July 7, 2022

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

Re: Tower Share Application – Dish Site 13709692
Dish Wireless Telecommunications Facility @ 1000 Trumbull Avenue, Bridgeport, CT 06606
AKA 1320 Chopsey Hill Road,
AKA 1330 Chopsey Hill Road

Dear Ms. Bachman,

Dish Wireless ("Dish") is proposing a new wireless telecommunications facility on an existing two hundred forty (240) foot tall lattice tower at 1000 Trumbull Avenue, Bridgeport, CT 06606; the site (also known as 1320 Chopsey Hill Road) (Latitude: 41.2196, Longitude: -73.20128611) and within the existing fenced compound. The tower is owned and operated by American Tower Corporation. The subject property is owned by the American Tower Corporation.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a one hundred forty five (145) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 240-feet and no changes will be made to the compound dimensions.

The tower is a non-conforming use that was approved by the Bridgeport Zoning Board of Appeals on November 24, 1989 (copy enclosed).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish's intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A §16-50j-73, a copy of this letter is being sent to the following individuals: American Tower Corporation as Tower Operator/Owner; American Tower Corporation as Property Owner; the Honorable Joseph P. Ganim, Mayor of Bridgeport, and Thomas F. Gill, Director of the Bridgeport Office of Planning and Economic Development.

The applicant's proposal falls squarely within those activities explicitly provided for in R.C.S.A. §16-50j-89. Specifically:

1. The proposed modifications will NOT result in an increase in the height of the existing structure.

2. The proposed modifications will NOT require an extension of the site boundary.

3. The proposed modifications will NOT increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will NOT increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Please see the RF emissions calculation for Dish's modified facility enclosed herewith.

5. The proposed modifications will NOT cause an ineligible change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading. Please see the structural analysis enclosed herewith.

Connecticut General Statute 16-50aa 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 respectfully indicates that the shared use of this facility satisfies these criteria:

A. Technical Feasibility. The existing tower has been deemed structurally capable of supporting Dish's proposed loading (see attached Structural Analysis).

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. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish to obtain a building permit for the proposed installation. Further, a Letter of Authorization is attached, authorizing Dish 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 equipment on the tower will have an insignificant visual impact on the area around the tower. Dish ground equipment would be installed within the existing facility compound. The Dish shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by the attached EME study, 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 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 with this tower sharing application.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting the proposed loading. Dish is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish's 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 the area.

Jack Andrews, Zoning Manager 10130 Donleigh Drive, Columbia, MD 21046 (443) 677-0144
Centerline Communications • 750 W Center Street, Suite 301, W Bridgewater, MA 02379

For the foregoing reasons, Dish respectfully requests that the Council approve this request for the shared use of this tower located at 1000 Trumbull Avenue, Bridgeport, CT 06606.

If you have any questions, please feel free to contact me.

Sincerely,

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

Enclosures:
Exhibit 1 – Letter of Authorization from tower owner
Exhibit 2 – Property Card and GIS
Exhibit 3 – Construction Drawings
Exhibit 4 – Structural Analysis Report
Exhibit 5 – Antenna Mount Analysis Report
Exhibit 6 – EME Study Report
Exhibit 7 – (4) Notice Confirmations

cc: American Tower Corporation - Tower Operator/Owner
Harry B. Brownson Country Club - Property Owner
The Honorable Joseph P. Ganim - Mayor of Bridgeport
Thomas F. Gill - Director of the Bridgeport OPED

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION

CENTERLINE COMMUNICATIONS LLC/ AT&T MOBILITY

I, Margaret Robinson, Vice President, US Tower Legal Division on behalf of American Tower*, owner/operator of the tower facility located at the address identified below (the "Tower Facilities"), do hereby authorize AT&T MOBILITY, CENTERLINE COMMUNICATIONS LLC, its successors and assigns, to act as American Tower's non-exclusive agent for the purpose of filing and securing any zoning, land-use, building permit and/or electrical permit application(s) and approvals of the applicable jurisdiction for and to conduct the construction of the installation of antennas and related telecommunications equipment on the Tower Facility located at the above address. This installation shall not affect adjoining lands and will occur only within the area leased by American Tower.

American Tower understands that the application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by American Tower of conditions related to American Tower's installation. Any such conditions of approval or modifications will not be effective unless approved in writing by American Tower.

The above authorization does not permit AT&T MOBILITY, CENTERLINE COMMUNICATIONS LLC to modify or alter any existing permit(s) and/or zoning or land-use conditions or impose any additional conditions unrelated to American Tower's installation of telecommunications equipment without the prior written approval of American Tower.

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

ATC Asset #	Site Name	Project Number	Site Address
283420	STONEYBROOK RD CT	13682835	23 Stonybrook Road, Stratford, Connecticut
243036	WEST HAVEN & RT 162 CT	13682841	668 Jones Hill Road, West Haven, Connecticut
302479	Rkhl - Rocky Hill	13683394	699 West Street, Rocky Hill, Connecticut
302537	Middletown CT 3	13747862	47 Inwood Road, Rocky Hill, Connecticut
302535	Milford CT 2	13748383	185 Research Drive, Milford, Connecticut
302473	E H F R - Prestige Park	13748397	310 Prestige Park Road, East Hartford, Connecticut
302505	Wshn - West Haven	13748405	204 Burwell Street, West Haven, Connecticut
302489	Enfd - Enfield	13753208	77 Town Farm Road, Enfield, Connecticut
302524	Beacon Falls	13753210	664 Rimmon Hill Road, Seymour, Connecticut
310968	WSPT-WESTPORT REBUILD CT	13753216	180A Bayberry Lane, Westport, Connecticut
302526	Naugatuck (telephone Pole)	13753218	585 South Main St. (soc. Club), Naugatuck, Connecticut
310972	WATERFORD REBUILD CT	13753547	15 Miner Lane, Waterford, Connecticut
302538	Parsonage Hill Aka Wallin	13753549	922 Northrop Road, Wallingford, Connecticut
370624	Mankes Silo	13754283	1338 Highland Ave, Cheshire, Connecticut

AMERICAN TOWER®
CORPORATION

88017	SHELTON-TRUMBULL	13755484	14 OXFORD DRIVE/BOOTH HILL RD, Shelton, Connecticut
414240	Byram Park CT	13755490	48 RITCH AVENUE WEST, Greenwich, Connecticut
283423	NAUGATUCK CT	13755758	880 Andrew Mountain Road, Naugatuck, Connecticut
302480	Woodbridge CT 1	13756843	77 Pease Road, Woodbridge, Connecticut
411183	WATERFORD CT	13756866	53 Dayton Rd. Waterford, Connecticut
302540	Madison CT 6	13757740	8 Old 79, Madison, Connecticut
411259	CT Collinsville CAC 802816 CT	13757764	650 Albany Turnpike, Collinsville, Connecticut
411256	CANTON CT	13757774	14 CANTON SPRINGS ROAD, Canton, Connecticut
302493	Nrwc - Norwich	13757776	225 Rogers Road, Norwich, Connecticut
302476	Wtbr - Waterbury	13757794	352 Garden Circle, Waterbury, Connecticut
302475	Sttn - Southington	13757796	80 Shuttle Meadow Road, Southington, Connecticut
302494	Hddm - Haddam	13757798	139 Morris Hubbard Rd, Higganum, Connecticut
283419	PINE ORCHARD BRANFORD CT	13757800	123 Pine Orchard Road, Brrandford, Connecticut
302482	North Havent CT 1	13757802	15 Dewight Street, North Haven, Connecticut
302485	Mdfd - Middlefield	13757806	134 Kikapoo Road, Middlefield, Connecticut
302500	Brst - Bristol	13757810	790 Willis Street, Bristol, Connecticut
302467	Bilkays Express	13757812	90 North Plains Industrial Rd. Wallingford, Connecticut
302536	Cherry Hill-branford	13759895	4 Beaver Road, Brandford, Connecticut
302482	North Havent CT 1	14050356	15 Dewight Street, North Haven, Connecticut
311305	GLFD-GUILFORD REBUILD CT	14050358	10 Tanner Marsh Road, Guilford, Connecticut
411261	CROMWELLSW CT	14089799	99 Christian Hill Road, Cromwell, Connecticut
302481	Hrfr - South	14090117	289 Mountain Street, Hartford, Connecticut

Signature: 

Margaret Robinson, Vice President
US Tower Legal Division

See attached Notary Block

LETTER OF AUTHORIZATION
CENTERLINE COMMUNICATIONS LLC/ AT&T MOBILITY

NOTARY BLOCK

COMMONWEALTH OF MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Vice President, UST Legal of American Tower (Tower Facility owner), personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same.

WITNESS my hand and official seal, this 30th day of June, 2022.

NOTARY SEAL

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

Notary Public
My Commission Expires: March 14, 2025

ATTACHMENT 1

BUILDING PERMIT

Building Department

City of Bridgeport, Connecticut

Nº 12165

DEC 2 7 1989 ....., 19.....

Permission is hereby granted to CHOPSEY HILL ASSOCIATES & E. & F. DEVELOPMENT

to erect TWO STORY ADDITION TO MASONRY BUILDING AND ANTENNA

Located at No. 1330 CHOPSEY HILL ROAD Street

THIS PERMIT IS GRANTED ON CONDITION THAT ALL CITY, STATE AND FEDERAL RULES REGULATIONS AND LAWS ARE COMPLIED WITH.

A CERTIFICATE OF OCCUPANCY MUST BE GRANTED BEFORE BUILDING OR ADDITIONS IS OCCUPIED.

THIS PERMIT EXPIRES SIX (6) MONTHS FROM DATE IF WORK IS NOT COMMENCED.

CALL OFFICE WHEN WORK IS STARTED, Telephone 576-7225, Building Department.

Special Conditions: .....

Building fee	$ 410
Occupancy fee	$ 3
Total	$ 413

PETER J. PAAJANEN, *Deputy Building Official*

FRANK A. MERCALDI, *Building Official*

34

Form 1209

ATTACHMENT 2

BRIDGEPORT ZONING BOARD OF APPEALS

Room 206 — 45 Lyon Terrace — Bridgeport, Connecticut 06604

At a meeting held in City Hall, on Tuesday, November 14 and Tuesday, November 21, 1989

RE: 1330 Chopsey Hill Rd. & 800 Trumbull Avenue

Petition of Metro-Mobile Cts of Fairfield County, Inc., lessee, waive regulation prohibiting the extension and enlargement of an existing nonconforming use in an A-RESIDENCE ZONE to permit the construction of a 2-sty. masonry addition to the existing nonconforming transmission equipment building. (CONTINUED from 10/10/89)

PUBLIC HEARING, Tuesday, November 14 and Tuesday, November 21, 1989 - Variance of Chap. 20 Sec. 3 GRANTED, subject to the following conditions:

1. The development of the subject property shall be substantially in accord with the plans submitted.
2. The petitioner shall file plans and applications for the issuance of a Certificate of Zoning Compliance and a Building permit.

(over)

NOTE—Unless acted upon within six months this grant becomes void. Your failure to comply with any conditions applicable to this action will also void the rights and privileges granted hereby. This is not a Building Permit and any structure or building contemplated by this action can only be started after proper application to and issuance of such permit by the Building Official. Other approvals or permits, required by law, should be sought from the proper authorities before exercising any part of this grant.

William A. Shaw ..... Clerk

34

Form 2113

(over)

3. All construction shall conform with the requirements of the Basic Building Code of the State of CT.

The "Board" assigned the following reason for its action:

1. The development, as proposed, would not create any adverse effects on the immediate area.

The "Board" assigned the following reason for its action:

1. The granting of this petition would not create any detrimental effects and provides a service to the neighborhood as well as the general public.

3) Petition of E & F Development Company, owner, 1330 Chopsey Hill Rd. & 800 Trumbull Avenue, N/E corner, lot: 481.56' x 459.47' x 711.29' x 419.5', waive regulation prohibiting the business use of property in an A-RESIDENCE ZONE & waive regulation prohibiting a structure exceeding 35' in height to permit the erection of a 250' high radio station tower & accessory transmission equipment building.
One person appeared in favor.
Exhibit 1 - Copy of prior approval submitted in favor.
Exhibit 2 - Real Estate Appraisal submitted in favor.
Exhibit 3 - Qualification and Report of C Thomas Jones, P.E. submitted in favor.
No one appeared in opposition.
Motion made by Mr. Lunin, seconded by Ms. Gamble that this petition be granted conditionally, subject to the following:

1. The development of the subject property shall be substantially in accord with the plans submitted.

2. The petitioner shall file plans & applications for the issuance of a Certificate of Zoning Compliance and a Building Permit.

3. All construction shall conform with the requirements of the Basic Building Code of the State of Connecticut.

Unanimously approved.

4) Petition of Joseph Ortiz, owner, 29 Harvard Street, west side 140' north of Wheeler Avenue & 32 Rosinoff Place, east side 140' north of Wheeler Avenue, lot: 70' x 95' x 5' x 94.2' x 70' x 94.4' x 5' x 95', waive 2'9" of the setback requirement of 16'9" in a C-RESIDENCE ZONE & waive 7'8" of the accumulative side yard requirement of 23'4" to permit the construction of a 3½-sty. 16 unit apartment building with 32 on-site parking spaces.
Two persons appeared in favor.
Letter from City Engineer Department, regarding sewers, read by Chairman Neary.
Copy of Tax Assessor's Map submitted in favor.
No one appeared in opposition.
Motion made by Ms. Gamble, seconded by Mr. LaChioma that this petition be granted.

UPON A ROLL CALL OF VOTES, THOSE VOTING

In Favor	Against
Gamble	Lunin
LaChioma	Bopko
	Neary

Motion to grant failed to pass.

Reason assigned by those in favor.

1. The granting of this petition will provide needed residential rental units without creating any detrimental effects on the immediate area.

Reasons assigned by those in opposition.

1. The petitioner failed to present an exceptional difficulty or unusual hardship owing to conditions directly affecting this parcel of land.

2. The granting of this petition would result in an overuse of the subject property.

5) Petition of Jack Rodrigues, owner, 94 Center Street, north side 340' east of Harral Avenue, lot: 50' x 113', waive 3'6" of the setback requirement of 16'6" in a C-RESIDENCE ZONE, waive 4'8" of the accumulative side yard requirement of 16'8" & waive 2' of the rear yard requirement of 16' to permit the construction of a 3½-sty. 5 unit residential building with 10 on-site parking spaces.
Two persons appeared in favor.
No one appeared in opposition.
Motion made by Ms. Gamble, seconded by Mr. LaChioma that this petition be granted conditionally subject to the following:

City of Bridgeport GIS

Search...

Parcels (1)

Site Address: 1000 TRUMBULL AV

GLOBAL TOWER ASSETS LLC

Field Card

Zoom to Feature

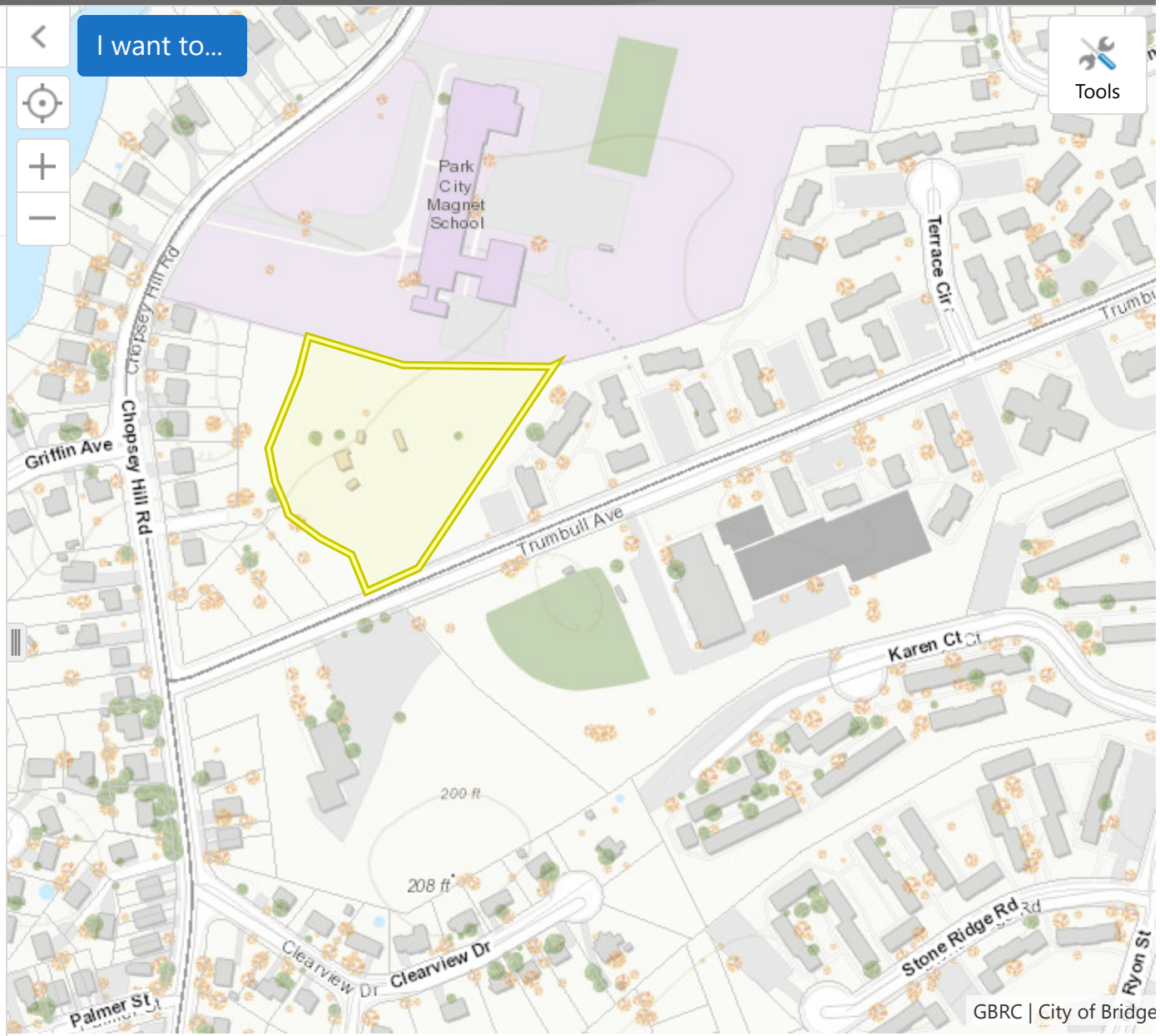
Buffer Feature

Displaying 1 - 1 (Total: 1)

Page 1 of 1

I want to...

Tools



Basemaps

0 150 300ft

1:500

Home Layers Parcels (1)

1000 TRUMBULL AV

Location	1000 TRUMBULL AV	**Mblu**	82/ 2778/ 61/B /
Acct#	RT-0049550	**Owner**	GLOBAL TOWER ASSETS LLC
Assessment	$393,250	**Appraisal**	$561,770
PID	32253	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$78,060	$483,710	$561,770
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$54,650	$338,600	$393,250

Owner of Record

Owner	GLOBAL TOWER ASSETS LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	10 PRESIDENTIAL WAY WOBURN, MA 01801	**Book & Page**	9695/0074
		Sale Date	09/13/2017
		Instrument	04

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
GLOBAL TOWER ASSETS LLC	$0		9695/0074	04	09/13/2017
GLOBAL TOWER ASSETS LLC	$0		9500/0294	03	09/14/2016
CELL TOWER LEASE ACQUISION LLC	$0		7342/0302	03	01/23/2007
UNISON SITE MANAGEMENT LLC	$1,925,000		7342/0299	03	01/23/2007
TARTAGLIA REMO	$700,000		3018/0317		07/06/1992

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories:	
Occupancy:	
Exterior Wall 1:	

Building Photo

(https://images.vgsi.com/photos2/BridgeportCTPhotos//\0125\IMG_3283_1

Building Layout

Exterior Wall 2:	
Roof Structure:	
Roof Cover:	
Interior Wall 1:	
Interior Wall 2:	
Interior Flr 1:	
Interior Flr 2	
Heat Fuel:	
Heat Type:	
AC Type:	
Total Bedrooms	
Total Full Baths	
Total Half Baths	
Total Xtra Fixtrs:	
Total Rooms	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Fireplaces	
Fin Bsmt Area	
Fin Bsmt Quality	
Num Park	
Bsmt Garages	
.	

Building Layout

 Building Layout (ParcelSketch.ashx?pid=32253&bid=32253)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	200V
Description	Commercial Lnd
Zone	RA
Neighborhood	21
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	3.05
Frontage	0
Depth	0
Assessed Value	$338,600
Appraised Value	$483,710

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN5	Fence 10'			616.00 LF	$6,470	1
PAV2	Paving Conc			40.00 SF	$120	1
TWR	Tower			240.00 LF	$49,920	1
SHD1	Shed	MS	Masonry	1200.00 SF	$12,240	1
SHD1	Shed	MS	Masonry	432.00 SF	$4,410	1
SHD1	Shed	MS	Masonry	240.00 SF	$2,450	1
SHD1	Shed	MS	Masonry	240.00 SF	$2,450	1

Valuation History

Appraisal

Valuation Year	Improvements	Land	Total
2021	$78,060	$483,710	$561,770
2020	$78,060	$483,710	$561,770
2019	$75,820	$367,620	$443,440

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$54,650	$338,600	$393,250
2020	$54,650	$338,600	$393,250
2019	$53,090	$257,330	$310,420

APPROVED
By Pawan Madahar at 2:42 pm, Mar 25, 2022

Pinnacle Telecom Group

Professional and Technical Services

Antenna Site FCC RF Compliance Assessment and Report for Municipal Submission

Prepared for:	Dish Wireless, LLC
Site ID:	NJJER01150B
Site Address:	1000 Trumbull Avenue Bridgeport, CT
Latitude:	N 41.219600
Longitude:	W 73.201286
Structure type:	Lattice tower
Report date:	March 14, 2022
Compliance Conclusion:	Dish Wireless, LLC will be in compliance with the rules and regulations as described in OET Bulletin 65, following the implementation of the proposed mitigation as detailed in the report.

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

Contents

Introduction and Summary

At the request of Dish Wireless, LLC ("Dish"), Pinnacle Telecom Group has performed an independent expert assessment of radiofrequency (RF) levels and related FCC compliance for proposed wireless base station antenna operations on an existing lattice tower located at 1000 Trumbull Avenue in Bridgeport, CT. Dish refers to the antenna site by the code "NJJER01150B", and its proposed operation involves directional panel antennas and transmission in the 600 MHz, 2000 MHz and 2100 MHz frequency bands licensed to it by the FCC.

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

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

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

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

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

- At street level, the conservatively calculated maximum RF level from the combination of proposed and existing non-broadcast antenna operations at the site is 1.4521 percent of the FCC general population MPE limit. The result of the existing broadcast operations at this site is 0.9000 percent of the same MPE limit. Summing the 0.9000-percent worst-case result for the broadcast operation with the 1.4521-percent worst-case result for the non-broadcast operations yields an overall result of 2.3521 percent – well below the 100-percent reference for compliance.
- A supplemental analysis of the RF levels at the same height as the Dish antennas indicate that the FCC MPE limit is potentially exceeded. Therefore, it is recommended that three Caution signs be installed six feet below the antennas. In addition, NOC Information signs are to be installed at the base of the lattice tower.
- The results of the calculations, along with the proposed mitigation, combine to satisfy the FCC requirements and associated guidelines on RF compliance at street level around the site and on the subject roof. Moreover, because of the significant conservatism incorporated in the analysis, RF levels actually caused by the antennas will be lower than these calculations indicate.

The remainder of this report provides the following:

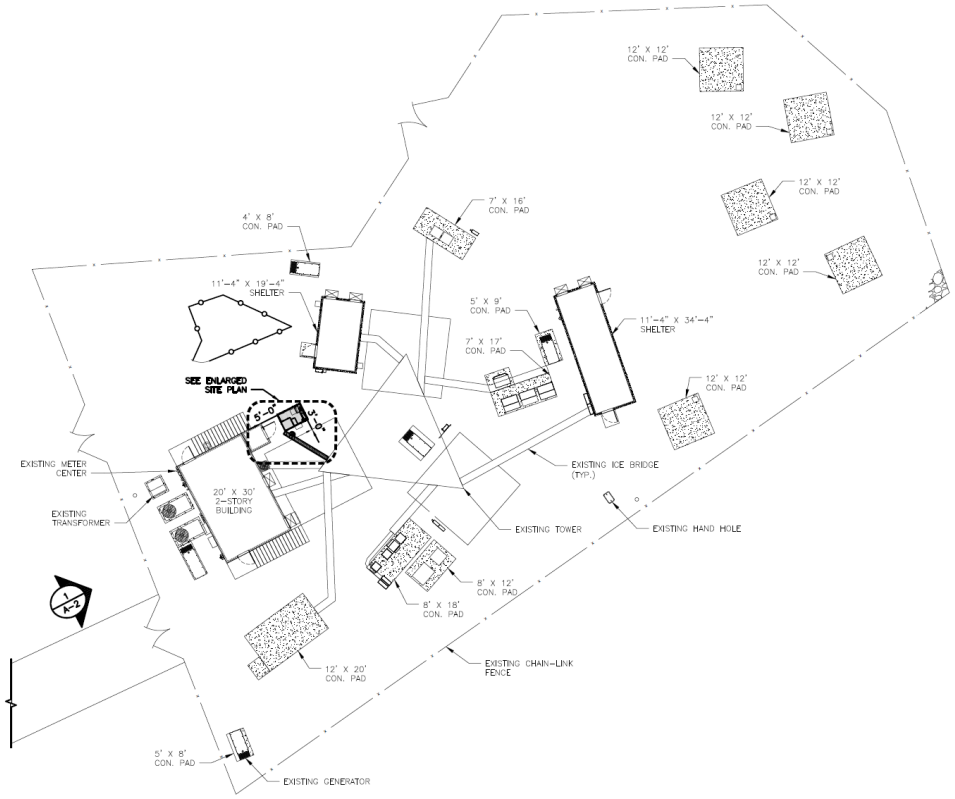
- relevant technical data on the proposed Dish antenna operations at the site, as well as on the other existing antenna operations;
- a description of the applicable FCC mathematical model for calculating RF levels, and application of the relevant technical data to that model;
- analysis of the results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

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

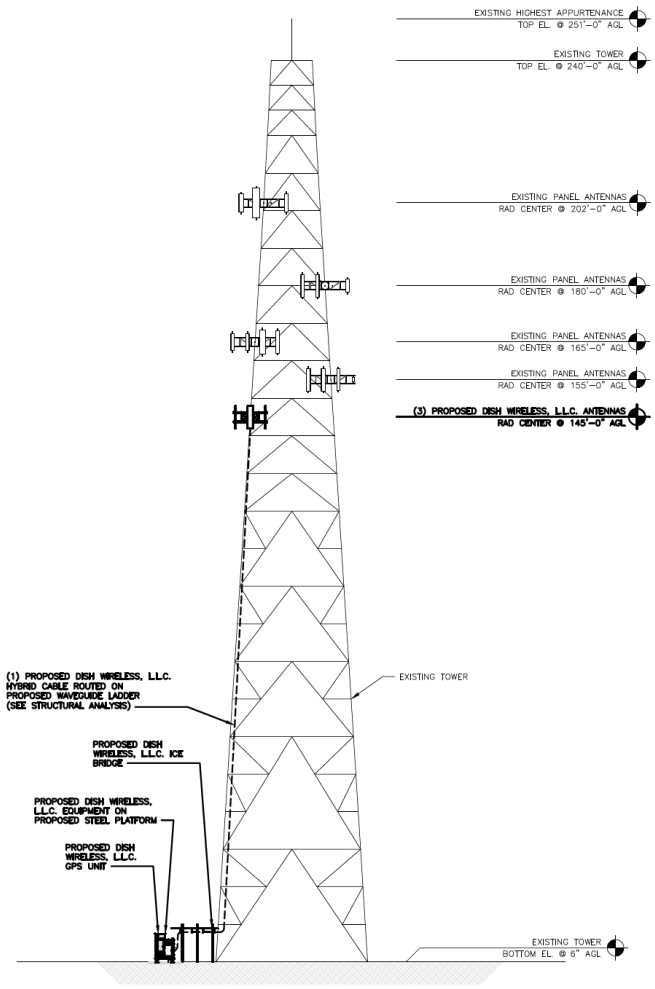
Antenna and Transmission Data

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

Plan View:



Elevation View:



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

Ant. ID	Carrier	Antenna Manufacturer	Antenna Model	Type	Freq (MHz)	Ant. Dim. (ft.)	Total Input Power (watts)	Total ERP (watts)	Z AGL (ft)	Ant. Gain (dBd)	B/W	Azimuth	EDT	MDT
❶	Dish	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	145	11.46	68	60	2	0
❶	Dish	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	145	16.16	62	60	2	0
❶	Dish	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	145	16.66	64	60	2	0
❷	Dish	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	145	11.46	68	180	2	0
❷	Dish	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	145	16.16	62	180	2	0
❷	Dish	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	145	16.66	64	180	2	0
❸	Dish	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	145	11.46	68	300	2	0
❸	Dish	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	145	16.16	62	300	2	0
❸	Dish	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	145	16.66	64	300	2	0

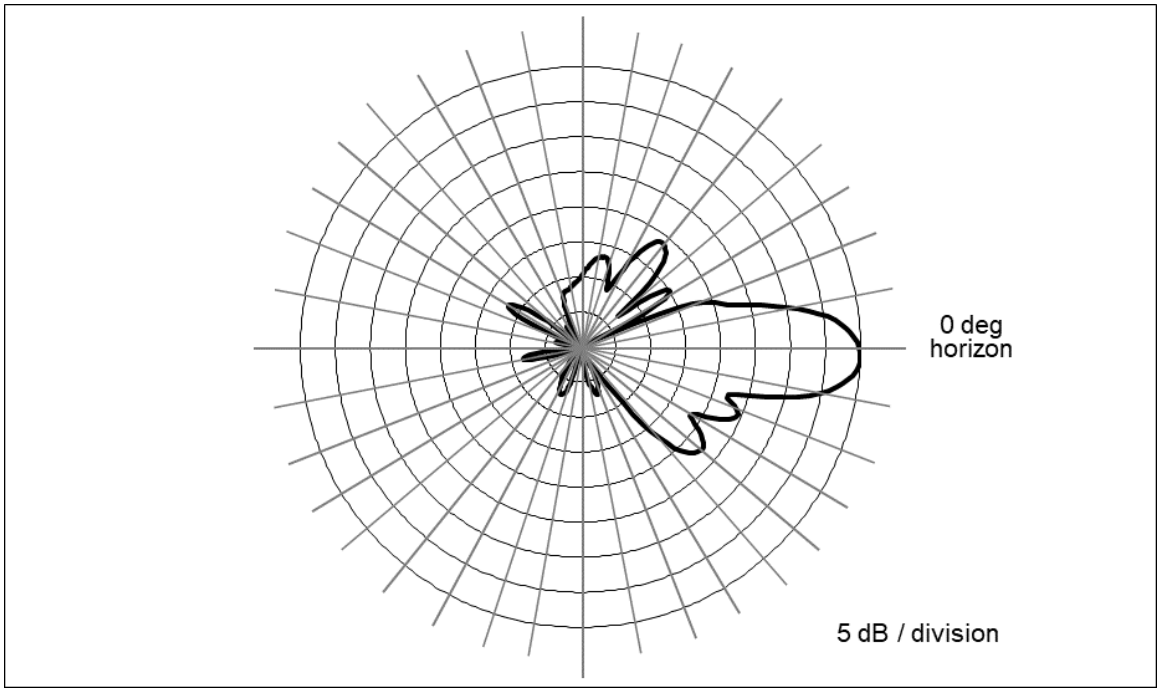
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

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

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

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

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



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

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

Carrier	*Antenna Manufacturer*	*Antenna Model*	*Type*	*Freq (MHz)*	*Total ERP (watts)*	*Ant. Gain (dBd)*	*Azimuth*
AT&T	Generic	Generic	Panel	700	4945	11.26	N/A
AT&T	Generic	Generic	Panel	850	2400	11.76	N/A
AT&T	Generic	Generic	Panel	1900	5756	15.56	N/A
AT&T	Generic	Generic	Panel	2100	5890	15.66	N/A
AT&T	Generic	Generic	Panel	2300	4131	16.16	N/A
Sprint	Generic	Generic	Panel	800	2168	13.36	N/A
Sprint	Generic	Generic	Panel	1900	6168	15.86	N/A
Sprint	Generic	Generic	Panel	2500	4669	15.90	N/A
T-Mobile	Generic	Generic	Panel	600	3163	12.96	N/A
T-Mobile	Generic	Generic	Panel	700	867	13.36	N/A
T-Mobile	Generic	Generic	Panel	1900	4123	15.36	N/A
T-Mobile	Generic	Generic	Panel	1900	1452	15.60	N/A
T-Mobile	Generic	Generic	Panel	2100	4626	15.86	N/A
T-Mobile	Generic	Generic	Panel	1900	1419	15.50	N/A
T-Mobile	Generic	Generic	Panel	2500	12804	22.35	N/A
Verizon Wireless	Generic	Generic	Panel	746	2400	11.76	N/A
Verizon Wireless	Generic	Generic	Panel	869	5166	12.36	N/A
Verizon Wireless	Generic	Generic	Panel	1900	5372	15.26	N/A
Verizon Wireless	Generic	Generic	Panel	2100	5625	15.46	N/A
Red Wolf Broadcasting	Generic	Generic	Broadcast	104.5	250	N/A	N/A

Compliance Analysis

FCC Office of Engineering and Technology Bulletin 65 ("OET Bulletin 65") provides guidelines for mathematical models to calculate the RF levels at various points around transmitting antennas. Different models apply to the broadcast and non-broadcast operations, and this compliance assessment will be based on the worst-case results of the analyses of each type of operation. We will address the non-broadcast operations first.

Analysis of Non-Broadcast Operations

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

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

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

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

where

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

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

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

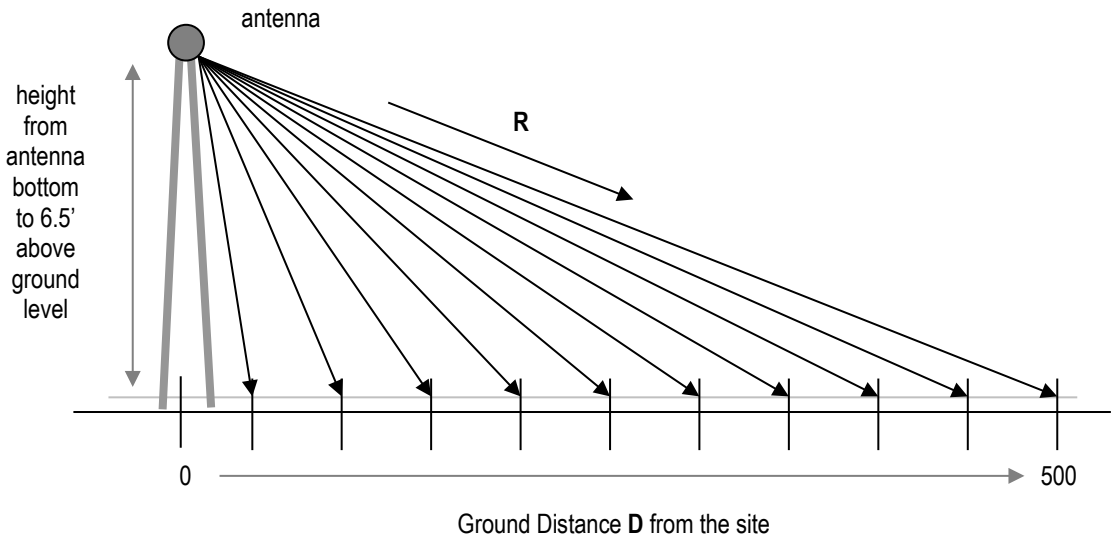


Figure 2. Street-level MPE% Calculation Geometry

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

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

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

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

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

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

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

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

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

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

Ground Distance (ft)	Dish 600 MHz MPE%	Dish 2000 MHz MPE%	Dish 2100 MHz MPE%	AT&T MPE%	Sprint MPE%	T-Mobile MPE%	Verizon Wireless MPE%	Total MPE%
0	0.0008	0.0010	0.0000	0.0475	0.0136	0.1088	0.0158	0.1875
20	0.0020	0.0037	0.0010	0.0417	0.0097	0.1469	0.0190	0.2240
40	0.0052	0.0141	0.0087	0.0882	0.0057	0.1574	0.0383	0.3176
60	0.0039	0.0102	0.0038	0.1283	0.0056	0.2626	0.0847	0.4991
80	0.0015	0.0111	0.0176	0.1801	0.0144	0.3737	0.1074	0.7058
100	0.0076	0.0015	0.0114	0.2236	0.0194	0.3515	0.1167	0.7317
120	0.0476	0.0029	0.1134	0.2593	0.0231	0.3028	0.0892	0.8383
140	0.0859	0.0126	0.2190	0.2212	0.0365	0.2337	0.1046	0.9135
160	0.0913	0.1573	0.2734	0.3047	0.0304	0.1527	0.2047	1.2145
180	0.0573	0.2159	0.1460	0.4558	0.0315	0.1386	0.2017	1.2468
200	0.0353	0.0580	0.0271	0.4821	0.0367	0.1637	0.1792	0.9821
220	0.0245	0.0082	0.0168	0.4675	0.0749	0.2180	0.2644	1.0743
240	0.0326	0.0038	0.0093	0.4750	0.0851	0.2906	0.3244	1.2208
260	0.0467	0.0343	0.0054	0.5440	0.0664	0.3501	0.3386	1.3855
280	**0.0572**	**0.0652**	**0.0342**	**0.5181**	**0.0406**	**0.4433**	**0.2935**	**1.4521**
300	**0.0548**	**0.0431**	**0.0298**	**0.4750**	**0.0219**	**0.5791**	**0.2484**	**1.4521**
320	0.0469	0.0019	0.0064	0.3986	0.0167	0.6362	0.1662	1.2729
340	0.0377	0.0092	0.0127	0.2574	0.0233	0.8051	0.1155	1.2609
360	0.0291	0.0240	0.0251	0.1870	0.0281	0.8530	0.0716	1.2179
380	0.0225	0.0287	0.0274	0.1418	0.0318	0.8916	0.0375	1.1813
400	0.0205	0.0218	0.0169	0.1197	0.0344	0.9688	0.0187	1.2008
420	0.0248	0.0151	0.0093	0.1129	0.0374	0.8590	0.0194	1.0779
440	0.0228	0.0139	0.0086	0.1134	0.0410	0.7021	0.0362	0.9380
460	0.0332	0.0173	0.0154	0.1210	0.0424	0.8801	0.0715	1.1809
480	0.0522	0.0248	0.0298	0.1120	0.0371	0.8380	0.1237	1.2176
500	0.0484	0.0230	0.0276	0.1341	0.0251	1.0300	0.1148	1.4030

As indicated, the maximum calculated overall RF level is 1.4521 percent of the FCC MPE limit – well below the 100-percent reference for compliance.

Analysis of Broadcast Operations

FCC Office of Engineering and Technology Bulletin 65 ("OET Bulletin 65") provides guidelines for mathematical models to calculate the RF levels at various points around transmitting antennas. Different models apply to the broadcast and non-broadcast operations, and this compliance assessment will be based on the worst-case results of the analyses of each type of operation. We will address the non-broadcast operations first.

For compliance analysis of FM broadcast antenna operations, the FCC has made publicly available a software program called "FM Model". Inputs to the program include transmission parameters taken from the FCC licenses. We'll use 150 meters as the maximum calculation distance, as that approximates the 500-foot distance we apply in the analysis of the wireless antennas.

The FM Model program also has a pop-up feature that reports the maximum calculated RF level, which we will use – independent of the particular distance at which that occurs – to analyze compliance. We'll convert the result to a percentage of the 0.2 watt/cm^2 MPE limit that applies to all FM broadcast operations.

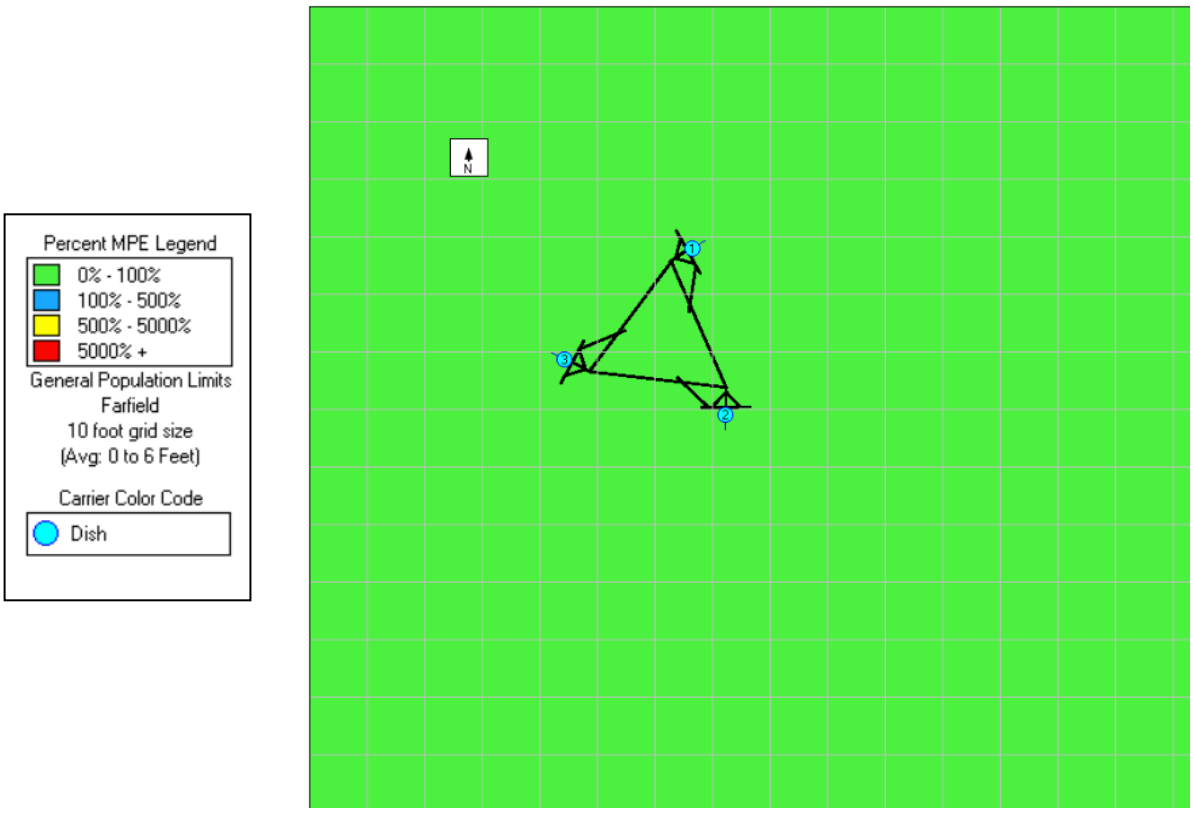
We input the appropriate data to the FCC program, including the maximum ERP (250 watts), and the antenna height (75 meters).

The table that follows provides the results of the analysis of the FM broadcast operation at the site.

Ground Distance (ft)	MPE%
0	0.8000
20	0.8500
40	0.9000
60	0.9000
80	0.8500
100	0.7000
120	0.5000
140	0.2500
160	0.1000
180	0.0000
200	0.0000
220	0.0500
240	0.0500
260	0.0500
280	0.0000
300	0.0000
320	0.0000
340	0.0000
360	0.0000
380	0.0000
400	0.0000
420	0.0000
440	0.0000
460	0.0000
480	0.0000
500	0.0000

Summing the 0.9000-percent worst-case result for the broadcast operation with the earlier 1.4521 -percent worst-case result for the non-broadcast operations yields an overall result of 2.3521 percent – well below the 100-percent reference for compliance.

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

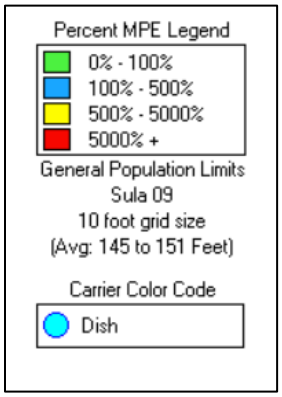


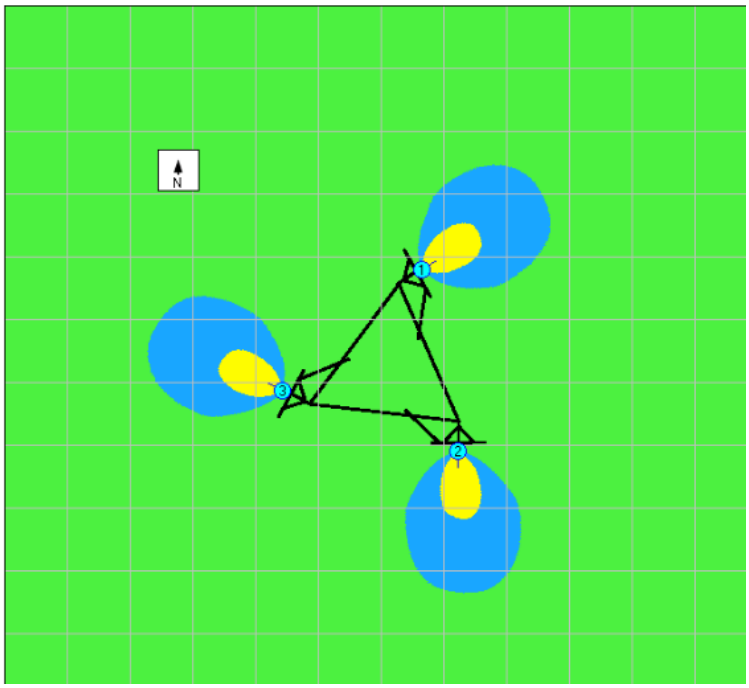
Near-field Analysis

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

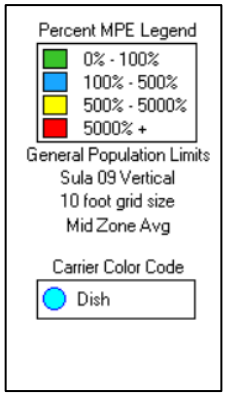
RF levels in the near field of an antenna depend on the power input to the antenna, the antenna's length and horizontal beamwidth, the mounting height of the antenna above nearby roof, and one's position and distance from the antenna. RF levels in front of a directional antenna are higher than they are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

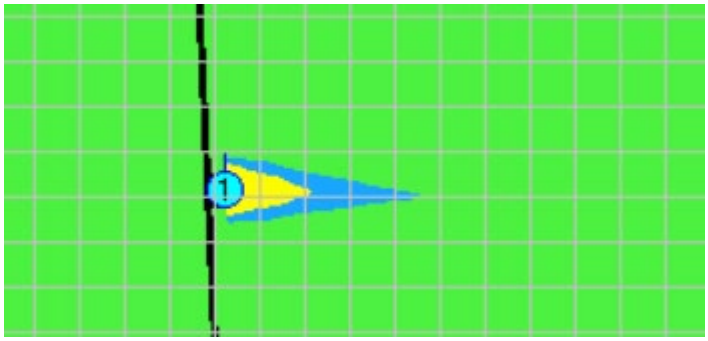
The RoofMaster graphic outputs for the same height as the Dish antennas are reproduced on the next page.





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





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

Compliance Conclusion

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

The conservative analysis in this case shows that the maximum calculated RF level from the combination of proposed and existing antenna operations at street level around the site is 2.3521 percent of the FCC general population MPE limit. At the same height as the antennas, the analysis shows that the calculated RF levels potentially exceed the FCC MPE limit. Per Dish guidelines, and consistent with FCC guidance on compliance, it is recommended that three Caution signs be installed six feet below the antennas. In addition, NOC Information signs be installed at the base of the lattice tower.

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

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

Certification

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

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

3/14/22

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

Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: RFDS-NJJER01150B-Final-20211115-v.0_20211116092507

CD: NJJER01150B_FinalStampedCDs_20211104002457

Appendix B. Background on the FCC MPE Limit

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

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

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

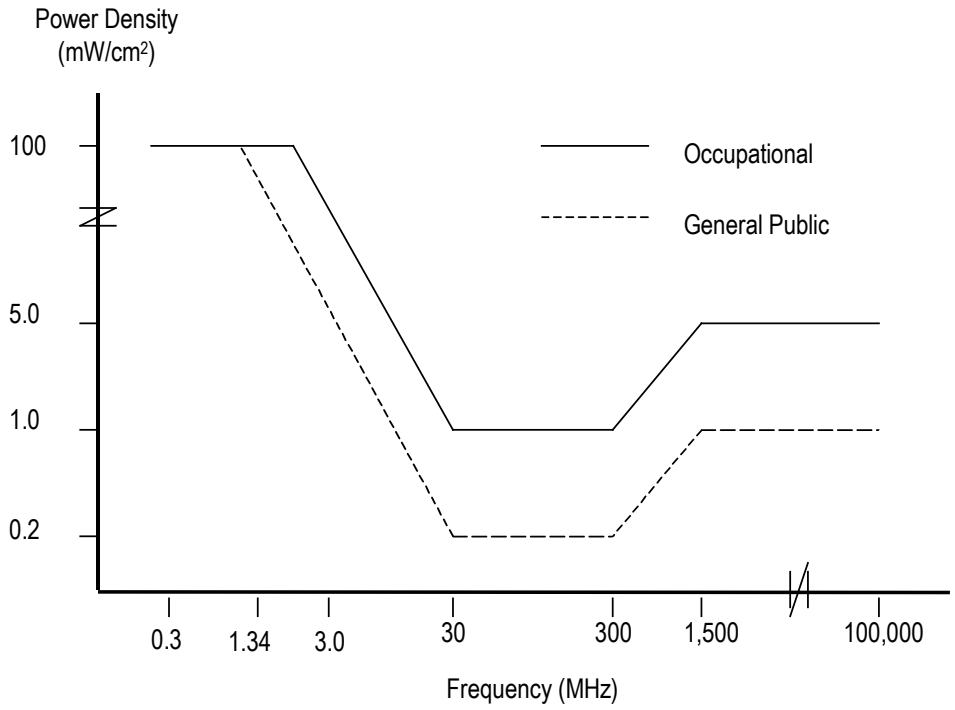
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in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

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

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

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

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



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

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

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

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

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

FCC References on RF Compliance

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

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

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

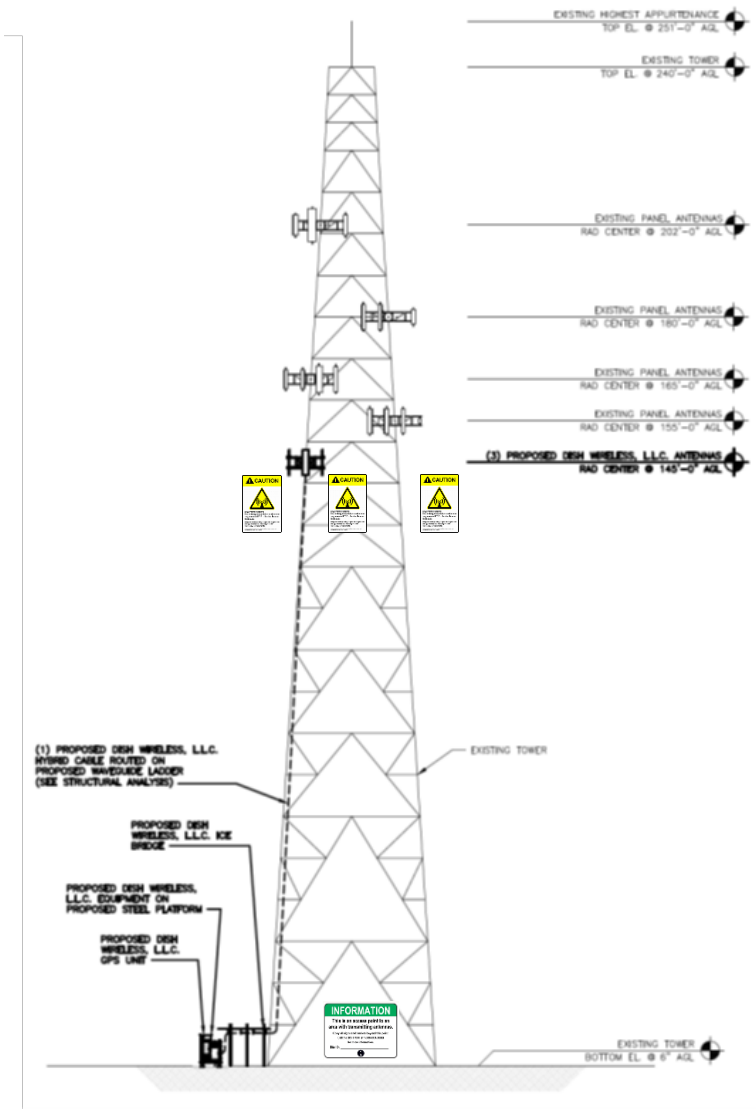
FCC Report and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released August 1, 1996.

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

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

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

Appendix C. Proposed Signage



NOC Information Sign		Caution Sign	
Guidelines Sign		Warning Sign	
Notice Sign			

Appendix D. Summary of Expert Qualifications

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

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

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**240 ft Self Support Tower**
ATC Site Name	:	**Tartaglia, CT**
ATC Site Number	:	**383598**
Engineering Number	:	**13709692_C3_02**
Proposed Carrier	:	**DISH WIRELESS L.L.C.**
Carrier Site Name	:	**NJJER01150B**
Carrier Site Number	:	**NJJER01150B**
Site Location	:	**1000 Trumbull Avenue** **Bridgeport, CT 06606** **41.2196, -73.2013**
County	:	**Fairfield**
Date	:	**September 3, 2021**
Max Usage	:	**99%**
Result	:	**Pass**

Prepared By:

Johnny Munoz-Cedeno, EI
Structural Engineer

Johnny Munoz

Reviewed By:

COA : PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 240 ft Self Support tower to reflect the change in loading by DISH WIRELESS L.L.C..

Supporting Documents

Tower Drawings	Rohn Drawing #C880400RI, dated March 3, 1988
Foundation Drawing	Mapping by FDH Project #10-12269E N1, dated January 17, 2011
Geotechnical Report	Soiltesting Job #G96-1987-87, dated January 6, 1988
Modifications	Centek Job #10001.CO78, dated December 6, 2010 GlenMartin Drawing #GM-07602, dated February 21, 2013

Analysis

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

Basic Wind Speed:	119 mph (3-second gust)**
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent**
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.21, S_1 = 0.05
Site Class:	D - Stiff Soil - Default

****Wind load and Ice thickness have been reduced by applicable existing structure load modification factors in accordance with TIA-222-H, Annex S.**

Conclusion

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

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

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
256.0	1	Generic 8' Yagi	Leg	-	OTHER
245.0	1	Generic 10' Omni	Leg	(1) 1 1/4" Coax	
240.0	1	Dielectric DCR-L1 w/ Radome	Leg	(1) 1 5/8" Coax	RED WOLF BROADCASTING
234.0	2	Generic 8' Omni	Side Arm	(2) 7/8" Coax	OTHER
223.0	-	-	Empty Side Arm	-	
229.0	1	Generic 12' Omni	Side Arm	(1) 1 1/4" Coax	
202.0	3	Ericsson Air6449 B41	Sector Frame	(2) 1 1/4" Hybriflex Cable (3) 1 5/8" Hybriflex	T-MOBILE
	3	Ericsson RRUS 4415 B25			
	3	RFS APXVAARR24_43-U-NA20			
	3	Ericsson AIR 32 B66AA B2P			
	3	Ericsson Radio 4449 B71 B85A			
181.0	3	Nokia 2.5G MAA - AAHC(64T64R)	Sector Frame	(1) 1.7" (43.2mm) Hybrid (3) 1 1/4" (1.25"-31.8mm) Fiber (1) 1 1/4" Hybriflex Cable (3) 1/2" Coax (2) 2" conduit (6) 5/16" (0.31"-7.9mm) Coax	SPRINT NEXTEL
180.0	1	RFS APXV9ERR18-C-A20			
	2	RFS APXVSPP18-C-A20			
	3	Generic 2' Std. Dish			
	1	Generic 24" x 24" Junction Box			
	3	Argus LLPX310R			
	6	Alcatel-Lucent 1900MHz RRH			
	3	Alcatel-Lucent 800 MHz RRH			
	3	Motorola DAP Vx			
165.0	3	Kathrein Scala 80010965	Sector Frame	(6) 0.39" (10mm) Fiber Trunk (8) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (2) 2" conduit	AT&T MOBILITY
	3	Quintel QS66512-3 (112 lbs.)			
	3	Andrew SBNHH-1D65A			
	3	Powerwave Allgon 7770.00			
	3	Ericsson Radio 4449			
	3	Ericsson RRUS 32 B2			
	3	Ericsson RRUS 32 (50.8 lbs)			
	3	Ericsson RRUS 4478 B14			
	3	Ericsson RRUS 4426 B66			
	3	Raycap DC6-48-60-18-8F (23.5" Height)			
	1	Commscope WCS-IMFQ-AMT			
	3	CCI DTMABP7819VG12A			
	6	Powerwave Allgon 7020.00 Dual Band RET			
	12	Powerwave Allgon LGP21901			
	9	Powerwave Allgon LGP21401			

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
155.0	3	Samsung Outdoor CBRS 20W RRH –Clip-on Antenna	Sector Frame	(6) 1 5/8" Coax (3) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Samsung B5/B13 RRH-BR04C			
	3	Samsung B2/B66A RRH-BR049			
	2	Raycap RxxDC-3315-PF-48			
	3	Samsung MT6407-77A			
	3	Commscope CBC78T-DS-43-2X			
	6	Commscope JAHH-65B-R3B			
	3	Samsung Outdoor CBRS 20W RRH			
	3	Amphenol Antel BXA-80063-6BF-EDIN-X			
132.0	1	Generic 4' Yagi	Side Arm	(1) 1 1/4" Coax	OTHER
123.0	1	Generic 10' Omni	Side Arm	(1) 7/8" Coax	
108.0	-	-	Empty Side Arm	-	
98.0	1	Generic 4' Yagi	Side Arm	(1) 1 1/4" Coax	
80.0	-	-	Empty Side Arm	-	
55.0	-	-	-	(1) 1/2" Coax	VERIZON WIRELESS

Equipment to be Removed

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

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
145.0	1	Commscope RDIDC-9181-PF-48	Sector Frame	(1) 1.75" (44.5mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B605			
	3	Fujitsu TA08025-B604			
	3	JMA Wireless MX08FRO665-21			

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines on the tower face with the least amount of existing lines.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	43%	Pass
Diagonals	99%	Pass
Horizontals	88%	Pass
Anchor Bolts	49%	Pass
Leg Bolts	35%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	272.7	89%
Download (kips)	340.3	1%

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

Deflection, Twist and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
180.0	Generic 2' Std. Dish	SPRINT NEXTEL	0.123	0.004	0.052
155.0	Samsung MT6407-77A	VERIZON WIRELESS	0.105	0.004	0.052
145.0	Commscope RDIDC-9181-PF-48	DISH WIRELESS L.L.C.	0.087	0.004	0.051
	Fujitsu TA08025-B604				
	Fujitsu TA08025-B605				
	JMA Wireless MX08FRO665-21				

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

Standard Conditions

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

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

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

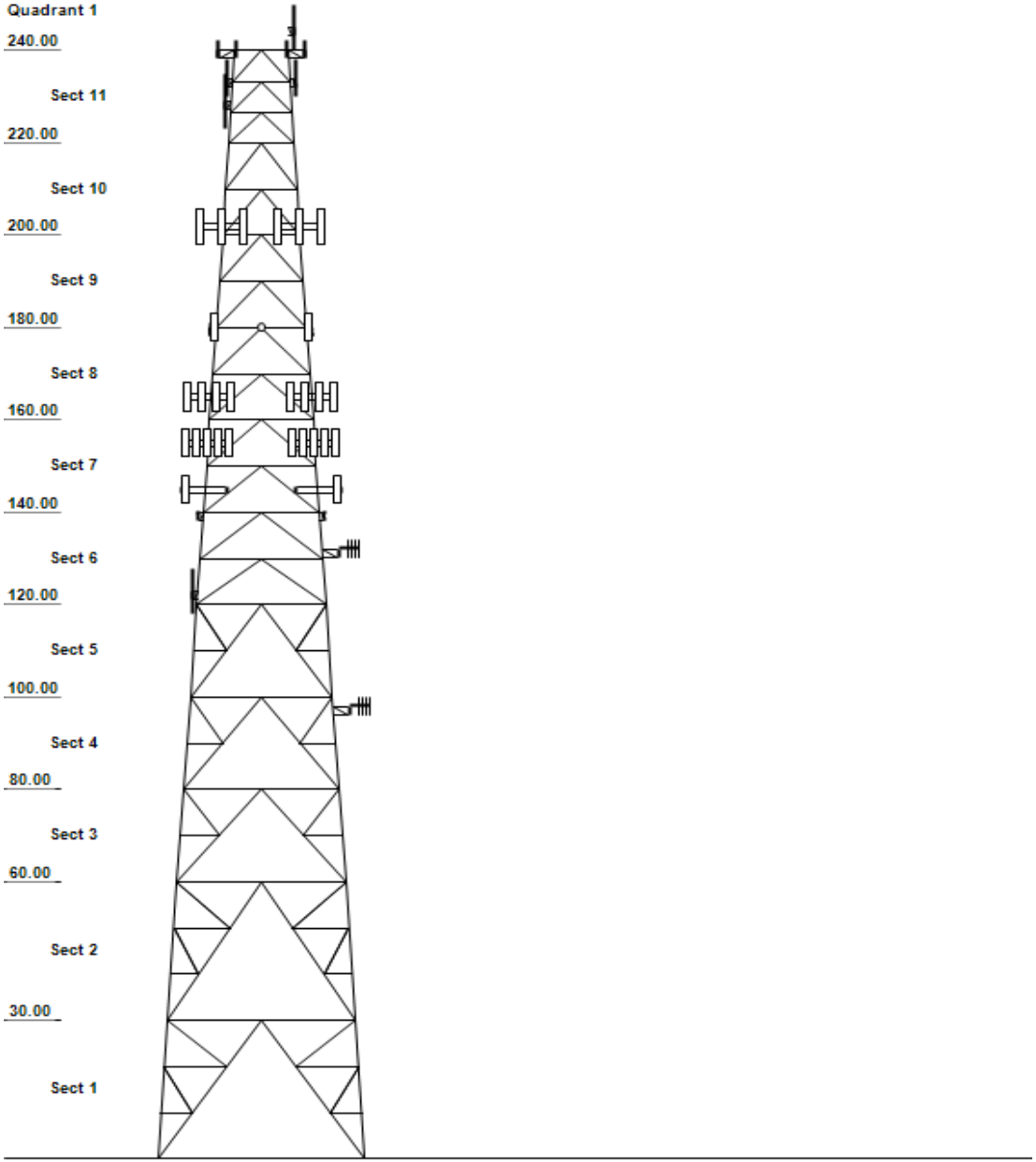
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with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

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

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

JOB INFORMATION

Asset:	383598, Tartaglia	Height :	240 ft
Client	DISH WIRELESS L.L.C.	Base Width :	40.33 ft
Code:	ANSI/TIA-222-H	Shape :	Triangle



SITE PARAMETERS

Nominal Wind : 115.99 mph wind with no ic — Exposure : C — Site Class : D

Ice Wind: 48.73 mph wind with 0.850" — Topo Method: Method 1 — Risk Cat : II

Service Wind : 60 mph Serviceability — Topo Feature : — S_s : 0.211 — S_1 : 0.054

SECTION PROPERTIES

Section	Leg Members	Diagonal Members	Horizontal Members
1	PX 50 ksi 10" DIA PIP	PST 50 ksi 3" DIA PIPE	PST 50 ksi 3-1/2" DIA PIPE
2 - 3	PX 50 ksi 10" DIA PIP	PST 50 ksi 3" DIA PIPE	PST 50 ksi 3" DIA PIPE
4	PX 50 ksi 8" DIA PIPE	PST 50 ksi 3" DIA PIPE	PST 50 ksi 3" DIA PIPE
5	PX 50 ksi 8" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE
6	PX 50 ksi 8" DIA PIPE	PST 50 ksi 3" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE
7 - 8	PX 50 ksi 8" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE
9 - 10	PX 50 ksi 8" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE	PST 50 ksi 2" DIA PIPE
11	PX 50 ksi 8" DIA PIPE	PST 50 ksi 2" DIA PIPE	PST 50 ksi 2" DIA PIPE

REDUNDANT SECONDARY BRACING

Section	Sub Diag 1	Sub Horiz 1	Sub Diag 2	Sub Horiz 2	Sub Diag 3	Sub Horiz 3
1	P1-1/2" DIA PIPE	P1-1/2" DIA PI	P2-1/2" DIA PIPE	P2" DIA PIPE	-	-
2	P1-1/2" DIA PIPE	P1-1/2" DIA PI	P2" DIA PIPE	P2" DIA PIPE	-	-
3 - 4	P2" DIA PIPE	P1-1/2" DIA PI	-	-	-	-
5	P1-1/2" DIA PIPE	P1-1/2" DIA PI	-	-	-	-
6 - 11	-	-	-	-	-	-

DISCRETE APPURTENANCE

Elev (ft)	Type	Qty	Description
256.00	YAGI	1	Generic 8' Yagi
245.00	OMNI	1	Generic 10' Omni
240.00	OMNI	1	Lightning Rod
240.00	OMNI	1	Beacon
240.00	Other	1	Dielectric DCR-L1 w/ Radome
240.00	Sector Frame	1	Round Sector Frame
240.00	Side Arm	1	Generic Round Side Arm
234.00	OMNI	2	Generic 8' Omni
230.00	T-Arm	1	Round Side Arm
229.00	OMNI	1	Generic 12' Omni
223.00	T-Arm	1	Round Side Arm
223.00	T-Arm	1	Empty Flat Side Arm
202.00	PANEL	3	RFS APXVAARR24_43-U-NA20
202.00	PANEL	3	Ericsson Air6449 B41
202.00	PANEL	3	Ericsson AIR 32 B66AA B2P
202.00	RRU/RRH	3	Ericsson Radio 4449 B71 B85A
202.00	RRU/RRH	3	Ericsson RRUS 4415 B25
202.00	Sector Frame	3	Round Sector Frame
183.00	Sector Frame	3	Flat Light Sector Frame
183.00	T-Arm	3	Side Arms
181.00	PANEL	3	Nokia 2.5G MAA - AAHC(64T64R)
180.00	BOB/SSB	1	Generic 24" x 24" Junction Box
180.00	DISH-STANDARD	3	Generic 2' Std. Dish
180.00	PANEL	1	RFS APXV9ERR18-C-A20
180.00	PANEL	2	RFS APXVSPP18-C-A20
180.00	PANEL	3	Argus LLPX310R
180.00	RRU/RRH	3	Alcatel-Lucent 800 MHz RRH

JOB INFORMATION

Asset:	383598, Tartaglia	Height :	240 ft
Client	DISH WIRELESS L.L.C.	Base Width :	40.33 ft
Code:	ANSI/TIA-222-H	Shape :	Triangle

DISCRETE APPURTENANCE

Elev (ft)	Type	Qty	Description
180.00	RRU/RRH	3	Motorola DAP Vx
180.00	RRU/RRH	6	Alcatel-Lucent 1900MHz RRH
165.00	BOB/SSB	3	Raycap DC6-48-60-18-8F (23.5"
165.00	DIPLEXER/DUAL COUPLER	12	Powerwave Allgon LGP21901
165.00	Filter	1	Commscope WCS-IMFQ-AMT
165.00	PANEL	3	Quintel QS66512-3 (112 lbs.)
165.00	PANEL	3	Andrew SBNHH-1D65A
165.00	PANEL	3	Powerwave Allgon 7770.00
165.00	PANEL	3	Kathrein Scala 80010965
165.00	RET/RCU	6	Powerwave Allgon 7020.00 Dual
165.00	RRU/RRH	3	Ericsson Radio 4449
165.00	RRU/RRH	3	Ericsson RRUS 32 B2
165.00	RRU/RRH	3	Ericsson RRUS 4478 B14
165.00	RRU/RRH	3	Ericsson RRUS 4426 B66
165.00	RRU/RRH	3	Ericsson RRUS 32 (50.8 lbs)
165.00	Sector Frame	3	Round Sector Frame
165.00	TTA	3	CCI DTMABP7819VG12A
165.00	TTA	9	Powerwave Allgon LGP21401
155.00	BOB/SSB	2	Raycap RxxDC-3315-PF-48
155.00	DIPLEXER/DUAL COUPLER	3	Commscope CBC78T-DS-43-2X
155.00	Mount Reinforcement	1	Generic Mount Reinforcement
155.00	PANEL	3	Samsung Outdoor CBRS 20W RRH –
155.00	PANEL	3	Samsung MT6407-77A
155.00	PANEL	3	Amphenol Antel BXA-80063-6BF-E
155.00	PANEL	6	Commscope JAHH-65B-R3B
155.00	RRU/RRH	3	Samsung Outdoor CBRS 20W RRH
155.00	RRU/RRH	3	Samsung B5/B13 RRH-BR04C
155.00	RRU/RRH	3	Samsung B2/B66A RRH-BR049
155.00	Sector Frame	3	Flat Light Sector Frame
145.00	BOB/SSB	1	Commscope RDIDC-9181-PF-48
145.00	PANEL	3	JMA Wireless MX08FRO665-21
145.00	RRU/RRH	3	Fujitsu TA08025-B604
145.00	RRU/RRH	3	Fujitsu TA08025-B605
145.00	Sector Frame	3	Generic Flat Light Sector Fram
140.00	OMNI	3	Small Side Lights
132.00	T-Arm	1	Flat Side Arm
132.00	YAGI	1	Generic 4' Yagi
123.00	OMNI	1	Generic 10' Omni
118.00	T-Arm	1	Round Side Arm
108.00	T-Arm	1	Round Side Arm
98.00	T-Arm	1	Flat Side Arm
98.00	YAGI	1	Generic 4' Yagi
80.00	T-Arm	1	Empty Round Side Arm
8.00	T-Arm	1	Round Side Arm

LINEAR APPURTENANCE

Elev (ft) From	To	Qty	Description
0.00	245.00	1	1 1/4" Coax
0.00	243.00	1	1 5/8" Coax
0.00	240.00	1	Waveguide
0.00	234.00	2	7/8" Coax

JOB INFORMATION

Asset:	383598, Tartaglia	Height :	240 ft
Client	DISH WIRELESS L.L.C.	Base Width :	40.33 ft
Code:	ANSI/TIA-222-H	Shape :	Triangle

LINEAR APPURTENANCE

Elev (ft) From	To	Qty	Description
0.00	229.00	1	1 1/4" Coax
0.00	202.00	1	Waveguide
0.00	202.00	3	1 5/8" Hybriflex
0.00	202.00	2	1 1/4" Hybriflex Cable
0.00	183.00	1	Waveguide
0.00	181.00	1	1.7" (43.2mm) Hybrid
0.00	180.00	6	5/16" (0.31"-7.9mm) Coax
0.00	180.00	2	2" conduit
0.00	180.00	3	1/2" Coax
0.00	180.00	1	1 1/4" Hybriflex Cable
0.00	180.00	3	1 1/4" (1.25"- 31.8mm) Fiber
0.00	174.00	1	Waveguide
0.00	165.00	1	Waveguide
0.00	165.00	2	2" conduit
0.00	165.00	12	1 5/8" Coax
0.00	165.00	6	0.78" (19.7mm) 8 AWG 6
0.00	165.00	6	0.39" (10mm) Fiber Trunk
0.00	164.00	2	0.78" (19.7mm) 8 AWG 6
0.00	155.00	1	Waveguide
0.00	155.00	3	1 5/8" Hybriflex
0.00	155.00	6	1 5/8" Coax
0.00	145.00	1	Waveguide
0.00	145.00	1	1.75" (44.5mm) Hybrid
0.00	132.00	1	1 1/4" Coax
0.00	123.00	1	7/8" Coax
0.00	98.00	1	1 1/4" Coax
0.00	55.00	1	1/2" Coax

GLOBAL BASE FOUNDATION DESIGN LOADS

Load Case	Moment (k-ft)	Vertical (kip)	Horizontal (kip)
DL+WL	10542.94	115.5	82.29
DL+WL+IL	3417.08	189.38	27.35

INDIVIDUAL BASE FOUNDATION DESIGN LOADS

	Vertical (kip)	Uplift (kip)	Horizontal (kip)
	340.32	272.74	49.33

JOB INFORMATION

Asset:	383598, Tartaglia	Height :	240 ft
Client	DISH WIRELESS L.L.C.	Base Width :	40.33 ft
Code:	ANSI/TIA-222-H	Shape :	Triangle

ANALYSIS PARAMETERS

Location:	Fairfield County, CT	Height:	240 ft
Type and Shape:	Self Support, Triangle	Base Elevation:	0.00 ft
Manufacturer:	Rohn	Bottom Face Width:	40.33 ft
Kd	0.85	Top Face Width:	10.93 ft
Ke:	0.99	Anchor Bolt Detail Type:	c

ICE & WIND PARAMETERS

Exposure Category:	C	Design Wind Speed Without Ice:	116 mph
Risk Category:	II	Design Wind Speed with Ice:	49 mph
Topographic Factor Procedure:	Method 1	Operational Windspeed:	60 mph
Topographic Category:	Flat	Design Ice Thickness:	0.85 in
Crest Height:	0 ft	HMSL:	212 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			Period Based on Rayleigh Method (sec):	0.72
T_L (sec):	6	P:	1.3	$C_{s:}$	0.040
$S_{s:}$	0.211	$S_{1:}$	0.054	$C_{s,}$ Max:	0.040
$F_{a:}$	1.600	$F_{v:}$	2.400	$C_{s,}$ Min:	0.030
$S_{ds:}$	0.225	S_{d1}:	0.086		

LOAD CASES

1.2D + 1.0W Normal	115.99 mph wind with no ice
1.2D + 1.0W 60°	115.99 mph wind with no ice
1.2D + 1.0W 90°	115.99 mph wind with no ice
0.9D + 1.0W Normal	115.99 mph wind with no ice
0.9D + 1.0W 60°	115.99 mph wind with no ice
0.9D + 1.0W 90°	115.99 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Normal	48.73 mph wind with 0.850" radial ice
1.2D + 1.0Di + 1.0Wi 60°	48.73 mph wind with 0.850" radial ice
1.2D + 1.0Di + 1.0Wi 90°	48.73 mph wind with 0.850" radial ice
1.2D + 1.0Ev + 1.0Eh Normal	Seismic
1.2D + 1.0Ev + 1.0Eh 60°	Seismic
1.2D + 1.0Ev + 1.0Eh 90°	Seismic
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 60°	Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 90°	Seismic (Reduced DL)
1.0D + 1.0W Service Normal	60 mph Wind with No Ice
1.0D + 1.0W Service 60°	60 mph Wind with No Ice
1.0D + 1.0W Service 90°	60 mph Wind with No Ice

TOWER LOADING

Discrete Appurtenance Properties 1.2D + 1.0W

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient Factor	Vert E_{cc} (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
256.0	Generic 8' Yagi	1	30	12.0	8.0	60.0	3.0	1.00	1.00	0.0	0.00	44.81	457	36
245.0	Generic 10' Omni	1	25	3.0	10.0	3.0	3.0	1.00	1.00	0.0	0.00	44.40	113	30
240.0	Lightning Rod	1	10	1.0	4.0	3.0	3.0	1.00	1.00	0.0	0.00	44.21	38	12
240.0	Dielectric DCR-L1 w/ Radome	1	18	1.8	0.0	0.0	0.0	1.00	1.00	3.0	203.45	44.33	68	22
240.0	Beacon	1	70	4.5	3.0	18.0	18.0	1.00	1.00	0.0	0.00	44.21	169	84
240.0	Generic Round Side Arm	1	188	5.2	0.0	0.0	0.0	1.00	0.90	0.0	0.00	44.21	176	225
240.0	Round Sector Frame	1	300	14.4	0.0	0.0	0.0	1.00	1.00	0.0	0.00	44.21	541	360
234.0	Generic 8' Omni	2	25	2.4	8.0	3.0	3.0	1.00	1.00	0.0	0.00	43.97	179	60
230.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.00	43.82	130	180
229.0	Generic 12' Omni	1	40	3.6	12.0	3.0	3.0	1.00	1.00	0.0	0.00	43.77	134	48
223.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	43.53	192	180
223.0	Empty Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.00	43.53	233	180
202.0	Ericsson Radio 4449 B71 B85A	3	75	1.6	1.3	13.2	10.5	0.80	0.50	0.0	0.00	42.63	72	270
202.0	Ericsson RRUS 4415 B25	3	46	1.8	1.4	13.4	5.9	0.80	0.50	0.0	0.00	42.63	80	166
202.0	Ericsson Air6449 B41	3	104	5.7	2.8	20.6	8.6	0.80	0.63	0.0	0.00	42.63	311	374
202.0	Ericsson AIR 32 B66AA B2P	3	109	6.9	4.9	12.9	8.7	0.80	0.71	0.0	0.00	42.63	424	392
202.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.00	42.63	787	1080
202.0	RFS APXVAARR24_43-U-NA20	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.00	42.63	1109	460
183.0	Side Arms	3	560	8.5	0.0	0.0	0.0	1.00	0.67	0.0	0.00	41.76	606	2016
183.0	Flat Light Sector Frame	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.00	41.76	958	1440
181.0	Nokia 2.5G MAA - AAHC(64T64R)	3	104	4.2	2.1	19.7	9.6	0.80	0.64	0.0	0.00	41.66	229	373
180.0	Motorola DAP Vx	3	27	1.6	2.1	7.6	5.5	0.80	0.50	0.0	0.00	41.61	70	95
180.0	Alcatel-Lucent 800 MHz RRH	3	53	2.1	1.6	13.0	10.8	0.80	0.50	0.0	0.00	41.61	91	191
180.0	Alcatel-Lucent 1900MHz RRH	6	44	3.3	1.9	13.0	17.0	0.80	0.50	0.0	0.00	41.61	277	317
180.0	Argus LLPX310R	3	29	4.3	3.5	11.8	4.5	0.80	0.63	0.0	0.00	41.61	230	103
180.0	Generic 24" x 24" Junction Box	1	20	4.8	2.0	24.0	8.0	0.80	1.00	0.0	0.00	41.61	136	24
180.0	Generic 2' Std. Dish	3	14	5.2	2.0	24.0	0.0	1.00	1.00	0.0	0.00	41.61	555	50
180.0	RFS APXVSPP18-C-A20	2	57	8.0	6.0	11.8	7.0	0.80	0.77	0.0	0.00	41.61	350	137
180.0	RFS APXV9ERR18-C-A20	1	62	8.0	6.0	11.8	7.9	0.80	1.00	0.0	0.00	41.61	227	74
165.0	Powerwave Allgon LGP21901	12	6	0.2	0.3	6.0	3.0	0.80	0.50	0.0	0.00	40.86	33	79
165.0	Powerwave Allgon 7020.00 Dual	6	2	0.3	0.4	8.3	2.4	0.80	0.50	0.0	0.00	40.86	28	16
165.0	CCI DTMABP7819VG12A	3	19	1.0	0.9	11.0	3.8	0.80	0.50	0.0	0.00	40.86	41	69
165.0	Commscope WCS-IMFQ-AMT	1	30	1.0	0.9	10.6	6.9	0.80	0.50	0.0	0.00	40.86	14	35
165.0	Powerwave Allgon LGP21401	9	14	1.1	1.2	9.2	2.6	0.80	0.50	0.0	0.00	40.86	138	152
165.0	Raycap DC6-48-60-18-8F (23.5"	3	20	1.3	2.0	9.7	9.7	0.80	0.50	0.0	0.00	40.86	53	72
165.0	Ericsson RRUS 4426 B66	3	48	1.6	1.3	13.2	5.8	0.80	0.50	0.0	0.00	40.86	69	174
165.0	Ericsson RRUS 4478 B14	3	60	1.8	1.4	13.4	7.7	0.80	0.50	0.0	0.00	40.86	77	216
165.0	Ericsson RRUS 32 (50.8 lbs)	3	51	2.7	2.2	12.1	6.7	0.80	0.50	0.0	0.00	40.86	112	183
165.0	Ericsson RRUS 32 B2	3	53	2.7	2.3	12.1	7.0	0.80	0.50	0.0	0.00	40.86	114	191
165.0	Ericsson Radio 4449	3	85	3.5	2.3	15.0	10.0	0.80	0.50	0.0	0.00	40.86	146	306
165.0	Powerwave Allgon 7770.00	3	35	5.5	4.6	11.0	5.0	0.80	0.65	0.0	0.00	40.86	298	126
165.0	Andrew SBNHH-1D65A	3	41	5.9	4.6	11.9	7.1	0.80	0.69	0.0	0.00	40.86	338	147
165.0	Quintel QS66512-3 (112 lbs.)	3	112	8.1	6.0	12.0	9.6	0.80	0.74	0.0	0.00	40.86	502	403
165.0	Kathrein Scala 80010965	3	98	13.8	6.6	20.0	6.9	0.80	0.62	0.0	0.00	40.86	714	351
165.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.00	40.86	754	1080
155.0	Commscope CBC78T-DS-43-2X	3	21	0.6	0.8	6.9	6.4	0.80	0.50	0.0	0.00	40.32	23	75
155.0	Samsung Outdoor CBRS 20W RRH	3	19	0.9	1.0	8.5	4.1	0.80	0.50	0.0	0.00	40.32	35	67
155.0	Samsung Outdoor CBRS 20W RRH –	3	4	0.9	1.0	8.7	1.4	0.80	0.50	0.0	0.00	40.32	37	16
155.0	Samsung B5/B13 RRH-BR04C	3	70	1.9	1.3	15.0	8.1	0.80	0.50	0.0	0.00	40.32	77	253
155.0	Samsung B2/B66A RRH-BR049	3	84	1.9	1.3	15.0	10.0	0.80	0.50	0.0	0.00	40.32	77	304
155.0	Raycap RxxDC-3315-PF-48	2	21	2.5	1.6	15.7	10.3	0.80	0.67	0.0	0.00	40.32	92	51
155.0	Samsung MT6407-77A	3	82	4.7	2.9	16.1	5.5	0.80	0.61	0.0	0.00	40.32	236	294
155.0	Amphenol Antel BXA-80063-6BF-E	3	19	7.3	5.7	11.2	5.3	0.80	0.66	0.0	0.00	40.32	394	69
155.0	Generic Mount Reinforcement	1	200	7.5	0.0	0.0	0.0	1.00	1.00	0.0	0.00	40.32	257	240
155.0	Commscope JAHH-65B-R3B	6	61	9.1	6.0	13.8	8.2	0.80	0.69	0.0	0.00	40.32	1034	436
155.0	Flat Light Sector Frame	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.00	40.32	925	1440
145.0	Commscope RDIDC-9181-PF-48	1	22	1.9	1.3	14.0	8.0	0.80	1.00	0.0	0.00	39.76	50	26
145.0	Fujitsu TA08025-B605	3	75	2.0	1.3	15.0	9.1	0.80	0.50	0.0	0.00	39.76	80	270
145.0	Fujitsu TA08025-B604	3	64	2.0	1.3	15.0	7.9	0.80	0.50	0.0	0.00	39.76	80	230
145.0	JMA Wireless MX08FRO665-21	3	65	12.5	6.0	20.0	8.0	0.80	0.64	0.0	0.00	39.76	648	232
145.0	Generic Flat Light Sector Fram	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.00	39.76	1021	1440
140.0	Small Side Lights	3	45	2.0	1.0	8.0	8.0	1.00	1.00	0.0	0.00	39.47	201	162
132.0	Generic 4' Yagi	1	15	4.9	4.0	48.0	3.0	1.00	1.00	0.0	0.00	38.98	162	18
132.0	Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.00	38.98	209	180
123.0	Generic 10' Omni	1	25	3.0	10.0	3.0	3.0	1.00	1.00	0.0	0.00	38.41	98	30
118.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	38.07	168	180

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient Factor	Vert Ecc (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
108.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	37.37	165	180
98.0	Generic 4' Yagi	1	15	4.9	4.0	48.0	3.0	1.00	1.00	0.0	0.00	36.61	152	18
98.0	Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.00	36.61	196	180
80.0	Empty Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	35.08	155	180
8.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	24.69	109	180
	Totals	184	16,110	933.7									19,054	19,332

TOWER LOADING

Discrete Appurtenance Properties 0.9D + 1.0W

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient Factor	Vert Ecc (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
256.0	Generic 8' Yagi	1	30	12.0	8.0	60.0	3.0	1.00	1.00	0.0	0.00	44.81	457	27
245.0	Generic 10' Omni	1	25	3.0	10.0	3.0	3.0	1.00	1.00	0.0	0.00	44.40	113	22
240.0	Lightning Rod	1	10	1.0	4.0	3.0	3.0	1.00	1.00	0.0	0.00	44.21	38	9
240.0	Dielectric DCR-L1 w/ Radome	1	18	1.8	0.0	0.0	0.0	1.00	1.00	3.0	203.45	44.33	68	16
240.0	Beacon	1	70	4.5	3.0	18.0	18.0	1.00	1.00	0.0	0.00	44.21	169	63
240.0	Generic Round Side Arm	1	188	5.2	0.0	0.0	0.0	1.00	0.90	0.0	0.00	44.21	176	169
240.0	Round Sector Frame	1	300	14.4	0.0	0.0	0.0	1.00	1.00	0.0	0.00	44.21	541	270
234.0	Generic 8' Omni	2	25	2.4	8.0	3.0	3.0	1.00	1.00	0.0	0.00	43.97	179	45
230.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.00	43.82	130	135
229.0	Generic 12' Omni	1	40	3.6	12.0	3.0	3.0	1.00	1.00	0.0	0.00	43.77	134	36
223.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	43.53	192	135
223.0	Empty Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.00	43.53	233	135
202.0	Ericsson Radio 4449 B71 B85A	3	75	1.6	1.3	13.2	10.5	0.80	0.50	0.0	0.00	42.63	72	202
202.0	Ericsson RRUS 4415 B25	3	46	1.8	1.4	13.4	5.9	0.80	0.50	0.0	0.00	42.63	80	124
202.0	Ericsson Air6449 B41	3	104	5.7	2.8	20.6	8.6	0.80	0.63	0.0	0.00	42.63	311	281
202.0	Ericsson AIR 32 B66AA B2P	3	109	6.9	4.9	12.9	8.7	0.80	0.71	0.0	0.00	42.63	424	294
202.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.00	42.63	787	810
202.0	RFS APXVAARR24_43-U-NA20	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.00	42.63	1109	345
183.0	Side Arms	3	560	8.5	0.0	0.0	0.0	1.00	0.67	0.0	0.00	41.76	606	1512
183.0	Flat Light Sector Frame	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.00	41.76	958	1080
181.0	Nokia 2.5G MAA - AAHC(64T64R)	3	104	4.2	2.1	19.7	9.6	0.80	0.64	0.0	0.00	41.66	229	280
180.0	Motorola DAP Vx	3	27	1.6	2.1	7.6	5.5	0.80	0.50	0.0	0.00	41.61	70	72
180.0	Alcatel-Lucent 800 MHz RRH	3	53	2.1	1.6	13.0	10.8	0.80	0.50	0.0	0.00	41.61	91	143
180.0	Alcatel-Lucent 1900MHz RRH	6	44	3.3	1.9	13.0	17.0	0.80	0.50	0.0	0.00	41.61	277	238
180.0	Argus LLPX310R	3	29	4.3	3.5	11.8	4.5	0.80	0.63	0.0	0.00	41.61	230	77
180.0	Generic 24" x 24" Junction Box	1	20	4.8	2.0	24.0	8.0	0.80	1.00	0.0	0.00	41.61	136	18
180.0	Generic 2' Std. Dish	3	14	5.2	2.0	24.0	0.0	1.00	1.00	0.0	0.00	41.61	555	38
180.0	RFS APXVSPP18-C-A20	2	57	8.0	6.0	11.8	7.0	0.80	0.77	0.0	0.00	41.61	350	103
180.0	RFS APXV9ERR18-C-A20	1	62	8.0	6.0	11.8	7.9	0.80	1.00	0.0	0.00	41.61	227	56
165.0	Powerwave Allgon LGP21901	12	6	0.2	0.3	6.0	3.0	0.80	0.50	0.0	0.00	40.86	33	59
165.0	Powerwave Allgon 7020.00 Dual	6	2	0.3	0.4	8.3	2.4	0.80	0.50	0.0	0.00	40.86	28	12
165.0	CCI DTMABP7819VG12A	3	19	1.0	0.9	11.0	3.8	0.80	0.50	0.0	0.00	40.86	41	52
165.0	Commscope WCS-IMFQ-AMT	1	30	1.0	0.9	10.6	6.9	0.80	0.50	0.0	0.00	40.86	14	27
165.0	Powerwave Allgon LGP21401	9	14	1.1	1.2	9.2	2.6	0.80	0.50	0.0	0.00	40.86	138	114
165.0	Raycap DC6-48-60-18-8F (23.5"	3	20	1.3	2.0	9.7	9.7	0.80	0.50	0.0	0.00	40.86	53	54
165.0	Ericsson RRUS 4426 B66	3	48	1.6	1.3	13.2	5.8	0.80	0.50	0.0	0.00	40.86	69	131
165.0	Ericsson RRUS 4478 B14	3	60	1.8	1.4	13.4	7.7	0.80	0.50	0.0	0.00	40.86	77	162
165.0	Ericsson RRUS 32 (50.8 lbs)	3	51	2.7	2.2	12.1	6.7	0.80	0.50	0.0	0.00	40.86	112	137
165.0	Ericsson RRUS 32 B2	3	53	2.7	2.3	12.1	7.0	0.80	0.50	0.0	0.00	40.86	114	143
165.0	Ericsson Radio 4449	3	85	3.5	2.3	15.0	10.0	0.80	0.50	0.0	0.00	40.86	146	230
165.0	Powerwave Allgon 7770.00	3	35	5.5	4.6	11.0	5.0	0.80	0.65	0.0	0.00	40.86	298	94
165.0	Andrew SBNHH-1D65A	3	41	5.9	4.6	11.9	7.1	0.80	0.69	0.0	0.00	40.86	338	110
165.0	Quintel QS66512-3 (112 lbs.)	3	112	8.1	6.0	12.0	9.6	0.80	0.74	0.0	0.00	40.86	502	302
165.0	Kathrein Scala 80010965	3	98	13.8	6.6	20.0	6.9	0.80	0.62	0.0	0.00	40.86	714	264
165.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.00	40.86	754	810
155.0	Commscope CBC78T-DS-43-2X	3	21	0.6	0.8	6.9	6.4	0.80	0.50	0.0	0.00	40.32	23	56
155.0	Samsung Outdoor CBRS 20W RRH	3	19	0.9	1.0	8.5	4.1	0.80	0.50	0.0	0.00	40.32	35	50
155.0	Samsung Outdoor CBRS 20W RRH –	3	4	0.9	1.0	8.7	1.4	0.80	0.50	0.0	0.00	40.32	37	12
155.0	Samsung B5/B13 RRH-BR04C	3	70	1.9	1.3	15.0	8.1	0.80	0.50	0.0	0.00	40.32	77	190
155.0	Samsung B2/B66A RRH-BR049	3	84	1.9	1.3	15.0	10.0	0.80	0.50	0.0	0.00	40.32	77	228
155.0	Raycap RxxDC-3315-PF-48	2	21	2.5	1.6	15.7	10.3	0.80	0.67	0.0	0.00	40.32	92	39
155.0	Samsung MT6407-77A	3	82	4.7	2.9	16.1	5.5	0.80	0.61	0.0	0.00	40.32	236	220
155.0	Amphenol Antel BXA-80063-6BF-E	3	19	7.3	5.7	11.2	5.3	0.80	0.66	0.0	0.00	40.32	394	52
155.0	Generic Mount Reinforcement	1	200	7.5	0.0	0.0	0.0	1.00	1.00	0.0	0.00	40.32	257	180
155.0	Commscope JAHH-65B-R3B	6	61	9.1	6.0	13.8	8.2	0.80	0.69	0.0	0.00	40.32	1034	327
155.0	Flat Light Sector Frame	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.00	40.32	925	1080

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient Factor	Vert E_{cc} (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
145.0	Commscope RDIDC-9181-PF-48	1	22	1.9	1.3	14.0	8.0	0.80	1.00	0.0	0.00	39.76	50	20
145.0	Fujitsu TA08025-B605	3	75	2.0	1.3	15.0	9.1	0.80	0.50	0.0	0.00	39.76	80	202
145.0	Fujitsu TA08025-B604	3	64	2.0	1.3	15.0	7.9	0.80	0.50	0.0	0.00	39.76	80	173
145.0	JMA Wireless MX08FRO665-21	3	65	12.5	6.0	20.0	8.0	0.80	0.64	0.0	0.00	39.76	648	174
145.0	Generic Flat Light Sector Fram	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.00	39.76	1021	1080
140.0	Small Side Lights	3	45	2.0	1.0	8.0	8.0	1.00	1.00	0.0	0.00	39.47	201	122
132.0	Generic 4' Yagi	1	15	4.9	4.0	48.0	3.0	1.00	1.00	0.0	0.00	38.98	162	14
132.0	Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.00	38.98	209	135
123.0	Generic 10' Omni	1	25	3.0	10.0	3.0	3.0	1.00	1.00	0.0	0.00	38.41	98	22
118.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	38.07	168	135
108.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	37.37	165	135
98.0	Generic 4' Yagi	1	15	4.9	4.0	48.0	3.0	1.00	1.00	0.0	0.00	36.61	152	14
98.0	Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.00	36.61	196	135
80.0	Empty Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	35.08	155	135
8.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	24.69	109	135
	Totals	184	16,110	933.7									19,054	14,499

TOWER LOADING

Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elev (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient Factor	Vert E_{cc} (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
256.0	Generic 8' Yagi	1	231	31.8	8.0	60.0	3.0	1.00	1.00	0.0	0.00	7.91	214	237
245.0	Generic 10' Omni	1	70	5.1	10.0	3.0	3.0	1.00	1.00	0.0	0.00	7.84	34	75
240.0	Lightning Rod	1	38	1.5	4.0	3.0	3.0	1.00	1.00	0.0	0.00	7.80	10	40
240.0	Dielectric DCR-L1 w/ Radome	1	62	3.7	0.0	0.0	0.0	1.00	1.00	3.0	73.12	7.82	24	65
240.0	Beacon	1	189	3.7	3.0	18.0	18.0	1.00	1.00	0.0	0.00	7.80	25	203
240.0	Generic Round Side Arm	1	242	6.8	0.0	0.0	0.0	1.00	0.90	0.0	0.00	7.80	41	279
240.0	Round Sector Frame	1	518	24.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	7.80	161	578
234.0	Generic 8' Omni	2	61	4.0	8.0	3.0	3.0	1.00	1.00	0.0	0.00	7.76	53	132
230.0	Round Side Arm	1	193	6.8	0.0	0.0	0.0	1.00	0.67	0.0	0.00	7.73	30	223
229.0	Generic 12' Omni	1	94	6.1	12.0	3.0	3.0	1.00	1.00	0.0	0.00	7.73	40	102
223.0	Round Side Arm	1	193	6.8	0.0	0.0	0.0	1.00	1.00	0.0	0.00	7.68	44	223
223.0	Empty Flat Side Arm	1	193	7.7	0.0	0.0	0.0	1.00	1.00	0.0	0.00	7.68	51	223
202.0	Ericsson Radio 4449 B71 B85A	3	110	2.1	1.3	13.2	10.5	0.80	0.50	0.0	0.00	7.52	16	375
202.0	Ericsson RRUS 4415 B25	3	75	2.4	1.4	13.4	5.9	0.80	0.50	0.0	0.00	7.52	18	251
202.0	Ericsson Air6449 B41	3	183	6.6	2.8	20.6	8.6	0.80	0.63	0.0	0.00	7.52	64	612
202.0	Ericsson AIR 32 B66AA B2P	3	206	8.2	4.9	12.9	8.7	0.80	0.71	0.0	0.00	7.52	89	683
202.0	Round Sector Frame	3	514	24.0	0.0	0.0	0.0	0.75	0.67	0.0	0.00	7.52	232	1722
202.0	RFS APXVAARR24_43-U-NA20	3	356	22.4	8.0	24.0	8.7	0.80	0.63	0.0	0.00	7.52	217	1145
183.0	Side Arms	3	829	12.6	0.0	0.0	0.0	1.00	0.67	0.0	0.00	7.37	158	2824
183.0	Flat Light Sector Frame	3	573	26.6	0.0	0.0	0.0	0.75	0.67	0.0	0.00	7.37	251	1959
181.0	Nokia 2.5G MAA - AAHC(64T64R)	3	168	5.0	2.1	19.7	9.6	0.80	0.64	0.0	0.00	7.35	48	567
180.0	Motorola DAP Vx	3	53	2.2	2.1	7.6	5.5	0.80	0.50	0.0	0.00	7.34	17	175
180.0	Alcatel-Lucent 800 MHz RRH	3	95	2.7	1.6	13.0	10.8	0.80	0.50	0.0	0.00	7.34	20	318
180.0	Alcatel-Lucent 1900MHz RRH	6	107	3.9	1.9	13.0	17.0	0.80	0.50	0.0	0.00	7.34	59	693
180.0	Argus LLPX310R	3	80	5.2	3.5	11.8	4.5	0.80	0.63	0.0	0.00	7.34	49	258
180.0	Generic 24" x 24" Junction Box	1	86	5.6	2.0	24.0	8.0	0.80	1.00	0.0	0.00	7.34	28	90
180.0	Generic 2' Std. Dish	3	46	6.1	2.0	24.0	0.0	1.00	1.00	0.0	0.00	7.34	115	146
180.0	RFS APXVSPP18-C-A20	2	156	9.6	6.0	11.8	7.0	0.80	0.77	0.0	0.00	7.34	74	335
180.0	RFS APXV9ERR18-C-A20	1	166	9.6	6.0	11.8	7.9	0.80	1.00	0.0	0.00	7.34	48	179
165.0	Powerwave Allgon LGP21901	12	10	0.4	0.3	6.0	3.0	0.80	0.50	0.0	0.00	7.21	11	131
165.0	Powerwave Allgon 7020.00 Dual	6	8	0.6	0.4	8.3	2.4	0.80	0.50	0.0	0.00	7.21	8	51
165.0	CCI DTMABP7819VG12A	3	34	1.3	0.9	11.0	3.8	0.80	0.50	0.0	0.00	7.21	10	113
165.0	Commscope WCS-IMFQ-AMT	1	49	1.4	0.9	10.6	6.9	0.80	0.50	0.0	0.00	7.21	3	55
165.0	Powerwave Allgon LGP21401	9	28	1.5	1.2	9.2	2.6	0.80	0.50	0.0	0.00	7.21	33	280
165.0	Raycap DC6-48-60-18-8F (23.5"	3	50	1.6	2.0	9.7	9.7	0.80	0.50	0.0	0.00	7.21	12	162
165.0	Ericsson RRUS 4426 B66	3	74	2.1	1.3	13.2	5.8	0.80	0.50	0.0	0.00	7.21	16	250
165.0	Ericsson RRUS 4478 B14	3	91	2.4	1.4	13.4	7.7	0.80	0.50	0.0	0.00	7.21	17	310
165.0	Ericsson RRUS 32 (50.8 lbs)	3	91	3.3	2.2	12.1	6.7	0.80	0.50	0.0	0.00	7.21	25	305
165.0	Ericsson RRUS 32 B2	3	95	3.4	2.3	12.1	7.0	0.80	0.50	0.0	0.00	7.21	25	316
165.0	Ericsson Radio 4449	3	143	4.2	2.3	15.0	10.0	0.80	0.50	0.0	0.00	7.21	31	480
165.0	Powerwave Allgon 7770.00	3	104	6.1	4.6	11.0	5.0	0.80	0.65	0.0	0.00	7.21	58	334
165.0	Andrew SBNHH-1D65A	3	118	7.1	4.6	11.9	7.1	0.80	0.69	0.0	0.00	7.21	72	378
165.0	Quintel QS66512-3 (112 lbs.)	3	225	9.7	6.0	12.0	9.6	0.80	0.74	0.0	0.00	7.21	106	743
165.0	Kathrein Scala 80010965	3	249	15.5	6.6	20.0	6.9	0.80	0.62	0.0	0.00	7.21	142	806
165.0	Round Sector Frame	3	509	23.8	0.0	0.0	0.0	0.75	0.67	0.0	0.00	7.21	220	1707

Elev (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient Factor	Vert Ecc (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
155.0	Commscope CBC78T-DS-43-2X	3	33	0.8	0.8	6.9	6.4	0.80	0.50	0.0	0.00	7.12	6	112
155.0	Samsung Outdoor CBRS 20W RRH	3	32	1.2	1.0	8.5	4.1	0.80	0.50	0.0	0.00	7.12	9	108
155.0	Samsung Outdoor CBRS 20W RRH –	3	15	1.3	1.0	8.7	1.4	0.80	0.50	0.0	0.00	7.12	9	47
155.0	Samsung B5/B13 RRH-BR04C	3	103	2.4	1.3	15.0	8.1	0.80	0.50	0.0	0.00	7.12	17	351
155.0	Samsung B2/B66A RRH-BR049	3	121	2.4	1.3	15.0	10.0	0.80	0.50	0.0	0.00	7.12	17	413
155.0	Raycap RxxDC-3315-PF-48	2	67	3.1	1.6	15.7	10.3	0.80	0.67	0.0	0.00	7.12	20	142
155.0	Samsung MT6407-77A	3	139	5.6	2.9	16.1	5.5	0.80	0.61	0.0	0.00	7.12	49	467
155.0	Amphenol Antel BXA-80063-6BF-E	3	101	8.8	5.7	11.2	5.3	0.80	0.66	0.0	0.00	7.12	84	315
155.0	Generic Mount Reinforcement	1	310	11.8	0.0	0.0	0.0	1.00	1.00	0.0	0.00	7.12	71	350
155.0	Commscope JAHH-65B-R3B	6	175	10.7	6.0	13.8	8.2	0.80	0.69	0.0	0.00	7.12	214	1126
155.0	Flat Light Sector Frame	3	571	26.5	0.0	0.0	0.0	0.75	0.67	0.0	0.00	7.12	241	1953
145.0	Commscope RDIDC-9181-PF-48	1	54	2.4	1.3	14.0	8.0	0.80	1.00	0.0	0.00	7.02	11	58
145.0	Fujitsu TA08025-B605	3	110	2.5	1.3	15.0	9.1	0.80	0.50	0.0	0.00	7.02	18	375
145.0	Fujitsu TA08025-B604	3	97	2.5	1.3	15.0	7.9	0.80	0.50	0.0	0.00	7.02	18	328
145.0	JMA Wireless MX08FRO665-21	3	208	14.1	6.0	20.0	8.0	0.80	0.64	0.0	0.00	7.02	129	664
145.0	Generic Flat Light Sector Fram	3	568	26.3	0.0	0.0	0.0	0.75	0.75	0.0	0.00	7.02	265	1945
140.0	Small Side Lights	3	65	0.7	1.0	8.0	8.0	1.00	1.00	0.0	0.00	6.97	12	222
132.0	Generic 4' Yagi	1	96	12.1	4.0	48.0	3.0	1.00	1.00	0.0	0.00	6.88	71	99
132.0	Flat Side Arm	1	191	7.7	0.0	0.0	0.0	1.00	1.00	0.0	0.00	6.88	45	221
123.0	Generic 10' Omni	1	67	5.0	10.0	3.0	3.0	1.00	1.00	0.0	0.00	6.78	29	72
118.0	Round Side Arm	1	190	6.7	0.0	0.0	0.0	1.00	1.00	0.0	0.00	6.72	38	220
108.0	Round Side Arm	1	189	6.7	0.0	0.0	0.0	1.00	1.00	0.0	0.00	6.60	37	219
98.0	Generic 4' Yagi	1	93	11.9	4.0	48.0	3.0	1.00	1.00	0.0	0.00	6.46	65	96
98.0	Flat Side Arm	1	189	7.6	0.0	0.0	0.0	1.00	1.00	0.0	0.00	6.46	42	219
80.0	Empty Round Side Arm	1	188	6.6	0.0	0.0	0.0	1.00	1.00	0.0	0.00	6.19	35	218
8.0	Round Side Arm	1	183	6.4	0.0	0.0	0.0	1.00	1.00	0.0	0.00	4.36	24	213
	Totals	184	28,460	1254.0									4598	31,682

TOWER LOADING

Discrete Appurtenance Properties 1.0D + 1.0W Service

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient Factor	Vert Ecc (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
256.0	Generic 8' Yagi	1	30	12.0	8.0	60.0	3.0	1.00	1.00	0.0	0.00	11.99	122	30
245.0	Generic 10' Omni	1	25	3.0	10.0	3.0	3.0	1.00	1.00	0.0	0.00	11.88	30	25
240.0	Lightning Rod	1	10	1.0	4.0	3.0	3.0	1.00	1.00	0.0	0.00	11.83	10	10
240.0	Dielectric DCR-L1 w/ Radome	1	18	1.8	0.0	0.0	0.0	1.00	1.00	3.0	54.44	11.86	18	18
240.0	Beacon	1	70	4.5	3.0	18.0	18.0	1.00	1.00	0.0	0.00	11.83	45	70
240.0	Generic Round Side Arm	1	188	5.2	0.0	0.0	0.0	1.00	0.90	0.0	0.00	11.83	47	188
240.0	Round Sector Frame	1	300	14.4	0.0	0.0	0.0	1.00	1.00	0.0	0.00	11.83	145	300
234.0	Generic 8' Omni	2	25	2.4	8.0	3.0	3.0	1.00	1.00	0.0	0.00	11.77	48	50
230.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.00	11.72	35	150
229.0	Generic 12' Omni	1	40	3.6	12.0	3.0	3.0	1.00	1.00	0.0	0.00	11.71	36	40
223.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	11.65	51	150
223.0	Empty Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.00	11.65	62	150
202.0	Ericsson Radio 4449 B71 B85A	3	75	1.6	1.3	13.2	10.5	0.80	0.50	0.0	0.00	11.41	19	225
202.0	Ericsson RRUS 4415 B25	3	46	1.8	1.4	13.4	5.9	0.80	0.50	0.0	0.00	11.41	21	138
202.0	Ericsson Air6449 B41	3	104	5.7	2.8	20.6	8.6	0.80	0.63	0.0	0.00	11.41	83	312
202.0	Ericsson AIR 32 B66AA B2P	3	109	6.9	4.9	12.9	8.7	0.80	0.71	0.0	0.00	11.41	114	327
202.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.00	11.41	211	900
202.0	RFS APXVAARR24_43-U-NA20	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.00	11.41	297	384
183.0	Side Arms	3	560	8.5	0.0	0.0	0.0	1.00	0.67	0.0	0.00	11.17	162	1680
183.0	Flat Light Sector Frame	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.00	11.17	256	1200
181.0	Nokia 2.5G MAA - AAHC(64T64R)	3	104	4.2	2.1	19.7	9.6	0.80	0.64	0.0	0.00	11.15	61	311
180.0	Motorola DAP Vx	3	27	1.6	2.1	7.6	5.5	0.80	0.50	0.0	0.00	11.13	19	80
180.0	Alcatel-Lucent 800 MHz RRH	3	53	2.1	1.6	13.0	10.8	0.80	0.50	0.0	0.00	11.13	24	159
180.0	Alcatel-Lucent 1900MHz RRH	6	44	3.3	1.9	13.0	17.0	0.80	0.50	0.0	0.00	11.13	74	264
180.0	Argus LLPX310R	3	29	4.3	3.5	11.8	4.5	0.80	0.63	0.0	0.00	11.13	61	86
180.0	Generic 24" x 24" Junction Box	1	20	4.8	2.0	24.0	8.0	0.80	1.00	0.0	0.00	11.13	36	20
180.0	Generic 2' Std. Dish	3	14	5.2	2.0	24.0	0.0	1.00	1.00	0.0	0.00	11.13	148	42
180.0	RFS APXVSPP18-C-A20	2	57	8.0	6.0	11.8	7.0	0.80	0.77	0.0	0.00	11.13	94	114
180.0	RFS APXV9ERR18-C-A20	1	62	8.0	6.0	11.8	7.9	0.80	1.00	0.0	0.00	11.13	61	62
165.0	Powerwave Allgon LGP21901	12	6	0.2	0.3	6.0	3.0	0.80	0.50	0.0	0.00	10.93	9	66
165.0	Powerwave Allgon 7020.00 Dual	6	2	0.3	0.4	8.3	2.4	0.80	0.50	0.0	0.00	10.93	8	13
165.0	CCI DTMABP7819VG12A	3	19	1.0	0.9	11.0	3.8	0.80	0.50	0.0	0.00	10.93	11	58
165.0	Commscope WCS-IMFQ-AMT	1	30	1.0	0.9	10.6	6.9	0.80	0.50	0.0	0.00	10.93	4	30

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient Factor	Vert Ecc (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
165.0	Powerwave Allgon LGP21401	9	14	1.1	1.2	9.2	2.6	0.80	0.50	0.0	0.00	10.93	37	127
165.0	Raycap DC6-48-60-18-8F (23.5"	3	20	1.3	2.0	9.7	9.7	0.80	0.50	0.0	0.00	10.93	14	60
165.0	Ericsson RRUS 4426 B66	3	48	1.6	1.3	13.2	5.8	0.80	0.50	0.0	0.00	10.93	18	145
165.0	Ericsson RRUS 4478 B14	3	60	1.8	1.4	13.4	7.7	0.80	0.50	0.0	0.00	10.93	21	180
165.0	Ericsson RRUS 32 (50.8 lbs)	3	51	2.7	2.2	12.1	6.7	0.80	0.50	0.0	0.00	10.93	30	152
165.0	Ericsson RRUS 32 B2	3	53	2.7	2.3	12.1	7.0	0.80	0.50	0.0	0.00	10.93	31	159
165.0	Ericsson Radio 4449	3	85	3.5	2.3	15.0	10.0	0.80	0.50	0.0	0.00	10.93	39	255
165.0	Powerwave Allgon 7770.00	3	35	5.5	4.6	11.0	5.0	0.80	0.65	0.0	0.00	10.93	80	105
165.0	Andrew SBNHH-1D65A	3	41	5.9	4.6	11.9	7.1	0.80	0.69	0.0	0.00	10.93	91	123
165.0	Quintel QS66512-3 (112 lbs.)	3	112	8.1	6.0	12.0	9.6	0.80	0.74	0.0	0.00	10.93	134	336
165.0	Kathrein Scala 80010965	3	98	13.8	6.6	20.0	6.9	0.80	0.62	0.0	0.00	10.93	191	293
165.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.00	10.93	202	900
155.0	Commscope CBC78T-DS-43-2X	3	21	0.6	0.8	6.9	6.4	0.80	0.50	0.0	0.00	10.79	6	62
155.0	Samsung Outdoor CBRS 20W RRH	3	19	0.9	1.0	8.5	4.1	0.80	0.50	0.0	0.00	10.79	9	56
155.0	Samsung Outdoor CBRS 20W RRH –	3	4	0.9	1.0	8.7	1.4	0.80	0.50	0.0	0.00	10.79	10	13
155.0	Samsung B5/B13 RRH-BR04C	3	70	1.9	1.3	15.0	8.1	0.80	0.50	0.0	0.00	10.79	21	211
155.0	Samsung B2/B66A RRH-BR049	3	84	1.9	1.3	15.0	10.0	0.80	0.50	0.0	0.00	10.79	21	253
155.0	Raycap RxxDC-3315-PF-48	2	21	2.5	1.6	15.7	10.3	0.80	0.67	0.0	0.00	10.79	25	43
155.0	Samsung MT6407-77A	3	82	4.7	2.9	16.1	5.5	0.80	0.61	0.0	0.00	10.79	63	245
155.0	Amphenol Antel BXA-80063-6BF-E	3	19	7.3	5.7	11.2	5.3	0.80	0.66	0.0	0.00	10.79	105	58
155.0	Generic Mount Reinforcement	1	200	7.5	0.0	0.0	0.0	1.00	1.00	0.0	0.00	10.79	69	200
155.0	Commscope JAHH-65B-R3B	6	61	9.1	6.0	13.8	8.2	0.80	0.69	0.0	0.00	10.79	277	364
155.0	Flat Light Sector Frame	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.00	10.79	247	1200
145.0	Commscope RDIDC-9181-PF-48	1	22	1.9	1.3	14.0	8.0	0.80	1.00	0.0	0.00	10.64	14	22
145.0	Fujitsu TA08025-B605	3	75	2.0	1.3	15.0	9.1	0.80	0.50	0.0	0.00	10.64	21	225
145.0	Fujitsu TA08025-B604	3	64	2.0	1.3	15.0	7.9	0.80	0.50	0.0	0.00	10.64	21	192
145.0	JMA Wireless MX08FRO665-21	3	65	12.5	6.0	20.0	8.0	0.80	0.64	0.0	0.00	10.64	173	194
145.0	Generic Flat Light Sector Fram	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.00	10.64	273	1200
140.0	Small Side Lights	3	45	2.0	1.0	8.0	8.0	1.00	1.00	0.0	0.00	10.56	54	135
132.0	Generic 4' Yagi	1	15	4.9	4.0	48.0	3.0	1.00	1.00	0.0	0.00	10.43	43	15
132.0	Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.00	10.43	56	150
123.0	Generic 10' Omni	1	25	3.0	10.0	3.0	3.0	1.00	1.00	0.0	0.00	10.28	26	25
118.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	10.19	45	150
108.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	10.00	44	150
98.0	Generic 4' Yagi	1	15	4.9	4.0	48.0	3.0	1.00	1.00	0.0	0.00	9.80	41	15
98.0	Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.00	9.80	52	150
80.0	Empty Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	9.39	41	150
8.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	6.61	29	150
	Totals	184	16,110	933.7									5,098	16,110

TOWER LOADING

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	% In Wind	Spread On Faces	Bundling	Cluster Dia (in)	Out of Zone	Spacing (in)	Orient Factor	K_a Override
0.0	245.0	1 1/4" Coax	1	1.55	0.63	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	243.0	1 5/8" Coax	1	1.98	0.82	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	240.0	Waveguide	1	1.50	6.00	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	234.0	7/8" Coax	2	1.09	0.33	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	229.0	1 1/4" Coax	1	1.55	0.63	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	202.0	1 1/4" Hybriflex Cable	2	1.54	1.00	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	202.0	1 5/8" Hybriflex	3	1.98	1.30	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	202.0	Waveguide	1	1.50	6.00	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	183.0	Waveguide	1	1.50	6.00	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	181.0	1.7" (43.2mm) Hybrid	1	1.70	1.78	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	180.0	1 1/4" Hybriflex Cable	1	1.54	1.00	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	180.0	2" conduit	2	2.38	3.65	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	180.0	1/2" Coax	3	0.63	0.15	67	2	Block	0.00	N	1.00	1.00	0.00
0.0	180.0	1 1/4" (1.25"- 31.8mm) Fiber	3	1.25	1.05	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	180.0	5/16" (0.31"-7.9mm) Coax	6	0.31	0.05	50	2	Block	0.00	N	1.00	1.00	0.00
0.0	174.0	Waveguide	1	1.50	6.00	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	165.0	0.39" (10mm) Fiber Trunk	2	0.39	0.06	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	165.0	Waveguide	1	1.50	6.00	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	165.0	0.39" (10mm) Fiber Trunk	4	0.39	0.06	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	165.0	0.78" (19.7mm) 8 AWG 6	6	0.78	0.59	50	1	Block	0.00	N	1.00	1.00	0.00
0.0	165.0	2" conduit	2	2.38	3.65	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	165.0	1 5/8" Coax	12	1.98	0.82	50	1	Block	0.00	N	1.00	1.00	0.00
0.0	164.0	0.78" (19.7mm) 8 AWG 6	2	0.78	0.59	100	1	Individual	0.00	N	1.00	1.00	0.01
0.0	155.0	1 5/8" Hybriflex	2	1.98	1.30	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	155.0	1 5/8" Hybriflex	1	1.98	1.30	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	155.0	1 5/8" Coax	6	1.98	0.82	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	155.0	Waveguide	1	1.50	6.00	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	145.0	1.75" (44.5mm) Hybrid	1	1.75	2.72	100	3	Individual	0.00	N	1.00	1.00	0.00
0.0	145.0	Waveguide	1	2.00	6.00	100	3	Individual	0.00	N	1.00	1.00	0.00
0.0	132.0	1 1/4" Coax	1	1.55	0.63	100	3	Individual	0.00	N	1.00	1.00	0.00
0.0	123.0	7/8" Coax	1	1.09	0.33	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	98.0	1 1/4" Coax	1	1.55	0.63	100	3	Individual	0.00	N	1.00	1.00	0.00
0.0	55.0	1/2" Coax	1	0.63	0.15	100	1	Individual	0.00	N	1.00	1.00	0.00

SECTION FORCES

1.2D + 1.0W Normal
115.99 mph wind with no ice
Gust Response Factor (Gh): 0.85
Wind Importance Factor (Iw): 1.00

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
11	230	43.82	0.000	45.353	0.00	0.179	2.67	1.00	1.00	0.0	22.58	60.21	0.00	4730	0	2242	369	2611
10	210	42.98	0.000	45.187	0.00	0.153	2.76	1.00	1.00	0.0	21.88	60.41	0.00	4935	0	2207	478	2686
9	190	42.09	0.000	46.842	0.00	0.137	2.82	1.00	1.00	0.0	22.55	63.63	0.00	5372	0	2277	933	3210
8	170	41.11	0.000	50.084	0.00	0.128	2.86	1.00	1.00	0.0	24.29	69.39	0.00	6687	0	2425	2092	4517
7	150	40.04	0.000	57.359	0.00	0.130	2.85	1.00	1.00	0.0	28.04	79.87	0.00	8357	0	2718	3827	6546
6	130	38.86	0.000	57.395	0.00	0.116	2.90	1.00	1.00	0.0	28.35	82.18	0.00	8690	0	2714	4109	6823
5	110	37.51	0.000	63.059	0.00	0.116	2.90	1.00	1.00	0.0	30.75	89.19	0.00	8578	0	2844	4026	6870
4	90	35.96	0.000	57.777	0.00	0.097	2.98	1.00	1.00	0.0	28.05	83.46	0.00	8481	0	2551	3911	6462
3	70	34.11	0.000	66.406	0.00	0.102	2.96	1.00	1.00	0.0	31.82	94.04	0.00	9475	0	2726	3715	6441
2	45	31.08	0.000	113.831	0.00	0.107	2.94	1.00	1.00	0.0	55.68	163.56	0.00	14777	0	4321	5102	9423
1	15	24.69	0.000	120.618	0.00	0.102	2.96	1.00	1.00	0.0	57.80	170.80	0.00	16084	0	3585	4058	7643
														96,166	0			63,232

1.2D + 1.0W 60°
115.99 mph wind with no ice
Gust Response Factor (Gh): 0.85
Wind Importance Factor (Iw): 1.00

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
11	230	43.82	0.000	45.353	0.00	0.179	2.67	0.80	1.00	0.0	22.58	60.21	0.00	4730	0	2242	369	2611
10	210	42.98	0.000	45.187	0.00	0.153	2.76	0.80	1.00	0.0	21.88	60.41	0.00	4935	0	2207	478	2686
9	190	42.09	0.000	46.842	0.00	0.137	2.82	0.80	1.00	0.0	22.55	63.63	0.00	5372	0	2277	933	3210
8	170	41.11	0.000	50.084	0.00	0.128	2.86	0.80	1.00	0.0	24.29	69.39	0.00	6687	0	2425	2092	4517
7	150	40.04	0.000	57.359	0.00	0.130	2.85	0.80	1.00	0.0	28.04	79.87	0.00	8357	0	2718	3827	6546
6	130	38.86	0.000	57.395	0.00	0.116	2.90	0.80	1.00	0.0	28.35	82.18	0.00	8690	0	2714	4109	6823
5	110	37.51	0.000	63.059	0.00	0.116	2.90	0.80	1.00	0.0	30.75	89.19	0.00	8578	0	2844	4026	6870
4	90	35.96	0.000	57.777	0.00	0.097	2.98	0.80	1.00	0.0	28.05	83.46	0.00	8481	0	2551	3911	6462
3	70	34.11	0.000	66.406	0.00	0.102	2.96	0.80	1.00	0.0	31.82	94.04	0.00	9475	0	2726	3715	6441
2	45	31.08	0.000	113.831	0.00	0.107	2.94	0.80	1.00	0.0	55.68	163.56	0.00	14777	0	4321	5102	9423
1	15	24.69	0.000	120.618	0.00	0.102	2.96	0.80	1.00	0.0	58.57	173.10	0.00	16084	0	3633	4058	7691
														96,166	0			63,280

1.2D + 1.0W 90°
115.99 mph wind with no ice
Gust Response Factor (Gh): 0.85
Wind Importance Factor (Iw): 1.00

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
11	230	43.82	0.000	45.353	0.00	0.179	2.67	0.85	1.00	0.0	22.58	60.21	0.00	4730	0	2242	369	2611
10	210	42.98	0.000	45.187	0.00	0.153	2.76	0.85	1.00	0.0	21.88	60.41	0.00	4935	0	2207	478	2686
9	190	42.09	0.000	46.842	0.00	0.137	2.82	0.85	1.00	0.0	22.55	63.63	0.00	5372	0	2277	933	3210
8	170	41.11	0.000	50.084	0.00	0.128	2.86	0.85	1.00	0.0	24.29	69.39	0.00	6687	0	2425	2092	4517
7	150	40.04	0.000	57.359	0.00	0.130	2.85	0.85	1.00	0.0	28.04	79.87	0.00	8357	0	2718	3827	6546
6	130	38.86	0.000	57.395	0.00	0.116	2.90	0.85	1.00	0.0	28.35	82.18	0.00	8690	0	2714	4109	6823
5	110	37.51	0.000	63.059	0.00	0.116	2.90	0.85	1.00	0.0	30.75	89.19	0.00	8578	0	2844	4026	6870
4	90	35.96	0.000	57.777	0.00	0.097	2.98	0.85	1.00	0.0	28.05	83.46	0.00	8481	0	2551	3911	6462
3	70	34.11	0.000	66.406	0.00	0.102	2.96	0.85	1.00	0.0	31.82	94.04	0.00	9475	0	2726	3715	6441
2	45	31.08	0.000	113.831	0.00	0.107	2.94	0.85	1.00	0.0	55.68	163.56	0.00	14777	0	4321	5102	9423
1	15	24.69	0.000	120.618	0.00	0.102	2.96	0.85	1.00	0.0	58.57	173.10	0.00	16084	0	3633	4058	7691
														96,166	0			63,280

0.9D + 1.0W Normal
115.99 mph wind with no ice
Gust Response Factor (Gh): 0.85
Wind Importance Factor (Iw): 1.00

Sect	Elev	Q_Z	A_f	A_r	Ice A_r	e	C_f	D_f	D_r	T_{iz}	A_e	EPA_a	EPA_{ai}	Wt.	Ice Wt	F_{st}	F_a	Force (lb)

SECTION FORCES

#	(ft)	(psf)	(sf)	(sf)	(sf)					(in)	(sf)	(sf)	(sf)	(lb)	(lb)	(lb)	(lb)	
11	230	43.82	0.000	45.353	0.00	0.179	2.67	1.00	1.00	0.0	22.58	60.21	0.00	3547	0	2242	369	2611
10	210	42.98	0.000	45.187	0.00	0.153	2.76	1.00	1.00	0.0	21.88	60.41	0.00	3702	0	2207	478	2686
9	190	42.09	0.000	46.842	0.00	0.137	2.82	1.00	1.00	0.0	22.55	63.63	0.00	4029	0	2277	933	3210
8	170	41.11	0.000	50.084	0.00	0.128	2.86	1.00	1.00	0.0	24.29	69.39	0.00	5015	0	2425	2092	4517
7	150	40.04	0.000	57.359	0.00	0.130	2.85	1.00	1.00	0.0	28.04	79.87	0.00	6268	0	2718	3827	6546
6	130	38.86	0.000	57.395	0.00	0.116	2.90	1.00	1.00	0.0	28.35	82.18	0.00	6517	0	2714	4109	6823
5	110	37.51	0.000	63.059	0.00	0.116	2.90	1.00	1.00	0.0	30.75	89.19	0.00	6433	0	2844	4026	6870
4	90	35.96	0.000	57.777	0.00	0.097	2.98	1.00	1.00	0.0	28.05	83.46	0.00	6361	0	2551	3911	6462
3	70	34.11	0.000	66.406	0.00	0.102	2.96	1.00	1.00	0.0	31.82	94.04	0.00	7106	0	2726	3715	6441
2	45	31.08	0.000	113.831	0.00	0.107	2.94	1.00	1.00	0.0	55.68	163.56	0.00	11083	0	4321	5102	9423
1	15	24.69	0.000	120.618	0.00	0.102	2.96	1.00	1.00	0.0	58.57	173.10	0.00	12063	0	3633	4058	7691
														72,124	0			63,280

0.9D + 1.0W 60° Gust Response Factor (Gh): 0.85
115.99 mph wind with no ice Wind Importance Factor (Iw): 1.00

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
11	230	43.82	0.000	45.353	0.00	0.179	2.67	0.80	1.00	0.0	22.58	60.21	0.00	3547	0	2242	369	2611
10	210	42.98	0.000	45.187	0.00	0.153	2.76	0.80	1.00	0.0	21.88	60.41	0.00	3702	0	2207	478	2686
9	190	42.09	0.000	46.842	0.00	0.137	2.82	0.80	1.00	0.0	22.55	63.63	0.00	4029	0	2277	933	3210
8	170	41.11	0.000	50.084	0.00	0.128	2.86	0.80	1.00	0.0	24.29	69.39	0.00	5015	0	2425	2092	4517
7	150	40.04	0.000	57.359	0.00	0.130	2.85	0.80	1.00	0.0	28.04	79.87	0.00	6268	0	2718	3827	6546
6	130	38.86	0.000	57.395	0.00	0.116	2.90	0.80	1.00	0.0	28.35	82.18	0.00	6517	0	2714	4109	6823
5	110	37.51	0.000	63.059	0.00	0.116	2.90	0.80	1.00	0.0	30.75	89.19	0.00	6433	0	2844	4026	6870
4	90	35.96	0.000	57.777	0.00	0.097	2.98	0.80	1.00	0.0	28.05	83.46	0.00	6361	0	2551	3911	6462
3	70	34.11	0.000	66.406	0.00	0.102	2.96	0.80	1.00	0.0	31.82	94.04	0.00	7106	0	2726	3715	6441
2	45	31.08	0.000	113.831	0.00	0.107	2.94	0.80	1.00	0.0	55.68	163.56	0.00	11083	0	4321	5102	9423
1	15	24.69	0.000	120.618	0.00	0.102	2.96	0.80	1.00	0.0	58.57	173.10	0.00	12063	0	3633	4058	7691
														72,124	0			63,280

0.9D + 1.0W 90° Gust Response Factor (Gh): 0.85
115.99 mph wind with no ice Wind Importance Factor (Iw): 1.00

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
11	230	43.82	0.000	45.353	0.00	0.179	2.67	0.85	1.00	0.0	22.58	60.21	0.00	3547	0	2242	369	2611
10	210	42.98	0.000	45.187	0.00	0.153	2.76	0.85	1.00	0.0	21.88	60.41	0.00	3702	0	2207	478	2686
9	190	42.09	0.000	46.842	0.00	0.137	2.82	0.85	1.00	0.0	22.55	63.63	0.00	4029	0	2277	933	3210
8	170	41.11	0.000	50.084	0.00	0.128	2.86	0.85	1.00	0.0	24.29	69.39	0.00	5015	0	2425	2092	4517
7	150	40.04	0.000	57.359	0.00	0.130	2.85	0.85	1.00	0.0	28.04	79.87	0.00	6268	0	2718	3827	6546
6	130	38.86	0.000	57.395	0.00	0.116	2.90	0.85	1.00	0.0	28.35	82.18	0.00	6517	0	2714	4109	6823
5	110	37.51	0.000	63.059	0.00	0.116	2.90	0.85	1.00	0.0	30.75	89.19	0.00	6433	0	2844	4026	6870
4	90	35.96	0.000	57.777	0.00	0.097	2.98	0.85	1.00	0.0	28.05	83.46	0.00	6361	0	2551	3911	6462
3	70	34.11	0.000	66.406	0.00	0.102	2.96	0.85	1.00	0.0	31.82	94.04	0.00	7106	0	2726	3715	6441
2	45	31.08	0.000	113.831	0.00	0.107	2.94	0.85	1.00	0.0	55.68	163.56	0.00	11083	0	4321	5102	9423
1	15	24.69	0.000	120.618	0.00	0.102	2.96	0.85	1.00	0.0	58.57	173.10	0.00	12063	0	3633	4058	7691
														72,124	0			63,280

1.2D + 1.0Di + 1.0Wi Normal Gust Response Factor (Gh): 0.85 Ice Importance Factor: 1.00
48.73 mph wind with 0.850" radial ice Wind Importance Factor (Iw): 1.00 Ice Dead Load Factor: 1.00

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
11	230	7.73	0.000	67.581	22.23	0.264	2.40	1.00	1.00	1.0	40.41	96.87	22.23	7144	2414	637	180	816
10	210	7.59	0.000	65.068	19.88	0.218	2.54	1.00	1.00	1.0	38.08	96.64	19.88	7314	2379	623	246	869
9	190	7.43	0.000	67.820	20.98	0.196	2.61	1.00	1.00	1.0	39.39	102.82	20.98	8235	2862	649	469	1118
8	170	7.26	0.000	72.228	22.14	0.182	2.66	1.00	1.00	1.0	41.81	111.06	22.14	10823	4136	685	1014	1699
7	150	7.07	0.000	77.759	25.61	0.174	2.68	1.00	1.00	1.0	47.91	128.60	25.61	14678	6321	773	1690	2463
6	130	6.86	0.000	81.778	24.38	0.165	2.72	1.00	1.00	1.0	47.16	128.17	24.38	14951	6262	747	1823	2571

SECTION FORCES

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
5	110	6.62	0.000	78.482	20.03	0.144	2.79	1.00	1.00	1.0	47.39	132.45	20.03	15337	6759	745	1813	2559
4	90	6.35	0.000	76.261	18.48	0.128	2.86	1.00	1.00	0.9	43.50	124.22	18.48	14502	6021	670	1772	2443
3	70	6.02	0.000	85.071	18.66	0.130	2.85	1.00	1.00	0.9	48.53	138.07	18.66	15567	6092	707	1660	2366
2	45	5.49	0.000	137.693	23.86	0.128	2.85	1.00	1.00	0.9	78.28	223.32	23.86	24177	9400	1041	2249	3290
1	15	4.36	0.000	136.326	24.35	0.115	2.90	1.00	1.00	0.8	82.37	239.22	24.35	24967	8883	886	1719	2605
														157,694	61,528			22,799

1.2D + 1.0Di + 1.0Wi 60° — Gust Response Factor (Gh): 0.85 — Ice Importance Factor: 1.00
48.73 mph wind with 0.850" radial ice — Wind Importance Factor (Iw): 1.00 — Ice Dead Load Factor: 1.00

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
11	230	7.73	0.000	67.581	22.23	0.264	2.40	0.80	1.00	1.0	40.41	96.87	22.23	7144	2414	637	180	816
10	210	7.59	0.000	65.068	19.88	0.218	2.54	0.80	1.00	1.0	38.08	96.64	19.88	7314	2379	623	246	869
9	190	7.43	0.000	67.820	20.98	0.196	2.61	0.80	1.00	1.0	39.39	102.82	20.98	8235	2862	649	469	1118
8	170	7.26	0.000	72.228	22.14	0.182	2.66	0.80	1.00	1.0	41.81	111.06	22.14	10823	4136	685	1014	1699
7	150	7.07	0.000	77.759	25.61	0.174	2.68	0.80	1.00	1.0	47.91	128.60	25.61	14678	6321	773	1690	2463
6	130	6.86	0.000	81.778	24.38	0.165	2.72	0.80	1.00	1.0	47.16	128.17	24.38	14951	6262	747	1823	2571
5	110	6.62	0.000	78.482	20.03	0.144	2.79	0.80	1.00	1.0	47.39	132.45	20.03	15337	6759	745	1813	2559
4	90	6.35	0.000	76.261	18.48	0.128	2.86	0.80	1.00	0.9	43.50	124.22	18.48	14502	6021	670	1772	2443
3	70	6.02	0.000	85.071	18.66	0.130	2.85	0.80	1.00	0.9	48.53	138.07	18.66	15567	6092	707	1660	2366
2	45	5.49	0.000	137.693	23.86	0.128	2.85	0.80	1.00	0.9	78.28	223.32	23.86	24177	9400	1041	2249	3290
1	15	4.36	0.000	136.326	24.35	0.115	2.90	0.80	1.00	0.8	82.37	239.22	24.35	24967	8883	886	1719	2605
														157,694	61,528			22,799

1.2D + 1.0Di + 1.0Wi 90° — Gust Response Factor (Gh): 0.85 — Ice Importance Factor: 1.00
48.73 mph wind with 0.850" radial ice — Wind Importance Factor (Iw): 1.00 — Ice Dead Load Factor: 1.00

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
11	230	7.73	0.000	67.581	22.23	0.264	2.40	0.85	1.00	1.0	40.41	96.87	22.23	7144	2414	637	180	816
10	210	7.59	0.000	65.068	19.88	0.218	2.54	0.85	1.00	1.0	38.08	96.64	19.88	7314	2379	623	246	869
9	190	7.43	0.000	67.820	20.98	0.196	2.61	0.85	1.00	1.0	39.39	102.82	20.98	8235	2862	649	469	1118
8	170	7.26	0.000	72.228	22.14	0.182	2.66	0.85	1.00	1.0	41.81	111.06	22.14	10823	4136	685	1014	1699
7	150	7.07	0.000	77.759	25.61	0.174	2.68	0.85	1.00	1.0	47.91	128.60	25.61	14678	6321	773	1690	2463
6	130	6.86	0.000	81.778	24.38	0.165	2.72	0.85	1.00	1.0	47.16	128.17	24.38	14951	6262	747	1823	2571
5	110	6.62	0.000	78.482	20.03	0.144	2.79	0.85	1.00	1.0	47.39	132.45	20.03	15337	6759	745	1813	2559
4	90	6.35	0.000	76.261	18.48	0.128	2.86	0.85	1.00	0.9	43.50	124.22	18.48	14502	6021	670	1772	2443
3	70	6.02	0.000	85.071	18.66	0.130	2.85	0.85	1.00	0.9	48.53	138.07	18.66	15567	6092	707	1660	2366
2	45	5.49	0.000	137.693	23.86	0.128	2.85	0.85	1.00	0.9	78.28	223.32	23.86	24177	9400	1041	2249	3290
1	15	4.36	0.000	136.326	24.35	0.115	2.90	0.85	1.00	0.8	82.37	239.22	24.35	24967	8883	886	1719	2605
														157,694	61,528			22,799

1.0D + 1.0W Service Normal — Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
11	230	11.72	0.000	45.353	0.00	0.179	2.67	1.00	1.00	0.0	25.16	67.10	0.00	3941	0	669	99	767
10	210	11.50	0.000	45.187	0.00	0.153	2.76	1.00	1.00	0.0	24.73	68.26	0.00	4113	0	667	128	795
9	190	11.26	0.000	46.842	0.00	0.137	2.82	1.00	1.00	0.0	25.60	72.23	0.00	4477	0	691	250	941
8	170	11.00	0.000	50.084	0.00	0.128	2.86	1.00	1.00	0.0	27.49	78.52	0.00	5572	0	734	560	1294
7	150	10.72	0.000	57.359	0.00	0.130	2.85	1.00	1.00	0.0	31.63	90.10	0.00	6964	0	821	1024	1845
6	130	10.40	0.000	57.395	0.00	0.116	2.90	1.00	1.00	0.0	31.83	92.28	0.00	7241	0	815	1100	1915
5	110	10.04	0.000	63.059	0.00	0.116	2.90	1.00	1.00	0.0	34.72	100.70	0.00	7148	0	859	1077	1937
4	90	9.62	0.000	57.777	0.00	0.097	2.98	1.00	1.00	0.0	31.99	95.18	0.00	7067	0	779	1047	1825
3	70	9.13	0.000	66.406	0.00	0.102	2.96	1.00	1.00	0.0	35.30	104.31	0.00	7896	0	809	994	1803
2	45	8.32	0.000	113.831	0.00	0.107	2.94	1.00	1.00	0.0	62.23	182.80	0.00	12314	0	1292	1365	2657
1	15	6.61	0.000	120.618	0.00	0.102	2.96	1.00	1.00	0.0	65.85	194.62	0.00	13403	0	1093	1086	2179

SECTION FORCES

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
														80,138	0			17,959

1.0D + 1.0W Service 60° Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
11	230	11.72	0.000	45.353	0.00	0.179	2.67	0.80	1.00	0.0	25.16	67.10	0.00	3941	0	669	99	767
10	210	11.50	0.000	45.187	0.00	0.153	2.76	0.80	1.00	0.0	24.73	68.26	0.00	4113	0	667	128	795
9	190	11.26	0.000	46.842	0.00	0.137	2.82	0.80	1.00	0.0	25.60	72.23	0.00	4477	0	691	250	941
8	170	11.00	0.000	50.084	0.00	0.128	2.86	0.80	1.00	0.0	27.49	78.52	0.00	5572	0	734	560	1294
7	150	10.72	0.000	57.359	0.00	0.130	2.85	0.80	1.00	0.0	31.63	90.10	0.00	6964	0	821	1024	1845
6	130	10.40	0.000	57.395	0.00	0.116	2.90	0.80	1.00	0.0	31.83	92.28	0.00	7241	0	815	1100	1915
5	110	10.04	0.000	63.059	0.00	0.116	2.90	0.80	1.00	0.0	34.72	100.70	0.00	7148	0	859	1077	1937
4	90	9.62	0.000	57.777	0.00	0.097	2.98	0.80	1.00	0.0	31.99	95.18	0.00	7067	0	779	1047	1825
3	70	9.13	0.000	66.406	0.00	0.102	2.96	0.80	1.00	0.0	35.30	104.31	0.00	7896	0	809	994	1803
2	45	8.32	0.000	113.831	0.00	0.107	2.94	0.80	1.00	0.0	62.23	182.80	0.00	12314	0	1292	1365	2657
1	15	6.61	0.000	120.618	0.00	0.102	2.96	0.80	1.00	0.0	65.85	194.62	0.00	13403	0	1093	1086	2179
														80,138	0			17,959

1.0D + 1.0W Service 90° Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Sect #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt. (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
11	230	11.72	0.000	45.353	0.00	0.179	2.67	0.85	1.00	0.0	25.16	67.10	0.00	3941	0	669	99	767
10	210	11.50	0.000	45.187	0.00	0.153	2.76	0.85	1.00	0.0	24.73	68.26	0.00	4113	0	667	128	795
9	190	11.26	0.000	46.842	0.00	0.137	2.82	0.85	1.00	0.0	25.60	72.23	0.00	4477	0	691	250	941
8	170	11.00	0.000	50.084	0.00	0.128	2.86	0.85	1.00	0.0	27.49	78.52	0.00	5572	0	734	560	1294
7	150	10.72	0.000	57.359	0.00	0.130	2.85	0.85	1.00	0.0	31.63	90.10	0.00	6964	0	821	1024	1845
6	130	10.40	0.000	57.395	0.00	0.116	2.90	0.85	1.00	0.0	31.83	92.28	0.00	7241	0	815	1100	1915
5	110	10.04	0.000	63.059	0.00	0.116	2.90	0.85	1.00	0.0	34.72	100.70	0.00	7148	0	859	1077	1937
4	90	9.62	0.000	57.777	0.00	0.097	2.98	0.85	1.00	0.0	31.99	95.18	0.00	7067	0	779	1047	1825
3	70	9.13	0.000	66.406	0.00	0.102	2.96	0.85	1.00	0.0	35.30	104.31	0.00	7896	0	809	994	1803
2	45	8.32	0.000	113.831	0.00	0.107	2.94	0.85	1.00	0.0	62.23	182.80	0.00	12314	0	1292	1365	2657
1	15	6.61	0.000	120.618	0.00	0.102	2.96	0.85	1.00	0.0	65.85	194.62	0.00	13403	0	1093	1086	2179
														80,138	0			17,959

EQUIVALENT LATERAL FORCE METHOD

Spectral Response Acceleration for Short Period (S_S):	0.21
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.05
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v:	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.22
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.09
Seismic Response Coefficient (C_s):	0.04
Upper Limit C_S:	0.04
Lower Limit C_S:	0.03
Period based on Rayleigh Method (sec):	0.72
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.11
Total Unfactored Dead Load:	96.25 k
Seismic Base Shear (E):	5.00 k

SEISMIC

Load Case: 0.9D - 1.0Ev + 1.0Eh

Seismic

Section	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	Cvx	Horizontal Force (lb)	Vertical Force (lb)
11	230.00	3,941	1,651,911	0.087	433	3,370
10	210.00	4,113	1,558,128	0.082	409	3,516
9	190.00	4,477	1,517,654	0.080	398	3,828
8	170.00	5,572	1,669,567	0.088	438	4,764
7	150.00	6,964	1,815,914	0.095	476	5,954
6	130.00	7,241	1,610,731	0.084	423	6,191
5	110.00	7,148	1,320,849	0.069	346	6,112
4	90.00	7,067	1,045,069	0.055	274	6,043
3	70.00	7,896	883,250	0.046	232	6,751
2	45.00	12,314	843,438	0.044	221	10,529
1	15.00	13,403	271,070	0.014	71	11,460
Generic 8' Yagi	240.00	30	13,182	0.001	3	26
Generic 10' Omni	240.00	25	10,985	0.001	3	21
Lightning Rod	240.00	10	4,394	0.000	1	9
Dielectric DCR-L1 w/ Radome	240.00	18	7,909	0.000	2	15
Beacon	240.00	70	30,758	0.002	8	60
Generic Round Side Arm	240.00	188	82,387	0.004	22	160
Round Sector Frame	240.00	300	131,819	0.007	35	256
Generic 8' Omni	234.00	50	21,361	0.001	6	43
Round Side Arm	230.00	150	62,867	0.003	16	128
Generic 12' Omni	229.00	40	16,684	0.001	4	34
Round Side Arm	223.00	150	60,746	0.003	16	128
Empty Flat Side Arm	223.00	150	60,746	0.003	16	128
Ericsson Radio 4449 B71 B85A	202.00	225	81,643	0.004	21	192
Ericsson RRUS 4415 B25	202.00	138	50,074	0.003	13	118
Ericsson Air6449 B41	202.00	312	113,212	0.006	30	267
Ericsson AIR 32 B66AA B2P	202.00	327	118,654	0.006	31	280
Round Sector Frame	202.00	900	326,572	0.017	86	769
RFS APXVAARR24_43-U-NA20	202.00	384	139,228	0.007	37	328
Side Arms	183.00	1,680	546,275	0.029	143	1,436
Flat Light Sector Frame	183.00	1,200	390,196	0.020	102	1,026
Nokia 2.5G MAA - AAHC(64T64R)	181.00	311	99,835	0.005	26	266

Motorola DAP Vx	180.00	80	25,380	0.001	7	68
Alcatel-Lucent 800 MHz RRH	180.00	159	50,761	0.003	13	136
Alcatel-Lucent 1900MHz RRH	180.00	264	84,282	0.004	22	226
Argus LLPX310R	180.00	86	27,392	0.001	7	73
Generic 24" x 24" Junction Box	180.00	20	6,385	0.000	2	17
Generic 2' Std. Dish	180.00	42	13,409	0.001	4	36
RFS APXVSPP18-C-A20	180.00	114	36,395	0.002	10	97
RFS APXV9ERR18-C-A20	180.00	62	19,794	0.001	5	53
Powerwave Allgon LGP21901	165.00	66	19,130	0.001	5	56
Powerwave Allgon 7020.00 Dual Band RET	165.00	13	3,826	0.000	1	11
CCI DTMABP7819VG12A	165.00	58	16,695	0.001	4	49
Commscope WCS-IMFQ-AMT	165.00	30	8,551	0.000	2	25
Powerwave Allgon LGP21401	165.00	127	36,782	0.002	10	108
Raycap DC6-48-60-18-8F (23.5" Height)	165.00	60	17,391	0.001	5	51
Ericsson RRUS 4426 B66	165.00	145	42,086	0.002	11	124
Ericsson RRUS 4478 B14	165.00	180	52,086	0.003	14	154
Ericsson RRUS 32 (50.8 lbs)	165.00	152	44,173	0.002	12	130
Ericsson RRUS 32 B2	165.00	159	46,086	0.002	12	136
Ericsson Radio 4449	165.00	255	73,912	0.004	19	218
Powerwave Allgon 7770.00	165.00	105	30,434	0.002	8	90
Andrew SBNHH-1D65A	165.00	123	35,565	0.002	9	105
Quintel QS66512-3 (112 lbs.)	165.00	336	97,389	0.005	26	287
Kathrein Scala 80010965	165.00	293	84,868	0.004	22	250
Round Sector Frame	165.00	900	260,865	0.014	68	769
Commscope CBC78T-DS-43-2X	155.00	62	16,793	0.001	4	53
Samsung Outdoor CBRS 20W RRH	155.00	56	15,089	0.001	4	48
Samsung Outdoor CBRS 20W RRH –Clip-on Antenna	155.00	13	3,569	0.000	1	11
Samsung B5/B13 RRH-BR04C	155.00	211	57,030	0.003	15	180
Samsung B2/B66A RRH-BR049	155.00	253	68,468	0.004	18	216
Raycap RxxDC-3315-PF-48	155.00	43	11,574	0.001	3	37
Samsung MT6407-77A	155.00	245	66,197	0.004	17	209
Amphenol Antel BXA-80063-6BF-EDIN-X	155.00	58	15,576	0.001	4	49
Generic Mount Reinforcement	155.00	200	54,082	0.003	14	171
Commscope JAHH-65B-R3B	155.00	364	98,321	0.005	26	311
Flat Light Sector Frame	155.00	1,200	324,493	0.017	85	1,026
Commscope RDIDC-9181-PF-48	145.00	22	5,499	0.000	1	19
Fujitsu TA08025-B605	145.00	225	56,500	0.003	15	192
Fujitsu TA08025-B604	145.00	192	48,138	0.002	13	164
JMA Wireless MX08FRO665-21	145.00	194	48,590	0.002	13	165
Generic Flat Light Sector Frame	145.00	1,200	301,333	0.016	79	1,026
Small Side Lights	140.00	135	32,604	0.002	9	115
Generic 4' Yagi	132.00	15	3,394	0.000	1	13
Flat Side Arm	132.00	150	33,936	0.002	9	128
Generic 10' Omni	123.00	25	5,229	0.000	1	21
Round Side Arm	118.00	150	29,964	0.002	8	128
Round Side Arm	108.00	150	27,158	0.001	7	128
Generic 4' Yagi	98.00	15	2,438	0.000	1	13
Flat Side Arm	98.00	150	24,380	0.001	6	128
Empty Round Side Arm	80.00	150	19,462	0.001	5	128
Round Side Arm	8.00	150	1,509	0.000	0	128
Totals		96,249	19,062,069	1.000	5,000	82,291

SEISMIC

Load Case: 1.2D + 1.0Ev + 1.0Eh Seismic

Section	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	Cvx	Horizontal Force (lb)	Vertical Force (lb)
11	230.00	3,941	1,651,911	0.087	433	4,907
10	210.00	4,113	1,558,128	0.082	409	5,120
9	190.00	4,477	1,517,654	0.080	398	5,574
8	170.00	5,572	1,669,567	0.088	438	6,938
7	150.00	6,964	1,815,914	0.095	476	8,671
6	130.00	7,241	1,610,731	0.084	423	9,016
5	110.00	7,148	1,320,849	0.069	346	8,900
4	90.00	7,067	1,045,069	0.055	274	8,799
3	70.00	7,896	883,250	0.046	232	9,830
2	45.00	12,314	843,438	0.044	221	15,332
1	15.00	13,403	271,070	0.014	71	16,687
Generic 8' Yagi	240.00	30	13,182	0.001	3	37
Generic 10' Omni	240.00	25	10,985	0.001	3	31

Lightning Rod	240.00	10	4,394	0.000	1	12
Dielectric DCR-L1 w/ Radome	240.00	18	7,909	0.000	2	22
Beacon	240.00	70	30,758	0.002	8	87
Generic Round Side Arm	240.00	188	82,387	0.004	22	233
Round Sector Frame	240.00	300	131,819	0.007	35	374
Generic 8' Omni	234.00	50	21,361	0.001	6	62
Round Side Arm	230.00	150	62,867	0.003	16	187
Generic 12' Omni	229.00	40	16,684	0.001	4	50
Round Side Arm	223.00	150	60,746	0.003	16	187
Empty Flat Side Arm	223.00	150	60,746	0.003	16	187
Ericsson Radio 4449 B71 B85A	202.00	225	81,643	0.004	21	280
Ericsson RRUS 4415 B25	202.00	138	50,074	0.003	13	172
Ericsson Air6449 B41	202.00	312	113,212	0.006	30	388
Ericsson AIR 32 B66AA B2P	202.00	327	118,654	0.006	31	407
Round Sector Frame	202.00	900	326,572	0.017	86	1,121
RFS APXVAARR24_43-U-NA20	202.00	384	139,228	0.007	37	478
Side Arms	183.00	1,680	546,275	0.029	143	2,092
Flat Light Sector Frame	183.00	1,200	390,196	0.020	102	1,494
Nokia 2.5G MAA - AAHC(64T64R)	181.00	311	99,835	0.005	26	387
Motorola DAP Vx	180.00	80	25,380	0.001	7	99
Alcatel-Lucent 800 MHz RRH	180.00	159	50,761	0.003	13	198
Alcatel-Lucent 1900MHz RRH	180.00	264	84,282	0.004	22	329
Argus LLPX310R	180.00	86	27,392	0.001	7	107
Generic 24" x 24" Junction Box	180.00	20	6,385	0.000	2	25
Generic 2' Std. Dish	180.00	42	13,409	0.001	4	52
RFS APXVSPP18-C-A20	180.00	114	36,395	0.002	10	142
RFS APXV9ERR18-C-A20	180.00	62	19,794	0.001	5	77
Powerwave Allgon LGP21901	165.00	66	19,130	0.001	5	82
Powerwave Allgon 7020.00 Dual Band RET	165.00	13	3,826	0.000	1	16
CCI DTMABP7819VG12A	165.00	58	16,695	0.001	4	72
Commscope WCS-IMFQ-AMT	165.00	30	8,551	0.000	2	37
Powerwave Allgon LGP21401	165.00	127	36,782	0.002	10	158
Raycap DC6-48-60-18-8F (23.5" Height)	165.00	60	17,391	0.001	5	75
Ericsson RRUS 4426 B66	165.00	145	42,086	0.002	11	181
Ericsson RRUS 4478 B14	165.00	180	52,086	0.003	14	224
Ericsson RRUS 32 (50.8 lbs)	165.00	152	44,173	0.002	12	190
Ericsson RRUS 32 B2	165.00	159	46,086	0.002	12	198
Ericsson Radio 4449	165.00	255	73,912	0.004	19	317
Powerwave Allgon 7770.00	165.00	105	30,434	0.002	8	131
Andrew SBNHH-1D65A	165.00	123	35,565	0.002	9	153
Quintel QS66512-3 (112 lbs.)	165.00	336	97,389	0.005	26	418
Kathrein Scala 80010965	165.00	293	84,868	0.004	22	365
Round Sector Frame	165.00	900	260,865	0.014	68	1,121
Commscope CBC78T-DS-43-2X	155.00	62	16,793	0.001	4	77
Samsung Outdoor CBRS 20W RRH	155.00	56	15,089	0.001	4	69
Samsung Outdoor CBRS 20W RRH –Clip-on Antenna	155.00	13	3,569	0.000	1	16
Samsung B5/B13 RRH-BR04C	155.00	211	57,030	0.003	15	263
Samsung B2/B66A RRH-BR049	155.00	253	68,468	0.004	18	315
Raycap RxxDC-3315-PF-48	155.00	43	11,574	0.001	3	53
Samsung MT6407-77A	155.00	245	66,197	0.004	17	305
Amphenol Antel BXA-80063-6BF-EDIN-X	155.00	58	15,576	0.001	4	72
Generic Mount Reinforcement	155.00	200	54,082	0.003	14	249
Commscope JAHH-65B-R3B	155.00	364	98,321	0.005	26	453
Flat Light Sector Frame	155.00	1,200	324,493	0.017	85	1,494
Commscope RDIDC-9181-PF-48	145.00	22	5,499	0.000	1	27
Fujitsu TA08025-B605	145.00	225	56,500	0.003	15	280
Fujitsu TA08025-B604	145.00	192	48,138	0.002	13	239
JMA Wireless MX08FRO665-21	145.00	194	48,590	0.002	13	241
Generic Flat Light Sector Frame	145.00	1,200	301,333	0.016	79	1,494
Small Side Lights	140.00	135	32,604	0.002	9	168
Generic 4' Yagi	132.00	15	3,394	0.000	1	19
Flat Side Arm	132.00	150	33,936	0.002	9	187
Generic 10' Omni	123.00	25	5,229	0.000	1	31
Round Side Arm	118.00	150	29,964	0.002	8	187
Round Side Arm	108.00	150	27,158	0.001	7	187
Generic 4' Yagi	98.00	15	2,438	0.000	1	19
Flat Side Arm	98.00	150	24,380	0.001	6	187
Empty Round Side Arm	80.00	150	19,462	0.001	5	187
Round Side Arm	8.00	150	1,509	0.000	0	187
Totals		96,249	19,062,069	1.000	5,000	119,831

FORCE/STRESS SUMMARY

Section 1 – Bolt Elevation 0.0 (ft) and Height 30.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 10" DIA PIPE	-293.27	1.2D + 1.0W N	30.078	33	33	33	32.81	50.0	669.65	0.00	0.00	0	0	43	Member X
H PST - 3-1/2" DIA PIPE	-15.86	1.2D + 1.0W 90°	18.292	100	100	100	163.80	50.0	22.56	0.00	42.31	2	0	70	Member X
D PST - 3" DIA PIPE	-31.82	1.2D + 1.0W 90°	36.164	33	33	33	0.00	0.0	41.40	0.00	60.65	3	0	76	User Input

Max Tension Member	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 10" DIA PIPE	231.94	0.9D + 1.0W 60°	50.0	65	724.50	0.00	0.00		0	0	32	Member
H PST - 3-1/2" DIA PIPE	16.72	1.2D + 1.0W 90°	50.0	65	120.60	0.00	33.93	0.00	2	0	49	Bolt Bear
D PST - 3" DIA PIPE	29.67	1.2D + 1.0W 90°	50.0	65	100.35	0.00	52.65	0.00	3	0	56	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Top Tension	230.24	0.9D + 1.0W 60°	0.00	0	0	
Bot Tension	276.52	0.9D + 1.0W 60°	681.46	17	12	1" A193-B7
Bot Compression	341.06	1.2D + 1.0W N	763.24	49	0	

Section 2 – Bolt Elevation 30.0 (ft) and Height 30.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 10" DIA PIPE	-239.52	1.2D + 1.0W N	30.078	33	33	33	32.81	50.0	669.65	0.00	0.00	0	0	35	Member X
H PST - 3" DIA PIPE	-15.44	0.9D + 1.0W 90°	16.417	100	100	100	169.83	50.0	17.47	0.00	40.44	2	0	88	Member X
D PST - 3" DIA PIPE	-34.81	1.2D + 1.0W 90°	35.153	33	33	33	120.01	50.0	34.98	0.00	60.65	3	0	99	Member X

Max Tension Member	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 10" DIA PIPE	185.69	0.9D + 1.0W 60°	50.0	65	724.50	0.00	0.00		0	0	25	Member
H PST - 3" DIA PIPE	16.26	1.2D + 1.0W 90°	50.0	65	100.35	0.00	32.43	0.00	2	0	50	Bolt Bear
D PST - 3" DIA PIPE	32.29	0.9D + 1.0W 90°	50.0	65	100.35	0.00	52.65	0.00	3	0	61	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Top Tension	184.09	0.9D + 1.0W 60°	0.00	0	0	
Bot Tension	230.24	0.9D + 1.0W 60°	654.20	35	12	1 A325

Section 3 – Bolt Elevation 60.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 10" DIA PIPE	-202.90	1.2D + 1.0W N	20.052	50	50	50	33.14	50.0	668.58	0.00	0.00	0	0	30	Member X
H PST - 3" DIA PIPE	-13.99	0.9D + 1.0W 90°	15.167	100	100	100	156.89	50.0	20.47	0.00	40.44	2	0	68	Member X
D PST - 3" DIA PIPE	-25.30	1.2D + 1.0W 90°	25.885	50	50	50	133.89	50.0	28.10	0.00	50.54	3	0	90	Member X

Max Tension Member	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 10" DIA PIPE	156.18	0.9D + 1.0W 60°	50.0	65	724.50	0.00	0.00		0	0	21	Member
H PST - 3" DIA PIPE	14.76	1.2D + 1.0W 90°	50.0	65	100.35	0.00	32.43	0.00	2	0	45	Bolt Bear
D PST - 3" DIA PIPE	23.26	1.2D + 1.0W 90°	50.0	65	100.35	0.00	43.80	0.00	3	0	53	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Top Tension	154.70	0.9D + 1.0W 60°	0.00	0	0	
Bot Tension	184.09	0.9D + 1.0W 60°	654.20	28	12	1 A325

FORCE/STRESS SUMMARY

Section 4 – Bolt Elevation 80.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Φc Pn (kip)	Shear ΦRnv (kip)	Bear ΦRn (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	-167.62	1.2D + 1.0W N	20.059	50	50	50	41.79	50.0	506.95	0.00	0.00	0	0	33	Member X
H PST - 3" DIA PIPE	-12.83	0.9D + 1.0W 90°	13.839	100	100	100	143.16	50.0	24.58	0.00	40.44	2	0	52	Member X
D PST - 3" DIA PIPE	-24.21	1.2D + 1.0W 90°	25.112	50	50	50	129.89	50.0	29.86	0.00	50.54	3	0	81	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	ΦcPn (kip)	Shear ΦRnv (kip)	Bear ΦRn (kip)	Blk Shear Φt Pn (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	126.27	0.9D + 1.0W 60°	50.0	65	576.00	0.00	0.00		0	0	21	Member
H PST - 3" DIA PIPE	13.26	1.2D + 1.0W 90°	50.0	65	100.35	0.00	32.43	0.00	2	0	40	Bolt Bear
D PST - 3" DIA PIPE	22.45	1.2D + 1.0W 90°	50.0	65	100.35	0.00	43.80	0.00	3	0	51	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	124.86	0.9D + 1.0W 60°	0.00	0	0	
Bot Tension	154.70	0.9D + 1.0W 60°	654.20	24	12	1 A325

Section 5 – Bolt Elevation 100.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Φc Pn (kip)	Shear ΦRnv (kip)	Bear ΦRn (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	-131.62	1.2D + 1.0W N	20.052	50	50	50	41.78	50.0	507.00	0.00	0.00	0	0	25	Member X
H PST - 2-1/2" DIA PIPE	-11.69	0.9D + 1.0W 90°	12.589	100	100	100	159.52	50.0	15.13	0.00	38.00	2	0	77	Member X
D PST - 2-1/2" DIA PIPE	-23.97	1.2D + 1.0W 90°	24.332	50	50	50	0.00	0.0	28.20	0.00	47.50	3	0	84	User Input

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	ΦcPn (kip)	Shear ΦRnv (kip)	Bear ΦRn (kip)	Blk Shear Φt Pn (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	95.52	0.9D + 1.0W 60°	50.0	65	576.00	0.00	0.00		0	0	16	Member
H PST - 2-1/2" DIA PIPE	12.38	1.2D + 1.0W 90°	50.0	65	76.68	0.00	30.48	0.00	2	0	40	Bolt Bear
D PST - 2-1/2" DIA PIPE	22.24	1.2D + 1.0W 90°	50.0	65	76.68	0.00	41.17	0.00	3	0	54	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	94.30	0.9D + 1.0W 60°	0.00	0	0	
Bot Tension	124.86	0.9D + 1.0W 60°	436.14	29	8	1 A325

Section 6 – Bolt Elevation 120.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Φc Pn (kip)	Shear ΦRnv (kip)	Bear ΦRn (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	-113.48	1.2D + 1.0W N	10.026	100	100	100	41.78	50.0	507.00	0.00	0.00	0	0	22	Member X
H PST - 2-1/2" DIA PIPE	-10.59	1.2D + 1.0W 90°	11.964	100	100	100	151.60	50.0	16.75	0.00	31.67	2	0	63	Member X
D PST - 3" DIA PIPE	-15.31	1.2D + 1.0W 90°	16.081	100	100	100	166.36	50.0	18.20	0.00	50.54	3	0	84	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	ΦcPn (kip)	Shear ΦRnv (kip)	Bear ΦRn (kip)	Blk Shear Φt Pn (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	81.29	0.9D + 1.0W 60°	50.0	65	576.00	0.00	0.00		0	0	14	Member
H PST - 2-1/2" DIA PIPE	11.33	1.2D + 1.0W 90°	50.0	65	76.68	0.00	25.33	0.00	2	0	44	Bolt Bear
D PST - 3" DIA PIPE	14.15	1.2D + 1.0W 90°	50.0	65	100.35	0.00	43.80	0.00	3	0	32	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	65.88	0.9D + 1.0W 60°	0.00	0	0	
Bot Tension	94.30	0.9D + 1.0W 60°	436.14	22	8	1 A325

FORCE/STRESS SUMMARY

Section 7 – Bolt Elevation 140.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	-79.84	1.2D + 1.0W N	10.026	100	100	100	41.78	50.0	507.00	0.00	0.00	0	0	15	Member X
H PST - 2-1/2" DIA PIPE	-8.60	0.9D + 1.0W 90°	10.714	100	100	100	135.76	50.0	20.89	0.00	31.67	2	0	41	Member X
D PST - 2-1/2" DIA PIPE	-13.05	1.2D + 1.0W 90°	15.123	100	100	100	0.00	0.0	23.40	0.00	47.50	3	0	55	User Input

Max Tension Member	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	54.19	0.9D + 1.0W 60°	50.0	65	576.00	0.00	0.00		0	0	9	Member
H PST - 2-1/2" DIA PIPE	9.16	1.2D + 1.0W 90°	50.0	65	76.68	0.00	25.33	0.00	2	0	36	Bolt Bear
D PST - 2-1/2" DIA PIPE	12.01	1.2D + 1.0W 90°	50.0	65	76.68	0.00	41.17	0.00	3	0	29	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Top Tension	40.33	0.9D + 1.0W 60°	0.00	0	0	
Bot Tension	65.88	0.9D + 1.0W 60°	436.14	15	8	1 A325

Section 8 – Bolt Elevation 160.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	-50.48	1.2D + 1.0W N	10.026	100	100	100	41.78	50.0	507.00	0.00	0.00	0	0	9	Member X
H PST - 2-1/2" DIA PIPE	-5.38	1.2D + 1.0W 90°	9.464	100	100	100	119.92	50.0	26.77	0.00	31.67	2	0	20	Member X
D PST - 2-1/2" DIA PIPE	-8.81	1.2D + 1.0W 90°	14.209	100	100	100	180.06	50.0	11.87	0.00	47.50	3	0	74	Member X

Max Tension Member	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	31.10	1.2D + 1.0W 60°	50.0	65	576.00	0.00	0.00		0	0	5	Member
H PST - 2-1/2" DIA PIPE	5.81	1.2D + 1.0W 90°	50.0	65	76.68	0.00	25.33	0.00	2	0	22	Bolt Bear
D PST - 2-1/2" DIA PIPE	8.02	1.2D + 1.0W 90°	50.0	65	76.68	0.00	41.17	0.00	3	0	19	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Top Tension	23.92	0.9D + 1.0W 60°	0.00	0	0	
Bot Tension	40.33	0.9D + 1.0W 60°	436.14	9	8	1 A325

Section 9 – Bolt Elevation 180.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	-29.39	1.2D + 1.0W N	10.026	100	100	100	41.78	50.0	507.00	0.00	0.00	0	0	5	Member X
H PST - 2" DIA PIPE	-3.41	0.9D + 1.0W 90°	8.214	100	100	100	125.24	50.0	15.41	0.00	24.02	2	0	22	Member X
D PST - 2-1/2" DIA PIPE	-6.02	1.2D + 1.0W 90°	13.351	100	100	100	169.18	50.0	13.45	0.00	47.50	3	0	44	Member X

Max Tension Member	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	17.46	1.2D + 1.0W 60°	50.0	65	576.00	0.00	0.00		0	0	3	Member
H PST - 2" DIA PIPE	3.67	1.2D + 1.0W 90°	50.0	65	48.15	0.00	19.22	0.00	2	0	19	Bolt Bear
D PST - 2-1/2" DIA PIPE	5.43	1.2D + 1.0W 90°	50.0	65	76.68	0.00	41.17	0.00	3	0	13	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Top Tension	12.11	0.9D + 1.0W 60°	0.00	0	0	
Bot Tension	23.92	0.9D + 1.0W 60°	436.14	5	8	1 A325

FORCE/STRESS SUMMARY

Section 10 – Bolt Elevation 200.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	-14.32	1.2D + 1.0W N	10.021	100	100	100	41.75	50.0	507.06	0.00	0.00	0	0	2	Member X
H PST - 2" DIA PIPE	-1.93	1.2D + 1.0W 90°	7.026	100	100	100	107.13	50.0	20.80	0.00	24.02	2	0	9	Member X
D PST - 2-1/2" DIA PIPE	-4.00	1.2D + 1.0W 90°	12.558	100	100	100	159.12	50.0	15.20	0.00	47.50	3	0	26	Member X

Max Tension Member	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	7.73	1.2D + 1.0W 60°	50.0	65	576.00	0.00	0.00		0	0	1	Member
H PST - 2" DIA PIPE	2.15	1.2D + 1.0W 90°	50.0	65	48.15	0.00	19.22	0.00	2	0	11	Bolt Bear
D PST - 2-1/2" DIA PIPE	3.49	1.2D + 1.0W 90°	50.0	65	76.68	0.00	41.17	0.00	3	0	8	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Top Tension	4.29	0.9D + 1.0W 60°	0.00	0	0	
Bot Tension	12.11	0.9D + 1.0W 60°	436.14	3	8	1 A325

Section 11 – Bolt Elevation 220.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	-5.44	1.2D + 1.0W N	6.678	100	100	100	27.82	50.0	544.30	0.00	0.00	0	0	0	Member X
H PST - 2" DIA PIPE	-1.06	1.2D + 1.0W N	6.13	100	100	100	93.47	50.0	25.42	0.00	24.02	2	0	4	Member X
D PST - 2" DIA PIPE	-2.22	1.2D + 1.0W 90°	9.288	100	100	100	141.61	50.0	12.05	0.00	36.04	3	0	18	Member X

Max Tension Member	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L PX - 8" DIA PIPE	0.22	1.2D + 1.0W N	50.0	65	576.00	0.00	0.00		0	0	0	Member
H PST - 2" DIA PIPE	1.37	1.2D + 1.0W 90°	50.0	65	48.15	0.00	19.22	0.00	2	0	7	Bolt Bear
D PST - 2" DIA PIPE	1.89	0.9D + 1.0W 90°	50.0	65	48.15	0.00	31.23	0.00	3	0	6	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Bot Tension	4.29	0.9D + 1.0W 60°	436.14	1	8	1 A325

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	*(-) Uplift and (+) Down *Fx (kip)	*Fy (kip)	*Fz (kip)
1.2D + 1.0W Normal	23.29	0.00	0	1	0.00	340.32	-49.33
	23.29	0.00	120	1a	13.04	-112.41	-16.45
	23.29	0.00	240	1b	-13.04	-112.41	-16.45
1.2D + 1.0W 60°	23.29	0.00	0	1	-7.44	189.42	-26.56
	23.29	0.00	120	1a	-26.72	189.41	6.83
	23.29	0.00	240	1b	-37.09	-263.34	-21.42
1.2D + 1.0W 90°	23.29	0.00	0	1	-8.76	38.50	-3.60
	23.29	0.00	120	1a	-39.58	299.89	17.96
	23.29	0.00	240	1b	-33.94	-222.90	-14.37
0.9D + 1.0W Normal	23.29	0.00	0	1	0.00	330.50	-48.45
	23.29	0.00	120	1a	13.82	-121.94	-16.92
	23.29	0.00	240	1b	-13.82	-121.94	-16.92
0.9D + 1.0W 60°	23.29	0.00	0	1	-7.45	179.69	-25.66
	23.29	0.00	120	1a	-25.95	179.68	6.37
	23.29	0.00	240	1b	-37.86	-272.74	-21.86
0.9D + 1.0W 90°	23.29	0.00	0	1	-8.77	28.87	-2.70
	23.29	0.00	120	1a	-38.80	290.08	17.51
	23.29	0.00	240	1b	-34.71	-232.33	-14.81
1.2D + 1.0Di + 1.0Wi Normal	23.29	0.00	0	1	0.00	160.95	-21.03
	23.29	0.00	120	1a	0.34	14.21	-3.16
	23.29	0.00	240	1b	-0.34	14.21	-3.16
1.2D + 1.0Di + 1.0Wi 60°	23.29	0.00	0	1	-2.54	112.04	-13.41
	23.29	0.00	120	1a	-12.88	112.04	4.51
	23.29	0.00	240	1b	-8.26	-34.70	-4.77
1.2D + 1.0Di + 1.0Wi 90°	23.29	0.00	0	1	-2.95	63.13	-5.78
	23.29	0.00	120	1a	-17.17	147.84	8.23
	23.29	0.00	240	1b	-7.23	-21.59	-2.45
1.2D + 1.0Ev + 1.0Eh Normal	23.29	0.00	0	1	0.00	61.24	-6.63
	23.29	0.00	120	1a	-2.16	26.48	0.84
	23.29	0.00	240	1b	2.16	26.48	0.84
1.2D + 1.0Ev + 1.0Eh 60°	23.29	0.00	0	1	-0.35	49.65	-5.18
	23.29	0.00	120	1a	-4.66	49.65	2.29
	23.29	0.00	240	1b	0.73	14.90	0.42
1.2D + 1.0Ev + 1.0Eh 90°	23.29	0.00	0	1	-0.41	38.07	-3.74
	23.29	0.00	120	1a	-5.51	58.14	2.94
	23.29	0.00	240	1b	0.97	18.00	0.79
0.9D - 1.0Ev + 1.0Eh Normal	23.29	0.00	0	1	0.00	49.29	-5.46
	23.29	0.00	120	1a	-1.15	14.57	0.25
	23.29	0.00	240	1b	1.15	14.57	0.25
0.9D - 1.0Ev + 1.0Eh 60°	23.29	0.00	0	1	-0.35	37.72	-4.01
	23.29	0.00	120	1a	-3.65	37.72	1.70
	23.29	0.00	240	1b	-0.28	2.99	-0.16
0.9D - 1.0Ev + 1.0Eh 90°	23.29	0.00	0	1	-0.41	26.14	-2.57
	23.29	0.00	120	1a	-4.49	46.19	2.36
	23.29	0.00	240	1b	-0.05	6.10	0.21
1.0D + 1.0W Service Normal	23.29	0.00	0	1	0.00	116.36	-15.86
	23.29	0.00	120	1a	1.93	-10.05	-3.58
	23.29	0.00	240	1b	-1.93	-10.05	-3.58
1.0D + 1.0W Service 60°	23.29	0.00	0	1	-2.12	74.22	-9.43
	23.29	0.00	120	1a	-9.23	74.22	2.88
	23.29	0.00	240	1b	-8.59	-52.19	-4.96
1.0D + 1.0W Service 90°	23.29	0.00	0	1	-2.46	32.08	-2.99
	23.29	0.00	120	1a	-12.85	105.06	6.01
	23.29	0.00	240	1b	-7.71	-40.90	-3.02

Max Uplift:	272.74 (kip)	Moment Ice:	3417.08 (kip-ft)	Moment:	10542.94 (kip-ft)
Max Down:	340.32 (kip)	Total Down Ice:	189.38 (kip)	Total Down:	115.5 (kip)
Max Shear:	49.33 (kip)	Total Shear Ice:	27.35 (kip)	Total Shear:	82.29(kip)

1.2D + 1.0W Normal

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0W Normal 115.99 mph wind with no ice	80.00	0.1371	0.0074	0.1268	0.127
1.2D + 1.0W Normal 115.99 mph wind with no ice	100.00	0.1869	0.0096	0.1648	0.1651
1.2D + 1.0W Normal 115.99 mph wind with no ice	120.00	0.2497	0.0103	0.1773	0.1773
1.2D + 1.0W Normal 115.99 mph wind with no ice	130.00	0.28	0.0101	0.1731	0.1734
1.2D + 1.0W Normal 115.99 mph wind with no ice	140.00	0.3112	0.0106	0.1825	0.1826
1.2D + 1.0W Normal 115.99 mph wind with no ice	160.00	0.3773	0.0108	0.1860	0.1862
1.2D + 1.0W Normal 115.99 mph wind with no ice	180.00	0.4414	0.0107	0.1841	0.1844
1.2D + 1.0W Normal 115.99 mph wind with no ice	200.00	0.5056	0.0105	0.1823	0.1823
1.2D + 1.0W Normal 115.99 mph wind with no ice	220.00	0.5684	0.0102	0.1802	0.1802
1.2D + 1.0W Normal 115.99 mph wind with no ice	226.67	0.5893	0.0100	0.1792	0.1792
1.2D + 1.0W Normal 115.99 mph wind with no ice	233.33	0.61	0.0099	0.1764	0.1767
1.2D + 1.0W Normal 115.99 mph wind with no ice	240.00	0.6305	0.0098	0.1761	0.1764
1.2D + 1.0W 60° 115.99 mph wind with no ice	80.00	0.1372	-0.0083	0.1265	0.1266
1.2D + 1.0W 60° 115.99 mph wind with no ice	100.00	0.1869	-0.0110	0.1646	0.1649
1.2D + 1.0W 60° 115.99 mph wind with no ice	120.00	0.2499	-0.0122	0.1775	0.1775
1.2D + 1.0W 60° 115.99 mph wind with no ice	130.00	0.2801	-0.0121	0.1728	0.173
1.2D + 1.0W 60° 115.99 mph wind with no ice	140.00	0.3112	-0.0129	0.1829	0.183
1.2D + 1.0W 60° 115.99 mph wind with no ice	160.00	0.3773	-0.0136	0.1864	0.1864
1.2D + 1.0W 60° 115.99 mph wind with no ice	180.00	0.4415	-0.0139	0.1843	0.1843
1.2D + 1.0W 60° 115.99 mph wind with no ice	200.00	0.5056	-0.0142	0.1825	0.1825
1.2D + 1.0W 60° 115.99 mph wind with no ice	220.00	0.5684	-0.0143	0.1803	0.1803
1.2D + 1.0W 60° 115.99 mph wind with no ice	226.67	0.5893	-0.0143	0.1791	0.1792
1.2D + 1.0W 60° 115.99 mph wind with no ice	233.33	0.61	-0.0143	0.1767	0.1767
1.2D + 1.0W 60° 115.99 mph wind with no ice	240.00	0.6305	-0.0143	0.1751	0.1754
1.2D + 1.0W 90° 115.99 mph wind with no ice	80.00	0.1372	-0.0096	0.1266	0.127
1.2D + 1.0W 90° 115.99 mph wind with no ice	100.00	0.187	-0.0127	0.1649	0.1654
1.2D + 1.0W 90° 115.99 mph wind with no ice	120.00	0.2499	-0.0141	0.1773	0.1774
1.2D + 1.0W 90° 115.99 mph wind with no ice	130.00	0.2801	-0.0141	0.1729	0.1734
1.2D + 1.0W 90° 115.99 mph wind with no ice	140.00	0.3113	-0.0150	0.1827	0.1828
1.2D + 1.0W 90° 115.99 mph wind with no ice	160.00	0.3775	-0.0158	0.1862	0.1863
1.2D + 1.0W 90° 115.99 mph wind with no ice	180.00	0.4415	-0.0161	0.1841	0.1843
1.2D + 1.0W 90° 115.99 mph wind with no ice	200.00	0.5057	-0.0165	0.1822	0.1824
1.2D + 1.0W 90° 115.99 mph wind with no ice	220.00	0.5684	-0.0167	0.1800	0.1802
1.2D + 1.0W 90° 115.99 mph wind with no ice	226.67	0.5893	-0.0167	0.1788	0.179
1.2D + 1.0W 90° 115.99 mph wind with no ice	233.33	0.6099	-0.0167	0.1765	0.1768
1.2D + 1.0W 90° 115.99 mph wind with no ice	240.00	0.6305	-0.0167	0.1749	0.1755
0.9D + 1.0W Normal 115.99 mph wind with no ice	80.00	0.137	0.0074	0.1266	0.1268
0.9D + 1.0W Normal 115.99 mph wind with no ice	100.00	0.1868	0.0096	0.1646	0.1649
0.9D + 1.0W Normal 115.99 mph wind with no ice	120.00	0.2496	0.0103	0.1771	0.1771
0.9D + 1.0W Normal 115.99 mph wind with no ice	130.00	0.2798	0.0101	0.1729	0.1732
0.9D + 1.0W Normal 115.99 mph wind with no ice	140.00	0.3109	0.0106	0.1824	0.1824
0.9D + 1.0W Normal 115.99 mph wind with no ice	160.00	0.377	0.0108	0.1859	0.186
0.9D + 1.0W Normal 115.99 mph wind with no ice	180.00	0.4411	0.0107	0.1840	0.1841
0.9D + 1.0W Normal 115.99 mph wind with no ice	200.00	0.5052	0.0105	0.1821	0.1821
0.9D + 1.0W Normal 115.99 mph wind with no ice	220.00	0.5679	0.0102	0.1800	0.18
0.9D + 1.0W Normal 115.99 mph wind with no ice	226.67	0.5887	0.0100	0.1790	0.179
0.9D + 1.0W Normal 115.99 mph wind with no ice	233.33	0.6094	0.0099	0.1762	0.1765
0.9D + 1.0W Normal 115.99 mph wind with no ice	240.00	0.6299	0.0098	0.1759	0.1762
0.9D + 1.0W 60° 115.99 mph wind with no ice	80.00	0.1371	-0.0083	0.1263	0.1265
0.9D + 1.0W 60° 115.99 mph wind with no ice	100.00	0.1868	-0.0110	0.1644	0.1648
0.9D + 1.0W 60° 115.99 mph wind with no ice	120.00	0.2497	-0.0121	0.1773	0.1773
0.9D + 1.0W 60° 115.99 mph wind with no ice	130.00	0.2799	-0.0121	0.1726	0.1729
0.9D + 1.0W 60° 115.99 mph wind with no ice	140.00	0.311	-0.0129	0.1827	0.1827
0.9D + 1.0W 60° 115.99 mph wind with no ice	160.00	0.377	-0.0136	0.1862	0.1862
0.9D + 1.0W 60° 115.99 mph wind with no ice	180.00	0.4411	-0.0139	0.1841	0.1841
0.9D + 1.0W 60° 115.99 mph wind with no ice	200.00	0.5052	-0.0142	0.1823	0.1823
0.9D + 1.0W 60° 115.99 mph wind with no ice	220.00	0.5679	-0.0143	0.1801	0.1801
0.9D + 1.0W 60° 115.99 mph wind with no ice	226.67	0.5888	-0.0143	0.1790	0.179
0.9D + 1.0W 60° 115.99 mph wind with no ice	233.33	0.6094	-0.0143	0.1765	0.1765
0.9D + 1.0W 60° 115.99 mph wind with no ice	240.00	0.6299	-0.0143	0.1749	0.1753
0.9D + 1.0W 90° 115.99 mph wind with no ice	80.00	0.1371	-0.0096	0.1265	0.1269
0.9D + 1.0W 90° 115.99 mph wind with no ice	100.00	0.1869	-0.0127	0.1648	0.1652
0.9D + 1.0W 90° 115.99 mph wind with no ice	120.00	0.2497	-0.0141	0.1771	0.1772
0.9D + 1.0W 90° 115.99 mph wind with no ice	130.00	0.2799	-0.0141	0.1727	0.1733

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
0.9D + 1.0W 90° 115.99 mph wind with no ice	140.00	0.3111	-0.0150	0.1824	0.1826
0.9D + 1.0W 90° 115.99 mph wind with no ice	160.00	0.3772	-0.0157	0.1859	0.1861
0.9D + 1.0W 90° 115.99 mph wind with no ice	180.00	0.4411	-0.0161	0.1839	0.1841
0.9D + 1.0W 90° 115.99 mph wind with no ice	200.00	0.5052	-0.0165	0.1820	0.1822
0.9D + 1.0W 90° 115.99 mph wind with no ice	220.00	0.5679	-0.0166	0.1798	0.18
0.9D + 1.0W 90° 115.99 mph wind with no ice	226.67	0.5887	-0.0167	0.1786	0.1788
0.9D + 1.0W 90° 115.99 mph wind with no ice	233.33	0.6094	-0.0166	0.1763	0.1767
0.9D + 1.0W 90° 115.99 mph wind with no ice	240.00	0.6299	-0.0167	0.1746	0.1753
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	80.00	0.047	0.0023	0.0414	0.0414
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	100.00	0.0628	0.0030	0.0527	0.0528
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	120.00	0.0825	0.0031	0.0556	0.0557
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	130.00	0.0919	0.0030	0.0538	0.0539
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	140.00	0.1015	0.0031	0.0565	0.0566
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	160.00	0.1217	0.0032	0.0574	0.0574
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	180.00	0.1414	0.0031	0.0567	0.0568
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	200.00	0.161	0.0030	0.0562	0.0563
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	220.00	0.1803	0.0029	0.0557	0.0557
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	226.67	0.1867	0.0029	0.0555	0.0555
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	233.33	0.1931	0.0028	0.0548	0.0548
1.2D + 1.0Di + 1.0Wi Normal 48.73 mph wind with 0.850" radial ice	240.00	0.1994	0.0028	0.0548	0.0548
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	80.00	0.0483	-0.0027	0.0417	0.0417
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	100.00	0.064	-0.0035	0.0526	0.0526
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	120.00	0.0837	-0.0038	0.0559	0.0559
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	130.00	0.093	-0.0037	0.0540	0.054
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	140.00	0.1025	-0.0040	0.0568	0.0568
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	160.00	0.1226	-0.0042	0.0577	0.0577
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	180.00	0.1422	-0.0043	0.0569	0.0569
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	200.00	0.1617	-0.0044	0.0565	0.0565
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	220.00	0.1809	-0.0044	0.0558	0.0559
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	226.67	0.1873	-0.0044	0.0555	0.0555
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	233.33	0.1937	-0.0044	0.0549	0.0549
1.2D + 1.0Di + 1.0Wi 60° 48.73 mph wind with 0.850" radial ice	240.00	0.2	-0.0044	0.0546	0.0546
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	80.00	0.048	-0.0031	0.0416	0.0417
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	100.00	0.0637	-0.0040	0.0527	0.0528
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	120.00	0.0834	-0.0044	0.0558	0.0558
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	130.00	0.0927	-0.0043	0.0539	0.054
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	140.00	0.1022	-0.0046	0.0567	0.0568
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	160.00	0.1224	-0.0048	0.0576	0.0576
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	180.00	0.142	-0.0049	0.0568	0.0569
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	200.00	0.1615	-0.0050	0.0564	0.0564
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	220.00	0.1807	-0.0051	0.0558	0.0558
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	226.67	0.1872	-0.0051	0.0554	0.0555
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	233.33	0.1935	-0.0051	0.0548	0.0549
1.2D + 1.0Di + 1.0Wi 90° 48.73 mph wind with 0.850" radial ice	240.00	0.1998	-0.0051	0.0544	0.0545
1.2D + 1.0Ev + 1.0Eh Normal Seismic	80.00	0.0093	0.0006	0.0105	0.0105
1.2D + 1.0Ev + 1.0Eh Normal Seismic	100.00	0.0134	0.0008	0.0141	0.0141
1.2D + 1.0Ev + 1.0Eh Normal Seismic	120.00	0.0189	0.0010	0.0161	0.0161
1.2D + 1.0Ev + 1.0Eh Normal Seismic	130.00	0.0217	0.0010	0.0161	0.0161
1.2D + 1.0Ev + 1.0Eh Normal Seismic	140.00	0.0246	0.0011	0.0175	0.0175
1.2D + 1.0Ev + 1.0Eh Normal Seismic	160.00	0.031	0.0011	0.0186	0.0187
1.2D + 1.0Ev + 1.0Eh Normal Seismic	180.00	0.0375	0.0012	0.0191	0.0191
1.2D + 1.0Ev + 1.0Eh Normal Seismic	200.00	0.0442	0.0012	0.0192	0.0192
1.2D + 1.0Ev + 1.0Eh Normal Seismic	220.00	0.0508	0.0012	0.0187	0.0187
1.2D + 1.0Ev + 1.0Eh Normal Seismic	226.67	0.053	0.0012	0.0185	0.0185
1.2D + 1.0Ev + 1.0Eh Normal Seismic	233.33	0.0551	0.0011	0.0180	0.0181
1.2D + 1.0Ev + 1.0Eh Normal Seismic	240.00	0.0571	0.0011	0.0179	0.0179
1.2D + 1.0Ev + 1.0Eh 60° Seismic	80.00	0.0093	0.0006	0.0106	0.0106
1.2D + 1.0Ev + 1.0Eh 60° Seismic	100.00	0.0134	0.0008	0.0141	0.0141
1.2D + 1.0Ev + 1.0Eh 60° Seismic	120.00	0.0188	0.0010	0.0162	0.0162
1.2D + 1.0Ev + 1.0Eh 60° Seismic	130.00	0.0216	0.0010	0.0161	0.0161
1.2D + 1.0Ev + 1.0Eh 60° Seismic	140.00	0.0246	0.0011	0.0175	0.0175
1.2D + 1.0Ev + 1.0Eh 60° Seismic	160.00	0.0309	0.0011	0.0188	0.0188
1.2D + 1.0Ev + 1.0Eh 60° Seismic	180.00	0.0375	0.0012	0.0192	0.0192
1.2D + 1.0Ev + 1.0Eh 60° Seismic	200.00	0.0442	0.0012	0.0193	0.0193
1.2D + 1.0Ev + 1.0Eh 60° Seismic	220.00	0.0508	0.0012	0.0188	0.0188
1.2D + 1.0Ev + 1.0Eh 60° Seismic	226.67	0.053	0.0012	0.0184	0.0184
1.2D + 1.0Ev + 1.0Eh 60° Seismic	233.33	0.0551	0.0011	0.0182	0.0182
1.2D + 1.0Ev + 1.0Eh 60° Seismic	240.00	0.0571	0.0011	0.0181	0.0181

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0Ev + 1.0Eh 90° Seismic	80.00	0.0093	-0.0007	0.0106	0.0106
1.2D + 1.0Ev + 1.0Eh 90° Seismic	100.00	0.0134	-0.0010	0.0141	0.0141
1.2D + 1.0Ev + 1.0Eh 90° Seismic	120.00	0.0189	-0.0011	0.0162	0.0162
1.2D + 1.0Ev + 1.0Eh 90° Seismic	130.00	0.0217	-0.0011	0.0161	0.0161
1.2D + 1.0Ev + 1.0Eh 90° Seismic	140.00	0.0246	-0.0012	0.0175	0.0175
1.2D + 1.0Ev + 1.0Eh 90° Seismic	160.00	0.0309	-0.0013	0.0187	0.0188
1.2D + 1.0Ev + 1.0Eh 90° Seismic	180.00	0.0375	-0.0014	0.0191	0.0192
1.2D + 1.0Ev + 1.0Eh 90° Seismic	200.00	0.0442	-0.0014	0.0193	0.0193
1.2D + 1.0Ev + 1.0Eh 90° Seismic	220.00	0.0508	-0.0014	0.0188	0.0188
1.2D + 1.0Ev + 1.0Eh 90° Seismic	226.67	0.053	-0.0013	0.0184	0.0185
1.2D + 1.0Ev + 1.0Eh 90° Seismic	233.33	0.0551	-0.0013	0.0181	0.0181
1.2D + 1.0Ev + 1.0Eh 90° Seismic	240.00	0.0571	-0.0013	0.0180	0.018
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	80.00	0.0093	0.0006	0.0104	0.0104
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	100.00	0.0134	0.0008	0.0140	0.014
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	120.00	0.0188	0.0010	0.0160	0.016
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	130.00	0.0216	0.0010	0.0161	0.0161
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	140.00	0.0246	0.0011	0.0174	0.0175
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	160.00	0.0309	0.0011	0.0186	0.0186
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	180.00	0.0374	0.0012	0.0191	0.0191
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	200.00	0.0441	0.0012	0.0191	0.0192
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	220.00	0.0507	0.0012	0.0187	0.0187
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	226.67	0.0529	0.0012	0.0184	0.0184
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	233.33	0.055	0.0011	0.0180	0.018
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	240.00	0.0571	0.0011	0.0178	0.0178
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	80.00	0.0092	0.0006	0.0105	0.0105
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	100.00	0.0133	0.0008	0.0140	0.014
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	120.00	0.0188	0.0010	0.0161	0.0161
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	130.00	0.0216	0.0010	0.0161	0.0161
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	140.00	0.0245	0.0011	0.0174	0.0174
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	160.00	0.0309	0.0011	0.0187	0.0187
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	180.00	0.0374	0.0012	0.0191	0.0191
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	200.00	0.0441	0.0012	0.0193	0.0193
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	220.00	0.0507	0.0012	0.0188	0.0188
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	226.67	0.0529	0.0012	0.0184	0.0184
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	233.33	0.055	0.0011	0.0181	0.0181
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	240.00	0.0571	0.0011	0.0179	0.0179
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	80.00	0.0093	-0.0007	0.0104	0.0105
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	100.00	0.0134	-0.0010	0.0140	0.014
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	120.00	0.0188	-0.0011	0.0161	0.0161
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	130.00	0.0216	-0.0011	0.0161	0.0161
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	140.00	0.0246	-0.0012	0.0174	0.0174
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	160.00	0.0309	-0.0013	0.0187	0.0187
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	180.00	0.0374	-0.0014	0.0191	0.0191
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	200.00	0.0441	-0.0014	0.0192	0.0192
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	220.00	0.0507	-0.0014	0.0187	0.0187
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	226.67	0.0529	-0.0013	0.0184	0.0184
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	233.33	0.055	-0.0013	0.0181	0.0181
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	240.00	0.0571	-0.0013	0.0179	0.0179
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	80.00	0.0384	0.0021	0.0354	0.0355
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	100.00	0.0521	0.0027	0.0460	0.0461
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	120.00	0.0697	0.0029	0.0494	0.0495
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	130.00	0.0782	0.0028	0.0483	0.0484
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	140.00	0.0868	0.0030	0.0509	0.051
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	160.00	0.1053	0.0030	0.0520	0.0521
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	180.00	0.1232	0.0030	0.0515	0.0516
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	200.00	0.1411	0.0030	0.0510	0.051
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	220.00	0.1587	0.0029	0.0504	0.0504
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	226.67	0.1646	0.0028	0.0501	0.0501
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	233.33	0.1704	0.0028	0.0493	0.0494
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	240.00	0.1761	0.0028	0.0493	0.0494
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	80.00	0.0384	-0.0023	0.0355	0.0355
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	100.00	0.0522	-0.0031	0.0459	0.0459
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	120.00	0.0698	-0.0034	0.0496	0.0496
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	130.00	0.0782	-0.0034	0.0483	0.0483
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	140.00	0.0869	-0.0036	0.0511	0.0511
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	160.00	0.1053	-0.0038	0.0522	0.0522
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	180.00	0.1232	-0.0039	0.0516	0.0516
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	200.00	0.1412	-0.0040	0.0511	0.0511

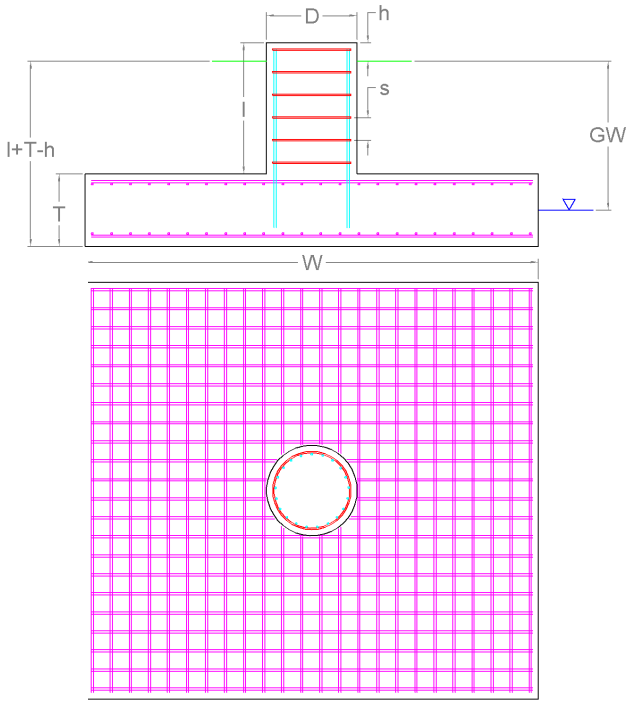
DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	220.00	0.1587	-0.0040	0.0505	0.0505
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	226.67	0.1646	-0.0040	0.0501	0.0501
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	233.33	0.1704	-0.0040	0.0495	0.0495
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	240.00	0.1761	-0.0040	0.0491	0.0491
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	80.00	0.0384	-0.0027	0.0355	0.0355
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	100.00	0.0522	-0.0035	0.0460	0.0461
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	120.00	0.0697	-0.0039	0.0495	0.0495
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	130.00	0.0782	-0.0039	0.0483	0.0484
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	140.00	0.0868	-0.0041	0.0510	0.0511
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	160.00	0.1053	-0.0044	0.0521	0.0521
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	180.00	0.1232	-0.0045	0.0516	0.0516
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	200.00	0.1412	-0.0046	0.0511	0.0511
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	220.00	0.1587	-0.0046	0.0504	0.0504
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	226.67	0.1646	-0.0046	0.0500	0.0501
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	233.33	0.1703	-0.0046	0.0494	0.0495
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	240.00	0.1761	-0.0046	0.0490	0.049

Pad & Pier Foundation Analysis (ANSI/TIA-222-H)

Foundation & Soil Parameters			
Ignore Rebar?		Y	
Pier Diameter	*D*	1.00	ft
Pier Height Above Ground	*h*	0.5	ft
Pad Base Depth	*l+T-h*	5.6	ft
Pad Width	*W*	22.0	ft
Pad Thickness	*T*	6.1	ft
Water Table Depth [BGL]	*GW*	99	ft
Unit Weight of Concrete		150	pcf
Unit Weight of Soil Above Water Table		140.0	pcf
Unit Weight of Water		62.4	pcf
Unit Weight of Soil [Submerged]		77.6	pcf
Cohesion		13,979	psf
Friction Angle		0	°
Ultimate Skin Friction		0	psf
Ultimate Bearing Pressure		95,574	psf
Conical Failure Angle		30	°
Soil Uplift at _____ of Pad		Top	
Capacity Increase (Transient Loads)		1.00	
Bearing Strength Reduction Factor, ϕ_s		0.75	
Uplift Strength Reduction Factor, ϕ_s		0.75	

Reactions		
Moment, M_u	0.0	k-ft
Shear, V_u	49.3	k
Compression, P_u	340.3	k
Uplift, T_u	272.7	k



Soil Axial Capacities and Design Moment		
Weight of Concrete [Buoyancy Considered]	442.9	k
Weight of Soil [Buoyancy Considered]	0.0	k
Skin Friction Resistance	0.0	k
Controlling Failure Mode	Top	
Nominal Uplift Capacity per Leg, $\phi_s T_n$	307.4	k
$T_u / \phi_s T_n$	**88.7%**	
Compressive Force, P_u	375.8	k
Nominal Compressive Capacity per Leg, $\phi_s P_n$	34,693.4	k
$P_u / \phi_s P_n$	**1.1%**	
Inflection Point [BGL]	1.3	ft
Design Moment at Inflection Point, M_u	49.8	k-ft

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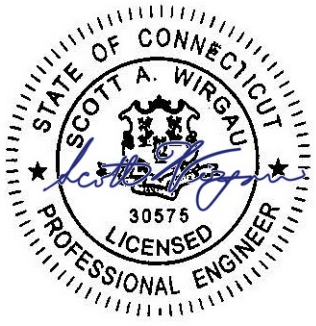
Mount Analysis Report

ATC Site Name	:	**Tartaglia, CT**
ATC Site Number	:	**383598**
Engineering Number	:	**13709692_C8_07**
Mount Elevation	:	**145 ft**
Carrier	:	**Dish Wireless L.L.C.**
Carrier Site Name	:	**NJJER01150B**
Carrier Site Number	:	**NJJER01150B**
Site Location	:	**1000 Trumbull Avenue** **Bridgeport, CT 6606** **41.21959076 , -73.20129723**
County	:	**Fairfield**
Date	:	**March 23, 2022**
Max Usage	:	**75%**
Result	:	**Pass**



Prepared By:
Garrett Williams
Structural Engineer I

Garrett Williams

Reviewed By:

COA: PEC.0001553

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Table of Contents

Introduction

The purpose of this report is to summarize results of the mount analysis performed for Dish Wireless L.L.C. at 145 ft.

Supporting Documents

Specifications Sheet	Commscope MTC3975083, dated March 17, 2021
Radio Frequency Data Sheet	RFDS ID #NJJER01150B, dated August 4, 2021

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	119 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00'' radial ice concurrent
Codes:	ANSI/TIA-222-H
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.211, S1 = 0.054
Site Class:	D - Stiff Soil
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above. The mount can support the equipment as described in this report.

- Analysis is based on new Commscope MTC3975083 sector frames.

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

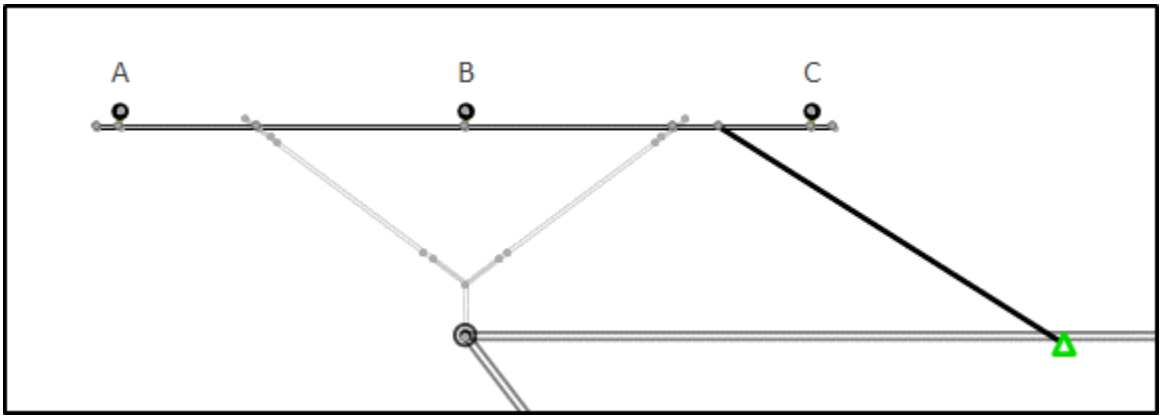
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
145.0	145.0	3	JMA Wireless MX08FRO665-21
		1	Commscope RDIDC-9181-PF-48
		3	Fujitsu TA08025-B605
		3	Fujitsu TA08025-B604

Structure Usages

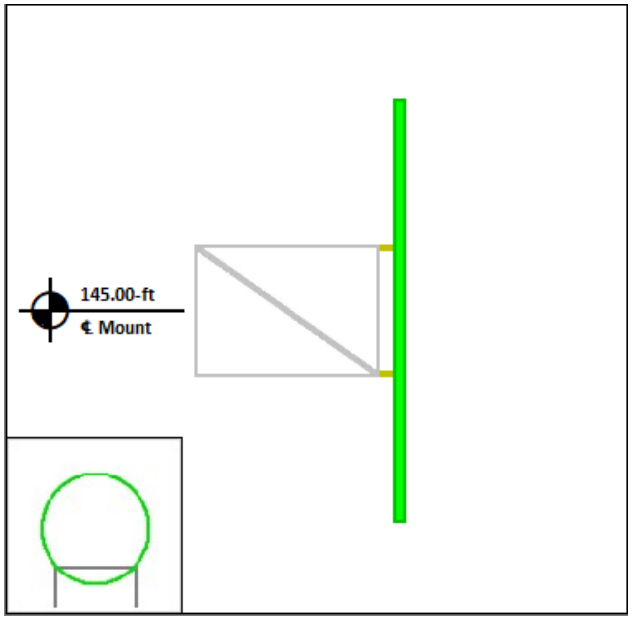
Structural Component	Controlling Usage	Pass/Fail
Horizontals	67%	Pass
Verticals	75%	Pass
Diagonals	23%	Pass
Tie-Backs	2%	Pass
Mount Pipes	10%	Pass

Mount Layout

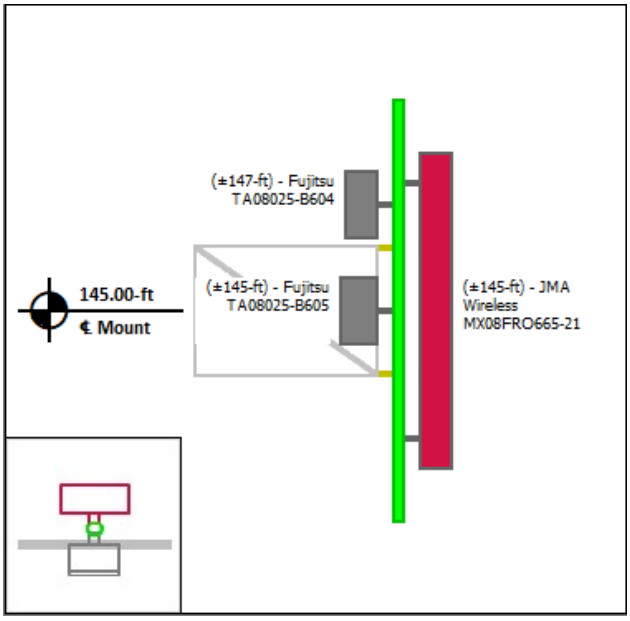


Equipment Layout

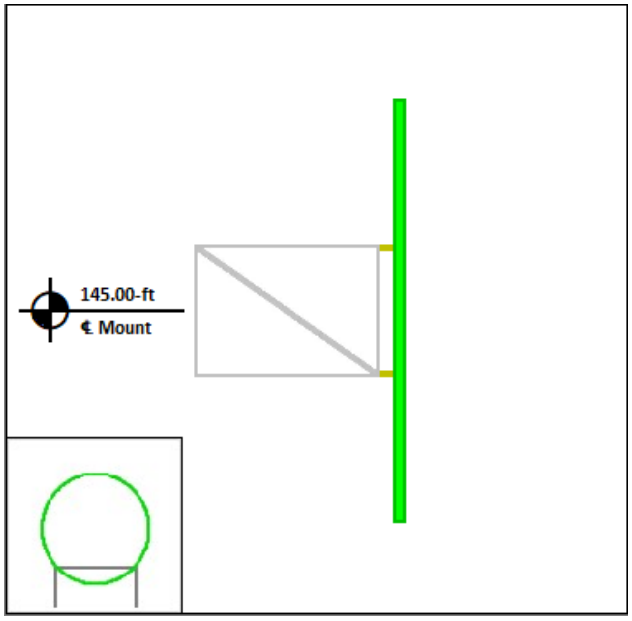
Mount Pipe A



Mount Pipe B



Mount Pipe C



Standard Conditions

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

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

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

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

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

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

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

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

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Site Number:	*383598*
Project Number:	*13709692_C8_07*
Carrier:	*Dish Wireless L.L.C.*
Mount Elevation:	*145 ft*
Date:	3/23/2022

Mount Analysis Force Calculations

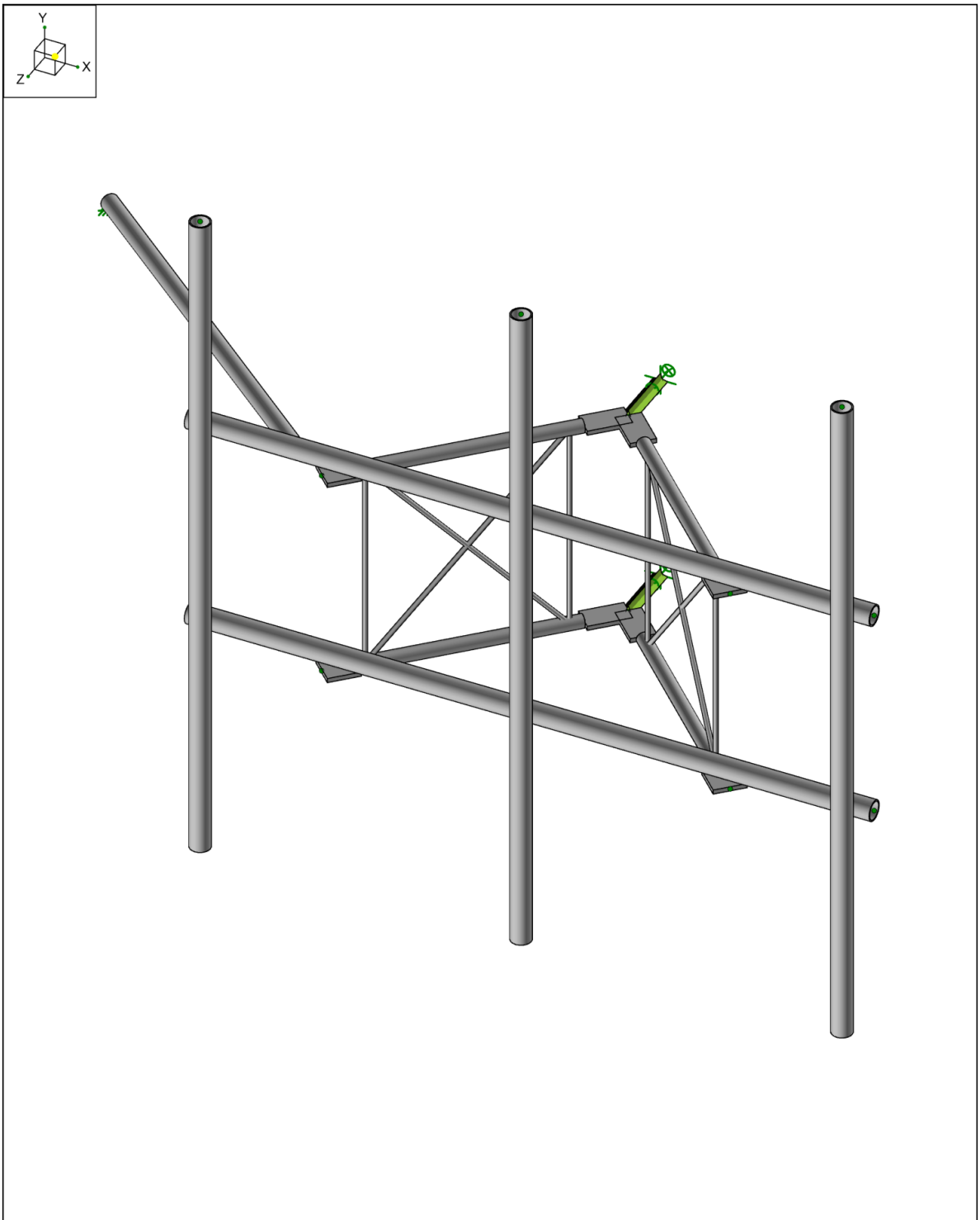
Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.37	
Topographic Factor	K_{zt}	1.00	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	0.99	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	119	mph
Velocity Pressure	q_z	46.8	psf
Height Escalation Factor	K_{iz}	1.16	
Thickness of Radial Glaze Ice	T_{iz}	1.16	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.225	
1 Second DSRAP	S_{D1}	0.086	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.113	
Amplification Factor	A	1.0	
Total Weight	W	538.9	lbs
Total Shear Force	V_S	60.6	lbs
Horizontal Seismic Load	Eh	60.6	lbs
Vertical Seismic Load	Ev	24.3	lbs

Antenna Calculations (Elevations per Application/RFDS)*

Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{Ni}	EPA_{Ti}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
JMA Wireless MX08FRO665-21	72.0	20.0	8.0	64.5	12.49	2.40	14.39	3.20
Commscope RDIDC-9181-PF-48	16.0	14.0	8.0	21.9	N/A	N/A	N/A	N/A
Fujitsu TA08025-B605	15.7	15.0	9.1	75.0	1.96	1.19	2.60	1.71
Fujitsu TA08025-B604	15.7	15.0	7.9	63.9	1.96	1.03	2.60	1.53

**** Equipment with EPA values N/A were not considered in the mount analysis***



American Tower Corp.	383598, Tartaglia	SK-1
Garrett.Williams		Mar 23, 2022
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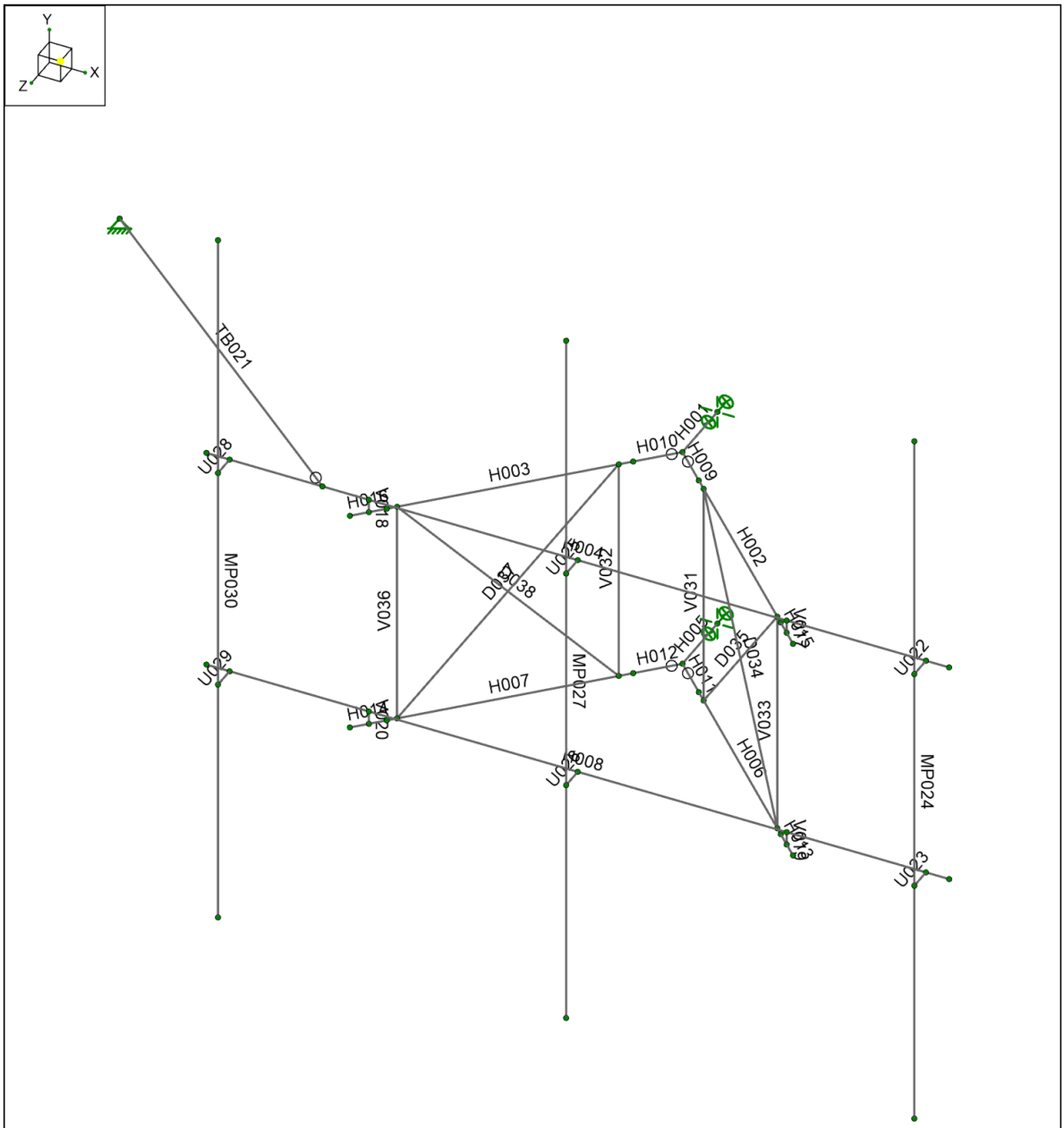

American Tower Corp.	383598, Tartaglia	SK-2
Garrett.Williams		Mar 23, 2022
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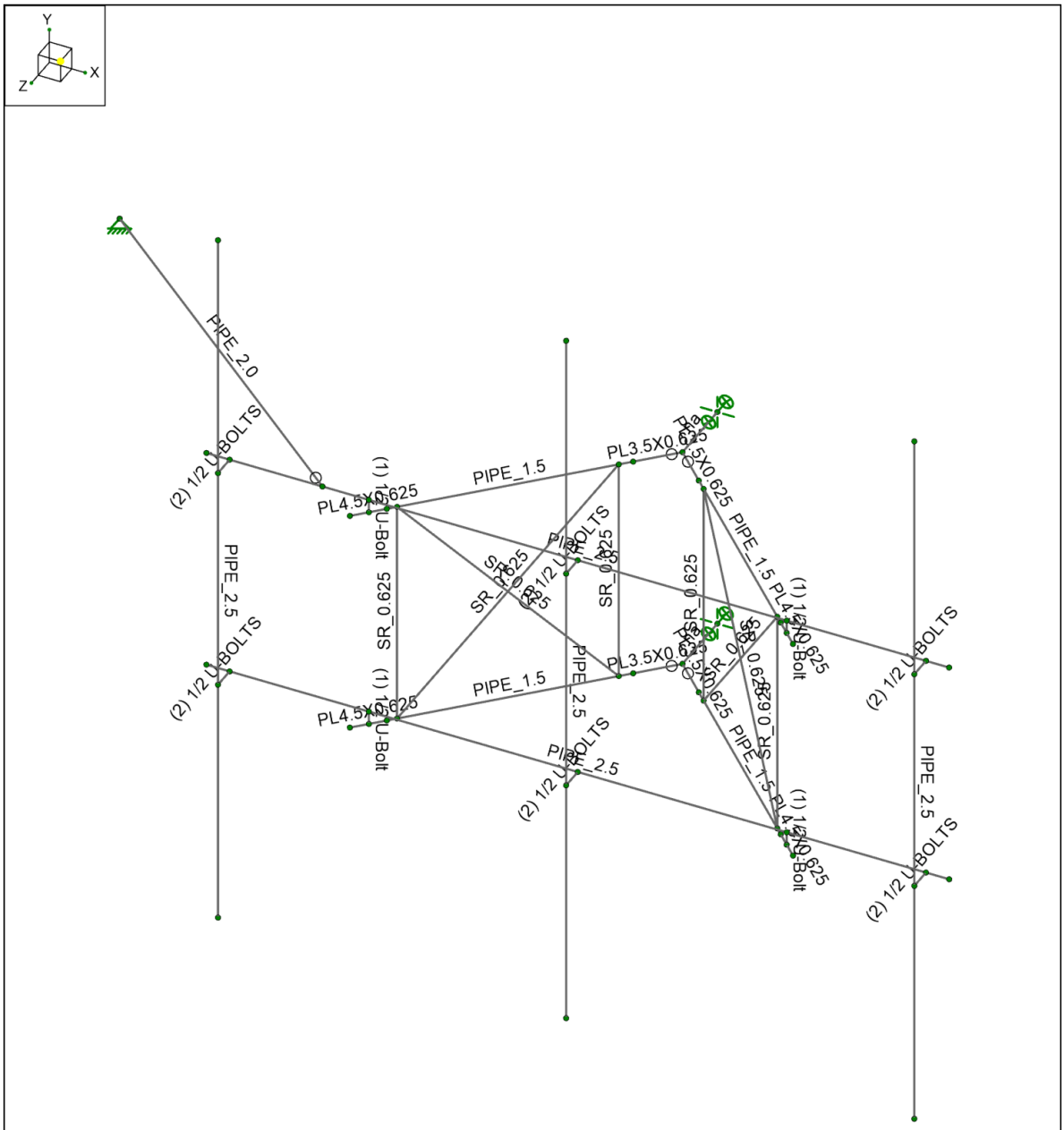

American Tower Corp.	383598, Tartaglia	SK-3
Garrett.Williams		Mar 23, 2022
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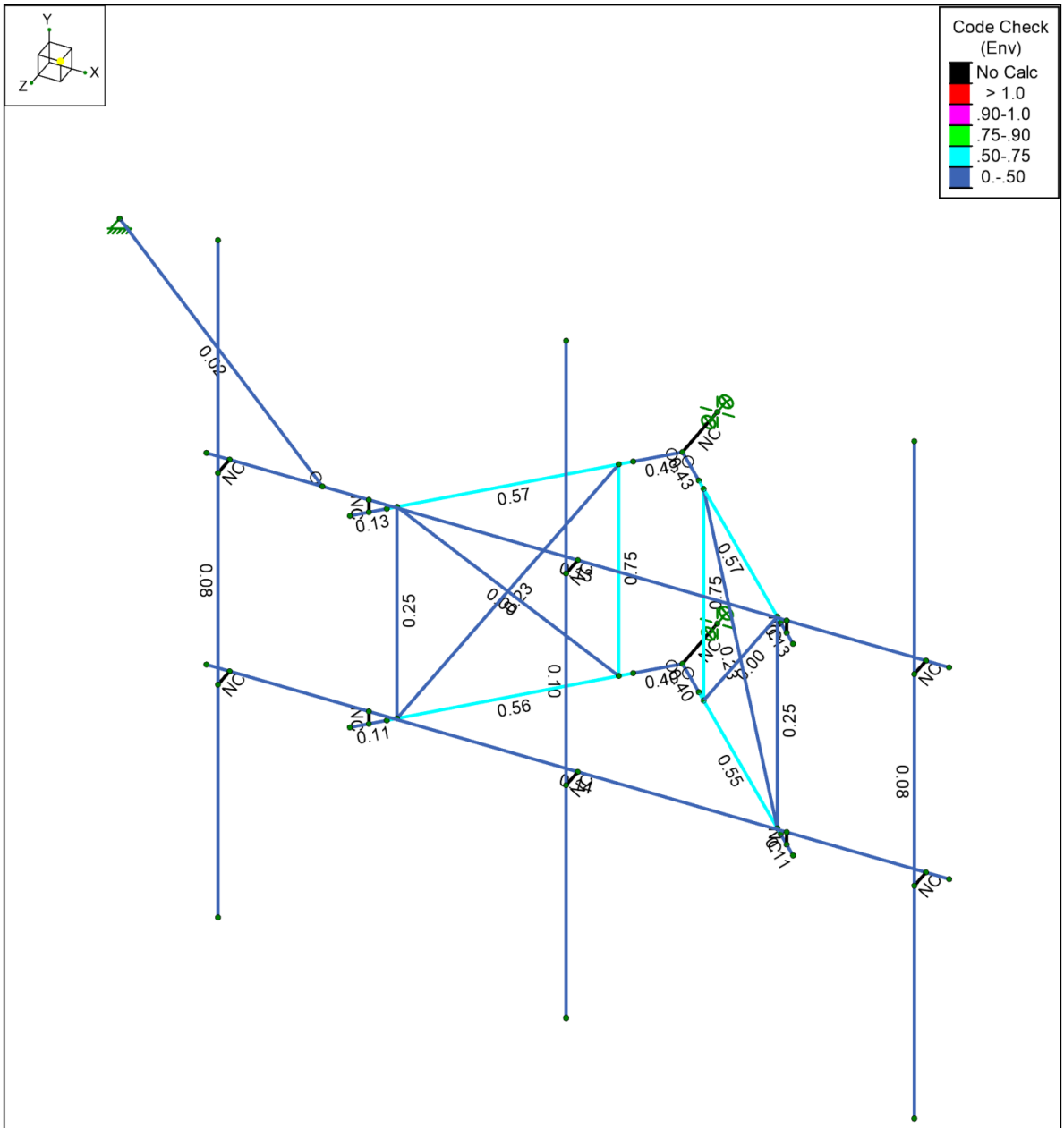

Member Code Checks Displayed (Enveloped)

American Tower Corp.	383598, Tartaglia	SK-4
Garrett.Williams		Mar 23, 2022
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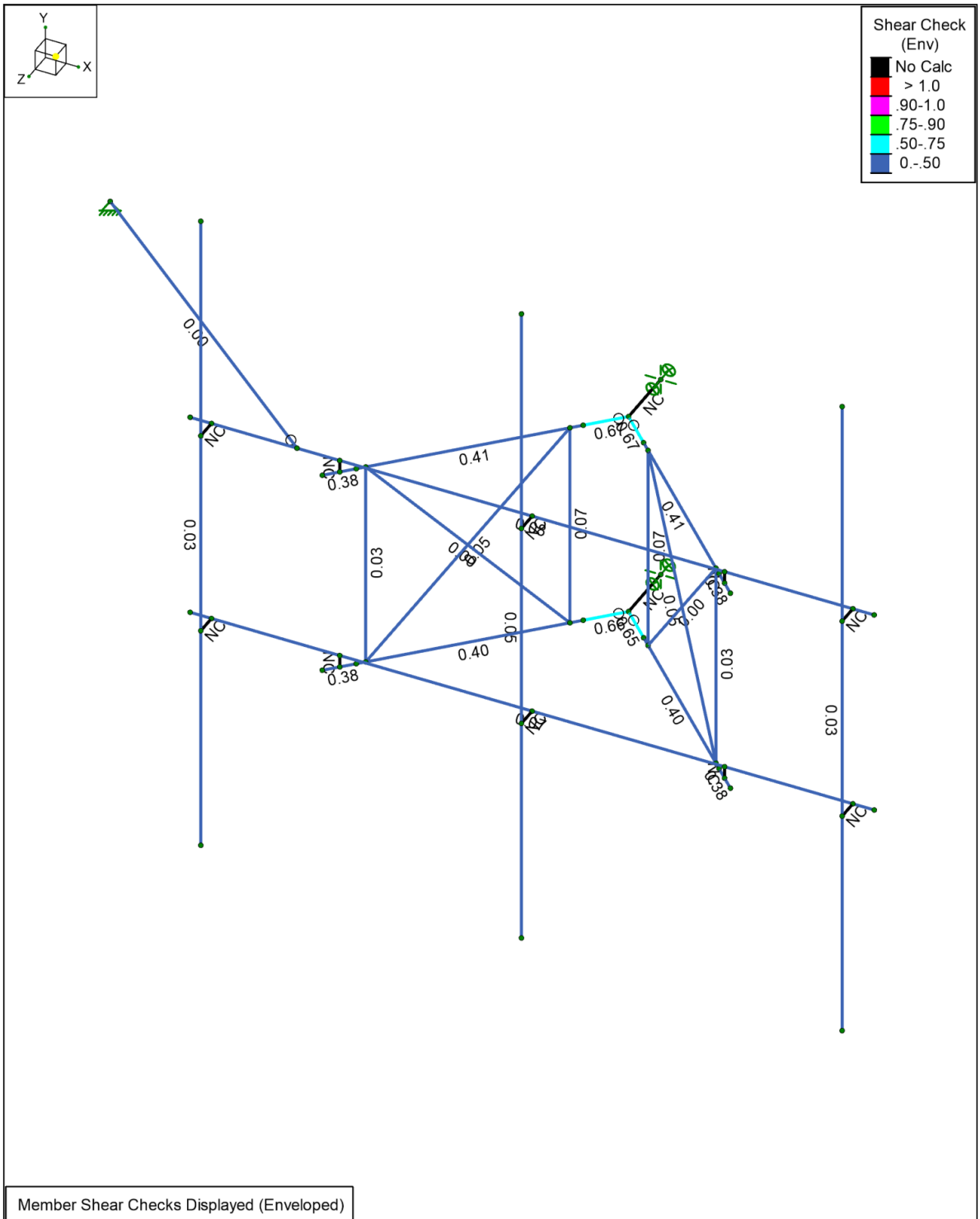


Member Shear Checks Displayed (Enveloped)

American Tower Corp.	383598, Tartaglia	SK-5
Garrett.Williams		Mar 23, 2022
13709692_C8_07		R3D. DISH WIRELESS L.L.C. @ …

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	D	DL	-1		4	
2	Di	IL			4	26
3	W 0	WL			4	37
4	W 30	WL			8	73
5	W 60	WL			8	73
6	W 90	WL			4	38
7	W 120	WL			8	73
8	W 150	WL			8	73
9	W 180	WL			4	37
10	W 210	WL			8	73
11	W 240	WL			8	73
12	W 270	WL			4	38
13	W 300	WL			8	73
14	W 330	WL			8	73
15	Wi 0	WL			4	37
16	Wi 30	WL			8	73
17	Wi 60	WL			8	73
18	Wi 90	WL			4	38
19	Wi 120	WL			8	73
20	Wi 150	WL			8	73
21	Wi 180	WL			4	37
22	Wi 210	WL			8	73
23	Wi 240	WL			8	73
24	Wi 270	WL			4	38
25	Wi 300	WL			8	73
26	Wi 330	WL			8	73
27	Ws 0	WL			4	37
28	Ws 30	WL			8	73
29	Ws 60	WL			8	73
30	Ws 90	WL			4	38
31	Ws 120	WL			8	73
32	Ws 150	WL			8	73
33	Ws 180	WL			4	37
34	Ws 210	WL			8	73
35	Ws 240	WL			8	73
36	Ws 270	WL			4	38
37	Ws 300	WL			8	73
38	Ws 330	WL			8	73
39	Ev -Y	ELY				26
40	Eh -Z	ELZ				26
41	Eh -X	ELX				26
42	Lv (1)	LL			1	
43	Lv (2)	LL			1	
44	Lv (3)	LL			1	
45	Lv (4)	LL			1	
46	Lv (5)	LL			1	
47	Lv (6)	LL			1	
48	Lv (7)	LL			1	
49	Lv (8)	LL			1	
50	Lv (9)	LL			1	
51	Lv (10)	LL			1	
52	Lv (11)	LL		1		
53	Lv (12)	LL		1		
54	Lm (1)	LL		1		
55	Lm (2)	LL		1		

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
56	Lm (3)	LL		1		

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	Z Rot [k-in/rad]
1	N001	Reaction	Reaction	Reaction	Reaction
2	N007	Reaction	Reaction	Reaction	Reaction
3	N030	Reaction	Reaction	Reaction	

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N001	N002		RIGID	None	None	RIGID	Typical
2	H002	N019	N022		PIPE_1.5	Beam	None	A500 Gr. C	Typical
3	H003	N013	N016		PIPE_1.5	Beam	None	A500 Gr. C	Typical
4	H004	N005	N006		PIPE_2.5	Beam	None	A500 Gr. C	Typical
5	H005	N007	N008		RIGID	None	None	RIGID	Typical
6	H006	N020	N021		PIPE_1.5	Beam	None	A500 Gr. C	Typical
7	H007	N014	N015		PIPE_1.5	Beam	None	A500 Gr. C	Typical
8	H008	N011	N012		PIPE_2.5	Beam	None	A500 Gr. C	Typical
9	H009	N002	N019	90	PL3.5X0.625	Beam	None	A36	Typical
10	H010	N002	N013	90	PL3.5X0.625	Beam	None	A36	Typical
11	H011	N008	N020	90	PL3.5X0.625	Beam	None	A36	Typical
12	H012	N008	N014	90	PL3.5X0.625	Beam	None	A36	Typical
13	H013	N021	N024	90	PL4.5X0.625	Beam	None	A36	Typical
14	H014	N015	N018	90	PL4.5X0.625	Beam	None	A36	Typical
15	H015	N022	N023	90	PL4.5X0.625	Beam	None	A36	Typical
16	H016	N016	N017	90	PL4.5X0.625	Beam	None	A36	Typical
17	V017	N025	N003		(1) 1/2 U-Bolt	Column	None	A36	Typical
18	V018	N026	N004		(1) 1/2 U-Bolt	Column	None	A36	Typical
19	V019	N027	N009		(1) 1/2 U-Bolt	Column	None	A36	Typical
20	V020	N028	N010		(1) 1/2 U-Bolt	Column	None	A36	Typical
21	TB021	N030	N029		PIPE_2.0	Beam	None	A500 Gr. C	Typical
22	U022	N031	N034		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
23	U023	N035	N036		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
24	MP024	N037	N038		PIPE_2.5	Column	None	A500 Gr. C	Typical
25	U025	N033	N039		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
26	U026	N040	N041		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
27	MP027	N042	N043		PIPE_2.5	Column	None	A500 Gr. C	Typical
28	U028	N032	N044		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
29	U029	N045	N046		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
30	MP030	N047	N048		PIPE_2.5	Column	None	A500 Gr. C	Typical
31	V031	N050	N049		SR_0.625	Column	None	A36	Typical
32	V032	N052	N051		SR_0.625	Column	None	A36	Typical
33	V033	N053	N054		SR_0.625	Column	None	A36	Typical
34	D034	N053	N049		SR_0.625	Column	None	A36	Typical
35	D035	N050	N054		SR_0.625	Column	None	A36	Typical
36	V036	N056	N055		SR_0.625	Column	None	A36	Typical
37	D037	N056	N051		SR_0.625	Column	None	A36	Typical
38	D038	N052	N055		SR_0.625	Column	None	A36	Typical

Member Advanced Data

	Label	I Release	J Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001				Yes	** NA **		None
2	H002				Yes	N/A		None
3	H003				Yes	N/A		None
4	H004				Yes	N/A		None
5	H005				Yes	** NA **		None
6	H006				Yes	N/A		None
7	H007				Yes	N/A		None
8	H008				Yes	N/A		None
9	H009	OOOOXO			Yes	Default		None
10	H010	OOOOXO			Yes	Default		None
11	H011	OOOOXO			Yes	Default		None
12	H012	OOOOXO			Yes	Default		None
13	H013				Yes	N/A		None
14	H014				Yes	N/A		None
15	H015				Yes	N/A		None
16	H016				Yes	N/A		None
17	V017				Yes	** NA **	Exclude	None
18	V018				Yes	** NA **	Exclude	None
19	V019				Yes	** NA **	Exclude	None
20	V020				Yes	** NA **	Exclude	None
21	TB021		BenPIN		Yes	N/A		None
22	U022				Yes	N/A	Exclude	None
23	U023				Yes	N/A	Exclude	None
24	MP024				Yes	** NA **		None
25	U025				Yes	N/A	Exclude	None
26	U026				Yes	N/A	Exclude	None
27	MP027				Yes	** NA **		None
28	U028				Yes	N/A	Exclude	None
29	U029				Yes	N/A	Exclude	None
30	MP030				Yes	** NA **		None
31	V031				Yes	** NA **		None
32	V032				Yes	** NA **		None
33	V033				Yes	** NA **		None
34	D034			Tension Only	Yes	** NA **		None
35	D035			Tension Only	Yes	** NA **		None
36	V036				Yes	** NA **		None
37	D037			Tension Only	Yes	** NA **		None
38	D038			Tension Only	Yes	** NA **		None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
1	H002	PIPE_1.5	30			Lbyy		0.8	1	Lateral
2	H003	PIPE_1.5	30			Lbyy		0.8	1	Lateral
3	H004	PIPE_2.5	96			Lbyy		1	1	Lateral
4	H006	PIPE_1.5	30			Lbyy		0.8	1	Lateral
5	H007	PIPE_1.5	30			Lbyy		0.8	1	Lateral
6	H008	PIPE_2.5	96			Lbyy		1	1	Lateral
7	H009	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
8	H010	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
9	H011	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
10	H012	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
11	H013	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral
12	H014	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral
13	H015	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
14	H016	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral
15	V017	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
16	V018	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
17	V019	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
18	V020	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
19	TB021	PIPE_2.0	58.577			Lbyy		1	1	Lateral
20	U022	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
21	U023	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
22	MP024	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
23	U025	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
24	U026	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
25	MP027	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
26	U028	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
27	U029	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
28	MP030	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
29	V031	SR_0.625	30			Lbyy		0.65	0.65	Lateral
30	V032	SR_0.625	30			Lbyy		0.65	0.65	Lateral
31	V033	SR_0.625	30			Lbyy		0.65	0.65	Lateral
32	D034	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral
33	D035	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral
34	V036	SR_0.625	30			Lbyy		0.65	0.65	Lateral
35	D037	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral
36	D038	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [lb/ft³]	Yield [psi]	Ry	Fu [psi]	Rt
1	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
2	A500 Gr. C	2.9e+07	1.115e+07	0.3	0.65	490	46000	1.4	62000	1.3
3	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N001	max	1072.732	102	765.642	90	434.454	25	0	109	0	109	91.766	76
2		min	-1050.806	84	238.758	21	-1778.945	79	0	1	0	1	-93.507	108
3	N007	max	1067.792	76	606.512	84	1748.342	74	0	109	0	109	89.684	76
4		min	-1088.395	106	217.537	15	88.538	20	0	1	0	1	-91.361	108
5	N030	max	542.401	6	385.166	73	436.25	4	0	109	0	109	0	109
6		min	-543.049	12	6.338	16	-435.954	10	0	1	0	1	0	1
7	Totals:	max	915.007	6	1378.128	78	1259.819	14						
8		min	-915.007	24	471.095	17	-1259.819	8						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	H002	PIPE_1.5	0.566	1.563	78	0.411	0		75	26562.555	31008.6	1452.45	1452.45	2.095	H3-6
2	H003	PIPE_1.5	0.572	1.563	105	0.413	0		108	26562.555	31008.6	1452.45	1452.45	2.095	H3-6
3	H004	PIPE_2.5	0.132	48	90	0.077	75		105	33487.322	66654	4726.5	4726.5	1.743	H1-1b
4	H006	PIPE_1.5	0.553	1.563	76	0.396	0		76	26562.555	31008.6	1452.45	1452.45	2.076	H3-6
5	H007	PIPE_1.5	0.559	1.563	108	0.397	0		108	26562.555	31008.6	1452.45	1452.45	2.076	H3-6
6	H008	PIPE_2.5	0.139	75	108	0.069	75		106	33487.322	66654	4726.5	4726.5	2.331	H1-1b
7	H009	PL3.5X0.625	0.427	6	78	0.666	6	y	75	54826.037	70875	922.852	5167.969	1.109	H1-1b
8	H010	PL3.5X0.625	0.431	6	106	0.669	6	y	109	54826.037	70875	922.852	5167.969	1.108	H1-1b
9	H011	PL3.5X0.625	0.4	6	76	0.653	0.125	y	75	54826.037	70875	922.852	5167.969	1.093	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
10	H012	PL3.5X0.625	0.404	6	108	0.656	6	y	108	54826.037	70875	922.852	5167.969	1.093	H1-1b
11	H013	PL4.5X0.625	0.108	0	85	0.381	2.156	y	76	78870.627	91125	1186.523	8542.969	2.595	H1-1b
12	H014	PL4.5X0.625	0.109	0	100	0.383	2.156	y	108	78870.627	91125	1186.523	8542.969	2.595	H1-1b
13	H015	PL4.5X0.625	0.128	0	80	0.377	2.156	y	75	78870.627	91125	1186.523	8542.969	2.599	H1-1b
14	H016	PL4.5X0.625	0.13	0	103	0.378	2.156	y	109	78870.627	91125	1186.523	8542.969	2.604	H1-1b
15	TB021	PIPE_2.0	0.024	0	6	0.002	58.577		13	29008.774	42228	2459.85	2459.85	1.136	H1-1b*
16	MP024	PIPE_2.5	0.08	33	79	0.027	33		79	46563.382	66654	4726.5	4726.5	3	H1-1b
17	MP027	PIPE_2.5	0.097	33	7	0.045	33		106	46563.382	66654	4726.5	4726.5	3	H1-1b
18	MP030	PIPE_2.5	0.08	33	105	0.027	33		102	46563.382	66654	4726.5	4726.5	3	H1-1b
19	V031	SR_0.625	0.749	0	75	0.067	30		76	4378.243	9940.196	103.544	103.544	2.267	H1-1b
20	V032	SR_0.625	0.752	0	109	0.068	30		106	4378.243	9940.196	103.544	103.544	2.267	H1-1b
21	V033	SR_0.625	0.251	30	78	0.027	0		84	4378.243	9940.196	103.544	103.544	2.28	H1-1b
22	D034	SR_0.625	0.231	40.361	78	0.047	0		76	2458.567	9940.196	103.544	103.544	1.98	H1-1a*
23	D035	SR_0.625	0	40.361	109	0	40.361		109	2458.567	9940.196	103.544	103.544	1	H1-1a
24	V036	SR_0.625	0.253	30	106	0.028	0		100	4378.243	9940.196	103.544	103.544	2.281	H1-1b
25	D037	SR_0.625	0.233	40.361	106	0.047	0		108	2458.567	9940.196	103.544	103.544	1.982	H1-1a*
26	D038	SR_0.625	0	40.361	109	0	40.361		109	2458.567	9940.196	103.544	103.544	1	H1-1a

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

NJJER01150B

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

1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

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

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

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

SITE PHOTO

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

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

SITE INFORMATION

PROPERTY OWNER:	AMERICAN TOWER CORP.
ADDRESS:	1000 TRUMBULL AVENUE BRIDGEPORT, CT 06606
TOWER TYPE:	SELF SUPPORT TOWER
TOWER CO SITE ID:	383598
TOWER APP NUMBER:	13709692_D2
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41° 13' 10.560" N 41.2196
LONGITUDE (NAD 83):	73° 12' 4.630" W -73.20128611
ZONING JURISDICTION:	BRIDGEPORT, CT
ZONING DISTRICT:	RESIDENTIAL
PARCEL NUMBER:	BRID-002778-000061B
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	LANDIS+GYR
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

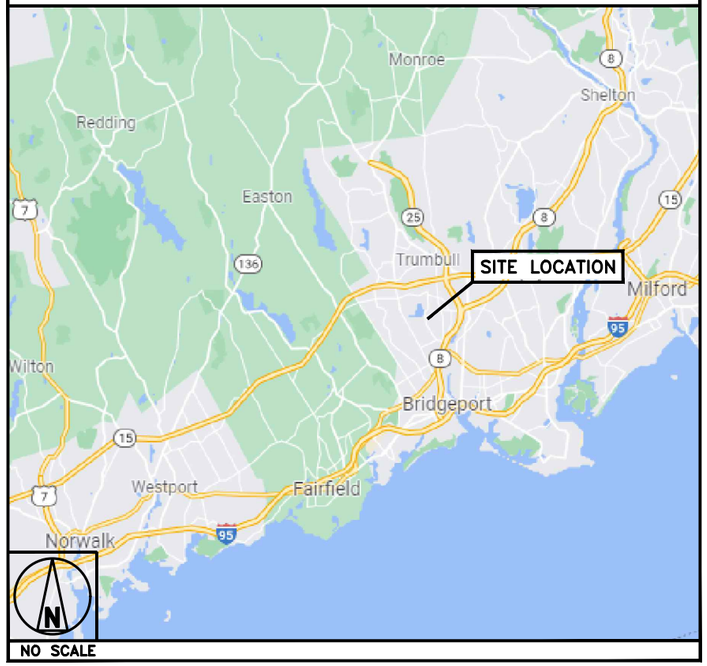
APPLICANT:	DISH WIRELESS, L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801
ENGINEER:	ATC TOWER SERVICES, LLC 3500 REGENCY PARKWAY SUITE 100 CARY, NC 27518
SITE ACQUISITION:	WILLIAM SNIDER WILLIAM.SNIDER@DISH.COM
CONSTRUCTION MANAGER: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

DIRECTIONS

FROM 3 ADP BLVD, ROSELAND, NJ 07068:

GET ON I-280 E FROM LIVINGSTON AVE. AFTER 1 MILE, CONTINUE ON I-280 E. TAKE GARDEN STATE PKWY, I-287 E AND I-95 N TO CHOPSEY HILL RD IN BRIDGEPORT. TAKE EXIT 5 FROM CT-25 N/CT-8 N. AFTER 91.4 MILES, CONTINUE ON CHOPSEY HILL RD TO YOUR DESTINATION. YOU WILL ARRIVE AT YOUR DESTINATION AFTER 1.3 MILES.

VICINITY MAP



NO SCALE

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

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/27/2021	ISSUED FOR CONSTRUCTION
1	11/01/2021	JX REQUIREMENTS

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
383598-13709692_D2

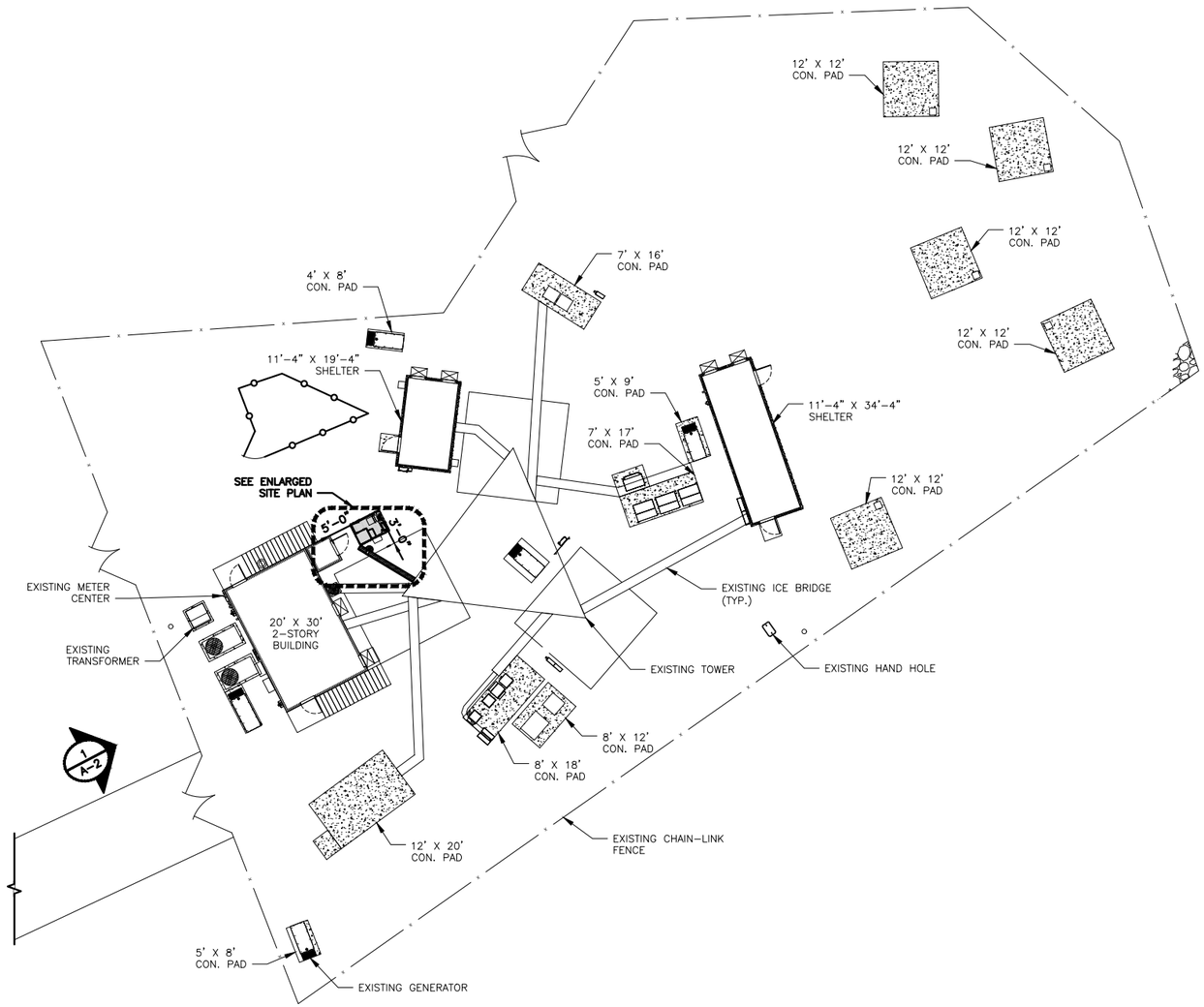
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



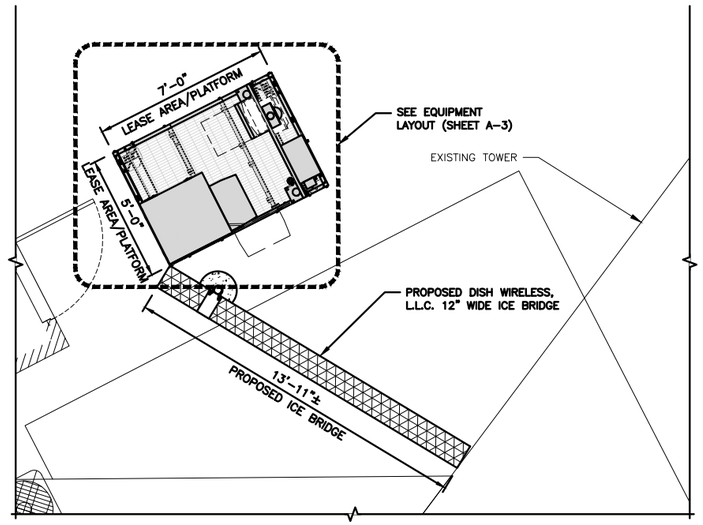
OVERALL SITE PLAN

16' 12' 8' 4' 0 16' 32'
1/16"=1'-0"

1

NOTES

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



ENLARGED SITE PLAN

3' 0 3' 6'
1"=3'

2

AERIAL VIEW

NO SCALE

3

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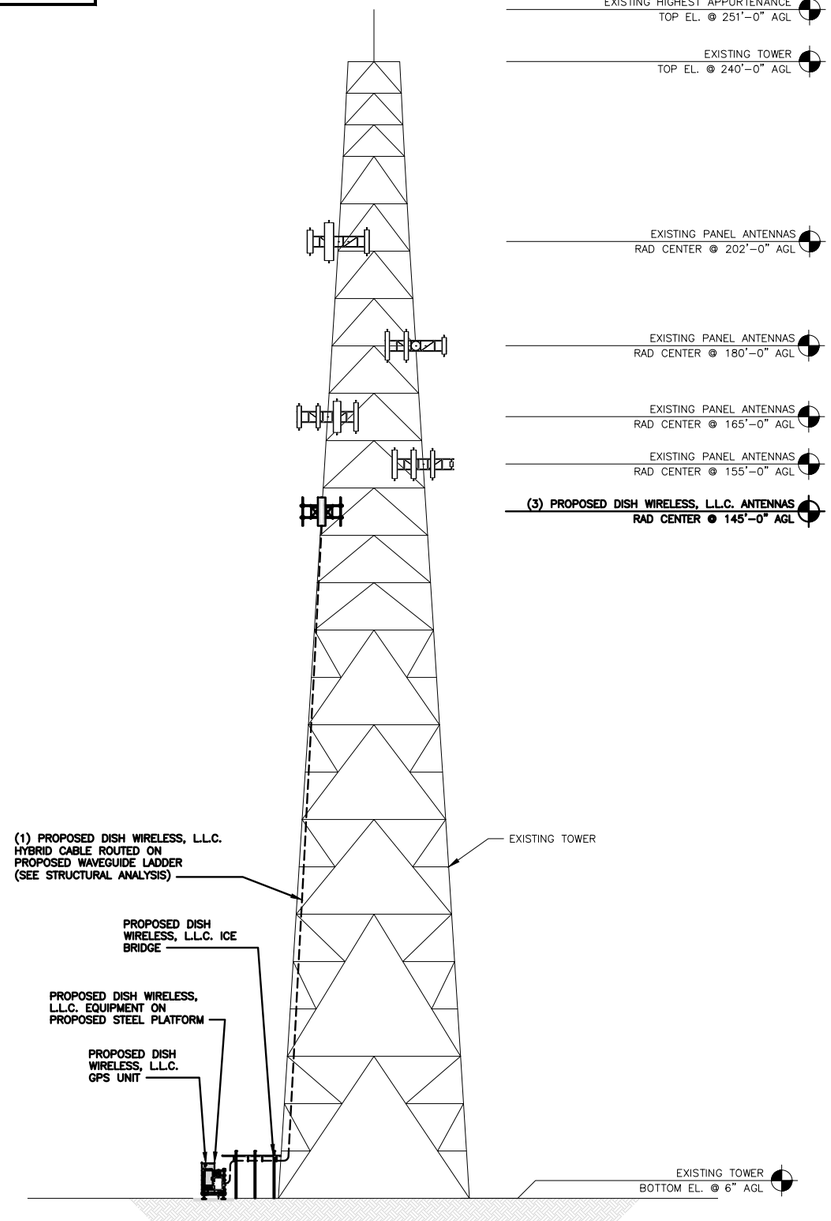
SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

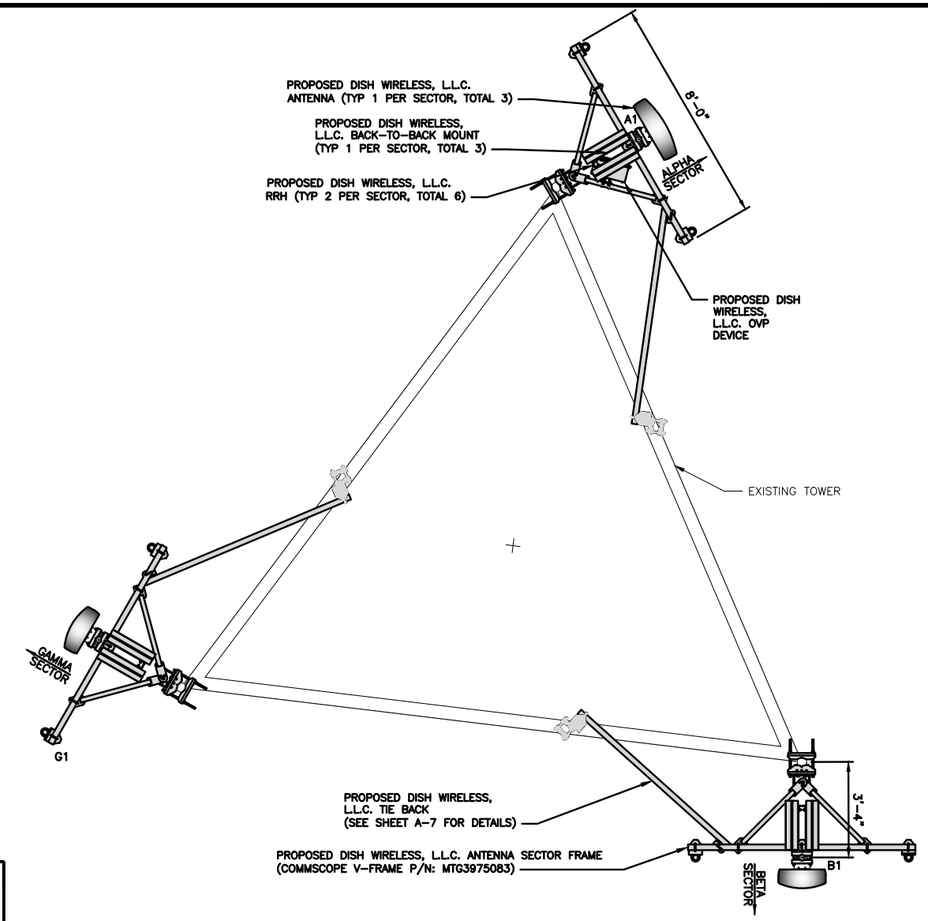
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

16' 12' 8' 4' 0 16' 32'
1/16"=1'-0"

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	MX08FRO665-21	5G	72.0" x 20.0"	60°	145'-0"	(1) HIGH-CAPACITY HYBRID CABLE (182' LONG)
BETA	B1	PROPOSED	MX08FRO665-21	5G	72.0" x 20.0"	180°	145'-0"	
GAMMA	G1	PROPOSED	MX08FRO665-21	5G	72.0" x 20.0"	300°	145'-0"	(1) RAYCAP RDIDC-9181-PF-48 OVP

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	TA08025-B604	N66 / N70
	A1	TA08025-B605	N29 / N71
BETA	B1	TA08025-B604	N66 / N70
	B1	TA08025-B605	N29 / N71
GAMMA	G1	TA08025-B604	N66 / N70
	G1	TA08025-B605	N29 / N71
–	–	RDIDC-9181-PF-48	–

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

dish wireless.
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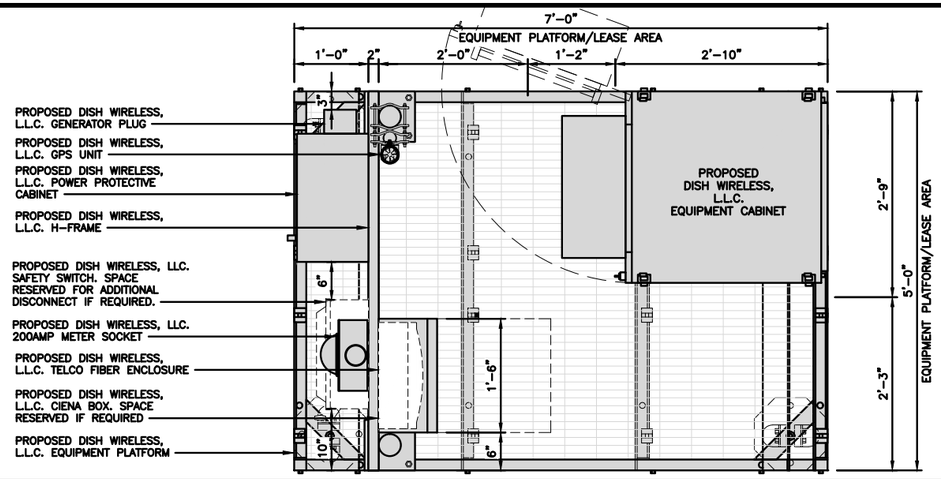
BRIDGEPORT, CT 06606

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



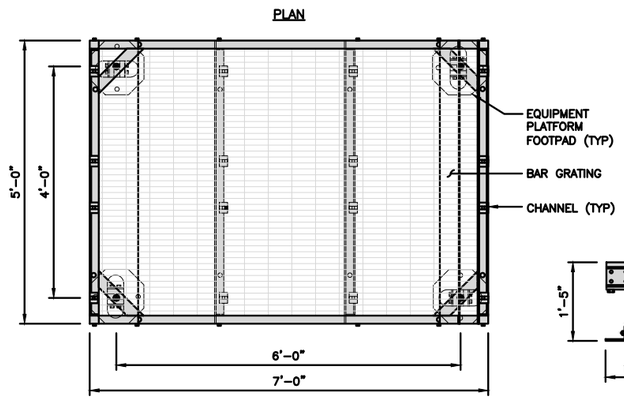
PLATFORM EQUIPMENT PLAN

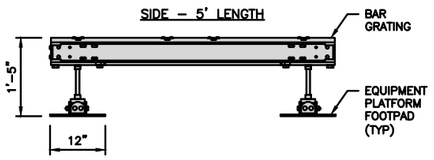
12" 9" 6" 3" 0 1' 2"
1"=1'-0"

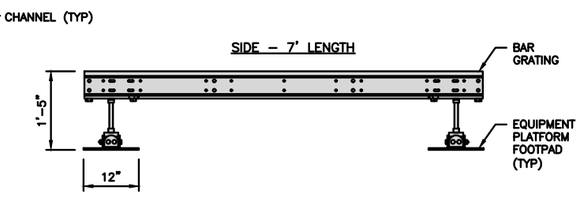
1

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

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

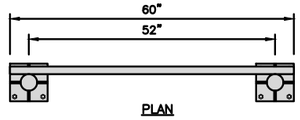


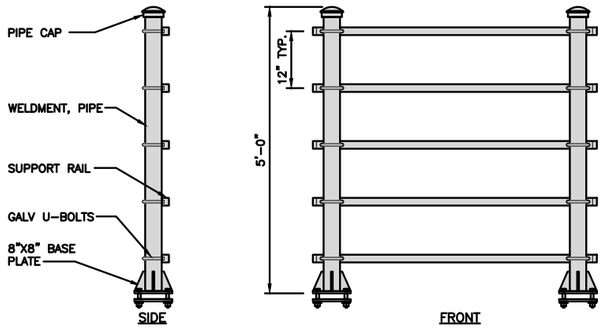




PLATFORM DETAIL | NO SCALE | 2

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



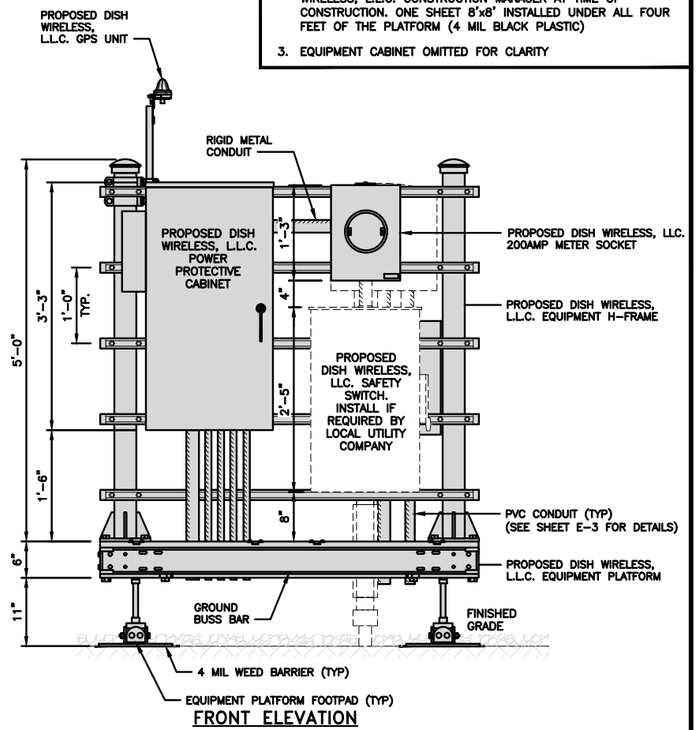


H-FRAME DETAIL | NO SCALE | 3

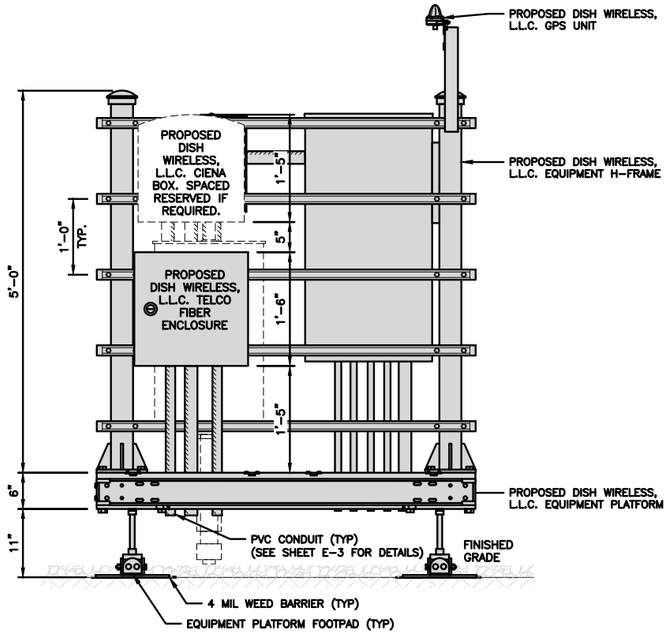
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

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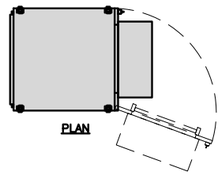
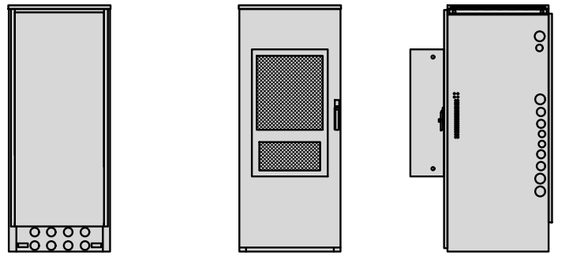
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

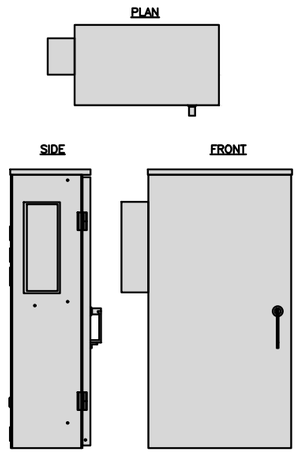
ENERSYS HEX CABINET 2000005996	
DIMENSIONS (HxWxD):	73"x30"x32"
WEIGHT EMPTY:	376 lbs
HEATER	800W
POWER SYSTEM	-48V ALPHA/600A





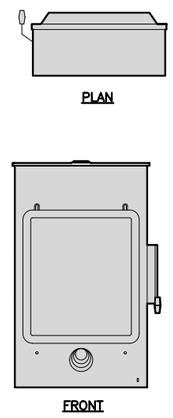
CABINET DETAIL | NO SCALE | 1

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



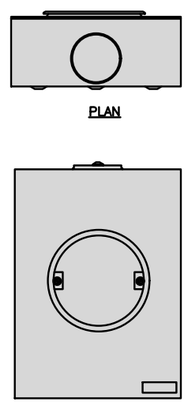
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

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



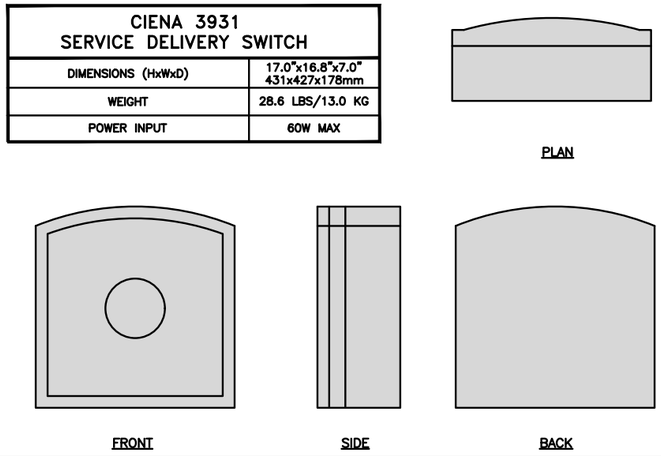
SAFETY SWITCH | NO SCALE | 3

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



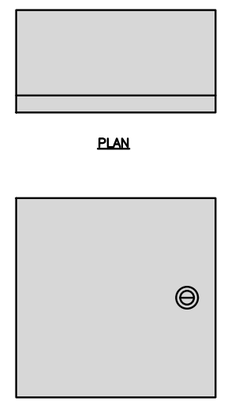
METER SOCKET DETAIL | NO SCALE | 4

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



CIENA DETAIL | NO SCALE | 5

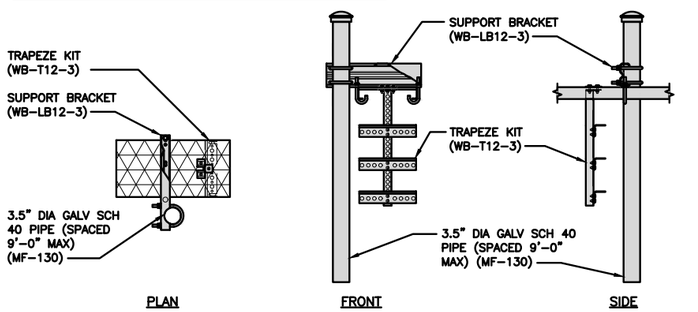
CHARLES FIBER TELCO ENCLOSURE CUBE-MP1818WB-A	
ENCLOSURE DIM (HxWxD)	18.0"x18.0"x9.25"
NEMA RATING	4X
THERMAL	SEALED
MOUNTING BACKBOARD	WOOD



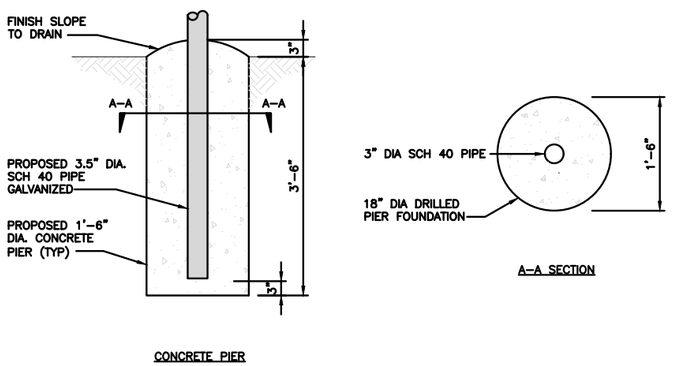
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

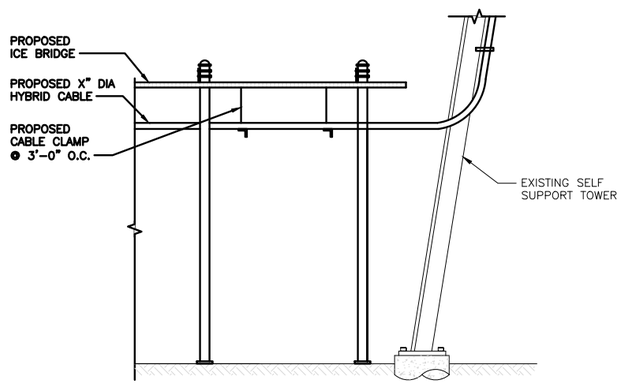
INCLUDED PRODUCTS:
- WB-T12-3 TRAPEZE KIT, 3 RUNGS
- WB-LB12-3 SUPPORT BRACKET
- MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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1	11/01/2021	JX REQUIREMENTS

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
383598-13709692_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

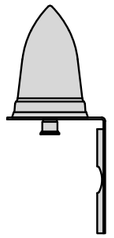
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

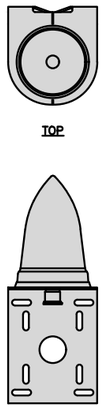
GPS DETAIL

NO SCALE | 1

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



BACK

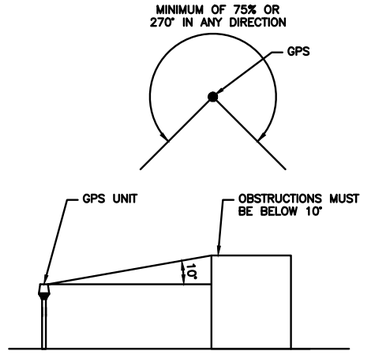


TOP

SIDE

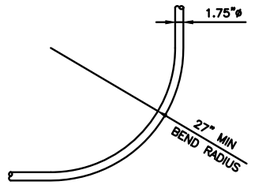
GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE | 2

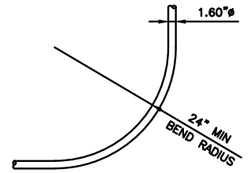


CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUSES

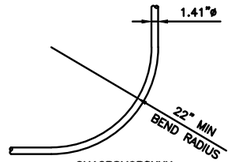
NO SCALE | 3



CU12PSM6P4XXX
(4 AWG CONDUCTORS)



CU12PSM9P6XXX
(6 AWG CONDUCTORS)



CU12PSM9P8XXX
(8 AWG CONDUCTORS)

NOT USED

NO SCALE | 4

NOT USED

NO SCALE | 5

NOT USED

NO SCALE | 6

NOT USED

NO SCALE | 7

NOT USED

NO SCALE | 8

NOT USED

NO SCALE | 9

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CARY, NC 27518
PHONE: (919) 468-0112

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	SRF	SRF

RFDS REV #: ----

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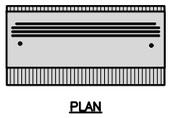
PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

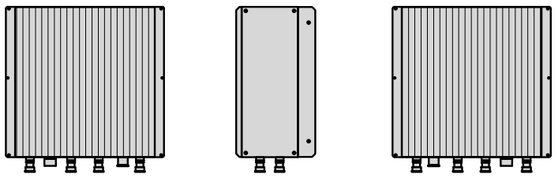
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

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



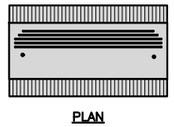
PLAN



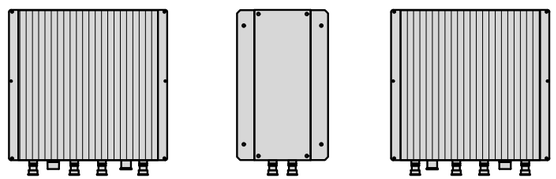
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

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



PLAN

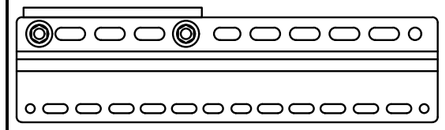


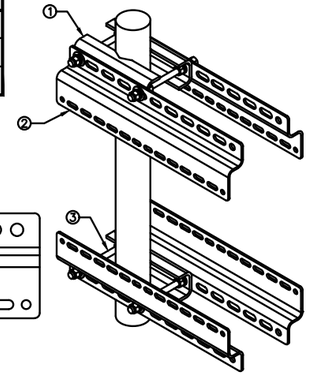
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

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

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



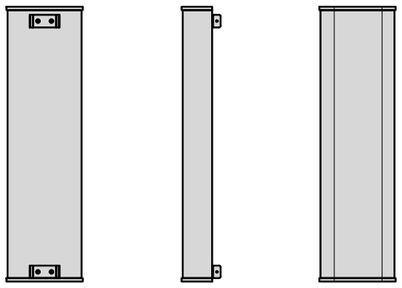


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

PLAN



BACK SIDE FRONT

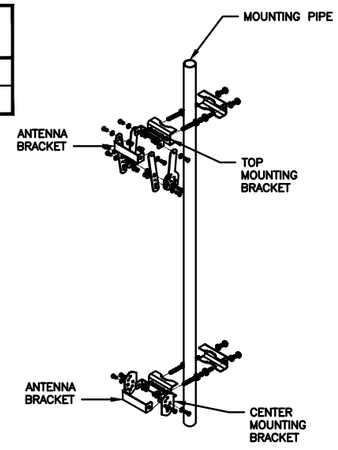
ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

JMA ANTENNA MOUNT BRACKET #91900318	
TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-,6-, AND 8-FOOT ANTENNAS

ANTENNA BRACKET NOT PART OF KIT

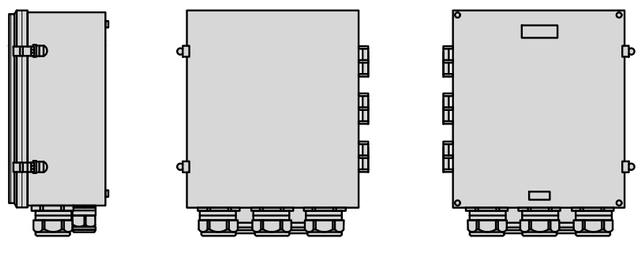


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

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

PLAN

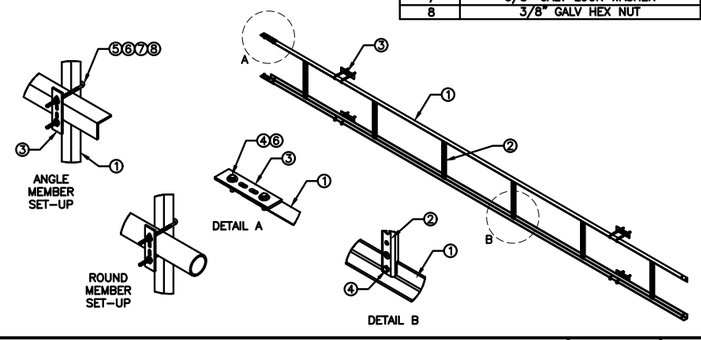


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

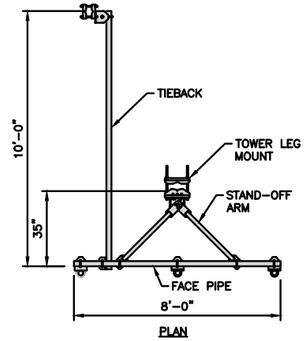
COMMSCOPE 20' CABLE LADDER 6 HOLE RUNGS	
DIMENSIONS (WxL)	20.5"x240"
WEIGHT	84.94 lbs

ITEM#	DESCRIPTION
1	20' ANGLE SIDE RAIL
2	20" LADDER RUNG
3	BACKING PLATE
4	3/8"x1-1/2" GALV BOLT KIT
5	8" GALV J-BOLT KIT
6	3/8" GALV FLAT WASHER
7	3/8" GALV LOCK WASHER
8	3/8" GALV HEX NUT

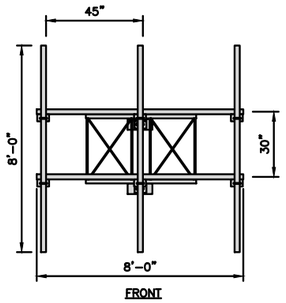


CABLE LADDER DETAIL | NO SCALE | 8

COMMSCOPE V-FRAME MTG3975083	
FACE SIZE	8'-0"
WEIGHT	352.136 lbs



PLAN



FRONT

ANTENNA FRAME DETAIL | NO SCALE | 9

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PHONE: (919) 468-0112

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PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

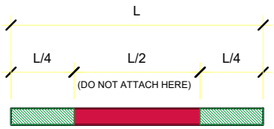
STIFF ARM LOCATION NOTES:

- TIE BACK SHALL BE CONNECTED PER MANUFACTURER SPECIFICATIONS. IF THE ANGLE OF ATTACHMENT DEVIATES FROM THE MANUFACTURER RANGES, A SITE SPECIFIC ANALYSIS THAT CONSIDERS THESE EFFECTS ON BOTH THE TOWER AND THE MOUNT WILL BE NEEDED.
- ACCEPTABLE STIFF ARM TO TOWER MEMBER ATTACHMENT LOCATIONS:
  - A) INTERIOR BRACING MEMBERS:
    -WITHIN 25% OF EITHER END OF THE MEMBER'S LENGTH.
  - B) TOWER LEGS:
    -WITHIN 25% OF EITHER END OF THE MEMBER'S LENGTH. IF ATTACHMENT IS NOT WITHIN 25% OF EITHER END OF THE MEMBERS LENGTH THEN ADJUST ATTACHMENT POINT TO MINIMIZE DISTANCE TO END OF MEMBER WHILE FOLLOWING MANUFACTURERS SPECIFICATIONS.

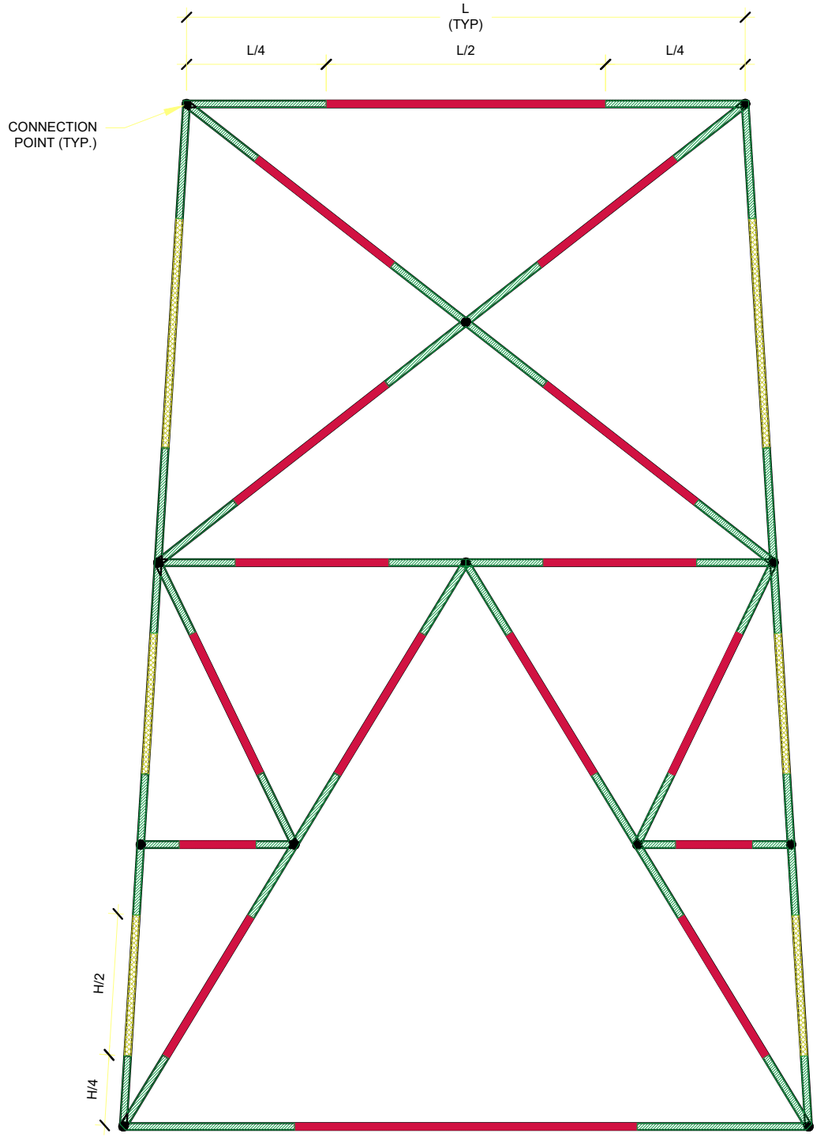
ACCEPTABLE ATTACHMENT REGION & FORCE

ACCEPTABLE ATTACHMENT REGION & FORCE

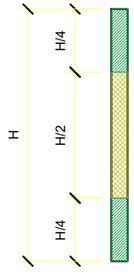
DO NOT ATTACH HERE



INTERIOR BRACING



TOWER SECTION



TOWER LEG

STIFF ARM LOCATIONS

NO SCALE

1

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A.T. ENGINEERING SERVICE, PLLC
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PHONE: (919) 468-0112

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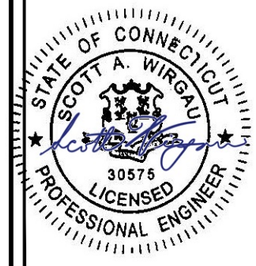

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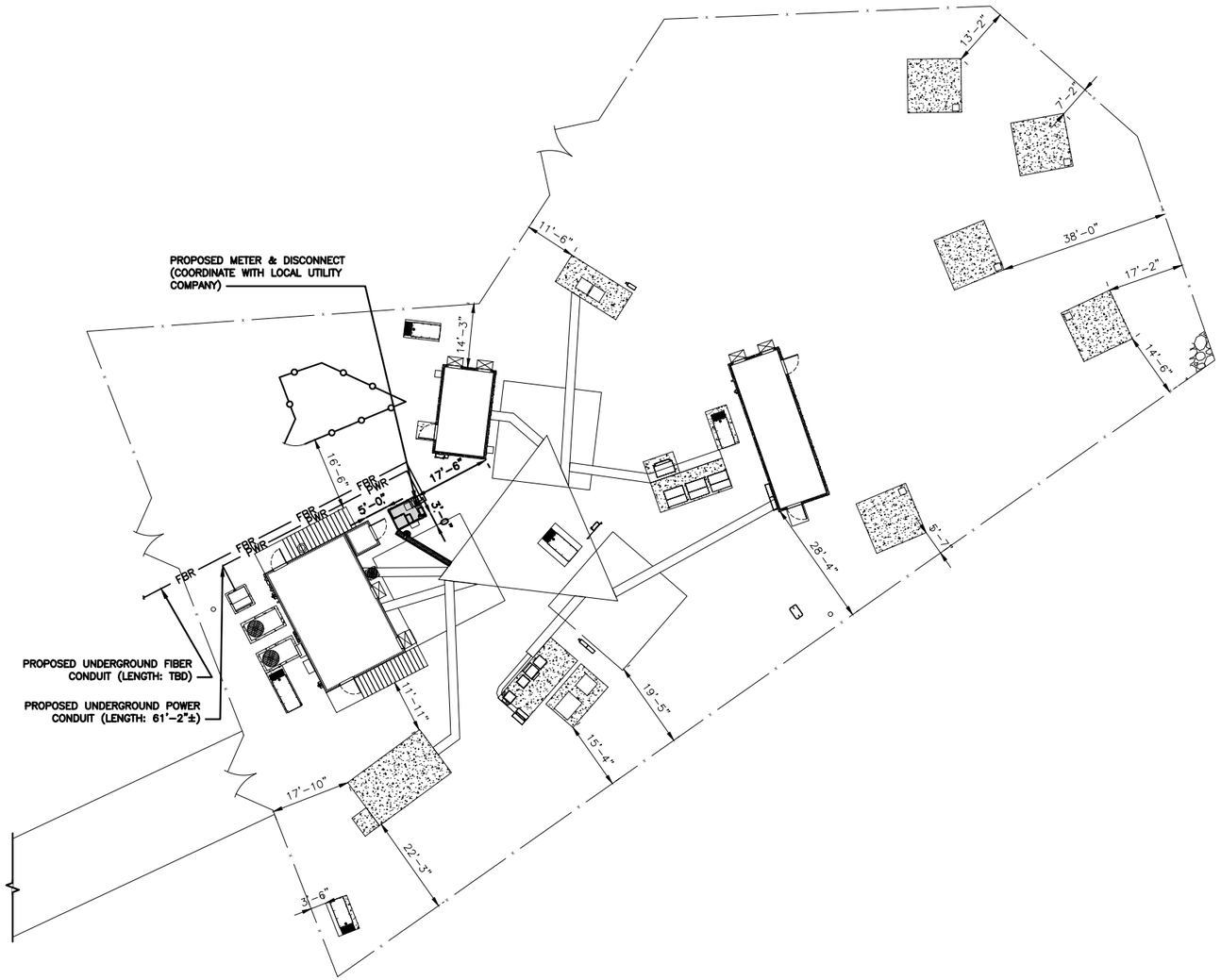
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

SHEET TITLE
PARCEL PLAN

SHEET NUMBER
A-7

NOTES

1. AMERICAN TOWER'S GROUND RIGHTS DO NOT INCLUDE A UTILITIES EASEMENT. LICENSEE WILL NEED TO OBTAIN A UTILITY EASEMENT AND CONSTRUCTION CONTRACTOR MUST FIELD VERIFY ALL PROPOSED UTILITY ROUTES ARE WITHIN THE OBTAINED EASEMENT.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



UTILITY ROUTE PLAN

16' 12' 8' 4' 0 16' 32'
1/16"=1'-0"

1

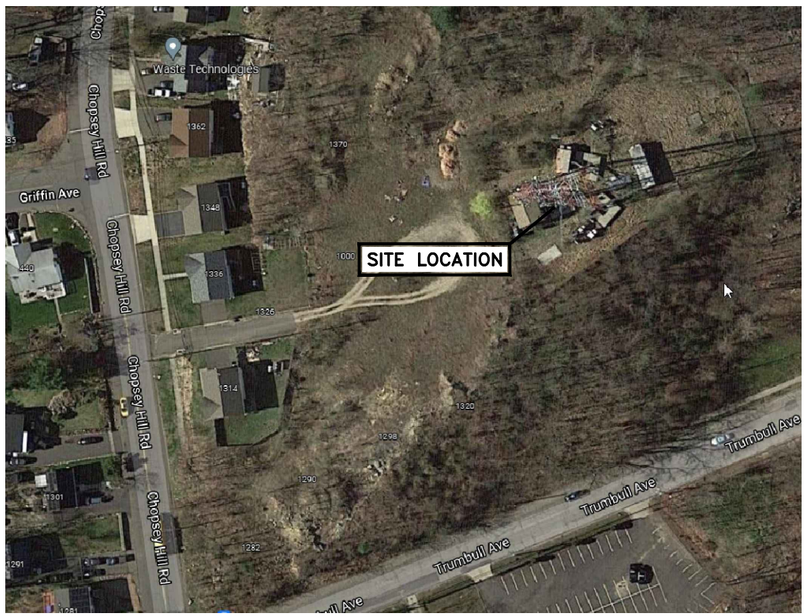
DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND −48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY −48V.

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

ELECTRICAL NOTES

NO SCALE

2



AERIAL VIEW

NO SCALE

3

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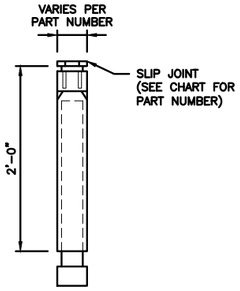
SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

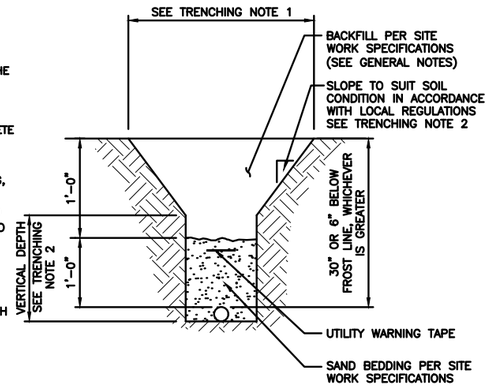


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

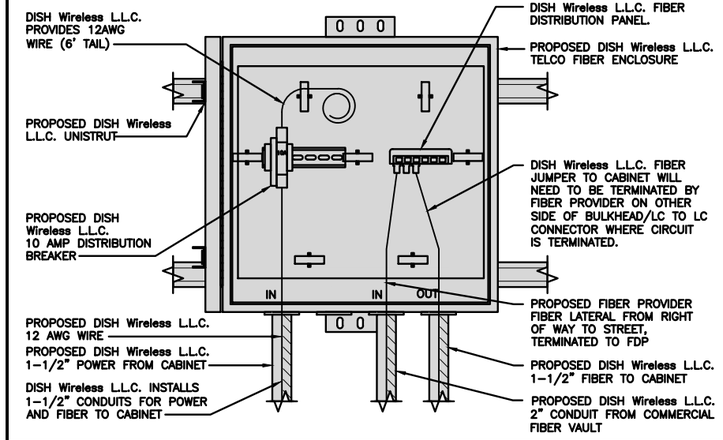
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

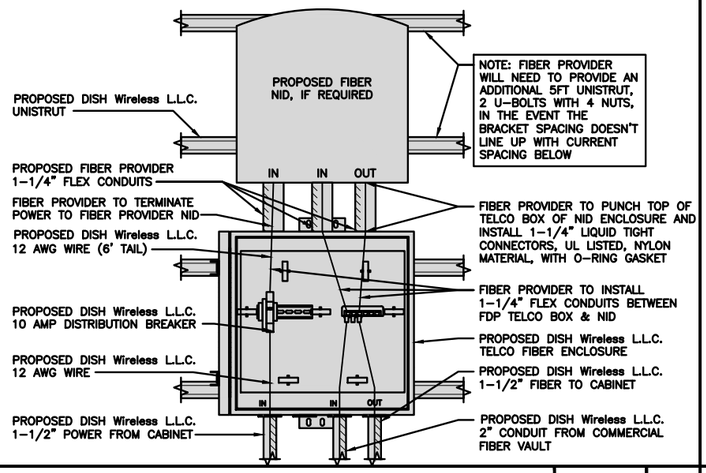
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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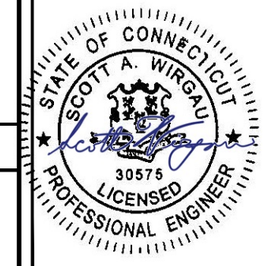
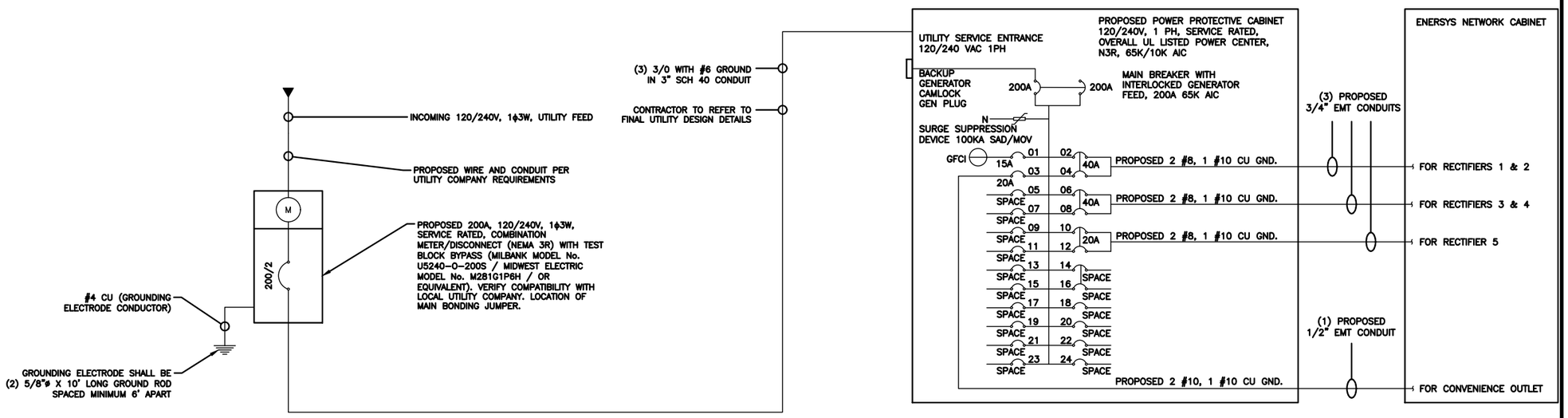


A&E PROJECT NUMBER
383598-13709692_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



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

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

PPC ONE-LINE DIAGRAM — NO SCALE — 1

PROPOSED ENERSYS PANEL SCHEDULE

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

PANEL SCHEDULE — NO SCALE — 2

NOT USED — NO SCALE — 3

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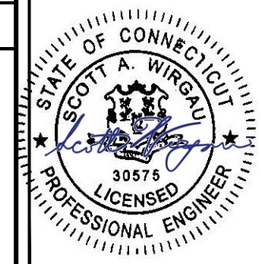
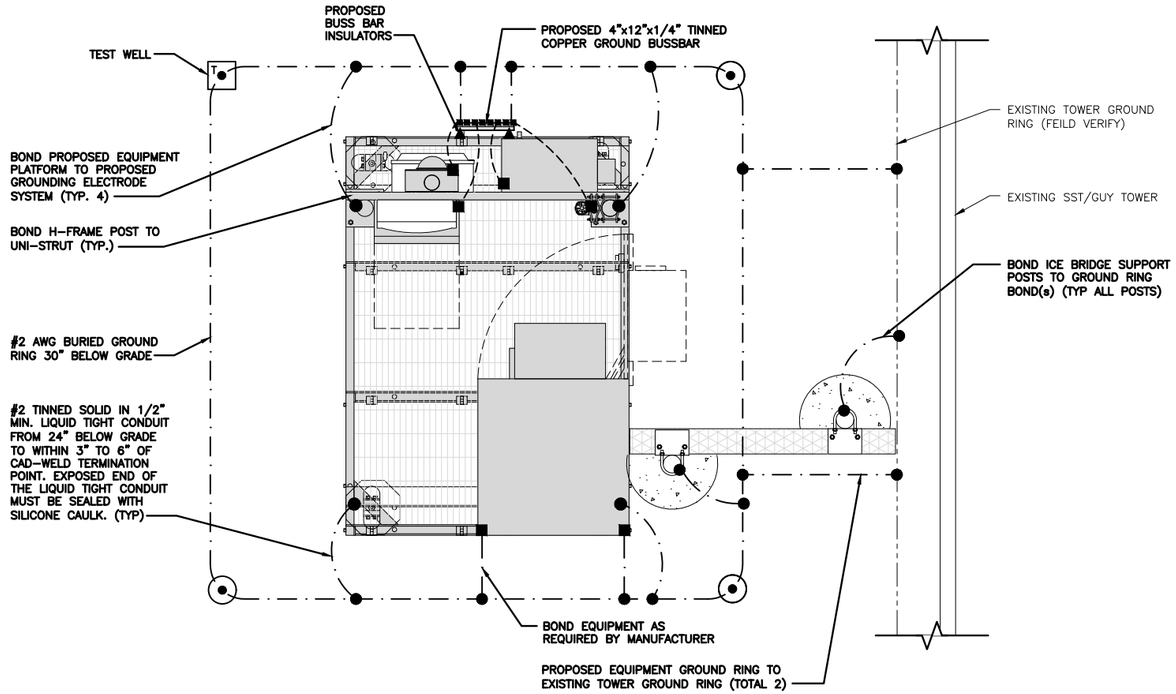


A&E PROJECT NUMBER
383598-13709692_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

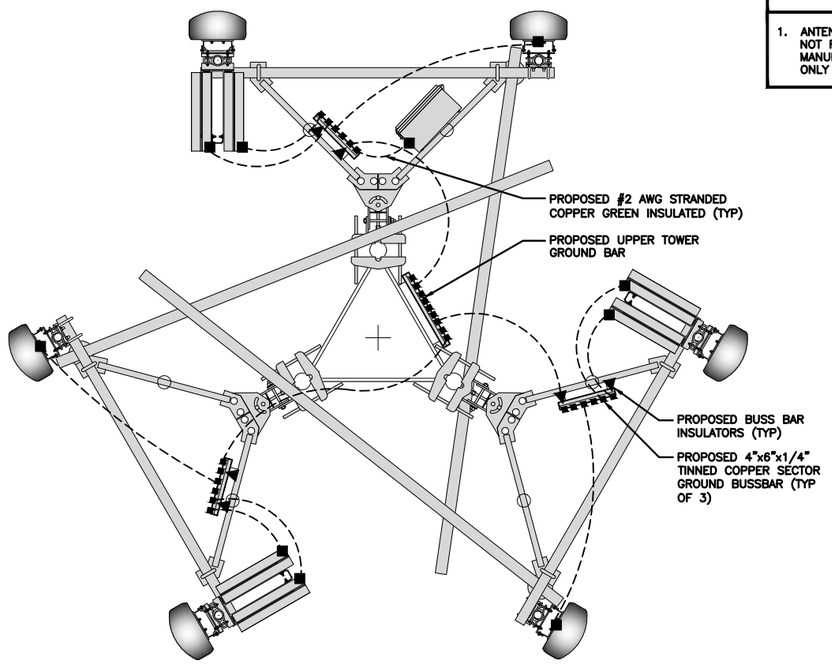
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

(E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 5/8" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES

NO SCALE | 3

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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
383598-13709692_D2

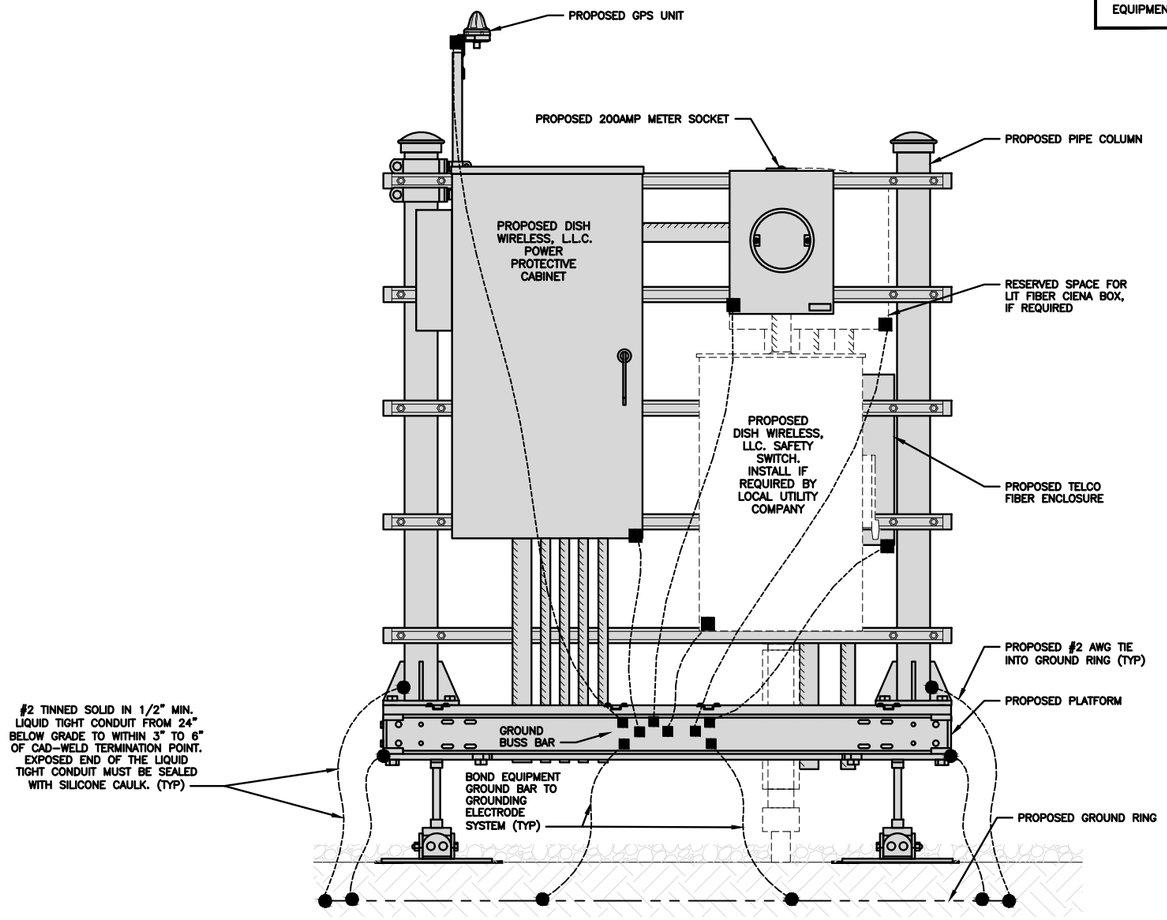
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

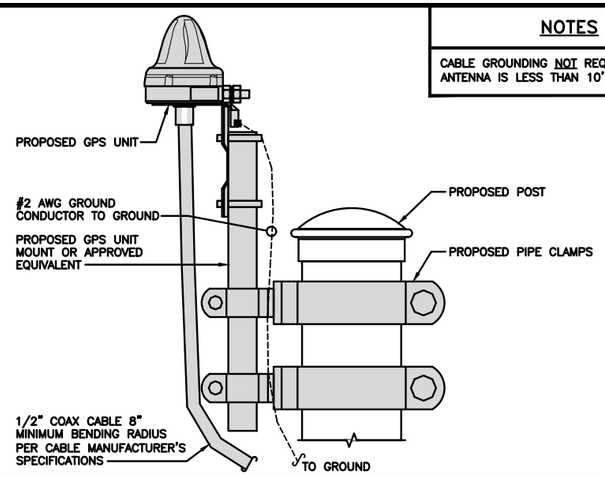
EQUIPMENT CABINET OMITTED FOR CLARITY



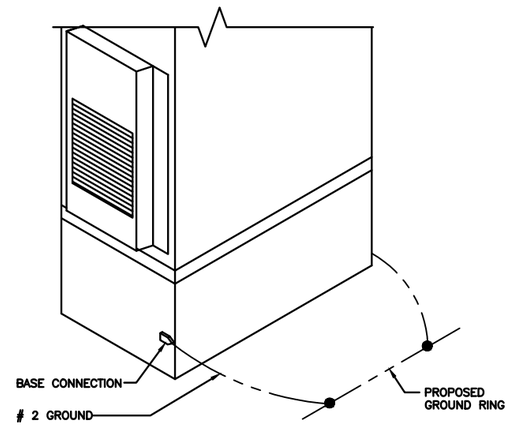
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

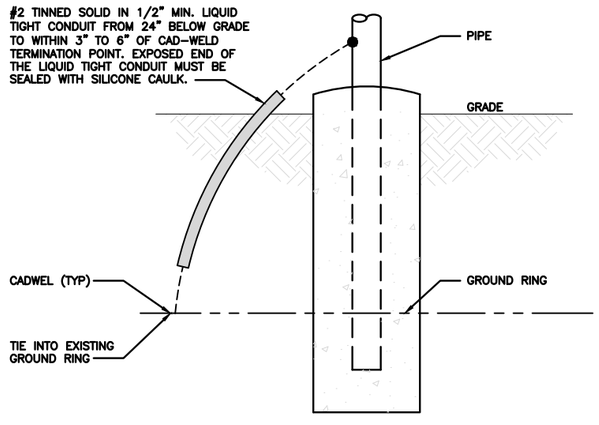
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



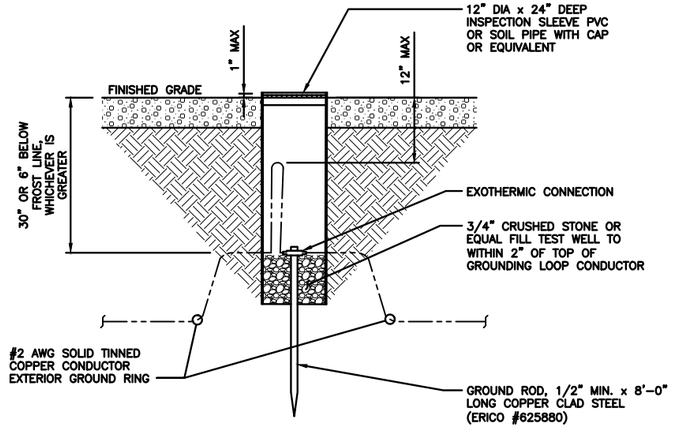
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



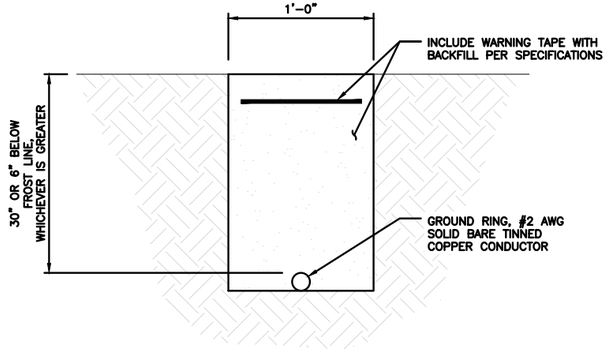
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
383598-13709692_D2

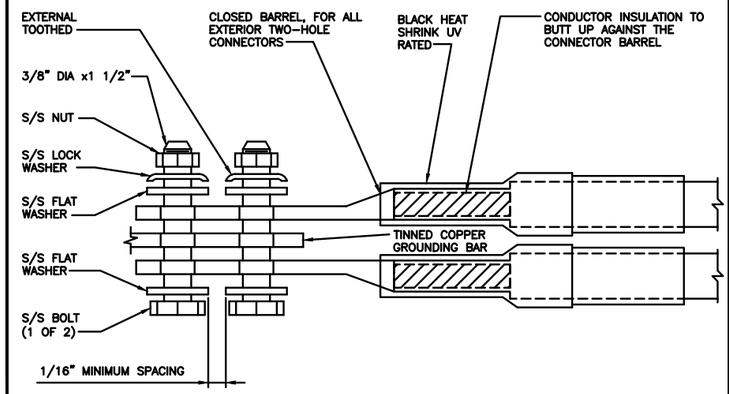
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

SHEET TITLE
GROUNDING DETAILS

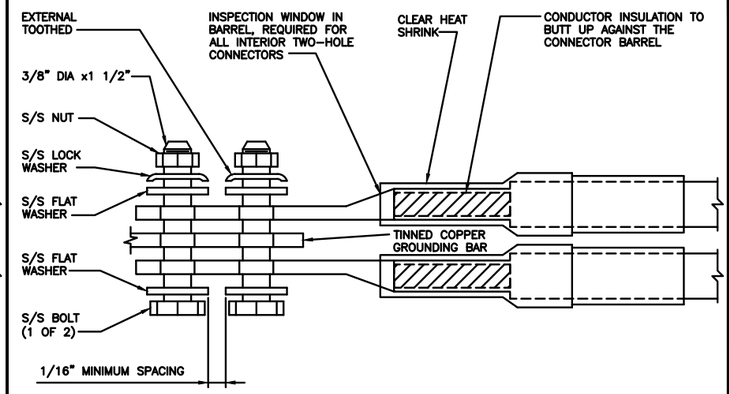
SHEET NUMBER
G-2

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

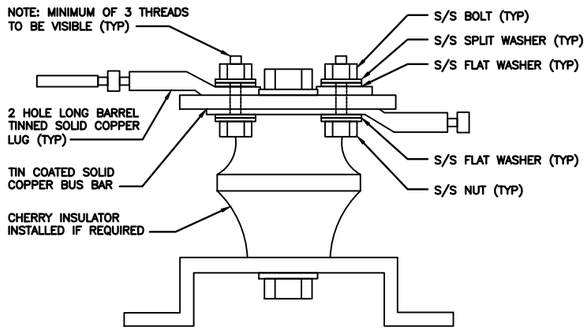
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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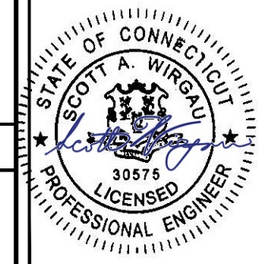

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PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

SHEET TITLE
GROUNDING DETAILS

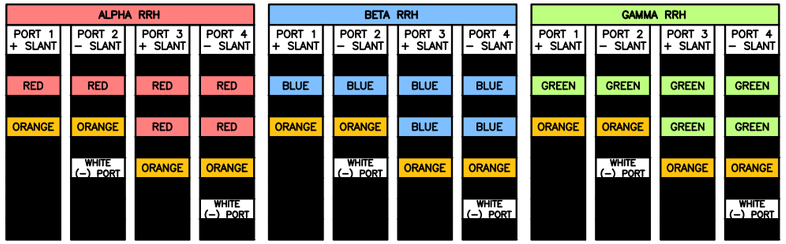
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

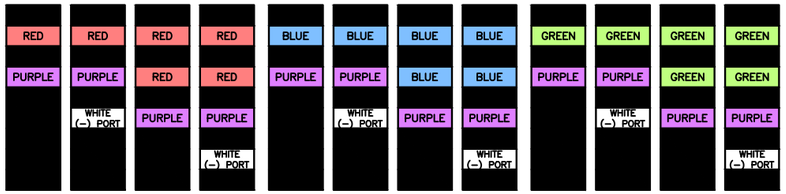
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

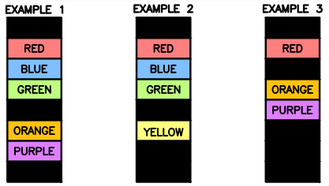


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

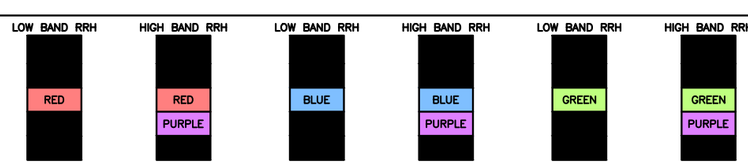
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



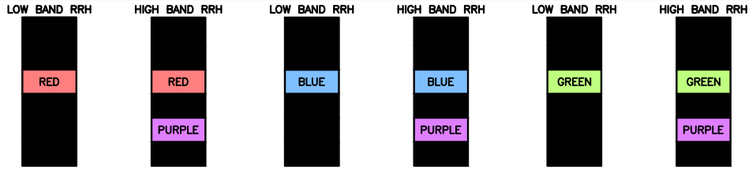
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

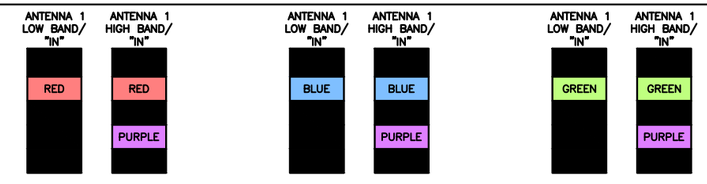


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



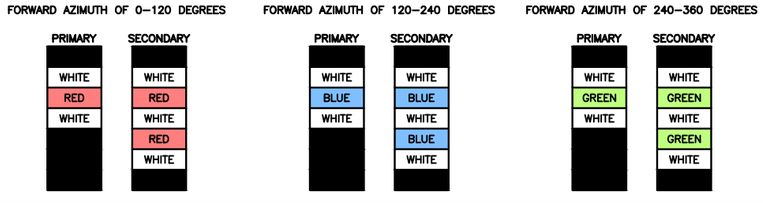
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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1	11/01/2021	JX REQUIREMENTS

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
383598-13709692_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH — $

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8 — F

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — x — x — x — x

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

UNDERGROUND POWER — UGP — UGP — UGP — UGP — UGP

UNDERGROUND TELCO — UGT — UGT — UGT — UGT — UGT

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

UNDERGROUND TELCO/POWER — UGT/P — UGT/P — UGT/P — UGT/P

ABOVE GROUND POWER — AGP — AGP — AGP — AGP — AGP

ABOVE GROUND TELCO — AGT — AGT — AGT — AGT — AGT

ABOVE GROUND TELCO/POWER — AGT/P — AGT/P — AGT/P — AGT/P

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

dish wireless.
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DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	SRF	SRF

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SHEET TITLE
LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SITE ACTIVITY REQUIREMENTS:

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

2. "LOOK UP" – DISH WIRELESS, L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH WIRELESS, L.L.C. AND DISH WIRELESS, L.L.C. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.

4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH WIRELESS, L.L.C. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).

5. ALL SITE WORK TO COMPLY WITH DISH WIRELESS, L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, L.L.C. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."

6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH WIRELESS, L.L.C. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.

10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.

11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.

12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH WIRELESS, L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.

14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.

15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.

16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.

18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

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

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

22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1.FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH WIRELESS, L.L.C.

TOWER OWNER:TOWER OWNER

2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.

3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.

4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.

5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.

6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.

7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.

12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH WIRELESS, L.L.C. AND TOWER OWNER

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

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

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GENERAL NOTES

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CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/27/2021	ISSUED FOR CONSTRUCTION
1	11/01/2021	JX REQUIREMENTS

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
383598-13709692_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

STRUCTURAL STEEL NOTES:

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

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

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

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

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

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

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

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

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

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

6. CONNECTIONS:

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

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

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

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

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

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

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

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

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

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

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DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	SRF	SRF

RFDS REV #: ----

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REV	DATE	DESCRIPTION
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1	11/01/2021	JX REQUIREMENTS

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
383598-13709692_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01150B
1000 TRUMBULL AVENUE
BRIDGEPORT, CT 06606

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

July 7, 2022

Blake Paynter
Project Manager, Site Development
American Tower Corporation
10 Presidential Way
Woburn, MA 01801

Re: Tower Share Application – Dish Site 13709692
Dish Wireless Telecommunications Facility @ 1000 Trumbull Avenue, Bridgeport, CT 06606
AKA 1320 Chopsey Hill Road, AKA 1330 Chopsey Hill Road

Dear Mr. Paynter:

Dish Wireless ("Dish") is proposing a new wireless telecommunications facility on an existing two hundred forty (240) foot tall lattice tower at 1000 Trumbull Avenue, Bridgeport, CT 06606; the site (also known as 1320 Chopsey Hill Road) (Latitude: 41.2196, Longitude: -73.20128611) and within the existing fenced compound. The tower is owned and operated by American Tower Corporation. The subject property is owned by the American Tower Corporation.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a one hundred forty five (145) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 240-feet and no changes will be made to the compound dimensions.

The tower is a non-conforming use that was approved by the Bridgeport Zoning Board of Appeals on November 24, 1989 (copy enclosed).

This letter is intended to serve as the required notice to both the property owner and the tower owner. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Acting Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046

July 7, 2022

The Honorable Joseph P. Ganim
City of Bridgeport
Margaret E. Morton Government Center
999 Broad Street
Bridgeport, CT 06604

Re: Tower Share Application – Dish Site 13709692
Dish Wireless Telecommunications Facility @ 1000 Trumbull Avenue, Bridgeport, CT 06606
AKA 1320 Chopsey Hill Road, AKA 1330 Chopsey Hill Road

Dear Mayor Ganim:

Dish Wireless ("Dish") is proposing a new wireless telecommunications facility on an existing two hundred forty (240) foot tall lattice tower at 1000 Trumbull Avenue, Bridgeport, CT 06606; the site (also known as 1320 Chopsey Hill Road) (Latitude: 41.2196, Longitude: -73.20128611) and within the existing fenced compound. The tower is owned and operated by American Tower Corporation. The subject property is owned by the American Tower Corporation.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a one hundred forty five (145) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 240-feet and no changes will be made to the compound dimensions.

The tower is a non-conforming use that was approved by the Bridgeport Zoning Board of Appeals on November 24, 1989 (copy enclosed).

This letter is intended to serve as the required notice to the chief elected official. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

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Respectfully Submitted,

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046

July 7, 2022

Thomas F. Gill, Director of OPED
Office of Planning and Economic Development
999 Broad Street
Bridgeport, CT 06604

Re: Tower Share Application – Dish Site 13709692
Dish Wireless Telecommunications Facility @ 1000 Trumbull Avenue, Bridgeport, CT 06606
AKA 1320 Chopsey Hill Road, AKA 1330 Chopsey Hill Road

Dear Mr. Rosetti:

Dish Wireless ("Dish") is proposing a new wireless telecommunications facility on an existing two hundred forty (240) foot tall lattice tower at 1000 Trumbull Avenue, Bridgeport, CT 06606; the site (also known as 1320 Chopsey Hill Road) (Latitude: 41.2196, Longitude: -73.20128611) and within the existing fenced compound. The tower is owned and operated by American Tower Corporation. The subject property is owned by the American Tower Corporation.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a one hundred forty five (145) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 240-feet and no changes will be made to the compound dimensions.

The tower is a non-conforming use that was approved by the Bridgeport Zoning Board of Appeals on November 24, 1989 (copy enclosed).

This letter is intended to serve as the required notice to the municipal planning agency. As required by Regulations of Connecticut State Agencies ("RCSA") 16-50j-73 the Connecticut Siting Council ("CSC") has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish's proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Acting Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

Jack Andrews
Zoning Manager, Centerline Communications
10130 Donleigh Drive
Columbia, MD 21046

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