April 28, 2022

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

Re: Tower Share Application – Dish Site 13710333
Dish Wireless Telecommunications Facility @ 168 Catoona Lane, Stamford, CT 06902

Dear Ms. Bachman,

Dish Wireless ("Dish") is proposing a wireless telecommunications facility on an existing three hundred (300) foot tall lattice tower at 168 Catoona Lane, Stamford, CT 06902 (Latitude: 41.052825 Longitude: -73.56304722) and within the existing fenced compound. The tower is owned and operated by American Tower Corporation. The subject property is owned by 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 mount, six (6) RRUs, and cables on the existing tower at eighty two (82) feet as more particularly detailed and described on the enclosed Construction Drawings. The overall height of the existing tower will remain at 300 feet and no changes will be made to the compound dimensions.

I was unable to locate the original tower approval, but the application letter in CSC sub-petition number PE1133-VER-20160805 proffered that ATC obtained the property from American Telephone and Telegraph in 2000, and there are no municipal records of the tower requiring or receiving any zoning approval. Stamford Building Department records revealed that the tower was constructed in 1968. The sub-petition was approved by the Council on September 6, 2016.

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 Caroline Simmons as Mayor of the City of Stamford, and Ralph Blessing, the Stamford Land Use Bureau Chief.

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

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 proposed 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 monopole 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 existing 300-foot tall tower would have an insignificant visual impact on the area around the tower. Dish ground equipment would be installed within the existing facility compound. Dish's shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, the attached EME study concludes that 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.

For the foregoing reasons, Dish respectfully requests that the Council approve this request for the shared use of this tower located at 168 Catoona Lane, Stamford, CT 06902.

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 – Original Tower Approval
Exhibit 8 – (4) Notice Confirmations

cc:
American Tower Corporation – Tower Operator/Owner
American Tower Corporation – Property Owner
The Honorable Caroline Simmons - Mayor of the City of Stamford
Ralph Blessing - Stamford Land Use Bureau Chief.

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION

SITE NO: See Site List Below **SITE NAME: See Site List Below**

ADDRESS: See Site List Below

I, Margaret Robinson, Senior Counsel, US Tower Division on behalf of American Tower*, owner and/or operator of the tower facilities located at the addresses identified below (the "Tower Facilities"), do hereby authorize Centerline Communications, LLC ("Centerline"), its agents, 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 owned and operated by AT&T on the Tower Facilities located at the addresses identified below. This installation shall not affect adjoining lands and will occur only within the areas leased or owned by American Tower.

American Tower understands that the applications 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 installations. Any such conditions of approval or modifications will not be effective unless approved in writing by American Tower.

The above authorization does not permit Centerline 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 installations of telecommunications equipment without the prior written approval of American Tower.

Site Authorized:

ATC Project #	ATC Asset #	Address
13682691	302483	286 Beckley Road, Berlin, CT 06037
13682687	302469	1069 Connecticut Ave. Bridgeport, CT 06607
13682699	383598	1000 Truumball Ave. Bridgeport, CT 06606
13682693	302468	99 Meadow St. Harftford, CT 06114
13682696	370627	605 Willard Ave. Newington, CT 06111
13682689	370629	125 Washington Ave. North Haven, CT 06473
13683386	283418	50 Devine St. North Haven, CT 06473
13683396	88018	168 Catoona Lane, Stamford, CT 06902
13682841	243036	668 Jones Hill Rd. West Haven, CT 06516
13958523	283422	171 Short Beach Rd. Brandford, CT 06405
13958547	302516	438 Bridgeport Ave. Milford, CT 06460
13683394	302479	699 West St. Rocky Hill, CT 06067
13958510	302511	20 Post Office Lane. Westport, CT 06880

AMERICAN TOWER®
CORPORATION

Signature: _____

Margaret Robinson, Senior Counsel
US Tower Division

NOTARY BLOCK

COMMONWEALTH OF MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel of American Tower (owner and/or operator of the above referenced Tower Facilities), 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 22nd day of April, 2022.

NOTARY SEAL

GERARD T. HEFFRON
Notary Public
Commonwealth of Massachusetts
My Commission Expires
August 9, 2024

Notary Public _____
My Commission Expires: August 9th, 2024

* American Tower as used herein is defined as American Tower Corporation and any of its affiliates or subsidiaries.

168 CATOONA LANE

Location	168 CATOONA LANE	**Mblu**	000/ 0370/ / /
Acct#	000-0370	**Owner**	AMERICAN TOWERS INC
Assessment	$3,019,920	**Appraisal**	$4,314,160
PID	116	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$422,560	$3,891,600	$4,314,160
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$295,800	$2,724,120	$3,019,920

Owner of Record

Owner	AMERICAN TOWERS INC	**Sale Price**	$1,040,050
Co-Owner		**Book & Page**	5456/0339
Address	PO BOX 723597 ATLANTA, GA 31139	**Sale Date**	02/17/2000

Ownership History

Ownership History			
Owner	**Sale Price**	**Book & Page**	**Sale Date**
AMERICAN TOWERS INC	$1,040,050	5456/0339	02/17/2000
AMERICAN T & T CO	$0	1128/0268	03/15/1968

Building Information

Building 1 : Section 1

Year Built: 1968
Living Area: 3,249

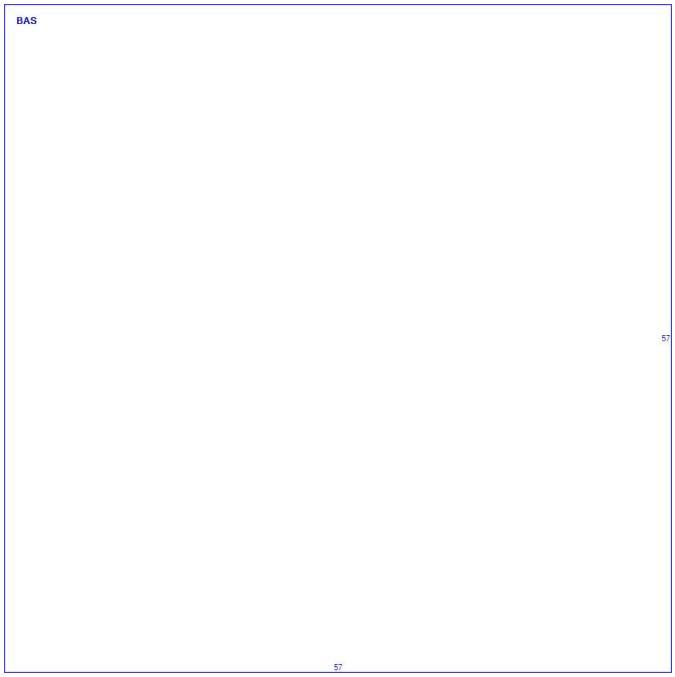
Building Attributes	
Field	**Description**
STYLE	Telephone Bldg

MODEL	Comm/Ind
Grade	C
Stories:	1
Occupancy	1.00
Exterior Wall 1	Reinforc Concr
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T&G/Rubber
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concrete Slab
Interior Floor 2	
Heating Fuel	Gas/LP
Heating Type	Hot Air-no Duc
AC Type	Central
Struct Class	
Bldg Use	Industrial MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	300C
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	None
Ceiling/Wall	Ceil & Wall
Rooms/Prtns	Average
Wall Height	15.00
% Comn Wall	

Building Photo

(https://images.vgsi.com/photos/StamfordCTPhotos//\00\11\89\56.jpg)

Building Layout



(ParcelSketch.ashx?pid=116&bid=116)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	3,249	3,249
		3,249	3,249

Building 2 : Section 1

Year Built: 1989
Living Area: 600

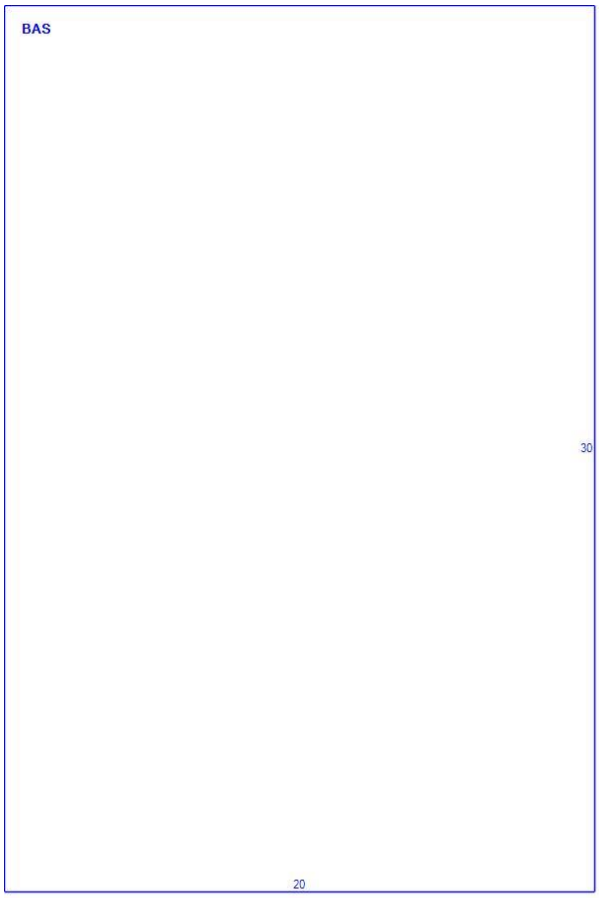
Building Attributes : Bldg 2 of 2	
Field	**Description**
STYLE	Telephone Bldg
MODEL	Comm/Ind
Grade	C

Building Photo

Building Photo
(https://images.vgsi.com/photos/StamfordCTPhotos//default.jpg)

Stories:	1
Occupancy	1.00
Exterior Wall 1	Reinforc Concr
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T&G/Rubber
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concrete Slab
Interior Floor 2	
Heating Fuel	Gas/LP
Heating Type	Hot Air-no Duc
AC Type	Central
Struct Class	
Bldg Use	Industrial MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	300C
Heat/AC	Heat/AC Pkgs
Frame Type	FireProofSteel
Baths/Plumbing	None
Ceiling/Wall	Ceil & Wall
Rooms/Prtns	Average
Wall Height	10.00
% Comn Wall	

Building Layout



(ParcelSketch.ashx?pid=116&bid=36833)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	600	600
		600	600

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	300C
Description	Industrial MDL-94
Zone	MZN
Neighborhood	0300
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	3.64
Depth	
Assessed Value	$2,724,120
Appraised Value	$3,891,600

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
AP1	Fence Chn Lk			2400.00 L.F.	$20,700	1
LP4	Pavng Asphlt			3880.00 S.F	$4,660	1
CEL1	Cell Tower			1.00 SITES	$146,250	1
CSHD	Cell Equipment			240.00 S.F.	$7,300	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$422,560	$3,891,600	$4,314,160
2020	$422,560	$3,891,600	$4,314,160
2019	$422,560	$3,891,600	$4,314,160

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$295,800	$2,724,120	$3,019,920
2020	$295,800	$2,724,120	$3,019,920
2019	$295,800	$2,724,120	$3,019,920

Google Maps 168 Catoona Ln

Imagery ©2022 CNES / Airbus, Maxar Technologies, New York GIS, USDA/FPAC/GEO, Map data ©2022 200 ft

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

May 9, 2022

John Andrews
Project Manager
Centerline Communications LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
jmandrews@clinellc.com

RE: **EM-CING-135-220330** – New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 168 Catoona Lane, Stamford, Connecticut.

Dear Mr. Andrews:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

1. Prior to AT&T's antenna installation, antenna mount modifications shall be installed in accordance with the Mount Analysis prepared by American Tower dated February 14, 2022 and stamped and signed by Esha Kaushal Modi;

2. Within 45 days following completion of equipment installation, AT&T shall provide documentation certified by a Professional Engineer that its installation complied with the recommendations of the Mount Analysis;

3. Any deviation from the proposed modification as specified in this notice and supporting materials submitted to the Council shall render this acknowledgement invalid;

4. Any material changes to this modification as proposed shall require the filing of a new notice with the Council;

5. The Council shall be notified in writing at least two weeks prior to the commencement of site construction activities;

6. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;

7. Deployment of any 5G services must comply with FCC and FAA guidance relative to air navigation, as applicable;

8. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by AT&T shall be removed within 60 days of the date the antenna ceased to function;

9. The validity of this action shall expire one year from the date of this letter; and

10. The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated March 25, 2022. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site by any dimension, increase noise levels at the tower site boundary by six decibels or more, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standards adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996 and by the state Department of Energy and Environmental Protection pursuant to Connecticut General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below state and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/CMW/emr

c: The Honorable Caroline Simmons, Mayor, City of Stamford (mayorsoffice@stamfordct.gov)

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A SUB-PETITION OF CELLCO	:	SUB-PETITION NO. 1133
PARTNERSHIP D/B/A VERIZON WIRELESS	:	168 CATOONA LANE
FOR THE SHARED USE OF AN EXISTING	:	STAMFORD, CT
WIRELESS TELECOMMUNICATIONS	:	
FACILITY AT 168 CATOONA LANE,	:	
STAMFORD, CONNECTICUT	:	AUGUST 4, 2016

SUB-PETITION FOR DECLARATORY RULING:
ELIGIBLE FACILITIES REQUEST FOR MODIFICATIONS
THAT WILL NOT SUBSTANTIALLY CHANGE THE
PHYSICAL DIMENSIONS OF AN EXISTING BASE STATION

I. Introduction

Pursuant to Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012, codified at 47 U.S.C. § 1455(a) ("Section 6409(a)") and the October 21, 2014 Report and Order (FCC-14-153) issued by the Federal Communications Commission ("FCC") (the "FCC Order"), Cellco Partnership d/b/a Verizon Wireless ("Cellco") hereby petitions the Connecticut Siting Council (the "Council") for a declaratory ruling ("Sub-Petition") that the installation of a single canister antenna and related telecommunications equipment at the existing wireless telecommunications base station at 168 Catoona Lane in Stamford, Connecticut (the "Property") constitutes an Eligible Facilities Request ("EFR") under the FCC Order. Cellco has designated this site as its "Stamford West 3 Facility".

II. Factual Background

The Property is a 3.64-acre parcel located in Stamford's M-L (Light Industrial) zone district. The Property and the existing 300-foot lattice tower are owned by American Tower Corporation ("ATC"). The Property is surrounded by commercial and residential uses along

Catoona Lane, Myano Lane and Progress Drive. *See* Attachment 1 – Site Vicinity Map and Site Schematic (Aerial Photograph). According to information available at Stamford City Hall, ATC acquired this former American Telephone and Telegraph (AT&T) Corporation in 2000. There is no information available in City records that indicates when the tower ever received or was required to receive local zoning approval. Stamford Building Department records, however, indicate that the tower was built in 1968. (*See* Attachment 2). The tower is currently shared by T-Mobile, with antennas at the 265-foot level; AT&T, with antennas at the 238-foot level; Sprint, with antennas at the 222-foot and 150-foot levels; Clearwire, with antennas at the 171-foot level; and Metro PCS, with antennas at the 150-foot level. Equipment associated with the existing antennas and several other buildings are located near the base of the tower. The entire Property is surrounded by a security fence with access off Catoona Lane.

Cellco is licensed to provide wireless telecommunications services in the 850 MHz, 1900 MHz, 700 MHz and 2100 MHz frequency ranges in Stamford and throughout the State of Connecticut. Cellco's proposed Stamford West 3 Facility described in this filing will provide improved wireless coverage and, more importantly, significant capacity relief to Cellco's existing wireless network in Stamford.

III. Proposed Stamford West 3 Facility

Cellco intends to install a total of twelve (12) antennas and nine (9) remote radio heads ("RRHs") on the northwest, northeast and southeast corners of this square lattice tower at a height of 92 feet above ground level. Cellco will also install a 12' x 26' equipment platform and canopy structure near the base of the tower. The platform will support Cellco's equipment cabinets. Power and telephone service will extend from the existing service at the tower site. Project Plans for the Stamford West 3 Facility are included in Attachment 3. Specifications for

Cellco's antennas and equipment are included in Attachment 4. A Structural Analysis Report confirming that the tower can support Cellco's antenna and related equipment modifications is included in Attachment 5.

IV. Discussion

A. The Proposed Modification Will Not Cause a Substantial Change to the Physical Dimensions of the Existing Base Station

Section 6409(a) provides, in relevant part, that "a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station." Pursuant to the FCC Order, the proposed modification does not substantially change the physical dimensions of the base station if the following criteria are satisfied.

1. *The proposed modified facility will not increase the height of the tower by more than ten (10) percent of the height.* Cellco does not intend to increase the height of the existing tower. Cellco's antennas and RRHs will be located at the 92-foot level on the existing 300-foot tower.

2. *The proposed facility modification will not protrude from the edge of the structure more than six (6) feet.* Cellco's antennas and RRHs will not protrude more than six (6) feet from the face of the tower.

3. *The proposed facility does not involve installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets.* Cellco intends to install two equipment cabinets on a steel equipment platform.

4. *The proposed facility does not entail any excavation or deployment outside the current site of the base station.* Cellco's proposed modification will remain within the limits of the Property.

5. *The proposed facility does not defeat the existing concealment elements of the base station.* There are no concealment elements incorporated into the existing base station tower and none are proposed by Cellco.

6. *The proposed facility complies with conditions associated with the prior approval of construction or modification of the base station.* There is no information available in City of Stamford records that would indicate whether the existing tower has received or was required to receive any type of local zoning approval. Building Department records indicate the tower was originally constructed in 1968. (*See* Attachment 2).

B. FCC Compliance

Included in Attachment 6 is a cumulative worst case General Power Density table for Cellco's proposed antennas confirming that the facility will operate within the FCC safety standards for radio frequency emissions.

C. Notice to the City, Property Owner and Abutting Landowners

On August 4, 2016, a copy of this Sub-Petition was sent to Stamford's Mayor, David Martin; and ATC, the owner of the Property and the tower. A copy of the cover letter sent to Mr. Martin and ATC are included in Attachment 7. A copy of this Sub-Petition was also sent to the owners of land that abuts the Property. A sample abutter's cover letter and the list of those abutting landowners who were sent notice and a copy of this filing is included in Attachment 8.

V. Conclusion

Based on the information provided above, Cellco respectfully submits that the proposed modification of the existing base station at the Property constitutes an "eligible facilities request" under Section 6409(a) and the FCC Order.

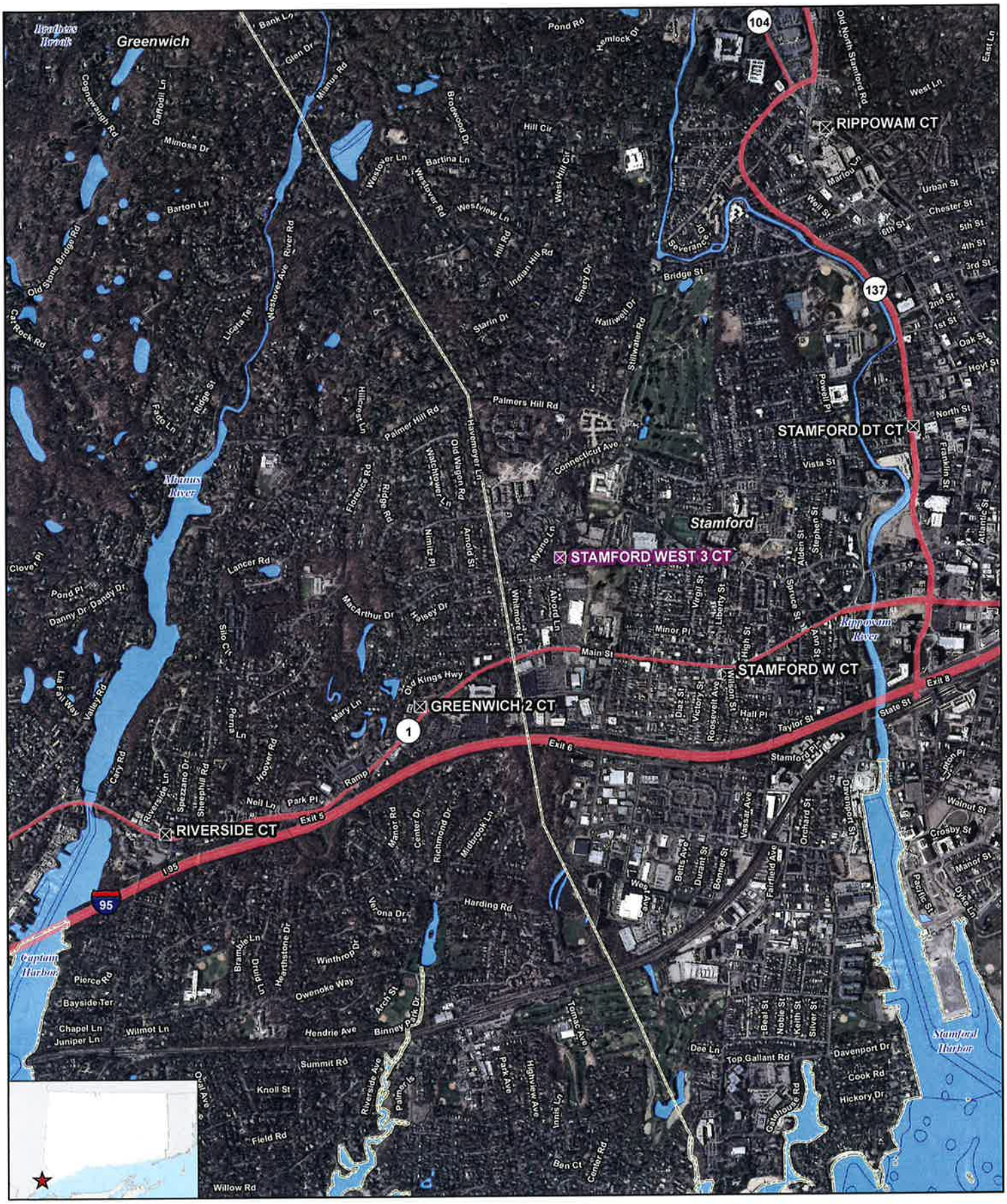
Respectfully submitted,

CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS

By _____

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(860) 275-8200
Its Attorneys

ATTACHMENT 1



Legend

- Proposed Verizon Wireless Facility
- Surrounding Verizon Wireless Facilities
- Municipal Boundary
- Waterbody

Base Map Source: 2012 Aerial Photograph (CTECO)
Map Scale: 1 inch = 2,000 feet
Map Date: June 2016

1,000 500 0 1,000 Feet

Site Vicinity Map

Proposed Wireless
Telecommunications Facility
Stamford West 3
168 Catoona Lane
Stamford, Connecticut

verizon

ALL-POINTS TECHNOLOGY CORPORATION

Legend

- Proposed Verizon Wireless Equipment Lease Areas
- Existing Self-Support Tower (By Others)
- Existing Compound Area (By Others)
- Subject Property
- Approximate Parcel Boundary (CTDEEP GIS Parcels Last Updated 2010)

N
W E
S

100 50 0 100 Feet

Map Notes:
Base Map Source: ESRI World Imagery
Map Scale: 1 inch = 100 feet
Map Date: June 2016

Site Schematic

Proposed Wireless
Telecommunications Facility
Stamford West 3
168 Catoona Lane
Stamford, Connecticut

verizon

ALL-POINTS TECHNOLOGY CORPORATION

ATTACHMENT 2

REAL ESTATE RECORD

1967 card

STAMFORD, CONNECTICUT

SIDE	CARD	STREET: # CATOONA LANE	DISTRICT	LOT	T. MAP	ZONE	BLOCK	SURVEY
N	16	OWNER: American Telephone + Telegraph Co.	A	A	25	R-5	283	8543

FRONT	REAR	AV. DEPTH	FIGURE	UNIT PRICE	DEPTH %	PRICE	TOTAL	INFL.	DEPR.	SOUND VALUE	EXPLANATION
100.0	✓	126.5									
		3.645 Ac.		@ 21,000	AV.	=	76550		—	76,550.	
											LAND 76,550.

BUILDINGS	TYPE	YEAR BUILT	CONDITION E-G-F-P	REPL. COST	DEPR.	SOUND VALUE
MICROWAVE TOWER - BLDG 1-0	SPEC	1968				~~18000~~ 115810
						BUILDINGS 115810

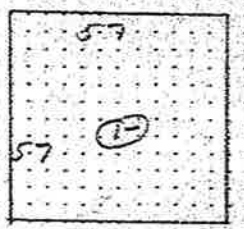
TOTAL LAND AND BUILDINGS: 192360

MAIN BUILDING CONSTRUCTION

TYPE	ROOF SHAPE	HEATING
ONE FAMILY	GABLE	NO HEAT
FAMILY	HIP	PIPELESS
NO. OF ROOMS	FLAT X	RADIANT
1ST. 2ND.	GAMBREL	HOT AIR FURNANCE
3RD.	MANSARD	FORCED AIR FURNACE
APARTMENT	DORMER - 1½ SMALL	HOT WATER OR VAPOR
STORE	DORMER - 1½ LARGE	ELECTRIC
RESIDENCE		STEAM
FACTORY	EXTERIOR WALLS	GAS COAL
OFFICES	CLAPBOARDS	OIL ELECT.
WAREHOUSE	VERTICAL SIDING	UNIT HEATERS
COMM. GARAGE	WOOD SHINGLES	AIR CONDITIONING
GAS STATION	ASBES. SHINGLES	
	ASPHALT SHINGLES	PLUMBING
FOUNDATION	STUCCO ON FRAME	BATH 3 FIX.
CONCRETE	STUCCO ON BLK.	TOIL. 2 FIX. 1/0
CONCRETE BLOCK	BRICK VENEER	W. C.
BRICK OR STONE	STONE VENEER	SINKS
PIERS	BRICK ON T. OR BL.	SHOWER STALL
CELLAR AREA FULL	STONE ON T. OR BL.	COMB.
¼ ½ ¾	CONC. ~~ON STONE OR~~ X	URINALS
CRAWL SPACE		
NO CELLAR X	INTERIOR FINISH	TILING
SLAB	B 1 2 3	BATH FL. & WAINS.
	PLASTER	BATH FL. & WALLS
	HARDWOOD	BATH FL. ONLY
ROOFING	PINE	BATH WALL ONLY
ASPH. SHINGLES	UNFINISHED X	KITCHEN
WOOD SHINGLES	WALLBOARD	SHOWER STALL
ASBES. SHINGLES	METAL CLG.	T. R. FL. & WAINS.
SLATE	FINISHED ATTIC	T. R. FL. & WALLS
TILE	BSMT. ROOM	T. R. FL. ONLY
METAL	FIREPLACE	
COMP. X	PANEL RMS.	DATE INSP.
	FLOORS	8-26-68
MISC.	B 1 2 3	
STEEL SASH	CEMENT X	8-12-69
ALUMINUM SASH	EARTH	
	PINE	
	HARDWOOD	
	SINGLE	
	ATTIC FL. & STRS.	

CONSTRUCTION DETAIL

		UNIT	
	BASE PRICE PER SQUARE FOOT		
ADJ.			
STY.	DIMENSIONS	SQ. FT.	REPLACEMENT
1-	57x57	3249	24.00 77980
TOWER	-300' Hi-STEEL		39000
	W/C FDN		
IMPROV.			
	REPLACEMENT COST		116980
	DEPRECIATION 1		
	TOTAL		115810
	UNFINISHED % OF REPLACEMENT COST		
	SOUND VALUE		



OUTDATED CARD 605

✓

PROPERTY OWNERSHIP RECORD

RECORD OF OWNER	CLERK	REVENUE STAMPS	VOLUME	PAGE	DATE
AMERICAN CYANAMID CO.			527 591	533 100	1/20/47 11/20/4[illegible]
AMERICAN TELEPHONE & TELEGRAPH CO. wty	hm	200.75	1128	268	3-15-68

EXPLANATION			
	1959	LAND	1090
		BUILDINGS	
		TOTAL	1090
	1960	LAND	4820
		BUILDINGS	
		TOTAL	4820
	1961	LAND	4820
		BUILDINGS	
		TOTAL	
	1962	LAND	4870
		BUILDINGS	
		TOTAL	
Land combined with N/74 West Main St. for 1963	1963	LAND	Ref. Card.
		BUILDINGS	
		TOTAL	
	1964	LAND	
		BUILDINGS	
		TOTAL	
	1965	LAND	
		BUILDINGS	
		TOTAL	
	1966	LAND	
		BUILDINGS	
		TOTAL	
Ref. M. 8543 3/5/68 Deed	1967	LAND	43750
		BUILDINGS	
		TOTAL	
Tower & Comp.	1968	LAND	76550.
		BUILDINGS	18000
		TOTAL	94550
Tower Comp.	1969	LAND	76550
		BUILDINGS	115810
		TOTAL	
F-C 3441-10-BM			192360

MISCELLANEOUS DETAIL

For 1963 list, N/16, lot 167-168 Catoma Land $4870. added & combined with N/74 W. main St.

CHANGED TO THE "A" TAX DISTRICT
FOR THE SEPTEMBER 1, 1963 LIST

1967 Land Acq. from N/74, Lot 1 on West Main St. 3.645 Ac $43,750. Map 8543.
Site for A.T.+T. MICRO-WAVE TOWER - Commercial Acreage with Tower and Bldg. to be constructed

OUTDATED
CARD 60's

1970
76550
115810
192360

COMMERCIAL-INDUSTRIAL RECORD [illegible] STAMFORD, CONNECTICUT

SIDE	CARD	STREET #	DISTRICT	LOT	T. MAP	ZONE	BLOCK	SURVEY
N	15	CATOGNA LANE	A	A	25	R-5	283	8543

OWNER: [illegible]

OCCUPANCY	CONSTRUCTION	SIZE	AREA	CLASS	AGE	REMOD.	COND.	REPL. VAL.	PHY. DEP.	PHYS. VALUE	FUNCT. DEP.	ACTUAL VAL.	SQ. FACT.	ASSESSMENT
1 Relay Station	13 Conc.	Sw		II	1968		G	104618	6	98340	—	98340	60	59000
2 Relay Dome	Height 200			@80'	1968		G	16000	5	15200	—	15200	60	9120
3 Paving	Black Top	3880		35	1968		G	1358	20	1086	—	1086	60	650
4 Fencing	Chain Link	1024 L/F		3.25	1968		G	3328	10	2995	—	2995	60	1800
														70570

LAND COMPUTATIONS

FRONT	REAR	FIGURE	DEPTH	UNIT PRICE	DEPTH %	TOTAL	COR. INF.	DEPR.	VALUE		ASSESSMENT
100	1		126	400 155½	220	349307	—	20 JBE	279446	60	167670

3.645 AC = 158776 # @ 22⁰ = 349307 — TOTAL LAND

TOTAL LAND AND BUILDINGS — 238240

FOUNDATION	
Concrete Walls	✓
Cement Blk. Walls	
Brick Walls	
Stone Walls	

BASEMENT AREA ¼ ½ ¾ Full [✓ 0]

EXTERIOR WALLS	
Solid Com. Brick	
Com. Br. on Tile or C. B.	
Face Br. on Com. Br.	
Face Br. on Tile or C. B.	
Face Br. V.	
Com. Br. Ven.	
Cement or Cinder Blk 12"	✓
Rein. Concrete	
Cut Stone Facing	
Terra Cotta Facing	
Stone or T. C. Trim	
Stucco On	
Siding or Shingles	
Party Walls	
Plate Glass Front	

ROOFING	
Composition or T. & G.	✓
Metal	
Wood Deck	
Metal Deck	
Concrete	✓

FLOORS	B	1	2	3	4	5
Concrete		✓				
Earth						
Pine						
Hardwood						
Single Fl.						
Asph. Tile						
Terrazzo						
Wood Joist						
Steel Joist						
Rein. Conc.		✓				

INTERIOR FINISH	
L & F.	
Drywall	
Unfin.	✓

PARTITIONS	
L & P.	
Drywall	
Brick	
C. Blk.	
Concrete	✓

HEATING	
Steam	
Hot Water	
Hot Air	✓
Gas	
Oil Burner	✓
No Heat	
Air Cond.	✓

WIRING	
Flexlume	
Pipe Conduit	✓

PLUMBING	
Bath Rooms	
Toilet Rooms	
Water Closet Extra	
Lavatory Extra	
Sink Extra	
Urinals	
No Plumbing	✓
? Medical Bust Only	

TILING	0
Bath Rm. Fl. & Wains.	
Toilet Rm. Fl. & Wains.	
Bath Room Flr.	
Toilet Room Flr.	

MISCELLANEOUS	
Fireproof Constr.	
Mill Construction	
Fire Resisting	
Steel Frame	
Steel Beams & Cols.	✓
Timber Beams & Cols.	
Steel Trusses	
Concrete Frame	
Sprinkler Syst.	
Passenger Elev.	
Freight Elev.	
Incinerator	
Chimneys	
Metal Frame Sash	✓
Wood Frame Sash	

BUILDING COMPUTATION

3249	S.F.	32²⁰	104618
	S.F.		
	S.F.		
	S.F.		
	S.F.		

REPLACEMENT VALUE 104612

DATE	INSPECTOR

LOCATION Good Fair Poor

LISTER	DATE
MKC	5/5/71

× Heavy Bust Bldg.

①

57 × 57 — 3249 — 15

[illegible]

OUTDATED CARD 705

COMMERCIAL
INDUSTRIAL PROPERTY

PROPERTY OWNERSHIP RECORD

RECORD OF OWNER	CLERK	CONVEY. TAX STAMPS	MORTGAGE	VOLUME	PAGE	DATE
AMERICAN TELEPHONE AND TELEGRAPH CO.	hm	200.75		1128	268	8/15/63

INTERIOR INSPECTED
DATE

RENTAL CAPITALIZATION

FLAT EXPENSE ITEMS	
LAND	
VACANCY	
HEATING	
WATER	
ELECTRICITY	
JANITOR	
MANAGEMENT	
TOTAL FLAT EXPENSES	
GROSS ANNUAL INCOME	
LESS FLAT EXPENSES	
BALANCE FOR CAP.	
CAP. RATE	
INDICATED CAP. VALUE	

OCCUPANCY DETAIL AND INCOME

TELEPHONE CO. Relay Station

SERVICES LAYOUT DETAIL

705

EXPLANATION

SUMMARY

1970	LAND	
	BUILDINGS	
	TOTAL	
1971	LAND	167670
	BUILDINGS	70570
	TOTAL	238240
1972	LAND	167670
	BUILDINGS	70570
	TOTAL	238240
1973	LAND	167670
	BUILDINGS	70570
	TOTAL	238240
1974	LAND	167670
	BUILDINGS	70570
	TOTAL	238240
1975	LAND	167670
	BUILDINGS	70570
	TOTAL	238240
1976	LAND	167670
	BUILDINGS	70570
	TOTAL	238240
1977	LAND	
	BUILDINGS	
	TOTAL	
1978	LAND	
	BUILDINGS	
	TOTAL	
1979	LAND	
	BUILDINGS	
	TOTAL	
1980	LAND	
	BUILDINGS	
	TOTAL	

ATTACHMENT 3

verizon

WIRELESS COMMUNICATIONS FACILITY

STAMFORD WEST 3
168 CATOONA LANE
STAMFORD, CT 06902

SITE DIRECTIONS

FROM: 99 EAST RIVER DRIVE
EAST HARTFORD, CONNECTICUT

TO: 168 CATOONA LANE
STAMFORD, CT 06902

1.	Head Southwest on E River Dr toward Pitkin St	0.9 mi
2.	Continue onto E River Dr Extension	0.3 mi
3.	Turn right to merge onto CT-15S/US-5S toward New Haven/Interstate 91S	0.2 mi
4.	Take I-91 S, CT-15S and I-95 S to Grenhart Rd in Stamford. Take exit 6	76.5 mi
5.	Continue on Grenhart Rd. Take Harvard Ave and	0.4 mi
6.	Take Harvard Ave and Alvord Lane to Catoona Lane.	0.4 mi

GENERAL NOTES

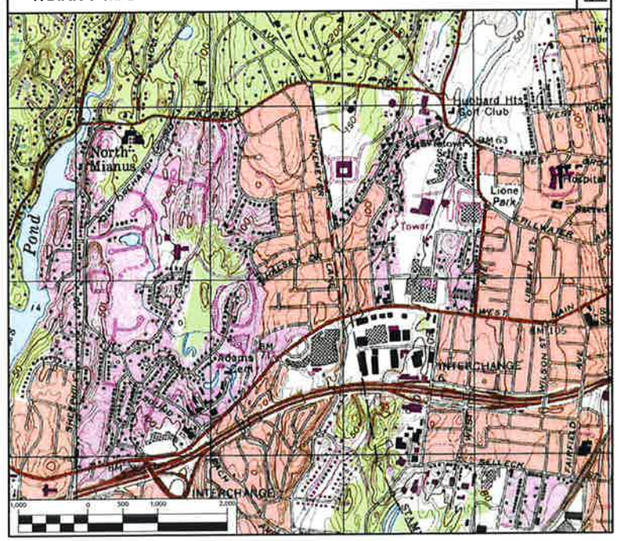
1. PROPOSED ANTENNA LOCATIONS AND HEIGHTS PROVIDED BY CELLCO PARTNERSHIP.

PROJECT SCOPE

1. THE PROPOSED SCOPE OF WORK GENERALLY INCLUDES INSTALLATION OF A 12'x26' RAISED STEEL GRATING PLATFORM ATOP CONC. PIERS WITH STAND ALONE CANOPY ROOF WHICH IS LOCATED WITHIN THE EXISTING WIRELESS COMMUNICATIONS LEASE AREA.
2. A TOTAL OF TWELVE (12) DIRECTIONAL PANEL ANTENNAS ARE PROPOSED TO BE MOUNTED ON AN EXISTING 300' TALL SS LATICE TOWER AT A CENTERLINE ELEVATION OF 92' ABOVE FINISHED GRADE.
3. ELECTRIC AND TELCO UTILITIES SHALL BE ROUTED UNDERGROUND TO THE PROPOSED EQUIPMENT PLATFORM FROM AN EXISTING UTILITY BACKBOARD LOCATED ADJACENT TO FENCED COMPOUND.
4. FINAL DESIGN FOR TOWER AND ANTENNA MOUNTS SHALL BE INCLUDED IN THE CONSTRUCTION DRAWINGS.
5. THE PROPOSED WIRELESS FACILITY INSTALLATION WILL BE DESIGNED IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2009 CONNECTICUT SUPPLEMENT.
6. THERE WILL NOT BE ANY LIGHTING UNLESS REQUIRED BY THE FCC OR THE FAA.
7. THERE WILL NOT BE ANY SIGNS OR ADVERTISING ON THE ANTENNAS OR EQUIPMENT.

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

SITE NAME:	STAMFORD WEST 3
SITE ADDRESS:	168 CATOONA LANE STAMFORD, CT 06902
LESSEE/TENANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 99 EAST RIVER DRIVE EAST HARTFORD, CT 06108
VERIZON SITE ACQUISITION CONTACT:	STEVE SCHADLER CELLCO PARTNERSHIP (508) 887-0357
LEGAL/REGULATORY COUNSEL:	KENNETH C. BALDWIN, ESQ. ROBINSON & COLE LLP (860) 257-8345
TOWER COORDINATES:	LATITUDE: 41°-03'-09.95" N LONGITUDE: 73°-33'-47.11" W GROUND ELEVATION: 50'± A.M.S.L. COORDINATES & GROUND ELEVATION ARE BASED ON CONNECTICUT SITING COUNCIL DATABASE.

SHEET INDEX

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	08/02/16	HAR	CPC	ISSUED FOR CT SITING COUNCIL
0	07/21/16	LGL	DMD	ISSUED FOR CT SITING COUNCIL – CLIENT REVIEW

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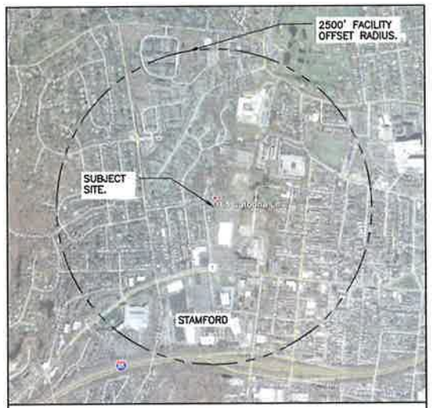
WIRELESS COMMUNICATIONS FACILITY
STAMFORD WEST 3
168 CATOONA LANE
STAMFORD, CT 06902

DATE: 07/13/2016
SCALE: AS NOTED
JOB NO. 14188.00

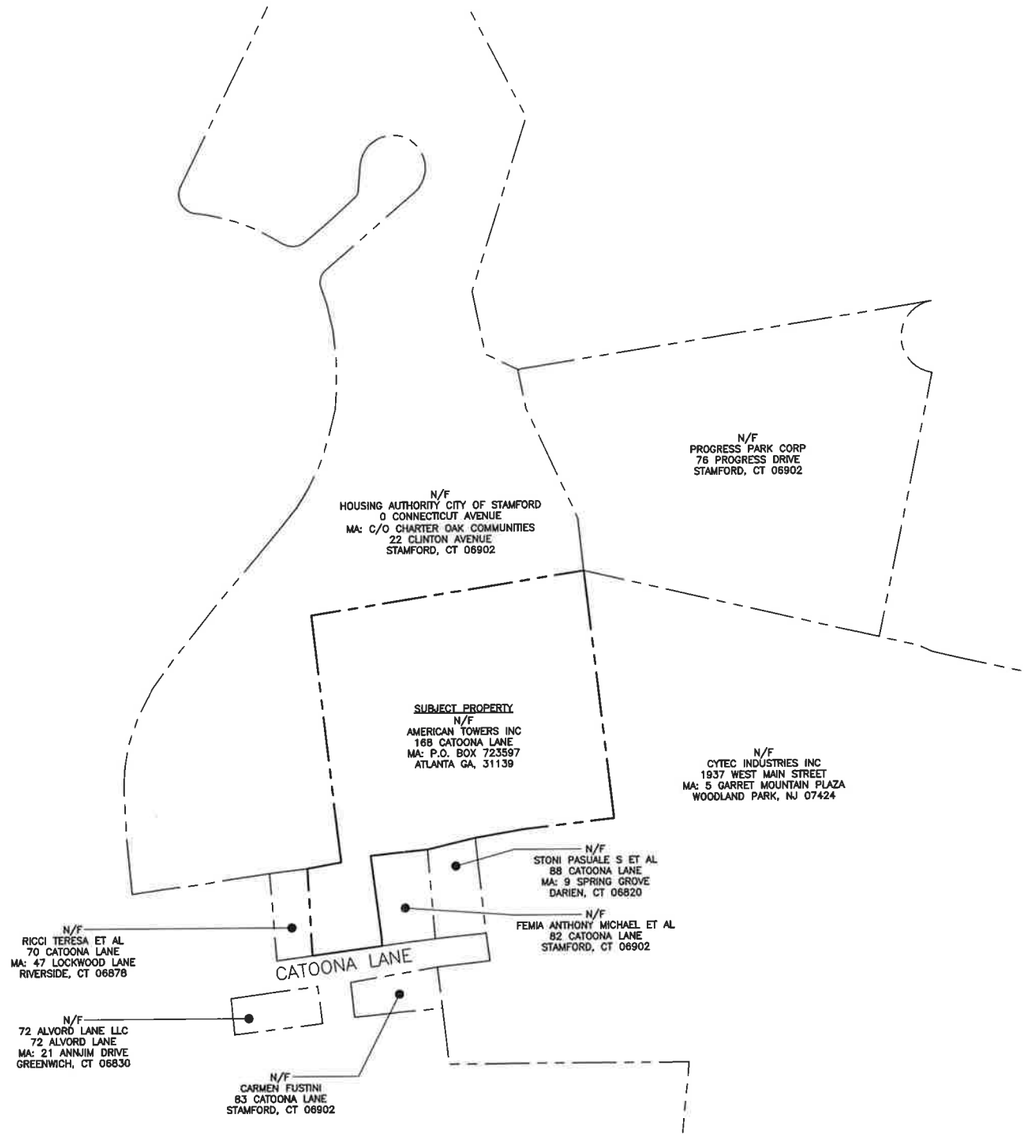
TITLE SHEET

T-1

Sheet No. 1 of 3



MUNICIPALITY NOTIFICATION LIMIT MAP



1 / C-1 ABUTTERS MAP
SCALE: 1" = 100'

APPROXIMATE NORTH

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

MAP REFERENCE NOTE:

PROPERTY LINES AND PROPERTY OWNER INFORMATION SHOWN HEREIN ARE REFERENCED FROM THE CITY OF STAMFORD TAX MAPS.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	08/02/16	HMR	CPC	ISSUED FOR CT SITING COUNCIL
0	07/21/16	LGL	DMD	ISSUED FOR CT SITING COUNCIL – CLIENT REVIEW

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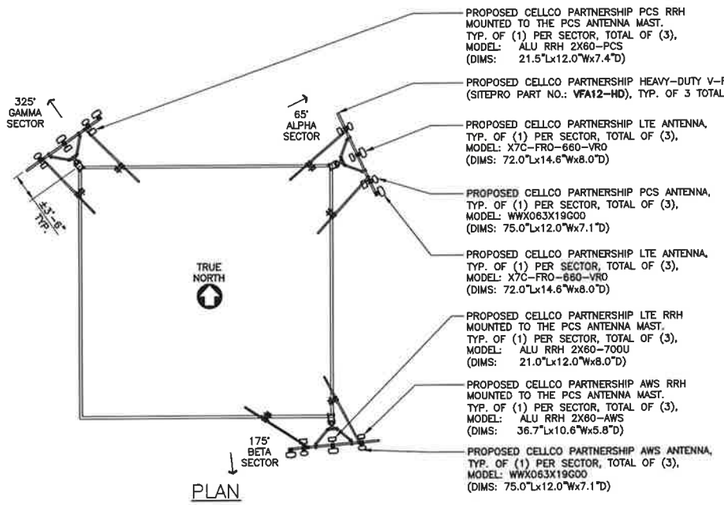
WIRELESS COMMUNICATIONS FACILITY
STAMFORD WEST 3
168 CATOONA LANE
STAMFORD, CT 06902

DATE: 07/13/2016
SCALE: AS NOTED
JOB NO. 14186.00

ABUTTERS MAP

C-1

Sheet No. 2 of 3



PLAN

PROPOSED CELLCO PARTNERSHIP PCS RRH MOUNTED TO THE PCS ANTENNA MAST. TYP. OF (1) PER SECTOR, TOTAL OF (3), MODEL: ALU RRH 2X60-PCS (DIMS: 21.5"Lx12.0"Wx7.4"D)

PROPOSED CELLCO PARTNERSHIP HEAVY-DUTY V-FRAME (SITEPRO PART NO.: VFA12-HD), TYP. OF 3 TOTAL.

PROPOSED CELLCO PARTNERSHIP LTE ANTENNA, TYP. OF (1) PER SECTOR, TOTAL OF (3), MODEL: X7C-FRO-660-VR0 (DIMS: 72.0"Lx14.6"Wx8.0"D)

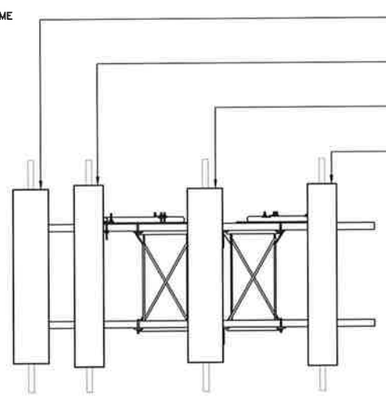
PROPOSED CELLCO PARTNERSHIP PCS ANTENNA, TYP. OF (1) PER SECTOR, TOTAL OF (3), MODEL: WWX063X19G00 (DIMS: 75.0"Lx12.0"Wx7.1"D)

PROPOSED CELLCO PARTNERSHIP LTE ANTENNA, TYP. OF (1) PER SECTOR, TOTAL OF (3), MODEL: X7C-FRO-660-VR0 (DIMS: 72.0"Lx14.6"Wx8.0"D)

PROPOSED CELLCO PARTNERSHIP LTE RRH MOUNTED TO THE PCS ANTENNA MAST. TYP. OF (1) PER SECTOR, TOTAL OF (3), MODEL: ALU RRH 2X60-700U (DIMS: 21.0"Lx12.0"Wx8.0"D)

PROPOSED CELLCO PARTNERSHIP AWS RRH MOUNTED TO THE PCS ANTENNA MAST. TYP. OF (1) PER SECTOR, TOTAL OF (3), MODEL: ALU RRH 2X60-AWS (DIMS: 36.7"Lx10.6"Wx5.8"D)

PROPOSED CELLCO PARTNERSHIP AWS ANTENNA, TYP. OF (1) PER SECTOR, TOTAL OF (3), MODEL: WWX063X19G00 (DIMS: 75.0"Lx12.0"Wx7.1"D)



ELEVATION

PROPOSED CELLCO PARTNERSHIP CELL ANTENNA MODEL: X7C-FRO-660-VR0 (DIMS: 72.0"Lx14.6"Wx8.0"D)

PROPOSED CELLCO PARTNERSHIP PCS ANTENNA: MODEL: WWX063X19G00 (DIMS: 75.0"Lx12.0"Wx7.1"D)

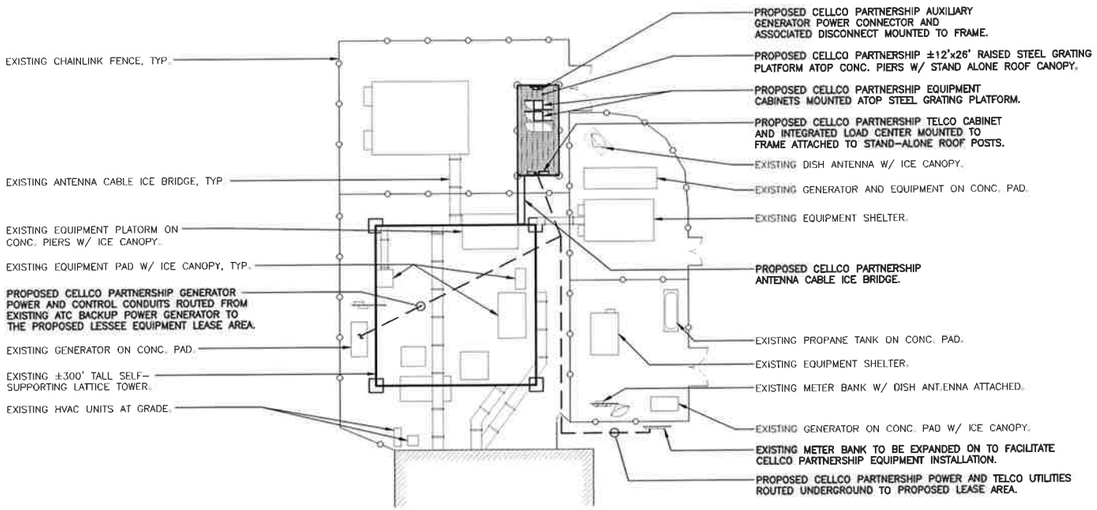
PROPOSED CELLCO PARTNERSHIP LTE ANTENNA: MODEL: X7C-FRO-660-VR0 (DIMS: 72.0"Lx14.6"Wx8.0"D)

PROPOSED CELLCO PARTNERSHIP AWS ANTENNA: MODEL: WWX063X19G00 (DIMS: 75.0"Lx12.0"Wx7.1"D)

3 C-2 **ANTENNA MOUNTING CONFIGURATION**
NOT TO SCALE

TOWER NOTES:

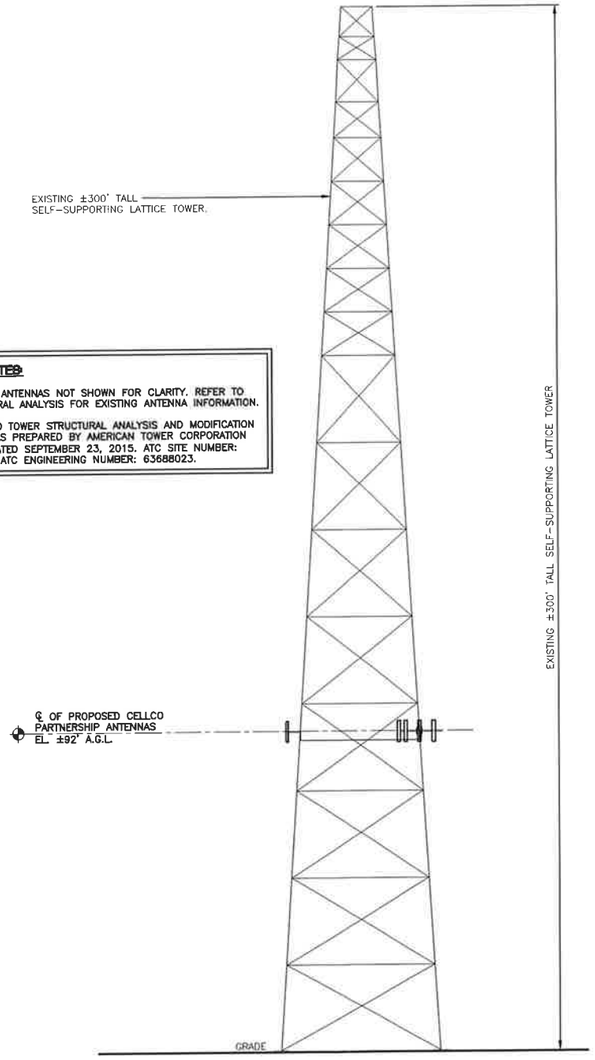
1. EXISTING ANTENNAS NOT SHOWN FOR CLARITY. REFER TO STRUCTURAL ANALYSIS FOR EXISTING ANTENNA INFORMATION.
2. REFER TO TOWER STRUCTURAL ANALYSIS AND MODIFICATION DESIGN AS PREPARED BY AMERICAN TOWER CORPORATION (ATC), DATED SEPTEMBER 23, 2015. ATC SITE NUMBER: 283425, ATC ENGINEERING NUMBER: 63688023.



1 C-2 **FACILITY PLAN**
SCALE: 1" = 20'

APPROXIMATE NORTH

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.



2 C-2 **TOWER ELEVATION**
SCALE: 1" = 20'

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	08/02/16	HAR	GFC	ISSUED FOR CT SITING COUNCIL
0	07/21/16	LGL	DMD	ISSUED FOR CT SITING COUNCIL - CLIENT REVIEW

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STAMFORD WEST 3
168 CATOONA LANE
STAMFORD, CT 06902

DATE: 07/13/2016
SCALE: AS NOTED
JOB NO. 14186.00

COMPOUND PLAN, ELEVATION AND ANTENNA MOUNTING CONFIG.

C-2

Sheet No. 3 of 3

ATTACHMENT 4

X7C-FRO-660

X-Pol Antenna, 698-896 MHz, (72.0", 60° H-Beam)

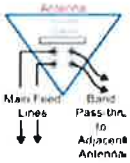
- Fast Roll Off (FRO)
- Designed to improve SNR
- Greatly increases LTE data rates
- Macro Cell High Gain Antenna
- Highly Reliable Fixed Tilt Design
- Suitable for LTE/CDMA/UMTS/GSM
- Mechanical Tilt Bracket Included

Available with Integrated Diplexers

Reduces mainline cables

Eliminates External Tower Devices

Supports high band TMAs



ELECTRICAL SPECIFICATIONS

Frequency Band, MHz	**698-824**	**824-896**
Horizontal Beam Width, 3dB points	58°	
Gain, dBi	16.5	17.2
Vertical Beam Width, 3dB points	11.0°	
Front-to-Back at 180°, dB	>30	
Upper Side Lobe Suppression, Typical, dB	<-18	
Polarization	+/-45°	
Electrical Down Tilt, Fixed	0, 2, 4, 6, 8, 10°	
VSWR/Return Loss, dB, Maximum (Non-IP)	1.4:1/-15.6	
VSWR/Return Loss, dB, Maximum (With-IP)	1.5:1/-14.0	
Return Loss, dB Maximum, Pass Thru	-17.7	
Isolation Between Ports, dB, Minimum	27	
Intermodulation (2x20w), IM3, dBc, Maximum	-150	
Impedance, ohms	50	
Maximum Power Per Connector, CW	500 @ 800 MHz	

MECHANICAL SPECIFICATIONS

Dimensions, Length/Width/Depth	72.0/14.6/8.0 in. (1829/372/203mm)
Connector (Quantity)	(2 or 4) 7-16 DIN Female
Connector Torque	220-265 lbf-in (23-30 N-m)
Connector Location	Back
Antenna Weight	32.2 lbs (14.6 kg) *Note: Weight varies slightly based on ordering options*
Bracket Weight	13.2 lb. (6.0 kg)
Standard Bracket Kit	CSS P/N 919011 (Included)
Mechanical Down Tilt Range	0-12°
Radome Material	High Strength Luran, UV Stabilized, ASTM D1925
Wind Survival	150 mph (241 km/h)
Front Wind Load	211.6 lbf (941.4 N) @100mph
Equivalent Flat Plate	4.22 sq-ft (c=2) @ 100mph

ORDER INFORMATION

MODEL	DESCRIPTION
X7C-FRO-660-*x*	X-Pol antenna with two back DIN connectors
X7C-FRO-660-*x*-IP	X-Pol antenna with four back DIN connectors with integrated pass thru diplexers
919036	Optional Bracket Kit, 2-Point, 12deg D-tilt, For 4.5" OD Pole

***x* defines the electrical tilt**

X7C-FRO-640-V

X-Pol Antenna, 698-896MHz, 72", Fast Roll Off 40° Azimuth
Variable E-Tilt, RET/MET

- Macro Cell, high gain antenna
- Fast Roll Off (FRO)
- Suitable for LTE/CDMA/UMTS/GSM
- AISG 2.0 RET or manual MET tilt control

ELECTRICAL SPECIFICATIONS

Frequency Band, MHz	**698-824**	**824-896**
Horizontal Beam width, 3dB points	46°	36°
Gain, dBi	17.3	18.5
Vertical Beam width, 3dB points	12.1°	10.2°
Front-to-Back at 180°, dB	24	
Upper Side Lobe Suppression, Typical, dB	18	
Polarization	Circular	
Electrical Down tilt	0-10° or 4-14°	
VSWR/Return Loss, dB, Maximum	1.5:1/-14.0	
Isolation Between Ports, dB, Minimum	28	
Intermodulation (2x20w), IM3, dBc	-150	
Impedance, ohms	50	
Maximum Power Per Connector, CW (w)	500	

MECHANICAL SPECIFICATIONS

Dimensions, Length/Width/Depth	72.0/18.8/9.1 in (1829/479/231 mm)
Connector (Quantity) Type	(2) 7-16 DIN Female
Connector Torque	220-265 lbf-in (23-30 N-m)
Connector Location	Back
Antenna Weight	42.4 Lbs (19.3 Kg)
Bracket Weight	13.4 lb (6.0 kg)
Standard Bracket Kit	P/N 919011 (Included)
Mechanical Downtilt Range	0-12°
Radome Material	High Strength Luran, UV Stabilized, ASTM D1925
Wind Survival	150 mph (241 km/h)
Front Wind Load	225.9 lbf (1005.1 N)
Equivalent Flat Plate	4.51 sq-ft (c=2)

RET INFORMATION

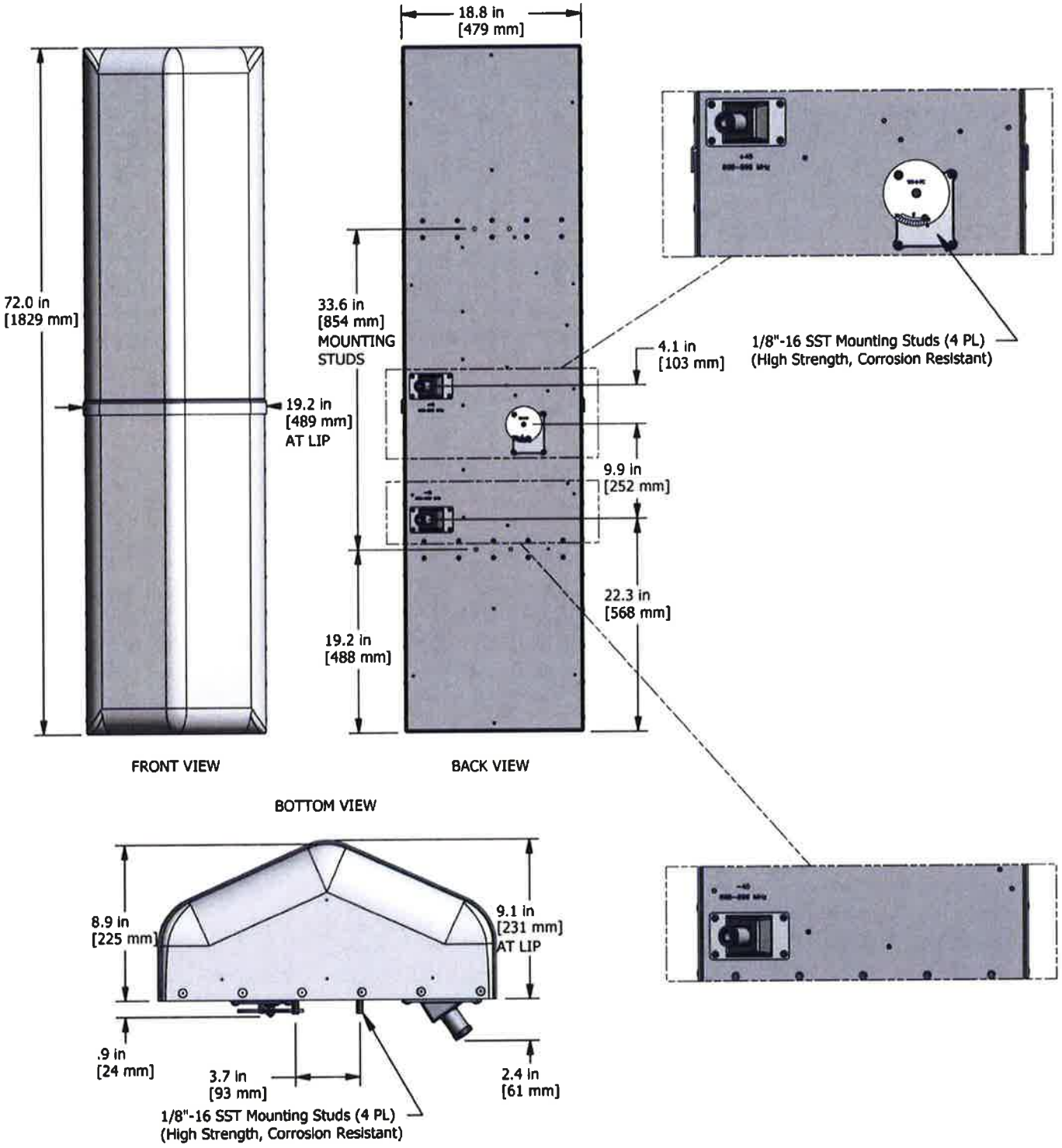
Model	CSS-RET-200
Mounting Location	Rear of Antenna
Weight	1.2 lb (0.54 kg)
Communication Standard	AISG 2.0
Control System	CSS-PCU-220

ORDER INFORMATION

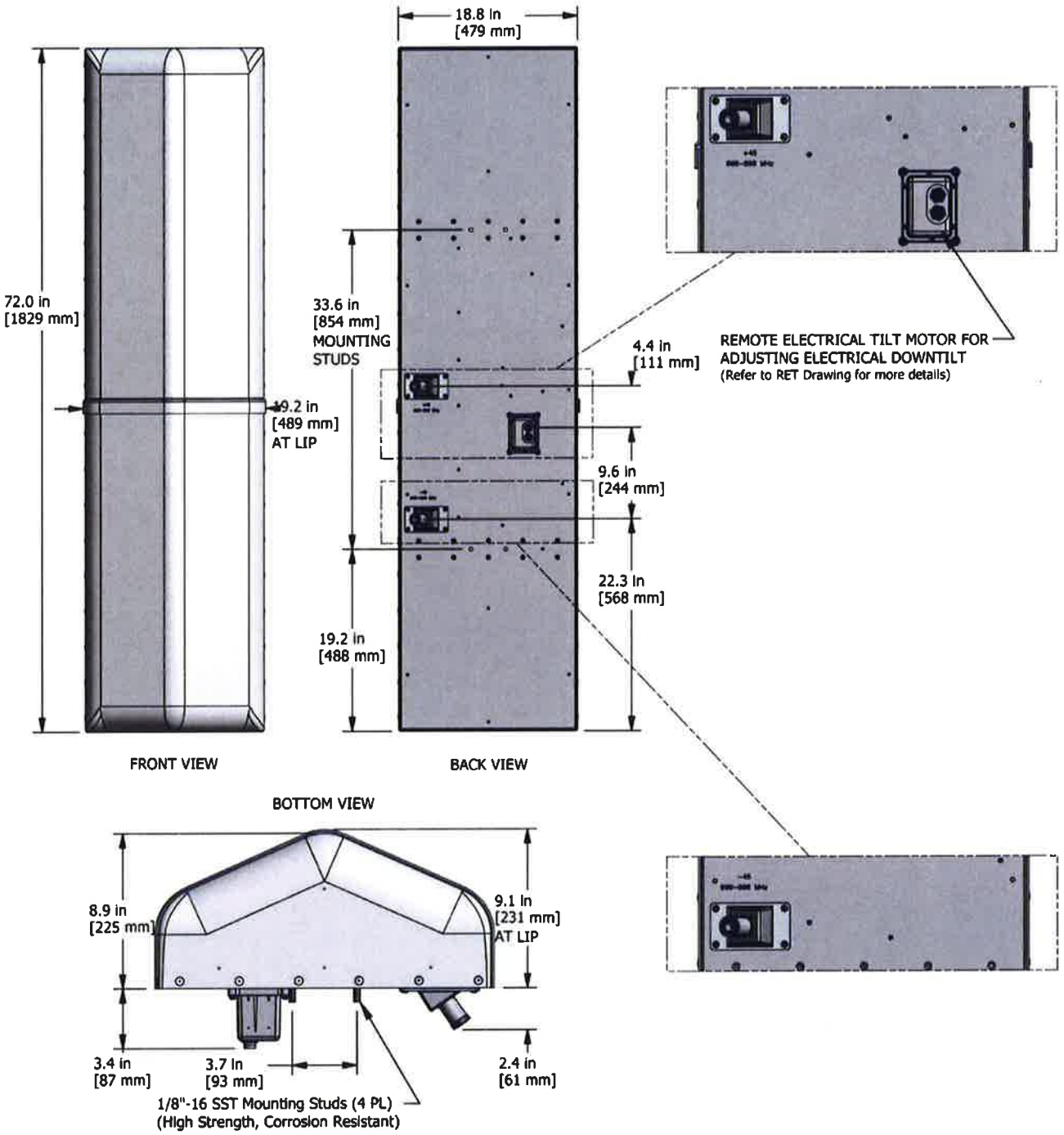
MODEL	DESCRIPTION
X7C-FRO-640-VM0	Antenna with manual MET adjust electrical downtilt 0-10°
X7C-FRO-640-VM4	Antenna with manual MET adjust electrical downtilt 4-14°
X7C-FRO-640-VR0	Antenna with remote RET adjust electrical downtilt 0-10°
X7C-FRO-640-VR4	Antenna with remote RET adjust electrical downtilt 4-14°
919036	Optional Bracket Kit, 2-Point, 12deg D-tilt, For 4.5" OD Pole

Mechanical Outline Drawing

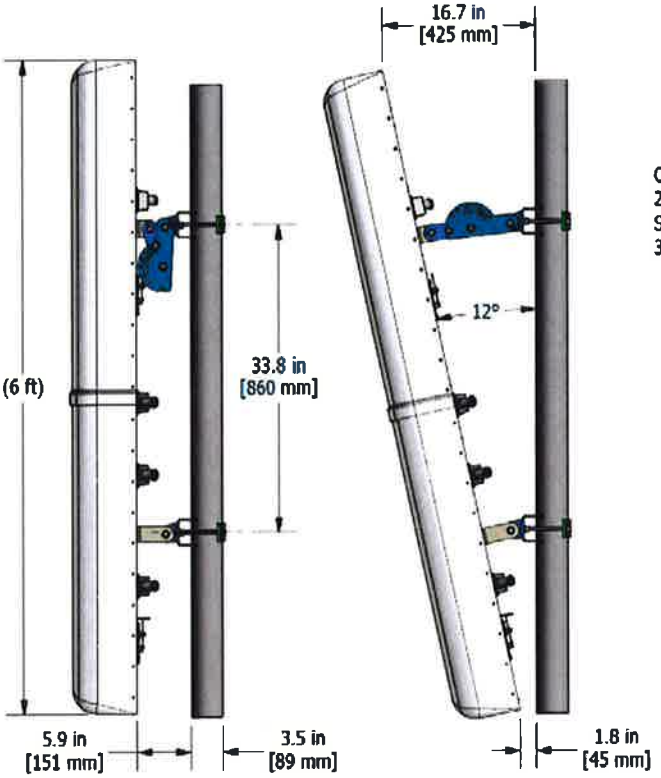
X7C-FRO-640-VM



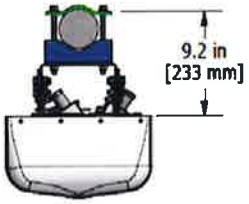
X7C-FRO-640-VR



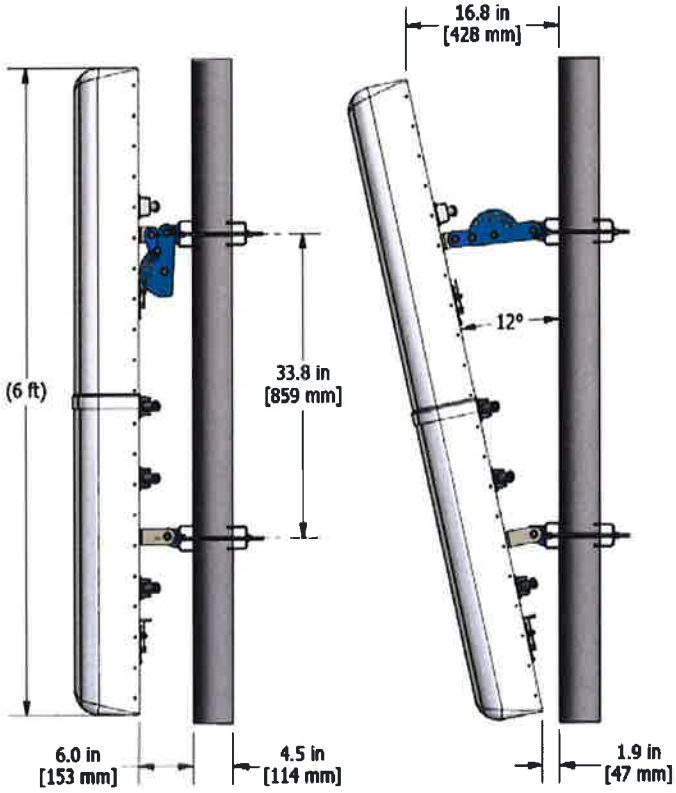
Standard Bracket Kit



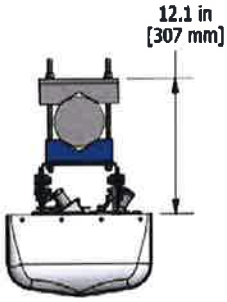
CSS P/N: 919011 BRACKET KIT
2 POINT, 12 DEGREE DOWN TILT
SHOWN MOUNTED ON 3.5" O.D. POLE
3.5" O.D. MAX POLE SIZE



Optional Bracket Kit



CSS P/N: 919036 BRACKET KIT
2 POINT, 12 DEGREE DOWN TILT
SHOWN MOUNTED ON 4.5" O.D. POLE
4.5" O.D. MAX POLE SIZE



WWX063X19x00

Twin Band | Panel Antenna | 2x X-Pol | 65° / 65° | 19.0 / 19.0 dBi | Variable Tilt

- Twin band, 2x X-Pol (Quad-Pol), variable tilt, panel antenna
- Part of Amphenol's UNIVERSAL series of antennas featuring consistent form factors for future-proofing
- Patented internal RET actuator adds no additional length to the antenna
- Can be used with our UNICELL 3-sector antenna enclosures
- Features an adjustable mounting bracket channel for custom mounting in any situation

Ordering Options	Model Number
When ordering, replace "x" in the model number with one of the options listed below.	
Manual Electrical Tilt	WWX063X19M00
Remote Electrical Tilt AISG v1.1	WWX063X19R00
Remote Electrical Tilt AISG v2.0 / 3GPP	WWX063X19G00
Mounting bracket kits and other accessories are ordered separately.	

Electrical Characteristics	2 x 1710-2170 MHz		
Frequency Bands	1710-1880 MHz	1850-1990 MHz	1900-2170 MHz
Polarization	2 x ±45° (Quad-Pol)		
Horizontal Beamwidth	70°	67°	66°
Vertical Beamwidth	5°	4.5°	4°
Gain	18.3 dBi	18.6 dBi	19.0 dBi
Electrical Downtilt	0-10°		
Impedance	50Ω		
VSWR	< 1.5:1		
Upper Sidelobe Suppression	< -17 dB Typical		
Front-to-Back Ratio	> 27 dB		
In-Band Isolation	> 30 dB		
Isolation Between Ports	> 30 dB		
IM3 (2x20W carrier)	< -153 dBc		
Input Power	250 W		
Total Number of Connectors	Antennas has 4 connectors located at the bottom		
Connectors Per Band, Type, Location — 1710-2170 MHz	2 Connectors / 7/16-DIN Female / Bottom / Blue Rings		
Connectors Per Band, Type, Location — 1710-2170 MHz	2 Connectors / 7/16-DIN Female / Bottom / White Rings		
Diplexed	No		
Lightning Protection	Direct Ground		
Operating Temperature	-40° to +60° C (-40° to +140° F)		

Mechanical Characteristics			
Dimensions (Length x Width x Depth)	1906 x 307.3 x 177.2 mm	75.0 x 12.1 x 7.0 in	
Weight without Mounting Brackets: MET	14.5 kg	32.0 lbs	
Weight without Mounting Brackets: RET	14.8 kg	32.7 lbs	
Survival Wind Speed	241 km/hr	150 mph	
Wind Loads (160 km/hr or 100 mph) — Front	707 N	159 lbf	
Wind Loads (160 km/hr or 100 mph) — Side	419 N	94 lbf	

WWX063X19x00

Twin Band | Panel Antenna | 2x X-Pol | 65° / 65° | 19.0 / 19.0 dBi | Variable Tilt

Electrical Downtilt Control			
Electrical downtilt for each band can be controlled separately. Tilt indicator(s) are covered by removable transparent cap(s).			
Manual Electrical Tilt (MET) Control	A colored knob at the end of the tilt indicator allows change of the tilt without need of a tool. The knob color is identical to the corresponding connector ring color. To access the knob, remove the cap by turning it counter-clockwise. It is re-installed by opposite rotation. Do not remove the transparent cap(s) from the antenna.		
Remote Electrical Tilt (RET) Control	The remote control of the electrical tilt is managed by a module (MDCU) totally inserted at the bottom of the antenna. One single module controls individually the tilt of each band (no need of daisy chain cables between the bands). This module does not add any additional length at the bottom of the antenna. For RET control, the transparent cap must be in place and locked. The tilt angle indicator always remains visible and the antenna still has manual tilt control (manual override).		
RET Module	The RET module is factory installed and does not need to be ordered separately.		
	Part Number for AISG v1.1 protocol:	MDCU-A0000	One unit installed in WWX063X19R00
	Part Number for 3GPP/AISG v2.0 protocol:	MDCU-G0000	One unit installed in WWX063X19G00
Important Installation Instructions	In order to operate RET control, the transparent caps covering the tilt adjustment indicators must be engaged and locked. Do not cut them from the antenna.		
	Do not install the antenna with the connectors facing upward.		

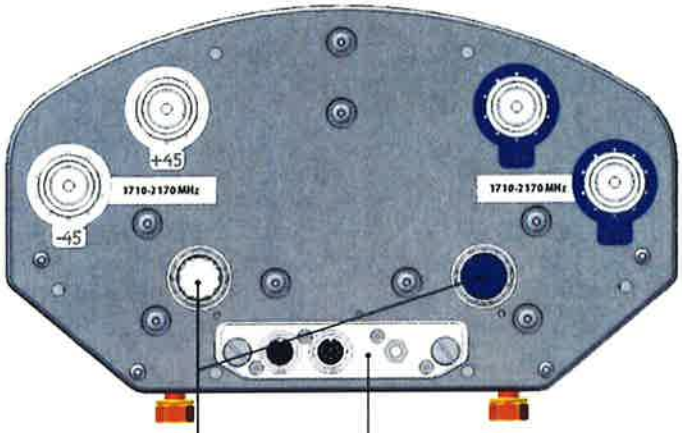
Mounting Options	Part Number	Image	Fits Pipe Diameter	Weight
All mounting bracket kits are ordered separately unless otherwise indicated. Select from the options listed below.				
3-Point Mounting Bracket Kit	MKS09P02		50-115 mm 2.0-4.5 in	4.1 kg 9 lbs
3-Point Mounting & Downtilt Bracket Kit	MKS09T02		50-115 mm 2.0-4.5 in	6.4 kg 14 lbs

Configuration Options	Part Number	Image	Product Description
This antenna model can be used with Amphenol's UNICELL 3-sector antenna enclosures.			
UNICELL 3-Sector Antenna Enclosure	UNX-20-xx		3-Sector, 511 mm (20 inch) diameter antenna enclosure

WWX063X19x00

Twin Band | Panel Antenna | 2x X-Pol | 65° / 65° | 19.0 / 19.0 dBi | Variable Tilt

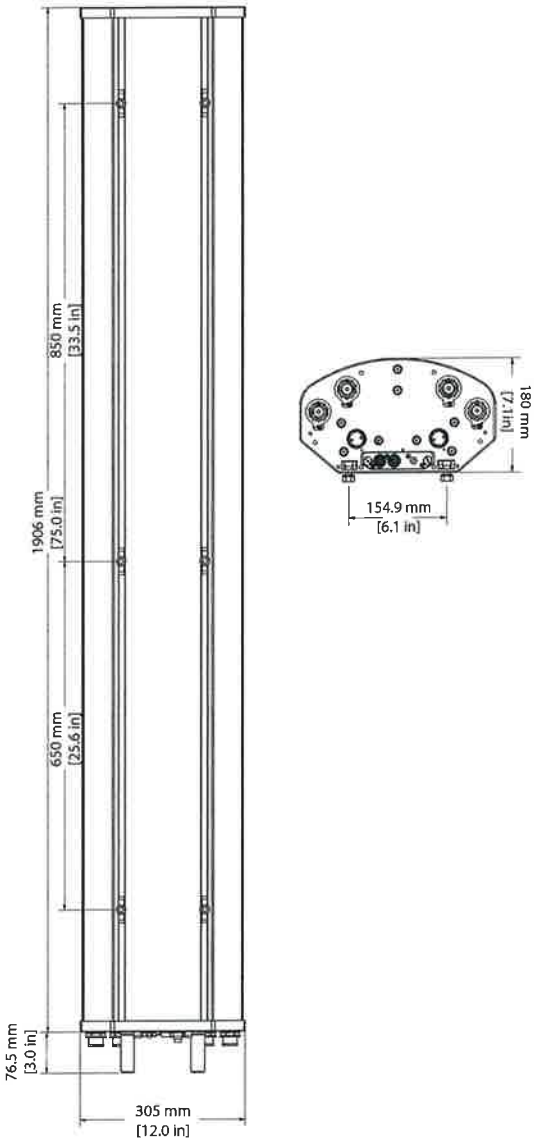
Bottom View of Antenna



Location of the MDCU
for RET Control

Tilt indicators covered by transparent caps.
Manual adjustment is accessed by removing the caps.
Knob colors are the same as the connectors.

Dimensions

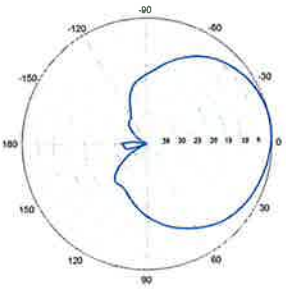


In order to operate RET control, the transparent caps covering the tilt adjustment indicators must be engaged and locked. Do not cut them from the antenna.

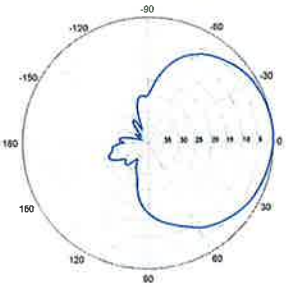
WWX063X19x00

Twin Band | Panel Antenna | 2x X-Pol | 65° / 65° | 19.0 / 19.0 dBi | Variable Tilt

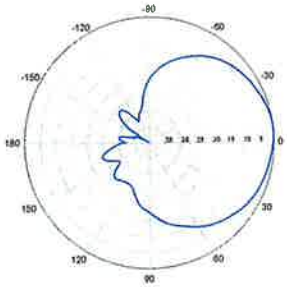
1710-2170 MHz



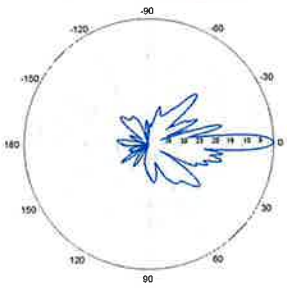
Horizontal | 1800 MHz



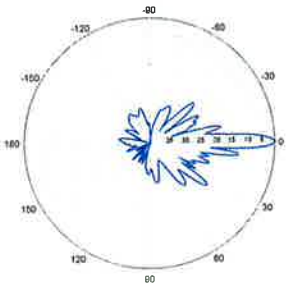
Horizontal | 1900 MHz



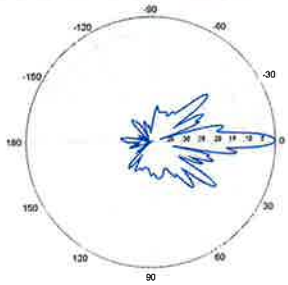
Horizontal | 2100 MHz



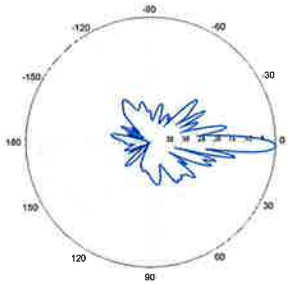
0° | Vertical | 1800 MHz



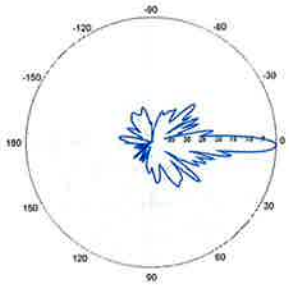
0° | Vertical | 1900 MHz



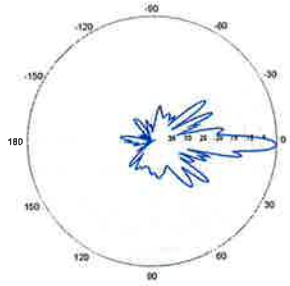
0° | Vertical | 2100 MHz



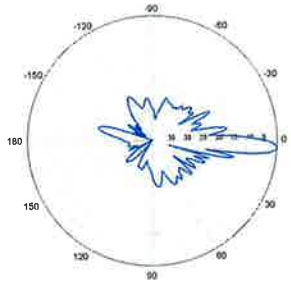
2° | Vertical | 1800 MHz



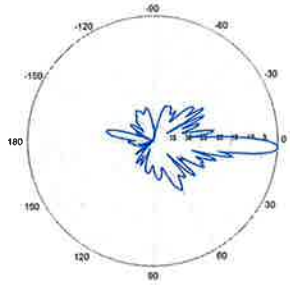
2° | Vertical | 1900 MHz



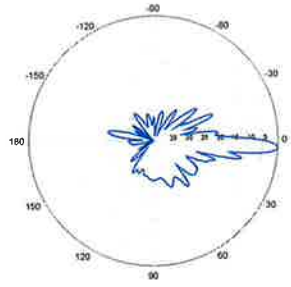
2° | Vertical | 2100 MHz



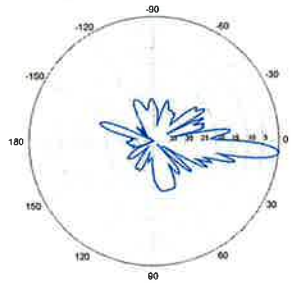
4° | Vertical | 1800 MHz



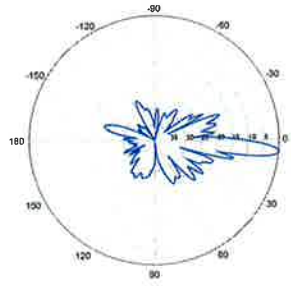
4° | Vertical | 1900 MHz



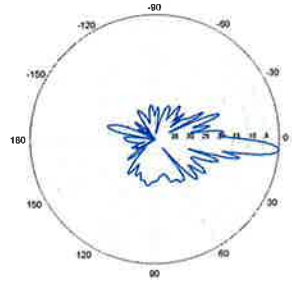
4° | Vertical | 2100 MHz



6° | Vertical | 1800 MHz



6° | Vertical | 1900 MHz

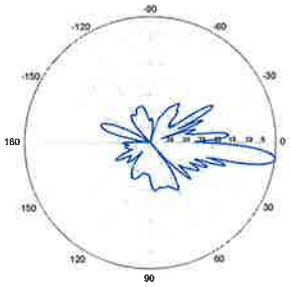


6° | Vertical | 2100 MHz

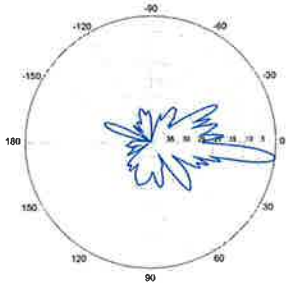
WWX063X19x00

Twin Band | Panel Antenna | 2x X-Pol | 65° / 65° | 19.0 / 19.0 dBi | Variable Tilt

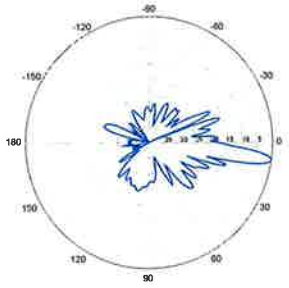
1710-2170 MHz



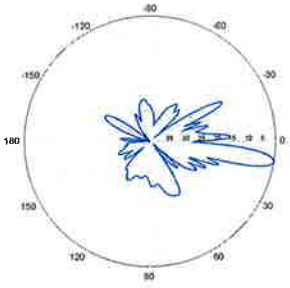
8° | Vertical | 1800 MHz



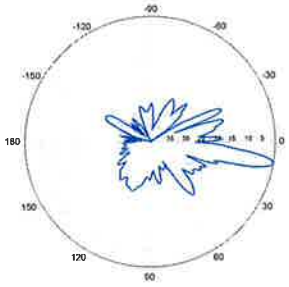
8° | Vertical | 1900 MHz



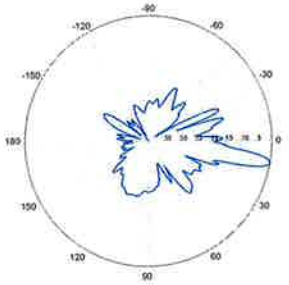
8° | Vertical | 2100 MHz



10° | Vertical | 1800 MHz



10° | Vertical | 1900 MHz



10° | Vertical | 2100 MHz

ALCATEL-LUCENT B13 RRH4X30-4R

Alcatel-Lucent B13 Remote Radio Head 4x30-4R is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B13 RRH4x30-4R allows operators to have a compact radio solution to deploy LTE in the 700U band (700 MHz, 3GPP band 13), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B13 RRH4x30-4R product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity and up to 10MHz instantaneous bandwidth.

The Alcatel-Lucent B13 RRH4x30-4R is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

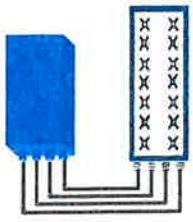
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 700 MHz band (700U, 3GPP band 13)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- 10MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in 700U band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through MIMO4
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



4x30W with 4T4R
or
2x60W with 2T4R

Can be switched between modes via SW w/o site visit

Alcatel·Lucent

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - #carriers	10MHz – 1 LTE carrier (in 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure – RX Diversity scheme	2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity
Sizes (HxWxD) in mm (in.) Volume in L Weight in kg (lb) (w/o mounting HW)	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield) 38 (with solar shield) 26 (57.2) (with solar shield)
DC voltage range DC power consumption	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 550W typical @100% RF load (in 2Tx or 4TX mode)
Environmental conditions Wind load (@150km/h or 93mph)	-40°C (-40°F) /+55°C (+131°F) IP65 Frontal:<200N / Lateral :<150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate7, 9.8 Gbps) SFP single mode dual fiber
AISG interfaces	1 AISG2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) – 4 RF Tx & 4 RF Rx monitor ports - 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

ALCATEL-LUCENT
WIRELESS PRODUCT DATASHEET
RRH2X60-1900A-4R FOR BAND 2/25 APPLICATIONS

The Alcatel-Lucent RRH2x60-1900A-4R is a high power, small form factor Remote Radio Head operating in the PCS 1900MHz frequency band for WCDMA and LTE technologies. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements and efficient operation.

A distributed Node B expands the deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of a Node B to be installed separately, within the same site or several kilometers apart.

The Alcatel-Lucent RRH2x60-1900A-4R is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information.

SUPERIOR RF PERFORMANCE

The Alcatel-Lucent RRH2x60-1900A-4R integrates all the latest technologies. This allows operators to offer best-in-class characteristics.

It delivers an outstanding 120 watts of total RF power thanks to its two transmit RF paths of 60 W each.

It is ideally suited to support multiple-input multiple-output (MIMO) 2x2 operation.

It includes four RF receivers to natively support 4-way uplink reception diversity. This improves the radio uplink coverage and this can be used to extend the cell radius commensurate with 2x2MIMO 2x60 W for the downlink.

The latest generation power amplifiers (PA) used in this product achieve high efficiency (>40%), resulting in improved power consumption figures.

OPTIMIZED TCO

The Alcatel-Lucent RRH2x60-1900A-4R is designed to make available all the benefits of a distributed Node B, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX).

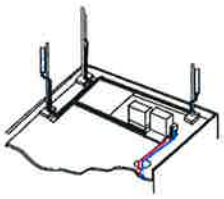
The Alcatel-Lucent RRH2x60-1900A-4R is a very cost-effective solution to deploy LTE MIMO.

EASY INSTALLATION

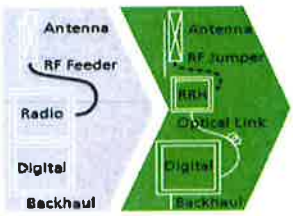
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-1900A-4R installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

The Alcatel-Lucent RRH2x60-1900A-4R is a zero-footprint solution and is convection cooled without fans for silent operation, simplifying negotiations with site property owners and minimizing environmental impacts.

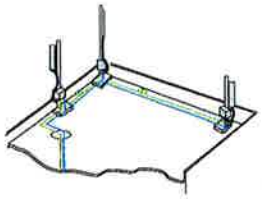
Installation can easily be done by a single person as the Alcatel–Lucent RRH2x60-190A-4R is compact and weighs about 21 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

- RRH2x60-1900A-4R integrates two power amplifiers of 60W rating (at each antenna connector)
- RRH2x60-1900A-4R can operate WCDMA only, LTE only or a mix of WCDMA and LTE
- RRH2x60-1900A-4R offers the possibility for WCDMA (non MIMO) to operate the two radio chains independently (2 blocks of 20 MHz anywhere in the band)
- RRH2x60-1900A-4R is a very compact and lightweight product
- Advanced power management techniques are embedded to provide power savings, such as PA bias control

BENEFITS

- MIMO deployment and/or WCDMA and LTE simultaneous operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and silent solutions, with minimum impact on the neighborhood, which ease the deployment
- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

TECHNICAL SPECIFICATIONS

Specifications listed are hardware capabilities. Some capabilities depend on support in a specific software release or future release.

Dimensions and weights

- HxWxD : 500x285x208 mm (30l with solar shield)
- Weight : 21 kg (46 lbs) (with solar shield)

Electrical Data

- Power Supply : -48V DC (-40.5 to -57V)
- Power Consumption: 460W typ. @2x60W (100%RF)

RF Characteristics

- Supported spectrum: DL 1930-1990 / UL 1850-1910
- Frequency band: 3GPP band 2/25
- Output power: 2x60W at antenna connectors
- Technology supported: W-CDMA and LTE
- Instantaneous bandwidth: 20 MHz (MIMO) or 2x20 MHz (non MIMO)
- Rx diversity: 2-way and 4-way uplink reception
- Typical sensitivity without Rx diversity: -124.8dBm for WCDMA and -105 dBm for LTE

Connectivity

- Two CPRI optical ports for daisychaining and up to six RRHs per fiber
- Type of optical fiber: Single-Mode (SM) and Multi-Mode (MM) SFPs
- Optical fiber length: up to 500m using MM fiber, up to 15km using SM fiber
- TMA/RETA: AISG 2.0 (RS485 connector and internal Bias-Tee)
- Six external alarms
- Surge protection for all external ports (DC and RF)

Environmental specifications

- Operating temperature: -40°C to 55°C including solar load
- Operating relative humidity: 8% to 100%
- Environmental Conditions: ETS300-019-1-4 class4.1E
- Ingress Protection: IEC 60529 IP65
- Acoustic Noise : Noiseless (natural convection cooling)

Safety and Regulatory Data

- EMC : 3GPP 25113, EN 301 489-1, EN 301 489-23, GR 1089
- Safety : IEC60950-1, EN 60825-1
- Regulatory: CE Mark-European Directive 2002/95/EC (RoHS), 2002/96/EC (WEEE), 1999/5/EC (R&TTE)
- Health : EN 50385

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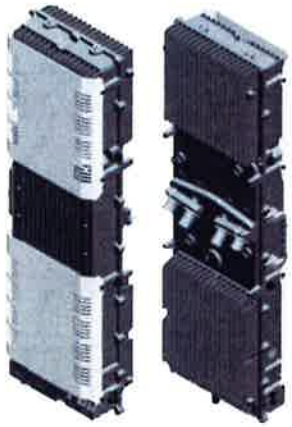
ALCATEL-LUCENT
WIRELESS PRODUCT DATASHEET
B4 RRH2X60-4R FOR AWS BAND APPLICATIONS

The Alcatel-Lucent B4 RRH2x60-4R is a high power, small form factor Remote Radio Head operating in the AWS frequency band (3GPP Band 4) for LTE technology. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements and efficient operation.



A distributed Node B expands the deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of a Node B to be installed separately, within the same site or several kilometers apart.

The Alcatel-Lucent B4 RRH2x60-4R is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information.

SUPERIOR RF PERFORMANCE

The Alcatel-Lucent B4 RRH2x60-4R integrates all the latest technologies. This allows operators to offer best-in-class characteristics.

It delivers an outstanding 120 watts of total RF power thanks to its two transmit RF paths of 60 W each.

It is ideally suited to support multiple-input multiple-output (MIMO) 2x2 operation.

It includes four RF receivers to natively support 4-way uplink reception diversity. This improves the radio uplink coverage and this can be used to extend the cell radius commensurate with 2x2MIMO 2x60 W for the downlink.

It supports multiple discontinuous LTE carriers within an instantaneous bandwidth of 45 MHz corresponding to the entire AWS B4 spectrum.

The latest generation power amplifiers (PA) used in this product achieve high efficiency (>40%), resulting in improved power consumption figures.

OPTIMIZED TCO

The Alcatel-Lucent B4 RRH2x60-4R is designed to make available all the benefits of a distributed Node B, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX).

The Alcatel-Lucent B4 RRH2x60-4R is a very cost-effective solution to deploy LTE MIMO.

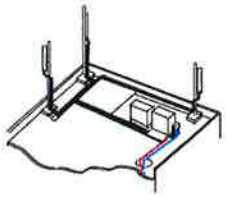
EASY INSTALLATION

The B4 RRH2x60-4R includes a reversible mounting bracket which allows for ease of installation behind an antenna, or on a rooftop knee wall while providing easy access to the mid body RF connectors.

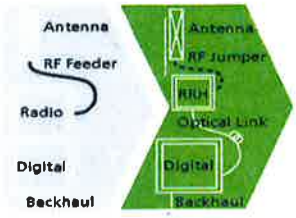
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent B4 RRH2x60-4R installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

The Alcatel-Lucent B4 RRH2x60-4R is a zero-footprint solution and is convection cooled without fans for silent operation, simplifying negotiations with site property owners and minimizing environmental impacts.

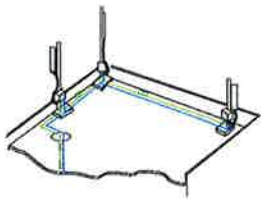
Installation can easily be done by a single person as the Alcatel–Lucent B4 RRH2x60-4R is compact and weighs about 25 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

- B4 RRH2x60-4R integrates two power amplifiers of 60W rating (at each antenna connector)
- Support multiple carriers over the entire 3GPP band 4
- B4 RRH2x60-4R is optimized for LTE operation
- B4 RRH2x60-4R is a very compact and lightweight product
- Advanced power management techniques are embedded to provide power savings, such as PA bias control

BENEFITS

- MIMO LTE operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and silent solutions, with minimum impact on the neighborhood, which ease the deployment
- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

TECHNICAL SPECIFICATIONS

Specifications listed are hardware capabilities. Some capabilities depend on support in a specific software release or future release.

Dimensions and weights

- HxWxD : 930x270x146 mm (with solar shield)
- Weight : 25 kg (55 lbs) (with solar shield)

Electrical Data

- Power Supply : -48V DC (-38 to -57V)
- Power Consumption: 346W typ. @2x30W (100%RF), 560W typ. @2x60W (100%RF)

RF Characteristics

- Frequency band: 1710-1755, UL / 2110-2155 MHz, DL (3GPP band 4)
- Output power: 2x60W at antenna connectors
- Technology supported: LTE
- Instantaneous bandwidth: 45 MHz
- Rx diversity: 2-way and 4-way uplink reception
- Typical sensitivity without Rx diversity: -105 dBm for LTE

Connectivity

- Two CPRI (3-6) optical ports for daisychaining and up to six RRHs per fiber
- Type of optical fiber: Single-Mode (SM) and Multi-Mode (MM) SFPs
- Optical fiber length: up to 300m using MM fiber, up to 15km using SM fiber
- TMA/RETA : AISG 2.0 (RS485 connector and internal Bias-Tee)
- Four external alarms
- Surge protection for all external ports (DC and RF)

Environmental specifications

- Operating temperature: -40°C to 55°C including solar load
- Operating relative humidity: 8% to 100%
- Environmental Conditions : ETS 300 019-1-4 class 4.1E
- Ingress Protection : IEC 60529 IP65
- Acoustic Noise : Noiseless (natural convection cooling)

Safety and Regulatory Data

- EMC : 3GPP 25113, EN 301 489-1, EN 301 489-23, GR 1089, GR 3108, OET-65
- Safety : IEC60950-1, EN 60825-1, UL, ANSI/NFPA 70, CAN/CSA-C22.2
- Regulatory : FCC Part 15 Class B
- Health : EN 50385

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ATTACHMENT 5

AMERICAN TOWER®
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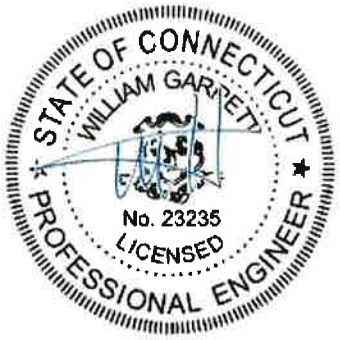
Structural Analysis Report

Structure	:	**300 ft Self Supported AT&T TAG Tower**
ATC Site Name	:	**Stamford (Katoona), CT**
ATC Site Number	:	**88018**
Engineering Number	:	**59720626**
Proposed Carrier	:	**Verizon**
Carrier Site Name	:	**Stamford West 3, CT**
Carrier Site Number	:	**NA**
Site Location	:	**Catoona Lane** **Stamford, CT 06902-4573** **41.052825,-73.563047**
County	:	**Fairfield**
Date	:	**December 18, 2015**
Max Usage	:	**100%**
Result	:	**Pass**

Reviewed by:
William Garrett, PE
Chief Engineer



Prepared By:
Andrew D. Vargo, E.I.

Andrew Vargo

Dec 18 2015 3:46 PM

COA: PEC.0001553

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Table of Contents

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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 300 ft self supported tower to reflect the change in loading by Verizon.

Supporting Documents

Tower Drawings	CSEI Analysis, ATC Eng. #73123451, dated September 28, 2005
Foundation Drawing	Rose, Chulkoff, and Rose Job #C67229, dated August 9, 1967
Geotechnical Report	Rose, Chulkoff, and Rose Job #C67229, dated August 9, 1967
Modifications	ATC Eng. #42439132, dated September 26, 2008 ATC Eng. #44209632, dated December 2, 2009

Analysis

The tower was analyzed using Power Lines Systems tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/EIA-222.

Basic Wind Speed:	85 mph (Fastest Mile)
Basic Wind Speed w/ Ice:	74 mph (Fastest Mile)w/ 1/2" radial ice concurrent
Code:	ANSI/TIA/EIA-222-F / 2003 IBC , Sec. 1609.1.1, Exception (5) & Sec. 3108.4 w/ 2005 CT Supplement & 2009 CT Amendment

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

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
300.0	306.0	1	3' HP Dish	Platform w/ Handrails	(1) 1/2" Coax	--
	300.0	3	Horizon Compact		(5) 7/8" Coax	Clearwire
		3	DragonWave A-ANT-18G-2-C			
	335.0	1	TX RX Systems 101-68-10-X-03N		(2) 1 1/4" Coax	Marcus Comm.
	317.0	1	16' Omni			
	311.0	1	Radio/ODU			
		1	4' Std. Dish			
	320.0	1	16' Omni		(1) 7/8" Coax	UNITed Wireless Holdings
270.0	276.0	1	Dielectric TLP-08M-2E	Side Arm	(1) 3 1/8" HL	Qualcomm
269.0	275.0	1	ADD090	Side Arm	(2) 7/8" Coax	US Dept Of Homeland Security
265.0	272.0	2	Til-Tek TA-2350-DAB	Side Arms	(1) EW20	Sirius XM Radio
	265.0	3	RFS ATMAA1412D-1A20	Sector Frames	(2) 7/8" Fiber (12) 1 5/8" Coax (1) 1 1/4" Fiber	T-Mobile
		3	Ericsson RRUS 11 B12			
		3	Ericsson AIR 21, 1.3 M, B2A B4P			
		3	Ericsson AIR 21, 1.3M, B4A B2P			
		3	Andrew LNX-6515DS-VTM			
240.0	250.0	1	Sinclair SC281-L	Side Arms	(2) 7/8" Coax	US Dept Of Homeland Security
	245.0	1	Sinclair SC381-HL			
231.0	235.0	6	Powerwave TT19-08BP111-001	Sector Frames	(12) 1 5/8" Coax (2) 0.74" 8 AWG 7 (2) 0.39" Fiber Trunk (2) 0.74" 8 AWG 7	AT&T Mobility
		2	Raycap DC2-48-60-0-9E			
		6	Ericsson RRUS A2			
		3	Ericsson RRUS E2 B29			
		3	Ericsson RRUS-32			
		3	Ericsson RRUS-11			
		3	Powerwave 7770.00			
		3	Andrew SBNHH-1D65A			
		3	Ericsson RRUS-11 800MHz			
		6	Ericsson RRUS 12			
		3	KMW AM-X-CD-14-65-00T-RET			
		3	CCI OPA-65R-LCUU-H4			
224.0	222.0	12	Decibel DB844H90E-XY	Sector Frames	(15) 1 5/8" Coax	Sprint Nextel
200.0	201.0	2	TX RX Systems 101-68-10-X-03N	Side Arms	(2) 1 1/4" Coax	Marcus Comm.
	210.0	1	Sinclair SC281-L		(1) 7/8" Coax	US Dept Of Homeland Security
189.0	193.0	1	30" x 30" Reflector	Leg	-	Town Of Stanford
178.0	183.0	3	Antel BCD-87010 ___	Side Arms	(3) 7/8" Coax	Spok Holdings
171.0	175.0	1	24" x 24" Junction Box	T-Arms	(2) 2" conduit	Clearwire
167.0	171.0	3	NextNet BTS-2500		(6) 5/16" (0.31") Coax (1) 2" conduit	
		3	Argus LLPX310R			
160.0	161.0	6	Kathrein 800 10504	Leg	(12) 1 5/8" Coax (2) 3/8" Coax	Metro PCS
	160.0	18	RCU			

Existing and Reserved Equipment Continued

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	150.0	3	Alcatel-Lucent ALU 800MHz External Notch Filter	Sector Frame	(4) 1 1/4" Hybriflex (1) 1/2" Coax	Sprint Nextel
		3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
		3	RFS IBC1900HB-2			
		3	Alcatel-Lucent 800MHz RRH			
		6	Alcatel-Lucent 1900MHz RRH			
		3	RFS APXVTM14-C-I20			
		3	RFS APXVSPP18-C-A20			
137.0	142.0	1	Antel BCD-87010 ___ 4°	Stand-Off	(1) 7/8" Coax	Sensus USA
120.0	120.0	1	Channel Master Type 120	Leg	(1) 1/2" Coax	Spok Holdings
100.0	100.0	1	TX RX Systems 101-68-10-X-03N	Side Arm	(1) 1 1/4" Coax	Marcus Comm.
24.0	22.0	1	Til-Tek TA-2324-LHCP	Leg	(1) 7/8" Coax	Sirius XM Radio
6.0	6.0	1	Trimble Acutime 2000	Leg	(1) 1/2" Coax (1) 1/4" Coax	Spok Holdings
		1	Channel Master Type 120			

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
No loading considered as to be removed						

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
92.0	92.0	3	Alcatel-Lucent RRH2X60-1900A-4R	Sector Frame	(2) 1 5/8" Hybriflex	Verizon
		3	Alcatel-Lucent RRH2x60 700			
		3	Alcatel-Lucent RRH2X60-AWS Band 4			
		2	RFS DB-T1-6Z-8AB-0Z			
		6	Antel WWX063X19G00			
		4	CSS X7C-FRO-660			
		2	CSS X7C-FRO-640-V			

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

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

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	91%	Pass
Diagonals	98%	Pass
Truss Diagonals	100%	Pass
Horizontals	96%	Pass
Truss Horizontals	85%	Pass
Anchor Bolts	85%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	386.8	91%
Axial (Kips)	496.5	8%

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.

The foundation and anchorages for this tower have factors of safety exceeding 2.0 with respect to wind.

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Standard Conditions

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

-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

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. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

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 we supply.

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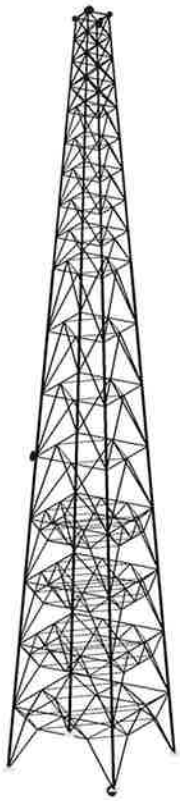
ıdeformed geometry displayed



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Date run : 10:57:43 AM Friday, December 18, 2015
by : Tower Version 12.50
Licensed to : American Tower Corp.

Successfully performed nonlinear analysis

Member check option: TIA/EIA 222-F
Connection rupture check: Not Checked
Crossing diagonal check: Fixed
Included angle check: None
Climbing load check: None
Redundant members checked with: Actual Force
Loads from file: n:\l2 - atc\88018\2015.12.18 - vzw (59720626) - tmo (63541023)\2015.12.18 - vzw (59720626) - tmo (63541023).eia

*** Analysis Results:

Maximum element usage is 99.81% for Angle "LD 9X" in load case "W -90"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
W 0	0P	-46.79	-21.38	-335.75	51.44	-0.92	-5.81	5.89	-2.42	0.00
W 0	0X	-44.83	22.12	-329.83	49.99	0.59	-5.48	5.52	2.43	0.00
W 0	0XY	-37.07	-16.41	226.04	40.54	0.55	-5.99	6.02	2.22	0.00
W 0	0Y	-38.62	15.68	228.46	41.68	-0.32	-6.33	6.33	-2.18	0.00
W 180	0P	38.98	15.48	225.96	41.94	-0.32	6.37	6.38	2.19	0.00
W 180	0X	37.09	-16.27	223.87	40.50	0.56	6.04	6.07	-2.22	0.00
W 180	0XY	44.85	22.02	-327.67	49.96	0.58	5.54	5.57	-2.44	0.00
W 180	0Y	46.48	-21.21	-333.24	51.09	-0.92	5.86	5.93	2.44	0.00
W 45	0P	-50.60	-50.89	-496.52	71.76	4.13	-4.05	5.78	-0.14	0.00
W 45	0X	-21.24	-15.24	-49.92	26.14	5.31	-4.29	6.82	3.60	0.00
W 45	0XY	-45.09	-44.97	384.80	63.68	5.02	-5.05	7.12	-0.01	0.00
W 45	0Y	-14.95	-21.08	-49.44	25.84	4.26	-5.22	6.74	-3.61	0.00
W -45	0P	-22.54	15.88	-53.38	27.57	-5.52	-4.52	7.14	-3.45	0.00
W -45	0X	-49.27	51.22	-492.19	71.07	-4.34	-3.81	5.77	0.00	0.00
W -45	0XY	-13.80	20.68	-52.33	24.86	-4.10	-4.99	6.45	3.62	0.00
W -45	0Y	-46.20	44.48	386.82	64.13	-4.86	-5.29	7.18	0.03	0.00
W 90	0P	-21.33	-46.94	-337.16	51.56	5.88	0.96	5.95	2.29	0.00
W 90	0X	15.65	-38.96	229.68	41.98	6.39	0.29	6.39	2.18	0.00
W 90	0XY	-16.57	-37.03	226.51	40.57	5.97	-0.59	6.00	-2.22	0.00
W 90	0Y	22.28	-44.77	-330.10	50.01	5.46	-0.55	5.49	-2.44	0.00
W -90	0P	15.51	39.01	228.06	41.98	-6.41	0.29	6.42	-2.06	0.00
W -90	0X	-21.21	46.82	-335.54	51.40	-5.90	0.97	5.98	-2.44	0.00
W -90	0XY	22.24	44.83	-328.99	50.04	-5.50	-0.54	5.53	2.45	0.00
W -90	0Y	-16.51	37.09	225.39	40.60	-6.01	-0.59	6.04	2.23	0.00
W 0 Ice	0P	-43.83	-21.14	-328.08	48.66	-1.87	-4.23	4.62	-2.22	0.00
W 0 Ice	0X	-41.89	21.84	-321.50	47.24	1.54	-3.90	4.19	2.23	0.00
W 0 Ice	0XY	-33.54	-14.72	190.52	36.63	1.65	-6.63	6.83	2.05	0.00
W 0 Ice	0Y	-34.96	14.03	192.13	37.67	-1.44	-6.95	7.10	-2.02	0.00
W 180 Ice	0P	35.23	13.76	188.80	37.82	-1.43	7.01	7.16	2.03	0.00
W 180 Ice	0X	33.57	-14.53	187.59	36.58	1.65	6.70	6.90	-2.06	0.00
W 180 Ice	0XY	41.92	21.70	-318.58	47.20	1.52	3.98	4.26	-2.24	0.00
W 180 Ice	0Y	43.57	-20.91	-324.75	48.32	-1.87	4.29	4.68	2.24	0.00
W 45 Ice	0P	-48.90	-49.16	-481.83	69.34	2.90	-2.82	4.04	-0.11	0.00
W 45 Ice	0X	-20.34	-13.05	-64.00	24.19	6.02	-2.91	6.68	3.42	0.00
W 45 Ice	0XY	-41.91	-41.79	342.31	59.19	5.87	-5.90	8.33	-0.01	0.00
W 45 Ice	0Y	-12.81	-20.21	-63.42	23.92	2.88	-5.94	6.60	-3.43	0.00
W -45 Ice	0P	-21.69	13.64	-68.44	25.62	-6.24	-3.14	6.99	-3.30	0.00
W -45 Ice	0X	-47.57	49.49	-476.70	68.65	-3.12	-2.59	4.05	0.00	0.00
W -45 Ice	0XY	-11.75	19.81	-65.18	23.03	-2.75	-5.71	6.34	3.45	0.00
W -45 Ice	0Y	-42.92	41.34	343.38	59.59	-5.74	-6.13	8.40	0.03	0.00
W 90 Ice	0P	-21.08	-43.98	-329.24	48.77	4.28	1.91	4.69	2.12	0.00
W 90 Ice	0X	13.98	-35.25	192.96	37.92	7.01	1.42	7.15	2.02	0.00
W 90 Ice	0XY	-14.85	-33.49	190.83	36.63	6.61	-1.68	6.82	-2.06	0.00
W 90 Ice	0Y	21.97	-41.82	-321.48	47.24	3.88	-1.50	4.16	-2.24	0.00
W -90 Ice	0P	13.77	35.27	190.50	37.86	-7.05	1.41	7.19	-1.92	0.00
W -90 Ice	0X	-20.90	43.86	-326.78	48.59	-4.32	1.91	4.73	-2.24	0.00
W -90 Ice	0XY	21.89	41.88	-319.55	47.25	-3.94	-1.49	4.22	2.24	0.00
W -90 Ice	0Y	-14.74	33.55	188.90	36.65	-6.67	-1.68	6.88	2.04	0.00

Summary of Joint Support Reactions For All Load Cases in Direction of Leg:

Load Case	Support Joint	Origin Joint	Leg Member	Force In Leg Dir. (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
W 0	0P	1P	L 1P	338.665	26.039	26.091	26.082	0.677	-46.79	-21.38	-335.75
W 0	0X	1X	L 1X	332.700	24.502	24.550	24.491	-1.782	-44.83	22.12	-329.83
W 0	0XY	1XY	L 1XY	-228.470	23.214	23.267	23.135	2.473	-37.07	-16.41	226.04
W 0	0Y	1Y	L 1Y	-230.937	24.529	24.582	24.530	-1.595	-38.62	15.68	228.46
W 180	0P	1P	L 1P	-228.451	25.037	25.090	-25.042	-1.547	38.98	15.48	225.96
W 180	0X	1X	L 1X	-226.303	23.362	23.415	-23.285	2.465	37.09	-16.27	223.87
W 180	0XY	1XY	L 1XY	330.537	24.653	24.706	-24.640	-1.810	44.85	22.02	-327.67
W 180	0Y	1Y	L 1Y	336.138	25.883	25.935	-25.926	0.659	46.48	-21.21	-333.24
W 45	0P	1P	L 1P	500.881	28.354	28.461	19.979	20.270	-50.60	-50.89	-496.52
W 45	0X	1X	L 1X	50.095	25.791	25.791	18.158	18.315	-21.24	-15.24	-49.92
W 45	0XY	1XY	L 1XY	-388.881	30.004	30.218	21.358	21.236	-45.09	-44.97	384.80
W 45	0Y	1Y	L 1Y	49.631	25.476	25.476	17.998	18.031	-14.95	-21.08	-49.44
W -45	0P	1P	L 1P	53.586	27.163	27.163	19.247	-17.168	-22.54	15.88	-53.38
W -45	0X	1X	L 1X	496.498	28.065	28.171	18.921	-20.871	-49.27	51.22	-492.19
W -45	0XY	1XY	L 1XY	52.555	24.381	24.381	17.027	-17.450	-13.80	20.68	-52.33
W -45	0Y	1Y	L 1Y	-390.927	30.296	30.411	22.344	-20.630	-46.20	44.48	386.82
W 90	0P	1P	L 1P	340.080	26.107	26.154	0.539	26.153	-21.33	-46.94	-337.16
W 90	0X	1X	L 1X	-232.165	24.787	24.839	-1.483	24.795	15.65	-38.96	229.68
W 90	0XY	1XY	L 1XY	-228.945	23.154	23.208	2.604	23.061	-16.57	-37.03	226.51
W 90	0Y	1Y	L 1Y	332.974	24.440	24.494	-1.924	24.418	22.28	-44.77	-330.10
W -90	0P	1P	L 1P	-230.551	24.940	24.992	-1.448	-24.950	15.51	39.01	228.06
W -90	0X	1X	L 1X	338.455	26.078	26.130	0.521	-26.124	-21.21	46.82	-335.54
W -90	0XY	1XY	L 1XY	331.862	24.566	24.620	-1.949	-24.543	22.24	44.83	-328.99
W -90	0Y	1Y	L 1Y	-227.830	23.281	23.335	2.608	-23.189	-16.51	37.09	225.39
W 0 Ice	0P	1P	L 1P	330.835	23.566	23.614	23.597	0.910	-43.83	-21.14	-328.08
W 0 Ice	0X	1X	L 1X	324.203	22.106	22.154	22.064	-2.014	-41.89	21.84	-321.50
W 0 Ice	0XY	1XY	L 1XY	-192.763	21.938	21.991	21.789	2.972	-33.54	-14.72	190.52
W 0 Ice	0Y	1Y	L 1Y	-194.418	23.167	23.219	23.116	-2.184	-34.96	14.03	192.13
W 180 Ice	0P	1P	L 1P	-191.096	23.627	23.680	-23.585	-2.117	35.23	13.76	188.80
W 180 Ice	0X	1X	L 1X	-189.836	22.147	22.200	-22.002	2.963	33.57	-14.53	187.59
W 180 Ice	0XY	1XY	L 1XY	321.279	22.316	22.366	-22.272	-2.051	41.92	21.70	-318.58
W 180 Ice	0Y	1Y	L 1Y	327.483	23.509	23.556	-23.540	0.883	43.57	-20.91	-324.75
W 45 Ice	0P	1P	L 1P	486.032	27.212	27.315	19.184	19.445	-48.90	-49.16	-481.83
W 45 Ice	0X	1X	L 1X	64.206	23.634	23.634	16.418	17.000	-20.34	-13.05	-64.00
W 45 Ice	0XY	1XY	L 1XY	-346.160	29.222	29.332	20.799	20.684	-41.91	-41.79	342.31
W 45 Ice	0Y	1Y	L 1Y	63.632	23.347	23.347	16.720	16.290	-12.81	-20.21	-63.42
W -45 Ice	0P	1P	L 1P	68.671	24.981	24.981	17.470	-17.856	-21.69	13.64	-68.44
W -45 Ice	0X	1X	L 1X	480.865	26.992	27.094	18.170	-20.098	-47.57	49.49	-476.70
W -45 Ice	0XY	1XY	L 1XY	65.425	22.318	22.318	15.768	-15.794	-11.75	19.81	-65.18
W -45 Ice	0Y	1Y	L 1Y	-347.259	29.543	29.415	21.747	-20.161	-42.92	41.34	343.38
W 90 Ice	0P	1P	L 1P	331.993	23.643	23.690	0.778	23.678	-21.08	-43.98	-329.24
W 90 Ice	0X	1X	L 1X	-195.251	23.387	23.439	-2.082	23.346	13.98	-35.25	192.96
W 90 Ice	0XY	1XY	L 1XY	-193.076	21.885	21.938	3.087	21.719	-14.85	-33.49	190.83
W 90 Ice	0Y	1Y	L 1Y	324.181	22.047	22.097	-2.149	21.992	21.97	-41.82	-321.48
W -90 Ice	0P	1P	L 1P	-192.793	23.557	23.604	-2.027	-23.522	13.77	35.27	190.50
W -90 Ice	0X	1X	L 1X	329.528	23.676	23.724	0.751	-23.712	-20.90	43.86	-326.78
W -90 Ice	0XY	1XY	L 1XY	322.261	22.228	22.278	-2.184	-22.171	21.89	41.88	-319.55
W -90 Ice	0Y	1Y	L 1Y	-191.155	22.067	22.120	3.090	-21.903	-14.74	33.55	188.90

Overturning Moment Summary For All Load Cases:

Load Case	Transverse Moment (ft-k)	Longitudinal Moment (ft-k)	Resultant Moment (ft-k)
W 0	80.189	25761.923	25762.048
W 180	80.113	-25547.015	25547.140
W 45	20259.629	20281.417	28666.853
W -45	-20192.974	20241.207	28591.304
W 90	25839.372	89.414	25839.526
W -90	-25713.625	89.376	25713.780
W 0 Ice	114.192	23741.515	23741.789
W 180 Ice	114.166	-23453.485	23453.762
W 45 Ice	18941.912	18968.648	26806.821
W -45 Ice	-18787.019	18936.934	26675.073
W 90 Ice	23793.573	129.598	23793.926
W -90 Ice	-23592.021	129.606	23592.377

EIA Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Top Width (ft)	Bottom Width (ft)	Gross Area (ft^2)	Face Af Adjust Factor	Face Ar Adjust Factor	Dead Load Factor
291.4-300.0	300.000	291.420	8	20	9.00	10.06	81.76	1.1670	1.1670	1.401
282.8-291.4	291.420	282.840	8	16	10.06	11.12	90.94	1.2150	1.2150	1.458
272.7-282.8	282.840	272.670	8	16	11.12	12.37	119.43	1.1960	1.1960	1.436
262.5-272.7	272.670	262.500	12	24	12.37	13.63	132.19	1.2030	1.2030	1.444

250.0-262.5	262.500	250.000	16	24	13.63	15.17	179.95	1.2010	1.2010	1.441
237.5-250.0	250.000	237.500	16	24	15.17	16.71	199.22	1.2070	1.2070	1.449
225.0-237.5	237.500	225.000	16	24	16.71	18.25	216.49	1.2130	1.2130	1.456
212.5-225.0	225.000	212.500	16	24	18.25	19.79	237.76	1.2190	1.2190	1.463
200.0-212.5	212.500	200.000	16	24	19.79	21.33	257.03	1.2250	1.2250	1.470
175.0-200.0	200.000	175.000	16	24	21.33	24.42	571.87	1.2320	1.2320	1.479
150.0-175.0	175.000	150.000	16	24	24.42	27.50	648.96	1.2570	1.2570	1.509
125.0-150.0	150.000	125.000	16	24	27.50	30.58	726.04	1.2660	1.2660	1.519
100.0-125.0	125.000	100.000	20	32	30.58	33.67	803.13	1.2790	1.2790	1.535
75.00-100.0	100.000	75.000	36	76	33.67	36.75	880.21	1.2240	1.2240	1.469
50.00-75.00	75.000	50.000	36	76	36.75	39.83	957.29	1.2290	1.2290	1.475
25.00-50.00	50.000	25.000	32	68	39.83	42.92	1034.38	1.2340	1.2340	1.481
0.000-25.00	25.000	0.000	20	40	42.92	46.00	1111.46	1.2520	1.2520	1.503

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress
Printed capacities do not include EIA allowable stress increase for wind load cases.
Printed capacities do not include the strength factor entered for each load case.
The Group Summary reports on the member and load case that resulted in maximum usage which may not necessarily be the same as that which produces maximum force.

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/R Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/R	KL/R	Length Comp. Member (ft)	Curve No.	No. Of Bolts Comp.
Leg S1	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	91.26	Comp	91.26	L 1P	-432.093	W 45	300.572	0.000	0.000	0.281	0.281	0.281	54.28	54.28	25.095	1	0
Leg S2	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	85.20	Comp	85.20	L 2P	-363.991	W 45	300.572	0.000	0.000	0.281	0.281	0.281	54.28	54.28	25.095	1	0
Leg S3	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	77.56	Comp	77.56	L 3P	-310.836	W 45	300.572	0.000	0.000	0.281	0.281	0.281	54.28	54.28	25.095	1	0
Leg S4	L 8" x 8" x 1"	SAE	8X8X1	36.0	71.14	Comp	71.14	L 4P	-255.616	W 45	269.490	0.000	0.000	0.281	0.281	0.281	54.28	54.28	25.095	1	0
Leg S5	L 8" x 8" x 0.875"	SAE	8X8X0.88	36.0	81.21	Comp	81.21	L 5P	-244.186	W 45	225.521	0.000	0.000	0.333	0.333	0.333	63.93	63.93	25.095	1	0
Leg S6	L 8" x 8" x 0.875"	SAE	8X8X0.88	36.0	65.78	Comp	65.78	L 6P	-197.779	W 45	225.521	0.000	0.000	0.333	0.333	0.333	63.93	63.93	25.095	1	0
Leg S7	L 8" x 8" x 0.75"	SAE	8X8X0.75	36.0	59.21	Comp	59.21	L 7P	-154.308	W 45	195.467	0.000	0.000	0.333	0.333	0.333	63.53	63.53	25.095	1	0
Leg S8	L 8" x 8" x 0.625"	SAE	8X8X0.63	36.0	52.25	Comp	52.25	L 8X	-114.397	W -45	164.199	0.000	0.000	0.333	0.333	0.333	63.53	63.53	25.095	1	0
Leg S9	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	49.64	Comp	49.64	L 9X	-94.994	W -45	143.521	0.000	0.000	0.500	0.500	0.500	64.35	64.35	12.547	1	0
Leg S10	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	39.77	Comp	39.77	L 10X	-76.097	W -45	143.521	0.000	0.000	0.500	0.500	0.500	64.35	64.35	12.547	1	0
Leg S11	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	40.21	Comp	40.21	L 11X	-58.812	W -45	109.689	0.000	0.000	0.500	0.500	0.500	63.80	63.80	12.547	1	0
Leg S12	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	29.71	Comp	29.71	L 12X	-43.449	W -45	109.689	0.000	0.000	0.500	0.500	0.500	63.80	63.80	12.547	1	0
Leg S13	L 6" x 6" x 0.4375"	SAE	6X6X0.44	36.0	25.25	Comp	25.25	L 13X	-29.147	W -45	96.587	0.000	0.000	0.500	0.500	0.500	63.26	63.26	12.547	1	0
Leg S14	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	23.09	Comp	23.09	L 14X	-22.168	W -45	71.997	0.000	0.000	0.500	0.500	0.500	62.12	62.12	10.209	1	0
Leg S15	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	14.84	Comp	14.84	L 15X	-14.250	W -45	71.997	0.000	0.000	0.500	0.500	0.500	62.12	62.12	10.209	1	0
Leg S16	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	10.28	Comp	10.28	L 16X	-7.525	W -45 Ic	54.905	0.000	0.000	0.500	0.500	0.500	51.99	51.99	8.613	1	0
Leg S17	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	4.51	Comp	4.51	L 17P	-3.300	W 45 Ice	54.905	0.000	0.000	0.500	0.500	0.500	51.99	51.99	8.613	1	0
Diag S1	B/B L3"x4"x0.3125"	DAS	4X3X0.31	36.0	91.94	Comp	91.94	D 2X	-50.575	W -90	41.258	0.000	0.000	0.310	0.920	0.310	124.63	122.85	21.788	4	0
Diag S2	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	36.0	98.07	Comp	98.07	D 4X	-56.002	W -90	42.829	0.000	0.000	0.310	0.620	0.310	94.33	94.33	20.919	1	0
Diag S3	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	36.0	66.62	Comp	66.62	D 6X	-55.780	W -90	32.896	0.000	0.000	0.333	0.667	0.333	111.84	111.84	20.553	1	0
Diag S4	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	36.0	65.72	Comp	65.72	D 8X	-56.167	W -90	33.631	0.000	0.000	0.333	0.667	0.333	109.96	109.96	20.207	1	0
Diag S5	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	87.05	Comp	87.05	D 9P	-35.176	W 90	30.309	0.000	0.000	0.333	0.667	0.333	134.71	129.05	30.178	6	0
Diag S6	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	82.09	Comp	82.09	D 11X	-34.380	W -90	31.411	0.000	0.000	0.333	0.667	0.333	131.00	124.76	29.346	4	0
Diag S7	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	71.37	Comp	71.37	D 13X	-30.899	W -90	32.473	0.000	0.000	0.333	0.667	0.333	127.55	124.64	28.573	6	0
Diag S8	B/B L3.5"x3.5"x0.25"	DAE	3.5X3.5X0.25	36.0	74.97	Comp	74.97	D 15X	-28.768	W -90	28.782	0.000	0.000	0.333	0.667	0.333	140.20	132.43	27.864	4	0
Diag S9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	38.86	Comp	38.86	D 17X	-16.331	W -90	31.523	0.000	0.000	0.320	0.590	0.320	97.87	97.87	16.451	1	0
Diag S10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	67.88	Comp	67.88	D 19X	-15.259	W -90	16.860	0.000	0.000	0.500	1.000	0.500	160.96	145.19	15.962	4	0
Diag S11	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	89.08	Comp	89.08	D 21X	-14.112	W -90	11.882	0.000	0.000	0.480	0.960	0.580	190.92	163.61	15.495	6	0
Diag S12	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	70.78	Comp	70.78	D 23X	-11.021	W -90	11.680	0.000	0.000	0.500	1.000	0.500	193.21	165.03	15.054	4	0
Diag S13	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	69.51	Comp	69.51	D 25X	-11.266	W -90	12.156	0.000	0.000	0.500	1.000	0.500	187.90	161.76	14.641	4	0
Diag S14	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	31.27	Comp	31.27	D 28X	-5.235	W -90	12.559	0.000	0.000	0.520	0.750	0.520	148.50	141.76	16.516	5	0
Diag S15	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	21.47	Comp	21.47	D 30X	-3.956	W -90	13.822	0.000	0.000	0.520	0.750	0.520	139.80	135.12	15.548	5	0
Diag S16	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	17.46	Comp	17.46	D 32X	-2.624	W -90	11.269	0.000	0.000	0.520	0.750	0.520	143.75	138.14	13.638	5	0
Diag S17	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	13.02	Comp	13.02	D 34X	-2.154	W -90	12.402	0.000	0.000	0.520	0.750	0.520	135.27	131.68	12.834	5	0
Horiz 1	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	95.93	Comp	95.93	H 1P	-41.291	W -90	32.284	0.000	0.000	0.480	0.480	0.480	113.39	113.39	21.458	1	0
Horiz 2	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	68.84	Comp	68.84	H 3P	-42.574	W -90	46.387	0.000	0.000	0.500	0.500	0.500	73.09	73.09	13.278	1	0
Horiz 3	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	62.07	Comp	62.07	H 5P	-39.789	W -90	48.080	0.000	0.000	0.500	0.500	0.500	67.43	67.43	12.250	1	0
Horiz 4	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	92.99	Comp	92.99	H 7P	-37.163	W -90	29.976	0.000	0.000	0.470	0.940	0.470	112.02	112.02	11.222	1	0
Horiz 5	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	91.96	Comp	91.96	H 9X	-17.556	W 90	14.318	0.000	0.000	1.000	1.000	1.000	194.18	165.62	15.292	4	0
Horiz 6	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	71.15	Comp	71.15	H 11P	-15.795	W -90	16.651	0.000	0.000	1.000	1.000	1.000	174.60	153.59	13.750	4	0
Horiz 7	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	73.37	Comp	73.37	H 13P	-13.027	W -90	13.318	0.000	0.000	1.000	1.000	1.000	190.51	163.36	12.208	4	0
Horiz 8	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	54.46	Comp	54.46	H 15P	-11.693	W -90	16.102	0.000	0.000	1.000	1.000	1.000	166.45	148.57	10.667	6	0
Horiz 9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	40.62	Comp	40.62	H 17P	-9.659	W -90	17.834	0.000	0.000	1.000	1.000	1.000	154.42	141.17	9.896	4	0
Horiz 10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	32.77	Comp	32.77	H 19P	-8.678	W -90	19.861	0.000	0.000	1.000	1.000	1.000	142.39	133.77	9.125	4	0
Horiz 11	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	26.99	Comp	26.99	H 21P	-8.008	W -90	22.254	0.000	0.000	1.000	1.000	1.000	130.36	126.37	8.354	6	0
Horiz 12	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	16.63	Comp	16.63	H 23P	-5.552	W -90	25.037	0.000	0.000	1.000	1.000	1.000	118.34	118.34	7.583	1	0
Horiz 13	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	13.70	Comp	13.70	H 25X	-5.288	W 90	28.949	0.000	0.000	1.000	1.000	1.000	106.31	106.31	6.813	1	0
Horiz 14	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	10.71	Comp	10.71	H 28P	-0.874	W -90	6.118	0.000	0.000	0.500	1.000	0.500	197.14	178.82	12.371	5	0
Horiz 15	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	1.48	Tens	1.24	H 30P	-0.458	W -90	27.775	0.000	0.000	0.500	1.000	0.500	118.05	118.05	11.116	1	0
Horiz 16	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	1.88	Tens	1.08	H 32P	-0.124	W -90	8.609	0.000	0.000	0.500	1.000	0.500	160.29	150.74	10.058	5	0
Horiz 17	C8x11.5	CHN	C8x11.5	36.0	1.42	Comp	1.42	H 33P	-0.372	W -90	19.649	0.000	0.000	0.500	1.000	0.500	172.80	160.27	9.000	5	0
LD 1	B/B L3"x2"x0.25"	DAL	3X2X0.25	36.0	81.17	Comp	81.17	LD 1X	-20.627	W -90	19.058	0.000	0.000	0.850	0.850	0.850	146.93	136.56	12.834	6	0
LD 2	B/B L4"x3"x0.25"	DAL	4X3X0.25	36.0	90.51	Comp	90.51	LD 3X	-53.624	W -90	44.434	0.000	0.000	0.820	0.820	0.820	98.67	98.67	12.634	1	0
LD 4	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	58.72	Comp	58.72	LD 7X	-27.873	W -45	16.111	0.000	0.000	0.870	0.870	0.870	153.35	140.51	11.516	6	0
LD 5	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	99.81	Comp	99.81	LD 9X	-36.709	W -90	27.586	0.000	0.000	0.800	0.800	0.800	100.21	100.21	8.184	1	0
LD 6	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	85.14	Comp	85.14	LD 11P	-40.366	W -90	35.559	0.000	0.000	0.840	0.840	0.840	104.91	104.91	9.679	1	0
LD 7	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	70.67	Comp	70.67	LD 13X	-27.395	W -45	29.075	0.000	0.000	0.865	0.865	0.865	122.11	121.30	10.941	6	0
LD 8	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	99.79	Comp	99.79	LD 15X	-36.446	W -90	27.395	0.000	0.000	0.820	0.820	0.820	100.92	100.92	8.040	1	0
LD 9	B/B L3"x2"x0.25"	DAL	3X2X0.25	36.0	99.40	Comp	99.40	LD 17P	-39.694	W -90	29.949	0.000	0.000	0.820	0.820	0.820	103.08	103.08	9.334	1	0
LD 10	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	66.13	Comp	66.13	LD 19X	-27.812	W -45	31.544	0.000	0.000	0.860	0.860	0.860	115.25	115.25	10.386	1	0
LD 11	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	96.39	Comp	96.39	LD 21X	-36.538	W -90	27.853	0.000	0.000	0.820	0.820	0.820	99.22	99.22	7.905	1	0
LD 12	B/B L2.5"x2.5"x0.375"	DAE	2.5X2.5X0.38	36.0	83.20	Comp	83.20	LD 23P	-38.903	W -90	35.071	0.000	0.000	0.850	0.850	0.850	121.98	121.22	9.005	4	0
LH 1	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	17.27	Tens	0.00	LH 2X	0.000		0.005	0.000	0.000	50.000	100.000	50.000	17758.62	10967.75	21.458	6	0
LH 2	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	67.53	Comp	67.53	LH 3X	-31.786	W -45	16.097	0.000	0.000	1.000	2.000	1.000	178.86	156.20	10.806	4	0
LH 3	B/B L2.5"x3"x0.375"	DAS	3X2.5X0.38	36.0	85.17	Comp	85.17	LH 5X	-30.281	W -45	26.667	0.000	0.000	1.000	2.000	1.000	163.32	146.64	10.003	4	0
LH 4	B/B L3.5"x3.5"x0.25"	DAE	3.5X3.5X0.25	36.0	75.72	Comp	75.72	LH 7X	-29.518	W -45	29.236	0.000	0.000	0.998	1.995	0.998	138.53	131.39	9.200	6	0
DUM 1	Dummy Bracing Member	DUM	0.1X0.1X1	36.0	0.00		0.00	BR 11XY	-1.324	W 45	0.215	0.000	0.000	1.000	1.000	1.000	2.33	2.33	19.445	1	0

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
Leg S1	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	91.26	Comp	67.35	L 1Y	324.490	W -45	361.367	0.000	0.000	0.000	25.095	0	0.000	0
Leg S2	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	85.20	Comp	58.11	L 2Y	279.996	W -45	361.367	0.000	0.000	0.000	25.095	0	0.000	0
Leg S3	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	77.56	Comp	49.40	L 3Y	238.004	W -45	361.367	0.000	0.000	0.000	25.095	0	0.000	0
Leg S4	L 8" x 8" x 1"	SAE	8X8X1	36.0	71.14	Comp	45.66	L 4XY	197.253	W 45	323.999	0.000	0.000	0.000	25.095	0	0.000	0
Leg S5	L 8" x 8" x 0.875"	SAE	8X8X0.88	36.0	81.21	Comp	50.36	L 5XY	191.895	W 45	285.768	0.000	0.000	0.000	25.095	0	0.000	0
Leg S6	L 8" x 8" x 0.875"	SAE	8X8X0.88	36.0	65.78	Comp	40.61	L 6XY	154.726	W 45	285.768	0.000	0.000	0.000	25.095	0	0.000	0
Leg S7	L 8" x 8" x 0.75"	SAE	8X8X0.75	36.0	59.21	Comp	36.48	L 7XY	120.178	W 45	247.104	0.000	0.000	0.000	25.095	0	0.000	0
Leg S8	L 8" x 8" x 0.625"	SAE	8X8X0.63	36.0	52.25	Comp	31.47	L 8XY	87.095	W 45	207.576	0.000	0.000	0.000	25.095	0	0.000	0
Leg S9	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	49.64	Comp	29.49	L 9XY	71.679	W 45	182.304	0.000	0.000	0.000	12.547	0	0.000	0
Leg S10	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	39.77	Comp	23.31	L 10XY	56.647	W 45	182.304	0.000	0.000	0.000	12.547	0	0.000	0
Leg S11	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	40.21	Comp	22.95	L 11XY	42.491	W 45	138.888	0.000	0.000	0.000	12.547	0	0.000	0
Leg S12	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	29.71	Comp	16.21	L 12XY	30.022	W 45	138.888	0.000	0.000	0.000	12.547	0	0.000	0
Leg S13	L 6" x 6" x 0.4375"	SAE	6X6X0.44	36.0	25.25	Comp	12.47	L 13XY	18.166	W 45	109.296	0.000	0.000	0.000	12.547	0	0.000	0
Leg S14	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	23.09	Comp	11.73	L 14XY	14.121	W 45	90.288	0.000	0.000	0.000	10.209	0	0.000	0
Leg S15	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	14.84	Comp	6.33	L 15XY	7.620	W 45	90.288	0.000	0.000	0.000	10.209	0	0.000	0
Leg S16	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	10.29	Comp	3.51	L 16XY	3.067	W 45	65.448	0.000	0.000	0.000	8.613	0	0.000	0
Leg S17	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	4.51	Comp	0.20	L 17Y	0.173	W -45	65.448	0.000	0.000	0.000	8.613	0	0.000	0
Diag S1	B/B L3"x4"x0.3125"	DAS	4X3X0.31	36.0	91.94	Comp	36.05	D 2P	45.807	W -90	90.288	0.000	0.000	0.000	21.788	0	0.000	0
Diag S2	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	36.0	98.07	Comp	54.75	D 4P	49.255	W -90	67.608	0.000	0.000	0.000	20.919	0	0.000	0
Diag S3	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	36.0	66.62	Comp	59.82	D 6P	49.617	W -90	62.208	0.000	0.000	0.000	20.553	0	0.000	0
Diag S4	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	36.0	65.72	Comp	59.50	D 8X	49.353	W 90	62.208	0.000	0.000	0.000	20.207	0	0.000	0
Diag S5	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	87.05	Comp	33.78	D 9X	32.885	W 90	73.008	0.000	0.000	0.000	30.178	0	0.000	0
Diag S6	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	82.09	Comp	32.95	D 11P	32.078	W -90	73.008	0.000	0.000	0.000	29.346	0	0.000	0
Diag S7	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	71.37	Comp	29.73	D 13P	28.942	W -90	73.008	0.000	0.000	0.000	28.573	0	0.000	0
Diag S8	B/B L3.5"x3.5"x0.25"	DAE	3.5X3.5X0.25	36.0	74.97	Comp	28.21	D 15P	27.462	W -90	73.008	0.000	0.000	0.000	27.864	0	0.000	0
Diag S9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	38.86	Comp	22.38	D 17P	15.342	W -90	51.408	0.000	0.000	0.000	16.451	0	0.000	0
Diag S10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	67.88	Comp	21.02	D 19P	14.405	W -90	51.408	0.000	0.000	0.000	15.962	0	0.000	0
Diag S11	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	89.08	Comp	21.82	D 21P	13.386	W -90	46.008	0.000	0.000	0.000	15.495	0	0.000	0
Diag S12	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	70.78	Comp	16.91	D 23P	10.371	W -90	46.008	0.000	0.000	0.000	15.054	0	0.000	0
Diag S13	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	69.51	Comp	17.37	D 25P	10.658	W -90	46.008	0.000	0.000	0.000	14.641	0	0.000	0
Diag S14	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	31.27	Comp	9.11	D 28X	4.434	W 90	36.504	0.000	0.000	0.000	16.516	0	0.000	0
Diag S15	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	21.47	Comp	6.73	D 30X	3.275	W 90	36.504	0.000	0.000	0.000	15.548	0	0.000	0
Diag S16	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	17.46	Comp	5.40	D 32P	2.239	W -90	31.104	0.000	0.000	0.000	13.638	0	0.000	0
Diag S17	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	13.02	Comp	4.07	D 34P	1.689	W -90	31.104	0.000	0.000	0.000	12.834	0	0.000	0
Horiz 1	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	95.93	Comp	52.96	H 1X	43.926	W -90	62.208	0.000	0.000	0.000	21.458	0	0.000	0
Horiz 2	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	68.84	Comp	55.73	H 3X	46.221	W -90	62.208	0.000	0.000	0.000	13.278	0	0.000	0
Horiz 3	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	62.07	Comp	52.72	H 5X	43.730	W -90	62.208	0.000	0.000	0.000	12.250	0	0.000	0
Horiz 4	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	92.99	Comp	52.65	H 7P	39.878	W 90	56.808	0.000	0.000	0.000	11.222	0	0.000	0
Horiz 5	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	91.96	Comp	23.92	H 9X	18.120	W -90	56.808	0.000	0.000	0.000	15.292	0	0.000	0
Horiz 6	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	71.15	Comp	21.27	H 11P	16.114	W 90	56.808	0.000	0.000	0.000	13.750	0	0.000	0
Horiz 7	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	73.37	Comp	19.22	H 13X	13.171	W -90	51.408	0.000	0.000	0.000	12.208	0	0.000	0
Horiz 8	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	54.46	Comp	17.52	H 15P	12.007	W 90	51.408	0.000	0.000	0.000	10.667	0	0.000	0
Horiz 9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	40.62	Comp	14.44	H 17X	9.901	W -90	51.408	0.000	0.000	0.000	9.896	0	0.000	0
Horiz 10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	32.77	Comp	12.99	H 19X	8.905	W -90	51.408	0.000	0.000	0.000	9.125	0	0.000	0
Horiz 11	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	26.99	Comp	11.77	H 21P	8.066	W 90	51.408	0.000	0.000	0.000	8.354	0	0.000	0
Horiz 12	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	16.63	Comp	8.38	H 23X	5.747	W -90	51.408	0.000	0.000	0.000	7.583	0	0.000	0
Horiz 13	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	13.70	Comp	8.32	H 25X	5.700	W -90	51.408	0.000	0.000	0.000	6.813	0	0.000	0
Horiz 14	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	10.71	Comp	4.84	H 27P	1.828	W 45	28.296	0.000	0.000	0.000	12.371	0	0.000	0
Horiz 15	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	1.48	Tens	1.48	H 30X	1.124	W -90 Ic	56.808	0.000	0.000	0.000	11.116	0	0.000	0
Horiz 16	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	1.88	Tens	1.88	H 32X	0.710	W -90 Ic	28.296	0.000	0.000	0.000	10.058	0	0.000	0
Horiz 17	C8x11.5	CHN	C8x11.5	36.0	1.42	Comp	0.38	H 33P	0.371	W 90	73.008	0.000	0.000	0.000	9.000	0	0.000	0
LD 1	B/B L3"x2"x0.25"	DAL	3X2X0.25	36.0	81.17	Comp	35.54	LD 2Y	24.362	W -45 Ic	51.408	0.000	0.000	0.000	12.834	0	0.000	0
LD 2	B/B L4"x3"x0.25"	DAL	4X3X0.25	36.0	90.51	Comp	51.59	LD 3P	50.219	W -90	73.008	0.000	0.000	0.000	12.834	0	0.000	0
LD 4	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	58.72	Comp	41.44	LD 8Y	25.419	W -45	46.008	0.000	0.000	0.000	11.516	0	0.000	0
LD 5	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	99.81	Comp	53.19	LD 9P	32.628	W -90	46.008	0.000	0.000	0.000	8.184	0	0.000	0
LD 6	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	85.14	Comp	49.87	LD 11X	41.365	W -90	62.208	0.000	0.000	0.000	9.679	0	0.000	0

LD 7	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	70.67	Comp	30.68	LD 14Y	25.446	W -45	62.208	0.000	0.000	0.000	10.841	0	0.000	0
LD 8	E/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	99.79	Comp	53.57	LD 15P	32.858	W -90	46.008	0.000	0.000	0.000	8.040	0	0.000	0
LD 9	B/B L3"x2"x0.25"	DAL	3X2X0.25	36.0	99.40	Comp	58.16	LD 17X	40.552	W -90	51.408	0.000	0.000	0.000	9.534	0	0.000	0
LD 10	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	66.13	Comp	30.65	LD 20Y	25.425	W -45	62.208	0.000	0.000	0.000	10.386	0	0.000	0
LD 11	B/B L3.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	98.39	Comp	53.05	LD 21P	32.541	W -90	46.008	0.000	0.000	0.000	7.805	0	0.000	0
LD 12	B/B L2.5"x2.5"x0.375"	DAE	2.5X2.5X0.38	36.0	83.20	Comp	39.70	LD 23X	39.678	W -90	74.952	0.000	0.000	0.000	9.005	0	0.000	0
LH 1	E/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	17.27	Tens	17.27	LH 2X	13.076M	90 Ice	56.808	0.000	0.000	0.000	21.455	0	0.000	0
LH 2	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	67.63	Comp	37.38	LH 4X	28.313	W -45	56.808	0.000	0.000	0.000	10.806	0	0.000	0
LH 3	E/E L2.5"x3"x0.375"	DAS	3X2.5X0.38	36.0	85.17	Comp	24.95	LH 6Y	27.553	W -45	82.944	0.000	0.000	0.000	10.003	0	0.000	0
LH 4	E/B L3.5"x3.5"x0.25"	DAE	3.5X3.5X0.25	36.0	75.72	Comp	27.23	LH 8Y	26.501	W -45	93.008	0.000	0.000	0.000	9.200	0	0.000	0
DUM 1	Dummy Bracing Member	DUM	0.1X0.1X1	36.0	0.00		0.00	ER J1X	1.108	W -45	0.216	0.000	0.000	0.000	19.445	0	0.000	0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
N 0	96.55	LD 10F	Angle
N 180	96.94	LD 10Y	Angle
N 45	91.28	L 1F	Angle
N -45	94.55	H 2Y	Angle
N 90	99.65	LD 15P	Angle
N -90	99.91	LD 9X	Angle
N 0 Ice	92.71	LD 10F	Angle
N 180 Ice	93.27	LD 10Y	Angle
N 45 Ice	88.95	H 2X	Angle
N -45 Ice	92.82	H 2Y	Angle
N 90 Ice	92.48	LD 9F	Angle
N -90 Ice	94.01	LD 9X	Angle

*** Weight of structure (lbs):

Weight of Angles+Section DLF:	143435.5
Weight of Equipment:	1109.0
Total:	144744.5

*** End of Report

Site #:	88018
Name:	Stamford (Katiina), CT

Engineer:	ADV
Date:	12/18/15

Windspeed:	No Ice: 85 mph	Ice: 74 mph	
Carrier			

Taper:	-0.123333
FW @ Base:	46 ft

Taper Change:	300 ft
FW @ Top:	9 ft

Spreadsheet Version Last Updated: 11/12/2014

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.	Drop Sub-Brace (Y or Blank)	# Vert	Drop (ft)	Height (ft)	Type	Count	Z-Elev. (ft)	FW (ft)	# Sub-Brace
0	XY-Symmetry	23	23	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed			7.030	25	1	1	0	46	3
1	XY-Symmetry	21.45833333	21.45833333	25	Free	Free	Free	Free	Free	Free			7.030	25	2	2	25	42.91666667	3
2	XY-Symmetry	19.91666667	19.91666667	50	Free	Free	Free	Free	Free	Free			7.030	25	2	3	50	39.83333333	3
3	XY-Symmetry	18.375	18.375	75	Free	Free	Free	Free	Free	Free			7.030	25	2	4	75	36.75	3
4	XY-Symmetry	16.83333333	16.83333333	100	Free	Free	Free	Free	Free	Free				25	A	5	100	33.66666667	2
5	XY-Symmetry	15.29166667	15.29166667	125	Free	Free	Free	Free	Free	Free				25	A	6	125	30.58333333	2
6	XY-Symmetry	13.75	13.75	150	Free	Free	Free	Free	Free	Free				25	A	7	150	27.5	2
7	XY-Symmetry	12.20833333	12.20833333	175	Free	Free	Free	Free	Free	Free				25	A	8	175	24.41666667	2
8	XY-Symmetry	10.66666667	10.66666667	200	Free	Free	Free	Free	Free	Free				12.5	A	9	200	21.33333333	1
9	XY-Symmetry	9.895833333	9.895833333	212.5	Free	Free	Free	Free	Free	Free				12.5	A	10	212.5	19.79166667	1
10	XY-Symmetry	9.125	9.125	225	Free	Free	Free	Free	Free	Free				12.5	A	11	225	18.25	1
11	XY-Symmetry	8.354166667	8.354166667	237.5	Free	Free	Free	Free	Free	Free				12.5	A	12	237.5	16.70833333	1
12	XY-Symmetry	7.583333333	7.583333333	250	Free	Free	Free	Free	Free	Free				12.5	A	13	250	15.16666667	1
13	XY-Symmetry	6.8125	6.8125	262.5	Free	Free	Free	Free	Free	Free		1		10.17	X	14	262.5	13.625	1
14	XY-Symmetry	6.18535	6.18535	272.67	Free	Free	Free	Free	Free	Free		1		10.17	X	15	272.67	12.3707	1
15	XY-Symmetry	5.5582	5.5582	282.84	Free	Free	Free	Free	Free	Free		1		8.58	X	16	282.84	11.1164	1
16	XY-Symmetry	5.0291	5.0291	291.42	Free	Free	Free	Free	Free	Free		1		8.58	X	17	291.42	10.0582	1
17	XY-Symmetry	4.5	4.5	300	Free	Free	Free	Free	Free	Free						18	300	9	
A1	Y-Symmetry	21.45833333	0	25	Free	Free	Free	Free	Free	Free									
A2	X-Symmetry	0	21.45833333	25	Free	Free	Free	Free	Free	Free									
A3	XY-Symmetry	19.91666667	6.638888889	50	Free	Free	Free	Free	Free	Free									
A4	XY-Symmetry	6.638888889	19.91666667	50	Free	Free	Free	Free	Free	Free									
A5	XY-Symmetry	18.375	6.125	75	Free	Free	Free	Free	Free	Free									
A6	XY-Symmetry	6.125	18.375	75	Free	Free	Free	Free	Free	Free									
A7	XY-Symmetry	16.83333333	5.611111111	100	Free	Free	Free	Free	Free	Free									
A8	XY-Symmetry	5.611111111	16.83333333	100	Free	Free	Free	Free	Free	Free									
A9	Y-Symmetry	15.29166667	0	125	Free	Free	Free	Free	Free	Free									
A10	X-Symmetry	0	15.29166667	125	Free	Free	Free	Free	Free	Free									
A11	Y-Symmetry	13.75	0	150	Free	Free	Free	Free	Free	Free									
A12	X-Symmetry	0	13.75	150	Free	Free	Free	Free	Free	Free									
A13	Y-Symmetry	12.20833333	0	175	Free	Free	Free	Free	Free	Free									
A14	X-Symmetry	0	12.20833333	175	Free	Free	Free	Free	Free	Free									
A15	Y-Symmetry	10.66666667	0	200	Free	Free	Free	Free	Free	Free									
A16	X-Symmetry	0	10.66666667	200	Free	Free	Free	Free	Free	Free									
A17	Y-Symmetry	9.895833333	0	212.5	Free	Free	Free	Free	Free	Free									
A18	X-Symmetry	0	9.895833333	212.5	Free	Free	Free	Free	Free	Free									
A19	Y-Symmetry	9.125	0	225	Free	Free	Free	Free	Free	Free									
A20	X-Symmetry	0	9.125	225	Free	Free	Free	Free	Free	Free									
A21	Y-Symmetry	8.354166667	0	237.5	Free	Free	Free	Free	Free	Free									
A22	X-Symmetry	0	8.354166667	237.5	Free	Free	Free	Free	Free	Free									
A23	Y-Symmetry	7.583333333	0	250	Free	Free	Free	Free	Free	Free									
A24	X-Symmetry	0	7.583333333	250	Free	Free	Free	Free	Free	Free									
A25	Y-Symmetry	6.8125	0	262.5	Free	Free	Free	Free	Free	Free									
A26	X-Symmetry	0	6.8125	262.5	Free	Free	Free	Free	Free	Free									
H1	XY-Symmetry	21.89185	10.72916667	17.97	Free	Free	Free	Free	Free	Free									
H2	XY-Symmetry	10.72916667	21.89185	17.97	Free	Free	Free	Free	Free	Free									
H5	XY-Symmetry	20.35018333	10.80611667	42.97	Free	Free	Free	Free	Free	Free									
H6	XY-Symmetry	10.80611667	20.35018333	42.97	Free	Free	Free	Free	Free	Free									
H7	Y-Symmetry	20.35018333	0	42.97	Free	Free	Free	Free	Free	Free									
H8	X-Symmetry	0	20.35018333	42.97	Free	Free	Free	Free	Free	Free									
H9	XY-Symmetry	18.80851667	10.00321667	67.97	Free	Free	Free	Free	Free	Free									
H10	XY-Symmetry	10.00321667	18.80851667	67.97	Free	Free	Free	Free	Free	Free									
H11	Y-Symmetry	18.80851667	0	67.97	Free	Free	Free	Free	Free	Free									
H12	X-Symmetry	0	18.80851667	67.97	Free	Free	Free	Free	Free	Free									
H13	XY-Symmetry	17.26685	9.200316667	92.97	Free	Free	Free	Free	Free	Free									
H14	XY-Symmetry	9.200316667	17.26685	92.97	Free	Free	Free	Free	Free	Free									
H15	Y-Symmetry	17.26685	0	92.97	Free	Free	Free	Free	Free	Free									
H16	X-Symmetry	0	17.26685	92.97	Free	Free	Free	Free	Free	Free									

NOTES	
Types:	
1:	Built up Horizs. w/ A
2:	Built up Horizs. w/ M
A:	Typical A brace
X:	Typical X brace
Drop:	Use only for types 1 & 2

# Sections:	17

Legs

Site No.:	88018
Engineer:	ADV
Date:	12/18/2015
Carrier:	0

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations *(ft)*	Type of Shape [1]	Diameter or Length *(in)*	Thickness [2] *(in)*	F_Y *(ksi)*
1	0.000-25.00	L	8	1.125	36
2	25.00-50.00	L	8	1.125	36
3	50.00-75.00	L	8	1.125	36
4	75.00-100.0	L	8	1	36
5	100.0-125.0	L	8	0.875	36
6	125.0-150.0	L	8	0.875	36
7	150.0-175.0	L	8	0.75	36
8	175.0-200.0	L	8	0.625	36
9	200.0-212.5	L	6	0.75	36
10	212.5-225.0	L	6	0.75	36
11	225.0-237.5	L	6	0.5625	36
12	237.5-250.0	L	6	0.5625	36
13	250.0-262.5	L	6	0.4375	36
14	262.5-272.7	L	5	0.4375	36
15	272.7-282.8	L	5	0.4375	36
16	282.8-291.4	L	5	0.3125	36
17	291.4-300.0	L	5	0.3125	36

Notes:

[1] Type of Leg Shape: **R** = Round or **P** = Bent Plate or **S** = Schifflerized Angle. **L** = Even Leg

[2] For Solid Round Leg Shapes Thickness Equals Zero.

[3] Adjust for Bent Plate Leg Shapes.

Diagonals

Site No.:	88018
Engineer:	ADV
Date:	12/18/2015
Carrier:	0

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape [1]	Diameter [2] (in)	Web Length [3] (in)	Flange Length [3] (in)	Thickness (in)	F_y (ksi)	Is Diag. Tension Only? (Y/N)
1	0.000-25.00	2L		3	4	0.3125	36	
2	25.00-50.00	2L		3	3.5	0.25	36	
3	50.00-75.00	2L		2.5	3.5	0.25	36	
4	75.00-100.0	2L		2.5	3.5	0.25	36	
5	100.0-125.0	2L		3	4	0.25	36	
6	125.0-150.0	2L		3	4	0.25	36	
7	150.0-175.0	2L		3	4	0.25	36	
8	175.0-200.0	2L		3.5	3.5	0.25	36	
9	200.0-212.5	2L		2.5	2.5	0.25	36	
10	212.5-225.0	2L		2.5	2.5	0.25	36	
11	225.0-237.5	2L		2.5	2	0.25	36	
12	237.5-250.0	2L		2.5	2	0.25	36	
13	250.0-262.5	2L		2.5	2	0.25	36	
14	262.5-272.7	L		3.5	3.5	0.25	36	
15	272.7-282.8	L		3.5	3.5	0.25	36	
16	282.8-291.4	L		3	3	0.25	36	
17	291.4-300.0	L		3	3	0.25	36	

Notes:

[1] Type of Diagonal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Horizontals

Site No.:	88018
Engineer:	ADV
Date:	12/18/2015
Carrier:	0

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape [1]	Diameter [2] (in)	Web Length [3] (in)	Flange Length [3] (in)	Thickness (in)	F_y (ksi)	
1	0.000-25.00	2L		3.5	2.5	0.25	36	
2	25.00-50.00	2L		3.5	2.5	0.25	36	
3	50.00-75.00	2L		3.5	2.5	0.25	36	
4	75.00-100.0	2L		3	2.5	0.25	36	
5	100.0-125.0	2L		3	2.5	0.25	36	
6	125.0-150.0	2L		3	2.5	0.25	36	
7	150.0-175.0	2L		2.5	2.5	0.25	36	
8	175.0-200.0	2L		2.5	2.5	0.25	36	
9	200.0-212.5	2L		2.5	2.5	0.25	36	
10	212.5-225.0	2L		2.5	2.5	0.25	36	
11	225.0-237.5	2L		2.5	2.5	0.25	36	
12	237.5-250.0	2L		2.5	2.5	0.25	36	
13	250.0-262.5	2L		2.5	2.5	0.25	36	
14	262.5-272.7	L		3	2.5	0.25	36	
15	272.7-282.8	2L		3	2.5	0.25	36	
16	282.8-291.4	L		3	2.5	0.25	36	
17	291.4-300.0	C		8	11.5		36	

Notes:

[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle, **2L** = Double-Angle, **C** = Channel, **W** = W Shape

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Built-up Diagonals

Site No.:	88018
Engineer:	ADV
Date:	12/18/2015
Carrier:	0

When inputting thickness values, include all decimal places.
Input diags. from left to center & from base section upward.

Tower Built-up Diag. #	Section Elevations (ft)	Type of Shape [1]	Diameter [2] (in)	Web Length [3] (in)	Flange Length [3] (in)	Thickness (in)	F_y (ksi)
1	0.000-25.00	2L		3	2	0.25	36
2	0.000-25.00	2L		4	3	0.25	36
3	25.00-50.00	2L		2.5	2	0.25	36
4	25.00-50.00	2L		2.5	2	0.25	36
5	25.00-50.00	2L		3	3	0.25	36
6	50.00-75.00	2L		3	3	0.25	36
7	50.00-75.00	2L		2.5	2	0.25	36
8	50.00-75.00	2L		3	2	0.25	36
9	75.00-100.0	2L		3	3	0.25	36
10	75.00-100.0	2L		2.5	2	0.25	36
11	75.00-100.0	2L		2.5	2.5	0.375	36

Notes:

[1] Type of Diagonal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Built-up Horizontals

Site No.:	88018
Engineer:	ADV
Date:	12/18/2015
Carrier:	0

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape [1]	Diameter [2] (in)	Web Length [3] (in)	Flange Length [3] (in)	Thickness (in)	F_y (ksi)	Is Horiz. Tension Only? (Y/N)
1	0.000-25.00	2L		2.5	3	0.25	36	Y
2	25.00-50.00	2L		2.5	3	0.25	36	
3	50.00-75.00	2L		2.5	3	0.375	36	
4	75.00-100.0	2L		3.5	3.5	0.25	36	

Notes:

[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

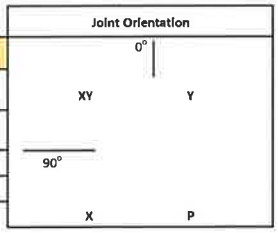
Coax and Dishes (p. 1 of 2)

Orig by MED, Improved by ABL. Last update 6/25/13 MED

Site No.:	88018
Engineer:	ADV
Date:	12/18/15
Carrier:	0

Dish Types	
S	Standard
R	Standard w/ Radome
H	High Performance
G	Grid

Joint Orientation



Dish Elevation (ft)	Dish Dia. (ft)	Dish Angle (deg)	Dish Type	Joint Orientation

Equipment Label	Attach Label	Equipment Property Set	EIA Antenna Orientation Angle

Description	From (ft)	To (ft)	Quantity	Shape	Width or Diameter (in)	Perimeter (in)	Unit Weight (lb/ft)	Part of Face Solidity Ratio (Yes/No)	Include in Wind Load (Yes/No)
LADDER	0	300	1	Flat	1.5	6.0	6	No	Yes
Short Ladder1	8.3333	33.3333	2	Flat	1.5	6.0	6	Yes	No
Short Ladder2	8.3333	33.3333	2	Flat	1.5	6.0	6	Yes	No
WG1	5	300	1	Flat	1.5	6.0	6	Yes	No
WG2	5	160	1	Flat	1.5	6.0	6	Yes	Yes
WG3	5	272	1	Flat	1.5	6.0	6	Yes	No
Clearwire1	5	300	5	Round	1.09	3.4	0.33	Yes	Yes
MC1	5	300	2	Round	1.55	4.9	0.63	No	Yes
UWH1	5	300	1	Round	1.09	3.4	0.33	No	Yes
UNK1	5	300	1	Round	0.63	2.0	0.15	No	Yes
QualComm1	5	270	1	Round	3.13	9.8	3.04	No	Yes
USDOHS1	5	269	2	Round	1.09	3.4	0.33	Yes	Yes
Sirus1	5	265	1	Round	5.02	15.8	1.85	Yes	No
Sirus2	5	265	1	Round	1.98	6.2	0.82	Yes	No
T-Mobile1	5	265	1	Flat	7.92	27.7	9.84	Yes	No
T-Mobile2	5	265	2	Round	0.88	2.8	0.7	Yes	No
T-Mobile3	5	265	1	Round	1.25	3.9	1.05	Yes	No
USDOHS2	5	240	2	Round	1.09	3.4	0.33	Yes	Yes
AT&T1	5	231	4	Round	0.74	2.3	0.49	Yes	No
AT&T2	5	231	2	Round	0.39	1.2	0.06	Yes	No
AT&T3	5	231	1	Flat	11.88	31.7	9.84	Yes	No
Sprint1	5	224	1	Flat	9.9	31.7	12.3	Yes	Yes
MC2	5	200	2	Round	1.55	4.9	0.63	No	Yes
USDOHS3	5	200	1	Round	1.09	3.4	0.33	Yes	Yes
Spok1	5	178	3	Round	1.09	3.4	0.33	No	Yes
Clearwire2	5	171	1	Flat	2.38	14.3	7.3	Yes	Yes
Clearwire3	5	167	6	Round	0.31	1.0	0.05	Yes	Yes
Clearwire4	5	167	1	Round	2.38	7.5	3.65	Yes	Yes
Metro1	5	160	1	Flat	11.88	31.7	9.84	Yes	No
Metro2	5	160	2	Round	0.44	1.4	0.08	Yes	No
Sprint2	5	150	4	Round	1.54	4.8	1	Yes	Yes
Sprint3	5	150	1	Round	0.63	2.0	0.15	Yes	Yes
Sensus1	5	137	1	Round	1.09	3.4	0.33	No	Yes
Spok2	5	120	1	Round	0.63	2.0	0.15	No	Yes
MC3	5	100	1	Round	1.55	4.9	0.63	No	Yes
Verizon1	5	92	2	Round	1.981	6.2	1.3	No	Yes
Spok3	5	6	1	Round	0.63	2.0	0.15	No	Yes
Spok4	5	6	1	Round	0.34	1.1	0.06	No	Yes

Coax and Dishes (p. 2 of 2) α 7 $k_{z\,max}$ 2.58

Tia Code: TIA-222-F z_g 33 $k_{z\,min}$ 1

e t

Description	From (ft)	To (ft)	Quantity	Face # (1-4, A-D)	Coax Width (in)	Considered Coax Shape (Block / Flat / Ind)	% Exposed	Spacing (in)	Shape (Round/Flat)	Block Width (# coax)	Block Depth (# coax)	Perimeter (in)	Unit Weight (lb/ft)	In Face Zone (Yes/No)	Include In Wind Load (Yes/No)
							100							No	No
LADDER	0	300	1	B	1.5	Flat	100		Flat	1	1	6.0	6	No	Yes
Short Ladder1	8.3333	33.3333	2	1	1.5	Flat	100		Flat	2	1	6.0	6	Yes	No
Short Ladder2	8.3333	33.3333	2	3	1.5	Flat	100		Flat	2	1	6.0	6	Yes	No
							100							No	No
WG1	5	300	1	1	1.5	Flat	100		Flat	1	1	6.0	6	Yes	No
WG2	5	160	1	2	1.5	Flat	100		Flat	1	1	6.0	6	Yes	Yes
WG3	5	272	1	1	1.5	Flat	100		Flat	1	1	6.0	6	Yes	No
Clearwire1	5	300	5	2	1.09	Ind	100		Round	5	1	3.4	0.33	Yes	Yes
MC1	5	300	2	B	1.55	Ind	100		Round	2	1	4.9	0.63	No	Yes
UWH1	5	300	1	B	1.09	Ind	100		Round	1	1	3.4	0.33	No	Yes
UNK1	5	300	1	B	0.63	Ind	100		Round	1	1	2.0	0.15	No	Yes
QualComm1	5	270	1	B	3.13	Ind	100		Round	1	1	9.8	3.04	No	Yes
USDOHS1	5	269	2	2	1.09	Ind	100		Round	2	1	3.4	0.33	Yes	Yes
Sirus1	5	265	1	4	5.02	Ind	100		Round	1	1	15.8	1.85	Yes	No
Sirus2	5	265	1	4	1.98	Ind	100		Round	1	1	6.2	0.82	Yes	No
T-Mobile1	5	265	12	3	1.98	Block	33	0	Flat	4	3	27.7	9.84	Yes	No
T-Mobile2	5	265	2	4	0.88	Ind	100		Round	2	1	2.8	0.7	Yes	No
T-Mobile3	5	265	1	3	1.25	Ind	100		Round	1	1	3.9	1.05	Yes	No
USDOHS2	5	240	2	2	1.09	Ind	100		Round	2	1	3.4	0.33	Yes	Yes
AT&T1	5	231	4	1	0.74	Ind	100		Round	4	1	2.3	0.49	Yes	No
AT&T2	5	231	2	1	0.39	Ind	100		Round	2	1	1.2	0.06	Yes	No
AT&T3	5	231	12	1	1.98	Block	50	0	Flat	6	2	31.7	9.84	Yes	No
Sprint1	5	224	15	2	1.98	Block	33	0	Flat	5	3	31.7	12.3	Yes	Yes
MC2	5	200	2	B	1.55	Ind	100		Round	2	1	4.9	0.63	No	Yes
USDOHS3	5	200	1	2	1.09	Ind	100		Round	1	1	3.4	0.33	Yes	Yes
Spok1	5	178	3	B	1.09	Ind	100		Round	3	1	3.4	0.33	No	Yes
Clearwire2	5	171	2	2	2.38	Block	50	0	Flat	1	2	14.3	7.3	Yes	Yes
Clearwire3	5	167	6	2	0.31	Ind	100		Round	6	1	1.0	0.05	Yes	Yes
Clearwire4	5	167	1	2	2.38	Ind	100		Round	1	1	7.5	3.65	Yes	Yes
Metro1	5	160	12	1	1.98	Block	50	0	Flat	6	2	31.7	9.84	Yes	No
Metro2	5	160	2	1	0.44	Ind	100		Round	2	1	1.4	0.08	Yes	No
Sprint2	5	150	4	2	1.54	Ind	100		Round	4	1	4.8	1	Yes	Yes
Sprint3	5	150	1	2	0.63	Ind	100		Round	1	1	2.0	0.15	Yes	Yes
Sensus1	5	137	1	B	1.09	Ind	100		Round	1	1	3.4	0.33	No	Yes
Spok2	5	120	1	B	0.63	Ind	100		Round	1	1	2.0	0.15	No	Yes
MC3	5	100	1	B	1.55	Ind	100		Round	1	1	4.9	0.63	No	Yes
Verizon1	5	92	2	B	1.98	Ind	100		Round	2	1	6.2	1.3	No	Yes
Spok3	5	6	1	B	0.63	Ind	100		Round	1	1	2.0	0.15	No	Yes
Spok4	5	6	1	B	0.34	Ind	100		Round	1	1	1.1	0.06	No	Yes

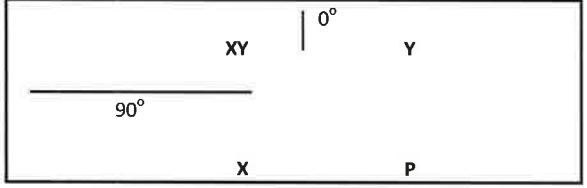
Coax & Dishes

Dish Types	
S	Standard
R	Standard w/ Radome
H	High Performance
G	Grid

Dish Elevation (ft)	Dish Dia. (ft)	Dish Angle (deg)	Dish Type	Joint Orientation
300	2	0	H	Y
300	2	90	H	XY
300	2	180	H	X
300	4	270	S	P
300	3	0	H	XY
120	4	90	S	X
24	2	235	R	P
6	4	180	S	P

Equipment Label	Attach Label	Equipment Property Set	EIA Antenna Orientation Angle *(deg)*
2' HP 1 @ 300'	17Y	2 ft HP Dish	0
2' HP 2 @ 300'	17XY	2 ft HP Dish	90
2' HP 3 @ 300'	17X	2 ft HP Dish	180
4' STD 4 @ 300'	17P	4 ft STD Dish	270
3' HP 5 @ 300'	17XY	3 ft HP Dish	0
4' STD 6 @ 120'	5X	4 ft STD Dish	90
2' RAD 7 @ 24'	1P	2 ft RAD Dish	235
4' STD 8 @ 6'	0P	4 ft STD Dish	180

Joint Orientation



Site #:	88018	Engineer:	ADV
Name:	0	Date:	12/18/15

Section Label	Section Color	Joint Defining Bottom Section	Dead Load Adj. Factor				Adj. Factor Flat	Adj. Factor Round	Area Multiplier	Weight Multiplier
0.000-25.00		0P	1.502697162				1.252247635	1.252247635	1	1.2
25.00-50.00		1P	1.48093403				1.234111691	1.234111691	1	1.2
50.00-75.00		2P	1.475299206				1.229416005	1.229416005	1	1.2
75.00-100.0		3P	1.468662391				1.223885326	1.223885326	1	1.2
100.0-125.0		4P	1.534826556				1.27902213	1.27902213	1	1.2
125.0-150.0		5P	1.518955429				1.265796191	1.265796191	1	1.2
150.0-175.0		6P	1.50866585				1.257221541	1.257221541	1	1.2
175.0-200.0		7P	1.478954774				1.232462312	1.232462312	1	1.2
200.0-212.5		8P	1.469986394				1.224988662	1.224988662	1	1.2
212.5-225.0		9P	1.462963002				1.219135835	1.219135835	1	1.2
225.0-237.5		10P	1.455806469				1.213172057	1.213172057	1	1.2
237.5-250.0		11P	1.44853386				1.20711155	1.20711155	1	1.2
250.0-262.5		12P	1.441165734				1.200971445	1.200971445	1	1.2
262.5-272.7		13P	1.443770575				1.203142146	1.203142146	1	1.2
272.7-282.8		14P	1.435797379				1.196497816	1.196497816	1	1.2
282.8-291.4		15P	1.457623525				1.214686271	1.214686271	1	1.2
291.4-300.0		16P	1.400830114				1.167358428	1.167358428	1	1.2

Site #:	88018
Name:	0

Engineer:	ADV
Date:	12/18/15

Group Label	Group Description	Angle Type	Angle Size	Material Type	Element Type	Group Type	Optimize Group
Leg S1	L 8" x 8" x 1.125"	SAE	8X8X1.13	A 36	Beam	Leg	None
Leg S2	L 8" x 8" x 1.125"	SAE	8X8X1.13	A 36	Beam	Leg	None
Leg S3	L 8" x 8" x 1.125"	SAE	8X8X1.13	A 36	Beam	Leg	None
Leg S4	L 8" x 8" x 1"	SAE	8X8X1	A 36	Beam	Leg	None
Leg S5	L 8" x 8" x 0.875"	SAE	8X8X0.88	A 36	Beam	Leg	None
Leg S6	L 8" x 8" x 0.875"	SAE	8X8X0.88	A 36	Beam	Leg	None
Leg S7	L 8" x 8" x 0.75"	SAE	8X8X0.75	A 36	Beam	Leg	None
Leg S8	L 8" x 8" x 0.625"	SAE	8X8X0.63	A 36	Beam	Leg	None
Leg S9	L 6" x 6" x 0.75"	SAE	6X6X0.75	A 36	Beam	Leg	None
Leg S10	L 6" x 6" x 0.75"	SAE	6X6X0.75	A 36	Beam	Leg	None
Leg S11	L 6" x 6" x 0.5625"	SAE	6X6X0.56	A 36	Beam	Leg	None
Leg S12	L 6" x 6" x 0.5625"	SAE	6X6X0.56	A 36	Beam	Leg	None
Leg S13	L 6" x 6" x 0.4375"	SAE	6X6X0.44	A 36	Beam	Leg	None
Leg S14	L 5" x 5" x 0.4375"	SAE	5X5X0.44	A 36	Beam	Leg	None
Leg S15	L 5" x 5" x 0.4375"	SAE	5X5X0.44	A 36	Beam	Leg	None
Leg S16	L 5" x 5" x 0.3125"	SAE	5X5X0.31	A 36	Beam	Leg	None
Leg S17	L 5" x 5" x 0.3125"	SAE	5X5X0.31	A 36	Beam	Leg	None
Diag S1	B/B L3"x4"x0.3125"	DAS	4X3X0.31	A 36	Beam	Other	None
Diag S2	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	A 36	Beam	Other	None
Diag S3	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	A 36	Beam	Other	None
Diag S4	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	A 36	Beam	Other	None
Diag S5	B/B L3"x4"x0.25"	DAS	4X3X0.25	A 36	Beam	Other	None
Diag S6	B/B L3"x4"x0.25"	DAS	4X3X0.25	A 36	Beam	Other	None
Diag S7	B/B L3"x4"x0.25"	DAS	4X3X0.25	A 36	Beam	Other	None
Diag S8	B/B L3.5"x3.5"x0.25"	DAE	3.5X3.5X0.25	A 36	Beam	Other	None
Diag S9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	A 36	Beam	Other	None
Diag S10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	A 36	Beam	Other	None
Diag S11	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	A 36	Beam	Other	None
Diag S12	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	A 36	Beam	Other	None
Diag S13	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	A 36	Beam	Other	None
Diag S14	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	A 36	Beam	Other	None
Diag S15	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	A 36	Beam	Other	None
Diag S16	L 3" x 3" x 0.25"	SAE	3X3X0.25	A 36	Beam	Other	None
Diag S17	L 3" x 3" x 0.25"	SAE	3X3X0.25	A 36	Beam	Other	None
Horiz 1	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	A 36	Beam	Other	None
Horiz 2	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	A 36	Beam	Other	None
Horiz 3	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	A 36	Beam	Other	None
Horiz 4	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	A 36	Beam	Other	None
Horiz 5	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	A 36	Beam	Other	None
Horiz 6	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	A 36	Beam	Other	None
Horiz 7	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	A 36	Beam	Other	None
Horiz 8	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	A 36	Beam	Other	None
Horiz 9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	A 36	Beam	Other	None
Horiz 10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	A 36	Beam	Other	None
Horiz 11	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	A 36	Beam	Other	None
Horiz 12	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	A 36	Beam	Other	None
Horiz 13	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	A 36	Beam	Other	None
Horiz 14	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	A 36	Beam	Other	None
Horiz 15	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	A 36	Beam	Other	None
Horiz 16	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	A 36	Beam	Other	None
Horiz 17	C8x11.5	CHN	C8x11.5	A 36	Beam	Other	None
LD 1	B/B L3"x2"x0.25"	DAL	3X2X0.25	A 36	Beam	Other	None
LD 2	B/B L4"x3"x0.25"	DAL	4X3X0.25	A 36	Beam	Other	None
LD 4	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	A 36	Beam	Other	None
LD 5	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	A 36	Beam	Other	None
LD 6	B/B L3"x3"x0.25"	DAE	3X3X0.25	A 36	Beam	Other	None
LD 7	B/B L3"x3"x0.25"	DAE	3X3X0.25	A 36	Beam	Other	None
LD 8	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	A 36	Beam	Other	None
LD 9	B/B L3"x2"x0.25"	DAL	3X2X0.25	A 36	Beam	Other	None
LD 10	B/B L3"x3"x0.25"	DAE	3X3X0.25	A 36	Beam	Other	None
LD 11	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	A 36	Beam	Other	None
LD 12	B/B L2.5"x2.5"x0.375"	DAE	2.5X2.5X0.38	A 36	Beam	Other	None
LH 1	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	A 36	T-Only	Other	None
LH 2	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	A 36	Beam	Other	None

Group Label	Group Description	Angle Type	Angle Size	Material Type	Element Type	Group Type	Optimize Group
LH 3	B/B L2.5"x3"x0.375"	DAS	3X2.5X0.38	A 36	Beam	Other	None
LH 4	B/B L3.5"x3.5"x0.25"	DAE	3.5X3.5X0.25	A 36	Beam	Other	None
DUM 1	Dummy Bracing Member	DUM	0.1X0.1X1	A 36	Beam	Fictitious	None

Site #:	88018
Name:	0

Engineer:	ADV
Date:	12/18/15

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ
L 1	Leg S1		XY-Symmetry	0P	1P	1	4	0.2812	0.2812	0.2812
L 2	Leg S2		XY-Symmetry	1P	2P	1	4	0.2812	0.2812	0.2812
L 3	Leg S3		XY-Symmetry	2P	3P	1	4	0.2812	0.2812	0.2812
L 4	Leg S4		XY-Symmetry	3P	4P	1	4	0.2812	0.2812	0.2812
L 5	Leg S5		XY-Symmetry	4P	5P	1	4	0.333333333	0.333333333	0.333333333
L 6	Leg S6		XY-Symmetry	5P	6P	1	4	0.333333333	0.333333333	0.333333333
L 7	Leg S7		XY-Symmetry	6P	7P	1	4	0.333333333	0.333333333	0.333333333
L 8	Leg S8		XY-Symmetry	7P	8P	1	4	0.333333333	0.333333333	0.333333333
L 9	Leg S9		XY-Symmetry	8P	9P	1	4	0.5	0.5	0.5
L 10	Leg S10		XY-Symmetry	9P	10P	1	4	0.5	0.5	0.5
L 11	Leg S11		XY-Symmetry	10P	11P	1	4	0.5	0.5	0.5
L 12	Leg S12		XY-Symmetry	11P	12P	1	4	0.5	0.5	0.5
L 13	Leg S13		XY-Symmetry	12P	13P	1	4	0.5	0.5	0.5
L 14	Leg S14		XY-Symmetry	13P	14P	1	4	0.5	0.5	0.5
L 15	Leg S15		XY-Symmetry	14P	15P	1	4	0.5	0.5	0.5
L 16	Leg S16		XY-Symmetry	15P	16P	1	4	0.5	0.5	0.5
L 17	Leg S17		XY-Symmetry	16P	17P	1	4	0.5	0.5	0.5
D 1	Diag S1		XY-Symmetry	0P	H2P	1	6	0.31	0.92	0.31
D 2	Diag S1		XY-Symmetry	0P	H1P	1	6	0.31	0.92	0.31
D 3	Diag S2		XY-Symmetry	1P	H6P	1	6	0.31	0.62	0.31
D 4	Diag S2		XY-Symmetry	1P	H5P	1	6	0.31	0.62	0.31
D 5	Diag S3		XY-Symmetry	2P	H10P	1	6	0.333333333	0.667	0.333333333
D 6	Diag S3		XY-Symmetry	2P	H9P	1	6	0.333333333	0.667	0.333333333
D 7	Diag S4		XY-Symmetry	3P	H14P	1	6	0.333333333	0.667	0.333333333
D 8	Diag S4		XY-Symmetry	3P	H13P	1	6	0.333333333	0.667	0.333333333
D 9	Diag S5		XY-Symmetry	4P	A9P	1	6	0.333333333	0.666666667	0.333333333
D 10	Diag S5		XY-Symmetry	4P	A10P	1	6	0.333333333	0.666666667	0.333333333
D 11	Diag S6		XY-Symmetry	5P	A11P	1	6	0.333333333	0.666666667	0.333333333
D 12	Diag S6		XY-Symmetry	5P	A12P	1	6	0.333333333	0.666666667	0.333333333
D 13	Diag S7		XY-Symmetry	6P	A13P	1	6	0.333333333	0.666666667	0.333333333
D 14	Diag S7		XY-Symmetry	6P	A14P	1	6	0.333333333	0.666666667	0.333333333
D 15	Diag S8		XY-Symmetry	7P	A15P	1	6	0.333333333	0.666666667	0.333333333
D 16	Diag S8		XY-Symmetry	7P	A16P	1	6	0.333333333	0.666666667	0.333333333
D 17	Diag S9		XY-Symmetry	8P	A17P	1	6	0.32	0.59	0.32
D 18	Diag S9		XY-Symmetry	8P	A18P	1	6	0.32	0.59	0.32
D 19	Diag S10		XY-Symmetry	9P	A19P	1	6	0.5	1	0.5
D 20	Diag S10		XY-Symmetry	9P	A20P	1	6	0.5	1	0.5
D 21	Diag S11		XY-Symmetry	10P	A21P	1	6	0.48	0.96	0.58
D 22	Diag S11		XY-Symmetry	10P	A22P	1	6	0.48	0.96	0.58
D 23	Diag S12		XY-Symmetry	11P	A23P	1	6	0.5	1	0.5
D 24	Diag S12		XY-Symmetry	11P	A24P	1	6	0.5	1	0.5
D 25	Diag S13		XY-Symmetry	12P	A25P	1	6	0.5	1	0.5
D 26	Diag S13		XY-Symmetry	12P	A26P	1	6	0.5	1	0.5
D 27	Diag S14		XY-Symmetry	13P	14Y	2	5	0.52	0.75	0.52
D 28	Diag S14		XY-Symmetry	13P	14X	2	5	0.52	0.75	0.52
D 29	Diag S15		XY-Symmetry	14P	15Y	2	5	0.52	0.75	0.52
D 30	Diag S15		XY-Symmetry	14P	15X	2	5	0.52	0.75	0.52
D 31	Diag S16		XY-Symmetry	15P	16Y	2	5	0.52	0.75	0.52
D 32	Diag S16		XY-Symmetry	15P	16X	2	5	0.52	0.75	0.52
D 33	Diag S17		XY-Symmetry	16P	17Y	2	5	0.52	0.75	0.52
D 34	Diag S17		XY-Symmetry	16P	17X	2	5	0.52	0.75	0.52
H 1	Horiz 1		XY-Symmetry	1P	A1P	1	6	0.48	0.48	0.48
H 2	Horiz 1		XY-Symmetry	1P	A2P	1	6	0.48	0.48	0.48
H 3	Horiz 2		XY-Symmetry	2P	A3P	1	6	0.5	0.5	0.5
H 4	Horiz 2		XY-Symmetry	2P	A4P	1	6	0.5	0.5	0.5
H 5	Horiz 3		XY-Symmetry	3P	A5P	1	6	0.5	0.5	0.5
H 6	Horiz 3		XY-Symmetry	3P	A6P	1	6	0.5	0.5	0.5
H 7	Horiz 4		XY-Symmetry	4P	A7P	1	6	0.47	0.94	0.47
H 8	Horiz 4		XY-Symmetry	4P	A8P	1	6	0.47	0.94	0.47
H 9	Horiz 5		XY-Symmetry	5P	A9P	1	6	1	1	1
H 10	Horiz 5		XY-Symmetry	5P	A10P	1	6	1	1	1
H 11	Horiz 6		XY-Symmetry	6P	A11P	1	6	1	1	1

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ
H 12	Horiz 6		XY-Symmetry	6P	A12P	1	6	1	1	1
H 13	Horiz 7		XY-Symmetry	7P	A13P	1	6	1	1	1
H 14	Horiz 7		XY-Symmetry	7P	A14P	1	6	1	1	1
H 15	Horiz 8		XY-Symmetry	8P	A15P	1	6	1	1	1
H 16	Horiz 8		XY-Symmetry	8P	A16P	1	6	1	1	1
H 17	Horiz 9		XY-Symmetry	9P	A17P	1	6	1	1	1
H 18	Horiz 9		XY-Symmetry	9P	A18P	1	6	1	1	1
H 19	Horiz 10		XY-Symmetry	10P	A19P	1	6	1	1	1
H 20	Horiz 10		XY-Symmetry	10P	A20P	1	6	1	1	1
H 21	Horiz 11		XY-Symmetry	11P	A21P	1	6	1	1	1
H 22	Horiz 11		XY-Symmetry	11P	A22P	1	6	1	1	1
H 23	Horiz 12		XY-Symmetry	12P	A23P	1	6	1	1	1
H 24	Horiz 12		XY-Symmetry	12P	A24P	1	6	1	1	1
H 25	Horiz 13		XY-Symmetry	13P	A25P	1	6	1	1	1
H 26	Horiz 13		XY-Symmetry	13P	A26P	1	6	1	1	1
H 27	Horiz 14		Y-Symmetry	14P	14X	3	5	0.5	1	0.5
H 28	Horiz 14		X-Symmetry	14P	14Y	3	5	0.5	1	0.5
H 29	Horiz 15		Y-Symmetry	15P	15X	1	6	0.5	1	0.5
H 30	Horiz 15		X-Symmetry	15P	15Y	1	6	0.5	1	0.5
H 31	Horiz 16		Y-Symmetry	16P	16X	3	5	0.5	1	0.5
H 32	Horiz 16		X-Symmetry	16P	16Y	3	5	0.5	1	0.5
H 33	Horiz 17		Y-Symmetry	17P	17X	3	5	0.5	1	0.5
H 34	Horiz 17		X-Symmetry	17P	17Y	3	5	0.5	1	0.5
H 37	Horiz 2		Y-Symmetry	A3P	A3X	1	5	1	1	1
H 38	Horiz 2		X-Symmetry	A4P	A4Y	1	5	1	1	1
H 39	Horiz 3		Y-Symmetry	A5P	A5X	1	5	1	1	1
H 40	Horiz 3		X-Symmetry	A6P	A6Y	1	5	1	1	1
H 41	Horiz 4		Y-Symmetry	A7P	A7X	1	5	1	1	1
H 42	Horiz 4		X-Symmetry	A8P	A8Y	1	5	1	1	1
LH 1	LH 1		Y-Symmetry	H1P	H1X	1	6	50	100	50
LH 2	LH 1		X-Symmetry	H2P	H2Y	1	6	50	100	50
LH 3	LH 2		XY-Symmetry	H5P	H7P	1	6	1	2	1
LH 4	LH 2		XY-Symmetry	H6P	H8P	1	6	1	2	1
LH 5	LH 3		XY-Symmetry	H9P	H11P	1	6	1	2	1
LH 6	LH 3		XY-Symmetry	H10P	H12P	1	6	1	2	1
LH 7	LH 4		XY-Symmetry	H13P	H15P	1	6	0.998	1.995	0.998
LH 8	LH 4		XY-Symmetry	H14P	H16P	1	6	0.998	1.995	0.998
LD 1	LD 1		XY-Symmetry	H1P	1P	1	6	0.85	0.85	0.85
LD 2	LD 1		XY-Symmetry	H2P	1P	1	6	0.85	0.85	0.85
LD 3	LD 2		XY-Symmetry	H1P	A1P	1	6	0.82	0.82	0.82
LD 4	LD 2		XY-Symmetry	H2P	A2P	1	6	0.82	0.82	0.82
LD 7	LD 4		XY-Symmetry	H5P	2P	1	6	0.87	0.87	0.87
LD 8	LD 4		XY-Symmetry	H6P	2P	1	6	0.87	0.87	0.87
LD 9	LD 5		XY-Symmetry	H5P	A3P	1	6	0.8	0.8	0.8
LD 10	LD 5		XY-Symmetry	H6P	A4P	1	6	0.8	0.8	0.8
LD 11	LD 6		XY-Symmetry	A3P	H7P	1	6	0.84	0.84	0.84
LD 12	LD 6		XY-Symmetry	A4P	H8P	1	6	0.84	0.84	0.84
LD 13	LD 7		XY-Symmetry	H9P	3P	1	6	0.865	0.865	0.865
LD 14	LD 7		XY-Symmetry	H10P	3P	1	6	0.865	0.865	0.865
LD 15	LD 8		XY-Symmetry	H9P	A5P	1	6	0.82	0.82	0.82
LD 16	LD 8		XY-Symmetry	H10P	A6P	1	6	0.82	0.82	0.82
LD 17	LD 9		XY-Symmetry	A5P	H11P	1	6	0.82	0.82	0.82
LD 18	LD 9		XY-Symmetry	A6P	H12P	1	6	0.82	0.82	0.82
LD 19	LD 10		XY-Symmetry	H13P	4P	1	6	0.86	0.86	0.86
LD 20	LD 10		XY-Symmetry	H14P	4P	1	6	0.86	0.86	0.86
LD 21	LD 11		XY-Symmetry	H13P	A7P	1	6	0.82	0.82	0.82
LD 22	LD 11		XY-Symmetry	H14P	A8P	1	6	0.82	0.82	0.82
LD 23	LD 12		XY-Symmetry	A7P	H15P	1	6	0.85	0.85	0.85
LD 24	LD 12		XY-Symmetry	A8P	H16P	1	6	0.85	0.85	0.85
BR 1	DUM 1		XY-Symmetry	A1P	A2P	1	4	1	1	1

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ
BR 3	DUM 1		XY-Symmetry	A3P	A4P	1	4	1	1	1
BR 4	DUM 1		XY-Symmetry	A3P	A4XY	1	4	1	1	1
BR 5	DUM 1		XY-Symmetry	A5P	A6P	1	4	1	1	1
BR 6	DUM 1		XY-Symmetry	A5P	A6XY	1	4	1	1	1
BR 7	DUM 1		XY-Symmetry	A7P	A8P	1	4	1	1	1
BR 8	DUM 1		XY-Symmetry	A7P	A8XY	1	4	1	1	1
BR 9	DUM 1		XY-Symmetry	A9P	A10P	1	4	1	1	1
BR 11	DUM 1		XY-Symmetry	A11P	A12P	1	4	1	1	1
BR 13	DUM 1		XY-Symmetry	A13P	A14P	1	4	1	1	1
BR 15	DUM 1		XY-Symmetry	A15P	A16P	1	4	1	1	1
BR 17	DUM 1		XY-Symmetry	A17P	A18P	1	4	1	1	1
BR 19	DUM 1		XY-Symmetry	A19P	A20P	1	4	1	1	1
BR 21	DUM 1		XY-Symmetry	A21P	A22P	1	4	1	1	1
BR 23	DUM 1		XY-Symmetry	A23P	A24P	1	4	1	1	1
BR 25	DUM 1		XY-Symmetry	A25P	A26P	1	4	1	1	1
BR 61	DUM 1		XY-Symmetry	H1P	H2P	1	4	1	1	1
BR 62	DUM 1		XY-Symmetry	H1P	H2XY	1	4	1	1	1
BR 64	DUM 1		XY-Symmetry	H5P	H6P	1	4	1	1	1
BR 65	DUM 1		XY-Symmetry	H5P	H6XY	1	4	1	1	1
BR 66	DUM 1		XY-Symmetry	H7P	H8P	1	4	1	1	1
BR 67	DUM 1		XY-Symmetry	H9P	H10P	1	4	1	1	1
BR 68	DUM 1		XY-Symmetry	H9P	H10XY	1	4	1	1	1
BR 69	DUM 1		XY-Symmetry	H11P	H12P	1	4	1	1	1
BR 70	DUM 1		XY-Symmetry	H13P	H14P	1	4	1	1	1
BR 71	DUM 1		XY-Symmetry	H13P	H14XY	1	4	1	1	1
BR 72	DUM 1		XY-Symmetry	H15P	H16P	1	4	1	1	1

Point Loads

Tower Height:	300	ft
Gh:	1.09	
Wind Speed:	85.00	
Wind Speed (Ice):	73.95	
Radial Ice Diameter:	0.5	in

Site No.:	88018
Engineer:	ADV
Date:	12/18/2015
Carrier:	0

KS-15676 Horn Antennas: ~128 ft²

No.	Carrier	Elevation (ft)	Quantity	Number of Azimuths	Model	Height (in)	Width (in)	Depth (in)	Weight (lbs/ea)	Flat/Round (F|R)	Reduction Factor	C_AA_C (ft²/ea)	Weight (k/ea)	H/W	C_A	q_z (psf)	q_z (Ice) (psf)
1		300	1	1	-	0.01	0.01	0.01	0.01	R	0.001			1.00	0.80	34.75	26.30
			1	4	Platform						1.000	55.00	4.00	-	-		
2		283	1	4	-	0.01	0.01	0.01	0.01	R	0.001			1.00	0.80	34.18	25.87
			1	4	Catwalk						1.000	40.00	2.75	-	-		
3		212.5	1	3	-	0.01	0.01	0.01	0.01	R	0.001			1.00	0.80	31.49	23.83
			1	3	Platform						1.000	50.00	3.00	-	-		
4		100	1	3	-	0.01	0.01	0.01	0.01	R	0.001			1.00	0.80	25.39	19.22
			1	3	Platform						1.000	50.00	3.00	-	-		
5	Clearwire	300	1	1	Horizon Compact	4.7	9.3	9.3	10.6	R	1.000			0.51	0.80	34.75	26.30
	Marcus Comm.		1	1	Radio/ODU						0.500	1.87	0.03	-	-		
6	United/Marcus	300	2	2	16' Omni	192	3	3	55	R	1.000			64.00	1.20	34.75	26.30
	Marcus Comm.		1	1	101-68-10-X-03N						1.000	5.53	0.07	-	-		
7	Qualcomm	270	1	1	TLP-08M-2E	146.4	10.5	10.5	130	R	1.000			13.94	0.95	33.72	25.52
	Qualcomm		1	1	Side Arm						1.000	5.20	0.15	-	-		
8	US DOHS	269	1	1	ADD090	78.7	31.5	31.5	88.2	F	1.000			2.50	1.40	33.68	25.50
	-		1	1	-						1.000	0.00	0.00	-	-		
9	Sirus	265	2	2	TA-2350-DAB	70	2.3	2.3	15	R	1.000			30.43	1.20	33.54	25.39
	Sirus		2	2	Side Arm						0.900	5.20	0.15	-	-		
10	T-Mobile	265	3	3	ATMAA1412D-1A20	12	10	4	13	F	0.500			1.20	1.40	33.54	25.39
	T-Mobile		3	3	RRU5 11 B12						0.500	3.25	0.05	-	-		
11	T-Mobile	265	3	3	AIR 21, 1.3 M, B2A B4P	56	12	8	83	F	0.690			4.67	1.40	33.54	25.39
	T-Mobile		3	3	AIR 21, 1.3M, B4A B2P						0.690	6.58	0.08	-	-		
12	T-Mobile	265	3	3	LNX-6515DS-VTM	96.3	11.9	7.1	51.3	F	0.700			8.09	1.44	33.54	25.39
	T-Mobile		3	3	Sector Frame						0.670	17.90	0.40	-	-		
13	US DOHS	240	1	1	SC381-HL	148.3	4.5	4.5	47	R	1.000			32.96	1.20	32.60	24.68
	US DOHS		1	1	SC281-L						1.000	10.46	0.08	-	-		
14	US DOHS	240	1	1	-	0.01	0.01	0.01	0.01	R	0.001			1.00	0.80	32.60	24.68
	US DOHS		2	2	Side Arm						0.900	5.20	0.15	-	-		
15	AT&T Mobility	231	3	3	7770	55	11	5	35	F	0.640			5.00	1.40	32.25	24.41
	AT&T Mobility		3	3	Sector Frame						0.670	14.40	0.40	-	-		
16																	
17	AT&T Mobility	231	3	3	SBNHH-1D65A	55	11.9	7.1	40.9	F	0.670			4.62	1.40	32.25	24.41
	AT&T Mobility		1	3	32 BOB, TTA, RET						0.500	83.84	1.26	-	-		
18	AT&T Mobility	231	3	3	AM-X-CD-14-65-00T-RET	48	11.8	5.9	36.4	F	0.650			4.07	1.40	32.25	24.41
	AT&T Mobility		3	3	OPA-65R-LCUU-H4						0.640	6.91	0.06	-	-		
19	Sprint Nextel	224	12	3	Decibel DB844H90E-XY	48	6.5	8	14	F	0.730			7.38	1.41	31.97	24.20
	Sprint Nextel		3	3	Sector Frame						0.670	17.90	0.40	-	-		
20	US DOHS	200	1	1	Sinclair SC281-L	251	5	5	79	R	1.000			50.20	1.20	30.95	23.43
	US DOHS		1	1	Side Arm						1.000	5.20	0.15	-	-		
21	Marcus Comm.	200	2	2	TX RX 101-68-10-X-03N	189.6	3.5	3.5	70	R	1.000			54.17	1.20	30.95	23.43
	Marcus Comm.		2	2	Side Arm						0.900	5.20	0.15	-	-		
22	Town of Stamford	189	1	1	-	0.01	0.01	0.01	0.01	R	0.001			1.00	0.80	30.45	23.05
	Town of Stamford		1	1	30" x 30" Reflector						1.000	8.75	0.03	-	-		
23	Spok Holdings	178	3	3	BCD-87010 ___	134	2.6	2.6	26.5	R	1.000			51.54	1.20	29.94	22.66
	Spok Holdings		3	3	Side Arm						0.670	5.20	0.15	-	-		
24	Clearwire	171	3	3	24" x 24" Junction Box	24	24	8	20	F	0.670			1.00	1.40	29.59	22.40
	Clearwire		1	1	-						1.000	0.01	0.01	-	-		
25	Clearwire	167	3	3	BTS-2500	19.3	11.3	5.1	35	F	0.670			1.71	1.40	29.40	22.25
	Clearwire		3	3	LLPX310R						0.620	4.83	0.03	-	-		
26	Clearwire	167	1	1	-	0.01	0.01	0.01	0.01	R	0.001			1.00	0.80	29.40	22.25
	Clearwire		3	3	T-Arm						0.670	5.20	0.15	-	-		
27	Metro PCS	160	18	3	RCU (Remote Control Unit)	8	2	2	1	R	0.500			4.00	0.80	29.04	21.98
	Metro PCS		6	3	800 10504						0.670	3.35	0.02	-	-		
28	Sprint Nextel	150	3	3	APXVTM14-C-I20	56.3	12.6	6.3	52.9	F	0.650			4.47	1.40	28.51	21.58
	Sprint Nextel		1	3	18 RRH						0.500	50.70	0.78	-	-		
29	Sprint Nextel	150	3	3	APXVSPP18-C-A20	72	11.8	7	57	F	0.680			6.10	1.40	28.51	21.58
	Sprint Nextel		3	3	Sector Frame						0.670	17.90	0.40	-	-		
30	Senus	137	1	1	BCD-87010 ___ 4"	134	2.6	2.6	26.5	R	1.000			51.54	1.20	27.78	21.03
	Senus		1	1	Side Arm						1.000	5.20	0.15	-	-		

31	Marcus Comm.	100	1	1	101-68-10-X-03N	189.6	3.5	3.5	70	R	1.000			54.17	1.20	25.39	19.22
	Marcus Comm.		1	1	Side Arm						1.000	5.20	0.15	-	-		
32	Verizon	92	6	3	WWX063X19G00	75	12.1	7	32.7	F	0.680			6.20	1.40	24.79	18.76
	Verizon		4	3	X7C-FRO-660 (35 Lbs)						0.670	10.22	0.04	-	-		
33	Verizon	92	2	3	X7C-FRO-640-V	72	18.8	9.1	42.4	F	0.640			3.83	1.40	24.79	18.76
	Verizon		1	3	9 RET, 2 BOB						0.500	36.58	0.56	-	-		
34	Verizon	92	1	1	-	0.01	0.01	0.01	0.01	R	0.001			1.00	0.80	24.79	18.76
	Verizon		1	3	Sector Frame						0.670	17.90	0.40	-	-		
35	Spok Holdings	6	1	1	Acutime 2000	5	6.1	6.1	1.3	F	1.000			0.82	1.40	18.50	14.00
	Spok Holdings		1	1	-						1.000	0.00	0.00	-	-		
36																	
37																	
38																	
39																	
40																	
41																	
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49																	
50																	

No.	Elevation (ft)	C_AA_C (ft^2)	C_AA_C (Ice) (ft^2)	Force (k)	Force (Ice) (k)	Weight (k)	Weight (Ice) (k)	Σ Force (k)	Σ Force (Ice) (k)	Σ Weight (k)	Σ Weight (Ice) (k)
1	300	0.00	0.00	0.000	0.000	0.000	0.000	2.08	2.12	4.00	5.20
		55.00	74.25	2.079	2.124	4.000	5.200				
2	283	0.00	0.00	0.000	0.000	0.000	0.000	1.49	1.52	2.75	3.58
		40.00	54.00	1.487	1.519	2.750	3.575				
3	212.5	0.00	0.00	0.000	0.000	0.000	0.000	1.71	1.75	3.00	3.90
		50.00	67.50	1.713	1.750	3.000	3.900				
4	100	0.00	0.00	0.000	0.000	0.000	0.000	1.38	1.41	3.00	3.90
		50.00	67.50	1.381	1.411	3.000	3.900				
5	300	0.24	0.33	0.009	0.009	0.011	0.017	0.04	0.05	0.04	0.06
		0.94	1.26	0.035	0.036	0.030	0.039				
6	300	9.60	12.87	0.363	0.368	0.110	0.198	0.57	0.58	0.18	0.29
		5.53	7.47	0.209	0.214	0.070	0.091				
7	270	10.19	11.23	0.374	0.312	0.130	0.239	0.56	0.51	0.28	0.43
		5.20	7.02	0.191	0.195	0.150	0.195				
8	269	24.10	25.18	0.883	0.698	0.088	0.286	0.88	0.70	0.09	0.29
		0.00	0.00	0.000	0.000	0.000	0.000				
9	265	2.68	3.91	0.098	0.108	0.030	0.056	0.44	0.46	0.33	0.45
		9.36	12.64	0.341	0.349	0.300	0.390				
10	265	1.75	2.09	0.064	0.058	0.039	0.062	0.24	0.24	0.19	0.26
		4.88	6.58	0.178	0.182	0.152	0.198				
11	265	13.52	14.91	0.493	0.412	0.249	0.375	0.99	0.92	0.49	0.69
		13.62	18.39	0.497	0.508	0.245	0.318				
12	265	24.01	26.29	0.876	0.726	0.154	0.351	2.19	2.07	1.35	1.91
		35.98	48.57	1.313	1.341	1.200	1.560				
13	240	5.56	6.84	0.197	0.184	0.047	0.096	0.57	0.56	0.13	0.20

		10.46	14.12	0.371	0.379	0.079	0.103					
14	240	0.00	0.00	0.000	0.000	0.000	0.000	0.33	0.34		0.30	0.39
		9.36	12.64	0.332	0.339	0.300	0.390					
15	231	11.29	12.54	0.396	0.333	0.105	0.203	1.41	1.37		1.31	1.76
		28.94	39.07	1.015	1.037	1.200	1.560					
16												
17	231	12.79	14.12	0.449	0.375	0.123	0.240	1.92	1.88		1.38	1.87
		41.92	56.59	1.471	1.503	1.256	1.633					
18	231	10.74	11.89	0.377	0.316	0.109	0.205	0.84	0.79		0.28	0.43
		13.27	17.91	0.465	0.476	0.171	0.222					
19	224	26.82	31.59	0.932	0.831	0.168	0.484	2.18	2.11		1.37	2.04
		35.98	48.57	1.251	1.278	1.200	1.560					
20	200	10.46	12.60	0.352	0.321	0.079	0.170	0.53	0.50		0.23	0.36
		5.20	7.02	0.175	0.179	0.150	0.195					
21	200	11.06	14.30	0.372	0.364	0.140	0.240	0.69	0.69		0.44	0.63
		9.36	12.64	0.315	0.322	0.300	0.390					
22	189	0.00	0.00	0.000	0.000	0.000	0.000	0.29	0.30		0.03	0.04
		8.75	11.81	0.290	0.296	0.030	0.039					
23	178	8.71	12.15	0.284	0.299	0.080	0.162	0.62	0.65		0.53	0.75
		10.45	14.11	0.340	0.348	0.450	0.585					
24	171	11.26	12.21	0.362	0.298	0.060	0.159	0.36	0.30		0.07	0.17
		0.01	0.01	0.000	0.000	0.010	0.013					
25	167	4.26	4.88	0.136	0.118	0.105	0.145	0.42	0.41		0.19	0.26
		8.98	12.13	0.287	0.294	0.086	0.112					
26	167	0.00	0.00	0.000	0.000	0.000	0.000	0.33	0.34		0.45	0.59
		10.45	14.11	0.334	0.341	0.450	0.585					
27	160	0.80	1.35	0.025	0.032	0.018	0.047	0.45	0.47		0.12	0.18
		13.47	18.18	0.425	0.435	0.106	0.137					
28	150	13.45	14.77	0.417	0.347	0.159	0.277	1.20	1.15		0.94	1.29
		25.35	34.22	0.786	0.803	0.779	1.013					
29	150	16.85	18.53	0.523	0.435	0.171	0.320	1.64	1.57		1.37	1.88
		35.98	48.57	1.116	1.140	1.200	1.560					
30	137	2.90	4.05	0.088	0.093	0.027	0.054	0.24	0.25		0.18	0.25
		5.20	7.02	0.157	0.161	0.150	0.195					
31	100	5.53	7.15	0.153	0.149	0.070	0.120	0.30	0.30		0.22	0.31
		5.20	7.02	0.144	0.147	0.150	0.195					
32	92	36.00	39.49	0.971	0.806	0.196	0.510	1.71	1.56		0.34	0.69
		27.39	36.98	0.739	0.755	0.140	0.182					
33	92	16.84	17.99	0.454	0.367	0.085	0.233	0.95	0.87		0.65	0.96
		18.29	24.69	0.493	0.504	0.561	0.729					
34	92	0.00	0.00	0.000	0.000	0.000	0.000	0.32	0.33		0.40	0.52
		11.99	16.19	0.323	0.330	0.400	0.520					
35	6	0.30	0.41	0.006	0.006	0.001	0.005	0.01	0.01		0.00	0.01
		0.00	0.00	0.000	0.000	0.000	0.000					
36												
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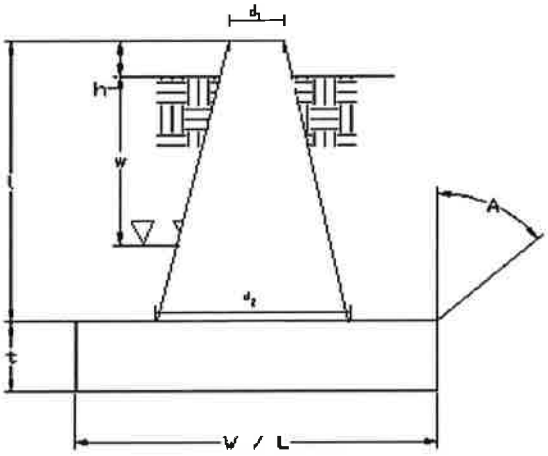
Foundation

Site No.:	88018
Engineer:	ADV
Date:	12/18/15
Carrier:	0

Design Loads (Unfactored)

Compression/Leg:	496.52	k
Uplift/Leg:	386.82	k

Face Width @ Top of Pier (d_1):	4.00	ft
Face Width @ Bottom of Pier (d_2):	8.00	ft
Total Length of Pier (l):	8.00	ft
Height of Pedestal Above Ground (h):	0.50	ft
Width of Pad (W):	18.00	ft
Length of Pad (L):	18.00	ft
Thickness of Pad (t):	3.00	ft
Water Table Depth (w):	99	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil (Above Water Table):	110.0	pcf
Unit Weight of Soil (Below Water Table):	55.0	pcf
Friction Angle of Uplift (A):	20	°
Allowable Compressive Bearing Pressure:	20000	psf



Volume Pier (Total):	298.67	ft^3
Volume Pad (Total):	972.00	ft^3
Volume Soil (Total):	2935.41	ft^3
Volume Pier (Buoyant):	0.00	ft^3
Volume Pad (Buoyant):	0.00	ft^3
Volume Soil (Buoyant):	0.00	ft^3
Weight Pier:	44.80	k
Weight Pad:	145.80	k
Weight Soil:	322.89	k

Uplift Check

TIA Case 1: $\frac{\text{Wt. Soil} + \text{Wt. Concrete}}{1.5}$

TIA Case 2: $\frac{\text{Wt. Soil}}{2.0} + \frac{\text{Wt. Concrete}}{1.25}$

	Allowable Uplift (k)	Ratio	Result
TIA Case 1:	451.68	0.86	OK
TIA Case 2:	423.28	0.91	OK

Axial Check

Allowable Axial: Allowable Bearing Pressure * W * L

	Allowable Axial (k)	Ratio	Result
	6480.00	0.08	OK

Anchor Bolt Check

Bolt Description	Allowable Uplift (k)	Ratio	Result
(6) 2 1/4" A36	456.61	0.85	OK

ATTACHMENT 6

	General	Power	Density					
Site Name: Stamford W 3								
Tower Height: 300Ft.								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Sirius XM Sat Radio	1	1000	268	2300	0.0052	1.0000	0.05%	
*Sirius XM Sat Radio	1	1000	260	2300	0.0056	1.0000	0.06%	
*Bell Industries	1	1000	303	930	0.0041	0.6200	0.07%	
*Lojack	1	200	310	173	0.0008	0.2000	0.04%	
*US Treasury	1	100	245	400	0.0006	0.2667	0.02%	
*US Treasury	1	100	205	400	0.0009	0.2667	0.03%	
*USA Mobility	1	500	183	900	0.0057	0.6000	0.10%	
*USA Mobility	1	500	173	900	0.0064	0.6000	0.11%	
*Sensus (CL&P)	1	200	142	940.1125	0.0039	0.6267	0.06%	
*MediaFLO			289	716			4.20%	
*SNET Paging	2	1500	315	931.1875	0.0113	0.6208	0.18%	
*Skytel	receive only	receive only	303	receive only	receive only	receive only	receive only	
*Rescue 21	5	159	199	165.313	0.0077	0.2000	0.38%	
*Rescue 21	1	159	199	412.975	0.0015	0.2753	0.06%	
*Marcus	5	100	189	450	0.0054	0.3000	0.18%	
*Marcus	5	100	209	450	0.0044	0.3000	0.15%	
*Marcus	5	100	209	450	0.0044	0.3000	0.15%	
*Marcus	1	0	300	5.8GHz	0.0000	1.0000	0.00%	
*AT&T	2	967	233	737	0.0135	0.4913	0.27%	
*AT&T	2	3200	233	1900	0.0447	1.0000	0.45%	
*AT&T	1	148	233	850	0.0010	0.5667	0.02%	
*AT&T	1	402	233	850	0.0028	0.5667	0.05%	
*AT&T	2	1274	233	2300	0.0178	1.0000	0.18%	
*AT&T	2	311	232.7	850	0.0043	0.5667	0.08%	
*AT&T	2	489	232.7	1900	0.0068	1.0000	0.07%	
*T-Mobile	2	2334	265	1900	0.0250	1.0000	0.25%	
*T-Mobile	2	2334	265	1900	0.0250	1.0000	0.25%	
*T-Mobile	2	2334	265	2100	0.0250	1.0000	0.25%	
*T-Mobile	2	1167	265	1900	0.0125	1.0000	0.13%	
*T-Mobile	2	1167	265	2100	0.0125	1.0000	0.13%	
*T-Mobile	1	865	265	700	0.0046	0.4667	0.10%	
*Nextel	9	100	195	851	0.0091	0.5673	0.16%	
*Clearwire	2	153	167	2496	0.0042	1.0000	0.04%	
*Clearwire	1	211	300	11 GHz	0.0009	1.0000	0.01%	
*Sprint	6	693	150	1900	0.0721	1.0000	0.72%	
*Sprint	1	390	150	850	0.0068	0.5667	0.12%	
*Sprint	2	390	150	2500	0.0135	1.0000	0.14%	
*MetroPCS	7	734	160	2310	0.0779	1.0000	0.78%	
Verizon PCS	**1**	**1581**	**92**	**0.0672**	**1970**	**1.0000**	**6.72%**	
Verizon Cellular	**9**	**437**	**92**	**0.1671**	**869**	**0.5793**	**28.84%**	
Verizon AWS	**1**	**1750**	**92**	**0.0743**	**2145**	**1.0000**	**7.43%**	
Verizon 700	**1**	**1184**	**92**	**0.0503**	**746**	**0.4973**	**10.11%**	
								63.11%
* Source: Siting Council								

ATTACHMENT 7

Robinson+Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

August 4, 2016

Via Certificate of Mailing

David Martin, Mayor
City of Stamford
Stamford Government Center
888 Washington Boulevard
Stamford, CT 06901

Re: **Proposed Modifications to a Telecommunications Facility at 168 Catoona Lane in Stamford, Connecticut**

Dear Mayor Martin:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to install antennas and related equipment on the existing 300-foot monopole tower at 168 Catoona Lane in Stamford, Connecticut (the "Property"). Cellco intends to install twelve (12) antennas and nine (9) remote radio heads at the 92-foot level on the tower. Equipment associated with Cellco's antennas and an emergency back-up generator will be installed on a new equipment platform with canopy structure.

As presented in the Sub-Petition, the proposed facility modifications constitute an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-153). A copy of the full Sub-Petition is attached for your review. Landowners whose property abuts the Property were also sent notice of this filing along with a copy of the Sub-Petition.

15052344-v1

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

Robinson + Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

August 4, 2016

Via Certificate of Mailing

Heather Douglas Wilkins
Territory Manager-Business Development
Northeast (New England/NY)
American Tower Corp.
10 Presidential Way
Woburn, MA 01801

Re: **Proposed Modifications to a Telecommunications Facility at 168 Catoona Lane in Stamford, Connecticut**

Dear Ms. Wilkins:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to install antennas and related equipment on the existing 300-foot monopole tower at 168 Catoona Lane in Stamford, Connecticut (the "Property"). Cellco intends to install twelve (12) antennas and nine (9) remote radio heads at the 92-foot level on the tower. Equipment associated with Cellco's antennas and an emergency back-up generator will be installed on a new equipment platform with canopy structure.

As presented in the Sub-Petition, the proposed facility modifications constitute an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-153). A copy of the full Sub-Petition is attached for your review. Landowners whose property abuts the Property were also sent notice of this filing along with a copy of the Sub-Petition.

15052378-v1

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

ATTACHMENT 8

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

August 4, 2016

Via Certificate of Mailing

«Name_and_Address»

Re: **Proposed Telecommunications Facility at 168 Catoona Lane in Stamford, Connecticut**

Dear «Salutation»:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to install antennas and related equipment on the existing 300-foot monopole tower at 168 Catoona Lane in Stamford, Connecticut (the "Property"). Cellco intends to install twelve (12) antennas and nine (9) remote radio heads at the 92-foot level on the tower. Equipment associated with Cellco's antennas and an emergency back-up generator will be installed on a new equipment platform with canopy structure.

As presented in the Sub-Petition, the proposed facility improvements at the Property constitute an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-153). A copy of the full Sub-Petition is attached for your review.

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the Sub-Petition.

This notice is being sent to you because you are listed as an owner of land that abuts the Property. If you have any questions regarding the Sub-Petition, the Council's process for reviewing the Sub-Petition or the details of the filing itself, please feel free to contact me at the number listed above. You may also contact the Council directly at 860-827-2935.

Sincerely,

Kenneth C. Baldwin

Attachment

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

ABUTTING PROPERTY OWNERS

168 CATOONA LANE
STAMFORD, CONNECTICUT

	Property Address	Owner's and Mailing Address
1.	0 Connecticut Avenue	Housing Authority City of Stamford c/o Charter Oak Communities 22 Clinton Avenue Stamford, CT 06901
2.	76 Progress Drive	Progress Park Corp. 76 Progress Drive Stamford, CT 06902
3.	1937 West Main Street	Cytec Industries Inc. 5 Garret Mountain Plaza Woodland Park, NJ 07424
4.	88 Catoona Lane	Pasquale S. Stoni et al 9 Spring Grove Darien, CT 06820
5.	82 Catoona Lane	Anthony Michael Femia et al 82 Catoona Lane Stamford, CT 06902
6.	83 Catoona Lane	Carmen Fustini 83 Catoona Lane Stamford, CT 06902
7.	72 Alvord Lane	72 Alvord Lane LLC 21 Annjim Drive Greenwich, CT 06830-4826
8.	70 Catoona Lane	Teresa Ricci et al 47 Lockwood Lane Riverside, CT 06878-1713

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:	NJJER01123B
Site Address:	168 Catoona Lane Stamford, CT
Latitude:	N 41.052825
Longitude:	W 73.56304722
Structure type:	Lattice Tower
Report date:	March 11, 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 168 Catoona Lane in Stamford, CT. Dish refers to the antenna site by the code "NJJER01123B", 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, Clearwire, MetroPCS, Sprint, T-Mobile, Verizon Wireless, Marcus Spectrum Holding, LLC, Spectrum Holding Company, LLC, and the State of Connecticut. Note that while the site drawings indicate there may be other antennas at the site, a search of FCC records indicates there are no other licensed transmitting antenna operations to include in the compliance assessment for the site. FCC regulations require any future antenna collocators to assess and assure continuing compliance based on the cumulative effects of all then-proposed and then-existing antennas at the site.

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

The results of a compliance assessment can be described in layman's terms by expressing the calculated RF levels as simple percentages of the FCC MPE limit. If the normalized reference for that limit is 100 percent, then calculated RF levels

higher than 100 percent indicate the MPE limit is exceeded and there is a need to mitigate the potential exposure. On the other hand, calculated RF levels consistently below 100 percent serve as a clear and sufficient demonstration of compliance with the MPE limit. We can (and will) also describe the overall worst-case result via the "plain-English" equivalent "times-below-the-limit" factor.

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

- At street level, the conservatively calculated maximum RF level from the combination of proposed and existing antenna operations at the site is 2.8380 percent of the FCC general population MPE limit – well below the 100-percent reference for compliance. In other words, the worst-case calculated RF level – intentionally and significantly overstated by the calculations – is still more than 35 times below the FCC limit for safe, continuous exposure of the general public.
- A supplemental analysis of the RF levels at the same height as the Dish antennas indicate that the FCC MPE limit is potentially exceeded. Therefore, it is recommended that four Caution signs be installed six feet below the antennas. In addition, NOC Information signs are to be installed at the base of the 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;

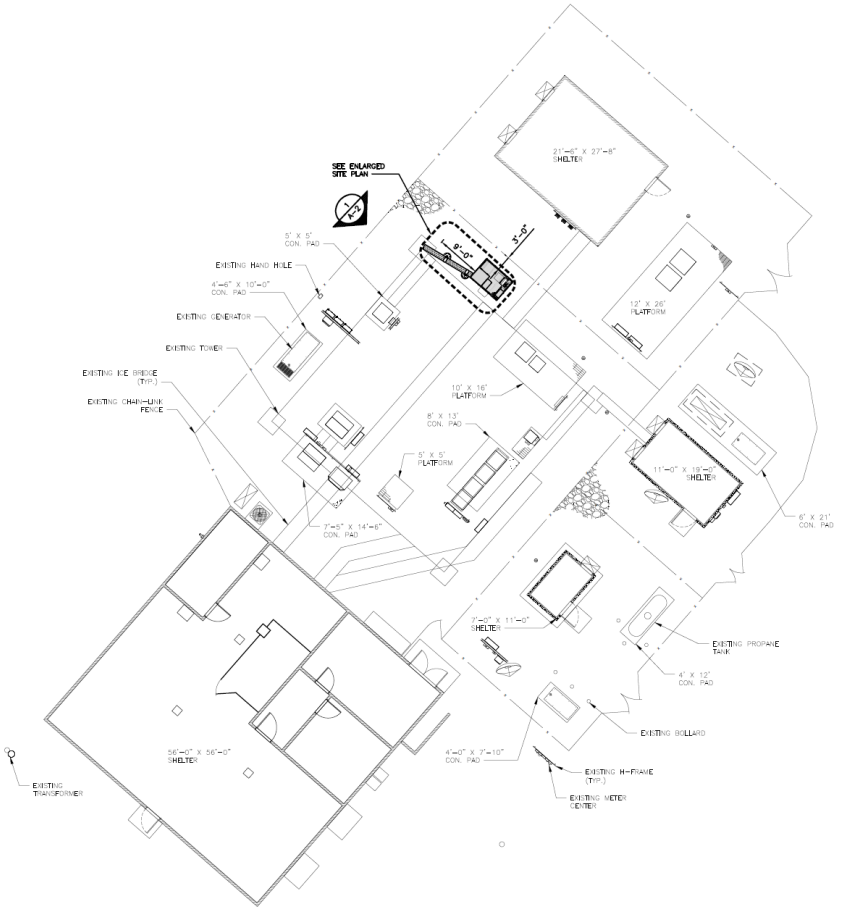
- analysis of the results of the calculations against the FCC MPE limit, and the compliance conclusion for the site.

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.

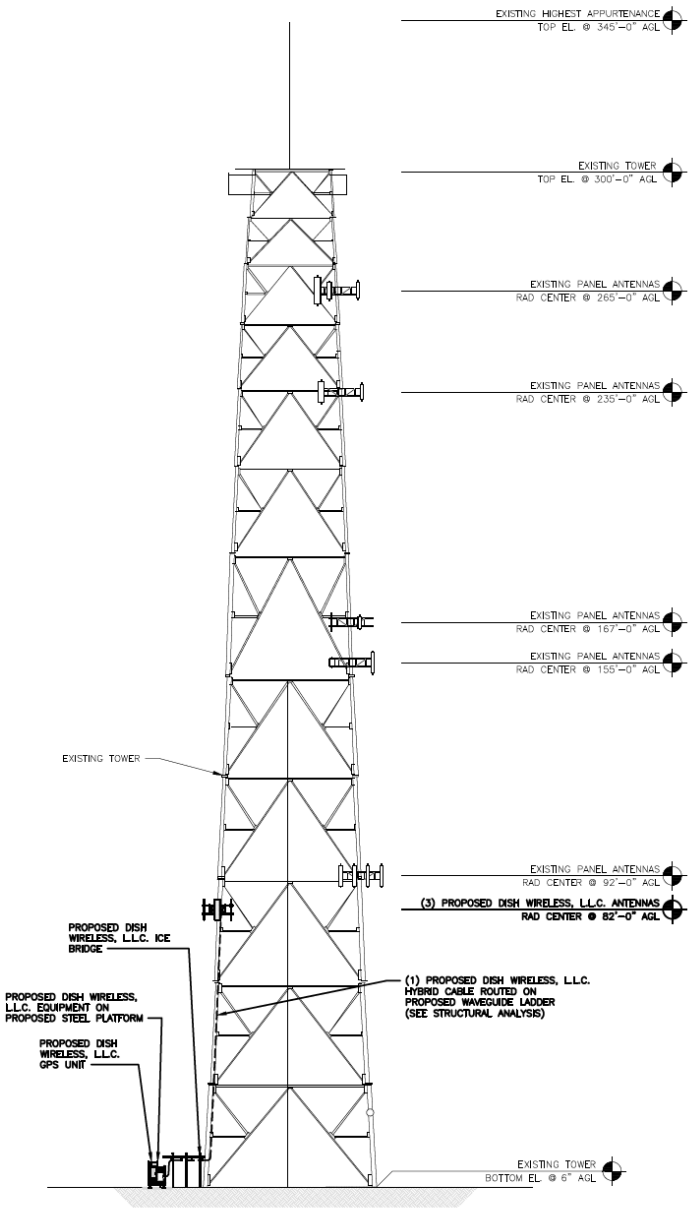
Antenna and Transmission Data

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	82	11.46	68	0	2	0
❶	Dish	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	82	16.16	62	0	2	0
❶	Dish	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	82	16.66	64	0	2	0
❷	Dish	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	82	11.46	68	100	2	0
❷	Dish	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	82	16.16	62	100	2	0
❷	Dish	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	82	16.66	64	100	2	0
❸	Dish	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	82	11.46	68	260	2	0
❸	Dish	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	82	16.16	62	260	2	0
❸	Dish	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	82	16.66	64	260	2	0

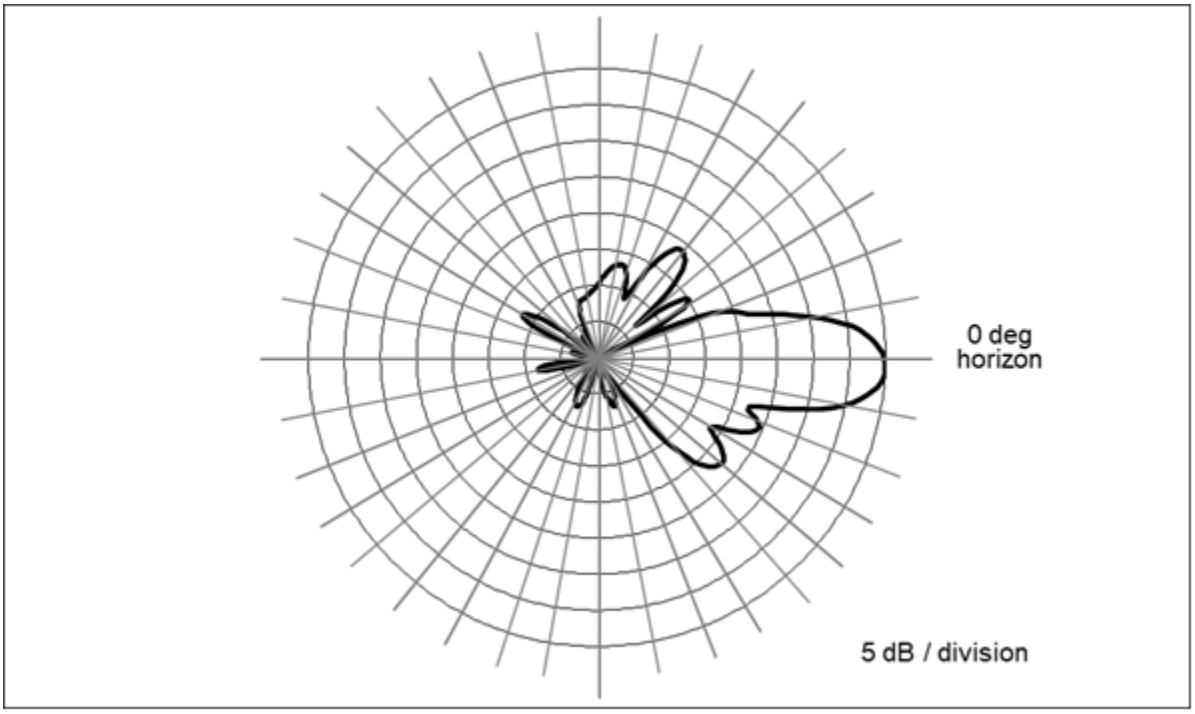
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

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

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

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

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



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

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

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
Clearwire	Generic	Generic	Panel	2500	2972	15.70	N/A
Clearwire	Generic	Generic	Dish	11000	70	32.40	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
Marcus Spectrum Holdings, Inc.	Generic	Generic	Omni	451	400	3.86	N/A
Marcus Spectrum Holdings, Inc.	Generic	Generic	Omni	464	225	3.86	N/A
Marcus Spectrum Holdings, Inc.	Generic	Generic	Omni	462	400	3.86	N/A
Spectrum Holding Company, LLC	Generic	Generic	Dish	6000	14288	39.56	N/A
State of Connecticut	Generic	Generic	Omni	173	500	3.66	N/A

Compliance Analysis

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

Street Level Analysis

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

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

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

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

where

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

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

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

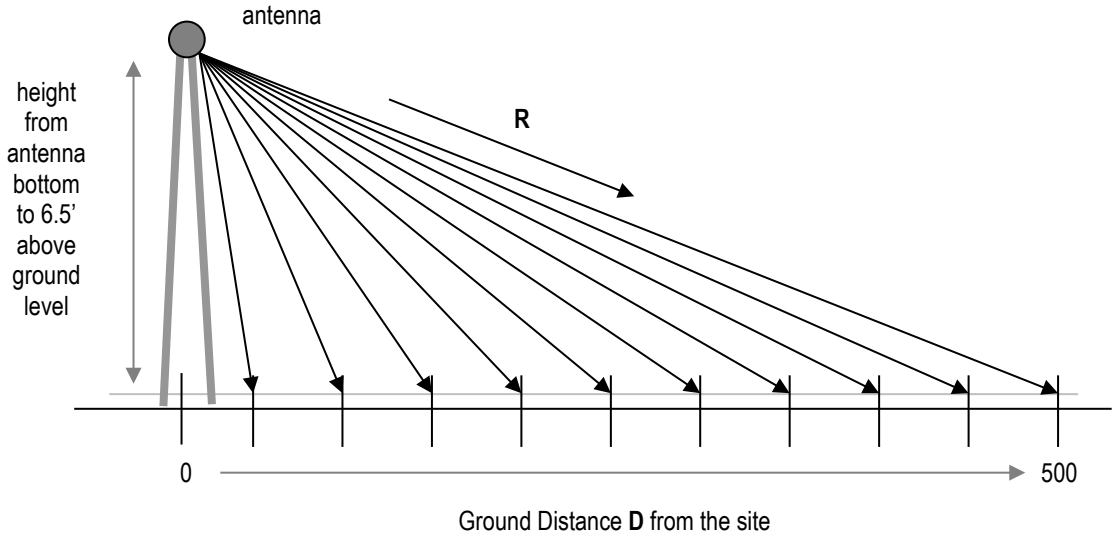


Figure 2. Street-level MPE% Calculation Geometry

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

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

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

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

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

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

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

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

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

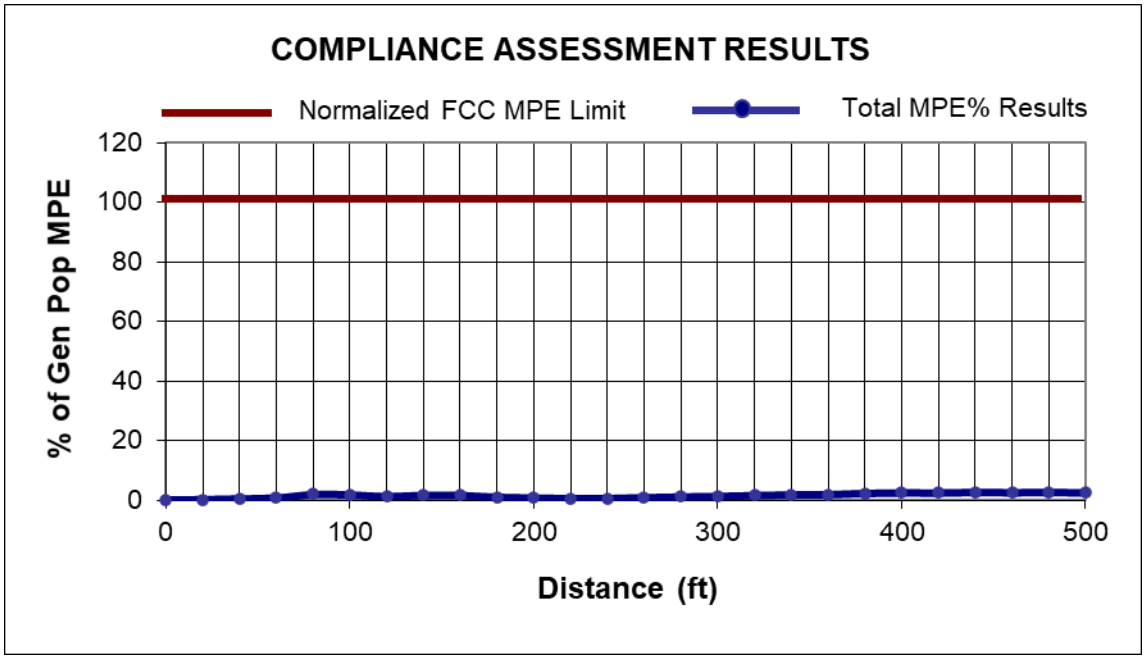
The tables that follow provide the results of the MPE% calculations for each antenna operation, with the overall worst-case calculated result highlighted in bold in the last column of the last table. Note that the transmission parameters for each Dish antenna sector are identical, and the calculations 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%	Clearwire MPE%	Sprint MPE%	T-Mobile MPE%	Subtotal MPE%
0	0.0027	0.0035	0.0001	0.0231	0.0002	0.0186	0.0639	0.1121
20	0.0170	0.0424	0.0267	0.0193	0.0016	0.0114	0.0834	0.2018
40	0.0056	0.0383	0.0494	0.0306	0.0004	0.0085	0.0924	0.2252
60	0.0947	0.0210	0.1594	0.0452	0.0007	0.0098	0.0966	0.4274
80	0.3287	0.1833	0.8979	0.0566	0.0010	0.0294	0.1536	1.6505
100	0.1622	0.4638	0.2795	0.0713	0.0002	0.0256	0.2113	1.2139
120	0.0832	0.0279	0.0571	0.0867	0.0045	0.0499	0.2179	0.5272
140	0.1614	0.1187	0.0188	0.1052	0.0001	0.0407	0.1963	0.6412
160	0.1923	0.1515	0.1048	0.1305	0.0024	0.0426	0.1685	0.7926
180	0.1341	0.0327	0.0451	0.1245	0.0055	0.0774	0.1361	0.5554
200	0.0809	0.1033	0.0987	0.1105	0.0004	0.1123	0.0992	0.6053
220	0.0682	0.0725	0.0563	0.1402	0.0015	0.0923	0.0913	0.5223
240	0.1216	0.0633	0.0564	0.1868	0.0080	0.0555	0.0863	0.5779
260	0.1782	0.0846	0.1017	0.2239	0.0057	0.0294	0.0983	0.7218
280	0.2517	0.0737	0.1041	0.2381	0.0010	0.0239	0.1151	0.8076
300	0.3424	0.0310	0.0551	0.2231	0.0011	0.0401	0.1371	0.8299
320	0.4379	0.0017	0.0079	0.2220	0.0065	0.0447	0.1662	0.8869
340	0.3901	0.0015	0.0070	0.2454	0.0084	0.0476	0.2050	0.9050
360	0.4938	0.0071	0.0036	0.2573	0.0083	0.0509	0.2238	1.0448
380	0.5866	0.0202	0.0216	0.2992	0.0036	0.0538	0.2945	1.2795
400	0.5312	0.0183	0.0196	0.2942	0.0011	0.0460	0.3299	1.2403
420	0.6083	0.0098	0.0152	0.2746	0.0002	0.0488	0.3701	1.3270
440	0.5557	0.0089	0.0138	0.2402	0.0002	0.0325	0.4784	1.3297
460	0.6127	0.0026	0.0001	0.2049	0.0010	0.0157	0.5175	1.3545
480	0.5638	0.0024	0.0001	0.1667	0.0023	0.0108	0.5534	1.2995
500	0.5205	0.0022	0.0001	0.1296	0.0033	0.0101	0.5846	1.2504

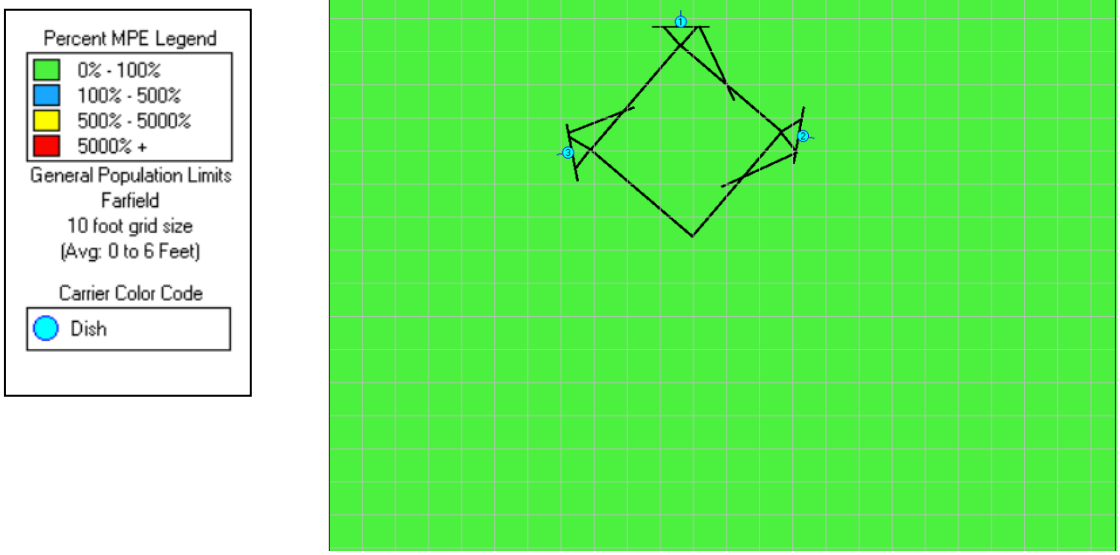
Ground Distance (ft)	Subtotal MPE%	Verizon Wireless MPE%	Marcus Spectrum Holdings MPE%	Spectrum Holdings Company MPE%	State of Connecticut MPE%	Total MPE%
0	0.1121	0.0486	0.0002	0.0058	0.0005	0.1672
20	0.2018	0.0921	0.0049	0.0055	0.0050	0.3093
40	0.2252	0.3040	0.0173	0.0049	0.0157	0.5671
60	0.4274	0.3466	0.0304	0.0041	0.0313	0.8398
80	1.6505	0.3215	0.0483	0.0033	0.0459	2.0695
100	1.2139	0.6404	0.0577	0.0027	0.0569	1.9716
120	0.5272	0.7128	0.0581	0.0022	0.0639	1.3642
140	0.6412	1.0638	0.0483	0.0018	0.0651	1.8202
160	0.7926	0.9001	0.0264	0.0015	0.0616	1.7822
180	0.5554	0.5229	0.0109	0.0049	0.0530	1.1471
200	0.6053	0.2303	0.0017	0.0041	0.0414	0.8828
220	0.5223	0.0613	0.0043	0.0035	0.0301	0.6215
240	0.5779	0.0596	0.0133	0.0030	0.0162	0.6700
260	0.7218	0.2236	0.0267	0.0053	0.0096	0.9870
280	0.8076	0.3650	0.0527	0.0046	0.0047	1.2346
300	0.8299	0.5447	0.0670	0.0041	0.0017	1.4474
320	0.8869	0.7484	0.0711	0.0036	0.0012	1.7112
340	0.9050	0.9821	0.0790	0.0032	0.0033	1.9726
360	1.0448	0.8814	0.0783	0.0073	0.0047	2.0165
380	1.2795	1.0991	0.0726	0.0066	0.0101	2.4679
400	1.2403	1.3319	0.0659	0.0060	0.0128	2.6569
420	1.3270	1.2128	0.0572	0.0055	0.0194	2.6219
440	1.3297	1.4206	0.0424	0.0050	0.0224	2.8201
460	1.3545	1.3036	0.0329	0.0046	0.0253	2.7209
480	**1.2995**	**1.4797**	**0.0239**	**0.0042**	**0.0307**	**2.8380**
500	1.2504	1.3669	0.0166	0.0039	0.0340	2.6718

As indicated, the maximum calculated overall RF level is 2.8380 percent of the FCC MPE limit – well below the 100-percent reference for compliance.

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



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

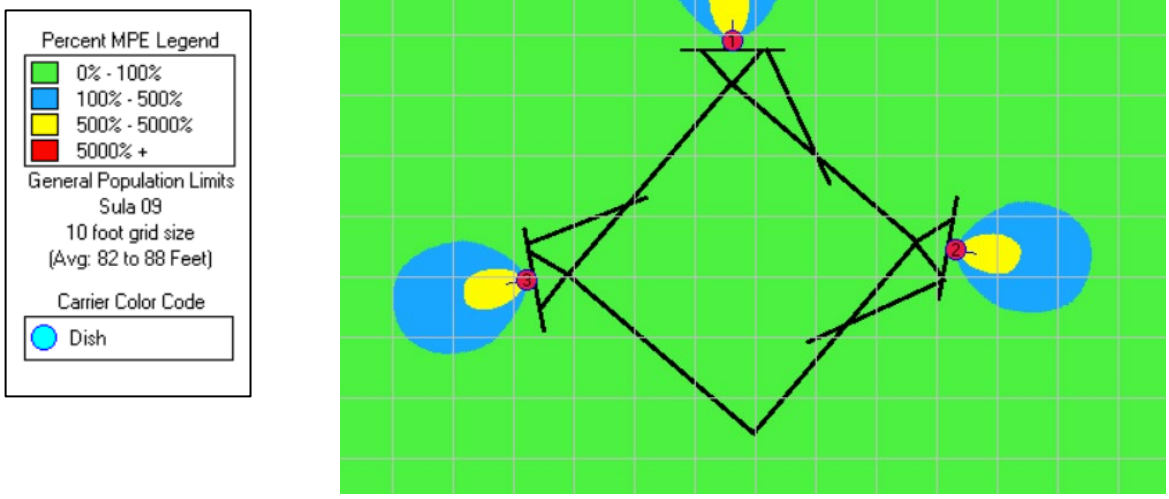


Near-field Analysis

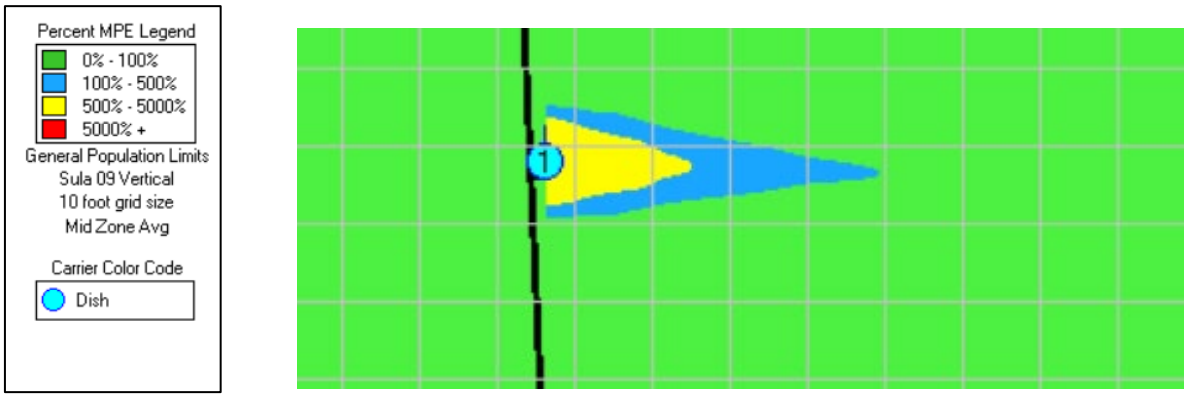
The compliance analysis for the same height as the antennas is performed using the RoofMaster program by Waterford Consultants.

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

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



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



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

Compliance Conclusion

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

The conservative analysis in this case shows that the maximum calculated RF level from the combination of proposed and existing antenna operations at street level around the site is 2.8380 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 four Caution signs be installed six feet below the antennas. In addition, NOC Information signs be installed at the base of the 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.

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

3/11/22
Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: RFDS-NJJER01123B-Final-20211115-v.0_20211116091330

CD: NJJER01123B_FinalStampedCDs_20211104113639

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.

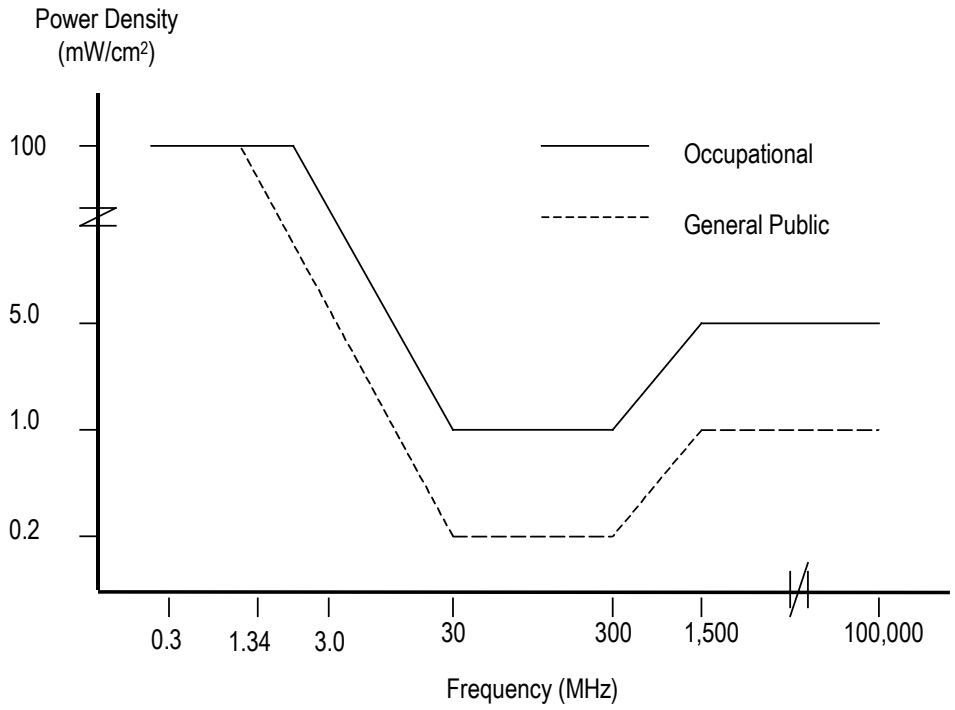
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in 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.

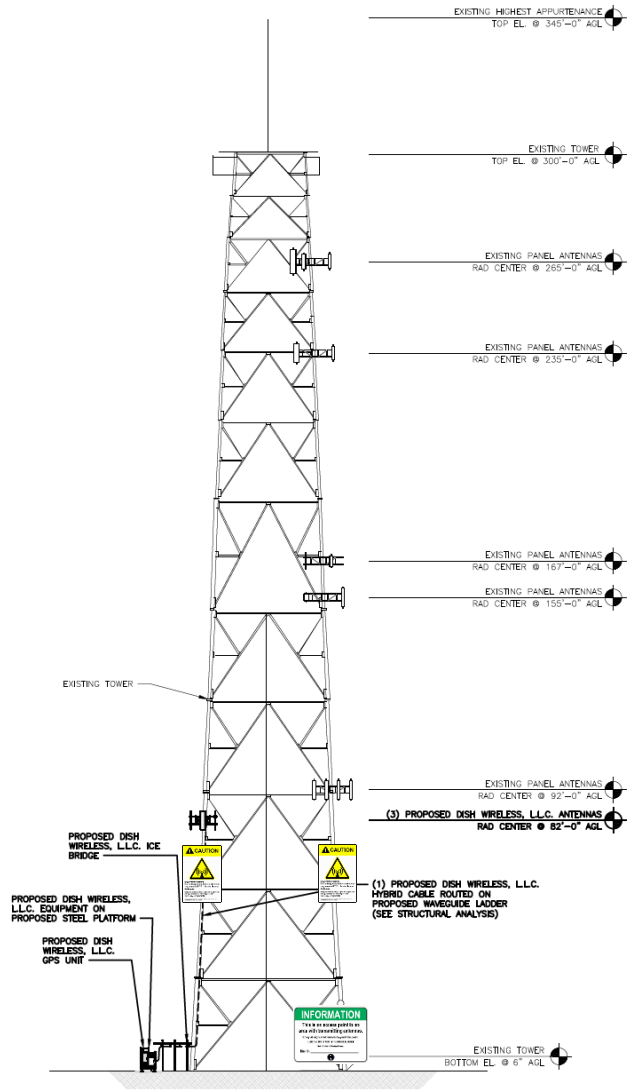
FCC Report and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released August 1, 1996.

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®
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Structural Analysis Report

Structure	:	**300 ft Self Supported Tower**
ATC Site Name	:	**Stamford (Katoona), CT**
ATC Asset Number	:	**88018**
Engineering Number	:	**13710333_C3_02**
Proposed Carrier	:	**DISH WIRELESS L.L.C.**
Carrier Site Name	:	**NJJER01123B**
Carrier Site Number	:	**NJJER01123B**
Site Location	:	**168 Catoona Lane** **Stamford, CT 06902-4573** **41.052800,-73.563000**
County	:	**Fairfield**
Date	:	**October 17, 2021**
Max Usage	:	**88%**
Result	:	**Pass**

Prepared By:
Timothy Kassakatis
Structural Engineer II

Reviewed By:

COA: PEC.0001553

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Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 300 ft self supported tower to reflect the change in loading by DISH WIRELESS L.L.C..

Supporting Documents

Tower Drawings	CSEI Analysis, ATC Eng. #73123451, dated September 28, 2005
Foundation Drawing	Rose, Chulkoff, and Rose Job #C67229, dated August 9, 1967
Geotechnical Report	Rose, Chulkoff, and Rose Job #C67229, dated August 9, 1967
Modifications	ATC Eng. #42439132, dated September 26, 2008 ATC Eng. #44209632, dated December 2, 2009
Mount Analysis	Maser Consulting Connecticut Project #21777443A, dated June 11, 2021
Mount Modifications	Maser Consulting Connecticut Job #217777443A, dated June 11, 2021

Analysis

The tower was analyzed using Power Line Systems, Inc. tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	117 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1

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
338.0	1	TX RX Systems 101-68-10-X-03N	Square Platform with Handrails	(1) 1 1/4" Coax	MARCUS COMMUNICATIONS LLC
324.0	1	Generic 15' Omni-Grid	Square Platform with Handrails	(1) 1 5/8" Coax	
320.0	1	Generic 12' Omni	Square Platform with Handrails	-	OTHER
311.0	1	Generic Radio/ODU	Square Platform with Handrails	-	MARCUS COMMUNICATIONS LLC
307.0	1	Generic Radio/ODU	Square Platform with Handrails	(1) 1/2" Coax	OTHER
	1	Generic 3' HP Dish			
300.0	3	DragonWave Horizon Compact	Square Platform with Handrails	(5) 7/8" Coax (3) 1/2" Coax	CLEARWIRE CORPORATION
	3	DragonWave A-ANT-18G-2-C			
	1	Generic 4' Std. Dish	Square Platform with Handrails	(1) 7/8" Coax	MARCUS COMMUNICATIONS LLC
292.0	1	Generic 5" x 3" x 2" Cavity Filter	Side Arm	(1) 7/8" Coax	SIGFOX S.A.
	1	Procom CXL 900-3LW			
	1	Generic Low Noise Amplifier			
275.0	1	Rohde & Schwarz ADD090	Side Arm	(2) 7/8" Coax	US DEPT OF HOMELAND SECURITY
270.0	1	Dielectric TLP-08M-2E	Side Arm	-	OTHER
268.0	2	Alive ATC-GCSXMV100-D7	Leg	(3) 7/8" (0.88"-22.2mm) Fiber (1) 1 5/8" Coax	T-MOBILE XM SATELLITE RADIO INC.
265.0	3	Ericsson Radio 4449 B71 B85A	Sector Frame	(3) 1 1/4" (1.25"-31.8mm) Fiber (3) 1 5/8" Hybriflex	T-MOBILE
	3	Ericsson Air6449 B41			
	3	Ericsson Air 3246 B66			
	3	RFS APXVAARR24_43-U-NA20			
	3	Ericsson 4424 B25			
260.0	2	Til-Tek TA-2350-DAB	Side Arm	(1) EW20	XM SATELLITE RADIO INC.
250.0	1	Sinclair SC281-L	Side Arm	(1) 7/8" Coax	US DEPT OF HOMELAND SECURITY
245.0	1	Sinclair SC381-HL	Side Arm	(1) 7/8" Coax	

235.0	3	CCI BSA-M65R-BUU-H6 (101 lbs)	Sector Frame	(3) 0.39" (10mm) Fiber Trunk (4) 0.74" (18.7mm) 8 AWG 7 (2) 0.78" (19.7mm) 8 AWG 6 (4) 0.96" (24.3mm) Cable (10) 1 5/8" Coax	AT&T MOBILITY
	2	KMW EPBQ-654L8H6-L2			
	2	CCI OPA-65R-LCUU-H4			
	2	Andrew SBNHH-1D65A			
	3	Powerwave Allgon 7770.00			
	2	Ericsson RRUS E2 B29			
	2	Ericsson RRUS 11 B12			
	2	Ericsson RRUS 32 B2			
	2	Ericsson RRUS 32 B30 (53 lbs)			
	1	Raycap DC6-48-60-18-8C			
	1	Ericsson RRUS 4449 B5, B12			
	2	Ericsson RRUS 4415 B30			
	3	Ericsson RRUS 4478 B14			
	2	Ericsson RRUS 4426 B66			
	2	Ericsson RRUS 8843 B2, B66A			
	3	Raycap DC6-48-60-18-8F ("Squid")			
	1	Raycap DC6-48-60-0-8C-EV			
	3	Powerwave Allgon TT19-08BP111-001			
	2	Ericsson RRUS 11 B5			
210.0	1	Sinclair SC281-L	Side Arm	(1) 7/8" Coax	US DEPT OF HOMELAND SECURITY
200.0	2	TX RX Systems 101-68-10-X-03N	Side Arm	(2) 1 1/4" Coax	MARCUS COMMUNICATIONS LLC
193.0	2	Antel BCD-87010 ___	Side Arm	(3) 7/8" Coax	SPOK HOLDINGS, INC.
	1	Generic 30" x 30" Reflector			
175.0	1	Generic 12" x 12" Junction Box	Leg	(2) 2" conduit (6) 5/16" (0.31"-7.9mm) Coax	CLEARWIRE CORPORATION
167.0	3	NextNet BTS-2500	T-Arm		
	3	Argus LLPX310R			
165.0	15	Generic RCU (Remote Control Unit)	Leg	(12) 1 5/8" Coax (1) 3/8" Coax	METRO PCS INC
	6	Kathrein Scala 800 10504			
155.0	3	Nokia 2.5G MAA - AAHC(64T64R)	Sector Frame	(3) 1 1/4" Hybriflex Cable (3) 1" (25.4mm) Hybrid (1) 1.7" (43.2mm) Hybrid	SPRINT NEXTEL
	3	RFS APXVSPP18-C-A20			
	6	Alcatel-Lucent 1900MHz RRH			
	3	Alcatel-Lucent ALU 800MHz External Notch Filter			
	3	Alcatel-Lucent 800 MHz RRH			
142.0	1	Antel BCD-87010 ___ 4°	Stand-Off	(1) 7/8" Coax	SENSUS USA INC.
135.0	-	-	-	(1) 1/2" Coax	SENET, INC.
120.0	1	Channel Master Type 120	Leg	(1) 1/2" Coax	SPOK HOLDINGS, INC.
107.0	1	TX RX Systems 101-68-10-X-03N	Side Arm	(1) 1 1/4" Coax	MARCUS COMMUNICATIONS LLC

92.0	3	Samsung Outdoor CBRS 20W RRH –Clip-on Antenna	Sector Frame	(3) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Samsung RT4401-48A			
	3	Samsung B5/B13 RRH-BR04C			
	3	Samsung B2/B66A RRH-BR049			
	3	Samsung MT6407-77A			
	3	RFS DB-T1-6Z-8AB-0Z			
	2	JMA Wireless MX06FRO660-03			
	6	Generic 72" x 14" Panel			
	4	Quintel QS6656-5D			
25.0	1	Til-Tek TA-2324-LHCP	Leg	(1) 7/8" Coax	XM SATELLITE RADIO INC.
6.0	1	Trimble Acutime 2000	Stand-Off	(1) 1/2" Coax (1) 1/4" Coax	SPOK HOLDINGS, INC.
	1	Channel Master Type 120			

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
82.0	1	Commscope RDIDC-9181-PF-48	Sector Frame	(1) 1.75" (44.5mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B604			
	3	Fujitsu TA08025-B605			
	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	72%	Pass
Diagonals	79%	Pass
Lower Diagonals	77%	Pass
Horizontals	58%	Pass
Lower Horizontals	88%	Pass
Anchor Bolts	47%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	311.5	80%
Axial (Kips)	445.2	5%

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.

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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

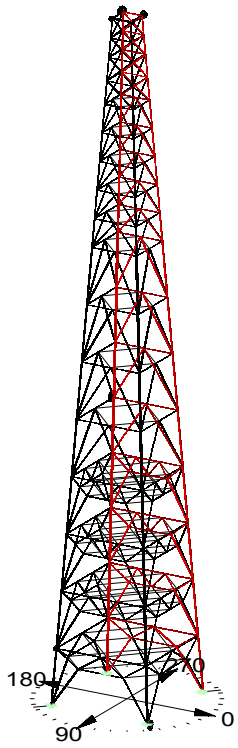
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

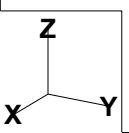
All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with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

American Tower Corp., Project: "88018 - Stamford (Katoona), CT"
Tower Version 16.01, 1:01:49 AM Sunday, October 17, 2021
Undeformed geometry displayed





Project Name : 88018 - Stamford (Katoona), CT
Project Notes: 13685619_C3_02 - Verizon Wireless
Project File : X:\S-V\Stamford (Katoona), CT (88018)\Structural Info\88018 - Stamford (Katoona), CT.tow
Date run   : 12:42:36 AM Sunday, October 17, 2021
by   : Tower Version 16.01
Licensed to : American Tower Corp.

Successfully performed nonlinear analysis

Member check option: ANSI/TIA 222-G-1
Connection rupture check: Not Checked
Crossing diagonal check: Fixed
Included angle check: None
Climbing load check: None
Redundant members checked with: Actual Force
Loads from file: X:\S-V\Stamford (Katoona), CT (88018)\Structural Info\88018 - Stamford (Katoona), CT.eia

*** Analysis Results:

Maximum element usage is 88.14% for Angle "LH 3X" in load case "W -45"

Foundation Design Forces For All Load Cases:

Note: loads are factored.

Load Case	Foundation Description	Axial Force (kips)	Shear Force (kips)	Bending Moment (ft-k)	Foundation Usage %
W 0	0P	322.66	47.59	5.03	0.00
W 0	0X	313.17	46.21	4.73	0.00
W 0	0XY	-189.84	34.37	5.27	0.00
W 0	0Y	-185.52	34.82	5.54	0.00
W 180	0P	-182.60	34.81	5.60	0.00
W 180	0X	-183.08	34.08	5.38	0.00
W 180	0XY	310.09	46.25	4.83	0.00
W 180	0Y	316.08	47.12	5.11	0.00
W 45	0P	445.24	62.69	4.55	0.00
W 45	0X	62.91	21.82	5.52	0.00
W 45	0XY	-311.47	51.10	5.82	0.00
W 45	0Y	63.80	21.77	5.48	0.00
W -45	0P	68.66	23.24	5.82	0.00
W -45	0X	437.57	61.82	4.58	0.00
W -45	0XY	61.34	20.95	5.26	0.00
W -45	0Y	-307.09	50.93	5.90	0.00
W 90	0P	323.03	47.88	5.09	0.00
W 90	0X	-186.03	35.01	5.58	0.00
W 90	0XY	-189.57	34.35	5.26	0.00
W 90	0Y	313.04	46.23	4.72	0.00
W -90	0P	-183.24	35.22	5.64	0.00
W -90	0X	317.36	47.30	5.15	0.00
W -90	0XY	309.97	46.20	4.80	0.00
W -90	0Y	-183.62	34.05	5.35	0.00
W 0 Ice	0P	170.58	21.39	1.47	0.00
W 0 Ice	0X	165.12	20.82	1.34	0.00
W 0 Ice	0XY	22.87	3.56	3.04	0.00
W 0 Ice	0Y	27.26	3.64	3.13	0.00
W 180 Ice	0P	31.86	3.86	3.20	0.00
W 180 Ice	0X	28.49	3.77	3.16	0.00
W 180 Ice	0XY	160.25	20.74	1.32	0.00
W 180 Ice	0Y	165.25	21.08	1.48	0.00
W 45 Ice	0P	204.97	26.40	0.52	0.00
W 45 Ice	0X	96.23	11.20	2.43	0.00
W 45 Ice	0XY	-11.16	6.25	3.39	0.00
W 45 Ice	0Y	95.81	11.20	2.41	0.00
W -45 Ice	0P	100.89	11.74	2.53	0.00
W -45 Ice	0X	199.91	26.00	0.50	0.00
W -45 Ice	0XY	91.76	11.11	2.33	0.00
W -45 Ice	0Y	-6.72	6.10	3.48	0.00
W 90 Ice	0P	170.69	21.45	1.48	0.00
W 90 Ice	0X	27.73	3.68	3.15	0.00
W 90 Ice	0XY	22.95	3.57	3.04	0.00
W 90 Ice	0Y	164.47	20.79	1.32	0.00
W -90 Ice	0P	31.70	3.90	3.20	0.00
W -90 Ice	0X	166.13	21.15	1.50	0.00
W -90 Ice	0XY	160.20	20.72	1.30	0.00
W -90 Ice	0Y	27.81	3.74	3.14	0.00

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
W 0	0P	-42.81	-20.80	-322.66	47.59	-0.85	-4.96	5.03	-1.99	0.00
W 0	0X	-41.08	21.16	-313.17	46.21	0.55	-4.70	4.73	2.11	0.00
W 0	0XY	-31.62	-13.46	189.84	34.37	0.48	-5.24	5.27	1.94	0.00
W 0	0Y	-32.47	12.57	185.52	34.82	-0.35	-5.52	5.54	-1.91	0.00
W 180	0P	32.56	12.32	182.60	34.81	-0.33	5.59	5.60	1.81	0.00
W 180	0X	31.51	-12.99	183.08	34.08	0.49	5.36	5.38	-1.95	0.00
W 180	0XY	41.19	21.04	-310.09	46.25	0.54	4.80	4.83	-2.12	0.00
W 180	0Y	42.51	-20.33	-316.08	47.12	-0.86	5.04	5.11	2.12	0.00
W 45	0P	-44.23	-44.43	-445.24	62.69	3.24	-3.19	4.55	0.13	0.00
W 45	0X	-19.03	-10.67	-62.91	21.82	4.35	-3.39	5.52	2.95	0.00
W 45	0XY	-36.12	-36.15	311.47	51.10	4.12	-4.12	5.82	-0.00	0.00
W 45	0Y	-10.43	-19.11	-63.80	21.77	3.40	-4.30	5.48	-2.95	0.00
W -45	0P	-20.25	11.40	-68.66	23.24	-4.57	-3.60	5.82	-3.00	0.00
W -45	0X	-42.87	44.54	-437.57	61.82	-3.46	-2.99	4.58	0.01	0.00
W -45	0XY	-9.76	18.53	-61.34	20.95	-3.31	-4.09	5.26	2.97	0.00
W -45	0Y	-36.61	35.41	307.09	50.93	-4.03	-4.32	5.90	0.03	0.00
W 90	0P	-20.71	-43.16	-323.03	47.88	5.01	0.88	5.09	2.11	0.00
W 90	0X	12.55	-32.68	186.03	35.01	5.57	0.34	5.58	1.90	0.00
W 90	0XY	-13.50	-31.59	189.57	34.35	5.24	-0.50	5.26	-1.95	0.00
W 90	0Y	21.26	-41.06	-313.04	46.23	4.70	-0.52	4.72	-2.11	0.00
W -90	0P	12.30	33.00	183.24	35.22	-5.63	0.31	5.64	-1.92	0.00
W -90	0X	-20.30	42.72	-317.36	47.30	-5.07	0.90	5.15	-2.12	0.00
W -90	0XY	21.15	41.08	-309.97	46.20	-4.77	-0.50	4.80	2.12	0.00
W -90	0Y	-13.11	31.43	183.62	34.05	-5.32	-0.51	5.35	1.96	0.00
W 0 Ice	0P	-17.67	-12.05	-170.58	21.39	-1.47	-0.02	1.47	-0.52	0.00
W 0 Ice	0X	-16.94	12.11	-165.12	20.82	1.34	0.07	1.34	0.53	0.00
W 0 Ice	0XY	-3.08	1.79	-22.87	3.56	1.40	-2.70	3.04	0.53	0.00
W 0 Ice	0Y	-3.07	-1.96	-27.26	3.64	-1.45	-2.78	3.13	-0.51	0.00
W 180 Ice	0P	3.05	-2.36	-31.86	3.86	-1.43	2.87	3.20	0.50	0.00
W 180 Ice	0X	3.10	2.15	-28.49	3.77	1.41	2.83	3.16	-0.54	0.00
W 180 Ice	0XY	17.00	11.88	-160.25	20.74	1.31	0.06	1.32	-0.54	0.00
W 180 Ice	0Y	17.56	-11.66	-165.25	21.08	-1.48	0.11	1.48	0.55	0.00
W 45 Ice	0P	-18.63	-18.70	-204.97	26.40	-0.36	0.38	0.52	0.02	0.00
W 45 Ice	0X	-10.71	3.30	-96.23	11.20	2.40	0.43	2.43	0.77	0.00
W 45 Ice	0XY	-4.41	-4.43	11.16	6.25	2.40	-2.40	3.39	-0.00	0.00
W 45 Ice	0Y	3.34	-10.69	-95.81	11.20	-0.42	-2.38	2.41	-0.77	0.00
W -45 Ice	0P	-11.30	-3.18	-100.89	11.74	-2.51	0.36	2.53	-0.79	0.00
W -45 Ice	0X	-18.06	18.71	-199.91	26.00	0.24	0.44	0.50	-0.01	0.00
W -45 Ice	0XY	3.34	10.59	-91.76	11.11	0.36	-2.31	2.33	0.79	0.00
W -45 Ice	0Y	-4.33	4.30	6.72	6.10	-2.47	-2.46	3.48	0.02	0.00
W 90 Ice	0P	-12.01	-17.77	-170.69	21.45	0.04	1.48	1.48	0.54	0.00
W 90 Ice	0X	-1.99	-3.10	-27.73	3.68	2.80	1.45	3.15	0.51	0.00
W 90 Ice	0XY	1.80	-3.09	-22.95	3.57	2.70	-1.39	3.04	-0.53	0.00
W 90 Ice	0Y	12.12	-16.90	-164.47	20.79	-0.07	-1.32	1.32	-0.53	0.00
W -90 Ice	0P	-2.35	3.12	-31.70	3.90	-2.87	1.43	3.20	-0.52	0.00
W -90 Ice	0X	-11.67	17.64	-166.13	21.15	-0.11	1.50	1.50	-0.55	0.00
W -90 Ice	0XY	11.92	16.95	-160.20	20.72	-0.04	-1.30	1.30	0.54	0.00
W -90 Ice	0Y	2.10	3.10	-27.81	3.74	-2.81	-1.41	3.14	0.54	0.00

Summary of Joint Support Reactions For All Load Cases in Direction of Leg:

Load Case	Support Joint	Origin Joint	Leg Member	Force In Leg Dir. (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
W 0	0P	1P	L 1P	325.343	22.881	22.928	22.910	0.902	-42.81	-20.80	-322.66
W 0	0X	1X	L 1X	315.815	21.801	21.850	21.771	-1.849	-41.08	21.16	-313.17
W 0	0XY	1XY	L 1XY	-191.888	19.949	19.994	19.916	1.757	-31.62	-13.46	189.84
W 0	0Y	1Y	L 1Y	-187.586	21.015	21.059	21.028	-1.134	-32.47	12.57	185.52
W 180	0P	1P	L 1P	-184.671	21.277	21.321	-21.295	-1.062	32.56	12.32	182.60
W 180	0X	1X	L 1X	-185.126	20.242	20.286	-20.215	1.703	31.51	-12.99	183.08
W 180	0XY	1XY	L 1XY	312.738	22.103	22.152	-22.070	-1.915	41.19	21.04	-310.09
W 180	0Y	1Y	L 1Y	318.742	22.986	23.033	-23.017	0.843	42.51	-20.33	-316.08
W 45	0P	1P	L 1P	449.000	23.767	23.857	16.769	16.969	-44.23	-44.43	-445.24
W 45	0X	1X	L 1X	63.184	21.006	21.006	15.148	14.553	-19.03	-10.67	-62.91
W 45	0XY	1XY	L 1XY	-314.730	23.849	23.940	16.917	16.939	-36.12	-36.15	311.47
W 45	0Y	1Y	L 1Y	64.088	20.894	20.894	14.361	15.177	-10.43	-19.11	-63.80
W -45	0P	1P	L 1P	68.947	22.384	22.384	16.017	-15.638	-20.25	11.40	-68.66
W -45	0X	1X	L 1X	441.281	23.590	23.679	15.884	-17.561	-42.87	44.54	-437.57
W -45	0XY	1XY	L 1XY	61.644	20.025	20.025	13.545	-14.749	-9.76	18.53	-61.34
W -45	0Y	1Y	L 1Y	-310.354	24.065	24.157	17.672	-16.470	-36.61	35.41	307.09
W 90	0P	1P	L 1P	325.734	23.211	23.258	0.795	23.244	-20.71	-43.16	-323.03
W 90	0X	1X	L 1X	-188.108	21.196	21.240	-1.080	21.212	12.55	-32.68	186.03
W 90	0XY	1XY	L 1XY	-191.619	19.935	19.980	1.811	19.898	-13.50	-31.59	189.57
W 90	0Y	1Y	L 1Y	315.686	21.792	21.841	-1.954	21.753	21.26	-41.06	-313.04
W -90	0P	1P	L 1P	-185.328	21.682	21.727	-0.997	-21.704	12.30	33.00	183.24
W -90	0X	1X	L 1X	320.031	23.116	23.162	0.726	-23.151	-20.30	42.72	-317.36
W -90	0XY	1XY	L 1XY	312.620	22.008	22.057	-2.032	-21.964	21.15	41.08	-309.97

W -90	0Y	1Y	L 1Y	-185.659	20.140	20.185	1.786	-20.106	-13.11	31.43	183.62
W 0 Ice	0P	1P	L 1P	171.765	7.292	7.311	7.150	1.529	-17.67	-12.05	-170.58
W 0 Ice	0X	1X	L 1X	166.284	7.002	7.023	6.753	-1.928	-16.94	12.11	-165.12
W 0 Ice	0XY	1XY	L 1XY	22.706	4.500	4.507	4.491	-0.380	-3.08	1.79	-22.87
W 0 Ice	0Y	1Y	L 1Y	27.089	4.750	4.758	4.750	0.278	-3.07	-1.96	-27.26
W 180 Ice	0P	1P	L 1P	31.695	5.021	5.029	-5.014	0.397	3.05	-2.36	-31.86
W 180 Ice	0X	1X	L 1X	28.319	4.860	4.868	-4.852	-0.396	3.10	2.15	-28.49
W 180 Ice	0XY	1XY	L 1XY	161.420	7.375	7.396	-7.122	-1.093	17.00	11.88	-160.25
W 180 Ice	0Y	1Y	L 1Y	166.416	7.497	7.516	-7.371	1.470	17.56	-11.66	-165.25
W 45 Ice	0P	1P	L 1P	206.488	8.492	8.525	5.993	6.062	-18.63	-18.70	-204.97
W 45 Ice	0X	1X	L 1X	96.722	5.453	5.455	4.774	2.639	-10.71	3.30	-96.23
W 45 Ice	0XY	1XY	L 1XY	-11.664	5.259	5.279	3.725	3.741	-4.41	-4.43	11.16
W 45 Ice	0Y	1Y	L 1Y	96.309	5.430	5.431	2.572	4.784	3.34	-10.69	-95.81
W -45 Ice	0P	1P	L 1P	101.399	5.925	5.926	5.083	-3.047	-11.30	-3.18	-100.89
W -45 Ice	0X	1X	L 1X	201.417	8.544	8.576	5.731	-6.380	-18.06	18.71	-199.91
W -45 Ice	0XY	1XY	L 1XY	92.265	5.450	5.453	2.320	-4.935	3.34	10.59	-91.76
W -45 Ice	0Y	1Y	L 1Y	-7.226	5.498	5.519	3.916	-3.889	-4.33	4.30	6.72
W 90 Ice	0P	1P	L 1P	171.871	7.376	7.396	1.482	7.246	-12.01	-17.77	-170.69
W 90 Ice	0X	1X	L 1X	27.556	4.808	4.816	0.282	4.808	-1.99	-3.10	-27.73
W 90 Ice	0XY	1XY	L 1XY	22.786	4.512	4.519	-0.386	4.502	1.80	-3.09	-22.95
W 90 Ice	0Y	1Y	L 1Y	165.633	7.017	7.038	-1.974	6.756	12.12	-16.90	-164.47
W -90 Ice	0P	1P	L 1P	31.536	5.081	5.090	0.394	-5.074	-2.35	3.12	-31.70
W -90 Ice	0X	1X	L 1X	167.303	7.509	7.529	1.421	-7.394	-11.67	17.64	-166.13
W -90 Ice	0XY	1XY	L 1XY	161.369	7.336	7.357	-2.042	-7.068	11.92	16.95	-160.20
W -90 Ice	0Y	1Y	L 1Y	27.639	4.818	4.825	-0.387	-4.810	2.10	3.10	-27.81

Overturning Moment Summary For All Load Cases:

Load Case	Transverse Moment (ft-k)	Longitudinal Moment (ft-k)	Torsional Moment (ft-k)	Resultant Moment (ft-k)	Transverse Force (kips)	Longitudinal Force (kips)	Vertical Force (kips)
W 0	317.333	-23257.294	87.886	23259.459	0.526	147.982	260.474
W 180	148.795	22812.625	-86.019	22813.111	-0.033	-147.761	260.474
W 45	17424.635	-17383.821	-7.875	24613.312	110.357	109.804	260.474
W -45	-16958.615	-17295.611	143.508	24222.567	-109.887	109.489	260.474
W 90	23268.412	-311.049	-107.991	23270.491	148.494	0.406	260.474
W -90	-22866.203	-178.696	112.243	22866.902	-148.232	-0.037	260.474
W 0 Ice	226.549	-6568.263	21.911	6572.169	0.106	40.754	385.840
W 180 Ice	192.430	6098.566	-21.521	6101.601	-0.007	-40.710	385.840
W 45 Ice	4961.416	-4980.633	-2.520	7030.103	30.529	30.418	385.840
W -45 Ice	-4542.510	-4962.704	35.685	6727.766	-30.429	30.355	385.840
W 90 Ice	6543.017	-252.799	-27.213	6547.899	40.854	0.082	385.840
W -90 Ice	-6136.949	-226.009	28.018	6141.110	-40.800	-0.008	385.840

EIA Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Top Width (ft)	Bottom Width (ft)	Gross Area (ft^2)	Face Adjust Factor	Af Face Adjust Factor	Ar Dead Load Factor
291.4-300.0	300.000	291.417	8	20	9.00	10.06	81.79	1.1220	1.1220	1.346
282.8-291.4	291.417	282.834	8	16	10.06	11.12	90.88	1.1250	1.1250	1.458
272.7-282.8	282.834	272.667	8	16	11.12	12.37	119.40	1.1970	1.1970	1.436
262.5-272.7	272.667	262.500	12	24	12.37	13.63	132.15	1.2030	1.2030	1.444
250.0-262.5	262.500	250.000	16	24	13.63	15.17	179.95	1.2010	1.2010	1.441
237.5-250.0	250.000	237.500	16	24	15.17	16.71	199.22	1.2070	1.2070	1.449
225.0-237.5	237.500	225.000	16	24	16.71	18.25	218.49	1.2130	1.2130	1.456
212.5-225.0	225.000	212.500	16	24	18.25	19.79	237.76	1.2190	1.2190	1.463
200.0-212.5	212.500	200.000	16	24	19.79	21.33	257.03	1.2250	1.2250	1.470
175.0-200.0	200.000	175.000	16	24	21.33	24.42	571.87	1.2320	1.2320	1.479
150.0-175.0	175.000	150.000	16	24	24.42	27.50	648.96	1.2570	1.2570	1.509
125.0-150.0	150.000	125.000	16	24	27.50	30.58	726.04	1.2660	1.2660	1.519
100.0-125.0	125.000	100.000	20	32	30.58	33.67	803.13	1.2790	1.2790	1.535
75.00-100.0	100.000	75.000	36	76	33.67	36.75	880.21	1.2760	1.2760	1.531
50.00-75.00	75.000	50.000	36	76	36.75	39.83	957.29	1.2790	1.2790	1.535
25.00-50.00	50.000	25.000	32	68	39.83	42.92	1034.38	1.2820	1.2820	1.539
0.000-25.00	25.000	0.000	20	40	42.92	46.00	1111.46	1.3210	1.3210	1.586

Printed capacities do not include the strength factor entered for each load case.
The Group Summary reports on the member and load case that resulted in maximum usage which may not necessarily be the same as that which produces maximum force.

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/r Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/r	KL/r Member (ft)	Length Comp. (ft)	Curve No.	No. Of Bolts Comp.
Leg S1	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	71.53	Comp	71.53	L 1P	-391.139	W 45	546.848	0.000	0.000	0.281	0.281	0.281	54.30	54.30	25.095	1	0
Leg S2	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	60.82	Comp	60.82	L 2P	-332.569	W 45	546.848	0.000	0.000	0.281	0.281	0.281	54.30	54.30	25.095	1	0
Leg S3	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	52.59	Comp	52.59	L 3P	-287.560	W 45	546.848	0.000	0.000	0.281	0.281	0.281	54.30	54.30	25.095	1	0
Leg S4	L 8" x 8" x 1"	SAE	8X8X1	36.0	49.16	Comp	49.16	L 4P	-241.090	W 45	490.403	0.000	0.000	0.281	0.281	0.281	54.30	54.30	25.095	1	0
Leg S5	L 8" x 8" x 0.875"	SAE	8X8X0.88	36.0	55.55	Comp	55.55	L 5P	-230.730	W 45	415.372	0.000	0.000	0.333	0.333	0.333	63.93	63.93	25.095	1	0
Leg S6	L 8" x 8" x 0.875"	SAE	8X8X0.88	36.0	46.23	Comp	46.23	L 6P	-192.009	W 45	415.372	0.000	0.000	0.333	0.333	0.333	63.93	63.93	25.095	1	0
Leg S7	L 8" x 8" x 0.75"	SAE	8X8X0.75	36.0	42.96	Comp	42.96	L 7P	-154.402	W 45	359.367	0.000	0.000	0.333	0.333	0.333	63.53	63.53	25.095	1	0
Leg S8	L 8" x 8" x 0.625"	SAE	8X8X0.63	36.0	39.60	Comp	39.60	L 8P	-119.709	W 45	302.314	0.000	0.000	0.333	0.333	0.333	63.53	63.53	25.095	1	0
Leg S9	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	38.53	Comp	38.53	L 9P	-101.950	W 45	264.581	0.000	0.000	0.500	0.500	0.500	64.35	64.35	12.547	1	0
Leg S10	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	31.62	Comp	31.62	L 10P	-83.651	W 45	264.581	0.000	0.000	0.500	0.500	0.500	64.35	64.35	12.547	1	0
Leg S11	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	33.48	Comp	33.48	L 11P	-67.686	W 45	202.144	0.000	0.000	0.500	0.500	0.500	63.80	63.80	12.547	1	0
Leg S12	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	25.56	Comp	25.56	L 12P	-51.660	W 45	202.144	0.000	0.000	0.500	0.500	0.500	63.80	63.80	12.547	1	0
Leg S13	L 6" x 6" x 0.4375"	SAE	6X6X0.44	36.0	22.81	Comp	22.81	L 13P	-36.314	W 45	159.219	0.000	0.000	0.500	0.500	0.500	63.26	63.26	12.547	1	0
Leg S14	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	20.94	Comp	20.94	L 14P	-27.722	W 45	132.418	0.000	0.000	0.500	0.500	0.500	62.10	62.10	10.206	1	0
Leg S15	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	13.78	Comp	13.78	L 15P	-18.244	W 45	132.418	0.000	0.000	0.500	0.500	0.500	62.10	62.10	10.206	1	0
Leg S16	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	9.85	Comp	9.85	L 16P	-9.523	W 45	96.705	0.000	0.000	0.500	0.500	0.500	52.01	52.01	8.616	1	0
Leg S17	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	4.95	Comp	4.95	L 17P	-4.790	W 45	96.705	0.000	0.000	0.500	0.500	0.500	52.01	52.01	8.616	1	0
Diag S1	B/B L3"x4"x0.3125"	DAS	4X3X0.31	36.0	56.72	Comp	56.72	D 2X	-44.814	W -90	79.015	0.000	0.000	0.310	0.920	0.310	124.62	122.84	21.786	6	0
Diag S2	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	36.0	61.69	Comp	61.69	D 4X	-50.021	W -90	81.084	0.000	0.000	0.310	0.620	0.310	94.31	94.31	20.916	1	0
Diag S3	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	36.0	78.51	Comp	78.51	D 6X	-49.403	W -90	62.929	0.000	0.000	0.333	0.667	0.333	111.82	111.82	20.550	1	0
Diag S4	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	36.0	78.25	Comp	78.25	D 8X	-48.856	W -90	62.438	0.000	0.000	0.333	0.667	0.333	109.94	109.94	20.204	1	0
Diag S5	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	53.81	Comp	53.81	D 9X	-30.239	W -90	56.194	0.000	0.000	0.333	0.667	0.333	134.71	129.05	30.178	6	0
Diag S6	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	50.33	Comp	50.33	D 11X	-29.548	W -90	58.704	0.000	0.000	0.333	0.667	0.333	131.00	126.76	29.346	6	0
Diag S7	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	44.69	Comp	44.69	D 13X	-27.299	W -90	61.090	0.000	0.000	0.333	0.667	0.333	127.55	124.64	28.573	6	0
Diag S8	B/B L3.5"x3.5"x0.25"	DAE	3.5X3.5X0.25	36.0	48.68	Comp	48.68	D 15X	-25.677	W -90	52.748	0.000	0.000	0.333	0.667	0.333	140.20	132.43	27.864	6	0
Diag S9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	26.00	Comp	26.00	D 17X	-14.744	W -90	56.716	0.000	0.000	0.320	0.590	0.320	97.87	97.87	16.451	1	0
Diag S10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	45.39	Comp	45.39	D 19P	-13.469	W 90	29.675	0.000	0.000	0.500	1.000	0.500	160.96	145.19	15.962	6	0
Diag S11	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	66.79	Comp	66.79	D 21P	-13.442	W 90	20.126	0.000	0.000	0.480	0.960	0.480	190.92	163.61	15.495	6	0
Diag S12	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	59.33	Comp	59.33	D 24P	-11.706	W 0	19.730	0.000	0.000	0.500	1.000	0.500	193.21	165.03	15.054	6	0
Diag S13	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	54.27	Comp	54.27	D 26P	-11.220	W 0	20.673	0.000	0.000	0.500	1.000	0.500	187.90	161.76	14.641	6	0
Diag S14 L	3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	25.95	Comp	25.95	D 28X	-6.240	W -90	24.047	0.000	0.000	0.520	0.520	0.520	148.48	141.74	16.514	5	0
Diag S15 L	3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	17.81	Comp	17.81	D 29Y	-4.713	W 180	26.469	0.000	0.000	0.520	0.520	0.520	139.78	135.11	15.546	5	0
Diag S16	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	14.09	Comp	14.09	D 31P	-3.044	W 0	21.604	0.000	0.000	0.520	0.520	0.520	143.77	138.16	13.640	5	0
Diag S17	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	10.20	Comp	10.20	D 33Y	-2.425	W 180	23.778	0.000	0.000	0.520	0.520	0.520	135.30	131.69	12.836	5	0
Horiz 1	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	57.90	Comp	57.90	H 1P	-35.594	W -90	61.473	0.000	0.000	0.480	0.480	0.480	113.39	113.39	21.458	1	0
Horiz 2	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	44.13	Tens	42.32	H 3P	-36.408	W -90	86.040	0.000	0.000	0.500	0.500	0.500	73.09	73.09	13.278	1	0
Horiz 3	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	41.47	Tens	37.88	H 5P	-33.577	W -90	88.638	0.000	0.000	0.500	0.500	0.500	67.43	67.43	12.250	1	0
Horiz 4	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	53.67	Comp	53.67	H 7P	-30.846	W -90	57.471	0.000	0.000	0.470	0.940	0.470	112.02	112.02	11.222	1	0
Horiz 5	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	53.62	Comp	53.62	H 9P	-14.696	W -90	27.408	0.000	0.000	1.000	1.000	1.000	194.18	165.62	15.292	6	0
Horiz 6	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	41.94	Comp	41.94	H 11P	-13.367	W -90	31.873	0.000	0.000	1.000	1.000	1.000	174.60	153.58	13.750	6	0
Horiz 7	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	44.73	Comp	44.73	H 13P	-11.404	W -90	25.495	0.000	0.000	1.000	1.000	1.000	190.51	163.36	12.208	6	0
Horiz 8	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	32.83	Comp	32.83	H 15P	-10.120	W -90	30.825	0.000	0.000	1.000	1.000	1.000	166.45	148.57	10.667	6	0
Horiz 9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	26.24	Comp	26.24	H 17P	-8.957	W -90	34.139	0.000	0.000	1.000	1.000	1.000	154.42	141.17	9.896	6	0
Horiz 10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	19.75	Comp	19.75	H 19X	-7.509	W 90	38.019	0.000	0.000	1.000	1.000	1.000	142.39	133.77	9.125	6	0
Horiz 11	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	17.26	Comp	17.26	H 22P	-7.352	W 180	42.599	0.000	0.000	1.000	1.000	1.000	130.36	126.37	8.354	6	0
Horiz 12	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	13.27	Comp	13.27	H 24P	-6.357	W 180	47.900	0.000	0.000	1.000	1.000	1.000	118.34	118.34	7.583	1	0
Horiz 13	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	9.19	Comp	9.19	H 26Y	-5.069	W 0	55.156	0.000	0.000	1.000	1.000	1.000	106.31	106.31	6.813	1	0
Horiz 14	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	6.00	Tens	4.72	H 27Y	-0.553	W 0	11.737	0.000	0.000	0.500	1.000	0.500	197.15	178.83	12.371	5	0
Horiz 15	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	1.73	Tens	0.50	H 29Y	-0.265	W 0	53.374	0.000	0.000	0.500	1.000	0.500	118.06	118.06	11.117	1	0
Horiz 16	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	2.36	Tens	0.00	H 32X	0.000		16.518	0.000	0.000	0.500	1.000	0.500	160.30	150.75	10.059	5	0
Horiz 17	C8x11.5	CHN	C8x11.5	36.0	1.00	Comp	1.00	H 33P	-0.296	W -90	29.726	0.000	0.000	1.000	1.000	1.000	172.80	160.27	9.000	5	0
LD 1	B/B L3"x2.5"x0.25"	DAL	3X2X0.25	36.0	49.34	Comp	49.34	LD 1X	-17.991	W -90	36.466	0.000	0.000	0.850	0.850	0.850	146.95	136.57	12.836	6	0
LD 2	B/B L4"x3"x0.25"	DAL	4X3X0.25	36.0	57.10	Comp	57.10	LD 3X	-47.265	W -90	82.773	0.000	0.000	0.820	0.820	0.820	98.68	98.68	12.836	1	0
LD 4	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	76.64	Comp	76.64	LD 7X	-23.642	W -45	30.849	0.000	0.000	0.870	0.870	0.870	153.35	140.51	11.516	6	0
LD 5	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	62.18	Comp	62.18	LD 9X	-32.585	W -90	52.407	0.000	0.000	0.800	0.800	0.800	100.25	100.25	8.187	1	0
LD 6	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	51.91	Comp	51.91	LD 11P	-35.176	W -90	67.765	0.000	0.000	0.840	0.840	0.840	104.93	104.93	9.681	1	0
LD 7	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	41.80	Comp	41.80	LD 13X	-23.277	W -45	55.681	0.000	0.000	0.865	0.865	0.865	122.12	121.30	10.941	6	0
LD 8	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	61.50	Comp	61.50	LD 15X	-32.024	W -90	52.069	0.000	0.000	0.820	0.820	0.820	100.96	100.96	8.044	1	0
LD 9	B/B L3"x2"x0.25"	DAL	3X2X0.25	36.0	60.18	Comp	60.18	LD 17P	-34.283	W -90	56.971	0.000	0.000	0.820	0.820	0.820	103.11	103.11	9.336	1	0
LD 10	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	39.23	Comp	39.23	LD 19X	-23.686	W -45	60.370	0.000	0.000	0.860	0.860	0.860	115.26	115.26	10.387	1	0
LD 11	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	59.41	Comp	59.41	LD 21X	-31.420	W -90	52.887	0.000	0.000	0.820	0.820	0.820	99.26	99.26	7.909	1	0
LD 12	B/B L2.5"x2.5"x0.375"	DAE	2.5X2.5X0.38	36.0	48.80	Comp	48.80	LD 23P	-32.824	W -90	67.258	0.000	0.000	0.850	0.850	0.850	122.01	121.24	9.008	6	0
LH 1	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	10.82	Tens	0.00	LH 2X	0.000		0.002	0.000	0.000	100.000	100.000	100.000	34196.55	21077.08	21.458	6	0
LH 2	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	88.14	Comp	88.14	LH 3X	-27.112	W -45	30.760	0.000	0.000	1.000	2.000	1.000	178.89	156.22	10.808	6	0
LH 3	B/B L2.5"x3"x0.375"	DAS	3X2.5X0.38	36.0	50.43	Comp	50.43	LH 5X	-25.855	W -45	51.273	0.000	0.000	1.000	2.000	1.000	163.34	146.66	10.005	6	0
LH 4	B/B L3"x3.5"x0.25"	DAE	3.5X3.5X0.25	36.0	45.18	Comp	45.18	LH 7X	-25.257	W -45	55.901	0.000	0.000	0.998	1.995	0.998	138.55	131.41	9.202	6	0
DUM 1	Dummy Bracing Member	DUM	0.1X0.1X1	36.0	0.00		0.00	BR 11XY	-1.063	W 45	0.324	0.000	0.000	1.000	1.000	1.000	2.33	2.33	19.445	1	0

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Section Load Case	Net Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Member (ft)	No. Of Bolts	No. Of Tens.	Hole Diameter (in)
Leg S1	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	71.53	Comp	48.45	L 1XY	262.630	W 45	542.051	0.000	0.000	0.000	25.095	0	0.000	0
Leg S2	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	60.82	Comp	42.21	L 2XY	228.797	W 45	542.051	0.000	0.000	0.000	25.095	0	0.000	0

Leg S3	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	52.59	Comp	36.43	L 3XY	197.446	W 45	542.051	0.000	0.000	0.000	25.095	0	0.000	0
Leg S4	L 8" x 8" x 1"	SAE	8X8X1	36.0	49.16	Comp	34.29	L 4XY	166.673	W 45	485.999	0.000	0.000	0.000	25.095	0	0.000	0
Leg S5	L 8" x 8" x 0.875"	SAE	8X8X0.88	36.0	55.55	Comp	38.00	L 5XY	162.879	W 45	428.651	0.000	0.000	0.000	25.095	0	0.000	0
Leg S6	L 8" x 8" x 0.875"	SAE	8X8X0.88	36.0	46.23	Comp	31.25	L 6XY	133.958	W 45	428.651	0.000	0.000	0.000	25.095	0	0.000	0
Leg S7	L 8" x 8" x 0.75"	SAE	8X8X0.75	36.0	42.96	Comp	28.64	L 7XY	106.151	W 45	370.655	0.000	0.000	0.000	25.095	0	0.000	0
Leg S8	L 8" x 8" x 0.625"	SAE	8X8X0.63	36.0	39.60	Comp	25.31	L 8XY	78.813	W 45	311.364	0.000	0.000	0.000	25.095	0	0.000	0
Leg S9	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	38.53	Comp	24.16	L 9XY	66.072	W 45	273.456	0.000	0.000	0.000	12.547	0	0.000	0
Leg S10	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	31.62	Comp	19.47	L 10XY	53.234	W 45	273.456	0.000	0.000	0.000	12.547	0	0.000	0
Leg S11	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	33.48	Comp	19.43	L 11XY	40.469	W 45	208.332	0.000	0.000	0.000	12.547	0	0.000	0
Leg S12	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	25.56	Comp	13.75	L 12XY	28.648	W 45	208.332	0.000	0.000	0.000	12.547	0	0.000	0
Leg S13	L 6" x 6" x 0.4375"	SAE	6X6X0.44	36.0	22.81	Comp	10.47	L 13XY	17.160	W 45	163.944	0.000	0.000	0.000	12.547	0	0.000	0
Leg S14	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	20.94	Comp	9.67	L 14XY	13.093	W 45	135.432	0.000	0.000	0.000	10.206	0	0.000	0
Leg S15	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	13.78	Comp	4.45	L 15XY	6.030	W 45	135.432	0.000	0.000	0.000	10.206	0	0.000	0
Leg S16	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	9.85	Comp	2.45	L 16XY	2.409	W 45	98.172	0.000	0.000	0.000	8.616	0	0.000	0
Leg S17	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	4.95	Comp	0.00	L 17Y	0.000		98.172	0.000	0.000	0.000	8.616	0	0.000	0
Diag S1	B/B L3"x4"x0.3125"	DAS	4X3X0.31	36.0	56.72	Comp	29.10	D 2P	39.411	W -90	135.432	0.000	0.000	0.000	21.786	0	0.000	0
Diag S2	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	36.0	61.69	Comp	41.56	D 4P	42.148	W -90	101.412	0.000	0.000	0.000	20.916	0	0.000	0
Diag S3	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	36.0	78.51	Comp	44.98	D 6P	41.974	W -90	93.312	0.000	0.000	0.000	20.550	0	0.000	0
Diag S4	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	36.0	78.25	Comp	43.46	D 8P	40.549	W -90	93.312	0.000	0.000	0.000	20.204	0	0.000	0
Diag S5	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	53.81	Comp	25.34	D 9P	27.755	W -90	109.512	0.000	0.000	0.000	30.178	0	0.000	0
Diag S6	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	50.33	Comp	24.70	D 11P	27.050	W -90	109.512	0.000	0.000	0.000	29.346	0	0.000	0
Diag S7	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	44.69	Comp	22.99	D 13P	25.175	W -90	109.512	0.000	0.000	0.000	28.573	0	0.000	0
Diag S8	B/B L3.5"x3.5"x0.25"	DAE	3.5X3.5X0.25	36.0	48.68	Comp	22.15	D 15P	24.257	W -90	109.512	0.000	0.000	0.000	27.864	0	0.000	0
Diag S9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	26.00	Comp	17.73	D 17P	13.671	W -90	77.112	0.000	0.000	0.000	16.451	0	0.000	0
Diag S10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	45.39	Comp	16.25	D 19X	12.533	W 90	77.112	0.000	0.000	0.000	15.962	0	0.000	0
Diag S11	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	66.79	Comp	18.33	D 21X	12.647	W 90	69.012	0.000	0.000	0.000	15.495	0	0.000	0
Diag S12	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	59.33	Comp	15.95	D 24Y	11.007	W 0	69.012	0.000	0.000	0.000	15.054	0	0.000	0
Diag S13	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	54.27	Comp	15.30	D 26Y	10.557	W 0	69.012	0.000	0.000	0.000	14.641	0	0.000	0
Diag S14	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	25.95	Comp	8.83	D 28X	4.835	W 90	54.756	0.000	0.000	0.000	16.514	0	0.000	0
Diag S15	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	17.81	Comp	6.35	D 29Y	3.475	W 0	54.756	0.000	0.000	0.000	15.546	0	0.000	0
Diag S16	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	14.09	Comp	4.70	D 31Y	2.193	W 0	46.656	0.000	0.000	0.000	13.640	0	0.000	0
Diag S17	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	10.20	Comp	3.51	D 33Y	1.639	W 0	46.656	0.000	0.000	0.000	12.836	0	0.000	0
Horiz 1	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	57.90	Comp	41.64	H 1X	38.854	W -90	93.312	0.000	0.000	0.000	21.458	0	0.000	0
Horiz 2	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	44.13	Tens	44.13	H 3X	41.183	W -90	93.312	0.000	0.000	0.000	13.278	0	0.000	0
Horiz 3	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	41.47	Tens	41.47	H 5X	38.692	W -90	93.312	0.000	0.000	0.000	12.250	0	0.000	0
Horiz 4	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	53.67	Comp	40.03	H 7P	34.110	W 90	85.212	0.000	0.000	0.000	11.222	0	0.000	0
Horiz 5	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	53.62	Comp	18.07	H 9P	15.401	W 90	85.212	0.000	0.000	0.000	15.292	0	0.000	0
Horiz 6	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	41.94	Comp	16.11	H 11P	13.726	W 90	85.212	0.000	0.000	0.000	13.750	0	0.000	0
Horiz 7	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	44.73	Comp	14.98	H 13P	11.548	W 90	77.112	0.000	0.000	0.000	12.208	0	0.000	0
Horiz 8	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	32.83	Comp	13.56	H 15P	10.459	W 90	77.112	0.000	0.000	0.000	10.667	0	0.000	0
Horiz 9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	26.24	Comp	11.75	H 17P	9.062	W 90	77.112	0.000	0.000	0.000	9.896	0	0.000	0
Horiz 10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	19.75	Comp	10.13	H 19P	7.811	W 90	77.112	0.000	0.000	0.000	9.125	0	0.000	0
Horiz 11	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	17.26	Comp	9.61	H 22P	7.410	W 0	77.112	0.000	0.000	0.000	8.354	0	0.000	0
Horiz 12	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	13.27	Comp	8.43	H 24P	6.498	W 0	77.112	0.000	0.000	0.000	7.583	0	0.000	0
Horiz 13	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	9.19	Comp	7.58	H 25X	5.844	W -90	77.112	0.000	0.000	0.000	6.813	0	0.000	0
Horiz 14	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	6.00	Tens	6.00	H 28P	2.546	W 45	42.444	0.000	0.000	0.000	12.371	0	0.000	0
Horiz 15	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	1.73	Tens	1.73	H 29P	1.471	W 0	85.212	0.000	0.000	0.000	11.117	0	0.000	0
Horiz 16	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	2.36	Tens	2.36	H 31P	1.001	W 0	42.444	0.000	0.000	0.000	10.059	0	0.000	0
Horiz 17	C8x11.5	CHN	C8x11.5	36.0	1.00	Comp	0.48	H 33P	0.523	W 90	109.512	0.000	0.000	0.000	9.000	0	0.000	0
LD 1	B/B L3"x2"x0.25"	DAL	3X2X0.25	36.0	49.34	Comp	24.16	LD 2Y	18.632	W -45	77.112	0.000	0.000	0.000	12.836	0	0.000	0
LD 2	B/B L4"x3"x0.25"	DAL	4X3X0.25	36.0	57.10	Comp	39.69	LD 3P	43.469	W -90	109.512	0.000	0.000	0.000	12.836	0	0.000	0
LD 4	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	76.64	Comp	30.22	LD 7P	20.857	W -90	69.012	0.000	0.000	0.000	11.516	0	0.000	0
LD 5	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	62.18	Comp	40.65	LD 9P	28.057	W -90	69.012	0.000	0.000	0.000	8.187	0	0.000	0
LD 6	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	51.91	Comp	38.89	LD 11X	36.288	W -90	93.312	0.000	0.000	0.000	9.681	0	0.000	0
LD 7	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	41.80	Comp	21.81	LD 14Y	20.353	W -45	93.312	0.000	0.000	0.000	10.941	0	0.000	0
LD 8	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	61.50	Comp	40.62	LD 15P	28.034	W -90	69.012	0.000	0.000	0.000	8.044	0	0.000	0
LD 9	B/B L3"x2"x0.25"	DAL	3X2X0.25	36.0	60.18	Comp	45.69	LD 17X	35.235	W -90	77.112	0.000	0.000	0.000	9.336	0	0.000	0
LD 10	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	39.23	Comp	21.50	LD 20Y	20.062	W -45	93.312	0.000	0.000	0.000	10.387	0	0.000	0
LD 11	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	59.41	Comp	39.20	LD 21P	27.052	W -90	69.012	0.000	0.000	0.000	7.909	0	0.000	0
LD 12	B/B L2.5"x2.5"x0.375"	DAE	2.5X2.5X0.38	36.0	48.80	Comp	29.96	LD 23X	33.680	W -90	112.428	0.000	0.000	0.000	9.008	0	0.000	0
LH 1	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	10.82	Tens	10.82	LH 1Y	9.219	W 0	85.212	0.000	0.000	0.000	21.458	0	0.000	0
LH 2	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	88.14	Comp	27.04	LH 3P	23.045	W -90	85.212	0.000	0.000	0.000	10.808	0	0.000	0
LH 3	B/B L2.5"x3"x0.375"	DAS	3X2.5X0.38	36.0	50.43	Comp	17.62	LH 6Y	21.916	W -45	124.416	0.000	0.000	0.000	10.005	0	0.000	0
LH 4	B/B L3.5"x3.5"x0.25"	DAE	3.5X3.5X0.25	36.0	45.18	Comp	18.96	LH 8Y	20.761	W -45	109.512	0.000	0.000	0.000	9.202	0	0.000	0
DUM 1	Dummy Bracing Member	DUM	0.1X0.1X1	36.0	0.00		0.00	BR 11X	0.869	W -45	0.324	0.000	0.000	0.000	19.445	0	0.000	0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
W 0	85.48	LH 4P	Angle
W 180	85.89	LH 4Y	Angle
W 45	85.38	LH 3P	Angle
W -45	88.14	LH 3X	Angle
W 90	86.17	LH 3P	Angle
W -90	86.46	LH 3X	Angle
W 0 Ice	31.24	LH 4P	Angle
W 180 Ice	32.13	LH 4Y	Angle
W 45 Ice	33.70	L 1P	Angle
W -45 Ice	32.79	L 1X	Angle
W 90 Ice	31.52	LH 3P	Angle
W -90 Ice	32.25	LH 3X	Angle

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	146562.4
Weight of Equipment:	1109.0
Total:	147671.4

*** End of Report

Site #:	88018			Engineer:	T. Kassakatis		Windspeed:	No Ice:	117 mph	Ice:	50 mph			Taper:	-0.123333		Taper Change:	300	ft			
Name:	Stamford (Katoona), CT			Date:	10/17/21		Carrier	Dish Wireless, LLC						FW @ Base:	46.00	ft	FW @ Top:	9	ft			

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.	Drop Sub-Brace (Y or Blank)	# Vert	Drop (ft)	Height (ft)	Type	Count	Z-Elev. (ft)	FW (ft)	# Sub-Brace
0	XY-Symmetry	23	23	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed		3	7.033	25	1	1	0	46	3
1	XY-Symmetry	21.45833333	21.45833333	25	Free	Free	Free	Free	Free	Free		2	7.033	25	2	2	25	42.91666667	3
2	XY-Symmetry	19.91666667	19.91666667	50	Free	Free	Free	Free	Free	Free		2	7.033	25	2	3	50	39.83333333	3
3	XY-Symmetry	18.375	18.375	75	Free	Free	Free	Free	Free	Free		2	7.033	25	2	4	75	36.75	3
4	XY-Symmetry	16.83333333	16.83333333	100	Free	Free	Free	Free	Free	Free				25	A	5	100	33.66666667	2
5	XY-Symmetry	15.29166667	15.29166667	125	Free	Free	Free	Free	Free	Free				25	A	6	125	30.58333333	2
6	XY-Symmetry	13.75	13.75	150	Free	Free	Free	Free	Free	Free				25	A	7	150	27.5	2
7	XY-Symmetry	12.20833333	12.20833333	175	Free	Free	Free	Free	Free	Free				25	A	8	175	24.41666667	2
8	XY-Symmetry	10.66666667	10.66666667	200	Free	Free	Free	Free	Free	Free				12.5	A	9	200	21.33333333	1
9	XY-Symmetry	9.895833333	9.895833333	212.5	Free	Free	Free	Free	Free	Free				12.5	A	10	212.5	19.79166667	1
10	XY-Symmetry	9.125	9.125	225	Free	Free	Free	Free	Free	Free				12.5	A	11	225	18.25	1
11	XY-Symmetry	8.354166667	8.354166667	237.5	Free	Free	Free	Free	Free	Free				12.5	A	12	237.5	16.70833333	1
12	XY-Symmetry	7.583333333	7.583333333	250	Free	Free	Free	Free	Free	Free				12.5	A	13	250	15.16666667	1
13	XY-Symmetry	6.8125	6.8125	262.5	Free	Free	Free	Free	Free	Free		1		10.167	X	14	262.5	13.625	1
14	XY-Symmetry	6.185535	6.185535	272.667	Free	Free	Free	Free	Free	Free		1		10.167	X	15	272.667	12.37107	1
15	XY-Symmetry	5.55857	5.55857	282.834	Free	Free	Free	Free	Free	Free		1		8.583	X	16	282.834	11.11714	1
16	XY-Symmetry	5.029285	5.029285	291.417	Free	Free	Free	Free	Free	Free				8.583	X	17	291.417	10.05857	1
17	XY-Symmetry	4.5	4.5	300	Free	Free	Free	Free	Free	Free						18	300	9	
A1	Y-Symmetry	21.45833333	0	25	Free	Free	Free	Free	Free	Free									
A2	X-Symmetry	0	21.45833333	25	Free	Free	Free	Free	Free	Free									
A3	XY-Symmetry	19.91666667	6.638888889	50	Free	Free	Free	Free	Free	Free									
A4	XY-Symmetry	6.638888889	19.91666667	50	Free	Free	Free	Free	Free	Free									
A5	XY-Symmetry	18.375	6.125	75	Free	Free	Free	Free	Free	Free									
A6	XY-Symmetry	6.125	18.375	75	Free	Free	Free	Free	Free	Free									
A7	XY-Symmetry	16.83333333	5.611111111	100	Free	Free	Free	Free	Free	Free									
A8	XY-Symmetry	5.611111111	16.83333333	100	Free	Free	Free	Free	Free	Free									
A9	Y-Symmetry	15.29166667	0	125	Free	Free	Free	Free	Free	Free									
A10	X-Symmetry	0	15.29166667	125	Free	Free	Free	Free	Free	Free									
A11	Y-Symmetry	13.75	0	150	Free	Free	Free	Free	Free	Free									
A12	X-Symmetry	0	13.75	150	Free	Free	Free	Free	Free	Free									
A13	Y-Symmetry	12.20833333	0	175	Free	Free	Free	Free	Free	Free									
A14	X-Symmetry	0	12.20833333	175	Free	Free	Free	Free	Free	Free									
A15	Y-Symmetry	10.66666667	0	200	Free	Free	Free	Free	Free	Free									
A16	X-Symmetry	0	10.66666667	200	Free	Free	Free	Free	Free	Free									
A17	Y-Symmetry	9.895833333	0	212.5	Free	Free	Free	Free	Free	Free									
A18	X-Symmetry	0	9.895833333	212.5	Free	Free	Free	Free	Free	Free									
A19	Y-Symmetry	9.125	0	225	Free	Free	Free	Free	Free	Free									
A20	X-Symmetry	0	9.125	225	Free	Free	Free	Free	Free	Free									
A21	Y-Symmetry	8.354166667	0	237.5	Free	Free	Free	Free	Free	Free									
A22	X-Symmetry	0	8.354166667	237.5	Free	Free	Free	Free	Free	Free									
A23	Y-Symmetry	7.583333333	0	250	Free	Free	Free	Free	Free	Free									
A24	X-Symmetry	0	7.583333333	250	Free	Free	Free	Free	Free	Free									
A25	Y-Symmetry	6.8125	0	262.5	Free	Free	Free	Free	Free	Free									
A26	X-Symmetry	0	6.8125	262.5	Free	Free	Free	Free	Free	Free									
H1	XY-Symmetry	21.892035	10.72916667	17.967	Free	Free	Free	Free	Free	Free									
H2	XY-Symmetry	10.72916667	21.892035	17.967	Free	Free	Free	Free	Free	Free									
H5	XY-Symmetry	20.35036833	10.807895	42.967	Free	Free	Free	Free	Free	Free									
H6	XY-Symmetry	10.807895	20.35036833	42.967	Free	Free	Free	Free	Free	Free									
H7	Y-Symmetry	20.35036833	0	42.967	Free	Free	Free	Free	Free	Free									
H8	X-Symmetry	0	20.35036833	42.967	Free	Free	Free	Free	Free	Free									
H9	XY-Symmetry	18.80870167	10.00487167	67.967	Free	Free	Free	Free	Free	Free									
H10	XY-Symmetry	10.00487167	18.80870167	67.967	Free	Free	Free	Free	Free	Free									
H11	Y-Symmetry	18.80870167	0	67.967	Free	Free	Free	Free	Free	Free									
H12	X-Symmetry	0	18.80870167	67.967	Free	Free	Free	Free	Free	Free									
H13	XY-Symmetry	17.267035	9.201848333	92.967	Free	Free	Free	Free	Free	Free									
H14	XY-Symmetry	9.201848333	17.267035	92.967	Free	Free	Free	Free	Free	Free									
H15	Y-Symmetry	17.267035	0	92.967	Free	Free	Free	Free	Free	Free									
H16	X-Symmetry	0	17.267035	92.967	Free	Free	Free	Free	Free	Free									

Spreadsheet Version Last Updated: 11/12/2014

NOTES	
Types:	
1:	Built up Horizs. w/ A
2:	Built up Horizs. w/ M
A:	Typical A brace
X:	Typical X brace
Drop:	Use only for types 1 & 2
# Sections:	17

Legs

Site No.:	88018
Engineer:	T. Kassakatis
Date:	10/17/2021
Carrier:	Dish Wireless, LLC

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations *(ft)*	Type of Shape [1]	Diameter or Length *(in)*	Thickness [2] *(in)*	F_Y *(ksi)*
1	0.000-25.00	L	8	1.125	36
2	25.00-50.00	L	8	1.125	36
3	50.00-75.00	L	8	1.125	36
4	75.00-100.0	L	8	1	36
5	100.0-125.0	L	8	0.875	36
6	125.0-150.0	L	8	0.875	36
7	150.0-175.0	L	8	0.75	36
8	175.0-200.0	L	8	0.625	36
9	200.0-212.5	L	6	0.75	36
10	212.5-225.0	L	6	0.75	36
11	225.0-237.5	L	6	0.5625	36
12	237.5-250.0	L	6	0.5625	36
13	250.0-262.5	L	6	0.4375	36
14	262.5-272.7	L	5	0.4375	36
15	272.7-282.8	L	5	0.4375	36
16	282.8-291.4	L	5	0.3125	36
17	291.4-300.0	L	5	0.3125	36

Notes:

[1] Type of Leg Shape: **R** = Round or **P** = Bent Plate or **S** = Schifflerized Angle. **L** = Even Leg

[2] For Solid Round Leg Shapes Thickness Equals Zero.

[3] Adjust for Bent Plate Leg Shapes.

Diagonals

Site No.:	88018
Engineer:	T. Kassakatis
Date:	10/17/2021
Carrier:	Dish Wireless, LLC

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape [1]	Diameter [2] (in)	Web Length [3] (in)	Flange Length [3] (in)	Thickness (in)	F_y (ksi)	Is Diag. Tension Only? (Y/N)
1	0.000-25.00	2L		3	4	0.3125	36	
2	25.00-50.00	2L		3	3.5	0.25	36	
3	50.00-75.00	2L		2.5	3.5	0.25	36	
4	75.00-100.0	2L		2.5	3.5	0.25	36	
5	100.0-125.0	2L		3	4	0.25	36	
6	125.0-150.0	2L		3	4	0.25	36	
7	150.0-175.0	2L		3	4	0.25	36	
8	175.0-200.0	2L		3.5	3.5	0.25	36	
9	200.0-212.5	2L		2.5	2.5	0.25	36	
10	212.5-225.0	2L		2.5	2.5	0.25	36	
11	225.0-237.5	2L		2.5	2	0.25	36	
12	237.5-250.0	2L		2.5	2	0.25	36	
13	250.0-262.5	2L		2.5	2	0.25	36	
14	262.5-272.7	L		3.5	3.5	0.25	36	
15	272.7-282.8	L		3.5	3.5	0.25	36	
16	282.8-291.4	L		3	3	0.25	36	
17	291.4-300.0	L		3	3	0.25	36	

Notes:

[1] Type of Diagonal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Horizontals

Site No.:	88018
Engineer:	T. Kassakatis
Date:	10/17/2021
Carrier:	Dish Wireless, LLC

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations *(ft)*	Type of Shape [1]	Diameter [2] *(in)*	Web Length [3] *(in)*	Flange Length [3] *(in)*	Thickness *(in)*	F_y *(ksi)*	B/B Spacing (in.)
1	0.000-25.00	2L		3.5	2.5	0.25	36	
2	25.00-50.00	2L		3.5	2.5	0.25	36	
3	50.00-75.00	2L		3.5	2.5	0.25	36	
4	75.00-100.0	2L		3	2.5	0.25	36	
5	100.0-125.0	2L		3	2.5	0.25	36	
6	125.0-150.0	2L		3	2.5	0.25	36	
7	150.0-175.0	2L		2.5	2.5	0.25	36	
8	175.0-200.0	2L		2.5	2.5	0.25	36	
9	200.0-212.5	2L		2.5	2.5	0.25	36	
10	212.5-225.0	2L		2.5	2.5	0.25	36	
11	225.0-237.5	2L		2.5	2.5	0.25	36	
12	237.5-250.0	2L		2.5	2.5	0.25	36	
13	250.0-262.5	2L		2.5	2.5	0.25	36	
14	262.5-272.7	L		3	2.5	0.25	36	
15	272.7-282.8	2L		3	2.5	0.25	36	
16	282.8-291.4	L		3	2.5	0.25	36	
17	291.4-300.0	C		8	11.5		36	

Notes:

[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle, **2L** = Double-Angle, **C** = Channel, **W** = W Shape

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Built-up Diagonals

Site No.:	88018
Engineer:	T. Kassakatis
Date:	10/17/2021
Carrier:	Dish Wireless, LLC

When inputting thickness values, include all decimal places.
Input diags. from left to center & from base section upward.

Tower Built-up Diag. #	Section Elevations *(ft)*	Type of Shape [1]	Diameter [2] *(in)*	Web Length [3] *(in)*	Flange Length [3] *(in)*	Thickness *(in)*	F_y *(ksi)*
1	0.000-25.00	2L		3	2	0.25	36
2	0.000-25.00	2L		4	3	0.25	36
3	25.00-50.00	2L		2.5	2	0.25	36
4	25.00-50.00	2L		2.5	2	0.25	36
5	25.00-50.00	2L		3	3	0.25	36
6	50.00-75.00	2L		3	3	0.25	36
7	50.00-75.00	2L		2.5	2	0.25	36
8	50.00-75.00	2L		3	2	0.25	36
9	75.00-100.0	2L		3	3	0.25	36
10	75.00-100.0	2L		2.5	2	0.25	36
11	75.00-100.0	2L		2.5	2.5	0.375	36

Notes:

[1] Type of Diagonal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Built-up Horizontals

Site No.:	88018
Engineer:	T. Kassakatis
Date:	10/17/2021
Carrier:	Dish Wireless, LLC

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations *(ft)*	Type of Shape [1]	Diameter [2] *(in)*	Web Length [3] *(in)*	Flange Length [3] *(in)*	Thickness *(in)*	F_y *(ksi)*	Is Horiz. Tension Only? *(Y/N)*
1	0.000-25.00	2L		2.5	3	0.25	36	Y
2	25.00-50.00	2L		2.5	3	0.25	36	
3	50.00-75.00	2L		2.5	3	0.375	36	
4	75.00-100.0	2L		3.5	3.5	0.25	36	

Notes:

[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Coax (p. 1 of 2)

Orig by MED, Improved by ABL. Last update 6/25/13 MED

Site No.:	88018
Engineer:	T. Kassakatis
Date:	10/17/21
Carrier:	Dish Wireless, LLC

Description	From (ft)	To (ft)	Quantity	Shape	Width or Diameter** (in)	Perimeter (in)	Unit Weight (lb/ft)	In Face Zone? (Yes/No)	Include in Wind Load (Yes/No)
1 Ladder	0	300	1	Flat	1.5	6.0	6	No	Yes
2 Short Ladder	8.3333	33.3333	2	Flat	1.5	6.0	6	Yes	Yes
3 Short Ladder	8.3333	33.3333	2	Flat	1.5	6.0	6	Yes	Yes
5 WG	5	300	1	Flat	1.5	6.0	6	Yes	Yes
6 WG	5	272	1	Flat	1.5	6.0	6	Yes	Yes
7 WG	5	235	1	Flat	1.5	6.0	6	Yes	Yes
8 WG	5	223	1	Flat	1.5	6.0	6	Yes	Yes
9 WG	5	160	1	Flat	1.5	6.0	6	Yes	Yes
10 Marcus Communications LLC	5	300	1	Round	1.55	4.9	0.63	No	Yes
11 Marcus Communications LLC	5	300	1	Round	1.98	6.2	0.82	No	Yes
12 Marcus Communications LLC	5	300	1	Round	1.09	3.4	0.33	No	Yes
13 Other	5	300	4	Round	0.63	2.0	0.15	No	Yes
14 Clearwire Corporation	5	300	5	Round	1.09	3.4	0.33	Yes	Yes
15 Sigfox S.A.	5	292	1	Round	1.09	3.4	0.33	Yes	Yes
16 US Dept Of Homeland Security	5	275	2	Round	1.09	3.4	0.33	Yes	Yes
17 XM Satellite Radio Inc.	5	268	1	Round	1.98	6.2	0.82	Yes	Yes
18 T-Mobile	5	265	3	Round	1.98	6.2	1.3	Yes	Yes
19 T-Mobile	5	265	1	Round	2.5	8.9	3.15	Yes	No
20 XM Satellite Radio Inc.	5	260	1	Round	5.02	15.8	1.85	Yes	No
21 US Dept Of Homeland Security	5	250	1	Round	1.09	3.4	0.33	Yes	Yes
22 US Dept Of Homeland Security	5	245	1	Round	1.09	3.4	0.33	Yes	Yes
23 AT&T Mobility	5	235	1	Flat	8.19	43.7	8.2	Yes	Yes
24 AT&T Mobility	5	235	1	Round	0.78	2.8	0.51	Yes	No
25 AT&T Mobility	5	235	2	Round	0.78	2.5	0.59	Yes	Yes
26 AT&T Mobility	5	235	1	Round	1.85	6.8	1.96	Yes	No
27 AT&T Mobility	5	235	1	Round	2.4	8.8	3.52	Yes	No
28 US Dept Of Homeland Security	5	210	1	Round	1.09	3.4	0.33	Yes	Yes
29 Marcus Communications LLC	5	200	2	Round	1.55	4.9	0.63	No	Yes
30 Spok Holdings, Inc.	5	193	2	Round	1.09	3.4	0.33	No	Yes
31 Spok Holdings, Inc.	5	193	1	Round	1.09	3.4	0.33	No	Yes
32 Clearwire Corporation	5	167	2	Round	2.38	7.5	3.65	Yes	Yes
33 Clearwire Corporation	5	167	6	Round	0.31	1.0	0.05	Yes	Yes
34 Metro PCS Inc	5	165	1	Flat	8.19	43.7	9.84	Yes	Yes
35 Metro PCS Inc	5	165	1	Round	0.38	1.2	0.23	Yes	Yes
36 Metro PCS Inc	5	165	1	Round	0.44	1.4	0.08	Yes	Yes
37 Sprint Nextel	5	155	3	Round	1	3.1	0.65	Yes	Yes
38 Sprint Nextel	5	155	3	Round	1.54	4.8	1	Yes	Yes
39 Sprint Nextel	5	155	1	Round	1.7	5.3	1.78	Yes	Yes
40 Sensus USA Inc.	5	142	1	Round	1.09	3.4	0.3	No	Yes
42 Senet, Inc.	5	135	1	Round	0.63	2.0	0.2	Yes	Yes
43 Spok Holdings, Inc.	5	120	1	Round	0.63	2.0	0.2	No	Yes
44 Marcus Communications LLC	5	107	1	Round	1.55	4.9	0.6	No	Yes
46 Verizon Wireless	5	92	3	Round	1.98	6.2	1.3	Yes	Yes
47 Sirius XM Radio Inc.	5	25	1	Round	1.09	3.4	0.3	Yes	Yes
48 Spok Holdings, Inc.	0	6	1	Round	0.63	2.0	0.2	No	Yes
49 Spok Holdings, Inc.	0	6	1	Round	0.34	1.1	0.1	No	Yes
51 Dish Wireless	6	82	1	Round	1.75	5.5	2.7	Yes	Yes

**Note: *Actual block width multiplied by 0.75 (1.5 block drag factor actual divided by 2.0 flat*

Coax (p. 2 of 2)

		Ke	0.998264		
	Exposure	B	α	7	$k_{z\,max}$ 2.01
Tia Code:	TIA-222-H	**Topo Cat:**	1	z_g	1200 $k_{z\,min}$ 0.7
f				K_c	0.9 K_t

Site No.:	880
Engineer:	T. Kass
Date:	10/1
Carrier:	Dish Wire

Description	From (ft)	To (ft)	Quantity	Face # (1-4, A-D)	Coax Width (in)	Coax Shape (Block / Flat / Ind)	% Exposed	Spacing (in)	Shape (Round/Flat)	Block Width (# coax)	Block Depth (# coax)	Perimeter (in)	Unit Weight (lb/ft)	In Face Zone (Yes/No)	Include in Wind Load (Yes/No)
Ladder	0	300	1	B	1.50	Flat	100		Flat	1	1	6.0	6	No	Yes
Short Ladder	8.3333	33.3333	2	1	1.50	Flat	100		Flat	2	1	6.0	6	Yes	Yes
Short Ladder	8.3333	33.3333	2	3	1.50	Flat	100		Flat	2	1	6.0	6	Yes	Yes
														No	No
WG	5	300	1	2	1.50	Flat	100		Flat	1	1	6.0	6	Yes	Yes
WG	5	272	1	3	1.50	Flat	100		Flat	1	1	6.0	6	Yes	Yes
WG	5	235	1	1	1.50	Flat	100		Flat	1	1	6.0	6	Yes	Yes
WG	5	223	1	2	1.50	Flat	100		Flat	1	1	6.0	6	Yes	Yes
WG	5	160	1	1	1.50	Flat	100		Flat	1	1	6.0	6	Yes	Yes
Marcus Communications LLC	5	300	1	B	1.55	Ind	100		Round	1	1	4.9	0.63	No	Yes
Marcus Communications LLC	5	300	1	B	1.98	Ind	100		Round	1	1	6.2	0.82	No	Yes
Marcus Communications LLC	5	300	1	B	1.09	Ind	100		Round	1	1	3.4	0.33	No	Yes
Other	5	300	4	B	0.63	Ind	100		Round	4	1	2.0	0.15	No	Yes
Clearwire Corporation	5	300	5	2	1.09	Ind	100		Round	5	1	3.4	0.33	Yes	Yes
Sigfox S.A.	5	292	1	3	1.09	Ind	100		Round	1	1	3.4	0.33	Yes	Yes
US Dept Of Homeland Security	5	275	2	2	1.09	Ind	100		Round	2	1	3.4	0.33	Yes	Yes
XM Satellite Radio Inc.	5	268	1	4	1.98	Ind	100		Round	1	1	6.2	0.82	Yes	Yes
T-Mobile	5	265	3	4	1.98	Ind	100		Round	3	1	6.2	1.3	Yes	Yes
T-Mobile	5	265	3	4	1.25	Ind	0		Round	1	3	8.9	3.15	Yes	No
XM Satellite Radio Inc.	5	260	1	4	5.02	Ind	0		Round	1	1	15.8	1.85	Yes	No
US Dept Of Homeland Security	5	250	1	2	1.09	Ind	100		Round	1	1	3.4	0.33	Yes	Yes
US Dept Of Homeland Security	5	245	1	2	1.09	Ind	100		Round	1	1	3.4	0.33	Yes	Yes
AT&T Mobility	5	235	10	1	1.98	Block	60	1	Flat	6	2	43.7	8.2	Yes	Yes
AT&T Mobility	5	235	3	1	0.39	Ind	0		Round	1	3	2.8	0.51	Yes	No
AT&T Mobility	5	235	2	1	0.78	Ind	100		Round	2	1	2.5	0.59	Yes	Yes
AT&T Mobility	5	235	4	1	0.74	Ind	0		Round	1	4	6.8	1.96	Yes	No
AT&T Mobility	5	235	4	1	0.96	Ind	0		Round	1	4	8.8	3.52	Yes	No
US Dept Of Homeland Security	5	210	1	2	1.09	Ind	100		Round	1	1	3.4	0.33	Yes	Yes
Marcus Communications LLC	5	200	2	B	1.55	Ind	100		Round	2	1	4.9	0.63	No	Yes
Spok Holdings, Inc.	5	193	2	B	1.09	Ind	100		Round	2	1	3.4	0.33	No	Yes
Spok Holdings, Inc.	5	193	1	B	1.09	Ind	100		Round	1	1	3.4	0.33	No	Yes
Clearwire Corporation	5	167	2	2	2.38	Ind	100		Round	2	1	7.5	3.65	Yes	Yes
Clearwire Corporation	5	167	6	2	0.31	Ind	100		Round	6	1	1.0	0.05	Yes	Yes
Metro PCS Inc	5	165	12	1	1.98	Block	50	1	Flat	6	2	43.7	9.84	Yes	Yes
Metro PCS Inc	5	165	1	1	0.38	Ind	100		Round	1	1	1.2	0.23	Yes	Yes
Metro PCS Inc	5	165	1	1	0.44	Ind	100		Round	1	1	1.4	0.08	Yes	Yes
Sprint Nextel	5	155	3	2	1.00	Ind	100		Round	3	1	3.1	0.65	Yes	Yes
Sprint Nextel	5	155	3	2	1.54	Ind	100		Round	3	1	4.8	1	Yes	Yes
Sprint Nextel	5	155	1	2	1.70	Ind	100		Round	1	1	5.3	1.78	Yes	Yes
Sensus USA Inc.	5	142	1	B	1.09	Ind	100		Round	1	1	3.4	0.33	No	Yes
														No	No
Senet, Inc.	5	135	1	3	0.63	Ind	100		Round	1	1	2.0	0.15	Yes	Yes
Spok Holdings, Inc.	5	120	1	B	0.63	Ind	100		Round	1	1	2.0	0.15	No	Yes
Marcus Communications LLC	5	107	1	B	1.55	Ind	100		Round	1	1	4.9	0.63	No	Yes
														No	No
Verizon Wireless	5	92	3	4	1.98	Ind	100		Round	3	1	6.2	1.3	Yes	Yes
Sirius XM Radio Inc.	5	25	1	4	1.09	Ind	100		Round	1	1	3.4	0.33	Yes	Yes
Spok Holdings, Inc.	0	6	1	B	0.63	Ind	100		Round	1	1	2.0	0.15	No	Yes
Spok Holdings, Inc.	0	6	1	B	0.34	Ind	100		Round	1	1	1.1	0.06	No	Yes
														No	No
Dish Wireless	6	82	1	2	1.75	Ind	100		Round	1	1	5.5	2.72	Yes	Yes
														No	No
														No	No
														No	No
														No	No
														No	No
														No	No
														No	No

Dishes

Site No.:	88018
Engineer:	T. Kassakatis
Date:	10/17/21
Carrier:	Dish Wireless, LLC

Dish Types	
S	Standard
R	Standard w/ Radome
H	High Performance
G	Grid

Dish Number	Dish Elevation (ft)	Dish Dia. (ft)	Dish Angle (deg)	Dish Type	Joint Orientation	Equipment Staus
1	307	3	0	H	Y	
2	300	4	51.4	S	XY	
3	300	2	90	H	XY	
4	300	2	180	H	X	
5	300	2	270	H	P	
6	120	4	90	S	XY	
7	25	2	197	R	X	
8	6	4	270	S	P	
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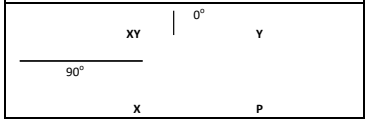
Equipment Label	Attach Label	Equipment Property Set	EIA Antenna Orientation Angle *(deg)*
3' HP 1 @ 307'	17Y	3 ft HP Dish	0
4' STD 2 @ 300'	17XY	4 ft STD Dish	51.4
2' HP 3 @ 300'	17XY	2 ft HP Dish	90
2' HP 4 @ 300'	17X	2 ft HP Dish	180
2' HP 5 @ 300'	17P	2 ft HP Dish	270
4' STD 6 @ 120'	5XY	4 ft STD Dish	90
2' RAD 7 @ 25'	1X	2 ft RAD Dish	197
4' STD 8 @ 6'	0P	4 ft STD Dish	270

Joint Orientation



Task:	Determine Point Loads	
Tower Height:	300	ft
Gh:	0.85	
Wind Speed:	117	mph,Vult
Ice Wind Speed:	50	
Ice Density:	56	
Tower Type:	S	

Ice Thick:	1	in
Topographic Category (1-4):	1	
Exposure Category (B-D):	B	
Risk Category (1-4):	2	
Height of Crest (H) if Topo Cat. >1:	0	ft
Load Factor; Wind:	1	
Load Factor; Dead:	1.2	

Rooftop Speed Up Factor (Ks)	1	
Ground Elevation (AMSL)	48	ft
Topographic Factor Procedure	Method 1	

Site No.:	
Engineer:	
Date:	
Carrier:	

No.	Carrier	Elevation (ft)	Quantity	# of Azimuths	Proposed?	Manufacturer	Model	Height (in)	Width (in)	Depth (in)	Weight (lbs/ea)	Flat/Round (F/R)	Reduction	C_AA_C (ft^2)	Weight (k)	Ka
1		300	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		300	1	4			Platform w/ HR						1.000	80.00	9.00	1
2		283	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		283	1	4			Catwalk						1.000	70.00	8.00	1
3		212.5	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		212.5	1	3			Access Platform						1.000	45.00	5.00	1
4		100	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		100	1	3			Access Platform						1.000	45.00	5.00	1
5																1
																1
6	Marcus Communications LLC	338	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Marcus Communications LLC	338	1	1		TX RX Systems	101-68-10-X-03N						1.000	5.53	0.07	1
7	Marcus Communications LLC	324	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Marcus Communications LLC	324	1	1			15' Omni-Grid						1.000	13.41	0.08	1
8	Other	320	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Other	320	1	1			12' Omni						1.000	3.60	0.04	1
9	Marcus Communications LLC	311	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Marcus Communications LLC	311	1	1			Radio/ODU						0.500	1.60	0.03	1
10	Other	307	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Other	307	1	1			Radio/ODU						0.500	1.60	0.03	1
11	Clearwire Corporation	300	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Clearwire Corporation	300	1	1		DragonWave	Horizon Compact						0.500	0.43	0.01	1
12	Sigfox S.A.	292	1	1		Procom	CXL 900-3LW	27.6	0.6	0.6	1.5	R	1.000			1
	Sigfox S.A.	292	1	1			5" x 3" x 2" Cavity Filter						1.000	0.17	0.00	1
13	Sigfox S.A.	292	1	1			Low Noise Amplifier	5	4	2	2	F	1.000			1
	Sigfox S.A.	292	1	1			Flat Side Arm						1.000	6.30	0.15	1
14	US Dept Of Homeland Security	275	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	US Dept Of Homeland Security	275	1	1			Round Side Arm						1.000	5.20	0.15	1
15	US Dept Of Homeland Security	275	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	US Dept Of Homeland Security	275	1	1		Rohde & Schwarz	ADD090						1.000	20.76	0.09	1
16	Other	270	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Other	270	1	1		Dielectric	TLP-08M-2E						1.000	22.75	0.13	1
17	Other	270	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Other	270	1	1			Round Side Arm						1.000	5.20	0.15	1
18	XM Satellite Radio Inc.	268	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	XM Satellite Radio Inc.	268	2	2		Til-Tek	TA-2350-DAB						1.000	1.34	0.02	1
19	XM Satellite Radio Inc.	268	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	XM Satellite Radio Inc.	268	2	2			Round Side Arm						0.900	5.20	0.15	0.9
20	T-Mobile	265	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	T-Mobile	265	1	1		Ericsson	Radio 4449 B71 B85A						0.500	1.65	0.08	0.8
21	T-Mobile	265	3	3		Ericsson	4424 B25	17.1	14.4	11.3	86	F	0.500			0.8
	T-Mobile	265	3	3		Ericsson	Air6449 B41						0.630	5.68	0.10	0.8
22	T-Mobile	265	3	3		Ericsson	Air 3246 B66	58.1	15.7	9.4	180	F	0.690			0.8
	T-Mobile	265	1	1			-						0.000	0.00	0.00	1
23	T-Mobile	265	3	3		RFS	APXVAARR24_43-U-NA20	95.9	24	8.7	127.9	F	0.630			0.8
	T-Mobile	265	3	3			Modified Flat Sector Frame						0.670	17.90	0.40	0.75
24	US Dept Of Homeland Security	250	1	1		Sinclair	SC281-L	251	5	5	79	R	1.000			1
	US Dept Of Homeland Security	250	1	1			Round Side Arm						1.000	5.20	0.15	1
25	US Dept Of Homeland Security	245	1	1		Sinclair	SC381-HL	148.3	4.5	4.5	47	R	1.000			1
	US Dept Of Homeland Security	245	1	1			Round Side Arm						1.000	5.20	0.15	1
26	AT&T Mobility	235	3	3		Powerwave Allgon	7770	55	11	5	35	F	0.650			0.8
	AT&T Mobility	235	2	2		Andrew	SBNHH-1D65A						0.690	5.80	0.04	0.8
27	AT&T Mobility	235	2	2		CCI	OPA-65R-LCUU-H4	48	14.8	7.4	57	F	0.660			0.8
	AT&T Mobility	235	1	3			(28) Diplexer/TTA/BOB/RET/RRU						0.500	55.30	1.29	0.8
28	AT&T Mobility	235	2	2		KMW	EPBQ-654L8H6-L2	73	21	6.3	72.8	F	0.610			0.8
	AT&T Mobility	235	3	3		CCI	BSA-M65R-BUU-H6 (101 lbs)						0.610	17.12	0.10	0.8
29	AT&T Mobility	235	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	AT&T Mobility	235	3	3			Sabre C10857278C Sector Frame						0.670	17.90	0.40	0.75
30	US Dept Of Homeland Security	210	1	1		Sinclair	SC281-L	251	5	5	79	R	1.000			1
	US Dept Of Homeland Security	210	1	1			Round Side Arm						1.000	5.20	0.15	1
31	Marcus Communications LLC	200	2	2		TX RX Systems	101-68-10-X-03N	189.6	3.5	3.5	70	R	1.000			1
	Marcus Communications LLC	200	2	2			Round Side Arm						0.900	5.20	0.15	0.9
32	Spok Holdings, Inc.	193	2	2		Antel	BCD-87010 ___	134	2.6	2.6	26.5	R	1.000			1
	Spok Holdings, Inc.	193	2	2			Round Side Arm						0.900	5.20	0.15	0.9
33	Spok Holdings, Inc.	193	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Spok Holdings, Inc.	193	1	1			30" x 30" Reflector						1.000	7.50	0.03	1
34	Clearwire Corporation	175	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Clearwire Corporation	175	1	1			12" x 12" Junction Box						1.000	1.20	0.01	1
35	Clearwire Corporation	167	3	3		NextNet	BTS-2500	19.3	11.3	5.1	35	F	0.500			0.8
	Clearwire Corporation	167	3	3		Argus	LLPX310R						0.630	4.29	0.03	0.8
36	Clearwire Corporation	167	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Clearwire Corporation	167	3	3			Flat T-Arm						0.670	12.90	0.25	0.75
37	Mtero PCS Inc	165	15	3		Generic	RCU (Remote Control Unit)	8	2	2	1	F	0.500			1
	Mtero PCS Inc	165	6	3		Kathrein Scala	800 10504						0.660	3.34	0.02	1
38	Sprint Nextel	155	3	3		Nokia	2.5G MAA - AAHC(64T64R)	25.6	19.7	9.6	103.6	F	0.640			0.8
	Sprint Nextel	155	1	3			(12) Filter/RRU						0.500	27.95	0.45	0.8
39	Sprint Nextel	155	3	3		RFS	APXVSPP18-C-A20	72	11.8	7	57	F	0.690			0.8
	Sprint Nextel	155	3	3			Flat Sector Frame						0.750	17.90	0.40	0.75
40	Sensus USA Inc.	142	1	1		Antel	BCD-87010 ___ 4"	134	2.6	2.6	26.5	R	1.000			1
	Sensus USA Inc.	142	1	1			Round Side Arm						1.000	5.20	0.15	1
41	Senet, Inc.	135	1	1		L-com	HG908U-PRO	63	1.5	1.5	3.8	R	1.000			1
	Senet, Inc.	135	1	1			Round Side Arm						1.000	5.20	0.15	1
42	Senet, Inc.	130	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Senet, Inc.	130	1	1			Stand-Off						1.000	2.50	0.08	1
43	Marcus Communications LLC	107	1	1		TX RX Systems	101-68-10-X-03N	189.6	3.5	3.5	70	R	1.000			1
	Marcus Communications LLC	107	1	1			Round Side Arm						1.000	5.20	0.15	1
44	Verizon Wireless	92	3	3		Samsung	Outdoor CBRS 20W RRH –Clip-on Antenna	12.3	8.7	1.4	4.4	F	0.500			0.8
	Verizon Wireless	92	1	3			(12) RRU/BOB						0.500	28.64	0.65	0.8
45	Verizon Wireless	92	4	3		Quintel	QS6656-5D	72	12	9.6	88	F	0.740			0.8
	Verizon Wireless	92	2	2		JMA Wireless	MX06FRO660-03						0.780	9.87	0.06	0.8
46	Verizon Wireless	92	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Verizon Wireless	92	3	3			Modified Sector Frame						0.670	17.90	0.40	0.75
47	-	42	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	-	42	4	4			Ice Shield						1.000	6.00	0.15	1
48	Spok Holdings, Inc.	6	1	1			-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Spok Holdings, Inc.	6	1	1		Trimble	Acutime 2000						1.000	0.30	0.00	1
49	Dish Wireless	82	1	1	Proposed	Commscope	RDIDC-9181-PF-48	16	14	8	21.9	F	0.500			0.8
	Dish Wireless	82	3	3	Proposed		Round Sector Frames						0.750	14.40	0.30	0.75
50	Dish Wireless	82	6	3	Proposed	Fujitsu	TA08025-B604/TA08025-B605	15.7	15	9.1	75	F	0.500			0.8
	Dish Wireless	82	3	3	Proposed	JMA Wireless	MX08FRO665-21						0.640	12.49	0.06	0.8

No.	Elevation (ft)	C_AA_C (ft^2)	C_AA_C (Ice) (ft^2)	Force (lb)	Force (Ice) (lb)	Weight (lb)	Weight (Ice) (lb)	60 Azi Mult.	Force mean	F (Ice) mean	Height Flag	Sum of Forces (No I 60 Azi.	180 Azi.
1	300	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00			
	300	80.00	108.00	2735.041	674.320	10800	14040	1.00	1504.27	370.88	1.5033333	2735.040831	
2	283	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5033343		
	283	70.00	94.50	2353.604	580.277	9600	12480	1.00	1294.48	319.15	1.5035336	2353.60375	
3	212.5	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5035346		
	212.5	45.00	60.75	1394.110	343.716	6000	7800	1.00	766.76	189.04	1.5047059	1394.110206	
4	100	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5047069		
	100	45.00	60.75	1123.999	277.120	6000	7800	1.00	618.20	152.42	1.5100000	1123.999149	
5					#VALUE!			1.00	#VALUE!	#VALUE!	1.5100010		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
6	338	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	#DIV/0!		
	338	5.53	7.47	195.613	48.228	84	109	1.00	107.59	26.53	1.5029586	195.6129746	
7	324	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5029596		
	324	13.41	18.10	468.654	115.546	90	117	1.00	257.76	63.55	1.5030864	468.6539151	
8	320	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5030874		
	320	3.60	4.86	125.367	30.909	48	62	1.00	68.95	17.00	1.5031250	125.3673756	
9	311	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5031260		
	311	0.80	1.08	27.633	6.813	36	47	1.00	15.20	3.75	1.5032154	27.63326095	
10	307	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5032164		
	307	0.80	1.08	27.531	6.788	36	47	1.00	15.14	3.73	1.5032573	27.53124484	
11	300	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5032583		
	300	0.22	0.29	7.350	1.812	13	17	1.00	4.04	1.00	1.5033333	7.350422232	
12	292	0.14	0.48	4.682	2.972	2	11	1.00	2.57	1.63	1.5033343		
	292	0.17	0.23	5.767	1.422	2	2	1.00	3.17	0.78	1.5033343	10.4489034	
13	292	0.17	0.41	5.654	2.530	2	7	1.00	3.11	1.39	1.5033353		
	292	6.30	8.51	213.728	52.694	180	234	1.00	117.55	28.98	1.5034247	229.8306415	
14	275	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5034257		
	275	5.20	7.02	173.413	42.755	180	234	1.00	95.38	23.52	1.5036364	173.4125159	
15	275	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5036374		
	275	20.76	28.03	692.316	170.689	106	138	1.00	380.77	93.88	1.5036364	865.7286371	
16	270	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5036374		
	270	22.75	30.71	754.713	186.073	156	203	1.00	415.09	102.34	1.5037037	754.7127022	
17	270	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5037047		
	270	5.20	7.02	172.506	42.531	180	234	1.00	94.88	23.39	1.5037037	927.2184627	
18	268	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5037047		
	268	2.68	3.62	88.718	21.873	36	47	1.00	48.79	12.03	1.5037313	88.71815255	
19	268	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5037323		
	268	8.42	11.37	250.980	61.879	360	468	1.00	138.04	34.03	1.5037313	339.6978337	
20	265	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5037323		
	265	0.66	0.89	17.423	4.296	90	117	1.00	9.58	2.36	1.5037736	17.42267293	
21	265	2.46	3.65	81.253	22.023	310	422	1.00	44.69	12.11	1.5037746		
	265	8.59	11.59	226.710	55.895	374	487	1.00	124.69	30.74	1.5037736	325.3858396	
22	265	13.15	17.13	433.841	103.210	648	948	1.00	238.61	56.77	1.5037746		
	265	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5037736	759.2271329	
23	265	30.61	37.42	1009.948	225.488	460	939	1.00	555.47	124.02	1.5037746		
	265	26.98	36.43	667.809	164.647	1440	1872	1.00	367.30	90.56	1.5037736	2436.984081	
24	250	10.46	14.76	339.401	87.469	95	425	1.00	186.67	48.11	1.5037746		
	250	5.20	7.02	168.754	41.606	180	234	1.00	92.81	22.88	1.5040000	508.1549355	
25	245	5.56	7.86	179.439	46.306	56	236	1.00	98.69	25.47	1.5040010		
	245	5.20	7.02	167.783	41.367	180	234	1.00	92.28	22.75	1.5040816	347.2214124	
26	235	8.59	11.24	273.987	65.441	126	260	1.00	150.69	35.99	1.5040826		
	235	6.40	8.64	163.328	40.268	98	128	1.00	89.83	22.15	1.5042553	437.3146487	
27	235	6.42	8.62	204.810	50.217	137	291	1.00	112.65	27.62	1.5042563		
	235	22.12	29.86	564.240	139.112	1552	2018	1.00	310.33	76.51	1.5042553	1206.364766	
28	235	12.92	16.37	411.916	95.312	175	461	1.00	226.55	52.42	1.5042563		
	235	25.06	33.84	639.304	157.619	364	473	1.00	351.62	86.69	1.5042553	2257.584898	
29	235	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5042563		
	235	26.98	36.43	645.274	159.091	1440	1872	1.00	354.90	87.50	1.5042553	2902.859353	
30	210	10.46	14.76	322.908	83.219	95	419	1.00	177.60	45.77	1.5042563		
	210	5.20	7.02	160.553	39.584	180	234	1.00	88.30	21.77	1.5047619	483.4612364	
31	200	11.06	17.56	336.757	97.665	168	372	1.00	185.22	53.72	1.5047629		
	200	8.42	11.37	230.846	56.915	360	468	1.00	126.97	31.30	1.5050000	567.6037078	
32	193	5.81	10.43	175.012	57.392	64	171	1.00	96.26	31.57	1.5050010		
	193	8.42	11.37	228.508	56.338	360	468	1.00	125.68	30.99	1.5051813	403.5205207	
33	193	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5051823		
	193	7.50	10.13	226.049	55.732	36	47	1.00	124.33	30.65	1.5051813	629.5694918	
34	175	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5051823		
	175	1.20	1.62	35.170	8.671	12	16	1.00	19.34	4.77	1.5057143	35.17014487	
35	167	2.18	3.31	63.070	17.456	126	189	1.00	34.69	9.60	1.5057153		
	167	6.49	8.76	150.067	36.999	103	134	1.00	82.54	20.35	1.5059880	213.1371646	
36	167	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5059890		
	167	19.45	26.25	421.789	103.991	900	1170	1.00	231.98	57.20	1.5059880	634.9259618	
37	165	1.17	2.92	33.623	15.351	18	26	1.00	18.49	8.44	1.5059890		
	165	13.23	17.86	381.183	93.980	127	165	1.00	209.65	51.69	1.5060606	414.8060437	
38	155	6.46	8.94	182.747	46.241	373	532	1.00	100.51	25.43	1.5060616		
	155	11.18	15.09	253.210	62.429	539	701	1.00	139.27	34.34	1.5064516	435.9571908	
39	155	13.29	16.44	376.192	85.004	205	399	1.00	206.91	46.75	1.5064526		
	155	30.21	40.78	641.345	158.123	1440	1872	1.00	352.74	86.97	1.5064516	1453.494403	
40	142	2.90	5.21	80.161	26.287	32	130	1.00	44.09	14.46	1.5064526		
	142	5.20	7.02	143.571	35.397	180	234	1.00	78.96	19.47	1.5070423	223.7320121	
41	135	0.79	1.67	21.431	8.301	5	34	1.00	11.79	4.57	1.5070433		
	135	5.20	7.02	141.513	34.890	180	234	1.00	77.83	19.19	1.5074074	162.9435653	
42	130	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5074084		
	130	2.50	3.38	67.305	16.594	96	125	1.00	37.02	9.13	1.5076923	67.30521577	
43	107	5.53	8.78	140.823	40.841	84	259	1.00	77.45	22.46	1.5076933		
	107	5.20	7.02	132.420	32.648	180	234	1.00	72.83	17.96	1.5093458	273.2426922	
44	92	1.07	1.79	26.099	7.951	16	36	1.00	14.35	4.37	1.5093468		
	92	11.46	15.46	223.511	55.106	782	1017	1.00	122.93	30.31	1.5108696	249.6109192	
45	92	19.26	23.85	469.740	106.239	422	667	1.00	258.36	58.43	1.5108706		
	92	12.32	16.63	240.342	59.256	144	187	1.00	132.19	32.59	1.5108696	959.6923182	
46	92	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5108706		
	92	26.98	36.43	493.604	121.697	1440	1872	1.00	271.48	66.93	1.5108696	1453.296407	
47	42	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5108706		
	42	24.00	32.40	467.866	115.352	720	936	1.00	257.33	63.44	1.5238095	467.8661772	
48	6	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5238105		
	6	0.30	0.41	5.308	1.309			1.00	2.92	0.72	1.6666667	5.307795781	
49	82	0.75	1.12	17.622	4.827	26	68	1.00	9.69	2.66	1.6666677		
	82	24.30	32.81	430.127	106.047	1080	1404	1.00	236.57	58.33	1.5121951	447.7487072	
50	82	4.71	7.02	111.160	30.262	540	687	1.00	61.14	16.64	1.5121961		
	82	19.18	25.90	362.191	89.298	232	302	1.00	199.21	49.11	1.5121951	921.100078	

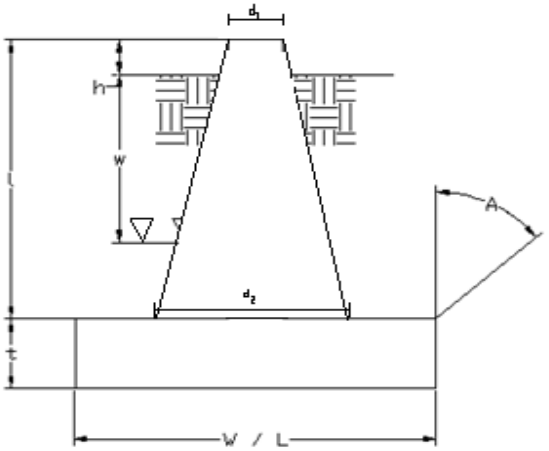
Foundation

Site No.:	88018
Engineer:	T. Kassakatis
Date:	10/17/21
Carrier:	Dish Wireless, LLC

Design Loads (Factored)

Compression/Leg:	445.24	k
Uplift/Leg:	311.47	k
Shear/Leg	62.69	k

Face Width @ Top of Pier (d_1):	4.00	ft
Face Width @ Bottom of Pier (d_2):	8.00	ft
Total Length of Pier (l):	8.00	ft
Height of Pedestal Above Ground (h):	0.50	ft
Width of Pad (W):	18.00	ft
Length of Pad (L):	18.00	ft
Thickness of Pad (t):	3.00	ft
Water Table Depth (w):	99.00	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil (Above Water Table):	100.0	pcf
Unit Weight of Soil (Below Water Table):	37.6	pcf
Friction Angle of Uplift (A):	20	°
Ultimate Compressive Bearing Pressure:	40000	psf
Ultimate Skin Friction:	197	psf



Volume Pier (Total):	298.67	ft³
Volume Pad (Total):	972.00	ft³
Volume Soil (Total):	2935.41	ft³
Volume Pier (Buoyant):	0.00	ft³
Volume Pad (Buoyant):	0.00	ft³
Volume Soil (Buoyant):	0.00	ft³
Weight Pier:	44.80	k
Weight Pad:	145.80	k
Weight Soil:	293.54	k
Uplift Skin Friction:	31.91	k

Uplift Check

ϕs Uplift Resistance (k)	Ratio	Result
387.04	0.80	**OK**

Axial Check

ϕs Axial Resistance (k)	Ratio	Result
9720.00	0.05	**OK**

Anchor Bolt Check

Bolt Diameter (in)	2.25
# of Bolts	6
Steel Grade	A36
Steel Fy	36
Steel Fu	58
Detail Type	C

Usage Ratio	Result
0.47	**OK**

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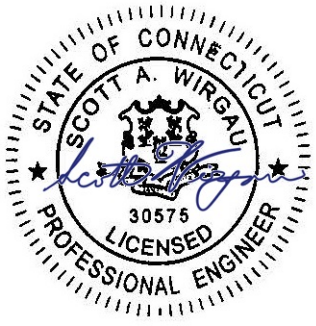
Mount Analysis Report

ATC Site Name	:	**STAMFORD (KATOONA), CT**
ATC Site Number	:	**88018**
Engineering Number	:	**13710333_C8_05**
Mount Elevation	:	**82 ft**
Carrier	:	**Dish Wireless L.L.C.**
Carrier Site Name	:	**NJJER01123B**
Carrier Site Number	:	**NJJER01123B**
Site Location	:	**168 Catoona Lane** **Stamford, CT 06902-4573** **41.05281657 , -73.56307265**
County	:	**Fairfield**
Date	:	**March 28, 2022**
Max Usage	:	**50%**
Result	:	**Pass**



Prepared By:
Molly Li
Structural Engineer

Molly Li

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 82 ft.

Supporting Documents

Specifications Sheet	Commscope MTC3975083, dated March 17, 2021
Radio Frequency Data Sheet	RFDS ID #NJJER01123B, dated August 4, 2021
Reference Photos	Site photos from 2020

Analysis

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

Basic Wind Speed:	117 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:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.265, S1 = 0.059
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.

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.

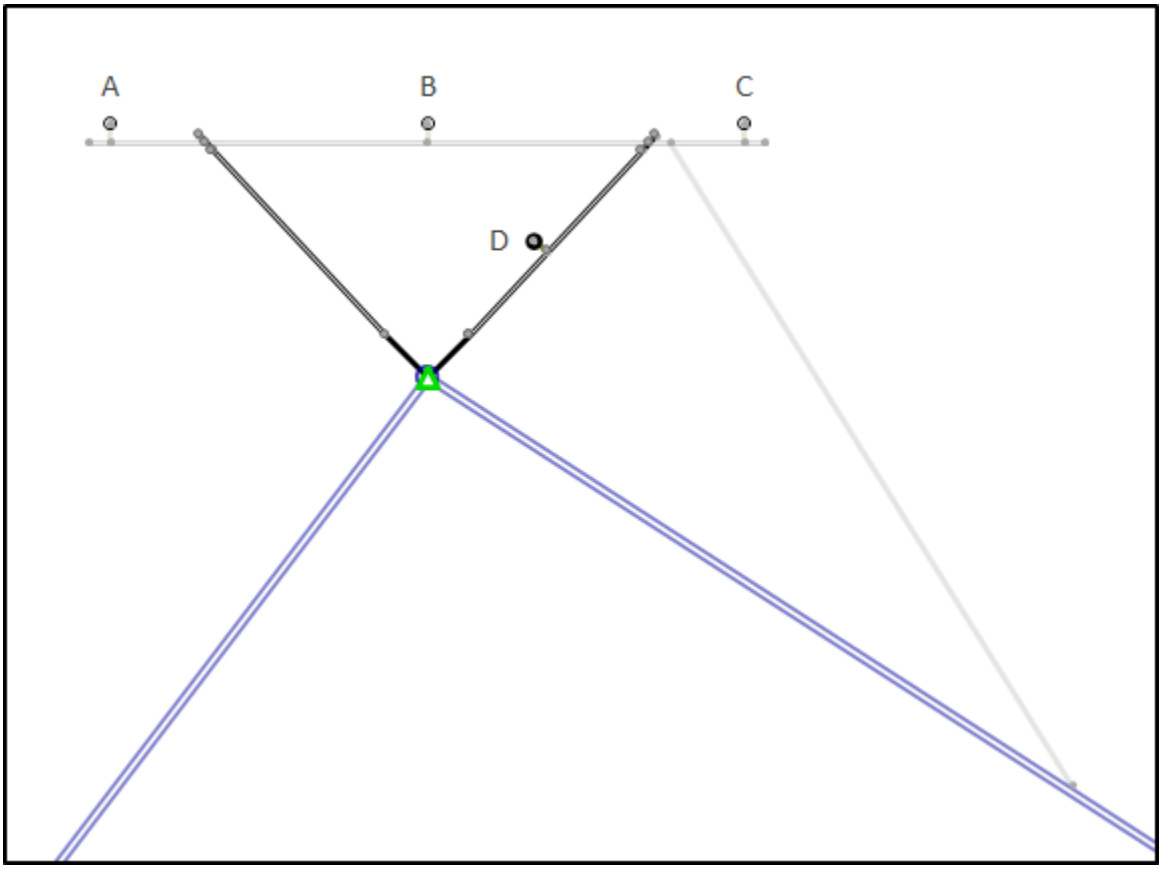
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
82.0	82.0	3	JMA Wireless MX08FRO665-21
		1	Commscope RDIDC-9181-PF-48
		3	Fujitsu TA08025-B604
		3	Fujitsu TA08025-B605

Structure Usages

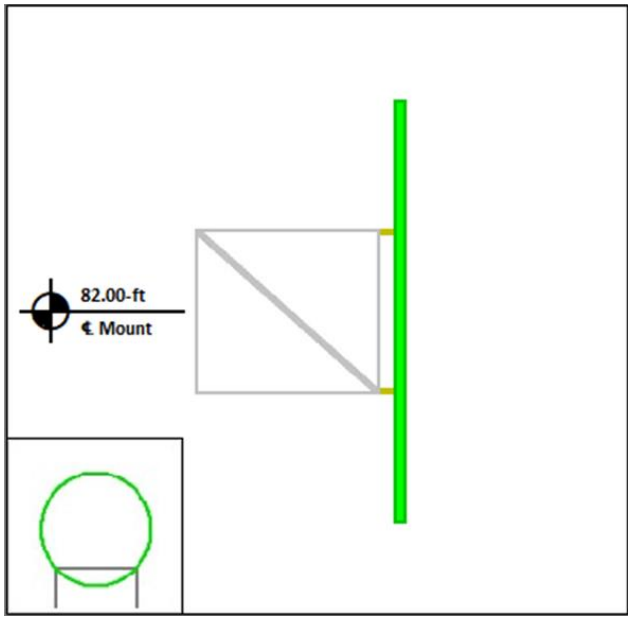
Structural Component	Controlling Usage	Pass/Fail
Horizontals	28%	Pass
Verticals	5%	Pass
Diagonals	35%	Pass
Tie-Backs	5%	Pass
Mount Pipes	6%	Pass
Tower Leg Check	50%	Pass

Mount Layout

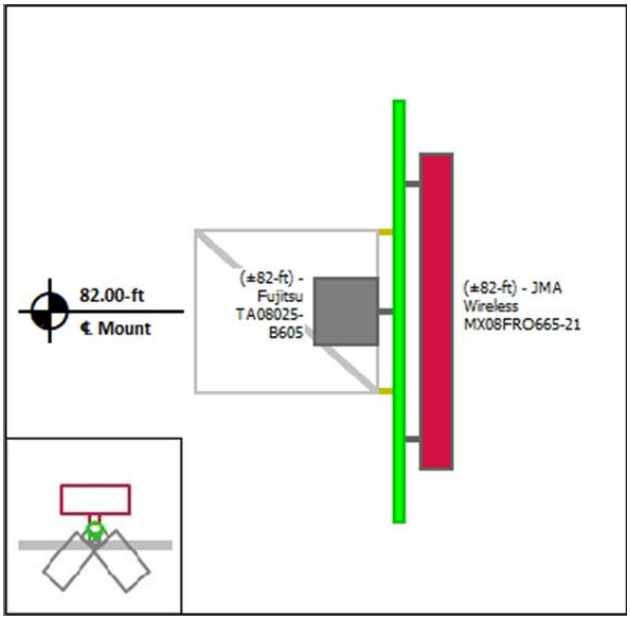


Equipment Layout

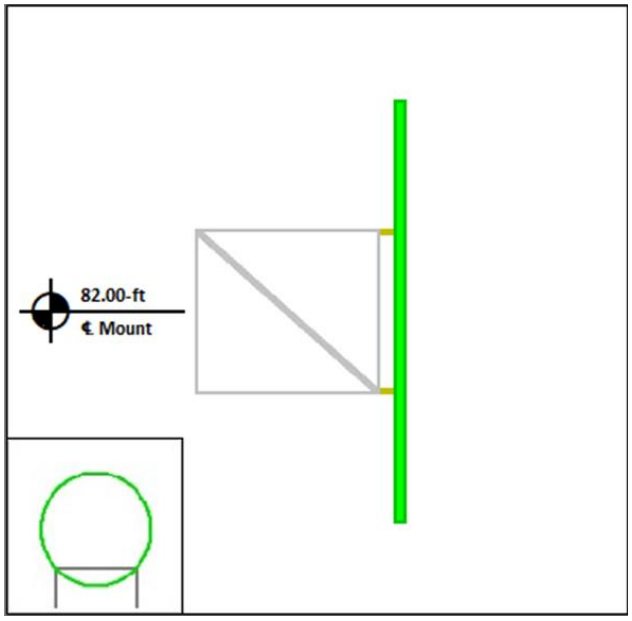
Mount Pipe A



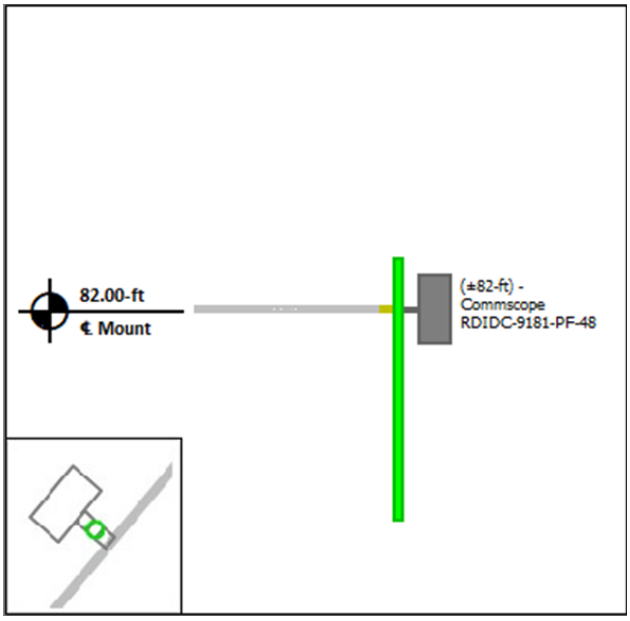
Mount Pipe B



Mount Pipe C



Mount Pipe D



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:	*88018*
Project Number:	*13710333_C8_05*
Carrier:	*Dish Wireless L.L.C.*
Mount Elevation:	*82 ft*
Date:	3/28/2022

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	0.93	
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	1.00	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	117	mph
Velocity Pressure	q_z	31.0	psf
Height Escalation Factor	K_{iz}	1.10	
Thickness of Radial Glaze Ice	T_{iz}	1.10	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.281	
1 Second DSRAP	S_{D1}	0.094	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.140	
Amplification Factor	A	1.0	
Total Weight	W	574.3	lbs
Total Shear Force	V_S	80.6	lbs
Horizontal Seismic Load	Eh	80.6	lbs
Vertical Seismic Load	Ev	32.2	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	2.44	14.28	3.20
Commscope RDIDC-9181-PF-48	16.0	14.0	8.0	21.9	1.87	1.07	2.45	1.54
Fujitsu TA08025-B604	15.7	15.0	7.9	63.9	1.96	1.03	2.56	1.50
Fujitsu TA08025-B605	15.7	15.0	9.1	75.0	1.96	1.19	2.56	1.68

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

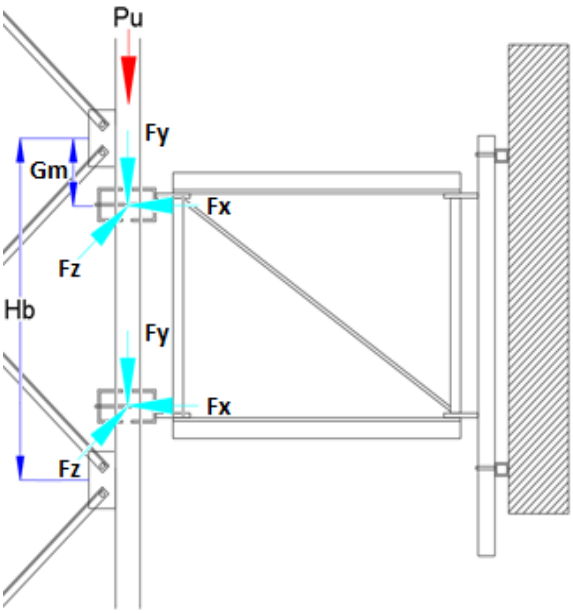
AMERICAN TOWER®
CORPORATION

Site Number:	*88018*
Project Number:	*13710333_C8_05*
Carrier:	*Dish Wireless L.L.C.*
Mount Elevation:	*82 ft*
Date:	3/28/2022

Tower Leg Reaction Analysis

Applied Loads from RISA 3D

Controlling Load Combination			1		
Leg Node Label(s)	N001	N006			
Force in X, Fx	36.2	-36.7			lbs
Force in Y, Fy	387.5	384.9			lbs
Force in Z, Fz	-609.1	608.4			lbs
Moment about X, Mx	-119.8	-119.6			lb-ft
Moment about Y, My	-7.7	4.4			lb-ft
Moment about Z, Mz	-13.5	-13.6			lb-ft

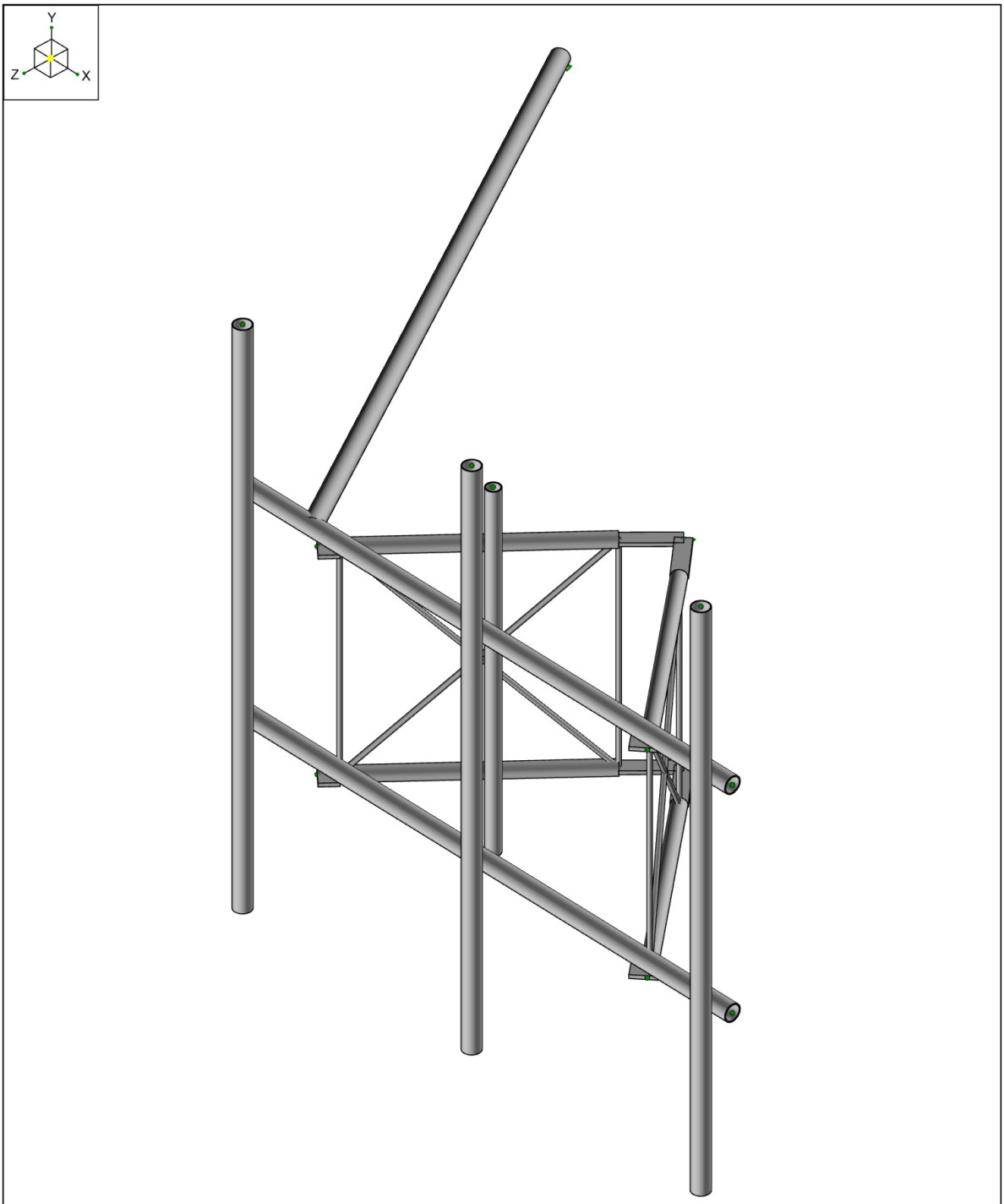


Tower Leg Properties

Leg Type		Single Angle	
Leg Member		L8x8x1	
Leg Bay Height	Hb	7.05	ft
Upper Mount Offset	Gm	197.00	in
Tower Axial Load	Pu_T	245.774	k
Leg Grade		A36	
Leg Yield Strength	Fy	36	ksi
Cross Sectional Area	Ag	15.100	in^2
Radius of Gyration	r	1.560	in
Moment of Inertia	I	36.800	in^4
Section Modulus	S_{min}	11.000	in^3
Torsional Constant	J	5.080	in^4
Elastic Modulus	E	29,000	ksi
Shear Modulus	G	11,200	ksi
Slenderness Limit	$4.71\sqrt{(E/Fy)}$	133.7	-
Member Slenderness	KL/r	54.2	-
Rotation of Leg	Θ	#DIV/0!	rads
Leg Torsional Stiffness	k	#DIV/0!	k-in/rad

Tower Leg Analysis

Critical Stress	F_{cr}	32.7	ksi
Axial Stress	σ_a	16.28	ksi
Shear Stress	τ_b	0.00	ksi
Bending Stress	σ_b	0.00	ksi
Torsional Stress	τ_t	0.00	ksi
Normal Stress Limit State	f_{un}	32.4	ksi
Shear Stress Limit State	f_{uv}	19.4	ksi
Buckling Limit State	f_{un} & f_{uv}	32.7	ksi
Torsional/Shear Capacity	$\Sigma\tau / f_{uv}$	0%	Pass
Buckling/Axial Capacity	$\Sigma\sigma / f_{un}$	50%	Pass



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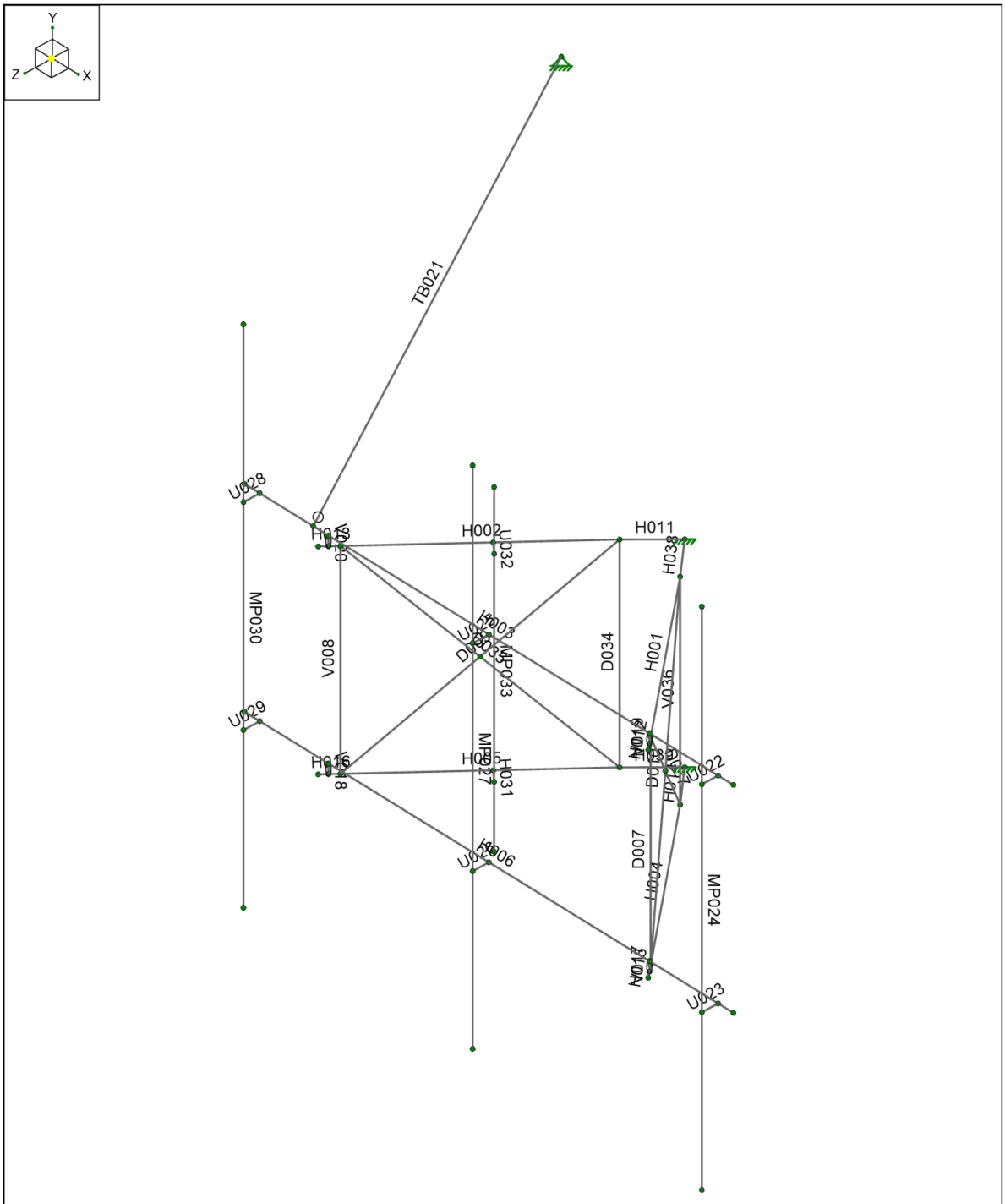
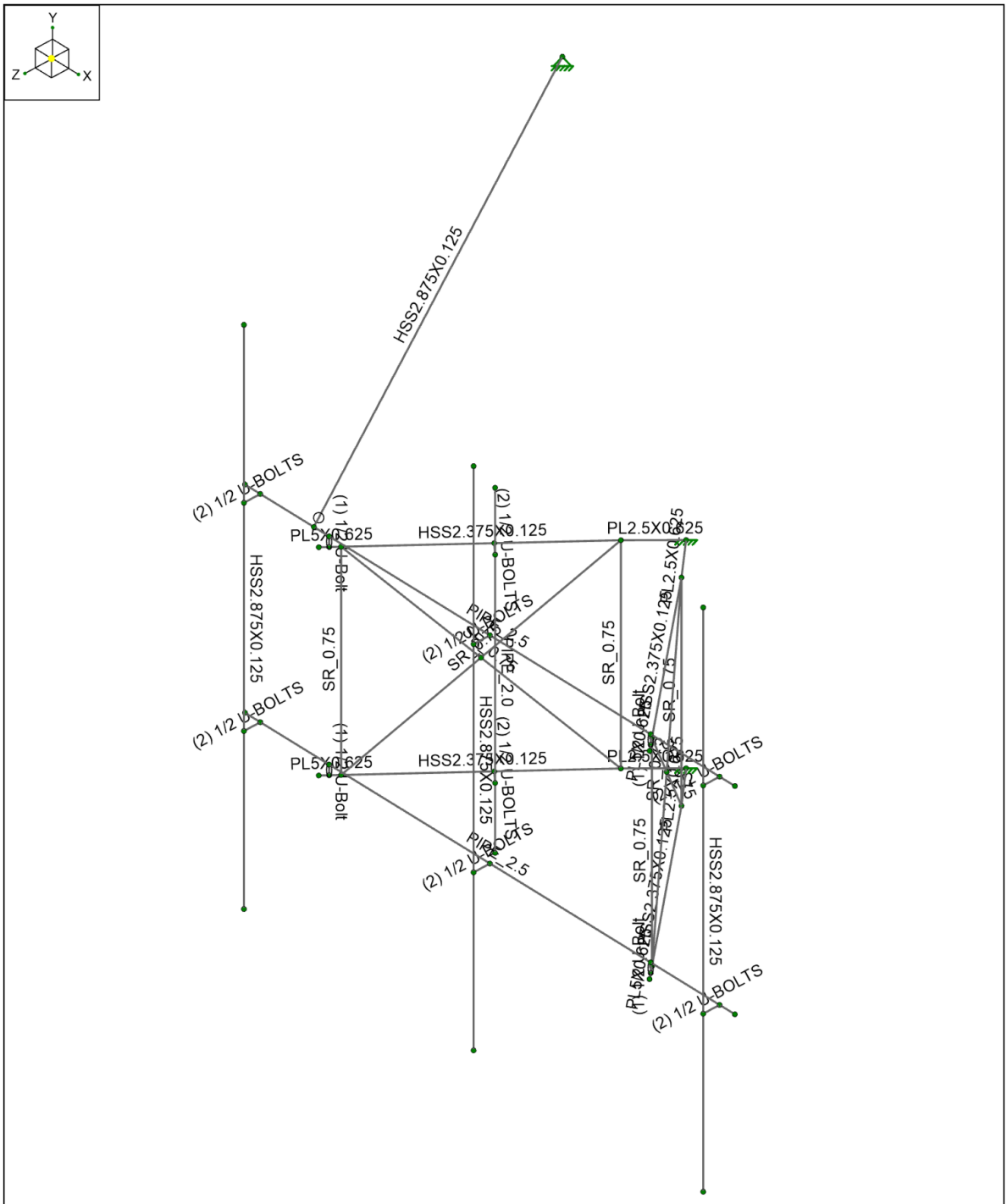
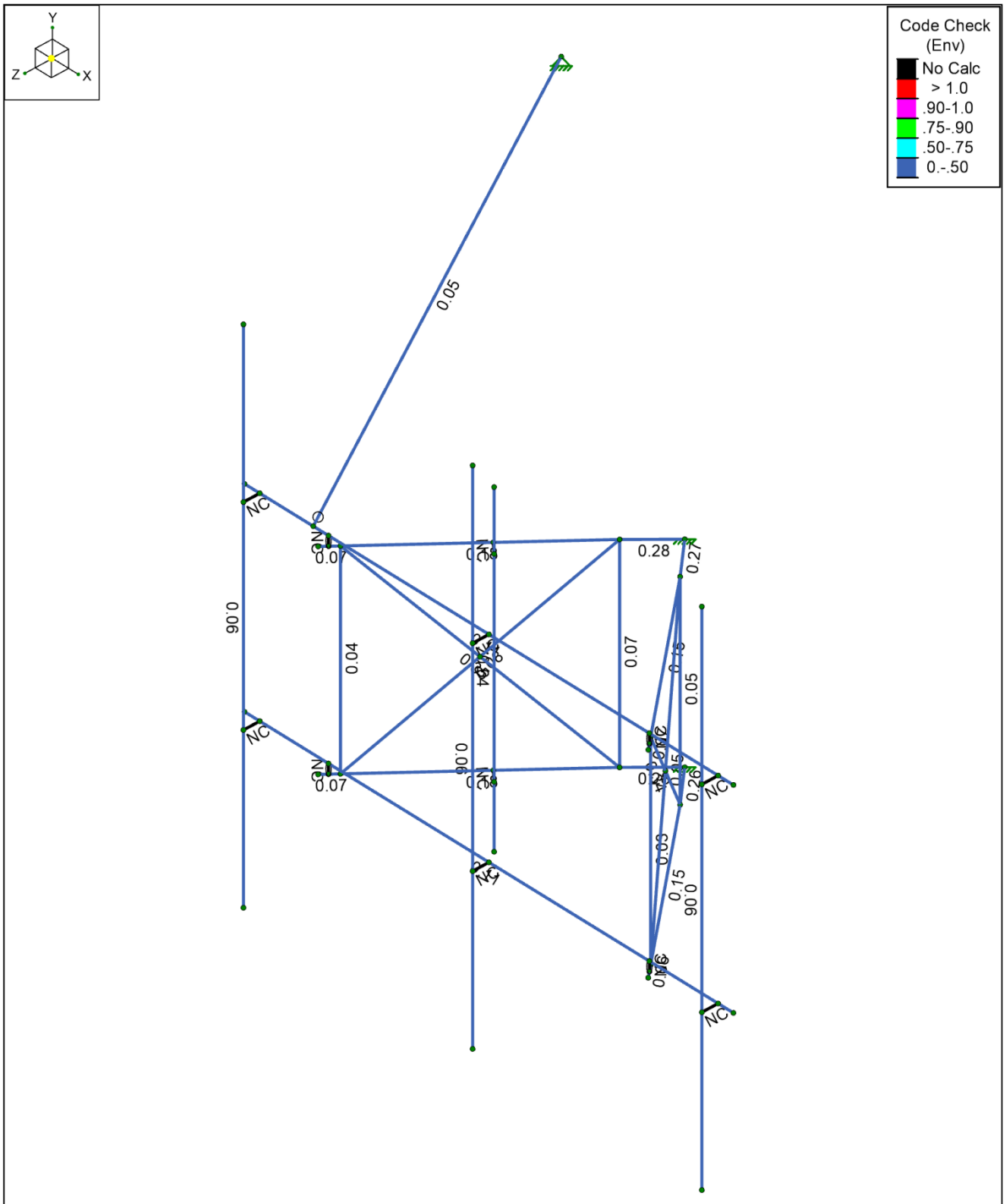
Molly.Li		Mar 28, 2022
13710333_C8_05		R3D. DISH WIRELESS L.L.C. @ …



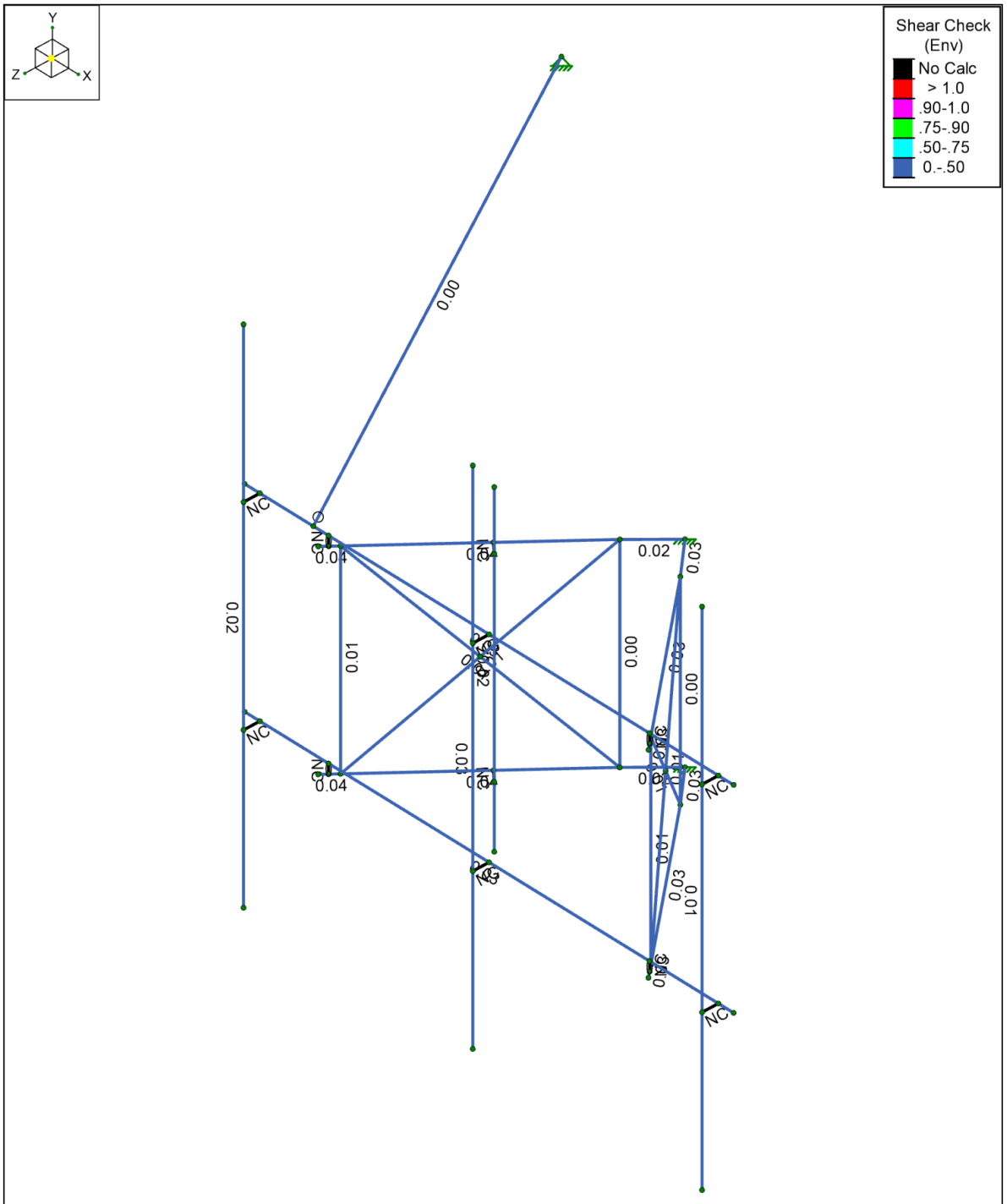
American Tower Corp.	88018, STAMFORD (KATOONA)	SK-2
Molly.Li		Mar 28, 2022
13710333_C8_05		R3D. DISH WIRELESS L.L.C. @ …



American Tower Corp.	88018, STAMFORD (KATOONA)	SK-3
Molly.Li		Mar 28, 2022
13710333_C8_05		R3D. DISH WIRELESS L.L.C. @ …



American Tower Corp.	88018, STAMFORD (KATOONA)	SK-4
Molly.Li		Mar 28, 2022
13710333_C8_05		R3D. DISH WIRELESS L.L.C. @ …



American Tower Corp.	88018, STAMFORD (KATOONA)	SK-5
Molly.Li		Mar 28, 2022
13710333_C8_05		R3D. DISH WIRELESS L.L.C. @ …

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	D	DL	-1		5	
2	Di	IL			5	27
3	W 0	WL			5	40
4	W 30	WL			10	79
5	W 60	WL			10	79
6	W 90	WL			5	41
7	W 120	WL			10	79
8	W 150	WL			10	79
9	W 180	WL			5	40
10	W 210	WL			10	79
11	W 240	WL			10	79
12	W 270	WL			5	41
13	W 300	WL			10	79
14	W 330	WL			10	79
15	Wi 0	WL			5	40
16	Wi 30	WL			10	79
17	Wi 60	WL			10	79
18	Wi 90	WL			5	41
19	Wi 120	WL			10	79
20	Wi 150	WL			10	79
21	Wi 180	WL			5	40
22	Wi 210	WL			10	79
23	Wi 240	WL			10	79
24	Wi 270	WL			5	41
25	Wi 300	WL			10	79
26	Wi 330	WL			10	79
27	Ws 0	WL			5	40
28	Ws 30	WL			10	79
29	Ws 60	WL			10	79
30	Ws 90	WL			5	41
31	Ws 120	WL			10	79
32	Ws 150	WL			10	79
33	Ws 180	WL			5	40
34	Ws 210	WL			10	79
35	Ws 240	WL			10	79
36	Ws 270	WL			5	41
37	Ws 300	WL			10	79
38	Ws 330	WL			10	79
39	Ev -Y	ELY				27
40	Eh -Z	ELZ				27
41	Eh -X	ELX				27
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		
57	Lm (4)	LL		1		

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Y Rot [k-in/rad]	Z Rot [k-in/rad]
1	N001	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N006	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N028	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N015	N011		HSS2.375X0.125	Beam	None	A500 Gr. B [RND]	Typical
2	H002	N017	N019		HSS2.375X0.125	Beam	None	A500 Gr. B [RND]	Typical
3	H003	N004	N005		PIPE_2.5	Beam	None	A500 Gr. C	Typical
4	H004	N016	N012		HSS2.375X0.125	Beam	None	A500 Gr. B [RND]	Typical
5	H005	N018	N021		HSS2.375X0.125	Beam	None	A500 Gr. B [RND]	Typical
6	H006	N009	N010		PIPE_2.5	Beam	None	A500 Gr. C	Typical
7	D007	N012	N011		SR_0.75	Column	None	A572-50	Typical
8	V008	N021	N019		SR_0.75	Column	None	A572-50	Typical
9	D009	N017	N021		SR_0.75	Column	None	A572-50	Typical
10	D010	N015	N012		SR_0.75	Column	None	A572-50	Typical
11	H011	N001	N017	90	PL2.5X0.625	Beam	None	A572-50	Typical
12	H012	N011	N013	90	PL5X0.625	Beam	None	A572-50	Typical
13	H013	N019	N020	90	PL5X0.625	Beam	None	A572-50	Typical
14	H014	N006	N016	90	PL2.5X0.625	Beam	None	A572-50	Typical
15	H015	N012	N014	90	PL5X0.625	Beam	None	A572-50	Typical
16	H016	N021	N022	90	PL5X0.625	Beam	None	A572-50	Typical
17	V017	N007	N023		(1) 1/2 U-Bolt	Column	None	A36	Typical
18	V018	N024	N008		(1) 1/2 U-Bolt	Column	None	A36	Typical
19	V019	N002	N025		(1) 1/2 U-Bolt	Column	None	A36	Typical
20	V020	N026	N003		(1) 1/2 U-Bolt	Column	None	A36	Typical
21	TB021	N028	N027		HSS2.875X0.125	Beam	None	A500 Gr. B [RND]	Typical
22	U022	N029	N032		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
23	U023	N033	N034		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
24	MP024	N035	N036		HSS2.875X0.125	Column	None	A500 Gr. B [RND]	Typical
25	U025	N030	N037		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
26	U026	N038	N039		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
27	MP027	N040	N041		HSS2.875X0.125	Column	None	A500 Gr. B [RND]	Typical
28	U028	N031	N042		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
29	U029	N043	N044		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
30	MP030	N045	N046		HSS2.875X0.125	Column	None	A500 Gr. B [RND]	Typical
31	H031	N048	N047		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
32	U032	N049	N050		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
33	MP033	N051	N052		PIPE_2.0	Column	None	A53 Gr. B	Typical
34	D034	N018	N017		SR_0.75	Column	None	A572-50	Typical
35	D035	N018	N019		SR_0.75	Column	None	A572-50	Typical
36	V036	N016	N015		SR_0.75	Column	None	A572-50	Typical
37	D037	N016	N011		SR_0.75	Column	None	A572-50	Typical
38	H038	N015	N001	90	PL2.5X0.625	Beam	None	A572-50	Typical
39	H039	N018	N006	90	PL2.5X0.625	Beam	None	A572-50	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001			Yes	N/A		None
2	H002			Yes	N/A		None
3	H003			Yes	N/A		None
4	H004			Yes	N/A		None
5	H005			Yes	N/A		None
6	H006			Yes	N/A		None
7	D007			Yes	** NA **		None
8	V008			Yes	** NA **		None
9	D009			Yes	** NA **		None
10	D010			Yes	** NA **		None
11	H011			Yes	N/A		None
12	H012			Yes	Default		None
13	H013			Yes	Default		None
14	H014			Yes	N/A		None
15	H015			Yes	Default		None
16	H016			Yes	Default		None
17	V017	OOOXOO		Yes	** NA **	Exclude	None
18	V018	OOOXOO		Yes	** NA **	Exclude	None
19	V019	OOOXOO		Yes	** NA **	Exclude	None
20	V020	OOOXOO		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	H031			Yes	N/A	Exclude	None
32	U032			Yes	N/A	Exclude	None
33	MP033			Yes	** NA **		None
34	D034			Yes	** NA **		None
35	D035			Yes	** NA **		None
36	V036			Yes	** NA **		None
37	D037			Yes	** NA **		None
38	H038			Yes	N/A		None
39	H039			Yes	N/A		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	H001	HSS2.375X0.125	37.5			Lbyy		0.65	0.65	Lateral
2	H002	HSS2.375X0.125	37.5			Lbyy		0.65	0.65	Lateral
3	H003	PIPE_2.5	96			Lbyy		1	1	Lateral
4	H004	HSS2.375X0.125	37.5			Lbyy		0.65	0.65	Lateral
5	H005	HSS2.375X0.125	37.5			Lbyy		0.65	0.65	Lateral
6	H006	PIPE_2.5	96			Lbyy		1	1	Lateral
7	D007	SR_0.75	37.5			Lbyy		0.65	0.65	Lateral
8	V008	SR_0.75	37.5			Lbyy		0.65	0.65	Lateral
9	D009	SR_0.75	53.033			Lbyy		0.65	0.65	Lateral
10	D010	SR_0.75	53.033			Lbyy		0.65	0.65	Lateral
11	H011	PL2.5X0.625	8.737			Lbyy		1	1	Lateral
12	H012	PL5X0.625	3			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
13	H013	PL5X0.625	3			Lbyy		2.1	2.1	Lateral
14	H014	PL2.5X0.625	8.737			Lbyy		1	1	Lateral
15	H015	PL5X0.625	3			Lbyy		2.1	2.1	Lateral
16	H016	PL5X0.625	3			Lbyy		2.1	2.1	Lateral
17	V017	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
18	V018	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
19	V019	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
20	V020	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
21	TB021	HSS2.875X0.125	114.237			Lbyy		1	1	Lateral
22	U022	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
23	U023	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
24	MP024	HSS2.875X0.125	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
25	U025	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
26	U026	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
27	MP027	HSS2.875X0.125	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
28	U028	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
29	U029	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
30	MP030	HSS2.875X0.125	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
31	H031	(2) 1/2 U-BOLTS	2.684			Lbyy		0.65	0.65	Lateral
32	U032	(2) 1/2 U-BOLTS	2.683			Lbyy		0.5	0.5	Lateral
33	MP033	PIPE_2.0	60	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
34	D034	SR_0.75	37.5			Lbyy		0.65	0.65	Lateral
35	D035	SR_0.75	53.033			Lbyy		0.65	0.65	Lateral
36	V036	SR_0.75	37.5			Lbyy		0.65	0.65	Lateral
37	D037	SR_0.75	53.033			Lbyy		0.65	0.65	Lateral
38	H038	PL2.5X0.625	8.737			Lbyy		1	1	Lateral
39	H039	PL2.5X0.625	8.737			Lbyy		1	1	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	A500 Gr. B [RND]	2.9e+07	1.115e+07	0.3	0.65	527	42000	1.4	58000	1.3
2	A500 Gr. C	2.9e+07	1.115e+07	0.3	0.65	490	46000	1.4	62000	1.3
3	A572-50	2.9e+07	1.115e+07	0.3	0.65	490	50000	1.1	65000	1.1
4	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
5	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	857.79	102	713.068	79	318.602	25	-75.178	25	84.006	16	128.806	78
2		min	-786.468	84	241.225	25	-1286.307	103	-233.983	115	-95.838	10	-143.462	108
3	N006	max	797.69	76	704.049	121	1262.799	74	-74.188	19	236.597	4	128.592	76
4		min	-866.233	106	240.123	19	-9.258	20	-234.475	121	-230.108	22	-143.551	108
5	N028	max	248.701	6	46.432	34	405.672	4	0	121	0	121	0	121
6		min	-248.244	24	15.804	18	-404.489	22	0	1	0	1	0	1
7	Totals:	max	749.31	18	1433.123	96	981.824	14						
8		min	-749.31	24	512.343	18	-981.824	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	H001	HSS2.375X0.125	0.145	18.75	62	0.028	37.5		62	29386.129	31109.4	1864.8	1864.8	1.37	H1-1b
2	H002	HSS2.375X0.125	0.178	16.797	117	0.038	37.5		120	29386.129	31109.4	1864.8	1864.8	1.417	H1-1b
3	H003	PIPE_2.5	0.113	48	89	0.03	82		10	33487.322	66654	4726.5	4726.5	1.884	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
4	H004	HSS2.375X0.125	0.145	18.75	65	0.028	37.5		65	29386.102	31109.4	1864.8	1864.8	1.37	H1-1b
5	H005	HSS2.375X0.125	0.176	16.797	121	0.037	37.5		117	29386.132	31109.4	1864.8	1864.8	1.413	H1-1b
6	H006	PIPE_2.5	0.111	48	88	0.027	16		84	33487.322	66654	4726.5	4726.5	1.893	H1-1b
7	D007	SR_0.75	0.034	37.5	90	0.008	37.5		4	5905.621	19880.391	248.505	248.505	2.282	H1-1b
8	V008	SR_0.75	0.036	37.5	120	0.01	37.5		10	5905.621	19880.391	248.505	248.505	2.276	H1-1b
9	D009	SR_0.75	0.075	0	117	0.007	26.517		12	2952.81	19880.391	248.505	248.505	2.227	H1-1b
10	D010	SR_0.75	0.053	0	62	0.008	26.517		88	2952.786	19880.391	248.505	248.505	2.733	H1-1b
11	H011	PL2.5X0.625	0.279	0	106	0.02	0	z	114	59233.995	70312.5	915.527	3662.109	2.177	H1-1b
12	H012	PL5X0.625	0.066	0	81	0.026	1.594	y	91	128630.838	140625	1831.055	14648.438	2.87	H1-1b
13	H013	PL5X0.625	0.073	0	103	0.04	1.594	y	91	128630.838	140625	1831.055	14648.438	2.87	H1-1b
14	H014	PL2.5X0.625	0.262	0	78	0.026	0	z	76	59233.995	70312.5	915.527	3662.109	1.489	H1-1b
15	H015	PL5X0.625	0.062	0	82	0.026	1.594	y	96	128633.174	140625	1831.055	14648.438	2.872	H1-1b
16	H016	PL5X0.625	0.067	0	102	0.04	1.594	y	87	128630.838	140625	1831.055	14648.438	2.877	H1-1b
17	TB021	HSS2.875X0.125	0.05	57.118	6	0.004	114.237		36	16399.356	38178	2784.6	2784.6	1.136	H1-1b
18	MP024	HSS2.875X0.125	0.057	30	81	0.01	30		6	25551.45	38178	2784.6	2784.6	3	H1-1b
19	MP027	HSS2.875X0.125	0.061	30	7	0.027	30		10	25551.45	38178	2784.6	2784.6	2.453	H1-1b
20	MP030	HSS2.875X0.125	0.058	30	103	0.017	30		10	25551.45	38178	2784.6	2784.6	2.274	H1-1b
21	MP033	PIPE_2.0	0.043	11.25	115	0.022	11.25		10	19171.622	32130	1871.625	1871.625	1.706	H1-1b
22	D034	SR_0.75	0.073	0	120	0.003	37.5		6	5905.621	19880.391	248.505	248.505	2.272	H1-1b
23	D035	SR_0.75	0.352	0	108	0.007	26.516		94	2952.813	19880.391	248.505	248.505	2.263	H1-1a
24	V036	SR_0.75	0.053	37.5	62	0.002	37.5		10	5905.621	19880.391	248.505	248.505	2.23	H1-1b
25	D037	SR_0.75	0.336	0	75	0.008	26.517		90	2952.81	19880.391	248.505	248.505	2.197	H1-1a
26	H038	PL2.5X0.625	0.269	8.737	78	0.026	8.737	z	78	59233.995	70312.5	915.527	3662.109	1.641	H1-1b
27	H039	PL2.5X0.625	0.281	8.737	106	0.02	8.737	z	114	59233.947	70312.5	915.527	3662.109	1.266	H1-1b

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

NJJER01123B

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

168 CATOONA LANE
STAMFORD, CT 06902

BIRD WATCH SITE:
PLEASE CONTACT BIRD.WATCH@AMERICANTOWER.COM OR AMERICAN TOWER NOC AT 877-518-6937 FOR ASSISTANCE

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 INFORMATION

PROPERTY OWNER:	AMERICAN TOWER
ADDRESS:	168 CATOONA LANE STAMFORD, CT 06902
TOWER TYPE:	SELF SUPPORT TOWER
TOWER CO SITE ID:	88018
TOWER APP NUMBER:	13710333_D2
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41° 3' 10.170" N 41.052825
LONGITUDE (NAD 83):	73° 33' 46.970" W -73.56304722
ZONING JURISDICTION:	STAMFORD, CT
ZONING DISTRICT:	COMMERCIAL
PARCEL NUMBER:	116
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	FRONTIER COMMUNICATIONS

PROJECT DIRECTORY

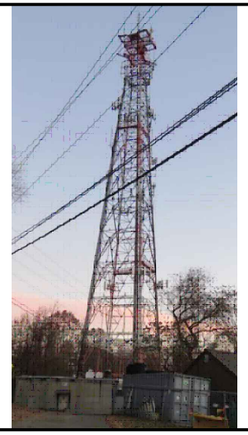
APPLICANT:	DISH WIRELESS, L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801
ENGINEER:	ATC TOWER SERVICES, LLC 3500 REGENCY PARKWAY SUITE 100 CARY, NC 27518
SITE ACQUISITION:	WILLIAM SNIDER WILLIAM.SNIDER@DISH.COM
CONSTRUCTION MANAGER: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

CONNECTICUT CODE COMPLIANCE

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

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

SITE PHOTO



DIRECTIONS

COMING FROM NORTH I-95 TAKE EXIT 6. TURN RIGHT ONTO WEST AVE. TURN LEFT AT FIRST LIGHT ONTO W. MAIN ST. TURN RIGHT AT FIRST LIGHT AND FOLLOW ROAD TO END.

SHEET INDEX

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

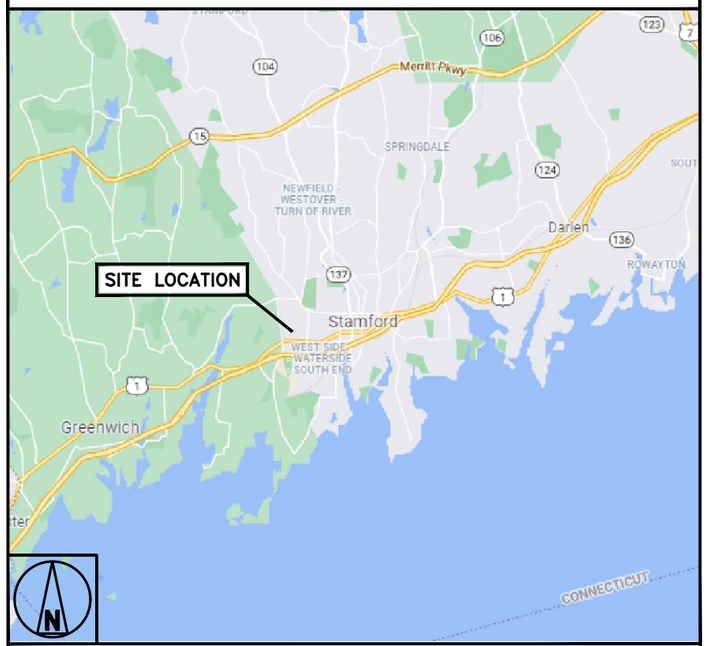
THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE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

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
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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
88018-13710333_D2

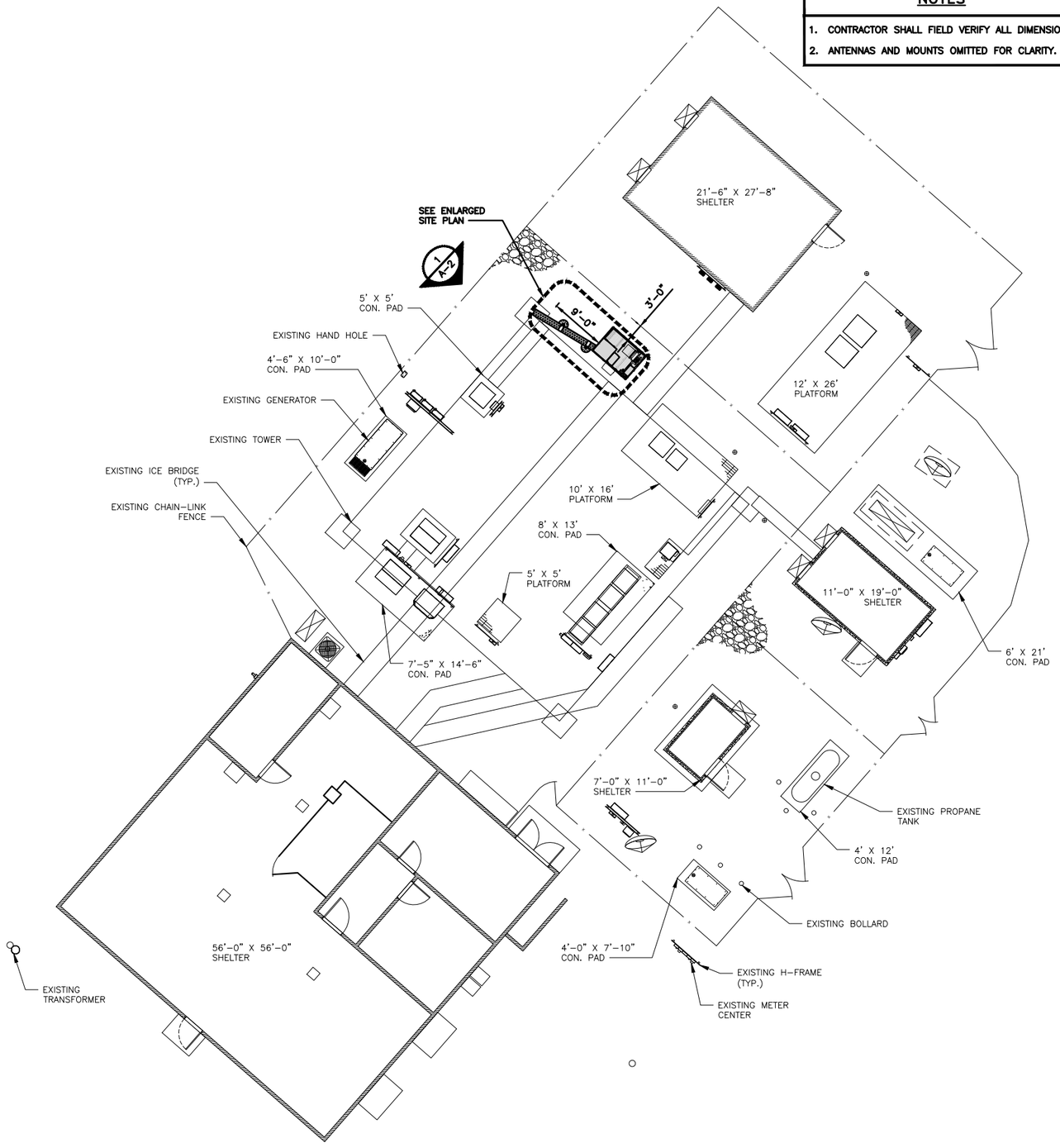
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



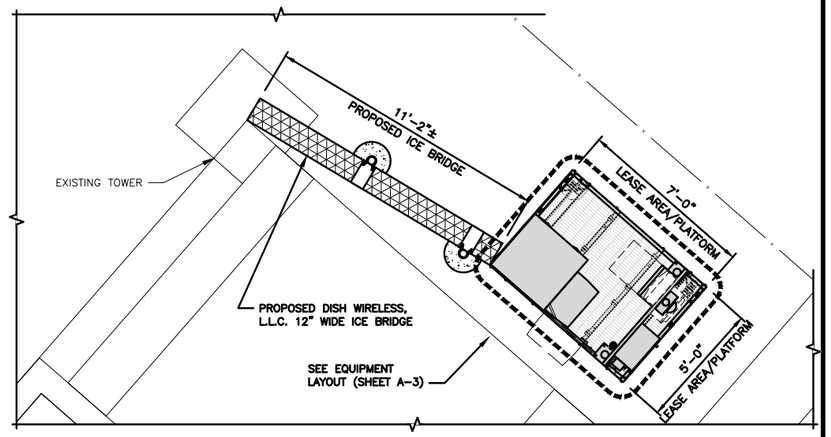
OVERALL SITE PLAN

10' 0 10' 20'
1"=10'

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

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JW	SRF	SRF

RFDS REV #: ----

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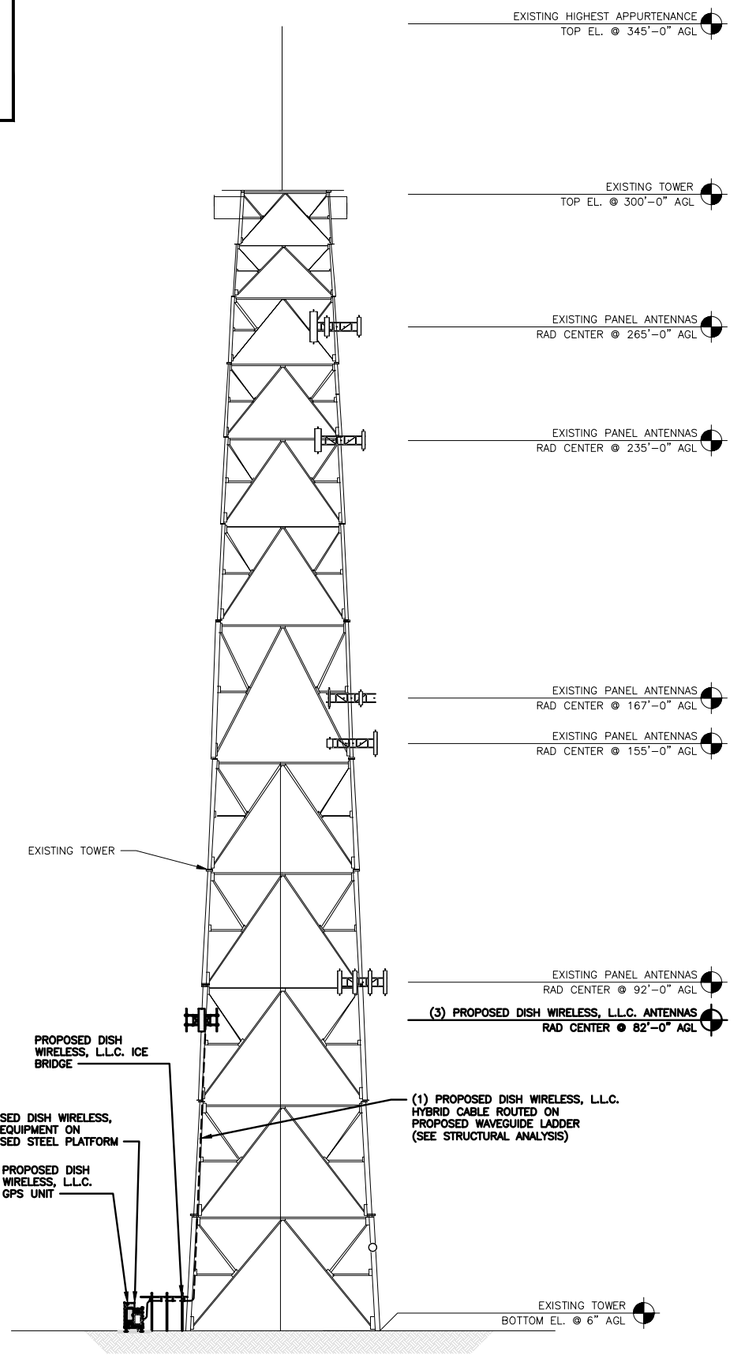
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

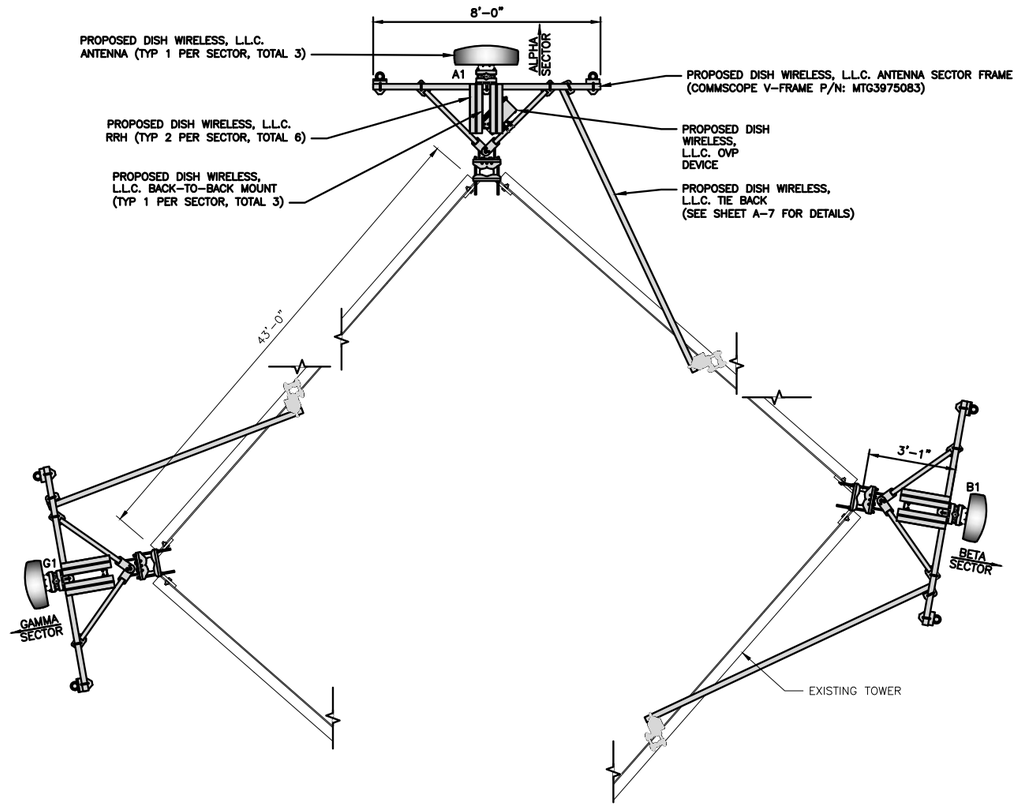
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

20' 10' 0 20' 40'
1"=20'

1



N

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"	0°	82'-0"	(1) HIGH-CAPACITY HYBRID CABLE (111' LONG)
BETA	B1	PROPOSED	MX08FRO665-21	5G	72.0" x 20.0"	100°	82'-0"	
GAMMA	G1	PROPOSED	MX08FRO665-21	5G	72.0" x 20.0"	260°	82'-0"	

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.
3. AZIMUTHS ARE TENTATIVE, NEEDS TO BE CONFIRMED BEFORE CONSTRUCTION STARTS.

ANTENNA SCHEDULE

NO SCALE

3

dish wireless.
5701 SOUTH SANTA FE DRIVE
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PHONE: (919) 468-0112

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

RFDS REV #: ----

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LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
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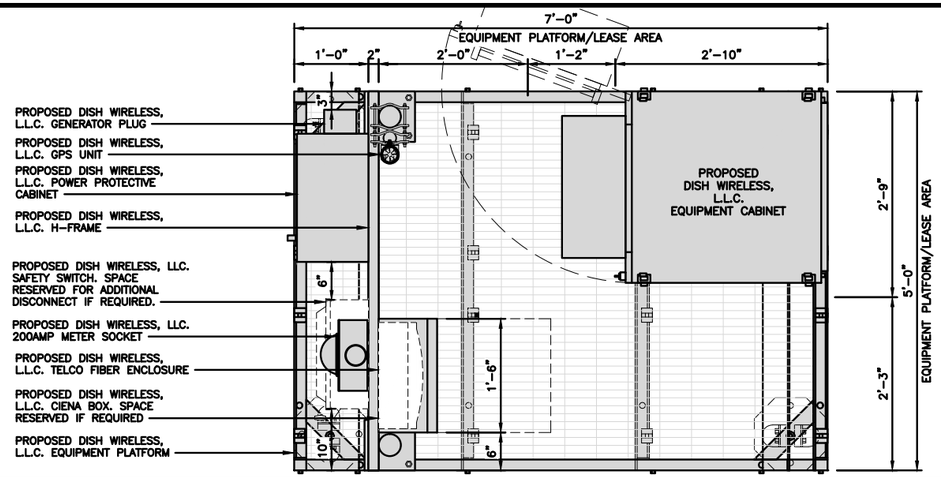
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



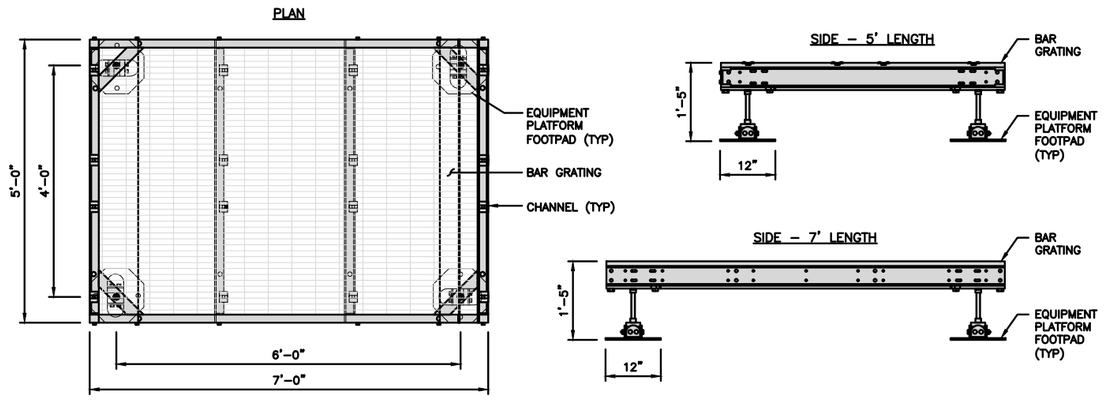
PLATFORM EQUIPMENT PLAN

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

1

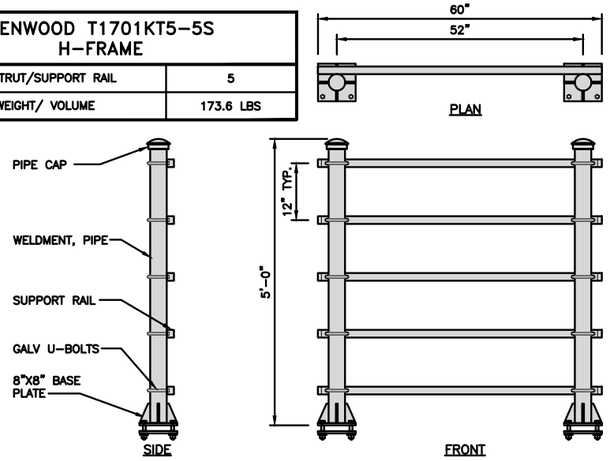
COMMSCOPE MTC4045LP 5X7 PLATFORM	
DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS

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

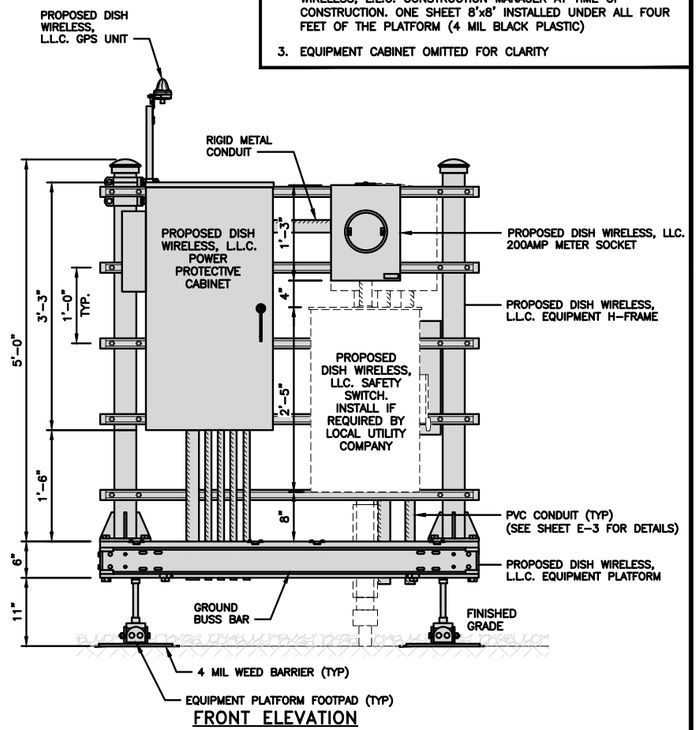


H-FRAME DETAIL | NO SCALE | 3

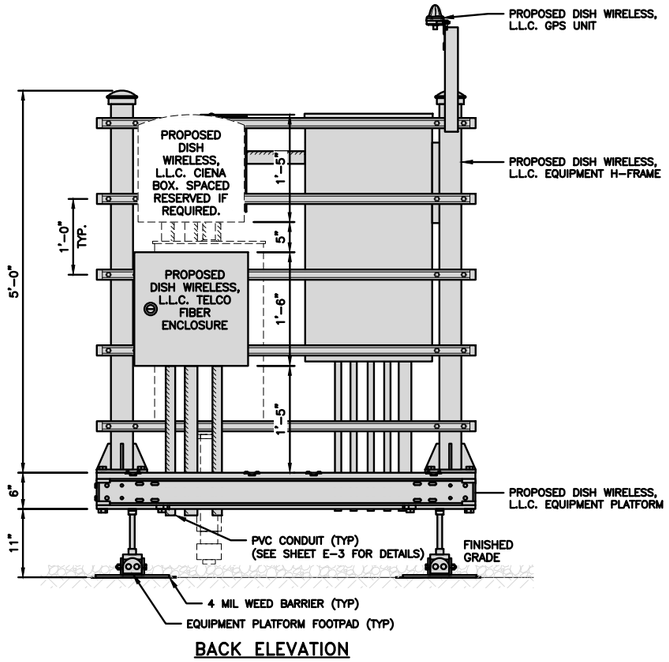
NOT USED | NO SCALE | 4

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

dish wireless.
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LITTLETON, CO 80120

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

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

RFDS REV #: ----

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30575
LICENSED
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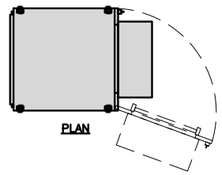
A&E PROJECT NUMBER
88018-13710333_D2

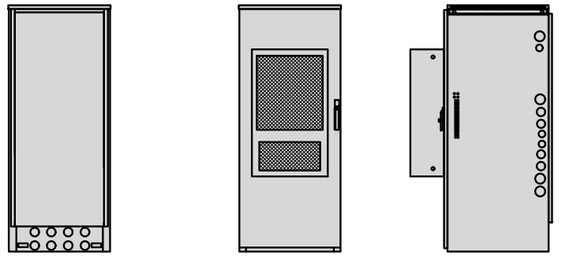
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

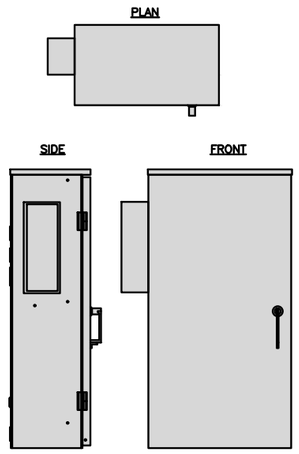
ENERSYS HEX CABINET 2000005996	
DIMENSIONS (HxWxD):	73"x30"x32"
WEIGHT EMPTY:	376 lbs
HEATER	800W
POWER SYSTEM	-48V ALPHA/600A





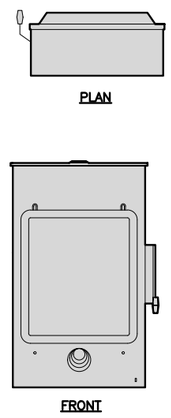
CABINET DETAIL | NO SCALE | 1

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



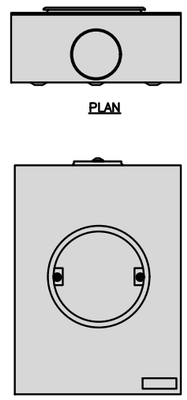
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

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



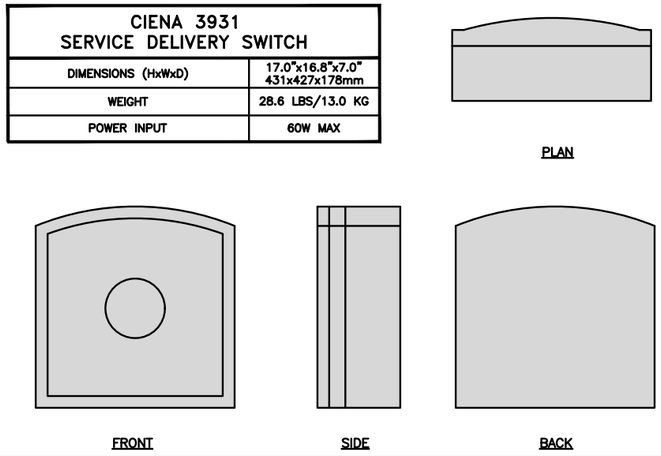
SAFETY SWITCH | NO SCALE | 3

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



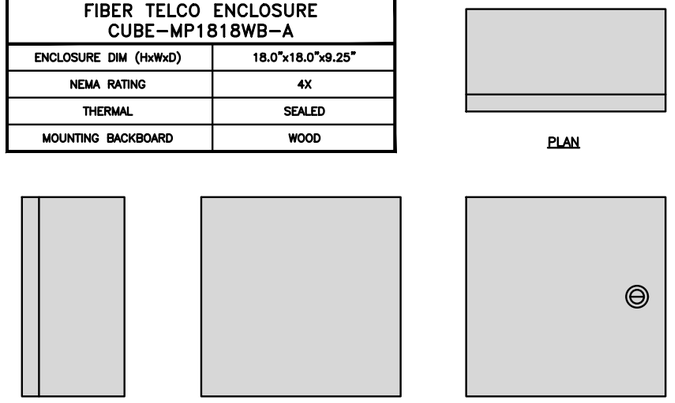
METER SOCKET DETAIL | NO SCALE | 4

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

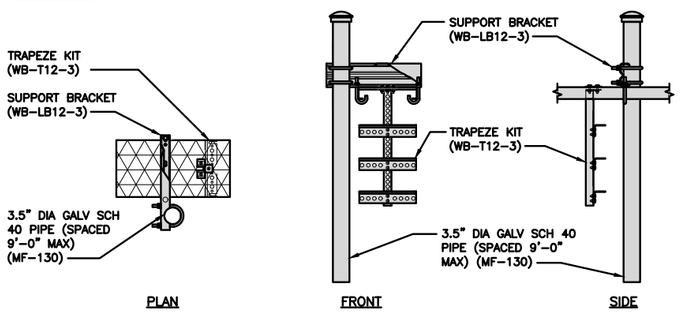
CHARLES FIBER TELCO ENCLOSURE CUBE-MP1818WB-A	
ENCLOSURE DIM (HxWxD)	18.0"x18.0"x9.25"
NEMA RATING	4X
THERMAL	SEALED
MOUNTING BACKBOARD	WOOD



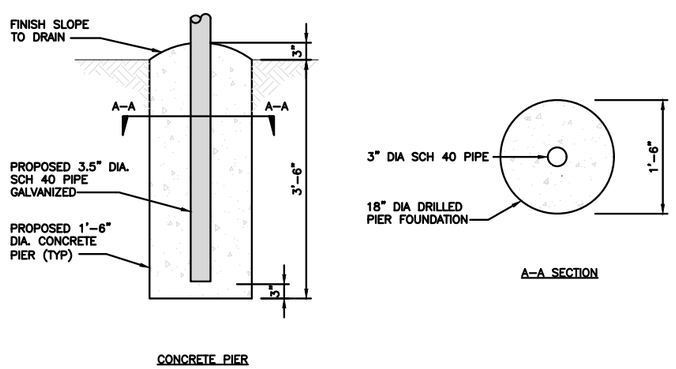
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

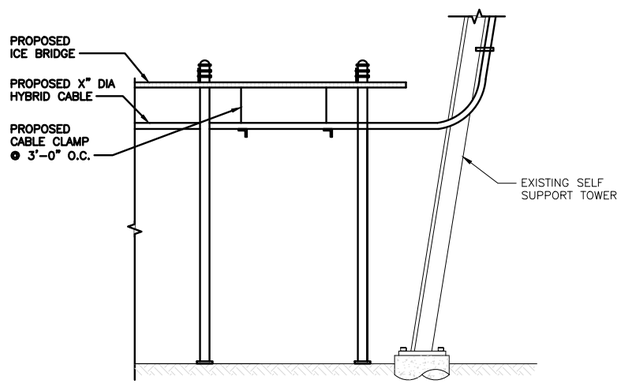
INCLUDED PRODUCTS:
- WB-T12-3 TRAPEZE KIT, 3 RUNGS
- WB-LB12-3 SUPPORT BRACKET
- MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"



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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NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

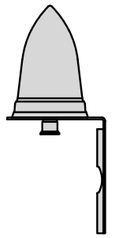
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

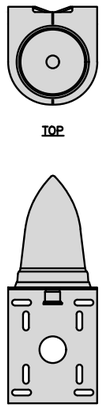
GPS DETAIL

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

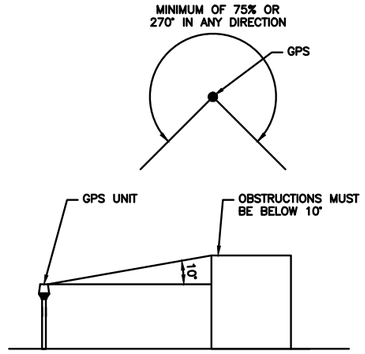


TOP

SIDE

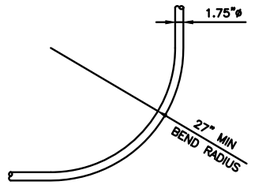
GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE | 2

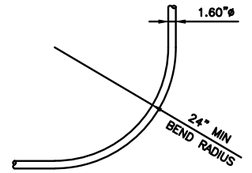


CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUSES

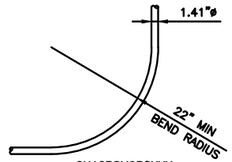
NO SCALE | 3



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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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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1	11/01/2021	PPC UPDATE

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

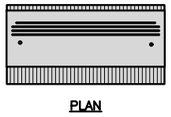
A&E PROJECT NUMBER
88018-13710333_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

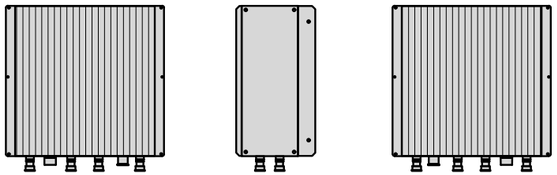
SHEET TITLE
EQUIPMENT DETAILS

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



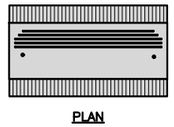
PLAN



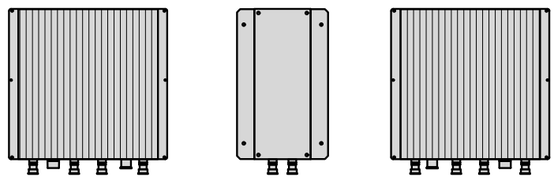
BACK SIDE FRONT

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

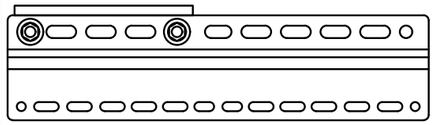


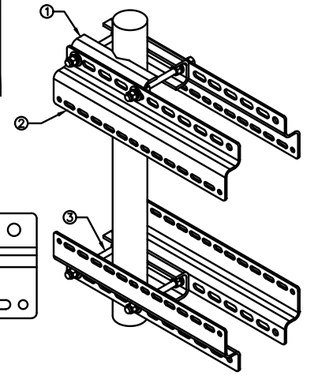
BACK SIDE FRONT

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"



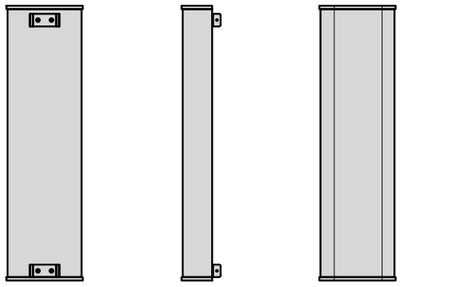


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

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

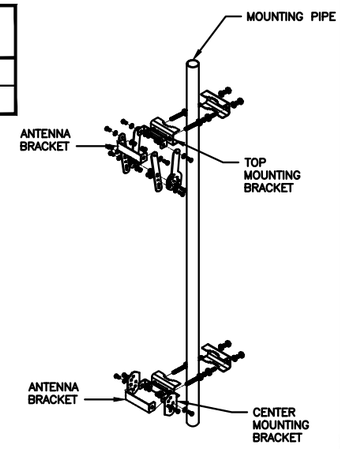
ANTENNA DETAIL | NO SCALE | 4

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

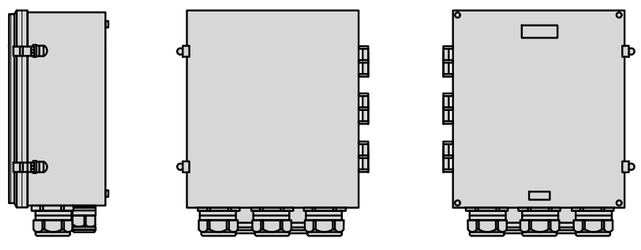


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

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

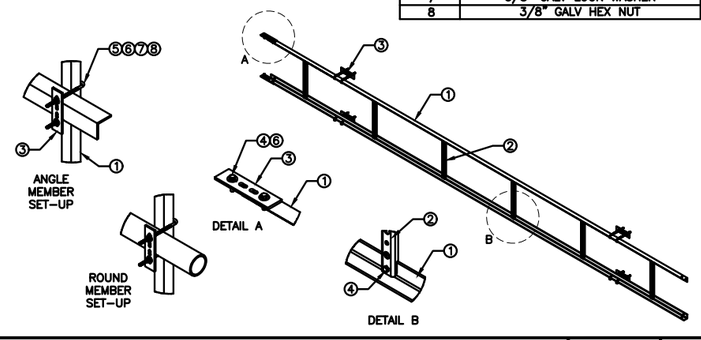


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

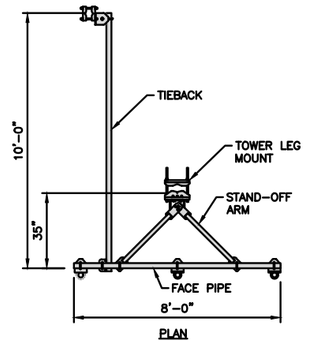
COMMSCOPE 20' CABLE LADDER 6 HOLE RUNGS	
DIMENSIONS (WxL)	20.5"x240"
WEIGHT	84.94 lbs

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

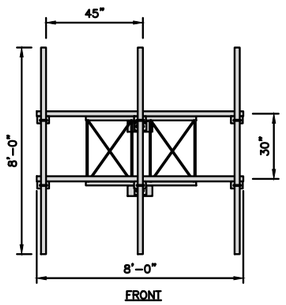


CABLE LADDER DETAIL | NO SCALE | 8

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



PLAN



FRONT

ANTENNA FRAME DETAIL | NO SCALE | 9

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30575
LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
88018-13710333_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

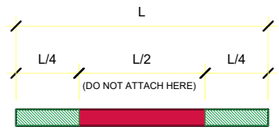
STIFF ARM LOCATION NOTES:

- 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.

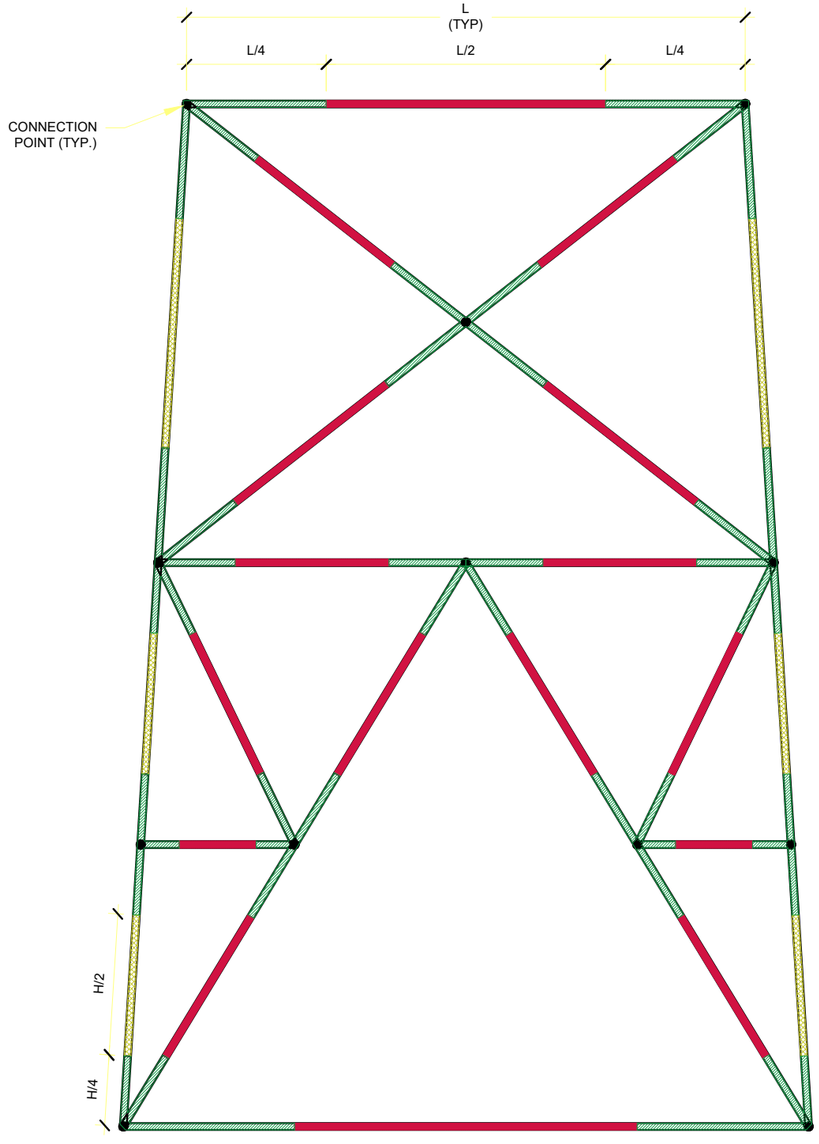
ACCEPTABLE ATTACHMENT REGION & FORCE

ACCEPTABLE ATTACHMENT REGION & FORCE

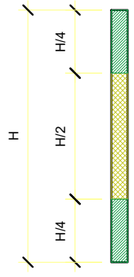
DO NOT ATTACH HERE



INTERIOR BRACING



TOWER SECTION



TOWER LEG

H-FRAME EQUIPMENT ELEVATION

NO SCALE

1

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30575
LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
88018-13710333_D2

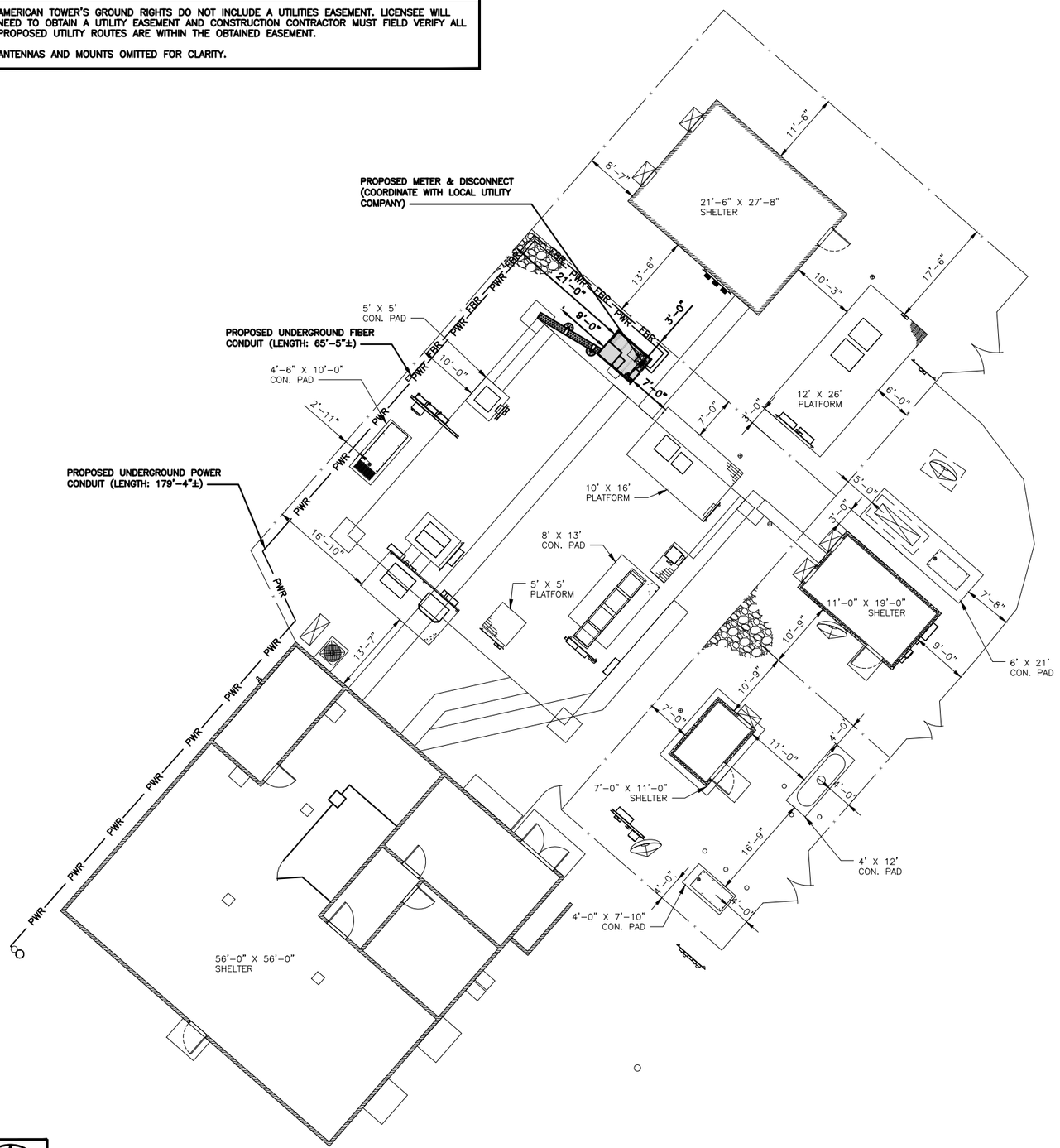
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

SHEET TITLE
EQUIPMENT DETAILS

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

10' 0 10' 20'
1"=10'

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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LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
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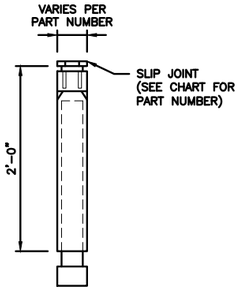
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

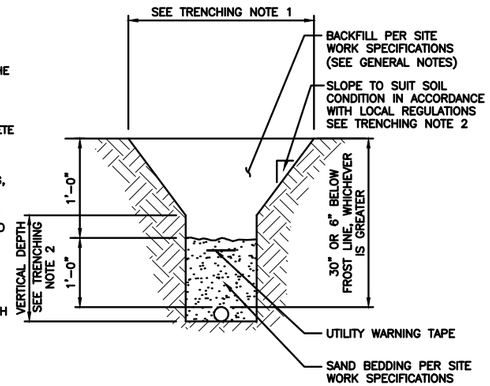


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

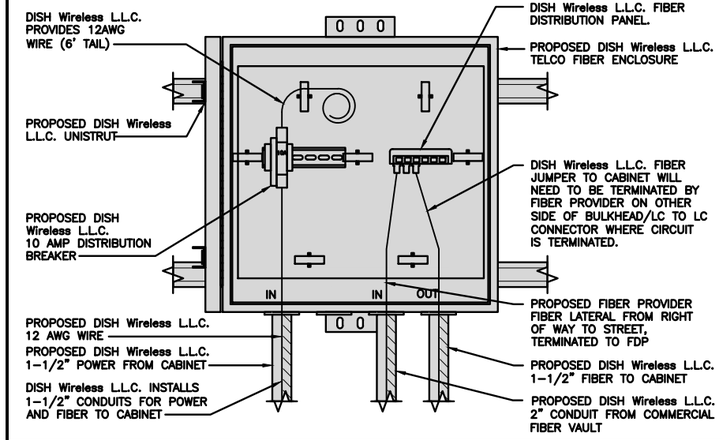
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

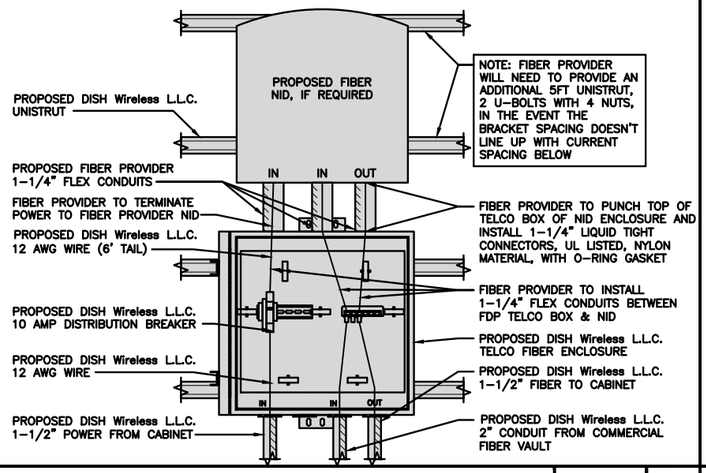
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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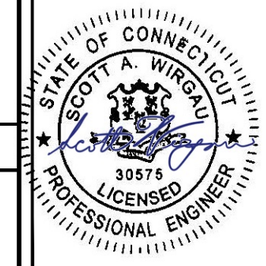

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PROJECT INFORMATION
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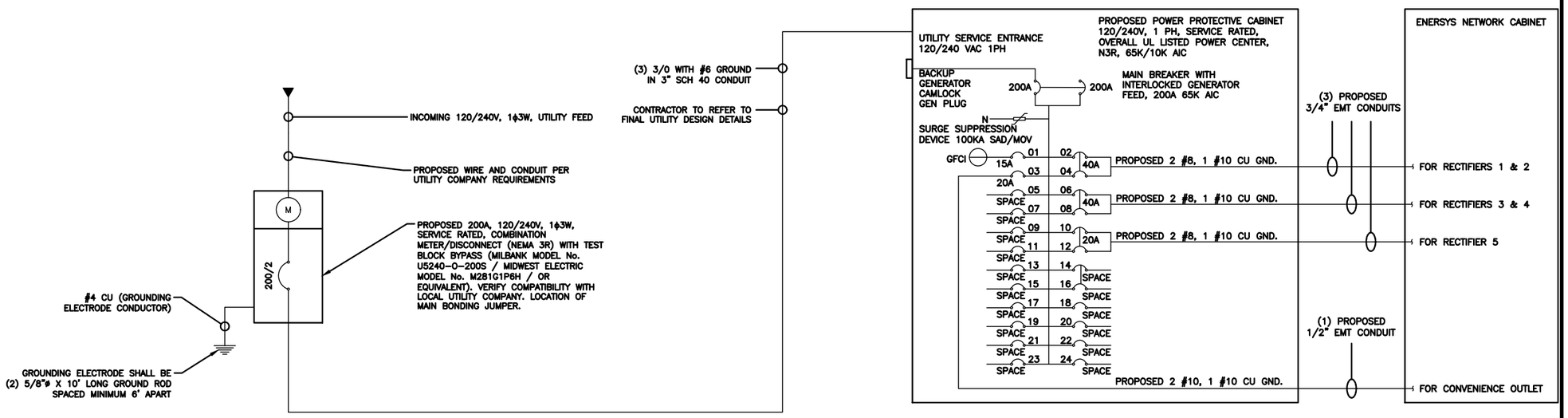
168 CATOONA LANE
STAMFORD, CT 06902

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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PHONE: (919) 468-0112

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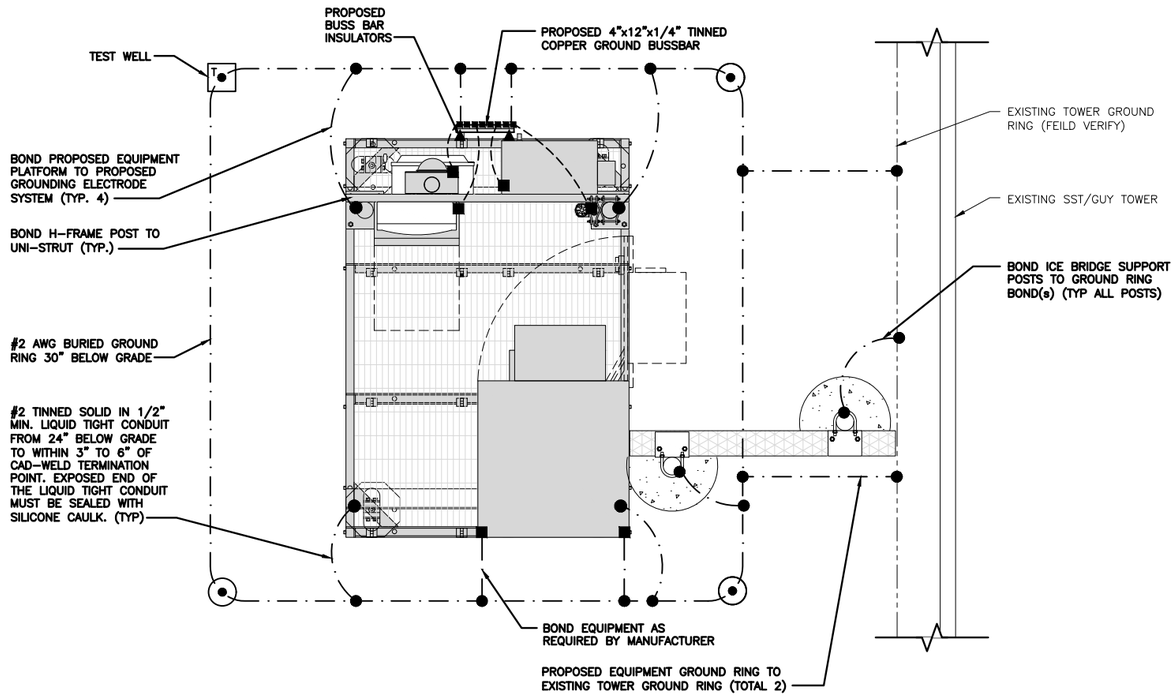
STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
88018-13710333_D2

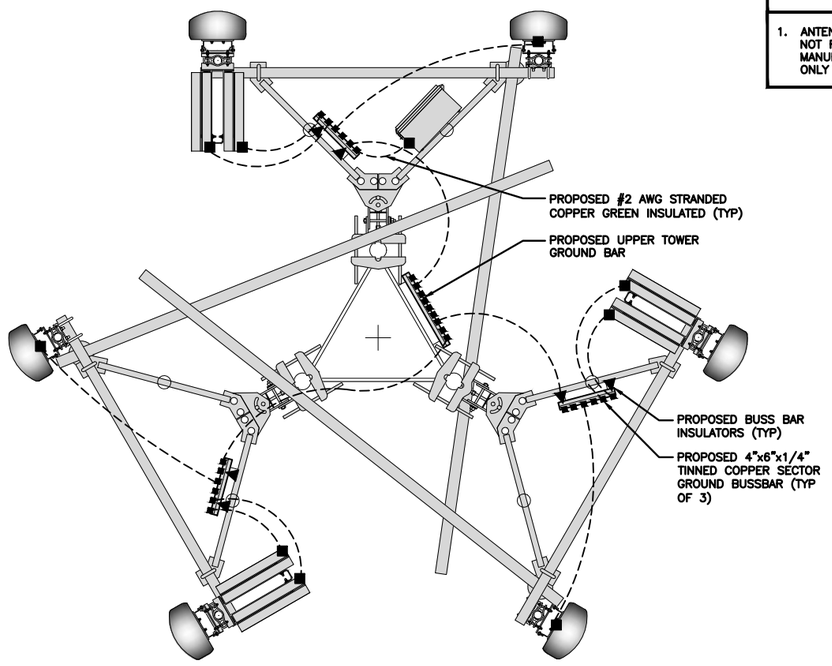
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

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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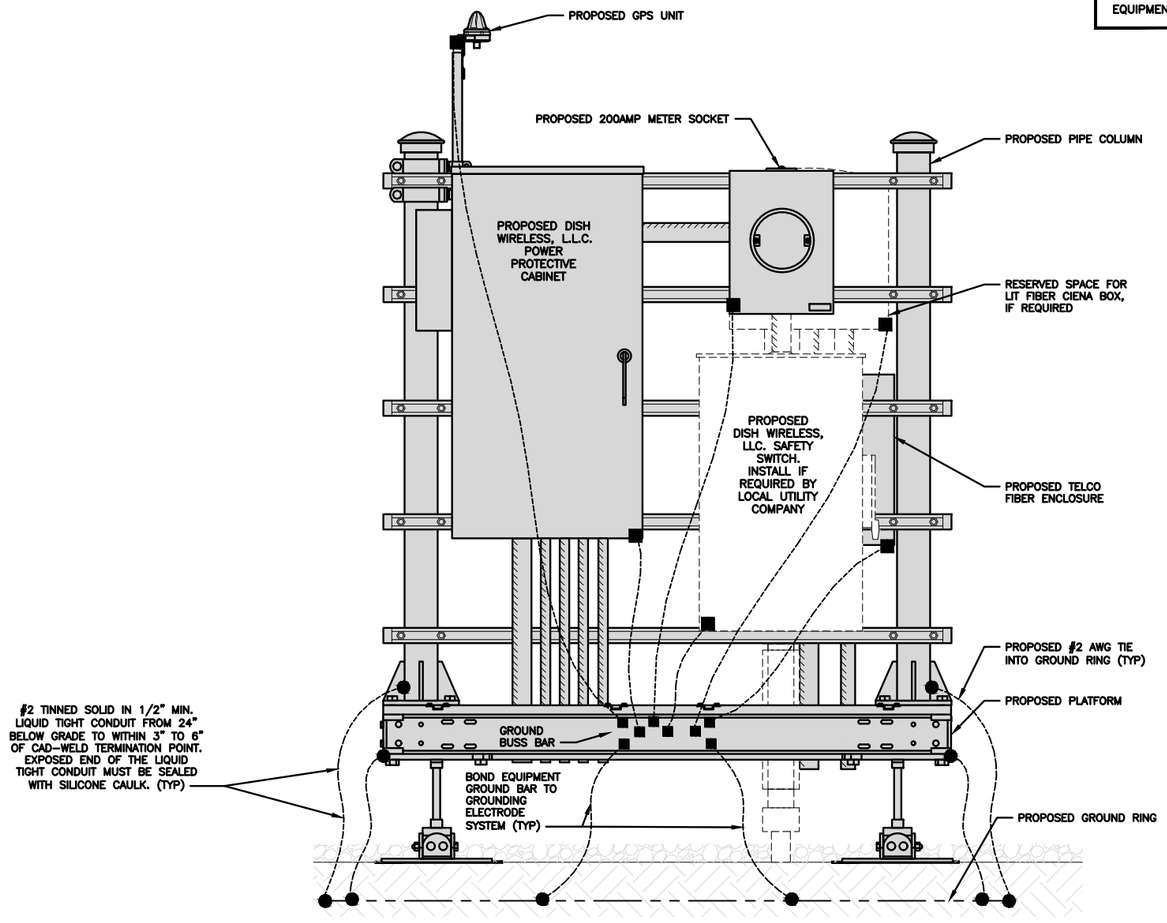
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

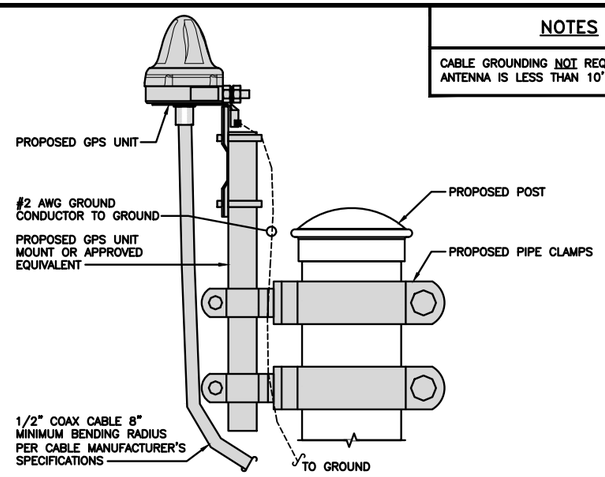
EQUIPMENT CABINET OMITTED FOR CLARITY



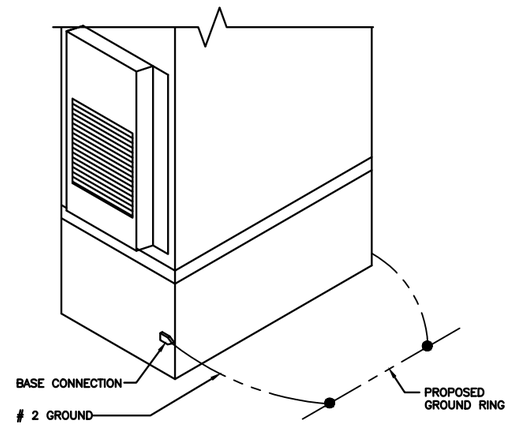
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

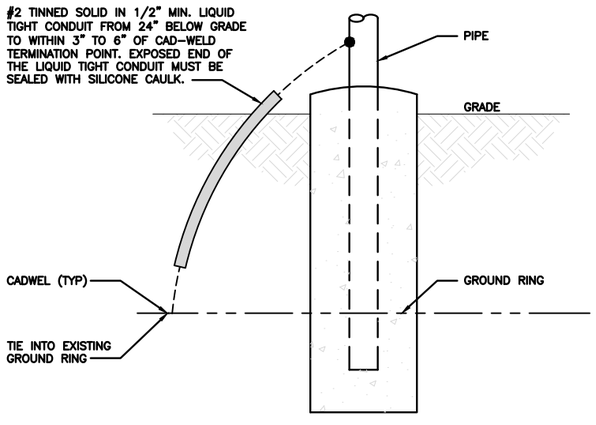
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



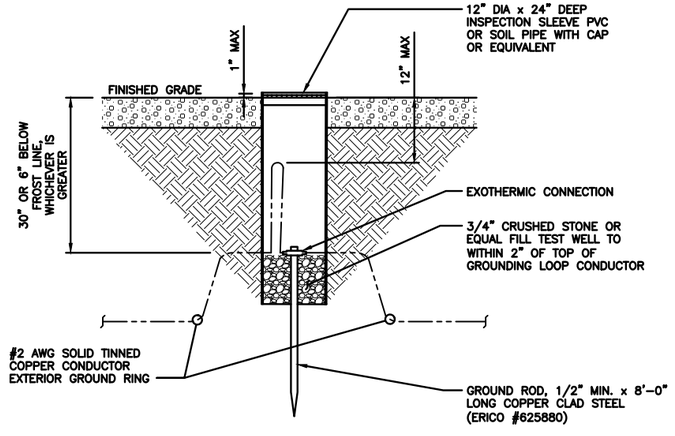
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



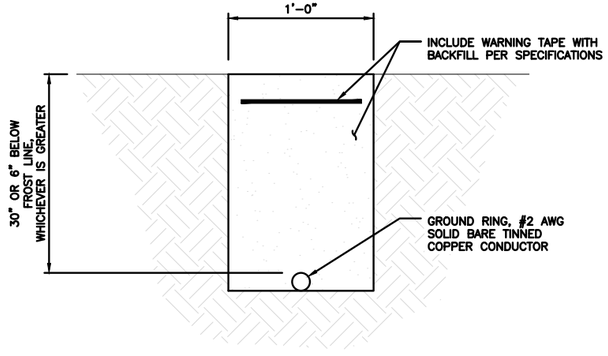
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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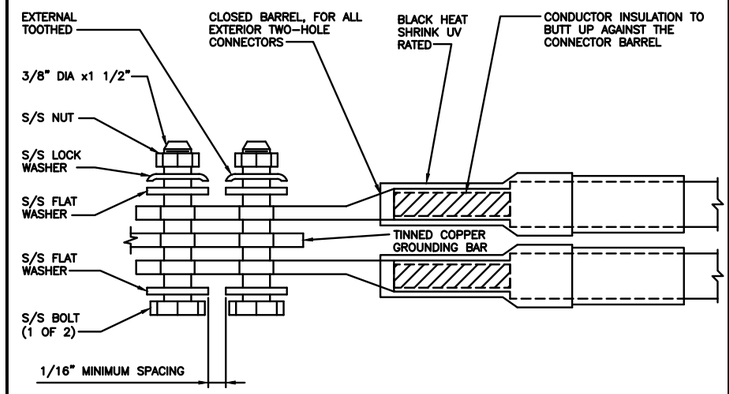
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

SHEET TITLE
GROUNDING DETAILS

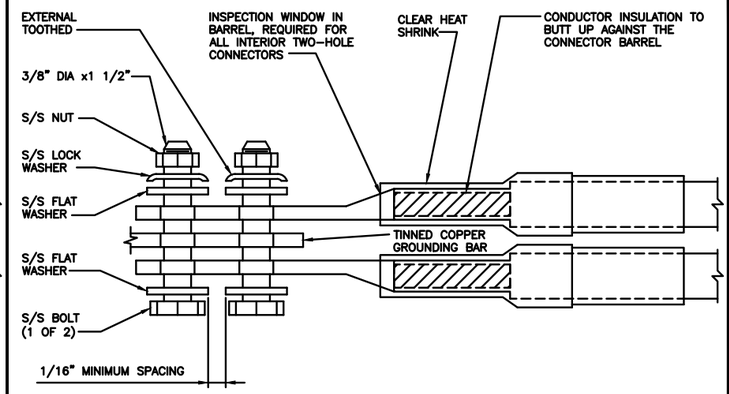
SHEET NUMBER
G-2

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).

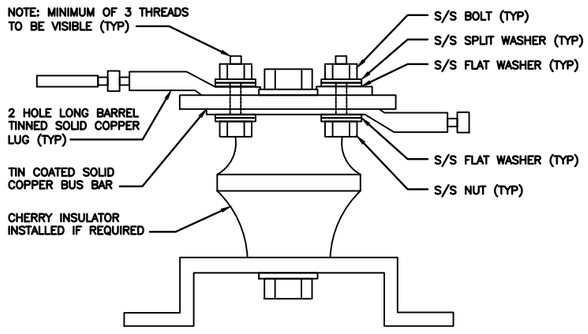
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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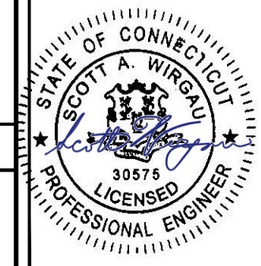

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SHEET TITLE
GROUNDING DETAILS

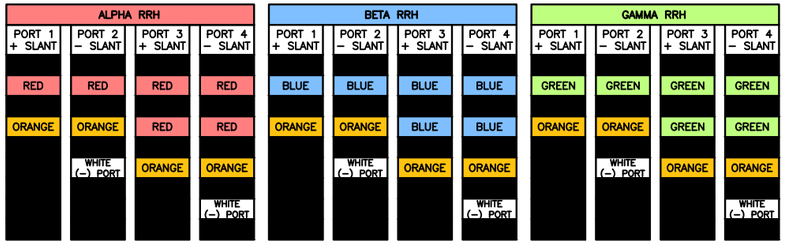
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

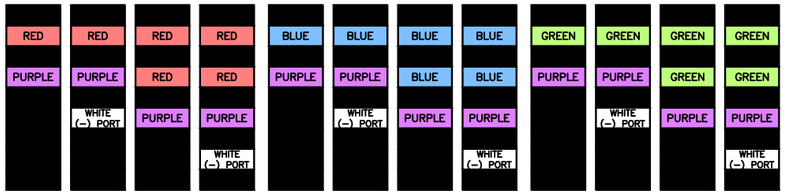
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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)

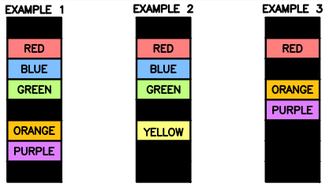


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

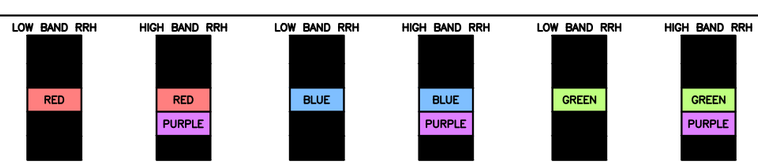
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



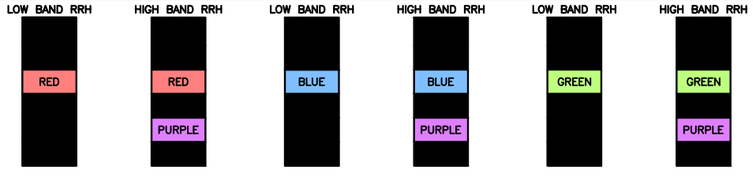
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

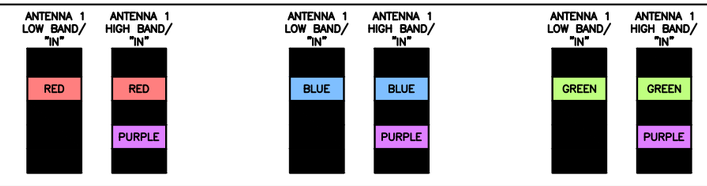


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



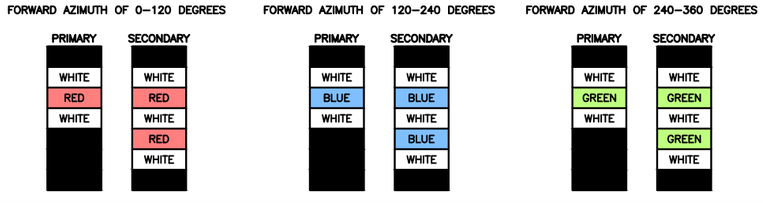
RET MOTORS AT ANTENNAS



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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SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

ABBREVIATIONS

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

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

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/27/2021	ISSUED FOR CONSTRUCTION
1	11/01/2021	PPC UPDATE

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
88018–13710333_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

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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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	PPC UPDATE

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
88018–13710333_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.
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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	PPC UPDATE

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
88018-13710333_D2

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
NJJER01123B
168 CATOONA LANE
STAMFORD, CT 06902

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

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