August 2, 2022

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

Re: Tower Share Application – Dish Site 14099618
Dish Wireless Telecommunications Facility @ 185 Research Drive, Milford, CT 06385
AKA 203 Research Drive

Dear Ms. Bachman,

Enclosed please find three (3) sets of Tower Share application packages for the above referenced site and a check in the amount of Six Hundred Twenty Five Dollars ($625.00). The application package consists of: Letter of Authorization from tower owner; a GIS Map; Construction Drawings; Structural Analysis Report; Antenna Mount Analysis Report; EME Study Report; and four (4) Notice Confirmations.

Please note that the tower was not approved by the Siting Council; the Milford Planning and Zoning Office concluded that original approval of the facility was completed on December 3, 1993, with no conditions attached

A pdf copy of these same documents has been emailed to your office this day.

As always, if you have any questions or comments, please feel free to contact me.

Sincerely,

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

July 27, 2022

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

Re: Tower Share Application – Dish Site 14099618
Dish Wireless Telecommunications Facility @ 185 Research Drive, Milford, CT 06385
AKA 203 Research Drive

Dear Ms. Bachman,

Dish Wireless ("Dish") is proposing a new wireless telecommunications facility on an existing tower and within the existing fenced compound at 185 Research Drive, Milford, CT 06385. The tower is owned and operated by American Tower Corporation. The subject property is owned by the Damato Investments LLC.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a one hundred fifty seven (157) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 183-feet and no changes will be made to the compound dimensions.

The tower was not approved by the Siting Council; research reveals that the Milford Planning and Zoning Office concluded that original approval of the facility was completed on December 3, 1993, with no conditions attached.

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; Damato Investments LLC, as Property Owner; the Honorable Benjamin G. Blake, Mayor of Milford, and David B. Sulkis, Milford City Planner.

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.

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

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

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

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

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

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

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

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish to obtain a building permit for the proposed installation. Further, a Letter of Authorization is attached, authorizing Dish to file this application for shared use.

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

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

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

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

For the foregoing reasons, Dish respectfully requests that the Council approve this request for the shared use of this tower located at 185 Research Drive, Milford, CT 06385.

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

Sincerely,

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

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

cc: American Tower Corporation - Tower Operator/Owner
Damato Investments LLC - Property Owner
the Honorable Benjamin G. Blake - Mayor of Milford
David B. Sulkis - Milford City Planner

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION

CENTERLINE COMMUNICATIONS LLC/ AT&T MOBILITY

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

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

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

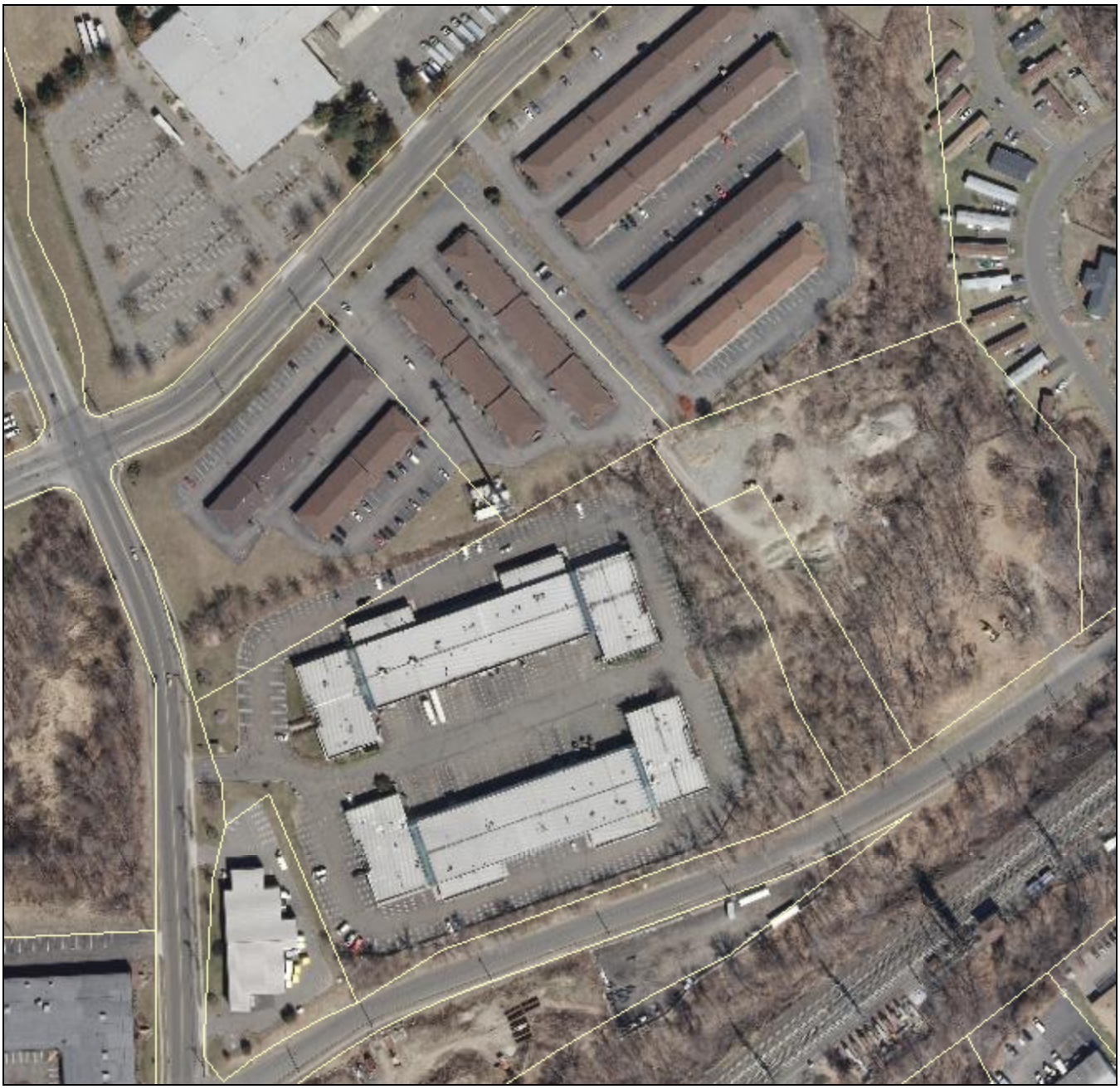
*American Tower includes all affiliates and subsidiaries of American Tower Corporation.

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

City of Milford

Geographic Information System (GIS)

Date Printed: 7/8/2022



MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The City of Milford and its mapping contractors assume no legal responsibility for the information contained herein.

Approximate Scale: 1 inch = 200 feet

0 200 Feet

N W E S

EBI Consulting

environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

Dish Wireless Existing Facility

Site ID: BOHVN00162B

185 Research Drive
Milford, Connecticut 06460

June 16, 2022

EBI Project Number: 6222003801

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**0.82%**

June 16, 2022

Dish Wireless

Emissions Analysis for Site: BOHVN00162B

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **185 Research Drive** in **Milford, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 185 Research Drive in Milford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 3 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 3 n70 channels (PCS Band - 2000 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 3 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

5) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative

estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 2000 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 2000 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 2000 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerline of the proposed antennas is 157 feet above ground level (AGL).

8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 2000 MHz / 2190 MHz	Frequency Bands:	600 MHz / 2000 MHz / 2190 MHz	Frequency Bands:	600 MHz / 2000 MHz / 2190 MHz
Gain:	11.35 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.35 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.35 dBd / 15.75 dBd / 16.75 dBd
Height (AGL):	157 feet	Height (AGL):	157 feet	Height (AGL):	157 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts
ERP (W):	2,524.75	ERP (W):	2,524.75	ERP (W):	2,524.75
Antenna A1 MPE %:	**0.50%**	Antenna B1 MPE %:	**0.50%**	Antenna C1 MPE %:	**0.50%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	0.50%
AT&T	0.0314%
Metro PCS	0.0043%
Sprint	0.0209%
Nextel	0.0018%
Clearwire	0.0006%
T-Mobile	0.1055%
Verizon	0.1521%
Computer Hospital	0.0001%
Site Total MPE % :	0.82%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	0.50%
Dish Wireless Sector B Total:	0.50%
Dish Wireless Sector C Total:	0.50%
Site Total MPE % :	0.82%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	110.82	157.0	0.70	600 MHz n71	400	0.17%
Dish Wireless 2000 MHz n70	4	245.22	157.0	1.55	2000 MHz n70	1000	0.15%
Dish Wireless 2190 MHz n66	4	275.14	157.0	1.74	2190 MHz n66	1000	0.17%
						Total:	**0.50%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	0.50%
Sector B:	0.50%
Sector C:	0.50%
Dish Wireless Maximum MPE % (Sector A):	0.50%
Site Total:	0.82%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **0.82%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

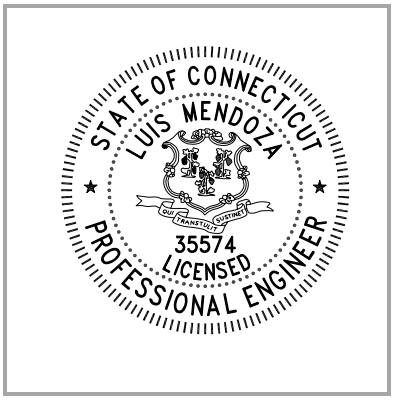
FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100%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

MOUNT ANALYSIS REPORT

July 11, 2022

Dish Wireless Site Name	BOHVN00162B
Infinigy Job Number	1197-F0001-B
Client	ATC
Carrier	Dish Wireless
Site Location	185 Research Drive, Milford, CT 06385 New Haven County 41° 14' 25.459" N NAD83 73° 0' 42.975" W NAD83
Structure Type	Monopole
Structure Height	183.0 ft
Mount Type	8.0 ft Platform
Mount Elevation	157.0 ft AGL
Structural Usage Ratio	**34.8%**
Overall Result	**Pass**

The enclosed structural analysis has been performed in accordance with the 2018 Connecticut State Building Code based on an ultimate 3-second gust wind speed of 120 mph. The evaluation criteria and applicable standards are presented in the next section of this report.



structural@infinigy.com

CONTENTS

1. INTRODUCTION

Infinigy performed a structural analysis on the Dish Wireless proposed telecommunication equipment supporting Platform mounted to the existing structure located at the aforementioned address. All referenced supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using Risa version 20.0.1 analysis software.

2. DESIGN/ANALYSIS PARAMETERS

Wind Speed	120 mph (3-Second Gust)
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 0.75 ice
Adopted Code	2018 Connecticut State Building Code
Standard(s)	TIA-222-H
Risk Category	II
Exposure Category	B
Topographic Factor	1.0
Seismic Spectral Response	S_s = 0.191 g / S_1 = 0.063 g
Live Load Wind Speed	250 mph
Man Live Load at Mid/End Points	500 lbs
Man Live Load at Mount Pipes	500 lbs
Ground Elevation (HMSL)	95.15 ft

3. PROPOSED LOADING CONFIGURATION - 157.0 ft. AGL Platform

Centerline (ft)	Qty.	Appurtenance Manufacturers	Appurtenance Models
157.0	3	JMA WIRELESS	MX08FRO665-21
	3	FUJITSU	TA08025-B604
	3	FUJITSU	TA08025-B605
	1	RAYCAP	RDIDC-9181-PF-48

4. SUPPORTING DOCUMENTATION

Construction Drawings	ATE Project #: 310972_14100509_D3 dated April 25, 2022
Dish Wireless Proposed Loading	RFDS Revision 1 Project ID: CT-ATC-T-302535 dated March 4, 2022
Structural Analysis Report	ATC Project #: 302535_14099618_C3-05 dated May 16, 2022
Mount Assembly Drawings	Commscope MC-PK8-DSH Rev. A dated March 8, 2021

5. RESULTS

Components	Capacity	Pass/Fail
Mount Pipe	14.6%	Pass
Horizontal	15.2%	Pass
Bracing	34.8%	Pass
Standoff	31.7%	Pass
Connection	19.6%	Pass
RATING =	**34.8%**	**Pass**

Notes:

1. See additional documentation in Appendix for calculations supporting the capacity consumed and detailed mount connection calculations.
2. All sectors are typical.

6. RECOMMENDATIONS

Infinigy recommends installing Dish Wireless's proposed equipment loading configuration on the Platform at 157.0 ft. The installation shall be performed in accordance with the construction documents issued for this site.

If you have any questions, require additional information, or believe the actual conditions differ from those detailed in this report, please contact us immediately.

Iker Moreno, E.I.T.
Project Engineer I | **INFINIGY**

7. ASSUMPTIONS

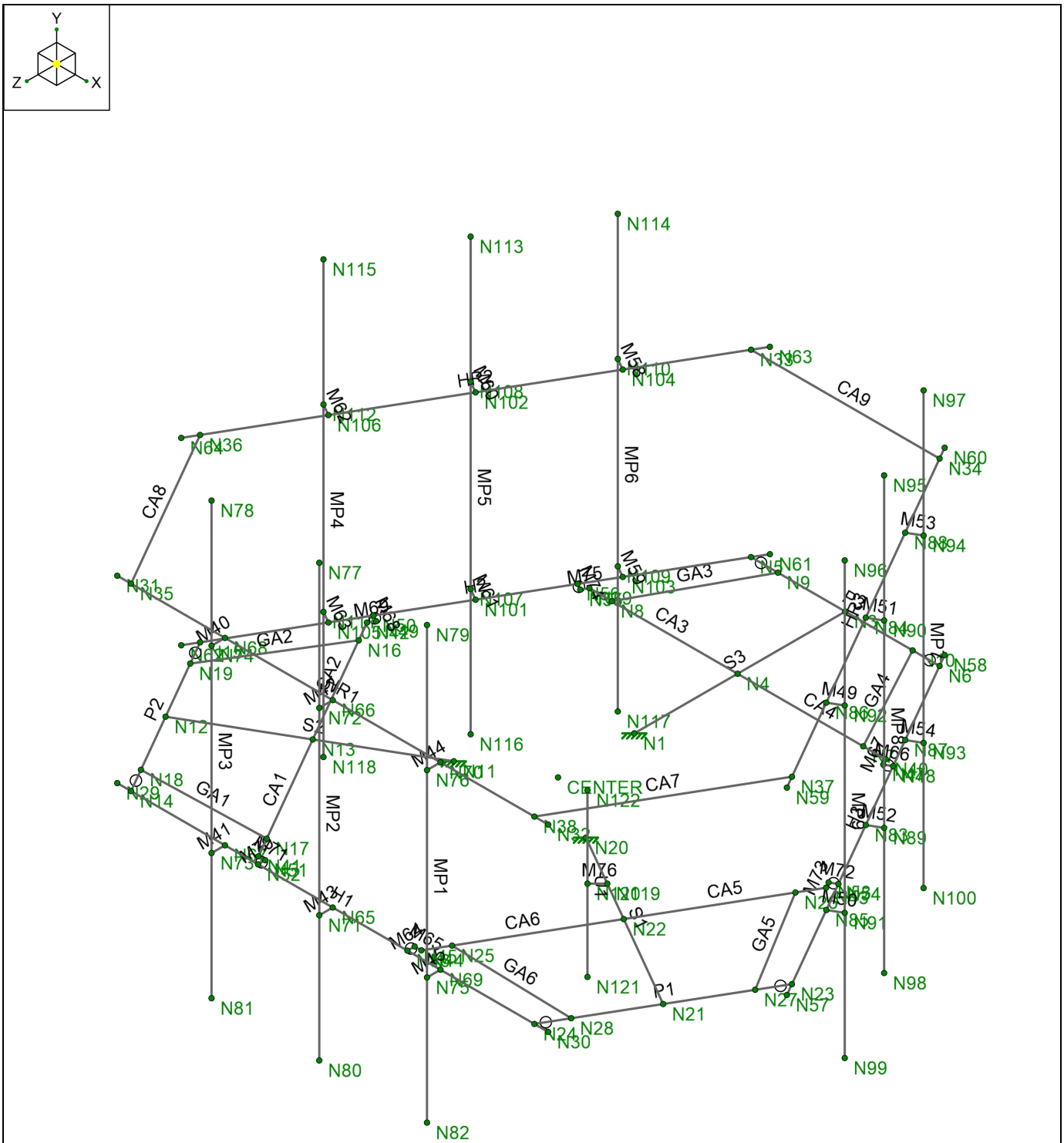
The antenna mounting system was properly fabricated, installed and maintained in accordance with its original design and manufacturer's specifications.
The configuration of antennas, mounts, and other appurtenances are as specified in the proposed loading configuration table.
All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
The analysis will require revisions if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
Steel grades have been assumed as follows, unless noted otherwise: Square/ Rectangle HSS Tube — ASTM A500 Channel — ASTM A529 Angle — ASTM A529 Pipe — ASTM A500 Connection Bolts — ASTM A325 U-Bolts — ASTM A307
All bolted connections are pretensioned in accordance with Table 8.2 of the RCSC 2014 Standard.

8. LIABILITY WAIVER AND LIMITATIONS

Our structural calculations are completed assuming all information provided to Infinigy is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition as erected and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report, Infinigy should be notified immediately to assess the impact on the results of this report.

Our evaluation is completed using industry standard methods and procedures. The structural results, conclusions and recommendations contained in this report are proprietary and should not be used by others as their own. Infinigy is not responsible for decisions made by others that are or are not based on the stated assumptions and conclusions in this report.

This report is an evaluation of the mount structure only and does not determine the adequacy of the supporting structure, other carrier mounts or cable mounting attachments. The analysis of these elements is outside the scope of this analysis, are assumed to be adequate for the purpose of this report and to have been installed per their manufacturer requirements. This document is not for construction purposes.



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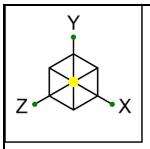

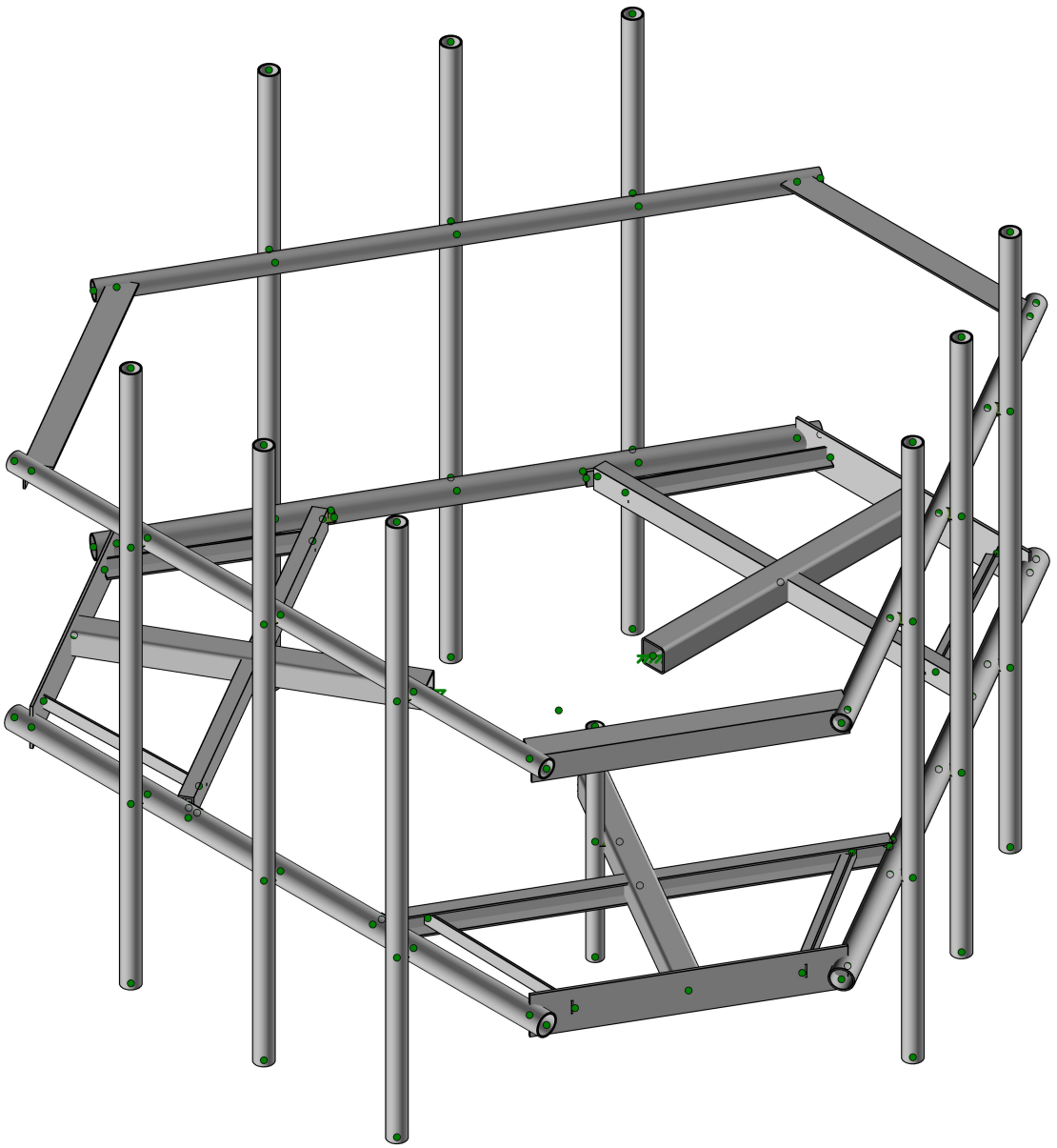

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IM		Jun 24, 2022
1197-F0001-B		BOHVN00162B_loaded_loaded.…

Program Inputs

INFINIGY

Infinigy Load Calculator V2.3.2

PROJECT INFORMATION	
Site Name:	BOHVN00162B
Carrier:	Dish Wireless
Engineer:	Luis Mendoza, PE

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	B	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	95.15	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Platform	
Num Sectors:	3	
Centerline AGL:	157.00	ft
Tower Height AGL:	180.00	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.950	
Ground Ele. Factor (K_e):	0.997	*Rev H Only
Rooftop Speed-Up (K_s):	1.000	*Rev H Only
Topographic Factor (K_{zt}):	1.000	
Height Esc. Fact. (K_{iz}):	1.169	
Gust Effect Factor (G_h):	1.000	
Shielding Factor (K_a):	0.900	
Velocity Pressure Co.(K_z):	1.124	(Mount Elev)

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-10	

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	120	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	0.75	in
Radial Ice Thickness (t_{iz}):	0.877	in
Flat Pressure:	78.468	psf
Round Pressure:	47.081	psf
Ice Wind Pressure:	8.174	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.200	g
1-Second Accel. (S_1):	0.053	g
Short-Period Design (S_{DS}):	0.213	
1-Second Design (S_{D1}):	0.085	
Short-Period Coeff. (F_a):	1.600	
1-Second Coeff. (F_v):	2.400	
Amplification Factor (A_s):	3.000	
Response Mod. Coeff. (R):	2.000	
Seismic Importance (I_e):	1.000	
Seismic Response Co. (C_s):	0.107	
Total App. Weight:	225.170	lb
Total Shear Force (V_s):	24.018	lb
Hor. Seismic Load (E_h):	24.018	lb
Vert. Seismic Load (E_v):	9.607	lb *

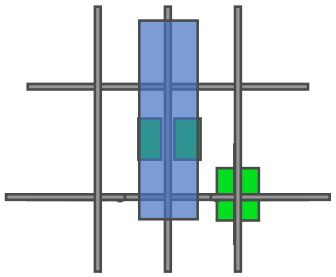
*For reference only. Per TIA rev H section 16.7, Ev is not applicable to mounts

Program Inputs

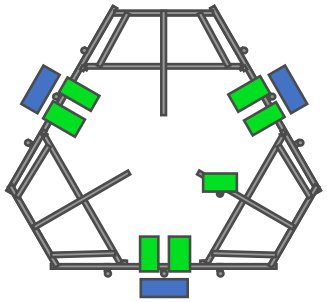
INFINIGY

Infinigy Load Calculator V2.3.2

ELEVATION VIEW



PLAN VIEW



APPURTENANCE INFORMATION

Appurtenance Name	Elevation	Qty.	Height (in)	Width (in)	Depth (in)	Weight (lbs)	EPA_N (ft^2)	EPA_T (ft^2)	Member (α sector)
JMA WIRELESS MX08FRO665-21	157.0	3	72.00	20.00	8.00	64.50	12.49	5.87	MP2
FUJITSU TA08025-B604	157.0	3	14.90	15.70	7.80	63.90	1.95	0.97	MP2
FUJITSU TA08025-B605	157.0	3	14.90	15.70	9.00	74.95	1.95	1.12	MP2
RAYCAP RDIDC-9181-PF-48	157.0	1	18.98	14.39	8.15	21.82	2.28	1.29	U1

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	S3	N1	N3		Standoff	Beam	Tube	A500 Gr.B Rect	Typical
2	GA4	N7	N10	270	Grating Angle	Beam	Single Angle	A529 Gr. 50	Typical
3	GA3	N8	N9		Grating Angle	Beam	Single Angle	A529 Gr. 50	Typical
4	P3	N5	N6		Corner Plates	Beam	RECT	A529 Gr. 50	Typical
5	S2	N11	N12		Standoff	Beam	Tube	A500 Gr.B Rect	Typical
6	GA2	N16	N19	270	Grating Angle	Beam	Single Angle	A529 Gr. 50	Typical
7	GA1	N17	N18		Grating Angle	Beam	Single Angle	A529 Gr. 50	Typical
8	P2	N14	N15		Corner Plates	Beam	RECT	A529 Gr. 50	Typical
9	S1	N20	N21		Standoff	Beam	Tube	A500 Gr.B Rect	Typical
10	GA6	N25	N28	270	Grating Angle	Beam	Single Angle	A529 Gr. 50	Typical
11	GA5	N26	N27		Grating Angle	Beam	Single Angle	A529 Gr. 50	Typical
12	P1	N23	N24		Corner Plates	Beam	RECT	A529 Gr. 50	Typical
13	H1	N29	N30		Horizontal	Beam	Pipe	A500 Gr.B RND	Typical
14	HR1	N31	N32		Handrail	Beam	Pipe	A500 Gr.B RND	Typical
15	CA8	N36	N35	180	Handrail Connector	Beam	Single Angle	A529 Gr. 50	Typical
16	CA9	N34	N33	180	Handrail Connector	Beam	Single Angle	A529 Gr. 50	Typical
17	CA7	N38	N37	180	Handrail Connector	Beam	Single Angle	A529 Gr. 50	Typical
18	CA3	N4	N39		Channel	Beam	Channel	A36 Gr.36	Typical
19	CA4	N40	N4		Channel	Beam	Channel	A36 Gr.36	Typical
20	CA1	N13	N41		Channel	Beam	Channel	A36 Gr.36	Typical
21	CA2	N42	N13		Channel	Beam	Channel	A36 Gr.36	Typical
22	CA5	N22	N43		Channel	Beam	Channel	A36 Gr.36	Typical
23	CA6	N44	N22		Channel	Beam	Channel	A36 Gr.36	Typical
24	M64	N46	N45		RIGID	None	None	RIGID	Typical
25	M65	N44	N45		RIGID	None	None	RIGID	Typical
26	M66	N48	N47		RIGID	None	None	RIGID	Typical
27	M67	N40	N47		RIGID	None	None	RIGID	Typical
28	M68	N50	N49		RIGID	None	None	RIGID	Typical
29	M69	N42	N49		RIGID	None	None	RIGID	Typical
30	M70	N52	N51		RIGID	None	None	RIGID	Typical
31	M71	N41	N51		RIGID	None	None	RIGID	Typical
32	M72	N54	N53		RIGID	None	None	RIGID	Typical
33	M73	N43	N53		RIGID	None	None	RIGID	Typical
34	M74	N56	N55		RIGID	None	None	RIGID	Typical
35	M75	N39	N55		PL2.375X0.5	None	None	A36 Gr.36	Typical
36	H3	N57	N58		Horizontal	Beam	Pipe	A500 Gr.B RND	Typical
37	HR3	N59	N60		Handrail	Beam	Pipe	A500 Gr.B RND	Typical
38	H2	N61	N62		Horizontal	Beam	Pipe	A500 Gr.B RND	Typical
39	HR2	N63	N64		Handrail	Beam	Pipe	A500 Gr.B RND	Typical
40	M40	N68	N74		RIGID	None	None	RIGID	Typical
41	M41	N67	N73		RIGID	None	None	RIGID	Typical
42	M42	N66	N72		RIGID	None	None	RIGID	Typical
43	M43	N65	N71		RIGID	None	None	RIGID	Typical
44	M44	N70	N76		RIGID	None	None	RIGID	Typical
45	M45	N69	N75		RIGID	None	None	RIGID	Typical
46	MP3	N78	N81		Mount Pipe	Column	Pipe	A500 Gr.B RND	Typical
47	MP2	N77	N80		Mount Pipe	Column	Pipe	A500 Gr.B RND	Typical
48	MP1	N79	N82		Mount Pipe	Column	Pipe	A500 Gr.B RND	Typical
49	M49	N86	N92		RIGID	None	None	RIGID	Typical
50	M50	N85	N91		RIGID	None	None	RIGID	Typical
51	M51	N84	N90		RIGID	None	None	RIGID	Typical
52	M52	N83	N89		RIGID	None	None	RIGID	Typical
53	M53	N88	N94		RIGID	None	None	RIGID	Typical
54	M54	N87	N93		RIGID	None	None	RIGID	Typical
55	MP9	N96	N99		Mount Pipe	Column	Pipe	A500 Gr.B RND	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
56	MP8	N95	N98		Mount Pipe	Column	Pipe	A500 Gr.B RND	Typical
57	MP7	N97	N100		Mount Pipe	Column	Pipe	A500 Gr.B RND	Typical
58	M58	N104	N110		RIGID	None	None	RIGID	Typical
59	M59	N103	N109		RIGID	None	None	RIGID	Typical
60	M60	N102	N108		RIGID	None	None	RIGID	Typical
61	M61	N101	N107		RIGID	None	None	RIGID	Typical
62	M62	N106	N112		RIGID	None	None	RIGID	Typical
63	M63	N105	N111		RIGID	None	None	RIGID	Typical
64	MP6	N114	N117		Mount Pipe	Column	Pipe	A500 Gr.B RND	Typical
65	MP5	N113	N116		Mount Pipe	Column	Pipe	A500 Gr.B RND	Typical
66	MP4	N115	N118		Mount Pipe	Column	Pipe	A500 Gr.B RND	Typical
67	M76	N119	N120		RIGID	None	None	RIGID	Typical
68	U1	N122	N121		Pipe 2.0	Column	Pipe	A500 Gr.B RND	Typical

Material Take-Off

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General Members				
2	RIGID		30	74.3	0
3	Total General		30	74.3	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	C3.38X2.06X0.25	6	198	98.255
7	A36 Gr.36	PL2.375X0.5	1	1.5	0.505
8	A500 Gr.B Rect	HSS4X4X4	3	141	144.916
9	A500 Gr.B RND	PIPE_3.0	3	288	181.815
10	A500 Gr.B RND	PIPE_2.5	12	1152	565.647
11	A500 Gr.B RND	PIPE_2.0	1	36	11.199
12	A529 Gr. 50	L2X2X4	6	163.8	43.838
13	A529 Gr. 50	L4X4X4	3	126	68.957
14	A529 Gr. 50	PL6.5X0.375	3	126	87.09
15	Total HR Steel		38	2232.3	1202.222

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Member)
1	Self Weight	DL		-1			13		3
2	Wind Load AZI 0	WLZ					26		
3	Wind Load AZI 30	None					26		
4	Wind Load AZI 60	None					26		
5	Wind Load AZI 90	WLX					26		
6	Wind Load AZI 120	None					26		
7	Wind Load AZI 150	None					26		
8	Wind Load AZI 180	None					26		
9	Wind Load AZI 210	None					26		
10	Wind Load AZI 240	None					26		
11	Wind Load AZI 270	None					26		
12	Wind Load AZI 300	None					26		
13	Wind Load AZI 330	None					26		
14	Distr. Wind Load Z	WLZ						68	
15	Distr. Wind Load X	WLX						68	
16	Ice Weight	OL1					13	68	3
17	Ice Wind Load AZI 0	OL2					26		
18	Ice Wind Load AZI 30	None					26		
19	Ice Wind Load AZI 60	None					26		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Member)
20	Ice Wind Load AZI 90	OL3					26		
21	Ice Wind Load AZI 120	None					26		
22	Ice Wind Load AZI 150	None					26		
23	Ice Wind Load AZI 180	None					26		
24	Ice Wind Load AZI 210	None					26		
25	Ice Wind Load AZI 240	None					26		
26	Ice Wind Load AZI 270	None					26		
27	Ice Wind Load AZI 300	None					26		
28	Ice Wind Load AZI 330	None					26		
29	Distr. Ice Wind Load Z	OL2						68	
30	Distr. Ice Wind Load X	OL3						68	
31	Seismic Load Z	ELZ			-0.32		13		
32	Seismic Load X	ELX	-0.32				13		
33	Service Live Loads	LL				1			
34	Maintenance Load Lm1	LL				1			
35	Maintenance Load Lm2	LL				1			
36	Maintenance Load Lm3	LL				1			
37	Maintenance Load Lm4	LL				1			
38	Maintenance Load Lm5	LL				1			
39	Maintenance Load Lm6	LL				1			
40	Maintenance Load Lm7	LL				1			
41	Maintenance Load Lm8	LL				1			
42	Maintenance Load Lm9	LL				1			
43	BLC 1 Transient Area Loads	None						9	
44	BLC 16 Transient Area Loads	None						9	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4DL	Yes	Y	1	1.4								
2	1.2DL + 1WL AZI 0	Yes	Y	1	1.2	2	1	14	1	15			
3	1.2DL + 1WL AZI 30	Yes	Y	1	1.2	3	1	14	0.866	15	0.5		
4	1.2DL + 1WL AZI 60	Yes	Y	1	1.2	4	1	14	0.5	15	0.866		
5	1.2DL + 1WL AZI 90	Yes	Y	1	1.2	5	1	14		15	1		
6	1.2DL + 1WL AZI 120	Yes	Y	1	1.2	6	1	14	-0.5	15	0.866		
7	1.2DL + 1WL AZI 150	Yes	Y	1	1.2	7	1	14	-0.866	15	0.5		
8	1.2DL + 1WL AZI 180	Yes	Y	1	1.2	8	1	14	-1	15			
9	1.2DL + 1WL AZI 210	Yes	Y	1	1.2	9	1	14	-0.866	15	-0.5		
10	1.2DL + 1WL AZI 240	Yes	Y	1	1.2	10	1	14	-0.5	15	-0.866		
11	1.2DL + 1WL AZI 270	Yes	Y	1	1.2	11	1	14		15	-1		
12	1.2DL + 1WL AZI 300	Yes	Y	1	1.2	12	1	14	0.5	15	-0.866		
13	1.2DL + 1WL AZI 330	Yes	Y	1	1.2	13	1	14	0.866	15	-0.5		
14	0.9DL + 1WL AZI 0	Yes	Y	1	0.9	2	1	14	1	15			
15	0.9DL + 1WL AZI 30	Yes	Y	1	0.9	3	1	14	0.866	15	0.5		
16	0.9DL + 1WL AZI 60	Yes	Y	1	0.9	4	1	14	0.5	15	0.866		
17	0.9DL + 1WL AZI 90	Yes	Y	1	0.9	5	1	14		15	1		
18	0.9DL + 1WL AZI 120	Yes	Y	1	0.9	6	1	14	-0.5	15	0.866		
19	0.9DL + 1WL AZI 150	Yes	Y	1	0.9	7	1	14	-0.866	15	0.5		
20	0.9DL + 1WL AZI 180	Yes	Y	1	0.9	8	1	14	-1	15			
21	0.9DL + 1WL AZI 210	Yes	Y	1	0.9	9	1	14	-0.866	15	-0.5		
22	0.9DL + 1WL AZI 240	Yes	Y	1	0.9	10	1	14	-0.5	15	-0.866		
23	0.9DL + 1WL AZI 270	Yes	Y	1	0.9	11	1	14		15	-1		
24	0.9DL + 1WL AZI 300	Yes	Y	1	0.9	12	1	14	0.5	15	-0.866		
25	0.9DL + 1WL AZI 330	Yes	Y	1	0.9	13	1	14	0.866	15	-0.5		
26	1.2D + 1.0Di	Yes	Y	1	1.2	16	1						
27	1.2D + 1.0Di +1.0Wi AZI 0	Yes	Y	1	1.2	16	1	17	1	29	1	30	

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
28	1.2D + 1.0Di +1.0Wi AZI 30	Yes	Y	1	1.2	16	1	18	1	29	0.866	30	0.5
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y	1	1.2	16	1	19	1	29	0.5	30	0.866
30	1.2D + 1.0Di +1.0Wi AZI 90	Yes	Y	1	1.2	16	1	20	1	29		30	1
31	1.2D + 1.0Di +1.0Wi AZI 120	Yes	Y	1	1.2	16	1	21	1	29	-0.5	30	0.866
32	1.2D + 1.0Di +1.0Wi AZI 150	Yes	Y	1	1.2	16	1	22	1	29	-0.866	30	0.5
33	1.2D + 1.0Di +1.0Wi AZI 180	Yes	Y	1	1.2	16	1	23	1	29	-1	30	
34	1.2D + 1.0Di +1.0Wi AZI 210	Yes	Y	1	1.2	16	1	24	1	29	-0.866	30	-0.5
35	1.2D + 1.0Di +1.0Wi AZI 240	Yes	Y	1	1.2	16	1	25	1	29	-0.5	30	-0.866
36	1.2D + 1.0Di +1.0Wi AZI 270	Yes	Y	1	1.2	16	1	26	1	29		30	-1
37	1.2D + 1.0Di +1.0Wi AZI 300	Yes	Y	1	1.2	16	1	27	1	29	0.5	30	-0.866
38	1.2D + 1.0Di +1.0Wi AZI 330	Yes	Y	1	1.2	16	1	28	1	29	0.866	30	-0.5
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.243	31	1	32					
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.243	31	0.866	32	0.5				
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.243	31	0.5	32	0.866				
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.243	31		32	1				
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.243	31	-0.5	32	0.866				
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.243	31	-0.866	32	0.5				
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.243	31	-1	32					
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.243	31	-0.866	32	-0.5				
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.243	31	-0.5	32	-0.866				
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.243	31		32	-1				
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.243	31	0.5	32	-0.866				
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.243	31	0.866	32	-0.5				
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.857	31	1	32					
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.857	31	0.866	32	0.5				
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.857	31	0.5	32	0.866				
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.857	31		32	1				
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.857	31	-0.5	32	0.866				
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.857	31	-0.866	32	0.5				
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.857	31	-1	32					
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.857	31	-0.866	32	-0.5				
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.857	31	-0.5	32	-0.866				
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.857	31		32	-1				
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.857	31	0.5	32	-0.866				
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.857	31	0.866	32	-0.5				
63	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 0	Yes	Y	1	1	2	0.25	14	0.25	15		33	1.5
64	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 30	Yes	Y	1	1	3	0.25	14	0.217	15	0.125	33	1.5
65	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 60	Yes	Y	1	1	4	0.25	14	0.125	15	0.217	33	1.5
66	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 90	Yes	Y	1	1	5	0.25	14		15	0.25	33	1.5
67	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 120	Yes	Y	1	1	6	0.25	14	-0.125	15	0.217	33	1.5
68	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 150	Yes	Y	1	1	7	0.25	14	-0.217	15	0.125	33	1.5
69	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 180	Yes	Y	1	1	8	0.25	14	-0.25	15		33	1.5
70	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 210	Yes	Y	1	1	9	0.25	14	-0.217	15	-0.125	33	1.5
71	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 240	Yes	Y	1	1	10	0.25	14	-0.125	15	-0.217	33	1.5
72	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 270	Yes	Y	1	1	11	0.25	14		15	-0.25	33	1.5
73	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 300	Yes	Y	1	1	12	0.25	14	0.125	15	-0.217	33	1.5
74	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 330	Yes	Y	1	1	13	0.25	14	0.217	15	-0.125	33	1.5
75	1.2DL + 1.5LL	Yes	Y	1	1.2	33	1.5						
76	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.063	14	0.063	15	
77	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.063	14	0.054	15	0.031
78	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.063	14	0.031	15	0.054
79	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.063	14		15	0.063
80	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.063	14	-0.031	15	0.054
81	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.063	14	-0.054	15	0.031
82	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.063	14	-0.063	15	

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
83	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.063	14	-0.054	15	-0.031
84	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.063	14	-0.031	15	-0.054
85	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.063	14		15	-0.063
86	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.063	14	0.031	15	-0.054
87	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.063	14	0.054	15	-0.031
88	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	35	1.5	2	0.063	14	0.063	15	
89	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	35	1.5	3	0.063	14	0.054	15	0.031
90	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	35	1.5	4	0.063	14	0.031	15	0.054
91	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	35	1.5	5	0.063	14		15	0.063
92	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	35	1.5	6	0.063	14	-0.031	15	0.054
93	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	35	1.5	7	0.063	14	-0.054	15	0.031
94	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	35	1.5	8	0.063	14	-0.063	15	
95	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	35	1.5	9	0.063	14	-0.054	15	-0.031
96	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	35	1.5	10	0.063	14	-0.031	15	-0.054
97	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	35	1.5	11	0.063	14		15	-0.063
98	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	35	1.5	12	0.063	14	0.031	15	-0.054
99	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	35	1.5	13	0.063	14	0.054	15	-0.031
100	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	36	1.5	2	0.063	14	0.063	15	
101	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	36	1.5	3	0.063	14	0.054	15	0.031
102	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	36	1.5	4	0.063	14	0.031	15	0.054
103	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	36	1.5	5	0.063	14		15	0.063
104	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	36	1.5	6	0.063	14	-0.031	15	0.054
105	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	36	1.5	7	0.063	14	-0.054	15	0.031
106	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	36	1.5	8	0.063	14	-0.063	15	
107	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	36	1.5	9	0.063	14	-0.054	15	-0.031
108	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	36	1.5	10	0.063	14	-0.031	15	-0.054
109	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	36	1.5	11	0.063	14		15	-0.063
110	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	36	1.5	12	0.063	14	0.031	15	-0.054
111	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	36	1.5	13	0.063	14	0.054	15	-0.031
112	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	37	1.5	2	0.063	14	0.063	15	
113	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	37	1.5	3	0.063	14	0.054	15	0.031
114	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	37	1.5	4	0.063	14	0.031	15	0.054
115	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	37	1.5	5	0.063	14		15	0.063
116	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	37	1.5	6	0.063	14	-0.031	15	0.054
117	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	37	1.5	7	0.063	14	-0.054	15	0.031
118	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	37	1.5	8	0.063	14	-0.063	15	
119	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	37	1.5	9	0.063	14	-0.054	15	-0.031
120	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	37	1.5	10	0.063	14	-0.031	15	-0.054
121	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	37	1.5	11	0.063	14		15	-0.063
122	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	37	1.5	12	0.063	14	0.031	15	-0.054
123	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	37	1.5	13	0.063	14	0.054	15	-0.031
124	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	38	1.5	2	0.063	14	0.063	15	
125	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	38	1.5	3	0.063	14	0.054	15	0.031
126	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	38	1.5	4	0.063	14	0.031	15	0.054
127	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	38	1.5	5	0.063	14		15	0.063
128	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	38	1.5	6	0.063	14	-0.031	15	0.054
129	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	38	1.5	7	0.063	14	-0.054	15	0.031
130	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	38	1.5	8	0.063	14	-0.063	15	
131	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	38	1.5	9	0.063	14	-0.054	15	-0.031
132	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	38	1.5	10	0.063	14	-0.031	15	-0.054
133	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	38	1.5	11	0.063	14		15	-0.063
134	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	38	1.5	12	0.063	14	0.031	15	-0.054
135	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	38	1.5	13	0.063	14	0.054	15	-0.031
136	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	39	1.5	2	0.063	14	0.063	15	
137	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	39	1.5	3	0.063	14	0.054	15	0.031

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
138	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	39	1.5	4	0.063	14	0.031	15	0.054
139	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	39	1.5	5	0.063	14		15	0.063
140	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	39	1.5	6	0.063	14	-0.031	15	0.054
141	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	39	1.5	7	0.063	14	-0.054	15	0.031
142	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	39	1.5	8	0.063	14	-0.063	15	
143	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	39	1.5	9	0.063	14	-0.054	15	-0.031
144	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	39	1.5	10	0.063	14	-0.031	15	-0.054
145	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	39	1.5	11	0.063	14		15	-0.063
146	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	39	1.5	12	0.063	14	0.031	15	-0.054
147	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	39	1.5	13	0.063	14	0.054	15	-0.031
148	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	40	1.5	2	0.063	14	0.063	15	
149	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	40	1.5	3	0.063	14	0.054	15	0.031
150	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	40	1.5	4	0.063	14	0.031	15	0.054
151	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	40	1.5	5	0.063	14		15	0.063
152	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	40	1.5	6	0.063	14	-0.031	15	0.054
153	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	40	1.5	7	0.063	14	-0.054	15	0.031
154	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	40	1.5	8	0.063	14	-0.063	15	
155	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	40	1.5	9	0.063	14	-0.054	15	-0.031
156	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	40	1.5	10	0.063	14	-0.031	15	-0.054
157	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	40	1.5	11	0.063	14		15	-0.063
158	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	40	1.5	12	0.063	14	0.031	15	-0.054
159	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	40	1.5	13	0.063	14	0.054	15	-0.031
160	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	41	1.5	2	0.063	14	0.063	15	
161	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	41	1.5	3	0.063	14	0.054	15	0.031
162	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	41	1.5	4	0.063	14	0.031	15	0.054
163	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	41	1.5	5	0.063	14		15	0.063
164	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	41	1.5	6	0.063	14	-0.031	15	0.054
165	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	41	1.5	7	0.063	14	-0.054	15	0.031
166	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	41	1.5	8	0.063	14	-0.063	15	
167	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	41	1.5	9	0.063	14	-0.054	15	-0.031
168	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	41	1.5	10	0.063	14	-0.031	15	-0.054
169	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	41	1.5	11	0.063	14		15	-0.063
170	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	41	1.5	12	0.063	14	0.031	15	-0.054
171	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	41	1.5	13	0.063	14	0.054	15	-0.031
172	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	42	1.5	2	0.063	14	0.063	15	
173	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	42	1.5	3	0.063	14	0.054	15	0.031
174	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	42	1.5	4	0.063	14	0.031	15	0.054
175	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	42	1.5	5	0.063	14		15	0.063
176	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	42	1.5	6	0.063	14	-0.031	15	0.054
177	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	42	1.5	7	0.063	14	-0.054	15	0.031
178	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	42	1.5	8	0.063	14	-0.063	15	
179	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	42	1.5	9	0.063	14	-0.054	15	-0.031
180	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	42	1.5	10	0.063	14	-0.031	15	-0.054
181	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	42	1.5	11	0.063	14		15	-0.063
182	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	42	1.5	12	0.063	14	0.031	15	-0.054
183	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	42	1.5	13	0.063	14	0.054	15	-0.031

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	N20	max	1079.026	6	1548.989	10	1622.058	25	565.052	16	2589.931	19	3640.281	10
2		min	-1076.263	24	-194.16	16	-1621.121	19	-2428.776	108	-2590.159	25	-980.061	16
3	N11	max	1008.162	16	1511.12	6	1538.676	15	582.703	24	2506.826	15	1000.039	24
4		min	-1010.869	10	-222.606	24	-1537.817	21	-2404.956	80	-2506.748	21	-3613.392	6
5	N1	max	1649.424	17	1525.381	2	674.201	2	4229.625	2	2287.851	23	701.726	146
6		min	-1649.458	23	-241.15	20	-680.029	8	-1215.524	20	-2287.769	17	-689.226	152

Envelope Node Reactions (Continued)

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
7	Totals:	max	3459.388	5	3943.895	36	3630.901	2						
8		min	-3459.389	11	1604.672	54	-3630.9	20						

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	CA4	C3.38X2.06X0.25	0.348	33	2	0.044	4.813	y	13	47760.074	56700	2202.821	5751.945	1.617	H1-1b
2	CA3	C3.38X2.06X0.25	0.346	0	2	0.042	28.188	y	3	47760.074	56700	2202.821	5751.945	1.617	H1-1b
3	CA2	C3.38X2.06X0.25	0.345	33	6	0.044	4.813	y	5	47760.074	56700	2202.821	5751.945	1.617	H1-1b
4	CA5	C3.38X2.06X0.25	0.344	0	10	0.044	28.188	y	11	47760.074	56700	2202.821	5751.945	1.617	H1-1b
5	CA1	C3.38X2.06X0.25	0.337	0	7	0.044	28.188	y	7	47760.074	56700	2202.821	5751.945	1.611	H1-1b
6	CA6	C3.38X2.06X0.25	0.335	33	9	0.044	4.813	y	9	47760.074	56700	2202.821	5751.945	1.611	H1-1b
7	S1	HSS4X4X4	0.317	0	8	0.089	0	y	107	130842.337	139518	16180.5	16180.5	2.141	H1-1b
8	S2	HSS4X4X4	0.31	0	8	0.088	0	y	175	130842.337	139518	16180.5	16180.5	2.124	H1-1b
9	S3	HSS4X4X4	0.298	0	4	0.088	0	y	147	130842.337	139518	16180.5	16180.5	2.12	H1-1b
10	M75	PL2.375X0.5	0.222	1.5	12	0.245	0	y	161	38256.871	38475	400.783	1903.711	2.217	H1-1b
11	P3	PL6.5X0.375	0.166	21	2	0.101	36.312	y	5	3658.14	109687.5	856.935	7424.774	1.321	H1-1b
12	P2	PL6.5X0.375	0.165	21	6	0.104	5.687	y	3	3658.14	109687.5	856.935	7418.085	1.32	H1-1b
13	P1	PL6.5X0.375	0.164	21	10	0.104	36.312	y	13	3658.14	109687.5	856.935	7418.885	1.32	H1-1b
14	GA2	L2X2X4	0.155	0	6	0.018	0	y	5	29527.563	42480	959.63	2190.068	1.5	H2-1
15	GA5	L2X2X4	0.154	0	10	0.018	0	z	11	29527.562	42480	959.63	2190.068	1.5	H2-1
16	HR1	PIPE_2.5	0.152	24	9	0.113	4		8	32461.394	60858	4315.5	4315.5	1	H1-1b
17	HR3	PIPE_2.5	0.151	24	13	0.11	4		12	32461.394	60858	4315.5	4315.5	1	H1-1b
18	HR2	PIPE_2.5	0.15	72	3	0.11	92		4	32461.394	60858	4315.5	4315.5	1	H1-1b
19	GA4	L2X2X4	0.15	0	2	0.017	0	y	13	29527.562	42480	959.63	2190.068	1.5	H2-1
20	GA3	L2X2X4	0.148	0	2	0.017	0	z	3	29527.563	42480	959.63	2190.068	1.5	H2-1
21	MP4	PIPE_2.5	0.146	68	7	0.059	68		5	32461.394	60858	4315.5	4315.5	1	H1-1b
22	MP6	PIPE_2.5	0.145	68	13	0.059	68		3	32461.394	60858	4315.5	4315.5	1	H1-1b
23	MP9	PIPE_2.5	0.145	68	9	0.059	68		11	32461.394	60858	4315.5	4315.5	1	H1-1b
24	MP7	PIPE_2.5	0.145	68	3	0.059	68		13	32461.394	60858	4315.5	4315.5	1	H1-1b
25	MP3	PIPE_2.5	0.144	68	5	0.06	68		7	32461.394	60858	4315.5	4315.5	1	H1-1b
26	MP1	PIPE_2.5	0.144	68	11	0.06	68		9	32461.394	60858	4315.5	4315.5	1	H1-1b
27	GA1	L2X2X4	0.142	0	6	0.018	0	z	7	29527.563	42480	959.63	2190.068	1.5	H2-1
28	GA6	L2X2X4	0.14	0	10	0.018	0	y	9	29527.563	42480	959.63	2190.068	1.5	H2-1
29	CA8	L4X4X4	0.122	42	5	0.027	42	y	9	53186.423	86850	4357.773	8220.865	1.195	H2-1
30	CA7	L4X4X4	0.122	0	11	0.027	42	y	13	53186.423	86850	4357.773	8220.865	1.196	H2-1
31	MP8	PIPE_2.5	0.117	68	9	0.074	68		3	32461.394	60858	4315.5	4315.5	1	H1-1b
32	MP5	PIPE_2.5	0.117	68	7	0.074	68		7	32461.394	60858	4315.5	4315.5	1	H1-1b
33	MP2	PIPE_2.5	0.116	68	5	0.074	68		5	32461.394	60858	4315.5	4315.5	1	H1-1b
34	CA9	L4X4X4	0.114	0	3	0.027	0	y	11	53186.423	86850	4357.773	8220.865	1.253	H2-1
35	H3	PIPE_3.0	0.1	31	8	0.057	32		9	51869.919	78246	6898.5	6898.5	1	H1-1b
36	H2	PIPE_3.0	0.1	65	8	0.057	64		7	51869.919	78246	6898.5	6898.5	1	H1-1b
37	H1	PIPE_3.0	0.095	72	11	0.056	32		5	51869.919	78246	6898.5	6898.5	1	H1-1b
38	U1	PIPE_2.0	0.005	18	10	0.001	18		10	33873.112	38556	2245.95	2245.95	1	H1-1b

INFINIGY

Bolt Calculation Tool, V1.6.2

PROJECT DATA	
Site Name:	BOHVN00162B
Site Number:	N/A
Connection Description:	Mount to Tower

ENVELOPE BOLT LOADS		
(LC108 S1) Bolt Tension:	3985.33	lbs
(LC25 S1) Bolt Shear:	2188.06	lbs

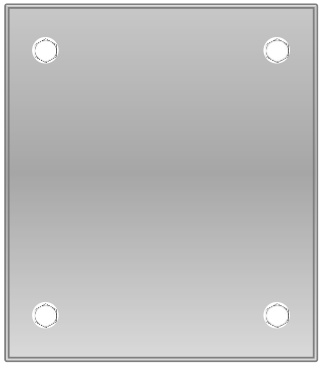
MAX BOLT USAGE LOADS[1]		
Bolt Tension:	3985.33	lbs
Bolt Shear:	9.90	lbs

BOLT PROPERTIES		
Bolt Type:	Bolt	-
Bolt Diameter:	0.625	in
Bolt Grade:	A325	-
# of Bolts:	4	-
Threads Excluded?	No	-

[1] *Max bolt usage loads correspond to Load combination #108 on member S1 in RISA-3D, which causes the maximum demand on the bolts.*

Member Information
I nodes of S3, S2, S1,

BOLT CHECK		
Tensile Strength	20340.15	
Shear Strength	13805.83	
Max Tensile Usage	19.6%	
Max Shear Usage	15.8%	
Interaction Check (Max Usage)	0.04	***≤1.05***
Result	Pass	

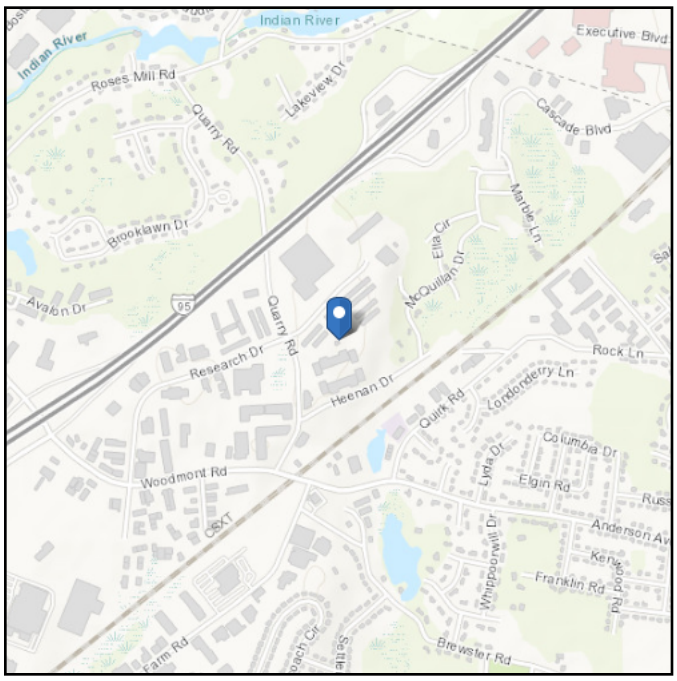


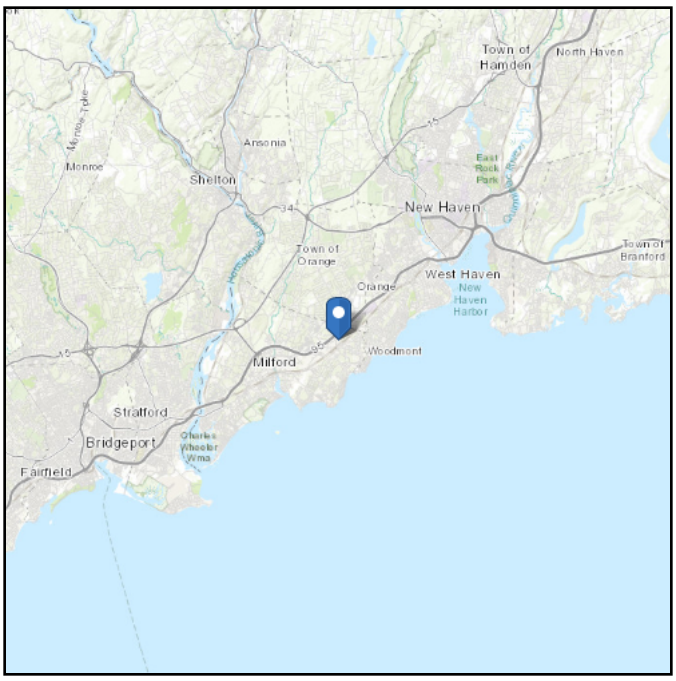
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 102.04 ft (NAVD 88)
Latitude: 41.240419
Longitude: -73.0119





Wind

Results:

Wind Speed	120 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	91 Vmph
100-year MRI	99 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Thu Jun 23 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

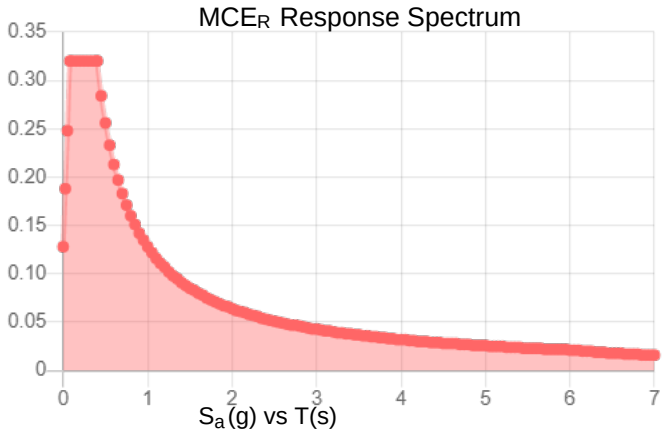
Seismic

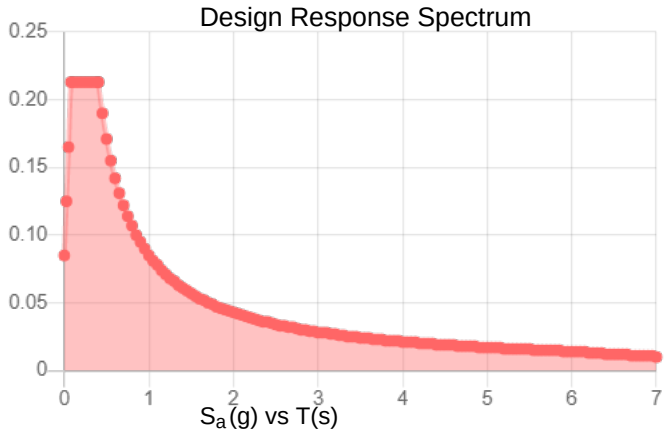
Site Soil Class: D - Default (see Section 11.4.3)

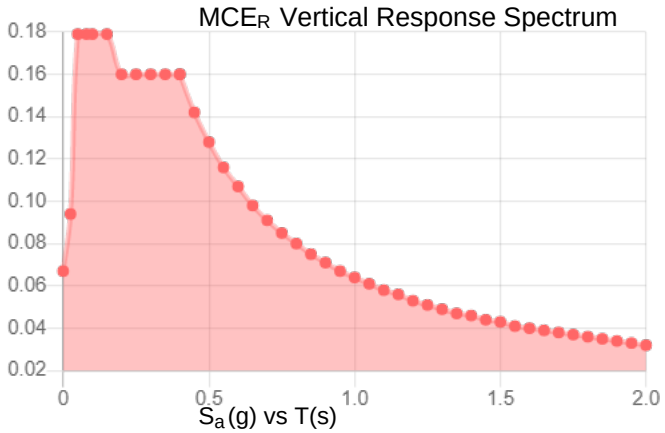
Results:

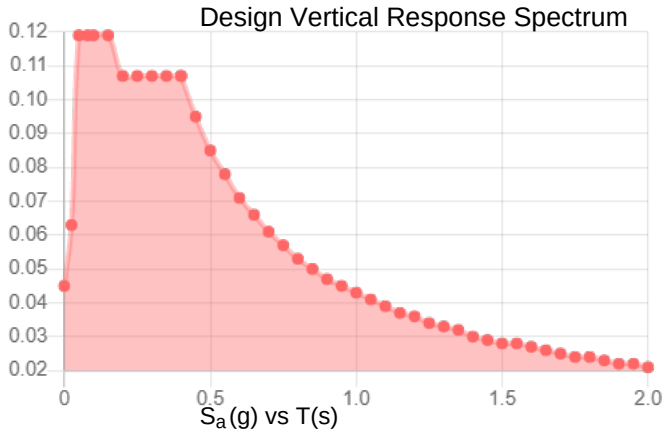
S_S :	0.2	S_{D1} :	0.085
S_1 :	0.053	T_L :	6
F_a :	1.6	PGA :	0.112
F_v :	2.4	PGA_M :	0.177
S_{MS} :	0.32	F_{PGA} :	1.576
S_{M1} :	0.128	I_e :	1
S_{DS} :	0.213	C_v :	0.7

Seismic Design Category B









Data Accessed: **Thu Jun 23 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Jun 23 2022

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

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

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**183 ft Monopole**
ATC Site Name	:	**Milford CT 2,CT**
ATC Site Number	:	**302535**
Engineering Number	:	**14099618_C3_05**
Proposed Carrier	:	**DISH WIRELESS L.L.C.**
Carrier Site Name	:	**BOHVN00162B**
Carrier Site Number	:	**BOHVN00162B**
Site Location	:	**185 Research Drive** **Milford, CT 06460-7733** **41.2404, -73.0119**
County	:	**New Haven**
Date	:	**May 16, 2022**
Max Usage	:	**80%**
Result	:	**Pass**

Prepared By:

Max McLean, E.I.
Structural Engineer I

Reviewed By:

COA : PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 183 ft Monopole to reflect the change in loading by DISH WIRELESS L.L.C..

Supporting Documents

Tower Drawings	Summit Manufacturing Drawing #1237-D1, dated September 9, 1994
Foundation Drawing	Summit Manufacturing Drawing #1237-F1 dated October 10, 1994
Geotechnical Report	French & Parrello Project #93N035CR1, dated November 2, 1993
Modifications	ATC Job #42659834, dated January 16, 2009 ATC Job #43915332, dated September 2, 2009 ATC Job #56682734, dated April 16, 2014

Analysis

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

Basic Wind Speed:	120 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.20, S_1 = 0.05
Site Class:	D - Stiff Soil - Default

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

Conclusion

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

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

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
175.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax	METRO PCS INC
169.0	3	Ericsson AIR 6419 B77G	Triangular Platform with Handrails	(4) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6 (2) 0.92" (23.4mm) Cable (2) 0.96" (24.3mm) Cable (3) 2" conduit (2) 3" conduit	AT&T MOBILITY
167.0	3	Ericsson RRUS 4426 B66			
	3	Ericsson RRUS 4478 B14			
	3	Quintel QD8616-7			
	3	Ericsson RRUS 32 B30			
	3	Ericsson RRUS 32 B2			
	3	Ericsson RRUS E2 B29			
	2	Raycap DC9-48-60-24-8C-EV			
	3	CCI DMP65R-BU8D			
	1	Raycap DC6-48-60-18-8F (23.5" Height)			
	1	Commscope WCS-IMFQ-AMT			
	3	Ericsson RRUS 4449 B5, B12			
165.0	3	Ericsson Air 6449 B77D			
145.0	3	Ericsson KRY 112 489/2	Triangular Platform with Handrails	(2) 1 1/4" Hybriflex Cable (2) 1 5/8" (1.63"-41.3mm) Fiber (6) 1 5/8" Coax	T-MOBILE
	3	Ericsson Radio 4449 B71 B85A			
	3	Ericsson RRUS 4415 B25			
	3	Ericsson Air6449 B41			
	3	Ericsson AIR32 B66Aa/B2a			
	3	RFS APXVAARR24_43-U-NA20			
127.0	3	Commscope CBC78T-DS-43-2X	Triangular Platform with Handrails	(4) 1 1/4" Hybriflex Cable (18) 7/8" Coax (6) 1 5/8" Coax	VERIZON WIRELESS
	3	Andrew HBXX-6517DS-A2M (43 lbs)			
	2	Raycap RRFDC-3315-PF-48			
126.0	3	Samsung B5/B13 RRH-BR04C			
	3	Antel BXA-80063/6CF			
	3	Samsung B2/B66A RRH-BR049			
	6	Commscope JAHH-45B-R3B			

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
185.0	3	Argus LLPX310R	Platform with Handrails	(3) 1 1/4" Hybriflex Cable (3) 1 5/8" Hybriflex (1) 1.7" (43.2mm) Hybrid (2) 1/2" Coax (2) 2" conduit (6) 5/16" (0.31"-7.9mm) Coax	CLEARWIRE CORPORATION
	6	Alcatel-Lucent RRH2x50-08			
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
	2	DragonWave Horizon Compact			
	3	Nokia 2.5G MAA - AAHC(64T64R)			
	3	Commscope NNVV-65B-R4			
	2	DragonWave A-ANT-18G-2-C			
	3	Andrew 844G65VTZASX		(12) 1 5/8" Coax	SPRINT NEXTEL
	6	Decibel DB844H90E-XY			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
157.0	1	Raycap RDIDC-9181-PF-48	Triangular Platform with Handrails	(1) 1.75" (44.5mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-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 inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	72%	Pass
Shaft	73%	Pass
Reinforcement	76%	Pass
Base Plate	27%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	4128.6	80%
Shear (Kips)	34.6	70%
Axial (Kips)	75.8	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.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
157.0	Raycap RDIDC-9181-PF-48	DISH WIRELESS L.L.C.	1.981	1.480
	JMA Wireless MX08FRO665-21			
	Fujitsu TA08025-B605			
	Fujitsu TA08025-B604			

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

Standard Conditions

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

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

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

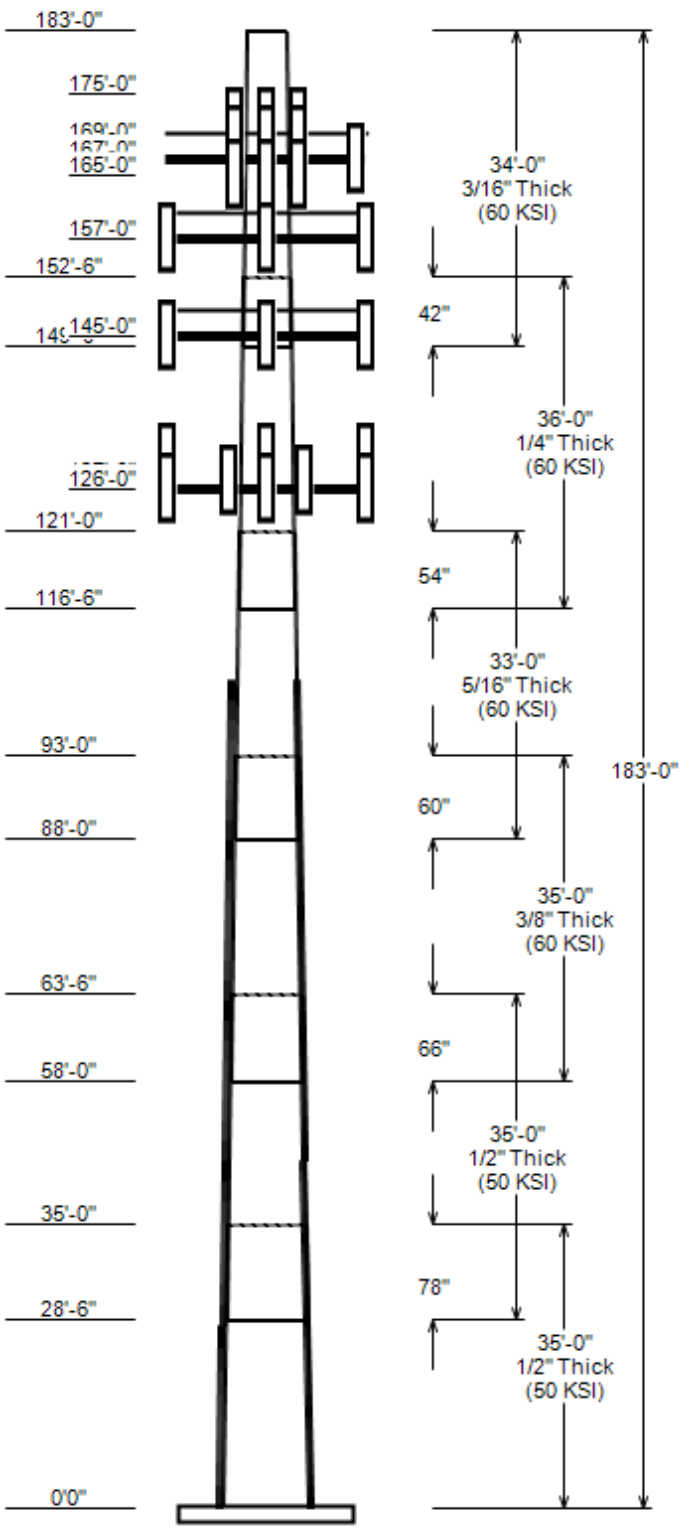
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with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

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

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

JOB INFORMATION

Asset :	302535, Milford CT 2	Height :	183 ft
Client :	DISH WIRELESS L.L.C.	Base Width :	48.62
Code :	ANSI/TIA-222-H	Shape :	18 Sides



SITE PARAMETERS

Nominal Wind: 116.96 mph wind with no ic **Topo Category:** 1

Ice Wind: 48.73 mph wind with 0.850" **Topo Method:** Method 1

Base Elev (ft): 0.00 **Taper :** 0.17500(In/ft) **Topo Feature:**

Structure Class: II **Exposure :** B **S_s :** 0.2 **S_1** : 0.053

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Diameter (in) Across Flats Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	35.000	42.50	48.62	0.500		0.000	18 Sides	50
2	35.000	38.51	44.64	0.500	Slip Joint	78.000	18 Sides	50
3	35.000	34.10	40.22	0.375	Slip Joint	66.000	18 Sides	60
4	33.000	29.83	35.60	0.312	Slip Joint	60.000	18 Sides	60
5	36.000	24.82	31.12	0.250	Slip Joint	54.000	18 Sides	60
6	34.000	19.86	25.81	0.188	Slip Joint	42.000	18 Sides	60

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
175.0	171.0	3	RFS APXV18-206517S-C
169.0	169.0	3	Ericsson AIR 6419 B77G
167.0	167.0	1	Commscope WCS-IMFQ-AMT
167.0	167.0	1	Raycap DC6-48-60-18-8F (23.5"
167.0	167.0	3	Ericsson RRUS 4426 B66
167.0	167.0	3	Ericsson RRUS 4478 B14
167.0	167.0	3	Ericsson RRUS 4449 B5, B12
167.0	167.0	3	Ericsson RRUS 32 B30
167.0	167.0	3	Ericsson RRUS 32 B2
167.0	167.0	3	Ericsson RRUS E2 B29
167.0	167.0	2	Raycap DC9-48-60-24-8C-EV
167.0	167.0	3	CCI DMP65R-BU8D
167.0	167.0	3	Quintel QD8616-7
167.0	167.0	1	Generic Round Platform with Ha
165.0	165.0	3	Ericsson Air 6449 B77D
157.0	157.0	1	Raycap RDIDC-9181-PF-48
157.0	157.0	3	Fujitsu TA08025-B604
157.0	157.0	3	Fujitsu TA08025-B605
157.0	157.0	3	JMA Wireless MX08FRO665-21
157.0	157.0	1	Generic Flat Platform with Han
145.0	145.0	3	Ericsson KRY 112 489/2
145.0	145.0	3	Ericsson Radio 4449 B71 B85A
145.0	145.0	3	Ericsson RRUS 4415 B25
145.0	145.0	3	Ericsson Air6449 B41
145.0	145.0	3	Ericsson AIR32 B66Aa/B2a
145.0	145.0	1	Generic Mount Reinforcement
145.0	145.0	3	RFS APXVAARR24_43-U-NA20
145.0	145.0	1	Round Platform w/ Handrails
127.0	127.0	3	Commscope CBC78T-DS-43-2X
127.0	127.0	2	Raycap RRFDC-3315-PF-48
127.0	127.0	3	Andrew HBXX-6517DS-A2M (43 lbs
126.0	126.0	3	Samsung B5/B13 RRH-BR04C
126.0	126.0	3	Samsung B2/B66A RRH-BR049
126.0	127.0	3	Antel BXA-80063/6CF
126.0	126.0	6	Commscope JAHH-45B-R3B
126.0	126.0	1	Flat Platform w/ Handrails

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind

JOB INFORMATION

Asset :	302535, Milford CT 2	Height :	183 ft
Client :	DISH WIRELESS L.L.C.	Base Width :	48.62
Code :	ANSI/TIA-222-H	Shape :	18 Sides

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	175.0	1 5/8" Coax	No
5.0	167.0	2" conduit	No
5.0	167.0	0.39" (10mm) Fiber Trunk	Yes
0.0	167.0	3" conduit	No
0.0	167.0	0.96" (24.3mm) Cable	No
0.0	167.0	0.92" (23.4mm) Cable	No
0.0	167.0	0.78" (19.7mm) 8 AWG 6	Yes
0.0	167.0	0.39" (10mm) Fiber Trunk	No
0.0	157.0	1.75" (44.5mm) Hybrid	No
0.0	145.0	1 5/8" Coax	Yes
0.0	145.0	1 5/8" (1.63"-41.3mm) Fiber	No
0.0	145.0	1 1/4" Hybriflex Cable	Yes
0.0	127.0	7/8" Coax	No
0.0	127.0	7/8" Coax	Yes
0.0	127.0	1 1/4" Hybriflex Cable	Yes
0.0	127.0	1 1/4" Hybriflex Cable	No
5.0	126.0	1 5/8" Coax	No
0.0	110.8	#20 Reinforcement	Yes
0.0	110.8	#20 Reinforcement	Yes
0.0	110.8	#20 Reinforcement	Yes
0.0	110.8	#20 Reinforcement	Yes

LOAD CASES

1.2D + 1.0W Normal	116.96 mph wind with no ice
0.9D + 1.0W Normal	116.96 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Nor	48.73 mph wind with 0.850" radial
1.2D + 1.0Ev + 1.0Eh Nor	Seismic
0.9D - 1.0Ev + 1.0Eh Nor	Seismic (Reduced DL)
1.0D + 1.0W Service Norm	60 mph Wind with No Ice

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	4128.60	34.62	75.80
0.9D + 1.0W Normal	4057.62	34.58	56.83
1.2D + 1.0Di + 1.0Wi Normal	926.43	7.19	96.48
1.2D + 1.0Ev + 1.0Eh Normal	272.98	1.90	76.12
0.9D - 1.0Ev + 1.0Eh Normal	266.80	1.90	52.51
1.0D + 1.0W Service Normal	962.16	8.14	63.21

DISH DEFLECTIONS

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

ANALYSIS PARAMETERS

Location:	New Haven County,CT	**Height:**	183 ft
Type and Shape:	Taper, 18 Sides	**Base Diameter:**	48.62 in
Manufacturer:	Undetermined	**Top Diameter:**	19.86 in
K_d (non-service):	0.95	**Taper:**	0.1750 in/ft
K_e:	1.00	**Rotation:**	0.000°

ICE & WIND PARAMETERS

Exposure Category:	B	**Design Wind Speed w/o Ice:**	117 mph
Risk Category:	II	**Design Wind Speed w/Ice:**	49 mph
Topo Factor Procedure:	Method 1	**Operational Wind Speed:**	60 mph
Topographic Category:	1	**Design Ice Thickness:**	0.85 in
Crest Height:	0 ft	**HMSL:**	94.20 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			**Period Based on Rayleigh Method (sec):**	3.04
T_L (sec):	6	**P:**	1	**C_s:**	0.030
S_s:	0.200	**S_1:**	0.053	**C_s Max:**	0.030
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.213	**S_{d1}:**	0.085		

LOAD CASES

1.2D + 1.0W Normal	116.96 mph wind with no ice
0.9D + 1.0W Normal	116.96 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Normal	48.73 mph wind with 0.850" radial ice
1.2D + 1.0Ev + 1.0Eh Normal	Seismic
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL)
1.0D + 1.0W Service Normal	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

							Bottom						Top						
Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	35.00	0.5000	50		0.00	8,516	48.62	0.000	76.36	22,340.4	15.38	97.24	42.50	35.00	66.65	14,852.4	13.22	85.00	0.1749
2-18	35.00	0.5000	50	Slip	78.00	7,763	44.64	28.500	70.04	17,236.9	13.98	89.27	38.51	63.50	60.32	11,012.9	11.82	77.03	0.1749
3-18	35.00	0.3750	60	Slip	66.00	5,215	40.22	58.000	47.43	9,516.0	17.15	107.27	34.10	93.00	40.14	5,769.5	14.27	90.94	0.1749
4-18	33.00	0.3125	60	Slip	60.00	3,609	35.60	88.000	35.00	5,507.3	18.33	113.93	29.83	121.00	29.28	3,222.8	15.07	95.46	0.1749
								116.50								1,487.0			
5-18	36.00	0.2500	60	Slip	54.00	2,694	31.12	0	24.49	2,948.3	20.18	124.47	24.82	152.50	19.50		15.74	99.28	0.1749
								149.00								572.4			
6-18	34.00	0.1875	60	Slip	42.00	1,559	25.81	0	15.25	1,264.4	22.51	137.64	19.86	183.00	11.71		16.91	105.92	0.1749

Shaft Weight 29,356

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
175.00	RFS APXV18-206517S-C	3	1.00	-4.000	26.40	5.160	0.68	79.75	6.522	0.68
169.00	Ericsson AIR 6419 B77G	3	0.75	0.000	66.10	3.797	0.65	121.82	4.554	0.65
167.00	CCI DMP65R-BU8D	3	0.75	0.000	95.70	17.871	0.63	290.66	19.985	0.63
167.00	Raycap DC9-48-60-24-8C-EV	2	0.75	0.000	16.00	4.788	0.50	90.05	5.632	0.50
167.00	Quintel QD8616-7	3	0.75	0.000	150.00	18.815	0.65	368.43	20.935	0.65
167.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	3429.10	41.222	1.00
167.00	Ericsson RRUS 32 B2	3	0.75	0.000	53.00	2.743	0.50	95.19	3.414	0.50
167.00	Ericsson RRUS E2 B29	3	0.75	0.000	60.00	3.145	0.50	106.39	3.810	0.50
167.00	Ericsson RRUS 32 B30	3	0.75	0.000	60.00	2.743	0.50	102.20	3.414	0.50
167.00	Ericsson RRUS 4449 B5, B12	3	0.75	0.000	71.00	1.969	0.50	107.97	2.504	0.50
167.00	Ericsson RRUS 4478 B14	3	0.75	0.000	59.90	1.842	0.50	91.62	2.357	0.50
167.00	Ericsson RRUS 4426 B66	3	0.75	0.000	48.40	1.650	0.50	74.01	2.137	0.50
167.00	Commscope WCS-IMFQ-AMT	1	0.75	0.000	29.50	0.989	0.50	48.82	1.368	0.50
167.00	Raycap DC6-48-60-18-8F (23.5"	1	0.75	0.000	20.00	1.260	0.50	50.20	1.638	0.50
165.00	Ericsson Air 6449 B77D	3	0.75	0.000	81.60	4.028	0.65	140.46	4.815	0.65
157.00	Generic Flat Platform with Han	1	1.00	0.000	2500.00	42.400	1.00	3512.70	54.355	1.00
157.00	JMA Wireless MX08FRO665-21	3	0.75	0.000	64.50	12.489	0.64	211.02	14.091	0.64
157.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	110.71	2.486	0.50
157.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	97.14	2.486	0.50
157.00	Raycap RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	1.00	54.34	2.380	1.00
145.00	Round Platform w/ Handrails	1	1.00	0.000	2000.00	27.200	1.00	2732.02	41.009	1.00
145.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.000	127.90	20.243	0.63	349.68	22.338	0.63
145.00	Generic Mount Reinforcement	1	1.00	0.000	200.00	7.500	1.00	309.33	11.730	1.00
145.00	Ericsson AIR32 B66Aa/B2a	3	0.75	0.000	132.20	6.510	0.67	222.37	7.747	0.67
145.00	Ericsson Radio 4449 B71 B85A	3	0.75	0.000	75.00	1.650	0.50	108.97	2.130	0.50
145.00	Ericsson RRUS 4415 B25	3	0.75	0.000	46.00	1.842	0.50	73.70	2.349	0.50
145.00	Ericsson Air6449 B41	3	0.75	0.000	104.00	5.682	0.63	180.99	6.579	0.63
145.00	Ericsson KRY 112 489/2	3	0.75	0.000	15.40	0.559	0.50	25.38	0.855	0.50
127.00	Commscope CBC78T-DS-43-2X	3	0.75	0.000	20.70	0.552	0.50	33.03	0.836	0.50
127.00	Raycap RRFDC-3315-PF-48	2	0.75	0.000	26.90	2.512	0.50	71.37	3.093	0.50
127.00	Andrew HBXX-6517DS-A2M (43 lbs	3	0.75	0.000	43.00	8.528	0.68	141.18	10.150	0.68
126.00	Antel BXA-80063/6CF	3	0.75	1.000	14.90	7.582	0.65	93.89	9.123	0.65
126.00	Commscope JAHH-45B-R3B	6	0.75	0.000	83.80	11.400	0.63	211.25	12.955	0.63
126.00	Flat Platform w/ Handrails	1	1.00	0.000	2000.00	42.400	1.00	2792.72	54.098	1.00
126.00	Samsung B2/B66A RRH-BR049	3	0.75	0.000	84.40	1.875	0.50	119.98	2.378	0.50
126.00	Samsung B5/B13 RRH-BR04C	3	0.75	0.000	70.30	1.875	0.50	102.21	2.378	0.50
Totals	Num Loadings: 36	93			14,987.90			24,865.82		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : _

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	175.00	6	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	METRO PCS INC
0.00	167.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	4	1	1	210	1	Y	AT&T MOBILITY
5.00	167.00	3	2" conduit	2.38	3.65	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	167.00	3	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	167.00	2	3" conduit	3.5	7.58	N	0	0	0	0	0	N	AT&T MOBILITY

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	167.00	2	0.92" (23.4mm) Cable	0.92	0.89	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	167.00	2	0.96" (24.3mm) Cable	0.96	0.88	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	167.00	1	0.39" (10mm) Fiber Tr	0.39	0.06	N	1	1	1	240	1	Y	AT&T MOBILITY
0.00	157.00	1	1.75" (44.5mm) Hybrid	1.75	2.72	N	0	0	0	0	0	N	DISH WIRELESS
0.00	145.00	6	1 5/8" Coax	1.98	0.82	N	6	1	1	250	1	Y	T-MOBILE
0.00	145.00	2	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0	0	0	0	N	T-MOBILE
0.00	145.00	2	1 1/4" Hybriflex Cabl	1.54	1	N	2	1	1	350	1	Y	T-MOBILE
0.00	127.00	12	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	VERIZON WIREL
0.00	127.00	6	7/8" Coax	1.09	0.33	N	6	1	1	0	1	Y	VERIZON WIREL
0.00	127.00	2	1 1/4" Hybriflex Cabl	1.54	1	N	2	1	1	0	1	Y	VERIZON WIREL
0.00	127.00	2	1 1/4" Hybriflex Cabl	1.54	1	N	0	0	0	0	0	N	VERIZON WIREL
5.00	126.00	6	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
0.00	110.80	1	#20 Reinforcement	4	4.68	N	1	0	0	180	0	Y	
0.00	110.80	1	#20 Reinforcement	4	4.68	N	1	0	0	0	0	Y	
0.00	110.80	1	#20 Reinforcement	4	4.68	N	1	0	0	90	0	Y	
0.00	110.80	1	#20 Reinforcement	4	4.68	N	1	0	0	270	0	Y	

ADDITIONAL STEEL

						Intermediate Connectors				
Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Description	Spacing (in)	Len (in)	Connectors	Continuation?
0.00	22.50	4	SOL #20 All Thread Bar	80	2.19	6" Angle Bracket	20.00	3.31	5/8" A36 U-Bolt	N
22.50	43.00	4	SOL #20 All Thread Bar	80	2.19	6" Angle Bracket	18.00	3.31	5/8" A36 U-Bolt	Y
43.00	102.50	4	SOL #20 All Thread Bar	80	2.19	6" Angle Bracket	30.00	3.31	5/8" A36 U-Bolt	Y

SEGMENT PROPERTIES

(Max Len: 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)	Additional Reinforcing Area (in^2)	Additional Reinforcing Ix (in^4)	Additional Reinforcing Weight (lb)
0.00		0.5000	48.620	76.364	22,340.40	15.38	97.24	63.5	905.0	0.0	0.0	19.640	7,654.20	0.0
5.00		0.5000	47.745	74.976	21,144.30	15.07	95.49	63.5	872.3	0.0	1,287.4	19.640	7,412.80	334.0
10.00		0.5000	46.871	73.588	19,991.70	14.77	93.74	63.5	840.1	0.0	1,263.8	19.640	7,175.20	334.0
15.00		0.5000	45.996	72.200	18,881.70	14.46	91.99	63.5	808.5	0.0	1,240.2	19.640	6,941.50	334.0
20.00		0.5000	45.122	70.812	17,813.60	14.15	90.24	63.5	777.6	0.0	1,216.6	19.640	6,711.70	334.0
22.50	Reinf. Top Reinf Bottom	0.5000	44.684	70.118	17,295.00	13.99	89.37	63.5	762.3	0.0	599.4	19.640	6,598.30	167.0
25.00		0.5000	44.247	69.424	16,786.50	13.84	88.49	63.5	747.2	0.0	593.5	19.640	6,485.80	167.0
28.50	Bot - Section 2	0.5000	43.635	68.453	16,091.60	13.62	87.27	63.5	726.4	0.0	821.0	19.640	6,330.00	233.8
30.00		0.5000	43.372	68.036	15,799.70	13.53	86.74	63.5	717.5	0.0	704.8	19.640	6,518.00	100.2
35.00	Top - Section 1	0.5000	43.498	68.235	15,938.80	13.58	87.00	63.5	721.7	0.0	2,318.5	19.640	6,295.40	334.0
40.00		0.5000	42.623	66.847	14,985.90	13.27	85.25	63.5	692.5	0.0	1,149.1	19.640	6,076.60	334.0
43.00	Reinf. Top Reinf Bottom	0.5000	42.099	66.015	14,432.70	13.08	84.20	63.5	675.2	0.0	678.1	19.640	5,947.20	200.4
45.00		0.5000	41.749	65.459	14,071.70	12.96	83.50	63.5	663.9	0.0	447.4	19.640	5,861.80	133.6
50.00		0.5000	40.874	64.071	13,195.40	12.65	81.75	63.5	635.9	0.0	1,101.9	19.640	5,650.80	334.0
55.00		0.5000	40.000	62.684	12,356.40	12.34	80.00	63.5	608.4	0.0	1,078.3	19.640	5,443.60	334.0
58.00	Bot - Section 3	0.5000	39.475	61.851	11,870.40	12.16	78.95	63.5	592.3	0.0	635.6	19.640	5,321.20	200.4
60.00		0.5000	39.125	61.296	11,553.60	12.03	78.25	63.5	581.6	0.0	740.4	19.640	5,414.50	133.6
63.50	Top - Section 2	0.3750	39.263	46.284	8,843.30	16.70	104.70	76.2	443.6	0.0	1,279.8	19.640	5,272.20	233.8
65.00		0.3750	39.000	45.972	8,665.50	16.57	104.00	76.2	437.6	0.0	235.4	19.640	5,211.80	100.2
70.00		0.3750	38.126	44.931	8,090.10	16.16	101.67	76.2	417.9	0.0	773.3	19.640	5,012.90	334.0
75.00		0.3750	37.251	43.890	7,540.70	15.75	99.34	76.2	398.7	0.0	755.6	19.640	4,818.00	334.0
80.00		0.3750	36.377	42.849	7,016.80	15.34	97.00	76.2	379.9	0.0	737.9	19.640	4,626.90	334.0
85.00		0.3750	35.502	41.808	6,517.80	14.93	94.67	76.2	361.6	0.0	720.2	19.640	4,439.70	334.0
88.00	Bot - Section 4	0.3750	34.977	41.184	6,230.00	14.68	93.27	76.2	350.8	0.0	423.6	19.640	4,329.20	200.4
90.00		0.3750	34.627	40.767	6,043.00	14.52	92.34	76.2	343.7	0.0	515.9	19.640	4,387.00	133.6
93.00	Top - Section 3	0.3125	34.728	34.134	5,107.90	17.83	111.13	75	289.7	0.0	764.1	19.640	4,277.20	200.4
95.00		0.3125	34.378	33.787	4,953.70	17.63	110.01	75.2	283.8	0.0	231.1	19.640	4,204.70	133.6
100.00		0.3125	33.503	32.920	4,581.90	17.14	107.21	75.7	269.4	0.0	567.5	19.640	4,026.40	334.0
102.50	Reinf. Top	0.3125	33.066	32.486	4,403.20	16.89	105.81	76	262.3	0.0	278.2	19.640	3,938.70	167.0
105.00		0.3125	32.629	32.052	4,229.20	16.65	104.41	76.2	255.3	0.0	274.5			
110.00		0.3125	31.754	31.185	3,895.00	16.15	101.61	76.2	241.6	0.0	538.0			
115.00		0.3125	30.879	30.318	3,578.90	15.66	98.81	76.2	228.3	0.0	523.2			
116.50	Bot - Section 5	0.3125	30.617	30.057	3,487.60	15.51	97.97	76.2	224.4	0.0	154.1			
120.00		0.3125	30.005	29.450	3,280.40	15.17	96.02	76.2	215.3	0.0	643.2			
121.00	Top - Section 4	0.2500	30.330	23.868	2,728.50	19.63	121.32	73.1	177.2	0.0	181.4			
125.00		0.2500	29.630	23.312	2,542.50	19.14	118.52	73.6	169.0	0.0	321.1			
126.00		0.2500	29.455	23.174	2,497.30	19.01	117.82	73.8	167.0	0.0	79.1			
127.00		0.2500	29.280	23.035	2,452.70	18.89	117.12	73.9	165.0	0.0	78.6			
130.00		0.2500	28.756	22.618	2,322.10	18.52	115.02	74.3	159.1	0.0	233.0			
135.00		0.2500	27.881	21.925	2,114.90	17.90	111.52	74.9	149.4	0.0	378.9			
140.00		0.2500	27.007	21.231	1,920.30	17.28	108.03	75.6	140.1	0.0	367.1			
145.00		0.2500	26.132	20.537	1,738.10	16.67	104.53	76.2	131.0	0.0	355.3			
149.00	Bot - Section 6	0.2500	25.432	19.981	1,600.90	16.17	101.73	76.2	124.0	0.0	275.7			
150.00		0.2500	25.257	19.843	1,567.80	16.05	101.03	76.2	122.3	0.0	119.5			
152.50	Top - Section 5	0.1875	25.195	14.882	1,175.90	21.93	134.37	70.7	91.9	0.0	295.0			
155.00		0.1875	24.758	14.622	1,115.30	21.52	132.04	71.2	88.7	0.0	125.5			
157.00		0.1875	24.408	14.414	1,068.30	21.19	130.18	71.5	86.2	0.0	98.8			
160.00		0.1875	23.883	14.101	1,000.40	20.70	127.38	72	82.5	0.0	145.5			
165.00		0.1875	23.009	13.581	893.60	19.87	122.71	72.9	76.5	0.0	235.5			
167.00		0.1875	22.659	13.373	853.20	19.55	120.85	73.2	74.2	0.0	91.7			
169.00		0.1875	22.309	13.165	813.90	19.22	118.98	73.6	71.9	0.0	90.3			
170.00		0.1875	22.134	13.060	794.80	19.05	118.05	73.7	70.7	0.0	44.6			
175.00		0.1875	21.259	12.540	703.50	18.23	113.38	74.6	65.2	0.0	217.8			
180.00		0.1875	20.385	12.020	619.50	17.41	108.72	75.4	59.9	0.0	208.9			
183.00		0.1875	19.860	11.707	572.40	16.91	105.92	76	56.8	0.0	121.1			
										Totals:	29,356.0			6,847.0

Load Case: 1.2D + 1.0W Normal — 116.96 mph wind with no ice — 28 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-75.80	-34.62	0.00	-4,128.6	0.00	4,128.60	4,364.18	1,030.91	4,481.01	4,310.15	0	0	0.728
5.00	-73.33	-34.32	0.00	-3,955.5	0.00	3,955.52	4,284.87	1,012.17	4,319.63	4,154.11	0.1	-0.19	0.720
10.00	-70.80	-34.01	0.00	-3,783.9	0.00	3,783.92	4,205.55	993.44	4,161.21	4,000.95	0.41	-0.38	0.710
15.00	-68.30	-33.69	0.00	-3,613.9	0.00	3,613.86	4,126.23	974.70	4,005.75	3,850.66	0.91	-0.58	0.700
20.00	-65.86	-33.43	0.00	-3,445.4	0.00	3,445.42	4,046.91	955.96	3,853.25	3,703.25	1.62	-0.77	0.690
22.50	-64.63	-33.26	0.00	-3,361.8	0.00	3,361.84	4,007.25	946.59	3,778.11	3,630.62	2.06	-0.87	0.684
25.00	-63.41	-33.05	0.00	-3,278.7	0.00	3,278.70	3,967.59	937.23	3,703.71	3,558.71	2.54	-0.97	0.678
28.50	-61.74	-32.86	0.00	-3,163.0	0.00	3,163.02	3,912.06	924.11	3,600.79	3,459.25	3.3	-1.11	0.670
30.00	-60.56	-32.62	0.00	-3,113.7	0.00	3,113.73	3,888.27	918.49	3,557.12	3,417.06	3.66	-1.17	0.658
35.00	-56.78	-32.17	0.00	-2,950.7	0.00	2,950.66	3,899.64	921.18	3,577.96	3,437.19	4.99	-1.36	0.628
40.00	-54.42	-31.80	0.00	-2,789.8	0.00	2,789.83	3,820.32	902.44	3,433.91	3,298.00	6.52	-1.55	0.614
43.00	-53.03	-31.55	0.00	-2,694.4	0.00	2,694.45	3,772.73	891.20	3,348.90	3,215.87	7.53	-1.67	0.605
45.00	-52.07	-31.22	0.00	-2,631.4	0.00	2,631.35	3,741.00	883.70	3,292.82	3,161.69	8.24	-1.74	0.599
50.00	-49.77	-30.70	0.00	-2,475.2	0.00	2,475.24	3,661.68	864.96	3,154.70	3,028.25	10.16	-1.92	0.584
55.00	-47.52	-30.25	0.00	-2,321.7	0.00	2,321.74	3,582.36	846.23	3,019.53	2,897.69	12.27	-2.1	0.568
58.00	-46.18	-29.95	0.00	-2,231.0	0.00	2,231.01	3,534.77	834.99	2,939.85	2,820.73	13.63	-2.21	0.557
60.00	-44.89	-29.59	0.00	-2,171.1	0.00	2,171.10	3,503.04	827.49	2,887.32	2,770.01	14.57	-2.28	0.545
63.50	-42.70	-29.16	0.00	-2,067.6	0.00	2,067.55	3,173.45	749.81	2,633.80	2,534.72	16.29	-2.41	0.522
65.00	-42.10	-28.78	0.00	-2,023.8	0.00	2,023.80	3,152.77	744.75	2,598.39	2,501.05	17.06	-2.46	0.516
70.00	-40.21	-28.08	0.00	-1,879.9	0.00	1,879.88	3,081.38	727.89	2,482.07	2,388.54	19.74	-2.66	0.497
75.00	-38.35	-27.37	0.00	-1,739.5	0.00	1,739.47	3,010.00	711.02	2,368.41	2,278.62	22.64	-2.86	0.476
80.00	-36.51	-26.64	0.00	-1,602.6	0.00	1,602.63	2,938.61	694.16	2,257.42	2,171.28	25.74	-3.05	0.455
85.00	-34.72	-26.00	0.00	-1,469.4	0.00	1,469.43	2,867.22	677.30	2,149.09	2,066.54	29.03	-3.24	0.433
88.00	-33.65	-25.60	0.00	-1,391.4	0.00	1,391.43	2,824.39	667.18	2,085.37	2,004.94	31.1	-3.35	0.419
90.00	-32.65	-25.23	0.00	-1,340.2	0.00	1,340.23	2,795.83	660.43	2,043.42	1,964.39	32.52	-3.42	0.405
93.00	-31.18	-24.79	0.00	-1,264.6	0.00	1,264.55	2,304.07	552.98	1,718.97	1,629.57	34.71	-3.53	0.433
95.00	-30.52	-24.33	0.00	-1,215.0	0.00	1,214.97	2,286.91	547.35	1,684.21	1,600.84	36.2	-3.6	0.421
100.00	-28.93	-23.69	0.00	-1,093.3	0.00	1,093.32	2,243.45	533.30	1,598.85	1,529.73	40.07	-3.78	0.390
102.50	-28.13	-23.31	0.00	-1,034.1	0.00	1,034.08	2,221.41	526.28	1,557.00	1,494.57	42.07	-3.87	0.375
102.50	-28.13	-23.31	0.00	-1,034.1	0.00	1,034.08	2,221.41	526.28	1,557.00	1,494.57	42.07	-3.87	0.707
105.00	-27.51	-22.84	0.00	-975.8	0.00	975.82	2,198.16	519.25	1,515.71	1,458.99	44.12	-3.95	0.683
110.00	-26.30	-22.15	0.00	-861.6	0.00	861.62	2,138.67	505.20	1,434.79	1,380.72	48.42	-4.26	0.638
115.00	-25.24	-21.66	0.00	-750.9	0.00	750.86	2,079.18	491.14	1,356.09	1,304.61	53.04	-4.56	0.590
116.50	-24.90	-21.52	0.00	-718.4	0.00	718.37	2,061.33	486.93	1,332.92	1,282.20	54.49	-4.64	0.574
120.00	-23.83	-21.32	0.00	-643.0	0.00	643.05	2,019.69	477.09	1,279.61	1,230.65	57.96	-4.84	0.536
121.00	-23.50	-21.18	0.00	-621.7	0.00	621.73	1,570.80	386.66	1,050.52	971.76	58.98	-4.89	0.658
125.00	-22.77	-20.99	0.00	-537.0	0.00	537.03	1,545.06	377.66	1,002.22	933.42	63.17	-5.1	0.593
126.00	-19.30	-17.15	0.00	-515.6	0.00	515.61	1,538.55	375.41	990.33	923.90	64.24	-5.16	0.573
127.00	-18.88	-16.41	0.00	-498.5	0.00	498.46	1,532.00	373.16	978.50	914.41	65.33	-5.22	0.559
130.00	-18.38	-16.16	0.00	-449.2	0.00	449.24	1,512.17	366.42	943.45	886.12	68.65	-5.38	0.521
135.00	-17.60	-15.81	0.00	-368.5	0.00	368.46	1,478.47	355.18	886.45	839.56	74.42	-5.63	0.453
140.00	-16.84	-15.45	0.00	-289.4	0.00	289.40	1,443.97	343.94	831.23	793.78	80.43	-5.85	0.378
145.00	-12.06	-11.23	0.00	-212.1	0.00	212.13	1,408.40	332.69	777.79	748.69	86.65	-6.04	0.293
149.00	-11.55	-11.03	0.00	-167.2	0.00	167.21	1,370.33	323.70	736.31	708.57	91.75	-6.16	0.246
150.00	-11.36	-10.91	0.00	-156.2	0.00	156.18	1,360.81	321.45	726.12	698.71	93.04	-6.19	0.233
152.50	-10.89	-10.71	0.00	-128.9	0.00	128.91	947.28	241.09	544.56	487.59	96.3	-6.26	0.278
155.00	-10.63	-10.55	0.00	-102.1	0.00	102.13	936.36	236.87	525.68	473.48	99.58	-6.31	0.229
157.00	-6.99	-7.27	0.00	-81.0	0.00	81.03	927.48	233.50	510.82	462.26	102.23	-6.36	0.184
160.00	-6.70	-7.00	0.00	-59.2	0.00	59.23	913.92	228.44	488.93	445.56	106.24	-6.41	0.141
165.00	-5.96	-6.46	0.00	-24.2	0.00	24.22	890.67	220.01	453.51	418.08	112.98	-6.47	0.065
167.00	-1.03	-1.57	0.00	-11.3	0.00	11.30	881.15	216.64	439.71	407.21	115.69	-6.48	0.029
169.00	-0.71	-1.21	0.00	-8.2	0.00	8.15	871.50	213.27	426.13	396.43	118.4	-6.49	0.021
170.00	-0.67	-1.04	0.00	-6.9	0.00	6.94	866.62	211.58	419.42	391.07	119.75	-6.49	0.019
175.00	-0.36	-0.30	0.00	-1.8	0.00	1.75	841.77	203.15	386.66	364.59	126.54	-6.5	0.005
180.00	-0.14	-0.08	0.00	-0.2	0.00	0.25	816.11	194.72	355.23	338.68	133.34	-6.5	0.001
183.00	0.00	-0.07	0.00	0.0	0.00	0.00	800.33	189.66	337.02	323.42	137.42	-6.5	0.000

Load Case: 0.9D + 1.0W Normal — 116.96 mph wind with no ice — 28 Iterations
Gust Response Factor: 1.10
Dead load Factor: 0.90
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-56.83	-34.58	0.00	-4,057.6	0.00	4,057.62	4,364.18	1,030.91	4,481.01	4,310.15	0	0	0.713
5.00	-54.96	-34.22	0.00	-3,884.7	0.00	3,884.70	4,284.87	1,012.17	4,319.63	4,154.11	0.1	-0.19	0.704
10.00	-53.03	-33.85	0.00	-3,713.6	0.00	3,713.59	4,205.55	993.44	4,161.21	4,000.95	0.4	-0.38	0.694
15.00	-51.13	-33.48	0.00	-3,544.3	0.00	3,544.32	4,126.23	974.70	4,005.75	3,850.66	0.9	-0.57	0.684
20.00	-49.28	-33.18	0.00	-3,377.0	0.00	3,376.95	4,046.91	955.96	3,853.25	3,703.25	1.59	-0.76	0.673
22.50	-48.35	-32.98	0.00	-3,294.0	0.00	3,294.00	4,007.25	946.59	3,778.11	3,630.62	2.02	-0.85	0.667
25.00	-47.42	-32.74	0.00	-3,211.6	0.00	3,211.55	3,967.59	937.23	3,703.71	3,558.71	2.49	-0.95	0.661
28.50	-46.16	-32.53	0.00	-3,097.0	0.00	3,096.95	3,912.06	924.11	3,600.79	3,459.25	3.24	-1.09	0.653
30.00	-45.26	-32.26	0.00	-3,048.2	0.00	3,048.15	3,888.27	918.49	3,557.12	3,417.06	3.59	-1.15	0.642
35.00	-42.40	-31.78	0.00	-2,886.9	0.00	2,886.86	3,899.64	921.18	3,577.96	3,437.19	4.89	-1.33	0.612
40.00	-40.62	-31.38	0.00	-2,728.0	0.00	2,727.98	3,820.32	902.44	3,433.91	3,298.00	6.39	-1.52	0.598
43.00	-39.57	-31.13	0.00	-2,633.8	0.00	2,633.83	3,772.73	891.20	3,348.90	3,215.87	7.38	-1.63	0.589
45.00	-38.84	-30.77	0.00	-2,571.6	0.00	2,571.58	3,741.00	883.70	3,292.82	3,161.69	8.08	-1.7	0.583
50.00	-37.10	-30.23	0.00	-2,417.7	0.00	2,417.71	3,661.68	864.96	3,154.70	3,028.25	9.96	-1.88	0.568
55.00	-35.39	-29.76	0.00	-2,266.6	0.00	2,266.58	3,582.36	846.23	3,019.53	2,897.69	12.03	-2.06	0.552
58.00	-34.38	-29.46	0.00	-2,177.3	0.00	2,177.30	3,534.77	834.99	2,939.85	2,820.73	13.36	-2.17	0.542
60.00	-33.41	-29.09	0.00	-2,118.4	0.00	2,118.38	3,503.04	827.49	2,887.32	2,770.01	14.28	-2.24	0.529
63.50	-31.76	-28.67	0.00	-2,016.6	0.00	2,016.57	3,173.45	749.81	2,633.80	2,534.72	15.97	-2.36	0.507
65.00	-31.30	-28.27	0.00	-1,973.6	0.00	1,973.58	3,152.77	744.75	2,598.39	2,501.05	16.72	-2.41	0.501
70.00	-29.87	-27.55	0.00	-1,832.2	0.00	1,832.23	3,081.38	727.89	2,482.07	2,388.54	19.35	-2.61	0.482
75.00	-28.46	-26.82	0.00	-1,694.5	0.00	1,694.47	3,010.00	711.02	2,368.41	2,278.62	22.18	-2.8	0.462
80.00	-27.08	-26.09	0.00	-1,560.4	0.00	1,560.35	2,938.61	694.16	2,257.42	2,171.28	25.21	-2.98	0.441
85.00	-25.73	-25.45	0.00	-1,429.9	0.00	1,429.92	2,867.22	677.30	2,149.09	2,066.54	28.43	-3.17	0.419
88.00	-24.92	-25.05	0.00	-1,353.6	0.00	1,353.58	2,824.39	667.18	2,085.37	2,004.94	30.46	-3.28	0.406
90.00	-24.17	-24.68	0.00	-1,303.5	0.00	1,303.48	2,795.83	660.43	2,043.42	1,964.39	31.84	-3.35	0.392
93.00	-23.07	-24.25	0.00	-1,229.5	0.00	1,229.46	2,304.07	552.98	1,718.97	1,629.57	33.98	-3.45	0.419
95.00	-22.57	-23.78	0.00	-1,181.0	0.00	1,180.96	2,286.91	547.35	1,684.21	1,600.84	35.44	-3.52	0.407
100.00	-21.37	-23.15	0.00	-1,062.0	0.00	1,062.05	2,243.45	533.30	1,598.85	1,529.73	39.22	-3.69	0.377
102.50	-20.77	-22.77	0.00	-1,004.2	0.00	1,004.17	2,221.41	526.28	1,557.00	1,494.57	41.17	-3.78	0.362
102.50	-20.77	-22.77	0.00	-1,004.2	0.00	1,004.17	2,221.41	526.28	1,557.00	1,494.57	41.17	-3.78	0.683
105.00	-20.30	-22.28	0.00	-947.2	0.00	947.25	2,198.16	519.25	1,515.71	1,458.99	43.17	-3.86	0.660
110.00	-19.38	-21.58	0.00	-835.8	0.00	835.84	2,138.67	505.20	1,434.79	1,380.72	47.38	-4.16	0.616
115.00	-18.58	-21.08	0.00	-727.9	0.00	727.94	2,079.18	491.14	1,356.09	1,304.61	51.89	-4.45	0.569
116.50	-18.32	-20.93	0.00	-696.3	0.00	696.31	2,061.33	486.93	1,332.92	1,282.20	53.3	-4.53	0.554
120.00	-17.51	-20.74	0.00	-623.0	0.00	623.05	2,019.69	477.09	1,279.61	1,230.65	56.69	-4.72	0.517
121.00	-17.25	-20.59	0.00	-602.3	0.00	602.30	1,570.80	386.66	1,050.52	971.76	57.68	-4.77	0.634
125.00	-16.70	-20.40	0.00	-520.0	0.00	519.95	1,545.06	377.66	1,002.22	933.42	61.76	-4.97	0.571
126.00	-14.17	-16.65	0.00	-499.1	0.00	499.12	1,538.55	375.41	990.33	923.90	62.81	-5.03	0.551
127.00	-13.86	-15.91	0.00	-482.5	0.00	482.47	1,532.00	373.16	978.50	914.41	63.87	-5.08	0.538
130.00	-13.48	-15.65	0.00	-434.8	0.00	434.76	1,512.17	366.42	943.45	886.12	67.11	-5.24	0.501
135.00	-12.89	-15.30	0.00	-356.5	0.00	356.52	1,478.47	355.18	886.45	839.56	72.73	-5.49	0.435
140.00	-12.32	-14.95	0.00	-280.0	0.00	280.01	1,443.97	343.94	831.23	793.78	78.58	-5.7	0.363
145.00	-8.81	-10.86	0.00	-205.3	0.00	205.29	1,408.40	332.69	777.79	748.69	84.65	-5.88	0.282
149.00	-8.43	-10.67	0.00	-161.9	0.00	161.87	1,370.33	323.70	736.31	708.57	89.62	-6	0.236
150.00	-8.29	-10.55	0.00	-151.2	0.00	151.20	1,360.81	321.45	726.12	698.71	90.87	-6.03	0.224
152.50	-7.94	-10.36	0.00	-124.8	0.00	124.84	947.28	241.09	544.56	487.59	94.04	-6.09	0.266
155.00	-7.75	-10.20	0.00	-98.9	0.00	98.94	936.36	236.87	525.68	473.48	97.24	-6.14	0.219
157.00	-5.09	-7.04	0.00	-78.5	0.00	78.53	927.48	233.50	510.82	462.26	99.82	-6.19	0.176
160.00	-4.87	-6.78	0.00	-57.4	0.00	57.42	913.92	228.44	488.93	445.56	103.72	-6.24	0.135
165.00	-4.32	-6.26	0.00	-23.5	0.00	23.54	890.67	220.01	453.51	418.08	110.28	-6.3	0.062
167.00	-0.74	-1.54	0.00	-11.0	0.00	11.01	881.15	216.64	439.71	407.21	112.92	-6.31	0.028
169.00	-0.50	-1.19	0.00	-7.9	0.00	7.94	871.50	213.27	426.13	396.43	115.56	-6.32	0.021
170.00	-0.48	-1.02	0.00	-6.8	0.00	6.75	866.62	211.58	419.42	391.07	116.88	-6.32	0.018
175.00	-0.27	-0.29	0.00	-1.7	0.00	1.67	841.77	203.15	386.66	364.59	123.49	-6.33	0.005
180.00	-0.10	-0.08	0.00	-0.2	0.00	0.24	816.11	194.72	355.23	338.68	130.11	-6.33	0.001
183.00	0.00	-0.07	0.00	0.0	0.00	0.00	800.33	189.66	337.02	323.42	134.08	-6.33	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi Normal		48.73 mph wind with 0.850" radial ice			27 Iterations
Gust Response Factor:	1.10	Ice Dead Load Factor	1.00		
Dead load Factor:	1.20			Ice Importance Factor	1.00
Wind Load Factor:	1.00				

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-96.48	-7.19	0.00	-926.4	0.00	926.43	4,364.18	1,030.91	4,481.01	4,310.15	0	0	0.178
5.00	-93.75	-7.15	0.00	-890.5	0.00	890.49	4,284.87	1,012.17	4,319.63	4,154.11	0.02	-0.04	0.176
10.00	-90.92	-7.10	0.00	-854.8	0.00	854.75	4,205.55	993.44	4,161.21	4,000.95	0.09	-0.09	0.174
15.00	-88.10	-7.06	0.00	-819.2	0.00	819.23	4,126.23	974.70	4,005.75	3,850.66	0.21	-0.13	0.172
20.00	-85.30	-7.02	0.00	-783.9	0.00	783.93	4,046.91	955.96	3,853.25	3,703.25	0.37	-0.17	0.170
22.50	-83.91	-7.00	0.00	-766.4	0.00	766.37	4,007.25	946.59	3,778.11	3,630.62	0.46	-0.2	0.169
25.00	-82.52	-6.97	0.00	-748.9	0.00	748.87	3,967.59	937.23	3,703.71	3,558.71	0.57	-0.22	0.168
28.50	-80.59	-6.94	0.00	-724.5	0.00	724.48	3,912.06	924.11	3,600.79	3,459.25	0.75	-0.25	0.166
30.00	-79.34	-6.91	0.00	-714.1	0.00	714.06	3,888.27	918.49	3,557.12	3,417.06	0.83	-0.26	0.164
35.00	-75.20	-6.84	0.00	-679.5	0.00	679.51	3,899.64	921.18	3,577.96	3,437.19	1.13	-0.31	0.157
40.00	-72.46	-6.78	0.00	-645.3	0.00	645.30	3,820.32	902.44	3,433.91	3,298.00	1.48	-0.35	0.154
43.00	-70.83	-6.75	0.00	-625.0	0.00	624.95	3,772.73	891.20	3,348.90	3,215.87	1.71	-0.38	0.152
45.00	-69.75	-6.70	0.00	-611.5	0.00	611.46	3,741.00	883.70	3,292.82	3,161.69	1.87	-0.4	0.151
50.00	-67.07	-6.62	0.00	-578.0	0.00	577.97	3,661.68	864.96	3,154.70	3,028.25	2.31	-0.44	0.148
55.00	-64.42	-6.54	0.00	-544.9	0.00	544.89	3,582.36	846.23	3,019.53	2,897.69	2.79	-0.48	0.144
58.00	-62.85	-6.50	0.00	-525.3	0.00	525.26	3,534.77	834.99	2,939.85	2,820.73	3.1	-0.51	0.142
60.00	-61.41	-6.45	0.00	-512.3	0.00	512.26	3,503.04	827.49	2,887.32	2,770.01	3.32	-0.52	0.139
63.50	-58.93	-6.39	0.00	-489.7	0.00	489.70	3,173.45	749.81	2,633.80	2,534.72	3.71	-0.55	0.134
65.00	-58.24	-6.34	0.00	-480.1	0.00	480.12	3,152.77	744.75	2,598.39	2,501.05	3.89	-0.57	0.133
70.00	-55.95	-6.24	0.00	-448.4	0.00	448.44	3,081.38	727.89	2,482.07	2,388.54	4.51	-0.61	0.129
75.00	-53.69	-6.15	0.00	-417.2	0.00	417.22	3,010.00	711.02	2,368.41	2,278.62	5.18	-0.66	0.124
80.00	-51.45	-6.05	0.00	-386.5	0.00	386.48	2,938.61	694.16	2,257.42	2,171.28	5.89	-0.71	0.119
85.00	-49.24	-5.96	0.00	-356.2	0.00	356.25	2,867.22	677.30	2,149.09	2,066.54	6.66	-0.75	0.114
88.00	-47.92	-5.90	0.00	-338.4	0.00	338.38	2,824.39	667.18	2,085.37	2,004.94	7.14	-0.78	0.111
90.00	-46.76	-5.84	0.00	-326.6	0.00	326.59	2,795.83	660.43	2,043.42	1,964.39	7.47	-0.8	0.108
93.00	-45.04	-5.78	0.00	-309.1	0.00	309.06	2,304.07	552.98	1,718.97	1,629.57	7.98	-0.82	0.116
95.00	-44.22	-5.71	0.00	-297.5	0.00	297.51	2,286.91	547.35	1,684.21	1,600.84	8.33	-0.84	0.113
100.00	-42.20	-5.61	0.00	-269.0	0.00	268.97	2,243.45	533.30	1,598.85	1,529.73	9.23	-0.88	0.105
102.50	-41.19	-5.55	0.00	-254.9	0.00	254.94	2,221.41	526.28	1,557.00	1,494.57	9.7	-0.91	0.102
102.50	-41.19	-5.55	0.00	-254.9	0.00	254.94	2,221.41	526.28	1,557.00	1,494.57	9.7	-0.91	0.189
105.00	-40.39	-5.49	0.00	-241.0	0.00	241.05	2,198.16	519.25	1,515.71	1,458.99	10.18	-0.93	0.184
110.00	-38.81	-5.40	0.00	-213.6	0.00	213.60	2,138.67	505.20	1,434.79	1,380.72	11.2	-1	0.173
115.00	-37.39	-5.33	0.00	-186.6	0.00	186.61	2,079.18	491.14	1,356.09	1,304.61	12.29	-1.08	0.161
116.50	-36.97	-5.29	0.00	-178.6	0.00	178.62	2,061.33	486.93	1,332.92	1,282.20	12.63	-1.1	0.157
120.00	-35.66	-5.24	0.00	-160.1	0.00	160.10	2,019.69	477.09	1,279.61	1,230.65	13.45	-1.15	0.148
121.00	-35.29	-5.19	0.00	-154.9	0.00	154.86	1,570.80	386.66	1,050.52	971.76	13.7	-1.16	0.182
125.00	-34.29	-5.14	0.00	-134.1	0.00	134.09	1,545.06	377.66	1,002.22	933.42	14.69	-1.21	0.166
126.00	-28.97	-4.28	0.00	-128.9	0.00	128.86	1,538.55	375.41	990.33	923.90	14.95	-1.23	0.158
127.00	-28.12	-4.11	0.00	-124.6	0.00	124.58	1,532.00	373.16	978.50	914.41	15.21	-1.24	0.155
130.00	-27.48	-4.03	0.00	-112.3	0.00	112.26	1,512.17	366.42	943.45	886.12	16	-1.28	0.145
135.00	-26.42	-3.93	0.00	-92.1	0.00	92.08	1,478.47	355.18	886.45	839.56	17.38	-1.34	0.128
140.00	-25.39	-3.83	0.00	-72.4	0.00	72.41	1,443.97	343.94	831.23	793.78	18.82	-1.4	0.109
145.00	-18.30	-2.80	0.00	-53.3	0.00	53.26	1,408.40	332.69	777.79	748.69	20.31	-1.45	0.084
149.00	-17.62	-2.74	0.00	-42.0	0.00	42.05	1,370.33	323.70	736.31	708.57	21.53	-1.48	0.072
150.00	-17.39	-2.71	0.00	-39.3	0.00	39.31	1,360.81	321.45	726.12	698.71	21.84	-1.49	0.069
152.50	-16.83	-2.65	0.00	-32.5	0.00	32.54	947.28	241.09	544.56	487.59	22.63	-1.5	0.085
155.00	-16.46	-2.60	0.00	-25.9	0.00	25.93	936.36	236.87	525.68	473.48	23.42	-1.52	0.072
157.00	-11.17	-1.83	0.00	-20.7	0.00	20.74	927.48	233.50	510.82	462.26	24.05	-1.53	0.057
160.00	-10.75	-1.74	0.00	-15.2	0.00	15.25	913.92	228.44	488.93	445.56	25.02	-1.54	0.046
165.00	-9.65	-1.60	0.00	-6.5	0.00	6.53	890.67	220.01	453.51	418.08	26.64	-1.56	0.027
167.00	-1.87	-0.44	0.00	-3.3	0.00	3.33	881.15	216.64	439.71	407.21	27.3	-1.56	0.010
169.00	-1.33	-0.35	0.00	-2.4	0.00	2.44	871.50	213.27	426.13	396.43	27.95	-1.56	0.008
170.00	-1.25	-0.30	0.00	-2.1	0.00	2.09	866.62	211.58	419.42	391.07	28.28	-1.56	0.007
175.00	-0.61	-0.10	0.00	-0.6	0.00	0.59	841.77	203.15	386.66	364.59	29.92	-1.57	0.002
180.00	-0.22	-0.03	0.00	-0.1	0.00	0.09	816.11	194.72	355.23	338.68	31.56	-1.57	0.001
183.00	0.00	-0.02	0.00	0.0	0.00	0.00	800.33	189.66	337.02	323.42	32.54	-1.57	0.000

Load Case: 1.0D + 1.0W Service Normal 60 mph Wind with No Ice 26 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.00
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-63.21	-8.14	0.00	-962.2	0.00	962.16	4,364.18	1,030.91	4,481.01	4,310.15	0	0	0.178
5.00	-61.24	-8.07	0.00	-921.4	0.00	921.44	4,284.87	1,012.17	4,319.63	4,154.11	0.02	-0.04	0.176
10.00	-59.22	-7.98	0.00	-881.1	0.00	881.11	4,205.55	993.44	4,161.21	4,000.95	0.09	-0.09	0.173
15.00	-57.22	-7.90	0.00	-841.2	0.00	841.20	4,126.23	974.70	4,005.75	3,850.66	0.21	-0.13	0.171
20.00	-55.25	-7.83	0.00	-801.7	0.00	801.71	4,046.91	955.96	3,853.25	3,703.25	0.38	-0.18	0.168
22.50	-54.27	-7.79	0.00	-782.1	0.00	782.13	4,007.25	946.59	3,778.11	3,630.62	0.48	-0.2	0.167
25.00	-53.30	-7.73	0.00	-762.7	0.00	762.66	3,967.59	937.23	3,703.71	3,558.71	0.59	-0.23	0.165
28.50	-51.95	-7.69	0.00	-735.6	0.00	735.59	3,912.06	924.11	3,600.79	3,459.25	0.77	-0.26	0.163
30.00	-51.01	-7.62	0.00	-724.1	0.00	724.06	3,888.27	918.49	3,557.12	3,417.06	0.85	-0.27	0.160
35.00	-47.94	-7.51	0.00	-685.9	0.00	685.94	3,899.64	921.18	3,577.96	3,437.19	1.16	-0.32	0.153
40.00	-46.03	-7.42	0.00	-648.4	0.00	648.37	3,820.32	902.44	3,433.91	3,298.00	1.52	-0.36	0.149
43.00	-44.90	-7.36	0.00	-626.1	0.00	626.10	3,772.73	891.20	3,348.90	3,215.87	1.75	-0.39	0.147
45.00	-44.15	-7.28	0.00	-611.4	0.00	611.37	3,741.00	883.70	3,292.82	3,161.69	1.92	-0.4	0.146
50.00	-42.29	-7.16	0.00	-575.0	0.00	574.96	3,661.68	864.96	3,154.70	3,028.25	2.37	-0.45	0.142
55.00	-40.46	-7.05	0.00	-539.2	0.00	539.17	3,582.36	846.23	3,019.53	2,897.69	2.86	-0.49	0.138
58.00	-39.37	-6.98	0.00	-518.0	0.00	518.02	3,534.77	834.99	2,939.85	2,820.73	3.17	-0.51	0.135
60.00	-38.33	-6.89	0.00	-504.1	0.00	504.06	3,503.04	827.49	2,887.32	2,770.01	3.39	-0.53	0.132
63.50	-36.52	-6.79	0.00	-479.9	0.00	479.94	3,173.45	749.81	2,633.80	2,534.72	3.79	-0.56	0.127
65.00	-36.06	-6.70	0.00	-469.8	0.00	469.75	3,152.77	744.75	2,598.39	2,501.05	3.97	-0.57	0.125
70.00	-34.53	-6.54	0.00	-436.2	0.00	436.24	3,081.38	727.89	2,482.07	2,388.54	4.59	-0.62	0.121
75.00	-33.02	-6.37	0.00	-403.6	0.00	403.57	3,010.00	711.02	2,368.41	2,278.62	5.27	-0.66	0.116
80.00	-31.52	-6.19	0.00	-371.7	0.00	371.74	2,938.61	694.16	2,257.42	2,171.28	5.99	-0.71	0.111
85.00	-30.05	-6.04	0.00	-340.8	0.00	340.78	2,867.22	677.30	2,149.09	2,066.54	6.75	-0.75	0.105
88.00	-29.17	-5.95	0.00	-322.6	0.00	322.65	2,824.39	667.18	2,085.37	2,004.94	7.24	-0.78	0.102
90.00	-28.36	-5.86	0.00	-310.8	0.00	310.75	2,795.83	660.43	2,043.42	1,964.39	7.57	-0.8	0.099
93.00	-27.14	-5.76	0.00	-293.2	0.00	293.16	2,304.07	552.98	1,718.97	1,629.57	8.07	-0.82	0.105
95.00	-26.61	-5.65	0.00	-281.6	0.00	281.64	2,286.91	547.35	1,684.21	1,600.84	8.42	-0.84	0.103
100.00	-25.29	-5.50	0.00	-253.4	0.00	253.38	2,243.45	533.30	1,598.85	1,529.73	9.32	-0.88	0.095
102.50	-24.63	-5.41	0.00	-239.6	0.00	239.62	2,221.41	526.28	1,557.00	1,494.57	9.79	-0.9	0.092
102.50	-24.63	-5.41	0.00	-239.6	0.00	239.62	2,221.41	526.28	1,557.00	1,494.57	9.79	-0.9	0.172
105.00	-24.15	-5.30	0.00	-226.1	0.00	226.09	2,198.16	519.25	1,515.71	1,458.99	10.26	-0.92	0.166
110.00	-23.19	-5.14	0.00	-199.6	0.00	199.58	2,138.67	505.20	1,434.79	1,380.72	11.26	-0.99	0.155
115.00	-22.32	-5.02	0.00	-173.9	0.00	173.88	2,079.18	491.14	1,356.09	1,304.61	12.34	-1.06	0.144
116.50	-22.07	-4.99	0.00	-166.4	0.00	166.35	2,061.33	486.93	1,332.92	1,282.20	12.67	-1.08	0.141
120.00	-21.20	-4.94	0.00	-148.9	0.00	148.89	2,019.69	477.09	1,279.61	1,230.65	13.48	-1.12	0.132
121.00	-20.95	-4.91	0.00	-143.9	0.00	143.94	1,570.80	386.66	1,050.52	971.76	13.72	-1.14	0.162
125.00	-20.37	-4.87	0.00	-124.3	0.00	124.31	1,545.06	377.66	1,002.22	933.42	14.69	-1.18	0.147
126.00	-17.23	-3.97	0.00	-119.3	0.00	119.34	1,538.55	375.41	990.33	923.90	14.94	-1.2	0.140
127.00	-16.85	-3.80	0.00	-115.4	0.00	115.37	1,532.00	373.16	978.50	914.41	15.19	-1.21	0.137
130.00	-16.46	-3.74	0.00	-104.0	0.00	103.97	1,512.17	366.42	943.45	886.12	15.96	-1.25	0.128
135.00	-15.83	-3.66	0.00	-85.3	0.00	85.28	1,478.47	355.18	886.45	839.56	17.3	-1.31	0.112
140.00	-15.21	-3.58	0.00	-67.0	0.00	66.99	1,443.97	343.94	831.23	793.78	18.7	-1.36	0.095
145.00	-10.93	-2.60	0.00	-49.1	0.00	49.12	1,408.40	332.69	777.79	748.69	20.15	-1.4	0.073
149.00	-10.49	-2.55	0.00	-38.7	0.00	38.73	1,370.33	323.70	736.31	708.57	21.33	-1.43	0.062
150.00	-10.33	-2.52	0.00	-36.2	0.00	36.17	1,360.81	321.45	726.12	698.71	21.63	-1.44	0.059
152.50	-9.94	-2.48	0.00	-29.9	0.00	29.87	947.28	241.09	544.56	487.59	22.39	-1.45	0.072
155.00	-9.72	-2.44	0.00	-23.7	0.00	23.67	936.36	236.87	525.68	473.48	23.15	-1.46	0.060
157.00	-6.42	-1.68	0.00	-18.8	0.00	18.78	927.48	233.50	510.82	462.26	23.77	-1.48	0.048
160.00	-6.17	-1.62	0.00	-13.7	0.00	13.73	913.92	228.44	488.93	445.56	24.7	-1.49	0.038
165.00	-5.50	-1.50	0.00	-5.6	0.00	5.62	890.67	220.01	453.51	418.08	26.27	-1.5	0.020
167.00	-0.99	-0.37	0.00	-2.6	0.00	2.63	881.15	216.64	439.71	407.21	26.9	-1.5	0.008
169.00	-0.69	-0.28	0.00	-1.9	0.00	1.89	871.50	213.27	426.13	396.43	27.53	-1.51	0.006
170.00	-0.65	-0.24	0.00	-1.6	0.00	1.61	866.62	211.58	419.42	391.07	27.84	-1.51	0.005
175.00	-0.33	-0.07	0.00	-0.4	0.00	0.40	841.77	203.15	386.66	364.59	29.42	-1.51	0.001
180.00	-0.12	-0.02	0.00	-0.1	0.00	0.06	816.11	194.72	355.23	338.68	31	-1.51	0.000
183.00	0.00	-0.02	0.00	0.0	0.00	0.00	800.33	189.66	337.02	323.42	31.95	-1.51	0.000

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

Spectral Response Acceleration for Short Period (S_S):	0.200
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.053
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a:	1.600
Site Coefficient F_v:	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.213
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.085
Seismic Response Coefficient (C_s):	0.030
Upper Limit C_S:	0.030
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	3.040
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	2.000
Total Unfactored Dead Load:	63.210 k
Seismic Base Shear (E):	1.900 k

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
54	181.5	121	3,989	0.006	12	150
53	177.5	209	6,582	0.010	20	260
52	172.5	242	7,212	0.011	21	301
51	169.5	50	1,423	0.002	4	62
50	168	100	2,826	0.004	8	124
49	166	166	4,576	0.007	14	206
48	162.5	421	11,126	0.017	33	524
47	158.5	257	6,458	0.010	19	319
46	156	179	4,346	0.007	13	222
45	153.75	225	5,324	0.008	16	280
44	151.25	395	9,031	0.014	27	491
43	149.5	159	3,561	0.006	11	198
42	147	435	9,407	0.015	28	541
41	142.5	605	12,295	0.019	36	752
40	137.5	617	11,670	0.018	35	767
39	132.5	629	11,044	0.017	33	782
38	128.5	383	6,326	0.010	19	476
37	126.5	139	2,218	0.004	7	172
36	125.5	144	2,268	0.004	7	179
35	123	581	8,785	0.014	26	722
34	120.5	246	3,576	0.006	11	306
33	118.25	870	12,169	0.019	36	1,081
32	115.75	251	3,368	0.005	10	312
31	112.5	863	10,918	0.017	32	1,072
30	107.5	956	11,048	0.017	33	1,188
29	103.75	484	5,205	0.008	15	601
28	101.25	654	6,707	0.010	20	813
27	97.5	1,320	12,544	0.020	37	1,640
26	94	532	4,700	0.007	14	661
25	91.5	1,215	10,175	0.016	30	1,510
24	89	817	6,469	0.010	19	1,015
23	86.5	875	6,546	0.010	19	1,087
22	82.5	1,472	10,020	0.016	30	1,829
21	77.5	1,490	8,949	0.014	27	1,851

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
20	72.5	1,508	7,925	0.012	23	1,874
19	67.5	1,525	6,950	0.011	21	1,896
18	64.25	461	1,903	0.003	6	573
17	61.75	1,806	6,887	0.011	20	2,245
16	59	1,041	3,625	0.006	11	1,294
15	56.5	1,087	3,470	0.005	10	1,351
14	52.5	1,830	5,045	0.008	15	2,275
13	47.5	1,854	4,183	0.006	12	2,304
12	44	748	1,449	0.002	4	930
11	41.5	1,129	1,945	0.003	6	1,403
10	37.5	1,901	2,674	0.004	8	2,363
9	32.5	3,071	3,243	0.005	10	3,816
8	29.25	930	796	0.001	2	1,156
7	26.75	1,347	964	0.002	3	1,674
6	23.75	970	547	0.001	2	1,205
5	21.25	975	440	0.001	1	1,212
4	17.5	1,969	603	0.001	2	2,446
3	12.5	1,992	311	0.000	1	2,476
2	7.5	2,016	113	0.000	0	2,505
1	2.5	1,960	12	0.000	0	2,435
RFS APXV18-206517S-C	175	79	2,426	0.004	7	98
Ericsson AIR 6419 B77G	169	198	5,664	0.009	17	246
Commscope WCS-IMFQ-AMT	167	30	823	0.001	2	37
Raycap DC6-48-60-18-8F (23.5" Height)	167	20	558	0.001	2	25
Ericsson RRUS 4426 B66	167	145	4,049	0.006	12	180
Ericsson RRUS 4478 B14	167	180	5,012	0.008	15	223
Ericsson RRUS 4449 B5, B12	167	213	5,940	0.009	18	265
Ericsson RRUS 32 B30	167	180	5,020	0.008	15	224
Ericsson RRUS 32 B2	167	159	4,434	0.007	13	198
Ericsson RRUS E2 B29	167	180	5,020	0.008	15	224
Raycap DC9-48-60-24-8C-EV	167	32	892	0.001	3	40
CCI DMP65R-BU8D	167	287	8,007	0.012	24	357
Quintel QD8616-7	167	450	12,550	0.020	37	559
Generic Round Platform with Handrails	167	2,500	69,722	0.109	207	3,107
Ericsson Air 6449 B77D	165	245	6,665	0.010	20	304
Raycap RDIDC-9181-PF-48	157	22	540	0.001	2	27
Fujitsu TA08025-B604	157	192	4,725	0.007	14	238
Fujitsu TA08025-B605	157	225	5,546	0.009	16	280
JMA Wireless MX08FRO665-21	157	194	4,770	0.008	14	240
Generic Flat Platform with Handrails	157	2,500	61,622	0.096	183	3,107
Ericsson KRY 112 489/2	145	46	971	0.002	3	57
Ericsson Radio 4449 B71 B85A	145	225	4,731	0.007	14	280
Ericsson RRUS 4415 B25	145	138	2,901	0.004	9	171
Ericsson Air6449 B41	145	312	6,560	0.010	19	388
Ericsson AIR32 B66Aa/B2a	145	397	8,339	0.013	25	493
Generic Mount Reinforcement	145	200	4,205	0.007	12	249
RFS APXVAARR24_43-U-NA20	145	384	8,067	0.013	24	477
Round Platform w/ Handrails	145	2,000	42,050	0.066	125	2,485
Commscope CBC78T-DS-43-2X	127	62	1,002	0.002	3	77
Raycap RRFDC-3315-PF-48	127	54	868	0.001	3	67
Andrew HBXX-6517DS-A2M (43 lbs)	127	129	2,081	0.003	6	160
Samsung B5/B13 RRH-BR04C	126	211	3,348	0.005	10	262
Samsung B2/B66A RRH-BR049	126	253	4,020	0.006	12	315
Antel BXA-80063/6CF	126	45	710	0.001	2	56
Commscope JAHH-45B-R3B	126	503	7,982	0.012	24	625
Flat Platform w/ Handrails	126	2,000	31,752	0.050	94	2,485
		63,212	639,517	1.000	1,896	78,552

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
54	181.5	121	3,989	0.006	12	104

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
53	177.5	209	6,582	0.010	20	179
52	172.5	242	7,212	0.011	21	208
51	169.5	50	1,423	0.002	4	42
50	168	100	2,826	0.004	8	86
49	166	166	4,576	0.007	14	142
48	162.5	421	11,126	0.017	33	361
47	158.5	257	6,458	0.010	19	220
46	156	179	4,346	0.007	13	153
45	153.75	225	5,324	0.008	16	193
44	151.25	395	9,031	0.014	27	338
43	149.5	159	3,561	0.006	11	137
42	147	435	9,407	0.015	28	373
41	142.5	605	12,295	0.019	36	519
40	137.5	617	11,670	0.018	35	529
39	132.5	629	11,044	0.017	33	539
38	128.5	383	6,326	0.010	19	328
37	126.5	139	2,218	0.004	7	119
36	125.5	144	2,268	0.004	7	123
35	123	581	8,785	0.014	26	498
34	120.5	246	3,576	0.006	11	211
33	118.25	870	12,169	0.019	36	746
32	115.75	251	3,368	0.005	10	216
31	112.5	863	10,918	0.017	32	740
30	107.5	956	11,048	0.017	33	820
29	103.75	484	5,205	0.008	15	415
28	101.25	654	6,707	0.010	20	561
27	97.5	1,320	12,544	0.020	37	1,131
26	94	532	4,700	0.007	14	456
25	91.5	1,215	10,175	0.016	30	1,042
24	89	817	6,469	0.010	19	700
23	86.5	875	6,546	0.010	19	750
22	82.5	1,472	10,020	0.016	30	1,262
21	77.5	1,490	8,949	0.014	27	1,277
20	72.5	1,508	7,925	0.012	23	1,293
19	67.5	1,525	6,950	0.011	21	1,308
18	64.25	461	1,903	0.003	6	395
17	61.75	1,806	6,887	0.011	20	1,549
16	59	1,041	3,625	0.006	11	893
15	56.5	1,087	3,470	0.005	10	932
14	52.5	1,830	5,045	0.008	15	1,569
13	47.5	1,854	4,183	0.006	12	1,589
12	44	748	1,449	0.002	4	641
11	41.5	1,129	1,945	0.003	6	968
10	37.5	1,901	2,674	0.004	8	1,630
9	32.5	3,071	3,243	0.005	10	2,632
8	29.25	930	796	0.001	2	798
7	26.75	1,347	964	0.002	3	1,155
6	23.75	970	547	0.001	2	831
5	21.25	975	440	0.001	1	836
4	17.5	1,969	603	0.001	2	1,688
3	12.5	1,992	311	0.000	1	1,708
2	7.5	2,016	113	0.000	0	1,728
1	2.5	1,960	12	0.000	0	1,680
RFS APXV18-206517S-C	175	79	2,426	0.004	7	68
Ericsson AIR 6419 B77G	169	198	5,664	0.009	17	170
Commscope WCS-IMFQ-AMT	167	30	823	0.001	2	25
Raycap DC6-48-60-18-8F (23.5" Height)	167	20	558	0.001	2	17
Ericsson RRUS 4426 B66	167	145	4,049	0.006	12	124
Ericsson RRUS 4478 B14	167	180	5,012	0.008	15	154
Ericsson RRUS 4449 B5, B12	167	213	5,940	0.009	18	183
Ericsson RRUS 32 B30	167	180	5,020	0.008	15	154
Ericsson RRUS 32 B2	167	159	4,434	0.007	13	136
Ericsson RRUS E2 B29	167	180	5,020	0.008	15	154
Raycap DC9-48-60-24-8C-EV	167	32	892	0.001	3	27
CCI DMP65R-BU8D	167	287	8,007	0.012	24	246
Quintel QD8616-7	167	450	12,550	0.020	37	386
Generic Round Platform with Handrails	167	2,500	69,722	0.109	207	2,143
Ericsson Air 6449 B77D	165	245	6,665	0.010	20	210
Raycap RDIDC-9181-PF-48	157	22	540	0.001	2	19
Fujitsu TA08025-B604	157	192	4,725	0.007	14	164

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
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JMA Wireless MX08FRO665-21	157	194	4,770	0.008	14	166
Generic Flat Platform with Handrails	157	2,500	61,622	0.096	183	2,143
Ericsson KRY 112 489/2	145	46	971	0.002	3	40
Ericsson Radio 4449 B71 B85A	145	225	4,731	0.007	14	193
Ericsson RRUS 4415 B25	145	138	2,901	0.004	9	118
Ericsson Air6449 B41	145	312	6,560	0.010	19	267
Ericsson AIR32 B66Aa/B2a	145	397	8,339	0.013	25	340
Generic Mount Reinforcement	145	200	4,205	0.007	12	171
RFS APXVAARR24_43-U-NA20	145	384	8,067	0.013	24	329
Round Platform w/ Handrails	145	2,000	42,050	0.066	125	1,715
Commscope CBC78T-DS-43-2X	127	62	1,002	0.002	3	53
Raycap RRFDC-3315-PF-48	127	54	868	0.001	3	46
Andrew HBXX-6517DS-A2M (43 lbs)	127	129	2,081	0.003	6	111
Samsung B5/B13 RRH-BR04C	126	211	3,348	0.005	10	181
Samsung B2/B66A RRH-BR049	126	253	4,020	0.006	12	217
Antel BXA-80063/6CF	126	45	710	0.001	2	38
Commscope JAHH-45B-R3B	126	503	7,982	0.012	24	431
Flat Platform w/ Handrails	126	2,000	31,752	0.050	94	1,715
		63,212	639,517	1.000	1,896	54,194

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

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-76.12	-1.90	0.00	-272.98	0.00	272.98	4,364.18	1,030.91	4,481	4,310.15	0.00	0.00	0.06
5.00	-73.61	-1.92	0.00	-263.46	0.00	263.46	4,284.87	1,012.17	4,320	4,154.11	0.01	-0.01	0.06
10.00	-71.13	-1.93	0.00	-253.86	0.00	253.86	4,205.55	993.44	4,161	4,000.95	0.03	-0.03	0.06
15.00	-68.69	-1.95	0.00	-244.19	0.00	244.19	4,126.23	974.70	4,006	3,850.66	0.06	-0.04	0.06
20.00	-67.48	-1.96	0.00	-234.46	0.00	234.46	4,046.91	955.96	3,853	3,703.25	0.11	-0.05	0.06
22.50	-66.27	-1.96	0.00	-229.57	0.00	229.57	4,007.25	946.59	3,778	3,630.62	0.14	-0.06	0.06
22.50	-66.27	-1.96	0.00	-229.57	0.00	229.57	4,007.25	946.59	3,778	3,630.62	0.14	-0.06	0.06
25.00	-64.60	-1.97	0.00	-224.67	0.00	224.67	3,967.59	937.23	3,704	3,558.71	0.17	-0.07	0.06
28.50	-63.44	-1.97	0.00	-217.79	0.00	217.79	3,912.06	924.11	3,601	3,459.25	0.22	-0.07	0.06
30.00	-59.62	-1.96	0.00	-214.84	0.00	214.84	3,888.27	918.49	3,557	3,417.06	0.25	-0.08	0.06
35.00	-57.26	-1.97	0.00	-205.02	0.00	205.02	3,899.64	921.18	3,578	3,437.19	0.34	-0.09	0.05
40.00	-55.86	-1.97	0.00	-195.20	0.00	195.20	3,820.32	902.44	3,434	3,298.00	0.44	-0.11	0.05
43.00	-54.93	-1.97	0.00	-189.30	0.00	189.30	3,772.73	891.20	3,349	3,215.87	0.51	-0.11	0.05
43.00	-54.93	-1.97	0.00	-189.30	0.00	189.30	3,772.73	891.20	3,349	3,215.87	0.51	-0.11	0.05
45.00	-52.62	-1.96	0.00	-185.36	0.00	185.36	3,741.00	883.70	3,293	3,161.69	0.56	-0.12	0.05
50.00	-50.35	-1.95	0.00	-175.57	0.00	175.57	3,661.68	864.96	3,155	3,028.25	0.69	-0.13	0.05
55.00	-49.00	-1.95	0.00	-165.82	0.00	165.82	3,582.36	846.23	3,020	2,897.69	0.83	-0.14	0.05
58.00	-47.70	-1.94	0.00	-159.98	0.00	159.98	3,534.77	834.99	2,940	2,820.73	0.93	-0.15	0.05
60.00	-45.46	-1.92	0.00	-156.11	0.00	156.11	3,503.04	827.49	2,887	2,770.01	0.99	-0.16	0.05
63.50	-44.88	-1.91	0.00	-149.40	0.00	149.40	3,173.45	749.81	2,634	2,534.72	1.11	-0.17	0.05
65.00	-42.99	-1.89	0.00	-146.53	0.00	146.53	3,152.77	744.75	2,598	2,501.05	1.16	-0.17	0.05
70.00	-41.11	-1.88	0.00	-137.06	0.00	137.06	3,081.38	727.89	2,482	2,388.54	1.35	-0.18	0.05
75.00	-39.26	-1.85	0.00	-127.68	0.00	127.68	3,010.00	711.02	2,368	2,278.62	1.55	-0.20	0.04
80.00	-37.43	-1.83	0.00	-118.42	0.00	118.42	2,938.61	694.16	2,257	2,171.28	1.77	-0.21	0.04
85.00	-36.35	-1.81	0.00	-109.29	0.00	109.29	2,867.22	677.30	2,149	2,066.54	2.00	-0.23	0.04
88.00	-35.33	-1.79	0.00	-103.86	0.00	103.86	2,824.39	667.18	2,085	2,004.94	2.14	-0.24	0.04
90.00	-33.82	-1.76	0.00	-100.28	0.00	100.28	2,795.83	660.43	2,043	1,964.39	2.24	-0.24	0.04
93.00	-33.16	-1.74	0.00	-95.01	0.00	95.01	2,304.07	552.98	1,719	1,629.57	2.40	-0.25	0.04
95.00	-31.52	-1.71	0.00	-91.52	0.00	91.52	2,286.91	547.35	1,684	1,600.84	2.50	-0.25	0.04
100.00	-30.71	-1.69	0.00	-82.99	0.00	82.99	2,243.45	533.30	1,599	1,529.73	2.78	-0.27	0.04
102.50	-30.10	-1.67	0.00	-78.78	0.00	78.78	2,221.41	526.28	1,557	1,494.57	2.92	-0.27	0.07
102.50	-30.10	-1.67	0.00	-78.78	0.00	78.78	2,221.41	526.28	1,557	1,494.57	2.92	-0.27	0.04
105.00	-28.92	-1.64	0.00	-74.60	0.00	74.60	2,198.16	519.25	1,516	1,458.99	3.07	-0.28	0.06
110.00	-27.84	-1.62	0.00	-66.39	0.00	66.39	2,138.67	505.20	1,435	1,380.72	3.37	-0.30	0.06
115.00	-27.53	-1.61	0.00	-58.31	0.00	58.31	2,079.18	491.14	1,356	1,304.61	3.70	-0.33	0.06
116.50	-26.45	-1.57	0.00	-55.90	0.00	55.90	2,061.33	486.93	1,333	1,282.20	3.81	-0.33	0.06
120.00	-26.14	-1.57	0.00	-50.39	0.00	50.39	2,019.69	477.09	1,280	1,230.65	4.06	-0.35	0.05
121.00	-25.42	-1.54	0.00	-48.83	0.00	48.83	1,570.80	386.66	1,051	971.76	4.13	-0.35	0.07

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
125.00	-25.24	-1.54	0.00	-42.67	0.00	42.67	1,545.06	377.66	1,002	933.42	4.44	-0.37	0.06
126.00	-21.33	-1.36	0.00	-41.13	0.00	41.13	1,538.55	375.41	990	923.90	4.52	-0.37	0.06
127.00	-20.55	-1.33	0.00	-39.77	0.00	39.77	1,532.00	373.16	978	914.41	4.59	-0.38	0.06
130.00	-19.77	-1.30	0.00	-35.77	0.00	35.77	1,512.17	366.42	943	886.12	4.84	-0.39	0.05
135.00	-19.00	-1.27	0.00	-29.28	0.00	29.28	1,478.47	355.18	886	839.56	5.26	-0.41	0.05
140.00	-18.25	-1.23	0.00	-22.95	0.00	22.95	1,443.97	343.94	831	793.78	5.70	-0.43	0.04
145.00	-13.11	-0.93	0.00	-16.80	0.00	16.80	1,408.40	332.69	778	748.69	6.16	-0.44	0.03
149.00	-12.91	-0.92	0.00	-13.07	0.00	13.07	1,370.33	323.70	736	708.57	6.54	-0.45	0.03
150.00	-12.42	-0.89	0.00	-12.14	0.00	12.14	1,360.81	321.45	726	698.71	6.63	-0.46	0.03
152.50	-12.14	-0.88	0.00	-9.91	0.00	9.91	947.28	241.09	545	487.59	6.87	-0.46	0.03
155.00	-11.92	-0.86	0.00	-7.72	0.00	7.72	936.36	236.87	526	473.48	7.12	-0.47	0.03
157.00	-7.71	-0.58	0.00	-6.00	0.00	6.00	927.48	233.50	511	462.26	7.31	-0.47	0.02
160.00	-7.19	-0.54	0.00	-4.26	0.00	4.26	913.92	228.44	489	445.56	7.61	-0.47	0.02
165.00	-6.68	-0.51	0.00	-1.54	0.00	1.54	890.67	220.01	454	418.08	8.11	-0.48	0.01
167.00	-1.12	-0.09	0.00	-0.52	0.00	0.52	881.15	216.64	440	407.21	8.31	-0.48	0.00
169.00	-0.81	-0.07	0.00	-0.34	0.00	0.34	871.50	213.27	426	396.43	8.51	-0.48	0.00
170.00	-0.51	-0.04	0.00	-0.28	0.00	0.28	866.62	211.58	419	391.07	8.61	-0.48	0.00
175.00	-0.15	-0.01	0.00	-0.06	0.00	0.06	841.77	203.15	387	364.59	9.11	-0.48	0.00
180.00	0.00	0.00	0.00	0.00	0.00	0.00	816.11	194.72	355	338.68	9.61	-0.48	0.00
183.00	0.00	0.00	0.00	0.00	0.00	0.00	800.33	189.66	337	323.42	9.91	-0.48	0.00

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

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-52.51	-1.90	0.00	-266.80	0.00	266.80	4,364.18	1,030.91	4,481	4,310.15	0.00	0.00	0.06
5.00	-50.78	-1.91	0.00	-257.30	0.00	257.30	4,284.87	1,012.17	4,320	4,154.11	0.01	-0.01	0.06
10.00	-49.08	-1.92	0.00	-247.74	0.00	247.74	4,205.55	993.44	4,161	4,000.95	0.03	-0.03	0.06
15.00	-47.39	-1.93	0.00	-238.14	0.00	238.14	4,126.23	974.70	4,006	3,850.66	0.06	-0.04	0.05
20.00	-46.55	-1.93	0.00	-228.50	0.00	228.50	4,046.91	955.96	3,853	3,703.25	0.11	-0.05	0.05
22.50	-45.72	-1.94	0.00	-223.66	0.00	223.66	4,007.25	946.59	3,778	3,630.62	0.13	-0.06	0.05
22.50	-45.72	-1.94	0.00	-223.66	0.00	223.66	4,007.25	946.59	3,778	3,630.62	0.13	-0.06	0.05
25.00	-44.56	-1.94	0.00	-218.82	0.00	218.82	3,967.59	937.23	3,704	3,558.71	0.17	-0.06	0.05
28.50	-43.77	-1.94	0.00	-212.03	0.00	212.03	3,912.06	924.11	3,601	3,459.25	0.22	-0.07	0.05
30.00	-41.13	-1.93	0.00	-209.12	0.00	209.12	3,888.27	918.49	3,557	3,417.06	0.24	-0.08	0.05
35.00	-39.50	-1.93	0.00	-199.44	0.00	199.44	3,899.64	921.18	3,578	3,437.19	0.33	-0.09	0.05
40.00	-38.53	-1.93	0.00	-189.78	0.00	189.78	3,820.32	902.44	3,434	3,298.00	0.43	-0.10	0.05
43.00	-37.89	-1.93	0.00	-183.98	0.00	183.98	3,772.73	891.20	3,349	3,215.87	0.50	-0.11	0.05
43.00	-37.89	-1.93	0.00	-183.98	0.00	183.98	3,772.73	891.20	3,349	3,215.87	0.50	-0.11	0.05
45.00	-36.30	-1.92	0.00	-180.12	0.00	180.12	3,741.00	883.70	3,293	3,161.69	0.54	-0.12	0.05
50.00	-34.73	-1.91	0.00	-170.51	0.00	170.51	3,661.68	864.96	3,155	3,028.25	0.67	-0.13	0.05
55.00	-33.80	-1.90	0.00	-160.96	0.00	160.96	3,582.36	846.23	3,020	2,897.69	0.81	-0.14	0.05
58.00	-32.91	-1.89	0.00	-155.25	0.00	155.25	3,534.77	834.99	2,940	2,820.73	0.90	-0.15	0.05
60.00	-31.36	-1.87	0.00	-151.46	0.00	151.46	3,503.04	827.49	2,887	2,770.01	0.97	-0.15	0.04
63.50	-30.96	-1.87	0.00	-144.90	0.00	144.90	3,173.45	749.81	2,634	2,534.72	1.08	-0.16	0.04
65.00	-29.66	-1.85	0.00	-142.09	0.00	142.09	3,152.77	744.75	2,598	2,501.05	1.13	-0.17	0.04
70.00	-28.36	-1.83	0.00	-132.84	0.00	132.84	3,081.38	727.89	2,482	2,388.54	1.31	-0.18	0.04
75.00	-27.09	-1.81	0.00	-123.69	0.00	123.69	3,010.00	711.02	2,368	2,278.62	1.51	-0.19	0.04
80.00	-25.82	-1.78	0.00	-114.66	0.00	114.66	2,938.61	694.16	2,257	2,171.28	1.72	-0.21	0.04
85.00	-25.07	-1.76	0.00	-105.77	0.00	105.77	2,867.22	677.30	2,149	2,066.54	1.95	-0.22	0.04
88.00	-24.37	-1.74	0.00	-100.48	0.00	100.48	2,824.39	667.18	2,085	2,004.94	2.09	-0.23	0.04
90.00	-23.33	-1.71	0.00	-97.00	0.00	97.00	2,795.83	660.43	2,043	1,964.39	2.18	-0.23	0.03
93.00	-22.87	-1.70	0.00	-91.87	0.00	91.87	2,304.07	552.98	1,719	1,629.57	2.33	-0.24	0.04
95.00	-21.74	-1.66	0.00	-88.48	0.00	88.48	2,286.91	547.35	1,684	1,600.84	2.44	-0.25	0.04
100.00	-21.18	-1.64	0.00	-80.19	0.00	80.19	2,243.45	533.30	1,599	1,529.73	2.70	-0.26	0.03
102.50	-20.77	-1.62	0.00	-76.09	0.00	76.09	2,221.41	526.28	1,557	1,494.57	2.84	-0.27	0.03
102.50	-20.77	-1.62	0.00	-76.09	0.00	76.09	2,221.41	526.28	1,557	1,494.57	2.84	-0.27	0.06
105.00	-19.95	-1.59	0.00	-72.03	0.00	72.03	2,198.16	519.25	1,516	1,458.99	2.98	-0.27	0.06
110.00	-19.21	-1.56	0.00	-64.06	0.00	64.06	2,138.67	505.20	1,435	1,380.72	3.28	-0.30	0.06
115.00	-18.99	-1.56	0.00	-56.24	0.00	56.24	2,079.18	491.14	1,356	1,304.61	3.60	-0.32	0.05
116.50	-18.25	-1.52	0.00	-53.90	0.00	53.90	2,061.33	486.93	1,333	1,282.20	3.70	-0.32	0.05
120.00	-18.03	-1.51	0.00	-48.58	0.00	48.58	2,019.69	477.09	1,280	1,230.65	3.95	-0.34	0.05
121.00	-17.54	-1.49	0.00	-47.07	0.00	47.07	1,570.80	386.66	1,051	971.76	4.02	-0.34	0.06
125.00	-17.41	-1.48	0.00	-41.12	0.00	41.12	1,545.06	377.66	1,002	933.42	4.31	-0.36	0.06
126.00	-14.71	-1.32	0.00	-39.64	0.00	39.64	1,538.55	375.41	990	923.90	4.39	-0.36	0.05
127.00	-14.17	-1.29	0.00	-38.32	0.00	38.32	1,532.00	373.16	978	914.41	4.47	-0.37	0.05
130.00	-13.64	-1.25	0.00	-34.47	0.00	34.47	1,512.17	366.42	943	886.12	4.70	-0.38	0.05

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
135.00	-13.11	-1.22	0.00	-28.20	0.00	28.20	1,478.47	355.18	886	839.56	5.11	-0.40	0.04
140.00	-12.59	-1.18	0.00	-22.10	0.00	22.10	1,443.97	343.94	831	793.78	5.54	-0.42	0.04
145.00	-9.04	-0.90	0.00	-16.19	0.00	16.19	1,408.40	332.69	778	748.69	5.98	-0.43	0.03
149.00	-8.91	-0.89	0.00	-12.59	0.00	12.59	1,370.33	323.70	736	708.57	6.35	-0.44	0.02
150.00	-8.57	-0.86	0.00	-11.70	0.00	11.70	1,360.81	321.45	726	698.71	6.44	-0.44	0.02
152.50	-8.37	-0.84	0.00	-9.55	0.00	9.55	947.28	241.09	545	487.59	6.67	-0.45	0.03
155.00	-8.22	-0.83	0.00	-7.44	0.00	7.44	936.36	236.87	526	473.48	6.91	-0.45	0.03
157.00	-5.32	-0.56	0.00	-5.78	0.00	5.78	927.48	233.50	511	462.26	7.10	-0.45	0.02
160.00	-4.96	-0.52	0.00	-4.10	0.00	4.10	913.92	228.44	489	445.56	7.39	-0.46	0.02
165.00	-4.60	-0.49	0.00	-1.48	0.00	1.48	890.67	220.01	454	418.08	7.87	-0.46	0.01
167.00	-0.77	-0.09	0.00	-0.51	0.00	0.51	881.15	216.64	440	407.21	8.06	-0.46	0.00
169.00	-0.56	-0.06	0.00	-0.33	0.00	0.33	871.50	213.27	426	396.43	8.26	-0.46	0.00
170.00	-0.35	-0.04	0.00	-0.27	0.00	0.27	866.62	211.58	419	391.07	8.35	-0.46	0.00
175.00	-0.10	-0.01	0.00	-0.06	0.00	0.06	841.77	203.15	387	364.59	8.84	-0.46	0.00
180.00	0.00	0.00	0.00	0.00	0.00	0.00	816.11	194.72	355	338.68	9.32	-0.46	0.00
183.00	0.00	0.00	0.00	0.00	0.00	0.00	800.33	189.66	337	323.42	9.62	-0.46	0.00

ANALYSIS SUMMARY

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W Normal	34.62	0.00	75.80	0.00	0.00	4128.60	0.00	0.73
0.9D + 1.0W Normal	34.58	0.00	56.83	0.00	0.00	4057.62	0.00	0.71
1.2D + 1.0Di + 1.0Wi Normal	7.19	0.00	96.48	0.00	0.00	926.43	102.50	0.19
1.2D + 1.0Ev + 1.0Eh Normal	1.97	0.00	76.12	0.00	0.00	272.98	121.00	0.07
0.9D - 1.0Ev + 1.0Eh Normal	1.94	0.00	52.51	0.00	0.00	266.80	102.50	0.06
1.0D + 1.0W Service Normal	8.14	0.00	63.21	0.00	0.00	962.16	0.00	0.18

ADDITIONAL STEEL SUMMARY

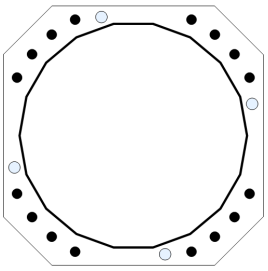
			Intermediate Connectors				Max member		
Elev From (ft)	Elev To (ft)	Member	VQ/I	Shear Applied (kips)	Shear (phiVn) (kips)	Ratio	Pu (kip)	PhiPn (kip)	Ratio
0.00	22.50	SOL #20 All Thread Bar	177.1	3.5	16.8	0.2107	230.2	343.1	0.6709
22.50	43.00	SOL #20 All Thread Bar	189.0	3.4	16.8	0.2024	218.3	345.0	0.6327
43.00	102.50	SOL #20 All Thread Bar	274.5	8.2	16.8	0.4898	201.0	330.5	0.6081

			Upper Termination Connectors					Lower Termination Connectors				
Elev From (ft)	Elev To (ft)	Member	MQ/I	phiVn (kips)	Num Reqd	Num Actual	Ratio	MQ/I (kips)	phiVn (kip)	Num Reqd	Num Actual	Ratio
0.00	22.50	SOL #20 All Thread Bar	0	12	0	0	0.0000	0	12	0	0	0.0000
22.50	43.00	SOL #20 All Thread Bar	0	12	0	0	0.0000	0	12	0	0	0.0000
43.00	102.50	SOL #20 All Thread Bar	146.1343	12	13	16	0.7611	0	12	0	0	0.0000

BASE PLATE ANALYSIS @ 0 FT

PLATE PARAMETERS (ID# 15895)

Width:	56	in
Shape:	Square	
Thickness:	2.75	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Clip Length:	10.5	in
Rod Detail Type:	c	
Clear Distance	-	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Elastic	
Neutral Axis:	116	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 16267]	Cluster	16	2.25	56	A615-75	75	100	6	-

DYWIDAG BAR PARAMETERS

Quantity	Bar Size	Bar Diameter (in)	Fy (ksi)	Fu (ksi)	Bracket Type	Bracket Offset (in)	Circle (in)	Offset (°)
4 [ID# 986]	#20	2.5	80	100	Angle	2.19	55.50	15

ANCHOR ROD GEOMETRY AND APPLIED LOADS --- ORIGINAL (16) 2.25"ø [ID 16267]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)	Shear Load (k)
1	0.464	25.04	12.53	-26.686	2313.678	-168.55	0.04
2	0.678	21.80	17.57	-26.018	2199.314	-164.24	0.78
3	0.893	17.57	21.80	-24.160	1896.485	-152.26	1.49
4	1.107	12.53	25.04	-21.196	1459.968	-133.15	2.13
5	2.035	-12.53	25.04	0.272	1.079	5.27	3.50
6	2.249	-17.57	21.80	5.940	115.443	41.82	3.42
7	2.463	-21.80	17.57	11.337	418.272	76.62	3.17
8	2.678	-25.04	12.53	16.215	854.789	108.07	2.78
9	3.606	-25.04	-12.53	26.686	2313.678	175.58	0.04
10	3.820	-21.80	-17.57	26.018	2199.314	171.27	0.78
11	4.034	-17.57	-21.80	24.160	1896.485	159.29	1.49
12	4.248	-12.53	-25.04	21.196	1459.968	140.18	2.13
13	5.176	12.53	-25.04	-0.272	1.079	1.76	3.50
14	5.391	17.57	-21.80	-5.940	115.443	-34.79	3.42
15	5.605	21.80	-17.57	-11.337	418.272	-69.58	3.17
16	5.819	25.04	-12.53	-16.215	854.789	-101.04	2.78

DYWIDAG BAR GEOMETRY AND APPLIED LOADS --- (4) #20 [ID 986]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)
1	1.833	-7.18	26.80	-5.295	139.540	-39.00
2	3.403	-26.80	-7.18	27.240	3644.303	230.67
3	4.974	7.18	-26.80	5.295	139.540	48.78
4	0.262	26.80	7.18	-27.240	3644.303	-220.90

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	48.6198"ø x 0.5" (18 Sides)	3063.7	75.80	34.62	0.742
Bolt Group	Original (16) 2.25"ø	3063.7	-	34.62	0.742
Dywidag Group	(4) #20	1064.9	-	-	0.258
	TOTALS	**4128.6**	**75.8**	**34.62**	

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	48.6198"ø x 0.5" (18 Sides)	75.2032	-	-	21773.08	-
Bolt Group	Original (16) 2.25"ø	3.9761	3.2477	0.8393	18518.05	4.5
Dywidag Group	(4) #20	4.9087	4.9087	1.9175	7567.69	-

EXTERNAL BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	48.74	in
Point-to-Point Diameter:	49.50	in
Flat Width:	8.595	in
Flat Radians:	0.349	rad

PLATE PROPERTIES

Neutral Axis:	116	°
Bend Line Lower Limit:		rad
Bend Line Upper Limit:	-0.153	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in^3)	Applied Moment Mu (k-in)	Moment Capacity ϕMn (k-in)	Ratio
Flat	30.451	0.00	57.572	688.1	2590.7	0.266
Corner	29.699	0.00	56.150	557.7	2526.8	0.221

ELASTIC ANCHOR ROD ANALYSIS

Class	Group Quantity	Rod Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity ϕPn (k)	Ratio	Interaction
Original	16	2.25	175.6	0.0	243.6	0.721	0.721

DYWIDAG BAR ANALYSIS

Group Quantity	Bar Size	Bar Circle (in)	Applied Axial Load Pu (k)	Compressive Capacity ϕPn (k)	Ratio
4	#20	55.50	230.7	368.2	0.627

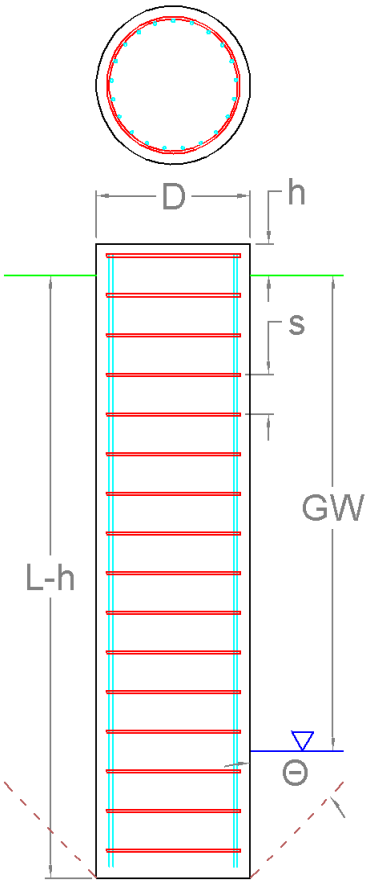
Pier Foundation Analysis (ANSI/TIA-222-H)

Foundation Analysis Parameters			
Pier Diameter	*D*	7.30	ft
Pier Embedment	*L-h*	22.5	ft
Pier Height above Ground	*H*	0.50	ft
Water Table Depth [BGL]	*GW*	99	ft
Pullout Angle	Θ	30	°
Unit Weight of Concrete		150	pcf
Uplift Skin Friction Factor		1.000	

Reactions		
Moment, M_u	4,128.6	k-ft
Shear, V_u	34.6	k
Axial, P_u	75.8	k
Uplift, T_u	0.0	k

Soil Properties

Layer Depth (ft)		Unit Weight	Cohesion	Friction Angle	Ultimate Skin Friction	Ultimate Bearing Pressure
TOP	BTM	pcf	psf	°	psf	psf
0.0	2.0	124	0	0	0	0
2.0	3.5	134	3,702	0	0	0
3.5	5.5	134	4,207	0	2,060	0
5.5	10.5	134	4,368	0	2,104	0
10.5	15.5	135	4,944	0	2,239	0
15.5	23.5	135	5,017	0	2,258	41,780



Soil Strength Capacities

Volume of Concrete	962.6	ft^3
Weight of Concrete [Buoyancy Considered]	144.4	k
Average Soil Unit Weight	133.6	pcf
Skin Friction Resistance	955.0	k
Compressive Bearing Resistance	1,748.6	k
Pullout Weight [Minus Concrete Weight]	979.3	k
Compressive Force, P_u	94.3	k
Nominal Compressive Capacity, $\phi_s P_n$	2,027.7	k
$P_u / \phi_s P_n$	**4.6%**	
Total Lateral Resistance	5,207.8	k
Inflection Point [BGL]	13.1	ft
Moment at Inflection Point, M_D	4,599.4	k-ft
Nominal Moment Capacity, $\phi_s M_n$	19,012.7	k-ft
$M_D / \phi_s M_n$	**24.2%**	

Pier Strength Capacities			
Concrete Compressive Strength, f'_c		3,000	psi
Rebar Size #		11	
Rebar Area (Single)		1.56	in^2
Rebar Quantity		21	
Rebar Yield Strength, F_y		60	ksi
Vertical Rebar Clear Cover		3	in
Tie Rebar Size #		4	
Tie Rebar Area (Single)		0.20	in^2
Tie Rebar Spacing	*s*	12.0	in
Tie Rebar Yield Strength, F_y		60	ksi
Rebar Cage Diameter		79.19	in
Strength Bending/Tension Reduction Factor, ϕ_B		0.90	
Strength Shear Reduction Factor, ϕ_V		0.75	
Strength Compression Reduction Factor, ϕ_C		0.65	
Steel Elastic Modulus		29,000	ksi
Design Moment, M_u		4,148.6	k-ft
Moment Capacity, $\phi_B M_n$		5,171.7	k-ft
$M_u / \phi_B M_n$		**80.2%**	
Design Shear, V_u		419.6	k
Shear Capacity, $\phi_V V_n$		603.4	k
$V_u / \phi_V V_n$		**69.5%**	
Design Compression, P_u		94.3	k
Compression Capacity, $\phi_P P_n$		8,970.4	k
$P_u / \phi_P P_n$		**1.1%**	
Bending Reinforcement Ratio		0.005	

DISH Wireless L.L.C. SITE ID:

BOHVN00162B

DISH Wireless L.L.C. SITE ADDRESS:

185 RESEARCH DRIVE
MILFORD, CT 06460

SCOPE OF WORK

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

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

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

NOTE: THE SCOPE OF THIS PROJECT DOES NOT INCLUDE MODIFICATIONS TO THE TOWER STRUCTURE OR FOUNDATION. A SEPARATE BUILDING PERMIT APPLICATION WILL BE SUBMITTED FOR ANY TOWER MODIFICATIONS.

SITE INFORMATION

PROPERTY OWNER:	DAMATO INVESTMENTS LLC
ADDRESS:	185 RESEARCH DRIVE MILFORD, CT 06460
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	302535
TOWER APP NUMBER:	14099618_D3
COUNTY:	NEW HAVEN
LATITUDE (NAD 83):	41° 14' 25.459" N 41.24041944
LONGITUDE (NAD 83):	73° 0' 42.975" W -73.0119
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	COMMERCIAL
PARCEL NUMBER:	MILF M:91 B:807 L:13A6
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	C. L.& P.
TELEPHONE COMPANY:	FRONTIER COMMUNICATIONS

PROJECT DIRECTORY

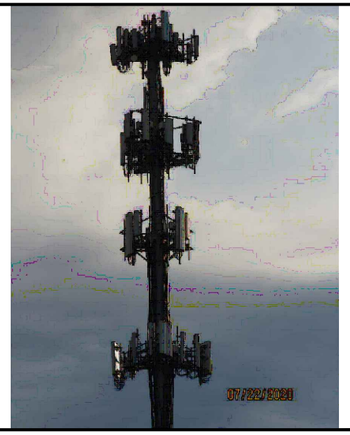
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801
ENGINEER:	ATC TOWER SERVICES, LLC 3500 REGENCY PARKWAY SUITE 100 CARY, NC 27518
SITE ACQUISITION:	DAVID GOODFELLOW DAVID.GOODFELLOW@DISH.COM
CONSTRUCTION MANAGER:	CHAD WILCOX CHAD.WILCOX@DISH.COM
RF ENGINEER:	DIPESH PARIKH DIPESH.PARIKH@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

FROM NEW HAVEN – TRAVEL ON I 95 SOUTH TO EXIT 40. TAKE LEFT AT OFF RAMP AND PROCEED TO FIRST SET OF LIGHTS AND TURN LEFT ON RESEARCH DRIVE. FOLLOW TO # 185

SHEET INDEX

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

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
COA: PEC.0001553

DRAWN BY:	CHECKED BY:	APPROVED BY:
AP	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	05/12/2022	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER

302535-14099618_D3

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

SHEET TITLE

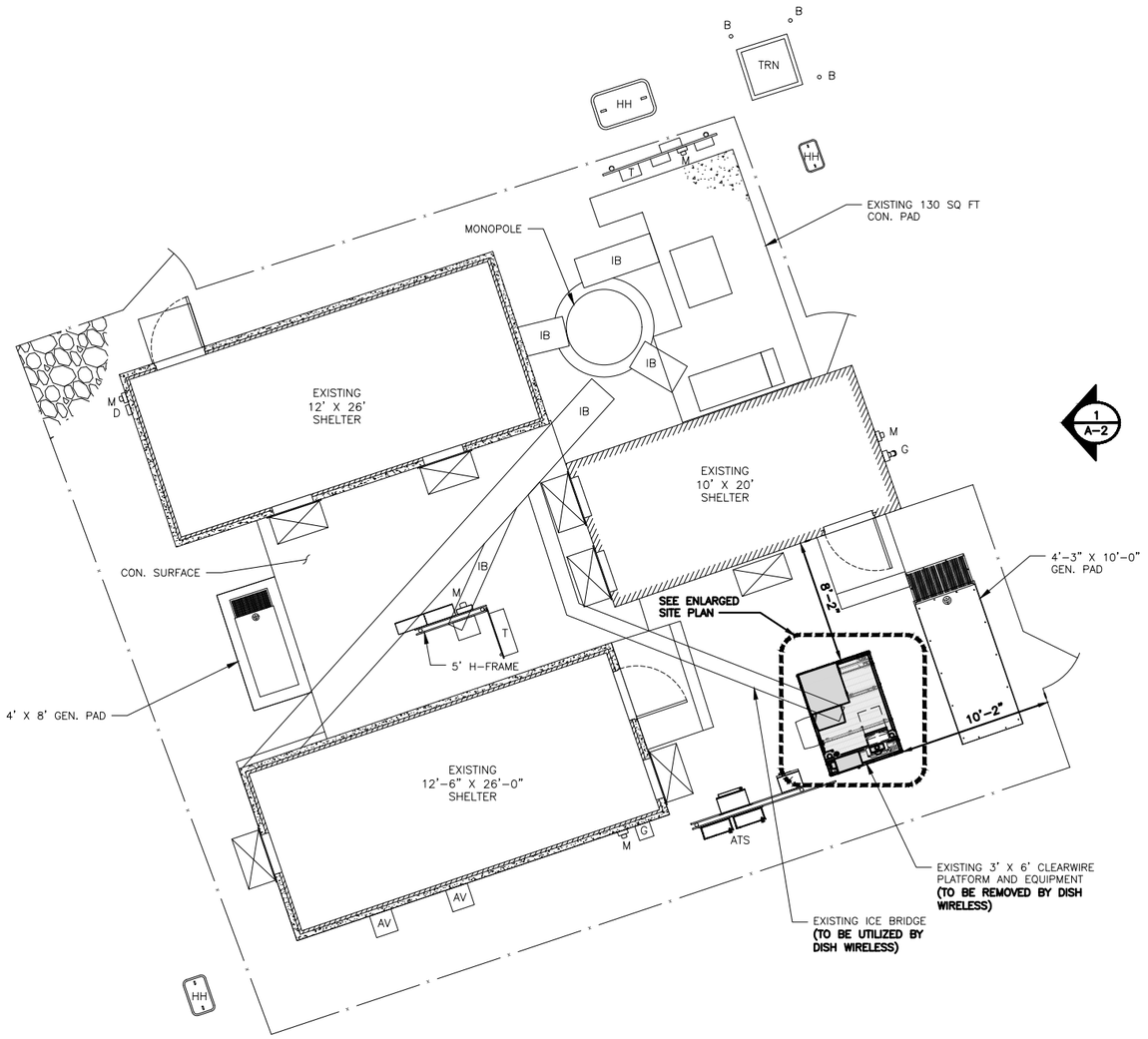
TITLE SHEET

SHEET NUMBER

T-1

NOTES

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



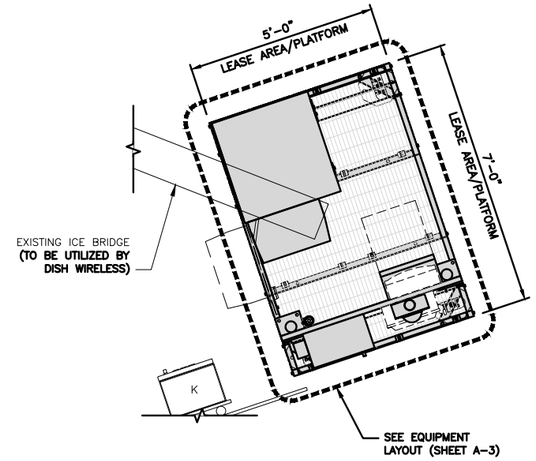
OVERALL SITE PLAN

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

1

NOTES

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



ENLARGED SITE PLAN

2' 0 2' 4'
1"=2'

2

AERIAL VIEW

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
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SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

DRAWN BY:	CHECKED BY:	APPROVED BY:
AP	SRF	SRF

RFDS REV #: ----

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0	05/12/2022	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
302535-14099618_D3

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

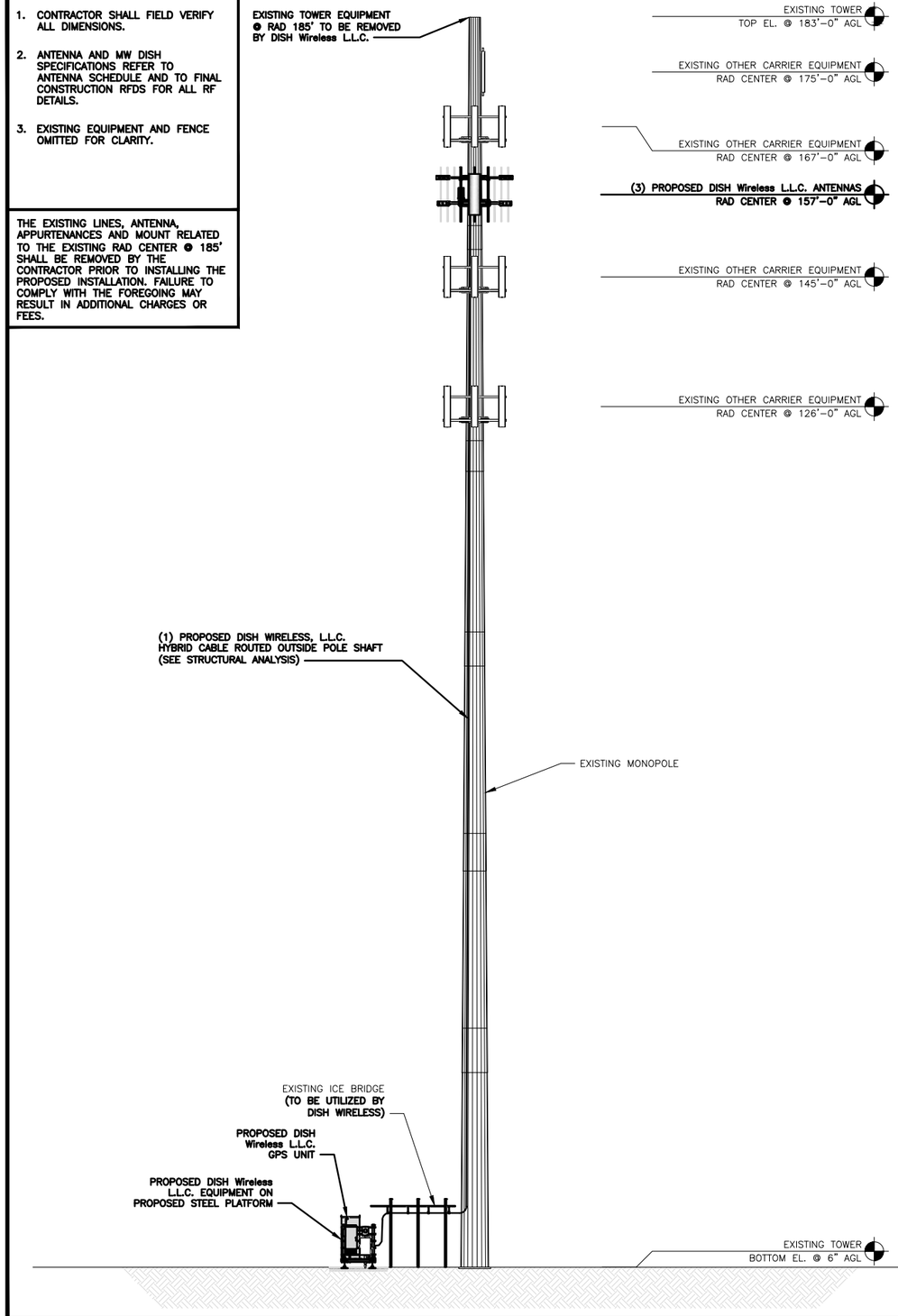
SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

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.

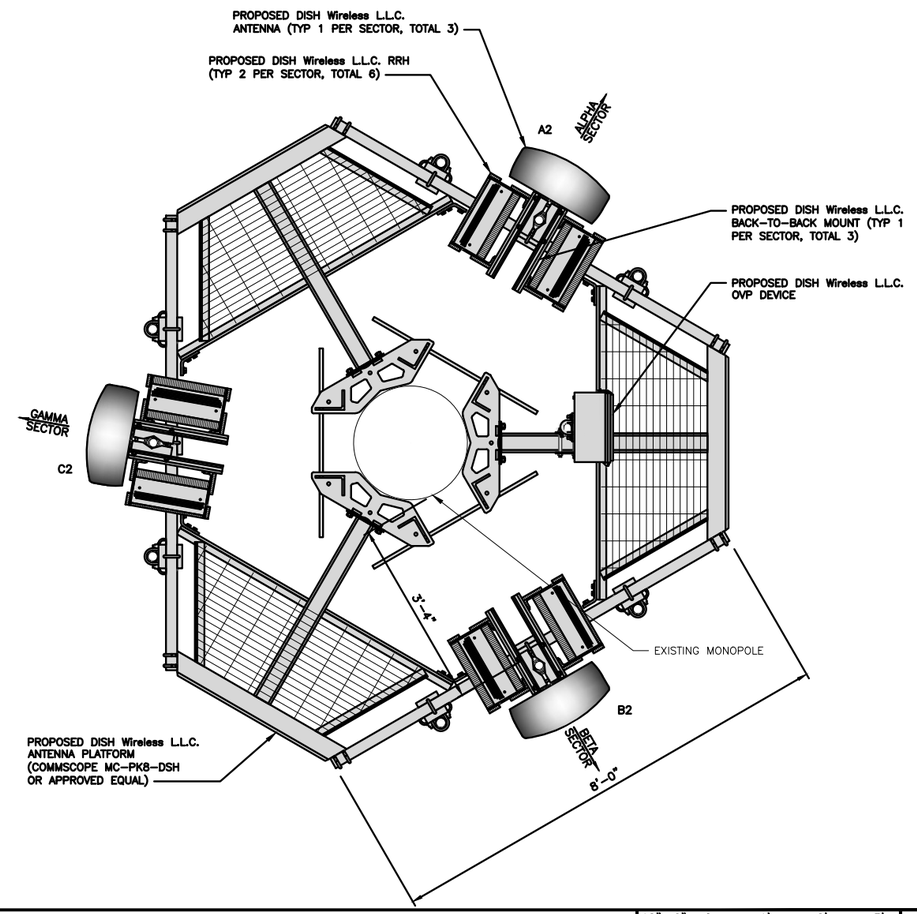
THE EXISTING LINES, ANTENNA, APPURTENANCES AND MOUNT RELATED TO THE EXISTING RAD CENTER @ 185' SHALL BE REMOVED BY THE CONTRACTOR PRIOR TO INSTALLING THE PROPOSED INSTALLATION. FAILURE TO COMPLY WITH THE FOREGOING MAY RESULT IN ADDITIONAL CHARGES OR FEES.



PROPOSED NORTH ELEVATION

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

1



ANTENNA LAYOUT

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

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1	--	--	--	--	--	(1) HIGH-CAPACITY HYBRID CABLE (222' LONG)	TA08025-B604	5G	A2	(1) RAYCAP RDIDC-9181-PF-48
A2	PROPOSED	JMA – MX08FRO665-21	5G	30°	157'-0"		TA08025-B605	5G	A2	
A3	--	--	--	--	--		--	--	--	
B1	--	--	--	--	--	SHARED W/ALPHA	TA08025-B604	5G	B2	SHARED W/ALPHA
B2	PROPOSED	JMA – MX08FRO665-21	5G	150°	157'-0"		TA08025-B605	5G	B2	
B3	--	--	--	--	--		--	--	--	
C1	--	--	--	--	--	SHARED W/ALPHA	TA08025-B604	5G	C2	SHARED W/ALPHA
C2	PROPOSED	JMA – MX08FRO665-21	5G	280°	157'-0"		TA08025-B605	5G	C2	
C3	--	--	--	--	--		--	--	--	

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

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

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

DRAWN BY:	CHECKED BY:	APPROVED BY:
AP	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	05/12/2022	ISSUED FOR CONSTRUCTION
1	05/25/2022	SHOW UPDATED SA RESULTS

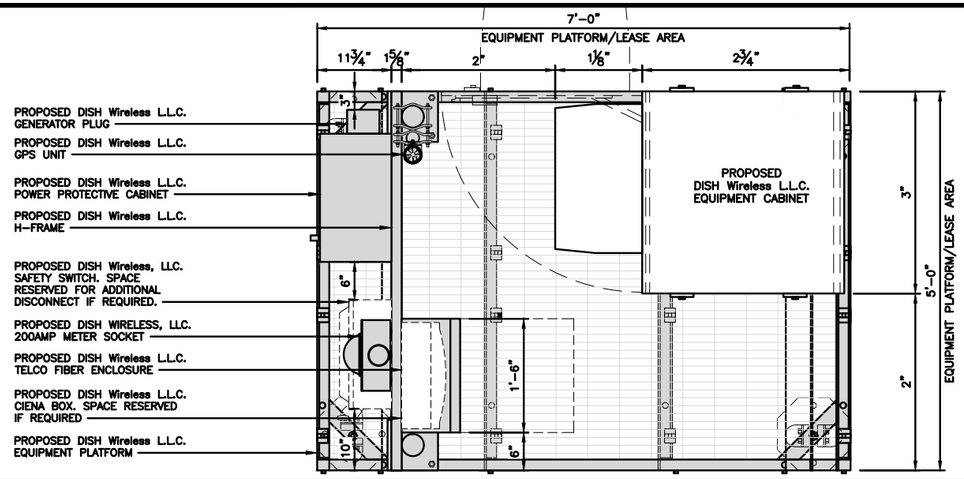
STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
302535-14099618_D3

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



PLATFORM EQUIPMENT PLAN

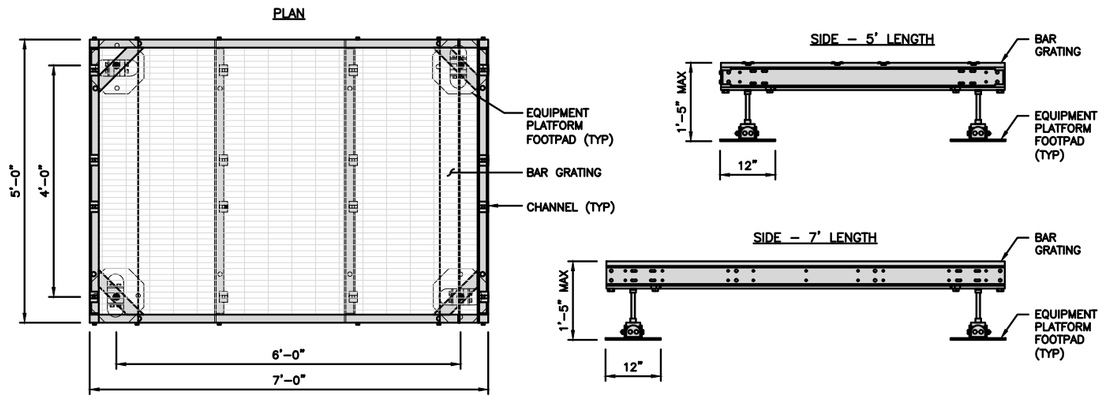
12" 9" 6" 3" 0 1' 2"
1"=1'-0"

1

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

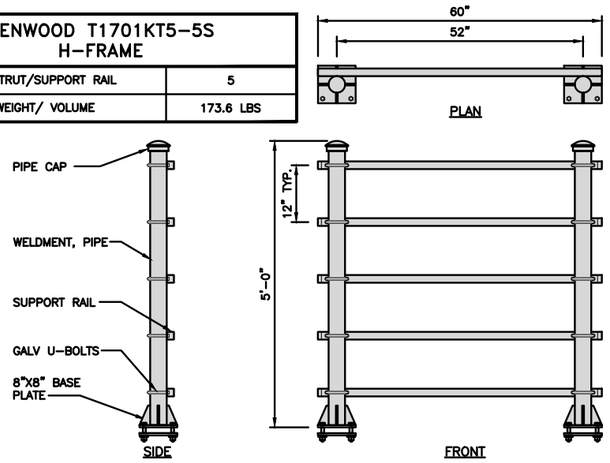
NOTE:

PLATFORM TO BE WITHIN 1° OF LEVEL



PLATFORM DETAIL | NO SCALE | 2

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

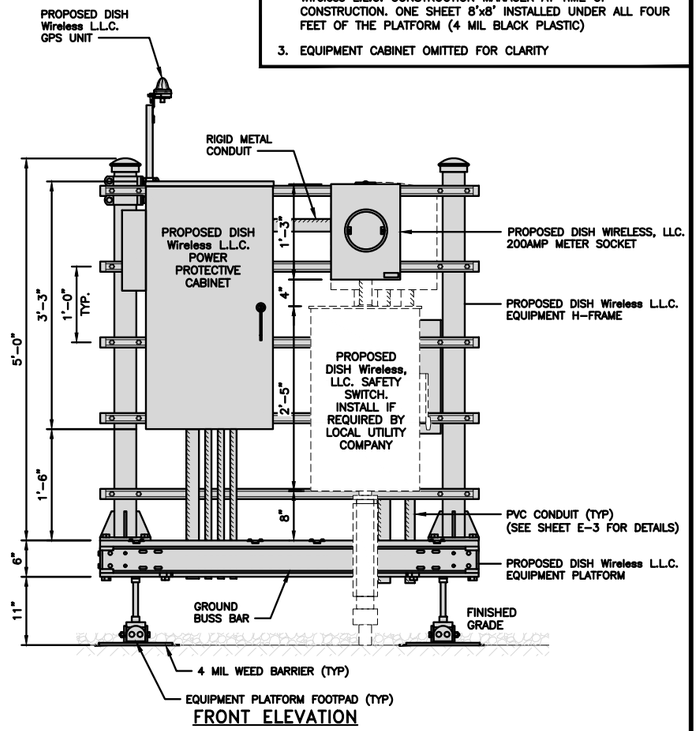


H-FRAME DETAIL | NO SCALE | 3

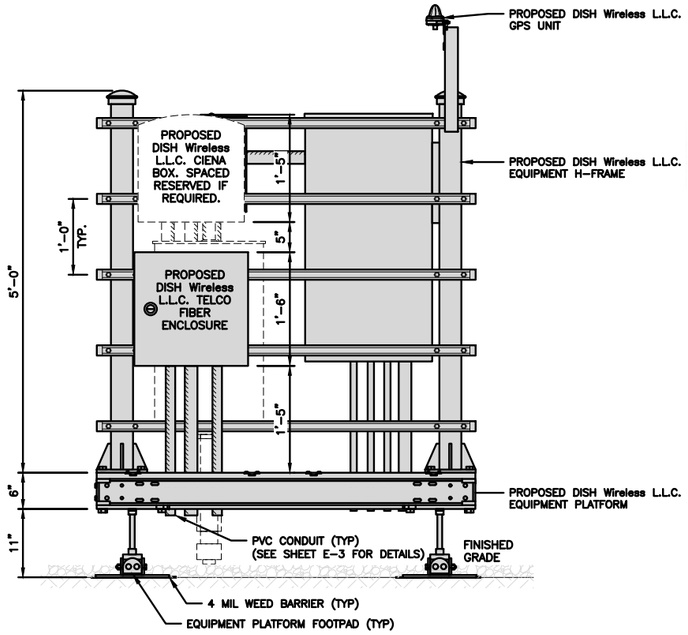
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

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RFDS REV #: ----

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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

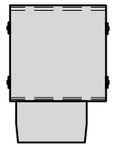
A&E PROJECT NUMBER
302535-14099618_D3

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

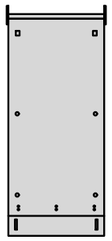
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

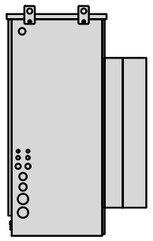
CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD)	74"x32"x32"
POWER PLANT	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 lbs



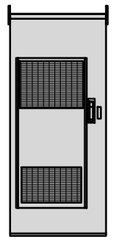
PLAN



BACK



SIDE

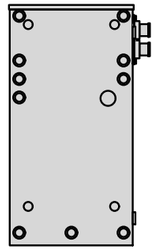


FRONT

CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC–2465–P–240–MTS	
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G

TOP



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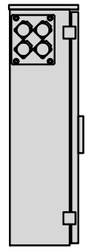
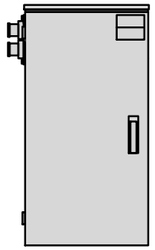
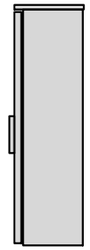


SIDE



FRONT

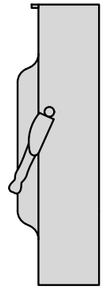


SIDE

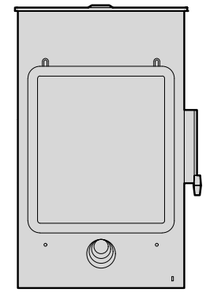
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E–2875

TOP



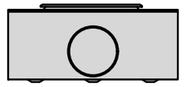
SIDE



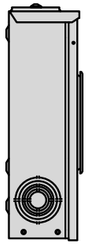
FRONT

SAFETY SWITCH DETAIL | NO SCALE | 3

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



PLAN



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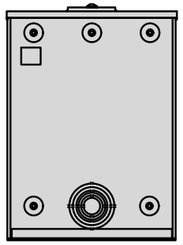

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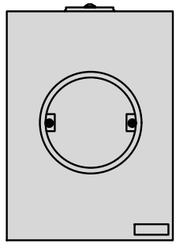
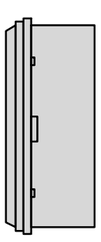


FRONT

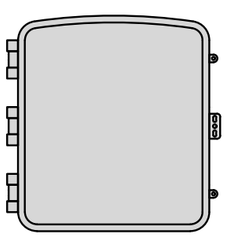
METER SOCKET DETAIL | NO SCALE | 4

CIENA 3931 FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	17"x16.8"x7"
WEIGHT	28.6 lbs

TOP



SIDE

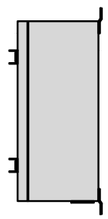


FRONT

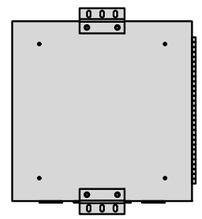
FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4

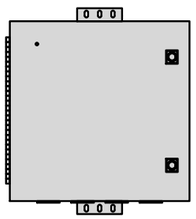
FRONT



SIDE



BACK

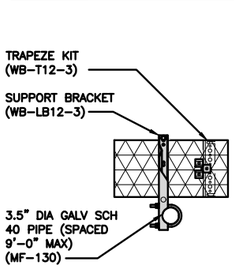


FRONT

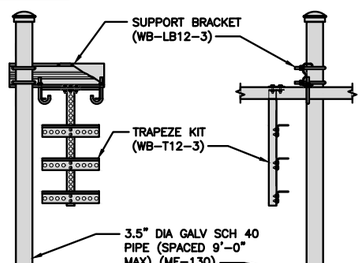
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

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



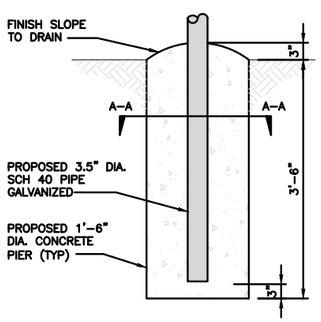
PLAN



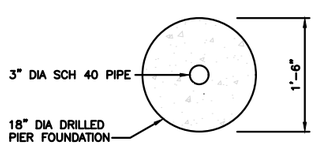
FRONT

SIDE

ICE BRIDGE DETAIL | NO SCALE | 7

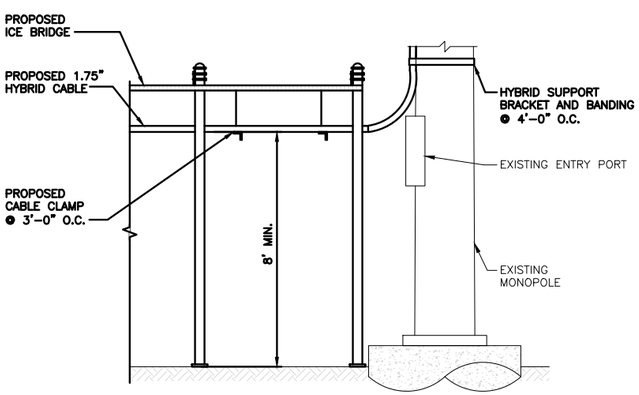


CONCRETE PIER



A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
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CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

DRAWN BY:	CHECKED BY:	APPROVED BY:
AP	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	05/12/2022	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

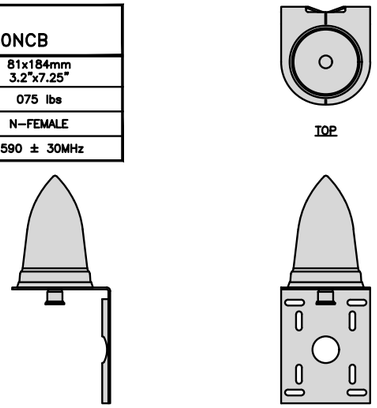
A&E PROJECT NUMBER
302535–14099618_D3

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

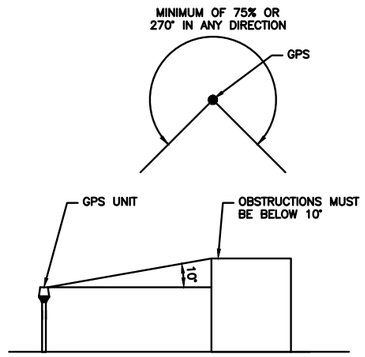
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

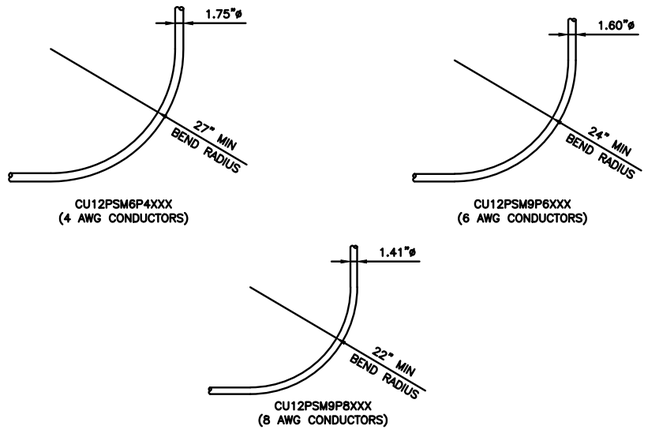
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL — NO SCALE — 1



GPS MINIMUM SKY VIEW REQUIREMENTS — NO SCALE — 2



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

NOT USED — NO SCALE — 4

NOT USED — NO SCALE — 5

NOT USED — NO SCALE — 6

NOT USED — NO SCALE — 7

NOT USED — NO SCALE — 8

NOT USED — NO SCALE — 9

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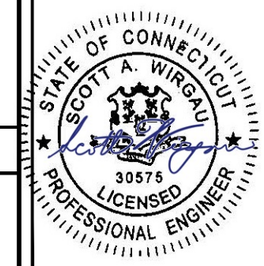


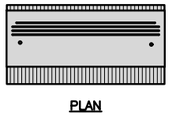
A&E PROJECT NUMBER
302535-14099618_D3

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

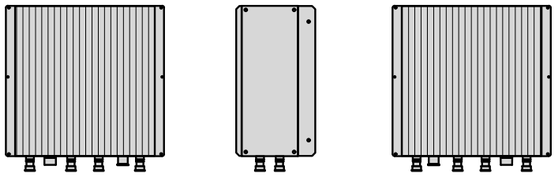
SHEET TITLE
EQUIPMENT DETAILS

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

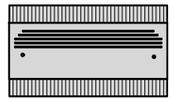


PLAN

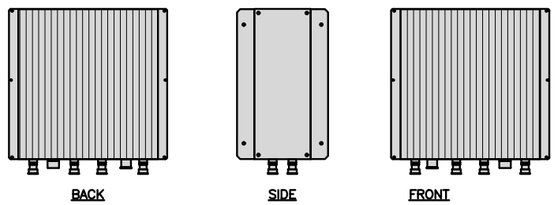


BACK SIDE FRONT

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



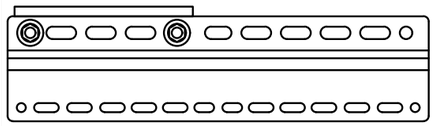
PLAN

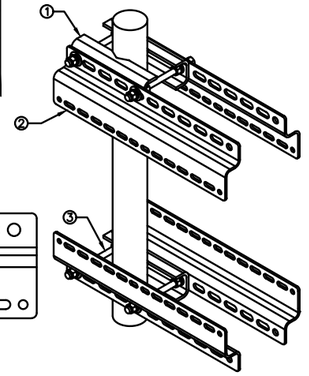


BACK SIDE FRONT

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

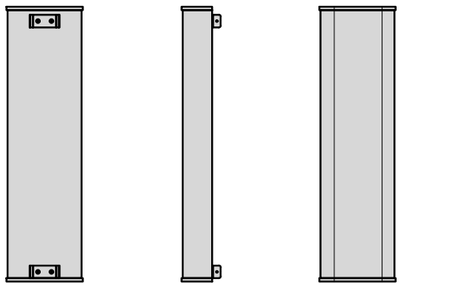
RRH DETAIL | NO SCALE | 1

RRH DETAIL | NO SCALE | 2

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

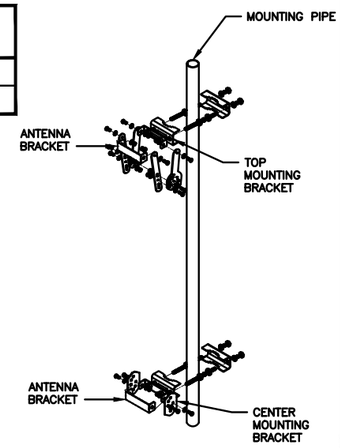
ANTENNA DETAIL | NO SCALE | 4

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

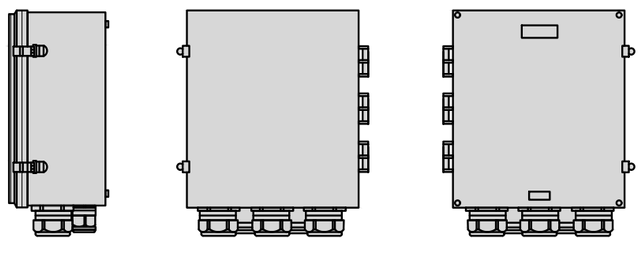


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

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

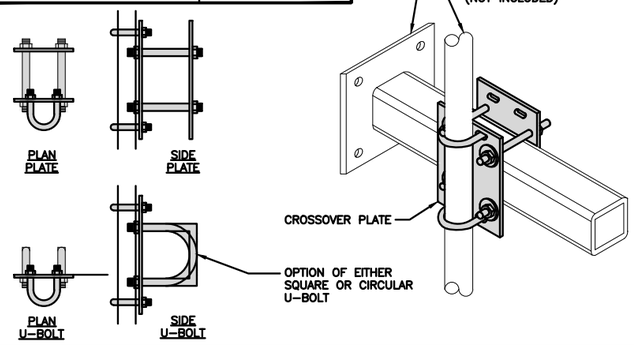
PLAN



SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

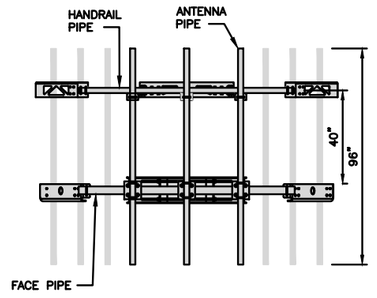
COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS

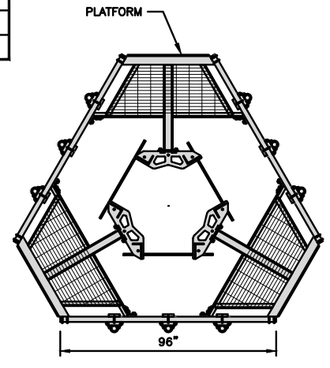


RRH/OVP MOUNT DETAIL | NO SCALE | 8

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

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





ANTENNA PLATFORM DETAIL | NO SCALE | 9

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COA: PEC.0001553

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RFDS REV #: ----

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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
302535-14099618_D3

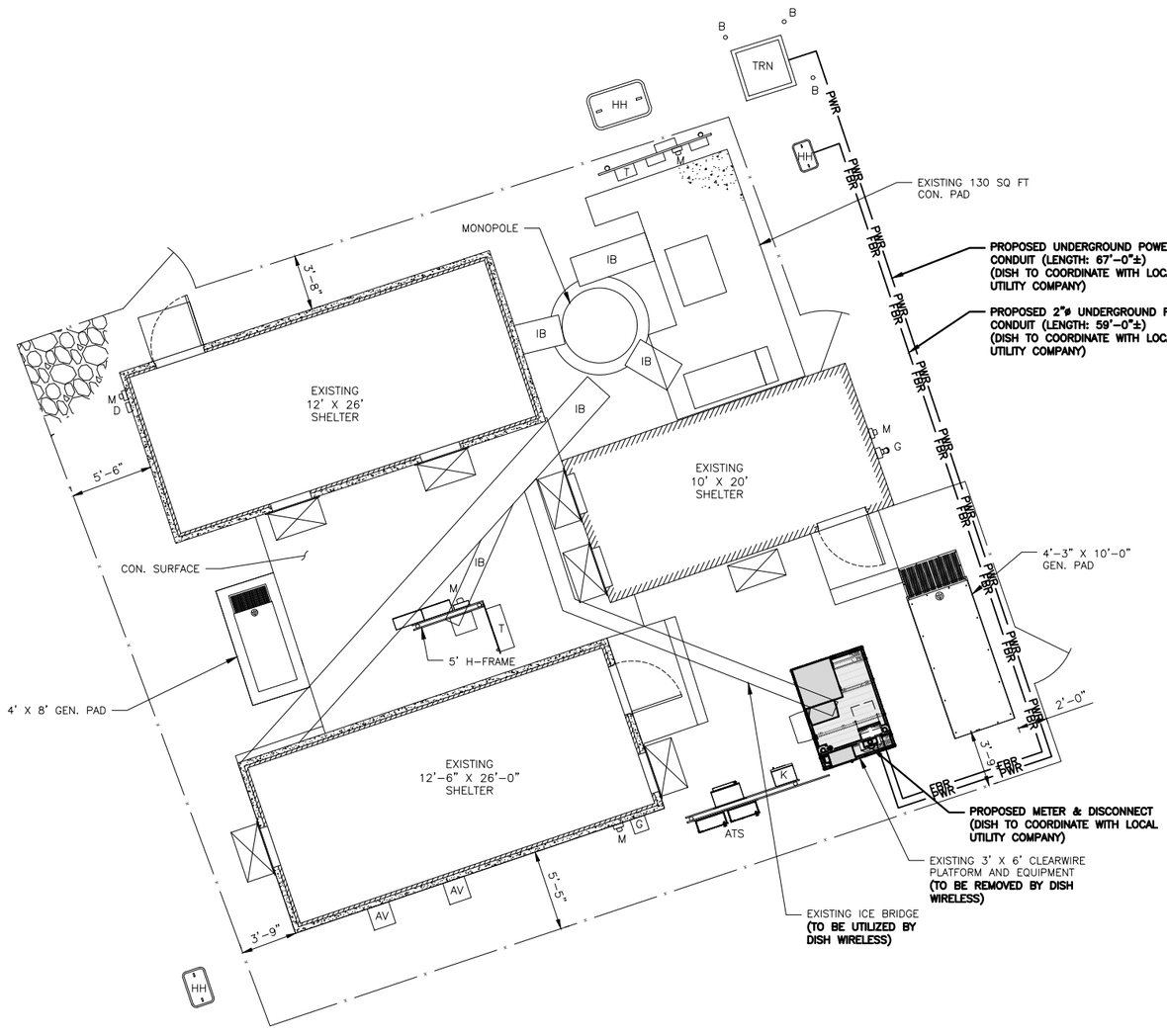
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

1. CONTRACTOR MUST VERIFY THAT THE PROPOSED UTILITY ROUTES ARE WITHIN AMERICAN TOWER'S EASEMENT.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. GC TO REFER TO FINAL UTILITY COORDINATION DOCUMENT FOR ALL MEET ME POINTS AND ROUTING DETAILS.



UTILITY ROUTE PLAN

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

1

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

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

ELECTRICAL NOTES

NO SCALE

2

AERIAL VIEW

NO SCALE

3

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CARY, NC 27518
PHONE: (919) 468-0112
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SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
302535-14099618_D3

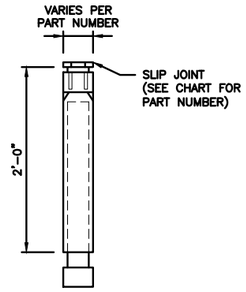
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

SHEET TITLE
ELECTRICAL/FIBER ROUTE PAN 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"

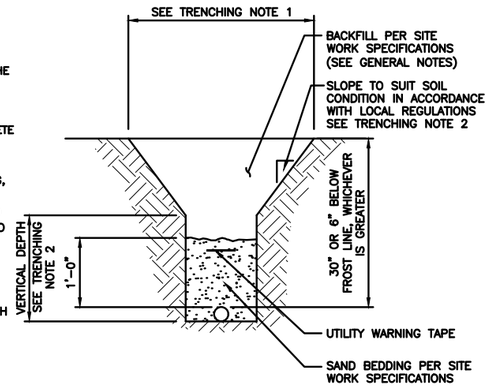


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

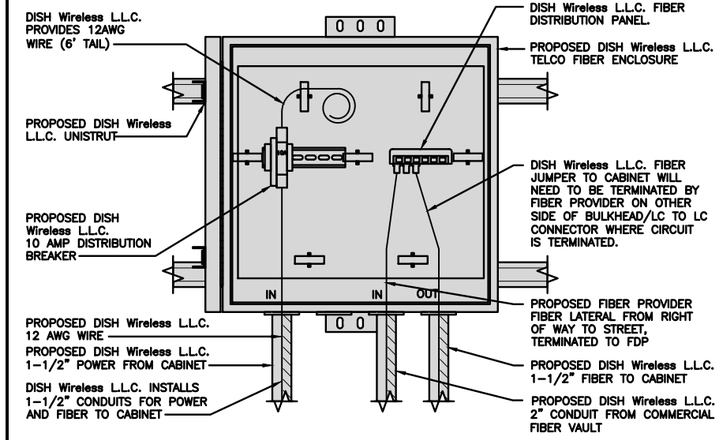
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

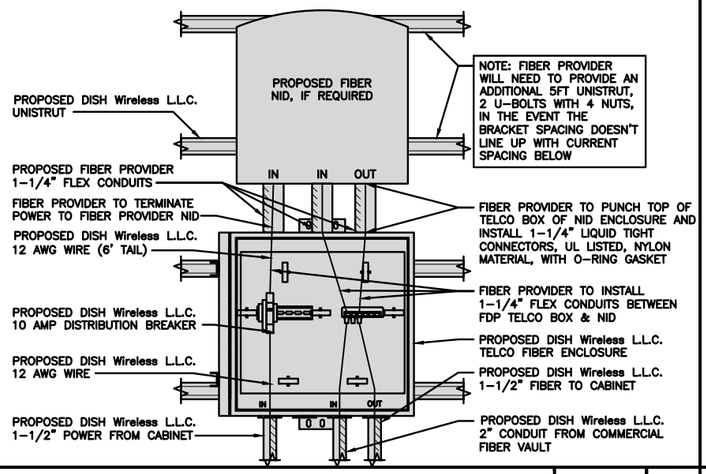
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT 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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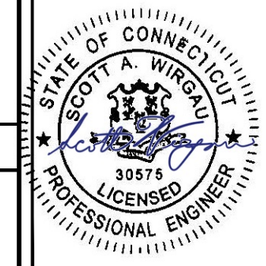
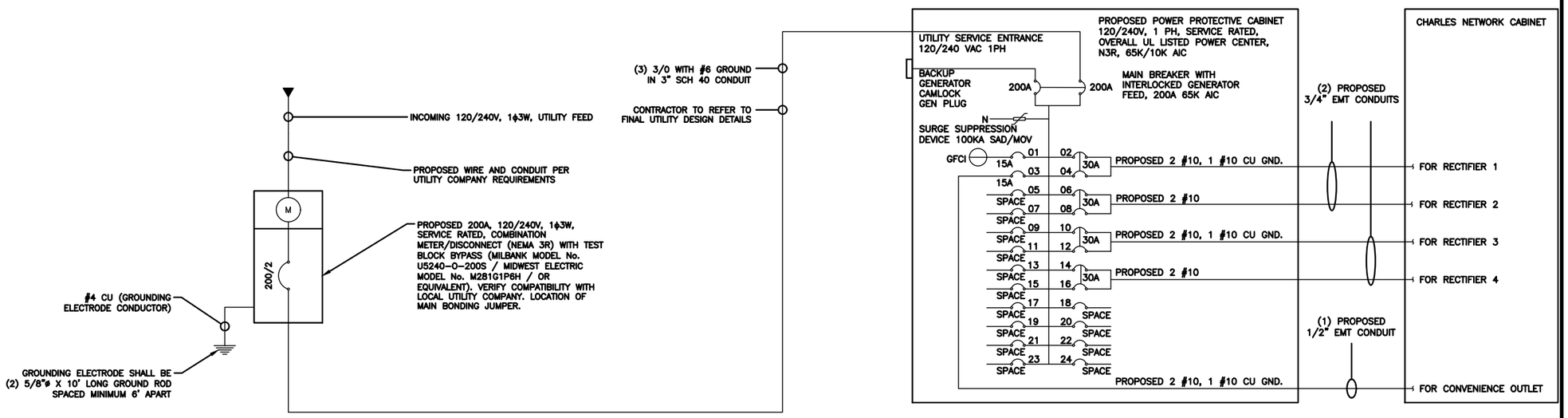


A&E PROJECT NUMBER
302535-14099618_D3

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

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:
(4) 30A, 2P BREAKER - SQUARE D P/N:QO230
(2) 15A, 1P BREAKER - SQUARE D P/N:QO115

PPC ONE-LINE DIAGRAM | NO SCALE | 1

PROPOSED CHARLES 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	30A	2880		ABB/GE INFINITY RECTIFIER 1
CHARLES GFCI OUTLET		180	15A	3	B	4			2880	
-SPACE-				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2
-SPACE-				7	B	8			2880	
-SPACE-				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3
-SPACE-				11	B	12			2880	
-SPACE-				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4
-SPACE-				15	B	16			2880	
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						11520	11520	
200A MCB, 1ϕ, 24 SPACE, 120/240V			L1		L2					
MB RATING: 65,000 AIC			11700		11700		VOLTAGE AMPS			
			98		98		AMPS			
			98				MAX AMPS			
			122				MAX 125%			

PANEL SCHEDULE | NO SCALE | 2

NOT USED | NO SCALE | 3

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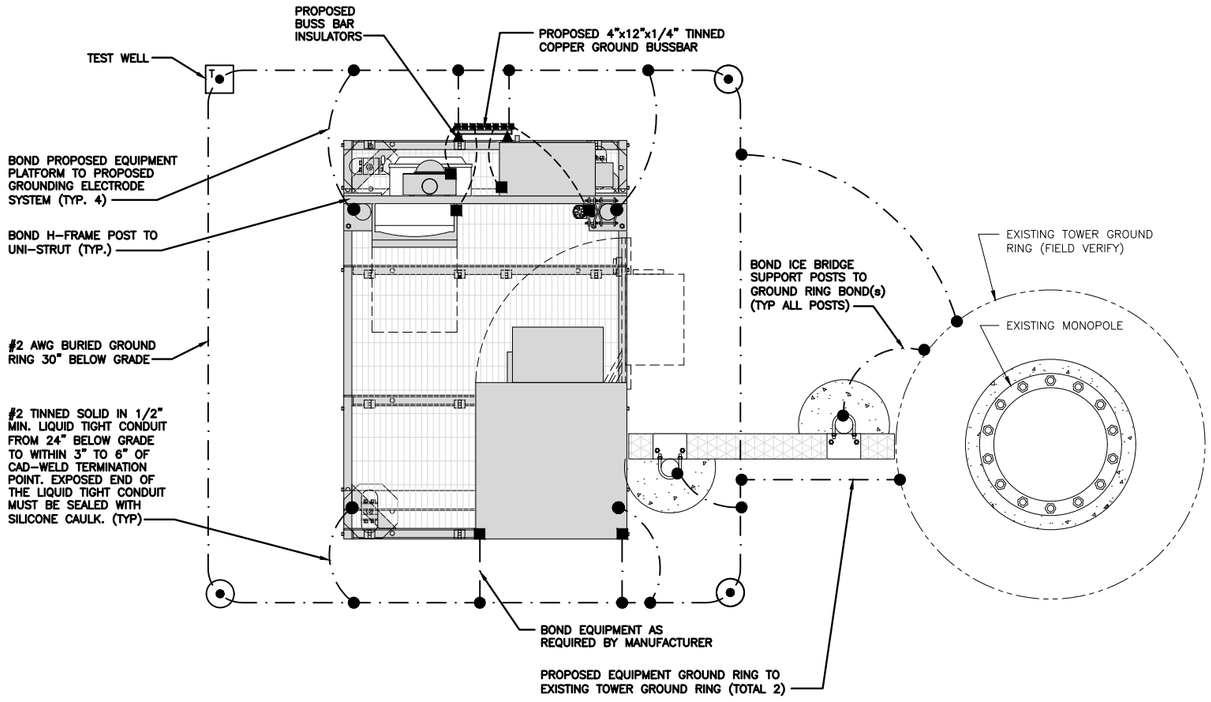
STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
302535-14099618_D3

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

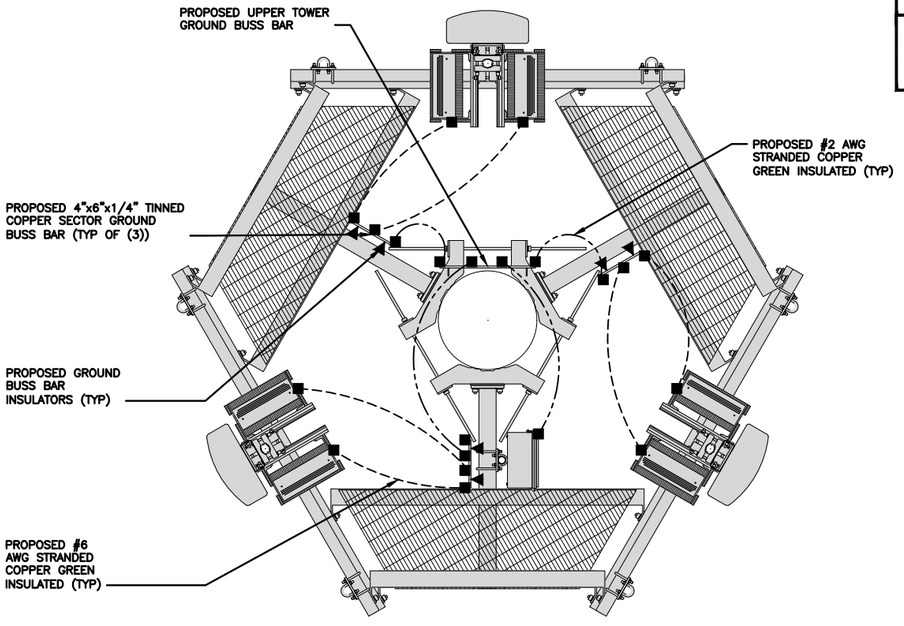
SHEET TITLE
ELECTRICAL ONE-LINE AND PANEL SCHEDULE

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE | 3

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A&E PROJECT NUMBER
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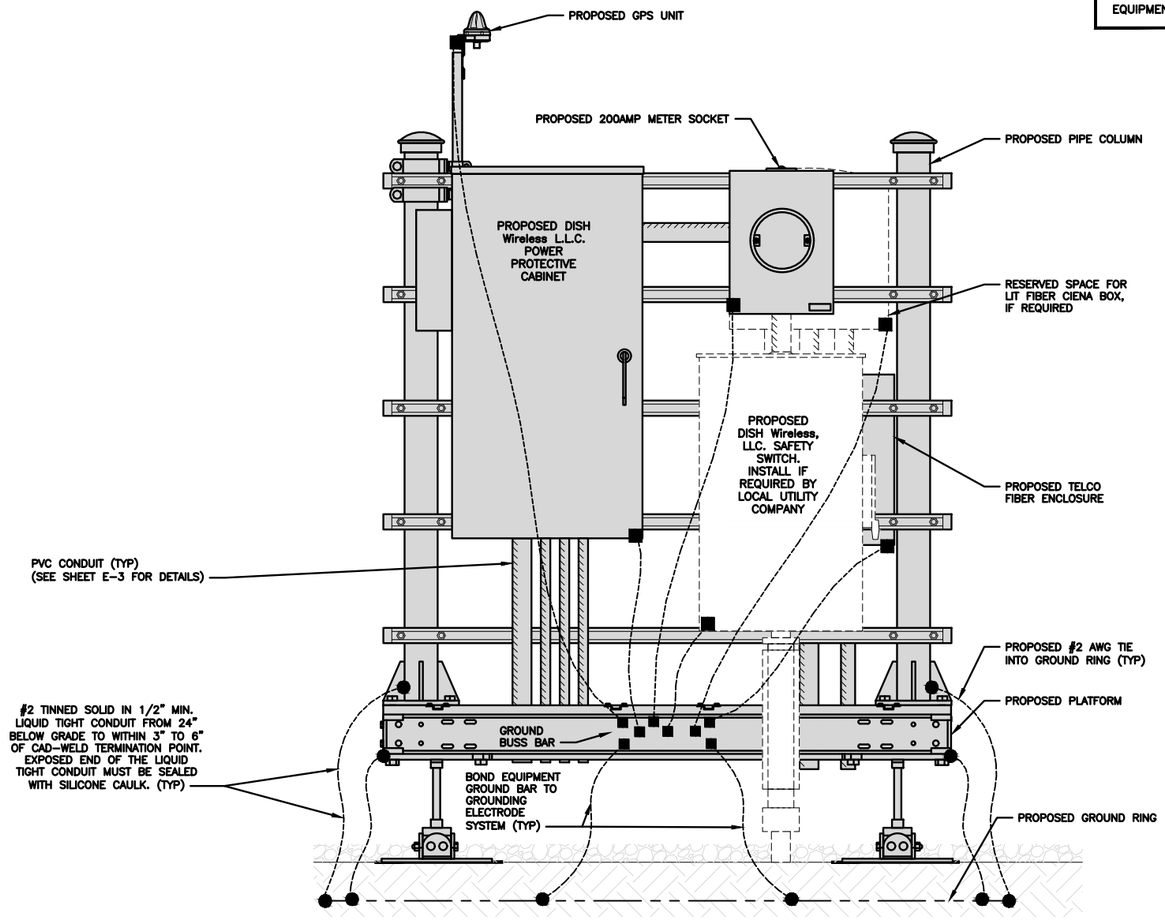
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

SHEET TITLE
GROUNDING PLAN AND NOTES

SHEET NUMBER
G-1

NOTES

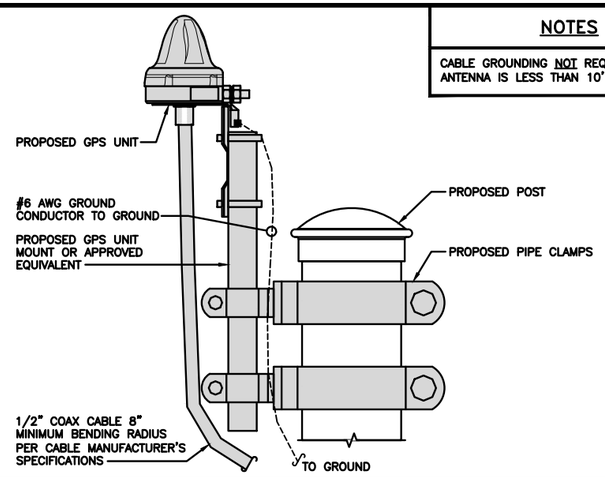
EQUIPMENT CABINET OMITTED FOR CLARITY



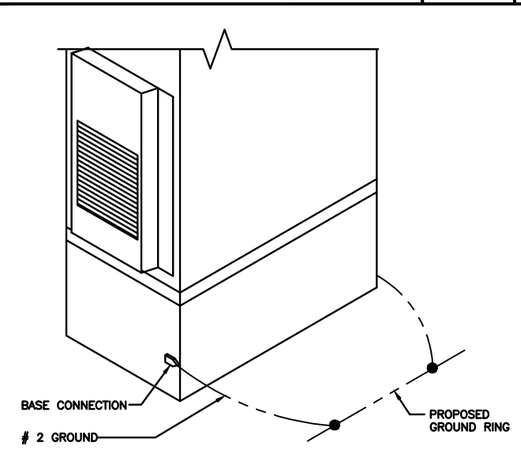
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

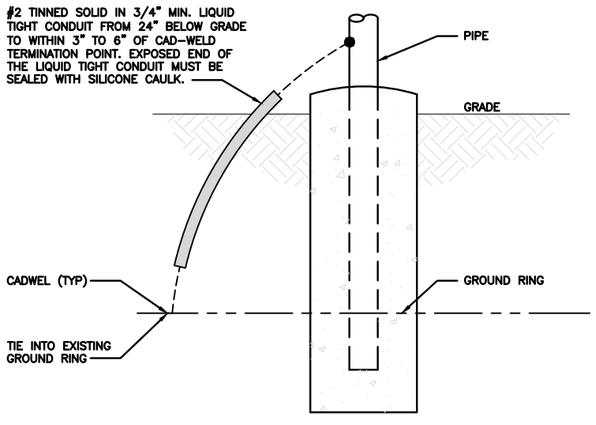
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



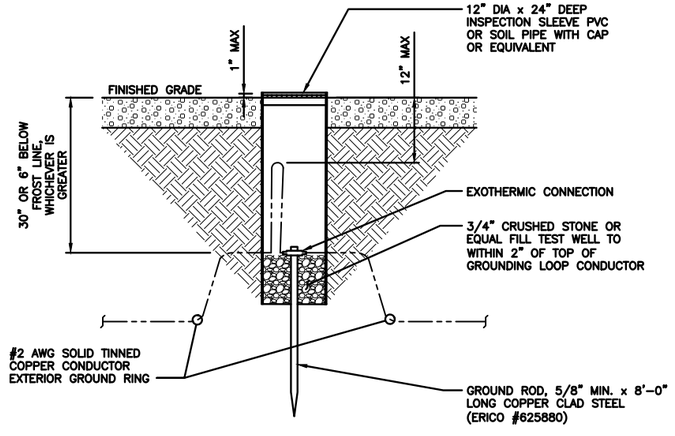
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



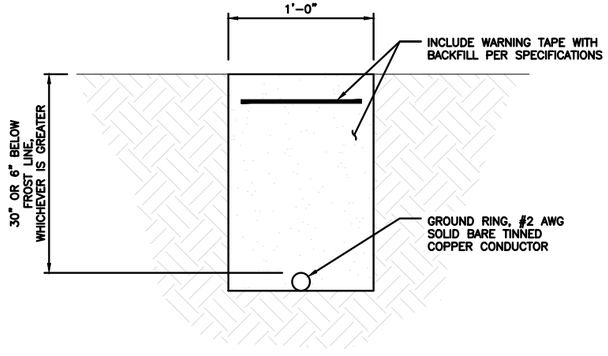
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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30575
LICENSED PROFESSIONAL ENGINEER

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DISH Wireless L.L.C.
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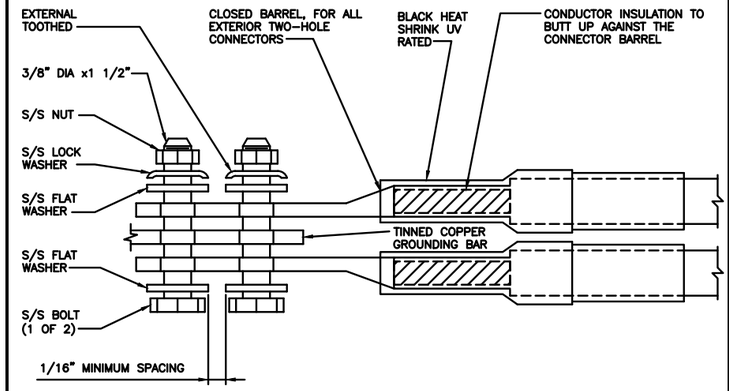
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

SHEET TITLE
GROUNDING DETAILS

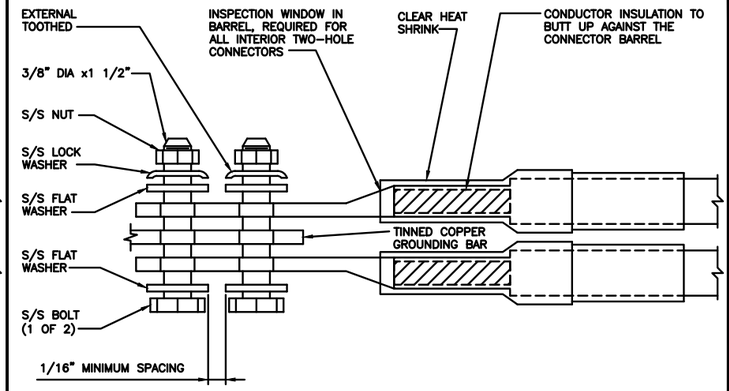
SHEET NUMBER
G-2

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).

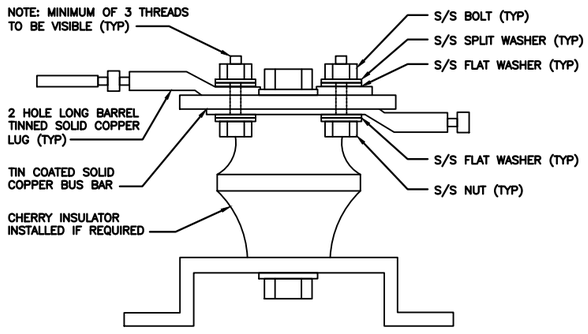
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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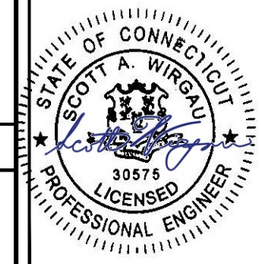

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SHEET TITLE
GROUNDING DETAILS

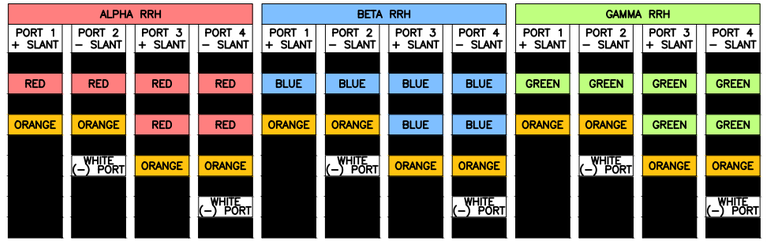
SHEET NUMBER
G-3

HYBRID/DISCREET CABLES

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

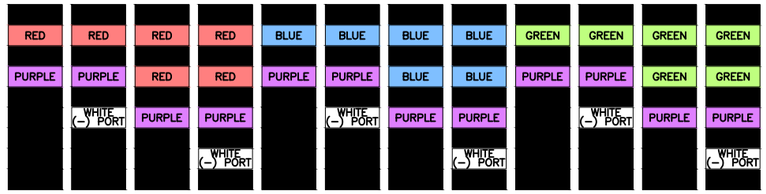
LOW–BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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



MID–BAND RRH
(AWS BANDS N66+N70)

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



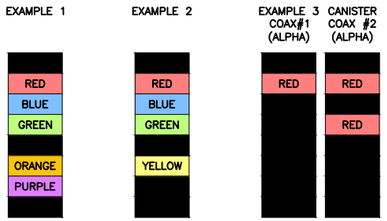
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

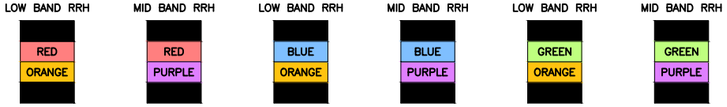
EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS.

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



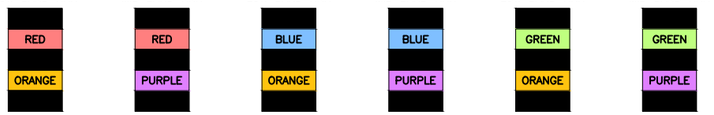
FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.



POWER CABLES TO RRHs

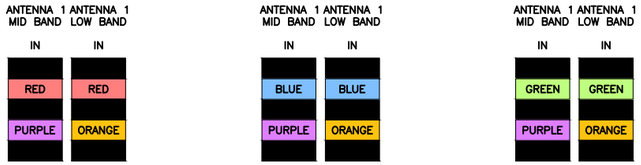
LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

RET CONTROL IS HANDLED BY THE MID–BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA.

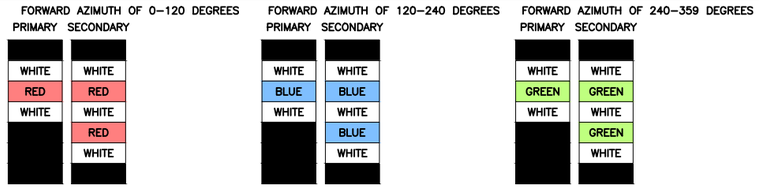
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



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.



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		2
NOT USED		3
RF CABLE COLOR CODES		1
NOT USED		4

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LICENSED PROFESSIONAL ENGINEER

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DISH Wireless L.L.C.
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185 RESEARCH DRIVE
MILFORD, CT 06460

SHEET TITLE
RF CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH — $

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

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

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — x x x x

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W W W W W

UNDERGROUND POWER — UGP UGP UGP UGP UGP

UNDERGROUND TELCO — UGT UGT UGT UGT UGT

OVERHEAD POWER — OHP OHP OHP OHP

OVERHEAD TELCO — OHT OHT OHT OHT

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

ABOVE GROUND POWER — AGP AGP AGP AGP AGP

ABOVE GROUND TELCO — AGT AGT AGT AGT AGT

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

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

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

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
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CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

DRAWN BY:	CHECKED BY:	APPROVED BY:
AP	SRF	SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	05/12/2022	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
302535–14099618_D3

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

SHEET TITLE
LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SIGN TYPES		
TYPE	COLOR	COLOR CODE PURPOSE
INFORMATION	GREEN	**"INFORMATIONAL SIGN"** TO NOTIFY OTHERS OF SITE OWNERSHIP & CONTACT NUMBER AND POTENTIAL RF EXPOSURE.
NOTICE	BLUE	**"NOTICE BEYOND THIS POINT"** RF FIELDS BEYOND THIS POINT MAY EXCEED THE FCC GENERAL PUBLIC EXPOSURE LIMIT. OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR–1.1307(b)
CAUTION	YELLOW	**"CAUTION BEYOND THIS POINT"** RF FIELDS BEYOND THIS POINT MAY EXCEED THE FCC GENERAL PUBLIC EXPOSURE LIMIT. OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR–1.1307(b)
WARNING	ORANGE/RED	**"WARNING BEYOND THIS POINT"** RF FIELDS AT THIS SITE EXCEED FCC RULES FOR HUMAN EXPOSURE. FAILURE TO OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS COULD RESULT IN SERIOUS INJURY. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR–1.1307(b)

SIGN PLACEMENT:

- RF SIGNAGE PLACEMENT SHALL FOLLOW THE RECOMMENDATIONS OF AN EXISTING EME REPORT, CREATED BY A THIRD PARTY PREVIOUSLY AUTHORIZED BY DISH Wireless L.L.C.
- INFORMATION SIGN (GREEN) SHALL BE LOCATED ON EXISTING DISH Wireless L.L.C EQUIPMENT.
  A) IF THE INFORMATION SIGN IS A STICKER, IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C EQUIPMENT CABINET.
  B) IF THE INFORMATION SIGH IS A METAL SIGN IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C H–FRAME WITH A SECURE ATTACH METHOD.
- IF EME REPORT IS NOT AVAILABLE AT THE TIME OF CREATION OF CONSTRUCTION DOCUMENTS; PLEASE CONTACT DISH Wireless L.L.C. CONSTRUCTION MANAGER FOR FURTHER INSTRUCTION ON HOW TO PROCEED.

NOTES:

1. FOR DISH Wireless L.L.C. LOGO, SEE DISH Wireless L.L.C. DESIGN SPECIFICATIONS (PROVIDED BY DISH Wireless L.L.C.)
2. SITE ID SHALL BE APPLIED TO SIGNS USING "LASER ENGRAVING" OR ANY OTHER WEATHER RESISTANT METHOD (DISH Wireless L.L.C. APPROVAL REQUIRED)
3. TEXT FOR SIGNAGE SHALL INDICATE CORRECT SITE NAME AND NUMBER AS PER DISH Wireless L.L.C. CONSTRUCTION MANAGER RECOMMENDATIONS.
4. CABINET/SHELTER MOUNTING APPLICATION REQUIRES ANOTHER PLATE APPLIED TO THE FACE OF THE CABINET WITH WATER PROOF POLYURETHANE ADHESIVE
5. ALL SIGNS WILL BE SECURED WITH EITHER STAINLESS STEEL ZIP TIES OR STAINLESS STEEL TECH SCREWS
6. ALL SIGNS TO BE 8.5"x11" AND MADE WITH 0.04" OF ALUMINUM MATERIAL

INFORMATION

This is an access point to an area with transmitting antennas.

Obey all signs and barriers beyond this point.
Call the DISH Wireless L.L.C. NOC at 1-866-624-6874

Site ID: _____

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE

Transmitting Antenna(s)

Radio frequency fields beyond this point MAY *EXCEED* the FCC Occupational exposure limit.

Obey all posted signs and site guidelines for working in radio frequency environments.

Call the DISH Wireless L.L.C. NOC at 1-866-624-6874 prior to working beyond this point.

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

CAUTION

Transmitting Antenna(s)

Radio frequency fields beyond this point MAY *EXCEED* the FCC Occupational exposure limit.

Obey all posted signs and site guidelines for working in radio frequency environments.

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dish

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Call the DISH Wireless L.L.C. NOC at 1-866-624-6874 prior to working beyond this point.

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

RF SIGNAGE

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

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A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
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DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: ----

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SUBMITTALS

REV	DATE	DESCRIPTION
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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
302535-14099618_D3

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

SHEET TITLE
RF SIGNAGE

SHEET NUMBER
GN-2

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.

dish wireless.
5701 SOUTH SANTA FE DRIVE
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PROFESSIONAL ENGINEER

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DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

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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LITTLETON, CO 80120

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A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
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COA: PEC.0001553

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RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	05/12/2022	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
302535-14099618_D3

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
185 RESEARCH DRIVE
MILFORD, CT 06460

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

STRUCTURAL STEEL NOTES:

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

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

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

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

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

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

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

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

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

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

6. CONNECTIONS:

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

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

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

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

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

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

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

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

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

dish wireless.
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LITTLETON, CO 80120

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3500 REGENCY PARKWAY
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REV	DATE	DESCRIPTION
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PROFESSIONAL ENGINEER

A&E PROJECT NUMBER
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DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00162B
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MILFORD, CT 06460

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-5

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July 27, 2022

DAMATO INVESTMENTS LLC
183 Quarry Road
Milford, CT 06460

Re: Tower Share Application – Dish Site 14099618
Dish Wireless Telecommunications Facility @ 185 Research Drive, Milford, CT 06385
AKA 203 Research Drive

Dear Property Owner:

Dish Wireless ("Dish") is proposing a new wireless telecommunications facility on an existing tower and within the existing fenced compound at 185 Research Drive, Milford, CT 06385. The tower is owned and operated by American Tower Corporation. The subject property is owned by the Damato Investments LLC.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a one hundred fifty seven (157) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 183-feet and no changes will be made to the compound dimensions.

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

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

Respectfully Submitted,

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

enclosures

July 27, 2022

The Honorable Benjamin G. Blake
Milford Town Hall
110 River St.
Milford, CT 06460

Re: Tower Share Application – Dish Site 14099618
Dish Wireless Telecommunications Facility @ 185 Research Drive, Milford, CT 06460
AKA 203 Research Drive

Dear Mayor Blake:

Dish Wireless ("Dish") is proposing a new wireless telecommunications facility on an existing tower and within the existing fenced compound at 185 Research Drive, Milford, CT 06385. The tower is owned and operated by American Tower Corporation. The subject property is owned by the Damato Investments LLC.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a one hundred fifty seven (157) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 183-feet and no changes will be made to the compound dimensions.

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

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

Respectfully Submitted,

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

enclosures

July 27, 2022

David B. Sulkis, City Planner
City of Milford
70 West River St.
Milford, CT 06460

Re: Tower Share Application – Dish Site 14099618
Dish Wireless Telecommunications Facility @ 185 Research Drive, Milford, CT 06385
AKA 203 Research Drive

Dear Mr. Sulkis:

Dish Wireless ("Dish") is proposing a new wireless telecommunications facility on an existing tower and within the existing fenced compound at 185 Research Drive, Milford, CT 06385. The tower is owned and operated by American Tower Corporation; the subject property is owned by Damato Investments LLC.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a one hundred fifty seven (157) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 183-feet and no changes will be made to the compound dimensions.

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

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

Respectfully Submitted,

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

July 27, 2022

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

Re: Tower Share Application – Dish Site 14099618
Dish Wireless Telecommunications Facility @ 185 Research Drive, Milford, CT 06460
AKA 203 Research Drive

Dear Mr. Paynter:

Dish Wireless ("Dish") is proposing a new wireless telecommunications facility on an existing tower and within the existing fenced compound at 185 Research Drive, Milford, CT 06385. The tower is owned and operated by American Tower Corporation. The subject property is owned by the Damato Investments LLC.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a one hundred fifty seven (157) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 183-feet and no changes will be made to the compound dimensions.

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

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

Respectfully Submitted,

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

enclosures