

Centerline Communications
Mark Appleby
750 West Center Street, Floor 3
West Bridgewater, MA 02379
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mappleby@clinellc.com

January 6, 2020

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

Notice of Exempt Modification
380 Horace Street, Bridgeport, Connecticut 06082
Latitude: 41.12'15.63" N
Longitude: 73.10'35.61." W
T-Mobile Site#: CTF868A_ANCHOR

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 80-foot level of the existing 90-foot monopole tower at 380 Horace St, Bridgeport, Connecticut 06082. The 90-foot tower is owned by Tarpon Towers, and the property is owned by 416 Horace Realty LLC. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 2500 MHz antennas. The new antennas would be installed at the 80-foot level of the tower. The proposed upgrades will make the site available for 5G deployment in the future.

Planned Modifications:

Remove and Replace:

(3) APX16DWV-16DWV Antennas (**Remove**) - (3) AIR6449_B41 2500 MHz Antennas (**Replace**)

Install New:

(3) Diplexers
(3) RRU 4415 B25 Radios
(1) Fiber Hybrid Line

Existing to Remain:

(3) AIR3246_B66A_B2A 1900 MHz/2100 MHz Antennas
(3) APXVAARR24 L600/L700 MHz Antennas
(3) RRU 4449 B71+B85 Radios
(3) RRUS 2217 B66 Radios
(3) Fiber Hybrid Line

Ground:

(2) New Cabinets

This facility was approved by the CT Siting Council under Docket 479 on March 29, 2018. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mayor Joseph P. Ganim, chief elected official, Dennis Buckley, Zoning Administrator for the City of Bridgeport, 416 Horace Realty LLC, the property owner and Tarpon Towers 11, LLC, the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Mark Appleby
Site Acquisition Consultant
Mobile: 860-209-4694
Fax: 508-819-3017
Office: 750 W. Center Street, Suite 301
West Bridgewater, MA 02379
Email: mappleby@clinellc.com

Attachments

cc: Mayor Joseph P. Ganim, Chief Elected Official, City of Bridgeport
Dennis Buckley, Zoning Administrator, City of Bridgeport
416 Horace Realty LLC, Property Owner
Tarpon Towers 11, LLC, Tower Owner

Exhibit A

Original Facility Approval



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

Keith Coppins
Phoenix Partnership
110 Washington Avenue
North Haven, CT 06473

RE: **TS-T-MOBILE-015-180529** – T-Mobile request for an order to approve tower sharing at an existing telecommunications facility located at 380 Horace Street, Bridgeport, Connecticut.

Dear Mr. Coppins:

At a public meeting held on June 21, 2018, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures with the following conditions:

1. Any deviation from the proposed installation as specified in the original tower share request and supporting materials with the Council shall render this decision invalid;
2. Any material changes to the proposed installation as specified in the original tower share request and supporting materials filed with the Council shall require an explicit request for modification to the Council pursuant to Connecticut General Statutes § 16-50aa, including all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65;
3. Not less than 45 days after completion of the proposed installation, the Council shall be notified in writing that the installation has been completed;
4. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by T-Mobile shall be removed within 60 days of the date the antenna ceased to function.
5. The validity of this action shall expire one year from the date of this letter; and
6. The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

The Council also recommends that a shared generator be considered.

This decision is under the exclusive jurisdiction of the Council and applies only to this request for tower sharing dated May 22, 2018. This facility has been carefully modeled to ensure that radio frequency emissions are conservatively below state and federal standards applicable to the frequencies now used on this tower. Any deviation from the approved tower sharing request is enforceable under the provisions of Connecticut General Statutes § 16-50u.

The proposed shared use is to be implemented as specified in your letter dated May 22, 2018, and additional information received on June 12, 2018, including the placement of all necessary equipment and shelters within the tower compound.

Please be advised that the validity of this action shall expire one year from the date of this letter.

Thank you for your attention and cooperation.

Sincerely,

Robert Stein
Chairman

RS/MAB/lm

c: The Honorable Joseph P. Ganim, Mayor, City of Bridgeport
Kimberly G. Staley, Chief Administrative Officer, City of Bridgeport
Thomas F. Gill, Director of Planning & Economic Development, City of Bridgeport
Tarpon Towers II, LLC



Affirmative Action / Equal Opportunity Employer

DOCKET NO. 479 - Tarpon Towers II, LLC and 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 380 Horace Street, Bridgeport, Connecticut. } Connecticut
} Siting
} Council

March 29, 2018

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 balance, public health and safety, scenic, historic, and recreational values, agriculture, forests and parks, air and water purity, and fish, aquaculture 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 Tarpon Towers II, LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 380 Horace Street, Bridgeport, 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 90 feet above ground level to provide the proposed wireless services, sufficient to accommodate the antennas of Cellco Partnership d/b/a Verizon Wireless 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 Bridgeport 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 that employ the governing standard in the State of Connecticut for tower design in accordance with the currently adopted International Building Code and include specifications for the tower, tower foundation, antennas, and equipment compound including, but not limited to, fencing, radio equipment, access road, utility line, and emergency backup generator;
 - b) the compound shall be rotated about 90 degrees to avoid the rocky outcropping;
 - c) the tower shall be designed with a yield point to ensure that the tower setback radius remains within the boundaries of the subject property;
 - d) a blasting plan prepared in consultation with the fire marshall, if applicable;
 - e) construction plans for site clearing, grading, landscaping, water drainage and stormwater control, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;
 - f) Vernal Pool Protection Plan; and
 - g) hours of construction.

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, and the City of Bridgeport.
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 January 29, 2018, and notice of issuance published in the Connecticut Post.

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

380 HORACE ST

Location 380 HORACE ST

Mblu 62/ 2050/ 39/Y /

Acct# R--0055600

Owner 416 HORACE REALTY LLC

Assessment \$2,074,540

Appraisal \$2,963,600

PID 19970

Building Count 2

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2019	\$1,736,220	\$1,227,380	\$2,963,600

Assessment			
Valuation Year	Improvements	Land	Total
2019	\$1,215,370	\$859,170	\$2,074,540

Owner of Record

Owner 416 HORACE REALTY LLC

Sale Price \$0

Co-Owner

Certificate

Address 380 HORACE ST
BRIDGEPORT, CT 06610

Book & Page 10087/245

Sale Date 09/04/2019

Instrument 03

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
416 HORACE REALTY LLC	\$0		10087/245	03	09/04/2019
MDL REALTY LLC	\$750,000		8483/0256	UNKQ	09/28/2011
CONCO MEDICAL COMPANY	\$0		0000/0000		

Building Information

Building 1 : Section 1

Year Built: 1987
Living Area: 77,608
Replacement Cost: \$4,273,873
Building Percent Good: 25

**Replacement Cost
Less Depreciation:**

\$1,068,470

Building Attributes

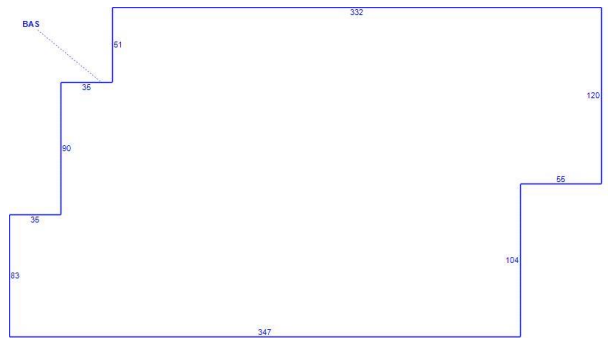
Field	Description
STYLE	Ofc/Whs/Ind
MODEL	Ind/Comm
Grade:	Average
Stories:	1
Occupancy:	1.00
Exterior Wall 1:	Concr/CinderBl
Exterior Wall 2:	
Roof Struct:	Flat
Roof Cover:	T+G/Rubber
Interior Wall 1:	Drywall
Interior Wall 2:	
Interior Floor 1:	Concr-Finished
Interior Floor 2:	Carpet
Heating Fuel:	Gas
Heating Type:	Forced Air
AC Type:	Central
Struct Class	
Bldg Use:	R+D/Indo
Ttl Rooms:	
Ttl Bedrms:	00
Ttl Baths:	0
Ttl Half Baths:	0
Ttl Xtra Fix:	0
1st Floor Use:	
Heat/AC:	Heat/Ac Pkgs
Frame Type:	Masonry
Baths/Plumbing:	Average
Ceiling/Wall:	Ceil & Walls
Rooms/Prtns:	Average
Wall Height:	20.00
% Comn Wall:	

Building Photo



(<http://images.vgsi.com/photos2/BridgeportCTPhotos//00\02\06\35.JPG>)

Building Layout



(ParcelSketch.ashx?pid=19970&bid=19970)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	77,608	77,608
		77,608	77,608

Building 2 : Section 1

Year Built: 1968
Living Area: 61,854
Replacement Cost: \$3,557,161
Building Percent Good: 13
Replacement Cost
Less Depreciation: \$462,430

Building Attributes : Bldg 2 of 2

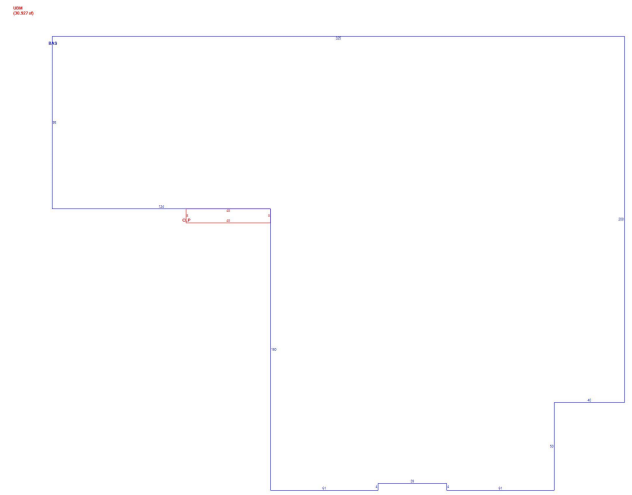
Field	Description
STYLE	Ofc/Whs/Ind
MODEL	Ind/Comm
Grade:	Average
Stories:	1
Occupancy:	1.00
Exterior Wall 1:	Concr/CinderBl
Exterior Wall 2:	
Roof Struct:	Flat
Roof Cover:	T+G/Rubber
Interior Wall 1:	Drywall
Interior Wall 2:	
Interior Floor 1:	Concr-Finished
Interior Floor 2:	Carpet
Heating Fuel:	Gas
Heating Type:	Forced Air
AC Type:	Central
Struct Class	
Bldg Use:	R+D/Indo
Ttl Rooms:	
Ttl Bedrms:	00
Ttl Baths:	0
Ttl Half Baths:	0
Ttl Xtra Fix:	0
1st Floor Use:	
Heat/AC:	Heat/Ac Pkgs
Frame Type:	Masonry
Baths/Plumbing:	Average
Ceiling/Wall:	Sus-Ceil & WI
Rooms/Prtns:	Average
Wall Height:	14.00
% Comn Wall:	

Building Photo



(<http://images.vgsi.com/photos2/BridgeportCTPhotos//default.jpg>)

Building Layout



(ParcelSketch.ashx?pid=19970&bid=35916)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	61,854	61,854
CLP	Loading Platform	384	0
UBM	Unfin Basement	30,927	0
		93,165	61,854

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
SPR1	Sprinklers-Wet	61854.00 SF	\$21,710	2
SPR1	Sprinklers-Wet	77608.00 SF	\$52,390	1
ELV2	Pass	2.00 STOPS	\$6,500	2
ELV2	Pass	2.00 STOPS	\$6,500	2

LDL1	Load Levler	2.00 UNITS	\$1,750	1
LDL1	Load Levler	2.00 UNITS	\$1,750	1

Land

Land Use

Use Code 341
Description R+D/Indo
Zone ILI
Neighborhood NI
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 12.69
Frontage 0
Depth 0
Assessed Value \$859,170
Appraised Value \$1,227,380

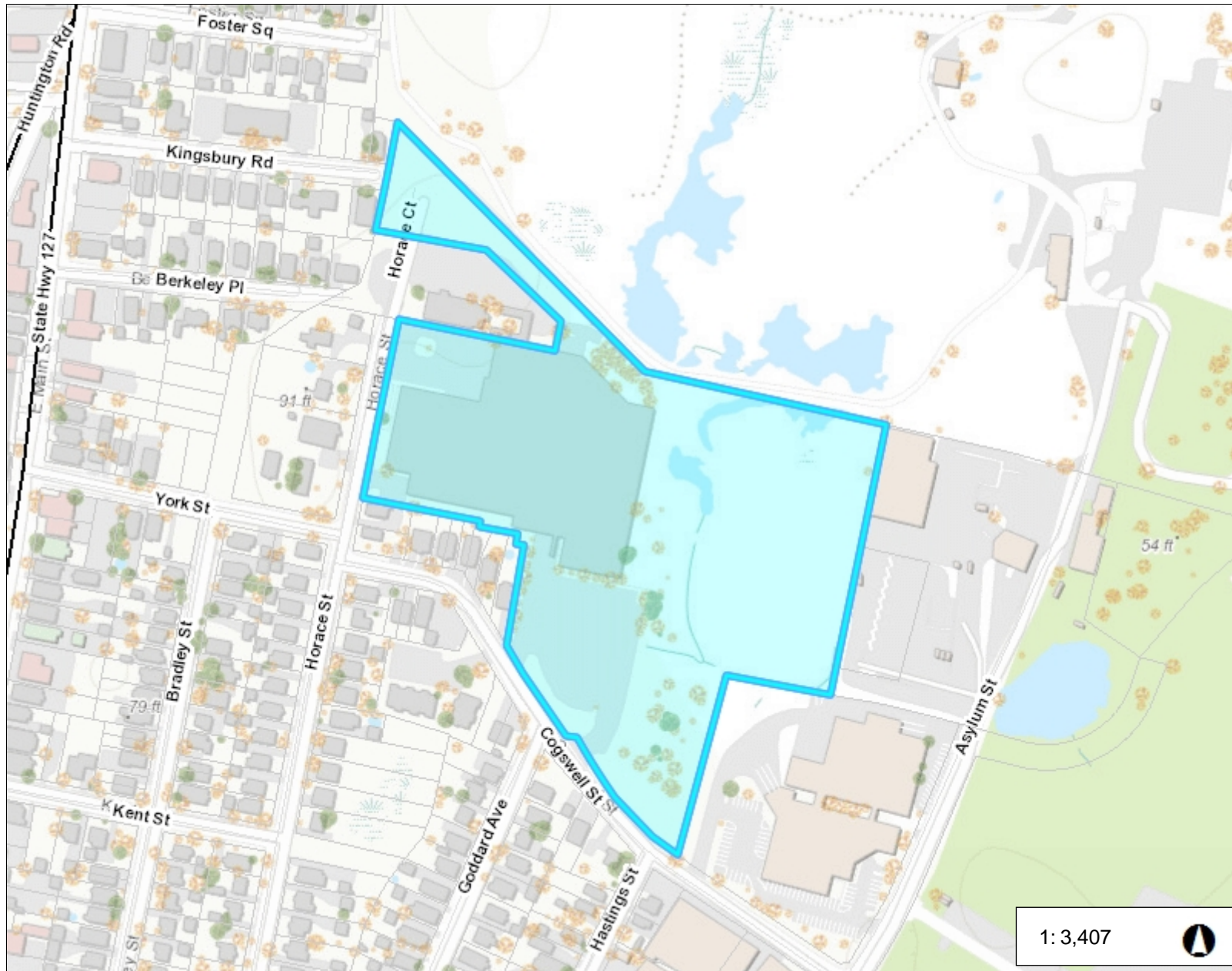
Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Paving Asph			36000.00 SF	\$32,400	1
PAV1	Paving Asph			40000.00 SF	\$36,000	1
LT	Light	2	Double	1.00 UNITS	\$1,770	1
LT	Light	1	Single	7.00 UNITS	\$9,770	1
FN1	Fence, Chain	6	6 ft	962.00 LF	\$4,040	1
FN1	Fence, Chain	7	7 ft	2655.00 LF	\$12,740	1
TWR	Tower			90.00 LF	\$18,000	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$1,718,220	\$1,239,630	\$2,957,850
2017	\$1,718,220	\$1,239,630	\$2,957,850
2016	\$1,716,470	\$1,239,630	\$2,956,100

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$1,202,770	\$867,740	\$2,070,510
2017	\$1,202,770	\$867,740	\$2,070,510
2016	\$1,201,540	\$867,740	\$2,069,280



Legend

- Parcels
- Streetname
- Roadways
 - Local
 - Collector
 - Minor Collector
 - Minor Arterial
 - Major Collector
 - PA Other
 - PA Other Expwy
 - PA Interstate

CTFF868A
380 Horace St Bridgeport CT

567.8 0 283.90 567.8 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Connecticut Metropolitan Council of Governments

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION



Exhibit C

Construction Drawings

SITE NAME: CTFF868A

380 HORACE ST
BRIDGEPORT, CT 06082
FAIRFIELD COUNTY

SITE NUMBER: CTFF868A

RF DESIGN GUIDELINE: 67D5A993M MUAC

T-MOBILE TECHNICIAN SITE SAFETY NOTES	
LOCATION	SPECIAL RESTRICTIONS
SECTOR A: ANTENNAS/TMA/RADIO	ACCESS NOT PERMITTED
SECTOR B: ANTENNAS/TMA/RADIO	ACCESS NOT PERMITTED
SECTOR C: ANTENNAS/TMA/RADIO	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED CAUTION: OSHA-APPROVED PORTABLE 8' STEP-LADDER REQUIRED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

T-MOBILE NORTHEAST LLC

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116



750 WEST CENTER STREET
SUITE #301
WEST BRIDGEWATER, MA 02379



45 BEECHWOOD DRIVE TEL: (978) 557-5553
N. ANDOVER, MA 01845 FAX: (978) 336-5586

GENERAL NOTES

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.



PROJECT SUMMARY

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT MODERNIZATION

ZONING JURISDICTION: BASED ON INFORMATION PROVIDED BY T-MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).

SITE ADDRESS: 380 HORACE ST
BRIDGEPORT, CT 06082

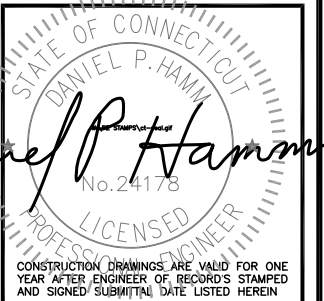
LATITUDE: 41° 12' 15.63" N

LONGITUDE: 73° 10' 35.61" W

JURISDICTION: (CITY OF BRIDGEPORT, CT)

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY



CHECKED BY: RP

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	11/24/20	ISSUED FOR CONSTRUCTION	TR
0	10/28/20	ISSUED FOR REVIEW	TR

APPROVALS

PROJECT MANAGER	DATE
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING / SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE

72 HOURS



CALL
BEFORE YOU DIG



CALL TOLL FREE 1-800-922-4455

OR CALL 811

UNDERGROUND SERVICE ALERT

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
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A-3	EQUIPMENT DETAILS	1
A-4	MOUNTING DETAILS	1
SN-1	SPECIAL INSPECTIONS NOTES	1
E-1	ONE-LINE DIAGRAM AND GROUNDING DETAILS	1

SITE NUMBER:

CTFF868A

SITE NAME:

CTFF868A

SITE ADDRESS:
380 HORACE ST
BRIDGEPORT, CT 06082
FAIRFIELD COUNTY

SHEET TITLE

TITLE SHEET

(ANCHOR 2020)

SHEET NUMBER

T-1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTNING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. 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.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OFF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. 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.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR – CENTERLINE COMMUNICATIONS
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER – T-MOBILE
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR 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 CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR 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.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR 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.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
 ELECTRICAL CODE: 2017 NATIONAL ELECTRIC CODE (NFPA 70)
 LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS					
AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNAS)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

**T-MOBILE
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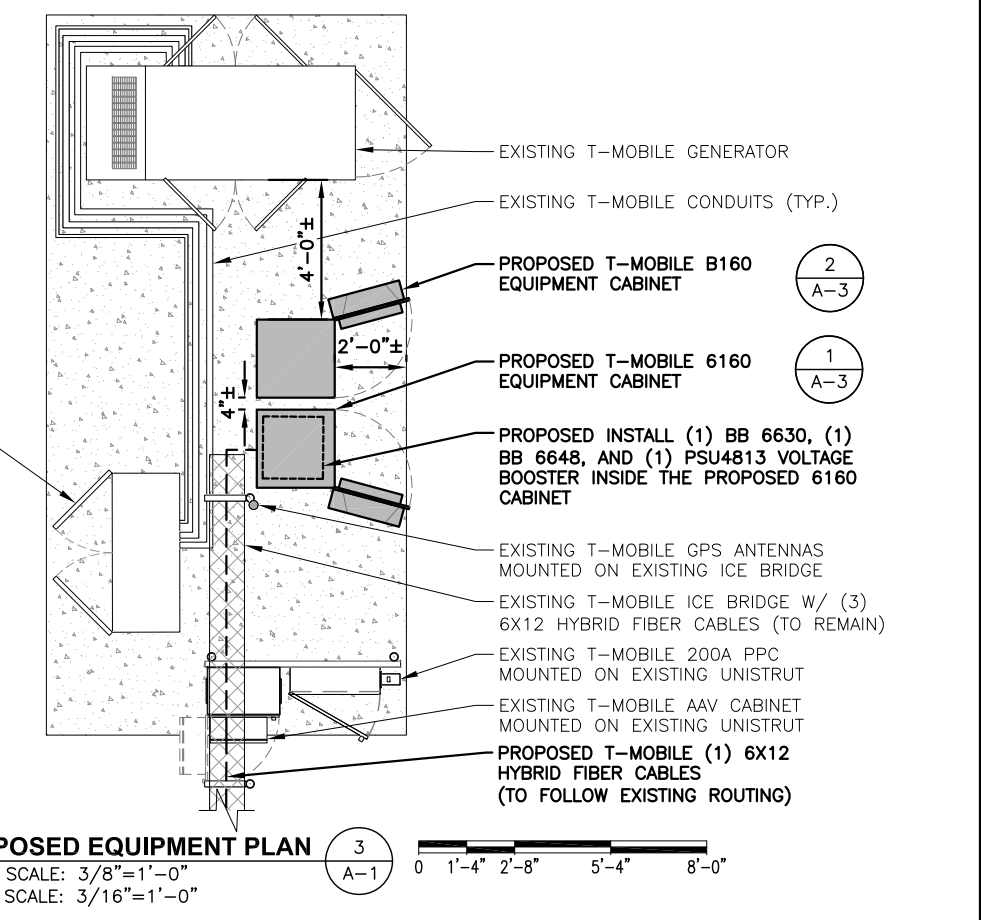
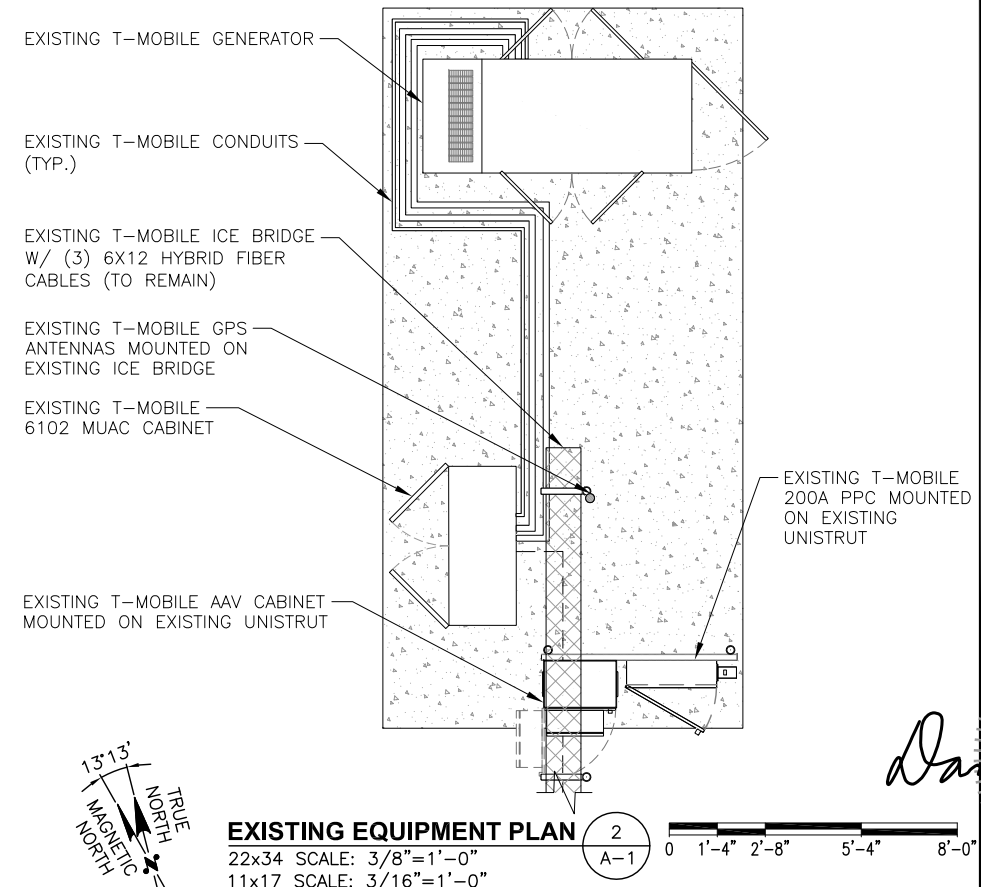
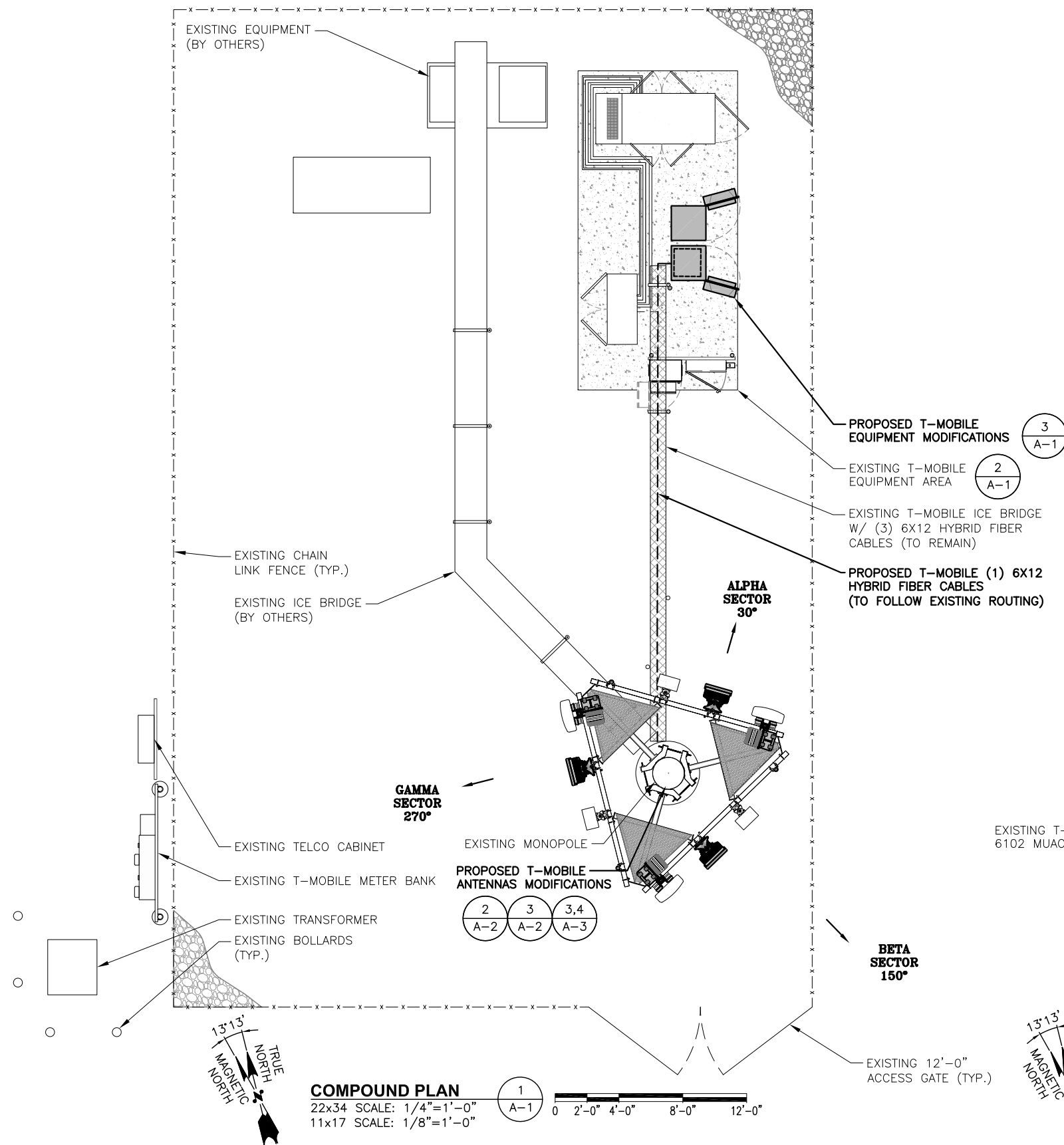
SITE NUMBER:
CTFF868A
SITE NAME:
CTFF868A
SITE ADDRESS:
380 HORACE ST
BRIDGEPORT, CT 06082
FAIRFIELD COUNTY

SHEET TITLE
GENERAL NOTES
(ANCHOR 2020)

SHEET NUMBER
GN-1

STRUCTURAL NOTES:
 PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS COMPLETED BY TARPON TOWERS DATED: NOVEMBER 13, 2020 AND MOUNT STRUCTURAL ANALYSIS COMPLETED BY HDG DATED: NOVEMBER 20, 2020 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

NOTE:
 REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



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STATE OF CONNECTICUT
 DANIEL P. HAMM
 No. 24178
 LICENSED PROFESSIONAL ENGINEER
 CONSTRUCTION DRAWINGS ARE VALID FOR ONE YEAR AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

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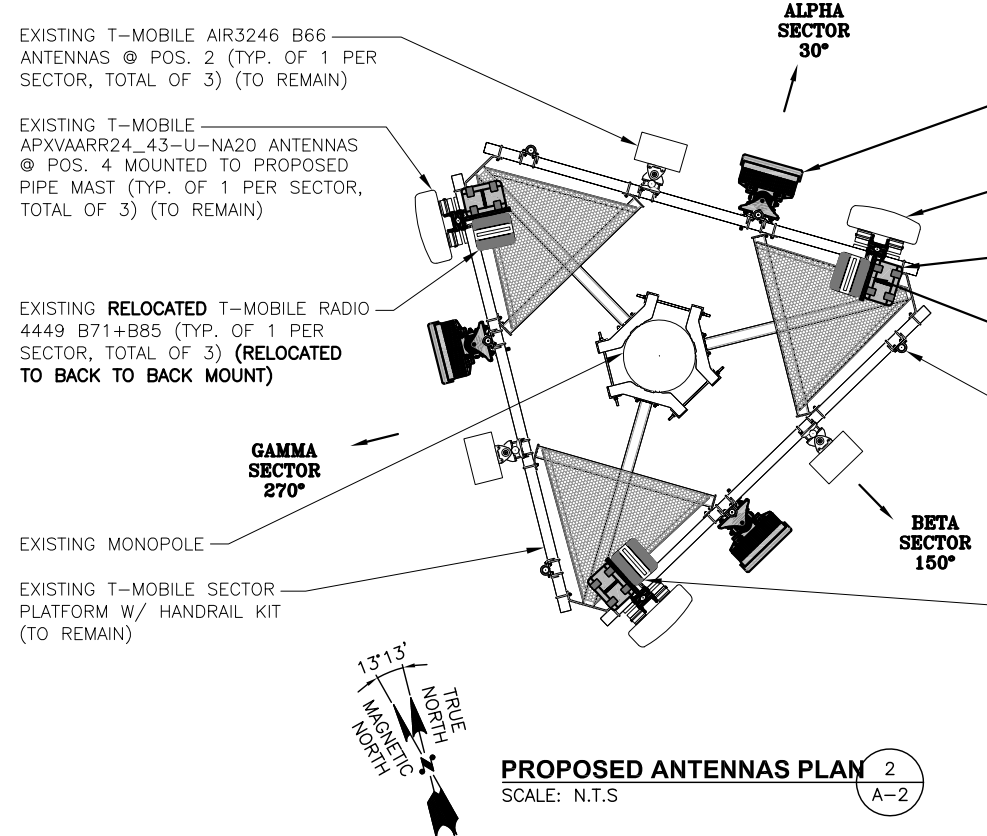
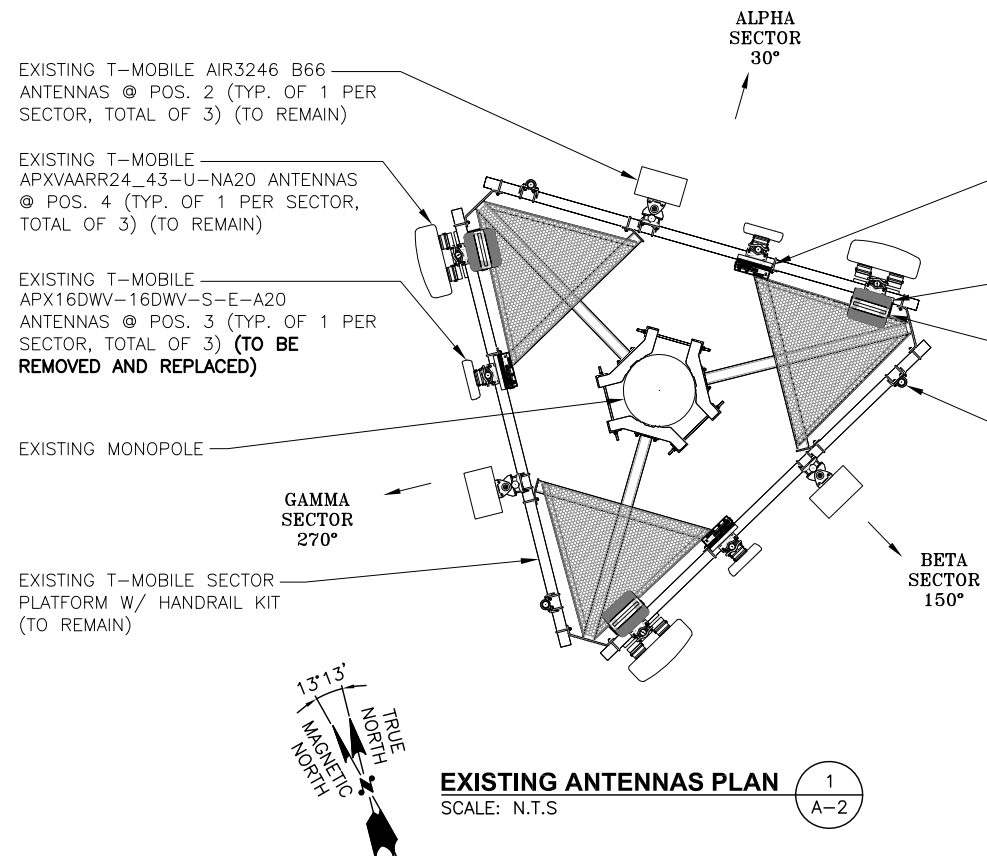
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 BRIDGEPORT, CT 06082
 FAIRFIELD COUNTY

SHEET TITLE
 COMPOUND & EQUIPMENT PLANS
 (ANCHOR 2020)

SHEET NUMBER
 A-1

STRUCTURAL NOTES:
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EXISTING T-MOBILE AIR3246 B66 ANTENNAS @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REMAIN)

EXISTING T-MOBILE APXVAARR24_43-U-NA20 ANTENNAS @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REMAIN)

EXISTING T-MOBILE APX16DWV-16DWV-S-E-A20 ANTENNAS @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE REMOVED AND REPLACED)

EXISTING MONOPOLE

EXISTING T-MOBILE RADIO 4415 B25 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE REMOVED AND REPLACED)

EXISTING T-MOBILE RADIO 4449 B71+B85 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (ABOVE) (TO BE RELOCATED TO BACK TO BACK RADIO MOUNT)

EXISTING T-MOBILE RADIO 2217 B66A (TYP. OF 1 PER SECTOR, TOTAL OF 3) (BELOW) (TO REMAIN)

EXISTING T-MOBILE EMPTY PIPE MAST @ POS. 1 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REMAIN)

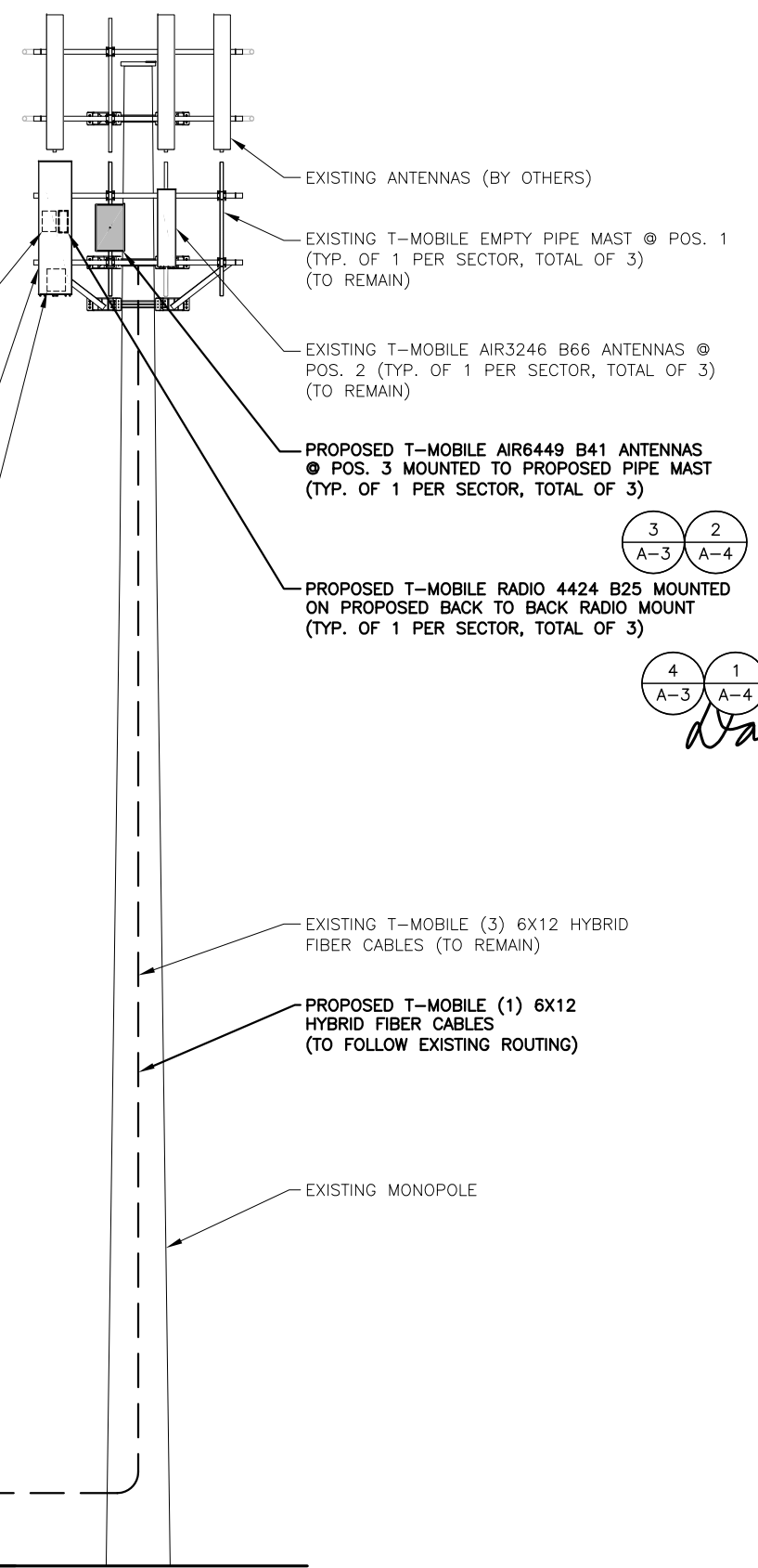
TOP OF EXISTING MONOPOLE
 ELEV. = 89'-0"± A.G.L.

CL OF EXISTING & PROPOSED T-MOBILE ANTENNAS
 ELEV. = 80'-0"± A.G.L.

EXISTING RELOCATED T-MOBILE RADIO 4449 B71+B85 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED TO BACK TO BACK MOUNT)

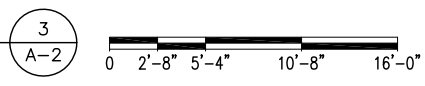
EXISTING T-MOBILE APXVAARR24_43-U-NA20 ANTENNAS @ POS. 4 MOUNTED TO PROPOSED PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REMAIN)

EXISTING T-MOBILE RADIO 2217 B66A (TYP. OF 1 PER SECTOR, TOTAL OF 3) (BELOW) (TO REMAIN)



GROUND LEVEL
 ELEV. = 0'-0"± A.G.L.

TOWER ELEVATION
 22x34 SCALE: 3/16"=1'-0"
 11x17 SCALE: 3/32"=1'-0"



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 DANIEL P. HAMM
 No. 24178
 LICENSED PROFESSIONAL ENGINEER

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 APPROVED BY: DPH

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0	10/28/20	ISSUED FOR REVIEW	TR

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SITE NAME:
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SITE ADDRESS:
 380 HORACE ST
 BRIDGEPORT, CT 06082
 FAIRFIELD COUNTY

SHEET TITLE
 ANTENNAS LAYOUTS & ELEVATION (ANCHOR 2020)

SHEET NUMBER
A-2

STRUCTURAL NOTES:
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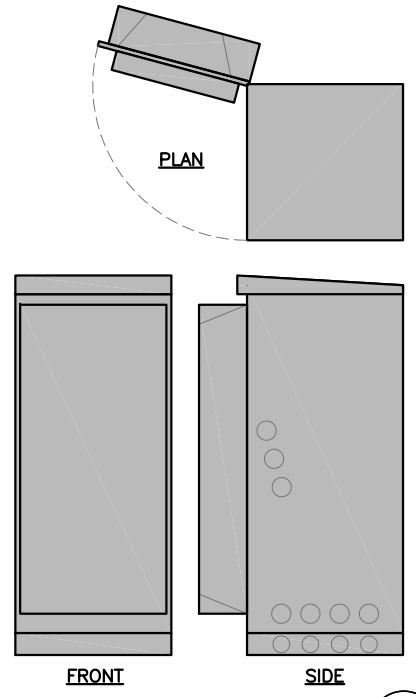
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SHEET TITLE
 EQUIPMENT
 DETAILS
 (ANCHOR 2020)

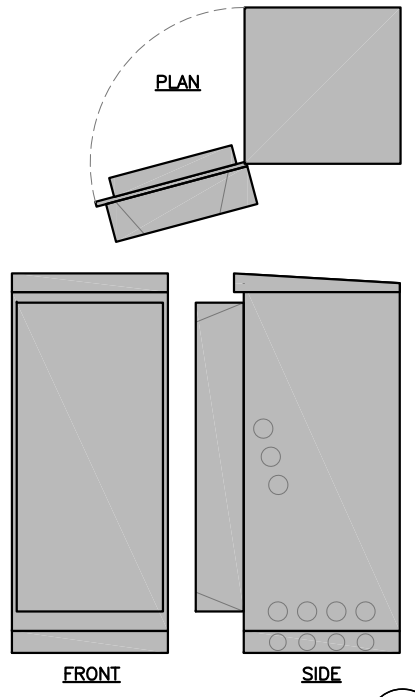
SHEET NUMBER
A-3

CABINET DIMENSIONS	
MODEL #	B160 SITE SUPPORT CABINET
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
BASE DEPTH	26"
DEPTH (W/ DOOR)	34"
WEIGHT	1500 LBS MAX
(INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	



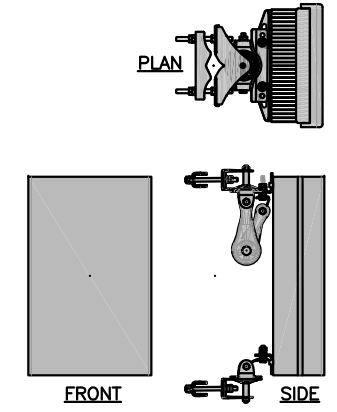
SITE SUPPORT CABINET DETAIL 1
 SCALE: N.T.S. A-3

CABINET DIMENSIONS	
MODEL #	B160 BATTERY CABINET
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
BASE DEPTH	26"
DEPTH (W/ DOOR)	34"
WEIGHT	2000 LBS MAX
(INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	



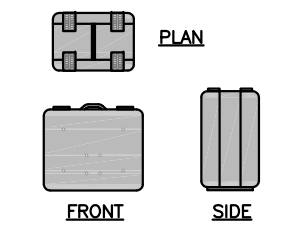
BATTERY CABINET DETAIL 2
 SCALE: N.T.S. A-3

L25+N25 ANTENNA DIMENSIONS	
MODEL #	AIR 6449 B41
MANUF.	ERICSSON
HEIGHT	33.1"
WIDTH	20.5"
DEPTH	8.5"
WEIGHT	103 LBS

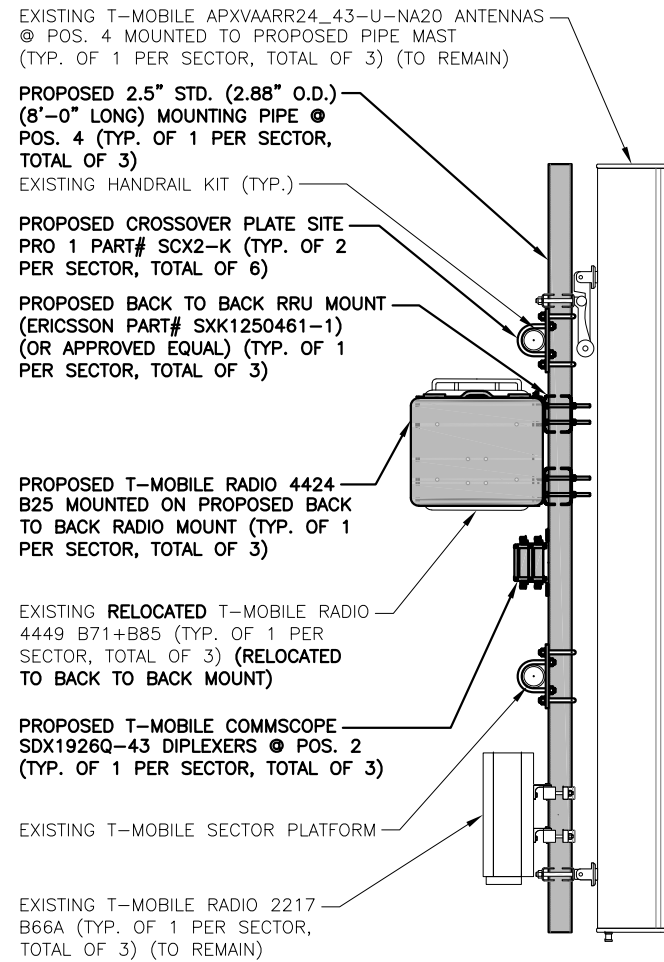


L25+N25 ANTENNA DETAIL 3
 SCALE: N.T.S. A-3

RADIO DIMENSIONS	
MODEL #	RADIO 4424 B25
MANUF.	ERICSSON
HEIGHT	16.5"
WIDTH	13.5"
DEPTH	9.6"
WEIGHT	88 LBS

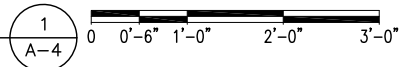


RADIO DETAIL 4
 SCALE: N.T.S. A-3



PROPOSED RADIO & TMAS MOUNTING DETAIL

22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"



1
A-4

PROPOSED 2.5" STD. (2.88" O.D.) (6'-0" LONG) MOUNTING PIPE @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3)

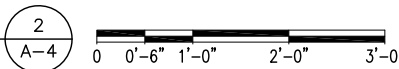
EXISTING HANDRAIL KIT (TYP.)
PROPOSED CROSSOVER PLATE SITE PRO 1 PART# SCX2-K (TYP. OF 2 PER SECTOR, TOTAL OF 6)

CL OF EXISTING & PROPOSED T-MOBILE ANTENNAS
ELEV. = 80'-0"± A.G.L.

EXISTING T-MOBILE SECTOR PLATFORM

PROPOSED L25+N25 ANTENNAS MOUNTING DETAIL

22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"



2
A-4

PROPOSED T-MOBILE AIR6449 B41 ANTENNAS @ POS. 3 MOUNTED TO PROPOSED PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3)

CL OF EXISTING & PROPOSED T-MOBILE ANTENNAS
ELEV. = 80'-0"± A.G.L.

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NOTE:
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T-MOBILE NORTHEAST LLC

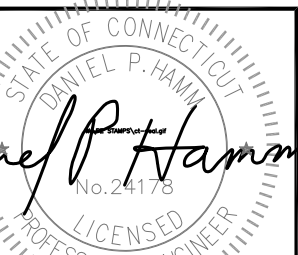
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Daniel P. Hamm

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SITE NAME:

CTFF868A

SITE ADDRESS:
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BRIDGEPORT, CT 06082
FAIRFIELD COUNTY

SHEET TITLE

MOUNTING
DETAILS
(ANCHOR 2020)

SHEET NUMBER

A-4

EXISTING T-MOBILE AIR3246 B66 ANTENNAS @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REMAIN)

PROPOSED T-MOBILE AIR6449 B41 ANTENNAS @ POS. 3 MOUNTED TO PROPOSED PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3)

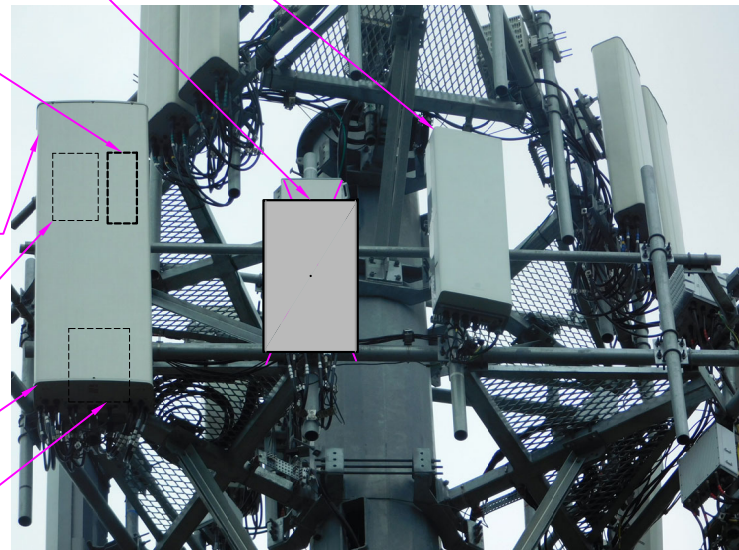
PROPOSED T-MOBILE RADIO 4424 B25 MOUNTED ON PROPOSED BACK TO BACK RADIO MOUNT (TYP. OF 1 PER SECTOR, TOTAL OF 3)

EXISTING T-MOBILE APXVAARR24_43-U-NA20 ANTENNAS @ POS. 4 MOUNTED TO PROPOSED PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REMAIN)

EXISTING RELOCATED T-MOBILE RADIO 4449 B71+B85 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED TO BACK TO BACK MOUNT)

PROPOSED T-MOBILE COMMSCOPE SDX1926Q-43 DIPLEXERS @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3)

EXISTING T-MOBILE RADIO 2217 B66A (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REMAIN)



T-MOBILE ELEVATION PHOTO DETAIL

SCALE: N.T.S.

3
A-4

STRUCTURAL NOTES:

- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-70 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
- ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	ENGINEER OF RECORD APPROVED SHOP DRAWINGS ¹
N/A	MATERIAL SPECIFICATIONS REPORT ²
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS ³
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS ⁴
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION ⁵
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS ⁶
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

- REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
- PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
- PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
- HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
- ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
- AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

- ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"Ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
- VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
- CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
- EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

**T-MOBILE
NORTHEAST LLC**

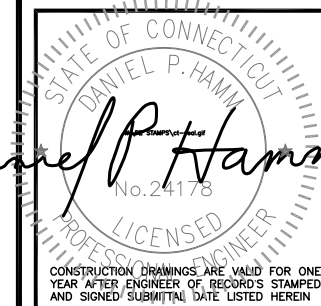
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
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750 WEST CENTER STREET
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WEST BRIDGEWATER, MA 02379



45 BEECHWOOD DRIVE TEL: (978) 557-5553
N. ANDOVER, MA 01845 FAX: (978) 336-5586



CHECKED BY: RP

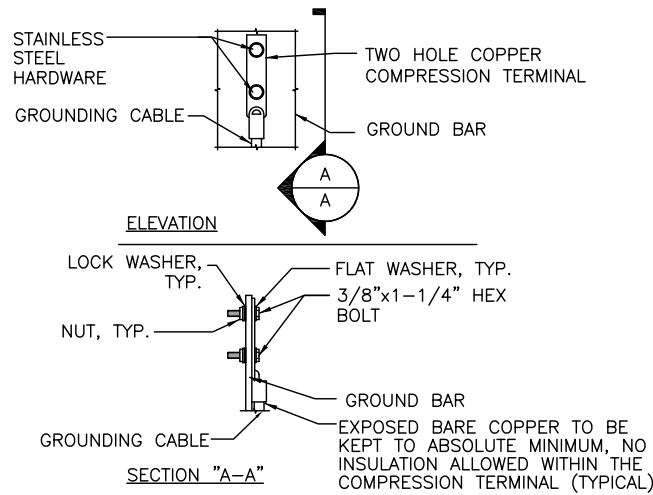
APPROVED BY: DPH

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
1	11/24/20	ISSUED FOR CONSTRUCTION	TR
0	10/28/20	ISSUED FOR REVIEW	TR

SITE NUMBER:
CTFF868A
SITE NAME:
CTFF868A
SITE ADDRESS:
380 HORACE ST
BRIDGEPORT, CT 06082
FAIRFIELD COUNTY

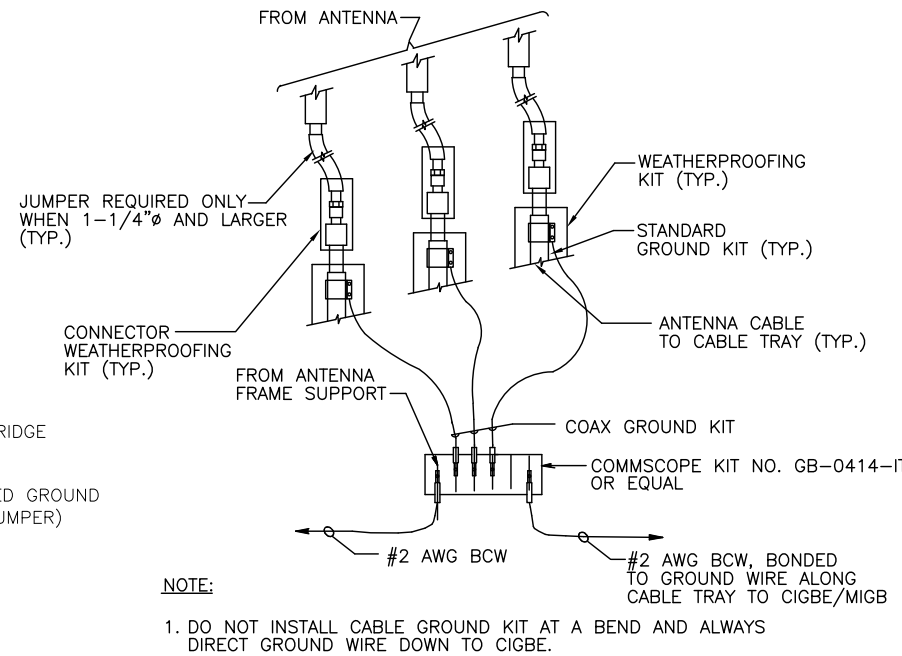
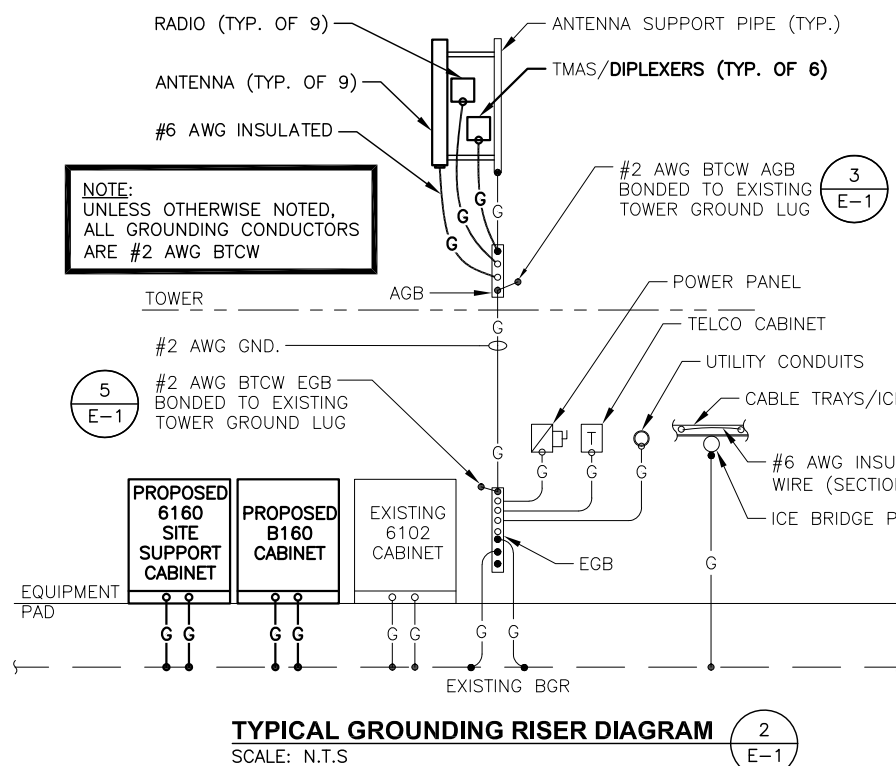
SHEET TITLE
SPECIAL
INSPECTIONS
NOTES
(ANCHOR 2020)

SHEET NUMBER
SN-1

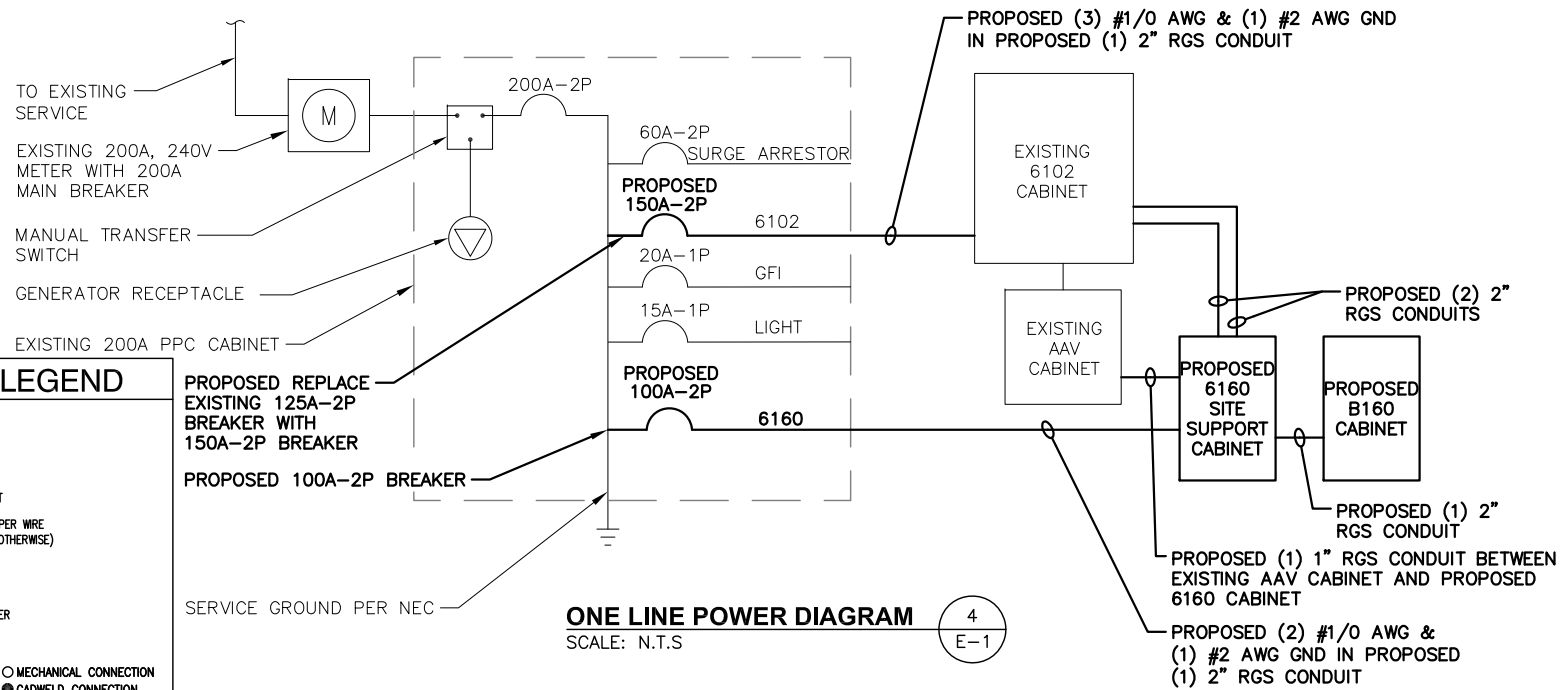


- NOTES:
- "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 - OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
 - CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

NOTE:
G.C. TO VERIFY THAT THE EXISTING CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSED LOADING AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.



- NOTE:**
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.



ELECTRICAL LEGEND

A	AMPERE	○	MECHANICAL CONNECTION
V	VOLT	●	CADWELD CONNECTION
KWH	KILOWATT - HOUR	○	EQUIPMENT GROUND BAR/ANTENNA GROUND BAR
C	CONDUIT	—	GROUND COPPER WIRE, SIZE AS NOTED
GRC	GALVANIZED RIGID CONDUIT	—	EXPOSED WIRING
BTCW	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)	—	INSULATED GROUNDING CONDUCTOR (#6 AWG STRANDED, UNLESS NOTED OTHERWISE)
GND	GROUND	○	5/8"Ø COPPER CLAD STAINLESS STEEL GROUND ROD
⊕	GROUND	●	EXOTHERMIC (CAD WELD) OR MECHANICAL (COMPRESSION TYPE) CONNECTION
GFI	GROUND FAULT INTERRUPTER	—	NEC
H.P	HORSE POWER	—	PHASE
MGB	MASTER GROUND BAR	—	PPC
		—	POWER PROTECTION CABINET
		—	P
		—	POLE
		—	PVC
		—	POLYVINYL CHLORIDE
		—	UL
		—	UNDERWRITER LABORATORIES
		—	⊗
		—	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

- ELECTRICAL & GROUNDING NOTES**
- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
 - ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
 - THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
 - GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
 - ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
 - RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
 - ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
 - RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
 - RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
 - ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
 - GROUNDING SHALL COMPLY WITH NEC ART. 250.
 - GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
 - USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
 - ALL GROUND CONNECTIONS TO BE BURNDY HYGROND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
 - ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
 - CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
 - CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
 - APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
 - BOND ANTENNAS MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNAS LOCATION.
 - BOND ANTENNAS EGB'S AND MGB TO WATER MAIN.
 - TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
 - BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
 - VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

T-MOBILE NORTHEAST LLC
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Daniel P. Hamm
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER
CONSTRUCTION DRAWINGS ARE VALID FOR ONE YEAR AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: RP

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	11/24/20	ISSUED FOR CONSTRUCTION	TR
0	10/28/20	ISSUED FOR REVIEW	TR

SITE NUMBER:
CTFF868A
SITE NAME:
CTFF868A
SITE ADDRESS:
380 HORACE ST
BRIDGEPORT, CT 06082
FAIRFIELD COUNTY

SHEET TITLE
ONE-LINE DIAGRAM & GROUNDING DETAILS (ANCHOR 2020)

SHEET NUMBER
E-1

Exhibit D

Structural Analysis Report

Structural Analysis 90-ft Monopole

Prepared For:
Tarpon Towers
8916 77th Terrace East Ste. 103
Bradenton, FL 34202

MFP Project #40920-028 r1

Site Location:
CT1221 Bridgeport
Fairfield Co., CT
Lat/Long: 41°12'14", -73°10'32"

Analysis Type:
ANSI/TIA-222-G
Structure Rating - 31.3% Passing

November 13, 2020



Michael F. Plahovinsak, P.E.
18301 State Route 161 W, Plain City, OH 43064
614-398-6250 - mike@mfpeng.com

Project Summary:

I have completed a structural analysis of the existing monopole for the following new configuration:

- 80' – T-Mobile:
 - (3) Ericsson AIR3246-B66 + (3) AIR6449-B41 Antennas
 - (3) RFS APXVARR24-43-U-NA20 Antennas
 - (3) Commscope SDX1926Q-43 Diplexer
 - (3) Ericsson 4449-B71-B85 + (3) 4424-B25 + (3) 2217-B66 RRU
 - (4) 1 ¼" Cable
 - 12' Platform

The pole has been analyzed in accordance with the requirements of the International Building Code per IBC section 3108, and the recommendations of the Telecommunications Industry Association “*Structural Standard for Steel Antenna Supporting Structures*” **ANSI/TIA-222-G**.

This analysis may be considered a “Rigorous Structural Analysis” as defined in ANSI/TIA-222-G 15.5.2.

As indicated in the conclusions of this analysis, I have determined that the existing pole and foundation have *sufficient capacity* to support the existing, reserved and proposed antenna loads as detailed herein. Based on the results of my analysis, structural modifications are not required at this time.

Source of Data:

Resource	Source	Job Number	Date
Pole and Foundation Drawings	Engineered Endeavors	18308-P01-T1	05/08/18
Geotechnical Report	Welti Geotechnical	-	04/09/18

Michael F. Plahovinsak, P.E. - Since 2011

mike@mfpeng.com

Analysis Criteria:

2015 International Building Code
Structural Standards for Steel Antenna Supporting Structures **ANSI/TIA-222-G**

- TIA-222-G Wind Speed 100 mph (V_{asd} / 3-Second Gust)
- Equivalent ASCE-7-10 Wind 129 mph (V_{ult})
- TIA-222-G Wind w/ 3/4" Ice 50 mph (3-Sec Gust)
- Operational Wind Speed 60 mph (3-Sec Gust)

Structure Class	Exposure Category	Topographic Category
II (I = 1.0)	C	I

Appurtenance Listing:

Status	Elev.	Antenna / Mounting	Coax	Owner
Existing	88'	(6) Commscope JAHH-65B-R3B Antennas (4) HBXX-6517DS-A2M Antennas (2) Samsung NR-AU(AT1KO1 Antennas at 85.6' (3) Samsung B5/B13 + (3) B2/66 RRU's (3) Commscope CB78T-43-2X Diplexers (1) Raycap RXDC-6627-PF-48 12' Platform	(2) 12 x 24	Verizon
Proposed	80'	(3) Ericsson AIR3246 B66 + (3) AIR6449-B41 Antennas (3) RFS APXVAARR24_43-UNA20 Antennas (3) Commscope SDX1926Q43 (3) Ericsson 4449 B71-B85 + (3) 4424-B25 + (3) 2217-B66 12' Platform	(4) 1 1/4"	T-Mobile

All antenna lines assumed internally mounted, not exposed to the wind.

Michael F. Plahovinsak, P.E. - Since 2011

mike@mfpeng.com

Foundation Analysis:

The existing monopole foundation design was analyzed in conjunction with site specific geotechnical report. The existing foundation has sufficient capacity to support the pole with the proposed antenna configuration.

Conclusion:

I have completed a structural analysis of the existing monopole and foundation in accordance with the project specifics outlined above. My analysis indicates that the existing monopole and foundation are structurally adequate when considering the existing plus proposed loading. Please refer to the attached calculations for an itemized listing of all member stress ratios. The existing pole is safe and adequate to support the proposed loads, and no structural reinforcing is required to support the above loading.

Recommendations:

As a part of routine maintenance, I recommend periodic inspection of the pole and foundation structure for signs of fatigue or corrosion.

If you have any questions about the contents of this structural report or require any additional information, please feel free to contact my office.

Sincerely,

Michael F. Plahovinsak, P.E.



mike@mpeng.com - 614.398-6250

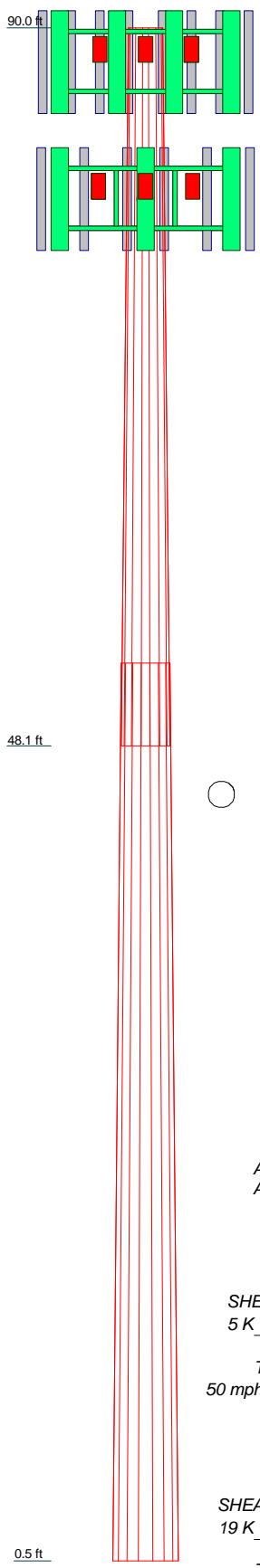
**Standard Conditions for Providing Structural Consulting
Services on Existing Structures**

1. The following standard conditions are a general overview of key issues regarding the work product supplied.
2. If the existing conditions are not as represented in this structural report or attached sketches, I should be contacted to evaluate the significance of the deviation and revise the structural assessment accordingly.
3. The structural analysis has been performed assuming that the structure is in "like new" condition. No allowance was made for excessive corrosion, damaged or missing structural members, loose bolts, etc. If there are any known deficiencies in the structure that potentially compromise structural integrity, I should be made aware of the deficiencies. If I am aware of a deficiency that exists in a structure at the time of my analysis, a general explanation of the structural concern due to the deficiency will be included in the structural report, but the deficiency will not be reflected in capacity calculations.
4. The structural analysis provided is an assessment of the primary load carrying capacity of the structure. I provide a limited scope of service in that I have not verified the capacity of every weld, plate, connection detail, etc. In most cases, structural fabrication details are unknown at the time of my analysis, and the detailed field measurement of this information is beyond the scope of my services. In instances where I have not performed connection capacity calculations, it is assumed that existing manufactured connections develop the full capacity of the primary members being connected.
5. The structural integrity of the existing foundation system can only be verified if exact foundation sizes and soils conditions are known. I will not accept any responsibility for the adequacy of the existing foundations unless this site-specific data is supplied.
6. Miscellaneous items such as antenna mounts, coax supports, etc. have not been designed, detailed, or specified as part of my work. It is assumed that material of adequate size and strength will be purchased from a reputable component manufacturer. The attached report and sketches are schematic in nature and should not be used to fabricate or purchase hardware and accessories to be attached to the structure. I recommend field measurement of the structure before fabricating or purchasing new hardware and accessories. I am not responsible for proper fit and clearance of hardware and accessory items in the field.
7. The structural analysis has been performed considering minimum code requirements or recommendations. If alternate wind, ice, or deflection criteria are to be considered, then I shall be made aware of the alternate criteria.

Michael F. Plahovinsak, P.E. - Since 2011

mike@mfpeng.com

Section	1	2
Length (ft)	41.94	52.43
Number of Sides	18	18
Thickness (in)	0.3125	0.4375
Socket Length (ft)	4.87	
Top Dia (in)	24.9600	33.1738
Bot Dia (in)	34.9600	45.5000
Grade	A572-65	A572-65
Weight (K)	4.2	9.6



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) Commscope JAHH-65B-R3B-V3 (Verizon)	88	Raycap RCMD-6627-PF-48 (Verizon)	88
(2) Commscope HBXX-6517DS-A2M (Verizon)	88	12' Platform w/ Handrail (Verizon)	88
(2) Commscope JAHH-65B-R3B-V3 (Verizon)	88	Samsung NR-AU (AT1KO1 (Verizon)	85.5
Commscope HBXX-6517DS-A2M (Verizon)	88	Samsung NR-AU (AT1KO1 (Verizon)	85.5
(2) Commscope JAHH-65B-R3B-V3 (Verizon)	88	(3) Ericsson AIR 3246 B66 (T-Mobile)	80
Commscope HBXX-6517DS-A2M (Verizon)	88	(3) Ericsson AIR6449-B41 w/ mount pipe (T-Mobile)	80
(2) Commscope JAHH-65B-R3B-V3 (Verizon)	88	(3) RFS - APXVAARR24_43-U-NA20 (T-Mobile)	80
Commscope HBXX-6517DS-A2M (Verizon)	88	(3) Ericsson Radio 4449 B71+B85 (T-Mobile)	80
(3) Samsung BR04C B5/B13 RRH (Verizon)	88	(3) Commscope SDX1926Q-43 Diplexer (T-Mobile)	80
(3) Samsung BR049 B2/B66A RRH (Verizon)	88	(3) Ericsson Radio 4424-B25 (T-Mobile)	80
(3) Commscope CBC78T-DS-43-2X (Verizon)	88	(3) Ericsson Radio 2217-B66A (T-Mobile)	80
		12' Platform w/ Handrail (T-Mobile)	80
		Andrew VHL P1-23 (T-Mobile)	80

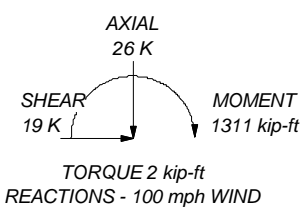
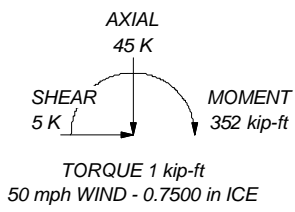
MATERIAL STRENGTH

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 C to the TIA-222-G Standard.
3. Tower designed for a 100 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. ANSI/TIA-222-G wind speeds are Vasd winds. Refer to IBC Table 1609.3.1 for Vult wind speed conversions.
9. TOWER RATING: 31.3%

ALL REACTIONS ARE FACTORED



Michael Plahovinsak, P.E.		
18301 State Route 161 Plain City, OH 43064 Phone: 614-398-6250 FAX: mike@mfpeng.com		
Job: 90-ft Monopole - MFP #40920-028 r1	Project: CT1221 Bridgeport	
Client: Tarpon Towers	Drawn by: JC	App'd:
Code: TIA-222-G	Date: 11/13/20	Scale: NTS
Path:	Dwg No. E-1	

tnxTower Michael Plahovinsak, P.E. 18301 State Route 161 Plain City, OH 43064 Phone: 614-398-6250 FAX: mike@mfpeng.com	Job	90-ft Monopole - MFP #40920-028 r1	Page	2 of 7
	Project	CT1221 Bridgeport	Date	13:33:40 11/13/20
	Client	Tarpon Towers	Designed by	Mike

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 90.00-48.06				1	1	1			
L2 48.06-0.50				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} ft ² /ft	Weight plf
1 5/8" (Verizon)	C	No	Yes	Inside Pole	90.00 - 0.50	2	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
6x12 HCS (T-Mobile)	C	No	Yes	Inside Pole	80.00 - 0.50	4	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
1/2" (T-Mobile)	C	No	Yes	Inside Pole	80.00 - 0.50	37	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	90.00-48.06	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.37
L2	48.06-0.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.53

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} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	90.00-48.06	A	1.613	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.37
L2	48.06-0.50	A	1.454	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.53

tnxTower Michael Plahovinsak, P.E. 18301 State Route 161 Plain City, OH 43064 Phone: 614-398-6250 FAX: mike@mfpeng.com	Job	90-ft Monopole - MFP #40920-028 r1	Page	3 of 7
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	Client	Tarpon Towers	Designed by	Mike

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz Lateral ft	Vert ft						°
(2) Commscope JAHH-65B-R3B-V3 (Verizon)	A	From Face	3.00 0.00	0.00	0.0000	88.00	No Ice 1/2" Ice	9.11 9.58	7.41 8.37	0.09 0.16
(2) Commscope HBXX-6517DS-A2M (Verizon)	A	From Face	3.00 0.00	0.00	0.0000	88.00	No Ice 1/2" Ice	8.72 9.27	6.91 8.11	0.07 0.14
(2) Commscope JAHH-65B-R3B-V3 (Verizon)	B	From Face	3.00 0.00	0.00	0.0000	88.00	No Ice 1/2" Ice	9.11 9.58	7.41 8.37	0.09 0.16
Commscope HBXX-6517DS-A2M (Verizon)	B	From Face	3.00 0.00	0.00	0.0000	88.00	No Ice 1/2" Ice	8.72 9.27	6.91 8.11	0.07 0.14
Samsung NR-AU (AT1KO1) (Verizon)	B	From Face	3.00 0.00	0.00	0.0000	85.50	No Ice 1/2" Ice	1.56 1.75	1.41 1.68	0.04 0.06
(2) Commscope JAHH-65B-R3B-V3 (Verizon)	C	From Face	3.00 0.00	0.00	0.0000	88.00	No Ice 1/2" Ice	9.11 9.58	7.41 8.37	0.09 0.16
Commscope HBXX-6517DS-A2M (Verizon)	C	From Face	3.00 0.00	0.00	0.0000	88.00	No Ice 1/2" Ice	8.72 9.27	6.91 8.11	0.07 0.14
Samsung NR-AU (AT1KO1) (Verizon)	C	From Face	3.00 0.00	0.00	0.0000	85.50	No Ice 1/2" Ice	1.56 1.75	1.41 1.68	0.04 0.06
(3) Samsung BR04C B5/B13 RRH (Verizon)	A	From Face	2.00 0.00	0.00	0.0000	88.00	No Ice 1/2" Ice	1.88 2.05	1.01 1.14	0.07 0.09
(3) Samsung BR049 B2/B66A RRH (Verizon)	B	From Face	2.00 0.00	0.00	0.0000	88.00	No Ice 1/2" Ice	1.88 2.05	1.25 1.39	0.08 0.10
(3) Commscope CBC78T-DS-43-2X (Verizon)	C	From Face	2.00 0.00	0.00	0.0000	88.00	No Ice 1/2" Ice	0.37 0.45	0.51 0.60	0.02 0.03
Raycap RCMDC-6627-PF-48 (Verizon)	B	From Face	2.00 0.00	0.00	0.0000	88.00	No Ice 1/2" Ice	4.06 4.32	3.10 3.34	0.03 0.07
12' Platform w/ Handrail (Verizon)	C	None			0.0000	88.00	No Ice 1/2" Ice 1" Ice	30.00 35.00 40.00	30.00 35.00 40.00	1.80 2.60 3.40
**										
(3) Ericsson AIR 3246 B66 (T-Mobile)	A	From Face	3.00 0.00	0.00	0.0000	80.00	No Ice 1/2" Ice	8.04 8.45	6.41 7.09	0.24 0.31
(3) Ericsson AIR6449-B41 w/ mount pipe (T-Mobile)	B	From Face	3.00 0.00	0.00	0.0000	80.00	No Ice 1/2" Ice	6.05 6.43	3.27 3.74	0.13 0.18
(3) RFS - APXVAARR24_43-U-NA20 (T-Mobile)	C	From Face	3.00 0.00	0.00	0.0000	80.00	No Ice 1/2" Ice	20.24 20.89	10.79 12.21	0.16 0.29
(3) Commscope SDX1926Q-43 Diplexer (T-Mobile)	A	From Face	2.00 0.00	0.00	0.0000	80.00	No Ice 1/2" Ice	0.24 0.30	0.10 0.14	0.00 0.01
(3) Ericsson Radio 4449 B71+B85	B	From Face	2.00 0.00	0.00	0.0000	80.00	No Ice 1/2" Ice	1.63 1.78	0.64 0.75	0.06 0.07

tnxTower Michael Plahovinsak, P.E. 18301 State Route 161 Plain City, OH 43064 Phone: 614-398-6250 FAX: mike@mfpeng.com	Job	90-ft Monopole - MFP #40920-028 r1	Page	4 of 7
	Project	CT1221 Bridgeport	Date	13:33:40 11/13/20
	Client	Tarpon Towers	Designed by	Mike

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft ²	ft ²	K
(T-Mobile)			0.00			1" Ice	1.95	0.86	0.09
(3) Ericsson 4424-B25	C	From Face	2.00		0.0000	No Ice	1.86	1.32	0.09
(T-Mobile)			0.00			1/2" Ice	2.03	1.47	0.11
			0.00			1" Ice	2.20	1.62	0.13
(3) Ericsson Radio	A	From Face	2.00		0.0000	No Ice	1.30	0.45	0.06
2217-B66A			0.00			1/2" Ice	1.44	0.54	0.07
(T-Mobile)			0.00			1" Ice	1.59	0.64	0.08
12' Platform w/ Handrail	C	None			0.0000	No Ice	30.00	30.00	1.80
(T-Mobile)						1/2" Ice	35.00	35.00	2.60
						1" Ice	40.00	40.00	3.40

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				Horz	Lateral						
				ft	ft	°	°	ft	ft	ft ²	K
Andrew VHLP1-23	C	Paraboloid	From	1.00		0.0000		80.00	1.00	No Ice	0.79
(T-Mobile)		w/Radome	Face	0.00						1/2" Ice	0.92
				0.00						1" Ice	1.06

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 90 deg - No Ice
5	0.9 Dead+1.6 Wind 90 deg - No Ice
6	1.2 Dead+1.6 Wind 180 deg - No Ice
7	0.9 Dead+1.6 Wind 180 deg - No Ice
8	1.2 Dead+1.0 Ice+1.0 Temp
9	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
10	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
11	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
12	Dead+Wind 0 deg - Service
13	Dead+Wind 90 deg - Service
14	Dead+Wind 180 deg - Service

Maximum Member Forces

tnxTower Michael Plahovinsak, P.E. 18301 State Route 161 Plain City, OH 43064 Phone: 614-398-6250 FAX: mike@mfpeng.com	Job	90-ft Monopole - MFP #40920-028 r1	Page	5 of 7
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	Client	Tarpon Towers	Designed by	Mike

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	90 - 48.06	Pole	Max. Tension	9	0.00	-0.00	-0.00
			Max. Compression	8	-27.94	2.43	-1.83
			Max. Mx	4	-13.25	-399.78	1.67
			Max. My	2	-13.22	0.62	419.74
			Max. Vy	4	14.09	-399.78	1.67
			Max. Vx	2	-14.79	0.62	419.74
			Max. Torque	5			-2.48
L2	48.06 - 0.5	Pole	Max. Tension	1	0.00	0.00	0.00
			Max. Compression	8	-45.06	2.42	-1.82
			Max. Mx	4	-26.43	-1254.59	3.85
			Max. My	2	-26.43	-1.25	1311.45
			Max. Vy	4	18.43	-1254.59	3.85
			Max. Vx	2	-19.12	-1.25	1311.45
			Max. Torque	5			-2.48

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	90 - 48.06	3.645	12	0.3314	0.0021
L2	52.93 - 0.5	1.333	12	0.2291	0.0009

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
88.00	(2) Commscope JAHH-65B-R3B-V3	12	3.505	0.3265	0.0021	71790
85.50	Samsung NR-AU (AT1KO1	12	3.331	0.3205	0.0020	71790
80.00	Andrew VHLP1-23	12	2.950	0.3069	0.0018	35895

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	90 - 48.06	18.090	2	1.6402	0.0106
L2	52.93 - 0.5	6.621	2	1.1379	0.0046

Critical Deflections and Radius of Curvature - Design Wind

tnxTower Michael Plahovinsak, P.E. 18301 State Route 161 Plain City, OH 43064 Phone: 614-398-6250 FAX: mike@mfpeng.com	Job	90-ft Monopole - MFP #40920-028 r1	Page	6 of 7
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	Client	Tarpon Towers	Designed by	Mike

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
88.00	(2) Commscope JAHH-65B-R3B-V3	2	17.395	1.6164	0.0103	14514
85.50	Samsung NR-AU (AT1KO1)	2	16.530	1.5867	0.0098	14514
80.00	Andrew VHLPI-23	2	14.644	1.5203	0.0089	7257

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	90 - 48.06 (1)	TP34.96x24.96x0.3125	41.94	0.00	0.0	33.2142	-13.22	2423.75	0.005
L2	48.06 - 0.5 (2)	TP45.5x33.1738x0.4375	52.43	0.00	0.0	62.5749	-26.43	4614.75	0.006

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	90 - 48.06 (1)	TP34.96x24.96x0.3125	419.75	1666.53	0.252	0.00	1666.53	0.000
L2	48.06 - 0.5 (2)	TP45.5x33.1738x0.4375	1311.45	4268.35	0.307	0.00	4268.35	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	90 - 48.06 (1)	TP34.96x24.96x0.3125	14.79	1199.58	0.012	1.72	3341.84	0.001
L2	48.06 - 0.5 (2)	TP45.5x33.1738x0.4375	19.12	2307.38	0.008	1.72	8559.67	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	Ratio $\frac{M_{uy}}{\phi M_{uy}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	90 - 48.06 (1)	0.005	0.252	0.000	0.012	0.001	0.257	1.000	4.8.2 ✓
L2	48.06 - 0.5 (2)	0.006	0.307	0.000	0.008	0.000	0.313	1.000	4.8.2 ✓

tnxTower Michael Plahovinsak, P.E. 18301 State Route 161 Plain City, OH 43064 Phone: 614-398-6250 FAX: mike@mfpeng.com	Job	90-ft Monopole - MFP #40920-028 r1	Page	7 of 7
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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
							✓		

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	90 - 48.06	Pole	TP34.96x24.96x0.3125	1	-13.22	2423.75	25.7	Pass
L2	48.06 - 0.5	Pole	TP45.5x33.1738x0.4375	2	-26.43	4614.75	31.3	Pass
Summary								
Pole (L2)							31.3	Pass
RATING =							31.3	Pass

Michael F. Plahovinsak, P.E. 18301 State Route 161 W Plain City, OH 43064 Phone: 614-398-6250 email: mike@mfpeng.com	Job 90-ft monopole - MFP #40920-028	Page BP & AB Calc
	Project CT1221 Bridgeport	Date 11/13/2020
	Client TARPON TOWERS	Designed by Mike

Anchor Rod and Base Plate Calculation

ANSI/TIA-222-G

<i>Factored Base Reactions:</i>	<i>Pole Shape:</i>	<i>Anchor Rods:</i>	<i>Base Plate:</i>
Moment: 1311 ft-kips	18-Sided	(18) 2.25 in. A615 GR. 75	2.75 in. x 58.75 in. Rour
Shear: 19 kips	<i>Pole Dia. (D_f):</i>	Anchor Rods Evenly Spaced	fy = 50 ksi
Axial: 26 kips	45.50 in	On a 52.75 in Bolt Circle	

Anchor Rod Calculation According to TIA-222-G section 4.9.9

- $\phi_t, \phi_v = 0.80$ TIA 4.9.9
- $I_{bolts} = 6260.77 \text{ in}^2$ Momet of Inertia
- $P_u = 68 \text{ kips}$ Compr Force
- $V_u = 1.1 \text{ kips}$ Shear Force
- $R_{nt} = 325.00 \text{ kips}$ Nominal Tensile Strength
- $n = 0.50$ for detail type (d)
- Stress Rating = 26.9%** Satisfies TIA-G 4.9.9

Base Plate Calculation According to TIA-222-G

- $\phi = 0.90$ TIA 4.7
 - $M_{PL} = 150.2 \text{ in-kip}$ Plate Moment
 - $L = 7.9 \text{ in}$ Section Length
 - $Z = 15.0$ Plastic Section Modulus
 - $M_P = 750.7 \text{ in-kip}$ Plastic Moment
 - $\phi M_n = 675.6 \text{ in-kip}$ Factored Resistance
- Calculated Moment vs Factored Resistance*
- $150.19 \text{ in-kip} \leq 676 \text{ in-kip}$
- Stress Rating = 22.2%**

Anchor Rods Are Adequate	26.9% <input checked="" type="checkbox"/>
Base Plate is Adequate	22.2% <input checked="" type="checkbox"/>

Exhibit E

Mount Analysis Report

November 20, 2020



Centerline Communications
750 West Center Street, Suite #301
West Bridgewater, MA 02379

RE: Site Number: CTFF868A (ANCHOR)
 Site Name: CTFF868A
 Site Address: 380 Horace Street
 Bridgeport, CT 06082

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Centerline Communications to perform a mount analysis on the existing T-Mobile antenna/RRH mounts to determine their capability of supporting the following additional loading:

- (3) APXVAARR24_43-U-NA20 Antennas (95.9"x24.0"x8.7" – Wt. = 128 lbs. /each)
- (3) AIR3246 B66A Antennas (58.1"x15.8"x9.4" – Wt. = 179 lbs. /each)
- (3) 4449 B71+B85 RRH's (17.9"x13.2"x9.4" – Wt. = 74 lbs. /each)
- (3) 2217 B66A RRH's (13.8"x11.8"x5.0" – Wt. = 30 lbs. /each)
- **(3) AIR6449 B41 Antennas (33.1"x20.5"x8.5" – Wt. = 103 lbs. /each)**
- **(3) 4424 B25 RRH's (16.5"x13.5"x9.6" – Wt. = 88 lbs. /each)**
- **(3) SDX1926Q-43 Diplexers (4.2"x6.9"x2.9" - Wt. = 6 lbs. /each)**

**Proposed equipment shown in bold*

Mount fabrication drawings prepared by SitePro1 P/N RMQP-4096-HK, dated July 14, 2014 were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30-degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.09 in was used for this analysis.
- HDG considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_s , of 0.209 and a spectral response acceleration parameter at a period of 1 second, S_1 , of 0.064.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 2.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with ring mount. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mount **IS CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (ANCHOR) Mount Rating	66	LC4	57%	PASS

Reference Documents:

- Fabrication drawings prepared by SitePro1 P/N RMQP-4096-HK, dated July 14, 2014.

This determination was based on the following limitations and assumptions:

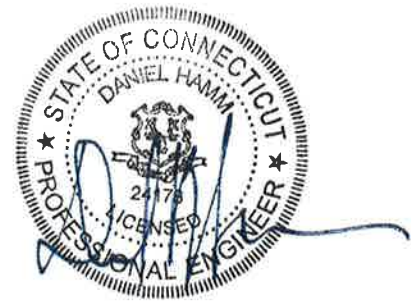
1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to T-Mobile's mount must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC

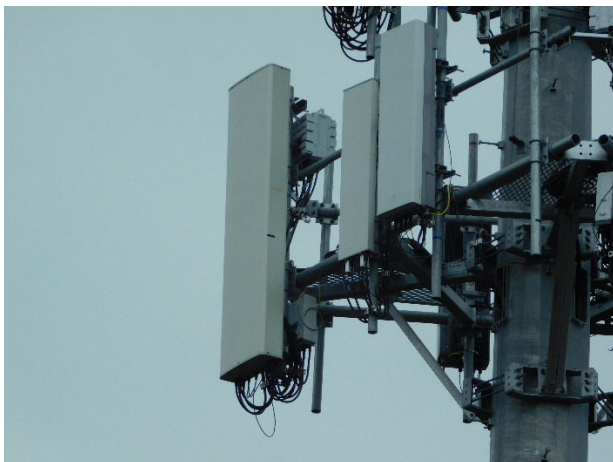
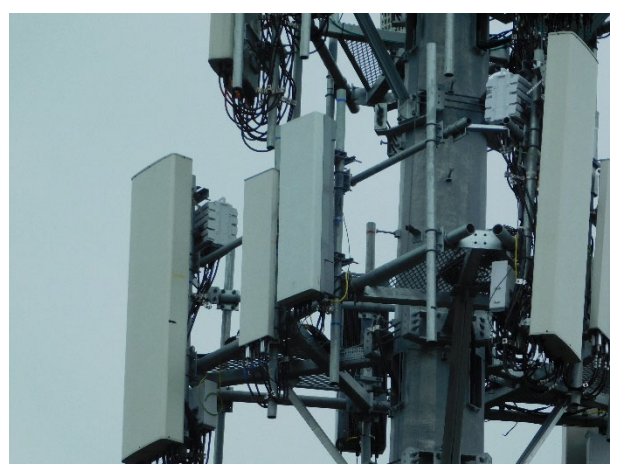


Michael Cabral
Vice President



Daniel P. Hamm, PE
Principal

FIELD PHOTOS:





HUDSON
Design Group LLC

Wind & Ice Calculations

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 Designed By: KM Checked By: MSC



2.6.5.2 Velocity Pressure Coeff:

$$K_z = 2.01 (z/z_g)^{2/\alpha}$$

$K_z =$ **1.208**

$z =$ 80 (ft)
 $z_g =$ 900 (ft)
 $\alpha =$ 9.5

$K_{zmin} \leq K_z \leq 2.01$

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$$K_{zt} = [1 + (K_c K_t / K_h)]^2$$

$$K_h = e^{(fz/H)}$$

$K_{zt} =$ **1**

(If Category 1 then $K_{zt} = 1.0$)

Category = **1**

$K_h =$ 1
 $K_c =$ 1 (from Table 2-4)
 $K_t =$ 0 (from Table 2-5)
 $f =$ 0 (from Table 2-5)
 $z =$ 80
 $z_g =$ 54 (Mean elevation of base of structure above sea level)
 $H =$ 0 (Ht. of the crest above surrounding terrain)
 $K_{zt} =$ 1.00 (from 2.6.6.2.1)
 $K_e =$ 1.00 (from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness = $t_i =$ **1.00** in
 Importance Factor = $I =$ **1.0** (from Table 2-3)
 $K_{iz} =$ **1.09** (from Sec. 2.6.10)

$$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$$

$t_{iz} =$ **1.09** in

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

$G_h = 1.0$ Latticed Structures > 600 ft

$G_h = 0.85$ Latticed Structures 450 ft or less

$G_h = 0.85 + 0.15 [h/150 - 3.0]$

$h =$ ht. of structure

$h =$ 89

$G_h =$ 0.85

2.6.9.2 Guyed Masts

$G_h =$ 0.85

2.6.9.3 Pole Structures

$G_h =$ 1.1

2.6.9 Appurtenances

$G_h =$ 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilevered tubular or latticed spines, pole, structures on buildings ($ht. : width$ ratio > 5))

$G_h =$ 1.35

$G_h =$ 1.00

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

$q_z =$	45.80
q_z (ice) =	7.33
q_z (30) =	2.64

$K_z =$	1.208 (from 2.6.5.2)
$K_{zt} =$	1.0 (from 2.6.6.2.1)
$K_s =$	1.0 (from 2.6.7)
$K_e =$	1.00 (from 2.6.8)
$K_d =$	0.95 (from Table 2-2)
$V_{max} =$	125 mph (Ultimate Wind Speed)
V_{max} (ice) =	50 mph
$V_{30} =$	30 mph

Table 2-2

Structure Type	Wind Direction Probability Factor, K_d
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

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Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r _s) ≥ 0.85	1.4 - 4.0(r _s) ≥ 0.90	2.0 - 6.0(r _s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	4.14/(C ^{0.485})	3.66/(C ^{0.415})	46.8/(C ^{1.0})
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
 (Aspect ratio is independent of the spacing between support points of a linear appurtenance.)

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.09 in** Angle = **0 (deg)** Equivalent Angle = **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	4.00	1.27	927	166	53
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.61	1.20	259	49	15
AIR3246 B66A Antenna	58.1	15.8	9.4	6.37	3.68	1.25	366	69	21
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.90	1.20	64	14	4
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	34	9	2
4424 B25 RRH	16.5	9.6	13.5	1.10	1.72	1.20	60	13	3
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	3.44	1.24	31	8	2
2217 B66A RRH	13.8	11.8	5.0	1.13	1.17	1.20	62	14	4
2217 B66A RRH (Shielded)	13.8	0.0	5.0	0.00	0.00	1.20	0	2	0
SDX1926Q-43 Diplexer	4.2	2.9	6.9	0.08	1.45	1.20	5	2	0
PL 6x1/2	6.0	0.5	-	0.02	12.00	2.00	2		
HSS 4x4	4.0	12.0	-	0.33	0.33	1.25	19		
2-1/2x2-1/2 Angle	2.5	12.0	-	0.21	0.21	2.00	19		
2x2 Angle	2.0	12.0	-	0.17	0.17	2.00	15		
3" Pipe	3.5	12.0	-	0.29	0.29	1.20	16		
2-1/2" Pipe	2.9	12.0	-	0.24	0.24	1.20	13		
2" Pipe	2.4	12.0	-	0.20	0.20	1.20	11		

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WIND LOADS

Angle = 30 (deg)

Ice Thickness = 1.09 in.

Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	927	407	797
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	259	113	222
AIR3246 B66A Antenna	58.1	15.8	9.4	6.37	3.79	3.68	6.18	1.25	1.36	366	237	333
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	64	90	71
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	34	90	48
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	60	85	67
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	31	85	45
2217 B66A RRH	13.8	11.8	5.0	1.13	0.48	1.17	2.76	1.20	1.21	62	27	53
2217 B66A RRH (Shielded)	13.8	5.9	5.0	0.57	0.48	2.34	2.76	1.20	1.21	31	27	30
SDX1926Q-43 Diplexer	4.2	2.9	6.9	0.08	0.20	1.45	0.61	1.20	1.20	5	11	6

WIND LOADS WITH ICE:

APXVAARR24_43-U-NA20 Antenna	98.1	26.2	10.9	17.84	7.41	3.75	9.01	1.26	1.47	164	80	143
AIR6449 B41 Antenna	35.3	22.7	10.7	5.56	2.62	1.56	3.30	1.20	1.24	49	24	43
AIR3246 B66A Antenna	60.3	18.0	11.6	7.53	4.85	3.35	5.20	1.24	1.32	68	47	63
4449 B71+B85 RRH	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	14	19	15
4449 B71+B85 RRH (Shielded)	20.1	5.8	15.4	0.81	2.15	3.47	1.31	1.24	1.20	7	19	10
4424 B25 RRH	18.7	11.8	15.7	1.53	2.04	1.59	1.19	1.20	1.20	13	18	15
4424 B25 RRH (Shielded)	18.7	5.9	15.7	0.76	2.04	3.17	1.19	1.23	1.20	7	18	10
2217 B66A RRH	16.0	14.0	7.2	1.55	0.80	1.14	2.22	1.20	1.20	14	7	12
2217 B66A RRH (Shielded)	16.0	7.0	7.2	0.78	0.80	2.29	2.22	1.20	1.20	7	7	7
SDX1926Q-43 Diplexer	6.4	5.1	9.1	0.23	0.40	1.26	0.70	1.20	1.20	2	4	2

WIND LOADS AT 30 MPH:

APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	53	23	46
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	15	7	13
AIR3246 B66A Antenna	58.1	15.8	9.4	6.37	3.79	3.68	6.18	1.25	1.36	21	14	19
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	4
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	3
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	3	5	4
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	2	5	3
2217 B66A RRH	13.8	11.8	5.0	1.13	0.48	1.17	2.76	1.20	1.21	4	2	3
2217 B66A RRH (Shielded)	13.8	5.9	5.0	0.57	0.48	2.34	2.76	1.20	1.21	2	2	2
SDX1926Q-43 Diplexer	4.2	2.9	6.9	0.08	0.20	1.45	0.61	1.20	1.20	0	1	0

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WIND LOADS

Angle = 60 (deg)

Ice Thickness = 1.09 in.

Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	927	407	537
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	259	113	149
AIR3246 B66A Antenna	58.1	15.8	9.4	6.37	3.79	3.68	6.18	1.25	1.36	366	237	269
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	64	90	84
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	48	90	80
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	60	85	79
4424 B25 RRH (Shielded)	16.5	7.2	13.5	0.83	1.55	2.29	1.22	1.20	1.20	45	85	75
2217 B66A RRH	13.8	11.8	5.0	1.13	0.48	1.17	2.76	1.20	1.21	62	27	35
2217 B66A RRH (Shielded)	13.8	8.9	5.0	0.85	0.48	1.56	2.76	1.20	1.21	47	27	32
SDX1926Q-43 Diplexer	4.2	2.9	6.9	0.08	0.20	1.45	0.61	1.20	1.20	5	11	9

WIND LOADS WITH ICE:

APXVAARR24_43-U-NA20 Antenna	98.1	26.2	10.9	17.84	7.41	3.75	9.01	1.26	1.47	164	80	101
AIR6449 B41 Antenna	35.3	22.7	10.7	5.56	2.62	1.56	3.30	1.20	1.24	49	24	30
AIR3246 B66A Antenna	60.3	18.0	11.6	7.53	4.85	3.35	5.20	1.24	1.32	68	47	52
4449 B71+B85 RRH	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	14	19	18
4449 B71+B85 RRH (Shielded)	20.1	8.7	15.4	1.21	2.15	2.31	1.31	1.20	1.20	11	19	17
4424 B25 RRH	18.7	11.8	15.7	1.53	2.04	1.59	1.19	1.20	1.20	13	18	17
4424 B25 RRH (Shielded)	18.7	8.8	15.7	1.15	2.04	2.11	1.19	1.20	1.20	10	18	16
2217 B66A RRH	16.0	14.0	7.2	1.55	0.80	1.14	2.22	1.20	1.20	14	7	9
2217 B66A RRH (Shielded)	16.0	10.5	7.2	1.16	0.80	1.52	2.22	1.20	1.20	10	7	8
SDX1926Q-43 Diplexer	6.4	5.1	9.1	0.23	0.40	1.26	0.70	1.20	1.20	2	4	3

WIND LOADS AT 30 MPH:

APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	53	23	31
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	15	7	9
AIR3246 B66A Antenna	58.1	15.8	9.4	6.37	3.79	3.68	6.18	1.25	1.36	21	14	15
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	3	5	5
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	3	5	5
4424 B25 RRH (Shielded)	16.5	7.2	13.5	0.83	1.55	2.29	1.22	1.20	1.20	3	5	4
2217 B66A RRH	13.8	11.8	5.0	1.13	0.48	1.17	2.76	1.20	1.21	4	2	2
2217 B66A RRH (Shielded)	13.8	8.9	5.0	0.85	0.48	1.56	2.76	1.20	1.21	3	2	2
SDX1926Q-43 Diplexer	4.2	2.9	6.9	0.08	0.20	1.45	0.61	1.20	1.20	0	1	1

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WIND LOADS

Angle = 90 (deg) Ice Thickness = 1.09 in. Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	927	407	407
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	259	113	113
AIR3246 B66A Antenna	58.1	15.8	9.4	6.37	3.79	3.68	6.18	1.25	1.36	366	237	237
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	64	90	90
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	34	90	90
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	60	85	85
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	31	85	85
2217 B66A RRH	13.8	11.8	5.0	1.13	0.48	1.17	2.76	1.20	1.21	62	27	27
2217 B66A RRH (Shielded)	13.8	0.0	5.0	0.00	0.48	0.00	2.76	1.20	1.21	0	27	27
SDX1926Q-43 Diplexer	4.2	2.9	6.9	0.08	0.20	1.45	0.61	1.20	1.20	5	11	11

WIND LOADS WITH ICE:

APXVAARR24_43-U-NA20 Antenna	98.1	26.2	10.9	17.84	7.41	3.75	9.01	1.26	1.47	164	80	80
AIR6449 B41 Antenna	35.3	22.7	10.7	5.56	2.62	1.56	3.30	1.20	1.24	49	24	24
AIR3246 B66A Antenna	60.3	18.0	11.6	7.53	4.85	3.35	5.20	1.24	1.32	68	47	47
4449 B71+B85 RRH	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	14	19	19
4449 B71+B85 RRH (Shielded)	20.1	6.9	15.4	0.96	2.15	2.92	1.31	1.22	1.20	9	19	19
4424 B25 RRH	18.7	11.8	15.7	1.53	2.04	1.59	1.19	1.20	1.20	13	18	18
4424 B25 RRH (Shielded)	18.7	7.0	15.7	0.91	2.04	2.67	1.19	1.21	1.20	8	18	18
2217 B66A RRH	16.0	14.0	7.2	1.55	0.80	1.14	2.22	1.20	1.20	14	7	7
2217 B66A RRH (Shielded)	16.0	2.2	7.2	0.24	0.80	7.32	2.22	1.41	1.20	3	7	7
SDX1926Q-43 Diplexer	6.4	5.1	9.1	0.23	0.40	1.26	0.70	1.20	1.20	2	4	4

WIND LOADS AT 30 MPH:

APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	53	23	23
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	15	7	7
AIR3246 B66A Antenna	58.1	15.8	9.4	6.37	3.79	3.68	6.18	1.25	1.36	21	14	14
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	5
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	3	5	5
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	2	5	5
2217 B66A RRH	13.8	11.8	5.0	1.13	0.48	1.17	2.76	1.20	1.21	4	2	2
2217 B66A RRH (Shielded)	13.8	0.0	5.0	0.00	0.48	0.00	2.76	1.20	1.21	0	2	2
SDX1926Q-43 Diplexer	4.2	2.9	6.9	0.08	0.20	1.45	0.61	1.20	1.20	0	1	1

Date: 11/17/2020
 Project Name: CTFF868A
 Project No.: CTFF868A
 Designed By: KM Checked By: MSC



WIND LOADS

Angle = 120 (deg) Ice Thickness = 1.09 in. Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	927	407	537
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	259	113	149
AIR3246 B66A Antenna	58.1	15.8	9.4	6.37	3.79	3.68	6.18	1.25	1.36	366	237	269
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	64	90	84
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	48	90	80
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	60	85	79
4424 B25 RRH (Shielded)	16.5	7.2	13.5	0.83	1.55	2.29	1.22	1.20	1.20	45	85	75
2217 B66A RRH	13.8	11.8	5.0	1.13	0.48	1.17	2.76	1.20	1.21	62	27	35
2217 B66A RRH (Shielded)	13.8	8.9	5.0	0.85	0.48	1.56	2.76	1.20	1.21	47	27	32
SDX1926Q-43 Diplexer	4.2	2.9	6.9	0.08	0.20	1.45	0.61	1.20	1.20	5	11	9

WIND LOADS WITH ICE:

APXVAARR24_43-U-NA20 Antenna	98.1	26.2	10.9	17.84	7.41	3.75	9.01	1.26	1.47	164	80	101
AIR6449 B41 Antenna	35.3	22.7	10.7	5.56	2.62	1.56	3.30	1.20	1.24	49	24	30
AIR3246 B66A Antenna	60.3	18.0	11.6	7.53	4.85	3.35	5.20	1.24	1.32	68	47	52
4449 B71+B85 RRH	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	14	19	18
4449 B71+B85 RRH (Shielded)	20.1	8.7	15.4	1.21	2.15	2.31	1.31	1.20	1.20	11	19	17
4424 B25 RRH	18.7	11.8	15.7	1.53	2.04	1.59	1.19	1.20	1.20	13	18	17
4424 B25 RRH (Shielded)	18.7	8.8	15.7	1.15	2.04	2.11	1.19	1.20	1.20	10	18	16
2217 B66A RRH	16.0	14.0	7.2	1.55	0.80	1.14	2.22	1.20	1.20	14	7	9
2217 B66A RRH (Shielded)	16.0	10.5	7.2	1.16	0.80	1.52	2.22	1.20	1.20	10	7	8
SDX1926Q-43 Diplexer	6.4	5.1	9.1	0.23	0.40	1.26	0.70	1.20	1.20	2	4	3

WIND LOADS AT 30 MPH:

APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	53	23	31
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	15	7	9
AIR3246 B66A Antenna	58.1	15.8	9.4	6.37	3.79	3.68	6.18	1.25	1.36	21	14	15
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	3	5	5
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	3	5	5
4424 B25 RRH (Shielded)	16.5	7.2	13.5	0.83	1.55	2.29	1.22	1.20	1.20	3	5	4
2217 B66A RRH	13.8	11.8	5.0	1.13	0.48	1.17	2.76	1.20	1.21	4	2	2
2217 B66A RRH (Shielded)	13.8	8.9	5.0	0.85	0.48	1.56	2.76	1.20	1.21	3	2	2
SDX1926Q-43 Diplexer	4.2	2.9	6.9	0.08	0.20	1.45	0.61	1.20	1.20	0	1	1

Date: 11/17/2020
 Project Name: CTFF868A
 Project No.: CTFF868A
 Designed By: KM Checked By: MSC



WIND LOADS

Angle = 150 (deg) Ice Thickness = 1.09 in. Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	927	407	797
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	259	113	222
AIR3246 B66A Antenna	58.1	15.8	9.4	6.37	3.79	3.68	6.18	1.25	1.36	366	237	333
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	64	90	71
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	34	90	48
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	60	85	67
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	31	85	45
2217 B66A RRH	13.8	11.8	5.0	1.13	0.48	1.17	2.76	1.20	1.21	62	27	53
2217 B66A RRH (Shielded)	13.8	5.9	5.0	0.57	0.48	2.34	2.76	1.20	1.21	31	27	30
SDX1926Q-43 Diplexer	4.2	2.9	6.9	0.08	0.20	1.45	0.61	1.20	1.20	5	11	6

WIND LOADS WITH ICE:

APXVAARR24_43-U-NA20 Antenna	98.1	26.2	10.9	17.84	7.41	3.75	9.01	1.26	1.47	164	80	143
AIR6449 B41 Antenna	35.3	22.7	10.7	5.56	2.62	1.56	3.30	1.20	1.24	49	24	43
AIR3246 B66A Antenna	60.3	18.0	11.6	7.53	4.85	3.35	5.20	1.24	1.32	68	47	63
4449 B71+B85 RRH	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	14	19	15
4449 B71+B85 RRH (Shielded)	20.1	5.8	15.4	0.81	2.15	3.47	1.31	1.24	1.20	7	19	10
4424 B25 RRH	18.7	11.8	15.7	1.53	2.04	1.59	1.19	1.20	1.20	13	18	15
4424 B25 RRH (Shielded)	18.7	5.9	15.7	0.76	2.04	3.17	1.19	1.23	1.20	7	18	10
2217 B66A RRH	16.0	14.0	7.2	1.55	0.80	1.14	2.22	1.20	1.20	14	7	12
2217 B66A RRH (Shielded)	16.0	7.0	7.2	0.78	0.80	2.29	2.22	1.20	1.20	7	7	7
SDX1926Q-43 Diplexer	6.4	5.1	9.1	0.23	0.40	1.26	0.70	1.20	1.20	2	4	2

WIND LOADS AT 30 MPH:

APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	5.79	4.00	11.02	1.27	1.53	53	23	46
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	15	7	13
AIR3246 B66A Antenna	58.1	15.8	9.4	6.37	3.79	3.68	6.18	1.25	1.36	21	14	19
4449 B71+B85 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	4
4449 B71+B85 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	3
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	3	5	4
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	2	5	3
2217 B66A RRH	13.8	11.8	5.0	1.13	0.48	1.17	2.76	1.20	1.21	4	2	3
2217 B66A RRH (Shielded)	13.8	5.9	5.0	0.57	0.48	2.34	2.76	1.20	1.21	2	2	2
SDX1926Q-43 Diplexer	4.2	2.9	6.9	0.08	0.20	1.45	0.61	1.20	1.20	0	1	0

Date: 11/17/2020

Project Name: CTFF868A

Project No.: CTFF868A

Designed By: KM Checked By: MSC



HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.09 in.
Density of ice: 56 pcf

APXVAARR24_43-U-NA20 Antenna

Weight of ice based on total radial SF area:

Height (in): 95.9
Width (in): 24.0
Depth (in): 8.7

Total weight of ice on object: 283 lbs

Weight of object: 128.0 lbs

Combined weight of ice and object: 411 lbs

AIR6449 B41 Antenna

Weight of ice based on total radial SF area:

Height (in): 33.1
Width (in): 20.5
Depth (in): 8.5

Total weight of ice on object: 86 lbs

Weight of object: 103.0 lbs

Combined weight of ice and object: 189 lbs

AIR3246 B66A Antenna

Weight of ice based on total radial SF area:

Height (in): 58.1
Width (in): 15.8
Depth (in): 9.4

Total weight of ice on object: 126 lbs

Weight of object: 179.0 lbs

Combined weight of ice and object: 305 lbs

4449 B71+B85 RRH

Weight of ice based on total radial SF area:

Height (in): 17.9
Width (in): 13.2
Depth (in): 9.4

Total weight of ice on object: 34 lbs

Weight of object: 74.0 lbs

Combined weight of ice and object: 108 lbs

4424 B25 RRH

Weight of ice based on total radial SF area:

Height (in): 16.5
Width (in): 13.5
Depth (in): 9.6

Total weight of ice on object: 32 lbs

Weight of object: 88.0 lbs

Combined weight of ice and object: 120 lbs

2217 B66A RRH

Weight of ice based on total radial SF area:

Height (in): 13.8
Width (in): 11.8
Depth (in): 5.0

Total weight of ice on object: 21 lbs

Weight of object: 30.0 lbs

Combined weight of ice and object: 51 lbs

SDX1926Q-43 Diplexer

Weight of ice based on total radial SF area:

Height (in): 4.2
Width (in): 2.9
Depth (in): 6.9

Total weight of ice on object: 4 lbs

Weight of object: 6.0 lbs

Combined weight of ice and object: 10 lbs

PL 6x1/2

Weight of ice based on total radial SF area:

Height (in): 6
Width (in): 0.5

Per foot weight of ice on object: 9 plf

HSS 4x4

Weight of ice based on total radial SF area:

Height (in): 4
Width (in): 4

Per foot weight of ice on object: 9 plf

L 2-1/2x2-1/2 Angles

Weight of ice based on total radial SF area:

Height (in): 2.5
Width (in): 2.5

Per foot weight of ice on object: 6 plf

L 2x2 Angles

Weight of ice based on total radial SF area:

Height (in): 2
Width (in): 2

Per foot weight of ice on object: 5 plf

3" Pipe

Per foot weight of ice:

diameter (in): 3.5

Per foot weight of ice on object: 6 plf

2-1/2" pipe

Per foot weight of ice:

diameter (in): 2.88

Per foot weight of ice on object: 5 plf

2" pipe

Per foot weight of ice:

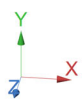
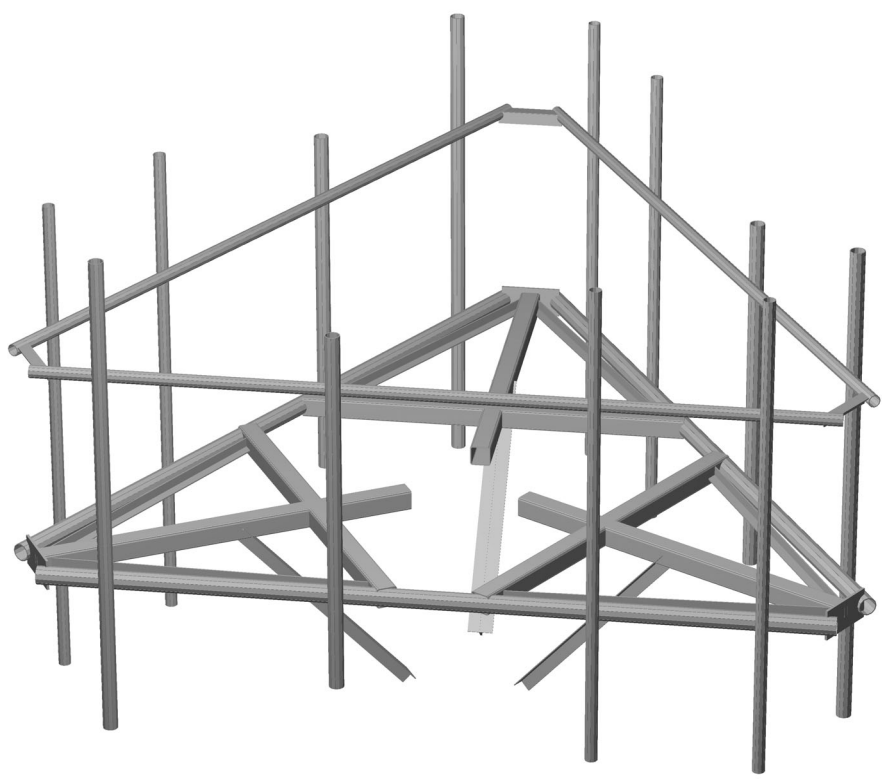
diameter (in): 2.38

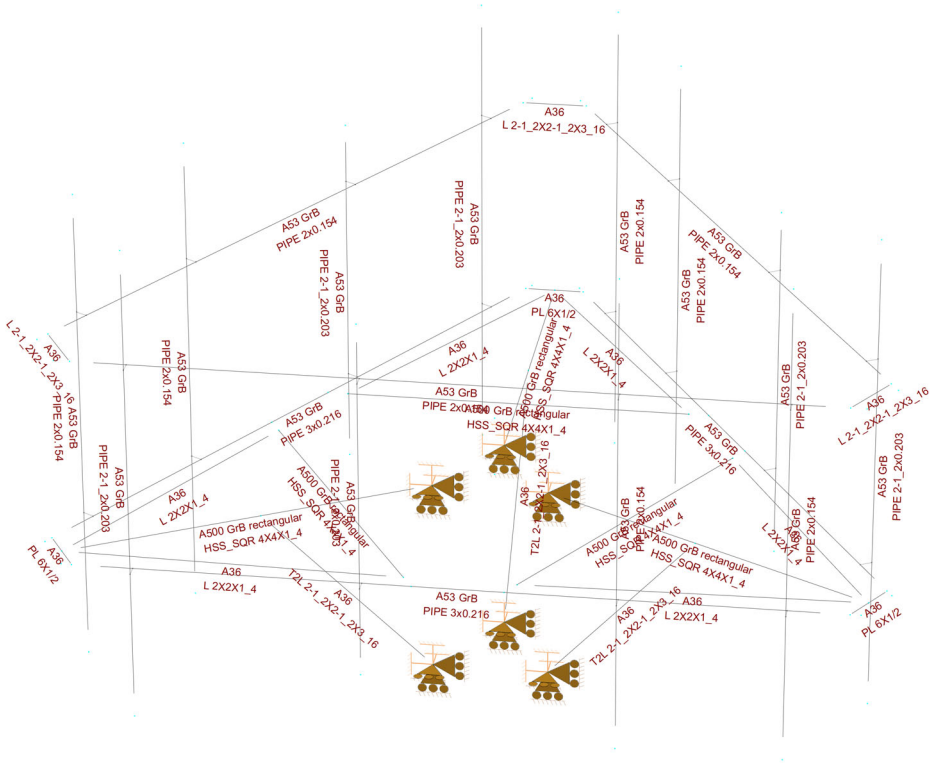
Per foot weight of ice on object: 5 plf

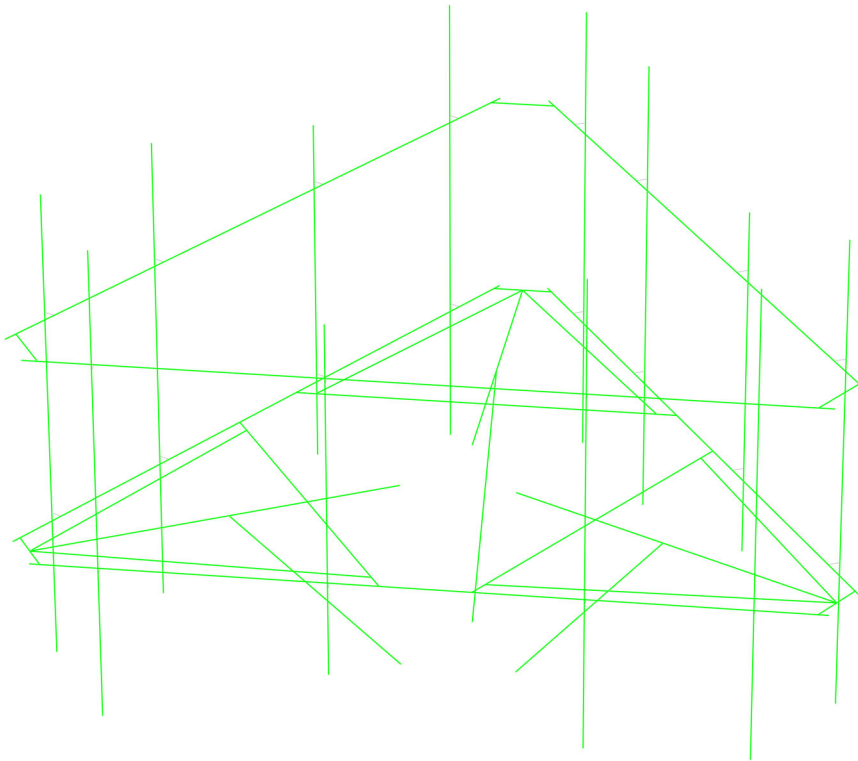


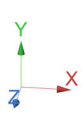
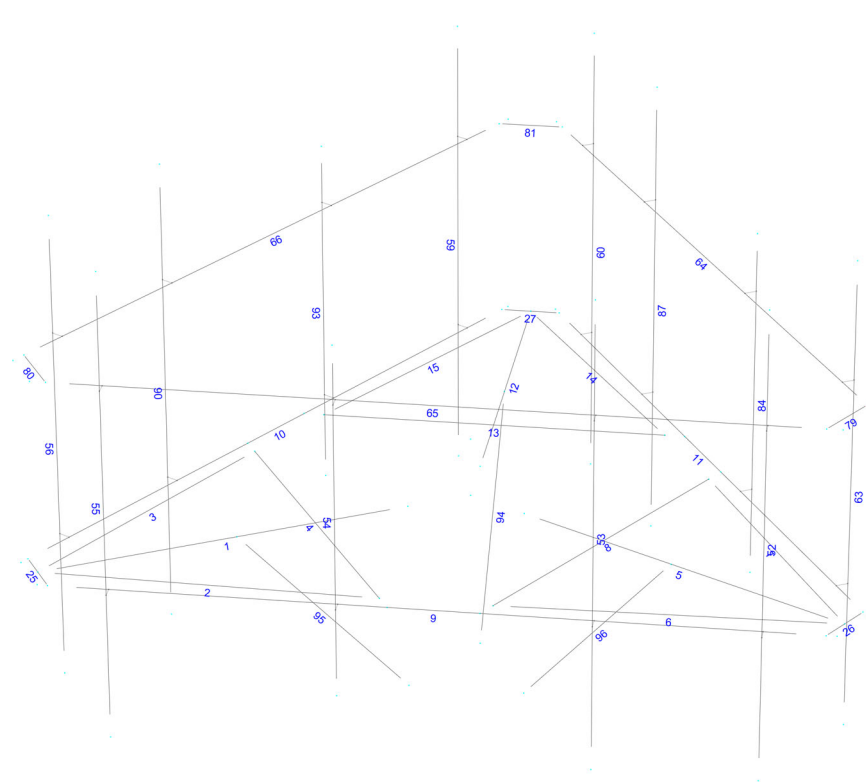
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Design Group LLC

**Mount Calculations
(Existing Conditions)**









Load data

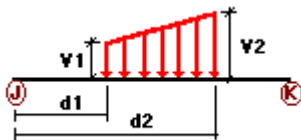
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL
LLa4	250 lb Live Load Antenna 4	No	LL

Distributed force on members

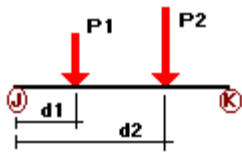


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	2	y	-0.01	0.00	0.00	No	0.00	No
	3	y	-0.01	0.00	0.00	No	0.00	No
	4	y	-0.01	0.00	0.00	No	0.00	No
	6	y	-0.01	0.00	0.00	No	0.00	No
	7	y	-0.01	0.00	0.00	No	0.00	No
	8	y	-0.01	0.00	0.00	No	0.00	No
	13	y	-0.01	0.00	0.00	No	0.00	No
	14	y	-0.01	0.00	0.00	No	0.00	No
W0	15	y	-0.01	0.00	0.00	No	0.00	No
	1	z	-0.019	0.00	0.00	No	0.00	No
	2	z	-0.015	0.00	0.00	No	0.00	No
	3	z	-0.015	0.00	0.00	No	0.00	No
	4	z	-0.019	0.00	0.00	No	0.00	No
	5	z	-0.019	0.00	0.00	No	0.00	No

	6	z	-0.015	0.00	0.00	No	0.00	No
	7	z	-0.015	0.00	0.00	No	0.00	No
	8	z	-0.019	0.00	0.00	No	0.00	No
	9	z	-0.016	0.00	0.00	No	0.00	No
	10	z	-0.016	0.00	0.00	No	0.00	No
	11	z	-0.016	0.00	0.00	No	0.00	No
	12	z	-0.019	0.00	0.00	No	0.00	No
	13	z	-0.019	0.00	0.00	No	0.00	No
	14	z	-0.015	0.00	0.00	No	0.00	No
	15	z	-0.015	0.00	0.00	No	0.00	No
	25	z	-0.002	0.00	0.00	No	0.00	No
	26	z	-0.002	0.00	0.00	No	0.00	No
	27	z	-0.002	0.00	0.00	No	0.00	No
	52	z	-0.011	0.00	0.00	No	0.00	No
	56	z	-0.011	0.00	0.00	No	0.00	No
	59	z	-0.011	0.00	0.00	No	0.00	No
	60	z	-0.011	0.00	0.00	No	0.00	No
	63	z	-0.011	0.00	0.00	No	0.00	No
	64	z	-0.011	0.00	0.00	No	0.00	No
	65	z	-0.011	0.00	0.00	No	0.00	No
	66	z	-0.011	0.00	0.00	No	0.00	No
	79	z	-0.019	0.00	0.00	No	0.00	No
	80	z	-0.019	0.00	0.00	No	0.00	No
	81	z	-0.019	0.00	0.00	No	0.00	No
	84	z	-0.011	0.00	0.00	No	0.00	No
	87	z	-0.011	0.00	0.00	No	0.00	No
	90	z	-0.011	0.00	0.00	No	0.00	No
	93	z	-0.011	0.00	0.00	No	0.00	No
	94	z	-0.019	0.00	0.00	No	0.00	No
	95	z	-0.019	0.00	0.00	No	0.00	No
	96	z	-0.019	0.00	0.00	No	0.00	No
W30	1	x	-0.019	0.00	0.00	No	0.00	No
	2	x	-0.015	0.00	0.00	No	0.00	No
	3	x	-0.015	0.00	0.00	No	0.00	No
	4	x	-0.019	0.00	0.00	No	0.00	No
	5	x	-0.019	0.00	0.00	No	0.00	No
	6	x	-0.015	0.00	0.00	No	0.00	No
	7	x	-0.015	0.00	0.00	No	0.00	No
	8	x	-0.019	0.00	0.00	No	0.00	No
	9	x	-0.016	0.00	0.00	No	0.00	No
	10	x	-0.016	0.00	0.00	No	0.00	No
	11	x	-0.016	0.00	0.00	No	0.00	No
	12	x	-0.019	0.00	0.00	No	0.00	No
	13	x	-0.019	0.00	0.00	No	0.00	No
	14	x	-0.015	0.00	0.00	No	0.00	No
	15	x	-0.015	0.00	0.00	No	0.00	No
	25	x	-0.002	0.00	0.00	No	0.00	No
	26	x	-0.002	0.00	0.00	No	0.00	No
	27	x	-0.002	0.00	0.00	No	0.00	No
	52	x	-0.011	0.00	0.00	No	0.00	No
	53	x	-0.011	0.00	0.00	No	0.00	No
	54	x	-0.011	0.00	0.00	No	0.00	No
	55	x	-0.011	0.00	0.00	No	0.00	No
	56	x	-0.011	0.00	0.00	No	0.00	No
	59	x	-0.011	0.00	0.00	No	0.00	No
	60	x	-0.011	0.00	0.00	No	0.00	No
	63	x	-0.011	0.00	0.00	No	0.00	No
	64	x	-0.011	0.00	0.00	No	0.00	No
	65	x	-0.011	0.00	0.00	No	0.00	No
	66	x	-0.011	0.00	0.00	No	0.00	No

	79	x	-0.019	0.00	0.00	No	0.00	No
	80	x	-0.019	0.00	0.00	No	0.00	No
	81	x	-0.019	0.00	0.00	No	0.00	No
	84	x	-0.011	0.00	0.00	No	0.00	No
	87	x	-0.011	0.00	0.00	No	0.00	No
	90	x	-0.011	0.00	0.00	No	0.00	No
	93	x	-0.011	0.00	0.00	No	0.00	No
	94	x	-0.019	0.00	0.00	No	0.00	No
	95	x	-0.019	0.00	0.00	No	0.00	No
	96	x	-0.019	0.00	0.00	No	0.00	No
Di	1	y	-0.009	0.00	0.00	No	0.00	No
	2	y	-0.005	0.00	0.00	No	0.00	No
	3	y	-0.005	0.00	0.00	No	0.00	No
	4	y	-0.009	0.00	0.00	No	0.00	No
	5	y	-0.009	0.00	0.00	No	0.00	No
	6	y	-0.005	0.00	0.00	No	0.00	No
	7	y	-0.005	0.00	0.00	No	0.00	No
	8	y	-0.009	0.00	0.00	No	0.00	No
	9	y	-0.006	0.00	0.00	No	0.00	No
	10	y	-0.006	0.00	0.00	No	0.00	No
	11	y	-0.006	0.00	0.00	No	0.00	No
	12	y	-0.009	0.00	0.00	No	0.00	No
	13	y	-0.009	0.00	0.00	No	0.00	No
	14	y	-0.005	0.00	0.00	No	0.00	No
	15	y	-0.005	0.00	0.00	No	0.00	No
	25	y	-0.009	0.00	0.00	No	0.00	No
	26	y	-0.009	0.00	0.00	No	0.00	No
	27	y	-0.009	0.00	0.00	No	0.00	No
	52	y	-0.005	0.00	0.00	No	0.00	No
	53	y	-0.005	0.00	0.00	No	0.00	No
	54	y	-0.005	0.00	0.00	No	0.00	No
	55	y	-0.005	0.00	0.00	No	0.00	No
	56	y	-0.005	0.00	0.00	No	0.00	No
	59	y	-0.005	0.00	0.00	No	0.00	No
	60	y	-0.005	0.00	0.00	No	0.00	No
	63	y	-0.005	0.00	0.00	No	0.00	No
	64	y	-0.005	0.00	0.00	No	0.00	No
	65	y	-0.005	0.00	0.00	No	0.00	No
	66	y	-0.005	0.00	0.00	No	0.00	No
	79	y	-0.006	0.00	0.00	No	0.00	No
	80	y	-0.006	0.00	0.00	No	0.00	No
	81	y	-0.006	0.00	0.00	No	0.00	No
	84	y	-0.005	0.00	0.00	No	0.00	No
	87	y	-0.005	0.00	0.00	No	0.00	No
	90	y	-0.005	0.00	0.00	No	0.00	No
	93	y	-0.005	0.00	0.00	No	0.00	No
	94	y	-0.006	0.00	0.00	No	0.00	No
	95	y	-0.006	0.00	0.00	No	0.00	No
	96	y	-0.006	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	53	y	-0.09	1.75	No
		y	-0.09	5.75	No
	54	y	-0.052	1.50	No
		y	-0.052	4.00	No
	55	y	-0.064	1.00	No
		y	-0.064	7.00	No
		y	-0.074	3.50	No
		y	-0.088	3.50	No
	59	y	-0.006	5.00	No
		y	-0.03	6.00	No
		y	-0.064	1.00	No
		y	-0.064	7.00	No
	63	y	-0.074	3.50	No
		y	-0.088	3.50	No
		y	-0.006	5.00	No
		y	-0.03	6.00	No
	84	y	-0.064	1.00	No
		y	-0.064	7.00	No
		y	-0.074	3.50	No
		y	-0.088	3.50	No
	87	y	-0.006	5.00	No
		y	-0.03	6.00	No
	90	y	-0.052	1.50	No
		y	-0.052	4.00	No
WO	53	z	-0.183	1.75	No
		z	-0.183	5.75	No
	54	z	-0.13	1.50	No
		z	-0.13	4.00	No
	55	z	-0.464	1.00	No
		z	-0.464	7.00	No
		z	-0.034	3.50	No
		z	-0.031	3.50	No
	59	z	-0.269	1.00	No
		z	-0.269	7.00	No
		z	-0.084	3.50	No
		z	-0.009	5.00	No
	63	z	-0.032	6.00	No
		z	-0.032	6.00	No
		z	-0.269	1.00	No
		z	-0.269	7.00	No
	84	z	-0.084	3.50	No
		z	-0.009	5.00	No
		z	-0.032	6.00	No
		z	-0.032	6.00	No
	87	z	-0.075	1.50	No
		z	-0.075	4.00	No
	90	z	-0.135	1.75	No
		z	-0.135	5.75	No

	93	z	-0.075	1.50	No
		z	-0.075	4.00	No
W30	53	x	-0.119	1.75	No
		x	-0.119	5.75	No
	54	x	-0.057	1.50	No
		x	-0.057	4.00	No
	55	x	-0.204	1.00	No
		x	-0.204	7.00	No
		x	-0.09	3.50	No
		x	-0.011	5.00	No
		x	-0.027	6.00	No
	59	x	-0.399	1.00	No
		x	-0.399	7.00	No
		x	-0.071	3.50	No
		x	-0.006	5.00	No
		x	-0.03	6.00	No
	63	x	-0.399	1.00	No
		x	-0.399	7.00	No
		x	-0.071	3.50	No
		x	-0.006	5.00	No
		x	-0.03	6.00	No
	84	x	-0.111	1.50	No
		x	-0.111	4.00	No
	87	x	-0.167	1.75	No
		x	-0.167	5.75	No
	90	x	-0.167	1.75	No
		x	-0.167	5.75	No
	93	x	-0.111	1.50	No
		x	-0.111	4.00	No
Di	53	y	-0.063	1.75	No
		y	-0.063	5.75	No
	54	y	-0.043	1.50	No
		y	-0.043	4.00	No
	55	y	-0.142	1.00	No
		y	-0.142	7.00	No
		y	-0.034	3.50	No
		y	-0.032	3.50	No
		y	-0.004	5.00	No
		y	-0.021	6.00	No
	59	y	-0.142	1.00	No
		y	-0.142	7.00	No
		y	-0.034	3.50	No
		y	-0.032	3.50	No
		y	-0.004	5.00	No
		y	-0.021	6.00	No
	63	y	-0.142	1.00	No
		y	-0.142	7.00	No
		y	-0.034	3.50	No
		y	-0.032	3.50	No
		y	-0.004	5.00	No
		y	-0.021	6.00	No
	84	y	-0.043	1.50	No
		y	-0.043	4.00	No
	87	y	-0.063	1.75	No
		y	-0.063	5.75	No
	90	y	-0.063	1.75	No
		y	-0.063	5.75	No
	93	y	-0.043	1.50	No
		y	-0.043	4.00	No
Wi0	53	z	-0.035	1.75	No

		z	-0.035	5.75	No
54		z	-0.025	1.50	No
		z	-0.025	4.00	No
55		z	-0.083	1.00	No
		z	-0.083	7.00	No
		z	-0.009	3.50	No
		z	-0.008	3.50	No
59		z	-0.051	1.00	No
		z	-0.051	7.00	No
		z	-0.018	3.50	No
		z	-0.003	5.00	No
		z	-0.008	6.00	No
63		z	-0.051	1.00	No
		z	-0.051	7.00	No
		z	-0.018	3.50	No
		z	-0.003	5.00	No
		z	-0.008	6.00	No
84		z	-0.015	1.50	No
		z	-0.015	4.00	No
87		z	-0.026	1.75	No
		z	-0.026	5.75	No
90		z	-0.026	1.75	No
		z	-0.026	5.75	No
93		z	-0.015	1.50	No
		z	-0.015	4.00	No
Wi30	53	x	-0.024	1.75	No
		x	-0.024	5.75	No
54		x	-0.012	1.50	No
		x	-0.012	4.00	No
55		x	-0.04	1.00	No
		x	-0.04	7.00	No
		x	-0.019	3.50	No
		x	-0.004	5.00	No
		x	-0.007	6.00	No
59		x	-0.072	1.00	No
		x	-0.072	7.00	No
		x	-0.015	3.50	No
		x	-0.002	5.00	No
		x	-0.007	6.00	No
63		x	-0.072	1.00	No
		x	-0.072	7.00	No
		x	-0.015	3.50	No
		x	-0.002	5.00	No
		x	-0.007	6.00	No
84		x	-0.022	1.50	No
		x	-0.022	4.00	No
87		x	-0.032	1.75	No
		x	-0.032	5.75	No
90		x	-0.032	1.75	No
		x	-0.032	5.75	No
93		x	-0.022	1.50	No
		x	-0.022	4.00	No
WLO	53	z	-0.011	1.75	No
		z	-0.011	5.75	No
54		z	-0.008	1.50	No
		z	-0.008	4.00	No
55		z	-0.027	1.00	No
		z	-0.027	7.00	No
		z	-0.002	3.50	No
		z	-0.002	3.50	No

	59	z	-0.016	1.00	No
		z	-0.016	7.00	No
		z	-0.005	3.50	No
		z	-0.001	5.00	No
		z	-0.002	6.00	No
	63	z	-0.016	1.00	No
		z	-0.016	7.00	No
		z	-0.005	3.50	No
		z	-0.001	5.00	No
		z	-0.002	6.00	No
	84	z	-0.005	1.50	No
		z	-0.005	4.00	No
	87	z	-0.008	1.75	No
		z	-0.008	5.75	No
	90	z	-0.008	1.75	No
		z	-0.008	5.75	No
	93	z	-0.005	1.50	No
		z	-0.005	4.00	No
WL30	53	x	-0.007	1.75	No
		x	-0.007	5.75	No
	54	x	-0.004	1.50	No
		x	-0.004	4.00	No
	55	x	-0.012	1.00	No
		x	-0.012	7.00	No
		x	-0.005	3.50	No
		x	-0.001	5.00	No
		x	-0.002	6.00	No
	59	x	-0.023	1.00	No
		x	-0.023	7.00	No
		x	-0.004	3.50	No
		x	-0.002	6.00	No
	63	x	-0.023	1.00	No
		x	-0.023	7.00	No
		x	-0.004	3.50	No
		x	-0.002	6.00	No
	84	x	-0.007	1.50	No
		x	-0.007	4.00	No
	87	x	-0.01	1.75	No
		x	-0.01	5.75	No
	90	x	-0.01	1.75	No
		x	-0.01	5.75	No
	93	x	-0.007	1.50	No
		x	-0.007	4.00	No
LL1	9	y	-0.25	50.00	Yes
LL2	9	y	-0.25	100.00	Yes
LLa1	52	y	-0.25	50.00	Yes
LLa2	53	y	-0.25	50.00	Yes
LLa3	54	y	-0.25	50.00	Yes
LLa4	55	y	-0.25	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	250 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00



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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

- LC1=1.2DL+W0
- LC2=1.2DL+W30
- LC3=1.2DL-W0
- LC4=1.2DL-W30
- LC5=0.9DL+W0
- LC6=0.9DL+W30
- LC7=0.9DL-W0
- LC8=0.9DL-W30
- LC9=1.2DL+Di+Wi0
- LC10=1.2DL+Di+Wi30
- LC11=1.2DL+Di-Wi0
- LC12=1.2DL+Di-Wi30
- LC13=1.2DL
- LC14=1.2DL+1.6LL1
- LC15=1.2DL+1.6LL2
- LC16=1.2DL+WL0+1.6LLa1
- LC17=1.2DL+WL30+1.6LLa1
- LC18=1.2DL-WL0+1.6LLa1
- LC19=1.2DL-WL30+1.6LLa1
- LC20=1.2DL+WL0+1.6LLa2
- LC21=1.2DL+WL30+1.6LLa2
- LC22=1.2DL-WL0+1.6LLa2
- LC23=1.2DL-WL30+1.6LLa2
- LC24=1.2DL+WL0+1.6LLa3
- LC25=1.2DL+WL30+1.6LLa3
- LC26=1.2DL-WL0+1.6LLa3
- LC27=1.2DL-WL30+1.6LLa3
- LC28=1.2DL+WL0+1.6LLa4
- LC29=1.2DL+WL30+1.6LLa4
- LC30=1.2DL-WL0+1.6LLa4
- LC31=1.2DL-WL30+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	1	LC2 at 52.08%	0.25	OK	Eq. H1-1b
		4	LC3 at 50.00%	0.21	OK	Eq. H1-1b
		5	LC4 at 52.08%	0.25	OK	Eq. H1-1b
		8	LC4 at 48.44%	0.21	OK	Eq. H1-1b
		12	LC1 at 47.92%	0.27	OK	Eq. H1-1b
		13	LC1 at 50.00%	0.21	OK	Eq. H1-1b
	L 2-1_2X2-1_2X3_16	79	LC4 at 0.00%	0.47	OK	Eq. H2-1
		80	LC3 at 0.00%	0.43	OK	Sec. F1
		81	LC4 at 100.00%	0.36	OK	Sec. F1
	L 2X2X1_4	2	LC3 at 0.00%	0.34	OK	Eq. H2-1
		3	LC2 at 0.00%	0.37	OK	Eq. H2-1
		6	LC3 at 0.00%	0.31	OK	Eq. H2-1
		7	LC4 at 0.00%	0.41	OK	Eq. H2-1
		14	LC1 at 100.00%	0.36	OK	Eq. H2-1
		15	LC1 at 100.00%	0.37	OK	Eq. H2-1

PIPE 2-1_2x0.203	54	LC1 at 72.92%	0.42	OK	Eq. H1-1b
	55	LC1 at 66.67%	0.37	OK	Eq. H1-1b
	59	LC2 at 66.67%	0.37	OK	Eq. H1-1b
	63	LC2 at 66.67%	0.40	OK	Eq. H1-1b
	84	LC2 at 72.92%	0.42	OK	Eq. H1-1b
	93	LC4 at 72.92%	0.42	OK	Eq. H1-1b
PIPE 2x0.154	52	LC2 at 66.67%	0.30	OK	Eq. H1-1b
	53	LC1 at 66.67%	0.41	OK	Eq. H1-1b
	56	LC1 at 25.00%	0.45	OK	Eq. H1-1b
	60	LC4 at 25.00%	0.42	OK	Eq. H1-1b
	64	LC2 at 90.18%	0.48	OK	Eq. H1-1b
	65	LC1 at 8.93%	0.55	OK	Eq. H1-1b
	66	LC4 at 91.07%	0.57	OK	Eq. H1-1b
	87	LC4 at 66.67%	0.47	OK	Eq. H1-1b
	90	LC4 at 66.67%	0.45	OK	Eq. H1-1b
PIPE 3x0.216	9	LC1 at 43.75%	0.29	OK	Eq. H3-6
	10	LC4 at 56.25%	0.32	OK	Eq. H1-1b
	11	LC4 at 56.25%	0.31	OK	Eq. H1-1b
PL 6X1/2	25	LC2 at 50.00%	0.15	OK	Eq. H1-1b
	26	LC4 at 50.00%	0.17	OK	Eq. H1-1b
	27	LC1 at 50.00%	0.18	OK	Eq. H1-1b
T2L 2-1_2X2-1_2X3_16	94	LC1 at 100.00%	0.47	OK	Eq. H2-1
	95	LC2 at 0.00%	0.49	OK	Eq. H2-1
	96	LC4 at 100.00%	0.51	OK	Eq. H2-1



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Geometry data

GLOSSARY

- Cb22, Cb33 : Moment gradient coefficients
- Cm22, Cm33 : Coefficients applied to bending term in interaction formula
- d0 : Tapered member section depth at J end of member
- DJX : Rigid end offset distance measured from J node in axis X
- DJY : Rigid end offset distance measured from J node in axis Y
- DJZ : Rigid end offset distance measured from J node in axis Z
- DKX : Rigid end offset distance measured from K node in axis X
- DKY : Rigid end offset distance measured from K node in axis Y
- DKZ : Rigid end offset distance measured from K node in axis Z
- dL : Tapered member section depth at K end of member
- Ig factor : Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
- K22 : Effective length factor about axis 2
- K33 : Effective length factor about axis 3
- L22 : Member length for calculation of axial capacity
- L33 : Member length for calculation of axial capacity
- LB pos : Lateral unbraced length of the compression flange in the positive side of local axis 2
- LB neg : Lateral unbraced length of the compression flange in the negative side of local axis 2
- RX : Rotation about X
- RY : Rotation about Y
- RZ : Rotation about Z
- TO : 1 = Tension only member 0 = Normal member
- TX : Translation in X
- TY : Translation in Y
- TZ : Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	-0.7253	0.00	4.0896	0
3	-6.0833	0.00	4.0896	0
4	-6.25	0.00	4.0896	0
5	-6.3333	0.00	3.6566	0
6	-6.5833	0.00	3.2236	0
7	-3.7376	0.00	-1.128	0
8	-3.9043	0.00	-1.4166	0
9	-0.892	0.00	3.8009	0
10	-6.6667	0.00	3.3679	0
11	-3.179	0.00	-2.6729	0
12	-2.8457	0.00	-2.6729	0
13	-0.50	0.00	-7.3131	0
14	-0.4167	0.00	-7.4574	0
17	0.7253	0.00	4.0896	0
18	6.0833	0.00	4.0896	0
19	6.25	0.00	4.0896	0
20	6.3333	0.00	3.6566	0
21	6.5833	0.00	3.2236	0
22	3.7376	0.00	-1.128	0
23	3.9043	0.00	-1.4166	0
24	0.892	0.00	3.8009	0

25	6.6667	0.00	3.3679	0
26	3.179	0.00	-2.6729	0
27	2.8457	0.00	-2.6729	0
28	0.50	0.00	-7.3131	0
29	0.4167	0.00	-7.4574	0
32	0.00	0.00	-7.3131	0
51	-6.2717	5.50	2.2838	0
53	-1.1581	5.50	-6.5733	0
63	-6.2717	-2.50	2.2838	0
67	-1.1581	-2.50	-6.5733	0
69	0.9427	0.00	0.5443	0
70	0.00	0.00	-1.0885	0
71	-0.9427	0.00	0.5443	0
92	1.1581	5.50	-6.5733	0
93	6.2717	5.50	2.2838	0
94	1.1581	-2.50	-6.5733	0
95	6.2717	-2.50	2.2838	0
108	5.1136	5.50	4.2896	0
109	-5.1136	5.50	4.2896	0
110	5.1136	-2.50	4.2896	0
111	-5.1136	-2.50	4.2896	0
112	2.50	5.50	4.2896	0
113	-1.50	4.50	4.2896	0
114	2.50	-2.50	4.2896	0
115	-1.50	-1.50	4.2896	0
148	0.4167	3.50	-7.4574	0
149	6.6667	3.50	3.3679	0
150	-6.25	3.50	4.0896	0
151	6.25	3.50	4.0896	0
152	-6.6667	3.50	3.3679	0
153	-0.4167	3.50	-7.4574	0
154	6.00	3.50	4.0896	0
155	6.5416	3.50	3.1514	0
156	-6.5416	3.50	3.1514	0
157	-6.00	3.50	4.0896	0
158	0.5417	3.50	-7.2409	0
159	-0.5417	3.50	-7.2409	0
160	0.00	0.00	0.00	0
161	0.00	1.00	0.00	0
170	2.4649	-2.50	-4.3098	0
171	-4.9649	-2.50	0.0203	0
172	2.4649	5.50	-4.3098	0
173	-4.9649	5.50	0.0203	0
182	4.4649	4.50	-0.8457	0
183	-2.9649	4.50	-3.4438	0
184	4.4649	-1.50	-0.8457	0
185	-2.9649	-1.50	-3.4438	0
186	0.00	-3.25	-1.0885	0
187	0.9427	-3.25	0.5443	0
188	-0.9427	-3.25	0.5443	0
189	0.00	0.00	-4.00	0
190	-3.4641	0.00	2.00	0
191	3.4641	0.00	2.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
69	1	1	1	1	1	1
70	1	1	1	1	1	1
71	1	1	1	1	1	1
186	1	1	1	1	1	1
187	1	1	1	1	1	1
188	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	5	71		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
2	5	9		L 2X2X1_4	A36	0.00	0.00	0.00
3	5	7		L 2X2X1_4	A36	0.00	0.00	0.00
4	8	2		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
5	20	69		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
6	20	24		L 2X2X1_4	A36	0.00	0.00	0.00
7	20	22		L 2X2X1_4	A36	0.00	0.00	0.00
8	23	17		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
9	4	19		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
10	10	14		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
11	29	25		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
12	70	32		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
13	11	26		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
14	27	32		L 2X2X1_4	A36	0.00	0.00	0.00
15	12	32		L 2X2X1_4	A36	0.00	0.00	0.00
25	6	3		PL 6X1/2	A36	0.00	0.00	0.00
26	18	21		PL 6X1/2	A36	0.00	0.00	0.00
27	28	13		PL 6X1/2	A36	0.00	0.00	0.00
52	108	110		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
53	112	114		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
54	113	115		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
55	109	111		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
56	51	63		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
59	53	67		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
60	92	94		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
63	93	95		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
64	148	149		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
65	150	151		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
66	152	153		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
79	154	155		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
80	156	157		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
81	158	159		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
84	182	184		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
87	172	170		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
90	173	171		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
93	183	185		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
94	186	189		T2L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
95	190	188		T2L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
96	187	191		T2L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
2	270.00	0	0.00	0.00	0.00
4	180.00	0	0.00	0.00	0.00
7	270.00	0	0.00	0.00	0.00
8	90.00	0	0.00	0.00	0.00
13	90.00	0	0.00	0.00	0.00
14	270.00	0	0.00	0.00	0.00
52	0.00	2	1.00	0.00	0.00
53	0.00	2	1.00	0.00	0.00
54	0.00	2	1.00	0.00	0.00
55	0.00	2	1.00	0.00	0.00
56	0.00	2	1.00	0.00	0.00
59	0.00	2	1.00	0.00	0.00
60	0.00	2	1.00	0.00	0.00
63	0.00	2	1.00	0.00	0.00
79	90.00	0	0.00	0.00	0.00
80	90.00	0	0.00	0.00	0.00
81	90.00	0	0.00	0.00	0.00

Exhibit F

Power Density/RF Emissions Report

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

T-Mobile Existing Facility

Site ID: CTFF868A

380 Horace Street
Bridgeport, Connecticut 06082

November 24, 2020

EBI Project Number: 6220005985

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	39.39%

November 24, 2020

T-Mobile
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CTFF868A

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **380 Horace Street in Bridgeport, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 380 Horace Street in Bridgeport, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

- 6) 4 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 7) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 8) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 9) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 10) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antennas used in this modeling are the Ericsson AIR 3246 for the 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 3246 for the 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 3246 for the 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 12) The antenna mounting height centerline of the proposed antennas is 80 feet above ground level (AGL).
- 13) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 14) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 3246	Make / Model:	Ericsson AIR 3246	Make / Model:	Ericsson AIR 3246
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.85 dBd	Gain:	15.85 dBd	Gain:	15.85 dBd
Height (AGL):	80 feet	Height (AGL):	80 feet	Height (AGL):	80 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	6,153.47	ERP (W):	6,153.47	ERP (W):	6,153.47
Antenna A1 MPE %:	3.46%	Antenna B1 MPE %:	3.46%	Antenna C1 MPE %:	3.46%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	80 feet	Height (AGL):	80 feet	Height (AGL):	80 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	38,477.89	ERP (W):	38,477.89	ERP (W):	38,477.89
Antenna A2 MPE %:	21.61%	Antenna B2 MPE %:	21.61%	Antenna C2 MPE %:	21.61%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	80 feet	Height (AGL):	80 feet	Height (AGL):	80 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	11,055.53	ERP (W):	11,055.53	ERP (W):	11,055.53
Antenna A3 MPE %:	9.37%	Antenna B3 MPE %:	9.37%	Antenna C3 MPE %:	9.37%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	34.44%
Verizon	4.95%
Site Total MPE % :	39.39%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	34.44%
T-Mobile Sector B Total:	34.44%
T-Mobile Sector C Total:	34.44%
Site Total MPE % :	39.39%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 2100 MHz LTE	4	1538.37	80.0	34.57	2100 MHz LTE	1000	3.46%
T-Mobile 2500 MHz LTE	1	19238.94	80.0	108.07	2500 MHz LTE	1000	10.81%
T-Mobile 2500 MHz NR	1	19238.94	80.0	108.07	2500 MHz NR	1000	10.81%
T-Mobile 600 MHz LTE	2	591.73	80.0	6.65	600 MHz LTE	400	1.66%
T-Mobile 600 MHz NR	1	1577.94	80.0	8.86	600 MHz NR	400	2.22%
T-Mobile 700 MHz LTE	2	648.82	80.0	7.29	700 MHz LTE	467	1.56%
T-Mobile 1900 MHz LTE	2	2203.69	80.0	24.76	1900 MHz LTE	1000	2.48%
T-Mobile 2100 MHz UMTS	2	1294.56	80.0	14.54	2100 MHz UMTS	1000	1.45%
						Total:	34.44%

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

Summary

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

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	34.44%
Sector B:	34.44%
Sector C:	34.44%
T-Mobile Maximum MPE % (Sector A):	34.44%
Site Total:	39.39%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **39.39%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit F

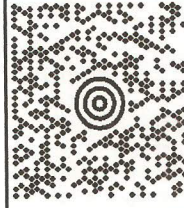
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1 LBS 1 OF 1

MARK APPELBY
8602094694
CENTERLINE COMMUNICATIONS
90 HAMILTON AVENUE
SOUTHINGTON CT 06489-3883

DWT: 11,8,1

SHIP TO:
TODD BOWMAN, SITE ADMIN & ACQ
(914) 757-5010 108
TARPON TOWERS II, LLC
SUITE 103
8916 77TH TERRACE EAST
LAKewood RANCH FL 34202-6415



FL 335 0-02



UPS GROUND

TRACKING #: 1Z 9Y4 503 P2 0615 3691



BILLING: P/P
ATTENTION UPS DRIVER: SHIPPER RELEASE



TM

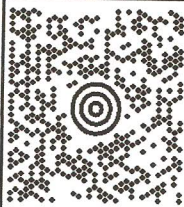
CS 22.0.12. WNTNV50 39.0A 11/2020*

1 LBS 1 OF 1

MARK APPELBY
8602094694
CENTERLINE COMMUNICATIONS
90 HAMILTON AVENUE
SOUTHINGTON CT 06489-3883

DWT: 11,8,1

SHIP TO:
MELANIE A. BACHMAN
CONNECTICUT SITING COUNCIL
EXECUTIVE DIRECTOR
10 FRANKLIN SQUARE
NEW BRITAIN CT 06051-2655

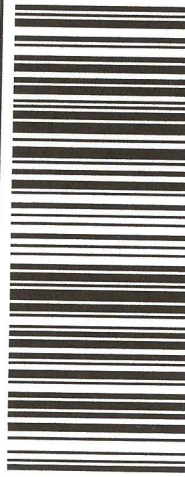


CT 067 9-06



UPS GROUND

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TM

CS 22.0.12. WNTNV50 39.0A 11/2020*

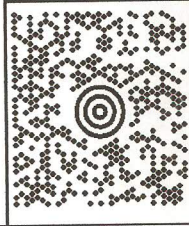
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MARK APPLEBY
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CENTERLINE COMMUNICATIONS
90 HAMILTON AVENUE
SOUTHINGTON CT 06489-3883

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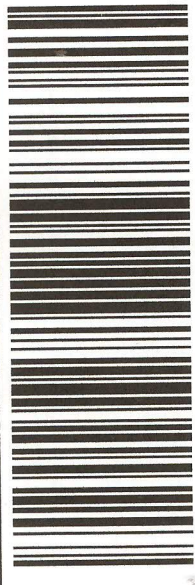
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DENNIS BUCKLEY ZONING ADMINISTRATOR
203-576-7217
CITY OF BRIDGEPORT
45 LYON TERRACE ROOM 210
CITY HALL
BRIDGEPORT CT 06604-4023



CT 066 9-04

UPS GROUND

TRACKING #: 1Z 9Y4 503 P2 0767 7678



BILLING: P/P
ATTENTION UPS DRIVER: SHIPPER RELEASE



TM

CS 22.0.12. WNTNUS0 39.0A 11/2020*

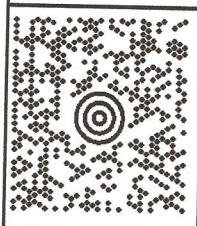
1 LBS

1 OF 1

MARK APPLEBY
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CENTERLINE COMMUNICATIONS
90 HAMILTON AVENUE
SOUTHINGTON CT 06489-3883

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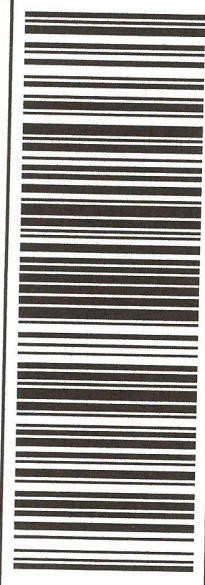
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203-576-7201
CITY OF BRIDGEPORT
999 BROAD ST
MARGARET E. MORTON GOVERNMENT CENTER
BRIDGEPORT CT 06604-4320



CT 066 9-04

UPS GROUND

TRACKING #: 1Z 9Y4 503 P2 1720 9655



BILLING: P/P
ATTENTION UPS DRIVER: SHIPPER RELEASE



TM

CS 22.0.12. WNTNUS0 39.0A 11/2020*

UPS CampusShip: View/Print Label

- 1. Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.
- 2. Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.
- 3. GETTING YOUR SHIPMENT TO UPS**
Customers with a Daily Pickup
 Your driver will pickup your shipment(s) as usual.

Customers without a Daily Pickup

Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.


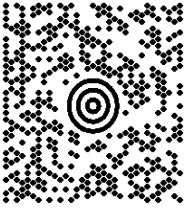
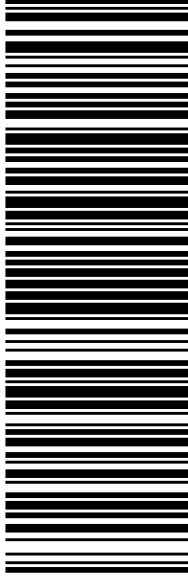

Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages. Hand the package to any UPS driver in your area.

UPS Access Point™
CVS STORE # 1060
326 MAIN ST
SOUTHINGTON ,CT 06489

UPS Access Point™
MICHAELS STORE # 1279
99 EXECUTIVE BLVD
SOUTHINGTON ,CT 06489

UPS Access Point™
ADVANCE AUTO PARTS STORE 8525
151 QUEEN ST
SOUTHINGTON ,CT 06489

FOLD HERE

<p>1 LBS 1 OF 1 DWT: 11.8,1</p> <p>MARK APPELBY 8602094694 CENTERLINE COMMUNICATIONS 90 HAMILTON AVENUE SOUTHINGTON CT 06489-3883</p> <p>SHIP TO: 416 HORACE REALTY LLC 380 HORACE ST BRIDGEPORT CT 06610-1903</p>	<p>CT 066 9-04</p>  	<p>UPS GROUND</p> <p>TRACKING #: 1Z 9Y4 503 P2 1689 4701</p> 	<p>BILLING: P/P ATTENTION UPS DRIVER: SHIPPER RELEASE</p>  <p>CS 22.0.12. WNTNV50 39.0A 11/2020*</p>
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