CROWN CASTLE

1 Cityplace Dr, Suite 490
Creve Coeur, MO 63141

Phone: (314) 513-0147
www.crowncastle.com

December 2, 2021

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

RE: **Notice of Exempt Modification for T-Mobile**
Crown Site ID#823530; Sprint Site ID#CT11364B
580 Chapel Street, Thomaston, Connecticut 06787
Latitude: 41° 39′ 48.48″ Longitude: -73° 4′ 27.41″

Dear Ms. Bachman:

T-Mobile currently maintains (6) antennas at the 172-foot mounts on the existing 175-foot Monopole Tower located at **580 Chapel Street, Thomaston.** The property is owned by Town of Thomaston and the Tower by Crown Castle. T-Mobile now intends to replace six (6) antennas. This modification/proposal includes hardware that is both 4G(LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Planned Modifications:

Tower:

REMOVE AND REPLACE
(3) EMS-RR90-17-XXDP Antennas (**REMOVE**), (3) Ericsson Air6449 B41 Antennas (**REPLACE**)
(3) Ericsson- 4415 B66A Remote radio units **(REMOVE),** (3) Ericsson Radio 4460 B25 + B66 Remote Radio units (**REPLACE**)

REMOVE
(6) TMA'S

INSTALL
(1) 1-5/8" Hybrid cable

Modify existing platform

Ground:

REMOVE:
All existing equipment

INSTALL:
(1) 6160 & (1) B160 Battery cabinet

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(1) IXRE Router in (P) Cabinet
(1) PDU Voltage Booster
(1) BB6648 in (P) Cabinet
(2) BB6630 in (P) Cabinet

The Facility was approved by the Thomaston Planning and Zoning commission by Special permit dated November 9, 2000.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to Edmond V. Mone, Town of Thomaston First Selectman and as Town property owner, Stacey Sefcik, Town of Thomaston Zoning enforcement officer.

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

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

3. The proposed modification 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 Communication 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-reference telecommunications facility constitutes an exempt modification under R.C.S.A. §16-50j-72(b)(2).

Sincerely,

Ersilia Davis
Crown Castle, Agent for Applicant
1777 Sentry Parkway W | VEVA 17, Suite 400
Blue Bell, PA 19422
edavis@nbcllc.com
(551)804-0667

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1 Cityplace Dr, Suite 490
Creve Coeur, MO 63141

Phone: (314) 513-0147
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cc:

Edmond V. Mone, First Selectman
Town of Thomaston
158 Main Street
Thomaston, CT 06787
(860) 283-4421
(Via Fedex)

Stacey Sefcik, Zoning Enforcement Officer
Town of Thomaston
158 Main Street
Thomaston, CT 06787
(860) 283-8411
(Via Fedex)

TRACK ANOTHER SHIPMENT

775375142963

ADD NICKNAME

Delivered
Friday, 12/3/2021 at 10:39 am

DELIVERED

Signed for by: C.CATHIE

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM

Ersilia Davis

1777 Sentry Parkway
VEVA 17, Suite 210
Blue Bell, PA US 19422
551-804-0667

TO

Edmond V. Mone, First Selectman
Town of Thomaston

158 Main Street
THOMASTON, CT US 06787
860-283-4421

MANAGE DELIVERY

Travel History

TIME ZONE
Local Scan Time

Friday, December 3, 2021

10:39 AM	THOMASTON, CT	Delivered
9:36 AM	WATERTOWN, CT	On FedEx vehicle for delivery
8:11 AM	WATERTOWN, CT	At local FedEx facility
3:59 AM	NEWARK, NJ	Departed FedEx hub

Thursday, December 2, 2021

TRACK ANOTHER SHIPMENT

775375258943

ADD NICKNAME

Delivered
Friday, 12/3/2021 at 10:39 am

DELIVERED

Signed for by: C.CATHIE

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM

Ersilia Davis

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TO

Stacey Sefcik, Zoning Enforcement
Town of Thomaston

158 Main Street
THOMASTON, CT US 06787
860-283-8411

MANAGE DELIVERY

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Thursday, December 2, 2021		

Exhibit A

Original Facility Approval

THOMASTON ZONING BOARD OF APPEALS
TOWN HALL
THOMASTON, CT 06787

CERTIFICATE OF VARIANCE

This is to certify that the Thomaston Zoning Board of Appeals held a public hearing on July 18, 2000, at 7:45 pm in Meeting Room 1 of the Town Hall on an application from Voice Stream Wireless Corporation of 100 Filley St., Bloomfield, CT. The applicants sought a variance to permit their locating a ground mounted tower for a wireless communications facility on the west side of Chapel Street, approximately 1,000 feet distant from the intersection of Chapel Street with Prospect Street. The proposed tower is 175 feet in height. The applicants requested permission to locate the tower 201 feet from the property line. The property is owned by the Town of Thomaston and is located in an RA-40 zone.

Sec. 27.4.e of the Zoning Regulations of the Town of Thomaston provides that: "...the minimum distance from the base of any proposed ground mounted regulated facility to any property line, roadway, habitable dwelling, business or industrial use, public recreational areas, or public pathway shall be the height of the facility and mount, including any antennas or other appurtenances plus fifty per cent." Thus, 262.5 feet was the required setback.

With quorum present, the Board voted unanimously to grant the variance. The reasons were: topographic considerations; soil conditions on other parts of the site; and concerns over elevation on the site.

ATTEST: Joseph F. Wassong, Jr.

Joseph F. Wassong, Jr.

Chairman, TZBA

Town of Thomaston
Planning & Zoning Board
158 Main Street
Thomaston, Connecticut 06787

Return Receipt Requested

November 9, 2000

Voice Stream Wireless
100 Filley Street
Bloomfield, CT 06002

Re: Special Permit Approval for a Commercial Cellular Telecommunications Tower
Chapel Street, Thomaston, Conn.

Dear Sirs:

At its meeting on Wednesday, November 1, 2000, the Thomaston Planning and Zoning Commission approved your Special Permit Application to construct a commercial cellular communications tower on municipal property at the end of Chapel Street.

The application was approved with the following conditions:

1. Conduct an annual RF inspection and submit the results to the Commission.

2. Regrade the driveway as noted in Land Tech's letter dated October 6, 2000.

3. Agreed to the terms and conditions as noted in a FAX from Planimetrics dated November 1, 2000, regarding items 12-15.

4. If the Town decides not to have the tower removed, then the site plan and mylar must be revised. Any undertaking regarding the Town's tower shall be done in accordance with the conditions of the signed contract.

Sincerely,

Samuel Barto
Staff, TPZC
Land Use Officer / ZEO

Exhibit B

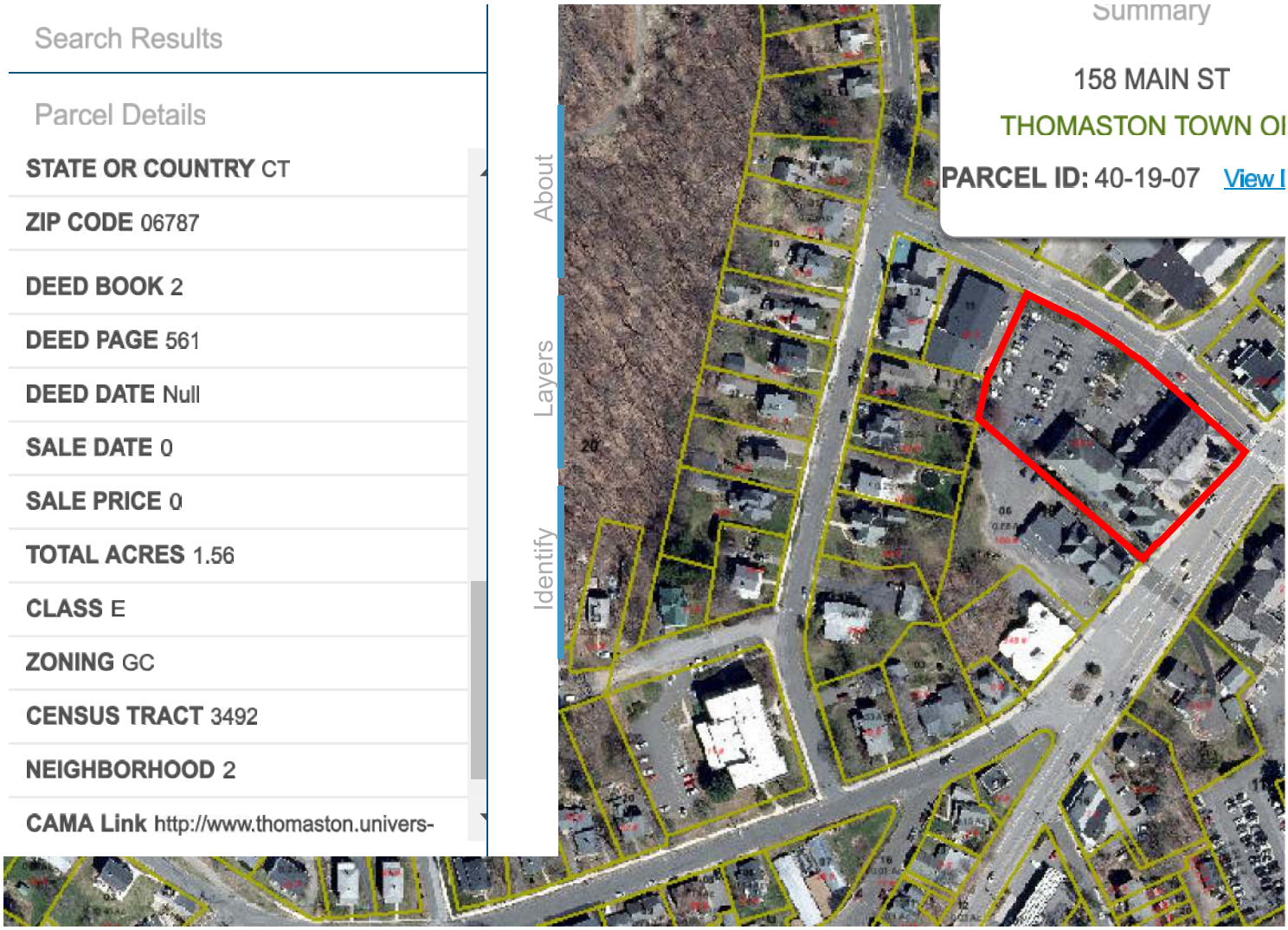
Property Card

158 Main St

Search Results

Parcel Details

STATE OR COUNTRY	CT
ZIP CODE	06787
DEED BOOK	2
DEED PAGE	561
DEED DATE	Null
SALE DATE	0
SALE PRICE	0
TOTAL ACRES	1.56
CLASS	E
ZONING	GC
CENSUS TRACT	3492
NEIGHBORHOOD	2
CAMA Link	http://www.thomaston.univers-



Email Map Link

Copy and paste the following string into an email to link to the current map view:

60m
200ft

Close

lat:41.6744, long:-73.0725

Tighe&Bond

Exhibit C

Construction Drawings

T-Mobile

T-MOBILE SITE NUMBER: CT11364B
T-MOBILE SITE NAME: CT364/CHAPEL ST. MONOPOLE
SITE TYPE: MONOPOLE
TOWER HEIGHT: 175'-0"
BUSINESS UNIT #: 823530
SITE ADDRESS: 580 CHAPEL STREET THOMASTON, CT 06787
COUNTY: LITCHFIELD
JURISDICTION: LITCHFIELD COUNTY

T-MOBILE ANCHOR SITE CONFIGURATION: 67D5998E_1xAIR+1OP

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	CT364/CHAPEL ST. MONOPOLE
SITE ADDRESS:	580 CHAPEL STREET THOMASTON, CT 06787
COUNTY:	LITCHFIELD
MAP/PARCEL #:	55-03-08
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.66344900° (41° 39' 48.48")
LONGITUDE:	-73.07420800° (-73° 4' 27.41")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	545 FT
CURRENT ZONING:	RA80
JURISDICTION:	LITCHFIELD COUNTY
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	THOMASTON TOWN OF CELL TOWER 158 MAIN ST, THOMASTON, CT
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	TBD
TELCO PROVIDER:	TBD

PROJECT TEAM

A&E FIRM:	INFINIGY 1033 WATERVLIET SHAKER RD. ALBANY, NY 12205
CROWN CASTLE USA INC. DISTRICT CONTACTS:	1500 CORPORATE DRIVE CANONSBURG, PA 15317 TRICIA PELON - PROJECT MANAGER TRICAIS.PELON@CROWNCASTLE.COM CHRISTOPHER P MILLER - CONSTRUCTION MANAGER CHRISP.MILLER@CROWNCASTLE.COM CONTACT : 585-739-1780

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
C-6	EQUIPMENT SPECS
C-7	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR ----. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

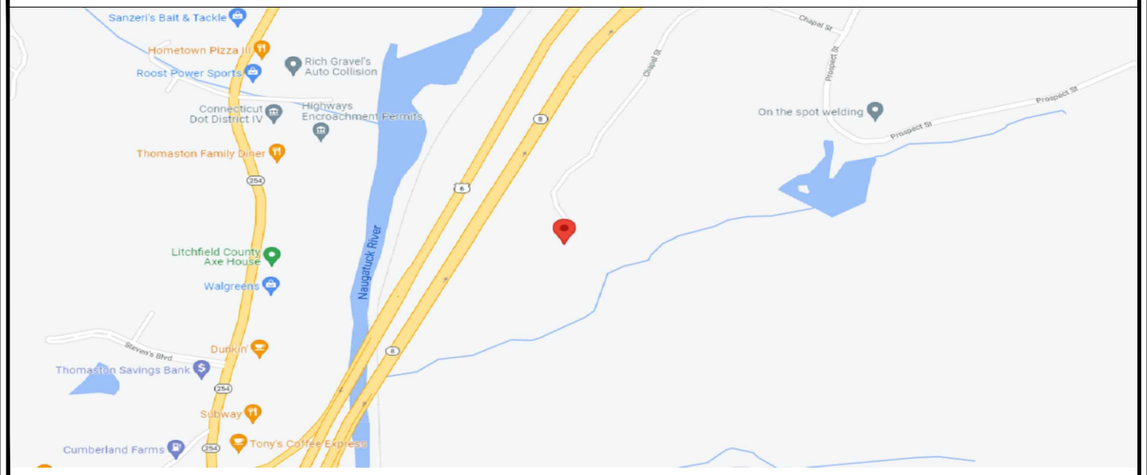
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (3) ANTENNAS
- REMOVE (3) RRHS
- REMOVE (6) DIPLEXERS
- INSTALL (3) ANTENNAS
- INSTALL (3) RRHS
- INSTALL (1) 1-5/8" HYBRID CABLE INSIDE THE MONOPOLE
- MODIFY EXISTING ANTENNA PLATFORM

GROUND SCOPE OF WORK:
- REMOVE ALL EXISTING EQUIPMENT
- INSTALL (1) 6160 & (1) B160 BATTERY CABINET
- INSTALL (1) IXRE ROUTER IN (P) CABINET
- INSTALL (1) PSU VOLTAGE BOOSTER
- INSTALL (1) BB6648 IN (P) CABINET
- INSTALL (2) BB 6630 IN (P) CABINET

NOTE:
PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER.

LOCATION MAP



NO SCALE

APPLICABLE CODES/REFERENCE DOCUMENTS

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

CODE TYPE	CODE
BUILDING	2018 CT STATE BUILDING CODE
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	B+T GROUP
DATED:	09/17/2021
MOUNT ANALYSIS:	TRYLON
DATED:	09/12/2021
RFDS REVISION:	7
DATED:	8/16/2021
ORDER ID:	581567
REVISION:	0

CALL CONNECTICUT ONE CALL (800) 922-4455 CBYD.COM CALL 2 WORKING DAYS BEFORE YOU DIG!

APPROVALS

APPROVAL	SIGNATURE	DATE
PROPERTY OWNER OR REP.		
LAND USE PLANNER		
T-MOBILE		
OPERATIONS		
RF		
NETWORK		
BACKHAUL		
CONSTRUCTION MANAGER		

THE PARTIES ABOVE HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES AND MODIFICATIONS THEY MAY IMPOSE.

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1500 CORPORATE DRIVE
CANONSBURG, PA 15317

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com

T-MOBILE SITE NUMBER:
CT11364B

BU #: **823530**
CT364/CHAPEL ST. MONOPOLE

580 CHAPEL STREET
THOMASTON, CT 06787

EXISTING 175'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/01/2021	TJ	FINALS	SS
1	11/03/2021	TJ	SITE LAYOUT UPDATE	SS
2	11/29/2021	TJ	MA NOTE UPDATE	SS

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

11/29/2021

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

SHEET NUMBER: T-1
REVISION: 2

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT: THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED–STD–10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: T–MOBILE
   TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
   #4 BARS AND SMALLER.......................40 ksi
   #5 BARS AND LARGER.......................60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.......3"
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 BARS AND LARGER.......................2"
   #5 BARS AND SMALLER.......................1–1/2"
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   SLAB AND WALLS.......................3/4"
   BEAMS AND COLUMNS.......................1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON–METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "T–MOBILE".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE

SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

WHITE	PROPOSED EXCAVATION
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
GREEN	SEWERS AND DRAIN LINES

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	FACILITY INTERFACE FRAME
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSM	GLOBAL SYSTEM FOR MOBILE
LTE	LONG TERM EVOLUTION
MGB	MASTER GROUND BAR
MW	MICROWAVE
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
(P)	PROPOSED
PP	POWER PLANT
QTY	QUANTITY
RECT	RECTIFIER
RBS	RADIO BASE STATION
RET	REMOTE ELECTRIC TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT

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T-MOBILE SITE NUMBER:
CT11364B

BU #: **823530**
CT364/CHAPEL ST. MONOPOLE

580 CHAPEL STREET
THOMASTON, CT 06787

EXISTING 175'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/01/2021	TJ	FINALS	SS
1	11/03/2021	TJ	SITE LAYOUT UPDATE	SS
2	11/29/2021	TJ	MA NOTE UPDATE	SS

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

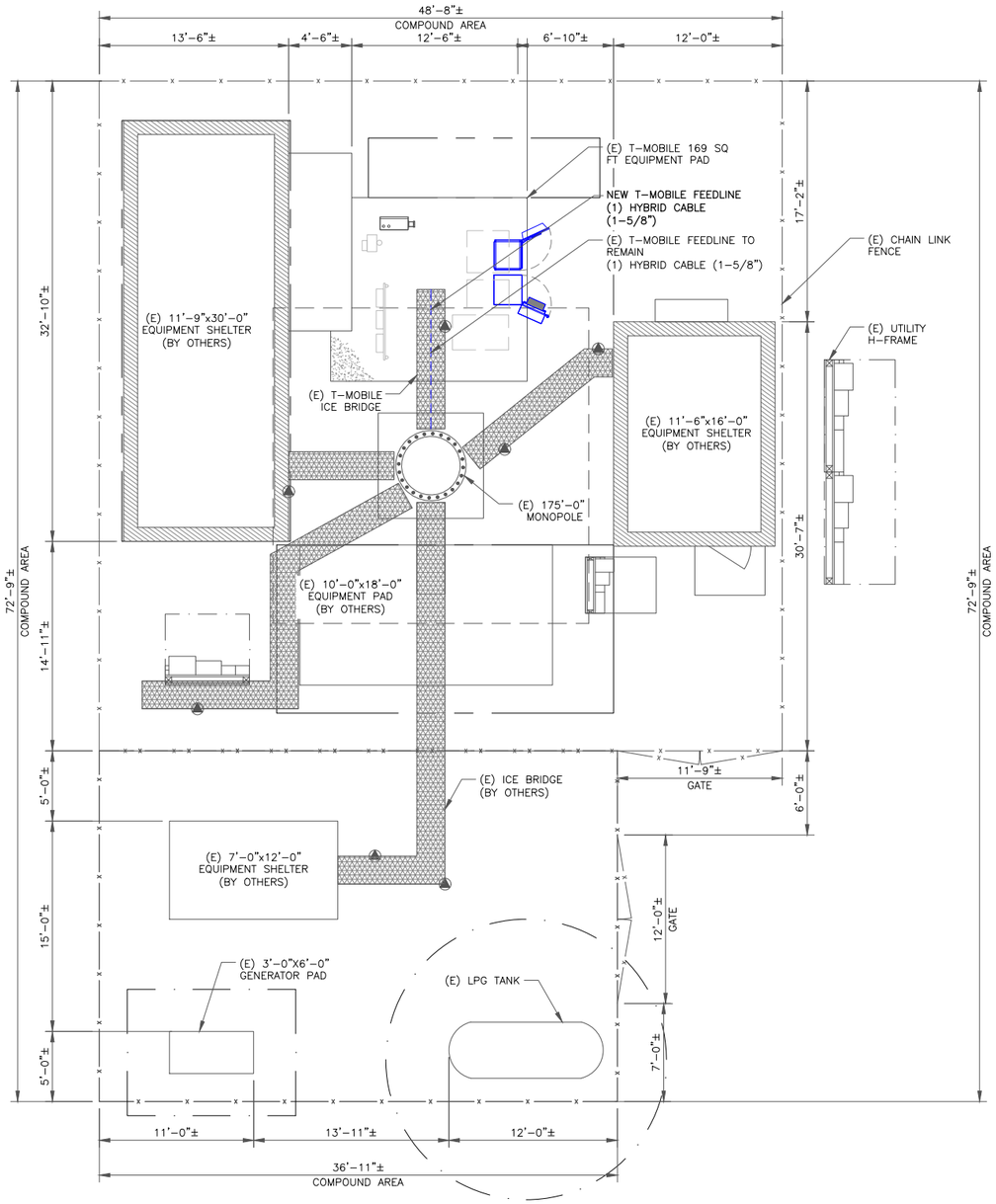
11/29/2021

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

SHEET NUMBER: T-2
REVISION: 2

NOTE:

1. PLANS BASED ON SITE PLAN PROVIDED BY TOWER OWNER AND SITE VISIT PERFORMED BY INFINIGY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING T–MOBILE EQUIPMENT.

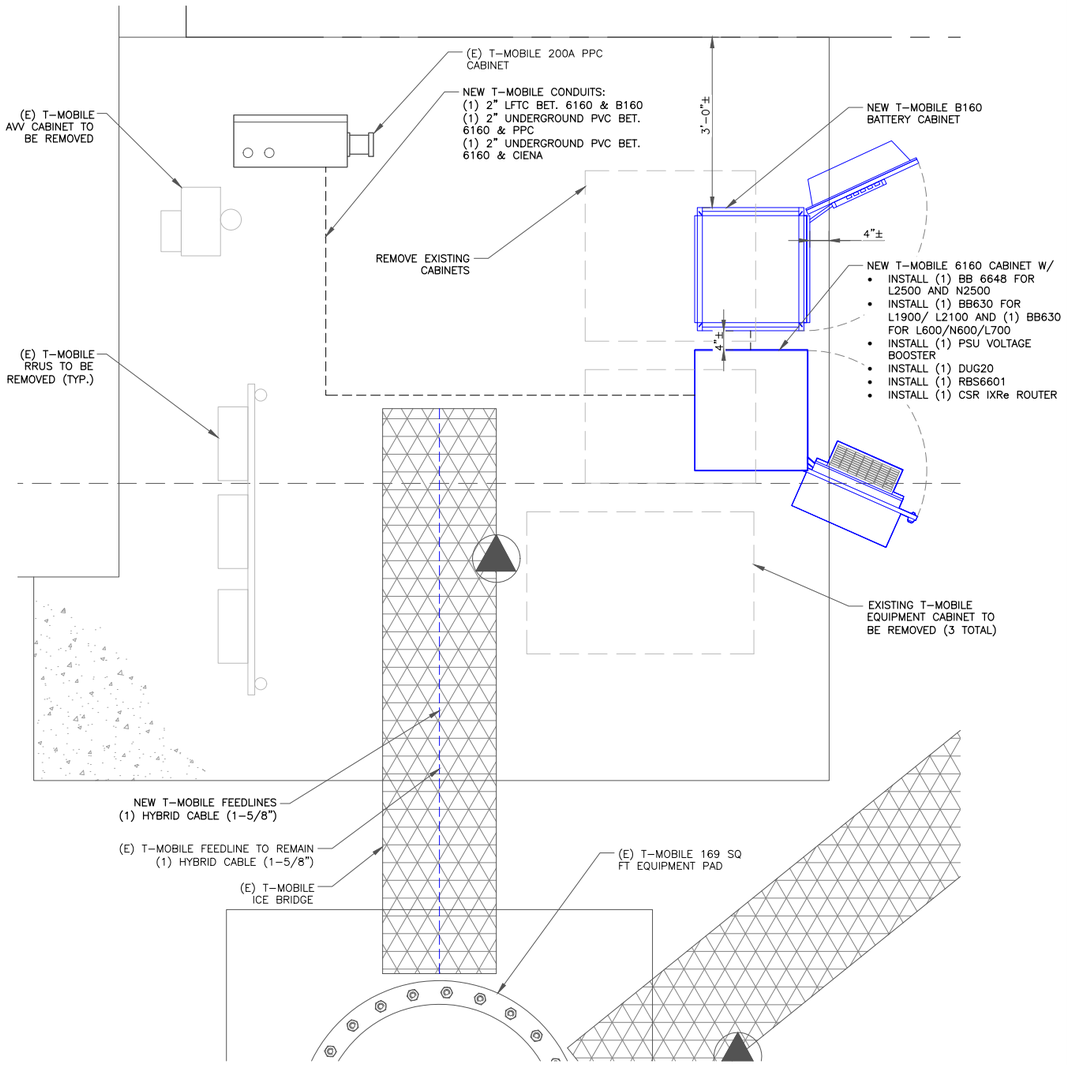


1 SITE PLAN
SCALE: 4' 2' 0 4' 3/16"=1'–0" (FULL SIZE) 3/32"=1'–0" (11x17)

N

NOTES:

THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. T–MOBILE IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.



2 ENLARGED SITE PLAN
SCALE: 1' 6" 0 1' 3/4"=1'–0" (FULL SIZE) 3/8"=1'–0" (11x17)

N

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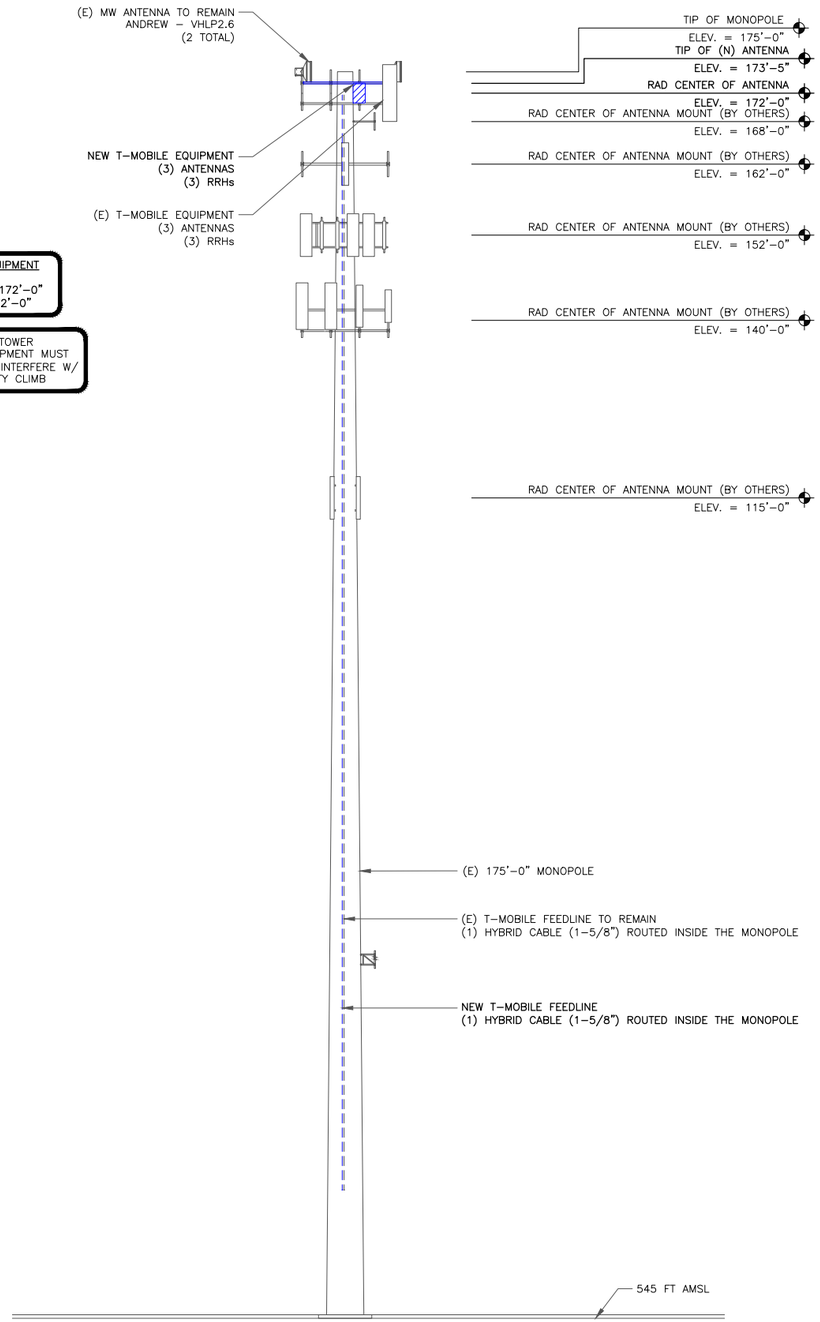
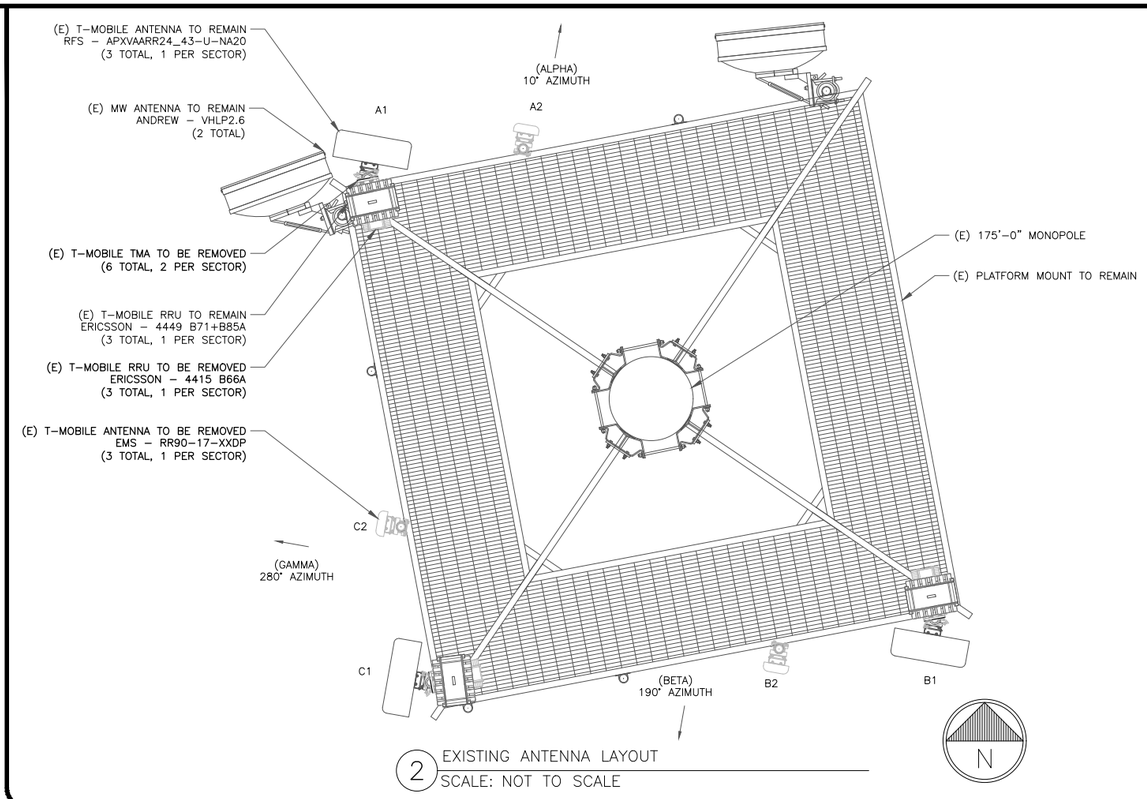
SHEET NUMBER:	REVISION:
C-1	2

NOTES:

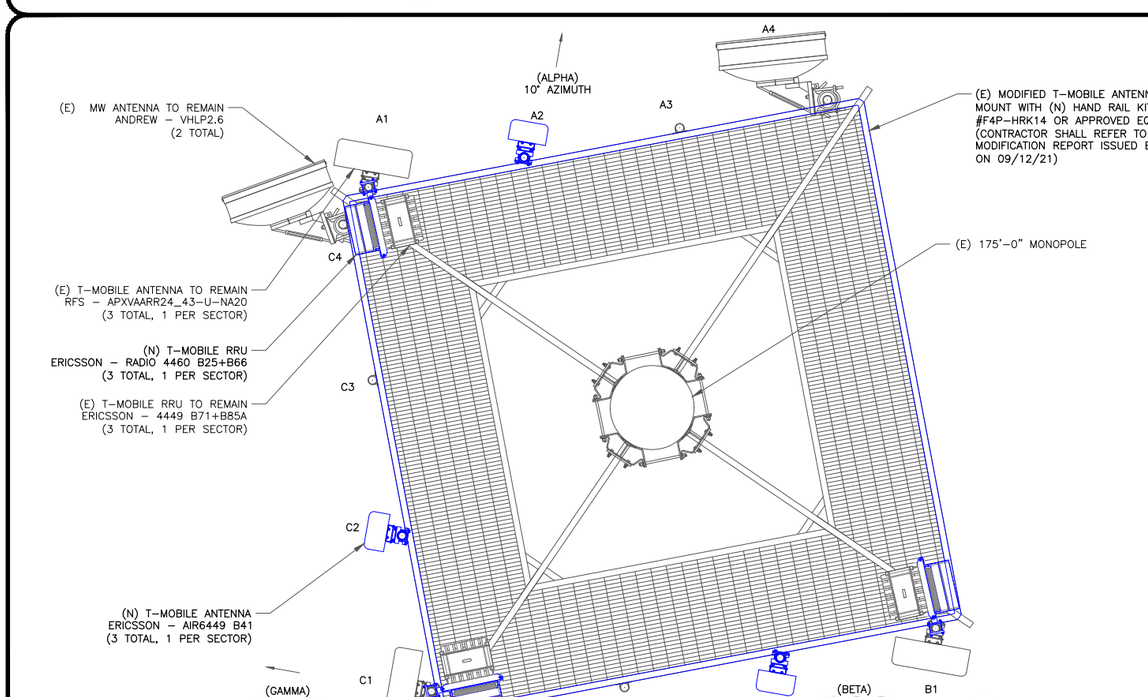
1. ELEVATION BASED ON DRAWING PROVIDED BY TOWER OWNER CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.
2. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.



1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

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STATE OF CONNECTICUT
SHUHEI SAKAMOTO
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LICENSED
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11/29/2021

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SHEET NUMBER: C-2

REVISION: 2

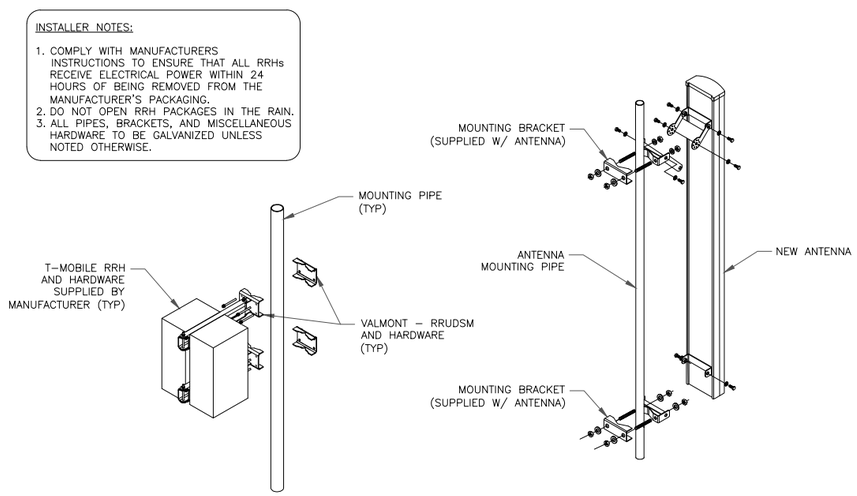
ANTENNA SCHEDULE

SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	LTE 600/700/1900/L2100, N600,G1900	172'-0"	10°	RFS/CELWAVE	APXVAARR24_43-U-NA20	0°	2°/2°/2°/2°	(1) ERICSSON – RRUS 4449 B71/12 (1) ERICSSON – RRUS 4460 B25/66	(1) 1-5/8" HYBRID (SHARED)
ALPHA	A2	LTE 2500, N2500	172'-0"	10°	ERICSSON	AIR6449 B41	0°	2°/2°	–	
ALPHA	A3	–	–	–	–	–	–	–	–	(1) 1-5/8" HYBRID (SHARED)
ALPHA	A4	–	–	–	–	–	–	–	–	
BETA	B1	LTE 600/700/1900/L2100, N600,G1900	172'-0"	190°	RFS/CELWAVE	APXVAARR24_43-U-NA20	0°	2°/2°/2°/2°	(1) ERICSSON – RRUS 4449 B71/12 (1) ERICSSON – RRUS 4460 B25/66	(1) 1-5/8" HYBRID (SHARED)
BETA	B2	LTE 2500, N2500	172'-0"	190°	ERICSSON	AIR6449 B41	0°	2°/2°	–	
BETA	B3	–	–	–	–	–	–	–	–	(1) 1-5/8" HYBRID (SHARED)
BETA	B4	–	–	–	–	–	–	–	–	
GAMMA	C1	LTE 600/700/1900/L2100, N600,G1900	172'-0"	280°	RFS/CELWAVE	APXVAARR24_43-U-NA20	0°	2°/2°/2°/2°	(1) ERICSSON – RRUS 4449 B71/12 (1) ERICSSON – RRUS 4460 B25/66	(1) 1-5/8" HYBRID (SHARED)
GAMMA	C2	LTE 2500, N2500	172'-0"	280°	ERICSSON	AIR6449 B41	0°	2°/2°	–	
GAMMA	C3	–	–	–	–	–	–	–	–	(1) 1-5/8" HYBRID (SHARED)
GAMMA	C4	–	–	–	–	–	–	–	–	

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



2 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

NOTE:

1. CONTRACTOR SHALL INSTALL 3RD DUAL RRH MOUNT TO ACCOMMODATE ALL RRH BRACKETS HOLES IF NECESSARY.

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BU #: **823530**
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MONOPOLE

580 CHAPEL STREET
THOMASTON, CT 06787

EXISTING 175'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/01/2021	TJ	FINALS	SS
1	11/03/2021	TJ	SITE LAYOUT UPDATE	SS
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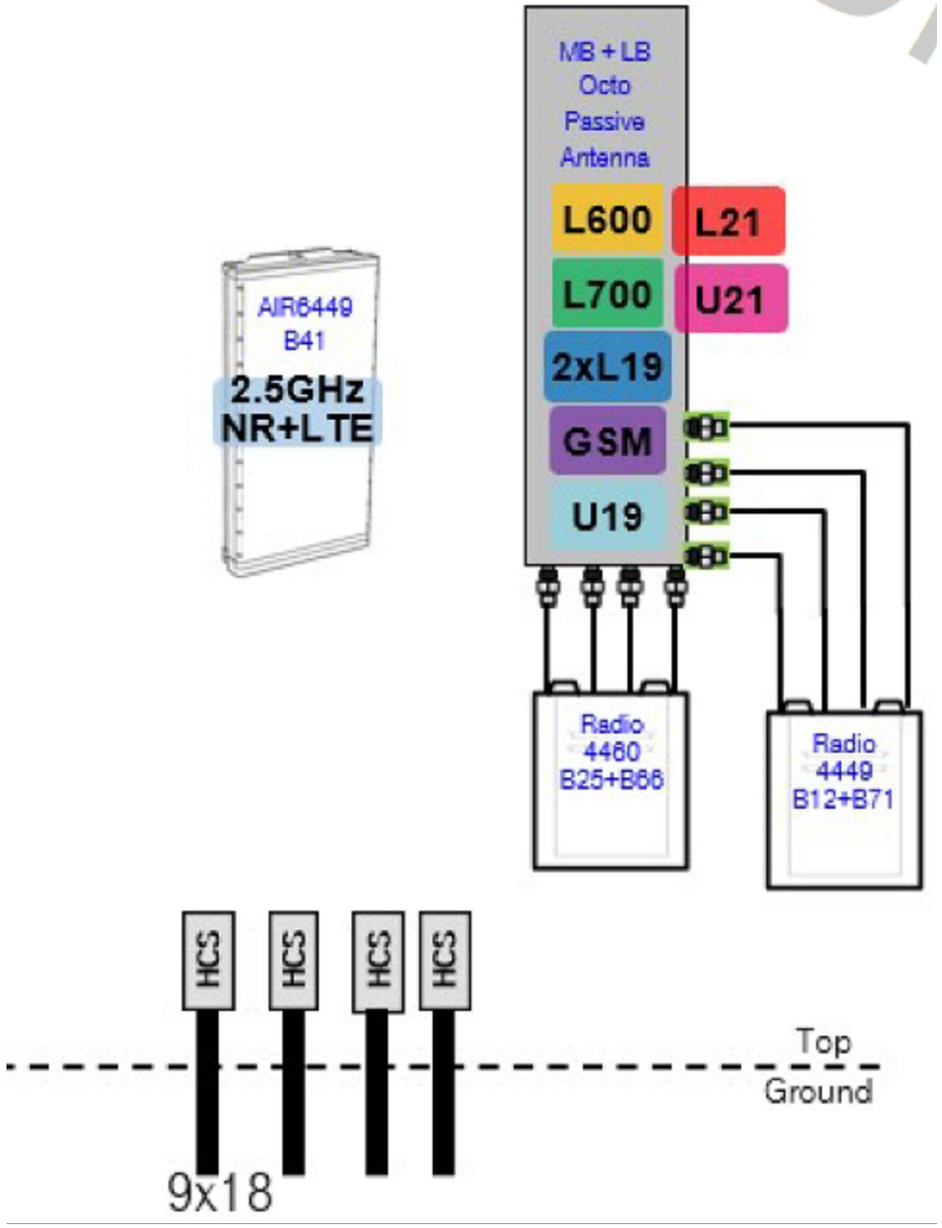
SHEET NUMBER: C-3

REVISION: 2

67D5A998E.jpg

Final Config: 67D5A998E



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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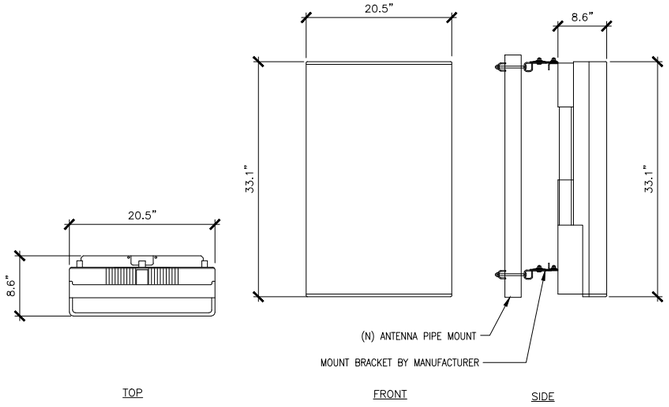
SHEET NUMBER: C-4

REVISION: 2

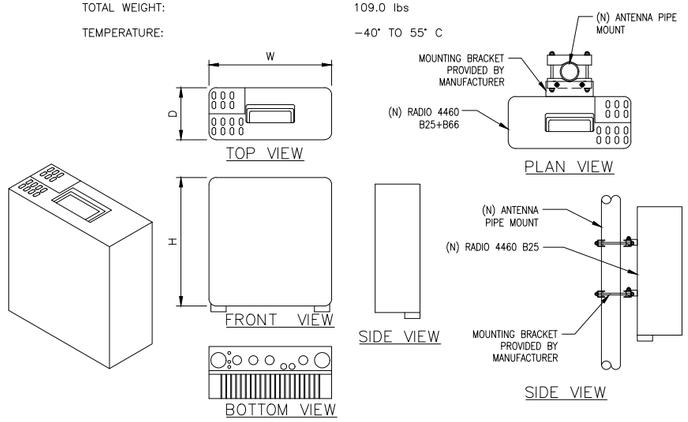
MANUFACTURER: ERICSSON
MODEL: AIR6449 B41
WEIGHT: 104 LBS (W/ MOUNT BRACKET 113)
DIMENSIONS: 33.1"H. X 20.5"W. X 8.6"D.
FREQUENCY: REFER TO RF DATA SHEET



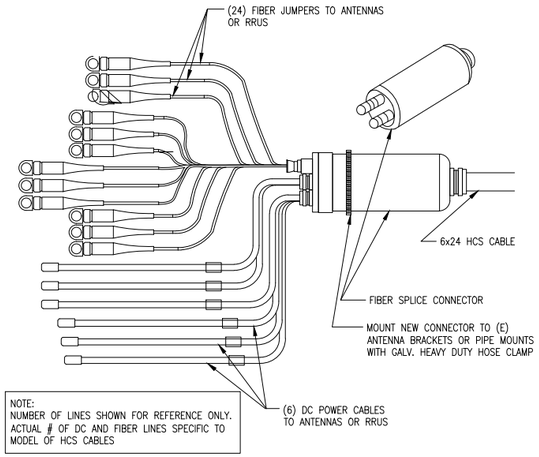
1 (N) AIR6449 B41 ANTENNA SPEC
SCALE: NOT TO SCALE

ERICSSON RADIO-4460 B25+B66

DIMENSIONS, WxDxH:	17.00"x15.10"x11.90"
POWER CONSUMPTION:	660 WATTS
TOTAL WEIGHT:	109.0 lbs
TEMPERATURE:	-40° TO 55° C



2 (N) RADIO 4460 B25+B66 SPEC
SCALE: NOT TO SCALE



NOTE:
NUMBER OF LINES SHOWN FOR REFERENCE ONLY. ACTUAL # OF DC AND FIBER LINES SPECIFIC TO MODEL OF HCS CABLES

3 (N) 6X24 HCS CABLE DETAIL
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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EXISTING 175'-0" MONOPOLE

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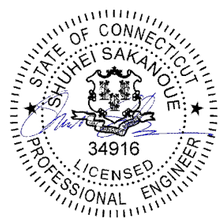

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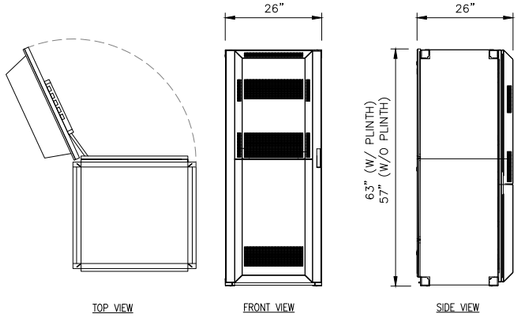
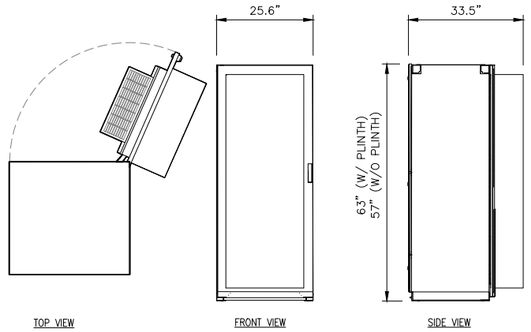
SHEET NUMBER: C-5
REVISION: 2



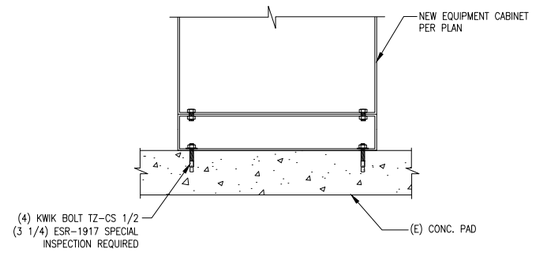
ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

1 (N) B160 CABINET DETAIL
SCALE: NOT TO SCALE

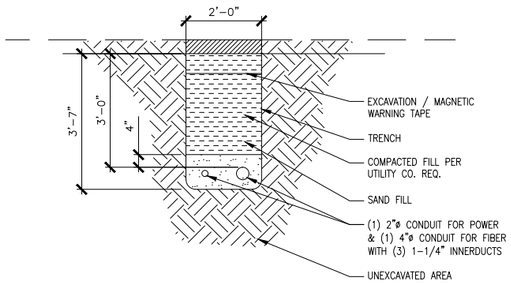


ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

2 (N) 6160 CABINET DETAIL
SCALE: NOT TO SCALE



3 (N) EQUIPMENT CABINET MOUNTING DETAIL
SCALE: NOT TO SCALE



4 (N) CONDUIT TRENCH DETAIL
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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EXISTING 175'-0" MONOPOLE

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SHEET NUMBER: C-6
REVISION: 2

T-MOBILE PANEL SCHEDULE

MAIN: 200A MAIN BREAKER			**VOTAGE/PHASE:** 120/240V, 1-PHASE, 3-WIRE						**SHORT CIRCUIT CURRENT RATING:** --		
MOUNTING: INSIDE PPC ENCLOSURE			**ENCLOSURE:** NEMA 3R						**SURGE PROTECTION DEVICE:** YES		
					PHASE LOADS (VA)						
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	A	B	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
BLANK				1	0		2	60	NC	0	UNKNOWN
				3		0	4		NC	0	
				5	7000		6	**100**	**C**	**7000**	**6160**
				7		7000	8		**C**	**7000**	
6160 GFI	**180**	**C**	**20**	9	180		10				
LIGHT+GFI	100	C	20	11		0	12				
BASE LOAD (VA) =					7180	7000					
25% OF CONTINUOUS LOAD (VA) =					1750	1750					
TOTAL LOAD (VA) =					8930	8750					
TOTAL LOAD (A) =					74	73					

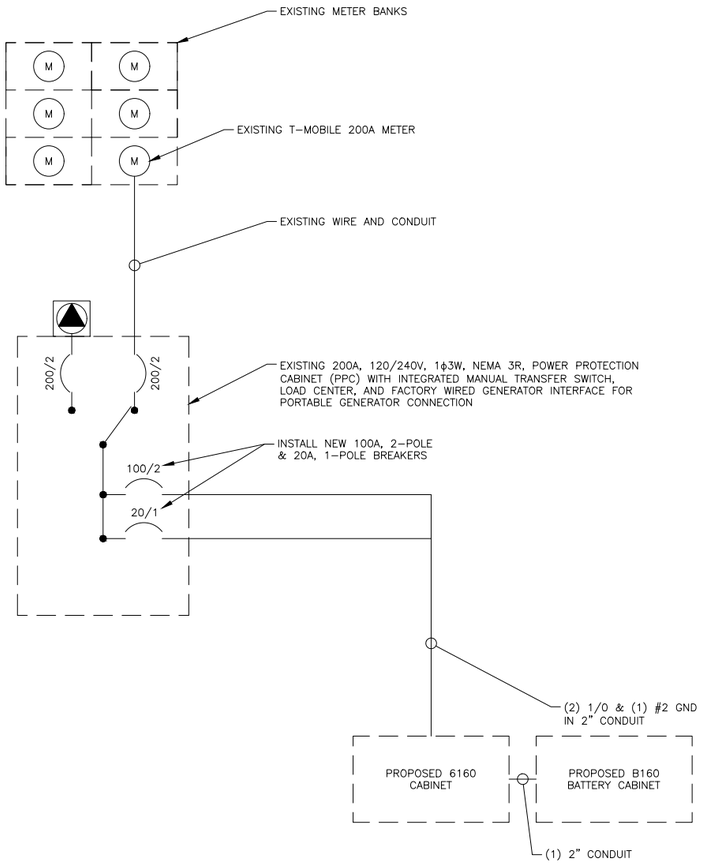
C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD

NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING.
CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS
THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED VALUES.

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, OR XHHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

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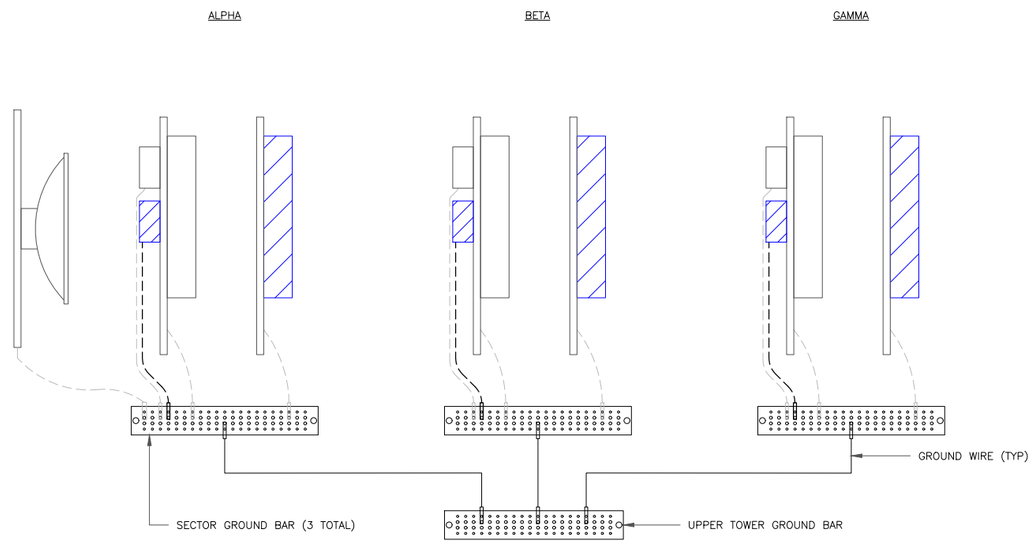
SHEET NUMBER: E-1
REVISION: 2



NOTE:

ALL NEW GROUNDS TO BE #6 STRANDED COPPER WITH GREEN INSULATION UNLESS NOTED OTHERWISE.

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

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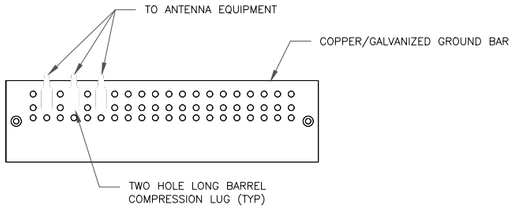
SHEET NUMBER: G-1

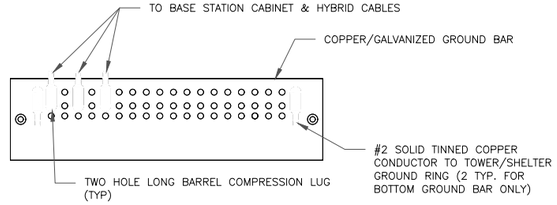
REVISION: 2



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

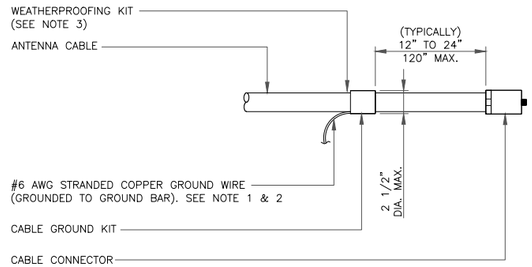
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

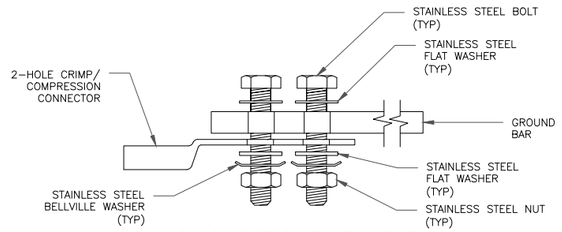
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



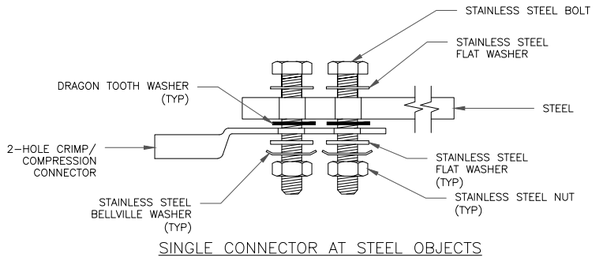
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

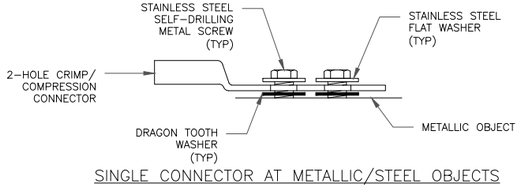
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS



SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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SHEET NUMBER: G-2
REVISION: 2

Exhibit D

Structural Analysis Report

Date: **September 17, 2021**

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CT11364B
	Site Name:	CT364/Chapel St. Monopole
Crown Castle Designation:	**BU Number:**	823530
	Site Name:	CT364/Chapel St. Monopole
	JDE Job Number:	680860
	Work Order Number:	2018677
	Order Number:	581567 Rev. 0
Engineering Firm Designation:	**B+T Group Project Number:**	137170.004.01
Site Data:	**580 Chapel Street, Thomaston, Litchfield County, CT**	
	Latitude *41° 39' 48.48"*, Longitude *-73° 4' 27.41"*	
	175 Foot - Monopole Tower	

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

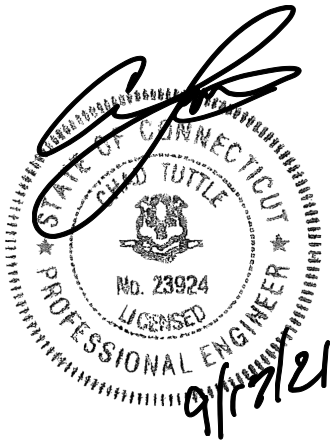
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity - 74.1%**

This analysis utilizes an ultimate 3-second gust wind speed of 116 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Austin Steward

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564; Expires: 10/02/2022



Chad E. Tuttle, P.E.

tnxTower Report - version 8.1.1.0

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1) INTRODUCTION

This tower is a 175 ft. Monopole tower designed by PiROD Inc.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	116 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
172.0	172.0	3	Ericsson	AIR6449 B41_T-MOBILE	2	1-5/8
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	RFS Celwave	APXVAARR24_43-U-NA20		
		1	Site Pro1	F4P-HRK14 Handrail Kit		
		1	--	Platform Mount [LP 701-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
172.0	175.0	2	Andrew	VHLP2.6	3	7/8
	168.0	1	Bird Tech. Group	OA20-67-DIN		
		1	Lone Star Electronics	LS-230C		
168.0	171.0	1	Lone Star Electronics	LS-230C	6	7/8
	168.0	1	--	Side Arm Mount [SO 701-1]		
162.0	162.0	3	Alcatel Lucent	800MHZ 2X50W RRH W/FILTER	4	1-1/4
		3	Alcatel Lucent	PCS 1900MHZ 2X40W		
		3	Alcatel Lucent	TD-RRH8X20-25		
		3	RFS Celwave	APXVSPP18-C-A20		
		3	RFS Celwave	APXVTM14-C-120		
		1	--	Platform Mount [LP 1201-1]		
152.0	152.0	3	Antel	LPA-80080/4CF	6 1	1-5/8 1-3/8
		6	Commscope	NNHH-65B-R4		
		1	Raycap	RVZDC-6600-PF-48		
		3	Samsung Telecomm.	MT6407-77A		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	Samsung Telecomm.	RFV01U-D1A		
		6	Samsung Telecomm.	RFV01U-D2A		
		1	--	Platform Mount [LP 402-1_KCKR]		
140.0	142.0	1	CCI Antennas	HPA65R-BU4A	12 6 2	1-5/8 3/4 3/8
		2	CCI Antennas	HPA65R-BU6A		
		3	Ericsson	RADIO 4415 B30		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14		
		3	Ericsson	RRUS 8843 B2/B66A		
		2	Kathrein	80010964		
		4	Kathrein	80010965		
		3	Powerwave Tech.	7770.00		
		6	Powerwave Tech.	LGP21401		
		3	Raycap	DC6-48-60-18-8F		
	140.0	1	--	Platform Mount [LP 304-1_HR-1]		
130.0	130.0	1	Commscope	MC-PK8-DSH (1)	1	1-1/2
		3	Fujitsu	TA08025-B604		
		3	Fujitsu	TA08025-B605		
		3	JMA Wireless	MX08FRO665-21		
		1	Raycap	RDIDC-9181-PF-48		
115.0	115.0	3	RFS Celwave	APXV18-206517S-C	6	1-5/8
50.0	50.0	1	Pctel	GPS-TMG-HR-26NCM	1	1/2
		1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	3462695	CCI Sites
Mount Analysis Report	9972810	CCI Sites
Foundation Drawing	3464631	CCI Sites
Geotech Report	3462674	CCI Sites
Crown CAD Package	Date: 09/09/2021	CCI Sites

3.1) Analysis Method

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

3.2) Assumptions

1) The tower and structures were maintained in accordance with the - TIA-222 standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) Base plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	175 - 164.25	Pole	TP26x22x0.25	1	-6.025	1202.113	4.5	Pass
L2	164.25 - 129.67	Pole	TP34.063x24.413x0.313	2	-24.126	1996.207	30.5	Pass
L3	129.67 - 96	Pole	TP41.75x32.452x0.375	3	-35.768	2940.315	44.7	Pass
L4	96 - 63.17	Pole	TP49.063x39.842x0.375	4	-45.876	3460.726	56.8	Pass
L5	63.17 - 31.17	Pole	TP56.125x46.96x0.375	5	-57.363	3964.264	64.9	Pass
L6	31.17 - 0	Pole	TP62.938x53.848x0.375	6	-72.606	4574.010	71.9	Pass
							Summary	
						Pole (L6)	71.9	Pass
						Rating =	71.9	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	Base	69.2	Pass
1,2,3	Base Plate	Base	71.9	Pass
1,2	Base Foundation (Structure)	Base	70.7	Pass
1,2	Base Foundation (Soil Interaction)	Base	74.1	Pass

Structure Rating (max from all components) =	**74.1%**

Notes:
1) See additional documentation in “Appendix C - Additional Calculations” for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H Section 15.5.
3) Base plate has the same capacity as its respective shaft.

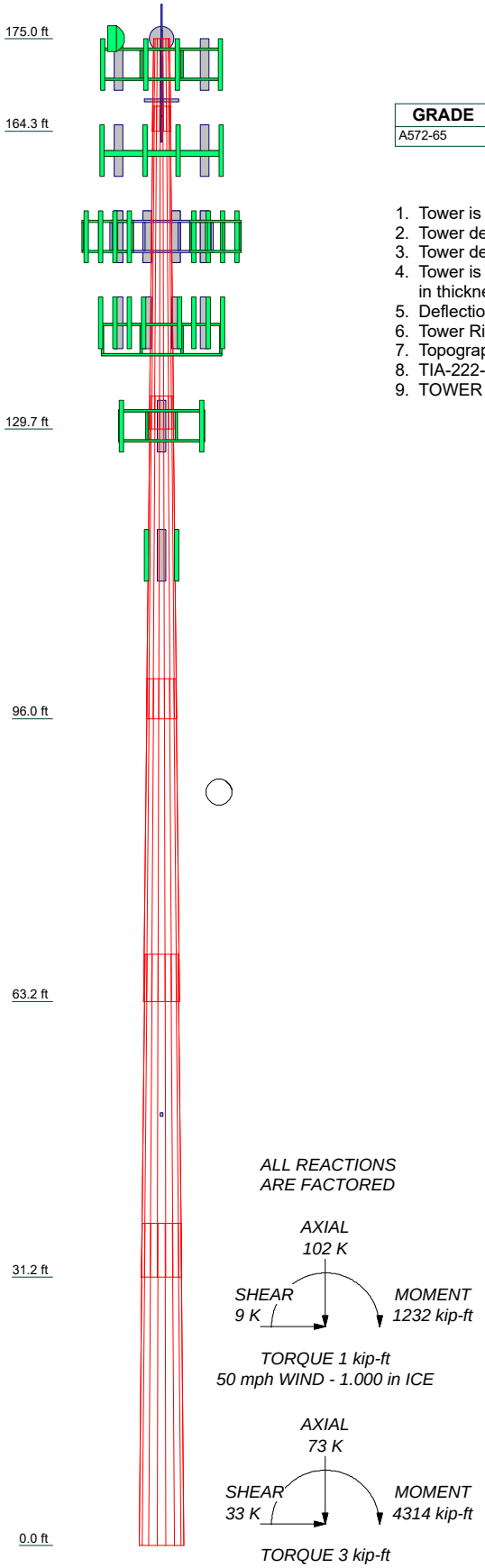
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.750	18	0.250	2.920	22.000	26.000		0.7
2	37.500	18	0.313	3.830	24.413	34.063		3.7
3	37.500	18	0.375	4.670	32.452	41.750		5.6
4	37.500	18	0.375	5.500	39.842	49.063		6.7
5	37.500	18	0.375	6.250	46.960	56.125		7.8
6	37.420	18	0.375		53.848	62.938		8.8
							A572-65	33.2



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 116 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 71.9%

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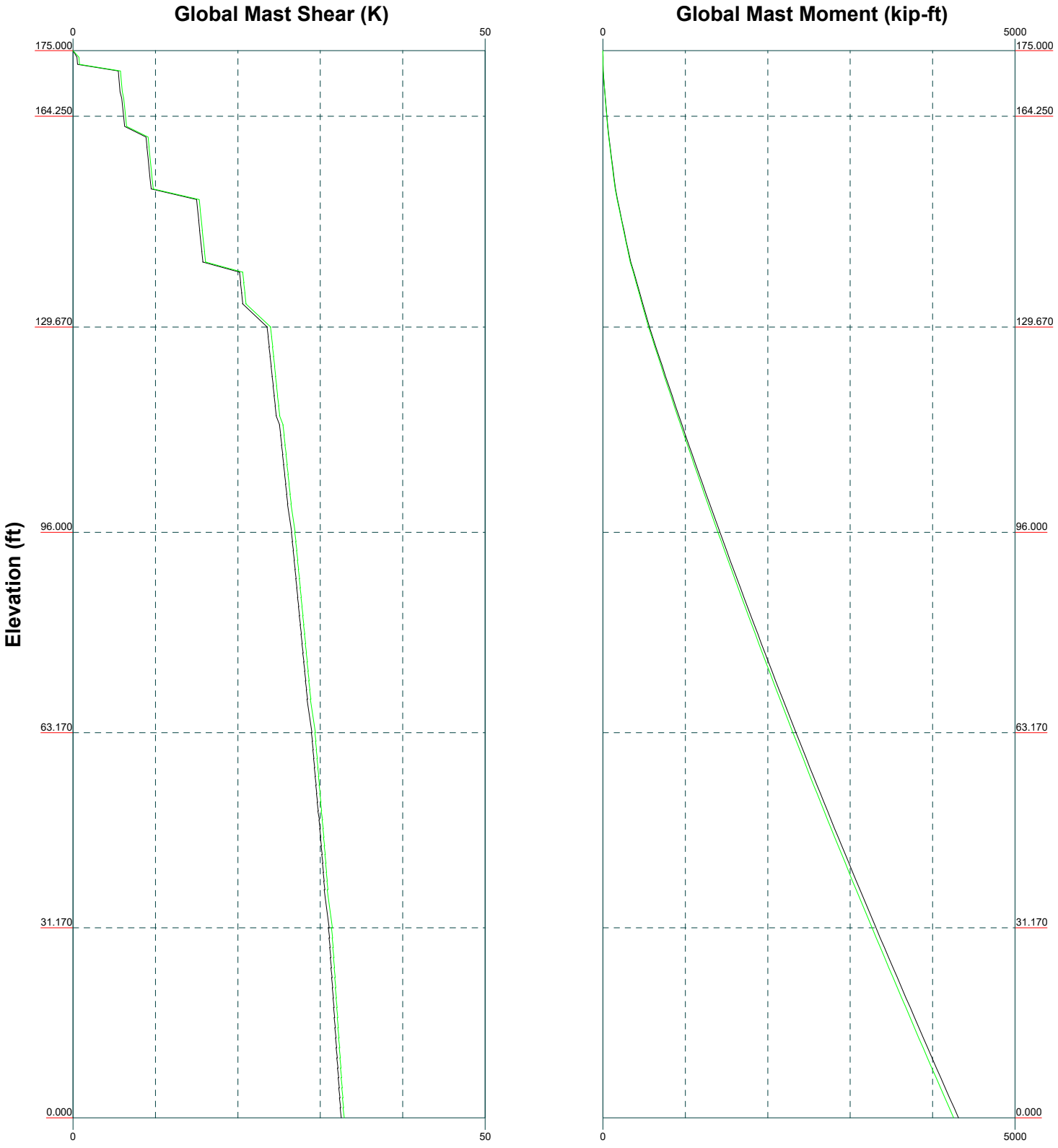
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 137170.004.01 - CT364/Chapel St. Monopole, CT (BU# 82353		
Project:		
Client: Crown Castle	Drawn by: V. RAO	App'd:
Code: TIA-222-H	Date: 09/15/21	Scale: NTS
Path:		Dwg No. E-1

TIA-222-H - 116 mph/50 mph 1.000 in Ice Exposure B

Maximum Values

Vx Vz Mx Mz



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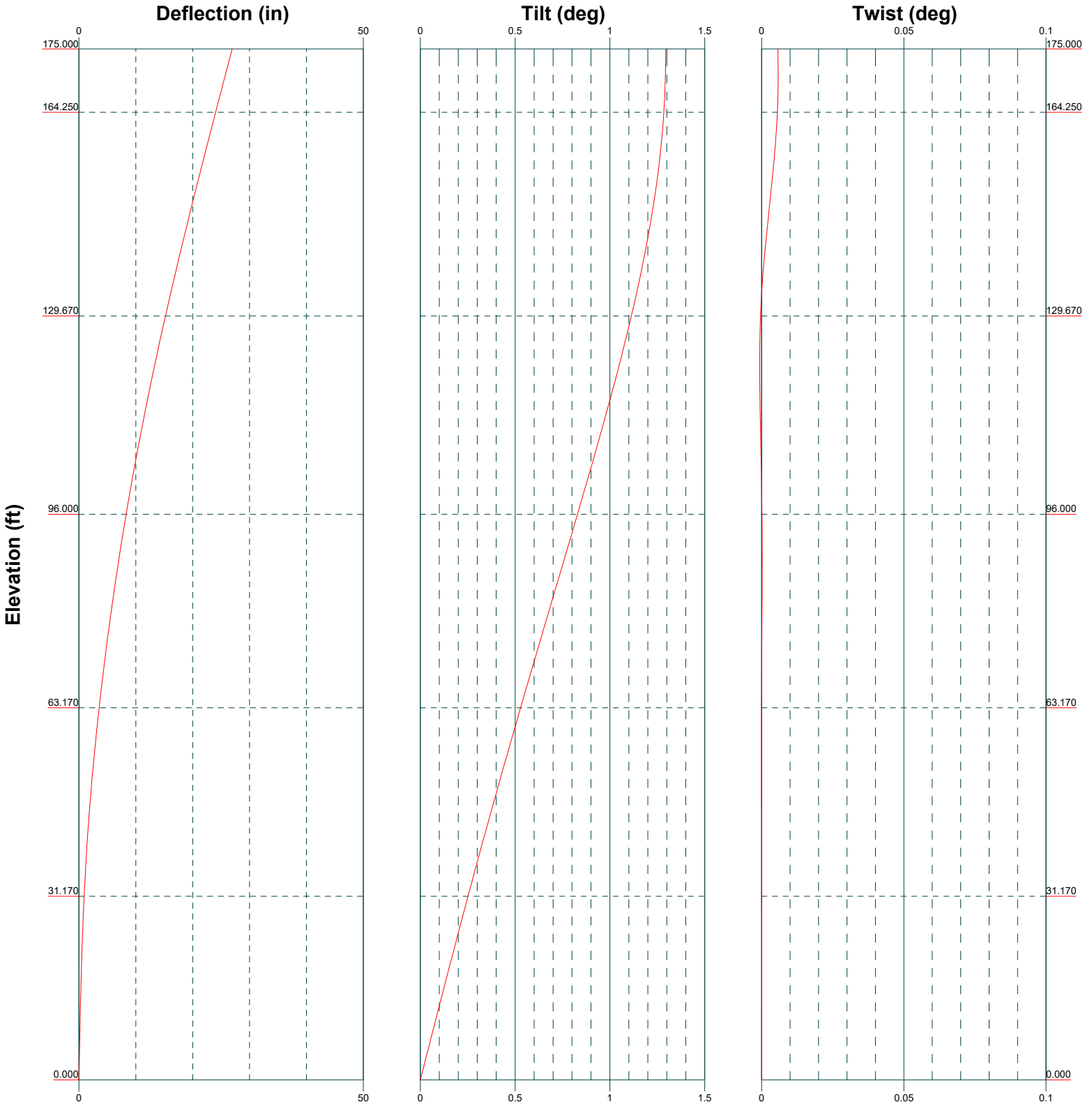
Project:		
Client: Crown Castle	Drawn by: V. RAO	App'd:
Code: TIA-222-H	Date: 09/15/21	Scale: NTS
Path:		Dwg No. E-4

TIA-222-H - Service - 60 mph

Maximum Values



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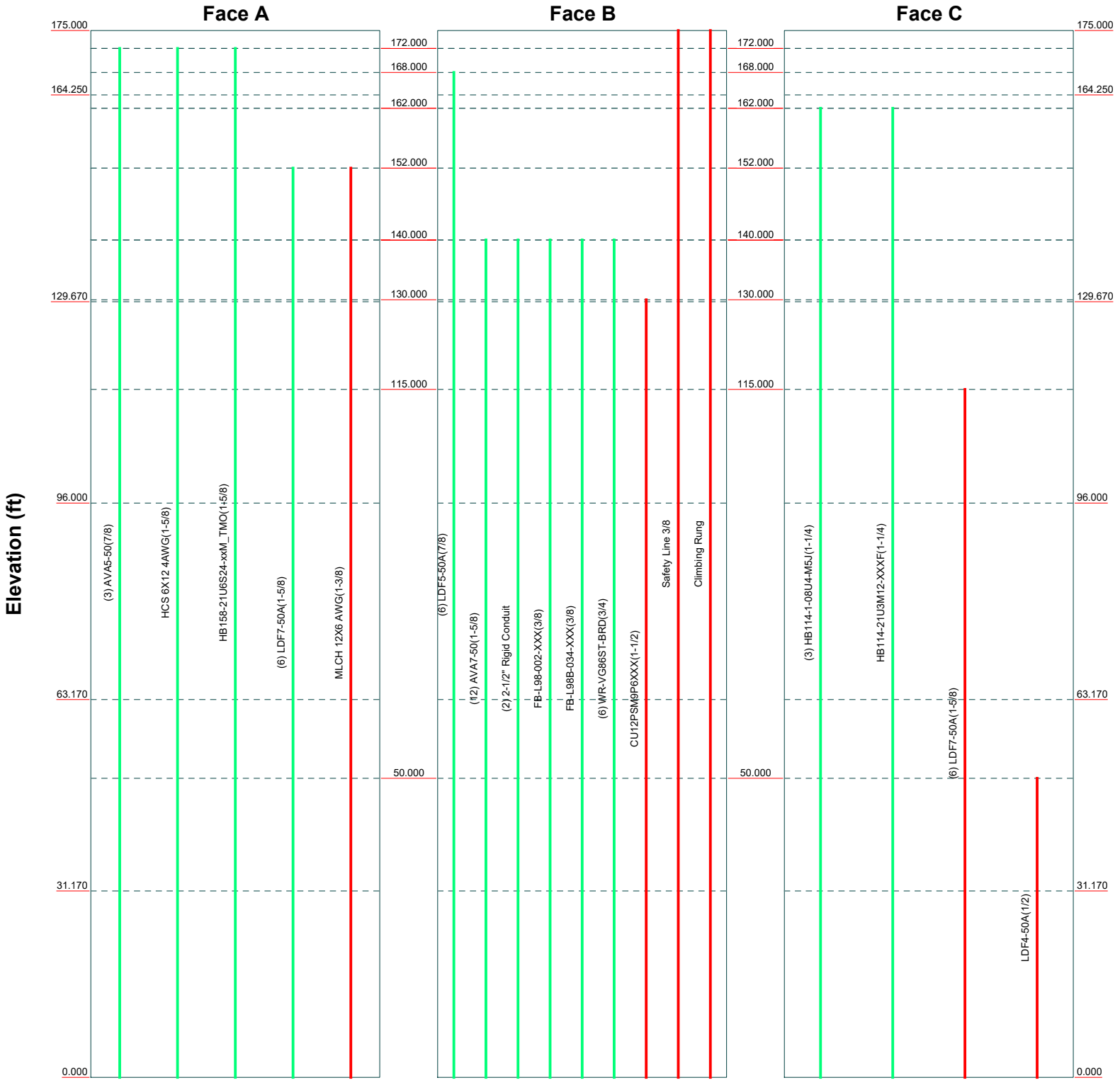
Project:		
Client: Crown Castle	Drawn by: V. RAO	App'd:
Code: TIA-222-H	Date: 09/15/21	Scale: NTS
Path:		Dwg No. E-5

Feed Line Distribution Chart
0' - 175'

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



B+T GRP

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Job: ***137170.004.01 - CT364/Chapel St. Monopole, CT (BU# 82353***		
Project:		
Client: Crown Castle	Drawn by: V. RAO	App'd:
Code: TIA-222-H	Date: 09/15/21	Scale: NTS
Path:		Dwg No. E-7

Tower Input Data

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

Tower is located in Litchfield County, Connecticut.
Tower base elevation above sea level: 543.000 ft.
Basic wind speed of 116 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	175.000-164.250	10.750	2.920	18	22.000	26.000	0.250	1.000	A572-65 (65 ksi)
L2	164.250-129.670	37.500	3.830	18	24.413	34.063	0.313	1.250	A572-65 (65 ksi)
L3	129.670-96.000	37.500	4.670	18	32.452	41.750	0.375	1.500	A572-65 (65 ksi)
L4	96.000-63.170	37.500	5.500	18	39.842	49.063	0.375	1.500	A572-65 (65 ksi)
L5	63.170-31.170	37.500	6.250	18	46.960	56.125	0.375	1.500	A572-65 (65 ksi)
L6	31.170-0.000	37.420		18	53.848	62.938	0.375	1.500	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	22.301	17.259	1031.483	7.721	11.176	92.294	2064.324	8.631	3.432	13.728
	26.363	20.433	1711.654	9.141	13.208	129.592	3425.561	10.218	4.136	16.544
L2	25.505	23.905	1754.280	8.556	12.402	141.451	3510.869	11.955	3.747	11.99
	34.540	33.476	4817.433	11.981	17.304	278.404	9641.206	16.741	5.445	17.424
L3	33.859	38.180	4963.150	11.387	16.486	301.059	9932.832	19.093	5.052	13.471
	42.336	49.247	10650.982	14.688	21.209	502.192	21315.979	24.628	6.688	17.835
L4	41.565	46.976	9244.448	14.011	20.240	456.746	18501.060	23.492	6.352	16.939
	49.762	57.950	17355.138	17.284	24.924	696.329	34733.112	28.981	7.975	21.267
L5	48.992	55.448	15202.632	16.538	23.856	637.273	30425.268	27.729	7.605	20.28
	56.933	66.356	26056.151	19.791	28.511	913.882	52146.587	33.185	9.218	24.581
L6	56.162	63.646	22991.527	18.983	27.355	840.501	46013.307	31.829	8.817	23.512
	63.851	74.465	36822.895	22.210	31.972	1151.714	73694.242	37.240	10.417	27.779

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 175.000-164.250				1	1	1			
L2 164.250-129.670				1	1	1			
L3 129.670-96.000				1	1	1			
L4 96.000-63.170				1	1	1			
L5 63.170-31.170				1	1	1			
L6 31.170-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
MLCH 12X6 AWG(1-3/8)	A	No	Surface Ar (CaAa)	152.000 - 0.000	1	1	-0.250 -0.220	1.430		0.002
CU12PSM9P6XXX(1-1/2)	B	No	Surface Ar (CaAa)	130.000 - 0.000	1	1	-0.480 -0.450	1.600		0.002
LDF7-50A(1-5/8)	C	No	Surface Ar (CaAa)	115.000 - 0.000	6	6	-0.250 0.000	1.980		0.001
LDF4-50A(1/2)	C	No	Surface Ar (CaAa)	50.000 - 0.000	1	1	-0.375 -0.350	0.630		0.000
Safety Line 3/8	B	No	Surface Ar (CaAa)	175.000 - 0.000	1	1	0.050 0.060	0.375		0.000
Climbing Rung	B	No	Surface Ar (CaAa)	175.000 - 0.000	1	1	0.000 0.100	1.000		0.008

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 klf
AVA5-50(7/8)	A	No	No	Inside Pole	172.000 - 0.000	3	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
HCS 6X12 4AWG(1-5/8)	A	No	No	Inside Pole	172.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.002 0.002 0.002
HB158-21U6S24-xx M_TMO(1-5/8)	A	No	No	Inside Pole	172.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.003 0.003 0.003
LDF5-50A(7/8)	B	No	No	Inside Pole	168.000 - 0.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
HB114-1-08U4-M5J (1-1/4)	C	No	No	Inside Pole	162.000 - 0.000	3	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
HB114-21U3M12-XXXF(1-1/4)	C	No	No	Inside Pole	162.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
LDF7-50A(1-5/8)	A	No	No	Inside Pole	152.000 - 0.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
AVA7-50(1-5/8)	B	No	No	Inside Pole	140.000 - 0.000	12	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
2-1/2" Rigid Conduit	B	No	No	Inside Pole	140.000 - 0.000	2	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
FB-L98-002-XXX(3/8)	B	No	No	Inside Pole	140.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
FB-L98B-034-XXX(3/8)	B	No	No	Inside Pole	140.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
WR-VG86ST-BRD(3/4)	B	No	No	Inside Pole	140.000 - 0.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
*							1" Ice	0.000	0.001

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	175.000-164.250	A	0.000	0.000	0.000	0.000	0.045
		B	0.000	0.000	1.478	0.000	0.100
		C	0.000	0.000	0.000	0.000	0.000
L2	164.250-129.670	A	0.000	0.000	3.193	0.000	0.349
		B	0.000	0.000	4.808	0.000	0.554
		C	0.000	0.000	0.000	0.000	0.144
L3	129.670-96.000	A	0.000	0.000	4.815	0.000	0.419
		B	0.000	0.000	10.017	0.000	1.043
		C	0.000	0.000	22.572	0.000	0.244
L4	96.000-63.170	A	0.000	0.000	4.695	0.000	0.408
		B	0.000	0.000	9.767	0.000	1.017
		C	0.000	0.000	39.002	0.000	0.308
L5	63.170-31.170	A	0.000	0.000	4.576	0.000	0.398
		B	0.000	0.000	9.520	0.000	0.991
		C	0.000	0.000	39.202	0.000	0.303
L6	31.170-0.000	A	0.000	0.000	4.457	0.000	0.388
		B	0.000	0.000	9.273	0.000	0.966
		C	0.000	0.000	38.994	0.000	0.297

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	175.000-164.250	A	1.001	0.000	0.000	0.000	0.000	0.045
		B		0.000	0.000	5.783	0.000	0.144
		C		0.000	0.000	0.000	0.000	0.000
L2	164.250-129.670	A	0.986	0.000	0.000	7.664	0.000	0.415
		B		0.000	0.000	18.721	0.000	0.697
		C		0.000	0.000	0.000	0.000	0.144
L3	129.670-96.000	A	0.961	0.000	0.000	11.458	0.000	0.517
		B		0.000	0.000	29.945	0.000	1.284

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	32.901	0.000	0.487
L4	96.000-63.170	A	0.928	0.000	0.000	11.003	0.000	0.501
		B		0.000	0.000	28.693	0.000	1.243
		C		0.000	0.000	56.638	0.000	0.718
L5	63.170-31.170	A	0.881	0.000	0.000	10.515	0.000	0.484
		B		0.000	0.000	27.336	0.000	1.200
		C		0.000	0.000	59.624	0.000	0.723
L6	31.170-0.000	A	0.787	0.000	0.000	9.949	0.000	0.465
		B		0.000	0.000	25.748	0.000	1.154
		C		0.000	0.000	60.607	0.000	0.706

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	175.000-164.250	0.965	-0.426	1.919	-0.844
L2	164.250-129.670	0.200	-0.447	0.974	-0.873
L3	129.670-96.000	1.005	2.659	1.301	1.269
L4	96.000-63.170	1.603	4.964	1.742	3.172
L5	63.170-31.170	1.810	5.307	2.109	3.652
L6	31.170-0.000	1.964	5.577	2.359	4.029

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	27	Safety Line 3/8	164.25 - 175.00	1.0000	1.0000
L1	28	Climbing Rung	164.25 - 175.00	1.0000	1.0000
L2	13	MLCH 12X6 AWG(1-3/8)	129.67 - 152.00	1.0000	1.0000
L2	21	CU12PSM9P6XXX(1-1/2)	129.67 - 130.00	1.0000	1.0000
L2	27	Safety Line 3/8	129.67 - 164.25	1.0000	1.0000
L2	28	Climbing Rung	129.67 - 164.25	1.0000	1.0000
L3	13	MLCH 12X6 AWG(1-3/8)	96.00 - 129.67	1.0000	1.0000
L3	21	CU12PSM9P6XXX(1-1/2)	96.00 - 129.67	1.0000	1.0000
L3	23	LDF7-50A(1-5/8)	96.00 - 115.00	1.0000	1.0000
L3	27	Safety Line 3/8	96.00 - 129.67	1.0000	1.0000
L3	28	Climbing Rung	96.00 - 129.67	1.0000	1.0000
L4	13	MLCH 12X6 AWG(1-3/8)	63.17 - 96.00	1.0000	1.0000
L4	21	CU12PSM9P6XXX(1-1/2)	63.17 - 96.00	1.0000	1.0000
L4	23	LDF7-50A(1-5/8)	63.17 - 96.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L4	27	Safety Line 3/8	63.17 - 96.00	1.0000	1.0000
L4	28	Climbing Rung	63.17 - 96.00	1.0000	1.0000
L5	13	MLCH 12X6 AWG(1-3/8)	31.17 - 63.17	1.0000	1.0000
L5	21	CU12PSM9P6XXX(1-1/2)	31.17 - 63.17	1.0000	1.0000
L5	23	LDF7-50A(1-5/8)	31.17 - 63.17	1.0000	1.0000
L5	25	LDF4-50A(1/2)	31.17 - 50.00	1.0000	1.0000
L5	27	Safety Line 3/8	31.17 - 63.17	1.0000	1.0000
L5	28	Climbing Rung	31.17 - 63.17	1.0000	1.0000
L6	13	MLCH 12X6 AWG(1-3/8)	0.00 - 31.17	1.0000	1.0000
L6	21	CU12PSM9P6XXX(1-1/2)	0.00 - 31.17	1.0000	1.0000
L6	23	LDF7-50A(1-5/8)	0.00 - 31.17	1.0000	1.0000
L6	25	LDF4-50A(1/2)	0.00 - 31.17	1.0000	1.0000
L6	27	Safety Line 3/8	0.00 - 31.17	1.0000	1.0000
L6	28	Climbing Rung	0.00 - 31.17	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8" x 6'	A	From Leg	4.000 0.000 3.000	0.000	174.000	No Ice 1/2" Ice 1" Ice	0.375 0.989 1.619	0.375 0.989 1.619	0.006 0.010 0.019
*									
LS-230C	A	From Leg	4.000 0.000 -4.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	1.610 2.337 2.796	1.610 2.337 2.796	0.011 0.023 0.040
OA20-67-DIN	A	From Leg	4.000 0.000 -4.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	5.020 7.960 10.930	4.400 6.800 9.200	0.009 0.043 0.080
*									
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	14.690 15.460 16.230	6.870 7.550 8.250	0.186 0.315 0.458
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	14.690 15.460 16.230	6.870 7.550 8.250	0.186 0.315 0.458
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	14.690 15.460 16.230	6.870 7.550 8.250	0.186 0.315 0.458
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	5.190 5.590 6.020	2.710 3.040 3.380	0.128 0.174 0.227
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	5.190 5.590 6.020	2.710 3.040 3.380	0.128 0.174 0.227
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	5.190 5.590 6.020	2.710 3.040 3.380	0.128 0.174 0.227
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.000 0.000	0.000	172.000	No Ice 1/2" Ice	2.139 2.321	1.686 1.850	0.109 0.131

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	2.511	2.022	0.156
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	2.139 2.321 2.511	1.686 1.850 2.022	0.109 0.131 0.156
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	2.139 2.321 2.511	1.686 1.850 2.022	0.109 0.131 0.156
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	1.970 2.147 2.331	1.587 1.749 1.918	0.073 0.093 0.116
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	1.970 2.147 2.331	1.587 1.749 1.918	0.073 0.093 0.116
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	1.970 2.147 2.331	1.587 1.749 1.918	0.073 0.093 0.116
(2) 6' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	1.425 1.925 2.294	1.425 1.925 2.294	0.022 0.033 0.048
(2) 6' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	172.000	No Ice 1/2" Ice 1" Ice	1.425 1.925 2.294	1.425 1.925 2.294	0.022 0.033 0.048
Platform Mount [LP 701-1_HR-1]	C	None		0.000	172.000	No Ice 1/2" Ice 1" Ice	55.580 62.440 69.140	55.580 62.440 69.140	3.082 4.291 5.677
*									
LS-230C	A	From Leg	3.000 0.000 3.000	0.000	168.000	No Ice 1/2" Ice 1" Ice	1.610 2.337 2.796	1.610 2.337 2.796	0.011 0.023 0.040
Side Arm Mount [SO 701-1]	A	From Leg	1.500 0.000 0.000	0.000	168.000	No Ice 1/2" Ice 1" Ice	0.850 1.140 1.430	1.670 2.340 3.010	0.065 0.079 0.093
*									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	162.000	No Ice 1/2" Ice 1" Ice	4.600 5.050 5.500	4.010 4.450 4.890	0.095 0.160 0.235
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	162.000	No Ice 1/2" Ice 1" Ice	4.600 5.050 5.500	4.010 4.450 4.890	0.095 0.160 0.235
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	162.000	No Ice 1/2" Ice 1" Ice	4.600 5.050 5.500	4.010 4.450 4.890	0.095 0.160 0.235
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	162.000	No Ice 1/2" Ice 1" Ice	4.090 4.480 4.880	2.860 3.230 3.610	0.077 0.127 0.185
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	162.000	No Ice 1/2" Ice 1" Ice	4.090 4.480 4.880	2.860 3.230 3.610	0.077 0.127 0.185
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	162.000	No Ice 1/2" Ice 1" Ice	4.090 4.480 4.880	2.860 3.230 3.610	0.077 0.127 0.185
TD-RRH8X20-25	A	From Leg	4.000 0.000 0.000	0.000	162.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
TD-RRH8X20-25	B	From Leg	4.000 0.000 0.000	0.000	162.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
TD-RRH8X20-25	C	From Leg	4.000	0.000	162.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			0.000			1" Ice	4.557	1.901	0.128
800MHZ 2X50W RRH W/FILTER	A	From Leg	4.000	0.000	162.000	No Ice	2.058	1.932	0.064
			0.000			1/2" Ice	2.240	2.109	0.086
			0.000			1" Ice	2.429	2.293	0.111
800MHZ 2X50W RRH W/FILTER	B	From Leg	4.000	0.000	162.000	No Ice	2.058	1.932	0.064
			0.000			1/2" Ice	2.240	2.109	0.086
			0.000			1" Ice	2.429	2.293	0.111
800MHZ 2X50W RRH W/FILTER	C	From Leg	4.000	0.000	162.000	No Ice	2.058	1.932	0.064
			0.000			1/2" Ice	2.240	2.109	0.086
			0.000			1" Ice	2.429	2.293	0.111
PCS 1900MHZ 2X40W	A	From Leg	4.000	0.000	162.000	No Ice	2.351	1.278	0.044
			0.000			1/2" Ice	2.547	1.434	0.062
			0.000			1" Ice	2.751	1.598	0.084
PCS 1900MHZ 2X40W	B	From Leg	4.000	0.000	162.000	No Ice	2.351	1.278	0.044
			0.000			1/2" Ice	2.547	1.434	0.062
			0.000			1" Ice	2.751	1.598	0.084
PCS 1900MHZ 2X40W	C	From Leg	4.000	0.000	162.000	No Ice	2.351	1.278	0.044
			0.000			1/2" Ice	2.547	1.434	0.062
			0.000			1" Ice	2.751	1.598	0.084
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	162.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	B	From Leg	4.000	0.000	162.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	162.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
Platform Mount [LP 1201-1]	C	None		0.000	162.000	No Ice	18.380	18.380	2.100
						1/2" Ice	22.110	22.110	2.652
						1" Ice	25.870	25.870	3.263
*									
LPA-80080/4CF w/ Mount Pipe	A	From Leg	4.000	0.000	152.000	No Ice	2.856	6.569	0.030
			0.000			1/2" Ice	3.220	7.195	0.076
			0.000			1" Ice	3.592	7.837	0.128
LPA-80080/4CF w/ Mount Pipe	B	From Leg	4.000	0.000	152.000	No Ice	2.856	6.569	0.030
			0.000			1/2" Ice	3.220	7.195	0.076
			0.000			1" Ice	3.592	7.837	0.128
LPA-80080/4CF w/ Mount Pipe	C	From Leg	4.000	0.000	152.000	No Ice	2.856	6.569	0.030
			0.000			1/2" Ice	3.220	7.195	0.076
			0.000			1" Ice	3.592	7.837	0.128
(2) NNHH-65B-R4 w/ Mount Pipe	A	From Leg	4.000	0.000	152.000	No Ice	7.550	4.230	0.110
			0.000			1/2" Ice	8.040	4.670	0.197
			0.000			1" Ice	8.530	5.120	0.296
(2) NNHH-65B-R4 w/ Mount Pipe	B	From Leg	4.000	0.000	152.000	No Ice	7.550	4.230	0.110
			0.000			1/2" Ice	8.040	4.670	0.197
			0.000			1" Ice	8.530	5.120	0.296
(2) NNHH-65B-R4 w/ Mount Pipe	C	From Leg	4.000	0.000	152.000	No Ice	7.550	4.230	0.110
			0.000			1/2" Ice	8.040	4.670	0.197
			0.000			1" Ice	8.530	5.120	0.296
(3) RFV01U-D2A	A	From Leg	4.000	0.000	152.000	No Ice	1.875	1.013	0.070
			0.000			1/2" Ice	2.045	1.145	0.087
			0.000			1" Ice	2.223	1.284	0.106
RFV01U-D1A	A	From Leg	4.000	0.000	152.000	No Ice	1.875	1.250	0.084
			0.000			1/2" Ice	2.045	1.393	0.103

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	2.223	1.543	0.124
(2) RFV01U-D1A	B	From Leg	4.000	0.000	152.000	No Ice	1.875	1.250	0.084
			0.000			1/2" Ice	2.045	1.393	0.103
			0.000			1" Ice	2.223	1.543	0.124
RVZDC-6600-PF-48	B	From Leg	4.000	0.000	152.000	No Ice	4.056	3.098	0.032
			0.000			1/2" Ice	4.316	3.335	0.068
			0.000			1" Ice	4.582	3.580	0.108
MT6407-77A w/ Mount Pipe	A	From Leg	4.000	0.000	152.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			0.000			1" Ice	5.615	3.624	0.180
MT6407-77A w/ Mount Pipe	B	From Leg	4.000	0.000	152.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			0.000			1" Ice	5.615	3.624	0.180
MT6407-77A w/ Mount Pipe	C	From Leg	4.000	0.000	152.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			0.000			1" Ice	5.615	3.624	0.180
RFV01U-D2A	A	From Leg	4.000	0.000	152.000	No Ice	1.875	1.013	0.070
			0.000			1/2" Ice	2.045	1.145	0.087
			0.000			1" Ice	2.223	1.284	0.106
RFV01U-D2A	B	From Leg	4.000	0.000	152.000	No Ice	1.875	1.013	0.070
			0.000			1/2" Ice	2.045	1.145	0.087
			0.000			1" Ice	2.223	1.284	0.106
RFV01U-D2A	C	From Leg	4.000	0.000	152.000	No Ice	1.875	1.013	0.070
			0.000			1/2" Ice	2.045	1.145	0.087
			0.000			1" Ice	2.223	1.284	0.106
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	152.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	B	From Leg	4.000	0.000	152.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	152.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
Platform Mount [LP 402-1_KCKR]	C	None		0.000	152.000	No Ice	38.870	38.870	2.441
						1/2" Ice	48.960	48.960	3.251
						1" Ice	59.000	59.000	4.228
Mount Reinforcement Specifications	C	None		0.000	152.000	No Ice	28.630	28.630	0.280
						1/2" Ice	37.310	37.310	0.670
						1" Ice	45.800	45.800	0.940
*									
7770.00 w/ Mount Pipe	A	From Leg	4.000	0.000	140.000	No Ice	5.746	4.254	0.055
			0.000			1/2" Ice	6.179	5.014	0.103
			2.000			1" Ice	6.607	5.711	0.157
7770.00 w/ Mount Pipe	B	From Leg	4.000	0.000	140.000	No Ice	5.746	4.254	0.055
			0.000			1/2" Ice	6.179	5.014	0.103
			2.000			1" Ice	6.607	5.711	0.157
7770.00 w/ Mount Pipe	C	From Leg	4.000	0.000	140.000	No Ice	5.746	4.254	0.055
			0.000			1/2" Ice	6.179	5.014	0.103
			2.000			1" Ice	6.607	5.711	0.157
HPA65R-BU6A w/ Mount Pipe	A	From Leg	4.000	0.000	140.000	No Ice	5.830	5.000	0.080
			0.000			1/2" Ice	6.400	5.560	0.142
			2.000			1" Ice	6.990	6.130	0.216
HPA65R-BU4A w/ Mount Pipe	B	From Leg	4.000	0.000	140.000	No Ice	3.830	3.300	0.062
			0.000			1/2" Ice	4.230	3.680	0.106
			2.000			1" Ice	4.640	4.080	0.158
HPA65R-BU6A w/ Mount	C	From Leg	4.000	0.000	140.000	No Ice	5.830	5.000	0.080

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pipe			0.000				1/2" Ice	6.400	5.560	0.142
			2.000				1" Ice	6.990	6.130	0.216
(2) 80010965 w/ Mount Pipe	A	From Leg	4.000	0.000	140.000		No Ice	12.260	5.790	0.136
			0.000				1/2" Ice	13.030	6.470	0.226
			2.000				1" Ice	13.800	7.170	0.328
(2) 80010964 w/ Mount Pipe	B	From Leg	4.000	0.000	140.000		No Ice	8.610	4.100	0.116
			0.000				1/2" Ice	9.180	4.590	0.186
			2.000				1" Ice	9.770	5.100	0.265
(2) 80010965 w/ Mount Pipe	C	From Leg	4.000	0.000	140.000		No Ice	12.260	5.790	0.136
			0.000				1/2" Ice	13.030	6.470	0.226
			2.000				1" Ice	13.800	7.170	0.328
(2) LGP21401	A	From Leg	4.000	0.000	140.000		No Ice	1.104	0.207	0.014
			0.000				1/2" Ice	1.239	0.274	0.021
			2.000				1" Ice	1.381	0.348	0.030
(2) LGP21401	B	From Leg	4.000	0.000	140.000		No Ice	1.104	0.207	0.014
			0.000				1/2" Ice	1.239	0.274	0.021
			2.000				1" Ice	1.381	0.348	0.030
(2) LGP21401	C	From Leg	4.000	0.000	140.000		No Ice	1.104	0.207	0.014
			0.000				1/2" Ice	1.239	0.274	0.021
			2.000				1" Ice	1.381	0.348	0.030
RRUS 4478 B14	A	From Leg	4.000	0.000	140.000		No Ice	1.843	1.059	0.060
			0.000				1/2" Ice	2.012	1.197	0.076
			2.000				1" Ice	2.190	1.342	0.094
RRUS 4478 B14	B	From Leg	4.000	0.000	140.000		No Ice	1.843	1.059	0.060
			0.000				1/2" Ice	2.012	1.197	0.076
			2.000				1" Ice	2.190	1.342	0.094
RRUS 4478 B14	C	From Leg	4.000	0.000	140.000		No Ice	1.843	1.059	0.060
			0.000				1/2" Ice	2.012	1.197	0.076
			2.000				1" Ice	2.190	1.342	0.094
RADIO 4415 B30	A	From Leg	4.000	0.000	140.000		No Ice	1.643	0.639	0.043
			0.000				1/2" Ice	1.803	0.750	0.055
			2.000				1" Ice	1.971	0.867	0.069
RADIO 4415 B30	B	From Leg	4.000	0.000	140.000		No Ice	1.643	0.639	0.043
			0.000				1/2" Ice	1.803	0.750	0.055
			2.000				1" Ice	1.971	0.867	0.069
RADIO 4415 B30	C	From Leg	4.000	0.000	140.000		No Ice	1.643	0.639	0.043
			0.000				1/2" Ice	1.803	0.750	0.055
			2.000				1" Ice	1.971	0.867	0.069
RRUS 4449 B5/B12	A	From Leg	4.000	0.000	140.000		No Ice	1.968	1.408	0.071
			0.000				1/2" Ice	2.144	1.564	0.090
			2.000				1" Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	B	From Leg	4.000	0.000	140.000		No Ice	1.968	1.408	0.071
			0.000				1/2" Ice	2.144	1.564	0.090
			2.000				1" Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	C	From Leg	4.000	0.000	140.000		No Ice	1.968	1.408	0.071
			0.000				1/2" Ice	2.144	1.564	0.090
			2.000				1" Ice	2.328	1.727	0.111
RRUS 8843 B2/B66A	A	From Leg	4.000	0.000	140.000		No Ice	1.639	1.353	0.072
			0.000				1/2" Ice	1.799	1.500	0.090
			2.000				1" Ice	1.966	1.655	0.110
RRUS 8843 B2/B66A	B	From Leg	4.000	0.000	140.000		No Ice	1.639	1.353	0.072
			0.000				1/2" Ice	1.799	1.500	0.090
			2.000				1" Ice	1.966	1.655	0.110
RRUS 8843 B2/B66A	C	From Leg	4.000	0.000	140.000		No Ice	1.639	1.353	0.072
			0.000				1/2" Ice	1.799	1.500	0.090
			2.000				1" Ice	1.966	1.655	0.110
DC6-48-60-18-8F	A	From Leg	4.000	0.000	140.000		No Ice	1.212	1.212	0.033

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	1.892	1.892	0.055
			2.000			1" Ice	2.105	2.105	0.080
DC6-48-60-18-8F	B	From Leg	4.000	0.000	140.000	No Ice	1.212	1.212	0.033
			0.000			1/2" Ice	1.892	1.892	0.055
			2.000			1" Ice	2.105	2.105	0.080
DC6-48-60-18-8F	C	From Leg	4.000	0.000	140.000	No Ice	1.212	1.212	0.033
			0.000			1/2" Ice	1.892	1.892	0.055
			2.000			1" Ice	2.105	2.105	0.080
4' x 2" Pipe Mount	A	From Leg	4.000	0.000	140.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
4' x 2" Pipe Mount	B	From Leg	4.000	0.000	140.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
4' x 2" Pipe Mount	C	From Leg	4.000	0.000	140.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	140.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	B	From Leg	4.000	0.000	140.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	140.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
Platform Mount [LP 304-1_HR-1]	C	None		0.000	140.000	No Ice	21.410	21.410	1.605
						1/2" Ice	26.620	26.620	2.056
*						1" Ice	31.660	31.660	2.598
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000	0.000	130.000	No Ice	8.010	4.230	0.108
			0.000			1/2" Ice	8.520	4.690	0.194
			0.000			1" Ice	9.040	5.160	0.292
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000	0.000	130.000	No Ice	8.010	4.230	0.108
			0.000			1/2" Ice	8.520	4.690	0.194
			0.000			1" Ice	9.040	5.160	0.292
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000	0.000	130.000	No Ice	8.010	4.230	0.108
			0.000			1/2" Ice	8.520	4.690	0.194
			0.000			1" Ice	9.040	5.160	0.292
TA08025-B604	A	From Leg	4.000	0.000	130.000	No Ice	1.964	0.981	0.064
			0.000			1/2" Ice	2.138	1.112	0.081
			0.000			1" Ice	2.320	1.250	0.100
TA08025-B604	B	From Leg	4.000	0.000	130.000	No Ice	1.964	0.981	0.064
			0.000			1/2" Ice	2.138	1.112	0.081
			0.000			1" Ice	2.320	1.250	0.100
TA08025-B604	C	From Leg	4.000	0.000	130.000	No Ice	1.964	0.981	0.064
			0.000			1/2" Ice	2.138	1.112	0.081
			0.000			1" Ice	2.320	1.250	0.100
TA08025-B605	A	From Leg	4.000	0.000	130.000	No Ice	1.964	1.129	0.075
			0.000			1/2" Ice	2.138	1.267	0.093
			0.000			1" Ice	2.320	1.411	0.114
TA08025-B605	B	From Leg	4.000	0.000	130.000	No Ice	1.964	1.129	0.075
			0.000			1/2" Ice	2.138	1.267	0.093
			0.000			1" Ice	2.320	1.411	0.114
TA08025-B605	C	From Leg	4.000	0.000	130.000	No Ice	1.964	1.129	0.075
			0.000			1/2" Ice	2.138	1.267	0.093
			0.000			1" Ice	2.320	1.411	0.114

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RDIDC-9181-PF-48	A	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	2.012 2.189 2.373	1.168 1.311 1.461	0.022 0.040 0.060
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
Commscope MC-PK8-DSH	C	None		0.000	130.000	No Ice 1/2" Ice 1" Ice	34.240 62.950 91.660	34.240 62.950 91.660	1.749 2.099 2.450
*									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	0.500 0.000 0.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	3.790 4.380 4.990	3.160 3.750 4.350	0.053 0.094 0.145
APXV18-206517S-C w/ Mount Pipe	B	From Leg	0.500 0.000 0.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	3.790 4.380 4.990	3.160 3.750 4.350	0.053 0.094 0.145
APXV18-206517S-C w/ Mount Pipe	C	From Leg	0.500 0.000 0.000	0.000	115.000	No Ice 1/2" Ice 1" Ice	3.790 4.380 4.990	3.160 3.750 4.350	0.053 0.094 0.145
*									
GPS-TMG-HR-26NCM	A	From Leg	3.000 0.000 0.000	0.000	50.000	No Ice 1/2" Ice 1" Ice	0.133 0.183 0.239	0.133 0.183 0.239	0.001 0.002 0.005
Side Arm Mount [SO 701-1]	A	From Leg	0.500 1.500 0.000	0.000	50.000	No Ice 1/2" Ice 1" Ice	0.850 1.140 1.430	1.670 2.340 3.010	0.065 0.079 0.093
* ** *									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2.6	A	Paraboloid w/Shroud (HP)	From Leg	4.000 0.000 3.000	-20.000		172.000	2.917	No Ice 1/2" Ice 1" Ice	6.680 7.070 7.460	0.048 0.080 0.120
VHLP2.6	C	Paraboloid w/Shroud (HP)	From Leg	4.000 0.000 3.000	90.000		172.000	2.917	No Ice 1/2" Ice 1" Ice	6.680 7.070 7.460	0.048 0.080 0.120
*											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	175 - 164.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-11.224	0.896	1.813
			Max. Mx	20	-6.046	28.329	2.060
			Max. My	2	-6.028	1.351	29.620
			Max. Vy	8	5.912	-27.638	-1.694
			Max. Vx	14	6.155	-1.116	-29.246
			Max. Torque	6			2.664
L2	164.25 - 129.67	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.361	-0.475	4.542
			Max. Mx	8	-24.181	-473.731	-10.416
			Max. My	14	-24.126	-8.525	-482.876
			Max. Vy	8	20.595	-473.731	-10.416
			Max. Vx	14	20.984	-8.525	-482.876
			Max. Torque	6			3.178
L3	129.67 - 96	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.068	-1.261	5.295
			Max. Mx	8	-35.815	-1273.620	-19.570
			Max. My	14	-35.767	-14.524	-1295.514
			Max. Vy	8	26.060	-1273.620	-19.570
			Max. Vx	14	26.477	-14.524	-1295.514
			Max. Torque	6			3.338
L4	96 - 63.17	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-70.344	-2.113	5.098
			Max. Mx	8	-45.908	-2147.601	-28.633
			Max. My	14	-45.875	-20.402	-2182.063
			Max. Vy	8	28.449	-2147.601	-28.633
			Max. Vx	14	28.860	-20.402	-2182.063
			Max. Torque	6			3.332
L5	63.17 - 31.17	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-84.163	-3.145	4.914
			Max. Mx	8	-57.380	-3072.092	-37.086
			Max. My	14	-57.362	-26.199	-3117.901
			Max. Vy	8	30.551	-3072.092	-37.086
			Max. Vx	14	30.929	-26.199	-3117.901
			Max. Torque	6			3.427
L6	31.17 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-102.116	-4.317	4.222
			Max. Mx	8	-72.607	-4255.236	-47.046
			Max. My	14	-72.606	-32.824	-4313.907
			Max. Vy	8	32.551	-4255.236	-47.046
			Max. Vx	14	32.913	-32.824	-4313.907
			Max. Torque	6			3.425

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	102.116	0.024	9.323
	Max. H_x	20	72.622	32.504	0.163
	Max. H_z	2	72.622	0.110	32.743
	Max. M_x	2	4295.803	0.110	32.743
	Max. M_z	8	4255.236	-32.517	-0.262
	Max. Torsion	6	3.423	-28.085	16.392
	Min. Vert	19	54.466	28.115	-16.324
	Min. H_x	8	72.622	-32.517	-0.262

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H_z	14	72.622	-0.148	-32.878
	Min. M_x	14	-4313.907	-0.148	-32.878
	Min. M_z	20	-4245.494	32.504	0.163
	Min. Torsion	18	-3.119	28.115	-16.324

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	60.518	0.000	-0.000	-2.848	-2.897	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	72.622	-0.110	-32.743	-4295.803	18.348	-1.323
0.9 Dead+1.0 Wind 0 deg - No Ice	54.466	-0.110	-32.743	-4222.482	18.863	-1.323
1.2 Dead+1.0 Wind 30 deg - No Ice	72.622	16.095	-28.400	-3728.398	-2097.570	-2.686
0.9 Dead+1.0 Wind 30 deg - No Ice	54.466	16.095	-28.400	-3664.619	-2061.457	-2.683
1.2 Dead+1.0 Wind 60 deg - No Ice	72.622	28.085	-16.392	-2152.524	-3670.854	-3.423
0.9 Dead+1.0 Wind 60 deg - No Ice	54.466	28.085	-16.392	-2115.328	-3608.195	-3.418
1.2 Dead+1.0 Wind 90 deg - No Ice	72.622	32.517	0.262	47.046	-4255.236	-2.466
0.9 Dead+1.0 Wind 90 deg - No Ice	54.466	32.517	0.262	47.003	-4182.697	-2.460
1.2 Dead+1.0 Wind 120 deg - No Ice	72.622	28.199	16.605	2187.574	-3693.441	-1.506
0.9 Dead+1.0 Wind 120 deg - No Ice	54.466	28.199	16.605	2151.476	-3630.329	-1.501
1.2 Dead+1.0 Wind 150 deg - No Ice	72.622	16.346	28.504	3741.875	-2146.961	-0.200
0.9 Dead+1.0 Wind 150 deg - No Ice	54.466	16.346	28.504	3679.643	-2109.848	-0.197
1.2 Dead+1.0 Wind 180 deg - No Ice	72.622	0.148	32.878	4313.907	-32.824	1.403
0.9 Dead+1.0 Wind 180 deg - No Ice	54.466	0.148	32.878	4242.056	-31.260	1.403
1.2 Dead+1.0 Wind 210 deg - No Ice	72.622	-16.027	28.498	3739.677	2077.304	2.692
0.9 Dead+1.0 Wind 210 deg - No Ice	54.466	-16.027	28.498	3677.490	2043.389	2.689
1.2 Dead+1.0 Wind 240 deg - No Ice	72.622	-28.115	16.324	2132.451	3669.184	3.119
0.9 Dead+1.0 Wind 240 deg - No Ice	54.466	-28.115	16.324	2097.465	3608.341	3.114
1.2 Dead+1.0 Wind 270 deg - No Ice	72.622	-32.504	-0.163	-35.562	4245.494	2.925
0.9 Dead+1.0 Wind 270 deg - No Ice	54.466	-32.503	-0.163	-33.931	4174.922	2.919
1.2 Dead+1.0 Wind 300 deg - No Ice	72.622	-28.120	-16.505	-2176.123	3671.432	1.855
0.9 Dead+1.0 Wind 300 deg - No Ice	54.466	-28.120	-16.505	-2138.426	3610.528	1.850
1.2 Dead+1.0 Wind 330 deg - No Ice	72.622	-16.290	-28.383	-3726.540	2129.203	0.437

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
0.9 Dead+1.0 Wind 330 deg - No Ice	54.466	-16.290	-28.383	-3662.779	2094.223	0.435
1.2 Dead+1.0 Ice+1.0 Temp	102.116	0.000	-0.000	-4.222	-4.317	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	102.116	-0.024	-9.323	-1232.338	0.460	-0.316
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	102.116	4.604	-8.082	-1069.412	-606.893	-0.768
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	102.116	8.019	-4.665	-618.868	-1056.836	-1.034
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	102.116	9.278	0.055	6.736	-1223.446	-0.860
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	102.116	8.043	4.711	619.446	-1061.933	-0.594
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	102.116	4.658	8.105	1065.191	-617.931	-0.180
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	102.116	0.032	9.351	1228.968	-10.992	0.333
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	102.116	-4.590	8.103	1064.539	595.101	0.769
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	102.116	-8.025	4.651	607.156	1049.090	0.970
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	102.116	-9.275	-0.035	-11.567	1213.937	0.955
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	102.116	-8.027	-4.690	-624.274	1049.741	0.666
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	102.116	-4.646	-8.080	-1069.164	606.673	0.229
Dead+Wind 0 deg - Service	60.518	-0.028	-8.255	-1074.208	2.470	-0.337
Dead+Wind 30 deg - Service	60.518	4.058	-7.160	-932.599	-525.621	-0.682
Dead+Wind 60 deg - Service	60.518	7.081	-4.133	-539.301	-918.257	-0.869
Dead+Wind 90 deg - Service	60.518	8.198	0.066	9.618	-1064.086	-0.626
Dead+Wind 120 deg - Service	60.518	7.109	4.186	543.854	-923.911	-0.382
Dead+Wind 150 deg - Service	60.518	4.121	7.186	931.800	-537.938	-0.051
Dead+Wind 180 deg - Service	60.518	0.037	8.289	1074.556	-10.268	0.357
Dead+Wind 210 deg - Service	60.518	-4.041	7.185	931.226	516.387	0.685
Dead+Wind 240 deg - Service	60.518	-7.088	4.115	530.108	913.641	0.792
Dead+Wind 270 deg - Service	60.518	-8.195	-0.041	-10.948	1057.452	0.742
Dead+Wind 300 deg - Service	60.518	-7.089	-4.161	-545.176	914.210	0.470
Dead+Wind 330 deg - Service	60.518	-4.107	-7.156	-932.143	529.305	0.110

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-60.518	0.000	-0.000	60.518	0.000	0.000%
2	-0.110	-72.622	-32.743	0.110	72.622	32.743	0.000%
3	-0.110	-54.466	-32.743	0.110	54.466	32.743	0.000%
4	16.095	-72.622	-28.400	-16.095	72.622	28.400	0.000%
5	16.095	-54.466	-28.400	-16.095	54.466	28.400	0.000%
6	28.085	-72.622	-16.392	-28.085	72.622	16.392	0.000%
7	28.085	-54.466	-16.392	-28.085	54.466	16.392	0.000%
8	32.517	-72.622	0.262	-32.517	72.622	-0.262	0.000%
9	32.517	-54.466	0.262	-32.517	54.466	-0.262	0.000%
10	28.199	-72.622	16.605	-28.199	72.622	-16.605	0.000%
11	28.199	-54.466	16.605	-28.199	54.466	-16.605	0.000%
12	16.346	-72.622	28.504	-16.346	72.622	-28.504	0.000%
13	16.346	-54.466	28.504	-16.346	54.466	-28.504	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
14	0.148	-72.622	32.878	-0.148	72.622	-32.878	0.000%
15	0.148	-54.466	32.878	-0.148	54.466	-32.878	0.000%
16	-16.027	-72.622	28.498	16.027	72.622	-28.498	0.000%
17	-16.027	-54.466	28.498	16.027	54.466	-28.498	0.000%
18	-28.115	-72.622	16.324	28.115	72.622	-16.324	0.000%
19	-28.115	-54.466	16.324	28.115	54.466	-16.324	0.000%
20	-32.503	-72.622	-0.163	32.504	72.622	0.163	0.000%
21	-32.503	-54.466	-0.163	32.503	54.466	0.163	0.000%
22	-28.120	-72.622	-16.505	28.120	72.622	16.505	0.000%
23	-28.120	-54.466	-16.505	28.120	54.466	16.505	0.000%
24	-16.290	-72.622	-28.383	16.290	72.622	28.383	0.000%
25	-16.290	-54.466	-28.383	16.290	54.466	28.383	0.000%
26	0.000	-102.116	0.000	-0.000	102.116	0.000	0.000%
27	-0.024	-102.116	-9.323	0.024	102.116	9.323	0.000%
28	4.604	-102.116	-8.082	-4.604	102.116	8.082	0.000%
29	8.019	-102.116	-4.665	-8.019	102.116	4.665	0.000%
30	9.278	-102.116	0.055	-9.278	102.116	-0.055	0.000%
31	8.043	-102.116	4.711	-8.043	102.116	-4.711	0.000%
32	4.658	-102.116	8.105	-4.658	102.116	-8.105	0.000%
33	0.032	-102.116	9.351	-0.032	102.116	-9.351	0.000%
34	-4.590	-102.116	8.103	4.590	102.116	-8.103	0.000%
35	-8.025	-102.116	4.651	8.025	102.116	-4.651	0.000%
36	-9.275	-102.116	-0.035	9.275	102.116	0.035	0.000%
37	-8.027	-102.116	-4.690	8.027	102.116	4.690	0.000%
38	-4.646	-102.116	-8.080	4.646	102.116	8.080	0.000%
39	-0.028	-60.518	-8.255	0.028	60.518	8.255	0.000%
40	4.058	-60.518	-7.160	-4.058	60.518	7.160	0.000%
41	7.081	-60.518	-4.133	-7.081	60.518	4.133	0.000%
42	8.198	-60.518	0.066	-8.198	60.518	-0.066	0.000%
43	7.109	-60.518	4.186	-7.109	60.518	-4.186	0.000%
44	4.121	-60.518	7.186	-4.121	60.518	-7.186	0.000%
45	0.037	-60.518	8.289	-0.037	60.518	-8.289	0.000%
46	-4.041	-60.518	7.185	4.041	60.518	-7.185	0.000%
47	-7.088	-60.518	4.115	7.088	60.518	-4.115	0.000%
48	-8.195	-60.518	-0.041	8.195	60.518	0.041	0.000%
49	-7.089	-60.518	-4.161	7.089	60.518	4.161	0.000%
50	-4.107	-60.518	-7.156	4.107	60.518	7.156	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00027880
3	Yes	5	0.00000001	0.00013918
4	Yes	6	0.00000001	0.00041167
5	Yes	6	0.00000001	0.00014545
6	Yes	6	0.00000001	0.00044949
7	Yes	6	0.00000001	0.00016014
8	Yes	5	0.00000001	0.00019622
9	Yes	5	0.00000001	0.00009658
10	Yes	6	0.00000001	0.00043458
11	Yes	6	0.00000001	0.00015361
12	Yes	6	0.00000001	0.00044182
13	Yes	6	0.00000001	0.00015636
14	Yes	5	0.00000001	0.00013872

15	Yes	5	0.00000001	0.00006595
16	Yes	6	0.00000001	0.00044097
17	Yes	6	0.00000001	0.00015738
18	Yes	6	0.00000001	0.00040718
19	Yes	6	0.00000001	0.00014432
20	Yes	5	0.00000001	0.00052774
21	Yes	5	0.00000001	0.00026442
22	Yes	6	0.00000001	0.00044553
23	Yes	6	0.00000001	0.00015822
24	Yes	6	0.00000001	0.00043297
25	Yes	6	0.00000001	0.00015331
26	Yes	4	0.00000001	0.00008162
27	Yes	6	0.00000001	0.00016086
28	Yes	6	0.00000001	0.00019854
29	Yes	6	0.00000001	0.00020243
30	Yes	6	0.00000001	0.00015905
31	Yes	6	0.00000001	0.00019823
32	Yes	6	0.00000001	0.00019977
33	Yes	6	0.00000001	0.00015882
34	Yes	6	0.00000001	0.00019671
35	Yes	6	0.00000001	0.00019292
36	Yes	6	0.00000001	0.00015822
37	Yes	6	0.00000001	0.00020143
38	Yes	6	0.00000001	0.00019977
39	Yes	4	0.00000001	0.00031495
40	Yes	5	0.00000001	0.00008162
41	Yes	5	0.00000001	0.00010279
42	Yes	4	0.00000001	0.00035491
43	Yes	5	0.00000001	0.00008702
44	Yes	5	0.00000001	0.00009125
45	Yes	4	0.00000001	0.00030213
46	Yes	5	0.00000001	0.00009716
47	Yes	5	0.00000001	0.00007887
48	Yes	4	0.00000001	0.00043192
49	Yes	5	0.00000001	0.00009625
50	Yes	5	0.00000001	0.00008866

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 164.25	26.940	39	1.294	0.006
L2	167.17 - 129.67	24.820	39	1.289	0.005
L3	133.5 - 96	16.124	39	1.138	0.003
L4	100.67 - 63.17	9.137	44	0.871	0.001
L5	68.67 - 31.17	4.213	44	0.579	0.001
L6	37.42 - 0	1.261	44	0.305	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.000	VHLP2.6	39	26.940	1.294	0.007	64732
174.000	Lightning Rod 5/8" x 6'	39	26.669	1.293	0.007	64732

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
172.000	LS-230C	39	26.127	1.293	0.006	64732
168.000	LS-230C	39	25.045	1.290	0.006	46336
162.000	APXVSPP18-C-A20 w/ Mount Pipe	39	23.430	1.280	0.005	25270
152.000	LPA-80080/4CF w/ Mount Pipe	39	20.780	1.245	0.004	14430
140.000	7770.00 w/ Mount Pipe	39	17.713	1.181	0.003	9500
130.000	MX08FRO665-21 w/ Mount Pipe	39	15.293	1.113	0.003	7784
115.000	APXV18-206517S-C w/ Mount Pipe	44	11.960	0.996	0.002	6917
50.000	GPS-TMG-HR-26NCM	44	2.211	0.413	0.001	5827

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 164.25	108.193	14	5.196	0.024
L2	167.17 - 129.67	99.701	14	5.180	0.020
L3	133.5 - 96	64.813	14	4.578	0.010
L4	100.67 - 63.17	36.714	14	3.506	0.006
L5	68.67 - 31.17	16.921	14	2.328	0.003
L6	37.42 - 0	5.062	14	1.223	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.000	VHLP2.6	14	108.193	5.196	0.026	17259
174.000	Lightning Rod 5/8" x 6'	14	107.107	5.195	0.026	17259
172.000	LS-230C	14	104.936	5.193	0.025	17259
168.000	LS-230C	14	100.599	5.184	0.023	12314
162.000	APXVSPP18-C-A20 w/ Mount Pipe	14	94.126	5.144	0.020	6586
152.000	LPA-80080/4CF w/ Mount Pipe	14	83.499	5.007	0.016	3690
140.000	7770.00 w/ Mount Pipe	14	71.194	4.749	0.013	2414
130.000	MX08FRO665-21 w/ Mount Pipe	14	61.479	4.478	0.011	1971
115.000	APXV18-206517S-C w/ Mount Pipe	14	48.069	4.006	0.008	1741
50.000	GPS-TMG-HR-26NCM	14	8.878	1.657	0.002	1451

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	175 - 164.25 (1)	TP26x22x0.25	10.750	0.000	0.0	19.570	-6.025	1144.870	0.005

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L2	164.25 - 129.67 (2)	TP34.063x24.413x0.313	37.500	0.000	0.0	32.498	-24.126	1901.150	0.013
L3	129.67 - 96 (3)	TP41.75x32.452x0.375	37.500	0.000	0.0	47.868	-35.768	2800.300	0.013
L4	96 - 63.17 (4)	TP49.063x39.842x0.375	37.500	0.000	0.0	56.341	-45.876	3295.930	0.014
L5	63.17 - 31.17 (5)	TP56.125x46.96x0.375	37.500	0.000	0.0	64.538	-57.363	3775.490	0.015
L6	31.17 - 0 (6)	TP62.938x53.848x0.375	37.420	0.000	0.0	74.465	-72.606	4356.200	0.017

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	175 - 164.25 (1)	TP26x22x0.25	29.993	729.119	0.041	0.000	729.119	0.000
L2	164.25 - 129.67 (2)	TP34.063x24.413x0.313	484.585	1584.183	0.306	0.000	1584.183	0.000
L3	129.67 - 96 (3)	TP41.75x32.452x0.375	1296.733	2847.117	0.455	0.000	2847.117	0.000
L4	96 - 63.17 (4)	TP49.063x39.842x0.375	2182.792	3755.708	0.581	0.000	3755.708	0.000
L5	63.17 - 31.17 (5)	TP56.125x46.96x0.375	3118.333	4686.617	0.665	0.000	4686.617	0.000
L6	31.17 - 0 (6)	TP62.938x53.848x0.375	4314.033	5847.241	0.738	0.000	5847.241	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	175 - 164.25 (1)	TP26x22x0.25	6.056	343.462	0.018	0.345	741.845	0.000
L2	164.25 - 129.67 (2)	TP34.063x24.413x0.313	20.968	570.345	0.037	0.009	1636.525	0.000
L3	129.67 - 96 (3)	TP41.75x32.452x0.375	26.454	840.090	0.031	0.101	2958.808	0.000
L4	96 - 63.17 (4)	TP49.063x39.842x0.375	28.835	988.779	0.029	0.101	4098.858	0.000
L5	63.17 - 31.17 (5)	TP56.125x46.96x0.375	30.909	1132.650	0.027	0.200	5378.425	0.000
L6	31.17 - 0 (6)	TP62.938x53.848x0.375	32.913	1306.860	0.025	1.403	7160.175	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	175 - 164.25 (1)	0.005	0.041	0.000	0.018	0.000	0.047 ✔	1.050	4.8.2 ✔
L2	164.25 -	0.013	0.306	0.000	0.037	0.000	0.320	1.050	4.8.2 ✔

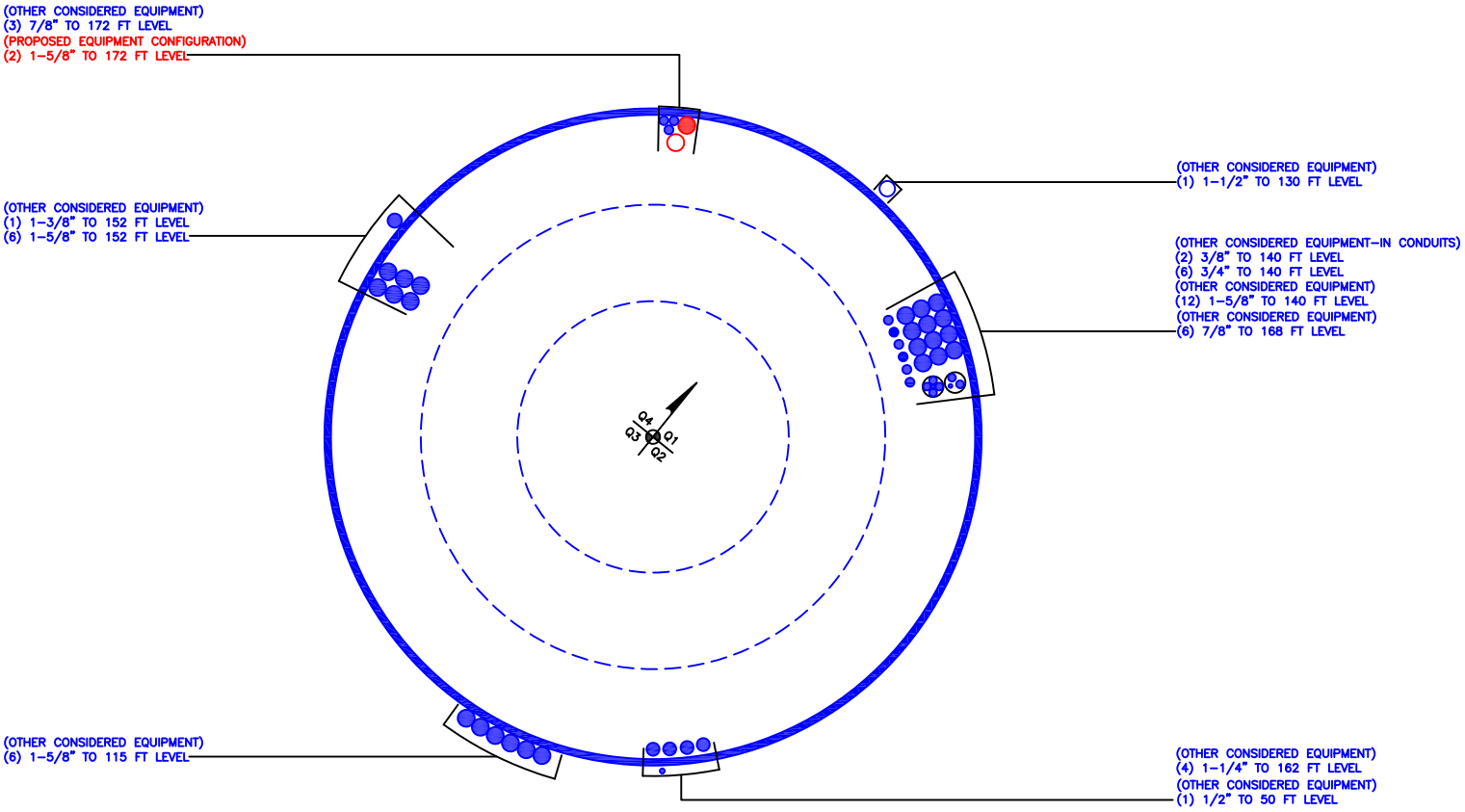
Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	129.67 (2)						✔		
L3	129.67 - 96 (3)	0.013	0.455	0.000	0.031	0.000	0.469 ✔	1.050	4.8.2 ✔
L4	96 - 63.17 (4)	0.014	0.581	0.000	0.029	0.000	0.596 ✔	1.050	4.8.2 ✔
L5	63.17 - 31.17 (5)	0.015	0.665	0.000	0.027	0.000	0.681 ✔	1.050	4.8.2 ✔
L6	31.17 - 0 (6)	0.017	0.738	0.000	0.025	0.000	0.755 ✔	1.050	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	175 - 164.25	Pole	TP26x22x0.25	1	-6.025	1202.113	4.5	Pass
L2	164.25 - 129.67	Pole	TP34.063x24.413x0.313	2	-24.126	1996.207	30.5	Pass
L3	129.67 - 96	Pole	TP41.75x32.452x0.375	3	-35.768	2940.315	44.7	Pass
L4	96 - 63.17	Pole	TP49.063x39.842x0.375	4	-45.876	3460.726	56.8	Pass
L5	63.17 - 31.17	Pole	TP56.125x46.96x0.375	5	-57.363	3964.264	64.9	Pass
L6	31.17 - 0	Pole	TP62.938x53.848x0.375	6	-72.606	4574.010	71.9	Pass
							Summary	
						Pole (L6)	71.9	Pass
						RATING =	**71.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 823530

APPENDIX C

ADDITIONAL CALCULATIONS

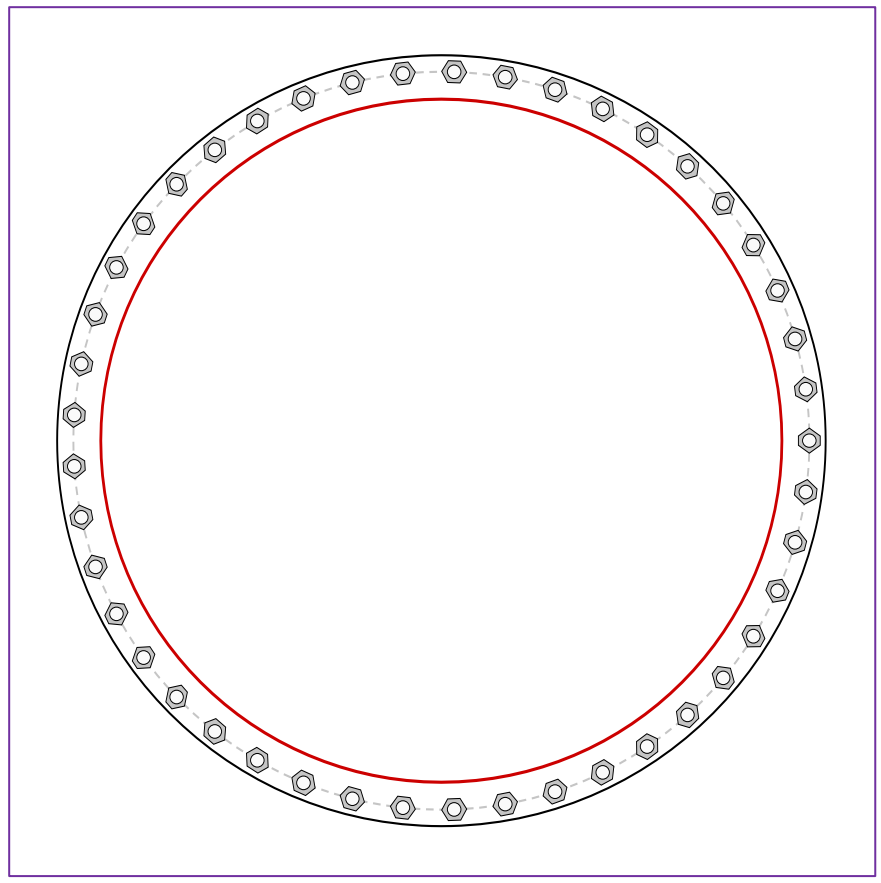
Monopole Base Plate Connection

Site Info	
BU #	823530
Site Name	64/Chapel St. Monopol
Order #	581567, Rev# 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.25

Applied Loads	
Moment (kip-ft)	4314.06
Axial Force (kips)	72.61
Shear Force (kips)	32.89

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(45) 1-1/4" ø bolts (A687 N; Fy=105 ksi, Fu=125 ksi) on 68" BC

Base Plate Data

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

Stiffener Data

N/A

Pole Data

62.9375" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 66.05	ϕPn_t = 90.84	**Stress Rating**
Vu = 0.73	ϕVn = 57.52	**69.2%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Pirod OK**

Pier and Pad Foundation

BU # :	823530
Site Name:	CT364/Chapel St. N
App. Number:	581567, Rev# 0

TIA-222 Revision:	H
Tower Type:	Monopole

Top & Bot. Pad Rein. Different?:	☐
Block Foundation?:	☐
Rectangular Pad?:	☐

Superstructure Analysis Reactions

Compression, P_{comp}:	73	kips
Base Shear, Vu_comp:	33	kips
Moment, M_u:	4314	ft-kips
Tower Height, **H**:	175	ft
BP Dist. Above Fdn, bp_{dist}:	2.5	in

Pier Properties

Pier Shape:	Circular	
Pier Diameter, **dpier**:	7.5	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	9	
Pier Rebar Quantity, **mc**:	36	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	8	ft
Pad Width, W_1:	22.5	ft
Pad Thickness, **T**:	2.75	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	23	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

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

Soil Properties

Total Soil Unit Weight, γ:	110	pcf
Ultimate Net Bearing, Qnet:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	28	degrees
SPT Blow Count, N_{blows}:	56	
Base Friction, μ:	0.45	
Neglected Depth, **N**:	3.75	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	12	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	279.78	33.00	**11.2%**	**Pass**
Bearing Pressure (ksf)	23.16	4.22	**18.2%**	**Pass**
*Overturning (kip*ft)*	6209.36	4601.38	**74.1%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	6254.25	4503.75	**68.6%**	**Pass**
Pier Compression (kip)	21089.12	118.72	**0.5%**	**Pass**
*Pad Flexure (kip*ft)*	2826.15	2098.22	**70.7%**	**Pass**
Pad Shear - 1-way (kips)	627.95	375.96	**57.0%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	3889.71	2702.25	**66.2%**	**Pass**

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

Structural Rating*:	**70.7%**
Soil Rating*:	**74.1%**

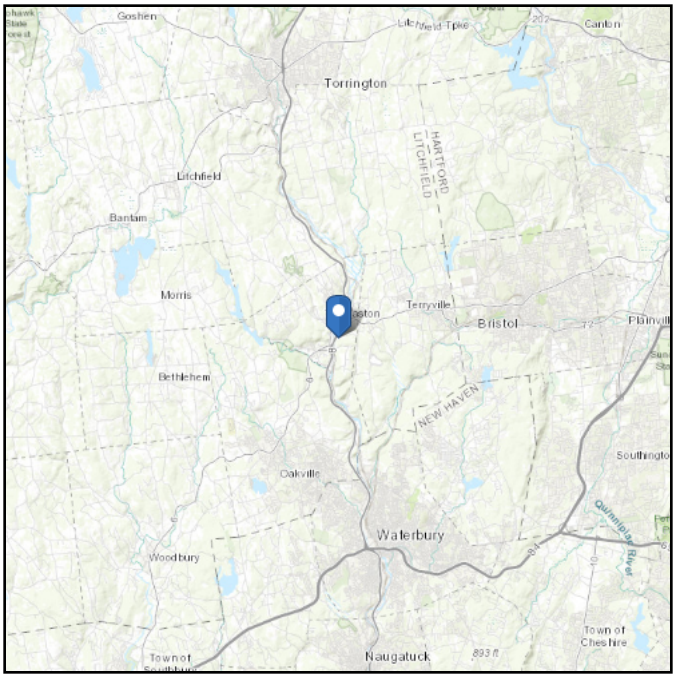
Version 4.1.1

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 543 ft (NAVD 88)
Latitude: 41.663467
Longitude: -73.074281



Wind

Results:

Wind Speed:	116 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	96 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Fri Sep 10 2021

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

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

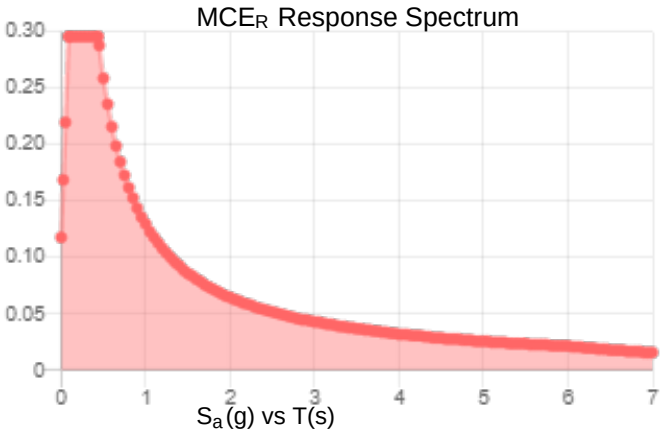
Seismic

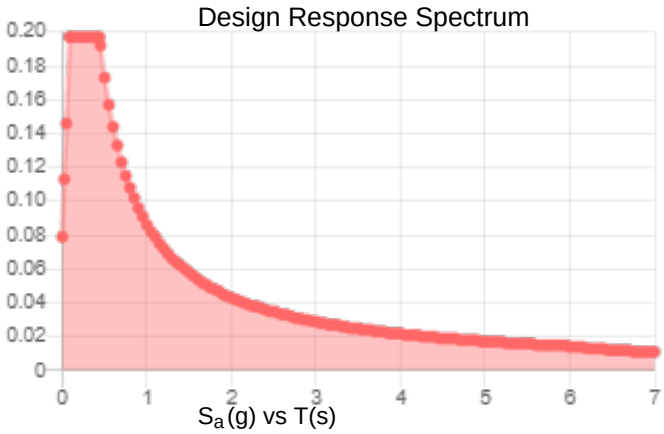
Site Soil Class: D - Default (see Section 11.4.3)

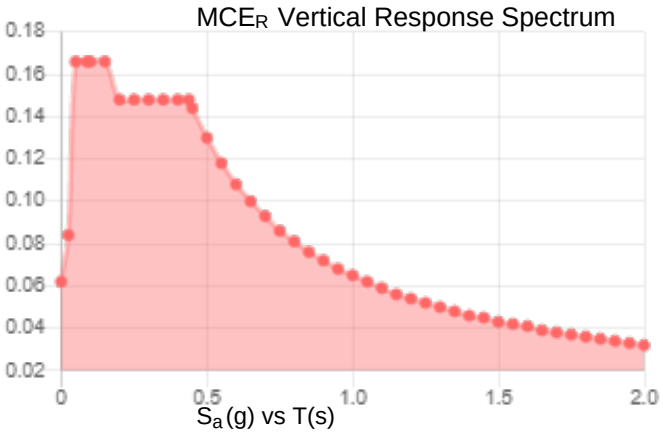
Results:

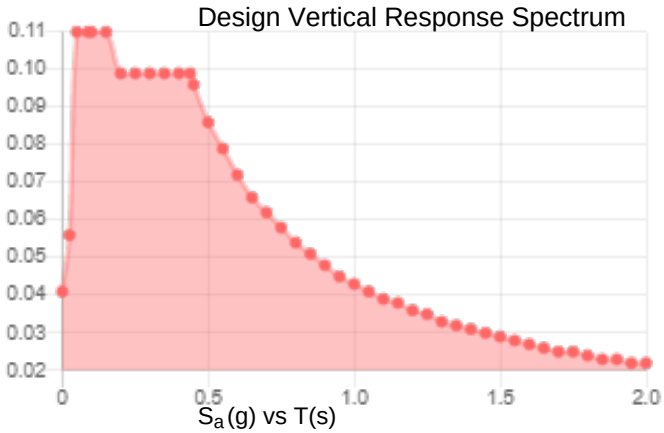
S_S :	0.185	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.1
F_v :	2.4	PGA_M :	0.16
S_{MS} :	0.296	F_{PGA} :	1.6
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.197	C_v :	0.7

Seismic Design Category B









Data Accessed: Fri Sep 10 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Sep 10 2021

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

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

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Exhibit E

Mount Analysis

Date: **September 12, 2021**

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6589

Trylon
1825 W. Walnut Hill Lane,
Suite 302
Irving, TX 75038
214-930-1730

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Anchor**	
	Carrier Site Number:	CT11364B
	Carrier Site Name:	CT364/Chapel St. Monopole
Crown Castle Designation:	**Crown Castle BU Number:**	823530
	Crown Castle Site Name:	CT364/Chapel St. Monopole
	Crown Castle JDE Job Number:	680860
	Crown Castle Order Number:	581567 Rev. 0
Engineering Firm Designation:	**Trylon Report Designation:**	191422
Site Data:	**580 Chapel Street, Thomaston, Litchfield County, CT, 06787** **Latitude 41°39'48.48" Longitude -73°4'27.41"**	
Structure Information:	**Tower Height & Type:**	**175.0 ft Monopole**
	Mount Elevation:	**172.0 ft**
	Mount Type:	**14.5 ft Platform**

Dear Darcy Tarr,

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

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

Platform **Sufficient***

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

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Aura Baltoiu

Respectfully Submitted by:
Jinshan Wang, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 4 sector 14.5 ft Platform, mapped by Pier Structural Engineering Corp.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	120 mph
Exposure Category:	B
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.186
Seismic S_1:	0.064
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
172.0	172.0	3	RFS/CELWAVE	APXVAARR24_43-U-NA20	14.5 ft Platform
		3	ERICSSON	AIR6449 B41_T-MOBILE	
		3	ERICSSON	RADIO 4449 B71 B85A_T-MOBILE	
		3	ERICSSON	RADIO 4460 B2/B25 B66_TMO	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	581567, Rev.0	CCI Sites
Handrail Manufacturer Drawings	Site Pro 1	F4P-HRK14	Trylon
Mount mapping Report	Pier Structural Engineering Corp.	8353005	CCI Sites

3.1) Analysis Method

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

A tool internally developed, using Microsoft Excel, by Trylon was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

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

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Platform, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Mount Pipe(s)	MP9	172.0	30.7	Pass
	Horizontal(s)	H32		47.3	Pass
	Standoff(s)	M5		76.4	Pass
	Bracing(s)	M21		88.1	Pass
	Handrail(s)	M129		37.3	Pass
	Plate(s)	M8		64.8	Pass
	Mount Connection(s)	-		88.2	Pass

Structure Rating (max from all components) =	88.2%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H, Section 15.5

4.1) Recommendations

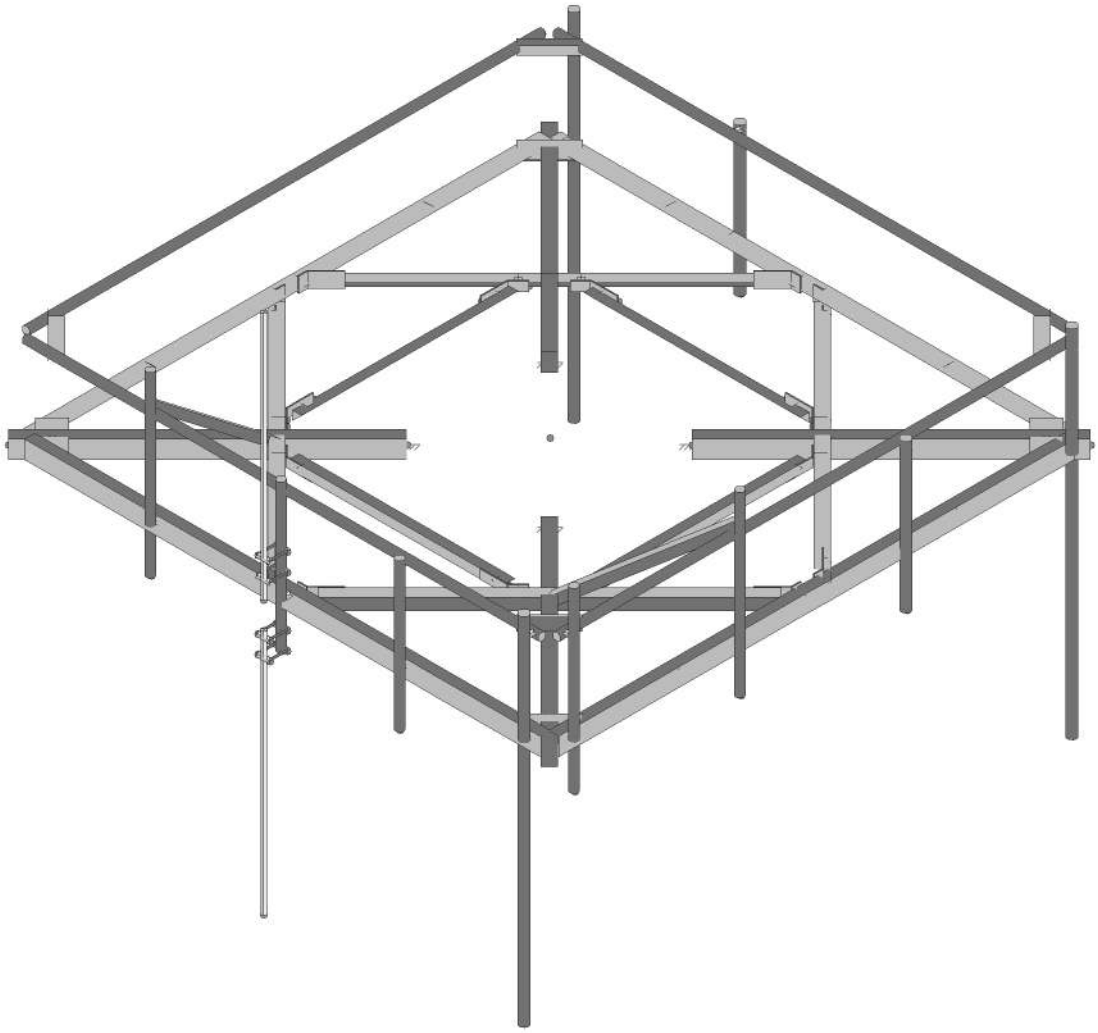
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

1. Top-rail kit, Site Pro 1, F4P-HRK14.

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

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

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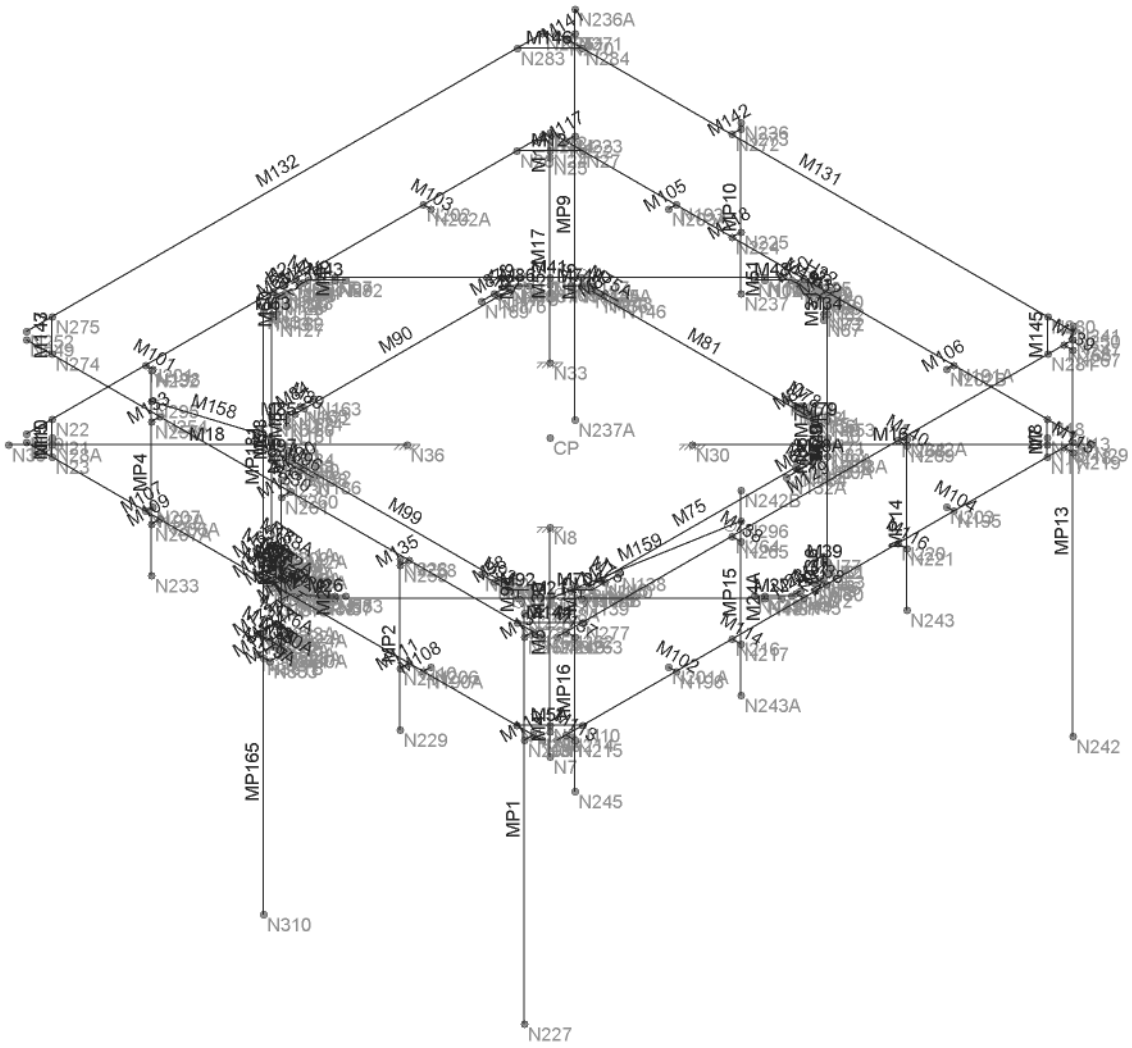
AB		Sept 12, 2021 at 6:15 PM
191422		823530_loaded.r3d



Envelope Only Solution

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191422		823530_loaded.r3d

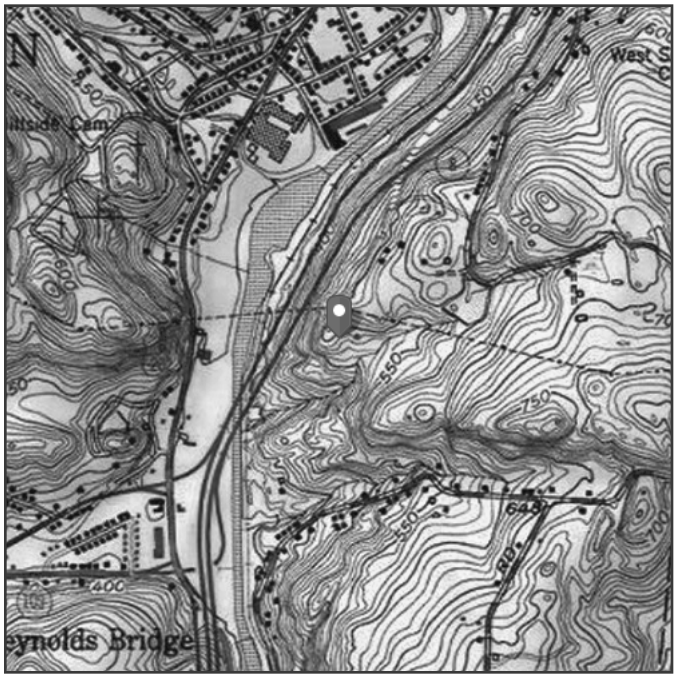
APPENDIX B

SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	543 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.663467
Soil Class:	D - Stiff Soil	**Longitude:**	-73.074281



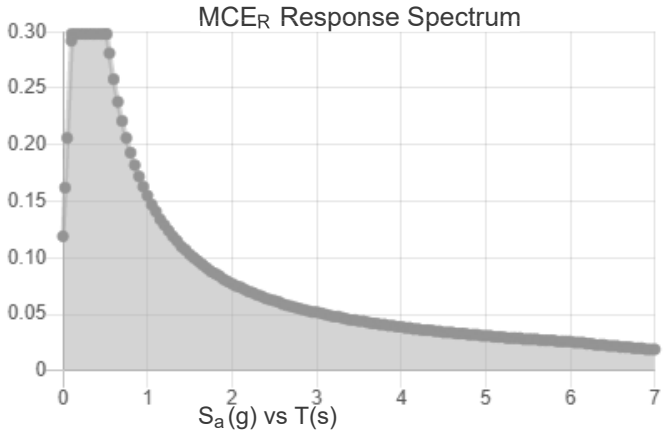
Seismic

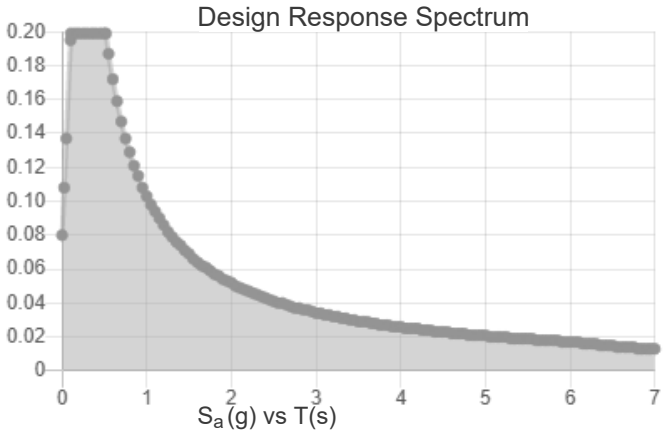
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.186	S_{DS} :	0.199
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.096
S_{MS} :	0.298	PGA_M :	0.153
S_{M1} :	0.155	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Fri Sep 10 2021

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Fri Sep 10 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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Trylon
1825 W. Walnut Hill Lane Suite 120
Irving, TX 75038

TIA LOAD CALCULATOR 2.1

PROJECT DATA	
Job Code:	191422
Carrier Site ID:	CT11364B
Carrier Site Name:	CT364/Chapel St. Monopole

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	2018 CTSBC
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	172.0	ft.
Number of Sectors:	4	--
Structure Type:	Monopole	--
Structure Height:	175.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	543	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	120	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.15	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	39.62	psf
Ground Elevation Factor (K_e):	0.98	--

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	39.62	psf
Mount Ice Thickness (t_{iz}):	1.77	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	71.32	psf
Round Member Pressure:	42.79	psf
Ice Wind Pressure:	7.59	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.186	g
1 Second Accel (S_1):	0.064	g
Short Period Des. (S_{DS}):	0.20	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.10	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

EQUIPMENT LOADING

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
APXVAARR24_43-U-NA20	3	172	No Ice	14.67	5.32	128.00
--	--	--	w/ Ice	17.04	7.41	437.17
AIR6449 B41_T-MOBILE	3	172	No Ice	5.27	2.03	114.63
--	--	--	w/ Ice	6.63	3.10	157.04
RADIO 4460B2/B25 B66_TMO	3	172	No Ice	2.14	1.69	109.00
--	--	--	w/ Ice	2.59	2.10	92.53
RADIO 4449B71 B85A_T-MOBILE	3	172	No Ice	1.97	1.59	73.21
--	--	--	w/ Ice	2.41	2.00	83.41
VHLP2.6	2	175	No Ice	10.21	5.57	48.00
--	--	--	w/ Ice	11.14	6.31	332.03
LS-230C	1	168	No Ice	1.61	1.61	11.00
--	--	--	w/ Ice	2.99	2.99	82.02
OA20-67-DIN	1	168	No Ice	2.31	2.31	9.00
--	--	--	w/ Ice	3.68	3.68	75.00
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
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			No Ice			
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			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

Appurtenance Name	Qty.	Elevation [ft]	--	EPA_N (ft2)	EPA_T (ft2)	Weight (lbs)
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
APXVAARR24_43-U-NA20	3	172	1.00	1.15	0.95	1.77	39.62	6.88
AIR6449 B41_T-MOBILE	3	172	1.00	1.15	0.95	1.77	39.62	6.88
DIO 4460B2/B25 B66_TM	3	172	1.00	1.15	0.95	1.77	39.62	6.88
IO 4449B71 B85A_T-MOB	3	172	1.00	1.15	0.95	1.77	39.62	6.88
VHLP2.6	2	175	1.00	1.16	0.95	1.77	39.82	6.91
LS-230C	1	168	1.00	1.15	0.95	1.77	39.36	6.83
OA20-67-DIN	1	168	1.00	1.15	0.95	1.77	39.36	6.83

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
APXVAARR24_43-U-NA20	3	No Ice	523.14	273.07	439.78	189.71	439.78	273.07
--	--	w/ Ice	105.48	60.76	90.57	45.85	90.57	60.76
AIR6449 B41_T-MOBILE	3	No Ice	187.93	101.28	159.04	72.39	159.04	101.28
--	--	w/ Ice	41.07	24.66	35.60	19.19	35.60	24.66
RADIO 4460B2/B25 B66_TMO	3	No Ice	76.28	64.16	72.24	60.12	72.24	64.16
--	--	w/ Ice	16.05	13.76	15.29	13.00	15.29	13.76
ADIO 4449B71 B85A_T-MOBILE	3	No Ice	70.25	60.00	66.83	56.58	66.83	60.00
--	--	w/ Ice	14.93	13.01	14.29	12.36	14.29	13.01
VHLP2.6	2	No Ice	302.10	187.76	263.99	149.65	263.99	187.76
--	--	w/ Ice	69.33	46.79	61.82	39.27	61.82	46.79
LS-230C	1	No Ice	57.03	57.03	57.03	57.03	57.03	57.03
--	--	w/ Ice	18.40	18.40	18.40	18.40	18.40	18.40
OA20-67-DIN	1	No Ice	81.67	81.67	81.67	81.67	81.67	81.67
--	--	w/ Ice	22.63	22.63	22.63	22.63	22.63	22.63
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
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		No Ice						
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		No Ice						
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		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

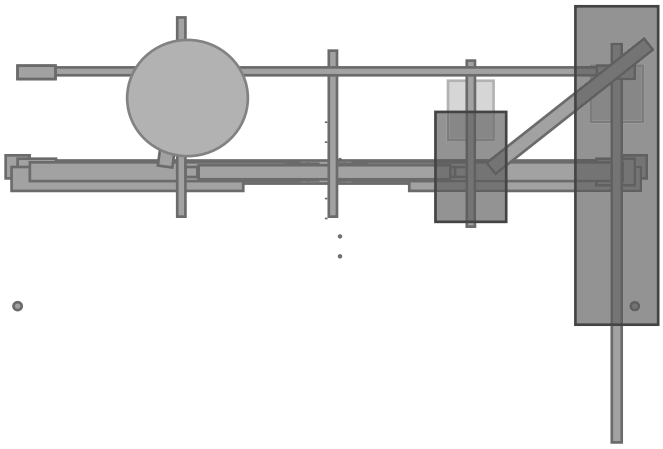
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

Appurtenance Name	*Qty.*	*--*	*0° 180°*	*30° 210°*	*60° 240°*	*90° 270°*	*120° 300°*	*150° 330°*
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	Weight [lbs]	F_p [lbs]
APXVAARR24_43-U-NA20	3	172	128	15.24
AIR6449 B41_T-MOBILE	3	172	114.63	13.65
RADIO 4460B2/B25 B66_TMO	3	172	109	12.98
RADIO 4449B71 B85A_T-MOBILE	3	172	73.21	8.71
VHLP2.6	2	175	48	5.71
LS-230C	1	168	11	1.31
OA20-67-DIN	1	168	9	1.07

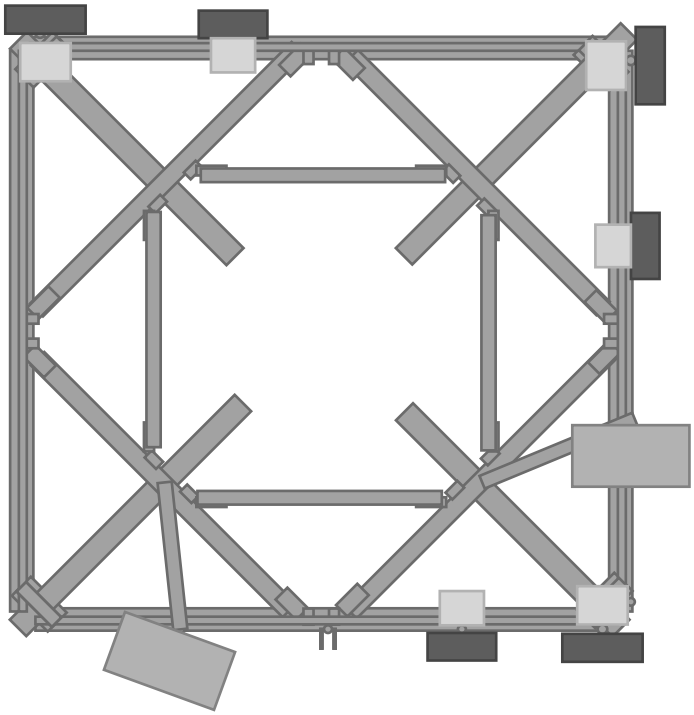
ELEVATION VIEW



MP4 MP3 MP2 MP1

*Elevation View Shows Alpha Sector Only

PLAN VIEW



1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
APXVAARR24_43-U-NA20	3	172	MP1/MP9/MP13	0/180/270
AIR6449 B41_T-MOBILE	3	172	MP2/MP10/MP14	0/180/270
RADIO 4460B2/B25 B66_TMO	3	172	MP1/MP9/MP13	0/180/270
RADIO 4449B71 B85A_T-MOBILE	3	172	MP2/MP10/MP14	0/180/270
VHLP2.6	2	175	MP4/MP15	20/360
LS-230C	1	168	MP181	0
OA20-67-DIN	1	168	MP165	0

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	20
Max Internal Sections for Member Calcs	39
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	No
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Z
Global Member Orientation Plane	XY
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	No
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	AA ADM1-15: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-05
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	No
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	Not Entered
Occupancy Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	SAE J 429 gr 2	29000	11154	.3	.65	.49	57	1.5	74	1.2
2	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
4	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
5	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
6	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
7	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
8	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
9	Q235	29000	11154	.3	.65	.49	36	1.5	58	1.2

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33	45
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50	65

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	SR 1/2"	SR 1/2"	Beam	RECT	SAE J 429 gr 2	Typical	.196	.003	.003	.006
2	corner angle	corner angle	Beam	RECT	A36 Gr.36	Typical	2.859	2.016	4.359	.135
3	3"x0.375" Plate	3"x0.375" Plate	Beam	RECT	A36 Gr.36	Typical	1.125	.013	.844	.049
4	L3X3X3	L3X3X3	Beam	Single Angle	A36 Gr.36	Typical	1.09	.948	.948	.014
5	Pl 8"x0.5"	Pl 8"x0.5"	Beam	RECT	A36 Gr.36	Typical	4	.083	21.333	.32

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
6	5"x0.375" Plate	5"x0.375" Plate	Beam	RECT	A36 Gr.36	Typical	1.875	.022	3.906	.084
7	L4X4X4	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical	1.93	3	3	.044
8	HSS6X4X4	HSS6X4X4	Beam	Tube	A500 Gr.B Rect	Typical	4.3	11.1	20.9	23.6
9	L6X3.5X5	L6X3.5X5	Beam	Single Angle	A36 Gr.36	Typical	2.89	2.84	10.9	.099
10	PIPE 2.0	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
11	PIPE 2.5	PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	162T125-18	Beam	None	A653 SS ...	Typical	.078	.013	.042	9e-6

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N30	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N33	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N8	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N36	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravi...	Y Gravi...	Z Gravity	Joint	Point	Distrib...	Area(Memb...	Surface...
1	Self Weight	DL			-1		24		4	
2	Structure Wind X	WLX						159		
3	Structure Wind Y	WLY						159		
4	Wind Load 0 AZI	WLX					48			
5	Wind Load 30 AZI	None					48			
6	Wind Load 45 AZI	None					48			
7	Wind Load 60 AZI	None					48			
8	Wind Load 90 AZI	WLY					48			
9	Wind Load 120 AZI	None					48			
10	Wind Load 135 AZI	None					48			
11	Wind Load 150 AZI	None					48			
12	Ice Weight	OL1					24	159	4	
13	Ice Structure Wind X	OL2						159		
14	Ice Structure Wind Y	OL3						159		
15	Ice Wind Load 0 AZI	OL2					48			
16	Ice Wind Load 30 AZI	None					48			
17	Ice Wind Load 45 AZI	None					48			
18	Ice Wind Load 60 AZI	None					48			
19	Ice Wind Load 90 AZI	OL3					48			
20	Ice Wind Load 120 AZI	None					48			
21	Ice Wind Load 135 AZI	None					48			
22	Ice Wind Load 150 AZI	None					48			
23	Seismic Load X	ELX	-.119				24			
24	Seismic Load Y	ELY		-.119			24			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravi...	Y Gravi...	Z Gravity	Joint	Point	Distrib...	Area(Memb...	Surface...
28	Live Load 4 (Lv)	None					1			
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			
34	Live Load 10 (Lv)	None					1			
35	Live Load 11 (Lv)	None					1			
36	Live Load 12 (Lv)	None					1			
37	Maintenance Load 1 (Lm)	None					1			
38	Maintenance Load 2 (Lm)	None					1			
39	Maintenance Load 3 (Lm)	None					1			
40	Maintenance Load 4 (Lm)	None					1			
41	Maintenance Load 5 (Lm)	None					1			
42	Maintenance Load 6 (Lm)	None					1			
43	Maintenance Load 7 (Lm)	None					1			
44	Maintenance Load 8 (Lm)	None					1			
45	Maintenance Load 9 (Lm)	None					1			
46	Maintenance Load 10 (Lm)	None					1			
47	Maintenance Load 11 (Lm)	None					1			
48	Maintenance Load 12 (Lm)	None					1			
49	BLC 1 Transient Area Loads	None						309		
50	BLC 12 Transient Area Loads	None						311		

Load Combinations

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL	Yes	Y		DL	1.4																		
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1												
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1												
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1												
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1												
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1												
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1												
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.7...	3	.707	10	1												
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.8...	3	.5	11	1												
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1												
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.8...	3	-.5	5	-1												
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.7...	3	-.7...	6	-1												
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.8...	7	-1												
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1												
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.8...	9	-1												
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.7...	10	-1												
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1												
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1												
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1												
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1												
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1												
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1												
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1												
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.7...	3	.707	10	1												

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.8...	3	.5	11	1												
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1												
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.8...	3	-.5	5	-1												
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.7...	3	-.7...	6	-1												
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.8...	7	-1												
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1												
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.8...	9	-1												
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.7...	10	-1												
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1												
34	1.2DL + 1DLi + 1WLi 0...	Yes	Y		DL	1.2	O...	1	13	1	14		15	1										
35	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1										
36	1.2DL + 1DLi + 1WLi 4...	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1										
37	1.2DL + 1DLi + 1WLi 6...	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1										
38	1.2DL + 1DLi + 1WLi 9...	Yes	Y		DL	1.2	O...	1	13		14	1	19	1										
39	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1										
40	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-.7...	14	.707	21	1										
41	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-.8...	14	.5	22	1										
42	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1										
43	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13	-.8...	14	-.5	16	-1										
44	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13	-.7...	14	-.7...	17	-1										
45	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.8...	18	-1										
46	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1										
47	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	1	13	.5	14	-.8...	20	-1										
48	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	1	13	.707	14	-.7...	21	-1										
49	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	1	13	.866	14	-.5	22	-1										
50	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	1	24															
51	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	.866	24	.5														
52	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	.707	24	.707														
53	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	.5	24	.866														
54	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23		24	1														
55	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	-.5	24	.866														
56	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	-.7...	24	.707														
57	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	-.8...	24	.5														
58	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	-1	24															
59	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	-.8...	24	-.5														
60	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	-.7...	24	-.7...														
61	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	-.5	24	-.8...														
62	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23		24	-1														
63	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	.5	24	-.8...														
64	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	.707	24	-.7...														
65	(1.2+0.2Sds)DL + 1E ...	Yes	Y		DL	1.24	23	.866	24	-.5														
66	(0.9-0.2Sds)DL + 1E 0...	Yes	Y		DL	.86	23	1	24															
67	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.86	23	.866	24	.5														
68	(0.9-0.2Sds)DL + 1E 4...	Yes	Y		DL	.86	23	.707	24	.707														
69	(0.9-0.2Sds)DL + 1E 6...	Yes	Y		DL	.86	23	.5	24	.866														
70	(0.9-0.2Sds)DL + 1E 9...	Yes	Y		DL	.86	23		24	1														
71	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.86	23	-.5	24	.866														
72	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.86	23	-.7...	24	.707														
73	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.86	23	-.8...	24	.5														
74	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.86	23	-1	24															
75	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.86	23	-.8...	24	-.5														
76	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.86	23	-.7...	24	-.7...														

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
77	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.86	23	-.5	24	-.8...														
78	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.86	23		24	-1														
79	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.86	23	.5	24	-.8...														
80	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.86	23	.707	24	-.7...														
81	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.86	23	.866	24	-.5														
82	1.2DL + 1Lv1	Yes	Y		DL	1.2	25	1.5																
83	1.2DL + 1Lv2	Yes	Y		DL	1.2	26	1.5																
84	1.2DL + 1Lv3	Yes	Y		DL	1.2	27	1.5																
85	1.2DL + 1Lv4	Yes	Y		DL	1.2	28	1.5																
86	1.2DL + 1Lv5	Yes	Y		DL	1.2	29	1.5																
87	1.2DL + 1Lv6	Yes	Y		DL	1.2	30	1.5																
88	1.2DL + 1Lv7	Yes	Y		DL	1.2	31	1.5																
89	1.2DL + 1Lv8	Yes	Y		DL	1.2	32	1.5																
90	1.2DL + 1Lv9	Yes	Y		DL	1.2	33	1.5																
91	1.2DL + 1Lv10	Yes	Y		DL	1.2	34	1.5																
92	1.2DL + 1Lv11	Yes	Y		DL	1.2	35	1.5																
93	1.2DL + 1Lv12	Yes	Y		DL	1.2	36	1.5																
94	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.063	3		4	.063										
95	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.054	3	.031	5	.063										
96	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.044	3	.044	6	.063										
97	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.031	3	.054	7	.063										
98	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2		3	.063	8	.063										
99	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	.054	9	.063										
100	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	.044	10	.063										
101	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	.031	11	.063										
102	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3		4	-.063										
103	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	-.0...	5	-.063										
104	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	-.0...	6	-.063										
105	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	-.0...	7	-.063										
106	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2		3	-.0...	8	-.063										
107	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.031	3	-.0...	9	-.063										
108	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.044	3	-.0...	10	-.063										
109	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	37	1.5	2	.054	3	-.0...	11	-.063										
110	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.063	3		4	.063										
111	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.054	3	.031	5	.063										
112	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.044	3	.044	6	.063										
113	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.031	3	.054	7	.063										
114	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2		3	.063	8	.063										
115	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	.054	9	.063										
116	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	.044	10	.063										
117	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	.031	11	.063										
118	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3		4	-.063										
119	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	-.0...	5	-.063										
120	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	-.0...	6	-.063										
121	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	-.0...	7	-.063										
122	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2		3	-.0...	8	-.063										
123	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.031	3	-.0...	9	-.063										
124	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.044	3	-.0...	10	-.063										
125	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	38	1.5	2	.054	3	-.0...	11	-.063										
126	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	.063	3		4	.063										
127	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	.054	3	.031	5	.063										
128	1.2DL + 1.5Lm + 1Wm...	Yes	Y		DL	1.2	39	1.5	2	.044	3	.044	6	.063										

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
129	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2	.031	3	.054	7	.063										
130	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2		3	.063	8	.063										
131	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	.054	9	.063										
132	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	.044	10	.063										
133	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	.031	11	.063										
134	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2	-.0...	3		4	-.063										
135	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	-.0...	5	-.063										
136	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	-.0...	6	-.063										
137	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	-.0...	7	-.063										
138	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2		3	-.0...	8	-.063										
139	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2	.031	3	-.0...	9	-.063										
140	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2	.044	3	-.0...	10	-.063										
141	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	39	1.5	2	.054	3	-.0...	11	-.063										
142	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	.063	3		4	.063										
143	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	.054	3	.031	5	.063										
144	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	.044	3	.044	6	.063										
145	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	.031	3	.054	7	.063										
146	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2		3	.063	8	.063										
147	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	.054	9	.063										
148	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	.044	10	.063										
149	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	.031	11	.063										
150	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	-.0...	3		4	-.063										
151	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	-.0...	5	-.063										
152	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	-.0...	6	-.063										
153	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	-.0...	7	-.063										
154	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2		3	-.0...	8	-.063										
155	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	.031	3	-.0...	9	-.063										
156	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	.044	3	-.0...	10	-.063										
157	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	40	1.5	2	.054	3	-.0...	11	-.063										
158	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	.063	3		4	.063										
159	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	.054	3	.031	5	.063										
160	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	.044	3	.044	6	.063										
161	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	.031	3	.054	7	.063										
162	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2		3	.063	8	.063										
163	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	.054	9	.063										
164	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	.044	10	.063										
165	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	.031	11	.063										
166	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	-.0...	3		4	-.063										
167	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	-.0...	5	-.063										
168	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	-.0...	6	-.063										
169	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	-.0...	7	-.063										
170	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2		3	-.0...	8	-.063										
171	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	.031	3	-.0...	9	-.063										
172	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	.044	3	-.0...	10	-.063										
173	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	41	1.5	2	.054	3	-.0...	11	-.063										
174	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	.063	3		4	.063										
175	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	.054	3	.031	5	.063										
176	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	.044	3	.044	6	.063										
177	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	.031	3	.054	7	.063										
178	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2		3	.063	8	.063										
179	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	.054	9	.063										
180	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	.044	10	.063										

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
181	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	.031	11	.063										
182	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	-.0...	3		4	-.063										
183	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	-.0...	5	-.063										
184	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	-.0...	6	-.063										
185	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	-.0...	7	-.063										
186	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2		3	-.0...	8	-.063										
187	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	.031	3	-.0...	9	-.063										
188	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	.044	3	-.0...	10	-.063										
189	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	42	1.5	2	.054	3	-.0...	11	-.063										
190	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	.063	3		4	.063										
191	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	.054	3	.031	5	.063										
192	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	.044	3	.044	6	.063										
193	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	.031	3	.054	7	.063										
194	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2		3	.063	8	.063										
195	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	-.0...	3	.054	9	.063										
196	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	-.0...	3	.044	10	.063										
197	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	-.0...	3	.031	11	.063										
198	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	-.0...	3		4	-.063										
199	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	-.0...	3	-.0...	5	-.063										
200	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	-.0...	3	-.0...	6	-.063										
201	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	-.0...	3	-.0...	7	-.063										
202	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2		3	-.0...	8	-.063										
203	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	.031	3	-.0...	9	-.063										
204	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	.044	3	-.0...	10	-.063										
205	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	43	1.5	2	.054	3	-.0...	11	-.063										
206	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	.063	3		4	.063										
207	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	.054	3	.031	5	.063										
208	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	.044	3	.044	6	.063										
209	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	.031	3	.054	7	.063										
210	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2		3	.063	8	.063										
211	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	-.0...	3	.054	9	.063										
212	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	-.0...	3	.044	10	.063										
213	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	-.0...	3	.031	11	.063										
214	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	-.0...	3		4	-.063										
215	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	-.0...	3	-.0...	5	-.063										
216	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	-.0...	3	-.0...	6	-.063										
217	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	-.0...	3	-.0...	7	-.063										
218	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2		3	-.0...	8	-.063										
219	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	.031	3	-.0...	9	-.063										
220	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	.044	3	-.0...	10	-.063										
221	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	44	1.5	2	.054	3	-.0...	11	-.063										
222	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	.063	3		4	.063										
223	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	.054	3	.031	5	.063										
224	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	.044	3	.044	6	.063										
225	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	.031	3	.054	7	.063										
226	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2		3	.063	8	.063										
227	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	-.0...	3	.054	9	.063										
228	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	-.0...	3	.044	10	.063										
229	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	-.0...	3	.031	11	.063										
230	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	-.0...	3		4	-.063										
231	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	-.0...	3	-.0...	5	-.063										
232	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	-.0...	3	-.0...	6	-.063										

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
233	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	-.0...	3	-.0...	7	-.063										
234	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2		3	-.0...	8	-.063										
235	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	.031	3	-.0...	9	-.063										
236	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	.044	3	-.0...	10	-.063										
237	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	45	1.5	2	.054	3	-.0...	11	-.063										
238	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	.063	3		4	.063										
239	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	.054	3	.031	5	.063										
240	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	.044	3	.044	6	.063										
241	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	.031	3	.054	7	.063										
242	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2		3	.063	8	.063										
243	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	-.0...	3	.054	9	.063										
244	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	-.0...	3	.044	10	.063										
245	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	-.0...	3	.031	11	.063										
246	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	-.0...	3		4	-.063										
247	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	-.0...	3	-.0...	5	-.063										
248	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	-.0...	3	-.0...	6	-.063										
249	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	-.0...	3	-.0...	7	-.063										
250	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2		3	-.0...	8	-.063										
251	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	.031	3	-.0...	9	-.063										
252	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	.044	3	-.0...	10	-.063										
253	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	46	1.5	2	.054	3	-.0...	11	-.063										
254	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	.063	3		4	.063										
255	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	.054	3	.031	5	.063										
256	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	.044	3	.044	6	.063										
257	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	.031	3	.054	7	.063										
258	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2		3	.063	8	.063										
259	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	-.0...	3	.054	9	.063										
260	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	-.0...	3	.044	10	.063										
261	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	-.0...	3	.031	11	.063										
262	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	-.0...	3		4	-.063										
263	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	-.0...	3	-.0...	5	-.063										
264	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	-.0...	3	-.0...	6	-.063										
265	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	-.0...	3	-.0...	7	-.063										
266	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2		3	-.0...	8	-.063										
267	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	.031	3	-.0...	9	-.063										
268	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	.044	3	-.0...	10	-.063										
269	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	47	1.5	2	.054	3	-.0...	11	-.063										
270	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	.063	3		4	.063										
271	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	.054	3	.031	5	.063										
272	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	.044	3	.044	6	.063										
273	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	.031	3	.054	7	.063										
274	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2		3	.063	8	.063										
275	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	-.0...	3	.054	9	.063										
276	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	-.0...	3	.044	10	.063										
277	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	-.0...	3	.031	11	.063										
278	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	-.0...	3		4	-.063										
279	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	-.0...	3	-.0...	5	-.063										
280	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	-.0...	3	-.0...	6	-.063										
281	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	-.0...	3	-.0...	7	-.063										
282	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2		3	-.0...	8	-.063										
283	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	.031	3	-.0...	9	-.063										
284	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	.044	3	-.0...	10	-.063										

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
285	1.2DL + 1.5Lm + 1Wm..	Yes	Y		DL	1.2	48	1.5	2	.054	3	-.0..	11	-.063										

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N30	max	625.113	33	6801.1087	39	3825.5439	48	12217.018	49	11410.3582	49	1506.0747	12
2		min	-7125.9192	41	-371.2084	31	792.2847	25	2102.0473	25	2054.7017	25	-1459.2057	20
3	N33	max	125.0355	19	348.2332	20	3358.9824	37	-2018.8156	29	11704.0095	36	536.0148	13
4		min	-6995.3743	44	-7111.6116	44	787.7908	78	-10016.1279	37	2596.0179	28	-528.769	21
5	N8	max	7339.944	35	7016.9941	37	4657.3496	42	14694.5739	45	-2091.902	19	1833.0856	25
6		min	-471.9958	27	-39.1673	28	900.6036	18	2430.2423	20	-14673.1508	43	-2050.6706	17
7	N36	max	6717.8891	49	340.7218	24	2831.6282	36	-476.6952	32	-530.6285	33	525.9535	7
8		min	-168.038	25	-6801.5077	48	492.4797	28	-6406.2878	40	-8086.4268	41	-420.8656	31
9	Totals:	max	6646.2312	18	5914.5798	22	14555.9913	34						
10		min	-6646.2459	10	-5914.5836	14	3282.8665	74						

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

	Member	Shape	Code Check	Loc...	L...	She...	Loc...	...	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn ...	Cb	Eqn
1	M21	L4X4X4	.926	55...	43	.150	52...	z	45	44357.4776	62532	3137.59...	6391.7...	1.3...	H2-1
2	M29A	L4X4X4	.925	55...	47	.157	52...	z	49	44357.4776	62532	3137.59...	6403.4...	1.3...	H2-1
3	M5	HSS6X4X4	.803	95	48	.084	95	y	49	63005.2914	178020	22252.5	29428.5	2.4...	H1-1b
4	M53	L4X4X4	.746	52...	42	.144	52...	z	44	44357.4776	62532	3137.59...	6615.0...	1.6...	H2-1
5	M41	L4X4X4	.712	55...	44	.139	52...	z	41	44357.4776	62532	3137.59...	6459.4...	1.4...	H2-1
6	M8	PI 8"x0.5"	.681	7.8...	38	.204	7.8...	y	40	69242.3726	129600	1350	19419....	1	H1-1b
7	M16	HSS6X4X4	.652	95	44	.092	95	y	46	63005.2914	178020	22252.5	29428.5	2.4...	H1-1b
8	M12	PI 8"x0.5"	.644	7.8...	44	.155	7.8...	y	43	69242.3726	129600	1350	21600	1.3...	H1-1b
9	M166A	SR 1/2"	.626	6	2...	.123	6		14	8312.7403	10072.755	83.9405	83.9405	2.2...	H1-1b
10	M5A	PI 8"x0.5"	.621	7.8...	43	.218	7.8...	y	38	69242.3726	129600	1350	21600	1.3...	H1-1b
11	M173A	SR 1/2"	.617	6	2...	.192	0		14	8312.7403	10072.755	83.9405	83.9405	2.2...	H1-1b
12	M165A	SR 1/2"	.614	6	2...	.123	6		6	8312.7403	10072.755	83.9405	83.9405	2.2...	H1-1b
13	M174A	SR 1/2"	.612	6	2...	.192	0		22	8312.7403	10072.755	83.9405	83.9405	2.2...	H1-1b
14	M17	HSS6X4X4	.599	95	37	.113	95	y	46	63005.2914	178020	22252.5	29428.5	2.3...	H1-1b
15	M170A	SR 1/2"	.587	0	2...	.120	0		14	8312.7403	10072.755	83.9405	83.9405	2.2...	H1-1b
16	M177A	SR 1/2"	.583	0	2...	.191	6		14	8312.7403	10072.755	83.9405	83.9405	2.2...	H1-1b
17	M178A	SR 1/2"	.581	0	6	.191	6		22	8312.7403	10072.755	83.9405	83.9405	2.2...	H1-1b
18	M169A	SR 1/2"	.576	0	2...	.120	0		14	8312.7403	10072.755	83.9405	83.9405	2.2...	H1-1b
19	H32	L6X3.5X5	.497	59...	1...	.413	4.5...	z	40	48835.1932	93636	3396.06...	8018.1...	1	H2-1
20	M10	PI 8"x0.5"	.486	7.8...	42	.133	7.8...	y	45	69242.3726	129600	1350	19419....	1	H1-1b
21	M18	HSS6X4X4	.426	95	40	.104	95	y	42	63005.2914	178020	22252.5	29428.5	2.7...	H1-1b
22	M31	5"x0.375" Plate	.402	2.6...	34	.156	2.6...	y	47	50247.9282	60750	474.6087	6328.125	2.1...	H1-1b
23	M129	PIPE 2.0	.392	9.1...	42	.204	54....		40	4678.5243	32130	1871.625	1871.625	1	H1-1b
24	M26	5"x0.375" Plate	.383	2.6...	42	.172	2.6...	y	43	50247.9282	60750	474.6087	6328.125	2.1...	H1-1b
25	M55	5"x0.375" Plate	.381	2.6...	42	.147	2.6...	y	42	50247.9282	60750	474.6087	6328.125	2.2...	H1-1b
26	M130	PIPE 2.0	.368	41....	34	.195	169...		34	4678.5243	32130	1871.625	1871.625	1	H1-1b
27	M22	5"x0.375" Plate	.350	2.6...	48	.175	2.6...	y	46	50247.9282	60750	474.6087	6328.125	1.7...	H1-1b
28	M36	5"x0.375" Plate	.335	2.6...	43	.169	2.6...	y	47	50247.9282	60750	474.6087	6328.125	1.7...	H1-1b
29	MP9	PIPE 2.5	.323	34....	10	.076	34....		17	10782.3413	50715	3596.25	3596.25	1	H1-1b
30	MP3	PIPE 2.0	.303	34....	2...	.092	19....		37	26092.12	32130	1871.625	1871.625	1	H1-1b
31	MP13	PIPE 2.5	.302	34....	6	.093	34....		42	10782.3413	50715	3596.25	3596.25	1	H1-1b
32	M48	5"x0.375" Plate	.292	2.6...	40	.131	2.6...	y	40	50247.9282	60750	474.6087	6328.125	2.2...	H1-1b

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

	Member	Shape	Code Check	Loc...	L...	She...	Loc....		LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn ...	Cb	Eqn
33	H1	L6X3.5X5	.284	41...	1...	.341	169...	y	42	48835.1932	93636	3396.06...	9838.2...	1.8...	H2-1
34	MP1	PIPE 2.5	.273	37...	10	.063	34...		49	10782.3413	50715	3596.25	3596.25	2.6...	H1-1b
35	H4	L6X3.5X5	.257	87	38	.321	169...	y	47	48835.1932	93636	2871.52...	8018.1...	1	H2-1
36	M60	5"x0.375" Plate	.252	2.6...	42	.082	2.6...	y	42	50247.9282	60750	474.6087	6328.125	2.2...	H1-1b
37	MP4	PIPE 2.0	.231	44...	43	.086	15...		48	23808.5402	32130	1871.625	1871.625	1	H1-1b
38	H2	L6X3.5X5	.219	91...	42	.082	82...	z	41	48835.1932	93636	3396.06...	9238.3...	1.4...	H2-1
39	M37	5"x0.375" Plate	.213	1.5	46	.255	0	y	44	60139.0577	60750	474.6087	6328.125	1.9...	H1-1b
40	M23	5"x0.375" Plate	.211	1.5	47	.250	0	y	48	60139.0577	60750	474.6087	6328.125	4.9...	H1-1b
41	M43	5"x0.375" Plate	.203	2.6...	34	.078	2.6...	y	37	50247.9282	60750	474.6087	6328.125	2.2...	H1-1b
42	M99	L3X3X3	.198	36.5	34	.010	69...	y	48	15601.5779	35316	1320.09...	2240.9...	1.1...	H2-1
43	M75	L3X3X3	.198	36.5	38	.010	69...	y	41	15601.5779	35316	1320.09...	2241.1...	1.1...	H2-1
44	M81	L3X3X3	.198	36.5	42	.013	69...	y	45	15601.5779	35316	1320.09...	2240.8...	1.1...	H2-1
45	MP10	PIPE 2.5	.195	31...	45	.034	31...		13	43998.1376	50715	3596.25	3596.25	2.1...	H1-1b
46	M90	L3X3X3	.195	36.5	46	.010	69...	y	42	15601.5779	35316	1320.09...	2240.1...	1.1...	H2-1
47	M144	corner angle	.176	0	42	.025	0	z	94	84197.3638	92643.75	4354.40...	6579.7...	1.0...	H1-1b
48	MP2	PIPE 2.0	.175	31...	47	.125	31...		45	26092.12	32130	1871.625	1871.625	2.1...	H1-1b
49	M131	PIPE 2.0	.171	164...	49	.083	4.5...		34	4678.5243	32130	1871.625	1871.625	1	H1-1b
50	MP16	PIPE 2.0	.164	44...	2...	.057	44...		35	26092.12	32130	1871.625	1871.625	1	H1-1b
51	M27	5"x0.375" Plate	.159	0	3	.021	0	y	43	60139.0577	60750	474.6087	6328.125	1.2...	H1-1b
52	M132	PIPE 2.0	.158	9.1...	37	.039	9.1...		34	4678.5243	32130	1871.625	1871.625	1	H1-1b
53	M96	3"x0.375" Plate	.153	4.4...	2	.073	8.9...	y	48	33280.9278	36450	284.7663	2278.125	4.7...	H1-1b
54	M93	3"x0.375" Plate	.150	4.4...	2	.071	8.9...	y	40	33280.9278	36450	284.7663	2278.125	4.7...	H1-1b
55	M71	3"x0.375" Plate	.141	4.4...	6	.072	8.9...	y	49	33280.9278	36450	284.7663	2278.125	1.4...	H1-1b
56	MP14	PIPE 2.5	.140	31...	10	.114	31...		43	43998.1376	50715	3596.25	3596.25	1	H1-1b
57	M61	5"x0.375" Plate	.140	0	9	.014	0	z	10	60139.0577	60750	474.6087	6328.125	1.2...	H1-1b
58	M68	3"x0.375" Plate	.139	4.4...	6	.072	8.9...	y	41	33280.9278	36450	284.7663	2278.125	4.7...	H1-1b
59	MP15	PIPE 2.0	.138	45...	38	.091	15...		43	23808.5402	32130	1871.625	1871.625	2.4...	H1-1b
60	M78	3"x0.375" Plate	.131	4.4...	42	.070	8.9...	y	36	33280.9278	36450	284.7663	2278.125	4.7...	H1-1b
61	M75A	3"x0.375" Plate	.131	4.4...	43	.074	8.9...	y	44	33280.9278	36450	284.7663	2278.125	4.7...	H1-1b
62	M44	5"x0.375" Plate	.125	0	11	.012	0	z	11	60139.0577	60750	474.6087	6328.125	1.2...	H1-1b
63	M32	5"x0.375" Plate	.125	0	9	.021	0	y	47	60139.0577	60750	474.6087	6328.125	1.2...	H1-1b
64	M146	corner angle	.124	15.5	46	.095	0	y	2	84197.3638	92643.75	4354.40...	4112.3...	1.3...	H1-1b
65	M95	3"x0.375" Plate	.109	5	49	.009	2.5	y	35	35440.8562	36450	284.7663	2278.125	2.1...	H1-1b
66	M92	3"x0.375" Plate	.109	5	49	.009	2.5	y	35	35440.8562	36450	284.7663	2278.125	2.1...	H1-1b
67	M87	3"x0.375" Plate	.107	4.4...	46	.073	8.9...	y	42	33280.9278	36450	284.7663	2278.125	4.7...	H1-1b
68	M84	3"x0.375" Plate	.106	4.4...	46	.071	8.9...	y	35	33280.9278	36450	284.7663	2278.125	1.4...	H1-1b
69	M74A	3"x0.375" Plate	.101	5	46	.009	2.5	y	41	35440.8562	36450	284.7663	2278.125	2.1...	H1-1b
70	M77	3"x0.375" Plate	.101	5	46	.009	2.5	y	42	35440.8562	36450	284.7663	2278.125	2.1...	H1-1b
71	M70A	3"x0.375" Plate	.100	5	40	.009	2.5	y	38	35440.8562	36450	284.7663	2278.125	2.1...	H1-1b
72	M66	3"x0.375" Plate	.100	5	40	.009	2.5	y	37	35440.8562	36450	284.7663	2278.125	2.1...	H1-1b
73	M56	5"x0.375" Plate	.096	0	42	.018	0	y	42	60139.0577	60750	474.6087	6328.125	1.2...	H1-1b
74	M145	corner angle	.084	15.5	1...	.062	15.5	y	43	84197.3638	92643.75	4354.40...	6579.7...	1.0...	H1-1b
75	M159	L3X3X3	.081	30...	3	.009	61...	z	47	19928.0172	35316	1320.09...	2369.93	1.1...	H2-1
76	M49	5"x0.375" Plate	.079	0	14	.015	0	y	34	60139.0577	60750	474.6087	6328.125	1.2...	H1-1b
77	M86	3"x0.375" Plate	.079	5	40	.009	2.5	y	47	35440.8562	36450	284.7663	2278.125	2.1...	H1-1b
78	M83	3"x0.375" Plate	.079	5	40	.009	2.5	y	42	35440.8562	36450	284.7663	2278.125	2.1...	H1-1b
79	M158	L3X3X3	.069	29...	5	.009	58...	y	15	20968.7018	35316	1320.09...	2400.9...	1.1...	H2-1
80	M143	corner angle	.038	0	38	.086	0	z	38	84197.3638	92643.75	4354.40...	6579.7...	1.2...	H1-1b
81	M147	corner angle	.038	0	38	.086	0	z	38	84197.3638	92643.75	4354.40...	6579.7...	1.2...	H1-1b

Envelope AISI S100-16: LRFD Cold Formed Steel Code Checks

Member	Shape	Code...	Loc[in]	LC	Shear...	Loc[in]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mn...	phi*Mn...	phi*V...	phi*V...	Cb	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCUATIONS

Trylon

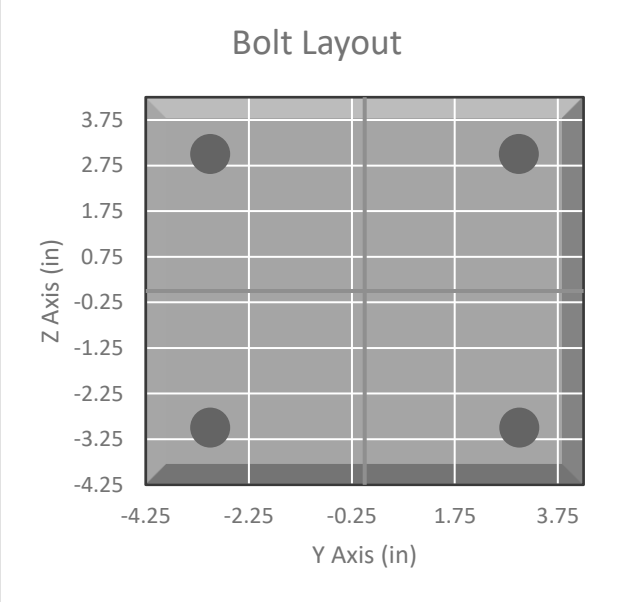
Analysis date: 9/12/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	191422
Carrier Site ID:	CT11364B
Carrier Site Name:	CT364/Chapel St. Monopol

Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	AISC

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in



Connection Description
Standoff to Tower Collar

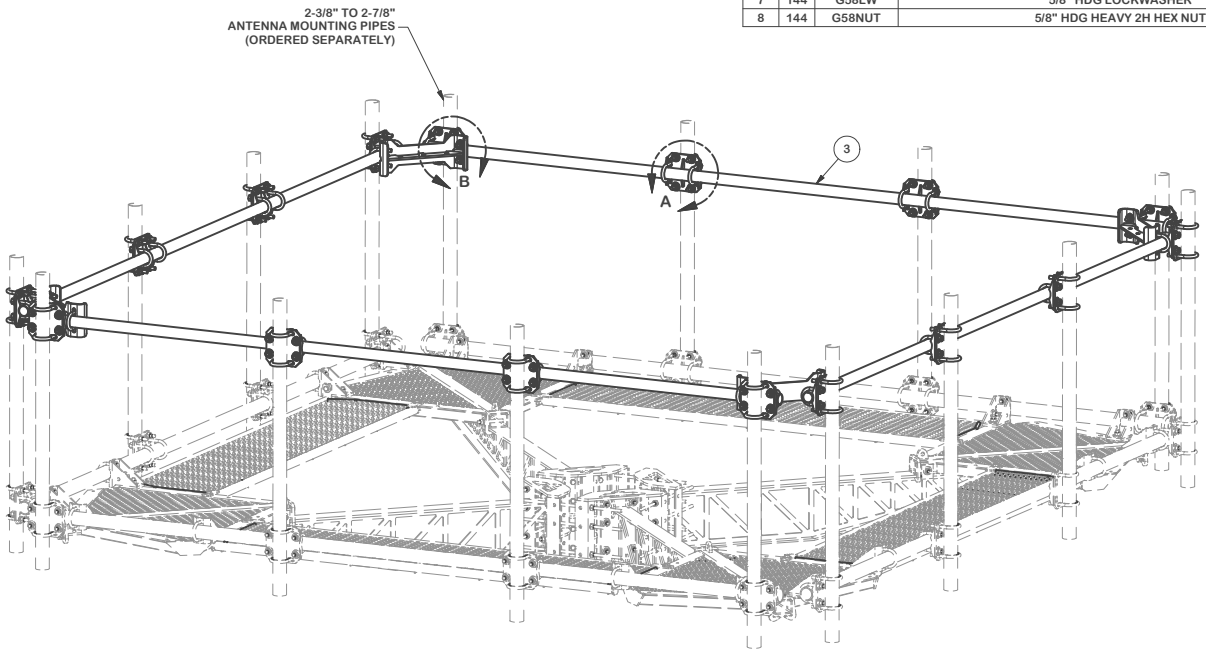
Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	18827.4	lbs
Shear Force (V_u):	1253.8	lbs
Tension Usage:	88.2%	--
Shear Usage:	8.6%	--
Interaction:	88.2%	Pass
Controlling Member:	M5	--
Controlling LC:	47	--

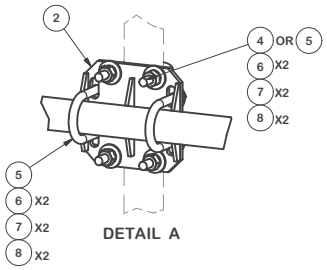
**Rating per TIA-222-H Section 15.5*

APPENDIX E

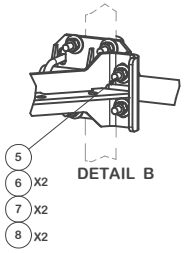
SUPPLEMENTAL DRAWINGS

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	4	X-F4PHRW	CORNER WELDMENT FOR 4-SIDED FORTRESS PLATFORM HADNRAIL KITS		19.32	77.27
2	16	X-SCX3-FR	FORTRESS CROSSOVER PLATE		6.61	105.82
3	4	P2174	2-3/8" OD X 174" SCH 40 GALVANIZED PIPE	174 in	55.75	222.98
4	32	X-UB5300	5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.)		1.15	36.78
5	72	X-UB5258	5/8" X 2-5/8" X 4-1/2" X 2" U-BOLT (HDG.)		1.00	72.01
6	144	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	10.15
7	144	G58LW	5/8" HDG LOCKWASHER		0.03	3.76
8	144	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	18.70
					TOTAL WT. #	547.48





DETAIL A



DETAIL B

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

PROPRIETARY NOTE:
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION
HANDRAIL KIT FOR
14' 4-SIDED FORTRESS™ PLATFORM

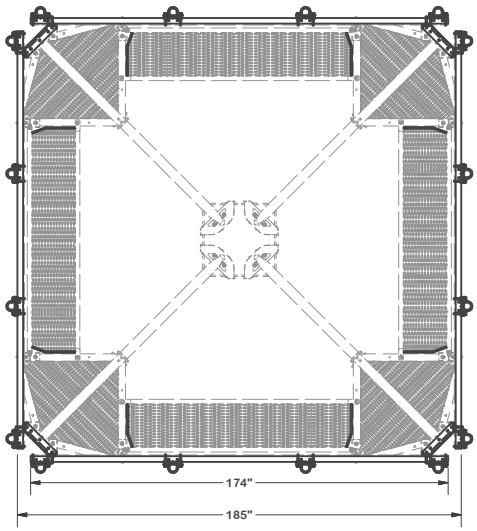
SITE PRO 1 — A valmont COMPANY

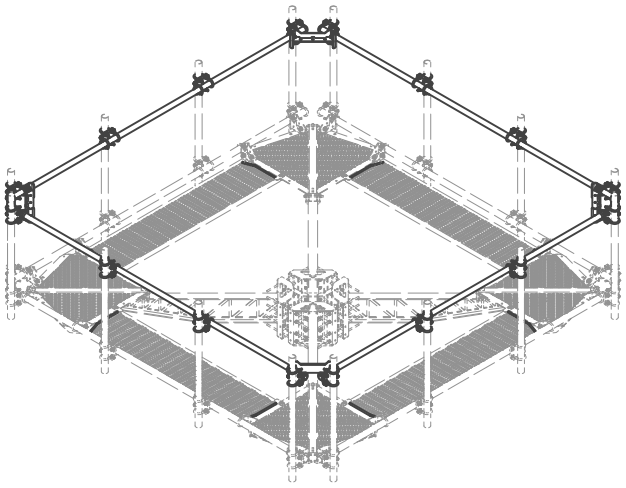
Engineering Support Team: 1-888-753-7446

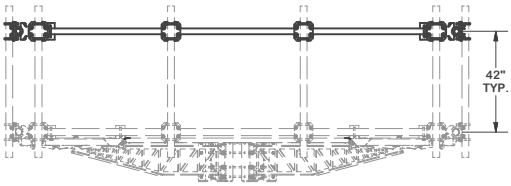
Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

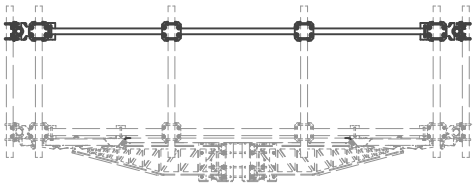
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 8/29/2017		F4P-HRK14

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER		F4P-HRK14









TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

PROPRIETARY NOTE:
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DESCRIPTION
HANDRAIL KIT FOR
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SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
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Salem, OR
Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 8/29/2017		F4P-HRK14

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER		F4P-HRK14

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11364B

823530
580 Chapel Street
Thomaston, Connecticut 06787

November 17, 2021

EBI Project Number: 6221006881

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**29.90%**

November 17, 2021

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

Emissions Analysis for Site: CT11364B - 823530

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **580 Chapel Street** in **Thomaston, 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 580 Chapel Street in Thomaston, 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 Traffic channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts.

8) 1 LTE Broadcast channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 20 Watts.

9) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

10) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.

11) 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.

12) 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.

13) The antennas used in this modeling are the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector A, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector B, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 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.

14) The antenna mounting height centerline of the proposed antennas is 172 feet above ground level (AGL).

15) 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.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	172 feet	Height (AGL):	172 feet	Height (AGL):	172 feet
Channel Count:	13	Channel Count:	13	Channel Count:	13
Total TX Power (W):	560 Watts	Total TX Power (W):	560 Watts	Total TX Power (W):	560 Watts
ERP (W):	18,052.03	ERP (W):	18,052.03	ERP (W):	18,052.03
Antenna A1 MPE %:	**3.09%**	Antenna B1 MPE %:	**3.09%**	Antenna C1 MPE %:	**3.09%**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd
Height (AGL):	172 feet	Height (AGL):	172 feet	Height (AGL):	172 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	36,356.09	ERP (W):	36,356.09	ERP (W):	36,356.09
Antenna A2 MPE %:	**4.74%**	Antenna B2 MPE %:	**4.74%**	Antenna C2 MPE %:	**4.74%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	7.83%
Thomaston FD	0.18%
Thomaston PD	0.03%
Litch. Co. FD	0.18%
CT State Police	0.06%
Sprint	2.18%
Metro PCS	0.57%
Verizon	4.18%
AT&T	14.69%
Site Total MPE % :	29.90%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	7.83%
T-Mobile Sector B Total:	7.83%
T-Mobile Sector C Total:	7.83%
Site Total MPE % :	29.90%

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 600 MHz LTE	2	591.73	172.0	1.54	600 MHz LTE	400	0.39%
T-Mobile 600 MHz NR	1	1577.94	172.0	2.06	600 MHz NR	400	0.51%
T-Mobile 700 MHz LTE	2	648.82	172.0	1.69	700 MHz LTE	467	0.36%
T-Mobile 1900 MHz GSM	4	1101.85	172.0	5.75	1900 MHz GSM	1000	0.58%
T-Mobile 1900 MHz LTE	2	2203.69	172.0	5.75	1900 MHz LTE	1000	0.58%
T-Mobile 2100 MHz LTE	2	2589.11	172.0	6.76	2100 MHz LTE	1000	0.68%
T-Mobile 2500 MHz LTE 1C & 2C Traffic	1	11044.63	172.0	14.41	2500 MHz LTE 1C & 2C Traffic	1000	1.44%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	172.0	1.40	2500 MHz LTE 1C & 2C Broadcast	1000	0.14%
T-Mobile 2500 MHz NR Traffic	1	22089.26	172.0	28.82	2500 MHz NR Traffic	1000	2.88%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	172.0	2.80	2500 MHz NR Broadcast	1000	0.28%
						Total:	**7.83%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	7.83%
Sector B:	7.83%
Sector C:	7.83%
T-Mobile Maximum MPE % (Sector A):	7.83%
Site Total:	29.90%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **29.90%** 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.

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