

## PROJECT NARRATIVE

May 10, 2022

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

Re: Request of DISH Wireless LLC for an Order to Approve the Shared Use of an Existing Tower  
320 Old Stagecoach Road, Ridgefield, CT 06612  
Latitude: 41°19'49.1" / Longitude: -73°31'6"

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes ("C.G.S.") §16-50aa, as amended, DISH Wireless LLC ("DISH") hereby requests an order from the Connecticut Siting Council ("Council") to approve the shared use by DISH of an existing telecommunication tower at 320 Old Stagecoach Road in Ridgefield (the "Property"). The existing 149-foot monopole tower is owned by American Tower Corporation ("ATC"). The underlying property is owned by American Towers Corporation. DISH requests that the Council find that the proposed shared use of the ATC tower satisfies the criteria of C.G.S. §16-50aa and issue an order approving the proposed shared use. A copy of this filing is being sent to Rudy Marconi, First Selectman for the Town of Ridgefield, Jason Celestino, Town of Ridgefield Building Official and American Towers Corporation as the property owner.

## **Background**

This facility was originally approved by the Council under Docket NO. 445 on September 4, 2014. A copy of this decision is included in this filing. The existing ATC facility consists of a 149-foot monopole tower located within an existing leased area. AT&T Mobility currently maintains antennas at the 146-foot level. Verizon Wireless currently maintains antennas at the 136-foot level. T-Mobile currently maintains antennas at the 126-foot level. The Town of Ridgefield currently maintains antennas at the 66-foot level. Equipment associated with these antennas are located at various positions within the tower and compound.

DISH is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. DISH and ATC have agreed to the proposed shared use of the 320 Old Stagecoach Road tower pursuant to mutually acceptable terms and conditions. Likewise, DISH and ATC have agreed to the proposed installation of equipment cabinets on the ground within the existing compound. ATC has authorized DISH to apply for all necessary permits and approvals that may be required to share the existing tower.  
(See attached Letter of Authorization)

DISH proposes to install three (3) antennas, (1) Tower platform mount, (6) Remote radio units at the 113-foot level along with, (1) over voltage protection device (OVP) and (1) Hybrid cable. DISH will install an equipment cabinet on a 5'x7' equipment platform. DISH's Construction Drawings provide project specifications for all proposed site improvement locations.

The construction drawings also include specifications for DISH's proposed antenna and groundwork.

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

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

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

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

1. The proposed installation will have no visual impact on the area of the tower. DISH's equipment cabinet would be installed within the existing facility compound. DISH's shared use of this tower therefore will not cause any significant change or alteration in the physical or environmental characteristics of the existing site.
2. Operation of DISH's antennas at this site would not exceed the RF emissions standard adopted by the Federal Communications Commission ("FCC"). Included in the EME report of this filing are the approximation tables that demonstrate that DISH's proposed facility will operate well within the FCC RF emissions safety standards.
3. Under ordinary operating conditions, the proposed installation would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the proposed installations would not generate any increased traffic to the ATC facility other than periodic maintenance. The proposed shared use of the ATC tower, would, therefore, have a minimal environmental effect, and is environmentally feasible.

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

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

### **Conclusion**

For the reasons discussed above, the proposed shared use of the existing ATC tower at 320 Old Stagecoach Road satisfies the criteria stated in C.G.S. §16-50aa and advances the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the proposed shared use.

Sincerely,

*David Hoogasian*

**David Hoogasian**  
*Project Manager*



## LETTER OF AUTHORIZATION



### LETTER OF AUTHORIZATION

I, Margaret Robinson, Senior Counsel for American Tower\*, owner/operator of the tower facility located at the address identified above (the “Tower Facility”), do hereby authorize **DISH WIRELESS L.L.C.**, its successors and assigns, and/or its agent, **NETWORK BUILDING + CONSULTING** (collectively, the “Licensee”) to act as American Tower’s non-exclusive agent for the sole purpose of filing and consummating any land-use or building permit application(s) as may be required by the applicable permitting authorities for Licensee’s telecommunications’ installation.

We understand that this application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by Licensee only of conditions related to Licensee’s installation and any such conditions of approval or modifications will be Licensee’s sole responsibility.

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

Project Number	Site Address	Customer Site Number	Tower Number	Site Name
13685414	5 High Ridge Park Road, Stamford CT	NJER01080B	302515	SMFR - North
13685427	1069 Connecticut Avenue, Bridgeport CT	NJER01130A	302469	Bridgeport CT 2
13688395	25 Meridian Ridge Drive, Newton CT	NJER01081B	302518	Newtown CT 3
13699598	100 Old Redding Road, Redding CT	NJER01161A	302522	Redding
13699607	22 Titicus Mtn Road, New Fairfield CT	NJER01162A	88014	New Fairfield
13700310	2 SUNNY LANE, Westport CT	NJER01082B	411189	CRANBURYSU CT
13700315	515 Morehouse Road, Easton CT	NJER01097B	207956	Easton
13700320	100 Pocono Road, Brookfield CT	NJER01099B	209271	Brookfield 2
13700322	320 Old Stagecoach Road, Ridgefield CT	NJER01100B	209115	Ridgefield 2
13705673	20 Post Office Lane, Westport CT	NJER01139B	302511	WSPT - South



**AMERICAN TOWER®**  
CORPORATION

13709691	180A Bayberry Lane, Westport CT	NJER01140B	310968	WSPT- WESTPORT REBUILD CT
13709692	1000 Trumbull Avenue, Bridgeport CT	NJER01150B	383598	Tartaglia
13710333	168 Catoona Lane, Stamford CT	NJER01123B	88018	Stamford (Katoona)
13712876	23 Stonybrook Road, Stratford CT	NJER02048A	283420	STONEBROOK RD CT
13735391	15 Soundview Avenue, Shelton CT	NJER02055A	415438	Brownson Country Club CT

Print Name: Margaret Robinson  
Senior Counsel, American Tower\*

**LETTER OF AUTHORIZATION**

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

**NOTARY BLOCK**

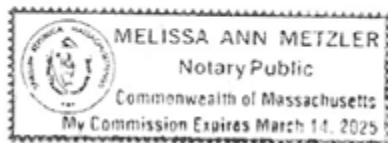
Commonwealth of MASSACHUSETTS

County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel for American Tower\*, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

WITNESS my hand and official seal, this 19<sup>th</sup> day of November 2021.

**NOTARY SEAL**



Notary Public   
My Commission Expires: March 14, 2025

## ORIGINAL FACILITY APPROVAL

<b>DOCKET NO. 445</b> - Homeland Towers, LLC and New Cingular	}	Connecticut
Wireless PCS, LLC application for a Certificate of Environmental	}	
Compatibility and Public Need for the construction, maintenance, and	}	Siting
operation of a telecommunications facility located at Ridgefield Town	}	
Assessor Map Parcel #D08-124, southwest of the intersection of Old	}	Council
Stagecoach Road and Aspen Ledges Road, Ridgefield, Connecticut.		September 4, 2014

### Decision and Order

Pursuant to Connecticut General Statutes §16-50p and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Homeland Towers, LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at Assessor Map Parcel #D08-124, located southwest of the intersection of Old Stagecoach Road and Aspen Ledges Road, Ridgefield, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of New Cingular Wireless PCS, LLC and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level. The height at the top of the uppermost antennas shall not exceed 162 feet above ground level.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Ridgefield for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
  - a) a final site plan(s) of site development to include specifications for the tower (including yield point), tower foundation, antennas, equipment compound, radio equipment, access road, utility line, emergency backup generator and landscaping;
  - b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;
  - c) a box turtle (*Terrapene carolina carolina*) protection plan;
  - d) a diagram showing the tower's two color scheme; and
  - e) provisions for a potential shared generator capable of being used by all facility tenants.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.
7. Any request for extension of the time period referred to in Condition 6 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Ridgefield. Any proposed modifications to this Decision and Order shall likewise be so served.
8. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council within 90 days from the one year period of cessation of service. The Certificate Holder may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period.
9. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.
10. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.
11. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

12. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.
13. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.
14. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.
15. This Certificate may be surrendered by the Certificate Holder upon written notification and approval by the Council.

We hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed in the Service List, dated March 20, 2014, and notice of issuance published in The Danbury News Times.

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

# ENGINEERING DRAWINGS





DISH Wireless L.L.C. SITE ID:

NJJER01100B

DISH Wireless L.L.C. SITE ADDRESS:

320 OLD STAGECOACH ROAD  
RIDGEFIELD, CT 06877

### CONNECTICUT CODE OF COMPLIANCE

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

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

### SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
LS1	SITE SURVEY
LS2	SITE SURVEY
LS3	SITE SURVEY
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION REMOVAL AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR 1.61000 (B)(7).

### SCOPE OF WORK

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

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

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

### SITE PHOTO



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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION



### GENERAL NOTES

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

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

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

### SITE INFORMATION

PROPERTY OWNER: VINCENT PELLICCIONE  
ADDRESS: P.O. BOX 662  
RIDGEFIELD, CT 06877

TOWER TYPE: MONOPOLE

TOWER CO SITE ID: 209115

TOWER APP NUMBER: 13700322

COUNTY: FAIRFIELD

LATITUDE (NAD 83): 41° 19' 49.1" N  
41.33030556 N

LONGITUDE (NAD 83): 73° 31' 6" W  
73.51833333 W

ZONING JURISDICTION: FAIRFIELD COUNTY

ZONING DISTRICT: AGRICULTURAL

PARCEL NUMBER: D08-0124

OCCUPANCY GROUP: U

CONSTRUCTION TYPE: II-B

POWER COMPANY: EVERSOURCE

TELEPHONE COMPANY: VERIZON, AT&T

### PROJECT DIRECTORY

APPLICANT: DISH Wireless L.L.C.  
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

TOWER OWNER: AMERICAN TOWER CORPORATION  
10 PRESIDENTIAL WAY  
WOBURN, MA 01801  
(781) 926-4500

SITE DESIGNER: B+T GROUP  
1717 S. BOULDER AVE, SUITE 300  
TULSA, OK 74119  
(918) 587-4630

SITE ACQUISITION: WILLIAM SNIDER  
william.snider@dish.com

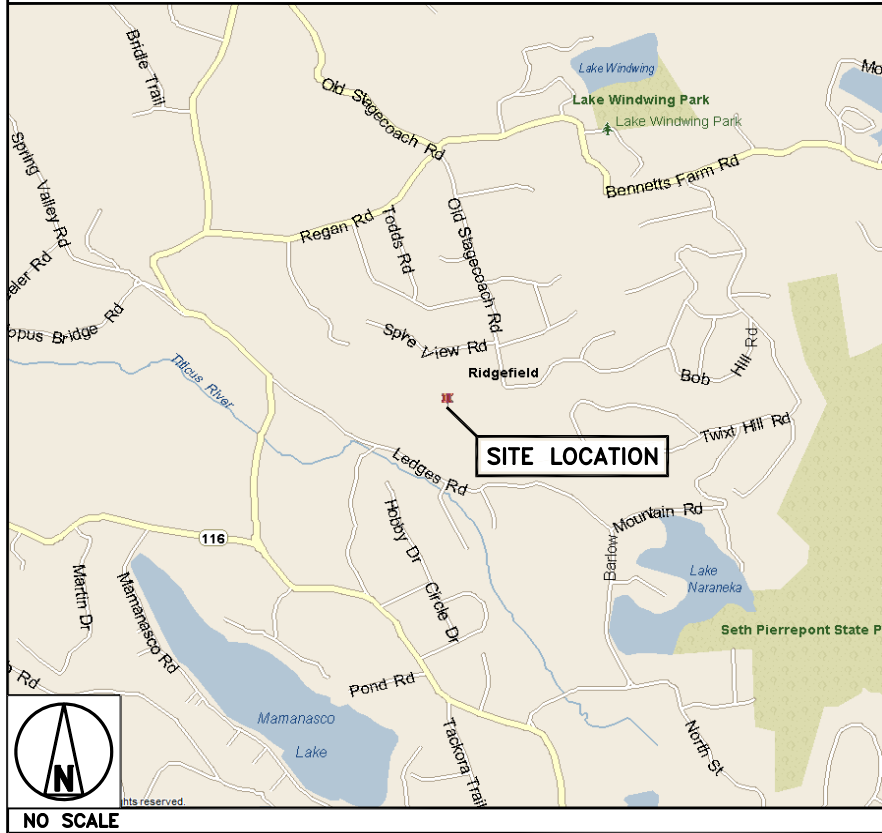
CONST. MANAGER: VICTOR CORREA  
victor.correa@dish.com

RF ENGINEER: MURUGABIRAN JAYAPAL  
murugabiran.jayapal@dish.com

### DIRECTIONS

DIRECTIONS FROM 3 ADP BOULEVARD ROSELAND, NJ 07068:  
DEPART 07068 ON LOCAL ROAD. TURN LEFT ONTO CR-611, THEN IMMEDIATELY TURN RIGHT ONTO BECKER FARM RD. TURN RIGHT ONTO CR-527. TAKE RAMP ONTO I-280. AT EXIT 17B, STAY ON I-280. TAKE RAMP ONTO I-95. STAY ON I-95. AT EXIT 73, STAY ON I-95. STAY ON I-95. AT EXIT 3, KEEP STRAIGHT ONTO RAMP. TAKE RAMP ONTO I-87. AT EXIT 4, TAKE RAMP ONTO CENTRAL PARK AVE. KEEP RIGHT ONTO RAMP. TAKE RAMP ONTO CROSS COUNTY PKWY. MERGE ONTO HUTCHINSON RIVER PKWY N. KEEP LEFT ONTO I-684. AT EXIT 7, TURN RIGHT ONTO RAMP. TURN RIGHT ONTO RT-116. TURN LEFT ONTO RT-116. BEAR RIGHT ONTO RT-116. BEAR LEFT ONTO RT-116. BEAR RIGHT ONTO RT-116. ROAD NAME CHANGES TO CT-116. TURN LEFT ONTO RIDGEBURY RD. BEAR RIGHT ONTO REGAN RD. TURN RIGHT ONTO SUGAR LOAF MOUNTAIN RD. TURN RIGHT ONTO OLD STAGECOACH RD. TURN RIGHT ONTO SPIRE VIEW RD. TURN LEFT ONTO LOCAL ROAD AND ARRIVE AT NJJER01100B.

### VICINITY MAP



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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

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

DRAWN BY: CHECKED BY: APPROVED BY:

SP BEL ---

RFDS REV #: 3

### CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	9/8/21	ISSUED FOR REVIEW
0	9/29/21	ISSUED FOR CONSTRUCTION

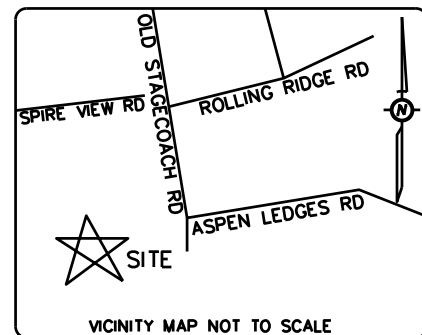
A&E PROJECT NUMBER  
155785.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJJER01100B  
320 OLD STAGECOACH  
ROAD  
RIDGEFIELD, CT 06877

SHEET TITLE  
TITLE SHEET

SHEET NUMBER  
T-1



CURVE TABLE					
CURVE	CHORD BRG	CHORD	RADIUS	ARC	DELTA
C5	N70° 33' 41"E	295.46	162.50	370.87	130° 45' 58"

NOTE: STONEWALL RUNS  
ALONG PROPERTY LINE

MAP OF TOMBSTONE HOLDING  
CORPORATION, SECTION 5

PARENT PARCEL INFO:  
INSITE TOWERS DEVELOPMENT LLC  
7 ASPEN LEDGES RD  
RIDGEFIELD CT 06877  
BOOK 993 PAGE 673  
TAX ID: D080124

ZONING: N/A

THIS PARCEL OF LAND LIES WITHIN FLOOD  
ZONE X WHICH IS NOT A SPECIAL FLOOD  
HAZARD AREA AS PER F.I.R.M. PANEL  
NUMBER: 09001C0209F  
EFFECTIVE DATE: 6/18/2010

#### LEGEND

- : SET 5/8" REBAR.
- : FOUND 1/2" REBAR AS NOTED.
- (---) : RECORD DESCRIPTION DATA.
- P.O.B. : POINT OF BEGINNING.
- P.O.C. : POINT OF COMMENCEMENT.
- : FENCE AS NOTED.
- OH— : OVER HEAD UTILITY LINES.
- ⊙ : WOOD UTILITY POLE.
- ⊞ : ELECTRIC TRANSFORMER.
- ⊞ : TELCO PEDESTAL.
- ⊞ : WATER METER.
- ⊞ : CABLE TELEVISION
- N/A : NOT AVAILABLE

AREA	SQUARE FEET	ACRE
PARENT PARCEL	138807	3.19
TOWER COMPOUND	4695	0.11

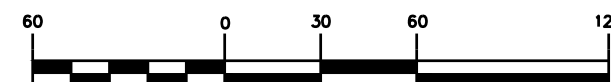
LEGAL DESCRIPTION: PARENT PARCEL (AS PROVIDED)

SITUATED IN THE TOWN OF RIDGEFIELD, COUNTY OF FAIRFIELD, STATE OF CONNECTICUT:

BEING DESIGNATED AS "PARCEL D-1" ON A CERTAIN MAP ENTITLED "RESUBDIVISION MAP SHOWING SECTION B - THE LEDGES OF RIDGEFIELD, RIDGEFIELD, CONNECTICUT" DATED MARCH 26, 2002 REVISED TO APRIL 9, 2003, PREPARED BY NEW ENGLAND LAND SURVEYING, P.C., AND FILED IN THE RIDGEFIELD TOWN CLERK'S OFFICE AS MAP NO. 8830.

TAX I.D. NUMBER: D080124

BEING THE SAME PROPERTY CONVEYED TO INSITE TOWERS DEVELOPMENT, LLC, GRANTEE, FROM INSITE TOWERS, LLC, GRANTOR, BY DEED RECORDED 11/14/2013, AS BOOK 993, PAGE 673 OF THE COUNTY RECORDS.



BAR GRAPH 1 inch = 60 ft.  
CT897 RIDGEFIELD.DWG

## AS-BUILT SURVEY

PREPARED FOR:



SITE: RIDGEFIELD

SITE ID: CT897

ADDRESS: 7 ASPEN LEDGES RD  
RIDGEFIELD CT 06877  
FAIRFIELD COUNTY

NATIONAL SURVEY SERVICES COORDINATION BY:

GEOLINE  
SURVEYING, INC.

13430 NW 104th Terrace, Suite A Alachua, FL 32615  
Office: (386) 418-0500 Fax: (386) 462-9986  
WWW.GEOLINEINC.COM

SURVEY WORK PERFORMED BY:

JONATHAN  
MURPHY

Professional Land Surveying

10505 Leafwood Place (919) 280-8189  
Raleigh NC 27613 FAX 995-9616  
E-MAIL: jonathan@murphygeomatics.com FIRM C-2757

#### SURVEYOR'S NOTES

1. BASIS OF BEARING:  
CT GRID NAD83
2. NO SUBSURFACE INVESTIGATION WAS PERFORMED TO LOCATE UNDERGROUND UTILITIES. UTILITIES SHOWN HEREON ARE LIMITED TO AND ARE PER OBSERVED EVIDENCE ONLY.
3. THIS SURVEY DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARENT PARCEL.
4. ALL VISIBLE TOWER EQUIPMENT AND IMPROVEMENTS ARE CONTAINED WITH IN THE DESCRIBED AREA UNLESS NOTED ON SURVEY.

#### SURVEYOR'S CERTIFICATION

I HEREBY CERTIFY TO:  
INSITE TOWERS & OLD REPUBLIC NATIONAL  
TITLE INSURANCE COMPANY.

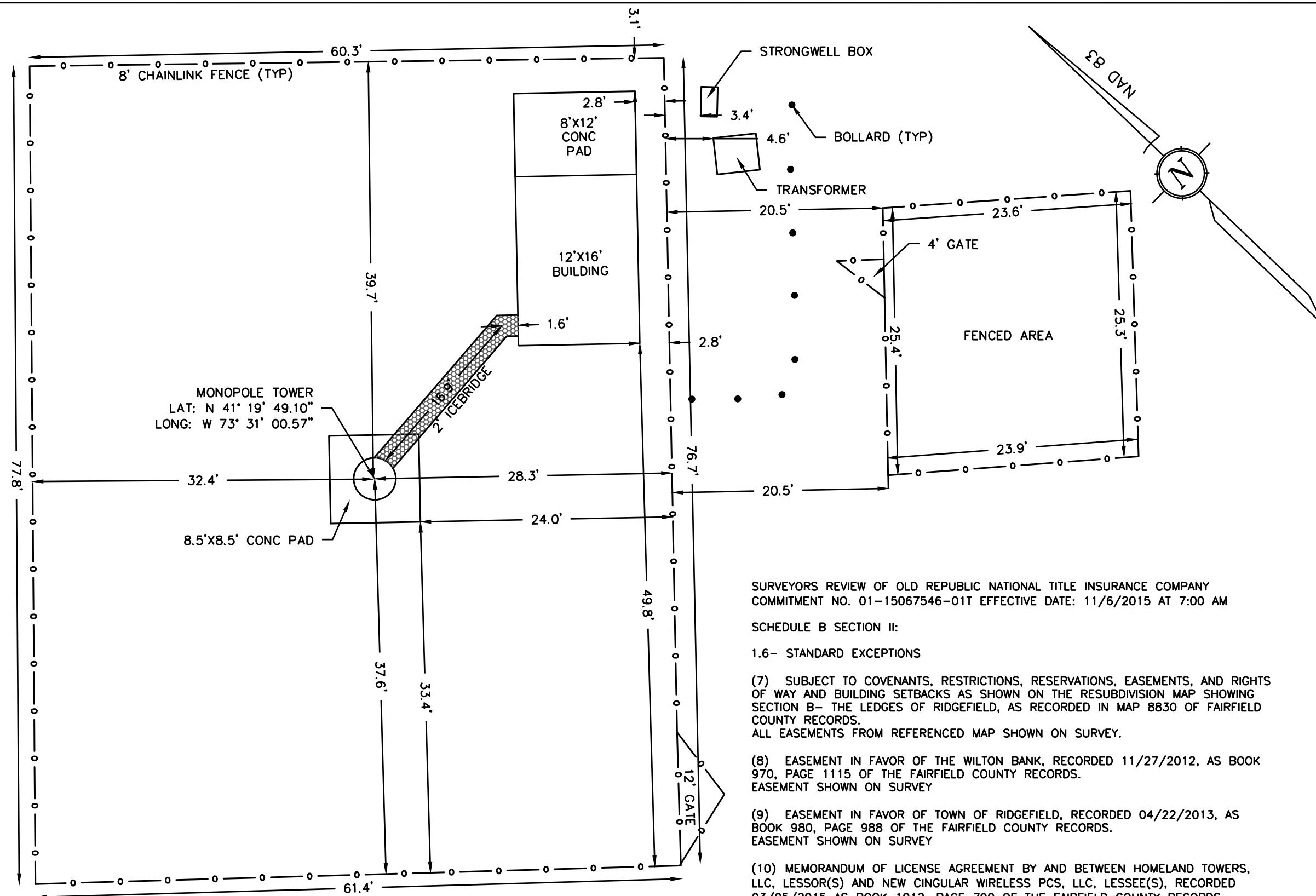
MURPHY GEOMATICS

WILLIAM J. NAGLE  
LAND SURVEYOR - CT - 70269  
DATE: 11/13/2015



CERTIFICATION NOTE: THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED UPON THEIR KNOWLEDGE AND BELIEF AND DOES NOT CONSTITUTE A GUARANTEE OR WARRANTY.





BAR GRAPH 1 inch = 10 ft.  
CT897 RIDGEFIELD.DWG

SURVEYORS REVIEW OF OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY  
COMMITMENT NO. 01-15067546-01T EFFECTIVE DATE: 11/6/2015 AT 7:00 AM

SCHEDULE B SECTION II:

1.6- STANDARD EXCEPTIONS

(7) SUBJECT TO COVENANTS, RESTRICTIONS, RESERVATIONS, EASEMENTS, AND RIGHTS  
OF WAY AND BUILDING SETBACKS AS SHOWN ON THE RESUBDIVISION MAP SHOWING  
SECTION B- THE LEDGES OF RIDGEFIELD, AS RECORDED IN MAP 8830 OF FAIRFIELD  
COUNTY RECORDS.  
ALL EASEMENTS FROM REFERENCED MAP SHOWN ON SURVEY.

(8) EASEMENT IN FAVOR OF THE WILTON BANK, RECORDED 11/27/2012, AS BOOK  
970, PAGE 1115 OF THE FAIRFIELD COUNTY RECORDS.  
EASEMENT SHOWN ON SURVEY

(9) EASEMENT IN FAVOR OF TOWN OF RIDGEFIELD, RECORDED 04/22/2013, AS  
BOOK 980, PAGE 988 OF THE FAIRFIELD COUNTY RECORDS.  
EASEMENT SHOWN ON SURVEY

(10) MEMORANDUM OF LICENSE AGREEMENT BY AND BETWEEN HOMELAND TOWERS,  
LLC, LESSOR(S) AND NEW CINGULAR WIRELESS PCS, LLC, LESSEE(S), RECORDED  
03/05/2015 AS BOOK 1012, PAGE 790 OF THE FAIRFIELD COUNTY RECORDS.  
TELECOMMUNICATION EQUIPMENT ON SURVEY.

(11) ELECTRIC DISTRIBUTION EASEMENT IN FAVOR OF THE CONNECTICUT LIGHT AND  
POWER COMPANY DBA EVERSOURCE ENERGY, RECORDED 07/28/2015, AS BOOK 1019,  
PAGE 1077 OF THE FAIRFIELD COUNTY RECORDS.  
BLANKET IN NATURE. AFFECTS PARENT PARCEL.

(12) TELEPHONE DISTRIBUTION EASEMENT IN FAVOR OF THE SOUTHERN NEW ENGLAND  
TELEPHONE COMPANY DBA FRONTIER COMMUNICATIONS OF CONNECTICUT, RECORDED  
07/28/2015, AS BOOK 1019, PAGE 1082 OF THE FAIRFIELD COUNTY RECORDS.  
BLANKET IN NATURE. AFFECTS PARENT PARCEL.

## AS-BUILT SURVEY

PREPARED FOR:



SITE: RIDGEFIELD

SITE ID: CT897

ADDRESS: 7 ASPEN LEDGES RD  
RIDGEFIELD CT 06877  
FAIRFIELD COUNTY

NATIONAL SURVEY SERVICES COORDINATION BY:

**GEOLINE**  
SURVEYING, INC.

13430 NW 104th Terrace, Suite A Alachua, FL 32615  
Office: (386) 418-0500 Fax: (386) 462-9986  
WWW.GEOLINEINC.COM

SURVEY WORK PERFORMED BY:

**JONATHAN**  
**MURPHY**

Professional Land Surveying

10505 Leafwood Place (919) 280-8189  
Raleigh NC 27613 FAX 995-9616  
E-MAIL: jonathan@murphygeomatics.com FIRM C-2757

### SURVEYOR'S NOTES

1. BASIS OF BEARING:

CT GRID NAD83

2. NO SUBSURFACE INVESTIGATION WAS  
PERFORMED TO LOCATE UNDERGROUND  
UTILITIES. UTILITIES SHOWN HEREON ARE  
LIMITED TO AND ARE PER OBSERVED  
EVIDENCE ONLY.

3. THIS SURVEY DOES NOT REPRESENT A  
BOUNDARY SURVEY OF THE PARENT  
PARCEL.

4. ALL VISIBLE TOWER EQUIPMENT AND  
IMPROVEMENTS ARE CONTAINED WITH IN THE  
DESCRIBED AREA UNLESS NOTED ON  
SURVEY.

### SURVEYOR'S CERTIFICATION

I HEREBY CERTIFY TO:  
INSITE TOWERS & OLD REPUBLIC NATIONAL  
TITLE INSURANCE COMPANY.

MURPHY GEOMATICS

WILLIAM J. NAGLE  
LAND SURVEYOR - CT - 70269  
DATE: 11/13/2015



CERTIFICATION NOTE: THE WORD "CERTIFY" IS UNDERSTOOD  
TO BE AN EXPRESSION OF PROFESSIONAL OPINION BY  
THE LAND SURVEYOR WHICH IS BASED UPON THEIR  
KNOWLEDGE AND BELIEF AND DOES NOT CONSTITUTE A  
GUARANTEE OR WARRANTY.

SURVEYORS CERTIFICATION

I, WILLIAM J. NAGLE, DO HEREBY CERTIFY TO INSITE TOWERS, LLC, A DELAWARE LIMITED LIABILITY COMPANY WITH ITS HEADQUARTERS ADDRESS AT 1199 N. FAIRFAX STREET, SUITE 700, ALEXANDRIA, VA 22314, INSITE TOWERS DEVELOPMENT, LLC, A DELAWARE LIMITED LIABILITY COMPANY, INSITE TOWERS, LLC, A DELAWARE LIMITED LIABILITY COMPANY, VANGARD WIRELESS, LLC, A DELAWARE LIMITED LIABILITY COMPANY, INSITE WIRELESS GROUP, LLC, A DELAWARE LIMITED LIABILITY COMPANY, ("INSITE TOWERS"), THE FEDERAL AVIATION ADMINISTRATION, OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY PER TITLE REPORT FORWARDED NOVEMBER 13, 2014, GOLDMAN SACHS SPECIALTY LENDING GROUP L.P., DEUTSCHE BANK TRUST COMPANY AMERICAS, A NEW YORK BANKING CORPORATION, LATHAM & WATKINS LLP, STEWART TITLE GUARANTY COMPANY, FIDELITY NATIONAL TITLE INSURANCE COMPANY, OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY AND THE SUCCESSORS AND ASSIGNS OF EACH OF THE FOREGOING, THAT THIS SURVEY WAS MADE ON THE GROUND UNDER MY PERSONAL SUPERVISION AND THAT THIS PLAT IS A TRUE, CORRECT AND ACCURATE REPRESENTATION OF THE FACTS AS FOUND AT THE TIME OF THE SURVEY, AND MORE SPECIFICALLY,

I SO HEREBY CERTIFY THAT THE SURVEY CONFORMS TO THE CONDITIONS AND STIPULATIONS AS CHECKED (X) BELOW.

(X) 1. THE BOUNDARY LINES AND DIMENSIONS OF THE INSITE TOWERS TOWER PARCEL AND ACCESS AND UTILITIES EASEMENTS (COLLECTIVELY, THE "EASEMENTS") INDICATED HEREON IS CORRECT.

(X) 2. TO THE EXTENT THE TOWER PARCEL AND EASEMENTS INDICATED HEREON ARE PART OF A PARENT PARCEL, SUCH TOWER PARCEL AND EASEMENTS ARE LOCATED WITHIN THE BOUNDARIES OF THE RECORD TITLE LEGAL DESCRIPTION OF SUCH PARENT PARCEL. THE LOCATION OF SAID TOWER PARCEL AND EASEMENTS RELATIVE TO AN APPROXIMATION OF THE LOCATION OF THE BOUNDARIES OF THE PARENT TRACT IS ILLUSTRATED ON THE INSET SHOWN HEREON.

(X) 3A. IRON PINS ARE SET AT EACH LEASE PARCEL CORNER UNLESS OTHERWISE INDICATED HEREON OR

( ) 3B. NOT APPLICABLE IN THIS STATE DUE TO RECORDING NEEDS.

(X) 4. THE DISTANCE FROM THE NEAREST INTERSECTING PUBLIC STREET OR ROAD IS AS SHOWN HEREON.

(X) 5. SHOWS THE LOCATION AND DIMENSION OF ALL ALLEYS, STREETS, ROADS, RIGHTS-OF-WAY, EASEMENTS AND OTHER MATTERS OF RECORD WHICH THE SURVEYOR HAS BEEN ADVISED AFFECTS THE TOWER PARCEL AND/OR EASEMENTS (EACH HAS BEEN IDENTIFIED BY INSTRUMENT VOLUME AND PAGE NUMBER IF AVAILABLE).

(X) 6. EXCEPT AS SHOWN, THERE ARE NO VISIBLE EASEMENTS, RIGHTS-OF WAY, PARTY WALLS OR CONFLICTS AFFECTING THE TOWER PARCEL AND/OR EASEMENTS; FURTHER, THIS SURVEY IS NOT SUBJECT TO ANY EASEMENTS OR RIGHTS-OF-WAY NOT VISIBLE ON THE GROUND.

(X) 7. THE LOCATION OF ALL BUILDINGS, STRUCTURES AND OTHER IMPROVEMENTS OF VISIBLE ITEMS AFFECTING THE FEE PARCEL AND EASEMENTS, IF SHOWN, ARE AS INDICATED HEREON. THE LOCATION OF ALL OTHER BUILDINGS, STRUCTURES AND OTHER IMPROVEMENTS OF VISIBLE ITEMS ON THE PARENT TRACT, IF SHOWN HEREON, ARE APPROXIMATE IN NATURE, EXCEPT THAT THE TOWER PARCEL AND EASEMENTS ARE ENTIRELY LOCATED WITHIN THE BOUNDARIES OF THE PARENT PARCEL, AS SHOWN ON THE INSET.

(X) 8. EXCEPT AS SHOWN, THERE ARE NO VISIBLE PROTRUSIONS ON ADJOINING PREMISES, STREETS OR ALLEYS BY ANY BUILDING, STRUCTURE OR OTHER IMPROVEMENTS SITUATED ON THE TOWER PARCEL AND/OR EASEMENTS.

(X) 9. EXCEPT AS SHOWN, THERE ARE NO VISIBLE ENCROACHMENTS ONTO THE TOWER PARCEL AND/OR EASEMENTS BY ANY BUILDING, STRUCTURE OR OTHER IMPROVEMENTS SITUATED ON ADJOINING PREMISES.

( ) 10A. SHOWS THE LOCATION AND ACRES CONTAINED IN ALL PORTIONS OF THE FEE PARCEL AND EASEMENTS WHICH ARE LOCATED IN AN AREA DESIGNATED AS A "FLOOD PRONE AREA (ZONE A)" AS DEFINED BY THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT PURSUANT TO THE FLOOD DISASTER ACT OF 1973; NONE, FIRM COMMUNITY PANEL NO.

(X) 10B THE SITE FEE PARCEL AND EASEMENTS ARE LOCATED IN AN AREA DESIGNATED AS A FLOOD ZONE (X) AS DEFINED BY THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT PURSUANT TO THE FLOOD DISASTER ACT OF 1973 FIRM COMMUNITY PANEL NO.

(X) 11. DESCRIBES AND SHOWS THE LOCATION OF ALL PUBLIC STREETS AND ROADS VISIBLY PROVIDING ACCESS TO AND FROM THE SUBJECT PROPERTY, AND CORRECTLY SETS FORTH THE MUNICIPAL ADDRESS OF THE SUBJECT PROPERTY.

(X) 12. DEPICTS THE LATITUDINAL AND LONGITUDINAL COORDINATES OF THE TOWER(S) LOCATION(S), TO THE NEAREST TENTH OF A SECOND, THE ELEVATION ABOVE MEAN SEA LEVEL OF THE BASE AND TIP OF EACH TOWER, PLUS OR MINUS 20 FEET, THE ELEVATION OF THE TIP OF EACH TOWER AS MEASURED FROM GROUND LEVEL, AND ADDITIONALLY, THE ELEVATION OF THE TIP OF THE HIGHEST APPURTENANCE ON THE TOWER AS MEASURED FROM GROUND LEVEL, IF SUCH APPURTENANCE IS HIGHER IN ELEVATION THAN THE HIGHEST POINT OF THE TOWER STRUCTURE ITSELF, TO THE NEAREST FOOT, ON THE SURVEY DRAWING AND ON A SEPARATE 8 1/2 X 11 CERTIFIED LETTERHEAD.

(X) 13. SURVEY OF THE TOWER PARCEL AND EASEMENTS MEETS OR EXCEEDS THE MINIMUM TECHNICAL STANDARDS FOR LAND BOUNDARY SURVEYS SET FORTH BY CONNECTICUT STATE LAW.

( ) 14. THE SUBJECT PROPERTY IS CURRENTLY ZONED N/A  
MURPHY GEOMATICS  
BY: WILLIAM J. NAGLE  
CT SURVEYOR NO. 70269

AS-BUILT SURVEY



SITE: RIDGEFIELD  
SITE ID: CT897  
ADDRESS: 7 ASPEN LEDGES RD  
RIDGEFIELD CT 06877  
FAIRFIELD COUNTY

NATIONAL SURVEY SERVICES COORDINATION BY:



SURVEY WORK PERFORMED BY:



SURVEYOR'S NOTES

1. BASIS OF BEARING:  
CT GRID NAD83
2. NO SUBSURFACE INVESTIGATION WAS PERFORMED TO LOCATE UNDERGROUND UTILITIES. UTILITIES SHOWN HEREON ARE LIMITED TO AND ARE PER OBSERVED EVIDENCE ONLY.
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4. ALL VISIBLE TOWER EQUIPMENT AND IMPROVEMENTS ARE CONTAINED WITH IN THE DESCRIBED AREA UNLESS NOTED ON SURVEY.

SURVEYOR'S CERTIFICATION

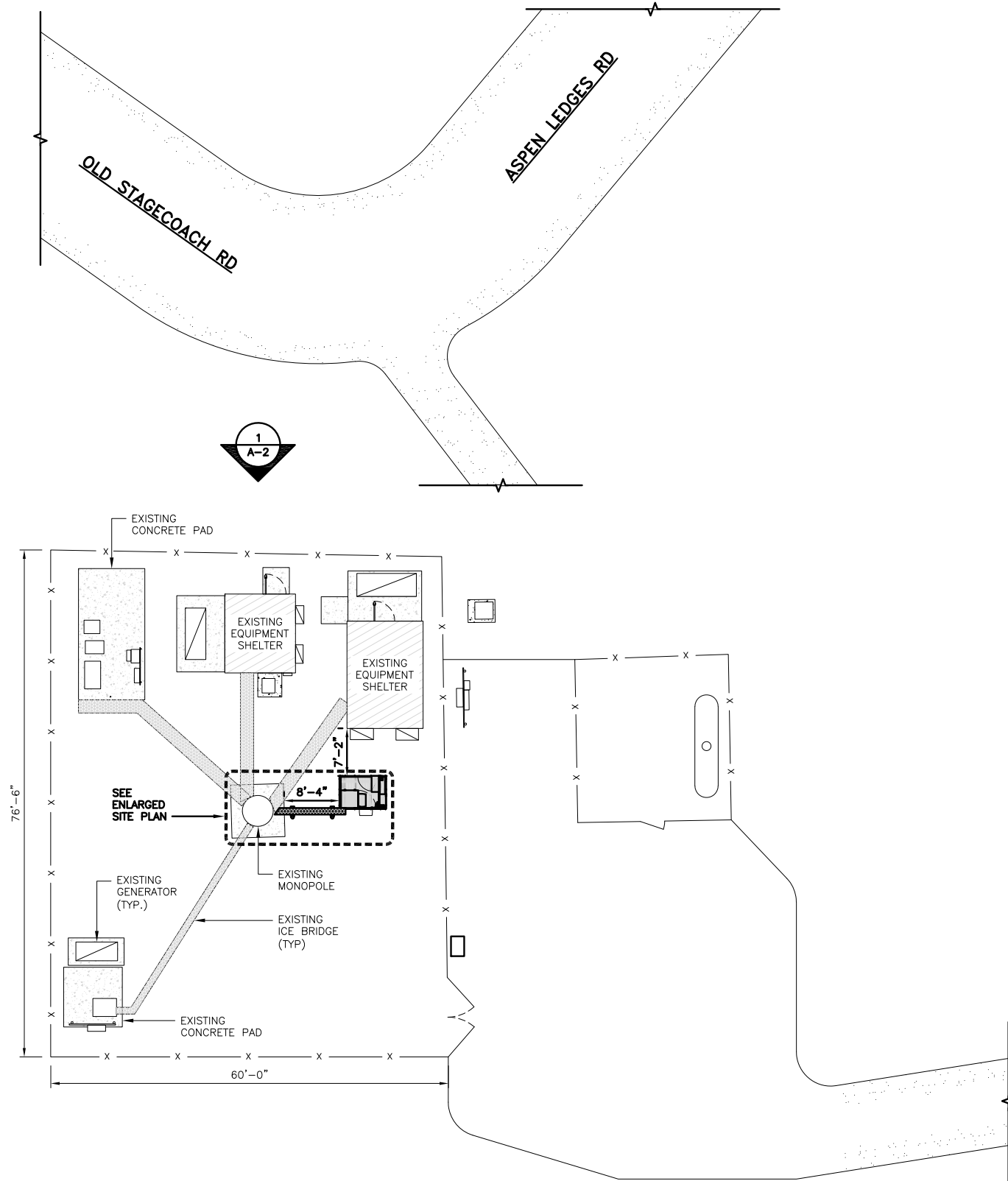
I HEREBY CERTIFY TO:  
INSITE TOWERS & OLD REPUBLIC NATIONAL  
TITLE INSURANCE COMPANY.

MURPHY GEOMATICS

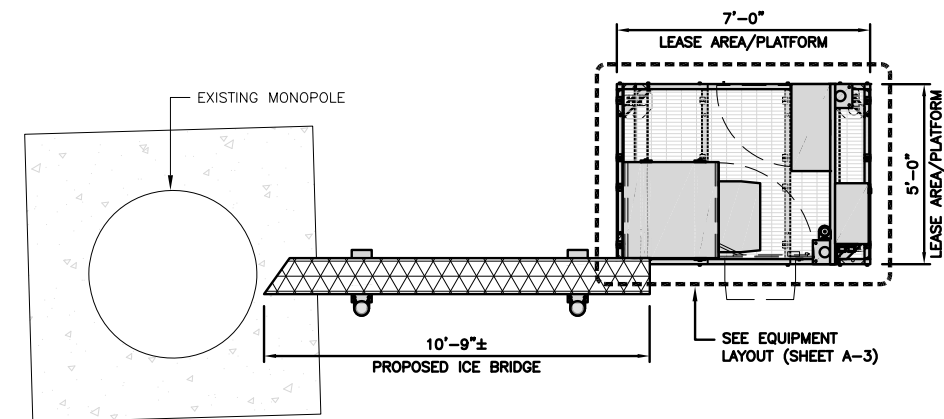
WILLIAM J. NAGLE  
LAND SURVEYOR – CT – 70269  
DATE: 11/13/2015



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- | <u>NOTES</u>  |
|---|
| <ol style="list-style-type: none"> <li>1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.</li> <li>2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.</li> </ol> |



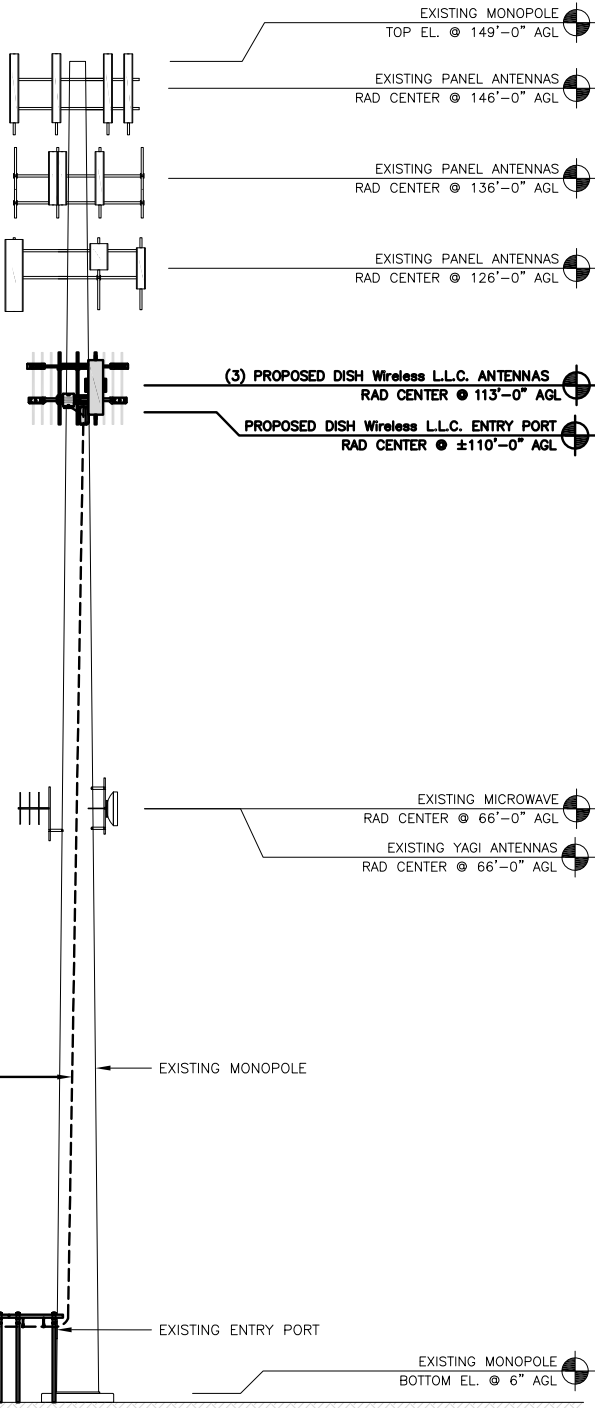
- ### NOTES
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
  2. CONTRACTOR SHALL MAINTAIN A 10"-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
  3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



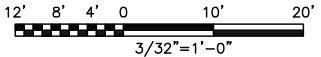
- NOTES
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.

2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS

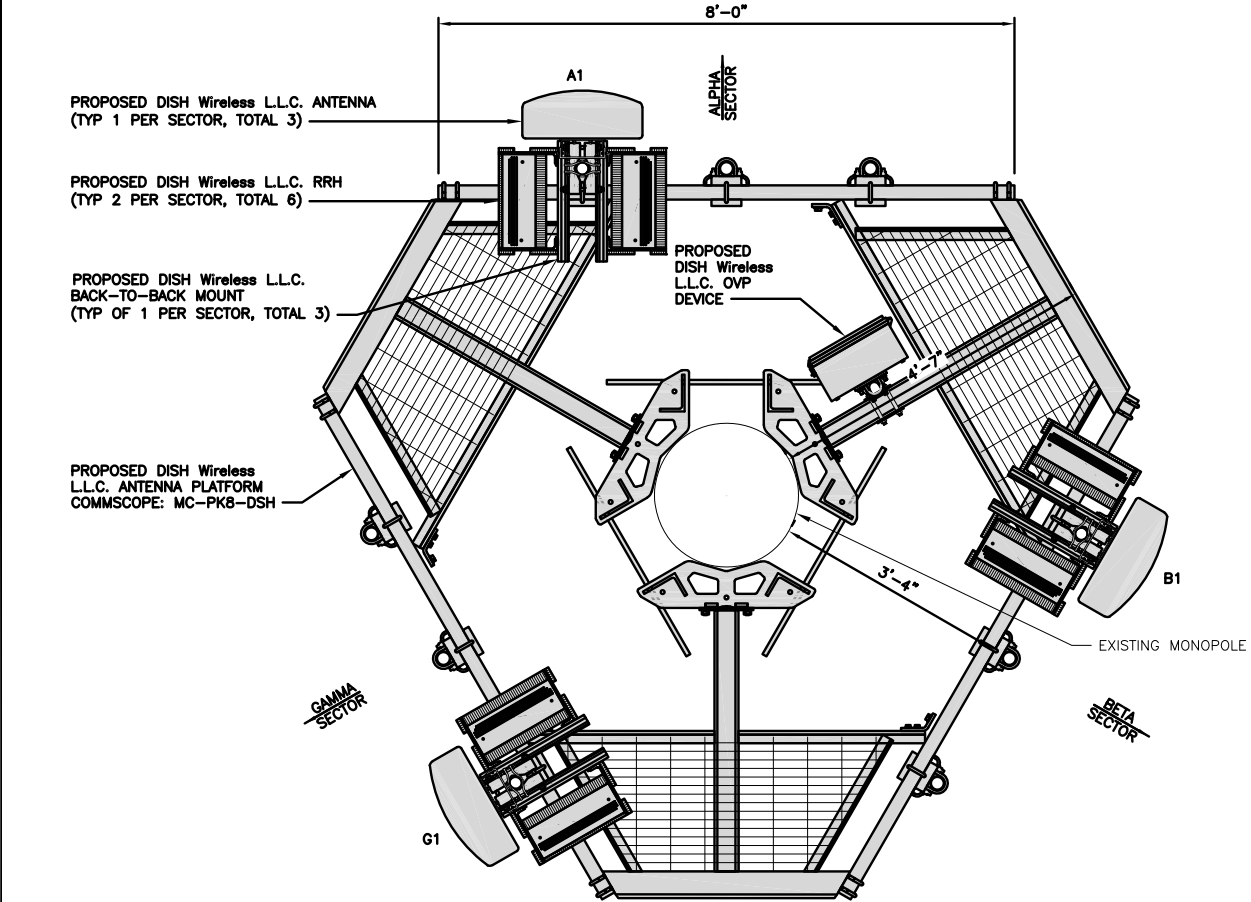
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

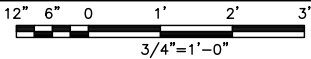


1



NOTE: AZIMUTHS ARE TENTATIVE, NEED TO CONFIRM BEFORE THE CONSTRUCTION STARTS.

ANTENNA LAYOUT



2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE	
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665–21	5G	72.0" x 20.0"	40°	113'–0"	(1) HIGH-CAPACITY HYBRID CABLE (150'–0" LONG)	
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665–21	5G	72.0" x 20.0"	160°	113'–0"		
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665–21	5G	72.0" x 20.0"	280°	113'–0"		

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

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY	
ALPHA	A1	FUJITSU – TA08025–B604	5G	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.
	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	

ANTENNA SCHEDULE

NO SCALE

3

dish  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

AMERICAN TOWER®  
10 PRESIDENTIAL WAY  
WOBURN, MA 01801

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

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

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

DRAWN BY: CHECKED BY: APPROVED BY:  
SP BEL ---

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

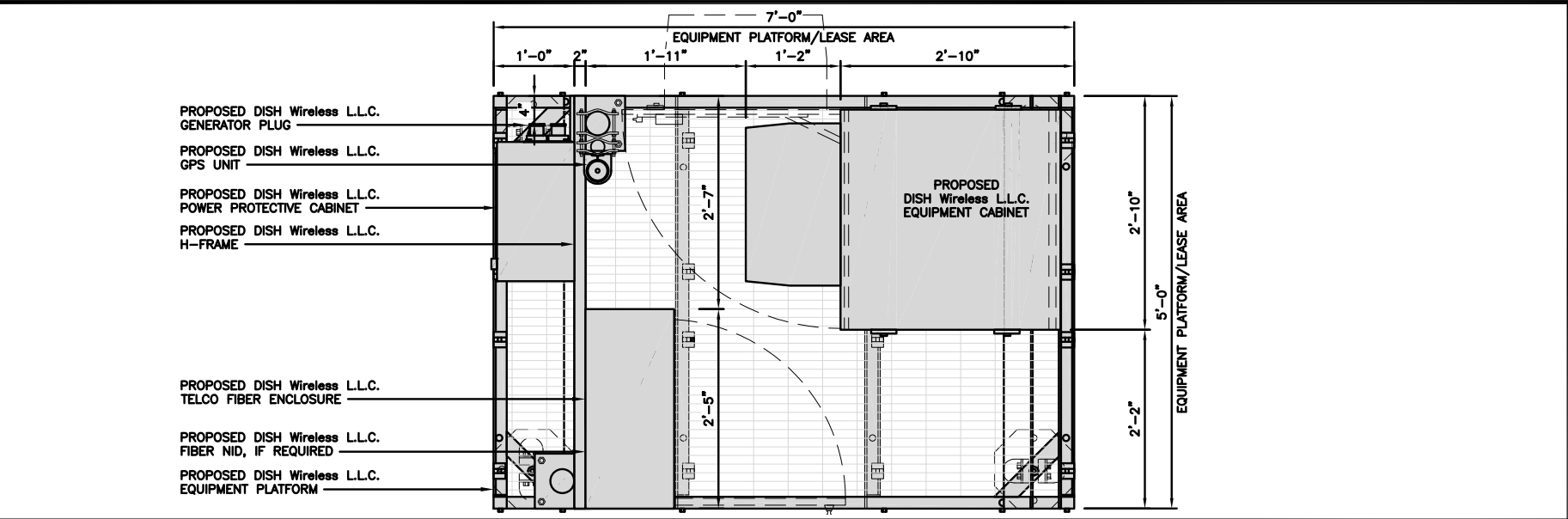
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0	9/29/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
155785.001.01

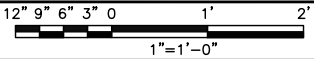
DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJJER01100B  
320 OLD STAGECOACH ROAD  
RIDGEFIELD, CT 06877

SHEET TITLE  
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER  
A-2



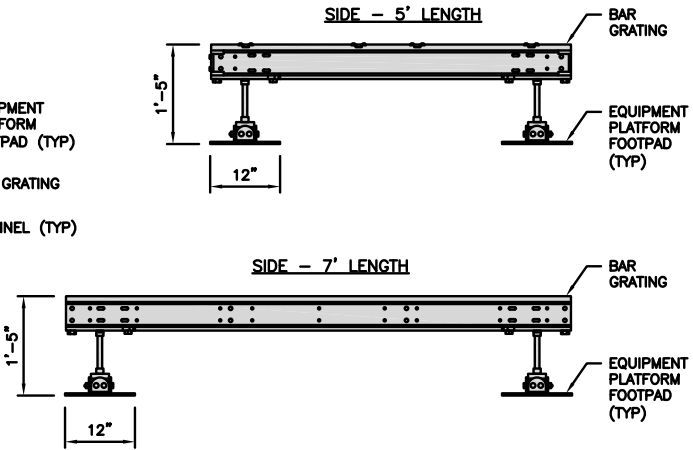
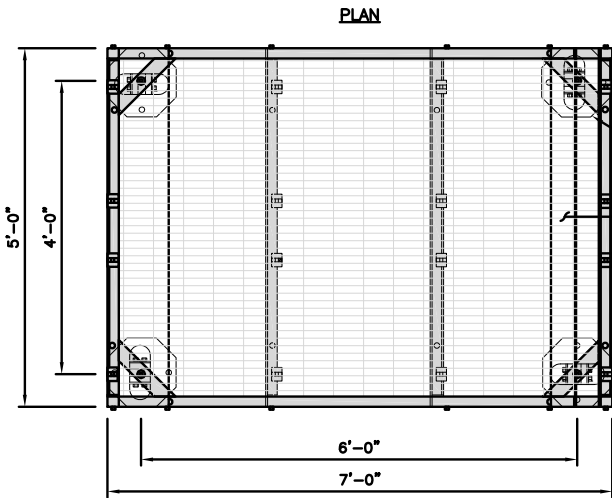
PLATFORM EQUIPMENT PLAN



1

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

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

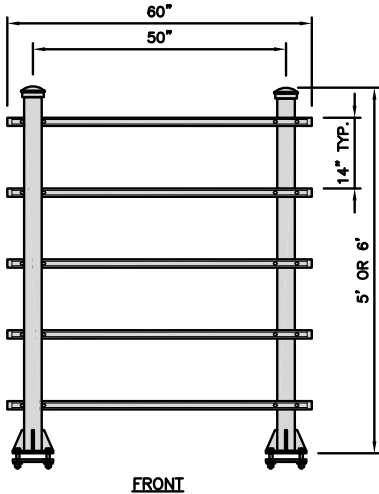
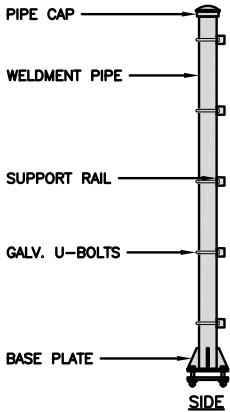


PLATFORM DETAIL

NO SCALE

2

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



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

H-FRAME DETAIL

NO SCALE

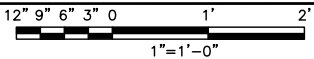
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NOT USED

NO SCALE

4

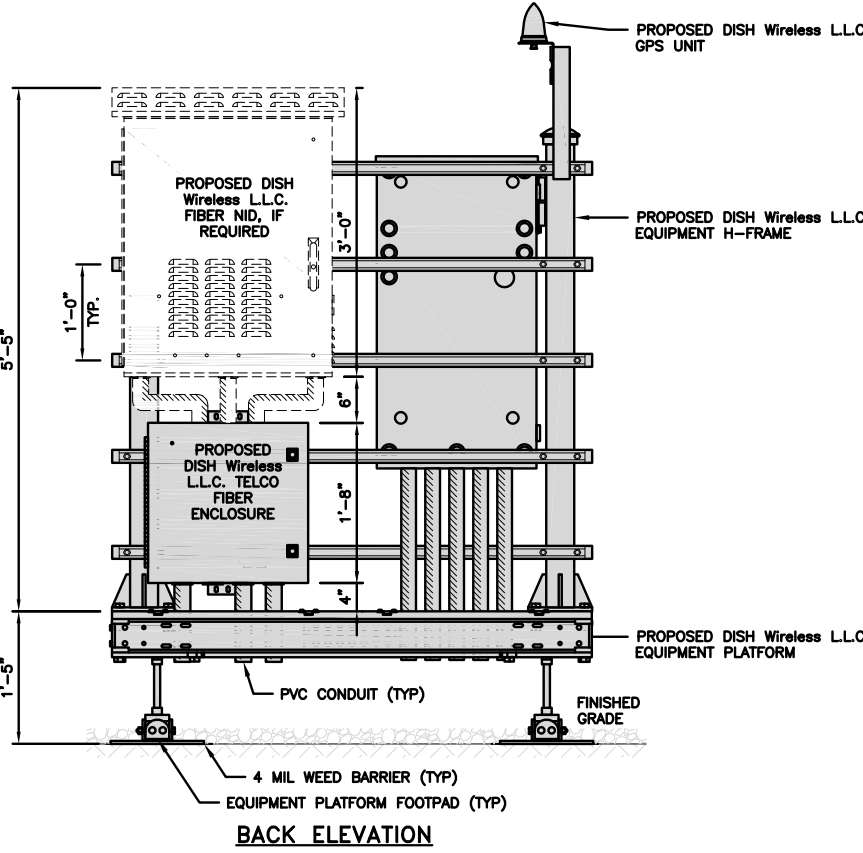
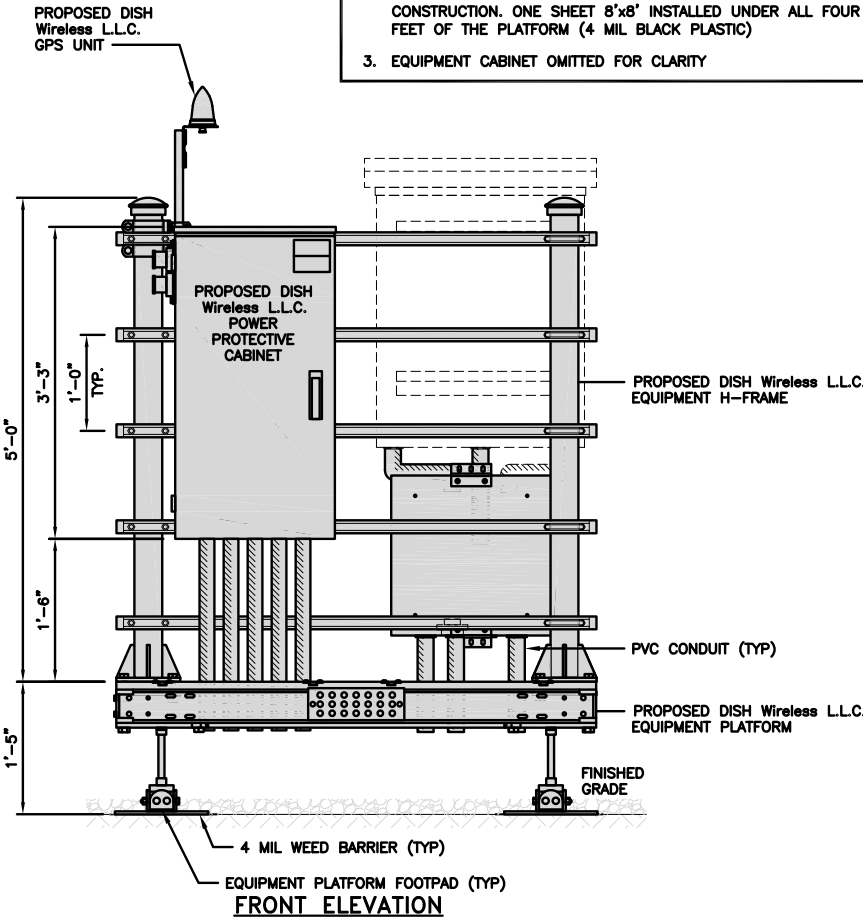
H-FRAME EQUIPMENT ELEVATION



5

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



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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

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UNLESS THEY ARE ACTING UNDER THE DIRECTION  
OF A LICENSED PROFESSIONAL ENGINEER,  
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DRAWN BY:	CHECKED BY:	APPROVED BY:
SP	BEL	---

RFDS REV #: 3

CONSTRUCTION  
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	9/8/21	ISSUED FOR REVIEW
0	9/29/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
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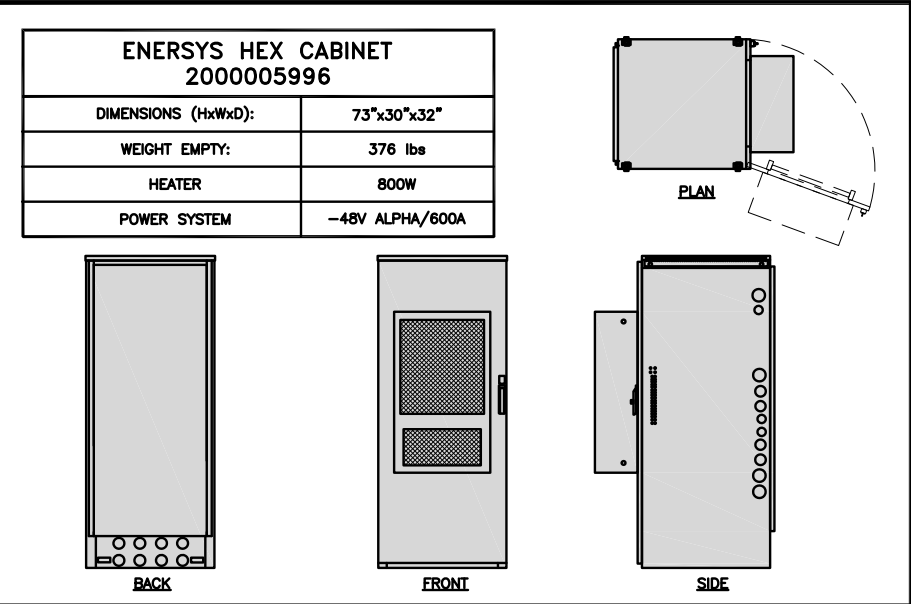
DISH Wireless L.L.C.  
PROJECT INFORMATION

NJJB01100B  
320 OLD STAGECOACH  
ROAD  
RIDGEFIELD, CT 06877

SHEET TITLE  
EQUIPMENT PLATFORM AND  
H-FRAME DETAILS

SHEET NUMBER

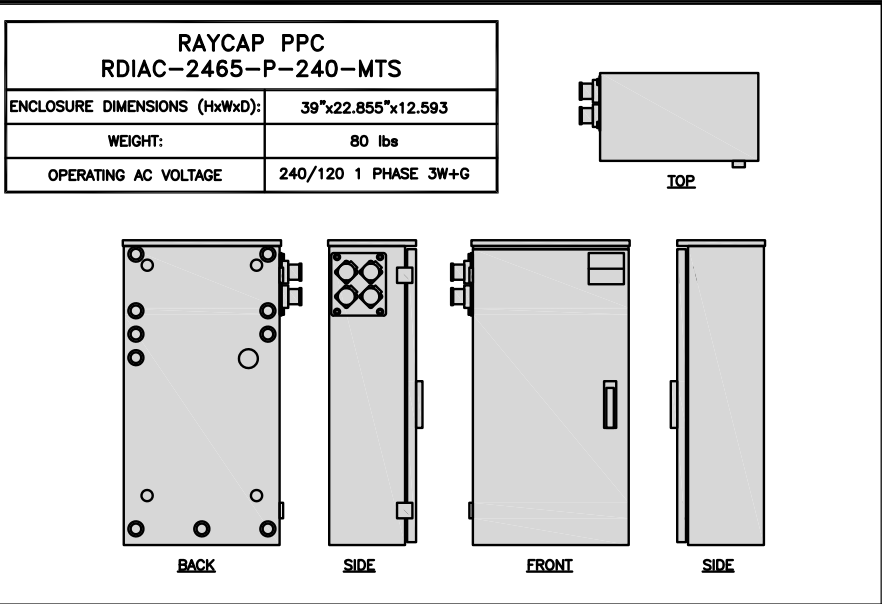
A-3



CABINET DETAIL

NO SCALE

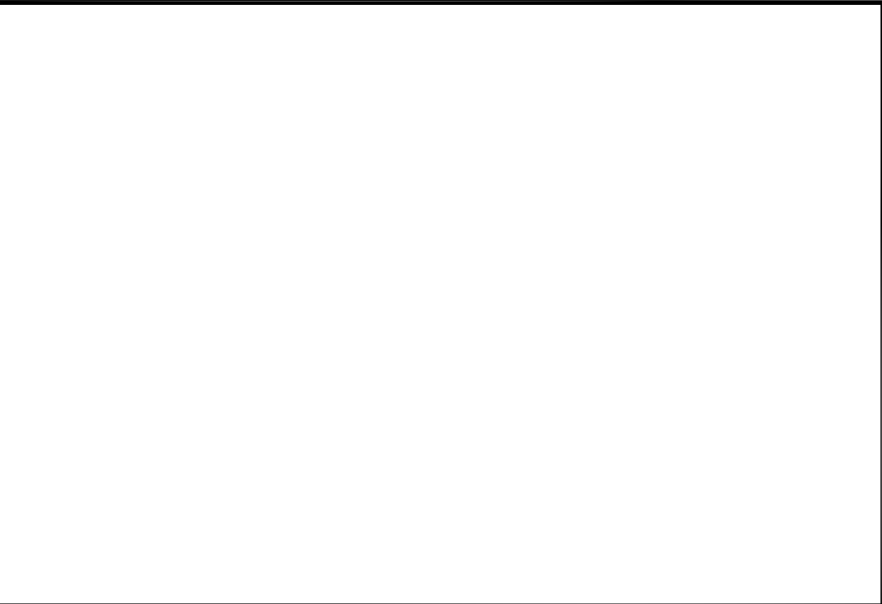
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POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

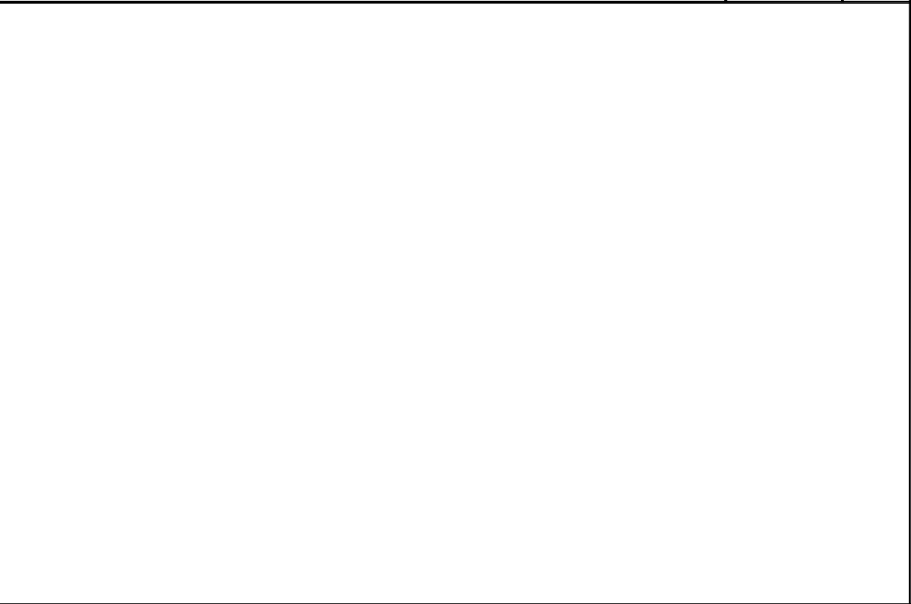
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NOT USED

NO SCALE

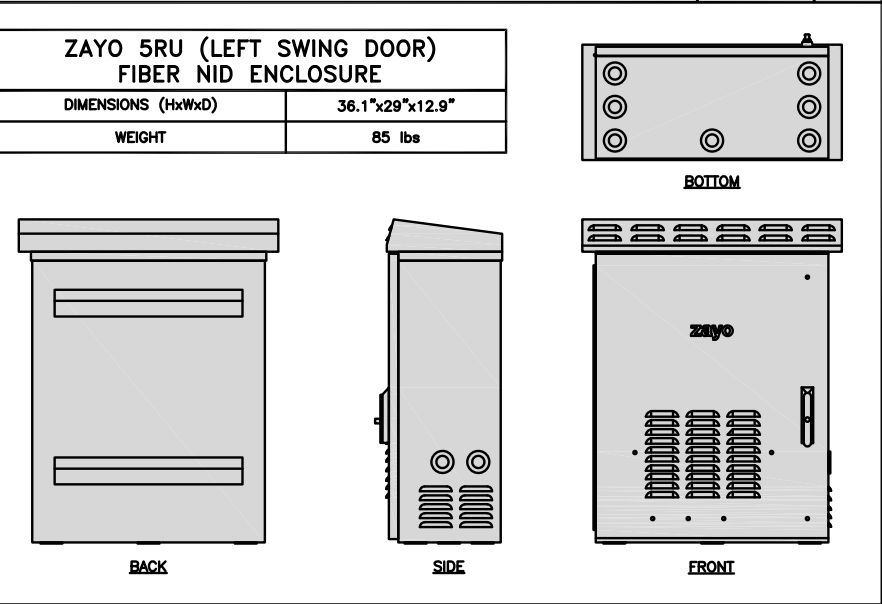
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NOT USED

NO SCALE

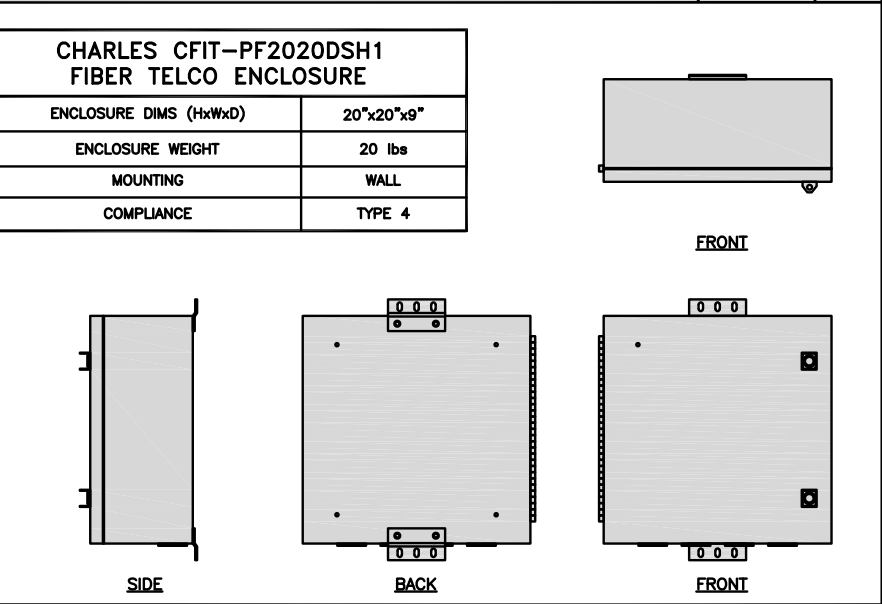
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FIBER NID ENCLOSURE DETAIL

NO SCALE

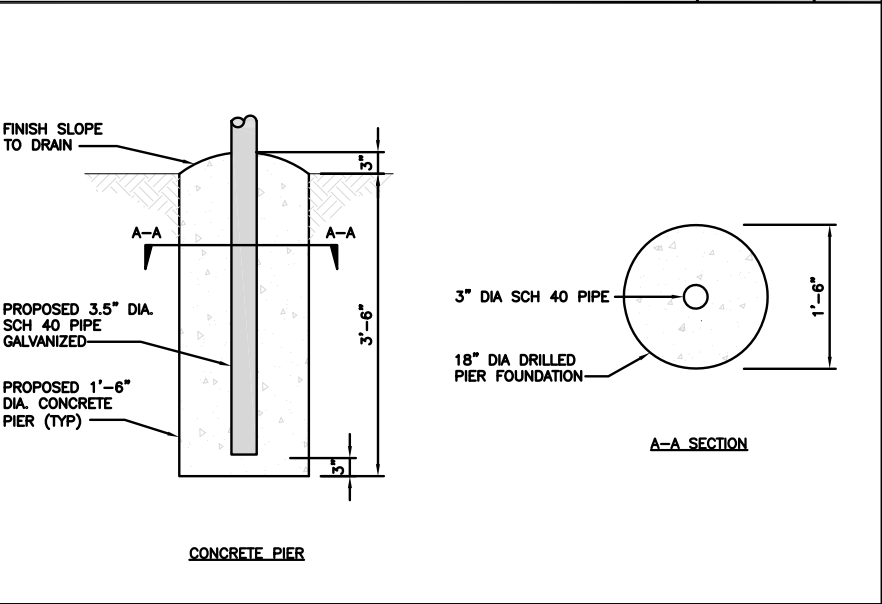
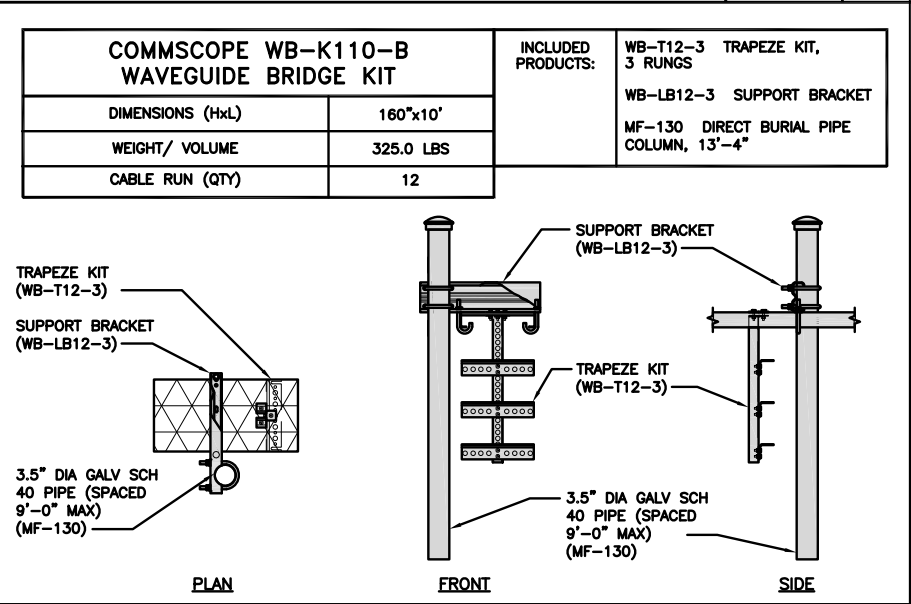
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FIBER TELCO ENCLOSURE DETAIL

NO SCALE

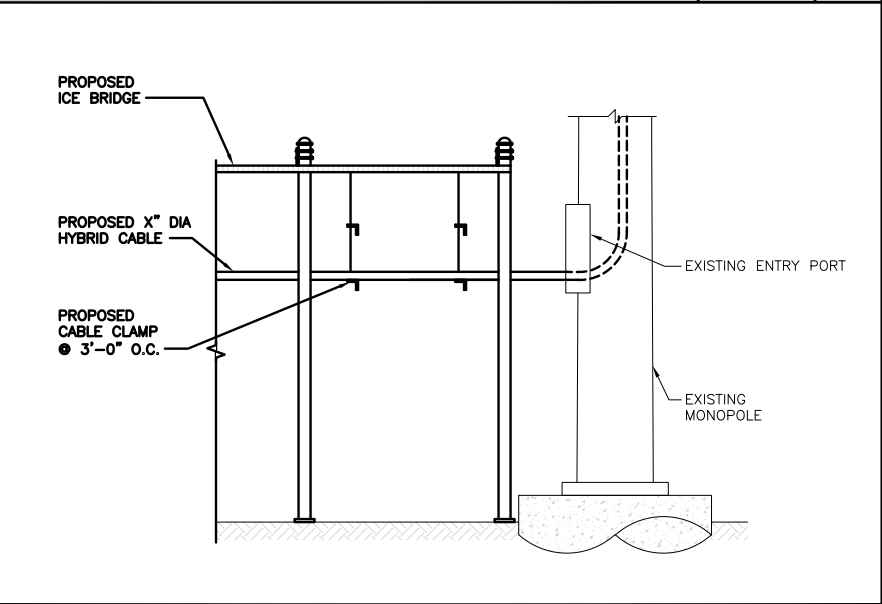
6



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

8



HYBRID CABLE RUN

NO SCALE

9



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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

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CONSTRUCTION  
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DISH Wireless L.L.C.  
PROJECT INFORMATION

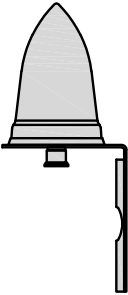
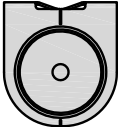
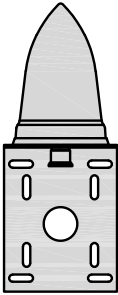
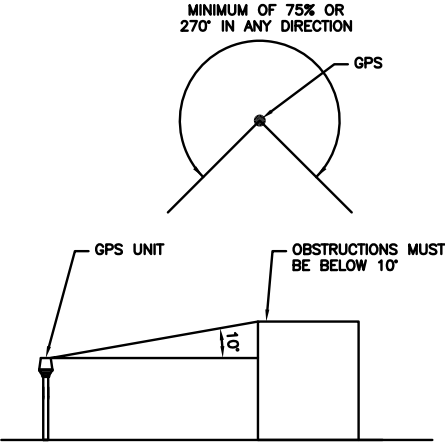
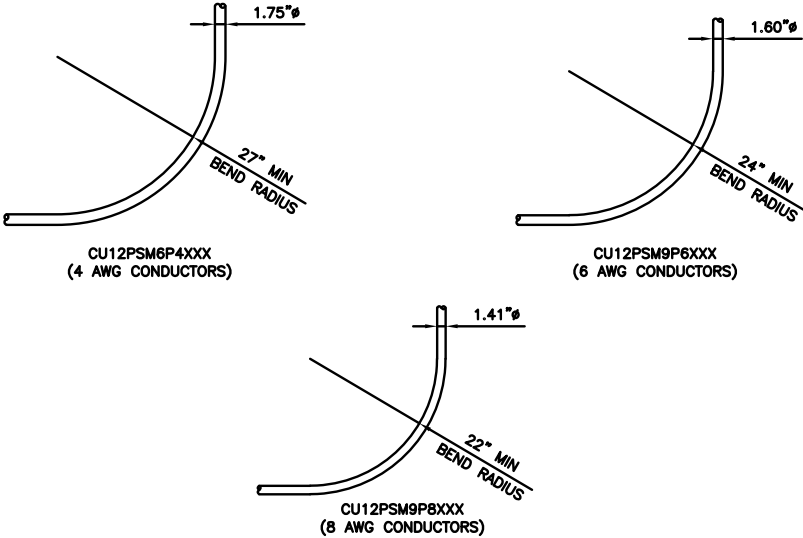
NJJer01100B  
320 OLD STAGECOACH  
ROAD  
RIDGEFIELD, CT 06877


SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER


A-4




<table><tr><td colspan="2">PCTEL GPSGL-TMG-SPI-40NCB</td></tr><tr><td>DIMENSIONS (DIAxH) MM/INCH</td><td>81x184mm 3.2"x7.25"</td></tr><tr><td>WEIGHT W/ACCESSORIES</td><td>075 lbs</td></tr><tr><td>CONNECTOR</td><td>N-FEMALE</td></tr><tr><td>FREQUENCY RANGE</td><td>1590 ± 30MHz</td></tr></table> <div><p>BACK</p></div> <div><p>TOP</p><div><p>SIDE</p></div></div>			PCTEL GPSGL-TMG-SPI-40NCB		DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"	WEIGHT W/ACCESSORIES	075 lbs	CONNECTOR	N-FEMALE	FREQUENCY RANGE	1590 ± 30MHz	<div><p>MINIMUM OF 75% OR 270° IN ANY DIRECTION</p><p>GPS</p><p>GPS UNIT</p><p>OBSTRUCTIONS MUST BE BELOW 10'</p></div>			<div><p>1.75"ø</p><p>27" MIN BEND RADIUS</p><p>CU12PSM6P4XXX (4 AWG CONDUCTORS)</p><p>1.60"ø</p><p>24" MIN BEND RADIUS</p><p>CU12PSM9P6XXX (6 AWG CONDUCTORS)</p><p>1.41"ø</p><p>22" MIN BEND RADIUS</p><p>CU12PSM9P8XXX (8 AWG CONDUCTORS)</p></div>										
PCTEL GPSGL-TMG-SPI-40NCB																										
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"																									
WEIGHT W/ACCESSORIES	075 lbs																									
CONNECTOR	N-FEMALE																									
FREQUENCY RANGE	1590 ± 30MHz																									
GPS DETAIL			NO SCALE			1			GPS MINIMUM SKY VIEW REQUIREMENTS			NO SCALE			2			CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUS			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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RFDS REV #: 3

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	9/8/21	ISSUED FOR REVIEW
0	9/29/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
155785.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJJER01100B  
320 OLD STAGECOACH ROAD  
RIDGEFIELD, CT 06877

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
**A-5**

FUJITSU TRIPLE BAND  
TA08025-B605

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

PLAN

BACK

SIDE

FRONT

RRH DETAIL

NO SCALE

1

FUJITSU DUAL BAND  
TA08025-B604

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

PLAN

BACK

SIDE

FRONT

RRH DETAIL

NO SCALE

2

SABRE DOUBLE Z-BRACKET  
C10123155

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

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

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

RRH MOUNT DETAIL

NO SCALE

3

JMA  
MX08FRO665-21

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

PLAN

SIDE

FRONT

ANTENNA DETAIL

NO SCALE

4

JMA ANTENNA MOUNT BRACKET  
#91900318

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

NOTE:  
KIT #91900318: TOP AND BOTTOM BRACKETS  
FOR 4-, 6-, AND 8-FOOT ANTENNAS  
ANTENNA BRACKET NOT PART OF KIT

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

ANTENNA BRACKET DETAIL

NO SCALE

6

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

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

PLAN

SIDE

BACK

FRONT

SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

7

COMMSCOPE XP-2040  
CROSSOVER PLATE

DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

PLAN U-BOLT

SIDE U-BOLT

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

RRH/OVP MOUNT DETAIL

NO SCALE

8

COMMSCOPE  
MC-PK8-DSH

FACE WIDTH	96"
WEIGHT	1373.08 lbs

NOTE: 15" TO 38" O.D.

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

ANTENNA PLATFORM DETAIL

NO SCALE

9

DISH Wireless L.L.C. TEMPLATE VERSION 40 - 08/13/2021

dish  
wireless.

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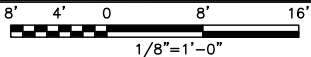
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PROJECT INFORMATION  
NJJER01100B  
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ROAD  
RIDGEFIELD, CT 06877

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
A-6



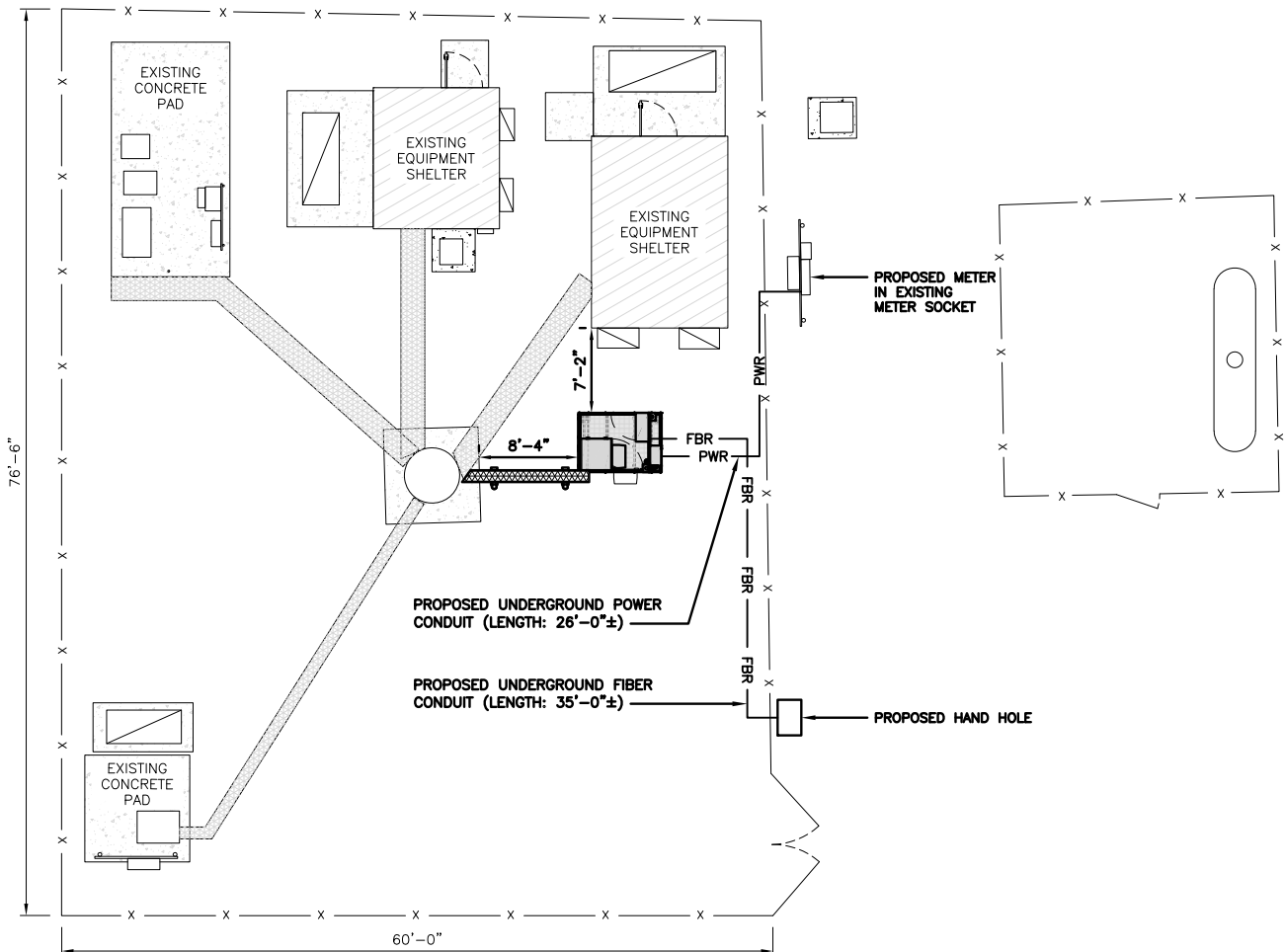
UTILITY ROUTE PLAN



1

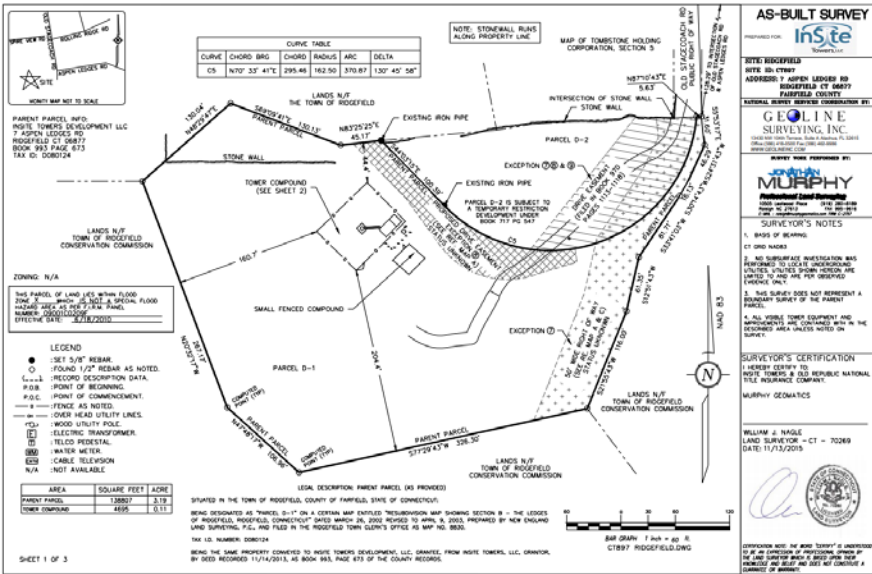
NOTES

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



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

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



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

ELECTRICAL NOTES

NO SCALE

2



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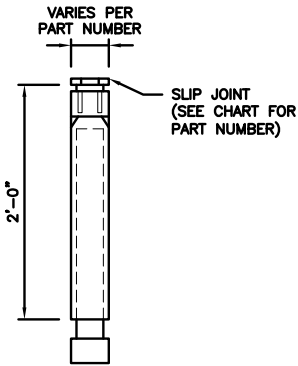
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PROJECT INFORMATION  
NJJER01100B  
320 OLD STAGECOACH ROAD  
RIDGEFIELD, CT 06877

SHEET TITLE  
ELECTRICAL/FIBER ROUTE  
PLAN AND NOTES

SHEET NUMBER

E-1

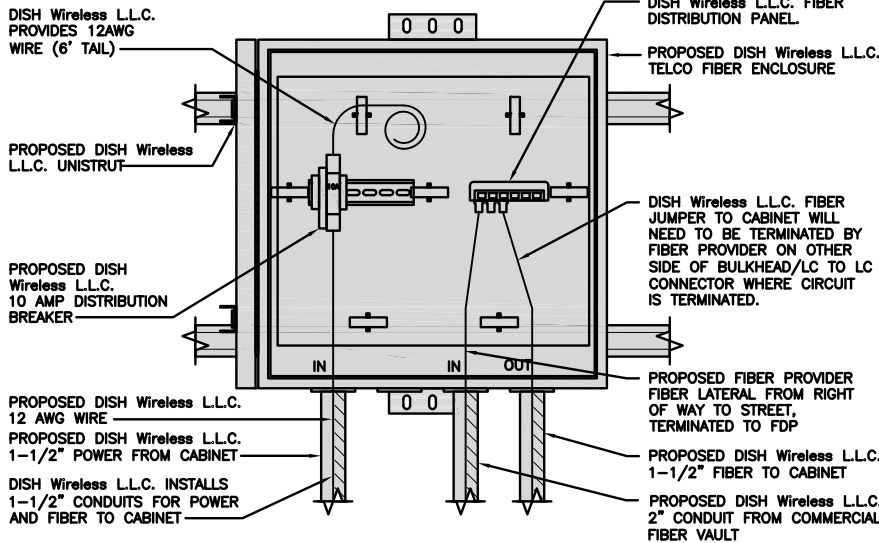
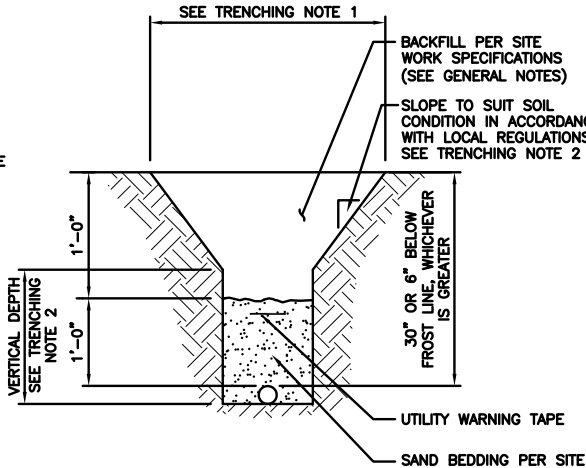
CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"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



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

### TRENCHING NOTES

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



EXPANSION JOINT DETAIL

NO SCALE

1

TYPICAL UNDERGROUND TRENCH DETAIL

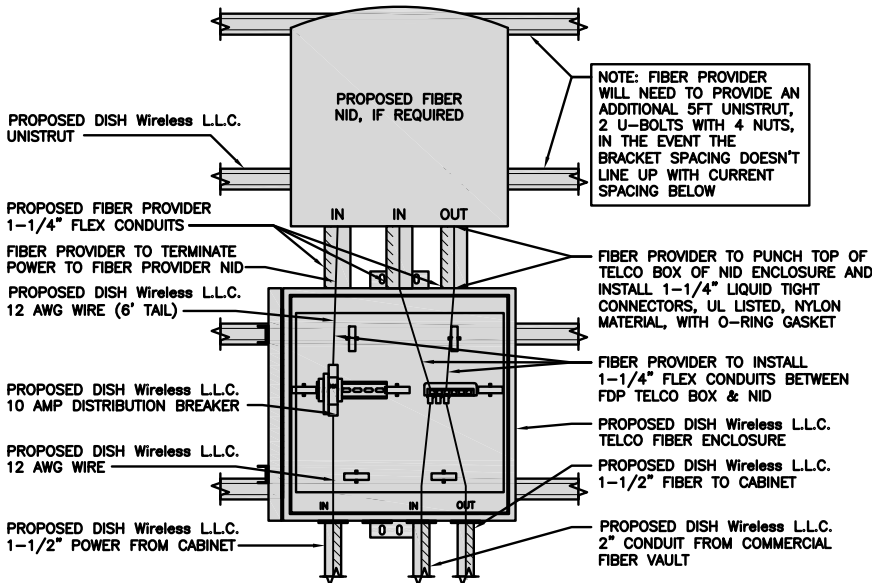
NO SCALE

2

DARK TELCO BOX – INTERIOR WIRING LAYOUT

NO SCALE

3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL)

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

9

**dish**  
wireless.

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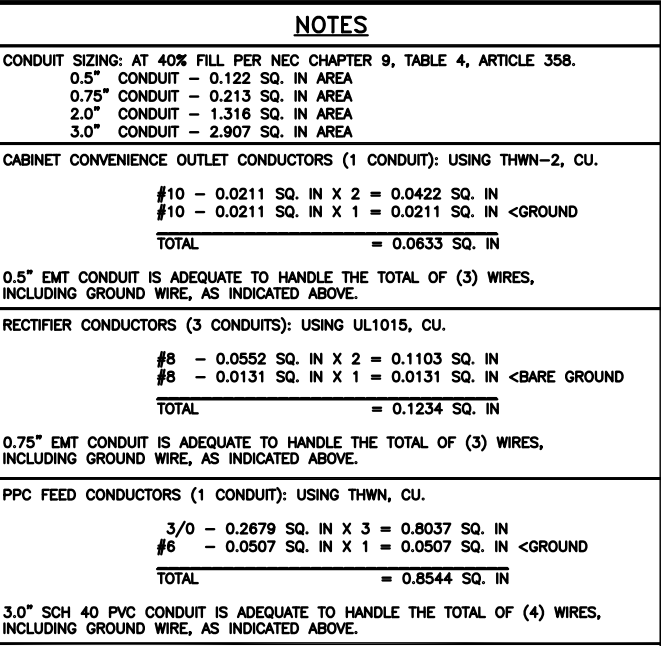
DISH Wireless L.L.C.  
PROJECT INFORMATION  
  
NJJER01100B  
320 OLD STAGECOACH  
ROAD  
RIDGEFIELD, CT 06877

SHEET TITLE  
ELECTRICAL  
DETAILS

SHEET NUMBER

**E-2**





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# CONSTRUCTION DOCUMENTS

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NJJER01100B  
320 OLD STAGECOACH  
ROAD  
RIDGEFIELD, CT 06877

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

SHEET NUMBER

**E-3**

### PPC ONE-LINE DIAGRAM

NO SCALE

1

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

## PANEL SCHEDULE

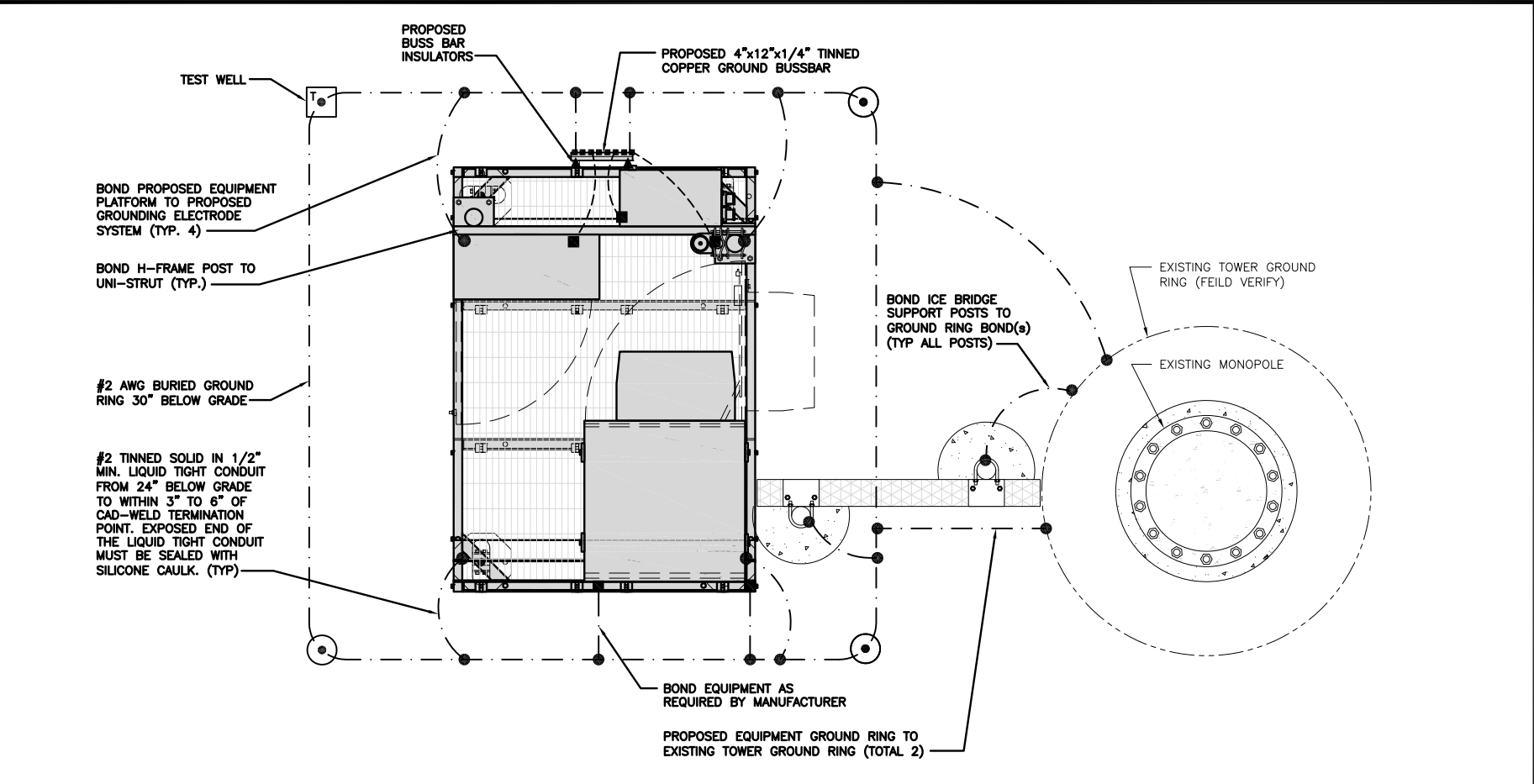
**NO SCALE**

2

**NOT USED**

NO SCALE

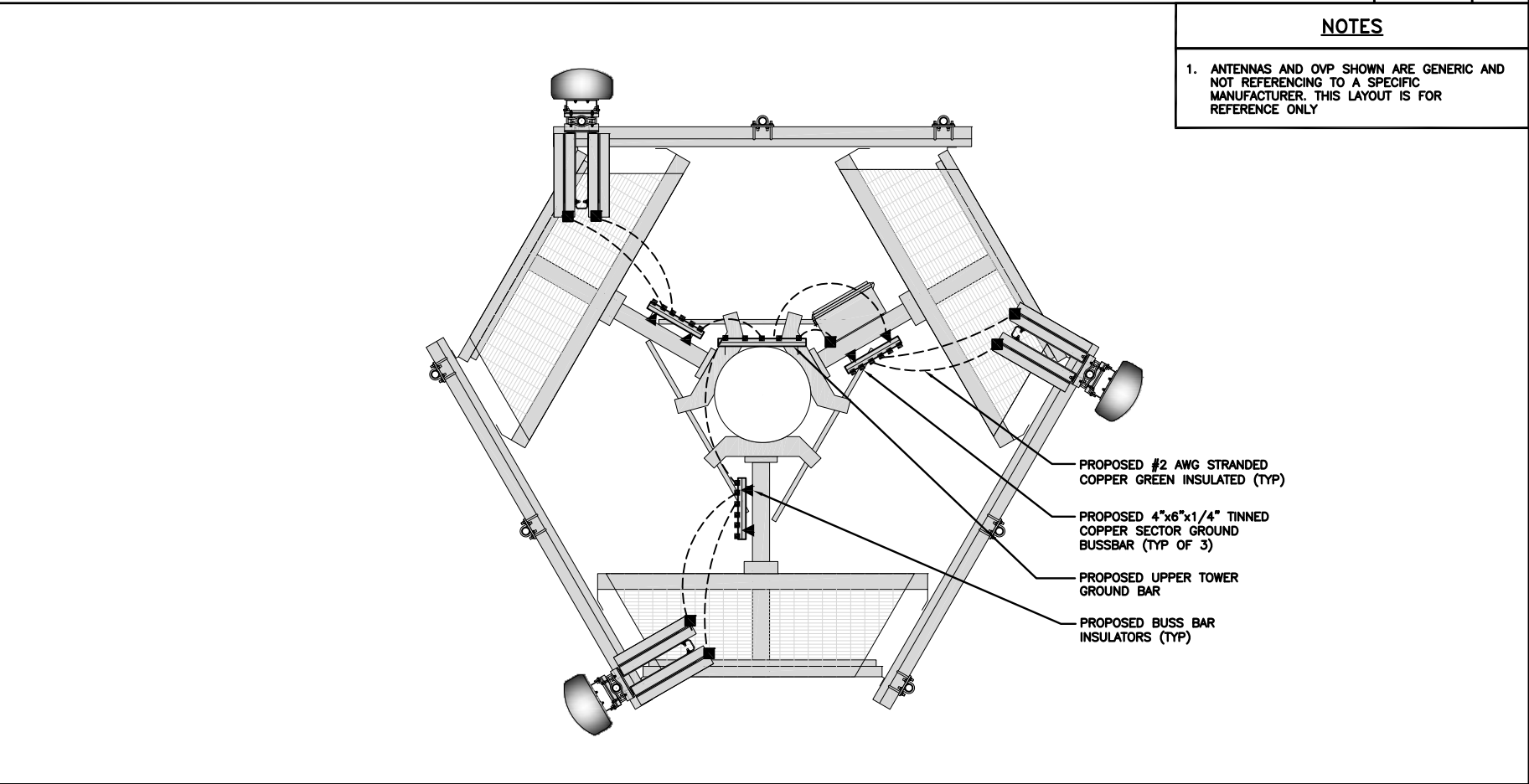
2



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE

1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE

2

- EXOTHERMIC CONNECTION

■

MECHANICAL CONNECTION

—

GROUND BUS BAR

○

GROUND ROD
- T

TEST GROUND ROD WITH INSPECTION SLEEVE

---

#6 AWG STRANDED & INSULATED

---

#2 AWG SOLID COPPER TINNED

▲

BUSS BAR INSULATOR

GROUNDING LEGEND

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

GROUNDING KEY NOTES

- A

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

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

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

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

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

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

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

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

**TELCO GROUND BAR:** BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.
- J

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

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

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

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

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

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

**TOWER TOP COLLECTOR BUSS BAR** IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE

3



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WOBBURN, MA 01801



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TULSA, OK 74119  
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SP	BEL	---

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	9/8/21	ISSUED FOR REVIEW
O	9/29/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
155785.001.01

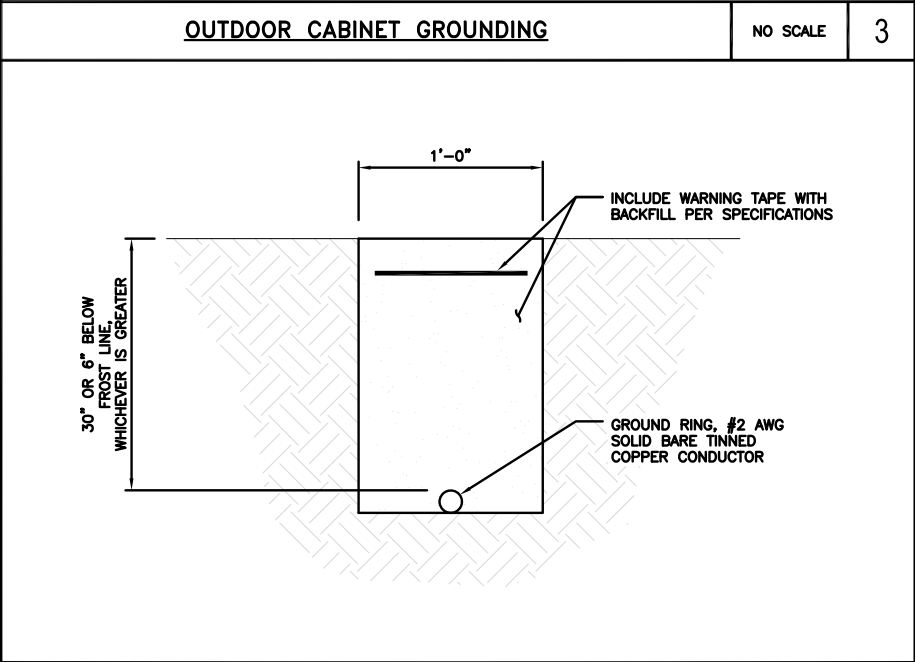
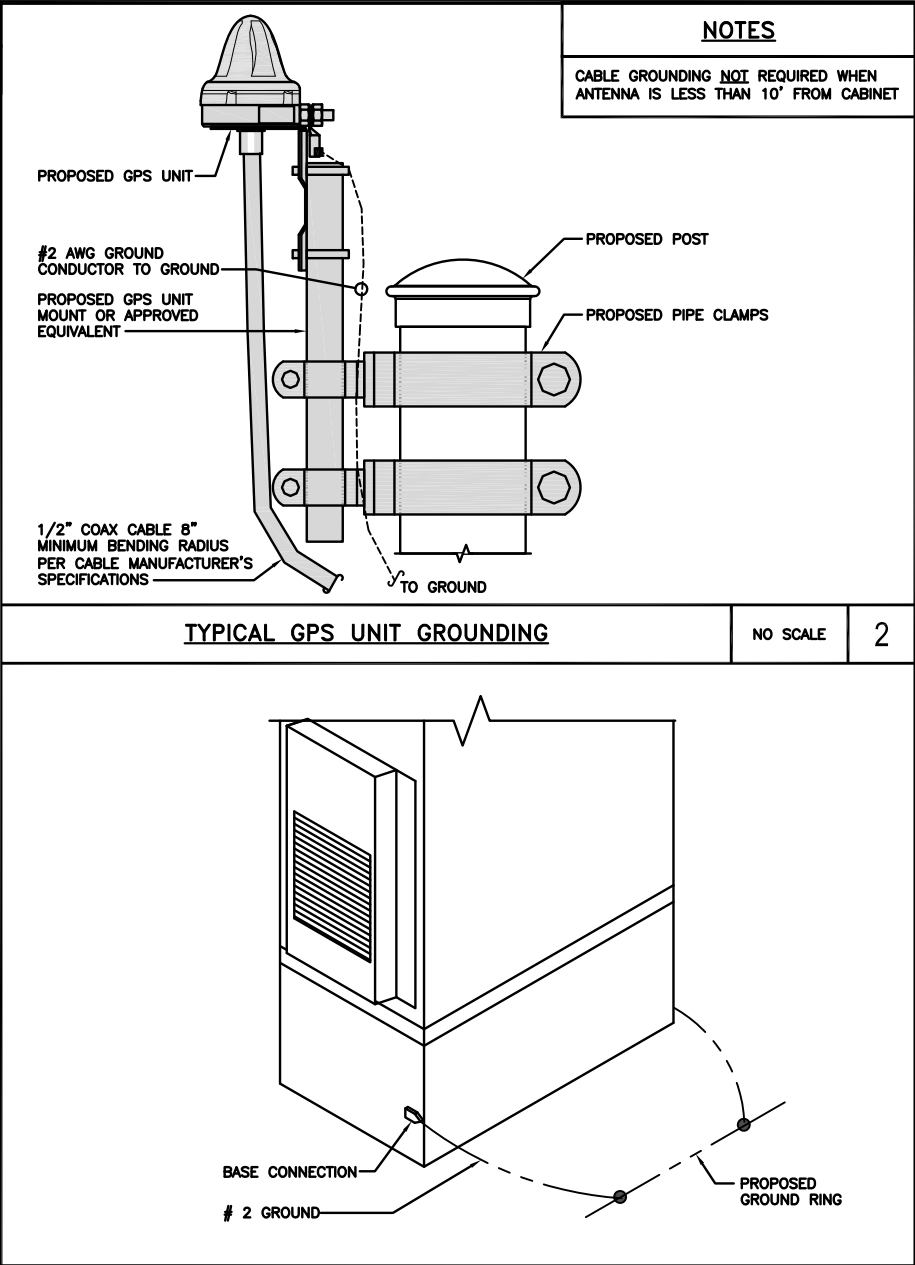
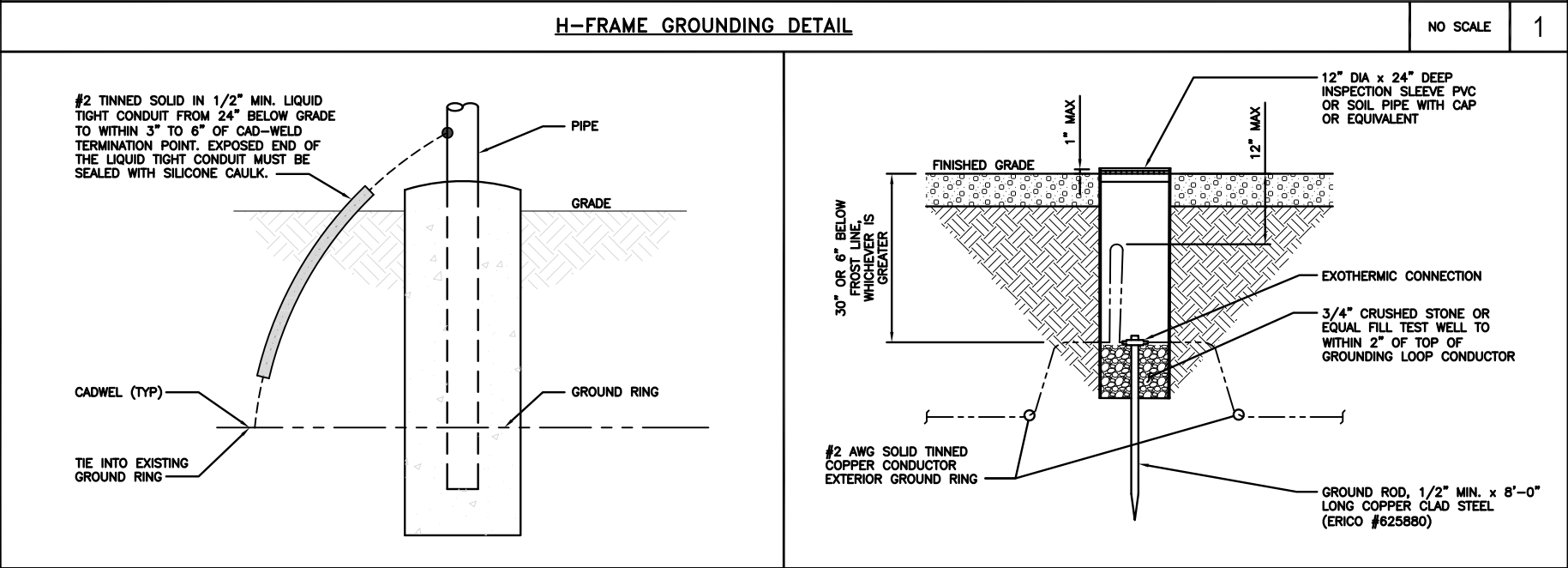
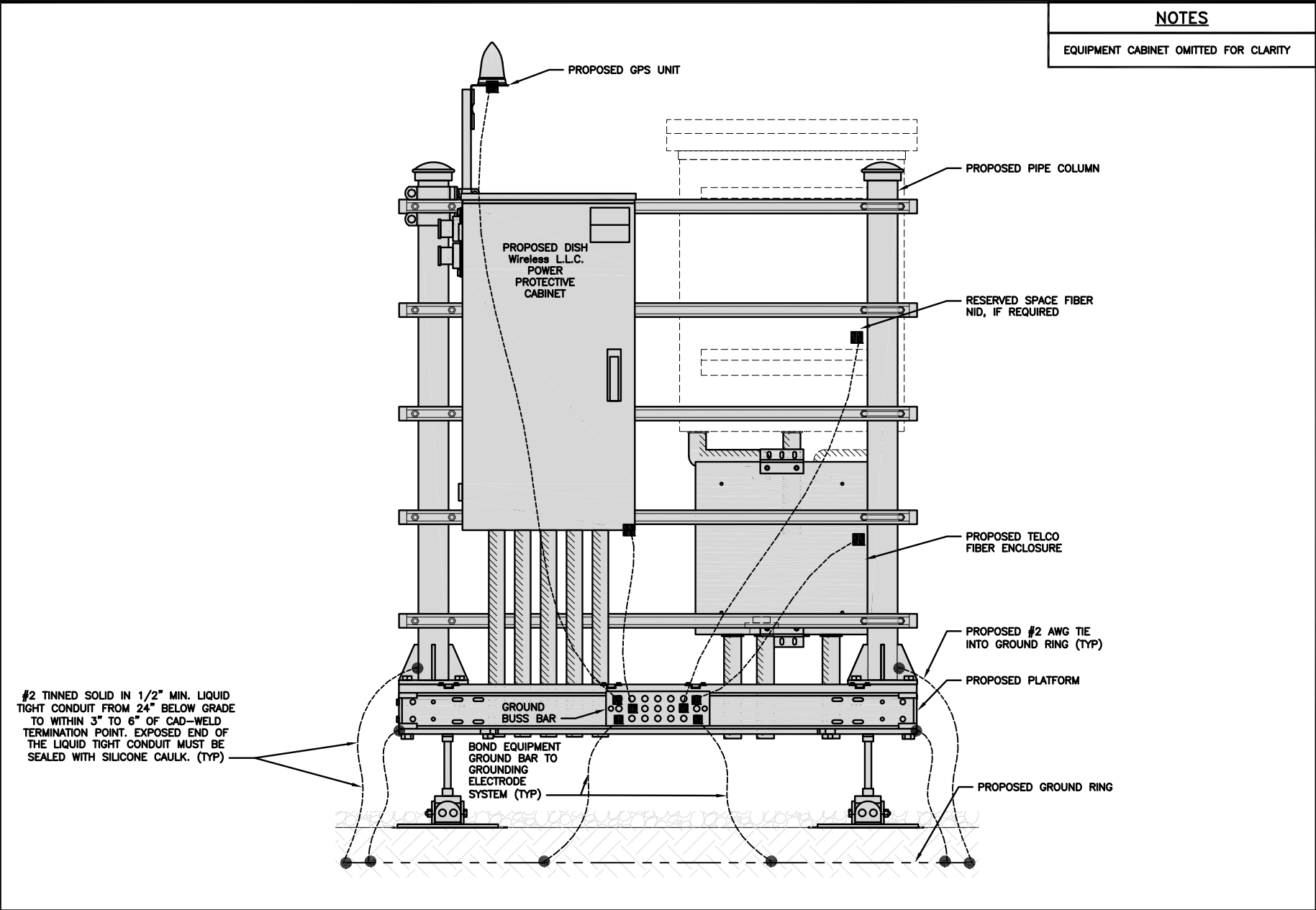
DISH Wireless L.L.C.  
PROJECT INFORMATION

NJJER01100B  
320 OLD STAGECOACH  
ROAD  
RIDGEFIELD, CT 06877

SHEET TITLE  
GROUNDING PLANS  
AND NOTES

SHEET NUMBER

G-1



5701 SOUTH SANTA FE DRIVE  
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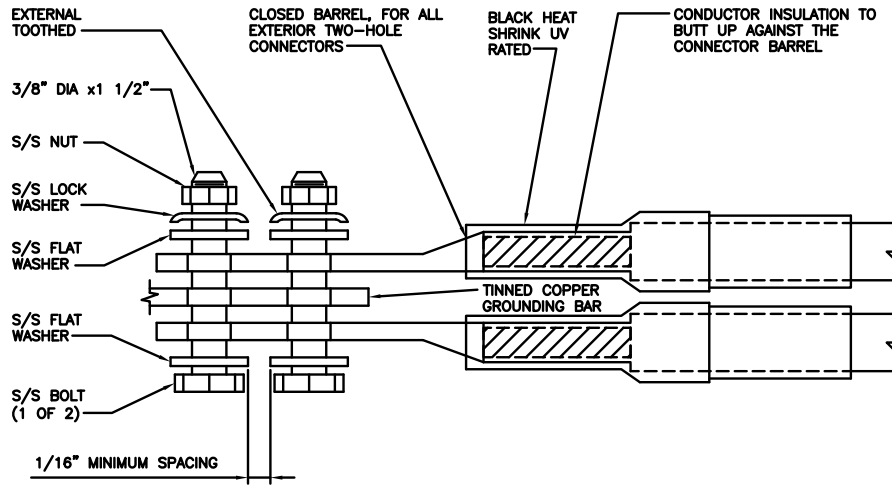
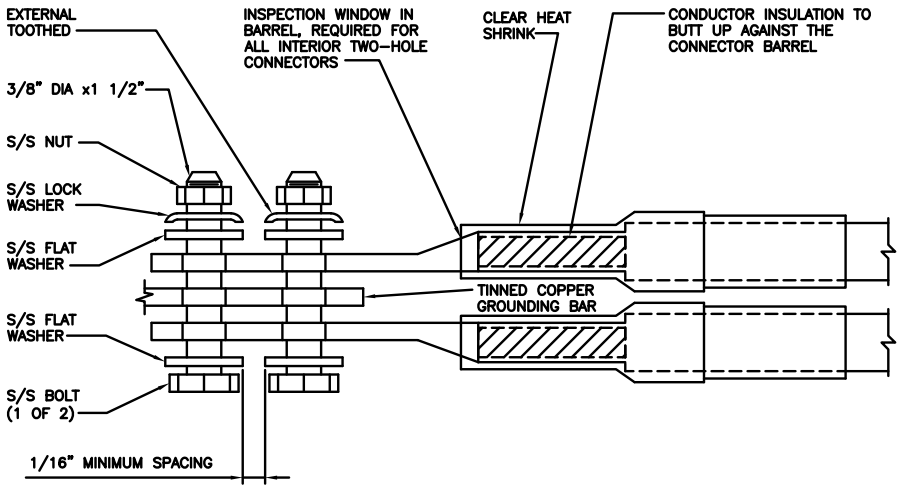
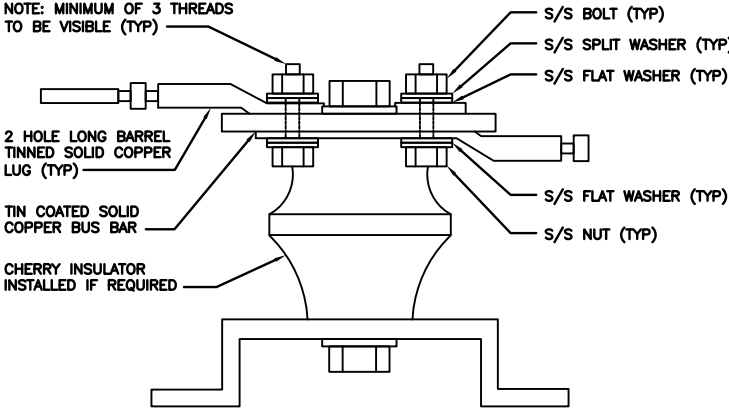
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DISH Wireless L.L.C. PROJECT INFORMATION		
NJJER01100B 320 OLD STAGECOACH ROAD RIDGEFIELD, CT 06877		
SHEET TITLE		
GROUNDING DETAILS		
SHEET NUMBER		
G-2		



<div>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.</div> <div>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.</div> <div>3. FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.</div> <div>4. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.</div> <div>5. NUT &amp; WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.</div> <div>6. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.</div> <div>7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.</div> <div>8. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).</div>														
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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EXPIRES

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DISH Wireless L.L.C.  
PROJECT INFORMATION

NJER01100B  
320 OLD STAGECOACH ROAD  
RIDGEFIELD, CT 06877

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

G-3

DISH Wireless L.L.C. TEMPLATE VERSION 40 – 08/13/2021



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)				ALPHA RRH				BETA RRH			
				PORT 1 + SLANT	PORT 2 – SLANT	PORT 3 + SLANT	PORT 4 – SLANT	PORT 1 + SLANT	PORT 2 – SLANT	PORT 3 + SLANT	PORT 4 – SLANT
				RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE
				ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE
					WHITE (–) PORT	ORANGE	ORANGE		WHITE (–) PORT	ORANGE	ORANGE
							WHITE (–) PORT				WHITE (–) PORT
MID-BAND RRH – (AWS BANDS N66+N70)				RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE
				PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE
					WHITE (–) PORT	PURPLE	PURPLE		WHITE (–) PORT	PURPLE	PURPLE
							WHITE (–) PORT				WHITE (–) PORT
HYBRID/DISCREET CABLES  INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS  EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS  EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS				EXAMPLE 1		EXAMPLE 2		EXAMPLE 3		CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RD DETAILS. FINAL RFDS IS IN NEXSYSONE.	
				RED	RED	RED	RED	RED	RED		
				BLUE		BLUE		ORANGE			
				GREEN		GREEN		PURPLE			
				ORANGE							
				PURPLE		YELLOW					
FIBER JUMPERS TO RRHs  LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY				LOW BAND RRH		HIGH BAND RRH		LOW BAND RRH		HIGH BAND RRH	
				RED		RED		BLUE		GREEN	
						PURPLE				PURPLE	
POWER CABLES TO RRHs  LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY				LOW BAND RRH		HIGH BAND RRH		LOW BAND RRH		HIGH BAND RRH	
				RED		RED		BLUE		GREEN	
						PURPLE				PURPLE	
RET MOTORS AT ANTENNAS				ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"
				RED	RED	BLUE	BLUE	GREEN	GREEN		
					PURPLE		PURPLE		PURPLE		PURPLE
MICROWAVE RADIO LINKS  LINKS WILL HAVE A 1.5–2 INCH WHITE WRAP WITH THE AZIMUTH COLOR OVERLAPPING IN THE MIDDLE. ADD ADDITIONAL SECTOR COLOR BANDS FOR EACH ADDITIONAL MW RADIO.  MICROWAVE CABLES WILL REQUIRE P–TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID'S				FORWARD AZIMUTH OF 0–120 DEGREES		FORWARD AZIMUTH OF 120–240 DEGREES		FORWARD AZIMUTH OF 240–360 DEGREES			
				PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY		
				WHITE	WHITE	WHITE	WHITE	WHITE	WHITE		
				RED	RED	BLUE	BLUE	GREEN	GREEN		
				WHITE	WHITE	WHITE	WHITE	WHITE	WHITE		
					RED		BLUE		GREEN		
					WHITE		WHITE		WHITE		

RF CABLE COLOR CODES

NO SCALE

1

NOT USED

NO SCALE

4

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

ORANGE

AWS  
(N66+N70+H–BLOCK)

PURPLE

CBRS TECH  
(3 GHz)

YELLOW

NEGATIVE SLANT PORT  
ON ANT/RRH

WHITE

ALPHA SECTOR

RED

BETA SECTOR

BLUE

GAMMA SECTOR

GREEN

COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4

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DISH Wireless L.L.C.  
PROJECT INFORMATION

NJER01100B  
320 OLD STAGECOACH  
ROAD  
RIDGEFIELD, CT 06877

SHEET TITLE  
RF  
CABLE COLOR CODES

SHEET NUMBER

RF-1

DISH Wireless L.L.C. TEMPLATE VERSION 40 – 08/13/2021

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SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH Wireless L.L.C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.
2. "LOOK UP" – DISH Wireless L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:  
  
THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH Wireless L.L.C. AND DISH Wireless L.L.C. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH Wireless L.L.C. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH DISH Wireless L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH Wireless L.L.C. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH Wireless L.L.C. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER’S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH Wireless L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER’S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR’S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER’S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

- 1.FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
  
CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION  
  
CARRIER:DISH Wireless L.L.C.  
  
TOWER OWNER:TOWER OWNER
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER’S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR’S EXPENSE TO THE SATISFACTION OF DISH Wireless L.L.C. AND TOWER OWNER
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER’S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.



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A&E PROJECT NUMBER  
  
155785.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
  
NJJER01100B  
320 OLD STAGECOACH  
ROAD  
RIDGEFIELD, CT 06877

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 90f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:  
#4 BARS AND SMALLER 40 ksi  
#5 BARS AND LARGER 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
  - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
  - CONCRETE EXPOSED TO EARTH OR WEATHER:
    - #6 BARS AND LARGER 2"
    - #5 BARS AND SMALLER 1-1/2"
  - CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
    - SLAB AND WALLS 3/4"
    - BEAMS AND COLUMNS 1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.


ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- 4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- 4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. TIE WRAPS ARE NOT ALLOWED.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.


16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.




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9/29/21

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A&E PROJECT NUMBER

155785.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJJER01100B  
320 OLD STAGECOACH ROAD  
RIDGEFIELD, CT 06877

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

DISH Wireless L.L.C. TEMPLATE VERSION 40 – 08/13/2021

GROUNDING NOTES:

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



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DISH Wireless L.L.C.  
PROJECT INFORMATION  
  
NJJER01100B  
320 OLD STAGECOACH  
ROAD  
RIDGFIELD, CT 06877

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER

GN-4

ENGINEERING:  
STRUCTURAL ANALYSIS  
MOUNT ANALYSIS



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 149 ft Monopole  
**ATC Site Name** : Ridgefield 2,CT  
**ATC Site Number** : 209115  
**Engineering Number** : 13700322\_C3\_02  
**Proposed Carrier** : DISH WIRELESS L.L.C.  
**Carrier Site Name** : NJJER01100B  
**Carrier Site Number** : NJJER01100B  
**Site Location** : 320 Old Stagecoach Road  
Ridgefield, CT 06877  
41.3303, -73.5168  
**County** : Fairfield  
**Date** : September 1, 2021  
**Max Usage** : 52%  
**Result** : Pass

Prepared By:

Sarah Kramer  
Structural Engineer

*Sarah D. Kramer*

Reviewed By:



**COA : PEC.0001553**

## **Table of Contents**

Introduction.....	3
Supporting Documents .....	3
Analysis .....	3
Conclusion .....	3
Existing and Reserved Equipment.....	4
Equipment to be Removed .....	4
Proposed Equipment .....	4
Structure Usages.....	5
Foundations .....	5
Deflection and Sway* .....	5
Standard Conditions .....	6
Calculations .....	Attached



## **Introduction**

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

## **Supporting Documents**

<b>Tower Drawings</b>	Valmont Project #273806, dated November 11, 2014
<b>Foundation Drawing</b>	Valmont Drawing #B-140570, dated November 19, 2014
<b>Geotechnical Report</b>	Terracon Project #J2145173, dated October 7, 2014

## **Analysis**

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

<b>Basic Wind Speed:</b>	115 mph (3-second gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-second gust) w/ 1" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	C
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 1
<b>Topographic Category:</b>	1
<b>Crest Height (H):</b>	0 ft
<b>Spectral Response:</b>	$S_s = 0.24$ , $S_i = 0.06$
<b>Site Class:</b>	D - Stiff Soil - Default

## **Conclusion**

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

### Existing and Reserved Equipment

Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
157.4	1	RFI Antennas BA40-41	Stand-Off	(1) 7/8" Coax	TOWN OF RIDGEFIELD, CT
146.0	3	Ericsson RRUS 4478 B14	Triangular Platform with Handrails	(2) 0.51" (13mm) Hybrid (8) 0.63" (15.9mm) Cable (3) 3/8" (0.38"-9.5mm) RET Control Cable	AT&T MOBILITY
	12	CCI HPA-65R-BUU-H8			
	6	Ericsson RRUS-11			
	3	Ericsson RRUS 32 (50.8 lbs)			
	3	Ericsson RRUS E2			
	3	Kaelus DBCT108F1V92-1			
	4	Raycap DC6-48-60-18-8F(32.8 lbs)			
	3	Ericsson RRUS A2 Module			
	3	Ericsson RRUS 8843 B2, B66A			
	3	Ericsson RRUS 4478 B5			
136.0	3	Commscope CBC78T-DS-43-2X	Triangular Platform with Handrails	(2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Samsung B5/B13 RRH-BR04C			
	1	RFS DB-C1-12C-24AB-OZ			
	3	Samsung B2/B66A RRH-BR049			
	9	Commscope JAHH-65B-R3B (63.3 lb)			
126.0	3	Ericsson Radio 4424 B25	T-Arm with Reinforcement	(4) 1 5/8" Hybriflex	T-MOBILE
	3	Ericsson Radio 4449 B71+B85			
	3	Ericsson Radio 4415 B2,B66A			
	3	Ericsson RRUS 11 B4			
	3	Ericsson AIR 6449 B41			
	3	Commscope SDX1926Q-43			
	3	RFS APXVAARR24_43-U-NA20			
	3	RFS APX16DWV-16DWVS-E-A20			
66.0	1	Commscope VHLP3-11W-6GR	Stand-Off	(1) EW90 (1) 7/8" Coax	TOWN OF RIDGEFIELD, CT
	1	Generic 4' Grid Dish			
	1	Sinclair SD210R-SF2P90LDF(S)			

### Equipment to be Removed

Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
No loading was considered as removed as part of this analysis.					

### Proposed Equipment

Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
113.0	1	Commscope RDIDC-9181-PF-48	Triangular Platform with Handrails	(1) 1.75" (44.5mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B605			
	3	Fujitsu TA08025-B604			
	3	JMA Wireless MX08FRO665-21			

<sup>1</sup> Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

### **Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	52%	Pass
Shaft	52%	Pass
Base Plate	14%	Pass

### **Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3540.1	45%
Axial (Kips)	53.8	23%
Shear (Kips)	32.3	38%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

### **Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
113.0	Commscope RDIDC-9181-PF-48	DISH WIRELESS L.L.C.	0.870	0.960
	Fujitsu TA08025-B605			
	Fujitsu TA08025-B604			
	JMA Wireless MX08FRO665-21			
70.0	Commscope VHLP3-11W-6GR	TOWN OF RIDGEFIELD, CT	0.312	0.540
69.6	Generic 4' Grid Dish	TOWN OF RIDGEFIELD, CT	0.308	0.540

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

### **Standard Conditions**

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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

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

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

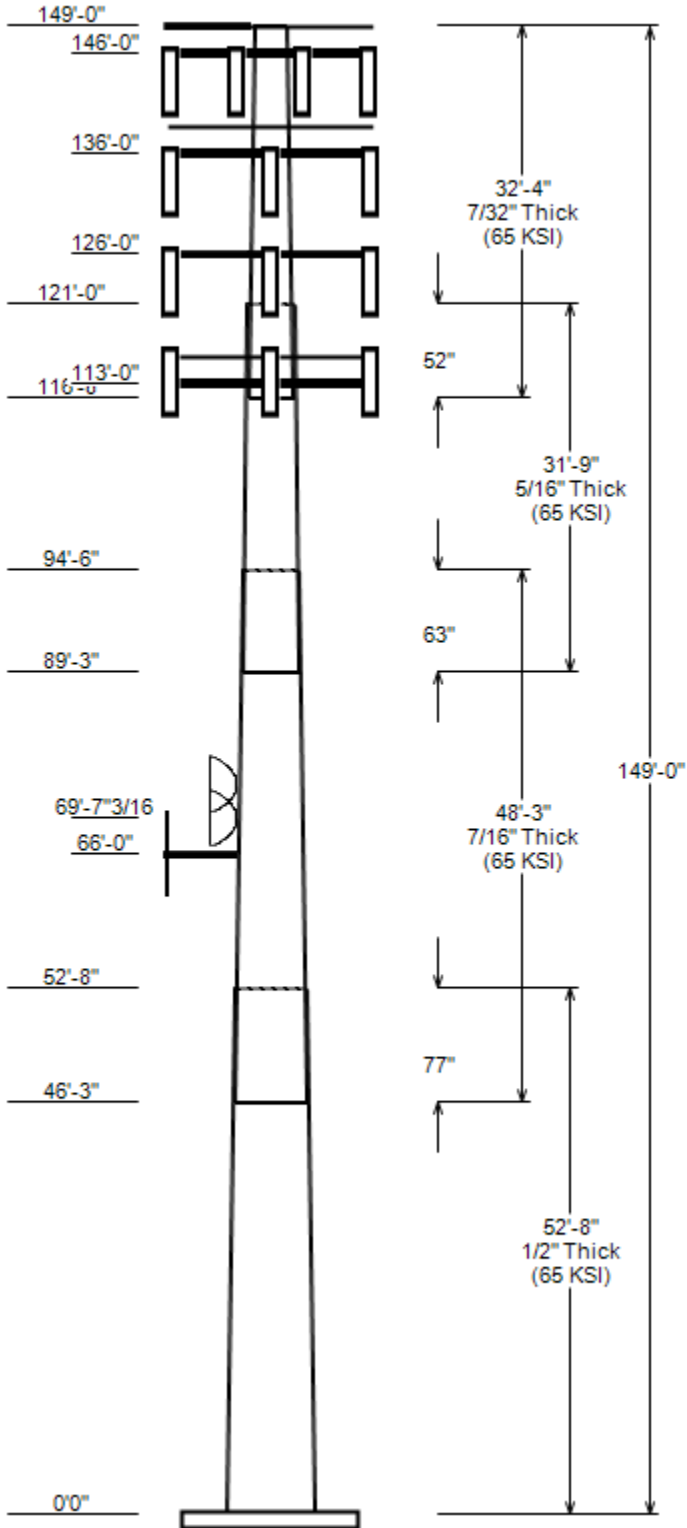
All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

# JOB INFORMATION

Asset : 209115, Ridgefield 2  
 Client : DISH WIRELESS L.L.C.  
 Code : ANSI/TIA-222-H

Height : 149 ft  
 Base Width : 56.88  
 Shape : 18 Sides

15'-4" 13/16



## SITE PARAMETERS

Base Elev (ft): 0.00 Structure Class: II  
 Taper : 0.25700 (In/ft) Exposure : C  
 Topographic Category : 1 Topographic Feature:  
 Topo Method : Method 1

## SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
		Top	Bottom					
1	52.667	43.34	56.88	0.500		0.000	18 Sides	65
2	48.250	33.45	45.86	0.438	Slip Joint	77.000	18 Sides	65
3	31.750	27.26	35.43	0.312	Slip Joint	63.000	18 Sides	65
4	32.333	20.50	28.81	0.219	Slip Joint	52.000	18 Sides	65

## DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
157.4	157.4	1	RFI Antennas BA40-41
149.0	149.0	1	Generic Flat Stand-Off
146.0	146.0	3	Kaelus DBCT108F1V92-1
146.0	145.6	4	Raycap DC6-48-60-18-8F(32.8 lb
146.0	146.0	3	Ericsson RRUS A2 Module
146.0	145.1	3	Ericsson RRUS 8843 B2, B66A
146.0	145.3	3	Ericsson RRUS 4478 B5
146.0	145.3	3	Ericsson RRUS 4478 B14
146.0	146.0	3	Ericsson RRUS E2
146.0	145.1	3	Ericsson RRUS 32 (50.8 lbs)
146.0	146.7	6	Ericsson RRUS-11
146.0	145.2	12	CCI HPA-65R-BUU-H8
146.0	146.0	1	Generic Round Platform with Ha
136.0	135.3	3	Commscope CBC78T-DS-43-2X
136.0	135.6	3	Samsung B2/B66A RRH-BR049
136.0	135.6	3	Samsung B5/B13 RRH-BR04C
136.0	136.0	1	RFS DB-C1-12C-24AB-0Z
136.0	135.9	9	Commscope JAHH-65B-R3B (63.3 l
136.0	136.0	1	Generic Round Platform with Ha
126.0	123.2	3	Commscope SDX1926Q-43
126.0	125.0	3	Ericsson Radio 4424 B25
126.0	126.0	3	Ericsson Radio 4449 B71+B85
126.0	126.0	3	Ericsson Radio 4415 B2,B66A
126.0	125.1	3	Ericsson RRUS 11 B4
126.0	125.9	3	Ericsson AIR 6449 B41
126.0	124.6	3	RFS APX16DWV-16DWVS-E-A20
126.0	126.0	1	Generic Mount Reinforcement
126.0	126.0	3	Generic Round T-Arm
126.0	123.1	3	RFS APXVAARR24_43-U-NA20
113.0	113.0	1	Commscope RDIDC-9181-PF-48
113.0	113.0	3	Fujitsu TA08025-B604
113.0	113.0	3	Fujitsu TA08025-B605
113.0	113.0	3	JMA Wireless MX08FRO665-21
113.0	113.0	1	Generic Flat Platform with Han
70.0	70.8	1	Commscope VHLP3-11W-6GR
69.6	69.6	1	Generic 4' Grid Dish
66.0	66.0	1	Sinclair SD210R-SF2P90LDF(S)
66.0	66.0	1	Generic Flat Stand-Off

## LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	157.4	7/8" Coax	No

# JOB INFORMATION

Asset : 209115, Ridgefield 2  
 Client : DISH WIRELESS L.L.C.  
 Code : ANSI/TIA-222-H

Height : 149 ft  
 Base Width : 56.88  
 Shape : 18 Sides

## LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	146.0	3/8" (0.38"- 9.5mm) RET Control Cable	No
0.0	146.0	0.63" (15.9mm) Cable	No
0.0	146.0	0.51" (13mm) Hybrid	No
0.0	136.0	1 5/8" Hybriflex	No
0.0	126.0	1 5/8" Hybriflex	No
0.0	113.0	1.75" (44.5mm) Hybrid	No
0.0	70.0	EW90	No
0.0	66.0	7/8" Coax	No

## LOAD CASES

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

## REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	3540.10	32.33	53.79
0.9D + 1.0W Normal	3504.79	32.31	40.33
1.2D + 1.0Di + 1.0Wi Normal	994.67	9.32	70.76
1.2D + 1.0Ev + 1.0Eh Normal	166.81	1.35	54.16
0.9D - 1.0Ev + 1.0Eh Normal	164.59	1.35	36.72
1.0D + 1.0W Service Normal	857.16	7.87	44.85

## DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W Service Normal	69.60	3.697	0.536
1.0D + 1.0W Service Normal	70.00	3.742	0.540

ASSET: 209115, Ridgefield 2  
CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
ENG NO: 13700322\_C3\_02

#### ANALYSIS PARAMETERS

Location:	Fairfield County,CT	Height:	149 ft
Type and Shape:	Taper, 18 Sides	Base Diameter:	56.88 in
Manufacturer:	Valmont	Top Diameter:	20.50 in
K <sub>d</sub> (non-service):	0.95	Taper:	0.2570 in/ft
K <sub>e</sub> :	0.97	Rotation:	0.000°

#### ICE & WIND PARAMETERS

Exposure Category:	C	Design Wind Speed w/o Ice:	115 mph
Risk Category:	II	Design Wind Speed w/Ice:	50 mph
Topo Factor Procedure:	Method 1	Operational Wind Speed:	60 mph
Topographic Category:	1	Design Ice Thickness:	1.00 in
Crest Height:	0 ft	HMSL:	807.00 ft

#### SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil	Period Based on Rayleigh Method (sec):	2.21
T <sub>L</sub> (sec):	6	P:	1
S <sub>s</sub> :	0.241	S <sub>1</sub> :	0.057
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.257	S <sub>d1</sub> :	0.091
		C <sub>s</sub> :	0.030
		C <sub>s</sub> Max:	0.030
		C <sub>s</sub> Min:	0.030

#### LOAD CASES

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

ASSET: 209115, Ridgefield 2  
 CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
 ENG NO: 13700322\_C3\_02

### SHAFT SECTION PROPERTIES

Bottom												Top							
Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	52.67	0.5000	65		0.00	14,109	56.88	0.003	89.47	35,932.7	18.30	113.76	43.34	52.67	67.98	15,758.4	13.52	86.67	0.2572
2-18	48.25	0.4375	65	Slip	77.00	8,941	45.86	46.250	63.07	16,441.6	16.72	104.82	33.45	94.50	45.84	6,312.6	11.72	76.46	0.2572
3-18	31.75	0.3125	65	Slip	63.00	3,325	35.43	89.250	34.83	5,425.4	18.23	113.37	27.26	121.00	26.73	2,452.4	13.62	87.24	0.2572
4-18	32.33	0.2188	65	Slip	52.00	1,867	28.81	116.667	19.86	2,051.3	21.46	131.69	20.50	149.00	14.08	731.7	14.76	93.68	0.2572

Shaft Weight 28,242

### DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice			Ice		
					Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor
157.40	RFI Antennas BA40-41	1	1.00	0.000	32.00	4.590	1.00	106.89	7.352	1.00
149.00	Generic Flat Stand-Off	1	1.00	0.000	187.50	6.300	1.00	276.36	8.378	1.00
146.00	Ericsson RRUS-11	6	0.75	0.700	55.00	3.792	0.61	114.79	4.647	0.61
146.00	CCI HPA-65R-BUU-H8	12	0.75	-0.800	68.00	12.976	0.67	239.13	15.360	0.67
146.00	Ericsson RRUS 32 (50.8 lbs)	3	0.75	-0.900	50.80	2.692	0.67	98.43	3.461	0.67
146.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	3578.74	43.480	1.00
146.00	Ericsson RRUS E2	3	0.75	0.000	52.90	2.475	0.67	94.58	3.162	0.67
146.00	Ericsson RRUS 4478 B14	3	0.75	-0.700	59.40	2.021	0.67	100.27	2.649	0.67
146.00	Ericsson RRUS 4478 B5	3	0.75	-0.700	59.90	1.842	0.50	96.72	2.439	0.50
146.00	Ericsson RRUS 8843 B2, B66A	3	0.75	-0.900	72.00	1.639	0.50	112.82	2.202	0.50
146.00	Ericsson RRUS A2 Module	3	0.75	0.000	21.20	1.600	0.50	45.20	2.157	0.50
146.00	Raycap DC6-48-60-18-8F(32.8 lb	4	0.75	-0.400	32.80	1.470	1.00	73.89	1.935	1.00
146.00	Kaelus DBCT108F1V92-1	3	0.75	0.000	13.90	0.633	0.50	30.66	0.996	0.50
136.00	Commscope CBC78T-DS-43-2X	3	0.75	-0.700	20.70	0.552	0.50	35.31	0.888	0.50
136.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	3571.09	43.364	1.00
136.00	Commscope JAHH-65B-R3B (63.3 l	9	0.75	-0.100	63.30	9.113	0.69	197.09	10.948	0.69
136.00	RFS DB-C1-12C-24AB-0Z	1	0.75	0.000	32.00	4.056	1.00	116.04	4.959	1.00
136.00	Samsung B5/B13 RRH-BR04C	3	0.75	-0.400	70.30	1.875	0.50	108.13	2.472	0.50
136.00	Samsung B2/B66A RRH-BR049	3	0.75	-0.400	84.40	1.875	0.50	126.59	2.472	0.50
126.00	Ericsson Radio 4415 B2,B66A	3	0.80	0.000	47.40	1.856	0.50	80.66	2.447	0.50
126.00	Ericsson Radio 4449 B71+B85	3	0.80	0.000	75.00	1.650	0.50	114.33	2.206	0.50
126.00	Ericsson Radio 4424 B25	3	0.80	-1.000	46.30	1.639	0.50	78.17	1.977	0.50
126.00	Ericsson RRUS 11 B4	3	0.80	-0.900	50.70	2.791	0.67	98.22	3.511	0.67
126.00	Ericsson AIR 6449 B41	3	0.80	-0.100	101.60	5.500	0.63	188.50	6.528	0.63
126.00	RFS APX16DWV-16DWVS-E-A20	3	0.80	-1.400	40.70	6.586	0.60	117.36	8.007	0.60
126.00	Generic Mount Reinforcement	1	1.00	0.000	200.00	7.500	1.00	327.00	12.413	1.00
126.00	Commscope SDX1926Q-43	3	0.80	-2.800	6.20	0.242	0.50	11.84	0.473	0.50
126.00	Generic Round T-Arm	3	1.00	0.000	312.50	9.700	1.00	483.94	15.110	1.00
126.00	RFS APXVAARR24_43-U-NA20	3	0.80	-2.900	127.90	20.243	0.63	385.53	22.677	0.63
113.00	Generic Flat Platform with Han	1	1.00	0.000	2500.00	42.400	1.00	3652.06	56.001	1.00
113.00	JMA Wireless MX08FRO665-21	3	0.75	0.000	64.50	12.489	0.64	231.18	14.311	0.64
113.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	101.72	2.559	0.50
113.00	Commscope RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	1.00	58.81	2.451	1.00
113.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	115.63	2.559	0.50
70.00	Commscope VHLP3-11W-6GR	1	0.90	0.800	53.00	10.680	1.00	187.33	11.863	1.00
69.60	Generic 4' Grid Dish	1	0.90	0.000	51.00	7.460	1.00	195.50	38.255	1.00
66.00	Sinclair SD210R-SF2P90LDF(S)	1	0.90	0.000	37.00	3.750	1.00	111.80	11.450	1.00
66.00	Generic Flat Stand-Off	1	1.00	0.000	187.50	6.300	1.00	269.43	8.216	1.00

Totals Num Loadings: 38

109

14,700.40

26,646.09

### LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : 0.00\_

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	157.40	1	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	TOWN OF RIDGE
0.00	146.00	8	0.63" (15.9mm) Cable	0.63	0.31	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	146.00	3	3/8" (0.38"- 9.5mm) R	0.38	0.23	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	146.00	2	0.51" (13mm) Hybrid	0.51	0.14	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	136.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIREL
0.00	126.00	4	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	T-MOBILE
0.00	113.00	1	1.75" (44.5mm) Hybrid	1.75	2.72	N	0	0	0	0	0	N	DISH WIRELESS
0.00	70.00	1	EW90	1.32	0.32	N	0	0	0	0	0	N	TOWN OF RIDGE



Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	66.00	1	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	TOWN OF RIDGE

ASSET: 209115, Ridgefield 2  
 CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
 ENG NO: 13700322\_C3\_02

SEGMENT PROPERTIES

(Max Len: 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)
0.00		0.5000	56.880	89.472	35,932.70	18.30	113.76	79.9	1244.3	0.0	0.0
5.00		0.5000	55.594	87.431	33,529.70	17.84	111.19	80.4	1187.9	0.0	1,504.9
10.00		0.5000	54.308	85.391	31,236.30	17.39	108.62	80.9	1132.9	0.0	1,470.2
15.00		0.5000	53.022	83.350	29,049.90	16.94	106.04	81.5	1079.1	0.0	1,435.5
20.00		0.5000	51.736	81.309	26,968.10	16.48	103.47	82	1026.7	0.0	1,400.7
25.00		0.5000	50.450	79.269	24,988.10	16.03	100.90	82.6	975.5	0.0	1,366.0
30.00		0.5000	49.165	77.228	23,107.50	15.57	98.33	82.6	925.7	0.0	1,331.3
35.00		0.5000	47.879	75.187	21,323.70	15.12	95.76	82.6	877.2	0.0	1,296.6
40.00		0.5000	46.593	73.147	19,634.20	14.67	93.19	82.6	830.0	0.0	1,261.9
45.00		0.5000	45.307	71.106	18,036.30	14.21	90.61	82.6	784.1	0.0	1,227.1
46.25	Bot - Section 2	0.5000	44.985	70.596	17,650.80	14.10	89.97	82.6	772.8	0.0	301.4
50.00		0.5000	44.021	69.065	16,527.60	13.76	88.04	82.6	739.5	0.0	1,687.2
52.67	Top - Section 1	0.4375	44.210	60.781	14,713.90	16.05	101.05	82.5	655.5	0.0	1,177.8
55.00		0.4375	43.610	59.948	14,117.10	15.81	99.68	82.6	637.6	0.0	479.2
60.00		0.4375	42.324	58.163	12,892.80	15.29	96.74	82.6	600.0	0.0	1,004.8
65.00		0.4375	41.038	56.377	11,741.50	14.78	93.80	82.6	563.5	0.0	974.4
66.00		0.4375	40.781	56.020	11,519.80	14.67	93.21	82.6	556.4	0.0	191.2
69.60		0.4375	39.855	54.734	10,744.70	14.30	91.10	82.6	531.0	0.0	678.4
70.00		0.4375	39.752	54.592	10,660.80	14.26	90.86	82.6	528.2	0.0	74.4
75.00		0.4375	38.466	52.806	9,648.60	13.74	87.92	82.6	494.0	0.0	913.6
80.00		0.4375	37.181	51.020	8,702.50	13.22	84.98	82.6	461.0	0.0	883.2
85.00		0.4375	35.895	49.235	7,820.50	12.70	82.04	82.6	429.1	0.0	852.9
89.25	Bot - Section 3	0.4375	34.801	47.717	7,119.20	12.26	79.55	82.6	402.9	0.0	701.1
90.00		0.4375	34.609	47.449	7,000.10	12.19	79.11	82.6	398.4	0.0	210.0
94.50	Top - Section 2	0.3125	34.076	33.488	4,823.30	17.46	109.04	80.9	278.8	0.0	1,235.9
95.00		0.3125	33.948	33.361	4,768.50	17.39	108.63	80.9	276.7	0.0	56.8
100.00		0.3125	32.662	32.085	4,242.20	16.67	104.52	81.8	255.8	0.0	556.7
105.00		0.3125	31.376	30.810	3,756.20	15.94	100.40	82.6	235.8	0.0	535.0
110.00		0.3125	30.090	29.535	3,308.70	15.21	96.29	82.6	216.6	0.0	513.3
113.00		0.3125	29.319	28.769	3,058.20	14.78	93.82	82.6	205.4	0.0	297.6
115.00		0.3125	28.804	28.259	2,898.30	14.49	92.17	82.6	198.2	0.0	194.1
116.67	Bot - Section 4	0.3125	28.375	27.834	2,769.50	14.25	90.80	82.6	192.2	0.0	159.1
120.00		0.3125	27.518	26.984	2,523.30	13.76	88.06	82.6	180.6	0.0	532.7
121.00	Top - Section 3	0.2188	27.699	19.083	1,820.70	20.56	126.59	77.2	129.5	0.0	156.7
125.00		0.2188	26.670	18.369	1,623.80	19.73	121.89	78.2	119.9	0.0	254.9
126.00		0.2188	26.413	18.190	1,576.90	19.52	120.72	78.4	117.6	0.0	62.2
130.00		0.2188	25.384	17.476	1,398.30	18.69	116.01	79.4	108.5	0.0	242.7
135.00		0.2188	24.098	16.583	1,194.70	17.66	110.14	80.6	97.6	0.0	289.7
136.00		0.2188	23.841	16.404	1,156.50	17.45	108.96	80.9	95.5	0.0	56.1
140.00		0.2188	22.812	15.690	1,011.90	16.62	104.26	81.9	87.4	0.0	218.4
145.00		0.2188	21.526	14.797	848.80	15.58	98.38	82.6	77.7	0.0	259.3
146.00		0.2188	21.269	14.618	818.40	15.38	97.21	82.6	75.8	0.0	50.0
149.00		0.2188	20.498	14.083	731.70	14.76	93.68	82.6	70.3	0.0	146.5

Totals: 28,241.5

ASSET: 209115, Ridgfield 2  
 CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
 ENG NO: 13700322\_C3\_02

Load Case: 1.2D + 1.0W Normal	115 mph wind with no ice	23 Iterations
Gust Response Factor: 1.10		
Dead load Factor: 1.20		
Wind Load Factor: 1.00		

# CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-53.79	-32.33	0.00	-3,540.1	0.00	3,540.10	6,432.44	1,570.23	7,996.47	7,454.51	0	0	0.484
5.00	-51.81	-31.95	0.00	-3,378.5	0.00	3,378.47	6,327.70	1,534.42	7,635.91	7,164.41	0.07	-0.14	0.480
10.00	-49.88	-31.57	0.00	-3,218.7	0.00	3,218.73	6,221.00	1,498.60	7,283.67	6,877.72	0.29	-0.28	0.476
15.00	-48.00	-31.20	0.00	-3,060.9	0.00	3,060.87	6,112.34	1,462.79	6,939.75	6,594.61	0.66	-0.42	0.472
20.00	-46.15	-30.81	0.00	-2,904.9	0.00	2,904.88	6,001.72	1,426.98	6,604.15	6,315.24	1.18	-0.57	0.468
25.00	-44.35	-30.40	0.00	-2,750.8	0.00	2,750.84	5,889.26	1,391.16	6,276.86	6,039.87	1.85	-0.72	0.463
30.00	-42.59	-29.98	0.00	-2,598.8	0.00	2,598.84	5,737.65	1,355.35	5,957.89	5,731.40	2.68	-0.87	0.461
35.00	-40.87	-29.55	0.00	-2,449.0	0.00	2,448.95	5,586.03	1,319.54	5,647.24	5,431.01	3.67	-1.02	0.459
40.00	-39.20	-29.11	0.00	-2,301.2	0.00	2,301.21	5,434.42	1,283.72	5,344.90	5,138.71	4.83	-1.18	0.456
45.00	-37.59	-28.82	0.00	-2,155.7	0.00	2,155.66	5,282.81	1,247.91	5,050.88	4,854.49	6.15	-1.34	0.452
46.25	-37.17	-28.61	0.00	-2,119.6	0.00	2,119.62	5,244.90	1,238.95	4,978.66	4,784.68	6.51	-1.38	0.451
50.00	-35.03	-28.29	0.00	-2,012.4	0.00	2,012.36	5,131.20	1,212.09	4,765.18	4,578.36	7.65	-1.51	0.447
52.67	-33.54	-28.04	0.00	-1,936.9	0.00	1,936.92	4,513.96	1,066.71	4,217.69	4,056.89	8.52	-1.6	0.486
55.00	-32.87	-27.72	0.00	-1,871.5	0.00	1,871.51	4,453.86	1,052.09	4,102.87	3,947.47	9.32	-1.68	0.482
60.00	-31.50	-27.27	0.00	-1,732.9	0.00	1,732.93	4,321.20	1,020.76	3,862.14	3,714.67	11.18	-1.86	0.475
65.00	-30.20	-26.98	0.00	-1,596.6	0.00	1,596.60	4,188.54	989.42	3,628.68	3,488.95	13.23	-2.05	0.466
66.00	-29.67	-26.39	0.00	-1,569.6	0.00	1,569.62	4,162.01	983.15	3,582.86	3,444.66	13.66	-2.08	0.464
69.60	-28.72	-25.92	0.00	-1,474.6	0.00	1,474.62	4,066.49	960.59	3,420.33	3,287.54	15.29	-2.22	0.456
70.00	-28.54	-25.31	0.00	-1,463.9	0.00	1,463.94	4,055.88	958.08	3,402.50	3,270.31	15.47	-2.24	0.455
75.00	-27.29	-24.87	0.00	-1,337.4	0.00	1,337.37	3,923.22	926.75	3,183.60	3,058.74	17.91	-2.42	0.445
80.00	-26.09	-24.43	0.00	-1,213.0	0.00	1,213.02	3,790.56	895.41	2,971.98	2,854.24	20.55	-2.61	0.433
85.00	-24.93	-24.02	0.00	-1,090.9	0.00	1,090.88	3,657.90	864.07	2,767.63	2,656.82	23.38	-2.8	0.418
89.25	-23.99	-23.78	0.00	-988.8	0.00	988.78	3,545.13	837.43	2,599.65	2,494.57	25.95	-2.96	0.404
90.00	-23.70	-23.57	0.00	-971.0	0.00	970.95	3,525.24	832.73	2,570.56	2,466.48	26.42	-2.99	0.401
94.50	-22.11	-23.30	0.00	-864.9	0.00	864.87	2,437.06	587.72	1,792.40	1,690.71	29.31	-3.16	0.522
95.00	-22.00	-23.10	0.00	-853.2	0.00	853.23	2,430.35	585.48	1,778.79	1,679.58	29.65	-3.18	0.519
100.00	-21.18	-22.70	0.00	-737.7	0.00	737.74	2,362.08	563.10	1,645.40	1,569.41	33.1	-3.41	0.481
105.00	-20.39	-22.31	0.00	-624.2	0.00	624.23	2,289.03	540.71	1,517.20	1,459.85	36.8	-3.64	0.438
110.00	-19.65	-21.99	0.00	-512.7	0.00	512.67	2,194.27	518.33	1,394.21	1,340.91	40.73	-3.86	0.393
113.00	-15.67	-18.59	0.00	-446.7	0.00	446.70	2,137.42	504.90	1,322.91	1,271.97	43.19	-3.98	0.360
115.00	-15.40	-18.44	0.00	-409.5	0.00	409.53	2,099.51	495.95	1,276.41	1,227.02	44.87	-4.06	0.342
116.67	-15.17	-18.25	0.00	-378.8	0.00	378.79	2,067.92	488.49	1,238.30	1,190.18	46.3	-4.12	0.327
120.00	-14.48	-18.05	0.00	-318.0	0.00	317.95	2,004.76	473.56	1,163.82	1,118.19	49.22	-4.24	0.293
121.00	-14.26	-17.87	0.00	-299.9	0.00	299.89	1,326.25	334.91	831.27	749.80	50.11	-4.28	0.414
125.00	-13.89	-17.67	0.00	-228.4	0.00	228.43	1,292.72	322.37	770.21	703.28	53.75	-4.4	0.339
126.00	-11.00	-12.89	0.00	-210.8	0.00	210.77	1,284.14	319.24	755.30	691.76	54.68	-4.44	0.315
130.00	-10.67	-12.57	0.00	-159.2	0.00	159.20	1,249.05	306.70	697.15	646.21	58.45	-4.57	0.257
135.00	-10.29	-12.34	0.00	-96.3	0.00	96.34	1,203.41	291.03	627.73	590.51	63.31	-4.7	0.174
136.00	-6.18	-8.23	0.00	-84.0	0.00	84.00	1,194.05	287.90	614.28	579.55	64.3	-4.72	0.151
140.00	-5.92	-7.92	0.00	-51.1	0.00	51.08	1,155.82	275.36	561.95	536.34	68.29	-4.79	0.101
145.00	-5.60	-7.70	0.00	-11.5	0.00	11.48	1,099.34	259.69	499.82	480.82	73.33	-4.84	0.030
146.00	-0.39	-0.64	0.00	-3.8	0.00	3.78	1,086.07	256.55	487.82	469.22	74.34	-4.84	0.008
149.00	0.00	-0.61	0.00	-1.8	0.00	1.84	1,046.26	247.15	452.73	435.29	77.38	-4.84	0.004

ASSET: 209115, Ridgfield 2  
 CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
 ENG NO: 13700322\_C3\_02

Load Case: 0.9D + 1.0W Normal	115 mph wind with no ice	23 Iterations
Gust Response Factor: 1.10		
Dead load Factor: 0.90		
Wind Load Factor: 1.00		

# CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-40.33	-32.31	0.00	-3,504.8	0.00	3,504.79	6,432.44	1,570.23	7,996.47	7,454.51	0	0	0.477
5.00	-38.83	-31.90	0.00	-3,343.2	0.00	3,343.25	6,327.70	1,534.42	7,635.91	7,164.41	0.07	-0.14	0.473
10.00	-37.37	-31.50	0.00	-3,183.8	0.00	3,183.75	6,221.00	1,498.60	7,283.67	6,877.72	0.29	-0.27	0.469
15.00	-35.93	-31.09	0.00	-3,026.3	0.00	3,026.28	6,112.34	1,462.79	6,939.75	6,594.61	0.65	-0.42	0.465
20.00	-34.53	-30.67	0.00	-2,870.8	0.00	2,870.83	6,001.72	1,426.98	6,604.15	6,315.24	1.17	-0.56	0.461
25.00	-33.16	-30.24	0.00	-2,717.5	0.00	2,717.46	5,889.26	1,391.16	6,276.86	6,039.87	1.83	-0.71	0.456
30.00	-31.83	-29.79	0.00	-2,566.3	0.00	2,566.27	5,737.65	1,355.35	5,957.89	5,731.40	2.65	-0.86	0.454
35.00	-30.52	-29.34	0.00	-2,417.3	0.00	2,417.29	5,586.03	1,319.54	5,647.24	5,431.01	3.63	-1.01	0.451
40.00	-29.25	-28.88	0.00	-2,270.6	0.00	2,270.58	5,434.42	1,283.72	5,344.90	5,138.71	4.78	-1.17	0.448
45.00	-28.03	-28.59	0.00	-2,126.2	0.00	2,126.16	5,282.81	1,247.91	5,050.88	4,854.49	6.08	-1.33	0.444
46.25	-27.71	-28.36	0.00	-2,090.4	0.00	2,090.42	5,244.90	1,238.95	4,978.66	4,784.68	6.44	-1.37	0.443
50.00	-26.10	-28.03	0.00	-1,984.1	0.00	1,984.09	5,131.20	1,212.09	4,765.18	4,578.36	7.56	-1.49	0.439
52.67	-24.97	-27.78	0.00	-1,909.3	0.00	1,909.32	4,513.96	1,066.71	4,217.69	4,056.89	8.42	-1.58	0.477
55.00	-24.46	-27.45	0.00	-1,844.5	0.00	1,844.51	4,453.86	1,052.09	4,102.87	3,947.47	9.21	-1.66	0.473
60.00	-23.42	-26.98	0.00	-1,707.3	0.00	1,707.28	4,321.20	1,020.76	3,862.14	3,714.67	11.05	-1.84	0.466
65.00	-22.43	-26.69	0.00	-1,572.4	0.00	1,572.38	4,188.54	989.42	3,628.68	3,488.95	13.07	-2.02	0.457
66.00	-22.03	-26.09	0.00	-1,545.7	0.00	1,545.69	4,162.01	983.15	3,582.86	3,444.66	13.5	-2.06	0.455
69.60	-21.31	-25.62	0.00	-1,451.8	0.00	1,451.76	4,066.49	960.59	3,420.33	3,287.54	15.1	-2.19	0.448
70.00	-21.17	-25.00	0.00	-1,441.2	0.00	1,441.20	4,055.88	958.08	3,402.50	3,270.31	15.29	-2.21	0.447
75.00	-20.22	-24.55	0.00	-1,316.2	0.00	1,316.19	3,923.22	926.75	3,183.60	3,058.74	17.69	-2.39	0.436
80.00	-19.31	-24.10	0.00	-1,193.5	0.00	1,193.46	3,790.56	895.41	2,971.98	2,854.24	20.3	-2.57	0.424
85.00	-18.43	-23.68	0.00	-1,073.0	0.00	1,072.99	3,657.90	864.07	2,767.63	2,656.82	23.09	-2.76	0.410
89.25	-17.72	-23.45	0.00	-972.3	0.00	972.33	3,545.13	837.43	2,599.65	2,494.57	25.62	-2.92	0.396
90.00	-17.49	-23.22	0.00	-954.8	0.00	954.76	3,525.24	832.73	2,570.56	2,466.48	26.08	-2.95	0.393
94.50	-16.30	-22.96	0.00	-850.2	0.00	850.24	2,437.06	587.72	1,792.40	1,690.71	28.94	-3.11	0.511
95.00	-16.20	-22.75	0.00	-838.8	0.00	838.77	2,430.35	585.48	1,778.79	1,679.58	29.27	-3.13	0.508
100.00	-15.57	-22.34	0.00	-725.0	0.00	725.02	2,362.08	563.10	1,645.40	1,569.41	32.67	-3.36	0.470
105.00	-14.97	-21.94	0.00	-613.3	0.00	613.32	2,289.03	540.71	1,517.20	1,459.85	36.32	-3.59	0.428
110.00	-14.40	-21.62	0.00	-503.6	0.00	503.62	2,194.27	518.33	1,394.21	1,340.91	40.19	-3.8	0.384
113.00	-11.47	-18.28	0.00	-438.8	0.00	438.77	2,137.42	504.90	1,322.91	1,271.97	42.62	-3.92	0.352
115.00	-11.26	-18.13	0.00	-402.2	0.00	402.21	2,099.51	495.95	1,276.41	1,227.02	44.28	-4	0.334
116.67	-11.09	-17.94	0.00	-372.0	0.00	371.99	2,067.92	488.49	1,238.30	1,190.18	45.68	-4.06	0.319
120.00	-10.56	-17.75	0.00	-312.2	0.00	312.19	2,004.76	473.56	1,163.82	1,118.19	48.56	-4.18	0.286
121.00	-10.40	-17.56	0.00	-294.4	0.00	294.44	1,326.25	334.91	831.27	749.80	49.44	-4.21	0.403
125.00	-10.12	-17.36	0.00	-224.2	0.00	224.21	1,292.72	322.37	770.21	703.28	53.02	-4.34	0.330
126.00	-8.03	-12.65	0.00	-206.8	0.00	206.85	1,284.14	319.24	755.30	691.76	53.93	-4.37	0.307
130.00	-7.78	-12.33	0.00	-156.3	0.00	156.26	1,249.05	306.70	697.15	646.21	57.65	-4.5	0.250
135.00	-7.50	-12.10	0.00	-94.6	0.00	94.63	1,203.41	291.03	627.73	590.51	62.44	-4.63	0.168
136.00	-4.48	-8.08	0.00	-82.5	0.00	82.53	1,194.05	287.90	614.28	579.55	63.41	-4.65	0.147
140.00	-4.29	-7.78	0.00	-50.2	0.00	50.20	1,155.82	275.36	561.95	536.34	67.34	-4.72	0.098
145.00	-4.06	-7.57	0.00	-11.3	0.00	11.31	1,099.34	259.69	499.82	480.82	72.3	-4.76	0.028
146.00	-0.28	-0.63	0.00	-3.8	0.00	3.75	1,086.07	256.55	487.82	469.22	73.3	-4.76	0.008
149.00	0.00	-0.61	0.00	-1.8	0.00	1.84	1,046.26	247.15	452.73	435.29	76.29	-4.77	0.004

ASSET: 209115, Ridgfield 2  
CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
ENG NO: 13700322\_C3\_02

Load Case: 1.2D + 1.0Di + 1.0Wi Normal				50 mph wind with 1" radial ice				22 Iterations			
Gust Response Factor: 1.10		Ice Dead Load Factor		1.00							
Dead load Factor: 1.20								Ice Importance Factor		1.00	
Wind Load Factor: 1.00											

#### CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-70.76	-9.32	0.00	-994.7	0.00	994.67	6,432.44	1,570.23	7,996.47	7,454.51	0	0	0.144
5.00	-68.58	-9.21	0.00	-948.0	0.00	948.05	6,327.70	1,534.42	7,635.91	7,164.41	0.02	-0.04	0.143
10.00	-66.42	-9.10	0.00	-902.0	0.00	902.00	6,221.00	1,498.60	7,283.67	6,877.72	0.08	-0.08	0.142
15.00	-64.30	-8.98	0.00	-856.5	0.00	856.52	6,112.34	1,462.79	6,939.75	6,594.61	0.19	-0.12	0.140
20.00	-62.21	-8.86	0.00	-811.6	0.00	811.61	6,001.72	1,426.98	6,604.15	6,315.24	0.33	-0.16	0.139
25.00	-60.17	-8.74	0.00	-767.3	0.00	767.30	5,889.26	1,391.16	6,276.86	6,039.87	0.52	-0.2	0.137
30.00	-58.17	-8.61	0.00	-723.6	0.00	723.61	5,737.65	1,355.35	5,957.89	5,731.40	0.75	-0.24	0.136
35.00	-56.21	-8.47	0.00	-680.6	0.00	680.57	5,586.03	1,319.54	5,647.24	5,431.01	1.03	-0.29	0.135
40.00	-54.30	-8.34	0.00	-638.2	0.00	638.20	5,434.42	1,283.72	5,344.90	5,138.71	1.35	-0.33	0.134
45.00	-52.43	-8.25	0.00	-596.5	0.00	596.50	5,282.81	1,247.91	5,050.88	4,854.49	1.72	-0.37	0.133
46.25	-51.97	-8.18	0.00	-586.2	0.00	586.19	5,244.90	1,238.95	4,978.66	4,784.68	1.82	-0.39	0.132
50.00	-49.65	-8.08	0.00	-555.5	0.00	555.51	5,131.20	1,212.09	4,765.18	4,578.36	2.14	-0.42	0.131
52.67	-48.03	-8.01	0.00	-534.0	0.00	533.95	4,513.96	1,066.71	4,217.69	4,056.89	2.38	-0.45	0.142
55.00	-47.27	-7.91	0.00	-515.3	0.00	515.27	4,453.86	1,052.09	4,102.87	3,947.47	2.6	-0.47	0.141
60.00	-45.69	-7.77	0.00	-475.7	0.00	475.73	4,321.20	1,020.76	3,862.14	3,714.67	3.12	-0.52	0.139
65.00	-44.14	-7.68	0.00	-436.9	0.00	436.90	4,188.54	989.42	3,628.68	3,488.95	3.69	-0.57	0.136
66.00	-43.45	-7.47	0.00	-429.2	0.00	429.22	4,162.01	983.15	3,582.86	3,444.66	3.81	-0.58	0.135
69.60	-42.20	-7.15	0.00	-402.3	0.00	402.32	4,066.49	960.59	3,420.33	3,287.54	4.26	-0.62	0.133
70.00	-41.91	-7.00	0.00	-399.4	0.00	399.39	4,055.88	958.08	3,402.50	3,270.31	4.31	-0.62	0.133
75.00	-40.46	-6.86	0.00	-364.4	0.00	364.41	3,923.22	926.75	3,183.60	3,058.74	4.99	-0.67	0.130
80.00	-39.05	-6.72	0.00	-330.1	0.00	330.13	3,790.56	895.41	2,971.98	2,854.24	5.72	-0.72	0.126
85.00	-37.68	-6.59	0.00	-296.5	0.00	296.54	3,657.90	864.07	2,767.63	2,656.82	6.5	-0.77	0.122
89.25	-36.56	-6.51	0.00	-268.5	0.00	268.53	3,545.13	837.43	2,599.65	2,494.57	7.21	-0.82	0.118
90.00	-36.25	-6.45	0.00	-263.6	0.00	263.65	3,525.24	832.73	2,570.56	2,466.48	7.34	-0.82	0.117
94.50	-34.47	-6.36	0.00	-234.6	0.00	234.63	2,437.06	587.72	1,792.40	1,690.71	8.14	-0.87	0.153
95.00	-34.37	-6.30	0.00	-231.4	0.00	231.45	2,430.35	585.48	1,778.79	1,679.58	8.23	-0.88	0.152
100.00	-33.37	-6.18	0.00	-200.0	0.00	199.96	2,362.08	563.10	1,645.40	1,569.41	9.19	-0.94	0.142
105.00	-32.41	-6.05	0.00	-169.1	0.00	169.08	2,289.03	540.71	1,517.20	1,459.85	10.2	-1	0.130
110.00	-31.49	-5.95	0.00	-138.8	0.00	138.83	2,194.27	518.33	1,394.21	1,340.91	11.29	-1.06	0.118
113.00	-25.71	-5.07	0.00	-121.0	0.00	120.98	2,137.42	504.90	1,322.91	1,271.97	11.96	-1.09	0.107
115.00	-25.36	-5.03	0.00	-110.8	0.00	110.83	2,099.51	495.95	1,276.41	1,227.02	12.43	-1.12	0.103
116.67	-25.08	-4.97	0.00	-102.4	0.00	102.45	2,067.92	488.49	1,238.30	1,190.18	12.82	-1.13	0.098
120.00	-24.25	-4.90	0.00	-85.9	0.00	85.90	2,004.76	473.56	1,163.82	1,118.19	13.62	-1.17	0.089
121.00	-24.01	-4.84	0.00	-81.0	0.00	81.00	1,326.25	334.91	831.27	749.80	13.87	-1.17	0.126
125.00	-23.49	-4.78	0.00	-61.6	0.00	61.64	1,292.72	322.37	770.21	703.28	14.87	-1.21	0.106
126.00	-18.36	-3.51	0.00	-56.9	0.00	56.86	1,284.14	319.24	755.30	691.76	15.12	-1.22	0.097
130.00	-17.88	-3.40	0.00	-42.8	0.00	42.81	1,249.05	306.70	697.15	646.21	16.16	-1.25	0.081
135.00	-17.31	-3.33	0.00	-25.8	0.00	25.79	1,203.41	291.03	627.73	590.51	17.49	-1.29	0.058
136.00	-10.80	-2.21	0.00	-22.5	0.00	22.46	1,194.05	287.90	614.28	579.55	17.76	-1.29	0.048
140.00	-10.39	-2.10	0.00	-13.6	0.00	13.64	1,155.82	275.36	561.95	536.34	18.85	-1.31	0.034
145.00	-9.89	-2.02	0.00	-3.2	0.00	3.15	1,099.34	259.69	499.82	480.82	20.23	-1.32	0.016
146.00	-0.66	-0.19	0.00	-1.1	0.00	1.12	1,086.07	256.55	487.82	469.22	20.51	-1.32	0.003
149.00	0.00	-0.17	0.00	-0.6	0.00	0.56	1,046.26	247.15	452.73	435.29	21.35	-1.33	0.001



ASSET: 209115, Ridgfield 2  
CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
ENG NO: 13700322\_C3\_02

Load Case: 1.0D + 1.0W Service Normal	60 mph Wind with No Ice	22 Iterations
Gust Response Factor: 1.10		
Dead load Factor: 1.00		
Wind Load Factor: 1.00		

# CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-44.85	-7.87	0.00	-857.2	0.00	857.16	6,432.44	1,570.23	7,996.47	7,454.51	0	0	0.122
5.00	-43.27	-7.77	0.00	-817.8	0.00	817.81	6,327.70	1,534.42	7,635.91	7,164.41	0.02	-0.03	0.121
10.00	-41.72	-7.68	0.00	-778.9	0.00	778.94	6,221.00	1,498.60	7,283.67	6,877.72	0.07	-0.07	0.120
15.00	-40.20	-7.58	0.00	-740.6	0.00	740.56	6,112.34	1,462.79	6,939.75	6,594.61	0.16	-0.1	0.119
20.00	-38.72	-7.48	0.00	-702.6	0.00	702.65	6,001.72	1,426.98	6,604.15	6,315.24	0.29	-0.14	0.118
25.00	-37.28	-7.38	0.00	-665.2	0.00	665.25	5,889.26	1,391.16	6,276.86	6,039.87	0.45	-0.17	0.117
30.00	-35.87	-7.27	0.00	-628.4	0.00	628.35	5,737.65	1,355.35	5,957.89	5,731.40	0.65	-0.21	0.116
35.00	-34.49	-7.16	0.00	-592.0	0.00	591.99	5,586.03	1,319.54	5,647.24	5,431.01	0.89	-0.25	0.115
40.00	-33.15	-7.05	0.00	-556.2	0.00	556.17	5,434.42	1,283.72	5,344.90	5,138.71	1.17	-0.29	0.114
45.00	-31.85	-6.98	0.00	-520.9	0.00	520.90	5,282.81	1,247.91	5,050.88	4,854.49	1.49	-0.32	0.113
46.25	-31.53	-6.93	0.00	-512.2	0.00	512.17	5,244.90	1,238.95	4,978.66	4,784.68	1.58	-0.33	0.113
50.00	-29.78	-6.85	0.00	-486.2	0.00	486.19	5,131.20	1,212.09	4,765.18	4,578.36	1.85	-0.37	0.112
52.67	-28.56	-6.79	0.00	-467.9	0.00	467.92	4,513.96	1,066.71	4,217.69	4,056.89	2.06	-0.39	0.122
55.00	-28.04	-6.71	0.00	-452.1	0.00	452.08	4,453.86	1,052.09	4,102.87	3,947.47	2.26	-0.41	0.121
60.00	-26.96	-6.60	0.00	-418.5	0.00	418.54	4,321.20	1,020.76	3,862.14	3,714.67	2.7	-0.45	0.119
65.00	-25.91	-6.53	0.00	-385.6	0.00	385.55	4,188.54	989.42	3,628.68	3,488.95	3.2	-0.49	0.117
66.00	-25.48	-6.38	0.00	-379.0	0.00	379.02	4,162.01	983.15	3,582.86	3,444.66	3.3	-0.5	0.116
69.60	-24.69	-6.27	0.00	-356.0	0.00	356.04	4,066.49	960.59	3,420.33	3,287.54	3.7	-0.54	0.114
70.00	-24.56	-6.12	0.00	-353.5	0.00	353.46	4,055.88	958.08	3,402.50	3,270.31	3.74	-0.54	0.114
75.00	-23.57	-6.01	0.00	-322.9	0.00	322.86	3,923.22	926.75	3,183.60	3,058.74	4.33	-0.59	0.112
80.00	-22.61	-5.90	0.00	-292.8	0.00	292.82	3,790.56	895.41	2,971.98	2,854.24	4.97	-0.63	0.109
85.00	-21.69	-5.80	0.00	-263.3	0.00	263.31	3,657.90	864.07	2,767.63	2,656.82	5.66	-0.68	0.105
89.25	-20.92	-5.74	0.00	-238.6	0.00	238.65	3,545.13	837.43	2,599.65	2,494.57	6.28	-0.72	0.102
90.00	-20.70	-5.69	0.00	-234.3	0.00	234.34	3,525.24	832.73	2,570.56	2,466.48	6.39	-0.72	0.101
94.50	-19.40	-5.63	0.00	-208.7	0.00	208.73	2,437.06	587.72	1,792.40	1,690.71	7.09	-0.76	0.132
95.00	-19.33	-5.58	0.00	-205.9	0.00	205.92	2,430.35	585.48	1,778.79	1,679.58	7.17	-0.77	0.131
100.00	-18.70	-5.48	0.00	-178.0	0.00	178.03	2,362.08	563.10	1,645.40	1,569.41	8	-0.82	0.121
105.00	-18.09	-5.38	0.00	-150.6	0.00	150.63	2,289.03	540.71	1,517.20	1,459.85	8.9	-0.88	0.111
110.00	-17.50	-5.31	0.00	-123.7	0.00	123.71	2,194.27	518.33	1,394.21	1,340.91	9.85	-0.93	0.100
113.00	-14.04	-4.49	0.00	-107.8	0.00	107.79	2,137.42	504.90	1,322.91	1,271.97	10.44	-0.96	0.091
115.00	-13.82	-4.45	0.00	-98.8	0.00	98.82	2,099.51	495.95	1,276.41	1,227.02	10.85	-0.98	0.087
116.67	-13.64	-4.41	0.00	-91.4	0.00	91.40	2,067.92	488.49	1,238.30	1,190.18	11.2	-1	0.083
120.00	-13.07	-4.36	0.00	-76.7	0.00	76.72	2,004.76	473.56	1,163.82	1,118.19	11.9	-1.03	0.075
121.00	-12.90	-4.31	0.00	-72.4	0.00	72.36	1,326.25	334.91	831.27	749.80	12.12	-1.03	0.106
125.00	-12.60	-4.27	0.00	-55.1	0.00	55.11	1,292.72	322.37	770.21	703.28	13	-1.06	0.088
126.00	-9.92	-3.11	0.00	-50.8	0.00	50.85	1,284.14	319.24	755.30	691.76	13.22	-1.07	0.081
130.00	-9.65	-3.03	0.00	-38.4	0.00	38.41	1,249.05	306.70	697.15	646.21	14.13	-1.1	0.067
135.00	-9.33	-2.98	0.00	-23.3	0.00	23.26	1,203.41	291.03	627.73	590.51	15.31	-1.14	0.047
136.00	-5.66	-1.99	0.00	-20.3	0.00	20.28	1,194.05	287.90	614.28	579.55	15.55	-1.14	0.040
140.00	-5.43	-1.91	0.00	-12.3	0.00	12.33	1,155.82	275.36	561.95	536.34	16.51	-1.16	0.028
145.00	-5.15	-1.86	0.00	-2.8	0.00	2.78	1,099.34	259.69	499.82	480.82	17.73	-1.17	0.011
146.00	-0.36	-0.16	0.00	-0.9	0.00	0.92	1,086.07	256.55	487.82	469.22	17.97	-1.17	0.002
149.00	0.00	-0.15	0.00	-0.4	0.00	0.45	1,046.26	247.15	452.73	435.29	18.71	-1.17	0.001

# EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

Spectral Response Acceleration for Short Period ( $S_S$ ):	0.241
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.057
Long-Period Transition Period ( $T_L$ – Seconds):	6
Importance Factor ( $I_a$ ):	1.000
Site Coefficient $F_a$ :	1.600
Site Coefficient $F_v$ :	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.257
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.091
Seismic Response Coefficient ( $C_s$ ):	0.030
Upper Limit $C_s$ :	0.030
Lower Limit $C_s$ :	0.030
Period based on Rayleigh Method (sec):	2.210
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.860
Total Unfactored Dead Load:	44.860 k
Seismic Base Shear (E):	1.350 k

## 1.2D + 1.0Ev + 1.0Eh Normal

## Seismic

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
42	147.5	147	1,575	0.008	11	185
41	145.5	54	560	0.003	4	67
40	142.5	278	2,787	0.014	19	348
39	138	234	2,204	0.011	15	292
38	135.5	63	570	0.003	4	78
37	132.5	322	2,814	0.014	19	403
36	128	268	2,201	0.011	15	336
35	125.5	74	584	0.003	4	92
34	123.0002	301	2,295	0.012	15	377
33	120.5002	168	1,234	0.006	8	211
32	118.3335	571	4,052	0.020	27	715
31	115.8335	178	1,216	0.006	8	223
30	114	217	1,437	0.007	10	272
29	111.5	340	2,162	0.011	15	426
28	107.5	585	3,470	0.017	23	732
27	102.5	607	3,294	0.016	22	759
26	97.5	628	3,109	0.016	21	786
25	94.7502	64	300	0.002	2	80
24	92.2502	1,300	5,807	0.029	39	1,627
23	89.6252	221	934	0.005	6	276
22	87.1252	762	3,060	0.015	21	953
21	82.5	924	3,355	0.017	23	1,157
20	77.5	955	3,085	0.015	21	1,195
19	72.5	985	2,812	0.014	19	1,233
18	69.8	80	213	0.001	1	100
17	67.8	731	1,842	0.009	12	915
16	65.5	206	487	0.002	3	258
15	62.5	1,049	2,273	0.011	15	1,313
14	57.5	1,080	2,003	0.010	13	1,351
13	53.8335	514	844	0.004	6	643
12	51.3335	1,218	1,830	0.009	12	1,524
11	48.1252	1,743	2,325	0.012	16	2,182
10	45.6252	320	387	0.002	3	401
9	42.5	1,302	1,378	0.007	9	1,629

ASSET: 209115, Ridgefield 2  
CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
ENG NO: 13700322\_C3\_02

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
8	37.5	1,337	1,121	0.006	8	1,673
7	32.5	1,371	882	0.004	6	1,716
6	27.5	1,406	663	0.003	4	1,760
5	22.5	1,441	468	0.002	3	1,803
4	17.5	1,475	301	0.002	2	1,846
3	12.5	1,510	165	0.001	1	1,890
2	7.5	1,545	65	0.000	0	1,933
1	2.5	1,580	9	0.000	0	1,977
RFI Antennas BA40-41	149	32	348	0.002	2	40
Generic Flat Stand-Off	149	188	2,040	0.010	14	235
Generic Flat Stand-Off	66	188	450	0.002	3	235
Kaelus DBCT108F1V92-1	146	42	437	0.002	3	52
Raycap DC6-48-60-18-8F(32.8 lbs)	146	131	1,375	0.007	9	164
Ericsson RRUS A2 Module	146	64	666	0.003	4	80
Ericsson RRUS 8843 B2, B66A	146	216	2,263	0.011	15	270
Ericsson RRUS 4478 B5	146	180	1,883	0.009	13	225
Ericsson RRUS 4478 B14	146	178	1,867	0.009	13	223
Ericsson RRUS E2	146	159	1,663	0.008	11	199
Ericsson RRUS 32 (50.8 lbs)	146	152	1,597	0.008	11	191
Ericsson RRUS-11	146	330	3,458	0.017	23	413
CCI HPA-65R-BUU-H8	146	816	8,550	0.043	58	1,021
Generic Round Platform with Handrails	146	2,500	26,194	0.131	176	3,129
Generic Round Platform with Handrails	136	2,500	22,959	0.115	155	3,129
Commscope CBC78T-DS-43-2X	136	62	570	0.003	4	78
Samsung B2/B66A RRH-BR049	136	253	2,325	0.012	16	317
Samsung B5/B13 RRH-BR04C	136	211	1,937	0.010	13	264
RFS DB-C1-12C-24AB-0Z	136	32	294	0.002	2	40
Commscope JAHH-65B-R3B (63.3 lb)	136	570	5,232	0.026	35	713
Commscope SDX1926Q-43	126	19	148	0.001	1	23
Ericsson Radio 4424 B25	126	139	1,107	0.006	7	174
Ericsson Radio 4449 B71+B85	126	225	1,793	0.009	12	282
Ericsson Radio 4415 B2,B66A	126	142	1,133	0.006	8	178
Ericsson RRUS 11 B4	126	152	1,212	0.006	8	190
Ericsson AIR 6449 B41	126	305	2,429	0.012	16	381
RFS APX16DWV-16DWVS-E-A20	126	122	973	0.005	7	153
Generic Mount Reinforcement	126	200	1,594	0.008	11	250
Generic Round T-Arm	126	938	7,471	0.037	50	1,173
RFS APXVAARR24_43-U-NA20	126	384	3,058	0.015	21	480
Commscope RDIDC-9181-PF-48	113	22	143	0.001	1	27
Fujitsu TA08025-B605	113	225	1,465	0.007	10	282
Fujitsu TA08025-B604	113	192	1,248	0.006	8	240
JMA Wireless MX08FRO665-21	113	194	1,260	0.006	8	242
Generic Flat Platform with Handrails	113	2,500	16,274	0.081	110	3,129
Commscope VHLP3-11W-6GR	70	53	142	0.001	1	66
Generic 4' Grid Dish	69.6	51	135	0.001	1	64
Sinclair SD210R-SF2P90LDF(S)	66	37	89	0.000	1	46
		44,855	199,955	1.000	1,346	56,133

**0.9D - 1.0Ev + 1.0Eh Normal**

**Seismic (Reduced DL)**

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
42	147.5	147	1,575	0.008	11	125
41	145.5	54	560	0.003	4	46
40	142.5	278	2,787	0.014	19	236
39	138	234	2,204	0.011	15	198
38	135.5	63	570	0.003	4	53
37	132.5	322	2,814	0.014	19	273
36	128	268	2,201	0.011	15	228
35	125.5	74	584	0.003	4	63
34	123.0002	301	2,295	0.012	15	256
33	120.5002	168	1,234	0.006	8	143
32	118.3335	571	4,052	0.020	27	485

ASSET: 209115, Ridgfield 2  
 CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
 ENG NO: 13700322\_C3\_02

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
31	115.8335	178	1,216	0.006	8	151
30	114	217	1,437	0.007	10	184
29	111.5	340	2,162	0.011	15	289
28	107.5	585	3,470	0.017	23	496
27	102.5	607	3,294	0.016	22	515
26	97.5	628	3,109	0.016	21	533
25	94.7502	64	300	0.002	2	54
24	92.2502	1,300	5,807	0.029	39	1,103
23	89.6252	221	934	0.005	6	187
22	87.1252	762	3,060	0.015	21	647
21	82.5	924	3,355	0.017	23	784
20	77.5	955	3,085	0.015	21	810
19	72.5	985	2,812	0.014	19	836
18	69.8	80	213	0.001	1	68
17	67.8	731	1,842	0.009	12	620
16	65.5	206	487	0.002	3	175
15	62.5	1,049	2,273	0.011	15	890
14	57.5	1,080	2,003	0.010	13	916
13	53.8335	514	844	0.004	6	436
12	51.3335	1,218	1,830	0.009	12	1,033
11	48.1252	1,743	2,325	0.012	16	1,479
10	45.6252	320	387	0.002	3	272
9	42.5	1,302	1,378	0.007	9	1,105
8	37.5	1,337	1,121	0.006	8	1,134
7	32.5	1,371	882	0.004	6	1,164
6	27.5	1,406	663	0.003	4	1,193
5	22.5	1,441	468	0.002	3	1,223
4	17.5	1,475	301	0.002	2	1,252
3	12.5	1,510	165	0.001	1	1,282
2	7.5	1,545	65	0.000	0	1,311
1	2.5	1,580	9	0.000	0	1,340
RFI Antennas BA40-41						
	149	32	348	0.002	2	27
Generic Flat Stand-Off						
	149	188	2,040	0.010	14	159
Generic Flat Stand-Off						
	66	188	450	0.002	3	159
Kaelus DBCT108F1V92-1						
	146	42	437	0.002	3	35
Raycap DC6-48-60-18-8F(32.8 lbs)						
	146	131	1,375	0.007	9	111
Ericsson RRUS A2 Module						
	146	64	666	0.003	4	54
Ericsson RRUS 8843 B2, B66A						
	146	216	2,263	0.011	15	183
Ericsson RRUS 4478 B5						
	146	180	1,883	0.009	13	152
Ericsson RRUS 4478 B14						
	146	178	1,867	0.009	13	151
Ericsson RRUS E2						
	146	159	1,663	0.008	11	135
Ericsson RRUS 32 (50.8 lbs)						
	146	152	1,597	0.008	11	129
Ericsson RRUS-11						
	146	330	3,458	0.017	23	280
CCI HPA-65R-BUU-H8						
	146	816	8,550	0.043	58	692
Generic Round Platform with Handrails						
	146	2,500	26,194	0.131	176	2,121
Generic Round Platform with Handrails						
	136	2,500	22,959	0.115	155	2,121
Commscope CBC78T-DS-43-2X						
	136	62	570	0.003	4	53
Samsung B2/B66A RRH-BR049						
	136	253	2,325	0.012	16	215
Samsung B5/B13 RRH-BR04C						
	136	211	1,937	0.010	13	179
RFS DB-C1-12C-24AB-0Z						
	136	32	294	0.002	2	27
Commscope JAHH-65B-R3B (63.3 lb)						
	136	570	5,232	0.026	35	483
Commscope SDX1926Q-43						
	126	19	148	0.001	1	16
Ericsson Radio 4424 B25						
	126	139	1,107	0.006	7	118
Ericsson Radio 4449 B71+B85						
	126	225	1,793	0.009	12	191
Ericsson Radio 4415 B2,B66A						
	126	142	1,133	0.006	8	121
Ericsson RRUS 11 B4						
	126	152	1,212	0.006	8	129
Ericsson AIR 6449 B41						
	126	305	2,429	0.012	16	259
RFS APX16DWV-16DWVS-E-A20						
	126	122	973	0.005	7	104
Generic Mount Reinforcement						
	126	200	1,594	0.008	11	170
Generic Round T-Arm						
	126	938	7,471	0.037	50	796
RFS APXVAARR24_43-U-NA20						
	126	384	3,058	0.015	21	326
Commscope RDIDC-9181-PF-48						
	113	22	143	0.001	1	19
Fujitsu TA08025-B605						
	113	225	1,465	0.007	10	191
Fujitsu TA08025-B604						
	113	192	1,248	0.006	8	163
JMA Wireless MX08FRO665-21						
	113	194	1,260	0.006	8	164
Generic Flat Platform with Handrails						
	113	2,500	16,274	0.081	110	2,121
Commscope VHLP3-11W-6GR						
	70	53	142	0.001	1	45
Generic 4' Grid Dish						
	69.6	51	135	0.001	1	43
Sinclair SD210R-SF2P90LDF(S)						
	66	37	89	0.000	1	31

ASSET: 209115, Ridgefield 2  
 CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
 ENG NO: 13700322\_C3\_02

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
		44,855	199,955	1.000	1,346	38,064

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

**CALCULATED FORCES**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-54.16	-1.35	0.00	-166.81	0.00	166.81	6,432.44	1,570.23	7,996	7,454.51	0.00	0.00	0.03
5.00	-52.22	-1.35	0.00	-160.07	0.00	160.07	6,327.70	1,534.42	7,636	7,164.41	0.00	-0.01	0.03
10.00	-50.33	-1.36	0.00	-153.31	0.00	153.31	6,221.00	1,498.60	7,284	6,877.72	0.01	-0.01	0.03
15.00	-48.49	-1.36	0.00	-146.52	0.00	146.52	6,112.34	1,462.79	6,940	6,594.61	0.03	-0.02	0.03
20.00	-46.68	-1.36	0.00	-139.72	0.00	139.72	6,001.72	1,426.98	6,604	6,315.24	0.06	-0.03	0.03
25.00	-44.92	-1.36	0.00	-132.90	0.00	132.90	5,889.26	1,391.16	6,277	6,039.87	0.09	-0.03	0.03
30.00	-43.21	-1.36	0.00	-126.09	0.00	126.09	5,737.65	1,355.35	5,958	5,731.40	0.13	-0.04	0.03
35.00	-41.53	-1.36	0.00	-119.28	0.00	119.28	5,586.03	1,319.54	5,647	5,431.01	0.18	-0.05	0.03
40.00	-39.90	-1.35	0.00	-112.49	0.00	112.49	5,434.42	1,283.72	5,345	5,138.71	0.23	-0.06	0.03
45.00	-39.50	-1.35	0.00	-105.73	0.00	105.73	5,282.81	1,247.91	5,051	4,854.49	0.29	-0.06	0.03
46.25	-37.32	-1.34	0.00	-104.04	0.00	104.04	5,244.90	1,238.95	4,979	4,784.68	0.31	-0.07	0.03
50.00	-35.80	-1.33	0.00	-99.02	0.00	99.02	5,131.20	1,212.09	4,765	4,578.36	0.37	-0.07	0.03
52.67	-35.15	-1.32	0.00	-95.48	0.00	95.48	4,513.96	1,066.71	4,218	4,056.89	0.41	-0.08	0.03
55.00	-33.80	-1.31	0.00	-92.40	0.00	92.40	4,453.86	1,052.09	4,103	3,947.47	0.45	-0.08	0.03
60.00	-32.49	-1.30	0.00	-85.84	0.00	85.84	4,321.20	1,020.76	3,862	3,714.67	0.54	-0.09	0.03
65.00	-32.23	-1.30	0.00	-79.35	0.00	79.35	4,188.54	989.42	3,629	3,488.95	0.64	-0.10	0.03
66.00	-31.04	-1.28	0.00	-78.05	0.00	78.05	4,162.01	983.15	3,583	3,444.66	0.66	-0.10	0.03
69.60	-30.87	-1.28	0.00	-73.43	0.00	73.43	4,066.49	960.59	3,420	3,287.54	0.74	-0.11	0.03
70.00	-29.57	-1.26	0.00	-72.92	0.00	72.92	4,055.88	958.08	3,402	3,270.31	0.75	-0.11	0.03
75.00	-28.38	-1.24	0.00	-66.60	0.00	66.60	3,923.22	926.75	3,184	3,058.74	0.87	-0.12	0.03
80.00	-27.22	-1.22	0.00	-60.38	0.00	60.38	3,790.56	895.41	2,972	2,854.24	0.99	-0.13	0.03
85.00	-26.27	-1.20	0.00	-54.27	0.00	54.27	3,657.90	864.07	2,768	2,656.82	1.13	-0.14	0.03
89.25	-25.99	-1.20	0.00	-49.14	0.00	49.14	3,545.13	837.43	2,600	2,494.57	1.26	-0.14	0.03
90.00	-24.36	-1.16	0.00	-48.25	0.00	48.25	3,525.24	832.73	2,571	2,466.48	1.28	-0.15	0.03
94.50	-24.28	-1.16	0.00	-43.03	0.00	43.03	2,437.06	587.72	1,792	1,690.71	1.42	-0.15	0.04
95.00	-23.50	-1.14	0.00	-42.45	0.00	42.45	2,430.35	585.48	1,779	1,679.58	1.44	-0.16	0.04
100.00	-22.74	-1.12	0.00	-36.76	0.00	36.76	2,362.08	563.10	1,645	1,569.41	1.61	-0.17	0.03
105.00	-22.01	-1.10	0.00	-31.17	0.00	31.17	2,289.03	540.71	1,517	1,459.85	1.79	-0.18	0.03
110.00	-21.58	-1.08	0.00	-25.68	0.00	25.68	2,194.27	518.33	1,394	1,340.91	1.98	-0.19	0.03
113.00	-17.39	-0.93	0.00	-22.43	0.00	22.43	2,137.42	504.90	1,323	1,271.97	2.10	-0.20	0.03
115.00	-17.17	-0.92	0.00	-20.58	0.00	20.58	2,099.51	495.95	1,276	1,227.02	2.19	-0.20	0.03
116.67	-16.45	-0.89	0.00	-19.05	0.00	19.05	2,067.92	488.49	1,238	1,190.18	2.26	-0.20	0.02
120.00	-16.24	-0.88	0.00	-16.09	0.00	16.09	2,004.76	473.56	1,164	1,118.19	2.40	-0.21	0.02
121.00	-15.86	-0.87	0.00	-15.20	0.00	15.20	1,326.25	334.91	831	749.80	2.45	-0.21	0.03
125.00	-15.77	-0.86	0.00	-11.74	0.00	11.74	1,292.72	322.37	770	703.28	2.63	-0.22	0.03
126.00	-12.15	-0.69	0.00	-10.88	0.00	10.88	1,284.14	319.24	755	691.76	2.67	-0.22	0.03
130.00	-11.75	-0.67	0.00	-8.11	0.00	8.11	1,249.05	306.70	697	646.21	2.86	-0.23	0.02
135.00	-11.67	-0.67	0.00	-4.73	0.00	4.73	1,203.41	291.03	628	590.51	3.10	-0.23	0.02
136.00	-6.84	-0.41	0.00	-4.06	0.00	4.06	1,194.05	287.90	614	579.55	3.15	-0.23	0.01
140.00	-6.49	-0.39	0.00	-2.41	0.00	2.41	1,155.82	275.36	562	536.34	3.34	-0.24	0.01
145.00	-6.42	-0.39	0.00	-0.44	0.00	0.44	1,099.34	259.69	500	480.82	3.59	-0.24	0.01
146.00	-0.27	-0.02	0.00	-0.05	0.00	0.05	1,086.07	256.55	488	469.22	3.64	-0.24	0.00
149.00	0.00	-0.02	0.00	0.00	0.00	0.00	1,046.26	247.15	453	435.29	3.79	-0.24	0.00

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

**CALCULATED FORCES**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-36.72	-1.35	0.00	-164.59	0.00	164.59	6,432.44	1,570.23	7,996	7,454.51	0.00	0.00	0.03
5.00	-35.41	-1.35	0.00	-157.86	0.00	157.86	6,327.70	1,534.42	7,636	7,164.41	0.00	-0.01	0.03
10.00	-34.13	-1.35	0.00	-151.11	0.00	151.11	6,221.00	1,498.60	7,284	6,877.72	0.01	-0.01	0.03
15.00	-32.88	-1.35	0.00	-144.34	0.00	144.34	6,112.34	1,462.79	6,940	6,594.61	0.03	-0.02	0.03
20.00	-31.66	-1.35	0.00	-137.57	0.00	137.57	6,001.72	1,426.98	6,604	6,315.24	0.06	-0.03	0.03
25.00	-30.46	-1.35	0.00	-130.80	0.00	130.80	5,889.26	1,391.16	6,277	6,039.87	0.09	-0.03	0.03



ASSET: 209115, Ridgfield 2  
 CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
 ENG NO: 13700322\_C3\_02

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
30.00	-29.30	-1.35	0.00	-124.04	0.00	124.04	5,737.65	1,355.35	5,958	5,731.40	0.13	-0.04	0.03
35.00	-28.16	-1.35	0.00	-117.29	0.00	117.29	5,586.03	1,319.54	5,647	5,431.01	0.17	-0.05	0.03
40.00	-27.06	-1.34	0.00	-110.56	0.00	110.56	5,434.42	1,283.72	5,345	5,138.71	0.23	-0.06	0.03
45.00	-26.79	-1.34	0.00	-103.87	0.00	103.87	5,282.81	1,247.91	5,051	4,854.49	0.29	-0.06	0.03
46.25	-25.31	-1.32	0.00	-102.19	0.00	102.19	5,244.90	1,238.95	4,979	4,784.68	0.31	-0.07	0.03
50.00	-24.27	-1.31	0.00	-97.23	0.00	97.23	5,131.20	1,212.09	4,765	4,578.36	0.36	-0.07	0.03
52.67	-23.84	-1.31	0.00	-93.74	0.00	93.74	4,513.96	1,066.71	4,218	4,056.89	0.40	-0.08	0.03
55.00	-22.92	-1.29	0.00	-90.69	0.00	90.69	4,453.86	1,052.09	4,103	3,947.47	0.44	-0.08	0.03
60.00	-22.03	-1.28	0.00	-84.22	0.00	84.22	4,321.20	1,020.76	3,862	3,714.67	0.53	-0.09	0.03
65.00	-21.86	-1.28	0.00	-77.81	0.00	77.81	4,188.54	989.42	3,629	3,488.95	0.63	-0.10	0.03
66.00	-21.05	-1.26	0.00	-76.53	0.00	76.53	4,162.01	983.15	3,583	3,444.66	0.65	-0.10	0.03
69.60	-20.93	-1.26	0.00	-71.98	0.00	71.98	4,066.49	960.59	3,420	3,287.54	0.73	-0.11	0.03
70.00	-20.05	-1.24	0.00	-71.47	0.00	71.47	4,055.88	958.08	3,402	3,270.31	0.73	-0.11	0.03
75.00	-19.24	-1.22	0.00	-65.26	0.00	65.26	3,923.22	926.75	3,184	3,058.74	0.85	-0.12	0.03
80.00	-18.46	-1.20	0.00	-59.14	0.00	59.14	3,790.56	895.41	2,972	2,854.24	0.98	-0.13	0.03
85.00	-17.81	-1.18	0.00	-53.13	0.00	53.13	3,657.90	864.07	2,768	2,656.82	1.11	-0.13	0.03
89.25	-17.62	-1.18	0.00	-48.10	0.00	48.10	3,545.13	837.43	2,600	2,494.57	1.24	-0.14	0.02
90.00	-16.52	-1.14	0.00	-47.21	0.00	47.21	3,525.24	832.73	2,571	2,466.48	1.26	-0.14	0.02
94.50	-16.47	-1.14	0.00	-42.09	0.00	42.09	2,437.06	587.72	1,792	1,690.71	1.40	-0.15	0.03
95.00	-15.93	-1.12	0.00	-41.53	0.00	41.53	2,430.35	585.48	1,779	1,679.58	1.42	-0.15	0.03
100.00	-15.42	-1.10	0.00	-35.95	0.00	35.95	2,362.08	563.10	1,645	1,569.41	1.58	-0.16	0.03
105.00	-14.92	-1.07	0.00	-30.47	0.00	30.47	2,289.03	540.71	1,517	1,459.85	1.76	-0.18	0.03
110.00	-14.63	-1.06	0.00	-25.10	0.00	25.10	2,194.27	518.33	1,394	1,340.91	1.95	-0.19	0.03
113.00	-11.79	-0.91	0.00	-21.92	0.00	21.92	2,137.42	504.90	1,323	1,271.97	2.07	-0.19	0.02
115.00	-11.64	-0.90	0.00	-20.11	0.00	20.11	2,099.51	495.95	1,276	1,227.02	2.15	-0.20	0.02
116.67	-11.15	-0.87	0.00	-18.61	0.00	18.61	2,067.92	488.49	1,238	1,190.18	2.22	-0.20	0.02
120.00	-11.01	-0.86	0.00	-15.72	0.00	15.72	2,004.76	473.56	1,164	1,118.19	2.36	-0.21	0.02
121.00	-10.76	-0.85	0.00	-14.85	0.00	14.85	1,326.25	334.91	831	749.80	2.40	-0.21	0.03
125.00	-10.69	-0.84	0.00	-11.47	0.00	11.47	1,292.72	322.37	770	703.28	2.58	-0.21	0.03
126.00	-8.24	-0.68	0.00	-10.63	0.00	10.63	1,284.14	319.24	755	691.76	2.62	-0.21	0.02
130.00	-7.97	-0.66	0.00	-7.92	0.00	7.92	1,249.05	306.70	697	646.21	2.81	-0.22	0.02
135.00	-7.91	-0.66	0.00	-4.62	0.00	4.62	1,203.41	291.03	628	590.51	3.04	-0.23	0.01
136.00	-4.64	-0.40	0.00	-3.97	0.00	3.97	1,194.05	287.90	614	579.55	3.09	-0.23	0.01
140.00	-4.40	-0.38	0.00	-2.35	0.00	2.35	1,155.82	275.36	562	536.34	3.28	-0.23	0.01
145.00	-4.36	-0.38	0.00	-0.43	0.00	0.43	1,099.34	259.69	500	480.82	3.53	-0.23	0.01
146.00	-0.19	-0.02	0.00	-0.05	0.00	0.05	1,086.07	256.55	488	469.22	3.58	-0.23	0.00
149.00	0.00	-0.02	0.00	0.00	0.00	0.00	1,046.26	247.15	453	435.29	3.72	-0.23	0.00

ASSET: 209115, Ridgefield 2  
CUSTOMER: DISH WIRELESS L.L.C.

CODE: ANSI/TIA-222-H  
ENG NO: 13700322\_C3\_02

#### ANALYSIS SUMMARY

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W Normal	32.33	0.00	53.79	0.00	0.00	3540.10	94.50	0.52
0.9D + 1.0W Normal	32.31	0.00	40.33	0.00	0.00	3504.79	94.50	0.51
1.2D + 1.0Di + 1.0Wi Normal	9.32	0.00	70.76	0.00	0.00	994.67	94.50	0.15
1.2D + 1.0Ev + 1.0Eh Normal	1.36	0.00	54.16	0.00	0.00	166.81	94.50	0.04
0.9D - 1.0Ev + 1.0Eh Normal	1.35	0.00	36.72	0.00	0.00	164.59	94.50	0.03
1.0D + 1.0W Service Normal	7.87	0.00	44.85	0.00	0.00	857.16	94.50	0.13

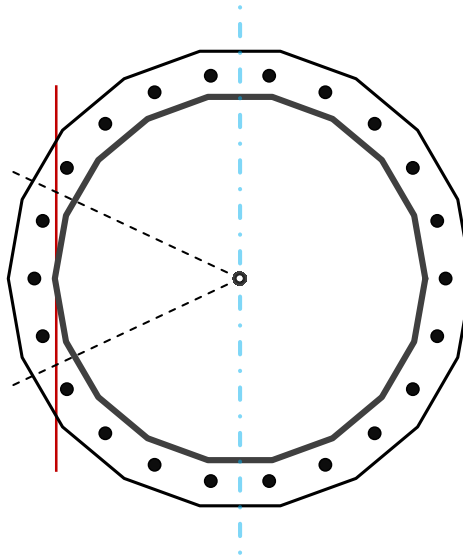
## Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	56.88	in
Thickness	1/2	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	3,540.1	k-ft
Axial, Pu	53.8	k
Shear, Vu	32.3	k
Neutral Axis	90	°

Report Capacities		
Component	Capacity	Result
Base Plate	14%	Pass
Anchor Rods	52%	Pass
Dwyidag	-	-

Base Plate		
Number of Sides	18	-
Diameter, $\phi$	71.33	in
Thickness	3 1/2	in
Grade	A572-50	
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	$\eta=0.5$
Clear Distance	3	in
Applied Moment, Mu	598.5	k
Bending Stress, $\phi M_n$	4217.6	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	22	-
Diameter, $\phi$	2 1/4	in
Bolt Circle	64.25	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	9.2	in
Orientation Offset		°
Applied Force, Pu	127.2	k
Anchor Rods, $\phi P_n$	243.6	k

# Calculations for Monopole Base Plate & Anchor Rod Analysis

## Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	32.3	3540.1	1.00
Anchor Rod Forces	32.3	3540.1	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

## Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in <sup>2</sup>	in <sup>2</sup>	in <sup>4</sup>	#	in <sup>4</sup>
Pole	88.1126	4.8951	0.4097		35017.85
Bolt	3.9761	3.2477	0.8393	4.5	34211.50
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate			
Shape	18	-	
Width, W	71.33	in	
Thickness, t	3.5	in	
Yield Strength, Fy	50	ksi	
Tensile Strength, Fu	65	ksi	
Base Plate Chord	43.042	in	
Detail Type	d	-	
Detail Factor	0.50	-	
Clear Distance	3	-	

Anchor Rods			
Anchor Rod Quantity, N	22	-	
Rod Diameter, d	2.25	in	
Bolt Circle, BC	64.25	in	
Yield Strength, Fy	75	ksi	
Tensile Strength, Fu	100	ksi	
Applied Axial, Pu	127.2	k	
Applied Shear, Vu	0.3	k	
Compressive Capacity, $\phi P_n$	243.6	k	
Tensile Capacity, $\phi R_n$	0.522	OK	
Interaction Capacity	0.525	OK	

External Base Plate			
Chord Length AA	43.871	in	
Additional AA	7.000	in	
Section Modulus, Z	155.792	in <sup>3</sup>	
Applied Moment, Mu	598.5	k-ft	
Bending Capacity, $\phi M_n$	7010.6	k-ft	
Capacity, Mu/ $\phi M_n$	0.085	OK	
Chord Length AB	42.991	in	
Additional AB	7.000	in	
Section Modulus, Z	153.099	in <sup>3</sup>	
Applied Moment, Mu	435.1	k-ft	
Bending Capacity, $\phi M_n$	6889.4	k-ft	
Capacity, Mu/ $\phi M_n$	0.063	OK	
Bend Line Length	30.604	in	
Additional Bend Line	0.000	in	
Section Modulus, Z	93.724	in <sup>3</sup>	
Applied Moment, Mu	598.5	k-ft	
Bending Capacity, $\phi M_n$	4217.6	k-ft	
Capacity, Mu/ $\phi M_n$	0.142	OK	

Internal Base Plate			
Arc Length	0.000	in	
Section Modulus, Z	0.000	in <sup>3</sup>	
Moment Arm	0.000	in	
Applied Moment, Mu	0.0	k-ft	
Bending Capacity, $\phi M_n$	0.0	k-ft	
Capacity, Mu/ $\phi M_n$			

**Site Name:** Ridgefield 2, CT  
**Site Number:** 209115  
**Tower Type:** MP  
**Design Loads (Factored) - Analysis per TIA-222-H Standards**

## Monolithic Mat & Pier Foundation Analysis

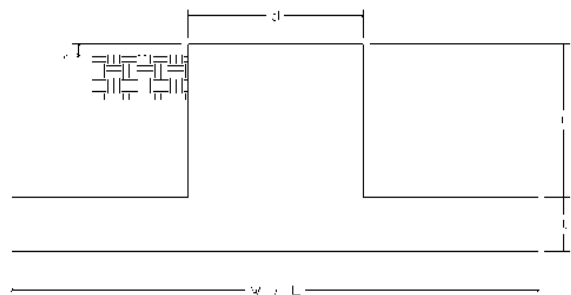
Foundation Analysis Parameters		
Design / Analysis / Mapping:	Analysis	-
Compression/Leg:	53.8	k
Uplift/Leg:	0.0	k
Total Shear:	32.3	k
Moment:	3,540.1	k-ft
Tower + Appurtenance Weight:	53.8	k
Depth to Base of Foundation (l + t - h):	6.5	ft
Diameter of Pier (d):	8	ft
Length of Pier (l):	4.25	ft
Height of Pier above Ground (h):	0.5	ft
Width of Pad (W):	27.5	ft
Length of Pad (L):	27.5	ft
Thickness of Pad (t):	2.75	ft
Tower Leg Center to Center:	0	ft
Number of Tower Legs:	1	-
Tower Center from Mat Center:	0	ft
Depth Below Ground Surface to Water Table:	99	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Soil Above Water Table:	100	pcf
Unit Weight of Water:	62.4	pcf
Unit Weight of Soil Below Water Table:	37.6	pcf
Friction Angle of Uplift:	15	°
Coefficient of Shear Friction:	0.5	-
Ultimate Compressive Bearing Pressure:	16,000	psf
Ultimate Passive Pressure on Pad Face:	0	psf
$f_{\text{Soil and Concrete Weight}}$ :	0.9	-
$f_{\text{Soil}}$ :	0.75	-

Overturning Moment Usage		
Design OTM:	3766.4	k-ft
OTM Resistance:	8360.2	k-ft
Design OTM / OTM Resistance:	45%	Pass

Soil Bearing Pressure Usage		
Net Bearing Pressure:	2627	psf
Factored Nominal Bearing Pressure:	12000	psf
Factored Nominal (Net) Bearing Pressure:	22%	Pass
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge	

Sliding Factor of Safety		
Ultimate Friction Resistance:	326.8	k
Ultimate Passive Pressure Resistance:	0.0	k
Total Factored Sliding Resistance:	245.1	k
Sliding Design / Sliding Resistance:	13%	Pass

Foundation Steel Parameters		
Shear/Leg (Compression):	21.6	k
Shear/Leg (Uplift):	17.8	k
Concrete Strength ( $f'_c$ ):	3,000	psi
Pad Tension Steel Depth:	29.44	in
Dead Load Factor:	0.9	-
$f_{\text{Shear}}$ :	0.75	-
$f_{\text{Flexure / Tension}}$ :	0.9	-
$f_{\text{Compression}}$ :	0.65	-
b:	0.85	-
Bottom Pad Rebar Size #:	9	-
# of Bottom Pad Rebar:	35	-
Pad Bottom Steel Area:	35.00	in <sup>2</sup>
Pad Steel $F_y$ :	60,000	psi
Top Pad Rebar Size #:	7	-
# of Top Pad Rebar:	28	-
Pad Top Steel Area:	16.80	in <sup>2</sup>
Pier Rebar Size #:	11	-
Pier Steel Area (Single Bar):	1.56	in <sup>2</sup>
# of Pier Rebar:	57	-
Pier Steel $F_y$ :	60,000	psi
Pier Cage Diameter:	87.6	in
Rebar Strain Limit:	0.008	-
Steel Elastic Modulus:	29,000	ksi
Tie Rebar Size #:	4	-
Tie Steel Area (Single Bar):	0.20	in <sup>2</sup>
Tie Spacing:	12	in
Tie Steel $F_y$ :	60,000	psi
Clear Cover:	3	in





Pad Strength Capacity			
Factored One Way Shear ( $V_u$ ):	299.7	k	ACI 318-14 25.5.5.1
One Way Shear Capacity ( $fV_c$ ):	798.1	k	
$V_u / fV_c$ :	38%	Pass	
Load Direction Controlling Shear Capacity:	Parallel to Pad Edge		
Lower Steel Pad Factored Moment ( $M_u$ ):	2012.4	k-ft	ACI 318-14 22.3.1.1
Lower Steel Pad Moment Capacity ( $fM_n$ ):	4469.4	k-ft	
$M_u / fM_n$ :	45%	Pass	
Load Direction Controlling Flexural Capacity:	Parallel to Pad Edge		
Upper Steel Pad Factored Moment ( $M_u$ ):	981.4	k-ft	
Upper Steel Pad Moment Capacity ( $fM_n$ ):	2187.0	k-ft	
$M_u / fM_n$ :	45%	Pass	
Lower Pad Flexural Reinforcement Ratio:	0.0036		
Upper Pad Flexural Reinforcement Ratio:	0.0017		OK - ACI 318-14 7.6.1.1 & 8.6.1.1
Pad Shrinkage Reinforcement Ratio:	0.0053		OK - ACI 318-14 24.4.3.2
Lower Pad Reinforcement Spacing:	9.5	in	OK - ACI 318-14 7.7.2.3, 8.7.2.2, & 24.4.3.3
Upper Pad Reinforcement Spacing:	12.0	in	OK - ACI 318-14 7.7.2.3, 8.7.2.2, & 24.4.3.3
Ultimate Punching Shear Stress, $v_u$ :	37.01	psi	ACI 318-14 R8.4.4.2.3
Nominal Punching Shear Capacity ( $f_c v_c$ ):	164.3	psi	ACI 318-14 22.6.5.2
$v_u / f_c v_c$ :	23%	Pass	
Pier Moment Pad Flexure Transfer Ratio, $\gamma_f$ :	0.60		TIA-222-H 9.4.2
Moment Transfer Effective Flexural Width, $B_{eff}$ :	16.25	ft	TIA-222-H 9.4.2
Moment Transfer Through Pad Flexure:	26478.02	k-in	TIA-222-H 9.4.2
Moment Transfer Flexural Capacity ( $fM_{sc,f}$ ):	32894.73	k-in	
$g_f M_{sc} / fM_{sc,f}$ :	0%	Pass	

Pier Strength Capacity			
Factored Moment in Pier ( $M_u$ ):	3677.5	k-ft	
Pier Moment Capacity ( $fM_n$ ):	16532.6	k-ft	
$M_u / fM_n$ :	22%	Pass	
Factored Shear in Pier ( $V_u$ ):	32.3	k	ACI 318-14 22.5.1.1
Pier Shear Capacity ( $fV_n$ ):	712.1	k	
$V_u / fV_c$ :	5%	Pass	
Pier Shear Reinforcement Ratio:	0.0003		OK - No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier ( $T_u$ ):	0.0	k	
Pier Tension Capacity ( $fT_n$ ):	4801.7	k	
$T_u / fT_n$ :	0%	Pass	
Factored Compression in Pier ( $P_u$ ):	53.8	k	ACI 318-14 22.4.2.1
Pier Compression Capacity ( $fP_n$ ):	9528.7	k	
$P_u / fP_n$ :	1%	Pass	
Pier Compression Reinforcement Ratio:	0.012		OK - TIA-222-H 9.4.1
Minimum Depth to Develop Vertical Rebar:	63	in	ACI 318-14 25.4.2.3
Minimum Hook Development Length:	31	in	ACI 318-14 25.4.3.1
Minimum Mat Thickness / Edge Distance from Pier:	34.0	in	
Minimum Foundation Depth:	8.35	ft	
$M_u / f_B M_n + T_u / f_T T_n$ :	22%	Pass	



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## Antenna Mount Analysis Report

**ATC Site Name** : Ridgefield 2  
**ATC Site Number** : 209115  
**Engineering Number** : 13700322\_C8\_04  
**Mount Elevation** : 113 ft.  
**Carrier** : Dish Wireless L.L.C.  
**Carrier Site Name** : NJJER01100B  
**Carrier Site Number** : NJJER01100B  
**Site Location** : 320 Old Stagecoach Road  
Ridgefield, CT 06877  
41.3303°, - 73.5168°  
**County** : Fairfield  
**Date** : March 21, 2022  
**Max Usage** : 49%  
**Result** : Pass

Prepared By:  
Erika Ruiz  
Project Engineer

Reviewed By:



**COA: PEC.0001564 Expires: 02/01/2023**



## **Table of Contents**

Introduction .....	1
Supporting Documents.....	1
Analysis.....	1
Conclusion.....	1
Antenna Loading.....	2
Structure Usages.....	2
Mount Layout .....	3
Photo Log .....	4
Standard Conditions .....	5
Calculations .....	Attached

## Introduction

The purpose of this report is to summarize results of the antenna mount analysis performed for Dish Wireless L.L.C. at 113 ft.

## Supporting Documents

<b>Spec. Sheet</b>	Spec Sheet for Commscope Part #MC-PK8-DSH
<b>Photos</b>	Site photos from 2020

## Analysis

This antenna mount was analyzed using RISA-3D v19.0.4 analysis software

<b>Basic Wind Speed:</b>	115 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1" radical ice concurrent
<b>Codes:</b>	ANSI/TIA-222-H/ 2018 Connecticut State Building Code
<b>Exposure Category:</b>	C
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 2
<b>Feature:</b>	Flat
<b>Crest Height:</b>	0 ft.
<b>Crest Length:</b>	0 ft.
<b>Spectral Response:</b>	$S_s = 0.241$ , $S_1 = 0.057$
<b>Site Class:</b>	D – Stiff Soil
<b>Live Loads:</b>	$L_m = 500$ lbs, $L_v = 250$ lbs

## Conclusion

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

**Antenna Loading**

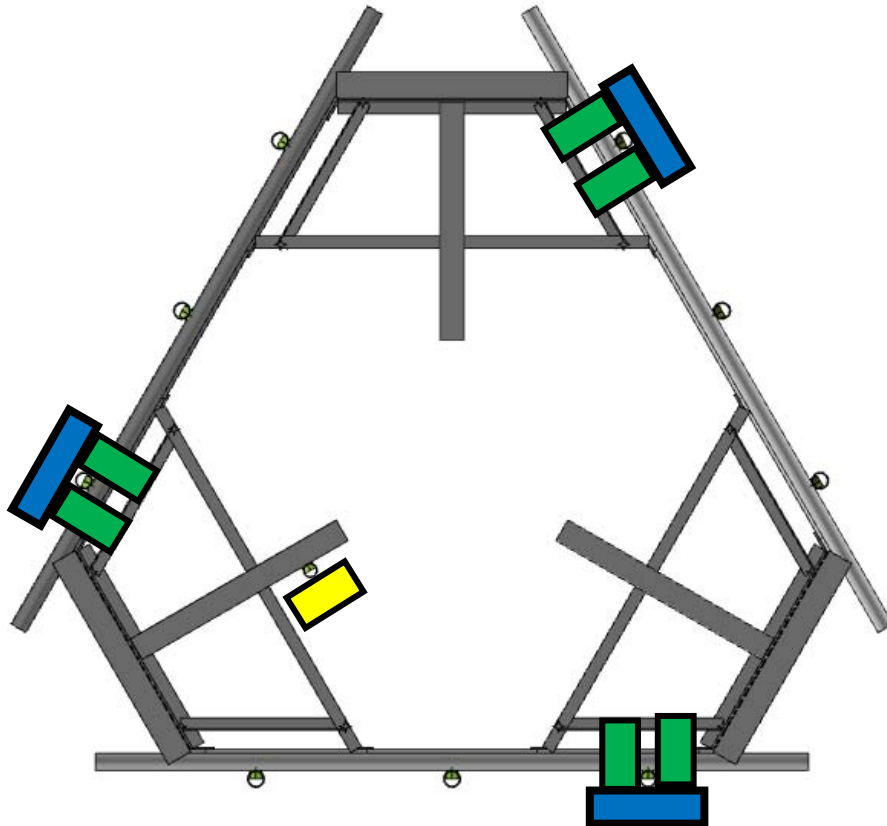
Mount Centerline (ft)	Antenna Centerline (ft)	Qty	Antenna Model
113	113	3	JMA Wireless MX08FRO665-21
		1	Raycap RD1DC-9181-PF-48
		3	Fujitsu TA08025-B605
		3	Fujitsu TA08025-B604

**Structure Usages**

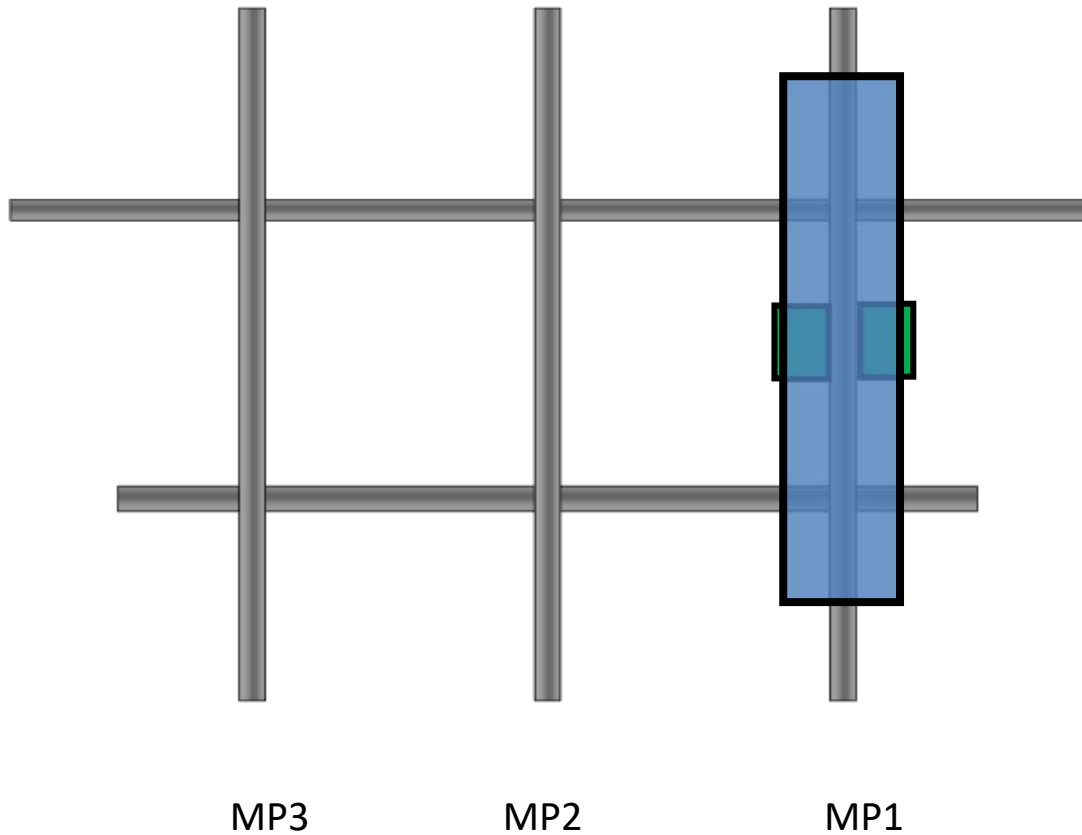
Structural Component	Controlling Usage	Pass/Fail
Main Face Horizontals	8%	Pass
Support Rails	11%	Pass
Support Tubes	49%	Pass
Support Channels	35%	Pass
Support Angles	35%	Pass
Mount Pipes	13%	Pass
Connection Plates	20%	Pass
Connection Angles	19%	Pass
Connection Bolts	25%	Pass



**Mount Layout**



### Equipment Layout



Front View (Viewing from Front of Antennas)

	Antenna Model	Location
1	JMA Wireless MX08FRO665-21	MP1
2	Raycap RD1DC-9181-PF-48	Equipment Mount Pipe
3	Fujitsu TA08025-B605	MP1
4	Fujitsu TA08025-B604	MP1



### **Standard Conditions**

All engineering services performed by B+T Group, Tulsa are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna and mounts
- Information from drawings, design and analysis documents, and field notes in the possession of B+T Group
- Manufacturers drawings for Commscope Part #MC-PK8-DSH used for analysis
- The following assumptions have been included in the analysis of the mount:

Component	Section	Length	Note
New Equipment Mount Pipe	2" Std. Pipe	4'-0"	Position per CDs

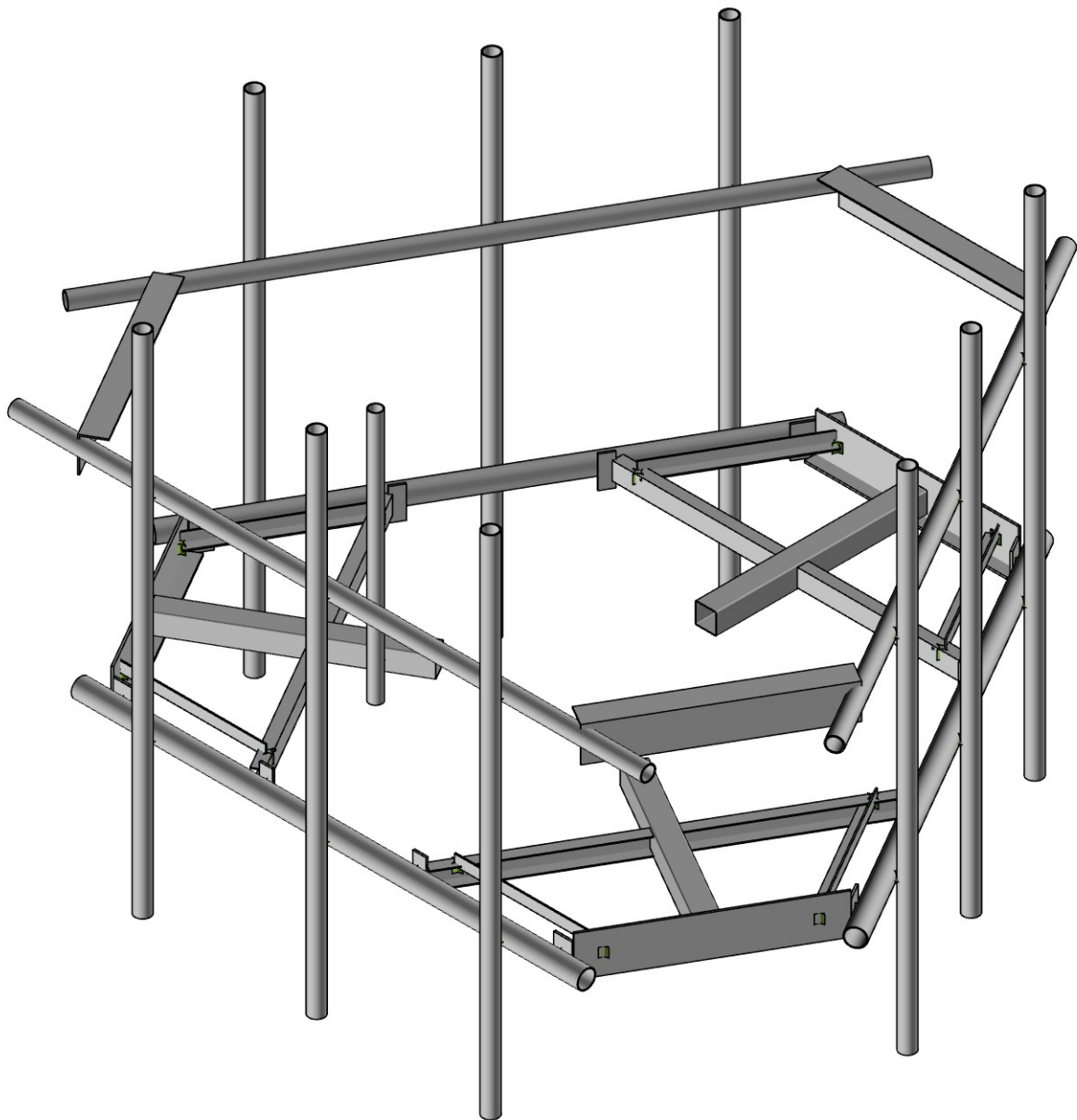
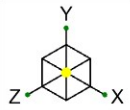
It is the responsibility of the client to ensure that the information provided to B+T Group and used in the performance of our engineering services is correct and complete.

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

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

Unless explicitly agreed by both the client and B+T Group all services will be performed in accordance with the current revision of ANSI/TIA-222.

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



Envelope Only Solution

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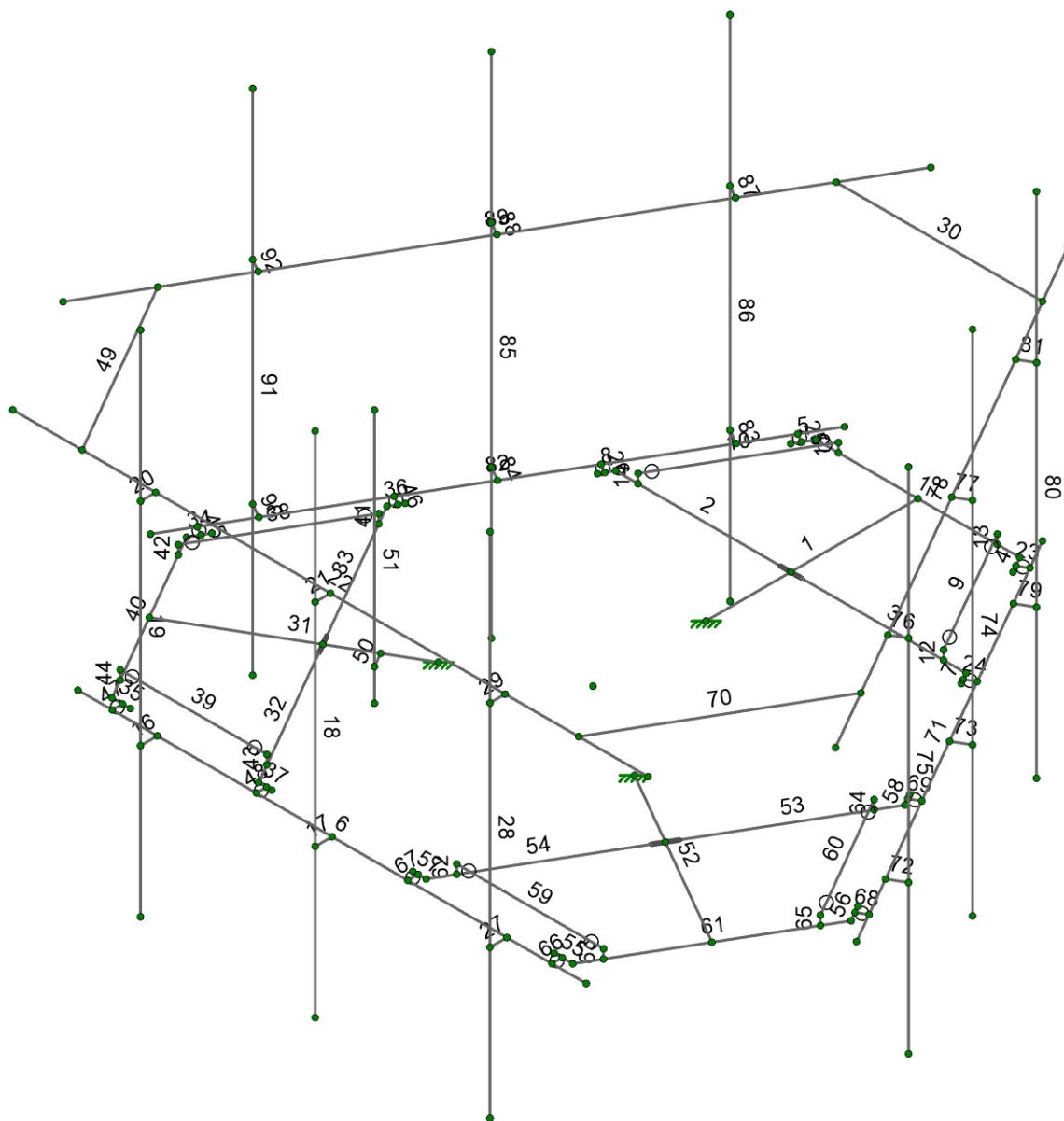
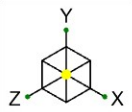
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209115 - Ridgefield 2

SK-1

Mar 19, 2022

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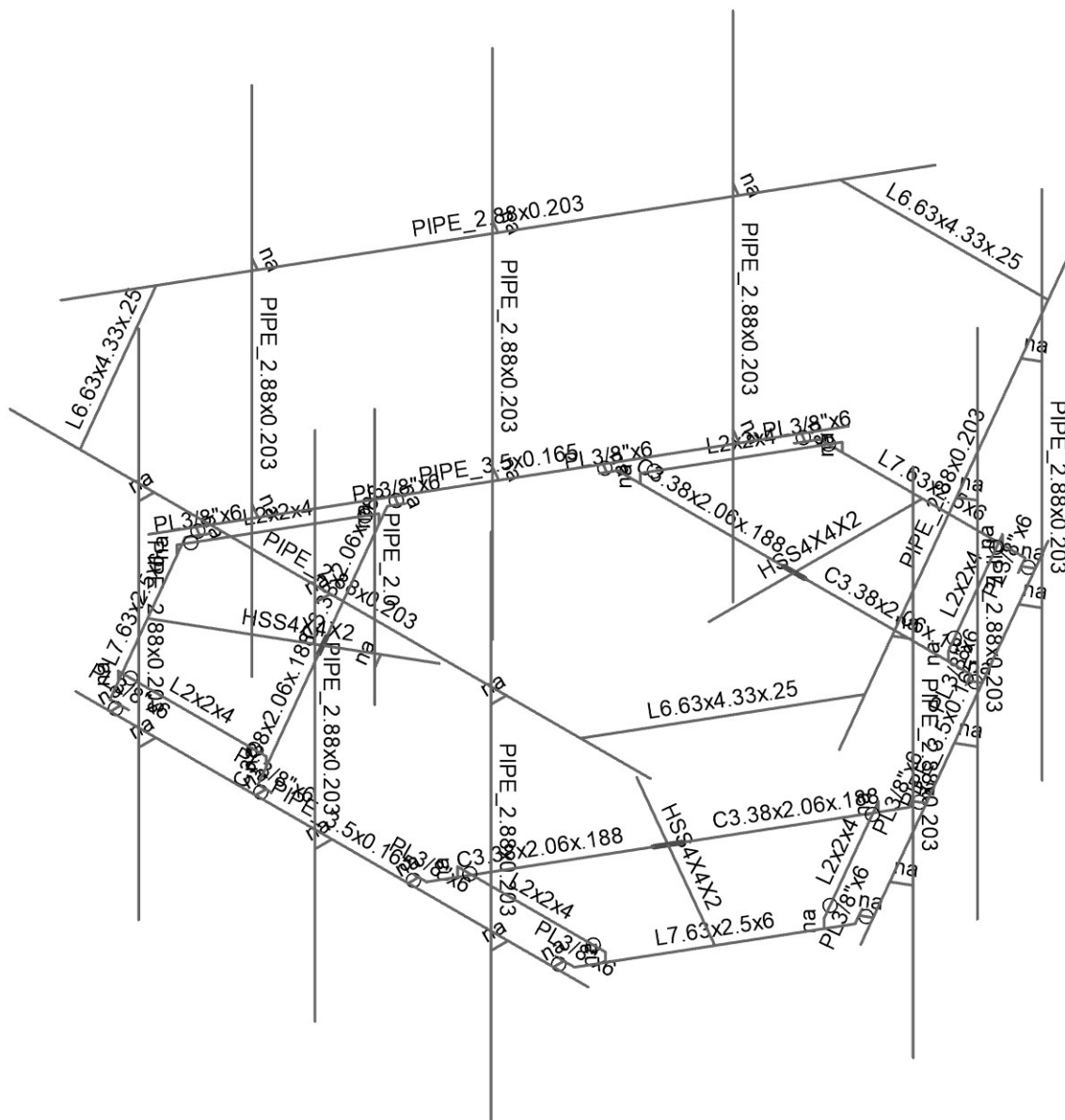
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209115 - Ridgefield 2

SK-3

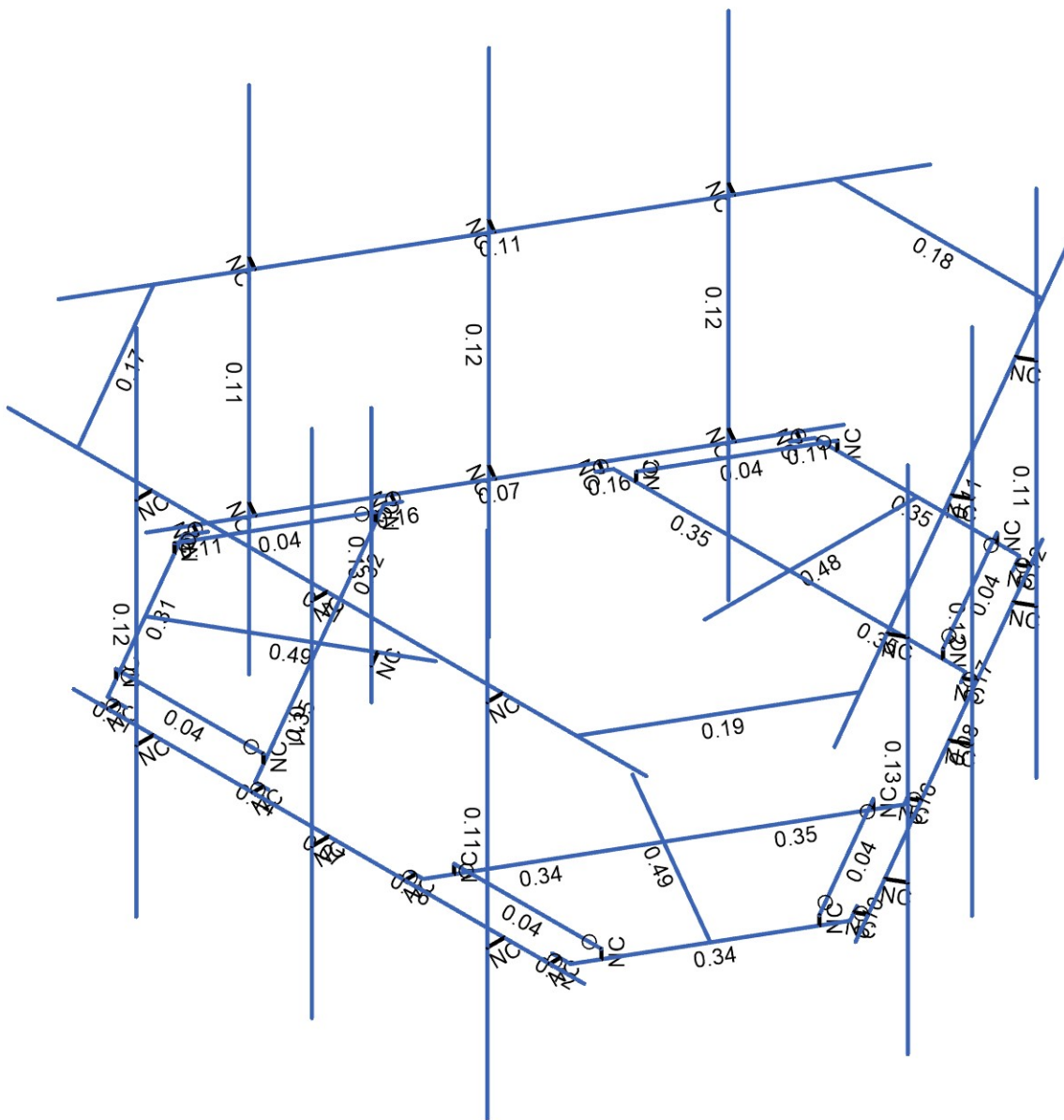
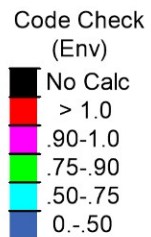
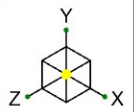
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Member Code Checks Displayed (Enveloped)  
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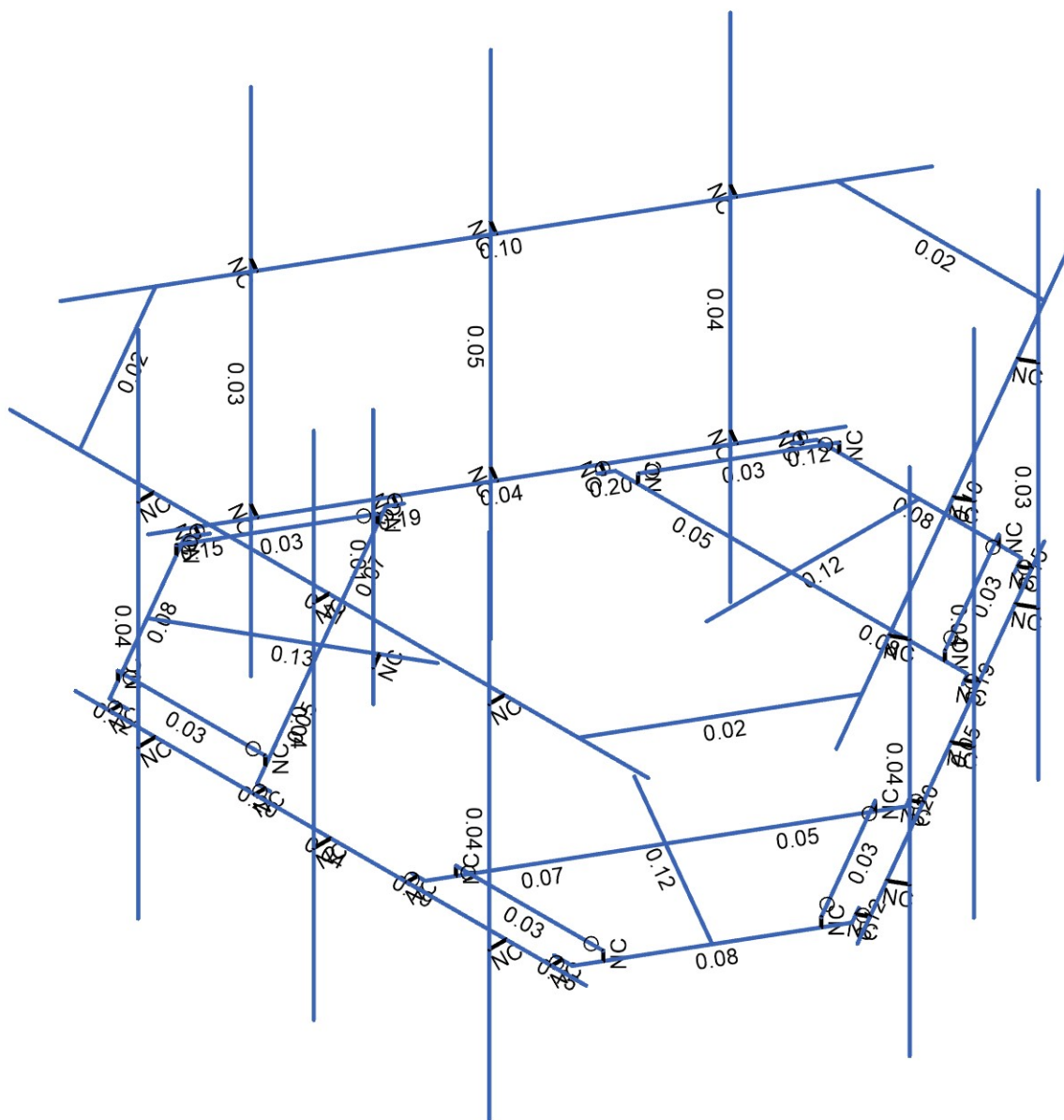
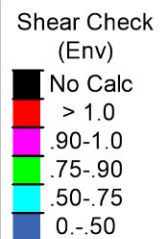
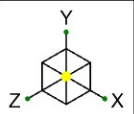
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Member Shear Checks Displayed (Enveloped)  
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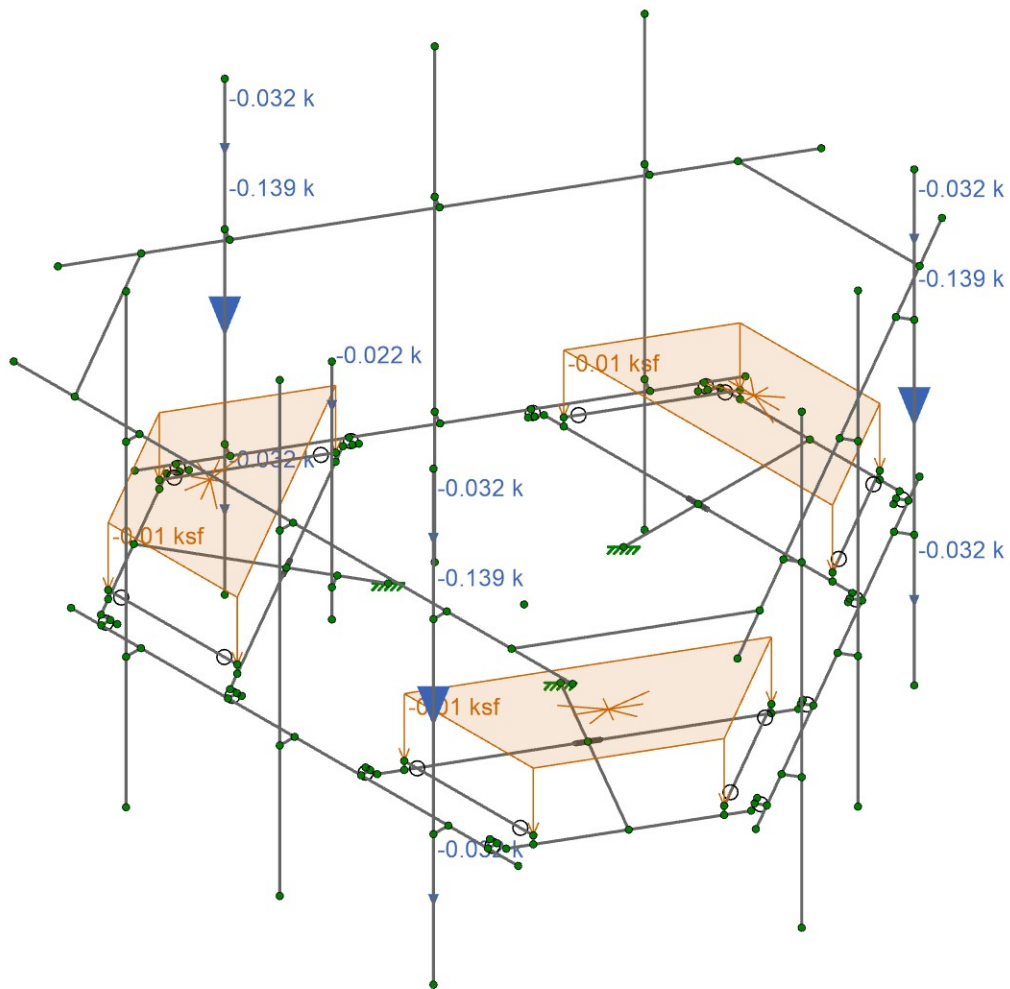
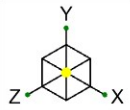
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209115 - Ridgefield 2

SK-6

Mar 19, 2022

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Loads: BLC 1, Dead

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155785.002.01

209115 - Ridgefield 2

SK-1

Mar 19, 2022

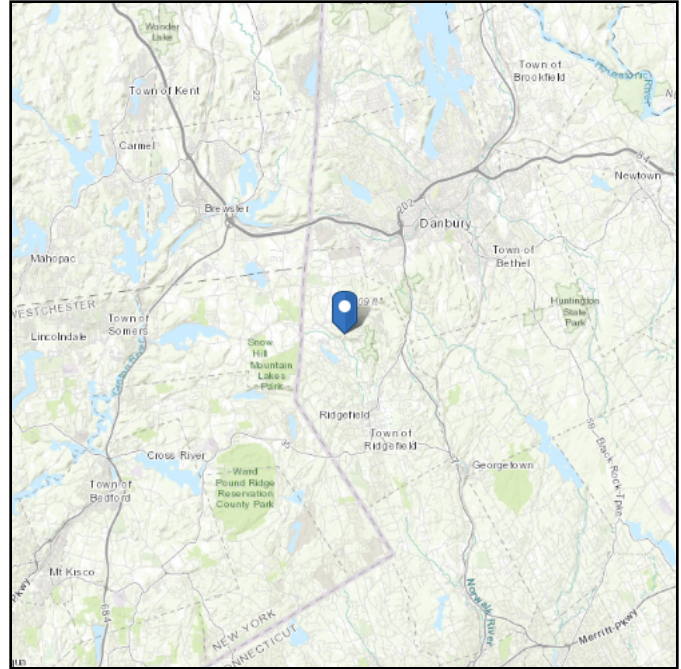
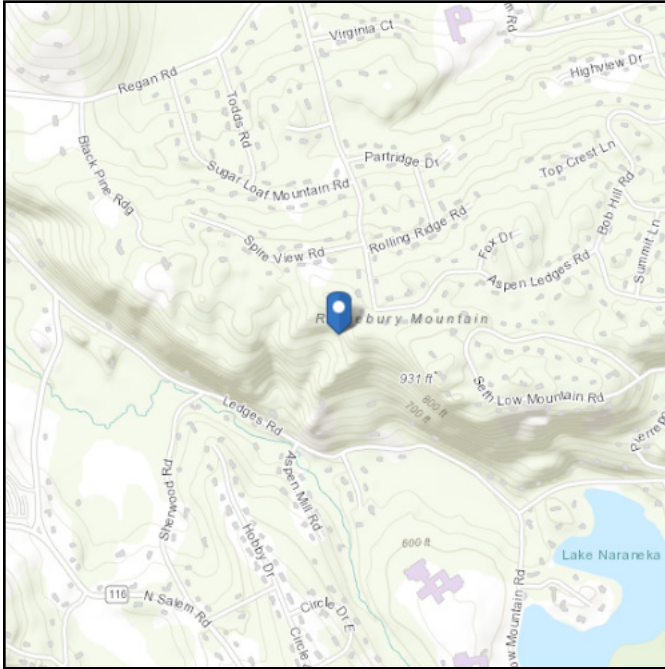
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# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

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

**Elevation:** 802.13 ft (NAVD 88)  
**Latitude:** 41.330321  
**Longitude:** -73.516847



## Wind

### Results:

Wind Speed	115 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2  
Date Accessed: Sat Mar 19 2022

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 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

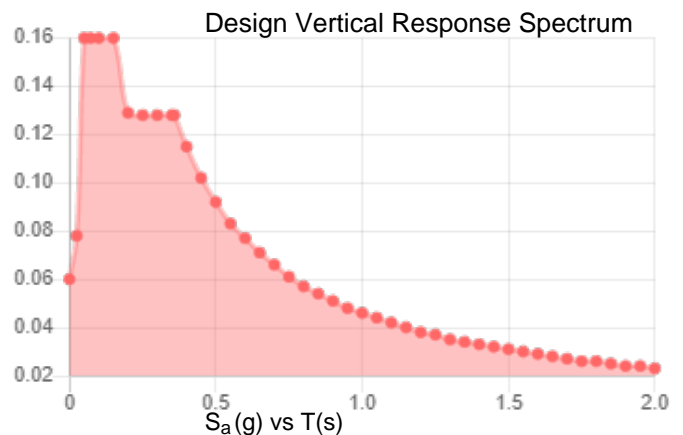
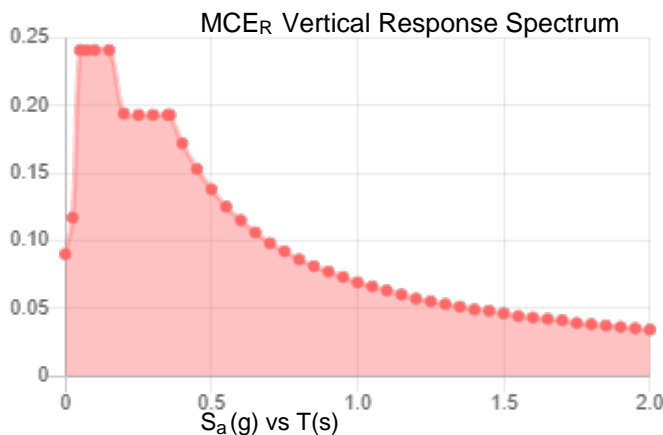
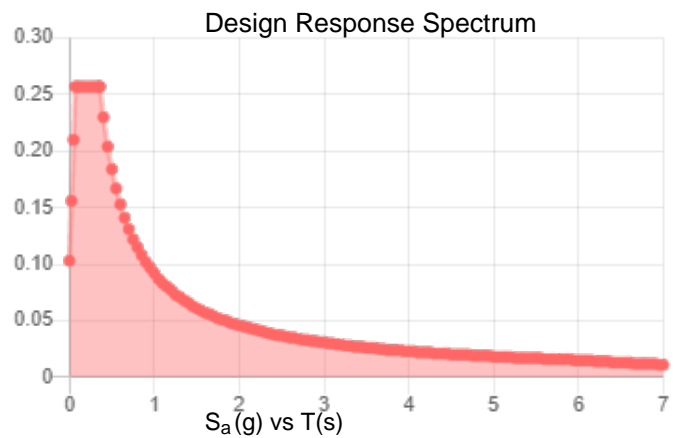
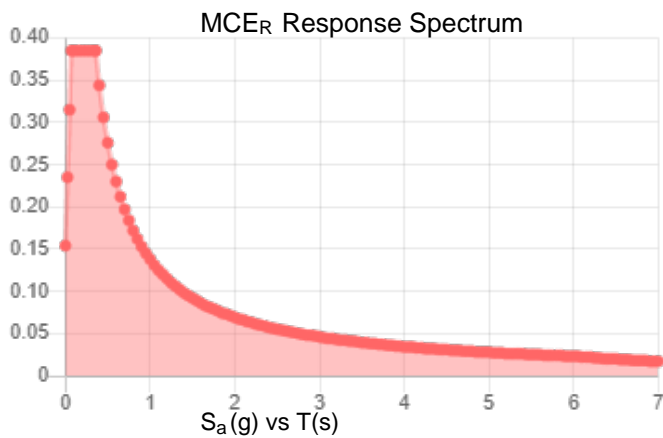
Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

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

**Results:**

$S_S$ :	0.241	$S_{D1}$ :	0.092
$S_1$ :	0.057	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.141
$F_v$ :	2.4	PGA <sub>M</sub> :	0.215
$S_{MS}$ :	0.385	$F_{PGA}$ :	1.517
$S_{M1}$ :	0.138	$I_e$ :	1
$S_{DS}$ :	0.257	$C_v$ :	0.781

**Seismic Design Category** B



**Data Accessed:** Sat Mar 19 2022

**Date Source:**

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

**Results:**

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

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

**Date Accessed:** Sat Mar 19 2022

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

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

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PROJECT	<b>155785.002.01 - Ridgefield 2</b>		<b>KSC</b>
SUBJECT	<b>Platform Mount Analysis</b>		
DATE	<b>03/21/22</b>	PAGE	OF

Tower Type	:	Monopole	
Ground Elevation	$Z_s$ :	802	ft [ASCE7 Hazard Tool]
Tower Height	:	149.00	ft
Mount Elevation	:	113.00	ft
Antenna Elevation	:	113.00	ft
Crest Height	:	0	ft
Risk Category	:	II	[Table 2-1 ]
Exposure Category	:	C	[Sec. 2.6.5.1.2]
Topography Category	:	1.00	[Sec. 2.6.6.2]
Wind Velocity	$V$ :	115	mph [ASCE7 Hazard Tool]
Ice wind Velocity	$V_i$ :	50	mph [ASCE7 Hazard Tool]
Service Velocity	$V_s$ :	30	mph [ASCE7 Hazard Tool]
Base Ice thickness	$t_i$ :	1.00	in [ASCE7 Hazard Tool]
Seismic Design Cat.	:	B	[ASCE7 Hazard Tool]
	$S_S$ :	0.24	
	$S_1$ :	0.06	
	$S_{DS}$ :	0.26	
	$S_{D1}$ :	0.09	
Gust Factor	$G_h$ :	1.00	[Sec. 16.6]
Pressure Coefficient	$K_z$ :	1.30	[Sec. 2.6.5.2]
Topography Factor	$K_{zt}$ :	1.00	[Sec. 2.6.6]
Elevation Factor	$K_e$ :	0.97	[Sec. 2.6.8]
Directionality Factor	$K_d$ :	0.95	[Sec. 16.6]
Shielding Factor	$K_a$ :	0.90	[Sec. 16.6]
Design Ice Thickness	$t_{iz}$ :	1.13	in [Sec. 2.6.10]
Importance Factor	$I_e$ :	1	[Table 2-3 ]
Response Coefficient	$C_s$ :	0.129	[Sec. 2.7.7.1]
Amplification	$A_s$ :	2.033557	[Sec. 16.7]
	$q_z$ :	40.57	psf

PROJECT	155785.002.01 - Ridgefield 2		KSC
SUBJECT	Platform Mount Analysis		
DATE	03/21/22	PAGE	OF



Manufacturer	Model	Qty	Aspect Ratio	C <sub>a</sub> flat/round	EPA <sub>N</sub> (ft <sup>2</sup> )	EPA <sub>T</sub> (ft <sup>2</sup> )	EPA <sub>N-ice</sub> (ft <sup>2</sup> )	EPA <sub>T-ice</sub> (ft <sup>2</sup> )	F <sub>A</sub> No Ice (N)	F <sub>A</sub> No Ice (T)	F <sub>A</sub> Ice (N)	F <sub>A</sub> Ice (T)
JMA Wireless	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.16	0.07	0.03	0.02
JMA Wireless	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.16	0.07	0.03	0.02
Fujitsu	TA08025-B605	1	1.73	1.20	0.99	1.64	1.42	2.15	0.04	0.07	0.01	0.01
Fujitsu	TA08025-B604	1	1.99	1.20	0.86	1.64	1.27	2.15	0.04	0.07	0.01	0.01
JMA Wireless	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.16	0.07	0.03	0.02
JMA Wireless	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.16	0.07	0.03	0.02
Fujitsu	TA08025-B605	1	1.73	1.20	0.99	1.64	1.42	2.15	0.04	0.07	0.01	0.01
Fujitsu	TA08025-B604	1	1.99	1.20	0.86	1.64	1.27	2.15	0.04	0.07	0.01	0.01
JMA Wireless	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.16	0.07	0.03	0.02
JMA Wireless	MX08FRO665-21	0.5	3.60	1.25	4.01	1.61	4.53	2.06	0.16	0.07	0.03	0.02
Fujitsu	TA08025-B605	1	1.73	1.20	0.99	1.64	1.42	2.15	0.04	0.07	0.01	0.01
Fujitsu	TA08025-B604	1	1.99	1.20	0.86	1.64	1.27	2.15	0.04	0.07	0.01	0.01
Raycap	RD1DC-9181-PF-48	1	1.14	1.20	1.56	0.89	2.06	1.30	0.07	0.04	0.01	0.01

### Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	2						
3	3						
4	4						
5	5						
6	16						
7	17						
8	19						
9	20						
10	22						
11	25						
12	26						
13	29						
14	53	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
15	54						
16	55						
17	56						
18	57						
19	66						
20	67						
21	69						
22	70						
23	72						
24	75						
25	76						
26	79						
27	82						
28	83						
29	84						
30	85						
31	86	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
32	87						
33	88						
34	89						
35	90						
36	99						
37	100						
38	102						
39	103						
40	105						
41	108						
42	109						
43	112						

### Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	1	2		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
2	2	5	3	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
3	3	3	4	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
4	4	7	8		MF-CP1	Beam	RECT	A36 Gr.36	Typical
5	5	6	9		MF-CP1	Beam	RECT	A36 Gr.36	Typical
6	6	14	15		MF-H1	Beam	Pipe	A500 Gr.C	Typical
7	7	16	4		MF-CP1	Beam	RECT	A36 Gr.36	Typical
8	8	5	19		MF-CP1	Beam	RECT	A36 Gr.36	Typical

**Member Primary Data (Continued)**

Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
9	9	25	24	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
10	10	23	22	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
11	11	6	7	SF-H4	Beam	Single Angle	A36 Gr.36	Typical
12	12	28	24	RIGID	None	None	RIGID	Typical
13	13	29	25	RIGID	None	None	RIGID	Typical
14	14	27	23	RIGID	None	None	RIGID	Typical
15	15	26	22	RIGID	None	None	RIGID	Typical
16	16	32	30	RIGID	None	None	RIGID	Typical
17	17	33	31	RIGID	None	None	RIGID	Typical
18	18	37	35	MF-P1	Column	Pipe	A500 Gr.C	Typical
19	19	36	34	MF-P1	Column	Pipe	A500 Gr.C	Typical
20	20	38	40	RIGID	None	None	RIGID	Typical
21	21	39	41	RIGID	None	None	RIGID	Typical
22	22	42	43	MF-H2	Beam	Pipe	A500 Gr.C	Typical
23	23	11	10	RIGID	None	None	RIGID	Typical
24	24	18	17	RIGID	None	None	RIGID	Typical
25	25	13	12	RIGID	None	None	RIGID	Typical
26	26	21	20	RIGID	None	None	RIGID	Typical
27	27	45	44	RIGID	None	None	RIGID	Typical
28	28	47	46	MF-P1	Column	Pipe	A500 Gr.C	Typical
29	29	48	49	RIGID	None	None	RIGID	Typical
30	30	51	52	180 MF-H3	Beam	Single Angle	A36 Gr.36	Typical
31	31	53	54	SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
32	32	57	55	180 SF-H2	Beam	Channel	A36 Gr.36	Typical
33	33	55	56	180 SF-H2	Beam	Channel	A36 Gr.36	Typical
34	34	59	60	MF-CP1	Beam	RECT	A36 Gr.36	Typical
35	35	58	61	MF-CP1	Beam	RECT	A36 Gr.36	Typical
36	36	66	56	MF-CP1	Beam	RECT	A36 Gr.36	Typical
37	37	57	69	MF-CP1	Beam	RECT	A36 Gr.36	Typical
38	38	75	74	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
39	39	73	72	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
40	40	58	59	SF-H4	Beam	Single Angle	A36 Gr.36	Typical
41	41	78	74	RIGID	None	None	RIGID	Typical
42	42	79	75	RIGID	None	None	RIGID	Typical
43	43	77	73	RIGID	None	None	RIGID	Typical
44	44	76	72	RIGID	None	None	RIGID	Typical
45	45	63	62	RIGID	None	None	RIGID	Typical
46	46	68	67	RIGID	None	None	RIGID	Typical
47	47	65	64	RIGID	None	None	RIGID	Typical
48	48	71	70	RIGID	None	None	RIGID	Typical
49	49	80	81	180 MF-H3	Beam	Single Angle	A36 Gr.36	Typical
50	50	82	83	RIGID	None	None	RIGID	Typical
51	51	84	85	MF-P2	Column	Pipe	A53 Gr.B	Typical
52	52	86	87	SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
53	53	90	88	180 SF-H2	Beam	Channel	A36 Gr.36	Typical
54	54	88	89	180 SF-H2	Beam	Channel	A36 Gr.36	Typical
55	55	92	93	MF-CP1	Beam	RECT	A36 Gr.36	Typical
56	56	91	94	MF-CP1	Beam	RECT	A36 Gr.36	Typical
57	57	99	89	MF-CP1	Beam	RECT	A36 Gr.36	Typical
58	58	90	102	MF-CP1	Beam	RECT	A36 Gr.36	Typical
59	59	108	107	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
60	60	106	105	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
61	61	91	92	SF-H4	Beam	Single Angle	A36 Gr.36	Typical
62	62	111	107	RIGID	None	None	RIGID	Typical
63	63	112	108	RIGID	None	None	RIGID	Typical

### Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
64	64	110	106		RIGID	None	None	RIGID	Typical
65	65	109	105		RIGID	None	None	RIGID	Typical
66	66	96	95		RIGID	None	None	RIGID	Typical
67	67	101	100		RIGID	None	None	RIGID	Typical
68	68	98	97		RIGID	None	None	RIGID	Typical
69	69	104	103		RIGID	None	None	RIGID	Typical
70	70	113	114	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
71	71	115	116		MF-H1	Beam	Pipe	A500 Gr.C	Typical
72	72	119	117		RIGID	None	None	RIGID	Typical
73	73	120	118		RIGID	None	None	RIGID	Typical
74	74	124	122		MF-P1	Column	Pipe	A500 Gr.C	Typical
75	75	123	121		MF-P1	Column	Pipe	A500 Gr.C	Typical
76	76	125	127		RIGID	None	None	RIGID	Typical
77	77	126	128		RIGID	None	None	RIGID	Typical
78	78	129	130		MF-H2	Beam	Pipe	A500 Gr.C	Typical
79	79	132	131		RIGID	None	None	RIGID	Typical
80	80	134	133		MF-P1	Column	Pipe	A500 Gr.C	Typical
81	81	135	136		RIGID	None	None	RIGID	Typical
82	82	137	138		MF-H1	Beam	Pipe	A500 Gr.C	Typical
83	83	141	139		RIGID	None	None	RIGID	Typical
84	84	142	140		RIGID	None	None	RIGID	Typical
85	85	146	144		MF-P1	Column	Pipe	A500 Gr.C	Typical
86	86	145	143		MF-P1	Column	Pipe	A500 Gr.C	Typical
87	87	147	149		RIGID	None	None	RIGID	Typical
88	88	148	150		RIGID	None	None	RIGID	Typical
89	89	151	152		MF-H2	Beam	Pipe	A500 Gr.C	Typical
90	90	154	153		RIGID	None	None	RIGID	Typical
91	91	156	155		MF-P1	Column	Pipe	A500 Gr.C	Typical
92	92	157	158		RIGID	None	None	RIGID	Typical

### Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
1	1	SF-H1	3.333	Lbyy	Lateral
2	2	SF-H2	2.758	Lbyy	Lateral
3	3	SF-H2	2.758	Lbyy	Lateral
4	4	MF-CP1	0.292	Lbyy	Lateral
5	5	MF-CP1	0.292	Lbyy	Lateral
6	6	MF-H1	8	Lbyy	Lateral
7	7	MF-CP1	0.208	Lbyy	Lateral
8	8	MF-CP1	0.208	Lbyy	Lateral
9	9	SF-H3	2.309	Lbyy	Lateral
10	10	SF-H3	2.309	Lbyy	Lateral
11	11	SF-H4	3.207	Lbyy	Lateral
12	18	MF-P1	8	Lbyy	Lateral
13	19	MF-P1	8	Lbyy	Lateral
14	22	MF-H2	10	Lbyy	Lateral
15	28	MF-P1	8	Lbyy	Lateral
16	30	MF-H3	3.251	Lbyy	Lateral
17	31	SF-H1	3.333	Lbyy	Lateral
18	32	SF-H2	2.758	Lbyy	Lateral
19	33	SF-H2	2.758	Lbyy	Lateral
20	34	MF-CP1	0.292	Lbyy	Lateral
21	35	MF-CP1	0.292	Lbyy	Lateral
22	36	MF-CP1	0.208	Lbyy	Lateral
23	37	MF-CP1	0.208	Lbyy	Lateral

### Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
24	38	SF-H3	2.309	Lbyy	Lateral
25	39	SF-H3	2.309	Lbyy	Lateral
26	40	SF-H4	3.207	Lbyy	Lateral
27	49	MF-H3	3.251	Lbyy	Lateral
28	51	MF-P2	4	Lbyy	Lateral
29	52	SF-H1	3.333	Lbyy	Lateral
30	53	SF-H2	2.758	Lbyy	Lateral
31	54	SF-H2	2.758	Lbyy	Lateral
32	55	MF-CP1	0.292	Lbyy	Lateral
33	56	MF-CP1	0.292	Lbyy	Lateral
34	57	MF-CP1	0.208	Lbyy	Lateral
35	58	MF-CP1	0.208	Lbyy	Lateral
36	59	SF-H3	2.309	Lbyy	Lateral
37	60	SF-H3	2.309	Lbyy	Lateral
38	61	SF-H4	3.207	Lbyy	Lateral
39	70	MF-H3	3.251	Lbyy	Lateral
40	71	MF-H1	8	Lbyy	Lateral
41	74	MF-P1	8	Lbyy	Lateral
42	75	MF-P1	8	Lbyy	Lateral
43	78	MF-H2	10	Lbyy	Lateral
44	80	MF-P1	8	Lbyy	Lateral
45	82	MF-H1	8	Lbyy	Lateral
46	85	MF-P1	8	Lbyy	Lateral
47	86	MF-P1	8	Lbyy	Lateral
48	89	MF-H2	10	Lbyy	Lateral
49	91	MF-P1	8	Lbyy	Lateral

### Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>6</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	A500 Gr.C	29000	11154	0.3	0.65	0.49	46	1.4	62	1.3

### Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
1	Dead	DL	-1		20		3
2	0 Wind - No Ice	WLZ			20	49	
3	90 Wind - No Ice	WLX			20	49	
4	0 Wind - Ice	WLZ			20	49	
5	90 Wind - Ice	WLX			20	49	
6	0 Wind - Service	WLZ			20	49	
7	90 Wind - Service	WLX			20	49	
8	Ice	OL1			20	49	3
9	0 Seismic	ELZ			20	49	
10	90 Seismic	ELX			20	49	
11	Live Load a	LL		3			
12	Live Load b	LL		3			
13	Live Load c	LL		3			

### Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
14	Live Load d	LL					
15	Maint LL 1	LL			1		
16	Maint LL 2	LL			1		
17	Maint LL 3	LL			1		
18	Maint LL 4	LL			1		
19	Maint LL 5	LL			1		
20	Maint LL 6	LL			1		
21	Maint LL 7	LL			1		
22	Maint LL 8	LL			1		
23	Maint LL 9	LL			1		
24	Maint LL 10	LL			1		
25	Maint LL 11	LL			1		
26	Maint LL 12	LL			1		
27	Maint LL 13	LL			1		
28	Maint LL 14	LL			1		
29	Maint LL 15	LL			1		
30	BLC 1 Transient Area Loads	None				9	
31	BLC 8 Transient Area Loads	None				9	

### Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	1.2 D + 1.0 - 0 W	Yes	Y	1	1.2	2	1				
3	1.2 D + 1.0 - 30 W	Yes	Y	1	1.2	2	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
5	1.2 D + 1.0 - 90 W	Yes	Y	1	1.2	3	1				
6	1.2 D + 1.0 - 120 W	Yes	Y	1	1.2	3	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
8	1.2 D + 1.0 - 180 W	Yes	Y	1	1.2	2	-1				
9	1.2 D + 1.0 - 210 W	Yes	Y	1	1.2	2	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
11	1.2 D + 1.0 - 270 W	Yes	Y	1	1.2	3	-1				
12	1.2 D + 1.0 - 300 W	Yes	Y	1	1.2	3	-0.866	2	0.5		
13	1.2 D + 1.0 - 330 W	Yes	Y	1	1.2	2	0.866	3	-0.5		
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
26	1.2 D + 1.0 E - 0	Yes	Y	1	1.2	9	1				
27	1.2 D + 1.0 E - 30	Yes	Y	1	1.2	9	0.866	10	0.5		
28	1.2 D + 1.0 E - 60	Yes	Y	1	1.2	10	0.866	9	0.5		
29	1.2 D + 1.0 E - 90	Yes	Y	1	1.2	10	1				
30	1.2 D + 1.0 E - 120	Yes	Y	1	1.2	10	0.866	9	-0.5		
31	1.2 D + 1.0 E - 150	Yes	Y	1	1.2	9	-0.866	10	0.5		
32	1.2 D + 1.0 E - 180	Yes	Y	1	1.2	9	-1				
33	1.2 D + 1.0 E - 210	Yes	Y	1	1.2	9	-0.866	10	-0.5		
34	1.2 D + 1.0 E - 240	Yes	Y	1	1.2	10	-0.866	9	-0.5		



### Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
35	1.2 D + 1.0 E - 270	Yes	Y	1	1.2	10	-1				
36	1.2 D + 1.0 E - 300	Yes	Y	1	1.2	10	-0.866	9	0.5		
37	1.2 D + 1.0 E - 330	Yes	Y	1	1.2	9	0.866	10	-0.5		
38	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13	1.5
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13	1.5
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13	1.5
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13	1.5
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13	1.5
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13	1.5
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13	1.5
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13	1.5
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13	1.5
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13	1.5
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13	1.5
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13	1.5
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14	1.5
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14	1.5
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14	1.5
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14	1.5
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14	1.5
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14	1.5
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14	1.5
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14	1.5
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14	1.5
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14	1.5
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14	1.5
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14	1.5
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15	1.5
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16	1.5
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17	1.5
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18	1.5

### Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19	1.5
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20	1.5
92	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					21	1.5
93	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					22	1.5
94	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					23	1.5
95	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					24	1.5
96	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					25	1.5
97	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					26	1.5
98	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					27	1.5
99	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					28	1.5
100	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					29	1.5

### Envelope Node Reactions

Node Label	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1 1 max	1.266	5	1.716	14	1.044	2	3.459	2	1.339	11	0.33	97
2 min	-1.269	11	0.037	8	-1.118	8	-0.362	8	-1.342	5	-0.199	89
3 53 max	1.133	5	1.802	18	1.389	2	0.289	13	1.509	3	0.21	12
4 min	-1.194	11	0.162	12	-1.349	8	-1.762	7	-1.512	9	-3.127	18
5 86 max	1.033	5	1.702	22	1.426	2	0.102	3	1.479	7	2.88	22
6 min	-0.968	11	0.108	4	-1.392	8	-1.875	21	-1.484	13	-0.183	4
7 Totals: max	3.431	5	4.793	20	3.858	2						
8 min	-3.431	11	2.413	2	-3.858	8						

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

Member	Shape	Code Check	Loc[ft]	LC	Shear	Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	1	HSS4X4X2	0.485	0	13	0.117	0	y	73	70.173	73.278	8.24	8.24	2.015	H1-1b
2	2	C3.38x2.06x.188	0.351	2.592	15	0.054	0.351	y	2	35.676	43.394	1.694	4.483	1.627	H1-1b
3	3	C3.38x2.06x.188	0.346	0	13	0.075	2.241	y	2	35.676	43.394	1.694	4.483	1.613	H1-1b
4	4	PL3/8"x6	0.12	0.164	7	0.149	0	y	62	68.997	72.9	0.57	9.113	1.883	H1-1b
5	5	PL3/8"x6	0.114	0	3	0.121	0	y	38	68.997	72.9	0.57	9.113	1.776	H1-1b
6	6	PIPE 3.5x0.165	0.073	2.833	4	0.041	4		4	45.872	71.57	6.336	6.336	1.348	H1-1b
7	7	PL3/8"x6	0.173	0.208	8	0.194	0.208	y	61	70.882	72.9	0.57	9.113	1.518	H1-1b
8	8	PL3/8"x6	0.155	0	13	0.198	0	y	51	70.882	72.9	0.57	9.113	2.301	H1-1b
9	9	L2x2x4	0.036	1.155	22	0.029	0	y	45	23.349	30.586	0.691	1.577	1.139	H2-1
10	10	L2x2x4	0.044	1.203	17	0.033	2.309	y	66	23.349	30.586	0.691	1.577	1.141	H2-1
11	11	L7.63x2.5x6	0.353	1.604	8	0.078	1.604	y	64	75.414	118.523	1.798	13.979	1.294	H2-1
12	18	PIPE 2.88x0.203	0.106	5.583	5	0.041	5.583		5	35.519	70.68	5.029	5.029	3	H1-1b
13	19	PIPE 2.88x0.203	0.12	2.333	10	0.04	5.583		9	35.519	70.68	5.029	5.029	3	H1-1b
14	22	PIPE 2.88x0.203	0.111	2.188	9	0.109	8.854		13	24.131	70.68	5.029	5.029	2.469	H1-1b
15	28	PIPE 2.88x0.203	0.105	5.583	6	0.037	5.583		7	35.519	70.68	5.029	5.029	3	H1-1b
16	30	L6.63x4.33x.25	0.178	3.251	6	0.02	3.251	z	12	51.793	86.751	2.311	6.976	1.5	H2-1
17	31	HSS4X4X2	0.494	0	7	0.133	0	z	3	70.173	73.278	8.24	8.24	2.109	H1-1b
18	32	C3.38x2.06x.188	0.35	2.592	19	0.052	2.592	y	66	35.676	43.394	1.694	4.483	1.625	H1-1b
19	33	C3.38x2.06x.188	0.323	0	5	0.066	2.241	y	6	35.676	43.394	1.694	4.483	1.616	H1-1b
20	34	PL3/8"x6	0.107	0.164	11	0.148	0	y	66	68.997	72.9	0.57	9.113	1.879	H1-1b
21	35	PL3/8"x6	0.114	0	7	0.12	0	y	42	68.997	72.9	0.57	9.113	1.757	H1-1b
22	36	PL3/8"x6	0.155	0.208	12	0.194	0.208	y	54	70.882	72.9	0.57	9.113	1.61	H1-1b
23	37	PL3/8"x6	0.142	0	5	0.2	0	y	55	70.882	72.9	0.57	9.113	2.253	H1-1b
24	38	L2x2x4	0.04	1.155	15	0.029	0	y	49	23.349	30.586	0.691	1.577	1.139	H2-1
25	39	L2x2x4	0.04	1.299	21	0.033	2.309	y	70	23.349	30.586	0.691	1.577	1.155	H2-1
26	40	L7.63x2.5x6	0.311	1.604	12	0.078	1.604	y	68	75.414	118.523	1.798	14.075	1.316	H2-1
27	49	L6.63x4.33x.25	0.173	3.251	10	0.021	3.251	y	9	51.793	86.751	2.311	6.976	1.5	H2-1
28	51	PIPE 2.0	0.125	3.5	8	0.01	3.5		8	26.521	32.13	1.872	1.872	1.522	H1-1b

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

Member	Shape	Code	Check	Loc[ft]	LC	Shear	Check	Loc[ft]	Dir	LC	phi*	Pnc [k]	phi*	Pnt [k]	phi*	Mn y-y [k-ft]	phi*	Mn z-z [k-ft]	Cb	Eqn
29	52	HSS4X4X2	0.489	0	9	0.118	0	y	69	70.173	73.278	8.24	8.24	2.015	H1-1b					
30	53	C3.38x2.06x.188	0.347	2.592	23	0.052	2.592	y	70	35.676	43.394	1.694	4.483	1.627	H1-1b					
31	54	C3.38x2.06x.188	0.344	0	9	0.068	2.241	y	10	35.676	43.394	1.694	4.483	1.613	H1-1b					
32	55	PL3/8"x6	0.124	0.164	3	0.146	0	y	70	68.997	72.9	0.57	9.113	1.965	H1-1b					
33	56	PL3/8"x6	0.105	0	11	0.122	0	y	46	68.997	72.9	0.57	9.113	1.758	H1-1b					
34	57	PL3/8"x6	0.157	0.208	4	0.195	0.208	y	57	70.882	72.9	0.57	9.113	1.607	H1-1b					
35	58	PL3/8"x6	0.156	0	9	0.197	0	y	59	70.882	72.9	0.57	9.113	2.294	H1-1b					
36	59	L2x2x4	0.039	1.01	19	0.029	0	y	41	23.349	30.586	0.691	1.577	1.155	H2-1					
37	60	L2x2x4	0.04	1.155	25	0.033	2.309	y	62	23.349	30.586	0.691	1.577	1.139	H2-1					
38	61	L7.63x2.5x6	0.337	1.604	3	0.078	1.604	y	72	75.414	118.523	1.798	14.401	1.397	H2-1					
39	70	L6.63x4.33x.25	0.193	3.251	2	0.023	3.251	y	13	51.793	86.751	2.311	6.976	1.5	H2-1					
40	71	PIPE 3.5x0.165	0.08	2.833	8	0.048	4	y	9	45.872	71.57	6.336	6.336	1.436	H1-1b					
41	74	PIPE 2.88x0.203	0.116	5.583	9	0.044	5.583	y	9	35.519	70.68	5.029	5.029	3	H1-1b					
42	75	PIPE 2.88x0.203	0.13	2.333	2	0.04	5.583	y	13	35.519	70.68	5.029	5.029	3	H1-1b					
43	78	PIPE 2.88x0.203	0.114	2.188	13	0.098	2.188	y	13	24.131	70.68	5.029	5.029	2.341	H1-1b					
44	80	PIPE 2.88x0.203	0.107	5.583	9	0.035	5.583	y	12	35.519	70.68	5.029	5.029	3	H1-1b					
45	82	PIPE 3.5x0.165	0.072	2.833	12	0.043	2.833	y	13	45.872	71.57	6.336	6.336	1.366	H1-1b					
46	85	PIPE 2.88x0.203	0.116	5.583	13	0.046	5.583	y	13	35.519	70.68	5.029	5.029	3	H1-1b					
47	86	PIPE 2.88x0.203	0.12	2.333	6	0.036	5.583	y	5	35.519	70.68	5.029	5.029	3	H1-1b					
48	89	PIPE 2.88x0.203	0.105	7.813	9	0.103	8.854	y	9	24.131	70.68	5.029	5.029	2.467	H1-1b					
49	91	PIPE 2.88x0.203	0.113	5.583	2	0.034	5.583	y	3	35.519	70.68	5.029	5.029	3	H1-1b					

PROJECT	<b>155785.002.01 - Ridgefield 2, CT</b>			<b>KSC</b>
SUBJECT	<b>Platform Mount Analysis</b>			
DATE	<b>03/21/22</b>	PAGE	1	OF 1



**B+T Group**  
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[REF: AISC 360-05]

### Reactions at Bolted Connection

Tension	:	1.044	k
Vertical Shear	:	1.716	k
Horizontal Shear	:	1.266	k
Torsion	:	0.33	k.ft
Moment from Horizontal Forces	:	1.339	k.ft
Moment from Vertical Forces	:	3.459	k.ft

### Bolt Parameters

Bolt Grade	:	A325	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in <sup>2</sup>
Bolt spacing, Horizontal	:	6	in
Bolt spacing, Vertical	:	6	in
Bolt edge distance, plate height	:	1.5	in
Bolt edge distance, plate width	:	1.5	in
Total Number of Bolts	:	4	bolts

### Summary of Forces

Shear Resultant Force	:	2.13	k
Force from Horz. Moment	:	2.43	k
Force from Vert. Moment	:	6.27	k
Shear Load / Bolt	:	0.53	k
Tension Load / Bolt	:	0.26	k
Resultant from Moments / Bolt	:	3.36	k

### Bolt Checks

Nominal Tensile Stress, $F_{nt}$	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, $\Phi R_{nt}$	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	<b>17.47%</b>		<b>OKAY</b>
Nominal Shear Stress, $F_{nv}$	:	48.00	ksi	[AISC Table J3.2]
Available Shear Stress, $\Phi R_{nv}$	:	11.05	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	<b>7.19%</b>		<b>OKAY</b>
Unity Check, Combined	:	<b>24.66%</b>		<b>OKAY</b>
Available Bearing Strength, $\Phi R_n$	:	34.66	k/bolt	
Unity Check, Bolt Bearing	:	<b>1.54%</b>		<b>OKAY</b>

PROJECT	<b>155785.002.01 - Ridgefield 2, CT</b>			<b>KSC</b>
SUBJECT	<b>Platform Mount Analysis</b>			
DATE	<b>03/21/22</b>	PAGE	1	OF 1



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[REF: AISC 360-05]

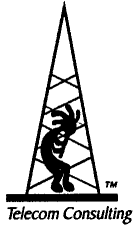
### **Connecting Member Parameters**

Plate Yield Strength, $F_y$	:	36.00	ksi	[AISC Table 2-5]
Plate Tensile Strength, $F_u$	:	58.00	ksi	[AISC Table 2-5]
Plate Height	:	9.00	in	
Plate Width	:	9.00	in	
Plate Thickness	:	0.50	in	
Edge Distance	:	1.06	in	
Gross Tension Area, $A_{gt}$	:	4.50	in <sup>2</sup>	
Gross Shear Area, $A_{gv}$	:	0.75	in <sup>2</sup>	
Net Area for tension, $A_{nv}$	:	4.16	in <sup>2</sup>	
Net Area for shear, $A_{nt}$	:	3.00	in <sup>2</sup>	

### **Plate Check**

Available Tensile Yield	:	145.80	k	[Eq. J4-1]
Available Tensile Rupture	:	180.80	k	[Eq. J4-2]
Unity Check, Plate Tension	:	<b>2.48%</b>	<b>OKAY</b>	
Available Shear Yield	:	16.20	k	[Eq. J4-3]
Available Shear Rupture	:	104.40	k	[Eq. J4-4]
Unity Check, Plate Shear	:	<b>13.16%</b>	<b>OKAY</b>	
Available Block Shear, $\Phi R_n$	:	77.40	k	[Eq. J4-5]
Unity Check, Block Shear	:	<b>2.76%</b>	<b>OKAY</b>	

## POWER DENSITY STUDY



# PINNACLE TELECOM GROUP

*Professional and Technical Services*

## ANTENNA SITE FCC RF COMPLIANCE ASSESSMENT AND REPORT FOR MUNICIPAL SUBMISSION



***PREPARED FOR:***

Dish Wireless, LLC

***SITE ID:***

NJER01100B

***SITE ADDRESS:***

320 Old STAGECOACH Road  
Ridgfield, CT

***LATITUDE:***

N 41.33030556

***LONGITUDE:***

W 73.51833333

***STRUCTURE TYPE:***

Monopole

***REPORT DATE:***

MARCH 15, 2022

***COMPLIANCE CONCLUSION:***

Dish Wireless, LLC will be in compliance with the rules and regulations as described in OET Bulletin 65, following the implementation of the proposed mitigation as detailed in the report.

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



# CONTENTS

<b>INTRODUCTION AND SUMMARY</b>	<b>3</b>
<b>ANTENNA AND TRANSMISSION DATA</b>	<b>5</b>
<b>COMPLIANCE ANALYSIS</b>	<b>11</b>
<b>COMPLIANCE CONCLUSION</b>	<b>18</b>

## **CERTIFICATION**

### **Appendix A. DOCUMENTS USED TO PREPARE THE ANALYSIS**

### **Appendix B. BACKGROUND ON THE FCC MPE LIMIT**

### **Appendix C. PROPOSED SIGNAGE**

### **Appendix D. SUMMARY OF EXPERT QUALIFICATIONS**

## **INTRODUCTION AND SUMMARY**

At the request of Dish Wireless, LLC (“Dish”), Pinnacle Telecom Group has performed an independent expert assessment of radiofrequency (RF) levels and related FCC compliance for proposed wireless base station antenna operations on an existing monopole located at 320 Old Stagecoach Road in Ridgefield, CT. Dish refers to the antenna site by the code “NJJER01100B”, and its proposed operation involves directional panel antennas and transmission in the 600 MHz, 2000 MHz and 2100 MHz frequency bands licensed to it by the FCC.

The FCC requires all wireless antenna operators to perform an assessment of potential human exposure to radiofrequency (RF) fields emanating from all the transmitting antennas at a site whenever antenna operations are added or modified, and to ensure compliance with the Maximum Permissible Exposure (MPE) limit in the FCC’s regulations. In this case, the compliance assessment needs to take into account the RF effects of other existing antenna operations at the site by AT&T, T-Mobile, Verizon Wireless, Ridgefield Fire Department, Ridgefield Police Department, and the Town of Ridgefield. Note that FCC regulations require any future antenna collocators to assess and assure continuing compliance based on the cumulative effects of all then-proposed and then-existing antennas at the site.

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

The results of a compliance assessment can be described in layman’s terms by expressing the calculated RF levels as simple percentages of the FCC MPE limit. If the normalized reference for that limit is 100 percent, then calculated RF levels higher than 100 percent indicate the MPE limit is exceeded and there is a need to mitigate the potential exposure. On the other hand, calculated RF levels consistently below 100 percent serve as a clear and sufficient demonstration of

compliance with the MPE limit. We can (and will) also describe the overall worst-case result via the “plain-English” equivalent “times-below-the-limit” factor.

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

- ❑ At street level, the conservatively calculated maximum RF level from the combination of proposed and existing antenna operations at the site is 3.8784 percent of the FCC general population MPE limit – well below the 100-percent reference for compliance. In other words, the worst-case calculated RF level – intentionally and significantly overstated by the calculations – is still more than 25 times below the FCC limit for safe, continuous exposure of the general public.
- ❑ A supplemental analysis of the RF levels at the same height as the Dish antennas indicate that the FCC MPE limit is potentially exceeded. Therefore, it is recommended that two Caution signs be installed six feet below the antennas. In addition, NOC Information signs are to be installed at the base of the monopole.
- ❑ The results of the calculations, along with the proposed mitigation, combine to satisfy the FCC requirements and associated guidelines on RF compliance at street level around the site and on the subject roof. Moreover, because of the significant conservatism incorporated in the analysis, RF levels actually caused by the antennas will be lower than these calculations indicate.

The remainder of this report provides the following:

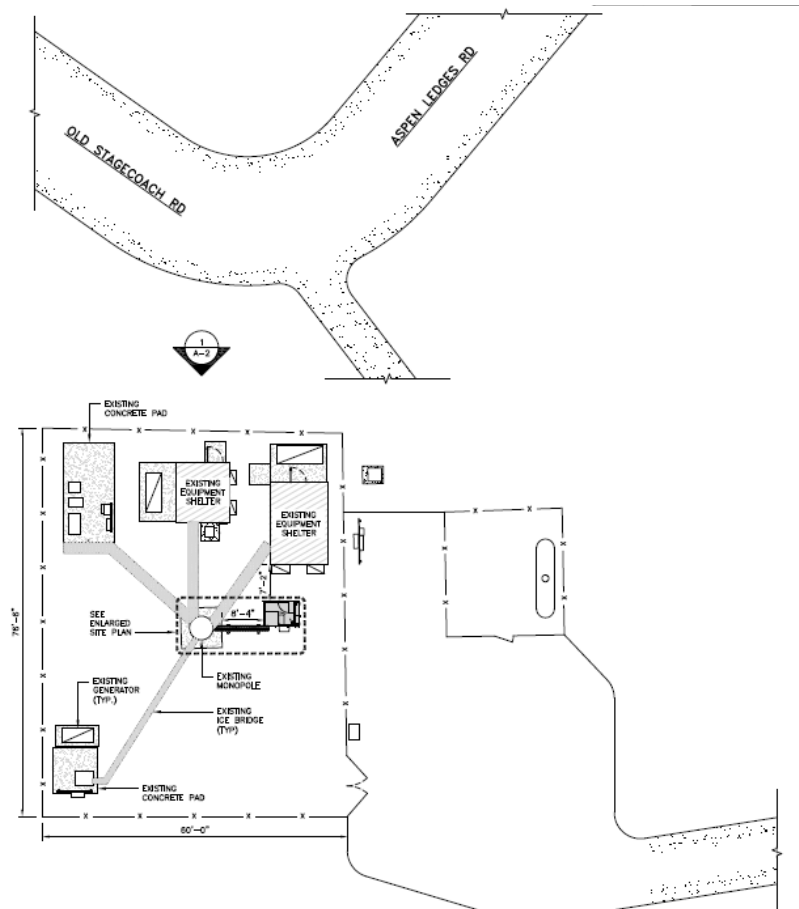
- ❑ relevant technical data on the proposed Dish antenna operations at the site, as well as on the other existing antenna operations;
- ❑ a description of the applicable FCC mathematical model for calculating RF levels, and application of the relevant technical data to that model;
- ❑ analysis of the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

In addition, four Appendices are included. Appendix A provides information on the documents used to prepare the analysis. Appendix B provides background on the FCC MPE limit. Appendix C details the proposed mitigation to satisfy the FCC requirements and associated guidelines on RF compliance. Appendix D provides a summary of the qualifications of the expert certifying FCC compliance for this site.

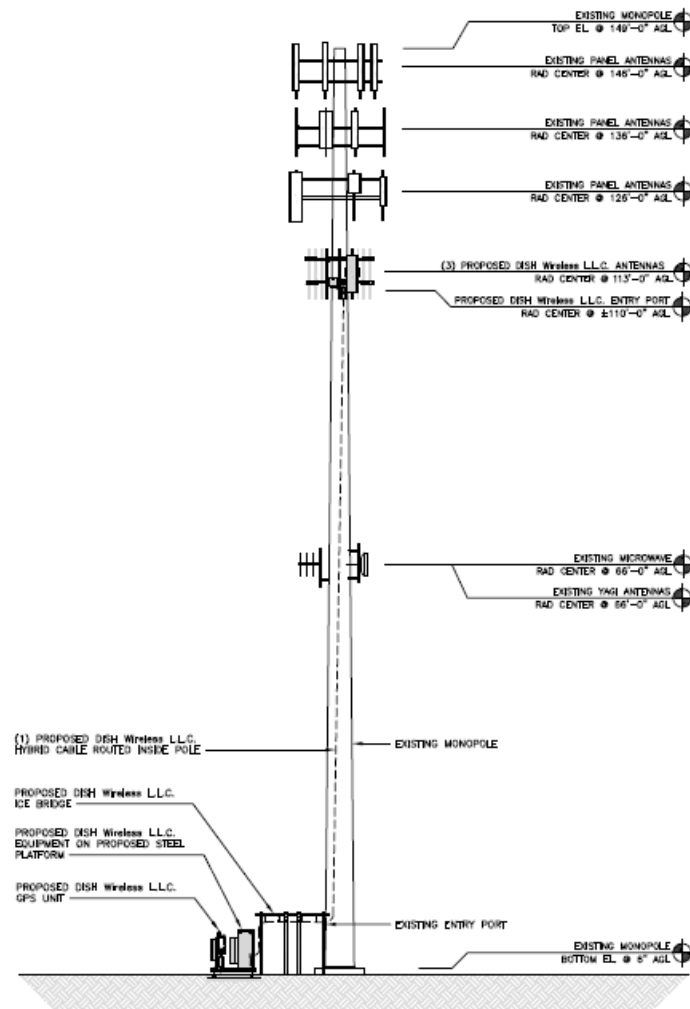
## ANTENNA AND TRANSMISSION DATA

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

### Plan View:



Elevation View:



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

<b>Ant. ID</b>	<b>Carrier</b>	<b>Antenna Manufacturer</b>	<b>Antenna Model</b>	<b>Type</b>	<b>Freq (MHz)</b>	<b>Ant. Dim. (ft.)</b>	<b>Total Input Power (watts)</b>	<b>Total ERP (watts)</b>	<b>Z AGL (ft)</b>	<b>Ant. Gain (dBd)</b>	<b>B/W</b>	<b>Azimuth</b>	<b>EDT</b>	<b>MDT</b>
❶	Dish	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	113	12.46	64	40	2	0
❶	Dish	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	113	13.16	63	40	2	0
❶	Dish	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	113	16.66	67	40	2	0
❷	Dish	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	113	12.46	64	160	2	0
❷	Dish	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	113	13.16	63	160	2	0
❷	Dish	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	113	16.66	67	160	2	0
❸	Dish	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	113	12.46	64	280	2	0
❸	Dish	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	113	13.16	63	280	2	0
❸	Dish	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	113	16.66	67	280	2	0

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

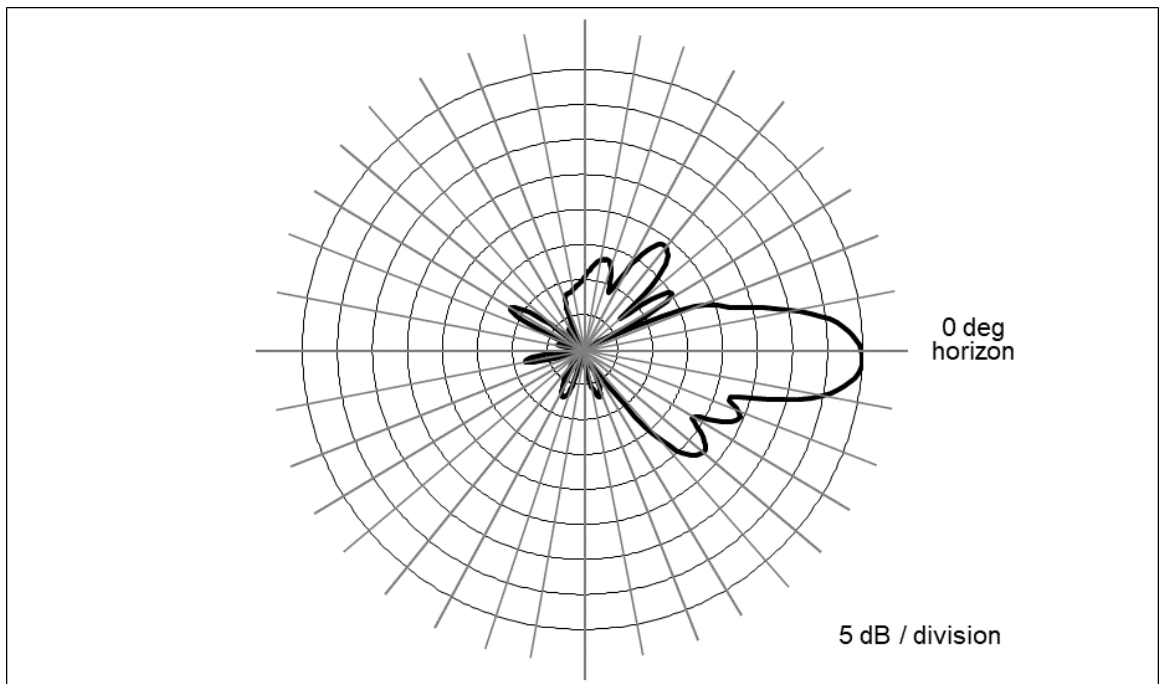
By way of illustration, Figure 1 that follows shows the vertical-plane radiation pattern of the proposed antenna model in the 600 MHz frequency band. In this type of antenna radiation pattern diagram, the antenna is effectively pointed at the three o’clock position (the horizon) and the relative strength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

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

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



**Figure 1. JMA Wireless MX08FRO665-21– 600 MHz Vertical-plane Pattern**



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

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

<i>Carrier</i>	<i>Antenna Manufacturer</i>	<i>Antenna Model</i>	<i>Type</i>	<i>Freq (MHz)</i>	<i>Total ERP (watts)</i>	<i>Ant. Gain (dBd)</i>	<i>Azimuth</i>
AT&T	Generic	Generic	Panel	700	4945	11.26	N/A
AT&T	Generic	Generic	Panel	850	2400	11.76	N/A
AT&T	Generic	Generic	Panel	1900	5756	15.56	N/A
AT&T	Generic	Generic	Panel	2100	5890	15.66	N/A
AT&T	Generic	Generic	Panel	2300	4131	16.16	N/A
T-Mobile	Generic	Generic	Panel	600	3163	12.96	N/A
T-Mobile	Generic	Generic	Panel	700	867	13.36	N/A
T-Mobile	Generic	Generic	Panel	1900	4123	15.36	N/A
T-Mobile	Generic	Generic	Panel	1900	1452	15.60	N/A
T-Mobile	Generic	Generic	Panel	2100	4626	15.86	N/A
T-Mobile	Generic	Generic	Panel	1900	1419	15.50	N/A
T-Mobile	Generic	Generic	Panel	2500	12804	22.35	N/A
Verizon Wireless	Generic	Generic	Panel	746	2400	11.76	N/A
Verizon Wireless	Generic	Generic	Panel	869	5166	12.36	N/A
Verizon Wireless	Generic	Generic	Panel	1900	5372	15.26	N/A
Verizon Wireless	Generic	Generic	Panel	2100	5625	15.46	N/A
Ridgefield Fire Department	Generic	Generic	Panel	154	9	3.36	N/A
Ridgefield Police Department	Generic	Generic	Dish	10735	2163	36.36	N/A
Town of Ridgefield	Generic	Generic	Panel	154	15	3.36	N/A

## Compliance Analysis

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

### ***Street Level Analysis***

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

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

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

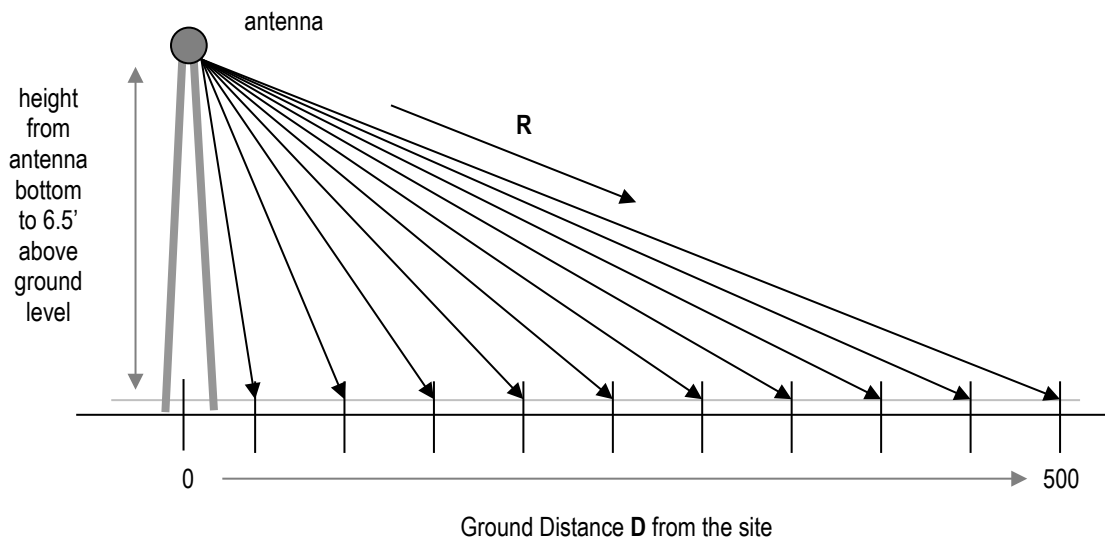
$$\text{MPE\%} = (100 * \text{Chans} * \text{TxPower} * 10^{(\text{Gmax} - \text{Vdisc}/10)} * 4) / (\text{MPE} * 4\pi * R^2)$$

where

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

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

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



**Figure 2. Street-level MPE% Calculation Geometry**

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

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

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

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

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

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

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

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

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

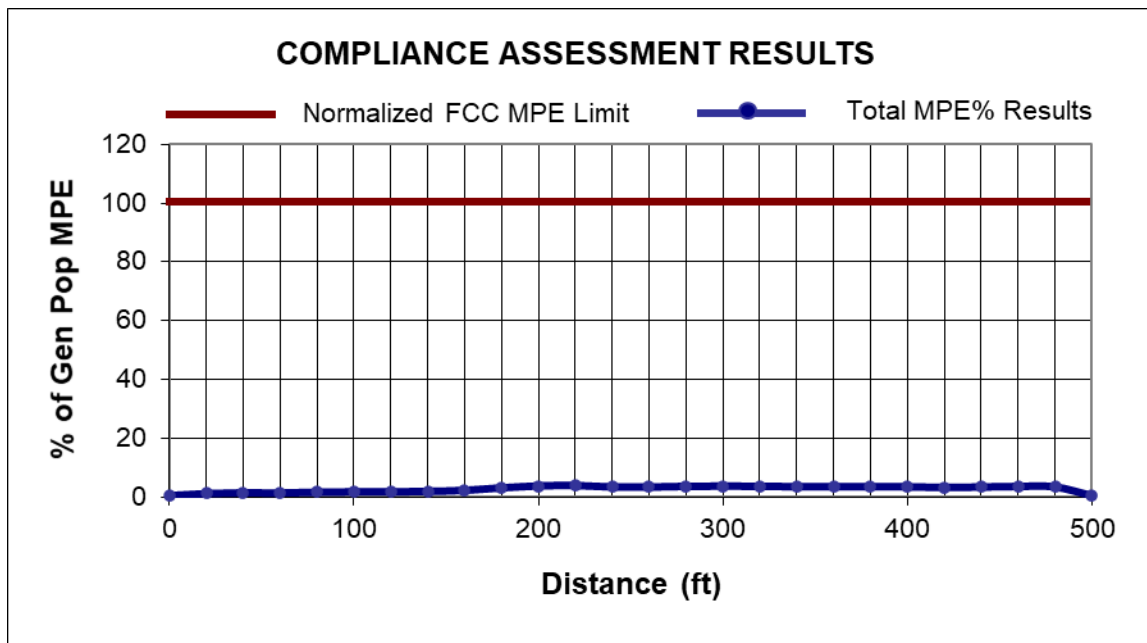
The table that follows provides the results of the MPE% calculations for each antenna operation, with the overall worst-case calculated result highlighted in bold in the last column. Note that the transmission parameters for each Dish antenna sector are identical, and the calculations reflect the worst-case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

Ground Distance (ft)	Dish 600 MHz MPE%	Dish 2000 MHz MPE%	Dish 2100 MHz MPE%	AT&T MPE%	T-Mobile MPE%	Verizon Wireless MPE%	Ridgefield FD MPE%	Ridgefield PD MPE%	Town of Ridgefield MPE%	Total MPE%
0	0.0454	0.0021	0.0003	0.0627	0.2938	0.0208	0.0004	0.0009	0.0003	0.6183
20	0.0884	0.0038	0.0050	0.0644	0.4286	0.0260	0.0010	0.0008	0.0003	1.2468
40	0.1858	0.0205	0.0331	0.1367	0.7960	0.0649	0.0082	0.0007	0.0009	1.5178
60	0.0653	0.0170	0.1343	0.1945	0.9543	0.1312	0.0128	0.0006	0.0078	1.4253
80	0.0462	0.2155	0.0446	0.2728	0.6845	0.1535	0.0036	0.0005	0.0041	1.6890
100	0.2467	0.1818	0.3644	0.3633	0.3885	0.1277	0.0071	0.0004	0.0091	1.7927
120	0.2894	0.2630	0.3220	0.3033	0.4506	0.1402	0.0085	0.0003	0.0154	1.7654
140	0.1678	0.0578	0.1876	0.4405	0.6237	0.2687	0.0057	0.0003	0.0133	1.9643
160	0.0598	0.0356	0.0257	0.6467	0.9358	0.2518	0.0018	0.0009	0.0062	2.2943
180	0.0336	0.0037	0.0433	0.6148	1.3359	0.2606	0.0001	0.0007	0.0016	3.1096
200	0.0280	0.0792	0.0322	0.6253	1.9522	0.3916	0.0005	0.0006	0.0000	3.7285
<b>220</b>	<b>0.0211</b>	<b>0.0736</b>	<b>0.1253</b>	<b>0.7860</b>	<b>2.2828</b>	<b>0.4371</b>	<b>0.0014</b>	<b>0.0005</b>	<b>0.0007</b>	<b>3.8784</b>
240	0.0116	0.0139	0.0725	0.8128	2.5608	0.3969	0.0046	0.0005	0.0048	3.4043
260	0.0100	0.0853	0.0237	0.6803	2.2603	0.3302	0.0062	0.0008	0.0075	3.3599
280	0.0172	0.1104	0.0665	0.5539	2.3757	0.2174	0.0077	0.0007	0.0104	3.5891
300	0.0324	0.0933	0.1059	0.3586	2.8334	0.1490	0.0068	0.0006	0.0091	3.6686
320	0.1023	0.0182	0.0779	0.2731	3.1245	0.0524	0.0081	0.0005	0.0116	3.6100
340	0.1513	0.0048	0.0341	0.2352	3.1337	0.0257	0.0093	0.0019	0.0140	3.4685
360	0.1362	0.0044	0.0307	0.2079	3.0403	0.0264	0.0083	0.0018	0.0125	3.4295
380	0.1909	0.0041	0.0096	0.2314	2.9199	0.0484	0.0092	0.0016	0.0144	3.4247
400	0.2536	0.0033	0.0032	0.2391	2.8080	0.0946	0.0084	0.0014	0.0131	3.4490
420	0.3223	0.0066	0.0020	0.2191	2.7164	0.1618	0.0076	0.0013	0.0119	3.2126
440	0.2952	0.0060	0.0018	0.2196	2.5187	0.1485	0.0083	0.0012	0.0133	3.3727
460	0.3626	0.0235	0.0091	0.2822	2.4426	0.2318	0.0076	0.0011	0.0122	3.5534
480	0.3343	0.0217	0.0083	0.4198	2.4183	0.3318	0.0070	0.0010	0.0112	3.4348
500	0.3983	0.0505	0.0296	0.3892	2.2388	0.3074	0.0074	0.0015	0.0121	0.6183

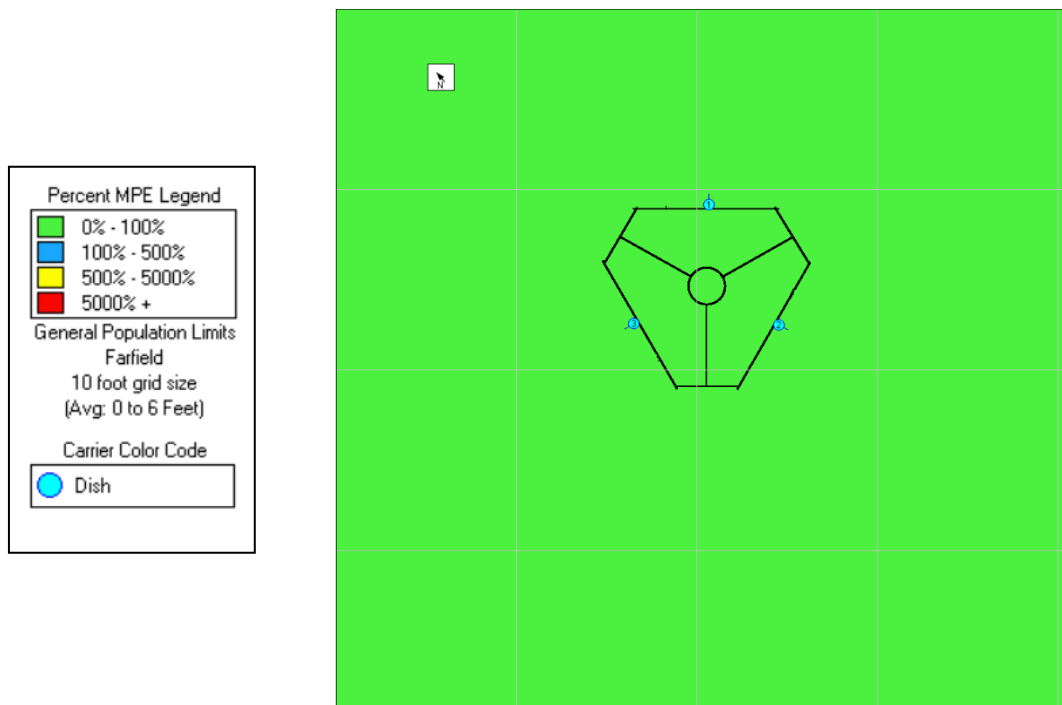


As indicated, the maximum calculated overall RF level is 3.8784 percent of the FCC MPE limit – well below the 100-percent reference for compliance.

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



The graphic output for the areas at street level surrounding the site is reproduced on the next page.

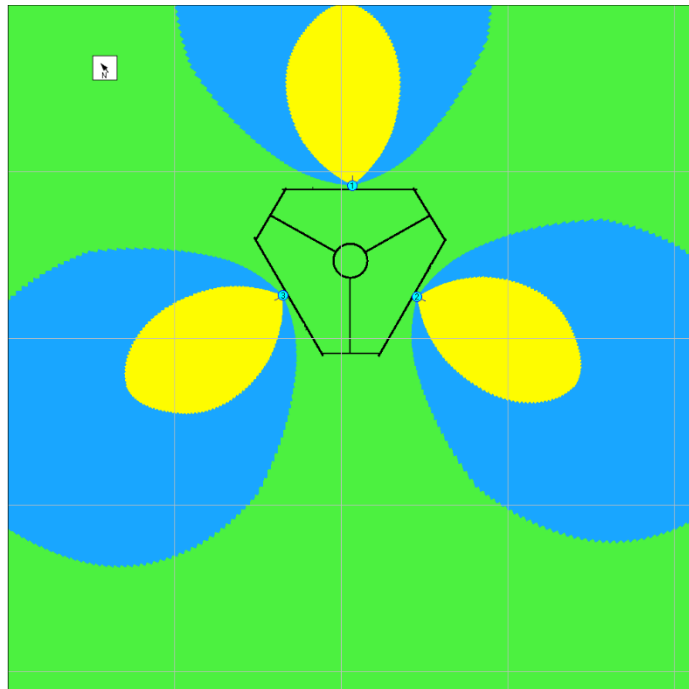
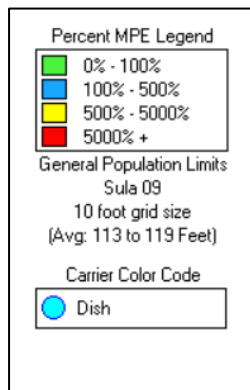


### ***Near-field Analysis***

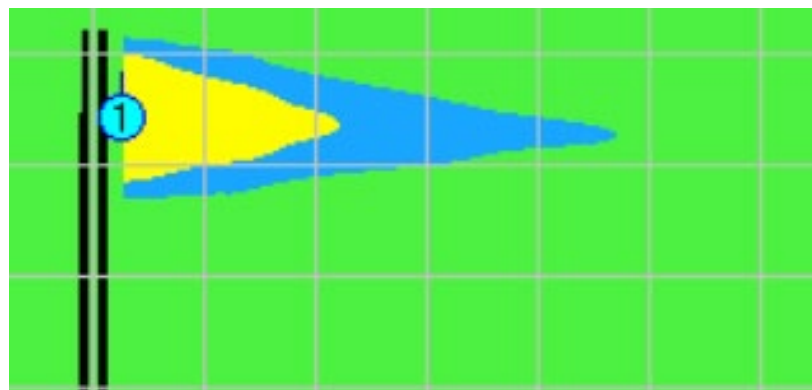
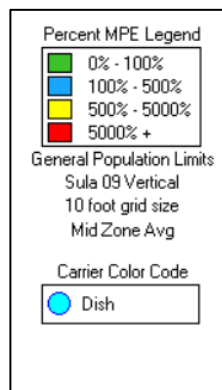
The compliance analysis for the same height as the antennas is performed using the RoofMaster program by Waterford Consultants.

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

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



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



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

## Compliance Conclusion

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

The conservative analysis in this case shows that the maximum calculated RF level from the combination of proposed and existing antenna operations at street level around the site is 3.8784 percent of the FCC general population MPE limit. At the same height as the antennas, the analysis shows that the calculated RF levels potentially exceed the FCC MPE limit. Per Dish guidelines, and consistent with FCC guidance on compliance, it is recommended that two Caution signs be six feet below the antennas. In addition, NOC Information signs be installed at the base of the monopole.

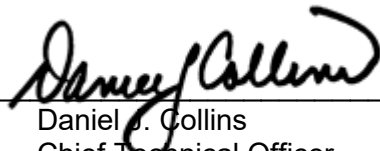
The results of the calculations, along with the described RF mitigation, combine to satisfy the FCC's RF compliance requirements and associated guidelines on compliance.

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

## CERTIFICATION

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

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



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

3/15/22

Date

## **Appendix A. Documents Used to Prepare the Analysis**

**RFDS:** RFDS-NJJER01100B-Final-20211020-v.0\_20211021072154

**CD:** NJJER01100B\_FinalStampedCDs\_20210929112314

## Appendix B. Background on the FCC MPE Limit

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

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

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

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

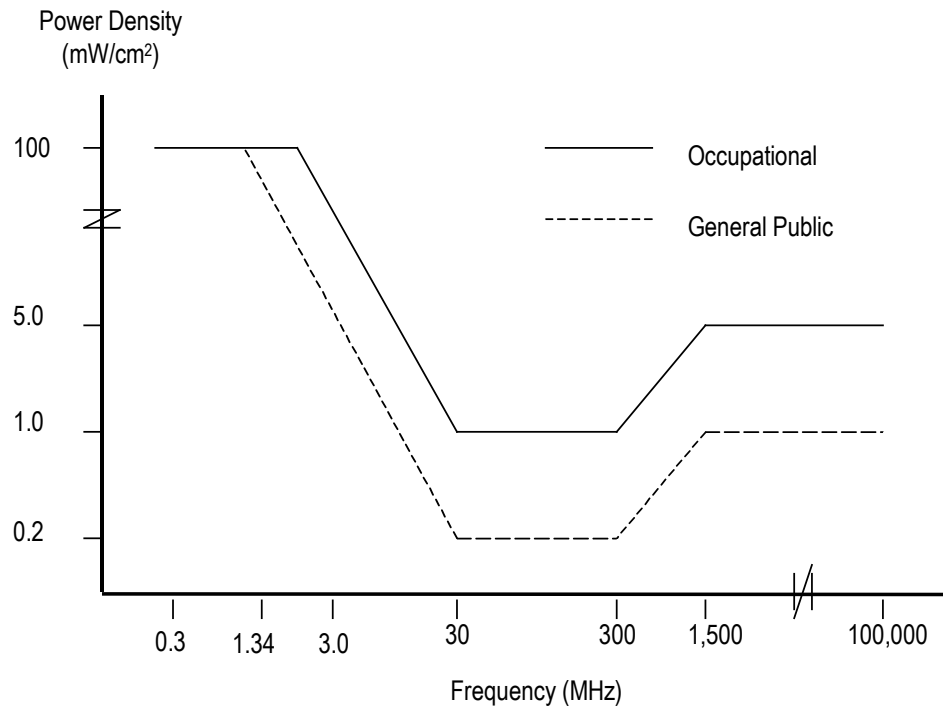
The reason for *two* tiers of MPE limits is based on an understanding and assumption that members of the general public are unlikely to have had appropriate RF safety training and may not be aware of the exposures they receive; occupational exposure in controlled environments, on the other hand, is assumed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

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



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

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



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

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

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

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

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

### ***FCC References on RF Compliance***

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

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

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

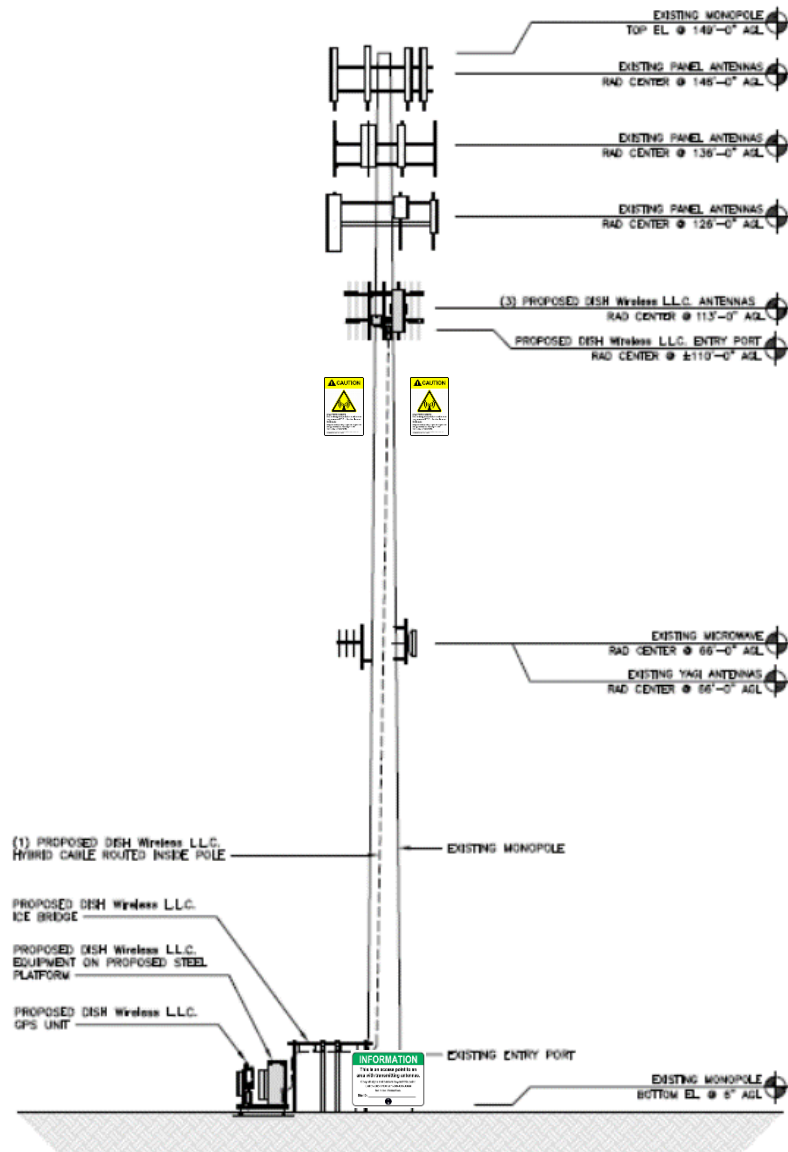
FCC Report and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released August 1, 1996.

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

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

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

## Appendix C. Proposed SIGNAGE



NOC Information Sign		Caution Sign	
Guidelines Sign		Warning Sign	
Notice Sign			

## Appendix D. SUMMARY of EXPERT QUALIFICATIONS

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

<b><i>Synopsis:</i></b>	<ul style="list-style-type: none"> <li>• 40+ years of experience in all aspects of wireless system engineering, related regulation, and RF exposure</li> <li>• Has performed or led RF exposure compliance assessments on more than 20,000 antenna sites since the latest FCC regulations went into effect in 1997</li> <li>• Has provided testimony as an RF compliance expert more than 1,500 times since 1997</li> <li>• Have been accepted as an FCC compliance expert in New York, New Jersey, Connecticut, Pennsylvania and more than 40 other states, as well as by the FCC</li> </ul>
<b><i>Education:</i></b>	<ul style="list-style-type: none"> <li>• B.E.E., City College of New York (Sch. Of Eng.), 1971</li> <li>• M.B.A., 1982, Fairleigh Dickinson University, 1982</li> <li>• Bronx High School of Science, 1966</li> </ul>
<b><i>Current Responsibilities:</i></b>	<ul style="list-style-type: none"> <li>• Leads all PTG staff work involving RF safety and FCC compliance, microwave and satellite system engineering, and consulting on wireless technology and regulation</li> </ul>
<b><i>Prior Experience:</i></b>	<ul style="list-style-type: none"> <li>• Edwards &amp; Kelcey, VP – RF Engineering and Chief Information Technology Officer, 1996-99</li> <li>• Bellcore (a Bell Labs offshoot after AT&amp;T's 1984 divestiture), Executive Director – Regulation and Public Policy, 1983-96</li> <li>• AT&amp;T (Corp. HQ), Division Manager – RF Engineering, and Director – Radio Spectrum Management, 1977-83</li> <li>• AT&amp;T Long Lines, Group Supervisor – Microwave Radio System Design, 1972-77</li> </ul>
<b><i>Specific RF Safety / Compliance Experience:</i></b>	<ul style="list-style-type: none"> <li>• Involved in RF exposure matters since 1972</li> <li>• Have had lead corporate responsibility for RF safety and compliance at AT&amp;T, Bellcore, Edwards &amp; Kelcey, and PTG</li> <li>• While at AT&amp;T, helped develop the mathematical models for calculating RF exposure levels</li> <li>• Have been relied on for compliance by all major wireless carriers, as well as by the federal government, several state and local governments, equipment manufacturers, system integrators, and other consulting / engineering firms</li> </ul>
<b><i>Other Background:</i></b>	<ul style="list-style-type: none"> <li>• Author, <i>Microwave System Engineering</i> (AT&amp;T, 1974)</li> <li>• Co-author and executive editor, <i>A Guide to New Technologies and Services</i> (Bellcore, 1993)</li> <li>• National Spectrum Management Association (NSMA) – former three-term President and Chairman of the Board of Directors; was founding member, twice-elected Vice President, long-time member of the Board, and was named an NSMA Fellow in 1991</li> <li>• Have published more than 35 articles in industry magazines</li> </ul>

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Revaluation Date: 10/1/2017

Unique ID: D080124

Ridaefield

Card No:

1

Location:		320 OLD STAGECOACH RD							
Map Id:		D08-0124							
General Description		Description		Area/Qty					
Building Use									
Units									
Overall Condition									
Class									
Stories									
Design (Style)									
Construction									
Year Built									
Percent Complete									
Finished Area									
Foundation									
Basement Area									
Finished Basement									
Garage Bays									
Outside Entry									
Sump Pump									
HVAC		Attached Components							
		Type	Year	Area					
Heating Type									
Fuel									
Cooling Type									
Interior									
Floors									
Attic Access									
Walls									
Bath Cond									
Kitchen Cond									
Exterior									
Exterior									
Roof Cover									
Roof Type									
Special Features									
Type	Count/Area								
		Total Building Value:							
		Detached Component Computations							
		Type	Year	Condition	Area/Qty	Type	Year	Condition	Area/Qty
Room Summary									
Total	Bedroom	Kitchens	Full Baths	Half Baths					



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<b>Special Handling:</b>	Deliver Weekday		
		<b>Delivery date:</b>	Apr 18, 2022 09:16

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		<b>Weight:</b>	1.00 LBS
		<b>Declared value:</b>	0.00 USD
		<b>Package Contents:</b>	
		<b>Document Description:</b>	
		<b>Shipment Purpose:</b>	
		<b>Invoice number:</b>	
		<b>Freight On Value:</b>	
<b>To:</b>	Rudy Marconi - First Selectman  Town of Ridgefield 400 Main Street, Upper Level RIDGEFIELD, CT 06877 US 2034312774	<b>Pricing Option:</b>	FedEx Standard Rate
		<b>Service type:</b>	FedEx 2-Day
		<b>Package type:</b>	FedEx Envelope
		<b>Pickup/Drop Off:</b>	Drop off package at FedEx location
		<b>Your reference:</b>	100814
		<b>Courtesy rate quote:*</b>	22.74 USD
		<b>Published rates:</b>	29.91
		<b>Effective net discount:</b>	7.17
		<b>Discounted variable %:</b>	
<b>Tracking no.:</b>	776556318868	<b>List variable %:</b>	
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Town of Ridgefield  
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