Northeast Site Solutions
Victoria Masse
420 Main St Unit 1 Box 2
Sturbridge, MA 01566
victoria@northeastsitesolutions.com

October 18, 2022

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

RE: Tower Share Application
91 Mountain Road, aka Hoskins Road, Simsbury, CT 06081
Latitude: 41.892374 N
Longitude: -72.769575 W
Site#: BOBDL00007C

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 91 Mountain Road, aka Hoskins Road, Simsbury, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 5G MHz antenna and six (6) RRUs, at the 65-foot level of the existing 100-foot self support tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Centek, dated October 18, 2022, Exhibit C. Also included is a structural analysis prepared by Centek, dated October 17, 2022 confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Connecticut Siting Council, Petition No. 824 on July 27, 2007. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Wendy Mackstutis, First Selectman, George McGregor, Director of Community Planning & Development, as well as the property owner and tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure. The top of the tower is 100-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 65-feet.

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

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

4.The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total density of 14.44% as evidenced by Exhibit F.

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

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

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

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 65-foot level of the existing 100-foot tower would have an insignificant visual impact on the area around the self-support tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

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

Sincerely,

Victoria Masse

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 1 Box 2, Sturbridge, MA 01566
Email: victoria@northeastsitesolutions.com

Attachments
Cc:
Wendy Mackstutis, First Selectman
Town of Simsbury
933 Hopmeadow Street
Simsbury CT 06070

George McGregor, Director of Community Planning & Development
Town of Simsbury
933 Hopmeadow Street
Simsbury CT 06070

Connecticut Light and Power Company, Property Owner
PO BOX 270
Hartford, CT 06141

Eversource, Tower Owners
107 Selden Street
Berlin, CT 06037

Exhibit A

Original Facility Approval

FW: Original zoning approvals – 414 Chapel Hill Rd Montville / Hoskins Rd (aka 91 Mountain Rd) Simsbury

External

Inbox

G

Gelinas, Christopher Fri, Oct 14, 12:30 PM (5 days ago)

to me, Victoria

Chuck

Attached is what we have on file for Montville. This may be the one you already have.

We have no docs on Simsbury

Christopher Gelinas
Senior Specialist – Real Estate
107 Selden Street
Berlin, CT 06037
Office: (860) 665-2008
E-Mail: Christopher.Gelinas@Eversource.com

This communication is not intended and shall not be construed as constituting an offer or acceptance of any terms or conditions discussed herein, nor shall it create a binding legal agreement between the parties.
Any information contained herein is presented for discussion purposes only.

---

91 Mountain Rd, Simsbury CT

External

Inbox

Campasano Christine <ccampasano@simsbury-ct.gov> 1:36 PM (1 minute ago)

to me

Chuck,
I have attached the permit, approval & certificate of completion from 1999 for the antennas and equipment shed found in the building file. There does not appear to be any original zoning approval associated with the permit.

Thanks,
Christine Campasano
Planning/Building Clerk
Town of Simsbury

(p) 860.658.3234
(f) 860.658.3217
ccampasano@simsbury-ct.gov

Exhibit B

Property Card

Town of Simsbury, CT

Property Listing Report

Map Block Lot	Building #	Unique Identifier
J07 128 010A		30372306

Property Information

Property Location	91 MOUNTAIN ROAD
Mailing Address	P O BOX 270 HARTFORD CT 061410270
Land Use	Land with Outbuildings
Zoning Code	R-80
Neighborhood	34

Owner	CONNECTICUT LIGHT AND POWER
Co-Owner	COMPANY THE
Book / Page	0260/0201
Land Class	Vacant Land
Census Tract	4664000
Acreage	0.45

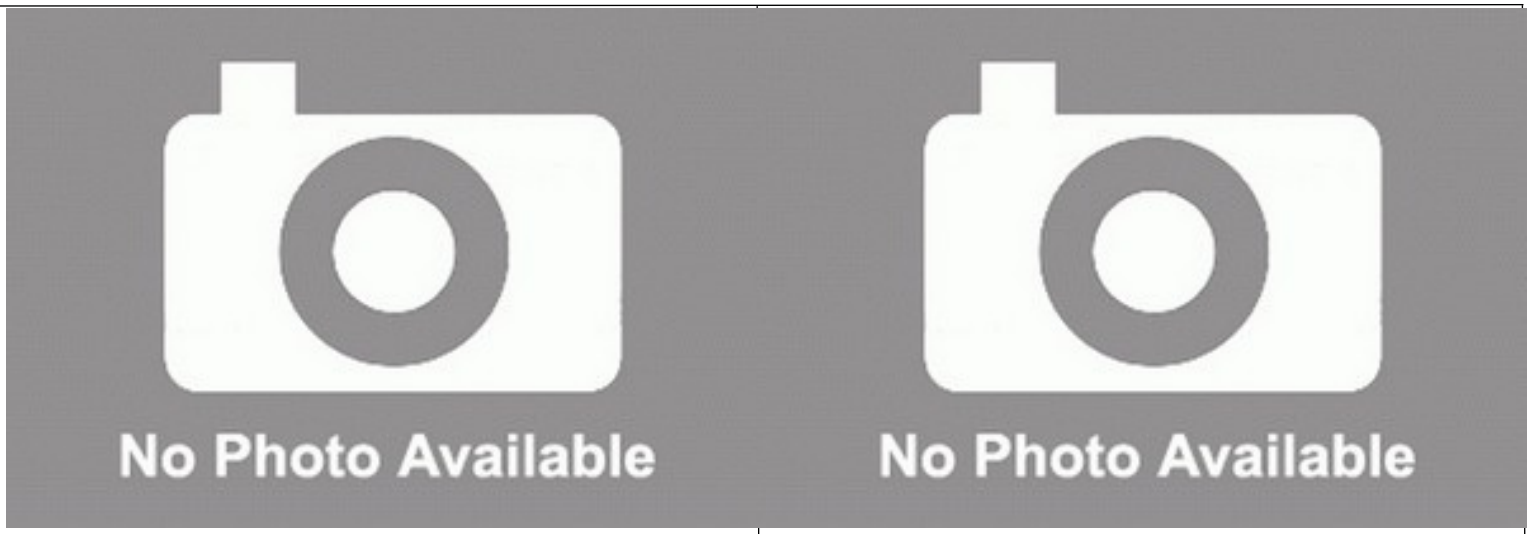
Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Outbuildings	0	0
Land	464285	325000
Total	464285	325000

Utility Information

Electric	No
Gas	No
Sewer	No
Public Water	No
Well	No



Primary Construction Details

Year Built		Heating Fuel		Livable Area (ft)		Bsmt Area	
Building Desc.		Heating Type		Building Use		Fin Bsmt Area	
Building Style		AC Type		Building Condition		Fin Bsmt Quality	
Stories		Bedrooms		Frame Type		Bsmt Access	
Exterior Walls		Full Bathrooms		Building Grade		Bsmt Gar	
Exterior Walls 2		Half Bathrooms		Fireplaces		Bsmt Sump Pump	
Interior Walls		Extra Fixtures		Wood Stoves			
Interior Walls 2		Total Rooms		Attic Access			
Interior Floors 1		Bath Style		Roof Style			
Interior Floors 2		Kitchen Style		Roof Cover			
		Occupancy					

Report Created On 10/14/2022

Town of Simsbury, CT

Property Listing Report | Map Block Lot: J07 128 010A | Building #: | Unique Identifier: 30372306

Detached Outbuildings

Type	Description	Area (sq ft)	Condition	Year Built

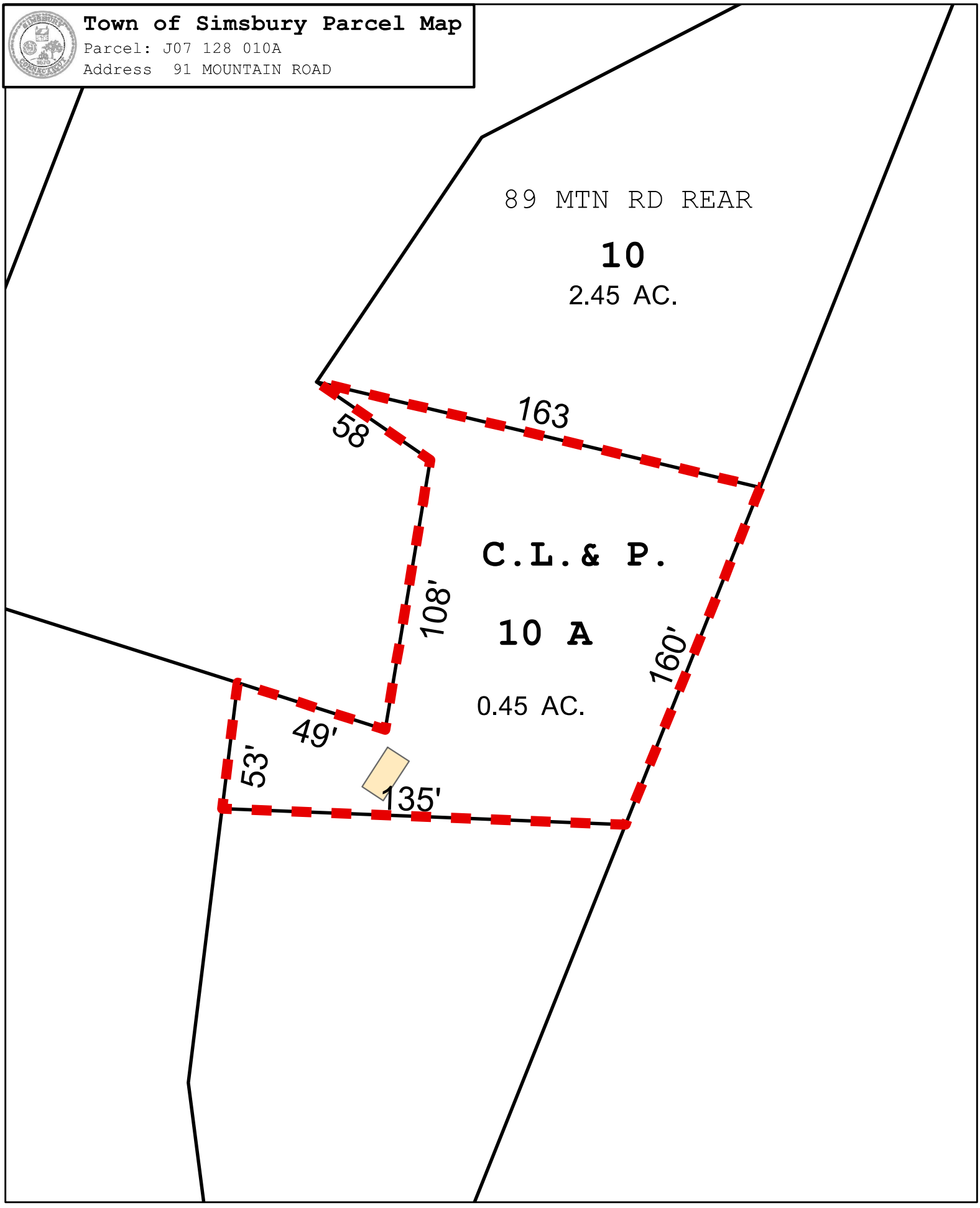
Attached Extra Features

Type	Description	Area (sq ft)	Condition	Year Built

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
CONNECTICUT LIGHT AND POWER	0260_0201	7/1/1982	0

Report Created On 10/14/2022



1 inch = 50 feet

0 25 50 75 100 Feet

Map Produced: May 2022

Exhibit C

Construction Drawings

dish wireless

SITE NUMBER: BOBDL00007C

SITE NAME: CLPC TOWER SIMSBURY

HOSKINS RD

SIMSBURY, CT 06070

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.

2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.

3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.

4. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE, WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.

5. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.

6. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS, AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.

7. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.

8. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.

9. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.

10. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.

11. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.

12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.

13. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.

14. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.

15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.

16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.

17. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE DISH WIRELESS CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.

18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.

19. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.

20. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.

21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK

22. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.

23. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.

24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

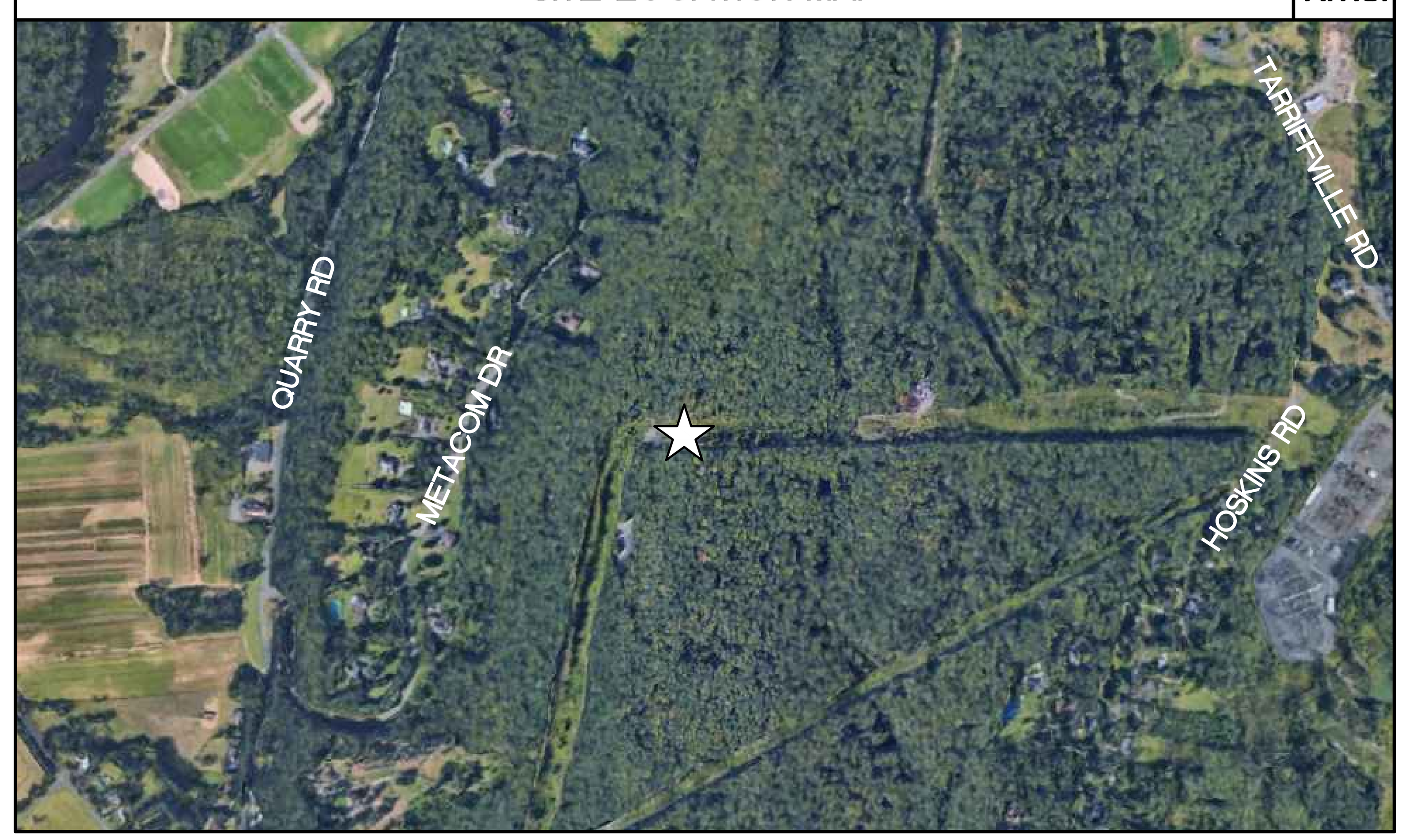
25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.

26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.

27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE 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 ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

SITE LOCATION MAP

N.T.S.



VICINITY MAP

N.T.S.

SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM FAA-2C SURVEY, COMPLETED BY CENTEK ENGINEERING, DATED 03/02/22.

SITE COORDINATES: LATITUDE: 41° 53' 32.83" N
LONGITUDE: 72° 46' 10.39" W
GROUND ELEVATION: ±469.94' AMSL

NORTH

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

1. INSTALL (1) JMA: MX08FRO665-21 ANTENNA PER SECTOR; TOTAL OF (3)
2. INSTALL (1) FUJITSU: TA08025-B605 RADIO PER SECTOR; TOTAL OF (3)
3. INSTALL (1) FUJITSU: TA08025-B604 RADIO PER SECTOR; TOTAL OF (3)
4. INSTALL (1) RAYCAP: RDIDC-9181-PF-48 OVP BOX
5. INSTALL (1) DUAL SECTOR MOUNT PER SECTOR; TOTAL (3)
6. INSTALL (1) 1.411" HYBRID CABLE
7. INSTALL (1) STEEL PLATFORM (5' x 7')
8. INSTALL (1) H-FRAME (MOUNTED TO STEEL PLATFORM)
9. INSTALL (1) 200A PPC CABINET
10. INSTALL (1) CHARLES HEX CABINET
11. INSTALL NEW CABLE ICE-BRIDGE. CONTRACTOR TO VERIFY FINAL ROUTE AND HEIGHT IN FIELD.
12. INSTALL 200A RATED UTILITY METER AND CIRCUIT BREAKER

PROJECT INFORMATION

SITE NUMBER:	BOBDL00007C
SITE NAME:	CLPC TOWER SIMSBURY
SITE ADDRESS:	HOSKINS RD SIMSBURY, CT 06070
APPLICANT:	DISH WIRELESS, LLC 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
CONTACT PERSON:	CHUCK REGULBUTO NORTHEAST SITE SOLUTIONS, LLC (860) 394-7021
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405 CARLO F. CENTORE, PE (203) 488-0580 EXT. 122
SITE COORDINATES:	LATITUDE: 41° 53' 32.83" N LONGITUDE: 72° 46' 10.39" W GROUND ELEVATION: ±469.94' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM FAA-2C SURVEY, COMPLETED BY CENTEK ENGINEERING, DATED 03/02/22.

SHEET INDEX

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REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	09/07/22	RTS	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
1	10/18/22	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED BUILDING CODES

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT · CARLO F. CENTORE · No. 16694 · PROFESSIONAL ENGINEER

NSS NORTHEAST SITE SOLUTIONS

dish wireless

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

DISH WIRELESS, LLC

SITE NUMBER: BOBDL00007C
SITE NAME: CLPC TOWER SIMSBURY
HOSKINS ROAD
SIMSBURY, CT 06070

DATE: 01/27/22
SCALE: AS NOTED
JOB NO. 21091.02

TITLE SHEET

T-1

Sheet No. 1 of 14

NOTES AND SPECIFICATIONS:

DESIGN BASIS:

GOVERNING CODE: 2021 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2022 CONNECTICUT STATE BUILDING CODE.

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED: 101 MPH (Vasd)
  (EXPOSURE B/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-16).

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
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12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
13. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
14. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
17. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE DISH WIRELESS CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
19. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
20. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
22. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
23. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE 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 ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS---ASTM A325-N
   G. U-BOLTS---ASTM A36
   H. ANCHOR RODS---ASTM F 1554
   I. WELDING ELECTRODE---ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

ANTENNA/APPURTENANCE SCHEDULE

SECTOR	EXISTING/PROPOSED	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) RRU (QTY)	(E/P) OVP (QTY)	(QTY) PROPOSED HYBRID/COAX LENGTH (FT)
A1	PROPOSED	JMA WIRELESS: MX08FRO665-21	72 x 20 x 8	65'	0°	(P) FUJITSU: TA08025-B604 (1), (P) FUJITSU: TA08025-B605 (1)	(P) RAYCAP: RDIDC09181-PF-48	(1) 1.411" HYBRID CABLE (±100FT)
B1	PROPOSED	JMA WIRELESS: MX08FRO665-21	72 x 20 x 8	65'	120°	(P) FUJITSU: TA08025-B604 (1), (P) FUJITSU: TA08025-B605 (1)		
C1	PROPOSED	JMA WIRELESS: MX08FRO665-21	72 x 20 x 8	65'	240°	(P) FUJITSU: TA08025-B604 (1), (P) FUJITSU: TA08025-B605 (1)		

NOTE:
ALL HYBRID/COAX LENGTHS TO BE MEASURED AND VERIFIED IN FIELD BEFORE ORDERING

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	09/07/22	RYS	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
	10/18/22	RYS	TJR	CONSTRUCTION DRAWINGS - REVISED BUILDING CODES

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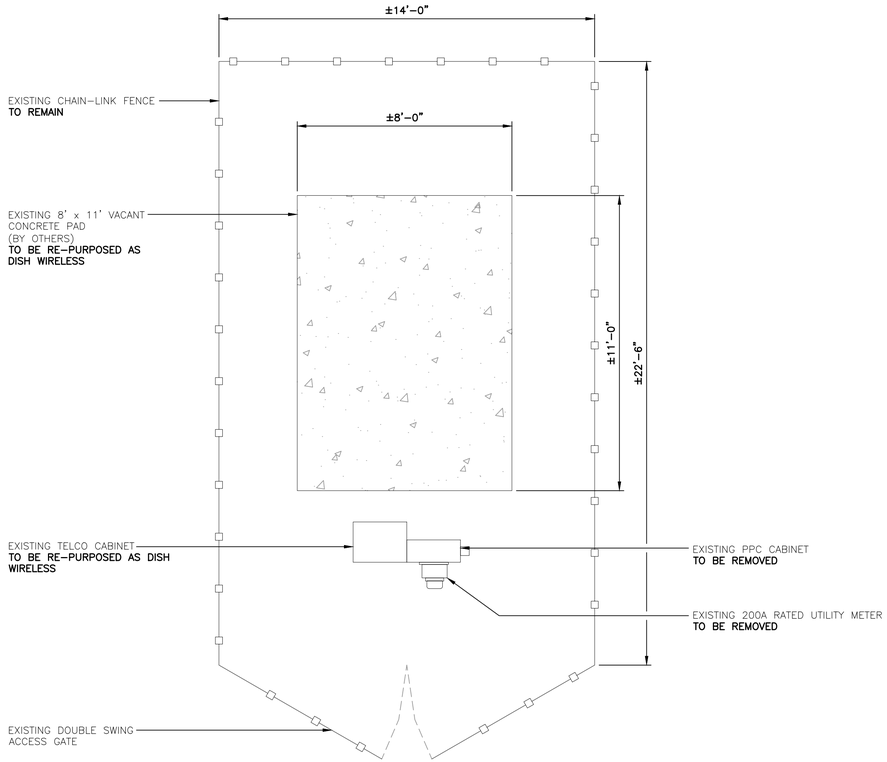
DISH WIRELESS, LLC

SITE NUMBER: BOBDL00007C
SITE NAME: CLPC TOWER SIMSBURY
HOSKINS ROAD
SIMSBURY, CT 06070

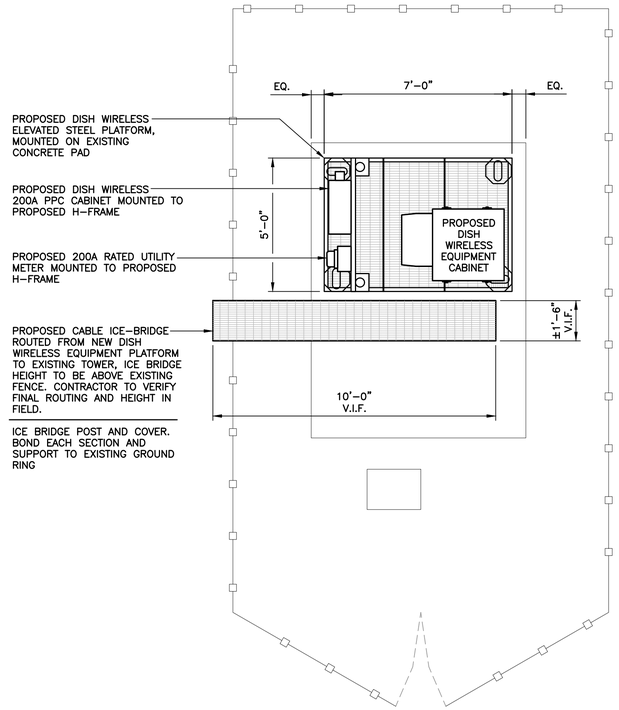
DATE: 01/27/22
SCALE: AS NOTED
JOB NO. 21091.02

SPECIFICATIONS, NOTES, AND ANT. SCHEDULE

N-1



1 C-1 **EXISTING EQUIPMENT PLAN**
SCALE: 3/8" = 1'



2 C-1 **PROPOSED EQUIPMENT PLAN**
SCALE: 3/8" = 1'

TRUE NORTH

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

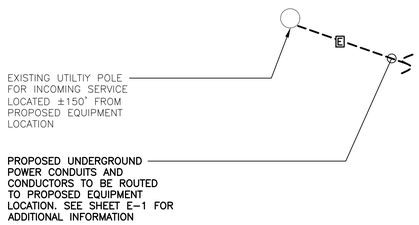
REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 21091.02) DATED 10/17/22 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

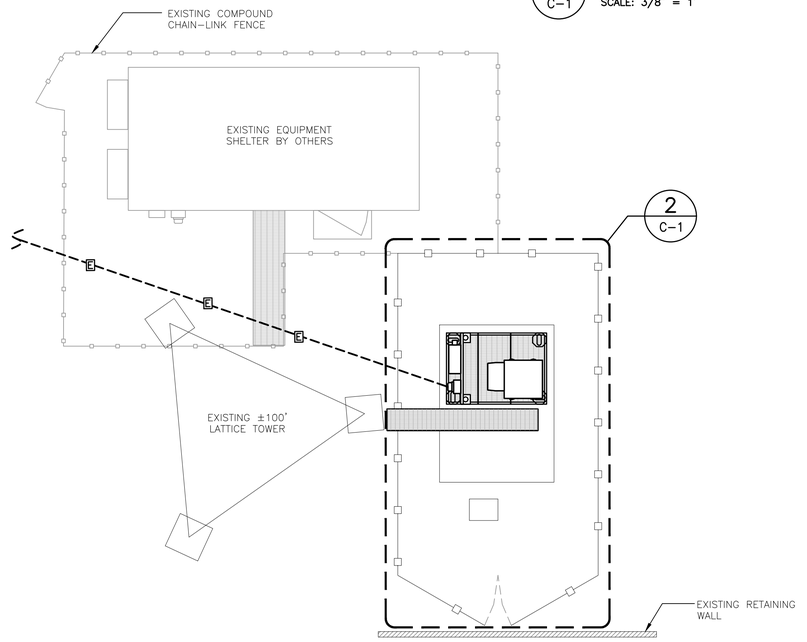
TOWER AND TOWER FOUNDATION

A STRUCTURAL ANALYSIS OF THE TOWER AND TOWER FOUNDATION WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 21091.02) DATED 10/17/22 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.





3 C-1 **PROPOSED COMPOUND PLAN**
SCALE: 3/32" = 1'

TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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SITE NUMBER: BOBDL00007C
SITE NAME: CLPC TOWER SIMSBURY
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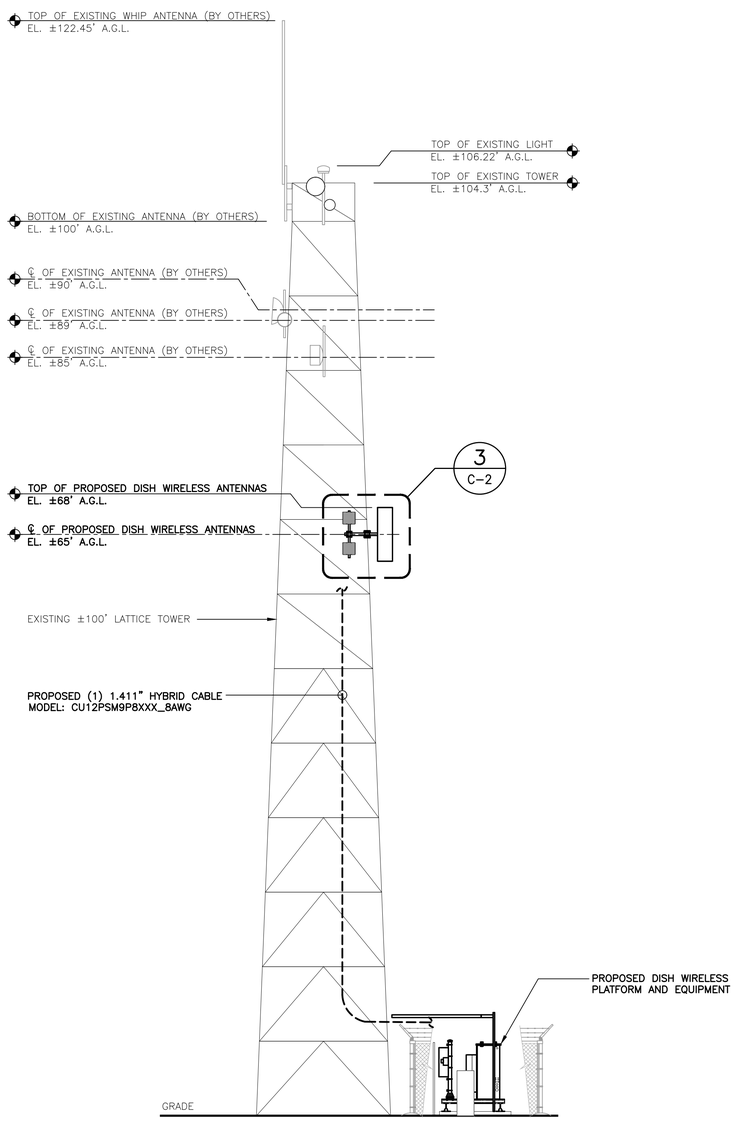
DATE: 01/27/22
SCALE: AS NOTED
JOB NO. 21091.02

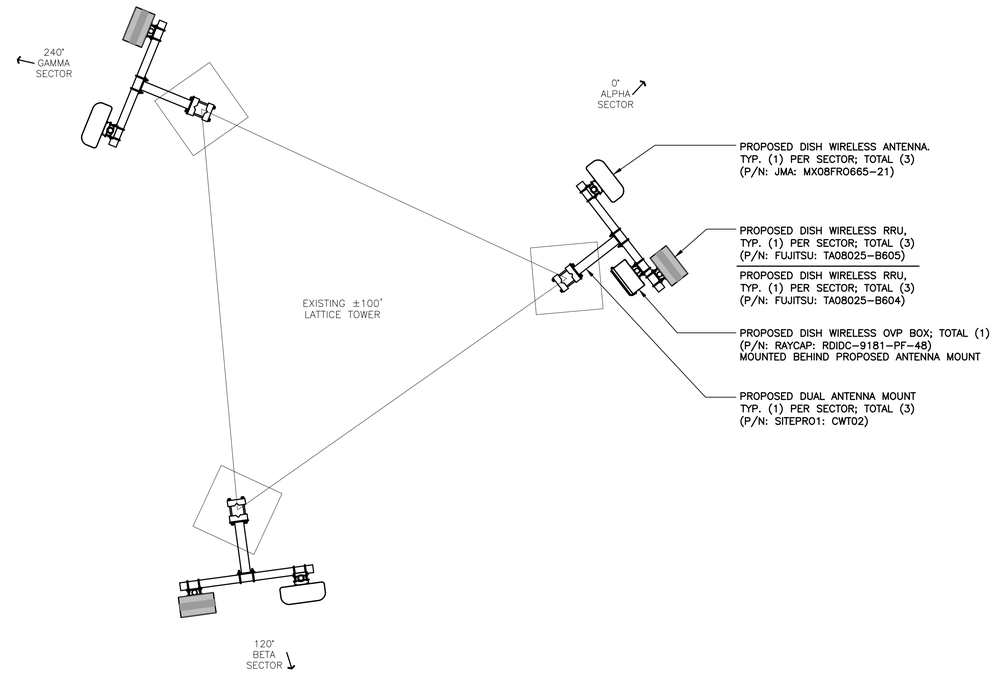
COMPOUND AND EQUIPMENT PLANS

C-1

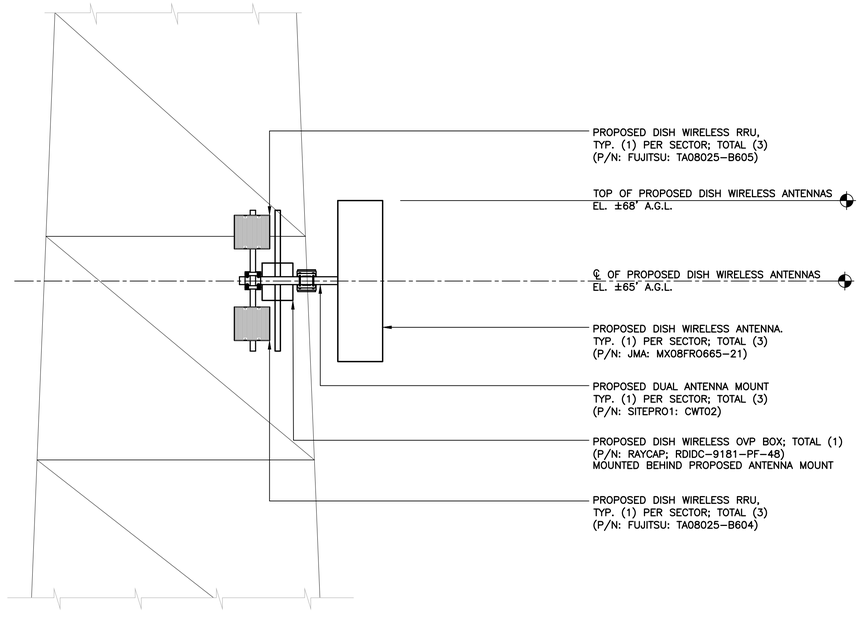
Sheet No. 3 of 14



1 C-2 **PROPOSED TOWER ELEVATION**
SCALE: 1" = 8'



2 C-2 **PROPOSED ANTENNA PLAN**
SCALE: 3/8" = 1'
TRUE NORTH



3 C-2 **PROPOSED ANTENNA ELEVATION**
SCALE: 3/8" = 1'

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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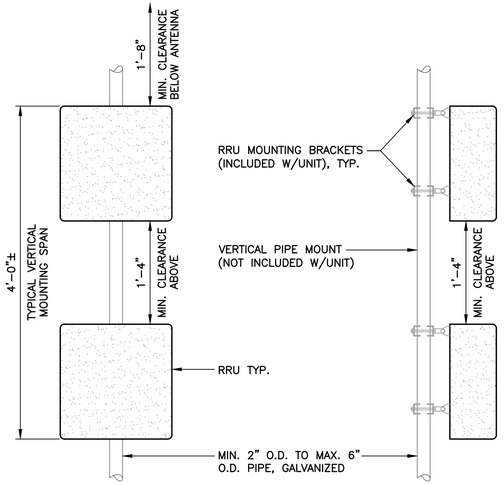
ANTENNA PLANS AND ELEVATIONS

C-2

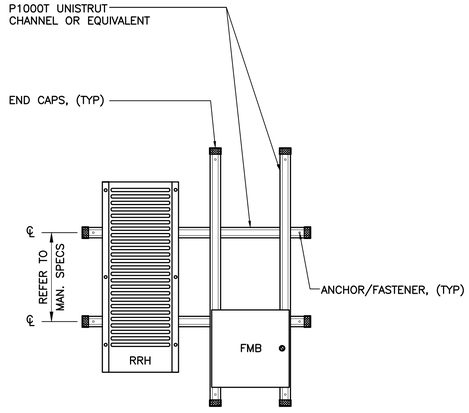


NOTES: (PIPE MOUNTING)

1. DISH WIRELESS SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

1 / C-3 TYPICAL RRU MOUNTING DETAILS

SCALE: NOT TO SCALE

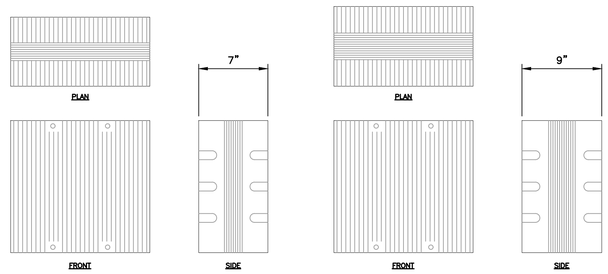


NOTES: (UNISTRUT MOUNTING)

1. INSTALL A MINIMUM OF (2) ANCHORS PER UNISTRUT (± 16"o/c MIN).
2. MOUNT RRU TO UNISTRUT WITH 3/8"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET.
3. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

2 / C-3 PROPOSED RRU DETAIL

SCALE: NOT TO SCALE

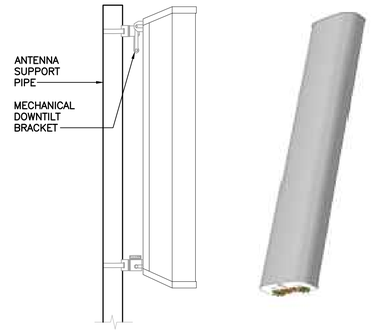


RRU (REMOTE RADIO UNIT)		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: FUJITSU MODEL: TA08025-B604	14.9"L x 15.7"W x 7.8"D	±63.9 LBS.
MAKE: FUJITSU MODEL: TA08025-B605	14.9"L x 15.7"W x 9"D	±74.9 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH DISH WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

3 / C-3 PROPOSED ANTENNA DETAIL

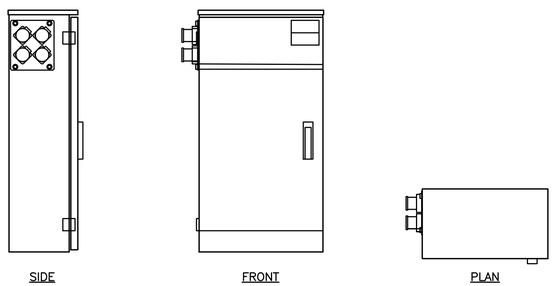
SCALE: NOT TO SCALE



MX08FRO665-21

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: JMA WIRELESS MODEL: MX08FRO665-21	72"L x 20"W x 8"D	±64.5 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH DISH WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

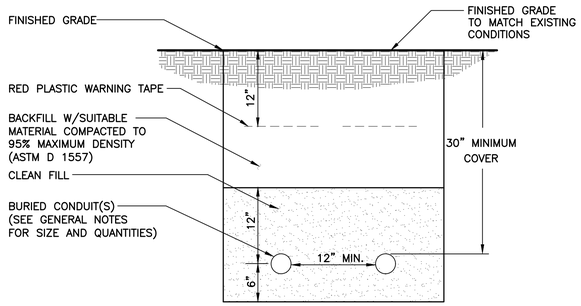


PPC CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RAYCAP MODEL: RDIAC-2465-P-240-MTS	39"H x 22.8"W x 12.5"D	80 LBS.

NOTES:
1. CONTRACTOR TO CONFIRM MAKE/MODEL AND QUANTITY WITH DISH WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

4 / C-3 PPC CABINET DETAIL

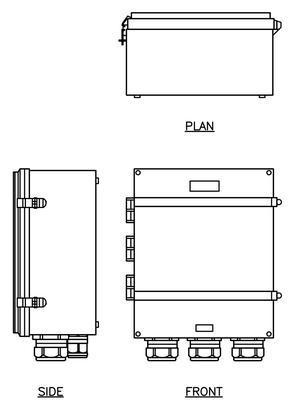
SCALE: NOT TO SCALE



NOTES:
1. THE CLEAN FILL SHALL PASS THROUGH A 3/8" MESH SCREEN AND SHALL NOT CONTAIN SHARP STONES. OTHER BACKFILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.
2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.

5 / C-3 TYPICAL ELECTRICAL/TEL TRENCH DETAIL

SCALE: NOT TO SCALE



OVP BOX		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RAYCAP MODEL: RDIDC-9181-PF-48	16"H x 14"W x 8"D	21.85 LBS.

NOTES:
1. CONTRACTOR TO CONFIRM OVP BOX MAKE/MODEL AND QUANTITY WITH DISH WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

6 / C-3 OVER-VOLTAGE PROTECTION BOX DETAIL

SCALE: NOT TO SCALE

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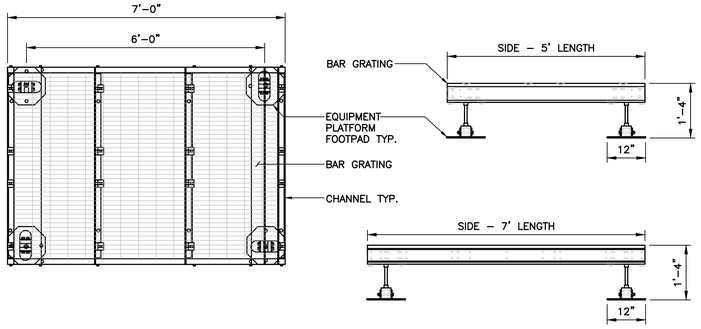
TYPICAL EQUIPMENT DETAILS

C-3

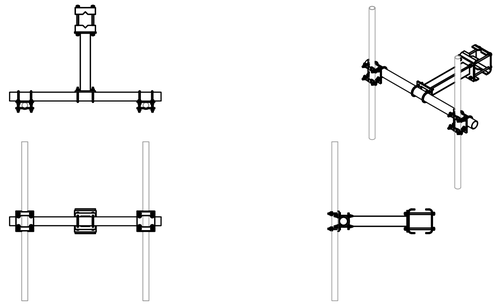
Sheet No. 5 of 14



COMMSCOPE PLATFORM		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: MTC4045LP	16"L x 84"W x 60"D	423 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH DISH WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.		

1 C-4 PROPOSED PLATFORM DETAIL

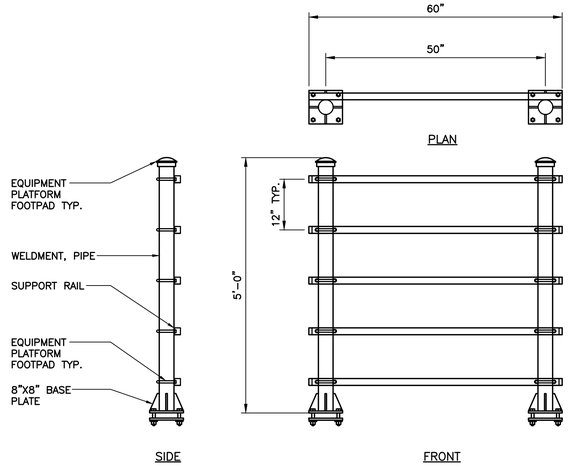
SCALE: NOT TO SCALE



SITEPRO1–CWT02

2 C-4 PROPOSED DUAL ANTENNA MOUNT DETAIL

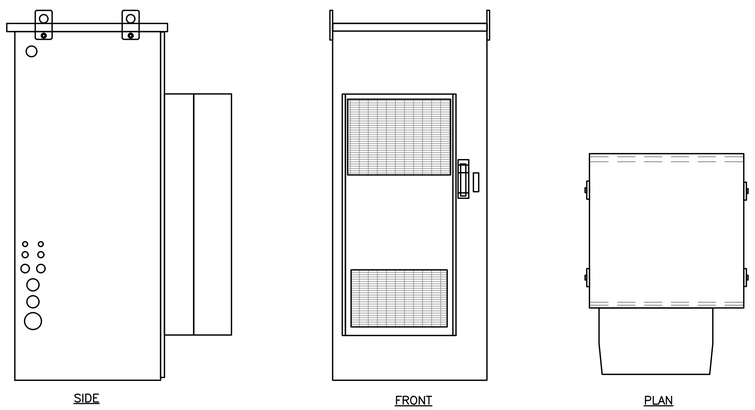
SCALE: NOT TO SCALE



H-FRAME		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: KENWOOD MODEL: T1701KT5–5S	60"H x 60"W	173 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH DISH WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.		

3 C-4 PROPOSED H-FRAME DETAIL

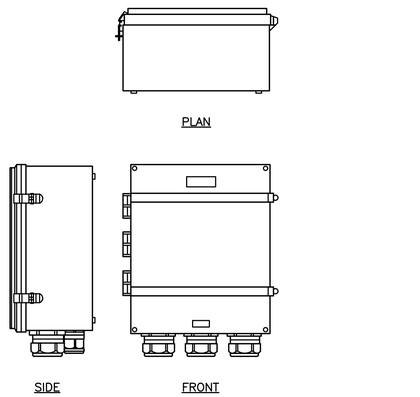
SCALE: NOT TO SCALE



CHARLES HEX CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CHARLES INDUSTRY HEX MODEL: CUBE–PM639155N4	74"H x 32"W x 32"D	±408 LBS

4 C-4 CHARLES HEX CABINET DETAIL

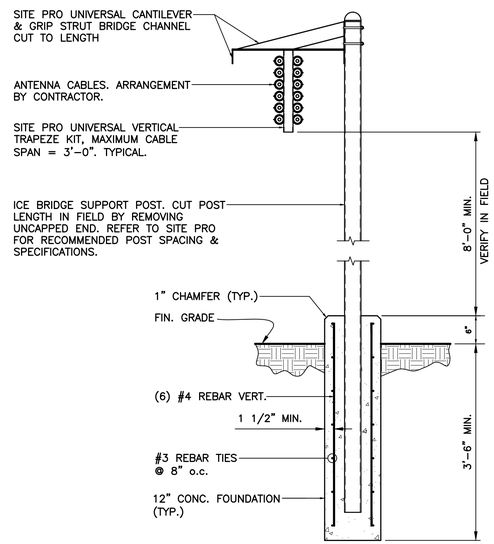
SCALE: NOT TO SCALE



OVP BOX		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RAYCAP MODEL: RDIDC–9181–PF–48	16"H x 14"W x 8"D	21.85 LBS.
NOTES: 1. CONTRACTOR TO CONFIRM OVP BOX MAKE/MODEL AND QUANTITY WITH DISH WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.		

5 C-4 OVER-VOLTAGE PROTECTION BOX DETAIL

SCALE: NOT TO SCALE



6 C-4 TYPICAL ICE-BRIDGE DETAIL

SCALE: NOT TO SCALE

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DISH WIRELESS, LLC

SITE NUMBER: BOBDL00007C
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HOSKINS ROAD
SIMSBURY, CT 06070

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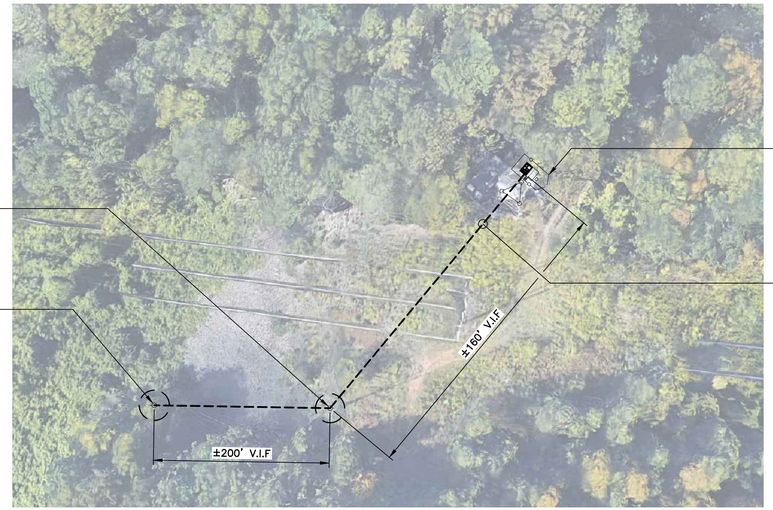
TYPICAL EQUIPMENT DETAILS

C-4

Sheet No. 6 of 14

NOTE: CONDUITS SHOWN HEREIN ARE DIAGRAMMATICAL IN NATURE. CONTRACTOR IS RESPONSIBLE FOR ALL CONDUIT ROUTING REGARDING LENGTH OF RUN, FEASIBILITY, AND SAFETY PROTOCOLS. CONDUITS SHOULD BE INSTALLED IN A MANOR OF LEAST OBSTRUCTION TO EGRESS PATHS/WALKWAYS TO AVOID TRIPPING HAZARDS.



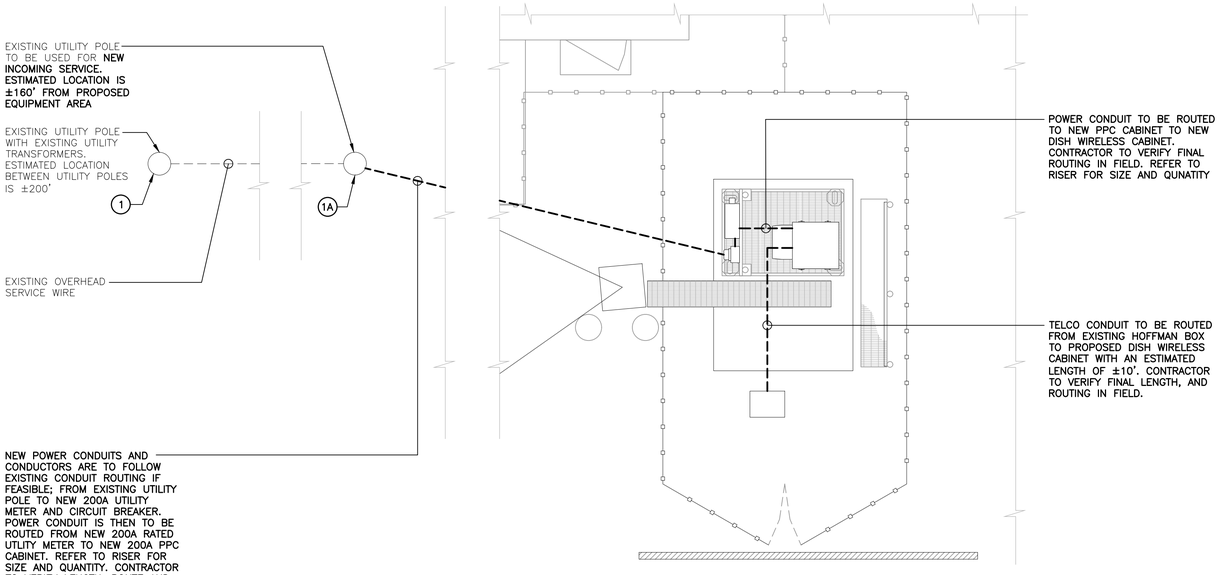
APPROXIMATE LOCATION OF EXISTING UTILITY POLE LOCATED AT TOP OF HILL **TO BE USED FOR NEW INCOMING SERVICE**

APPROXIMATE LOCATION OF EXISTING UTILITY POLE WITH TRANSFORMER LOCATED DOWN HILL. LENGTH BETWEEN UTILITY POLES ARE ESTIMATED TO BE ±200'

PROPOSED DISH WIRELESS EQUIPMENT LOCATION

POWER CONDUITS ARE TO FOLLOW EXISTING UNDERGROUND CONDUIT ROUTING IF FEASIBLE; FROM EXISTING UTILITY POLE TO NEW 200A UTILITY METER AND CIRCUIT BREAKER. REFER TO RISER FOR SIZE AND QUANTITY. CONTRACTOR TO VERIFY LENGTH, ROUTE AND FEASIBILITY IN FIELD

1 / E-1 **CONDUIT AERIAL VIEW**
SCALE: 1" = 50'
TRUE NORTH



EXISTING UTILITY POLE TO BE USED FOR **NEW INCOMING SERVICE. ESTIMATED LOCATION IS ±160' FROM PROPOSED EQUIPMENT AREA**

EXISTING UTILITY POLE WITH EXISTING UTILITY TRANSFORMERS. ESTIMATED LOCATION BETWEEN UTILITY POLES IS ±200'

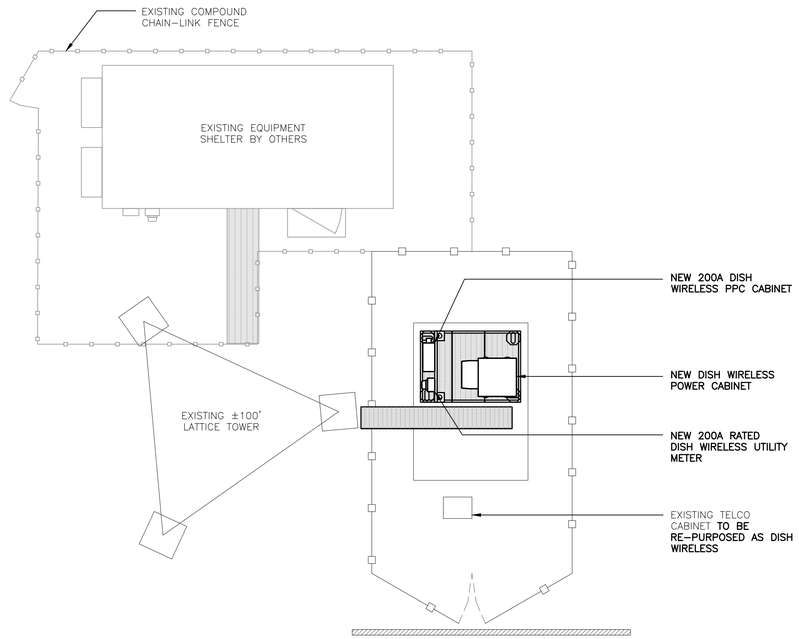
EXISTING OVERHEAD SERVICE WIRE

NEW POWER CONDUITS AND CONDUCTORS ARE TO FOLLOW EXISTING CONDUIT ROUTING IF FEASIBLE; FROM EXISTING UTILITY POLE TO NEW 200A UTILITY METER AND CIRCUIT BREAKER. POWER CONDUIT IS THEN TO BE ROUTED FROM NEW 200A RATED UTLITY METER TO NEW 200A PPC CABINET. REFER TO RISER FOR SIZE AND QUANTITY. CONTRACTOR TO VERIFY LENGTH, ROUTE AND FEASIBILITY IN FIELD

POWER CONDUIT TO BE ROUTED TO NEW PPC CABINET TO NEW DISH WIRELESS CABINET. CONTRACTOR TO VERIFY FINAL ROUTING IN FIELD. REFER TO RISER FOR SIZE AND QUNATITY

TELCO CONDUIT TO BE ROUTED FROM EXISTING HOFFMAN BOX TO PROPOSED DISH WIRELESS CABINET WITH AN ESTIMATED LENGTH OF ±10'. CONTRACTOR TO VERIFY FINAL LENGTH, AND ROUTING IN FIELD.

2 / E-1 **ELECTRICAL CONDUIT ROUTING PLAN**
SCALE: NOT TO SCALE
TRUE NORTH



EXISTING COMPOUND CHAIN-LINK FENCE

NEW 200A DISH WIRELESS PPC CABINET

NEW DISH WIRELESS POWER CABINET

NEW 200A RATED DISH WIRELESS UTILITY METER

EXISTING TELCO CABINET **TO BE RE-PURPOSED AS DISH WIRELESS**

3 / E-1 **PROPOSED COMPOUND PLAN**
SCALE: 3/32" = 1'
TRUE NORTH

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AERIAL VIEW, COMPOUND, AND CONDUIT ROUTING PLAN

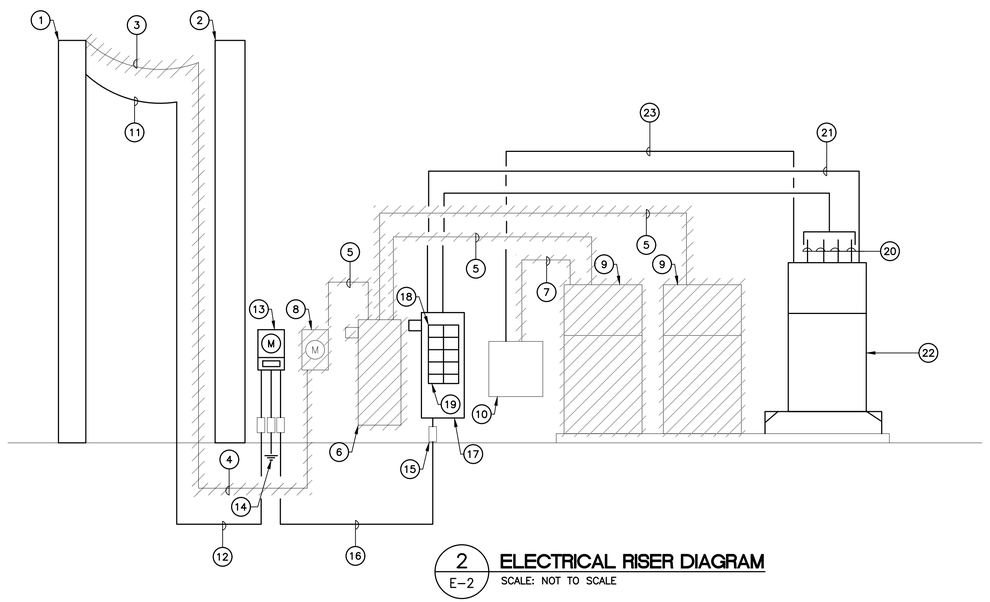
E-1

Sheet No. 7 of 14

VOLTAGE:	120/240		PHASE:	1	WIRE:	3		PANEL NO.		MDP							
MAIN BUS:	200	AMPS						TOTAL WATTS, L1		11,700							
MAIN BREAKER:	200	A FRAME		200		A TRIP		TOTAL WATTS, L2		11,700	LOC:	EQUIPMENT FRAME					
MOUNTING:	SURFACE							TOTAL WATTS		23,400							
NOTES:	A) PPC SHALL BE 200A, 120/240V, SINGLE PHASE, 3W, 65 KAIC, 200A MCB, 24 POSITION, NEMA 3R ENCLOSURE, LAMINATED ENGRAVED BAKELITE NAMEPLATE, COPPER EQUIPMENT GROUND KIT, INSULATED COPPER SOLID NEUTRAL BAR.																
	B) BRANCH CIRCUIT BREAKER AND CONDUCTOR SIZE BASED ON SPECIFIC EQUIPMENT. CONFIRM ELECTRICAL REQUIREMENTS PRIOR TO INSTALLATION.																

		WATTS LOAD				L1 Y L2 Y			WATTS LOAD				
DIRECTORY	WIRE & CONDUIT	L1	L2	CKT.	AMPS		AMPS	CKT.	L1	L2	WIRE & CONDUIT	DIRECTORY
RECTIFIER #1	3/4" C, 2 #10, #10GND	2,880		1	30/2P		20	2	180		3/4" C, 2 #12, #12GND	CONVENIENCE GFCI OUTLET
			2,880	3			20	4		180	3/4" C, 2 #12, #12GND	PPC GFCI OUTLET
RECTIFIER #2	3/4" C, 2 #10, #10GND	2,880		5	30/2P			6			-	SPACE
			2,880	7				8			-	SPACE
RECTIFIER #3	3/4" C, 2 #10, #10GND	2,880		9	30/2P			10			-	SPACE
			2,880	11				12			-	SPACE
RECTIFIER #4	3/4" C, 2 #10, #10GND	2,880		13	30/2P			14			-	SPACE
			2,880	15				16			-	SPACE
SPACE	-			17				18			-	SPACE
SPACE	-			19				20			-	SPACE
SPACE	-			21				22			-	SPACE
SPACE	-			23				24			-	SPACE
SUBTOTAL		11,520	11,520						180	180	SUBTOTAL	

1 E-2 **ELECTRICAL PANEL SCHEDULE**
SCALE: NOT TO SCALE



2 E-2 **ELECTRICAL RISER DIAGRAM**
SCALE: NOT TO SCALE

RISER DIAGRAM NOTES

1. EXISTING UTILITY POLE (1) WITH EXISTING TRANSFORMERS.
2. EXISTING UTILITY POLE (1A) TO BE USED.
3. OVERHEAD SECTION OF INCOMING UTILITY CONDUCTORS TO BE REMOVED.
4. EXISTING INCOMING SERVICE CONDUCTORS TO BE REMOVED.
5. EXISTING CONDUITS AND CONDUCTORS TO BE REMOVED.
6. EXISTING PPC CABINET TO BE REMOVED AND REPLACED.
7. EXISTING TELCO CONDUIT TO BE REMOVED.
8. EXISTING 200A RATED, 240V, SINGLE PHASE, 3 WIRE UTILITY METER TO BE REMOVED.
9. EXISTING CABINET(S) TO BE REMOVED.
10. EXISTING TELCO CABINET TO REMAIN.
11. OVERHEAD SECTION OF INCOMING UTILITY CONDUCTORS.
12. 3" CONDUIT WITH INCOMING SERVICE CONDUCTORS. COORDINATE ALL EQUIPMENT WITH UTILITY COMPANY.PROVIDE ALL COUPLINGS, ADAPTERS, SWEEPS, AND ASSOCIATED HARDWARE. MATERIAL SHALL BE PER UTILITY COMPANY SPECIFICATIONS
13. 200A RATED, 240V, SINGLE PHASE, 3 WIRE UTILITY METER AND ASSOCIATED 200A/2P CIRCUIT BREAKER TO SERVE DISH WIRELESS. ALL EQUIPMENT MUST BE UTILITY COMPANY APPROVED.
14. #2 AWG MAIN SERVICE GROUNDING CONDUCTOR IN A 3/4" PVC CONDUIT. BOND TO EXISTING EXTERIOR GROUNDING SYSTEM
15. EXPANSION COUPLING, TYPICAL.
16. (3) 3/0 AWG, (1) #6 AWG GROUND, 2-1/2" CONDUIT.
17. NEW 200A, 120/240V, SINGLE PHASE PPC CABINET.
18. (4) 30A, 2P CIRCUIT BREAKER TO SERVE NEW DISH WIRELESS EQUIPMENT.
19. (1) 20A, 1P CIRCUIT BREAKER TO SERVE NEW DISH WIRELESS EQUIPMENT.
20. (4) SETS OF (3) #10 AWG, (1) #10 AWG GROUND. 3/4" CONDUIT.
21. (2) #12 AWG, (1) #12 AWG GROUND. 3/4" CONDUIT.
22. NEW DISH WIRELESS EQUIPMENT CABINET.
23. TELCO CONDUIT FOR CABINET CONNECTION. REFER TO MANUFACTURER FOR REQUIREMENTS

GENERAL NOTES:

1. EXISTING ELECTRICAL EQUIPMENT, CONDUITS, AND CONDUCTORS MAY BE REUSED PROVIDED THEY MATCH THE SPECIFICATIONS IN THESE DRAWINGS AND ARE IN PROPER WORKING CONDITION.

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ELECTRICAL
RISER DIAGRAM &
PANEL SCHEDULE

E-2

Sheet No. 8 of 14

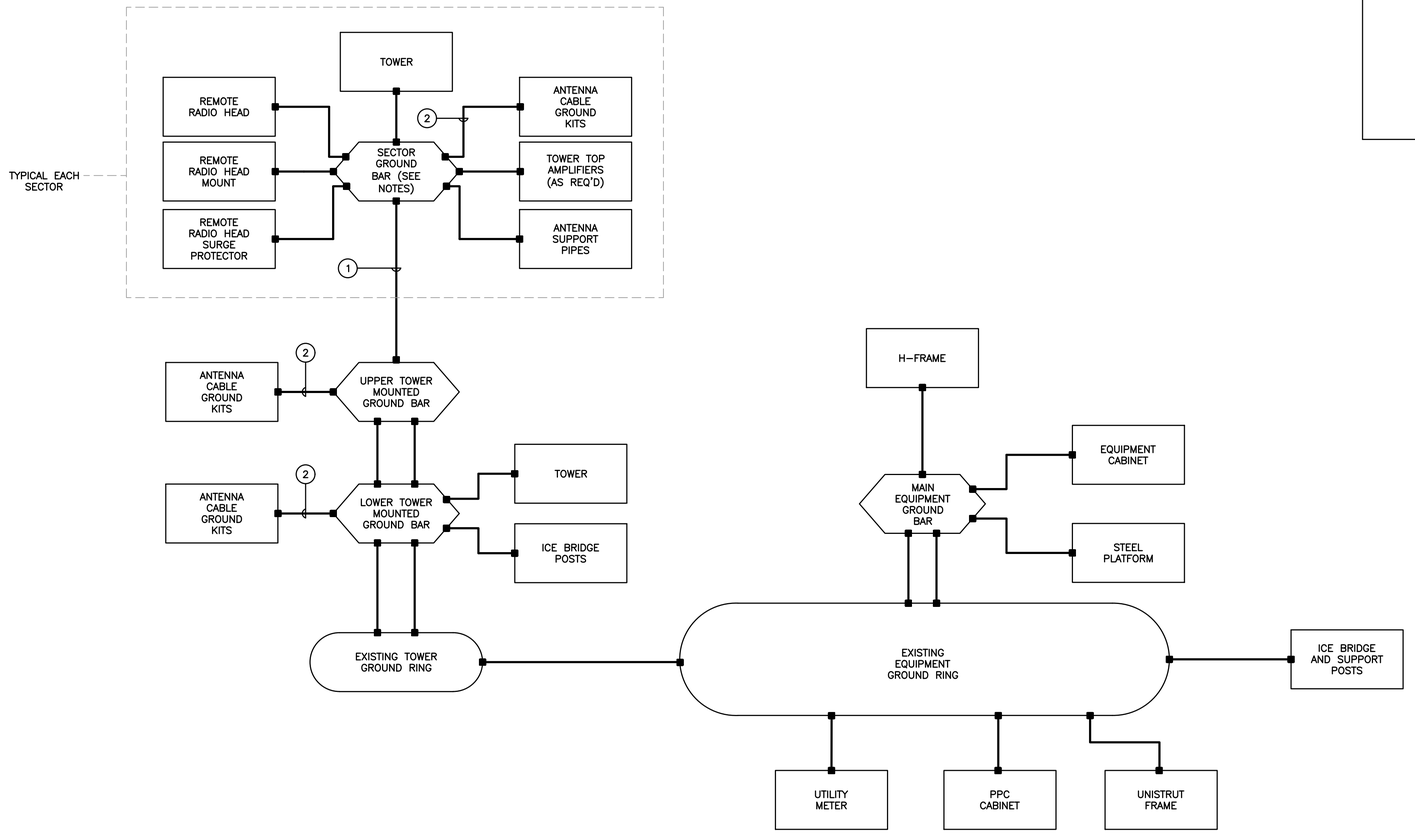
GROUNDING SCHEMATIC NOTES

(1) #2/0 GREEN INSULATED

(2) #6 AWG

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. BOND CABLE TRAY AND ICE BRIDGE SECTIONS TOGETHER WITH #6 AWG STRANDED GREEN INSULATED JUMPERS.
4. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
5. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
6. ALL BONDS TO TOWER SHALL BE MADE IN STRICT ACCORDANCE WITH SPECIFICATIONS OF TOWER MANUFACTURER OR STRUCTURAL ENGINEER.
7. REFER TO GROUNDING PLAN FOR LOCATION OF GROUNDING DEVICES.
8. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
9. COORDINATE ALL TOWER MOUNTED EQUIPMENT WITH OWNER.
10. ALL TOWER MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
11. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.
12. COORDINATE WITH TOWER OWNER BEFORE INSTALLING ANY GROUNDING ELEMENTS ON TOWER OR BONDING TO EXISTING TOWER GROUND RING.



1 / E-3 **ELECTRICAL SCHEMATIC DIAGRAM**

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ELECTRICAL SCHEMATIC AND PANEL SCHEDULE

E-3

Sheet No. 9 of 14

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. SCOPE OF WORK

A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. INSTALL 200A, 240/120V, 1P, 3 WIRE ELECTRIC SERVICE WITH REVENUE METER AND 200A MAIN CIRCUIT BREAKER FOR OWNER AND ASSOCIATED DISTRIBUTION EQUIPMENT. (AS REQUIRED BY UTILITY CO.)

2. FEEDERS AND BRANCH CIRCUIT WIRING TO PANELS, RECEPTACLES, EQUIPMENT, ETC. AS INDICATED OR NOTED ON PLANS.

3. CELLULAR GROUNDING SYSTEMS, CONSISTING OF ANTENNA GROUNDING, INTERIOR GROUNDING RING, GROUND BARS, ETC.

4. FURNISH AND INSTALL 3/4" PLYWOOD BACKBOARD OF SIZE INDICATED ON DRAWINGS FOR MOUNTING OF POWER/SERVICE EQUIPMENT. BACKBOARDS SHALL BE PAINTED WITH TWO (2) COATS OF SEMI-GLOSS GRAY FIRE RETARDANT PAINT.

5. COORDINATE ALL WORK SHOWN, ON THESE PLANS WITH LOCAL UTILITY COMPANIES.

B. LOCAL UTILITY COMPANIES SHALL PROVIDE THE FOLLOWING:

1. SHUTDOWN OF SERVICE (COORDINATE WITH OWNER).

C. CONTRACTOR SHALL CONFER WITH LOCAL UTILITY COMPANIES TO ASCERTAIN THE LIMITS OF THEIR WORK AND SHALL INCLUDE IN BID ANY CHARGES OR FEES MADE BY THE UTILITY COMPANIES FOR THEIR PORTION OF THE WORK AND SHALL PROVIDE AND INSTALL ALL ITEMS REQUIRED, BUT NOT PROVIDED BY UTILITY COMPANY.

D. ELECTRICAL CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH ELECTRIC UTILITY CO. PRIOR TO INSTALLATION.

1.02. GENERAL REQUIREMENTS

A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.

B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.

E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH LOCAL TELEPHONE COMPANY THAT MAY BE REQUIRED FOR THE INSTALLATION OF TELEPHONE SERVICE TO THE PROPOSED CELLULAR SITE.

F. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.

G. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.

H. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.

I. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.

J. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

K. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.

L. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.

M. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.

N. SHOP DRAWINGS:

1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.

2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.

O. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION.

SECTION 16111

1.01. CONDUIT

A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". CONDUITS SHALL BE PROPERLY FASTENED AS REQUIRED BY THE N.E.C.

B. THE INTERIOR OF RACEWAYS/ ENCLOSURES INSTALLED UNDERGROUND SHALL BE CONSIDERED TO BE WET LOCATION, INSULATED CONDUCTORS SHALL BE LISTED FOR USE IN WET LOCATIONS. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

C. CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.

D. PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS

E. ONLY LISTED PVC CONDUIT AND FITTINGS ARE PERMITTED FOR THE INSTALLATION OF ELECTRICAL CONDUCTORS, SUITABLE FOR UNDERGROUND APPLICATIONS.

CONDUIT SCHEDULE SECTION 16111

CONDUIT TYPE	NEC REFERENCE	APPLICATION	MIN. BURIAL DEPTH (PER NEC TABLE 300.5) [2,3]
EMT	ARTICLE 358	INTERIOR CIRCUITING, EQUIPMENT ROOMS, SHELTERS	N/A
RMC, RIGID GALV. STEEL	ARTICLE 344, 300.5, 300.50	ALL INTERIOR/ EXTERIOR CIRCUITING, ALL UNDERGROUND INSTALLATIONS.	6 INCHES
PVC, SCHEDULE 40	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE NOT SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
PVC, SCHEDULE 80	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
LIQUID TIGHT FLEX. METAL	ARTICLE 350	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A
FLEX. METAL	ARTICLE 348	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A

[1] PHYSICAL DAMAGE IS SUBJECT TO THE AUTHORITY HAVING JURISDICTION.

[2] UNDERGROUND CONDUIT INSTALLED UNDER ROADS, HIGHWAYS, DRIVEWAYS, PARKING LOTS SHALL HAVE MINIMUM DEPTH OF 24".

[3] WHERE SOLID ROCK PREVENTS COMPLIANCE WITH MINIMUM COVER DEPTHS, WIRING SHALL BE INSTALLED IN PERMITTED RACEWAY FOR DIRECT BURIAL. THE RACEWAY SHALL BE COVERED BY A MINIMUM OF 2" OF CONCRETE EXTENDING DOWN TO ROCK.

SECTION 16123

1.01. CONDUCTORS

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

	120/208/240V	277/480V
LINE	COLOR	COLOR
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

1.01. BOXES

A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.

B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

SECTION 16140

1.01. WIRING DEVICES

A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.

1. 15 MINUTE TIMER SWITCH – INTERMATIC #FF15M (INTERIOR LIGHTS)

2. DUPLEX RECEPTACLE – P&S #2095 (GFCI) SPECIFICATION GRADE

3. SINGLE POLE SWITCH – P&S #CSB20AC2 (20A-120V HARD USE) SPECIFICATION GRADE

4. DUPLEX RECEPTACLE – P&S #5362 (20A-120V HARD USE) SPECIFICATION GRADE

B. PLATES – ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.

C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

1.01. DISCONNECT SWITCHES

A. FUSIBLE AND NON-FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

SECTION 16190

1.01. SEISMIC RESTRAINT

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT

A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.

B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.

C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

SECTION 16470

1.01. DISTRIBUTION EQUIPMENT

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16960

1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.

TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.

2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.

3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

SECTION 16450

1.01. GROUNDING

A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.

B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.

C. GROUNDING OF PANELBOARDS:

1. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.

2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).

D. EQUIPMENT GROUNDING CONDUCTOR:

1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.

2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.

3. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).

E. CELLULAR GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 10 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

1. GROUND BARS
2. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).
3. ANTENNA GROUND CONNECTIONS AND PLATES.

F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.

G. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

SECTION 16961

1.01. TESTS BY CONTRACTOR

A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.

B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE SO CONNECTED TO THE PANELBOARDS SUCH THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.

C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	09/07/22	RYS	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
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DISH WIRELESS, LLC

SITE NUMBER: BOBDL00007C
SITE NAME: CLPC TOWER SIMSBURY
HOSKINS ROAD
SIMSBURY, CT 06070

DATE: 01/27/22
SCALE: AS NOTED
JOB NO. 21091.02

ELECTRICAL SPECIFICATIONS

E-4

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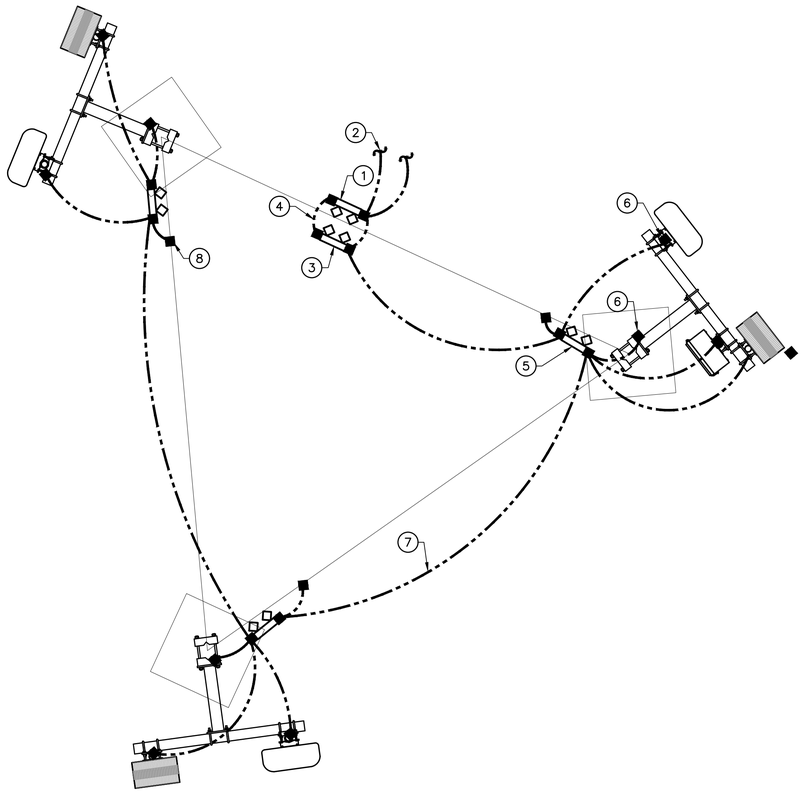
GROUNDING PLAN NOTES

1. LOWER TOWER MOUNTED GROUND BAR.
2. BOND GROUND BAR TO EXISTING TOWER GROUND RING TYP. 2 PLACES.
3. UPPER TOWER MOUNTED GROUND BAR
4. BOND UPPER TOWER MOUNTED GROUND BAR TO SECTOR GROUND BAR (2 GROUND LEADS).
5. SECTOR GROUND BARS TYP.
6. BOND ANTENNA MOUNTING PIPES TO SECTOR GROUND BAR.
7. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
8. BOND SECTOR GROUND BAR TO TOWER STEEL.



1 / G-1 ELECTRICAL GROUNDING PLAN - ANTENNA
SCALE: NOT TO SCALE

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ELECTRICAL GROUNDING PLANS

G-1

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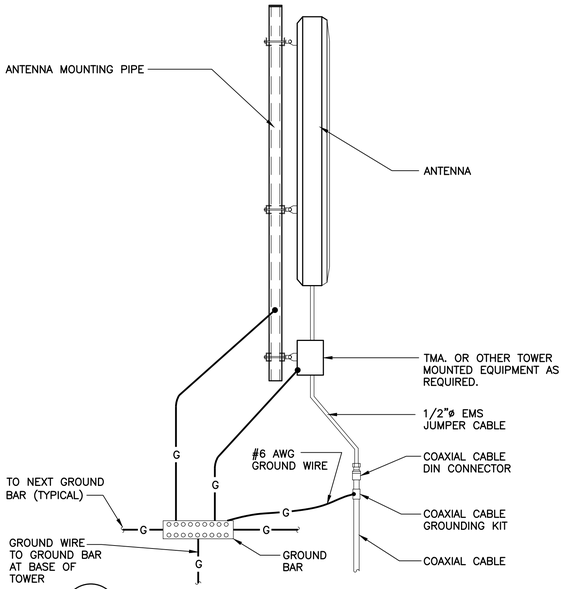
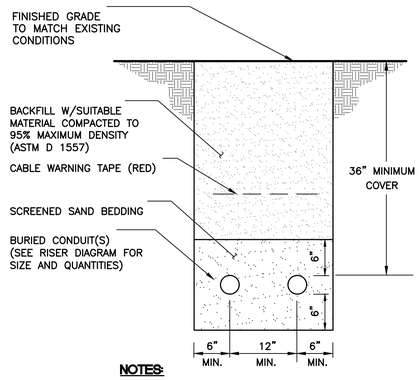


1 G-2 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NOT TO SCALE

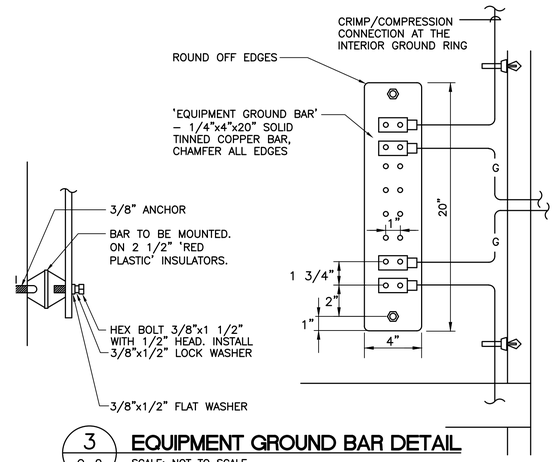


NOTES:

1. THE CLEAN FILL SHALL PASS THROUGH A 3/8" MESH SCREEN AND SHALL NOT CONTAIN SHARP STONES. OTHER BACKFILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.
2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.
3. WHERE SHALLOW BEDROCK IS ENCOUNTERED BETWEEN UTILITY SOURCE AND SERVICE EQUIPMENT, COORDINATE WITH UTILITY COMPANY FOR BURIAL DEPTH REQUIREMENTS.
4. COORDINATE WITH ELECTRICAL ENGINEER WHERE SHALLOW BEDROCK IS ENCOUNTERED BETWEEN SERVICE EQUIPMENT AND EQUIPMENT SHELTER.

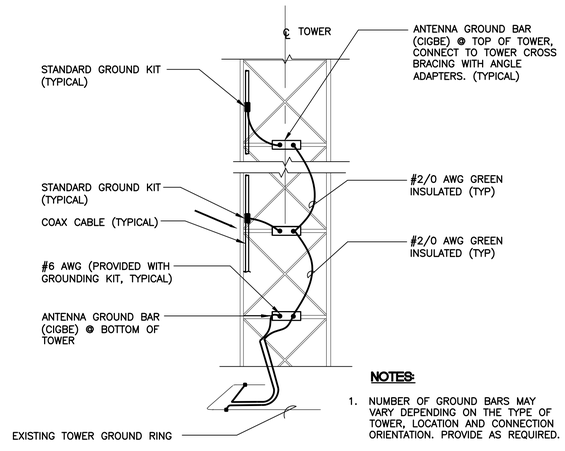
2 G-2 TYPICAL ELECTRICAL TRENCH DETAIL

SCALE: NOT TO SCALE



3 G-2 EQUIPMENT GROUND BAR DETAIL

SCALE: NOT TO SCALE



NOTES:

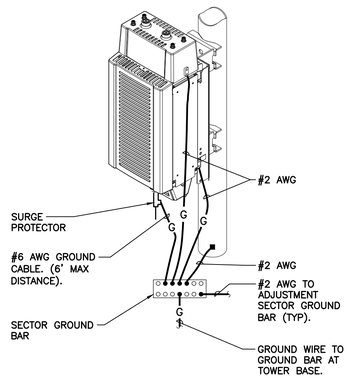
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.

4 G-2 ANTENNA CABLE GROUNDING - LATTICE TOWER

SCALE: NOT TO SCALE

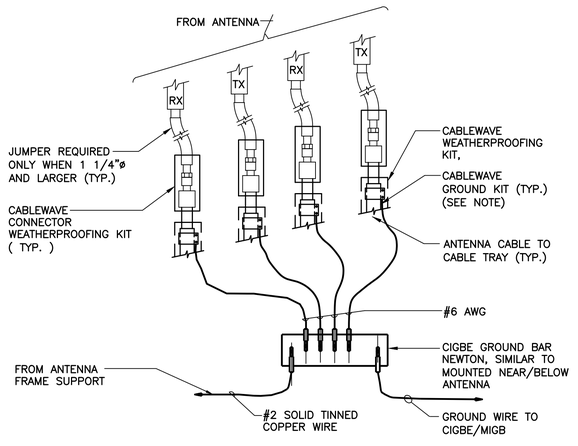
EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:

1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



5 G-2 RRH POLE MOUNT GROUNDING

SCALE: NOT TO SCALE

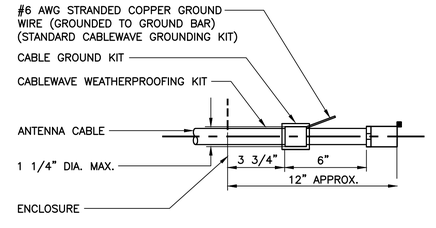


NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

6 G-2 CONNECTION OF GROUND WIRES TO GROUND BAR

SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

7 G-2 ANTENNA CABLE GROUNDING DETAIL

SCALE: NOT TO SCALE

NOTES

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ELECTRICAL GROUNDING DETAILS

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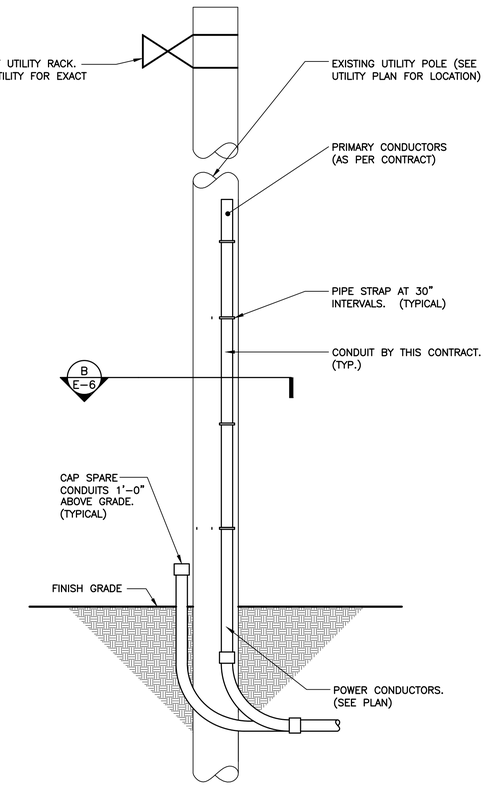
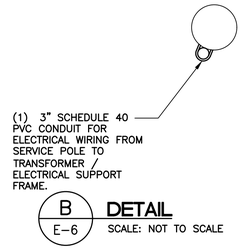
SERVICE RISER NOTES:

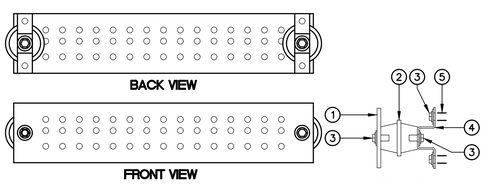
1. THE LOCATION SHOWN FOR THE CONNECTION TO UTILITIES, AND INCOMING POWER AND TELEPHONE SERVICES IS FOR CONCEPT ONLY. THE CONTRACTOR SHALL COORDINATE THE ACTUAL LOCATION WITH LOCAL TELEPHONE COMPANY, THE OWNER AND LOCAL ELECTRIC UTILITY COMPANY.
2. CONTRACTOR IS RESPONSIBLE FOR MAKING ARRANGEMENTS WITH LOCAL UTILITY COMPANY AND LOCAL TELEPHONE COMPANY FOR A TIMELY INSTALLATION OF THE INCOMING POWER AND TELEPHONE SERVICE. CONTRACTOR WILL OBTAIN AN ELECTRIC SERVICE ORDER (ESO) FOR THE SITE FROM LOCAL UTILITY COMPANY AND LOCAL TELEPHONE COMPANY PRIOR TO CONSTRUCTION.
3. THE INCOMING ELECTRIC SERVICE WILL BE INSPECTED BY THE AUTHORITY HAVING JURISDICTION AND A CERTIFICATE OF SUCH INSPECTION SHALL BE FURNISHED TO THE OWNER AND A COPY FORWARDED TO LOCAL UTILITY COMPANY.
4. FOR INCOMING UNDERGROUND TELEPHONE SERVICE, THE CONTRACTOR SHALL INSTALL CONDUIT AND PULL WIRES BETWEEN THE RISER POLE AND THE TELCO SERVICE CABINET. THE CONTRACTOR SHALL PROVIDE PRE CAST PULL–BOXES INCLUSIVE OF THE PRE CAST COVERS OF THE TYPE AND AS REQUIRED BY LOCAL TELEPHONE COMPANY THE MAXIMUM DISTANCE BETWEEN PULL–BOXES CAN NOT EXCEED 750' (CONTRACTOR TO CONFIRM WITH LOCAL UTILITY). AT THE PROPOSED RISER POLE EXTEND THE TELEPHONE CONDUIT UP THE POLE APPROXIMATELY 8' AND SEAL.
5. THE CONTRACTOR SHALL COORDINATE THE METER REQUIREMENTS WITH LOCAL UTILITY COMPANY.
6. THE INCOMING ELECTRICAL SERVICE SHALL BE INSTALLED IN CONFORMANCE WITH LOCAL UTILITY COMPANY STANDARDS (LATEST EDITION).
7. THIS SITE MAY CONTAIN CRITICAL UNDERGROUND ELECTRIC AND TELEPHONE SERVICES IN THE VICINITY OF THE NEW UNDERGROUND SERVICE AND THE EQUIPMENT SUPPORTS. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DISRUPTION OF THESE EXISTING FACILITIES. THE CONTRACTOR SHALL ALSO CONTACT LOCAL UTILITY COMPANY AND LOCAL TELEPHONE COMPANY AND ALL THE APPROPRIATE AGENCIES PRIOR TO EXCAVATION AT THIS SITE.



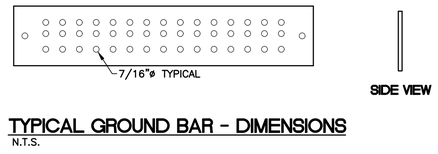
1 G–3 **INCOMING SERVICE POLE RISER**
SCALE: NOT TO SCALE



B E–6 **DETAIL**
SCALE: NOT TO SCALE



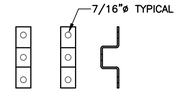
TYPICAL GROUND BAR ASSEMBLY
N.T.S.



TYPICAL GROUND BAR – DIMENSIONS
N.T.S.

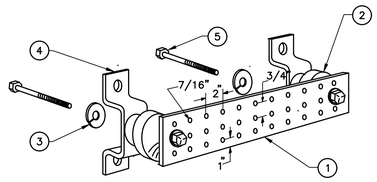
NOTES

1. HIGH CONDUCTIVITY TINNED COPPER BAR 1'–8"Lx4"Wx1/4"D.
2. RED COLORED STANDOFF INSULATOR PLASTIC #1872–1A.
3. STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS, SPLIT LOCKWASHER AND FLAT WASHER.
4. 1"Wx1/8"T STAINLESS STEEL TYPE 304 BRACKET.
5. STAINLESS STEEL TYPE 304 HARDWARE – 3/8"ø EXPANSION BOLT FOR CONCRETE.



BRACKET FOR GROUND BAR-DIMENSIONS
N.T.S.

2 G–3 **MASTER/EQUIPMENT GROUND BAR DETAILS**
SCALE: NOT TO SCALE



NOTES

1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061–4.
3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015–8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A–6056.
5. 5/8–11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS.

3 G–3 **GROUND BAR DETAIL**
SCALE: NOT TO SCALE

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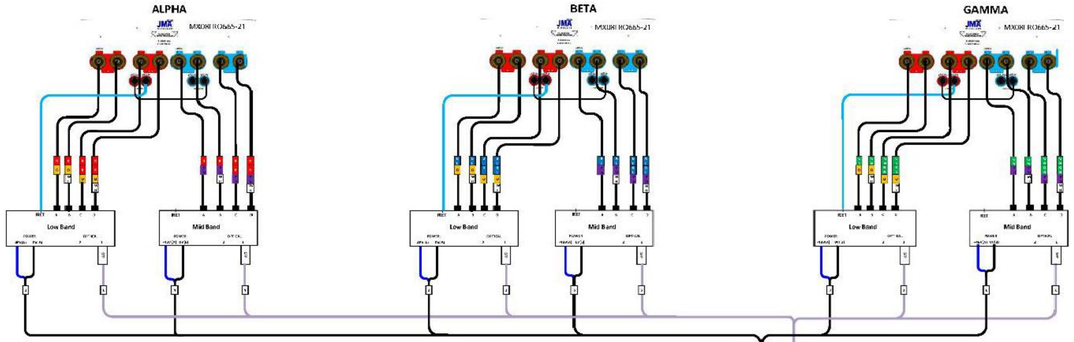
JOB NO. 21091.02

ELECTRICAL GROUNDING DETAILS

G-3

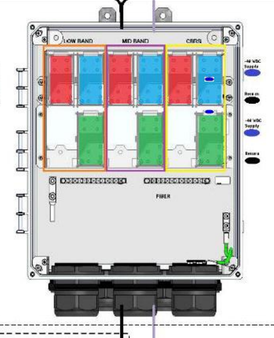
Sheet No. 13 of 14

PLUMBING DIAGRAM



Fiber Patch Panel

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



top

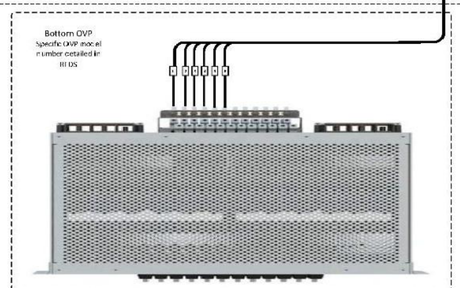
bottom

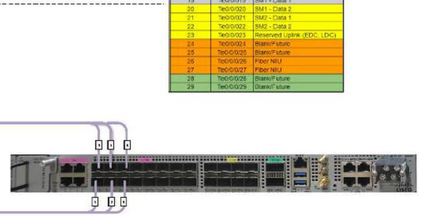
Bottom OVP Layout

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

5G plumbing diagram | MX MX08RO665-21
2-2-2(LB+MB)

Bottom OVP
Specific OVP model number detailed in BOM





CSR NCS540

Port	Interface	Description
0	Gi0/0/0/0	SiteBasu
1	Gi0/0/0/1	CBRS - Alpha
2	Gi0/0/0/2	CBRS - Beta
3	Gi0/0/0/3	CBRS - Gamma
4	Te0/0/0/4	Fujitsu Low-Band RU - Alpha
5	Te0/0/0/5	Fujitsu Mid-Band RU - Alpha
6	Te0/0/0/6	Fujitsu Low-Band RU - Beta
7	Te0/0/0/7	Fujitsu Mid-Band RU - Beta
8	Te0/0/0/8	Fujitsu Low-Band RU - Gamma
9	Te0/0/0/9	Fujitsu Mid-Band RU - Gamma
10	Te0/0/0/10	Fixed Volt
11	Te0/0/0/11	Fixed Volt
12	Te0/0/0/12	Fixed Volt
13	Te0/0/0/13	Fixed Volt
14	Te0/0/0/14	CHASI1
15	Te0/0/0/15	CBRS2
16	Te0/0/0/16	CHAS3
17	Gi0/0/0/17	SM1 - RMC
18	Gi0/0/0/18	SM2 - RMC
19	Te0/0/0/19	SM1 - Data 1
20	Te0/0/0/20	SM1 - Data 2
21	Te0/0/0/21	SM2 - Data 1
22	Te0/0/0/22	SM2 - Data 2
23	Te0/0/0/23	Reserved Uplink (EDC - LDC)
24	Te0/0/0/24	Blank Future
25	Te0/0/0/25	Blank Future
26	Te0/0/0/26	Fiber NIU
27	Te0/0/0/27	Fiber NIU
28	Te0/0/0/28	Blank Future
29	Te0/0/0/29	Blank Future

RF COLOR CODING

RF Cable Color Codes

Low Bands (N71+N26) Optional - (N29)	AWS (N66+N70+H-block)	CBRS Tech (3 GHz)	Negative Slant Port on Ant/RRH
ORANGE	PURPLE	YELLOW	WHITE

RF Jumper Color Coding

3/4" tape widths with 3/4" spacing

	ALPHA RRH				BETA RRH				GAMMA RRH			
	Port 1 + slant	Port 2 - slant	Port 3 + slant	Port 4 - slant	Port 1 + slant	Port 2 - slant	Port 3 + slant	Port 4 - slant	Port 1 + sl ant	Port 2 - sl ant	Port 3 + slant	Port 4 - slant
Low-Band RRH – (600MHz N71 baseband) + (850MHz N26 band) + (700MHz N29 band) - optional per market	RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
Add Frequency Color to Sector Band (CBRS will use Yellow bands)	ORANGE	ORANGE WHITE (-) Port	RED ORANGE	RED ORANGE WHITE (-) Port	ORANGE	ORANGE WHITE (-) Port	BLUE ORANGE	BLUE ORANGE WHITE (-) Port	ORANGE	ORANGE WHITE (-) Port	GREEN ORANGE	GREEN ORANGE WHITE (-) Port
Mid-band RRH - (AWS bands N66+N70)	RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
Add Frequency Color to Sector Band (CBRS will use Yellow bands)	PURPLE	PURPLE WHITE (-) Port	RED PURPLE	RED PURPLE WHITE (-) Port	PURPLE	PURPLE WHITE (-) Port	BLUE PURPLE	BLUE PURPLE WHITE (-) Port	PURPLE	PURPLE WHITE (-) Port	GREEN PURPLE	GREEN PURPLE WHITE (-) Port

Hybrid/Discreet Cables

	Example 1	Example 2
Include sector bands being supported along with frequency bands	RED BLUE GREEN	RED BLUE GREEN
Example 1 - Hybrid, or discreet, supports all sectors, both low-bands and mid-bands		
Example 2 - Hybrid, or discreet, supports CBRS only, all sectors	ORANGE PURPLE	YELLOW

Fiber Jumpers to RRHs

	Low Band RRH	High Band RRH	Low Band RRH	High Band RRH	Low Band RRH	High Band RRH
Low Band RRH fiber cables have sector stripe only	RED	RED PURPLE	BLUE	BLUE PURPLE	GREEN	GREEN PURPLE

Power Cables to RRHs

	Low Band RRH	High Band RRH	Low Band RRH	High Band RRH	Low Band RRH	High Band RRH
Low Band RRH power cables have sector stripe only	RED	RED PURPLE	BLUE	BLUE PURPLE	GREEN	GREEN PURPLE

RET motors at Antennas

	Port 1/ Antenna 1 IN	Port 1/ Antenna 1 IN	Port 1/ Antenna 1 OUT	Port 1/ Antenna 1 IN	Port 1/ Antenna 1 OUT
	RED	BLUE RED	BLUE GREEN	GREEN BLUE	

Example here shows daisy-chain sector configuration
Second antenna on each sector would display two sector color stripes.

Microwave Radio Links

Links will have a 1.5-2 inch white wrap with the azimuth color overlapping in the middle. Add additional sector color bands for each additional MW radio.

Microwave cables will require P-touch labels inside the cabinet to identify the local and remote Site ID's.

Forward azimuth of 0-120 degrees		Forward azimuth of 120-240 degrees		Forward azimuth of 240-359 degrees	
Primary	Secondary	Primary	Secondary	Primary	Secondary
WHITE RED WHITE	WHITE RED WHITE RED WHITE	WHITE BLUE WHITE	WHITE BLUE WHITE BLUE WHITE	WHITE GREEN WHITE	WHITE GREEN WHITE GREEN WHITE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	09/07/22	RYS	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
	10/18/22	RYS	TJR	CONSTRUCTION DRAWINGS – REVISED BUILDING CODES

PROFESSIONAL ENGINEER SEAL

dish wireless

NSS NORTHEAST Site Solutions

CENTEK engineering "Centered on Solutions"
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

DISH WIRELESS, LLC

SITE NUMBER: BOBDL00007C
SITE NAME: CLPC TOWER SIMSBURY
HOSKINS ROAD
SIMSBURY, CT 06070

DATE: 01/27/22
SCALE: AS NOTED
JOB NO. 21091.02

RF COLOR CODING AND PLUMBING DIAGRAM

RF-1

Sheet No. 14 of 14

Exhibit D

Structural Analysis Report

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

100-ft Existing Self-Supporting Lattice Tower

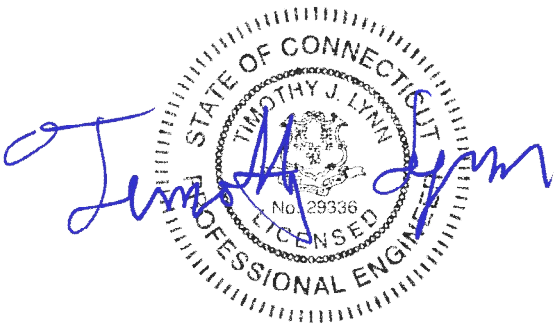
Proposed Dish Antenna Installation

Site Ref: BOBDL00007C

91 Mountain Rd, aka Hoskins Rd
Simsbury, CT

CENTEK Project No. 21091.02

~~Date: January 4, 2022~~
Rev 3: October 17, 2022



Prepared for:
Northeast Site Solutions
1053 Farmington Ave., Unit G
Farmington, CT 06032

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- ANTENNA AND APPURTENANCE SUMMARY
- PRIMARY ASSUMPTIONS USED IN THE ANALYSIS
- ANALYSIS
- TOWER LOADING
- TOWER CAPACITY
- FOUNDATION AND ANCHORS
- CONCLUSION

SECTION 2 – CONDITIONS & SOFTWARE

- STANDARD ENGINEERING CONDITIONS
- GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

SECTION 3 – CALCULATIONS

- tnxTower INPUT/OUTPUT SUMMARY
- tnxTower FEED LINE PLAN
- tnxTower FEED LINE DISTRIBUTION
- tnxTower DETAILED OUTPUT
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SECTION 4 – REFERENCE MATERIALS

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Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna installation proposed by Dish on the existing self-supporting lattice tower located in Simsbury, Connecticut.

The host tower is a 100-ft, four-section, three legged, self-supporting tapered lattice tower originally designed and manufactured by Stainless Inc., report no. 1935-S, dated November 3, 1967. The tower geometry, structure member sizes and the foundation system information were obtained from the aforementioned design documents.

Antenna and appurtenance information were obtained from a previous structural report prepared by Gaviria Engineering, LLC project no. 2021-0316.006A dated May 3, 2021, a previous structural report prepared by Centek project no. 13003.06 dated August 1, 2013 and a Dish RF sheet.

The existing tower consists of four (4) tapered steel pipe leg sections conforming to ASTM A53 Grade B. Diagonal lateral support bracing consists of steel pipe sections conforming to ASTM A53 Grade B. Horizontal support bracing consists of A36 steel angle construction. The vertical tower sections are connected by bolted flange plates while the pipe legs and bracing are connected by bolted and welded gusset connections. The width of the tower face is 7-ft at the top and 15-ft at the base.

Antenna and Appurtenance Summary

The existing tower was designed to support several communication antennas. The existing, proposed and future loads considered in this analysis consist of the following:

- Eversource (Existing):
  Appurtenance: One (1) 20-ft dipole leg mounted to the top of the tower.
  Conduit: One (1) 1-1/4" ∅ coax cable.
- Town (Reserved):
  Appurtenance: One (1) ANT-18GHZ-24-SP microwave dish on a pipe mast with a RAD center elevations of 90-ft above existing grade.
  Conduit: One (1) 1/2" ∅ coax cable.
- Eversource (Existing):
  Appurtenance: Two (2) 3-ft ∅ microwave dishes on a pipe mast with a RAD center elevations of 89-ft and 85-ft above existing grade.
  Conduit: Two (2) 1-1/4" ∅ coax cable.
- Town (Reserved):
  Appurtenance: One (1) RFI OA40-67-DIN dipole leg mounted with a RAD center elevations of 80-ft above existing grade.
  Conduit: One (1) 7/8" ∅ coax cable.

- UNKNOWN (Existing):
  Antennas: One (1) GPS antenna leg mounted with an elevation of 56-ft above existing grade.
  Coax Cable: One (1) 1/2" ∅ coax cable.
- UNKNOWN (Existing):
  Antennas: One (1) GPS antenna leg mounted with an elevation of 12-ft above existing grade.
  Coax Cable: One (1) 1/2" ∅ coax cable.
- **Dish (Proposed):**
  Antennas: Three (3) JMA MX08FRO665-21 panel antennas, three (3) Fujitsu TA08025-B605 remote radio heads, three (3) Fujitsu TA08025-B604 remote radio heads and and one (1) Raycap surge arrestor mounted on three (3) SitePro tower mounts (p/n CWT02) to the tower with a RAD center elevation of ±65-ft above grade level.
  Coax Cables: One (1) hybrid cable running on a face of the existing tower as specified in Section 3 of this report.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (3-second gust) with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-H entitled "Structural Standard for Antenna Support Structures, Antennas and Small Wind Turbine Support Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC[1] and the wind speed data available in the TIA-222-H Standard.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-H, gravity loads of the tower structure and its components, and the application of 1.5" radial ice on the tower structure and its components.

Load Cases:	Load Case 1; 125 mph (Risk Cat III) wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Appendix P of the 2022 CT Building Code]*
	Load Case 2; 50 mph wind speed w/ 1.50" radial ice plus gravity load – used in calculation of tower stresses.	*[Annex B of TIA-222-H]*

[1] The 2021 International Building Code as amended by the 2022 Connecticut State Building Code (CSBC).

Tower Capacity

- Calculated stresses were found to be within allowable limits. This tower was found to be at **76.1%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Leg (T4)	0'-0"-25'-0"	61.4%	**PASS**
Diagonal (T3)	25'-0"-50'-0"	76.1%	**PASS**

- The tower combined deflection is **0.1403 degrees**.

Deflection Criteria	Proposed (degrees)
Sway (Tilt)	0.1347
Twist	0.0394
Combined	0.1403

Note 1: *Tower deflection calculated utilizing the service wind load combination and nominal wind speed of 101 mph.*

Foundation and Anchors

The existing foundation consists of three (3) individual 2'-6" square tapering to 4'-0" square by 4'-0" long piers with eight (8) rock anchors per pier. The foundation properties and sub-grade conditions used in the analysis of the existing foundation were obtained from the aforementioned original Stainless design documents. Tower legs are connected to the foundation by means of (6) 1-1/2"∅, ASTM A36 anchor bolts per leg, embedded into the concrete foundation structure.

- The tower base maximum corner reactions developed from the governing Load Case 2 were used in the verification of the foundation and its anchors:

Vector	Proposed Reactions
Compression	**93 kips**
Uplift	**80 kips**
Leg Shear	**13 kips**
Total Shear	**23 kips**
Overturning Moment	**1149 kip-ft**

- The foundation was found to be within allowable limits.

Foundation	Design Limit	TIA-222-H Section 9.4 FS[(1)]	Proposed Loading (FS)[(1)]	Result
Reinf. Conc. Pier w/ Rock Anchors	Uplift	1.0	1.46	**PASS**

Note 1: FS denotes Factor of Safety

- The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	19.2%	**PASS**

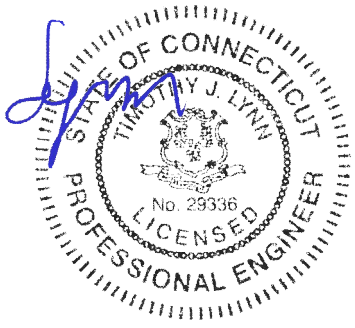
Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by Dish. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

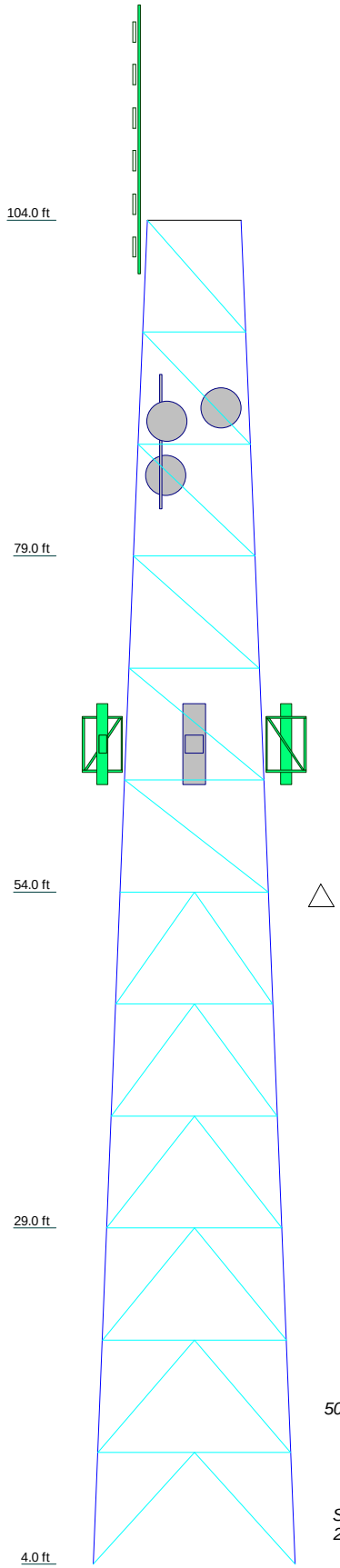
- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.



Section	T1	T2	T3	T4
Legs	HSS5x.188		HSS5x.312	HSS5x.375
Leg Grade	A53-B-35			
Diagonals	HSS3x.188		HSS2.5x.125	HSS2.875x.188
Diagonal Grade	A53-B-35			
Top Grts	L3x3x1/4	N.A.		
Horizontals	L3x3x1/4	L4x4x1/4	L3x3x1/4	
Face Width (ft)	7	9	11	13
# Panels @ (ft)	12 @ 8.33333			
Weight (K)	1.6	1.9	2.2	2.9

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
20' 8 Bay Di-Pole	100	TA08025-B605 (Dish - Proposed)	65
ANT-18GHZ-24-SP	90	Site Pro WiMAX Tower Mount CWT02 (Dish - Proposed)	65
3-ft Dish	89	Site Pro WiMAX Tower Mount CWT02 (Dish - Proposed)	65
10'x2.5" Pipe Mount	87.5	Site Pro WiMAX Tower Mount CWT02 (Dish - Proposed)	65
3-ft Dish	85	RD1DC-9181-PF-48 (Dish - Proposed)	65
OA40-67-DIN	80	MX08FRO665-21 (Dish - Proposed)	65
MX08FRO665-21 (Dish - Proposed)	65	MX08FRO665-21 (Dish - Proposed)	65
TA08025-B604 (Dish - Proposed)	65	GPS	56
TA08025-B605 (Dish - Proposed)	65	GPS	12
TA08025-B604 (Dish - Proposed)	65		
TA08025-B605 (Dish - Proposed)	65		
TA08025-B604 (Dish - Proposed)	65		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi			

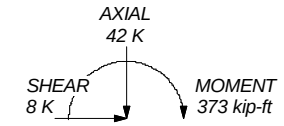
TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 101 mph wind.
5. Tower Risk Category III.
6. Topographic Category 4 with Crest Height of 150.00 ft
7. TOWER RATING: 76.1%

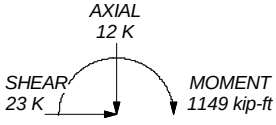
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 93 K
SHEAR: 13 K

UPLIFT: -80 K
SHEAR: 12 K



TORQUE 3 kip-ft
50 mph WIND - 1.5000 in ICE



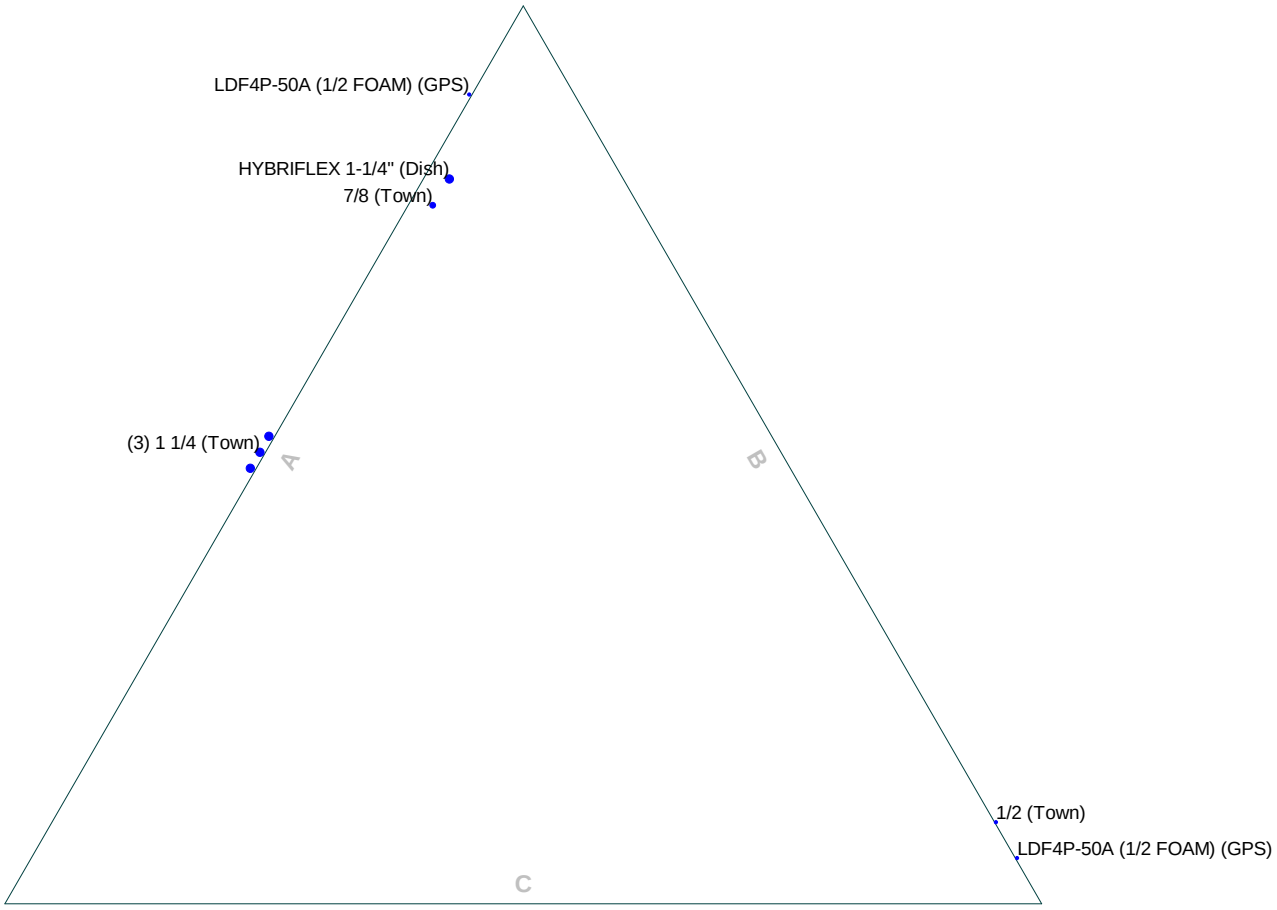
TORQUE 8 kip-ft
REACTIONS - 125 mph WIND

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: 21091.02 - BOBDL00007C		
Project: 100-ft Stainless Lattice Tower - Wintonbury Rd, Simsbury, CT		
Client: Dish	Drawn by: TJL	App'd:
Code: TIA-222-H	Date: 10/18/22	Scale: NTS
Path:		Dwg No. E-1

Feed Line Plan

Round Flat App In Face App Out Face



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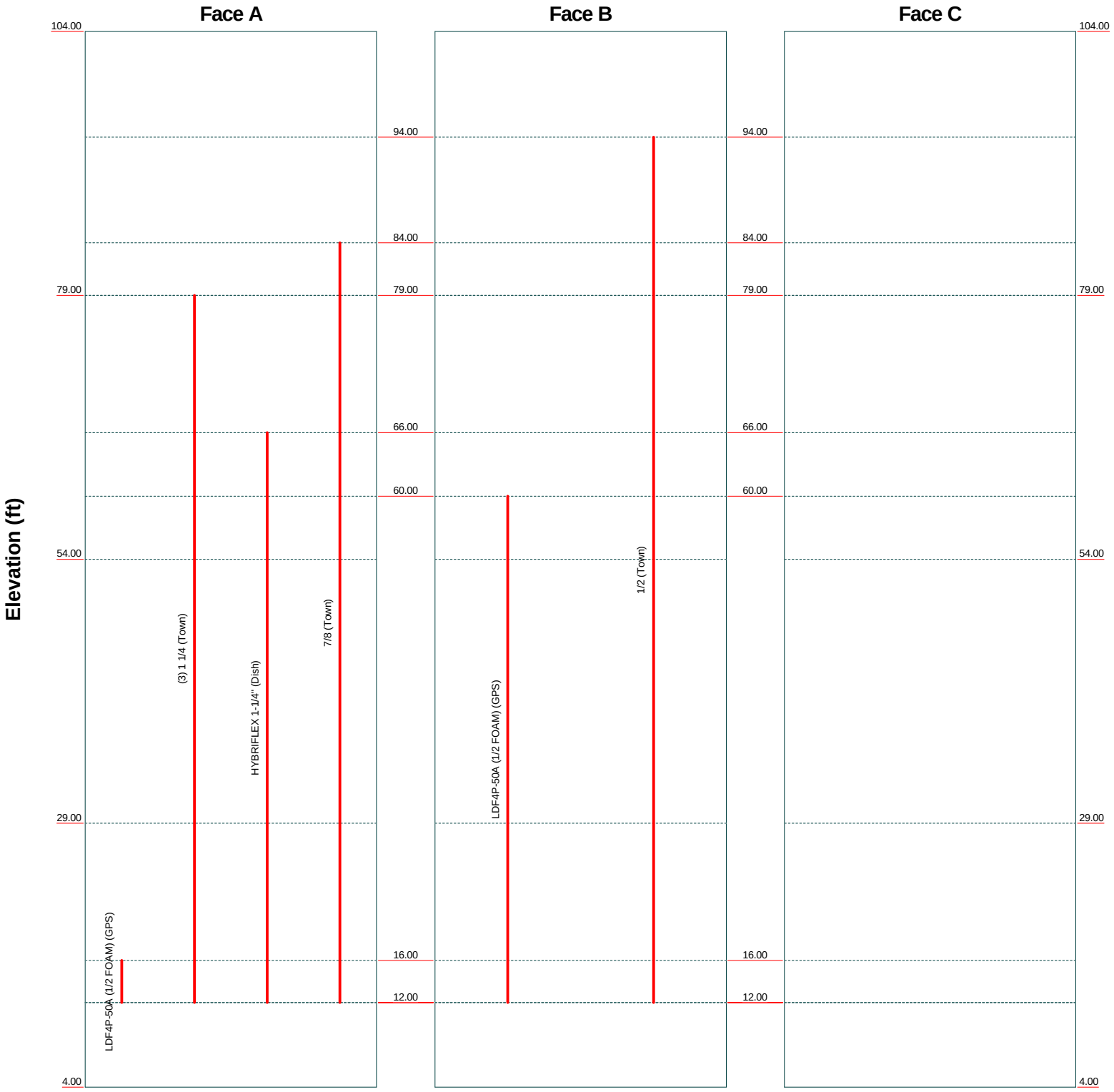
FAX: (203) 488-8587

Job: ***21091.02 - BOBDL00007C***		
Project: ***100-ft Stainless Lattice Tower - Wintonbury Rd, Simsbury, CT***		
Client: Dish	Drawn by: TJL	App'd:
Code: TIA-222-H	Date: 10/18/22	Scale: NTS
Path:		Dwg No. E-7

Feed Line Distribution Chart
4' - 104'

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



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FAX: (203) 488-8587

Job: ***21091.02 - BOBDL00007C***		
Project: ***100-ft Stainless Lattice Tower - Wintonbury Rd, Simsbury, CT***		
Client: Dish	Drawn by: TJL	App'd:
Code: TIA-222-H	Date: 10/18/22	Scale: NTS
Path:		Dwg No. E-7

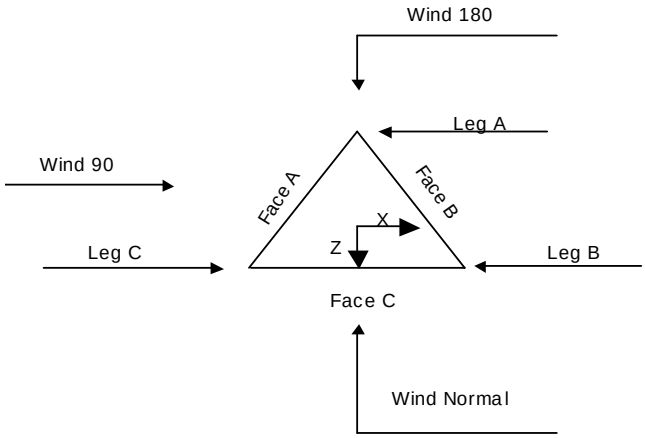
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 104.00 ft above the ground line.
The base of the tower is set at an elevation of 4.00 ft above the ground line.
The face width of the tower is 7.00 ft at the top and 15.00 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 4.00 ft.
Basic wind speed of 125 mph.
Risk Category III.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 4.
Crest Height: 150.00 ft.
Nominal ice thickness of 1.5000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 101 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	104.00-79.00			7.00	1	25.00
T2	79.00-54.00			9.00	1	25.00
T3	54.00-29.00			11.00	1	25.00
T4	29.00-4.00			13.00	1	25.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	104.00-79.00	8.33	Diag Down	No	Yes	0.0000	0.0000
T2	79.00-54.00	8.33	Diag Down	No	Yes	0.0000	0.0000
T3	54.00-29.00	8.33	K Brace Down	No	Yes	0.0000	0.0000
T4	29.00-4.00	8.33	K Brace Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 104.00-79.00	Pipe	HSS5x.188	A53-B-35 (35 ksi)	Pipe	HSS3x.188	A53-B-35 (35 ksi)
T2 79.00-54.00	Pipe	HSS5x.188	A53-B-35 (35 ksi)	Pipe	HSS3x.188	A53-B-35 (35 ksi)
T3 54.00-29.00	Pipe	HSS5x.312	A53-B-35 (35 ksi)	Pipe	HSS2.5x.125	A53-B-35 (35 ksi)
T4 29.00-4.00	Pipe	HSS5x.375	A53-B-35 (35 ksi)	Pipe	HSS2.875x.188	A53-B-35 (35 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 104.00-79.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T2 79.00-54.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T3 54.00-29.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T4 29.00-4.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 104.00-79.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 79.00-54.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 54.00-29.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 29.00-4.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	Yes	1	1	1	1	1	1	1	1
104.00-79.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
79.00-54.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
54.00-29.00				1	1	1	1	1	1	1
T4 29.00-4.00	Yes	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
104.00-79.00														
T2 79.00-54.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 54.00-29.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 29.00-4.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal Net Width Deduct in	Redundant Horizontal U	Redundant Diagonal Net Width Deduct in	Redundant Diagonal U	Redundant Sub-Diagonal Net Width Deduct in	Redundant Sub-Diagonal U	Redundant Sub-Horizontal Net Width Deduct in	Redundant Sub-Horizontal U	Redundant Vertical Net Width Deduct in	Redundant Vertical U	Redundant Hip Net Width Deduct in	Redundant Hip U	Redundant Hip Diagonal Net Width Deduct in	Redundant Hip Diagonal U
T1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
104.00-79.00														
T2 79.00-54.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 54.00-29.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 29.00-4.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1	Flange	0.7500	4	1.0000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	2	0.6250	0
104.00-79.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T2 79.00-54.00	Flange	0.7500 A325N	4	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T3 54.00-29.00	Flange	0.7500 A325N	8	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T4 29.00-4.00	Flange	1.5000 A36	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF4P-50A (1/2 FOAM) (GPS)	A	No	No	Ar (CaAa)	16.00 - 12.00	0.0000	0.4	1	1	0.6300	0.6300		0.15
LDF4P-50A (1/2 FOAM) (GPS)	B	No	No	Ar (CaAa)	60.00 - 12.00	0.0000	0.45	1	1	0.6300	0.6300		0.15
1 1/4 (Town)	A	No	No	Ar (CaAa)	79.00 - 12.00	0.0000	0	3	3	1.5500	1.5500		0.66
HYBRIFLEX 1-1/4" (Dish)	A	No	No	Ar (CaAa)	66.00 - 12.00	-3.0000	0.32	1	1	1.5400	1.5400		1.30
7/8 (Town)	A	No	No	Ar (CaAa)	84.00 - 12.00	-3.0000	0.29	1	1	1.1100	1.1100		0.54
1/2 (Town)	B	No	No	Ar (CaAa)	94.00 - 12.00	0.0000	0.41	1	1	0.5800	0.5800		0.25

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	104.00-79.00	A	0.000	0.000	0.555	0.000	0.00
		B	0.000	0.000	0.870	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	79.00-54.00	A	0.000	0.000	16.248	0.000	0.08
		B	0.000	0.000	1.828	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
T3	54.00-29.00	A	0.000	0.000	18.250	0.000	0.10
		B	0.000	0.000	3.025	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
T4	29.00-4.00	A	0.000	0.000	12.662	0.000	0.07
		B	0.000	0.000	2.057	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	104.00-79.00	A	2.281	0.000	0.000	2.836	0.000	0.05
		B		0.000	0.000	7.713	0.000	0.12
		C		0.000	0.000	0.000	0.000	0.00
T2	79.00-54.00	A	2.307	0.000	0.000	64.863	0.000	1.06
		B		0.000	0.000	16.129	0.000	0.26
		C		0.000	0.000	0.000	0.000	0.00
T3	54.00-29.00	A	2.317	0.000	0.000	73.058	0.000	1.22
		B		0.000	0.000	26.198	0.000	0.42
		C		0.000	0.000	0.000	0.000	0.00
T4	29.00-4.00	A	2.247	0.000	0.000	50.287	0.000	0.83
		B		0.000	0.000	17.335	0.000	0.27
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	104.00-79.00	0.4060	-0.0456	1.8004	0.2711
T2	79.00-54.00	-2.3654	-3.2026	-2.1497	-4.8902
T3	54.00-29.00	-2.1773	-4.0860	-0.4412	-5.3327
T4	29.00-4.00	-1.6274	-3.1865	-0.4572	-4.6111

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	5	7/8	79.00 - 84.00	0.6000	0.6000
T1	6	1/2	79.00 - 94.00	0.6000	0.6000
T2	2	LDF4P-50A (1/2 FOAM)	54.00 - 60.00	0.6000	0.6000
T2	3	1 1/4	54.00 - 79.00	0.6000	0.6000
T2	4	HYBRIFLEX 1-1/4"	54.00 - 66.00	0.6000	0.6000
T2	5	7/8	54.00 - 79.00	0.6000	0.6000
T2	6	1/2	54.00 - 79.00	0.6000	0.6000
T3	2	LDF4P-50A (1/2 FOAM)	29.00 - 54.00	0.6000	0.6000
T3	3	1 1/4	29.00 - 54.00	0.6000	0.6000
T3	4	HYBRIFLEX 1-1/4"	29.00 - 54.00	0.6000	0.6000
T3	5	7/8	29.00 - 54.00	0.6000	0.6000
T3	6	1/2	29.00 - 54.00	0.6000	0.6000
T4	1	LDF4P-50A (1/2 FOAM)	12.00 - 16.00	0.6000	0.6000
T4	2	LDF4P-50A (1/2 FOAM)	12.00 - 29.00	0.6000	0.6000
T4	3	1 1/4	12.00 - 29.00	0.6000	0.6000
T4	4	HYBRIFLEX 1-1/4"	12.00 - 29.00	0.6000	0.6000
T4	5	7/8	12.00 - 29.00	0.6000	0.6000
T4	6	1/2	12.00 - 29.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
GPS	B	From Leg	0.00 0.00 0.00	0.0000	12.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.50 2.00 3.00	1.00 1.50 2.00 3.00	0.01 0.01 0.02 0.03
GPS	A	From Leg	0.00 0.00 0.00	0.0000	56.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.50 2.00 3.00	1.00 1.50 2.00 3.00	0.01 0.01 0.02 0.03
20' 8 Bay Di-Pole	C	From Leg	0.50 0.00 10.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.00 6.00 8.00 12.00	4.00 6.00 8.00 12.00	0.06 0.10 0.14 0.23
10'x2.5" Pipe Mount	A	From Face	0.50 0.00 0.00	0.0000	87.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.58 3.91 4.96 6.19	2.58 3.91 4.96 6.19	0.06 0.08 0.11 0.18
MX08FRO665-21 (Dish - Proposed)	A	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.49 12.99 13.49 14.52	5.87 6.32 6.79 7.74	0.08 0.16 0.24 0.42
MX08FRO665-21 (Dish - Proposed)	B	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.49 12.99 13.49 14.52	5.87 6.32 6.79 7.74	0.08 0.16 0.24 0.42
MX08FRO665-21 (Dish - Proposed)	C	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.49 12.99 13.49 14.52	5.87 6.32 6.79 7.74	0.08 0.16 0.24 0.42
TA08025-B604 (Dish - Proposed)	A	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.98 2.15 2.33 2.72	1.04 1.18 1.32 1.63	0.07 0.08 0.10 0.15
TA08025-B605 (Dish - Proposed)	A	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.98 2.15 2.33 2.72	1.20 1.34 1.49 1.81	0.08 0.09 0.11 0.16
TA08025-B604 (Dish - Proposed)	B	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.98 2.15 2.33 2.72	1.04 1.18 1.32 1.63	0.07 0.08 0.10 0.15
TA08025-B605 (Dish - Proposed)	B	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.98 2.15 2.33 2.72	1.20 1.34 1.49 1.81	0.08 0.09 0.11 0.16
TA08025-B604 (Dish - Proposed)	C	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.98 2.15 2.33 2.72	1.04 1.18 1.32 1.63	0.07 0.08 0.10 0.15
TA08025-B605 (Dish - Proposed)	C	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.98 2.15 2.33 2.72	1.20 1.34 1.49 1.81	0.08 0.09 0.11 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Site Pro WiMAX Tower Mount CWT02 (Dish - Proposed)	A	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 4.05 5.25 7.65	2.85 4.05 5.25 7.65	0.15 0.20 0.25 0.35
Site Pro WiMAX Tower Mount CWT02 (Dish - Proposed)	B	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 4.05 5.25 7.65	2.85 4.05 5.25 7.65	0.15 0.20 0.25 0.35
Site Pro WiMAX Tower Mount CWT02 (Dish - Proposed)	C	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 4.05 5.25 7.65	2.85 4.05 5.25 7.65	0.15 0.20 0.25 0.35
RD1DC-9181-PF-48 (Dish - Proposed)	A	From Leg	2.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.07 1.20 1.35 1.66	0.02 0.04 0.06 0.10
OA40-67-DIN	A	From Leg	0.50 0.00 5.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.90 0.00 0.00 0.00	5.00 0.00 0.00 0.00	0.01 0.02 0.02 0.03

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
3-ft Dish	A	Paraboloid w/o Radome	From Face	0.00 0.00 0.00	0.0000		85.00	3.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.07 7.47 7.86 8.66	0.06 0.10 0.14 0.21
3-ft Dish	A	Paraboloid w/o Radome	From Face	0.00 0.00 0.00	0.0000		89.00	3.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.07 7.47 7.86 8.66	0.06 0.10 0.14 0.21
ANT-18GHZ-24-SP	B	Paraboloid w/o Radome	From Face	0.00 0.00 0.00	0.0000		90.00	3.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.07 7.47 7.86 8.66	0.06 0.10 0.14 0.21

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	91.50	1.242	70	210.425	A	5.438	29.073	20.856	60.43	0.555	0.000
104.00-79.00					B	5.438	29.073		60.43	0.870	0.000
					C	5.438	29.073		60.43	0.000	0.000
T2 79.00-54.00	66.50	1.161	74	260.425	A	9.250	30.216	20.856	52.84	16.248	0.000
					B	9.250	30.216		52.84	1.828	0.000
					C	9.250	30.216		52.84	0.000	0.000
T3 54.00-29.00	41.50	1.052	78	310.425	A	8.438	33.381	20.856	49.87	18.250	0.000
					B	8.438	33.381		49.87	3.025	0.000
					C	8.438	33.381		49.87	0.000	0.000
T4 29.00-4.00	16.50	0.866	76	360.425	A	9.938	36.201	20.856	45.20	12.662	0.000
					B	9.938	36.201		45.20	2.057	0.000
					C	9.938	36.201		45.20	0.000	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 104.00-79.00	91.50	1.242	11	2.2809	219.936	A	5.438	68.865	39.883	53.68	2.836	0.000
						B	5.438	68.865		53.68	7.713	0.000
						C	5.438	68.865		53.68	0.000	0.000
T2 79.00-54.00	66.50	1.161	12	2.3067	270.044	A	9.250	74.520	40.098	47.87	64.863	0.000
						B	9.250	74.520		47.87	16.129	0.000
						C	9.250	74.520		47.87	0.000	0.000
T3 54.00-29.00	41.50	1.052	12	2.3173	320.088	A	8.438	88.968	40.187	41.26	73.058	0.000
						B	8.438	88.968		41.26	26.198	0.000
						C	8.438	88.968		41.26	0.000	0.000
T4 29.00-4.00	16.50	0.866	12	2.2468	369.794	A	9.938	93.813	39.598	38.17	50.287	0.000
						B	9.938	93.813		38.17	17.335	0.000
						C	9.938	93.813		38.17	0.000	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	91.50	1.242	46	210.425	A	5.438	29.073	20.856	60.43	0.555	0.000
104.00-79.00					B	5.438	29.073		60.43	0.870	0.000
					C	5.438	29.073		60.43	0.000	0.000
T2 79.00-54.00	66.50	1.161	48	260.425	A	9.250	30.216	20.856	52.84	16.248	0.000
					B	9.250	30.216		52.84	1.828	0.000
					C	9.250	30.216		52.84	0.000	0.000
T3 54.00-29.00	41.50	1.052	51	310.425	A	8.438	33.381	20.856	49.87	18.250	0.000
					B	8.438	33.381		49.87	3.025	0.000
					C	8.438	33.381		49.87	0.000	0.000
T4 29.00-4.00	16.50	0.866	50	360.425	A	9.938	36.201	20.856	45.20	12.662	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					B	9.938	36.201		45.20	2.057	0.000
					C	9.938	36.201		45.20	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.01	1.56	A	0.164	2.721	70	1	1	19.066	3.14	125.68	C
104.00-79.00			B	0.164	2.721		1	1	19.066			
			C	0.164	2.721		1	1	19.066			
T2	0.09	1.86	A	0.152	2.766	74	1	1	23.144	4.72	188.72	C
79.00-54.00			B	0.152	2.766		1	1	23.144			
			C	0.152	2.766		1	1	23.144			
T3	0.11	2.17	A	0.135	2.829	78	1	1	24.082	5.35	214.07	C
54.00-29.00			B	0.135	2.829		1	1	24.082			
			C	0.135	2.829		1	1	24.082			
T4 29.00-4.00	0.07	2.90	A	0.128	2.854	76	1	1	26.758	5.53	221.25	C
			B	0.128	2.854		1	1	26.758			
			C	0.128	2.854		1	1	26.758			
Sum Weight:	0.27	8.49						OTM	839.62 kip-ft	18.74		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.01	1.56	A	0.164	2.721	70	0.8	1	17.979	2.97	118.63	C
104.00-79.00			B	0.164	2.721		0.8	1	17.979			
			C	0.164	2.721		0.8	1	17.979			
T2	0.09	1.86	A	0.152	2.766	74	0.8	1	21.294	4.40	175.82	C
79.00-54.00			B	0.152	2.766		0.8	1	21.294			
			C	0.152	2.766		0.8	1	21.294			
T3	0.11	2.17	A	0.135	2.829	78	0.8	1	22.395	5.04	201.44	C
54.00-29.00			B	0.135	2.829		0.8	1	22.395			
			C	0.135	2.829		0.8	1	22.395			
T4 29.00-4.00	0.07	2.90	A	0.128	2.854	76	0.8	1	24.771	5.16	206.52	C
			B	0.128	2.854		0.8	1	24.771			
			C	0.128	2.854		0.8	1	24.771			
Sum Weight:	0.27	8.49						OTM	787.60 kip-ft	17.56		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.01	1.56	A	0.164	2.721	70	0.85	1	18.251	3.01	120.39	C
104.00-79.00			B	0.164	2.721		0.85	1	18.251			
			C	0.164	2.721		0.85	1	18.251			
T2	0.09	1.86	A	0.152	2.766	74	0.85	1	21.756	4.48	179.04	C
79.00-54.00			B	0.152	2.766		0.85	1	21.756			
			C	0.152	2.766		0.85	1	21.756			
T3	0.11	2.17	A	0.135	2.829	78	0.85	1	22.817	5.11	204.59	C
54.00-29.00			B	0.135	2.829		0.85	1	22.817			
			C	0.135	2.829		0.85	1	22.817			
T4 29.00-4.00	0.07	2.90	A	0.128	2.854	76	0.85	1	25.268	5.26	210.20	C
			B	0.128	2.854		0.85	1	25.268			
			C	0.128	2.854		0.85	1	25.268			
Sum Weight:	0.27	8.49						OTM	800.60 kip-ft	17.86		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.17	5.87	A	0.338	2.2	11	1	1	47.556	1.06	42.32	C
104.00-79.00			B	0.338	2.2		1	1	47.556			
			C	0.338	2.2		1	1	47.556			
T2	1.32	7.12	A	0.31	2.269	12	1	1	54.123	1.73	69.14	C
79.00-54.00			B	0.31	2.269		1	1	54.123			
			C	0.31	2.269		1	1	54.123			
T3	1.64	8.22	A	0.304	2.285	12	1	1	61.843	2.13	85.05	C
54.00-29.00			B	0.304	2.285		1	1	61.843			
			C	0.304	2.285		1	1	61.843			
T4 29.00-4.00	1.10	9.37	A	0.281	2.349	12	1	1	65.579	2.02	80.86	C
			B	0.281	2.349		1	1	65.579			
			C	0.281	2.349		1	1	65.579			
Sum Weight:	4.24	30.57						OTM	305.60 kip-ft	6.93		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.17	5.87	A	0.338	2.2	11	0.8	1	46.468	1.04	41.40	C
104.00-79.00			B	0.338	2.2		0.8	1	46.468			
			C	0.338	2.2		0.8	1	46.468			
T2	1.32	7.12	A	0.31	2.269	12	0.8	1	52.273	1.69	67.45	C
79.00-54.00			B	0.31	2.269		0.8	1	52.273			
			C	0.31	2.269		0.8	1	52.273			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T3	1.64	8.22	A	0.304	2.285	12	0.8	1	60.155	2.09	83.42	C
54.00-29.00			B	0.304	2.285		0.8	1	60.155			
			C	0.304	2.285		0.8	1	60.155			
T4 29.00-4.00	1.10	9.37	A	0.281	2.349	12	0.8	1	63.592	1.97	78.92	C
			B	0.281	2.349		0.8	1	63.592			
			C	0.281	2.349		0.8	1	63.592			
Sum Weight:	4.24	30.57						OTM	298.82 kip-ft	6.78		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.17	5.87	A	0.338	2.2	11	0.85	1	46.740	1.04	41.63	C
104.00-79.00			B	0.338	2.2		0.85	1	46.740			
			C	0.338	2.2		0.85	1	46.740			
T2	1.32	7.12	A	0.31	2.269	12	0.85	1	52.736	1.70	67.87	C
79.00-54.00			B	0.31	2.269		0.85	1	52.736			
			C	0.31	2.269		0.85	1	52.736			
T3	1.64	8.22	A	0.304	2.285	12	0.85	1	60.577	2.10	83.82	C
54.00-29.00			B	0.304	2.285		0.85	1	60.577			
			C	0.304	2.285		0.85	1	60.577			
T4 29.00-4.00	1.10	9.37	A	0.281	2.349	12	0.85	1	64.089	1.99	79.41	C
			B	0.281	2.349		0.85	1	64.089			
			C	0.281	2.349		0.85	1	64.089			
Sum Weight:	4.24	30.57						OTM	300.52 kip-ft	6.82		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.01	1.56	A	0.164	2.721	46	1	1	20.343	2.19	87.45	C
104.00-79.00			B	0.164	2.721		1	1	20.343			
			C	0.164	2.721		1	1	20.343			
T2	0.09	1.86	A	0.152	2.766	48	1	1	24.569	3.24	129.69	C
79.00-54.00			B	0.152	2.766		1	1	24.569			
			C	0.152	2.766		1	1	24.569			
T3	0.11	2.17	A	0.135	2.829	51	1	1	25.290	3.64	145.66	C
54.00-29.00			B	0.135	2.829		1	1	25.290			
			C	0.135	2.829		1	1	25.290			
T4 29.00-4.00	0.07	2.90	A	0.128	2.854	50	1	1	28.384	3.81	152.31	C
			B	0.128	2.854		1	1	28.384			
			C	0.128	2.854		1	1	28.384			
Sum Weight:	0.27	8.49						OTM	578.11	12.88		

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
									kip-ft			

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.01	1.56	A	0.164	2.721	46	0.8	1	19.255	2.07	82.85	C
104.00-79.00			B	0.164	2.721		0.8	1	19.255			
			C	0.164	2.721		0.8	1	19.255			
T2	0.09	1.86	A	0.152	2.766	48	0.8	1	22.719	3.03	121.27	C
79.00-54.00			B	0.152	2.766		0.8	1	22.719			
			C	0.152	2.766		0.8	1	22.719			
T3	0.11	2.17	A	0.135	2.829	51	0.8	1	23.603	3.44	137.41	C
54.00-29.00			B	0.135	2.829		0.8	1	23.603			
			C	0.135	2.829		0.8	1	23.603			
T4 29.00-4.00	0.07	2.90	A	0.128	2.854	50	0.8	1	26.396	3.57	142.69	C
			B	0.128	2.854		0.8	1	26.396			
			C	0.128	2.854		0.8	1	26.396			
Sum Weight:	0.27	8.49						OTM	544.14 kip-ft	12.11		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.01	1.56	A	0.164	2.721	46	0.85	1	19.527	2.10	84.00	C
104.00-79.00			B	0.164	2.721		0.85	1	19.527			
			C	0.164	2.721		0.85	1	19.527			
T2	0.09	1.86	A	0.152	2.766	48	0.85	1	23.181	3.08	123.38	C
79.00-54.00			B	0.152	2.766		0.85	1	23.181			
			C	0.152	2.766		0.85	1	23.181			
T3	0.11	2.17	A	0.135	2.829	51	0.85	1	24.025	3.49	139.48	C
54.00-29.00			B	0.135	2.829		0.85	1	24.025			
			C	0.135	2.829		0.85	1	24.025			
T4 29.00-4.00	0.07	2.90	A	0.128	2.854	50	0.85	1	26.893	3.63	145.10	C
			B	0.128	2.854		0.85	1	26.893			
			C	0.128	2.854		0.85	1	26.893			
Sum Weight:	0.27	8.49						OTM	552.63 kip-ft	12.30		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	3.75					
Bracing Weight	4.74					
Total Member Self-Weight	8.49			-1.12	0.78	
Total Weight	10.25			-1.12	0.78	
Wind 0 deg - No Ice		-0.07	-22.50	-1101.24	6.51	-4.07
Wind 30 deg - No Ice		10.84	-18.59	-910.02	-531.84	-6.61
Wind 60 deg - No Ice		19.63	-9.96	-467.55	-1003.39	-7.42
Wind 90 deg - No Ice		22.49	0.66	53.93	-1132.55	-6.64
Wind 120 deg - No Ice		20.36	11.58	576.39	-1023.42	-4.38
Wind 150 deg - No Ice		11.73	18.79	923.58	-605.98	-0.88
Wind 180 deg - No Ice		0.56	21.84	1090.80	-44.00	3.55
Wind 210 deg - No Ice		-11.23	18.59	907.87	567.09	7.21
Wind 240 deg - No Ice		-20.05	11.32	555.55	1000.34	8.45
Wind 270 deg - No Ice		-22.29	0.30	24.70	1118.14	7.28
Wind 300 deg - No Ice		-19.36	-10.45	-506.68	983.17	3.87
Wind 330 deg - No Ice		-10.97	-18.77	-924.46	544.11	-0.37
Member Ice	22.08					
Total Weight Ice	39.80			-8.53	2.48	
Wind 0 deg - Ice		-0.01	-7.92	-382.89	3.60	-0.85
Wind 30 deg - Ice		3.90	-6.74	-326.37	-181.67	-1.90
Wind 60 deg - Ice		6.94	-3.75	-181.06	-333.18	-2.45
Wind 90 deg - Ice		7.96	0.13	2.23	-379.13	-2.42
Wind 120 deg - Ice		7.01	4.03	184.01	-334.15	-1.80
Wind 150 deg - Ice		4.07	6.78	312.39	-196.17	-0.68
Wind 180 deg - Ice		0.11	7.87	367.61	-6.27	0.75
Wind 210 deg - Ice		-3.98	6.74	309.32	193.21	2.02
Wind 240 deg - Ice		-6.95	3.98	179.94	334.29	2.65
Wind 270 deg - Ice		-7.92	0.06	-3.48	380.97	2.54
Wind 300 deg - Ice		-6.89	-3.84	-188.70	333.87	1.70
Wind 330 deg - Ice		-3.93	-6.77	-329.19	188.72	0.44
Total Weight	10.25			-1.12	0.78	
Wind 0 deg - Service		-0.05	-15.34	-749.57	4.18	-2.69
Wind 30 deg - Service		7.40	-12.70	-620.58	-362.74	-4.35
Wind 60 deg - Service		13.38	-6.83	-320.40	-681.91	-4.87
Wind 90 deg - Service		15.34	0.43	35.50	-770.37	-4.35
Wind 120 deg - Service		13.86	7.89	392.05	-694.99	-2.86
Wind 150 deg - Service		7.99	12.83	630.03	-411.14	-0.56
Wind 180 deg - Service		0.37	14.91	743.34	-28.80	2.34
Wind 210 deg - Service		-7.66	12.70	619.77	385.61	4.74
Wind 240 deg - Service		-13.65	7.72	378.44	679.77	5.54
Wind 270 deg - Service		-15.21	0.20	16.42	760.82	4.77
Wind 300 deg - Service		-13.20	-7.15	-345.95	668.56	2.53
Wind 330 deg - Service		-7.49	-12.82	-630.01	370.61	-0.26

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice

Comb. No.	Description
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	104 - 79	Leg	Max Tension	7	5.08	-0.12	-0.01
			Max. Compression	10	-6.30	0.16	0.00
			Max. Mx	11	-5.87	0.48	0.04
			Max. My	9	-0.89	-0.12	0.50
			Max. Vy	11	-0.41	0.48	0.04
			Max. Vx	6	-0.45	0.03	0.49
		Diagonal	Max Tension	22	3.48	0.00	0.00
			Max. Compression	8	-3.69	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	36	1.18	0.27	0.00
			Max. My	27	0.17	0.00	0.00
			Max. Vy	36	0.09	0.00	0.00
			Max. Vx	27	-0.00	0.00	0.00
		Horizontal	Max Tension	15	2.04	0.00	0.00
			Max. Compression	20	-1.96	0.00	0.00
			Max. Mx	26	-0.03	-0.21	0.00
			Max. My	30	0.61	0.00	0.00
			Max. Vy	26	0.10	0.00	0.00
			Max. Vx	30	0.00	0.00	0.00
		Top Girt	Max Tension	15	0.22	0.00	0.00
			Max. Compression	2	-0.24	0.00	0.00
			Max. Mx	26	-0.01	-0.15	0.00
			Max. My	27	0.01	0.00	0.00
			Max. Vy	26	-0.08	0.00	0.00
			Max. Vx	27	0.00	0.00	0.00
T2	79 - 54	Leg	Max Tension	23	22.06	-0.74	-0.00
			Max. Compression	10	-27.01	0.12	0.11
			Max. Mx	22	14.24	0.96	-0.00
			Max. My	8	-2.36	0.01	-0.98
			Max. Vy	6	0.68	-0.75	0.03
			Max. Vx	20	0.70	-0.06	-0.78
		Diagonal	Max Tension	4	8.19	0.00	0.00
			Max. Compression	16	-8.41	0.00	0.00
			Max. Mx	36	2.54	0.38	0.00
			Max. My	27	0.20	0.00	0.00
			Max. Vy	36	-0.11	0.00	0.00
			Max. Vx	27	-0.00	0.00	0.00
		Horizontal	Max Tension	17	5.64	0.00	0.00
			Max. Compression	10	-5.57	0.00	0.00
			Max. Mx	29	-0.47	-0.41	0.00
			Max. My	29	1.55	0.00	0.01
			Max. Vy	29	0.16	0.00	0.00
			Max. Vx	29	-0.00	0.00	0.00
T3	54 - 29	Leg	Max Tension	23	42.96	-0.23	-0.01
			Max. Compression	10	-50.51	0.42	0.01
			Max. Mx	11	-49.83	0.42	0.01
			Max. My	8	0.20	-0.02	0.43
			Max. Vy	19	-0.14	0.30	-0.08
			Max. Vx	20	0.15	-0.01	-0.43
		Diagonal	Max Tension	17	6.96	0.00	0.00
			Max. Compression	16	-7.06	0.00	0.00
			Max. Mx	38	2.10	0.15	0.00
			Max. My	35	-0.01	0.00	-0.00
			Max. Vy	38	-0.06	0.00	0.00
			Max. Vx	35	0.00	0.00	0.00
		Horizontal	Max Tension	16	6.69	0.03	0.01
			Max. Compression	4	-6.55	0.03	0.01
			Max. Mx	37	-0.10	0.14	0.02
			Max. My	36	-0.56	0.12	0.02
			Max. Vy	37	0.10	0.14	0.02
			Max. Vx	36	-0.01	0.00	0.00
T4	29 - 4	Leg	Max Tension	23	70.37	-0.41	0.00
			Max. Compression	10	-81.68	0.00	0.00
			Max. Mx	11	-80.57	0.43	0.01
			Max. My	8	0.38	-0.02	0.43
			Max. Vy	11	0.19	0.43	0.01
			Max. Vx	16	0.20	-0.02	0.38
		Diagonal	Max Tension	17	8.14	0.00	0.00
			Max. Compression	16	-8.30	0.00	0.00
			Max. Mx	34	2.73	0.21	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	35	-0.03	0.00	-0.00
			Max. Vy	34	-0.08	0.00	0.00
			Max. Vx	35	0.00	0.00	0.00
		Horizontal	Max Tension	16	5.49	0.04	0.01
			Max. Compression	17	-5.47	0.03	0.01
			Max. Mx	37	-0.09	0.16	0.03
			Max. My	35	1.87	0.14	0.03
			Max. Vy	37	0.10	0.14	0.03
			Max. Vx	35	0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	90.21	10.70	-6.52
	Max. H_x	18	90.21	10.70	-6.52
	Max. H_z	5	-65.76	-7.62	6.36
	Min. Vert	7	-79.94	-9.94	5.94
	Min. H_x	7	-79.94	-9.94	5.94
	Min. H_z	16	75.22	8.17	-6.65
Leg B	Max. Vert	10	92.53	-10.96	-6.51
	Max. H_x	23	-80.09	9.99	5.87
	Max. H_z	25	-67.12	7.85	6.20
	Min. Vert	23	-80.09	9.99	5.87
	Min. H_x	10	92.53	-10.96	-6.51
	Min. H_z	12	78.40	-8.56	-6.59
Leg A	Max. Vert	2	86.92	-0.15	12.22
	Max. H_x	21	1.16	3.23	0.03
	Max. H_z	2	86.92	-0.15	12.22
	Min. Vert	15	-79.03	0.08	-11.49
	Min. H_x	9	-1.09	-3.23	-0.18
	Min. H_z	15	-79.03	0.08	-11.49

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	10.25	0.00	0.00	-1.12	0.78	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	12.30	-0.07	-22.50	-1075.84	6.68	-4.07
0.9 Dead+1.0 Wind 0 deg - No Ice	9.22	-0.07	-22.50	-1075.25	6.44	-4.07
1.2 Dead+1.0 Wind 30 deg - No Ice	12.30	10.84	-18.59	-888.98	-519.41	-6.61
0.9 Dead+1.0 Wind 30 deg - No Ice	9.22	10.84	-18.59	-888.44	-519.52	-6.61
1.2 Dead+1.0 Wind 60 deg - No Ice	12.30	19.63	-9.96	-455.63	-982.41	-7.42
0.9 Dead+1.0 Wind 60 deg - No Ice	9.22	19.63	-9.96	-455.18	-982.41	-7.42
1.2 Dead+1.0 Wind 90 deg - No	12.30	22.49	0.66	53.76	-1107.94	-6.64

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Ice						
0.9 Dead+1.0 Wind 90 deg - No Ice	9.22	22.49	0.66	54.08	-1107.90	-6.64
1.2 Dead+1.0 Wind 120 deg - No Ice	12.30	20.36	11.58	563.38	-1001.15	-4.38
0.9 Dead+1.0 Wind 120 deg - No Ice	9.22	20.36	11.58	563.58	-1001.14	-4.38
1.2 Dead+1.0 Wind 150 deg - No Ice	12.30	11.73	18.79	902.12	-593.64	-0.88
0.9 Dead+1.0 Wind 150 deg - No Ice	9.22	11.73	18.79	902.24	-593.73	-0.88
1.2 Dead+1.0 Wind 180 deg - No Ice	12.30	0.56	21.84	1066.45	-43.89	3.55
0.9 Dead+1.0 Wind 180 deg - No Ice	9.22	0.56	21.84	1066.53	-44.11	3.55
1.2 Dead+1.0 Wind 210 deg - No Ice	12.30	-11.23	18.59	886.39	555.02	7.22
0.9 Dead+1.0 Wind 210 deg - No Ice	9.22	-11.23	18.59	886.51	554.66	7.22
1.2 Dead+1.0 Wind 240 deg - No Ice	12.30	-20.05	11.32	542.52	978.36	8.45
0.9 Dead+1.0 Wind 240 deg - No Ice	9.22	-20.05	11.32	542.72	977.90	8.45
1.2 Dead+1.0 Wind 270 deg - No Ice	12.30	-22.29	0.30	24.50	1093.83	7.29
0.9 Dead+1.0 Wind 270 deg - No Ice	9.22	-22.29	0.30	24.83	1093.33	7.29
1.2 Dead+1.0 Wind 300 deg - No Ice	12.30	-19.36	-10.45	-494.80	962.48	3.88
0.9 Dead+1.0 Wind 300 deg - No Ice	9.22	-19.36	-10.45	-494.35	962.02	3.87
1.2 Dead+1.0 Wind 330 deg - No Ice	12.30	-10.97	-18.77	-903.44	532.02	-0.37
0.9 Dead+1.0 Wind 330 deg - No Ice	9.22	-10.97	-18.77	-902.89	531.66	-0.37
1.2 Dead+1.0 Ice+1.0 Temp	41.85	0.00	0.00	-8.77	2.63	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	41.85	-0.01	-7.92	-372.03	3.76	-0.86
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	41.85	3.90	-6.74	-317.12	-176.03	-1.91
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	41.85	6.94	-3.75	-175.82	-323.63	-2.45
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	41.85	7.96	0.13	2.01	-368.05	-2.42
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	41.85	7.01	4.03	178.22	-324.41	-1.80
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	41.85	4.07	6.78	302.65	-190.57	-0.68
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	41.85	0.11	7.87	356.48	-6.14	0.75
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	41.85	-3.98	6.74	299.57	187.93	2.02
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	41.85	-6.95	3.98	174.13	324.86	2.66
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	41.85	-7.92	0.06	-3.72	370.21	2.55
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	41.85	-6.89	-3.84	-183.49	324.64	1.70
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	41.85	-3.93	-6.77	-319.96	183.41	0.44
Dead+Wind 0 deg - Service	10.25	-0.05	-15.34	-732.68	4.53	-2.69

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 30 deg - Service	10.25	7.40	-12.70	-606.66	-353.97	-4.35
Dead+Wind 60 deg - Service	10.25	13.38	-6.83	-312.74	-667.24	-4.88
Dead+Wind 90 deg - Service	10.25	15.34	0.43	34.85	-753.21	-4.35
Dead+Wind 120 deg - Service	10.25	13.86	7.89	382.60	-679.47	-2.86
Dead+Wind 150 deg - Service	10.25	7.99	12.83	614.75	-402.42	-0.56
Dead+Wind 180 deg - Service	10.25	0.37	14.91	726.06	-28.48	2.35
Dead+Wind 210 deg - Service	10.25	-7.66	12.70	604.48	377.55	4.75
Dead+Wind 240 deg - Service	10.25	-13.65	7.72	368.98	664.93	5.55
Dead+Wind 270 deg - Service	10.25	-15.21	0.20	15.75	744.34	4.77
Dead+Wind 300 deg - Service	10.25	-13.20	-7.15	-338.31	654.56	2.53
Dead+Wind 330 deg - Service	10.25	-7.49	-12.82	-616.10	362.53	-0.26

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-10.25	0.00	0.00	10.25	0.00	0.000%
2	-0.07	-12.30	-22.50	0.07	12.30	22.50	0.000%
3	-0.07	-9.22	-22.50	0.07	9.22	22.50	0.000%
4	10.84	-12.30	-18.59	-10.84	12.30	18.59	0.000%
5	10.84	-9.22	-18.59	-10.84	9.22	18.59	0.000%
6	19.63	-12.30	-9.96	-19.63	12.30	9.96	0.000%
7	19.63	-9.22	-9.96	-19.63	9.22	9.96	0.000%
8	22.49	-12.30	0.66	-22.49	12.30	-0.66	0.000%
9	22.49	-9.22	0.66	-22.49	9.22	-0.66	0.000%
10	20.36	-12.30	11.58	-20.36	12.30	-11.58	0.000%
11	20.36	-9.22	11.58	-20.36	9.22	-11.58	0.000%
12	11.73	-12.30	18.79	-11.73	12.30	-18.79	0.000%
13	11.73	-9.22	18.79	-11.73	9.22	-18.79	0.000%
14	0.56	-12.30	21.84	-0.56	12.30	-21.84	0.000%
15	0.56	-9.22	21.84	-0.56	9.22	-21.84	0.000%
16	-11.23	-12.30	18.59	11.23	12.30	-18.59	0.000%
17	-11.23	-9.22	18.59	11.23	9.22	-18.59	0.000%
18	-20.05	-12.30	11.32	20.05	12.30	-11.32	0.000%
19	-20.05	-9.22	11.32	20.05	9.22	-11.32	0.000%
20	-22.29	-12.30	0.30	22.29	12.30	-0.30	0.000%
21	-22.29	-9.22	0.30	22.29	9.22	-0.30	0.000%
22	-19.36	-12.30	-10.45	19.36	12.30	10.45	0.000%
23	-19.36	-9.22	-10.45	19.36	9.22	10.45	0.000%
24	-10.97	-12.30	-18.77	10.97	12.30	18.77	0.000%
25	-10.97	-9.22	-18.77	10.97	9.22	18.77	0.000%
26	0.00	-41.85	0.00	0.00	41.85	0.00	0.000%
27	-0.01	-41.85	-7.92	0.01	41.85	7.92	0.000%
28	3.90	-41.85	-6.74	-3.90	41.85	6.74	0.000%
29	6.94	-41.85	-3.75	-6.94	41.85	3.75	0.000%
30	7.96	-41.85	0.13	-7.96	41.85	-0.13	0.000%
31	7.01	-41.85	4.03	-7.01	41.85	-4.03	0.000%
32	4.07	-41.85	6.78	-4.07	41.85	-6.78	0.000%
33	0.11	-41.85	7.87	-0.11	41.85	-7.87	0.000%
34	-3.98	-41.85	6.74	3.98	41.85	-6.74	0.000%
35	-6.95	-41.85	3.98	6.95	41.85	-3.98	0.000%
36	-7.92	-41.85	0.06	7.92	41.85	-0.06	0.000%
37	-6.89	-41.85	-3.84	6.89	41.85	3.84	0.000%
38	-3.93	-41.85	-6.77	3.93	41.85	6.77	0.000%
39	-0.05	-10.25	-15.34	0.05	10.25	15.34	0.000%
40	7.40	-10.25	-12.70	-7.40	10.25	12.70	0.000%
41	13.38	-10.25	-6.83	-13.38	10.25	6.83	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
42	15.34	-10.25	0.43	-15.34	10.25	-0.43	0.000%
43	13.86	-10.25	7.89	-13.86	10.25	-7.89	0.000%
44	7.99	-10.25	12.83	-7.99	10.25	-12.83	0.000%
45	0.37	-10.25	14.91	-0.37	10.25	-14.91	0.000%
46	-7.66	-10.25	12.70	7.66	10.25	-12.70	0.000%
47	-13.65	-10.25	7.72	13.65	10.25	-7.72	0.000%
48	-15.21	-10.25	0.20	15.21	10.25	-0.20	0.000%
49	-13.20	-10.25	-7.15	13.20	10.25	7.15	0.000%
50	-7.49	-10.25	-12.82	7.49	10.25	12.82	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00000001
17	Yes	4	0.00000001	0.00000001
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000001
20	Yes	4	0.00000001	0.00000001
21	Yes	4	0.00000001	0.00000001
22	Yes	4	0.00000001	0.00000001
23	Yes	4	0.00000001	0.00000001
24	Yes	4	0.00000001	0.00000001
25	Yes	4	0.00000001	0.00000001
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000001
28	Yes	4	0.00000001	0.00000001
29	Yes	4	0.00000001	0.00000001
30	Yes	4	0.00000001	0.00000001
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000001
33	Yes	4	0.00000001	0.00000001
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001

43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	104 - 79	2.083	43	0.1347	0.0394
T2	79 - 54	1.362	43	0.1287	0.0340
T3	54 - 29	0.683	43	0.0937	0.0211
T4	29 - 4	0.197	43	0.0535	0.0075

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.00	20' 8 Bay Di-Pole	43	1.967	0.1350	0.0388	Inf
90.00	ANT-18GHZ-24-SP	43	1.678	0.1343	0.0371	593656
89.00	3-ft Dish	43	1.649	0.1341	0.0369	554070
87.50	10'x2.5" Pipe Mount	43	1.606	0.1336	0.0367	503704
85.00	3-ft Dish	43	1.534	0.1326	0.0361	437426
80.00	OA40-67-DIN	43	1.390	0.1295	0.0344	313977
65.00	MX08FRO665-21	43	0.969	0.1112	0.0256	66568
56.00	GPS	43	0.733	0.0969	0.0221	42968
12.00	GPS	43	0.045	0.0182	0.0019	60659

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	104 - 79	3.070	11	0.1986	0.0567
T2	79 - 54	2.007	11	0.1898	0.0496
T3	54 - 29	1.007	11	0.1381	0.0322
T4	29 - 4	0.290	10	0.0789	0.0114

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.00	20' 8 Bay Di-Pole	11	2.899	0.1990	0.0560	Inf
90.00	ANT-18GHZ-24-SP	11	2.473	0.1980	0.0537	416904
89.00	3-ft Dish	11	2.431	0.1976	0.0535	389111
87.50	10'x2.5" Pipe Mount	11	2.367	0.1970	0.0531	353737
85.00	3-ft Dish	11	2.261	0.1955	0.0524	307192
80.00	OA40-67-DIN	11	2.049	0.1910	0.0502	219736
65.00	MX08FRO665-21	11	1.428	0.1640	0.0402	45252
56.00	GPS	11	1.080	0.1428	0.0338	29194
12.00	GPS	10	0.066	0.0268	0.0029	41083

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	104	Leg	A325N	0.7500	4	1.27	30.10	0.042 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	3.48	25.65	0.136 ✔	1	Member Bearing
		Horizontal	A325N	0.6250	2	1.02	13.81	0.074 ✔	1	Bolt Shear
T2	79	Leg	A325N	0.7500	4	5.51	30.10	0.183 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	8.19	25.65	0.319 ✔	1	Member Bearing
		Horizontal	A325N	0.6250	2	2.82	13.81	0.204 ✔	1	Bolt Shear
T3	54	Leg	A325N	0.7500	8	5.37	30.10	0.178 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	6.96	17.10	0.407 ✔	1	Member Bearing
		Horizontal	A325N	0.6250	2	3.35	13.81	0.242 ✔	1	Bolt Shear
T4	29	Leg	A36	1.5000	6	11.73	61.13	0.192 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	8.14	25.65	0.318 ✔	1	Member Bearing
		Horizontal	A325N	0.6250	2	2.75	13.81	0.199 ✔	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 79	HSS5x.188	25.03	8.34	58.6 K=1.00	2.6381	-6.30	69.69	0.090 [1] ✔
T2	79 - 54	HSS5x.188	25.03	8.34	58.6 K=1.00	2.6381	-27.01	69.69	0.388 [1] ✔
T3	54 - 29	HSS5x.312	25.03	8.34	60.0 K=1.00	4.3050	-50.51	112.78	0.448 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	29 - 4	HSS5x.375	25.03	8.34	60.7 K=1.00	5.0994	-81.68	133.02	0.614 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 79	HSS3x.188	12.02	11.45	137.2 K=1.00	1.5448	-3.69	18.53	0.199 [1] ✔
T2	79 - 54	HSS3x.188	13.54	13.01	155.9 K=1.00	1.5448	-8.41	14.35	0.586 [1] ✔
T3	54 - 29	HSS2.5x.125	10.57	10.23	145.5 K=1.00	0.8688	-7.06	9.27	0.761 [1] ✔
T4	29 - 4	HSS2.875x.188	11.21	10.90	136.7 K=1.00	1.4765	-8.30	17.85	0.465 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 79	L3x3x1/4	8.33	7.52	140.0 K=0.92	1.4400	-1.96	21.04	0.093 [1] ✔
T2	79 - 54	L4x4x1/4	10.33	9.52	134.6 K=0.94	1.9400	-5.57	30.66	0.182 [1] ✔
T3	54 - 29	L3x3x1/4	11.00	5.09	111.6 K=1.08	1.4400	-6.55	31.53	0.208 [1] ✔
T4	29 - 4	L3x3x1/4	14.33	6.76	133.0 K=0.97	1.4400	-5.47	23.29	0.235 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 79	L3x3x1/4	7.00	6.58	128.3 K=0.96	1.4400	-0.24	25.05	0.010 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 79	HSS5x.188	25.03	8.34	58.6	2.6381	5.08	83.10	0.061 [1]
T2	79 - 54	HSS5x.188	25.03	8.34	58.6	2.6381	22.06	83.10	0.265 [1]
T3	54 - 29	HSS5x.312	25.03	8.34	60.0	4.3050	42.96	135.61	0.317 [1]
T4	29 - 4	HSS5x.375	25.03	8.34	60.7	5.0994	70.37	160.63	0.438 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 79	HSS3x.188	12.02	11.45	137.2	1.5448	3.48	48.66	0.071 [1]
T2	79 - 54	HSS3x.188	13.54	13.01	155.9	1.5448	8.19	48.66	0.168 [1]
T3	54 - 29	HSS2.5x.125	10.57	10.23	145.5	0.8688	6.96	27.37	0.254 [1]
T4	29 - 4	HSS2.875x.188	11.21	10.90	136.7	1.4765	8.14	46.51	0.175 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 79	L3x3x1/4	8.33	7.52	102.2	0.9394	2.04	40.86	0.050 [1] ✔
T2	79 - 54	L4x4x1/4	10.33	9.52	95.2	1.3144	5.64	57.18	0.099 [1] ✔
T3	54 - 29	L3x3x1/4	11.00	5.09	102.4	0.9394	6.69	40.86	0.164 [1] ✔
T4	29 - 4	L3x3x1/4	14.33	6.76	134.7	0.9394	5.49	40.86	0.134 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 79	L3x3x1/4	7.00	6.58	84.9	1.4400	0.22	46.66	0.005 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	104 - 79	Leg	HSS5x.188	2	-6.30	69.69	9.0	Pass
T2	79 - 54	Leg	HSS5x.188	23	-27.01	69.69	38.8	Pass
T3	54 - 29	Leg	HSS5x.312	44	-50.51	112.78	44.8	Pass
T4	29 - 4	Leg	HSS5x.375	74	-81.68	133.02	61.4	Pass
T1	104 - 79	Diagonal	HSS3x.188	7	-3.69	18.53	19.9	Pass
T2	79 - 54	Diagonal	HSS3x.188	30	-8.41	14.35	58.6	Pass
T3	54 - 29	Diagonal	HSS2.5x.125	54	-7.06	9.27	76.1	Pass
T4	29 - 4	Diagonal	HSS2.875x.188	84	-8.30	17.85	46.5	Pass
T1	104 - 79	Horizontal	L3x3x1/4	10	-1.96	21.04	9.3	Pass
T2	79 - 54	Horizontal	L4x4x1/4	32	-5.57	30.66	18.2	Pass
T3	54 - 29	Horizontal	L3x3x1/4	70	-6.55	31.53	20.4 (b) 20.8 24.2 (b)	Pass
T4	29 - 4	Horizontal	L3x3x1/4	82	-5.47	23.29	23.5	Pass
T1	104 - 79	Top Girt	L3x3x1/4	6	-0.24	25.05	1.0	Pass
						Summary		
						Leg (T4)	61.4	Pass
						Diagonal (T3)	76.1	Pass
						Horizontal (T3)	24.2	Pass
						Top Girt (T1)	1.0	Pass
						Bolt Checks	40.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						RATING =	**76.1**	**Pass**

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: FOUNDATION WITH ROCK ANCHORS

Location: Simsbury, CT

Rev. 3: 10/17/22

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 21091.02

Rock Anchor Design:

Input Data:

Max Pier Reactions:

Uplift =	Uplift := 80·kips	*user input*	
Shear =	Shear := 13·kips	*user input*	
Compression =	Axial := 93·kips	*user input*	

Structure:

Footing Width =	$B_{ftg} := 0ft$	*user input*	
Footing Length =	$L_{ftg} := 0ft$	*user input*	
Footing Thickness =	$T_{ftg} := 0ft$	*user input*	
Pier Length/Width Top =	$L_{pier1} := 2.5ft$	*user input*	
Pier Length/Width Bottom =	$L_{pier2} := 4.00ft$	*user input*	
Pier Height =	$T_{pier} := 4ft$	*user input*	
Pier Projection Above Grade =	$P_p := 3.00 \cdot ft$	*user input*	

Depths:

Depth to Bottom of Footing =	$D_{ftg} := 1.00ft$	*user input*	(from grade line)
Depth to Suitable Rock =	$D_{rock} := 1.00ft$	*user input*	(from grade line)
Depth to Suitable Earth =	$D_{earth} := 0ft$	*user input*	(from grade line)
Anchor Length =	$D_{anchor} := 11ft$	*user input*	(from grade line)

Subgrade Properties:

Internal Friction Angle =	$\phi := 35deg$	*user input*
Unit Weight of Earth =	$\gamma_{earth} := 110\frac{lb}{ft^3}$	*user input*
Unit Weight of Rock =	$\gamma_{rock} := 165\frac{lb}{ft^3}$	*user input*
Unit Weight of Conc =	$\gamma_{conc} := 150\frac{lb}{ft^3}$	*user input*
Ultimate Bearing =	Bearing := 24000·psf	*user input*

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Subject: FOUNDATION WITH ROCK ANCHORS

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Job No. 21091.02

Rock Anchor Properties:

Number of Anchors =	$N_{anchor} := 8$	*user input*	
Hole Diameter =	$hole_d := 2.00in$	*user input*	
Allowable Bond Stress Between Rock and Grout =	$\sigma_{bond} := 175 \cdot psi$	*user input*	Working bond Strength based on Granite Gneiss
Grout Allowable Compressive Stress =	$fc_g := 5000 \cdot psi$	*user input*	
Anchor Spacing* (along length) =	$S_{anchor} := 3ft$	*user input*	
Required Factor of Safety =	$F_S := 1$	*user input*	
Rock Anchor Ultimate Strength =	$Fu_{anchor} := 90ksi$	*user input*	#8 Grade 60 Rebar
Rock Anchor Yield Strength =	$Fy_{anchor} := 60ksi$	*user input*	
Rock Anchor Diameter =	$d_{ra} := 1.000in$	*user input*	
Rock Anchor Area per Group =	$A_g := 0.79in^2$	*user input*	
Rock Anchor Allowable Tension =	$T_{all} := 0.60 \cdot 71.1kips = 42.66 \cdot kips$		Per Recommendation of PTI For Prestressed Rock Anchors and Soil Anchors Section 6.6 Design Load Should not be more than 60% of Specified Minimum Tensile Strength.
Rock Anchor Maximum Working Load to Yield =	$T_y := 0.80 \cdot 71.1kips = 56.88 \cdot kips$		
Rock Anchor Shear Capacity =	$Sh := 0.4 \cdot T_y = 22.75 \cdot kips$		

Calculated Uplift Resistance:

Intermediate Dimension:

Suitable Earth Height = $H := D_{rock} - D_{earth} = 1\,ft$

Suitable Rock Height = $Z := \left(D_{anchor} - D_{rock}\right) = 10\,ft$

Total Anchor Width = $W := S_{anchor} = 3\,ft$

Base Area 1 of Resisting Pyramid = $B_1 := W^2 = 9\,ft^2$

Base Area 2 of Resisting Pyramid = $B_2 := [\tan(\phi)\cdot(Z)\cdot 2 + W]^2 = 289.1\,ft^2$

Base Area 3 of Resisting Pyramid = $B_3 := [\tan(\phi)\cdot(Z + H)\cdot 2 + W]^2 = 338.7\,ft^2$

Total Volume of Concrete = $V_{conc} := \frac{T_{pier}}{3}\cdot\left(L_{pier1}^2 + L_{pier2}^2 + \sqrt{L_{pier1}^2\cdot L_{pier2}^2}\right) = 43\cdot ft^3$

Total Volume of Resisting Material = $V_{tot} := \frac{\left[[H + (Z)]\cdot\left(B_1 + B_3 + \sqrt{B_1\cdot B_3}\right)\right]}{3} = 1477.5\cdot ft^3$

Volume of Rock = $V_{rock} := \frac{\left[(Z)\cdot\left(B_1 + B_2 + \sqrt{B_1\cdot B_2}\right)\right]}{3} = 1163.8\cdot ft^3$

Volume of Earth = $V_{earth} := V_{tot} - V_{rock} - V_{conc} = 270.6\cdot ft^3$

Total Weight of Concrete = $W_{conc} := V_{conc}\cdot\gamma_{conc} = 6.5\cdot kips$

Resisting Rock Force = $W_{rock} := V_{rock}\cdot\gamma_{rock} = 192\cdot kips$

Resisting Earth Force = $W_{earth} := V_{earth}\cdot\gamma_{earth} = 29.8\cdot kips$

Total Resisting Force = $W_{total} := 0.5\cdot W_{rock} + 0.5\cdot W_{earth} + 0.9\cdot W_{conc} = 116.7\cdot kips$

Foundation Uplift Check:

Factor of Safety = $\frac{W_{total}}{Uplift} = 1.46$

$Uplift\_Check := if\left(\frac{W_{total}}{Uplift} \geq F_S, \text{"OK"}, \text{"Overstressed"}\right)$

Uplift_Check = "OK"

Rock Bearing Capacity Check:

Bearing Force = $MaxBearing := \left[\frac{\left(Axial + W_{conc}\right)}{L_{pier2}^2}\right] = 6.216\cdot ksf$

$\frac{MaxBearing}{0.75Bearing} = 0.35$

$Rock\_Bearing\_Check := if\left(\frac{MaxBearing}{0.75Bearing} \leq 1.00, \text{"OK"}, \text{"Overstressed"}\right)$

Rock_Bearing_Check = "OK"

Rock Anchor Tension/Shear Check:

Tension Force per Anchor =

$$T_a := \frac{Uplift - W_{conc}}{N_{anchor}} = 9.2 \cdot kips$$

Design Shear Force per Anchor =

$$S_a := \frac{Shear}{N_{anchor}} = 1.6 \cdot kips$$

Reduced Tension For Tension/Shear Combination =

$$T_r := \left[1 - \left(\frac{S_a}{T_{all}}\right)^2\right] \cdot T_{all} = 42.6 \cdot kips$$

Tension Check =

$$TensionCheck := if\left(T_r \geq T_a, "OK", "IncreaseSize"\right) = "OK"$$

Shear Check =

$$ShearCheck := if\left(Sh \geq S_a, "OK", "IncreaseSize"\right) = "OK"$$

Provided Safety Factor =

$$\frac{T_r}{T_a} = 4.63$$

$$SafetyFactor := if\left(\frac{T_r}{T_a} \geq 1.0, "OK", "Overstressed"\right)$$

SafetyFactor = "OK"

Grout Bond Check:

Tension on Rock Anchor =

$$All_{bond} := \pi \cdot hole_d \cdot \sigma_{bond} \cdot \left(D_{anchor} - D_{rock}\right) = 132 \cdot kips$$

$$Bond\_Length\_Check := if\left(\frac{Uplift}{All_{bond} \cdot N_{anchor}} \leq F_S, "OK", "Increase Length"\right)$$

Bond_Length_Check = "OK"

RF DESIGN SHEET

Issue Date	8/23/2021
Revision	0

RFDS Status	Preliminary
Created By	Charles, Bossener

SITE INFORMATION	
DISH Site Number	BOBDL00007C
DISH Site Name	CLPC Tower Simsbury
Prequal Asset ID	
AOI	Hartford-East Hartford-Springfield
PEA	1
Latitude	41.892533
Longitude	-72.769364
Address	Hoskins Road
City	Simsbury
State	CT
ZIP Code	06070
County	Hartford
Centerline RC (ft.)	65
RAD Confirmed	***No Confirmed RAD***
Structure Type	SST

PROJECT ASSIGNMENTS	
Market Manager	Michael Lawton
Site Development Mgr.	Jean Cottrell
RF Engineer	Bossener Charles
Site Acq Specialist/Develop. Cord.	April Parrott /
SAQ Vendor/A&E Vendor	Northeast Site Solutions, LLC / Northeast Site Solutions, LLC
Asset Owner/Asset #	Private Owner /
Construction Mgr. (Lead/Field)	Javier Soto /
Contractor (General/Tower/Civil)	/ /
Power Company / Fiber Provider	EVERSOURCE CT ELECTRIC /

EMERGENCY CONTACT INFORMATION	
Name	Temporary Emergency Line
Phone	866-624-6874

LEASE AREA	
Dimensions (ft.)	5x7
Type	Steel Platform
Baseband Cabinet	EnerSys(Purcell)-HVAC
Dimensions (in)	32" x 30" x 73"
Baseband	gNB-CU
Generator Required	No
Make/Model	

DESIGN COMMENTS

This RFDS is preliminary and for planning purposes only.Once site design complete and antenna center line is confirmed please request Final RFD from Dish Market RF.

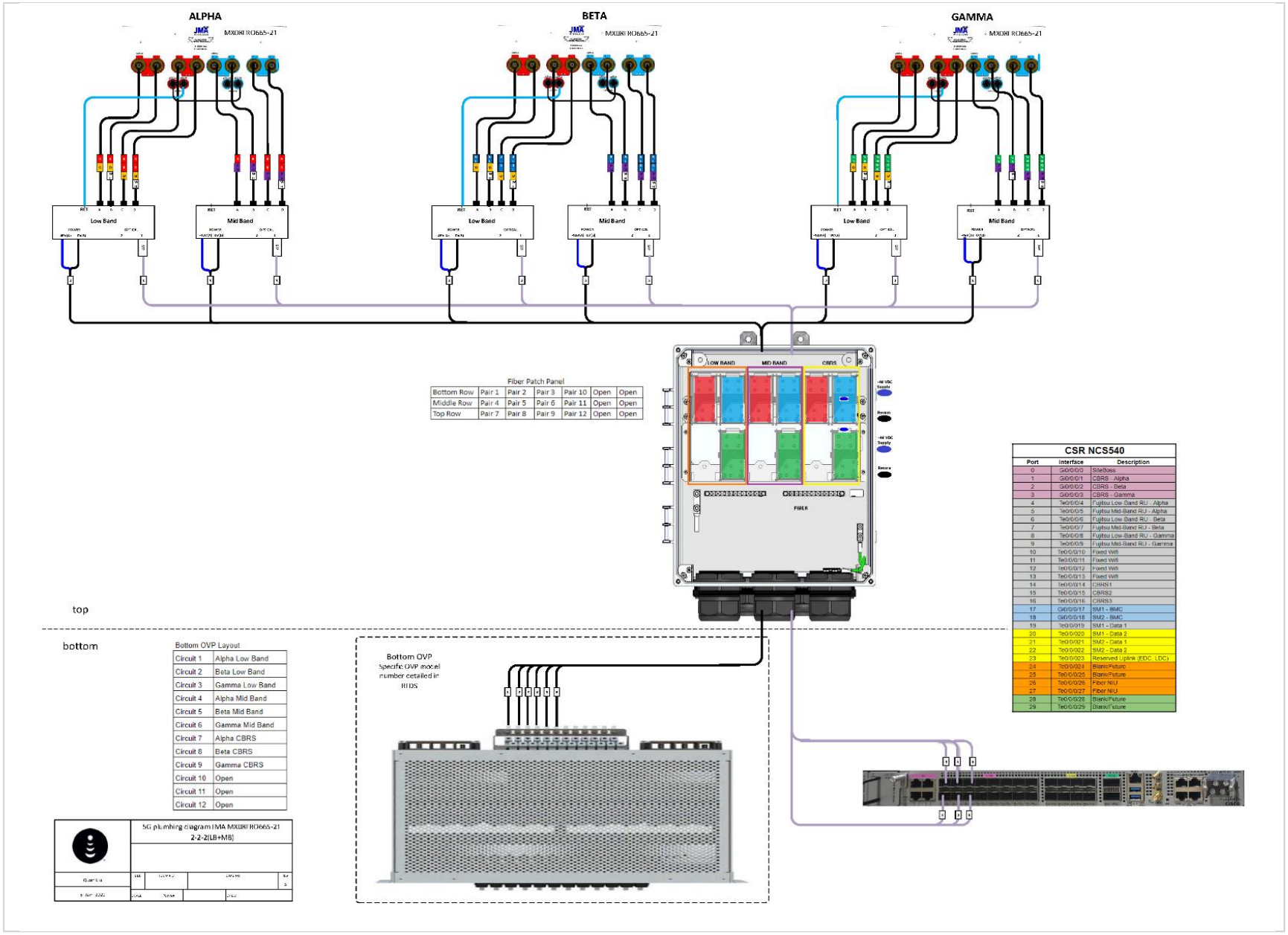
RF EQUIPMENT INFORMATION

Issue Date/Revision	8/23/2021	**Revision:**	0	**Latitude**	41.892533 **Longitude** -72.769364
Site ID	BOBDL00007C			**Prequal Asset ID**	
Site Address	Hoskins Road , Simsbury CT 06070			**SOW / RF**	Dish proposes to place 3 antennas, 6 RRUs, 1 junction box(s), and 1 cable(s) at the 65 foot RAD. Dish will require a 5x7 lease area for ground equipment. This RFDS is preliminary and for planning purposes only.Once site design complete and antenna center line is confirmed please request Final RFD
Structure Type	SST			**Comments**	
sectors >20' apart?	No	***Confirmed RAD?***	***No Confirmed RAD*** 65		

	Sector 1 (alpha)			Sector 2 (beta)			Sector 3 (gamma)		
ANTENNA									
Antenna #	1	4	7	2	5	8	3	6	9
Manufacturer	JMA			JMA			JMA		
Model Number	MX08FRO665-21			MX08FRO665-21			MX08FRO665-21		
Dimensions H x W x D (in)	72.0" x 20.0" x 8.0"			72.0" x 20.0" x 8.0"			72.0" x 20.0" x 8.0"		
Weight (lbs.)	64.5			64.5			64.5		
TX Power Output (watts)	40000			40000			40000		
ERP (dBm)	76.02			76.02			76.02		
RAD Centerline Height (ft.)	65			65			65		
Azimuths (True North)	0°			120°			240°		
Mech Down Tilt	0			0			0		
Default Mount	Generic								
LOW BAND/RADIO #1									
Manufacturer	Fujitsu			Fujitsu			Fujitsu		
Model Number	TA08025-B605			TA08025-B605			TA08025-B605		
Dimensions H x W x D (in.)	15.75" x 14.96" x 9.06"			15.75" x 14.96" x 9.06"			15.75" x 14.96" x 9.06"		
Weight (lbs.)	74.95			74.95			74.95		
Location	Antenna			Antenna			Antenna		
Band	n71 | |			n71 | |			n71 | |		
Quantity	1			1			1		
Port Assignment	Port 1-4			Port 1-4			Port 1-4		
Elec Down Tilt	2			2			2		
MID BAND/RADIO #2									
Manufacturer	Fujitsu			Fujitsu			Fujitsu		
Model Number	TA08025-B604			TA08025-B604			TA08025-B604		
Dimensions H x W x D (in)	15.75" x 14.96" x 7.87"			15.75" x 14.96" x 7.87"			15.75" x 14.96" x 7.87"		
Weight (lbs.)	63.93			63.93			63.93		
Location	Antenna			Antenna			Antenna		
Quantity	1			1			1		
Band	n70 |n66			n70 |n66			n70 |n66		
Port Assignment	Port 5-8			Port 5-8			Port 5-8		
Elec Down Tilt	4			4			4		
OVP (Junction Box)									
Manufacturer	Raycap								
Model Number	RDIDC-9181-PF-48								
Dimensions H x W x D (in.)	16" x 14" x 8"								
Weight (lbs.)	21.85								
Quantity	1								
LINE DETAILS									
Line Type	Hybrid								
Manufacturer	Cables Unlimited								
Model Number	CU12PSM9P8XXX_8AWG								
Diameter (O.D. in.)	1.411"								
Weight (lbs. per ft.)	1.658 lbs/ft								
Quantity	1								
Approx. Cable Length	95								
OTHER EQUIPMENT									
Type of Equipment									
Manufacturer									
Model Number									
Dimensions H x W x D (in)									
Weight (lbs.)									
Equipment Location									
Quantity									

Frequencies	**n29**	**n66**	**n70**	**n71**
Downlink (TX)	0 - 0	2180 - 2200	1995 - 2020	632 - 652
Uplink (RX)	-	-	1915 - 1920	678 - 698

PLUMBING DIAGRAM



Fiber Patch Panel

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

Bottom OVP Layout

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

5G plumbing diagram | MA MXORIRO665-21
2-2-2(LB+MB)

CSR NCS540

Port	Interface	Description
0	Gi0/0/0/0	SiteBoss
1	Gi0/0/0/1	CBRS - Alpha
2	Gi0/0/0/2	CBRS - Beta
3	Gi0/0/0/3	CBRS - Gamma
4	Te0/0/0/4	Fujitsu Low Band RU - Alpha
5	Te0/0/0/5	Fujitsu Mid-Band RU - Alpha
6	Te0/0/0/6	Fujitsu Low Band RU - Beta
7	Te0/0/0/7	Fujitsu Mid-Band RU - Beta
8	Te0/0/0/8	Fujitsu Low-Band RU - Gamma
9	Te0/0/0/9	Fujitsu Mid-Band RU - Gamma
10	Te0/0/0/10	Fixed Wifi
11	Te0/0/0/11	Fixed Wifi
12	Te0/0/0/12	Fixed Wifi
13	Te0/0/0/13	Fixed Wifi
14	Te0/0/0/14	CRAN1
15	Te0/0/0/15	CBRS2
16	Te0/0/0/16	CRAN3
17	Gi0/0/0/17	SM1 - BMC
18	Gi0/0/0/18	SM2 - BMC
19	Te0/0/0/19	SM1 - Data 1
20	Te0/0/0/20	SM1 - Data 2
21	Te0/0/0/21	SM2 - Data 1
22	Te0/0/0/22	SM2 - Data 2
23	Te0/0/0/23	Reserved Uplink (EDC, LDC)
24	Te0/0/0/24	Blank/Future
25	Te0/0/0/25	Blank/Future
26	Te0/0/0/26	Fiber NIU
27	Te0/0/0/27	Fiber NIU
28	Te0/0/0/28	Blank/Future
29	Te0/0/0/29	Blank/Future

RF COLOR CODING

Exhibit E

Mount Analysis

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

Antenna Mount Analysis

Proposed Dish Antenna Upgrade

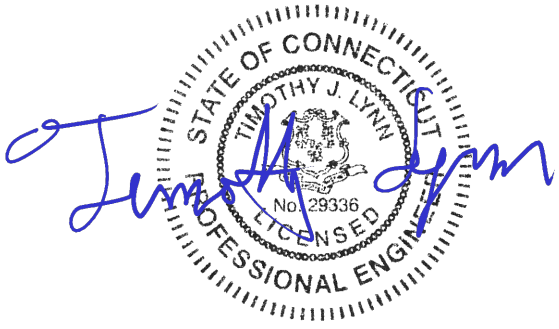
Site Ref: BOBDL00007C

91 Mountain Rd, aka Hoskins Rd
Simsbury, CT

CENTEK Project No. 21091.02

~~Date: March 14, 2022~~

Rev 1: October 17, 2022



Prepared for:

Northeast Site Solutions
1053 Farmington Ave., Unit G
Farmington, CT 06032

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CENTEK engineering

Centered on Solutions℠

October 17, 2022

Mr. Chuck Regulbuto
Northeast Site Solutions
1053 Farmington Ave., Unit G
Farmington, CT 06032

Re: Structural Letter ~ Antenna Mount
Dish – Site Ref: BOBDL00007C
Wintonbury Avenue
Simsbury, CT

Centek Project No. 21091.02

Dear Mr. Regulbuto,

Centek Engineering, Inc. has reviewed the Dish antenna installation at the above referenced site. The purpose of the review is to determine the structural adequacy of the existing mount, consisting of three (3) SitePro CWT02 mounts to support the proposed equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2021 International Building Code as modified by the 2022 Connecticut State Building Code (CTBC) including ASCE 7-16 and ANSI/TIA-222-H *Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures"*.

The loads considered in this analysis consist of the following:

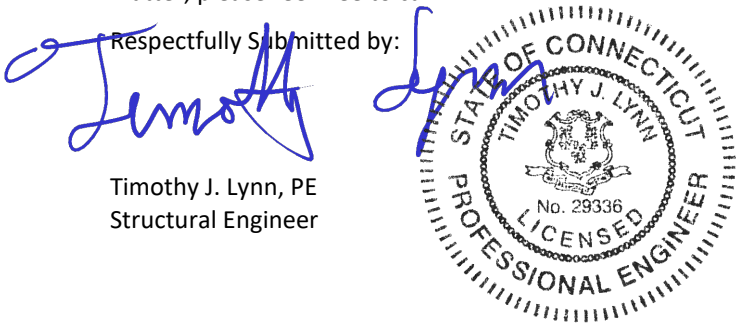
- **Dish:**
  Mounts: Three (3) JMA MX08FRO665-21 panel antennas, three (3) Fujitsu TA0825-B604 remote radio heads and three (3) Fujitsu TA0825-B605 remote radio heads mounted on three (3) SitePRO CWT02 mounts with a RAD center elevation of 65-ft +/- AGL.

The antenna mount was analyzed per the requirements of the 2021 International Building Code as modified by the 2022 Connecticut State Building Code considering a Ultimate design wind speed of 125 mph for Simsbury as required in Appendix P of the 2022 Connecticut State Building Code.

A structural analysis of tower and foundation needs to be completed prior to any work.

Based on our review of the installation, it is our opinion that the **subject antenna mount has sufficient capacity** to support the aforementioned antenna configuration. If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

CENTEK engineering
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Branford, CT 06405 F: (203) 488-8587

Subject:	TIA-222-H Loads
Location:	Simsbury, CT
Rev. 1: 10/17/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21091.02

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-H

Wind Speeds

Basic Wind Speed	$V := 125$	mph	(User Input - CSBC 2022 Appendix P)
Basic Wind Speed with Ice	$V_i := 50$	mph	(User Input - TIA-222-H Annex B)
Basic Wind Speed (Mount)	$V_m := 30$	mph	(User Input - TIA-222-H Section 16.3)

Input

Structure Type =	Structure_Type := Flexible		(User Input)
Structure Category =	SC := III		(User Input)
Exposure Category =	Exp := C		(User Input)
Structure Height =	$h := 100$	ft	(User Input)
Height to Center of Antennas =	$z_{ant} := 65$	ft	(User Input)
Radial Ice Thickness =	$t_i := 1.5$	in	(User Input per Annex B of TIA-222-H)
Radial Ice Density =	Id := 56.00	pcf	(User Input)
Topograpic Factor =	$K_{zt} := 1.89$		(User Input)
Shielding Factor for Appurtenances =	$K_a := 1.0$		(User Input)
Rooftop Wind Speed-up Factor =	$K_s := 1.0$		(User Input)
Ground Elevation Factor =	$K_e = 0.996$		(User Input)
Gust Response Factor =	$G_H = 1.35$		(User Input)

Output

Wind Direction Probability Factor = $K_d := 0.95$ (Per Table 2-2 of TIA-222-H)

Importance Factors =

$$I_{ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.15 & \text{if } SC = 3 \\ 1.25 & \text{if } SC = 4 \end{cases} = 1.15$$

(Per Table 2-3 of TIA-222-H)

$$I_{Seismic} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.25 & \text{if } SC = 3 \\ 1.50 & \text{if } SC = 4 \end{cases} = 1.25$$

$$K_{iz} := \left(\frac{z_{ant}}{33}\right)^{0.1} = 1.07$$

$$t_{iz} := t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.307$$

Velocity Pressure Coefficient Antennas =

$$Kz_{ant} := 2.01\left(\left(\frac{z_{ant}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.156$$

Velocity Pressure w/o Ice Antennas = $qz_{ant} := 0.00256 \cdot K_{zt} \cdot K_s \cdot K_e \cdot K_d \cdot Kz_{ant} \cdot V^2 = 82.65$

Velocity Pressure with Ice Antennas = $qz_{ice.ant} := 0.00256 \cdot K_{zt} \cdot K_s \cdot K_e \cdot K_d \cdot Kz_{ant} \cdot V_i^2 = 13.224$

Velocity Pressure with Ice Antennas = $qz_m := 0.00256 \cdot K_{zt} \cdot K_s \cdot K_e \cdot K_d \cdot Kz_{ant} \cdot V_m^2 = 4.761$

Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model =	MX08FRO665-21		
Appurtenance Shape =	Flat		(User Input)
Appurtenance Height=	$L_{app} := 72$	in	(User Input)
Appurtenance Width =	$W_{app} := 20$	in	(User Input)
Appurtenance Thickness =	$T_{app} := 8$	in	(User Input)
Appurtenance Weight =	$WT_{app} := 70$	lbs	(User Input)
Number of Appurtenances=	$N_{app} := 1$		(User Input)
Appurtenance Aspect Ratio =	$Ar_{app} := \frac{L_{app}}{W_{app}} = 3.6$		
Appurtenance Force Coefficient =	$Ca_{app} = 1.25$		

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 10$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 1393$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 4$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 557$	lbs

Wind Load (with ice)

Surface Area for One Appurtenance w/ Ice (Front)=	$SA_{ICEappF} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (W_{app} + 2 \cdot t_{iz})}{144} = 13.1$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappF} = 292$	lbs
Surface Area for One Appurtenance w/ Ice (Side) =	$SA_{ICEappS} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz})}{144} = 6.7$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappS} = 150$	lbs

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 10$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 80$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 4$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 32$	lbs

Gravity Loads (ice only)

Volume of Each Appurtenance =	$V_{app} := L_{app} \cdot W_{app} \cdot T_{app} = 1 \times 10^4$	cu in
Volume of Ice on Each Appurtenance =	$V_{ice} := (L_{app} + 2 \cdot t_{iz})(W_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz}) - V_{app} = 1 \times 10^4$	cu in
Weight of Ice on Each Appurtenance =	$W_{ICEapp} := \frac{V_{ice}}{1728} \cdot Id = 397$	lbs
Weight of Ice on All Appurtenances =	$W_{ICEapp} \cdot N_{app} = 397$	lbs

Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model =	Fujitsu TA0825-B604		
Appurtenance Shape =	Flat		(User Input)
Appurtenance Height =	$L_{app} := 14.96$	in	(User Input)
Appurtenance Width =	$W_{app} := 15.75$	in	(User Input)
Appurtenance Thickness =	$T_{app} := 7.87$	in	(User Input)
Appurtenance Weight =	$WT_{app} := 70$	lbs	(User Input)
Number of Appurtenances =	$N_{app} := 1$		(User Input)
Appurtenance Aspect Ratio =	$Ar_{app} := \frac{L_{app}}{W_{app}} = 0.9$		
Appurtenance Force Coefficient =	$Ca_{app} = 1.2$		

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 1.6$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 219$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 0.8$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 109$	lbs

Wind Load (with ice)

Surface Area for One Appurtenance w/ Ice (Front) =	$SA_{ICEappF} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (W_{app} + 2 \cdot t_{iz})}{144} = 2.8$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappF} = 59$	lbs
Surface Area for One Appurtenance w/ Ice (Side) =	$SA_{ICEappS} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz})}{144} = 1.7$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappS} = 36$	lbs

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 1.6$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 13$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 0.8$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 6$	lbs

Gravity Loads (ice only)

Volume of Each Appurtenance =	$V_{app} := L_{app} \cdot W_{app} \cdot T_{app} = 1854$	cu in
Volume of Ice on Each Appurtenance =	$V_{ice} := (L_{app} + 2 \cdot t_{iz})(W_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz}) - V_{app} = 3121$	cu in
Weight of Ice on Each Appurtenance =	$W_{ICEapp} := \frac{V_{ice}}{1728} \cdot Id = 101$	lbs
Weight of Ice on All Appurtenances =	$W_{ICEapp} \cdot N_{app} = 101$	lbs

Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model =	Fujitsu TA0825-B605		
Appurtenance Shape =	Flat		(User Input)
Appurtenance Height=	$L_{app} := 14.96$	in	(User Input)
Appurtenance Width =	$W_{app} := 15.75$	in	(User Input)
Appurtenance Thickness =	$T_{app} := 9.06$	in	(User Input)
Appurtenance Weight =	$WT_{app} := 80$	lbs	(User Input)
Number of Appurtenances=	$N_{app} := 1$		(User Input)
Appurtenance Aspect Ratio =	$Ar_{app} := \frac{L_{app}}{W_{app}} = 0.9$		
Appurtenance Force Coefficient =	$Ca_{app} = 1.2$		

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 1.6$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 219$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 0.9$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 126$	lbs

Wind Load (with ice)

Surface Area for One Appurtenance w/ Ice (Front)=	$SA_{ICEappF} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (W_{app} + 2 \cdot t_{iz})}{144} = 2.8$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappF} = 59$	lbs
Surface Area for One Appurtenance w/ Ice (Side) =	$SA_{ICEappS} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz})}{144} = 1.9$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappS} = 40$	lbs

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 1.6$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 13$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 0.9$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 7$	lbs

Gravity Loads (ice only)

Volume of Each Appurtenance =	$V_{app} := L_{app} \cdot W_{app} \cdot T_{app} = 2135$	cu in
Volume of Ice on Each Appurtenance =	$V_{ice} := (L_{app} + 2 \cdot t_{iz})(W_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz}) - V_{app} = 3315$	cu in
Weight of Ice on Each Appurtenance =	$W_{ICEapp} := \frac{V_{ice}}{1728} \cdot Id = 107$	lbs
Weight of Ice on All Appurtenances =	$W_{ICEapp} \cdot N_{app} = 107$	lbs

Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model =	Raycap RDIDC-9181-PF-48		
Appurtenance Shape =	Flat		(User Input)
Appurtenance Height=	$L_{app} := 18.97$	in	(User Input)
Appurtenance Width =	$W_{app} := 16.20$	in	(User Input)
Appurtenance Thickness =	$T_{app} := 9.64$	in	(User Input)
Appurtenance Weight =	$WT_{app} := 25$	lbs	(User Input)
Number of Appurtenances=	$N_{app} := 1$		(User Input)
Appurtenance Aspect Ratio =	$Ar_{app} := \frac{L_{app}}{W_{app}} = 1.2$		
Appurtenance Force Coefficient =	$Ca_{app} = 1.2$		

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 2.1$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 286$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 1.3$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 170$	lbs

Wind Load (with ice)

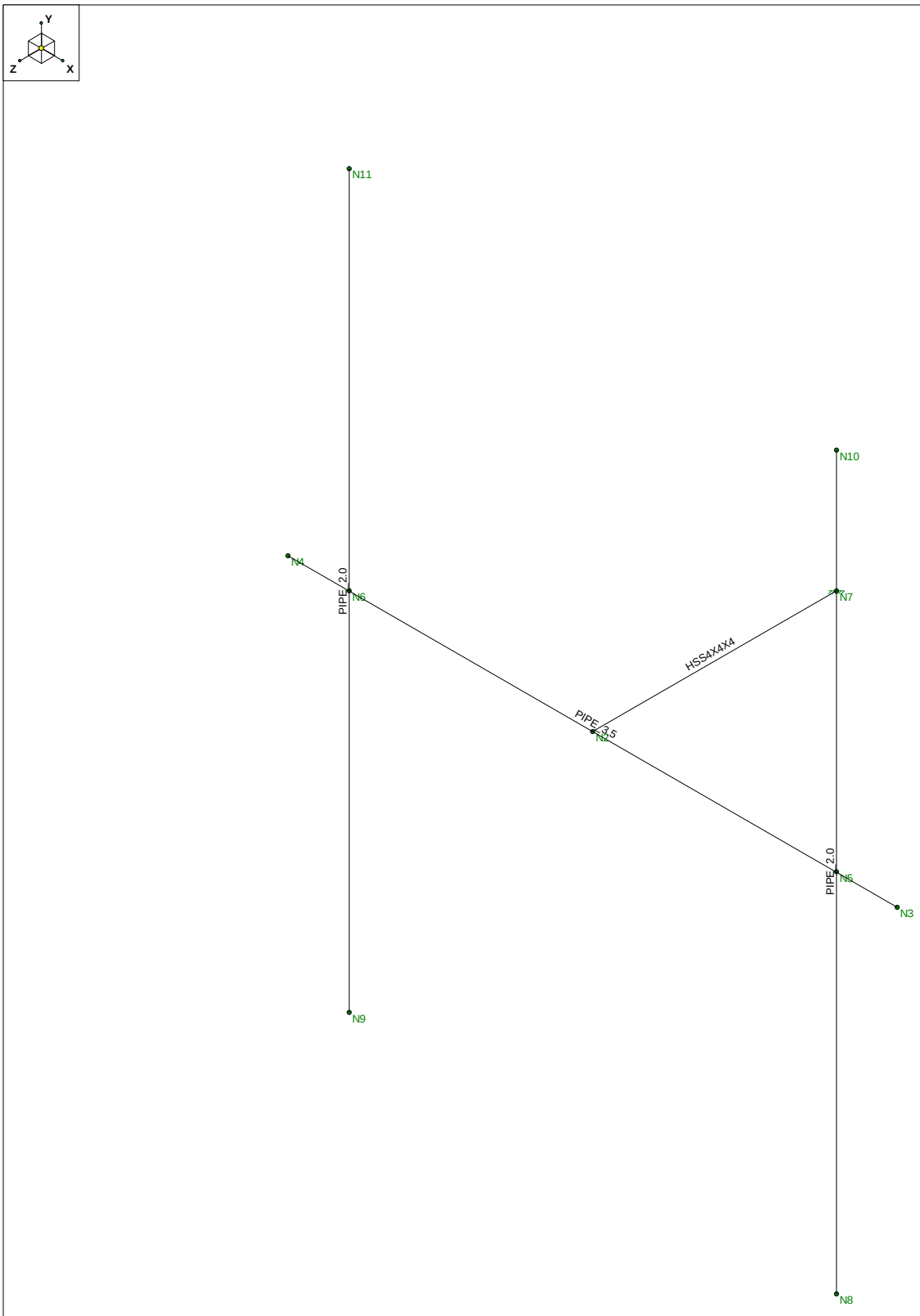
Surface Area for One Appurtenance w/ Ice (Front)=	$SA_{ICEappF} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (W_{app} + 2 \cdot t_{iz})}{144} = 3.4$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappF} = 73$	lbs
Surface Area for One Appurtenance w/ Ice (Side) =	$SA_{ICEappS} := \frac{(L_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz})}{144} = 2.3$	sf
Total Appurtenance Wind Force w/ Ice =	$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappS} = 50$	lbs

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =	$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 2.1$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 16$	lbs
Surface Area for One Appurtenance (Side) =	$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 1.3$	sf
Total Appurtenance Wind Force =	$F_{app} := qz_m \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 10$	lbs

Gravity Loads (ice only)

Volume of Each Appurtenance =	$V_{app} := L_{app} \cdot W_{app} \cdot T_{app} = 2963$	cu in
Volume of Ice on Each Appurtenance =	$V_{ice} := (L_{app} + 2 \cdot t_{iz})(W_{app} + 2 \cdot t_{iz}) \cdot (T_{app} + 2 \cdot t_{iz}) - V_{app} = 4034$	cu in
Weight of Ice on Each Appurtenance =	$W_{ICEapp} := \frac{V_{ice}}{1728} \cdot Id = 131$	lbs
Weight of Ice on All Appurtenances =	$W_{ICEapp} \cdot N_{app} = 131$	lbs



Envelope Only Solution

Centek Engineering		
TJL	BOBDL00007C	Oct 17, 2022 at 4:40 PM
21091.02	Member Framing	BOBDL00007C_AMA.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-10: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-11: ASD
Aluminum Code	AA ADM1-10: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	150.001
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	2
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Grade B	29000	11154	.3	.65	.49	35	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	(E) Pipe 1.25	PIPE_1.25	Beam	Pipe	A53 Grade B	Typical	.625	.184	.184	.368
2	(E) Horizontals Pipe 2.0	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
3	(E) SR5/8	0.625' Dia.	Column	BAR	A36 Gr.36	Typical	.307	.007	.007	.015
4	(E) Antenna Mast Pipe ...	PIPE_2.0	Column	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	HSS4X4X4	2			Lbyy						Lateral
2	M2	PIPE_3.5	5			Lbyy						Lateral
3	M3	PIPE_2.0	6			Lbyy						Lateral
4	M4	PIPE_2.0	6			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design ...
1	M1	N2	N7			HSS4X4X4	Beam	Tube	A36 Gr.36	Typical
2	M2	N4	N3			PIPE_3.5	Beam	HSS Pipe	A36 Gr.36	Typical
3	M3	N9	N11			PIPE_2.0	Beam	HSS Pipe	A36 Gr.36	Typical
4	M4	N8	N10			PIPE_2.0	Beam	HSS Pipe	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N7	0	0	0	0	
2	N2	0	0	2	0	
3	N3	2.5	0	2	0	
4	N4	-2.5	0	2	0	
5	N5	2	0	2	0	
6	N6	-2	0	2	0	
7	N8	2	-3	2	0	
8	N9	-2	-3	2	0	
9	N10	2	3	2	0	
10	N11	-2	3	2	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N7	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Point Loads (BLC 2 : Dead Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Y	-.035	.5
2	M3	Y	-.035	5.5
3	M4	Y	-.07	4.5
4	M4	Y	-.08	1.5
5	M3	Y	-.025	3.5

Member Point Loads (BLC 2 : Dead Load) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
6	M4	Y	-.025	3.5

Member Point Loads (BLC 3 : Ice Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Y	-.199	.5
2	M3	Y	-.199	5.5
3	M4	Y	-.101	4.5
4	M4	Y	-.107	1.5
5	M3	Y	-.131	3.5
6	M4	Y	-.131	3.5

Member Point Loads (BLC 4 : Lm Maintenance Load (500lb))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Y	-.5	5

Member Point Loads (BLC 5 : Lv Maintenance Load (250lb))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.25	5

Member Point Loads (BLC 6 : Wind with Ice X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	X	.075	.5
2	M3	X	.075	5.5
3	M4	X	.036	4.5
4	M4	X	.04	1.5
5	M3	X	.05	3.5
6	M4	X	.05	3.5

Member Point Loads (BLC 7 : Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	X	.279	.5
2	M3	X	.279	5.5
3	M4	X	.109	4.5
4	M4	X	.126	1.5
5	M3	X	.17	3.5
6	M4	X	.17	3.5

Member Point Loads (BLC 8 : Wm Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	X	.016	.5
2	M3	X	.016	5.5
3	M4	X	.006	4.5
4	M4	X	.007	1.5
5	M3	X	.016	3.5
6	M4	X	.01	3.5

Member Point Loads (BLC 9 : Wind with Ice Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]

Member Point Loads (BLC 9 : Wind with Ice Z) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Z	.146	.5
2	M3	Z	.146	5.5
3	M4	Z	.059	4.5
4	M4	Z	.059	1.5
5	M3	Z	.073	3.5
6	M4	Z	.073	3.5

Member Point Loads (BLC 10 : Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Z	.697	.5
2	M3	Z	.697	5.5
3	M4	Z	.219	4.5
4	M4	Z	.219	1.5
5	M3	Z	.286	3.5
6	M4	Z	.286	3.5

Member Point Loads (BLC 11 : Wm Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Z	.04	.5
2	M3	Z	.04	5.5
3	M4	Z	.013	4.5
4	M4	Z	.013	1.5
5	M3	Z	.016	3.5
6	M4	Z	.016	3.5

Member Distributed Loads (BLC 6 : Wind with Ice X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...
1	M1	PX	.004	.004	0	0
2	M2	PX	.004	.004	0	0
3	M3	PX	.004	.004	0	0
4	M4	PX	.004	.004	0	0

Member Distributed Loads (BLC 7 : Wind X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...
1	M1	PX	.024	.024	0	0
2	M2	PX	.024	.024	0	0
3	M3	PX	.024	.024	0	0
4	M4	PX	.024	.024	0	0

Member Distributed Loads (BLC 8 : Wm Wind X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...
1	M1	PX	.003	.003	0	0
2	M2	PX	.003	.003	0	0
3	M3	PX	.003	.003	0	0
4	M4	PX	.003	.003	0	0

Member Distributed Loads (BLC 9 : Wind with Ice Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...

Member Distributed Loads (BLC 9 : Wind with Ice Z) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...
1	M1	PZ	.004	.004	0	0
2	M2	PZ	.004	.004	0	0

Member Distributed Loads (BLC 10 : Wind Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...
1	M1	PZ	.024	.024	0	0
2	M2	PZ	.024	.024	0	0

Member Distributed Loads (BLC 11 : Wm Wind Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k...	Start Location[ft..	End Location[ft,...
1	M1	PZ	.003	.003	0	0
2	M2	PZ	.003	.003	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	DL		-1						
2	Dead Load	None					6			
3	Ice Load	None					6			
4	Lm Maintenance Load (500lb)	None					1			
5	Lv Maintenance Load (250lb)	None					1			
6	Wind with Ice X	None					6	4		
7	Wind X	None					6	4		
8	Wm Wind X	None					6	4		
9	Wind with Ice Z	None					6	2		
10	Wind Z	None					6	2		
11	Wm Wind Z	None					6	2		

Load Combinations

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
1	1.4D	Yes	Y		1	1.4	2	1.4																
2	1.2D +1.5Lv	Yes	Y		1	1.2	2	1.2	5	1.5														
3	1.2D + 1.0W (X-dir...	Yes	Y		1	1.2	2	1.2	7	1														
4	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	2	1.2	3	1	6	1												
5	1.2D +1.5Lm+ 1.0...	Yes	Y		1	1.2	2	1.2	4	1.5	8	1												
6	1.2D + 1.0W (Z-dir...	Yes	Y		1	1.2	2	1.2	10	1														
7	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	2	1.2	3	1	9	1												
8	1.2D +1.5Lm+ 1.0...	Yes	Y		1	1.2	2	1.2	4	1.5	11	1												

Envelope Joint Reactions

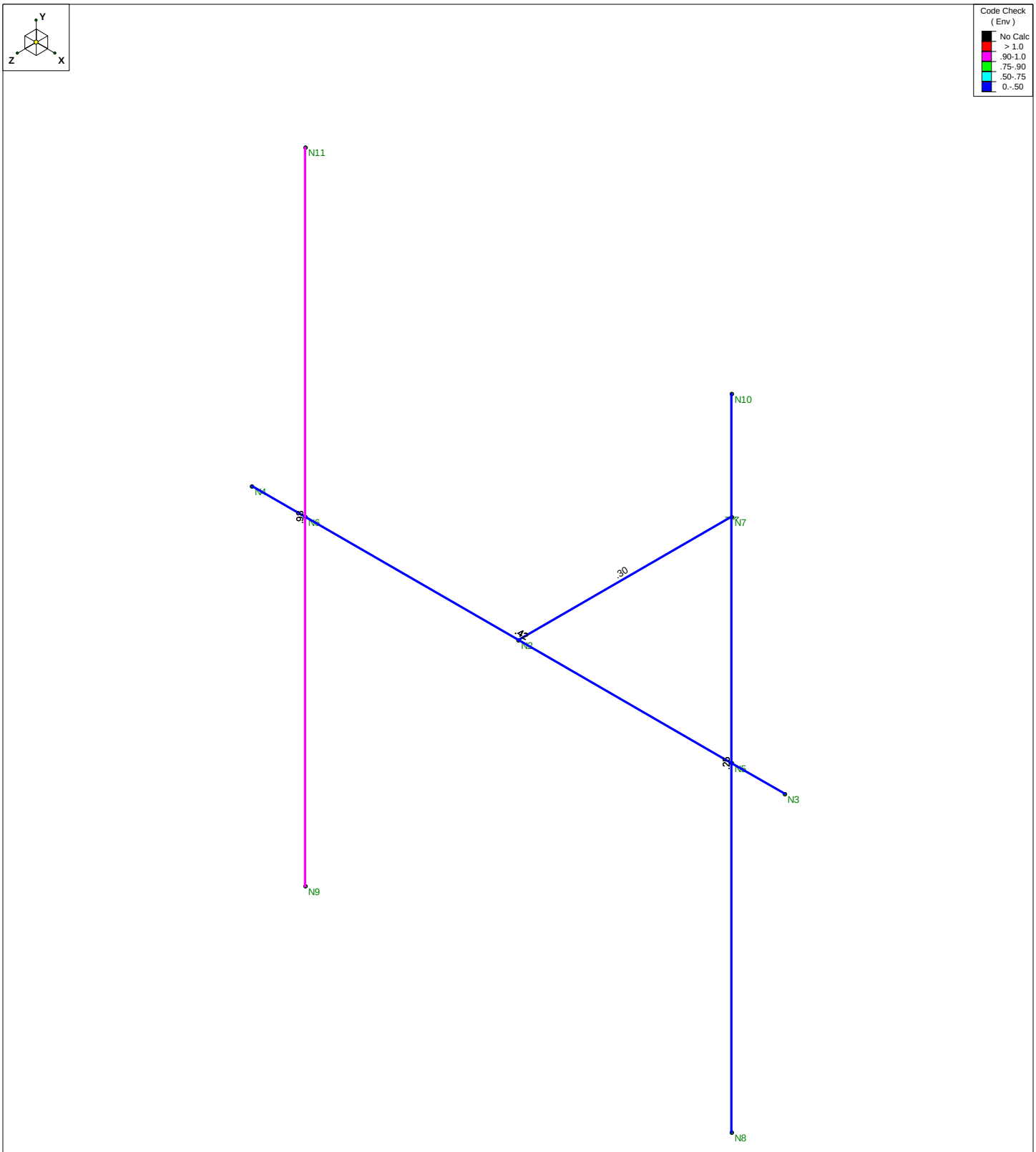
	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N7	max	0	8	1.321	7	0	5	-.878	3	0	2	1.13	2
2		min	-1.469	3	.453	3	-2.524	6	-2.69	7	-2.891	3	-1.314	8
3	Totals:	max	0	8	1.321	7	0	5						
4		min	-1.469	3	.453	3	-2.524	6						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N7	max	0	8	0	8	0	8	0	8	0	8	0	8
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N2	max	.039	3	-.012	3	0	6	2.195e-03	7	3.037e-03	6	2.651e-03	8
4		min	0	1	-.036	7	0	1	6.911e-04	3	0	1	-2.279e-03	2
5	N3	max	.039	3	.032	8	0	2	2.302e-03	7	2.286e-03	3	1.969e-03	8
6		min	0	1	-.138	2	-.069	3	6.912e-04	3	0	1	-4.57e-03	2
7	N4	max	.039	3	.037	2	.198	6	2.311e-03	7	7.737e-03	6	5.146e-03	8
8		min	0	1	-.168	8	0	1	6.912e-04	3	0	1	-1.861e-03	2
9	N5	max	.039	3	.02	8	0	2	2.302e-03	7	2.286e-03	3	1.969e-03	8
10		min	0	1	-.111	2	-.055	3	6.912e-04	3	0	1	-4.506e-03	2
11	N6	max	.039	3	.026	2	.152	6	2.311e-03	7	7.736e-03	6	5.145e-03	8
12		min	0	1	-.137	8	0	1	6.912e-04	3	0	1	-1.861e-03	2
13	N8	max	.078	5	.02	8	-.02	6	2.065e-03	4	2.286e-03	3	2.142e-03	5
14		min	-.162	2	-.111	2	-.089	4	-8.769e-04	6	0	1	-4.495e-03	2
15	N9	max	.276	3	.026	2	.659	6	2.064e-03	4	7.736e-03	6	9.189e-03	3
16		min	-.067	2	-.137	8	-.064	5	-1.998e-02	6	0	1	-1.859e-03	2
17	N10	max	.167	3	.02	8	.105	6	4.365e-03	6	2.286e-03	3	1.975e-03	8
18		min	-.069	8	-.111	2	-.03	3	6.931e-04	3	0	1	-4.518e-03	2
19	N11	max	.32	3	.026	2	.786	6	2.352e-02	6	7.736e-03	6	5.242e-03	8
20		min	-.186	8	-.138	8	.029	1	6.925e-04	3	0	1	-1.043e-02	3

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Memb...	Shape	Code Check	L...	LC	Sh...	L...	Dir	...phi*P...	phi*Pn...	phi*Mn y-y [k-ft]	phi*...	Cb	Eqn
1	M1	HSS4X4X4	.298	2	3	.163	2	y	8 107.7...	109.188	12.663	12....	1....	H1...
2	M2	PIPE_3.5	.424	2.5	6	.092	2.5		6 72.939	81	8.181	8.181	1....	H1...
3	M3	PIPE_2.0	.983	3	6	.099	3		6 21.2	33.048	1.925	1.925	1	H1...
4	M4	PIPE_2.0	.248	3	6	.051	3		6 21.2	33.048	1.925	1.925	1....	H1...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering		
TJL	BOBDL00007C	Oct 17, 2022 at 4:39 PM
21091.02	Unity Check	BOBDL00007C_AMA.r3d

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	Connection to Host Building
Location:	Simsbury, CT
Rev. : 10/17/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21091.02

Antenna Mount Connection:

Anchor Data:

A307 Thru-Bolt =

Number of Anchor Bolts = $N := 4$ (User Input)

Diameter of Bolts = $D := 0.625in$ (User Input)

Design Tension = $T_{design} := 10.4 \cdot kips$ (User Input)

Design Shear = $V_{design} := 6.23 \cdot kips$ (User Input)

Bolt Spacing = $SP := 6in$ (User Input)

Design Reactions:

Force X = $F_x := 1.5 \cdot kips$ (User Input)

Force Y = $F_y := 0.5 \cdot kips$ (User Input)

Force Z = $F_z := 0 \cdot kips$ (User Input)

Moment X = $M_x := 0.9 \cdot ft \cdot kips$ (User Input)

Moment Y = $M_y := 2.9 \cdot ft \cdot kips$ (User Input)

Moment Z = $M_z := 0.4 \cdot ft \cdot kips$ (User Input)

Anchor Check:

Max Tension Force = $$T_{Max} := \frac{F_z}{N} + \frac{M_x}{SP \cdot \frac{N}{2}} + \frac{M_y}{SP \cdot \frac{N}{2}} = 3.8 \cdot kips$$

Max Shear Force = $$V_{Max} := \frac{F_y + F_x}{N} + \frac{M_z}{SP \cdot \frac{N}{2}} = 0.9 \cdot kips$$

Condition 1 = $$Condition1 := if\left(\frac{T_{Max}}{T_{design}} + \frac{V_{Max}}{V_{design}} \le 1.0, "OK", "NG"\right) = "OK"$$

% of Capacity = $$\max\left[\frac{T_{Max}}{T_{design}}, \frac{V_{Max}}{V_{design}}, \left(\frac{\frac{T_{Max}}{T_{design}} + \frac{V_{Max}}{V_{design}}}{1.0}\right)\right] = 51 \cdot \%$$

CENTEK engineering
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Branford, CT 06405 F: (203) 488-8587

Subject:	Connection to Host Building
Location:	Simsbury, CT
Rev. : 10/17/22	Prepared by: T.J.L. Checked by: C.F.C. Job No. 21091.02

Design Reactions:

Force X =	$F_x := 0 \cdot kips$	(User Input)
Force Y =	$F_y := 0.5 \cdot kips$	(User Input)
Force Z =	$F_z := 2.5 \cdot kips$	(User Input)
Moment X =	$M_x := 1.2 \cdot ft \cdot kips$	(User Input)
Moment Y =	$M_y := 1.9 \cdot ft \cdot kips$	(User Input)
Moment Z =	$M_z := 0.2 \cdot ft \cdot kips$	(User Input)

Anchor Check:

Max Tension Force =

$$T_{Max} := \frac{F_z}{N} + \frac{M_x}{SP \cdot \frac{N}{2}} + \frac{M_y}{SP \cdot \frac{N}{2}} = 3.73 \cdot kips$$

Max Shear Force =

$$V_{Max} := \frac{F_y + F_x}{N} + \frac{M_z}{SP \cdot \frac{N}{2}} = 0.33 \cdot kips$$

Condition 1 =

$$Condition1 := if\left(\frac{T_{Max}}{T_{design}} + \frac{V_{Max}}{V_{design}} \le 1.0, "OK", "NG"\right) = "OK"$$

% of Capacity =

$$\max\left[\frac{T_{Max}}{T_{design}}, \frac{V_{Max}}{V_{design}}, \left(\frac{\frac{T_{Max}}{T_{design}} + \frac{V_{Max}}{V_{design}}}{1.0}\right)\right] = 41 \cdot \%$$

Units

Angular

$rad \equiv 1$

$deg \equiv \pi \cdot \frac{rad}{180}$

Weight

$kips \equiv 1000 \cdot lb$

$k \equiv kips$

$tons \equiv 2000 \cdot lb$

Unit Weight

$plf \equiv \frac{lb}{ft}$

$klf \equiv \frac{kips}{ft}$

Pressure

$psf \equiv \frac{lb}{ft^2}$

$psi \equiv \frac{lb}{in^2}$

$ksf \equiv \frac{kips}{ft^2}$

$ksi \equiv \frac{kips}{in^2}$

Exhibit F

Power Density/RF Emissions Report

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

Site ID: BOBDL00007C

CLPC Tower Simsbury
91 Mountain Road , aka Hoskins Road
Simsbury, CT 06070

October 13, 2022

Fox Hill Telecom Project Number: 221857

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**14.44 %**

Fox Hill Telecom

October 13, 2022

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOBDL00007C – CLPC Tower Simsbury**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **91 Mountain Rd, aka Hoskins Rd, Simsbury, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and antenna installation located on this property are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS / AWS-4) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed radio system installation for **Dish** on the subject site located at 91 Mountain Rd, aka **Hoskins Rd, Simsbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65.

In OET-65, plane wave power densities in the Far Field of an antenna may be estimated by considering the additional factors of antenna gain and reflective waves that would contribute to exposure.

The radiation pattern of an antenna has developed in the Far Field region and the power gain needs to be considered in exposure predictions. Also, since the vertical radiation pattern of the antenna is considered, the exposure predictions would most likely be reduced significantly at ground level, resulting in a more realistic estimate of the actual exposure levels.

Additionally, to model a truly "worst case" prediction of exposure levels at or near a surface, such as at ground-level or on a rooftop, reflection off the surface of antenna radiation power can be assumed, resulting in a potential four-fold increase in power density.

These additional factors are considered, and the Far Field prediction model is determined by the following equation:

$$S = EIRP \times Rc \div 4\pi R^2$$

S = Power Density
EIRP = Effective Radiated Power from antenna
Rc = Reflection Coefficient (2.56)
R = Distance from the antenna

Predicted power densities are calculated 6 feet above the ground level and are displayed as a percentage of the applicable FCC standards.

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
5G	n71 (600 MHz)	4	61.5
5G	n70 (AWS-4 / 1995-2020)	4	40
5G	n66 (AWS-4 / 2180-2200)	4	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz (n71) frequency band, and the 2100 MHz (AWS 4) frequency bands at 1995-2020 MHz (n70) and 2180-2200 MHz (n66). This is based on feedback from the carrier with regards to anticipated antenna selection.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	JMA MX08FRO665-21	65
B	1	JMA MX08FRO665-21	65
C	1	JMA MX08FRO665-21	65

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE % at 6 feet above ground level
Antenna A1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	3.39
						Sector A Composite MPE%	**3.39**
Antenna B1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	3.39
						Sector B Composite MPE%	**3.39**
Antenna C1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	3.39
						Sector C Composite MPE%	**3.39**

Table 3: Dish Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
Dish – Max Per Sector Value	**3.39 %**
Sprint	11.05 %
Site Total MPE %:	**14.44 %**

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	3.39 %
Dish Sector B Total:	3.39 %
Dish Sector C Total:	3.39 %
Site Total:	14.44 %

Table 5: Site MPE Summary

Table 6 below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

Dish _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Dish n71 (600 MHz) 5G	4	858.77	65	6.60	n71 (600 MHz)	400	1.65%
Dish n70 (AWS-4 / 1995-2020) 5G	4	1,648.39	65	8.70	n70 (AWS-4 / 1995-2020)	1000	0.87%
Dish n66 (AWS-4 / 2180-2200) 5G	4	1,849.52	65	8.70	n66 (AWS-4 / 2180-2200)	1000	0.87%
						Total:	**3.39%**

Table 6: Dish Maximum Sector MPE Power Values

Summary

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

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

Dish Sector	Power Density Value (%)
Sector A:	3.39 %
Sector B:	3.39 %
Sector C:	3.39 %
Dish Maximum Total (per sector):	3.39 %
Site Total:	14.44 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **14.44 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Worcester, MA 01609
(978)660-3998

Exhibit G

Letter of Authorization

FW: Dish - CT BOBDL00007C 91 Mountain Rd, Simsbury (Hoskins Rd)

External

Inbox

G

Gelinas, Christopher Fri, Sep 30, 9:20 AM

to me

Chuck

Per below

Structural and CD's for Wintonbury Rd, Simsbury are approved.

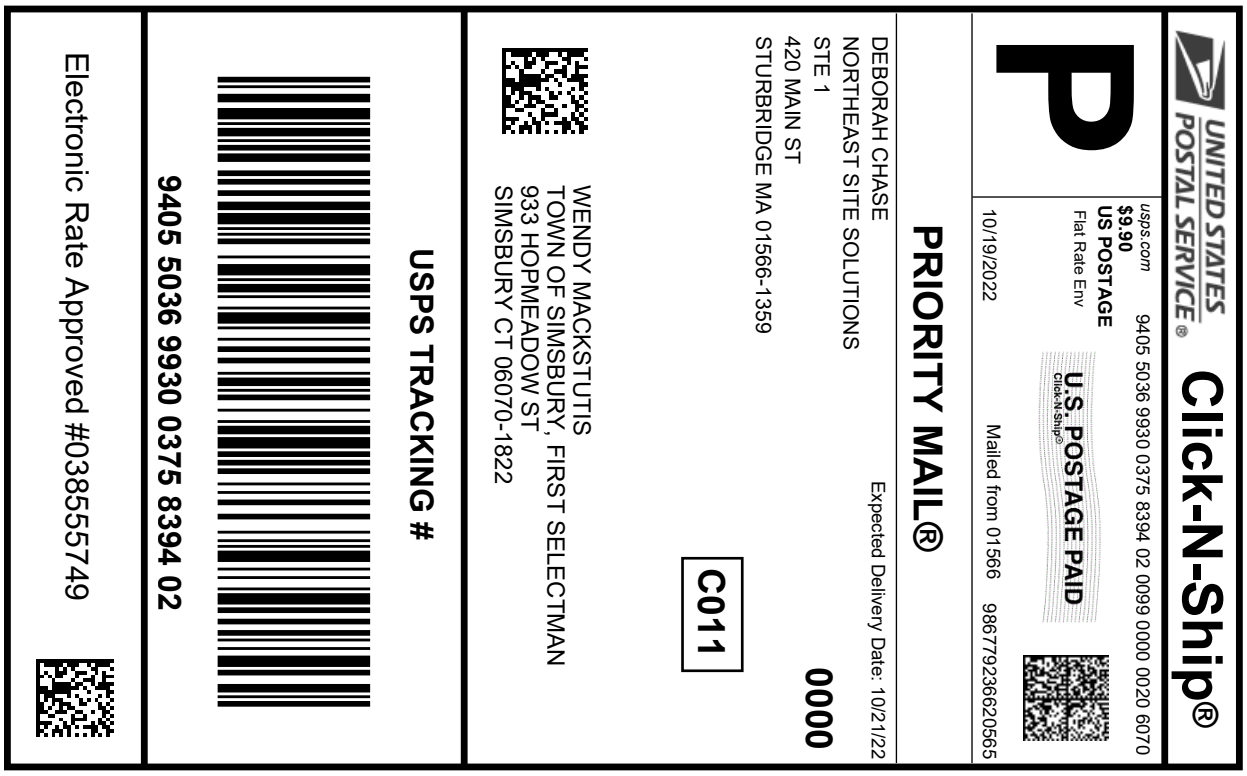
Dish can file with CSC at their risk

Thank you,

Christopher Gelinas
Senior Specialist – Real Estate
107 Selden Street
Berlin, CT 06037
Office: (860) 665-2008
E-Mail: Christopher.Gelinas@Eversource.com

Exhibit H

Recipient Mailings



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Instructions

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2. **Place your label so it does not wrap around the edge of the package.**
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4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0375 8394 02

Trans. #:	574110182
Print Date:	10/19/2022
Ship Date:	10/19/2022
Expected Delivery Date:	10/21/2022

Priority Mail® Postage:	**$9.90**
Total:	**$9.90**

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

To: WENDY MACKSTUTIS
TOWN OF SIMSBURY, FIRST SELECTMAN
933 HOPMEADOW ST
SIMSBURY CT 06070-1822

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

Thank you for shipping with the United States Postal Service!
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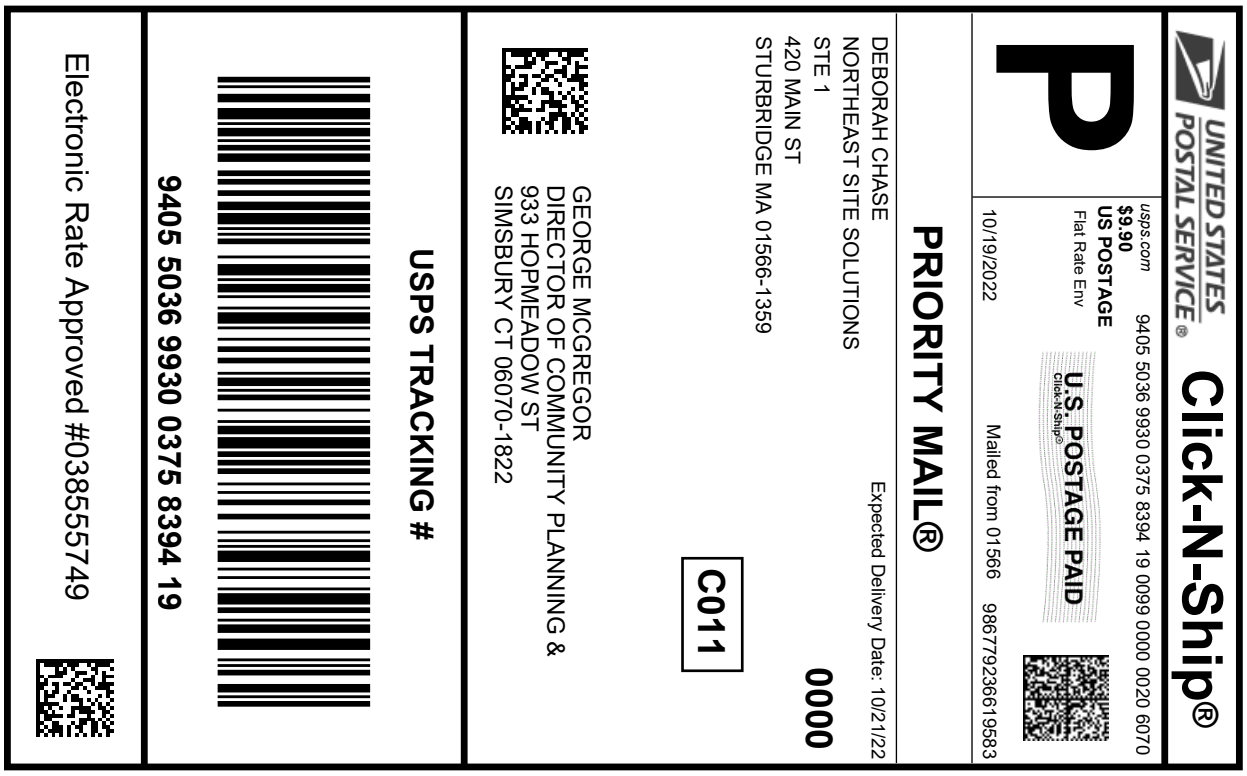

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Trans. #:	574110182
Print Date:	10/19/2022
Ship Date:	10/19/2022
Expected Delivery Date:	10/21/2022

Priority Mail® Postage:	**$9.90**
Total:	**$9.90**

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

To: GEORGE MCGREGOR
DIRECTOR OF COMMUNITY PLANNING & DEVELOPMENT
933 HOPMEADOW ST
SIMSBURY CT 06070-1822

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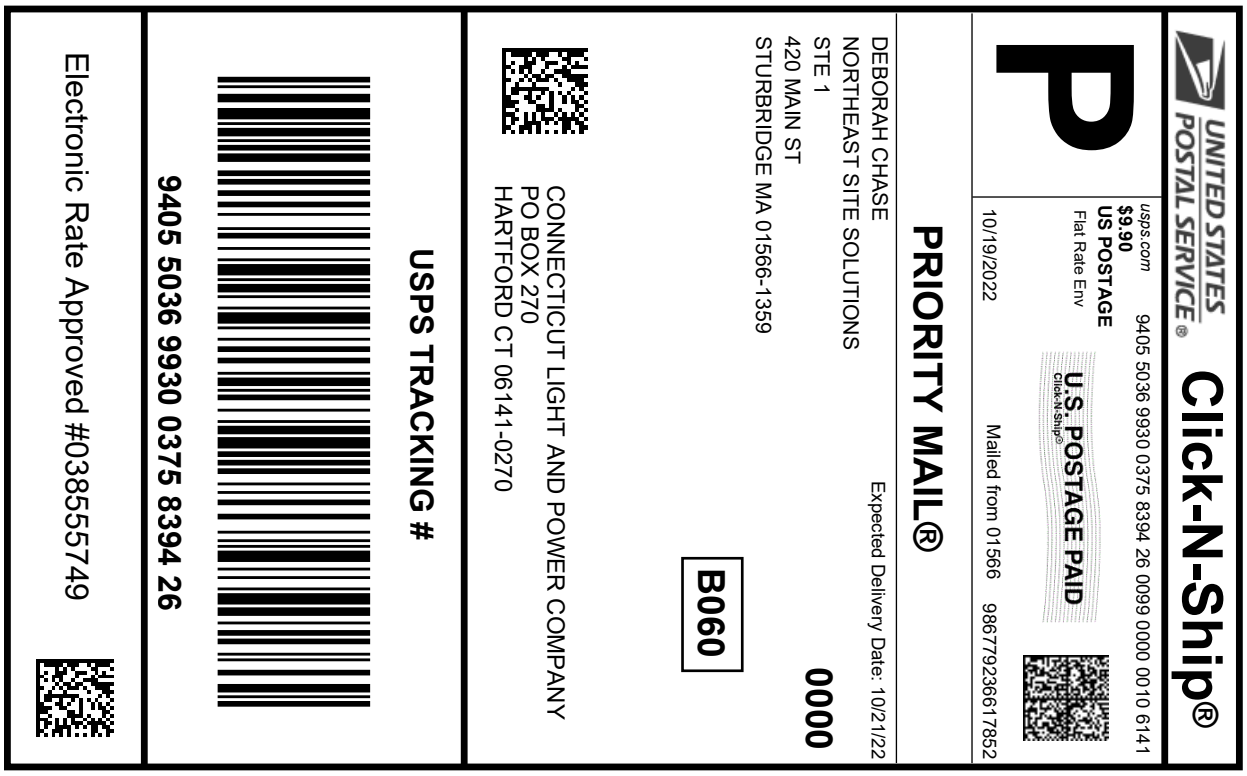

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0375 8394 26

Trans. #:	574110182
Print Date:	10/19/2022
Ship Date:	10/19/2022
Expected Delivery Date:	10/21/2022

Priority Mail® Postage:	**$9.90**
Total:	**$9.90**

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

To: CONNECTICUT LIGHT AND POWER COMPANY
PO BOX 270
HARTFORD CT 06141-0270

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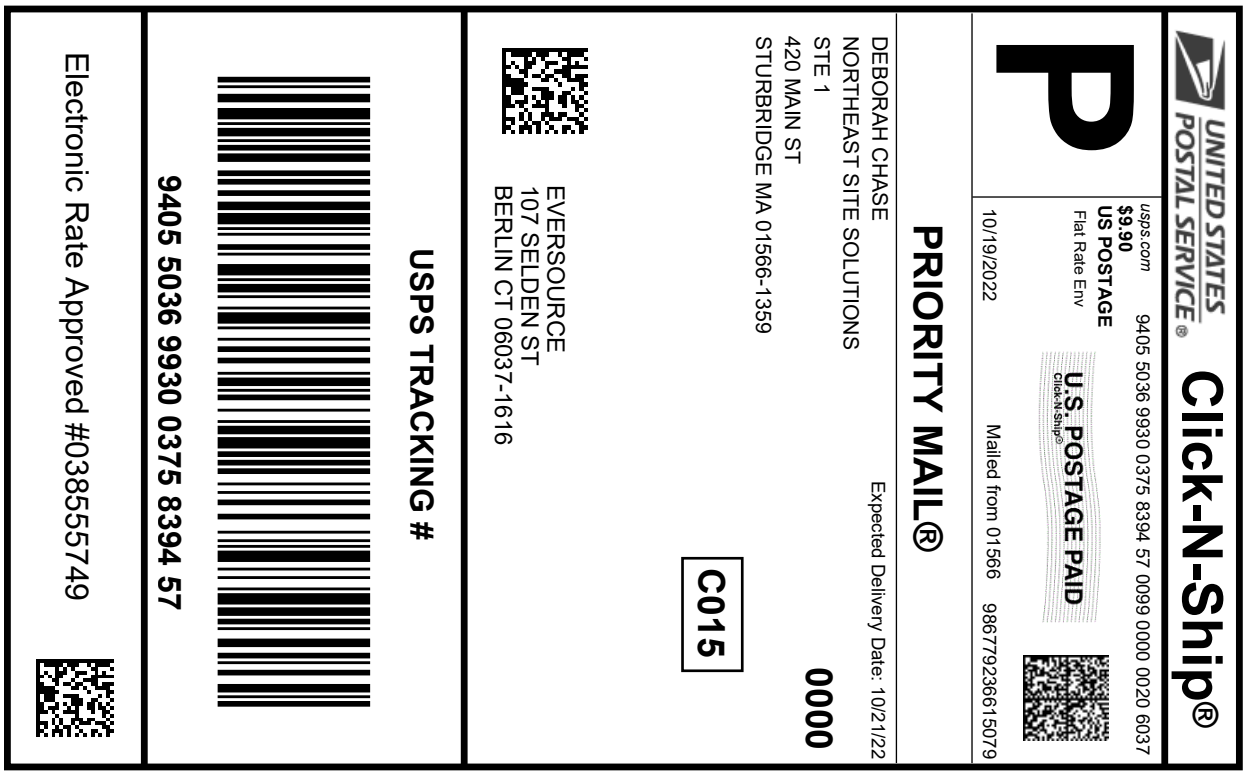

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5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0375 8394 57

Trans. #:	574110182
Print Date:	10/19/2022
Ship Date:	10/19/2022
Expected Delivery Date:	10/21/2022

Priority Mail® Postage:	**$9.90**
Total:	**$9.90**

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

To: EVERSOURCE
107 SELDEN ST
BERLIN CT 06037-1616

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UNITED STATES POSTAL SERVICE®

Shipment Confirmation Acceptance Notice

A. Mailer Action

Note To Mailer: The labels and volume associated to this form online, **must** match the labeled packages being presented to the USPS® employee with this form.

Shipment Date: 10/19/22

Shipped From:

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

Type of Mail	Volume
Priority Mail®	4
Priority Mail Express™*	0
International Mail*	0
First-Class Package Service - Retail™	0
Parcel Select® Ground	0
Other	0
Total Volume	4

*Start time for products with service guarantees will begin when mail arrives at the local Post Office™ and items receive individual processing and acceptance scans.

B. USPS Action

- USPS EMPLOYEE: Please scan upon pickup or receipt of mail. Leave form with customer or in customer's mail receptacle. Employee verifies the package volume count on the Package Pickup Carrier Manifest.
  - If the volume on the manifest matches the volume being collected from the customer, the employee should make the **1:YES** selection by pressing the number 1 on the keypad of the handheld scanner, or on the keyboard of the POS ONE terminal.
  - If the volume on the manifest does not match the volume being collected from the customer, the employee should make the **2:NO** selection. The mail should still be collected and dispatched as normal.

USPS SCAN

9475 7036 9930 0413 2458 54

Boston 00276 Dish

UNITED STATES POSTAL SERVICE.

FARMINGTON
210 MAIN ST
FARMINGTON, CT 06032-9998
(800)275-8777

10/19/2022 04:10 PM

Product	Qty	Unit Price	Price
Prepaid Mail Hartford, CT 06141 Weight: 0 lb 11.30 oz Acceptance Date: Wed 10/19/2022 Tracking #: 9405 5036 9930 0375 8394 26	1		$0.00
Prepaid Mail Simsbury, CT 06070 Weight: 0 lb 11.40 oz Acceptance Date: Wed 10/19/2022 Tracking #: 9405 5036 9930 0375 8394 19	1		$0.00
Prepaid Mail Simsbury, CT 06070 Weight: 0 lb 11.30 oz Acceptance Date: Wed 10/19/2022 Tracking #: 9405 5036 9930 0375 8394 02	1		$0.00
Prepaid Mail Berlin, CT 06037 Weight: 0 lb 11.30 oz Acceptance Date: Wed 10/19/2022 Tracking #: 9405 5036 9930 0375 8394 57	1		$0.00
Grand Total:			$0.00

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Receipt #: 840-50600020-1-4976717-1
Clerk: 2