Centerline Communications
Andres Lopez
750 West Center Street, Floor 3
West Bridgewater, MA 02379
908-358-5305
alopez@clinellc.com

July 11, 2019

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

RE: Notice of Exempt Modification
293 Elm Street, Enfield, CT 06082
Latitude: 41°59'51.7" N
Longitude: 72°33'10.72" W
T-Mobile Site#: CTHA029A_L600

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 140-foot level of the existing 160-foot monopole tower at 293 Elm Street, Enfield, CT. The 160-foot tower and property are both owned by the Town of Enfield. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 600/700 MHz antennas. The new antennas would be installed at the 140-foot level of the tower. The existing antenna mounts can support the proposed antenna installations with the following modification: Install new 2" std. (2.38" O.D.) diagonal pipes secured to existing standoff (typical of 2 per section, total of 6).

Please note the last CSC submission dated October 19, 2017 (EM-T-MOBILE-049-171023) and subsequent approval listed, (3) RRUS-11 and (3) RRUS-32 radios. At the time of the build, those models were unavailable. Instead, (3) RRUS11-B12 and (3) RUS11 B4 were installed. As part of the same submission, (1) IBR 1300 microwave dish was approved but not installed because the equipment was unavailable at the time. The updated equipment list and planned modifications for this site are listed below.

Planned Modifications:

Remove and Replace:
(3) LNX6515-A1M Antennas **(Remove)** - (3) APXVAARR24_43 600/700 MHz Antennas **(Replace)**
(3) RRUS11 B12 radios **(Remove) -** (3) RRU 4449 B71+B12 radios **(Replace)**

Existing to Remain:
(3) Fiber Hybrid Line
(3) AIR32 B66A
(3) APX16DWV A20
(3) RRUS11 B4

This facility was approved for tower sharing by the CT Siting Council filing TS-T-MOBILE-049-160914 on September 30, 2016.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Mayor Michael Ludwick, Town of Enfield as tower and property owner, and the Town of Enfield Planning and Zoning Commission.

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).

Respectfully submitted,

Andres Lopez

Andres Lopez
Mobile: 908-358-5305
Fax: 508-819-3017
Office: 750 West Center Street, Floor 3 West Bridgewater, MA 02379
Email: alopez@clinellc.com

Attachments

cc: Mayor Michael Ludwick – as chief elected official
Town of Enfield Planning and Zoning Commission
Town of Enfield as property and 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

September 30, 2016

Eric Dahl
Vertical Development
20 Commercial Street
Branford, CT 06405

RE: **TS-T-MOBILE-049-160914** - T-Mobile Northeast LLC request for an order to approve tower sharing at an existing telecommunications facility located at 293 Elm Street, Enfield, Connecticut.

Dear Mr. Dahl:

At a public meeting held on September 29, 2016, 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 Northeast LLC 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.

This decision is under the exclusive jurisdiction of the Council and applies only to this request for tower sharing dated September 7, 2016. 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 September 7, 2016, 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.

Very truly yours,

Robert Stein

Robert Stein
Chairman

RS/FOC/lm

c: The Honorable Scott Kaupin, Mayor, Town of Enfield
Bryan Chodkowski, Town Manager, Town of Enfield
Roger O'Brien, Director of Planning, Town of Enfield

Exhibit B

Property Card

293 ELM ST

Location	293 ELM ST	**Mblu**	057/ / 0103/ /
Acct#	000600010333	**Owner**	ENFIELD TOWN OF
Assessment	$255,500	**Appraisal**	$365,000
PID	30446	**Building Count**	1
Fire District	3		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$95,000	$270,000	$365,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$66,500	$189,000	$255,500

Owner of Record

Owner	ENFIELD TOWN OF	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	820 ENFIELD ST ENFIELD, CT 06082	**Book & Page**	626/ 14
		Sale Date	01/30/1991
		Instrument	25

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
ENFIELD TOWN OF	$0		626/ 14	25	01/30/1991

Building Information

Building 1 : Section 1

Year Built:	
Living Area:	0
Replacement Cost:	$0
Building Percent Good:	
Replacement Cost Less Depreciation:	$0

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Extra Kitchens	
Fireplace(s)	
Extra Opening(s)	
Gas Fireplace(s)	
Blocked FPL(s)	
Bsmt Garage(s)	
Fin Bsmt	
FBM Quality	
Whirlpool(s)	
Walk Out	
Solar	

Building Photo

(http://images.vgsi.com/photos2/EnfieldCTPhotos//default.jpg)

Building Layout

Building Layout
(http://images.vgsi.com/photos2/EnfieldCTPhotos//Sketches/304

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	300
Description	Ind Land
Zone	I1
Neighborhood	C110
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0
Frontage	
Depth	
Assessed Value	$189,000
Appraised Value	$270,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
TWR1	Cell Twr 1 Carrier			1 UNITS	$95,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$95,000	$270,000	$365,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$66,500	$189,000	$255,500

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293 ELM ST

Location	293 ELM ST	**Mblu**	075/ / 0103/ /
Acct#	000600010333E	**Owner**	ENFIELD TOWN OF
Assessment	$2,651,150	**Appraisal**	$3,787,340
PID	85	**Building Count**	1
Fire District	3		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$2,989,430	$797,910	$3,787,340
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$2,092,610	$558,540	$2,651,150

Owner of Record

Owner	ENFIELD TOWN OF	**Sale Price**	$0
Co-Owner	PUBLIC SAFETY COMPLX	**Certificate**	1
Address	820 ENFIELD ST ENFIELD, CT 06082	**Book & Page**	626/ 14
		Sale Date	

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
ENFIELD TOWN OF	$0	1	626/ 14	

Building Information

Building 1 : Section 1

Year Built:	1991
Living Area:	23,348
Replacement Cost:	$3,735,400
Building Percent Good:	73
Replacement Cost Less Depreciation:	$2,726,840

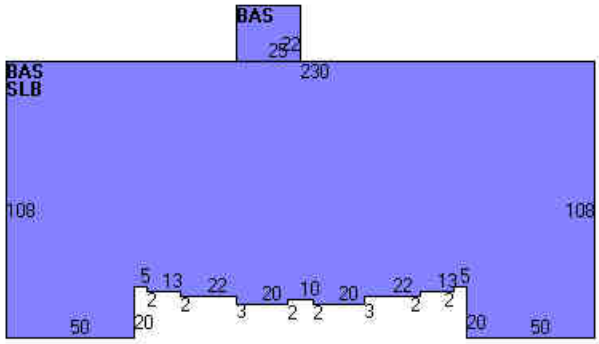
Building Attributes

Field	Description
STYLE	Police Station
MODEL	Comm/Ind
Grade	Average +10
Stories:	1
Occupancy	1
Exterior Wall 1	Brick
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Vinyl/Asphalt
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Hot Air-no Duc
AC Type	Central
Bldg Use	Exempt Comm
Total Rooms	
Total Bedrms	
Total Baths	
Total H Bths	
Extra Fixtures	
1st Floor Use:	
Heat/AC	Ht/AC Package
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Sus Ceil Wall
Rooms/Prtns	Average
Wall Height	8
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos2/EnfieldCTPhotos//\00\01\70/90

Building Layout



(http://images.vgsi.com/photos2/EnfieldCTPhotos//Sketches/85_

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	23,348	23,348
SLB	Slab	22,798	0
		46,146	23,348

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
SPR1	SPRINKLERS-WET	23348 SF	$17,040	1

Land

Land Use

Land Line Valuation

Use Code	925	**Size (Acres)**	7.43
Description	Exempt Comm	**Frontage**	
Zone	I-1	**Depth**	
Neighborhood	C110	**Assessed Value**	$558,540
Alt Land Appr	No	**Appraised Value**	$797,910
Category			

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	Paving	AS	Asphalt	40000 S.F.	$43,000	1
FN4	FENCE-10'CHAIN			2500 L.F.	$32,500	1
SHD1	Shed	FR	Frame	480 S.F.	$2,940	1
LT1	LIGHTS-IN W/PL			14 UNITS	$11,200	1
TWR1	Cell Twr 1 Carrier			2 UNITS	$150,100	1
SHD2	Shed gd	MS	Masonry	220 S.F.	$3,100	1
PAV1	Paving	AS	Asphalt	2520 S.F.	$2,710	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$2,989,430	$797,910	$3,787,340
2017	$3,179,430	$797,910	$3,977,340
2016	$3,179,430	$797,910	$3,977,340

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$2,092,610	$558,540	$2,651,150
2017	$2,225,610	$558,540	$2,784,150
2016	$2,225,610	$558,540	$2,784,150

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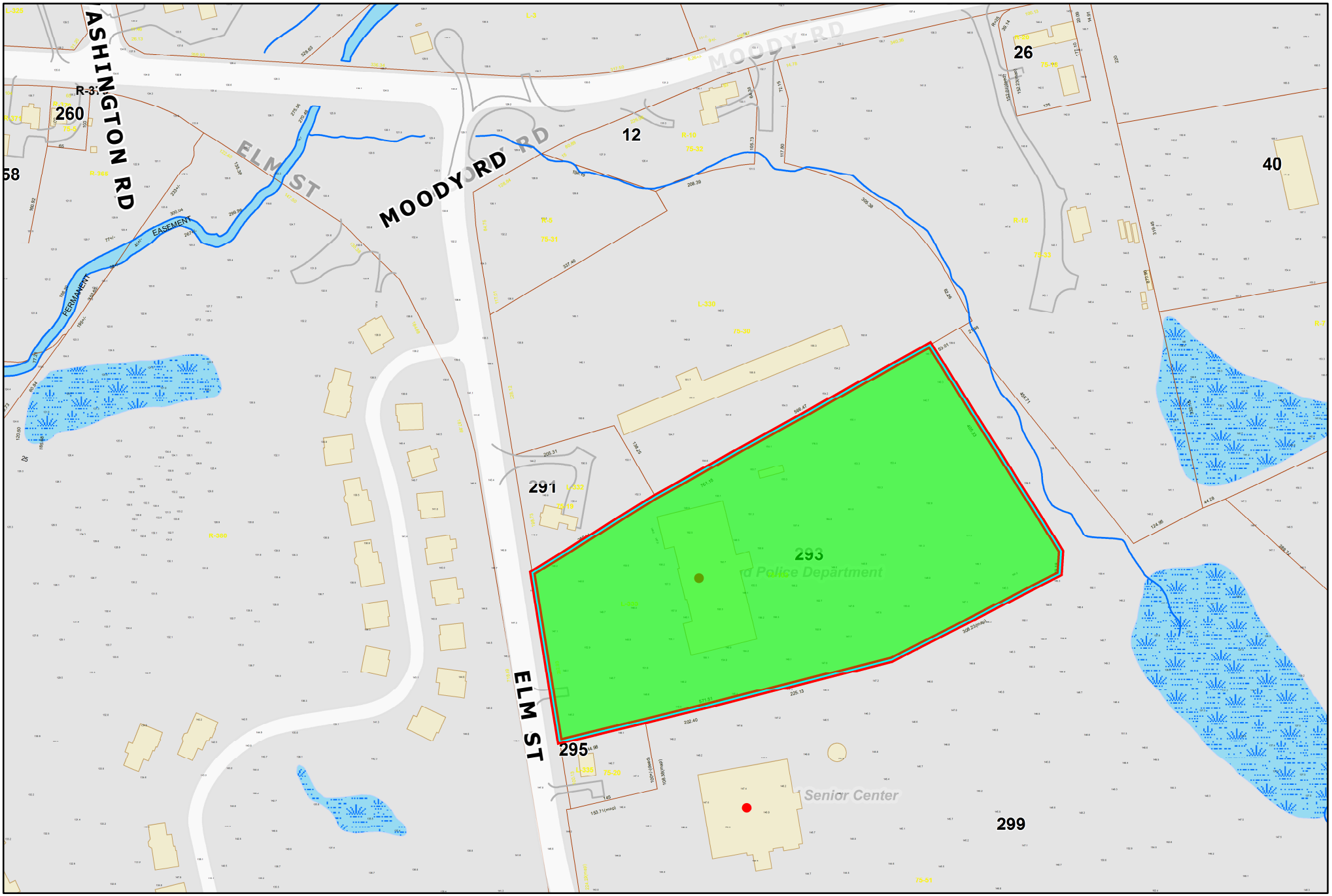

N
W E
S

293 Elm St Enfield CT CTHA029A

Feet
0 50 100 200 300
1 inch = 206 feet

The Town of Enfield, CT shall assume no liability for any errors,omissions, or inaccuracies in the information provided regardless of how caused or any decision made or action taken or not taken by reader in reliance upon any information or data furnished hereunder.

Exhibit C

Construction Drawings

SITE NAME: CTHA029A

293 ELM STREET
ENFIELD, CT 06082
HARTFORD COUNTY

SITE NUMBER: CTHA029A

RF DESIGN GUIDELINE: 67D97DB2

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS
SECTOR A: ANTENNA/RADIO	ACCESS NOT PERMITTED
SECTOR B: ANTENNA/RADIO	ACCESS NOT PERMITTED
SECTOR C: ANTENNA/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

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:	293 ELM STREET ENFIELD, CT 06082
LATITUDE:	41° 59' 51.80" N
LONGITUDE:	72° 33' 10.83" W
JURISDICTION:	CONNECTICUT SITING COUNCIL/TOWN OF ENFIELD
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

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.
T-1	TITLE SHEET	3
GN-1	GENERAL NOTES	3
A-1	COMPOUND & EQUIPMENT PLANS	3
A-2	ANTENNA LAYOUTS & ELEVATION	3
A-3	DETAILS	3
SN-1	SPECIAL INSPECTIONS NOTES	3
S-1	STRUCTURAL MODIFICATION DETAILS	3
E-1	ONE-LINE DIAGRAM AND GROUNDING DETAILS	3

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

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

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

STATE OF CONNECTICUT
DEREK J. CREASER
No. 25561
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/13/19	REVISED FOR CONSTRUCTION	MR
2	06/06/19	REVISED FOR CONSTRUCTION	VP
1	05/31/19	ISSUED FOR CONSTRUCTION	TR
0	05/16/19	ISSUED FOR REVIEW	TR

SITE NUMBER:
CTHA029A
SITE NAME:
CTHA029A
SITE ADDRESS:
293 ELM STREET
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE
TITLE SHEET
(L600)

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) LIGHTING 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-OF-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 – TRANSCEND WIRELESS
   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 (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 23587
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/13/19	REVISED FOR CONSTRUCTION	MR
2	06/06/19	REVISED FOR CONSTRUCTION	VP
1	05/31/19	ISSUED FOR CONSTRUCTION	TR
0	05/16/19	ISSUED FOR REVIEW	TR

SITE NUMBER:
CTHA029A

SITE NAME:
CTHA029A

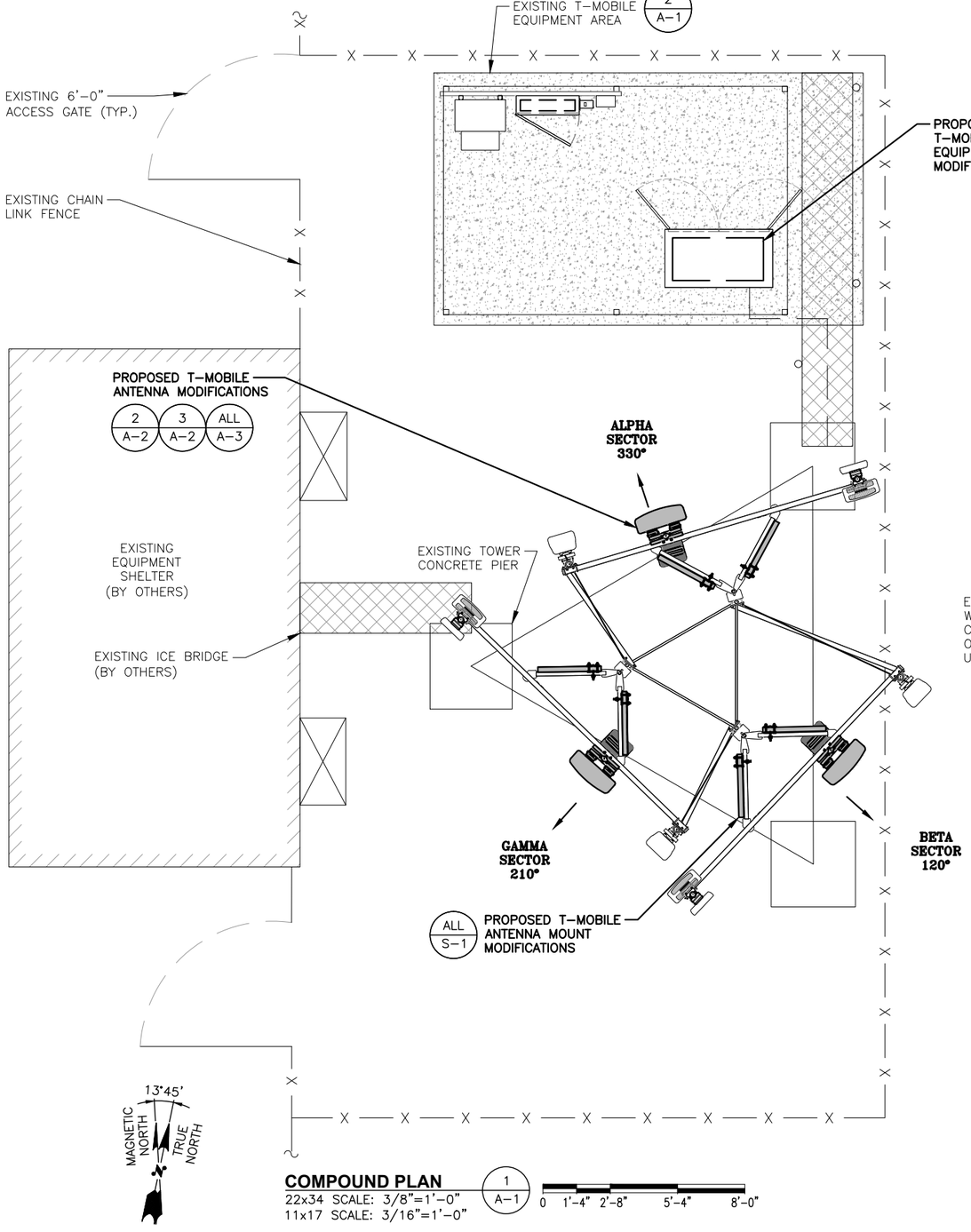
SITE ADDRESS:
293 ELM STREET
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE
GENERAL NOTES
(L600)

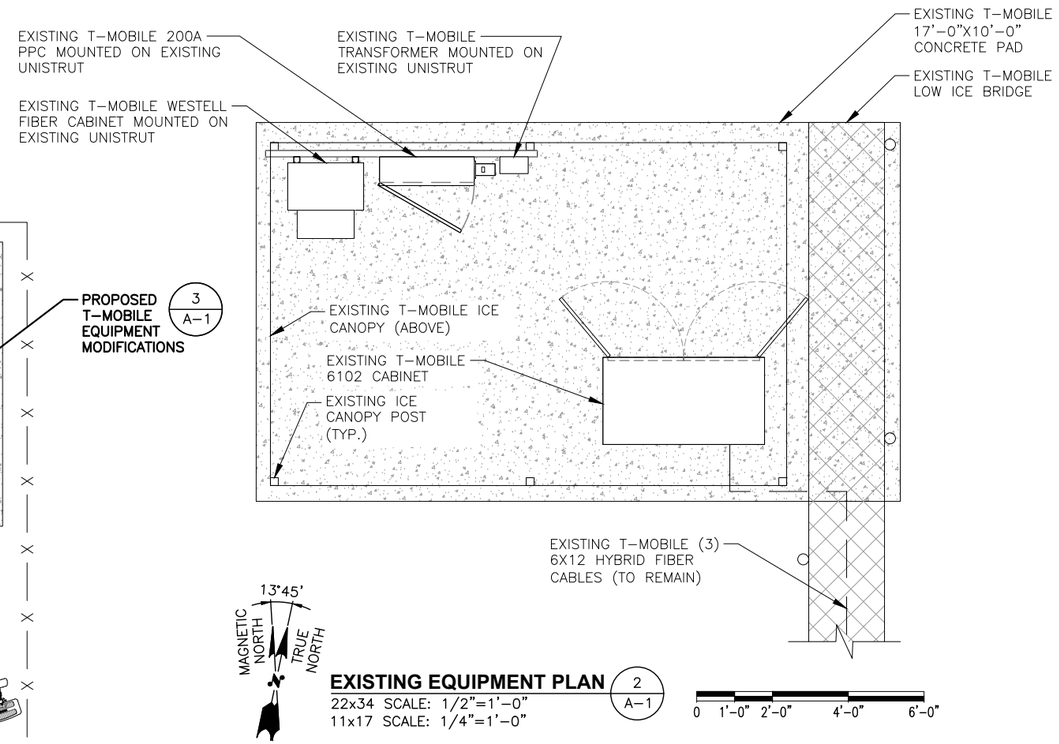
SHEET NUMBER
GN-1

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO MOUNT STRUCTURAL ANALYSIS BY HDG, (REV. 1) DATED: JUNE 04, 2019 & STRUCTURAL ANALYSIS PROVIDED BY HDG, DATED: JUNE 06, 2019 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

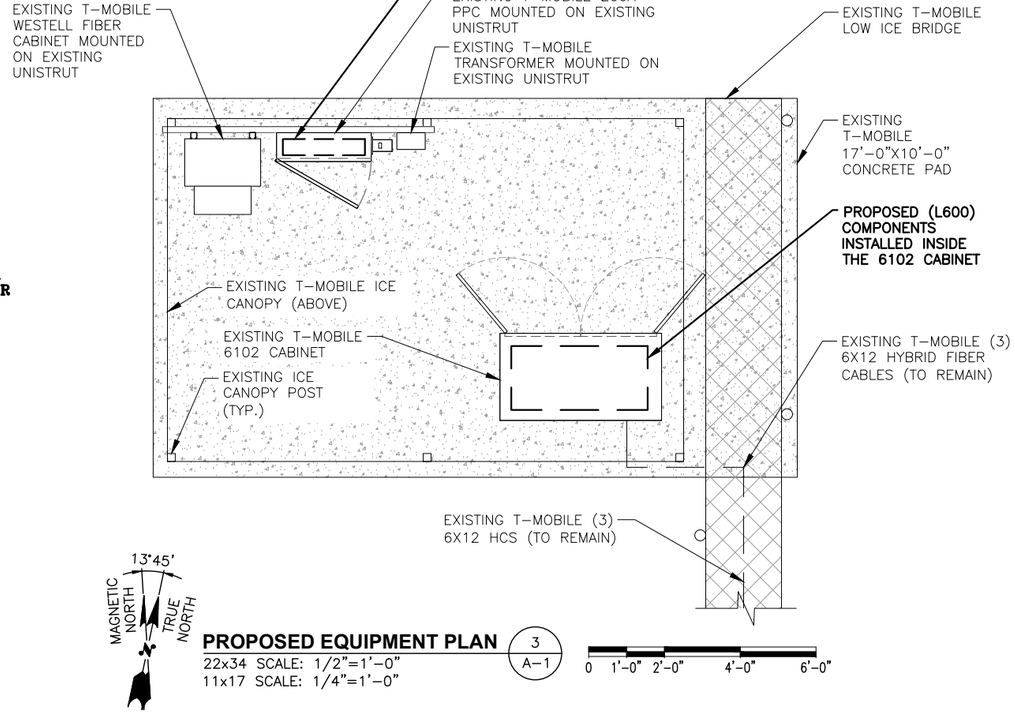
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



COMPOUND PLAN
1 A-1
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"
0 1'-4" 2'-8" 5'-4" 8'-0"



EXISTING EQUIPMENT PLAN
2 A-1
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"



PROPOSED EQUIPMENT PLAN
3 A-1
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 29561
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/13/19	REVISED FOR CONSTRUCTION	MR
2	06/06/19	REVISED FOR CONSTRUCTION	VP
1	05/31/19	ISSUED FOR CONSTRUCTION	TR
0	05/16/19	ISSUED FOR REVIEW	TR

SITE NUMBER:
CTHA029A

SITE NAME:
CTHA029A

SITE ADDRESS:
293 ELM STREET
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE
COMPOUND & EQUIPMENT PLANS
(L600)

SHEET NUMBER
A-1

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO MOUNT STRUCTURAL ANALYSIS BY HDG, (REV. 1) DATED: JUNE 04, 2019 & STRUCTURAL ANALYSIS PROVIDED BY HDG, DATED: JUNE 06, 2019 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

NOTE:
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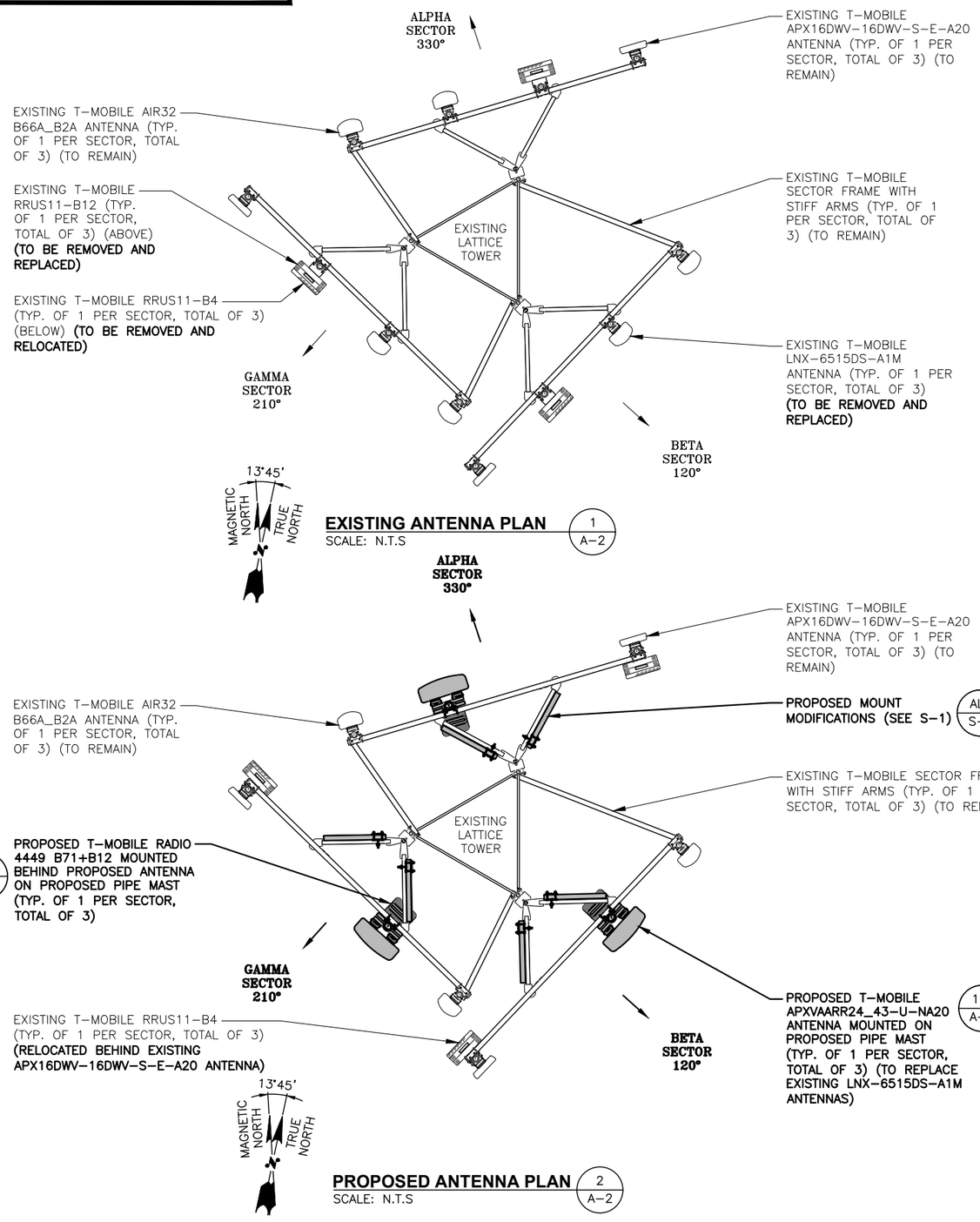
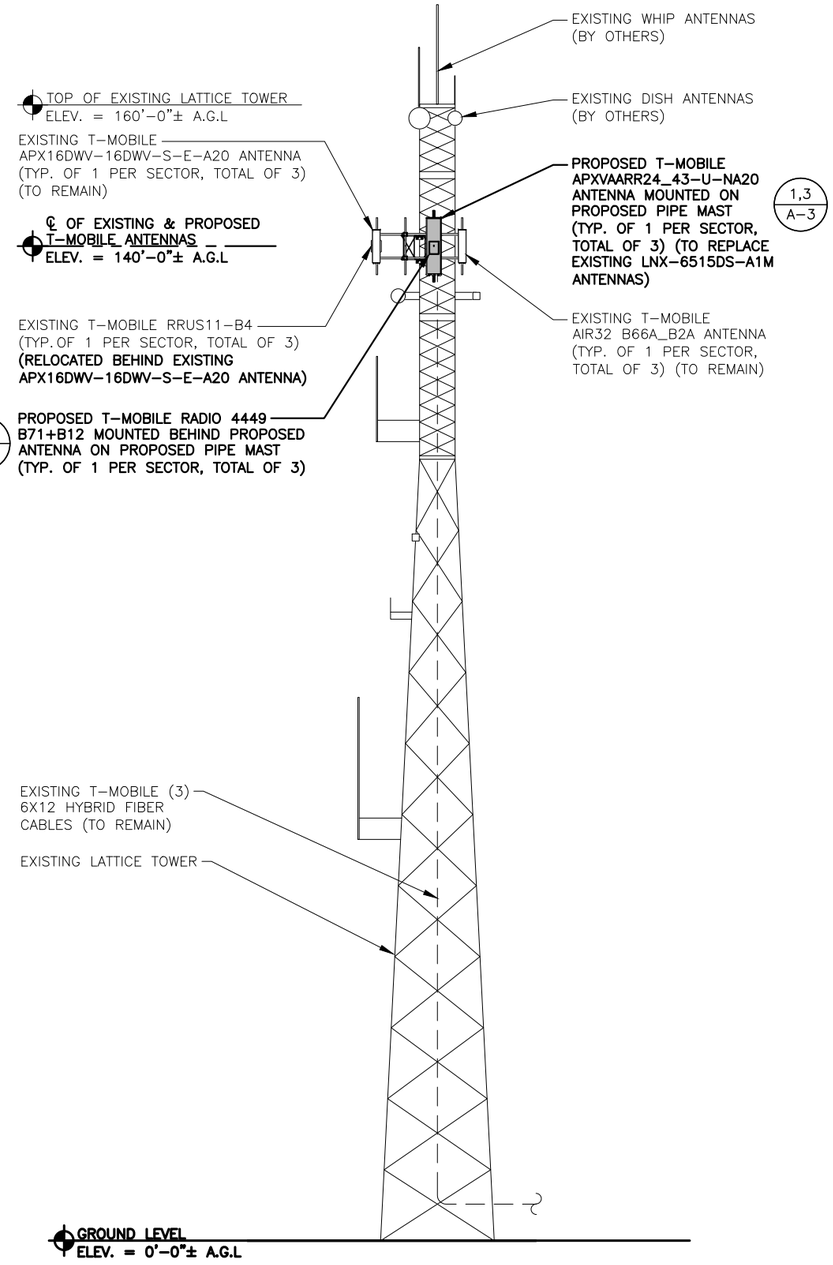


EXISTING ANTENNA PLAN 1 A-2
SCALE: N.T.S

PROPOSED ANTENNA PLAN 2 A-2
SCALE: N.T.S



TOWER ELEVATION 3 A-2
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"
0 5'-4" 10'-8" 21'-4" 32'-0"

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 25651
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/13/19	REVISED FOR CONSTRUCTION	MR
2	06/06/19	REVISED FOR CONSTRUCTION	VP
1	05/31/19	ISSUED FOR CONSTRUCTION	TR
0	05/16/19	ISSUED FOR REVIEW	TR

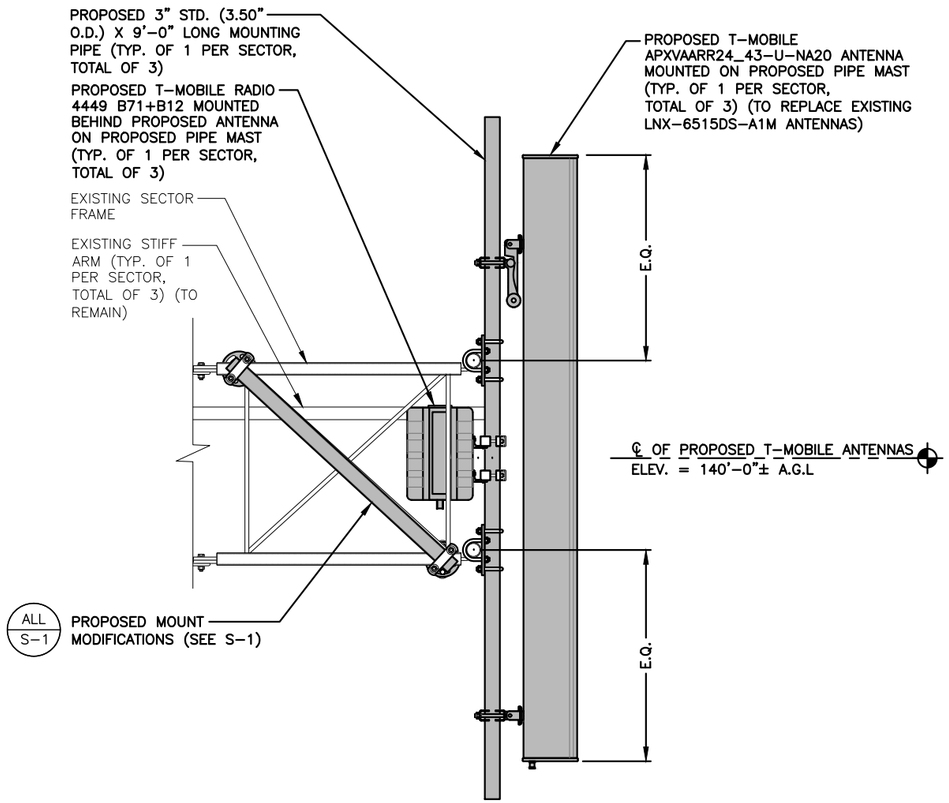
SITE NUMBER:
CTHA029A

SITE NAME:
CTHA029A

SITE ADDRESS:
293 ELM STREET
ENFIELD, CT 06082
HARTFORD COUNTY

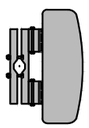
SHEET TITLE
ANTENNA LAYOUTS & ELEVATION
(L600)

SHEET NUMBER
A-2



L600+ L700 ANTENNA MOUNTING DETAIL 1/A-3
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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



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

STRUCTURAL NOTES:
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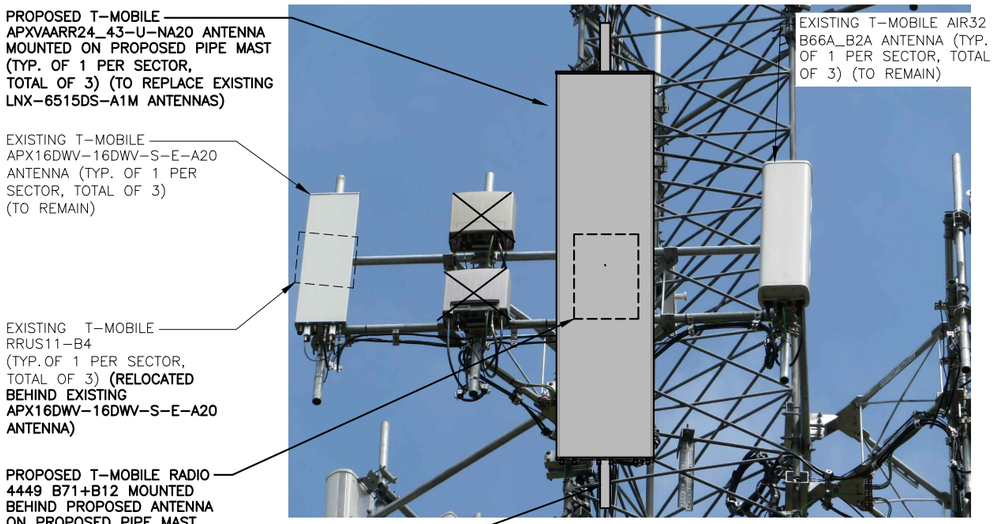
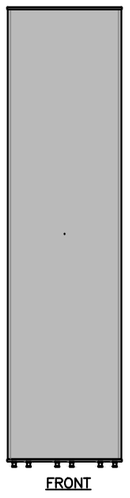


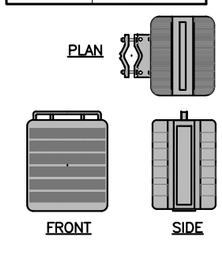
T-MOBILE ELEVATION PHOTO DETAIL 2/A-3
SCALE: N.T.S



L600 + L700 ANTENNA DIMENSIONS	
MODEL #	**APXVAARR24_43-U-NA20 (OCTA)**
MANUF.	RFS
HEIGHT	95.9"
WIDTH	24"
DEPTH	8.7"
WEIGHT	128 LBS

L600 + L700 ANTENNA DETAIL 3/A-3
SCALE: N.T.S

RADIO DIMENSIONS	
MODEL #	**RADIO 4449 B71+B12 (WITH FILTER)**
MANUF.	ERICSSON
HEIGHT	14.9"
WIDTH	13.1"
DEPTH	9.2"
WEIGHT	74 LBS



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

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 29561
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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SITE NUMBER:
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SITE ADDRESS:
293 ELM STREET
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE
DETAILS
(L600)

SHEET NUMBER
A-3

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. 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.
3. 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".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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 DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. 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.
12. 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.
13. 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-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. 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.
15. 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.
16. 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.
17. 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.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. 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
N/A	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:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. 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.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. 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.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

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WEST BRIDGEWATER, MA 02379

HDG HUDSON Design Group LLC
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FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 29567
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/13/19	REVISED FOR CONSTRUCTION	MR
2	06/06/19	REVISED FOR CONSTRUCTION	VP
1	05/31/19	ISSUED FOR CONSTRUCTION	TR
0	05/16/19	ISSUED FOR REVIEW	TR

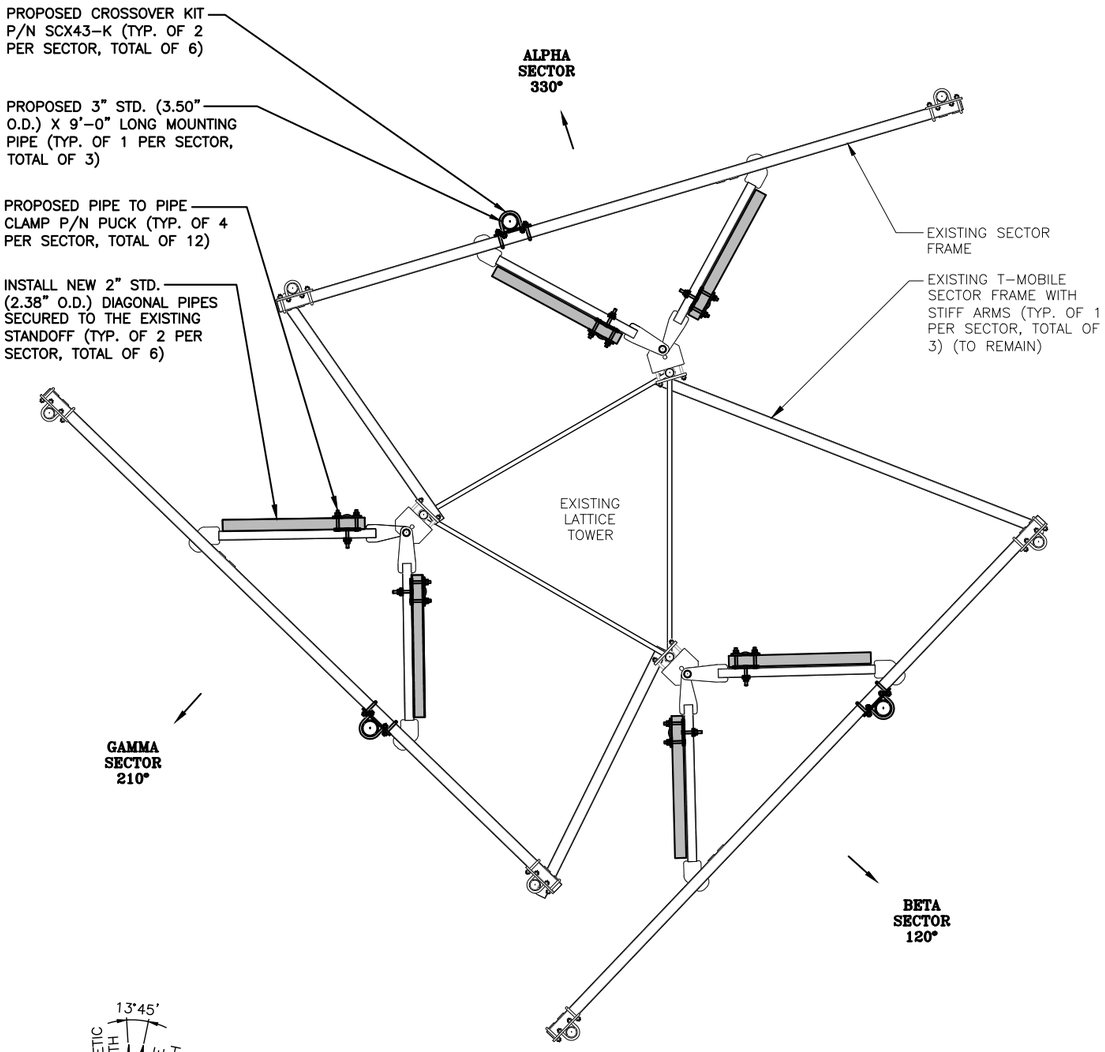
SITE NUMBER:
CTHA029A

SITE NAME:
CTHA029A

SITE ADDRESS:
293 ELM STREET
ENFIELD, CT 06082
HARTFORD COUNTY

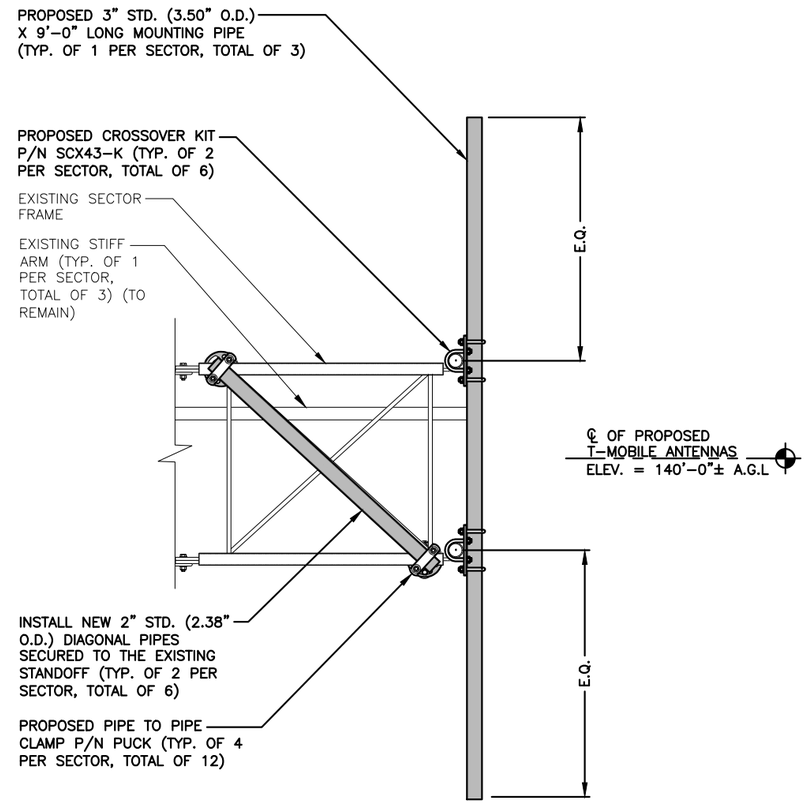
SHEET TITLE
SPECIAL INSPECTIONS NOTES
(L600)

SHEET NUMBER
SN-1



PROPOSED MOUNT MODIFICATION DETAILS (1 / S-1)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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



PROPOSED MOUNT MODIFICATION DETAILS (2 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO MOUNT STRUCTURAL ANALYSIS BY HDG, (REV. 1) DATED: JUNE 04, 2019 & STRUCTURAL ANALYSIS PROVIDED BY HDG, DATED: JUNE 06, 2019 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
DEREK J. CREASER
No. 25651
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

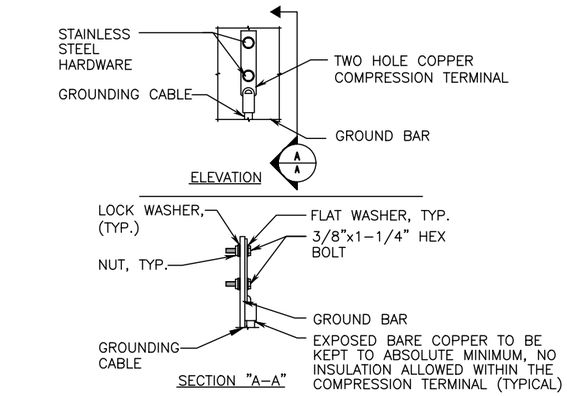
SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/13/19	REVISED FOR CONSTRUCTION	MR
2	06/06/19	REVISED FOR CONSTRUCTION	VP
1	05/31/19	ISSUED FOR CONSTRUCTION	TR
0	05/16/19	ISSUED FOR REVIEW	TR

SITE NUMBER:
CTHA029A
SITE NAME:
CTHA029A
SITE ADDRESS:
293 ELM STREET
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE
STRUCTURAL MODIFICATION DETAILS
(L600)

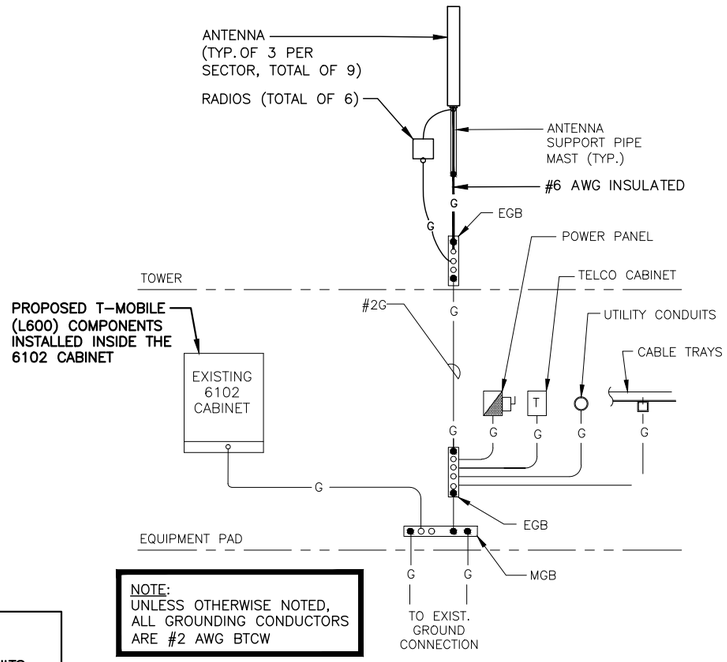
SHEET NUMBER
S-1



NOTE:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER AGB/EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL (1 / E-1)

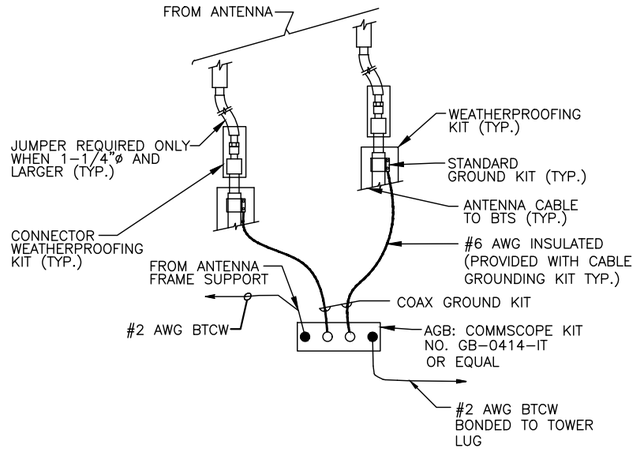
SCALE: N.T.S



NOTE:
UNLESS OTHERWISE NOTED, ALL GROUNDING CONDUCTORS ARE #2 AWG BTCW

GROUNDING RISER DIAGRAM (2 / E-1)

SCALE: N.T.S

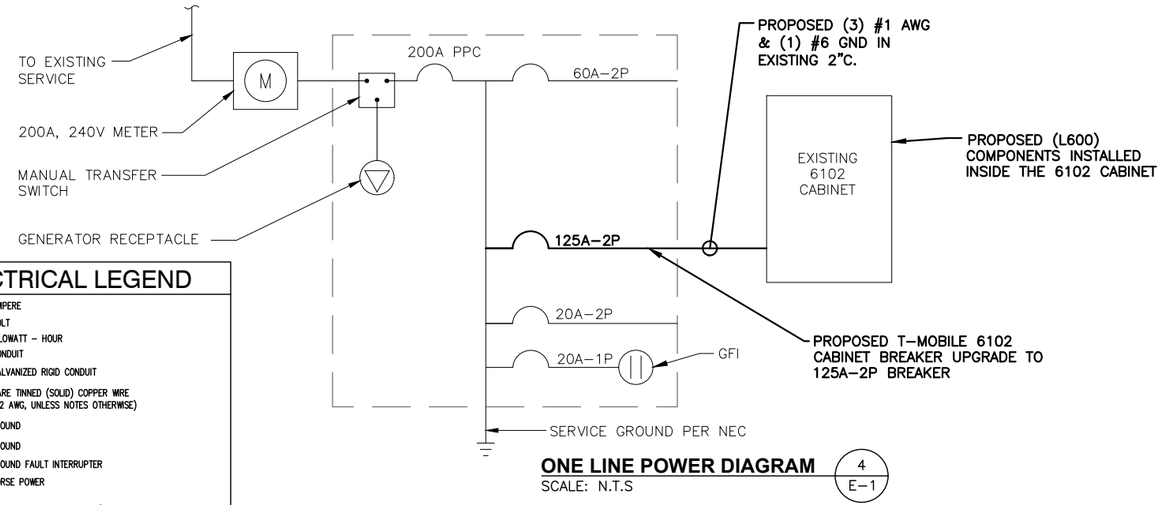


NOTE:
INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB.

TOWER TOP CABLE GROUNDING DETAIL (3 / E-1)

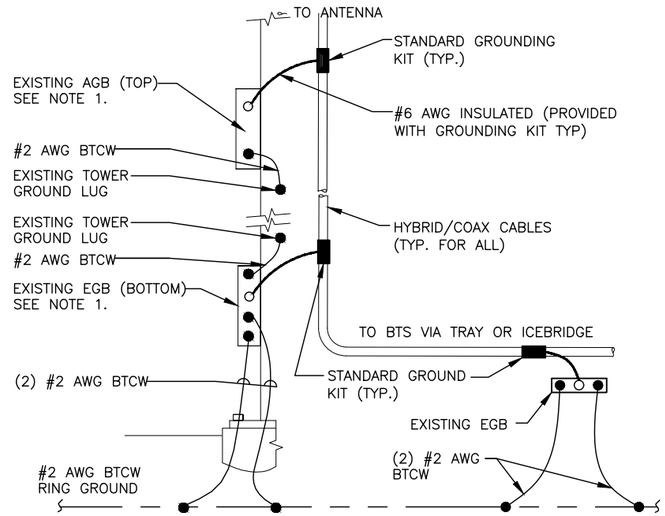
SCALE: N.T.S

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.



ONE LINE POWER DIAGRAM (4 / E-1)

SCALE: N.T.S



NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE ADDITIONAL AGB/EGB AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

TOWER BOTTOM CABLE GROUNDING DETAIL (5 / E-1)

SCALE: N.T.S

ELECTRICAL LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BTCW	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)
GND	GROUND
⏚	GROUND
GFI	GROUND FAULT INTERRUPTER
H.P	HORSE POWER
MGB	MASTER GROUND BAR — ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
AGB/EGB	EQUIPMENT GROUND BAR/ANTENNA GROUND BAR
— G —	GROUND COPPER WIRE, SIZE AS NOTED
———	EXPOSED WIRING
═══	INSULATED GROUNDING CONDUCTOR(#6 AWG STRANDED, UNLESS NOTED OTHERWISE)
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
○—●	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
NEC	NATIONAL ELECTRIC CODE
ø	PHASE
PPC	POWER PROTECTION CABINET
P	POLE
PVC	POLYVINYL CHLORIDE
UL	UNDERWRITER LABORATORIES
⊠	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

ELECTRICAL & GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. 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.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. 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.
9. 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.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
13. 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.
14. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. 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.
16. 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).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 25561
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/13/19	REVISED FOR CONSTRUCTION	MR
2	06/06/19	REVISED FOR CONSTRUCTION	VP
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SITE NUMBER:
CTHA029A

SITE NAME:
CTHA029A

SITE ADDRESS:
293 ELM STREET
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE
ONE-LINE DIAGRAM & GROUNDING DETAILS
(L600)

SHEET NUMBER
E-1

Exhibit D

Structural Analysis Report

STRUCTURAL ANALYSIS REPORT

For

CTHA029A

293 ELM STREET
ENFIELD, CT 06082

Antennas Mounted to the Tower

Prepared for:

CENTERLINE COMMUNICATIONS

T-Mobile

Dated: June 6, 2019

Prepared by:

HUDSON Design Group LLC

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www.hudsondesigngroupllc.com

STATE OF CONNECTICUT
GI KAI WANG
No. 28220
LICENSED PROFESSIONAL ENGINEER

6/6/2019

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by T-Mobile to conduct a structural evaluation of the 160' self-supporting tower supporting the existing and proposed T-Mobile's antennas located at elevation 140' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of T-Mobile's existing and proposed antennas listed below.

Record drawings of the existing tower were not available for our use. The previous structural analysis report prepared by All-Points Technology Corporation, PC, dated September 29, 2017, was available and obtained for our use.

Hudson Design Group LLC performed a mount analysis on the existing T-Mobile antenna mount on June 4, 2019. The existing antenna mounts are capable of supporting the proposed antenna installations with the following modification:

- Install new 2" std. (2.38" O.D.) diagonal pipes secured to the existing standoff (typ. of 2 per sector, total of 6).

Mount analysis is under separate submission.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower and foundation **are in conformance** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **82.2%** - (Diagonals at Tower Section T8 from EL.20' to EL.40' Controlling).

HUDSON Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	Lightning Rod	174'	Tower Leg
	14' Pipe	166'	Tower Leg
	10' Omni	163'	Side Mount Standoff
	3' Dish	158'	Side Mount Standoff
	(2) 2' Dish	158'	Side Mount Standoff
	Panel Antenna 1'X1'	158'	Tower Leg
T-Mobile	(3) APX16DWV-16DWVS Antennas	140'	T - Frame
T-Mobile	(3) AIR 32 B66Aa/B2a Antennas	140'	T - Frame
T-Mobile	(3) RRUS-11 B4	140'	T - Frame
T-Mobile	***(3) APXVAARR24_43-U-NA20 Antennas***	140'	T - Frame
T-Mobile	***(3) Radio 4449***	140'	T - Frame
	Panel Antenna 1'X1'	133'	Side Mount Standoff
	2' Dish	133'	Side Mount Standoff
	(2) 12' Omni	120'	Side Mount Standoff
	3' Omni	115.5'	Side Mount Standoff
	Panel Antenna 1'X1'	99'	Side Mount Standoff
	2' Yagi	88'	Side Mount Standoff
	(2) 3' Yagi	88'	Side Mount Standoff
	(2) 20' Omni	68'	Side Mount Standoff
	12' Omni	64'	Side Mount Standoff
	GPS	18'	Side Mount Standoff

Proposed T-Mobile Appurtenances shown in Bold.

T-MOBILE EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
T-Mobile	(3) Fiber Cables	140'	Tower Face

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Legs	61.5 %	40 - 60	PASS	
Diagonals	**82.2 %**	20 - 40	PASS	**Controlling**
Top Girts	4.8 %	100 - 110	PASS	
Bottom Girts	10.7 %	130 - 150	PASS	

HUDSON Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

2. 2018 Connecticut State Building Code

   City/Town: Enfield
   County: Hartford
   Wind Load: 105 mph
   Structural Class: II
   Exposure Category: B
   Topographic Category: 1
   Ice Thickness: 1.0 inch

3. Approximate height above grade to proposed antennas: 140'

ASSUMPTIONS:

1. The tower dimensions, member sizes and material strength are as indicated in the previous structural analysis report prepared by All-Points Technology Corporation, PC, dated September 29, 2017.

2. The existing appurtenances configuration is as stated in the previous structural analysis report prepared by All-Points Technology Corporation, PC, dated September 29, 2017. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

3. The tower and foundation are properly constructed and maintained. 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.

4. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

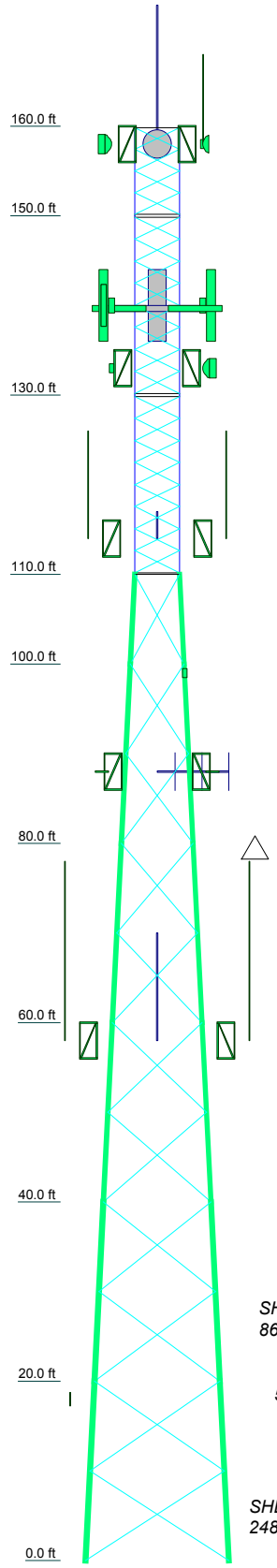
HDG recommends that the proposed antennas and radios be mounted on the existing T-frame supported by the tower.

Photo 1: Photo illustrating the Tower with Appurtenances shown.

HUDSON
Design Group LLC

CALCULATIONS

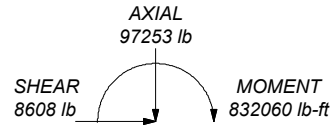
Section		T1	T2	T3	T4	T5	T6	T7	T8	T9	
Legs		SR 1 3/4	SR 2	SR 2 1/4	Pirod 105216	Pirod 105217			Pirod 105218		
Leg Grade		A572-50									
Diagonals		SR 7/8		SR 1		L2 1/2x2 1/2x3/16				L3x3x3/16	
Diagonal Grade		A36									
Top Girts		SR 1		SR 1 1/4	L3x3x3/16			N.A.			
Bottom Girts		SR 1		SR 1 1/4				N.A.			
Face Width (ft)	5				6		8		12	14	16
# Panels @ (ft)	4 @ 2.41667		16 @ 2.45833					11 @ 10			
Weight (lb) 17044.6	598.4	1268.8	1651.8	988.9	2222.5	2288.4	2320.3	2763.6	2961.9		



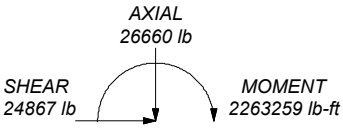
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 172221 lb
SHEAR: 16584 lb

UPLIFT: -154014 lb
SHEAR: 14955 lb



TORQUE 8052 lb-ft
50 mph WIND - 1.0000 in ICE



TORQUE 15892 lb-ft
REACTIONS - 105 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8x4'	160	Radio 4449	140
2 1/2"x14' pipe	160	PiROD 12' T-Frame (T-Mobile - existing)	140
Panel Antenna 1'X1'	158	PiROD 12' T-Frame	140
Omni 2"x10'	158	PiROD 12' T-Frame	140
2' Side Mount Standoff	158	3' Side Mount Standoff	133
2' Side Mount Standoff	158	Panel Antenna 1'X1'	133
2' Side Mount Standoff	158	3' Side Mount Standoff	133
VHLP3-11W	158	Andrew VHLP2-23	133
SP2-2.4	158	Omni 2"x12'	114
Andrew VHLP2-23	158	Pirod 6' Side Mount Standoff (1)	114
APX16DWV-16DWVS-E-A20 w/mount pipe	140	Omni 1"x3'	114
APX16DWV-16DWVS-E-A20 w/mount pipe	140	Pirod 6' Side Mount Standoff (1)	114
APX16DWV-16DWVS-E-A20 w/mount pipe	140	Omni 2"x12'	114
AIR 32 B66Aa/B2a w/mount pipe	140	Pirod 6' Side Mount Standoff (1)	114
AIR 32 B66Aa/B2a w/mount pipe	140	Panel Antenna 1'X1'	99
AIR 32 B66Aa/B2a w/mount pipe	140	3' Yagi antenna	88
RRUS-11 B4	140	3' Side Mount Standoff	88
RRUS-11 B4	140	3' Side Mount Standoff	88
RRUS-11 B4	140	2' Yagi	88
APXVAARR24_43-U-NA20 w/mount pipe (T-Mobile - Proposed)	140	3' Side Mount Standoff	88
APXVAARR24_43-U-NA20 w/mount pipe	140	3' Yagi antenna	88
APXVAARR24_43-U-NA20 w/mount pipe	140	Omni 2 1/2"x20'	58
Radio 4449	140	Pirod 6' Side Mount Standoff (1)	58
Radio 4449	140	Omni 2"x12'	58
		Pirod 6' Side Mount Standoff (1)	58
		Omni 2 1/2"x20'	58
		Pirod 6' Side Mount Standoff (1)	58
		GPS	18

MATERIAL STRENGTH

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

Hudson Design Group LLC
45 Beechwood Drive
North Andover, MA 01845
Phone: (978) 557-5553
FAX: (978) 336-5586

Job: **CTHA029A**			
Project: ***160 ft Self Supporting Tower***			
Client: T-Mobile	Drawn by: kw	App'd:	
Code: TIA-222-G	Date: 06/06/19	Scale: NTS	
Path: C:\Users\kwang\Documents\HUDSON DESIGN GROUP\AAA\CTHA029A - SST (T-Mobile - Centerline) 6-2019\CTHA029A\CTHA029A.eri		Dwg No. E-1	

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 160.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.00 ft at the top and 16.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 105 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	160.00-150.00			5.00	1	10.00
T2	150.00-130.00			5.00	1	20.00
T3	130.00-110.00			5.00	1	20.00
T4	110.00-100.00			5.00	1	10.00
T5	100.00-80.00			6.00	1	20.00
T6	80.00-60.00			8.00	1	20.00
T7	60.00-40.00			10.00	1	20.00
T8	40.00-20.00			12.00	1	20.00
T9	20.00-0.00			14.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	*Tower Elevation*	*Diagonal Spacing*	*Bracing Type*	*Has K Brace End Panels*	*Has Horizontals*	*Top Girt Offset*	*Bottom Girt Offset*
	ft	*ft*				*in*	*in*
T1	160.00-150.00	2.42	X Brace	No	No	2.0000	2.0000
T2	150.00-130.00	2.46	X Brace	No	No	2.0000	2.0000
T3	130.00-110.00	2.46	X Brace	No	No	2.0000	2.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T4	110.00-100.00	10.00	X Brace	No	No	0.0000	0.0000
T5	100.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T6	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T7	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T8	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T9	20.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 160.00-150.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 150.00-130.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 130.00-110.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T4 110.00-100.00	Truss Leg	Pirod 105216	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 100.00-80.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 80.00-60.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 60.00-40.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T8 40.00-20.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T9 20.00-0.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 160.00-150.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T2 150.00-130.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T3 130.00-110.00	Solid Round	1 1/4	A36 (36 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T4 110.00-100.00	Equal Angle	L3x3x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8	A	No	No	Ar (CaAa)	88.00 - 8.00	-10.0000	0.45	13	7	0.0000	1.1100		0.54
7/8	A	No	No	Ar (CaAa)	114.00 - 88.00	-8.0000	0.4	10	5	0.0000	1.1100		0.54
7/8	A	No	No	Ar (CaAa)	133.00 - 114.00	-6.0000	0.45	7	4	0.0000	1.1100		0.54
7/8	A	No	No	Ar (CaAa)	158.00 - 133.00	-4.0000	0.425	5	3	0.0000	1.1100		0.54
1/2	A	No	No	Ar (CaAa)	58.00 - 8.00	-12.0000	0.4	3	3	0.0000	0.5800		0.25
1/2	A	No	No	Ar (CaAa)	18.00 - 8.00	-12.0000	0.45	1	1	0.0000	0.5800		0.25
1/4	A	No	No	Ar (CaAa)	158.00 - 8.00	-11.0000	0.45	1	1	0.4000	0.4000		0.25
1/4	A	No	No	Ar (CaAa)	133.00 - 8.00	-9.0000	0.45	1	1	0.4000	0.4000		0.25
1/4	A	No	No	Ar (CaAa)	99.00 - 8.00	-7.0000	0.45	1	1	0.4000	0.4000		0.25
1/4	A	No	No	Ar (CaAa)	88.00 - 8.00	-5.0000	0.45	1	1	0.4000	0.4000		0.25
Safety Line 3/8 **********	A	No	No	Af (CaAa)	160.00 - 8.00	4.0000	0.45	1	1	0.3750	0.3750		0.22
1 1/4 Fiber Cable (T-Mobile - existing)	A	No	No	Ar (CaAa)	140.00 - 8.00	-2.0000	0.45	3	3	1.5500	1.5500		0.66

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Lightning Rod 5/8x4'	A	From Leg	0.00 0.00 14.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	0.25 0.66 0.97	0.25 0.66 0.97	31.00 33.82 39.29
2 1/2"x14' pipe	A	From Leg	0.00 0.00 6.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	4.32 5.85 7.40	4.32 5.85 7.40	81.00 112.35 153.32
Panel Antenna 1'X1'	B	From Leg	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice	1.20 1.34 1.48	0.32 0.40 0.49	10.00 17.91 27.76
Omni 2"x10'	B	From Leg	3.00 0.00 5.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice	2.00 3.02 4.07	2.00 3.02 4.07	20.00 35.50 57.47
2' Side Mount Standoff	A	From Leg	1.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice	1.00 1.50 2.00	1.00 1.50 2.00	30.00 50.00 70.00
2' Side Mount Standoff	B	From Leg	1.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice	1.00 1.50 2.00	1.00 1.50 2.00	30.00 50.00 70.00
2' Side Mount Standoff	C	From Leg	1.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice	1.00 1.50 2.00	1.00 1.50 2.00	30.00 50.00 70.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
**********									
PiROD 12' T-Frame	A	From Leg	2.00	0.0000	140.00	No Ice	12.20	12.20	360.00
(T-Mobile - existing)			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
PiROD 12' T-Frame	B	From Leg	2.00	0.0000	140.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
PiROD 12' T-Frame	C	From Leg	2.00	0.0000	140.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
APX16DWV-16DWVS-E-A	A	From Leg	4.00	0.0000	140.00	No Ice	6.78	3.57	62.60
20 w/mount pipe			0.00			1/2" Ice	7.26	4.41	111.44
			0.00			1" Ice	7.73	5.13	166.82
APX16DWV-16DWVS-E-A	B	From Leg	4.00	0.0000	140.00	No Ice	6.78	3.57	62.60
20 w/mount pipe			0.00			1/2" Ice	7.26	4.41	111.44
			0.00			1" Ice	7.73	5.13	166.82
APX16DWV-16DWVS-E-A	C	From Leg	4.00	0.0000	140.00	No Ice	6.78	3.57	62.60
20 w/mount pipe			0.00			1/2" Ice	7.26	4.41	111.44
			0.00			1" Ice	7.73	5.13	166.82
AIR 32 B66Aa/B2a w/mount	A	From Leg	4.00	0.0000	140.00	No Ice	6.81	6.14	153.90
pipe			0.00			1/2" Ice	7.30	6.99	215.61
			0.00			1" Ice	7.76	7.73	284.26
AIR 32 B66Aa/B2a w/mount	B	From Leg	4.00	0.0000	140.00	No Ice	6.81	6.14	153.90
pipe			0.00			1/2" Ice	7.30	6.99	215.61
			0.00			1" Ice	7.76	7.73	284.26
AIR 32 B66Aa/B2a w/mount	C	From Leg	4.00	0.0000	140.00	No Ice	6.81	6.14	153.90
pipe			0.00			1/2" Ice	7.30	6.99	215.61
			0.00			1" Ice	7.76	7.73	284.26
RRUS-11 B4	A	From Leg	3.00	0.0000	140.00	No Ice	2.79	1.19	51.00
			0.00			1/2" Ice	3.00	1.34	71.87
			0.00			1" Ice	3.21	1.50	95.78
RRUS-11 B4	B	From Leg	3.00	0.0000	140.00	No Ice	2.79	1.19	51.00
			0.00			1/2" Ice	3.00	1.34	71.87
			0.00			1" Ice	3.21	1.50	95.78
RRUS-11 B4	C	From Leg	3.00	0.0000	140.00	No Ice	2.79	1.19	51.00
			0.00			1/2" Ice	3.00	1.34	71.87
			0.00			1" Ice	3.21	1.50	95.78
**********									
APXVAARR24_43-U-NA20	A	From Leg	4.00	0.0000	140.00	No Ice	20.24	11.19	174.32
w/mount pipe			0.00			1/2" Ice	20.89	12.62	311.78
(T-Mobile - Proposed)			0.00			1" Ice	21.55	13.71	460.89
APXVAARR24_43-U-NA20	B	From Leg	4.00	0.0000	140.00	No Ice	20.24	11.19	174.32
w/mount pipe			0.00			1/2" Ice	20.89	12.62	311.78
			0.00			1" Ice	21.55	13.71	460.89
APXVAARR24_43-U-NA20	C	From Leg	4.00	0.0000	140.00	No Ice	20.24	11.19	174.32
w/mount pipe			0.00			1/2" Ice	20.89	12.62	311.78
			0.00			1" Ice	21.55	13.71	460.89
Radio 4449	A	From Leg	3.00	0.0000	140.00	No Ice	1.65	1.16	74.00
			0.00			1/2" Ice	1.81	1.30	90.16
			0.00			1" Ice	1.98	1.45	108.95
Radio 4449	B	From Leg	3.00	0.0000	140.00	No Ice	1.65	1.16	74.00
			0.00			1/2" Ice	1.81	1.30	90.16
			0.00			1" Ice	1.98	1.45	108.95
Radio 4449	C	From Leg	3.00	0.0000	140.00	No Ice	1.65	1.16	74.00
			0.00			1/2" Ice	1.81	1.30	90.16
			0.00			1" Ice	1.98	1.45	108.95
**********									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
3' Side Mount Standoff	C	From Leg	1.50 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	1.50 2.20 2.90	1.50 2.20 2.90	45.00 70.00 95.00
Panel Antenna 1'X1'	C	From Leg	3.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	1.20 1.34 1.48	0.32 0.40 0.49	10.00 17.91 27.76
3' Side Mount Standoff	B	From Leg	1.50 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	1.50 2.20 2.90	1.50 2.20 2.90	45.00 70.00 95.00
Omni 1"x3'	A	From Leg	6.00 0.00 1.50	0.0000	114.00	No Ice 1/2" Ice 1" Ice	0.30 0.54 0.73	0.30 0.54 0.73	12.00 14.85 19.79
Pirod 6' Side Mount Standoff (1)	A	From Leg	3.00 0.00 0.00	0.0000	114.00	No Ice 1/2" Ice 1" Ice	4.97 6.12 7.27	4.97 6.12 7.27	70.00 130.00 190.00
Omni 2"x12'	B	From Leg	6.00 0.00 6.00	0.0000	114.00	No Ice 1/2" Ice 1" Ice	2.40 3.63 4.87	2.40 3.63 4.87	32.00 50.56 76.80
Pirod 6' Side Mount Standoff (1)	B	From Leg	3.00 0.00 0.00	0.0000	114.00	No Ice 1/2" Ice 1" Ice	4.97 6.12 7.27	4.97 6.12 7.27	70.00 130.00 190.00
Omni 2"x12'	C	From Leg	6.00 0.00 6.00	0.0000	114.00	No Ice 1/2" Ice 1" Ice	2.40 3.63 4.87	2.40 3.63 4.87	32.00 50.56 76.80
Pirod 6' Side Mount Standoff (1)	C	From Leg	3.00 0.00 0.00	0.0000	114.00	No Ice 1/2" Ice 1" Ice	4.97 6.12 7.27	4.97 6.12 7.27	70.00 130.00 190.00
Panel Antenna 1'X1'	B	From Leg	0.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice	1.20 1.34 1.48	0.32 0.40 0.49	10.00 17.91 27.76
2' Yagi	A	From Leg	3.00 0.00 0.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice	1.50 2.25 3.00	1.50 2.25 3.00	10.00 20.00 30.00
3' Side Mount Standoff	A	From Leg	1.50 0.00 0.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice	1.50 2.20 2.90	1.50 2.20 2.90	45.00 70.00 95.00
3' Yagi antenna	B	From Leg	3.00 0.00 0.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice	0.60 0.81 1.04	0.30 0.41 0.54	10.00 36.35 66.52
3' Side Mount Standoff	B	From Leg	1.50 0.00 0.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice	1.50 2.20 2.90	1.50 2.20 2.90	45.00 70.00 95.00
3' Yagi antenna	C	From Leg	3.00 0.00 0.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice	0.60 0.81 1.04	0.30 0.41 0.54	10.00 36.35 66.52
3' Side Mount Standoff	C	From Leg	1.50 0.00 0.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice	1.50 2.20 2.90	1.50 2.20 2.90	45.00 70.00 95.00
Omni 2"x12'	A	From Leg	6.00 0.00 6.00	0.0000	58.00	No Ice 1/2" Ice 1" Ice	2.40 3.63 4.87	2.40 3.63 4.87	32.00 50.56 76.80
Pirod 6' Side Mount Standoff (1)	A	From Leg	3.00 0.00 0.00	0.0000	58.00	No Ice 1/2" Ice 1" Ice	4.97 6.12 7.27	4.97 6.12 7.27	70.00 130.00 190.00
Omni 2 1/2"x20'	B	From Leg	6.00 0.00 10.00	0.0000	58.00	No Ice 1/2" Ice 1" Ice	5.00 7.03 9.07	5.00 7.03 9.07	40.00 76.96 126.55

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Pirod 6' Side Mount Standoff (1)	B	From Leg	3.00 0.00 0.00	0.0000	58.00	No Ice 1/2" Ice 1" Ice	4.97 6.12 7.27	4.97 6.12 7.27	70.00 130.00 190.00
Omni 2 1/2"x20'	C	From Leg	6.00 0.00 10.00	0.0000	58.00	No Ice 1/2" Ice 1" Ice	5.00 7.03 9.07	5.00 7.03 9.07	40.00 76.96 126.55
Pirod 6' Side Mount Standoff (1)	C	From Leg	3.00 0.00 0.00	0.0000	58.00	No Ice 1/2" Ice 1" Ice	4.97 6.12 7.27	4.97 6.12 7.27	70.00 130.00 190.00
GPS	C	From Leg	3.00 0.00 0.00	0.0000	18.00	No Ice 1/2" Ice 1" Ice	0.21 0.31 0.42	0.21 0.31 0.42	5.00 7.52 11.31

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
VHLP3-11W	A	Paraboloid w/Shroud (HP)	From Leg	3.00 0.00 0.00	0.0000		158.00	3.28	No Ice 1/2" Ice 1" Ice	8.47 8.90 9.34	53.00 100.00 140.00
SP2-2.4	B	Paraboloid w/o Radome	From Leg	3.00 0.00 0.00	0.0000		158.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.67	22.00 39.49 56.98
Andrew VHLP2-23	C	Paraboloid w/Shroud (HP)	From Leg	3.00 0.00 0.00	0.0000		158.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	31.00 41.00 51.00
Andrew VHLP2-23	B	Paraboloid w/Shroud (HP)	From Leg	3.00 0.00 0.00	0.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	31.00 41.00 51.00

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	22216.73	-0.00	0.00	-5714.69	-543.90	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	26660.07	-146.57	-23568.06	-2179700.79	20575.04	1197.89
0.9 Dead+1.6 Wind 0 deg - No Ice	19995.05	-146.57	-23568.06	-2174957.72	20703.59	1195.92
1.2 Dead+1.6 Wind 30 deg - No Ice	26660.07	10944.01	-19017.46	-1793140.61	-1025849.36	-2373.42
0.9 Dead+1.6 Wind 30 deg - No Ice	19995.05	10944.00	-19017.46	-1788907.72	-1024249.04	-2371.11
1.2 Dead+1.6 Wind 60 deg - No Ice	26660.07	19512.26	-11326.13	-1071546.18	-1825294.42	-8827.11
0.9 Dead+1.6 Wind 60 deg - No	19995.05	19512.26	-11326.13	-1068321.97	-1822579.12	-8820.05

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Ice						
1.2 Dead+1.6 Wind 90 deg - No Ice	26660.07	23774.59	-41.01	-14545.48	-2197685.63	-15569.23
0.9 Dead+1.6 Wind 90 deg - No Ice	19995.05	23774.59	-41.01	-12798.26	-2194474.57	-15561.09
1.2 Dead+1.6 Wind 120 deg - No Ice	26660.07	21479.52	12529.20	1141404.80	-1954363.13	-15380.73
0.9 Dead+1.6 Wind 120 deg - No Ice	19995.05	21479.52	12529.19	1141549.79	-1951517.66	-15367.57
1.2 Dead+1.6 Wind 150 deg - No Ice	26660.07	11854.67	20717.24	1916669.83	-1093062.66	-8893.03
0.9 Dead+1.6 Wind 150 deg - No Ice	19995.06	11854.71	20717.23	1915716.10	-1091388.02	-8888.84
1.2 Dead+1.6 Wind 180 deg - No Ice	26660.07	16.70	22653.22	2120270.52	-2016.19	-1392.32
0.9 Dead+1.6 Wind 180 deg - No Ice	19995.05	16.70	22653.22	2119016.03	-1849.40	-1390.50
1.2 Dead+1.6 Wind 210 deg - No Ice	26660.07	-10909.19	19087.78	1790196.97	1019607.20	2351.25
0.9 Dead+1.6 Wind 210 deg - No Ice	19995.05	-10909.19	19087.78	1789400.87	1018348.96	2349.01
1.2 Dead+1.6 Wind 240 deg - No Ice	26660.07	-20394.40	11733.46	1073256.56	1877445.19	8869.89
0.9 Dead+1.6 Wind 240 deg - No Ice	19995.05	-20394.40	11733.46	1073487.85	1875009.17	8862.49
1.2 Dead+1.6 Wind 270 deg - No Ice	26660.07	-23826.68	-134.63	-27050.14	2203837.91	15891.66
0.9 Dead+1.6 Wind 270 deg - No Ice	19995.05	-23826.68	-134.63	-25282.17	2200945.60	15883.43
1.2 Dead+1.6 Wind 300 deg - No Ice	26660.07	-20751.10	-12060.65	-1130168.56	1922770.44	15532.99
0.9 Dead+1.6 Wind 300 deg - No Ice	19995.05	-20751.10	-12060.65	-1126873.46	1920265.52	15523.65
1.2 Dead+1.6 Wind 330 deg - No Ice	26660.07	-11989.53	-20649.31	-1919065.89	1112556.96	8593.37
0.9 Dead+1.6 Wind 330 deg - No Ice	19995.05	-11989.54	-20649.30	-1914680.26	1111169.68	8588.38
1.2 Dead+1.0 Ice+1.0 Temp	97252.96	-0.00	0.00	-51092.04	-3591.56	0.21
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	97252.96	-29.00	-8326.06	-829409.81	689.10	633.74
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	97252.96	4067.60	-7053.68	-714277.66	-385546.27	-2704.70
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	97252.96	7111.48	-4114.99	-438105.30	-670585.54	-5765.74
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	97252.96	8433.95	-7.34	-52648.98	-789822.56	-7988.12
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	97252.96	7445.84	4319.59	350139.48	-692995.14	-7611.68
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	97252.96	4211.08	7325.08	633168.40	-395574.49	-4547.42
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	97252.96	3.28	8231.13	722240.85	-3879.91	-671.37
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	97252.96	-4060.55	7065.89	613720.82	377315.07	2700.46
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	97252.96	-7210.60	4150.29	336139.30	670118.81	5780.30
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	97252.96	-8444.26	-25.84	-55179.50	784123.90	8052.39
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	97252.96	-7377.16	-4272.16	-450175.86	683735.15	7636.65
1.2 Dead+1.0 Wind 330	97252.96	-4237.96	-7313.32	-733611.35	392603.87	4488.35

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	22216.73	-29.91	-4809.81	-448789.78	3781.66	244.09
Dead+Wind 30 deg - Service	22216.73	2233.47	-3881.12	-369944.17	-209577.48	-486.44
Dead+Wind 60 deg - Service	22216.73	3982.09	-2311.45	-222813.61	-372587.22	-1800.68
Dead+Wind 90 deg - Service	22216.73	4851.96	-8.37	-7289.84	-448519.89	-3173.26
Dead+Wind 120 deg - Service	22216.73	4383.58	2556.98	228409.34	-398916.99	-3138.26
Dead+Wind 150 deg - Service	22216.73	2419.32	4228.01	386469.01	-223284.69	-1817.49
Dead+Wind 180 deg - Service	22216.73	3.41	4623.11	427982.06	-823.95	-284.06
Dead+Wind 210 deg - Service	22216.73	-2226.37	3895.47	360675.72	207479.85	481.90
Dead+Wind 240 deg - Service	22216.73	-4162.12	2394.58	214509.26	382402.37	1809.70
Dead+Wind 270 deg - Service	22216.73	-4862.59	-27.47	-9838.69	448946.34	3239.02
Dead+Wind 300 deg - Service	22216.73	-4234.92	-2461.36	-234765.35	391639.38	3169.00
Dead+Wind 330 deg - Service	22216.73	-2446.84	-4214.14	-395622.76	226433.33	1756.35

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	160 - 150	3.546	49	0.1961	0.0393
T2	150 - 130	3.135	49	0.1952	0.0372
T3	130 - 110	2.316	49	0.1859	0.0308
T4	110 - 100	1.576	43	0.1536	0.0244
T5	100 - 80	1.273	43	0.1297	0.0197
T6	80 - 60	0.787	43	0.0980	0.0137
T7	60 - 40	0.429	43	0.0681	0.0093
T8	40 - 20	0.191	43	0.0395	0.0058
T9	20 - 0	0.053	43	0.0195	0.0025

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
160.00	Lightning Rod 5/8x4'	49	3.546	0.1961	0.0393	534545
158.00	VHLP3-11W	49	3.464	0.1960	0.0389	534545
140.00	PiROD 12' T-Frame	49	2.722	0.1925	0.0341	173200
133.00	Andrew VHLP2-23	49	2.437	0.1884	0.0317	85803
114.00	Omni 1"x3'	49	1.711	0.1622	0.0260	25876
99.00	Panel Antenna 1'X1'	43	1.245	0.1276	0.0193	28885
88.00	2' Yagi	43	0.964	0.1089	0.0157	34685
58.00	Omni 2"x12'	43	0.400	0.0650	0.0089	38520
18.00	GPS	43	0.045	0.0176	0.0023	51704

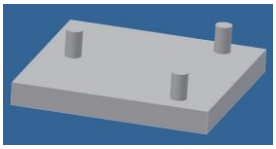
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$øP_{allow}$ lb	% Capacity	Pass Fail
T1	160 - 150	Leg	1 3/4	3	-2785.68	78497.50	3.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T2	150 - 130	Leg	2	36	-24442.60	109604.00	22.3	Pass
T3	130 - 110	Leg	2 1/4	92	-67303.00	146329.00	46.0	Pass
T4	110 - 100	Leg	Pirod 105216	149	-71197.60	142493.00	50.0	Pass
T5	100 - 80	Leg	Pirod 105217	161	-94343.60	214859.00	43.9	Pass
T6	80 - 60	Leg	Pirod 105217	176	-113179.00	214859.00	52.7	Pass
T7	60 - 40	Leg	Pirod 105217	191	-132094.00	214859.00	61.5	Pass
T8	40 - 20	Leg	Pirod 105218	206	-150280.00	300681.00	50.0	Pass
T9	20 - 0	Leg	Pirod 105218	221	-167156.00	300681.00	55.6	Pass
T1	160 - 150	Diagonal	7/8	12	-695.51	7667.77	9.1	Pass
T2	150 - 130	Diagonal	7/8	45	-3509.14	7682.33	45.7	Pass
T3	130 - 110	Diagonal	1	102	-4112.65	12556.30	32.8	Pass
T4	110 - 100	Diagonal	L2 1/2x2 1/2x3/16	159	-5278.42	12697.80	41.6	Pass
T5	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	172	-4144.63	11091.80	37.4	Pass
T6	80 - 60	Diagonal	L2 1/2x2 1/2x3/16	180	-3773.12	8118.15	46.5	Pass
T7	60 - 40	Diagonal	L2 1/2x2 1/2x3/16	195	-4264.97	6524.21	65.4	Pass
T8	40 - 20	Diagonal	L2 1/2x2 1/2x3/16	210	-4352.64	5297.34	82.2	Pass
T9	20 - 0	Diagonal	L3x3x3/16	225	-5538.98	7622.94	72.7	Pass
T1	160 - 150	Top Girt	1	4	-49.77	6669.94	0.7	Pass
T2	150 - 130	Top Girt	1	37	-157.76	6727.56	2.3	Pass
T3	130 - 110	Top Girt	1 1/4	96	-631.93	16476.40	3.8	Pass
T4	110 - 100	Top Girt	L3x3x3/16	153	-901.04	18759.70	4.8	Pass
T1	160 - 150	Bottom Girt	1	7	-125.27	6669.94	1.9	Pass
T2	150 - 130	Bottom Girt	1	42	-720.46	6727.56	10.7	Pass
T3	130 - 110	Bottom Girt	1 1/4	99	-483.60	16476.40	2.9	Pass
							Summary	
						Leg (T7)	61.5	Pass
						Diagonal (T8)	82.2	Pass
						Top Girt (T4)	4.8	Pass
						Bottom Girt (T2)	10.7	Pass
						RATING =	**82.2**	**Pass**

Unit Base Foundation

Checks capacity of square mat foundation with raised piers for a self-supporting tower



BU#:
Site Name: CTHA029A
App Number: N/A
TIA-222 Revision: G

Design Reactions		
Shear, **S**:	24.9	kips
Moment, **M**:	2263.0	ft-kips
Compression/leg, **Ca**:	172.2	kips
Uplift/leg, **Ua**:	154.0	kips
Tower Weight, **Wt**:	26.7	kips
Tower Height, **H**:	160.0	ft
Base Face Width, **w'**:	16.0	ft

Pad Properties		
Depth, **D**:	5.5	ft
Pad Width, **W**:	23.5	ft
Pad Thickness, **T**:	1.5	ft
Ext. Above Grade, **E**:	0.5	ft
Neglected Depth, **N**:	0.0	ft
Pad Rebar Size, **Sp**:		
Pad Rebar Quantity, **mp**:		#N/A

Pier Properties		
Pier Shape:	Circular	
Pier Width, di:	3.5	ft
Pier Rebar Size, **Sc**:		
Pier Rebar Quantity, **mc**:		#N/A
Pier Tie Size, **St**:		
Tie Quantity, **mt**:		#N/A

Material Properties		
Rebar Tensile, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Density, δ**c**:	150	pcf
Clear Cover, **cc**:	3	in

Soil Properties		
Soil Unit Weight, γ:	100	pcf
Ultimate Bearing: **Bc**:	6.000	ksf
Cohesion, **Co**:	0.000	ksf
Friction Angle, φ:	30	degrees
Base Sliding, **μ**:	0.4	

Design Checks	***Capacity/ Availability***	***Demand/ Limits***	***Check***
Base Sliding (kips):	214.40	24.90	**11.6%**
Overturning (k-ft):	3744.44	2263.00	**60.4%**
Bearing (ksf):	4.50	1.77	**39.2%**
1-way Shear (kips):	#N/A	#N/A	**#N/A**
2-way Shear (kips):	#N/A	172.20	**#N/A**
Pier concrete stress (ksf):	2161.29	172.20	**8.0%**
Pier moment capacity (k-ft):	117.40	56.03	**47.7%**
Pad moment capacity(k-ft):	#N/A	635.53	**#N/A**

☐ Tower centroid is offset from foundation centroid

Exhibit E

Mount Analysis

May 20, 2019
June 4, 2019 (Rev. 1)

CENTERLINE COMMUNICATIONS T··Mobile·

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

RE: Site Number: CTHA029A
Site Address: 293 Elm Street
Enfield, CT 06082

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by T-Mobile to perform a mount analysis on the existing T-Mobile antenna mounts to determine their capabilities of supporting the following equipment loading:

- (3) AIR 32 B66A B2A Antennas (56.6"x12.9"x8.7" – Wt. = 133 lbs. /each)
- (3) APX16DWV-16DWVS-E-A20 Antennas (55.9"x13.0"x3.2" – Wt. = 19 lbs. /each)
- (3) RRUS-11 B4 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each)
- **(3) APXVAARR24_43-U-NA20 Antennas (95.9"x24.0"x8.7" – Wt. = 128 lbs. /each)**
- **(3) 4449 B71+B12 RRH's (14.9"x13.1"x9.2" – Wt. = 74 lbs. /each)**

**Proposed equipment shown in bold.*

No original structural design documents were available for the existing mounts. HDG reviewed field photographs dated May 9, 2019 and used field data from similar mounts to complete this analysis.

Based on our analysis, we have determined that the existing antenna mounts **ARE CAPABLE** of supporting the proposed antenna installations with the following modifications:

- **Install new 2" std. (2.38" O.D.) diagonal pipes secured to the existing standoff (typ. of 2 per sector, total of 6).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	5	LC3	148%	**FAIL**
Modified Mount Rating	14	LC3	73%	**PASS**

This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 and the 2018 Connecticut State Building Code (See the attached analysis).

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. Contractor to perform pre-inspection prior to construction.

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 mounts have been adequately secured to the tower structure per the mount manufacturer's specifications.

5. All components pertaining to T-Mobile's mounts 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
Structural Dept. Head

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 06/04/2019
Project Name: CTHA029A
Project No.: CTHA029A
Designed By: LBW **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

K_z=	**1.088**

z=	140	(ft)
z_g=	1200	(ft)
α=	7.0	

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_e
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

2.6.6.4 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

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

$K_h = e^{(f*z/H)}$

K_{zt}=	#DIV/0!

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

Category=	1

K_h=	#DIV/0!	
K_e=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	140	
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	
K_{iz} =	1.16	(from Sec. 2.6.8)

2.6.8 Design Ice Thickness

Max Ice Thickness = t_i = **1.00** in

Importance Factor, I_{ice} = I_{ice}= **1.25** (from Table 2-3)

$t_{iz} = 2.0*t_i*I_{ice}*K_{iz}*(Kzt)^{0.35}$ t_{iz} = 2.89 in

Date: 06/04/2019
Project Name: CTHA029A
Project No.: CTHA029A
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	160	Gh=	0.85

2.6.7.2 Guyed Masts Gh= 0.85

2.6.7.3 Pole Structures Gh= 1.1

2.6.9 Appurtenances Gh= 1.0

2.6.7.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

Gh=	1.35	**Gh=**	**1.00**

2.6.9.2 Design Wind Force on Appurtenances

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

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

		K_z=	1.088	
		K_{zt}=	1.0	
q_z=	**30.02**	K_d=	0.85	(from Table 2-2)
$q_{z\,(ice)}$=	**5.92**	V_{max}=	105	
		$V_{max\,(ice)}$=	50	
		I=	1.2	(from Table 2-3)
		I_{wice}=	1.0	(from Table 2-3)

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

Date: 06/04/2019
Project Name: CTHA029A
Project No.: CTHA029A
Designed By: LBW Checked By: MSC

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Determine Ca:

Table 2-8

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
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{-1.0})$
	C > 64 (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, and the section length considered to have uniform wind load).

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

Ice Thickness = **2.89** **in**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/Ice)
AIR 32 B66A B2A Antenna	56.6	12.9	8.7	5.07	4.39	1.28	**195**	**61**
APX16DWV-16WVS-E-A20 Antenna	55.9	13.0	3.2	5.05	4.30	1.28	**194**	**61**
APXVAARR24_43-U-NA20 Antenna	95.9	24.0	8.7	15.98	4.00	1.27	**608**	**158**
4449 B71+B12 RRH	14.9	13.1	9.2	1.36	1.14	1.20	**49**	**19**
RRUS-11 B4 RRH	19.7	17.0	7.2	2.33	1.16	1.20	**84**	**29**
2" Pipe	2.4	12.0	0.0	0.20	0.20	1.20	**7**	**7**
3/4" Round Bar	0.8	12.0	0.0	0.06	0.06	1.20	**2**	**6**

Date: 06/04/2019
Project Name: CTHA029A
Project No.: CTHA029A
Designed By: LBW **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 2.89 in.
Density of ice: 56 pcf

AIR 32 B66A B2A Antenna

Weight of ice based on total radial SF area:

Height (in):	56.6	
Width (in):	12.9	
Depth (in):	8.7	
Total weight of ice on object:		307 lbs
Weight of object:	133.0 lbs	
Combined weight of ice and object:		440 lbs

APX16DWV-16WVS-E-A20 Antenna

Weight of ice based on total radial SF area:

Height (in):	55.9	
Width (in):	13.0	
Depth (in):	3.2	
Total weight of ice on object:		268 lbs
Weight of object:	19.0 lbs	
Combined weight of ice and object:		287 lbs

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:		802 lbs
Weight of object:	128.0 lbs	
Combined weight of ice and object:		930 lbs

4449 B71+B12 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.1	
Depth (in):	9.2	
Total weight of ice on object:		83 lbs
Weight of object:	74.0 lbs	
Combined weight of ice and object:		157 lbs

RRUS-11 B4 RRH

Weight of ice based on total radial SF area:

Height (in):	19.7	
Width (in):	17.0	
Depth (in):	7.2	
Total weight of ice on object:		124 lbs
Weight of object:	51.0 lbs	
Combined weight of ice and object:		175 lbs

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		19 plf

3" Pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		23 plf

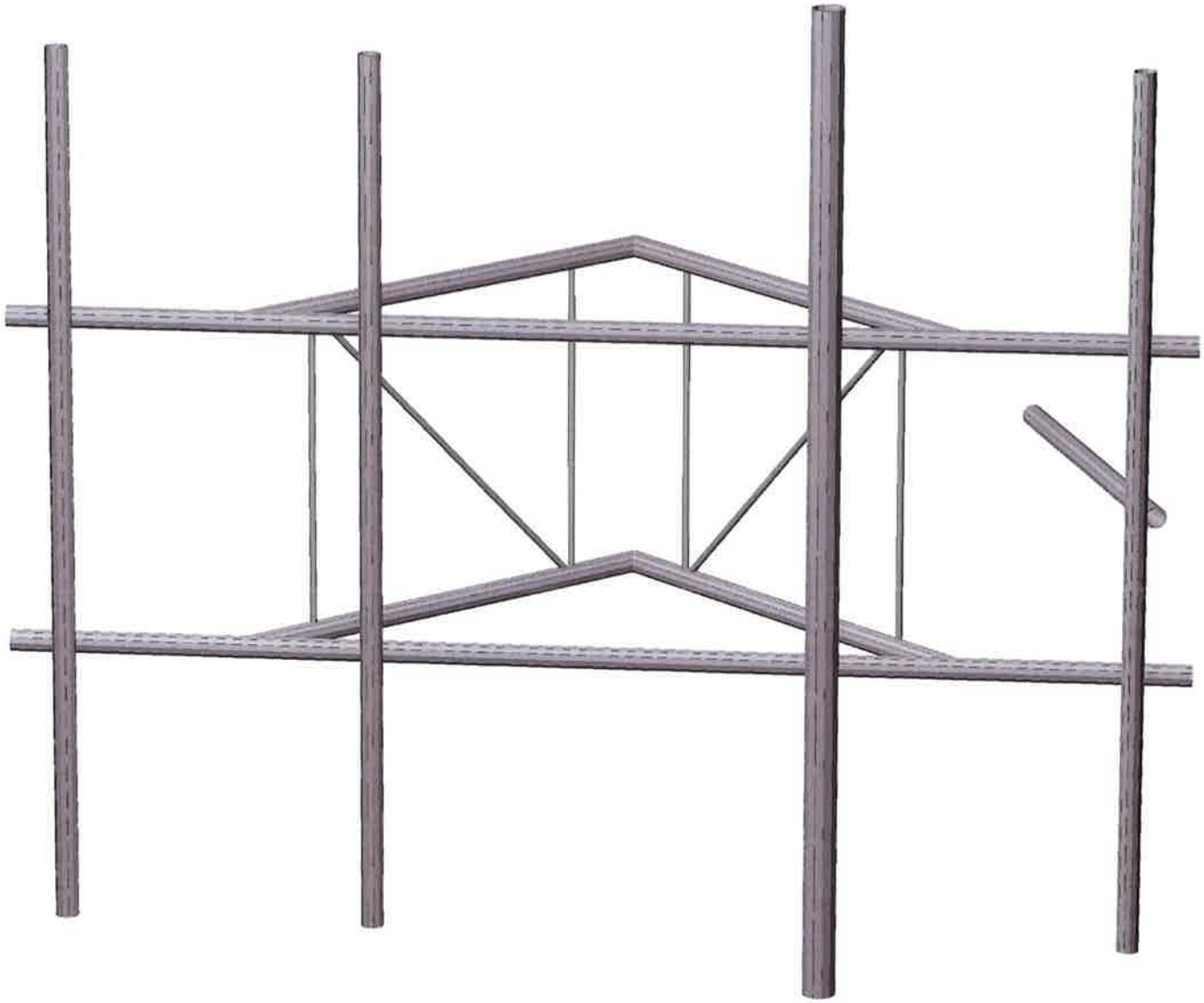
3/4" Round Bar

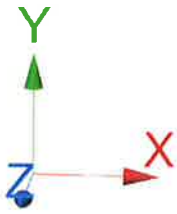
Per foot weight of ice:

diameter (in):	0.75	
Per foot weight of ice on object:		13 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

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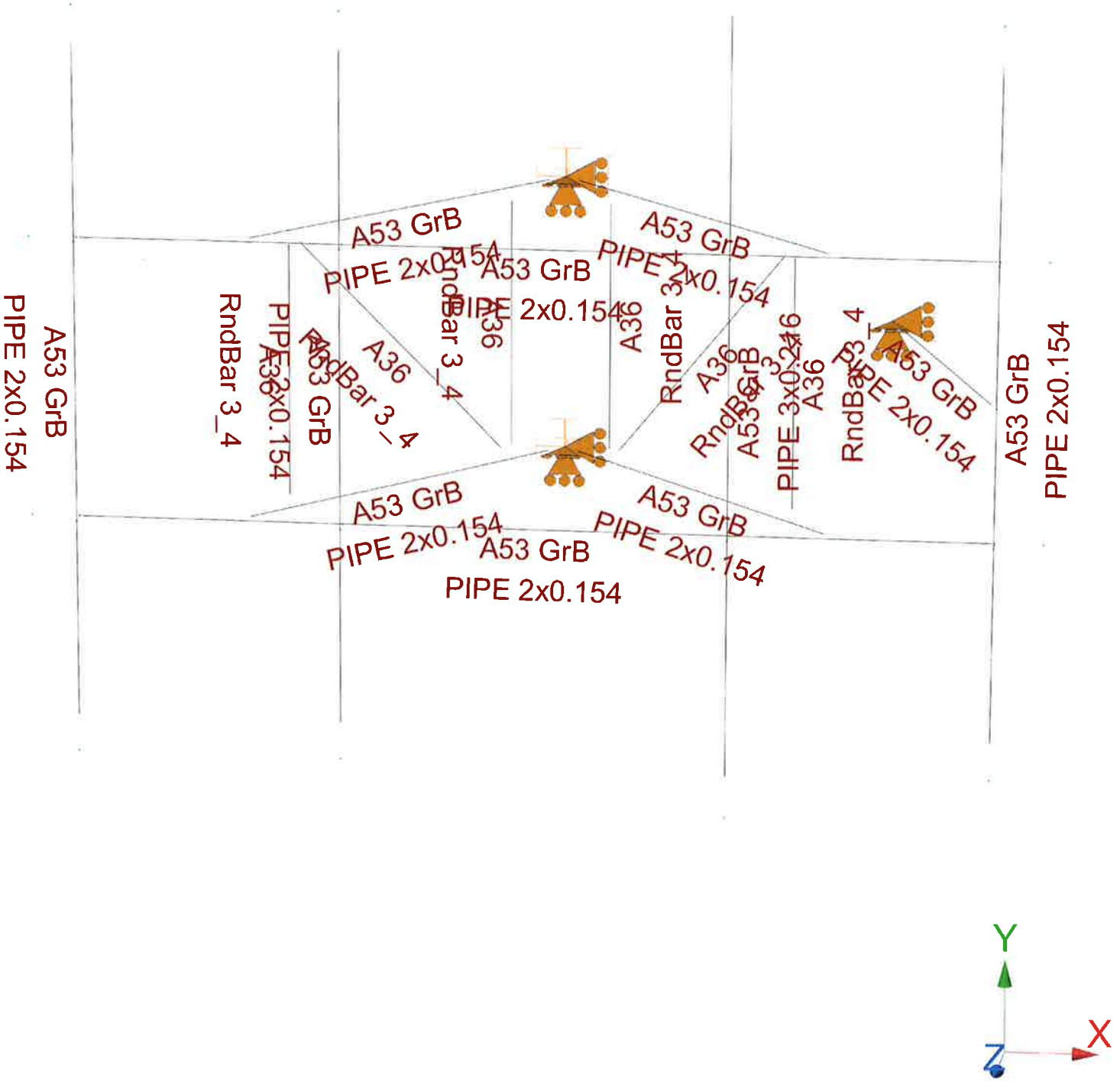
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RndBar 3_4
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Bentley

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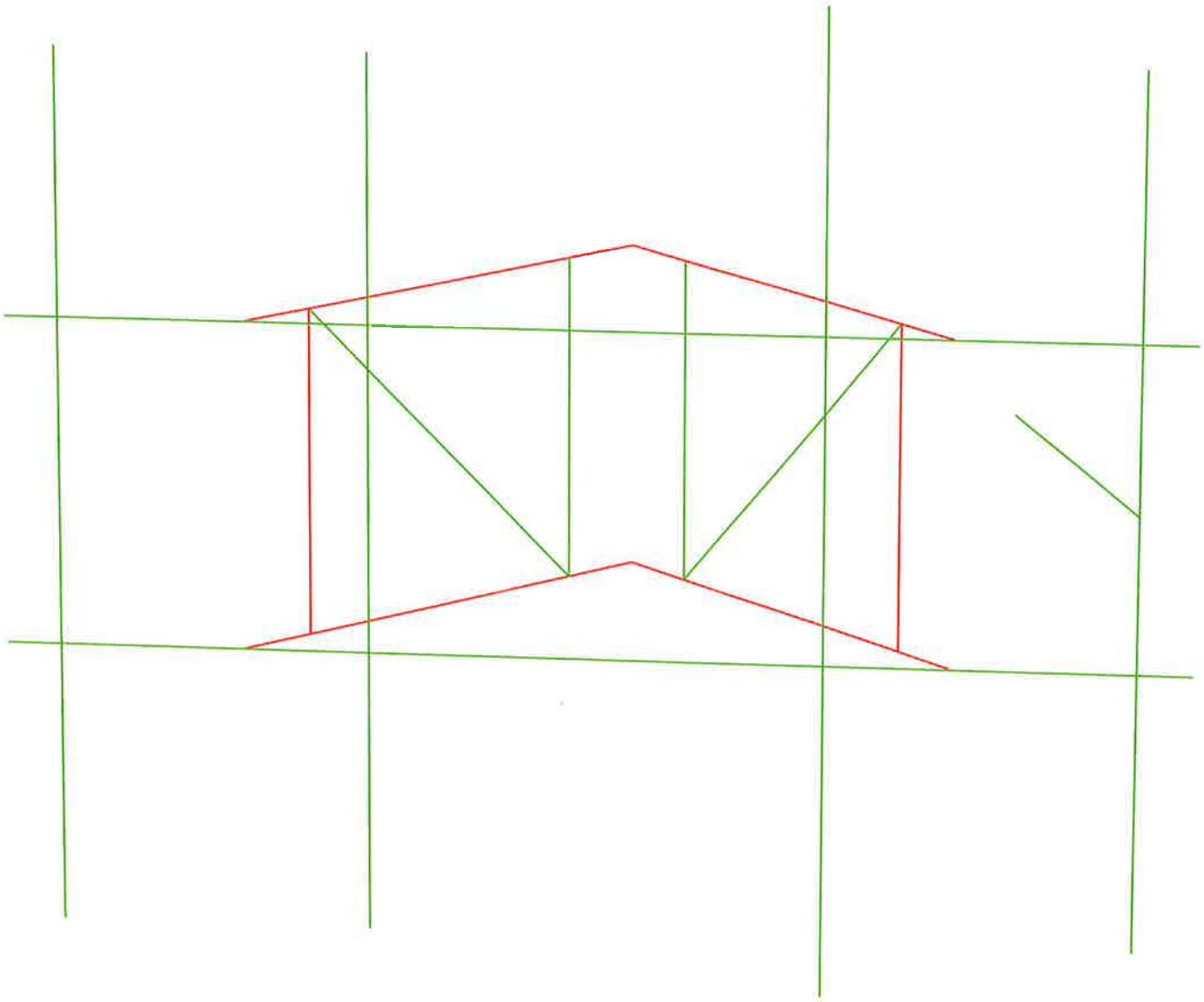
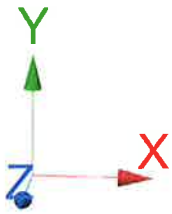
Design status

- Not designed
- Error on design
- Design O.K.
- With warnings





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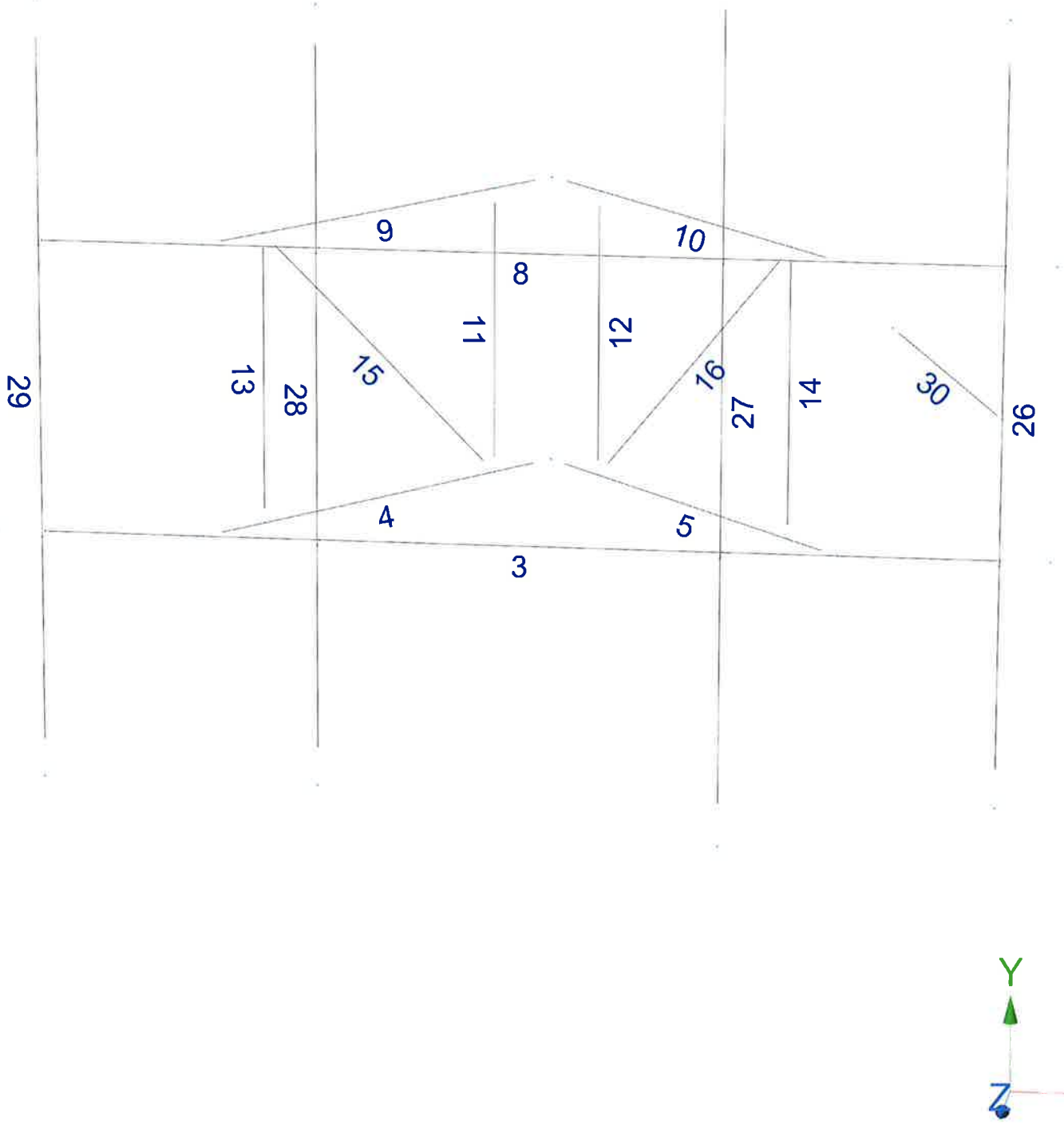

Bentley

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Load data

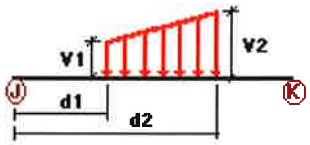
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wo	Wind Load (No Ice)	No	WIND
Wi	Wind Load (With Ice)	No	WIND
Di	Ice Load	No	LL

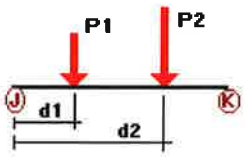
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	3	z	-0.007	0.00	0.00	No	0.00	No
	4	z	-0.007	0.00	0.00	No	0.00	No
	5	z	-0.007	0.00	0.00	No	0.00	No
	8	z	-0.007	0.00	0.00	No	0.00	No
	9	z	-0.007	0.00	0.00	No	0.00	No
	10	z	-0.007	0.00	0.00	No	0.00	No
	11	z	-0.002	0.00	0.00	No	0.00	No
	12	z	-0.002	0.00	0.00	No	0.00	No
	13	z	-0.002	0.00	0.00	No	0.00	No
	14	z	-0.002	0.00	0.00	No	0.00	No
	15	z	-0.002	0.00	0.00	No	0.00	No
	16	z	-0.002	0.00	0.00	No	0.00	No
	28	z	-0.007	0.00	0.00	No	0.00	No
	30	z	-0.007	0.00	0.00	No	0.00	No
Di	3	y	-0.019	0.00	0.00	No	0.00	No
	4	y	-0.019	0.00	0.00	No	0.00	No
	5	y	-0.019	0.00	0.00	No	0.00	No
	8	y	-0.019	0.00	0.00	No	0.00	No
	9	y	-0.019	0.00	0.00	No	0.00	No
	10	y	-0.019	0.00	0.00	No	0.00	No
	11	y	-0.013	0.00	0.00	No	0.00	No
	12	y	-0.013	0.00	0.00	No	0.00	No
	13	y	-0.013	0.00	0.00	No	0.00	No
	14	y	-0.013	0.00	0.00	No	0.00	No

15	y	-0.013	0.00	0.00	No	0.00	No
16	y	-0.013	0.00	0.00	No	0.00	No
26	y	-0.019	0.00	0.00	No	0.00	No
27	y	-0.023	0.00	0.00	No	0.00	No
28	y	-0.019	0.00	0.00	No	0.00	No
29	y	-0.019	0.00	0.00	No	0.00	No
30	y	-0.019	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	26	y	-0.067	0.50	No
		y	-0.067	5.00	No
	27	y	-0.064	1.00	No
		y	-0.064	8.00	No
		y	-0.074	2.50	No
	29	y	-0.01	0.50	No
		y	-0.01	5.00	No
		y	-0.051	1.50	No
Wo	26	z	-0.098	0.50	No
		z	-0.098	5.00	No
	27	z	-0.304	1.00	No
		z	-0.304	8.00	No
		z	-0.049	2.50	No
	29	z	-0.097	0.50	No
		z	-0.097	5.00	No
		z	-0.084	1.50	No
Wi	26	z	-0.031	0.50	No
		z	-0.031	5.00	No
	27	z	-0.079	1.00	No
		z	-0.079	8.00	No
		z	-0.019	2.50	No
	29	z	-0.031	0.50	No
		z	-0.031	5.00	No
		z	-0.029	1.50	No
Di	26	y	-0.104	0.50	No
		y	-0.104	5.00	No
	27	y	-0.401	1.00	No
		y	-0.401	8.00	No
		y	-0.083	2.50	No
	29	y	-0.134	0.50	No
		y	-0.134	5.00	No
		y	-0.124	1.50	No

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
Wo	Wind Load (No Ice)	No	0.00	0.00	0.00
Wi	Wind Load (With Ice)	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
Wo	0.00	0.00	0.00
Wi	0.00	0.00	0.00
Di	0.00	0.00	0.00

Bentley

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2x0.154	**3**	LC3 at 79.46%	0.86	OK	Eq. H3-6
		4	LC3 at 100.00%	1.45	N.G.	Eq. H1-1b
		5	LC3 at 100.00%	**1.48**	**N.G.**	Eq. H1-1b
		8	LC3 at 79.46%	0.92	OK	Eq. H3-6
		9	LC3 at 100.00%	1.40	N.G.	Eq. H1-1b
		10	LC3 at 100.00%	1.43	N.G.	Eq. H1-1b
		26	LC3 at 48.44%	0.57	OK	Eq. H1-1b
		28	LC3 at 31.25%	0.43	OK	Eq. H1-1b
		29	LC3 at 31.25%	0.46	OK	Eq. H1-1b
		30	LC3 at 0.00%	0.91	OK	Eq. H1-1b
	PIPE 3x0.216	**27**	LC1 at 66.67%	**0.36**	**OK**	Eq. H1-1b
	RndBar 3_4	**11**	LC3 at 0.00%	0.62	OK	Eq. H1-1b
		12	LC3 at 100.00%	0.64	OK	Eq. H1-1b
		13	LC3 at 100.00%	**1.09**	**N.G.**	Eq. H1-1b
		14	LC3 at 0.00%	1.08	N.G.	Eq. H1-1b
		15	LC3 at 0.00%	0.29	OK	Eq. H1-1b
		16	LC3 at 100.00%	0.35	OK	Eq. H1-1b

Bentley

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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	5.25	0.00	0.00	0
3	-5.25	0.00	0.00	0
8	-3.15	0.00	0.00	0
9	3.15	0.00	0.00	0
10	0.00	0.00	-3.00	0
16	5.25	3.00	0.00	0
17	-5.25	3.00	0.00	0
22	-3.15	3.00	0.00	0
23	3.15	3.00	0.00	0
24	0.00	3.00	-3.00	0
33	-4.75	5.50	0.20	0
34	4.75	5.50	0.20	0
35	-4.75	-2.50	0.20	0
36	4.75	-2.50	0.20	0
42	2.00	6.00	0.20	0
43	2.00	-3.00	0.20	0
48	-2.00	5.50	0.20	0
49	-2.00	-2.50	0.20	0
66	-2.6198	3.00	-0.505	0
133	-0.5302	3.00	-2.495	0
134	-2.6198	0.00	-0.505	0

135	-0.5302	0.00	-2.495	0
152	0.5302	3.00	-2.495	0
219	2.6198	3.00	-0.505	0
220	0.5302	0.00	-2.495	0
221	2.6198	0.00	-0.505	0
222	4.75	1.50	0.20	0
223	3.50	1.50	-3.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
10	1	1	1	1	1	1
24	1	1	1	1	1	1
223	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
3	3	2		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
4	8	10		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	9	10		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	17	16		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
9	22	24		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
10	23	24		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
11	135	133		RndBar 3_4	A36	0.00	0.00	0.00
12	152	220		RndBar 3_4	A36	0.00	0.00	0.00
13	66	134		RndBar 3_4	A36	0.00	0.00	0.00
14	221	219		RndBar 3_4	A36	0.00	0.00	0.00
15	66	135		RndBar 3_4	A36	0.00	0.00	0.00
16	220	219		RndBar 3_4	A36	0.00	0.00	0.00
26	34	36		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
27	42	43		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
28	48	49		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
29	33	35		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
30	222	223		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
26	45.00	0	0.00	0.00	0.00
27	45.00	0	0.00	0.00	0.00
28	45.00	0	0.00	0.00	0.00
29	45.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
30	2.00	0.00	0.00	2.00	0.00	0.00

Hinges

	Node-J				Node-K						
Member	M33	M22	V3	V2	M33	M22	V3	V2	TOR	AXL	Axial rigidity
15	0	0	0	0	0	0	0	0	0	0	Tension only
16	0	0	0	0	0	0	0	0	0	0	Tension only

HUDSON
Design Group LLC

Mount Calculations
(Modified Conditions)

Bentley

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Units system: English
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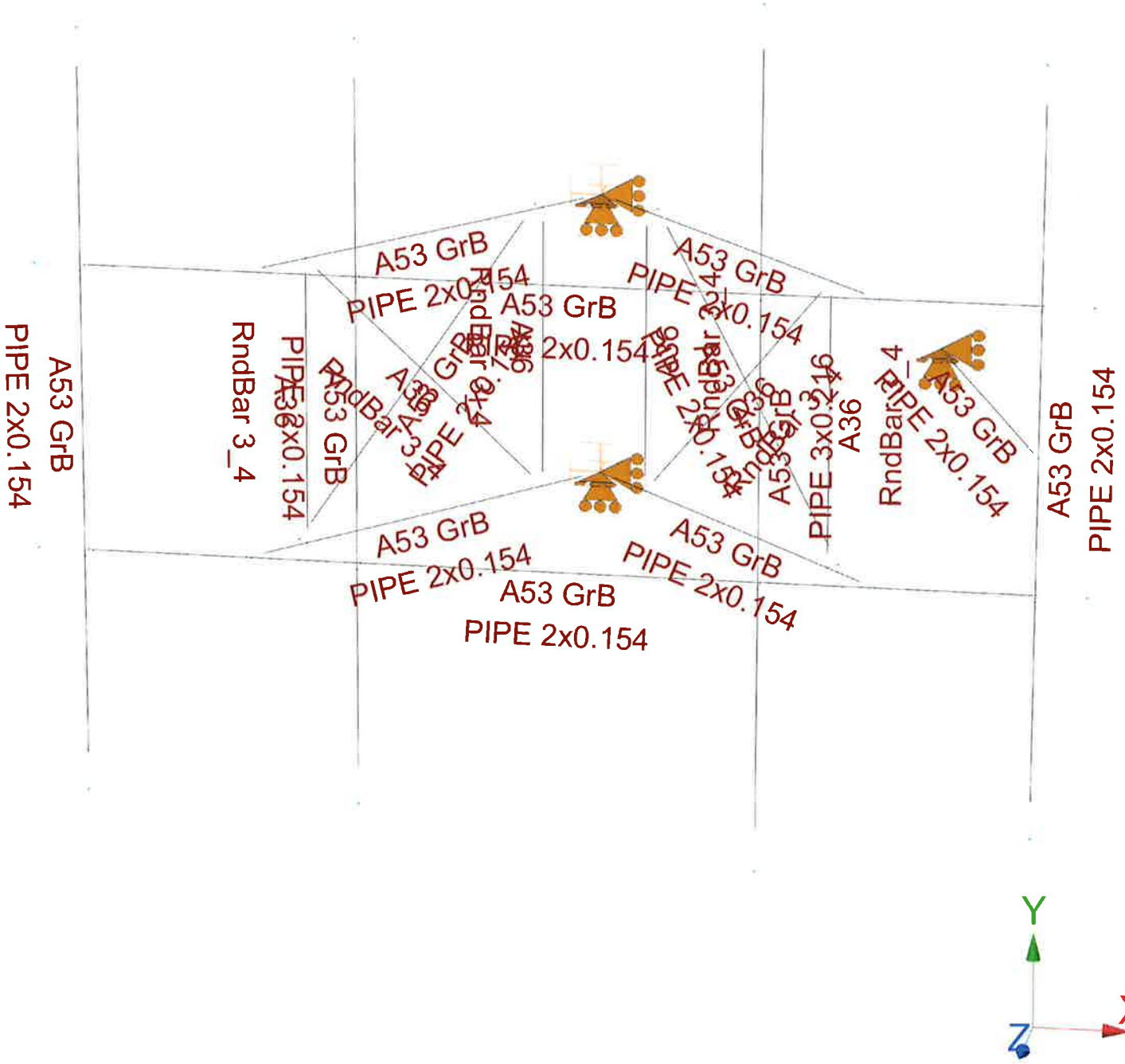

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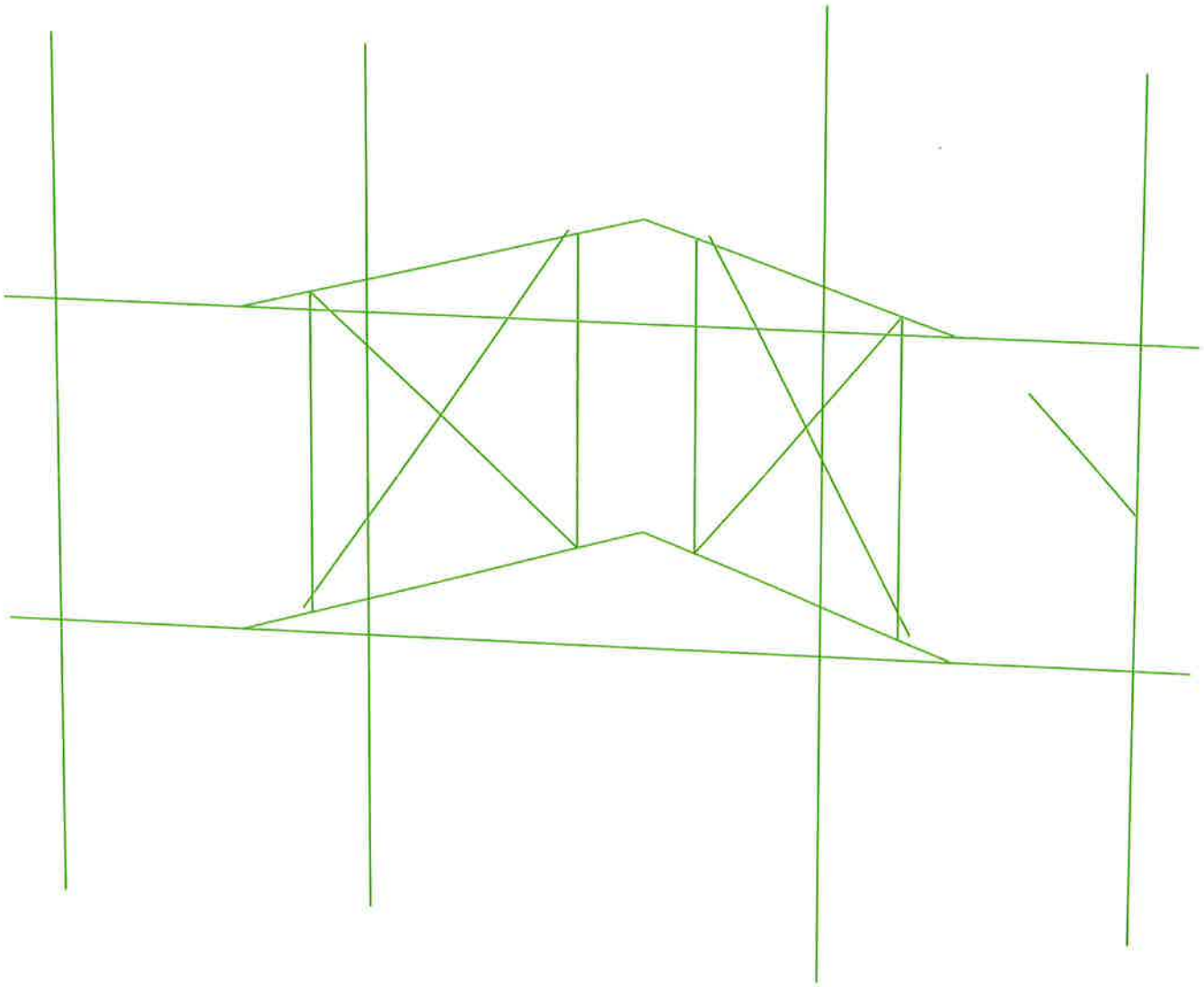
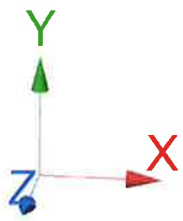
Design status

- Not designed
- Error on design
- Design O.K.
- With warnings





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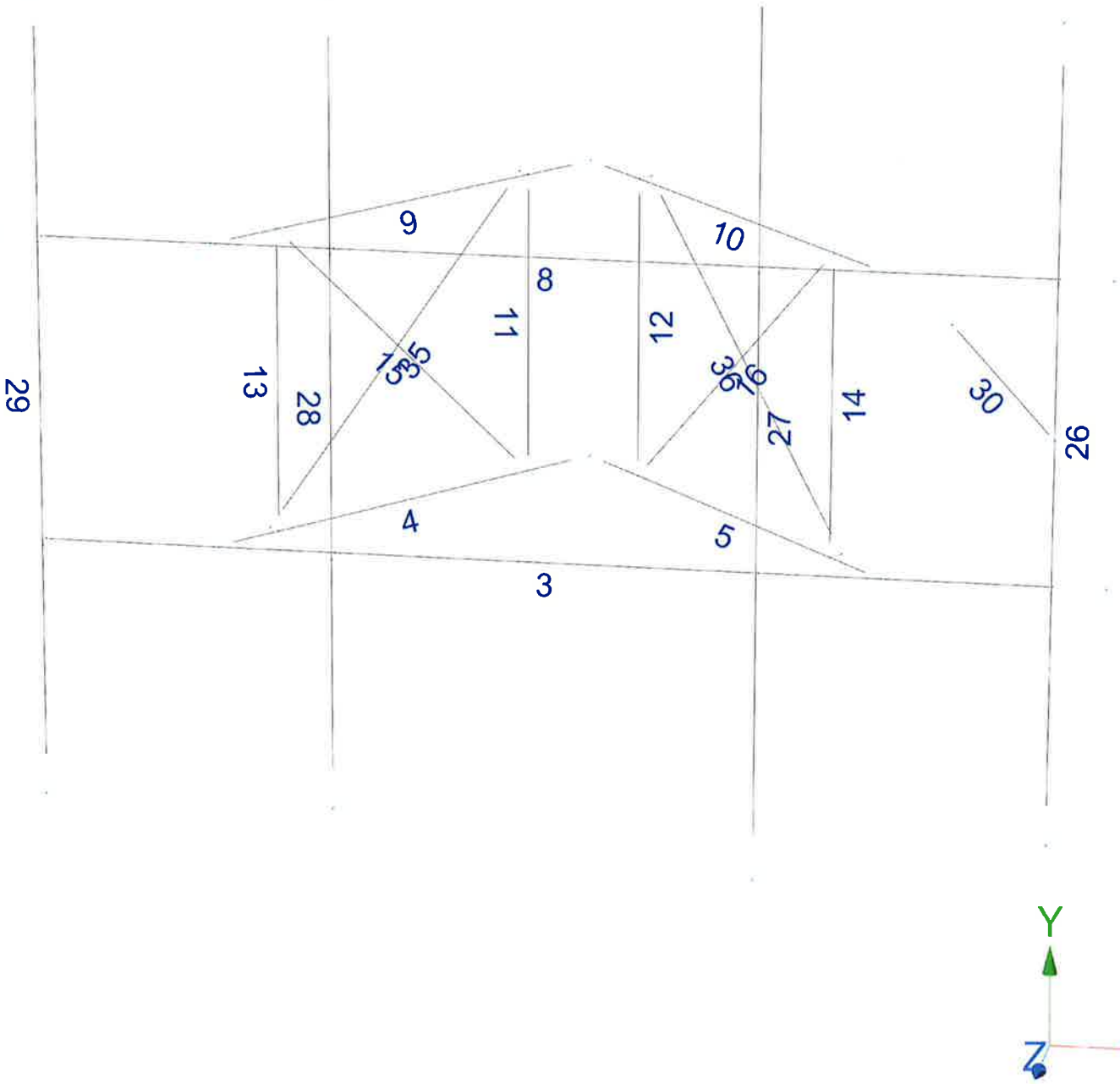

Bentley

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Load data

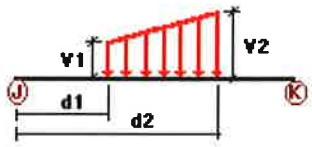
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wo	Wind Load (No Ice)	No	WIND
Wi	Wind Load (With Ice)	No	WIND
Di	Ice Load	No	LL

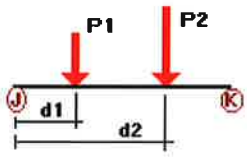
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	3	z	-0.007	0.00	0.00	No	0.00	No
	4	z	-0.007	0.00	0.00	No	0.00	No
	5	z	-0.007	0.00	0.00	No	0.00	No
	8	z	-0.007	0.00	0.00	No	0.00	No
	9	z	-0.007	0.00	0.00	No	0.00	No
	10	z	-0.007	0.00	0.00	No	0.00	No
	11	z	-0.002	0.00	0.00	No	0.00	No
	12	z	-0.002	0.00	0.00	No	0.00	No
	13	z	-0.002	0.00	0.00	No	0.00	No
	14	z	-0.002	0.00	0.00	No	0.00	No
	15	z	-0.002	0.00	0.00	No	0.00	No
	16	z	-0.002	0.00	0.00	No	0.00	No
	28	z	-0.007	0.00	0.00	No	0.00	No
	30	z	-0.007	0.00	0.00	No	0.00	No
Di	3	y	-0.019	0.00	0.00	No	0.00	No
	4	y	-0.019	0.00	0.00	No	0.00	No
	5	y	-0.019	0.00	0.00	No	0.00	No
	8	y	-0.019	0.00	0.00	No	0.00	No
	9	y	-0.019	0.00	0.00	No	0.00	No
	10	y	-0.019	0.00	0.00	No	0.00	No
	11	y	-0.013	0.00	0.00	No	0.00	No
	12	y	-0.013	0.00	0.00	No	0.00	No
	13	y	-0.013	0.00	0.00	No	0.00	No
	14	y	-0.013	0.00	0.00	No	0.00	No

15	y	-0.013	0.00	0.00	No	0.00	No
16	y	-0.013	0.00	0.00	No	0.00	No
26	y	-0.019	0.00	0.00	No	0.00	No
27	y	-0.023	0.00	0.00	No	0.00	No
28	y	-0.019	0.00	0.00	No	0.00	No
29	y	-0.019	0.00	0.00	No	0.00	No
30	y	-0.019	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	26	y	-0.067	0.50	No
		y	-0.067	5.00	No
	27	y	-0.064	1.00	No
		y	-0.064	8.00	No
		y	-0.074	2.50	No
	29	y	-0.01	0.50	No
		y	-0.01	5.00	No
		y	-0.051	1.50	No
Wo	26	z	-0.098	0.50	No
		z	-0.098	5.00	No
	27	z	-0.304	1.00	No
		z	-0.304	8.00	No
		z	-0.049	2.50	No
	29	z	-0.097	0.50	No
		z	-0.097	5.00	No
		z	-0.084	1.50	No
Wi	26	z	-0.031	0.50	No
		z	-0.031	5.00	No
	27	z	-0.079	1.00	No
		z	-0.079	8.00	No
		z	-0.019	2.50	No
	29	z	-0.031	0.50	No
		z	-0.031	5.00	No
		z	-0.029	1.50	No
Di	26	y	-0.104	0.50	No
		y	-0.104	5.00	No
	27	y	-0.401	1.00	No
		y	-0.401	8.00	No
		y	-0.083	2.50	No
	29	y	-0.134	0.50	No
		y	-0.134	5.00	No
		y	-0.124	1.50	No

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
Wo	Wind Load (No Ice)	No	0.00	0.00	0.00
Wi	Wind Load (With Ice)	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
Wo	0.00	0.00	0.00
Wi	0.00	0.00	0.00
Di	0.00	0.00	0.00

Bentley

Current Date: 6/4/2019 10:59 AM
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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2x0.154	**3**	LC3 at 79.46%	0.40	OK	Eq. H1-1b
		4	LC3 at 100.00%	0.36	OK	Eq. H1-1b
		5	LC3 at 100.00%	0.44	OK	Eq. H1-1b
		8	LC1 at 19.64%	0.51	OK	Eq. H1-1b
		9	LC3 at 100.00%	0.40	OK	Eq. H1-1b
		10	LC3 at 100.00%	**0.67**	**OK**	Eq. H1-1b
		26	LC1 at 29.69%	0.34	OK	Eq. H1-1b
		28	LC3 at 31.25%	0.12	OK	Eq. H1-1b
		29	LC1 at 29.17%	0.45	OK	Eq. H1-1b
		30	LC1 at 0.00%	0.07	OK	Eq. H1-1b
		35	LC3 at 100.00%	0.19	OK	Eq. H1-1b
		36	LC3 at 100.00%	0.33	OK	Eq. H1-1b
	PIPE 3x0.216	**27**	LC1 at 66.67%	**0.36**	**OK**	Eq. H1-1b
	RndBar 3_4	**11**	LC3 at 100.00%	0.33	OK	Eq. H1-1a
		12	LC3 at 0.00%	0.50	OK	Eq. H1-1a
		13	LC3 at 100.00%	0.48	OK	Eq. H1-1a
		14	LC3 at 100.00%	**0.73**	**OK**	Eq. H1-1a
		15	LC3 at 0.00%	0.15	OK	Eq. H1-1b
		16	LC3 at 100.00%	0.16	OK	Eq. H1-1b

Bentley

Current Date: 6/4/2019 10:59 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\T-MOBILE\CT\CTHA029A\L600\Rev. 1\CTHA029A (L600)(MODS) (Rev. 1).etz\

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	5.25	0.00	0.00	0
3	-5.25	0.00	0.00	0
8	-3.15	0.00	0.00	0
9	3.15	0.00	0.00	0
10	0.00	0.00	-3.00	0
16	5.25	3.00	0.00	0
17	-5.25	3.00	0.00	0
22	-3.15	3.00	0.00	0
23	3.15	3.00	0.00	0
24	0.00	3.00	-3.00	0
33	-4.75	5.50	0.20	0
34	4.75	5.50	0.20	0
35	-4.75	-2.50	0.20	0
36	4.75	-2.50	0.20	0
42	2.00	6.00	0.20	0
43	2.00	-3.00	0.20	0
48	-2.00	5.50	0.20	0
49	-2.00	-2.50	0.20	0
66	-2.6198	3.00	-0.505	0
135	-0.5302	0.00	-2.495	0
219	2.6198	3.00	-0.505	0

220	0.5302	0.00	-2.495	0
222	4.75	1.50	0.20	0
223	3.50	1.50	-3.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
10	1	1	1	1	1	1
24	1	1	1	1	1	1
223	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
3	3	2		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
4	8	10		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	9	10		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	17	16		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
9	22	24		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
10	23	24		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
11	135	133		RndBar 3_4	A36	0.00	0.00	0.00
12	152	220		RndBar 3_4	A36	0.00	0.00	0.00
13	66	134		RndBar 3_4	A36	0.00	0.00	0.00
14	221	219		RndBar 3_4	A36	0.00	0.00	0.00
15	66	135		RndBar 3_4	A36	0.00	0.00	0.00
16	220	219		RndBar 3_4	A36	0.00	0.00	0.00
26	34	36		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
27	42	43		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
28	48	49		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
29	33	35		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
30	222	223		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
35	225	224		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
36	226	227		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
26	45.00	0	0.00	0.00	0.00
27	45.00	0	0.00	0.00	0.00
28	45.00	0	0.00	0.00	0.00
29	45.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
30	2.00	0.00	0.00	2.00	0.00	0.00

Hinges

	Node-J				Node-K						
Member	**M33**	**M22**	**V3**	**V2**	**M33**	**M22**	**V3**	**V2**	**TOR**	**AXL**	**Axial rigidity**
15	0	0	0	0	0	0	0	0	0	0	Tension only
16	0	0	0	0	0	0	0	0	0	0	Tension only

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTHA029A

CTHA029A
293 Elm Street
Enfield, Connecticut 06082

May 29, 2019

EBI Project Number: 6219001884

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**3.08%**

May 29, 2019

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

Emissions Analysis for Site: CTHA029A - CTHA029A

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **293 Elm Street** in **Enfield, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 293 Elm Street in Enfield, 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) 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.

3) 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.

4) 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.

5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 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.

7) 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.

8) The antennas used in this modeling are the Ericsson AIR32 B66A_B2A for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s) in Sector A, the Ericsson AIR32 B66A_B2A for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s) in Sector B, the Ericsson AIR32 B66A_B2A for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 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.

9) The antenna mounting height centerline of the proposed antennas is 140 feet above ground level (AGL).

10) 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.

11) 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 AIR32 B66A_B2A	Make / Model:	Ericsson AIR32 B66A_B2A	Make / Model:	Ericsson AIR32 B66A_B2A
Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	8,728.31	ERP (W):	8,728.31	ERP (W):	8,728.31
Antenna A1 MPE %:	**1.60%**	Antenna B1 MPE %:	**1.60%**	Antenna C1 MPE %:	**1.60%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
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 / 700 MHz	Frequency Bands:	600 MHz / 700 MHz	Frequency Bands:	600 MHz / 700 MHz
Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	2,481.08	ERP (W):	2,481.08	ERP (W):	2,481.08
Antenna A2 MPE %:	**1.05%**	Antenna B2 MPE %:	**1.05%**	Antenna C2 MPE %:	**1.05%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	60 Watts	Total TX Power (W):	60 Watts	Total TX Power (W):	60 Watts
ERP (W):	2,334.27	ERP (W):	2,334.27	ERP (W):	2,334.27
Antenna A3 MPE %:	**0.43%**	Antenna B3 MPE %:	**0.43%**	Antenna C3 MPE %:	**0.43%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	3.08%
No Additional Carriers	N/A
Site Total MPE % :	3.08%

T-Mobile Sector A Total:	3.08%
T-Mobile Sector B Total:	3.08%
T-Mobile Sector C Total:	3.08%
Site Total:	3.08%

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 (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz LTE PCS	2	2056.61	140.0	7.54	1900 MHz LTE PCS	1000	0.75%
T-Mobile 2100 MHz LTE AWS	2	2307.55	140.0	8.47	2100 MHz LTE AWS	1000	0.85%
T-Mobile 600 MHz LTE	2	591.73	140.0	2.17	600 MHz LTE	400	0.54%
T-Mobile 700 MHz LTE	2	648.82	140.0	2.38	700 MHz LTE	467	0.51%
T-Mobile 2100 MHz UMTS	2	1167.14	140.0	4.28	2100 MHz UMTS	1000	0.43%
						Total:	**3.08%**

• 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:	3.08%
Sector B:	3.08%
Sector C:	3.08%
T-Mobile Maximum MPE % (Sector A):	3.08%
Site Total:	3.08%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **3.08%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Mailing Receipts/Proof of Notice

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.

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UPS Access Point™
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200 BLOOMFIELD AVE
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UPS Access Point™
THE UPS STORE
1022 BOULEVARD
WEST HARTFORD ,CT 06119

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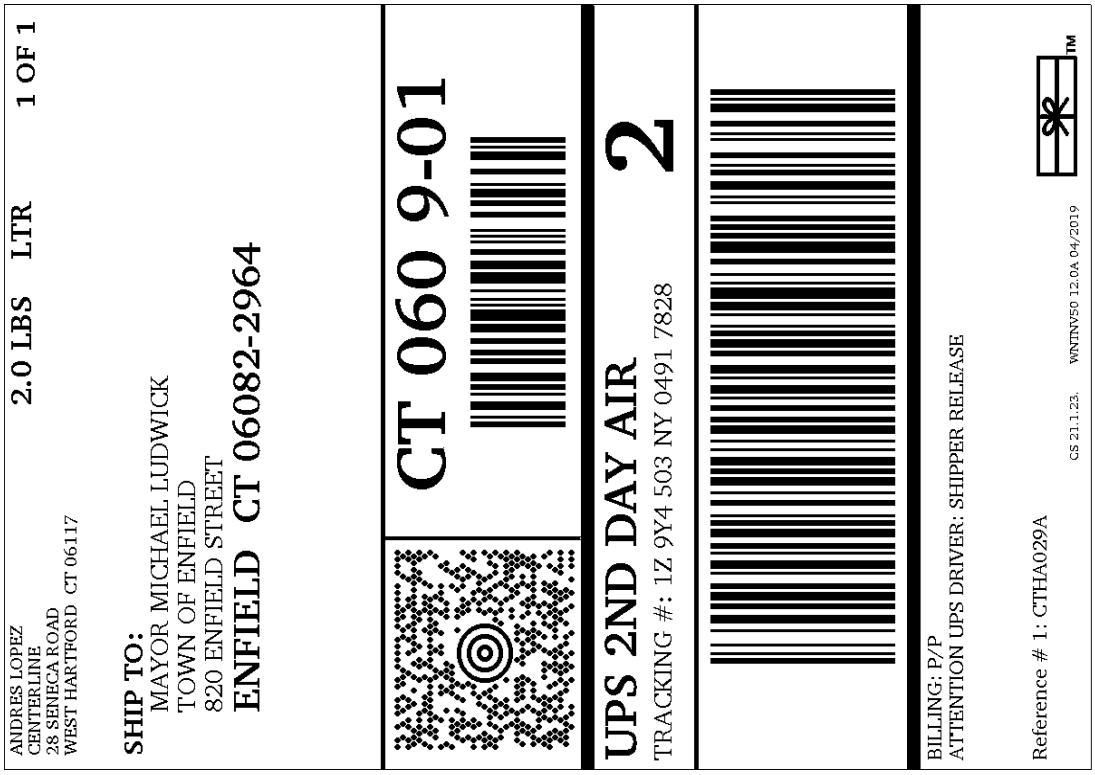

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   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted 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.
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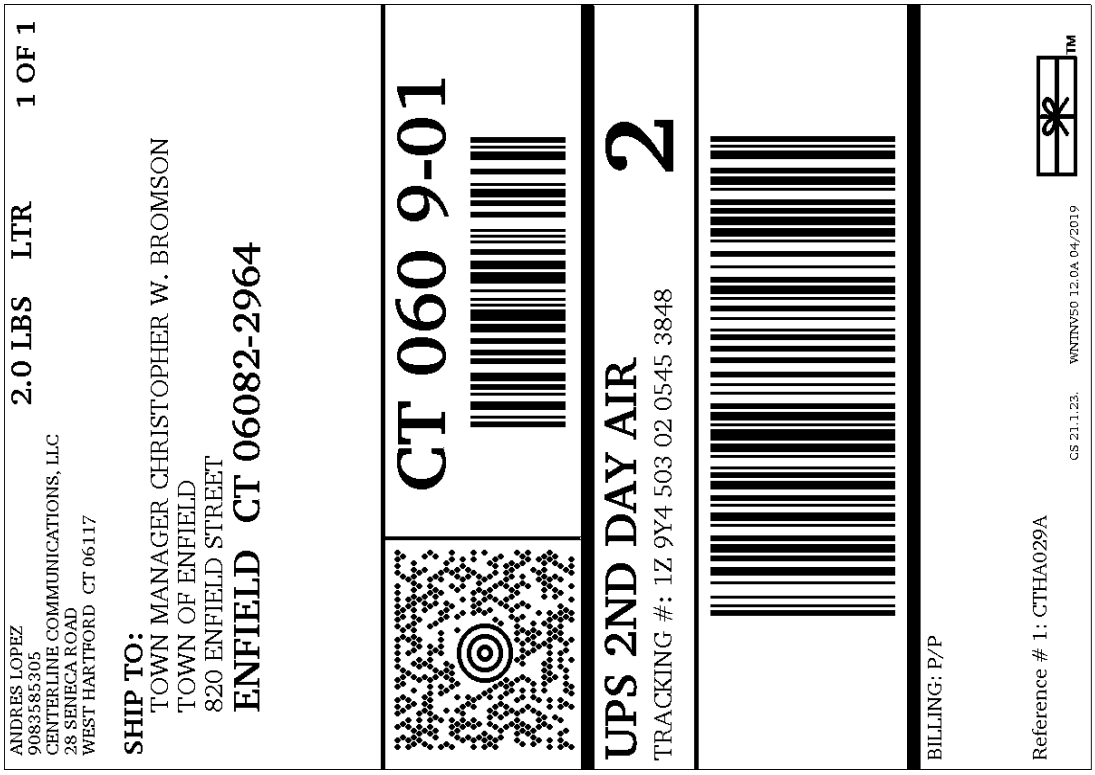

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   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

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