




LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9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82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE
GROUNDING DETAILS

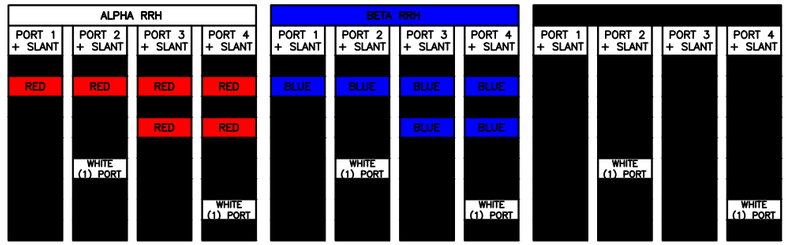
SHEET NUMBER
G-3

## RF JUMPER COLOR CODING

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

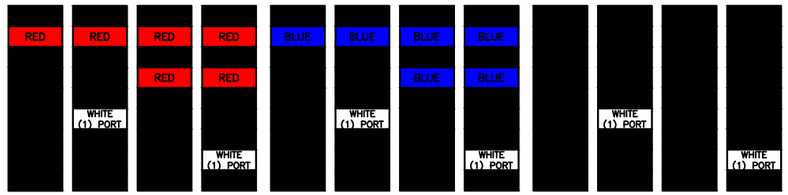
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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




MID-BAND RRH –
(AWS BANDS N66+N70)

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

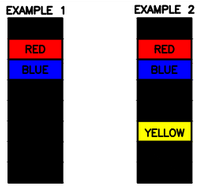



### HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED AM LONG WITH FREQUENCY BANDS

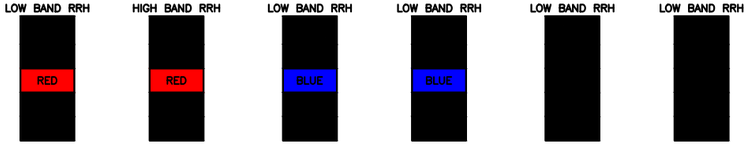
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



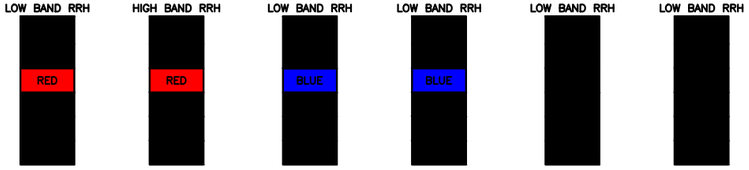

### HYBRID/DISCREET CABLES

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

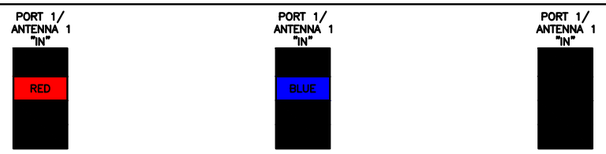



### POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



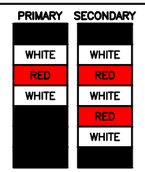

### RET MOTORS AT ANTENNAS

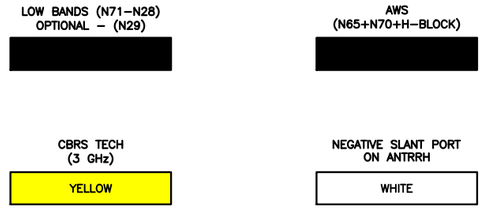



### MICROWAVE RADIO LINKS

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

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




**COLOR IDENTIFIER** | NO SCALE | 2

**NOT USED** | NO SCALE | 3

**NOT USED** | NO SCALE | 4

**RF CABLE COLOR CODES** | NO SCALE | 1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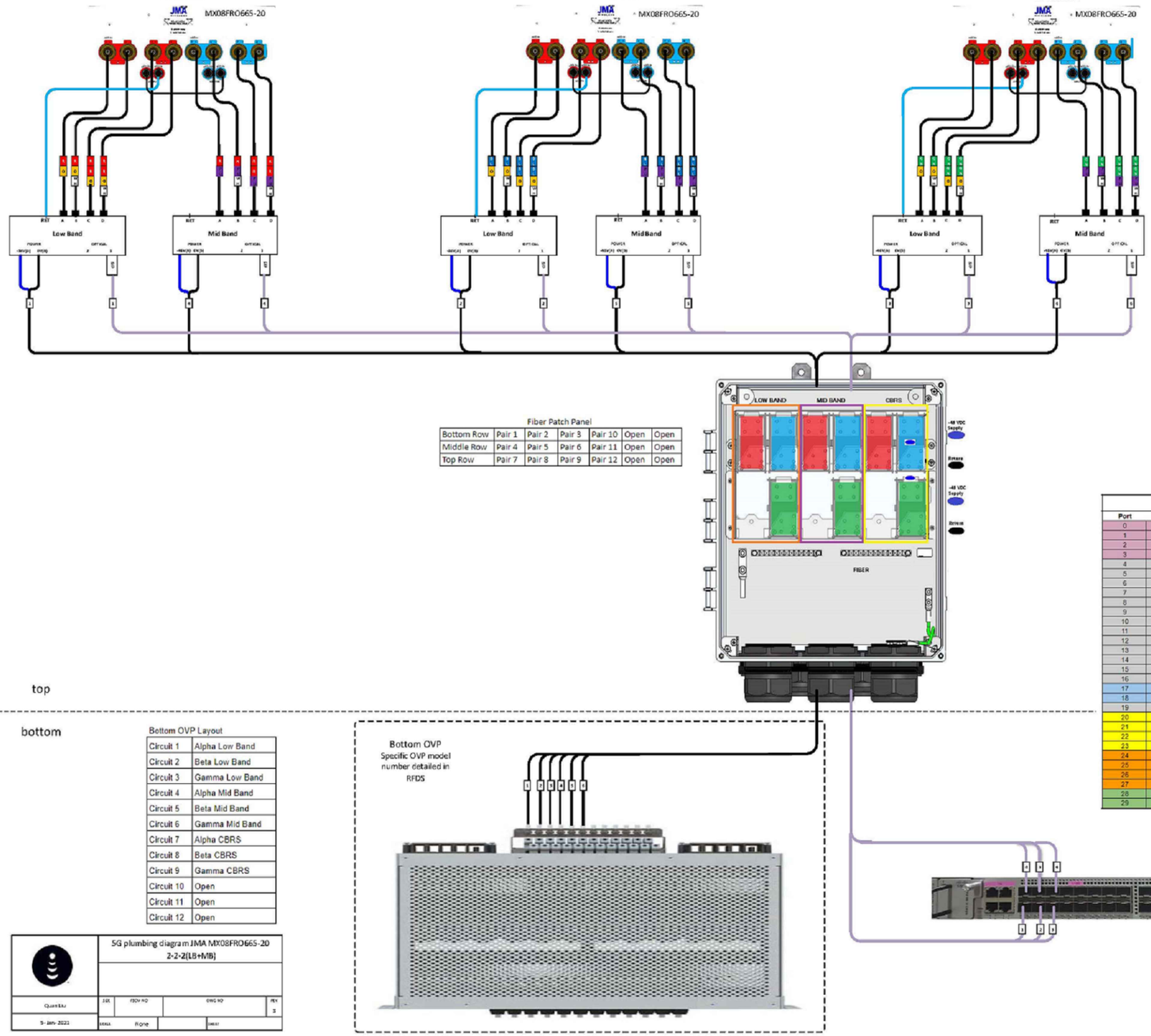
| REV | DATE | DESCRIPTION |
|---|---|---|
| 0 | 10/25/21 | ISSUED FOR PERMIT |
| 1 | 11/16/21 | REVISED PER COMMENTS |
| 2 | 12/08/21 | REVISED PER COMMENTS |

A&E PROJECT NUMBER
1197-F0001-C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
**RF-1**




Fiber Patch Panel

| | | | | | | |
|---|---|---|---|---|---|---|
| Bottom Row | Pair 1 | Pair 2 | Pair 3 | Pair 10 | Open | Open |
| Middle Row | Pair 4 | Pair 5 | Pair 6 | Pair 11 | Open | Open |
| Top Row | Pair 7 | Pair 8 | Pair 9 | Pair 12 | Open | Open |

Bottom OVP Layout

| | |
|---|---|
| Circuit 1 | Alpha Low Band |
| Circuit 2 | Beta Low Band |
| Circuit 3 | Gamma Low Band |
| Circuit 4 | Alpha Mid Band |
| Circuit 5 | Beta Mid Band |
| Circuit 6 | Gamma Mid Band |
| Circuit 7 | Alpha CBRS |
| Circuit 8 | Beta CBRS |
| Circuit 9 | Gamma CBRS |
| Circuit 10 | Open |
| Circuit 11 | Open |
| Circuit 12 | Open |

5G plumbing diagram JMA MX08FRO665-20
2-2-2(LB+MB)

Quantity: 1 | ISSV NO | DWG NO | REV: 3
Date: 9-Jan-2021 | Name | Sheet

CSR NCS540

| Port | Interface | Description |
|---|---|---|
| 0 | Gi0/0/0/0 | SiteBoss |
| 1 | Gi0/0/0/1 | CBRS - Alpha |
| 2 | Gi0/0/0/2 | CBRS - Beta |
| 3 | Gi0/0/0/3 | CBRS - Gamma |
| 4 | Te0/0/0/4 | Fujitsu Low-Band RU - Alpha |
| 5 | Te0/0/0/5 | Fujitsu Mid-Band RU - Alpha |
| 6 | Te0/0/0/6 | Fujitsu Low-Band RU - Beta |
| 7 | Te0/0/0/7 | Fujitsu Mid-Band RU - Beta |
| 8 | Te0/0/0/8 | Fujitsu Low-Band RU - Gamma |
| 9 | Te0/0/0/9 | Fujitsu Mid-Band RU - Gamma |
| 10 | Te0/0/0/10 | Fixed VM |
| 11 | Te0/0/0/11 | Fixed VM |
| 12 | Te0/0/0/12 | Fixed VM |
| 13 | Te0/0/0/13 | Fixed VM |
| 14 | Te0/0/0/14 | CBRS1 |
| 15 | Te0/0/0/15 | CBRS2 |
| 16 | Te0/0/0/16 | CBRS3 |
| 17 | Gi0/0/0/17 | SM1 - BMC |
| 18 | Gi0/0/0/18 | SM2 - BMC |
| 19 | Te0/0/019 | SM1 - Data 1 |
| 20 | Te0/0/020 | SM1 - Data 2 |
| 21 | Te0/0/021 | SM2 - Data 1 |
| 22 | Te0/0/022 | SM2 - Data 2 |
| 23 | Te0/0/023 | Reserved Uplink (EDC, LDC) |
| 24 | Te0/0/024 | Blank/Future |
| 25 | Te0/0/025 | Blank/Future |
| 26 | Te0/0/026 | Fiber NIU |
| 27 | Te0/0/027 | Fiber NIU |
| 28 | Te0/0/028 | Blank/Future |
| 29 | Te0/0/029 | Blank/Future |

**PLUMBING DIAGRAM** | NO SCALE | 1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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
12/8/2021



| DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|
| RCD | SS | CJW |

RFDS REV #: N/A

## CONSTRUCTION DOCUMENTS

SUBMITTALS

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PROJECT INFORMATION
BOBDL00107A
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82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE
RF
PLUMBING DIAGRAM

SHEET NUMBER
**RF-2**

## LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

## ABBREVIATIONS

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


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SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
12/8/2021



| DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|
| RCD | SS | CJW |

RFDS REV #: N/A

**CONSTRUCTION DOCUMENTS**

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1197–F0001–C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

**GN-1**

SITE ACTIVITY REQUIREMENTS:

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

2. "LOOK UP" – DISH WIRELESS, LLC. 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, LLC. AND DISH WIRELESS, LLC. 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, LLC. 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, LLC. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, LLC. 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, LLC. 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, LLC. 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, LLC.

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, LLC. AND TOWER OWNER

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

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

dish wireless.
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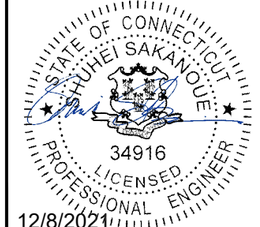




| DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|
| RCD | SS | CJW |

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

| REV | DATE | DESCRIPTION |
|---|---|---|
| 0 | 10/25/21 | ISSUED FOR PERMIT |
| 1 | 11/16/21 | REVISED PER COMMENTS |
| 2 | 12/08/21 | REVISED PER COMMENTS |

A&E PROJECT NUMBER
1197–F0001–C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
**GN-2**

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH WIRELESS, LLC. 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, LLC.".

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

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

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
12/8/2021



| DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|
| RCD | SS | CJW |

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

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| 1 | 11/16/21 | REVISED PER COMMENTS |
| 2 | 12/08/21 | REVISED PER COMMENTS |

A&E PROJECT NUMBER
1197-F0001-C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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


dish wireless.

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED
PROFESSIONAL ENGINEER
12/8/2021



| DRAWN BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|
| RCD | SS | CJW |

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER

1197-F0001-C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00107A
UNIONVILLE CO
82 LOVELY ST
UNIONVILLE, CT 06085

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

**GN-4**

# Exhibit D

## Structural Analysis Report

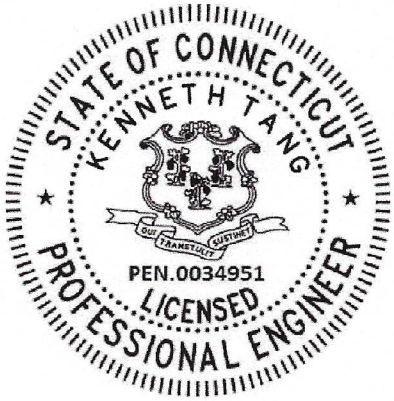
# Structural Analysis of a 100 ft Monopole

**Site Number Dish Wireless BOBDL00107A**
**EIP: 701773**
**Site Name: Unionville CO**
**County: Hartford**
**Location: Unionville, CT**

Checked By:

Patrick Propert

Patrick Propert
Structural Design Engineer III




Kenneth Tang
9/7/2021

EVEREST
INFRASTRUCTURE PARTNERS

Two Allegheny Ctr

Nova Tower 2, Suite 703

Pittsburgh, PA 15212

**August 2021**

9 North Main Street, 2nd Floor, Cortland, NY 13045
(607)591-5381 Fax: (866)870-0840 www.ArmorTower.com

September 7, 2021

Tom Rigg
Everest Infrastructure Partners
Two Allegheny Ctr
Nova Tower 2, Suite 703
Pittsburgh, PA 15212

RE: Dish Wireless – BOBDL00107A
EIP – 701773 – Unionville CO
82 Lovely St, Unionville, CT

Tom:

We have completed the structural analysis of the subject tower and **have found it to be adequate within the scope of this analysis to support the proposed antenna loading**. The tower was analyzed according to the code wind and ice parameters outlined in the *Code Requirements Table* following this letter.

The subject tower is a 100 ft Engineered Endeavors monopole tower consisting of (3) slip-jointed tubular pole sections. Pole dimeters range from 14.5" at the top to 27.5" at the base. Foundation capacities are based on a foundation mapping and geotechnical report by Wilkinson Engineering dated February 2010.

The loading used in the analysis consisted of the existing antennas/lines for AT&T as well as the following for Dish Wireless at 88 ft on a Valmont trisector antenna frame:

- (3) MX08FRO665-20 antennas
- (3) TA08025-B604 RRUs, (3) TA08025-B605 RRUs
- (1) RDIDC-9181-PF-48 fed with (1) 1-5/8" hybrid cable installed inside the pole

The results of the analysis showed all tower and apparent foundation elements to be loaded within allowable limits with a maximum stress rating of 78%. We recommend a post-construction inspection be completed by a structural engineer to document that tower-mounted equipment has been placed in compliance with the requirements of this analysis. For a detailed listing of tower performance, please see page 11 of the calculations.

We appreciate the opportunity to provide our professional services to Everest Infrastructure and Dish Wireless and if you have any questions concerning this analysis, please contact us.

Sincerely,

ARMOR TOWER, INC.

Patrick Botimer
Structural Design Engineer V

STATE OF CONNECTICUT
KENNETH TANG
PEN.0034951
LICENSED
PROFESSIONAL ENGINEER

9/7/2021

9 North Main Street, 2nd Floor, Cortland, NY 13045
(607)591-5381 Fax: (866)870-0840 www.ArmorTower.com

## CODE REQUIREMENTS

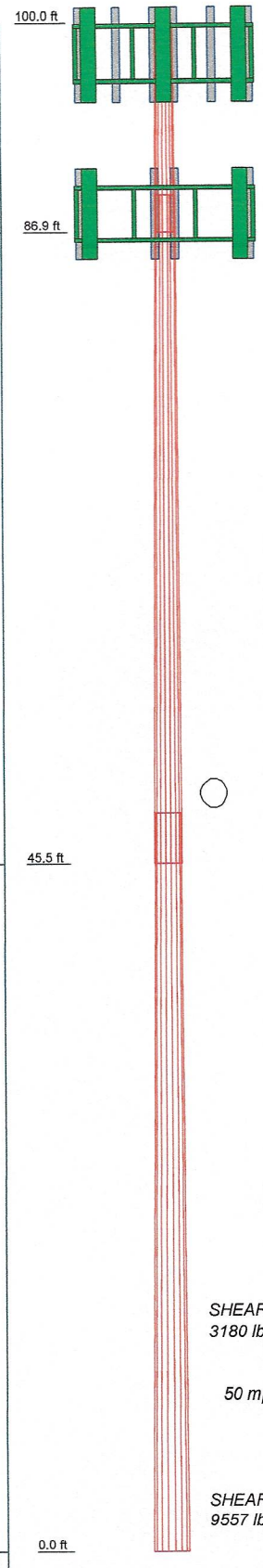
| | |
|---|---|
| **Governing code:** | 2018 CT State Building Code |
| **Code basis/adoption:** | 2015 International Building Code |
| **Referenced standard:** | ANSI/TIA 222-G-2 |
| **Basic wind speed: (3-sec. gust):** | $V_{ult}$: 120 mph with no ice<br>$V_{asd}$: 93 mph with no ice<br>50 mph with 1" concurrent ice |
| **County of site location:** | **Hartford** |
| **ASCE 7 Special wind region:** | No |
| **Structure/Risk Category:** | II |
| **Exposure Category:** | B |
| **Topographic Category: (Method 1)** | 1 - no topographic escalation |
| **Crest Height/Tower Base AMSL Elevation:** | 0 ft/ 257 ft |
| **Site Spectral Response:** | $S_s$=0.182, $S_1$=0.064 |

## PRIMARY ASSUMPTIONS CONSIDERED IN THIS PROJECT

1. Allowable steel stresses are defined by AISC-LRFD-99/360-16 and all welds conform to AWS D1.1 specification.
2. If reserved antennas/feed lines by other carriers are to be considered in this analysis, it is the responsibility of Everest Infrastructure and its affiliates to provide this information.
3. Any deviation from the analyzed antenna loading will require a re-analysis of the tower for verification of structural integrity. This analysis has considered the proposed hybrid line to be installed inside the tower as shown on drawing E-7.
4. This analysis assumes all tower members are galvanized adequately to prevent corrosion of the steel and that all tower members are in "like new" condition with no physical deterioration. This analysis also assumes the tower has been maintained properly per TIA 222-G Annex J recommended inspection and maintenance procedures for tower owners and is in a plumb condition. Armor Tower has not completed a condition assessment of the tower.
5. No accounting for residual stresses due to incorrect tower erection can be made. This analysis assumes all bolts are appropriately tightened providing necessary connection continuity and that the installation of the tower was performed by a qualified tower erector.
6. Foundation capacities are based on a foundation mapping and geotechnical report by Wilkinson Engineering dated February 2010.
7. No conclusions, expressed or implied, shall indicate that Armor Tower has made an evaluation of the original design, materials, fabrication, or potential installation or erection deficiencies. Any information contrary to that assumed for the purpose of preparing this analysis could alter the findings and conclusions stated herein.
8. Tower member sizes, geometry, and existing antenna loading are based on a tower analysis by MEI dated March 2010. It is our assumption that this data is complete and accurately reflects the existing conditions of the tower and equipment. Armor Tower has not been commissioned to field-validate this data. Armor Tower reserves the right to add to or modify this report as more information becomes available. Proposed equipment was outlined in a ColoApp dated April 15, 2021.

9. The investigation of the load carrying capacities of the antenna supporting frames/mounts is outside the scope of this analysis. Antenna mount certification can be completed under a separate contract.
10. Armor Tower can assist the contractor in providing a Class IV rigging plan for equipment lifting.

| Section | Length (ft) | Number of Sides | Thickness (in) | Socket Length (ft) | Top Dia (in) | Bot Dia (in) | Grade | Weight (lb) |
|---|---|---|---|---|---|---|---|---|
| 1 | 13.15 | 18 | 0.1875 | 2.50 | 14.5000 | 16.3487 | | 405.6 |
| 2 | 43.88 | 18 | 0.2500 | 3.25 | 15.6221 | 21.7155 | A572-65 | 2182.3 |
| 3 | 48.72 | 18 | 0.3125 | | 20.7642 | 27.5000 | | 3917.2 |
| | | | | | | | | 6505.1 |




## DESIGNED APPURTENANCE LOADING

| TYPE | ELEVATION | TYPE | ELEVATION |
|---|---|---|---|
| PwrWv P65-15-XLH-RR w. MtgPipe (ATI-Alpha) | 98 | Ericsson Radio 8843 B25/B66A (ATI-Gamma) | 98 |
| PwrWv P65-15-XLH-RR w. MtgPipe (ATI-Beta) | 98 | Ericsson Radio 4449 B5/B12 (ATI-Alpha) | 98 |
| PwrWv P65-15-XLH-RR w. MtgPipe (ATI-Gamma) | 98 | Ericsson Radio 4449 B5/B12 (ATI-Beta) | 98 |
| HPA-65R-BUU-H8 w. MtgPipe (ATI-Alpha) | 98 | Ericsson Radio 4449 B5/B12 (ATI-Gamma) | 98 |
| HPA-65R-BUU-H8 w. MtgPipe (ATI-Beta) | 98 | DC6-48-60-18-8F Surge Suppressor (ATI-Alpha) | 98 |
| HPA-65R-BUU-H8 w. MtgPipe (ATI-Gamma) | 98 | DC6-48-60-18-8F Surge Suppressor (ATI-Beta) | 98 |
| DMP65R-BU8D w. MtgPipe (ATI-Alpha) | 98 | Sabre 12' HD MOVE Platform (ATI) | 98 |
| DMP65R-BU8D w. MtgPipe (ATI-Beta) | 98 | MX08FRO665-20 w. Mtg Pipe (P-DW-Alpha) | 88 |
| DPA65R-BU6A w. Mtg Pipe (ATI-Gamma) | 98 | MX08FRO665-20 w. Mtg Pipe (P-DW-Beta) | 88 |
| PwrWv TT19-08BP111-001 TMA (ATI-Alpha) | 98 | MX08FRO665-20 w. Mtg Pipe (P-DW-Gamma) | 88 |
| PwrWv TT19-08BP111-001 TMA (ATI-Beta) | 98 | TA08025-B604 RRU (P-DW-Alpha) | 88 |
| PwrWv TT19-08BP111-001 TMA (ATI-Gamma) | 98 | TA08025-B604 RRU (P-DW-Beta) | 88 |
| Ericsson Radio 8843 B25/B66A (ATI-Alpha) | 98 | TA08025-B604 RRU (P-DW-Gamma) | 88 |
| Ericsson Radio 8843 B25/B66A (ATI-Beta) | 98 | TA08025-B605 RRU (P-DW-Alpha) | 88 |
| | | TA08025-B605 RRU (P-DW-Beta) | 88 |
| | | TA08025-B605 RRU (P-DW-Gamma) | 88 |
| | | RDIDC-9181-PF-48 (P-DW-Alpha) | 88 |
| | | Valmont SNP8HR-396 Platform (P-DW) | 88 |

## MATERIAL STRENGTH

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

## TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G 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 Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
8. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
9. Welds are fabricated with ER-70S-6 electrodes.
10. ASCE7-10:120mph(Vult) => 93 mph (Vasd)
11. TOWER RATING: 78.4%

*ALL REACTIONS ARE FACTORED*

*AXIAL 34779 lb*

*SHEAR 3180 lb* *MOMENT 306709 lb-ft*

*TORQUE 223 lb-ft*
*50 mph WIND - 1.0000 in ICE*

*AXIAL 17602 lb*

*SHEAR 9557 lb* *MOMENT 824780 lb-ft*

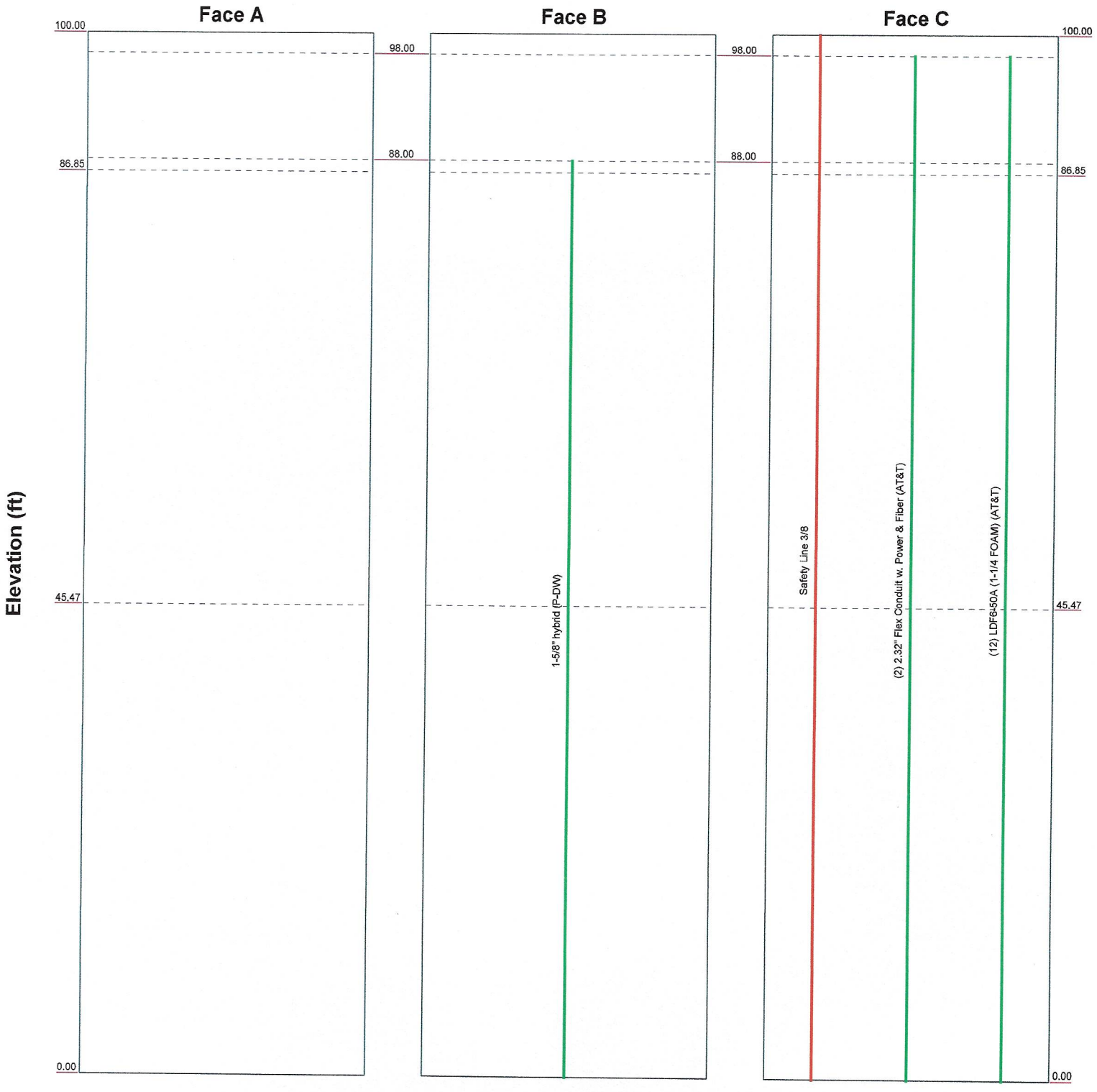
*TORQUE 870 lb-ft*
*REACTIONS - 93 mph WIND*


ARMOR TOWER
*Armor Tower Inc*
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840


| | |
|---|---|
| Job: | ***100' MONOPOLE ANALYSIS*** |
| Project: | ***Dish Wireless BOBDL00107A - Unionville CO, CT*** |
| Client: | Everest Infrastructure Partners - 701773 |
| Drawn by: | PB |
| App'd: | |
| Code: | TIA-222-G |
| Date: | 09/07/21 |
| Scale: | NTS |
| Path: | D:\Armor\Towerline Dropbox\ATI Team Folder\DriveY\Everest Infrastructure\701773 Unionville\CO\Project Files\tnx\100mp.eri |
| Dwg No. | E-1 |

# Feed Line Distribution Chart
## 0' - 100'

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





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| | | | |
|---|---|---|---|
| Job: | ***100' MONOPOLE ANALYSIS*** | | |
| Project: | ***Dish Wireless BOBDL00107A - Unionville CO, CT*** | | |
| Client: | Everest Infrastructure Partners - 701773 | Drawn by: PB | App'd: |
| Code: | TIA-222-G | Date: 08/30/21 | Scale: NTS |
| Path: | D:\ArmorTowerInc Dropbox\All Team Folder\DriveY\Everest Infrastructure\701773 Unionville\CO\ProjectFiles\tnx\100mp.eri | | Dwg No. E-7 |

ARMOR TOWER ENGINEERING

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*FAX: 866-870-0840*

| Job | Page |
|---|---|
| 100' MONOPOLE ANALYSIS | 1 of 11 |
| **Project** | **Date** |
| Dish Wireless BOBDL00107A - Unionville CO, CT | 10:58:01 09/07/21 |
| **Client** | **Designed by** |
| Everest Infrastructure Partners - 701773 | PB |

# Tower Input Data

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

ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 93 mph.
Structure Class II.
Exposure Category B.
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.
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.
ASCE7-10:120mph (Vult) => 93 mph (Vasd).
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

# Options

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

ARMOR TOWER ENGINEERING

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| Job | Page |
|---|---|
| 100' MONOPOLE ANALYSIS | 2 of 11 |
| **Project** | **Date** |
| Dish Wireless BOBDL00107A - Unionville CO, CT | 10:58:01 09/07/21 |
| **Client** | **Designed by** |
| Everest Infrastructure Partners - 701773 | PB |

## 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 | 100.00-86.85 | 13.15 | 2.50 | 18 | 14.5000 | 16.3487 | 0.1875 | 0.7500 | A572-65 (65 ksi) |
| L2 | 86.85-45.47 | 43.88 | 3.25 | 18 | 15.6221 | 21.7155 | 0.2500 | 1.0000 | A572-65 (65 ksi) |
| L3 | 45.47-0.00 | 48.72 | | 18 | 20.7642 | 27.5000 | 0.3125 | 1.2500 | 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 | 14.6948 | 8.5177 | 220.4409 | 5.0809 | 7.3660 | 29.9268 | 441.1718 | 4.2597 | 2.2220 | 11.851 |
| | 16.5720 | 9.6179 | 317.3704 | 5.7372 | 8.3051 | 38.2137 | 635.1585 | 4.8099 | 2.5474 | 13.586 |
| L2 | 16.1771 | 12.1978 | 364.1548 | 5.4571 | 7.9360 | 45.8862 | 728.7887 | 6.1000 | 2.3095 | 9.238 |
| | 22.0119 | 17.0329 | 991.5335 | 7.6203 | 11.0315 | 89.8822 | 1984.3718 | 8.5181 | 3.3819 | 13.528 |
| L3 | 21.4925 | 20.2855 | 1071.9684 | 7.2603 | 10.5482 | 101.6256 | 2145.3474 | 10.1447 | 3.1045 | 9.934 |
| | 27.8760 | 26.9666 | 2518.2696 | 9.6516 | 13.9700 | 180.2627 | 5039.8527 | 13.4859 | 4.2900 | 13.728 |

| 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 100.00-86.85 | | | | 1 | 1 | 1 | | | |
| L2 86.85-45.47 | | | | 1 | 1 | 1 | | | |
| L3 45.47-0.00 | | | | 1 | 1 | 1 | | | |

## Monopole Base Plate Data

| Base Plate Data | |
|---|---|
| Base plate is square | |
| Base plate is grouted | √ |
| Anchor bolt grade | A615-75 |
| Anchor bolt size | 2.2500 in |
| Number of bolts | 6 |
| Embedment length | 72.0000 in |
| $f'_c$ | 4 ksi |
| Grout space | 4.0000 in |
| Base plate grade | A871 Gr60 |
| Base plate thickness | 2.5000 in |
| Bolt circle diameter | 36.5000 in |
| Outer diameter | 43.0000 in |
| Inner diameter | 17.5000 in |
| Base plate type | Plain Plate |

## Feed Line/Linear Appurtenances - Entered As Round Or Flat

| Description | Sector | Exclude From Torque Calculation | Component Type | Placement ft | Total Number | Number Per Row | Start/End Position | Width or Diameter in | Perimeter in | Weight plf |
|---|---|---|---|---|---|---|---|---|---|---|
| Safety Line 3/8 | C | Yes | Surface Ar (CaAa) | 100.00 - 0.00 | 1 | 1 | 0.000<br>0.000 | 0.3750 | | 0.22 |

## Feed Line/Linear Appurtenances - Entered As Area

| Description | Face or Leg | Allow Shield | Exclude From Torque Calculation | Component Type | Placement ft | Total Number | | $C_AA_A$ $ft^2/ft$ | Weight plf |
|---|---|---|---|---|---|---|---|---|---|
| * | | | | | | | | | |
| 2.32" Flex Conduit w. Power & Fiber (AT&T) | C | No | Yes | Inside Pole | 98.00 - 0.00 | 2 | No Ice<br>1/2" Ice<br>1" Ice | 0.00<br>0.00<br>0.00 | 2.80<br>2.80<br>2.80 |
| LDF6-50A (1-1/4 FOAM) (AT&T) | C | No | Yes | Inside Pole | 98.00 - 0.00 | 12 | No Ice<br>1/2" Ice<br>1" Ice | 0.00<br>0.00<br>0.00 | 0.66<br>0.66<br>0.66 |
| * | | | | | | | | | |
| 1-5/8" hybrid (P-DW) | B | No | Yes | Inside Pole | 88.00 - 0.00 | 1 | No Ice<br>1/2" Ice<br>1" Ice | 0.00<br>0.00<br>0.00 | 0.67<br>0.67<br>0.67 |

## Feed Line/Linear Appurtenances Section Areas

| Tower Section | Tower Elevation ft | Face | $A_R$ $ft^2$ | $A_F$ $ft^2$ | $C_AA_A$ In Face $ft^2$ | $C_AA_A$ Out Face $ft^2$ | Weight lb |
|---|---|---|---|---|---|---|---|
| L1 | 100.00-86.85 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.77 |
| | | C | 0.000 | 0.000 | 0.493 | 0.000 | 153.58 |
| L2 | 86.85-45.47 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 27.72 |
| | | C | 0.000 | 0.000 | 1.552 | 0.000 | 568.56 |
| L3 | 45.47-0.00 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 30.47 |
| | | C | 0.000 | 0.000 | 1.705 | 0.000 | 624.82 |

## Feed Line/Linear Appurtenances Section Areas - With Ice

| Tower Section | Tower Elevation ft | Face or Leg | Ice Thickness in | $A_R$ $ft^2$ | $A_F$ $ft^2$ | $C_AA_A$ In Face $ft^2$ | $C_AA_A$ Out Face $ft^2$ | Weight lb |
|---|---|---|---|---|---|---|---|---|
| L1 | 100.00-86.85 | A | 2.219 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.77 |
| | | C | | 0.000 | 0.000 | 6.327 | 0.000 | 246.03 |
| L2 | 86.85-45.47 | A | 2.142 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |

| Tower Section | Tower Elevation ft | Face or Leg | Ice Thickness in | $A_R$ $ft^2$ | $A_F$ $ft^2$ | $C_AA_A$ In Face $ft^2$ | $C_AA_A$ Out Face $ft^2$ | Weight lb |
|---|---|---|---|---|---|---|---|---|
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 27.72 |
| | | C | | 0.000 | 0.000 | 19.917 | 0.000 | 859.57 |
| L3 | 45.47-0.00 | A | 1.920 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 30.47 |
| | | C | | 0.000 | 0.000 | 21.188 | 0.000 | 924.39 |

## Shielding Factor Ka

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | $K_a$ No Ice | $K_a$ Ice |
|---|---|---|---|---|---|
| L1 | 1 | Safety Line 3/8 | 86.85 - 100.00 | 1.0000 | 1.0000 |
| L2 | 1 | Safety Line 3/8 | 45.47 - 86.85 | 1.0000 | 1.0000 |
| L3 | 1 | Safety Line 3/8 | 0.00 - 45.47 | 1.0000 | 1.0000 |

## Discrete Tower Loads

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral ft / Vert ft | Azimuth Adjustment ° | Placement ft | | $C_AA_A$ Front $ft^2$ | $C_AA_A$ Side $ft^2$ | Weight lb |
|---|---|---|---|---|---|---|---|---|---|
| *No Lightning Rod | | | | | | | | | |
| * | | | | | | | | | |
| *AT&T Mar2020 | | | | | | | | | |
| PwrWv P65-15-XLH-RR w. | A | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 5.43 | 3.95 | 54.60 |
| MtgPipe | | | -3.00 | | | 1/2" Ice | 5.77 | 4.52 | 99.63 |
| (AT&T-Alpha) | | | 0.00 | | | 1" Ice | 6.12 | 5.11 | 150.60 |
| PwrWv P65-15-XLH-RR w. | B | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 5.43 | 3.95 | 54.60 |
| MtgPipe | | | -3.00 | | | 1/2" Ice | 5.77 | 4.52 | 99.63 |
| (AT&T-Beta) | | | 0.00 | | | 1" Ice | 6.12 | 5.11 | 150.60 |
| PwrWv P65-15-XLH-RR w. | C | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 5.43 | 3.95 | 54.60 |
| MtgPipe | | | -3.00 | | | 1/2" Ice | 5.77 | 4.52 | 99.63 |
| (AT&T-Gamma) | | | 0.00 | | | 1" Ice | 6.12 | 5.11 | 150.60 |
| HPA-65R-BUU-H8 w. | A | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 12.83 | 9.38 | 82.20 |
| MtgPipe | | | 0.00 | | | 1/2" Ice | 13.44 | 10.78 | 175.71 |
| (AT&T-Alpha) | | | 0.00 | | | 1" Ice | 14.05 | 12.04 | 278.92 |
| HPA-65R-BUU-H8 w. | B | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 12.83 | 9.38 | 82.20 |
| MtgPipe | | | 0.00 | | | 1/2" Ice | 13.44 | 10.78 | 175.71 |
| (AT&T-Beta) | | | 0.00 | | | 1" Ice | 14.05 | 12.04 | 278.92 |
| HPA-65R-BUU-H8 w. | C | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 12.83 | 9.38 | 82.20 |
| MtgPipe | | | 0.00 | | | 1/2" Ice | 13.44 | 10.78 | 175.71 |
| (AT&T-Gamma) | | | 0.00 | | | 1" Ice | 14.05 | 12.04 | 278.92 |
| DMP65R-BU8D w. MtgPipe | A | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 17.87 | 10.02 | 148.20 |
| (AT&T-Alpha) | | | 3.00 | | | 1/2" Ice | 18.50 | 11.44 | 266.88 |
| | | | 0.00 | | | 1" Ice | 19.14 | 12.72 | 395.91 |
| DMP65R-BU8D w. MtgPipe | B | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 17.87 | 10.02 | 148.20 |
| (AT&T-Beta) | | | 3.00 | | | 1/2" Ice | 18.50 | 11.44 | 266.88 |

| *Description* | *Face or Leg* | *Offset Type* | *Offsets: Horz Lateral ft* / *Vert ft* / *ft* | *Azimuth Adjustment* ° | *Placement* ft | | $C_AA_A$ *Front* $ft^2$ | $C_AA_A$ *Side* $ft^2$ | *Weight* lb |
|---|---|---|---|---|---|---|---|---|---|
| | | | 0.00 | | | 1" Ice | 19.14 | 12.72 | 395.91 |
| DPA65R-BU6A w. Mtg Pipe | C | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 7.88 | 7.44 | 69.90 |
| (AT&T-Gamma) | | | 3.00 | | | 1/2" Ice | 8.34 | 8.40 | 138.34 |
| | | | 0.00 | | | 1" Ice | 8.80 | 9.23 | 214.57 |
| PwrWv TT19-08BP111-001 | A | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 0.55 | 0.45 | 16.00 |
| TMA | | | 0.00 | | | 1/2" Ice | 0.65 | 0.53 | 21.80 |
| (AT&T-Alpha) | | | 0.00 | | | 1" Ice | 0.75 | 0.63 | 29.22 |
| PwrWv TT19-08BP111-001 | B | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 0.55 | 0.45 | 16.00 |
| TMA | | | 0.00 | | | 1/2" Ice | 0.65 | 0.53 | 21.80 |
| (AT&T-Beta) | | | 0.00 | | | 1" Ice | 0.75 | 0.63 | 29.22 |
| PwrWv TT19-08BP111-001 | C | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 0.55 | 0.45 | 16.00 |
| TMA | | | 0.00 | | | 1/2" Ice | 0.65 | 0.53 | 21.80 |
| (AT&T-Gamma) | | | 0.00 | | | 1" Ice | 0.75 | 0.63 | 29.22 |
| Ericsson Radio 8843 | A | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 1.64 | 1.36 | 71.87 |
| B25/B66A | | | 0.00 | | | 1/2" Ice | 1.80 | 1.51 | 89.52 |
| (AT&T-Alpha) | | | 0.00 | | | 1" Ice | 1.97 | 1.66 | 109.89 |
| Ericsson Radio 8843 | B | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 1.64 | 1.36 | 71.87 |
| B25/B66A | | | 0.00 | | | 1/2" Ice | 1.80 | 1.51 | 89.52 |
| (AT&T-Beta) | | | 0.00 | | | 1" Ice | 1.97 | 1.66 | 109.89 |
| Ericsson Radio 8843 | C | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 1.64 | 1.36 | 71.87 |
| B25/B66A | | | 0.00 | | | 1/2" Ice | 1.80 | 1.51 | 89.52 |
| (AT&T-Gamma) | | | 0.00 | | | 1" Ice | 1.97 | 1.66 | 109.89 |
| Ericsson Radio 4449 B5/B12 | A | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 1.97 | 1.41 | 70.50 |
| (AT&T-Alpha) | | | 0.00 | | | 1/2" Ice | 2.15 | 1.57 | 89.03 |
| | | | 0.00 | | | 1" Ice | 2.33 | 1.73 | 110.38 |
| Ericsson Radio 4449 B5/B12 | B | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 1.97 | 1.41 | 70.50 |
| (AT&T-Beta) | | | 0.00 | | | 1/2" Ice | 2.15 | 1.57 | 89.03 |
| | | | 0.00 | | | 1" Ice | 2.33 | 1.73 | 110.38 |
| Ericsson Radio 4449 B5/B12 | C | From Face | 3.00 | 0.0000 | 98.00 | No Ice | 1.97 | 1.41 | 70.50 |
| (AT&T-Gamma) | | | 0.00 | | | 1/2" Ice | 2.15 | 1.57 | 89.03 |
| | | | 0.00 | | | 1" Ice | 2.33 | 1.73 | 110.38 |
| DC6-48-60-18-8F Surge | A | From Face | 2.00 | 0.0000 | 98.00 | No Ice | 0.79 | 0.79 | 20.00 |
| Suppressor | | | 0.00 | | | 1/2" Ice | 1.27 | 1.27 | 35.12 |
| (AT&T-Alpha) | | | 0.00 | | | 1" Ice | 1.45 | 1.45 | 52.57 |
| DC6-48-60-18-8F Surge | B | From Face | 2.00 | 0.0000 | 98.00 | No Ice | 0.79 | 0.79 | 20.00 |
| Suppressor | | | 0.00 | | | 1/2" Ice | 1.27 | 1.27 | 35.12 |
| (AT&T-Beta) | | | 0.00 | | | 1" Ice | 1.45 | 1.45 | 52.57 |
| Sabre 12' HD MOVE | C | None | | 0.0000 | 98.00 | No Ice | 28.00 | 28.00 | 2959.00 |
| Platform | | | | | | 1/2" Ice | 32.00 | 32.00 | 3450.00 |
| (AT&T) | | | | | | 1" Ice | 36.00 | 36.00 | 3941.00 |
| * | | | | | | | | | |
| *DishWireless Aug2021 | | | | | | | | | |
| MX08FRO665-20 w. Mtg | A | From Face | 3.00 | 0.0000 | 88.00 | No Ice | 12.49 | 7.29 | 93.90 |
| Pipe | | | 0.00 | | | 1/2" Ice | 12.99 | 8.25 | 183.58 |
| (P-DW-Alpha) | | | 0.00 | | | 1" Ice | 13.49 | 9.08 | 281.61 |
| MX08FRO665-20 w. Mtg | B | From Face | 3.00 | 0.0000 | 88.00 | No Ice | 12.49 | 7.29 | 93.90 |
| Pipe | | | 0.00 | | | 1/2" Ice | 12.99 | 8.25 | 183.58 |
| (P-DW-Beta) | | | 0.00 | | | 1" Ice | 13.49 | 9.08 | 281.61 |
| MX08FRO665-20 w. Mtg | C | From Face | 3.00 | 0.0000 | 88.00 | No Ice | 12.49 | 7.29 | 93.90 |
| Pipe | | | 0.00 | | | 1/2" Ice | 12.99 | 8.25 | 183.58 |
| (P-DW-Gamma) | | | 0.00 | | | 1" Ice | 13.49 | 9.08 | 281.61 |
| TA08025-B604 RRU | A | From Face | 3.00 | 0.0000 | 88.00 | No Ice | 1.98 | 1.04 | 64.00 |
| (P-DW-Alpha) | | | -2.00 | | | 1/2" Ice | 2.15 | 1.18 | 80.85 |
| | | | 0.00 | | | 1" Ice | 2.33 | 1.32 | 100.41 |
| TA08025-B604 RRU | B | From Face | 3.00 | 0.0000 | 88.00 | No Ice | 1.98 | 1.04 | 64.00 |
| (P-DW-Beta) | | | -2.00 | | | 1/2" Ice | 2.15 | 1.18 | 80.85 |
| | | | 0.00 | | | 1" Ice | 2.33 | 1.32 | 100.41 |

*Armor Tower Inc*
*9 North Main*
*Cortland, NY 13045*
*Phone: 607-591-5381*
*FAX: 866-870-0840*


| *Description* | *Face or Leg* | *Offset Type* | *Offsets: Horz Lateral Vert* ft ft ft | *Azimuth Adjustment* ° | *Placement* ft | | *$C_AA_A$ Front* $ft^2$ | *$C_AA_A$ Side* $ft^2$ | *Weight* lb |
|---|---|---|---|---|---|---|---|---|---|
| TA08025-B604 RRU (P-DW-Gamma) | C | From Face | 3.00<br>-2.00<br>0.00 | 0.0000 | 88.00 | No Ice<br>1/2" Ice<br>1" Ice | 1.98<br>2.15<br>2.33 | 1.04<br>1.18<br>1.32 | 64.00<br>80.85<br>100.41 |
| TA08025-B605 RRU (P-DW-Alpha) | A | From Face | 3.00<br>-2.00<br>0.00 | 0.0000 | 88.00 | No Ice<br>1/2" Ice<br>1" Ice | 1.98<br>2.15<br>2.33 | 1.20<br>1.34<br>1.49 | 75.00<br>93.09<br>113.96 |
| TA08025-B605 RRU (P-DW-Beta) | B | From Face | 3.00<br>-2.00<br>0.00 | 0.0000 | 88.00 | No Ice<br>1/2" Ice<br>1" Ice | 1.98<br>2.15<br>2.33 | 1.20<br>1.34<br>1.49 | 75.00<br>93.09<br>113.96 |
| TA08025-B605 RRU (P-DW-Gamma) | C | From Face | 3.00<br>-2.00<br>0.00 | 0.0000 | 88.00 | No Ice<br>1/2" Ice<br>1" Ice | 1.98<br>2.15<br>2.33 | 1.20<br>1.34<br>1.49 | 75.00<br>93.09<br>113.96 |
| RDIDC-9181-PF-48 (P-DW-Alpha) | A | From Face | 2.00<br>0.00<br>0.00 | 0.0000 | 88.00 | No Ice<br>1/2" Ice<br>1" Ice | 2.31<br>2.50<br>2.70 | 1.29<br>1.45<br>1.61 | 22.00<br>41.25<br>63.41 |
| Valmont SNP8HR-396 Platform (P-DW) | C | None | | 0.0000 | 88.00 | No Ice<br>1/2" Ice<br>1" Ice | 30.70<br>42.00<br>53.30 | 30.70<br>42.00<br>53.30 | 1786.00<br>2052.00<br>2318.00 |

## Load Combinations

| *Comb. No.* | *Description* |
|---|---|
| 1 | Dead Only |
| 2 | 1.2 Dead+1.6 Wind 0 deg - No Ice |
| 3 | 0.9 Dead+1.6 Wind 0 deg - No Ice |
| 4 | 1.2 Dead+1.6 Wind 30 deg - No Ice |
| 5 | 0.9 Dead+1.6 Wind 30 deg - No Ice |
| 6 | 1.2 Dead+1.6 Wind 60 deg - No Ice |
| 7 | 0.9 Dead+1.6 Wind 60 deg - No Ice |
| 8 | 1.2 Dead+1.6 Wind 90 deg - No Ice |
| 9 | 0.9 Dead+1.6 Wind 90 deg - No Ice |
| 10 | 1.2 Dead+1.6 Wind 120 deg - No Ice |
| 11 | 0.9 Dead+1.6 Wind 120 deg - No Ice |
| 12 | 1.2 Dead+1.6 Wind 150 deg - No Ice |
| 13 | 0.9 Dead+1.6 Wind 150 deg - No Ice |
| 14 | 1.2 Dead+1.6 Wind 180 deg - No Ice |
| 15 | 0.9 Dead+1.6 Wind 180 deg - No Ice |
| 16 | 1.2 Dead+1.6 Wind 210 deg - No Ice |
| 17 | 0.9 Dead+1.6 Wind 210 deg - No Ice |
| 18 | 1.2 Dead+1.6 Wind 240 deg - No Ice |
| 19 | 0.9 Dead+1.6 Wind 240 deg - No Ice |
| 20 | 1.2 Dead+1.6 Wind 270 deg - No Ice |
| 21 | 0.9 Dead+1.6 Wind 270 deg - No Ice |
| 22 | 1.2 Dead+1.6 Wind 300 deg - No Ice |
| 23 | 0.9 Dead+1.6 Wind 300 deg - No Ice |
| 24 | 1.2 Dead+1.6 Wind 330 deg - No Ice |
| 25 | 0.9 Dead+1.6 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 |

| Comb. No. | Description |
|---|---|
| 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 Reactions

| Location | Condition | Gov. Load Comb. | Vertical lb | Horizontal, X lb | Horizontal, Z lb |
|---|---|---|---|---|---|
| Pole | Max. Vert | 30 | 34779.17 | -3180.35 | -3.24 |
| | Max. $H_x$ | 21 | 13201.65 | 9557.04 | 15.56 |
| | Max. $H_z$ | 2 | 17602.20 | 15.56 | 9323.35 |
| | Max. $M_x$ | 2 | 799907.69 | 15.56 | 9323.35 |
| | Max. $M_z$ | 8 | 824779.43 | -9557.04 | -15.56 |
| | Max. Torsion | 12 | 869.77 | -4791.99 | -8082.04 |
| | Min. Vert | 5 | 13201.65 | -4765.04 | 8066.48 |
| | Min. $H_x$ | 9 | 13201.65 | -9557.04 | -15.56 |
| | Min. $H_z$ | 14 | 17602.20 | -15.56 | -9323.35 |
| | Min. $M_x$ | 14 | -798870.04 | -15.56 | -9323.35 |
| | Min. $M_z$ | 20 | -824254.93 | 9557.04 | 15.56 |
| | Min. Torsion | 24 | -868.37 | 4791.99 | 8082.04 |

## 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 | 14668.50 | 0.00 | -0.00 | -402.95 | -203.40 | 0.01 |
| 1.2 Dead+1.6 Wind 0 deg - No Ice | 17602.20 | -15.56 | -9323.35 | -799907.69 | 1279.70 | 764.29 |
| 0.9 Dead+1.6 Wind 0 deg - No Ice | 13201.65 | -15.56 | -9323.35 | -778112.61 | 1305.25 | 760.77 |
| 1.2 Dead+1.6 Wind 30 deg - No Ice | 17602.20 | 4765.04 | -8066.48 | -692024.20 | -411283.94 | 454.72 |
| 0.9 Dead+1.6 Wind 30 deg - No Ice | 13201.65 | 4765.04 | -8066.48 | -673150.52 | -400054.96 | 453.79 |

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| Load Combination | Vertical | $Shear_x$ | $Shear_z$ | Overturning Moment, $M_x$ | Overturning Moment, $M_z$ | Torque |
|---|---|---|---|---|---|---|
| | lb | lb | lb | lb-ft | lb-ft | lb-ft |
| 1.2 Dead+1.6 Wind 60 deg - No Ice | 17602.20 | 8268.86 | -4648.20 | -398829.16 | -713614.33 | 23.09 |
| 0.9 Dead+1.6 Wind 60 deg - No Ice | 13201.65 | 8268.86 | -4648.20 | -387900.44 | -694183.00 | 25.04 |
| 1.2 Dead+1.6 Wind 90 deg - No Ice | 17602.20 | 9557.04 | 15.56 | 1005.41 | -824779.43 | -414.52 |
| 0.9 Dead+1.6 Wind 90 deg - No Ice | 13201.65 | 9557.04 | 15.56 | 1109.58 | -802335.12 | -410.25 |
| 1.2 Dead+1.6 Wind 120 deg - No Ice | 17602.20 | 8284.41 | 4675.15 | 400419.45 | -715104.79 | -741.35 |
| 0.9 Dead+1.6 Wind 120 deg - No Ice | 13201.65 | 8284.41 | 4675.15 | 389712.60 | -695636.03 | -735.87 |
| 1.2 Dead+1.6 Wind 150 deg - No Ice | 17602.20 | 4791.99 | 8082.04 | 692488.91 | -413892.06 | -869.77 |
| 0.9 Dead+1.6 Wind 150 deg - No Ice | 13201.65 | 4791.99 | 8082.04 | 673870.75 | -402594.35 | -864.51 |
| 1.2 Dead+1.6 Wind 180 deg - No Ice | 17602.20 | 15.56 | 9323.35 | 798870.04 | -1752.16 | -764.36 |
| 0.9 Dead+1.6 Wind 180 deg - No Ice | 13201.65 | 15.56 | 9323.35 | 777371.04 | -1643.65 | -760.82 |
| 1.2 Dead+1.6 Wind 210 deg - No Ice | 17602.20 | -4765.04 | 8066.48 | 690967.14 | 410791.77 | -453.41 |
| 0.9 Dead+1.6 Wind 210 deg - No Ice | 13201.65 | -4765.04 | 8066.48 | 672395.56 | 399702.60 | -452.61 |
| 1.2 Dead+1.6 Wind 240 deg - No Ice | 17602.20 | -8268.86 | 4648.20 | 397780.88 | 713096.12 | -21.78 |
| 0.9 Dead+1.6 Wind 240 deg - No Ice | 13201.65 | -8268.86 | 4648.20 | 387151.80 | 693812.50 | -23.83 |
| 1.2 Dead+1.6 Wind 270 deg - No Ice | 17602.20 | -9557.04 | -15.56 | -2025.57 | 824254.93 | 414.54 |
| 0.9 Dead+1.6 Wind 270 deg - No Ice | 13201.65 | -9557.04 | -15.56 | -1838.56 | 801960.45 | 410.26 |
| 1.2 Dead+1.6 Wind 300 deg - No Ice | 17602.20 | -8284.41 | -4675.15 | -401420.20 | 714600.00 | 740.02 |
| 0.9 Dead+1.6 Wind 300 deg - No Ice | 13201.65 | -8284.41 | -4675.15 | -390428.16 | 695275.29 | 734.63 |
| 1.2 Dead+1.6 Wind 330 deg - No Ice | 17602.20 | -4791.99 | -8082.04 | -693498.38 | 413413.32 | 868.37 |
| 0.9 Dead+1.6 Wind 330 deg - No Ice | 13201.65 | -4791.99 | -8082.04 | -674592.60 | 402251.75 | 863.26 |
| 1.2 Dead+1.0 Ice+1.0 Temp | 34779.16 | 0.01 | -0.02 | -2685.42 | -1114.45 | 0.36 |
| 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp | 34779.17 | -3.24 | -3141.70 | -303334.66 | -748.09 | 168.19 |
| 1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp | 34779.16 | 1587.23 | -2718.95 | -262979.84 | -153652.49 | 68.48 |
| 1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp | 34779.16 | 2752.42 | -1567.91 | -152760.04 | -265683.17 | -49.56 |
| 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp | 34779.17 | 3180.35 | 3.24 | -2332.90 | -306699.99 | -154.19 |
| 1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp | 34779.16 | 2755.66 | 1573.53 | 147991.66 | -266053.30 | -217.49 |
| 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp | 34779.16 | 1592.85 | 2722.19 | 257940.92 | -154293.86 | -222.40 |
| 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp | 34779.17 | 3.25 | 3141.69 | 297930.56 | -1487.94 | -167.52 |
| 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp | 34779.16 | -1587.23 | 2718.95 | 257567.96 | 151413.93 | -67.71 |
| 1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp | 34779.16 | -2752.42 | 1567.91 | 147347.52 | 263440.57 | 50.33 |
| 1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp | 34779.17 | -3180.34 | -3.25 | -3072.57 | 304456.13 | 154.92 |

| Load Combination | Vertical | $Shear_x$ | $Shear_z$ | Overturning Moment, $M_x$ | Overturning Moment, $M_z$ | Torque |
|---|---|---|---|---|---|---|
| | lb | lb | lb | lb-ft | lb-ft | lb-ft |
| 1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp | 34779.16 | -2755.66 | -1573.53 | -153396.72 | 263809.04 | 218.16 |
| 1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp | 34779.16 | -1592.85 | -2722.20 | -263345.35 | 152053.64 | 223.00 |
| Dead+Wind 0 deg - Service | 14668.50 | -3.62 | -2172.12 | -183938.67 | 132.98 | 181.69 |
| Dead+Wind 30 deg - Service | 14668.50 | 1110.12 | -1879.30 | -159179.01 | -94573.21 | 106.91 |
| Dead+Wind 60 deg - Service | 14668.50 | 1926.41 | -1082.93 | -91881.31 | -163995.12 | 3.48 |
| Dead+Wind 90 deg - Service | 14668.50 | 2226.52 | 3.62 | -79.34 | -189531.85 | -100.88 |
| Dead+Wind 120 deg - Service | 14668.50 | 1930.03 | 1089.20 | 91629.19 | -164342.10 | -178.21 |
| Dead+Wind 150 deg - Service | 14668.50 | 1116.39 | 1882.93 | 158671.99 | -95174.68 | -207.79 |
| Dead+Wind 180 deg - Service | 14668.50 | 3.62 | 2172.12 | 183084.14 | -562.06 | -181.67 |
| Dead+Wind 210 deg - Service | 14668.50 | -1110.12 | 1879.30 | 158323.64 | 94143.23 | -106.86 |
| Dead+Wind 240 deg - Service | 14668.50 | -1926.41 | 1082.93 | 91026.36 | 163564.00 | -3.43 |
| Dead+Wind 270 deg - Service | 14668.50 | -2226.52 | -3.62 | -774.37 | 189100.49 | 100.90 |
| Dead+Wind 300 deg - Service | 14668.50 | -1930.03 | -1089.20 | -92482.06 | 163911.62 | 178.21 |
| Dead+Wind 330 deg - Service | 14668.50 | -1116.39 | -1882.93 | -159525.27 | 94745.35 | 207.78 |

## Maximum Tower Deflections - Service Wind

| Section No. | Elevation | Horz. Deflection | Gov. Load Comb. | Tilt | Twist |
|---|---|---|---|---|---|
| | ft | in | | ° | ° |
| L1 | 100 - 86.8542 | 22.883 | 42 | 1.9199 | 0.0099 |
| L2 | 89.3542 - 45.4742 | 18.632 | 42 | 1.8750 | 0.0073 |
| L3 | 48.7242 - 0 | 5.554 | 42 | 1.0689 | 0.0022 |

## Critical Deflections and Radius of Curvature - Service Wind

| Elevation | Appurtenance | Gov. Load Comb. | Deflection | Tilt | Twist | Radius of Curvature |
|---|---|---|---|---|---|---|
| ft | | | in | ° | ° | ft |
| 98.00 | PwrWv P65-15-XLH-RR w. MtgPipe | 42 | 22.078 | 1.9148 | 0.0094 | 13193 |
| 88.00 | MX08FRO665-20 w. Mtg Pipe | 42 | 18.103 | 1.8637 | 0.0070 | 5807 |

## Maximum Tower Deflections - Design Wind

| Section No. | Elevation | Horz. Deflection | Gov. Load Comb. | Tilt | Twist |
|---|---|---|---|---|---|
| | ft | in | | ° | ° |
| L1 | 100 - 86.8542 | 99.647 | 8 | 8.3729 | 0.0423 |
| L2 | 89.3542 - 45.4742 | 81.163 | 8 | 8.1836 | 0.0313 |
| L3 | 48.7242 - 0 | 24.204 | 8 | 4.6645 | 0.0092 |

## Critical Deflections and Radius of Curvature - Design Wind

| Elevation<br>ft | Appurtenance | Gov. Load Comb. | Deflection<br>in | Tilt<br>° | Twist<br>° | Radius of Curvature<br>ft |
|---|---|---|---|---|---|---|
| 98.00 | PwrWv P65-15-XLH-RR w. MtgPipe | 8 | 96.146 | 8.3520 | 0.0401 | 3188 |
| 88.00 | MX08FRO665-20 w. Mtg Pipe | 8 | 78.859 | 8.1350 | 0.0300 | 1396 |

## Base Plate Design Data

| Plate Thickness<br>in | Number of Anchor Bolts | Anchor Bolt Size<br>in | Actual Allowable Ratio Bolt Tension<br>lb | Actual Allowable Ratio Concrete Stress<br>ksi | Actual Allowable Ratio Plate Stress<br>ksi | Actual Allowable Ratio Stiffener Stress<br>ksi | Controlling Condition | Critical Ratio |
|---|---|---|---|---|---|---|---|---|
| 2.5000 | 6 | 2.2500 | 131986.00<br>223654.40<br>0.59 | 2.177<br>4.080<br>0.53 | 41.842<br>54.000<br>0.77 | | Plate | 0.77 ✔ |

## Compression Checks

## Pole Design Data

| Section No. | Elevation<br>ft | Size | L<br>ft | $L_u$<br>ft | Kl/r | A<br>$in^2$ | $P_u$<br>lb | $\phi P_n$<br>lb | Ratio $\frac{P_u}{\phi P_n}$ |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 100 - 86.8542 (1) | TP16.3487x14.5x0.1875 | 13.15 | 100.00 | 213.8 | 9.4087 | -13221.20 | 46495.10 | 0.284 |
| L2 | 86.8542 - 45.4742 (2) | TP21.7155x15.6221x0.25 | 43.88 | 100.00 | 160.9 | 16.6748 | -11140.10 | 145586.00 | 0.077 |
| L3 | 45.4742 - 0 (3) | TP27.5x20.7642x0.3125 | 48.72 | 100.00 | 124.3 | 26.9666 | -17583.40 | 394093.00 | 0.045 |

## Pole Bending Design Data

| Section No. | Elevation<br>ft | Size | $M_{ux}$<br>lb-ft | $\phi M_{nx}$<br>lb-ft | Ratio $\frac{M_{ux}}{\phi M_{nx}}$ | $M_{uy}$<br>lb-ft | $\phi M_{ny}$<br>lb-ft | Ratio $\frac{M_{uy}}{\phi M_{ny}}$ |
|---|---|---|---|---|---|---|---|---|
| L1 | 100 - 86.8542 (1) | TP16.3487x14.5x0.1875 | 17448.17 | 226351.67 | 0.077 | 0.00 | 226351.67 | 0.000 |
| L2 | 86.8542 - 45.4742 (2) | TP21.7155x15.6221x0.25 | 374880.00 | 533197.50 | 0.703 | 0.00 | 533197.50 | 0.000 |
| L3 | 45.4742 - 0 (3) | TP27.5x20.7642x0.3125 | 824780.00 | 1116050.00 | 0.739 | 0.00 | 1116050.00 | 0.000 |

## Pole Shear Design Data

| Section No. | Elevation ft | Size | Actual $V_u$ lb | $\phi V_n$ lb | Ratio $\frac{V_u}{\phi V_n}$ | Actual $T_u$ lb-ft | $\phi T_n$ lb-ft | Ratio $\frac{T_u}{\phi T_n}$ |
|---|---|---|---|---|---|---|---|---|
| L1 | 100 - 86.8542 (1) | TP16.3487x14.5x0.1875 | 1900.13 | 349510.00 | 0.005 | 28.27 | 454065.00 | 0.000 |
| L2 | 86.8542 - 45.4742 (2) | TP21.7155x15.6221x0.25 | 8798.12 | 619426.00 | 0.014 | 417.62 | 1069608.33 | 0.000 |
| L3 | 45.4742 - 0 (3) | TP27.5x20.7642x0.3125 | 9591.59 | 1001740.00 | 0.010 | 414.51 | 2238700.00 | 0.000 |

## Pole Interaction Design Data

| Section No. | Elevation ft | Ratio $\frac{P_u}{\phi P_n}$ | Ratio $\frac{M_{ux}}{\phi M_{nx}}$ | Ratio $\frac{M_{uy}}{\phi M_{ny}}$ | Ratio $\frac{V_u}{\phi V_n}$ | Ratio $\frac{T_u}{\phi T_n}$ | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 100 - 86.8542 (1) | 0.284 | 0.077 | 0.000 | 0.005 | 0.000 | 0.361 ✔ | 1.000 | 4.8.2 ✔ |
| L2 | 86.8542 - 45.4742 (2) | 0.077 | 0.703 | 0.000 | 0.014 | 0.000 | 0.780 ✔ | 1.000 | 4.8.2 ✔ |
| L3 | 45.4742 - 0 (3) | 0.045 | 0.739 | 0.000 | 0.010 | 0.000 | 0.784 ✔ | 1.000 | 4.8.2 ✔ |

## Section Capacity Table

| Section No. | Elevation ft | Component Type | Size | Critical Element | P lb | $\phi P_{allow}$ lb | % Capacity | Pass Fail |
|---|---|---|---|---|---|---|---|---|
| L1 | 100 - 86.8542 | Pole | TP16.3487x14.5x0.1875 | 1 | -13221.20 | 46495.10 | 36.1 | Pass |
| L2 | 86.8542 - 45.4742 | Pole | TP21.7155x15.6221x0.25 | 2 | -11140.10 | 145586.00 | 78.0 | Pass |
| L3 | 45.4742 - 0 | Pole | TP27.5x20.7642x0.3125 | 3 | -17583.40 | 394093.00 | 78.4 | Pass |
| | | | | | | | Summary | |
| | | | | | | Pole (L3) | 78.4 | Pass |
| | | | | | | Base Plate | 77.5 | Pass |
| | | | | | | **RATING =** | **78.4** | **Pass** |

**Monopole Pad & Pier Calculations**

Client: Dish Wireless
Project: Unionville, CT
09/07/21 11:02

**Applied Factored Loads:**

| | | |
|---|---|---|
| OTM: | 825 | kip-ft |
| Shear: | 9.6 | kip |
| Deadload: | 17.6 | kip |

**Pad Dimensions:**

| | | |
|---|---|---|
| Width: | 17 | ft |
| Thickness: | 4.5 | ft |
| OADepth: | 9.5 | ft |
| Abolt Circle | 36.5 | in |
| ABolt QTY/ϕ: | 6 | 2.25 in |
| Pier Diam: | 6.5 | ft 4.38 ft min |
| Pier Height: | 0.5 | ft above Grade |
| Pier Depth: | 5 | ft |
| Total Moment: | 878 | kip-ft |

| | | |
|---|---|---|
| Specific Gravity: | 2.65 | |
| Soil Unit Weight: | 120 | pcf |
| Submerged Unit Wt: | 74.72 | pcf |
| Soil Ang: | 34 | ° |
| Concrete Unit Wt: | 150 | pcf |
| Concrete f`c: | 3000 | psi |
| Rebar Fy: | 60000 | psi |
| Concrete Volume: | 54.9 | cuyd |
| Depth to Water: | 9.5 | ft |

**Soil Resistance:**

| | | |
|---|---|---|
| Soil1: | 1473.9 | kip-ft |
| Soil2: | 604.1 | kip-ft |
| Soil3: | 77.3 | kip-ft |

**Concrete Resistance:** 1658 kip-ft
**OTM Capacity:** 3275 kip-ft
ϕs: TIA 222G 0.75 26.8% Loaded

**Bearing Capacity:** ϕs: 0.75

| | | |
|---|---|---|
| Soil Type @ Bearing Location: | Sand | |
| SPT-N @ Bearing Location: | 50 | |

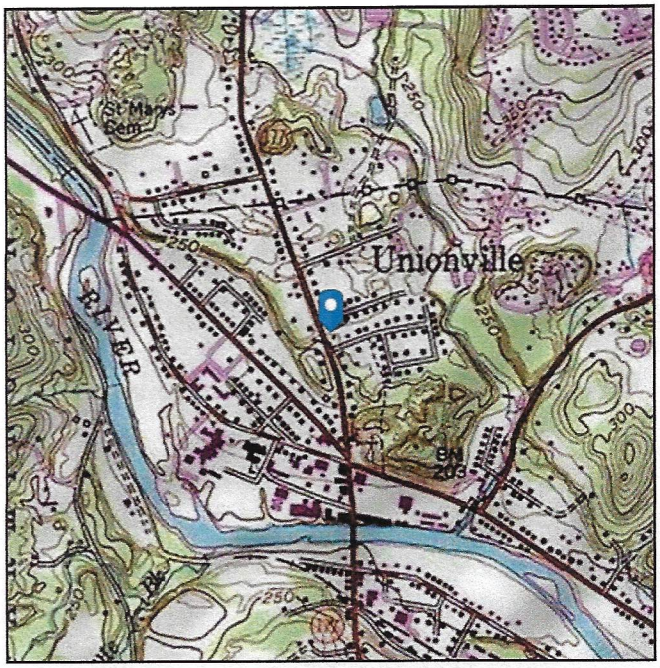
fb(max): 2387 psf
Fb: 15000 psf per geotech
15.9% Loaded

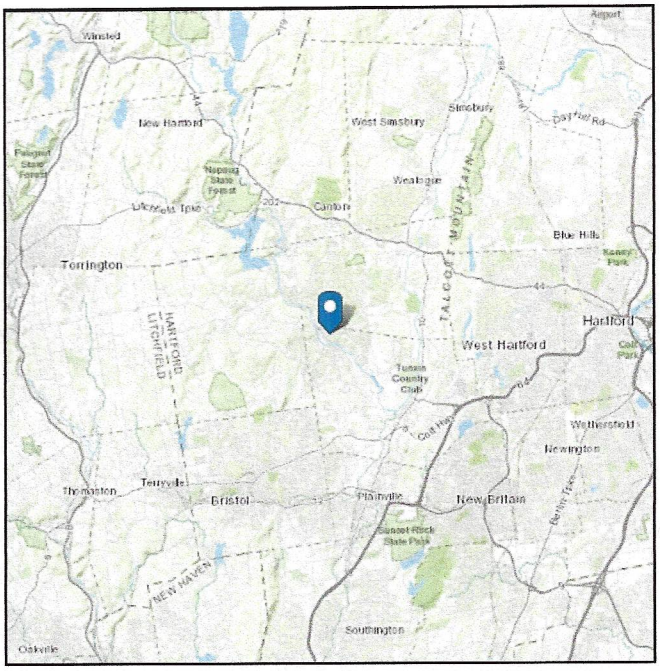
# ASCE 7 Hazards Report

**Address:**
82 Lovely St
Unionville, Connecticut
06085

**Standard:** ASCE/SEI 7-10
**Risk Category:** II
**Soil Class:** D - Stiff Soil

**Elevation:** 257.03 ft (NAVD 88)
**Latitude:** 41.761284
**Longitude:** -72.887428




## Wind

**Results:**

| | |
|---|---|
| Wind Speed: | 120 Vmph |
| 10-year MRI | 76 Vmph |
| 25-year MRI | 86 Vmph |
| 50-year MRI | 91 Vmph |
| 100-year MRI | 98 Vmph |

Data Accessed: Mon Aug 30 2021

Date Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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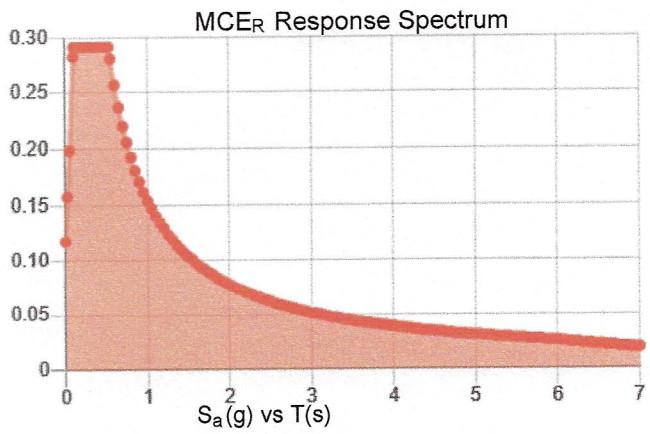
# Seismic

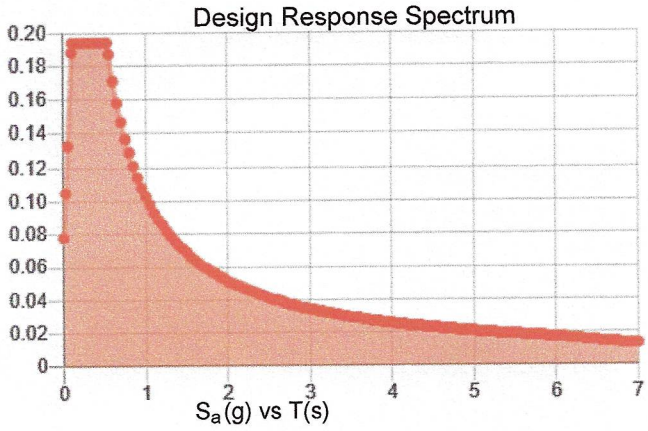
**Site Soil Class:** D - Stiff Soil

**Results:**

| | | | |
|---|---|---|---|
| $S_S$ : | 0.182 | $S_{DS}$ : | 0.194 |
| $S_1$ : | 0.064 | $S_{D1}$ : | 0.103 |
| $F_a$ : | 1.6 | $T_L$ : | 6 |
| $F_v$ : | 2.4 | PGA : | 0.092 |
| $S_{MS}$ : | 0.291 | $PGA_M$ : | 0.147 |
| $S_{M1}$ : | 0.154 | $F_{PGA}$ : | 1.6 |
| | | $I_e$ : | 1 |

**Seismic Design Category** B




**Data Accessed:** Mon Aug 30 2021

**Date Source:** USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

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# Ice

**Results:**

| | |
|---|---|
| Ice Thickness: | 1.00 in. |
| Concurrent Temperature: | 5 F |
| Gust Speed: | 50 mph |
| **Data Source:** | Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8 |
| **Date Accessed:** | Mon Aug 30 2021 |

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 50-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.

# Exhibit E

## Mount Analysis

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1033 WATERVLIET SHAKER RD ALBANY, NY 12205

# Mount Analysis Report

**September 27, 2021**

| | |
|---|---|
| Dish Wireless Site Number | BOBDL00107A |
| Infinigy Job Number | 2039-Z5555C |
| Client | Crown Castle |
| Carrier | Dish Wireless |
| Site Location | 82 Lovely Street,<br>Unionville, CT 06085<br>41.7614 N NAD83<br>72.8875 W NAD83 |
| Mount Centerline EL. | 88 ft |
| Mount Classification | Platform |
| Structural Usage Ratio | **79%** |
| Overall Result | **Pass** |

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA and ASCE code requirements. The proposed platform for the proposed carrier is therefore deemed **adequate** to support the final loading configuration as listed in this report.


09-27-21

Dmitriy Albul, P.E.
Engineering Consultant to Infinigy

## Contents

## Introduction

Infinigy Engineering has been requested to perform a mount analysis of proposed antenna mount from the Dish Wireless equipment. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 19.0 analysis software.

## Supporting Documentation

| | |
|---|---|
| **Platform Drawings** | Site Pro 1 Assembly Drawings No. SNP8HR-3XX |
| **Construction Drawings** | Infinigy Engineering PLLC, Job No. 2039-Z5555C, dated June 8, 2021 |
| **RF Design Sheet** | Dish Wireless, dated February 19, 2021 |

## Analysis Code Requirements

| | |
|---|---|
| Wind Speed | 125 mph (3-second Gust, Vult.) |
| Wind Speed w/ ice | 50 mph (3-Second Gust) w/ 1" ice |
| TIA Revision | ANSI/TIA-222-G / 2018 Connecticut State Building Code (2015 IBC) |
| Structure Class | II |
| Exposure Category | B |
| Topographic Method | Method 2 |
| Topographic Category | 1 |
| Spectral Response | $S_s$=0.172, $S_1$=0.064 |
| Site Class | D – Stiff Soil |
| HMSL | 264.28 ft. |

## Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The proposed platform is therefore deemed adequate to support the final loading configuration as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Dmitriy Albul, P.E.
Professional Engineer | Engineering Consultant to Infinigy
1033 Watervliet Shaker Road, Albany, NY 12205
(O) (518) 690-0790 | (M) (518) 699-4428
www.infinigy.com

## Final Configuration Loading

| Mount CL (ft) | Rad. HT (ft) | Vert. O/S (ft) | Horiz. O/S (ft)* | Qty | Appurtenance | Carrier |
|---|---|---|---|---|---|---|
| 88.0 | 88.0 | - | 4 | 3 | JMA MX08FRO665-20 | Dish Wireless |
| | | | 4 | 3 | Fujitsu TA08025-B605 | |
| | | | 4 | 3 | Fujitsu TA08025-B604 | |
| | | | - | 1 | Raycap RDIDC-9181-PF-48 | |

***Horizontal Offset is defined as the distance from the left most edge of the mount face horizontal when viewed facing the tower.**

## Structure Usages

| | | |
|---|---|---|
| Plates | 79% | Pass |
| Mount Pipes | 35% | Pass |
| Arms | 33% | Pass |
| Cross Arms | 29% | Pass |
| Connections | 26% | Pass |
| Frame Rails | 12% | Pass |
| Handrails | 11% | Pass |
| **Rating** | **79%** | Pass |

## Assumptions and Limitations

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of "like new" and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the proposed carriers mount structure only and does not reflect adequacy of the existing tower, other mounts, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.

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| | |
|---|---|
| Date: | 9/27/2021 |
| Site Name: | BOBDL00107A |
| Project Engineer: | DVA |
| Project No: | 2039-Z5555C |
| Customer: | Crown Castle |
| Carrier: | Dish Wireless |

| | | |
|---|---|---|
| Building Code: | 2015 | |
| ASCE Standard: | ASCE 7-10 | |
| TIA Standard: | G | |
| Mount Type: | Platform | |
| | Proposed | |
| Mount Centerline: | 88 | ft |
| Superstructure Height: | 100 | ft |
| Structure Type: | Tower | |

| Factors | |
|---|---|
| Gh: | 1.001 |
| $K_{zmin}$: | 0.701 |
| $K_z$: | 0.951 |
| $K_d$: | 0.951 |
| $K_{zt}$: | 1.001 |
| | |
| | |
| Ka: | 0.901 |
| | |
| | |
| I wind: | 1.001 |
| I ice: | 1.001 |

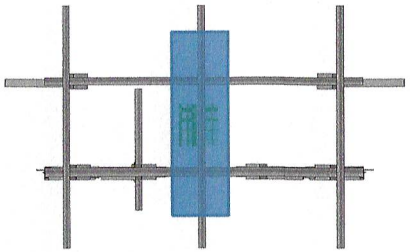
| | | |
|---|---|---|
| $q_z$: | 21.71 | psf |
| Surface Wind Pressure: | 0.00 | psf |

| Site Information | | |
|---|---|---|
| Exposure Category: | B | |
| Risk Category: | II | |
| | | |
| Ultimate Wind Speed: | 125 | mph |
| Design Wind Speed: | 97 | mph |
| Ice Thickness: | 1.00 | in |
| Ice Wind Speed: | 50.0 | mph |
| Escalated Ice Thickness: | 2.21 | in |
| Topographic Method: | 2 | |
| Topographic Category: | 1 | |

| | |
|---|---|
| Run Seismic? | Yes |
| Site Soil: | D (Default) |
| Short-Period Accel. (Ss): | 0.1720 |
| 1-Second Accel. (S1): | 0.0640 |
| Short-Period Design (SDS): | 0.1940 |
| 1-Second Design (SD1): | 0.1030 |
| Short-Period Coeff. (Fa): | 1.6000 |
| 1-Second Coeff. (Fv): | 2.4000 |
| Cs | 0.0970 |
| Cs min | 0.0300 |
| Amplification Factor (ap): | 1.00 |
| Response Mod. (Rp): | 2.50 |
| Overstrength (Ωo): | 1.00 |

| | | |
|---|---|---|
| Service Wind: | 30.0 | mph |
| Lm (man live load) = | 500.0 | lb |
| Lv (man live load) = | 250.0 | lb |

ELEVATION VIEW



PLAN VIEW

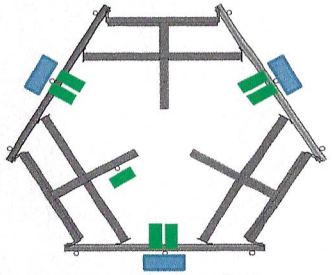


Table 1. Equipment Specifications and Wind Pressure

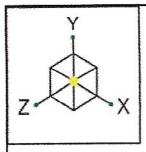
| Manufacturer | Model | Elevation | Pipe Label | Weight (lb) | Height (in) | Width (in) | Depth (in) | $EPA_N$ | $EPA_T$ | $EPA_{N\ w/\ ice}$ | $EPA_{T\ w/\ ice}$ | $q_z$: | $q_{z\ ice}$: | $q_{z\ live}$: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JMA | MX08FRC365-20 | 88 | 4, 74, 42 | 64.50 | 72 | 20 | 8 | 8.01 | 3.21 | 9.08 | 4.15 | 21.72 | 5.79 | 2.09 |
| Fujitsu | TA08025B605 | 88 | 4, 74, 42 | 74.95 | 15.75 | 14.96 | 9.06 | 1.86 | 1.16 | 3.08 | 2.18 | 21.72 | 5.79 | 2.09 |
| Fujitsu | TA08025B604 | 88 | 4, 74, 42 | 63.93 | 15.75 | 14.96 | 7.87 | 1.86 | 1.01 | 3.08 | 2.00 | 21.72 | 5.79 | 2.09 |
| Raycap | RDIDC-9181-PF-48 | 88 | 125 | 21.85 | 18.98 | 14.39 | 8.15 | 2.18 | 1.28 | 3.49 | 2.39 | 21.72 | 5.79 | 2.09 |

Table 2. Equipment Wind and Seismic Loads

| Manufacturer | Model | Wind Load ($F_A$), lb | | Wind Load Ice Case ($F_A$), lb | | | Wind Load Service Case | | Seismic |
|---|---|---|---|---|---|---|---|---|---|
| JMA | MX08FRC365-20 | 157 | 63 | 47 | 22 | 392 | 15 | 6 | 6.3 |
| Fujitsu | TA08025B605 | 36 | 23 | 16 | 11 | 71 | 3 | 2 | 7.3 |
| Fujitsu | TA08025B604 | 36 | 20 | 16 | 10 | 69 | 3 | 2 | 6.2 |
| Raycap | RDIDC-9181-PF-48 | 43 | 25 | 18 | 12 | 82 | 4 | 2 | 2.1 |

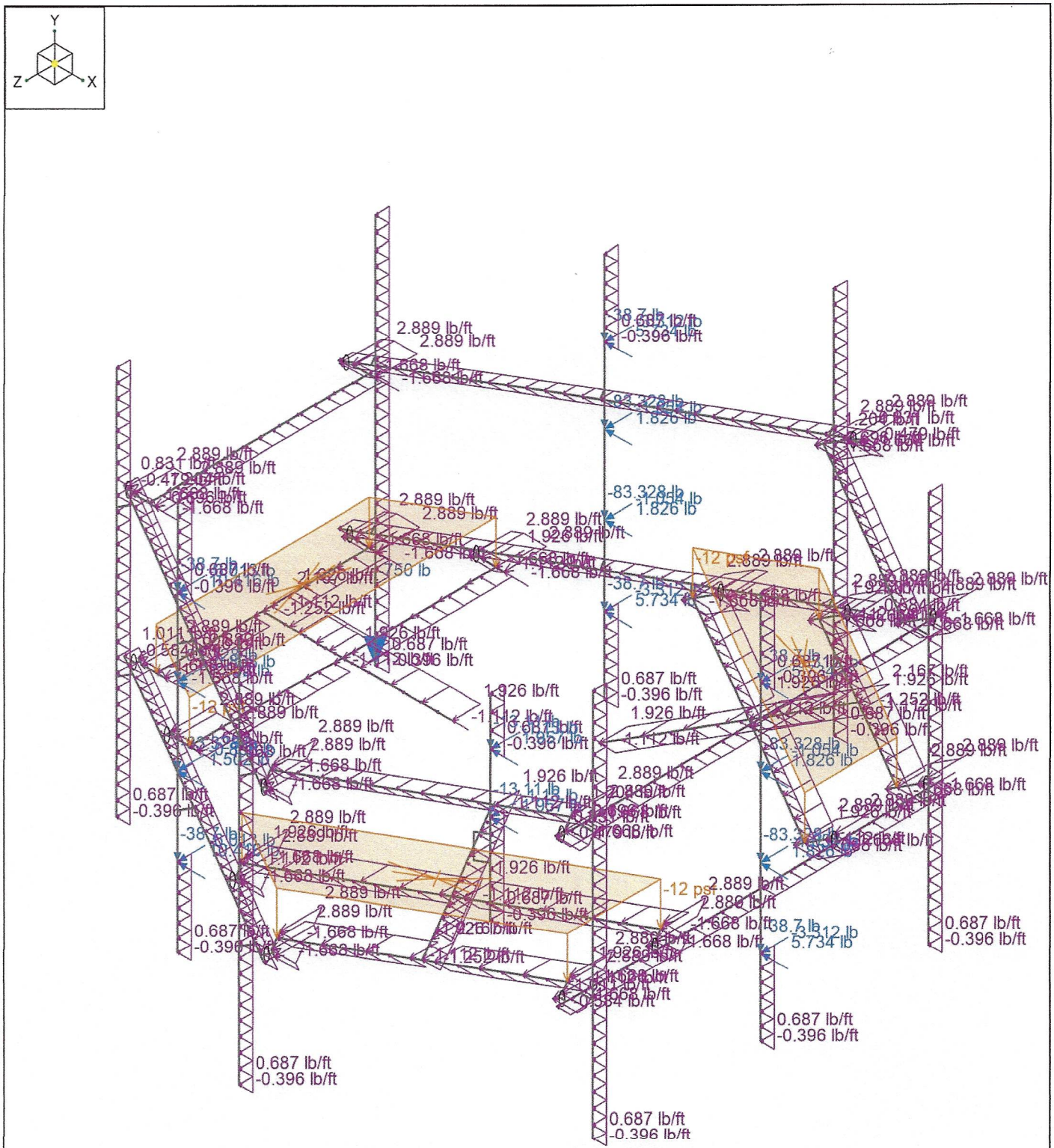
Table 3. Member Capacities

| Member Name | Member Shape | Wind load (plf) | Wind Load Ice (plf) | Weight Ice (plf) | Bending Check | Shear Check | Total Capacity | Controlling Capacity |
|---|---|---|---|---|---|---|---|---|
| Arm | HSS4X4X4 | 14.48 | 3.86 | 1.93 | 33% | 13% | 33% | 79% |
| Arm 2 | HSS4.5X4.5X3 | 16.29 | 4.34 | 2.05 | 5% | 9% | 9% | |
| Cross Arm | L4X4X4 | 14.48 | 3.86 | 1.93 | 29% | 23% | 29% | |
| Frame Rail | PIPE_3.0 | 7.60 | 2.03 | 1.82 | 12% | 12% | 12% | |
| Handrail | PIPE_2.5 | 6.25 | 1.67 | 1.67 | 11% | 10% | 11% | |
| Mount Pipe | PIPE_2.0 | 5.16 | 1.38 | 1.56 | 35% | 10% | 35% | |
| Plate | 6"x0.375" Plate | 21.72 | 5.79 | 2.39 | 28% | 79% | 79% | |
| Angle | L2.5x25x3 | 9.05 | 2.41 | 1.59 | 11% | 11% | 11% | |



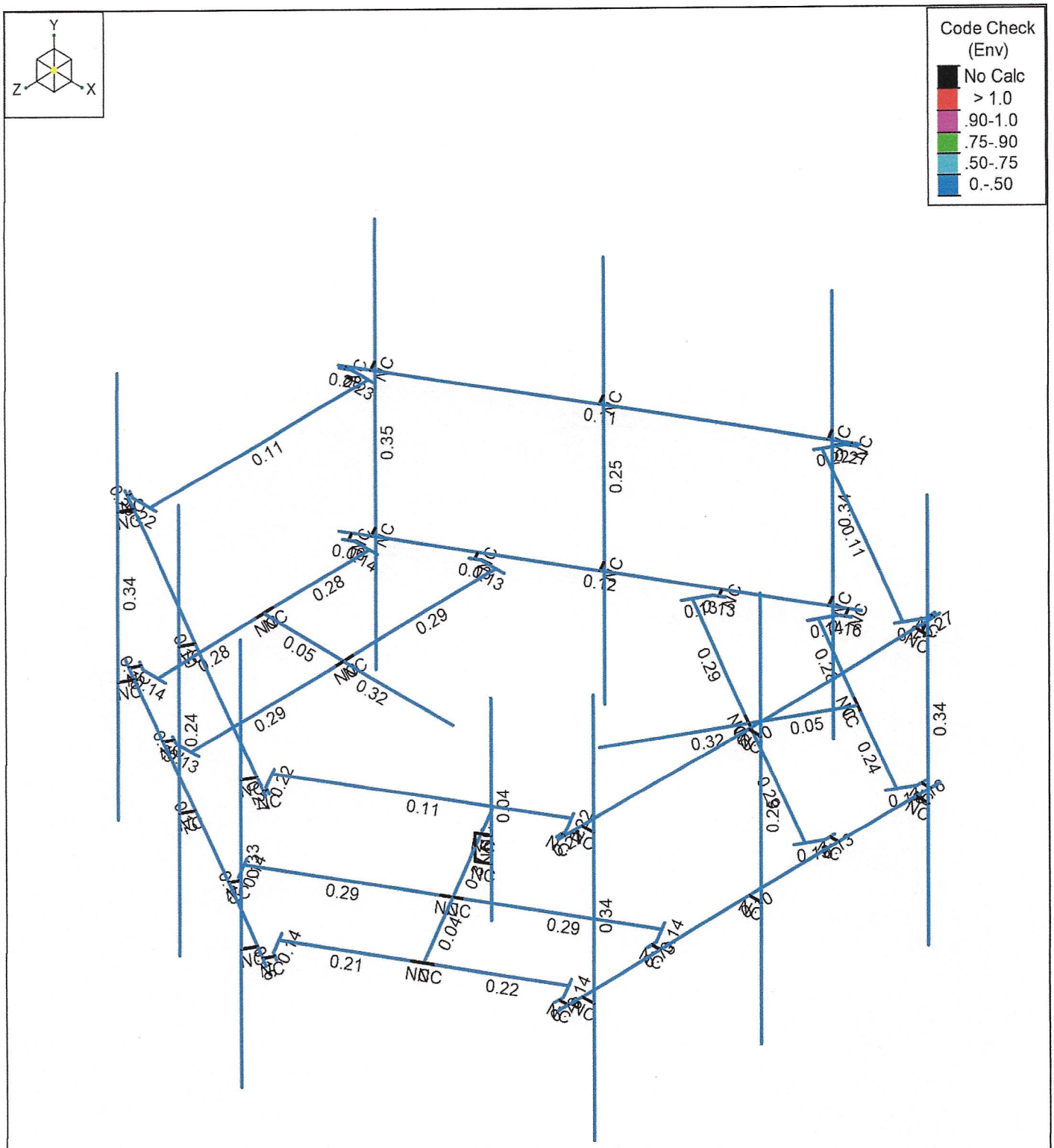

Envelope Only Solution

| | | |
|---|---|---|
| Infinigy Engineering, PLLC | BOBDL00107A | SK-1 |
| DVA | | Sep 27, 2021 |
| 2039-Z5555C | Proposed Configuration Model | BOBDL00107A.R3D |



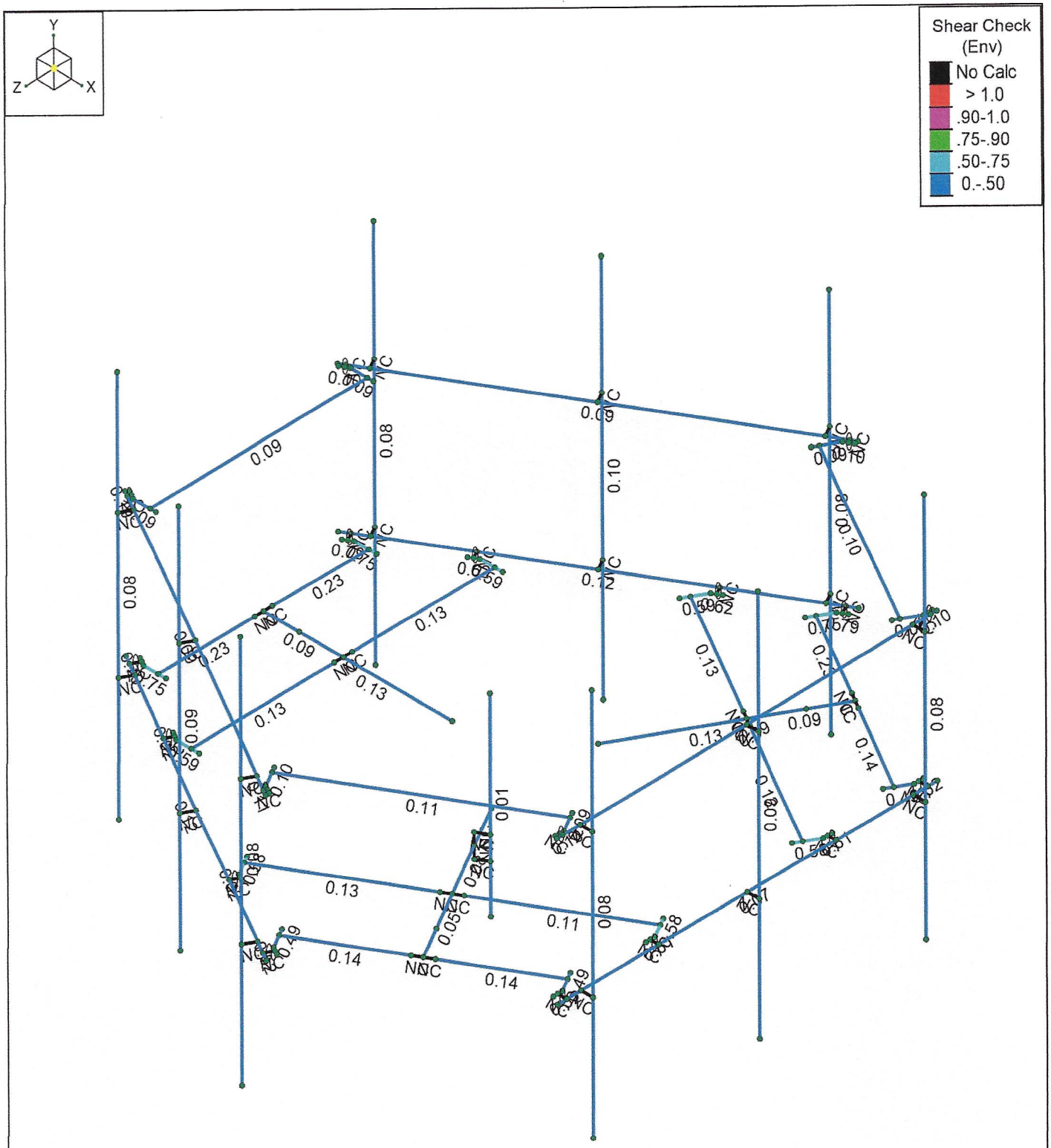

Loads: LC 109, 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 300
Envelope Only Solution

| | | |
|---|---|---|
| Infinigy Engineering, PLLC | BOBDL00107A | SK-2 |
| DVA | | Sep 27, 2021 |
| 2039-Z5555C | Controlling Load Case | BOBDL00107A.R3D |




Member Code Checks Displayed (Enveloped)
Envelope Only Solution

| | | |
|---|---|---|
| Infinigy Engineering, PLLC | BOBDL00107A | SK-3 |
| DVA | | Sep 27, 2021 |
| 2039-Z5555C | Member Bending Check | BOBDL00107A.R3D |




Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

| | | |
|---|---|---|
| Infinigy Engineering, PLLC | BOBDL00107A | SK-4 |
| DVA | | Sep 27, 2021 |
| 2039-Z5555C | Member Shear Check | BOBDL00107A.R3D |

## *Model Settings*

### Solution

Members

| | |
|---|---|
| Number of Reported Sections | 5 |
| Number of Internal Sections | 100 |
| Member Area Load Mesh Size ($in^2$) | 144 |
| Consider Shear Deformation | Yes |
| Consider Torsional Warping | Yes |

Wall Panels

| | |
|---|---|
| Approximate Mesh Size (in) | 12 |
| Transfer Forces Between Intersecting Wood Walls | Yes |
| Increase Wood Wall Nailing Capacity for Wind Loads | Yes |
| Include P-Delta for Walls | Yes |
| Optimize Masonry and Wood Walls | Yes |
| Maximum Number of Iterations | 3 |

Processor Core Utilization

| | |
|---|---|
| Single | No |
| Multiple (Optimum) | Yes |
| Maximum | No |

### Axis

Vertical Global Axis

| | |
|---|---|
| Global Axis corresponding to vertical direction | Y |
| Convert Existing Data | Yes |

Default Member Orientation

| | |
|---|---|
| Default Global Plane for z-axis | XZ |

Plate Axis

| | |
|---|---|
| Plate Local Axis Orientation | Nodal |

### Codes

| | |
|---|---|
| Hot Rolled Steel | AISC 14th (360-10): LRFD |
| Stiffness Adjustment | Yes (Iterative) |
| Notional Annex | None |
| Connections | AISC 14th (360-10): LRFD |
| Cold Formed Steel | AISI S100-12: LRFD |
| Stiffness Adjustment | Yes (Iterative) |
| Wood | AWC NDS-12: ASD |
| Temperature | < 100F |
| Concrete | ACI 318-11 |
| Masonry | ACI 530-11: Strength |
| Aluminum | AA ADM1-10: LRFD |
| Structure Type | Building |
| Stiffness Adjustment | Yes (Iterative) |
| Stainless | AISC 14th (360-10): LRFD |
| Stiffness Adjustment | Yes (Iterative) |

### Concrete

Column Design

| | |
|---|---|
| Analysis Methodology | Exact Integration Method |
| Parme Beta Factor | 0.65 |

| | |
|---|---|
| Compression Stress Block | Rectangular Stress Block |
| Analyze using Cracked Sections | Yes |
| Leave room for horizontal rebar splices (2*d bar spacing) | No |

***Model Settings (Continued)***

| | |
|---|---|
| List forces which were ignored for design in the Detail Report | Yes |

**Rebar**

| | |
|---|---|
| Column Min Steel | 1 |
| Column Max Steel | 8 |
| Rebar Material Spec | ASTM A615 |
| Warn if beam-column framing arrangement is not understood | No |

Shear Reinforcement

| | |
|---|---|
| Number of Shear Regions | 4 |
| Region 2 & 3 Spacing Increase Increment (in) | 4 |

**Seismic**

RISA-3D Seismic Load Options

| | |
|---|---|
| Code | ASCE 7-10 |
| Risk Category | I or II |
| Drift Cat | Other |
| Base Elevation (ft) | |
| Include the weight of the structure in base shear calcs | Yes |

Site Parameters

| | |
|---|---|
| $S_1$ (g) | 1 |
| $SD_1$ (g) | 1 |
| $SD_s$ (g) | 1 |
| $T_L$ (sec) | 5 |

Structure Characteristics

| | |
|---|---|
| T Z (sec) | |
| T X (sec) | |
| $C_t$X | 0.02 |
| $C_t$Exp. Z | 0.75 |
| $C_t$Exp. X | 0.75 |
| R Z | 3 |
| R X | 3 |
| $\Omega_0$Z | 1 |
| $\Omega_0$X | 1 |
| $C_d$Z | 4 |
| $C_d$X | 4 |
| ρ Z | 1 |
| ρ X | 1 |

***Member Primary Data***

| | Label | I Node | J Node | Rotate(deg) | Section/Shape | Type | Design List | Material | Design Rule |
|---|---|---|---|---|---|---|---|---|---|
| 1 | M1 | N1 | N2 | | Arm | Beam | Tube | A500 Gr.B Rect | Typical |
| 2 | M2 | N5 | N6 | | Frame Rail | Beam | Pipe | A53 Gr.B | Typical |
| 3 | M3 | N7 | N8 | | Handrail | HBrace | Pipe | A53 Gr.B | Typical |
| 4 | M4 | N10 | N11 | | Mount Pipe | Column | Pipe | A53 Gr.B | Typical |
| 5 | M5 | N4 | N3 | | Arm 2 | Beam | Tube | A500 Gr.B Rect | Typical |
| 6 | M6 | N15 | N35 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 7 | M7 | N33 | N13 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 8 | M8 | N12 | N34 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 9 | M9 | N36 | N14 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 10 | M10 | N18 | N20 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 11 | M11 | N17 | N19 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 12 | M12 | N21 | N22 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 13 | M13 | N23 | N24 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 14 | M14 | N28 | N25 | 90 | Angle | HBrace | Single Angle | A36 Gr.36 | Typical |
| 15 | M15 | N26 | N27 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 16 | M16 | N29 | N30 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 17 | M17 | N31 | N9 | | RIGID | None | None | RIGID | Typical |
| 18 | M18 | N32 | N16 | | RIGID | None | None | RIGID | Typical |
| 19 | M19 | N4 | N35 | | RIGID | None | None | RIGID | Typical |
| 20 | M20 | N4 | N33 | | RIGID | None | None | RIGID | Typical |
| 21 | M21 | N3 | N34 | | RIGID | None | None | RIGID | Typical |
| 22 | M22 | N36 | N3 | | RIGID | None | None | RIGID | Typical |
| 23 | M23 | N19 | N37 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 24 | M24 | N22 | N38 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 25 | M25 | N39 | N41 | | RIGID | None | None | RIGID | Typical |
| 26 | M26 | N40 | N42 | | RIGID | None | None | RIGID | Typical |
| 27 | M27 | N27 | N43 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 28 | M28 | N44 | N45 | | RIGID | None | None | RIGID | Typical |
| 29 | M29 | N20 | N46 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 30 | M30 | N24 | N47 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 31 | M31 | N48 | N50 | | RIGID | None | None | RIGID | Typical |
| 32 | M32 | N49 | N51 | | RIGID | None | None | RIGID | Typical |
| 33 | M33 | N30 | N52 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 34 | M34 | N53 | N54 | | RIGID | None | None | RIGID | Typical |
| 35 | M35 | N56 | N57 | | Mount Pipe | Column | Pipe | A53 Gr.B | Typical |
| 36 | M36 | N59 | N55 | | RIGID | None | None | RIGID | Typical |
| 37 | M37 | N60 | N58 | | RIGID | None | None | RIGID | Typical |
| 38 | M38 | N62 | N63 | | Mount Pipe | Column | Pipe | A53 Gr.B | Typical |
| 39 | M39 | N65 | N61 | | RIGID | None | None | RIGID | Typical |
| 40 | M40 | N66 | N64 | | RIGID | None | None | RIGID | Typical |
| 41 | M41 | N67 | N68 | | Arm | Beam | Tube | A500 Gr.B Rect | Typical |
| 42 | M42 | N72 | N73 | | Mount Pipe | Column | Pipe | A53 Gr.B | Typical |
| 43 | M43 | N70 | N69 | | Arm 2 | Beam | Tube | A500 Gr.B Rect | Typical |
| 44 | M44 | N77 | N97 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 45 | M45 | N95 | N75 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 46 | M46 | N74 | N96 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 47 | M47 | N98 | N76 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 48 | M48 | N80 | N82 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 49 | M49 | N79 | N81 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 50 | M50 | N83 | N84 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 51 | M51 | N85 | N86 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 52 | M52 | N90 | N87 | 90 | Angle | HBrace | Single Angle | A36 Gr.36 | Typical |
| 53 | M53 | N88 | N89 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 54 | M54 | N91 | N92 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 55 | M55 | N93 | N71 | | RIGID | None | None | RIGID | Typical |
| 56 | M56 | N94 | N78 | | RIGID | None | None | RIGID | Typical |
| 57 | M57 | N70 | N97 | | RIGID | None | None | RIGID | Typical |
| 58 | M58 | N70 | N95 | | RIGID | None | None | RIGID | Typical |

***Member Primary Data (Continued)***

| | Label | I Node | J Node | Rotate(deg) | Section/Shape | Type | Design List | Material | Design Rule |
|---|---|---|---|---|---|---|---|---|---|
| 59 | M59 | N69 | N96 | | RIGID | None | None | RIGID | Typical |
| 60 | M60 | N98 | N69 | | RIGID | None | None | RIGID | Typical |
| 61 | M61 | N81 | N99 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 62 | M62 | N84 | N100 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 63 | M63 | N101 | N103 | | RIGID | None | None | RIGID | Typical |
| 64 | M64 | N102 | N104 | | RIGID | None | None | RIGID | Typical |
| 65 | M65 | N89 | N105 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 66 | M66 | N106 | N107 | | RIGID | None | None | RIGID | Typical |
| 67 | M67 | N82 | N108 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 68 | M68 | N86 | N109 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 69 | M69 | N110 | N112 | | RIGID | None | None | RIGID | Typical |
| 70 | M70 | N111 | N113 | | RIGID | None | None | RIGID | Typical |
| 71 | M71 | N92 | N114 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 72 | M72 | N115 | N116 | | RIGID | None | None | RIGID | Typical |
| 73 | M73 | N117 | N118 | | Arm | Beam | Tube | A500 Gr.B Rect | Typical |
| 74 | M74 | N122 | N123 | | Mount Pipe | Column | Pipe | A53 Gr.B | Typical |
| 75 | M75 | N120 | N119 | | Arm 2 | Beam | Tube | A500 Gr.B Rect | Typical |
| 76 | M76 | N127 | N147 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 77 | M77 | N145 | N125 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 78 | M78 | N124 | N146 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 79 | M79 | N148 | N126 | 90 | Cross Arm | Beam | Single Angle | A36 Gr.36 | Typical |
| 80 | M80 | N130 | N132 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 81 | M81 | N129 | N131 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 82 | M82 | N133 | N134 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 83 | M83 | N135 | N136 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 84 | M84 | N140 | N137 | 90 | Angle | HBrace | Single Angle | A36 Gr.36 | Typical |
| 85 | M85 | N138 | N139 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 86 | M86 | N141 | N142 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 87 | M87 | N143 | N121 | | RIGID | None | None | RIGID | Typical |
| 88 | M88 | N144 | N128 | | RIGID | None | None | RIGID | Typical |
| 89 | M89 | N120 | N147 | | RIGID | None | None | RIGID | Typical |
| 90 | M90 | N120 | N145 | | RIGID | None | None | RIGID | Typical |
| 91 | M91 | N119 | N146 | | RIGID | None | None | RIGID | Typical |
| 92 | M92 | N148 | N119 | | RIGID | None | None | RIGID | Typical |
| 93 | M93 | N131 | N149 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 94 | M94 | N134 | N150 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 95 | M95 | N151 | N153 | | RIGID | None | None | RIGID | Typical |
| 96 | M96 | N152 | N154 | | RIGID | None | None | RIGID | Typical |
| 97 | M97 | N139 | N155 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 98 | M98 | N156 | N157 | | RIGID | None | None | RIGID | Typical |
| 99 | M99 | N132 | N158 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 100 | M100 | N136 | N159 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 101 | M101 | N160 | N162 | | RIGID | None | None | RIGID | Typical |
| 102 | M102 | N161 | N163 | | RIGID | None | None | RIGID | Typical |
| 103 | M103 | N142 | N164 | | Plate | Beam | BAR | A36 Gr.36 | Typical |
| 104 | M104 | N165 | N166 | | RIGID | None | None | RIGID | Typical |
| 105 | M105 | N167 | N168 | | Frame Rail | Beam | Pipe | A53 Gr.B | Typical |
| 106 | M106 | N169 | N170 | | Handrail | HBrace | Pipe | A53 Gr.B | Typical |
| 107 | M107 | N172 | N173 | | Mount Pipe | Column | Pipe | A53 Gr.B | Typical |
| 108 | M108 | N175 | N171 | | RIGID | None | None | RIGID | Typical |
| 109 | M109 | N176 | N174 | | RIGID | None | None | RIGID | Typical |
| 110 | M110 | N178 | N179 | | Mount Pipe | Column | Pipe | A53 Gr.B | Typical |
| 111 | M111 | N181 | N177 | | RIGID | None | None | RIGID | Typical |
| 112 | M112 | N182 | N180 | | RIGID | None | None | RIGID | Typical |
| 113 | M113 | N183 | N184 | | Frame Rail | Beam | Pipe | A53 Gr.B | Typical |
| 114 | M114 | N185 | N186 | | Handrail | HBrace | Pipe | A53 Gr.B | Typical |
| 115 | M115 | N188 | N189 | | Mount Pipe | Column | Pipe | A53 Gr.B | Typical |
| 116 | M116 | N191 | N187 | | RIGID | None | None | RIGID | Typical |

### Member Primary Data (Continued)

| | Label | I Node | J Node | Rotate(deg) | Section/Shape | Type | Design List | Material | Design Rule |
|---|---|---|---|---|---|---|---|---|---|
| 117 | M117 | N192 | N190 | | RIGID | None | None | RIGID | Typical |
| 118 | M118 | N194 | N195 | | Mount Pipe | Column | Pipe | A53 Gr.B | Typical |
| 119 | M119 | N197 | N193 | | RIGID | None | None | RIGID | Typical |
| 120 | M120 | N198 | N196 | | RIGID | None | None | RIGID | Typical |
| 121 | M121 | N199 | N200 | | RIGID | None | None | RIGID | Typical |
| 122 | M122 | N201 | N199 | | RIGID | None | None | RIGID | Typical |
| 123 | M123 | N200 | N202 | | RIGID | None | None | RIGID | Typical |
| 124 | M124 | N201 | N203 | | RIGID | None | None | RIGID | Typical |
| 125 | M125 | N204 | N205 | | Mount Pipe | Column | Pipe | A53 Gr.B | Typical |

### Material Take-Off

| | Material | Size | Pieces | Length[in] | Weight[LB] |
|---|---|---|---|---|---|
| 1 | General Members | | | | |
| 2 | RIGID | | 52 | 123.7 | 0 |
| 3 | Total General | | 52 | 123.7 | 0 |
| 4 | | | | | |
| 5 | Hot Rolled Steel | | | | |
| 6 | A36 Gr.36 | 6"x0.375" Plate | 36 | 144 | 91.875 |
| 7 | A36 Gr.36 | L4X4X4 | 12 | 363 | 198.663 |
| 8 | A36 Gr.36 | L2.5x2.5x3 | 3 | 165 | 42.156 |
| 9 | A500 Gr.B Rect | HSS4.5X4.5X3 | 3 | 60 | 53.615 |
| 10 | A500 Gr.B Rect | HSS4X4X4 | 3 | 115.4 | 118.563 |
| 11 | A53 Gr.B | PIPE_2.0 | 10 | 912 | 263.783 |
| 12 | A53 Gr.B | PIPE_2.5 | 3 | 288 | 131.483 |
| 13 | A53 Gr.B | PIPE_3.0 | 3 | 288 | 169.05 |
| 14 | Total HR Steel | | 73 | 2335.4 | 1069.189 |

### Basic Load Cases

| | BLC Description | Category | X Gravity | Y Gravity | Z Gravity | Point | Distributed | Area(Member) |
|---|---|---|---|---|---|---|---|---|
| 1 | Self Weight | DL | | -1 | | 20 | | 3 |
| 2 | Wind Load AZI 0 | WLX | | | | 40 | 258 | |
| 3 | Wind Load AZI 30 | None | | | | 40 | 258 | |
| 4 | Wind Load AZI 60 | None | | | | 40 | 258 | |
| 5 | Wind Load AZI 90 | WLZ | | | | 40 | 258 | |
| 6 | Wind Load AZI 120 | None | | | | 40 | 258 | |
| 7 | Wind Load AZI 150 | None | | | | 40 | 258 | |
| 8 | Wind Load AZI 180 | None | | | | 40 | 258 | |
| 9 | Wind Load AZI 210 | None | | | | 40 | 258 | |
| 10 | Wind Load AZI 240 | None | | | | 40 | 258 | |
| 11 | Wind Load AZI 270 | None | | | | 40 | 258 | |
| 12 | Wind Load AZI 300 | None | | | | 40 | 258 | |
| 13 | Wind Load AZI 330 | None | | | | 40 | 258 | |
| 14 | Ice Weight | OL1 | | | | 20 | 125 | 3 |
| 15 | Ice Wind Load AZI 0 | OL2 | | | | 40 | 258 | |
| 16 | Ice Wind Load AZI 30 | None | | | | 40 | 258 | |
| 17 | Ice Wind Load AZI 60 | None | | | | 40 | 258 | |
| 18 | Ice Wind Load AZI 90 | OL3 | | | | 40 | 258 | |
| 19 | Ice Wind Load AZI 120 | None | | | | 40 | 258 | |
| 20 | Ice Wind Load AZI 150 | None | | | | 40 | 258 | |
| 21 | Ice Wind Load AZI 180 | None | | | | 40 | 258 | |
| 22 | Ice Wind Load AZI 210 | None | | | | 40 | 258 | |
| 23 | Ice Wind Load AZI 240 | None | | | | 40 | 258 | |
| 24 | Ice Wind Load AZI 270 | None | | | | 40 | 258 | |
| 25 | Ice Wind Load AZI 300 | None | | | | 40 | 258 | |
| 26 | Ice Wind Load AZI 330 | None | | | | 40 | 258 | |
| 27 | Seismic Load X | ELX | | | -0.097 | 20 | | |
| 28 | Seismic Load Z | ELZ | -0.097 | | | 20 | | |

***Basic Load Cases (Continued)***

| | BLC Description | Category | X Gravity | Y Gravity | Z Gravity | Point | Distributed | Area(Member) |
|---|---|---|---|---|---|---|---|---|
| 29 | Service Live Loads | LL | | | | | | |
| 30 | Maintenance Load 1 | LL | | | | 1 | | |
| 31 | Maintenance Load 2 | LL | | | | 1 | | |
| 32 | Maintenance Load 3 | LL | | | | 1 | | |
| 33 | Maintenance Load 4 | LL | | | | 1 | | |
| 34 | Maintenance Load 5 | LL | | | | 1 | | |
| 35 | Maintenance Load 6 | LL | | | | 1 | | |
| 36 | Maintenance Load 7 | LL | | | | 1 | | |
| 37 | Maintenance Load 8 | LL | | | | 1 | | |
| 38 | Maintenance Load 9 | LL | | | | 1 | | |
| 39 | Maintenance Load 10 | LL | | | | 1 | | |
| 40 | Maintenance Load 11 | LL | | | | 1 | | |
| 41 | Maintenance Load 12 | LL | | | | 1 | | |
| 42 | Maintenance Load 13 | LL | | | | 1 | | |
| 43 | Maintenance Load 14 | LL | | | | 1 | | |
| 44 | Maintenance Load 15 | LL | | | | 1 | | |
| 45 | Maintenance Load 16 | LL | | | | 1 | | |
| 46 | Maintenance Load 17 | LL | | | | 1 | | |
| 47 | Maintenance Load 18 | LL | | | | 1 | | |
| 52 | BLC 1 Transient Area Loads | None | | | | | 141 | |
| 53 | BLC 14 Transient Area Loads | None | | | | | 141 | |

***Load Combinations***

| | Description | Solve | PDelta | BLC | Factor | BLC | Factor | BLC | Factor |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.4DL | Yes | Y | 1 | 1.4 | | | | |
| 2 | 1.2DL + 1.6WL AZI 0 | Yes | Y | 1 | 1.2 | 2 | 1.6 | | |
| 3 | 1.2DL + 1.6WL AZI 30 | Yes | Y | 1 | 1.2 | 3 | 1.6 | | |
| 4 | 1.2DL + 1.6WL AZI 60 | Yes | Y | 1 | 1.2 | 4 | 1.6 | | |
| 5 | 1.2DL + 1.6WL AZI 90 | Yes | Y | 1 | 1.2 | 5 | 1.6 | | |
| 6 | 1.2DL + 1.6WL AZI 120 | Yes | Y | 1 | 1.2 | 6 | 1.6 | | |
| 7 | 1.2DL + 1.6WL AZI 150 | Yes | Y | 1 | 1.2 | 7 | 1.6 | | |
| 8 | 1.2DL + 1.6WL AZI 180 | Yes | Y | 1 | 1.2 | 8 | 1.6 | | |
| 9 | 1.2DL + 1.6WL AZI 210 | Yes | Y | 1 | 1.2 | 9 | 1.6 | | |
| 10 | 1.2DL + 1.6WL AZI 240 | Yes | Y | 1 | 1.2 | 10 | 1.6 | | |
| 11 | 1.2DL + 1.6WL AZI 270 | Yes | Y | 1 | 1.2 | 11 | 1.6 | | |
| 12 | 1.2DL + 1.6WL AZI 300 | Yes | Y | 1 | 1.2 | 12 | 1.6 | | |
| 13 | 1.2DL + 1.6WL AZI 330 | Yes | Y | 1 | 1.2 | 13 | 1.6 | | |
| 14 | 0.9DL + 1.6WL AZI 0 | Yes | Y | 1 | 0.9 | 2 | 1.6 | | |
| 15 | 0.9DL + 1.6WL AZI 30 | Yes | Y | 1 | 0.9 | 3 | 1.6 | | |
| 16 | 0.9DL + 1.6WL AZI 60 | Yes | Y | 1 | 0.9 | 4 | 1.6 | | |
| 17 | 0.9DL + 1.6WL AZI 90 | Yes | Y | 1 | 0.9 | 5 | 1.6 | | |
| 18 | 0.9DL + 1.6WL AZI 120 | Yes | Y | 1 | 0.9 | 6 | 1.6 | | |
| 19 | 0.9DL + 1.6WL AZI 150 | Yes | Y | 1 | 0.9 | 7 | 1.6 | | |
| 20 | 0.9DL + 1.6WL AZI 180 | Yes | Y | 1 | 0.9 | 8 | 1.6 | | |
| 21 | 0.9DL + 1.6WL AZI 210 | Yes | Y | 1 | 0.9 | 9 | 1.6 | | |
| 22 | 0.9DL + 1.6WL AZI 240 | Yes | Y | 1 | 0.9 | 10 | 1.6 | | |
| 23 | 0.9DL + 1.6WL AZI 270 | Yes | Y | 1 | 0.9 | 11 | 1.6 | | |
| 24 | 0.9DL + 1.6WL AZI 300 | Yes | Y | 1 | 0.9 | 12 | 1.6 | | |
| 25 | 0.9DL + 1.6WL AZI 330 | Yes | Y | 1 | 0.9 | 13 | 1.6 | | |
| 26 | 1.2D + 1.0Di | Yes | Y | 1 | 1.2 | 14 | 1 | | |
| 27 | 1.2D + 1.0Di +1.0Wi AZI 0 | Yes | Y | 1 | 1.2 | 14 | 1 | 15 | 1 |
| 28 | 1.2D + 1.0Di +1.0Wi AZI 30 | Yes | Y | 1 | 1.2 | 14 | 1 | 16 | 1 |
| 29 | 1.2D + 1.0Di +1.0Wi AZI 60 | Yes | Y | 1 | 1.2 | 14 | 1 | 17 | 1 |
| 30 | 1.2D + 1.0Di +1.0Wi AZI 90 | Yes | Y | 1 | 1.2 | 14 | 1 | 18 | 1 |
| 31 | 1.2D + 1.0Di +1.0Wi AZI 120 | Yes | Y | 1 | 1.2 | 14 | 1 | 19 | 1 |
| 32 | 1.2D + 1.0Di +1.0Wi AZI 150 | Yes | Y | 1 | 1.2 | 14 | 1 | 20 | 1 |
| 33 | 1.2D + 1.0Di +1.0Wi AZI 180 | Yes | Y | 1 | 1.2 | 14 | 1 | 21 | 1 |
| 34 | 1.2D + 1.0Di +1.0Wi AZI 210 | Yes | Y | 1 | 1.2 | 14 | 1 | 22 | 1 |

***Load Combinations (Continued)***

| | Description | Solve | PDelta | BLC | Factor | BLC | Factor | BLC | Factor |
|---|---|---|---|---|---|---|---|---|---|
| 35 | 1.2D + 1.0Di +1.0Wi AZI 240 | Yes | Y | 1 | 1.2 | 14 | 1 | 23 | 1 |
| 36 | 1.2D + 1.0Di +1.0Wi AZI 270 | Yes | Y | 1 | 1.2 | 14 | 1 | 24 | 1 |
| 37 | 1.2D + 1.0Di +1.0Wi AZI 300 | Yes | Y | 1 | 1.2 | 14 | 1 | 25 | 1 |
| 38 | 1.2D + 1.0Di +1.0Wi AZI 330 | Yes | Y | 1 | 1.2 | 14 | 1 | 26 | 1 |
| 39 | (1.2 + 0.2Sds)DL + 1.0E AZI 0 | Yes | Y | 1 | 1.239 | 27 | 1 | 28 | |
| 40 | (1.2 + 0.2Sds)DL + 1.0E AZI 30 | Yes | Y | 1 | 1.239 | 27 | 0.866 | 28 | 0.5 |
| 41 | (1.2 + 0.2Sds)DL + 1.0E AZI 60 | Yes | Y | 1 | 1.239 | 27 | 0.5 | 28 | 0.866 |
| 42 | (1.2 + 0.2Sds)DL + 1.0E AZI 90 | Yes | Y | 1 | 1.239 | 27 | | 28 | 1 |
| 43 | (1.2 + 0.2Sds)DL + 1.0E AZI 120 | Yes | Y | 1 | 1.239 | 27 | -0.5 | 28 | 0.866 |
| 44 | (1.2 + 0.2Sds)DL + 1.0E AZI 150 | Yes | Y | 1 | 1.239 | 27 | -0.866 | 28 | 0.5 |
| 45 | (1.2 + 0.2Sds)DL + 1.0E AZI 180 | Yes | Y | 1 | 1.239 | 27 | -1 | 28 | |
| 46 | (1.2 + 0.2Sds)DL + 1.0E AZI 210 | Yes | Y | 1 | 1.239 | 27 | -0.866 | 28 | -0.5 |
| 47 | (1.2 + 0.2Sds)DL + 1.0E AZI 240 | Yes | Y | 1 | 1.239 | 27 | -0.5 | 28 | -0.866 |
| 48 | (1.2 + 0.2Sds)DL + 1.0E AZI 270 | Yes | Y | 1 | 1.239 | 27 | | 28 | -1 |
| 49 | (1.2 + 0.2Sds)DL + 1.0E AZI 300 | Yes | Y | 1 | 1.239 | 27 | 0.5 | 28 | -0.866 |
| 50 | (1.2 + 0.2Sds)DL + 1.0E AZI 330 | Yes | Y | 1 | 1.239 | 27 | 0.866 | 28 | -0.5 |
| 51 | (0.9 - 0.2Sds)DL + 1.0E AZI 0 | Yes | Y | 1 | 0.861 | 27 | 1 | 28 | |
| 52 | (0.9 - 0.2Sds)DL + 1.0E AZI 30 | Yes | Y | 1 | 0.861 | 27 | 0.866 | 28 | 0.5 |
| 53 | (0.9 - 0.2Sds)DL + 1.0E AZI 60 | Yes | Y | 1 | 0.861 | 27 | 0.5 | 28 | 0.866 |
| 54 | (0.9 - 0.2Sds)DL + 1.0E AZI 90 | Yes | Y | 1 | 0.861 | 27 | | 28 | 1 |
| 55 | (0.9 - 0.2Sds)DL + 1.0E AZI 120 | Yes | Y | 1 | 0.861 | 27 | -0.5 | 28 | 0.866 |
| 56 | (0.9 - 0.2Sds)DL + 1.0E AZI 150 | Yes | Y | 1 | 0.861 | 27 | -0.866 | 28 | 0.5 |
| 57 | (0.9 - 0.2Sds)DL + 1.0E AZI 180 | Yes | Y | 1 | 0.861 | 27 | -1 | 28 | |
| 58 | (0.9 - 0.2Sds)DL + 1.0E AZI 210 | Yes | Y | 1 | 0.861 | 27 | -0.866 | 28 | -0.5 |
| 59 | (0.9 - 0.2Sds)DL + 1.0E AZI 240 | Yes | Y | 1 | 0.861 | 27 | -0.5 | 28 | -0.866 |
| 60 | (0.9 - 0.2Sds)DL + 1.0E AZI 270 | Yes | Y | 1 | 0.861 | 27 | | 28 | -1 |
| 61 | (0.9 - 0.2Sds)DL + 1.0E AZI 300 | Yes | Y | 1 | 0.861 | 27 | 0.5 | 28 | -0.866 |
| 62 | (0.9 - 0.2Sds)DL + 1.0E AZI 330 | Yes | Y | 1 | 0.861 | 27 | 0.866 | 28 | -0.5 |
| 63 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 0 | Yes | Y | 1 | 1 | 2 | 0.096 | 29 | 1.5 |
| 64 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 30 | Yes | Y | 1 | 1 | 3 | 0.096 | 29 | 1.5 |
| 65 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 60 | Yes | Y | 1 | 1 | 4 | 0.096 | 29 | 1.5 |
| 66 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 90 | Yes | Y | 1 | 1 | 5 | 0.096 | 29 | 1.5 |
| 67 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 120 | Yes | Y | 1 | 1 | 6 | 0.096 | 29 | 1.5 |
| 68 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 150 | Yes | Y | 1 | 1 | 7 | 0.096 | 29 | 1.5 |
| 69 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 180 | Yes | Y | 1 | 1 | 8 | 0.096 | 29 | 1.5 |
| 70 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 210 | Yes | Y | 1 | 1 | 9 | 0.096 | 29 | 1.5 |
| 71 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 240 | Yes | Y | 1 | 1 | 10 | 0.096 | 29 | 1.5 |
| 72 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 270 | Yes | Y | 1 | 1 | 11 | 0.096 | 29 | 1.5 |
| 73 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 300 | Yes | Y | 1 | 1 | 12 | 0.096 | 29 | 1.5 |
| 74 | 1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 330 | Yes | Y | 1 | 1 | 13 | 0.096 | 29 | 1.5 |
| 75 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 2 | 0.154 |
| 76 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 3 | 0.154 |
| 77 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 4 | 0.154 |
| 78 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 5 | 0.154 |
| 79 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 6 | 0.154 |
| 80 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 7 | 0.154 |
| 81 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 8 | 0.154 |
| 82 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 9 | 0.154 |
| 83 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 10 | 0.154 |
| 84 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 11 | 0.154 |
| 85 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 12 | 0.154 |
| 86 | 1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 34 | 1.5 | 13 | 0.154 |
| 87 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 2 | 0.154 |
| 88 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 3 | 0.154 |
| 89 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 4 | 0.154 |
| 90 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 5 | 0.154 |
| 91 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 6 | 0.154 |
| 92 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 7 | 0.154 |

***Load Combinations (Continued)***

| | Description | Solve | PDelta | BLC | Factor | BLC | Factor | BLC | Factor |
|---|---|---|---|---|---|---|---|---|---|
| 93 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 8 | 0.154 |
| 94 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 9 | 0.154 |
| 95 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 10 | 0.154 |
| 96 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 11 | 0.154 |
| 97 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 12 | 0.154 |
| 98 | 1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 35 | 1.5 | 13 | 0.154 |
| 99 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 2 | 0.154 |
| 100 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 3 | 0.154 |
| 101 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 4 | 0.154 |
| 102 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 5 | 0.154 |
| 103 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 6 | 0.154 |
| 104 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 7 | 0.154 |
| 105 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 8 | 0.154 |
| 106 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 9 | 0.154 |
| 107 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 10 | 0.154 |
| 108 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 11 | 0.154 |
| 109 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 12 | 0.154 |
| 110 | 1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 36 | 1.5 | 13 | 0.154 |
| 111 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 2 | 0.154 |
| 112 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 3 | 0.154 |
| 113 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 4 | 0.154 |
| 114 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 5 | 0.154 |
| 115 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 6 | 0.154 |
| 116 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 7 | 0.154 |
| 117 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 8 | 0.154 |
| 118 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 9 | 0.154 |
| 119 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 10 | 0.154 |
| 120 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 11 | 0.154 |
| 121 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 12 | 0.154 |
| 122 | 1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 37 | 1.5 | 13 | 0.154 |
| 123 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 2 | 0.154 |
| 124 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 3 | 0.154 |
| 125 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 4 | 0.154 |
| 126 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 5 | 0.154 |
| 127 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 6 | 0.154 |
| 128 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 7 | 0.154 |
| 129 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 8 | 0.154 |
| 130 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 9 | 0.154 |
| 131 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 10 | 0.154 |
| 132 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 11 | 0.154 |
| 133 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 12 | 0.154 |
| 134 | 1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 38 | 1.5 | 13 | 0.154 |
| 135 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 2 | 0.154 |
| 136 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 3 | 0.154 |
| 137 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 4 | 0.154 |
| 138 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 5 | 0.154 |
| 139 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 6 | 0.154 |
| 140 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 7 | 0.154 |
| 141 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 8 | 0.154 |
| 142 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 9 | 0.154 |
| 143 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 10 | 0.154 |
| 144 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 11 | 0.154 |
| 145 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 12 | 0.154 |
| 146 | 1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 39 | 1.5 | 13 | 0.154 |
| 147 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 2 | 0.154 |
| 148 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 3 | 0.154 |
| 149 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 4 | 0.154 |
| 150 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 5 | 0.154 |

***Load Combinations (Continued)***

| | Description | Solve | PDelta | BLC | Factor | BLC | Factor | BLC | Factor |
|---|---|---|---|---|---|---|---|---|---|
| 151 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 6 | 0.154 |
| 152 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 7 | 0.154 |
| 153 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 8 | 0.154 |
| 154 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 9 | 0.154 |
| 155 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 10 | 0.154 |
| 156 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 11 | 0.154 |
| 157 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 12 | 0.154 |
| 158 | 1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 40 | 1.5 | 13 | 0.154 |
| 159 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 2 | 0.154 |
| 160 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 3 | 0.154 |
| 161 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 4 | 0.154 |
| 162 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 5 | 0.154 |
| 163 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 6 | 0.154 |
| 164 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 7 | 0.154 |
| 165 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 8 | 0.154 |
| 166 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 9 | 0.154 |
| 167 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 10 | 0.154 |
| 168 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 11 | 0.154 |
| 169 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 12 | 0.154 |
| 170 | 1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 41 | 1.5 | 13 | 0.154 |
| 171 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 2 | 0.154 |
| 172 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 3 | 0.154 |
| 173 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 4 | 0.154 |
| 174 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 5 | 0.154 |
| 175 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 6 | 0.154 |
| 176 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 7 | 0.154 |
| 177 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 8 | 0.154 |
| 178 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 9 | 0.154 |
| 179 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 10 | 0.154 |
| 180 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 11 | 0.154 |
| 181 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 12 | 0.154 |
| 182 | 1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 42 | 1.5 | 13 | 0.154 |
| 183 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 2 | 0.154 |
| 184 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 3 | 0.154 |
| 185 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 4 | 0.154 |
| 186 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 5 | 0.154 |
| 187 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 6 | 0.154 |
| 188 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 7 | 0.154 |
| 189 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 8 | 0.154 |
| 190 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 9 | 0.154 |
| 191 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 10 | 0.154 |
| 192 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 11 | 0.154 |
| 193 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 12 | 0.154 |
| 194 | 1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 43 | 1.5 | 13 | 0.154 |
| 195 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 2 | 0.154 |
| 196 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 3 | 0.154 |
| 197 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 4 | 0.154 |
| 198 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 5 | 0.154 |
| 199 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 6 | 0.154 |
| 200 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 7 | 0.154 |
| 201 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 8 | 0.154 |
| 202 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 9 | 0.154 |
| 203 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 10 | 0.154 |
| 204 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 11 | 0.154 |
| 205 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 12 | 0.154 |
| 206 | 1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 44 | 1.5 | 13 | 0.154 |
| 207 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 2 | 0.154 |
| 208 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 3 | 0.154 |

***Load Combinations (Continued)***

| | Description | Solve | PDelta | BLC | Factor | BLC | Factor | BLC | Factor |
|---|---|---|---|---|---|---|---|---|---|
| 209 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 4 | 0.154 |
| 210 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 5 | 0.154 |
| 211 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 6 | 0.154 |
| 212 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 7 | 0.154 |
| 213 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 8 | 0.154 |
| 214 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 9 | 0.154 |
| 215 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 10 | 0.154 |
| 216 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 11 | 0.154 |
| 217 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 12 | 0.154 |
| 218 | 1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 45 | 1.5 | 13 | 0.154 |
| 219 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 2 | 0.154 |
| 220 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 3 | 0.154 |
| 221 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 4 | 0.154 |
| 222 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 5 | 0.154 |
| 223 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 6 | 0.154 |
| 224 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 7 | 0.154 |
| 225 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 8 | 0.154 |
| 226 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 9 | 0.154 |
| 227 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 10 | 0.154 |
| 228 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 11 | 0.154 |
| 229 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 12 | 0.154 |
| 230 | 1.2DL + 1.5LM13 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 46 | 1.5 | 13 | 0.154 |
| 231 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 2 | 0.154 |
| 232 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 3 | 0.154 |
| 233 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 4 | 0.154 |
| 234 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 5 | 0.154 |
| 235 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 6 | 0.154 |
| 236 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 7 | 0.154 |
| 237 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 8 | 0.154 |
| 238 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 9 | 0.154 |
| 239 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 10 | 0.154 |
| 240 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 11 | 0.154 |
| 241 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 12 | 0.154 |
| 242 | 1.2DL + 1.5LM14 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 47 | 1.5 | 13 | 0.154 |
| 243 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 2 | 0.154 |
| 244 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 3 | 0.154 |
| 245 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 4 | 0.154 |
| 246 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 5 | 0.154 |
| 247 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 6 | 0.154 |
| 248 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 7 | 0.154 |
| 249 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 8 | 0.154 |
| 250 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 9 | 0.154 |
| 251 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 10 | 0.154 |
| 252 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 11 | 0.154 |
| 253 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 12 | 0.154 |
| 254 | 1.2DL + 1.5LM15 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 48 | 1.5 | 13 | 0.154 |
| 255 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 2 | 0.154 |
| 256 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 3 | 0.154 |
| 257 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 4 | 0.154 |
| 258 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 5 | 0.154 |
| 259 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 6 | 0.154 |
| 260 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 7 | 0.154 |
| 261 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 8 | 0.154 |
| 262 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 9 | 0.154 |
| 263 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 10 | 0.154 |
| 264 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 11 | 0.154 |
| 265 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 12 | 0.154 |
| 266 | 1.2DL + 1.5LM16 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 49 | 1.5 | 13 | 0.154 |

### Load Combinations (Continued)

| | Description | Solve | PDelta | BLC | Factor | BLC | Factor | BLC | Factor |
|---|---|---|---|---|---|---|---|---|---|
| 267 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 2 | 0.154 |
| 268 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 3 | 0.154 |
| 269 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 4 | 0.154 |
| 270 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 5 | 0.154 |
| 271 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 6 | 0.154 |
| 272 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 7 | 0.154 |
| 273 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 8 | 0.154 |
| 274 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 9 | 0.154 |
| 275 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 10 | 0.154 |
| 276 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 11 | 0.154 |
| 277 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 12 | 0.154 |
| 278 | 1.2DL + 1.5LM17 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 50 | 1.5 | 13 | 0.154 |
| 279 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 0 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 2 | 0.154 |
| 280 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 30 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 3 | 0.154 |
| 281 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 60 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 4 | 0.154 |
| 282 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 90 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 5 | 0.154 |
| 283 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 120 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 6 | 0.154 |
| 284 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 150 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 7 | 0.154 |
| 285 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 180 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 8 | 0.154 |
| 286 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 210 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 9 | 0.154 |
| 287 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 240 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 10 | 0.154 |
| 288 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 270 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 11 | 0.154 |
| 289 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 300 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 12 | 0.154 |
| 290 | 1.2DL + 1.5LM18 + 1.6SWL (30 mph) AZI 330 | Yes | Y | 1 | 1.2 | 51 | 1.5 | 13 | 0.154 |

### Envelope Node Reactions

| | Node Label | | X [lb] | LC | Y [lb] | LC | Z [lb] | LC | MX [lb-in] | LC | MY [lb-in] | LC | MZ [lb-in] | LC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | N1 | max | 905.255 | 25 | 1649.562 | 87 | 910.801 | 16 | 14851.995 | 108 | 16870.179 | 16 | 2620.082 | 20 |
| 2 | | min | -1101.221 | 8 | 96.024 | 20 | -923.354 | 24 | -14851.1 | 90 | -17200.108 | 24 | -61952.723 | 87 |
| 3 | N67 | max | 1198.642 | 2 | 1725.89 | 35 | 1115.166 | 5 | 2894.363 | 16 | 21950.067 | 25 | 30206.78 | 143 |
| 4 | | min | -1090.318 | 20 | 129.093 | 16 | -940.67 | 24 | -50085.608 | 35 | -17854.158 | 18 | -1560.157 | 16 |
| 5 | N117 | max | 1128.551 | 2 | 1649.791 | 127 | 864.19 | 16 | 60923.996 | 127 | 17217.965 | 22 | 29811.578 | 211 |
| 6 | | min | -1020.402 | 20 | 81.453 | 24 | -1106.485 | 12 | -2890.37 | 24 | -17185.582 | 16 | -1668.27 | 24 |
| 7 | Totals: | max | 3180.168 | 14 | 4653.436 | 35 | 2787.112 | 16 | | | | | | |
| 8 | | min | -3180.168 | 20 | 1698.323 | 52 | -2942.973 | 12 | | | | | | |

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

| | Member | Shape | Code Check | Loc[in] | LC | Shear Check | Loc[in] | Dir | LC | phi*Pnc [lb] | phi*Pnt [lb] | phi*Mn y-y [lb-in] | phi*Mn z-z [lb-in] | Cb | Eqn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M24 | 6"x0.375" Plate | 0.158 | 1.125 | 2 | 0.791 | 0 | y | 109 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |
| 2 | M100 | 6"x0.375" Plate | 0.159 | 1.125 | 6 | 0.791 | 0 | y | 129 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |
| 3 | M30 | 6"x0.375" Plate | 0.158 | 1.125 | 2 | 0.791 | 0 | y | 89 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |
| 4 | M12 | 6"x0.375" Plate | 0.143 | 2.036 | 2 | 0.751 | 2.036 | y | 109 | 62722.329 | 72900 | 6834.391 | 109350 | 2.484 | H1-1b |
| 5 | M83 | 6"x0.375" Plate | 0.144 | 2.036 | 6 | 0.75 | 2.036 | y | 129 | 62722.329 | 72900 | 6834.391 | 109350 | 2.49 | H1-1b |
| 6 | M13 | 6"x0.375" Plate | 0.143 | 2.036 | 2 | 0.75 | 2.036 | y | 89 | 62722.329 | 72900 | 6834.391 | 109350 | 2.492 | H1-1b |
| 7 | M23 | 6"x0.375" Plate | 0.128 | 1.125 | 5 | 0.623 | 0 | y | 109 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |
| 8 | M99 | 6"x0.375" Plate | 0.13 | 1.125 | 3 | 0.622 | 0 | y | 129 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |
| 9 | M29 | 6"x0.375" Plate | 0.128 | 1.125 | 11 | 0.622 | 0 | y | 89 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |
| 10 | M61 | 6"x0.375" Plate | 0.135 | 1.125 | 13 | 0.615 | 0 | y | 33 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |
| 11 | M93 | 6"x0.375" Plate | 0.13 | 1.125 | 9 | 0.614 | 0 | y | 29 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |
| 12 | M67 | 6"x0.375" Plate | 0.134 | 1.125 | 25 | 0.614 | 0 | y | 38 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |
| 13 | M11 | 6"x0.375" Plate | 0.128 | 2.036 | 11 | 0.587 | 2.036 | y | 109 | 62722.329 | 72900 | 6834.391 | 109350 | 2.23 | H1-1b |
| 14 | M80 | 6"x0.375" Plate | 0.131 | 2.036 | 9 | 0.586 | 2.036 | y | 129 | 62722.329 | 72900 | 6834.391 | 109350 | 2.216 | H1-1b |
| 15 | M10 | 6"x0.375" Plate | 0.128 | 2.036 | 5 | 0.586 | 2.036 | y | 89 | 62722.329 | 72900 | 6834.391 | 109350 | 2.229 | H1-1b |
| 16 | M49 | 6"x0.375" Plate | 0.141 | 2.036 | 25 | 0.577 | 2.036 | y | 33 | 62722.329 | 72900 | 6834.391 | 109350 | 2.006 | H1-1b |
| 17 | M81 | 6"x0.375" Plate | 0.132 | 2.036 | 3 | 0.576 | 2.036 | y | 29 | 62722.329 | 72900 | 6834.391 | 109350 | 2.216 | H1-1b |
| 18 | M48 | 6"x0.375" Plate | 0.142 | 2.036 | 13 | 0.576 | 2.036 | y | 38 | 62722.329 | 72900 | 6834.391 | 109350 | 2.178 | H1-1b |
| 19 | M68 | 6"x0.375" Plate | 0.157 | 1.125 | 10 | 0.519 | 0 | y | 145 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |

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

| | Member | Shape | Code Check | Loc[in] | LC | Shear Check | Loc[in] | Dir | LC | phi*Pnc [lb] | phi*Pnt [lb] | phi*Mn y-y [lb-in] | phi*Mn z-z [lb-in] | Cb | Eqn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | M94 | 6"x0.375" Plate | 0.158 | 1.125 | 6 | 0.518 | 0 | y | 209 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |
| 21 | M62 | 6"x0.375" Plate | 0.159 | 1.125 | 10 | 0.517 | 0 | y | 225 | 71110.261 | 72900 | 6834.391 | 109350 | 3 | H1-1b |
| 22 | M51 | 6"x0.375" Plate | 0.139 | 2.036 | 10 | 0.491 | 2.036 | y | 145 | 62722.329 | 72900 | 6834.391 | 109350 | 2.492 | H1-1b |
| 23 | M82 | 6"x0.375" Plate | 0.139 | 2.036 | 6 | 0.49 | 2.036 | y | 209 | 62722.329 | 72900 | 6834.391 | 109350 | 2.485 | H1-1b |
| 24 | M50 | 6"x0.375" Plate | 0.143 | 2.036 | 10 | 0.489 | 2.036 | y | 225 | 62722.329 | 72900 | 6834.391 | 109350 | 2.483 | H1-1b |
| 25 | M6 | L4X4X4 | 0.284 | 24.375 | 89 | 0.227 | 24.375 | z | 98 | 54411.715 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 26 | M7 | L4X4X4 | 0.284 | 0 | 109 | 0.226 | 0 | z | 100 | 54411.715 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 27 | M76 | L4X4X4 | 0.284 | 24.375 | 129 | 0.226 | 24.375 | z | 126 | 54411.715 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 28 | M77 | L4X4X4 | 0.235 | 0 | 25 | 0.144 | 0 | y | 7 | 54411.715 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 29 | M44 | L4X4X4 | 0.216 | 24.375 | 16 | 0.143 | 24.375 | y | 9 | 54411.715 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 30 | M45 | L4X4X4 | 0.213 | 0 | 16 | 0.14 | 0 | y | 12 | 54411.715 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 31 | M9 | L4X4X4 | 0.294 | 0 | 98 | 0.134 | 0 | z | 97 | 51466.784 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 32 | M8 | L4X4X4 | 0.294 | 36.125 | 99 | 0.134 | 36.125 | z | 101 | 51466.784 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 33 | M79 | L4X4X4 | 0.294 | 0 | 127 | 0.134 | 0 | z | 125 | 51466.784 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 34 | M1 | HSS4X4X4 | 0.325 | 0 | 97 | 0.133 | 0 | y | 109 | 133649.326 | 139518 | 194166 | 194166 | 1.775 | H1-1b |
| 35 | M73 | HSS4X4X4 | 0.325 | 0 | 125 | 0.133 | 0 | y | 129 | 133649.326 | 139518 | 194166 | 194166 | 1.776 | H1-1b |
| 36 | M46 | L4X4X4 | 0.293 | 36.125 | 35 | 0.13 | 36.125 | z | 85 | 51466.784 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 37 | M105 | PIPE_3.0 | 0.124 | 48 | 122 | 0.119 | 93 | | 110 | 60482.561 | 65205 | 68985 | 68985 | 1 | H1-1b |
| 38 | M113 | PIPE_3.0 | 0.124 | 48 | 77 | 0.119 | 3 | | 89 | 60482.561 | 65205 | 68985 | 68985 | 1 | H1-1b |
| 39 | M78 | L4X4X4 | 0.293 | 36.125 | 31 | 0.115 | 36.125 | z | 33 | 51466.784 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 40 | M47 | L4X4X4 | 0.292 | 0 | 35 | 0.115 | 0 | z | 33 | 51466.784 | 62532 | 37651.159 | 80578.632 | 1.5 | H2-1 |
| 41 | M65 | 6"x0.375" Plate | 0.272 | 1.125 | 9 | 0.111 | 1.125 | y | 13 | 71110.261 | 72900 | 6834.391 | 109350 | 2.978 | H1-1b |
| 42 | M52 | L2.5x2.5x3 | 0.107 | 27.5 | 10 | 0.107 | 55 | z | 13 | 14632.678 | 29192.4 | 10470.885 | 20138.381 | 1.082 | H2-1 |
| 43 | M97 | 6"x0.375" Plate | 0.266 | 1.125 | 5 | 0.101 | 1.125 | y | 9 | 71110.261 | 72900 | 6834.391 | 109350 | 2.986 | H1-1b |
| 44 | M103 | 6"x0.375" Plate | 0.272 | 1.125 | 7 | 0.101 | 1.125 | y | 3 | 71110.261 | 72900 | 6834.391 | 109350 | 2.978 | H1-1b |
| 45 | M71 | 6"x0.375" Plate | 0.266 | 1.125 | 11 | 0.101 | 1.125 | y | 7 | 71110.261 | 72900 | 6834.391 | 109350 | 2.987 | H1-1b |
| 46 | M53 | 6"x0.375" Plate | 0.22 | 5.75 | 9 | 0.099 | 5.75 | y | 13 | 62722.329 | 72900 | 6834.391 | 109350 | 1.458 | H1-1b |
| 47 | M33 | 6"x0.375" Plate | 0.272 | 1.125 | 3 | 0.099 | 1.125 | y | 11 | 71110.261 | 72900 | 6834.391 | 109350 | 2.978 | H1-1b |
| 48 | M27 | 6"x0.375" Plate | 0.283 | 1.125 | 13 | 0.098 | 1.125 | y | 5 | 71110.261 | 72900 | 6834.391 | 109350 | 2.968 | H1-1b |
| 49 | M42 | PIPE_2.0 | 0.251 | 30 | 13 | 0.096 | 38 | | 13 | 14916.096 | 32130 | 22459.5 | 22459.5 | 3 | H1-1b |
| 50 | M84 | L2.5x2.5x3 | 0.107 | 27.5 | 6 | 0.096 | 55 | z | 9 | 14632.678 | 29192.4 | 10470.885 | 20138.3 | 1.082 | H2-1 |
| 51 | M3 | PIPE_2.5 | 0.095 | 90 | 6 | 0.095 | 90 | | 6 | 30038.461 | 50715 | 43155 | 43155 | 1.785 | H1-1b |
| 52 | M106 | PIPE_2.5 | 0.106 | 90 | 13 | 0.095 | 6 | | 6 | 30038.461 | 50715 | 43155 | 43155 | 1.767 | H1-1b |
| 53 | M114 | PIPE_2.5 | 0.097 | 48 | 75 | 0.094 | 6 | | 2 | 30038.461 | 50715 | 43155 | 43155 | 1.795 | H1-1b |
| 54 | M14 | L2.5x2.5x3 | 0.107 | 27.5 | 2 | 0.093 | 55 | y | 12 | 14632.678 | 29192.4 | 10470.885 | 20138.433 | 1.082 | H2-1 |
| 55 | M85 | 6"x0.375" Plate | 0.215 | 5.75 | 5 | 0.09 | 5.75 | y | 9 | 62722.329 | 72900 | 6834.391 | 109350 | 1.469 | H1-1b |
| 56 | M86 | 6"x0.375" Plate | 0.22 | 5.75 | 7 | 0.09 | 5.75 | y | 3 | 62722.329 | 72900 | 6834.391 | 109350 | 1.455 | H1-1b |
| 57 | M54 | 6"x0.375" Plate | 0.215 | 5.75 | 11 | 0.09 | 5.75 | y | 7 | 62722.329 | 72900 | 6834.391 | 109350 | 1.472 | H1-1b |
| 58 | M16 | 6"x0.375" Plate | 0.22 | 5.75 | 3 | 0.088 | 5.75 | y | 11 | 62722.329 | 72900 | 6834.391 | 109350 | 1.454 | H1-1b |
| 59 | M15 | 6"x0.375" Plate | 0.228 | 5.75 | 13 | 0.088 | 5.75 | y | 5 | 62722.329 | 72900 | 6834.391 | 109350 | 1.407 | H1-1b |
| 60 | M5 | HSS4.5X4.5X3 | 0.052 | 20 | 98 | 0.088 | 8.958 | y | 109 | 120246.398 | 121302 | 194994 | 194994 | 1.448 | H1-1b |
| 61 | M75 | HSS4.5X4.5X3 | 0.051 | 20 | 127 | 0.088 | 8.958 | y | 129 | 120246.398 | 121302 | 194994 | 194994 | 1.448 | H1-1b |
| 62 | M74 | PIPE_2.0 | 0.244 | 30 | 8 | 0.087 | 38 | | 3 | 14916.096 | 32130 | 22459.5 | 22459.5 | 3 | H1-1b |
| 63 | M4 | PIPE_2.0 | 0.249 | 30 | 12 | 0.085 | 38 | | 12 | 14916.096 | 32130 | 22459.5 | 22459.5 | 2.48 | H1-1b |
| 64 | M41 | HSS4X4X4 | 0.305 | 0 | 37 | 0.084 | 0 | y | 81 | 133649.326 | 139518 | 194166 | 194166 | 1.874 | H1-1b |
| 65 | M110 | PIPE_2.0 | 0.335 | 30 | 8 | 0.076 | 30 | | 6 | 14916.096 | 32130 | 22459.5 | 22459.5 | 3 | H1-1b |
| 66 | M35 | PIPE_2.0 | 0.335 | 30 | 4 | 0.076 | 30 | | 6 | 14916.096 | 32130 | 22459.5 | 22459.5 | 3 | H1-1b |
| 67 | M107 | PIPE_2.0 | 0.354 | 30 | 13 | 0.076 | 30 | | 2 | 14916.096 | 32130 | 22459.5 | 22459.5 | 2.65 | H1-1b |
| 68 | M38 | PIPE_2.0 | 0.338 | 30 | 12 | 0.076 | 30 | | 10 | 14916.096 | 32130 | 22459.5 | 22459.5 | 3 | H1-1b |
| 69 | M118 | PIPE_2.0 | 0.335 | 30 | 4 | 0.076 | 30 | | 2 | 14916.096 | 32130 | 22459.5 | 22459.5 | 2.543 | H1-1b |
| 70 | M115 | PIPE_2.0 | 0.335 | 30 | 8 | 0.076 | 30 | | 10 | 14916.096 | 32130 | 22459.5 | 22459.5 | 3 | H1-1b |
| 71 | M2 | PIPE_3.0 | 0.1 | 48 | 37 | 0.066 | 3 | | 12 | 60482.561 | 65205 | 68985 | 68985 | 1 | H1-1b |
| 72 | M43 | HSS4.5X4.5X3 | 0.044 | 8.958 | 12 | 0.053 | 8.958 | y | 225 | 120246.398 | 121302 | 194994 | 194994 | 1.455 | H1-1b |
| 73 | M125 | PIPE_2.0 | 0.043 | 18 | 10 | 0.008 | 18 | | 10 | 26521.424 | 32130 | 22459.5 | 22459.5 | 2.402 | H1-1b |

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

## BOLT CONNECTION CALCULATION

## BOLT PROPERTIES

| | |
|---|---|
| ***Date:*** | 9/27/2021 |
| ***Site:*** | *BOBDL00107A* |
| ***Engineer:*** | *DVA* |
| ***Project No:*** | *2039-Z5555C* |
| ***Connection Location:*** | *Arm to Collar* |

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

| | | |
|---|---|---|
| Net Bolt Cross-Sectional Area, **An** | 0.226 | $in^2$ |
| Gross Bolt Cross-Sectional Area, **Ag** | 0.307 | $in^2$ |
| Tensile Steel Strength (per bolt), $\varphi R_{nt}$ | 20340 | lbs |
| Shear Steel Strength (per bolt), $\varphi R_{nv}$ | 12425 | lbs |

INFINIGY

FROM ZERO TO INFINIGY

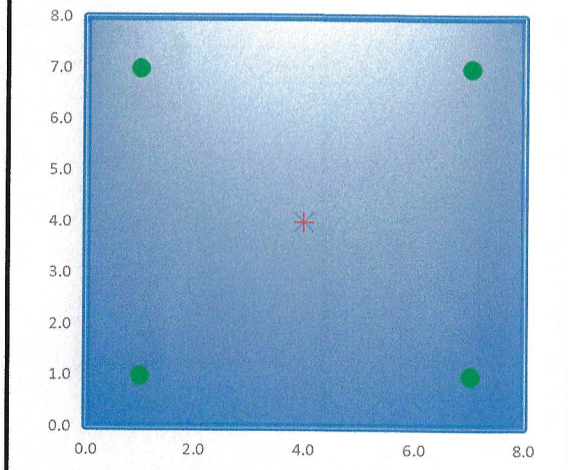
the solutions are endless

## BOLT CONNECTION CALCULATION

## BOLT GROUP CHECK

| | |
|---|---|
| ***Date:*** | *9/27/2021* |
| ***Site:*** | *BOBDL00107A* |
| ***Engineer:*** | *DVA* |
| ***Project No:*** | *2039-Z5555C* |
| ***Connection Location:*** | *Arm to Collar* |

***Bolt Group Pattern***




| ***Loads Properties*** | | | | | |
|---|---|---|---|---|---|
| Controlling LC: | 97 | | | | |
| Load Point Number: | N1 | | | | |
| X-Coordinate (in.) | 4.00 | | | | |
| Y-Coordinate (in.) | 4.00 | | | | |
| Z-Coordinate (in.) | 0.00 | | | | |
| Shear Load, Px (lbs) | 93.000 | 0 | 0 | 0 | 0 |
| Shear Load, Py (lbs) | 1627.000 | 0 | 0 | 0 | 0 |
| Axial Load, Pz (lbs) | 123.000 | 0 | 0 | 0 | 0 |
| Moment, Mx (lb-in) | -60911.000 | 0 | 0 | 0 | 0 |
| Moment, My (lb-in) | -2045.000 | 0 | 0 | 0 | 0 |
| Moment, Mz (lb-in) | 14254.000 | 0 | 0 | 0 | 0 |

| ***Member Properties*** | ***X*** | ***Y*** |
|---|---|---|
| Start Coordinates: | 0.0 | 0.0 |
| Dimentions: | 8.0 | 8.0 |

Number of Bolts: 4

| | | ***Bolt Coordinates*** | | ***Bolt Loads*** | | ***Steel Bolt Usage*** | | | |
|---|---|---|---|---|---|---|---|---|---|
| ***No.*** | ***Bolt Type*** | ***Xo (in)*** | ***Yo (in)*** | ***Axial (lbs)*** | ***Shear (lbs)*** | ***Tension*** | ***Shear*** | ***Combined*** | ***Max. Capacity*** |
| 1 | Main Type | 1.0 | 1.0 | 4936.25 | 1151.95 | 24.3% | 9.3% | 24.3% | 24.3% |
| 2 | Main Type | 7.0 | 1.0 | 5277.08 | 600.58 | 25.9% | 4.8% | 25.9% | 25.9% |
| 3 | Main Type | 1.0 | 7.0 | -5215.58 | 1175.68 | 0.0% | 9.5% | 9.5% | 9.5% |
| 4 | Main Type | 7.0 | 7.0 | -4874.75 | 644.92 | 0.0% | 5.2% | 5.2% | 5.2% |

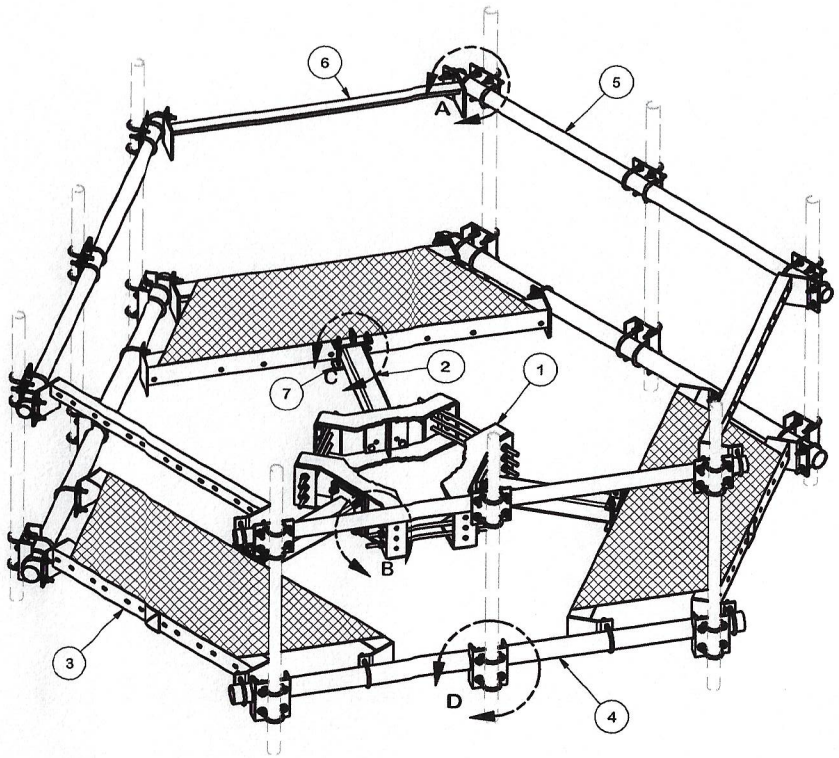
***Bolt Group Properties:***

| | | |
|---|---|---|
| Xc = | 4.00 | in. |
| Yc = | 4.00 | in. |
| Ic.y = | 11.04 | in.^2 |
| Ic.x = | 11.04 | in.^2 |
| Ic.xy = | 22.09 | in.^2 |

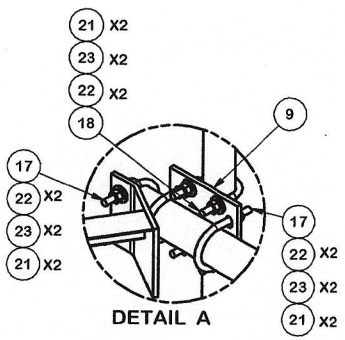
***Loads at Center of Gravity of Bolt Group:***

| | | |
|---|---|---|
| Pz = | 123.00 | lbs |
| Px = | 93.00 | lbs |
| Py = | 1627.00 | lbs |
| Mx = | -60911.00 | lb-in |
| My = | -2045.00 | lb-in |
| Mz = | 14254.00 | lb-in |

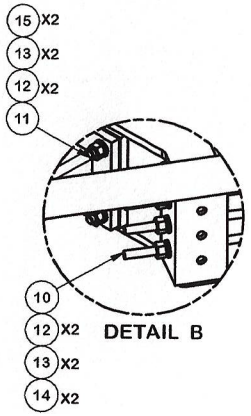
***Total Capacity of Bolt Group:*** 25.9%




| PARTS LIST | | | | | | |
|---|---|---|---|---|---|---|
| ITEM | QTY | PART NO. | PART DESCRIPTION | LENGTH | UNIT WT. | NET WT. |
| 1 | 3 | X-LWRM | RING MOUNT WELDMENT | | 68.81 | 206.42 |
| 2 | 3 | X-SNP-ST8 | SNB8 TELESCOPING ARM FOR GRATING | | 60.39 | 181.16 |
| 3 | 3 | X-SNPC | CORNER GRATING WELDMENT | | 194.33 | 582.99 |
| 4 | 3 | P396 | 3" SCH. 40 PIPE (3.5" O.D. x 0.216" WALL) A500 | 96.000 in | 60.75 | 182.25 |
| 5 | 3 | P3096 | 2-7/8" OD X 96" Sch 40 Galvanized Pipe | | 46.45 | 139.36 |
| 6 | 3 | X-SNP-HRA | CORNER BRACKET FOR SNPX PLATFORMS | | 25.95 | 77.86 |
| 7 | 3 | X-SNPP1G | CLAMP PLATE | 7.250 in | 2.03 | 6.10 |
| 8 | 9 | X-SP219 | SMALL SUPPORT CROSS PLATE | 8.250 in | 8.61 | 77.50 |
| 9 | 9 | SCX2 | CROSSOVER PLATE | 7.000 in | 4.80 | 43.17 |
| 10 | 9 | G58R-48 | 5/8" x 48" THREADED ROD (HDG.) | | 0.55 | 4.94 |
| 10 | 9 | G58R-24 | 5/8" x 24" THREADED ROD (HDG.) | | 0.55 | 4.94 |
| 11 | 12 | A58234 | 5/8" x 2-3/4" HDG A325 HEX BOLT | 2.75 | 0.36 | 4.27 |
| 12 | 30 | A58FW | 5/8" HDG A325 FLATWASHER | | 0.03 | 1.02 |
| 13 | 30 | G58LW | 5/8" HDG LOCKWASHER | | 0.03 | 0.78 |
| 14 | 18 | A58NUT | 5/8" HDG A325 HEX NUT | | 0.13 | 2.34 |
| 15 | 12 | G58NUT | 5/8" HDG HEAVY 2H HEX NUT | | 0.13 | 1.56 |
| 16 | 12 | X-UB1358 | 1/2" X 3-5/8" X 5-1/2" X 3" U-BOLT (HDG.) | | 0.73 | 8.78 |
| 17 | 24 | X-UB1300 | 1/2" X 3" X 5" X 2" U-BOLT (HDG.) | | 0.73 | 17.56 |
| 18 | 36 | X-UB1212 | 1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.) | | 0.73 | 26.34 |
| 19 | 6 | G12065 | 1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD | 7-1/2 | 0.41 | 2.46 |
| 20 | 18 | X-UB1306 | 1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.) | | 0.73 | 13.17 |
| 21 | 186 | G12NUT | 1/2" HDG HEAVY 2H HEX NUT | | 0.07 | 13.32 |
| 22 | 180 | G12FW | 1/2" HDG USS FLATWASHER | | 0.03 | 6.13 |
| 23 | 186 | G12LW | 1/2" HDG LOCKWASHER | | 0.01 | 2.59 |
| 24 | 9 | A | 2" SCH. 40 PIPE (2.375" O.D. x 0.154" WALL) A500 | B | C | D |



DETAIL A



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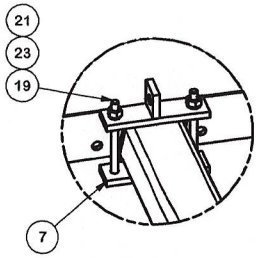

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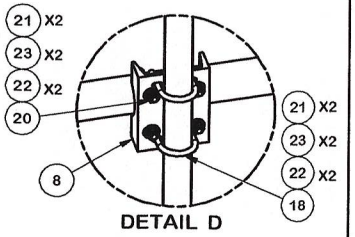


DETAIL D

| 2-3/8" O.D. VERTICAL MOUNTING PIPES | | | | | |
|---|---|---|---|---|---|
| ASSEMBLY NO. | PART NO. "A" | LENGTH "B" | UNIT WEIGHT "C | NET WEIGHT "D" | TOTAL WEIGHT |
| SNP8HR-372 | P272 | 6'-0" | 2307 | 207.63 | 1717.07 |
| SNP8HR-384 | P284 | 7'-0" | 2691 | 242.19 | 1751.63 |
| SNP8HR-396 | P296 | 8'-0" | 3076 | 276.84 | 1786.28 |
| SNP8HR-3126 | P2126 | 10'-6" | 4075 | 366.75 | 1876.19 |

## TOLERANCE NOTES

**TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:**
**SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")***
**DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES**
**LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES**
**BENDS ARE ± 1/2 DEGREE**
**ALL OTHER MACHINING *(± 0.030")***
**ALL OTHER ASSEMBLY *(± 0.060")***



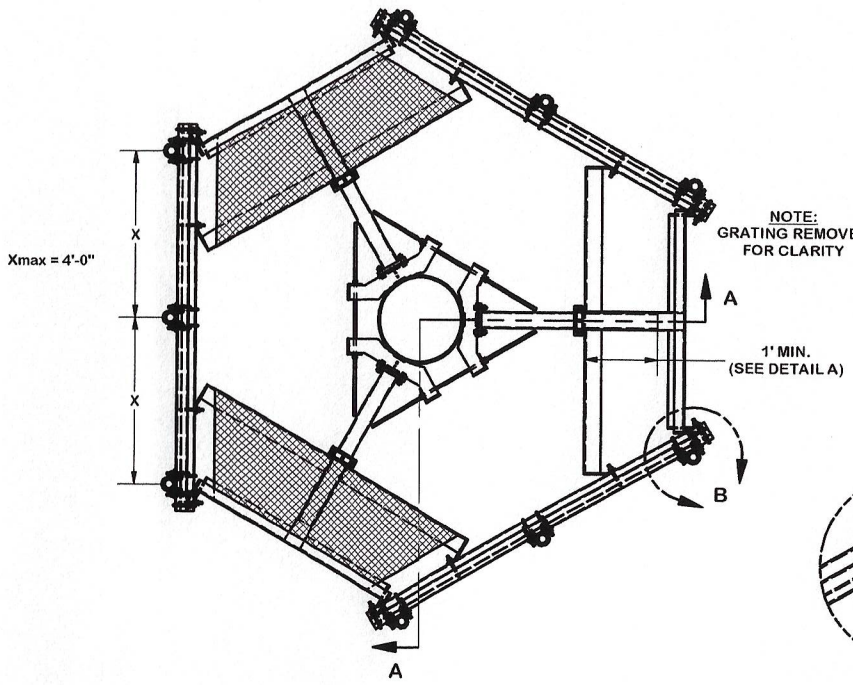
DESCRIPTION: 8' SNUB NOSE PLATFORM WITH HANDRAIL

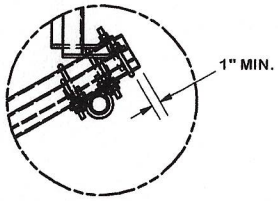
SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

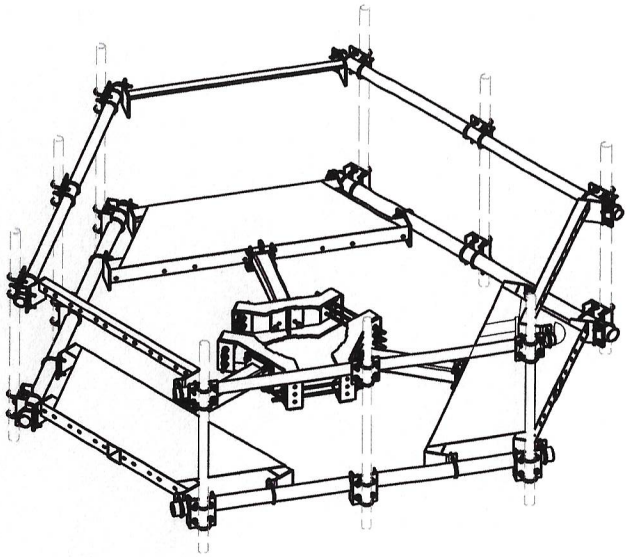
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

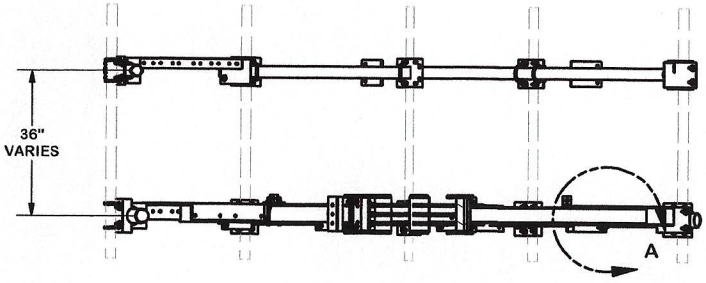
| CPD NO. | | DRAWN BY | ENG. APPROVAL | PART NO. | PAGE |
|---|---|---|---|---|---|
| | | CEK 11/19/2014 | | SEE ASSEMBLY NO. | 1 OF 2 |
| CLASS | SUB | DRAWING USAGE | CHECKED BY | DWG. NO. | |
| 81 | 02 | CUSTOMER | BMC 11/21/2014 | SNP8HR-3XX | |



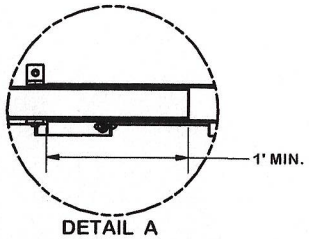




DETAIL B

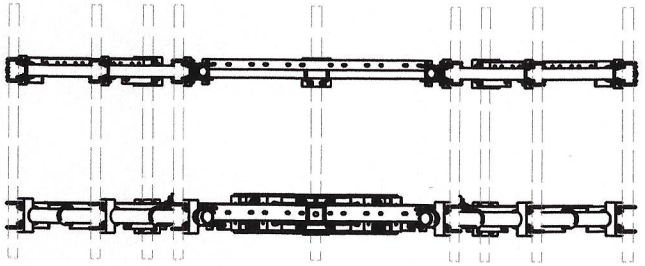





SECTION A-A




DETAIL A



## TOLERANCE NOTES

**TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:**
**SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")***
**DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES**
**LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES**
**BENDS ARE ± 1/2 DEGREE**
**ALL OTHER MACHINING *(± 0.030")***
**ALL OTHER ASSEMBLY *(± 0.060")***



| DESCRIPTION | | | |
|---|---|---|---|
| 8' SNUB NOSE PLATFORM WITH HANDRAIL | | | |
| CPD NO. | DRAWN BY | ENG. APPROVAL | PART NO. |
| | CEK 11/19/2014 | | SEE ASSEMBLY NO. |
| CLASS / SUB | DRAWING USAGE | CHECKED BY | DWG. NO. |
| 81 / 02 | CUSTOMER | BMC 11/21/2014 | SNP8HR-3XX |

SITE PRO 1
A valmont COMPANY
Engineering Support Team:
1-888-753-7446
Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

# Exhibit F

## Power Density/RF Emissions Report

Fox Hill Telecom

# Radio Frequency Emissions Analysis Report

## Site ID: BOBDL00107A

BOBDL00107A
82 Lovely Street
Unionville, CT 06085

**October 21, 2021**

**Fox Hill Telecom Project Number: 210615**

| Site Compliance Summary | |
|---|---|
| Compliance Status: | **COMPLIANT** |
| Site total MPE% of FCC general population allowable limit: | **36.76 %** |

Fox Hill Telecom

October 21, 2021

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOBDL00107A – BOBDL00107A**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed radio installation for **Dish Wireless, LLC ("Dish")** facility located at **82 Lovely Street, Unionville, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and antenna installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were performed for the proposed radio system installation for **Dish** on the subject site located at **82 Lovely Street, Unionville, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since **Dish** is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused toward the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

| Technology | Frequency Band | Channel Count | Transmit Power per Channel (W) |
|---|---|---|---|
| 5G | 600 MHz | 4 | 61.5 |
| 5G | 1900 MHz (PCS) | 4 | 40 |
| 5G | 2100 MHz (AWS) | 4 | 40 |

*Table 1: Channel Data Table*

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

| Sector | Antenna Number | Antenna Make / Model | Antenna Centerline (ft) |
|---|---|---|---|
| A | 1 | JMA MX08FRO665-21 | 88 |
| B | 1 | JMA MX08FRO665-21 | 88 |
| C | 1 | JMA MX08FRO665-21 | 88 |

*Table 2: Antenna Data*

All calculations were done with respect to uncontrolled / general population threshold limits.

## RESULTS

Per the calculations completed for the proposed **Dish** configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

| Antenna ID | Antenna Make / Model | Frequency Bands | Antenna Gain (dBd) | Channel Count | Total TX Power (W) | ERP (W) | MPE % |
|---|---|---|---|---|---|---|---|
| Antenna A1 | JMA MX08FRO665-21 | 600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS) | 11.45 / 16.15 / 16.65 | 12 | 566 | 17,426.72 | 12.08 |
| | | | | | | Sector A Composite MPE% | **12.08** |
| Antenna B1 | JMA MX08FRO665-21 | 600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS) | 11.45 / 16.15 / 16.65 | 12 | 566 | 17,426.72 | 12.08 |
| | | | | | | Sector B Composite MPE% | **12.08** |
| Antenna C1 | JMA MX08FRO665-21 | 600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS) | 11.45 / 16.15 / 16.65 | 12 | 566 | 17,426.72 | 12.08 |
| | | | | | | Sector C Composite MPE% | **12.08** |

*Table 3: Dish Emissions Levels*

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum **Dish** MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each **Dish** Sector as well as the composite MPE value for the site.

| **Site Composite MPE%** | |
|---|---|
| **Carrier** | **MPE%** |
| Dish – Max Per Sector Value | **12.08 %** |
| AT&T | 24.68 % |
| **Site Total MPE %:** | **36.76 %** |

*Table 4: All Carrier MPE Contributions*

| | |
|---|---|
| Dish Sector A Total: | 12.08 % |
| Dish Sector B Total: | 12.08 % |
| Dish Sector C Total: | 12.08 % |
| | |
| Site Total: | 36.76 % |

*Table 5: Site MPE Summary*

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

| Dish _ Frequency Band / Technology Max Power Values (Per Sector) | # Channels | Watts ERP (Per Channel) | Height (feet) | Total Power Density ($\mu W/cm^2$) | Frequency (MHz) | Allowable MPE ($\mu W/cm^2$) | Calculated % MPE |
|---|---|---|---|---|---|---|---|
| Dish 600 MHz 5G | 4 | 858.77 | 88 | 18.37 | 600 MHz | 400 | 4.59% |
| Dish 1900 MHz (PCS) 5G | 4 | 1,648.39 | 88 | 35.25 | 1900 MHz (PCS) | 1000 | 3.53% |
| Dish 2100 MHz (AWS) 5G | 4 | 1,849.52 | 88 | 39.55 | 2100 MHz (AWS) | 1000 | 3.96% |
| | | | | | | **Total:** | **12.08%** |

*Table 6: Dish Maximum Sector MPE Power Values*

Fox Hill Telecom

## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the Dish facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

| Dish Sector | Power Density Value (%) |
|---|---|
| Sector A: | 12.08 % |
| Sector B: | 12.08 % |
| Sector C: | 12.08 % |
| Dish Maximum Total (per sector): | 12.08 % |
| | |
| Site Total: | 36.76 % |
| | |
| Site Compliance Status: | **COMPLIANT** |

The anticipated composite MPE value for this site assuming all carriers present is **36.76 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

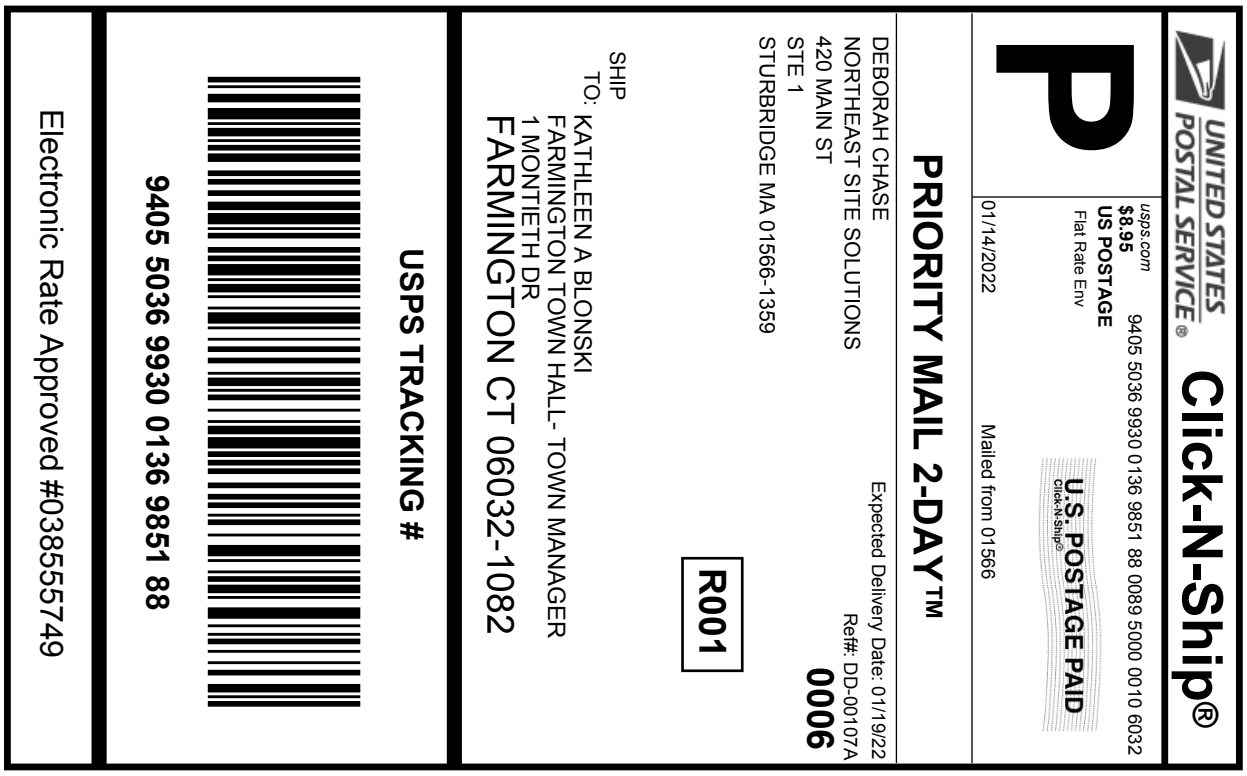
Scott Heffernan
Principal RF Engineer
**Fox Hill Telecom, Inc**
Holden, MA 01520
(978)660-3998

# Exhibit G

## Letter of Authorization

# Exhibit H

**Recipient Mailings**




*Cut on dotted line.*

## Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

## Click-N-Ship® Label Record

**USPS TRACKING # :**
**9405 5036 9930 0136 9851 88**

| | |
|---|---|
| Trans. #: | 554115270 |
| Print Date: | 01/14/2022 |
| Ship Date: | 01/14/2022 |
| Expected Delivery Date: | 01/19/2022 |

| | |
|---|---|
| Priority Mail® Postage: | **$8.95** |
| Total: | **$8.95** |

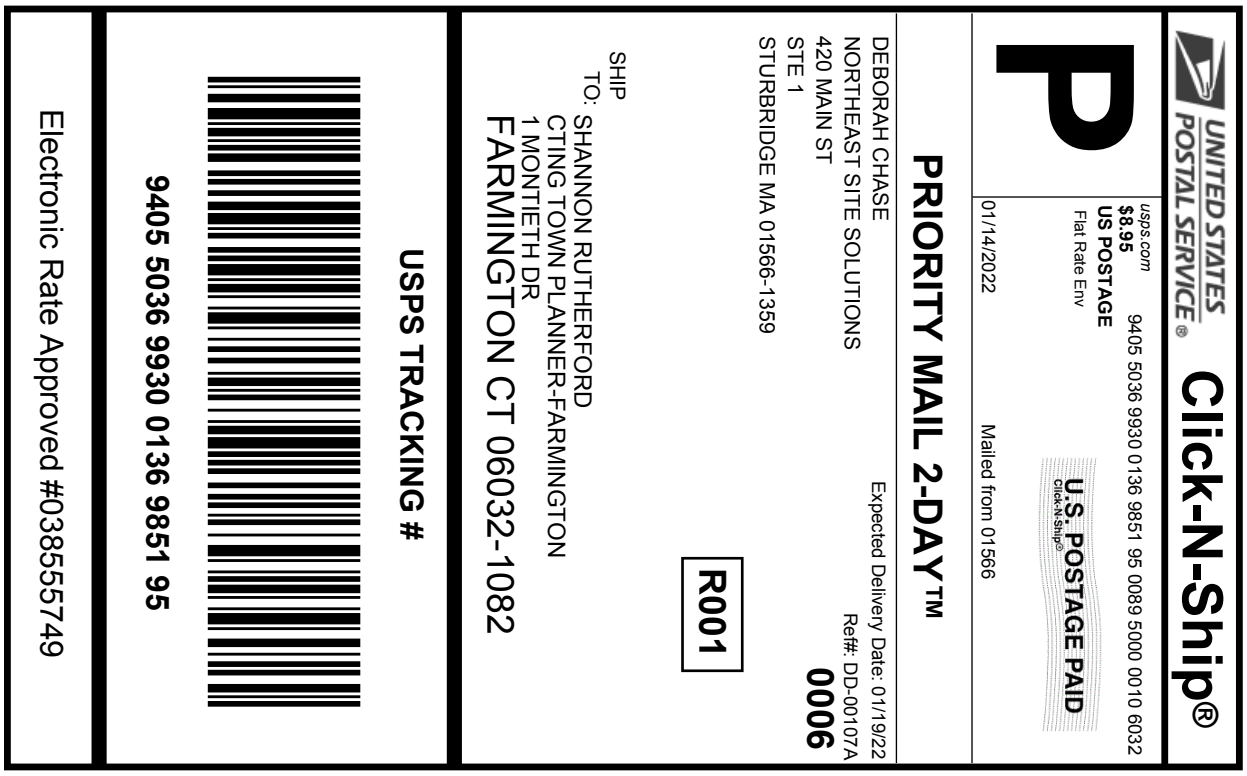
**From:** DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DD-00107A

**To:** KATHLEEN A BLONSKI
FARMINGTON TOWN HALL- TOWN MANAGER
1 MONTIETH DR
FARMINGTON CT 06032-1082

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

*Thank you for shipping with the United States Postal Service!*
*Check the status of your shipment on the USPS Tracking® page at usps.com*

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2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

## Click-N-Ship® Label Record

**USPS TRACKING # :**
**9405 5036 9930 0136 9851 95**

| | |
|---|---|
| Trans. #: | 554115270 |
| Print Date: | 01/14/2022 |
| Ship Date: | 01/14/2022 |
| Expected Delivery Date: | 01/19/2022 |

| | |
|---|---|
| Priority Mail® Postage: | **$8.95** |
| Total: | **$8.95** |

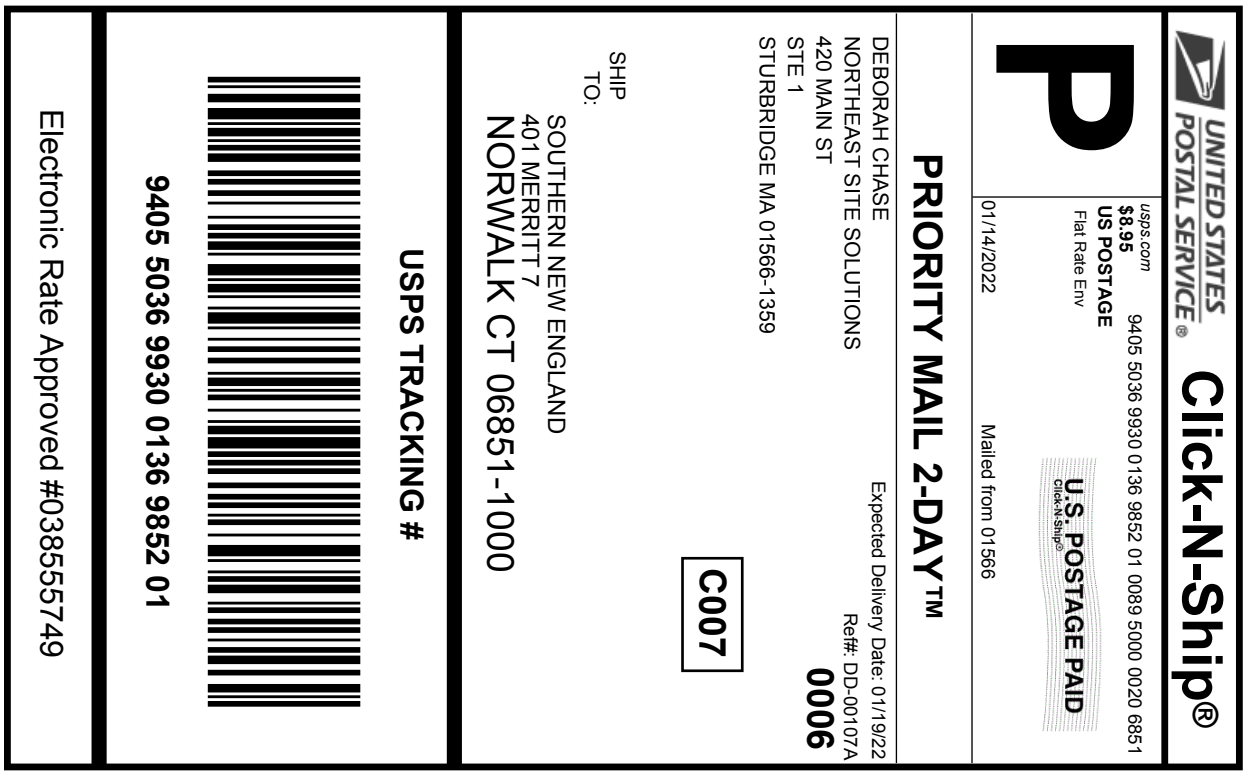
**From:** DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DD-00107A

**To:** SHANNON RUTHERFORD
CTING TOWN PLANNER-FARMINGTON
1 MONTIETH DR
FARMINGTON CT 06032-1082

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

*Thank you for shipping with the United States Postal Service!*
*Check the status of your shipment on the USPS Tracking® page at usps.com*




*Cut on dotted line.*

## Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

## Click-N-Ship® Label Record

**USPS TRACKING # :**
**9405 5036 9930 0136 9852 01**

| | |
|---|---|
| Trans. #: | 554115270 |
| Print Date: | 01/14/2022 |
| Ship Date: | 01/14/2022 |
| Expected Delivery Date: | 01/19/2022 |

| | |
|---|---|
| Priority Mail® Postage: | **$8.95** |
| Total: | **$8.95** |

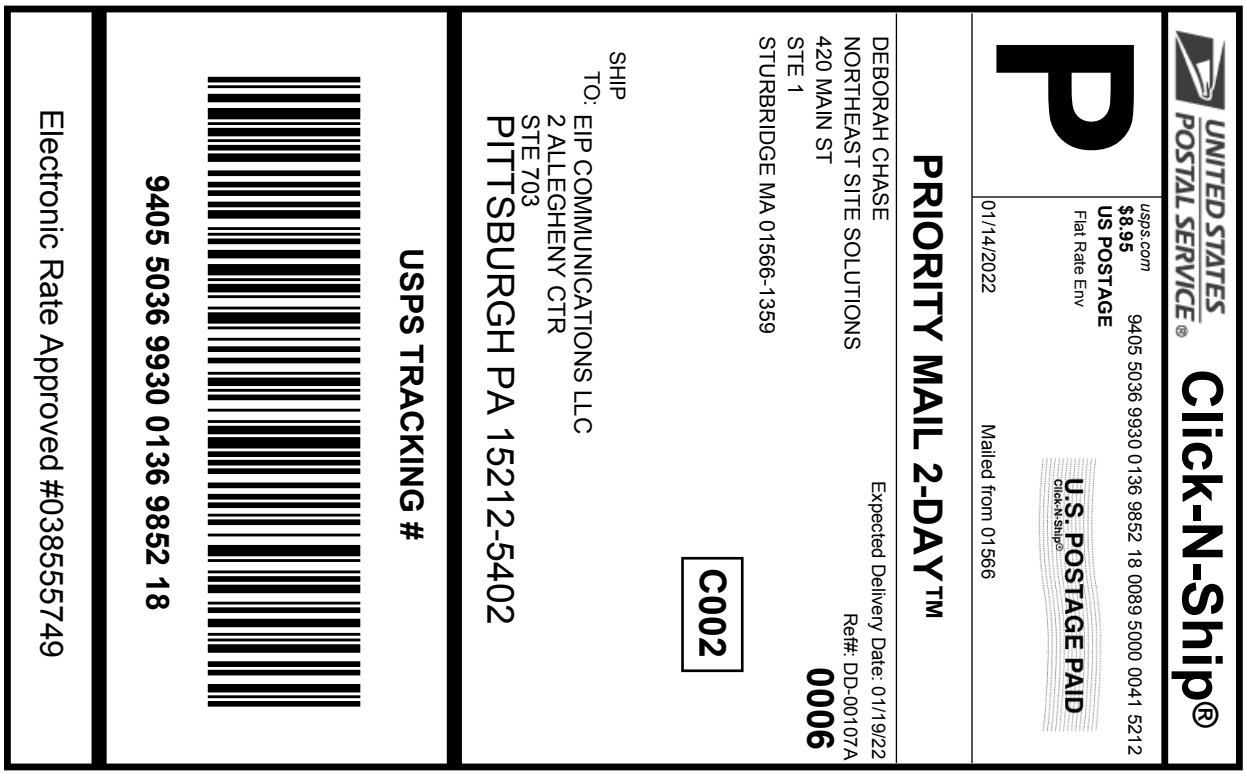
**From:** DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DD-00107A

**To:** SOUTHERN NEW ENGLAND
401 MERRITT 7
NORWALK CT 06851-1000

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

*Thank you for shipping with the United States Postal Service!*
*Check the status of your shipment on the USPS Tracking® page at usps.com*




*Cut on dotted line.*

## Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

## Click-N-Ship® Label Record

**USPS TRACKING # :**
**9405 5036 9930 0136 9852 18**

| | |
|---|---|
| Trans. #: | 554115270 |
| Print Date: | 01/14/2022 |
| Ship Date: | 01/14/2022 |
| Expected Delivery Date: | 01/19/2022 |

| | |
|---|---|
| Priority Mail® Postage: | **$8.95** |
| Total: | **$8.95** |

**From:** DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DD-00107A

**To:** EIP COMMUNICATIONS LLC
2 ALLEGHENY CTR
STE 703
PITTSBURGH PA 15212-5402

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

*Thank you for shipping with the United States Postal Service!*
*Check the status of your shipment on the USPS Tracking® page at usps.com*

Doc 1 of 7A

UNITED STATES POSTAL SERVICE.

UNIONVILLE
24 MILL ST
UNIONVILLE, CT 06085-9998
(800)275-8777

01/18/2022 03:25 PM

| Product | Qty | Unit Price | Price |
|---|---|---|---|
| Prepaid Mail<br>Farmington, CT 06032<br>Weight: 0 lb 7.50 oz<br>Acceptance Date:<br>Tue 01/18/2022<br>Tracking #:<br>9405 5036 9930 0136 9851 88 | 1 | | $0.00 |
| Prepaid Mail<br>Pittsburgh, PA 15212<br>Weight: 0 lb 7.50 oz<br>Acceptance Date:<br>Tue 01/18/2022<br>Tracking #:<br>9405 5036 9930 0136 9852 18 | 1 | | $0.00 |
| Prepaid Mail<br>Farmington, CT 06032<br>Weight: 0 lb 7.40 oz<br>Acceptance Date:<br>Tue 01/18/2022<br>Tracking #:<br>9405 5036 9930 0136 9851 95 | 1 | | $0.00 |
| Prepaid Mail<br>Norwalk, CT 06851<br>Weight: 0 lb 7.50 oz<br>Acceptance Date:<br>Tue 01/18/2022<br>Tracking #:<br>9405 5036 9930 0136 9852 01 | 1 | | $0.00 |
| Grand Total: | | | $0.00 |