PROJECT NARRATIVE

April 8, 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
515 Morehouse Road, Easton, CT 06612
Latitude: 41°14'8.153" / Longitude: -73°17'7.301"

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 515 Morehouse Road in Easton (the "Property"). The existing 150-foot monopole tower is owned by American Tower Corporation ("ATC"). The underlying property is owned by The Town of Easton. 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 David Bindelglass, First Selectman for the Town of Easton, Peter Howard, Town of Easton Building Inspector and The Town of Easton. as the property owner.

Background

This facility was originally approved by the Council under Docket NO. 473 on September 14, 2017. A copy of this decision is included in this filing. The existing ATC facility consists of a 150-foot monopole tower located within an existing leased area. Verizon Wireless currently maintains antennas at the 145-foot level. AT&T Mobility currently maintains antennas at the 135-foot level T-Mobile currently maintains antennas at the 123-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 515 Morehouse 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 515 Morehouse 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 prosed shared use.

Sincerely,

David Hoogasian

David Hoogasian
Project Manager

LETTER OF AUTHORIZATION

AMERICAN TOWER®
CORPORATION

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	NJJER01080B	302515	SMFR - North
13685427	1069 Connecticut Avenue, Bridgeport CT	NJJER01130A	302469	Bridgeport CT 2
13688395	25 Meridian Ridge Drive, Newton CT	NJJER01081B	302518	Newtown CT 3
13699598	100 Old Redding Road, Redding CT	NJJER01161A	302522	Redding
13699607	22 Titicus Mtn Road, New Fairfield CT	NJJER01162A	88014	New Fairfield
13700310	2 SUNNY LANE, Westport CT	NJJER01082B	411189	CRANBURYSU CT
13700315	515 Morehouse Road, Easton CT	NJJER01097B	207956	Easton
13700320	100 Pocono Road, Brookfield CT	NJJER01099B	209271	Brookfield 2
13700322	320 Old Stagecoach Road, Ridgefield CT	NJJER01100B	209115	Ridgefield 2
13705673	20 Post Office Lane, Westport CT	NJJER01139B	302511	WSPT - South

13709691	180A Bayberry Lane, Westport CT	NJJER01140B	310968	WSPT-WESTPORT REBUILD CT
13709692	1000 Trumbull Avenue, Bridgeport CT	NJJER01150B	383598	Tartaglia
13710333	168 Catoona Lane, Stamford CT	NJJER01123B	88018	Stamford (Katoona)
13712876	23 Stonybrook Road, Stratford CT	NJJER02048A	283420	STONEYBROOK RD CT
13735391	15 Soundview Avenue, Shelton CT	NJJER02055A	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 19th day of November 2021.

NOTARY SEAL

MELISSA ANN METZLER
Notary Public
Commonwealth of Massachusetts
My Commission Expires March 14, 2025

Notary Public
My Commission Expires: March 14, 2025

ORIGINAL FACILITY APPROVAL

DOCKET NO. 473 - Homeland Towers, LLC and Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at 515 Morehouse Road, Easton, Connecticut.	}	Connecticut Siting Council September 14, 2017

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 515 Morehouse Road, Easton, 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 at a height of 150 feet above ground level to provide the proposed wireless services, sufficient to accommodate the antennas of Cellco Partnership d/b/a Verizon Wireless, the Town of Easton and other entities, both public and private. The height of the tower may be extended after the date of this Decision and Order pursuant to regulations of the Federal Communications Commission.

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 Easton 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) final site plan(s) for development of the facility to include specifications for the tower, tower color, tower foundation, antennas, equipment compound including, but not limited to, fencing with anti-climb features, radio equipment, access road, utility line, and emergency backup power systems that employ the governing standard in the State of Connecticut for tower design in accordance with the currently adopted International Building Code;
    b) construction plans for site clearing, grading, landscaping, water drainage and stormwater control, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;
    c) restriction of tree clearing activities as recommended by the United States Fish and Wildlife Service guidelines to minimize the risk to migratory birds during site construction, or in the alternative, conduct an avian survey of the construction area to determine if breeding birds would be disturbed and, if applicable, restrict clearing to avoid any nesting birds;
    d) an eastern box turtle protection plan in accordance with established Department of Energy and Environmental Protection protocols; and
    e) hours of construction.

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 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 Easton.

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, and utility line 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 May 25, 2017, and notice of issuance published in Easton Courier.

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.

CERTIFICATION

The undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in **DOCKET NO. 473** – Homeland Towers, LLC and Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at 515 Morehouse Road, Easton, Connecticut, and voted as follows to approve the proposed telecommunications facility:

Council Members	Vote Cast
Robert Stein, Chairman	Yes
James J. Murphy, Jr., Vice Chairman	Yes
Chairman Katie Dykes Designee: Larry Levesque	Yes
Commissioner Robert Klee Designee: Robert Hannon	Yes
Daniel P. Lynch, Jr.	Yes
Michael Harder	Yes
Dr. Michael W. Klemens	Yes
Robert Silvestri	Yes

Dated at New Britain, Connecticut, September 14, 2017.

ENGINEERING DRAWINGS

DISH WIRELESS, L.L.C. SITE ID:

NJJER01097B

DISH WIRELESS, L.L.C. SITE ADDRESS:

515 MOREHOUSE ROAD
EASTON, CT 06612

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 IBC
MECHANICAL	2018 IMC
ELECTRICAL	2017 NEC

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-0	EXISTING 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

SCOPE OF WORK

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

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

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

SITE PHOTO

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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).

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:	N/A
ADDRESS:	515 MOREHOUSE RD FAIRFIELD, CT 207956
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	207956
TOWER APP NUMBER:	13700315_D2
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41° 14' 8.153" N 41.23559796
LONGITUDE (NAD 83):	73° 17' 7.301" W -73.28536131
ZONING JURISDICTION:	FAIRFIELD COUNTY
ZONING DISTRICT:	COMMERCIAL
PARCEL NUMBER:	7107-01
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	LANDIS+GYR
TELEPHONE COMPANY:	UNKNOWN

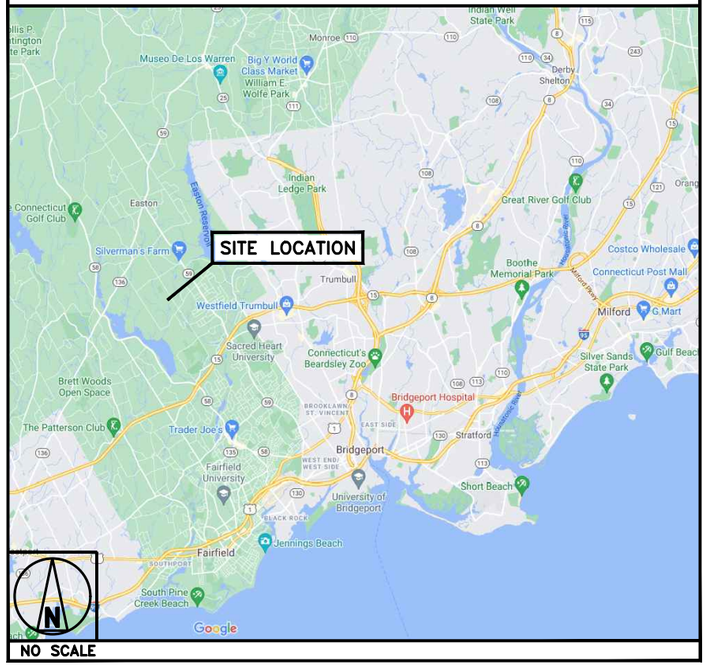
PROJECT DIRECTORY

APPLICANT:	DISH WIRELESS, L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801
ENGINEER:	ATC TOWER SERVICES, LLC 3500 REGENCY PARKWAY SUITE 100 CARY, NC 27518
SITE ACQUISITION:	WILLIAM SNIDER WILLIAM.SNIDER@DISH.COM
CONSTRUCTION MANAGER:	VICTOR CORREA VICTOR.CORREA@DISH.COM
RF ENGINEER:	MURUGABIRAN JAYAPAL MURUGABIRAN.JAYAPAL@DISH.COM

DIRECTIONS

FROM 3 ADP BLVD, HEAD NORTHEAST TOWARD ADP BLVD, TURN LEFT, TURN LEFT TOWARD ADP BLVD, TURN LEFT TOWARD ADP BLVD, TURN LEFT ONTO ADP BLVD, TURN RIGHT TOWARD CHOCTAW WAY, SLIGHT RIGHT ONTO CHOCTAW WAY, USE THE LEFT LANE TO TURN RIGHT ONTO LIVINGSTON AVE,USE THE RIGHT LANE TO TAKE THE RAMP ONTO I-280 E, TAKE EXIT 12 TOWARD ORATON PKWY, TAKE EXIT 12 TOWARD ORATON PKWY, KEEP LEFT, FOLLOW SIGNS FOR GARDEN STATE PARKWAY AND MERGE ONTO GARDEN STATE PKWY, KEEP RIGHT TO STAY ON GARDEN STATE PKWY, CONTINUE ONTO NJ-444 N/GARDEN STATE PKWY, ENTERING NEW YORK, CONTINUE ONTO GARDEN STATE PARKWAY CONNECTOR, TAKE EXIT 14-1 TO MERGE ONTO I-287 E/I-87 S, KEEP LEFT AT THE FORK TO CONTINUE ON I-287 E, FOLLOW SIGNS FOR WHITE PLAINS/RYE, TAKE EXIT 9 S-N TOWARD, HUTCHINSON PKWY/MERRITT PKWY, MERGE ONTO WESTCHESTER AVE, USE THE RIGHT LANE TO TAKE THE RAMP TO WESTCHESTER AVE/NORTH HUTCHINSON PKWY/MERRITT PKWY,MERGE ONTO HUTCHINSON RIVER PKWY N, KEEP RIGHT AT THE FORK TO STAY ON HUTCHINSON RIVER PKWY N, ENTERING CONNECTICUT, CONTINUE ONTO CT-15 N, TAKE EXIT 44 TOWARD CT-58/FAIRFIELD/REDDING, USE THE LEFT LANE TO TURN LEFT ONTO CONGRESS ST, TURN LEFT AT THE 1ST CROSS STREET ONTO CT-58 N, TURN RIGHT ONTO CONGRESS ST, TURN LEFT ONTO MOREHOUSE HWY

VICINITY MAP



NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY:	CHECKED BY:	APPROVED BY:
MF	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	11/03/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

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

A&E PROJECT NUMBER

207956-13700315_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION

NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE

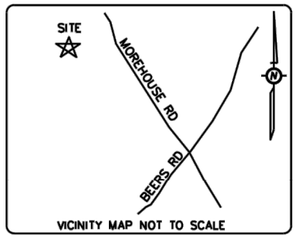
TITLE SHEET

SHEET NUMBER

T-1

AS-BUILT SURVEY

FOR: InSite Towers, LLC.



PARENT PARCEL INFORMATION:
OWNER: TOWN OF EASTON, A CONNECTICUT MUNICIPAL CORPORATION
515 MOREHOUSE ROAD, EASTON, CT
TAX ID: 113209
PIN: 3777A, B 4
DEED BOOK/PAGE: 343/23

FAA 1-A INFORMATION:
149.7'+/- 1'METAL TOWER ON TOP OF A 0.7'CONCRETE CAISSON ABOVE FINISHED GRADE.
LATITUDE: 41° 14'08.09"N. +/- 20'
LONGITUDE: -73° 17'07.34"W. +/- 20'
GROUND ELEVATION AT BASE OF PROPOSED TOWER: 441.5'NAVD, 1988
HEIGHT OF TOP OF TOWER ABOVE GROUND: 150.4'+/- 1'
ELEVATION OF TOP OF TOWER: 591.9'+/- 3'NAVD 1988
HEIGHT OF HIGHEST APPURTENANCE ABOVE GROUND: 153.9'+/- 1'[3.5'LIGHTNING ROD]
ELEVATION OF TOP OF HIGHEST APPURTENANCE: 595.4'+/- 3'NAVD 1988

NAD 83

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 TELECOM EQUIPMENT AND IMPROVEMENTS ARE CONTAINED WITHIN THE DESCRIBED AREA.
5. ALL SYMBOLS SHOWN HEREON NOT DEPICTED TO SCALE.
6. ACCESS/UTILITY EASEMENT HAS DIRECT ACCESS TO MOREHOUSE ROAD, A DEDICATED PUBLIC RIGHT OF WAY.

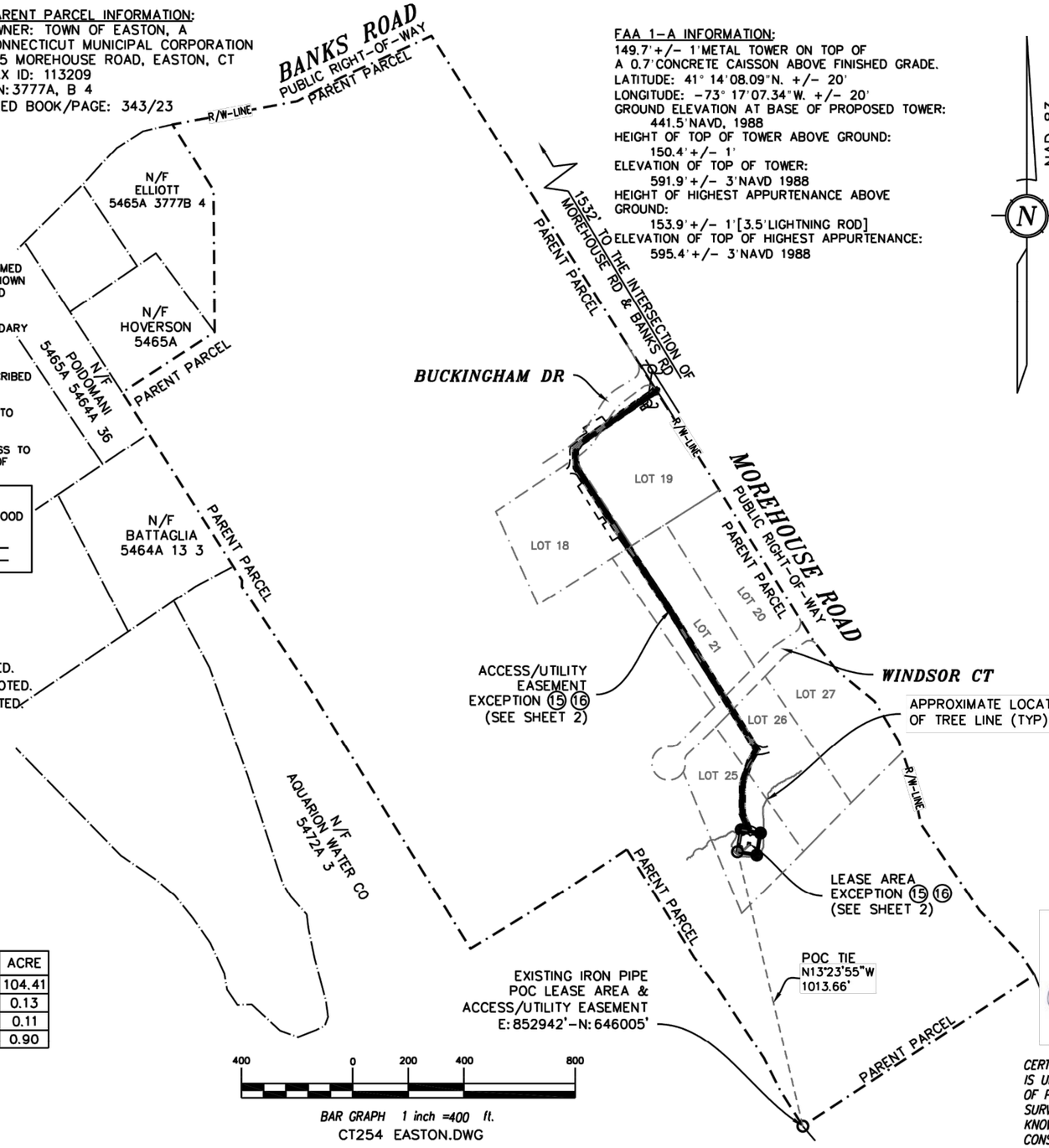
THIS PARCEL OF LAND LIES WITHIN FLOOD ZONE X WHICH IS NOT A SPECIAL FLOOD HAZARD AREA AS PER F.I.R.M. PANEL NUMBER: 09001C0406F EFFECTIVE DATE: 06/18/2018

ZONING: R3

LEGEND

- ● : SET 5/8" REBAR, OR AS NOTED.
- ○ : FOUND 1/2" REBAR, OR AS NOTED.
- ■ : FOUND MONUMENT, OR AS NOTED.
- (___) : RECORD DESCRIPTION DATA.
- P.O.T. : POINT OF TERMINUS.
- P.O.B. : POINT OF BEGINNING.
- P.O.C. : POINT OF COMMENCEMENT.
- —— o —— : FENCE AS NOTED.
- —— OH —— : OVER HEAD UTILITY LINES.
- : WOOD UTILITY POLE.
- E : ELECTRIC TRANSFORMER.
- T : TELCO PEDESTAL.
- HH : HAND HOLE.
- N/A : NOT AVAILABLE
- : FLOOD LIGHT

AREA	SQUARE FEET	ACRE
PARENT PARCEL	4,548,100	104.41
LEASE AREA	5,600	0.13
TOWER COMPOUND	4,871	0.11
ACCESS/UTILITY EASEMENT	39,065	0.90



SURVEYOR 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 TOWER DEVELOPEMENT 2, THE FEDERAL AVIATION ADMINISTRATION, *****TITLE COMPANY PER TITLE REPORT FORWARDED*****, 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 LEASE AREA AND ACCESS AND UTILITIES EASEMENTS (COLLECTIVELY, THE "EASEMENTS") INDICATED HEREON IS CORRECT.

(X) 2. TO THE EXTENT THE LEASE AREA AND EASEMENTS INDICATED HEREON ARE PART OF A PARENT PARCEL, SUCH LEASE AREA AND EASEMENTS ARE LOCATED WITHIN THE BOUNDARIES OF THE RECORD TITLE LEGAL DESCRIPTION OF SUCH PARENT PARCEL. THE LOCATION OF SAID LEASE AREA 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 LEASE AREA 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 LEASE AREA 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 LEASE AREA 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 LEASE AREA 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 LEASE AREA AND/OR EASEMENTS.

(X) 9. EXCEPT AS SHOWN, THERE ARE NO VISIBLE ENCROACHMENTS ONTO THE LEASE AREA 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 LEASE AREA 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 LEASE AREA 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. 09001C0406F

(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 81/2 X11 CERTIFIED LETTERHEAD.

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

(X) 14. THE SUBJECT PROPERTY IS CURRENTLY ZONED R3.

MURPHY GEOMATICS
NAME: WILLIAM J. NAGLE
DATE: 11/12/2018
SURVEYOR REGISTRATION NO. 70269

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.

InSite Towers, LLC

INSITE SITE NAME: EASTON
INSITE SITE #: CT254
515 MOREHOUSE ROAD, EASTON, CT 06612,
FAIRFIELD COUNTY

SURVEY WORK PERFORMED BY:

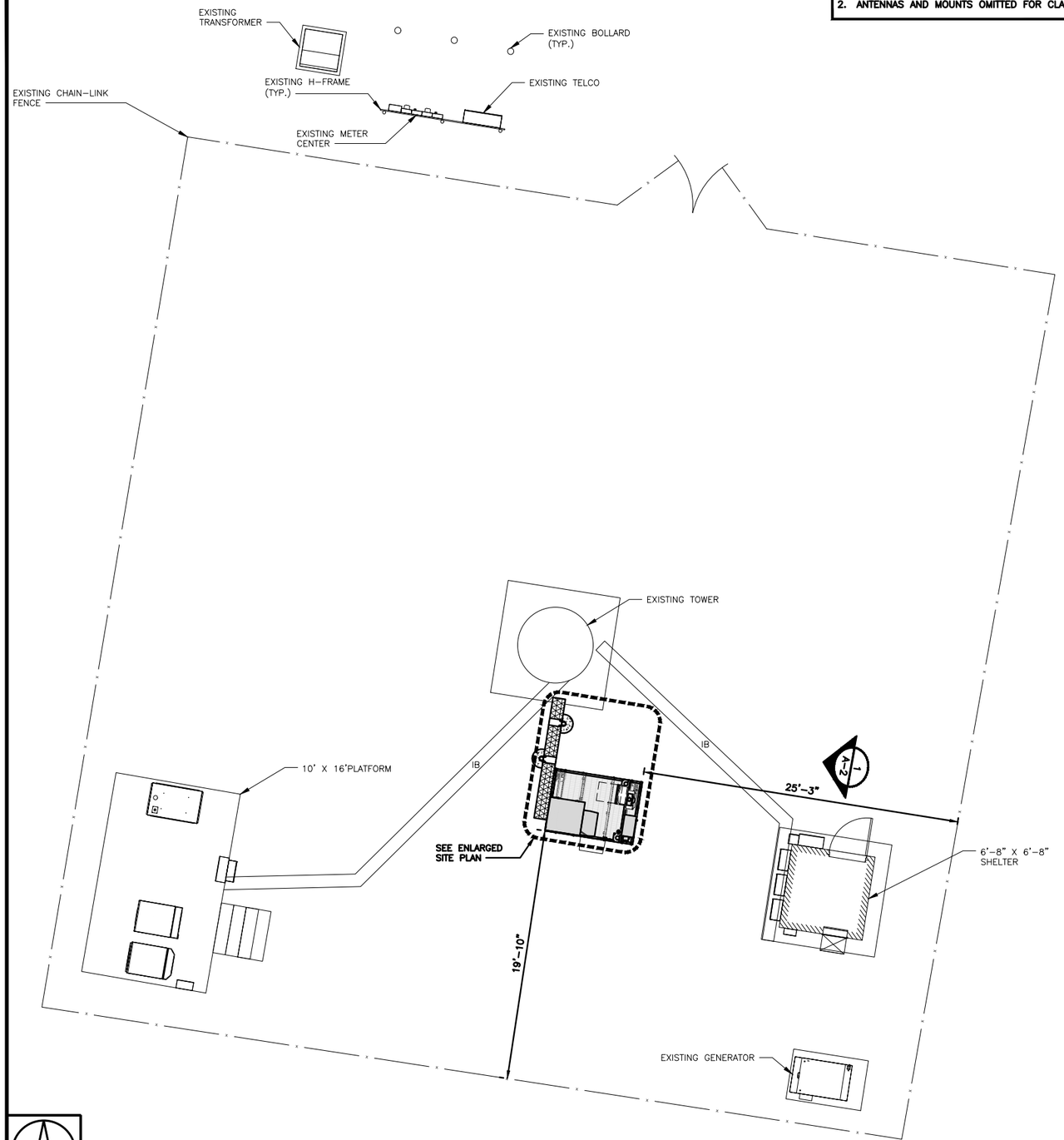
JONATHAN MURPHY
Professional Land Surveying
10505 Leafwood Place (919) 280-8189
Raleigh NC 27613 FAX 995-9616
E-MAIL : raleigh@murphygeomatics.com FIRM C-2757

NATIONAL SURVEY SERVICES COORDINATION BY:

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

NOTES

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



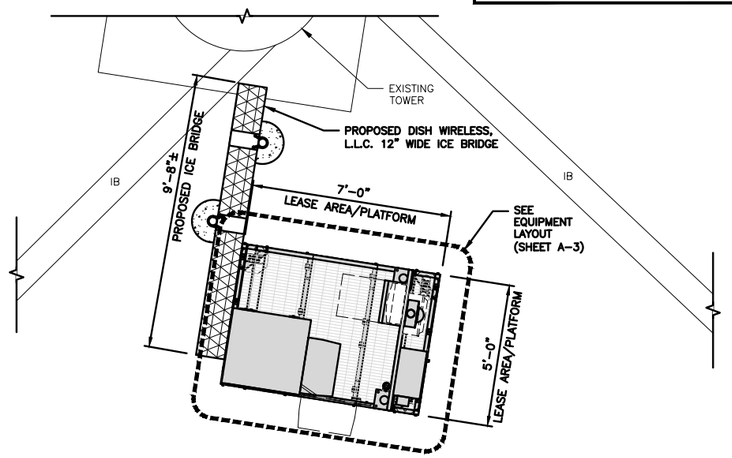
OVERALL SITE PLAN

5' 0 5' 10'
1"=5'

1

NOTES

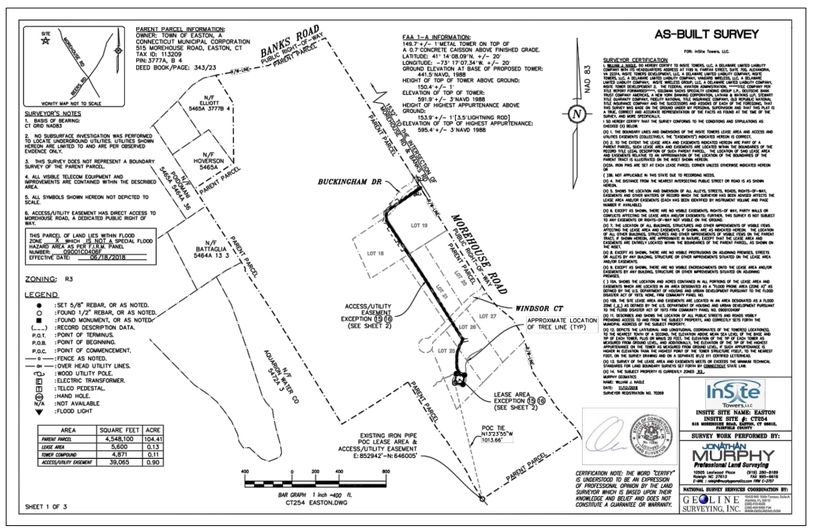
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

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

2



EXISTING SURVEY (BY OTHERS)

NO SCALE

3

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

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY:	CHECKED BY:	APPROVED BY:
MF	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	11/03/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

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

A&E PROJECT NUMBER
207956-13700315_D2

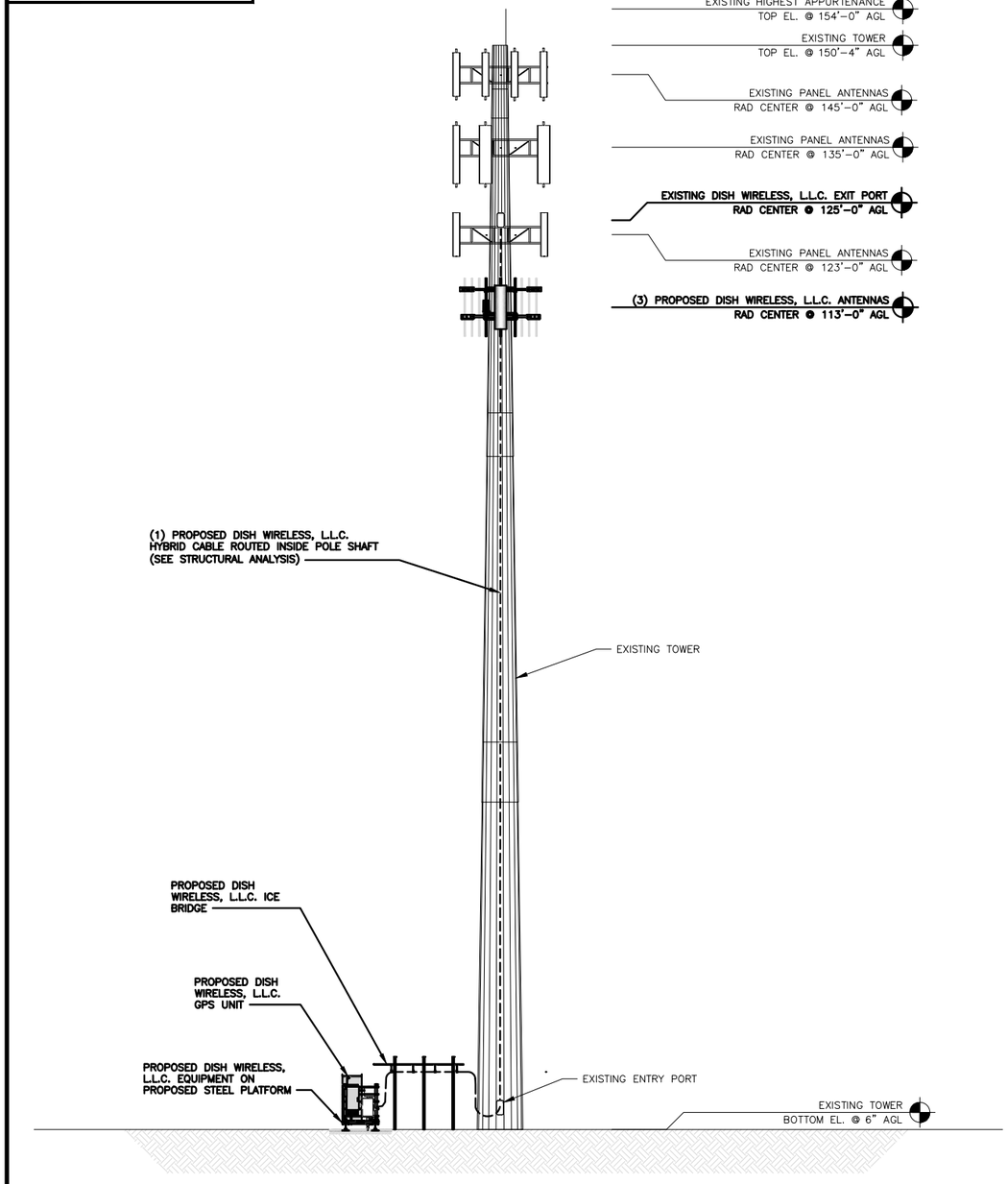
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

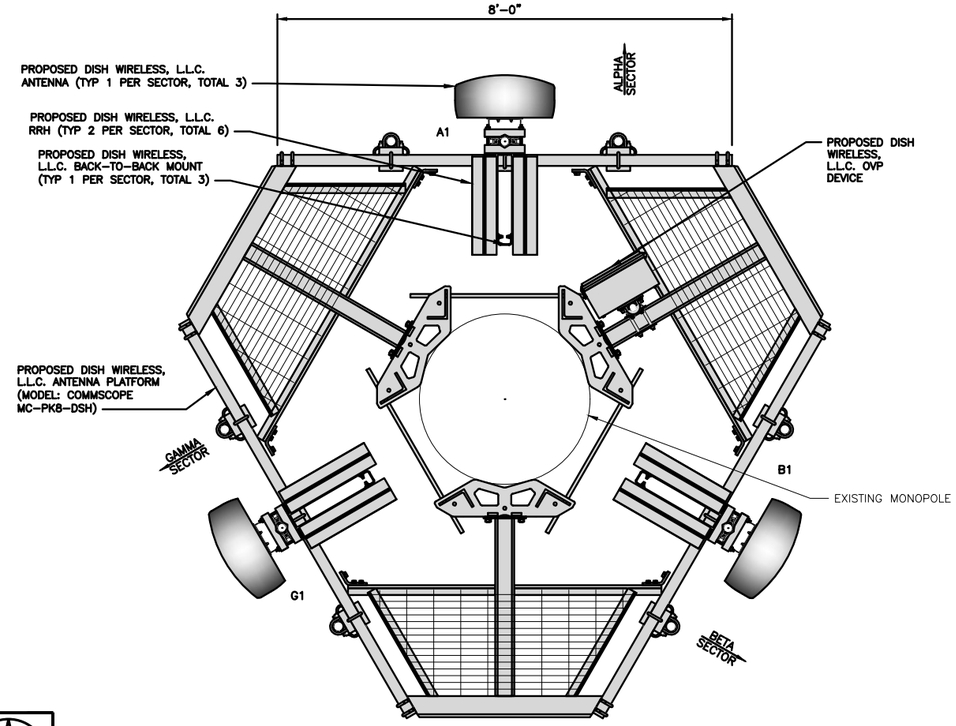
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

5' 0 5' 10'
1"=5'

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	72.0" x 19.6"	0°	113'-0"	(1) HIGH-CAPACITY HYBRID CABLE (140' LONG) (1) RAYCAP RDIDC-9181-PF-48 OVP
BETA	B1	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	72.0" x 19.6"	120°	113'-0"	
GAMMA	G1	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	72.0" x 19.6"	240°	113'-0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	TA08025-B605	5G
	A2	TA08025-B604	5G
BETA	B1	TA08025-B605	5G
	B2	TA08025-B604	5G
GAMMA	G1	TA08025-B605	5G
	G2	TA08025-B604	5G

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

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

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY:	CHECKED BY:	APPROVED BY:
MF	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	11/03/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

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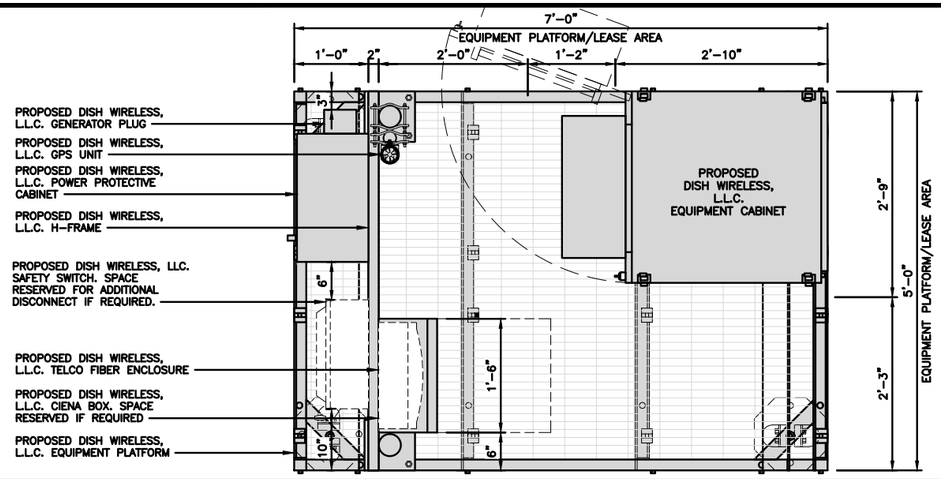
A&E PROJECT NUMBER
207956-13700315_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



PLATFORM EQUIPMENT PLAN

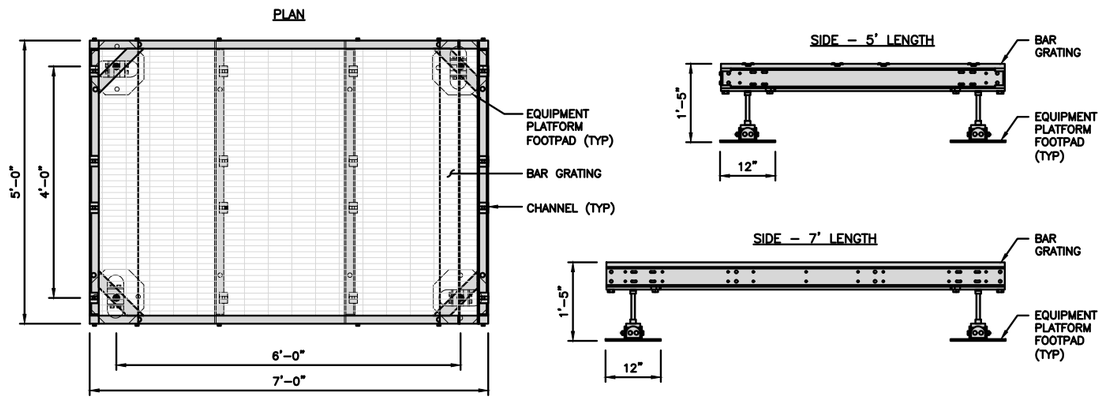
12" 9" 6" 3" 0 1' 2"
1"=1'-0"

1

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

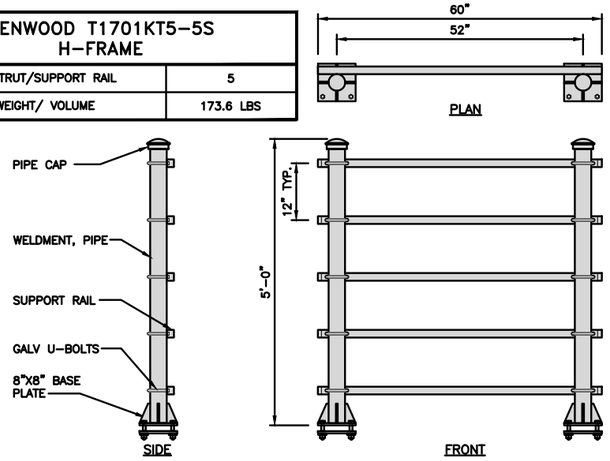
NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"

PLATFORM TO BE WITHIN 1° OF LEVEL



PLATFORM DETAIL | NO SCALE | 2

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

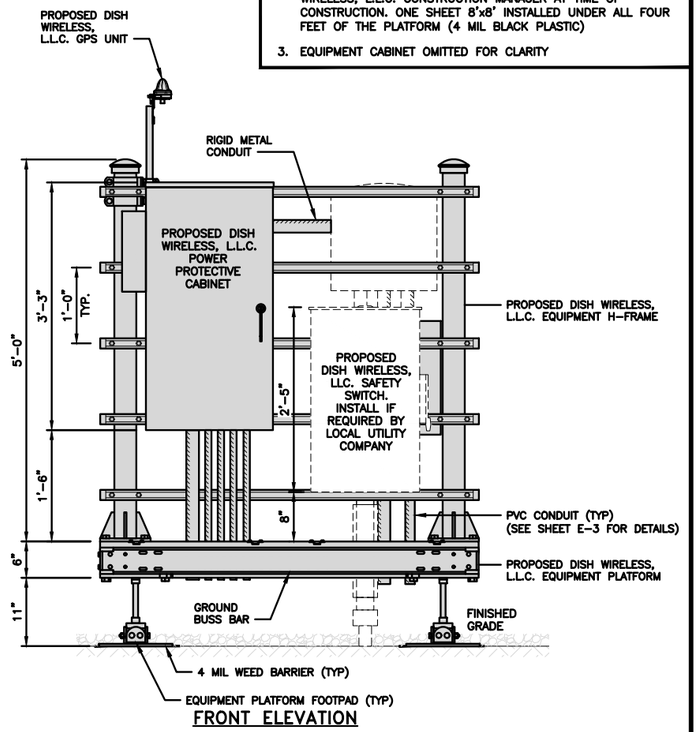


H-FRAME DETAIL | NO SCALE | 3

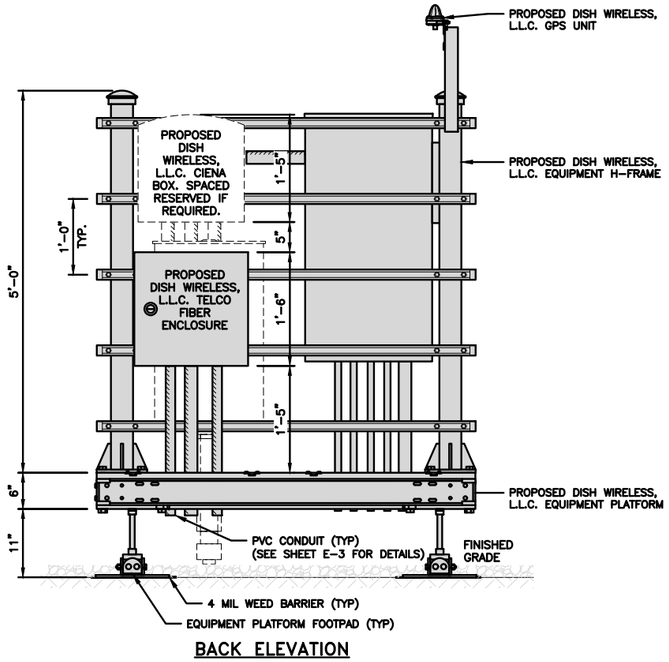
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION | 12" 9" 6" 3" 0 1' 2" 1"=1'-0" | 5

dish wireless.
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LITTLETON, CO 80120

AMERICAN TOWER®
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RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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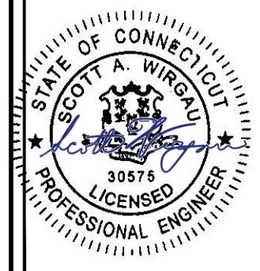

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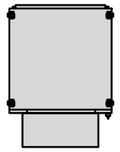
A&E PROJECT NUMBER
207956-13700315_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

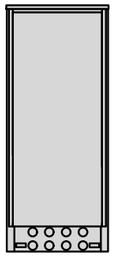
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

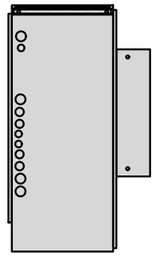
ENERSYS HEX 2000005996	
DIMENSIONS (HxWxD)	73"x30"x32"
POWER SYSTEM	-48V ALPHA/600A
HEATER	800W
TOTAL WEIGHT (EMPTY)	376 lbs



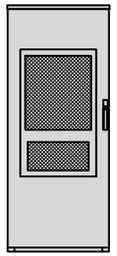
PLAN



BACK



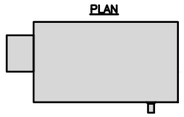
SIDE



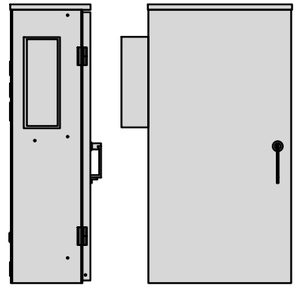
FRONT

CABINET DETAIL | NO SCALE | 1

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



PLAN



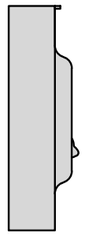
SIDE

FRONT

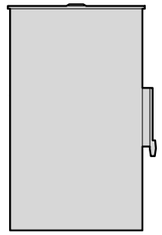
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

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

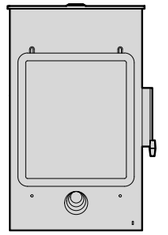
PLAN



SIDE



BACK



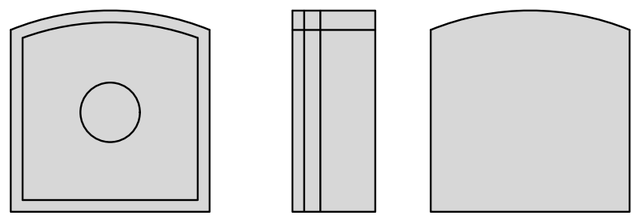
FRONT

SAFETY SWITCH | NO SCALE | 3

NOT USED | NO SCALE | 4

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

PLAN



FRONT

SIDE

BACK

CIENA DETAIL | NO SCALE | 5

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

PLAN

SIDE

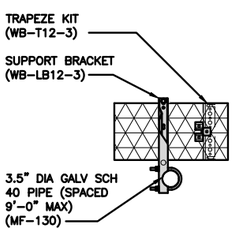
BACK

FRONT

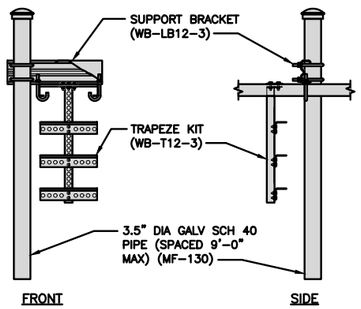
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

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



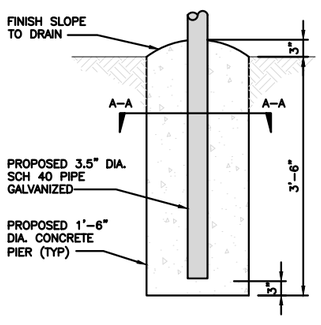
PLAN



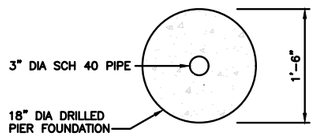
FRONT

SIDE

ICE BRIDGE DETAIL | NO SCALE | 7

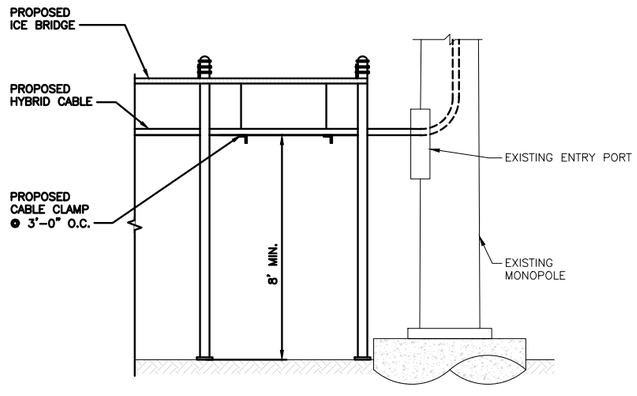


CONCRETE PIER



A-A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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LITTLETON, CO 80120

AMERICAN TOWER®

A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY:	CHECKED BY:	APPROVED BY:
MF	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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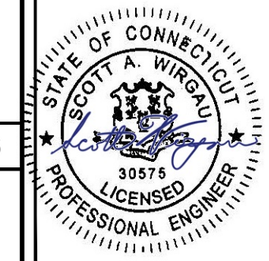

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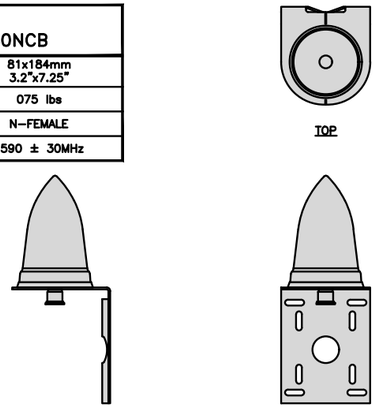
A&E PROJECT NUMBER
207956-13700315_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

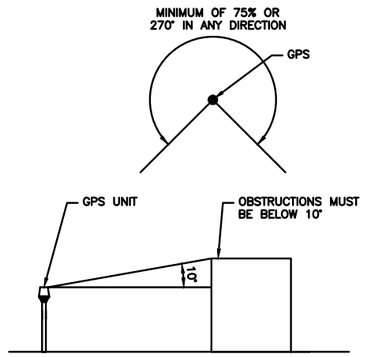
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

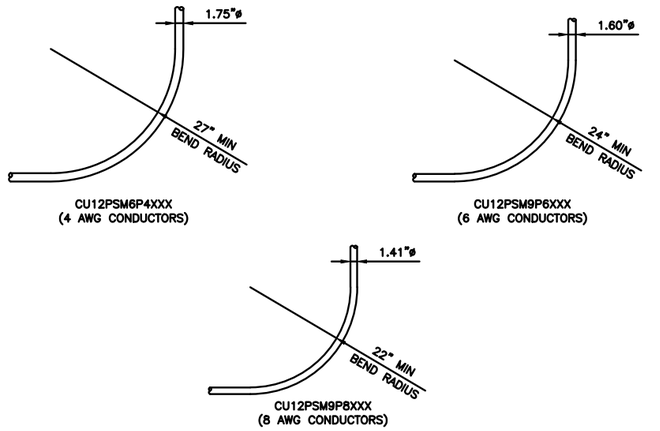
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL — NO SCALE — 1



GPS MINIMUM SKY VIEW REQUIREMENTS — NO SCALE — 2



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

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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SUITE 100
CARY, NC 27518
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MF	SRF	SRF

RFDS REV #: ----

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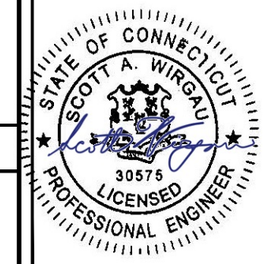

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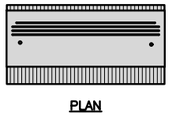
A&E PROJECT NUMBER
207956-13700315_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

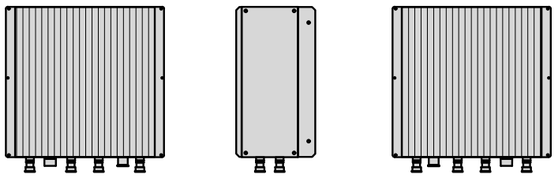
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

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



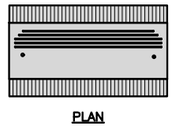
PLAN



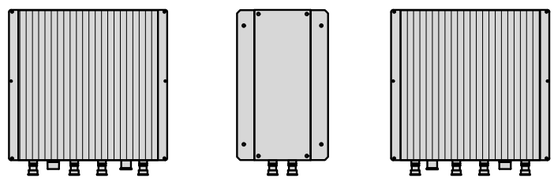
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

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

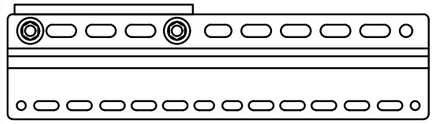


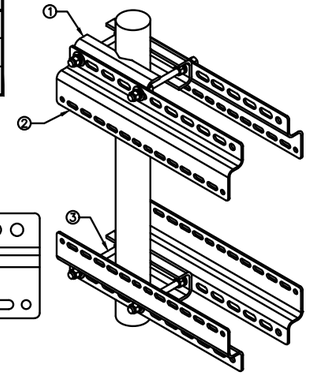
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z-BRACKET G10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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



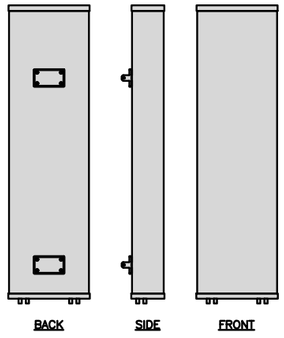


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

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

PLAN



BACK SIDE FRONT

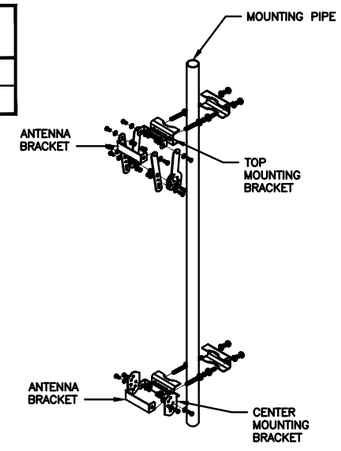
ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

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

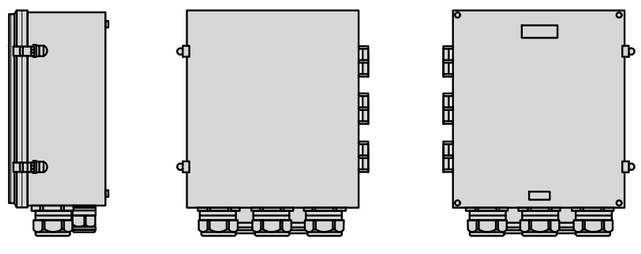


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

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

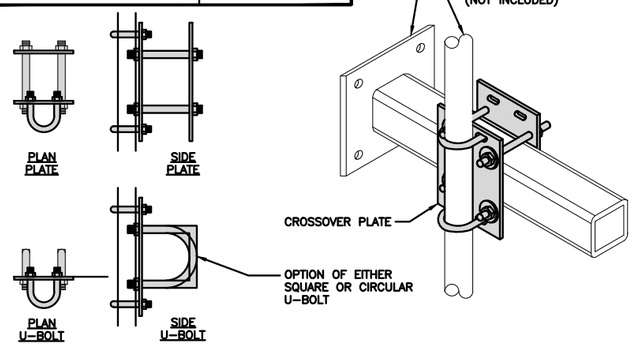
PLAN



SIDE BACK FRONT

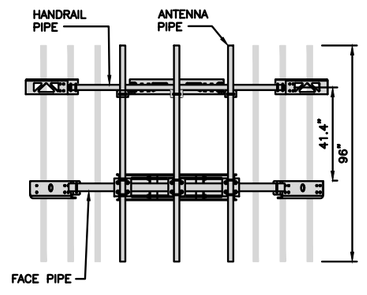
SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

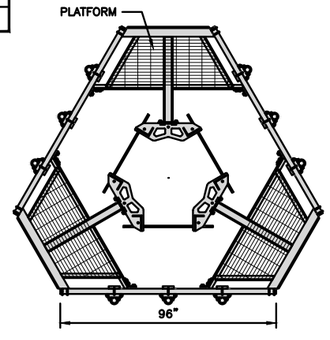
COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS



RRH/OVP MOUNT DETAIL | NO SCALE | 8

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





ANTENNA PLATFORM DETAIL | NO SCALE | 9

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LITTLETON, CO 80120

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A.T. ENGINEERING SERVICE, PLLC
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SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

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0	11/03/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

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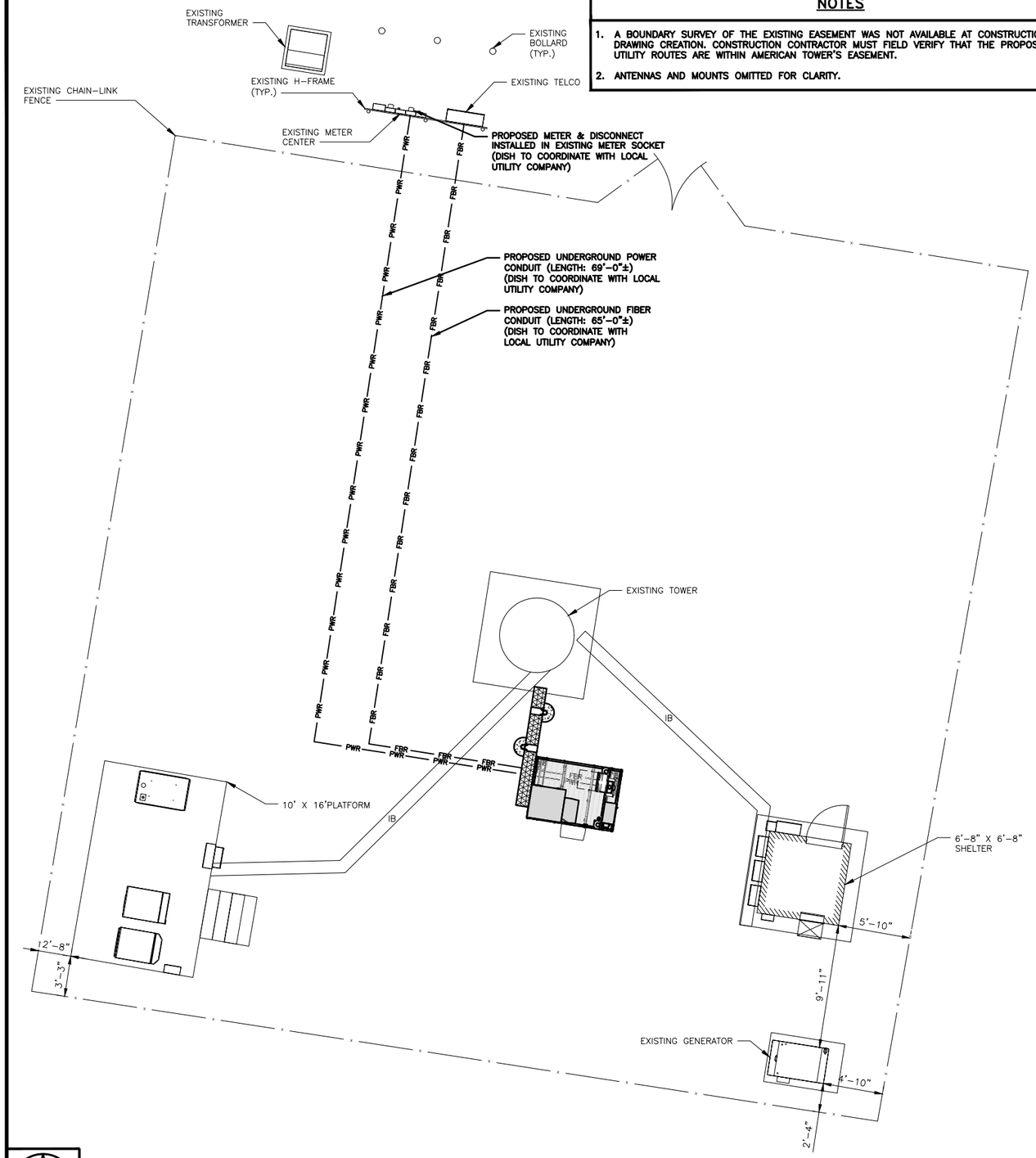
A&E PROJECT NUMBER
207956-13700315_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6



NOTES

1. A BOUNDARY SURVEY OF THE EXISTING EASEMENT WAS NOT AVAILABLE AT CONSTRUCTION DRAWING CREATION. CONSTRUCTION CONTRACTOR MUST FIELD VERIFY THAT THE PROPOSED UTILITY ROUTES ARE WITHIN AMERICAN TOWER'S EASEMENT.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.

UTILITY ROUTE PLAN

5' 0 5' 10'
1"=5'

1

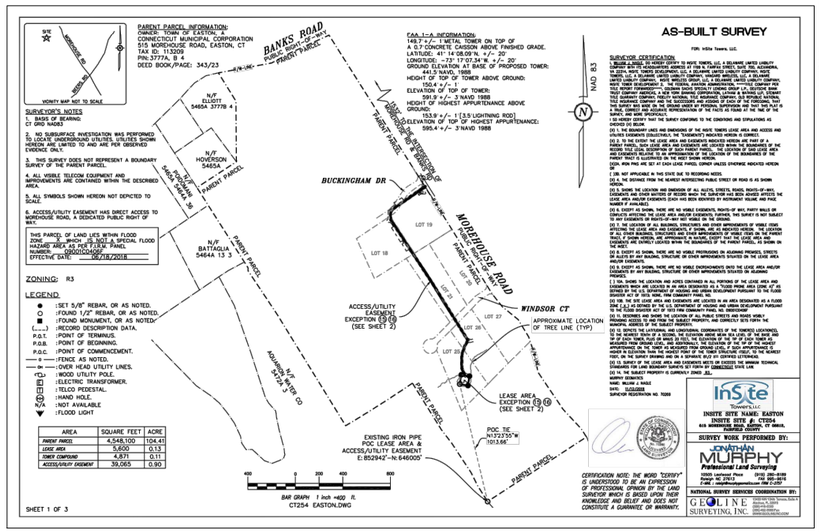
DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND -48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY -48V.

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

ELECTRICAL NOTES

NO SCALE

2



EXISTING SURVEY (BY OTHERS)

NO SCALE

3

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A&E PROJECT NUMBER
207956-13700315_D2

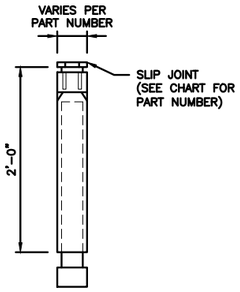
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

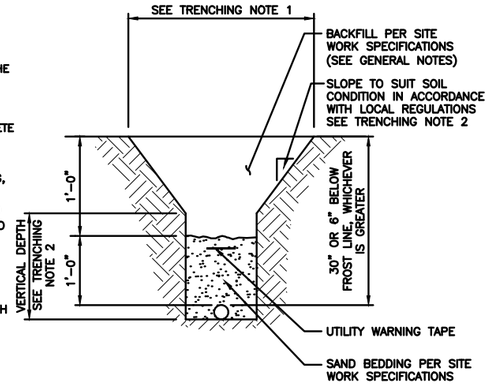


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

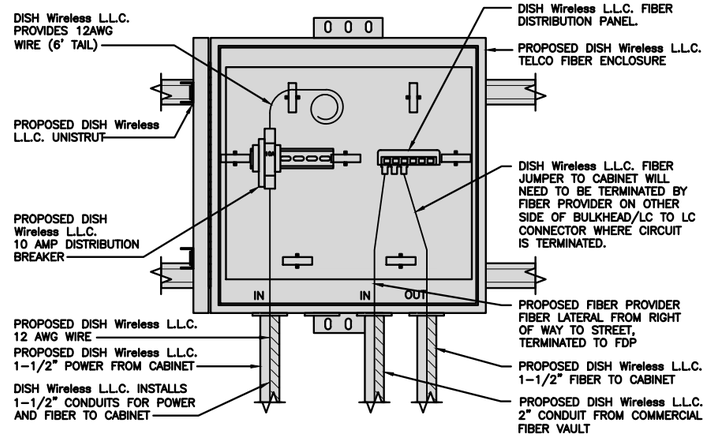
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

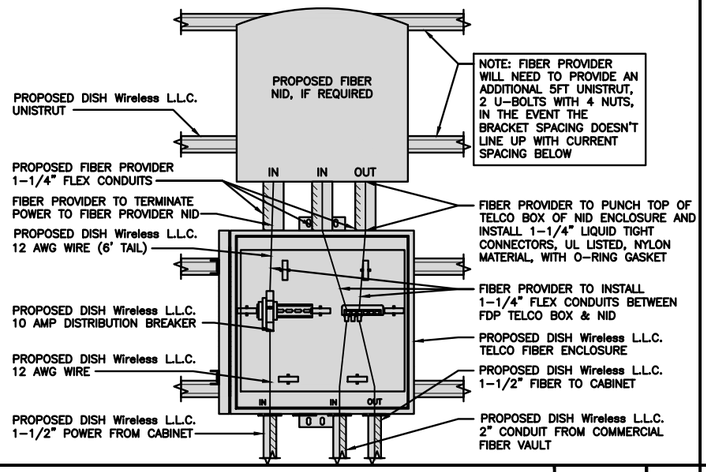
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL) | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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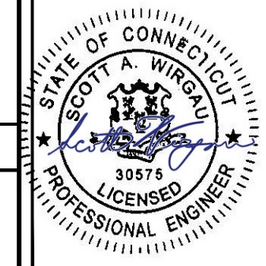

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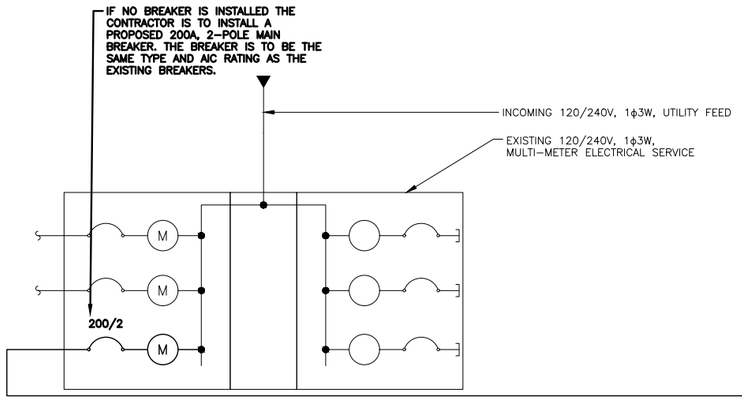
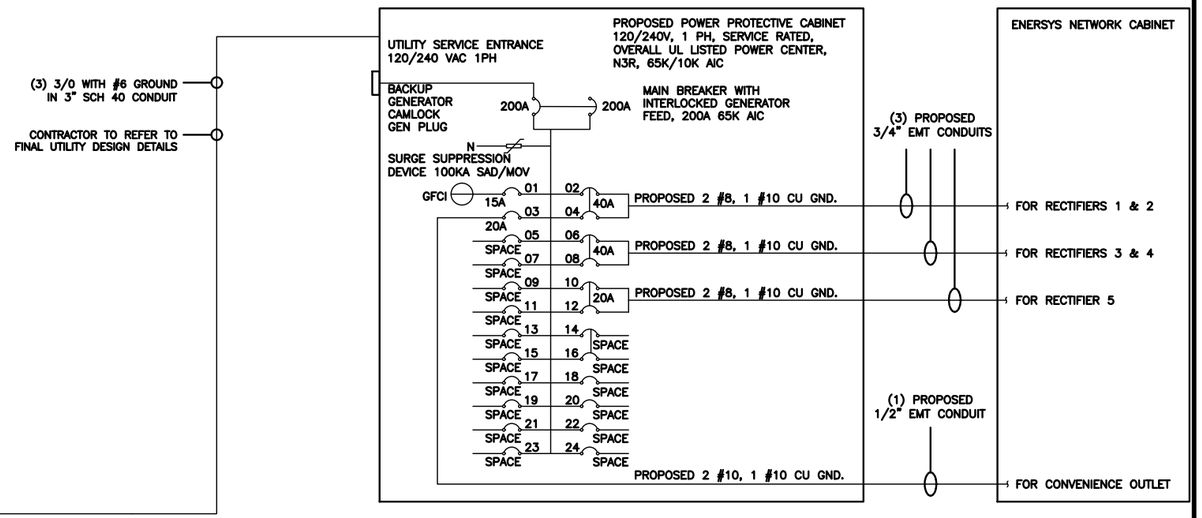
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2





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

BREAKERS REQUIRED:
(2) 40A, 2P BREAKER - SQUARE D P/N:QO240
(1) 20A, 2P BREAKER - SQUARE D P/N:QO220
(1) 20A, 1P BREAKER - SQUARE D P/N:QO120
(1) 15A, 1P BREAKER - SQUARE D P/N:QO115

PPC ONE-LINE DIAGRAM | NO SCALE | 1

PROPOSED ENERSYS PANEL SCHEDULE

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

PANEL SCHEDULE | NO SCALE | 2

NOT USED | NO SCALE | 3

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CONSTRUCTION DOCUMENTS

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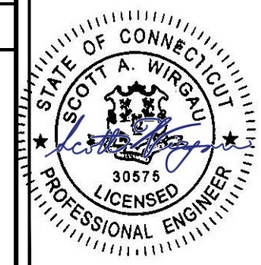

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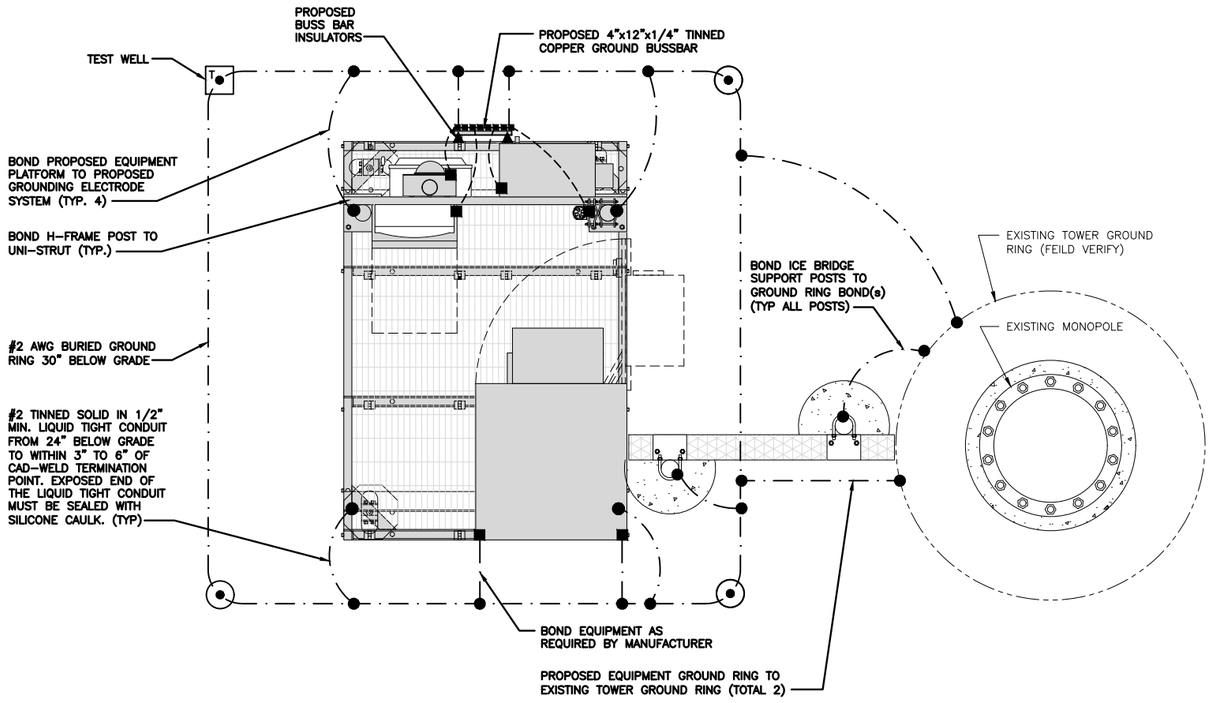
A&E PROJECT NUMBER
207956-13700315_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

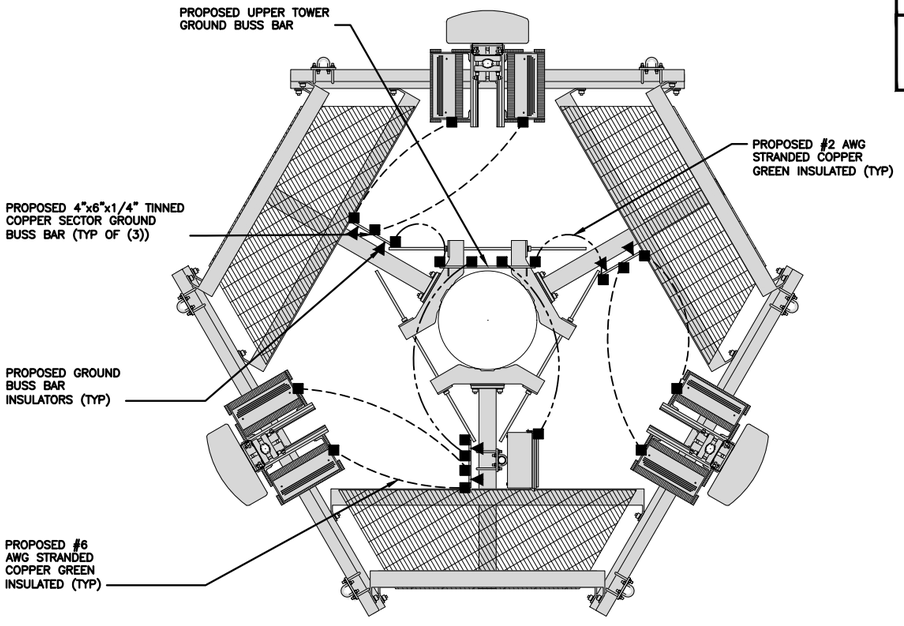
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- GROUND BUS BAR
- GROUND ROD
- TEST GROUND ROD WITH INSPECTION SLEEVE
- #2 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 5/8" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.

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

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

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

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

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

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

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

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

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

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

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

REFER TO DISH WIRELESS, L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE | 3

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MF	SRF	SRF

RFDS REV #: ----

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0	11/03/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

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A&E PROJECT NUMBER
207956-13700315_D2

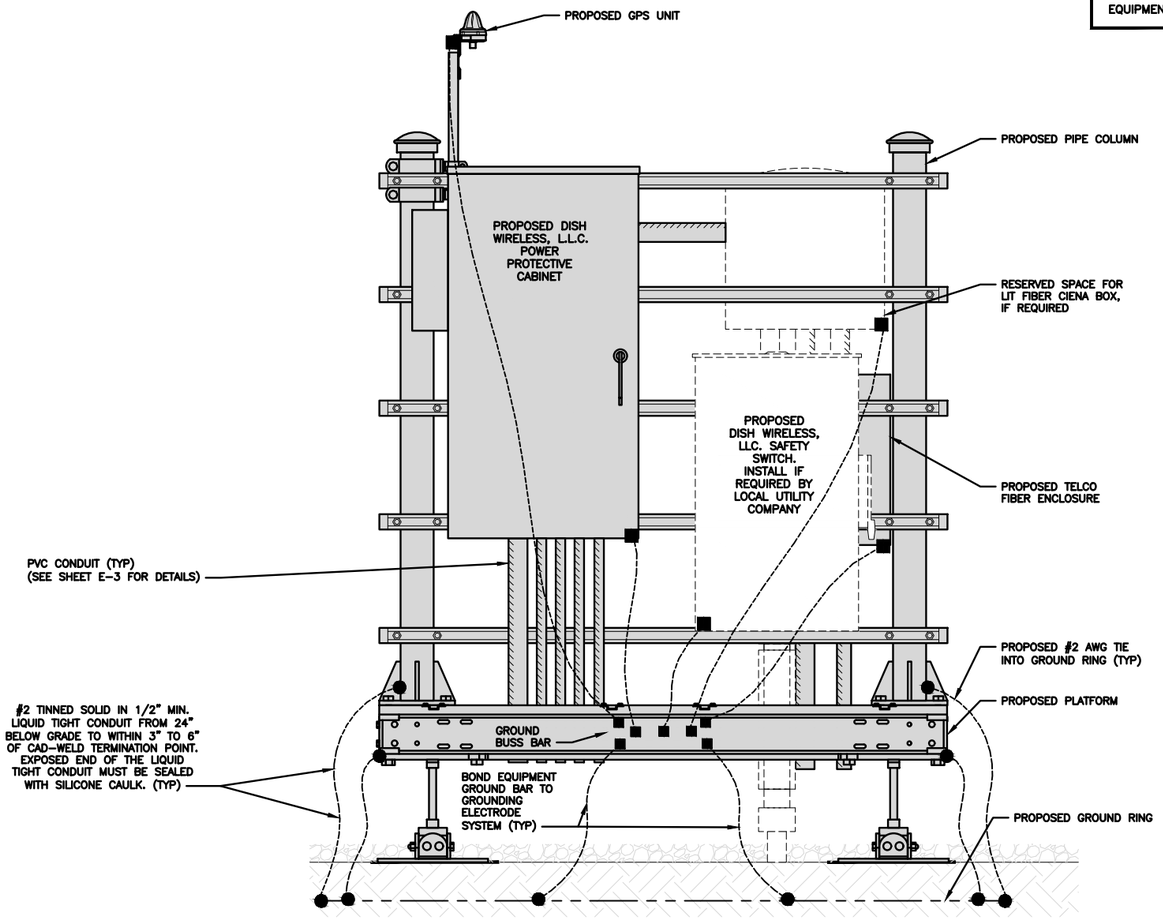
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

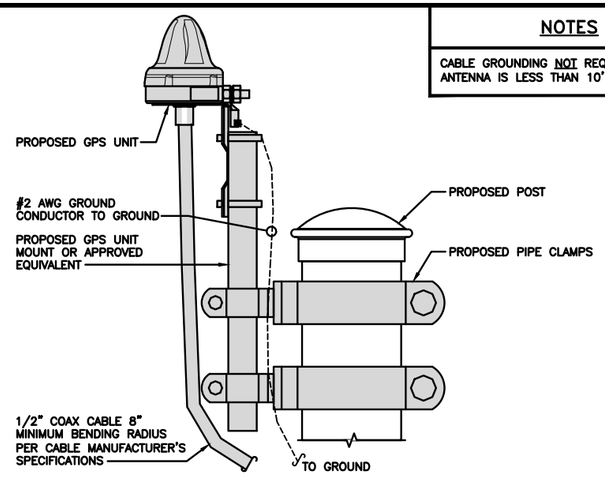
EQUIPMENT CABINET OMITTED FOR CLARITY



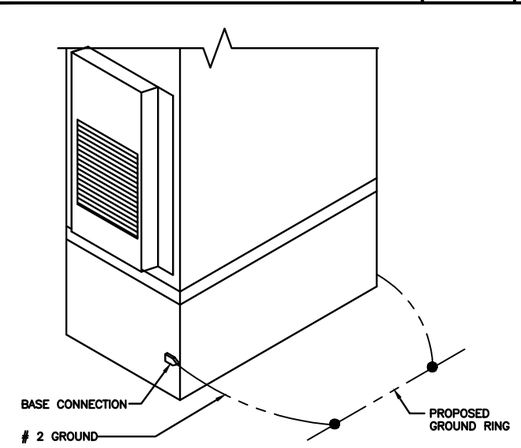
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

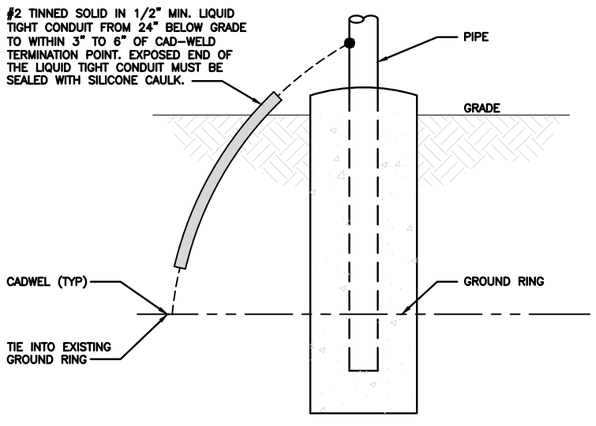
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



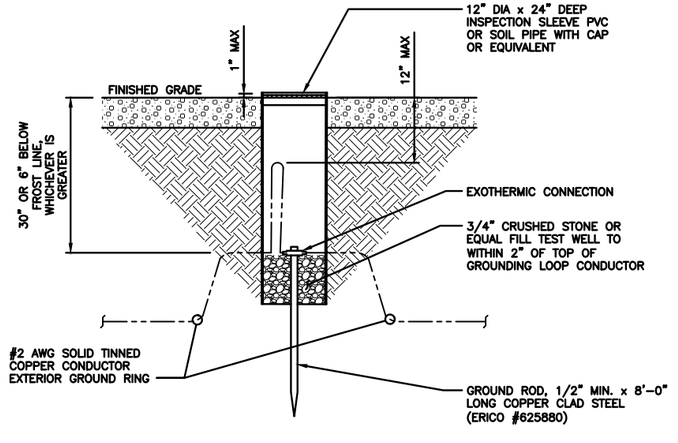
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



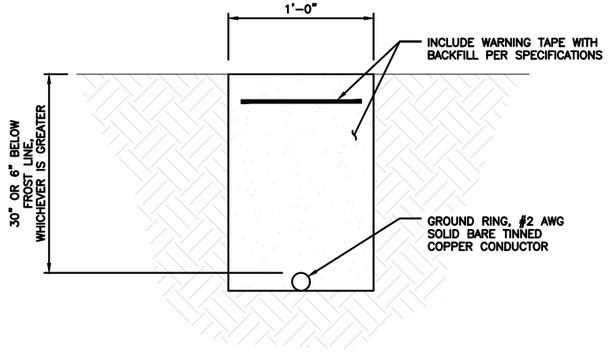
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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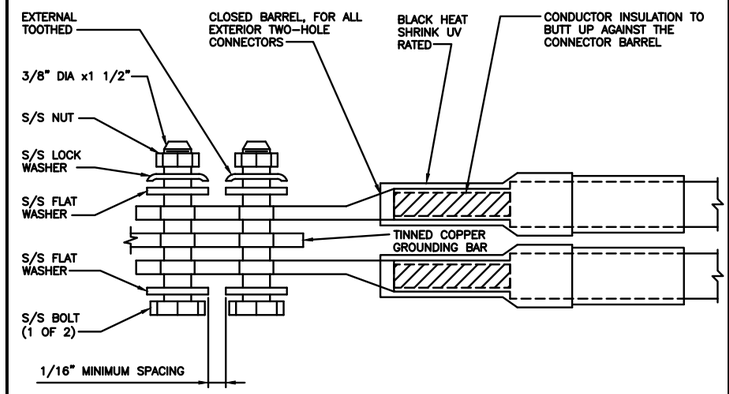
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
GROUNDING DETAILS

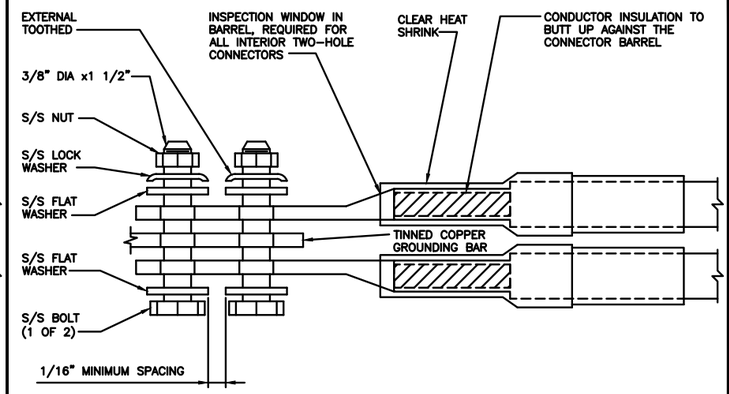
SHEET NUMBER
G-2

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

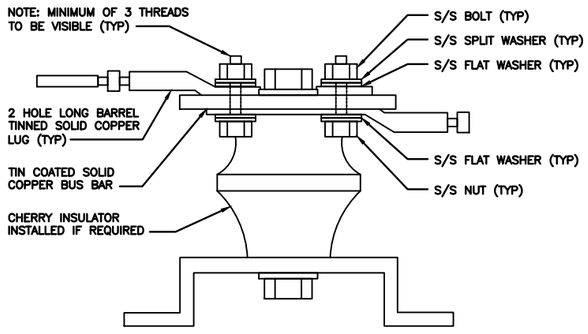
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
GROUNDING DETAILS

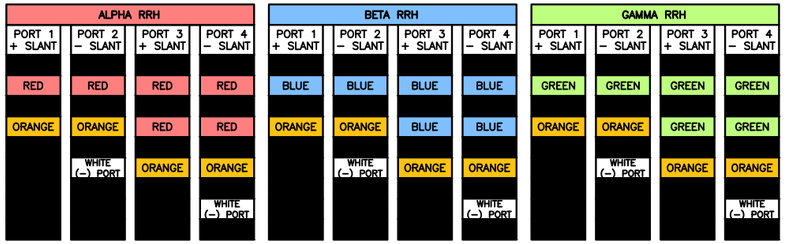
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

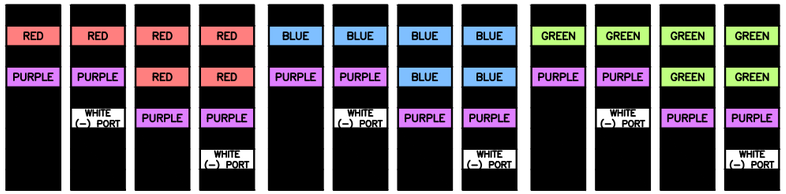
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

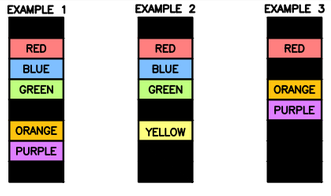


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
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

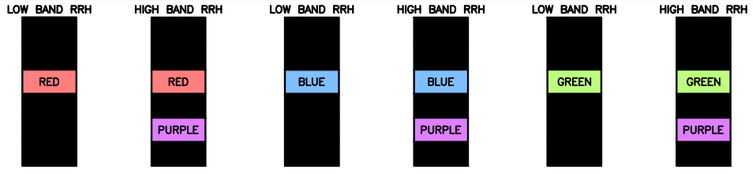


FIBER JUMPERS TO RRHs

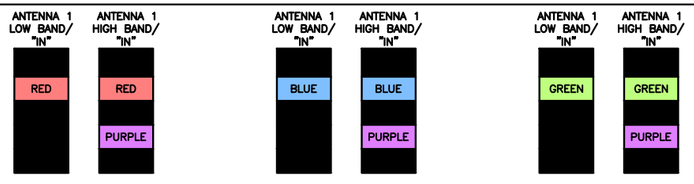
LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



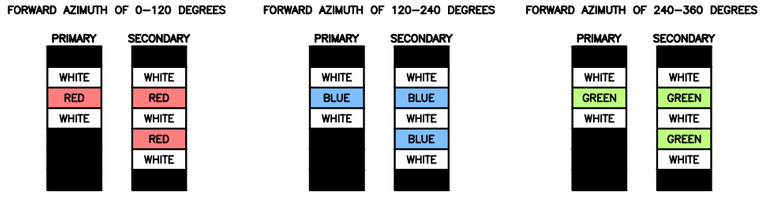
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES	NO SCALE	1

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

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER	NO SCALE	2

NOT USED	NO SCALE	3

NOT USED	NO SCALE	4

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DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

W.P.

SECTION REFERENCE

DETAIL REFERENCE

ABBREVIATIONS

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

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DRAWN BY:	CHECKED BY:	APPROVED BY:
MF	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	11/03/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

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

A&E PROJECT NUMBER
207956–13700315_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH WIRELESS, 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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RFDS REV #: ----

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A&E PROJECT NUMBER
207956–13700315_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.
5701 SOUTH SANTA FE DRIVE
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DRAWN BY:	CHECKED BY:	APPROVED BY:
MF	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	11/03/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

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

A&E PROJECT NUMBER
207956-13700315_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."

2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:

A. ASTM A-572, GRADE 50 – ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE

B. ASTM A-36 – ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.

C. ASTM A-500, GRADE B – HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)

D. ASTM A-325, TYPE SC OR N – ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS

E. ASTM F-1554 07 – ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE

3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.

4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.

6. CONNECTIONS:

A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.

B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.

C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.

D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.

E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.

F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.

G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING ½" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.

H. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.

I. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND DISH WIRELESS L.L.C. PROJECT MANAGER IN WRITING

dish wireless.
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DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: ----

CONSTRUCTION DOCUMENTS

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REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER
207956-13700315_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01097B
515 MOREHOUSE ROAD
EASTON, CT 06612

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

ENGINEERING:

STRUCTURAL ANALYSIS

MOUNT ANALYSIS

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**149 ft Monopole**
ATC Site Name	:	**Easton,CT**
ATC Site Number	:	**207956**
Engineering Number	:	**13700315_C3_04**
Proposed Carrier	:	**DISH WIRELESS L.L.C.**
Carrier Site Name	:	**NJJER01097B**
Carrier Site Number	:	**NJJER01097B**
Site Location	:	**515 Morehouse Road** **Easton, CT 06612** **41.2356, -73.2854**
County	:	**Fairfield**
Date	:	**October 1, 2021**
Max Usage	:	**30%**
Result	:	**Pass**

Prepared By:

Faisal Wakid
Structural Engineer

Faisal Wakid

Reviewed By:

COA : PEC.0001553

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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

Tower Drawings	Sabre Job #172085, dated October 19, 2017
Foundation Drawing	Sabre Job #172085, dated October 19, 2017
Geotechnical Report	Terracon Project #J2175120, dated September 29, 2017

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.

Basic Wind Speed:	118 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code:	ANSI/TIA-222-H
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Spectral Response:	Ss = 0.22, S_1 = 0.06
Site Class:	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. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
145.0	3	Alcatel-Lucent RRH2X60-AWS	Triangular Platform with Handrails	(2) 1 5/8" Hybriflex	VERIZON WIRELESS
	6	JMA Wireless X7C-FRO-660-VR0			
	6	Amphenol Antel WWX063X19G00			
	2	RFS DB-T1-6Z-8AB-0Z			
	3	Alcatel-Lucent RRH2x60			
	3	Alcatel-Lucent B13 RRH4x30-4R			
135.0	6	KMW EPBQ-654L8H8-L2	Sector Frame	(3) 2" Carflex Non-Metallic Conduit (2) 0.39" (10mm) Fiber Trunk (6) 0.76" (19.2mm) 8 AWG 6	AT&T MOBILITY
	3	CCI HPA65R-BU8A			
	3	Ericsson RRUS 32 (50.8 lbs)			
	2	Raycap DC6-48-60-18-8C			
	3	Ericsson RRUS 4449 B5, B12			
	3	Ericsson RRUS 4415 B25			
	1	Raycap DC6-48-60-0-8C-EV			
	3	Ericsson RRUS 4478 B14			
123.0	3	Ericsson Radio 4480 B71+B85A	Triangular Platform with Handrails	(3) 1.99" (50.7mm) Hybrid	T-MOBILE
	3	Ericsson Air6449 B41			
	3	RFS APXVAALL24 43-U-NA20			
	3	Ericsson Radio 4460 B25+B66			

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
No loading was considered as removed as part of this analysis.					

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
113.0	1	Raycap 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			

[1] 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	30%	Pass
Shaft	27%	Pass
Base Plate	18%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3531.6	28%
Axial (Kips)	70.5	7%
Shear (Kips)	34.9	28%

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	Raycap RDIDC-9181-PF-48	DISH WIRELESS L.L.C.	0.327	0.350
	JMA Wireless MX08FRO665-21			
	Fujitsu TA08025-B604			
	Fujitsu TA08025-B605			

***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.

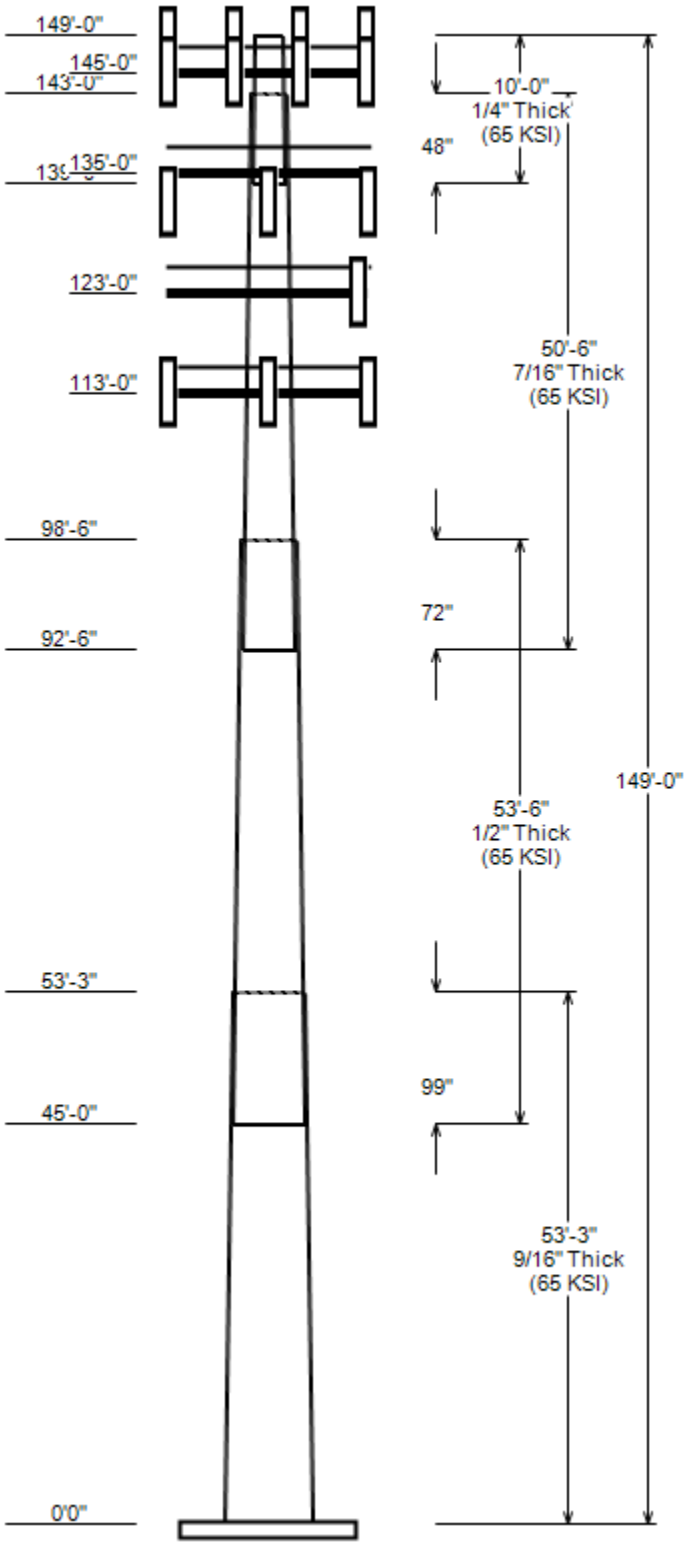
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with 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 :	207956, Easton	Height :	149 ft
Client :	DISH WIRELESS L.L.C.	Base Width :	74.32
Code :	ANSI/TIA-222-H	Shape :	18 Sides



SITE PARAMETERS

Base Elev (ft):	0.00	Structure Class:	II
Taper :	0.35300 (In/ft)	Exposure :	C
Topographic Category :	1	Topographic Feature:	
Topo Method :	Method 1		

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Diameter (in) Across Flats Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	53.250	55.51	74.32	0.562		0.000	18 Sides	65
2	53.500	40.52	59.42	0.500	Slip Joint	99.000	18 Sides	65
3	50.500	25.68	43.52	0.438	Slip Joint	72.000	18 Sides	65
4	10.000	24.06	27.59	0.250	Slip Joint	48.000	18 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
145.0	145.0	3	Alcatel-Lucent RRH2X60-AWS
145.0	147.6	3	Alcatel-Lucent B13 RRH4x30-4R
145.0	145.0	3	Alcatel-Lucent RRH2x60
145.0	145.0	2	RFS DB-T1-6Z-8AB-0Z
145.0	145.7	6	Amphenol Antel WWX063X19G00
145.0	145.0	6	JMA Wireless X7C-FRO-660-VR0
145.0	145.0	1	Generic Round Platform with Ha
135.0	136.3	1	Raycap DC6-48-60-0-8C-EV
135.0	136.4	3	Ericsson RRUS 4415 B25
135.0	134.7	3	Ericsson RRUS 4449 B5, B12
135.0	136.3	3	Ericsson RRUS 4478 B14
135.0	136.2	2	Raycap DC6-48-60-18-8C
135.0	134.2	3	Ericsson RRUS 32 (50.8 lbs)
135.0	134.5	3	CCI HPA65R-BU8A
135.0	135.0	3	Generic Round Sector Frame
135.0	134.5	6	KMW EPBQ-654L8H8-L2
123.0	123.0	3	Ericsson Radio 4460 B25+B66
123.0	123.0	3	Ericsson Radio 4480 B71+B85A
123.0	123.0	3	Ericsson Air6449 B41
123.0	123.0	3	RFS APXVAALL24 43-U-NA20
123.0	123.0	1	Generic Flat Platform with Han
113.0	113.0	1	Raycap RDIDC-9181-PF-48
113.0	113.0	3	Fujitsu TA08025-B605
113.0	113.0	3	Fujitsu TA08025-B604
113.0	113.0	3	JMA Wireless MX08FRO665-21
113.0	113.0	1	Generic Round Platform with Ha

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	145.0	1 5/8" Hybriflex	No
0.0	136.0	2" Carflex Non-Metallic Conduit	No
0.0	135.0	0.76" (19.2mm) 8 AWG 6	No
0.0	135.0	0.39" (10mm) Fiber Trunk	No
0.0	123.0	1.99" (50.7mm) Hybrid	No
0.0	113.0	1.75" (44.5mm) Hybrid	No

LOAD CASES

1.2D + 1.0W Normal	118 mph wind with no ice
0.9D + 1.0W Normal	118 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

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JOB INFORMATION			
Asset :	207956, Easton	Height :	149 ft
Client :	DISH WIRELESS L.L.C.	Base Width :	74.32
Code :	ANSI/TIA-222-H	Shape :	18 Sides

REACTIONS			
Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	3531.59	34.87	70.48
0.9D + 1.0W Normal	3516.46	34.86	52.85
1.2D + 1.0Di + 1.0Wi Normal	929.96	9.50	88.31
1.2D + 1.0Ev + 1.0Eh Normal	264.70	2.42	70.38
0.9D - 1.0Ev + 1.0Eh Normal	263.30	2.42	48.17
1.0D + 1.0W Service Normal	814.60	8.06	58.75

DISH DEFLECTIONS			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)

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ANALYSIS PARAMETERS

Location:	Fairfield County,CT	Height:	149 ft
Type and Shape:	Taper, 18 Sides	Base Diameter:	74.32 in
Manufacturer:	Sabre	Top Diameter:	24.06 in
K_d (non-service):	0.95	Taper:	0.3530 in/ft
K_e:	0.98	Rotation:	0.000°

ICE & WIND PARAMETERS

Exposure Category:	C	Design Wind Speed w/o Ice:	118 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:	440.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			Period Based on Rayleigh Method (sec):	1.42
T_L (sec):	6	P:	1	$C_{s:}$	0.041
$S_{s:}$	0.219	$S_{1:}$	0.055	C_s Max:	0.041
$F_{a:}$	1.600	$F_{v:}$	2.400	C_s Min:	0.030
$S_{ds:}$	0.234	$S_{d1:}$	0.088		

LOAD CASES

1.2D + 1.0W Normal	118 mph wind with no ice
0.9D + 1.0W Normal	118 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

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SHAFT SECTION PROPERTIES

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (in)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
									131.6							37,418.9			
1-18	53.25	0.5625	65		0.00	20,818	74.32	0.000	8	90,507.7	21.53	132.12	55.51	53.25	98.10		15.64	98.68	0.3533
2-18	53.50	0.5000	65	Slip	99.00	14,293	59.42	45.000	93.51	41,018.6	19.19	118.85	40.52	98.50	63.52	12,855.5	12.53	81.05	0.3533
3-18	50.50	0.4375	65	Slip	72.00	8,151	43.52	92.500	59.82	14,027.9	15.78	99.47	25.68	143.00	35.05	2,821.6	8.59	58.70	0.3533
4-18	10.00	0.2500	65	Slip	48.00	691	27.59	139.000	21.70	2,049.3	17.70	110.37	24.06	149.00	18.89	1,353.2	15.21	96.24	0.3533
				Shaft Weight		43,953													

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
145.00	JMA Wireless X7C-FRO-660-VR0	6	0.75	0.000	36.20	9.549	0.68	174.35	11.395	0.68
145.00	Amphenol Antel WWX063X19G00	6	0.75	0.700	32.70	8.598	0.69	153.78	10.531	0.69
145.00	RFS DB-T1-6Z-8AB-0Z	2	0.75	0.000	44.00	4.800	0.72	127.74	5.746	0.72
145.00	Alcatel-Lucent RRH2x60	3	0.75	0.000	60.00	3.500	0.65	112.64	4.477	0.65
145.00	Alcatel-Lucent B13 RRH4x30-4R	3	0.75	2.600	57.80	2.140	0.67	103.69	2.805	0.67
145.00	Alcatel-Lucent RRH2X60-AWS	3	0.75	0.000	44.00	1.876	0.50	81.77	2.499	0.50
145.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	3577.63	43.463	1.00
135.00	Ericsson RRUS 4449 B5, B12	3	0.80	-0.300	71.00	1.969	0.50	113.52	2.584	0.50
135.00	KMW EPBQ-654L8H8-L2	6	0.80	-0.500	86.00	18.089	0.61	300.29	20.525	0.61
135.00	Generic Round Sector Frame	3	0.75	0.000	300.00	14.400	0.67	542.70	25.321	0.67
135.00	CCI HPA65R-BU8A	3	0.80	-0.500	54.00	11.230	0.71	207.27	13.357	0.71
135.00	Ericsson RRUS 32 (50.8 lbs)	3	0.80	-0.800	50.80	2.692	0.67	97.99	3.454	0.67
135.00	Raycap DC6-48-60-18-8C	2	0.80	1.200	16.00	2.030	0.70	54.41	2.531	0.70
135.00	Ericsson RRUS 4478 B14	3	0.80	1.300	59.40	2.021	0.67	99.89	2.643	0.67
135.00	Ericsson RRUS 4415 B25	3	0.80	1.400	46.00	1.842	0.50	78.35	2.434	0.50
135.00	Raycap DC6-48-60-0-8C-EV	1	0.80	1.300	16.00	1.020	0.50	45.88	1.393	0.50
123.00	Ericsson Radio 4480 B71+B85A	3	0.75	0.000	84.00	2.852	0.67	133.42	3.582	0.67
123.00	RFS APXVAALL24 43-U-NA20	3	0.75	0.000	122.80	20.243	0.63	377.58	22.669	0.63
123.00	Generic Flat Platform with Han	1	1.00	0.000	2500.00	42.400	1.00	3662.00	56.118	1.00
123.00	Ericsson Air6449 B41	3	0.75	0.000	104.00	5.682	0.63	193.14	6.720	0.63
123.00	Ericsson Radio 4460 B25+B66	3	0.75	0.000	109.00	2.564	0.67	166.82	3.253	0.67
113.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	115.63	2.559	0.50
113.00	Raycap RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	0.50	58.81	2.451	0.50
113.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	3550.41	43.052	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
Totals	Num Loadings: 26	75			12,685.90			23,301.48		

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	145.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIREL
0.00	136.00	3	2" Carflex Non-Metall	2.36	0.68	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	135.00	6	0.76" (19.2mm) 8 AWG	0.76	0.53	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	135.00	2	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	123.00	3	1.99" (50.7mm) Hybrid	1.99	1.9	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

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SEGMENT PROPERTIES

(Max Len: 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.5625	74.320	131.680	90,507.70	21.53	132.12	76.1	2398.6	0.0	0.0
5.00		0.5625	72.554	128.527	84,160.00	20.98	128.98	76.7	2284.7	0.0	2,213.6
10.00		0.5625	70.787	125.373	78,116.20	20.43	125.84	77.4	2173.5	0.0	2,159.9
15.00		0.5625	69.021	122.220	72,369.00	19.87	122.70	78	2065.1	0.0	2,106.3
20.00		0.5625	67.255	119.067	66,910.80	19.32	119.56	78.7	1959.5	0.0	2,052.6
25.00		0.5625	65.489	115.913	61,734.10	18.77	116.42	79.3	1856.7	0.0	1,999.0
30.00		0.5625	63.722	112.760	56,831.60	18.21	113.28	80	1756.6	0.0	1,945.3
35.00		0.5625	61.956	109.607	52,195.80	17.66	110.14	80.6	1659.3	0.0	1,891.7
40.00		0.5625	60.190	106.453	47,819.20	17.10	107.00	81.3	1564.8	0.0	1,838.0
45.00	Bot - Section 2	0.5625	58.424	103.300	43,694.30	16.55	103.86	81.9	1473.1	0.0	1,784.4
50.00		0.5625	56.657	100.147	39,813.80	16.00	100.72	82.6	1384.1	0.0	3,297.8
53.25	Top - Section 1	0.5000	56.509	88.883	35,228.30	18.16	113.02	80	1227.9	0.0	2,089.2
55.00		0.5000	55.891	87.902	34,074.60	17.95	111.78	80.3	1200.8	0.0	526.4
60.00		0.5000	54.125	85.099	30,917.80	17.32	108.25	81	1125.1	0.0	1,471.7
65.00		0.5000	52.358	82.296	27,962.30	16.70	104.72	81.8	1051.9	0.0	1,424.0
70.00		0.5000	50.592	79.493	25,201.30	16.08	101.18	82.5	981.1	0.0	1,376.3
75.00		0.5000	48.826	76.690	22,628.40	15.46	97.65	82.6	912.8	0.0	1,328.6
80.00		0.5000	47.060	73.887	20,236.80	14.83	94.12	82.6	847.0	0.0	1,281.0
85.00		0.5000	45.293	71.084	18,020.00	14.21	90.59	82.6	783.6	0.0	1,233.3
90.00		0.5000	43.527	68.281	15,971.30	13.59	87.05	82.6	722.7	0.0	1,185.6
92.50	Bot - Section 3	0.5000	42.644	66.880	15,007.90	13.28	85.29	82.6	693.2	0.0	574.9
95.00		0.5000	41.761	65.478	14,084.00	12.96	83.52	82.6	664.3	0.0	1,066.7
98.50	Top - Section 2	0.4375	41.399	56.879	12,057.60	14.92	94.63	82.6	573.7	0.0	1,455.8
100.00		0.4375	40.869	56.143	11,595.70	14.71	93.42	82.6	558.8	0.0	288.4
105.00		0.4375	39.103	53.690	10,141.50	14.00	89.38	82.6	510.8	0.0	934.3
110.00		0.4375	37.337	51.238	8,814.20	13.28	85.34	82.6	465.0	0.0	892.6
113.00		0.4375	36.277	49.766	8,076.30	12.86	82.92	82.6	438.5	0.0	515.5
115.00		0.4375	35.571	48.785	7,608.10	12.57	81.30	82.6	421.3	0.0	335.3
120.00		0.4375	33.804	46.332	6,517.30	11.86	77.27	82.6	379.7	0.0	809.2
123.00		0.4375	32.745	44.861	5,915.90	11.43	74.84	82.6	355.8	0.0	465.5
125.00		0.4375	32.038	43.880	5,536.20	11.15	73.23	82.6	340.3	0.0	302.0
130.00		0.4375	30.272	41.427	4,658.80	10.44	69.19	82.6	303.1	0.0	725.7
135.00		0.4375	28.506	38.975	3,879.40	9.73	65.16	82.6	268.0	0.0	684.0
139.00	Bot - Section 4	0.4375	27.093	37.013	3,322.50	9.16	61.93	82.6	241.5	0.0	517.1
140.00		0.4375	26.739	36.522	3,192.10	9.01	61.12	82.6	235.1	0.0	198.5
143.00	Top - Section 3	0.2500	26.180	20.574	1,747.70	16.70	104.72	81.8	131.5	0.0	579.6
145.00		0.2500	25.473	20.014	1,608.70	16.20	101.89	82.3	124.4	0.0	138.1
149.00		0.2500	24.060	18.893	1,353.20	15.21	96.24	82.6	110.8	0.0	264.8
								Totals:			43,952.7

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Load Case: 1.2D + 1.0W Normal — 118 mph wind with no ice — 18 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	-70.48	-34.87	0.00	-3,531.6	0.00	3,531.59	9,015.57	2,310.98	15,395.60	13,685.27	0	0	0.266
5.00	-67.69	-34.24	0.00	-3,357.2	0.00	3,357.24	8,875.00	2,255.64	14,667.16	13,146.83	0.03	-0.05	0.263
10.00	-64.97	-33.61	0.00	-3,186.1	0.00	3,186.07	8,730.74	2,200.30	13,956.36	12,613.36	0.12	-0.11	0.260
15.00	-62.31	-33.00	0.00	-3,018.0	0.00	3,018.00	8,582.78	2,144.96	13,263.22	12,085.25	0.26	-0.17	0.257
20.00	-59.72	-32.36	0.00	-2,853.0	0.00	2,853.02	8,431.12	2,089.62	12,587.74	11,562.91	0.47	-0.22	0.254
25.00	-57.19	-31.71	0.00	-2,691.2	0.00	2,691.22	8,275.76	2,034.28	11,929.90	11,046.75	0.73	-0.28	0.251
30.00	-54.73	-31.05	0.00	-2,532.7	0.00	2,532.67	8,116.71	1,978.94	11,289.72	10,537.17	1.06	-0.34	0.247
35.00	-52.34	-30.38	0.00	-2,377.4	0.00	2,377.44	7,953.97	1,923.60	10,667.20	10,034.58	1.46	-0.4	0.244
40.00	-50.01	-29.70	0.00	-2,225.6	0.00	2,225.56	7,787.52	1,868.25	10,062.33	9,539.38	1.91	-0.47	0.240
45.00	-47.74	-29.02	0.00	-2,077.0	0.00	2,077.04	7,617.38	1,812.91	9,475.11	9,051.98	2.44	-0.53	0.236
50.00	-43.66	-28.44	0.00	-1,931.9	0.00	1,931.92	7,440.39	1,757.57	8,905.54	8,569.15	3.03	-0.6	0.232
53.25	-41.08	-28.08	0.00	-1,839.5	0.00	1,839.51	6,402.43	1,559.90	7,891.64	7,370.51	3.45	-0.64	0.256
55.00	-40.40	-27.63	0.00	-1,790.4	0.00	1,790.37	6,352.05	1,542.69	7,718.42	7,231.09	3.69	-0.66	0.254
60.00	-38.51	-26.96	0.00	-1,652.2	0.00	1,652.23	6,205.61	1,493.49	7,234.09	6,837.10	4.42	-0.74	0.248
65.00	-36.68	-26.30	0.00	-1,517.4	0.00	1,517.44	6,055.47	1,444.30	6,765.45	6,449.91	5.24	-0.81	0.242
70.00	-34.90	-25.64	0.00	-1,386.0	0.00	1,385.96	5,901.64	1,395.11	6,312.51	6,069.91	6.12	-0.88	0.235
75.00	-33.19	-25.00	0.00	-1,257.7	0.00	1,257.74	5,697.71	1,345.92	5,875.26	5,651.49	7.09	-0.96	0.229
80.00	-31.53	-24.37	0.00	-1,132.7	0.00	1,132.74	5,489.47	1,296.72	5,453.70	5,243.89	8.13	-1.03	0.222
85.00	-29.94	-23.75	0.00	-1,010.9	0.00	1,010.88	5,281.22	1,247.53	5,047.83	4,851.54	9.25	-1.11	0.214
90.00	-28.40	-23.29	0.00	-892.1	0.00	892.11	5,072.97	1,198.34	4,657.66	4,474.45	10.46	-1.18	0.205
92.50	-27.65	-22.99	0.00	-833.9	0.00	833.89	4,968.85	1,173.74	4,468.45	4,291.62	11.09	-1.22	0.200
95.00	-26.31	-22.62	0.00	-776.4	0.00	776.41	4,864.72	1,149.15	4,283.17	4,112.61	11.74	-1.26	0.195
98.50	-24.49	-22.30	0.00	-697.2	0.00	697.24	4,225.80	998.22	3,693.52	3,551.63	12.68	-1.31	0.203
100.00	-24.11	-21.93	0.00	-663.8	0.00	663.79	4,171.13	985.31	3,598.59	3,459.86	13.1	-1.33	0.198
105.00	-22.87	-21.37	0.00	-554.1	0.00	554.12	3,988.92	942.26	3,291.10	3,162.63	14.54	-1.41	0.181
110.00	-21.70	-20.92	0.00	-447.3	0.00	447.28	3,806.70	899.22	2,997.34	2,878.74	16.05	-1.48	0.162
113.00	-17.32	-18.15	0.00	-384.5	0.00	384.52	3,697.37	873.39	2,827.67	2,714.82	16.99	-1.52	0.147
115.00	-16.88	-17.79	0.00	-348.2	0.00	348.22	3,624.48	856.18	2,717.30	2,608.21	17.64	-1.55	0.139
120.00	-15.83	-17.37	0.00	-259.3	0.00	259.27	3,442.27	813.13	2,451.00	2,351.02	19.29	-1.6	0.115
123.00	-10.83	-12.75	0.00	-207.2	0.00	207.17	3,332.94	787.31	2,297.81	2,203.12	20.3	-1.63	0.098
125.00	-10.45	-12.41	0.00	-181.7	0.00	181.67	3,260.05	770.09	2,198.43	2,107.18	20.99	-1.65	0.090
130.00	-9.54	-11.93	0.00	-119.6	0.00	119.60	3,077.84	727.05	1,959.59	1,876.69	22.74	-1.69	0.067
135.00	-6.08	-6.07	0.00	-59.9	0.00	59.93	2,895.62	684.00	1,734.48	1,659.55	24.53	-1.72	0.038
139.00	-5.45	-5.84	0.00	-35.6	0.00	35.65	2,749.85	649.57	1,564.28	1,495.45	25.98	-1.73	0.026
140.00	-5.21	-5.67	0.00	-29.8	0.00	29.81	2,713.40	640.96	1,523.10	1,455.76	26.34	-1.73	0.022
143.00	-4.51	-5.44	0.00	-12.8	0.00	12.81	1,513.88	361.08	845.70	806.26	27.43	-1.74	0.019
145.00	-0.31	-0.14	0.00	-0.6	0.00	0.57	1,483.19	351.24	800.25	768.18	28.16	-1.74	0.001
149.00	0.00	-0.13	0.00	0.0	0.00	0.00	1,403.62	331.56	713.11	685.85	29.62	-1.74	0.000

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Load Case: 0.9D + 1.0W Normal — 118 mph wind with no ice — 18 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	-52.85	-34.86	0.00	-3,516.5	0.00	3,516.46	9,015.57	2,310.98	15,395.60	13,685.27	0	0	0.263
5.00	-50.76	-34.21	0.00	-3,342.2	0.00	3,342.15	8,875.00	2,255.64	14,667.16	13,146.83	0.03	-0.05	0.260
10.00	-48.71	-33.57	0.00	-3,171.1	0.00	3,171.09	8,730.74	2,200.30	13,956.36	12,613.36	0.12	-0.11	0.257
15.00	-46.71	-32.94	0.00	-3,003.2	0.00	3,003.22	8,582.78	2,144.96	13,263.22	12,085.25	0.26	-0.17	0.254
20.00	-44.76	-32.29	0.00	-2,838.5	0.00	2,838.52	8,431.12	2,089.62	12,587.74	11,562.91	0.47	-0.22	0.251
25.00	-42.85	-31.63	0.00	-2,677.0	0.00	2,677.05	8,275.76	2,034.28	11,929.90	11,046.75	0.73	-0.28	0.248
30.00	-41.00	-30.96	0.00	-2,518.9	0.00	2,518.90	8,116.71	1,978.94	11,289.72	10,537.17	1.06	-0.34	0.244
35.00	-39.20	-30.27	0.00	-2,364.1	0.00	2,364.12	7,953.97	1,923.60	10,667.20	10,034.58	1.45	-0.4	0.241
40.00	-37.44	-29.59	0.00	-2,212.8	0.00	2,212.75	7,787.52	1,868.25	10,062.33	9,539.38	1.9	-0.46	0.237
45.00	-35.74	-28.90	0.00	-2,064.8	0.00	2,064.79	7,617.38	1,812.91	9,475.11	9,051.98	2.43	-0.53	0.233
50.00	-32.67	-28.32	0.00	-1,920.3	0.00	1,920.27	7,440.39	1,757.57	8,905.54	8,569.15	3.01	-0.59	0.229
53.25	-30.73	-27.96	0.00	-1,828.2	0.00	1,828.25	6,402.43	1,559.90	7,891.64	7,370.51	3.43	-0.64	0.253
55.00	-30.22	-27.50	0.00	-1,779.3	0.00	1,779.32	6,352.05	1,542.69	7,718.42	7,231.09	3.67	-0.66	0.251
60.00	-28.79	-26.83	0.00	-1,641.8	0.00	1,641.81	6,205.61	1,493.49	7,234.09	6,837.10	4.4	-0.73	0.245
65.00	-27.41	-26.16	0.00	-1,507.7	0.00	1,507.69	6,055.47	1,444.30	6,765.45	6,449.91	5.21	-0.8	0.239
70.00	-26.08	-25.50	0.00	-1,376.9	0.00	1,376.90	5,901.64	1,395.11	6,312.51	6,069.91	6.09	-0.88	0.232
75.00	-24.79	-24.85	0.00	-1,249.4	0.00	1,249.41	5,697.71	1,345.92	5,875.26	5,651.49	7.05	-0.95	0.226
80.00	-23.54	-24.22	0.00	-1,125.2	0.00	1,125.15	5,489.47	1,296.72	5,453.70	5,243.89	8.09	-1.03	0.219
85.00	-22.34	-23.60	0.00	-1,004.0	0.00	1,004.05	5,281.22	1,247.53	5,047.83	4,851.54	9.21	-1.1	0.212
90.00	-21.18	-23.14	0.00	-886.1	0.00	886.06	5,072.97	1,198.34	4,657.66	4,474.45	10.4	-1.18	0.203
92.50	-20.62	-22.84	0.00	-828.2	0.00	828.22	4,968.85	1,173.74	4,468.45	4,291.62	11.03	-1.21	0.198
95.00	-19.62	-22.47	0.00	-771.1	0.00	771.13	4,864.72	1,149.15	4,283.17	4,112.61	11.67	-1.25	0.192
98.50	-18.25	-22.15	0.00	-692.5	0.00	692.49	4,225.80	998.22	3,693.52	3,551.63	12.61	-1.3	0.200
100.00	-17.95	-21.78	0.00	-659.3	0.00	659.27	4,171.13	985.31	3,598.59	3,459.86	13.02	-1.33	0.195
105.00	-17.03	-21.22	0.00	-550.3	0.00	550.34	3,988.92	942.26	3,291.10	3,162.63	14.45	-1.4	0.179
110.00	-16.14	-20.77	0.00	-444.3	0.00	444.26	3,806.70	899.22	2,997.34	2,878.74	15.96	-1.47	0.159
113.00	-12.87	-18.03	0.00	-381.9	0.00	381.94	3,697.37	873.39	2,827.67	2,714.82	16.9	-1.51	0.145
115.00	-12.55	-17.67	0.00	-345.9	0.00	345.88	3,624.48	856.18	2,717.30	2,608.21	17.54	-1.54	0.136
120.00	-11.75	-17.25	0.00	-257.5	0.00	257.54	3,442.27	813.13	2,451.00	2,351.02	19.18	-1.59	0.113
123.00	-8.04	-12.67	0.00	-205.8	0.00	205.79	3,332.94	787.31	2,297.81	2,203.12	20.19	-1.62	0.096
125.00	-7.75	-12.33	0.00	-180.4	0.00	180.45	3,260.05	770.09	2,198.43	2,107.18	20.87	-1.64	0.088
130.00	-7.07	-11.86	0.00	-118.8	0.00	118.78	3,077.84	727.05	1,959.59	1,876.69	22.61	-1.68	0.066
135.00	-4.51	-6.02	0.00	-59.5	0.00	59.49	2,895.62	684.00	1,734.48	1,659.55	24.39	-1.71	0.037
139.00	-4.04	-5.80	0.00	-35.4	0.00	35.40	2,749.85	649.57	1,564.28	1,495.45	25.83	-1.72	0.025
140.00	-3.87	-5.62	0.00	-29.6	0.00	29.61	2,713.40	640.96	1,523.10	1,455.76	26.19	-1.72	0.022
143.00	-3.34	-5.41	0.00	-12.7	0.00	12.73	1,513.88	361.08	845.70	806.26	27.27	-1.73	0.018
145.00	-0.23	-0.14	0.00	-0.6	0.00	0.56	1,483.19	351.24	800.25	768.18	28	-1.73	0.001
149.00	0.00	-0.13	0.00	0.0	0.00	0.00	1,403.62	331.56	713.11	685.85	29.45	-1.73	0.000

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Load Case: 1.2D + 1.0Di + 1.0Wi Normal		50 mph wind with 1" radial ice			18 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	-88.31	-9.50	0.00	-930.0	0.00	929.96	9,015.57	2,310.98	15,395.60	13,685.27	0	0	0.078
5.00	-85.20	-9.31	0.00	-882.5	0.00	882.46	8,875.00	2,255.64	14,667.16	13,146.83	0.01	-0.01	0.077
10.00	-82.12	-9.12	0.00	-835.9	0.00	835.91	8,730.74	2,200.30	13,956.36	12,613.36	0.03	-0.03	0.076
15.00	-79.09	-8.94	0.00	-790.3	0.00	790.30	8,582.78	2,144.96	13,263.22	12,085.25	0.07	-0.04	0.075
20.00	-76.13	-8.75	0.00	-745.6	0.00	745.61	8,431.12	2,089.62	12,587.74	11,562.91	0.12	-0.06	0.074
25.00	-73.23	-8.55	0.00	-701.9	0.00	701.88	8,275.76	2,034.28	11,929.90	11,046.75	0.19	-0.07	0.072
30.00	-70.40	-8.35	0.00	-659.1	0.00	659.12	8,116.71	1,978.94	11,289.72	10,537.17	0.28	-0.09	0.071
35.00	-67.63	-8.15	0.00	-617.4	0.00	617.37	7,953.97	1,923.60	10,667.20	10,034.58	0.38	-0.11	0.070
40.00	-64.94	-7.95	0.00	-576.6	0.00	576.63	7,787.52	1,868.25	10,062.33	9,539.38	0.5	-0.12	0.069
45.00	-62.32	-7.74	0.00	-536.9	0.00	536.90	7,617.38	1,812.91	9,475.11	9,051.98	0.64	-0.14	0.068
50.00	-57.88	-7.56	0.00	-498.2	0.00	498.21	7,440.39	1,757.57	8,905.54	8,569.15	0.79	-0.16	0.066
53.25	-55.06	-7.45	0.00	-473.6	0.00	473.63	6,402.43	1,559.90	7,891.64	7,370.51	0.9	-0.17	0.073
55.00	-54.26	-7.32	0.00	-460.6	0.00	460.59	6,352.05	1,542.69	7,718.42	7,231.09	0.96	-0.17	0.072
60.00	-52.03	-7.11	0.00	-424.0	0.00	424.00	6,205.61	1,493.49	7,234.09	6,837.10	1.16	-0.19	0.070
65.00	-49.87	-6.91	0.00	-388.4	0.00	388.43	6,055.47	1,444.30	6,765.45	6,449.91	1.37	-0.21	0.068
70.00	-47.77	-6.71	0.00	-353.9	0.00	353.87	5,901.64	1,395.11	6,312.51	6,069.91	1.6	-0.23	0.066
75.00	-45.73	-6.52	0.00	-320.3	0.00	320.30	5,697.71	1,345.92	5,875.26	5,651.49	1.85	-0.25	0.065
80.00	-43.77	-6.32	0.00	-287.7	0.00	287.71	5,489.47	1,296.72	5,453.70	5,243.89	2.12	-0.27	0.063
85.00	-41.87	-6.14	0.00	-256.1	0.00	256.09	5,281.22	1,247.53	5,047.83	4,851.54	2.41	-0.29	0.061
90.00	-40.04	-5.99	0.00	-225.4	0.00	225.41	5,072.97	1,198.34	4,657.66	4,474.45	2.72	-0.31	0.058
92.50	-39.15	-5.90	0.00	-210.4	0.00	210.43	4,968.85	1,173.74	4,468.45	4,291.62	2.88	-0.31	0.057
95.00	-37.67	-5.79	0.00	-195.7	0.00	195.68	4,864.72	1,149.15	4,283.17	4,112.61	3.05	-0.32	0.055
98.50	-35.65	-5.69	0.00	-175.4	0.00	175.42	4,225.80	998.22	3,693.52	3,551.63	3.29	-0.34	0.058
100.00	-35.18	-5.58	0.00	-166.9	0.00	166.89	4,171.13	985.31	3,598.59	3,459.86	3.4	-0.34	0.057
105.00	-33.68	-5.40	0.00	-139.0	0.00	139.00	3,988.92	942.26	3,291.10	3,162.63	3.77	-0.36	0.052
110.00	-32.24	-5.26	0.00	-112.0	0.00	111.99	3,806.70	899.22	2,997.34	2,878.74	4.16	-0.38	0.047
113.00	-26.23	-4.54	0.00	-96.2	0.00	96.20	3,697.37	873.39	2,827.67	2,714.82	4.4	-0.39	0.043
115.00	-25.69	-4.43	0.00	-87.1	0.00	87.12	3,624.48	856.18	2,717.30	2,608.21	4.56	-0.4	0.041
120.00	-24.39	-4.30	0.00	-65.0	0.00	64.97	3,442.27	813.13	2,451.00	2,351.02	4.99	-0.41	0.035
123.00	-17.17	-3.23	0.00	-52.1	0.00	52.09	3,332.94	787.31	2,297.81	2,203.12	5.25	-0.42	0.029
125.00	-16.69	-3.12	0.00	-45.6	0.00	45.63	3,260.05	770.09	2,198.43	2,107.18	5.42	-0.42	0.027
130.00	-15.55	-2.97	0.00	-30.0	0.00	30.02	3,077.84	727.05	1,959.59	1,876.69	5.87	-0.43	0.021
135.00	-9.31	-1.55	0.00	-15.2	0.00	15.18	2,895.62	684.00	1,734.48	1,659.55	6.33	-0.44	0.012
139.00	-8.51	-1.48	0.00	-9.0	0.00	8.96	2,749.85	649.57	1,564.28	1,495.45	6.7	-0.44	0.009
140.00	-8.23	-1.42	0.00	-7.5	0.00	7.48	2,713.40	640.96	1,523.10	1,455.76	6.79	-0.44	0.008
143.00	-7.40	-1.35	0.00	-3.2	0.00	3.21	1,513.88	361.08	845.70	806.26	7.07	-0.45	0.009
145.00	-0.46	-0.05	0.00	-0.2	0.00	0.20	1,483.19	351.24	800.25	768.18	7.26	-0.45	0.001
149.00	0.00	-0.05	0.00	0.0	0.00	0.00	1,403.62	331.56	713.11	685.85	7.63	-0.45	0.000

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Load Case: 1.0D + 1.0W Service Normal 60 mph Wind with No Ice 17 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	-58.75	-8.06	0.00	-814.6	0.00	814.60	9,015.57	2,310.98	15,395.60	13,685.27	0	0	0.066
5.00	-56.45	-7.91	0.00	-774.3	0.00	774.28	8,875.00	2,255.64	14,667.16	13,146.83	0.01	-0.01	0.065
10.00	-54.21	-7.77	0.00	-734.7	0.00	734.70	8,730.74	2,200.30	13,956.36	12,613.36	0.03	-0.03	0.064
15.00	-52.02	-7.62	0.00	-695.9	0.00	695.86	8,582.78	2,144.96	13,263.22	12,085.25	0.06	-0.04	0.064
20.00	-49.88	-7.47	0.00	-657.7	0.00	657.74	8,431.12	2,089.62	12,587.74	11,562.91	0.11	-0.05	0.063
25.00	-47.80	-7.32	0.00	-620.4	0.00	620.37	8,275.76	2,034.28	11,929.90	11,046.75	0.17	-0.07	0.062
30.00	-45.77	-7.17	0.00	-583.8	0.00	583.76	8,116.71	1,978.94	11,289.72	10,537.17	0.25	-0.08	0.061
35.00	-43.79	-7.01	0.00	-547.9	0.00	547.93	7,953.97	1,923.60	10,667.20	10,034.58	0.34	-0.09	0.060
40.00	-41.87	-6.85	0.00	-512.9	0.00	512.87	7,787.52	1,868.25	10,062.33	9,539.38	0.44	-0.11	0.059
45.00	-40.00	-6.69	0.00	-478.6	0.00	478.61	7,617.38	1,812.91	9,475.11	9,051.98	0.56	-0.12	0.058
50.00	-36.62	-6.56	0.00	-445.1	0.00	445.13	7,440.39	1,757.57	8,905.54	8,569.15	0.7	-0.14	0.057
53.25	-34.48	-6.48	0.00	-423.8	0.00	423.82	6,402.43	1,559.90	7,891.64	7,370.51	0.8	-0.15	0.063
55.00	-33.93	-6.37	0.00	-412.5	0.00	412.48	6,352.05	1,542.69	7,718.42	7,231.09	0.85	-0.15	0.062
60.00	-32.37	-6.22	0.00	-380.6	0.00	380.63	6,205.61	1,493.49	7,234.09	6,837.10	1.02	-0.17	0.061
65.00	-30.86	-6.06	0.00	-349.6	0.00	349.55	6,055.47	1,444.30	6,765.45	6,449.91	1.21	-0.19	0.059
70.00	-29.40	-5.91	0.00	-319.2	0.00	319.25	5,901.64	1,395.11	6,312.51	6,069.91	1.41	-0.2	0.058
75.00	-27.99	-5.76	0.00	-289.7	0.00	289.70	5,697.71	1,345.92	5,875.26	5,651.49	1.63	-0.22	0.056
80.00	-26.63	-5.61	0.00	-260.9	0.00	260.90	5,489.47	1,296.72	5,453.70	5,243.89	1.87	-0.24	0.055
85.00	-25.31	-5.47	0.00	-232.8	0.00	232.83	5,281.22	1,247.53	5,047.83	4,851.54	2.13	-0.26	0.053
90.00	-24.04	-5.36	0.00	-205.5	0.00	205.47	5,072.97	1,198.34	4,657.66	4,474.45	2.41	-0.27	0.051
92.50	-23.43	-5.29	0.00	-192.1	0.00	192.06	4,968.85	1,173.74	4,468.45	4,291.62	2.56	-0.28	0.049
95.00	-22.32	-5.21	0.00	-178.8	0.00	178.82	4,864.72	1,149.15	4,283.17	4,112.61	2.71	-0.29	0.048
98.50	-20.81	-5.14	0.00	-160.6	0.00	160.59	4,225.80	998.22	3,693.52	3,551.63	2.92	-0.3	0.050
100.00	-20.49	-5.05	0.00	-152.9	0.00	152.88	4,171.13	985.31	3,598.59	3,459.86	3.02	-0.31	0.049
105.00	-19.48	-4.92	0.00	-127.6	0.00	127.63	3,988.92	942.26	3,291.10	3,162.63	3.35	-0.32	0.045
110.00	-18.50	-4.82	0.00	-103.0	0.00	103.02	3,806.70	899.22	2,997.34	2,878.74	3.7	-0.34	0.041
113.00	-14.81	-4.18	0.00	-88.6	0.00	88.57	3,697.37	873.39	2,827.67	2,714.82	3.92	-0.35	0.037
115.00	-14.44	-4.10	0.00	-80.2	0.00	80.21	3,624.48	856.18	2,717.30	2,608.21	4.06	-0.36	0.035
120.00	-13.57	-4.00	0.00	-59.7	0.00	59.72	3,442.27	813.13	2,451.00	2,351.02	4.45	-0.37	0.029
123.00	-9.31	-2.94	0.00	-47.7	0.00	47.72	3,332.94	787.31	2,297.81	2,203.12	4.68	-0.38	0.024
125.00	-8.99	-2.86	0.00	-41.8	0.00	41.85	3,260.05	770.09	2,198.43	2,107.18	4.84	-0.38	0.023
130.00	-8.23	-2.75	0.00	-27.6	0.00	27.55	3,077.84	727.05	1,959.59	1,876.69	5.24	-0.39	0.017
135.00	-5.20	-1.40	0.00	-13.8	0.00	13.80	2,895.62	684.00	1,734.48	1,659.55	5.65	-0.4	0.010
139.00	-4.67	-1.34	0.00	-8.2	0.00	8.21	2,749.85	649.57	1,564.28	1,495.45	5.99	-0.4	0.007
140.00	-4.47	-1.30	0.00	-6.9	0.00	6.87	2,713.40	640.96	1,523.10	1,455.76	6.07	-0.4	0.006
143.00	-3.89	-1.25	0.00	-3.0	0.00	2.95	1,513.88	361.08	845.70	806.26	6.32	-0.4	0.006
145.00	-0.26	-0.03	0.00	-0.1	0.00	0.13	1,483.19	351.24	800.25	768.18	6.49	-0.4	0.000
149.00	0.00	-0.03	0.00	0.0	0.00	0.00	1,403.62	331.56	713.11	685.85	6.83	-0.4	0.000

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EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

Spectral Response Acceleration for Short Period (S_S):	0.219
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.055
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	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}):	0.234
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.088
Seismic Response Coefficient (C_s):	0.041
Upper Limit C_S:	0.041
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	1.420
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.460
Total Unfactored Dead Load:	58.750 k
Seismic Base Shear (E):	2.420 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)
37	147	265	390	0.011	26	330
36	144	143	205	0.006	14	179
35	141.5	587	818	0.023	55	732
34	139.5	201	274	0.008	19	251
33	137	530	703	0.020	48	660
32	132.5	724	915	0.026	62	902
31	127.5	765	915	0.026	62	954
30	124	318	365	0.010	25	396
29	121.5	506	564	0.016	38	631
28	117.5	877	931	0.026	63	1,094
27	114	363	368	0.010	25	452
26	111.5	565	555	0.016	37	704
25	107.5	974	908	0.025	61	1,215
24	102.5	1,016	883	0.025	60	1,267
23	99.25	313	259	0.007	18	390
22	96.75	1,513	1,208	0.034	82	1,886
21	93.75	1,108	845	0.024	57	1,381
20	91.25	616	451	0.013	31	768
19	87.5	1,267	874	0.024	59	1,580
18	82.5	1,315	832	0.023	56	1,640
17	77.5	1,363	787	0.022	53	1,699
16	72.5	1,410	739	0.021	50	1,758
15	67.5	1,458	688	0.019	46	1,818
14	62.5	1,506	635	0.018	43	1,877
13	57.5	1,554	580	0.016	39	1,937
12	54.125	555	190	0.005	13	692
11	51.625	2,142	683	0.019	46	2,671
10	47.5	3,380	954	0.027	64	4,213
9	42.5	1,866	448	0.012	30	2,327
8	37.5	1,920	384	0.011	26	2,393
7	32.5	1,973	320	0.009	22	2,460
6	27.5	2,027	257	0.007	17	2,527
5	22.5	2,081	197	0.006	13	2,594
4	17.5	2,134	140	0.004	9	2,661

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Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
3	12.5	2,188	88	0.002	6	2,728
2	7.5	2,242	43	0.001	3	2,795
1	2.5	2,295	9	0.000	1	2,862
Alcatel-Lucent RRH2X60-AWS	145	132	190	0.005	13	165
Alcatel-Lucent B13 RRH4x30-4R	145	173	250	0.007	17	216
Alcatel-Lucent RRH2x60	145	180	260	0.007	18	224
RFS DB-T1-6Z-8AB-0Z	145	88	127	0.004	9	110
Amphenol Antel WWX063X19G00	145	196	283	0.008	19	245
JMA Wireless X7C-FRO-660-VR0	145	217	313	0.009	21	271
Generic Round Platform with Handrails	145	2,500	3,606	0.101	244	3,117
Generic Round Platform with Handrails	113	2,500	2,505	0.070	169	3,117
Raycap DC6-48-60-0-8C-EV	135	16	21	0.001	1	20
Ericsson RRUS 4415 B25	135	138	179	0.005	12	172
Ericsson RRUS 4449 B5, B12	135	213	277	0.008	19	266
Ericsson RRUS 4478 B14	135	178	232	0.006	16	222
Raycap DC6-48-60-18-8C	135	32	42	0.001	3	40
Ericsson RRUS 32 (50.8 lbs)	135	152	198	0.006	13	190
CCI HPA65R-BU8A	135	162	210	0.006	14	202
Generic Round Sector Frame	135	900	1,169	0.033	79	1,122
KMW EPBQ-654L8H8-L2	135	516	670	0.019	45	643
Ericsson Radio 4460 B25+B66	123	327	371	0.010	25	408
Ericsson Radio 4480 B71+B85A	123	252	286	0.008	19	314
Ericsson Air6449 B41	123	312	354	0.010	24	389
RFS APXVAALL24 43-U-NA20	123	368	418	0.012	28	459
Generic Flat Platform with Handrails	123	2,500	2,835	0.079	192	3,117
Raycap RDIDC-9181-PF-48	113	22	22	0.001	1	27
Fujitsu TA08025-B605	113	225	225	0.006	15	281
Fujitsu TA08025-B604	113	192	192	0.005	13	239
JMA Wireless MX08FRO665-21	113	194	194	0.005	13	241
		58,747	35,829	1.000	2,422	73,241

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
37	147	265	390	0.011	26	226
36	144	143	205	0.006	14	122
35	141.5	587	818	0.023	55	501
34	139.5	201	274	0.008	19	172
33	137	530	703	0.020	48	452
32	132.5	724	915	0.026	62	617
31	127.5	765	915	0.026	62	653
30	124	318	365	0.010	25	271
29	121.5	506	564	0.016	38	432
28	117.5	877	931	0.026	63	749
27	114	363	368	0.010	25	309
26	111.5	565	555	0.016	37	482
25	107.5	974	908	0.025	61	831
24	102.5	1,016	883	0.025	60	867
23	99.25	313	259	0.007	18	267
22	96.75	1,513	1,208	0.034	82	1,291
21	93.75	1,108	845	0.024	57	945
20	91.25	616	451	0.013	31	525
19	87.5	1,267	874	0.024	59	1,081
18	82.5	1,315	832	0.023	56	1,122
17	77.5	1,363	787	0.022	53	1,163
16	72.5	1,410	739	0.021	50	1,204
15	67.5	1,458	688	0.019	46	1,244
14	62.5	1,506	635	0.018	43	1,285
13	57.5	1,554	580	0.016	39	1,326
12	54.125	555	190	0.005	13	474
11	51.625	2,142	683	0.019	46	1,828
10	47.5	3,380	954	0.027	64	2,884

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Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
9	42.5	1,866	448	0.012	30	1,592
8	37.5	1,920	384	0.011	26	1,638
7	32.5	1,973	320	0.009	22	1,684
6	27.5	2,027	257	0.007	17	1,730
5	22.5	2,081	197	0.006	13	1,775
4	17.5	2,134	140	0.004	9	1,821
3	12.5	2,188	88	0.002	6	1,867
2	7.5	2,242	43	0.001	3	1,913
1	2.5	2,295	9	0.000	1	1,959
Alcatel-Lucent RRH2X60-AWS	145	132	190	0.005	13	113
Alcatel-Lucent B13 RRH4x30-4R	145	173	250	0.007	17	148
Alcatel-Lucent RRH2x60	145	180	260	0.007	18	154
RFS DB-T1-6Z-8AB-0Z	145	88	127	0.004	9	75
Amphenol Antel WWX063X19G00	145	196	283	0.008	19	167
JMA Wireless X7C-FRO-660-VR0	145	217	313	0.009	21	185
Generic Round Platform with Handrails	145	2,500	3,606	0.101	244	2,133
Generic Round Platform with Handrails	113	2,500	2,505	0.070	169	2,133
Raycap DC6-48-60-0-8C-EV	135	16	21	0.001	1	14
Ericsson RRUS 4415 B25	135	138	179	0.005	12	118
Ericsson RRUS 4449 B5, B12	135	213	277	0.008	19	182
Ericsson RRUS 4478 B14	135	178	232	0.006	16	152
Raycap DC6-48-60-18-8C	135	32	42	0.001	3	27
Ericsson RRUS 32 (50.8 lbs)	135	152	198	0.006	13	130
CCI HPA65R-BU8A	135	162	210	0.006	14	138
Generic Round Sector Frame	135	900	1,169	0.033	79	768
KMW EPBQ-654L8H8-L2	135	516	670	0.019	45	440
Ericsson Radio 4460 B25+B66	123	327	371	0.010	25	279
Ericsson Radio 4480 B71+B85A	123	252	286	0.008	19	215
Ericsson Air6449 B41	123	312	354	0.010	24	266
RFS APXVAALL24 43-U-NA20	123	368	418	0.012	28	314
Generic Flat Platform with Handrails	123	2,500	2,835	0.079	192	2,133
Raycap RDIDC-9181-PF-48	113	22	22	0.001	1	19
Fujitsu TA08025-B605	113	225	225	0.006	15	192
Fujitsu TA08025-B604	113	192	192	0.005	13	164
JMA Wireless MX08FRO665-21	113	194	194	0.005	13	165
		58,747	35,829	1.000	2,422	50,128

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 (fr-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	-70.38	-2.42	0.00	-264.70	0.00	264.70	9,015.57	2,310.98	15,396	13,685.27	0.00	0.00	0.03
5.00	-67.58	-2.43	0.00	-252.59	0.00	252.59	8,875.00	2,255.64	14,667	13,146.83	0.00	0.00	0.03
10.00	-64.86	-2.42	0.00	-240.46	0.00	240.46	8,730.74	2,200.30	13,956	12,613.36	0.01	-0.01	0.03
15.00	-62.19	-2.42	0.00	-228.34	0.00	228.34	8,582.78	2,144.96	13,263	12,085.25	0.02	-0.01	0.03
20.00	-59.60	-2.41	0.00	-216.25	0.00	216.25	8,431.12	2,089.62	12,588	11,562.91	0.04	-0.02	0.03
25.00	-57.07	-2.40	0.00	-204.21	0.00	204.21	8,275.76	2,034.28	11,930	11,046.75	0.06	-0.02	0.03
30.00	-54.61	-2.38	0.00	-192.23	0.00	192.23	8,116.71	1,978.94	11,290	10,537.17	0.08	-0.03	0.03
35.00	-52.22	-2.35	0.00	-180.35	0.00	180.35	7,953.97	1,923.60	10,667	10,034.58	0.11	-0.03	0.03
40.00	-49.89	-2.33	0.00	-168.58	0.00	168.58	7,787.52	1,868.25	10,062	9,539.38	0.14	-0.04	0.02
45.00	-45.68	-2.26	0.00	-156.94	0.00	156.94	7,617.38	1,812.91	9,475	9,051.98	0.18	-0.04	0.02
50.00	-43.01	-2.22	0.00	-145.63	0.00	145.63	7,440.39	1,757.57	8,906	8,569.15	0.23	-0.05	0.02
53.25	-42.32	-2.21	0.00	-138.42	0.00	138.42	6,402.43	1,559.90	7,892	7,370.51	0.26	-0.05	0.03
55.00	-40.38	-2.17	0.00	-134.56	0.00	134.56	6,352.05	1,542.69	7,718	7,231.09	0.28	-0.05	0.03
60.00	-38.50	-2.13	0.00	-123.71	0.00	123.71	6,205.61	1,493.49	7,234	6,837.10	0.33	-0.06	0.02
65.00	-36.68	-2.08	0.00	-113.08	0.00	113.08	6,055.47	1,444.30	6,765	6,449.91	0.40	-0.06	0.02
70.00	-34.92	-2.03	0.00	-102.66	0.00	102.66	5,901.64	1,395.11	6,313	6,069.91	0.46	-0.07	0.02
75.00	-33.23	-1.98	0.00	-92.49	0.00	92.49	5,697.71	1,345.92	5,875	5,651.49	0.54	-0.07	0.02
80.00	-31.59	-1.93	0.00	-82.58	0.00	82.58	5,489.47	1,296.72	5,454	5,243.89	0.61	-0.08	0.02
85.00	-30.01	-1.87	0.00	-72.95	0.00	72.95	5,281.22	1,247.53	5,048	4,851.54	0.70	-0.08	0.02
90.00	-29.24	-1.84	0.00	-63.61	0.00	63.61	5,072.97	1,198.34	4,658	4,474.45	0.79	-0.09	0.02
92.50	-27.86	-1.78	0.00	-59.01	0.00	59.01	4,968.85	1,173.74	4,468	4,291.62	0.83	-0.09	0.02
95.00	-25.97	-1.70	0.00	-54.56	0.00	54.56	4,864.72	1,149.15	4,283	4,112.61	0.88	-0.09	0.02
98.50	-25.58	-1.68	0.00	-48.62	0.00	48.62	4,225.80	998.22	3,694	3,551.63	0.95	-0.10	0.02

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Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-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
100.00	-24.31	-1.62	0.00	-46.10	0.00	46.10	4,171.13	985.31	3,599	3,459.86	0.98	-0.10	0.02
105.00	-23.10	-1.56	0.00	-37.99	0.00	37.99	3,988.92	942.26	3,291	3,162.63	1.09	-0.10	0.02
110.00	-22.39	-1.52	0.00	-30.20	0.00	30.20	3,806.70	899.22	2,997	2,878.74	1.20	-0.11	0.02
113.00	-18.04	-1.28	0.00	-25.64	0.00	25.64	3,697.37	873.39	2,828	2,714.82	1.27	-0.11	0.01
115.00	-16.94	-1.21	0.00	-23.08	0.00	23.08	3,624.48	856.18	2,717	2,608.21	1.32	-0.11	0.01
120.00	-16.31	-1.17	0.00	-17.02	0.00	17.02	3,442.27	813.13	2,451	2,351.02	1.44	-0.12	0.01
123.00	-11.23	-0.85	0.00	-13.50	0.00	13.50	3,332.94	787.31	2,298	2,203.12	1.51	-0.12	0.01
125.00	-10.28	-0.79	0.00	-11.80	0.00	11.80	3,260.05	770.09	2,198	2,107.18	1.57	-0.12	0.01
130.00	-9.37	-0.72	0.00	-7.86	0.00	7.86	3,077.84	727.05	1,960	1,876.69	1.69	-0.12	0.01
135.00	-5.84	-0.47	0.00	-4.24	0.00	4.24	2,895.62	684.00	1,734	1,659.55	1.82	-0.12	0.01
139.00	-5.59	-0.45	0.00	-2.37	0.00	2.37	2,749.85	649.57	1,564	1,495.45	1.93	-0.13	0.00
140.00	-4.85	-0.39	0.00	-1.92	0.00	1.92	2,713.40	640.96	1,523	1,455.76	1.95	-0.13	0.00
143.00	-4.68	-0.38	0.00	-0.75	0.00	0.75	1,513.88	361.08	846	806.26	2.03	-0.13	0.00
145.00	0.00	0.00	0.00	0.00	0.00	0.00	1,483.19	351.24	800	768.18	2.09	-0.13	0.00
149.00	0.00	0.00	0.00	0.00	0.00	0.00	1,403.62	331.56	713	685.85	2.19	-0.13	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 (fr-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	-48.17	-2.42	0.00	-263.30	0.00	263.30	9,015.57	2,310.98	15,396	13,685.27	0.00	0.00	0.03
5.00	-46.26	-2.42	0.00	-251.19	0.00	251.19	8,875.00	2,255.64	14,667	13,146.83	0.00	0.00	0.02
10.00	-44.39	-2.42	0.00	-239.07	0.00	239.07	8,730.74	2,200.30	13,956	12,613.36	0.01	-0.01	0.02
15.00	-42.57	-2.41	0.00	-226.97	0.00	226.97	8,582.78	2,144.96	13,263	12,085.25	0.02	-0.01	0.02
20.00	-40.79	-2.40	0.00	-214.91	0.00	214.91	8,431.12	2,089.62	12,588	11,562.91	0.03	-0.02	0.02
25.00	-39.06	-2.39	0.00	-202.90	0.00	202.90	8,275.76	2,034.28	11,930	11,046.75	0.05	-0.02	0.02
30.00	-37.38	-2.37	0.00	-190.96	0.00	190.96	8,116.71	1,978.94	11,290	10,537.17	0.08	-0.03	0.02
35.00	-35.74	-2.34	0.00	-179.12	0.00	179.12	7,953.97	1,923.60	10,667	10,034.58	0.11	-0.03	0.02
40.00	-34.15	-2.32	0.00	-167.39	0.00	167.39	7,787.52	1,868.25	10,062	9,539.38	0.14	-0.04	0.02
45.00	-31.26	-2.25	0.00	-155.81	0.00	155.81	7,617.38	1,812.91	9,475	9,051.98	0.18	-0.04	0.02
50.00	-29.43	-2.21	0.00	-144.55	0.00	144.55	7,440.39	1,757.57	8,906	8,569.15	0.23	-0.04	0.02
53.25	-28.96	-2.20	0.00	-137.38	0.00	137.38	6,402.43	1,559.90	7,892	7,370.51	0.26	-0.05	0.02
55.00	-27.64	-2.16	0.00	-133.54	0.00	133.54	6,352.05	1,542.69	7,718	7,231.09	0.28	-0.05	0.02
60.00	-26.35	-2.11	0.00	-122.75	0.00	122.75	6,205.61	1,493.49	7,234	6,837.10	0.33	-0.06	0.02
65.00	-25.11	-2.07	0.00	-112.18	0.00	112.18	6,055.47	1,444.30	6,765	6,449.91	0.39	-0.06	0.02
70.00	-23.90	-2.02	0.00	-101.83	0.00	101.83	5,901.64	1,395.11	6,313	6,069.91	0.46	-0.07	0.02
75.00	-22.74	-1.97	0.00	-91.73	0.00	91.73	5,697.71	1,345.92	5,875	5,651.49	0.53	-0.07	0.02
80.00	-21.62	-1.91	0.00	-81.89	0.00	81.89	5,489.47	1,296.72	5,454	5,243.89	0.61	-0.08	0.02
85.00	-20.54	-1.85	0.00	-72.32	0.00	72.32	5,281.22	1,247.53	5,048	4,851.54	0.69	-0.08	0.02
90.00	-20.01	-1.82	0.00	-63.05	0.00	63.05	5,072.97	1,198.34	4,658	4,474.45	0.78	-0.09	0.02
92.50	-19.07	-1.77	0.00	-58.49	0.00	58.49	4,968.85	1,173.74	4,468	4,291.62	0.83	-0.09	0.02
95.00	-17.77	-1.68	0.00	-54.08	0.00	54.08	4,864.72	1,149.15	4,283	4,112.61	0.88	-0.09	0.02
98.50	-17.51	-1.67	0.00	-48.19	0.00	48.19	4,225.80	998.22	3,694	3,551.63	0.95	-0.10	0.02
100.00	-16.64	-1.61	0.00	-45.69	0.00	45.69	4,171.13	985.31	3,599	3,459.86	0.98	-0.10	0.02
105.00	-15.81	-1.54	0.00	-37.65	0.00	37.65	3,988.92	942.26	3,291	3,162.63	1.08	-0.10	0.02
110.00	-15.33	-1.51	0.00	-29.93	0.00	29.93	3,806.70	899.22	2,997	2,878.74	1.19	-0.11	0.01
113.00	-12.35	-1.27	0.00	-25.41	0.00	25.41	3,697.37	873.39	2,828	2,714.82	1.26	-0.11	0.01
115.00	-11.60	-1.20	0.00	-22.88	0.00	22.88	3,624.48	856.18	2,717	2,608.21	1.31	-0.11	0.01
120.00	-11.16	-1.16	0.00	-16.87	0.00	16.87	3,442.27	813.13	2,451	2,351.02	1.43	-0.12	0.01
123.00	-7.69	-0.84	0.00	-13.38	0.00	13.38	3,332.94	787.31	2,298	2,203.12	1.50	-0.12	0.01
125.00	-7.03	-0.78	0.00	-11.69	0.00	11.69	3,260.05	770.09	2,198	2,107.18	1.55	-0.12	0.01
130.00	-6.42	-0.72	0.00	-7.79	0.00	7.79	3,077.84	727.05	1,960	1,876.69	1.68	-0.12	0.01
135.00	-4.00	-0.46	0.00	-4.20	0.00	4.20	2,895.62	684.00	1,734	1,659.55	1.81	-0.12	0.00
139.00	-3.82	-0.44	0.00	-2.35	0.00	2.35	2,749.85	649.57	1,564	1,495.45	1.91	-0.12	0.00
140.00	-3.32	-0.39	0.00	-1.91	0.00	1.91	2,713.40	640.96	1,523	1,455.76	1.94	-0.12	0.00
143.00	-3.20	-0.37	0.00	-0.75	0.00	0.75	1,513.88	361.08	846	806.26	2.02	-0.13	0.00
145.00	0.00	0.00	0.00	0.00	0.00	0.00	1,483.19	351.24	800	768.18	2.07	-0.13	0.00
149.00	0.00	0.00	0.00	0.00	0.00	0.00	1,403.62	331.56	713	685.85	2.18	-0.13	0.00

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ANALYSIS SUMMARY

	Reactions						Max Usage	
Load Case	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	34.87	0.00	70.48	0.00	0.00	3531.59	0.00	0.27
0.9D + 1.0W Normal	34.86	0.00	52.85	0.00	0.00	3516.46	0.00	0.26
1.2D + 1.0Di + 1.0Wi Normal	9.50	0.00	88.31	0.00	0.00	929.96	0.00	0.08
1.2D + 1.0Ev + 1.0Eh Normal	2.43	0.00	70.38	0.00	0.00	264.70	0.00	0.03
0.9D - 1.0Ev + 1.0Eh Normal	2.42	0.00	48.17	0.00	0.00	263.30	0.00	0.02
1.0D + 1.0W Service Normal	8.06	0.00	58.75	0.00	0.00	814.60	0.00	0.07

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Base Plate & Anchor Rod Analysis

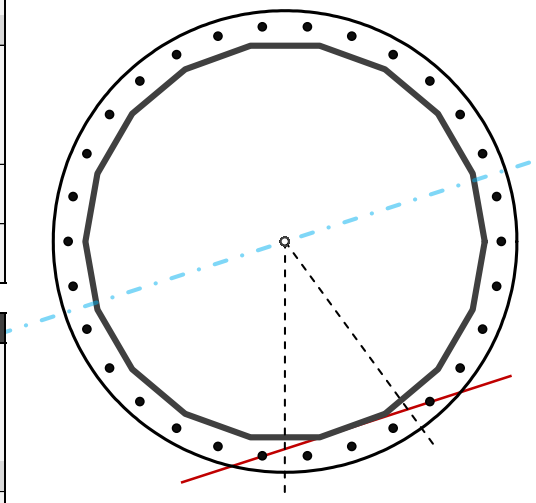
Pole Dimensions		
Number of Sides	18	-
Diameter	74.32	in
Thickness	9/16	in
Orientation Offset		°

Base Reactions		
Moment, Mu	3,531.6	k-ft
Axial, Pu	70.5	k
Shear, Vu	34.9	k
Neutral Axis	198	°

Report Capacities		
Component	Capacity	Result
Base Plate	18%	Pass
Anchor Rods	30%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ø	87.75	in
Thickness	2 3/4	in
Grade	A572-50	
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Clip	N/A	in
Orientation Offset		°
Anchor Rod Detail	d	η=0.5
Clear Distance	4	in
Applied Moment, Mu	436.6	k
Bending Stress, ϕMn	2478.8	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	30	-
Diameter, ø	2 1/4	in
Bolt Circle	82	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	8.6	in
Orientation Offset		°
Applied Force, Pu	73.3	k
Anchor Rods, ϕPn	243.6	k



Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	34.9	3531.6	1.00
Anchor Rod Forces	34.9	3531.6	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^2	in^2	in^4	#	in^4
Pole	129.6795	7.2044	0.7627		88198.55
Bolt	3.9761	3.2477	0.8393	4.5	77240.71
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	Round	-
Diameter, D	87.75	in
Thickness, t	2.75	in
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Base Plate Chord	46.654	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	4	-

Anchor Rods		
Anchor Rod Quantity, N	30	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	82	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	73.3	k
Applied Shear, Vu	0.2	k
Compressive Capacity, ϕPn	243.6	k
Tensile Capacity, ϕRnt	0.301	OK
Interaction Capacity	0.302	OK

External Base Plate		
Chord Length AA	39.977	in
Additional AA	5.500	in
Section Modulus, Z	85.981	in^3
Applied Moment, Mu	436.6	k-ft
Bending Capacity, ϕMn	3869.1	k-ft
Capacity, Mu/ϕMn	0.113	OK
Chord Length AB	37.761	in
Additional AB	5.500	in
Section Modulus, Z	81.790	in^3
Applied Moment, Mu	312.1	k-ft
Bending Capacity, ϕMn	3680.6	k-ft
Capacity, Mu/ϕMn	0.085	OK
Bend Line Length	29.136	in
Additional Bend Line	0.000	in
Section Modulus, Z	55.085	in^3
Applied Moment, Mu	436.6	k-ft
Bending Capacity, ϕMn	2478.8	k-ft
Capacity, Mu/ϕMn	0.176	OK

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in^3
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Site Name: Easton, CT
Site Number: 207956
Tower Type: MP
Design Loads (Factored) - Analysis per TIA-222-H Standards

Monolithic Mat & Pier Foundation Analysis

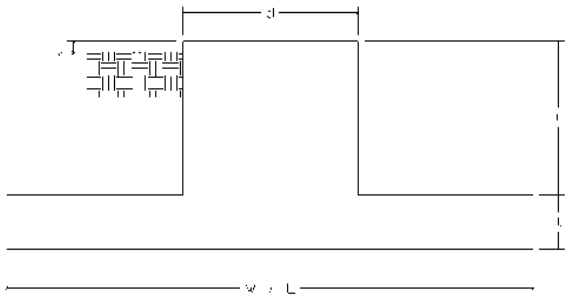
Foundation Analysis Parameters		
Design / Analysis / Mapping:	Analysis	-
Compression/Leg:	70.5	k
Uplift/Leg:	0.0	k
Total Shear:	34.9	k
Moment:	3,531.6	k-ft
Tower + Appurtenance Weight:	70.5	k
Depth to Base of Foundation (l + t - h):	6	ft
Diameter of Pier (d):	9	ft
Length of Pier (l):	4.25	ft
Height of Pier above Ground (h):	0.5	ft
Width of Pad (W):	33.5	ft
Length of Pad (L):	33.5	ft
Thickness of Pad (t):	2.25	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:	165	pcf
Unit Weight of Water:	62.4	pcf
Unit Weight of Soil Below Water Table:	102.6	pcf
Friction Angle of Uplift:	15	°
Coefficient of Shear Friction:	0.7	-
Ultimate Compressive Bearing Pressure:	24,000	psf
Ultimate Passive Pressure on Pad Face:	0	psf
$f_{Soil\ and\ Concrete\ Weight}$:	0.9	-
f_{Soil}:	0.75	-

Overturning Moment Usage		
Design OTM:	3758.5	k-ft
OTM Resistance:	17673.4	k-ft
Design OTM / OTM Resistance:	21%	Pass

Soil Bearing Pressure Usage		
Net Bearing Pressure:	1312	psf
Factored Nominal Bearing Pressure:	18000	psf
Factored Nominal (Net) Bearing Pressure:	7%	Pass
Load Direction Controling Design Bearing Pressure:	*Diagonal to Pad Edge*	

Sliding Factor of Safety		
Ultimate Friction Resistance:	793.2	k
Ultimate Passive Pressure Resistance:	0.0	k
Total Factored Sliding Resistance:	594.9	k
Sliding Design / Sliding Resistance:	6%	Pass

Foundation Steel Parameters		
Shear/Leg (Compression):	23.3	k
Shear/Leg (Uplift):	19.2	k
Concrete Strength (f'_c):	4,500	psi
Pad Tension Steel Depth:	23.44	in
Dead Load Factor:	0.9	-
f_{Shear}:	0.75	-
$f_{Flexure\ /\ Tension}$:	0.9	-
$f_{Compression:}$	0.65	-
b:	0.83	-
Bottom Pad Rebar Size #:	9	-
# of Bottom Pad Rebar:	79	-
Pad Bottom Steel Area:	79.00	in^2
Pad Steel F_y:	60,000	psi
Top Pad Rebar Size #:	9	-
# of Top Pad Rebar:	79	-
Pad Top Steel Area:	79.00	in^2
Pier Rebar Size #:	9	-
Pier Steel Area (Single Bar):	1.00	in^2
# of Pier Rebar:	60	-
Pier Steel F_y:	60,000	psi
Pier Cage Diameter:	99.6	in
Rebar Strain Limit:	0.008	-
Steel Elastic Modulus:	29,000	ksi
Tie Rebar Size #:	5	-
Tie Steel Area (Single Bar):	0.31	in^2
Tie Spacing:	12	in
Tie Steel F_y:	60,000	psi
Clear Cover:	3	in



Pad Strength Capacity			
Factored One Way Shear (V_u):	267.5	k	
One Way Shear Capacity (fV_c):	948.1	k	*ACI 318-14 25.5.5.1*
V_u / fV_c:	28%	Pass	
Load Direction Controling Shear Capacity:	*Parallel to Pad Edge*		
Lower Steel Pad Factored Moment (M_u):	2077.0	k-ft	
Lower Steel Pad Moment Capacity (fM_n):	7866.3	k-ft	*ACI 318-14 22.3.1.1*
M_u / fM_n:	26%	Pass	
Load Direction Controling Flexural Capacity:	*Parallel to Pad Edge*		
Upper Steel Pad Factored Moment (M_u):	878.2	k-ft	
Upper Steel Pad Moment Capacity (fM_n):	7866.3	k-ft	
M_u / fM_n:	11%	Pass	
Lower Pad Flexural Reinforcement Ratio:	0.0084		*OK - ACI 318-14 7.6.1.1 & 8.6.1.1*
Upper Pad Flexural Reinforcement Ratio:	0.0084		*OK - ACI 318-14 7.6.1.1 & 8.6.1.1*
Pad Shrinkage Reinforcement Ratio:	0.0168		*OK - ACI 318-14 24.4.3.2*
Lower Pad Reinforcement Spacing:	5.1	in	*OK - ACI 318-14 7.7.2.3, 8.7.2.2, & 24.4.3.3*
Upper Pad Reinforcement Spacing:	5.1	in	*OK - ACI 318-14 7.7.2.3, 8.7.2.2, & 24.4.3.3*
Ultimate Punching Shear Stress, v_u:	46.60	psi	*ACI 318-14 R8.4.4.2.3*
Nominal Punching Shear Capacity (f_cv_c):	201.2	psi	*ACI 318-14 22.6.5.2*
v_u / f_cv_c:	23%	Pass	
Pier Moment Pad Flexure Transfer Ratio, γ_f:	0.60		*TIA-222-H 9.4.2*
Moment Transfer Effective Flexural Width, B_{eff}:	15.75	ft	*TIA-222-H 9.4.2*
Moment Transfer Through Pad Flexure:	26495.46	k-in	*TIA-222-H 9.4.2*
Moment Transfer Flexural Capacity ($fM_{sc,f}$):	45657.22	k-in	
g_fM_{sc} / $fM_{sc,f}$:	0%	Pass	

Pier Strength Capacity			
Factored Moment in Pier (M_u):	3679.9	k-ft	
Pier Moment Capacity (fM_n):	13151.8	k-ft	
M_u / fM_n:	28%	Pass	
Factored Shear in Pier (V_u):	34.9	k	
Pier Shear Capacity (fV_n):	1126.2	k	*ACI 318-14 22.5.1.1*
V_u / fV_c:	3%	Pass	
Pier Shear Reinforcement Ratio:	0.0004		*OK - No Ties Necessary for Shear - ACI11.5.6.1*
Factored Tension in Pier (T_u):	0.0	k	
Pier Tension Capacity (fT_n):	3240.0	k	
T_u / fT_n:	0%	Pass	
Factored Compression in Pier (P_u):	70.5	k	
Pier Compression Capacity (fP_n):	18132.9	k	*ACI 318-14 22.4.2.1*
P_u / fP_n:	0%	Pass	
Pier Compression Reinforcement Ratio:	0.007		*OK - TIA-222-H 9.4.1*
Minimum Depth to Develop Vertical Rebar:	34	in	*ACI 318-14 25.4.2.3*
Minimum Hook Development Length:	21	in	*ACI 318-14 25.4.3.1*
Minimum Mat Thickness / Edge Distance from Pier:	24.0	in	
Minimum Foundation Depth:	5.10	ft	
$M_u/f_BM_n + T_u/f_TT_n$:	28%	Pass	

AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

telamon
Tower Engineering PLLC

Antenna Mount Analysis Report

ATC Site Name	:	**Easton**
ATC Asset Number	:	**207956**
Engineering Number	:	**13700315_C8_05**
Mount Elevation	:	**114.67 ft**
Carrier	:	**Dish Wireless L.L.C.**
Carrier Site Name	:	**NJJER01097B**
Carrier Site Number	:	**NJJER01097B**
Site Location	:	**515 Morehouse Road** **Easton, CT 6612** **41.23559796, -73.28536131**
County	:	**Fairfield**
Date	:	**March 22, 2022**
Max Usage	:	**53%**
Result	:	**Contingent Pass*** ***See conclusion for requirements**

Prepared By:
Gunjan Donode
Telamon Tower Engineering, PLLC

Reviewed By:
William Holt, P.E.
Telamon Tower Engineering, PLLC

Digitally signed by William Holt
Date: 2022.03.22 19:40:29 -04'00'

STATE OF CONNECTICUT
WILLIAM HOLT
PEN.35568
LICENSED
PROFESSIONAL ENGINEER

William Holt, PE
Director of Engineering
License No. 35568 Expires: 01/31/2023

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Calculations ..... Attached

Introduction

The proposed equipment is to be mounted to the proposed Commscope MC-PK8-DSH Platform w/ Support Rails. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

Supporting Documents

Structural Data	Site Photos, dated March 3, 2021 Assembly Drawing by Commscope, Document #MC-PK8-DSH, Rev. A, dated March 17, 2021 Assembly Drawing by Andrew, Part #XP-197-S, Rev. A, dated April 27, 2011
Previous Analyses	Tower SA by ATC, Engineering #13741737_C3_02, dated January 11, 2022
Construction Drawings	CDs by Dish Wireless, Project #207956-13700315_D2, Rev. 0, dated November 3, 2021
Loading Data	ATC Application, Project #13700315, Revision #1, dated September 22, 2021

Analysis

Codes	TIA-222-H
Basic Wind Speed	118 mph, V_{ult} (3-Second Gust)
Basic Wind Speed w/ Ice	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
Exposure Category	C
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Risk Category	II
Maintenance Live Load	L_M: 500 lb
Spectral Response	S_s: 0.22; S_1: 0.06; Site Class: D

Conclusion

Based on the analysis, the antenna mount meets the requirements per the applicable codes listed above. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

- **Install (1) Commscope MC-PK8-DSH Platform Mount at ±113' elevation.**
- **Install (3) Commscope MT54696, 8 ft. long mount pipes included in the Commscope MC-PK8-DSH platform mount kit at each sector of the platform mount (9 Total) as shown.**
- **Install (1) 5ft. long, Pipe 2 STD, A53 Gr. B, mount pipe at alpha sector of the platform mount (1 total) as shown. Connect to stand-off horizontal HSS tube with (1) Andrew XP-197-S crossover plate kit (1 total).**
- **All mount pipes are to be installed equidistant from each other as shown in the assembly drawings.**
- **Install existing and proposed antennas such that they are vertically centered on the platform base horizontal member. Install existing and proposed RRUS behind the antennas.**

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

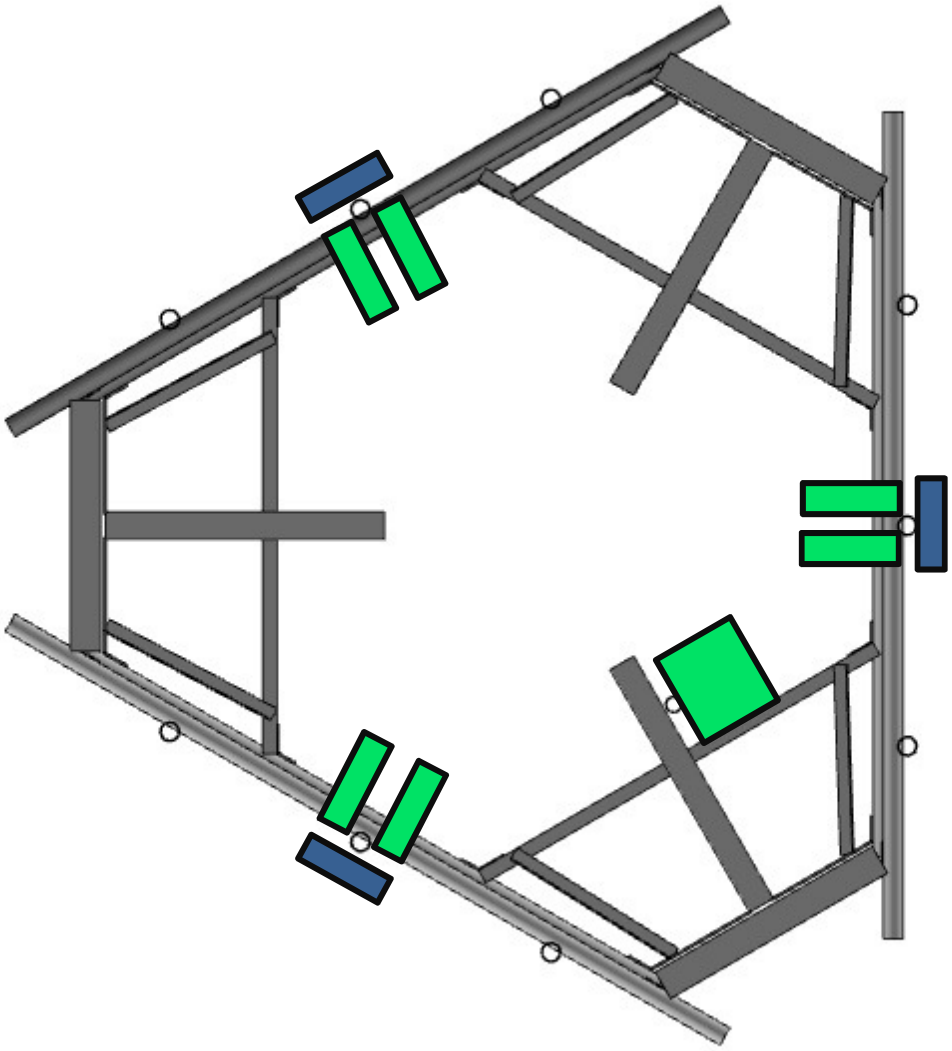
Antenna Loading

Elevation (ft)		Antennas	
Mount	Rad.	#	Name
114.7	113.0	3	Jma Wireless MX08FRO665-21
		1	Raycap RDIDC-9181-PF-48
		3	Fujitsu TA08025-B605
		3	Fujitsu TA08025-B604

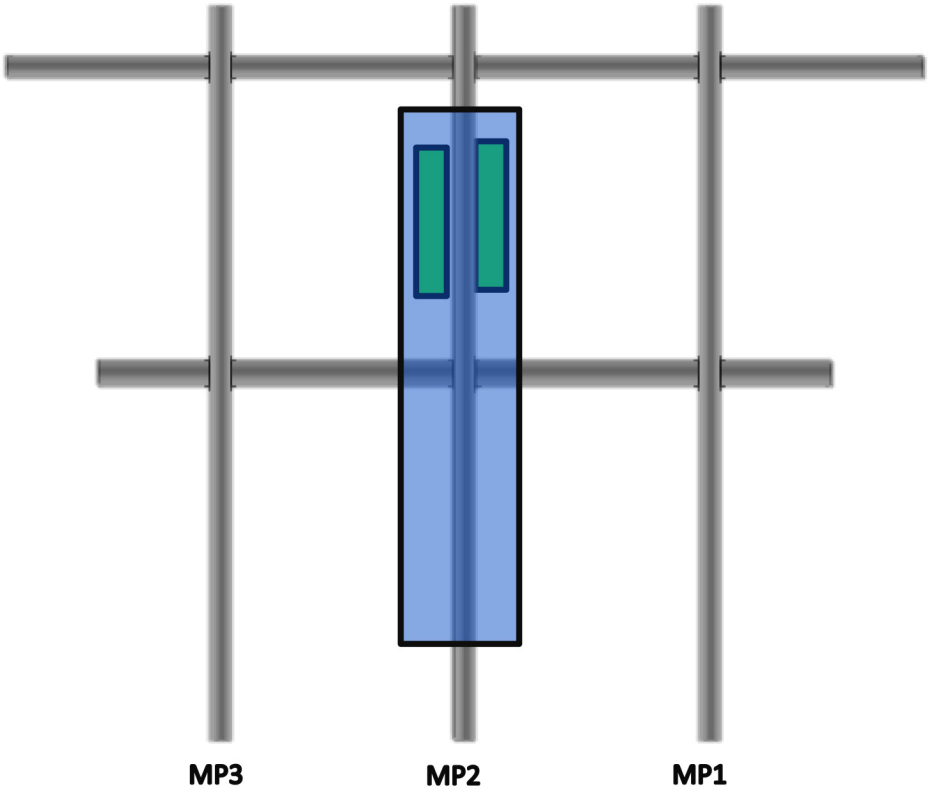
Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Tower to Mount Connection	53%	Pass
Stand-Off Horizontals	49%	Pass
Bracing Members	39%	Pass
Mount Pipes	16%	Pass
Support Rail	13%	Pass
Platform Base	8%	Pass

Equipment Layout Plan View



Equipment Layout Front Elevation View



Total #	Equipment	Mount Pipe Position
3	Jma Wireless MX08FRO665-21	P2
1	Raycap RDIDC-9181-PF-48	Stand-off (Alpha)
3	Fujitsu TA08025-B605	P2
3	Fujitsu TA08025-B604	P2

Standard Conditions

This analysis is inclusive of the antenna supporting frames/mounts and all recorded connections that will support the equipment listed in this report. It considers only the theoretical capacity of structural components and it is not a condition assessment. The validity of the analysis may be dependent on the accuracy of structural information supplied by others. The client is responsible for verifying this information. If any provided information is revised after completion of this analysis, Telamon Tower Engineering, PLLC should be notified immediately to revise results.

This analysis assumes the following:

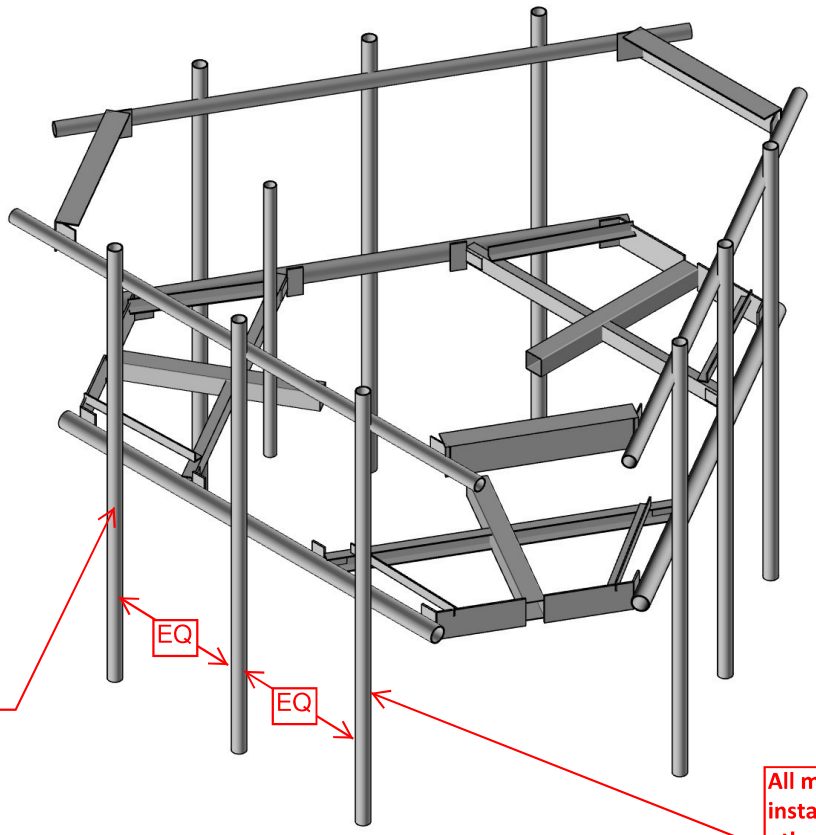
1. The tower or other superstructure and mounts (if existing) were properly constructed as per the original design and have been properly maintained in accordance with applicable code standards.
2. Member sizes and strengths are accurate as supplied or are assumed as stated in the calculations.
3. In the absence of sufficient design information, all welds and connections are assumed to develop at least the capacity of the connected member, unless otherwise stated in this analysis.
4. All prior structural modifications, if any, are assumed to be correctly installed and fully effective.
5. The loading configuration is complete and accurate as supplied and/or as modeled in the previous analysis. All appurtenances are assumed to be properly installed and supported as per manufacturer requirements.
6. Some conservative assumptions may be used regarding appurtenances and their projected areas based on careful interpretation of data supplied, previous experience and standard industry practice.
7. Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided exercising a level of care and diligence equivalent to the standard of our profession. No warranty or guarantee, either expressed or implied, is offered. All services are confidential in nature and this report will not be released to any other party without the client's consent. The use of this analysis is limited to the expressed purpose for which it was commissioned and it may not be reused, copied or disseminated for any other purpose without consent from Telamon Tower Engineering, PLLC.

All services were performed, results obtained and recommendations made in accordance with generally accepted engineering principles and practices. Telamon Tower Engineering, PLLC is not responsible for the conclusions, opinions or recommendations made by others based on the information supplied in this analysis.

It is not possible to have the fully detailed information necessary to perform a complete and thorough analysis of every structural sub-component of an existing structure. The structural analysis by Telamon Tower Engineering, PLLC verifies the adequacy of the primary members of the structure. Telamon Tower Engineering, PLLC provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, gusset, etc.

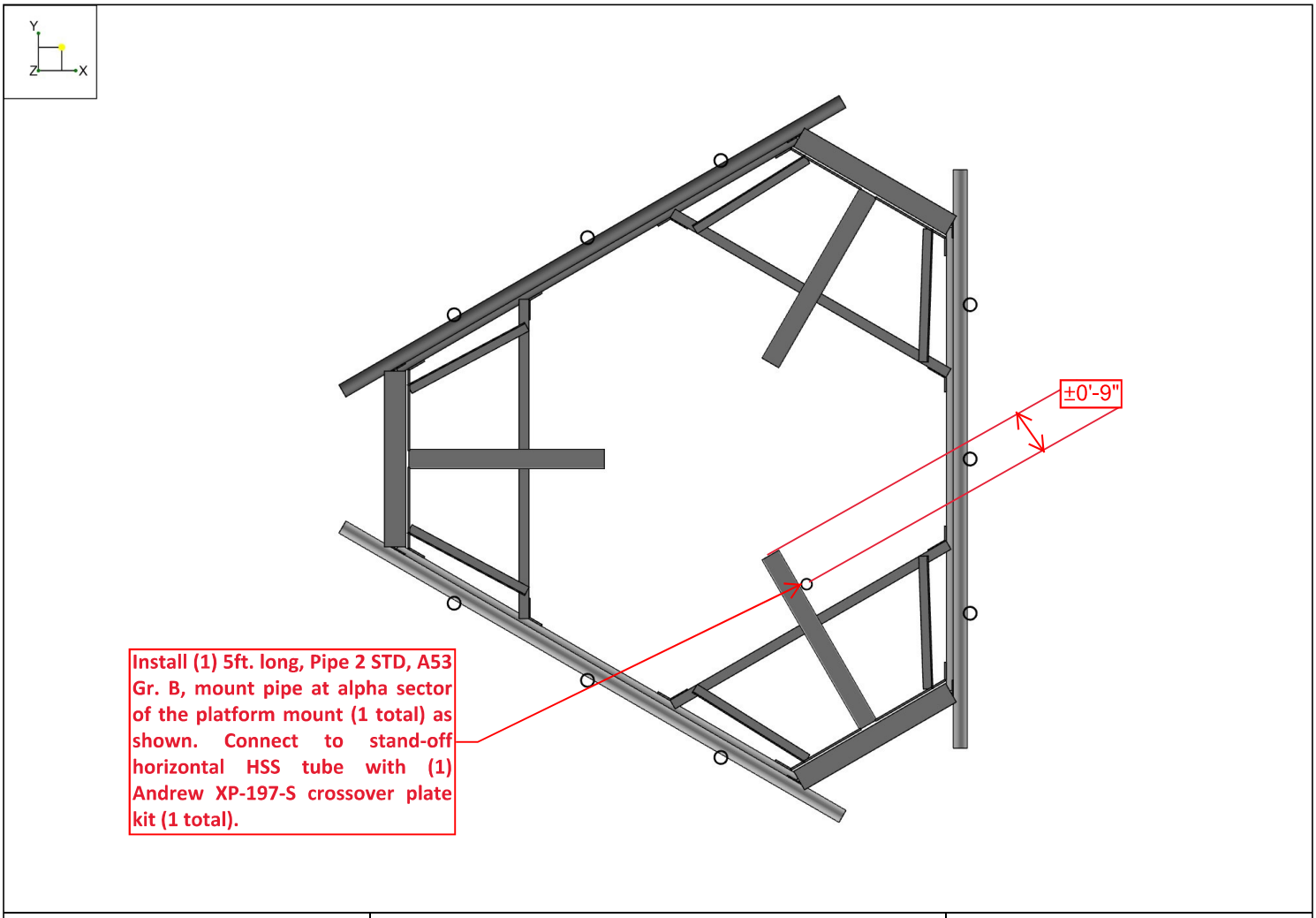
Install (1) Commscope MC-PK8-DSH Platform Mount at ±113' elevation.



Install (3) Commscope MT54696, 8 ft. long mount Pipes included in the Commscope MC-PK8-DSH platform mount kit at each sector of the platform mount (9 Total) as shown.

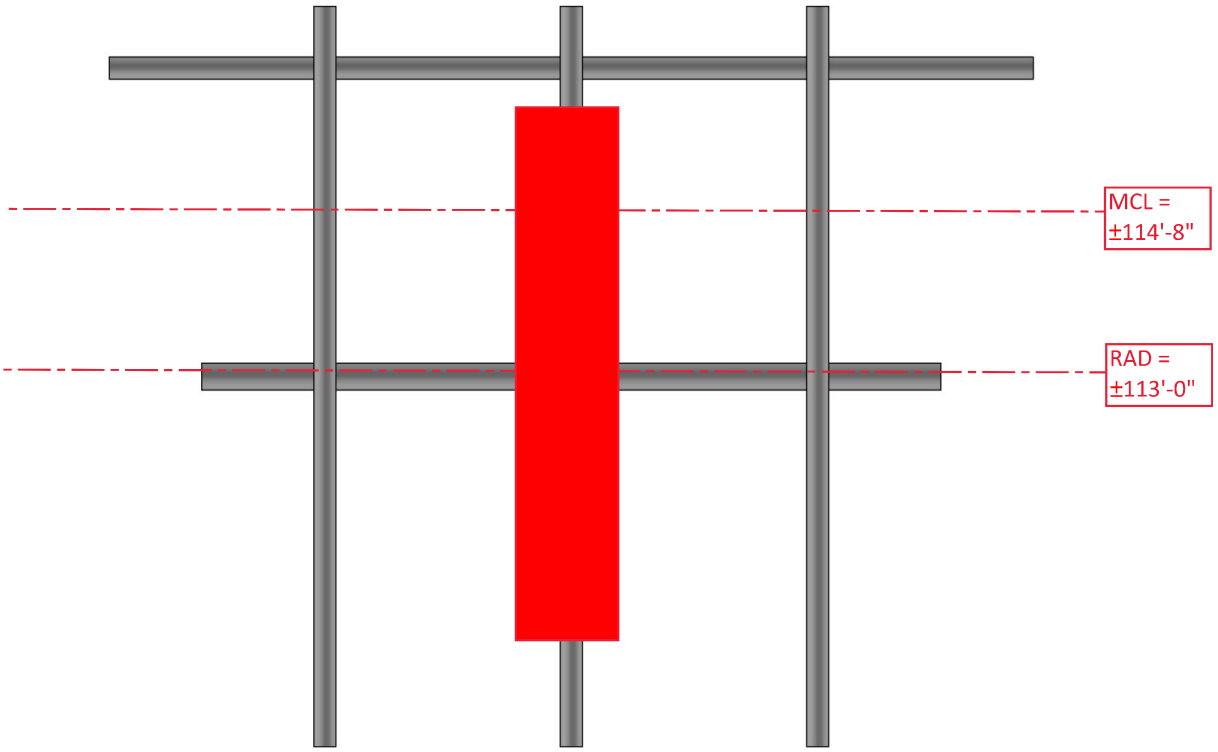
All mount pipes are to be installed equidistant from each other as shown in the assembly drawings.

Telamon CLS	41124-13700315_C8_05-Easton	IN-1
GD		Mar 22, 2022
41124-13700315_C8_05-01-MA	Proposed Mount - Rendered	207956_13700315_C8_05_DISH WIRELESS …



Telamon CLS	41124-13700315_C8_05-Easton	IN-2
GD		Mar 22, 2022
41124-13700315_C8_05-01-MA	Proposed Mount - Plan View	207956_13700315_C8_05_DISH WIRELESS …

Install existing and proposed antennas such that they are vertically centered about the platform base horizontal member. Install existing and proposed RRUS behind the antennas.



Telamon CLS	41124-13700315_C8_05-Easton	IN-3
GD		Mar 22, 2022
41124-13700315_C8_05-01-MA	Proposed Mount - Front View	207956_13700315_C8_05_DISH WIRELESS …

NOTES:

1.0 GENERAL
- 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS
- 1.2 FOR PATENTS, SEE WWW.CS-PAT.COM

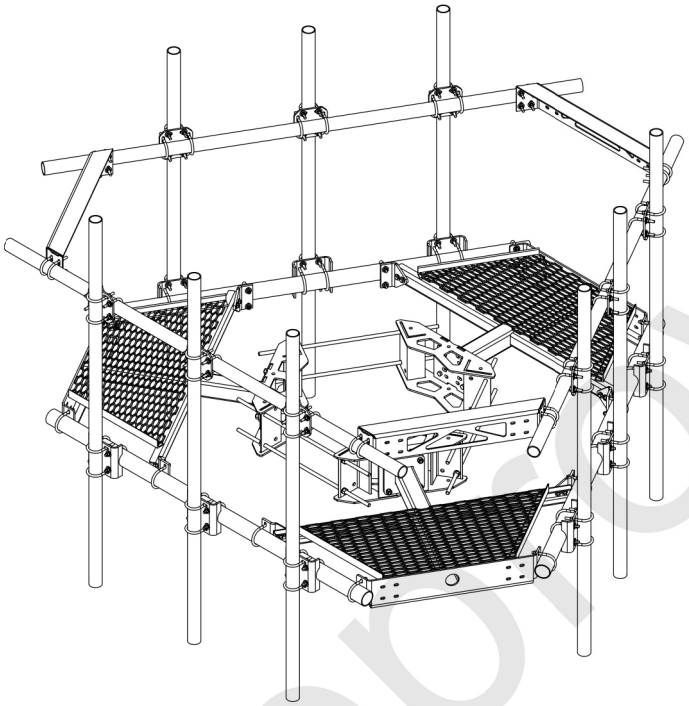
2.0 DESIGN NOTES
- 2.1 TORQUE U-BOLTS TO 44 FT-LBS

3.0 MANUFACTURING/SPECIAL REQUIREMENTS

4.0 TEST

5.0 PACKAGING

REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
A	10272PC	INITIAL RELEASE	HDAI	03/08/2021



Approved

PATENT PENDING

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES
1 PLACE .X ± .25 | 3 PLACE .XXX ± 0.06
2 PLACE .XX ± 0.12 | ANGLES ± 2°

SAP MATERIAL MASTER: MC-PK8-DSH

FINISH: GALV A123

MATERIAL: A500, A1011/A1018

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET PER ANSI Y 14.5M-1994

	NAME	DATE
CE	MRC	02/17/20
RW	ROGHANSON	03/16/2021
AD	BCROSS	03/17/2021
RE	FA1024	02/27/2020

ECN 10272PC

TITLE: **LOW PROFILE PLATFORM FACE**

SCALE: 1:32

DOCUMENT NO.: MC-PK8-DSH

DENSITY	lbs/in³
MASS	lbs
VOLUME	in³
SURFACE AREA	in²
HEIGHT	96"
LENGTH	46"
WIDTH	29"

SIZE: C

Auth Group: INSL

MODEL			DRAWING			SHEET
VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	
01	AD		00	AD	A	1 OF 3

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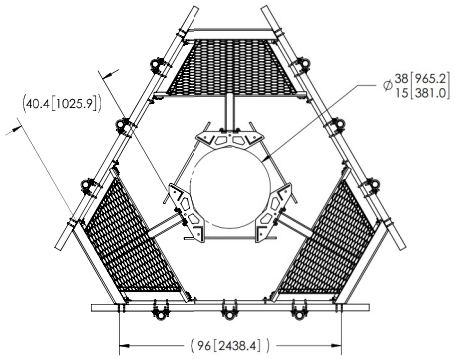
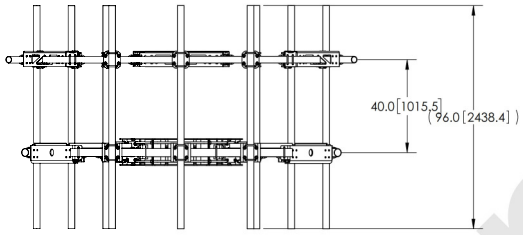
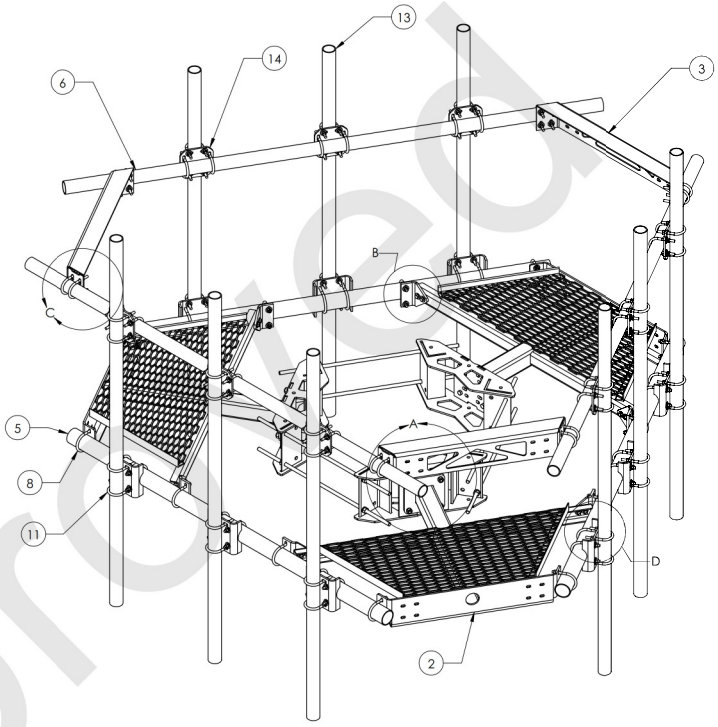
NOTES:







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1	MC-RM1550-3	12' - 50' OD RINGMOUNT	1
2	MTC300602	SECTOR WELDMENT FOR SNUB NOSE PLATFORM	3
3	MT195801	Corner Weldment Snub Nose Handrail	3
4	GB-0520A	5/8" X 2" GALV BOLT KIT (A325)	12
5	MT54796	3.50" OD X 96" GALV PIPE	3
6	MT546120	2.875" O.D. X 120" PIPE	3
7	GWF-04	1/2" GALV FLAT WASHER	12
8	GUB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12
9	MTC300618	MOUNTING PLATE FOR MT-196	6
10	GB-04205	1/2" X 2" GALV BOLT KIT	12
11	MT-219M-H	3.5" OD X 2-7/8" OD Clamp Bracket Assembly	9
12	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	12
13	MT54696	Ø2.875" O.D. X 96 PIPE	9
14	XP-2525	CROSSOVER PLATE KIT, 2-7/8 OD X 2-7/8 OD	9

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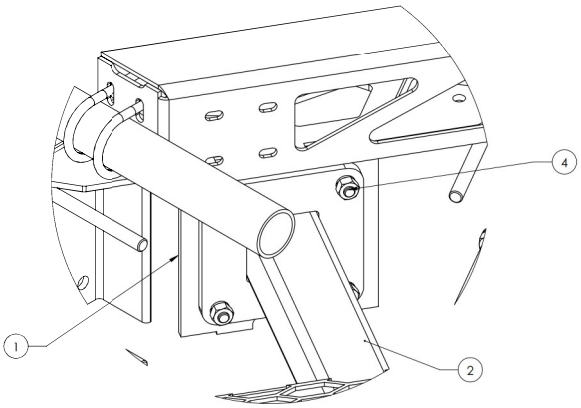
TITLE: LOW PROFILE PLATFORM FACE

SIZE	SCALE	DOCUMENT NO.
C	1:32	MC-PK8-DSH

DRAWING			SHEET
VERSION	STATUS	REVISION	
00	AD	A	

NOTES:



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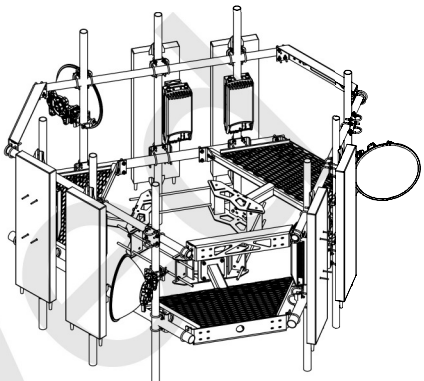
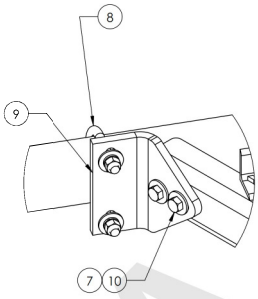


WITH ANTENNAS



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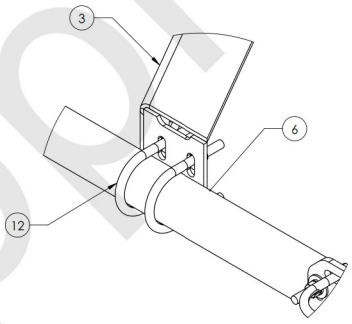

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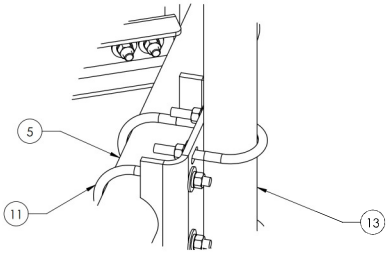

DETAIL D
SCALE 1 : 4

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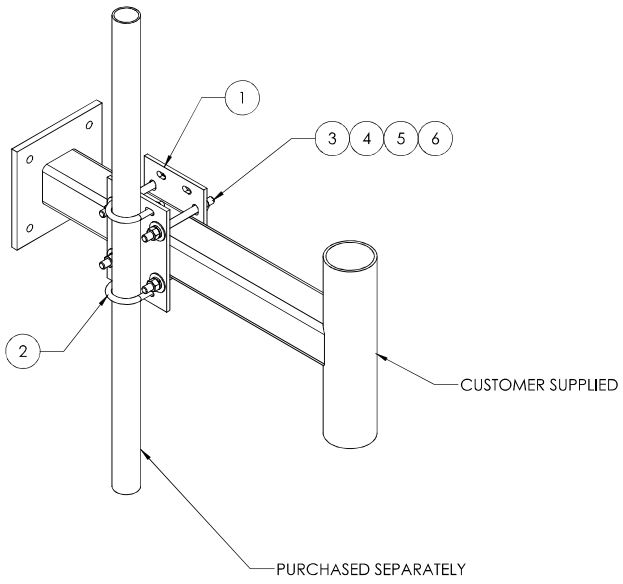
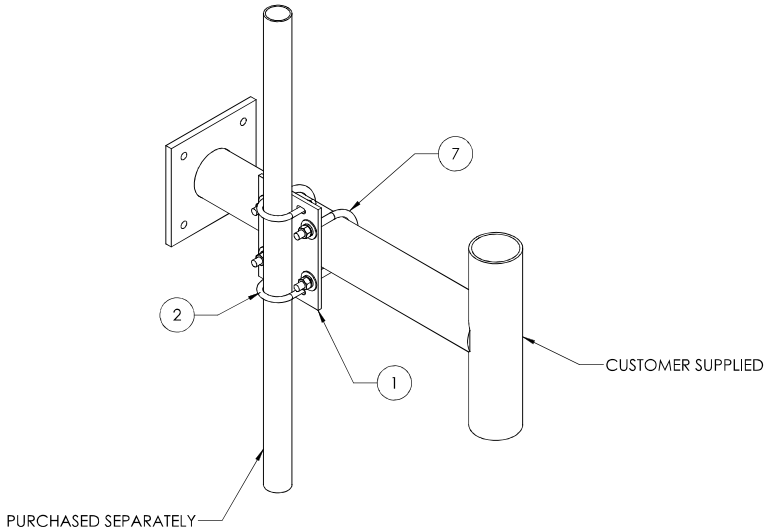
COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: LOW PROFILE PLATFORM FACE			
SIZE: C	SCALE: 1:24	DOCUMENT NO.: MC-PK8-DSH	
		DRAWING: VERSION 00 / STATUS AD / REVISION A	SHEET: 3 OF 3

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
1	XP2040.01	CROSSOVER PLATE 2-3/8" O.D. TO 4-1/2" O.D.	2	7.13 LBS
2	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	2	1.44 LBS
3	MT-381-8	5/8" X 8" GALV THREADED ROD	4	0.69 LBS
4	GWF-05	5/8" GALV FLAT WASHER	8	0.06 LBS
5	GWL-05	5/8" GALV LOCK WASHER	8	0.09 LBS
6	GN-05	5/8" GALV HEX NUT	8	0.04 LBS
7	GUB-5456	5/8" X 4-5/8" X 6-1/2" GALV U-BOLT	2	1.88 LBS

REVISIONS				
REV.	ZONE	DESCRIPTION	BY	DATE
A		INITIAL RELEASE	DRR	12/19/11





NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

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TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03
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DO NOT SCALE THIS PRINT

DRAWN BY: MSM	SHEET: 1 of 1	XP-197-S
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: RRH Standoff Mount
DATE: 04/27/11	MATERIAL: A36, A500	DRAWING TYPE: ASSEMBLY DRAWING
SIZE: A	FINISH: GALV A123	ANDREW® WESTCHESTER, IL. 60154 U.S.A.
	WEIGHT: 21.96 LBS	

ERROR: undefined
OFFENDING COMMAND: ‘~

STACK:

POWER DENSITY STUDY

Pinnacle Telecom Group

Professional and Technical Services

Telecom Consulting

Antenna Site FCC RF Compliance Assessment and Report for Municipal Submission

Prepared for:	Dish Wireless, LLC
Site ID:	NJJER01097B
Site Address:	515 Morehouse Road Easton, CT
Latitude:	N 41.23560556
Longitude:	W 73.28537222
Structure type:	Monopole
Report date:	March 7, 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

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Introduction and Summary 3

Antenna and Transmission Data 5

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Compliance Conclusion 18

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 515 Morehouse Road in Easton, CT. Dish refers to the antenna site by the code "NJJER01097B", and its proposed operation involves directional panel antennas and transmission in the 600 MHz, 2000 MHz and 2100 MHz frequency bands licensed to it by the FCC.

The FCC requires all wireless antenna operators to perform an assessment of potential human exposure to radiofrequency (RF) fields emanating from all the transmitting antennas at a site whenever antenna operations are added or modified, and to ensure compliance with the Maximum Permissible Exposure (MPE) limit in the FCC's regulations. In this case, the compliance assessment needs to take into account the RF effects of other existing antenna operations at the site by AT&T, T-Mobile and Verizon Wireless. Note that 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 4.2263 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 23 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.

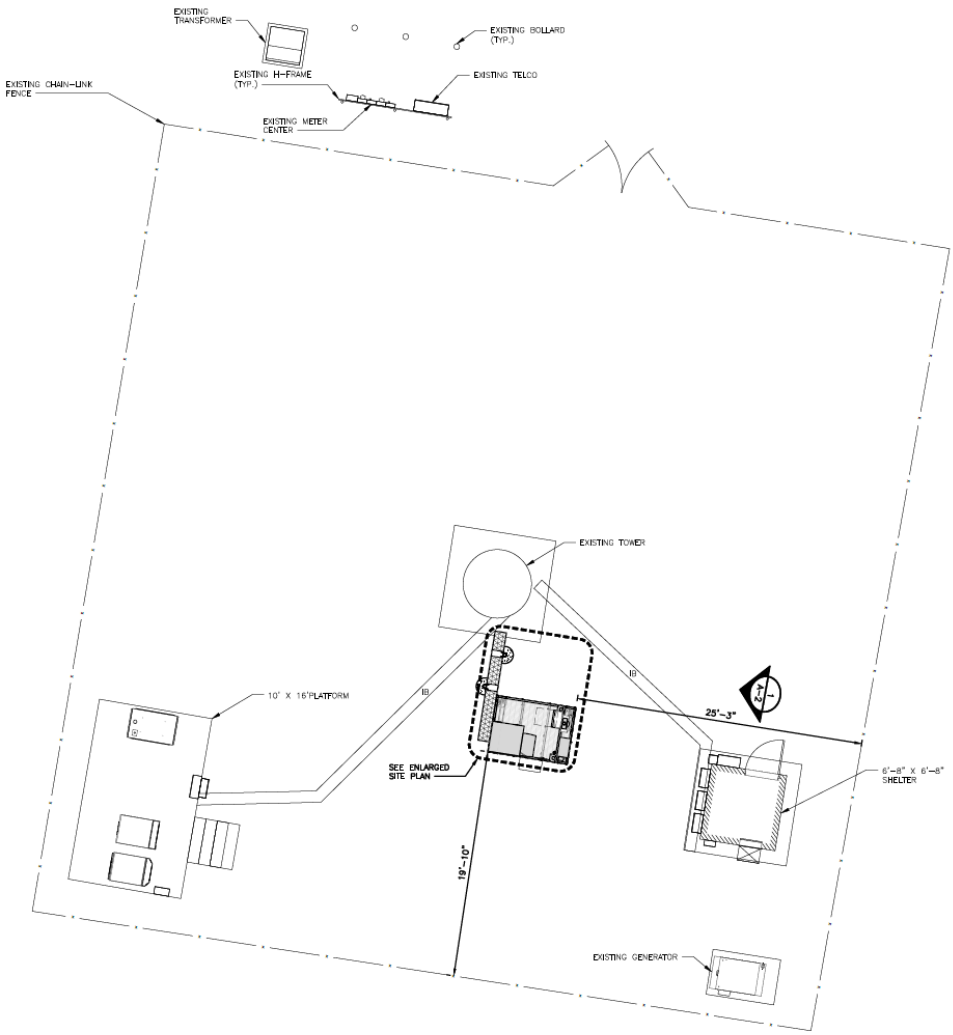
In addition, four Appendices are included. Appendix A provides information on the documents used to prepare the analysis. Appendix B provides background on the

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.

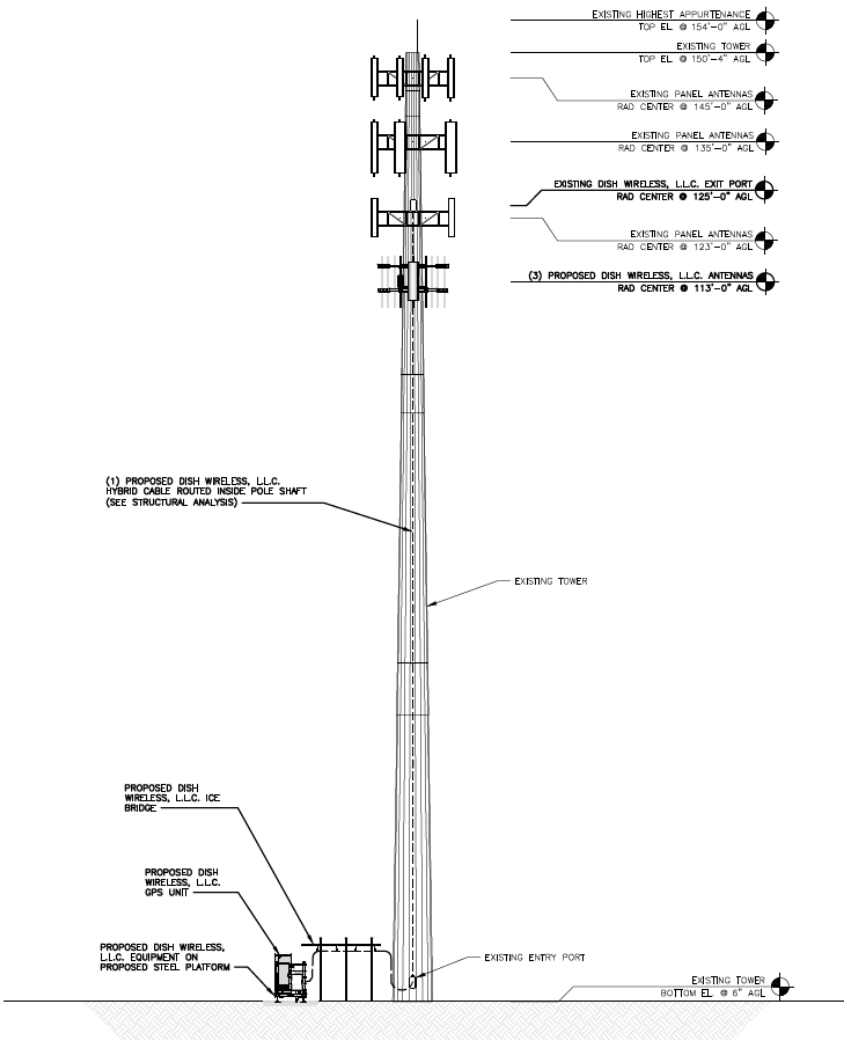
Antenna and Transmission Data

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.

Ant. ID	Carrier	Antenna Manufacturer	Antenna Model	Type	Freq (MHz)	Ant. Dim. (ft.)	Total Input Power (watts)	Total ERP (watts)	Z AGL (ft)	Ant. Gain (dBd)	B/W	Azimuth	EDT	MDT
❶	Dish	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	113	12.46	64	50	2	0
❶	Dish	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	113	16.66	67	50	2	0
❶	Dish	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	113	16.66	67	50	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	16.66	67	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	300	2	0
❸	Dish	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	113	16.66	67	300	2	0
❸	Dish	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	113	16.66	67	300	2	0

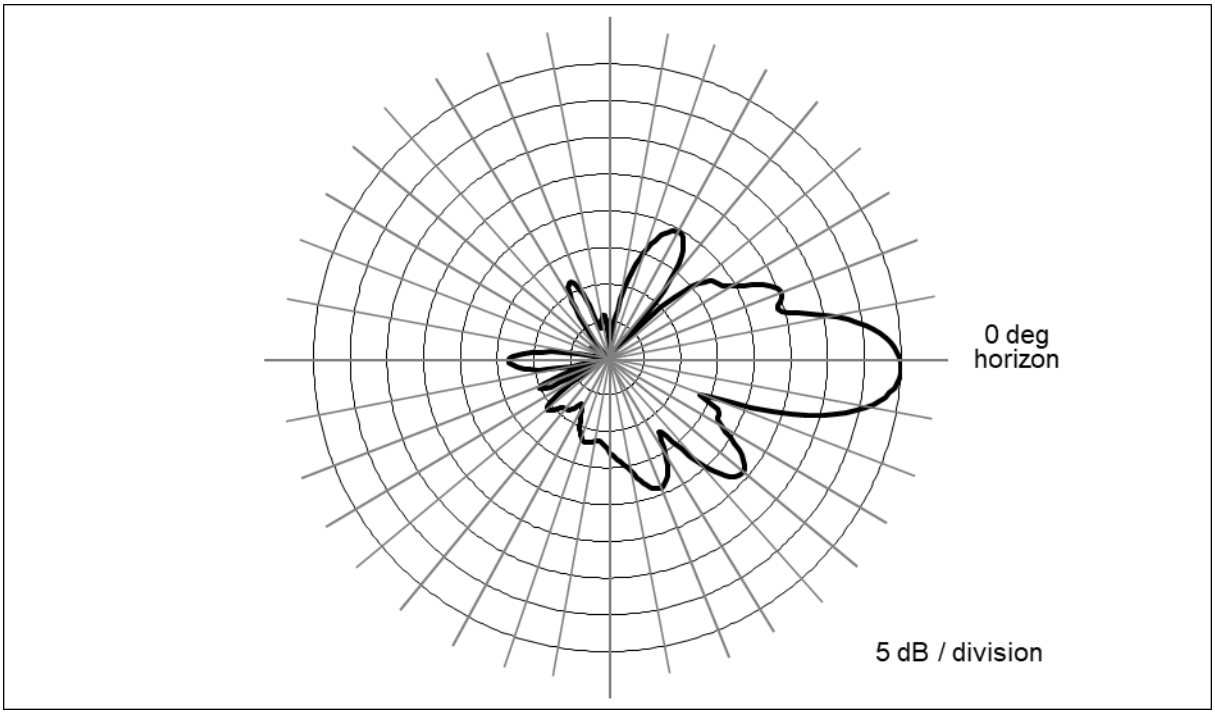
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

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

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

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

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



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

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

Carrier	*Antenna Manufacturer*	*Antenna Model*	*Type*	*Freq (MHz)*	*Total ERP (watts)*	*Ant. Gain (dBd)*	*Azimuth*
AT&T	Generic	Generic	Panel	700	4945	11.26	N/A
AT&T	Generic	Generic	Panel	850	2400	11.76	N/A
AT&T	Generic	Generic	Panel	1900	5756	15.56	N/A
AT&T	Generic	Generic	Panel	2100	5890	15.66	N/A
AT&T	Generic	Generic	Panel	2300	4131	16.16	N/A
T-Mobile	Generic	Generic	Panel	600	3163	12.96	N/A
T-Mobile	Generic	Generic	Panel	700	867	13.36	N/A
T-Mobile	Generic	Generic	Panel	1900	4123	15.36	N/A
T-Mobile	Generic	Generic	Panel	1900	1452	15.60	N/A
T-Mobile	Generic	Generic	Panel	2100	4626	15.86	N/A
T-Mobile	Generic	Generic	Panel	1900	1419	15.50	N/A
T-Mobile	Generic	Generic	Panel	2500	12804	22.35	N/A
Verizon Wireless	Generic	Generic	Panel	746	2400	11.76	N/A
Verizon Wireless	Generic	Generic	Panel	869	5166	12.36	N/A
Verizon Wireless	Generic	Generic	Panel	1900	5372	15.26	N/A
Verizon Wireless	Generic	Generic	Panel	2100	5625	15.46	N/A

Compliance Analysis

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

Street Level Analysis

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

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

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

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

where

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

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

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

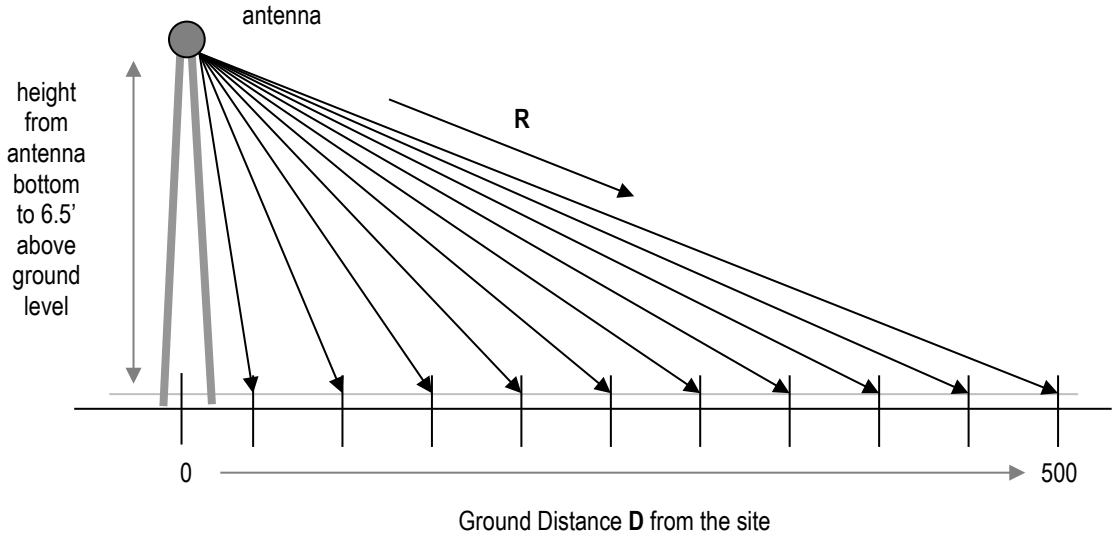


Figure 2. Street-level MPE% Calculation Geometry

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

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

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

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

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

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

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

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

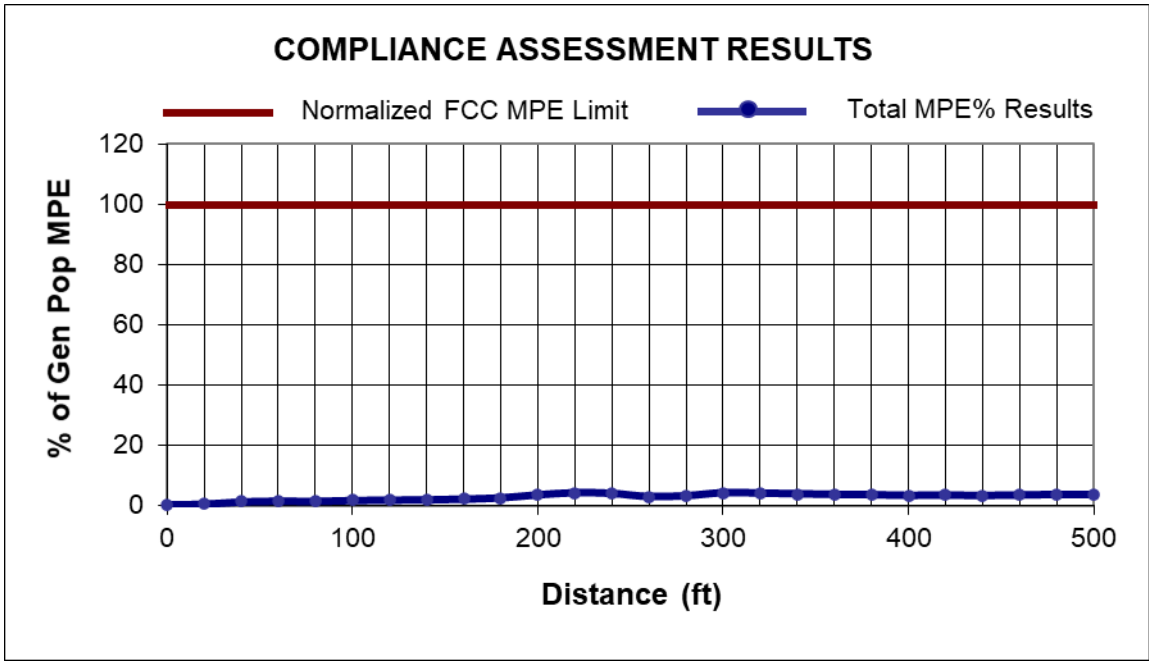
The net result of these assumptions is to intentionally and significantly overstate the calculated RF levels relative to the levels that will actually result from the antenna operations – and the purpose of this conservatism is to allow very "safe-side" conclusions about compliance.

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

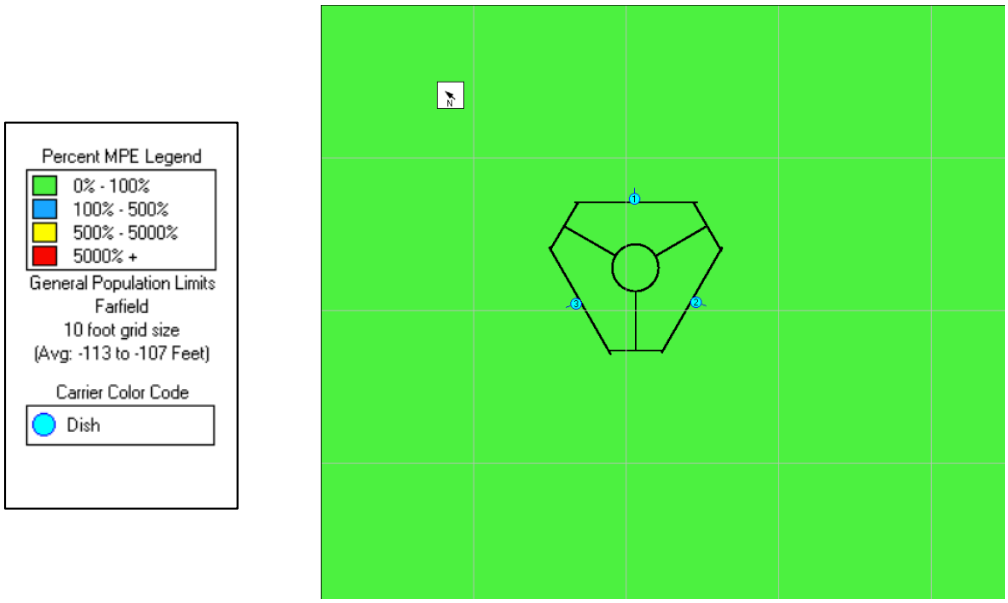
Ground Distance (ft)	Dish 600 MHz MPE%	Dish 2000 MHz MPE%	Dish 2100 MHz MPE%	AT&T MPE%	T-Mobile MPE%	Verizon Wireless MPE%	Total MPE%
0	0.0454	0.0021	0.0003	0.0741	0.3093	0.0182	0.4494
20	0.0884	0.0038	0.0050	0.0863	0.4504	0.0228	0.6567
40	0.1858	0.0205	0.0331	0.1675	0.9071	0.0501	1.3641
60	0.0653	0.0170	0.1343	0.2580	0.9884	0.1024	1.5654
80	0.0462	0.2155	0.0446	0.3616	0.7189	0.1280	1.5148
100	0.2467	0.1818	0.3644	0.4014	0.4561	0.1263	1.7767
120	0.2894	0.2630	0.3220	0.3932	0.5373	0.0979	1.9028
140	0.1678	0.0578	0.1876	0.6665	0.7266	0.1794	1.9857
160	0.0598	0.0356	0.0257	0.7430	1.1164	0.2465	2.2270
180	0.0336	0.0037	0.0433	0.7053	1.6199	0.2044	2.6102
200	0.0280	0.0792	0.0322	0.8318	2.3178	0.2597	3.5487
220	0.0211	0.0736	0.1253	0.9656	2.6437	0.3826	4.2119
240	0.0116	0.0139	0.0725	0.7997	2.7032	0.3956	3.9965
260	0.0100	0.0853	0.0237	0.5620	2.0086	0.3399	3.0295
280	0.0172	0.1104	0.0665	0.4137	2.4106	0.2518	3.2702
300	**0.0324**	**0.0933**	**0.1059**	**0.3004**	**3.5048**	**0.1895**	**4.2263**
320	0.1023	0.0182	0.0779	0.2671	3.5008	0.1308	4.0971
340	0.1513	0.0048	0.0341	0.2346	3.3855	0.0463	3.8566
360	0.1362	0.0044	0.0307	0.2595	3.2417	0.0229	3.6954
380	0.1909	0.0041	0.0096	0.2667	3.0983	0.0236	3.5932
400	0.2536	0.0033	0.0032	0.2652	2.8078	0.0436	3.3767
420	0.3223	0.0066	0.0020	0.3382	2.7244	0.0855	3.4790
440	0.2952	0.0060	0.0018	0.3104	2.6635	0.0786	3.3555
460	0.3626	0.0235	0.0091	0.4599	2.5082	0.1354	3.4987
480	0.3343	0.0217	0.0083	0.6638	2.4253	0.2121	3.6655
500	0.3983	0.0505	0.0296	0.6149	2.3931	0.1966	3.6830

As indicated, the maximum calculated overall RF level is 4.2263 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.

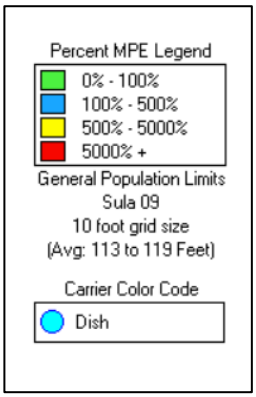


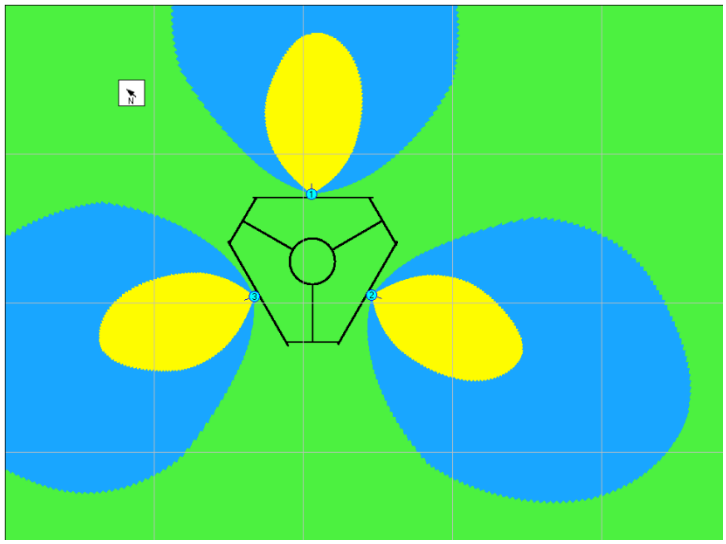
Near-field Analysis

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

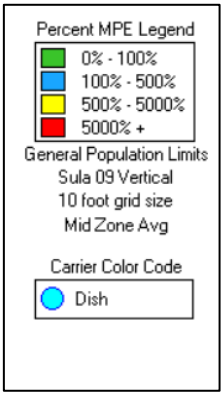
RF levels in the near field of an antenna depend on the power input to the antenna, the antenna's length and horizontal beamwidth, the mounting height of the antenna above nearby roof, and one's position and distance from the antenna. RF levels in front of a directional antenna are higher than they are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

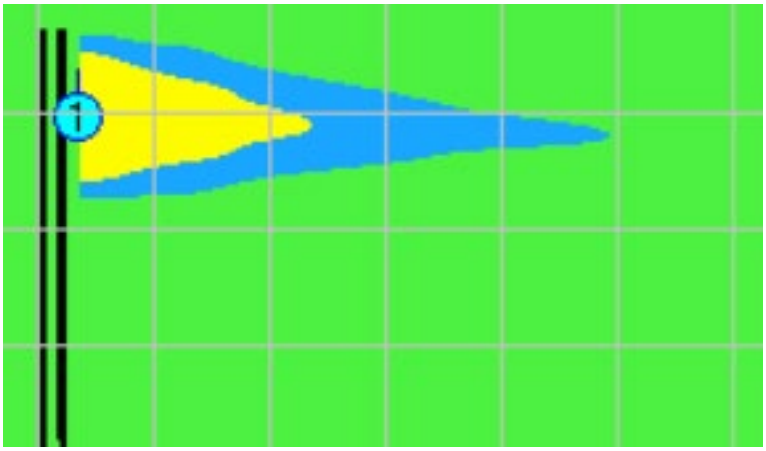
The RoofMaster graphic outputs for the same height as the Dish antennas are reproduced on the next page.





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 4.2263 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 installed 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.

3/7/22

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

Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: RFDS-NJJER01097B-Final-20211115-v.0_20211116091031

CD: NJJER01097B_FinalStampedCDs_20211104164956

Appendix B. Background on the FCC MPE Limit

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

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

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

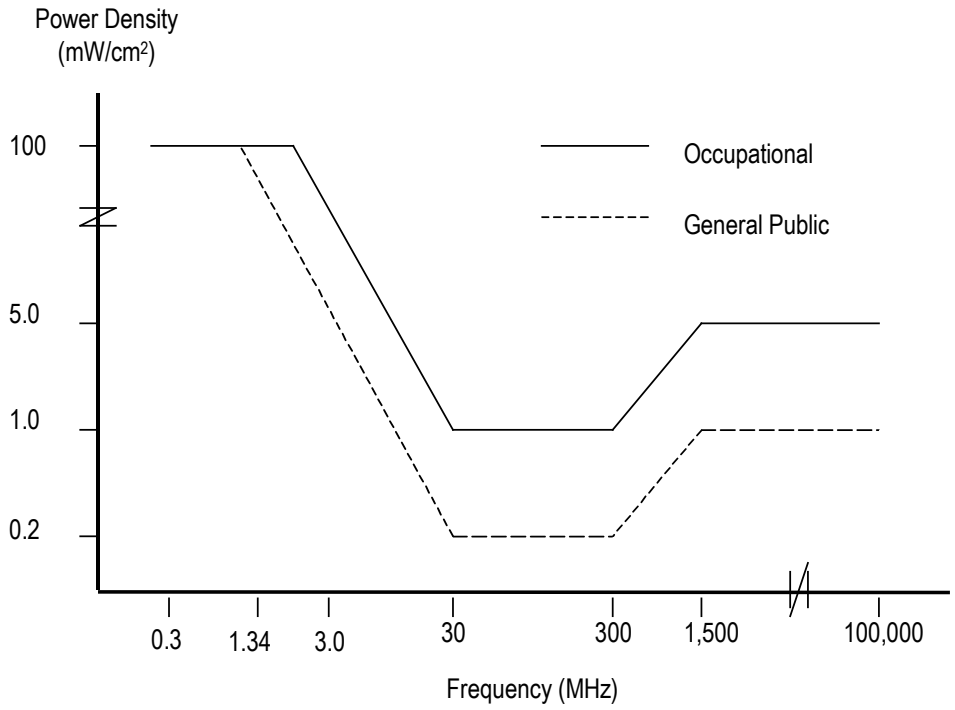
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in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

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

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

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

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



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

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

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

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

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

FCC References on RF Compliance

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

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

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

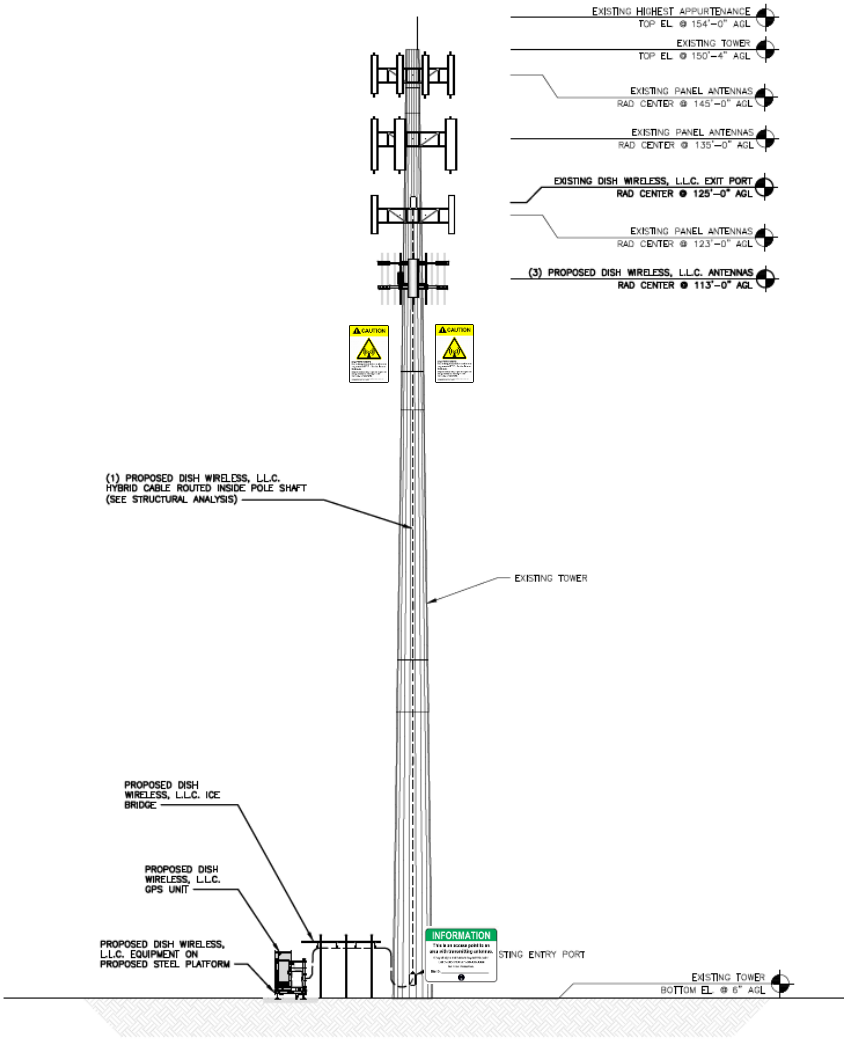
FCC Report and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released August 1, 1996.

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

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

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

Appendix C. Proposed Signage



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

Synopsis:	• 40+ years of experience in all aspects of wireless system engineering, related regulation, and RF exposure • Has performed or led RF exposure compliance assessments on more than 20,000 antenna sites since the latest FCC regulations went into effect in 1997 • Has provided testimony as an RF compliance expert more than 1,500 times since 1997 • Have been accepted as an FCC compliance expert in New York, New Jersey, Connecticut, Pennsylvania and more than 40 other states, as well as by the FCC
Education:	• B.E.E., City College of New York (Sch. Of Eng.), 1971 • M.B.A., 1982, Fairleigh Dickinson University, 1982 • Bronx High School of Science, 1966
Current Responsibilities:	• Leads all PTG staff work involving RF safety and FCC compliance, microwave and satellite system engineering, and consulting on wireless technology and regulation
Prior Experience:	• Edwards & Kelcey, VP – RF Engineering and Chief Information Technology Officer, 1996-99 • Bellcore (a Bell Labs offshoot after AT&T's 1984 divestiture), Executive Director – Regulation and Public Policy, 1983-96 • AT&T (Corp. HQ), Division Manager – RF Engineering, and Director – Radio Spectrum Management, 1977-83 • AT&T Long Lines, Group Supervisor – Microwave Radio System Design, 1972-77
Specific RF Safety / Compliance Experience:	• Involved in RF exposure matters since 1972 • Have had lead corporate responsibility for RF safety and compliance at AT&T, Bellcore, Edwards & Kelcey, and PTG • While at AT&T, helped develop the mathematical models for calculating RF exposure levels • Have been relied on for compliance by all major wireless carriers, as well as by the federal government, several state and local governments, equipment manufacturers, system integrators, and other consulting / engineering firms
Other Background:	• Author, *Microwave System Engineering* (AT&T, 1974) • Co-author and executive editor, *A Guide to New Technologies and Services* (Bellcore, 1993) • National Spectrum Management Association (NSMA) – former three-term President and Chairman of the Board of Directors; was founding member, twice-elected Vice President, long-time member of the Board, and was named an NSMA Fellow in 1991 • Have published more than 35 articles in industry magazines

UNDERLYING PROPERTY INFORMATION

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2021.

Easton, CT

Information on the Property Records for the Municipality of Easton was last updated on 2/11/2022.

Parcel Information

Location:	515 MOREHOUSE ROAD	Property Use:	School	Primary Use:	Elementary School
Unique ID:	00094600	Map Block Lot:	3777A,B 4	Acres:	104.41
490 Acres:	0.00	Zone:	R3	Volume / Page:	0343/0023
Developers Map / Lot:	1824/1722 1497	Census:	1051		

Value Information

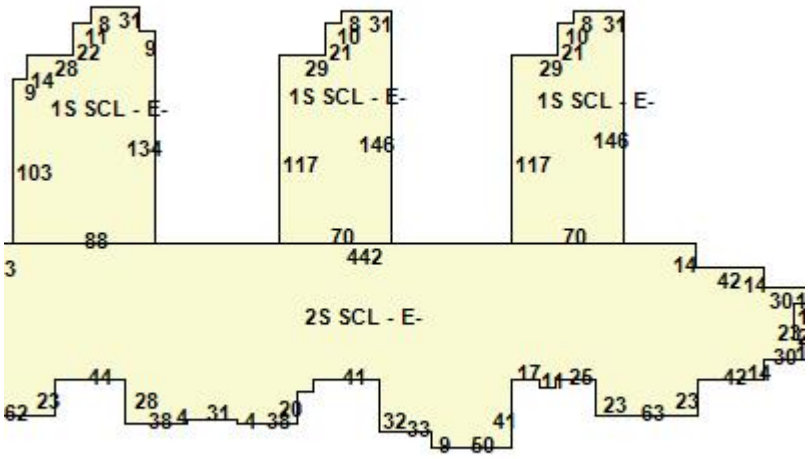
	Appraised Value	Assessed Value
Land	2,789,000	1,952,300
Buildings	28,554,200	19,987,940
Detached Outbuildings	558,600	391,020

	Appraised Value	Assessed Value
Total	31,901,800	22,331,260

Owner's Information

Owner's Data
EASTON TOWN OF STAPLES (NEW SCHOOL) 225 CENTER ROAD EASTON, CT 06612

Building 1



Category:	School	Use:	Elementary School	GLA:	136,118
Stories:	2.00	Construction:	Reinforced Concrete	Year Built:	2004
Heating:	FHA	Fuel:	Oil	Cooling Percent:	100
Siding:	B. V. Solid/Concrete Block	Roof Material:	Wood	Beds/Units:	0

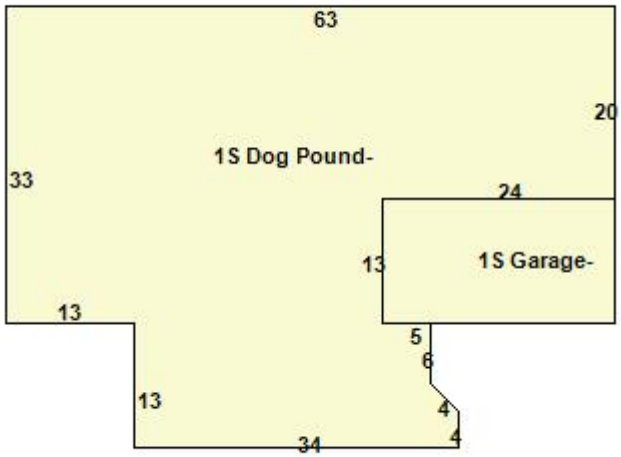
Special Features

Commercial Elevator	1
Extra Fixtures	99
Wet Sprinklers	135711

Attached Components

Type:	Year Built:	Area:
Covered Loading Dock	2004	253

Building 2



Category:	Public Use	Use:	Dog Pound	GLA:	2,186
Stories:	1.40	Construction:	Masonry and Wood Frame	Year Built:	2010
Heating:	FHA	Fuel:	Gas	Cooling Percent:	100
Siding:	Wood Shingles	Roof Material:	Arch Shingles	Beds/Units:	0

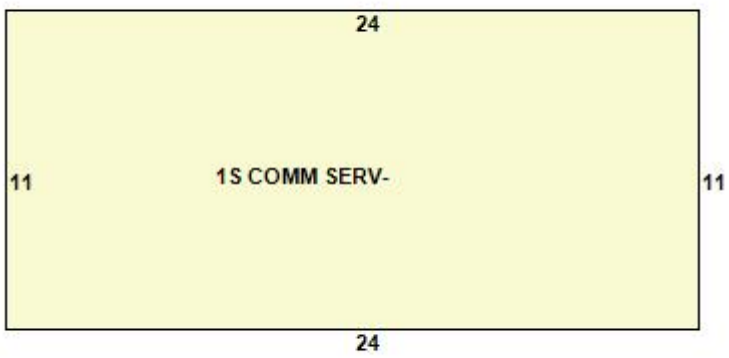
Special Features

Attached Components

Type:	Year Built:	Area:
Attached Frame Garage	2009	312

Building 3

Photo Not Available



Category:	Public Use	Use:	Community Service Building	GLA:	264
Stories:	1.00	Construction:	Wood Frame	Year Built:	2019

Heating:		Fuel:		Cooling Percent:	0
Siding:	Texture 1-11	Roof Material:	Asphalt	Beds/Units:	0

Special Features

Attached Components

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Bleachers	2004	0.00	0.00	270
10ft Chain Link Fencing	2004	0.00	0.00	144
4ft Chain Link Fencing	2004	0.00	0.00	1,268
4ft Chain Link Fencing	2004	0.00	0.00	300
6ft Chain Link Fencing	2004	0.00	0.00	139
8ft Chain Link Fencing	2004	0.00	0.00	149
Comm Conc Pad Patio	2004	0.00	0.00	930
Concrete/Masonry Patio	2004	0.00	0.00	4,270
Paving	2004	0.00	0.00	190,322
Paving	2004	0.00	0.00	4,951
Light Pole 1 each	2004	0.00	0.00	34
Open Porch	2015	0.00	0.00	800
Masonry Shed	2005	30.00	20.00	600

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Sale Price
EASTON TOWN OF	0343	0023	05/24/2001	Warranty Deed	$8,500,000
MOREHOUSE ESTATES LLC	0338	0013	04/09/2001		$0
FAIRFIELD INVESTORS(75%)&MAIN ST	0315	0148	04/10/2000		$0
FAIRFIELD INVESTORS	0053	0506	12/31/1970		$450,000

Building Permits

Permit Number	Permit Type	Date Opened	Reason
16256	Outbuilding/Yard Item	08/15/2019	PRE-FAB MULTI USER RESTROOM BUILDING
15980	Cell Tower	11/07/2018	ADD AT&T ANTENNAS TO EXISTING CELL TOWER
15760	Solar	05/01/2018	PHASE 2 SOLAR ARRAY 302KW
15757	Cell Tower	04/27/2018	12 VERIZON ANTENNAS ON CELL TOWER
15581	Cell Tower	10/27/2017	150' CELL TOWER (70 X 70') FENCED AREA
14907	Outbuilding/Yard Item	10/13/2015	PAVILION
14796	Solar	07/24/2015	INSTALL 301 KW GROUND MOUNTED SOLAR
12375	Carport	07/01/2009	ANIMAL SHELTER
10331	New Construction	04/03/2004	NEW ELEMENTARY SCHOOL $420,000,000.00

Information Published With Permission From The Assessor

NOTIFICATIONS

April 18, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 776556268756

Delivery Information:

Status:	Delivered	**Delivered To:**	Shipping/Receiving
Signed for by:	S.IGNATURE ON FILE	**Delivery Location:**	225 CENTER RD
Service type:	FedEx 2Day		
Special Handling:	Deliver Weekday		EASTON, CT, 06612
		Delivery date:	Apr 14, 2022 11:54

Shipping Information:

Tracking number:	776556268756	**Ship Date:**	Apr 12, 2022
		Weight:	1.0 LB/0.45 KG

Recipient:
Town of Easton - Owner,
225 Center Road
Staples (New School)
EASTON, CT, US, 06612

Shipper:
Corey Milan, NB+C
100 Apollo Dr.
Suite 303
CHELMSFORD, MA, US, 01824

Reference 100814

Thank you for choosing FedEx

April 18, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 776556209573

Delivery Information:

Status:	Delivered	**Delivered To:**	Shipping/Receiving
Signed for by:	S.IGNATURE ON FILE	**Delivery Location:**	225 CENTER RD
Service type:	FedEx 2Day		
Special Handling:	Deliver Weekday		EASTON, CT, 06612
		Delivery date:	Apr 14, 2022 11:54

Shipping Information:

Tracking number:	776556209573	**Ship Date:**	Apr 12, 2022
		Weight:	1.0 LB/0.45 KG

Recipient:
David Bindleglass - First Selectman,
225 Center Road
EASTON, CT, US, 06612

Shipper:
Corey Milan, NB+C
100 Apollo Dr.
Suite 303
CHELMSFORD, MA, US, 01824

Reference 100814

Thank you for choosing FedEx

April 18, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 776556237091

Delivery Information:

Status:	Delivered	**Delivered To:**	Shipping/Receiving
Signed for by:	S.IGNATURE ON FILE	**Delivery Location:**	225 CENTER RD
Service type:	FedEx 2Day		
Special Handling:	Deliver Weekday		EASTON, CT, 06612
		Delivery date:	Apr 18, 2022 11:26

Shipping Information:

Tracking number:	776556237091	**Ship Date:**	Apr 12, 2022
		Weight:	1.0 LB/0.45 KG

Recipient:
Peter Howard - Building Inspector,
225 Center Road
EASTON, CT, US, 06612

Shipper:
Corey Milan, NB+C
100 Apollo Dr.
Suite 303
CHELMSFORD, MA, US, 01824

Reference 100814

Thank you for choosing FedEx