Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Tectonic Engineering
Theresa Ranciato-Viele
63-3 N. Branford Road
Branford, CT 06405
Tranciato@Tectonicengineering.com
203-606-5127

August 4, 2022

Ms. Melanie Bachman, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: **Notice of Exempt Modification to an existing 139'monopole tower located at 15 Great Pasture Road, Danbury, Connecticut**

Latitude: 41° 22' 58.80" / Longitude: 73° 25' 19.82"

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless, LLC ("Dish"). Dish plans to install antennas and related equipment to the tower site at the existing 112'monopole tower facility located at 15 Great Pasture Road, Danbury, Connecticut (See Original Facility Approval attached as Exhibit A) ("Facility"). The property is owned by Eppoliti Industrial Realty, Inc. (See Danbury Assessor Property Card attached hereto as Exhibit B).

Dish proposes to install three (3) 600/1900/2100 MHz JMA – MX08Fr0665-21 antennas and six (6) FUJITSU TA08025 RRUs on the tower at the two hundred twenty five foot (225') centerline AGL. Dish further proposes to install one (1) 1.5" Hybrid Cable. Dish will also install its equipment cabinets on a 5' X 7' platform within its 10' X 15' lease area. The installation is shown on plans completed by Tectonic Engineering, dated January 19, 2022, and attached hereto as Exhibit C.

Dish requests that the Connecticut Siting Council ("Council") find that the proposed shared use of this Facility satisfies the criteria of C.G.S. sec. 16-50aa and accordingly issue an order approving the proposed shared use. This proposed installation constitutes an exempt modification pursuant to R.C.S.A. 16-50j-89. Pursuant to R.C.S.A. 16-50j-73, Dish is providing notice to Dean Esposito, Mayor of the City of Danbury, Sharon B. Calitro, Director of Planning and Zoning for the City of Danbury and the property owner, Eppoliti Industrial Realty, Inc..

Under the Council's regulations, Dish's plans do not constitute a modification subject to the Council's review in that:

Dish will not change the existing 139' height of the Tower as the Dish antennas will be installed at a height of 110'.

The proposed installation will not extend the existing boundaries of the approved compound as depicted in Exhibit C;

The proposed installation will not increase the noise levels at the facility by six (6) decibels or more, or to levels that exceed local and state criteria; and

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 attached Exhibit E indicates that the combined site operations will result in a total power density of .25%.

Tower

The Facility consists of a one hundred thirty nine (139') foot guy tower located at 15 Great Pasture Road, Danbury, Connecticut. As indicated above, the tower is owned by Eppoliti Industrial Realty, Inc.. The tower currently supports AT&T at the one hundred forty foot (140') centerline, and Verizon Wireless at the one hundred twenty foot (120') centerline AGL. The antenna locations are set forth on Sheet A-2 of the attached drawings in Exhibit C.

A. TECHNICAL FEASIBILTY

The existing monopole has been deemed structurally capable of supporting the proposed Dish loading. The structural and mount analyses is attached hereto as Exhibit D.

B. LEGAL FEASIBILITY

C.G.S. Se. 16-50aa authorizes the Council to issue orders approving the shared use of existing towers such as the above referenced tower. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish to obtain a building permit from the Town of Danbury to proceed with the proposed installation. Additionally, a Supplement to The Master Lease Agreement is attached as Exhibit F, granting Dish the authority from the tower owner to proceed with this application for shared use.

C. ENVIRONMENTAL FEASIBILITY

The proposed shared use of this Facility would have a minimal environmental impact. The installation of the Dish equipment at the 110' level of the existing tower would have an insignificant visual impact on the area surrounding the tower. The proposed Dish ground equipment would be installed within the

existing Facility compound. The Dish installation would not cause any significant alteration to the physical or environmental characteristics of the existing Facility. Additionally, as evidenced by Exhibit E, the proposed antennas would not increase the radio frequency emissions to a level at or above the Federal Communications Commission safety standards.

D. ECONOMIC FEASIBILTY

Dish has entered into a Lease Agreement (Exhibit F) with the Facility owner for the proposed colocation. Therefore, this shared use is economically feasible.

E. PUBLIC SAFETY CONCERNS

As set forth above, the tower is structurally capable of supporting the proposed Dish loading. Dish is not aware of any public safety concerns relative to the proposed sharing of the existing tower.

For the reasons set forth herein, the proposed shared use of the existing tower at 15 Great Pasture Road, Danbury, satisfies the criteria stated in C.G.S. sec. 16-50aa, and supports the general goal of preventing the unnecessary proliferation of tower sites in Connecticut. Dish respectfully requests the Council issue an order approving the proposed shared use.

Respectfully submitted,
Dish Wireless, LLC

By _____
Theresa Ranciato-Viele, consultant
63-3 N. Branford Road
Branford, CT 06405
Tranciato@Tectonicengineering.com
203-606-5127

cc: Danbury Mayor, Honorable Dean Esposito
155 Deer Hill Ave.
Danbury, CT 06810

Danbury Director of Planning and Zoning, Sharon B. Calitro
155 Deer Hill Ave,
Danbury, CT 06810

Tower Owner: Eppoliti Industrial Realty, Inc
37 Danbury Road, Suite 203
Ridgefield, CT 06877

Exhibit A

Original Facility Approval

DOCKET NO. 462 – Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Danbury Tax Assessor's Map L16, Lot 5, 15 Great Pasture Road, Danbury, Connecticut.	}	Connecticut Siting Council

December 10, 2015

Decision and Order

Pursuant to Connecticut General Statutes §16-50p and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Cellco Partnership d/b/a Verizon Wireless (Cellco), hereinafter referred to as the Certificate Holder, for a telecommunications facility at the proposed site, located at 15 Great Pasture Road, Danbury, Connecticut.

Unless otherwise approved by the Council, the facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole at a height of 120-feet above ground level to provide the proposed wireless services, sufficient to accommodate the antennas of Cellco and other entities, both public and private. The height of the tower may be extended after the date of this Decision and Order pursuant to regulations of the Federal Communications Commission.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the City of Danbury and Town of Bethel for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a) final site plan(s) for development of the facility to include specifications for the tower, tower foundation, antennas, equipment compound including, but not limited to, fence design with anti-climbing measures, radio equipment, access road, utility line, utility trench depth relative to Department of Energy and Environmental Protection No Dig Restriction depth, emergency backup generator, and generator fuel tank with associated run time that employ the governing standard in the State of Connecticut for tower design in accordance with the currently adopted International Building Code;
    b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;
    c) Protection plans for eastern box turtle, wood turtle and bog turtle including plans for the bog turtle's terrestrial activity; and
    d) Wetland protection plans.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower 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 Final 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 Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

7. Any request for extension of the time period referred to in Condition 6 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, the City of Danbury and the Town of Bethel.

8. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council within 90 days from the one year period of cessation of service. The Certificate Holder may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period.

9. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

10. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.

11. The Certificate Holder 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.

12. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

13. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.

14. If the Certificate Holder 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 Certificate Holder within 30 days of the sale and/or transfer.

15. This Certificate may be surrendered by the Certificate Holder upon written notification and approval by the Council.

We hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed in the Service List, dated July 9, 2015, and notice of issuance published in the Danbury News Times.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

Exhibit B

Property Card

Unique ID: L16005 Danbury Card No: 1 Of 2

Location:	15 GREAT PASTURE RD	Map Id:	L16 5	Zone:		Date Printed:	8/4/2022
		Neighborhood:	4000			Last Update:	8/4/2022

Owner Of Record	Volume/Page	Date	Sales Type	Valid	Sale Price
EPPOLITI INDUSTRIAL REALTY INC	2028/1121	2/2/2009	Name Change	No	0
37 DANBURY RD STE 203 , RIDGEFIELD, CT 06877			Exempt		
Prior Owner History					
K & E REALTY INC	0858/0281	9/18/1987	00	No	0

Permit Number	Date	Permit Description
21-1922	7/20/2021	Verizon Wireless antenna modification to existing cell tower installation. See submitted plans.
21-1273	6/15/2021	AT&T proposes the installation of a 20' monopole tower extension to the top of the existing +/- 120'
56795	6/30/2015	CHANGE OF USE / INSTALL LIFTS
56093	1/7/2015	FGR DOOR BIGGER
53769	8/20/2013	REMODEL BATH & REMOVE WALL
29946	6/14/2000	CONVERT TO OFFICES

Supplemental Data

Census/Tract	2104	VisionPID	10559
Dev Map ID		Street Description	Paved
		TC MAP	12719 6755
		TC LOT	NONE 5
		TOPO	Level
Utilities	Sewer, Public Water		

Appraised Value

Total Land Value	2,160,600
Total Building Value	1,792,400
Total Outbldg Value	44,100
Total Market Value	3,997,100

Acres

Land Type	Acres	490	Total Value
Ind Excess	6.66	0.00	466.200
Industrial Prime Site	5.97	0.00	1,694.400
Total	12.6300	0.00	2,160,600

State Item Codes

Code	Quantity	Value
31-Industrial Land	12.63	1,512.400
32-Industrial Building	2.00	1,352.000
33-Industrial Improvement	2.00	30,900

Assessment History (Prior Years as of Oct 1)

	2022	2021	2020	2019	2018
Land	1,512,400	1,512,400	1,512,400	1,512,400	1,512,400
Building	1,352,000	1,352,000	1,382,900	1,382,900	1,382,900
Outbuilding	30,900	30,900	0	0	0
Total	2,895,300	2,895,300	2,895,300	2,895,300	2,895,300

490 Appraised Totals

Type	Acres	Value	Type	Acres	Value
			Totals	0.00	0

Application Date: Expiration Date:

Comments

9/23/2021 EASEMENT VOL 2456/1060;

Unique ID: L16005 Danbury

Location: 15 GREAT PASTURE RD **Unit**

Commercial Building Description	
Building Use	Industrial
Class	Masonry
Overall Condition	Fair
Construction Quality	C
Stories	1.00
Year Built	1958
Remodel	
Percent Complete	100
GLA	83734

Basement	
Basement Area	0

HVAC	
Heating Type	Forced Hot Air
Fuel Type	Natural Gas
Cooling Type	None

Interior	
Floors	Vinyl Tile/Concr-Finished
Walls	Drywall
Wall Height	

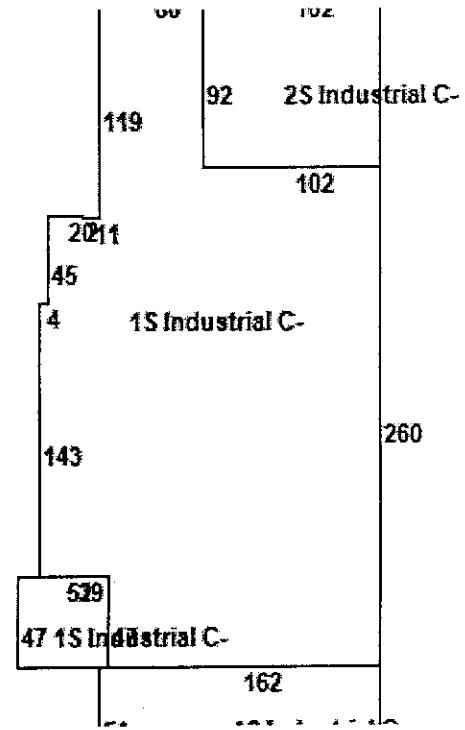
Exterior	
Exterior Walls	Concr/Cinder/Brick
Roof Type	Tar and Gravel
Roof Cover	Flat

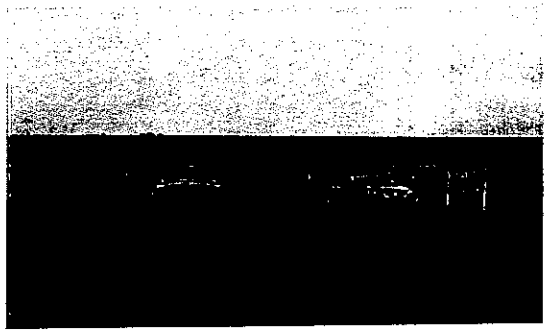
Special Features	
Air Condition	8262
Dock Leveler	4
Wet Sprinklers	72585

Description	Area/Qty
Base Rate	83734
Air Condition	8262
Dock Leveler	4
Wet Sprinklers	72585

Attached Component Computations

Type	Yr Blt	Area/Qty





Detached Component Computations

Type	Year	Condition	Area/Qty
Paving	1999	Fair	70000

Type	Year	Condition	Area/Qty

Unique ID: L16005 Danbury Card No: 2 Of 2

Location:	15 GREAT PASTURE RD	Map Id:	L16 5	Zone:		Date Printed:	8/4/2022
		Neighborhood:	4000			Last Update:	8/4/2022

Owner Of Record	Volume/Page	Date	Sales Type	Valid	Sale Price
EPPOLITI INDUSTRIAL REALTY INC	2028/1121	2/2/2009	Name Change	No	0
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Acres

Land Type	Acres	490	Total Value
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Building	1,352,000	1,352,000	1,382,900	1,382,900	1,382,900
Outbuilding	30,900	30,900	0	0	0
Total	**2,895,300**	**2,895,300**	**2,895,300**	**2,895,300**	**2,895,300**

490 Appraised Totals

Type	Acres	Value

Type	Acres	Value
Totals	0.00	0

Application Date: Expiration Date:

Comments

9/23/2021 EASEMENT VOL 2456/1060;

Revaluation Date: 10/1/2017

Unique ID: L16005 Danbury

Location:	15 GREAT PASTURE RD	Unit	

Commercial Building Description

Building Use	Industrial
Class	Steel
Overall Condition	Average
Construction Quality	C
Stories	1.00
Year Built	1980
Remodel	
Percent Complete	100
GLA	2912

Basement

Basement Area	0

HVAC

Heating Type	Forced Hot Air
Fuel Type	Natural Gas
Cooling Type	None

Interior

Floors	Concr-Finished/Carpet
Walls	None/Minumum
Wall Height	

Exterior

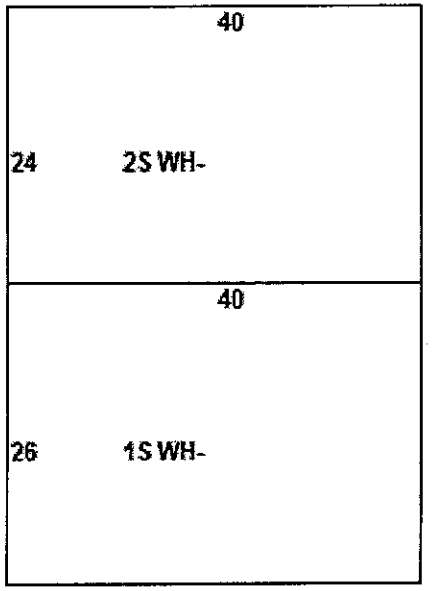
Exterior Walls	Stucco
Roof Type	Metal
Roof Cover	Flat

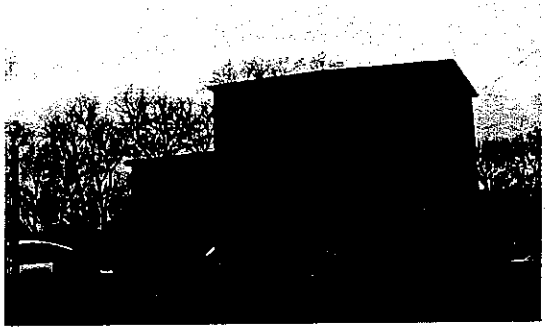
Special Features

Description	Area/Qty
Base Rate	2912

Attached Component Computations

Type	Yr Blt	Area/Qty





Detached Component Computations

Type	Year	Condition	Area/Qty
Other Improvements	0	Average	1

Type	Year	Condition	Area/Qty

Exhibit C

Project Plans

dish wireless

DISH WIRELESS SITE ID:

NJJER01120B

DISH WIRELESS SITE ADDRESS:

15 GREAT PASTURE ROAD, DANBURY, CT 06810

CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

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

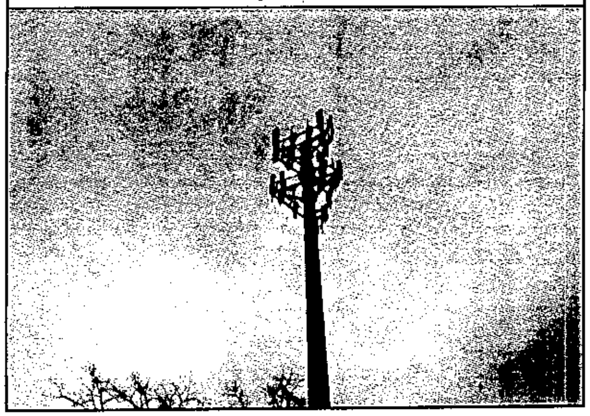
SCOPE OF WORK

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

TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED ANTENNA MOUNT
- INSTALL (6) PROPOSED RRHs (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 CIENA BOX (IF REQUIRED)
- INSTALL (1) PROPOSED METER SOCKET

SITE PHOTO



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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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:	EPPOLITI INDUSTRIAL REALTY INC.
ADDRESS:	15 GREAT PASTURE ROAD, DANBURY, CT 06810
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	CT03X
TOWER APP NUMBER:	N/A
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41° 22' 58.8" N 41.383000 N
LONGITUDE (NAD 83):	73° 25' 19.82" W 73.422172 W
ZONING JURISDICTION:	CITY OF DANBURY/ CT SITING COUNCIL
ZONING DISTRICT:	IL-40
PARCEL NUMBER:	L16005-0000
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	T.B.D.

PROJECT DIRECTORY

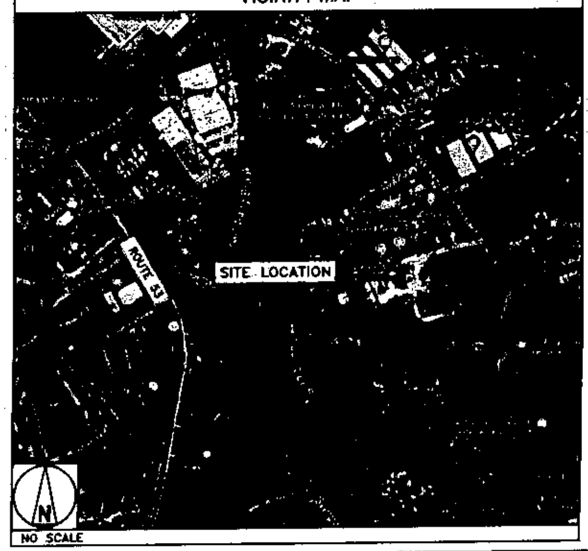
APPLICANT:	DISH WIRELESS 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	KGI WIRELESS 505 LAS CIMAS PARKWAY BUILDING 3, SUITE 370 AUSTIN, TX 78746
SITE DESIGNER:	TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C. 1279 ROUTE 300 NEWBURGH, NY 10853 (845) 567-6656
SITE ACQUISITION:	TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C. (845) 567-6656
CONSTRUCTION MANAGER:	RAFAL ROSOLOWSKI RAFAL.ROSOLOWSKI@DISH.COM
RF ENGINEER:	PAWAN MADAHAR PAWAN.MADAHAR@DISH.COM

DIRECTIONS

DIRECTIONS FROM 3 ADP BOULEVARD ROSELAND, NJ 07068:

HEAD NORTHEAST TOWARD ADP BLVD. TURN LEFT. TURN LEFT TOWARD ADP BLVD. TURN LEFT TOWARD ADP BLVD. TURN LEFT ONTO ADP BLVD. TURN RIGHT TOWARD CHOCTAW WAY. SLIGHT RIGHT ONTO CHOCTAW WAY. USE THE LEFT LANE TO TURN RIGHT ONTO LIVINGSTON AVE. USE THE RIGHT LANE TO TAKE THE RAMP ONTO I-280 E. MERGE WITH I-280 E. KEEP LEFT TO STAY ON I-280 E. TAKE EXIT 12 TOWARD GARDEN PKWY. KEEP LEFT, FOLLOW SIGNS FOR GARDEN STATE PARKWAY AND MERGE ONTO GARDEN STATE PKWY. KEEP RIGHT TO STAY ON GARDEN STATE PKWY. KEEP LEFT TO STAY ON GARDEN STATE PKWY. CONTINUE ONTO NJ-444 N/GARDEN STATE PKWY. ENTERING NEW YORK. CONTINUE ONTO GARDEN STATE PARKWAY CONNECTOR. USE ANY LANE TO TAKE EXIT 14-1 TO MERGE WITH I-287 E/I-87 S. KEEP LEFT AT THE T JUNCTION TO CONTINUE ON I-287 E. FOLLOW SIGNS FOR WHITE PLAINS/RYE. TAKE EXIT 9A TOWARD I-684 N. KEEP LEFT, FOLLOW SIGNS FOR I-684/BREWSTER AND MERGE ONTO I-684 N. ENTERING NEW YORK. TAKE EXIT 9E TO MERGE WITH I-84 E TOWARD DANBURY. ENTERING CONNECTICUT. TAKE EXIT 3 FOR US-7 S TOWARD NORWALK. CONTINUE ONTO US-7 S. TAKE EXIT 8 TO MERGE WITH BACKUS AVE/PARK AVE. CONTINUE TO FOLLOW PARK AVE. TURN RIGHT ONTO W WOOSTER ST. TURN LEFT TO STAY ON W WOOSTER ST. TURN RIGHT ONTO DEER HILL AVE. TURN LEFT ONTO WILSON ST. TURN RIGHT ONTO GRAND ST. GRAND ST TURNS LEFT AND BECOMES SOUTH ST. TURN LEFT TO STAY ON SOUTH ST. TURN LEFT ONTO GREAT PASTURE RD. TURN RIGHT.

VICINITY MAP



NO SCALE

---

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

1279 Route 300
Newburgh, NY 12550

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022028
LICENSED
PROFESSIONAL ENGINEER

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

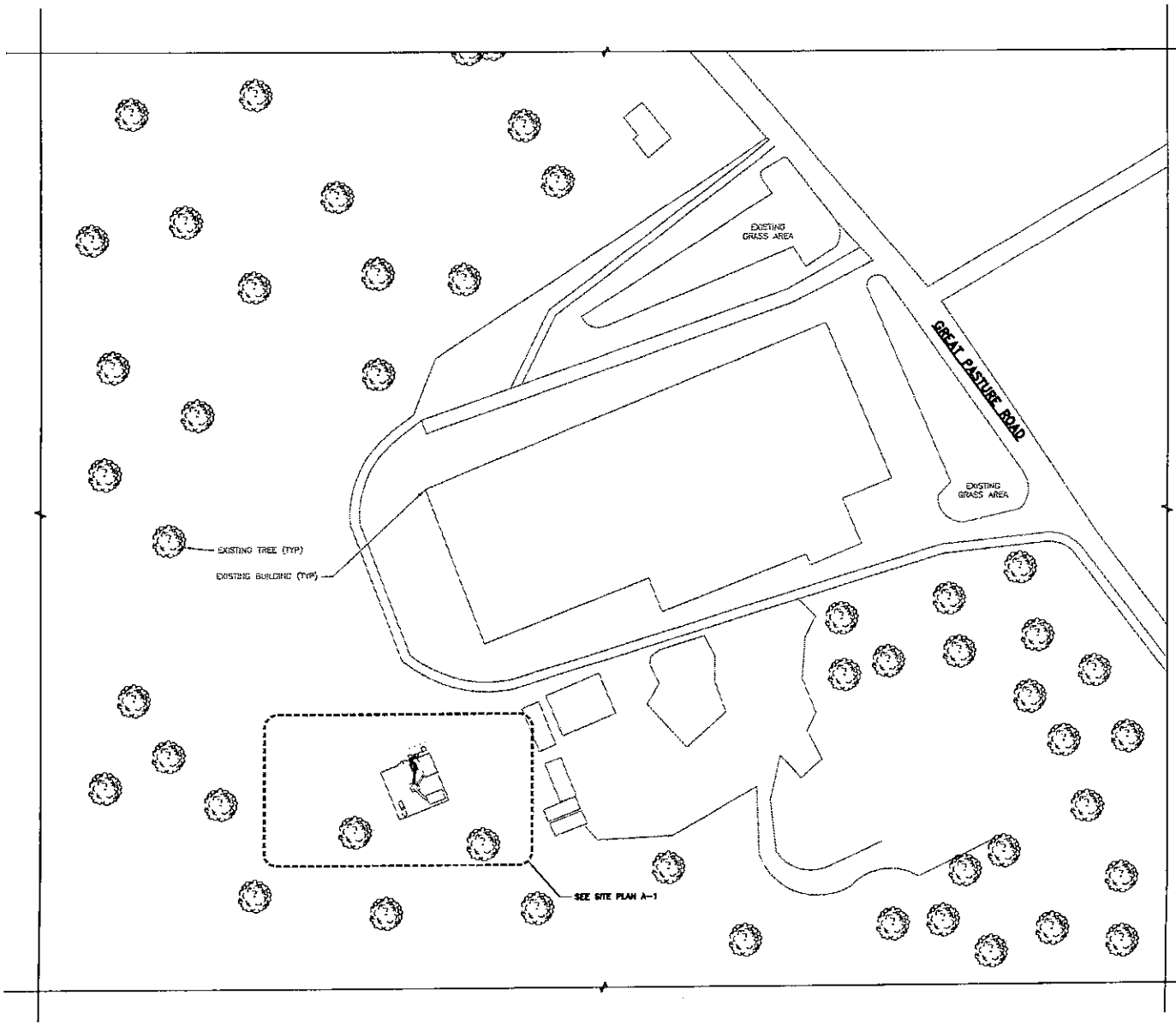
REV	DATE	DESCRIPTION
0	08/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. PROPERTY LINE AND PARCEL FEATURES ARE BASED ON AERIAL IMAGERY AND/OR PREVIOUS INFORMATION AND NOT FROM OR BASED ON AN ACTUAL SURVEY.

OVERALL SITE PLAN

50' 25' 0 50' 100'
1"=50'

1

dish wireless.

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LITTLETON, CO 80120

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER

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DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	06/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION

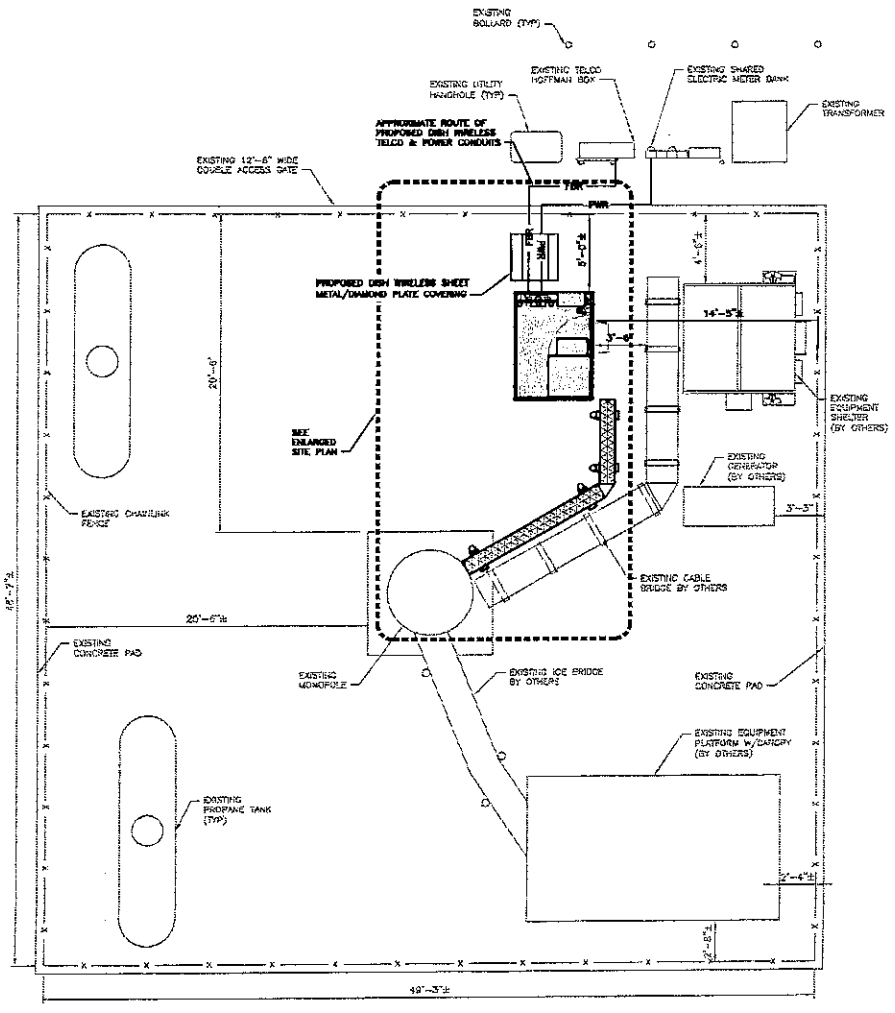
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE
OVERALL SITE PLAN

SHEET NUMBER
SP-1

NOTES

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

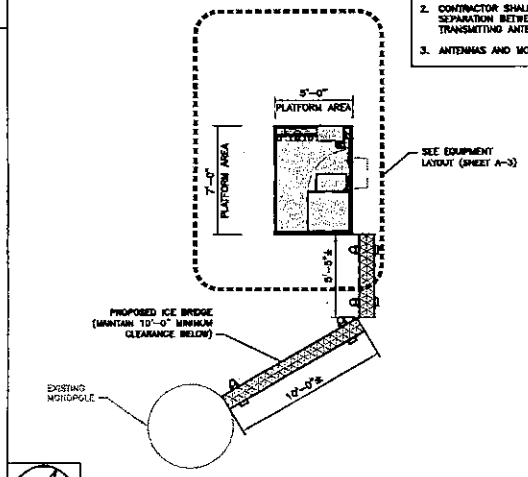


SITE PLAN 1

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

NOTES

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



ENLARGED EQUIPMENT PLAN 2

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

NOT USED 3

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STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022088
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	06/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
10710.NJJER01120B

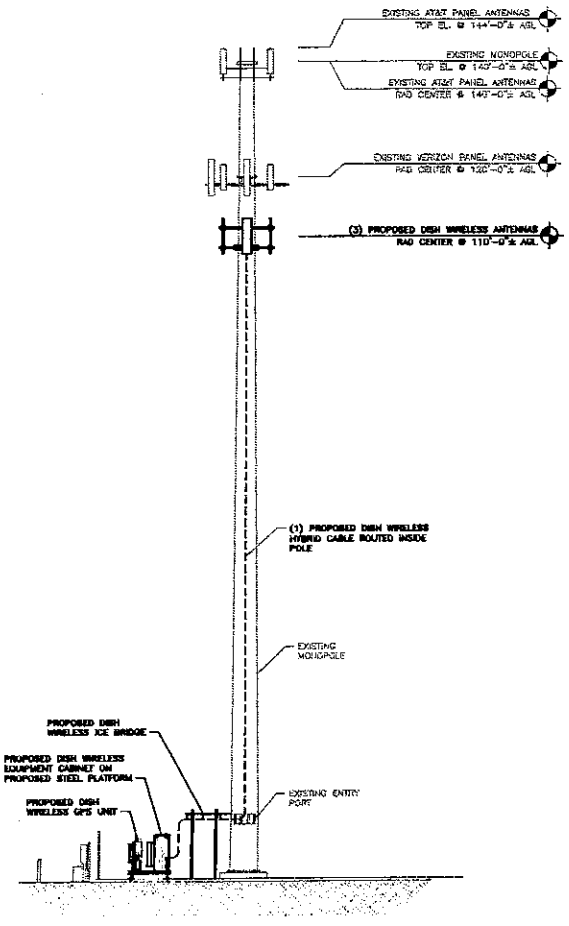
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE
SITE PLAN AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

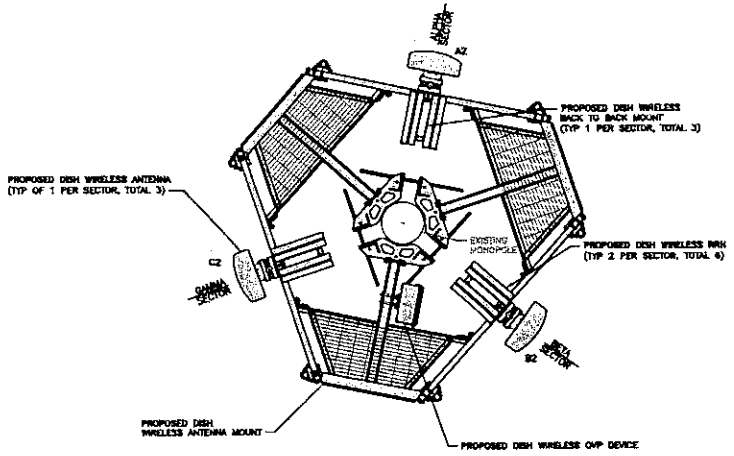
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
3. REFER TO THE STRUCTURAL ANALYSIS REPORT BY SEAMANN ENGINEERING SOLUTIONS DATED 01/14/22.



PROPOSED ELEVATION

12' 8' 4' 0 10' 20'
3/32"=1'-0"

1



ANTENNA LAYOUT

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

2

SECTOR POS.	ANTENNA: EXISTING OR PROPOSED	ANTENNA: MANUFACTURER – MODEL NUMBER	ANTENNA: TECH	ANTENNA: AZIMUTH	ANTENNA: RAD CENTER	TRANSMISSION CABLE: FEED LINE TYPE AND LENGTH	RRH: MANUFACTURER – MODEL NUMBER	RRH: TECH	RRH: POS.	OVP: MANUFACTURER MODEL
A1	—	—	—	—	—	(1) HIGH-CAPACITY HYBRID CABLE (180' LONG)	FUJITSU – TA08025-B604	5G	A2	RDIDC-9181-PF-48
A2	PROPOSED	JMA – MX08FRO665-21	5G	10°	110'-0"		FUJITSU – TA08025-B605	5G	A2	
A3	—	—	—	—	—		—	—	—	
B1	—	—	—	—	—	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	B2	SHARED W/ALPHA
B2	PROPOSED	JMA – MX08FRO665-21	5G	125°	110'-0"		FUJITSU – TA08025-B605	5G	B2	
B3	—	—	—	—	—		—	—	—	
C1	—	—	—	—	—	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	C2	SHARED W/ALPHA
C2	PROPOSED	JMA – MX08FRO665-21	5G	250°	110'-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.
3. AZIMUTHS ARE SUBJECT TO CHANGE AND NEED TO BE CONFIRMED WITH THE LATEST RFDS PRIOR TO THE START OF CONSTRUCTION.

ANTENNA SCHEDULE

NO SCALE

3

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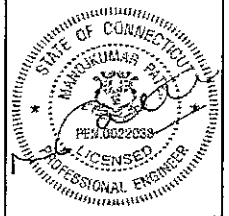
LITTLETON, CO 80120



DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

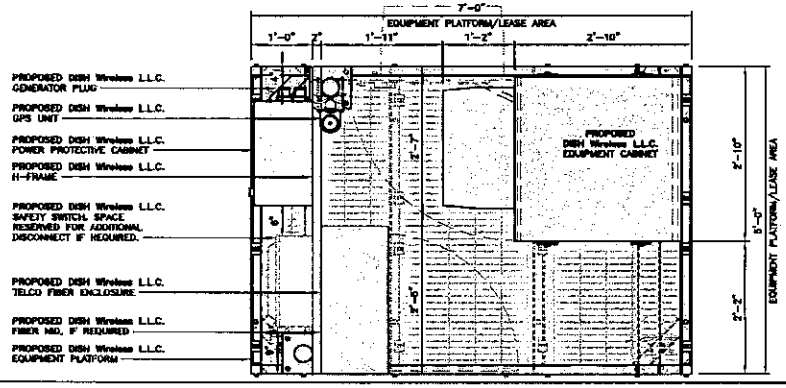
REV	DATE	DESCRIPTION
0	05/02/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



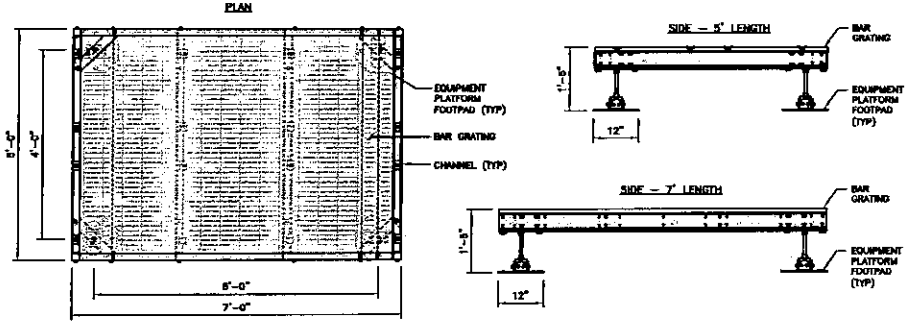
PLATFORM EQUIPMENT PLAN

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

1

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

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



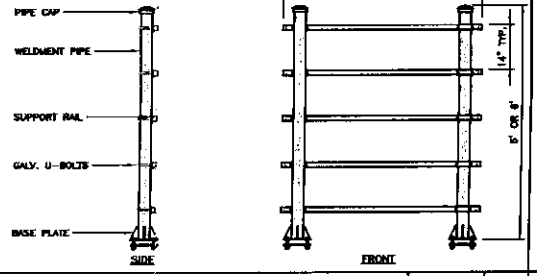
PLATFORM DETAIL

NO SCALE

2

COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	58.74 lbs

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



H-FRAME DETAIL

NO SCALE

3

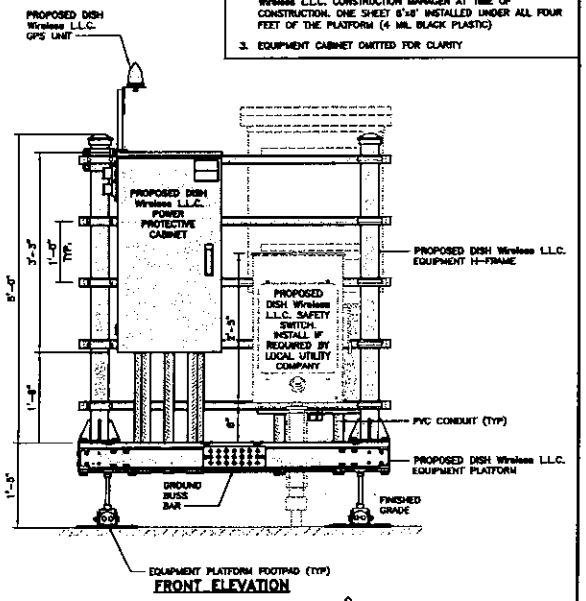
NOT USED

NO SCALE

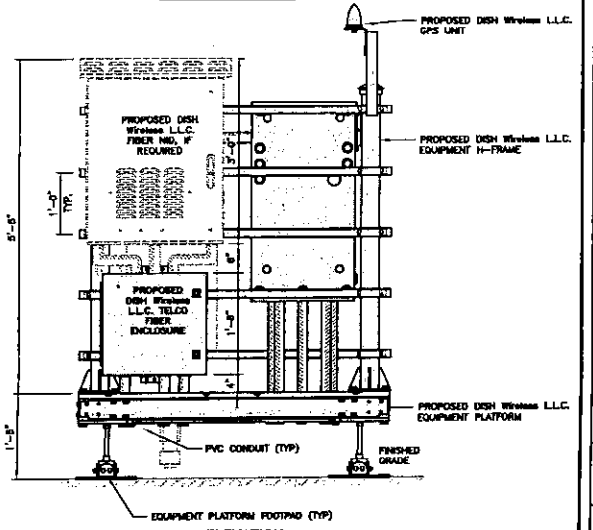
4

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

5

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

STATE OF CONNECTION
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	06/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
10710.NJJER01120B

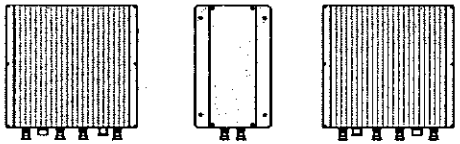
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

FUJITSU TRIPLE BAND TA08025-B605

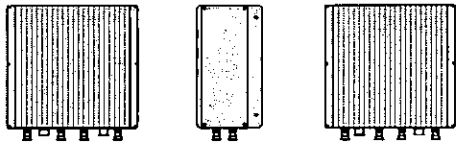
DIMENSIONS (HxWxD)	14.9"x15.7"x8"
WEIGHT	74.96 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-38V



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~-38V

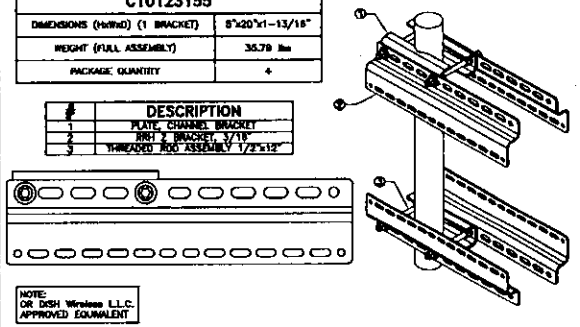


RRH DETAIL | NO SCALE | 2

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	BRKT Z, BRACKET, Y/16"
3	THREADED ROD ASSEMBLY 1/2"x12"

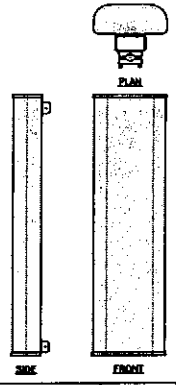


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

JMA MX08FRO665-21

DIMENSIONS (HxWxD)	72"x20.0"x8.0"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	84.5 lbs
WEIGHT WITH BRACKETS	92.5 lbs

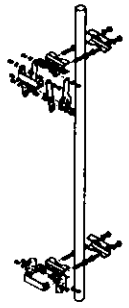


ANTENNA DETAIL | NO SCALE | 4

JMA ANTENNA MOUNT BRACKET #91900318

TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.16 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

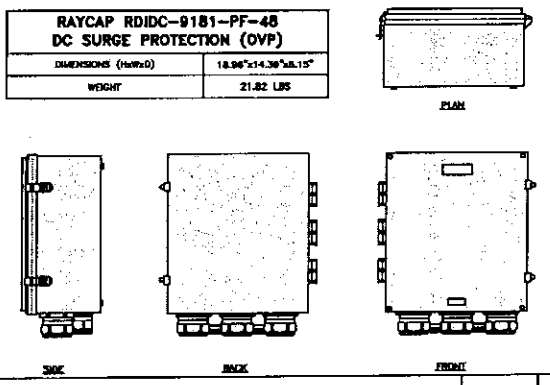


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 5

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

DIMENSIONS (HxWxD)	18.96"x14.38"x8.15"
WEIGHT	21.82 LBS

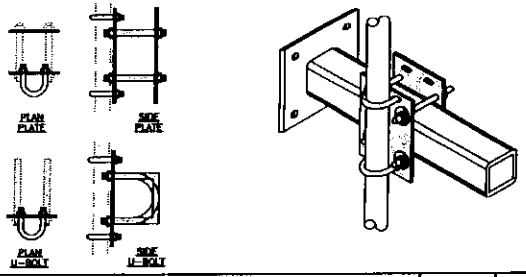


SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 6

COMMSCOPE XP-2040 CROSSOVER PLATE

DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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

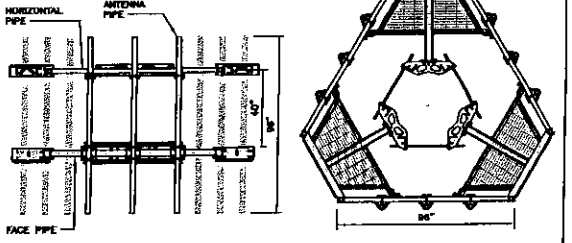


RRH/OVP MOUNT DETAIL | NO SCALE | 7

COMMSCOPE MC-PK8-DSH

FACE WIDTH	96"
WEIGHT	1373.08 lbs
NOTE: 15" TO 38" O.D.	

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



ANTENNA PLATFORM DETAIL | NO SCALE | 8

NO SCALE | 9

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

STATE OF CONNECTICUT
MARKKUMAR PATEL
PEN.0022033
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: ——

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/03/2025	ISSUED FOR CONSTRUCTION

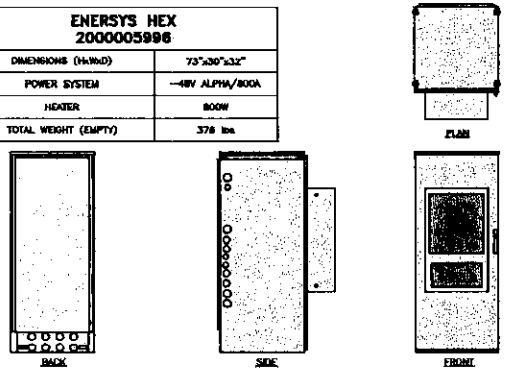
A&E PROJECT NUMBER
10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE
EQUIPMENT DETAILS

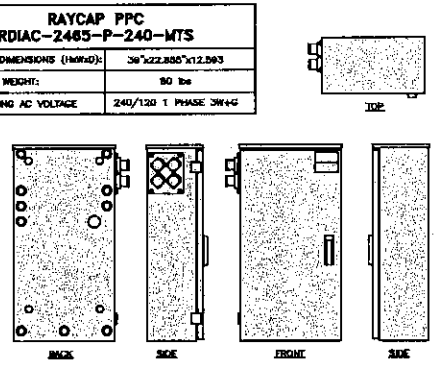
SHEET NUMBER
A-4

ENERSYS HEX 2000005996	
DIMENSIONS (HxWxD)	73"x30"x32"
POWER SYSTEM	-48V ALPHA/800A
HEATER	800W
TOTAL WEIGHT (EMPTY)	378 lbs



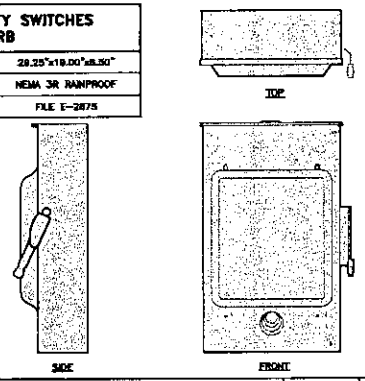
CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC-2465-P-240-MTS	
ENCLOSURE DIMENSIONS (HxWxD):	36"x22.835"x12.563
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G



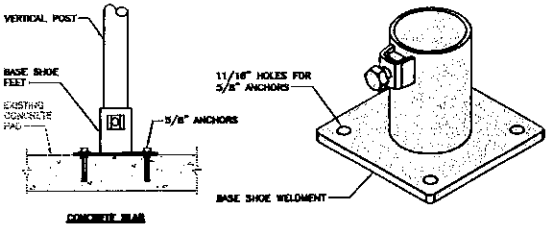
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	28.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E-2875



SAFETY SWITCH DETAIL | NO SCALE | 3

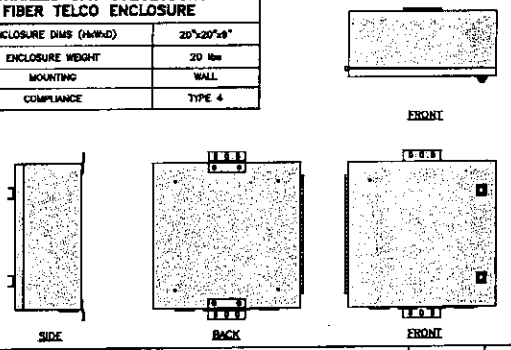
SITEPRO1 BSF35 BASE SHOE FEET	
DIMENSIONS (HxWxL)	8"x8"x1/2"
WEIGHT	18.0 LBS
POST SIZE:	2-7/8" OR 3-1/2"



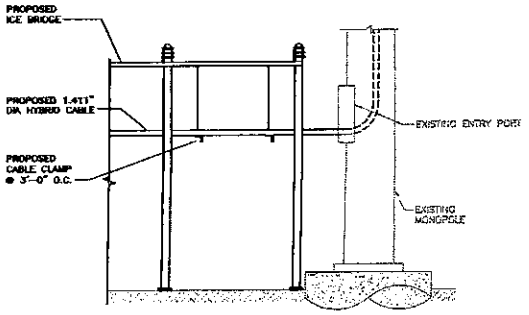
ICE BRIDGE PIPE MOUNT DETAIL | NO SCALE | 4

NO SCALE | 5

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

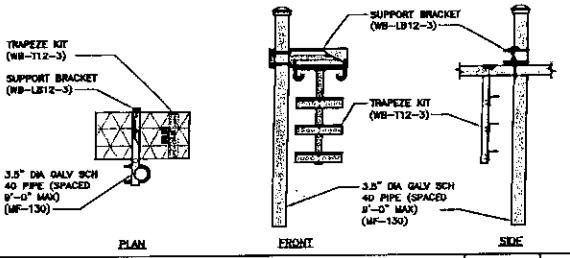


FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6



HYBRID CABLE RUN | NO SCALE | 7

COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT		INCLUDED PRODUCTS:	WB-T12-3 TRAPEZE KIT, 3 RUNGS WB-LB12-3 SUPPORT BRACKET MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"
DIMENSIONS (HxL)	180"x10'		
WEIGHT/ VOLUME	325.0 LBS		
CABLE RUN (QTY)	12		



ICE BRIDGE DETAIL | NO SCALE | 8

NO SCALE | 9

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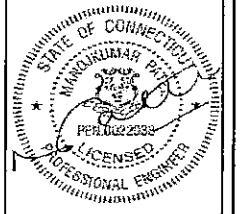


DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	06/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

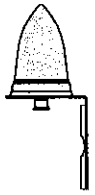
SHEET TITLE

EQUIPMENT DETAILS

SHEET NUMBER

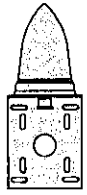
A-5

PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIA×H) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1580 ± 30MHz



BACK

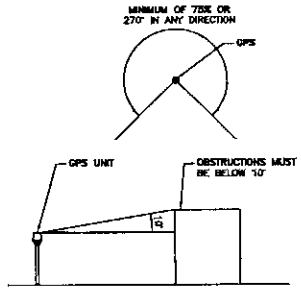
TOP



SIDE

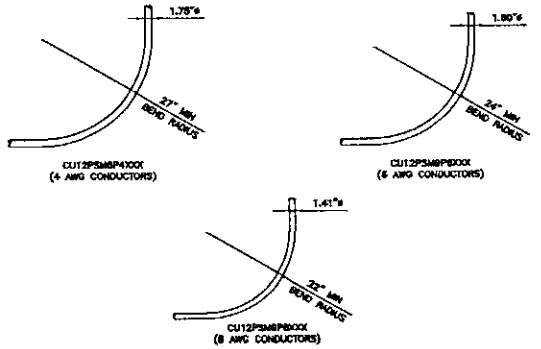
GPS DETAIL

NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE | 2



CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUSES

NO SCALE | 3

NO SCALE | 4

NO SCALE | 5

NO SCALE | 6

NO SCALE | 7

NO SCALE | 8

NO SCALE | 9

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LITTLETON, CO 80120

STATE OF CONNECTICUT
MANOKUMAR PATEL
PEN.0032038
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

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CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE

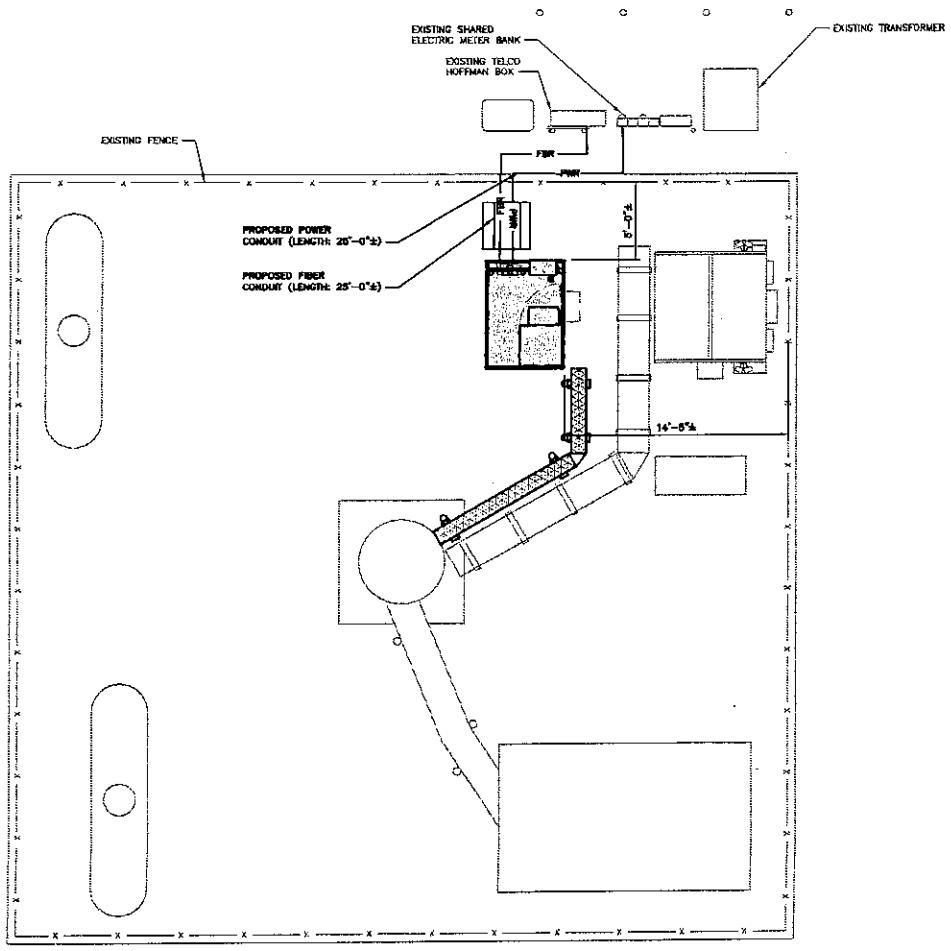
EQUIPMENT DETAILS

SHEET NUMBER

A-5

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



UTILITY ROUTE PLAN

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

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STATE OF CONNECTICUT
MANOJKUMAR PATEL
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PROFESSIONAL ENGINEER

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CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE

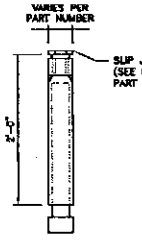
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

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"

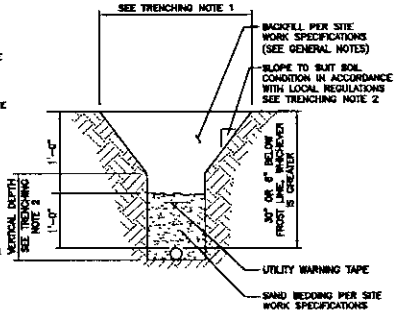


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

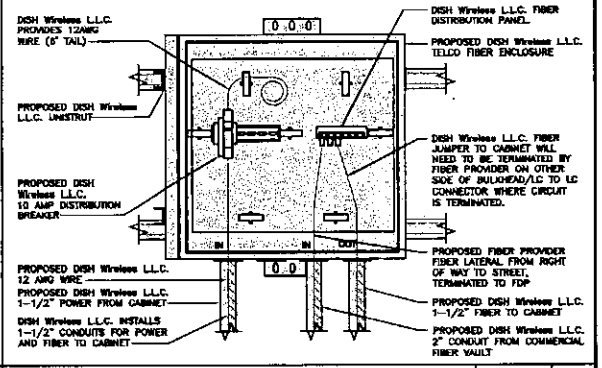
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

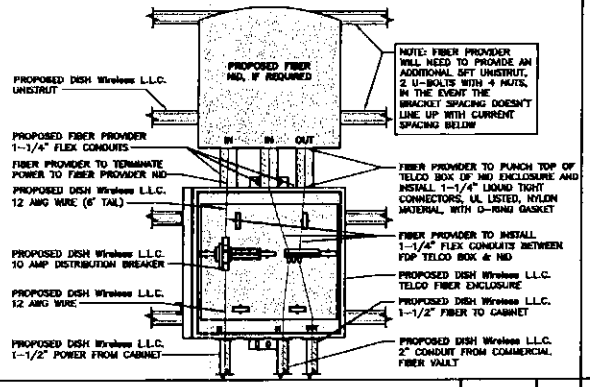
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT 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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LITTLETON, CO 80120

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION

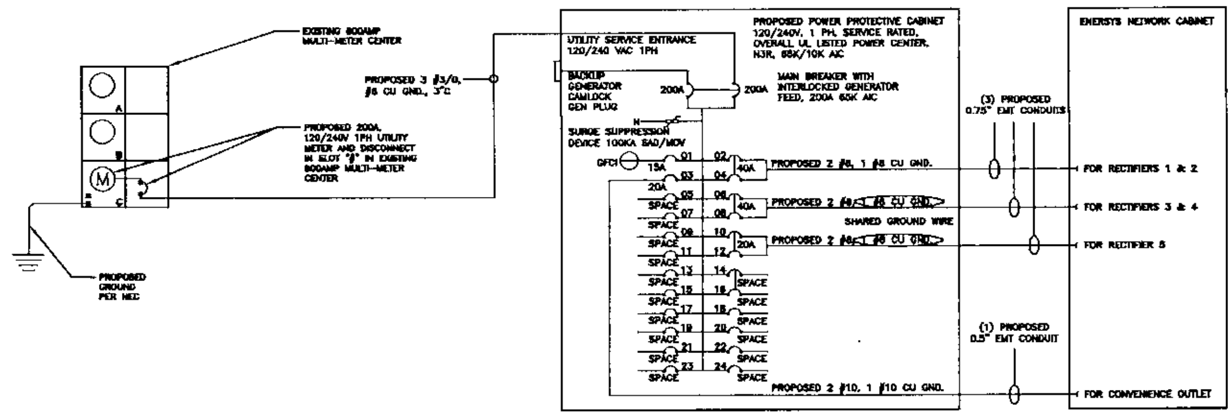
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



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

BREAKERS REQUIRED:
(2) 40A, 2P BREAKER – SQUARE D P/N:Q0240
(1) 20A, 2P BREAKER – SQUARE D P/N:Q0220
(1) 20A, 1P BREAKER – SQUARE D P/N:Q0120

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.

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 (3 CONDUITS): USING UL1015, CU.

#6 – 0.0552 SQ. IN X 2 = 0.1103 SQ. IN
#8 – 0.0131 SQ. IN X 1 = 0.0131 SQ. IN <BARE GROUND
TOTAL = 0.1234 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) 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 ENERSYS PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	40A	3840		ENERSYS ALPHA CORDEX RECTIFIERS 1 & 2
ENERSYS GFCI OUTLET		180	20A	3	B	4			3840	
-SPACE-				5	A	6	40A	3840		ENERSYS ALPHA CORDEX RECTIFIER 3 & 4
-SPACE-				7	B	8			3840	
-SPACE-				9	A	10	20A	1920		ENERSYS ALPHA CORDEX RECTIFIER 5
-SPACE-				11	B	12			1920	
-SPACE-				13	A	14				-SPACE-
-SPACE-				15	B	16				-SPACE-
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						9600	9600	

	L1	L2	
200A MCB, 1ϕ, 24 SPACE, 120/240V			
MB RATING: 65,000 AIC	9680	9680	VOLTAGE AMPS
	81	81	AMPS
	81		MAX AMPS
	101		MAX 125%

PANEL SCHEDULE — NO SCALE — 2

FAULT CURRENT VALUES BASED ON POINT-TO-POINT METHOD OF CALCULATION

F1 (SINGLE PHASE)

LOCATION:	TRANSFORMER	
TRANSFORMER SIZE =	100.0	kVA
SECONDARY VOLTAGE (L-L) =	240	V
SECONDARY VOLTAGE (L-N) =	120	V
ISC =	40,000	A

F2 (SINGLE PHASE)

LOCATION:	METER	
TYPE OF CONDUIT:	PVC	
CONDUCTOR SIZE AND TYPE:	3/0	COPPER
SETS OF CONDUCTORS =	1	
LENGTH OF CONDUCTORS =	80	FEET
"C" VALUE =	13923	
f(L-L) =	1.9153	
M(L-L) =	0.3430	
f(L-N) =	5.7459	
M(L-N) =	0.1482	
ISC (L-L) =	13,721	A
ISC (L-N) =	8,894	A

F3 (SINGLE PHASE)

LOCATION:	DISCONNECT	
TYPE OF CONDUIT:	PVC	
CONDUCTOR SIZE AND TYPE:	3/0	COPPER
SETS OF CONDUCTORS =	1	
LENGTH OF CONDUCTORS =	10	FEET
"C" VALUE =	13923	
f(L-L) =	0.0821	
M(L-L) =	0.9241	
f(L-N) =	0.1085	
M(L-N) =	0.9036	
ISC (L-L) =	12,679	A
ISC (L-N) =	8,036	A

F4 (SINGLE PHASE)

LOCATION:	200A PPC	
TYPE OF CONDUIT:	PVC	
CONDUCTOR SIZE AND TYPE:	3/0	COPPER
SETS OF CONDUCTORS =	1	
LENGTH OF CONDUCTORS =	30	FEET
"C" VALUE =	13923	
f(L-L) =	0.2277	
M(L-L) =	0.8146	
f(L-N) =	0.2887	
M(L-N) =	0.7760	
ISC (L-L) =	10,328	A
ISC (L-N) =	6,236	A

FAULT CALCULATIONS — NO SCALE — 3

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STATE OF CONNECTICUT — MANOJKUMAR PATIL — PEN.0022028 — LICENSED PROFESSIONAL ENGINEER

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: ——

CONSTRUCTION DOCUMENTS

SUBMITTALS

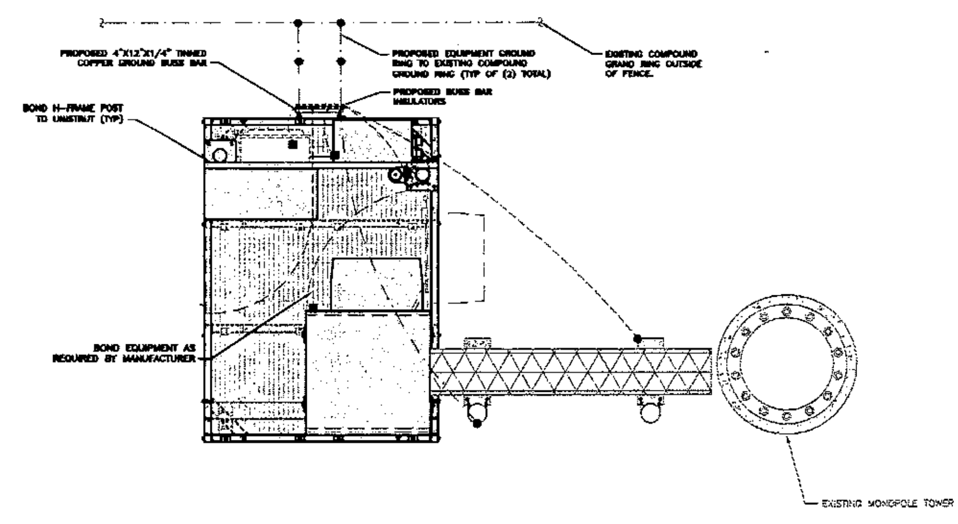
REV	DATE	DESCRIPTION
0	08/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
10710.NJJER01120B

DISH Wireless L.L.C. PROJECT INFORMATION
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

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

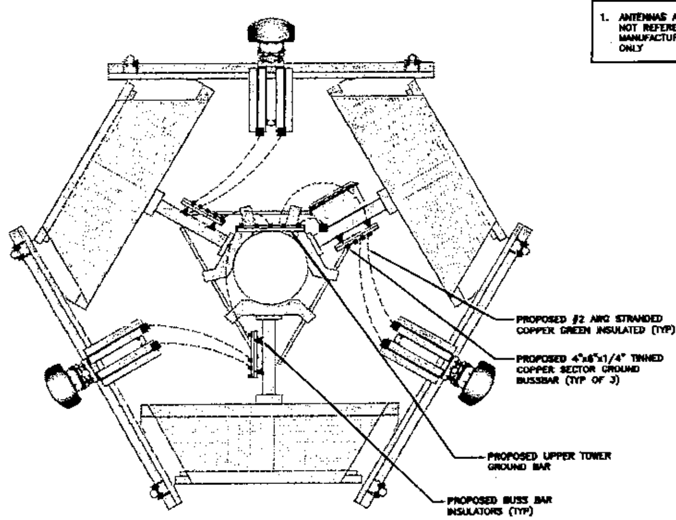
SHEET NUMBER
E-3



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
- ▲ 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 PROPOSED ANTENNA MOUNT COLLAR.

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

GROUNDING KEY NOTES | NO SCALE | 3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022093
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: ——

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	[illegible]	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
10710.NJJER01120B

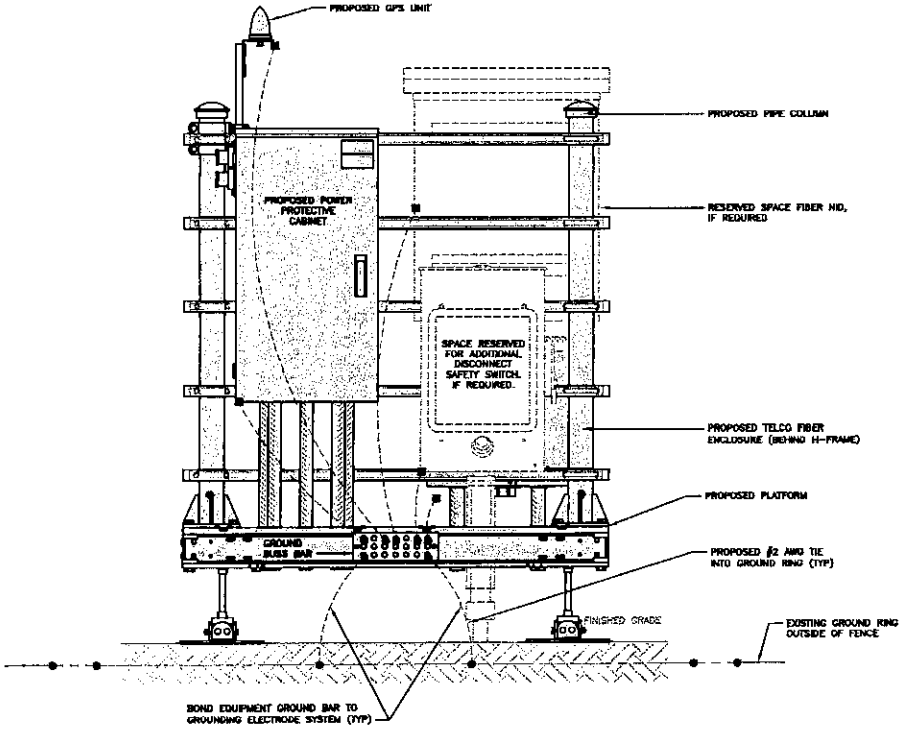
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

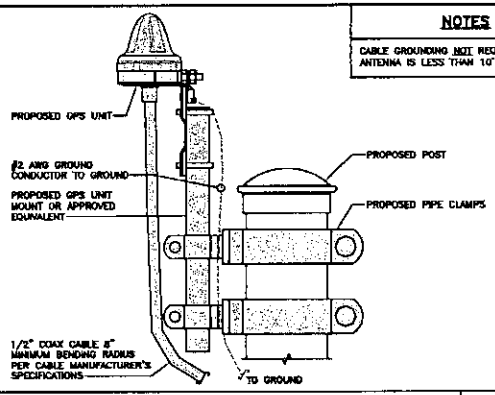
EQUIPMENT CABINET OMITTED FOR CLARITY



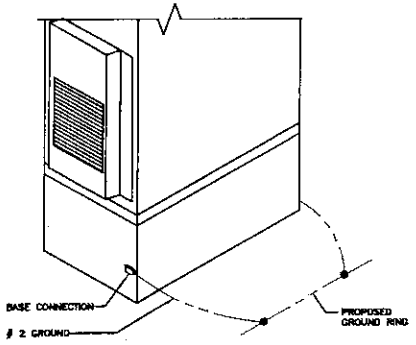
H-FRAME GROUNDING DETAIL NO SCALE 1

NOTES

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



TYPICAL GPS UNIT GROUNDING NO SCALE 2



OUTDOOR CABINET GROUNDING NO SCALE 3

NO SCALE 4

NO SCALE 5

NO SCALE 6

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CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/02/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
10710.NJJER01120B

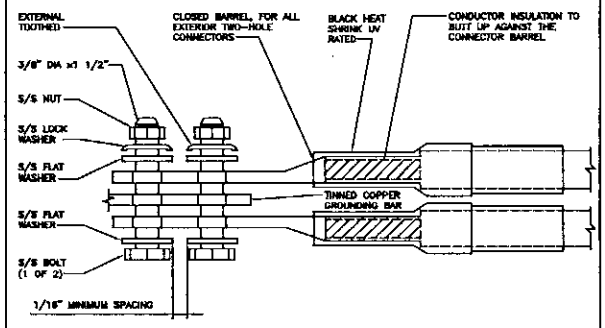
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE
GROUNDING DETAILS

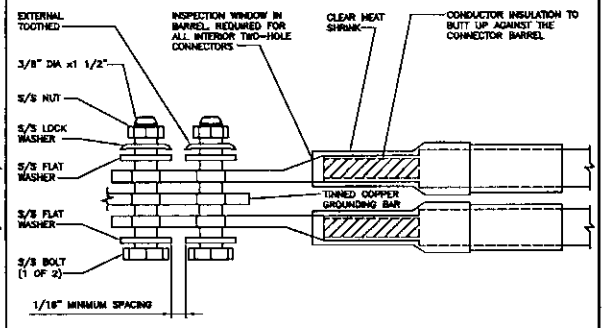
SHEET NUMBER
G-2

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).

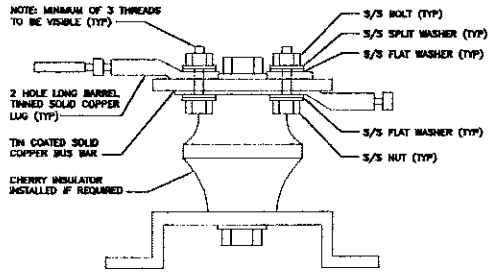
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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LICENSED PROFESSIONAL ENGINEER

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JW	JQ	MP

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE
GROUNDING DETAILS

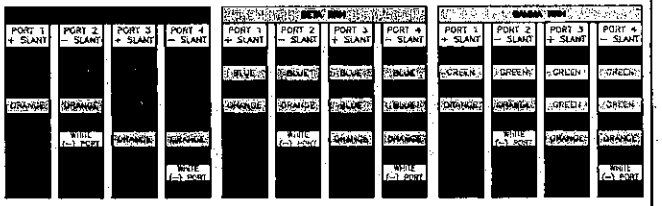
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(650MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS

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

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

FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

POWER CABLES TO RRHs

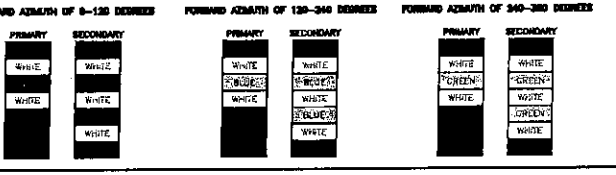
LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY

RET MOTORS AT ANTENNAS

MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

LOW BANDS (N71+N29) OPTIONAL – (N28)
ORANGE

AWS (N66+N70+H-BLOCK)
PURPLE

CBRS TECH (3 GHz)
YELLOW

NEGATIVE SLANT PORT ON ANT/RRH
WHITE

ALPHA SECTOR

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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LITTLETON, CO 80120

STATE OF CONNECTICUT
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PEN.0022038
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

ABBREVIATIONS

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

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

STATE OF CONNECTICUT
MANOKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

10710-NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

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 SIGN IS A METAL SIGN IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C H-FRAME WITH A SECURE ATTACH METHOD.
- IF EME REPORT IS NOT AVAILABLE AT THE TIME OF CREATION OF CONSTRUCTION DOCUMENTS; PLEASE CONTACT DISH Wireless L.L.C. CONSTRUCTION MANAGER FOR FURTHER INSTRUCTION ON HOW TO PROCEED.

NOTES:

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

INFORMATION

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

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

Site ID: _____

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE

Transmitting Antenna(s)

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

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

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

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

CAUTION

Transmitting Antenna(s)

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dish

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

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

RF SIGNAGE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0027059
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	06/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE

RF SIGNAGE

SHEET NUMBER

GN-2

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER: DISH Wireless L.L.C.

TOWER OWNER: TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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STATE OF CONNECTICUT
MANORUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

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 8" 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.

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

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JG	MP

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/03/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

10710.NJJER01120B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01120B
15 GREAT PASTURE ROAD
DANBURY, CT 06810

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

Exhibit D

Structural Analysis

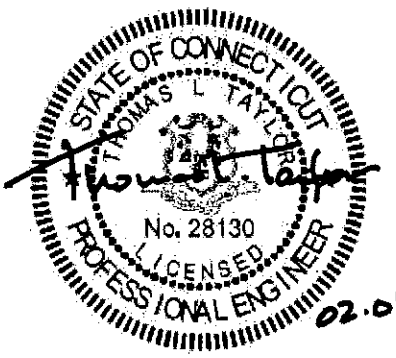
Structural Analysis Report

Prepared for:

KGI
805 Las Cimas Parkway, Building Three, Suite 370
Austin, TX 78746

ATTN: Ms. Stephanie Oswald

Structure	:	**139 ft Monopole**
Site ID	:	**28493**
Proposed Carrier	:	**Dish Wireless**
Site Name	:	**Bethel West 2**
Site Location	:	**15 Great Pasture Road**
		Danbury, CT
		41.383, -73.4222
County	:	**Fairfield**
Date	:	**January 14, 2022**
Max Structure Usage	:	**48%**
Max Foundation Usage	:	**78%**
Result	:	**Pass**



02.01.22

EXP. 01/31/2023

Thomas L. Taylor

Digitally signed by Thomas L. Taylor
Date: 2022.02.01 10:48:58 -06'00'

Prepared By:
Nathan Wood, E.I.T.
Structural Engineer

Nathan Wood

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 139 ft Monopole to reflect the change in loading by Dish Wireless.

Supporting Documents

Tower Drawing	Sabre Job #16-7133-SCB, dated July 13, 2016
Foundation Drawing	Centek Engineering Job #14216.000, dated July 28, 2016
Geotechnical Report	DET Job #2015.13, dated February 19, 2016
Foundation Analysis	Centek Engineering Project #14216.00, dated March 12, 2020
Mount Analysis	Tectonic Site #NJJER01120B, date September 17, 2021
Modifications	SES Monopole Extension Package, dated September 2, 2020 TEP PMI Site #28493, dated August 30, 2021
Tower Inventory	KGI TLF Site #28493, dated December 29, 2021

Analysis

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

Basic Wind Speed	115 mph (3-Second Gust) Vult
Basic Wind Speed w/Ice	50 mph (3-Second Gust) w/ 1" radial ice concurrent
Code	ANSI/TIA-222-H / 2018 IBC / 2018 Connecticut State Building Code
Risk Category	II
Exposure Category	B
Topographic Category	1
Crest Height	0 ft
Spectral Response	Ss = 0.223 , S1 = 0.056
Site Class	C - Very Dense Soil
Ground Elevation	386.01 ft

Conclusion

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

If you have any questions or require additional information, please contact Semaan Engineering Solutions at 402-289-1888.

Existing and Reserved Equipment

This loading **is** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
140.0	140.0	9	TPA65R-BU6DA-K	(1) Sabre C10-855-721C Platform w/Rail	(2) 1/2" (6) 7/8" DC Cable (2) 3/8" Fiber	AT&T
		3	4478 B14 RRU			
		3	8843 B2/B66A RRU			
		3	4415 B30 RRU			
		3	4449 B5/B12 RRU			
		3	DC6-48-60-18-8F			
		2	GPS			
120.0	120.0	8	NHH-33B-R2B	(1) Platform w/Rail	(12) 1 5/8" (3) Hybrid	Verizon
		3	MT6407-77A w/RRU			
		12	RRUS A2 Module			
		4	B2/866A RRH-BR049			
		4	B5/B13 RRH BR04C			
		12	10"x7"x2" TMA			
		3	OVP Junction Box			

Equipment to be Removed

This loading **is not** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
No loading considered as to be removed						

Proposed Equipment

This loading **is** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
110.0	110.0	3	MX08FRO665-21	(1) Commscope MC-PK8-DSH Snub Nose Platform w/Rail	(3) 51.2mm Hybrid Cable	Dish Wireless
		3	TA08025-B604			
		3	TA08025-B605			
		1	RDIDC-9181-PF-48			

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Shaft	48%	Pass
Anchor Bolts	42%	Pass
Baseplate	38%	Pass
Flange	46%	Pass

Foundations

Reaction Component	Original Design Reactions	Analysis Reactions	% of Usage
Moment (Kips-Ft)	4,952.3	2,326.1	47%
Axial (Kips)	57.2	44.4	78%
Shear (Kips)	48.9	22.3	46%

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

SEMAAN
ENGINEERING SOLUTIONS

Standard Conditions

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

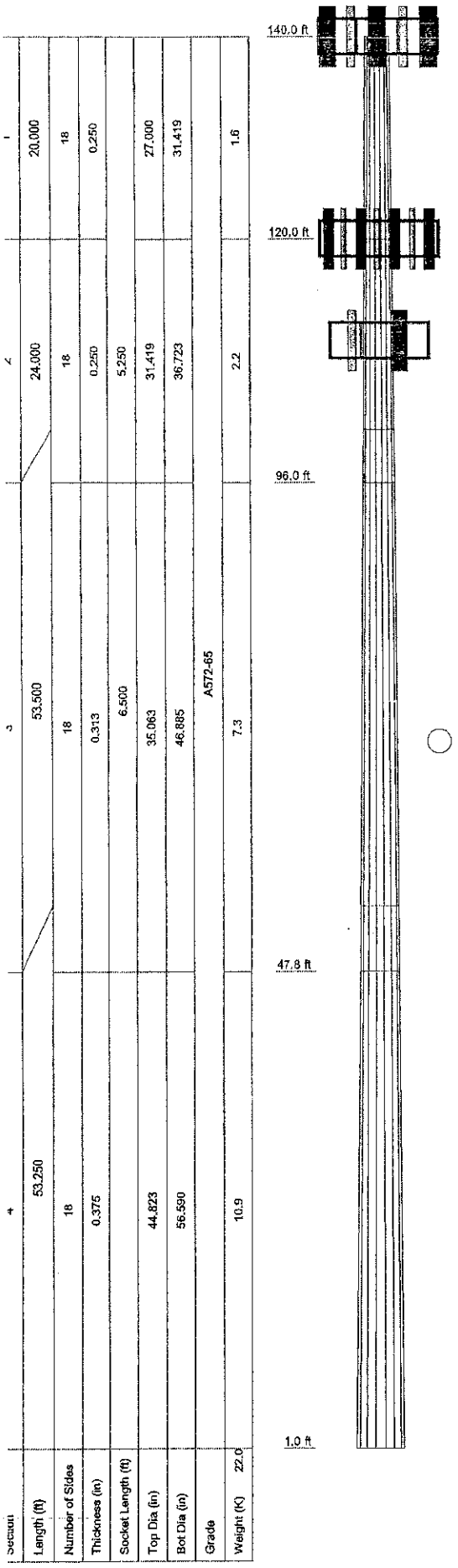
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of Semaan Engineering Solutions, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Semaan Engineering Solutions Holdings and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

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

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Semaan Engineering Solutions Holdings is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



Section	1	2	3	4
Length (ft)	20.000	24.000	53.500	53.250
Number of Sides	18	18	18	18
Thickness (in)	0.250	0.250	0.313	0.375
Socket Length (ft)		5.250	6.500	
Top Dia (in)	27.000	31.419	35.063	44.823
Bot Dia (in)	31.419	36.723	46.885	56.590
Grade	A572-65			
Weight (K)	1.6	2.2	7.3	10.9

Total Weight: 22.0

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Sabre C10-855-721C Platform w/Rail w/o Mount Pipe (SES) (ATT)	140	MT6407-77A w/8' Mount Pipe (Verizon)	120
(3) TPA65R-BU6DA-K w/8' Mount Pipe (ATT)	140	(4) RRUS A2 Module (Verizon)	120
(3) TPA65R-BU6DA-K w/8' Mount Pipe (ATT)	140	(4) RRUS A2 Module (Verizon)	120
(3) TPA65R-BU6DA-K w/8' Mount Pipe (ATT)	140	(4) RRUS A2 Module (Verizon)	120
8'x2 1/2" Pipe Mount (ATT)	140	B2/B66A RRH-BR049 (Verizon)	120
8'x2 1/2" Pipe Mount (ATT)	140	(2) B2/B66A RRH-BR049 (Verizon)	120
8'x2 1/2" Pipe Mount (ATT)	140	B2/B66A RRH-BR049 (Verizon)	120
4478 B14 RRU (ATT)	140	B5/B13 RRH BR04C (Verizon)	120
4478 B14 RRU (ATT)	140	B5/B13 RRH BR04C (Verizon)	120
4478 B14 RRU (ATT)	140	(2) B5/B13 RRH BR04C (Verizon)	120
8843 B2/B66A RRU (ATT)	140	(4) 10"x7"x2" TMA (Verizon)	120
8843 B2/B66A RRU (ATT)	140	(4) 10"x7"x2" TMA (Verizon)	120
8843 B2/B66A RRU (ATT)	140	(4) 10"x7"x2" TMA (Verizon)	120
4415 B30 RRU (ATT)	140	OVP Junction Box (Verizon)	120
4415 B30 RRU (ATT)	140	OVP Junction Box (Verizon)	120
4415 B30 RRU (ATT)	140	OVP Junction Box (Verizon)	120
4449 B5/B12 RRU (ATT)	140	Commscope MC-PK8-DSH Snub Nose Platform w/Rail w/o Mount Pipe (SES) (Dish Wireless)	110
4449 B5/B12 RRU (ATT)	140	MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	110
4449 B5/B12 RRU (ATT)	140	MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	110
DC6-48-60-18-8F (ATT)	140	MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	110
DC6-48-60-18-8F (ATT)	140	(2) 8'x2 1/2" Pipe Mount (Dish Wireless)	110
DC6-48-60-18-8F (ATT)	140	(2) 8'x2 1/2" Pipe Mount (Dish Wireless)	110
(2) GPS (ATT)	140	(2) 8'x2 1/2" Pipe Mount (Dish Wireless)	110
Platform w/Rail (Verizon)	120	TA08025-B604 (Dish Wireless)	110
8'x2 1/2" Pipe Mount (Verizon)	120	TA08025-B604 (Dish Wireless)	110
(2) NHH-33B-R2B w/8' Mount Pipe (Verizon)	120	TA08025-B604 (Dish Wireless)	110
(3) NHH-33B-R2B w/8' Mount Pipe (Verizon)	120	TA08025-B605 (Dish Wireless)	110
(3) NHH-33B-R2B w/8' Mount Pipe (Verizon)	120	TA08025-B605 (Dish Wireless)	110
MT6407-77A w/8' Mount Pipe (Verizon)	120	TA08025-B605 (Dish Wireless)	110
MT6407-77A w/8' Mount Pipe (Verizon)	120	RDIDC-9181-PF-48 (Dish Wireless)	110

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

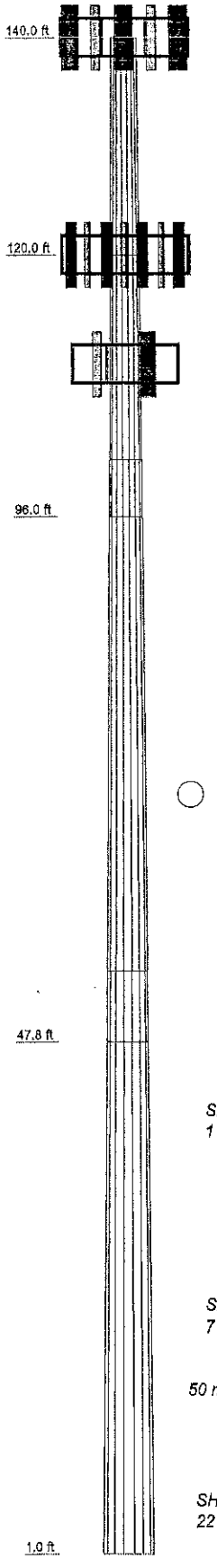
1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in Ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft

Semaan Engineering Solutions
1047 N 205th Street
Elkhorn, NE 68022
Phone: 402.289.1888
FAX:

Job: **28493_Bethel West 2**		
Project: **REV05**		
Client: KGI	Drawn by: NathanW	App'd:
Code: TIA-222-H	Date: 01/14/22	Scale:
Path: \\DMZBESSERVER01\Common\TNX files\28493\REV05\28493_REV05.eri		Dwg No.

Section	1	2	3	4
Length (ft)	20.000	24.000	53.500	53.250
Number of Sides	18	18	18	18
Thickness (in)	0.250	0.250	0.313	0.375
Socket Length (ft)		5.250	6.500	
Top Dia (in)	27.000	31.419	35.063	44.823
Bot Dia (in)	31.419	36.723	46.885	56.590
Grade	A572-65			
Weight (K)	1.6	2.2	7.3	10.9

22.0



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. CCISeismic Note: Seismic loads generated by CCISeismic 3.2.3
9. CCISeismic Note: Seismic calculations are in accordance with TIA-222-H
10. TOWER RATING: 48%

ALL REACTIONS ARE FACTORED

AXIAL 46 K
SHEAR 1 K
MOMENT 133 kip-ft
TORQUE 0 kip-ft
SEISMIC

AXIAL 65 K
SHEAR 7 K
MOMENT 687 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 1.000 in ICE

AXIAL 44 K
SHEAR 22 K
MOMENT 2326 kip-ft
TORQUE 1 kip-ft
REACTIONS - 115 mph WIND

Semaan Engineering Solutions
1047 N 205th Street
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Phone: 402.289.1888
FAX:

Job: **28493_Bethel West 2**		
Project: **REV05**		
Client: KGI	Drawn by: NathanW	App'd:
Code: TIA-222-H	Date: 01/14/22	Scale: N
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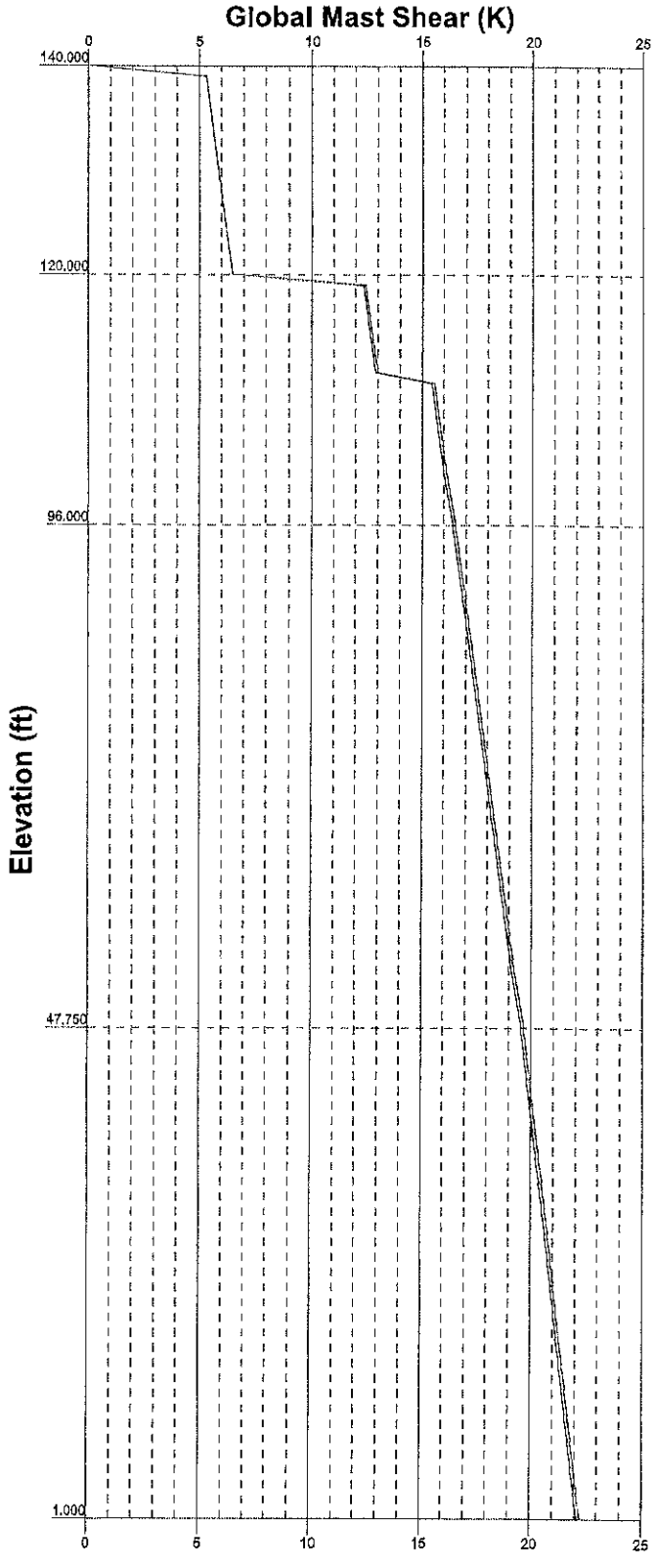
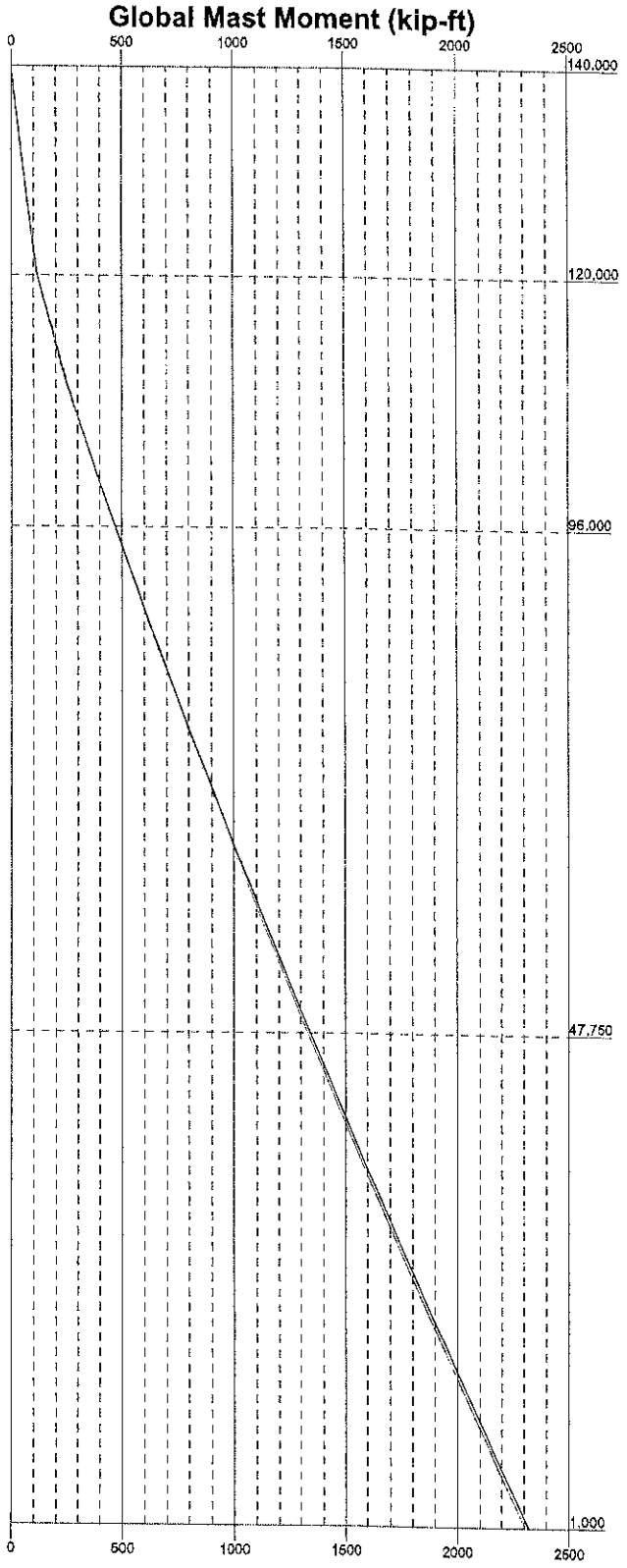
Vx Vz Mx Mz





Semaan Engineering Solutions
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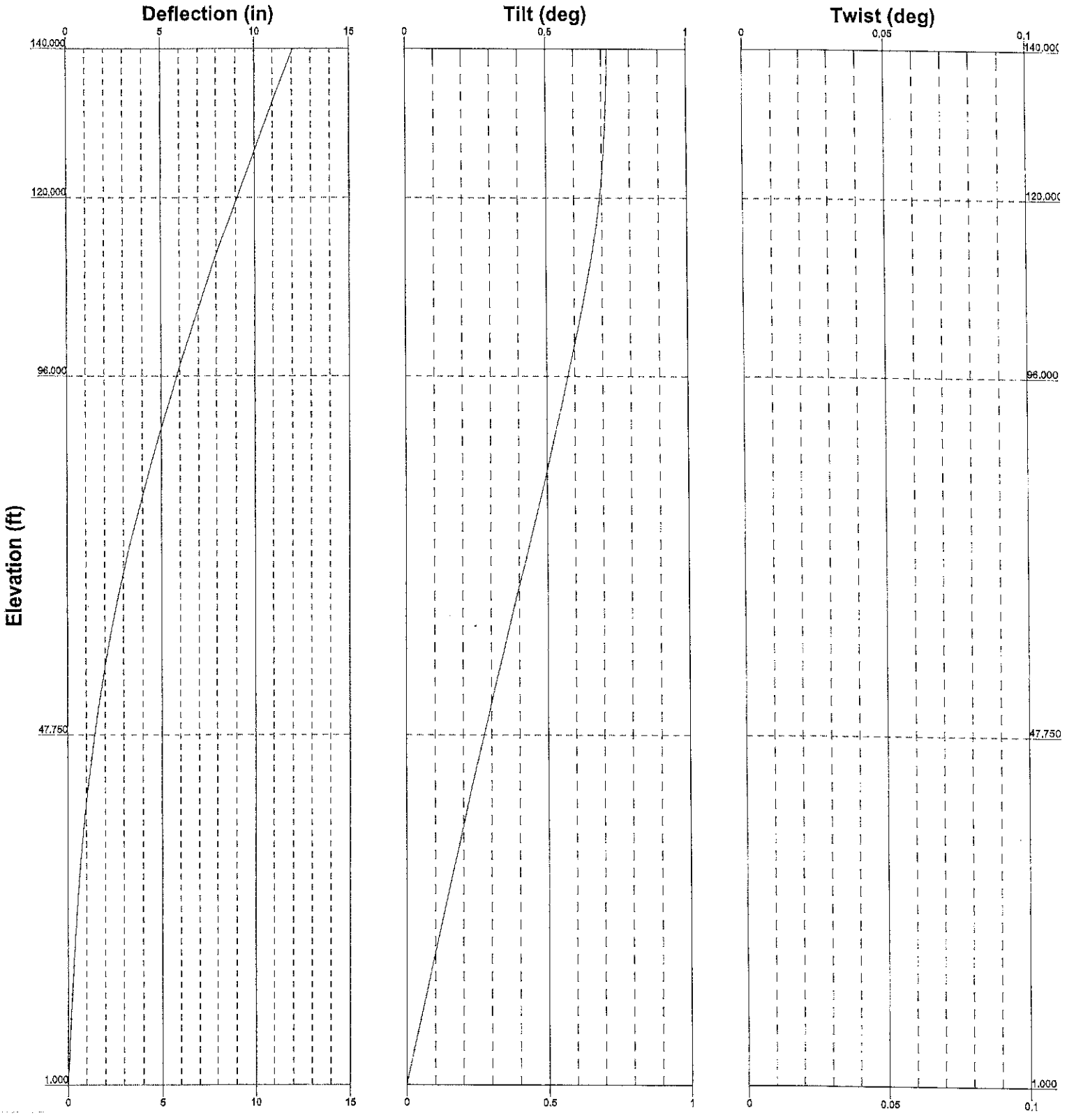
Project: **REV05**		
Client: KGI	Drawn by: NathanW	App'd:
Code: TIA-222-H	Date: 01/14/22	Scale: N
Path: \\DMZSESSERVER01\Common\TNX files\28493\REV05\28493_REV05.eri		Dwg No.

TIA-222-H - Service - 60 mph

Maximum Values



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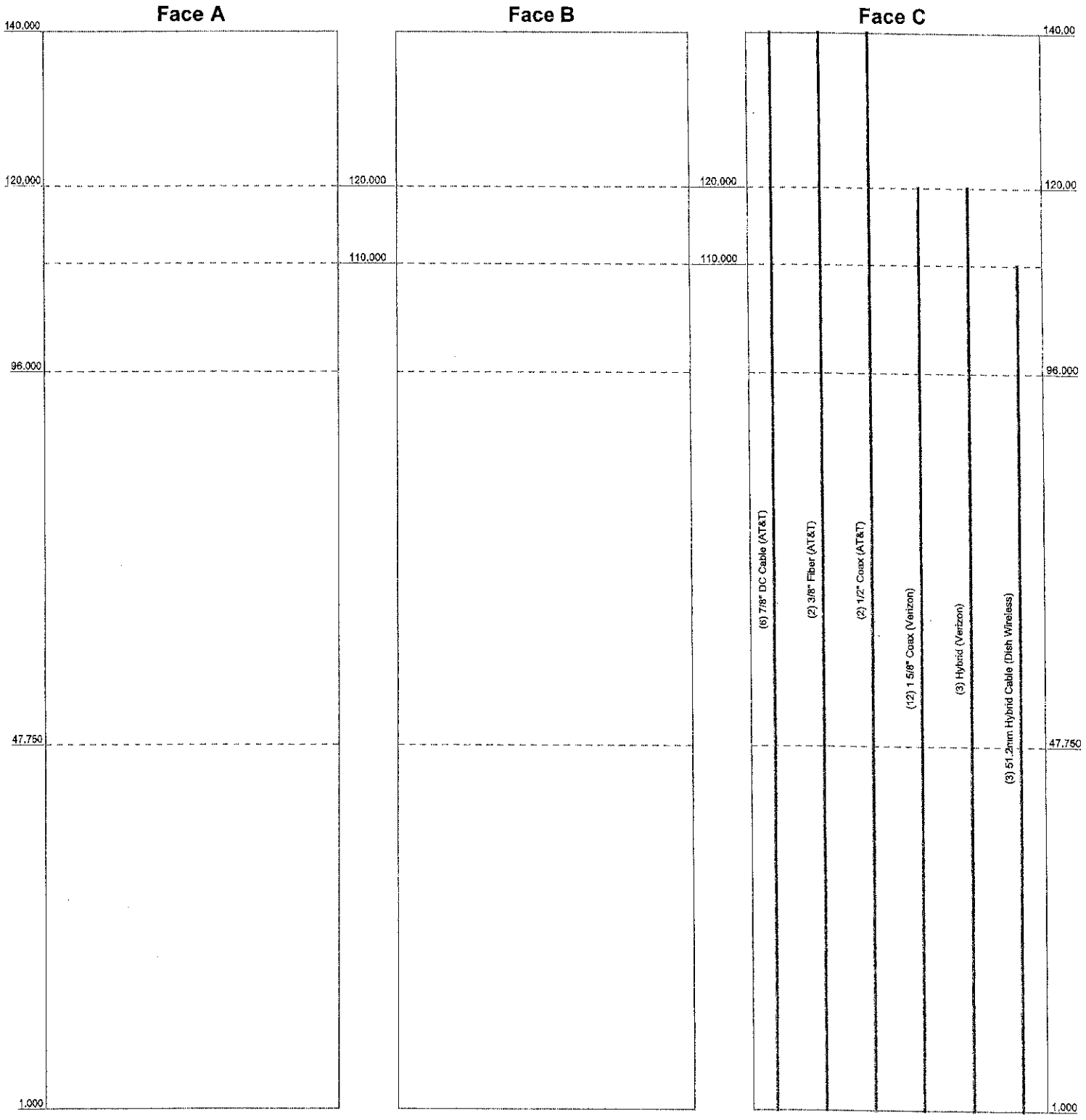
Phone: 402.289.1888
FAX:

Job: **28493_Bethel West 2**			
Project: **REV05**			
Client: KGI	Drawn by: NathanW		App'd:
Code: TIA-222-H	Date: 01/14/22		Scale: N
Path: \\OMZSESSERVER01\Common\TNX files\28493\REV05\28493_REV05.eri			Dwg No.

1' - 140'

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



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Job: **28493_Bethel West 2**		
Project: ***REV05***		
Client: KGI	Drawn by: NathanW	App'd:
Code: TIA-222-H	Date: 01/14/22	Scale: N
Path: \\OMZSESSERVER01\Common\TNX files\28493\REV05\28493_REV05.eri		Dwg No.

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Tower base elevation above sea level: 387.010 ft.
Basic wind speed of 115 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
CCISeismic Note: Seismic loads generated by CCISeismic 3.2.3.
CCISeismic Note: Seismic calculations are in accordance with TIA-222-H.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	140.000-120.000	20.000	0.000	18	27.000	31.419	0.250	1.000	A572-65 (65 ksi)
L2	120.000-96.000	24.000	5.250	18	31.419	36.723	0.250	1.000	A572-65 (65 ksi)
L3	96.000-47.750	53.500	6.500	18	35.063	46.885	0.313	1.250	A572-65 (65 ksi)
L4	47.750-1.000	53.250		18	44.823	56.590	0.375	1.500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in²	I in⁴	r in	C in	I/C in³	J in⁴	It/Q in²	w in	w/t
L1	27.378	21.226	1918.915	9.496	13.716	139.903	3840.355	10.615	4.312	17.248
	31.866	24.733	3035.783	11.065	15.961	190.199	6075.561	12.369	5.090	20.359
L2	31.866	24.733	3035.783	11.065	15.961	190.199	6075.561	12.369	5.090	20.359
	37.251	28.941	4863.953	12.948	18.655	260.730	9734.306	14.473	6.023	24.093
L3	36.733	34.468	5258.525	12.336	17.812	295.227	10523.969	17.237	5.621	17.987
	47.560	46.194	12658.196	16.533	23.817	531.469	25333.047	23.101	7.702	24.645
L4	46.915	52.905	13205.069	15.779	22.770	579.927	26427.513	26.457	7.229	19.277
	57.405	66.910	26713.597	19.956	28.748	929.242	53462.345	33.461	9.300	24.8

Tower Elevation ft	Gusset Area (per face) ft²	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
L1 140.000-120.000				1	1	1			
L2 120.000-96.000				1	1	1			
L3 96.000-47.750				1	1	1			
L4 47.750-1.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight klf
7/8" DC Cable (AT&T)	C	No	No	Inside Pole	140.000 - 1.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
3/8" Fiber (AT&T)	C	No	No	Inside Pole	140.000 - 1.000	2	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
1/2" Coax	C	No	No	Inside Pole	140.000 - 1.000	2	No Ice	0.000	0.000

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
(AT&T)							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
1 5/8" Coax (Verizon)	C	No	No	Inside Pole	120.000 - 1.000	12	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
Hybrid (Verizon)	C	No	No	Inside Pole	120.000 - 1.000	3	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
51.2mm Hybrid Cable (Dish Wireless)	C	No	No	Inside Pole	110.000 - 1.000	3	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003

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
L1	140.000-120.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.080
L2	120.000-96.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.628
L3	96.000-47.750	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	1.414
L4	47.750-1.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	1.370

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
L1	140.000-120.000	A	1.147	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.080
L2	120.000-96.000	A	1.126	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.628
L3	96.000-47.750	A	1.080	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	1.414
L4	47.750-1.000	A	0.968	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	1.370

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	140.000-120.000	0.000	0.000	0.000	0.000
L2	120.000-96.000	0.000	0.000	0.000	0.000
L3	96.000-47.750	0.000	0.000	0.000	0.000
L4	47.750-1.000	0.000	0.000	0.000	0.000

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

User Defined Loads - Seismic

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic Tower Section 1 - 1	135.000	0.000	0.000	0.029	0.000	0.000	0.050
CCISeismic Tower Section 1 - 2	125.000	0.000	0.000	0.031	0.000	0.000	0.046
CCISeismic Tower Section 2 - 1	118.000	0.000	0.000	0.013	0.000	0.000	0.017
CCISeismic Tower Section 2 - 2	111.000	0.000	0.000	0.035	0.000	0.000	0.040
CCISeismic Tower Section 2 - 3	101.000	0.000	0.000	0.037	0.000	0.000	0.035
CCISeismic Tower Section 3 - 1	99.500	0.000	0.000	0.016	0.000	0.000	0.015
CCISeismic Tower Section 3 - 2	92.750	0.000	0.000	0.048	0.000	0.000	0.038
CCISeismic Tower Section 3 - 3	82.750	0.000	0.000	0.051	0.000	0.000	0.032
CCISeismic Tower Section 3 - 4	72.750	0.000	0.000	0.054	0.000	0.000	0.026
CCISeismic Tower Section 3 - 5	62.750	0.000	0.000	0.056	0.000	0.000	0.021
CCISeismic Tower Section 3 - 6	52.750	0.000	0.000	0.059	0.000	0.000	0.015
CCISeismic Tower Section 4 - 1	52.625	0.000	0.000	0.023	0.000	0.000	0.006
CCISeismic Tower Section 4 - 2	46.000	0.000	0.000	0.072	0.000	0.000	0.014
CCISeismic Tower Section 4 - 3	36.000	0.000	0.000	0.076	0.000	0.000	0.009
CCISeismic Tower Section 4 - 4	26.000	0.000	0.000	0.079	0.000	0.000	0.005
CCISeismic Tower Section 4 - 5	16.000	0.000	0.000	0.083	0.000	0.000	0.002
CCISeismic Tower Section 4 - 6	6.000	0.000	0.000	0.086	0.000	0.000	0.000
CCISeismic pole mounts Sabre C10-855-721C Platform w/Rail w/o Mount Pipe (SES)	140.000	0.000	0.000	0.086	0.000	0.000	0.159
CCISeismic (3) cci TPA65R-BU6DA-K w/8' Mount Pipe	140.000	0.000	0.000	0.013	0.000	0.000	0.025
CCISeismic (3) cci TPA65R-BU6DA-K w/8' Mount Pipe	140.000	0.000	0.000	0.013	0.000	0.000	0.025
CCISeismic (3) cci TPA65R-BU6DA-K w/8' Mount Pipe	140.000	0.000	0.000	0.013	0.000	0.000	0.025
CCISeismic tower mounts 8'x2 1/2" Pipe Mount	140.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic tower mounts 8'x2 1/2" Pipe Mount	140.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic tower mounts 8'x2 1/2" Pipe Mount	140.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic ericsson 4478 B14 RRU	140.000	0.000	0.000	0.002	0.000	0.000	0.004
CCISeismic ericsson 4478 B14 RRU	140.000	0.000	0.000	0.002	0.000	0.000	0.004

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic ericsson 4478 B14 RRU	140.000	0.000	0.000	0.002	0.000	0.000	0.004
CCISeismic ericsson 8843 B2/B66A RRU	140.000	0.000	0.000	0.003	0.000	0.000	0.005
CCISeismic ericsson 8843 B2/B66A RRU	140.000	0.000	0.000	0.003	0.000	0.000	0.005
CCISeismic ericsson 8843 B2/B66A RRU	140.000	0.000	0.000	0.003	0.000	0.000	0.005
CCISeismic ericsson 4415 B30 RRU	140.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic ericsson 4415 B30 RRU	140.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic ericsson 4415 B30 RRU	140.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic ericsson 4449 B5/B12 RRU	140.000	0.000	0.000	0.003	0.000	0.000	0.005
CCISeismic ericsson 4449 B5/B12 RRU	140.000	0.000	0.000	0.003	0.000	0.000	0.005
CCISeismic ericsson 4449 B5/B12 RRU	140.000	0.000	0.000	0.003	0.000	0.000	0.005
CCISeismic raycap DC6-48-60-18-8F	140.000	0.000	0.000	0.001	0.000	0.000	0.002
CCISeismic raycap DC6-48-60-18-8F	140.000	0.000	0.000	0.001	0.000	0.000	0.002
CCISeismic raycap DC6-48-60-18-8F	140.000	0.000	0.000	0.001	0.000	0.000	0.002
CCISeismic (2) GPS	140.000	0.000	0.000	0.001	0.000	0.000	0.002
CCISeismic pole mounts Platform w/Rail	120.000	0.000	0.000	0.097	0.000	0.000	0.131
CCISeismic tower mounts 8'x2 1/2" Pipe Mount	120.000	0.000	0.000	0.002	0.000	0.000	0.002
CCISeismic (2) commscope NHH-33B-R2B w/8' Mount Pipe	120.000	0.000	0.000	0.011	0.000	0.000	0.015
CCISeismic (3) commscope NHH-33B-R2B w/8' Mount Pipe	120.000	0.000	0.000	0.016	0.000	0.000	0.022
CCISeismic (3) commscope NHH-33B-R2B w/8' Mount Pipe	120.000	0.000	0.000	0.016	0.000	0.000	0.022
CCISeismic samsung MT6407-77A w/8' Mount Pipe	120.000	0.000	0.000	0.005	0.000	0.000	0.007
CCISeismic samsung MT6407-77A w/8' Mount Pipe	120.000	0.000	0.000	0.005	0.000	0.000	0.007
CCISeismic samsung MT6407-77A w/8' Mount Pipe	120.000	0.000	0.000	0.005	0.000	0.000	0.007
CCISeismic (4) ericsson RRUS A2 Module	120.000	0.000	0.000	0.003	0.000	0.000	0.004
CCISeismic (4) ericsson RRUS A2 Module	120.000	0.000	0.000	0.003	0.000	0.000	0.004
CCISeismic (4) ericsson RRUS A2 Module	120.000	0.000	0.000	0.003	0.000	0.000	0.004
CCISeismic samsung B2/B66A RRH-BR049	120.000	0.000	0.000	0.003	0.000	0.000	0.005
CCISeismic (2) samsung B2/B66A RRH-BR049	120.000	0.000	0.000	0.007	0.000	0.000	0.009
CCISeismic samsung B2/B66A RRH-BR049	120.000	0.000	0.000	0.003	0.000	0.000	0.005
CCISeismic samsung B5/B13 RRH BR04C	120.000	0.000	0.000	0.003	0.000	0.000	0.004
CCISeismic samsung B5/B13 RRH BR04C	120.000	0.000	0.000	0.003	0.000	0.000	0.004
CCISeismic (2) samsung B5/B13	120.000	0.000	0.000	0.005	0.000	0.000	0.007

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
RRH BR04C							
CCISeismic (4) miscl 10"x7"x2" TMA	120.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic (4) miscl 10"x7"x2" TMA	120.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic (4) miscl 10"x7"x2" TMA	120.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic OVP Junction Box	120.000	0.000	0.000	0.001	0.000	0.000	0.002
CCISeismic OVP Junction Box	120.000	0.000	0.000	0.001	0.000	0.000	0.002
CCISeismic OVP Junction Box	120.000	0.000	0.000	0.001	0.000	0.000	0.002
CCISeismic pole mounts Commscope MC-PK8-DSH Snub Nose Platform w/Rail w/o Mount Pipe (SES)	110.000	0.000	0.000	0.038	0.000	0.000	0.043
CCISeismic jma MX08FRO665-21 w/8' Mount Pipe	110.000	0.000	0.000	0.004	0.000	0.000	0.005
CCISeismic jma MX08FRO665-21 w/8' Mount Pipe	110.000	0.000	0.000	0.004	0.000	0.000	0.005
CCISeismic jma MX08FRO665-21 w/8' Mount Pipe	110.000	0.000	0.000	0.004	0.000	0.000	0.005
CCISeismic (2) tower mounts 8'x2 1/2" Pipe Mount	110.000	0.000	0.000	0.004	0.000	0.000	0.004
CCISeismic (2) tower mounts 8'x2 1/2" Pipe Mount	110.000	0.000	0.000	0.004	0.000	0.000	0.004
CCISeismic (2) tower mounts 8'x2 1/2" Pipe Mount	110.000	0.000	0.000	0.004	0.000	0.000	0.004
CCISeismic fujitsu TA08025-B604	110.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic fujitsu TA08025-B604	110.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic fujitsu TA08025-B604	110.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic fujitsu TA08025-B605	110.000	0.000	0.000	0.003	0.000	0.000	0.003
CCISeismic fujitsu TA08025-B605	110.000	0.000	0.000	0.003	0.000	0.000	0.003
CCISeismic fujitsu TA08025-B605	110.000	0.000	0.000	0.003	0.000	0.000	0.003
CCISeismic raycap RDIDC-9181-PF-48	110.000	0.000	0.000	0.001	0.000	0.000	0.001
CCISeismic (6) 7/8" DC Cable From 0 to 139 (129ft to139ft)	135.000	0.000	0.000	0.001	0.000	0.000	0.002
CCISeismic (6) 7/8" DC Cable From 0 to 139 (119ft to129ft)	125.000	0.000	0.000	0.001	0.000	0.000	0.002
CCISeismic (6) 7/8" DC Cable From 0 to 139 (109ft to119ft)	115.000	0.000	0.000	0.001	0.000	0.000	0.002
CCISeismic (6) 7/8" DC Cable From 0 to 139 (99ft to109ft)	105.000	0.000	0.000	0.001	0.000	0.000	0.001
CCISeismic (6) 7/8" DC Cable From 0 to 139 (89ft to99ft)	95.000	0.000	0.000	0.001	0.000	0.000	0.001
CCISeismic (6) 7/8" DC Cable From 0 to 139 (79ft to89ft)	85.000	0.000	0.000	0.001	0.000	0.000	0.001
CCISeismic (6) 7/8" DC Cable From 0 to 139 (69ft to79ft)	75.000	0.000	0.000	0.001	0.000	0.000	0.001
CCISeismic (6) 7/8" DC Cable From 0 to 139 (59ft to69ft)	65.000	0.000	0.000	0.001	0.000	0.000	0.001
CCISeismic (6) 7/8" DC Cable	55.000	0.000	0.000	0.001	0.000	0.000	0.000

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
From 0 to 139 (49ft to59ft) CCISeismic (6) 7/8" DC Cable	45.000	0.000	0.000	0.001	0.000	0.000	0.000
From 0 to 139 (39ft to49ft) CCISeismic (6) 7/8" DC Cable	35.000	0.000	0.000	0.001	0.000	0.000	0.000
From 0 to 139 (29ft to39ft) CCISeismic (6) 7/8" DC Cable	25.000	0.000	0.000	0.001	0.000	0.000	0.000
From 0 to 139 (19ft to29ft) CCISeismic (6) 7/8" DC Cable	15.000	0.000	0.000	0.001	0.000	0.000	0.000
From 0 to 139 (9ft to19ft) CCISeismic (6) 7/8" DC Cable	5.500	0.000	0.000	0.001	0.000	0.000	0.000
From 0 to 139 (0ft to9ft) CCISeismic (2) 3/8" Fiber	135.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (129ft to139ft) CCISeismic (2) 3/8" Fiber	125.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (119ft to129ft) CCISeismic (2) 3/8" Fiber	115.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (109ft to119ft) CCISeismic (2) 3/8" Fiber	105.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (99ft to109ft) CCISeismic (2) 3/8" Fiber	95.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (89ft to99ft) CCISeismic (2) 3/8" Fiber	85.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (79ft to89ft) CCISeismic (2) 3/8" Fiber	75.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (69ft to79ft) CCISeismic (2) 3/8" Fiber	65.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (59ft to69ft) CCISeismic (2) 3/8" Fiber	55.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (49ft to59ft) CCISeismic (2) 3/8" Fiber	45.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (39ft to49ft) CCISeismic (2) 3/8" Fiber	35.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (29ft to39ft) CCISeismic (2) 3/8" Fiber	25.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (19ft to29ft) CCISeismic (2) 3/8" Fiber	15.000	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (9ft to19ft) CCISeismic (2) 3/8" Fiber	5.500	0.000	0.000	0.000	0.000	0.000	0.000
From 0 to 139 (0ft to9ft) CCISeismic (2) general cable 1/2" Coax From 0 to 139 (129ft to139ft)	135.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (119ft to129ft)	125.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (109ft to119ft)	115.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (99ft to109ft)	105.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (89ft to99ft)	95.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (79ft to89ft)	85.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (69ft to79ft)	75.000	0.000	0.000	0.000	0.000	0.000	0.000

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (59ft to69ft)	65.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (49ft to59ft)	55.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (39ft to49ft)	45.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (29ft to39ft)	35.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (19ft to29ft)	25.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (9ft to19ft)	15.000	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (2) general cable 1/2" Coax From 0 to 139 (0ft to9ft)	5.500	0.000	0.000	0.000	0.000	0.000	0.000
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (129ft to139ft)	135.000	0.000	0.000	0.005	0.000	0.000	0.008
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (119ft to129ft)	125.000	0.000	0.000	0.005	0.000	0.000	0.007
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (109ft to119ft)	115.000	0.000	0.000	0.005	0.000	0.000	0.006
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (99ft to109ft)	105.000	0.000	0.000	0.005	0.000	0.000	0.005
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (89ft to99ft)	95.000	0.000	0.000	0.005	0.000	0.000	0.004
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (79ft to89ft)	85.000	0.000	0.000	0.005	0.000	0.000	0.003
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (69ft to79ft)	75.000	0.000	0.000	0.005	0.000	0.000	0.003
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (59ft to69ft)	65.000	0.000	0.000	0.005	0.000	0.000	0.002
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (49ft to59ft)	55.000	0.000	0.000	0.005	0.000	0.000	0.001
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (39ft to49ft)	45.000	0.000	0.000	0.005	0.000	0.000	0.001
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (29ft to39ft)	35.000	0.000	0.000	0.005	0.000	0.000	0.001
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (19ft to29ft)	25.000	0.000	0.000	0.005	0.000	0.000	0.000
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (9ft to19ft)	15.000	0.000	0.000	0.005	0.000	0.000	0.000

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic (12) general cable 1 5/8" Coax From 0 to 139 (0ft to9ft)	5.500	0.000	0.000	0.004	0.000	0.000	0.000
CCISeismic (3) Hybrid From 0 to 119 (109ft to119ft)	115.000	0.000	0.000	0.002	0.000	0.000	0.003
CCISeismic (3) Hybrid From 0 to 119 (99ft to109ft)	105.000	0.000	0.000	0.002	0.000	0.000	0.002
CCISeismic (3) Hybrid From 0 to 119 (89ft to99ft)	95.000	0.000	0.000	0.002	0.000	0.000	0.002
CCISeismic (3) Hybrid From 0 to 119 (79ft to89ft)	85.000	0.000	0.000	0.002	0.000	0.000	0.001
CCISeismic (3) Hybrid From 0 to 119 (69ft to79ft)	75.000	0.000	0.000	0.002	0.000	0.000	0.001
CCISeismic (3) Hybrid From 0 to 119 (59ft to69ft)	65.000	0.000	0.000	0.002	0.000	0.000	0.001
CCISeismic (3) Hybrid From 0 to 119 (49ft to59ft)	55.000	0.000	0.000	0.002	0.000	0.000	0.001
CCISeismic (3) Hybrid From 0 to 119 (39ft to49ft)	45.000	0.000	0.000	0.002	0.000	0.000	0.000
CCISeismic (3) Hybrid From 0 to 119 (29ft to39ft)	35.000	0.000	0.000	0.002	0.000	0.000	0.000
CCISeismic (3) Hybrid From 0 to 119 (19ft to29ft)	25.000	0.000	0.000	0.002	0.000	0.000	0.000
CCISeismic (3) Hybrid From 0 to 119 (9ft to19ft)	15.000	0.000	0.000	0.002	0.000	0.000	0.000
CCISeismic (3) Hybrid From 0 to 119 (0ft to9ft)	5.500	0.000	0.000	0.002	0.000	0.000	0.000
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (109ft to119ft)	115.000	0.000	0.000	0.003	0.000	0.000	0.004
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (99ft to109ft)	105.000	0.000	0.000	0.003	0.000	0.000	0.003
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (89ft to99ft)	95.000	0.000	0.000	0.003	0.000	0.000	0.002
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (79ft to89ft)	85.000	0.000	0.000	0.003	0.000	0.000	0.002
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (69ft to79ft)	75.000	0.000	0.000	0.003	0.000	0.000	0.002
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (59ft to69ft)	65.000	0.000	0.000	0.003	0.000	0.000	0.001
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (49ft to59ft)	55.000	0.000	0.000	0.003	0.000	0.000	0.001
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (39ft to49ft)	45.000	0.000	0.000	0.003	0.000	0.000	0.001
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (29ft to39ft)	35.000	0.000	0.000	0.003	0.000	0.000	0.000
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (19ft to29ft)	25.000	0.000	0.000	0.003	0.000	0.000	0.000
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (9ft to19ft)	15.000	0.000	0.000	0.003	0.000	0.000	0.000

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic (3) 51.2mm Hybrid Cable From 0 to 119 (0ft to9ft)	5.500	0.000	0.000	0.003	0.000	0.000	0.000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Sabre C10-855-721C Platform w/Rail w/o Mount Pipe (SES) (ATT)	C	None			0.000	140.000	No Ice 1/2" Ice 1" Ice	24.660 32.550 40.440	24.660 32.550 40.440	2.237 2.908 3.579
(3) TPA65R-BU6DA-K w/8' Mount Pipe (ATT)	A	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	13.304 14.015 14.644	7.915 9.199 10.146	0.115 0.214 0.323
(3) TPA65R-BU6DA-K w/8' Mount Pipe (ATT)	B	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	13.304 14.015 14.644	7.915 9.199 10.146	0.115 0.214 0.323
(3) TPA65R-BU6DA-K w/8' Mount Pipe (ATT)	C	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	13.304 14.015 14.644	7.915 9.199 10.146	0.115 0.214 0.323
8'x2 1/2" Pipe Mount (ATT)	A	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	2.300 3.132 3.620	2.300 3.132 3.620	0.046 0.063 0.085
8'x2 1/2" Pipe Mount (ATT)	B	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	2.300 3.132 3.620	2.300 3.132 3.620	0.046 0.063 0.085
8'x2 1/2" Pipe Mount (ATT)	C	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	2.300 3.132 3.620	2.300 3.132 3.620	0.046 0.063 0.085
4478 B14 RRU (ATT)	A	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	2.021 2.200 2.386	1.246 1.396 1.554	0.059 0.077 0.097
4478 B14 RRU (ATT)	B	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	2.021 2.200 2.386	1.246 1.396 1.554	0.059 0.077 0.097
4478 B14 RRU (ATT)	C	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	2.021 2.200 2.386	1.246 1.396 1.554	0.059 0.077 0.097
8843 B2/B66A RRU (ATT)	A	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	1.639 1.799 1.966	1.353 1.500 1.655	0.072 0.090 0.110
8843 B2/B66A RRU (ATT)	B	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	1.639 1.799 1.966	1.353 1.500 1.655	0.072 0.090 0.110
8843 B2/B66A RRU (ATT)	C	From Centroid-Face	3.000 0.000 0.000		0.000	140.000	No Ice 1/2" Ice 1" Ice	1.639 1.799 1.966	1.353 1.500 1.655	0.072 0.090 0.110
4415 B30 RRU (ATT)	A	From Centroid-Face	3.000 0.000		0.000	140.000	No Ice 1/2" Ice	1.843 2.012	0.820 0.943	0.046 0.060

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
		ce	0.000					1" Ice	2.190	1.075	0.077
4415 B30 RRU (ATT)	B	From Centroid-Face	3.000 0.000			0.000	140.000	No Ice 1/2" Ice	1.843 2.012	0.820 0.943	0.046 0.060
		ce	0.000					1" Ice	2.190	1.075	0.077
4415 B30 RRU (ATT)	C	From Centroid-Face	3.000 0.000			0.000	140.000	No Ice 1/2" Ice	1.843 2.012	0.820 0.943	0.046 0.060
		ce	0.000					1" Ice	2.190	1.075	0.077
4449 B5/B12 RRU (ATT)	A	From Centroid-Face	3.000 0.000			0.000	140.000	No Ice 1/2" Ice	1.968 2.144	1.408 1.564	0.071 0.090
		ce	0.000					1" Ice	2.328	1.727	0.111
4449 B5/B12 RRU (ATT)	B	From Centroid-Face	3.000 0.000			0.000	140.000	No Ice 1/2" Ice	1.968 2.144	1.408 1.564	0.071 0.090
		ce	0.000					1" Ice	2.328	1.727	0.111
4449 B5/B12 RRU (ATT)	C	From Centroid-Face	3.000 0.000			0.000	140.000	No Ice 1/2" Ice	1.968 2.144	1.408 1.564	0.071 0.090
		ce	0.000					1" Ice	2.328	1.727	0.111
DC6-48-60-18-8F (ATT)	A	From Leg	2.000 0.000 0.000			0.000	140.000	No Ice 1/2" Ice 1" Ice	0.917 1.458 1.643	0.917 1.458 1.643	0.033 0.051 0.071
DC6-48-60-18-8F (ATT)	B	From Leg	2.000 0.000 0.000			0.000	140.000	No Ice 1/2" Ice 1" Ice	0.917 1.458 1.643	0.917 1.458 1.643	0.033 0.051 0.071
DC6-48-60-18-8F (ATT)	C	From Leg	2.000 0.000 0.000			0.000	140.000	No Ice 1/2" Ice 1" Ice	0.917 1.458 1.643	0.917 1.458 1.643	0.033 0.051 0.071
(2) GPS (ATT)	A	From Centroid-Face	3.000 0.000			0.000	140.000	No Ice 1/2" Ice	0.267 0.337	0.267 0.337	0.015 0.020
*		ce	0.000					1" Ice	0.415	0.415	0.026
Platform w/Rail (Verizon)	A	None				0.000	120.000	No Ice 1/2" Ice 1" Ice	35.850 40.460 45.070	35.850 40.460 45.070	2.500 3.500 4.500
8'x2 1/2" Pipe Mount (Verizon)	A	From Centroid-Face	3.000 0.000			0.000	120.000	No Ice 1/2" Ice	2.300 3.132	2.300 3.132	0.046 0.063
		ce	0.000					1" Ice	3.620	3.620	0.085
(2) NHH-33B-R2B w/8' Mount Pipe (Verizon)	A	From Centroid-Face	3.000 0.000			0.000	120.000	No Ice 1/2" Ice	15.903 16.634	8.902 10.199	0.141 0.257
		ce	0.000					1" Ice	17.286	11.156	0.384
(3) NHH-33B-R2B w/8' Mount Pipe (Verizon)	B	From Centroid-Face	3.000 0.000			0.000	120.000	No Ice 1/2" Ice	15.903 16.634	8.902 10.199	0.141 0.257
		ce	0.000					1" Ice	17.286	11.156	0.384
(3) NHH-33B-R2B w/8' Mount Pipe (Verizon)	C	From Centroid-Face	3.000 0.000			0.000	120.000	No Ice 1/2" Ice	15.903 16.634	8.902 10.199	0.141 0.257
		ce	0.000					1" Ice	17.286	11.156	0.384
MT6407-77A w/8' Mount Pipe (Verizon)	A	From Centroid-Face	3.000 0.000			0.000	120.000	No Ice 1/2" Ice	6.159 6.975	4.144 5.199	0.133 0.188
		ce	0.000					1" Ice	7.580	5.917	0.249
MT6407-77A w/8' Mount Pipe (Verizon)	B	From Centroid-Face	3.000 0.000			0.000	120.000	No Ice 1/2" Ice	6.159 6.975	4.144 5.199	0.133 0.188
		ce	0.000					1" Ice	7.580	5.917	0.249
MT6407-77A w/8' Mount Pipe (Verizon)	C	From Centroid-Face	3.000 0.000			0.000	120.000	No Ice 1/2" Ice	6.159 6.975	4.144 5.199	0.133 0.188
		ce	0.000					1" Ice	7.580	5.917	0.249
(4) RRUS A2 Module (Verizon)	A	From Centroid-Face	3.000 0.000			0.000	120.000	No Ice 1/2" Ice	1.600 1.758	0.455 0.558	0.021 0.031
		ce	0.000					1" Ice	1.924	0.667	0.044
(4) RRUS A2 Module	B	From	3.000			0.000	120.000	No Ice	1.600	0.455	0.021

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(Verizon)		Centroid-Face	0.000 0.000			1/2" Ice 1" Ice	1.758 1.924	0.558 0.667	0.031 0.044
(4) RRUS A2 Module (Verizon)	C	From Centroid-Face	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	1.600 1.758 1.924	0.455 0.558 0.667	0.021 0.031 0.044
B2/B66A RRH-BR049 (Verizon)	A	From Centroid-Face	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	2.101 2.282 2.469	1.579 1.737 1.903	0.089 0.111 0.136
(2) B2/B66A RRH-BR049 (Verizon)	B	From Centroid-Face	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	2.101 2.282 2.469	1.579 1.737 1.903	0.089 0.111 0.136
B2/B66A RRH-BR049 (Verizon)	C	From Centroid-Face	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	2.101 2.282 2.469	1.579 1.737 1.903	0.089 0.111 0.136
B5/B13 RRH BR04C (Verizon)	A	From Centroid-Face	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	1.875 2.045 2.223	1.019 1.151 1.291	0.070 0.087 0.106
B5/B13 RRH BR04C (Verizon)	B	From Centroid-Face	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	1.875 2.045 2.223	1.019 1.151 1.291	0.070 0.087 0.106
(2) B5/B13 RRH BR04C (Verizon)	C	From Centroid-Face	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	1.875 2.045 2.223	1.019 1.151 1.291	0.070 0.087 0.106
(4) 10"x7"x2" TMA (Verizon)	A	From Centroid-Face	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	0.583 0.681 0.787	0.182 0.250 0.325	0.015 0.019 0.024
(4) 10"x7"x2" TMA (Verizon)	B	From Centroid-Face	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	0.583 0.681 0.787	0.182 0.250 0.325	0.015 0.019 0.024
(4) 10"x7"x2" TMA (Verizon)	C	From Centroid-Face	3.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	0.583 0.681 0.787	0.182 0.250 0.325	0.015 0.019 0.024
OVP Junction Box (Verizon)	A	From Leg	2.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	3.791 4.043 4.302	2.511 2.724 2.944	0.032 0.063 0.099
OVP Junction Box (Verizon)	B	From Leg	2.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	3.791 4.043 4.302	2.511 2.724 2.944	0.032 0.063 0.099
OVP Junction Box (Verizon)	C	From Leg	2.000 0.000 0.000	0.000	120.000	No Ice 1/2" Ice 1" Ice	3.791 4.043 4.302	2.511 2.724 2.944	0.032 0.063 0.099
*									
Commscope MC-PK8-DSH Snub Nose Platform w/Rail w/o Mount Pipe (SES) (Dish Wireless)	C	None		0.000	110.000	No Ice 1/2" Ice 1" Ice	26.050 50.700 75.350	26.050 50.700 75.350	0.984 1.279 1.574
MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	A	From Centroid-Face	3.000 0.000 0.000	0.000	110.000	No Ice 1/2" Ice 1" Ice	13.064 13.769 14.395	8.167 9.457 10.410	0.111 0.209 0.318
MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	B	From Centroid-Face	3.000 -2.000 0.000	0.000	110.000	No Ice 1/2" Ice 1" Ice	13.064 13.769 14.395	8.167 9.457 10.410	0.111 0.209 0.318
MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	C	From Centroid-Face	3.000 -2.000 0.000	0.000	110.000	No Ice 1/2" Ice 1" Ice	13.064 13.769 14.395	8.167 9.457 10.410	0.111 0.209 0.318
(2) 8'x2 1/2" Pipe Mount (Dish Wireless)	A	From Centroid-Face	3.000 -2.000	0.000	110.000	No Ice 1/2" Ice	2.300 3.132	2.300 3.132	0.046 0.063

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
		ce	0.000			1" Ice	3.620	3.620	0.085
(2) 8'x2 1/2" Pipe Mount	B	From	3.000	0.000	110.000	No Ice	2.300	2.300	0.046
(Dish Wireless)		Centroid-Fa	0.000			1/2" Ice	3.132	3.132	0.063
		ce	0.000			1" Ice	3.620	3.620	0.085
(2) 8'x2 1/2" Pipe Mount	C	From	3.000	0.000	110.000	No Ice	2.300	2.300	0.046
(Dish Wireless)		Centroid-Fa	0.000			1/2" Ice	3.132	3.132	0.063
		ce	0.000			1" Ice	3.620	3.620	0.085
TA08025-B604	A	From	3.000	0.000	110.000	No Ice	1.975	1.040	0.064
(Dish Wireless)		Centroid-Fa	0.000			1/2" Ice	2.150	1.176	0.081
		ce	0.000			1" Ice	2.332	1.318	0.100
TA08025-B604	B	From	3.000	0.000	110.000	No Ice	1.975	1.040	0.064
(Dish Wireless)		Centroid-Fa	0.000			1/2" Ice	2.150	1.176	0.081
		ce	0.000			1" Ice	2.332	1.318	0.100
TA08025-B604	C	From	3.000	0.000	110.000	No Ice	1.975	1.040	0.064
(Dish Wireless)		Centroid-Fa	0.000			1/2" Ice	2.150	1.176	0.081
		ce	0.000			1" Ice	2.332	1.318	0.100
TA08025-B605	A	From	3.000	0.000	110.000	No Ice	1.975	1.198	0.075
(Dish Wireless)		Centroid-Fa	0.000			1/2" Ice	2.150	1.340	0.093
		ce	0.000			1" Ice	2.332	1.490	0.114
TA08025-B605	B	From	3.000	0.000	110.000	No Ice	1.975	1.198	0.075
(Dish Wireless)		Centroid-Fa	0.000			1/2" Ice	2.150	1.340	0.093
		ce	0.000			1" Ice	2.332	1.490	0.114
TA08025-B605	C	From	3.000	0.000	110.000	No Ice	1.975	1.198	0.075
(Dish Wireless)		Centroid-Fa	0.000			1/2" Ice	2.150	1.340	0.093
		ce	0.000			1" Ice	2.332	1.490	0.114
RDIDC-9181-PF-48	A	From Leg	2.000	0.000	110.000	No Ice	2.297	1.334	0.022
(Dish Wireless)			0.000			1/2" Ice	2.487	1.490	0.041
			0.000			1" Ice	2.684	1.653	0.064

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z ksf	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
L1	129.748	1.065	0.034	49.370	A	0.000	49.370	49.370	100.00	0.000	0.000
140.000-120.0					B	0.000	49.370		100.00	0.000	0.000
00					C	0.000	49.370		100.00	0.000	0.000
L2	107.689	1.009	0.032	69.116	A	0.000	69.116	69.116	100.00	0.000	0.000
120.000-96.00					B	0.000	69.116		100.00	0.000	0.000
0					C	0.000	69.116		100.00	0.000	0.000
L3	71.426	0.898	0.028	169.464	A	0.000	169.464	169.464	100.00	0.000	0.000
96.000-47.750					B	0.000	169.464		100.00	0.000	0.000
					C	0.000	169.464		100.00	0.000	0.000
L4	23.893	0.7	0.023	203.208	A	0.000	203.208	203.208	100.00	0.000	0.000
47.750-1.000					B	0.000	203.208		100.00	0.000	0.000
					C	0.000	203.208		100.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z ksf	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
L1	129.748	1.065	0.006	1.147	53.192	A	0.000	53.192	53.192	100.00	0.000	0.000
140.000-120.000						B	0.000	53.192		100.00	0.000	0.000
						C	0.000	53.192		100.00	0.000	0.000
L2	107.689	1.009	0.006	1.126	73.618	A	0.000	73.618	73.618	100.00	0.000	0.000
120.000-96.000						B	0.000	73.618		100.00	0.000	0.000
						C	0.000	73.618		100.00	0.000	0.000
L3	71.426	0.898	0.005	1.080	178.515	A	0.000	178.515	178.515	100.00	0.000	0.000
96.000-47.750						B	0.000	178.515		100.00	0.000	0.000
						C	0.000	178.515		100.00	0.000	0.000
L4 47.750-1.000	23.893	0.7	0.004	0.968	211.625	A	0.000	211.625	211.625	100.00	0.000	0.000
						B	0.000	211.625		100.00	0.000	0.000
						C	0.000	211.625		100.00	0.000	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z ksf	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
L1	129.748	1.065	0.008	49.370	A	0.000	49.370	49.370	100.00	0.000	0.000
140.000-120.0					B	0.000	49.370		100.00	0.000	0.000
00					C	0.000	49.370		100.00	0.000	0.000
L2	107.689	1.009	0.008	69.116	A	0.000	69.116	69.116	100.00	0.000	0.000
120.000-96.00					B	0.000	69.116		100.00	0.000	0.000
0					C	0.000	69.116		100.00	0.000	0.000
L3	71.426	0.898	0.007	169.464	A	0.000	169.464	169.464	100.00	0.000	0.000
96.000-47.750					B	0.000	169.464		100.00	0.000	0.000
					C	0.000	169.464		100.00	0.000	0.000
L4	23.893	0.7	0.006	203.208	A	0.000	203.208	203.208	100.00	0.000	0.000
47.750-1.000					B	0.000	203.208		100.00	0.000	0.000
					C	0.000	203.208		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.080	1.564	A	1	0.63	0.034	1	1	49.370	1.155	0.058	C
140.000-120.0			B	1	0.63		1	1	49.370			
00			C	1	0.63		1	1	49.370			
L2	0.628	2.192	A	1	0.63	0.032	1	1	69.116	1.533	0.064	C
120.000-96.00			B	1	0.63		1	1	69.116			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
0			C	1	0.63		1	1	69.116			
L3	1.414	7.342	A	1	0.63	0.028	1	1	169.464	3.326	0.069	C
96.000-47.750			B	1	0.63		1	1	169.464			
			C	1	0.63		1	1	169.464			
L4	1.370	10.855	A	1	0.63	0.023	1	1	203.208	3.205	0.069	C
47.750-1.000			B	1	0.63		1	1	203.208			
			C	1	0.63		1	1	203.208			
Sum Weight:	3.491	21.953						OTM	619.938 kip-ft	9.220		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.080	1.564	A	1	0.63	0.034	1	1	49.370	1.155	0.058	C
140.000-120.0			B	1	0.63		1	1	49.370			
00			C	1	0.63		1	1	49.370			
L2	0.628	2.192	A	1	0.63	0.032	1	1	69.116	1.533	0.064	C
120.000-96.00			B	1	0.63		1	1	69.116			
0			C	1	0.63		1	1	69.116			
L3	1.414	7.342	A	1	0.63	0.028	1	1	169.464	3.326	0.069	C
96.000-47.750			B	1	0.63		1	1	169.464			
			C	1	0.63		1	1	169.464			
L4	1.370	10.855	A	1	0.63	0.023	1	1	203.208	3.205	0.069	C
47.750-1.000			B	1	0.63		1	1	203.208			
			C	1	0.63		1	1	203.208			
Sum Weight:	3.491	21.953						OTM	619.938 kip-ft	9.220		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.080	1.564	A	1	0.63	0.034	1	1	49.370	1.155	0.058	C
140.000-120.0			B	1	0.63		1	1	49.370			
00			C	1	0.63		1	1	49.370			
L2	0.628	2.192	A	1	0.63	0.032	1	1	69.116	1.533	0.064	C
120.000-96.00			B	1	0.63		1	1	69.116			
0			C	1	0.63		1	1	69.116			
L3	1.414	7.342	A	1	0.63	0.028	1	1	169.464	3.326	0.069	C
96.000-47.750			B	1	0.63		1	1	169.464			
			C	1	0.63		1	1	169.464			
L4	1.370	10.855	A	1	0.63	0.023	1	1	203.208	3.205	0.069	C
47.750-1.000			B	1	0.63		1	1	203.208			
			C	1	0.63		1	1	203.208			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
Sum Weight:	3.491	21.953						OTM	619.938 kip-ft	9.220		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.080	2.423	A	1	1.1	0.006	1	1	53.192	0.411	0.021	C
140.000-120.0			B	1	1.1		1	1	53.192			
00			C	1	1.1		1	1	53.192			
L2	0.628	3.365	A	1	1.1	0.006	1	1	73.618	0.539	0.022	C
120.000-96.00			B	1	1.1		1	1	73.618			
0			C	1	1.1		1	1	73.618			
L3	1.414	10.085	A	1	1.1	0.005	1	1	178.151	1.154	0.024	C
96.000-47.750			B	1	1.1		1	1	178.151			
			C	1	1.1		1	1	178.151			
L4	1.370	13.782	A	1	1.1	0.004	1	1	210.752	1.097	0.023	C
47.750-1.000			B	1	1.1		1	1	210.752			
			C	1	1.1		1	1	210.752			
Sum Weight:	3.491	29.656						OTM	216.799 kip-ft	3.201		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.080	2.423	A	1	1.1	0.006	1	1	53.192	0.411	0.021	C
140.000-120.0			B	1	1.1		1	1	53.192			
00			C	1	1.1		1	1	53.192			
L2	0.628	3.365	A	1	1.1	0.006	1	1	73.618	0.539	0.022	C
120.000-96.00			B	1	1.1		1	1	73.618			
0			C	1	1.1		1	1	73.618			
L3	1.414	10.085	A	1	1.1	0.005	1	1	178.151	1.154	0.024	C
96.000-47.750			B	1	1.1		1	1	178.151			
			C	1	1.1		1	1	178.151			
L4	1.370	13.782	A	1	1.1	0.004	1	1	210.752	1.097	0.023	C
47.750-1.000			B	1	1.1		1	1	210.752			
			C	1	1.1		1	1	210.752			
Sum Weight:	3.491	29.656						OTM	216.799 kip-ft	3.201		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.080	2.423	A	1	1.1	0.006	1	1	53.192	0.411	0.021	C
140.000-120.0			B	1	1.1		1	1	53.192			
00			C	1	1.1		1	1	53.192			
L2	0.628	3.365	A	1	1.1	0.006	1	1	73.618	0.539	0.022	C
120.000-96.00			B	1	1.1		1	1	73.618			
0			C	1	1.1		1	1	73.618			
L3	1.414	10.085	A	1	1.1	0.005	1	1	178.151	1.154	0.024	C
96.000-47.750			B	1	1.1		1	1	178.151			
			C	1	1.1		1	1	178.151			
L4	1.370	13.782	A	1	1.1	0.004	1	1	210.752	1.097	0.023	C
47.750-1.000			B	1	1.1		1	1	210.752			
			C	1	1.1		1	1	210.752			
Sum Weight:	3.491	29.656						OTM	216.799 kip-ft	3.201		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.080	1.564	A	1	0.63	0.008	1	1	49.370	0.281	0.014	C
140.000-120.0			B	1	0.63		1	1	49.370			
00			C	1	0.63		1	1	49.370			
L2	0.628	2.192	A	1	0.63	0.008	1	1	69.116	0.373	0.016	C
120.000-96.00			B	1	0.63		1	1	69.116			
0			C	1	0.63		1	1	69.116			
L3	1.414	7.342	A	1	0.63	0.007	1	1	169.464	0.810	0.017	C
96.000-47.750			B	1	0.63		1	1	169.464			
			C	1	0.63		1	1	169.464			
L4	1.370	10.855	A	1	0.63	0.006	1	1	203.208	0.781	0.017	C
47.750-1.000			B	1	0.63		1	1	203.208			
			C	1	0.63		1	1	203.208			
Sum Weight:	3.491	21.953						OTM	150.991 kip-ft	2.246		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.080	1.564	A	1	0.63	0.008	1	1	49.370	0.281	0.014	C
140.000-120.0			B	1	0.63		1	1	49.370			
00			C	1	0.63		1	1	49.370			
L2	0.628	2.192	A	1	0.63	0.008	1	1	69.116	0.373	0.016	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
120.000-96.00			B	1	0.63		1	1	69.116			
0			C	1	0.63		1	1	69.116			
L3	1.414	7.342	A	1	0.63	0.007	1	1	169.464	0.810	0.017	C
96.000-47.750			B	1	0.63		1	1	169.464			
			C	1	0.63		1	1	169.464			
L4	1.370	10.855	A	1	0.63	0.006	1	1	203.208	0.781	0.017	C
47.750-1.000			B	1	0.63		1	1	203.208			
			C	1	0.63		1	1	203.208			
Sum Weight:	3.491	21.953						OTM	150.991 kip-ft	2.246		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.080	1.564	A	1	0.63	0.008	1	1	49.370	0.281	0.014	C
140.000-120.0			B	1	0.63		1	1	49.370			
00			C	1	0.63		1	1	49.370			
L2	0.628	2.192	A	1	0.63	0.008	1	1	69.116	0.373	0.016	C
120.000-96.00			B	1	0.63		1	1	69.116			
0			C	1	0.63		1	1	69.116			
L3	1.414	7.342	A	1	0.63	0.007	1	1	169.464	0.810	0.017	C
96.000-47.750			B	1	0.63		1	1	169.464			
			C	1	0.63		1	1	169.464			
L4	1.370	10.855	A	1	0.63	0.006	1	1	203.208	0.781	0.017	C
47.750-1.000			B	1	0.63		1	1	203.208			
			C	1	0.63		1	1	203.208			
Sum Weight:	3.491	21.953						OTM	150.991 kip-ft	2.246		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	21.953					
Bracing Weight	0.000					
Total Member Self-Weight	21.953			0.066	-0.419	
Total Weight	36.996			0.066	-0.419	
Wind 0 deg - No Ice		0.088	-22.221	-2243.102	-10.902	0.745
Wind 30 deg - No Ice		11.119	-19.288	-1947.816	-1123.151	0.519
Wind 60 deg - No Ice		19.171	-11.187	-1130.596	-1934.565	0.155
Wind 90 deg - No Ice		22.085	-0.088	-10.417	-2227.726	-0.251
Wind 120 deg - No Ice		19.082	11.034	1112.572	-1924.082	-0.590
Wind 150 deg - No Ice		10.966	19.200	1937.465	-1104.994	-0.770
Wind 180 deg - No Ice		-0.088	22.221	2243.234	10.064	-0.745

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 210 deg - No Ice		-11.119	19.288	1947.948	1122.313	-0.519
Wind 240 deg - No Ice		-19.171	11.187	1130.729	1933.727	-0.155
Wind 270 deg - No Ice		-22.085	0.088	10.549	2226.888	0.251
Wind 300 deg - No Ice		-19.082	-11.034	-1112.439	1923.244	0.590
Wind 330 deg - No Ice		-10.966	-19.200	-1937.333	1104.156	0.770
Member Ice	7.703					
Total Weight Ice	57.355			0.006	-1.241	
Wind 0 deg - Ice		0.015	-6.677	-646.531	-2.982	0.146
Wind 30 deg - Ice		3.339	-5.790	-560.782	-324.626	0.109
Wind 60 deg - Ice		5.769	-3.351	-324.770	-559.619	0.043
Wind 90 deg - Ice		6.653	-0.015	-1.735	-644.996	-0.035
Wind 120 deg - Ice		5.754	3.326	321.767	-557.878	-0.103
Wind 150 deg - Ice		3.314	5.775	559.053	-321.610	-0.144
Wind 180 deg - Ice		-0.015	6.677	646.543	0.500	-0.146
Wind 210 deg - Ice		-3.339	5.790	560.794	322.145	-0.109
Wind 240 deg - Ice		-5.769	3.351	324.782	557.138	-0.043
Wind 270 deg - Ice		-6.653	0.015	1.747	642.514	0.035
Wind 300 deg - Ice		-5.754	-3.326	-321.755	555.397	0.103
Wind 330 deg - Ice		-3.314	-5.775	-559.041	319.129	0.144
Total Weight	36.996			0.066	-0.419	
Wind 0 deg - Service		0.021	-5.416	-546.803	-2.972	0.181
Wind 30 deg - Service		2.710	-4.701	-474.813	-274.134	0.127
Wind 60 deg - Service		4.672	-2.727	-275.580	-471.953	0.038
Wind 90 deg - Service		5.383	-0.021	-2.487	-543.426	-0.061
Wind 120 deg - Service		4.651	2.689	271.290	-469.400	-0.144
Wind 150 deg - Service		2.673	4.680	472.393	-269.711	-0.188
Wind 180 deg - Service		-0.021	5.416	546.936	2.134	-0.181
Wind 210 deg - Service		-2.710	4.701	474.946	273.295	-0.127
Wind 240 deg - Service		-4.672	2.727	275.712	471.115	-0.038
Wind 270 deg - Service		-5.383	0.021	2.619	542.588	0.061
Wind 300 deg - Service		-4.651	-2.689	-271.157	468.562	0.144
Wind 330 deg - Service		-2.673	-4.680	-472.260	268.873	0.188
Seismic Vertical	1.443					
Seismic Horizontal 0 deg		0.000	-1.120	-127.988	0.000	0.000
Seismic Horizontal 30 deg		0.560	-0.970	-110.841	-63.994	0.000
Seismic Horizontal 60 deg		0.970	-0.560	-63.994	-110.841	0.000
Seismic Horizontal 90 deg		1.120	0.000	0.000	-127.988	0.000
Seismic Horizontal 120 deg		0.970	0.560	63.994	-110.841	0.000
Seismic Horizontal 150 deg		0.560	0.970	110.841	-63.994	0.000
Seismic Horizontal 180 deg		0.000	1.120	127.988	0.000	0.000
Seismic Horizontal 210 deg		-0.560	0.970	110.841	63.994	0.000
Seismic Horizontal 240 deg		-0.970	0.560	63.994	110.841	0.000
Seismic Horizontal 270 deg		-1.120	0.000	0.000	127.988	0.000
Seismic Horizontal 300 deg		-0.970	-0.560	-63.994	110.841	0.000
Seismic Horizontal 330 deg		-0.560	-0.970	-110.841	63.994	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

Comb. No.	Description
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service
51	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
52	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
53	1.2 Dead+1.0 Ev+1.0 Eh 30 deg
54	0.9 Dead-1.0 Ev+1.0 Eh 30 deg
55	1.2 Dead+1.0 Ev+1.0 Eh 60 deg
56	0.9 Dead-1.0 Ev+1.0 Eh 60 deg
57	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
58	0.9 Dead-1.0 Ev+1.0 Eh 90 deg
59	1.2 Dead+1.0 Ev+1.0 Eh 120 deg
60	0.9 Dead-1.0 Ev+1.0 Eh 120 deg
61	1.2 Dead+1.0 Ev+1.0 Eh 150 deg
62	0.9 Dead-1.0 Ev+1.0 Eh 150 deg
63	1.2 Dead+1.0 Ev+1.0 Eh 180 deg
64	0.9 Dead-1.0 Ev+1.0 Eh 180 deg
65	1.2 Dead+1.0 Ev+1.0 Eh 210 deg
66	0.9 Dead-1.0 Ev+1.0 Eh 210 deg
67	1.2 Dead+1.0 Ev+1.0 Eh 240 deg
68	0.9 Dead-1.0 Ev+1.0 Eh 240 deg

Comb. No.	Description
69	1.2 Dead+1.0 Ev+1.0 Eh 270 deg
70	0.9 Dead-1.0 Ev+1.0 Eh 270 deg
71	1.2 Dead+1.0 Ev+1.0 Eh 300 deg
72	0.9 Dead-1.0 Ev+1.0 Eh 300 deg
73	1.2 Dead+1.0 Ev+1.0 Eh 330 deg
74	0.9 Dead-1.0 Ev+1.0 Eh 330 deg

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 120	Pole	Max Tension	26	0.000	0.000	0.000
			Max. Compression	26	-12.574	0.166	0.096
			Max. Mx	20	-6.798	117.701	0.025
			Max. My	2	-6.795	0.052	117.705
			Max. Vy	8	6.515	-117.521	0.082
			Max. Vx	14	6.517	0.108	-117.598
			Max. Torque	4			0.060
L2	120 - 96	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-32.875	-1.324	-0.019
			Max. Mx	8	-17.760	-381.467	1.659
			Max. My	14	-17.750	1.250	-383.451
			Max. Vy	8	15.991	-381.467	1.659
			Max. Vx	14	16.132	1.250	-383.451
			Max. Torque	12			0.783
L3	96 - 47.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-45.650	-1.324	-0.019
			Max. Mx	8	-27.859	-1206.401	5.979
			Max. My	14	-27.852	5.539	-1214.997
			Max. Vy	8	19.057	-1206.401	5.979
			Max. Vx	14	19.197	5.539	-1214.997
			Max. Torque	12			0.783
L4	47.75 - 1	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-65.460	-1.324	-0.019
			Max. Mx	8	-44.384	-2304.734	10.771
			Max. My	14	-44.383	10.325	-2320.689
			Max. Vy	8	22.109	-2304.734	10.771
			Max. Vx	14	22.245	10.325	-2320.689
			Max. Torque	12			0.782

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	28	65.460	-3.339	5.790
	Max. H_x	20	44.395	22.085	-0.088
	Max. H_z	3	33.296	-0.088	22.221
	Max. M_x	2	2320.525	-0.088	22.221
	Max. M_z	8	2304.734	-22.085	0.088
	Max. Torsion	12	0.782	-10.966	-19.200
	Min. Vert	58	31.854	-1.120	0.000
	Min. H_x	8	44.395	-22.085	0.088
	Min. H_z	14	44.395	0.088	-22.221

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. M_x	14	-2320.689	0.088	-22.221
	Min. M_z	20	-2303.665	22.085	-0.088
	Min. Torsion	24	-0.782	10.966	19.200

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	36.996	0.000	0.000	0.066	-0.419	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	44.395	0.088	-22.221	-2320.525	-11.390	0.765
0.9 Dead+1.0 Wind 0 deg - No Ice	33.296	0.088	-22.221	-2300.308	-11.153	0.759
1.2 Dead+1.0 Wind 30 deg - No Ice	44.395	11.119	-19.288	-2015.047	-1162.029	0.544
0.9 Dead+1.0 Wind 30 deg - No Ice	33.296	11.119	-19.288	-1997.495	-1151.759	0.537
1.2 Dead+1.0 Wind 60 deg - No Ice	44.395	19.171	-11.187	-1169.624	-2001.452	0.177
0.9 Dead+1.0 Wind 60 deg - No Ice	33.296	19.171	-11.187	-1159.443	-1983.864	0.171
1.2 Dead+1.0 Wind 90 deg - No Ice	44.395	22.085	-0.088	-10.771	-2304.734	-0.237
0.9 Dead+1.0 Wind 90 deg - No Ice	33.296	22.085	-0.088	-10.696	-2284.506	-0.241
1.2 Dead+1.0 Wind 120 deg - No Ice	44.395	19.082	11.034	1150.999	-1990.609	-0.588
0.9 Dead+1.0 Wind 120 deg - No Ice	33.296	19.082	11.034	1140.942	-1973.118	-0.588
1.2 Dead+1.0 Wind 150 deg - No Ice	44.395	10.966	19.200	2004.376	-1143.231	-0.782
0.9 Dead+1.0 Wind 150 deg - No Ice	33.296	10.966	19.200	1986.876	-1133.130	-0.778
1.2 Dead+1.0 Wind 180 deg - No Ice	44.395	-0.088	22.221	2320.689	10.325	-0.765
0.9 Dead+1.0 Wind 180 deg - No Ice	33.296	-0.088	22.221	2300.434	10.367	-0.759
1.2 Dead+1.0 Wind 210 deg - No Ice	44.395	-11.119	19.288	2015.216	1160.962	-0.544
0.9 Dead+1.0 Wind 210 deg - No Ice	33.296	-11.119	19.288	1997.619	1150.971	-0.537
1.2 Dead+1.0 Wind 240 deg - No Ice	44.395	-19.171	11.187	1169.794	2000.383	-0.177
0.9 Dead+1.0 Wind 240 deg - No Ice	33.296	-19.171	11.187	1159.568	1983.075	-0.171
1.2 Dead+1.0 Wind 270 deg - No Ice	44.395	-22.085	0.088	10.944	2303.665	0.237
0.9 Dead+1.0 Wind 270 deg - No Ice	33.296	-22.085	0.088	10.823	2283.717	0.241
1.2 Dead+1.0 Wind 300 deg - No Ice	44.395	-19.082	-11.034	-1150.825	1989.542	0.588
0.9 Dead+1.0 Wind 300 deg - No Ice	33.296	-19.082	-11.034	-1140.814	1972.330	0.588
1.2 Dead+1.0 Wind 330 deg - No Ice	44.395	-10.966	-19.200	-2004.203	1142.166	0.782
0.9 Dead+1.0 Wind 330 deg -	33.296	-10.966	-19.200	-1986.748	1132.344	0.778

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
No Ice						
1.2 Dead+1.0 Ice+1.0 Temp	65.460	0.000	0.000	0.019	-1.324	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	65.460	0.015	-6.677	-685.096	-3.328	0.162
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	65.460	3.339	-5.790	-594.232	-344.163	0.129
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	65.460	5.769	-3.351	-344.139	-593.175	0.061
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	65.460	6.653	-0.015	-1.827	-683.643	-0.024
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	65.460	5.754	3.326	340.982	-591.325	-0.101
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	65.460	3.314	5.775	592.430	-340.957	-0.152
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	65.460	-0.015	6.677	685.144	0.373	-0.162
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	65.460	-3.339	5.790	594.281	341.208	-0.128
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	65.460	-5.769	3.351	344.187	590.220	-0.061
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	65.460	-6.653	0.015	1.875	680.687	0.024
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	65.460	-5.754	-3.326	-340.933	588.369	0.101
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	65.460	-3.314	-5.775	-592.382	338.002	0.152
Dead+Wind 0 deg - Service	36.996	0.021	-5.416	-562.617	-3.071	0.186
Dead+Wind 30 deg - Service	36.996	2.710	-4.701	-488.546	-282.074	0.132
Dead+Wind 60 deg - Service	36.996	4.672	-2.727	-283.551	-485.613	0.042
Dead+Wind 90 deg - Service	36.996	5.383	-0.021	-2.560	-559.152	-0.058
Dead+Wind 120 deg - Service	36.996	4.651	2.689	279.137	-482.984	-0.144
Dead+Wind 150 deg - Service	36.996	2.673	4.680	486.057	-277.519	-0.190
Dead+Wind 180 deg - Service	36.996	-0.021	5.416	562.757	2.188	-0.186
Dead+Wind 210 deg - Service	36.996	-2.710	4.701	488.686	281.191	-0.132
Dead+Wind 240 deg - Service	36.996	-4.672	2.727	283.691	484.730	-0.042
Dead+Wind 270 deg - Service	36.996	-5.383	0.021	2.700	558.269	0.058
Dead+Wind 300 deg - Service	36.996	-4.651	-2.689	-278.996	482.101	0.144
Dead+Wind 330 deg - Service	36.996	-2.673	-4.680	-485.917	276.636	0.190
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	45.838	0.000	-1.120	-132.661	-0.537	0.001
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	31.854	0.000	-1.120	-131.184	-0.395	0.001
1.2 Dead+1.0 Ev+1.0 Eh 30 deg	45.838	0.560	-0.970	-114.876	-66.910	0.002
0.9 Dead-1.0 Ev+1.0 Eh 30 deg	31.854	0.560	-0.970	-113.600	-66.018	0.001
1.2 Dead+1.0 Ev+1.0 Eh 60 deg	45.838	0.970	-0.560	-66.288	-115.498	0.001
0.9 Dead-1.0 Ev+1.0 Eh 60 deg	31.854	0.970	-0.560	-65.561	-114.057	0.001
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	45.838	1.120	0.000	0.085	-133.283	0.001
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	31.854	1.120	0.000	0.063	-131.641	0.001
1.2 Dead+1.0 Ev+1.0 Eh 120 deg	45.838	0.970	0.560	66.458	-115.498	-0.000
0.9 Dead-1.0 Ev+1.0 Eh 120 deg	31.854	0.970	0.560	65.686	-114.057	-0.000
1.2 Dead+1.0 Ev+1.0 Eh 150 deg	45.838	0.560	0.970	115.047	-66.910	-0.001
0.9 Dead-1.0 Ev+1.0 Eh 150 deg	31.854	0.560	0.970	113.725	-66.018	-0.001
1.2 Dead+1.0 Ev+1.0 Eh 180 deg	45.838	0.000	1.120	132.831	-0.537	-0.001
0.9 Dead-1.0 Ev+1.0 Eh 180 deg	31.854	0.000	1.120	131.309	-0.395	-0.001
1.2 Dead+1.0 Ev+1.0 Eh 210 deg	45.838	-0.560	0.970	115.047	65.836	-0.002
0.9 Dead-1.0 Ev+1.0 Eh 210	31.854	-0.560	0.970	113.725	65.229	-0.001

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Ev+1.0 Eh 240 deg	45.838	-0.970	0.560	66.458	114.425	-0.001
0.9 Dead-1.0 Ev+1.0 Eh 240 deg	31.854	-0.970	0.560	65.686	113.268	-0.001
1.2 Dead+1.0 Ev+1.0 Eh 270 deg	45.838	-1.120	0.000	0.085	132.209	-0.001
0.9 Dead-1.0 Ev+1.0 Eh 270 deg	31.854	-1.120	0.000	0.063	130.852	-0.001
1.2 Dead+1.0 Ev+1.0 Eh 300 deg	45.838	-0.970	-0.560	-66.288	114.425	0.000
0.9 Dead-1.0 Ev+1.0 Eh 300 deg	31.854	-0.970	-0.560	-65.561	113.268	0.000
1.2 Dead+1.0 Ev+1.0 Eh 330 deg	45.838	-0.560	-0.970	-114.876	65.836	0.001
0.9 Dead-1.0 Ev+1.0 Eh 330 deg	31.854	-0.560	-0.970	-113.600	65.229	0.001

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-36.996	0.000	0.000	36.996	0.000	0.000%
2	0.088	-44.395	-22.221	-0.088	44.395	22.221	0.000%
3	0.088	-33.296	-22.221	-0.088	33.296	22.221	0.000%
4	11.119	-44.395	-19.288	-11.119	44.395	19.288	0.000%
5	11.119	-33.296	-19.288	-11.119	33.296	19.288	0.000%
6	19.171	-44.395	-11.187	-19.171	44.395	11.187	0.000%
7	19.171	-33.296	-11.187	-19.171	33.296	11.187	0.000%
8	22.085	-44.395	-0.088	-22.085	44.395	0.088	0.000%
9	22.085	-33.296	-0.088	-22.085	33.296	0.088	0.000%
10	19.082	-44.395	11.034	-19.082	44.395	-11.034	0.000%
11	19.082	-33.296	11.034	-19.082	33.296	-11.034	0.000%
12	10.966	-44.395	19.200	-10.966	44.395	-19.200	0.000%
13	10.966	-33.296	19.200	-10.966	33.296	-19.200	0.000%
14	-0.088	-44.395	22.221	0.088	44.395	-22.221	0.000%
15	-0.088	-33.296	22.221	0.088	33.296	-22.221	0.000%
16	-11.119	-44.395	19.288	11.119	44.395	-19.288	0.000%
17	-11.119	-33.296	19.288	11.119	33.296	-19.288	0.000%
18	-19.171	-44.395	11.187	19.171	44.395	-11.187	0.000%
19	-19.171	-33.296	11.187	19.171	33.296	-11.187	0.000%
20	-22.085	-44.395	0.088	22.085	44.395	-0.088	0.000%
21	-22.085	-33.296	0.088	22.085	33.296	-0.088	0.000%
22	-19.082	-44.395	-11.034	19.082	44.395	11.034	0.000%
23	-19.082	-33.296	-11.034	19.082	33.296	11.034	0.000%
24	-10.966	-44.395	-19.200	10.966	44.395	19.200	0.000%
25	-10.966	-33.296	-19.200	10.966	33.296	19.200	0.000%
26	0.000	-65.460	0.000	0.000	65.460	0.000	0.000%
27	0.015	-65.460	-6.677	-0.015	65.460	6.677	0.000%
28	3.339	-65.460	-5.790	-3.339	65.460	5.790	0.000%
29	5.769	-65.460	-3.351	-5.769	65.460	3.351	0.000%
30	6.653	-65.460	-0.015	-6.653	65.460	0.015	0.000%
31	5.754	-65.460	3.326	-5.754	65.460	-3.326	0.000%
32	3.314	-65.460	5.775	-3.314	65.460	-5.775	0.000%
33	-0.015	-65.460	6.677	0.015	65.460	-6.677	0.000%
34	-3.339	-65.460	5.790	3.339	65.460	-5.790	0.000%
35	-5.769	-65.460	3.351	5.769	65.460	-3.351	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
36	-6.653	-65.460	0.015	6.653	65.460	-0.015	0.000%
37	-5.754	-65.460	-3.326	5.754	65.460	3.326	0.000%
38	-3.314	-65.460	-5.775	3.314	65.460	5.775	0.000%
39	0.021	-36.996	-5.416	-0.021	36.996	5.416	0.000%
40	2.710	-36.996	-4.701	-2.710	36.996	4.701	0.000%
41	4.672	-36.996	-2.727	-4.672	36.996	2.727	0.000%
42	5.383	-36.996	-0.021	-5.383	36.996	0.021	0.000%
43	4.651	-36.996	2.689	-4.651	36.996	-2.689	0.000%
44	2.673	-36.996	4.680	-2.673	36.996	-4.680	0.000%
45	-0.021	-36.996	5.416	0.021	36.996	-5.416	0.000%
46	-2.710	-36.996	4.701	2.710	36.996	-4.701	0.000%
47	-4.672	-36.996	2.727	4.672	36.996	-2.727	0.000%
48	-5.383	-36.996	0.021	5.383	36.996	-0.021	0.000%
49	-4.651	-36.996	-2.689	4.651	36.996	2.689	0.000%
50	-2.673	-36.996	-4.680	2.673	36.996	4.680	0.000%
51	0.000	-45.838	-1.120	0.000	45.838	1.120	0.000%
52	0.000	-31.854	-1.120	0.000	31.854	1.120	0.000%
53	0.560	-45.838	-0.970	-0.560	45.838	0.970	0.000%
54	0.560	-31.854	-0.970	-0.560	31.854	0.970	0.000%
55	0.970	-45.838	-0.560	-0.970	45.838	0.560	0.000%
56	0.970	-31.854	-0.560	-0.970	31.854	0.560	0.000%
57	1.120	-45.838	0.000	-1.120	45.838	0.000	0.000%
58	1.120	-31.854	0.000	-1.120	31.854	0.000	0.000%
59	0.970	-45.838	0.560	-0.970	45.838	-0.560	0.000%
60	0.970	-31.854	0.560	-0.970	31.854	-0.560	0.000%
61	0.560	-45.838	0.970	-0.560	45.838	-0.970	0.000%
62	0.560	-31.854	0.970	-0.560	31.854	-0.970	0.000%
63	0.000	-45.838	1.120	0.000	45.838	-1.120	0.000%
64	0.000	-31.854	1.120	0.000	31.854	-1.120	0.000%
65	-0.560	-45.838	0.970	0.560	45.838	-0.970	0.000%
66	-0.560	-31.854	0.970	0.560	31.854	-0.970	0.000%
67	-0.970	-45.838	0.560	0.970	45.838	-0.560	0.000%
68	-0.970	-31.854	0.560	0.970	31.854	-0.560	0.000%
69	-1.120	-45.838	0.000	1.120	45.838	0.000	0.000%
70	-1.120	-31.854	0.000	1.120	31.854	0.000	0.000%
71	-0.970	-45.838	-0.560	0.970	45.838	0.560	0.000%
72	-0.970	-31.854	-0.560	0.970	31.854	0.560	0.000%
73	-0.560	-45.838	-0.970	0.560	45.838	0.970	0.000%
74	-0.560	-31.854	-0.970	0.560	31.854	0.970	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00004704
3	Yes	4	0.00000001	0.00072540
4	Yes	5	0.00000001	0.00070030
5	Yes	5	0.00000001	0.00033850
6	Yes	5	0.00000001	0.00067850
7	Yes	5	0.00000001	0.00032773
8	Yes	4	0.00000001	0.00045406
9	Yes	4	0.00000001	0.00028587
10	Yes	5	0.00000001	0.00065415
11	Yes	5	0.00000001	0.00031623
12	Yes	5	0.00000001	0.00068823

13	Yes	5	0.00000001	0.00033341
14	Yes	4	0.00000001	0.00074812
15	Yes	4	0.00000001	0.00048905
16	Yes	5	0.00000001	0.00067015
17	Yes	5	0.00000001	0.00032348
18	Yes	5	0.00000001	0.00068849
19	Yes	5	0.00000001	0.00033288
20	Yes	4	0.00000001	0.00025096
21	Yes	4	0.00000001	0.00012623
22	Yes	5	0.00000001	0.00067890
23	Yes	5	0.00000001	0.00032918
24	Yes	5	0.00000001	0.00064819
25	Yes	5	0.00000001	0.00031332
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00027402
28	Yes	5	0.00000001	0.00033381
29	Yes	5	0.00000001	0.00033211
30	Yes	5	0.00000001	0.00027390
31	Yes	5	0.00000001	0.00032964
32	Yes	5	0.00000001	0.00033152
33	Yes	5	0.00000001	0.00027407
34	Yes	5	0.00000001	0.00032934
35	Yes	5	0.00000001	0.00032988
36	Yes	5	0.00000001	0.00027144
37	Yes	5	0.00000001	0.00032734
38	Yes	5	0.00000001	0.00032664
39	Yes	4	0.00000001	0.00007560
40	Yes	4	0.00000001	0.00029789
41	Yes	4	0.00000001	0.00027217
42	Yes	4	0.00000001	0.00005298
43	Yes	4	0.00000001	0.00025783
44	Yes	4	0.00000001	0.00029760
45	Yes	4	0.00000001	0.00007182
46	Yes	4	0.00000001	0.00026280
47	Yes	4	0.00000001	0.00028348
48	Yes	4	0.00000001	0.00005162
49	Yes	4	0.00000001	0.00028614
50	Yes	4	0.00000001	0.00025143
51	Yes	4	0.00000001	0.00001917
52	Yes	4	0.00000001	0.00000939
53	Yes	4	0.00000001	0.00002285
54	Yes	4	0.00000001	0.00001190
55	Yes	4	0.00000001	0.00002283
56	Yes	4	0.00000001	0.00001188
57	Yes	4	0.00000001	0.00001935
58	Yes	4	0.00000001	0.00000945
59	Yes	4	0.00000001	0.00002290
60	Yes	4	0.00000001	0.00001191
61	Yes	4	0.00000001	0.00002291
62	Yes	4	0.00000001	0.00001192
63	Yes	4	0.00000001	0.00001922
64	Yes	4	0.00000001	0.00000941
65	Yes	4	0.00000001	0.00002252
66	Yes	4	0.00000001	0.00001174
67	Yes	4	0.00000001	0.00002254
68	Yes	4	0.00000001	0.00001176
69	Yes	4	0.00000001	0.00001904
70	Yes	4	0.00000001	0.00000934
71	Yes	4	0.00000001	0.00002246
72	Yes	4	0.00000001	0.00001173
73	Yes	4	0.00000001	0.00002246
74	Yes	4	0.00000001	0.00001172

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 120	12.075	40	0.723	0.001
L2	120 - 96	9.091	40	0.693	0.001
L3	101.25 - 47.75	6.513	40	0.610	0.001
L4	54.25 - 1	1.828	40	0.314	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.000	Sabre C10-855-721C Platform w/Rail w/o Mount Pipe (SES)	40	12.075	0.723	0.001	72801
135.000	CCISeismic Tower Section 1 - 1	40	11.319	0.719	0.001	72801
125.000	CCISeismic Tower Section 1 - 2	40	9.823	0.705	0.001	24267
120.000	Platform w/Rail	40	9.091	0.693	0.001	18529
118.000	CCISeismic Tower Section 2 - 1	40	8.803	0.687	0.001	17269
115.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (109ft to119ft)	40	8.376	0.676	0.001	15900
111.000	CCISeismic Tower Section 2 - 2	40	7.817	0.659	0.001	14437
110.000	Commscope MC-PK8-DSH Snub Nose Platform w/Rail w/o Mount Pipe (SES)	40	7.679	0.655	0.001	14110
105.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (99ft to109ft)	40	7.004	0.630	0.001	12678
101.000	CCISeismic Tower Section 2 - 3	40	6.481	0.608	0.001	11774
99.500	CCISeismic Tower Section 3 - 1	40	6.289	0.600	0.001	11498
95.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (89ft to99ft)	40	5.727	0.574	0.000	10797
92.750	CCISeismic Tower Section 3 - 2	40	5.454	0.561	0.000	10482
85.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (79ft to89ft)	40	4.560	0.513	0.000	9524
82.750	CCISeismic Tower Section 3 - 3	40	4.315	0.499	0.000	9278
75.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (69ft to79ft)	40	3.520	0.449	0.000	8520
72.750	CCISeismic Tower Section 3 - 4	40	3.305	0.435	0.000	8322
65.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (59ft to69ft)	40	2.621	0.384	0.000	7707
62.750	CCISeismic Tower Section 3 - 5	40	2.439	0.369	0.000	7545
55.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (49ft to59ft)	40	1.877	0.319	0.000	7136
52.750	CCISeismic Tower Section 3 - 6	40	1.733	0.305	0.000	7251
52.625	CCISeismic Tower Section 4 - 1	40	1.725	0.304	0.000	7263
46.000	CCISeismic Tower Section 4 - 2	40	1.349	0.262	0.000	8271
45.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (39ft to49ft)	40	1.298	0.256	0.000	8459
36.000	CCISeismic Tower Section 4 - 3	40	0.899	0.202	0.000	10634
35.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (29ft to39ft)	40	0.860	0.196	0.000	10947
26.000	CCISeismic Tower Section 4 - 4	40	0.561	0.143	0.000	14888
25.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (19ft to29ft)	40	0.532	0.137	0.000	15508

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
16.000	CCISeismic Tower Section 4 - 5	40	0.304	0.085	0.000	24813
15.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (9ft to19ft)	40	0.282	0.079	0.000	26585
6.000	CCISeismic Tower Section 4 - 6	40	0.096	0.028	0.000	74439
5.500	CCISeismic (6) 7/8" DC Cable From 0 to 139 (0ft to9ft)	40	0.086	0.025	0.000	74439

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 120	49.824	4	2.985	0.003
L2	120 - 96	37.514	4	2.861	0.004
L3	101.25 - 47.75	26.876	4	2.518	0.002
L4	54.25 - 1	7.542	4	1.296	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.000	Sabre C10-855-721C Platform w/Rail w/o Mount Pipe (SES)	4	49.824	2.985	0.003	17770
135.000	CCISeismic Tower Section 1 - 1	4	46.704	2.967	0.004	17770
125.000	CCISeismic Tower Section 1 - 2	4	40.532	2.911	0.004	5922
120.000	Platform w/Rail	4	37.514	2.861	0.004	4520
118.000	CCISeismic Tower Section 2 - 1	4	36.325	2.835	0.003	4212
115.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (109ft to119ft)	4	34.562	2.791	0.003	3875
111.000	CCISeismic Tower Section 2 - 2	4	32.256	2.722	0.003	3516
110.000	Commscope MC-PK8-DSH Snub Nose Platform w/Rail w/o Mount Pipe (SES)	4	31.688	2.703	0.003	3436
105.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (99ft to109ft)	4	28.902	2.601	0.003	3086
101.000	CCISeismic Tower Section 2 - 3	4	26.743	2.512	0.002	2864
99.500	CCISeismic Tower Section 3 - 1	4	25.950	2.478	0.002	2797
95.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (89ft to99ft)	4	23.631	2.371	0.002	2625
92.750	CCISeismic Tower Section 3 - 2	4	22.506	2.316	0.002	2548
85.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (79ft to89ft)	4	18.818	2.120	0.002	2314
82.750	CCISeismic Tower Section 3 - 3	4	17.805	2.061	0.002	2254
75.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (69ft to79ft)	4	14.525	1.855	0.001	2068
72.750	CCISeismic Tower Section 3 - 4	4	13.637	1.794	0.001	2020
65.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (59ft to69ft)	4	10.813	1.584	0.001	1869
62.750	CCISeismic Tower Section 3 - 5	4	10.065	1.523	0.001	1830
55.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (49ft to59ft)	4	7.744	1.316	0.001	1730

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
52.750	CCISeismic Tower Section 3 - 6	4	7.149	1.257	0.001	1758
52.625	CCISeismic Tower Section 4 - 1	4	7.116	1.254	0.001	1760
46.000	CCISeismic Tower Section 4 - 2	4	5.564	1.083	0.001	2005
45.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (39ft to49ft)	4	5.354	1.057	0.001	2050
36.000	CCISeismic Tower Section 4 - 3	4	3.707	0.832	0.000	2577
35.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (29ft to39ft)	4	3.549	0.808	0.000	2652
26.000	CCISeismic Tower Section 4 - 4	4	2.315	0.589	0.000	3607
25.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (19ft to29ft)	4	2.196	0.565	0.000	3757
16.000	CCISeismic Tower Section 4 - 5	4	1.256	0.352	0.000	6011
15.000	CCISeismic (6) 7/8" DC Cable From 0 to 139 (9ft to19ft)	4	1.163	0.328	0.000	6441
6.000	CCISeismic Tower Section 4 - 6	4	0.396	0.117	0.000	18033
5.500	CCISeismic (6) 7/8" DC Cable From 0 to 139 (0ft to9ft)	4	0.356	0.105	0.000	18033

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	140 - 120 (1)	TP31.419x27x0.25	20.000	0.000	0.0	24.733	-6.797	1446.880	0.005
L2	120 - 96 (2)	TP36.723x31.419x0.25	24.000	0.000	0.0	28.021	-17.746	1639.200	0.011
L3	96 - 47.75 (3)	TP46.885x35.063x0.313	53.500	0.000	0.0	44.769	-27.850	2618.990	0.011
L4	47.75 - 1 (4)	TP56.59x44.823x0.375	53.250	0.000	0.0	66.910	-44.383	3914.230	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	140 - 120 (1)	TP31.419x27x0.25	117.709	1090.117	0.108	0.000	1090.117	0.000
L2	120 - 96 (2)	TP36.723x31.419x0.25	384.462	1337.625	0.287	0.000	1337.625	0.000
L3	96 - 47.75 (3)	TP46.885x35.063x0.313	1218.092	2707.417	0.450	0.000	2707.417	0.000
L4	47.75 - 1 (4)	TP56.59x44.823x0.375	2326.100	4961.950	0.469	0.000	4961.950	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	140 - 120 (1)	TP31.419x27x0.25	6.516	434.063	0.015	0.030	1184.842	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L2	120 - 96 (2)	TP36.723x31.419x0.25	16.177	491.761	0.033	0.545	1520.775	0.000
L3	96 - 47.75 (3)	TP46.885x35.063x0.313	19.241	785.697	0.024	0.545	3105.675	0.000
L4	47.75 - 1 (4)	TP56.59x44.823x0.375	22.287	1174.270	0.019	0.544	5780.958	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 120 (1)	0.005	0.108	0.000	0.015	0.000	0.113 ✔	1.000	4.8.2 ✔
L2	120 - 96 (2)	0.011	0.287	0.000	0.033	0.000	0.299 ✔	1.000	4.8.2 ✔
L3	96 - 47.75 (3)	0.011	0.450	0.000	0.024	0.000	0.461 ✔	1.000	4.8.2 ✔
L4	47.75 - 1 (4)	0.011	0.469	0.000	0.019	0.000	0.480 ✔	1.000	4.8.2 ✔

Section Capacity Table

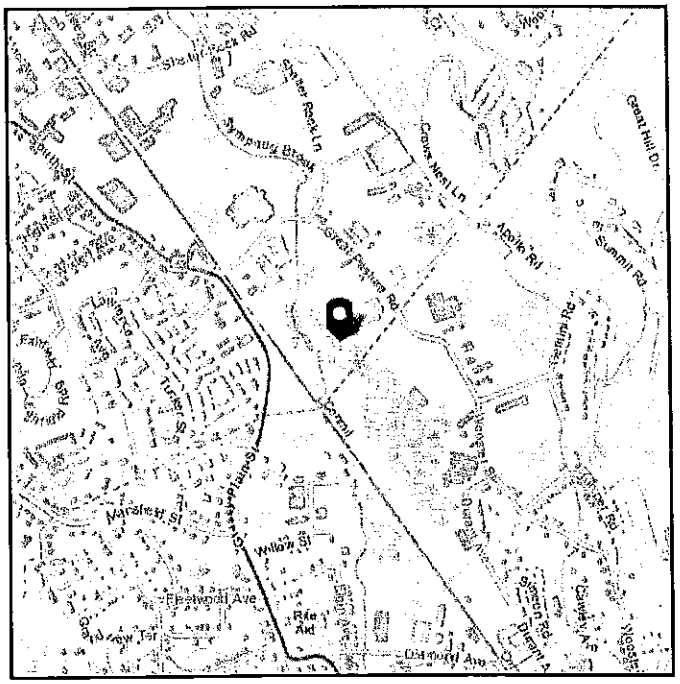
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	140 - 120	Pole	TP31.419x27x0.25	1	-6.797	1446.880	11.3	Pass
L2	120 - 96	Pole	TP36.723x31.419x0.25	2	-17.746	1639.200	29.9	Pass
L3	96 - 47.75	Pole	TP46.885x35.063x0.313	3	-27.850	2618.990	46.1	Pass
L4	47.75 - 1	Pole	TP56.59x44.823x0.375	4	-44.383	3914.230	48.0	Pass
							Summary	
						Pole (L4)	48.0	Pass
						RATING =	**48.0**	**Pass**

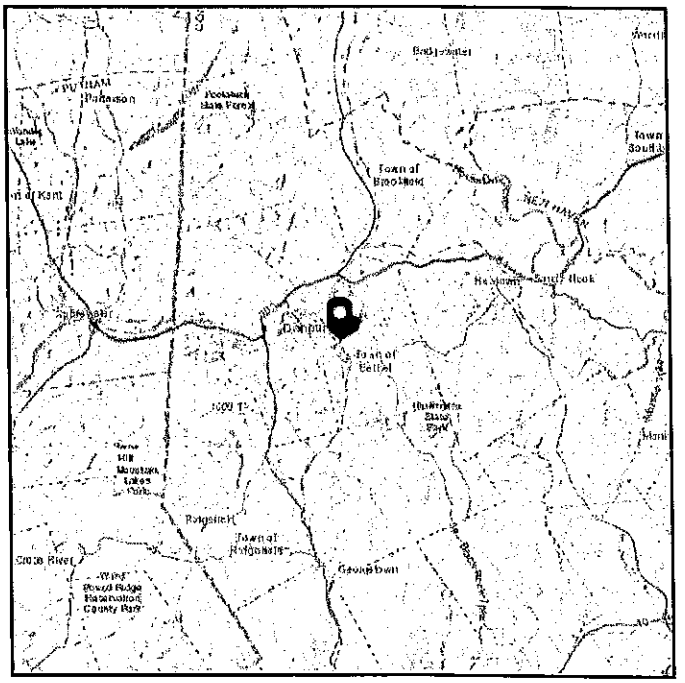
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: C - Very Dense Soil and Soft Rock

Elevation: 386.01 ft (NAVD 88)
Latitude: 41.383
Longitude: -73.4222





Wind

Results:

Wind Speed	115 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri Jan 14 2022

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

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

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

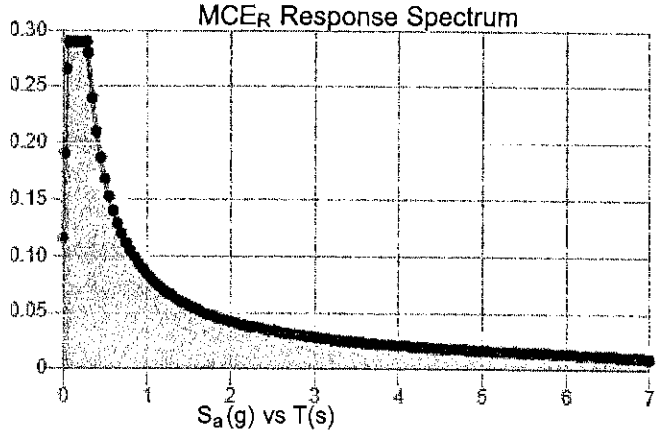
Seismic

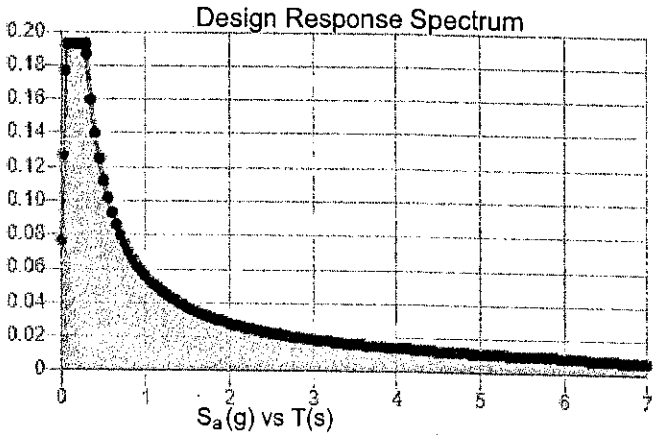
Site Soil Class: C - Very Dense Soil and Soft Rock

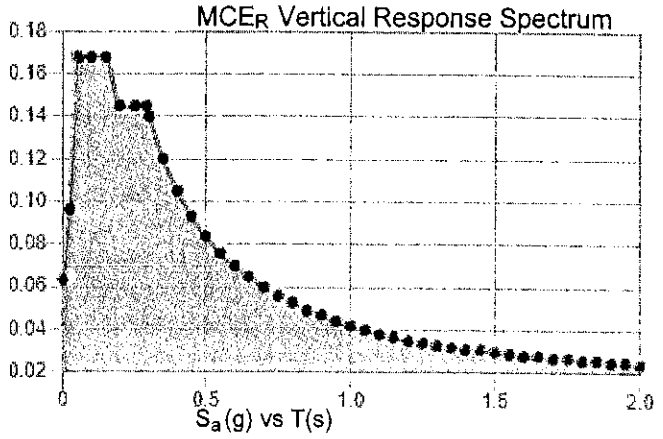
Results:

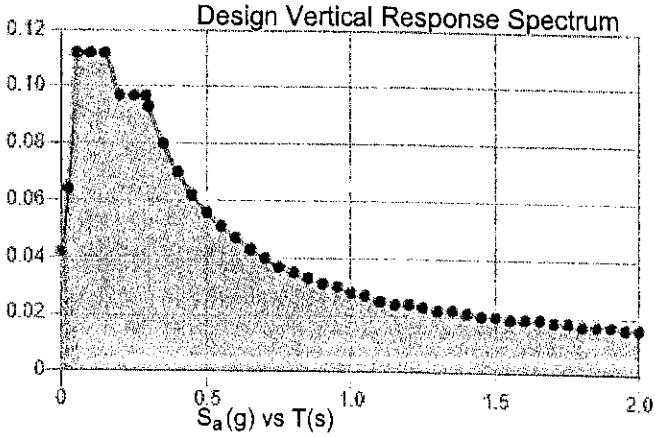
S_S :	0.223	S_{D1} :	0.056
S_1 :	0.056	T_L :	6
F_a :	1.3	PGA :	0.128
F_v :	1.5	PGA_M :	0.163
S_{MS} :	0.29	F_{PGA} :	1.272
S_{M1} :	0.084	I_e :	1
S_{DS} :	0.193	C_v :	0.723

Seismic Design Category B









Data Accessed: Fri Jan 14 2022

Date Source:

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

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Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Jan 14 2022

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

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

Monopole Flange Plate Connection

Elevation = 119 ft.

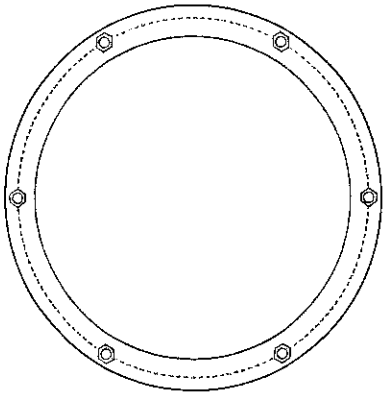
CROWN CASTLE

BU #	28493
Site Name	Bethel West 2
Order #	REV05

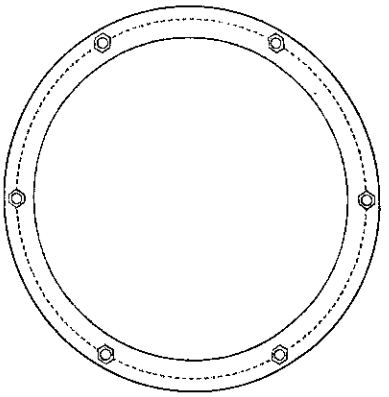
TIA-222 Revision	H

Applied Loads	
Moment (kip-ft)	118.12
Axial Force (kips)	13.08
Shear Force (kips)	11.92

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(6) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 35" BC

Top Plate Data

37.5" OD x 1.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Plate Data

37.5" OD x 1.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

31.419425" x 0.25" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Bottom Pole Data

31.419425" x 0.25" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	24.81	
Allowable (kips)	54.45	
Stress Rating:	**45.6%**	Pass

Top Plate Capacity

Max Stress (ksi):	6.02	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**13.4%**	Pass
Tension Side Stress Rating:	**6.4%**	Pass

Bottom Plate Capacity

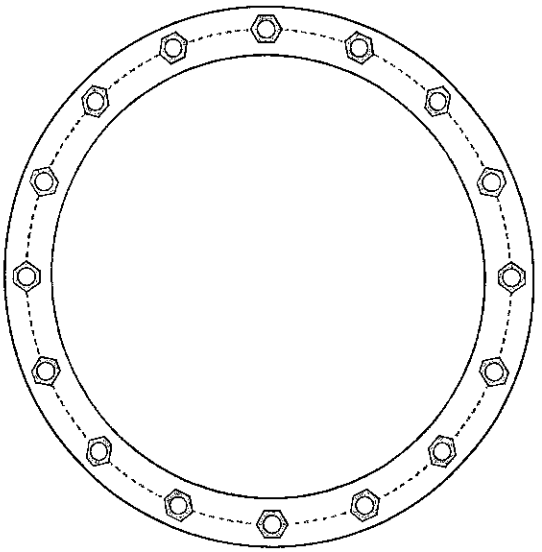
Max Stress (ksi):	6.02	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**13.4%**	Pass
Tension Side Stress Rating:	**6.4%**	Pass

Monopole Base Plate Connection

Site Info	
BU #	28493
Site Name	Bethel West 2
Order #	REV05

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2.25

Applied Loads	
Moment (kip-ft)	2326.10
Axial Force (kips)	44.38
Shear Force (kips)	22.29



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 63.25" BC

Base Plate Data

69" OD x 2.25" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

56.590004" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_c = 113.05	ϕPn_c = 268.39	**Stress Rating**
Vu = 1.39	ϕVn = 120.77	**42.1%**
Mu = n/a	ϕMn = n/a	Pass

Base Plate Summary

Max Stress (ksi):	16.89	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**37.5%**	Pass

CENTEK engineering

Centered on Solutions℠

Project

Tower Foundation
Structural Analysis Report

Bethel W 2

15 Great Pasture Road
Danbury, CT

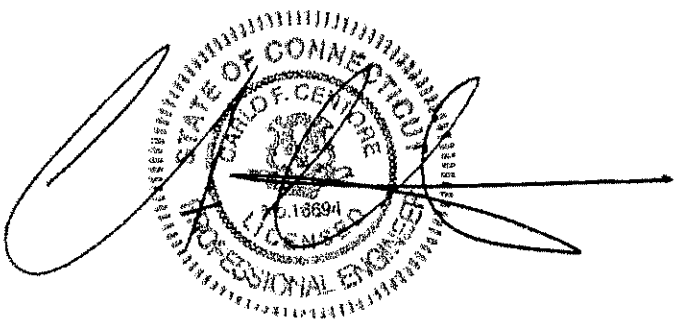
Centek Project No. 14216.00

Prepared For

Verizon Wireless
99 East River Road
East Hartford, CT 06108

Attn: Joseph McCarty
CC: Scott Kisting, Shirley Rock

Prepared By



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March 12, 2020

TABLE OF CONTENTS

1.00 EXECUTIVE SUMMARY

1.01 INTRODUCTION

This report was prepared on behalf of our client, Verizon Wireless, for the purpose of verifying the structural adequacy of the existing (As-Built) micropile supported tower mat foundation.

The tower foundation was originally designed by Centek in 2017. Upon re-analysis of the foundation by Thomas Taylor of Semaan engineering, a design deficiency in the micropiles was discovered. The deficiency identified consists of an overload condition of the inner (4) piles. Due to the placement of the aforementioned piles they receive the full tower axial load, the weight of the thickened portion of the mat and the associated mat weight. This combined loading exceeds the micro-plie allowable capacity.

Our reanalysis assumes the subject (4) inner micropiles to be failed and re-evaluates the system with the reinforced concrete mat supported by the remaining (40) micropiles. The reinforced concrete mat was conservatively analyzed as a one-way slab for its ability to span to the middle row of piles (31'-4"). The max pile loading was recalculated and compared to the as-built micropile capacity.

1.02 REFERENCE MATERIALS

The following documents were referenced in the structural analysis of the tower foundation:

- Monopole Tower Design Report prepared by Sabre Industries project no. 16-7133-SCB dated 7/13/16.
- Foundation Design Drawings prepared by Centek Engineering, Inc. project no. 14216.00 dated 5/3/17 Rev.2.
- Geotechnical Report prepared by Design Earth Technology project no. 2015.13, dated 2/19/16.
- Drilled Micropile Design submittal prepared by Helical Drilling Inc. dated 3/21/17.
- Grout Compression Tests prepared by Materials Testing, Inc. S-1000A, S-1001A and S-1002A dated 5/3/17.
- 2015 International Building Code (Section 1810 Deep Foundations)
- ACI 318-14 "Building Code Requirements for Structural Concrete"

1.03 FOUNDATION ANALYSIS RESULTS

A structural check was made of the tower foundation. Calculations are provided in Section 2.00 of this report. Refer to the following tables for a summary of the analysis results:

Table 1

Component Capacity Check			
Component	Type	Stress Ratio	Result
Reinforced Concrete Mat	Bending	77.4%	PASS
	Shear	72.3%	PASS
Micropile	Compression	87.9%	PASS
	Rock Socket	99.2%	PASS

1.04 CONCLUSION

This analysis finds the micropile supported tower foundation in the as-built condition to be structurally adequate to accommodate the tower reactions from the Monopole Tower Design Report prepared by Sabre Industries project no. 16-7133-SCB dated 7/13/16 Sabre.

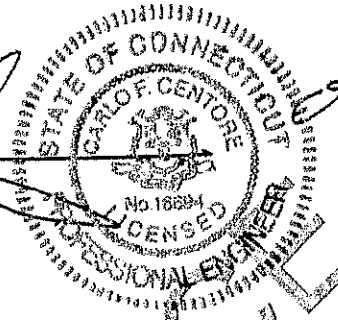
As discussed with Scott Kisting consultant to Verizon Wireless, the maintenance and condition assessment program that Verizon has in place would identify potential issues with the foundation should they present.

The analysis is based, in part, on the original foundation design documents, Helical micropile design documents and the tower installation field inspection documents, including material testing reports. The field inspection documents compiled during construction of the subject foundation alleviate any concerns with potential installation errors.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Carlo F. Centore, PE
Principal ~ Structural Engineer



Prepared by:

Timothy J. Lynn, PE
Structural Engineer

Section 2.0

Calculations

CENTEK engineering
Centered on Solutions SM www.centekeng.com
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Branford, CT 06405 F: (203) 488-8587

JOB BETHEL WEST 2
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

MICRO PILE CAPACITY

- **CHECK CASED PORTION**

AREA OF STEEL PIPE $= \frac{1}{4}\pi\left[(5.5)^2 - \left(5.5 - (2)(0.361)\right)^2\right] = 5.83\ in^2$

ALLOWABLE COMPRESSION STRESS $= 0.4F_y \leq 32{,}000$ (IBC 1810.3.2.6)

$0.4(80) = 32$ KSI

$P_{ALL} = (5.83\ in^2)(32\ ksi) = 186.6^k$ ← ADDITIONAL STRENGTH PROVIDED BY GROUT/REBAR

- **CHECK UNCASED PORTION**

AREA OF REBAR $= 1.27\ in^2$ (#10 BAR)

ALLOWABLE COMP STRESS $= 0.5F_y \leq 32{,}000$ (IBC 1810.3.2.6)

$0.5(75) = 37.5$ ksi

AREA OF GROUT $= \frac{1}{4}\pi(4)^2 - 1.27\ in^2 = 11.3\ in^2$

ALLOWABLE COMP STRESS $= 0.33f'_c$ (IBC 1810.3.2.6)

$= (0.33)(7210\ psi)$

$= 2379$ psi

$P_{ALL_{COMP}} = (1.27\ in^2)(32\ ksi) + (11.3\ in^2)(2.38\ ksi) = 67.5^k$

- **CHECK END BEARING / GROUT BOND (Rock Socket)**

ALLOWABLE BOND LOAD $= \pi(4")(5'\times 12)(75\ psi) = 56.5^k$

ALLOWABLE END BEARING $= \frac{1}{4}\pi(5.5")^2\left(10\ tons/ft^2\right)\left(\frac{2000}{144}\right) = 3.3^k$

$P_{ALL_{RS}} = 56.5^k + 3.3^k = 59.8^k$ ← CONTROLS

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UNFACTORED TOWER BASE REACTIONS

SHEAR = 36^k
AXIAL = 47.6^k
MOMENT = 3941 k-ft

FROM SABRE TOWER DESIGN CALCS, TIA-222-F LOADING

WEIGHT OF CONCRETE

PIER = $(8')^2(1')(0.15^k/cf)$ = 9.6^k

THICKED HAUNCH = $\frac{1}{3}(4.5)\left[(8')^2+(17')^2+(8)(17)\right](0.15)$ = 110^k

TRIB AREA MAT
INNER (16) PILES = $(39.15)^2$ = 1533 ft^2

WEIGHT MAT INNER (16) = $(1533\ ft^2)(2.25')(0.15)$ = 517.5^k

TRIB AREA MAT OUTER (24) = (80) − 1533 = 967 ft^2

WEIGHT MAT OUTER (24) = $(967\ ft^2)(2.25')(0.15)$ = 326.5^k

P$_{CONC}$ (INNER) = $(9.6^k + 110^k + 517.5^k)/16$ = 39.8^k ←

P$_{CONC}$ (OUTER) = $326.5^k/24$ = 13.6^k ←

LOADS FROM TOWER

PILE POLAR MOMENT OF INERTIA

$I_p = (23.5)^2(14) + (15.67)^2(14) + (7.83')^2(8)$ = 11660 ft^2

$M_{OT} = (36^k)(3.5') + 3941\ k\text{-ft}$ = 4067 k-ft

P_{TOWER} (INNER) = $\frac{4067\ k\text{-ft}\,(15.67')}{11660\ ft^2} + \frac{47.6^k}{16}$ = 8.5^k ←

P_{TOWER} (OUTER) = $\frac{4067\ k\text{-ft}\,(23.5')}{11660\ ft^2}$ = 8.2^k ←

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EQUIPMENT DEAD LOAD

17,000 # TOT. / 4 = 4,250 # (COMMSCOPE VZWA-9-4X16-6LSP-3)

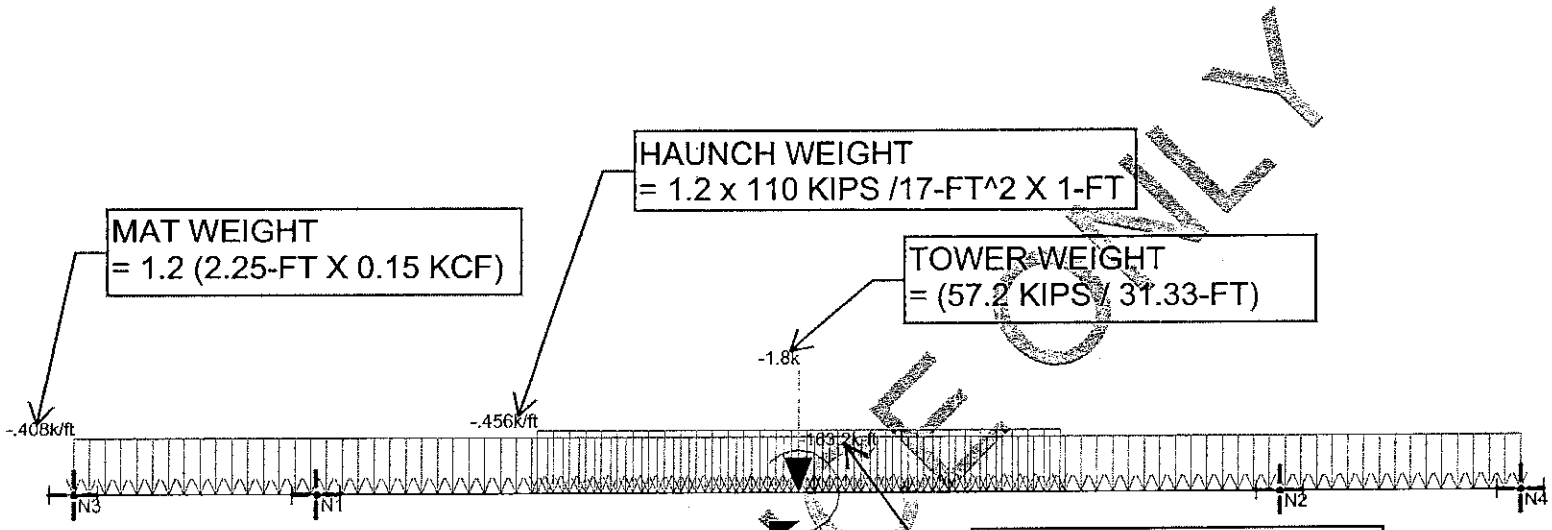
TOTAL LOADS ON PILES

$P_{TOT\ (INNER)} = 39.8^K + 8.5^K + 4.3^K + 6.7^K = 59.3^K < 59.8\ (OK)$

$P_{TOT\ (OUTER)} = 13.6^K + 8.2^K + 4.3^K + 6.7^K = 32.8^K < 59.8\ (OK)$

$\frac{P_{TOT}}{P_{ALL\ COMP}} = \frac{59.3^K}{59.8^K} = 99.2\%$

$\frac{P_{TOT}}{P_{ALL\ RS}} = \frac{59.3^K}{67.5^K} = 87.9\%$



Loads: LC 4, IBC 16-4 (a)
Envelope Only Solution

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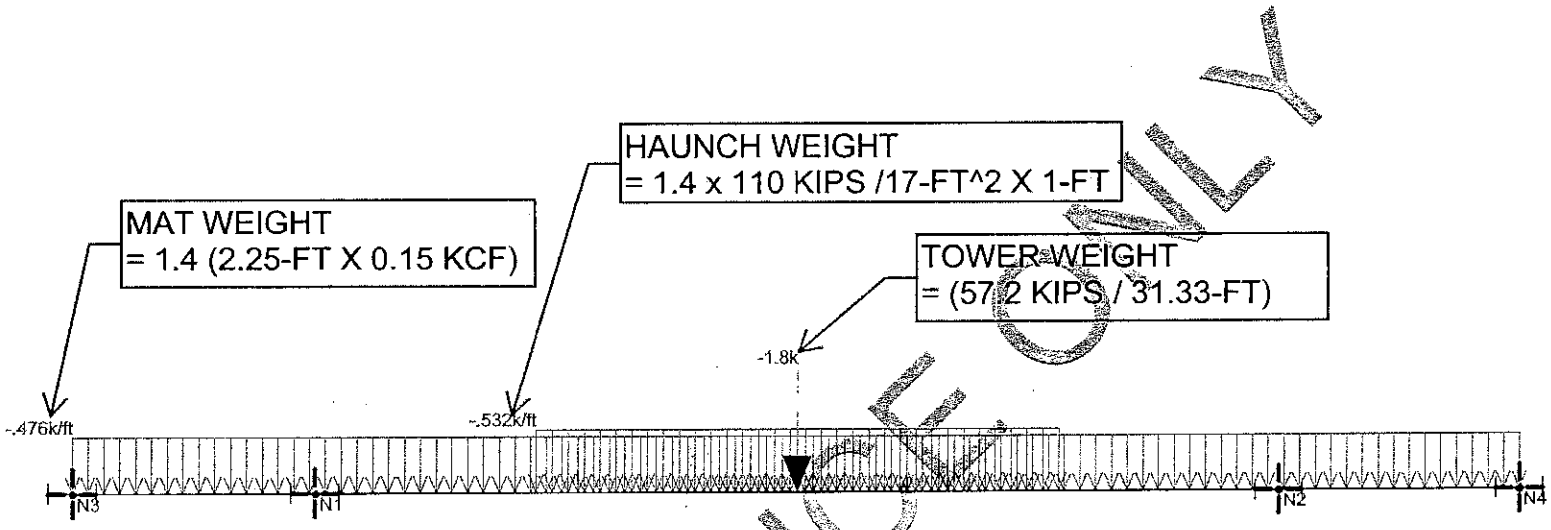
	12-in Strip.r3d



Loads: LC 1, IBC 16-1
Envelope Only Solution

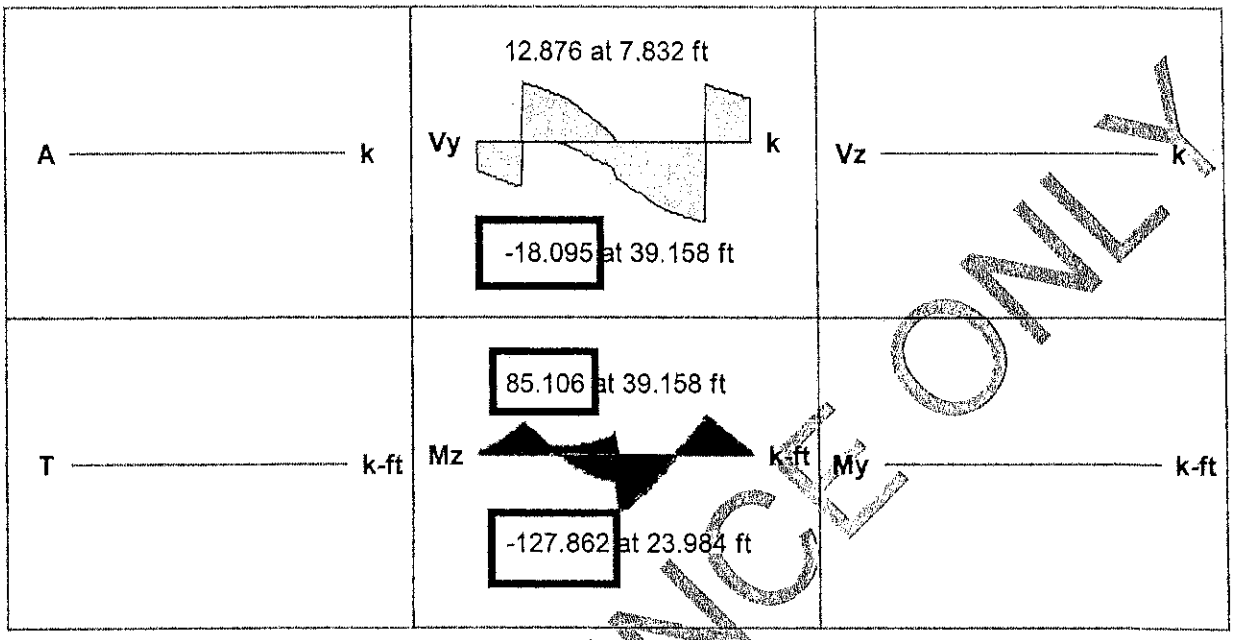
	SK - 1
	Mar 10, 2020 at 3:43 PM
	12-in Strip.r3d

Beam: ***M1***

Shape: **CRECT24X12**
Material: **Conc4000NW**
Length: **46.99 ft**
I Joint: **N3**
J Joint: **N4**

Concrete Stress Block: **Rectangular**

Code Check: **No Calc**
Report Based On 97 Sections

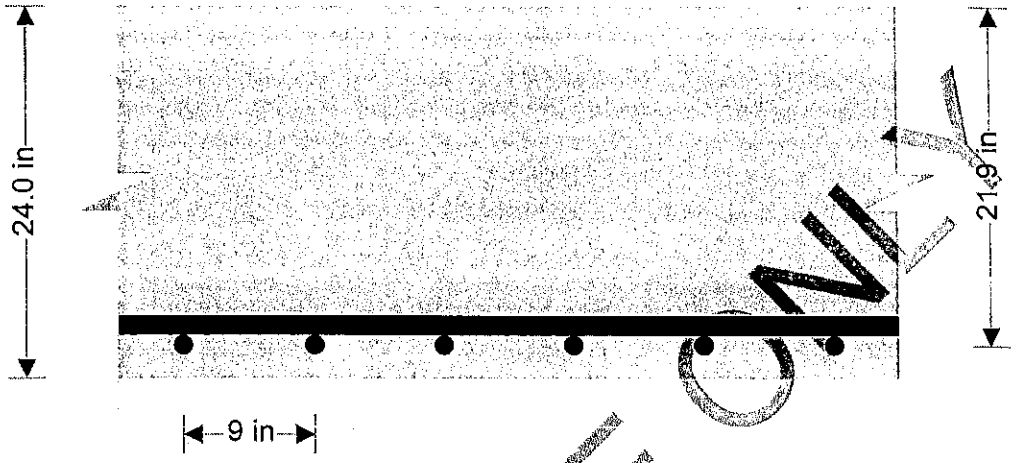


No Calc
- Concrete code check not calculated -

TEKLA Tedds	Project				Job Ref.	
Centek Engineering, Inc, 63-2 North Branford Road Branford, CT 06405	Section				Sheet no./rev. 1	
	Calc. by T	Date 3/11/2020	Chk'd by	Date	App'd by	Date

RC ONE-WAY SLAB DESIGN (ACI318-11)

Tedds calculation version 1.1.04



Slab definition

Slab type	**One-way continuous**
Overall thickness of slab	h = **24.000** in
Clear shorter span of slab	l_n = **31.33** ft
Clear cover to tension reinforcement	c_c = **1.50** in

Materials

Specified compressive strength of concrete	f'_c = **4000** psi
Specified yield strength of reinforcement	f_y = **60000** psi
Modulus of elasticity	E_{SACI} = **29000000** psi
Concrete modification factor	λ = **1.00**

Maximum design moment and shear in span(per 12 in width of slab)

Maximum ultimate positive moment	M_{us} = **128.000** kip_ft/ft
Maximum ultimate shear force	V_u = **18.000** kips/ft

Reinforcement calculation - positive moments

Tension steel provided	**No. 10 @ 8.5 in o.c.**
Depth to tension steel	$d = (h - c_c - D / 2)$ = **21.87** in
Stress block depth factor	β_1 = 0.85
Reinforcement ratio at strain of 0.004	$\rho^b = 0.85 \times \beta_1 \times f'_c / f_y \times (0.003 / (0.003 + 0.004))$ = **0.021**
Maximum reinforcement ratio	$\rho^{max} = \rho^b$ = **0.021**
Maximum area of tension steel	$A_{s\_max} = \rho^{max} \times d$ = **5.416** in^2/ft
Min ratio of transverse reinforcement (cl. 7.12.2.1)	ρ^t =**0.0018**
Min area tension steel req'd (cl. 10.5.4 & 7.12.2.1)	$A_{s\_min} = \rho^t \times h$ = **0.518** in^2/ft
Area of tension steel provided	A_{s_prov} = **1.788** in^2/ft

PASS - Area of steel provided - OK

Steel stress (cl. 10.6.4)	$f_s = 2/3 \times f_y$ = **40000** psi
Max allowable spacing (cl. 10.5.4 & 10.6.4)	s_{max} = min(3×h, 18in, 15in$\times$(40000 psi/f_s) – 2.5$\times c_c$, 12in$\times$(40000 psi/f_s))

s_{max} = **11.250** in

Actual tensile bar spacing provided — s = **8.500** in

PASS - Spacing of bars (+ve moment steel) less than maximum allowable

Check for section - positive moments

Depth of equivalent rectangular stress block — $a = (A_{s\_prov} \times f_y) / (0.85 \times f'_c)$ = **2.63** in

Depth of neutral axis — $c = a / \beta_1$ = **3.094** in

Net tensile strain in long. steel at nominal strength — $\varepsilon_t = 0.003 \times [(d - c) / c]$ = **0.0182**

Section is tension controlled, design OK

Strength reduction factor — ϕ = 0.9

Revised required nominal flexural strength — $M_{ns} = M_{us} / \phi$ = **142.222** kip_ft/ft

Actual nominal flexural strength — $M_{ns\_prov} = A_{s\_prov} \times f_y \times (d - a / 2)$ = **183.756** kip_ft/ft

PASS - Actual flexural strength exceeds required nominal flexural strength

Transverse reinforcement - (for shrinkage and temperature)

Transverse reinforcement provided — **No. 10 @ 8.5 in o.c.**

Area of reinforcement provided — A_{t_prov} = **1.788** in^2/ft

Min ratio of transverse reinforcement (cl. 7.12.2.1) — ρ_t = **0.0018**

Minimum area of transverse reinforcement required — $A_{t\_req} = \rho_t \times h$ = **0.518** in^2/ft

PASS - Area of transverse steel provided OK

Maximum allowable spacing of bars — $s_{max\_t} = min(5 \times h, 18\ in)$ = **18.000** in

Actual transverse bar spacing provided — s_t = **8.500** in

PASS - Spacing of transverse bars is less than allowable

Check for shear

Nominal shear strength required — $V_n = abs(V_u) / 0.75$ = **24.000** kips/ft

Shear strength provided by concrete — $V_c = 2 \times \lambda \times \sqrt{(f'_c \times 1\ psi)} \times d$ = **33.189** kips/ft

Shear strength provided by shear steel (assumed) — V_s = 0 kips/ft

Shear capacity of section — $V = V_c + V_s$ = **33.189** kips/ft

PASS - One-way shear capacity

Check of clear cover (ACI 7.7.1)

Permissible min nominal cover to all reinforcement — c_{min} = 0.75 in

Clear cover to tension reinforcement (+ve mnt) — $c_c = h - d - D/2$ = **1.500** in

PASS - Cover to steel resisting positive moment exceeds allowable minimum cover

Deflection

Support condition — **Both ends continuous**

Basic span-to-thickness ratio (Table 9.5(a)) — $ratio_{basic}$ = **28**

Type of concrete — **Normal weight**

Concrete density factor (Table 9.5(a)) — $f_{density}$ = **1.00**

Allowable span-to-thickness ratio — $ratio_{allow} = ratio_{basic} / (f_{density} \times (0.4 + f_y / 100000\ psi))$ = **28.000**

Actual span-to-thickness ratio — $ratio_{actual} = l_n / h$ = **15.665**

PASS - The slab thickness is adequate to control deflection

Design summary

Slab is 24.0 in thick in 4000 psi concrete

Tension steel provided - positive moment, No. 10 @ 8.5 in o.c. in 60000 psi steel

Transverse steel provided , No. 10 @ 8.5 in o.c. in 60000 psi steel

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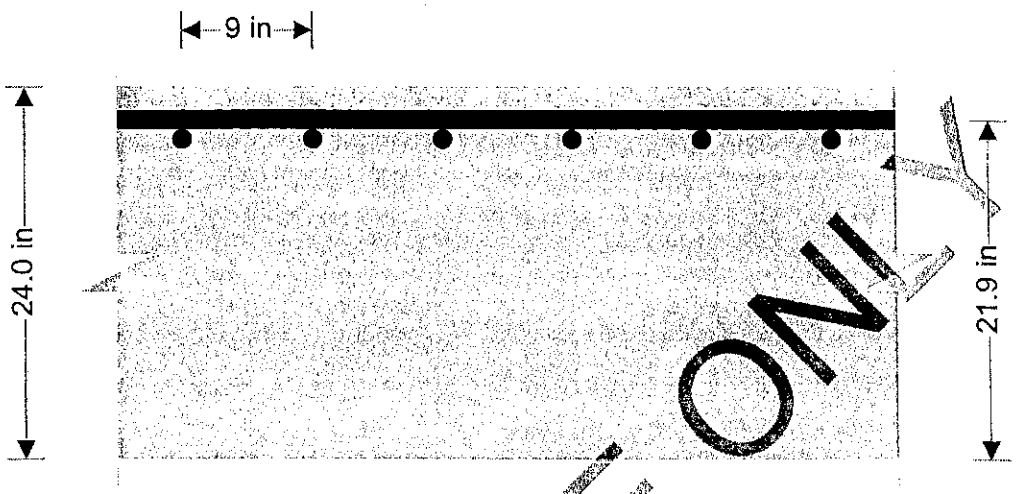
RC ONE-WAY SLAB DESIGN (ACI318-11)

Tedds calculation version 1.1.04



Slab definition

Slab type	**One-way continuous**
Overall thickness of slab	h = **24.00** in
Clear shorter span of slab	l_n = **31.33** ft
Clear cover to tension reinforcement	c_{c_hog} = **1.50** in

Materials

Specified compressive strength of concrete	f'_c = **4000** psi
Specified yield strength of reinforcement	f_y = **60000** psi
Modulus of elasticity	E_{SACI} = **29000000** psi
Concrete modification factor	λ = **1.00**

Maximum design moment and shear in span(per 12 in width of slab)

Maximum ultimate negative moment	M_{uh} = **86.000** kip_ft/ft
Maximum ultimate shear force	V_u = **18.000** kips/ft

Reinforcement calculations - negative moment

Tension steel provided	**No. 10 @ 8.5 in o.c.**
Depth to tension steel	$d_{hog} = (h - c_{c\_hog} - D_{hog} / 2)$ = **21.87** in
Stress block depth factor	β_1 = 0.85
Reinforcement ratio at strain of 0.004	$\rho^b = 0.85 \times \beta_1 \times f'_c / f_y \times (0.003 / (0.003 + 0.004))$ = **0.021**
Maximum reinforcement ratio	$\rho^{max} = \rho^b$ = **0.021**
Maximum area of tension steel	$A_{s\_max\_hog} = \rho^{max} \times d_{hog}$ = **5.416** in^2/ft
Min ratio of transverse reinforcement (cl. 7.12.2.1)	ρ^t =**0.0018**
Min area tension steel req'd (cl. 10.5.4 & 7.12.2.1)	$A_{s\_min\_hog} = \rho^t \times h$ = **0.518** in^2/ft
Area of tension steel provided	$A_{s\_prov\_hog}$ = **1.788** in^2/ft
	PASS - Area of steel provided - OK
Steel stress (cl. 10.6.4)	$f_s = 2/3 \times f_y$ = **40000** psi
Max allowable spacing (cl. 10.5.4 & 10.6.4)	$s_{max} = \min(3 \times h, 18\text{in}, 15\text{in} \times (40000\text{ psi}/f_s) - 2.5 \times c_{c\_hog}, 12\text{in} \times (40000\text{psi}/f_s))$

	s_{max} = **11.250** in
Actual tensile bar spacing provided	s_{hog} = **8.500** in
	PASS - Spacing of bars (-ve mnt) less than maximum allowable

Check for section - negative moment

Depth of equivalent rectangular stress block	$a_{hog} = (A_{s\_prov\_hog} \times f_y) / (0.85 \times f'_c)$ = **2.63** in
Depth of neutral axis	$c_{hog} = a_{hog} / \beta_1$ = **3.094** in
Net tensile strain in long. steel at nominal strength	$\varepsilon_{t\_hog} = 0.003 \times [(d_{hog} - c_{hog}) / c_{hog}]$ = **0.0182**
	Section is tension controlled, Design OK
Strength reduction factor	ϕ_{hog} = 0.9
Revised required nominal flexural strength	$M_{nh} = M_{uh} / \phi_{hog}$ = **95.556** kip_ft/ft
Actual nominal flexural strength	$M_{nh\_prov} = A_{s\_prov\_hog} \times f_y \times (d_{hog} - a_{hog} / 2)$ = **183.756** kip_ft/ft
	PASS - Actual flexural strength exceeds required nominal flexural strength

Transverse reinforcement - (for shrinkage and temperature)

Transverse reinforcement provided	**No. 10 @ 8.5 in o.c.**
Area of reinforcement provided	A_{t_prov} = **1.788** in²/ft
Min ratio of transverse reinforcement (cl. 7.12.2.1)	ρ_t =**0.0018**
Minimum area of transverse reinforcement required	$A_{t\_req} = \rho_t \times h$ = **0.518** in²/ft
	PASS - Area of transverse steel provided OK
Maximum allowable spacing of bars	s_{max_t} = min (5 × h, 18 in) = **18.000** in
Actual transverse bar spacing provided	s_t = **8.500** in
	PASS - Spacing of transverse bars is less than allowable

Check for shear

Nominal shear strength required	$V_n = abs(V_u) / 0.75$ = **24.000** kips/ft
Shear strength provided by concrete	$V_c = 2 \times \lambda \times \sqrt{(f'_c \times 1\ psi)} \times d_{hog}$ = **33.189** kips/ft
Shear strength provided by shear steel (assumed)	V_s = 0 kips/ft
Shear capacity of section	$V = V_c + V_s$ = **33.189** kips/ft
	PASS - One-way shear capacity

Check of clear cover (ACI 7.7.1)

Permissible min nominal cover to all reinforcement	c_{min} = 0.75 in
Clear cover to tension reinforcement (-ve mnt)	$c_{c\_hog} = h - d_{hog} - D_{hog}/2$ = **1.500** in
	PASS - Cover to steel resisting negative moment exceeds allowable minimum cover

Deflection

Support condition	**Both ends continuous**
Basic span-to-thickness ratio (Table 9.5(a))	$ratio_{basic}$ = **28**
Type of concrete	**Normal weight**
Concrete density factor (Table 9.5(a))	$f_{density}$ = **1.00**
Allowable span-to-thickness ratio	$ratio_{allow} = ratio_{basic} / (f_{density} \times (0.4 + f_y / 100000\ psi))$ = **28.000**
Actual span-to-thickness ratio	$ratio_{actual} = l_n / h$ = **15.665**
	PASS - The slab thickness is adequate to control deflection

Design summary

Slab is 24.0 in thick in 4000 psi concrete

Tension steel provided - negative moment, No. 10 @ 8.5 in o.c. in 60000 psi steel

Transverse steel provided , No. 10 @ 8.5 in o.c. in 60000 psi steel

Section 3.0

Supporting Documentation

Sabre Industries™
Towers and Poles

Structural Design Report

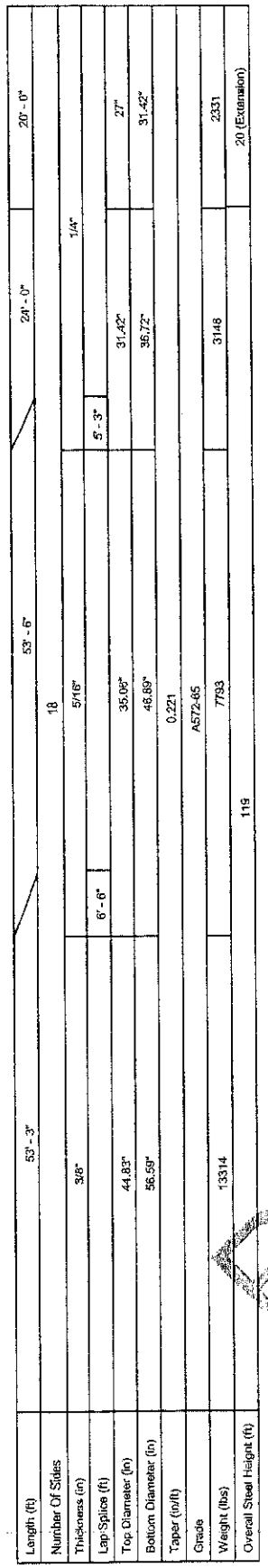
120' Extendible to 140' Monopole
Site: Bethel W2, CT
Site Number: 5-0157

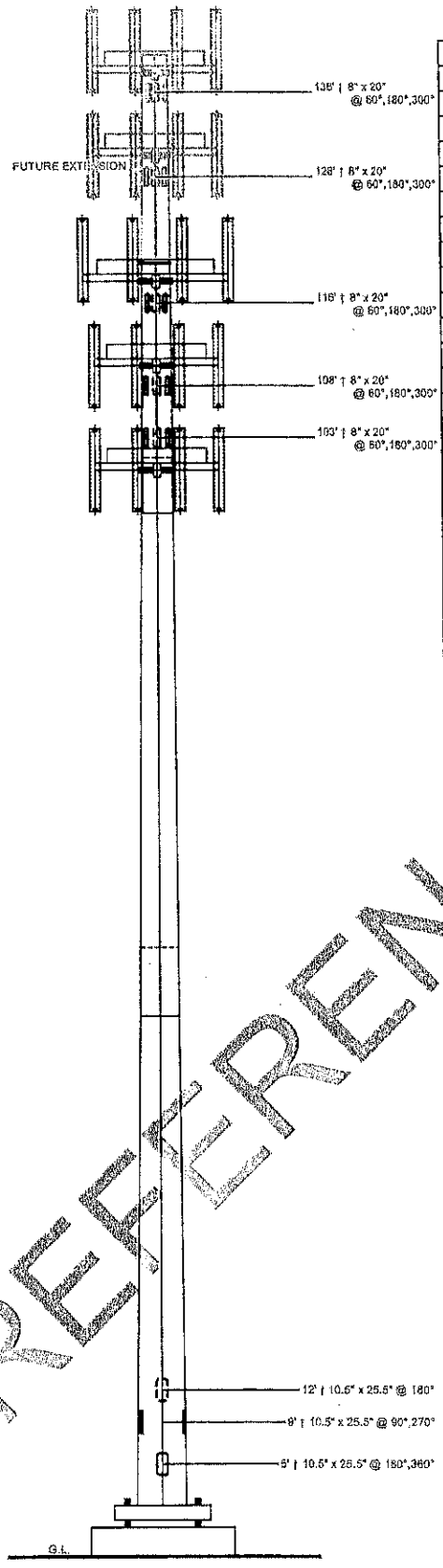
Prepared for: VERIZON WIRELESS
by: Sabre Towers & Poles ™

Job Number: 16-7133-SCB

July 13, 2016

7/13/16





Designed Appurtenance Loading

Elev	Description	Tx-Line
140***	(3) 800 10510	(3) 1 5/8"
140***	(18) TMA	
140***	(2) DB-B1-6C-12AB-0Z	(2) DC/Fiber Trunks
140***	(12) RRH2x40-AWS	
140***	(9) 800 10766	(9) 1 5/8"
138***	L.P. Platform (Monopole Only) - 12' w/ Handrail	
130***	L.P. Platform (Monopole Only) - 12' w/ Handrail	
130***	(12) RRH2x40-AWS	
130***	(18) TMA	
130***	(3) 800 10510	(3) 1 5/8"
130***	(9) 800 10766	(9) 1 5/8"
130***	(2) DB-B1-6C-12AB-0Z	(2) DC/Fiber Trunks
120	(6) HBX-6517DS-VTM	(9) 1 5/8"
120	(3) RRH2x60-AWS	
120	(3) RRH2x60-1900A-4R	
120	(2) DB-B1-6C-12AB-0Z	(2) DC/Fiber Trunks
120	(6) 800 10766	(9) 1 5/8"
120	(3) RRH2x60-700	
118	L.P. Platform (Monopole Only) - 14' w/ Handrail	
110	L.P. Platform (Monopole Only) - 12' w/ Handrail	
110	(12) RRH2x40-AWS	
110	(18) TMA	
110	(3) 800 10510	(3) 1 5/8"
110	(9) 800 10766	(9) 1 5/8"
110	(2) DB-B1-6C-12AB-0Z	(2) DC/Fiber Trunks
100	L.P. Platform (Monopole Only) - 12' w/ Handrail	
100	(12) RRH2x40-AWS	
100	(18) TMA	
100	(3) 800 10510	(3) 1 5/8"
100	(9) 800 10766	(9) 1 5/8"
100	(2) DB-B1-6C-12AB-0Z	(2) DC/Fiber Trunks

Load Case Reactions

Description	Axial (kips)	Shear (kips)	Moment (ft-k)	Deflection (ft)	Sway (deg)
3s Gusted Wind	57.21	45.89	4952.27	9.02	6.45
3s Gusted Wind 0.9 Dead	42.95	45.78	4867.79	8.82	6.3
3s Gusted Wind&Ice	81.12	14.08	1566.09	2.91	2.07
Service Loads	47.65	9.22	988.59	1.81	1.29

Base Plate Dimensions

Shape	Diameter	Thickness	Bolt Circle	Bolt Qty	Bolt Diameter
Round	69"	2.25"	63.25"	16	2.25"

Anchor Bolt Dimensions

Length	Diameter	Hole Diameter	Weight	Type	Finish
84"	2.25"	2.625"	1937.6	A615-75	Galv-18"

Notes

1) Antenna Feed Lines Run Inside Pole
2) All dimensions are above ground level, unless otherwise specified.
3) Weights shown are estimates. Final weights may vary.
4) The Monopole was designed for a basic wind speed of 100 mph with 0" of radial ice, and 50 mph with 3/4" of radial ice, in accordance with ANSI/TIA-222-G, Structure Class II, Exposure Category C, Topographic Category 1.
5) Full Height Step Bolts
6) The Monopole was designed for a basic wind speed of 85 mph with 1/2" radial ice with reduction, in accordance with EIA/TIA-222-F.
7) ANSI/TIA-222-G load case reactions are shown in the table above. EIA/TIA -222-F load case reactions can be found in the calcuations toward the end of this design report.

*** These Appurtenances cannot be installed until the Monopole has been extended.

Sabre Industries
Towers and Poles

Sabre Communications Corporation
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Job:	**16-7133-SCB**
Customer:	VERIZON WIRELESS
Site Name:	Bethel W2, CT 5-0157
Description:	120' ext. 140' Monopole
Date:	7/13/2016 By: REB

	0.02	0.54	0.55	180.0	0.04	0.00	0.04	90.0
95.00								
	0.02	0.55	0.57	180.0	0.04	0.00	0.04	90.0
	0.02	0.74	0.75	180.0	0.04	0.00	0.04	90.0
81.08								
	0.02	0.74	0.75	180.0	0.04	0.00	0.04	90.0
	0.02	0.87	0.89	180.0	0.03	0.00	0.03	90.0
67.17								
	0.02	0.87	0.89	180.0	0.03	0.00	0.03	90.0
	0.02	0.97	0.98	180.0	0.03	0.00	0.03	90.0
53.25								
	0.01	0.81	0.82	180.0	0.03	0.00	0.03	90.0
	0.01	0.84	0.85	180.0	0.03	0.00	0.03	90.0
46.75								
	0.01	0.86	0.87	180.0	0.03	0.00	0.03	90.0
	0.01	0.90	0.92	180.0	0.03	0.00	0.03	90.0
35.06								
	0.01	0.90	0.92	180.0	0.03	0.00	0.03	90.0
	0.01	0.94	0.95	180.0	0.03	0.00	0.03	90.0
23.37								
	0.01	0.94	0.95	180.0	0.03	0.00	0.03	90.0
	0.01	0.96	0.97	180.0	0.03	0.00	0.03	90.0
11.69								
	0.01	0.96	0.98	180.0	0.03	0.00	0.03	90.0
	0.01	0.98	0.99	180.0	0.02	0.00	0.02	90.0
0.00								

EXTREME FIBRE STRESSES IN LAP SPLICE

ELEV	CONTACT.PRESSURE MAX	CONTACT.PRESSURE AZI	HOOP.STRESSES MAX	HOOP.STRESSES AZI	BENDING.STRESSES MAX	BENDING.STRESSES AZI
ft	ksi	deg	ksi	deg	ksi	deg
100.25	0.30	0.0	21.55	90.0	29.57	180.0
95.00	0.29	180.0	21.56	90.0	28.76	180.0
53.25	0.54	0.0	39.05	90.0	50.24	180.0
46.75	0.52	180.0	39.06	90.0	44.78	180.0

LOADS ONTO FOUNDATION(w.r.t. NORTH-EAST-DOWN coordinates)

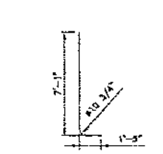
TOTAL AXIAL	SHEAR NORTH	SHEAR EAST	MOMENT NORTH	MOMENT EAST	TORSION
kip	kip	kip	ft-kip	ft-kip	ft-kip
47.56	-36.16	0.00	3940.84	0.00	0.00

LOADS ONTO FOUNDATION(w.r.t. wind direction)

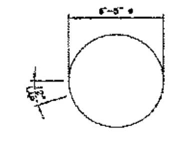
DOWN	SHEAR.w.r.t.WIND.DIR ALONG	SHEAR.w.r.t.WIND.DIR ACROSS	MOMENT.w.r.t.WIND.DIR ALONG	MOMENT.w.r.t.WIND.DIR ACROSS	TORSION
kip	kip	kip	ft-kip	ft-kip	ft-kip
47.56	36.16	0.00	-3940.84	0.00	0.00

LOADING CONDITION B ========== Iterations: Mast 5 ======

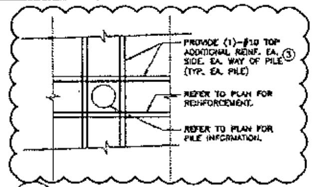
85 mph + 0.5" ice (Reduction Allowed)



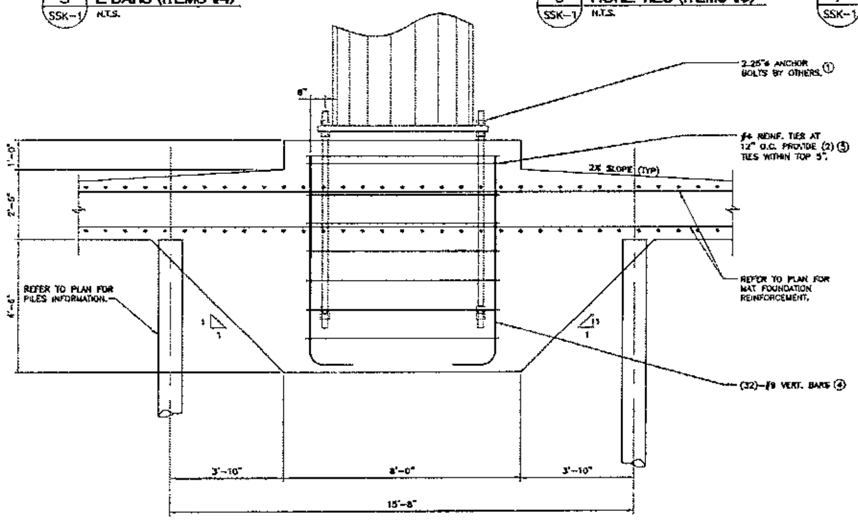
5 SSK-1 L BARS (ITEMS #4)
N.T.S.



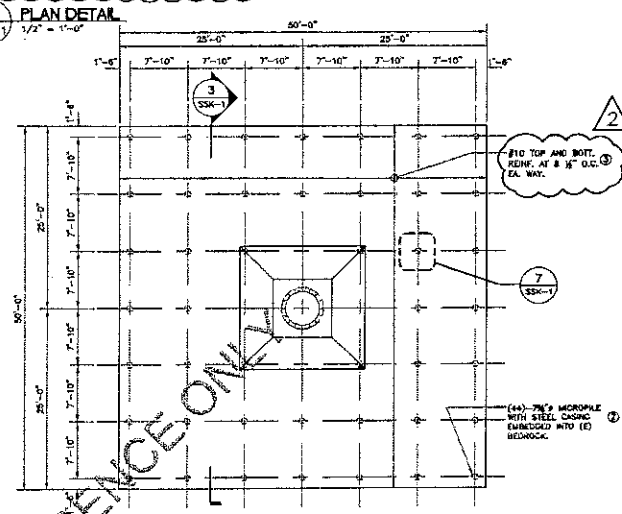
6 SSK-1 HORZ. TIES (ITEMS #5)
N.T.S.



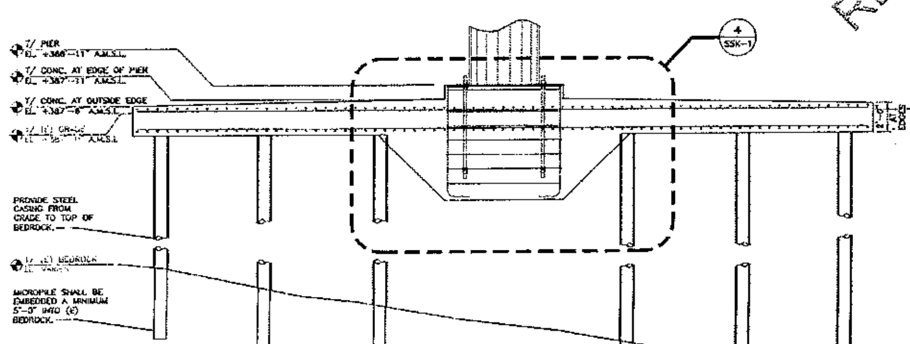
7 SSK-1 PLAN DETAIL
1/2" = 1'-0"



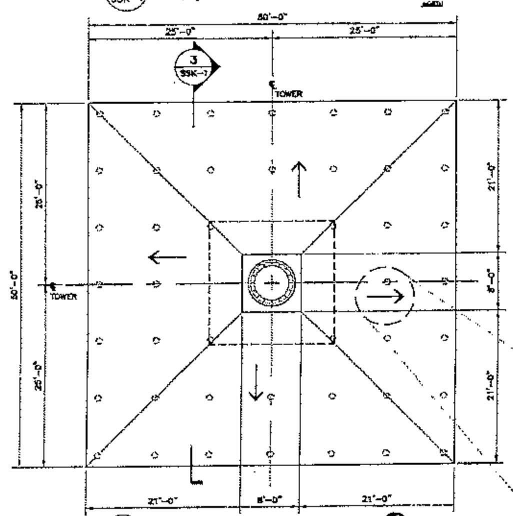
4 SSK-1 MAT FOUNDATION REINF. PLAN
SCALE: 1/2" = 1'-0"



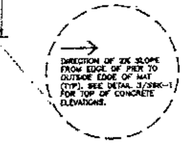
2 SSK-1 MAT FOUNDATION REINF. PLAN
SCALE: 1/8" = 1'-0"



3 SSK-1 MAT FOUNDATION REINF. PLAN
SCALE: 1/4" = 1'-0"



1 SSK-1 MAT FOUNDATION PLAN
SCALE: 1/8" = 1'-0"



DESIGN BASIS

COVERNING CODE: 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2009 CONNECTICUT SUPPLEMENT.

1. DESIGN CRITERIA:
   - WIND SPEED OF 85 MPH (FASTEST MILE) AND 74 MPH (FASTEST MILE) CONCURRENT WITH 0.5" OF RADIAL ICE PER EIA/TIA 222 F-96.
   - WIND SPEED OF 100 MPH (3 SECOND GUST) AND 50 MPH (3 SECOND GUST) CONCURRENT WITH 0.75" OF RADIAL ICE PER TIA-222-G.
   - SEISMIC LOAD: PER ASCE 7-95 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (DOES NOT GOVERN).

GENERAL NOTES

1. FOUNDATION DESIGN IS BASED ON TOWER STRUCTURE DESIGN CALCULATIONS PREPARED BY ENGINEERED SABRE INDUSTRIES, JOB No. 16-7133-SCB, FOR VERIZON WIRELESS, DATED JULY 13, 2016.
2. PILE DESIGN IS BASED ON GEOTECHNICAL REPORT PREPARED BY DESIGN EARTH TECHNOLOGIES, DATED FEBRUARY 19, 2016 WITH A MAXIMUM ALLOWABLE ROCK BEARING PRESSURE OF 10 TONS/SF (20KSF).
3. THE TOWER FOUNDATION MUST BEAR ON COMPETENT (SOUND) ROCK. BEDROCK BEARING SURFACE SHALL BE LEVEL, CLEANED OF ANY SOIL, LOOSE ROCK FRAGMENTS AND ANY UNSUITABLE BEARING MATERIAL. THE FINISHED BEARING SURFACE IS TO BE INSPECTED BY THE DESIGN ENGINEER FOR APPROVAL.
4. DRILLED HOLES SHALL BE CLEAR OF DEBRIS BEFORE GROUTING.
5. ALL WORK SHALL BE SUBJECT TO SPECIAL INSPECTION RETAINED BY THE OWNER/CONTRACTOR AS PER THE 2005 CONNECTICUT STATE BUILDING CODE WITH 2009 SUPPLEMENT.
6. MICROPILES SHALL BE DESIGNED AND INSTALLED BY A RESPONSIBLE PROFESSIONAL EXPERIENCED IN MICROPILE WORK.
7. AN INDEPENDENT QUALIFIED INSPECTION/TESTING AGENCY SHALL BE RETAINED BY THE OWNER FOR THE PURPOSE OF INSPECTING, TESTING AND DOCUMENTING ALL FIELD WORK PREFORMED BY THE PILE CONTRACTOR. ALL INSPECTION REPORTS AND DOCUMENTS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD (CENTEK ENGINEERING INC.) FOR REVIEW.

FOUNDATION DESIGN REACTIONS

BASE REACTION TYPE	TIA/EIA-222-F	TIA-222-G
SHEAR (kips)	38.00	46.88
AXIAL (kips)	47.86	57.21
BASE MOMENT (ft-kips)	3940.84	4632.27

NOTE:
1. REACTIONS SHOWN TAKEN FROM TOWER DESIGN AS PREPARED BY ENGINEERED SABRE INDUSTRIES. REFER TO GENERAL NOTE #1.

MATERIAL LIST

ITEM	QTY.	LENGTH	DESCRIPTION
①	18	7'-0"	2.625"ø A615-GR.75 ANCHOR BOLTS w/ (4) H.H.N. AND ANCHOR PLATES (x2) AS PROVIDED BY OTHERS.
②	44	VARIES	7⅝"ø MICROPILES (TO RESIST 55 KIP MINIMUM AXIAL LOAD) OR ENGINEER APPROVED EQUAL. REFER TO GEOTECHNICAL REPORT (GENERAL NOTE #2) FOR PILE LENGTHS.
③	824 308	20'-0" 23'-0"	#10 (ASTM A615-GR.60) EA. WAY TOP & BOTT. PROVIDE ADDITIONAL BAR EA. SIDE OF PILE.
④	32	8'-4"	#9 (ASTM A615-GR.60) L SHAPE BAR. REFER TO 5/SSK-1.
⑤	10	21'-2"	#4 TIE (ASTM A615-GR.60). PROVIDE (2) TIES WITHIN TOP 5". REFER TO 6/SSK-1.

CONCRETE	(cu.yd)	217	4000psi TYPE X CEMENT

PILE LOAD CALCULATION

LOAD TYPE (PER PILE)	AXIAL FORCE (kips)
DEAD/EQUIPMENT LOAD	33.6
TOWER LOAD	10.0
DOWN DRAG LOAD	6.7
TOTAL REQUIRED LOAD	50.3
MINIMUM PILE CAPACITY	55.0

AS-BUILT PILE CAPACITY - 59.9 KIPS

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	08/01/16	LWP	CTC	FOR T&V APPROVAL
1	04/05/17	DMD	CTC	FOR CONSTRUCTION
2	06/05/17	MAW	LWP	REINFORCEMENT MODIFICATION

PROFESSIONAL ENGINEER SEAL

Cellco Partnership d.b.a. Verizon wireless

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

Cellco Partnership d/b/a Verizon Wireless
WIRELESS COMMUNICATIONS FACILITY
BETHEL W2
15 GREAT PASTURE ROAD
DANBURY, CT 06810

DATE: 07/28/16
SCALE: AS NOTED
JOB NO. 14216.000

MAT FOUNDATION AND PILE DETAILS

SSK-1
Sheet No. 1 of 2

NOTES:

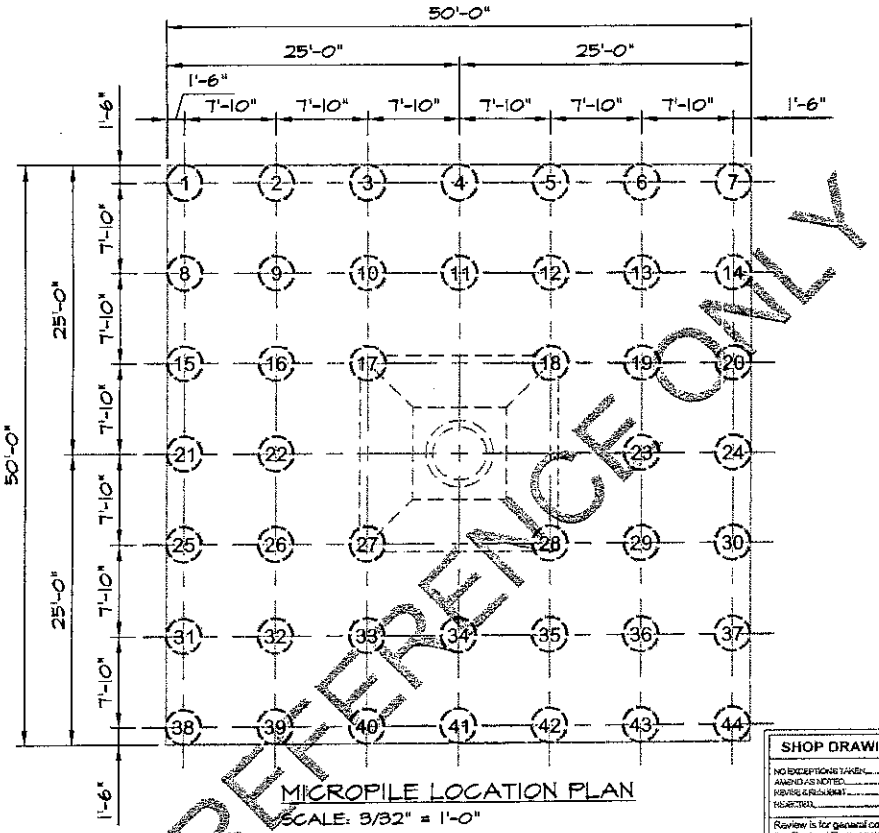
1. Micropiles shall be advanced through the fill soil and bonded into bedrock at an average maximum depth of 25.0' below working grade.

2. Micropiles shall consist of steel casing, with an outside diameter of 5.5" and a wall thickness of 0.361" as manufactured by PennDrill Manufacturing (Punxsutawney, PA) with N80 flush joint casing. The lead section of casing shall be fitted with carbide "J" teeth. Beyond that a 4.0" rock socket will be a drilled for the bond zone. The borehole will be filled with a minimum 4.0 ksi neat cement grout and a #10 (GR-75) thread bar. The thread bar will be centered using PVC centralizers. A minimum bond length of 5'-0" is required.

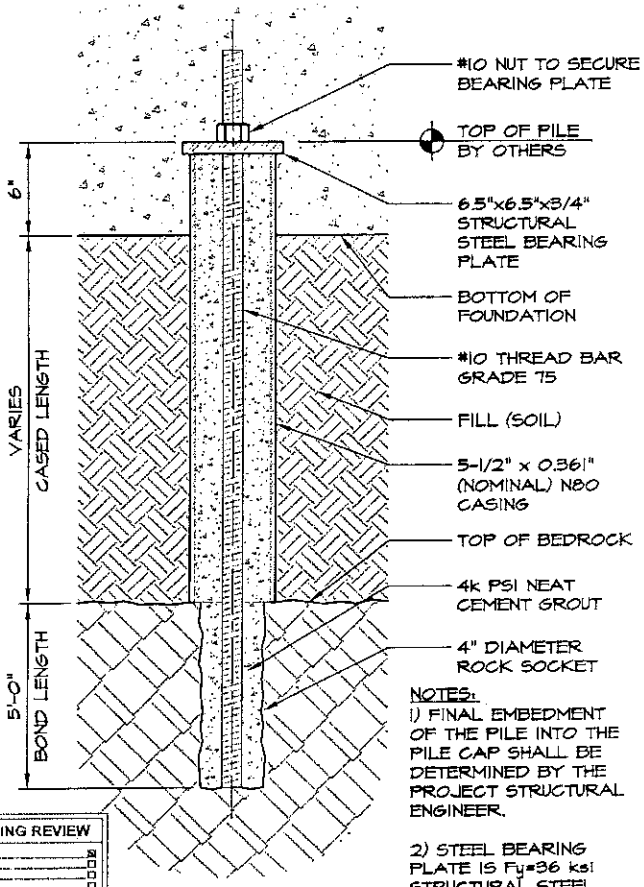
3. All Micropiles will be designed for 55 kips (allowable) axial compression.

4. Pile cap plates will be a minimum of 6.5" x 6.5" x .75" structural steel plates. Structural Engineer of Record to verify depth/height of bearing plates in pile cap.

5. Concrete pile caps and grade beams, including pile embedment into concrete, shall be sized and designed by the Structural Engineer of Record. We have schematically shown the pile caps. Pile layout will be the responsibility of others along with any as-built information. Minimum pile spacing shall be 3 times the pile diameter.



MICROPILE LOCATION PLAN
SCALE: 3/32" = 1'-0"



NOTES:
1) FINAL EMBEDMENT OF THE PILE INTO THE PILE CAP SHALL BE DETERMINED BY THE PROJECT STRUCTURAL ENGINEER.

2) STEEL BEARING PLATE IS Fy=36 ksi STRUCTURAL STEEL

MICROPILE DETAIL
SCALE: N.T.S.

REFERENCE ONLY

SHOP DRAWING REVIEW
NO EXCEPTIONS TAKEN
AMEND AS NOTED
REVISE & RESUBMIT
REJECTED
Review is for general compliance with the Contract Documents. The contractor is responsible for construction methods, coordination of work, quantities and dimensions.
Ceratok Engineering, Inc.
Date 03/23/17 Checked By LVP
Ceratok Project # T7000.01

(#) Indicates Micropile location and designation as indicated on Sheet SSK-1, dated 8/3/16. Micropile layouts, survey locations, and any as-builts are the responsibility of others.

SCALE	DATE	SHEET	PLAN #
AS NOTED	3/21/17	1 of 1	
DRAWN BY	CHKD BY	APPD BY	DISK REF #
MJP	PJY	RMV	

HELICAL
Geotechnical Design/Build
699 GRANITE ST.
BRAINTREE, MA
02184
(781) 848-2110

MICROPILE LOCATION PLAN AND DETAILS

Bethel W2 Verizon
15 Great Pasture Road
Danbury, CT

SHEET NO.
MP-1.0

accomplished by rotary percussive methods, which can address obstructions (i.e. cobbles, boulders, wood/stumps, debris). It is estimated that these mini-piles would be about 30 to 40 feet deep. Static load tests would be required to verify load capacity. These rock-socketed mini-piles would achieve capacity through side friction in the rock socket and end bearing.

There are a few considerations when the mini-piles are designed by the structural engineer. The design load shall be distributed into the bedrock using the bond strength between the bedrock and the grout. This bond strength value can be estimated from the bedrock core samples at Ultimate Bond Strength of 150 psi. A minimum of 5' shall used as the uncased bond length into bedrock. Due to the relatively small cross sectional area of the mini-pile, load carrying capacity resulting from end bearing is generally considered to be negligible for mini-piles, the use of 10.0 tons/square foot net allowable bearing capacity could be used if end bearing is being considered. Corrosion of the mini-piles needs to be addressed in both the bonded and un-bonded zones. It is recommended in the un-bonded zone to have steel installation casing left in-place (from top of bedrock to within the upper horizontal foundation component). This produces a superior mini-pile that has a higher quality of installation. Mini-piles are very slender elements that can not resist lateral load effectively. The use of battered mini-piles is recommended for the lateral loads. The mini-piles shall not be designed to carry tensile or uplift loads. Because the fill material will continue to settle, the mini-pile design must address "negative" skin friction. Negative skin friction develops along the contact surface between pile and soil when the soil settles relative to the pile. The negative skin friction must be added into the dead load of the pile. A preliminary estimate of this negative skin friction load could be as much as 20 tons per pile.

At least one verification load test should be performed to confirm the ultimate bond stress. A minimum of one proof test should also be performed on one of the production pile.

Equipment Shelter

If the shelter is allowed to settle because of the deep fill material, a spread footing is considered appropriate, if minimal settlement is allowed for the shelter, a deep foundation with a mini-pile foundation system is to be used.

EARTHQUAKE DESIGN (SEISMIC)

Seismic design requirements for the State of Connecticut are based on the Connecticut State Building Code, which incorporates the Seismic design Category approach from the International Building Code. The seismic design Category determination is based on a few category factors. One such category is the "Site Classification (soil type)". From our test borings, we consider that the site subsurface conditions match the General Description of "Very Dense Soil and Soft Rock". The site classification is therefore "C".

The proposed deep foundation is to bear on bedrock. This bedrock will not liquefy during a seismic event and needs not be addressed in the foundation design.

MATERIALS TESTING, INC.

55 LAURA STREET • NEW HAVEN, CONNECTICUT 06512 • (203)468-5216
42 BOSTON POST ROAD • WILLIMANTIC, CONNECTICUT 06226 • (860)423-1972
materialstestinginc.com

COMPRESSION TESTS (MASONRY)

CLIENT: Centek Engineering
63-2 North Branford Road
Branford, CT 06405
Attn: Erik Armas

S-1001A

PROJECT: 17000.01 Bethel West 2

LOCATION: Pile #36

MATERIAL: Type II Portland Cement

DATE CAST: 04-18-17 **DATE RECEIVED:** 05-03-17

TEMPERATURE-AMBIENT: **MIX:**

SAMPLES CAST BY: Contractor **SAMPLING TIME:**

REQUIRED STRENGTH: 5000 PSI

SAMPLE TYPE:
- ☐ 3½" x 3½" x 7" GROUT - ASTM C1019
- ☐ 6" x 12" CYLINDERS - COARSE GROUT - ASTM C31
- ☐ 2" x 2" CUBES - MORTAR - ASTM C109 MODIFIED
- ☒ 2" x 2" CUBES - GROUT USED FOR SUPPORT - ASTM C1107
- ☐ OTHER:_____

SLUMP: _____

FLOW RATE: _____

SAMPLE NUMBER	AGE DAYS	DATE TESTED	LOAD LBS.	COMPRESSIVE STRENGTH- PSI
S-50746	21	05-09-17	31,660	7920
S-50747	28	05-16-17	32,510	8130
S-50748	28	05-16-17	28,840	7210

Materials Testing, Inc.

William J. Soucy

1cc: Client

sw

STATE OF CONNECTICUT
M.S. RAVI SHARMA
No. 28022
LICENSED PROFESSIONAL ENGINEER

5/22/17

MATERIALS TESTING, INC.

55 LAURA STREET • NEW HAVEN, CONNECTICUT 06512 • (203)468-5216
42 BOSTON POST ROAD • WILLIMANTIC, CONNECTICUT 06226 • (860)423-1972
materialstestinginc.com

COMPRESSION TESTS (MASONRY)

CLIENT: Centek Engineering
63-2 North Branford Road
Branford, CT 06405
Attn: Erik Armas

S-1000A

PROJECT: 17000.01 Bethel West 2

LOCATION: Pile #3

MATERIAL: Type II Portland Cement

DATE CAST: 04-18-17 **DATE RECEIVED:** 05-03-17

TEMPERATURE-AMBIENT: **MIX:**

SAMPLES CAST BY: Contractor **SAMPLING TIME:**

REQUIRED STRENGTH: 5000 PSI

SAMPLE TYPE:
- ☐ 3½" x 3½" x 7" GROUT - ASTM C1019
- ☐ 6" x 12" CYLINDERS - COARSE GROUT - ASTM C31
- ☐ 2" x 2" CUBES - MORTAR - ASTM C109 MODIFIED
- ☒ 2" x 2" CUBES - GROUT USED FOR SUPPORT - ASTM C1107
- ☐ OTHER: _____

SLUMP: _____

FLOW RATE: _____

SAMPLE NUMBER	AGE DAYS	DATE TESTED	LOAD LBS.	COMPRESSIVE STRENGTH- PSI
S-50743	21	05-09-17	42,980	10,720
S-50744	28	05-16-17	39,580	9900
S-50745	28	05-16-17	45,380	11350

Materials Testing, Inc.

William J. Soucy

1cc: Client

SW

STATE OF CONNECTICUT
M. S. RAVI SHARMA
No. 28322
LICENSED PROFESSIONAL ENGINEER

MATERIALS TESTING, INC.

55 LAURA STREET • NEW HAVEN, CONNECTICUT 06512 • (203)468-5216
42 BOSTON POST ROAD • WILLIMANTIC, CONNECTICUT 06226 • (860)423-1972
materialstestinginc.com

COMPRESSION TESTS (MASONRY)

CLIENT: Centek Engineering
63-2 North Branford Road
Branford, CT 06405
Attn: Erik Armas

S-1002A

PROJECT: 17000.01 Bethel West 2

LOCATION: Pile #25

MATERIAL: Type II Portland Cement

DATE CAST: 04-18-17 **DATE RECEIVED:** 05-03-17

TEMPERATURE-AMBIENT: **MIX:**

SAMPLES CAST BY: Contractor **SAMPLING TIME:**

REQUIRED STRENGTH: 5000 PSI

SAMPLE TYPE:
- ☐ 3½" x 3½" x 7" GROUT - ASTM C1019
- ☐ 6" x 12" CYLINDERS - COARSE GROUT - ASTM C31
- ☐ 2" x 2" CUBES - MORTAR - ASTM C109 MODIFIED
- ☒ 2" x 2" CUBES - GROUT USED FOR SUPPORT - ASTM C1107
- ☐ OTHER:_____

SLUMP: _____

FLOW RATE: _____

SAMPLE NUMBER	AGE DAYS	DATE TESTED	LOAD LBS.	COMPRESSIVE STRENGTH- PSI
S-50749	21	05-09-17	28,840	7210
S-50750	28	05-16-17	30,750	7690
S-50751	28	05-16-17	30,690	7670

Materials Testing, Inc.

William J. Soucy

1cc: Client

SW

STATE OF CONNECTICUT
M. S. RAVI SHARMA
No. 28322
LICENSED PROFESSIONAL ENGINEER

5/24/17

1810.3.2.6 Allowable stresses. The allowable stresses for materials used in deep foundation elements shall not exceed those specified in Table 1810.3.2.6.

❖ This section refers the code user to the table of allowable stresses in order to identify the correct values that apply to various types of deep foundations. Note that Section 1810.1.4 allows "special types of piles" using the allowable stresses for materials that are specified herein.

TABLE 1810.3.2.6. See below.

❖ This table provides a complete list of the relevant allowable stresses for deep foundation element materials including concrete, reinforcing steel and structural steel.

1810.3.2.7 Increased allowable compressive stress for cased cast-in-place elements. The allowable compressive stress in the concrete shall be permitted to be increased as specified in Table 1810.3.2.6 for those portions of permanently cased cast-in-place elements that satisfy all of the following conditions:

1. The design shall not use the casing to resist any portion of the axial load imposed.
2. The casing shall have a sealed tip and be mandrel driven.
3. The thickness of the casing shall not be less than manufacturer's standard gage No.14 (0.068 inch) (1.75 mm).
4. The casing shall be seamless or provided with seams of strength equal to the basic material and be of a configuration that will provide confinement to the cast-in-place concrete.
5. The ratio of steel yield strength (F_y) to specified compressive strength (f'_c) shall not be less than six.
6. The nominal diameter of the element shall not be greater than 16 inches (406 mm).

❖ For cased cast-in-place concrete elements formed by driving permanent steel casings, the allowable design compressive stress in Table 1810.3.2.6 is generally not to exceed $0.33f'_c$. When the permanent casing complies with the requirements of this section, the allowable concrete compressive stress may be increased to $0.40f'_c$. The basis for this increase in allowable concrete stress is the added strength given to the concrete by the confining action of the steel casing. The general formula for increased allowable stress caused by confinement is:

$$f_c 0.33 f'_c\left(\frac{1 + 7.5 t f_y}{D f'_c}\right)$$

where:

f_c = Allowable concrete stress.

f'_c = Specified concrete strength.

TABLE 1810.3.2.6
ALLOWABLE STRESSES FOR MATERIALS USED IN DEEP FOUNDATION ELEMENTS

MATERIAL TYPE AND CONDITION	MAXIMUM ALLOWABLE STRESS[a]
1. Concrete or grout in compression[b] Cast-in-place with a permanent casing in accordance with Section 1810.3.2.7 Cast-in-place in a pipe, tube, other permanent casing or rock Cast-in-place without a permanent casing Precast nonprestressed Precast prestressed	 $0.4 f'_c$ $0.33 f'_c$ $0.3 f'_c$ $0.33 f'_c$ $0.33 f'_c - 0.27 f_{pc}$
2. Nonprestressed reinforcement in compression	$0.4 f_y \leq 30{,}000$ psi
3. Steel in compression Cores within concrete-filled pipes or tubes Pipes, tubes or H-piles, where justified in accordance with Section 1810.3.2.8 Pipes or tubes for micropiles Other pipes, tubes or H-piles Helical piles	 $0.5 F_y \leq 32{,}000$ psi $0.5 F_y \leq 32{,}000$ psi $0.4 F_y \leq 32{,}000$ psi $0.35 F_y \leq 16{,}000$ psi $0.6 F_y \leq 0.5 F_u$
4. Nonprestressed reinforcement in tension Within micropiles Other conditions	 $0.6 f_y$ $0.5 f_y \leq 24{,}000$ psi
5. Steel in tension Pipes, tubes or H-piles, where justified in accordance with Section 1810.3.2.8 Other pipes, tubes or H-piles Helical piles	 $0.5 F_y \leq 32{,}000$ psi $0.35 F_y \leq 16{,}000$ psi $0.6 F_y \leq 0.5 F_u$
6. Timber	In accordance with the AWC NDS

a. f'_c is the specified compressive strength of the concrete or grout; f_{pc} is the compressive stress on the gross concrete section due to effective prestress forces only; f_y is the specified yield strength of reinforcement; F_y is the specified minimum yield stress of steel; F_u is the specified minimum tensile stress of structural steel.

b. The stresses specified apply to the gross cross-sectional area within the concrete surface. Where a temporary or permanent casing is used, the inside face of the casing shall be considered the concrete surface.

CROWN CASTLE

BU:	28493
WO:	Bethel West 2
Order:	REV05
Structure:	
Rev:	H

Location

	Decimal Degrees		Deg	Min	Sec
Lat:	41.383000	+	41	22	58.80
Long:	-73.422200	-	73	25	19.92

Code and Site Parameters

Seismic Design Code:	TIA-222-H	
Site Soil:	C	Dense Soil/Soft Rock
Risk Category:	II	

USGS Seismic Reference			
	S_S:	0.2230	g
	S_1:	0.0560	g
	T_L:	6	s

Seismic Design Category Determination

Importance Factor, I_e:	1
Acceleration-based site coefficient, F_a:	1.3000
Velocity-based site coefficient, F_v:	1.5000

Design spectral response acceleration short period, S_{DS}:	0.1933	g
Design spectral response acceleration 1 s period, S_{D1}:	0.0560	g

Seismic Design Category Based on S_{DS}:	B
Seismic Design Category Based on S_{D1}:	A
Seismic Design Category Based on S_1:	N/A
Controlling Seismic Design Category:	

CROWN CASTLE

BU:	28493	Structure:	
WO:	Bethel West 2		
Order:	REV05	Rev:	H

Tower Details

Tower Type:	Tapered Monopole		
Height, h:	139	ft	
Effective Seismic Weight, W:	37.33	kips	
Amplification Factor, A_s:	1.0		2.7.8.1

Seismic Base Shear

Response Modification Factor, R:	1.5		
Discrete Appurtenance Weight in Top 1/3 of Structure, W_u:	11.562692	kips	
W_L:	25.76790771	kips	
E:	29000.0	ksi	
g:	386.088	in/s^2	
Average Moment of Inertia, I_{avg}:	10873.23494	in^4	
F_a:	0.336132657	hz	
Approximate Fundamental Period Monopole, T_a:	2.9750	s	2.7.7.1.3.3
Seismic Response Coefficient, C_s	0.1288		2.7.7.1.1
Seismic Response Coefficient Max 1, C_{smax}	0.0125		2.7.7.1.1
Seismic Response Coefficient Max 2, C_{smax}	N/A		2.7.7.1.1
Seismic Response Coefficient Min 1, C_{smin}	0.0300		2.7.7.1.1
Seismic Response Coefficient Min 2, C_{smin}	N/A		2.7.7.1.1
Controlling Seismic Response Coefficient, C_{sc}	0.0300		
Seismic Base Shear, V		kips	2.7.7.1.1

Vertical Distribution Factors

Period Related Exponent, k:	2.000	2.7.7.1.2
Sum of $w_i h_i^k$	303779.47	2.7.7.1.2

Tower Section Loads								
Section Number	Length	Top Height	Mid Height, h_x	Section Weight, w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
1 - 1	10.00	139.00	134.00	[illegible]	[illegible]	0.0445	0.0498	[illegible]
1 - 2	10.00	129.00	124.00	0.8117	12481.40	0.0411	0.0460	0.0314
2 - 1	4.00	119.00	117.00	0.3414	[illegible]	0.0154	0.0172	0.0132
2 - 2	10.00	115.00	110.00	0.8953	10832.80	0.0357	0.0399	0.0346
2 - 3	10.00	105.00	100.00	0.9549	9549.35	0.0314	0.0357	0.0369
3 - 1	3.50	100.25	98.50	0.4151	4026.97	0.0133	0.0148	0.0160
3 - 2	10.00	96.75	91.75	1.2362	10406.50	0.0343	0.0384	0.0478
3 - 3	10.00	86.75	81.75	1.3108	8760.09	0.0288	0.0323	0.0507
3 - 4	10.00	76.75	71.75	1.3854	7131.96	0.0235	0.0263	0.0535
3 - 5	10.00	66.75	61.75	1.4599	5566.86	0.0183	0.0205	0.0564
3 - 6	10.00	56.75	51.75	1.5345	4109.53	0.0135	0.0152	0.0593
4 - 1	3.25	53.25	51.63	0.5898	1571.84	0.0052	0.0058	0.0228
4 - 2	10.00	50.00	45.00	1.8740	3794.83	0.0125	0.0140	0.0724
4 - 3	10.00	40.00	35.00	1.9635	2405.27	0.0079	0.0089	0.0759
4 - 4	10.00	30.00	25.00	2.0530	1283.11	0.0042	0.0047	0.0794
4 - 5	10.00	20.00	15.00	2.1425	482.06	0.0016	0.0018	0.0828
4 - 6	10.00	10.00	5.00	2.2320	55.80	0.0002	0.0002	0.0863
			Sum	[redacted]	[redacted]			

Discrete Loads						
Name	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{px}	F_{vx}
pole mounts Platform w/Rail w/8' Mount Pipe	139.00	2.5000	35402.50	0.1165	0.1305	0.0966
(3) ccl TPA65R-BU6DA-K w/8' Mount Pipe	139.00	0.3460	6684.29	0.0220	0.0246	0.0134
(3) ccl TPA65R-BU6DA-K w/8' Mount Pipe	139.00	0.3460	6684.29	0.0220	0.0246	0.0134
tower mounts 8'x2 1/2" Pipe Mount	139.00	0.0463	895.41	0.0029	0.0033	0.0018
tower mounts 8'x2 1/2" Pipe Mount	139.00	0.0463	895.41	0.0029	0.0033	0.0018
ericsson 4478 B14 RRU	139.00	0.0594	1147.67	0.0038	0.0042	0.0023
ericsson 4478 B14 RRU	139.00	0.0594	1147.67	0.0038	0.0042	0.0023
ericsson 8843 B2/B66A RRU	139.00	0.0720	1391.11	0.0046	0.0051	0.0028
ericsson 8843 B2/B66A RRU	139.00	0.0720	1391.11	0.0046	0.0051	0.0028
ericsson 4415 B30 RRU	139.00	0.0460	888.77	0.0029	0.0033	0.0018
ericsson 4415 B30 RRU	139.00	0.0460	888.77	0.0029	0.0033	0.0018
ericsson 4449 B5/B12 RRU	139.00	0.0710	1371.79	0.0045	0.0051	0.0027
ericsson 4449 B5/B12 RRU	139.00	0.0710	1371.79	0.0045	0.0051	0.0027
raycap DC6-48-60-18-8F	139.00	0.0328	633.73	0.0021	0.0023	0.0013
raycap DC6-48-60-18-8F	139.00	0.0328	633.73	0.0021	0.0023	0.0013
(2) GPS Unit	139.00	0.0300	579.63	0.0019	0.0021	0.0012
pole mounts Platform w/Rail	119.00	2.5000	35402.50	0.1165	0.1305	0.0966
tower mounts 8'x2 1/2" Pipe Mount	119.00	0.0463	656.28	0.0022	0.0024	0.0018
(2) commscope NHH-33B-R2B w/8' Mount Pipe	119.00	0.2822	3996.77	0.0132	0.0147	0.0109
(3) commscope NHH-33B-R2B w/8' Mount Pipe	119.00	0.4234	5995.16	0.0197	0.0221	0.0164
(3) commscope NHH-33B-R2B w/8' Mount Pipe	119.00	0.4234	5995.16	0.0197	0.0221	0.0164
samsung MT6407-77A w/8' Mount Pipe	119.00	0.1334	1889.36	0.0062	0.0070	0.0052
samsung MT6407-77A w/8' Mount Pipe	119.00	0.1334	1889.36	0.0062	0.0070	0.0052
(4) ericsson RRUS A2 Module	119.00	0.0846	1198.59	0.0039	0.0044	0.0033
(4) ericsson RRUS A2 Module	119.00	0.0846	1198.59	0.0039	0.0044	0.0033
(4) ericsson RRUS A2 Module	119.00	0.0846	1198.59	0.0039	0.0044	0.0033
samsung B2/B66A RRH-BR049	119.00	0.0888	1257.21	0.0041	0.0046	0.0034
(2) samsung B2/B66A RRH-BR049	119.00	0.1776	2514.43	0.0083	0.0093	0.0069
samsung B2/B66A RRH-BR049	119.00	0.0888	1257.21	0.0041	0.0046	0.0034
samsung B5/B13 RRH BR04C	119.00	0.0703	995.94	0.0033	0.0037	0.0027
samsung B5/B13 RRH BR04C	119.00	0.0703	995.94	0.0033	0.0037	0.0027
(2) samsung B5/B13 RRH BR04C	119.00	0.1407	1991.89	0.0066	0.0073	0.0054
(4) misc 10"x7"x2" TMA	119.00	0.0600	849.66	0.0028	0.0031	0.0023
(4) misc 10"x7"x2" TMA	119.00	0.0600	849.66	0.0028	0.0031	0.0023
(4) misc 10"x7"x2" TMA	119.00	0.0600	849.66	0.0028	0.0031	0.0023
OVP Junction Box	119.00	0.0320	453.15	0.0015	0.0017	0.0012
OVP Junction Box	119.00	0.0320	453.15	0.0015	0.0017	0.0012
OVP Junction Box	119.00	0.0320	453.15	0.0015	0.0017	0.0012
pole mounts commscope MC-PK8-DSH-shub, Nose Platform w/Rail w/8 Mo	109.00	0.9833	11689.60	0.0385	0.0431	0.0380
jma MX08FRO665-21 w/8' Mount Pipe	109.00	0.1108	1316.65	0.0043	0.0049	0.0043
jma MX08FRO665-21 w/8' Mount Pipe	109.00	0.1108	1316.65	0.0043	0.0049	0.0043
jma MX08FRO665-21 w/8' Mount Pipe	109.00	0.1108	1316.65	0.0043	0.0049	0.0043
(2) tower mounts 8'x2 1/2" Pipe Mount	109.00	0.0927	1101.23	0.0036	0.0041	0.0036
(2) tower mounts 8'x2 1/2" Pipe Mount	109.00	0.0927	1101.23	0.0036	0.0041	0.0036
(2) tower mounts 8'x2 1/2" Pipe Mount	109.00	0.0927	1101.23	0.0036	0.0041	0.0036
fujitsu TA08025-B604	109.00	0.0640	760.38	0.0025	0.0028	0.0025
fujitsu TA08025-B604	109.00	0.0640	760.38	0.0025	0.0028	0.0025
fujitsu TA08025-B604	109.00	0.0640	760.38	0.0025	0.0028	0.0025
fujitsu TA08025-B605	109.00	0.0750	891.08	0.0029	0.0033	0.0029
fujitsu TA08025-B605	109.00	0.0750	891.08	0.0029	0.0033	0.0029
fujitsu TA08025-B605	109.00	0.0750	891.08	0.0029	0.0033	0.0029
raycap RDIDC-9181-PF-48	109.00	0.0219	259.60	0.0009	0.0010	0.0008
	Sum					

Linear Loads								
Name	Start Height	End Height	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
(6) 7/8" DC Cable From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(6) 7/8" DC Cable From 0 to 139	119.00	129.00	124.00	0.0354	544.31	0.0018	0.0020	0.0014
(6) 7/8" DC Cable From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(6) 7/8" DC Cable From 0 to 139	99.00	109.00	104.00	0.0354	382.89	0.0013	0.0014	0.0014
(6) 7/8" DC Cable From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(6) 7/8" DC Cable From 0 to 139	79.00	89.00	84.00	0.0354	249.78	0.0008	0.0009	0.0014
(6) 7/8" DC Cable From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(6) 7/8" DC Cable From 0 to 139	59.00	69.00	64.00	0.0354	145.00	0.0005	0.0005	0.0014
(6) 7/8" DC Cable From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(6) 7/8" DC Cable From 0 to 139	39.00	49.00	44.00	0.0354	68.53	0.0002	0.0003	0.0014
(6) 7/8" DC Cable From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(6) 7/8" DC Cable From 0 to 139	19.00	29.00	24.00	0.0354	20.39	0.0001	0.0001	0.0014
(6) 7/8" DC Cable From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(6) 7/8" DC Cable From 0 to 139	0.00	9.00	4.50	0.0319	0.65	0.0000	0.0000	0.0012
(2) 3/8" Fiber From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) 3/8" Fiber From 0 to 139	119.00	129.00	124.00	0.0012	18.45	0.0001	0.0001	0.0000
(2) 3/8" Fiber From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) 3/8" Fiber From 0 to 139	99.00	109.00	104.00	0.0012	12.98	0.0000	0.0000	0.0000
(2) 3/8" Fiber From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) 3/8" Fiber From 0 to 139	79.00	89.00	84.00	0.0012	8.47	0.0000	0.0000	0.0000
(2) 3/8" Fiber From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) 3/8" Fiber From 0 to 139	59.00	69.00	64.00	0.0012	4.92	0.0000	0.0000	0.0000
(2) 3/8" Fiber From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) 3/8" Fiber From 0 to 139	39.00	49.00	44.00	0.0012	2.32	0.0000	0.0000	0.0000
(2) 3/8" Fiber From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) 3/8" Fiber From 0 to 139	19.00	29.00	24.00	0.0012	0.69	0.0000	0.0000	0.0000
(2) 3/8" Fiber From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) 3/8" Fiber From 0 to 139	0.00	9.00	4.50	0.0011	0.02	0.0000	0.0000	0.0000
(2) general cable 1/2" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) general cable 1/2" Coax From 0 to 139	119.00	129.00	124.00	0.0032	49.20	0.0002	0.0002	0.0001
(2) general cable 1/2" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) general cable 1/2" Coax From 0 to 139	99.00	109.00	104.00	0.0032	34.61	0.0001	0.0001	0.0001
(2) general cable 1/2" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) general cable 1/2" Coax From 0 to 139	79.00	89.00	84.00	0.0032	22.58	0.0001	0.0001	0.0001
(2) general cable 1/2" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) general cable 1/2" Coax From 0 to 139	59.00	69.00	64.00	0.0032	13.11	0.0000	0.0000	0.0001
(2) general cable 1/2" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) general cable 1/2" Coax From 0 to 139	39.00	49.00	44.00	0.0032	6.20	0.0000	0.0000	0.0001
(2) general cable 1/2" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) general cable 1/2" Coax From 0 to 139	19.00	29.00	24.00	0.0032	1.84	0.0000	0.0000	0.0001
(2) general cable 1/2" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) general cable 1/2" Coax From 0 to 139	0.00	9.00	4.50	0.0029	0.06	0.0000	0.0000	0.0001
(12) general cable 1 5/8" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(12) general cable 1 5/8" Coax From 0 to 139	119.00	129.00	124.00	0.1248	1918.92	0.0063	0.0071	0.0048
(12) general cable 1 5/8" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(12) general cable 1 5/8" Coax From 0 to 139	99.00	109.00	104.00	0.1248	1349.84	0.0044	0.0050	0.0048
(12) general cable 1 5/8" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(12) general cable 1 5/8" Coax From 0 to 139	79.00	89.00	84.00	0.1248	880.59	0.0029	0.0032	0.0048
(12) general cable 1 5/8" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(12) general cable 1 5/8" Coax From 0 to 139	59.00	69.00	64.00	0.1248	511.18	0.0017	0.0019	0.0048
(12) general cable 1 5/8" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(12) general cable 1 5/8" Coax From 0 to 139	39.00	49.00	44.00	0.1248	241.61	0.0008	0.0009	0.0048
(12) general cable 1 5/8" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(12) general cable 1 5/8" Coax From 0 to 139	19.00	29.00	24.00	0.1248	71.88	0.0002	0.0003	0.0048
(12) general cable 1 5/8" Coax From 0 to 139	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(12) general cable 1 5/8" Coax From 0 to 139	0.00	9.00	4.50	0.1123	2.27	0.0000	0.0000	0.0043
(3) Hybrid From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) Hybrid From 0 to 119	99.00	109.00	104.00	0.0534	577.57	0.0019	0.0021	0.0021
(3) Hybrid From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) Hybrid From 0 to 119	79.00	89.00	84.00	0.0534	376.79	0.0012	0.0014	0.0021
(3) Hybrid From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) Hybrid From 0 to 119	59.00	69.00	64.00	0.0534	218.73	0.0007	0.0008	0.0021
(3) Hybrid From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) Hybrid From 0 to 119	39.00	49.00	44.00	0.0534	103.38	0.0003	0.0004	0.0021
(3) Hybrid From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) Hybrid From 0 to 119	19.00	29.00	24.00	0.0534	30.76	0.0001	0.0001	0.0021
(3) Hybrid From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) Hybrid From 0 to 119	0.00	9.00	4.50	0.0481	0.97	0.0000	0.0000	0.0019
(3) 51.2mm Hybrid Cable From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) 51.2mm Hybrid Cable From 0 to 119	99.00	109.00	104.00	0.0750	811.20	0.0027	0.0030	0.0029
(3) 51.2mm Hybrid Cable From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) 51.2mm Hybrid Cable From 0 to 119	79.00	89.00	84.00	0.0750	529.20	0.0017	0.0020	0.0029
(3) 51.2mm Hybrid Cable From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) 51.2mm Hybrid Cable From 0 to 119	59.00	69.00	64.00	0.0750	307.20	0.0010	0.0011	0.0029
(3) 51.2mm Hybrid Cable From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) 51.2mm Hybrid Cable From 0 to 119	39.00	49.00	44.00	0.0750	145.20	0.0005	0.0005	0.0029
(3) 51.2mm Hybrid Cable From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) 51.2mm Hybrid Cable From 0 to 119	19.00	29.00	24.00	0.0750	43.20	0.0001	0.0002	0.0029
(3) 51.2mm Hybrid Cable From 0 to 119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(3) 51.2mm Hybrid Cable From 0 to 119	0.00	9.00	4.50	0.0675	1.37	0.0000	0.0000	0.0026
				Sum	[illegible]			

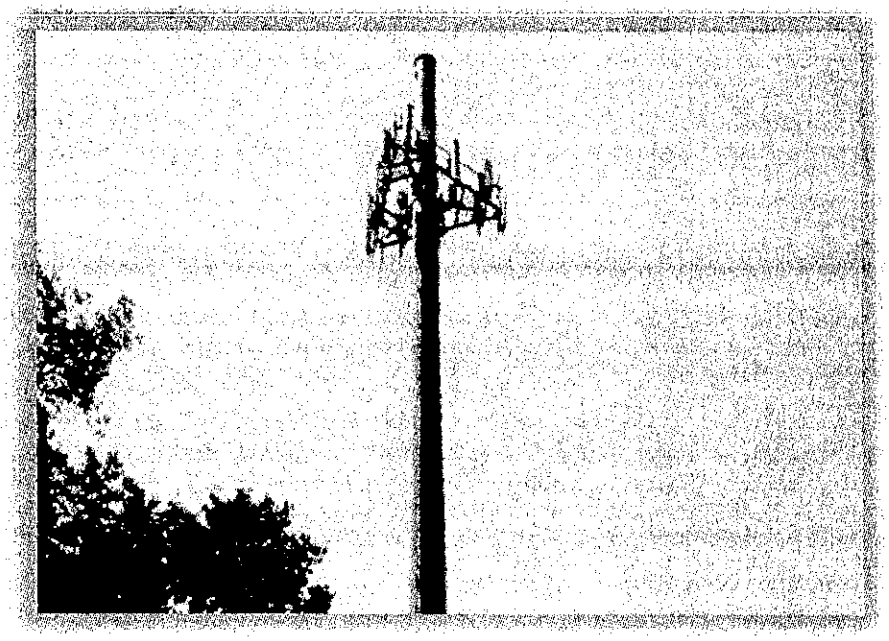
Exhibit E

Emissions Report

Radio Frequency - Electromagnetic Energy (RF-EME) Jurisdictional Report

Site No. NJJER01120B
15 Great Pasture Rd
Danbury, Connecticut 06810
41° 22' 58.80" N, 73° 25' 19.82" W NAD83

EBI Project No. 6222001230
March 10, 2022



Prepared for:

Dish Wireless

Prepared by:

EBI Consulting
environmental | engineering | due diligence

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APPENDICES

REFERENCE DOCUMENTS (NOT ATTACHED)
CDs: NJJER01120B_PRELIMCD_20220106124040
RFDS: RFDS-NJJER01120B-PRELIMINARY-20211202-V.1_20211203153207

EXECUTIVE SUMMARY

Purpose of Report

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by Dish Wireless to conduct radio frequency electromagnetic (RF-EME) modeling for Dish Wireless Site NJJER01120B located at 15 Great Pasture Rd in Danbury, Connecticut to determine RF-EME exposure levels from proposed Dish Wireless communications equipment at this site. As described in greater detail in Appendix C of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for the general public and for occupational activities. This report summarizes the results of RF-EME modeling in relation to relevant FCC RF-EME compliance standards for limiting human exposure to RF-EME fields.

Statement of Compliance

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

As presented in the sections below, based on worst-case predictive modeling, there are no modeled areas on any accessible rooftop or ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site. Additionally, there are areas where workers who may be elevated above the rooftop or ground may be exposed to power densities greater than the occupational limits. Therefore, workers should be informed about the presence and locations of antennas and their associated fields.

At the nearest walking/working surfaces to the Dish Wireless antennas, the maximum power density generated by the DISH antennas is approximately **0.09** percent of the FCC's general public limit (**0.02** percent of the FCC's occupational limit).

The composite exposure level from all carriers on this site is approximately **0.25** percent of the FCC's general public limit (**0.05** percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

Recommended control measures are outlined in Section 4.0 and within the Site Safety Plan (attached); Dish Wireless should also provide procedures to shut down and lockout/tagout this wireless equipment in accordance with their own standard operating protocol. Non-telecom workers who will be working in areas of exceedance are required to contact Dish Wireless since only DISH has the ability to lockout/tagout the facility, or to authorize others to do so.

1.0 INTRODUCTION

Radio frequency waves are electromagnetic waves from the portion of the electromagnetic spectrum at frequencies lower than visible light and microwaves. The wavelengths of radio waves range from thousands of meters to around 30 centimeters. These wavelengths correspond to frequencies as low as 3 cycles per second (or hertz [Hz]) to as high as one gigahertz (one billion cycles per second).

Personal Communication (PCS) facilities used by Dish Wireless in this area will potentially operate within a frequency range of 600 to 5000 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed a distance above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of in areas in the immediate vicinity of the antennas.

MPE limits do not represent levels where a health risk exists, since they are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size or health.

2.0 SITE DESCRIPTION

This project site includes the following proposed wireless telecommunication antennas on a monopole located at 15 Great Pasture Rd in Danbury, Connecticut.

Ant #	Operator	Antenna Make	Antenna Model	Frequency (MHz)	Azimuth (deg.)	Mechanical Downtilt (deg.)	Horizontal Beamwidth (Degrees)	Aperture (feet)	Total Power Input (Watts)	Gain (dBd)*	Total ERP (Watts)	Total EIRP (Watts)
1	Dish	JMA	MX08FRO665-21 02DT 600	600	10	0	68	6.0	120	11.46	1496.86	2454.85
1	Dish	JMA	MX08FRO665-21 02DT 1900	1900	10	0	62	6.0	160	16.16	5890.06	9659.70
1	Dish	JMA	MX08FRO665-21 02DT 2100	2100	10	0	64	6.0	160	16.66	6608.76	10838.37
2	Dish	JMA	MX08FRO665-21 02DT 600	600	125	0	68	6.0	120	11.46	1496.86	2454.85
2	Dish	JMA	MX08FRO665-21 02DT 1900	1900	125	0	62	6.0	160	16.16	5890.06	9659.70
2	Dish	JMA	MX08FRO665-21 02DT 2100	2100	125	0	64	6.0	160	16.66	6608.76	10838.37
3	Dish	JMA	MX08FRO665-21 02DT 600	600	250	0	68	6.0	120	11.46	1496.86	2454.85
3	Dish	JMA	MX08FRO665-21 02DT 1900	1900	250	0	62	6.0	160	16.16	5890.06	9659.70
3	Dish	JMA	MX08FRO665-21 02DT 2100	2100	250	0	64	6.0	160	16.66	6608.76	10838.37
4	AT&T	GENERIC	PANEL 6FT 00DT 700	700	10	0	68	6.0	80	12.33	1368.01	2243.54
4	AT&T	GENERIC	PANEL 6FT 00DT 850	850	10	0	66	6.0	80	12.62	1462.48	2398.47
4	AT&T	GENERIC	PANEL 6FT 00DT 1900	1900	10	0	66	6.0	80	15.84	3069.66	5034.24
5	AT&T	GENERIC	PANEL 6FT 00DT 2100	2100	10	0	63	6.0	80	16.39	3484.09	5713.92
5	AT&T	GENERIC	PANEL 6FT 00DT 2300	2300	10	0	58	6.0	50	16.22	2093.97	3434.11
6	AT&T	GENERIC	PANEL 6FT 00DT 700	700	125	0	68	6.0	80	12.33	1368.01	2243.54
6	AT&T	GENERIC	PANEL 6FT 00DT 850	850	125	0	66	6.0	80	12.62	1462.48	2398.47
6	AT&T	GENERIC	PANEL 6FT 00DT 1900	1900	125	0	66	6.0	80	15.84	3069.66	5034.24

7	AT&T	GENERIC	PANEL 6FT 00DT 2100	2100	125	0	63	6.0	80	16.39	3484.09	5713.92
7	AT&T	GENERIC	PANEL 6FT 00DT 2300	2300	125	0	58	6.0	50	16.22	2093.97	3434.11
8	AT&T	GENERIC	PANEL 6FT 00DT 700	700	250	0	68	6.0	80	12.33	1368.01	2243.54
8	AT&T	GENERIC	PANEL 6FT 00DT 850	850	250	0	66	6.0	80	12.62	1462.48	2398.47
8	AT&T	GENERIC	PANEL 6FT 00DT 1900	1900	250	0	66	6.0	80	15.84	3069.66	5034.24
9	AT&T	GENERIC	PANEL 6FT 00DT 2100	2100	250	0	63	6.0	80	16.39	3484.09	5713.92
9	AT&T	GENERIC	PANEL 6FT 00DT 2300	2300	250	0	58	6.0	50	16.22	2093.97	3434.11
10	Verizon	COMMSCOPE	NHH-33A-R2B 02DT 850	850	5	0	30	4.0	160	14.14	4150.69	6807.13
11	Verizon	COMMSCOPE	NHH-33A-R2B 02DT 1900	1900	5	0	33	4.0	160	15.71	5958.27	9771.56
12	Verizon	COMMSCOPE	NHH-33A-R2B 02DT 2100	2100	5	0	31	4.0	160	16.3	6825.27	11193.45
13	Verizon	COMMSCOPE	NHH-33A-R2B 02DT 700	700	5	0	34	4.0	160	12.96	3163.15	5187.57
14	Verizon	COMMSCOPE	NHH-65B-R2B 02DT 0850	850	150	0	60	6.0	160	12.64	2938.46	4819.08
15	Verizon	COMMSCOPE	NHH-65B-R2B 02DT 1900	1900	150	0	69	6.0	160	15.61	5822.64	9549.13
16	Verizon	COMMSCOPE	NHH-65B-R2B 02DT 2100	2100	150	0	64	6.0	160	16.36	6920.22	11349.16
17	Verizon	COMMSCOPE	NHH-65B-R2B 02DT 0700	700	150	0	65	6.0	160	12.29	2710.94	4445.94
18	Verizon	COMMSCOPE	NHH-45B-R2B 02DT 0850	850	250	0	43	6.0	160	15.09	5165.59	8471.57
19	Verizon	COMMSCOPE	NHH-45B-R2B 02DT 1900	1900	250	0	43	6.0	160	17.49	8976.77	14721.90
20	Verizon	COMMSCOPE	NHH-45B-R2B 02DT 2100	2100	250	0	41	6.0	160	17.89	9842.83	16142.24
21	Verizon	COMMSCOPE	NHH-45B-R2B 02DT 0700	700	250	0	48	6.0	160	13.98	4000.55	6560.91
1	Dish	JMA	MX08FRO665-21 02DT 600	600	10	0	68	6.0	120	11.46	1496.86	2454.85

• Note there is 1 Dish Wireless antenna per sector at this site. For clarity, the different frequencies for each antenna are entered on separate lines.
• Gain includes antenna and combiner.

Ant #	NAME	X	Y	Antenna Radiation Centerline	Z-Height Equipment Shelter	Z-Height Ground
1	Dish	6.5	11.4	102.0	92.0	102.0
2	Dish	9.9	13.5	102.0	92.0	102.0
3	Dish	9.5	18.8	102.0	92.0	102.0
4	AT&T	5.9	20.1	140.0	130.0	140.0
5	AT&T	2.0	17.6	140.0	130.0	140.0
6	AT&T	2.1	13.5	140.0	130.0	140.0
7	AT&T	5.3	10.7	140.0	130.0	140.0
8	AT&T	7.1	12.0	140.0	130.0	140.0
9	AT&T	9.0	13.2	140.0	130.0	140.0
10	Verizon	10.7	14.6	120.0	110.0	120.0
11	Verizon	10.7	18.2	120.0	110.0	120.0
12	Verizon	9.3	19.1	120.0	110.0	120.0
13	Verizon	6.8	20.3	120.0	110.0	120.0
14	Verizon	4.5	21.0	120.0	110.0	120.0
15	Verizon	2.1	19.2	120.0	110.0	120.0
16	Verizon	2.6	17.0	120.0	110.0	120.0
17	Verizon	2.6	14.4	120.0	110.0	120.0

18	Verizon	2.4	12.2	120.0	110.0	120.0
19	Verizon	9.2	11.0	120.0	110.0	120.0
20	Verizon	8.6	21.0	120.0	110.0	120.0
21	Verizon	0.2	15.3	120.0	110.0	120.0

• Note the Z-Height represents the distance from the antenna centerline in feet.

The above tables contain an inventory of proposed Dish Wireless antennas and other carrier antennas if sufficient information was available to model them. Note that EBI uses an assumed set of antenna specifications and powers for unknown and other carrier antennas for modeling purposes. The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general population/uncontrolled exposure limits for members of the general public that may be exposed to antenna fields. While access to this site is considered controlled, the analysis has considered exposures with respect to both controlled and uncontrolled limits as an untrained worker may access adjacent rooftop locations. Additional information regarding controlled/uncontrolled exposure limits is provided in Appendix C. Appendix B presents a site safety plan that provides a plan view of the monopole with antenna locations.

3.0 WORST-CASE PREDICTIVE MODELING

EBI has performed theoretical MPE modeling using RoofMaster™ software to estimate the worst-case power density at the site's nearby broadcast levels resulting from operation of the antennas. RoofMaster™ is a widely-used predictive modeling program that has been developed by Waterford Consultants to predict RF power density values for rooftop and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. Using the computational methods set forth in Federal Communications Commission (FCC) Office of Engineering & Technology (OET) Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" (OET-65), RoofMaster™ calculates predicted power density in a scalable grid based on the contributions of all RF sources characterized in the study scenario. At each grid location, the cumulative power density is expressed as a percentage of the FCC limits. Manufacturer antenna pattern data is utilized in these calculations. RoofMaster™ models consist of the Far Field model as specified in OET-65 and an implementation of the OET-65 Cylindrical Model (Sula9). The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

For this report, EBI utilized antenna and power data provided by Dish Wireless and compared the resultant worst-case MPE levels to the FCC's occupational/controlled exposure limits outlined in OET Bulletin 65. The assumptions used in the modeling are based upon information provided by Dish Wireless and information gathered from other sources. Elevations of walking/working surfaces were estimated based on elevations provided and available aerial imagery. Sector orientation assignments were made assuming coverage is directed to areas of site. Changes to antenna mount heights or placement will impact site compliance. The parameters used for modeling are summarized in the Site Description antenna inventory table in Section 2.0.

AT&T and Verizon also have antennas on the monopole. Information about these antennas was included in the modeling analysis.

Based on worst-case predictive modeling, there are no modeled areas on any accessible rooftop or ground-level walking/working surface related to the proposed Dish Wireless antennas that exceed the FCC's occupational or general public exposure limits at this site. At the nearest walking/working surfaces to the Dish Wireless antennas, the maximum power density generated by the Dish Wireless antennas is approximately 0.09 percent of the FCC's general public limit (0.02 percent of the FCC's occupational

limit). The composite exposure level from all carriers on this site is approximately 0.25 percent of the FCC's general public limit (0.05 percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

The Site Safety Plan also presents areas where Dish Wireless antennas contribute greater than 5% of the applicable MPE limit for a site. A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

There are no modeled areas on the rooftop and ground that exceed the FCC's limits for general public or occupational exposure in front of the other carrier antennas.

The inputs used in the modeling are summarized in the Site Description antenna inventory table in Section 2.0. A graphical representation of the RoofMaster™ modeling results is presented in Appendix B. Microwave dish antennas are designed for point-to-point operations at the elevations of the installed equipment rather than ground level coverage. The maximum power density generated by all carrier antennas, including microwaves and panel antennas, is included in the modeling results presented within this report.

4.0 MITIGATION/SITE CONTROL OPTIONS

EBI's modeling indicates that there are no areas in front of the Dish Wireless antennas that exceed the FCC standards for occupational or general public exposure. All exposures above the FCC's safe limits require that individuals be elevated above the rooftop and/or ground. In order to alert people accessing the monopole, a Caution sign and an NOC Information sign are recommended for installation 10 feet above ground level at the base of the monopole.

Barriers are recommended for installation when possible to block access to the areas in front of the antennas that exceed the FCC general public and/or occupational limits. Barriers may consist of rope, chain, or fencing. Painted stripes should only be used as a last resort. There are no barriers recommended on this site. Barriers are not recommended for installation because there are no exceedances on any walking/working surface.

These protocols and recommended control measures have been summarized and included with a graphic representation of the antennas and associated signage and control areas in a RF-EME Site Safety Plan, which is included as Appendix B. Individuals and workers accessing the monopole should be provided with a copy of the attached Site Safety Plan, made aware of the posted signage, and signify their understanding of the Site Safety Plan.

To reduce the risk of exposure, EBI recommends that access to areas associated with the active antenna installation be restricted and secured where possible.

Implementation of the signage recommended in the Site Safety Plan and in this report will bring this site into compliance with the FCC's rules and regulations.

5.0 SUMMARY AND CONCLUSIONS

EBI has prepared a Radiofrequency – Electromagnetic Energy (RF-EME) Compliance Report for telecommunications equipment installed by Dish Wireless Site Number NJJER01120B located at 15 Great Pasture Rd in Danbury, Connecticut to determine worst-case predicted RF-EME exposure levels from wireless communications equipment installed at this site. This report summarizes the results of RF-EME

modeling in relation to relevant Federal Communications Commission (FCC) RF-EME compliance standards for limiting human exposure to RF-EME fields.

As presented in the sections above, based on the FCC criteria, there are no modeled areas on any accessible rooftop or ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site.

Workers should be informed about the presence and locations of antennas and their associated fields. Recommended control measures are outlined in Section 4.0 and within the Site Safety Plan (attached); Dish Wireless should also provide procedures to shut down and lockout/tagout this wireless equipment in accordance with their own standard operating protocol. Non-telecom workers who will be working in areas of exceedance are required to contact Dish Wireless since only Dish Wireless has the ability to lockout/tagout the facility, or to authorize others to do so.

6.0 LIMITATIONS

This report was prepared for the use of Dish Wireless. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by EBI are based solely on the information provided by the client. The observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to EBI so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

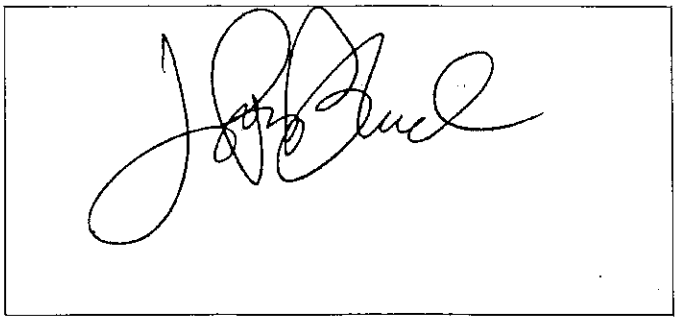
Appendix A

Certifications

Preparer Certification

I, John-Pierre Blanchard, state that:

- I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.
- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified "occupational" under the FCC regulations.
- I am fully aware of and familiar with the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation.
- I have reviewed the data provided by the client and incorporated it into this Site Compliance Report such that the information contained in this report is true and accurate to the best of my knowledge.



Reviewed and Approved by:

sealed 10mar2022 mike@h2dc.com
H2DC PLLC CT CoA#: PEC.0001714

Michael McGuire
Electrical Engineer
mike@h2dc.com

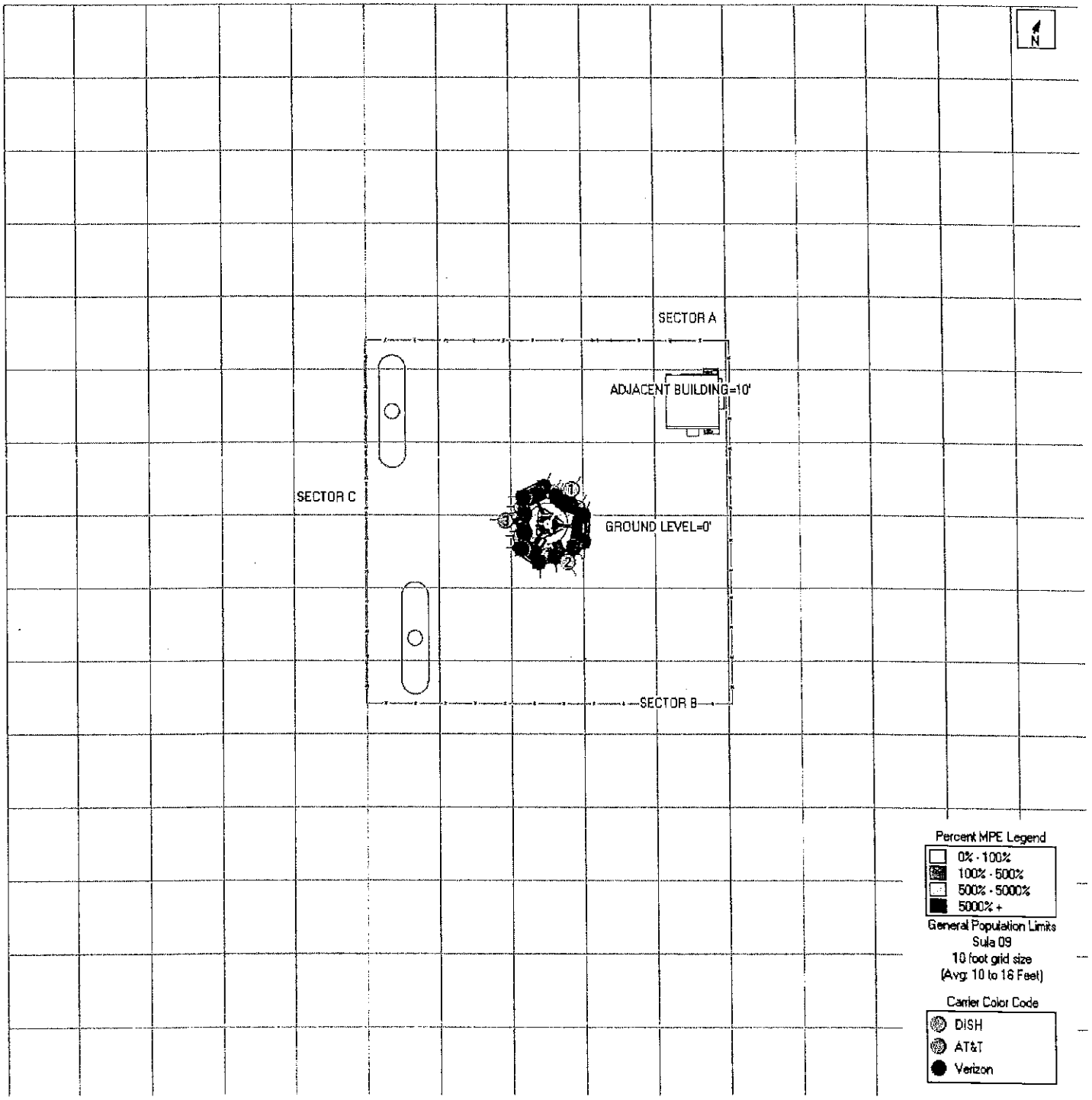
Note that EBI's scope of work is limited to an evaluation of the Radio Frequency – Electromagnetic Energy (RF-EME) field generated by the antennas and broadcast equipment noted in this report. The engineering and design of the building and related structures, as well as the impact of the antennas and broadcast equipment on the structural integrity of the building, are specifically excluded from EBI's scope of work.

Appendix B

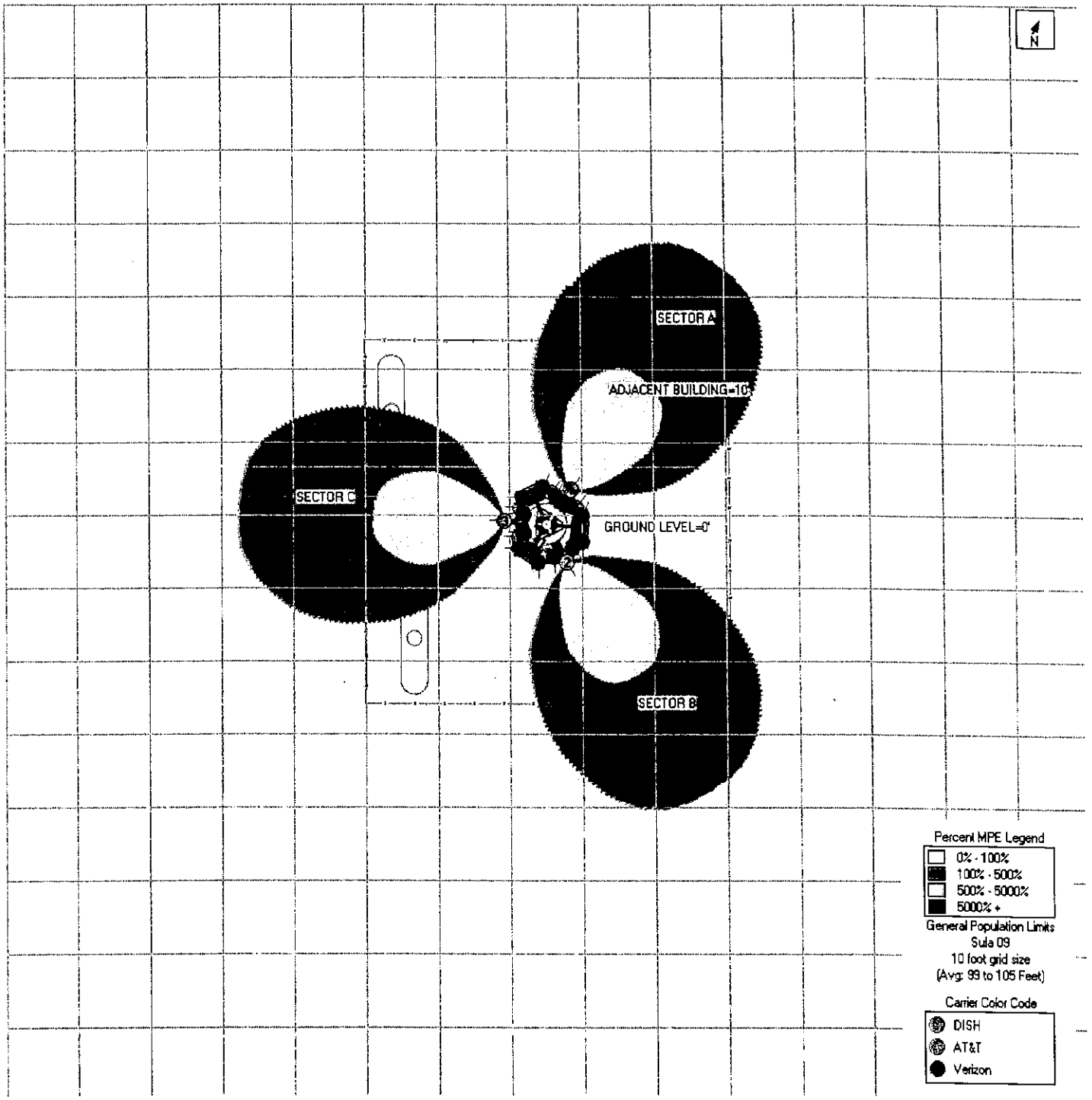
Radio Frequency Electromagnetic Energy

Safety Information and Signage Plans

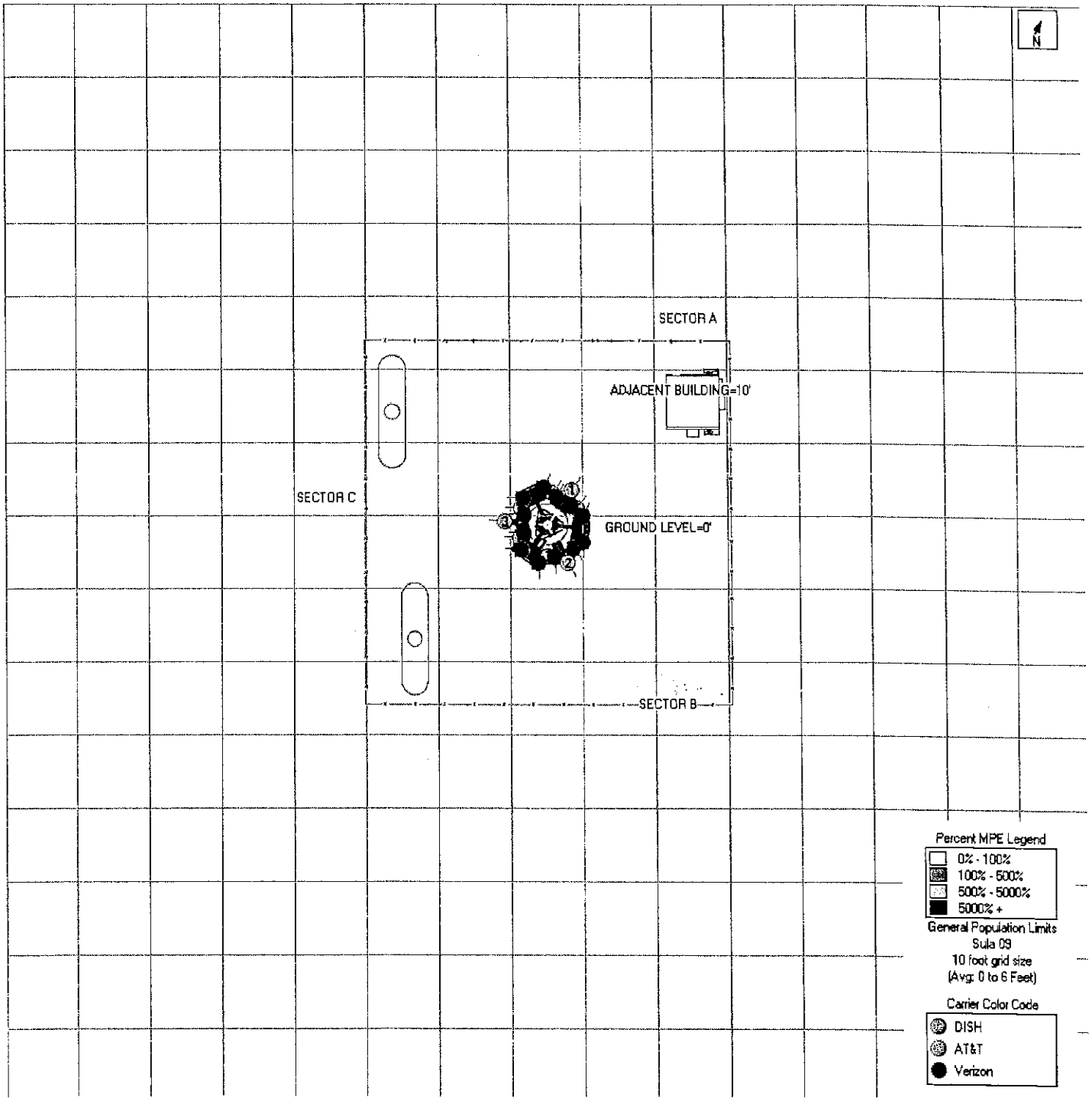
Nearest Walking Surface (Equipment Shelter Roof) Simulation



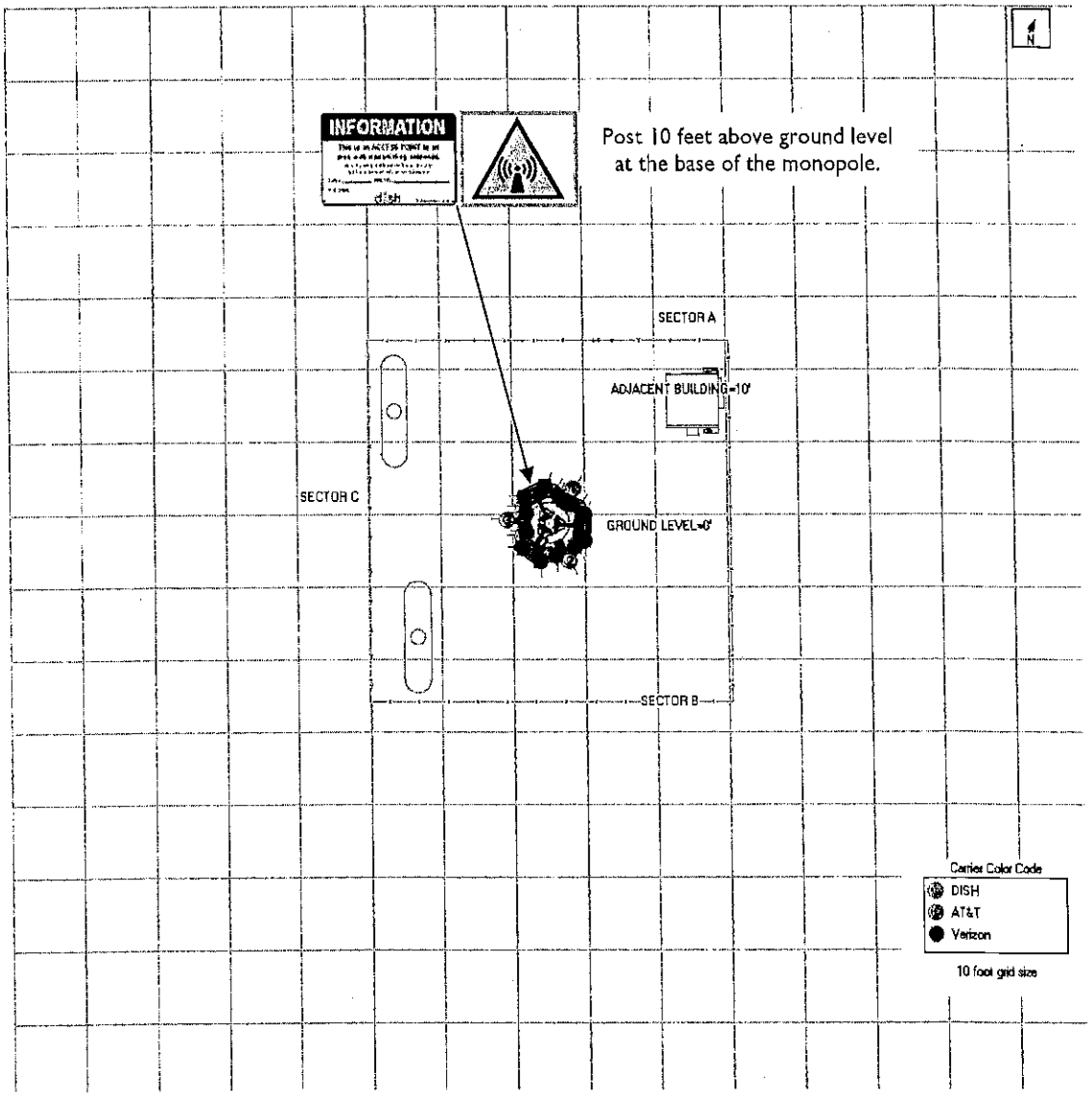
Antenna Face Level Simulation

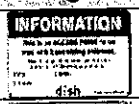


Ground Level Simulation



Dish Wireless Safety (Signage) Plan



Sign	Posting Instructions	Required Signage / Mitigation
	**NOC Information** Information signs are used to provide contact information for any questions or concerns for personnel accessing the site.	Securely post 10 feet above ground level at the base of the monopole in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.
	**Guidelines** Informational sign used to notify workers that there are active antennas installed and provide guidelines for working in RF environments.	Signage not required.
	**Notice** Used to notify individuals they are entering an area where the power density emitted from transmitting antennas may exceed the FCC's MPE limit for the general public or occupational exposures.	Signage not required.
	**Caution** Used to notify individuals that they are entering a hot spot where either the general public or occupational FCC's MPE limit is or could be exceeded.	Securely post 10 feet above ground level at the base of the monopole in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.
	**Warning** Used to notify individuals that they are entering a hot zone where the occupational FCC's MPE limit has been exceeded by 10x.	Signage not required.

Appendix C

Federal Communications Commission (FCC) Requirements

The FCC has established Maximum Permissible Exposure (MPE) limits for human exposure to Radiofrequency Electromagnetic (RF-EME) energy fields, based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

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 public/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.

General public/uncontrolled exposure limits apply to situations in which the general public 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 public 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.

Table 1 and Figure 1 (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are "time-averaged" limits to reflect different durations resulting from controlled and uncontrolled exposures.

The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm^2). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm^2) and an uncontrolled MPE of 1 mW/cm^2 for equipment operating in the 1900 MHz frequency range. For the Dish Wireless equipment operating at 600 MHz or 850 MHz, the FCC's occupational MPE is 2.83 mW/cm^2 and an uncontrolled MPE of 0.57 mW/cm^2. For the Dish Wireless equipment operating at 1900 MHz, the FCC's occupational MPE is 5.0 mW/cm^2 and an uncontrolled MPE limit of 1.0 mW/cm^2. These limits are considered protective of these populations.

Table 1: Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure

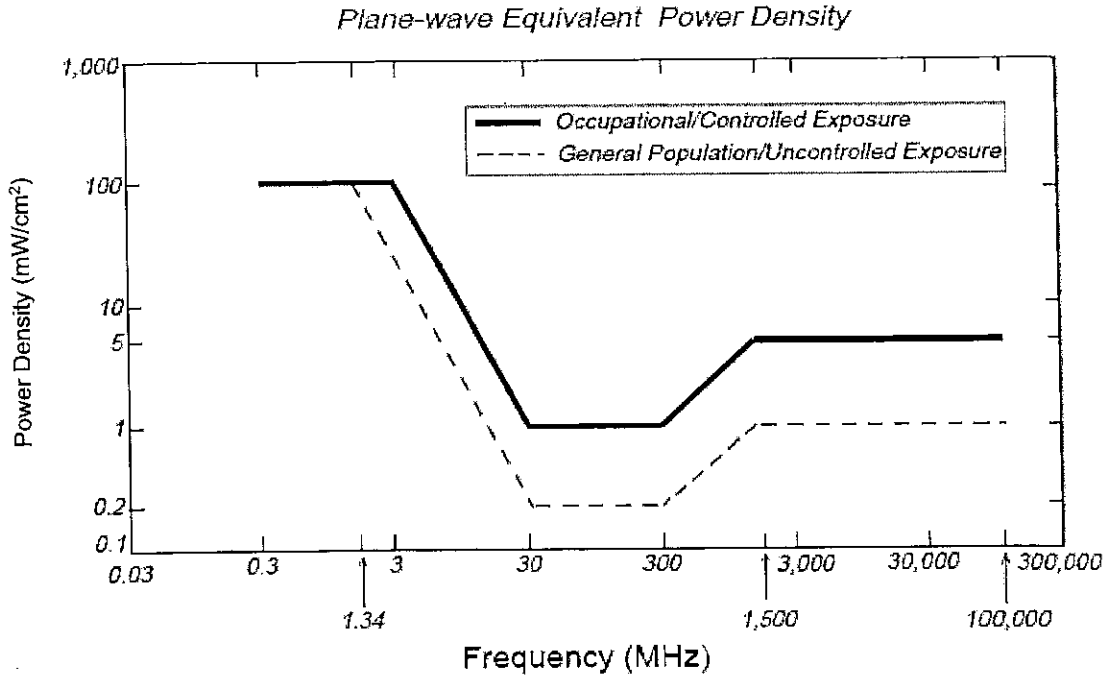
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $[E]^2$, $[H]^2$, or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6

(B) Limits for General Public/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $[E]^2$, $[H]^2$, or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)
* Plane-wave equivalent power density

Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)



Based on the above, the most restrictive thresholds for exposures of unlimited duration to RF energy for several personal wireless services are summarized below:

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Microwave (Point-to-Point)	5,000 - 80,000 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Broadband Radio (BRS)	2,600 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Wireless Communication (WCS)	2,300 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Advanced Wireless (AWS)	2,100 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Personal Communication (PCS)	1,950 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Cellular Telephone	870 MHz	2.90 mW/cm^2	0.58 mW/cm^2
Specialized Mobile Radio (SMR)	855 MHz	2.85 mW/cm^2	0.57 mW/cm^2
Long Term Evolution (LTE)	700 MHz	2.33 mW/cm^2	0.47 mW/cm^2
Most Restrictive Frequency Range	30-300 MHz	1.00 mW/cm^2	0.20 mW/cm^2

MPE limits are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

Personal Communication (PCS) facilities used by Dish Wireless in this area will potentially operate within a frequency range of 600 to 2100 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.

FCC Compliance Requirement

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

Exhibit F

Lease Agreement

Lessor Site ID & No.: Bethel West 2 / 467694
Lessee Site ID & No.: NJJER01120B CONTRACT # _____

LEASE SUPPLEMENT

This Supplement ("Supplement"), is made this 29th day of June, 2022 (the "Supplement Effective Date"), between Cellco Partnership, a Delaware general partnership, d/b/a Verizon Wireless, with its principal offices at One Verizon Way, Mail Stop 4AW100, Basking Ridge, New Jersey 07920, hereinafter designated LESSOR and DISH Wireless L.L.C., a Colorado limited liability company, with its principal offices at 9601 S. Meridian Blvd., Englewood, Colorado 80112, hereinafter designated LESSEE.

1. This Supplement is made pursuant to that certain Master Tower Lease Agreement between Cellco Partnership d/b/a Verizon Wireless and DISH Wireless L.L.C. dated August 6, 2021 (the "Agreement"). All of the terms and conditions of the Agreement are incorporated hereby by reference and made a part hereof without the necessity of repeating or attaching the Agreement. In the event of a contradiction, modification or inconsistency between the terms of the Agreement and this Supplement, the terms of the Agreement shall govern, except as it pertains to Exhibits, Rent that is negotiated in accordance with the terms of the Agreement, and any other site specific terms that are expressly included in a Supplement. Capitalized terms used in this Supplement shall have the same meaning described for them in the Agreement unless otherwise indicated herein.

2. The Premises leased by the LESSOR to the LESSEE hereunder is described as follows:

35 square feet of Ground Space located at 15 Great Pasture Road, Danbury, Fairfield County, Connecticut 06810 for the placement of LESSEE's equipment shelter or cabinets and ancillary equipment, and certain Tower Space for the installation of LESSEE's antennas and related equipment, together with certain easements, as more particularly described on **Exhibit 1** attached hereto and made a part hereof.

3. In the event an **Exhibit 1** is attached hereto describing the Premises, the LESSEE may have the right to survey the Premises and said survey may then become **Exhibit 2** which shall be attached hereto and made a part hereof and shall control in the event of any discrepancies between it and **Exhibit 1**. The cost for such work shall be borne by the LESSEE.

4. LESSOR hereby grants permission to LESSEE to install, maintain and operate the communications equipment, antennas, technology, frequencies and appurtenances described in **Exhibit 3** attached hereto (the "LESSEE Equipment"). LESSEE reserves the right to replace, repair, augment, add or otherwise modify the LESSEE Equipment as provided in **Paragraph 4** of the Agreement.

5. If the Premises are subject to a prime lease, license or other such agreement, a copy of such agreement is attached hereto as **Exhibit 4** (the "Prime Lease"). This Supplement shall not be effective until LESSEE has approved the Prime Lease, and Lessee shall be under no obligation to proceed under this Supplement unless and until the form and substance of the Prime Lease is acceptable to LESSEE. LESSEE'S execution of this Supplement shall convey its approval of the Prime Lease.

HSG

6. The Supplement Term shall be as set forth in **Paragraph 6** of the Agreement and shall commence as set forth in **Paragraph 6** of the Agreement and if known at the time execution of this Supplement, is set forth below. LESSOR and LESSEE agree that they shall acknowledge in writing the Commencement Date using the form attached as "**Exhibit 5**" to this Supplement.

7. The Rent due for the Supplement Term shall be in accordance with the Agreement and shall be an initial annual amount of $20,625.00 to be paid in equal monthly installments. Rent consists of Site Rent in the initial annual amount of $16,500.00 per year and an Initial Prime Lease Payment in the amount of $4,125.00 per year. Rent shall be paid in equal monthly installments on the first day of each month, in advance, as follows:

(a) Pursuant to Paragraph 36 of the Prime Lease and Paragraph 7(f) of the Agreement, LESSEE shall pay 20% of Rent to Prime Lease lessor at BSIP Propco SPV LLC c/o Brookfield Asset Management Inc., Brookfield Place, 250 Vesey Street, New York, NY 10281-1023, and

(b) LESSEE shall pay 80% of Rent to LESSOR at Verizon Wireless, P.O. Box 64498, Baltimore, Maryland 21264-4498 or to such other person, firm or place as the LESSOR may, from time to time, designate in writing at least sixty (60) calendar days in advance of any Rent payment date. All Rent checks shall have LESSOR'S site number clearly written on the face of the check.

The foregoing Rent reflects the Site Rent, any Microwave Rent, any Additional Wind Load Surface Area Rent, any Additional Ground Space Rent, and any Prime Lease Payment and shall commence on a date to be determined in accordance with **Paragraph 6** of the Agreement. The Initial Prime Lease Payment shall be increased annually in the same manner and at the same time as the Site Rent.

8. Subject to the provisions of any applicable Master Tower Lease Agreement, LESSEE acknowledges its receipt of the Notice to Sublessee attached hereto as "**Exhibit 6**" to this Supplement.

[SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF, the Parties hereto have set their hands and affixed their respective seals as of the Supplement Effective Date.

LESSOR:
Cellco Partnership d/b/a Verizon Wireless

By: DocuSigned by: Chad Schmelzer C89AB65CAC8F4F2...

Name: Chad Schmelzer

Title: Senior Manager – Network Engineering & Operations

Date: Jun 29, 2022

LESSEE:
DISH Wireless L.L.C.

By: DocuSigned by: F0DA1A105A684B7...

Name: David Mayo

Title: EVP

Date: 5/26/2022

DS MF

EXHIBIT 1 TO SUPPLEMENT
PREMISES
PAGE 1 OF 3

A portion of that certain parcel of property located at 15 Great Pasture Road, Township of Danbury, County of Fairfield County, State of Connecticut, and being described as a 50' x 50' parcel containing 2,500 square feet (the "Land Space"), together with a twenty (20') foot wide right-of-way extending from the nearest public right-of-way, Great Pasture Road, to the Land Space. The property is also shown on the Tax Map Number L16 of the Town of Danbury as Block N/A, Lot 5 and Wooster Street, Town of Bethel, County of Fairfield, State of Connecticut, as shown on Tax Map No. 20 of the Town of Bethel as Block 40, Lot 1 and is further described in Deed Book 2028 at Page 1121 as recorded in the Office of the Danbury Town Clerk and Deed Book 967 at Page 368 in the Office of the Bethel Town Clerk.

HSG

EXHIBIT 1 TO SUPPLEMENT
PREMISES
PAGE 2 OF 3

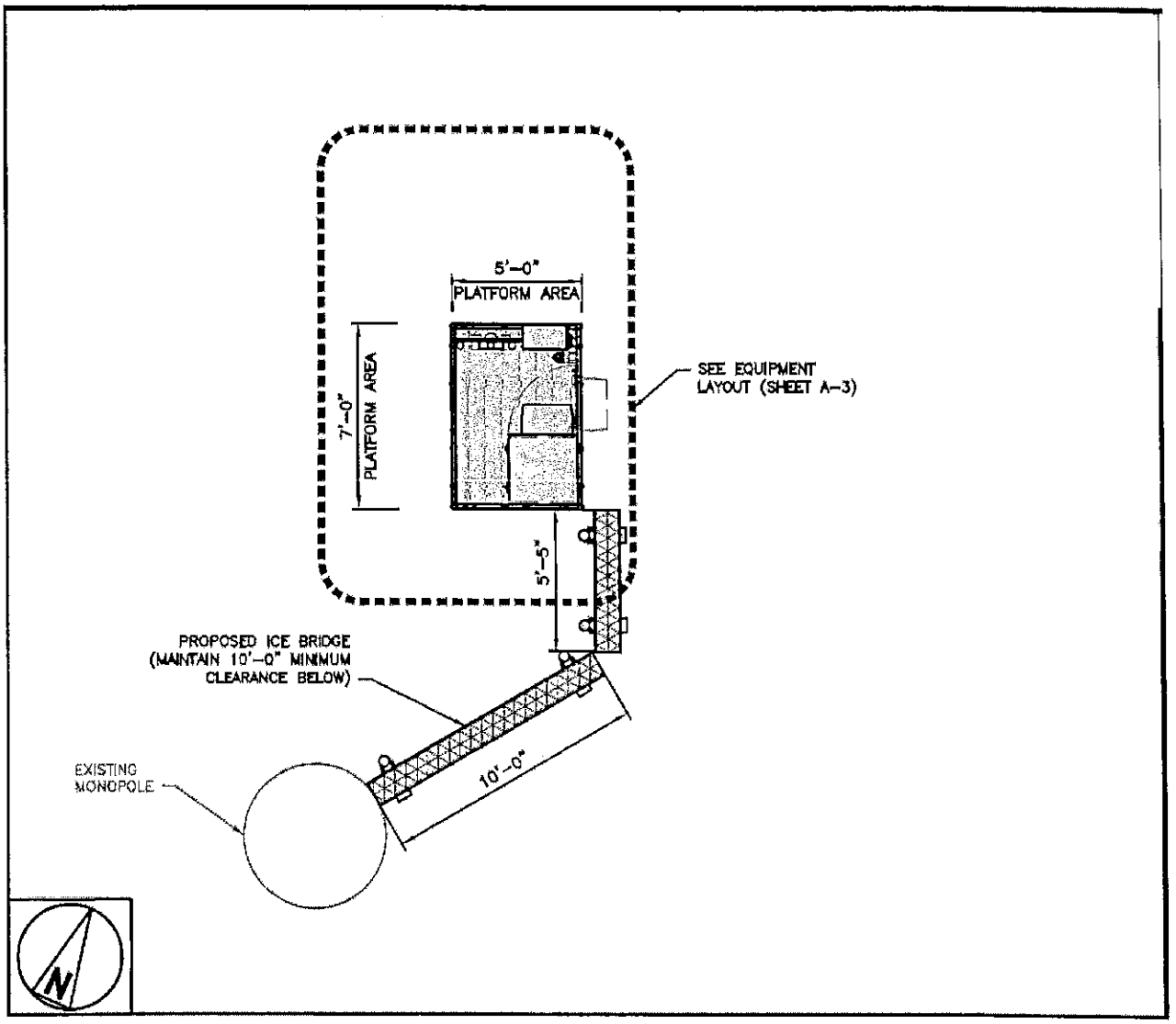


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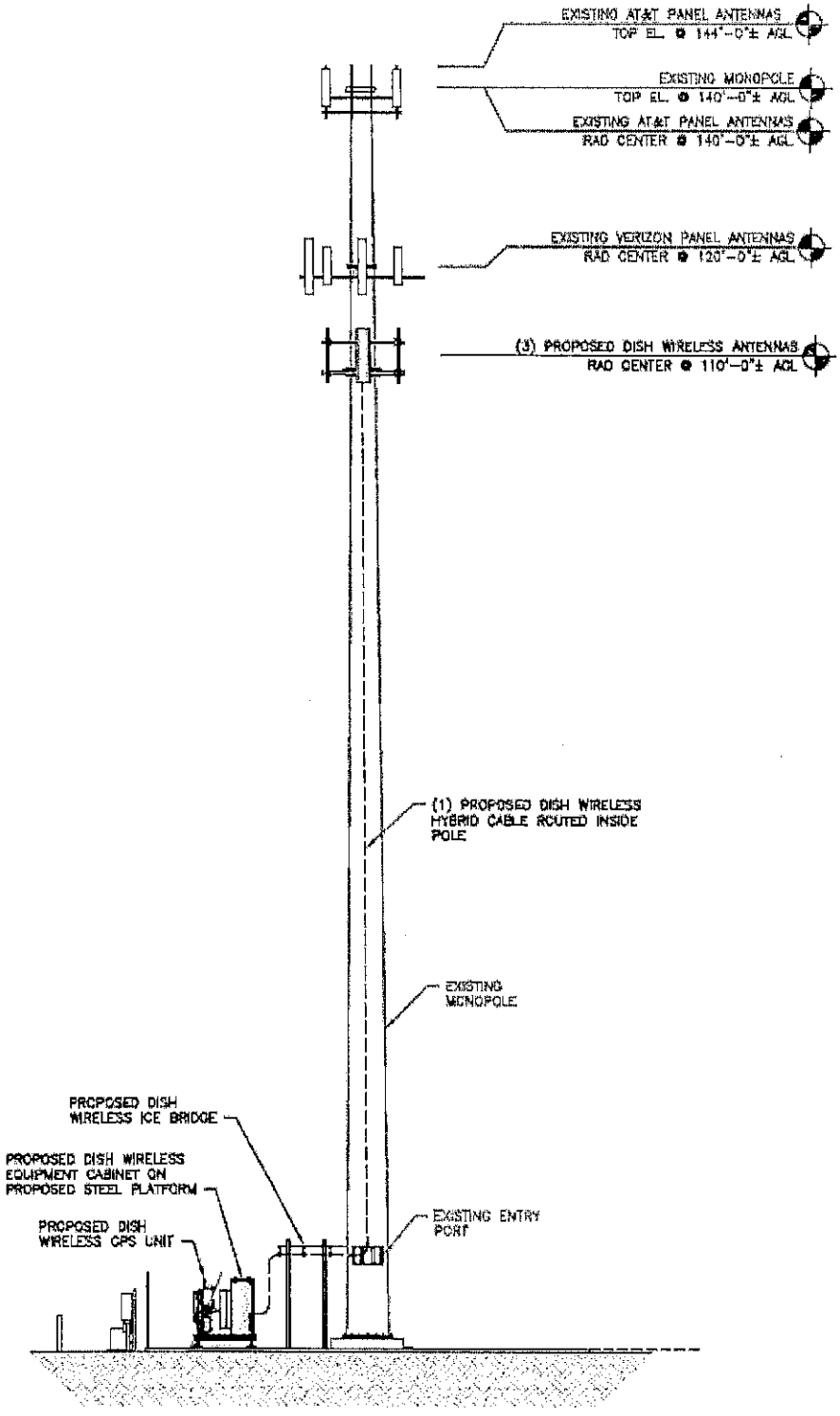
EXHIBIT 1 TO SUPPLEMENT
PREMISES
PAGE 3 OF 3



HSG

CONTRACT # _____

EXHIBIT 2 TO SUPPLEMENT
SURVEY

N/A

HSG

EXHIBIT 3 TO SUPPLEMENT
LESSEE'S COMMUNICATIONS EQUIPMENT

Number of Antennas:	Three (3)
Antenna Manufacturer, Model and Type:	JMA (MX08FRO665-21) Panels
Dimension and Weight of Antenna:	72.0 x 20.0 x 8.0 inches & 64.5 lb
Number of Transmission Lines (Coax and/or Hybrid):	One (1)
Diameter of Transmission Lines (Coax and/or Hybrid):	51.2mm Hybrid Cables
Location of Antenna(s) (Approved RAD Center):	110'
Direction of Radiation (Azimuth):	0, 120, 240
Additional Equipment to be placed on Tower:	Three (3) Fujitsu (TA08025-B605) Remote Radio Units 15.7 x 15.0 x 9.0 inches & 75.0 lb Three (3) Fujitsu (TA08025-B604) Remote Radio Units 15.7 x 15.0 x 7.9 inches & 63.9 lb One (1) Raycap (RDIDC-9181-PF-48) OVP 19.0 x 14.4 x 8.1 inches & 21.8 lb
Dimensions of Lessee's Shelter (for additional equipment not scheduled hereon):	35 SF (5' x 7')
Generator Specifications:	No generator proposed
Additional Ground Space for Generator	N/A

HSG

Lessor Site ID & No.: Bethel West 2 / 467694
Lessee Site ID & No.: NJJER01120B

CONTRACT # _____

EXHIBIT 4 TO SUPPLEMENT
PRIME LEASE

Type: LAND RECORDS

BK 2481 PG 1151 - 1158

ASSIGNMENT OF PURCHASE, EASEMENT AND LEASE AGREEMENTS

PIN: DAND-000016L-000000-000005

STATE OF: CONNECTICUT
COUNTY OF: FAIRFIELD

Document Date: June 25, 2019

ASSIGNOR:	**LANDMARK INFRASTRUCTURE HOLDING COMPANY LLC**
Address:	P.O. Box 3429 El Segundo, CA 90245
ASSIGNEE:	**BSIP PROPCO SPV LLC**
Address:	c/o Brookfield Asset Management Inc. Brookfield Place, 250 Vesey Street New York, New York 10281-1023
Legal Description:	Attached as Exhibit A.

Prepared by:
Landmark Dividend LLC
P.O. Box 3429
El Segundo, CA 90245

Return after recording to:
Fidelity National Title Group
Attn: Melissa Cater
7130 Glen Forest Drive #300
Richmond, VA 23226

29332750

ASSIGNMENT OF PURCHASE, EASEMENT AND LEASE AGREEMENTS

THIS ASSIGNMENT OF PURCHASE, EASEMENT AND LEASE AGREEMENTS (this "Assignment"), effective on June 25, 2019 is executed by LANDMARK INFRASTRUCTURE HOLDING COMPANY LLC, a Delaware limited liability company ("Assignor") and BSIP PROPCO SPV LLC, a Delaware limited liability company ("Assignee").

WHEREAS, Eppolitt Industrial Realty, Inc. ("Owner") leased a certain portion of property located at 15 Great Pasture Rd, Danbury, CT, as more particularly described in Exhibit "A" attached hereto (the "Property") to Cellco Partnership d/b/a Verizon Wireless ("Tenant") pursuant to a certain lease dated Feb 24, 2015 and more particularly described in Exhibit "C" attached hereto (as amended, the "Lease"); and

WHEREAS, pursuant to that certain Purchase and Sale of Telecom Easement and Assignment Agreement dated Oct 31, 2018 (as amended, the "Owner/Assignor Purchase Agreement"), by and between Owner and Assignor, Owner and Assignor entered into that certain Easement and Assignment of Lease Agreement dated Oct 31, 2018, as recorded on Dec 10, 2018 in the Official Records of Fairfield County as Instrument 010612990010 whereby Owner granted a 50 year easement over the area more particularly described in Exhibit "B" attached hereto (as amended, the "Easement") to Assignor and assigned all of its right, title and interest as lessor under the Lease to Assignor; and

WHEREAS, pursuant to that certain Purchase Agreement dated as of June 20, 2019 (the "Assignor/Assignee Purchase Agreement"), by and among BSIP PropCo SPV LLC, Assignor and Landmark Dividend LLC, Assignor has previously assigned all of Assignor's right, title and interest in and to the Owner/Assignor Purchase Agreement, Easement and Lease to Assignee, and Assignor and Assignee desire to provide record notice of such assignment; and

NOW THEREFORE, In consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Assignment by Assignor. Assignor does hereby confirm that, pursuant to the Assignor/Assignee Purchase Agreement, Assignor has assigned, transferred, and delivered to Assignee all of Assignor's right, title, and interest in and to the Owner/Assignor Purchase Agreement, Easement and Lease, including, without limitation, the right to receive any and all rents thereunder, in each case to the extent first accruing from and after June 25, 2019 (the "Closing Date").

2. Acceptance and Assumption by Assignee. Assignee hereby confirms that, pursuant to the Assignor/Assignee Purchase Agreement, it has assumed and shall faithfully perform and discharge any and all of Assignor under each of the Owner/Assignor Purchase Agreement, Easement and Lease, and Assignor shall be relieved of all future obligations and liability thereunder, in each case to the extent first accruing from and after the Closing Date.

3. Inconsistencies. This Assignment is delivered pursuant to and subject to the Assignor/Assignee Purchase Agreement, and the terms of the Assignor/Assignee Purchase Agreement, including the representations, warranties, covenants, agreements, indemnities and other terms and conditions set forth therein are incorporated herein by reference. If there are any inconsistencies between this Assignment and the Assignor/Assignee Purchase Agreement, the Assignor/Assignee Purchase Agreement shall control.

4. Successors and Assigns; Third-Party Beneficiaries. This Assignment shall be binding upon and inure solely to the benefit of the parties hereto and their respective successors and permitted assigns. Nothing herein, express or implied, is intended to or shall confer upon any other person or entity any legal or equitable right, benefit or remedy of any nature whatsoever under or by reason of the Assignor/Assignee Purchase Agreement.

5. Governing Law; Jurisdiction. This Assignment shall be governed by and construed in accordance with the laws of the State of Delaware, without giving effect to any conflict or choice of law provision that would require or permit the

application of the laws of any other jurisdiction. The provisions of Sections 10.12 and 10.13 of the Assignor/Assignee Purchase Agreement are incorporated herein by reference, *mutatis mutandis*.

6. Counterparts. This Assignment may be executed and delivered in one or more counterparts, and by the different parties hereto in separate counterparts, each of which when executed shall be deemed to be an original, but all of which taken together shall constitute one and the same agreement.

IN WITNESS WHEREOF, the parties have executed this Assignment as of the day and year first above written.

ASSIGNOR:

LANDMARK INFRASTRUCTURE HOLDING COMPANY LLC,
a Delaware limited liability company

By: _____
Name: Josef Bobek
Title: Authorized Signatory
Date: 6/17/2019

Ashley Mark

Kamilah Edwards

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss.
COUNTY OF LOS ANGELES)

On 6/17/2019 before me Krista E. Cooper, a Notary Public, personally appeared Josef Bobek, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official Seal.

Krista E. Cooper
Signature of Notary Public

KRISTA E. COOPER
Notary Public - California
Los Angeles County
Commission # 2181053
My Comm. Expires Jan 23, 2021

ASSIGNEE:

BSIP PROPCO SPV LLC,
a Delaware limited liability company

By: _____
Name: Ralph Klatzkin
Title: Authorized Signatory

Date: June 27, 2019

STATE OF NEW YORK)
) ss.
COUNTY OF NEW YORK)

On June 27, 2019, before me, Michael Chan, a Notary Public in and for said County and State, personally appeared Ralph Klatzkin, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of New York that the foregoing paragraph is true and correct.

WITNESS my hand and official Seal.

_____
Notary Public
My Commission Expires: Jan. 3, 2021

[SEAL]

MICHAEL CHAN
Notary Public, State of New York
No. 01CH6120938
Qualified in New York County
Commission Expires January 3, 2021

EXHIBIT "C"

LEASE DESCRIPTION

That certain Land Lease Agreement dated February 24, 2015, by and between Eppolito Industrial Realty, Inc., a Connecticut corporation ("Lessor") and Cellco Partnership d/b/a Verizon Wireless, a Delaware general partnership ("Lessee"), for the property located at 15 Great Pasture Road, Danbury, Connecticut 06810, together with all amendments, modifications and/or assignments, for which a Memorandum of Agreement is duly recorded on February 24, 2015, as Book No. 2306, Page 1024 of the Fairfield County Registry.

EXHIBIT "A"

LEGAL DESCRIPTION OF PROPERTY

The land referred to herein below is situated in the County of Fairfield, Towns of Danbury and Bethel, State of Connecticut and is described as follows:

Beginning at a point on the Westerly line of Great Pasture Road, as the same is intersected by the Northeasterly corner of the herein described premises and the Southeasterly corner of land now or formerly of George F. Kettenring et ux; thence running from said point of beginning and along the Westerly line of Great Pasture Road the following courses and distances:

South 27° 24' East 185.26 feet to a point; thence South 23° 50' 57" East 128.46 feet to a point; thence South 18° 35' 9" East 133.53 feet to a point in a stone wall; thence along said stone wall South 6° 21' East 15 feet to a point; thence continuing along said last named stone wall the following courses and distances:

South 14° 8' 40" East 61.09 feet; South 20° 5' 30" East 176.06 feet to a stone wall separating the herein described premises from land now or formerly of William M. and Elizabeth C. Skidd; thence leaving the Westerly line of Great Pasture Road and running along said last named stone wall the following courses and distances:

South 65° 22' 10" West 148.82 feet; South 63° 53' West 129.82 feet; South 61° 55' 20" West 102.70 feet; South 60° 7' 40" West 64.41 feet; South 56° 14' 40" West 21.43 feet to a wire fence separating the herein described premises from land now or formerly of William M. and Elizabeth C. Skidd; thence along said wire fence, South 49° 34' West 63.00 feet to the center line of a brook; thence along said center line of said brook the following courses and distances:

North 25° 55' 30" West 47.77 feet; North 51° 40' West 54.82 feet; North 77° 20' West 36.90 feet; South 77° 39' 40" West 65.51 feet; North 60° 23' 40" West 50.61 feet; South 88° 34' 10" West 40.01 feet; North 76°25' 50" West 89.50 feet; North 46° 35' 30" West 50.93 feet; North 8° 38' 20" West 19.24 feet; North 30° 22' 40" West 33.62 feet; North 20° 45' 20' East 31.02 feet; North 64° 01'20" West 43.38 feet; North 26° 33' 50" East 5.65 feet; North 37° 49' West 84.81 feet; North 67° 50' West 87.46 feet; North 8° 7' 50" West 28.28 feet; North 19° 39' 10" East 59.46 feet, due North 00° 00' 27 feet; North 34° 37' 30" West 51.04 feet; North 43° 34' 10" West 56.59 feet; North 9° 47' East 29.43 feet; and North 15° 00' 10" West 50.69 feet to a point which is the Southwesterly corner of land. now or formerly of the Joseph. F. Keating Realty Co.; thence North 74° 15' 10" East 98 feet along the Southerly line of land now or formerly of said Joseph F. Keating Realty Co., part of said distance being along a stone wall separating the herein described premises from said land now or formerly of said Joseph F. Keating Realty Co.; thence continuing along said last named stone wall the following courses and distances:

North 69° 48' 50" East 119.98 feet; North 68° 32' East 78.91 feet; North 72° 49' 20" East 126.97 feet; North 71° 42' East 140.49 feet, North 72° 28' 20" East 131.50 feet; North 71° 10' 10" East 180.35 feet to the point place of beginning.

Parcel ID #DANB-000016L-000000-000005

This being the same property conveyed to Eppoliti Industrial Realty, Inc. from CBS Inc., a New York Corporation in a deed dated September 17, 1987 and recorded September 18, 1987, in Book 858 Page 281.

*Please note the legal description includes Parcel Id #20-40-01 located in the Town of Bethel, Connecticut. This parcel was not searched and is not included as a part of this commitment for title insurance. Please note the only parcel being covered is Parcel Id #DANB-000016L-000000-000005, located in Danbury, Connecticut.

Property Commonly Known As: 15 Great Pasture Road, Danbury, CT 06810-8127

Parcel ID: DANB-000016L-000000-000005

6

RE: **Notice of Grant of Easement and Assignment of Lease**

Premises address: 15 Great Pasture Rd, Danbury CT 06810-8127 (the "Property")

Lease dated as of Feb 24, 2015 (the "Lease")

Tenant Reference #: 20141054736

Current Payor: Cellco Partnership d/b/a Verizon Wireless, a Delaware general partnership

Landmark Site Number: TC187224

Dear Tenant:

Please take notice that as of October 31, 2018, the undersigned, as fee owner of the above-referenced Property has granted an easement and assigned all rights, title and interest in and to the Lease to Landmark Infrastructure Holding Company LLC, a Delaware limited liability company ("Landmark"). The undersigned will continue to own the Property and retain the obligations and liabilities of landlord under the Lease pursuant to the terms of the easement granted to Landmark and recorded against the Property. The undersigned shall also retain possession and control of all security deposits and Landmark shall have no obligation with respect to any such security deposits.

After the date hereof, except for payments in respect of utility fees, real property taxes and assessments payable by you to the undersigned as landlord under the Lease, all future rent payments are hereby directed to be made payable to "Landmark Infrastructure Holding Company LLC" and delivered, subject to any further instructions you may hereafter receive, to:

Landmark Infrastructure Holding Company LLC

Payment Address:
P.O. Box 3429
El Segundo, CA 90245

Other Communication Address:
P.O. Box 3429
El Segundo, CA 90245
Ref: Landmark # TC187224

All future communications regarding the Lease should be made directly to Landmark. If you have any questions about the foregoing, please contact Landmark at (310) 294-8186.

Best regards,

EPPOLITI INDSTRUSTRIAL REALTY, INC., A CONNECTICUT CORPORATION

Michael Ippoliti
President

TC187224

HSG

EASEMENT AND ASSIGNMENT OF LEASE AGREEMENT

PIN: DANB-000016L-000000-000005

STATE OF: CONNECTICUT
COUNTY OF: FAIRFIELD

Document Date: October 31, 2018

GRANTOR:	EPPOLITI INDUSTRIAL REALTY, INC, A CONNECTICUT CORPORATION
Address:	37 Danbury Rd Ste 203 Ridgefield, CT 06877-4079
GRANTEE:	LANDMARK INFRASTRUCTURE HOLDING COMPANY LLC
Address:	P.O. Box 3429 El Segundo, CA 90245
Legal Description:	Attached as Exhibit A.

Prepared by:
Landmark Dividend LLC
400 Continental Blvd., Suite 500
El Segundo, CA 90245
TC187224

Return after recording to:
Solidifi Title and Closing LLC
127 John Clark Road
First Floor Ocean Technology Plaza
Middletown, RI 02842
LMD-1218722-C

EASEMENT AND ASSIGNMENT OF LEASE AGREEMENT

This Easement and Assignment of Lease Agreement (this "**Agreement**") dated October 31, 2018 (the "**Effective Date**") is by and between **EPPOLITI INDUSTRIAL REALTY, INC,** a Connecticut corporation ("**Grantor**"), and **LANDMARK INFRASTRUCTURE HOLDING COMPANY LLC,** a Delaware limited liability company ("**Grantee**"); and

WHEREAS Grantor owns certain real property located at: 15 Great Pasture Rd, Danbury, CT 06810-8127 ("**Property**"); and more particularly described in Exhibit A attached hereto; and

WHEREAS Grantor intends to grant to Grantee an exclusive easement (the "**Telecom Easement**") in, to, under and over a certain portion of the Property described in Exhibit B attached hereto (the "**Telecom Easement Area**") for telecommunications purposes, and a non-exclusive easement (the "**Access Easement**") in, to, under and over certain portions of the Property described in Exhibit C attached hereto (the "**Access Easement Area**") for ingress, egress, maintenance and utility service for and to the Telecom Easement (the Telecom Easement and the Access Easement may be collectively referred to herein as the "**Easement**"); and

WHEREAS Grantor intends to sell, assign, set over, convey and transfer the existing telecommunications lease(s) or license(s) ("**Lease(s)**") more particularly described in Exhibit D to Grantee; and

WHEREAS Grantor intends to allow Grantee to use the Easement in order that Grantee may lease space to Tenants in the telecommunications business; and

NOW THEREFORE, In consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. **GRANT OF EASEMENT.** Grantor hereby grants to Grantee an exclusive easement over the Telecom Easement Area for the purpose of leasing space on the Property to telecommunications tenant(s) and uses associated with the exercise rights of telecommunications tenants under such leases.

2. **TERM.** Commencing on October 31, 2018 (the "**Commencement Date**"), the Term of this Agreement shall be 50 years.

3. **TERMINATION.** Grantor may not terminate this Agreement; provided however, that in the event that Grantee voluntarily ceases to use the Easement for a continuous period of three (3) years, the Easement shall be deemed abandoned and this Agreement shall automatically terminate.

4. **ASSIGNMENT OF LEASE(S).** As part of the consideration provided for this Agreement, Grantor hereby assigns and conveys all of its right, title and interest in and to the Lease(s), more particularly described in Exhibit D. Grantor shall retain and continue to faithfully perform and discharge any and all of Grantor's obligations as lessor under the Lease(s) and Grantee assumes no obligations thereunder.

5. **NON-EXCLUSIVE ACCESS EASEMENT.** As part of the consideration for this Agreement, Grantor hereby grants to Grantee the Access Easement in, to, under and across the Property adequate to allow ingress and egress, operation, maintenance of and utility service to the Telecom Easement Area.

6. **REPRESENTATIONS AND COVENANTS OF GRANTOR.** Grantor represents and warrants to Grantee, as of the date hereof, that:

a. This Agreement and any other documents executed by Grantor in connection with it constitute the legal, valid and binding obligation of Grantor, enforceable against Grantor in accordance with their terms.

b. The execution, delivery and performance by Grantor of this Agreement does not and will not violate or conflict with any provision of Grantor's organizational documents (if Grantor is an organization) or of any agreement to which Grantor is a party including, without limitation, permits, mortgages and deeds of trust, or by which Grantor or the Property is bound and will not violate or conflict with any law, rule, regulation, judgment, order or decree to which Grantor is subject.

c. There is no pending or threatened action, judgment, order decree or proceeding (including any bankruptcy, insolvency, eminent domain, zoning or other land use regulation actions) that, if determined against Grantor, would adversely affect Grantor's ability to grant the Easement or such other documents or to perform its obligations hereunder or thereunder, or limit Grantee's ability to use the Easement as contemplated herein. Grantor has received no notice from any governmental or quasi-governmental authority either that the Property or the use thereof violates any statutes, ordinances, orders or regulations affecting any portion of the Property.

d. Grantor owns one hundred percent (100%) of the fee title to the Property and the lessor's interest in and to the Lease(s).

e. Grantor has not previously deeded, granted, assigned, mortgaged, pledged, hypothecated, alienated or otherwise transferred any of its right, title and interest in and to the Lease(s), or any portion of the Property the Easement occupies, except as expressly disclosed to Grantee in writing. Except for the Lease(s), Grantor has not executed or otherwise entered into any leases, tenancies, license or concession agreements,

occupancy agreements or other agreements with respect to rights that would adversely affect Grantee's, or Grantee's tenants, possession or occupancy of any portion of the Easement or use of the Property pursuant to this Agreement or the Lease(s).

f. Grantor shall not allow or permit a breach or default to occur under the Leases and Grantor shall comply with all applicable laws which may affect the Property.

g. Grantor shall not settle or compromise any insurance claim or condemnation award relating to the Easement without Grantee's prior written approval, which shall not be unreasonably withheld.

h. Grantor shall not, nor shall Grantor permit its lessees, licensees, employees, invitees or agents to use any portion of the Property, or the Easement in a way which interferes with the operations of tenants under the Lease(s), or any other of Grantee's future lessees or licensees, or to interfere with the Access Easement. Such interference shall be deemed a material breach by Grantor.

7. **SUCCESSORS AND ASSIGNS.** This Agreement shall be binding upon and inure to the benefit of the parties hereto and the successors and assigns of the parties to this Agreement. This Agreement shall run with the land upon which the Easement is located, and Grantor shall, in any and all deeds or other documents related to the sale, conveyance, assignment, mortgage, pledge, or other encumbrance or transfer of the Property, expressly provide that the Property is subject to all rights, liabilities and obligations under this Agreement (including without limitation, with respect to the Easement). Grantor hereby expressly acknowledges and agrees that Grantee may from time to time sell, convey, assign, mortgage, pledge, encumber, hypothecate, securitize or otherwise transfer some or all of Grantee's right, title and interest in and to this Agreement, the Easement, the Telecom Easement Area and/or the Access Easement Area without notice to or consent of Grantor.

8. **ENVIRONMENTAL REPRESENTATIONS.**

a. **Grantor Environmental Representation.** Grantor represents that it has no knowledge of any substance, chemical or waste (collectively "**Hazardous Substance**") on the Property that is identified as hazardous, toxic or dangerous in any applicable federal, state or local law or regulation. Grantor shall not introduce or use (or permit the use of) any Hazardous Substance on the Property in violation of any applicable federal, state or local environmental laws. Grantor shall be responsible for (and shall promptly conduct any investigation and remediation as required by any applicable environmental laws) all spills or other releases of any Hazardous Substance not caused solely by Grantee, that have occurred or which may occur on the Property.

b. **Grantee Environmental Representations.** Grantee shall not introduce or use any Hazardous Substance on the Property or the Easement in violation of any applicable federal, state or local environmental laws. Notwithstanding the foregoing, Grantee shall not be responsible for any Hazardous Substances arising or present on or before the Effective Date. Liability of Grantee for any claims with respect to any Hazardous Substances at the Property or the Easement shall be limited to contamination which is shown by clear evidence to have been solely caused by a release of a Hazardous Substance by Grantee after the Effective Date, and in violation of any applicable federal, state or local environmental laws.

c. **Mutual Indemnification.** Each party agrees to defend, indemnify, and hold harmless the other from and against any and all administrative and judicial actions and rulings, claims, causes of action, demands and liability including, but not limited to damages, costs, expenses, assessments, penalties, fines, cleanup, remedial, removal or restoration work required by any governmental authority, losses, judgments and reasonable attorneys' fees that the indemnified party may suffer or incur due to the existence or discovery of any Hazardous Substance on the Property caused by the other party. This indemnification shall also apply to the migration of any Hazardous Substance to other properties, and the release of any Hazardous Substance into the environment that relate to or arise from the indemnitor's activities on the Property. Grantor agrees to defend, indemnify, protect and hold Grantee harmless from claims resulting from actions on the Property not caused by Grantee prior to, and during the Term of, this Agreement. This indemnification shall survive the termination or expiration of this Agreement.

9. **NOTICES.** All notices, requests, demands and other communications hereunder shall be delivered by Certified Mail Return Receipt Requested, and/or a nationally recognized Overnight courier. Notice shall be deemed accepted upon proof of delivery. Notices shall be delivered:

As to Grantor: 37 Danbury Rd Ste 203
Ridgefield, CT 06877-4079

As to Grantee: c/o Landmark Dividend LLC
400 N. Continental Blvd., Suite 500
El Segundo, CA 90245
Attn: Legal Dept.

10. **DEFAULT.** It shall be an "Event of Default" if either Grantor or Grantee fails to observe or perform any of the terms, conditions or its respective obligations set forth in this Agreement. Upon receiving written notice of such a default or breach of this Agreement, the defaulting party shall have sixty (60) days to cure such default. Notwithstanding anything herein to the contrary, if the required cure of the noticed default cannot reasonably be completed by Grantee within such 60-day period, Grantee's failure to perform shall not constitute an Event of Default so long as Grantee undertakes to cure the failure promptly and diligently and continuously pursues the cure thereof to completion. In the event that the defaulting party fails to cure such default within the cure period, the non-defaulting party shall be entitled to exercise any rights permitted by applicable law.

11. **AGREEMENT FULLY PERFORMED.** Notwithstanding anything herein to the contrary, this Agreement is deemed to be fully performed by Grantee as of the Commencement Date. In no event shall this Agreement be deemed an executory contract for purposes of the United States Bankruptcy Code, as amended (the "Code"), and this Agreement may not be rejected pursuant to Section 365 of the Code.

12. **GOVERNING LAW; CERTAIN WAIVERS.**

(a) THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE IN WHICH THE PROPERTY IS LOCATED, WITHOUT REGARD TO PRINCIPLES OF CONFLICTS OF LAWS THEREOF.

(b) TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, EACH PARTY WAIVES ANY RIGHT TO A JURY TRIAL IN ANY ACTION OR PROCEEDING TO ENFORCE OR INTERPRET THIS AGREEMENT.

(c) EACH PARTY SUBMITS TO THE NON-EXCLUSIVE JURISDICTION OF THE APPLICABLE UNITED STATES DISTRICT COURT FOR THE DISTRICT THE PROPERTY IS LOCATED IN, AND EACH PARTY WAIVES ANY OBJECTION WHICH IT MAY HAVE TO THE LAYING OF VENUE IN SUCH COURT, WHETHER ON THE BASIS OF INCONVENIENT FORUM OR OTHERWISE.

IN WITNESS WHEREOF, the undersigned, intending to be legally bound, have caused this Agreement to be duly executed as of the date first written above.

GRANTOR:

EPPOLITI INDSTRUSTRIAL REALTY, INC.,
a Connecticut corporation

By: _____
Name: Michael Eppoliti
Its: President

Date: 10/31/2018

WITNESSESS:

_____
Doreen Ward

_____

STATE OF Connecticut)
) ss.
COUNTY OF Fairfield)

On October 31, 2018, before me, Andrew J. Buzzi, Jr., a Notary Public in and for said County and State, personally appeared Michael Eppoliti, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of Connecticut that the foregoing paragraph is true and correct.

WITNESS my hand and official Seal.

_____
Notary Public
My Commission Expires: _____

ANDREW J. BUZZI, JR.
Notary Public, State of Connecticut
My Commission Expires Sept. 30, 2019

[SEAL]

IN WITNESS WHEREOF, the undersigned, intending to be legally bound, have caused this Agreement to be duly executed as of the date first written above.

GRANTEE:
LANDMARK INFRASTRUCTURE HOLDING COMPANY LLC, a Delaware limited liability company

WITNESSESS:
Emily Chen
Rafael Macedo Jr.

By:
Name: DANIEL R. PERSONS
Title: Authorized Signatory
Date: 10-29-18

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of Los Angeles

On 10-29-18 before me, Kamilah Edwards (here insert name and title of officer), personally appeared DANIEL R. PERSONS, who proved to me on the basis of satisfactory evidence to be the person(s) whose name (s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

Witness my hand and official seal.

Signature _____ (Seal)

KAMILAH EDWARDS
Commission # 2132073
Notary Public - California
Los Angeles County
My Comm. Expires Oct 20, 2019

EXHIBIT A

LEGAL DESCRIPTION OF THE PROPERTY

The land referred to herein below is situated in the County of Fairfield, Towns of Danbury and Bethel, State of Connecticut and is described as follows:

Beginning at a point on the Westerly line of Great Pasture Road, as the same is intersected by the Northeasterly corner of the herein described premises and the Southeasterly corner of land now or formerly of George F. Kettenring et ux; thence running from said point of beginning and along the Westerly line of Great Pasture Road the following courses and distances:

South 27° 24' East 185.26 feet to a point; thence South 23° 50' 57" East 128.46 feet to a point; thence South 18° 35' 9" East 133.53 feet to a point in a stone wall; thence along said stone wall South 6° 21' East 15 feet to a point; thence continuing along said last named stone wall the following courses and distances:

South 14° 8' 40" East 61.09 feet; South 20° 5' 30" East 176.06 feet to a stone wall separating the herein described premises from land now or formerly of William M. and Elizabeth C. Skidd; thence leaving the Westerly line of Great Pasture Road and running along said last named stone wall the following courses and distances:

South 65° 22' 10" West 148.82 feet; South 63° 53' West 129.82 feet; South 61° 55' 20" West 102.70 feet; South 60° 7' 40" West 64.41 feet; South 56° 14' 40" West 21.43 feet to a wire fence separating the herein described premises from land now or formerly of William M. and Elizabeth C. Skidd; thence along said wire fence. South 49° 34' West 63.00 feet to the center line of a brook; thence along said center line of said brook the following courses and distances:

North 25° 55' 30" West 47.77 feet; North 51° 40' West 54.82 feet; North 77° 20' West 36.90 feet; South 77° 39' 40" West 65.51 feet; North 60° 23' 40" West 50.61 feet; South 88° 34' 10" West 40.01 feet; North 76°25' 50" West 89.50 feet; North 46° 35' 30" West 50.93 feet; North 8° 38' 20" West 19.24 feet; North 30° 22' 40" West 33.62 feet; North 20° 46' 20' East 31.02 feet; North 64° 01'20" West 43.38 feet; North 26° 33' 50" East 5.65 feet; North 37° 49' West 84.81 feet; North 67° 50' West 87.46 feet; North 8° 7' 50" West 28.28 feet; North 19° 39' 10" East 59.46 feet, due North 00° 00' 27 feet; North 34° 37' 30" West 51.04 feet; North 43° 34' 10" West 56.59 feet; North 9° 47' East 29.43 feet; and North 15° 00' 10" West 50.69 feet to a point which is the Southwesterly corner of land. now or formerly of the Joseph. F. Keating Realty Co.; thence North 74° 15' 10" East 98 feet along the Southerly line of land now or formerly of said Joseph F. Keating Realty Co., part of said distance being along a stone wall separating the herein described premises from said land now or formerly of said Joseph F. Keating Realty Co.; thence continuing along said last named stone wall the following courses and distances:

North 69° 48' 50" East 119.98 feet; North 68° 32' East 78.91 feet; North 72° 49' 20" East 126.97 feet; North 71° 42' East 140.49 feet, North 72° 28' 20" East 131.50 feet; North 71° 10' 10" East 180.35 feet to the point place of beginning.

Parcel ID #DANB-000016L-000000-000005

This being the same property conveyed to Eppoliti Industrial Realty, Inc. from CBS Inc., a New York Corporation in a deed dated September 17, 1987 and recorded September 18, 1987, in Book 858 Page 281.

*Please note the legal description includes Parcel Id #20-40-01 located in the Town of Bethel, Connecticut. This parcel was not searched and is not included as a part of this commitment for title insurance. Please note the only parcel being covered is Parcel Id #DANB-000016L-000000-000005, located in Danbury, Connecticut.

Property Commonly Known As: **15 Great Pasture Road, Danbury, CT 06810-8127**

Parcel ID: **DANB-000016L-000000-000005**

EXHIBIT B

TELECOM EASEMENT AREA DESCRIPTION

LEGAL DESCRIPTION: TOWER EASEMENT
A PORTION OF ALL THAT CERTAIN PARCEL OF LAND LYING IN THE CITY OF DANBURY, COUNTY OF FAIRFIELD, STATE OF CONNECTICUT, DESCRIBED IN DEED BOOK 2028 PAGE 1121, FURTHER DESCRIBED AS: COMMENCING FROM AN EXISTING CONCRETE MONUMENT, FOUND ON THE NORTHERN MOST PROPERTY CORNER OF SAID PROPERTY, ALSO LYING ON THE WESTERN RIGHT OF WAY OF GREAT PASTURE ROAD, AND HAVING CONNECTICUT STATE PLANE COORDINATES E: 815841' -AND- N: 701617';

THENCE, S 26° 01' 14" W FOR A DISTANCE OF 654.87 FEET TO THE POINT OF BEGINNING;

THENCE, S 23° 35' 33" E FOR A DISTANCE OF 50.00 FEET TO A POINT;

THENCE, S 66° 24' 27" W FOR A DISTANCE OF 50.00 FEET TO A POINT;

THENCE, N 23° 35' 33" W FOR A DISTANCE OF 50.00 FEET TO A POINT;

THENCE, N 66° 24' 27" E FOR A DISTANCE OF 50.00 FEET TO THE POINT OF BEGINNING, CONTAINING 2,500 SQFT -AND- 0.06 ACRES.

EXHIBIT C

ACCESS EASEMENT AREA DESCRIPTION

LEGAL DESCRIPTION: ACCESS/UTILITY EASEMENT
A PORTION OF ALL THAT CERTAIN PARCEL OF LAND LYING IN THE CITY OF DANBURY, COUNTY OF FAIRFIELD, STATE OF CONNECTICUT, DESCRIBED IN DEED BOOK 2028 PAGE 1121, FURTHER DESCRIBED AS: COMMENCING FROM AN EXISTING CONCRETE MONUMENT, FOUND ON THE NORTHERN MOST PROPERTY CORNER OF SAID PROPERTY, ALSO LYING ON THE WESTERN RIGHT OF WAY OF GREAT PASTURE ROAD, AND HAVING CONNECTICUT STATE PLANE COORDINATES E: 815841' -AND- N: 701617';

THENCE, S 26° 01' 14" W FOR A DISTANCE OF 654.87 FEET TO A POINT ON A PREVIOUSLY MENTIONED 2,500 SQFT TOWER EASEMENT, ALSO BEING THE POINT OF BEGINNING;

THENCE, S 66° 24' 27" W FOR A DISTANCE OF 50.00 FEET TO A POINT;

THENCE, N 23° 35' 33" W FOR A DISTANCE OF 37.85 FEET TO A POINT;

THENCE, N 70° 15' 00" E FOR A DISTANCE OF 645.63 FEET TO A POINT ON THE PUBLIC RIGHT OF WAY OF GREAT PASTURE ROAD, A DEDICATED PUBLIC RIGHT OF WAY;

THENCE, ALONG SAID RIGHT OF WAY, S 31° 50' 00" E FOR A DISTANCE OF 20.45 FEET TO A POINT;

THENCE, DEPARTING SAID RIGHT OF WAY, S 70° 15' 00" W FOR A DISTANCE OF 598.46 FEET TO A POINT;

THENCE, S 23° 35' 33" E FOR A DISTANCE OF 14.45 FEET TO THE POINT OF BEGINNING, CONTAINING 13,748 SQFT -AND- 0.32 ACRES.

EXHIBIT D

LEASE DESCRIPTION

That certain Land Lease Agreement dated February 24, 2015, by and between Eppoliti Industrial Realty, Inc., a Connecticut corporation ("Lessor") and Cellco Partnership d/b/a Verizon Wireless, a Delaware general partnership ("Lessee"), for the property located at 15 Great Pasture Road, Danbury, Connecticut 06810, together with all amendments, modifications and/or assignments, for which a Memorandum of Agreement is duly recorded on February 24, 2015, as Book No. 2306, Page 1024 of the Fairfield County Registry.

SITE NAME: Bethel West 2, CT
SITE NUMBER: 20141054736
ATTY/DATE: Saunders/2014

LAND LEASE AGREEMENT

This Agreement, made this 24th day of February, 2015 between Eppoliti Industrial Realty, Inc., a Connecticut corporation with its principal offices located at 37 Danbury Road, Suite 203, Ridgefield, Connecticut 06877, hereinafter designated LESSOR and Cellco Partnership d/b/a Verizon Wireless, a Delaware general partnership with its principal office located at One Verizon Way, Mail Stop 4AW100, Basking Ridge, New Jersey 07920 (telephone number 866-862-4404), hereinafter designated LESSEE. The LESSOR and LESSEE are at times collectively referred to hereinafter as the "Parties" or individually as the "Party".

1. PREMISES. LESSOR hereby leases to LESSEE a portion of that certain parcel of property (the entirety of LESSOR's property is referred to hereinafter as the Property), located at 15 Great Pasture Road in the City of Danbury, and Wooster Street, in the Town of Bethel, County of Fairfield and State of Connecticut, and being described as a 50' by 50' parcel containing 2,500 square feet (the "Land Space"), together with the non-exclusive right (the "Rights of Way") for ingress and egress, seven (7) days a week twenty-four (24) hours a day, on foot or motor vehicle, including trucks over or along a twenty (20') foot wide right-of-way extending from the nearest public right-of-way, Great Pasture Road, to the Land Space, and for the installation and maintenance of utility wires, poles, cables, conduits, and pipes over, under, or along one or more rights of way from the Land Space, said Land Space and Rights of Way (hereinafter collectively referred to as the "Premises") being substantially as described herein in Exhibit "A" attached hereto and made a part hereof. The Property is also shown on the Tax Map Number L16 of the Town of Danbury as Block N/A, Lot 5 and Wooster Street, Town of Bethel, County of Fairfield, State of Connecticut, as shown on Tax Map No. 20 of the Town of Bethel as Block 40, Lot 1 and is further described in Deed Book 2028 at Page 1121 as recorded in the Office of the Danbury Town Clerk and Deed Book 967 at Page 368 in the Office of the Bethel Town Clerk.

In the event any public utility is unable to use the Rights of Way, the LESSOR hereby agrees to grant an additional right-of-way either to the LESSEE or to the public utility at no cost to the LESSEE.

2. SURVEY. LESSOR also hereby grants to LESSEE the right to survey the Property and the Premises, and said survey shall then become Exhibit "B" which shall be attached hereto and made a part hereof, and shall control in the event of boundary and access discrepancies between it and Exhibit "A". Cost for such work shall be borne by the LESSEE.

3. TERM; RENTAL.

a. This Agreement shall be effective as of the date of execution by both Parties, provided, however, the initial term shall be for five (5) years and shall commence on the Commencement Date (as hereinafter defined) at which time rental payments shall commence and be due at a total annual rental of [redacted] to be paid in equal monthly installments on the first day of the month, in advance, to LESSOR or to such other person, firm or place as LESSOR may, from time to time, designate in writing at least thirty (30) days in advance of any rental payment date by notice given in accordance with

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Paragraph 23 below. The Agreement shall commence based upon the date LESSEE is granted a building permit by the governmental agency charged with issuing such permits, or the date of execution of the Agreement by the Parties, whichever is later. In the event the date at which LESSEE is granted a building permit or the date of execution of the Agreement, whichever is applicable, falls between the 1st and 15th of the month, the Agreement shall commence on the 1st of that month and if such date falls between the 16th and 31st of the month, then the Agreement shall commence on the 1st day of the following month (either the "Commencement Date"). LESSOR and LESSEE acknowledge and agree that initial rental payment(s) shall not actually be sent by LESSEE until thirty (30) days after the Commencement Date. By way of illustration of the preceding sentence, if the Commencement Date is January 1, LESSEE shall send to the LESSOR the rental payments for January 1 and February 1 by February 1.

Upon agreement of the Parties, LESSEE may pay rent by electronic funds transfer and in such event, LESSOR agrees to provide to LESSEE bank routing information for such purpose upon request of LESSEE.

b. LESSOR hereby agrees to provide to LESSEE certain documentation (the "Rental Documentation") evidencing LESSOR's interest in, and right to receive payments under, this Agreement, including without limitation: (i) documentation, acceptable to LESSEE in LESSEE's reasonable discretion, evidencing LESSOR's good and sufficient title to and/or interest in the Property and right to receive rental payments and other benefits hereunder; (ii) a complete and fully executed Internal Revenue Service Form W-9, or equivalent, in a form acceptable to LESSEE, for any party to whom rental payments are to be made pursuant to this Agreement; and (iii) other documentation requested by LESSEE in LESSEE's reasonable discretion. From time to time during the Term of this Agreement and within thirty (30) days of a written request from LESSEE, LESSOR agrees to provide updated Rental Documentation in a form reasonably acceptable to LESSEE. The Rental Documentation shall be provided to LESSEE in accordance with the provisions of and at the address given in Paragraph 23. Delivery of Rental Documentation to LESSEE shall be a prerequisite for the payment of any rent by LESSEE and notwithstanding anything to the contrary herein, LESSEE shall have no obligation to make any rental payments until Rental Documentation has been supplied to LESSEE as provided herein.

Within fifteen (15) days of obtaining an interest in the Property or this Agreement, any assignee(s), transferee(s) or other successor(s) in interest of LESSOR shall provide to LESSEE Rental Documentation in the manner set forth in the preceding paragraph. From time to time during the Term of this Agreement and within thirty (30) days of a written request from LESSEE, any assignee(s) or transferee(s) of LESSOR agrees to provide updated Rental Documentation in a form reasonably acceptable to LESSEE. Delivery of Rental Documentation to LESSEE by any assignee(s), transferee(s) or other successor(s) in interest of LESSOR shall be a prerequisite for the payment of any rent by LESSEE to such party and notwithstanding anything to the contrary herein, LESSEE shall have no obligation to make any rental payments to any assignee(s), transferee(s) or other successor(s) in interest of LESSOR until Rental Documentation has been supplied to LESSEE as provided herein.

4. EXTENSIONS. This Agreement shall automatically be extended for four (4) additional five (5) year terms unless LESSEE terminates it at the end of the then current term by giving LESSOR written notice of the intent to terminate at least six (6) months prior to the end of the then current term.

5. EXTENSION RENTALS. The annual rental for the first (1st) five (5) year extension term shall be increased to [redacted]; the annual rental for the second (2nd) five (5) year extension term shall be increased to [redacted]; the annual rental for the third (3rd) five (5) year extension term shall be increased to [redacted]; and the annual rental for the fourth (4th) five (5) year extension term shall be increased to [redacted].

6. ADDITIONAL EXTENSIONS. If at the end of the fourth (4th) five (5) year extension term this Agreement has not been terminated by either Party by giving to the other written notice of an intention to terminate it at least three (3) months prior to the end of such term, this Agreement shall continue in force upon the same covenants, terms and conditions for a further term of five (5) years and for five (5) year terms thereafter until terminated by either Party by giving to the other written notice of its intention to so terminate at least three (3) months prior to the end of such term. Annual rental for each such additional five (5) year term shall be equal to the annual rental payable with respect to the immediately preceding five (5) year term, plus a fifteen (15) percent increase per each five (5) year extension. The initial term and all extensions shall be collectively referred to herein as the "Term". Notwithstanding the foregoing, the Term shall not exceed 98 years.

7. TAXES. LESSEE shall have the responsibility to pay any personal property, real estate taxes, assessments, or charges owed on the Property which LESSOR demonstrates is the result of LESSEE's use of the Premises and/or the installation, maintenance, and operation of the LESSEE's improvements, and any sales tax imposed on the rent (except to the extent that LESSEE is or may become exempt from the payment of sales tax in the jurisdiction in which the Property is located), including any increase in real estate taxes at the Property which LESSOR demonstrates arises from the LESSEE's improvements and/or LESSEE's use of the Premises. LESSOR and LESSEE shall each be responsible for the payment of any taxes, levies, assessments and other charges imposed including franchise and similar taxes imposed upon the business conducted by LESSOR or LESSEE at the Property. Notwithstanding the foregoing, LESSEE shall not have the obligation to pay any tax, assessment, or charge that LESSEE is disputing in good faith in appropriate proceedings prior to a final determination that such tax is properly assessed provided that no lien attaches to the Property. Nothing in this Paragraph shall be construed as making LESSEE liable for any portion of LESSOR's income taxes in connection with any Property or otherwise. Except as set forth in this Paragraph, LESSOR shall have the responsibility to pay any personal property, real estate taxes, assessments, or charges owed on the Property and shall do so prior to the imposition of any lien on the Property.

LESSEE shall have the right, at its sole option and at its sole cost and expense, to appeal, challenge or seek modification of any tax assessment or billing for which LESSEE is wholly or

partly responsible for payment. LESSOR shall reasonably cooperate with LESSEE at LESSEE's expense in filing, prosecuting and perfecting any appeal or challenge to taxes as set forth in the preceding sentence, including but not limited to, executing any consent, appeal or other similar document. In the event that as a result of any appeal or challenge by LESSEE, there is a reduction, credit or repayment received by the LESSOR for any taxes previously paid by LESSEE, LESSOR agrees to promptly reimburse to LESSEE the amount of said reduction, credit or repayment. In the event that LESSEE does not have the standing rights to pursue a good faith and reasonable dispute of any taxes under this paragraph, LESSOR will pursue such dispute at LESSEE's sole cost and expense upon written request of LESSEE.

8. USE; GOVERNMENTAL APPROVALS. LESSEE shall use the Premises for the purpose of constructing, maintaining, repairing and operating a communications facility and uses incidental thereto. A security fence consisting of chain link construction or similar but comparable construction may be placed around the perimeter of the Premises at the discretion of LESSEE (not including the access easement). All improvements, equipment, antennas and conduits shall be at LESSEE's expense and their installation shall be at the discretion and option of LESSEE. LESSEE shall have the right to replace, repair, add or otherwise modify its utilities, equipment, antennas and/or conduits or any portion thereof and the frequencies over which the equipment operates, whether the equipment, antennas, conduits or frequencies are specified or not on any exhibit attached hereto, during the Term. It is understood and agreed that LESSEE's ability to use the Premises is contingent upon its obtaining after the execution date of this Agreement all of the certificates, permits and other approvals (collectively the "Governmental Approvals") that may be required by any Federal, State or Local authorities as well as satisfactory soil boring tests which will permit LESSEE use of the Premises as set forth above. LESSOR shall cooperate with LESSEE in its effort to obtain such approvals and shall take no action which would adversely affect the status of the Property with respect to the proposed use thereof by LESSEE. In the event that (i) any of such applications for such Governmental Approvals should be finally rejected; (ii) any Governmental Approval issued to LESSEE is canceled, expires, lapses, or is otherwise withdrawn or terminated by governmental authority; (iii) LESSEE determines that such Governmental Approvals may not be obtained in a timely manner; (iv) LESSEE determines that any soil boring tests are unsatisfactory; (v) LESSEE determines that the Premises is no longer technically compatible for its use, or (vi) LESSEE, in its sole discretion, determines that the use the Premises is obsolete or unnecessary, LESSEE shall have the right to terminate this Agreement. Notice of LESSEE's exercise of its right to terminate shall be given to LESSOR in writing by certified mail, return receipt requested, and shall be effective upon the mailing of such notice by LESSEE, or upon such later date as designated by LESSEE. All rentals paid to said termination date shall be retained by LESSOR. Upon such termination, this Agreement shall be of no further force or effect except to the extent of the representations, warranties and indemnities made by each Party to the other hereunder. Otherwise, the LESSEE shall have no further obligations for the payment of rent to LESSOR.

9. INDEMNIFICATION. Subject to Paragraph 10 below, each Party shall indemnify and hold the other harmless against any claim of liability or loss from personal injury or property damage resulting from or arising out of the negligence or willful misconduct of the indemnifying Party, its employees, contractors or agents, except to the extent such claims or damages may be

due to or caused by the negligence or willful misconduct of the other Party, or its employees, contractors or agents.

10. INSURANCE.

a. Notwithstanding the indemnity in Paragraph 9, the Parties hereby waive and release any and all rights of action for negligence against the other which may hereafter arise on account of damage to the Premises or to the Property, resulting from any fire, or other casualty of the kind covered by standard fire insurance policies with extended coverage, regardless of whether or not, or in what amounts, such insurance is now or hereafter carried by the Parties, or either of them. These waivers and releases shall apply between the Parties and they shall also apply to any claims under or through either Party as a result of any asserted right of subrogation. All such policies of insurance obtained by either Party concerning the Premises or the Property shall waive the insurer's right of subrogation against the other Party.

b. LESSEE will maintain at its own cost;

i. Commercial General Liability insurance with limits not less than $1,000,000 for injury to or death of one or more persons in any one occurrence and $500,000 for damage or destruction to property in any one occurrence

ii. Commercial Auto Liability insurance on all owned, non-owned and hired automobiles with a minimum combined limit of not less than one million ($1,000,000) per occurrence

iii. Workers Compensation insurance providing the statutory benefits and not less than one million ($1,000,000) of Employers Liability coverage.

LESSEE will include the LESSOR as an additional insured on the Commercial General Liability and Auto Liability policies.

c. LESSOR will maintain at its own cost commercial general liability insurance with limits not less than $1,000,000 for injury to or death of one or more persons in any one occurrence and $500,000 for damage or destruction to property in any one occurrence. LESSOR will include the LESSEE as an additional insured.

11. LIMITATION OF LIABILITY. Except for indemnification pursuant to Paragraphs 9 and 29, neither Party shall be liable to the other, or any of their respective agents, representatives, employees for any lost revenue, lost profits, loss of technology, rights or services, incidental, punitive, indirect, special or consequential damages, loss of data, or interruption or loss of use of service, even if advised of the possibility of such damages, whether under theory of contract, tort (including negligence), strict liability or otherwise.

12. ANNUAL TERMINATION. Notwithstanding anything to the contrary contained herein, provided LESSEE is not in default hereunder beyond applicable notice and cure periods,

LESSEE shall have the right to terminate this Agreement upon the annual anniversary of the Commencement Date provided that three (3) months prior notice is given to LESSOR.

13. INTERFERENCE. LESSEE agrees to install equipment of the type and frequency which will not cause harmful interference which is measurable in accordance with then existing industry standards to any equipment of LESSOR or other lessees of the Property which existed on the Property prior to the date this Agreement is executed by the Parties. In the event any after-installed LESSEE's equipment causes such interference, and after LESSOR has notified LESSEE in writing of such interference, LESSEE will take all commercially reasonable steps necessary to correct and eliminate the interference, including but not limited to, at LESSEE's option, powering down such equipment and later powering up such equipment for intermittent testing. In no event will LESSOR be entitled to terminate this Agreement or relocate the equipment as long as LESSEE is making a good faith effort to remedy the interference issue. LESSOR agrees that LESSOR and/or any other tenants of the Property who currently have or in the future take possession of the Property will be permitted to install only such equipment that is of the type and frequency which will not cause harmful interference which is measurable in accordance with then existing industry standards to the then existing equipment of LESSEE. The Parties acknowledge that there will not be an adequate remedy at law for noncompliance with the provisions of this Paragraph and therefore, either Party shall have the right to equitable remedies, such as, without limitation, injunctive relief and specific performance.

14. REMOVAL AT END OF TERM. LESSEE shall, upon expiration of the Term, or within ninety (90) days after any earlier termination of the Agreement, remove its building(s), antenna structure(s) (except footings), equipment, conduits, fixtures and all personal property and restore the Premises to its original condition, reasonable wear and tear and casualty damage excepted. LESSOR agrees and acknowledges that all of the equipment, conduits, fixtures and personal property of LESSEE shall remain the personal property of LESSEE and LESSEE shall have the right to remove the same at any time during the Term, whether or not said items are considered fixtures and attachments to real property under applicable Laws (as defined in Paragraph 33 below). If such time for removal causes LESSEE to remain on the Premises after termination of this Agreement, LESSEE shall pay rent at the then existing monthly rate or on the existing monthly pro-rata basis if based upon a longer payment term, until such time as the removal of the building, antenna structure, fixtures and all personal property are completed.

15. HOLDOVER. LESSEE has no right to retain possession of the Premises or any part thereof beyond the expiration of that removal period set forth in Paragraph 14 herein, unless the Parties are negotiating a new lease or lease extension in good faith. In the event that the Parties are not in the process of negotiating a new lease or lease extension in good faith, LESSEE holds over in violation of Paragraph 14 and this Paragraph 15, then the rent then in effect payable from and after the time of the expiration or earlier removal period set forth in Paragraph 14 shall equal to the rent applicable during the month immediately preceding such expiration or earlier termination.

16. RIGHT OF FIRST REFUSAL. INTENTIONALLY OMITTED.

17. RIGHTS UPON SALE. Should LESSOR, at any time during the Term decide (i) to sell or transfer all or any part of the Property to a purchaser other than LESSEE, or (ii) to grant to a third party by easement or other legal instrument an interest in and to that portion of the Property occupied by LESSEE, or a larger portion thereof, for the purpose of operating and maintaining communications facilities or the management thereof, such sale or grant of an easement or interest therein shall be under and subject to this Agreement and any such purchaser or transferee shall recognize LESSEE's rights hereunder under the terms of this Agreement. To the extent that LESSOR grants to a third party by easement or other legal instrument an interest in and to that portion of the Property occupied by LESSEE for the purpose of operating and maintaining communications facilities or the management thereof and in conjunction therewith, assigns this Agreement to said third party, LESSOR shall not be released from its obligations to LESSEE under this Agreement, and LESSEE shall have the right to look to LESSOR and the third party for the full performance of this Agreement.

18. QUIET ENJOYMENT. LESSOR covenants that LESSEE, on paying the rent and performing the covenants herein, shall peaceably and quietly have, hold and enjoy the Premises.

19. TITLE. LESSOR represents and warrants to LESSEE as of the execution date of this Agreement, and covenants during the Term that LESSOR is seized of good and sufficient title and interest to the Property and has full authority to enter into and execute this Agreement. LESSOR further covenants during the Term that there are no liens, judgments or impediments of title on the Property, or affecting LESSOR's title to the same and that there are no covenants, easements or restrictions which prevent or adversely affect the use or occupancy of the Premises by LESSEE as set forth above.

20. INTEGRATION. It is agreed and understood that this Agreement contains all agreements, promises and understandings between LESSOR and LESSEE and that no verbal or oral agreements, promises or understandings shall be binding upon either LESSOR or LESSEE in any dispute, controversy or proceeding at law; and any addition, variation or modification to this Agreement shall be void and ineffective unless made in writing signed by the Parties or in a written acknowledgment in the case provided in Paragraph 3. In the event any provision of the Agreement is found to be invalid or unenforceable, such finding shall not affect the validity and enforceability of the remaining provisions of this Agreement. The failure of either Party to insist upon strict performance of any of the terms or conditions of this Agreement or to exercise any of its rights under the Agreement shall not waive such rights and such Party shall have the right to enforce such rights at any time and take such action as may be lawful and authorized under this Agreement, in law or in equity.

21. GOVERNING LAW. This Agreement and the performance thereof shall be governed, interpreted, construed and regulated by the Laws of the State in which the Property is located.

22. ASSIGNMENT. This Agreement may be sold, assigned or transferred by the LESSEE without any approval or consent of the LESSOR to the LESSEE's principal, affiliates, subsidiaries of its principal or to any entity which acquires all or substantially all of LESSEE's assets in the market defined by the Federal Communications Commission in which the Property

is located by reason of a merger, acquisition or other business reorganization. As to other parties, this Agreement may not be sold, assigned or transferred without the written consent of the LESSOR, which such consent will not be unreasonably withheld, delayed or conditioned. No change of stock ownership, partnership interest or control of LESSEE or transfer upon partnership or corporate dissolution of LESSEE shall constitute an assignment hereunder. LESSEE may sublet the Premises within its sole discretion, upon notice to LESSOR. Any sublease that is entered into by LESSEE shall be subject to the provisions of this Agreement and shall be binding upon the successors, assigns, heirs and legal representatives of the respective Parties hereto.

23. NOTICES. All notices hereunder must be in writing and shall be deemed validly given if sent by certified mail, return receipt requested or by commercial courier, provided the courier's regular business is delivery service and provided further that it guarantees delivery to the addressee by the end of the next business day following the courier's receipt from the sender, addressed as follows (or any other address that the Party to be notified may have designated to the sender by like notice):

LESSOR: Eppoliti Industrial Realty, Inc.
37 Danbury Road
Suite 203
Ridgefield, Connecticut 06877
Attention: Michael Eppoliti

LESSEE: Cellco Partnership d/b/a Verizon Wireless
180 Washington Valley Road
Bedminster, New Jersey 07921
Attention: Network Real Estate

Notice shall be effective upon actual receipt or refusal as shown on the receipt obtained pursuant to the foregoing.

24. SUCCESSORS. This Agreement shall extend to and bind the heirs, personal representative, successors and assigns of the Parties hereto.

25. SUBORDINATION AND NON-DISTURBANCE. LESSOR shall obtain not later than fifteen (15) days following the execution of this Agreement, a Non-Disturbance Agreement, as defined below, from its existing mortgagee(s), ground lessors and master lessors, if any, of the Property. At LESSOR's option, this Agreement shall be subordinate to any future master lease, ground lease, mortgage, deed of trust or other security interest (a "Mortgage") by LESSOR which from time to time may encumber all or part of the Property or right-of-way; provided, however, as a condition precedent to LESSEE being required to subordinate its interest in this Agreement to any future Mortgage covering the Property, LESSOR shall obtain for LESSEE's benefit a non-disturbance and attornment agreement for LESSEE's benefit in the form reasonably satisfactory to LESSEE, and containing the terms described below (the "Non-Disturbance Agreement"), and shall recognize LESSEE's right to remain in occupancy of and have access to the Premises as long as LESSEE is not in default of this Agreement beyond applicable notice and

cure periods. The Non-Disturbance Agreement shall include the encumbering party's ("Lender's") agreement that, if Lender or its successor-in-interest or any purchaser of Lender's or its successor's interest (a "Purchaser") acquires an ownership interest in the Property, Lender or such successor-in-interest or Purchaser will (1) honor all of the terms of the Agreement, (2) fulfill LESSOR's obligations under the Agreement, and (3) promptly cure all of the then-existing LESSOR defaults under the Agreement. Such Non-Disturbance Agreement must be binding on all of Lender's participants in the subject loan (if any) and on all successors and assigns of Lender and/or its participants and on all Purchasers. In return for such Non-Disturbance Agreement, LESSEE will execute an agreement for Lender's benefit in which LESSEE (1) confirms that the Agreement is subordinate to the Mortgage or other real property interest in favor of Lender, (2) agrees to attorn to Lender if Lender becomes the owner of the Property and (3) agrees to accept a cure by Lender of any of LESSOR's defaults, provided such cure is completed within the deadline applicable to LESSOR. In the event LESSOR defaults in the payment and/or other performance of any mortgage or other real property interest encumbering the Property, LESSEE, may, at its sole option and without obligation, cure or correct LESSOR's default and upon doing so, LESSEE shall be subrogated to any and all rights, titles, liens and equities of the holders of such mortgage or other real property interest and LESSEE shall be entitled to deduct and setoff against all rents that may otherwise become due under this Agreement the sums paid by LESSEE to cure or correct such defaults.

26. RECORDING. LESSOR agrees to execute a Memorandum of this Agreement which LESSEE may record with the appropriate recording officer. The date set forth in the Memorandum of Lease is for recording purposes only and bears no reference to commencement of either the Term or rent payments.

27. DEFAULT.

a. In the event there is a breach by LESSEE with respect to any of the provisions of this Agreement or its obligations under it, including the payment of rent, LESSOR shall give LESSEE written notice of such breach. After receipt of such written notice, LESSEE shall have fifteen (15) days in which to cure any monetary breach and thirty (30) days in which to cure any non-monetary breach, provided LESSEE shall have such extended period as may be required beyond the thirty (30) days if the nature of the cure is such that it reasonably requires more than thirty (30) days and LESSEE commences the cure within the thirty (30) day period and thereafter continuously and diligently pursues the cure to completion. LESSOR may not maintain any action or effect any remedies for default against LESSEE unless and until LESSEE has failed to cure the breach within the time periods provided in this Paragraph.

b. In the event there is a breach by LESSOR with respect to any of the provisions of this Agreement or its obligations under it, LESSEE shall give LESSOR written notice of such breach. After receipt of such written notice, LESSOR shall have thirty (30) days in which to cure any such breach, provided LESSOR shall have such extended period as may be required beyond the thirty (30) days if the nature of the cure is such that it reasonably requires more than thirty (30) days and

LESSOR commences the cure within the thirty (30) day period and thereafter continuously and diligently pursues the cure to completion. LESSEE may not maintain any action or effect any remedies for default against LESSOR unless and until LESSOR has failed to cure the breach within the time periods provided in this Paragraph. Notwithstanding the foregoing to the contrary, it shall be a default under this Agreement if LESSOR fails, within five (5) days after receipt of written notice of such breach, to perform an obligation required to be performed by LESSOR if the failure to perform such an obligation interferes with LESSEE's ability to conduct its business on the Property; provided, however, that if the nature of LESSOR's obligation is such that more than five (5) days after such notice is reasonably required for its performance, then it shall not be a default under this Agreement if performance is commenced within such five (5) day period and thereafter diligently pursued to completion.

28. REMEDIES. Upon a default, the non-defaulting Party may at its option (but without obligation to do so), perform the defaulting Party's duty or obligation on the defaulting Party's behalf, including but not limited to the obtaining of reasonably required insurance policies. The costs and expenses of any such performance by the non-defaulting Party shall be due and payable by the defaulting Party upon invoice therefor. In the event of a default by either Party with respect to a material provision of this Agreement, without limiting the non-defaulting Party in the exercise of any right or remedy which the non-defaulting Party may have by reason of such default, the non-defaulting Party may terminate the Agreement and/or pursue any remedy now or hereafter available to the non-defaulting Party under the Laws or judicial decisions of the state in which the Premises are located; provided, however, LESSOR shall use reasonable efforts to mitigate its damages in connection with a default by LESSEE. If LESSEE so performs any of LESSOR's obligations hereunder, the full amount of the reasonable and actual cost and expense incurred by LESSEE shall immediately be owing by LESSOR to LESSEE, and LESSOR shall pay to LESSEE upon demand the full undisputed amount thereof with interest thereon from the date of payment at the greater of (i) [redacted] per annum, or (ii) the highest rate permitted by applicable Laws. Notwithstanding the foregoing, if LESSOR does not pay LESSEE the full undisputed amount within thirty (30) days of its receipt of an invoice setting forth the amount due from LESSOR, LESSEE may offset the full undisputed amount, including all accrued interest, due against all fees due and owing to LESSOR until the full undisputed amount, including all accrued interest, is fully reimbursed to LESSEE.

29. ENVIRONMENTAL.

a. LESSOR will be responsible for all obligations of compliance with any and all environmental and industrial hygiene laws, including any regulations, guidelines, standards, or policies of any governmental authorities regulating or imposing standards of liability or standards of conduct with regard to any environmental or industrial hygiene conditions or concerns as may now or at any time hereafter be in effect, that are or were in any way related to activity now conducted in, on, or in any way related to the Property, unless such conditions or concerns are caused by the specific activities of LESSEE in the Premises.

b. LESSOR shall hold LESSEE harmless and indemnify LESSEE from and assume all duties, responsibility and liability at LESSOR's sole cost and expense, for all duties, responsibilities, and liability (for payment of penalties, sanctions, forfeitures, losses, costs, or damages) and for responding to any action, notice, claim, order, summons, citation, directive, litigation, investigation or proceeding which is in any way related to: a) failure to comply with any environmental or industrial hygiene law, including without limitation any regulations, guidelines, standards, or policies of any governmental authorities regulating or imposing standards of liability or standards of conduct with regard to any environmental or industrial hygiene concerns or conditions as may now or at any time hereafter be in effect, unless such non-compliance results from conditions caused by LESSEE; and b) any environmental or industrial hygiene conditions arising out of or in any way related to the condition of the Property or activities conducted thereon, unless such environmental conditions are caused by LESSEE.

30. CASUALTY. In the event of damage by fire or other casualty to the Premises that cannot reasonably be expected to be repaired within forty-five (45) days following same or, if the Property is damaged by fire or other casualty so that such damage may reasonably be expected to disrupt LESSEE's operations at the Premises for more than forty-five (45) days, then LESSEE may, at any time following such fire or other casualty, provided LESSOR has not completed the restoration required to permit LESSEE to resume its operation at the Premises, terminate this Agreement upon fifteen (15) days prior written notice to LESSOR. Any such notice of termination shall cause this Agreement to expire with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of this Agreement and the Parties shall make an appropriate adjustment, as of such termination date, with respect to payments due to the other under this Agreement. Notwithstanding the foregoing, the rent shall abate during the period of repair following such fire or other casualty in proportion to the degree to which LESSEE's use of the Premises is impaired.

31. CONDEMNATION. In the event of any condemnation of all or any portion of the Property, this Agreement shall terminate as to the part so taken as of the date the condemning authority takes title or possession, whichever occurs first. If as a result of a partial condemnation of the Premises or Property, LESSEE, in LESSEE's sole discretion, is unable to use the Premises for the purposes intended hereunder, or if such condemnation may reasonably be expected to disrupt LESSEE's operations at the Premises for more than forty-five (45) days, LESSEE may, at LESSEE's option, to be exercised in writing within fifteen (15) days after LESSOR shall have given LESSEE written notice of such taking (or in the absence of such notice, within fifteen (15) days after the condemning authority shall have taken possession) terminate this Agreement as of the date the condemning authority takes such possession. LESSEE may on its own behalf make a claim in any condemnation proceeding involving the Premises for losses related to the equipment, conduits, fixtures, its relocation costs and its damages and losses (but not for the loss of its leasehold interest). Any such notice of termination shall cause this Agreement to expire with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of this Agreement and the Parties shall make an appropriate adjustment as of such termination date with respect to payments due to the other under this Agreement. If LESSEE does not terminate this Agreement in accordance with the foregoing, this Agreement

shall remain in full force and effect as to the portion of the Premises remaining, except that the rent shall be reduced in the same proportion as the rentable area of the Premises taken bears to the total rentable area of the Premises. In the event that this Agreement is not terminated by reason of such condemnation, LESSOR shall promptly repair any damage to the Premises caused by such condemning authority.

32. SUBMISSION OF AGREEMENT/PARTIAL INVALIDITY/AUTHORITY. The submission of this Agreement for examination does not constitute an offer to lease the Premises and this Agreement becomes effective only upon the full execution of this Agreement by the Parties. If any provision herein is invalid, it shall be considered deleted from this Agreement and shall not invalidate the remaining provisions of this Agreement. Each of the Parties hereto warrants to the other that the person or persons executing this Agreement on behalf of such Party has the full right, power and authority to enter into and execute this Agreement on such Party's behalf and that no consent from any other person or entity is necessary as a condition precedent to the legal effect of this Agreement.

33. APPLICABLE LAWS. During the Term, LESSOR shall maintain the Property in compliance with all applicable laws, rules, regulations, ordinances, directives, covenants, easements, zoning and land use regulations, and restrictions of record, permits, building codes, and the requirements of any applicable fire insurance underwriter or rating bureau, now in effect or which may hereafter come into effect (including, without limitation, the Americans with Disabilities Act and laws regulating hazardous substances) (collectively "Laws"). LESSEE shall, in respect to the condition of the Premises and at LESSEE's sole cost and expense, comply with (a) all Laws relating solely to LESSEE's specific and unique nature of use of the Premises (other than general office use); and (b) all building codes requiring modifications to the Premises due to the improvements being made by LESSEE in the Premises.

34. SURVIVAL. The provisions of the Agreement relating to indemnification from one Party to the other Party shall survive any termination or expiration of this Agreement. Additionally, any provisions of this Agreement which require performance subsequent to the termination or expiration of this Agreement shall also survive such termination or expiration.

35. CAPTIONS. The captions contained in this Agreement are inserted for convenience only and are not intended to be part of the Agreement. They shall not affect or be utilized in the construction or interpretation of the Agreement.

36. SUBLEASE. LESSEE may sublease any portion of the Premises at its sole discretion, upon notice to LESSOR. Any sublease that is entered into by LESSEE shall be subject to the provisions of this Agreement and shall be binding upon the successors, assigns, heirs and legal representatives of the respective parties hereto. The term "Sublease", "Sublet", "Sublessee" and any other similar tern shall apply to any situation by which LESSEE allows a third party use of the Premises for co-location, whether it be by formal sublease, license or other agreement. All rights and responsibilities of LESSEE set forth in this Agreement shall be enjoyed by and binding on any Sublessee.

a. In the event LESSEE subleases any portion of the Premises, in accordance with this Agreement, LESSOR and LESSEE shall share the revenue as follows: Twenty (20) percent to LESSOR and Eighty (80) percent to LESSEE. Any Sublessee shall be instructed to pay the foregoing amount directly to the LESSOR. The LESSEE shall not be responsible to the LESSOR for the collection or payment of rents by the Sublessee to the LESSOR, and the LESSEE shall have no liability to the LESSOR in the event of failure of payment by Sublessee. In this event:

   i. The LESSEE shall have no liability of any nature to the LESSOR for failure to sublet all or any part of the premises to any or all potential Sublessee(s);

   ii. At LESSOR's request, LESSEE will provide LESSOR with a tri-party agreement to be executed by the LESSEE, its Sublessee, and LESSOR to confirm direct payment obligation from the Sublessee to the LESSOR and to indicate LESSOR has been notified of the sublease.

b. INTENTIONALLY OMITTED.

c. Notwithstanding any other provision of this Agreement, the LESSEE shall not be required to obtain approval from the LESSOR for the Subletting of the Premises or part thereof. The LESSEE shall have the sole right to determine whether it will Sublet any portion of the Premises or whether it will sublease to any specific Sublessee.

[Signatures follow on next page]

CONTRACT # __________

IN WITNESS WHEREOF, the Parties hereto have set their hands and affixed their respective seals the day and year first above written.

LESSOR: EPPOLITI INDUSTRIAL REALTY, INC.

By: ____________________

Its: PRESIDENT

Date: 10/8/2014

Marcia Eppoliti

WITNESS

Amy Cerullo

LESSEE: CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

By: ____________________
David R. Heverling

Its: Area Vice President Network

Date: 2/4/15

Karen Paul

WITNESS

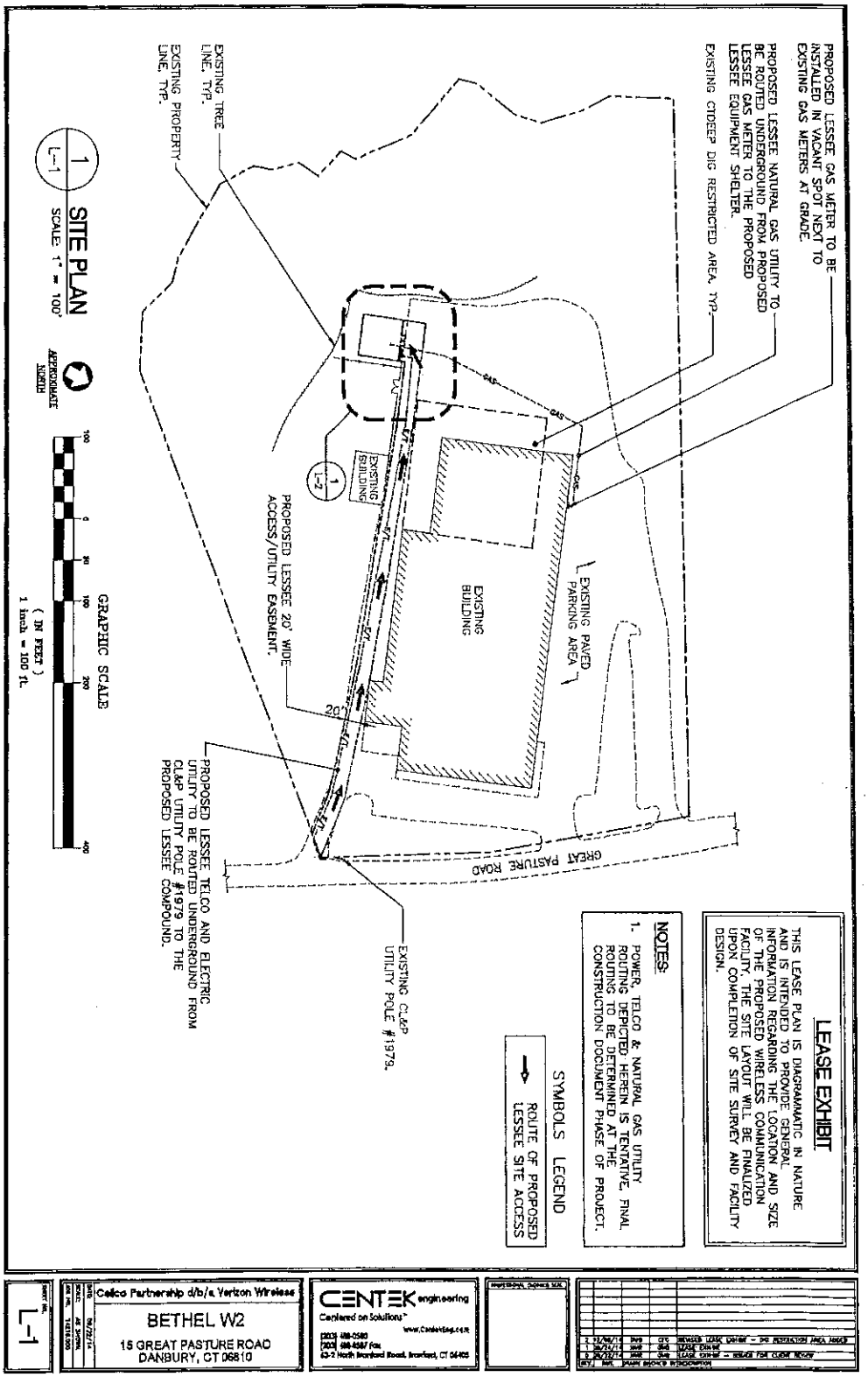
Diane Zampella

HSG

Lessor Site ID & No.: Bethel West 2 / 467694
Lessee Site ID & No.: NJJER01120B

CONTRACT # _____

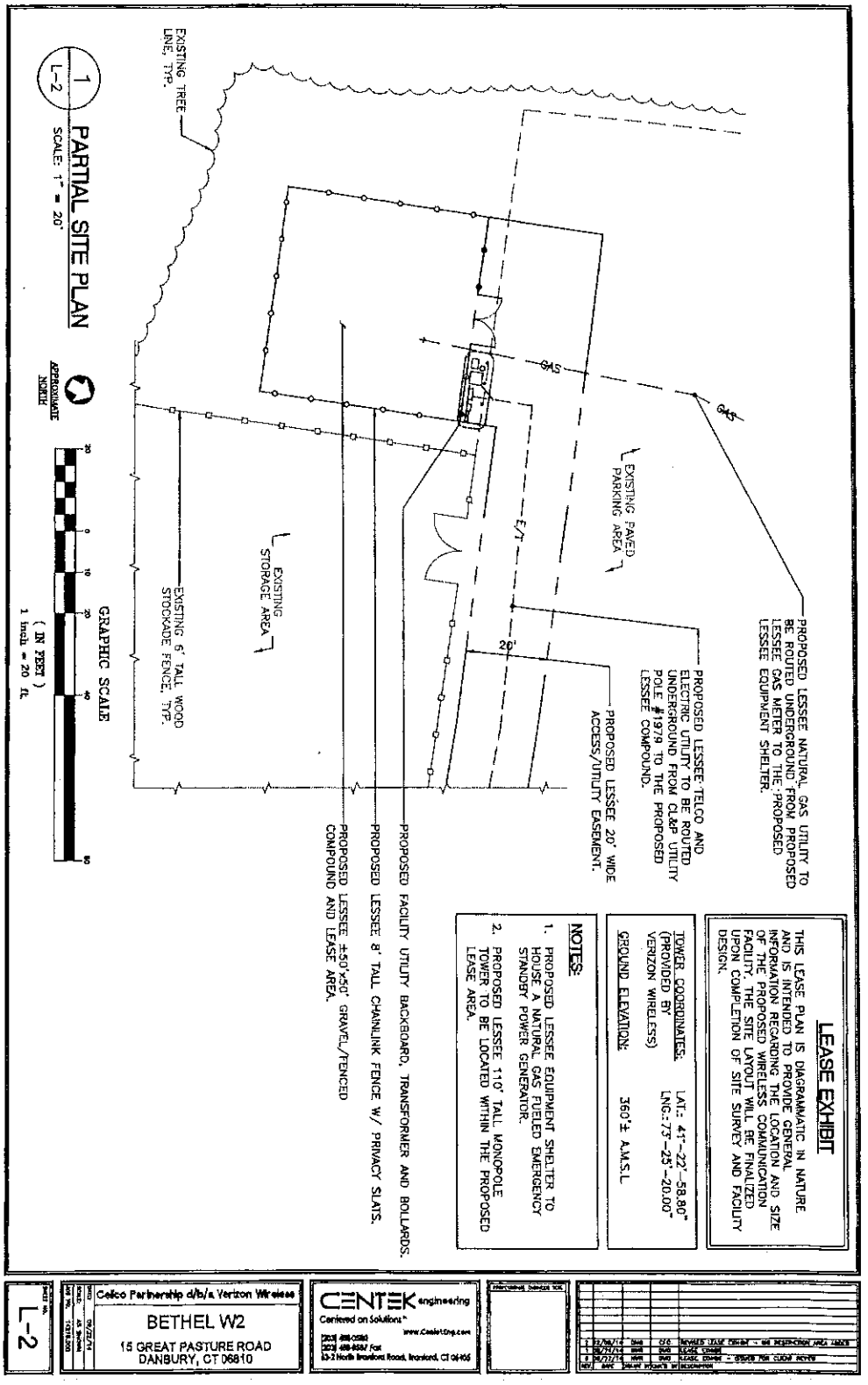
Exhibit "A" (2 pages)



HSG

Lessor Site ID & No.: Bethel West 2 / 467694
Lessee Site ID & No.: NJJER01120B

CONTRACT # _____



HSG

EXHIBIT 5 TO SUPPLEMENT

WRITTEN ACKNOWLEDGMENT OF LEASE COMMENCEMENT

Re: COMMENCEMENT LETTER
Supplement by and between Cellco Partnership, a Delaware general partnership, d/b/a Verizon Wireless ("LESSOR") and DISH Wireless L.L.C., a Colorado limited liability company ("LESSEE") dated_____.
Site Reference: Bethel West 2 / 467694
LESSEE Site Reference: NJJER01120B

Dear _____:

The Master Tower Lease Agreement between LESSOR and LESSEE defines the Commencement Date of any Supplement as the earlier of three (3) months from full execution of the Supplement or the first day of the calendar month following the commencement of installation of LESSEE's communications equipment at such Site.

This letter is to notify you that three (3) months expired on _____ and the **Commencement Date is hereby established as _____. That date is also the date that rent commences under the Supplement.** LESSEE agrees to provide a copy of this signed Commencement Letter to LESSEE's accounting group to ensure proper rent credit.

Or

This letter is to notify you that installation started on _____ thereby the **Commencement Date is hereby established as _____. That date is also the date that rent commences under the Supplement.** LESSEE agrees to provide a copy of this signed Commencement Letter to LESSEE's accounting group to ensure proper rent credit.

If you have any questions, please feel free to call me at _____.

Sincerely,

EXHIBIT 6 TO SUPPLEMENT
Page 1 of 2

Last Revision: 3/10/04

NOTICE TO SUBLESSEE – ENVIRONMENTAL CONDITIONS/RESTRICTIONS AT SUBJECT SITE

Note: Verizon Wireless makes no representation or warranty as to the accuracy or completeness of the information below. Sublessee is fully responsible for its own compliance with all applicable laws and regulations and for its own environmental due diligence. To the extent that Sublessee becomes aware of any additional environmental conditions, it agrees to immediately inform Verizon Wireless.

The following environmental conditions have been identified at the BETHEL WEST 2 CT site:

Environmental Condition	Description and Location of Contaminant
⊗ Contaminated soil	VOC contamination in the area of the ELUR (See figure).
☐ Contaminated groundwater	
☐ Presence of asbestos	
☐ Presence of lead-based paint	
☐ Other:	

Applicable legal requirements or Verizon Wireless policies and procedures may require that these conditions be communicated to all parties involved in Sublessee's construction activities and on-going operations at the project site. To the extent that these conditions may affect or be impacted by Sublessee's construction activities, Sublessee must submit to Verizon Wireless for review and approval all details of the work to be performed.

Environmental conditions affecting scope of work:
The Subject Property has an Environmental Land Use Restriction (ELUR) for the southwestern portion of the office building and an area extending approximately 25 feet from the southwestern corner of the building. This area contained VOCs in excess of the CTDEEP Remediation Standard Regulations (RSRs); however, excavation of this area would result in compromising the structural integrity of the building. In April 1987, The CTDEEP approved the plan to monitor groundwater and place a subsurface containment barrier around the fourth area, with the condition that future owners must be notified of the presence of the container to prevent disturbance. The subsurface containment barrier was installed directly against the southwestern portion of the building where soils were determined to contain VOCs above the established CTDEEP RSRs. Additionally, contaminated soils were excavated along the building foundation and out from the building to the south and west at about a 30-degree slope for a distance of about 14 feet away from the footing and then down to bedrock. The barrier was placed at the extent of the excavation before backfilled. The area of the ELUR is located approximately 160 feet northeast and cross gradient of the proposed tower compound, approximately 5 feet north and crossgradient of the proposed electric and telco conduit and approximately 10 feet east and upgradient of the proposed gas conduit.

Sublessee is required to comply with all applicable environmental, industrial hygiene, and worker health and safety laws and regulations, and Verizon Wireless policies and procedures as referred to herein. Sublessee shall retain qualified, appropriately specialized (and/or licensed, as required) and adequately insured environmental firms for the completion of specialized work as applicable. Verizon Wireless shall have the final authority to approve the selection of such environmental firms performing services on its leased property.

Environmental Services Required

- ☐ Asbestos abatement
- ☐ Lead based paint abatement
- ☐ Hazardous or special waste transportation and disposal
- ☐ Excavation, drilling or advancement through and staging/stockpiling of contaminated media
- ☐ Other:

Sublessee shall ensure at all times that only appropriately trained, qualified, and licensed workers perform the required environmental services. It is the responsibility of the Sublessee to adhere to the following site restrictions indefinitely in response to the above environmental conditions:

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EXHIBIT 6 TO SUPPLEMENT
Page 2 of 2

Last Revision: 3/10/04

Site Restrictions

⊗ Restrictions on excavations/construction methods. Description: No excavation allowed in the ELUR area.
⊗ Diesel fuel prohibited at construction site except in fuel tank of vehicle
⊗ Gasoline prohibited at construction site except in fuel tank of vehicle
□ Other:

The terms of this Exhibit 6 shall supplement the terms of the Lease between Verizon Wireless and Sublessee.

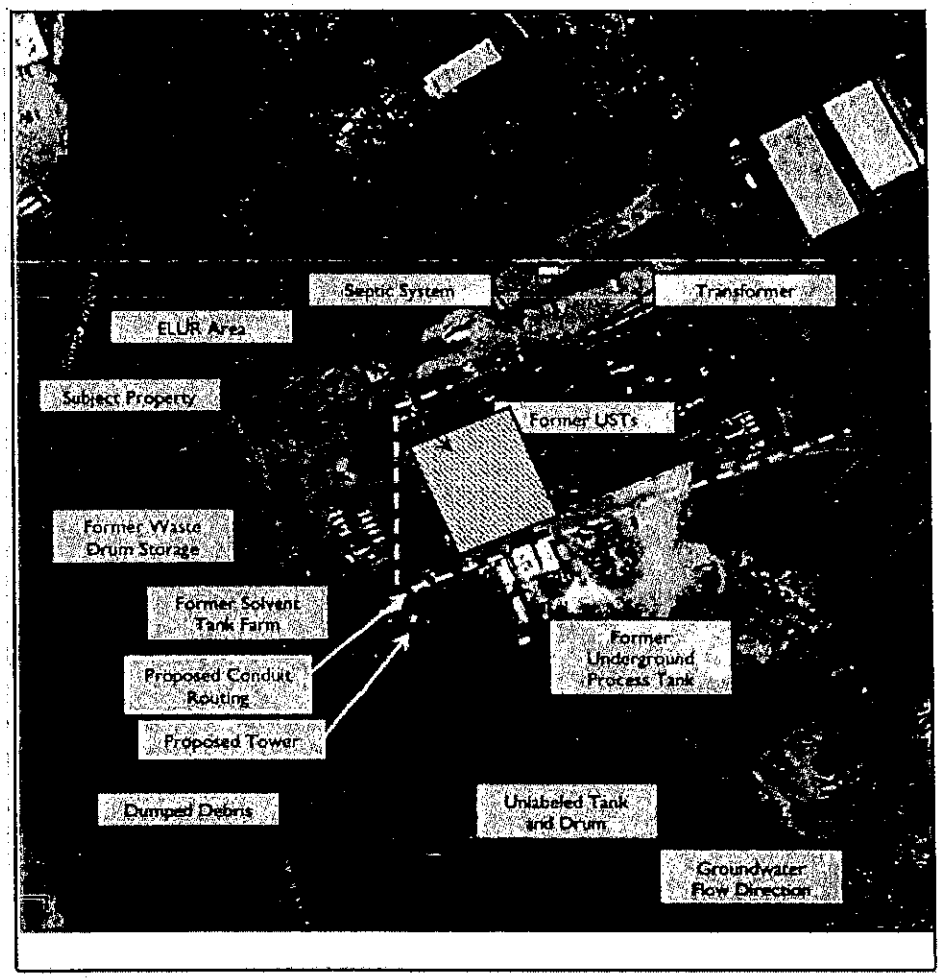


Figure 3 – Site Plan

Bethel West 2 / P# 20141054736 L# 295447
15 Great Pasture Road
Danbury, Connecticut

Not to scale

HSG

DocuSign

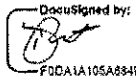
Certificate Of Completion

Envelope Id: CEA820CB8426433FA6FE737661031AAD
Status: Completed
Subject: Please DocuSign: NJJER01120B_ApprovedExecutableLease_20220503144757.pdf
Source Envelope:
Document Pages: 45
Signatures: 1
Certificate Pages: 5
Initials: 2
AutoNav: Enabled
EnvelopeId Stamping: Enabled
Time Zone: (UTC-07:00) Mountain Time (US & Canada)

Envelope Originator:
Remy Najdawi
472 NILE ST
AURORA, CO 80010
remy.najdawi@dish.com
IP Address: 66.170.243.136

Record Tracking

Status: Original
5/4/2022 6:58:05 AM
Holder: Remy Najdawi
remy.najdawi@dish.com
Location: DocuSign

Signer Events	Signature	Timestamp
Michael Fox mike.fox@dish.com Market General Manager Security Level: Email, Account Authentication (None)	 Signature Adoption: Pre-selected Style Signed by link sent to mike.fox@dish.com Using IP Address: 66.170.243.136	Sent: 5/4/2022 7:03:35 AM Resent: 5/5/2022 1:41:17 PM Viewed: 5/5/2022 2:17:25 PM Signed: 5/5/2022 2:17:30 PM
Electronic Record and Signature Disclosure: Accepted: 9/8/2021 3:08:56 PM ID: 68b4cba5-8a7c-4ccd-a082-eb63334f4ac6		
Lease Administration leaseadmin@dish.com Sr. Operations Analyst - Lease Administration Security Level: Email, Account Authentication (None)	 Signature Adoption: Pre-selected Style Signed by link sent to leaseadmin@dish.com Using IP Address: 66.170.243.136	Sent: 5/5/2022 2:17:32 PM Resent: 5/26/2022 7:11:17 AM Viewed: 5/26/2022 3:36:28 PM Signed: 5/26/2022 3:36:33 PM
Electronic Record and Signature Disclosure: Not Offered via DocuSign		
David Mayo Dave.mayo@dish.com EVP DISH Wireless, LLC Security Level: Email, Account Authentication (None)	 Signature Adoption: Drawn on Device Signed by link sent to Dave.mayo@dish.com Using IP Address: 172.58.178.229 Signed using mobile	Sent: 5/26/2022 3:36:36 PM Viewed: 5/26/2022 3:45:55 PM Signed: 5/26/2022 3:46:23 PM
Electronic Record and Signature Disclosure: Accepted: 5/26/2022 3:45:55 PM ID: 14ac863b-b8eb-4b29-a9da-d796da1c75a4		

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp
Danielle Bartley dbartley@tectonicengineering.com Security Level: Email, Account Authentication (None) **Electronic Record and Signature Disclosure:** Not Offered via DocuSign	COPIED	Sent: 5/26/2022 3:46:26 PM
Alexis Elagmi alexis.elagmi@dish.com Security Level: Email, Account Authentication (None) **Electronic Record and Signature Disclosure:** Not Offered via DocuSign	COPIED	Sent: 5/26/2022 3:46:28 PM

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	5/4/2022 7:03:35 AM
Certified Delivered	Security Checked	5/26/2022 3:45:55 PM
Signing Complete	Security Checked	5/26/2022 3:46:23 PM
Completed	Security Checked	5/26/2022 3:46:29 PM

Payment Events	Status	Timestamps

Electronic Record and Signature Disclosure

CONSUMER DISCLOSURE

From time to time, DISH Network (we, us or Company) may be required by law to provide to you certain written notices or disclosures. Described below are the terms and conditions for providing to you such notices and disclosures electronically through the DocuSign, Inc. (DocuSign) electronic signing system. Please read the information below carefully and thoroughly, and if you can access this information electronically to your satisfaction and agree to these terms and conditions, please confirm your agreement by clicking the 'I agree' button at the bottom of this document.

Getting paper copies

At any time, you may request from us a paper copy of any record provided or made available electronically to you by us. You will have the ability to download and print documents we send to you through the DocuSign system during and immediately after signing session and, if you elect to create a DocuSign signer account, you may access them for a limited period of time (usually 30 days) after such documents are first sent to you. After such time, if you wish for us to send you paper copies of any such documents from our office to you, you will be charged a $0.00 per-page fee. You may request delivery of such paper copies from us by following the procedure described below.

Withdrawing your consent

If you decide to receive notices and disclosures from us electronically, you may at any time change your mind and tell us that thereafter you want to receive required notices and disclosures only in paper format. How you must inform us of your decision to receive future notices and disclosure in paper format and withdraw your consent to receive notices and disclosures electronically is described below.

Consequences of changing your mind

If you elect to receive required notices and disclosures only in paper format, it will slow the speed at which we can complete certain steps in transactions with you and delivering services to you because we will need first to send the required notices or disclosures to you in paper format, and then wait until we receive back from you your acknowledgment of your receipt of such paper notices or disclosures. To indicate to us that you are changing your mind, you must withdraw your consent using the DocuSign 'Withdraw Consent' form on the signing page of a DocuSign envelope instead of signing it. This will indicate to us that you have withdrawn your consent to receive required notices and disclosures electronically from us and you will no longer be able to use the DocuSign system to receive required notices and consents electronically from us or to sign electronically documents from us.

All notices and disclosures will be sent to you electronically

Unless you tell us otherwise in accordance with the procedures described herein, we will provide electronically to you through the DocuSign system all required notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you during the course of our relationship with you. To reduce the chance of you inadvertently not receiving any notice or disclosure, we prefer to provide all of the required notices and disclosures to you by the same method and to the same address that you have given us. Thus, you can receive all the disclosures and notices electronically or in paper format through the paper mail delivery system. If you do not agree with this process, please let us know as described below. Please also see the paragraph immediately above that describes the consequences of your electing not to receive delivery of the notices and disclosures electronically from us.

How to contact DISH Network:

You may contact us to let us know of your changes as to how we may contact you electronically, to request paper copies of certain information from us, and to withdraw your prior consent to receive notices and disclosures electronically as follows:
To contact us by email send messages to: PCTORDERS@DISH.COM

To advise DISH Network of your new e-mail address

To let us know of a change in your e-mail address where we should send notices and disclosures electronically to you, you must send an email message to us at PCTORDERS@DISH.COM and in the body of such request you must state: your previous e-mail address, your new e-mail address. We do not require any other information from you to change your email address..

In addition, you must notify DocuSign, Inc. to arrange for your new email address to be reflected in your DocuSign account by following the process for changing e-mail in the DocuSign system.

To request paper copies from DISH Network
To request delivery from us of paper copies of the notices and disclosures previously provided by us to you electronically, you must send us an e-mail to PCTORDERS@DISH.COM and in the body of such request you must state your e-mail address, full name, US Postal address, and telephone number. We will bill you for any fees at that time, if any.
To withdraw your consent with DISH Network

To inform us that you no longer want to receive future notices and disclosures in electronic format you may:

i. decline to sign a document from within your DocuSign session, and on the subsequent page, select the check-box indicating you wish to withdraw your consent, or you may;

ii. send us an e-mail to PCTORDERS@DISH.COM and in the body of such request you must state your e-mail, full name, US Postal Address, and telephone number. We do not need any other information from you to withdraw consent.. The consequences of your withdrawing consent for online documents will be that transactions may take a longer time to process..

Required hardware and software

Operating Systems:	Windows® 2000, Windows® XP, Windows Vista®; Mac OS® X
Browsers:	Final release versions of Internet Explorer® 6.0 or above (Windows only); Mozilla Firefox 2.0 or above (Windows and Mac); Safari™ 3.0 or above (Mac only)
PDF Reader:	Acrobat® or similar software may be required to view and print PDF files
Screen Resolution:	800 x 600 minimum

Enabled Security Settings:	Allow per session cookies

** These minimum requirements are subject to change. If these requirements change, you will be asked to re-accept the disclosure. Pre-release (e.g. beta) versions of operating systems and browsers are not supported.

Acknowledging your access and consent to receive materials electronically

To confirm to us that you can access this information electronically, which will be similar to other electronic notices and disclosures that we will provide to you, please verify that you were able to read this electronic disclosure and that you also were able to print on paper or electronically save this page for your future reference and access or that you were able to e-mail this disclosure and consent to an address where you will be able to print on paper or save it for your future reference and access. Further, if you consent to receiving notices and disclosures exclusively in electronic format on the terms and conditions described above, please let us know by clicking the 'I agree' button below.

By checking the 'I agree' box, I confirm that:

- I can access and read this Electronic CONSENT TO ELECTRONIC RECEIPT OF ELECTRONIC CONSUMER DISCLOSURES document; and
- I can print on paper the disclosure or save or send the disclosure to a place where I can print it, for future reference and access; and
- Until or unless I notify DISH Network as described above, I consent to receive from exclusively through electronic means all notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to me by DISH Network during the course of my relationship with you.

DocuSign

Certificate Of Completion

Envelope Id: C90146B02285483FAE85B22505B06B1C
Status: Completed
Subject: DocuSign: 467694 Dish SLA - Bethel West 2
Source Envelope:
Document Pages: 50
Signatures: 1
Certificate Pages: 4
Initials: 0
AutoNav: Enabled
EnvelopeId Stamping: Enabled
Time Zone: (UTC-08:00) Pacific Time (US & Canada)

Envelope Originator:
Celyna Ebohon
Celyna.Ebohon@verizonwireless.com
IP Address: 69.78.100.102

Record Tracking

Status: Original
6/29/2022 11:10:00 AM
Holder: Celyna Ebohon
Celyna.Ebohon@verizonwireless.com
Location: DocuSign

Signer Events	Signature	Timestamp
Chad Schmelzer Chad.Schmelzer@verizonwireless.com Security Level: Email, Account Authentication (None)	DocuSigned by: Chad Schmelzer C89AB65CACBF4F2...	Sent: 6/29/2022 11:11:39 AM Viewed: 6/29/2022 11:12:59 AM Signed: 6/29/2022 11:13:35 AM
	Signature Adoption: Pre-selected Style Signed by link sent to Chad.Schmelzer@verizonwireless.com Using IP Address: 69.78.100.102	

Electronic Record and Signature Disclosure:
Accepted: 6/29/2022 11:12:59 AM
ID: 5436747d-015b-4399-8013-90970794409a

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	6/29/2022 11:11:39 AM
Certified Delivered	Security Checked	6/29/2022 11:12:59 AM
Signing Complete	Security Checked	6/29/2022 11:13:35 AM
Completed	Security Checked	6/29/2022 11:13:35 AM

Payment Events	Status	Timestamps

Electronic Record and Signature Disclosure

ELECTRONIC RECORD AND SIGNATURE DISCLOSURE

From time to time, VBG Network Real Estate (we, us or Company) may be required by law to provide to you certain written notices or disclosures. Described below are the terms and conditions for providing to you such notices and disclosures electronically through the DocuSign system. Please read the information below carefully and thoroughly, and if you can access this information electronically to your satisfaction and agree to this Electronic Record and Signature Disclosure (ERSD), please confirm your agreement by selecting the check-box next to 'I agree to use electronic records and signatures' before clicking 'CONTINUE' within the DocuSign system.

Getting paper copies

At any time, you may request from us a paper copy of any record provided or made available electronically to you by us. You will have the ability to download and print documents we send to you through the DocuSign system during and immediately after the signing session and, if you elect to create a DocuSign account, you may access the documents for a limited period of time (usually 30 days) after such documents are first sent to you. After such time, if you wish for us to send you paper copies of any such documents from our office to you, you will be charged a $0.00 per-page fee. You may request delivery of such paper copies from us by following the procedure described below.

Withdrawing your consent

If you decide to receive notices and disclosures from us electronically, you may at any time change your mind and tell us that thereafter you want to receive required notices and disclosures only in paper format. How you must inform us of your decision to receive future notices and disclosure in paper format and withdraw your consent to receive notices and disclosures electronically is described below.

Consequences of changing your mind

If you elect to receive required notices and disclosures only in paper format, it will slow the speed at which we can complete certain steps in transactions with you and delivering services to you because we will need first to send the required notices or disclosures to you in paper format, and then wait until we receive back from you your acknowledgment of your receipt of such paper notices or disclosures. Further, you will no longer be able to use the DocuSign system to receive required notices and consents electronically from us or to sign electronically documents from us.

All notices and disclosures will be sent to you electronically

Unless you tell us otherwise in accordance with the procedures described herein, we will provide electronically to you through the DocuSign system all required notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you during the course of our relationship with you. To reduce the chance of you inadvertently not receiving any notice or disclosure, we prefer to provide all of the required notices and disclosures to you by the same method and to the same address that you have given us. Thus, you can receive all the disclosures and notices electronically or in paper format through the paper mail delivery system. If you do not agree with this process, please let us know as described below. Please also see the paragraph immediately above that describes the consequences of your electing not to receive delivery of the notices and disclosures electronically from us.

How to contact VBG Network Real Estate:

You may contact us to let us know of your changes as to how we may contact you electronically, to request paper copies of certain information from us, and to withdraw your prior consent to receive notices and disclosures electronically as follows:
To contact us by email send messages to: tricsha.fatakia@verizonwireless.com

To advise VBG Network Real Estate of your new email address

To let us know of a change in your email address where we should send notices and disclosures electronically to you, you must send an email message to us at tricsha.fatakia@verizonwireless.com and in the body of such request you must state: your previous email address, your new email address. We do not require any other information from you to change your email address.

If you created a DocuSign account, you may update it with your new email address through your account preferences.

To request paper copies from VBG Network Real Estate

To request delivery from us of paper copies of the notices and disclosures previously provided by us to you electronically, you must send us an email to tricsha.fatakia@verizonwireless.com and in the body of such request you must state your email address, full name, mailing address, and telephone number. We will bill you for any fees at that time, if any.

To withdraw your consent with VBG Network Real Estate

To inform us that you no longer wish to receive future notices and disclosures in electronic format you may:

i. decline to sign a document from within your signing session, and on the subsequent page, select the check-box indicating you wish to withdraw your consent, or you may;

ii. send us an email to tricsha.fatakia@verizonwireless.com and in the body of such request you must state your email, full name, mailing address, and telephone number. We do not need any other information from you to withdraw consent.. The consequences of your withdrawing consent for online documents will be that transactions may take a longer time to process..

Required hardware and software

The minimum system requirements for using the DocuSign system may change over time. The current system requirements are found here: https://support.docusign.com/guides/signer-guide-signing-system-requirements.

Acknowledging your access and consent to receive and sign documents electronically

To confirm to us that you can access this information electronically, which will be similar to other electronic notices and disclosures that we will provide to you, please confirm that you have read this ERSD, and (i) that you are able to print on paper or electronically save this ERSD for your future reference and access; or (ii) that you are able to email this ERSD to an email address where you will be able to print on paper or save it for your future reference and access. Further, if you consent to receiving notices and disclosures exclusively in electronic format as described herein, then select the check-box next to 'I agree to use electronic records and signatures' before clicking 'CONTINUE' within the DocuSign system.

By selecting the check-box next to 'I agree to use electronic records and signatures', you confirm that:

- You can access and read this Electronic Record and Signature Disclosure; and
- You can print on paper this Electronic Record and Signature Disclosure, or save or send this Electronic Record and Disclosure to a location where you can print it, for future reference and access; and
- Until or unless you notify VBG Network Real Estate as described above, you consent to receive exclusively through electronic means all notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you by VBG Network Real Estate during the course of your relationship with VBG Network Real Estate.

Exhibit G

Mailing Receipts

LTR 1 OF 1

FROM:
LEV MAYZLER
(203) 488-0712
CONSTRUCTION SERVICES OF BRANF
63-3 NORTH BRANFORD ROAD
BRANFORD CT 06405-2848

SHIP TO:

HON. DEAN ESPOSITO
15 DEER HILL AVE.
DANBURY CT 06810

CT 068 0-01

UPS 2ND DAY AIR **2**
TRACKING #: 1Z E05 345 02 6277 3743

BILLING: P/P

WS 22.0.17 SHARP MX-3070 33.0A 08/2022

Fold here and place in label pouch

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number
1ZE053450262773743

Service

UPS 2nd Day Air®

Delivered On

08/10/2022 10:02 A.M.

Delivered To
DANBURY, CT, US
Received By

TC

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 08/10/2022 2:47 P.M. EST

LTR 1 OF 1

FROM:
LEV MAYZLER
(203) 488-0712
CONSTRUCTION SERVICES OF BRANF
63-3 NORTH BRANFORD ROAD
BRANFORD CT 06405-2848

SHIP TO:

EPPOLITI INDUSTRIAL REALTY, INC.
SUITE 203
37 DANBURY RD.
RIDGEFIELD CT 06877

CT 068 0-02

UPS 2ND DAY AIR **2**

TRACKING #: 1Z E05 345 02 6391 1369

BILLING: P/P

WS 22.0.17 SHARP MX-3070 33.0A 08/2022

Fold here and place in label pouch

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number
1ZE053450263911369

Service

UPS 2nd Day Air®

Delivered On

08/09/2022 3:29 P.M.

Delivered To

37 DANBURY RD
RIDGEFIELD, CT, 06877, US

Received By

EPOLOTTI

Left At

Receiver

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 08/10/2022 6:54 A.M. EST

LTR 1 OF 1

FROM:
LEV MAYZLER
(203) 488-0712
CONSTRUCTION SERVICES OF BRANF
63-3 NORTH BRANFORD ROAD
BRANFORD CT 06405-2848

SHIP TO:

DIRECTOR OF PLANING & ZONING
MS. SHARON B. CALITRO
155 DEER HILL AVE.
DANBURY CT 06810

CT 068 0-01

UPS 2ND DAY AIR **2**
TRACKING #: 1Z E05 345 02 6142 9153

BILLING: P/P

WS 22.0.17 SHARP MX-3070 33.0A 08/2022

Fold here and place in label pouch

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1ZE053450261429153

Service

UPS 2nd Day Air®

Delivered On

08/09/2022 9:58 A.M.

Delivered To

155 DEER HILL AVE
DANBURY, CT, 06810, US

Received By

TC

Left At

Front Desk

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 08/10/2022 6:55 A.M. EST