CENTERLINE COMMUNICATIONS

750 West Center Street, Floor 3 / Suite 301
West Bridgewater, MA 02379 *Corporate Headquarters*
781.713.4725
617.249.0819

Centerline Communications
Mark Appleby
750 West Center Street, Floor 3
West Bridgewater, MA 02379
860-209-4694
mappleby@clinellc.com

April 29, 2021

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

Notice of Exempt Modification
37 Bacon Rd Enfield, Connecticut 06082
Latitude: 42 ’0 57.20” N
Longitude: -72.’31.43.42” W
T-Mobile Site#: CT11533B_L600&Anchor

Dear Ms. Bachman:

T-Mobile currently maintains Three (3) antennas at the 160-foot level of the existing 180-foot monopole tower at 37 Bacon Rd Enfield, Connecticut 06082. The 180-foot monopole tower is owned by the SAI Group and property is owned by the Shakers Pines Fire District # 5. T-Mobile now intends to replace three (3) of its existing antennas with nine (9) new 2500 MHz antennas. The new antennas would be installed at the 160-foot level of the monopole tower. The proposed upgrades will make the site available for 5G deployment in the future. There are modifications to be done to the foundation of this tower the modifications are depicted in the attached drawings by Hudson Design Group dated 2/17/21.

Planned Modifications:

Remove and Replace:
(3) RR90-17-XXDP Antennas **(Remove)** - (3) APX16DWV-16DWV-S-E-A20 Antennas **(Replace)**

Install New:
(3) APXVAALL24_43-U-NA20 Antennas
(3) AIR6449 B41 Antennas

(3) RRU 4424 B25 Radios Antenna Level
(3) RRU 4415 B66A Radios Antenna Level
(3) RRU 4449 B71 B85 Radios Antenna Level

Remove (6) 1-5/8” Coax Replace with (3) Fiber Cables

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Ground: Install (2) New Cabinets

This facility was approved by the CT Siting Council filing Docket NO.139 on September 18, 1991. Please see attached.

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 Mike Ludwick. Jennifer Pacacha – Assistant Town Planner, Shaker Pines Fire District #5 SAI Group, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

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

Attachments
cc: Town of Enfield Mayor Mike Ludwig
Town of Enfield Assistant Town Planner Jennifer Pacacha
Shaker Pines Fire District #5 Property Owner
SAI Group Tower Owner

Exhibit A

Original Facility Approval

DOCKET NO. 139 - An application of Metro Mobile CTS of Hartford, Inc., for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of cellular facilities in the Towns of Enfield, East Hartford, and Wethersfield, Connecticut. : Connecticut : Siting : Council

September 18, 1991

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a cellular telecommunications towers and equipment buildings at the proposed Enfield, Connecticut, alternate site and the proposed East Hartford, Connecticut, prime site including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need as provided by section 16-50k of the Connecticut General Statutes (CGS), be issued to Metro Mobile CTS of Hartford, Inc., for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed alternate site in Enfield, Connecticut, and the proposed prime site in East Hartford, Connecticut.

The facilities shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter and subject to the following conditions:

1. The self-supporting monopole towers shall be no taller than necessary to provide the proposed communication service and in no event shall the towers exceed a total height of 163 feet above ground level (AGL) at the proposed Enfield alternate site and 123 feet AGL at the proposed East Hartford prime site, with antennas and appurtenances.

2. The Certificate holder shall prepare a Development and Management (D&M) Plan, for approval by the Council, for these sites in compliance with sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. This D&M plan

shall include detailed plans of the towers, tower foundations, soil boring reports, equipment buildings, access roads, security fences, landscaping plans, detailed erosion and sedimentation control plans, and a final schedule. In addition, the D&M plan shall include for Council consideration, detailed plans and itemized costs for the placement of service utilities underground in order to further mitigate the visual effect of the facilities.

3. The Certificate holder shall comply with any existing and future radio frequency (RF) standards promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted herein shall be brought into compliance with such standards.

4. The Certificate holder shall provide the Council with a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.

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

6. If the facility does not initially provide or permanently ceases to provide cellular service following completion of construction, this Decision and Order shall be void, and the tower and all associated equipment shall be dismantled and removed or reapplication for any new use shall be made to the Council as soon as practicable before any such new use is made.

7. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to CGS section 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of this issuance shall be published in the Hartford Courant and the Journal Inquirer.

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

The parties to this proceeding are:

PARTIES	ITS REPRESENTATIVE
Metro Mobile CTS of Hartford, Inc. 20 Alexander Drive P.O. Box 5029 Wallingford, CT 06492 Attn: Gary Schulman	Robinson and Cole One Commercial Plaza Hartford, CT 06103-3597 Attn: Earl Phillips, Jr. (203) 275-8200
The Town of East Hartford	G. Barry Goodberg Assistant Corporation Counsel Town of East Hartford 740 Main Street East Hartford, CT 06108 (203) 289-2781
The Town of Enfield	Christopher W. Bromson Enfield Town Attorney 47 No. Main Street Enfield, CT 06082 (203) 745-0371 Ext. 290

SMH:bw

5534E

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in DOCKET NO. 139 - An application of Metro Mobile CTS of Hartford, Inc., for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of cellular facilities in the Towns of Enfield, East Hartford, and Wethersfield, Connecticut, or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 18th day of September, 1991.

Council Members	Vote Cast
Mortimer A. Gelston Chairman	YES
Commissioner Clifton A. Leonhardt Designee: Commissioner Richard G. Patterson	ABSTAIN
Commissioner Timothy R.E. Keeney Designee: Brian Emerick	ABSENT
Harry E. Covey	NO
Daniel P. Lynch, Jr.	NO
Gloria Dibble Pond	YES
Paulann H. Sheets	YES
William H. Smith	YES
Colin C. Tait	YES

Exhibit B

Property Card

37 BACON RD

Location	37 BACON RD	**Mblu**	094/ / 0062/ /
Acct#	052900010040	**Owner**	SHAKER PINES FIRE DISTRICT #5
Assessment	$395,070	**Appraisal**	$564,380
PID	1157	**Building Count**	1
Fire District	5		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$384,380	$180,000	$564,380
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$269,070	$126,000	$395,070

Owner of Record

Owner	SHAKER PINES FIRE DISTRICT #5	**Sale Price**	$0
Co-Owner		**Certificate**	1
Address	37 BACON RD ENFIELD, CT 06082	**Book & Page**	0617/0455
		Sale Date	

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
SHAKER PINES FIRE DISTRICT #5	$0	1	0617/0455	

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	Fire Station
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)	
Sauna	
Walk Out	
Solar	
Fndtn Cndtn	
Basement	

Building Photo

(http://images.vgsi.com/photos2/EnfieldCTPhotos//\00\01\72\10.jpg)

Building Layout

Building Layout (ParcelSketch.ashx?pid=1157&bid=1157)

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	I-1
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.00
Frontage	
Depth	
Assessed Value	$126,000
Appraised Value	$180,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
TWR3	Cell Twr3 Carriers			1.00 UNITS	$384,380	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$384,380	$180,000	$564,380
2019	$384,380	$180,000	$564,380
2018	$384,380	$180,000	$564,380

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$269,070	$126,000	$395,070
2019	$269,070	$126,000	$395,070
2018	$269,070	$126,000	$395,070

Enfield, CT

N
W E
S

0 150300 600 900 1,2001,500 Feet

1 inch = 969 feet

Exhibit C

Construction Drawings

SITE NAME: CT533/SAI - ENFIELD

37 BACON RD
ENFIELD, CT 06082
HARTFORD COUNTY

SITE NUMBER: CT11533B

RF DESIGN GUIDELINE:
67D93D4 HYBRID & 67D5A998C ODE+6160

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
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:	37 BACON RD ENFIELD, CT 06082
LATITUDE:	42° 0' 57.20" N
LONGITUDE:	72° 31' 43.42" W
JURISDICTION:	TOWN OF ENFIELD, CT
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.
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A-1	COMPOUND & EQUIPMENT PLANS	2
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SN-1	SPECIAL INSPECTIONS NOTES	2
S-1	MOUNT MODIFICATION DETAILS	2
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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

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

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

CONSTRUCTION DRAWINGS ARE VALID FOR ONE YEAR AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: RP

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	02/17/21	REVISED FOR CONSTRUCTION	VP
1	12/07/20	ISSUED FOR CONSTRUCTION	VP
0	11/11/20	ISSUED FOR REVIEW	TR

SITE NUMBER:
CT11533B
SITE NAME:
CT533/SAI - ENFIELD
SITE ADDRESS:
37 BACON RD
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE
TITLE SHEET
(L600+ANCHOR 2020)

SHEET NUMBER
T-1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) 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 AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

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

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

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

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

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

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

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

   CONTRACTOR – CENTERLINE COMMUNICATIONS
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T-MOBILE

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

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

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

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

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

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

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)
    LIGHTNING 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		

T-MOBILE NORTHEAST LLC
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STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

CONSTRUCTION DRAWINGS ARE VALID FOR ONE YEAR AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: RP

APPROVED BY: DPH

SUBMITTALS

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SITE NUMBER:
CT11533B

SITE NAME:
CT533/SAI – ENFIELD

SITE ADDRESS:
37 BACON RD
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE
GENERAL NOTES
(L600+ANCHOR 2020)

SHEET NUMBER
GN-1

STRUCTURAL NOTES:
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NOTE:
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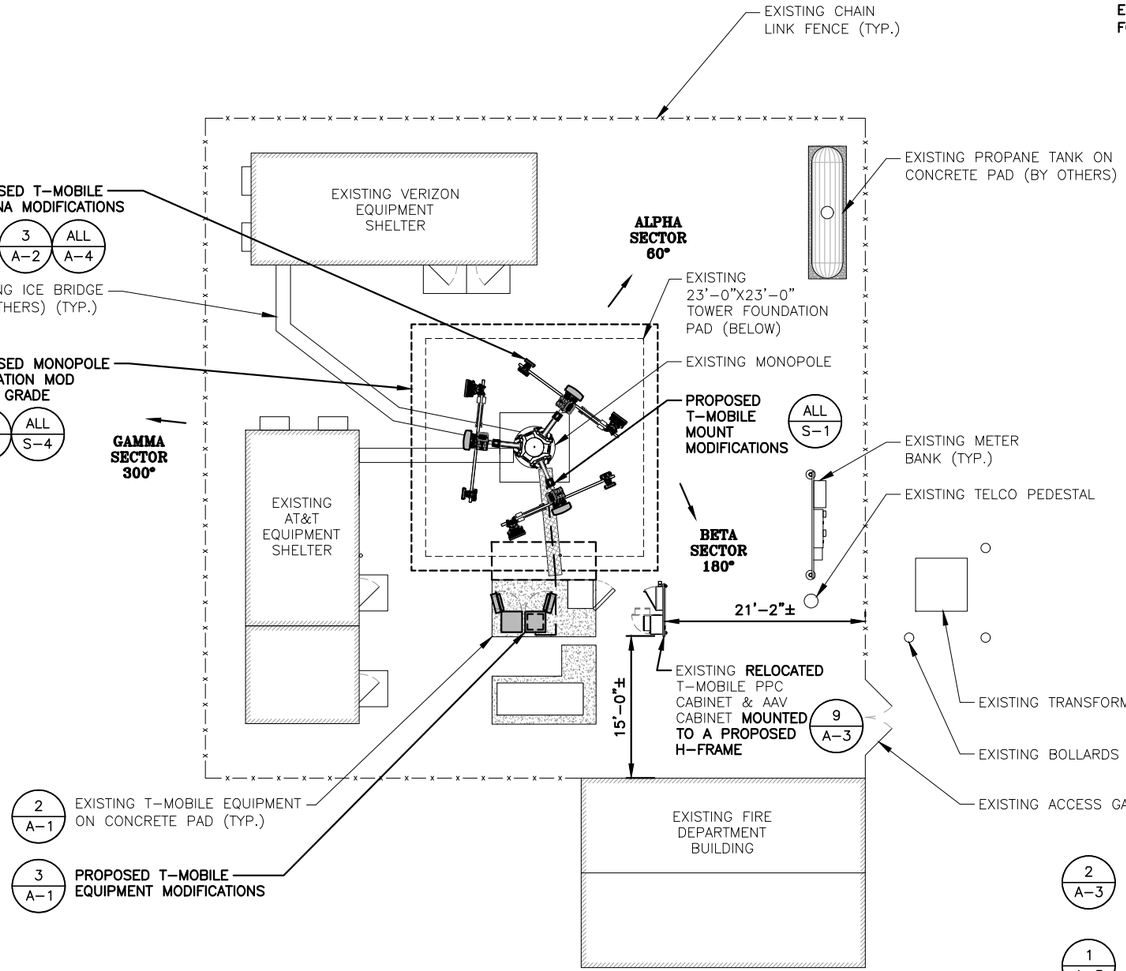
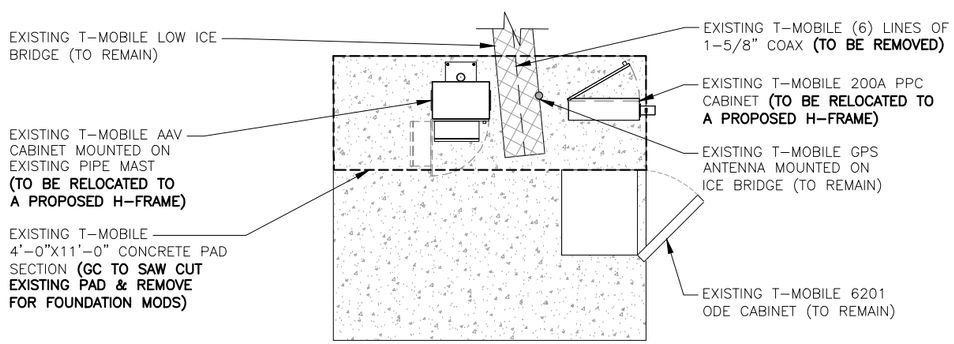
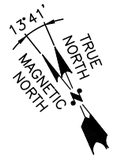
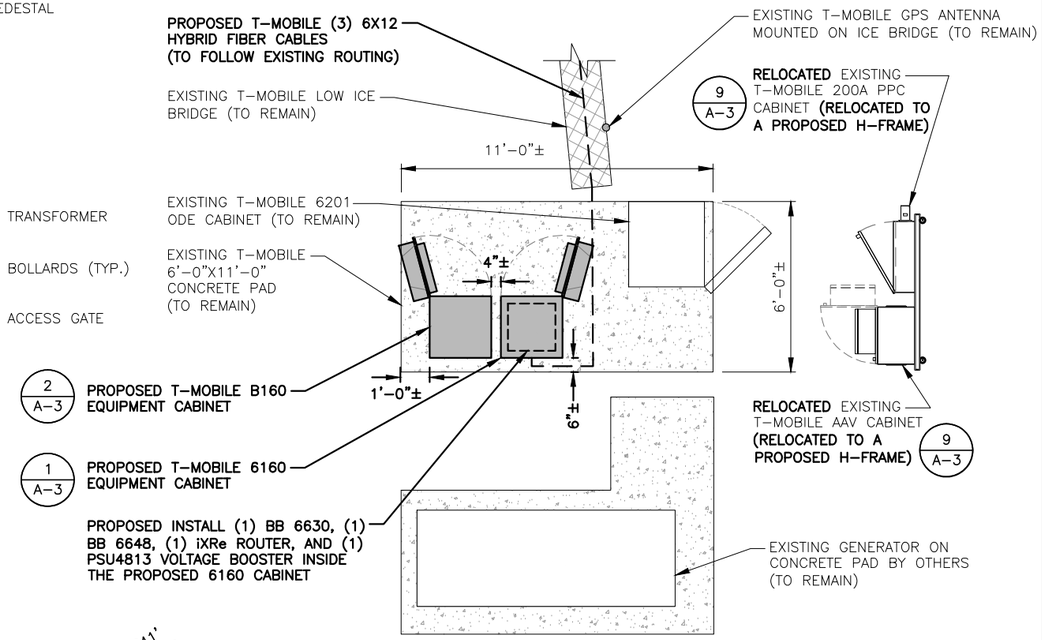


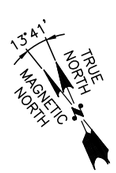
COMPOUND PLAN 1 A–1
22x34 SCALE: 1/8"=1'–0"
11x17 SCALE: 1/16"=1'–0"
0 4'–0" 8'–0" 16'–0" 24'–0"





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





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

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N. ANDOVER, MA 01845
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SHEET TITLE
COMPOUND & EQUIPMENT PLANS
(L600+ANCHOR 2020)

SHEET NUMBER
A-1

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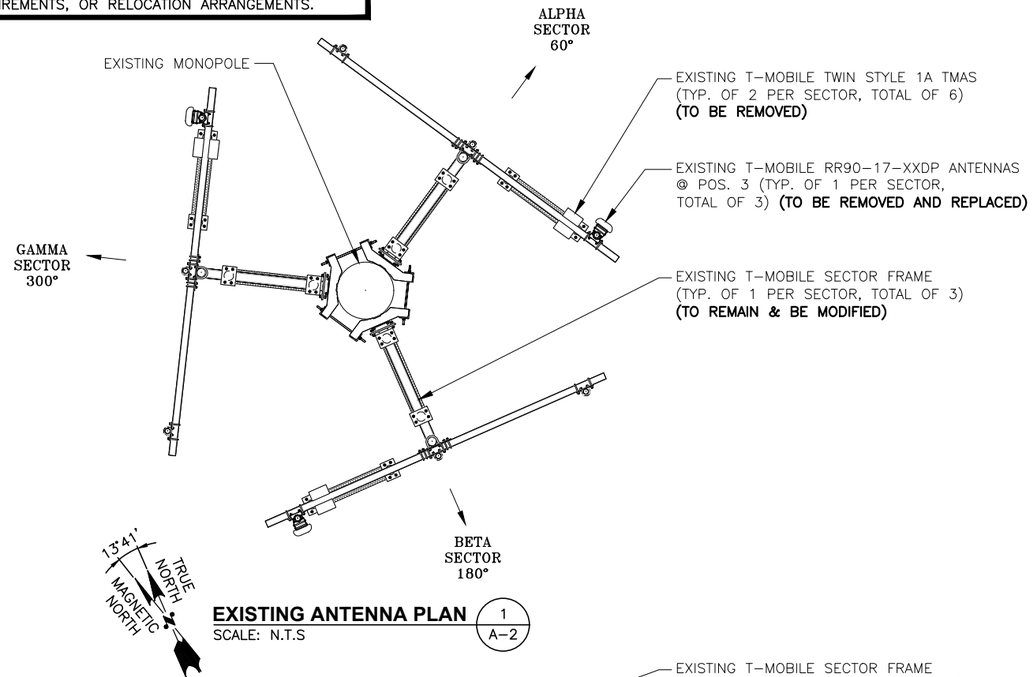
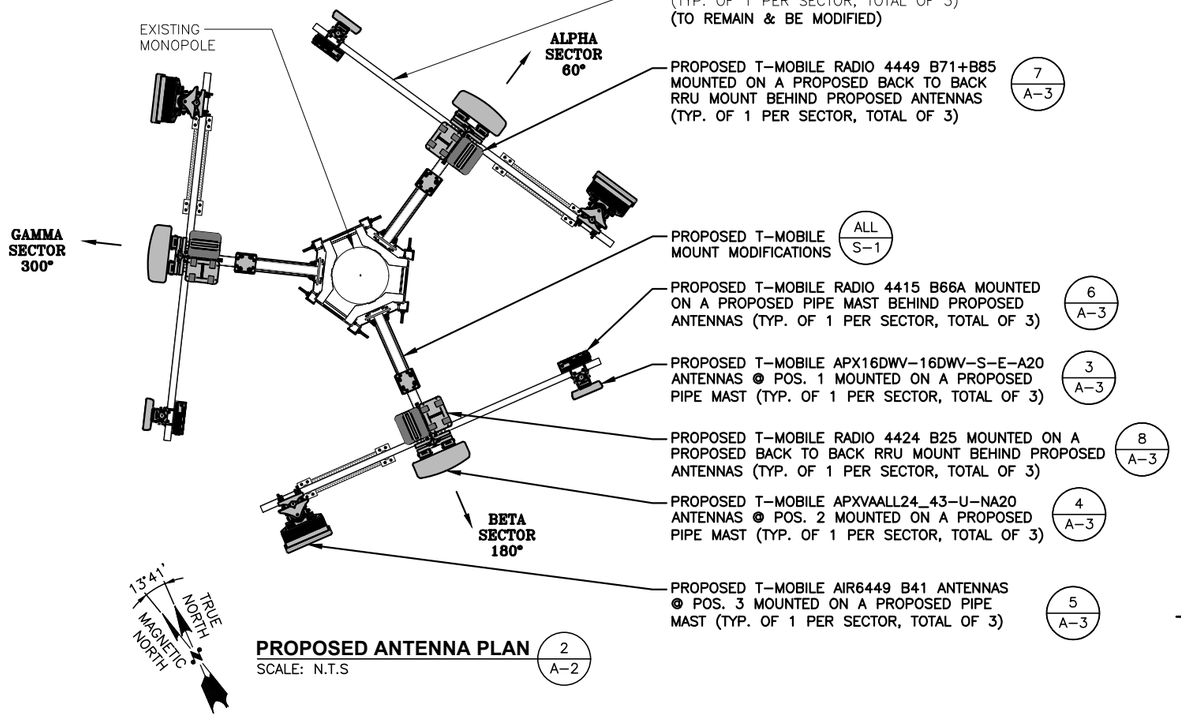
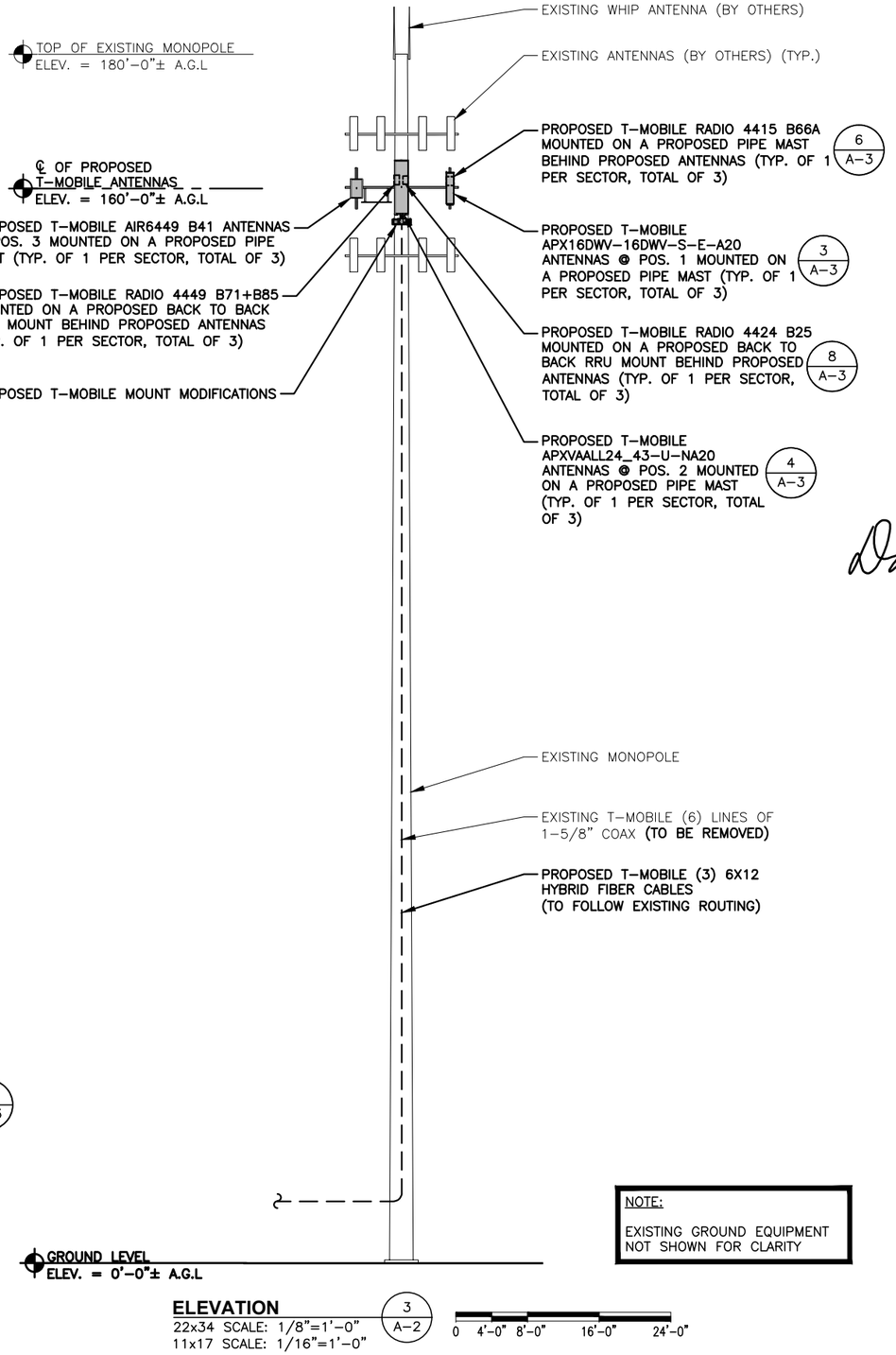


EXISTING ANTENNA PLAN (1 / A-2)
SCALE: N.T.S



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



NOTE:
EXISTING GROUND EQUIPMENT NOT SHOWN FOR CLARITY

ELEVATION (3 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"

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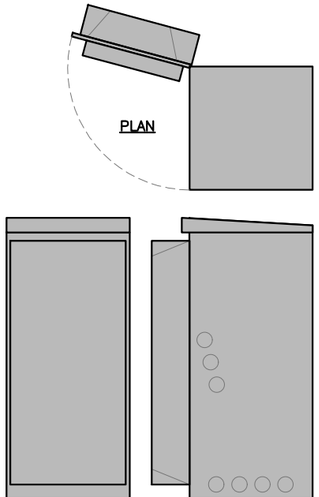
ANTENNA PLANS & ELEVATION
(L600+ANCHOR 2020)

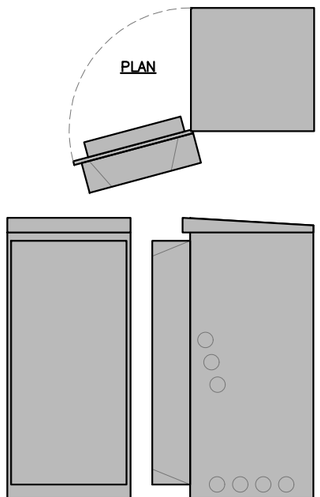
SHEET NUMBER
A-2

CABINET DIMENSIONS	
MODEL #	6160 SITE SUPPORT CABINET
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
BASE DEPTH	26"
DEPTH (W/ DOOR)	34"
WEIGHT	1500 LBS MAX
(INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	



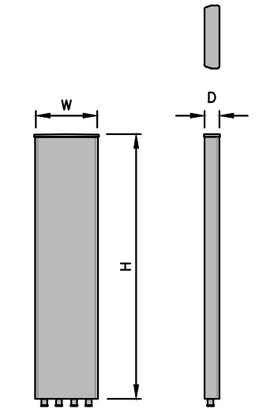
SITE SUPPORT CABINET DETAIL 1 / A-3
SCALE: N.T.S

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



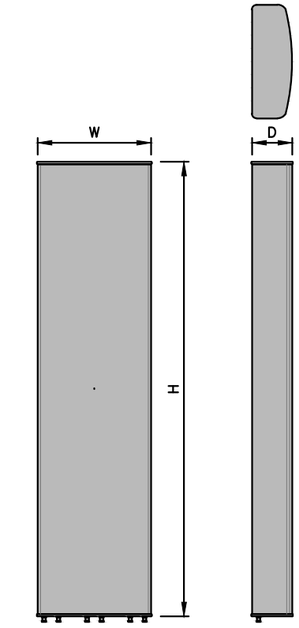
BATTERY CABINET DETAIL 2 / A-3
SCALE: N.T.S

L21 ANTENNA DIMENSIONS	
MODEL #	APX16DWV-16DWV-S-E-A20
MANUF.	RFS
HEIGHT	55.9"
WIDTH	13.3"
DEPTH	3.2"
WEIGHT	55 LBS



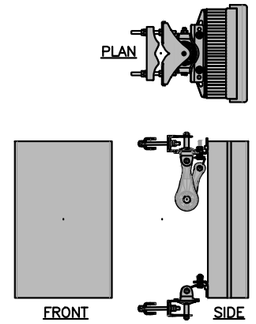
L21 ANTENNA DETAIL 3 / A-3
SCALE: N.T.S

L600+L700 ANTENNA DIMENSIONS	
MODEL #	APXVAALL24_43-U-NA20 (OCTO)
MANUF.	RFS
HEIGHT	95.9"
WIDTH	15.7"
DEPTH	9.4"
WEIGHT	128 LBS



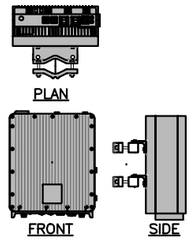
L600+L700 ANTENNA DETAIL 4 / A-3
SCALE: N.T.S

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



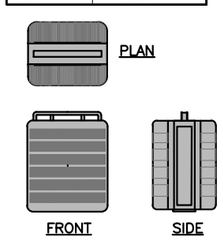
L25+N25 ANTENNA DETAIL 5 / A-3
SCALE: N.T.S

RADIO 4415 DIMENSIONS	
MODEL #	RADIO 4415 B66A
MANUF.	ERICSSON
HEIGHT	16.5"
WIDTH	13.4"
DEPTH	5.9"
WEIGHT	46 LBS



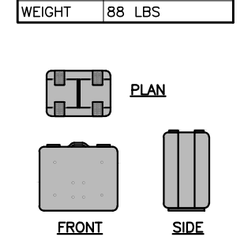
RADIO DETAIL 6 / A-3
SCALE: N.T.S

RADIO DIMENSIONS	
MODEL #	RADIO 4449 B71+B85 (WITH FILTER)
MANUF.	ERICSSON
HEIGHT	17.9"
WIDTH	13.2"
DEPTH	9.44"
WEIGHT	71 LBS

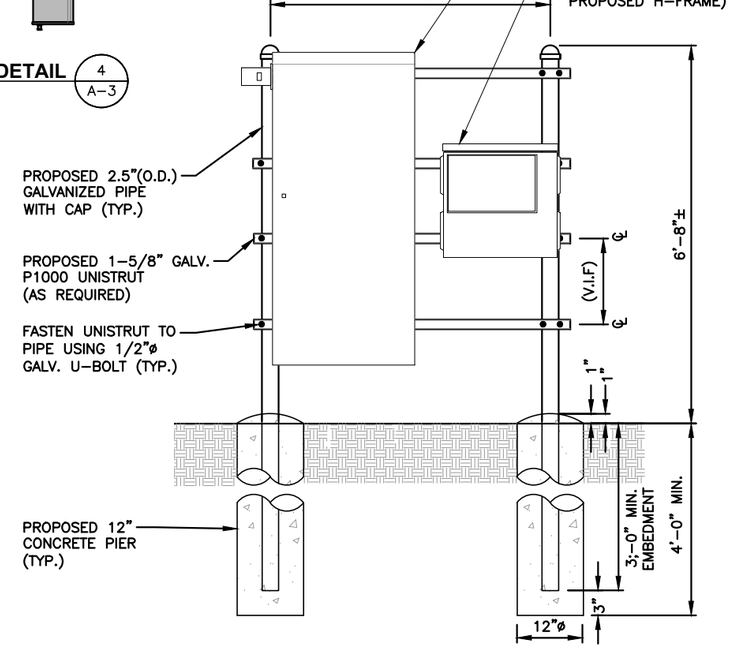


RADIO DETAIL 7 / A-3
SCALE: N.T.S

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



RADIO DETAIL 8 / A-3
SCALE: N.T.S



PROPOSED H-FRAME DETAIL 9 / A-3
SCALE: N.T.S

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SHEET TITLE
EQUIPMENT DETAILS
(L600+ANCHOR 2020)

SHEET NUMBER
A-3

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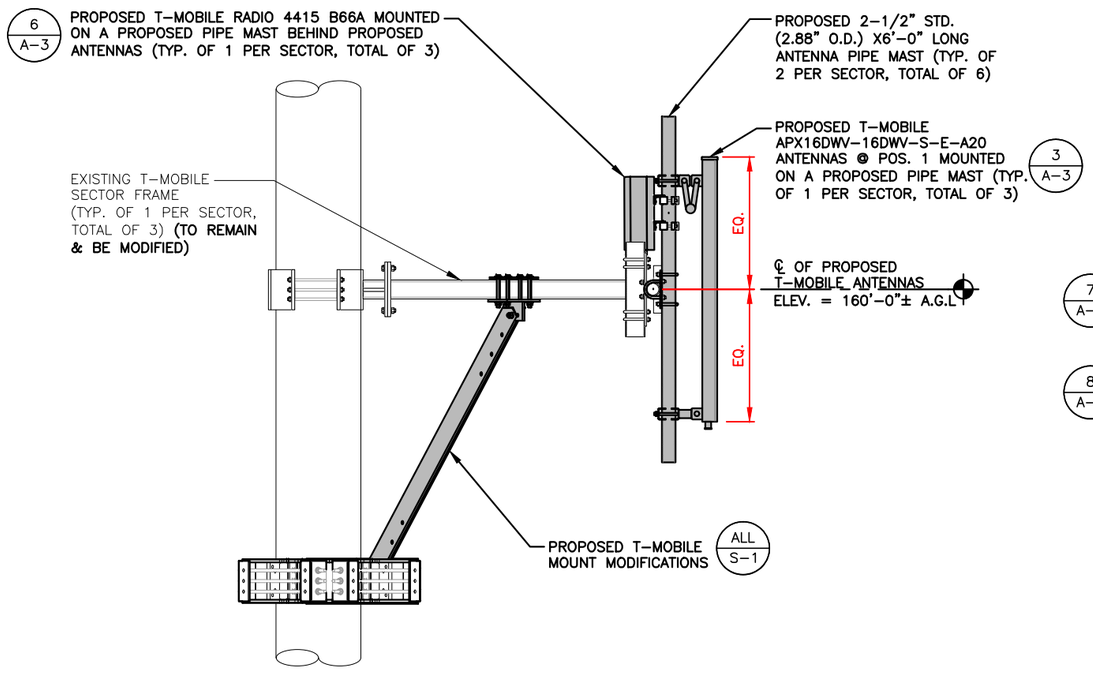
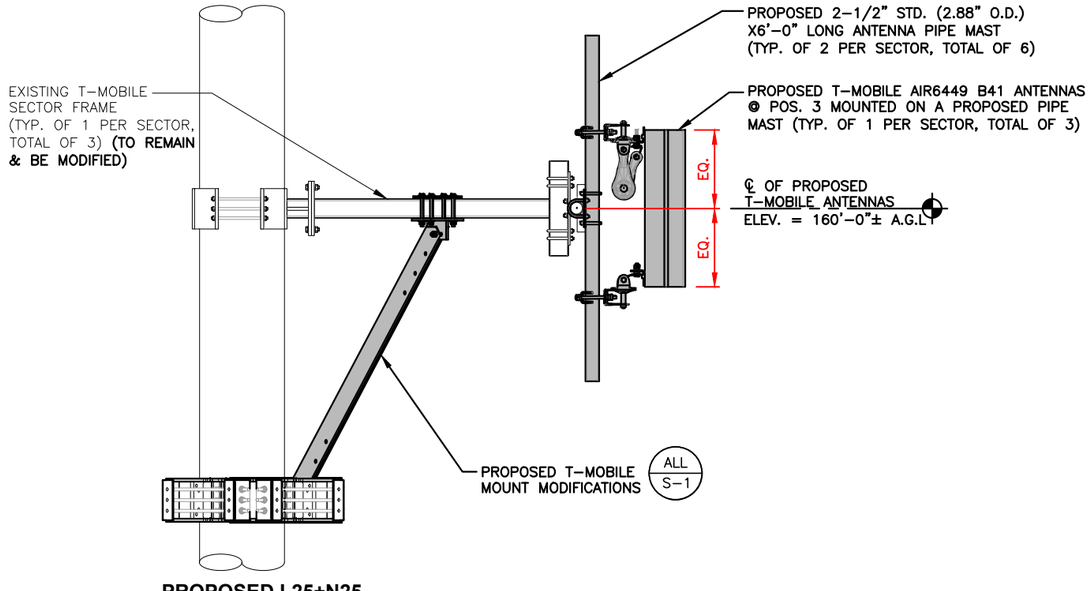
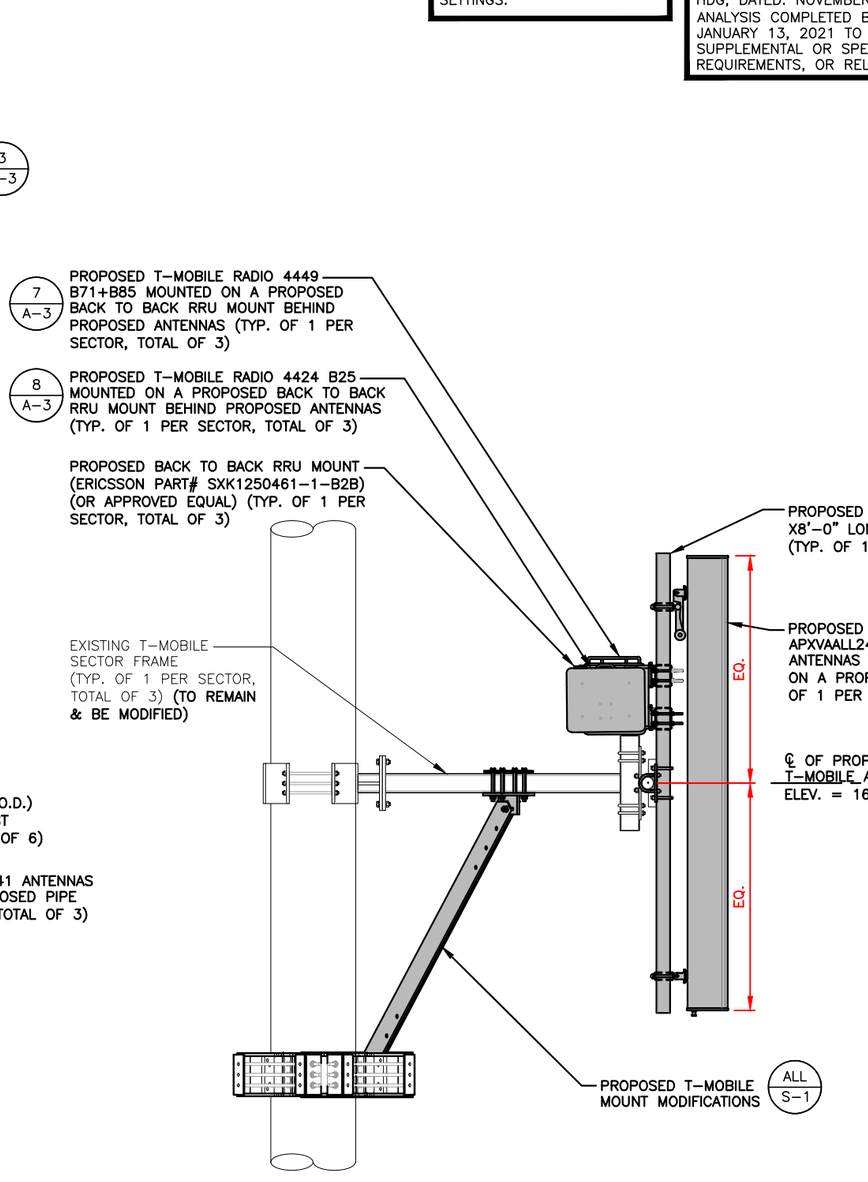


PROPOSED L21 ANTENNA & RADIO MOUNTING DETAIL 1 A-4
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"



PROPOSED L25+N25 ANTENNA MOUNTING DETAIL 3 A-4
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"



PROPOSED L600+L700 ANTENNA & RADIO MOUNTING DETAIL 2 A-4
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"

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MOUNTING DETAILS
(L600+ANCHOR 2020)

SHEET NUMBER
A-4

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-70 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
REQUIRED	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]
REQUIRED	FOUNDATION INSPECTIONS
REQUIRED	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
REQUIRED	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.

T-MOBILE NORTHEAST LLC

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

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

HUDSON Design Group LLC

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

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

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Daniel P. Hamm

CHECKED BY: RP

APPROVED BY: DPH

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SITE NAME:
CT533/SAI – ENFIELD

SITE ADDRESS:
37 BACON RD
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE
SPECIAL INSPECTIONS NOTES
(L600+ANCHOR 2020)

SHEET NUMBER
SN-1

STRUCTURAL NOTES:
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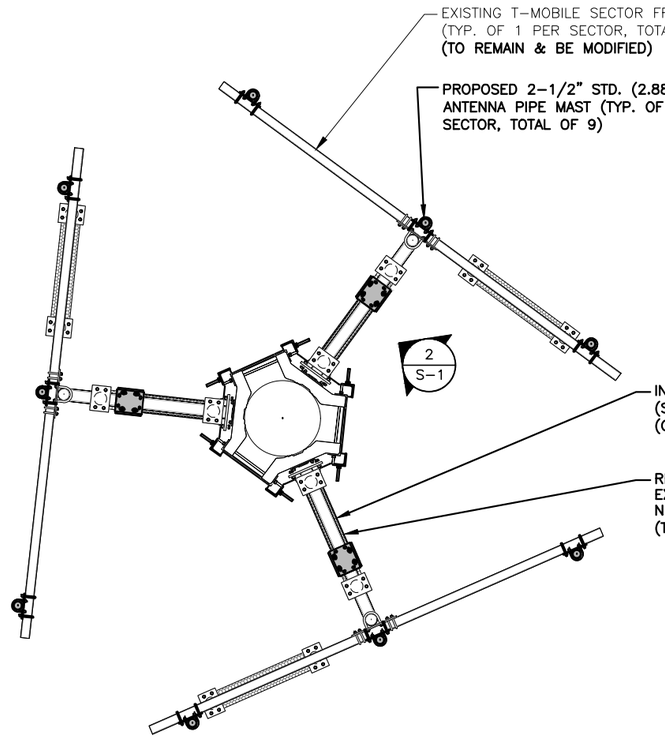
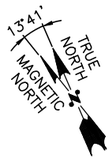
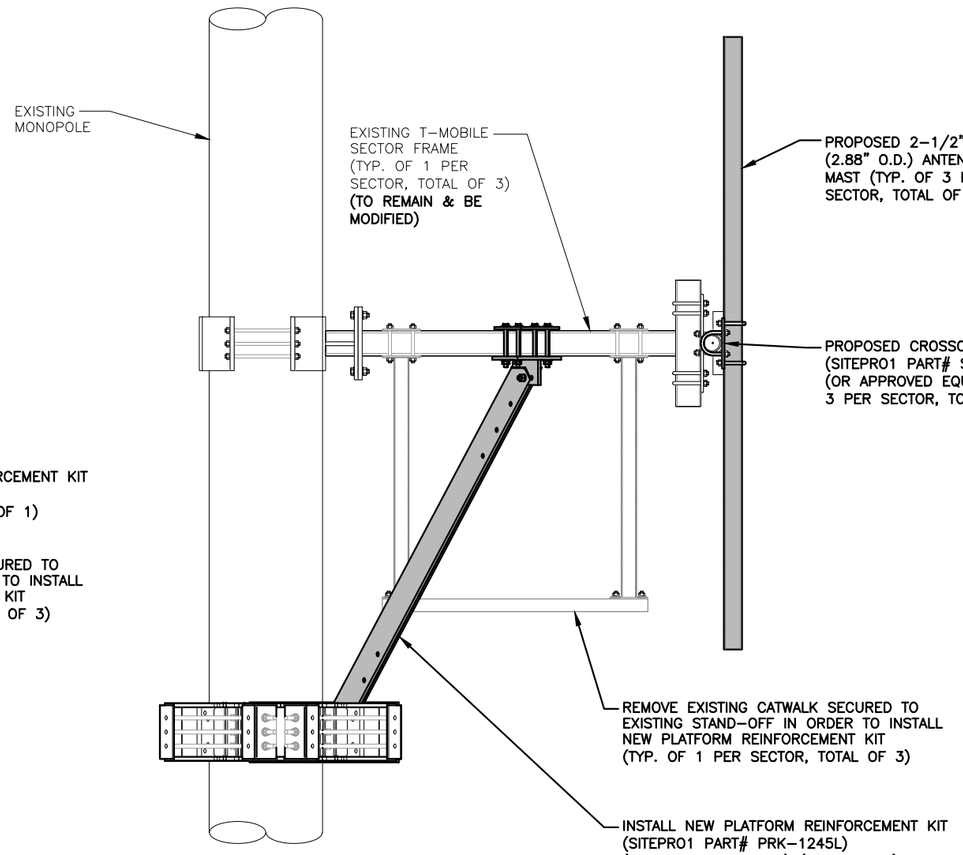




PROPOSED ANTENNA MOUNT MODIFICATION PLAN (1 / S-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 16'-0" 32'-0" 64'-0" 96'-0"



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

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

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MOUNT MODIFICATION DETAILS
(L600+ANCHOR 2020)

SHEET NUMBER
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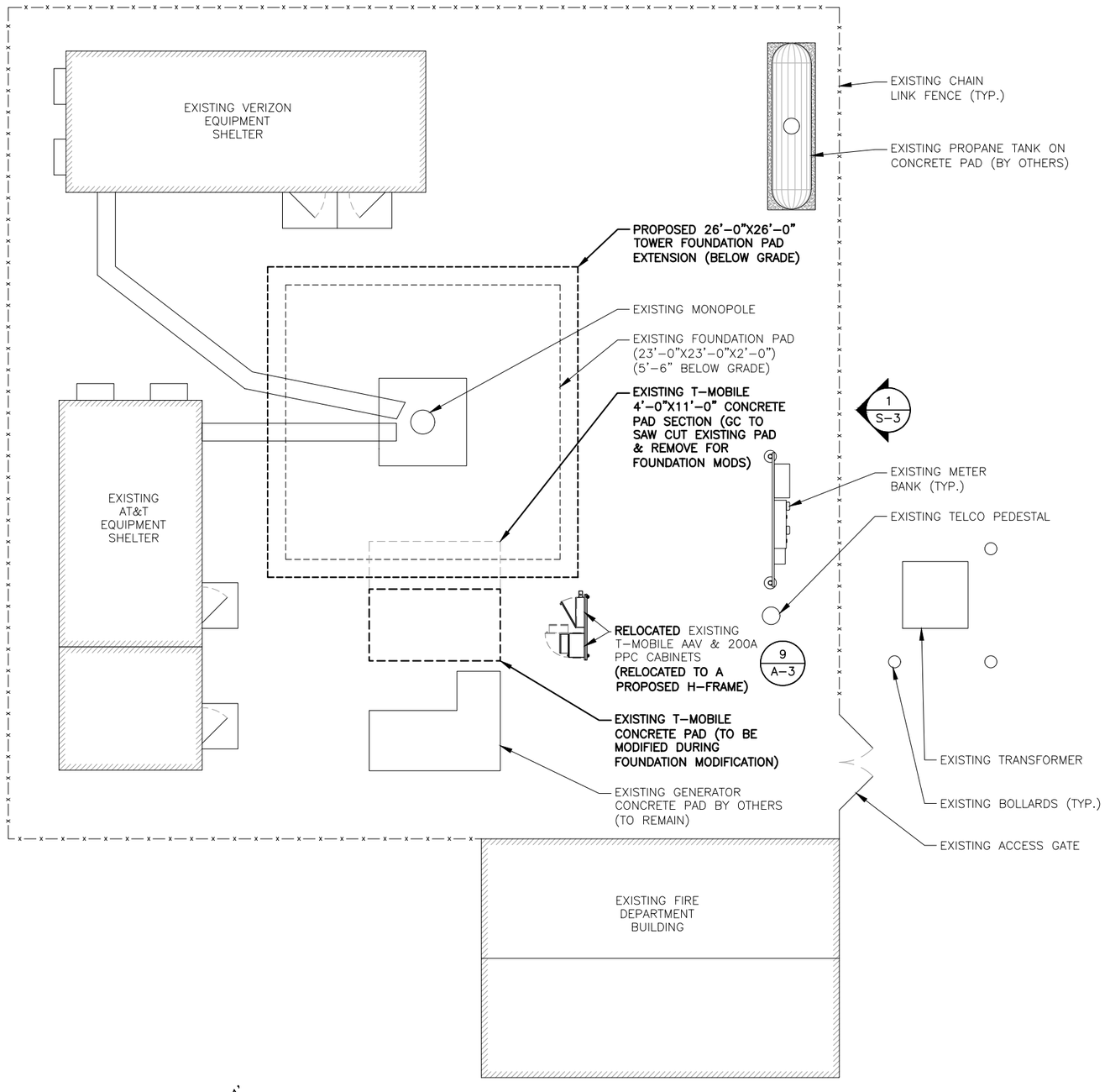

COMPOUND PLAN 1 S-2
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"

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FOUNDATION MOD DESIGN
COMPOUND PLAN
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SHEET NUMBER
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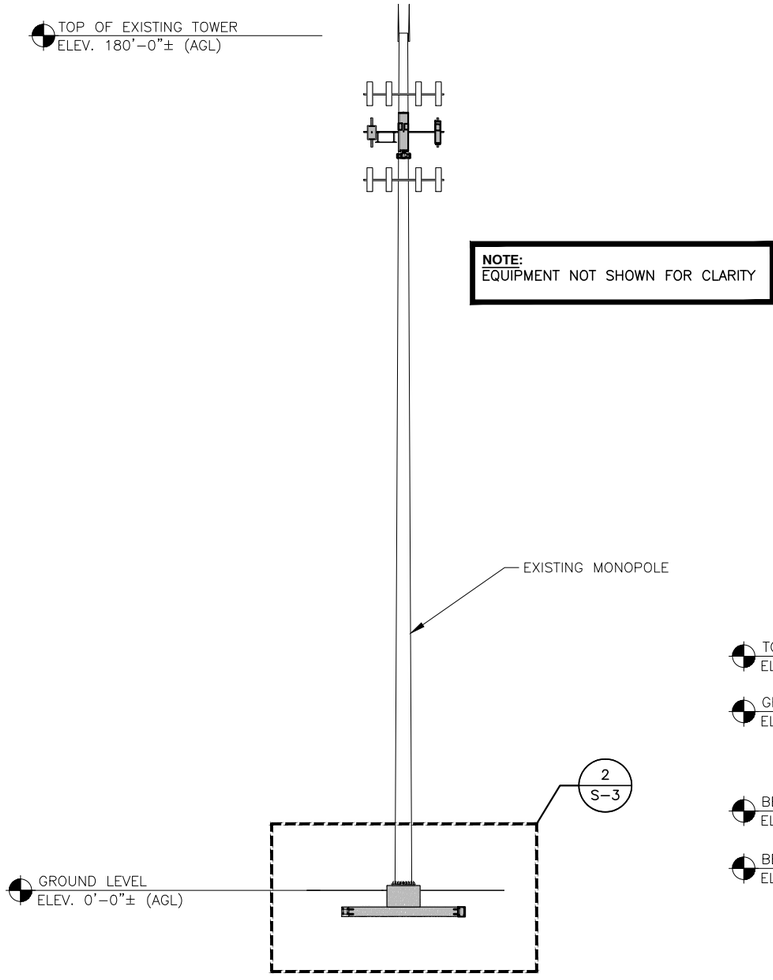
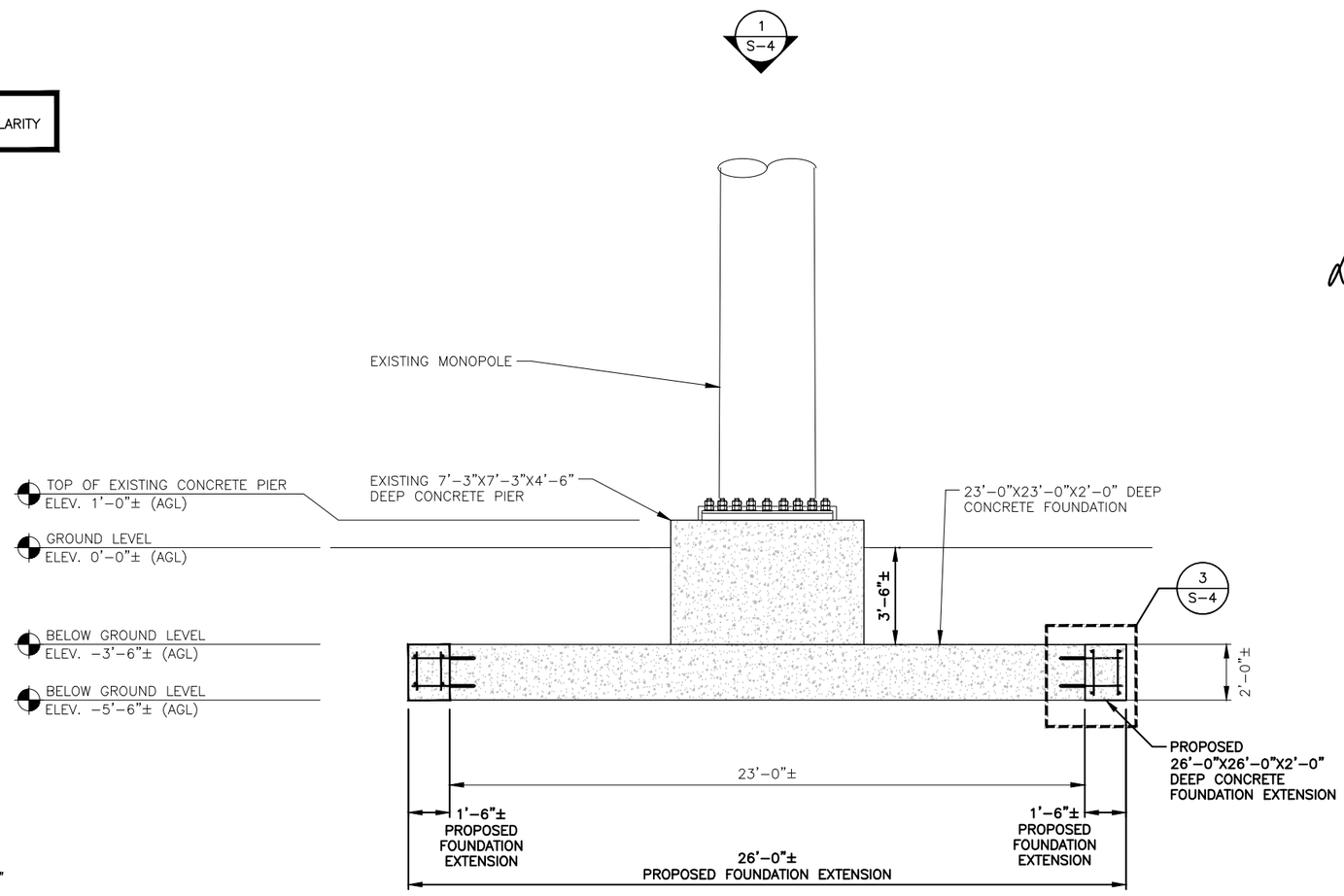
NOTES:
- CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI, IN ACCORDANCE WITH ACI 318-02.
- REBAR TO CONFORM TO ASTM SPECIFICATION A615 GRADE 60.
- ALL REBAR TO HAVE A MINIMUM OF 3" CONCRETE COVER.
- ALL EXPOSED CONCRETE CORNERS TO BE CHAMFERED 3/4".



NOTE:
EQUIPMENT NOT SHOWN FOR CLARITY

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

0 8'-0" 16'-0" 32'-0" 48'-0"



MOD DESIGN ELEVATION 2 S-3
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

0 1'-4" 2'-8" 5'-4" 8'-0"

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FOUNDATION MOD DESIGN ELEVATION
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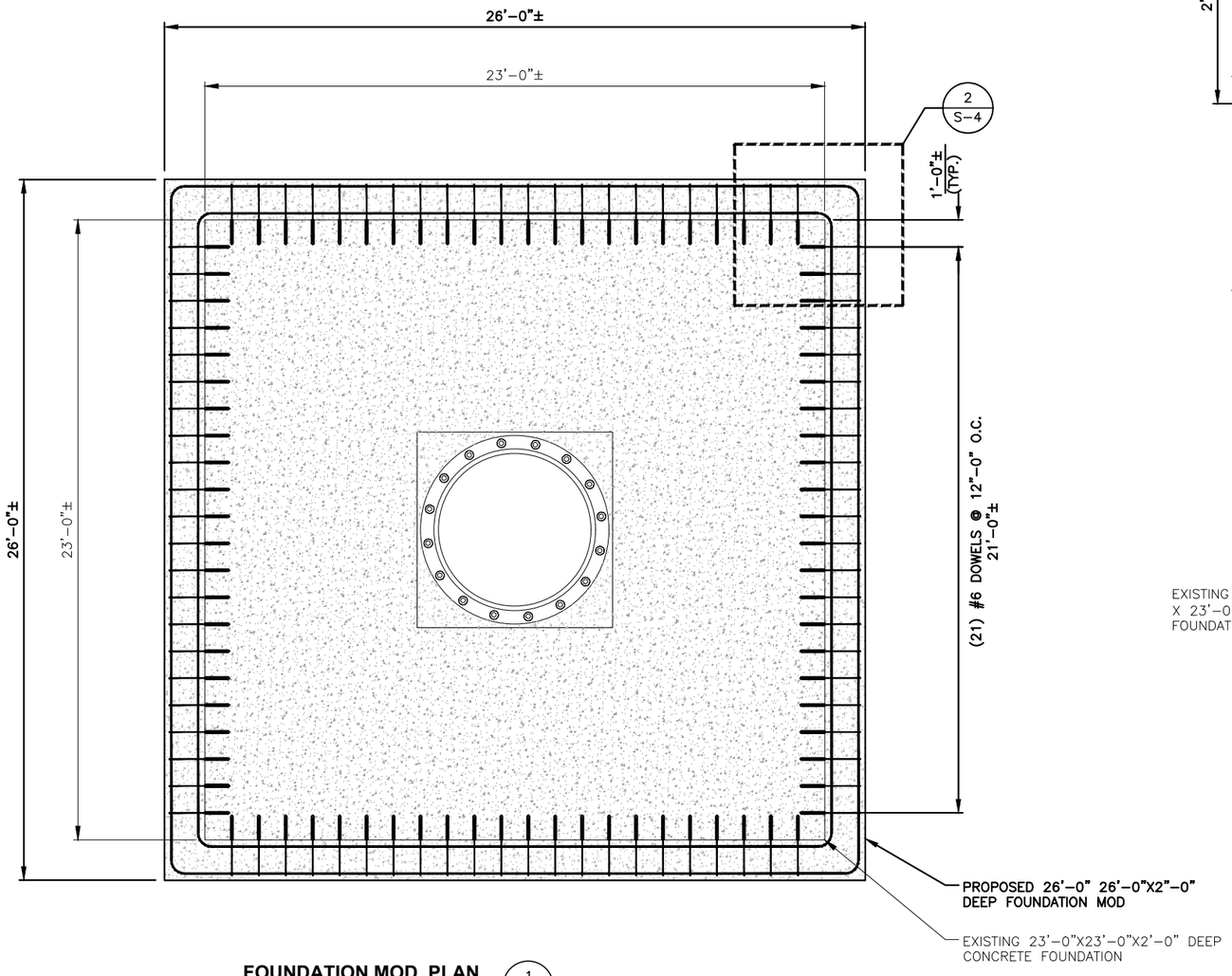
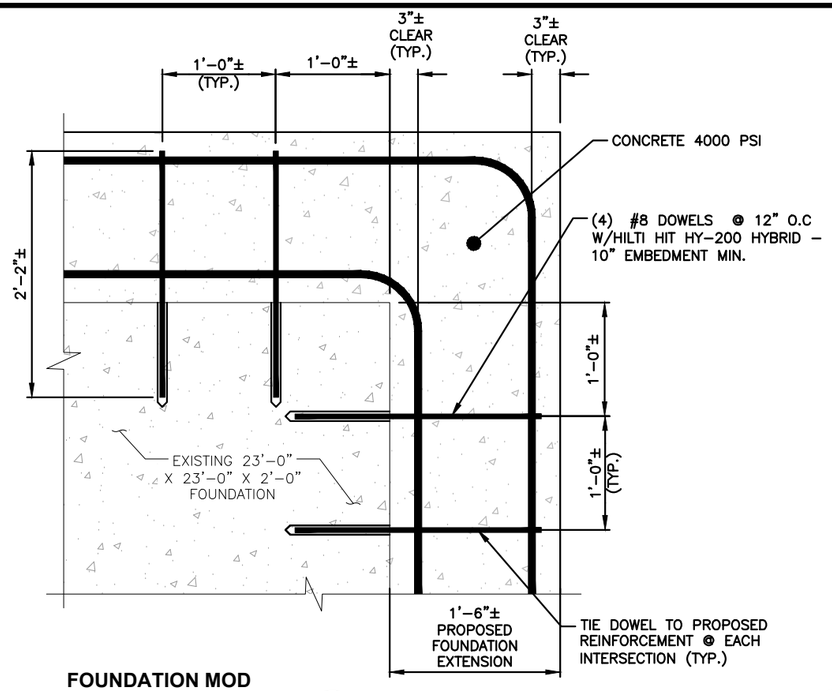
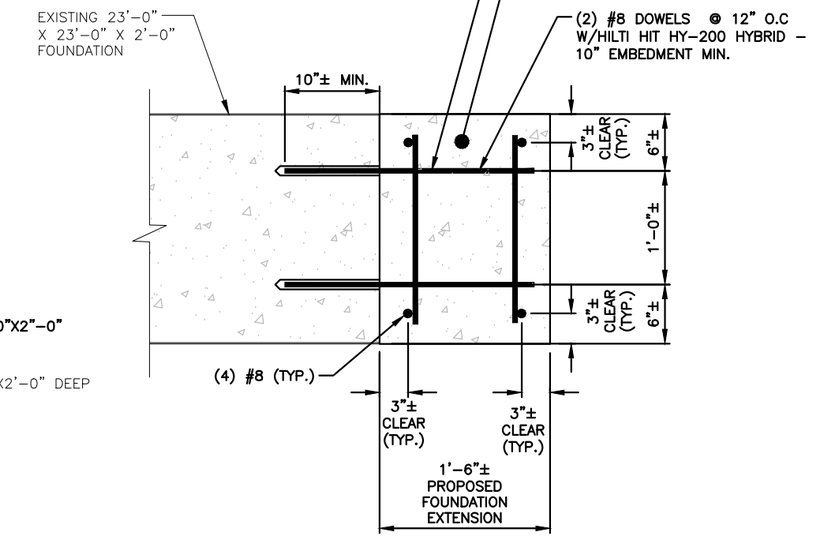


FOUNDATION MOD PLAN (1 / S-4)
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"
0 1'-4" 2'-8" 5'-4" 8'-0"



FOUNDATION MOD CONNECTION DETAIL (2 / S-4)
22x34 SCALE: 1-1/2"=1'-0"
11x17 SCALE: 3/4"=1'-0"
0 0'-4" 0'-8" 1'-4" 2'-0"



FOUNDATION MOD CONNECTION DETAIL (3 / S-4)
22x34 SCALE: 1-1/2"=1'-0"
11x17 SCALE: 3/4"=1'-0"
0 0'-4" 0'-8" 1'-4" 2'-0"

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SHEET TITLE
FOUNDATION MOD PLAN & DETAILS
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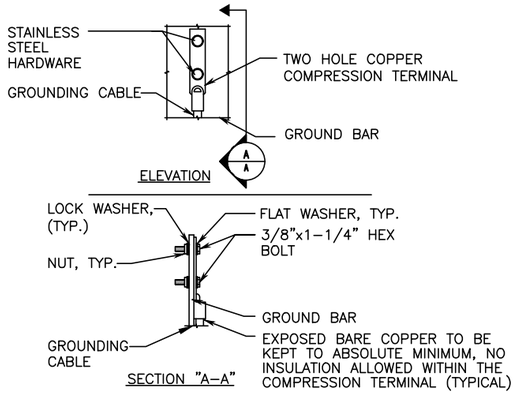
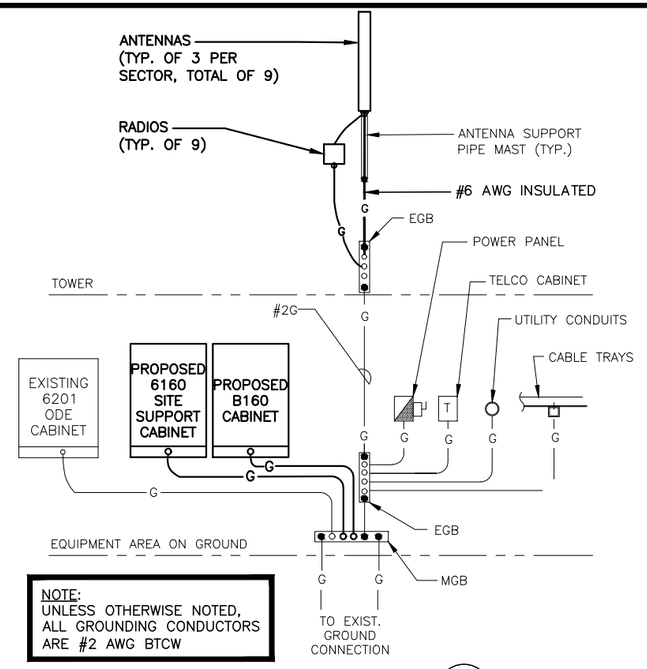
SHEET NUMBER
S-4



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

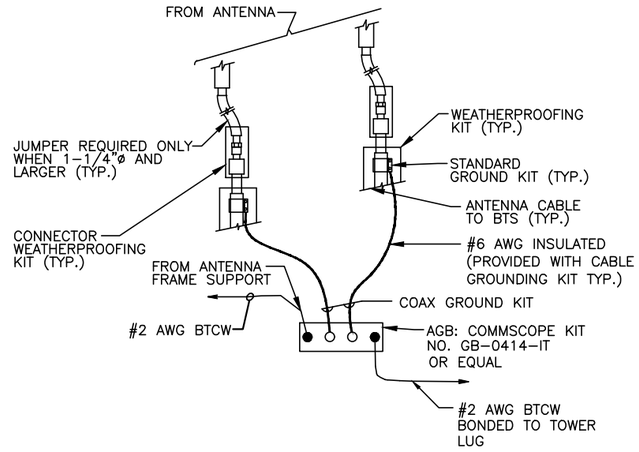
SCALE: N.T.S — 1 / E-1



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

GROUNDING RISER DIAGRAM

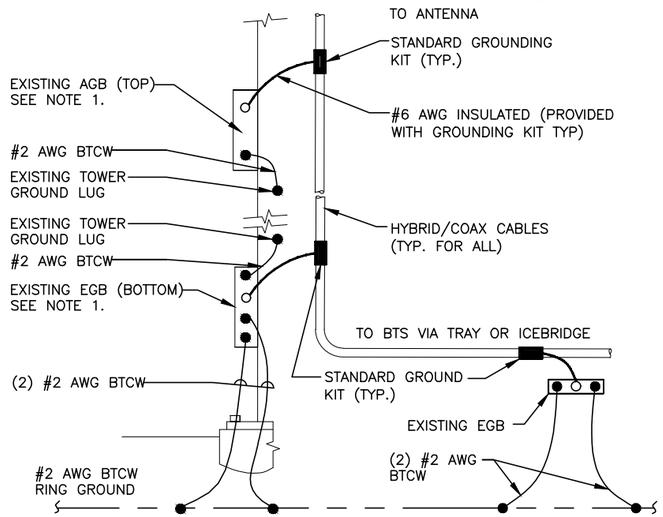
SCALE: N.T.S — 2 / E-1



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

TOWER TOP CABLE GROUNDING DETAIL

SCALE: N.T.S — 3 / E-1



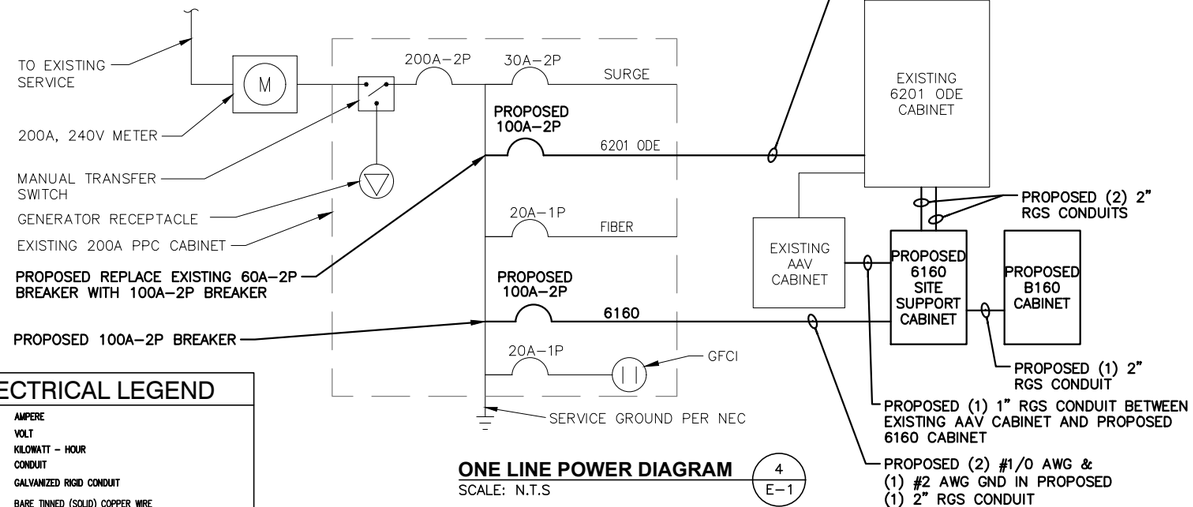
NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE ADDITIONAL AGB/EGB AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

TOWER BOTTOM CABLE GROUNDING DETAIL

SCALE: N.T.S — 5 / E-1

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

SCALE: N.T.S — 4 / E-1

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)
G	GROUND
	GROUND
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
PPC	POWER PROTECTION CABINET
	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.

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

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

STATE OF CONNECTICUT — DANIEL P. HAMM — No. 24178 — LICENSED PROFESSIONAL ENGINEER

CONSTRUCTION DRAWINGS ARE VALID FOR ONE YEAR AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

Daniel P. Hamm

CHECKED BY: RP

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	02/17/21	REVISED FOR CONSTRUCTION	VP
1	12/07/20	ISSUED FOR CONSTRUCTION	VP
0	11/11/20	ISSUED FOR REVIEW	TR

SITE NUMBER: CT11533B

SITE NAME: CT533/SAI - ENFIELD

SITE ADDRESS: 37 BACON RD ENFIELD, CT 06082 HARTFORD COUNTY

SHEET TITLE: ONE-LINE DIAGRAM & GROUNDING DETAILS (L600+ANCHOR 2020)

SHEET NUMBER: E-1

Exhibit D

Structural Analysis Report

(REVISED)
STRUCTURAL ANALYSIS REPORT

For

CT11533B (ANCHOR 2020)
CT533/SAI - ENFIELD

37 Bacon Road
Enfield, CT 06082

Antennas Mounted on the Monopole

Controlling Member	Pass/Fail	Stress Ratio
Pole Section – L5	PASS	91.1%

Prepared for:

CENTERLINE COMMUNICATIONS

T-Mobile

Dated: January 13, 2021 (Rev.1)
December 3, 2020

STATE OF CONNECTICUT
DANIEL HAMM
21178
LICENSED
PROFESSIONAL ENGINEER

Prepared by:

HDG HUDSON Design Group LLC

45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by T-Mobile to conduct a structural evaluation of the 179' monopole supporting the proposed T-Mobile's antennas located at elevation 160' 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 monopole prepared by Sabre Communications Corp. dated July 23, 2003 were obtained for our use. This office conducted an on-site visual survey and tower mapping on April 11, 2012 to record dimensional properties of the existing monopole and its appurtenances.

The following documents were used for our reference:

- Previous structural analysis report prepared by HDG, dated July 16, 2019.
- Previous structural analysis report prepared by HDG, dated July 13, 2020.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole **is in conformance** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The monopole structure is rated at **91.1%** - (Pole section L5 from EL.20' to 47.75' Controlling).

FOUNDATION SUMMARY:

HDG performed structural analysis of the existing foundation with the following proposed modifications:

1. **Enlarge existing foundation pad to 26'-0" x 26'-0".**

Based on our evaluation, we have determined that the existing foundation **is in conformance** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The foundation is rated at **70.6 %** - (Overturning Controlling).

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	10' Omni	182'	Side Mount Standoff
	Panel Antenna	178.5'	Side Mount Standoff
	Box 12"x8"	177.7'	Side Mount Standoff
	2' Dish	177.7'	Side Mount Standoff
AT&T	(1) QS66512-2 Antenna	168'	Side Mount Standoff
AT&T	(2) TPA-65R-LCUUUU-H8 Antennas	168'	Side Mount Standoff
AT&T	(6) RRUS-32 RRH's	168'	Mount Pipe
AT&T	(3) RRUS-11RRH's	168'	Mount Pipe
AT&T	(2) Squid Surge Arrestor	168'	Mount Pipe
T-Mobile	***(3) APX16DWV-16DWV-S-E-A20 Antennas***	160'	T - Frame
T-Mobile	***(3) APXVAALL24_43-U-NA20 Antennas***	160'	T - Frame
T-Mobile	***(3) AIR6449 B41 Antennas***	160'	T - Frame
T-Mobile	***(3) 4449 B71+B85 RRH's***	160'	T - Frame
T-Mobile	***(3) 4424 B25 RRH's***	160'	T - Frame
T-Mobile	***(3) 4415 B66A RRH's***	160'	T - Frame
Verizon	(6) LPA-80080-4CF Antennas	150'	Low Profile Platform
Verizon	(3) BXA-171085-8BF Antennas	150'	Low Profile Platform
Verizon	BXA-70063-4CF Antenna	150'	Low Profile Platform
Verizon	(2) SLCP 2X6014 Antennas	150'	Low Profile Platform
Verizon	(6) FD9R6004 Diplexers	150'	Low Profile Platform

Proposed T-Mobile Appurtenances shown in Bold.

T-MOBILE EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
T-Mobile	***(3) 6x12 Hybrid Fiber Cables***	160'	Inside Monopole

Proposed T-Mobile Coax Cables shown in Bold.

HUDSON Design Group LLC

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	87.4 %	148.0 – 179.0	PASS	
Pole Section-L2	86.6 %	117.25 – 148.0	PASS	
Pole Section-L3	83.6 %	97.25 – 117.25	PASS	
Pole Section-L4	85.7 %	47.75 – 97.25	PASS	
Pole Section-L5	**91.1 %**	20.0 – 47.75	PASS	**Controlling**
Pole Section-L6	79.7 %	0.0 – 20.0	PASS	
Base Plate & Anchor Bolts	71.4 %	0.0	PASS	

FOUNDATION COMPARISON SUMMARY:

	Stress Ratio	Pass/Fail	Comments
Bearing	59.6 %	PASS	
Overturning	**70.6 %**	PASS	**Controlling**
Shear	15.2 %	PASS	

HUDSON Design Group LLC

DESIGN CRITERIA:

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

   County: Hartford
   City/Town: Enfield
   Wind Load: 97 mph
   Structural Class: II
   Exposure Category: B
   Topographic Category: 1
   Crest Height: 0 ft.
   Ice Thickness: 1.0 inch

2. Approximate height above grade to proposed antennas: 160'

ASSUMPTIONS:

1. The monopole 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.

2. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

3. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

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

SUPPORT RECOMMENDATIONS:

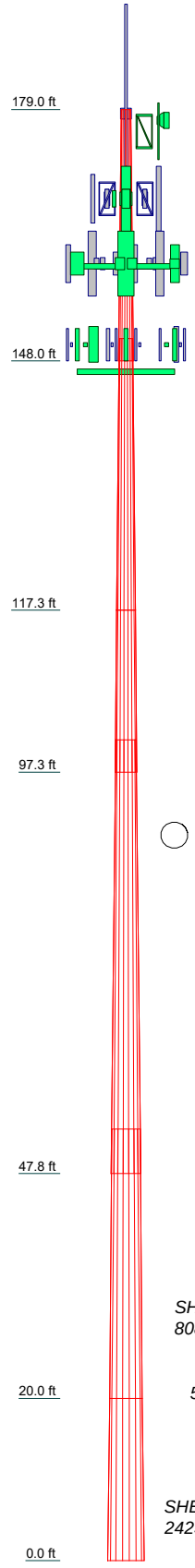
HDG recommends that the proposed antennas and RRHs be mounted on the existing T-Frame supported by the monopole.

Photo 1: Photo illustrating the Monopole with Appurtenances shown.

HUDSON
Design Group LLC

CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	31.00	18	0.1875	2.75	14.4000	21.3800		1111.3
2	33.50	18	0.2500		20.3858	27.9400		2163.0
3	20.00	18	0.2800	4.00	27.9400	32.4400		1809.0
4	53.50	18	0.3125	5.50	30.9800	43.1000	A572-65	6631.9
5	33.25	18	0.3125		41.2290	48.9500		5025.0
6	20.00	18	0.3500		48.9500	53.2300		3836.1
								20576.4



ALL REACTIONS ARE FACTORED

AXIAL 75434 lb

SHEAR 8088 lb

MOMENT 1181187 lb-ft

TORQUE 802 lb-ft
50 mph WIND - 1.0000 in ICE

AXIAL 40011 lb

SHEAR 24238 lb

MOMENT 3136305 lb-ft

TORQUE 1700 lb-ft
REACTIONS - 97 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Omni 3"X20'	182	AIR6449 B41 Antenna w/ Mounting Pipe	160
Panel Antenna 16"x16"	178.5	4449 B71+B85 RRH	160
Box 12"x8"x3"	177.7	4449 B71+B85 RRH	160
HP2-102	177.7	4449 B71+B85 RRH	160
Pirod 4' Side Mount Standoff (1)	176.3	4424 B25 RRH	160
7'x2" Antenna Mount Pipe	176.3	4424 B25 RRH	160
Pirod 4' Side Mount Standoff (1)	176.3	4424 B25 RRH	160
Collar Mount	169.5	4415 RRH	160
Pirod 4' Side Mount Standoff (1)	168	4415 RRH	160
Pirod 4' Side Mount Standoff (1)	168	4415 RRH	160
Pirod 4' Side Mount Standoff (1)	168	Pirod 12' T-Frame	160
RRUS-11 RRH	168	Pirod 12' T-Frame	160
RRUS-11 RRH	168	Pirod 12' T-Frame	160
RRUS-11 RRH	168	LPA-80080/4CF Antenna w/ Mounting Pipe	150
Squid Surge Arrestor	168	SLCP 2x6014 Antenna w/ Mounting PIpe	150
QS66512-2 Antenna w/ Mounting Pipe	168	BXA-171085-8BF-EDIN Antenna w/ Mounting Pipe	150
TPA-65R-LCUUUU-H8 Antenna w/ Mounting Pipe	168	LPA-80080/4CF Antenna w/ Mounting Pipe	150
TPA-65R-LCUUUU-H8 Antenna w/ Mounting Pipe	168	LPA-80080/4CF Antenna w/ Mounting Pipe	150
RRUS-32 RRH	168	LPA-80080/4CF Antenna w/ Mounting Pipe	150
RRUS-32 RRH	168	SLCP 2x6014 Antenna w/ Mounting PIpe	150
RRUS-32 RRH	168	BXA-171085-8BF-EDIN Antenna w/ Mounting Pipe	150
RRUS-32 RRH	168	LPA-80080/4CF Antenna w/ Mounting Pipe	150
RRUS-32 RRH	168	(2) FD9R6004 Diplexer	150
RRUS-32 RRH	168	(2) FD9R6004 Diplexer	150
Squid Surge Arrestor	168	(2) FD9R6004 Diplexer	150
APX16DWV-16DWV-S-E-A20 Antenna w/ Mounting Pipe	160	BXA-70063/4CF Antenna w/ Mounting Pipe	150
APX16DWV-16DWV-S-E-A20 Antenna w/ Mounting Pipe	160	BXA-171085-8BF-EDIN Antenna w/ Mounting Pipe	150
APX16DWV-16DWV-S-E-A20 Antenna w/ Mounting Pipe	160	LPA-80080/4CF Antenna w/ Mounting Pipe	150
APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	160	PiROD 13' Low Profile Platform	147
APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	160		
APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	160		
AIR6449 B41 Antenna w/ Mounting Pipe	160		
AIR6449 B41 Antenna w/ Mounting Pipe	160		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 91.1%

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

Job: **CT11533B**			
Project: **CT533/SAI - ENFIELD**			
Client: T-Mobile - Centerline	Drawn by: ID	App'd:	
Code: TIA-222-G	Date: 12/02/20	Scale: NTS	
Path: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\TnxTower\Tnx Projects\T-MOBILE\CT\CT11533B\CT11533B.eri		Dwg No. E-1	

Tower Input Data

The tower is a monopole.
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 97 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 pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	179.00-148.00	31.00	2.75	18	14.4000	21.3800	0.1875	0.7500	A572-65 (65 ksi)
L2	148.00-117.25	33.50	0.00	18	20.3858	27.9400	0.2500	1.0000	A572-65 (65 ksi)
L3	117.25-97.25	20.00	4.00	18	27.9400	32.4400	0.2800	1.1200	A572-65 (65 ksi)
L4	97.25-47.75	53.50	5.50	18	30.9800	43.1000	0.3125	1.2500	A572-65 (65 ksi)
L5	47.75-20.00	33.25	0.00	18	41.2290	48.9500	0.3125	1.2500	A572-65 (65 ksi)
L6	20.00-0.00	20.00		18	48.9500	53.2300	0.3500	1.4000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	14.5932	8.4582	215.8525	5.0454	7.3152	29.5074	431.9890	4.2299	2.2044	11.757
	21.6809	12.6122	715.6361	7.5233	10.8610	65.8902	1432.2138	6.3073	3.4329	18.309
L2	21.2914	15.9778	818.4486	7.1482	10.3560	79.0314	1637.9742	7.9904	3.1479	12.592
	28.3325	21.9720	2128.4000	9.8300	14.1935	149.9558	4259.6006	10.9881	4.4774	17.91
L3	28.3278	24.5820	2376.0684	9.8193	14.1935	167.4052	4755.2632	12.2933	4.4246	15.802

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	32.8972	28.5812	3734.6553	11.4168	16.4795	226.6240	7474.2248	14.2933	5.2166	18.631
L4	32.3299	30.4183	3614.3443	10.8870	15.7378	229.6595	7233.4444	15.2121	4.9025	15.688
	43.7167	42.4399	9816.2392	15.1896	21.8948	448.3366	19645.3948	21.2240	7.0356	22.514
L5	43.1137	40.5841	8584.0143	14.5254	20.9443	409.8488	17179.3236	20.2959	6.7063	21.46
	49.6569	48.2423	14418.1031	17.2663	24.8666	579.8180	28855.1778	24.1257	8.0652	25.809
L6	49.6511	53.9897	16110.9528	17.2530	24.8666	647.8953	32243.1048	27.0000	7.9992	22.855
	53.9972	58.7444	20753.2805	18.7724	27.0408	767.4791	41533.8687	29.3778	8.7525	25.007

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 179.00-148.00				1	1	1			
L2 148.00-117.25				1	1	1			
L3 117.25-97.25				1	1	1			
L4 97.25-47.75				1	1	1			
L5 47.75-20.00				1	1	1			
L6 20.00-0.00				1	1	1			

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	√
Anchor bolt grade	A615
Anchor bolt size	2.2500 in
Number of bolts	16
Embedment length	67.1300 in
f'_c	4 ksi
Grout space	3.0000 in
Base plate grade	A572-60
Base plate thickness	2.0000 in
Bolt circle diameter	60.0000 in
Outer diameter	65.0000 in
Inner diameter	40.0000 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
6X12 HYBRID FIBER CABLES (T-Mobile) ***	A	No	Yes	Inside Pole	160.00 - 8.00	6	No Ice	0.00	2.18
							1/2" Ice	0.00	2.18
							1" Ice	0.00	2.18
HCC12-50J (1/2 AIR)	A	No	Yes	Inside Pole	179.00 - 8.00	5	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LCF78-50J (7/8 FOAM)	A	No	Yes	Inside Pole	179.00 - 8.00	1	No Ice	0.00	0.53
							1/2" Ice	0.00	0.53
							1" Ice	0.00	0.53
FLC 158-50J (1 5/8 FOAM)	A	No	Yes	Inside Pole	168.00 - 8.00	6	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
FLC 158-50J (1 5/8 FOAM)	A	No	Yes	Inside Pole	168.00 - 8.00	1	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
DC Cable	A	No	Yes	Inside Pole	168.00 - 8.00	2	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
HCC12-50J (1/2 AIR)	A	No	Yes	Inside Pole	168.00 - 8.00	1	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
FLC 158-50J (1 5/8 FOAM)	A	No	Yes	Inside Pole	157.00 - 8.00	6	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
FLC 158-50J (1 5/8 FOAM)	A	No	Yes	Inside Pole	150.00 - 8.00	12	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
FLC 158-50J (1 5/8 FOAM)	A	No	Yes	Inside Pole	168.00 - 8.00	1	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
DC Cable	A	No	Yes	Inside Pole	168.00 - 8.00	2	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70

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
Pirod 4' Side Mount Standoff (1)	A	From Leg	2.00 0.00	0.0000	176.30	No Ice	2.72	2.72	50.00
						1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff (1)	B	From Leg	2.00 0.00	0.0000	176.30	No Ice	2.72	2.72	50.00
						1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
Omni 3"X20'	A	From Leg	4.00 0.00	0.0000	182.00	No Ice	6.00	6.00	50.00
						1/2" Ice	8.03	8.03	93.17
			0.00			1" Ice	10.08	10.08	149.01
Panel Antenna 16"x16"	A	From Leg	4.00 0.00	0.0000	178.50	No Ice	2.13	0.44	10.00
						1/2" Ice	2.31	0.55	22.57
			0.00			1" Ice	2.50	0.66	37.61
Box 12"x8"x3"	B	From Leg	4.00 0.00	0.0000	177.70	No Ice	0.80	0.32	10.00
						1/2" Ice	0.91	0.40	15.83
			0.00			1" Ice	1.04	0.49	23.35
7'x2" Antenna Mount Pipe	B	From Leg	4.00 0.00	0.0000	176.30	No Ice	1.66	1.66	26.00
						1/2" Ice	2.39	2.39	38.58
			0.00			1" Ice	2.83	2.83	55.84
********									
PiROD 13' Low Profile	A	None		0.0000	147.00	No Ice	15.70	15.70	1300.00

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
Platform						1/2" Ice	20.10	20.10	1765.00
						1" Ice	24.50	24.50	2230.00
LPA-80080/4CF Antenna w/ Mounting Pipe	A	From Face	4.00 6.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	3.11 3.58 4.02	6.82 7.65 8.35	33.90 82.91 138.07
BXA-70063/4CF Antenna w/ Mounting Pipe	A	From Face	4.00 4.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.19 5.68 6.14	3.87 4.67 5.34	31.90 76.58 127.26
BXA-171085-8BF-EDIN Antenna w/ Mounting Pipe	A	From Face	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	3.41 3.88 4.32	3.58 4.38 5.06	32.90 67.56 107.91
LPA-80080/4CF Antenna w/ Mounting Pipe	A	From Face	4.00 -6.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	3.11 3.58 4.02	6.82 7.65 8.35	33.90 82.91 138.07
LPA-80080/4CF Antenna w/ Mounting Pipe	B	From Face	4.00 6.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	3.11 3.58 4.02	6.82 7.65 8.35	33.90 82.91 138.07
SLCP 2x6014 Antenna w/ Mounting PIpe	B	From Face	4.00 4.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	6.85 7.35 7.82	6.70 7.55 8.27	41.90 108.28 181.58
BXA-171085-8BF-EDIN Antenna w/ Mounting Pipe	B	From Face	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	3.41 3.88 4.32	3.58 4.38 5.06	32.90 67.56 107.91
LPA-80080/4CF Antenna w/ Mounting Pipe	B	From Face	4.00 -6.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	3.11 3.58 4.02	6.82 7.65 8.35	33.90 82.91 138.07
LPA-80080/4CF Antenna w/ Mounting Pipe	C	From Face	4.00 6.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	3.11 3.58 4.02	6.82 7.65 8.35	33.90 82.91 138.07
SLCP 2x6014 Antenna w/ Mounting PIpe	C	From Face	4.00 4.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	6.85 7.35 7.82	6.70 7.55 8.27	41.90 108.28 181.58
BXA-171085-8BF-EDIN Antenna w/ Mounting Pipe	C	From Face	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	3.41 3.88 4.32	3.58 4.38 5.06	32.90 67.56 107.91
LPA-80080/4CF Antenna w/ Mounting Pipe	C	From Face	4.00 -6.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	3.11 3.58 4.02	6.82 7.65 8.35	33.90 82.91 138.07
(2) FD9R6004 Diplexer	A	From Face	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.31 0.39 0.47	0.08 0.12 0.17	2.60 4.90 8.29
(2) FD9R6004 Diplexer	B	From Face	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.31 0.39 0.47	0.08 0.12 0.17	2.60 4.90 8.29
(2) FD9R6004 Diplexer	C	From Face	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	0.31 0.39 0.47	0.08 0.12 0.17	2.60 4.90 8.29
****									
Pirod 12' T-Frame	A	From Face	0.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	12.20 17.60 23.00	12.20 17.60 23.00	360.00 490.00 620.00
Pirod 12' T-Frame	B	From Face	0.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	12.20 17.60 23.00	12.20 17.60 23.00	360.00 490.00 620.00
Pirod 12' T-Frame	C	From Face	0.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	12.20 17.60 23.00	12.20 17.60 23.00	360.00 490.00 620.00

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
APX16DWV-16DWV-S-E-A20 Antenna w/ Mounting Pipe	A	From Face	4.00 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.78 7.26 7.73	3.57 4.41 5.13	62.90 111.74 167.12
APX16DWV-16DWV-S-E-A20 Antenna w/ Mounting Pipe	B	From Face	4.00 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.78 7.26 7.73	3.57 4.41 5.13	62.90 111.74 167.12
APX16DWV-16DWV-S-E-A20 Antenna w/ Mounting Pipe	C	From Face	4.00 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.78 7.26 7.73	3.57 4.41 5.13	62.90 111.74 167.12
APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	A	From Face	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	10.79 12.21 13.49	157.20 290.89 435.20
APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	B	From Face	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	10.79 12.21 13.49	157.20 290.89 435.20
APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	C	From Face	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	10.79 12.21 13.49	157.20 290.89 435.20
AIR6449 B41 Antenna w/ Mounting Pipe	A	From Face	4.00 6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.42 7.00 7.50	3.89 4.62 5.22	124.90 179.59 240.17
AIR6449 B41 Antenna w/ Mounting Pipe	B	From Face	4.00 6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.42 7.00 7.50	3.89 4.62 5.22	124.90 179.59 240.17
AIR6449 B41 Antenna w/ Mounting Pipe	C	From Face	4.00 6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.42 7.00 7.50	3.89 4.62 5.22	124.90 179.59 240.17
4449 B71+B85 RRH	A	From Face	3.00 0.75 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.40 1.56 1.72	74.00 92.48 113.77
4449 B71+B85 RRH	B	From Face	3.00 0.75 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.40 1.56 1.72	74.00 92.48 113.77
4449 B71+B85 RRH	C	From Face	3.00 0.75 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.40 1.56 1.72	74.00 92.48 113.77
4424 B25 RRH	A	From Face	3.00 -0.75 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.86 2.03 2.20	1.32 1.47 1.62	88.00 105.87 126.50
4424 B25 RRH	B	From Face	3.00 -0.75 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.86 2.03 2.20	1.32 1.47 1.62	88.00 105.87 126.50
4424 B25 RRH	C	From Face	3.00 -0.75 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.86 2.03 2.20	1.32 1.47 1.62	88.00 105.87 126.50
4415 RRH	A	From Face	3.00 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	44.00 56.41 71.18
4415 RRH	B	From Face	3.00 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	44.00 56.41 71.18
4415 RRH	C	From Face	3.00 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	44.00 56.41 71.18
***** Pirod 4' Side Mount Standoff (1)	A	From Face	2.00 0.00	0.0000	168.00	No Ice 1/2" Ice	2.72 4.91	2.72 4.91	50.00 89.00

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
			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff (1)	B	From Face	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	50.00 89.00 128.00
Pirod 4' Side Mount Standoff (1)	C	From Face	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	50.00 89.00 128.00
RRUS-11 RRH	A	From Face	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	51.00 71.87 95.78
RRUS-11 RRH	B	From Face	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	51.00 71.87 95.78
RRUS-11 RRH	C	From Face	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	51.00 71.87 95.78
Squid Surge Arrestor	C	From Leg	1.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	0.81 1.30 1.48	0.81 1.30 1.48	33.00 48.38 66.11
Collar Mount	C	None		0.0000	169.50	No Ice 1/2" Ice 1" Ice	1.40 2.40 3.40	1.40 2.40 3.40	20.00 35.00 50.00
********									
QS66512-2 Antenna w/ Mounting Pipe	A	From Face	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	8.13 8.59 9.05	8.22 9.19 10.02	132.90 205.99 287.01
TPA-65R-LCUUUU-H8 Antenna w/ Mounting Pipe	B	From Face	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	13.30 13.90 14.50	10.72 12.15 13.43	104.20 204.76 315.30
TPA-65R-LCUUUU-H8 Antenna w/ Mounting Pipe	C	From Face	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	13.30 13.90 14.50	10.72 12.15 13.43	104.20 204.76 315.30
RRUS-32 RRH	A	From Face	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	60.00 81.11 105.42
RRUS-32 RRH	B	From Face	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	60.00 81.11 105.42
RRUS-32 RRH	C	From Face	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	60.00 81.11 105.42
RRUS-32 RRH	A	From Face	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	60.00 81.11 105.42
RRUS-32 RRH	B	From Face	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	60.00 81.11 105.42
RRUS-32 RRH	C	From Face	2.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	60.00 81.11 105.42
Squid Surge Arrestor	C	From Leg	1.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	0.81 1.30 1.48	0.81 1.30 1.48	33.00 48.38 66.11

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 ft²	Weight lb
HP2-102	B	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 0.00	0.0000		177.70	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.67	25.00 42.49 59.98

Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	Actual Allowable Ratio Bolt Tension lb	Actual Allowable Ratio Concrete Stress ksi	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Critical Ratio
2.0000	16	2.2500	119073.00 201288.96 0.59	2.068 4.080 0.51	38.564 54.000 0.71		Plate	0.71 ✔

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	179 - 148 (1)	TP21.38x14.4x0.1875	31.00	179.00	325.9	11.0483	-18523.00	23496.10	0.788
L2	148 - 117.25 (2)	TP27.94x20.3858x0.25	33.50	179.00	218.5	21.9720	-11188.70	103955.00	0.108
L3	117.25 - 97.25 (3)	TP32.44x27.94x0.28	20.00	179.00	193.6	27.7814	-14054.70	167517.00	0.084
L4	97.25 - 47.75 (4)	TP43.1x30.98x0.3125	53.50	179.00	145.7	41.2040	-24961.80	438765.00	0.057
L5	47.75 - 20 (5)	TP48.95x41.229x0.3125	33.25	179.00	124.4	48.2423	-34372.10	704204.00	0.049
L6	20 - 0 (6)	TP53.23x48.95x0.35	20.00	179.00	114.4	58.7444	-40001.80	1013630.00	0.039

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	179 - 148 (1)	TP21.38x14.4x0.1875	26685.25	312657.50	0.085	0.00	312657.50	0.000
L2	148 - 117.25 (2)	TP27.94x20.3858x0.25	684370.00	903508.33	0.757	0.00	903508.33	0.000
L3	117.25 - 97.25 (3)	TP32.44x27.94x0.28	966733.33	1286833.33	0.751	0.00	1286833.33	0.000
L4	97.25 - 47.75 (4)	TP43.1x30.98x0.3125	1918741.67	2400266.67	0.799	0.00	2400266.67	0.000
L5	47.75 - 20 (5)	TP48.95x41.229x0.3125	2661983.33	3089500.00	0.862	0.00	3089500.00	0.000
L6	20 - 0 (6)	TP53.23x48.95x0.35	3136308.33	4143691.67	0.757	0.00	4143691.67	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	179 - 148 (1)	TP21.38x14.4x0.1875	4721.20	417047.00	0.011	643.36	627031.67	0.001
L2	148 - 117.25 (2)	TP27.94x20.3858x0.25	17140.70	794310.00	0.022	1593.73	1811691.67	0.001
L3	117.25 - 97.25 (3)	TP32.44x27.94x0.28	18198.80	1002040.00	0.018	1586.87	2580300.00	0.001
L4	97.25 - 47.75 (4)	TP43.1x30.98x0.3125	21398.00	1404460.00	0.015	1574.51	4811866.67	0.000
L5	47.75 - 20 (5)	TP48.95x41.229x0.3125	23220.60	1542320.00	0.015	1570.93	6192558.00	0.000
L6	20 - 0 (6)	TP53.23x48.95x0.35	24252.60	1903000.00	0.013	1570.41	8305824.67	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	179 - 148 (1)	0.788	0.085	0.000	0.011	0.001	0.874 ✔	1.000	4.8.2 ✔
L2	148 - 117.25 (2)	0.108	0.757	0.000	0.022	0.001	0.866 ✔	1.000	4.8.2 ✔
L3	117.25 - 97.25 (3)	0.084	0.751	0.000	0.018	0.001	0.836 ✔	1.000	4.8.2 ✔
L4	97.25 - 47.75 (4)	0.057	0.799	0.000	0.015	0.000	0.857 ✔	1.000	4.8.2 ✔
L5	47.75 - 20 (5)	0.049	0.862	0.000	0.015	0.000	0.911 ✔	1.000	4.8.2 ✔
L6	20 - 0 (6)	0.039	0.757	0.000	0.013	0.000	0.797 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	179 - 148	Pole	TP21.38x14.4x0.1875	1	-18523.00	23496.10	87.4	Pass
L2	148 - 117.25	Pole	TP27.94x20.3858x0.25	2	-11188.70	103955.00	86.6	Pass
L3	117.25 - 97.25	Pole	TP32.44x27.94x0.28	3	-14054.70	167517.00	83.6	Pass
L4	97.25 - 47.75	Pole	TP43.1x30.98x0.3125	4	-24961.80	438765.00	85.7	Pass
L5	47.75 - 20	Pole	TP48.95x41.229x0.3125	5	-34372.10	704204.00	91.1	Pass
L6	20 - 0	Pole	TP53.23x48.95x0.35	6	-40001.80	1013630.00	79.7	Pass
							Summary	
							Pole (L5) 91.1	Pass
							Base Plate 71.4	Pass
							RATING = **91.1**	**Pass**

Monopole Pier and Pad Foundation

TIA-222 Revision:	G

Design Reactions		
Shear, **S**:	24.238	kips
Moment, **M**:	3136.305	ft-kips
Tower Height, **H**:	179	ft
Tower Weight, **Wt**:	40.011	kips
Base Diameter, **BD**:	4.44	ft

Foundation Dimensions		
Depth, **D**:	5.5	ft
Pad Width, **W**:	26	ft
Neglected Depth, **N**:	0	ft
Thickness, **T**:	2.00	ft
Pier Diameter, **Pd**:	7.00	ft
Ext. Above Grade, **E**:	1.00	ft
BP Dist. Above Pier:	3	in.
Clear Cover, **Cc**:	3.0	in

Soil Properties		
Soil Unit Weight, **γ**:	0.100	kcf
Ult. Bearing Capacity, Bc:	4.0	ksf
Angle of Friction, **Φ**:	30	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	0.000	ksf
Base Friction, **μ**:	0.40	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	4000	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	8	
Pier Rebar Quanity, **mp**:	36	36
Pad Rebar Size, **Spad**:	8	
Pad Rebar Quanity, **mpad**:	144	15
Pier Tie Size, **St**:	4	3
Tie Quanity, **mt**:	6	6

Design Checks	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	7	5.94	**OK**
Overturning (ft-kips)	4443.46	3136.31	**70.6%**
Shear Capacity (kips)	159.18	24.24	**15.2%**
Bearing (ksf)	3.00	1.79	**59.6%**
Pad Shear - 1-way (kips)	606.78	328.20	**54.1%**
Pad Shear - 2-way (kips)	1276.94	77.53	**6.1%**
Pad Moment Capacity (k-ft)	8847.41	1133.40	**12.8%**
Pier Moment Capacity (k-ft)	9815.92	3245.38	**33.1%**

Exhibit E

Mount Analysis Report

November 30, 2020

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

RE: Site Number: CT11533B (ANCHOR)
Site Name: CT533 / SAI-ENFIELD
Site Address: 37 Bacon Road
Enfield, CT 06082

To Whom It May Concern:

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

- **(3) APX16DWV-16DWV-S-E-A20 Antennas (55.9”x13.3”x3.2” – Wt. = 55 lbs. /each)**
- **(3) APXVAALL24_43-U-NA20 Antennas (95.9”x15.7”x9.4” – Wt. = 128 lbs. /each)**
- **(3) AIR6449 B41 Antennas (33.1”x20.5”x8.5” – Wt. = 103 lbs. /each)**
- **(3) 4449 B71+B85 RRH’s (17.9”x13.2”x9.5” – Wt. = 71 lbs. /each)**
- **(3) 4424 B25 RRH’s (16.5”x13.5”x9.6” – Wt. = 88 lbs. /each)**
- **(3) 4415 B25 RRH’s (16.5”x13.4”x5.9” – Wt. = 46 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG conducted a ground audit of the existing antenna mounts on September 8, 2020. HDG used mapping information from similar mounts to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.76 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.176 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.065.
- The existing mounts are secured to the existing monopole with ring mount. The connections are considered OK by visual inspection.

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

- **Remove existing catwalk secured to existing standoff in order to install new platform reinforcement (typ. of 1 per sector, total of 3).**
- **Install new platform reinforcement kit, SitePro1 P/N PRK-1245L (or approved equal).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (ANCHOR) Mount Rating	1	LC30	133%	**FAIL**
Modified (ANCHOR) Mount Rating	11	LC10	81%	**PASS**

This determination was based on the following limitations and assumptions:

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

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:






HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 11/30/2020
Project Name: CT11533B
Project No.: CT533 / SAI - ENFIELD
Designed By: ID **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

	z=	160	(ft)
	z_g=	1200	(ft)
K_z= 1.130	α=	7.0	

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

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

$K_{zt} = [1+(K_c\ K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= 1

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

Category= **1**

K_h=	1	
K_c=	0.9	(from Table 2-4)
K_t=		(from Table 2-5)
f=		(from Table 2-5)
z=	160	
z_s=	171	(Mean elevation of base of structure above sea level)
H=		(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.99	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i = 1.50 in
Importance Factor = I= 1.0 (from Table 2-3)
K_{iz} = 1.17 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.76 in

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	180	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

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

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

2.6.11.2 Design Wind Force on Appurtenances

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

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

		K_z=	1.130	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**42.68**	K_e=	0.99	(from 2.6.8)
$q_{z\ (ice)}$=	**6.83**	K_d=	0.95	(from Table 2-2)
$q_{z\ (30)}$=	**2.46**	V_{max}=	125	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

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

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Determine Ca:

Table 2-9

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

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

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

Ice Thickness = 1.76 in | **Angle =** 0 (deg) | **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
APX16DWV-16DWV-S-E-A20 Antenna	55.9	13.3	3.2	5.16	4.20	1.28	281	60	16
APXVAALL24_43-U-NA20 Antenna	95.9	15.7	9.4	10.46	6.11	1.36	607	123	35
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.61	1.20	241	50	14
4415 B66A RRH	16.5	13.4	5.9	1.54	1.23	1.20	79	19	5
4415 B66A RRH (Shielded)	16.5	0.1	5.9	0.01	165.00	6.67	3	23	0
4449 B71+B85 RRH	17.9	9.5	13.2	1.18	1.88	1.20	60	16	3
4449 B71+B85 RRH (Shielded)	17.9	4.8	13.2	0.59	3.77	1.26	32	11	2
4424 B25 RRH	16.5	9.6	13.5	1.10	1.72	1.20	56	15	3
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	3.44	1.24	29	10	2
1" Pipe	1.3	12.0		0.11	0.11	1.20	6	4	0
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	12	6	1
3" Pipe	3.5	12.0		0.29	0.29	1.20	15	6	1
L 2-1/2x2-1/2 Angles	2.5	12.0		0.21	0.21	2.00	18	9	1
HSS 3x3	3.0	12.0		0.25	0.25	1.25	13	6	1
1200S162-54	1.6	12.0		0.14	0.14	2.00	12	8	1

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HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.76	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
APX16DWV-16DWV-S-E-A20 Anten	55.9	13.3	3.2	5.16	1.24	4.20	17.47	1.28	1.75	281	93	234
APXVAALL24_43-U-NA20 Antenna	95.9	15.7	9.4	10.46	6.26	6.11	10.20	1.36	1.51	607	403	556
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	241	105	207
4415 B66A RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	79	35	68
4415 B66A RRH (Shielded)	16.5	6.7	5.9	0.77	0.68	2.46	2.80	1.20	1.21	39	35	38
4449 B71+B85 RRH	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	60	84	66
4449 B71+B85 RRH (Shielded)	17.9	4.8	13.2	0.59	1.64	3.77	1.36	1.26	1.20	32	84	45
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	56	79	62
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	29	79	42

WIND LOADS WITH ICE:

APX16DWV-16DWV-S-E-A20 Anten	59.4	16.8	6.7	6.94	2.77	3.53	8.85	1.25	1.46	59	28	51
APXVAALL24_43-U-NA20 Antenna	99.4	19.2	12.9	13.26	8.91	5.17	7.70	1.32	1.42	119	87	111
AIR6449 B41 Antenna	36.6	24.0	12.0	6.11	3.05	1.52	3.05	1.20	1.22	50	26	44
4415 B66A RRH	20.0	16.9	9.4	2.35	1.31	1.18	2.13	1.20	1.20	19	11	17
4415 B66A RRH (Shielded)	20.0	8.5	9.4	1.18	1.31	2.37	2.13	1.20	1.20	10	11	10
4449 B71+B85 RRH	21.4	13.0	16.7	1.94	2.49	1.65	1.28	1.20	1.20	16	20	17
4449 B71+B85 RRH (Shielded)	21.4	6.5	16.7	0.97	2.49	3.29	1.28	1.24	1.20	8	20	11
4424 B25 RRH	20.0	13.1	17.0	1.82	2.36	1.53	1.18	1.20	1.20	15	19	16
4424 B25 RRH (Shielded)	20.0	6.6	17.0	0.91	2.36	3.05	1.18	1.22	1.20	8	19	11

WIND LOADS AT 30 MPH:

APX16DWV-16DWV-S-E-A20 Anten	55.9	13.3	3.2	5.16	1.24	4.20	17.47	1.28	1.75	16	5	13
APXVAALL24_43-U-NA20 Antenna	95.9	15.7	9.4	10.46	6.26	6.11	10.20	1.36	1.51	35	23	32
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	14	6	12
4415 B66A RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	4
4415 B66A RRH (Shielded)	16.5	6.7	5.9	0.77	0.68	2.46	2.80	1.20	1.21	2	2	2
4449 B71+B85 RRH	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	3	5	4
4449 B71+B85 RRH (Shielded)	17.9	4.8	13.2	0.59	1.64	3.77	1.36	1.26	1.20	2	5	3
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	3	5	4
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	2	5	2

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HUDSON Design Group LLC

WIND LOADS

Angle = 60 (deg) | Ice Thickness = 1.76 in. | Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
APX16DWV-16DWV-S-E-A20 Anten	55.9	13.3	3.2	5.16	1.24	4.20	17.47	1.28	1.75	281	93	140
APXVAALL24_43-U-NA20 Antenna	95.9	15.7	9.4	10.46	6.26	6.11	10.20	1.36	1.51	607	403	454
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	241	105	139
4415 B66A RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	79	35	46
4415 B66A RRH (Shielded)	16.5	10.1	5.9	1.15	0.68	1.64	2.80	1.20	1.21	59	35	41
4449 B71+B85 RRH	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	60	84	78
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.89	1.64	2.51	1.36	1.20	1.20	45	84	74
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	56	79	74
4424 B25 RRH (Shielded)	16.5	7.2	13.5	0.83	1.55	2.29	1.22	1.20	1.20	42	79	70

WIND LOADS WITH ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
APX16DWV-16DWV-S-E-A20 Anten	59.4	16.8	6.7	6.94	2.77	3.53	8.85	1.25	1.46	59	28	35
APXVAALL24_43-U-NA20 Antenna	99.4	19.2	12.9	13.26	8.91	5.17	7.70	1.32	1.42	119	87	95
AIR6449 B41 Antenna	36.6	24.0	12.0	6.11	3.05	1.52	3.05	1.20	1.22	50	26	32
4415 B66A RRH	20.0	16.9	9.4	2.35	1.31	1.18	2.13	1.20	1.20	19	11	13
4415 B66A RRH (Shielded)	20.0	12.7	9.4	1.76	1.31	1.58	2.13	1.20	1.20	14	11	12
4449 B71+B85 RRH	21.4	13.0	16.7	1.94	2.49	1.65	1.28	1.20	1.20	16	20	19
4449 B71+B85 RRH (Shielded)	21.4	9.8	16.7	1.45	2.49	2.19	1.28	1.20	1.20	12	20	18
4424 B25 RRH	20.0	13.1	17.0	1.82	2.36	1.53	1.18	1.20	1.20	15	19	18
4424 B25 RRH (Shielded)	20.0	9.8	17.0	1.37	2.36	2.03	1.18	1.20	1.20	11	19	17

WIND LOADS AT 30 MPH:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
APX16DWV-16DWV-S-E-A20 Anten	55.9	13.3	3.2	5.16	1.24	4.20	17.47	1.28	1.75	16	5	8
APXVAALL24_43-U-NA20 Antenna	95.9	15.7	9.4	10.46	6.26	6.11	10.20	1.36	1.51	35	23	26
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	14	6	8
4415 B66A RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	3
4415 B66A RRH (Shielded)	16.5	10.1	5.9	1.15	0.68	1.64	2.80	1.20	1.21	3	2	2
4449 B71+B85 RRH	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	3	5	5
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.89	1.64	2.51	1.36	1.20	1.20	3	5	4
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	3	5	4
4424 B25 RRH (Shielded)	16.5	7.2	13.5	0.83	1.55	2.29	1.22	1.20	1.20	2	5	4

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Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.76	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
APX16DWV-16DWV-S-E-A20 Anten	55.9	13.3	3.2	5.16	1.24	4.20	17.47	1.28	1.75	281	93	93
APXVAALL24_43-U-NA20 Antenna	95.9	15.7	9.4	10.46	6.26	6.11	10.20	1.36	1.51	607	403	403
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	241	105	105
4415 B66A RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	79	35	35
4415 B66A RRH (Shielded)	16.5	0.1	5.9	0.01	0.68	165.00	2.80	6.67	1.21	3	35	35
4449 B71+B85 RRH	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	60	84	84
4449 B71+B85 RRH (Shielded)	17.9	4.8	13.2	0.59	1.64	3.77	1.36	1.26	1.20	32	84	84
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	56	79	79
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	29	79	79

WIND LOADS WITH ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
APX16DWV-16DWV-S-E-A20 Anten	59.4	16.8	6.7	6.94	2.77	3.53	8.85	1.25	1.46	59	28	28
APXVAALL24_43-U-NA20 Antenna	99.4	19.2	12.9	13.26	8.91	5.17	7.70	1.32	1.42	119	87	87
AIR6449 B41 Antenna	36.6	24.0	12.0	6.11	3.05	1.52	3.05	1.20	1.22	50	26	26
4415 B66A RRH	20.0	16.9	9.4	2.35	1.31	1.18	2.13	1.20	1.20	19	11	11
4415 B66A RRH (Shielded)	20.0	3.6	9.4	0.50	1.31	5.54	2.13	1.34	1.20	5	11	11
4449 B71+B85 RRH	21.4	13.0	16.7	1.94	2.49	1.65	1.28	1.20	1.20	16	20	20
4449 B71+B85 RRH (Shielded)	21.4	8.3	16.7	1.23	2.49	2.59	1.28	1.20	1.20	10	20	20
4424 B25 RRH	20.0	13.1	17.0	1.82	2.36	1.53	1.18	1.20	1.20	15	19	19
4424 B25 RRH (Shielded)	20.0	8.3	17.0	1.16	2.36	2.41	1.18	1.20	1.20	9	19	19

WIND LOADS AT 30 MPH:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
APX16DWV-16DWV-S-E-A20 Anten	55.9	13.3	3.2	5.16	1.24	4.20	17.47	1.28	1.75	16	5	5
APXVAALL24_43-U-NA20 Antenna	95.9	15.7	9.4	10.46	6.26	6.11	10.20	1.36	1.51	35	23	23
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	14	6	6
4415 B66A RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	2
4415 B66A RRH (Shielded)	16.5	0.1	5.9	0.01	0.68	165.00	2.80	6.67	1.21	0	2	2
4449 B71+B85 RRH	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	3	5	5
4449 B71+B85 RRH (Shielded)	17.9	4.8	13.2	0.59	1.64	3.77	1.36	1.26	1.20	2	5	5
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	3	5	5
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	2	5	5

Date: 12/2/2020
Project Name: CT11533B
Project No.: CT533 / SAI - ENFIELD
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.76	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
APX16DWV-16DWV-S-E-A20 Anten	55.9	13.3	3.2	5.16	1.24	4.20	17.47	1.28	1.75	281	93	140
APXVAALL24_43-U-NA20 Antenna	95.9	15.7	9.4	10.46	6.26	6.11	10.20	1.36	1.51	607	403	454
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	241	105	139
4415 B66A RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	79	35	46
4415 B66A RRH (Shielded)	16.5	10.1	5.9	1.15	0.68	1.64	2.80	1.20	1.21	59	35	41
4449 B71+B85 RRH	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	60	84	78
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.89	1.64	2.51	1.36	1.20	1.20	45	84	74
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	56	79	74
4424 B25 RRH (Shielded)	16.5	7.2	13.5	0.83	1.55	2.29	1.22	1.20	1.20	42	79	70

WIND LOADS WITH ICE:

APX16DWV-16DWV-S-E-A20 Anten	59.4	16.8	6.7	6.94	2.77	3.53	8.85	1.25	1.46	59	28	35
APXVAALL24_43-U-NA20 Antenna	99.4	19.2	12.9	13.26	8.91	5.17	7.70	1.32	1.42	119	87	95
AIR6449 B41 Antenna	36.6	24.0	12.0	6.11	3.05	1.52	3.05	1.20	1.22	50	26	32
4415 B66A RRH	20.0	16.9	9.4	2.35	1.31	1.18	2.13	1.20	1.20	19	11	13
4415 B66A RRH (Shielded)	20.0	12.7	9.4	1.76	1.31	1.58	2.13	1.20	1.20	14	11	12
4449 B71+B85 RRH	21.4	13.0	16.7	1.94	2.49	1.65	1.28	1.20	1.20	16	20	19
4449 B71+B85 RRH (Shielded)	21.4	9.8	16.7	1.45	2.49	2.19	1.28	1.20	1.20	12	20	18
4424 B25 RRH	20.0	13.1	17.0	1.82	2.36	1.53	1.18	1.20	1.20	15	19	18
4424 B25 RRH (Shielded)	20.0	9.8	17.0	1.37	2.36	2.03	1.18	1.20	1.20	11	19	17

WIND LOADS AT 30 MPH:

APX16DWV-16DWV-S-E-A20 Anten	55.9	13.3	3.2	5.16	1.24	4.20	17.47	1.28	1.75	16	5	8
APXVAALL24_43-U-NA20 Antenna	95.9	15.7	9.4	10.46	6.26	6.11	10.20	1.36	1.51	35	23	26
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	14	6	8
4415 B66A RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	3
4415 B66A RRH (Shielded)	16.5	10.1	5.9	1.15	0.68	1.64	2.80	1.20	1.21	3	2	2
4449 B71+B85 RRH	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	3	5	5
4449 B71+B85 RRH (Shielded)	17.9	7.1	13.2	0.89	1.64	2.51	1.36	1.20	1.20	3	5	4
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	3	5	4
4424 B25 RRH (Shielded)	16.5	7.2	13.5	0.83	1.55	2.29	1.22	1.20	1.20	2	5	4

Date: 12/2/2020
Project Name: CT11533B
Project No.: CT533 / SAI - ENFIELD
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.76	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
APX16DWV-16DWV-S-E-A20 Anten	55.9	13.3	3.2	5.16	1.24	4.20	17.47	1.28	1.75	281	93	234
APXVAALL24_43-U-NA20 Antenna	95.9	15.7	9.4	10.46	6.26	6.11	10.20	1.36	1.51	607	403	556
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	241	105	207
4415 B66A RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	79	35	68
4415 B66A RRH (Shielded)	16.5	6.7	5.9	0.77	0.68	2.46	2.80	1.20	1.21	39	35	38
4449 B71+B85 RRH	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	60	84	66
4449 B71+B85 RRH (Shielded)	17.9	4.8	13.2	0.59	1.64	3.77	1.36	1.26	1.20	32	84	45
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	56	79	62
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	29	79	42

WIND LOADS WITH ICE:

APX16DWV-16DWV-S-E-A20 Anten	59.4	16.8	6.7	6.94	2.77	3.53	8.85	1.25	1.46	59	28	51
APXVAALL24_43-U-NA20 Antenna	99.4	19.2	12.9	13.26	8.91	5.17	7.70	1.32	1.42	119	87	111
AIR6449 B41 Antenna	36.6	24.0	12.0	6.11	3.05	1.52	3.05	1.20	1.22	50	26	44
4415 B66A RRH	20.0	16.9	9.4	2.35	1.31	1.18	2.13	1.20	1.20	19	11	17
4415 B66A RRH (Shielded)	20.0	8.5	9.4	1.18	1.31	2.37	2.13	1.20	1.20	10	11	10
4449 B71+B85 RRH	21.4	13.0	16.7	1.94	2.49	1.65	1.28	1.20	1.20	16	20	17
4449 B71+B85 RRH (Shielded)	21.4	6.5	16.7	0.97	2.49	3.29	1.28	1.24	1.20	8	20	11
4424 B25 RRH	20.0	13.1	17.0	1.82	2.36	1.53	1.18	1.20	1.20	15	19	16
4424 B25 RRH (Shielded)	20.0	6.6	17.0	0.91	2.36	3.05	1.18	1.22	1.20	8	19	11

WIND LOADS AT 30 MPH:

APX16DWV-16DWV-S-E-A20 Anten	55.9	13.3	3.2	5.16	1.24	4.20	17.47	1.28	1.75	16	5	13
APXVAALL24_43-U-NA20 Antenna	95.9	15.7	9.4	10.46	6.26	6.11	10.20	1.36	1.51	35	23	32
AIR6449 B41 Antenna	33.1	20.5	8.5	4.71	1.95	1.61	3.89	1.20	1.26	14	6	12
4415 B66A RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	4
4415 B66A RRH (Shielded)	16.5	6.7	5.9	0.77	0.68	2.46	2.80	1.20	1.21	2	2	2
4449 B71+B85 RRH	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	3	5	4
4449 B71+B85 RRH (Shielded)	17.9	4.8	13.2	0.59	1.64	3.77	1.36	1.26	1.20	2	5	3
4424 B25 RRH	16.5	9.6	13.5	1.10	1.55	1.72	1.22	1.20	1.20	3	5	4
4424 B25 RRH (Shielded)	16.5	4.8	13.5	0.55	1.55	3.44	1.22	1.24	1.20	2	5	2

Date: 11/30/2020
Project Name: CT11533B
Project No.: CT533 / SAI - ENFIELD
Designed By: ID **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.76 in.
Density of ice: 56 pcf

APX16DWV-16DWS-S-E-A20 Antenna

Weight of ice based on total radial SF area:

Height (in):	55.9	
Width (in):	13.3	
Depth (in):	3.2	
Total weight of ice on object:		155 lbs
Weight of object:	55.0	lbs
Combined weight of ice and object:		210 lbs

APXVAALL24_43-U-NA20 Antenna

Weight of ice based on total radial SF area:

Height (in):	95.9	
Width (in):	15.7	
Depth (in):	9.4	
Total weight of ice on object:		345 lbs
Weight of object:	128.0	lbs
Combined weight of ice and object:		473 lbs

AIR6449 B41 Antenna

Weight of ice based on total radial SF area:

Height (in):	33.1	
Width (in):	20.5	
Depth (in):	8.5	
Total weight of ice on object:		142 lbs
Weight of object:	103.0	lbs
Combined weight of ice and object:		245 lbs

4449 B71+B85 RRH

Weight of ice based on total radial SF area:

Height (in):	17.9	
Width (in):	13.2	
Depth (in):	9.5	
Total weight of ice on object:		58 lbs
Weight of object:	71.0	lbs
Combined weight of ice and object:		129 lbs

4424 B25 RRH

Weight of ice based on total radial SF area:

Height (in):	16.5	
Width (in):	13.5	
Depth (in):	9.6	
Total weight of ice on object:		54 lbs
Weight of object:	88.0	lbs
Combined weight of ice and object:		142 lbs

4415 B25 RRH

Weight of ice based on total radial SF area:

Height (in):	16.5	
Width (in):	13.4	
Depth (in):	5.9	
Total weight of ice on object:		48 lbs
Weight of object:	46.0	lbs
Combined weight of ice and object:		94 lbs

2-1/2" pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		10 plf

3" Pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		11 plf

HSS 3x3

Weight of ice based on total radial SF area:

Height (in):	3	
Width (in):	3	
Per foot weight of ice on object:		13 plf

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

Weight of ice based on total radial SF area:

Height (in):	2.5	
Width (in):	2.5	
Per foot weight of ice on object:		11 plf

1" Pipe

Per foot weight of ice:

diameter (in):	1.32	
Per foot weight of ice on object:		7 plf

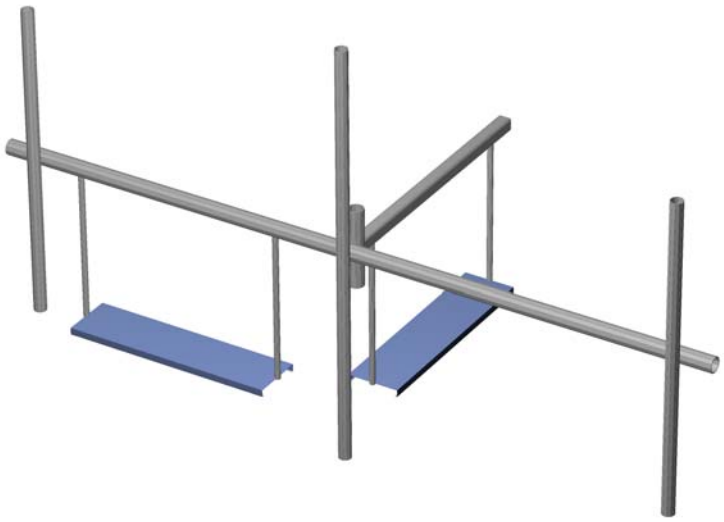
1200S162-54

Weight of ice based on total radial SF area:

Height (in):	1.625	
Width (in):	12	
Per foot weight of ice on object:		30 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)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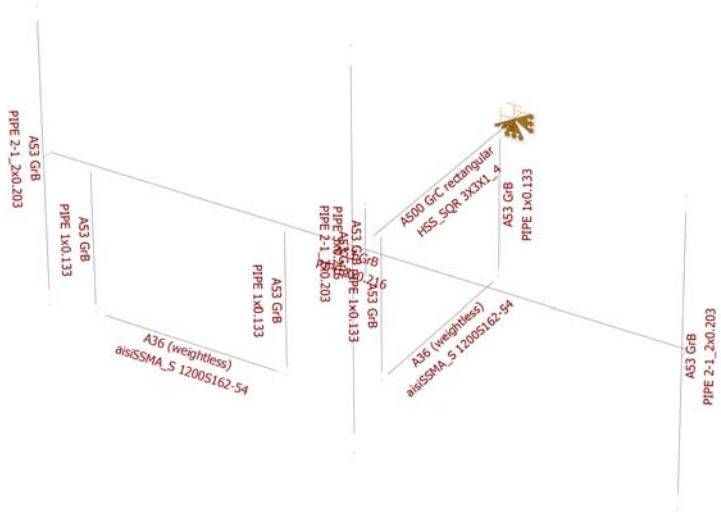

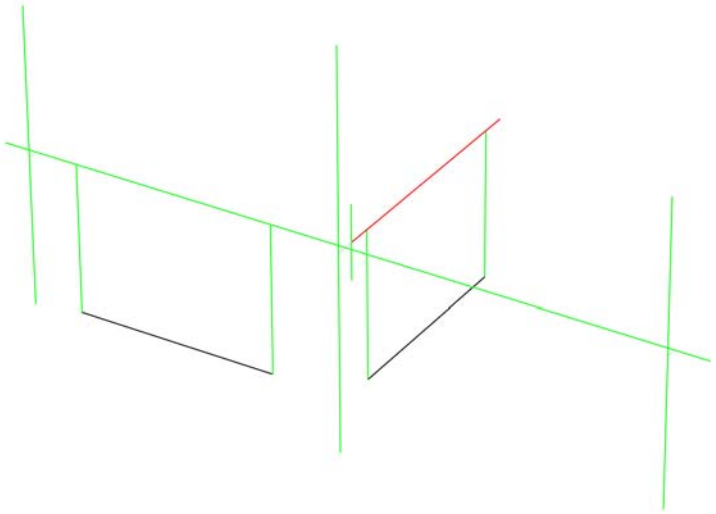
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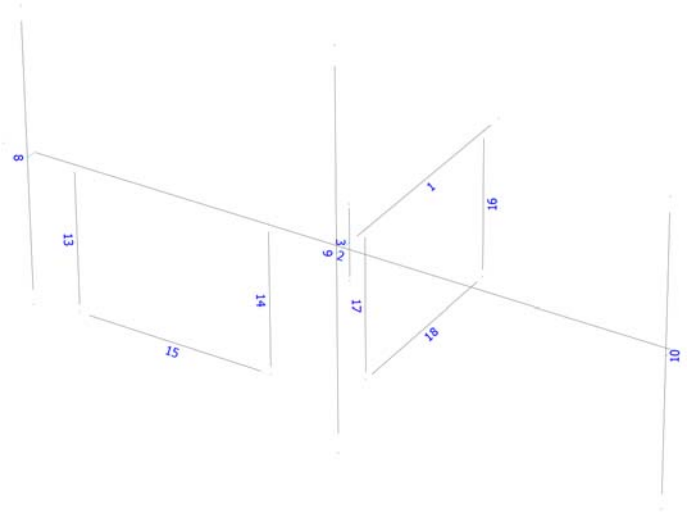
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Load data

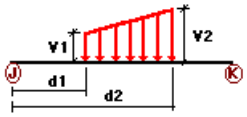
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND

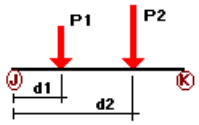
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
D	15	y	-0.01	0.00	0.00	No	0.00	No
	18	y	-0.01	0.00	0.00	No	0.00	No
Wo	1	z	-0.016	0.00	0.00	No	0.00	No
	2	z	-0.018	0.00	0.00	No	0.00	No
	3	z	-0.018	0.00	0.00	No	0.00	No
	13	z	-0.006	0.00	0.00	No	0.00	No
	14	z	-0.006	0.00	0.00	No	0.00	No
	15	z	-0.012	0.00	0.00	No	0.00	No
	16	z	-0.006	0.00	0.00	No	0.00	No
	17	z	-0.006	0.00	0.00	No	0.00	No
	18	z	-0.012	0.00	0.00	No	0.00	No
W30	1	z	-0.016	0.00	0.00	No	0.00	No
	2	z	-0.018	0.00	0.00	No	0.00	No
	3	z	-0.018	0.00	0.00	No	0.00	No
	8	z	-0.015	0.00	0.00	No	0.00	No
	9	z	-0.015	0.00	0.00	No	0.00	No

	10	z	-0.015	0.00	0.00	No	0.00	No
	13	z	-0.006	0.00	0.00	No	0.00	No
	14	z	-0.006	0.00	0.00	No	0.00	No
	15	z	-0.012	0.00	0.00	No	0.00	No
	16	z	-0.006	0.00	0.00	No	0.00	No
	17	z	-0.006	0.00	0.00	No	0.00	No
	18	z	-0.012	0.00	0.00	No	0.00	No
W60	1	x	-0.016	0.00	0.00	No	0.00	No
	2	x	-0.018	0.00	0.00	No	0.00	No
	3	x	-0.018	0.00	0.00	No	0.00	No
	8	x	-0.015	0.00	0.00	No	0.00	No
	9	x	-0.015	0.00	0.00	No	0.00	No
	10	x	-0.015	0.00	0.00	No	0.00	No
	13	x	-0.006	0.00	0.00	No	0.00	No
	14	x	-0.006	0.00	0.00	No	0.00	No
	15	x	-0.012	0.00	0.00	No	0.00	No
	16	x	-0.006	0.00	0.00	No	0.00	No
	17	x	-0.006	0.00	0.00	No	0.00	No
	18	x	-0.012	0.00	0.00	No	0.00	No
W90	1	x	-0.016	0.00	0.00	No	0.00	No
	2	x	-0.018	0.00	0.00	No	0.00	No
	3	x	-0.018	0.00	0.00	No	0.00	No
	8	x	-0.015	0.00	0.00	No	0.00	No
	9	x	-0.015	0.00	0.00	No	0.00	No
	10	x	-0.015	0.00	0.00	No	0.00	No
	13	x	-0.006	0.00	0.00	No	0.00	No
	14	x	-0.006	0.00	0.00	No	0.00	No
	15	x	-0.012	0.00	0.00	No	0.00	No
	16	x	-0.006	0.00	0.00	No	0.00	No
	17	x	-0.006	0.00	0.00	No	0.00	No
	18	x	-0.012	0.00	0.00	No	0.00	No
W120	1	x	-0.016	0.00	0.00	No	0.00	No
	2	x	-0.018	0.00	0.00	No	0.00	No
	3	x	-0.018	0.00	0.00	No	0.00	No
	8	x	-0.015	0.00	0.00	No	0.00	No
	9	x	-0.015	0.00	0.00	No	0.00	No
	10	x	-0.015	0.00	0.00	No	0.00	No
	13	x	-0.006	0.00	0.00	No	0.00	No
	14	x	-0.006	0.00	0.00	No	0.00	No
	16	x	-0.006	0.00	0.00	No	0.00	No
	17	x	-0.006	0.00	0.00	No	0.00	No
W150	1	z	0.016	0.00	0.00	No	0.00	No
	2	z	0.018	0.00	0.00	No	0.00	No
	3	z	0.018	0.00	0.00	No	0.00	No
	8	z	0.015	0.00	0.00	No	0.00	No
	9	z	0.015	0.00	0.00	No	0.00	No
	10	z	0.015	0.00	0.00	No	0.00	No
	13	z	0.006	0.00	0.00	No	0.00	No
	14	z	0.006	0.00	0.00	No	0.00	No
	15	z	0.012	0.00	0.00	No	0.00	No
	16	z	0.006	0.00	0.00	No	0.00	No
	17	z	0.006	0.00	0.00	No	0.00	No
	18	z	0.012	0.00	0.00	No	0.00	No
Di	1	y	-0.013	0.00	0.00	No	0.00	No
	2	y	-0.011	0.00	0.00	No	0.00	No
	3	y	-0.011	0.00	0.00	No	0.00	No
	8	y	-0.01	0.00	0.00	No	0.00	No
	9	y	-0.01	0.00	0.00	No	0.00	No
	10	y	-0.01	0.00	0.00	No	0.00	No
	13	y	-0.007	0.00	0.00	No	0.00	No
	14	y	-0.007	0.00	0.00	No	0.00	No
	15	y	-0.03	0.00	0.00	No	0.00	No
	16	y	-0.007	0.00	0.00	No	0.00	No
	17	y	-0.007	0.00	0.00	No	0.00	No
	18	y	-0.03	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
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		y	-0.052	4.50	No
	9	y	-0.064	0.50	No
		y	-0.064	7.50	No
		y	-0.071	2.00	No
		y	-0.088	2.00	No
	10	y	-0.028	1.00	No
		y	-0.028	5.00	No
		y	-0.046	2.00	No
Wo	8	z	-0.121	1.50	No
		z	-0.121	4.50	No
	9	z	-0.304	0.50	No
		z	-0.304	7.50	No
		z	-0.032	2.00	No
		z	-0.029	2.00	No
	10	z	-0.141	1.00	No
		z	-0.141	5.00	No
		z	-0.003	2.00	No
W30	8	3	-0.104	1.50	No
		3	-0.104	4.50	No
	9	3	-0.279	0.50	No
		3	-0.279	7.50	No
		3	-0.045	2.00	No
	10	3	-0.118	1.00	No
		3	-0.118	5.00	No
		3	-0.038	2.00	No
W60	8	3	-0.07	1.50	No
		3	-0.07	4.50	No
	9	3	-0.227	0.50	No
		3	-0.227	7.50	No
		3	-0.074	2.00	No
	10	3	-0.07	1.00	No
		3	-0.07	5.00	No
		3	-0.041	2.00	No
W90	8	x	-0.053	1.50	No
		x	-0.053	4.50	No
	9	x	-0.202	0.50	No
		x	-0.202	7.50	No
		x	-0.084	2.00	No
	10	x	-0.047	1.00	No
		x	-0.047	5.00	No
		x	-0.035	2.00	No
W120	8	2	-0.07	1.50	No
		2	-0.07	4.50	No
	9	2	-0.227	0.50	No
		2	-0.227	7.50	No
		2	-0.074	2.00	No
	10	2	-0.07	1.00	No
		2	-0.07	5.00	No
		2	-0.041	2.00	No
W150	8	2	-0.104	1.50	No
		2	-0.104	4.50	No
	9	2	-0.279	0.50	No
		2	-0.279	7.50	No
		2	-0.045	2.00	No
	10	2	-0.118	1.00	No
		2	-0.118	5.00	No
		2	-0.038	2.00	No
Di	8	y	-0.071	1.50	No

		y	-0.071	4.50	No
	9	y	-0.173	0.50	No
		y	-0.173	7.50	No
		y	-0.058	2.00	No
		y	-0.054	2.00	No
	10	y	-0.078	1.00	No
		y	-0.078	5.00	No
		y	-0.048	2.00	No
WI0	8	z	-0.026	1.50	No
		z	-0.026	4.50	No
	9	z	-0.062	0.50	No
		z	-0.062	7.50	No
		z	-0.011	2.00	No
		z	-0.01	2.00	No
	10	z	-0.031	1.00	No
		z	-0.031	5.00	No
		z	-0.023	2.00	No
WI30	8	3	-0.022	1.50	No
		3	-0.022	4.50	No
	9	3	-0.056	0.50	No
		3	-0.056	7.50	No
		3	-0.011	2.00	No
	10	3	-0.026	1.00	No
		3	-0.026	5.00	No
		3	-0.01	2.00	No
WI60	8	3	-0.016	1.50	No
		3	-0.016	4.50	No
	9	3	-0.048	0.50	No
		3	-0.048	7.50	No
		3	-0.018	2.00	No
	10	3	-0.018	1.00	No
		3	-0.018	5.00	No
		3	-0.012	2.00	No
WI90	8	x	-0.013	1.50	No
		x	-0.013	4.50	No
	9	x	-0.044	0.50	No
		x	-0.044	7.50	No
		x	-0.02	2.00	No
	10	x	-0.014	1.00	No
		x	-0.014	5.00	No
		x	-0.011	2.00	No
WI120	8	2	-0.016	1.50	No
		2	-0.016	4.50	No
	9	2	-0.048	0.50	No
		2	-0.048	7.50	No
		2	-0.018	2.00	No
	10	2	-0.018	1.00	No
		2	-0.018	5.00	No
		2	-0.012	2.00	No
WI150	8	2	-0.022	1.50	No
		2	-0.022	4.50	No
	9	2	-0.056	0.50	No
		2	-0.056	7.50	No
		2	-0.011	2.00	No
	10	2	-0.026	1.00	No
		2	-0.026	5.00	No
		2	-0.01	2.00	No
WL0	8	z	-0.007	1.50	No
		z	-0.007	4.50	No
	9	z	-0.018	0.50	No
		z	-0.018	7.50	No
		z	-0.002	2.00	No
		z	-0.002	2.00	No
	10	z	-0.009	1.00	No
		z	-0.009	5.00	No
WL30	8	3	-0.006	1.50	No

		3	-0.006	4.50	No
	9	3	-0.017	0.50	No
		3	-0.017	7.50	No
		3	-0.003	2.00	No
	10	3	-0.007	1.00	No
		3	-0.007	5.00	No
		3	-0.002	2.00	No
WL60	8	3	-0.005	1.50	No
		3	-0.005	4.50	No
	9	3	-0.014	0.50	No
		3	-0.014	7.50	No
		3	-0.004	2.00	No
	10	3	-0.005	1.00	No
		3	-0.005	5.00	No
		3	-0.002	2.00	No
WL90	8	x	-0.004	1.50	No
		x	-0.004	4.50	No
	9	x	-0.012	0.50	No
		x	-0.012	7.50	No
		x	-0.005	2.00	No
	10	x	-0.003	1.00	No
		x	-0.003	5.00	No
		x	-0.002	2.00	No
WL120	8	2	-0.005	1.50	No
		2	-0.005	4.50	No
	9	2	-0.014	0.50	No
		2	-0.014	7.50	No
		2	-0.004	2.00	No
	10	2	-0.005	1.00	No
		2	-0.005	5.00	No
		2	-0.002	2.00	No
WL150	8	2	-0.006	1.50	No
		2	-0.006	4.50	No
	9	2	-0.017	0.50	No
		2	-0.017	7.50	No
		2	-0.003	2.00	No
	10	2	-0.007	1.00	No
		2	-0.007	5.00	No
		2	-0.002	2.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00

WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D
LC38=1.2D
LC39=1.2D
LC40=1.2D+WL0
LC41=1.2D+WL30
LC42=1.2D+WL60
LC43=1.2D+WL90
LC44=1.2D+WL120
LC45=1.2D+WL150
LC46=1.2D-WL0
LC47=1.2D-WL30
LC48=1.2D-WL60
LC49=1.2D-WL90
LC50=1.2D-WL120
LC51=1.2D-WL150
LC52=1.2D+WL0
LC53=1.2D+WL30
LC54=1.2D+WL60
LC55=1.2D+WL90
LC56=1.2D+WL120
LC57=1.2D+WL150
LC58=1.2D-WL0
LC59=1.2D-WL30

LC60=1.2D-WL60
LC61=1.2D-WL90
LC62=1.2D-WL120
LC63=1.2D-WL150
LC64=1.2D+WL0
LC65=1.2D+WL30
LC66=1.2D+WL60
LC67=1.2D+WL90
LC68=1.2D+WL120
LC69=1.2D+WL150
LC70=1.2D-WL0
LC71=1.2D-WL30
LC72=1.2D-WL60
LC73=1.2D-WL90
LC74=1.2D-WL120
LC75=1.2D-WL150
LC76=1.2D+WL0
LC77=1.2D+WL30
LC78=1.2D+WL60
LC79=1.2D+WL90
LC80=1.2D+WL120
LC81=1.2D+WL150
LC82=1.2D-WL0
LC83=1.2D-WL30
LC84=1.2D-WL60
LC85=1.2D-WL90
LC86=1.2D-WL120
LC87=1.2D-WL150

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	aisiSSMA_S 1200S162-54	**15**	LC31 at 50.00%	0.19	With warnings	Eq. H1.2-1
		18	LC31 at 43.75%	**0.40**	**With warnings**	Eq. H1.2-1
	HSS_SQR 3X3X1_4	**1**	LC30 at 0.00%	**1.33**	**N.G.**	
	PIPE 1x0.133	**13**	LC8 at 0.00%	0.27	OK	
		14	LC1 at 0.00%	0.31	OK	
		16	LC31 at 0.00%	**0.83**	**OK**	
		17	LC31 at 0.00%	0.72	OK	
	PIPE 2-1_2x0.203	**8**	LC1 at 50.00%	0.07	OK	
		9	LC1 at 46.88%	**0.44**	**OK**	
		10	LC1 at 50.00%	0.11	OK	
	PIPE 3x0.216	**2**	LC8 at 48.96%	**0.63**	**OK**	
		3	LC9 at 50.00%	0.00	OK	

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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
1	0.00	0.00	0.00	0
2	0.00	0.00	5.00	0
3	-7.00	0.00	5.20	0
4	7.00	0.00	5.20	0
5	0.00	-0.75	5.00	0
6	0.00	0.75	5.00	0
8	-6.3333	0.00	5.20	0
18	0.00	0.00	5.20	0
27	6.3333	0.00	5.20	0
28	-6.3408	0.00	5.4172	0
29	0.00	0.00	5.4172	0
30	6.3258	0.00	5.4172	0
31	-6.3408	3.00	5.4172	0
32	0.00	4.00	5.4172	0
33	6.3258	3.00	5.4172	0
34	-6.3408	-3.00	5.4172	0
35	0.00	-4.00	5.4172	0
36	6.3258	-3.00	5.4172	0
39	-5.50	0.00	5.20	0
40	-1.50	0.00	5.20	0
41	-5.50	-3.00	5.20	0
42	-1.50	-3.00	5.20	0
43	0.00	0.00	0.50	0
44	0.00	0.00	4.50	0
45	0.00	-3.00	0.50	0
46	0.00	-3.00	4.50	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	1	2		HSS_SQR 3X3X1_4	A500 GrC rectangular	0.00	0.00	0.00
2	3	4		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
3	6	5		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
8	31	34		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
9	32	35		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
10	33	36		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
13	39	41		PIPE 1x0.133	A53 GrB	0.00	0.00	0.00
14	40	42		PIPE 1x0.133	A53 GrB	0.00	0.00	0.00
15	41	42		aisiSSMA_S 1200S162-54	A36 (weightless)	0.00	0.00	0.00
16	43	45		PIPE 1x0.133	A53 GrB	0.00	0.00	0.00
17	44	46		PIPE 1x0.133	A53 GrB	0.00	0.00	0.00
18	46	45		aisiSSMA_S 1200S162-54	A36 (weightless)	0.00	0.00	0.00

Orientation of local axes

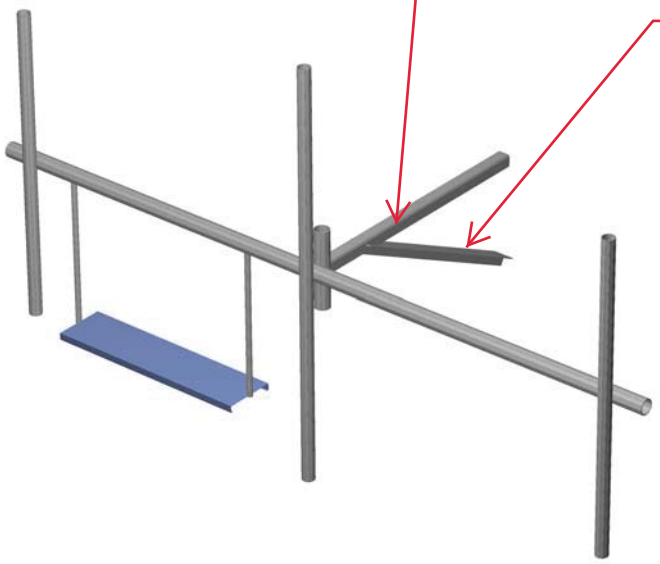
Member	Rotation [Deg]	Axes23	NX	NY	NZ
8	315.00	0	0.00	0.00	0.00
9	315.00	0	0.00	0.00	0.00
10	315.00	0	0.00	0.00	0.00
15	90.00	0	0.00	0.00	0.00
18	90.00	0	0.00	0.00	0.00

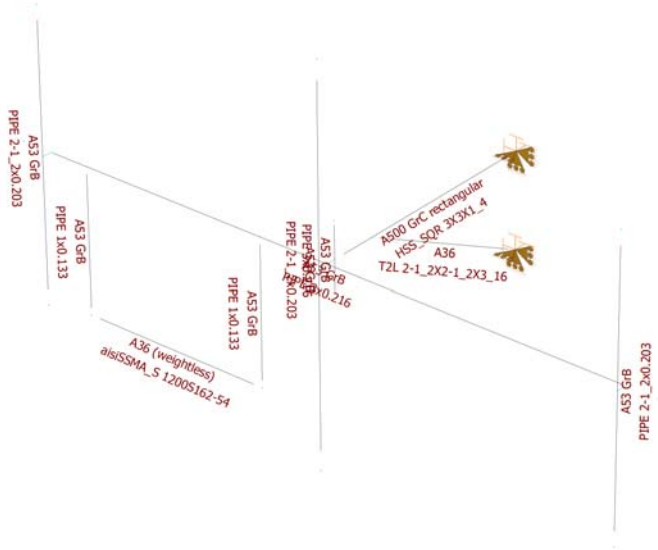
HUDSON
Design Group LLC

Mount Calculations
(Modified Conditions)

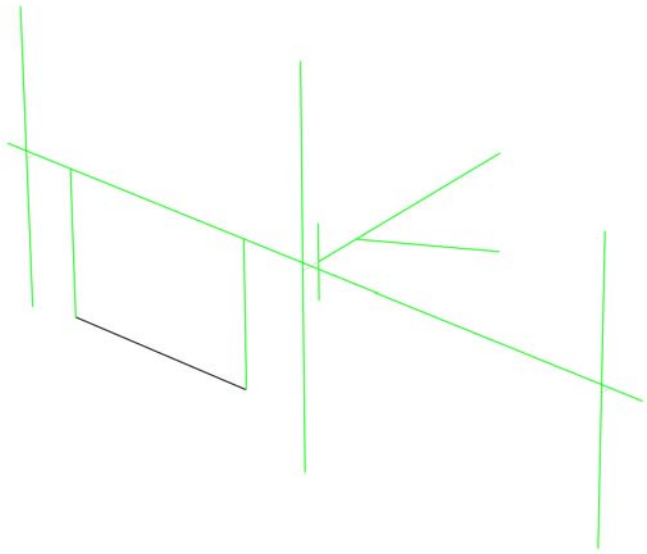
Remove existing catwalk secured to existing standoff in order to install new platform reinforcement (typ. of 1 per sector, total of 3).

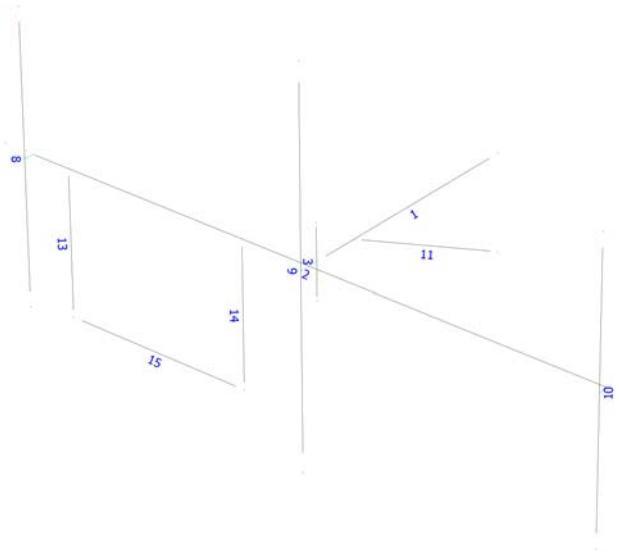
Install new platform reinforcement kit, SitePro1 P/N PRK-1245L (or approved equal).




A53 GrB
PIPE 2-1_2x0.203
A53 GrB
PIPE 1x0.133
A53 GrB
PIPE 1x0.133
A36 (weightless)
aisiSSMA_S 1200S162-54
A53 GrB
PIPE 2-1_2x0.203
A53 GrB
PIPE 2-1_2x0.216
A500 GrC rectangular
HSS_SQR 3X3X1_4
A36
T2L 2-1_2X2-1_2X3_16
A53 GrB
PIPE 2-1_2x0.203


Y
Z
X


Y
Z
X


8
13
14
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9
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1
11
10


Y
Z
X

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D
LC38=1.2D
LC39=1.2D
LC40=1.2D+WL0
LC41=1.2D+WL30
LC42=1.2D+WL60
LC43=1.2D+WL90
LC44=1.2D+WL120
LC45=1.2D+WL150
LC46=1.2D-WL0
LC47=1.2D-WL30
LC48=1.2D-WL60
LC49=1.2D-WL90
LC50=1.2D-WL120
LC51=1.2D-WL150
LC52=1.2D+WL0
LC53=1.2D+WL30
LC54=1.2D+WL60
LC55=1.2D+WL90
LC56=1.2D+WL120
LC57=1.2D+WL150
LC58=1.2D-WL0
LC59=1.2D-WL30

LC60=1.2D-WL60
LC61=1.2D-WL90
LC62=1.2D-WL120
LC63=1.2D-WL150
LC64=1.2D+WL0
LC65=1.2D+WL30
LC66=1.2D+WL60
LC67=1.2D+WL90
LC68=1.2D+WL120
LC69=1.2D+WL150
LC70=1.2D-WL0
LC71=1.2D-WL30
LC72=1.2D-WL60
LC73=1.2D-WL90
LC74=1.2D-WL120
LC75=1.2D-WL150
LC76=1.2D+WL0
LC77=1.2D+WL30
LC78=1.2D+WL60
LC79=1.2D+WL90
LC80=1.2D+WL120
LC81=1.2D+WL150
LC82=1.2D-WL0
LC83=1.2D-WL30
LC84=1.2D-WL60
LC85=1.2D-WL90
LC86=1.2D-WL120
LC87=1.2D-WL150

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	aisiSSMA_S 1200S162-54	**15**	LC31 at 50.00%	**0.19**	**With warnings**	Eq. H1.2-1
	HSS_SQR 3X3X1_4	**1**	LC4 at 0.00%	**0.51**	**OK**	
	PIPE 1x0.133	**13**	LC8 at 0.00%	0.27	OK	
		14	LC1 at 0.00%	**0.31**	**OK**	
	PIPE 2-1_2x0.203	**8**	LC7 at 50.00%	0.07	OK	
		9	LC1 at 46.88%	**0.44**	**OK**	
		10	LC7 at 50.00%	0.11	OK	
	PIPE 3x0.216	**2**	LC8 at 48.96%	**0.63**	**OK**	
		3	LC3 at 50.00%	0.00	OK	
	T2L 2-1_2X2-1_2X3_16	**11**	LC10 at 100.00%	**0.81**	**OK**	

Current Date: 11/30/2020 1:52 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\T-MOBILE\CT\CT11533B\CT11533B (MOD).retx

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
1	0.00	0.00	0.00	0
2	0.00	0.00	5.00	0
3	-7.00	0.00	5.20	0
4	7.00	0.00	5.20	0
5	0.00	-0.75	5.00	0
6	0.00	0.75	5.00	0
8	-6.3333	0.00	5.20	0
18	0.00	0.00	5.20	0
27	6.3333	0.00	5.20	0
28	-6.3408	0.00	5.4172	0
29	0.00	0.00	5.4172	0
30	6.3258	0.00	5.4172	0
31	-6.3408	3.00	5.4172	0
32	0.00	4.00	5.4172	0
33	6.3258	3.00	5.4172	0
34	-6.3408	-3.00	5.4172	0
35	0.00	-4.00	5.4172	0
36	6.3258	-3.00	5.4172	0
37	0.00	-2.00	0.00	0
38	0.00	0.00	4.00	0
39	-5.50	0.00	5.20	0
40	-1.50	0.00	5.20	0
41	-5.50	-3.00	5.20	0
42	-1.50	-3.00	5.20	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1
37	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	1	2		HSS_SQR 3X3X1_4	A500 GrC rectangular	0.00	0.00	0.00
2	3	4		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
3	6	5		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
8	31	34		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
9	32	35		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
10	33	36		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
11	38	37		T2L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
13	39	41		PIPE 1x0.133	A53 GrB	0.00	0.00	0.00
14	40	42		PIPE 1x0.133	A53 GrB	0.00	0.00	0.00
15	41	42		aisiSSMA_S 1200S162-54	A36 (weightless)	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
8	315.00	0	0.00	0.00	0.00
9	315.00	0	0.00	0.00	0.00
10	315.00	0	0.00	0.00	0.00
15	90.00	0	0.00	0.00	0.00

Exhibit F

Power Density/RF Emissions Report

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

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

T-Mobile Existing Facility

Site ID: CT11533B

CT533/SAI - Enfield
37 Bacon Road
Enfield, Connecticut 06082

April 27, 2021

EBI Project Number: 6221002088

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**31.35%**

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

EBI Consulting

April 27, 2021

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

Emissions Analysis for Site: CT11533B - CT533/SAI - Enfield

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **37 Bacon Road** 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 37 Bacon Road 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 power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 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 (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 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.

7) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

8) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

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

10) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

11) The antennas used in this modeling are the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector A, the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

12) The antenna mounting height centerline of the proposed antennas is 160 feet above ground level (AGL).

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

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

EBI Consulting

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
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):	160 feet	Height (AGL):	160 feet	Height (AGL):	160 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE %:	**0.71%**	Antenna B1 MPE %:	**0.71%**	Antenna C1 MPE %:	**0.71%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd
Height (AGL):	160 feet	Height (AGL):	160 feet	Height (AGL):	160 feet
Channel Count:	11	Channel Count:	11	Channel Count:	11
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	12,569.87	ERP (W):	12,569.87	ERP (W):	12,569.87
Antenna A2 MPE %:	**2.77%**	Antenna B2 MPE %:	**2.77%**	Antenna C2 MPE %:	**2.77%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	17.3 dBd / 17.3 dBd	Gain:	17.3 dBd / 17.3 dBd	Gain:	17.3 dBd / 17.3 dBd
Height (AGL):	160 feet	Height (AGL):	160 feet	Height (AGL):	160 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	12,888.76	ERP (W):	12,888.76	ERP (W):	12,888.76
Antenna A3 MPE %:	**1.95%**	Antenna B3 MPE %:	**1.95%**	Antenna C3 MPE %:	**1.95%**

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Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	5.44%
Omnipoint	1%
Town	0.23%
AT&T	22.48%
Verizon	2.2%
Site Total MPE % :	31.35%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	5.44%
T-Mobile Sector B Total:	5.44%
T-Mobile Sector C Total:	5.44%
Site Total MPE % :	31.35%

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 2100 MHz LTE	2	2334.27	160.0	7.08	2100 MHz LTE	1000	0.71%
T-Mobile 600 MHz LTE	2	591.73	160.0	1.79	600 MHz LTE	400	0.45%
T-Mobile 600 MHz NR	1	1577.94	160.0	2.39	600 MHz NR	400	0.60%
T-Mobile 700 MHz LTE	2	695.22	160.0	2.11	700 MHz LTE	467	0.45%
T-Mobile 1900 MHz GSM	4	1052.26	160.0	6.38	1900 MHz GSM	1000	0.64%
T-Mobile 1900 MHz LTE	2	2104.51	160.0	6.38	1900 MHz LTE	1000	0.64%
T-Mobile 2500 MHz LTE	1	6444.38	160.0	9.77	2500 MHz LTE	1000	0.98%
T-Mobile 2500 MHz NR	1	6444.38	160.0	9.77	2500 MHz NR	1000	0.98%
						Total:	**5.44%**

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

EBI Consulting

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:	5.44%
Sector B:	5.44%
Sector C:	5.44%
T-Mobile Maximum MPE % (Sector A):	5.44%
Site Total:	31.35%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **31.35%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit F

Mailing Receipts/ Proof Postage

Exhibit F

Mailing Receipts/ Proof Postage

MARK APPLEBY
8602094694
CENTERLINE
90 HAMILTON AVENUE
SOUTHINGTON CT 06489-3883

1 LBS
DWT: 11,8,1

1 OF 1

SHIP TO:
DAVID GALE
SAI ACQUISITIONS LLC
12 INDUSTRIAL WAY
SALEM NH 03079-2837

NH 030 0-03

UPS GROUND
TRACKING #: 1Z 9Y4 503 P2 3928 2141

BILLING: P/P
ATTENTION UPS DRIVER: SHIPPER RELEASE

CS 22.0.13. WNTNV50 45.0A 04/2021*

TM

MARK APPLEBY
8602094694
CENTERLINE
90 HAMILTON AVENUE
SOUTHINGTON CT 06489-3883

1 LBS
DWT: 11,8,1

1 OF 1

SHIP TO:
MAYOR MIKE LUDWIG
TOWN OF ENFIELD
820 ENFIELD ST.
ENFIELD CT 06082-2964

CT 060 9-01

UPS GROUND
TRACKING #: 1Z 9Y4 503 P2 1002 7622

BILLING: P/P
ATTENTION UPS DRIVER: SHIPPER RELEASE

CS 22.0.13. WNTNV50 45.0A 04/2021*

TM

MARK APPLEBY
8602094694
CENTERLINE
90 HAMILTON AVENUE
SOUTHINGTON CT 06489-3883

1 LBS
DWT: 11,8,1

1 OF 1

SHIP TO:
ASSISTANT TOWN PLANNER
TOWN OF ENFIELD
JENNIFER PACACHA
820 ENFIELD ST.
ENFIELD CT 06082-2964

CT 060 9-01

UPS GROUND
TRACKING #: 1Z 9Y4 503 P2 0950 2610

BILLING: P/P
ATTENTION UPS DRIVER: SHIPPER RELEASE

CS 22.0.13. WNTNV50 45.0A 04/2021*

MARK APPLEBY
8602094694
CENTERLINE
90 HAMILTON AVENUE
SOUTHINGTON CT 06489-3883

1 LBS
DWT: 11,8,1

1 OF 1

SHIP TO:
MELANIE A. BACHMAN
8608272935
CONNECTICUT SITING COUNCIL
EXECUTIVE DIRECTOR
TEN FRANKLIN SQUARE
NEW BRITAIN CT 06051-2655

CT 067 9-06

UPS GROUND
TRACKING #: 1Z 9Y4 503 P2 1357 9601

BILLING: P/P
ATTENTION UPS DRIVER: SHIPPER RELEASE

CS 22.0.13. WNTNV50 45.0A 04/2021*

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

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

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

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

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