NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
203-435-3640
denise@northeastsitesolutions.com

March 18, 2022

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

RE: Tower Share Application
250 Meriden Waterbury Turnpike, Southington, CT 06489
Latitude: 41.556830
Longitude: -72.853016
Site #: 841298_Crown_Dish

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 250 Meriden Waterbury Turnpike, Southington, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 100-foot level of the existing 120-foot tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within a 7' x 5' lease area within the existing site boundary. Included are plans by Infinigy, dated January 14, 2022, Exhibit C. Also included is a structural analysis prepared by Paul J. Ford and Co., dated February 9, 2022, confirming that the existing tower, once modified, will be structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Connecticut Siting Council in 1999, and subsequently the Council approved a tower extension to 120 feet in Petition No. 1349 on October 25, 2018. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Victoria Triano, Town Council Chair, Mark Sciota, Town Manager and Maryellen Edwards, Director of Planning & Community Development for the Town of Southington, as well as the tower owner (Crown Castle) and property owner (John Rogus).

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the existing tower is 120-feet and the Dish Wireless LLC antennas will be located at a centerline height of 100-feet.

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

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. The combined site operations will result in a total power density of 11.14% as evidenced by Exhibit F.

Connecticut General Statutes 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 Wireless LLC respectfully submits that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing tower, once modified, has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included as Exhibit D.

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

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 100-foot level of the existing 120-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility boundary. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

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

Sincerely,

Denise Sabo

Denise Sabo
Mobile: 203-435-3640
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments

Cc: Victoria Triano, Town Council Chair
Southington Town Hall
75 Main Street
Southington, CT 06489

Mark Sciota, Town Manager
Southington Town Hall
75 Main Street
Southington, CT 06489

Maryellen Edwards, Director of Planning & Community Development
Southington Municipal Center
196 North Main Street
Southington, CT 06489

John Rogus - Property Owner
250 Meriden Waterbury Turnpike
Southington, CT 06489

Crown Castle – Tower Owner

Exhibit A

Original Facility Approval

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

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

October 26, 2018

Lucia Chiocchio, Esq.
Cuddy & Feder, LLP
445 Hamilton Avenue, 14th Floor
White Plains, NY 10601

RE: **PETITION NO. 1349** – New Cingular Wireless PCS, LLC petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed extension of an existing wireless telecommunications facility located at 250 Meriden Waterbury Turnpike, Southington, Connecticut.

Dear Attorney Chiocchio:

At a public meeting held on October 25, 2018, the Connecticut Siting Council (Council) considered and ruled that the above-referenced proposal would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k, would not require a Certificate of Environmental Compatibility and Public Need with the following conditions:

1. Prior to AT&T's antenna installation the tower modification shall be carried out in accordance with the Structural Modification Report and Modification Drawings prepared by Paul J. Ford, dated March 16, 2018 and March 19, 2018 respectively, and stamped and signed by Joseph Pachicarah Jacobs;

2. Within 45 days following completion of proposed modifications, AT&T shall provide documentation that its installation complied with the recommendations of the Tower Modification Schedule;

3. Approval of any minor project changes be delegated to Council staff;

4. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed within three years from the date of the mailing of the Council's decision, this decision shall be void, and the facility owner/operator shall dismantle the facility and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The facility owner/operator shall provide written notice to the Executive Director of any schedule changes as soon as is practicable;

5. Any request for extension of the time period to fully construct the facility shall be filed with the Council not later than 60 days prior to the expiration date of this decision and shall be served on all parties and intervenors, if applicable, and the Town of Southington;

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

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

8. The facility owner/operator shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v;

9. This Declaratory Ruling may be transferred, provided the facility owner/operator/transferor is current with payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v and the transferee provides written confirmation that the transferee agrees to comply with the terms, limitations and conditions contained in the Declaratory Ruling, including timely payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v; and

10. If the facility owner/operator is a wholly owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition received September 4, 2018 and additional information received on October 5, 2018 and October 11, 2018.

Enclosed for your information is a copy of the staff report on this project.

Sincerely,

Robert Stein

Robert Stein
Chairman

RS/IN/lm

Enclosure: Staff Report dated October 25, 2018

c: The Honorable Christopher Palmieri, Chairman, Town of Southington
Mark J. Sciota, Town Manager, Town of Southington
Robert Phillips, Director of Planning and Community Development, Town of Southington
John Rogus, property owner

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

Petition No. 1349
New Cingular Wireless PCS, LLC
Southington, Connecticut
Staff Report
October 25, 2018

On September 4, 2018, New Cingular Wireless PCS, LLC (AT&T) submitted a petition (Petition) to the Connecticut Siting Council (Council) for a declaratory ruling pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k for the proposed extension of an existing wireless telecommunications facility located at 250 Meriden Waterbury Turnpike, Southington, Connecticut. A field review of the proposed project was conducted on September 25, 2018. Council member Daniel Lynch and Fred Cunliffe and Ifeanyi Nwankwo of the Council staff attended the field review. Kristen Motel Esq., Mark Roberts and Brian Huff attended the field review as representatives of AT&T. At the request of the Council, AT&T attempted to fly a balloon during the field review to simulate the proposed extension of the facility, but it was unsuccessful due to weather conditions. AT&T conducted a second balloon float at the site on October 1, 2018. Two balloons were flown, one red (2-feet in diameter) and one white (3.5-feet in diameter) and flown at elevations of 110-feet and 120-feet above ground level, respectively.

The existing facility is located on a 1.2 acre parcel containing a commercial building, associated outbuildings and a parking area within a Business District Zone. The surrounding area consists of a mix of residential, commercial and retail uses to the north and west and residential uses to the south and east.

The existing facility consists of an 80-foot self-supporting lattice tower owned by Crown Castle. AT&T currently has nine antennas mounted at a center line height of 78-feet above ground level (agl) and Verizon has six antennas mounted at a center line height of 60-feet agl. AT&T and Verizon have associated equipment located at the base of the tower. The equipment shelter is locked and the tower is equipped with an anti-climbing shield.

AT&T proposes to extend the height of the existing self-supporting lattice tower to 120-feet agl. AT&T would remove its existing antennas and install three new 700/850 MHz antennas at the top of the lattice extension. Antennas would be installed at a centerline height of 120-feet agl. The height at the top of AT&T's antennas would be 123-feet agl. AT&T would also install six remote radio head units (RRU's), one surge arrestor, nine cables and an 11-foot lightning mast at the same 120-foot level. The proposed equipment is dual technology capable and compatible with 5G. Aside from minor equipment upgrades within AT&T's equipment shelter, there will be no changes to the existing equipment area at ground level. Existing access to the site would continue to be used. Verizon's existing antennas and equipment would not be affected.

AT&T has backup power batteries within its equipment shelter. These batteries can handle periods of commercial power outages of up to eight hours. For extended commercial power outages, AT&T would utilize a mobile diesel generator that would be transported to the site. This method of backup power has been successfully deployed several times during the sites existence.

AT&T states that in the event of a tower failure due to a catastrophic event, the tower's control section (40 – 60 foot along the legs of the tower) would cause it to collapse upon itself keeping it within the subject parcel.

The purpose of the proposed modification is to provide reliable wireless service in this area of Southington. The existing AT&T antennas are currently at or below the height of the surrounding tree canopy and as a result two of the three sectors of antennas are blocked by the tree line. AT&T dropped call data for this site indicates elevated voice and data drops, as well as substandard data service, that drive the need for the proposed height extension. The proposed height is the lowest height AT&T could locate antennas to gain the coverage necessary to provide reliable service, particularly north along State Route 120. Reducing the height to 100-feet would decrease coverage by one-half to the area.

The proposed extension would have a minimal impact on visibility. The proposed extension would be consistent with the existing tower in design, color and material. Views from the closest residential areas on Meriden Waterbury Turnpike and Orchard Lane are not expected to be substantial. The existing facility can be seen from West Peak and Castle Craig (0.5 miles and 0.9 miles northeast respectively, of the AT&T facility) within Hubbard Park in Meriden. The proposed extension would also be visible from these locations.

There are no schools or child day care centers within 1,000-feet of the tower. The nearest school is South End Elementary School located approximately 8,270-feet from the site. There are 72 residences within 1000-feet of the existing site. The closest residence is within approximately 10-feet and is located on the subject parcel. The closest off-site residence is within approximately 200-feet and is located at Orchard Lane.

The site is outside of the 100-year and 500-year flood zones. The nearest wetland is approximately 1,155-feet to the northwest of the site. No aviation marking or lighting is required. The nearest Important Bird Areas to the site (East Rock Park (11 miles away) and Naugatuck State Forest (12 miles away)) would not be adversely impacted by the proposed modification. Furthermore, the proposed modifications would comply with the recommended guidelines of the U.S. Fish and Wildlife Service for minimizing the potential for telecommunication towers to impact bird species.

There will be no ground disturbance or tree removal for the proposed extension.

A Professional Engineer duly licensed in the State of Connecticut has certified that the tower is structurally adequate to support the proposed loading with certain conditions. The maximum worst-case power density would be 25.2% of the applicable limit. AT&T's RF Tier rating for this facility is Tier 1 (level of priority to maintain network continuity) since it provides service to an interstate highway (I-691).

Notice was provided to the Town of Southington, the property owner and abutting property owners on August 29, 2018. No comments have been received to date.

AT&T contends that this proposal will not have a substantial adverse environmental effect. Staff recommends approval with the following conditions:

- Prior to AT&T's antenna installation the tower modification shall be carried out in accordance with the Structural Modification Report and Modification Drawings prepared by Paul J. Ford, dated March 16, 2018 and March 19, 2018 respectively, and stamped and signed by Joseph Pachicarah Jacobs;
- Within 45 days following completion of proposed modifications, AT&T shall provide documentation that its installation complied with the recommendations of the Tower Modification Schedule; and
- Approval of any minor project changes be delegated to Council staff.

View of Balloon float from Commercial district on Meriden Avenue

Photo-simulation showing proposed tower extension from commercial district on Meriden Avenue

View of Balloon float from nearby residential area on Orchard Lane

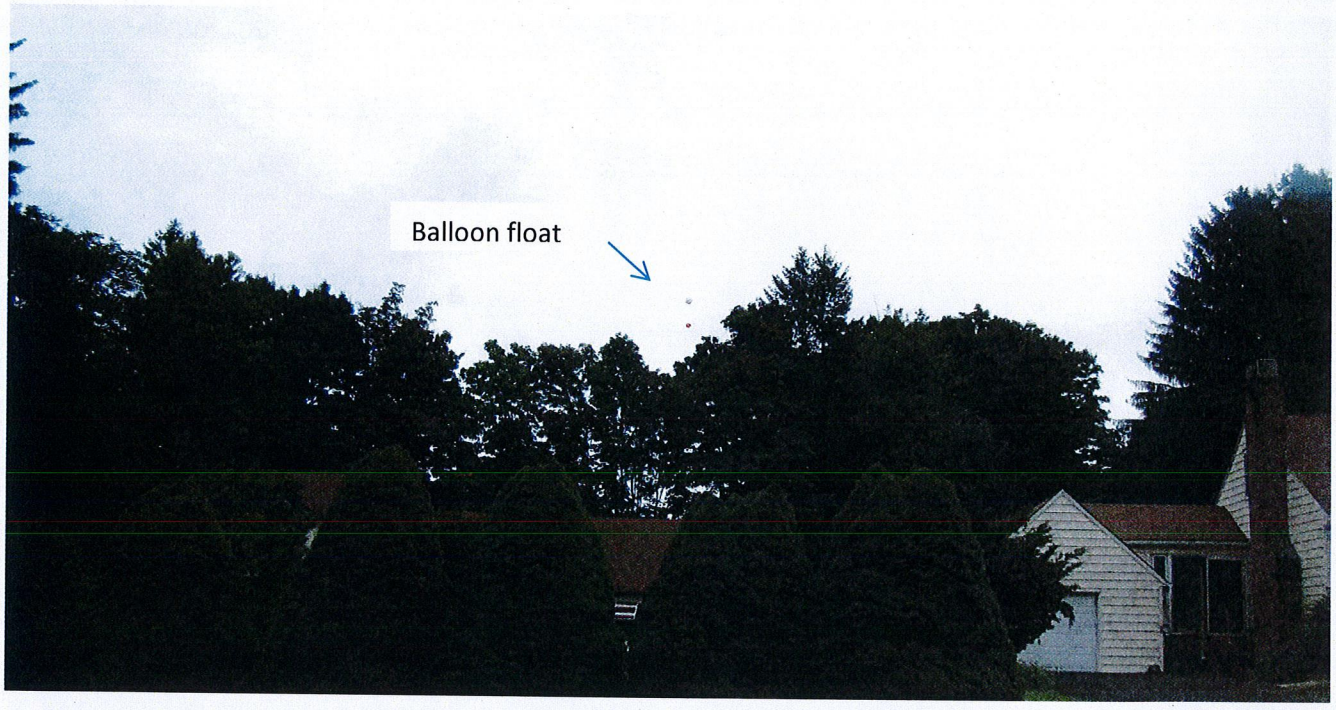
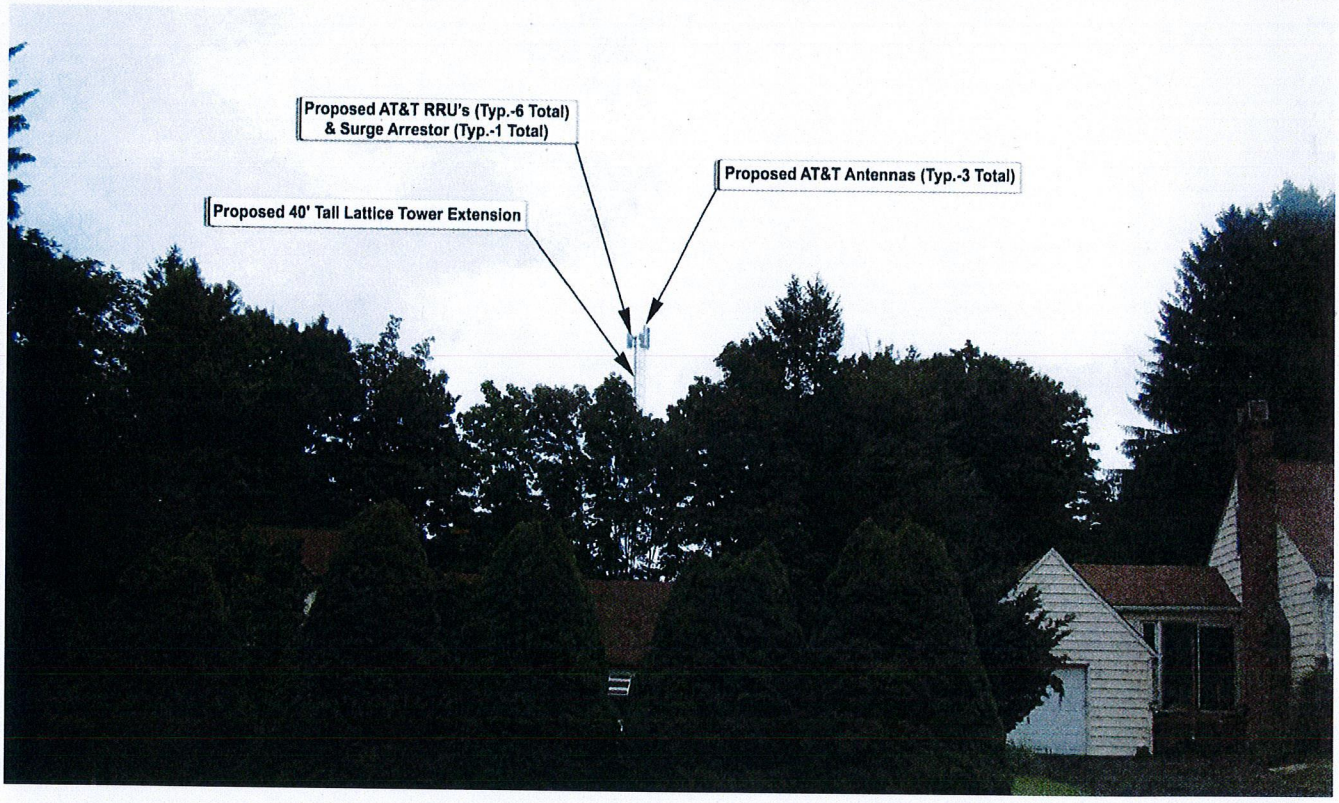


Photo-simulation showing proposed tower extension from nearby residential area on Orchard lane



View of Balloon float from the Tower Farm on West Peak

Photo-simulation showing proposed tower extension from the Tower Farm on West Peak

Exhibit B

Property Card

250 MERIDEN WATERBURY TPKE

Location	250 MERIDEN WATERBURY TPKE	**Mblu**	015/ / 080/ /
		Acct#	10848
Owner	ROGUS JOHN	**Assessment**	$350,310
Appraisal	$500,450	**PID**	398
Building Count	2		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$173,720	$326,730	$500,450
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$121,600	$228,710	$350,310

Owner of Record

Owner	ROGUS JOHN	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	250 MERIDEN WATERBURY TPKE SOUTHINGTON, CT 06489	**Book & Page**	1267/0806
		Sale Date	12/28/2012
		Instrument	29

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
ROGUS JOHN	$0		1267/0806	29	12/28/2012
ROGUS JOHN JR & JAN	$0		0311/0085	29	07/10/1980

Building Information

Building 1 : Section 1

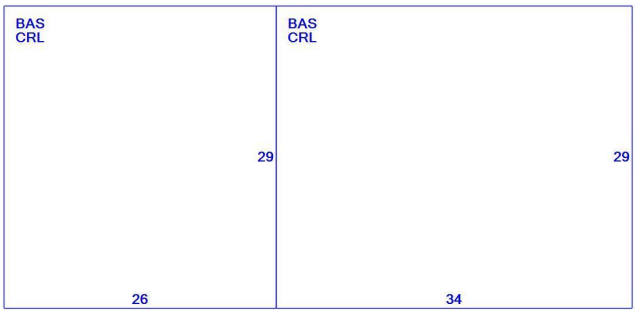
Year Built:	1936
Living Area:	1,740
Building Percent Good:	62

Building Attributes	
Field	**Description**
Style:	Retail
Model	Comm/Ind
Grade	C-
Stories:	1
Occupancy	1.00
Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt / Arch Shingle
Interior Wall 1	Average
Interior Wall 2	
Interior Floor 1	Average
Interior Floor 2	
Heating Fuel	Typical
Heating Type	Unit Heater
AC Type	None
Struct Class	
Bldg Use	Multi Use - Comm
Total Bedrooms	
Total Baths	
Wet Sprinkler	0
Dry Sprinkler	0
1st Floor Use:	
Heat/AC	Heat Only
Frame Type	Wood Frame
Baths/Plumbing	None
Ceiling/Wall	Typical
Rooms/Prtns	Average
Wall Height	9.00

Building Photo

(http://images.vgsi.com/photos2/SouthingtonCTPhotos//\00\05\57\30.jpg)

Building Layout



(ParcelSketch.ashx?pid=398&bid=398)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,740	1,740
CRL	Crawl Space	1,740	0
		3,480	1,740

Building 2 : Section 1

Year Built: 1936
Living Area: 1,188
Building Percent Good: 66

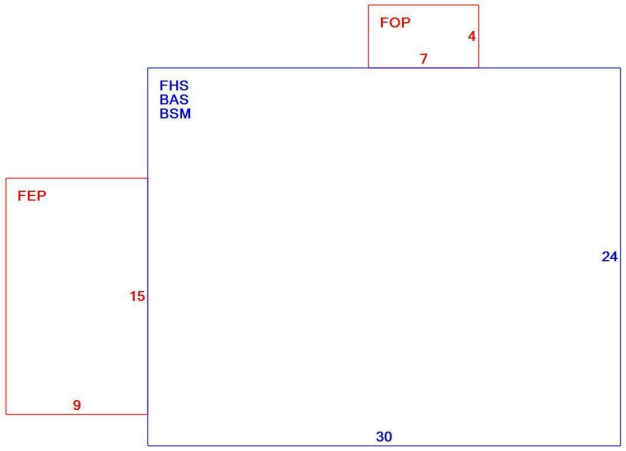
Building Attributes : Bldg 2 of 2	
Field	**Description**
Style	Cape
Model	Residential
Grade:	C

Stories	1.5
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt / Arch Shingle
Interior Wall 1	Average
Interior Wall 2	
Interior Flr 1	Average
Interior Flr 2	
Heat Fuel	Gas
Heat Type:	Forced Hot Air
AC Type:	None
Total Bedrooms:	2
Full Bthrms:	1
Half Baths:	1
Extra Fixtures	0
Total Rooms:	5
Bath Style:	Average
Kitchen Style:	Average
Total Kitchens	1
Fireplaces	1
Whirlpool Tubs	0
Fin Bsmt Area	None
Fin Bsmt Quality	
Bsmt Garages	0
.	
Bsmt Type	Full
Attic Type	None
Cath Ceiling	No
Fndtn Cndtn	
Basement	

Building Photo

(http://images.vgsi.com/photos2/SouthingtonCTPhotos//\00\01\72\06.JPG)

Building Layout



(ParcelSketch.ashx?pid=398&bid=20002)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	720	720
FHS	Finished Half Story	720	468
BSM	Basement	720	0
FEP	Finished Enclosed Porch	135	0
FOP	Open Porch	28	0
		2,323	1,188

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	031
Description	Multi Use - Comm
Zone	B
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	1.22
Depth	

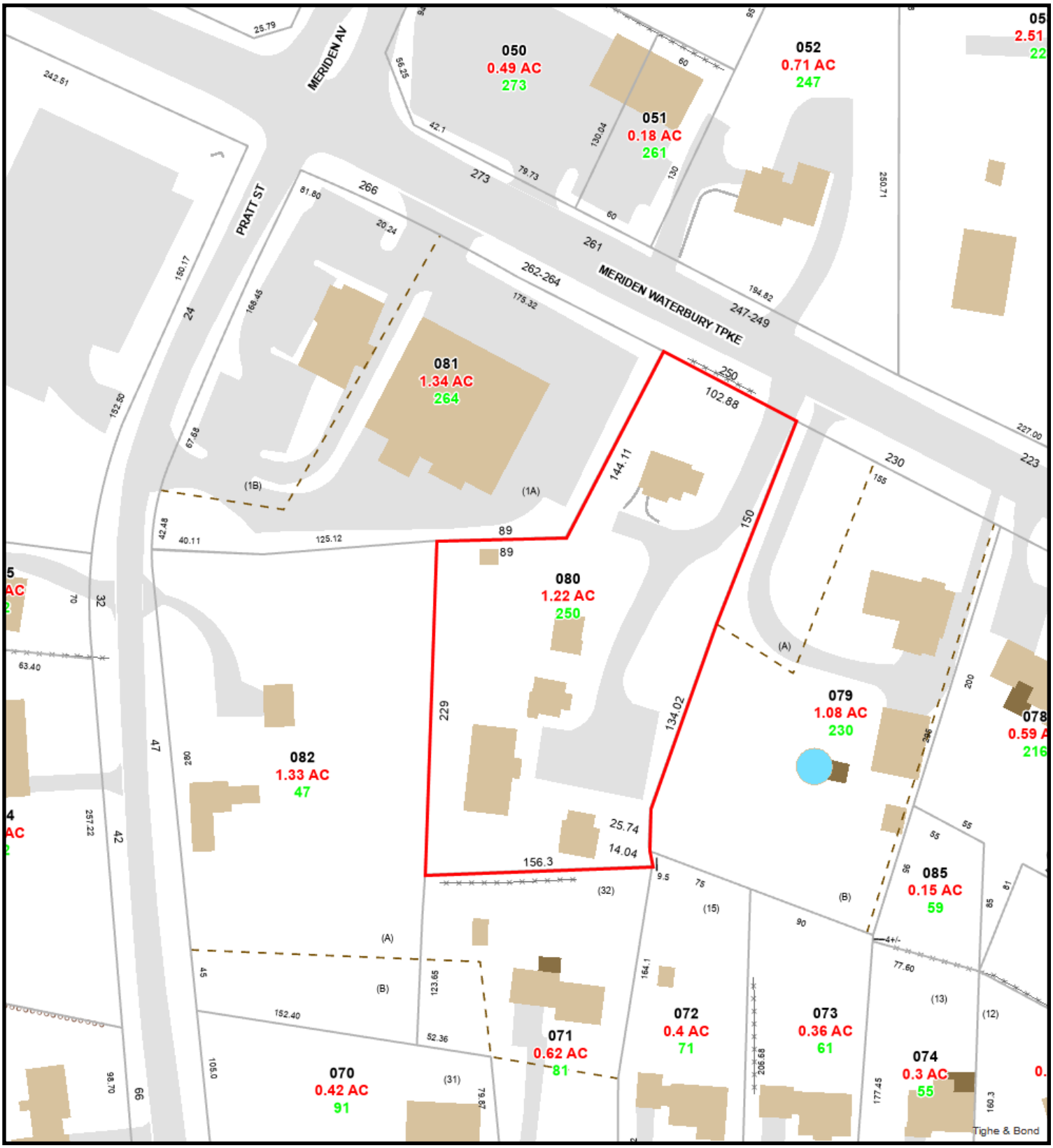
Outbuildings

Outbuildings					Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Bldg #**
PAV1	Paving	AS	Asphalt	2625.00 S.F.	1
FGR1	Garage			520.00 S.F.	1
SHD1	Shed	FR	Frame	462.00 S.F.	1
SHD1	Shed	FR	Frame	414.00 S.F.	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$173,720	$326,730	$500,450
2020	$173,720	$326,730	$500,450
2019	$165,770	$136,600	$302,370
2018	$165,770	$136,600	$302,370
2017	$165,770	$136,600	$302,370

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$121,600	$228,710	$350,310
2020	$121,600	$228,710	$350,310
2019	$116,040	$95,620	$211,660
2018	$116,040	$95,620	$211,660
2017	$116,040	$95,620	$211,660



250 MERIDEN WATERBURY

3/18/2022 9:02:16 AM

Scale: 1"=94'

Scale is approximate

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBDL00061A

DISH Wireless L.L.C. SITE ADDRESS:

250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

CONNECTICUT CODE OF COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

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

TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (2 PER SECTOR)
- INSTALL (3) PROPOSED SECTOR FRAMES
- 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 FIBER NID (IF REQUIRED)
- INSTALL (1) PROPOSED METER SOCKET

SITE PHOTO

UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM
CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	JOHN ROGUS
ADDRESS:	250 MERIDEN WATERBURY TPKE SOUTHINGTON, CT 06489
TOWER TYPE:	SELF-SUPPORT TOWER
TOWER CO SITE ID:	841298
TOWER APP NUMBER:	557181
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 33' 24.54" N 41.556817 N
LONGITUDE (NAD 83):	72° 51' 10.84" W 72.853011 W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	B-BUSINESS
PARCEL NUMBER:	SOUT-000015-000080
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

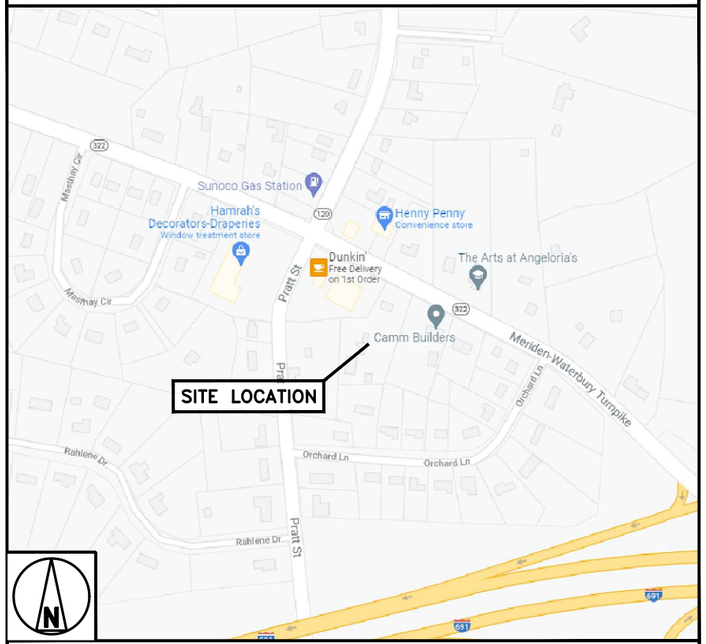
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486 - 9377
SITE DESIGNER:	INFINIGY 2500 W. HIGGINS RD. SUITE 500 HOFFMAN ESTATES, IL 60169 (847) 648-4068
SITE ACQUISITION:	CORWIN DIXON CORWIN.DIXON@CROWNCASTLE.COM
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM (617) 839-6514
RF ENGINEER:	BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM

DIRECTIONS

DIRECTIONS FROM MERIDEN MARKHAM MUNICIPAL AIRPORT:

HEAD TOWARD EVANSVILLE AVE, TURN LEFT ONTO EVANSVILLE AVE, HERTZ RENT-A-CAR ON THE CORNER, TURN LEFT ONTO CT-70 / MAIN ST, TURN RIGHT TO STAY ON CT-70 / RIVER RD, TURN RIGHT ONTO OREGON RD, TURN LEFT ONTO COE AVE, TURN RIGHT ONTO ALLEN AVE, TURN LEFT ONTO JOHNSON AVE, TURN RIGHT ONTO PRATT ST, TURN RIGHT ONTO CT-322 / MERIDEN WATERBURY TPKE, SHELL ON THE CORNER, TURN RIGHT, ARRIVE AT 250 MERIDEN WATERBURY TURNPIKE SOUTHINGTON, CT 06489

VICINITY MAP



NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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2/2/2022
STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
0	01/14/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

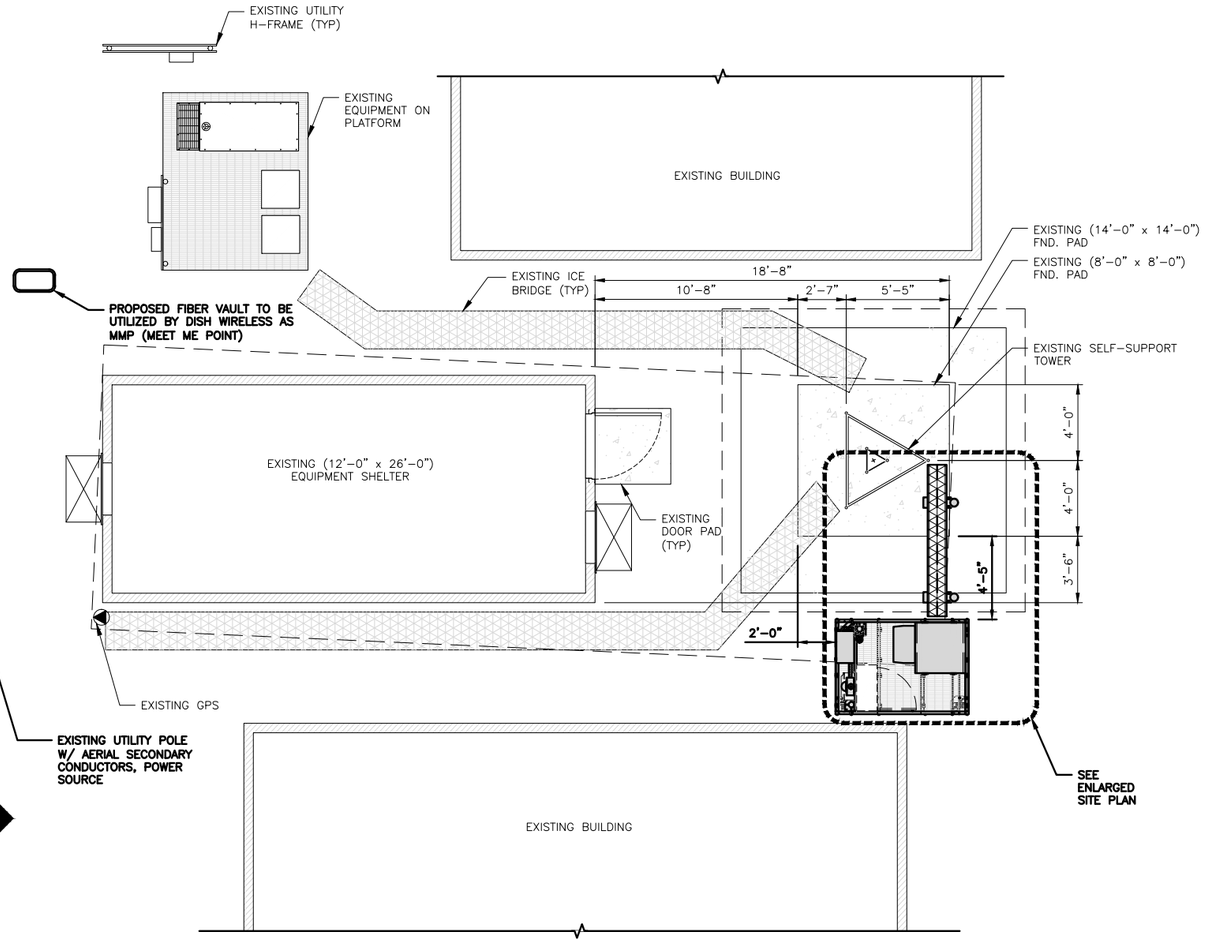
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



1 A-2

N

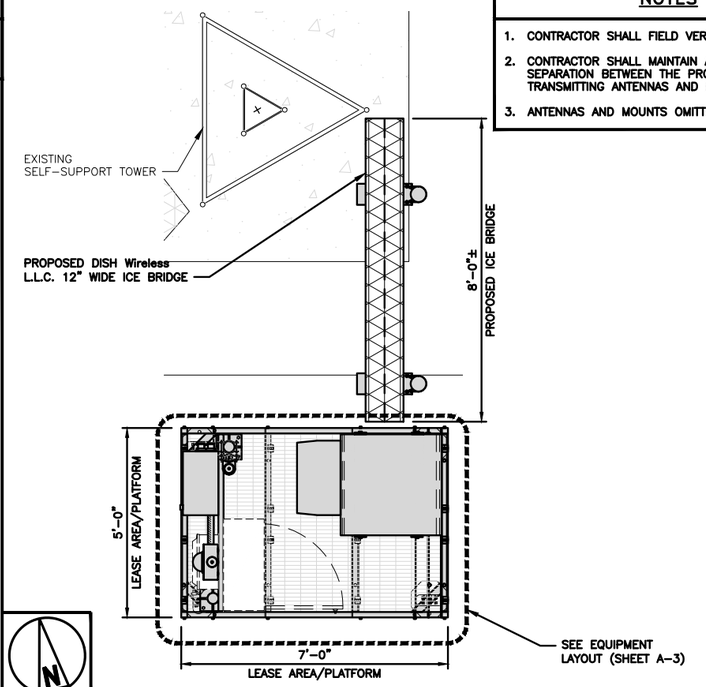
OVERALL SITE PLAN

4' 2' 0 4' 8'
1/4"=1'-0"

1

NOTES

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

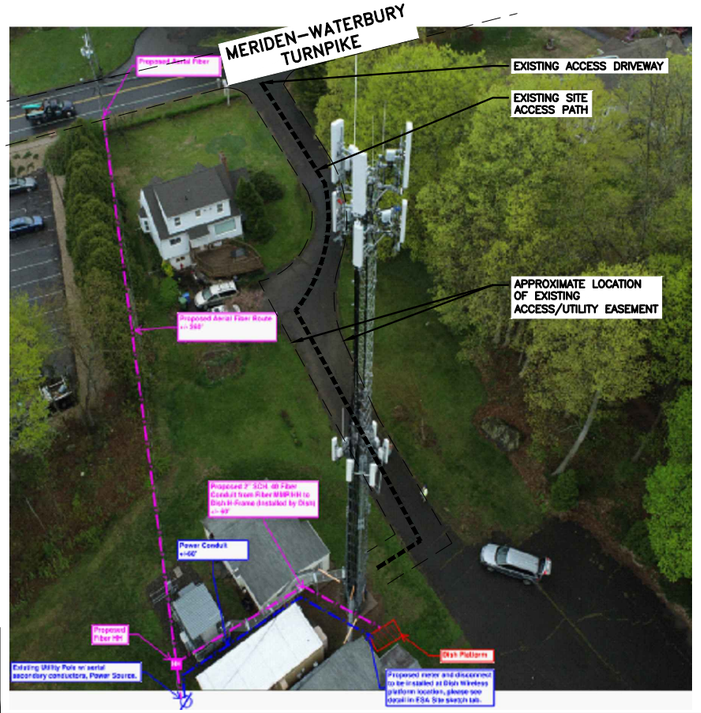


N

ENLARGED SITE PLAN

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

2



N

SITE PLAN

32' 24'16' 8' 0 32' 64'
1/32"=1'-0"

3

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PROJECT INFORMATION
BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

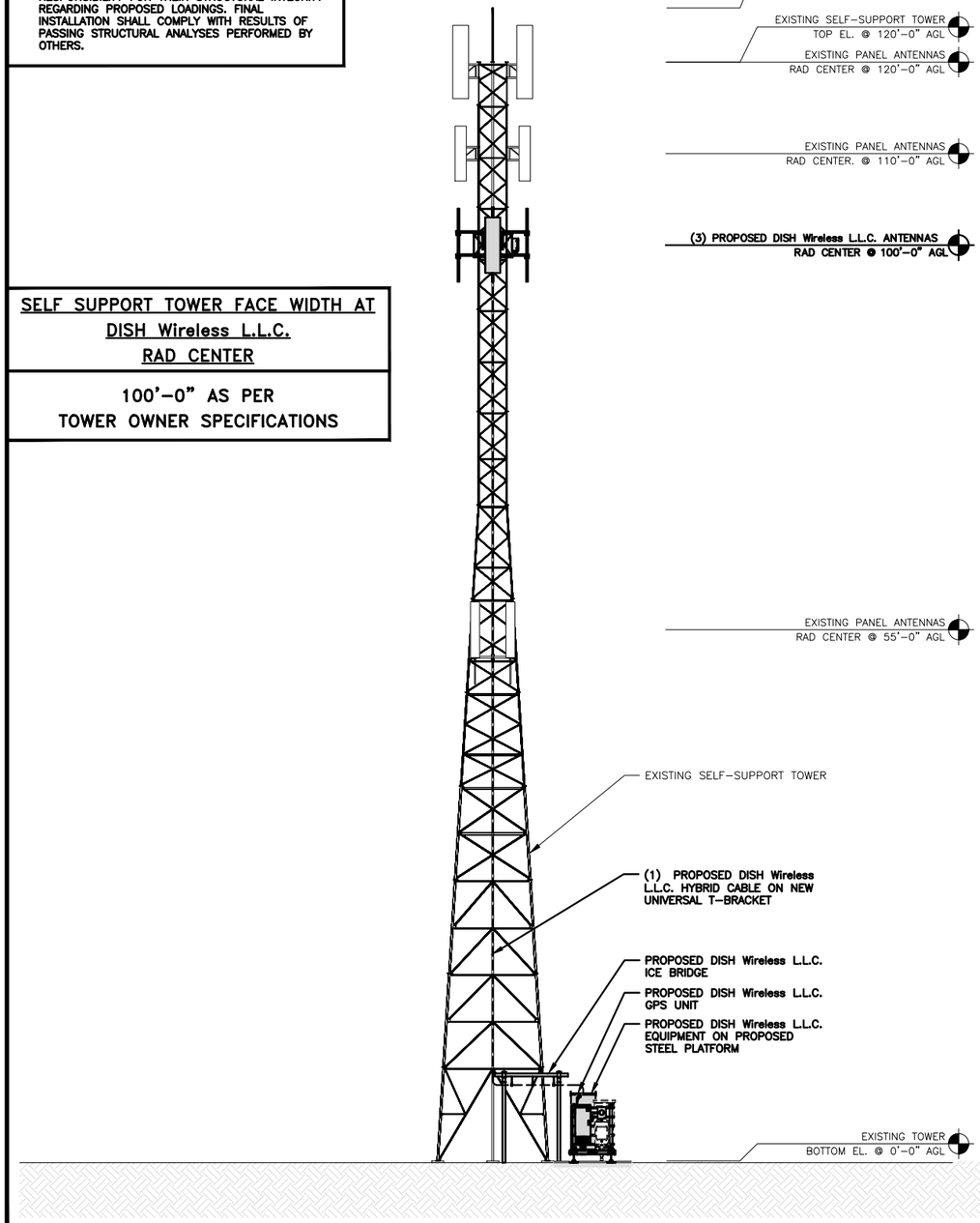
SHEET NUMBER
A-1

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.
4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.

SELF SUPPORT TOWER FACE WIDTH AT DISH Wireless L.L.C. RAD CENTER

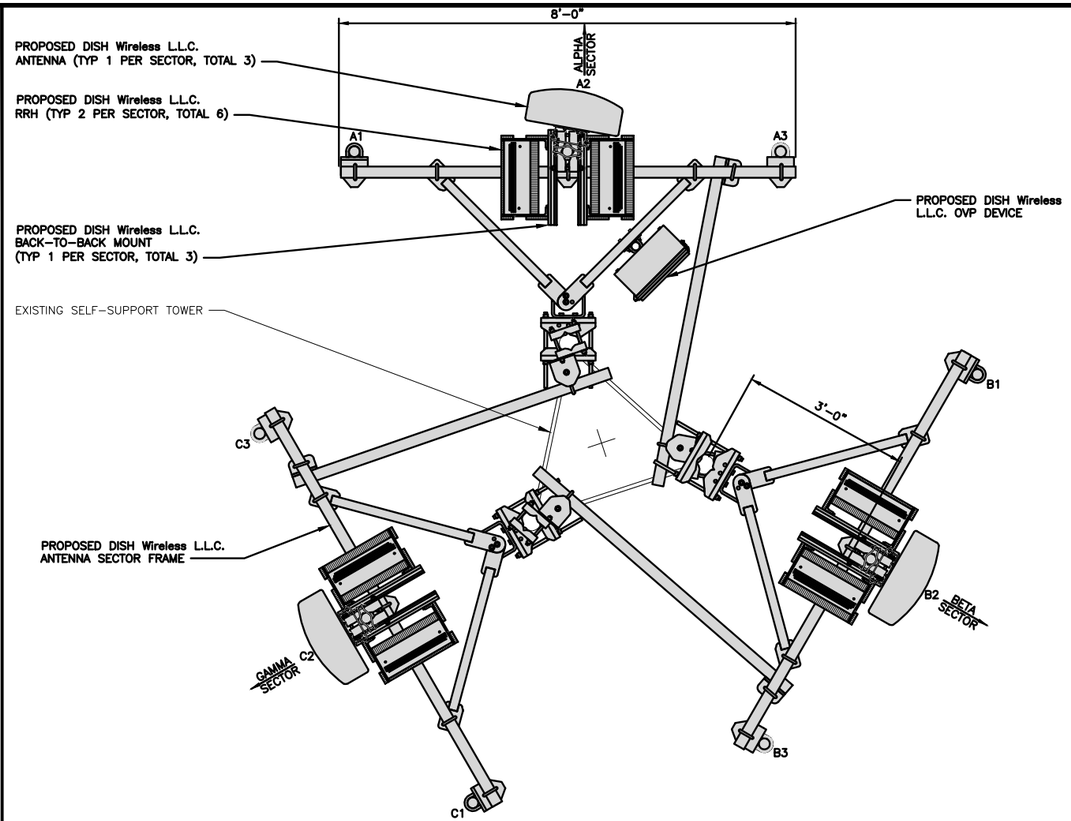
100'–0" AS PER TOWER OWNER SPECIFICATIONS



PROPOSED WEST ELEVATION

8' 4' 0 8' 16'
1/8"=1'–0"

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 (131' LONG)	FUJITSU – TA08025–B604	5G	A2	RAYCAP RDIDC–9181–PF–48
A2	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	10°	100'–0"		FUJITSU – TA08025–B605	5G	A2	
A3	––	––	––	––	––		––	––	––	
B1	––	––	––	––	––	SHARED W/ALPHA	FUJITSU – TA08025–B604	5G	B2	SHARED W/ALPHA
B2	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	120°	100'–0"		FUJITSU – TA08025–B605	5G	B2	
B3	––	––	––	––	––		––	––	––	
C1	––	––	––	––	––	SHARED W/ALPHA	FUJITSU – TA08025–B604	5G	C2	SHARED W/ALPHA
C2	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	240°	100'–0"		FUJITSU – 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

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PROJECT INFORMATION
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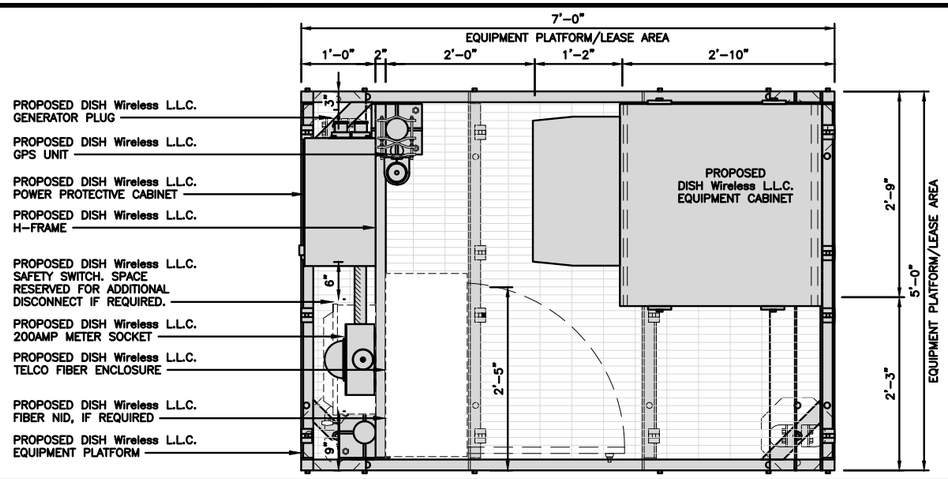
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



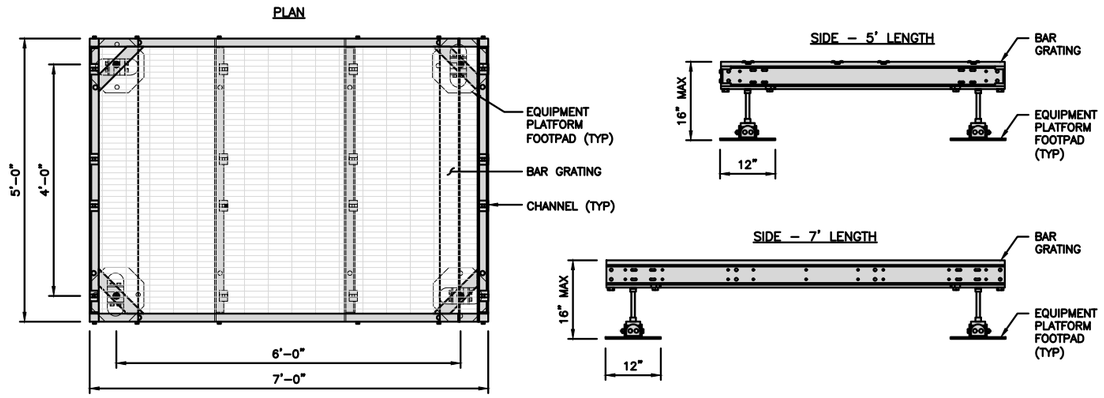
PLATFORM EQUIPMENT PLAN

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

1

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

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



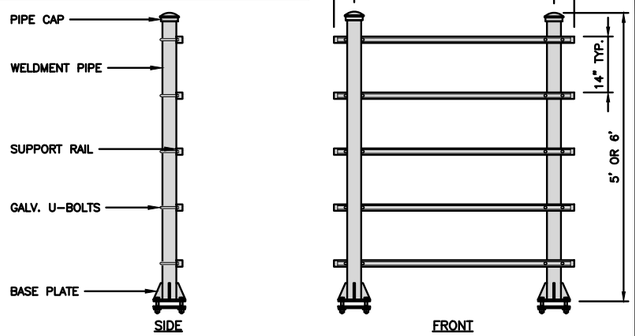
PLATFORM DETAIL

NO SCALE

2

COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs

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



H-FRAME DETAIL

NO SCALE

3

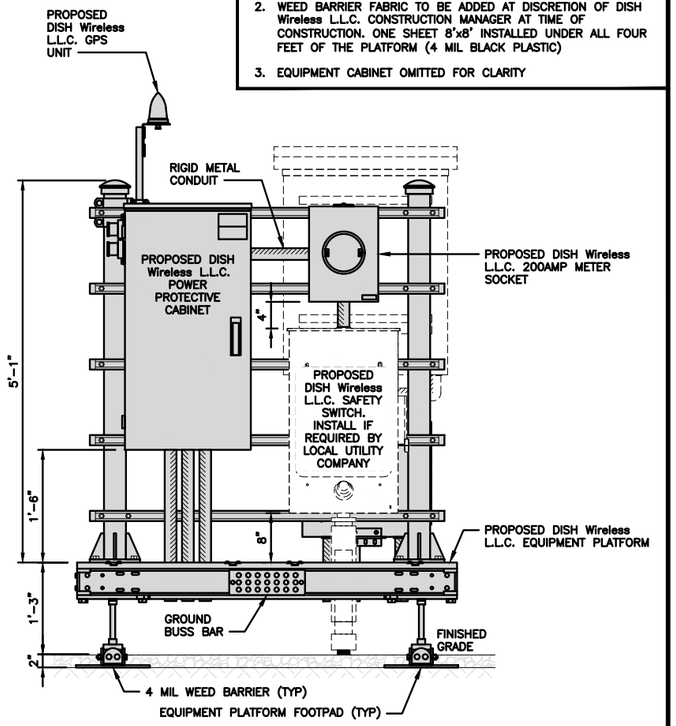
NOT USED

NO SCALE

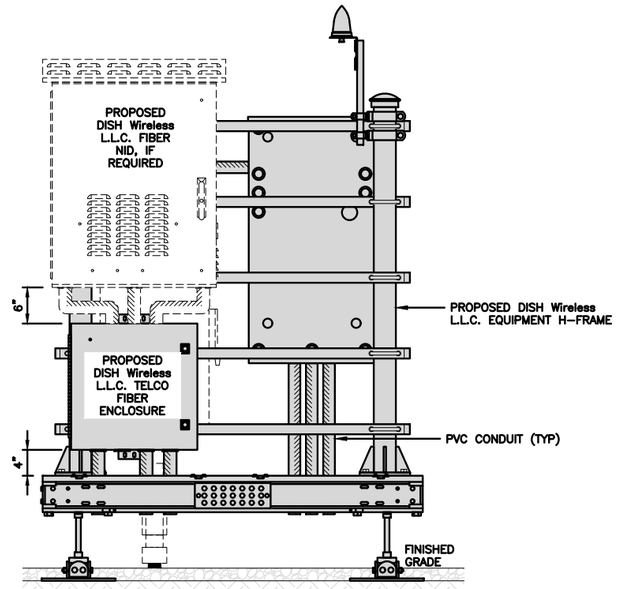
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

DISH Wireless L.L.C. TEMPLATE VERSION 47 – 12/17/2021

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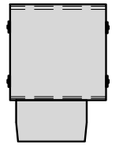
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

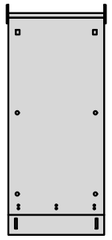
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

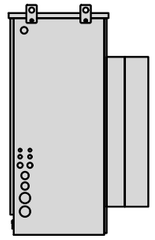
CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD)	74"x32"x32"
POWER PLANT	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 lbs



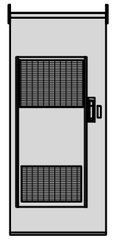
PLAN



BACK



SIDE

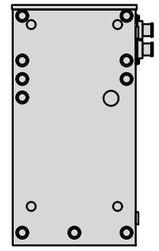


FRONT

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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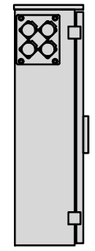
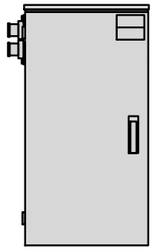
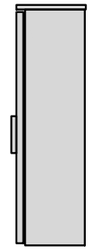


SIDE



FRONT

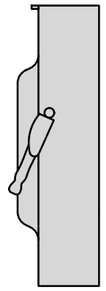


SIDE

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



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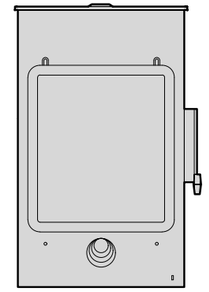
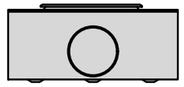


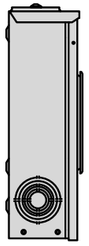
FRONT

SAFETY SWITCH DETAIL | NO SCALE | 3

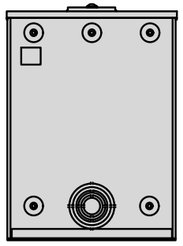
EATON METER SOCKET UNRRS213BEUSE	
METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS



PLAN



SIDE



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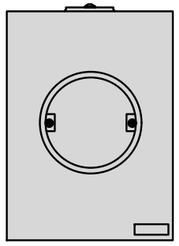
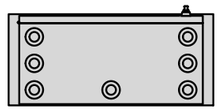


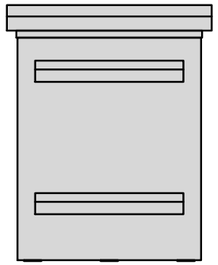
FRONT

METER SOCKET DETAIL | NO SCALE | 4

ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	36.1"x29"x12.9"
WEIGHT	85 lbs



BOTTOM



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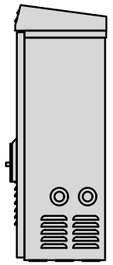
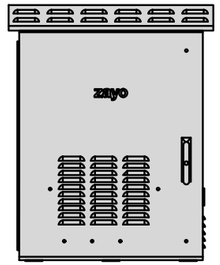


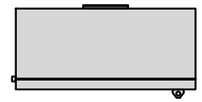
SIDE



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



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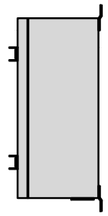
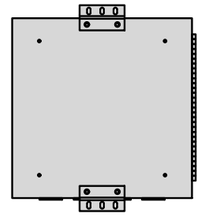


SIDE



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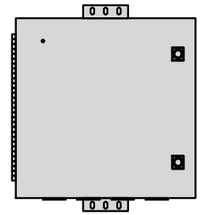
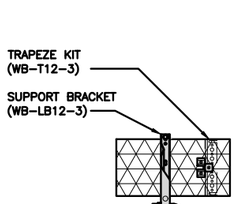


FRONT

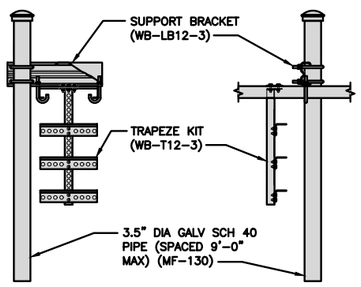
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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"

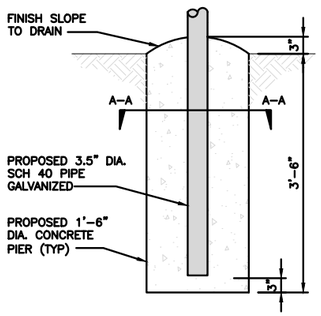


PLAN

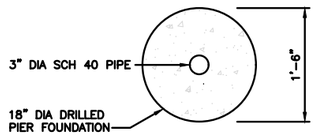


FRONT SIDE

ICE BRIDGE DETAIL | NO SCALE | 7

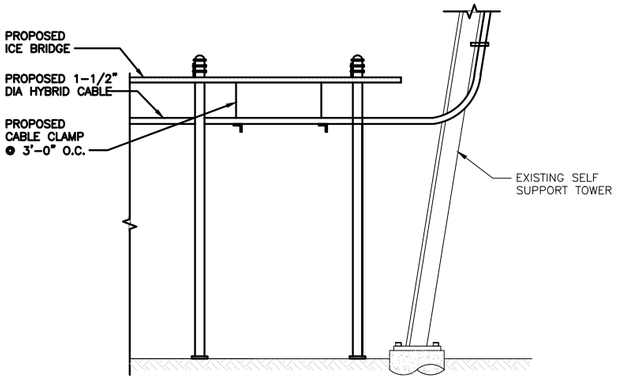


CONCRETE PIER



A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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2/2/2022
STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
0	01/14/2022	ISSUED FOR CONSTRUCTION

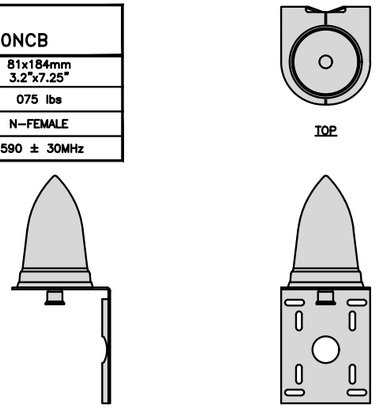
A&E PROJECT NUMBER
6039–Z0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

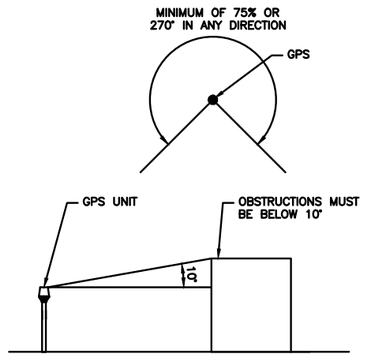
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

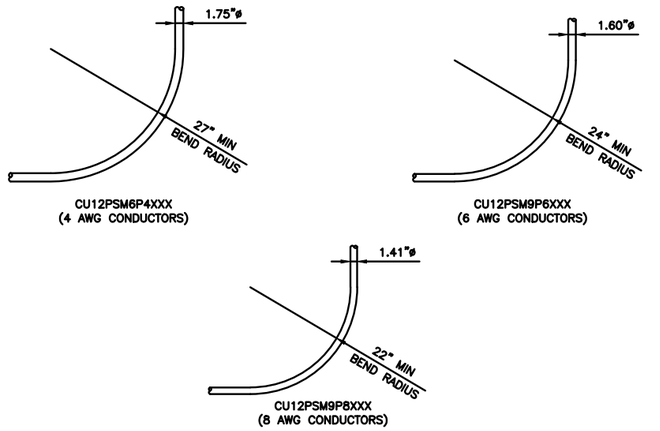
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



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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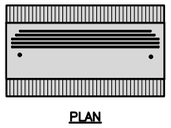
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

SHEET TITLE
EQUIPMENT DETAILS

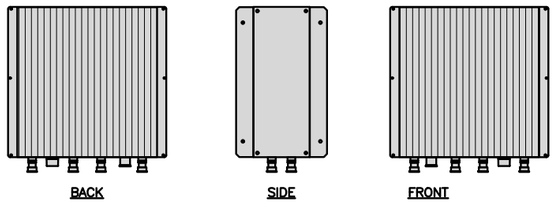
SHEET NUMBER
A-5

FUJITSU TRIPLE BAND TA08025-B605

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



PLAN

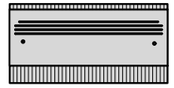


BACK SIDE FRONT

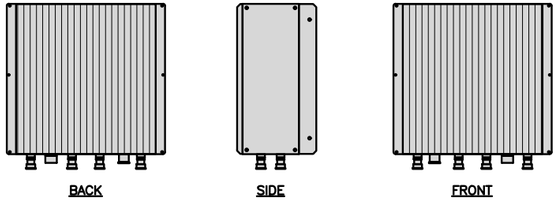
RRH DETAIL | NO SCALE | 1

FUJITSU DUAL BAND TA08025-B604

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



PLAN



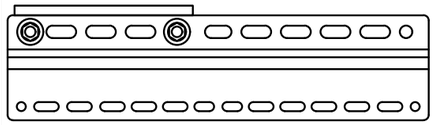
BACK SIDE FRONT

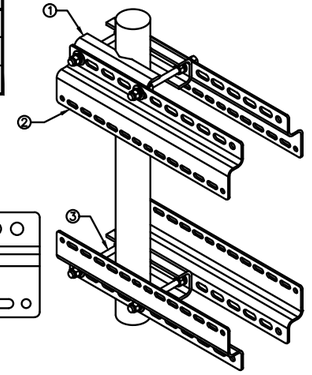
RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z-BRACKET C10123155

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

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





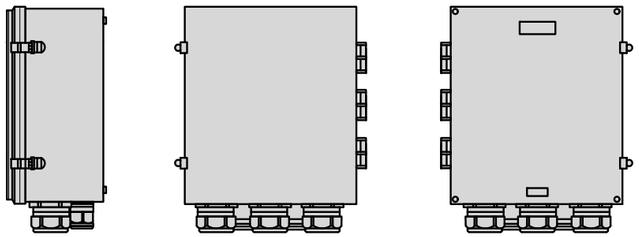
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)

DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS

PLAN

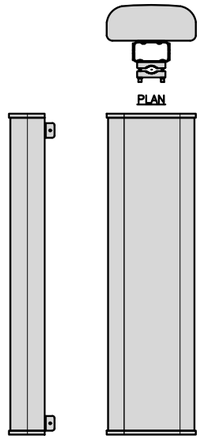


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 4

JMA MX08FRO665-21

DIMENSIONS (HxWxD)	72"x20.0"x8.0"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs



PLAN SIDE FRONT

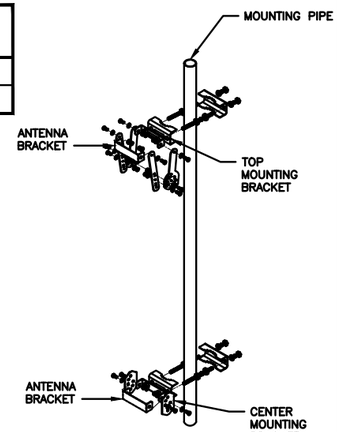
ANTENNA DETAIL | NO SCALE | 5

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

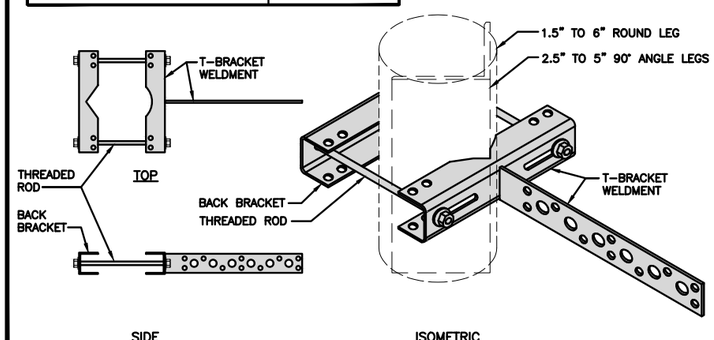


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

SITEPRO1 T600 UNIVERSAL T-BRACKET

DIMENSIONS (HxWxL)	2.25"x10.0"x15.25"
WEIGHT/ VOLUME	5.60 LBS

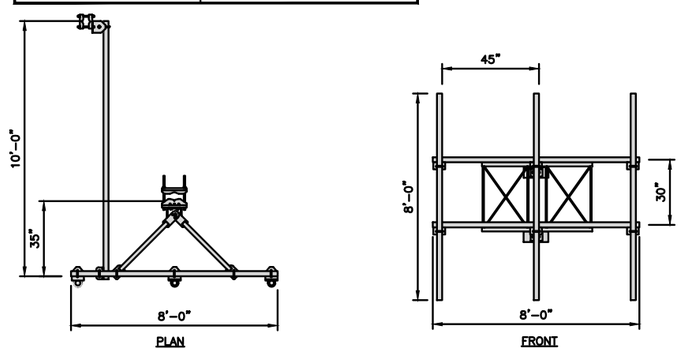


VERTICAL CABLE SUPPORT DETAIL | NO SCALE | 7

COMMSCOPE V-FRAME MTC3975083

FACE SIZE	8'-0"
WEIGHT	352.136 lbs

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



ANTENNA FRAME DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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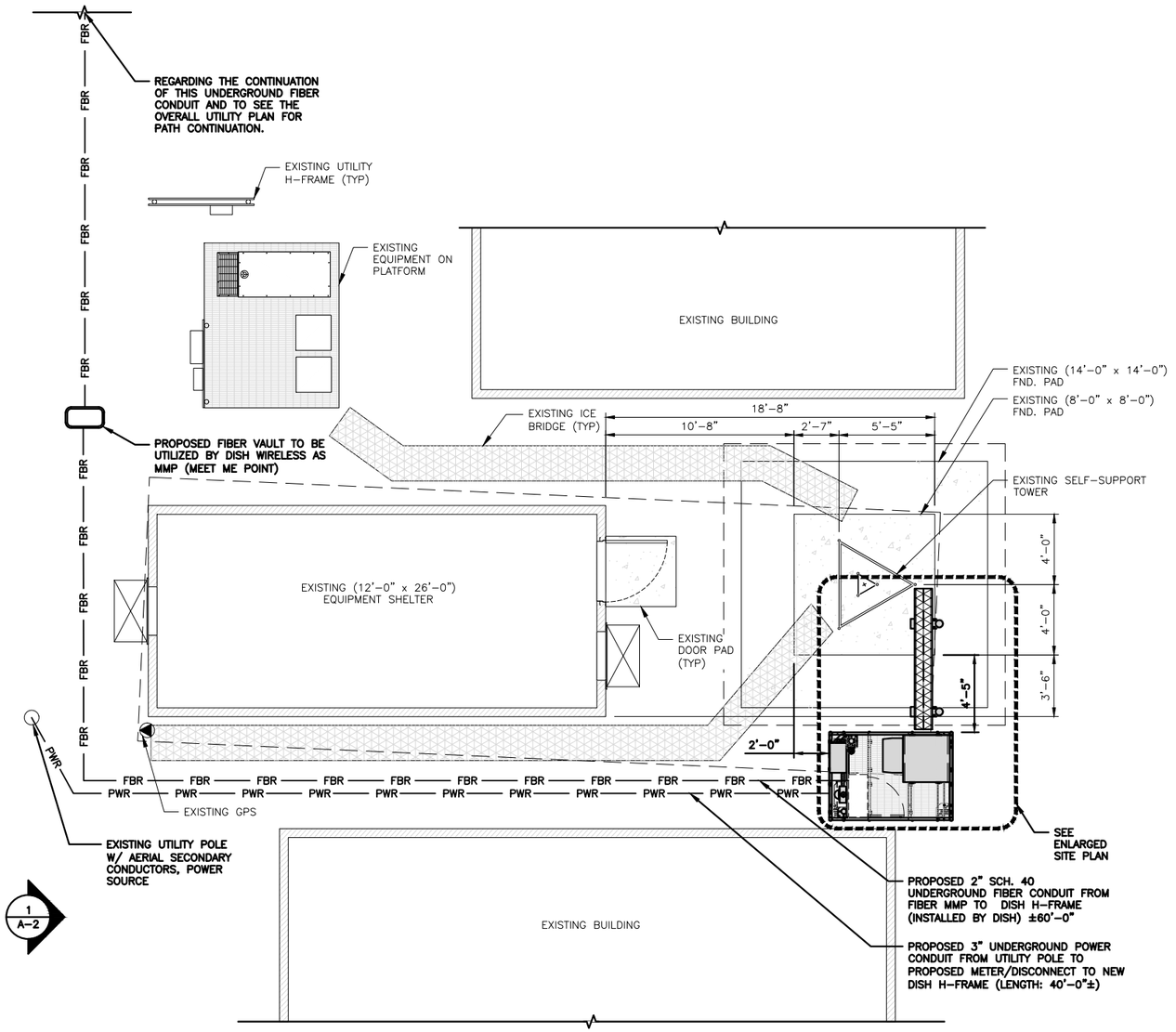
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. THE GROUND LEASE PROVIDES BROAD/BLANKET UTILITY RIGHTS. "PWR" AND "FBR" PATH DEPICTED ON A–1 AND E–1 ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS NOT AN OPTION, PLEASE NOTIFY TOWER OWNER AS FURTHER COORDINATION MAY BE NEEDED.



UTILITY ROUTE PLAN

4' 2' 0 4' 8'
1/4"=1'–0"

1

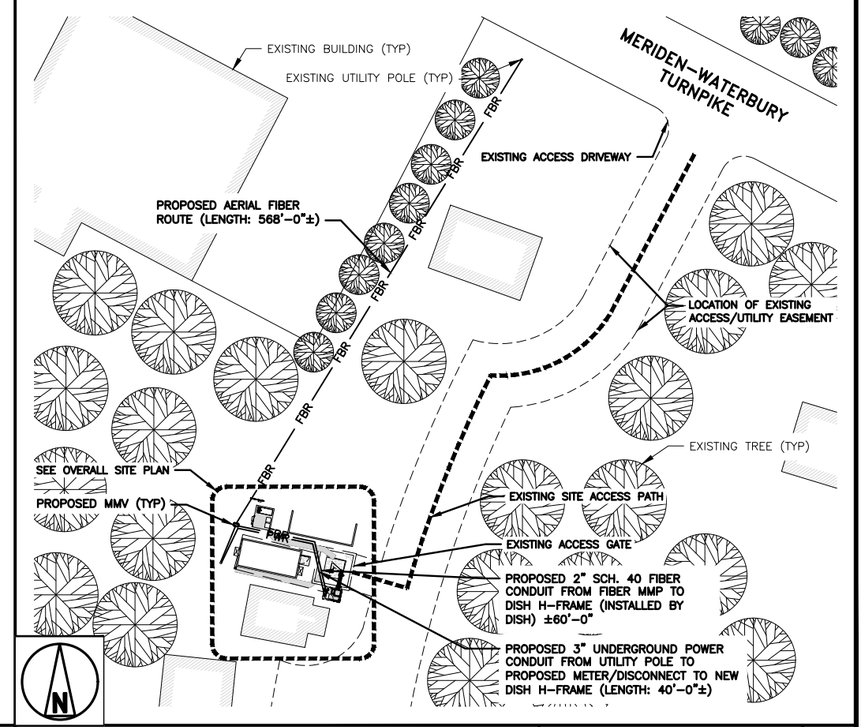
DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND –48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY –48V.

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

ELECTRICAL NOTES

NO SCALE

2



ELECTRICAL NOTES

16' 12' 8' 4' 0 16' 32'
1/16"=1'–0"

3

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RFDS REV #: N/A

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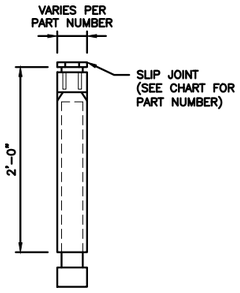
SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

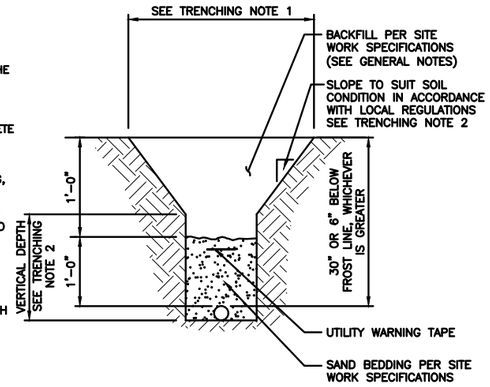


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

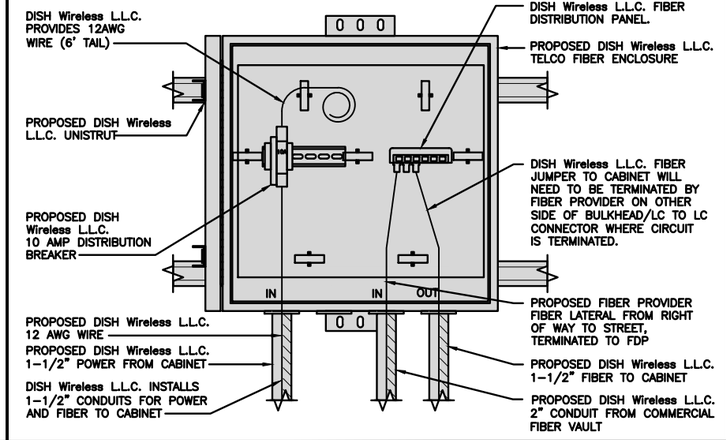
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

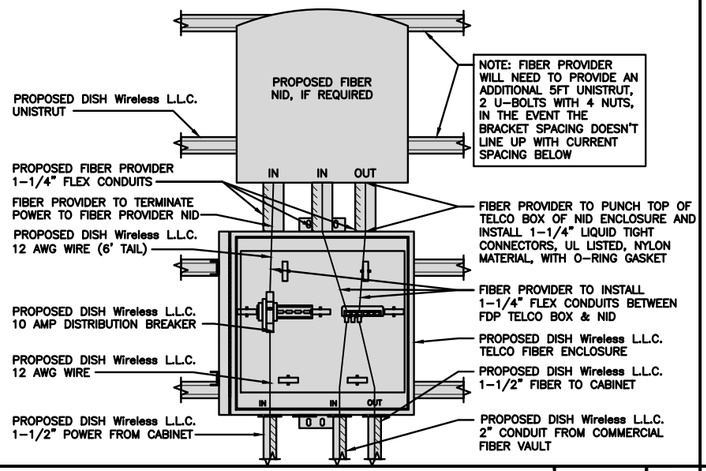
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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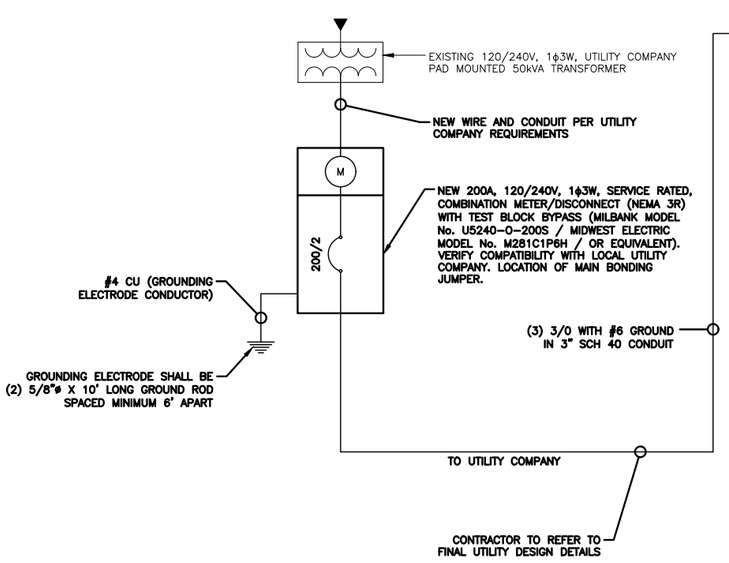
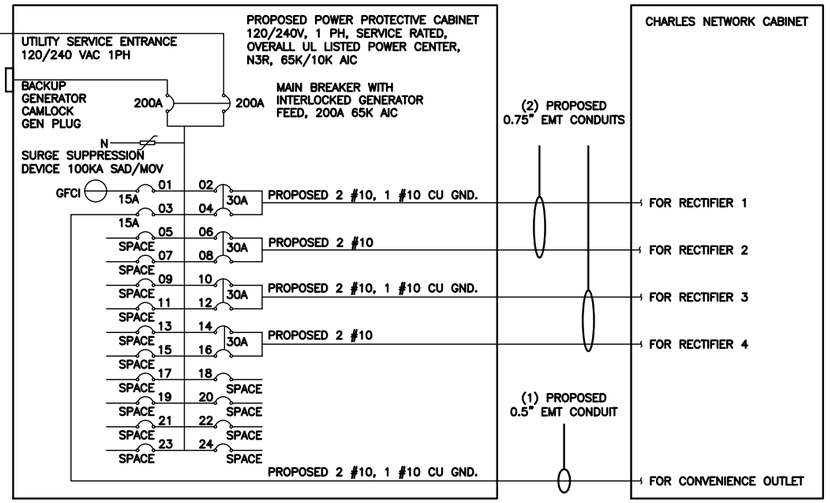
SHEET NUMBER
E-2





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
(1) 15A, 1P BREAKER - SQUARE D P/N:QO115

NOTES

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUIT AND FEEDERS COMPLY WITH THE NEC (LISTED ON T-1) ARTICLE 210.19(A)(1) FPN NO. 4.

THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2014/17 NEC TABLE 310.15(B)(3)(a) OR 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE.

#12 FOR 15A-20A/1P BREAKER: 0.8 x 30A = 24.0A
#10 FOR 25A-30A/2P BREAKER: 0.8 x 40A = 32.0A
#8 FOR 35A-40A/2P BREAKER: 0.8 x 55A = 44.0A
#6 FOR 45A-60A/2P BREAKER: 0.8 x 75A = 60.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.
0.5" CONDUIT - 0.122 SQ. IN AREA
0.75" CONDUIT - 0.213 SQ. IN AREA
2.0" CONDUIT - 1.316 SQ. IN AREA
3.0" CONDUIT - 2.907 SQ. IN AREA

CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN-2, CU.

#10 - 0.0211 SQ. IN X 2 = 0.0422 SQ. IN
#10 - 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND
TOTAL = 0.0633 SQ. IN

0.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.

#10 - 0.0266 SQ. IN X 4 = 0.1064 SQ. IN
#10 - 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND
TOTAL = 0.1146 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (5) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.

3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.8544 SQ. IN

3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

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			
			123				MAX 125%			

PANEL SCHEDULE | NO SCALE | 2

NOT USED | NO SCALE | 3

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LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

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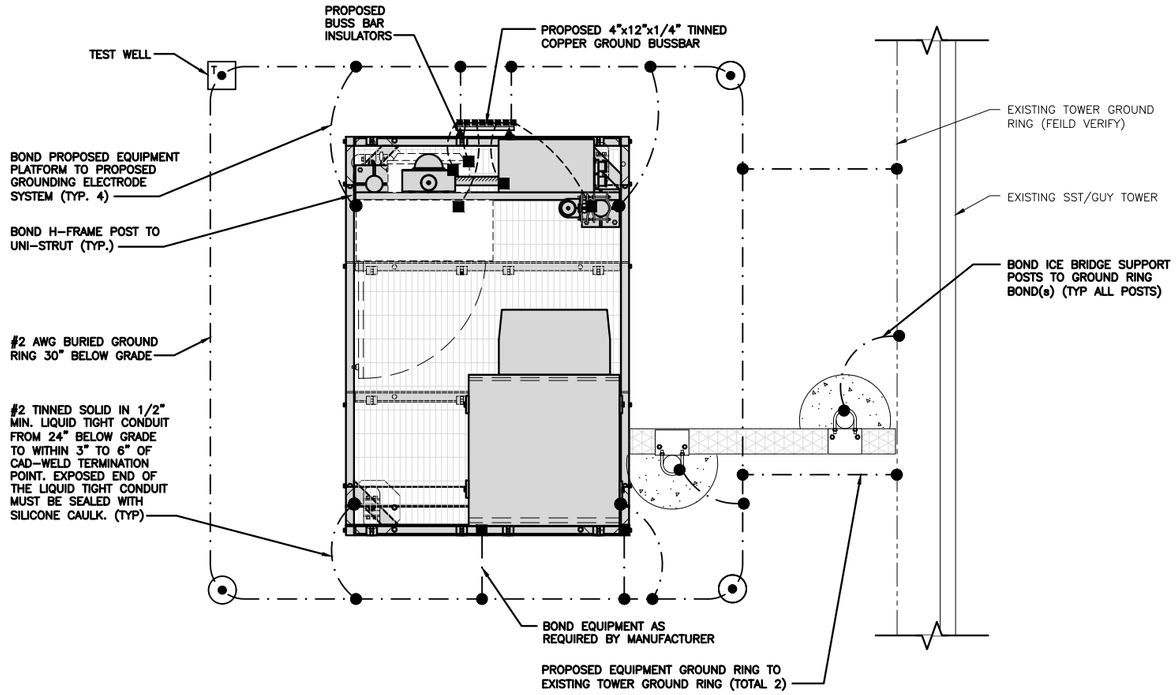
A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

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

SHEET NUMBER
E-3

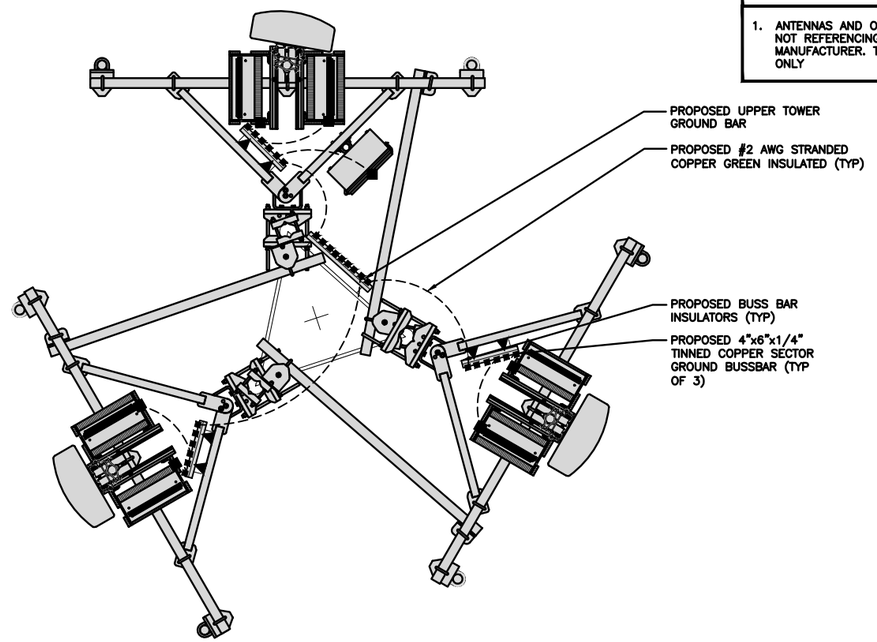


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
GROUND BUS BAR
GROUND ROD
TEST GROUND ROD WITH INSPECTION SLEEVE
#6 AWG STRANDED & INSULATED
#2 AWG SOLID COPPER TINNED
#2 AWG STRANDED & INSULATED
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 1/2" 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.

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

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

(K) 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.

(L) 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.

(M) 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

(N) 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.

(O) 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

(P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO TOWER STEEL.

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

GROUNDING KEY NOTES

NO SCALE | 3

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RFDS REV #: N/A

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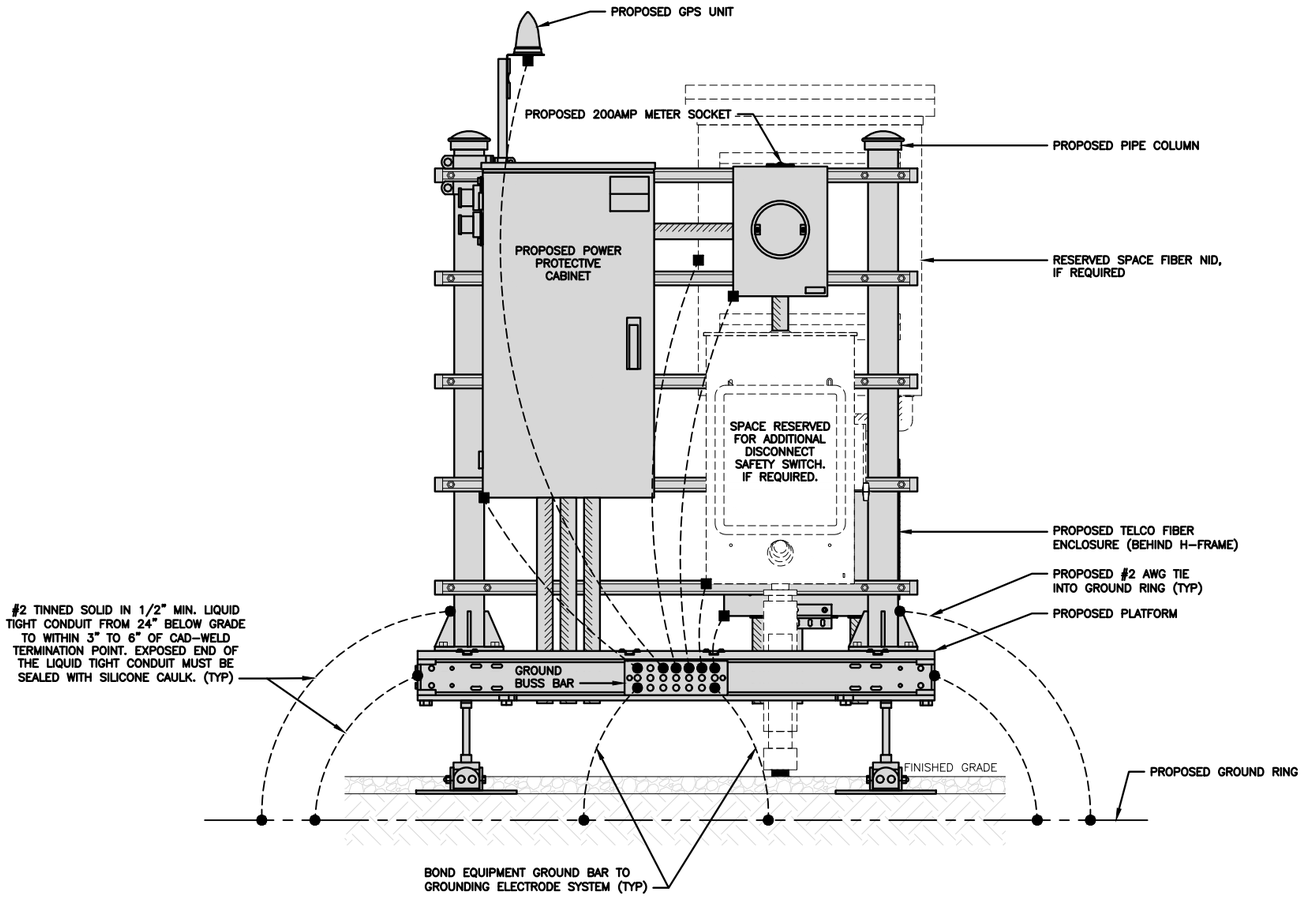
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

SHEET TITLE
GROUNDING PLANS AND NOTES

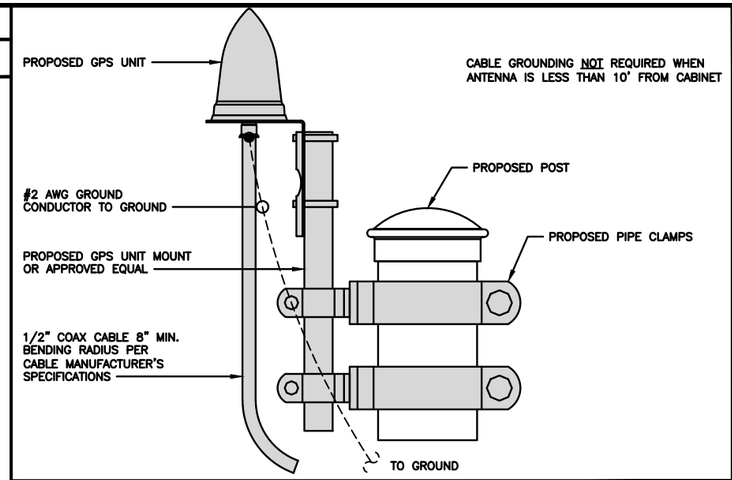
SHEET NUMBER
G-1

NOTES

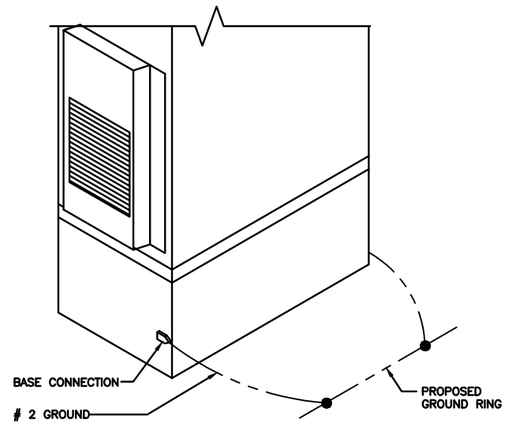
EQUIPMENT CABINET OMITTED FOR CLARITY



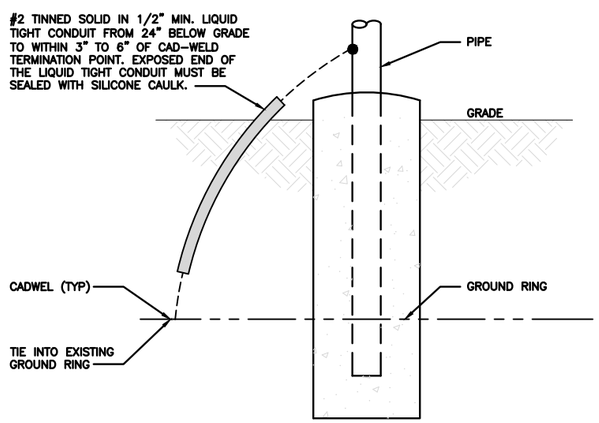
H-FRAME GROUNDING DETAIL | NO SCALE | 1



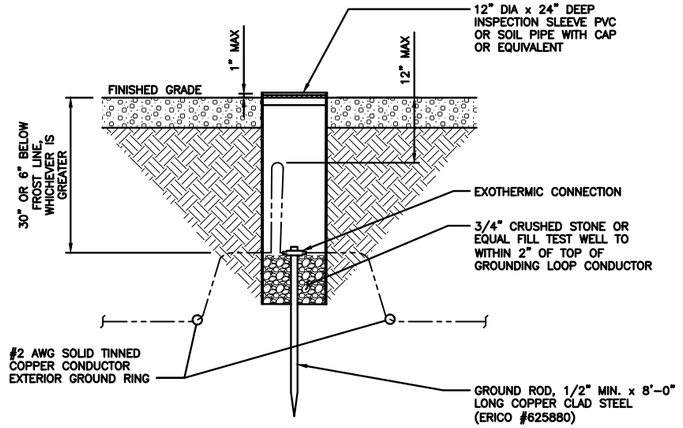
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



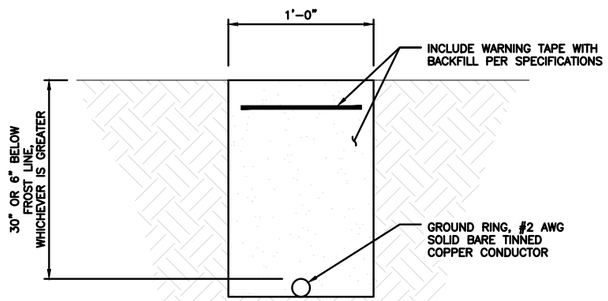
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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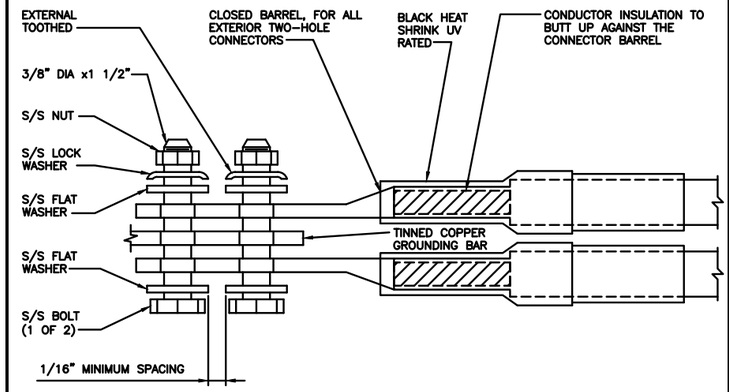
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

SHEET TITLE
GROUNDING DETAILS

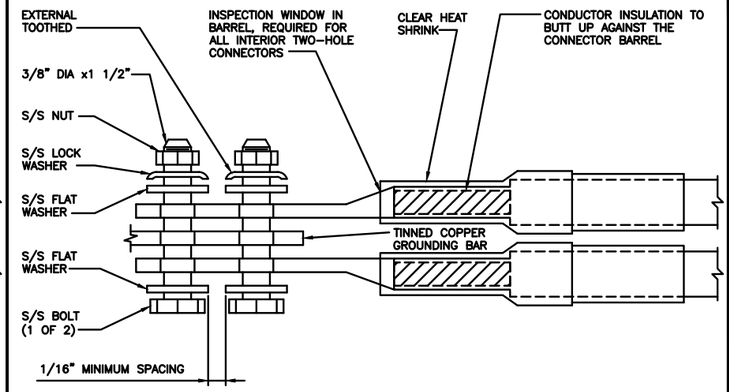
SHEET NUMBER
G-2

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).

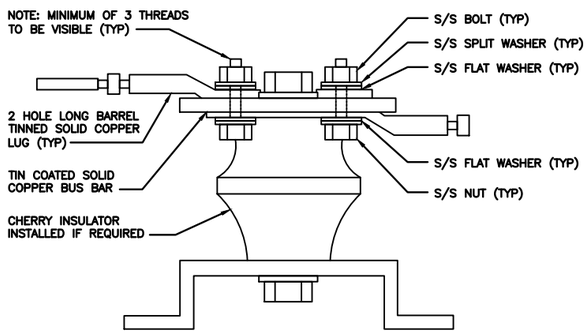
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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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)

ALPHA RRH				BETA RRH				GAMMA RRH			
PORT 1 + SLANT	PORT 2 – SLANT	PORT 3 + SLANT	PORT 4 – SLANT	PORT 1 + SLANT	PORT 2 – SLANT	PORT 3 + SLANT	PORT 4 – SLANT	PORT 1 + SLANT	PORT 2 – SLANT	PORT 3 + SLANT	PORT 4 – SLANT
RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN
	WHITE (–) PORT	ORANGE	ORANGE		WHITE (–) PORT	ORANGE	ORANGE		WHITE (–) PORT	ORANGE	ORANGE
			WHITE (–) PORT				WHITE (–) PORT				WHITE (–) PORT

MID-BAND RRH
(AWS BANDS N66+N70)

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

RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
	WHITE (–) PORT	PURPLE	PURPLE		WHITE (–) PORT	PURPLE	PURPLE		WHITE (–) PORT	PURPLE	PURPLE
			WHITE (–) PORT				WHITE (–) PORT				WHITE (–) PORT

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.

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3 COAX#1 (ALPHA)	CANISTER COAX #2 (ALPHA)
RED	RED	RED	RED
BLUE	BLUE		RED
GREEN	GREEN		
ORANGE	YELLOW		
PURPLE			

FIBER JUMPERS TO RRHs

LOW-BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY

LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE

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.

ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN	ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN	ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN
RED	RED	BLUE	BLUE	GREEN	GREEN
PURPLE	ORANGE	PURPLE	ORANGE	PURPLE	ORANGE

MICROWAVE RADIO LINKS

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

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

FORWARD AZIMUTH OF 0–120 DEGREES		FORWARD AZIMUTH OF 120–240 DEGREES		FORWARD AZIMUTH OF 240–359 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	BLUE	GREEN	GREEN
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
	RED		BLUE		GREEN
	WHITE		WHITE		WHITE

RF CABLE COLOR CODES | NO SCALE | 1

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

AWS (N66+N70+H-BLOCK): PURPLE

CBRS TECH (3 GHz): YELLOW

NEGATIVE SLANT PORT ON ANT/RRH: WHITE

ALPHA SECTOR	BETA SECTOR	GAMMA SECTOR
RED	BLUE	GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

dish wireless.
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2/2/2022
STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
0	01/14/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

SHEET TITLE
RF
CABLE COLOR CODE

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

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6039–Z0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

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: BOBDL00061A

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: BOBDL00061A

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

⚠ CAUTION

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

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RF SIGNAGE

dish wireless.
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DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

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.

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SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
0	01/14/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039–Z0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

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.

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34916
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
0	01/14/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

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.

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RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

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0	01/14/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00061A
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

Exhibit D

Structural Analysis Report

PAUL J. FORD & COMPANY

Date: **February 9, 2022**

Paul J. Ford and Company
250 E. Broad St., Ste 600
Columbus, OH 43215
614-221-6679

Subject:	**Structural Modification Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00061A
	Site Name:	CT-CCI-T-841298
Crown Castle Designation:	**BU Number:**	841298
	Site Name:	SOUTHINGTON ROGUS
	JDE Job Number:	650050
	Work Order Number:	2069959
	Order Number:	557181 Rev. 3
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37522-0019.001.8800
Site Data:	**250 Meriden Waterbury Turnpike, Southington, Hartford Co., CT**	
	Latitude *41° 33' 24.54"*, Longitude *-72° 51' 10.84"*	
	120 Foot - Self Support Tower	

Paul J. Ford and Company is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

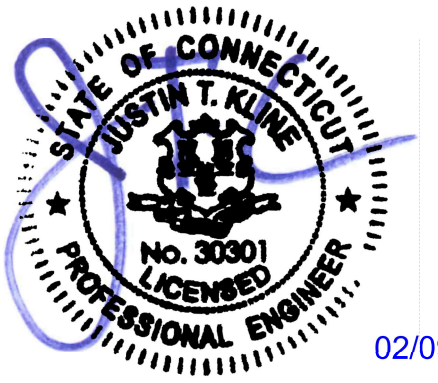
LC4.5: Modified Structure w/ Proposed Equipment Configuration **Sufficient Capacity – 96.4%**

This analysis utilizes an ultimate 3-second gust wind speed of 118 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective

Respectfully submitted by:

Richard W. Hoffman, P.E.
Project Manager
rhoffman@pauljford.com



02/09/2022

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1) INTRODUCTION

This tower is a 120 ft self-support tower, designed by Pirod and mapped by GPD in April of 2014. The original design standard and wind speed are unavailable.

The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	118 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
100.0	100.0	3	jma wireless	MX08FRO665-21 w/ Mount Pipe	1	1 1/2
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MTC3975083 (3)		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
120.0	124.0	1	pctel	MFB9157	3	7/8
	123.0	1	scala	OGB6-900		
	122.0	1	rfs celwave	BA1012-0		
119.0	120.0	3	cci antennas	TPA65R-BU8D_CCIV2 w/ Mount Pipe	1 2	3/8 3/4
		3	ericsson	RRUS 4449 B5/B12		
		1	raycap	DC6-48-60-18-8C		
	119.0	3	tower mounts	8' x 2" Tie Back		
		1	tower mounts	Side Arm Mount [SO 304-3]		
110.0	110.0	3		8' x 2" Tie Back	1 2 6	3/8 3/4 1 1/4
		3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe		
		3	ericsson	RRUS 8843 B2/B66A		
		1	raycap	DC6-48-60-18-8C		
		1	tower mounts	Side Arm Mount [SO 304-3]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
60.0	66.0	1	scala	OGD6-905/945	2	7/8
	62.0	1	rfs celwave	BA1012-0		
	60.0	2	tower mounts	Side Arm Mount [SO 305-1]		
55.0	58.0	3	alcatel lucent	B13 RRH4X30-4R	2	1 1/4
		3	alcatel lucent	B66A RRH4X45		
		6	commscope	SBNHH-1D65B w/ Mount Pipe		
		2	rfs celwave	DB-T1-6Z-8AB-0Z		
		3	tower mounts	6' x 4" Mount Pipe		
	55.0	3	tower mounts	6' x 2" Horizontal Mount Pipe		
50.0	60.0	1	scala	OGD6-905/945	1	1/2
	56.0	1	scala	OGB9-900-DT3	1	7/8
	50.0	2	tower mounts	Side Arm Mount [SO 305-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	5114302	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	5114267	CCISITES
4-TOWER MANUFACTURER DRAWINGS	5114299	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5388172	CCISITES
4-POST-MODIFICATION INSPECTION	5610335	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6175374	CCISITES
4-POST-MODIFICATION INSPECTION	6175357	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	7426751	CCISITES
4-POST-MODIFICATION INSPECTION	8266808	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	9168114	CCISITES
4-POST-MODIFICATION INSPECTION	9549096	CCISITES

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the reinforced leg sections. These calculations are presented in Appendix C.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The foundation (structural) capacity was unable to be determined due to the lack of existing reinforcing steel information. Therefore, it was assumed that the foundation was properly designed to meet the minimum amount of steel per ACI requirements. The minimum steel values were then used for the foundation analysis.
4) The structure will be modified in conformance with the attached proposed modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	120 - 100	Leg	1 1/2	3	-13.71	55.54	24.7	Pass
T2	100 - 80	Leg	1 1/2	88	-46.52	55.54	83.8	Pass
T3	80 - 60	Leg	841298_1.50 SR w/0.25 x 2.375 HP	174	-75.42	83.07	90.8	Pass
T4	60 - 40	Leg	841298_1.75 SR w/0.154 x 2.375 HP	276	-109.21	113.32	96.4	Pass
T5	40 - 20	Leg	841298_2 SR w/0.276 x 2.875 HP	378	-142.65	148.42	96.1	Pass
T6	20 - 0	Leg	841298_2.25 SR w/0.276 x 2.875 HP	456	-173.02	187.86	92.1	Pass
T1	120 - 100	Diagonal	5/8	14	-1.61	4.53	35.6	Pass
T2	100 - 80	Diagonal	5/8	100	-2.79	4.53	61.5	Pass
T3	80 - 60	Diagonal	5/8	270	-3.55	4.37	81.4	Pass
T4	60 - 40	Diagonal	3/4	289	-3.85	6.32	60.9	Pass
T5	40 - 20	Diagonal	7/8	454	-3.60	10.63	33.8	Pass
T6	20 - 0	Diagonal	7/8	469	-3.20	8.30	38.5	Pass
T1	120 - 100	Horizontal	3/4	27	-0.31	6.28	5.0	Pass
T2	100 - 80	Horizontal	3/4	115	-1.11	6.28	17.7	Pass
T3	80 - 60	Horizontal	3/4	188	-1.48	4.79	30.9	Pass
T4	60 - 40	Horizontal	3/4	290	-1.96	3.66	53.5	Pass
T5	40 - 20	Horizontal	7/8	392	-2.52	5.33	47.3	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T6	20 - 0	Horizontal	7/8	470	-3.04	4.31	70.6	Pass
T1	120 - 100	Secondary Horizontal	5/8	86	0.00	14.50	0.5	Pass
T2	100 - 80	Secondary Horizontal	5/8	172	0.00	14.50	0.5	Pass
T3	80 - 60	Secondary Horizontal	1x1	191	-1.48	12.39	11.9 18.7 (b)	Pass
T4	60 - 40	Secondary Horizontal	1x1	293	-1.96	9.47	20.7 21.1 (b)	Pass
T1	120 - 100	Top Girt	1	6	-0.16	16.35	1.0	Pass
T2	100 - 80	Top Girt	1	90	-0.86	16.35	5.3	Pass
T3	80 - 60	Top Girt	1	176	-1.48	16.26	9.1	Pass
T4	60 - 40	Top Girt	1	278	-1.96	13.60	14.4	Pass
T5	40 - 20	Top Girt	1	380	-2.52	11.07	22.8	Pass
T6	20 - 0	Top Girt	1	458	-3.04	8.81	34.6	Pass
T1	120 - 100	Bottom Girt	3/4	9	-0.87	6.28	13.8	Pass
T2	100 - 80	Bottom Girt	3/4	95	-1.62	6.28	25.8	Pass
T3	80 - 60	Bottom Girt	3/4	181	-1.58	4.63	34.1	Pass
T4	60 - 40	Bottom Girt	1	283	-2.18	11.14	19.6	Pass
T5	40 - 20	Bottom Girt	1	383	-2.52	8.86	28.5	Pass
T6	20 - 0	Bottom Girt	1	463	-1.88	7.17	26.3	Pass
							Summary	
						Leg (T4)	96.4	Pass
						Diagonal (T3)	81.4	Pass
						Horizontal (T6)	70.6	Pass
						Secondary Horizontal (T4)	21.1	Pass
						Top Girt (T6)	34.6	Pass
						Bottom Girt (T3)	34.1	Pass
						Bolt Checks	53.9	Pass
						Rating =	96.4	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Jump / Leg Splice Connection	60	57.9	Pass
1	Flange Jump / Leg Splice Connection	40	82.7	Pass
1	Bridge Stiffener Connection	20	71.9	Pass
1	Anchor Rod Bracket	0	28.9	Pass
1	Anchor Rods	0	58.4	Pass
1	Base Foundation Structural	0	16.2	Pass
1	Base Foundation Soil Interaction	0	68.2	Pass

Structure Rating (max from all components) =	96.4%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) Adjusted % Capacity shown in calculations per TIA-H, Section 15.5.

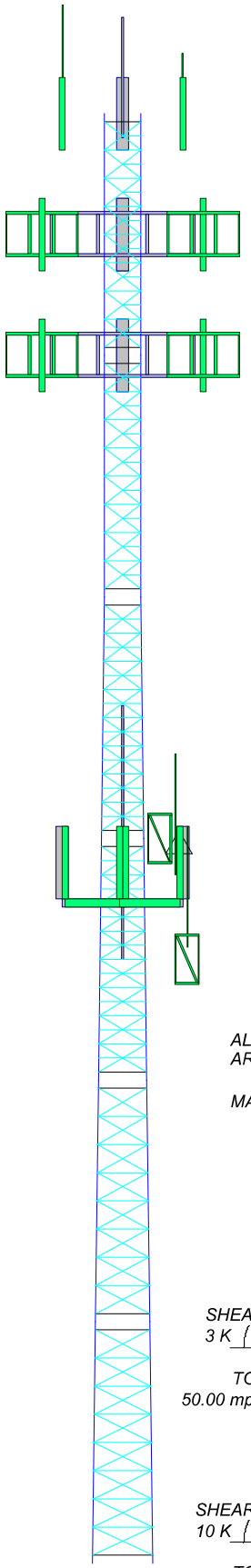
4.1) Recommendations

Perform the modifications detailed in Appendix D to remedy the deficiencies identified in Crown Castle Work Order No. 1987178.

APPENDIX A

TNXTOWER OUTPUT

Section	T1	T2	T3	T4	T5	T6
Legs	SR 1 1/2		841298_1.50 SR w/0.25 x 2.375 HP	841298_1.75 SR w/0.154 x 2.375 HP	841298_2 SR w/0.276 x 2.875 HP	841298_2.25 SR w/0.276 x 2.875 HP
Leg Grade	A572-50		46.0 ksi		A572-50	
Diagonals		SR 5/8		SR 3/4	SR 7/8	
Diagonal Grade			A36			
Top Girts			SR 1			
Bottom Girts		SR 3/4			SR 1	
Horizontals			SR 3/4		SR 7/8	
Sec. Horizontals	SR 5/8		1x1		N.A.	
Face Width (ft)	3		3.5		4	5
# Panels @ (ft)	54 @ 2.33333				4.5	
Weight (K)	0.7	0.7	1.1	1.4	1.6	1.8



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	46.0 ksi	46 ksi	65 ksi
A36	36 ksi	58 ksi			

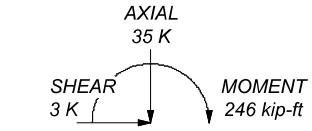
TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 118.00 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50.00 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TIA-222-H Annex S
9. TOWER RATING: 96.4%

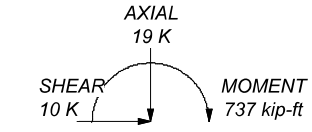
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 176 K
SHEAR: 4 K

UPLIFT: -164 K
SHEAR: 5 K



TORQUE 0 kip-ft
50.00 mph WIND - 1.00 in ICE



TORQUE 1 kip-ft
REACTIONS - 118.00 mph WIND

Paul J. Ford and Company
250 E. Broad St., Ste 600
Columbus, OH 43215
Phone: 614-221-6679
FAX:

Job: **37522-0019.001.8800**			
Project: **841298, Southington Rogus; Southington, Connecticut**			
Client: Crown Castle	Drawn by: Rich Hoffman	App'd:	
Code: TIA-222-H	Date: 02/08/22	Scale: NTS	
Path:		Dwg No. E-1	

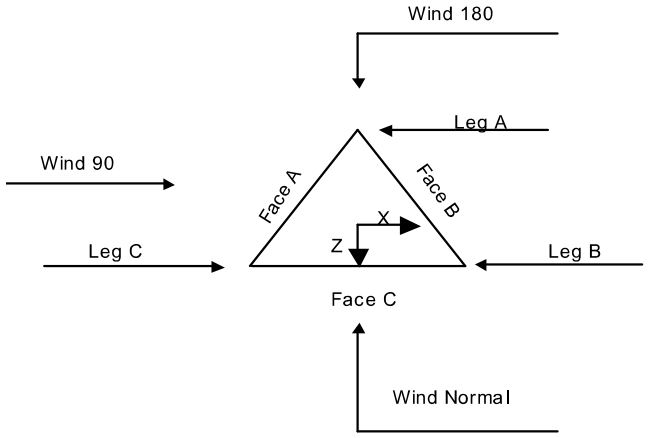
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 120.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.00 ft at the top and 5.00 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Tower base elevation above sea level: 343.00 ft.
Basic wind speed of 118.00 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.00 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50.00 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60.00 mph.
TIA-222-H Annex S.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.05.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	120.00-100.00			3.00	1	20.00
T2	100.00-80.00			3.00	1	20.00
T3	80.00-60.00			3.00	1	20.00
T4	60.00-40.00			3.50	1	20.00
T5	40.00-20.00			4.00	1	20.00
T6	20.00-0.00			4.50	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	120.00-100.00	2.33	X Brace	No	Yes+Steps	8.00	8.00
T2	100.00-80.00	2.33	X Brace	No	Yes+Steps	8.00	8.00
T3	80.00-60.00	2.33	X Brace	No	Yes	8.00	8.00
T4	60.00-40.00	2.33	X Brace	No	Yes	8.00	8.00
T5	40.00-20.00	2.33	X Brace	No	Yes	8.00	8.00
T6	20.00-0.00	2.33	X Brace	No	Yes	8.00	8.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 120.00-100.00	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	5/8	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T2 100.00-80.00	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	5/8	A36 (36 ksi)
T3 80.00-60.00	Arbitrary Shape	841298_1.50 SR w/0.25 x 2.375 HP	46.0 ksi (46 ksi)	Solid Round	5/8	A36 (36 ksi)
T4 60.00-40.00	Arbitrary Shape	841298_1.75 SR w/0.154 x 2.375 HP	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T5 40.00-20.00	Arbitrary Shape	841298_2 SR w/0.276 x 2.875 HP	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 20.00-0.00	Arbitrary Shape	841298_2.25 SR w/0.276 x 2.875 HP	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 120.00-100.00	Solid Round	1	A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T2 100.00-80.00	Solid Round	1	A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T3 80.00-60.00	Solid Round	1	A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T4 60.00-40.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T5 40.00-20.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T6 20.00-0.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T2 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T3 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T4 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T5 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 20.00-0.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 120.00-	Solid Round	5/8	A572-50	Solid Round		A572-50

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
100.00			(50 ksi)			(50 ksi)
T2 100.00-80.00	Solid Round	5/8	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T3 80.00-60.00	Flat Bar	1x1	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T4 60.00-40.00	Flat Bar	1x1	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 120.00-100.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T2 100.00-80.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T3 80.00-60.00	0.00	0.25	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T4 60.00-40.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T5 40.00-20.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T6 20.00-0.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 120.00-100.00	No	No	1	0.9 0.9	1 1	1 1	0.7 0.7	0.7 0.7	1 1	1 1
T2 100.00-80.00	No	No	1	0.9 0.9	1 1	1 1	0.7 0.7	0.7 0.7	1 1	1 1
T3 80.00-60.00	No	No	1	0.9 0.9	1 1	1 1	0.7 0.7	0.7 0.7	1 1	1 1
T4 60.00-40.00	No	No	1	0.9 0.9	1 1	1 1	0.7 0.7	0.7 0.7	1 1	1 1
T5 40.00-20.00	No	No	1	0.9 0.9	1 1	1 1	0.7 0.7	0.7 0.7	1 1	1 1
T6 20.00-0.00	No	No	1	0.9 0.9	1 1	1 1	0.7 0.7	0.7 0.7	1 1	1 1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 120.00-100.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75
T2 100.00-80.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75
T3 80.00-60.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75
T4 60.00-40.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75
T5 40.00-20.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75
T6 20.00-0.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 120.00-100.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T2 100.00-80.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T3 80.00-60.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T4 60.00-40.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T5 40.00-20.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T6 20.00-0.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 120.00-100.00	Flange	0.63 A325N	4	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T2 100.00-80.00	Flange	0.63 A325N	4	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T3 80.00-60.00	Sleeve DS	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.50 A325N	1
T4 60.00-40.00	Sleeve DS	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.50 A325N	1
T5 40.00-20.00	Sleeve DS	0.75 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T6 20.00-0.00	Flange	0.75 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8 ****	B	No	No	Ar (CaAa)	120.00 - 8.00	0.00	0	1	1	0.38	0.38		0.22
LDF6-50A(1-1/4)	A	No	No	Ar (CaAa)	110.00 - 8.00	0.00	-0.25	6	6	1.00 0.50	1.55		0.60
FB-L98B-034-XXX(3/8)	A	No	No	Ar (CaAa)	110.00 - 8.00	0.00	-0.1	1	1	0.39	0.39		0.06
FB-L98B-034-XXX(3/8)	A	No	No	Ar (CaAa)	119.00 - 8.00	0.00	-0.4	1	1	0.39	0.39		0.06
WR-VG86ST-BRD(3/4)	A	No	No	Ar (CaAa)	110.00 - 8.00	0.00	-0.1	2	2	0.80	0.80		0.58
WR-VG86ST-BRD(3/4) **** ****	A	No	No	Ar (CaAa)	119.00 - 8.00	0.00	-0.4	2	2	0.80	0.80		0.58
HB114-U6S12-XXX-LI(1-1/4) ****	A	No	No	Ar (CaAa)	58.00 - 8.00	0.00	0.45	2	2	1.54	1.54		1.70
FLC 78-50J(7/8)	A	No	No	Ar (CaAa)	60.00 - 8.00	-1.00	-0.25	5	5	1.11	1.11		0.40
FLC 78-50J(7/8) ***	A	No	No	Ar (CaAa)	120.00 - 60.00	-1.00	-0.25	3	3	1.11	1.11		0.40
FLC 78-50J(7/8)	A	No	No	Ar (CaAa)	50.00 - 0.00	-1.00	-0.25	1	1	1.11	1.11		0.40
FLC 12-50J(1/2) ***	A	No	No	Ar (CaAa)	50.00 - 0.00	-1.00	-0.4	1	1	0.64	0.64		0.17
T-Brackets (Af) ***	A	No	No	Af (CaAa)	120.00 - 8.00	0.00	-0.25	1	1	1.00	1.00		8.40
CU12PSM9P6XXX(1-1/2)	C	No	No	Ar (CaAa)	100.00 - 0.00	0.00	0	1	1	1.60	1.60		2.35

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	120.00-100.00	A	0.000	0.000	25.058	0.000	0.26
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	100.00-80.00	A	0.000	0.000	36.540	0.000	0.31
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	3.200	0.000	0.05
T3	80.00-60.00	A	0.000	0.000	36.540	0.000	0.31
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	3.200	0.000	0.05
T4	60.00-40.00	A	0.000	0.000	48.284	0.000	0.40
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	3.200	0.000	0.05
T5	40.00-20.00	A	0.000	0.000	50.652	0.000	0.41
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	3.200	0.000	0.05
T6	20.00-0.00	A	0.000	0.000	31.793	0.000	0.25
		B	0.000	0.000	0.450	0.000	0.00
		C	0.000	0.000	3.200	0.000	0.05

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	120.00-100.00	A	0.959	0.000	0.000	73.208	0.000	0.77
		B		0.000	0.000	4.585	0.000	0.04
		C		0.000	0.000	0.000	0.000	0.00
T2	100.00-80.00	A	0.940	0.000	0.000	102.746	0.000	1.03
		B		0.000	0.000	4.509	0.000	0.03
		C		0.000	0.000	6.959	0.000	0.11
T3	80.00-60.00	A	0.916	0.000	0.000	101.855	0.000	1.01
		B		0.000	0.000	4.416	0.000	0.03
		C		0.000	0.000	6.866	0.000	0.10
T4	60.00-40.00	A	0.886	0.000	0.000	132.815	0.000	1.30
		B		0.000	0.000	4.294	0.000	0.03
		C		0.000	0.000	6.744	0.000	0.10
T5	40.00-20.00	A	0.842	0.000	0.000	137.598	0.000	1.31
		B		0.000	0.000	4.118	0.000	0.03
		C		0.000	0.000	6.568	0.000	0.10
T6	20.00-0.00	A	0.754	0.000	0.000	80.673	0.000	0.75
		B		0.000	0.000	2.260	0.000	0.02
		C		0.000	0.000	6.217	0.000	0.09

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	120.00-100.00	-4.38	0.92	-3.19	0.71
T2	100.00-80.00	-5.48	1.62	-4.06	1.31
T3	80.00-60.00	-4.66	1.46	-3.28	1.11
T4	60.00-40.00	-4.74	-0.21	-3.62	-0.39
T5	40.00-20.00	-5.41	-0.42	-4.73	-0.70
T6	20.00-0.00	-3.97	0.01	-3.59	-0.06

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Safety Line 3/8	100.00 - 120.00	0.6000	0.5502
T1	3	LDF6-50A(1-1/4)	100.00 - 110.00	0.6000	0.5502
T1	4	FB-L98B-034-XXX(3/8)	100.00 - 110.00	0.0000	0.0000
T1	5	FB-L98B-034-XXX(3/8)	100.00 - 119.00	0.0000	0.0000
T1	6	WR-VG86ST-BRD(3/4)	100.00 - 110.00	0.6000	0.5502
T1	7	WR-VG86ST-BRD(3/4)	100.00 - 119.00	0.6000	0.5502
T1	19	FLC 78-50J(7/8)	100.00 - 120.00	0.0000	0.0000
T1	24	T-Brackets (Af)	100.00 - 120.00	0.6000	0.5502
T2	1	Safety Line 3/8	80.00 - 100.00	0.6000	0.5558
T2	3	LDF6-50A(1-1/4)	80.00 -	0.6000	0.5558

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	4	FB-L98B-034-XXX(3/8)	100.00 80.00 -	0.0000	0.0000
T2	5	FB-L98B-034-XXX(3/8)	100.00 80.00 -	0.0000	0.0000
T2	6	WR-VG86ST-BRD(3/4)	100.00 80.00 -	0.6000	0.5558
T2	7	WR-VG86ST-BRD(3/4)	100.00 80.00 -	0.6000	0.5558
T2	19	FLC 78-50J(7/8)	100.00 80.00 -	0.0000	0.0000
T2	24	T-Brackets (Af)	100.00 80.00 -	0.6000	0.5558
T2	26	CU12PSM9P6XXX(1-1/2)	100.00 80.00 -	0.6000	0.5558
T3	1	Safety Line 3/8	100.00 60.00 -	0.6000	0.4522
T3	3	LDF6-50A(1-1/4)	80.00 60.00 -	0.6000	0.4522
T3	4	FB-L98B-034-XXX(3/8)	80.00 60.00 -	0.0000	0.0000
T3	5	FB-L98B-034-XXX(3/8)	80.00 60.00 -	0.0000	0.0000
T3	6	WR-VG86ST-BRD(3/4)	80.00 60.00 -	0.6000	0.4522
T3	7	WR-VG86ST-BRD(3/4)	80.00 60.00 -	0.6000	0.4522
T3	19	FLC 78-50J(7/8)	80.00 60.00 -	0.0000	0.0000
T3	24	T-Brackets (Af)	80.00 60.00 -	0.6000	0.4522
T3	26	CU12PSM9P6XXX(1-1/2)	80.00 60.00 -	0.6000	0.4522
T4	1	Safety Line 3/8	80.00 40.00 -	0.6000	0.4840
T4	3	LDF6-50A(1-1/4)	60.00 40.00 -	0.6000	0.4840
T4	4	FB-L98B-034-XXX(3/8)	60.00 40.00 -	0.0000	0.0000
T4	5	FB-L98B-034-XXX(3/8)	60.00 40.00 -	0.0000	0.0000
T4	6	WR-VG86ST-BRD(3/4)	60.00 40.00 -	0.6000	0.4840
T4	7	WR-VG86ST-BRD(3/4)	60.00 40.00 -	0.6000	0.4840
T4	16	HB114-U6S12-XXX-LI(1-1/4)	60.00 40.00 -	0.6000	0.4840
T4	18	FLC 78-50J(7/8)	58.00 40.00 -	0.0000	0.0000
T4	21	FLC 78-50J(7/8)	60.00 40.00 -	0.0000	0.0000
T4	22	FLC 12-50J(1/2)	50.00 40.00 -	0.0000	0.0000
T4	24	T-Brackets (Af)	50.00 40.00 -	0.6000	0.4840
T4	26	CU12PSM9P6XXX(1-1/2)	60.00 40.00 -	0.6000	0.4840
T5	1	Safety Line 3/8	60.00 20.00 -	0.6000	0.5719
T5	3	LDF6-50A(1-1/4)	40.00 20.00 -	0.6000	0.5719
T5	4	FB-L98B-034-XXX(3/8)	40.00 20.00 -	0.0000	0.0000
T5	5	FB-L98B-034-XXX(3/8)	40.00 20.00 -	0.0000	0.0000
T5	6	WR-VG86ST-BRD(3/4)	40.00 20.00 -	0.6000	0.5719
T5	7	WR-VG86ST-BRD(3/4)	40.00 20.00 -	0.6000	0.5719
			40.00		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	16	HB114-U6S12-XXX-LI(1-1/4)	20.00 - 40.00	0.6000	0.5719
T5	18	FLC 78-50J(7/8)	20.00 - 40.00	0.0000	0.0000
T5	21	FLC 78-50J(7/8)	20.00 - 40.00	0.0000	0.0000
T5	22	FLC 12-50J(1/2)	20.00 - 40.00	0.0000	0.0000
T5	24	T-Brackets (Af)	20.00 - 40.00	0.6000	0.5719
T5	26	CU12PSM9P6XXX(1-1/2)	20.00 - 40.00	0.6000	0.5719
T6	1	Safety Line 3/8	8.00 - 20.00	0.6000	0.6000
T6	3	LDF6-50A(1-1/4)	8.00 - 20.00	0.6000	0.6000
T6	4	FB-L98B-034-XXX(3/8)	8.00 - 20.00	0.0000	0.0000
T6	5	FB-L98B-034-XXX(3/8)	8.00 - 20.00	0.0000	0.0000
T6	6	WR-VG86ST-BRD(3/4)	8.00 - 20.00	0.6000	0.6000
T6	7	WR-VG86ST-BRD(3/4)	8.00 - 20.00	0.6000	0.6000
T6	16	HB114-U6S12-XXX-LI(1-1/4)	8.00 - 20.00	0.6000	0.6000
T6	18	FLC 78-50J(7/8)	8.00 - 20.00	0.0000	0.0000
T6	21	FLC 78-50J(7/8)	0.00 - 20.00	0.0000	0.0000
T6	22	FLC 12-50J(1/2)	0.00 - 20.00	0.0000	0.0000
T6	24	T-Brackets (Af)	8.00 - 20.00	0.6000	0.6000
T6	26	CU12PSM9P6XXX(1-1/2)	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
TPA65R-BU8D_CCIV2 w/ Mount Pipe	A	From Leg	4.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	15.89 16.81 17.76	7.89 8.74 9.60	0.12 0.23 0.36
RRUS 4449 B5/B12	A	From Leg	4.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
DC6-48-60-18-8C	A	From Leg	4.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	1.14 1.79 2.00	1.14 1.79 2.00	0.03 0.05 0.07
TPA65R-BU8D_CCIV2 w/ Mount Pipe	B	From Leg	4.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	15.89 16.81 17.76	7.89 8.74 9.60	0.12 0.23 0.36
RRUS 4449 B5/B12	B	From Leg	4.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
TPA65R-BU8D_CCIV2 w/ Mount Pipe	C	From Leg	4.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	15.89 16.81 17.76	7.89 8.74 9.60	0.12 0.23 0.36
RRUS 4449 B5/B12	C	From Leg	4.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
8' x 2" Tie Back	A	From Leg	0.00 0 0	0.000	119.00	No Ice 1/2" Ice 1" Ice	0.50 0.75 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Tie Back	B	From Leg	0.00 0 0	0.000	119.00	No Ice 1/2" Ice 1" Ice	0.50 0.75 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Tie Back	C	From Leg	0.00 0 0	0.000	119.00	No Ice 1/2" Ice 1" Ice	0.50 0.75 3.40	1.90 2.73 3.40	0.03 0.04 0.06
Side Arm Mount [SO 304-3]	C	None		0.000	119.00	No Ice 1/2" Ice 1" Ice	1.43 2.11 2.88	1.43 2.11 2.88	0.07 0.10 0.14
****									
OGB6-900	A	From Leg	4.00 0 3	0.000	120.00	No Ice 1/2" Ice 1" Ice	1.18 1.77 2.13	1.18 1.77 2.13	0.01 0.02 0.03
BA1012-0	B	From Leg	4.00 0 2	0.000	120.00	No Ice 1/2" Ice 1" Ice	0.47 0.96 1.31	0.47 0.96 1.31	0.00 0.01 0.01
MFB9157	C	From Leg	4.00 0 4	0.000	120.00	No Ice 1/2" Ice 1" Ice	1.20 2.02 2.86	1.20 2.02 2.86	0.00 0.01 0.03
****									
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	9.19 9.94 10.71	6.21 6.93 7.66	0.11 0.18 0.26
RRUS 8843 B2/B66A	A	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
DC6-48-60-18-8C	A	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.14 1.79 2.00	1.14 1.79 2.00	0.03 0.05 0.07
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	9.19 9.94 10.71	6.21 6.93 7.66	0.11 0.18 0.26
RRUS 8843 B2/B66A	B	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	9.19 9.94 10.71	6.21 6.93 7.66	0.11 0.18 0.26
RRUS 8843 B2/B66A	C	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
8' x 2" Tie Back	A	From Leg	0.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	0.50 0.75 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Tie Back	B	From Leg	0.00 0	0.000	110.00	No Ice 1/2"	0.50 0.75	1.90 2.73	0.03 0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0			Ice	3.40	3.40	0.06
						1" Ice			
8' x 2" Tie Back	C	From Leg	0.00	0.000	110.00	No Ice	0.50	1.90	0.03
			0			1/2"	0.75	2.73	0.04
			0			Ice	3.40	3.40	0.06
						1" Ice			
Side Arm Mount [SO 304-3]	C	None		0.000	110.00	No Ice	1.43	1.43	0.07
						1/2"	2.11	2.11	0.10
						Ice	2.88	2.88	0.14
						1" Ice			
****									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00	0.000	100.00	No Ice	8.01	4.23	0.11
			0			1/2"	8.52	4.69	0.19
			0			Ice	9.04	5.16	0.29
						1" Ice			
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00	0.000	100.00	No Ice	8.01	4.23	0.11
			0			1/2"	8.52	4.69	0.19
			0			Ice	9.04	5.16	0.29
						1" Ice			
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00	0.000	100.00	No Ice	8.01	4.23	0.11
			0			1/2"	8.52	4.69	0.19
			0			Ice	9.04	5.16	0.29
						1" Ice			
TA08025-B604	A	From Leg	4.00	0.000	100.00	No Ice	1.96	0.98	0.06
			0			1/2"	2.14	1.11	0.08
			0			Ice	2.32	1.25	0.10
						1" Ice			
TA08025-B605	A	From Leg	4.00	0.000	100.00	No Ice	1.96	1.13	0.08
			0			1/2"	2.14	1.27	0.09
			0			Ice	2.32	1.41	0.11
						1" Ice			
RDIDC-9181-PF-48	A	From Leg	4.00	0.000	100.00	No Ice	2.01	1.17	0.02
			0			1/2"	2.19	1.31	0.04
			0			Ice	2.37	1.46	0.06
						1" Ice			
TA08025-B604	B	From Leg	4.00	0.000	100.00	No Ice	1.96	0.98	0.06
			0			1/2"	2.14	1.11	0.08
			0			Ice	2.32	1.25	0.10
						1" Ice			
TA08025-B605	B	From Leg	4.00	0.000	100.00	No Ice	1.96	1.13	0.08
			0			1/2"	2.14	1.27	0.09
			0			Ice	2.32	1.41	0.11
						1" Ice			
TA08025-B604	C	From Leg	4.00	0.000	100.00	No Ice	1.96	0.98	0.06
			0			1/2"	2.14	1.11	0.08
			0			Ice	2.32	1.25	0.10
						1" Ice			
TA08025-B605	C	From Leg	4.00	0.000	100.00	No Ice	1.96	1.13	0.08
			0			1/2"	2.14	1.27	0.09
			0			Ice	2.32	1.41	0.11
						1" Ice			
Commscope MTC3975083 (3)	C	None		0.000	100.00	No Ice	23.85	23.85	1.26
						1/2"	34.12	34.12	1.80
						Ice	44.39	44.39	2.35
						1" Ice			
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.000	100.00	No Ice	1.90	1.90	0.03
			0			1/2"	2.73	2.73	0.04
			0			Ice	3.40	3.40	0.06
						1" Ice			
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.000	100.00	No Ice	1.90	1.90	0.03
			0			1/2"	2.73	2.73	0.04
			0			Ice	3.40	3.40	0.06
						1" Ice			
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.000	100.00	No Ice	1.90	1.90	0.03
			0			1/2"	2.73	2.73	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0			Ice	3.40	3.40	0.06
						1" Ice			
***									
BA1012-0	B	From Leg	3.00	0.000	60.00	No Ice	0.47	0.47	0.00
			0			1/2"	0.96	0.96	0.01
			2			Ice	1.31	1.31	0.01
						1" Ice			
OGD6-905/945	A	From Leg	3.00	0.000	60.00	No Ice	2.51	2.51	0.03
			0			1/2"	3.74	3.74	0.04
			6			Ice	4.98	4.98	0.07
						1" Ice			
Side Arm Mount [SO 305-1]	A	From Leg	1.50	0.000	60.00	No Ice	0.53	1.52	0.03
			0			1/2"	0.78	2.07	0.04
			0			Ice	1.06	2.66	0.06
						1" Ice			
Side Arm Mount [SO 305-1]	B	From Leg	1.50	0.000	60.00	No Ice	0.53	1.52	0.03
			0			1/2"	0.78	2.07	0.04
			0			Ice	1.06	2.66	0.06
						1" Ice			
****									
B13 RRH4X30-4R	A	From Leg	0.50	0.000	55.00	No Ice	2.16	1.62	0.06
			0			1/2"	2.35	1.79	0.08
			3			Ice	2.55	1.97	0.10
						1" Ice			
B66A RRH4X45	A	From Leg	0.50	0.000	55.00	No Ice	2.58	1.63	0.07
			0			1/2"	2.79	1.81	0.09
			3			Ice	3.01	2.00	0.11
						1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	0.50	0.000	55.00	No Ice	4.09	3.30	0.07
			0			1/2"	4.49	3.68	0.13
			3			Ice	4.89	4.07	0.20
						1" Ice			
DB-T1-6Z-8AB-0Z	A	From Leg	0.50	0.000	55.00	No Ice	4.80	2.00	0.04
			0			1/2"	5.07	2.19	0.08
			3			Ice	5.35	2.39	0.12
						1" Ice			
B13 RRH4X30-4R	B	From Leg	0.50	0.000	55.00	No Ice	2.16	1.62	0.06
			0			1/2"	2.35	1.79	0.08
			3			Ice	2.55	1.97	0.10
						1" Ice			
B66A RRH4X45	B	From Leg	0.50	0.000	55.00	No Ice	2.58	1.63	0.07
			0			1/2"	2.79	1.81	0.09
			3			Ice	3.01	2.00	0.11
						1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	0.50	0.000	55.00	No Ice	4.09	3.30	0.07
			0			1/2"	4.49	3.68	0.13
			3			Ice	4.89	4.07	0.20
						1" Ice			
DB-T1-6Z-8AB-0Z	B	From Leg	0.50	0.000	55.00	No Ice	4.80	2.00	0.04
			0			1/2"	5.07	2.19	0.08
			3			Ice	5.35	2.39	0.12
						1" Ice			
B13 RRH4X30-4R	C	From Leg	0.50	0.000	55.00	No Ice	2.16	1.62	0.06
			0			1/2"	2.35	1.79	0.08
			3			Ice	2.55	1.97	0.10
						1" Ice			
B66A RRH4X45	C	From Leg	0.50	0.000	55.00	No Ice	2.58	1.63	0.07
			0			1/2"	2.79	1.81	0.09
			3			Ice	3.01	2.00	0.11
						1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	0.50	0.000	55.00	No Ice	4.09	3.30	0.07
			0			1/2"	4.49	3.68	0.13
			3			Ice	4.89	4.07	0.20
						1" Ice			
6' x 2" Horizontal Mount	A	From Leg	0.50	0.000	55.00	No Ice	1.20	0.01	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pipe			0 0			1/2" Ice 1" Ice	1.77 2.34	0.02 0.03	0.17 0.32
6' x 2" Horizontal Mount Pipe	B	From Leg	0.50 0 0	0.000	55.00	No Ice 1/2" Ice 1" Ice	1.20 1.77 2.34	0.01 0.02 0.03	0.03 0.17 0.32
6' x 2" Horizontal Mount Pipe	C	From Leg	0.50 0 0	0.000	55.00	No Ice 1/2" Ice 1" Ice	1.20 1.77 2.34	0.01 0.02 0.03	0.03 0.17 0.32
6' x 4" Mount Pipe	A	From Leg	0.50 0 3	0.000	55.00	No Ice 1/2" Ice 1" Ice	2.09 2.46 2.83	2.09 2.46 2.83	0.04 0.06 0.08
6' x 4" Mount Pipe	B	From Leg	0.50 0 3	0.000	55.00	No Ice 1/2" Ice 1" Ice	2.09 2.46 2.83	2.09 2.46 2.83	0.04 0.06 0.08
6' x 4" Mount Pipe	C	From Leg	0.50 0 3	0.000	55.00	No Ice 1/2" Ice 1" Ice	2.09 2.46 2.83	2.09 2.46 2.83	0.04 0.06 0.08
****									
OGB9-900-DT3	B	From Leg	4.00 0 6	0.000	50.00	No Ice 1/2" Ice 1" Ice	1.94 2.94 3.95	1.94 2.94 3.95	0.02 0.03 0.05
OGD6-905/945	A	From Leg	4.00 0 10	0.000	50.00	No Ice 1/2" Ice 1" Ice	2.51 3.74 4.98	2.51 3.74 4.98	0.03 0.04 0.07
Side Arm Mount [SO 305-1]	A	From Leg	4.00 0 0	0.000	50.00	No Ice 1/2" Ice 1" Ice	0.53 0.78 1.06	1.52 2.07 2.66	0.03 0.04 0.06
Side Arm Mount [SO 305-1]	B	From Leg	4.00 0 0	0.000	50.00	No Ice 1/2" Ice 1" Ice	0.53 0.78 1.06	1.52 2.07 2.66	0.03 0.04 0.06
**** ***									
(3) 0.5' x 3' Bridge Stiffeners	A	None		0.000	20.00	No Ice 1/2" Ice 1" Ice	2.10 3.10 4.10	2.10 3.10 4.10	0.12 0.18 0.24
(3) 0.5' x 3' Bridge Stiffeners	B	None		0.000	20.00	No Ice 1/2" Ice 1" Ice	2.10 3.10 4.10	2.10 3.10 4.10	0.12 0.18 0.24
(3) 0.5' x 3' Bridge Stiffeners	C	None		0.000	20.00	No Ice 1/2" Ice 1" Ice	2.10 3.10 4.10	2.10 3.10 4.10	0.12 0.18 0.24
new jump plate	A	None		0.000	40.00	No Ice 1/2" Ice 1" Ice	4.00 5.00 6.00	4.00 5.00 6.00	0.12 0.18 0.24
new jump plate	B	None		0.000	40.00	No Ice 1/2" Ice 1" Ice	4.00 5.00 6.00	4.00 5.00 6.00	0.12 0.18 0.24
new jump plate	C	None		0.000	40.00	No Ice 1/2" Ice	4.00 5.00 6.00	4.00 5.00 6.00	0.12 0.18 0.24

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
new jump plate	A	None		0.000	60.00	1" Ice No Ice 1/2" Ice 1" Ice	4.00 5.00 6.00	4.00 5.00 6.00	0.12 0.18 0.24
new jump plate	B	None		0.000	60.00	1" Ice No Ice 1/2" Ice 1" Ice	4.00 5.00 6.00	4.00 5.00 6.00	0.12 0.18 0.24
new jump plate	C	None		0.000	60.00	1" Ice No Ice 1/2" Ice 1" Ice	4.00 5.00 6.00	4.00 5.00 6.00	0.12 0.18 0.24
***									

Tower Pressures - No Ice

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1 120.00-100.00	110.00	1.016	29	62.500	A	0.000	9.712	5.000	51.48	25.058	0.000
					B	0.000	9.712		51.48	0.750	0.000
					C	0.000	10.311		48.49	0.000	0.000
T2 100.00-80.00	90.00	0.959	27	62.500	A	0.000	9.712	5.000	51.48	36.540	0.000
					B	0.000	9.712		51.48	0.750	0.000
					C	0.000	10.311		48.49	3.200	0.000
T3 80.00-60.00	70.00	0.892	25	67.500	A	2.083	12.942	7.917	52.70	36.540	0.000
					B	2.083	12.942		52.70	0.750	0.000
					C	2.083	12.942		52.70	3.200	0.000
T4 60.00-40.00	50.00	0.811	23	77.917	A	2.403	14.340	7.917	47.29	48.284	0.000
					B	2.403	14.340		47.29	0.750	0.000
					C	2.403	14.340		47.29	3.200	0.000
T5 40.00-20.00	30.00	0.701	20	88.334	A	0.000	17.784	9.584	53.89	50.652	0.000
					B	0.000	17.784		53.89	0.750	0.000
					C	0.000	17.784		53.89	3.200	0.000
T6 20.00-0.00	10.00	0.7	20	98.750	A	0.000	18.604	9.584	51.52	31.793	0.000
					B	0.000	18.604		51.52	0.450	0.000
					C	0.000	18.604		51.52	3.200	0.000

Tower Pressure - With Ice

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1 120.00-100.00	110.00	1.016	5	0.96	65.696	A	0.000	29.551	11.392	38.55	73.208	0.000
						B	0.000	29.551		38.55	4.585	0.000
						C	0.000	31.987		35.61	0.000	0.000
T2 100.00-80.00	90.00	0.959	5	0.94	65.632	A	0.000	29.156	11.265	38.64	102.746	0.000
						B	0.000	29.156		38.64	4.509	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	31.557		35.70	6.959	0.000
T3 80.00-60.00	70.00	0.892	5	0.92	70.555	A	2.083	36.568	14.027	36.29	101.855	0.000
						B	2.083	36.568		36.29	4.416	0.000
						C	2.083	36.568		36.29	6.866	0.000
T4 60.00-40.00	50.00	0.811	4	0.89	80.871	A	2.403	39.327	13.825	33.13	132.815	0.000
						B	2.403	39.327		33.13	4.294	0.000
						C	2.403	39.327		33.13	6.744	0.000
T5 40.00-20.00	30.00	0.701	4	0.84	91.140	A	0.000	39.014	15.198	38.95	137.598	0.000
						B	0.000	39.014		38.95	4.118	0.000
						C	0.000	39.014		38.95	6.568	0.000
T6 20.00-0.00	10.00	0.7	4	0.75	101.265	A	0.000	39.022	14.614	37.45	80.673	0.000
						B	0.000	39.022		37.45	2.260	0.000
						C	0.000	39.022		37.45	6.217	0.000

Tower Pressure - Service

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 120.00-100.00	110.00	1.016	8	62.500	A	0.000	9.712	5.000	51.48	25.058	0.000
					B	0.000	9.712		51.48	0.750	0.000
					C	0.000	10.311		48.49	0.000	0.000
T2 100.00-80.00	90.00	0.959	7	62.500	A	0.000	9.712	5.000	51.48	36.540	0.000
					B	0.000	9.712		51.48	0.750	0.000
					C	0.000	10.311		48.49	3.200	0.000
T3 80.00-60.00	70.00	0.892	7	67.500	A	2.083	12.942	7.917	52.70	36.540	0.000
					B	2.083	12.942		52.70	0.750	0.000
					C	2.083	12.942		52.70	3.200	0.000
T4 60.00-40.00	50.00	0.811	6	77.917	A	2.403	14.340	7.917	47.29	48.284	0.000
					B	2.403	14.340		47.29	0.750	0.000
					C	2.403	14.340		47.29	3.200	0.000
T5 40.00-20.00	30.00	0.701	5	88.334	A	0.000	17.784	9.584	53.89	50.652	0.000
					B	0.000	17.784		53.89	0.750	0.000
					C	0.000	17.784		53.89	3.200	0.000
T6 20.00-0.00	10.00	0.7	5	98.750	A	0.000	18.604	9.584	51.52	31.793	0.000
					B	0.000	18.604		51.52	0.450	0.000
					C	0.000	18.604		51.52	3.200	0.000

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice

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

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 100	9.97	49	0.669	0.100
T2	100 - 80	7.16	49	0.646	0.084
T3	80 - 60	4.55	49	0.537	0.057
T4	60 - 40	2.52	50	0.401	0.036
T5	40 - 20	1.10	50	0.247	0.021
T6	20 - 0	0.29	50	0.119	0.009

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120.00	OGB6-900	49	9.97	0.669	0.100	129483
119.00	TPA65R-BU8D_CCIV2 w/ Mount Pipe	49	9.83	0.669	0.100	129483
110.00	OPA-65R-LCUU-H6 w/ Mount Pipe	49	8.55	0.666	0.094	64741
100.00	MX08FRO665-21 w/ Mount Pipe	49	7.16	0.646	0.084	29379
60.00	BA1012-0	50	2.52	0.401	0.036	7759
55.00	B13 RRH4X30-4R	50	2.11	0.363	0.031	7849
50.00	OGB9-900-DT3	50	1.73	0.323	0.028	7932
40.00	new jump plate	50	1.10	0.247	0.021	8057
20.00	(3) 0.5' x 3' Bridge Stiffeners	50	0.29	0.119	0.009	7931

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 100	36.47	24	2.442	0.353
T2	100 - 80	26.20	24	2.362	0.298
T3	80 - 60	16.68	24	1.965	0.201
T4	60 - 40	9.23	24	1.470	0.127
T5	40 - 20	4.04	24	0.904	0.073
T6	20 - 0	1.07	24	0.436	0.034

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120.00	OGB6-900	24	36.47	2.442	0.353	37323
119.00	TPA65R-BU8D_CCIV2 w/ Mount Pipe	24	35.95	2.442	0.351	37323
110.00	OPA-65R-LCUU-H6 w/ Mount Pipe	24	31.31	2.432	0.330	18661
100.00	MX08FRO665-21 w/ Mount Pipe	24	26.20	2.362	0.298	8399
60.00	BA1012-0	24	9.23	1.470	0.127	2125
55.00	B13 RRH4X30-4R	24	7.72	1.330	0.112	2147
50.00	OGB9-900-DT3	24	6.36	1.185	0.098	2168
40.00	new jump plate	24	4.04	0.904	0.073	2200
20.00	(3) 0.5' x 3' Bridge Stiffeners	24	1.07	0.436	0.034	2164

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	120	Leg	A325N	0.63	4	3.46	20.34	0.170	1.05	Bolt Tension
T2	100	Leg	A325N	0.63	4	11.51	20.34	0.566	1.05	Bolt Tension
T3	80	Secondary Horizontal	A325N	0.50	1	1.74	8.84	0.197	1.05	Bolt Shear
T4	60	Secondary Horizontal	A325N	0.50	1	1.96	8.84	0.222	1.05	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	1 1/2	20.00	2.33	74.7 K=1.00	1.77	-13.71	52.90	0.259 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	100 - 80	1 1/2	20.00	2.33	74.7 K=1.00	1.77	-46.52	52.90	0.879 [1]
T3	80 - 60	841298_1.50 SR w/0.25 x 2.375 HP	20.00	1.18	67.7 K=1.00	2.60	-75.42	79.12	0.953 [1]
T4	60 - 40	841298_1.75 SR w/0.154 x 2.375 HP	20.00	1.18	52.9 K=1.00	2.94	-109.21	107.93	1.012 [1]
T5	40 - 20	841298_2 SR w/0.276 x 2.875 HP	20.00	2.33	64.8 K=1.00	4.27	-142.65	141.35	1.009 [1]
T6	20 - 0	841298_2.25 SR w/0.276 x 2.875 HP	20.00	2.33	58.4 K=1.00	5.10	-173.02	178.92	0.967 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	5/8	3.80	1.82	125.9 K=0.90	0.31	-1.61	4.32	0.374 [1]
T2	100 - 80	5/8	3.80	1.82	125.9 K=0.90	0.31	-2.79	4.32	0.646 [1]
T3	80 - 60	5/8	3.84	1.86	128.7 K=0.90	0.31	-3.55	4.16	0.854 [1]
T4	60 - 40	3/4	4.59	2.23	128.3 K=0.90	0.44	-3.85	6.02	0.640 [1]
T5	40 - 20	7/8	4.67	2.26	111.5 K=0.90	0.60	-3.60	10.13	0.355 [1]
T6	20 - 0	7/8	5.48	2.65	130.9 K=0.90	0.60	-3.20	7.91	0.404 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	3/4	3.00	2.88	128.8 K=0.70	0.44	-0.31	5.98	0.053 [1]
T2	100 - 80	3/4	3.00	2.88	128.8 K=0.70	0.44	-1.11	5.98	0.186 [1]
T3	80 - 60	3/4	3.42	3.30	147.8 K=0.70	0.44	-1.48	4.57	0.324 [1]
T4	60 - 40	3/4	3.92	3.78	169.3 K=0.70	0.44	-1.96	3.48	0.562 [1]
T5	40 - 20	7/8	4.42	4.26	163.5 K=0.70	0.60	-2.52	5.08	0.496 [1]
T6	20 - 0	7/8	4.92	4.74	181.9 K=0.70	0.60	-3.04	4.10	0.742 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	5/8	1.50	1.44	110.4 K=1.00	0.31	-0.00	5.66	0.000 [1]
T2	100 - 80	5/8	1.50	1.44	110.4 K=1.00	0.31	-0.00	5.66	0.000 [1]
T3	80 - 60	1x1	3.45	3.33	138.4 K=1.00	1.00	-1.48	11.80	0.125 [1]
T4	60 - 40	1x1	3.95	3.81	158.3 K=1.00	1.00	-1.96	9.02	0.217 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	1	3.00	2.88	96.6 K=0.70	0.79	-0.16	15.57	0.011 [1]
T2	100 - 80	1	3.00	2.88	96.6 K=0.70	0.79	-0.86	15.57	0.055 [1]
T3	80 - 60	1	3.02	2.89	97.2 K=0.70	0.79	-1.48	15.48	0.096 [1]
T4	60 - 40	1	3.52	3.37	113.3 K=0.70	0.79	-1.96	12.95	0.151 [1]
T5	40 - 20	1	4.02	3.85	129.4 K=0.70	0.79	-2.52	10.54	0.239 [1]
T6	20 - 0	1	4.52	4.33	145.5 K=0.70	0.79	-3.04	8.39	0.363 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	3/4	3.00	2.88	128.8 K=0.70	0.44	-0.87	5.98	0.145 [1]
T2	100 - 80	3/4	3.00	2.88	128.8 K=0.70	0.44	-1.62	5.98	0.271 [1]
T3	80 - 60	3/4	3.48	3.36	150.5 K=0.70	0.44	-1.58	4.41	0.359 [1]
T4	60 - 40	1	3.98	3.84	128.9 K=0.70	0.79	-2.18	10.61	0.205 [1]
T5	40 - 20	1	4.48	4.32	145.0 K=0.70	0.79	-2.52	8.43	0.299 [1]
T6	20 - 0	1	4.98	4.80	161.1 K=0.70	0.79	-1.88	6.83	0.276 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	120 - 100	1 1/2	20.00	0.67	21.3	1.77	13.86	79.52	0.174 [1]
T2	100 - 80	1 1/2	20.00	0.67	21.3	1.77	46.04	79.52	0.579 [1]
T3	80 - 60	841298_1.50 SR w/0.25 x 2.375 HP	20.00	0.67	38.4	2.60	73.68	107.72	0.684 [1]
T4	60 - 40	841298_1.75 SR w/0.154 x 2.375 HP	20.00	0.67	30.0	2.94	105.21	132.44	0.794 [1]
T5	40 - 20	841298_2 SR w/0.276 x 2.875 HP	20.00	0.67	18.5	4.27	135.75	192.06	0.707 [1]
T6	20 - 0	841298_2.25 SR w/0.276 x 2.875 HP	20.00	0.67	16.7	5.10	163.93	229.63	0.714 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	120 - 100	5/8	3.80	1.82	139.9	0.31	1.58	9.94	0.159 [1]
T2	100 - 80	5/8	3.80	1.82	139.9	0.31	2.65	9.94	0.266 [1]
T3	80 - 60	5/8	3.84	1.86	143.0	0.31	3.31	9.94	0.333 [1]
T4	60 - 40	3/4	4.59	2.23	142.6	0.44	3.66	14.31	0.256 [1]
T5	40 - 20	7/8	4.67	2.26	123.9	0.60	3.25	19.48	0.167 [1]
T6	20 - 0	7/8	5.11	2.47	135.4	0.60	3.22	19.48	0.165 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	120 - 100	3/4	3.00	2.88	184.0	0.44	0.41	14.31	0.029 [1]
T2	100 - 80	3/4	3.00	2.88	184.0	0.44	1.37	14.31	0.096 [1]
T3	80 - 60	3/4	3.37	3.24	207.5	0.44	1.48	14.31	0.103 [1]
T4	60 - 40	3/4	3.92	3.78	241.9	0.44	1.96	14.31	0.137 [1]
T5	40 - 20	7/8	4.37	4.20	230.4	0.60	2.52	19.48	0.129 [1]
T6	20 - 0	7/8	4.87	4.68	256.7	0.60	3.04	19.48	0.156 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	120 - 100	5/8	1.50	1.44	110.4	0.31	0.00	13.81	0.000 [1]
T2	100 - 80	5/8	1.50	1.44	110.4	0.31	0.00	13.81	0.000 [1]
T3	80 - 60	1x1	3.05	2.92	121.4	0.28	1.70	13.71	0.124 [1]
T4	60 - 40	1x1	3.95	3.81	158.3	0.28	1.96	13.71	0.143 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	1	3.00	2.88	138.0	0.79	0.17	25.45	0.007 [1]
T2	100 - 80	1	3.00	2.88	138.0	0.79	0.86	25.45	0.034 [1]
T3	80 - 60	1	3.02	2.89	138.8	0.79	1.48	25.45	0.058 [1]
T4	60 - 40	1	3.52	3.37	161.8	0.79	1.96	25.45	0.077 [1]
T5	40 - 20	1	4.02	3.85	184.8	0.79	2.52	25.45	0.099 [1]
T6	20 - 0	1	4.52	4.33	207.8	0.79	3.04	25.45	0.120 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	3/4	3.00	2.88	184.0	0.44	0.83	14.31	0.058 [1]
T2	100 - 80	3/4	3.00	2.88	184.0	0.44	1.54	14.31	0.107 [1]
T3	80 - 60	3/4	3.48	3.36	214.9	0.44	1.58	14.31	0.110 [1]
T4	60 - 40	1	3.98	3.84	184.2	0.79	2.17	25.45	0.085 [1]
T5	40 - 20	1	4.48	4.32	207.2	0.79	2.52	25.45	0.099 [1]
T6	20 - 0	1	4.98	4.80	230.2	0.79	1.85	25.45	0.073 [1]

[1] P_u / ϕP_n controls

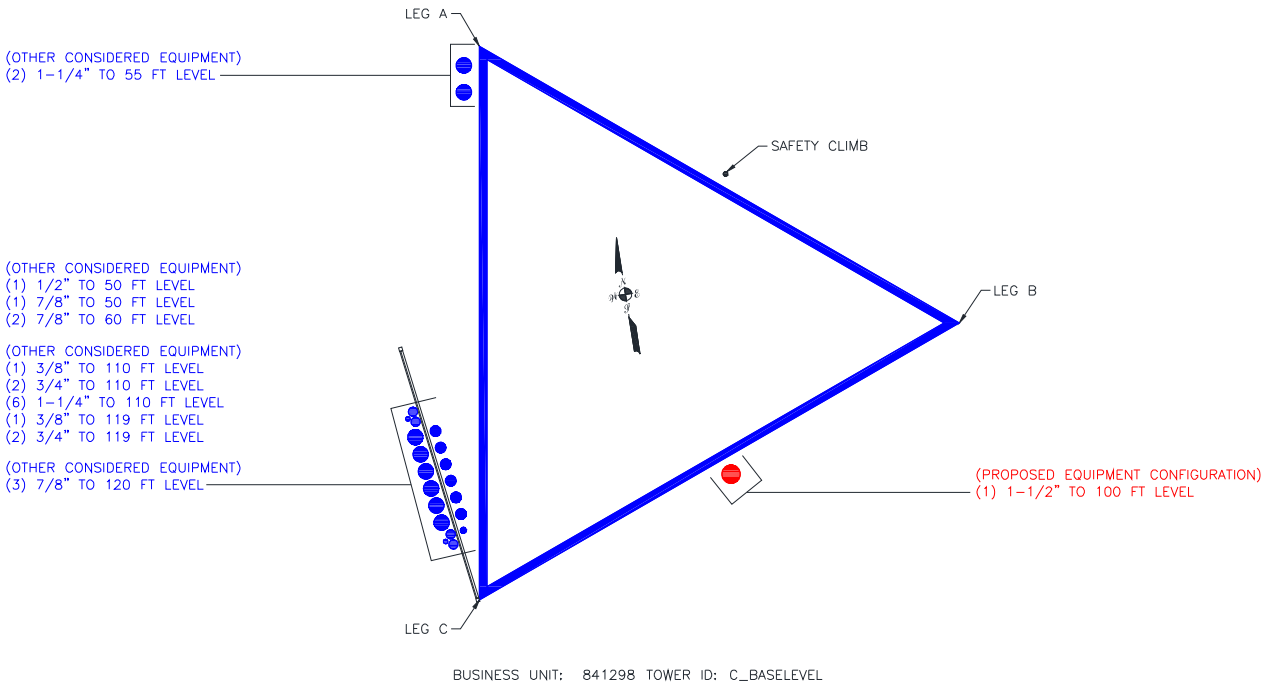
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	120 - 100	Leg	1 1/2	3	-13.71	55.54	24.7	Pass
T2	100 - 80	Leg	1 1/2	88	-46.52	55.54	83.8	Pass
T3	80 - 60	Leg	841298_1.50 SR w/0.25 x 2.375 HP	174	-75.42	83.07	90.8	Pass
T4	60 - 40	Leg	841298_1.75 SR w/0.154 x 2.375 HP	276	-109.21	113.32	96.4	Pass
T5	40 - 20	Leg	841298_2 SR w/0.276 x 2.875 HP	378	-142.65	148.42	96.1	Pass
T6	20 - 0	Leg	841298_2.25 SR w/0.276 x 2.875 HP	456	-173.02	187.86	92.1	Pass
T1	120 - 100	Diagonal	5/8	14	-1.61	4.53	35.6	Pass
T2	100 - 80	Diagonal	5/8	100	-2.79	4.53	61.5	Pass
T3	80 - 60	Diagonal	5/8	270	-3.55	4.37	81.4	Pass
T4	60 - 40	Diagonal	3/4	289	-3.85	6.32	60.9	Pass
T5	40 - 20	Diagonal	7/8	454	-3.60	10.63	33.8	Pass
T6	20 - 0	Diagonal	7/8	469	-3.20	8.30	38.5	Pass
T1	120 - 100	Horizontal	3/4	27	-0.31	6.28	5.0	Pass
T2	100 - 80	Horizontal	3/4	115	-1.11	6.28	17.7	Pass
T3	80 - 60	Horizontal	3/4	188	-1.48	4.79	30.9	Pass
T4	60 - 40	Horizontal	3/4	290	-1.96	3.66	53.5	Pass
T5	40 - 20	Horizontal	7/8	392	-2.52	5.33	47.3	Pass
T6	20 - 0	Horizontal	7/8	470	-3.04	4.31	70.6	Pass
T1	120 - 100	Secondary Horizontal	5/8	86	0.00	14.50	0.5	Pass
T2	100 - 80	Secondary Horizontal	5/8	172	0.00	14.50	0.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T3	80 - 60	Secondary Horizontal	1x1	191	-1.48	12.39	11.9 18.7 (b)	Pass
T4	60 - 40	Secondary Horizontal	1x1	293	-1.96	9.47	20.7 21.1 (b)	Pass
T1	120 - 100	Top Girt	1	6	-0.16	16.35	1.0	Pass
T2	100 - 80	Top Girt	1	90	-0.86	16.35	5.3	Pass
T3	80 - 60	Top Girt	1	176	-1.48	16.26	9.1	Pass
T4	60 - 40	Top Girt	1	278	-1.96	13.60	14.4	Pass
T5	40 - 20	Top Girt	1	380	-2.52	11.07	22.8	Pass
T6	20 - 0	Top Girt	1	458	-3.04	8.81	34.6	Pass
T1	120 - 100	Bottom Girt	3/4	9	-0.87	6.28	13.8	Pass
T2	100 - 80	Bottom Girt	3/4	95	-1.62	6.28	25.8	Pass
T3	80 - 60	Bottom Girt	3/4	181	-1.58	4.63	34.1	Pass
T4	60 - 40	Bottom Girt	1	283	-2.18	11.14	19.6	Pass
T5	40 - 20	Bottom Girt	1	383	-2.52	8.86	28.5	Pass
T6	20 - 0	Bottom Girt	1	463	-1.88	7.17	26.3	Pass
							Summary	
						Leg (T4)	96.4	Pass
						Diagonal (T3)	81.4	Pass
						Horizontal (T6)	70.6	Pass
						Secondary Horizontal (T4)	21.1	Pass
						Top Girt (T6)	34.6	Pass
						Bottom Girt (T3)	34.1	Pass
						Bolt Checks	53.9	Pass
						RATING =	**96.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 841298 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

PAUL J. FORD & COMPANY
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Phone 614.221.6679 www.pauljford.com

Max ratio: 1.05
Rating includes max ratio? Y

Job Number: 37522-0019.001.8800
Site Number: 841298
Site Name: SOUTHINGTON ROGUS
WO No.: 2069959
Order No.: 557181 Rev 3
Engineer: RH

v1.6 - Effective 6/18/20 Date: 02/08/22

Modified Member Calculation Summary - TIA-222-H

Elevations		Existing Member			Reinforcement			Built-up Member						Capacity: ϕPn			Loads	Rating	
Bottom	Top	Type	L_u	Area	Type	a_i	Area	Connection Type	a_i/r_i	$(KL/r)_o$	$(KL/r)_m$	F'_y	F_{cr}	Comp.	Cope	Crushing	Comp.		
ft	ft		in	in^2		in	in^2		a_i/r_{ib}			ksi	ksi	kip	kip	kip	kip		
60	80	SR 1.500"	14.0	1.77	1/2 Sleeve 2.375" x 0.250"	9.0	0.83	Welded	27.07	32.66	32.66	46.00	42.81	100.25	91.50	79.52	75.42	90.3%	PASS
40	60	SR 1.750"	14.0	2.41	1/2 Sleeve 2.375" x 0.154"	12.0	0.54	Welded	34.91	29.64	40.73	50.00	44.29	117.29	N/A	108.24	109.21	96.1%	PASS
20	40	SR 2.000"	28.0	3.14	1/2 Sleeve 2.875" x 0.276"	12.0	1.13	Welded	29.60	49.94	49.94	50.00	41.66	160.05	N/A	141.37	142.65	96.1%	PASS
0	20	SR 2.250"	28.0	3.98	1/2 Sleeve 2.875" x 0.276"	12.0	1.13	Welded	29.60	44.76	44.76	50.00	43.19	198.33	N/A	178.92	173.02	92.1%	PASS

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Job Number:	37522-0019.001.8800	**Page:**	1 of 1
Site Number:	SOUTHINGTON ROGUS	**Date:**	2/8/2022
Site Name:	841298	**Version:**	1.3
WO No.:	2069959	**Effective:**	3/24/2021
Order No.:	557181 Rev 3	**By:**	RH

Anchor Rod Bracket Plate Analysis

60-FT

Existing Leg Outer Diameter :	1.75	inches	Pipe Leg?:	No
Existing Pipe Leg Wall Thickness :		inches		
Existing Pipe Leg F_y :		ksi	Existing Pipe Leg Fu :	
Existing Pipe Leg Load :		kip		
Anchor CL to Structure Face:	6	inches		
Anchor Type :	Anchor Rod			
Anchor Size :	CCI-AR-0100			
Anchor Net Area :		in^2		
Anchor F_u :		ksi		
Anchor Design Tensile Capacity :		kip		
Anchor Analysis Tensile Load :	36.84	kip	1	Maximum Ratio

1" A193, GR B THREADED ROD % CAPACITY
= 36.84 KIPS / 60.57 KIPS / 1.05 = 57.9% OK

Tube Size :	HSS 3 x 3 x 0.375			
Tube Grade:	A500 Gr. C (Fy=50)			
Tube F_y :	50	ksi		
Tube Unbraced Length :	1	inches	Analysis Ratio	
Tube Compressive Capacity :	152.51	kip	0.242	
Washer Plate Thickness :	1.25	inches		
Washer Plate F_y :	A572 Gr. 50		Analysis Ratio	
Washer Shear Capacity	172.30	kip	0.214	
Bracket Plate Thickness :	0.375	inches		
Bracket Plate Height :	12	inches		
Bracket Plate Width :	4.5	inches		
Bracket Plate Grade:	A572 Gr. 50			
Bracket Plate F_y :	50	ksi	Bracket Plate Analysis Ratios	
Bracket Moment Capacity :	405	kip-in	Moment: 0.546	<--Governs Bracket Plate
Bracket Shear Capacity :	121.5	kip	Shear: 0.303	
			Interaction: 0.390	
Tube to Bracket Weld Size :	5	/16 inch		
Tube to Bracket Weld Length :	12	inches	Analysis Ratio	
Tube to Bracket Weld Capacity :	103.05	kip	0.357	
Structure to Bracket Weld Size :	5	/16 inch		
Structure to Bracket Weld Length :	12	inches	Analysis Ratio	
Structure to Bracket Weld Capacity :	103.05	kip	0.357	
Local Pipe Moment :	221.04	kip-in	Analysis Ratio	
Local Pipe Moment Capacity :	N/A	kip-in	N/A	*Not Pipe Leg*
Local Pipe Shear :	9.210	kip	Analysis Ratio	
Local Pipe Shear Capacity :	N/A	kip	N/A	*Not Pipe Leg*

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Job Number:	37522-0019.001.8800	**Page:**	1 of 1
Site Number:	SOUTHINGTON ROGUS	**Date:**	2/8/2022
Site Name:	841298	**Version:**	1.3
WO No.:	2069959	**Effective:**	3/24/2021
Order No.:	557181 Rev 3	**By:**	RH

Anchor Rod Bracket Plate Analysis

40-FT

Existing Leg Outer Diameter :	2	inches	Pipe Leg?:	No
Existing Pipe Leg Wall Thickness :		inches		
Existing Pipe Leg F_y :		ksi	Existing Pipe Leg Fu :	
Existing Pipe Leg Load :		kip		
Anchor CL to Structure Face:	6	inches		
Anchor Type :	Anchor Rod			
Anchor Size :	CCI-AR-0100			
Anchor Net Area :		in^2		
Anchor F_u :		ksi		
Anchor Design Tensile Capacity :		kip		
Anchor Analysis Tensile Load :	52.605	kip	1	Maximum Ratio
Tube Size :	HSS 3 x 3 x 0.375			
Tube Grade:	A500 Gr. C (Fy=50)			
Tube F_y :	50	ksi		
Tube Unbraced Length :	1	inches	Analysis Ratio	
Tube Compressive Capacity :	152.51	kip	0.345	
Washer Plate Thickness :	1.25	inches		
Washer Plate F_y :	A572 Gr. 50		Analysis Ratio	
Washer Shear Capacity	172.30	kip	0.305	
Bracket Plate Thickness :	0.375	inches		
Bracket Plate Height :	12	inches		
Bracket Plate Width :	4.5	inches		
Bracket Plate Grade:	A572 Gr. 50			
Bracket Plate F_y :	50	ksi	Bracket Plate Analysis Ratios	
Bracket Moment Capacity :	405	kip-in	Moment:	0.779
Bracket Shear Capacity :	121.5	kip	Shear:	0.433
			Interaction:	0.795 <--Governs Bracket Plate
Tube to Bracket Weld Size :	5	/16 inch		
Tube to Bracket Weld Length :	12	inches	Analysis Ratio	
Tube to Bracket Weld Capacity :	103.05	kip	0.510	
Structure to Bracket Weld Size :	5	/16 inch		
Structure to Bracket Weld Length :	12	inches	Analysis Ratio	
Structure to Bracket Weld Capacity :	103.05	kip	0.510	
Local Pipe Moment :	315.63	kip-in	Analysis Ratio	
Local Pipe Moment Capacity :	N/A	kip-in	N/A	*Not Pipe Leg*
Local Pipe Shear :	13.151	kip	Analysis Ratio	
Local Pipe Shear Capacity :	N/A	kip	N/A	*Not Pipe Leg*

1" A193, GR B THREADED ROD % CAPACITY
= 52.61 KIPS / 60.57 KIPS / 1.05 = 82.7% OK

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TIA-222 Rev: H
Section 15.5: Yes

Job Number: 37522-0019.001.8800
Site Number: 841298
Site Name: Southington Rogus
WO No.: 1859123
Order No.: 517069, Rev 1
Engineer: RH

Version: 1.0 Date: 2/8/2022

Lattice Tower Welded Splice Jump Plate Analysis

Elevation: 20 ft
Analysis or Design: Analysis

Existing Splice:
Splice Type: Sleeve
Bolt Size: 0.75 in
Bolt Grade: A325
Thread Type: N-Included
Number of Bolts: 5
Shear Planes: Double

Loads:
Top Leg Compressive Load: 142.65 kip
Top Leg Tensile Load: 135.75 kip

Plate Info:
Number of Plates: 3
Grade: A572 Gr. 50
Plate Thickness: 1 in
Vertical Plate Width: 3 in
Vertical Clear Distance 24 in
Horizontal Plate Height: 6 in
Clear Distance from Leg: 3 in

Plate F_y: 50 ksi
Plate F_u: 65 ksi
A_g: 3 in^2
Override A_g: in^2
Override CG: in

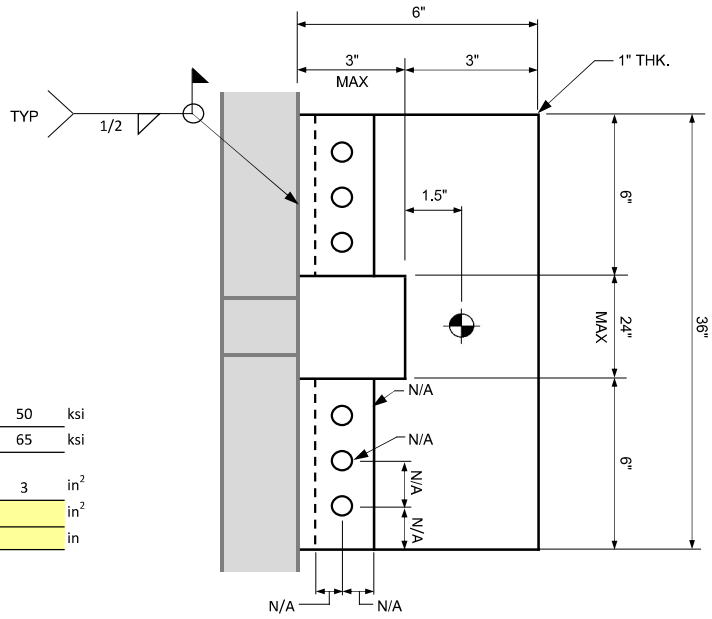
Connection Info:
Type: Welded
Structure to Plate Weld Size: 8 /16 in
Number of Bolts:
Bolt Size: in
Bolt Grade:
Thread Type:
Shear Planes:
Bolt Spacing: in
Plate End Distance: in
Plate Edge Distance: in

Tab Grade: A572 Gr. 50
Tab Thickness: in
Tab End Distance: in
Tab Edge Distance: in
Tab Height: in
Tab Width: in

Tab F_y: 50 ksi
Tab F_u: 65 ksi

Load Distribution:
Cut Plane: Worst
Top Leg Area: 3.14 in^2

	Splice (k)	Plate (k)
Compression:	40.2	35.3
Tension:	35.1	45.3



Results Summary				
Checks		Load (k)	Capacity (k)	Ratio
Plate	Compression	35.3	81.4	41.2%
	Tension	45.3	135.0	31.9%
	Moment (k-in)	203.6	405.0	47.9%
	Shear	45.3	175.5	24.6%
	Tab Shear	---	---	---
	Tab Moment (k-in)	---	---	---
Connection	Bolt Shear	---	---	---
	Bearing	---	---	---
	Block Shear	---	---	---
	Weld	45.3	59.9	71.9%
	Splice Bolts	40.2	198.8	19.3%

Self Support Anchor Rod Capacity

Site Info	
BU #	841298
Site Name	Southington Rogus
Order #	557181, Rev 3

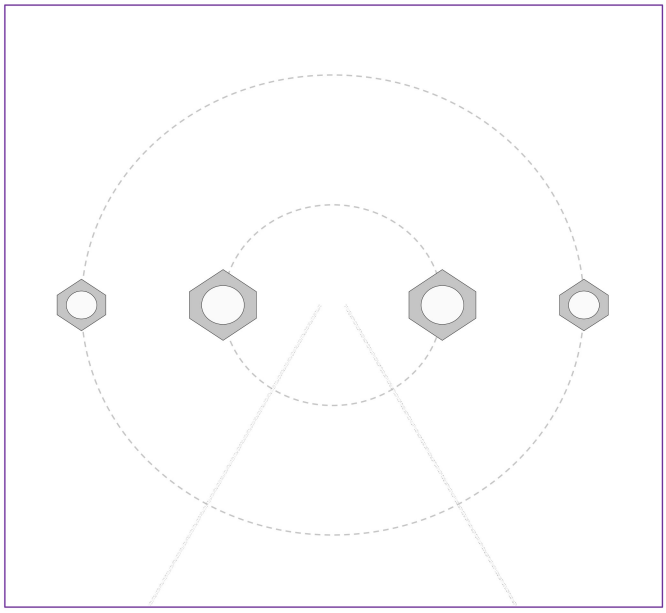
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{ar} (in)	See Custom Sheet

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	176.00	164.00
Shear Force (kips)	4.00	5.00

**TIA-222-H Section 15.5 Applied*

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

**Anchor Rod Eccentricity Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (2) 1-3/4" ø bolts (A572-50 N; Fy=50 ksi, Fu=65 ksi) on 9" BC
pos. (deg): 0, 180
l_{ar} (in): 2.25

GROUP 2: (2) 1-1/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 20.625" BC
pos. (deg): 0, 180
l_{ar} (in): 1.25

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

GROUP 1:		
Pu_c = 58.28	ϕPn_c = 108.24	**Stress Rating**
Vu = 2	ϕVn = 48.71	**58.4%**
Mu = 2.93	ϕMn = 40.2	**Pass**
GROUP 2:		
Pu_t = 27.7	ϕPn_t = 90.84	**Stress Rating**
Vu = 0	ϕVn = 57.52	**29.0%**
Mu = n/a	ϕMn = n/a	**Pass**

SST Unit Base Foundation

BU # :	841298
Site Name:	Southington
App. Number:	557181, Rev 3
TIA-222 Revision:	H

Top & Bot. Pad Rein. Different?:	☐
Tower Centroid Offset?:	☐
Block Foundation?:	☑
Rectangular Pad?:	☐

Superstructure Analysis Reactions		
Global Moment, **M**:	737	ft-kips
Global Axial, **P**:	19	kips
Global Shear, **V**:	10	kips
Leg Compression, P_{comp}:	176	kips
Leg Comp. Shear, V_{u_comp}:	4	kips
Leg Uplift, P_{uplift}:	164	kips
Leg Uplift. Shear, V_{u_uplift}:	5	kips
Tower Height, **H**:	120	ft
Base Face Width, **BW**:	5	ft
BP Dist. Above Fdn, bp_{dist}:	4	in
Anchor Bolt Circle, **BC**:	20.625	in

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	53.11	10.00	**17.9%**	**Pass**
Bearing Pressure (ksf)	3.75	1.87	**49.9%**	**Pass**
*Overturning (kip*ft)*	1166.41	795.33	**68.2%**	**Pass**
*Pad Flexure (kip*ft)*	1725.30	278.25	**15.4%**	**Pass**
Pad Shear - 1-way (kips)	502.81	55.70	**10.5%**	**Pass**
Pad Shear - Comp 2-way (ksi)	0.164	0.028	**16.2%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	1077.70	0.00	**0.0%**	**Pass**
Pad Shear - Tension 2-way (ksi)	0.164	0.026	**15.1%**	**Pass**
*Flexural 2-way (Tension) (kip*ft)*	1077.70	0.00	**0.0%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Structural Rating*:	**16.2%**
Soil Rating*:	**68.2%**

Pad Properties		
Depth, **D**:	5.50	ft
Pad Width, W_1:	16.00	ft
Pad Thickness, **T**:	3.00	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	6	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	28	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	110	pcf
Ultimate Gross Bearing, Qult:	5.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:		degrees
SPT Blow Count, N_{blows}:	7	
Base Friction, μ:	0.35	
Neglected Depth, **N**:	3.3	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<-- Toggle between Gross and Net

APPENDIX D

MODIFICATION DRAWINGS

MODIFIED 120' SELF SUPPORT TOWER

BU #841298; SOUTHINGTON ROGUS

250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CONNECTICUT 06489
HARTFORD COUNTY
LAT: 41° 33' 24.54"; LONG: -72° 51' 10.84"
ORDER: 557181 REV. 3; WO: 2069959

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 · Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3 CORPORATE PARK DRIVE SUITE 101 CLIFTON PARK, NY 12065
PH: (586) 370-4768

PROJECT CONTACTS

STRUCTURE OWNER:
CROWN CASTLE
MOD PM: JOHN MCGEE AT JOHN.MCGEE@CROWNCASTLE.COM
PH: 704-877-8397

ENGINEER OF RECORD:
PJFMOD@PAULJFORD.COM

WIND DESIGN DATA	
REFERENCE STANDARD	ANSI/TIA-222-H-2017
LOCAL CODE	2018 CT BUILDING CODE (2015 IBC)
ULTIMATE WIND SPEED (3-SECOND GUST)	118 MPH
ICE THICKNESS	1.0 IN
ICE WIND SPEED	50 MPH
SERVICE WIND SPEED	60 MPH
RISK CATEGORY	II
EXPOSURE CATEGORY	B
MAXIMUM TOPOGRAPHIC FACTOR, K_{ZT}	1.0

SHEET INDEX	
SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
MI-1	MI CHECKLIST AND NOTES
N-1	NOTES
N-2	NOTES
S-1	TOWER ELEVATION
S-2	SECONDARY HORIZONTAL
S-3	HALF SLEEVE LEG REINFORCEMENT
S-4	HALF SLEEVE WELD DETAILS
S-5	GUSSET WELDMENT REPLACEMENT

HOT WORK INCLUDED	
NA	BASE GRINDING ONLY
NA	BASE WELDING (AND GRINDING)
NA	AERIAL GRINDING ONLY
X	AERIAL WELDING (AND GRINDING)

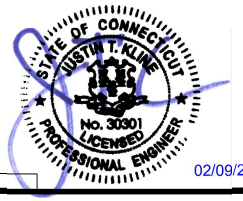
TOWER MANUFACTURER: PIROD

TOWER MANUFACTURER #: 115911-1 U-5.0 x 80

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM PAUL J. FORD & COMPANY TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTED QUALIFIED ENGINEERING SERVICES, PLEASE CONTACT PJFMOD@PAULJFORD.COM.

ATTENTION ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT (800) 788-7011.

SAFETY CLIMB: "LOOK UP"
THE INTEGRITY OF THE WIRE ROPE SAFETY CLIMB SYSTEM SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION AND INSPECTION. TOWER REINFORCEMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF ANY WIRE ROPE SAFETY CLIMB 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, OR IMPACT TO THE ANCHORAGE POINTS IN ANY WAY. ANY COMPROMISED SAFETY CLIMB MUST BE REPORTED TO YOUR CROWN POC FOR RESOLUTION, INCLUDING EXISTING CONDITIONS



02/09/2022

REV	DATE	DESCRIPTION

BU #841298; SOUTHINGTON ROGUS
SOUTHINGTON, CONNECTICUT
MODIFIED 120' SELF SUPPORT TOWER

PROJECT No:	37522-0019.001.8800
DRAWN BY:	BJH
DESIGNED BY:	RWH
CHECKED BY:	CMH
DATE:	2/9/2022

TITLE SHEET

T-1

37522-0019.001.DWG

CED-FRM-10354 MI CHECKLIST

REQUIRED	REPORT ITEM	APPLICABLE CROWN DOC #	BRIEF DESCRIPTION
	PRE-CONSTRUCTION		
X	MI CHECKLIST DRAWING	CED-SOW-10007	THIS CHECKLIST SERVES AS A GUIDELINE FOR THE REQUIRED CONSTRUCTION DOCUMENTS AND INSPECTIONS FOR THIS MODIFICATION
X	EOR APPROVED SHOP DRAWINGS	CED-SOW-10007	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS. THESE INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. SHOP DRAWING SUBMISSION SHALL INCLUDE THE EOR RFI FORM DETAILING ANY CHANGES FROM THE ORIGINAL DESIGN
X	FABRICATION INSPECTION	CED-SOW-10007	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	CED-SOW-10007 CED-STD-10069	A CWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	CED-SOW-10007	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED AS REQUIRED PER SECTION 9.2.5 OF CED-SOW-10007. MTRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	FABRICATOR NDE INSPECTION REPORT	CED-SOW-10066 CED-STD-10069	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	NDE OF MONOPOLE BASE PLATE	ENG-SOW-10033	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	CED-SOW-10007	PACKING/SHIPPING LIST FOR ALL MATERIAL THAT WAS USED DURING CONSTRUCTION OF THE MODIFICATION.
	ADDITIONAL TESTING AND INSPECTIONS:		
	CONSTRUCTION		
NA	FOUNDATION INSPECTIONS	CED-SOW-10144	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL OBSERVATION OF THE REBAR SHALL BE PERFORMED BEFORE PLACING THE EPOXY. A SEALED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	CONCRETE COMP, STRENGTH AND SLUMP TEST	CED-SOW-10144	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE FOUNDATION REPORT.
NA	EARTHWORK	CED-SOW-10144	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY AN APPROVED FOUNDATION INSPECTOR AND RESULTS INCLUDED AS PART OF THE FOUNDATION REPORT.
NA	MICROPILE/ROCK ANCHOR	CED-SOW-10144	MICROPILES/ROCK ANCHORS SHALL BE INSPECTED BY THE FOUNDATION INSPECTION VENDOR AND SHALL BE INCLUDED AS PART OF THE FOUNDATION INSPECTION REPORT. ADDITIONAL TESTING AND/OR INSPECTION REQUIREMENTS ARE NOTED IN THESE CONTRACT DOCUMENTS.
NA	POST-INSTALLED ANCHOR ROD VERIFICATION	CED-SOW-10007 CED-FRM-10358	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH CROWN REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	BASE PLATE GROUT VERIFICATION	ENG-STD-10323	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMOVED AND/OR INSTALLED IN ACCORDANCE WITH CROWN REQUIREMENTS FOR INCLUSION IN THE MI REPORT.
X	FIELD CERTIFIED WELD INSPECTION	CED-SOW-10066 CED-STD-10069	A CROWN APPROVED CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST FIELD WELDS, FOLLOWING ALL PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS APPLICABLE TO WELD INSPECTIONS. A REPORT SHALL BE PROVIDED. NDE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED BY CROWN STANDARDS AND CONTRACT DOCUMENTS. THE NDE REPORT SHALL BE INCLUDED IN THE CWI REPORT.
X	ON-SITE COLD GALVANIZING VERIFICATION	ENG-STD-10149	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.
NA	TENSION TWIST AND PLUMB	CED-PRC-10182 CED-STD-10261	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.
X	GC AS-BUILT DRAWINGS	CED-SOW-10007	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED.
	ADDITIONAL TESTING AND INSPECTIONS:		
	POST-CONSTRUCTION		
X	CONSTRUCTION COMPLIANCE LETTER	CED-SOW-10007 CED-FRM-10358	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
NA	POST-INSTALLED ANCHOR ROD PULL TESTS	CED-PRC-10119	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY A CROWN APPROVED PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	CED-SOW-10007	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
X	BOLT HOLE INSTALLATION VERIFICATION REPORT	CED-SOW-10007	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	PUNCH LIST DEVELOPMENT AND CORRECTION DOCUMENTATION	CED-PRC-10283 CED-FRM-10285	FINAL PUNCH LIST INDICATING ALL NONCONFORMANCE(S) IDENTIFIED AND THE FINAL RESOLUTION/APPROVAL.
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	CED-SOW-10007	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
	ADDITIONAL TESTING AND INSPECTIONS:		

THE MI CHECKLIST SHALL BE REVIEWED PRIOR TO THE START OF CONSTRUCTION. ALL PARTIES TO THE MODIFICATION SHALL UNDERSTAND CROWN REQUIREMENTS AND INSPECTIONS/DOCUMENTATION THAT ARE APPLICABLE TO THE SOW THEY ARE PERFORMING. ERRORS ON THE CHECKLIST DO NOT ABSOLVE THE GC OR MI INSPECTOR FROM PERFORMING/COLLECTING DOCUMENTATION.

MODIFICATION INSPECTION NOTES

GENERAL

THE MI IS AN ON-SITE VISUAL AND HANDS-ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS; IN ACCORDANCE WITH APPLICABLE CROWN STANDARDS; AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE, ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN, OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE CROWN POINT OF CONTACT (CROWN POC) FOR EVALUATION.

ALL MI'S SHALL BE CONDUCTED BY A CROWN APPROVED MI INSPECTOR, WORKING FOR A CROWN APPROVED MI VENDOR. SEE CROWN CED-LST-10173, "APPROVED MI VENDORS".

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR INSPECTOR SHALL CONTACT THE CROWN POINT OF CONTACT (CROWN POC).

REFER TO CROWN CED-SOW-10007, "MODIFICATION INSPECTION SOW", FOR FURTHER DETAILS AND REQUIREMENTS.

SERVICE LEVEL COMMITMENT

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:

- THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
  - WELD PREPARATION
  - BOLT INSTALLATION
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS. FOR A COMPLETE LIST OF PHOTOS SEE CED-SOW-10007.

REV	DATE	DESCRIPTION

STATE OF CONNECTICUT · JUSTIN T. KLINE · No. 30301 · LICENSED PROFESSIONAL ENGINEER

02/09/2022

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 · Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3 CORPORATE PARK DRIVE SUITE 101 CLIFTON PARK, NY 12065
PH: (585) 370-4768

BU #841298; SOUTHINGTON ROGUS
SOUTHINGTON, CONNECTICUT
MODIFIED 120' SELF SUPPORT TOWER

PROJECT No:	37522-0019.001.8800
DRAWN BY:	BJH
DESIGNED BY:	RWH
CHECKED BY:	CMH
DATE:	2/9/2022

MI CHECKLIST AND NOTES

MI-1

37522-0019.001.DWG

GENERAL NOTES:

1. The General Contractor (GC) shall reference CON-STD-10159, "Tower Modification Construction Specifications", as a continuation of the following General Notes. The GC shall keep a printed or electronic copy of this document with the Structural Design Drawings (SDD) at all times, in a location accessible to all contractor personnel, and shall ensure that all Contractor Personnel are aware of the information enclosed within the General Notes and CON-STD-10159.
2. The Contract Documents are the property of Crown Castle (Crown). They are provided to the GC and its Lower Tier Contractors and material suppliers for the limited purpose of use in completing the Work for this Site, and shall be kept in strict confidence and not disclosed to any third parties. The Contract Documents shall not be used for any other purpose whatsoever without the prior written consent of Crown.
3. Detail drawings, including notes and tables, shall govern over general notes and typical details. Contact the Crown Point of Contact (POC) and Engineer of Record (EOR) for clarification as needed.
4. Do not scale drawings.
5. Any Work performed without a prefabrication mapping is done at the risk of the GC and/or fabricator. All dimensions of existing structural elements are assumed based on the available documentation and are preliminary until field-verified by the GC, unless noted otherwise (UNO). Where discrepancies are found, GC shall contact the Crown POC and EOR through RFI.
6. For this analysis and modification, the tower has been assumed to be in good condition without any structural defects, UNO. If the GC discovers any indication of an existing structural defect, contact the Crown POC and EOR immediately.
7. 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 GC 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 Crown standard CED-STD-10253, "Rigging Program", including the required involvement of a qualified engineer for class IV construction to certify the supporting structure(s) in accordance with the ANSI/TIA-322 (latest edition).
8. Hoisting grips used for feed line installation shall follow manufacturer guidelines for maximum installed spacing intervals and pull load capacity restrictions.
9. The structural integrity of the modification design extends to the complete condition only. The GC must be cognizant that the removal of any structural component of an existing tower has the potential to cause the partial or complete collapse of the structure. All necessary precautions must be taken to ensure structural integrity, including, but not limited to, engineering assessment of construction stresses with installation maximum wind speed and/or temporary bracing and shoring.
10. Aerial and underground utilities and facilities may or may not be shown on the drawings. The GC shall take every precaution to preserve and protect these items, which may include aerial or underground power lines, telephone lines, water lines, sewer lines, cable television facilities, pipelines, structures and other public and private improvements within or adjacent to the Work area. The responsibility for determining the actual on-site location of these items shall rest exclusively with the GC.
11. All manufacturer's hardware assembly instructions shall be followed, UNO. Conflicting notes shall be brought to the attention of the EOR and the Crown POC.
12. The GC shall fabricate all required items per the materials specified below, UNO on the detail drawing sheets. If the GC finds for any component that the materials have not been clearly specified, the GC shall submit an RFI to the EOR to confirm the required material.

All structural elements shall be new and shall conform to the following requirements, UNO:

Monopoles:

- Structural shapes and plates: ASTM A572 Grade 65 (FY = 65 KSI)
- Welding electrodes, SMAW: E80XX
- Welding electrodes, FCAW: E8XT-XX
- Welding electrodes, GMAW: ER80S-X

Self-Support and Guyed Towers:

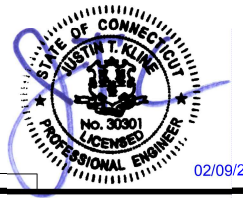
- Structural shapes and plates: ASTM A572 Grade 50 (FY = 50 KSI)
- Welding electrodes, SMAW: E70XX
- Welding electrodes, FCAW: E7XT-XX
- Welding electrodes, GMAW: ER70S-X

All tower types:

- Steel angle: ASTM A572 Grade 50 (FY = 50 KSI)
- Solid rod: ASTM A36 (FY = 36 KSI)
- Pipe/tube (round): ASTM A500 Grade C (FY = 46 KSI)
- Pipe/tube (square): ASTM A500 Grade C (FY = 50 KSI)
- Bolts: ASTM F3125 Grade A325 Type 1
- U-bolts: ASTM A307 Grade A, or SAE J429 Grade 2
- Nuts: ASTM A563 Grade DH
- Washers: ASTM F436 Type 1
- Guy Wires: ASTM A475 Grade EHS
- Bridge Strand: ASTM A586 Grade 1

13. After fabrication, hot-dip galvanize all steel items, UNO. Galvanize per ASTM A123, ASTM A153/A153M, or ASTM A653 G90, as applicable. ASTM A490 bolts shall not be hot-dip galvanized, but shall instead be coated with Magni 565 or EOR approved equivalent, per ASTM F2833.
14. Contractor Personnel shall not drill holes in any new or existing structural members, other than those drilled holes shown on structural drawings, without the approval of the EOR.
15. For a list of Crown-approved cold galvanizing compounds, refer to OPS-STD-10149, “Tower Protective Coatings Guidelines”.
16. All exposed structural steel as the result of this scope of Work including welds (after final inspection of the weld by the CWI), field drilled holes, and shaft interiors (where accessible), shall be cleaned and two (2) coats cold galvanizing shall be applied by brush in accordance with OPS-STD-10149, “Tower Protective Coatings Guidelines”. Photo documentation is required to be submitted to the MI Inspector.
17. If removal of existing modifications is required per the modification scope, the GC shall clean and cold galvanize any existing empty bolt holes, UNO. If additional unexpected, oversized, or slotted holes are found, the GC shall contact the EOR and Crown POC for guidance prior to proceeding with the modifications.
18. All Work involving base plate grout scope items or resulting in disturbance of base plate grout shall reference ENG-STD-10323, "Base Plate Grout", and shall follow any Base Plate Grout Removal Notes contained herein.
19. All tower grounding affected by the Work shall be repaired or replaced in accordance with OPS-STD-10090, "Tower Grounding", and OPS-BUL-10133, "Grounding Repair Recommendation".
20. If scope of modification requires removal or covering of tower ID tag, the tag must be replaced.
21. Any hardware removed from the existing tower shall be replaced with new hardware of equal size and quality, UNO. No existing fasteners shall be reused.
22. All joints using ASTM A325 or A490 bolts, U-bolts, V-bolts, and threaded rods shall be snug tightened, UNO.
23. A nut locking device shall be installed on all proposed and/or replaced snug tightened ASTM A325 or A490 bolts, U-bolts, V-bolts, and threaded rods.
24. All joints are bearing type connections UNO. If no bolt length is given in the Bill of Materials, the connection may include threads in the shear planes, and the GC is responsible for sizing the length of the bolt.
25. Blind bolts shall be installed per the installation specifications on the corresponding Approved Fastener sheets contained in CON-CAT-10300, "Monopole Standard Drawings and Approved Reinforcement Components".
26. If ASTM A325 or A490 bolts, and/or threaded rods are specified to be pre-tensioned, these shall be installed and tightened to the pretensioned condition according to the requirements of the RCSC Specification for Structural Joints Using ASTM High Strength Bolts.
27. All proposed and/or replaced bolts shall be of sufficient length such that the end of the bolt be at least flush with the face of the nut. It is not permitted for the bolt end to be below the face of the nut after tightening is completed.
28. If scope of modification involves bark removal or installation, the GC shall reference CED-SOW-10265, "Tree Concealment for Monopoles", as well as CED-STD-10395, "Installation Guidelines for Bark Surfaces".
29. If scope of modification involves concealment components including branching, the GC shall reverence CED-CAT-10398 "Monopole Concealed Decorative Structures (CDS) Approved Components". All new branch installation required tethering.
30. If scope of modification involves cathodic protection, the GC shall reference CED-SOW-10397, Cathodic Protection Installation, Replacement, and Enhancement".

REV	DATE	DESCRIPTION



02/09/2022

PJF PAUL J. FORD & COMPANY
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Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3 CORPORATE PARK DRIVE SUITE 101 CLIFTON PARK, NY 12065
PH: (586) 370-4768

BU #841298; SOUTHINGTON ROGUS
SOUTHINGTON, CONNECTICUT
MODIFIED 120' SELF SUPPORT TOWER

PROJECT No:	37522-0019.001.8800
DRAWN BY:	BJH
DESIGNED BY:	RWH
CHECKED BY:	CMH
DATE:	2/9/2022

NOTES

N-1

37522-0019.001.DWG

GENERAL NOTES:

1. THIS TOWER MODIFICATION DRAWING IS BASED UPON A STRUCTURAL ANALYSIS PERFORMED BY CROWN CASTLE, DATED 9-13-2021.

2. PAUL J. FORD AND COMPANY HAS NOT PERFORMED A FIELD VISIT TO VERIFY THE EXISTING TOWER MEMBER SIZES AND DIMENSIONS. THE MODIFICATIONS SHOWN ON THESE PAGES WERE DEVELOPED USING INFORMATION PROVIDED TO US BY CROWN CASTLE.

3. PAUL J. FORD AND COMPANY WAS NOT PROVIDED WITH THE EXACT LOCATION OF EVERY EXISTING APPURTENANCE THAT COULD POTENTIALLY INTERFERE WITH THE MODIFICATIONS AS INDICATED ON THESE DRAWINGS. IT IS IMPORTANT THAT THE MODIFICATION MATERIAL BE PLACED IN THE PROPER LOCATION TO BE EFFECTIVE. THIS MAY REQUIRE THE REPOSITIONING OF SOME EXISTING NON-STRUCTURAL ITEMS CURRENTLY ATTACHED TO THE TOWER.

4. THE CONTRACTOR MUST BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED ON THESE DRAWINGS. BY ACCEPTANCE OF THIS PROJECT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED TO DO THIS WORK IN THE JURISDICTION IN WHICH THE WORK IS TO BE PERFORMED.

5. INSPECTIONS SHALL BE COMPLETED IN ACCORDANCE WITH LOCAL BUILDING CODES.

CONSTRUCTION NOTES:

1. REFER TO CCI DOC ENG-PLN-10015 FOR CUTTING AND WELDING SAFETY PLAN. (USE WHEN YOU HAVE ON SITE CUTTING AND WELDING)

MATERIAL NOTES:

1. ALL MATERIAL GRADES GREATER THAN 36 KSI WILL REQUIRE MATERIAL TEST REPORTS.

2. ALL HOLES IN THE NEW STEEL MEMBERS SHALL BE SIZED 1/16" LARGER THAN THE BOLT DIAMETER. SLOTTED OR OVERSIZED HOLES ARE NOT PERMITTED, UNO.

3. ALL THREADED ROD FOR FLANGE JUMPS SHALL BE ASTM A193, GR B7 MATERIAL.

4. ALL SQUARE BAR SHALL BE ASTM A572, GR 50 (FY = 50 KSI) MATERIAL.

REV	DATE	DESCRIPTION

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

02/09/2022

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BU #841298; SOUTHINGTON ROGUS
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MODIFIED 120' SELF SUPPORT TOWER

PROJECT No:	37522-0019.001.8800
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NOTES

N-2

37522-0019.001.DWG

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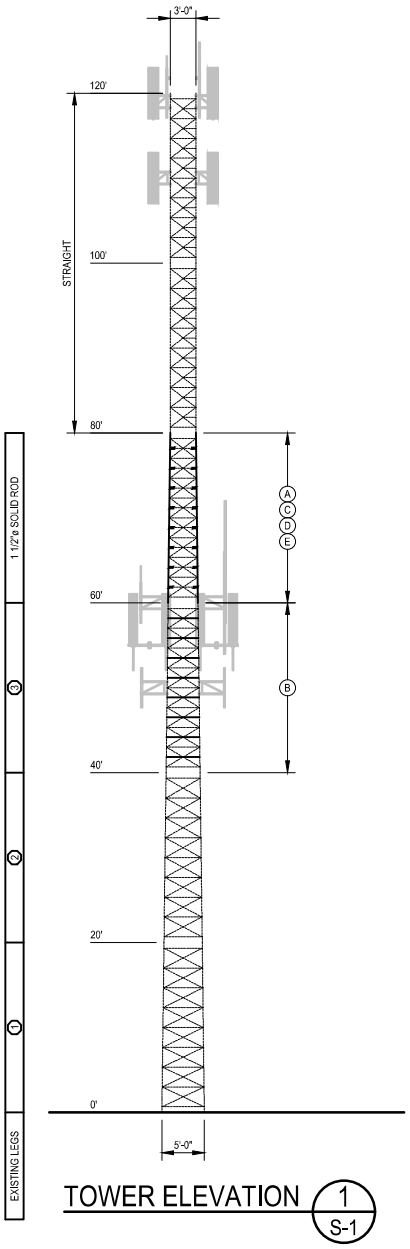
TOWER ELEVATION

S-1



TOWER ELEVATION 1 S-1

TOWER MODIFICATION SCHEDULE

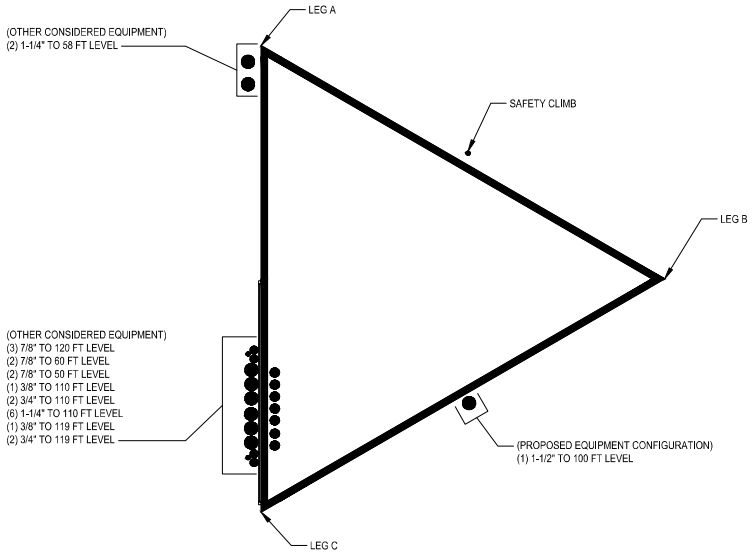
	ELEVATION	TOWER MODIFICATION DESCRIPTION	REFERENCE SHEETS
A	60'± TO 80'±	REMOVE EXISTING SQUARE BAR HORIZONTALS	S-1
B	40'± TO 60'±	INSTALL NEW SQUARE BAR SECONDARY HORIZONTALS	S-2
C	60'± TO 80'±	WELD NEW HALF SLEEVES TO EXISTING TOWER LEGS	S-3
D	60'± TO 80'±	REPLACE EXISTING GUSSET WELDMENTS WITH NEW GUSSET WELDMENTS	S-4
E	60'± TO 80'±	REPLACE EXISTING SQUARE BAR HORIZONTALS	S-4

PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN, LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSE ONLY AND SHALL NOT BE USED FOR FABRICATION.

FOR PARTS NOT DETAILED WITHIN THE DRAWING AND STARTING WITH "CCI-", SEE THE FOLLOWING CATALOG FOR DETAILS: CED-CAT-10302, SELF-SUPPORT TOWER STANDARD DRAWINGS AND APPROVED REINFORCEMENT COMPONENTS

EXISTING TOWER MEMBER

1	2 1/4"ø SOLID ROD W/ 2.875" OD x 0.276" THK HALF SLEEVE
2	2"ø SOLID ROD W/ 2.875" OD x 0.276" THK HALF SLEEVE
3	1 3/4"ø SOLID ROD W/ 2.375" OD x 0.154" THK HALF SLEEVE



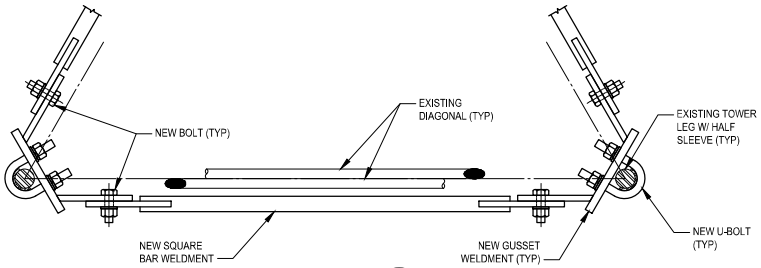
COAX LAYOUT 2 S-1

REV	DATE	DESCRIPTION

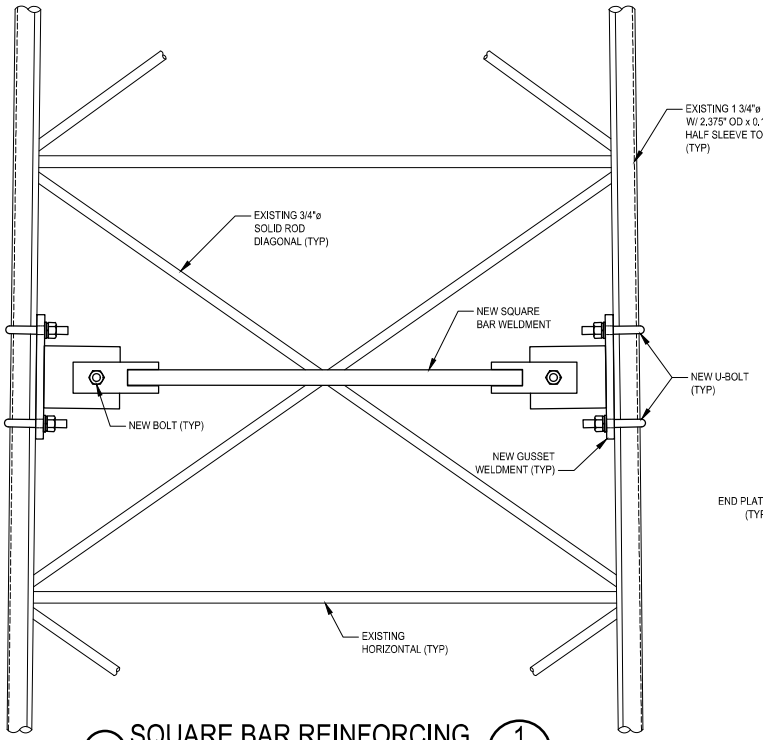
STATE OF CONNECTICUT · JUSTIN T. KLINE · No. 30301 · LICENSED PROFESSIONAL ENGINEER

02/09/2022

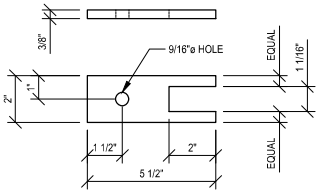
37522-0019.001.DWG



SECTION 2 / S-2



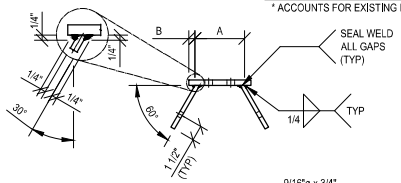
B SQUARE BAR REINFORCING 1 / S-2

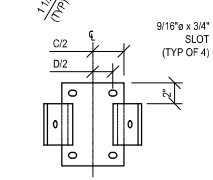


END PLATE

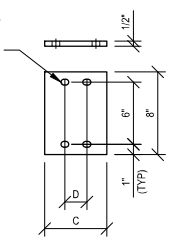
SOLID ROD LEG ø	ASSEMBLY		BACKER PLATE		U-BOLT		
	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)
2.375" *	5 5/16	5/16	6	3	3 7/8	2 1/2	1/2

* ACCOUNTS FOR EXISTING HALF SLEEVE OD

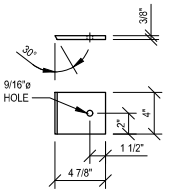




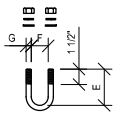
GUSSET WELDMENT



BACKER PLATE



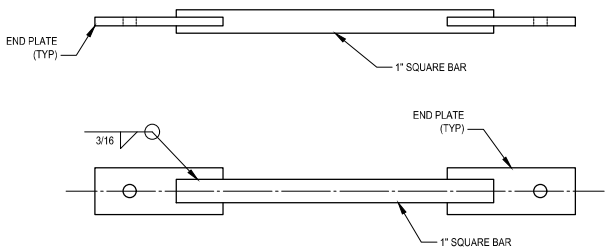
GUSSET PLATE
TYPICAL FOR ALL ASSEMBLIES



U-BOLT

GUSSET WELDMENT NOTES:

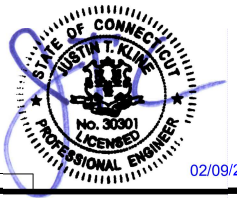
1. ALL HOLES TO BE SHOP FABRICATED, UNLESS NOTED OTHERWISE.
2. TOLERANCES, UNLESS NOTED OTHERWISE: FRACTIONS ± 1/16" ANGLES ± 1/2 DEGREE DECIMALS ± .010"
3. U-BOLTS SHALL BE SNUG TIGHT.
4. USE 2 U-BOLTS PER ASSEMBLY, COMPLETE WITH NUTS (ASTM A563), WASHERS (ASTM F436), AND LOCK WASHERS.
5. NO FIELD FABRICATION PERMITTED ON THIS PART.
6. STANDARD 9/16"ø HOLES IN PLACE OF SLOTTED HORIZONTAL HOLES ON THE BACKER PLATE ARE PERMITTED.



SQUARE BAR WELDMENT

MATERIAL LIST			
ELEVATION	QTY	MATERIAL	LENGTH
40'± TO 60'±	24	1" SQUARE BAR WELDMENT	VARIES
	24	GUSSET WELDMENT	-
	48	1/2"ø BOLTS	1 3/4"
	48	1/2"ø U-BOLTS	-

REV	DATE	DESCRIPTION



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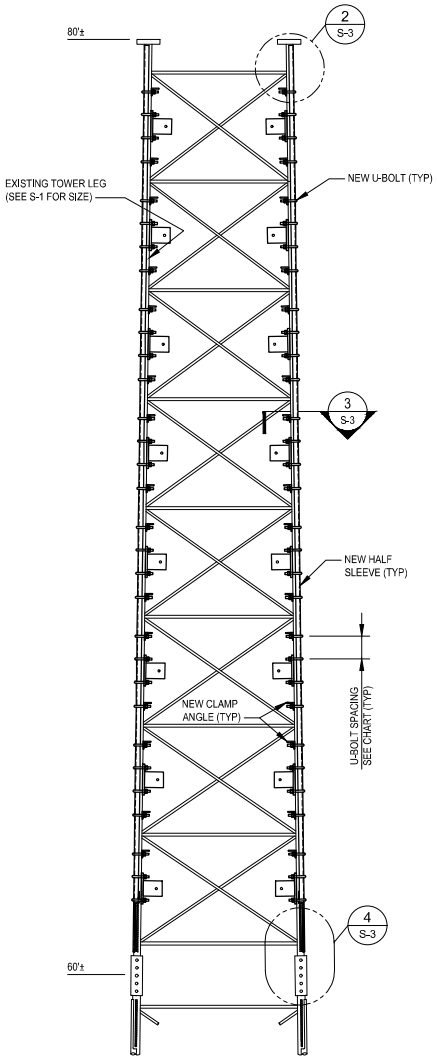
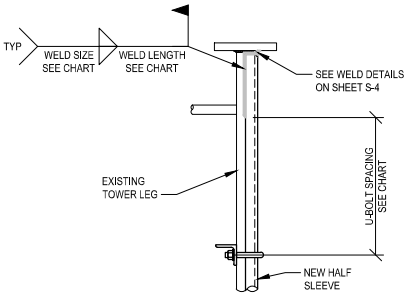
SECONDARY HORIZONTAL

S-2

37522-0019.001.DWG



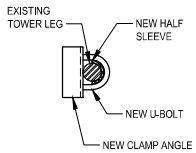
C HALF SLEEVE REINFORCING 1 S-3



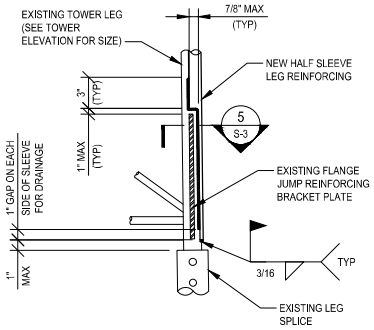
DETAIL 2 S-3

MATERIAL LIST			
ELEVATION	QTY	MATERIAL	LENGTH
60'± TO 80'±	3	HALF SLEEVE 2.375" OD x 0.250" THK	20'-0"±
	45	CLAMP ANGLE L2 x 2 x 1/4	0'-5"±
	45	1/2"ø U-BOLTS	

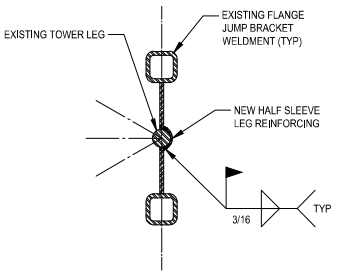
HALF SLEEVE CHART			
ELEVATION	WELD SIZE	WELD LENGTH	MAX U-BOLT SPACING
60'± TO 80'±	3/16"	8"	9"



SECTION 3 S-3



DETAIL 4 S-3
(TYP)



SECTION 5 S-3

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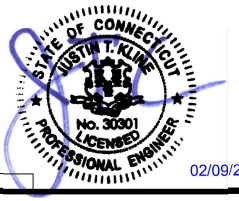
HALF SLEEVE LEG REINFORCEMENT

S-3



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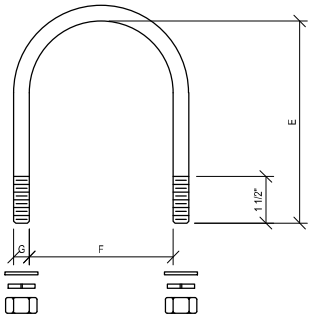
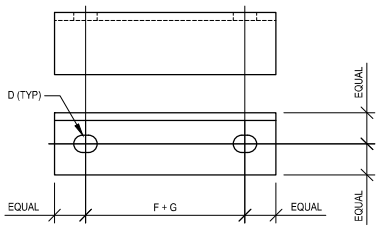
REV	DATE	DESCRIPTION

37522-0019.001.DWG



U-BOLT DETAIL

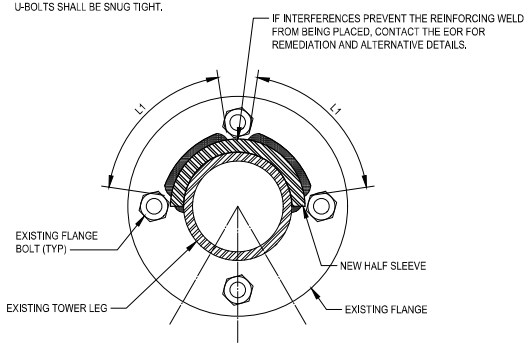


CLAMP ANGLE

NOTES:
1. ALL HOLES TO BE SHOP FABRICATED, UNLESS NOTED OTHERWISE.
2. TOLERANCES, UNLESS NOTED OTHERWISE: FRACTIONS ± 1/16"
   ANGLES ± 1/2 DEGREE
   DECIMALS ± .010"
3. STANDARD U-BOLTS SHALL BE USED.
3. U-BOLT ASSEMBLY, COMPLETE WITH NUTS (ASTM A563), WASHERS (ASTM F436), AND LOCK WASHERS.
4. STANDARD HOLES IN PLACE OF SLOTTED HORIZONTAL HOLES ON THE ANGLE ARE PERMITTED. WHEN STANDARD HOLES ARE USED, FLAT WASHERS ARE NOT REQUIRED.
5. U-BOLTS SHALL BE SNUG TIGHT.

U-BOLT CHART

ELEVATION	HALF SLEEVE OD	ANGLE	U-BOLT		
		D (IN)	E (IN)	F (IN)	G (IN)
60'± TO 80'±	2.375	9/16" x 3/4"	3 3/8	2 1/2	1/2

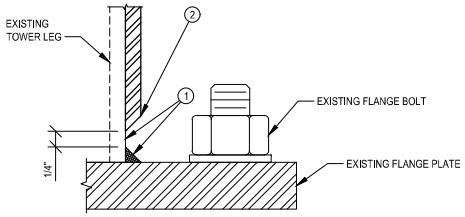


FLANGE CONNECTION INTERFERENCE

STEP 1 NOTES:

(1) CLEAN GALVANIZING FROM EXISTING WELD AND ALL WELD CONTACT SURFACES.

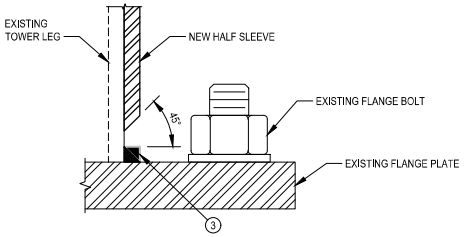
(2) INSTALL PROPOSED HALF SLEEVE.



WELD DETAIL 1 S-4

STEP 2 NOTES:

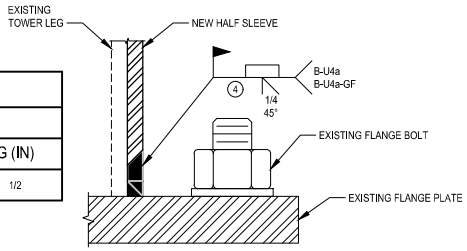
(3) BUILD A PLATFORM WITH WELD (BUTTER) TO MATCH THE HEIGHT OF THE EXISTING FILLET WELD PER SECTION 5.22.4.3 OF AWS D1.1/D1.1M: 2010. ENGINEERING APPROVAL IS PROVIDED FOR CORRECTING ROOT OPENINGS GREATER THAN THOSE PERMITTED IN SECTION 5.22.4.3 IN ACCORDANCE WITH SECTION 5.22.4.4.



WELD DETAIL 2 S-4

STEP 3 NOTES:

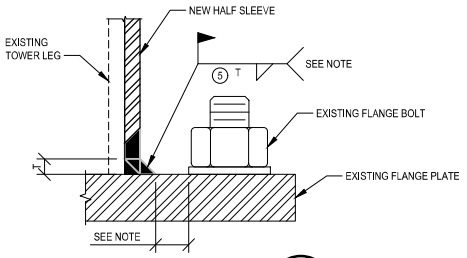
(4) PERFORM A CJP WELD USING THE EXISTING TOWER LEG AS A BACKING BAR.



WELD DETAIL 3 S-4

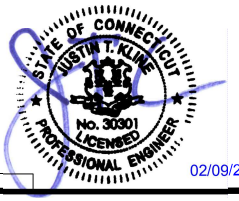
STEP 4 NOTES:

(5) REINFORCING FILLET WELD SIZED TO MATCH EXISTING FILLET WELD. PRIOR TO CONSTRUCTION CONTRACTOR SHALL VERIFY THAT THERE IS ADEQUATE CLEARANCE BETWEEN THE PROPOSED WELD AND THE EXISTING FLANGE BOLTS. IF INTERFERENCE OCCURS AN ALTERNATIVE SLEEVE TERMINATION DETAIL MAY BE REQUIRED.



WELD DETAIL 4 S-4

REV	DATE	DESCRIPTION



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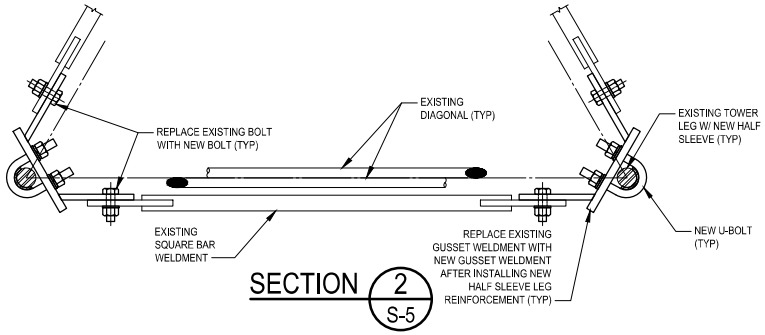
BU #841298; SOUTHINGTON ROGUS
SOUTHINGTON, CONNECTICUT
MODIFIED 120' SELF SUPPORT TOWER

PROJECT No:	37522-0019.001.8800
DRAWN BY:	BJH
DESIGNED BY:	RWH
CHECKED BY:	CMH
DATE:	2/9/2022

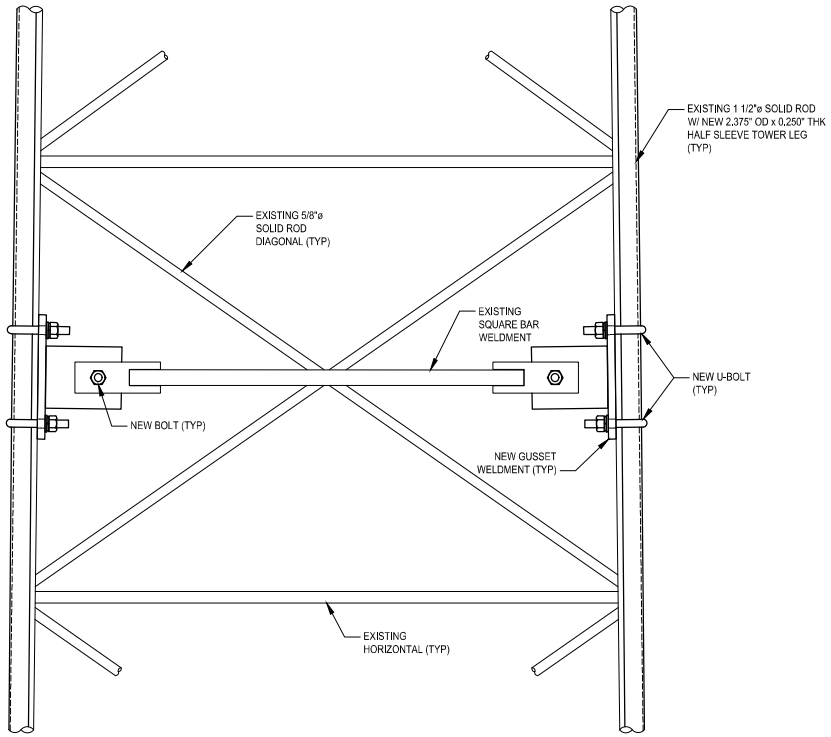
HALF SLEEVE WELD DETAILS

S-4

37522-0019.001.DWG



SECTION 2 / S-5

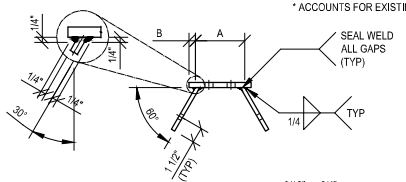


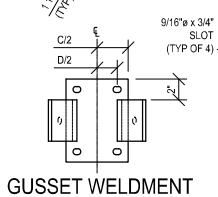
D E GUSSET WELDMENT REPLACEMENT 1 / S-5

MATERIAL LIST			
ELEVATION	QTY	MATERIAL	LENGTH
60'± TO 80'±	24	GUSSET WELDMENT	-
	48	1/2"ø BOLTS	1 3/4"
	48	1/2"ø U-BOLTS	-

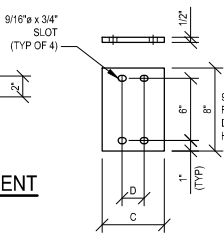
SOLID ROD LEG ø	ASSEMBLY		BACKER PLATE		U-BOLT		
	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)
2.375"*	5 5/16	5/16	6	3	3 7/8	2 1/2	1/2

* ACCOUNTS FOR EXISTING HALF SLEEVE OD

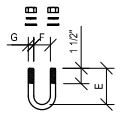




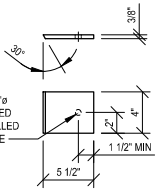
GUSSET WELDMENT



BACKER PLATE



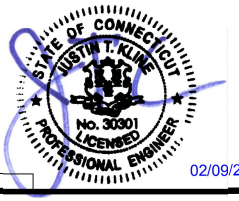
U-BOLT



GUSSET PLATE
TYPICAL FOR ALL ASSEMBLIES

GUSSET WELDMENT NOTES:

1. ALL HOLES TO BE SHOP FABRICATED, UNLESS NOTED OTHERWISE.
2. TOLERANCES, UNLESS NOTED OTHERWISE: FRACTIONS ± 1/16" ANGLES ± 1/2 DEGREE DECIMALS ± .010"
3. U-BOLTS SHALL BE SNUG TIGHT.
4. USE 2 U-BOLTS PER ASSEMBLY, COMPLETE WITH NUTS (ASTM A563), WASHERS (ASTM F436), AND LOCK WASHERS.
5. NO FIELD FABRICATION PERMITTED ON THIS PART.
6. STANDARD 9/16"ø HOLES IN PLACE OF SLOTTED HORIZONTAL HOLES ON THE BACKER PLATE ARE PERMITTED.



02/09/2022

REV	DATE	DESCRIPTION

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 · Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3 CORPORATE PARK DRIVE SUITE 101 CLIFTON PARK, NY 12065
PH: (585) 370-4768

BU #841298; SOUTHINGTON ROGUS
SOUTHINGTON, CONNECTICUT
MODIFIED 120' SELF SUPPORT TOWER

PROJECT No:	37522-0019.001.8800
DRAWN BY:	BJH
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GUSSET WELDMENT REPLACEMENT

S-5

37522-0019.001.DWG

Exhibit E

Mount Analysis

Date: **September 15, 2021**

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Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Jacob Montoya
Crown Castle
2055 S. Stearman Dr.
Chandler, AZ 85286
(480) 298-9641

Subject:	**Mount Analysis Report**	
Carrier Designation:	**Dish Network 5G**	
	Carrier Site Number:	BOBDL00061A
	Carrier Site Name:	CT-CCI-T-841298
Crown Castle Designation:	**Crown Castle BU Number:**	841298
	Crown Castle Site Name:	Southington Rogus
	Crown Castle JDE Job Number:	650050
	Crown Castle Order Number:	557181 Rev. 1
Engineering Firm Designation:	**Infinigy Engineering, PLLC Report Designation:** 1039-Z0001-B	
Site Data:	**250 Meriden Waterbury Turnpike, Southington, Hartford County, CT, 06489** **Latitude 41°33'24.54" Longitude -72°51'10.84"**	
Structure Information:	**Tower Height & Type:**	**120.0 ft Self Support**
	Mount Elevation:	**100.0 ft**
	Mount Type:	**8.0 ft Sector Frame**

Dear Jacob Montoya,

Infinigy Engineering, PLLC is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of Dish Network's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

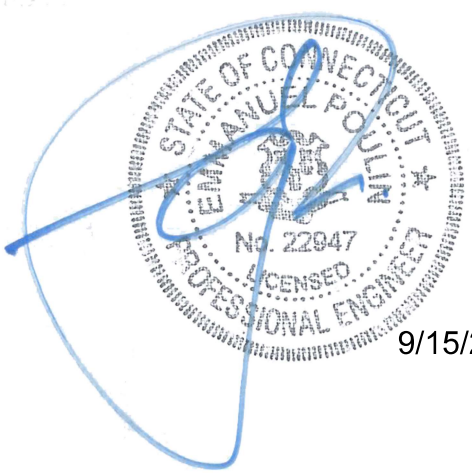
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Sector Frame **Sufficient**
***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

This analysis utilizes an ultimate 3-second gust wind speed of 118 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Robert Faber, E.I.T.

Respectfully Submitted by:
Emmanuel Poulin, P.E.
518-690-0790
structural@infinigy.com
CT PE License No. 22947



9/15/21

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3 sector 8.0 ft Sector Frame, designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	118 mph per ASCE 7-16 as allowed by Connecticut
Exposure Category:	B
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.184
Seismic S_1:	0.063
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
100.0	100.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Sector Frame (Commscope MTC3975083)
		3	FUJITSU	TA08025-B604	
		3	FUJITSU	TA08025-B605	
		1	RAYCAP	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	Dish Network Application	557181 Rev. 1	CCI Sites
Mount Manufacturer Drawings	Commscope	Part No. MTC3975083	Infinigy

3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

Infinigy Mount Analysis Tool V2.1.7, a tool internally developed by Infinigy, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B "Software Input Calculations".

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision B).

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) 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.
4) The analysis will be required to be revised 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.
5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A529 (GR 50)
HSS (Rectangular)	ASTM A500 (GR 46)
Pipe	ASTM A500 (GR 46)
Threaded Rod	ASTM A307

This analysis may be affected if any assumptions are not valid or have been made in error. Infinigy Engineering, PLLC should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Sector Frame, Worst Case Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Mount Pipe(s)	MP3	100.0	9.2	Pass
	Horizontal(s)	HOR1		10.1	Pass
	Standoff(s)	SA3		25.4	Pass
	Bracing	DIAG4		26.6	Pass
	Mount Connection(s)	--		30.4	Pass

Structure Rating (max from all components) =	30.4%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in "Appendix D – Additional Calculations" for detailed mount connection calculations.

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb)[2]	Notes
N38	Proposed	550.9	Leg	1.5"	2,777.0	1,2

Notes:
1) Tieback connection point is within 25% of either end of the connected tower member
2) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

4.1) Recommendations

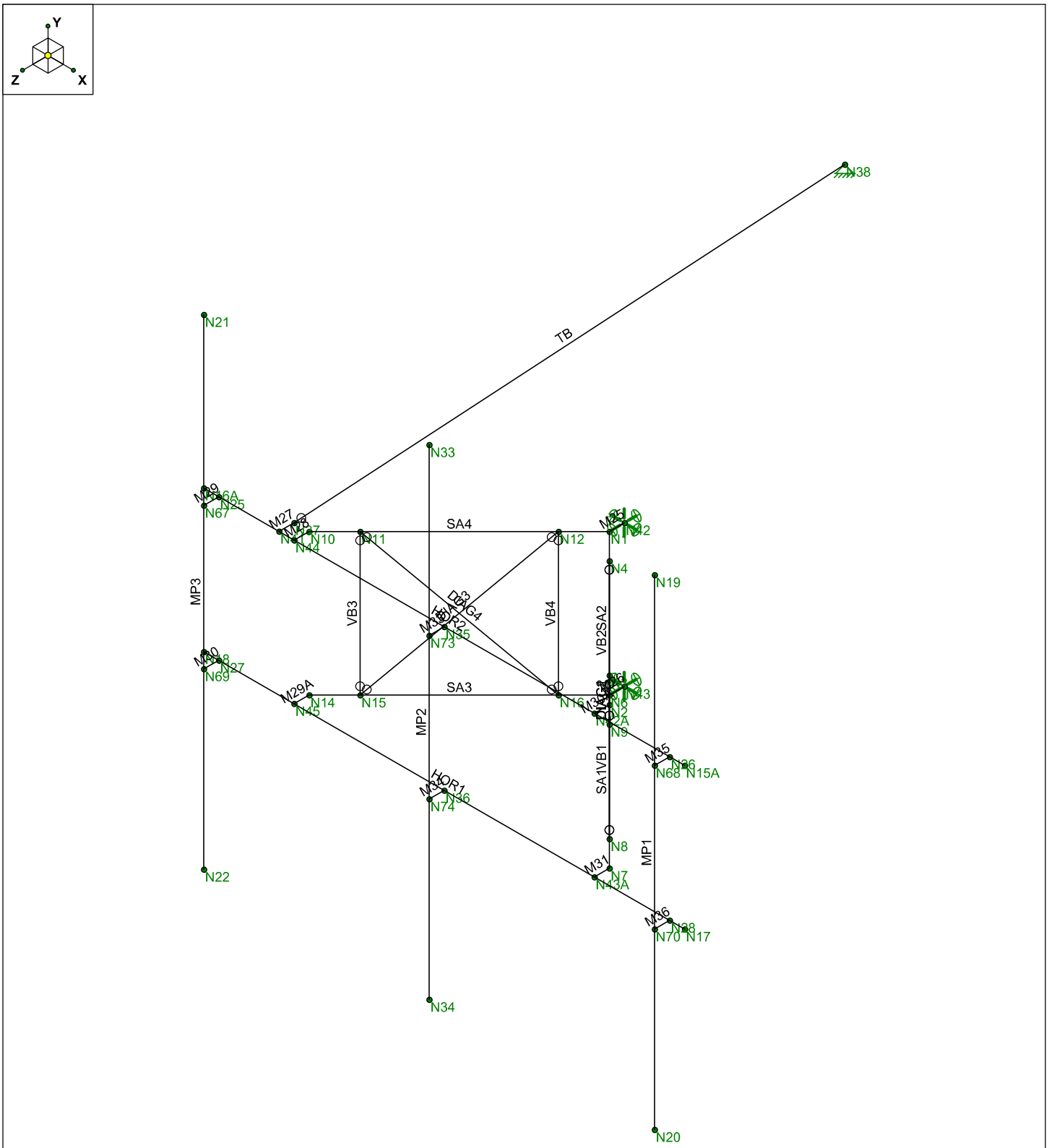
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope MTC3975083 (8' sector).

No structural modifications are required at this time, provided that the above-listed changes are implemented.

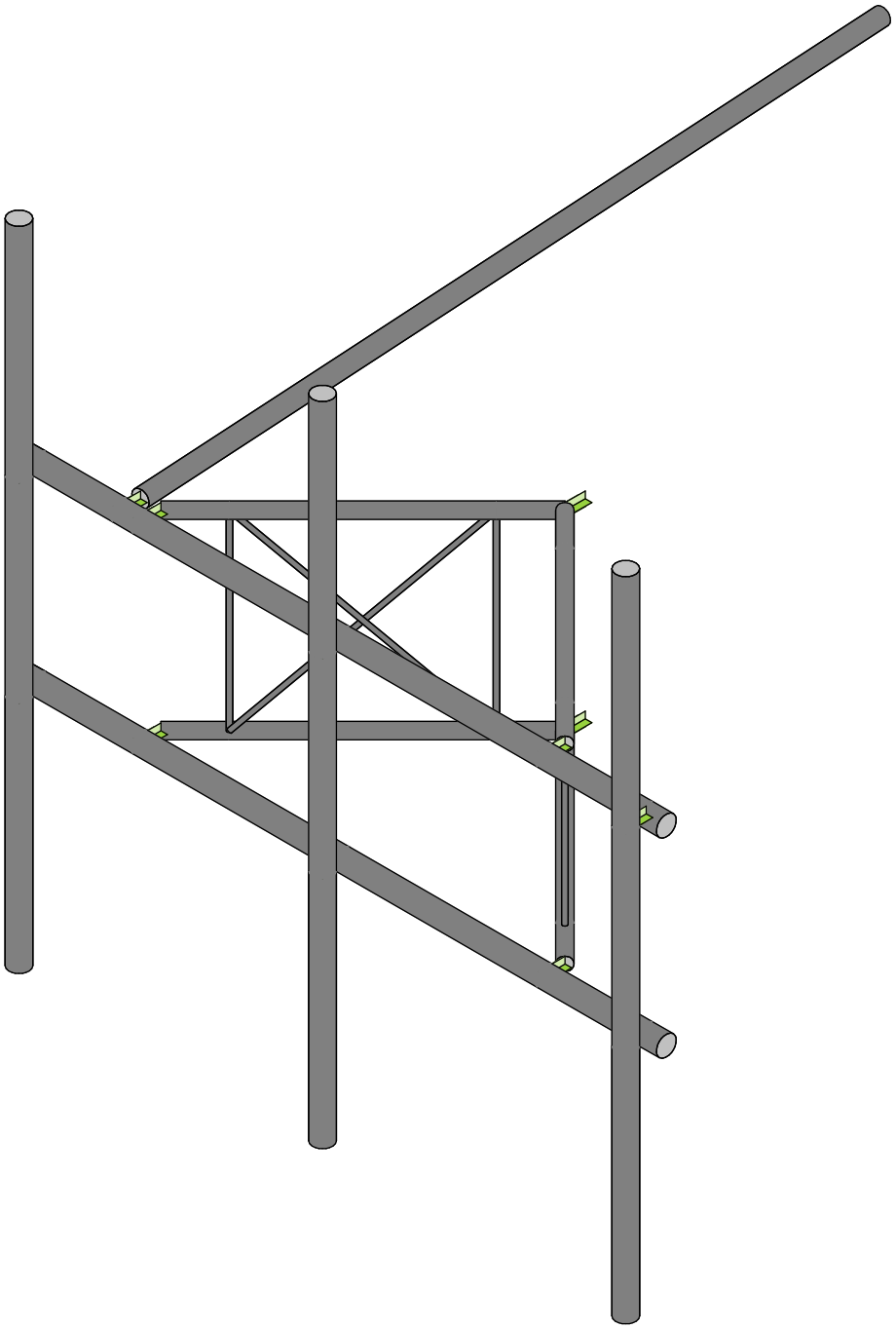
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Infinigy Engineering	841298	Wireframe
Robert Faber		Sept 15, 2021 at 10:53 AM
1039-Z0001-B		MTC3975083_loaded.r3d



Envelope Only Solution

Infinigy Engineering	841298	Render
Robert Faber		Sept 15, 2021 at 10:54 AM
1039-Z0001-B		MTC3975083_loaded.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Program Inputs

PROJECT INFORMATION	
Client:	Crown Castle
Carrier:	Dish Network
Engineer:	Robert Faber

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	B	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	343.35	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	100.00	ft
Tower Height AGL:	120.00	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):	0.988	*Rev H Only
Rooftop Speed-Up (K_s):	1.000	*Rev H Only
Topographic Factor (K_{zt}):	1.000	
Gust Effect Factor (G_h):	1.000	

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

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	118	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Flat Pressure:	66.103	psf
Round Pressure:	39.662	psf
Ice Wind Pressure:	7.121	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.184	g
1-Second Accel. (S_1):	0.063	g
Short-Period Design (S_{DS}):	0.196	
1-Second Design (S_{D1}):	0.101	
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	

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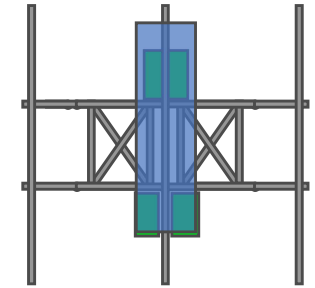
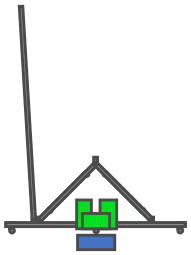
Infinigy Load Calculator V2.1.7

Program Inputs

ELEVATION VIEW



PLAN VIEW



INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

Infinigy Load Calculator V2.1.7

APPURTENANCE INFORMATION

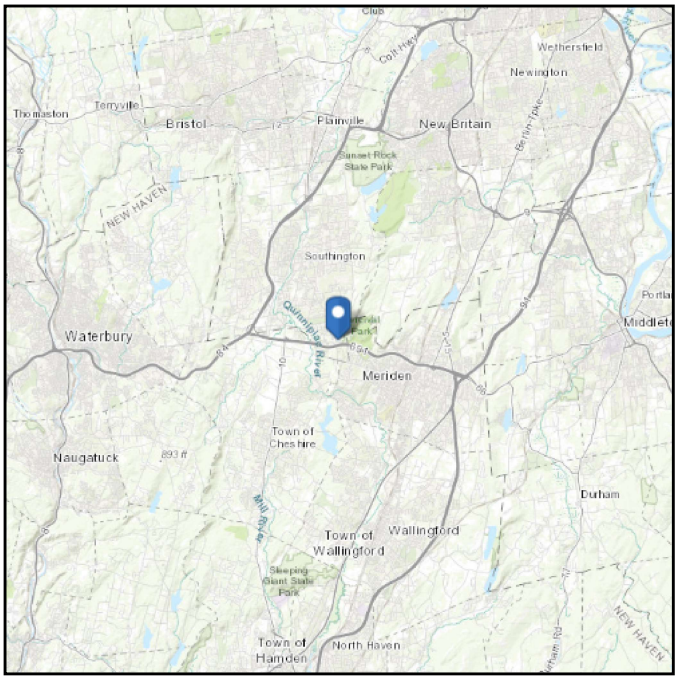
Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft^2)	EPA_T (ft^2)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)
JMA WIRELESS MX08FRO665-21	100.0	3	0.90	33.05	8.01	3.21	238.27	95.49	82.50	24.29	MP2
FUJITSU TA08025-B604	100.0	3	0.90	33.05	1.96	0.98	58.41	29.18	63.90	18.81	MP2
FUJITSU TA08025-B605	100.0	3	0.90	33.05	1.96	1.13	58.41	33.60	75.00	22.08	MP2
RAYCAP RDIDC-9181-PF-48	100.0	1	0.90	33.05	2.01	1.17	59.85	34.75	21.85	6.43	MP2

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 343.35 ft (NAVD 88)
Latitude: 41.556817
Longitude: -72.853011



Wind

Results:

Wind Speed:	118 Vmph per the State of Connecticut allowing ASCE-16 wind speeds
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	93 Vmph
100-year MRI	100 Vmph

Data Accessed: Wed Sep 15 2021

Date Source: ASCE/SEI 7-10 Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

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 7-10 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 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

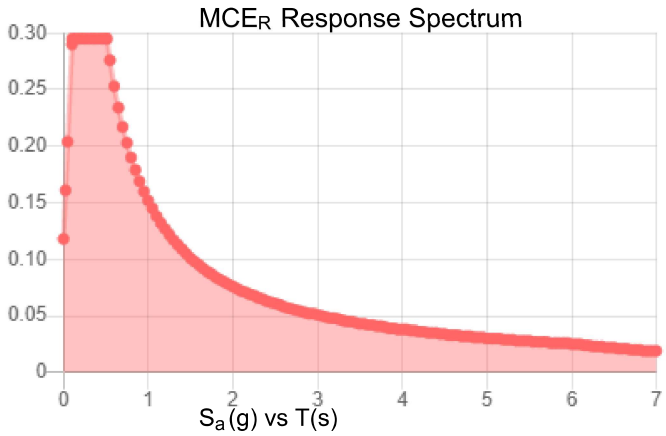
Seismic

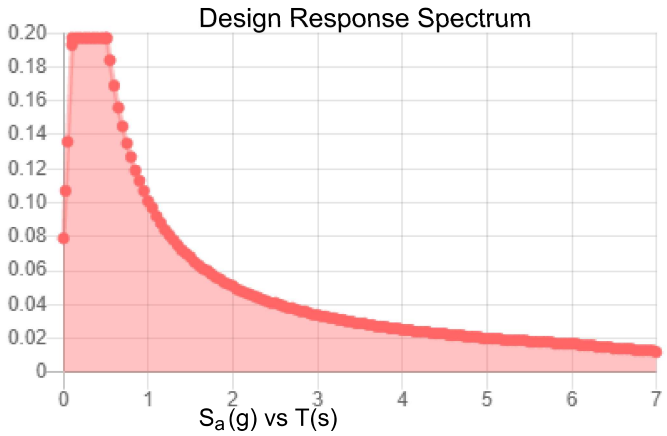
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.184	S_{DS} :	0.197
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.095
S_{MS} :	0.295	PGA_M :	0.151
S_{M1} :	0.152	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Sep 15 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Wed Sep 15 2021

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 50-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.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(de...	Section/Shape	Type	Design List	Material	Design Rules
1	SA2	N2	N1			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
2	SA1	N7	N6			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
3	VB1	N3	N8			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
4	VB2	N4	N9			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
5	DIAG1	N4	N8			Diagonal	VBrace	BAR	A529 Gr.50	Typical
6	DIAG2	N3	N9			Diagonal	VBrace	BAR	A529 Gr.50	Typical
7	SA4	N10	N1			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
8	SA3	N14	N6			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
9	VB3	N11	N15			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
10	VB4	N12	N16			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
11	DIAG3	N12	N15			Diagonal	VBrace	BAR	A529 Gr.50	Typical
12	DIAG4	N11	N16			Diagonal	VBrace	BAR	A529 Gr.50	Typical
13	HOR2	N16A	N15A			Face Horizontal	Beam	Pipe	A500 Gr.46	Typical
14	HOR1	N18	N17			Face Horizontal	Beam	Pipe	A500 Gr.46	Typical
15	MP3	N22	N21			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
16	MP1	N20	N19			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
17	MP2	N34	N33			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
18	TB	N37	N38			Tieback	Beam	Pipe	A500 Gr.46	Typical
19	M29	N25	N67			RIGID	None	None	RIGID	Typical
20	M30	N27	N69			RIGID	None	None	RIGID	Typical
21	M33	N35	N73			RIGID	None	None	RIGID	Typical
22	M34	N36	N74			RIGID	None	None	RIGID	Typical
23	M35	N26	N68			RIGID	None	None	RIGID	Typical
24	M36	N28	N70			RIGID	None	None	RIGID	Typical
25	M25	N1	N42			RIGID	None	None	RIGID	Typical
26	M26	N6	N43			RIGID	None	None	RIGID	Typical
27	M27	N37	N41			RIGID	None	None	RIGID	Typical
28	M28	N10	N44			RIGID	None	None	RIGID	Typical
29	M29A	N14	N45			RIGID	None	None	RIGID	Typical
30	M30A	N2	N42A			RIGID	None	None	RIGID	Typical
31	M31	N7	N43A			RIGID	None	None	RIGID	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	SA2	Standoff Ar...	42.4			Lbyy						Lateral
2	SA1	Standoff Ar...	42.4			Lbyy						Lateral
3	VB1	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
4	VB2	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
5	DIAG1	Diagonal	39.811			Lbyy			.7	.7		Lateral
6	DIAG2	Diagonal	39.811			Lbyy			.5	.5		Lateral
7	SA4	Standoff Ar...	42.4			Lbyy						Lateral
8	SA3	Standoff Ar...	42.4			Lbyy						Lateral
9	VB3	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
10	VB4	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
11	DIAG3	Diagonal	39.811			Lbyy			.7	.7		Lateral
12	DIAG4	Diagonal	39.811			Lbyy			.5	.5		Lateral
13	HOR2	Face Horizo...	96	Segment	Segment	Segment	Segment	Segme...				Lateral
14	HOR1	Face Horizo...	96			Lbyy						Lateral
15	MP3	Mount Pipe	96			Lbyy						Lateral
16	MP1	Mount Pipe	96			Lbyy						Lateral
17	MP2	Mount Pipe	96			Lbyy						Lateral
18	TB	Tieback	117.209									Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Face Horizontal	PIPE_2.5	Beam	Pipe	A500 Gr.46	Typical	1.61	1.45	1.45	2.89
2	Standoff Arms	PIPE_1.5	Beam	Pipe	A500 Gr.46	Typical	.749	.293	.293	.586
3	Diagonal	0.625" S.R.	VBrace	BAR	A529 Gr.50	Typical	.307	.007	.007	.015
4	Mount Pipe	PIPE_2.5	Column	Pipe	A500 Gr.46	Typical	1.61	1.45	1.45	2.89
5	Tieback	PIPE_2.0	Beam	Pipe	A500 Gr.46	Typical	1.02	.627	.627	1.25
6	Standoff Vertical	0.625" S.R.	VBrace	BAR	A529 Gr.50	Typical	.307	.007	.007	.015

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		13	39	0
3	Total General		13	39	0
4					
5	Hot Rolled Steel				
6	A500 Gr.46	PIPE_1.5	4	169.6	.036
7	A500 Gr.46	PIPE_2.5	5	480	.219
8	A500 Gr.46	PIPE_2.0	1	117.2	.034
9	A529 Gr.50	0.625" S.R.	8	272.4	.024
10	Total HR Steel		18	1039.3	.313

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL		-1			5			
2	Wind Load AZI 0	WLZ					10			
3	Wind Load AZI 30	None					10			
4	Wind Load AZI 60	None					10			
5	Wind Load AZI 90	WLX					10			
6	Wind Load AZI 120	None					10			
7	Wind Load AZI 150	None					10			
8	Wind Load AZI 180	None					10			
9	Wind Load AZI 210	None					10			
10	Wind Load AZI 240	None					10			
11	Wind Load AZI 270	None					10			
12	Wind Load AZI 300	None					10			
13	Wind Load AZI 330	None					10			
14	Distr. Wind Load Z	WLZ						31		
15	Distr. Wind Load X	WLX						31		
16	Ice Weight	OL1					5	31		
17	Ice Wind Load AZI 0	OL2					10			
18	Ice Wind Load AZI 30	None					10			
19	Ice Wind Load AZI 60	None					10			
20	Ice Wind Load AZI 90	OL3					10			
21	Ice Wind Load AZI 120	None					10			
22	Ice Wind Load AZI 150	None					10			
23	Ice Wind Load AZI 180	None					10			
24	Ice Wind Load AZI 210	None					10			
25	Ice Wind Load AZI 240	None					10			
26	Ice Wind Load AZI 270	None					10			
27	Ice Wind Load AZI 300	None					10			
28	Ice Wind Load AZI 330	None					10			
29	Distr. Ice Wind Load Z	OL2						31		
30	Distr. Ice Wind Load X	OL3						31		
31	Seismic Load Z	ELZ			-.294		5			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
32	Seismic Load X	ELX	-.294				5			
33	Service Live Loads	LL				1				
34	Maintenance Load 1	LL				1				
35	Maintenance Load 2	LL				1				
36	Maintenance Load 3	LL				1				

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Y	-41.25	6
2	MP2	Y	-41.25	78
3	MP2	Y	-63.9	%75
4	MP2	Y	-75	%75
5	MP2	Y	-21.85	%25

Member Point Loads (BLC 2 : Wind Load AZI 0)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	6
2	MP2	Z	-119.13	6
3	MP2	X	0	78
4	MP2	Z	-119.13	78
5	MP2	X	0	%75
6	MP2	Z	-58.41	%75
7	MP2	X	0	%75
8	MP2	Z	-58.41	%75
9	MP2	X	0	%25
10	MP2	Z	-59.85	%25

Member Point Loads (BLC 3 : Wind Load AZI 30)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-50.64	6
2	MP2	Z	-87.72	6
3	MP2	X	-50.64	78
4	MP2	Z	-87.72	78
5	MP2	X	-25.55	%75
6	MP2	Z	-44.25	%75
7	MP2	X	-26.1	%75
8	MP2	Z	-45.21	%75
9	MP2	X	-26.79	%25
10	MP2	Z	-46.39	%25

Member Point Loads (BLC 4 : Wind Load AZI 60)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-56.8	6
2	MP2	Z	-32.8	6
3	MP2	X	-56.8	78
4	MP2	Z	-32.8	78
5	MP2	X	-31.6	%75
6	MP2	Z	-18.25	%75
7	MP2	X	-34.47	%75
8	MP2	Z	-19.9	%75
9	MP2	X	-35.53	%25
10	MP2	Z	-20.51	%25

Member Point Loads (BLC 5 : Wind Load AZI 90)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-47.74	6
2	MP2	Z	0	6
3	MP2	X	-47.74	78
4	MP2	Z	0	78
5	MP2	X	-29.18	%75
6	MP2	Z	0	%75
7	MP2	X	-33.6	%75
8	MP2	Z	0	%75
9	MP2	X	-34.75	%25
10	MP2	Z	0	%25

Member Point Loads (BLC 6 : Wind Load AZI 120)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-56.8	6
2	MP2	Z	32.8	6
3	MP2	X	-56.8	78
4	MP2	Z	32.8	78
5	MP2	X	-31.6	%75
6	MP2	Z	18.25	%75
7	MP2	X	-34.47	%75
8	MP2	Z	19.9	%75
9	MP2	X	-35.53	%25
10	MP2	Z	20.51	%25

Member Point Loads (BLC 7 : Wind Load AZI 150)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-50.64	6
2	MP2	Z	87.72	6
3	MP2	X	-50.64	78
4	MP2	Z	87.72	78
5	MP2	X	-25.55	%75
6	MP2	Z	44.25	%75
7	MP2	X	-26.1	%75
8	MP2	Z	45.21	%75
9	MP2	X	-26.79	%25
10	MP2	Z	46.39	%25

Member Point Loads (BLC 8 : Wind Load AZI 180)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	6
2	MP2	Z	119.13	6
3	MP2	X	0	78
4	MP2	Z	119.13	78
5	MP2	X	0	%75
6	MP2	Z	58.41	%75
7	MP2	X	0	%75
8	MP2	Z	58.41	%75
9	MP2	X	0	%25
10	MP2	Z	59.85	%25

Member Point Loads (BLC 9 : Wind Load AZI 210)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	50.64	6
2	MP2	Z	87.72	6
3	MP2	X	50.64	78

Member Point Loads (BLC 9 : Wind Load AZI 210) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
4	MP2	Z	87.72	78
5	MP2	X	25.55	%75
6	MP2	Z	44.25	%75
7	MP2	X	26.1	%75
8	MP2	Z	45.21	%75
9	MP2	X	26.79	%25
10	MP2	Z	46.39	%25

Member Point Loads (BLC 10 : Wind Load AZI 240)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	56.8	6
2	MP2	Z	32.8	6
3	MP2	X	56.8	78
4	MP2	Z	32.8	78
5	MP2	X	31.6	%75
6	MP2	Z	18.25	%75
7	MP2	X	34.47	%75
8	MP2	Z	19.9	%75
9	MP2	X	35.53	%25
10	MP2	Z	20.51	%25

Member Point Loads (BLC 11 : Wind Load AZI 270)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	47.74	6
2	MP2	Z	0	6
3	MP2	X	47.74	78
4	MP2	Z	0	78
5	MP2	X	29.18	%75
6	MP2	Z	0	%75
7	MP2	X	33.6	%75
8	MP2	Z	0	%75
9	MP2	X	34.75	%25
10	MP2	Z	0	%25

Member Point Loads (BLC 12 : Wind Load AZI 300)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	56.8	6
2	MP2	Z	-32.8	6
3	MP2	X	56.8	78
4	MP2	Z	-32.8	78
5	MP2	X	31.6	%75
6	MP2	Z	-18.25	%75
7	MP2	X	34.47	%75
8	MP2	Z	-19.9	%75
9	MP2	X	35.53	%25
10	MP2	Z	-20.51	%25

Member Point Loads (BLC 13 : Wind Load AZI 330)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	50.64	6
2	MP2	Z	-87.72	6
3	MP2	X	50.64	78
4	MP2	Z	-87.72	78
5	MP2	X	25.55	%75
6	MP2	Z	-44.25	%75

Member Point Loads (BLC 13 : Wind Load AZI 330) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
7	MP2	X	26.1	%75
8	MP2	Z	-45.21	%75
9	MP2	X	26.79	%25
10	MP2	Z	-46.39	%25

Member Point Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Y	-136.993	6
2	MP2	Y	-136.993	78
3	MP2	Y	-67.112	%75
4	MP2	Y	-71.515	%75
5	MP2	Y	-70.477	%25

Member Point Loads (BLC 17 : Ice Wind Load AZI 0)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	6
2	MP2	Z	-16.84	6
3	MP2	X	0	78
4	MP2	Z	-16.84	78
5	MP2	X	0	%75
6	MP2	Z	-6.49	%75
7	MP2	X	0	%75
8	MP2	Z	-6.49	%75
9	MP2	X	0	%25
10	MP2	Z	-6.81	%25

Member Point Loads (BLC 18 : Ice Wind Load AZI 30)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-7.77	6
2	MP2	Z	-13.46	6
3	MP2	X	-7.77	78
4	MP2	Z	-13.46	78
5	MP2	X	-3.05	%75
6	MP2	Z	-5.28	%75
7	MP2	X	-3.08	%75
8	MP2	Z	-5.33	%75
9	MP2	X	-3.24	%25
10	MP2	Z	-5.61	%25

Member Point Loads (BLC 19 : Ice Wind Load AZI 60)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-11.21	6
2	MP2	Z	-6.47	6
3	MP2	X	-11.21	78
4	MP2	Z	-6.47	78
5	MP2	X	-4.6	%75
6	MP2	Z	-2.65	%75
7	MP2	X	-4.77	%75
8	MP2	Z	-2.75	%75
9	MP2	X	-5.04	%25
10	MP2	Z	-2.91	%25

Member Point Loads (BLC 20 : Ice Wind Load AZI 90)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]

Member Point Loads (BLC 20 : Ice Wind Load AZI 90) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-11.65	6
2	MP2	Z	0	6
3	MP2	X	-11.65	78
4	MP2	Z	0	78
5	MP2	X	-4.92	%75
6	MP2	Z	0	%75
7	MP2	X	-5.18	%75
8	MP2	Z	0	%75
9	MP2	X	-5.49	%25
10	MP2	Z	0	%25

Member Point Loads (BLC 21 : Ice Wind Load AZI 120)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-11.21	6
2	MP2	Z	6.47	6
3	MP2	X	-11.21	78
4	MP2	Z	6.47	78
5	MP2	X	-4.6	%75
6	MP2	Z	2.65	%75
7	MP2	X	-4.77	%75
8	MP2	Z	2.75	%75
9	MP2	X	-5.04	%25
10	MP2	Z	2.91	%25

Member Point Loads (BLC 22 : Ice Wind Load AZI 150)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-7.77	6
2	MP2	Z	13.46	6
3	MP2	X	-7.77	78
4	MP2	Z	13.46	78
5	MP2	X	-3.05	%75
6	MP2	Z	5.28	%75
7	MP2	X	-3.08	%75
8	MP2	Z	5.33	%75
9	MP2	X	-3.24	%25
10	MP2	Z	5.61	%25

Member Point Loads (BLC 23 : Ice Wind Load AZI 180)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	6
2	MP2	Z	16.84	6
3	MP2	X	0	78
4	MP2	Z	16.84	78
5	MP2	X	0	%75
6	MP2	Z	6.49	%75
7	MP2	X	0	%75
8	MP2	Z	6.49	%75
9	MP2	X	0	%25
10	MP2	Z	6.81	%25

Member Point Loads (BLC 24 : Ice Wind Load AZI 210)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	7.77	6
2	MP2	Z	13.46	6
3	MP2	X	7.77	78

Member Point Loads (BLC 24 : Ice Wind Load AZI 210) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
4	MP2	Z	13.46	78
5	MP2	X	3.05	%75
6	MP2	Z	5.28	%75
7	MP2	X	3.08	%75
8	MP2	Z	5.33	%75
9	MP2	X	3.24	%25
10	MP2	Z	5.61	%25

Member Point Loads (BLC 25 : Ice Wind Load AZI 240)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	11.21	6
2	MP2	Z	6.47	6
3	MP2	X	11.21	78
4	MP2	Z	6.47	78
5	MP2	X	4.6	%75
6	MP2	Z	2.65	%75
7	MP2	X	4.77	%75
8	MP2	Z	2.75	%75
9	MP2	X	5.04	%25
10	MP2	Z	2.91	%25

Member Point Loads (BLC 26 : Ice Wind Load AZI 270)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	11.65	6
2	MP2	Z	0	6
3	MP2	X	11.65	78
4	MP2	Z	0	78
5	MP2	X	4.92	%75
6	MP2	Z	0	%75
7	MP2	X	5.18	%75
8	MP2	Z	0	%75
9	MP2	X	5.49	%25
10	MP2	Z	0	%25

Member Point Loads (BLC 27 : Ice Wind Load AZI 300)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	11.21	6
2	MP2	Z	-6.47	6
3	MP2	X	11.21	78
4	MP2	Z	-6.47	78
5	MP2	X	4.6	%75
6	MP2	Z	-2.65	%75
7	MP2	X	4.77	%75
8	MP2	Z	-2.75	%75
9	MP2	X	5.04	%25
10	MP2	Z	-2.91	%25

Member Point Loads (BLC 28 : Ice Wind Load AZI 330)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	7.77	6
2	MP2	Z	-13.46	6
3	MP2	X	7.77	78
4	MP2	Z	-13.46	78
5	MP2	X	3.05	%75
6	MP2	Z	-5.28	%75

Member Point Loads (BLC 28 : Ice Wind Load AZI 330) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
7	MP2	X	3.08	%75
8	MP2	Z	-5.33	%75
9	MP2	X	3.24	%25
10	MP2	Z	-5.61	%25

Member Point Loads (BLC 31 : Seismic Load Z)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Z	-12.144	6
2	MP2	Z	-12.144	78
3	MP2	Z	-18.812	%75
4	MP2	Z	-22.08	%75
5	MP2	Z	-6.433	%25

Member Point Loads (BLC 32 : Seismic Load X)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-12.144	6
2	MP2	X	-12.144	78
3	MP2	X	-18.812	%75
4	MP2	X	-22.08	%75
5	MP2	X	-6.433	%25

Member Distributed Loads (BLC 14 : Distr. Wind Load Z)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	SA2	SZ	-39.662	-39.662	0	%100
2	SA1	SZ	-39.662	-39.662	0	%100
3	VB1	SZ	-39.662	-39.662	0	%100
4	VB2	SZ	-39.662	-39.662	0	%100
5	DIAG1	SZ	-39.662	-39.662	0	%100
6	DIAG2	SZ	-39.662	-39.662	0	%100
7	SA4	SZ	-39.662	-39.662	0	%100
8	SA3	SZ	-39.662	-39.662	0	%100
9	VB3	SZ	-39.662	-39.662	0	%100
10	VB4	SZ	-39.662	-39.662	0	%100
11	DIAG3	SZ	-39.662	-39.662	0	%100
12	DIAG4	SZ	-39.662	-39.662	0	%100
13	HOR2	SZ	-39.662	-39.662	0	%100
14	HOR1	SZ	-39.662	-39.662	0	%100
15	MP3	SZ	-39.662	-39.662	0	%100
16	MP1	SZ	-39.662	-39.662	0	%100
17	MP2	SZ	-39.662	-39.662	0	%100
18	TB	SZ	-39.662	-39.662	0	%100
19	M29	SZ	0	0	0	%100
20	M30	SZ	0	0	0	%100
21	M33	SZ	0	0	0	%100
22	M34	SZ	0	0	0	%100
23	M35	SZ	0	0	0	%100
24	M36	SZ	0	0	0	%100
25	M25	SZ	0	0	0	%100
26	M26	SZ	0	0	0	%100
27	M27	SZ	0	0	0	%100
28	M28	SZ	0	0	0	%100
29	M29A	SZ	0	0	0	%100
30	M30A	SZ	0	0	0	%100
31	M31	SZ	0	0	0	%100

Member Distributed Loads (BLC 15 : Distr. Wind Load X)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	SA2	SX	-39.662	-39.662	0	%100
2	SA1	SX	-39.662	-39.662	0	%100
3	VB1	SX	-39.662	-39.662	0	%100
4	VB2	SX	-39.662	-39.662	0	%100
5	DIAG1	SX	-39.662	-39.662	0	%100
6	DIAG2	SX	-39.662	-39.662	0	%100
7	SA4	SX	-39.662	-39.662	0	%100
8	SA3	SX	-39.662	-39.662	0	%100
9	VB3	SX	-39.662	-39.662	0	%100
10	VB4	SX	-39.662	-39.662	0	%100
11	DIAG3	SX	-39.662	-39.662	0	%100
12	DIAG4	SX	-39.662	-39.662	0	%100
13	HOR2	SX	-39.662	-39.662	0	%100
14	HOR1	SX	-39.662	-39.662	0	%100
15	MP3	SX	-39.662	-39.662	0	%100
16	MP1	SX	-39.662	-39.662	0	%100
17	MP2	SX	-39.662	-39.662	0	%100
18	TB	SX	-39.662	-39.662	0	%100
19	M29	SX	0	0	0	%100
20	M30	SX	0	0	0	%100
21	M33	SX	0	0	0	%100
22	M34	SX	0	0	0	%100
23	M35	SX	0	0	0	%100
24	M36	SX	0	0	0	%100
25	M25	SX	0	0	0	%100
26	M26	SX	0	0	0	%100
27	M27	SX	0	0	0	%100
28	M28	SX	0	0	0	%100
29	M29A	SX	0	0	0	%100
30	M30A	SX	0	0	0	%100
31	M31	SX	0	0	0	%100

Member Distributed Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	SA2	Y	-7.321	-7.321	0	%100
2	SA1	Y	-7.321	-7.321	0	%100
3	VB1	Y	-4.711	-4.711	0	%100
4	VB2	Y	-4.711	-4.711	0	%100
5	DIAG1	Y	-4.711	-4.711	0	%100
6	DIAG2	Y	-4.711	-4.711	0	%100
7	SA4	Y	-7.321	-7.321	0	%100
8	SA3	Y	-7.321	-7.321	0	%100
9	VB3	Y	-4.711	-4.711	0	%100
10	VB4	Y	-4.711	-4.711	0	%100
11	DIAG3	Y	-4.711	-4.711	0	%100
12	DIAG4	Y	-4.711	-4.711	0	%100
13	HOR2	Y	-9.318	-9.318	0	%100
14	HOR1	Y	-9.318	-9.318	0	%100
15	MP3	Y	-9.318	-9.318	0	%100
16	MP1	Y	-9.318	-9.318	0	%100
17	MP2	Y	-9.318	-9.318	0	%100
18	TB	Y	-8.294	-8.294	0	%100
19	M29	Y	-3.431	-3.431	0	%100
20	M30	Y	-3.431	-3.431	0	%100
21	M33	Y	-3.431	-3.431	0	%100
22	M34	Y	-3.431	-3.431	0	%100

Member Distributed Loads (BLC 16 : Ice Weight) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
23	M35	Y	-3.431	-3.431	0	%100
24	M36	Y	-3.431	-3.431	0	%100
25	M25	Y	-3.431	-3.431	0	%100
26	M26	Y	-3.431	-3.431	0	%100
27	M27	Y	-3.431	-3.431	0	%100
28	M28	Y	-3.431	-3.431	0	%100
29	M29A	Y	-3.431	-3.431	0	%100
30	M30A	Y	-3.431	-3.431	0	%100
31	M31	Y	-3.431	-3.431	0	%100

Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	SA2	SZ	-19.683	-19.683	0	%100
2	SA1	SZ	-19.683	-19.683	0	%100
3	VB1	SZ	-45.31	-45.31	0	%100
4	VB2	SZ	-45.31	-45.31	0	%100
5	DIAG1	SZ	-45.31	-45.31	0	%100
6	DIAG2	SZ	-45.31	-45.31	0	%100
7	SA4	SZ	-19.683	-19.683	0	%100
8	SA3	SZ	-19.683	-19.683	0	%100
9	VB3	SZ	-45.31	-45.31	0	%100
10	VB4	SZ	-45.31	-45.31	0	%100
11	DIAG3	SZ	-45.31	-45.31	0	%100
12	DIAG4	SZ	-45.31	-45.31	0	%100
13	HOR2	SZ	-15.423	-15.423	0	%100
14	HOR1	SZ	-15.423	-15.423	0	%100
15	MP3	SZ	-15.423	-15.423	0	%100
16	MP1	SZ	-15.423	-15.423	0	%100
17	MP2	SZ	-15.423	-15.423	0	%100
18	TB	SZ	-17.171	-17.171	0	%100
19	M29	SZ	0	0	0	%100
20	M30	SZ	0	0	0	%100
21	M33	SZ	0	0	0	%100
22	M34	SZ	0	0	0	%100
23	M35	SZ	0	0	0	%100
24	M36	SZ	0	0	0	%100
25	M25	SZ	0	0	0	%100
26	M26	SZ	0	0	0	%100
27	M27	SZ	0	0	0	%100
28	M28	SZ	0	0	0	%100
29	M29A	SZ	0	0	0	%100
30	M30A	SZ	0	0	0	%100
31	M31	SZ	0	0	0	%100

Member Distributed Loads (BLC 30 : Distr. Ice Wind Load X)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	SA2	SX	-19.683	-19.683	0	%100
2	SA1	SX	-19.683	-19.683	0	%100
3	VB1	SX	-45.31	-45.31	0	%100
4	VB2	SX	-45.31	-45.31	0	%100
5	DIAG1	SX	-45.31	-45.31	0	%100
6	DIAG2	SX	-45.31	-45.31	0	%100
7	SA4	SX	-19.683	-19.683	0	%100
8	SA3	SX	-19.683	-19.683	0	%100
9	VB3	SX	-45.31	-45.31	0	%100
10	VB4	SX	-45.31	-45.31	0	%100

Member Distributed Loads (BLC 30 : Distr. Ice Wind Load X) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
11	DIAG3	SX	-45.31	-45.31	0	%100
12	DIAG4	SX	-45.31	-45.31	0	%100
13	HOR2	SX	-15.423	-15.423	0	%100
14	HOR1	SX	-15.423	-15.423	0	%100
15	MP3	SX	-15.423	-15.423	0	%100
16	MP1	SX	-15.423	-15.423	0	%100
17	MP2	SX	-15.423	-15.423	0	%100
18	TB	SX	-17.171	-17.171	0	%100
19	M29	SX	0	0	0	%100
20	M30	SX	0	0	0	%100
21	M33	SX	0	0	0	%100
22	M34	SX	0	0	0	%100
23	M35	SX	0	0	0	%100
24	M36	SX	0	0	0	%100
25	M25	SX	0	0	0	%100
26	M26	SX	0	0	0	%100
27	M27	SX	0	0	0	%100
28	M28	SX	0	0	0	%100
29	M29A	SX	0	0	0	%100
30	M30A	SX	0	0	0	%100
31	M31	SX	0	0	0	%100

Load Combinations

	Description	So..	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
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	.866	15	.5												
4	1.2DL + 1WL AZI 60	Yes	Y		1	1.2	4	1	14	.5	15	.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	-.5	15	.866												
7	1.2DL + 1WL AZI 150	Yes	Y		1	1.2	7	1	14	-.866	15	.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	-.866	15	-.5												
10	1.2DL + 1WL AZI 240	Yes	Y		1	1.2	10	1	14	-.5	15	-.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	.5	15	-.866												
13	1.2DL + 1WL AZI 330	Yes	Y		1	1.2	13	1	14	.866	15	-.5												
14	0.9DL + 1WL AZI 0	Yes	Y		1	.9	2	1	14	1	15													
15	0.9DL + 1WL AZI 30	Yes	Y		1	.9	3	1	14	.866	15	.5												
16	0.9DL + 1WL AZI 60	Yes	Y		1	.9	4	1	14	.5	15	.866												
17	0.9DL + 1WL AZI 90	Yes	Y		1	.9	5	1	14		15	1												
18	0.9DL + 1WL AZI 120	Yes	Y		1	.9	6	1	14	-.5	15	.866												
19	0.9DL + 1WL AZI 150	Yes	Y		1	.9	7	1	14	-.866	15	.5												
20	0.9DL + 1WL AZI 180	Yes	Y		1	.9	8	1	14	-1	15													
21	0.9DL + 1WL AZI 210	Yes	Y		1	.9	9	1	14	-.866	15	-.5												
22	0.9DL + 1WL AZI 240	Yes	Y		1	.9	10	1	14	-.5	15	-.866												
23	0.9DL + 1WL AZI 270	Yes	Y		1	.9	11	1	14		15	-1												
24	0.9DL + 1WL AZI 300	Yes	Y		1	.9	12	1	14	.5	15	-.866												
25	0.9DL + 1WL AZI 330	Yes	Y		1	.9	13	1	14	.866	15	-.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											
28	1.2D + 1.0Di +1.0Wi AZI 30	Yes	Y		1	1.2	16	1	18	1	29	.866	30	.5										
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y		1	1.2	16	1	19	1	29	.5	30	.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 ...	Yes	Y		1	1.2	16	1	21	1	29	-.5	30	.866										

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
32	1.2D + 1.0Di +1.0Wi AZI ...	Yes	Y		1	1.2	16	1	22	1	29	-.866	30	.5												
33	1.2D + 1.0Di +1.0Wi AZI ...	Yes	Y		1	1.2	16	1	23	1	29	-1	30													
34	1.2D + 1.0Di +1.0Wi AZI ...	Yes	Y		1	1.2	16	1	24	1	29	-.866	30	-.5												
35	1.2D + 1.0Di +1.0Wi AZI ...	Yes	Y		1	1.2	16	1	25	1	29	-.5	30	-.866												
36	1.2D + 1.0Di +1.0Wi AZI ...	Yes	Y		1	1.2	16	1	26	1	29		30	-1												
37	1.2D + 1.0Di +1.0Wi AZI ...	Yes	Y		1	1.2	16	1	27	1	29	.5	30	-.866												
38	1.2D + 1.0Di +1.0Wi AZI ...	Yes	Y		1	1.2	16	1	28	1	29	.866	30	-.5												
39	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	1	32																	
40	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	.866	32	.5																
41	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	.5	32	.866																
42	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31		32	1																
43	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	-.5	32	.866																
44	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	-.866	32	.5																
45	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	-1	32																	
46	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	-.866	32	-.5																
47	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	-.5	32	-.866																
48	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31		32	-1																
49	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	.5	32	-.866																
50	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	.866	32	-.5																
51	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31	1	32																	
52	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31	.866	32	.5																
53	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31	.5	32	.866																
54	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31		32	1																
55	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31	-.5	32	.866																
56	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31	-.866	32	.5																
57	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31	-1	32																	
58	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31	-.866	32	-.5																
59	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31	-.5	32	-.866																
60	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31		32	-1																
61	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31	.5	32	-.866																
62	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.861	31	.866	32	-.5																
63	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	2	.259	14	.259	15		33	1.5												
64	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	3	.259	14	.224	15	.129	33	1.5												
65	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	4	.259	14	.129	15	.224	33	1.5												
66	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	5	.259	14		15	.259	33	1.5												
67	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	6	.259	14	-.129	15	.224	33	1.5												
68	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	7	.259	14	-.224	15	.129	33	1.5												
69	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	8	.259	14	-.259	15		33	1.5												
70	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	9	.259	14	-.224	15	-.129	33	1.5												
71	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	10	.259	14	-.129	15	-.224	33	1.5												
72	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	11	.259	14		15	-.259	33	1.5												
73	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	12	.259	14	.129	15	-.224	33	1.5												
74	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	13	.259	14	.224	15	-.129	33	1.5												
75	1.2DL + 1.5LL	Yes	Y		1	1.2	33	1.5																		
76	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	2	.065	14	.065	15													
77	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	3	.065	14	.056	15	.032												
78	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	4	.065	14	.032	15	.056												
79	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	5	.065	14		15	.065												
80	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	6	.065	14	-.032	15	.056												
81	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	7	.065	14	-.056	15	.032												
82	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	8	.065	14	-.065	15													
83	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	9	.065	14	-.056	15	-.032												
84	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	10	.065	14	-.032	15	-.056												
85	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	11	.065	14		15	-.065												
86	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	12	.065	14	.032	15	-.056												
87	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	13	.065	14	.056	15	-.032												
88	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	2	.065	14	.065	15													

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
89	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	3	.065	14	.056	15	.032										
90	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	4	.065	14	.032	15	.056										
91	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	5	.065	14		15	.065										
92	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	6	.065	14	-.032	15	.056										
93	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	7	.065	14	-.056	15	.032										
94	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	8	.065	14	-.065	15											
95	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	9	.065	14	-.056	15	-.032										
96	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	10	.065	14	-.032	15	-.056										
97	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	11	.065	14		15	-.065										
98	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	12	.065	14	.032	15	-.056										
99	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	13	.065	14	.056	15	-.032										
100	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	2	.065	14	.065	15											
101	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	3	.065	14	.056	15	.032										
102	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	4	.065	14	.032	15	.056										
103	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	5	.065	14		15	.065										
104	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	6	.065	14	-.032	15	.056										
105	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	7	.065	14	-.056	15	.032										
106	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	8	.065	14	-.065	15											
107	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	9	.065	14	-.056	15	-.032										
108	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	10	.065	14	-.032	15	-.056										
109	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	11	.065	14		15	-.065										
110	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	12	.065	14	.032	15	-.056										

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	...	LC	phi*...	phi*...	phi*...	phi*...	Cb	Eqn
1	DIAG4	0.625"..	.266	20.32	86	.004	0		34	399...	13815	134.4	134.4	1.1...	H1...
2	DIAG2	0.625"..	.260	20.32	89	.004	0		32	399...	13815	134.4	134.4	1.1...	H1...
3	SA3	PIPE_...	.254	42.4	87	.076	7.067		83	227...	310...	145...	145...	2.4...	H1...
4	SA1	PIPE_...	.249	42.4	89	.075	7.067		93	227...	310...	145...	145...	2.4...	H1...
5	SA4	PIPE_...	.243	42.4	81	.071	42.4		86	227...	310...	145...	145...	2.4...	H1...
6	SA2	PIPE_...	.237	42.4	93	.070	42.4		90	227...	310...	145...	145...	2.4...	H1...
7	HOR1	PIPE_...	.101	48	108	.085	18		86	334...	66654	472...	472...	1.5...	H1...
8	HOR2	PIPE_...	.093	48	101	.070	18		80	623...	66654	472...	472...	2.2...	H1...
9	MP3	PIPE_...	.092	63	81	.023	35		87	334...	66654	472...	472...	4.2...	H1...
10	MP1	PIPE_...	.092	63	95	.022	35		89	334...	66654	472...	472...	4.3...	H1...
11	DIAG3	0.625"..	.080	19.905	37	.004	0		28	203...	13815	134.4	134.4	1.1...	H1...
12	DIAG1	0.625"..	.078	19.905	29	.004	39.811		38	203...	13815	134.4	134.4	1.1...	H1...
13	MP2	PIPE_...	.078	34	8	.020	63		85	334...	66654	472...	472...	3.3	H1...
14	TB	PIPE_...	.072	58.605	30	.005	117.209		36	103...	42228	245...	245...	1.1...	H1...
15	VB3	0.625"..	.018	14.15	3	.005	0		78	467...	13815	134.4	134.4	1	H1...
16	VB1	0.625"..	.016	14.15	2	.005	0		78	467...	13815	134.4	134.4	1	H1...
17	VB2	0.625"..	.015	14.15	20	.014	0		86	467...	13815	134.4	134.4	1	H1...
18	VB4	0.625"..	.015	14.15	20	.013	0		90	467...	13815	134.4	134.4	1	H1...

APPENDIX D

ADDITIONAL CALCUATIONS

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	Southington Rogus
Site Number:	841298
Connection Description:	Sector Frame to Self Support

MAXIMUM BOLT LOADS		
Bolt Tension:	3087.30	lbs
Bolt Shear:	843.25	lbs

WORST CASE BOLT LOADS[1]		
Bolt Tension:	3087.30	lbs
Bolt Shear:	454.53	lbs

BOLT PROPERTIES		
Bolt Type:	Threaded Rod	-
Bolt Diameter:	0.625	in
Bolt Grade:	A307	-
# of Threaded Rods:	2	-
Threads Excluded?	No	-

[1] *Worst case bolt loads correspond to Load combination #31 on member M25 in RISA-3D, which causes the maximum demand on the bolts.*

Member Information
J nodes of M25, M26

BOLT CHECK		
Tensile Strength	10170.07	
Shear Strength	6902.91	
Max Tensile Usage	30.4%	
Max Shear Usage	12.2%	
Interaction Check (Worst Case)	0.10	***≤1.05***
Result	Pass	

Exhibit F

Power Density/RF Emissions Report

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: 841298

BOBDL00061A
250 Meriden Waterbury Turnpike
Southington, Connecticut 06489

January 25, 2022

EBI Project Number: 6222000659

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**11.14%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

January 25, 2022

Dish Wireless

Emissions Analysis for Site: 841298 - BOBDL00061A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **250 Meriden Waterbury Turnpike** in **Southington, 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 250 Meriden Waterbury Turnpike in Southington, 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) 4 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) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 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.

4) 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.

5) A conservative roof attenuation factor of 10 dB, in which a radiofrequency signal is reduced by a factor of 10 due to intervening roof building materials, was also included. For purposes of this analysis, it is assumed that the roof building material is comprised of a poured concrete and steel underlayment with a rubber fabric roof membrane.

6) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 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 100 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 / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz
Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts
ERP (W):	3,065.51	ERP (W):	3,065.51	ERP (W):	3,065.51
Antenna A1 MPE %:	**1.79%**	Antenna B1 MPE %:	**1.79%**	Antenna C1 MPE %:	**1.79%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.79%
AT&T	6.56%
Various Others	2.79%
Site Total MPE % :	11.14%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.79%
Dish Wireless Sector B Total:	1.79%
Dish Wireless Sector C Total:	1.79%
Site Total MPE % :	11.14%

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	223.68	100.0	3.64	600 MHz n71	400	0.91%
Dish Wireless 1900 MHz n70	4	542.70	100.0	8.83	1900 MHz n70	1000	0.88%
						Total:	**1.79%**

• 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:	1.79%
Sector B:	1.79%
Sector C:	1.79%
Dish Wireless Maximum MPE % (Sector A):	1.79%
Site Total:	11.14%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **11.14%** 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.

Exhibit G

Letter of Authorization

4545 E River Rd, Suite 320
West Henrietta, NY 14586

Phone: (585) 445-5896
Fax: (724) 416-4461
www.crowncastle.com

Crown Castle Letter of Authorization

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

Re: Tower Share Application
Crown Castle telecommunications site at:
250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON, CT 06489

CCATT LLC ("Crown Castle") hereby authorizes DISH Wireless LLC, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the CT - CONNECTICUT SITING COUNCIL for the existing wireless communications site described below:

Crown Site ID/Name: **841298/SOUTHINGTON ROGUS**
Customer Site ID: **BOBDL00061A/CT-CCI-T-841298**
Site Address: **250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON, CT 06489**

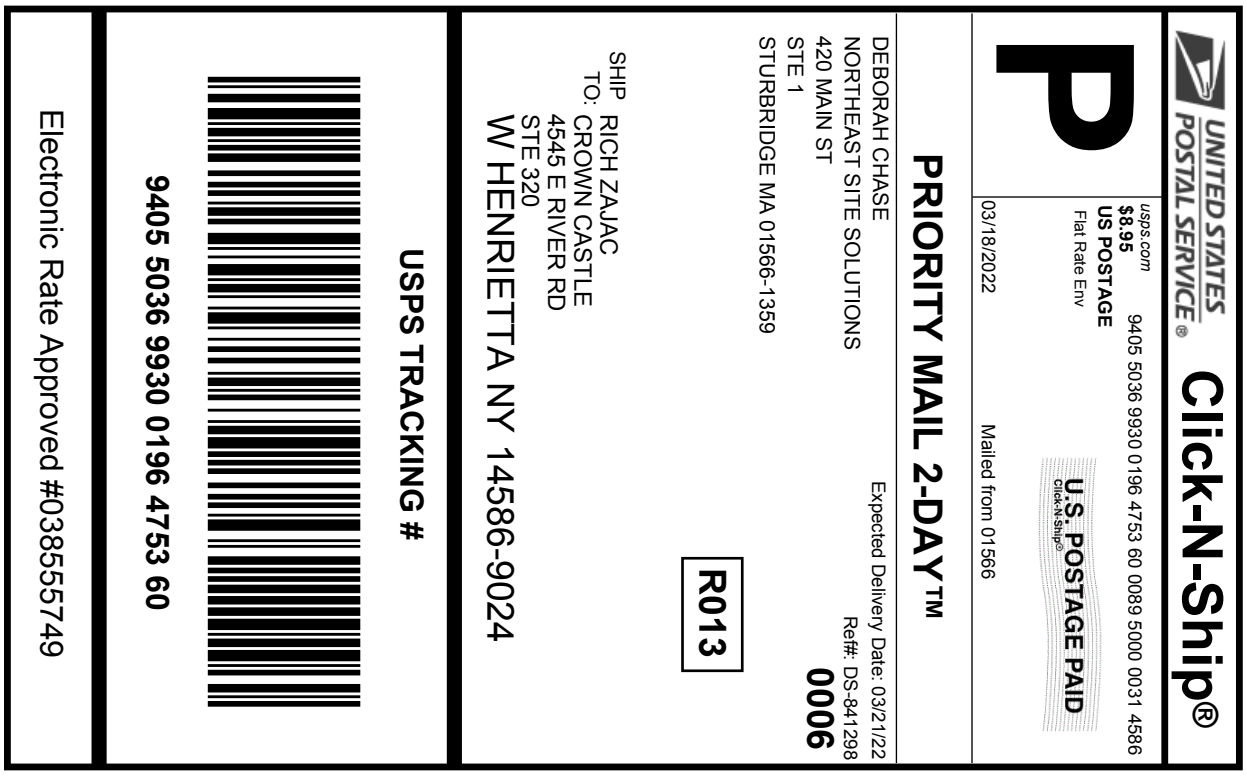
Crown Castle

By: _____ Date: 3/15/2022

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



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Instructions

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USPS TRACKING # :
9405 5036 9930 0196 4753 60

Trans. #:	559126796
Print Date:	03/18/2022
Ship Date:	03/18/2022
Expected Delivery Date:	03/21/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: DS-841298

To: RICH ZAJAC
CROWN CASTLE
4545 E RIVER RD
STE 320
W HENRIETTA NY 14586-9024

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

Thank you for shipping with the United States Postal Service!
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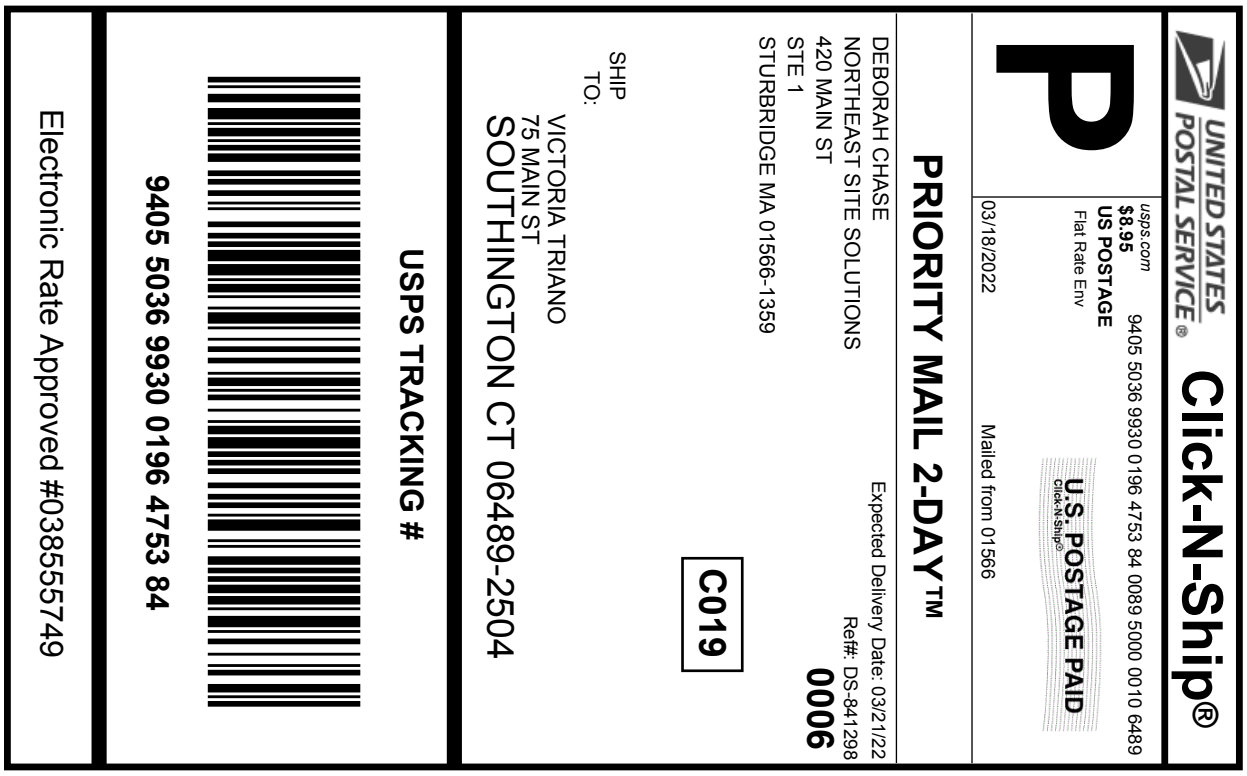

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0196 4753 84

Trans. #:	559126796
Print Date:	03/18/2022
Ship Date:	03/18/2022
Expected Delivery Date:	03/21/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: DS-841298

To: VICTORIA TRIANO
75 MAIN ST
SOUTHINGTON CT 06489-2504

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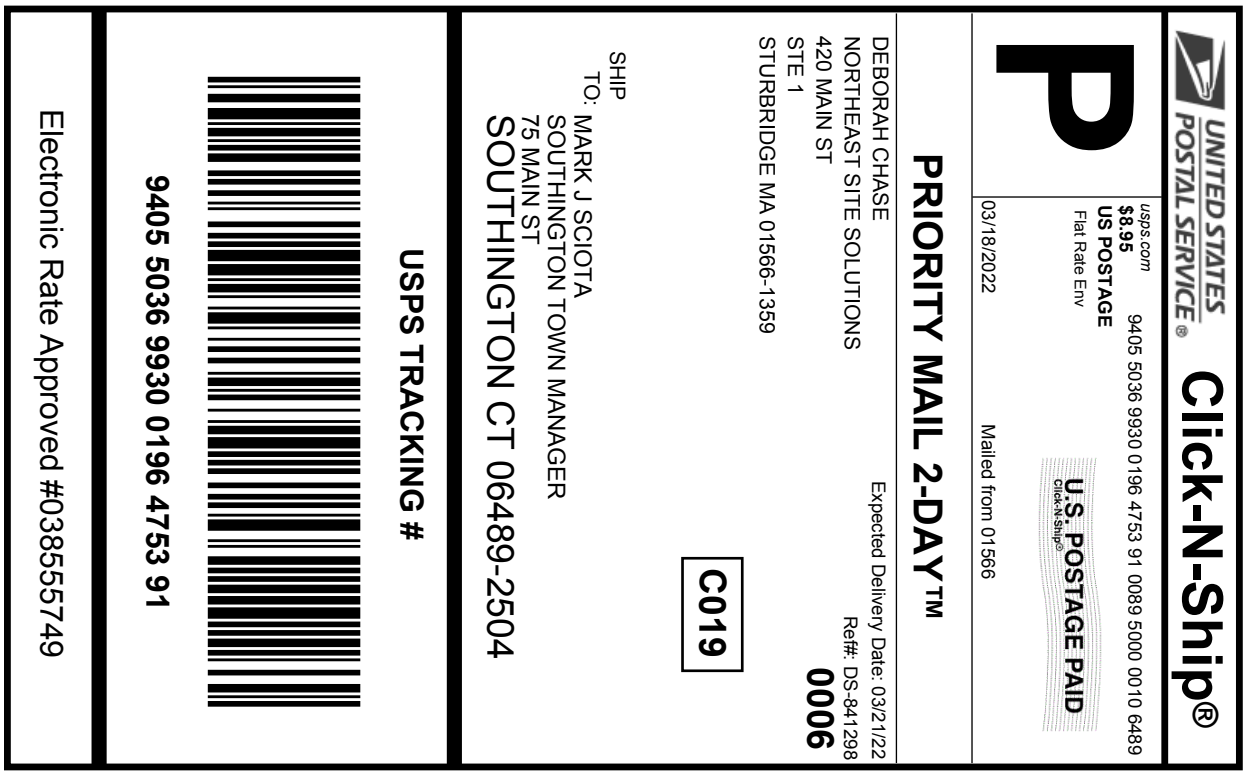

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USPS TRACKING # :
9405 5036 9930 0196 4753 91

Trans. #:	559126796
Print Date:	03/18/2022
Ship Date:	03/18/2022
Expected Delivery Date:	03/21/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: DS-841298

To: MARK J SCIOTA
SOUTHINGTON TOWN MANAGER
75 MAIN ST
SOUTHINGTON CT 06489-2504

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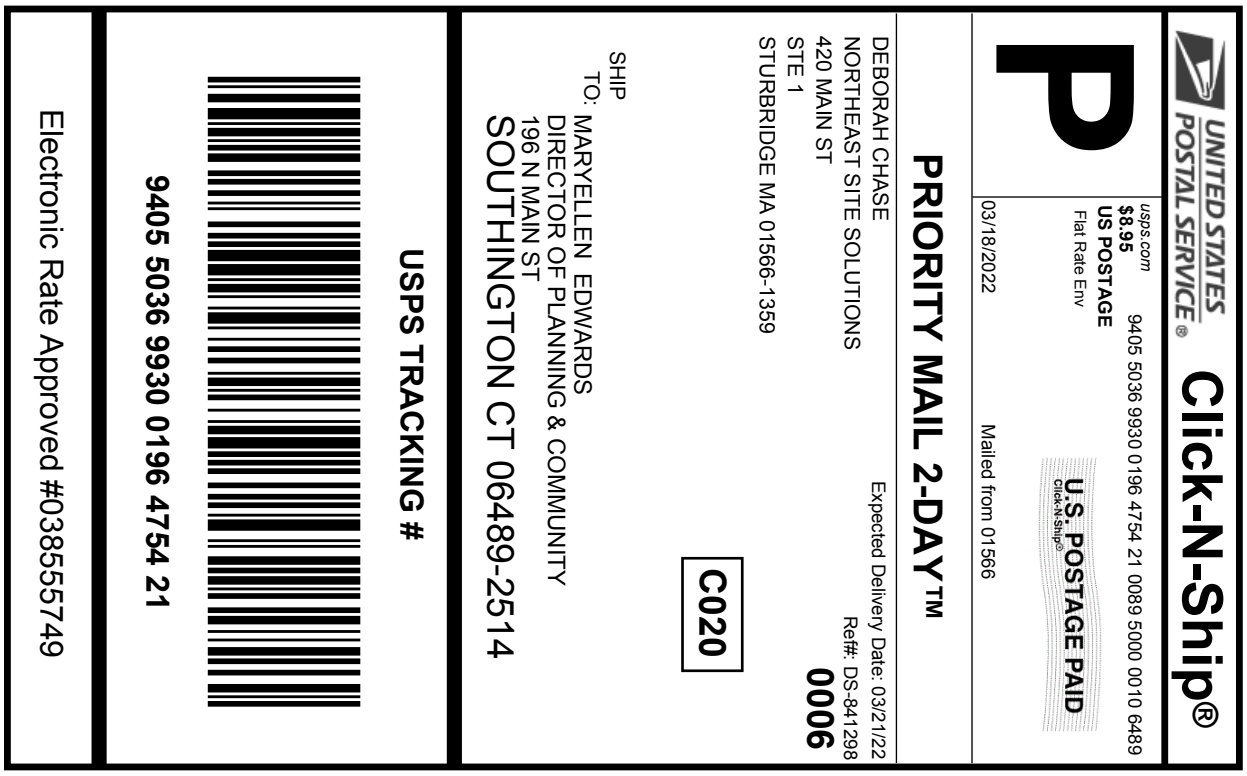

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USPS TRACKING # :
9405 5036 9930 0196 4754 21

Trans. #:	559126796
Print Date:	03/18/2022
Ship Date:	03/18/2022
Expected Delivery Date:	03/21/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: DS-841298

To: MARYELLEN EDWARDS
DIRECTOR OF PLANNING & COMMUNITY DEVELOPMENT
196 N MAIN ST
SOUTHINGTON CT 06489-2514

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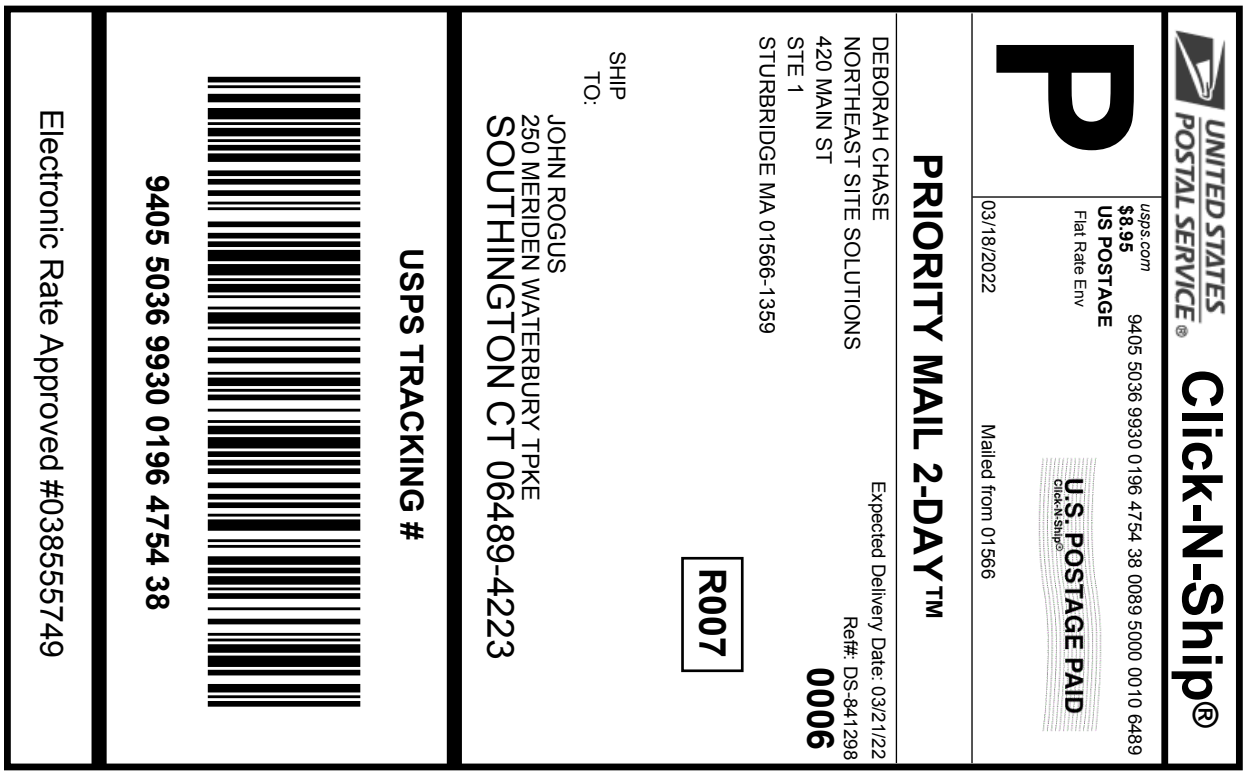

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0196 4754 38

Trans. #:	559126796
Print Date:	03/18/2022
Ship Date:	03/18/2022
Expected Delivery Date:	03/21/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: DS-841298

To: JOHN ROGUS
250 MERIDEN WATERBURY TPKE
SOUTHINGTON CT 06489-4223

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841298 Crown D252

UNITED STATES POSTAL SERVICE.

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

03/18/2022 03:22 PM

Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 0.20 oz Acceptance Date: Fri 03/18/2022 Tracking #: 9405 5036 9930 0196 4753 60	1		$0.00
Prepaid Mail Southington, CT 06489 Weight: 0 lb 9.50 oz Acceptance Date: Fri 03/18/2022 Tracking #: 9405 5036 9930 0196 4753 84	1		$0.00
Prepaid Mail Southington, CT 06489 Weight: 0 lb 9.30 oz Acceptance Date: Fri 03/18/2022 Tracking #: 9405 5036 9930 0196 4754 38	1		$0.00
Prepaid Mail Southington, CT 06489 Weight: 0 lb 9.30 oz Acceptance Date: Fri 03/18/2022 Tracking #: 9405 5036 9930 0196 4754 21	1		$0.00
Prepaid Mail Southington, CT 06489 Weight: 0 lb 9.40 oz Acceptance Date: Fri 03/18/2022 Tracking #: 9405 5036 9930 0196 4753 91	1		$0.00
Grand Total:			$0.00