CROWN CASTLE

1 Cityplace Dr, Suite 490

Creve Coeur, MO 63141

Phone: (314) 513-0147

www.crowncastle.com

January 10, 2022

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# 876325; T-Mobile Site ID# CTHA662A
92 Weston St Hartford, CT 06103
Latitude: 41.78674723 / Longitude: -72.66230000

Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 108-foot mount on the existing 110-foot Monopole Tower located at 92 Weston St Hartford, CT. The property is owned by Freeport Realty V LLC and the Tower by Crown Castle. T-Mobile now intends to replace six (6) existing 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) RFS APXVTM14-C-120 Antennas **(REMOVE) –** (3) Ericsson AIR6449 B41 Antennas **(REPLACE)**

(3) RFS APXVSPP18-C-A20 Antennas **(REMOVE) –** (3) RFS APXVAALL24_43-U-NA20 Antennas **(REPLACE)**

(3) Sprint RRU Radios **(REMOVE) -** (3) Ericsson 4480 B71+B85 RRU Radios **(REPLACE)**

(3) Sprint RRU Radios **(REMOVE) -** (3) Ericsson 4460 B25+B66 RRU Radios **(REPLACE)**

Remove:
(6) Sprint RRUs
(1) Sprint RRU Mount
(1) Antenna Mount

Install:
(3) Hybrid Cables
(1) Antenna Mount

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Ground:

Install New:
(1) 6160 Cabinet
(1) RBS 6601 in 6160 cabinet
(3) BB6648 in 6160 cabinet
(1) DUG20 in 6160 cabinet
(1) PSU 4813 in 6160 cabinet
(1) IXRE V2 Router in 6160 cabinet
(1) B160 Battery Cabinet

Remove:
(1) BBU Cabinet
(1) MMBTS Cabinet

The facility was previously approved by Connecticut Siting Council by way of a Exempt Modification application on April 28, 2015.

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 Luke Bronin, Mayor of the City of Hartford and I. Charles Mathews, Director of Development Services for the City of Hartford. A copy will also be sent to the property owner.

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,

Colin Robinson

Colin Robinson
Project Manager
NETWORK BUILDING + CONSULTING
100 Apollo Drive Suite 303
Chelmsford, MA 01824
crobinson@nbcllc.com
(360) 561-3311

cc:

Luke Bronin, Mayor *(Via Federal Express)*
Mayor's Office
Hartford City Hall
550 Main Street
2nd Floor, Room 200
Hartford, CT 06103
(860) 757-9500

I. Charles Mathews, Director of Development Services *(Via Federal Express)*
260 Constitution Plaza, 1st Fl
Hartford, CT 06103
(860) 757-9040

Freeport Realty V LLC *(Via Federal Express)*
337 Freeport ST
Boston, MA 02122
860-985-5005

Colin Robinson

From: TrackingUpdates@fedex.com
Sent: Tuesday, January 11, 2022 11:19 AM
To: Colin Robinson
Subject: FedEx Shipment 775706833796: Your package has been delivered

Hi. Your package was delivered Tue, 01/11/2022 at 11:17am.

Delivered to 550 MAIN ST, HARTFORD, CT 06103

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	775706833796
FROM	NB+C 100 Apollo Dr. Suite 303 CHELMSFORD, MA, US, 01824
TO	Mayor's Office Luke Bronin 550 Main Street

	2nd Floor, Room 200 HARTFORD, CT, US, 06103
REFERENCE	100788 NB+C
SHIPPER REFERENCE	100788 NB+C
SHIP DATE	Mon 1/10/2022 06:17 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	CHELMSFORD, MA, US, 01824
DESTINATION	HARTFORD, CT, US, 06103
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Colin Robinson

From: TrackingUpdates@fedex.com
Sent: Tuesday, January 11, 2022 10:46 AM
To: Colin Robinson
Subject: FedEx Shipment 775706795368: Your package has been delivered

Hi. Your package was delivered Tue, 01/11/2022 at 10:44am.

Delivered to 260 CONSTITUTION PLZ, HARTFORD, CT 06103

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	775706795368
FROM	NB+C 100 Apollo Dr. Suite 303 CHELMSFORD, MA, US, 01824
TO	Director of Development Services I. Charles Mathews 260 Constitution Plaza

	1st Floor HARTFORD, CT, US, 06103
REFERENCE	100788 NB+C
SHIPPER REFERENCE	100788 NB+C
SHIP DATE	Mon 1/10/2022 06:17 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	CHELMSFORD, MA, US, 01824
DESTINATION	HARTFORD, CT, US, 06103
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Colin Robinson

From: TrackingUpdates@fedex.com
Sent: Tuesday, January 11, 2022 9:08 AM
To: Colin Robinson
Subject: FedEx Shipment 775706896161: Your package has been delivered

Hi. Your package was delivered Tue, 01/11/2022 at 8:54am.

Delivered to 337 FREEPORT ST, BOSTON, MA 02122

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	775706896161
FROM	NB+C 100 Apollo Dr. Suite 303 CHELMSFORD, MA, US, 01824
TO	Freeport Realty V LLC 337 Freeport ST BOSTON, MA, US, 02122

REFERENCE	100788 NB+C
SHIPPER REFERENCE	100788 NB+C
SHIP DATE	Mon 1/10/2022 06:17 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	CHELMSFORD, MA, US, 01824
DESTINATION	BOSTON, MA, US, 02122
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Exhibit A

Original Facility Approval

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

www.ct.gov/csc

April 28, 2015

Donna Neal
Crown Castle
3530 Torrington Way, Suite 300
Charlotte, NC 28277

RE: **EM-SPRINT-064-150410** - Sprint PCS notice of intent to modify an existing telecommunications facility located at 92 Weston Street, Hartford, Connecticut.

Dear Ms. Neal:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by Sprint shall be removed within 60 days of the date the antenna ceased to function;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated April 9, 2015. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site by any dimension, increase noise levels at the tower site boundary by six decibels or more, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standards adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996 and by the state Department of Energy and Environmental Protection pursuant to Connecticut General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below state and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Melanie A. Bachman
Acting Executive Director

MAB/FOC/cm

c: The Honorable Pedro E. Segarra, Mayor, City of Hartford
Darrell V. Hill, Chief Operating Officer, City of Hartford
Khara Dodds, Planning Division Director, City of Hartford
Albemarle Weston Street, LLC

Exhibit B

Property Card

Unofficial Property Record Card - Hartford, CT

General Property Data

Parcel ID	286-173-007	**Account Number**	
Prior Parcel ID			
Property Owner	FREEPORT REALTY V LLC	**Property Location**	92 WESTON ST
		Property Use	WAREHOUSE
Mailing Address	337 FREEPORT ST	**Most Recent Sale Date**	9/20/2019
		Legal Reference	07527-0278
City	BOSTON	**Grantor**	NEPREO INC
Mailing State	MA **Zip** 02122	**Sale Price**	0
ParcelZoning	ID-1	**Land Area**	187,334.453 acres

Current Property Assessment

Card 1 Value	Building Value	Xtra Features Value	Land Value	Total Value
	586,040	59,780	842,170	1,487,990

Building Description

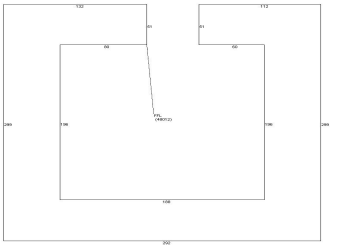
Building Style	OFFICE/WHS	**Foundation Type**	Concrete	**Flooring Type**	COMBINATION
# of Living Units	0	**Frame Type**	Steel	**Basement Floor**	N/A
Year Built	1978	**Roof Structure**	FLAT	**Heating Type**	Warm Air
Building Grade	Average	**Roof Cover**	Metal	**Heating Fuel**	Gas
Building Condition	N/A	**Siding**	Brick	**Air Conditioning**	30%
Finished Area (SF)	N/A	**Interior Walls**	DRYWALL	**# of Bsmt Garages**	0
Number Rooms	0	**# of Bedrooms**	0	**# of Full Baths**	0
# of 3/4 Baths	0	**# of 1/2 Baths**	0	**# of Other Fixtures**	0

Legal Description

Narrative Description of Property

This property contains 187,334.453 acres of land mainly classified as WAREHOUSE with a(n) OFFICE/WHS style building, built about 1978 , having Brick exterior and Metal roof cover, with 0 commercial unit(s) and 0 residential unit(s), 0 room(s), 0 bedroom(s), 0 bath(s), 0 half bath(s).

Property Images



Disclaimer: This information is believed to be correct but is subject to change and is not warranteed.

Exhibit C

Construction Drawings

T-Mobile

T-MOBILE SITE NUMBER: CTHA662A
T-MOBILE SITE NAME: CT03XC064
SITE TYPE: MONOPOLE
TOWER HEIGHT: 110'-0"

BUSINESS UNIT #: 876325
SITE ADDRESS: 92 WESTON STREET HARTFORD, CT 06103-1217
COUNTY: HARTFORD
JURISDICTION: HARTFORD COUNTY

T-MOBILE SPRINT RETAIN SITE CONFIGURATION: 67E5998E_1XAIR+1OP

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	WESTON SQUARE
SITE ADDRESS:	92 WESTON STREET HARTFORD, CT 06103-1217
COUNTY:	HARTFORD
MAP/PARCEL #:	286173007
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.78674723° (41° 47' 12.30")
LONGITUDE:	-72.66230000° (-72° 39' 44.42")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	9.8 FT
CURRENT ZONING:	ID-1 (INDUSTRIAL DISTRICTS)
JURISDICTION:	HARTFORD COUNTY
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	FREEPORT REALTY V LLC 337 FREEPORT ST DORCHESTER, MA 02122
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 (518) 373-3507
	JASON D'AMICO - CONSTRUCTION MANAGER (860) 209-0104

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
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

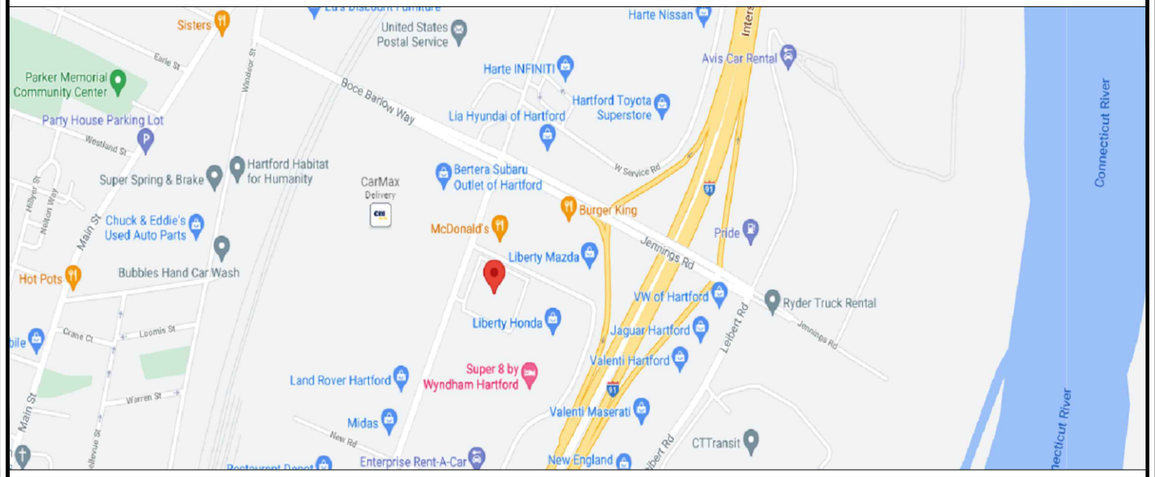
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (6) ANTENNAS
- REMOVE (12) RRHs
- REMOVE (6) COMBINERs
- REMOVE (1) RRH MOUNT
- REMOVE (3) HYBRID CABLES
- INSTALL (6) ANTENNAS
- INSTALL (6) RRHs
- INSTALL (3) HYBRID CABLES INSIDE MONOPOLE
- INSTALL (1) ANTENNA PLATFORM MOUNT

GROUND SCOPE OF WORK:
- REMOVE (1) MMBS EQUIPMENT CABINET
- REMOVE (1) BBU EQUIPMENT CABINET
- INSTALL (1) 6160 & (1) B160 BATTERY CABINETS
- INSTALL (3) BB 6648
- INSTALL (1) DUG20 W/ RBS 6601 UNIT
- INSTALL (1) PSU 4813
- INSTALL (1) CSR IXRe V2 (GEN2)
- UPGRADE SERVICE TO 200AMP.

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:	CROWN CASTLE
DATED:	09/20/2021
MOUNT ANALYSIS:	TRYLON
DATED:	08/31/2021
RFDS REVISION:	1 - DRAFT
DATED:	08/31/2021
ORDER ID:	557897
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:
CTHA662A

BU #: **876325**
WESTON SQUARE

92 WESTON STREET
HARTFORD, CT 06103-1217

EXISTING 110'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	06/01/21	RCD	FINAL	SS
1	09/13/21	HL	FINAL	SS
2	10/28/21	HL	FINAL	SS
3	12/03/21	TJ	AZIMUTH UPDATE	SS

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

12/03/2021

SHEET NUMBER: T-1
REVISION: 3

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–POTENTAL 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

T-Mobile

35 GRIFFIN ROAD
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CROWN CASTLE

1500 CORPORATE DRIVE
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T-MOBILE SITE NUMBER:
CTHA662A

BU #: **876325**
WESTON SQUARE

92 WESTON STREET
HARTFORD, CT 06103-1217

EXISTING 110'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	06/01/21	RCD	FINAL	SS
1	09/13/21	HL	FINAL	SS
2	10/28/21	HL	FINAL	SS
3	12/03/21	TJ	AZIMUTH UPDATE	SS

SHUHEI SAKANOUE
34916

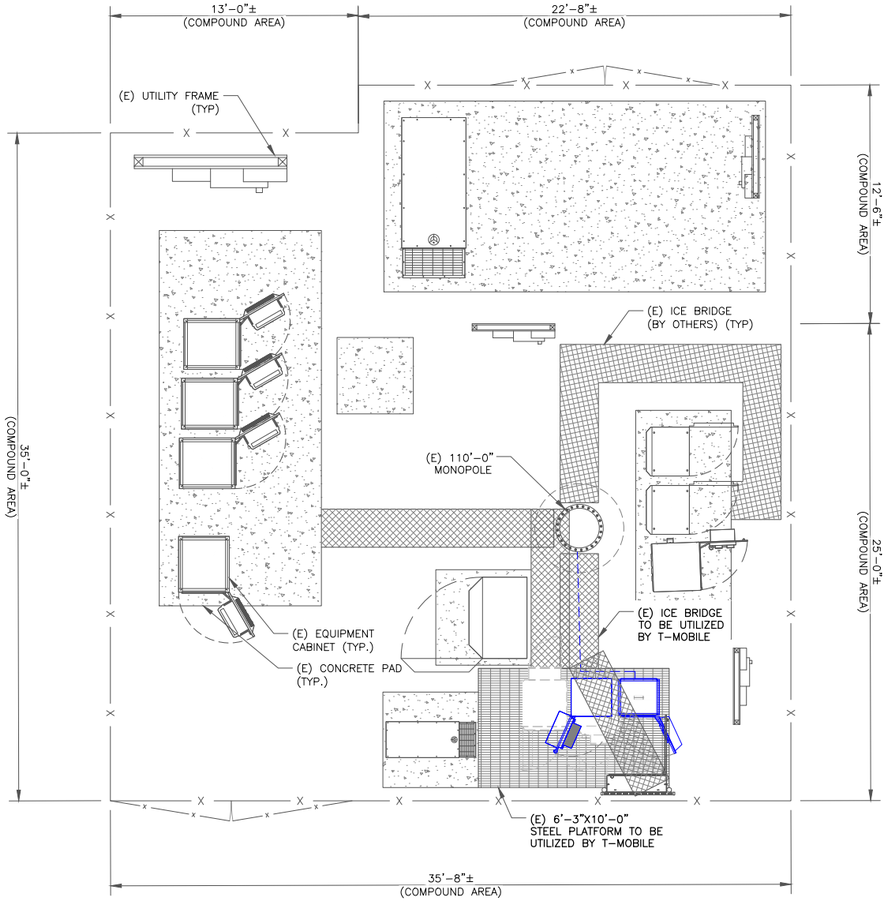
12/03/2021

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:	REVISION:
T-2	3

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.

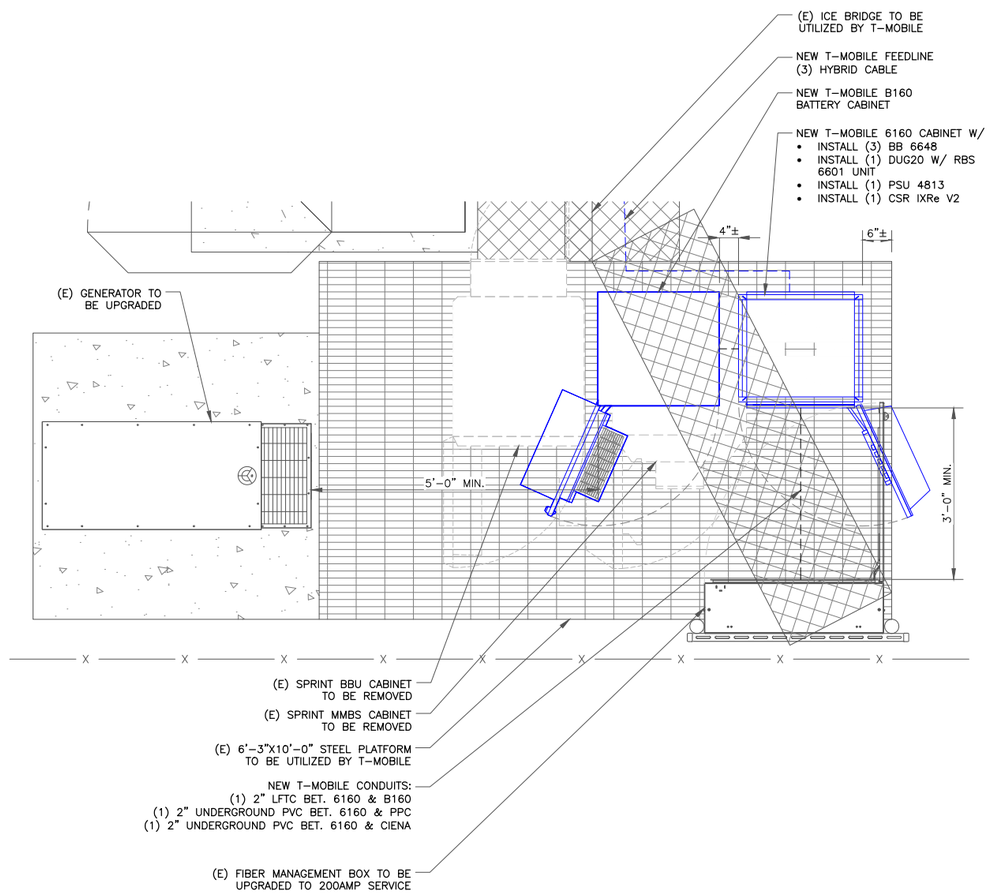


1 SITE PLAN
SCALE: 4' 3' 2' 1' 0 4'
1/4"=1'-0" (FULL SIZE)
1/8"=1'-0" (11x17)

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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EXISTING 110'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	06/01/21	RCD	FINAL	SS
1	09/13/21	HL	FINAL	SS
2	10/28/21	HL	FINAL	SS
3	12/03/21	TJ	AZIMUTH UPDATE	SS

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED
PROFESSIONAL ENGINEER

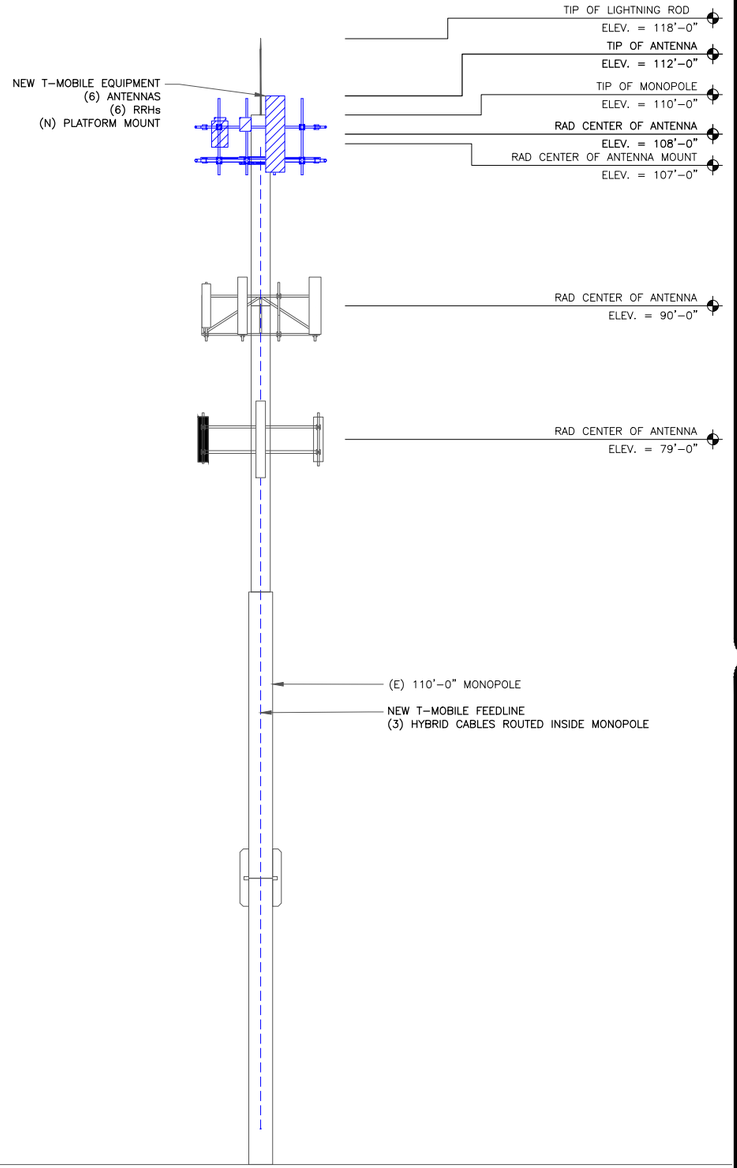
12/03/2021

SHEET NUMBER: C-1

REVISION: 3

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.

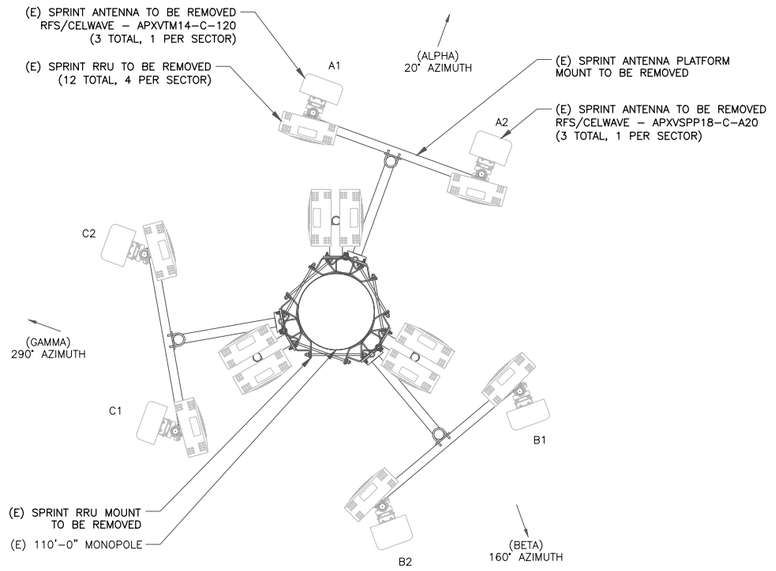


T-MOBILE EQUIPMENT

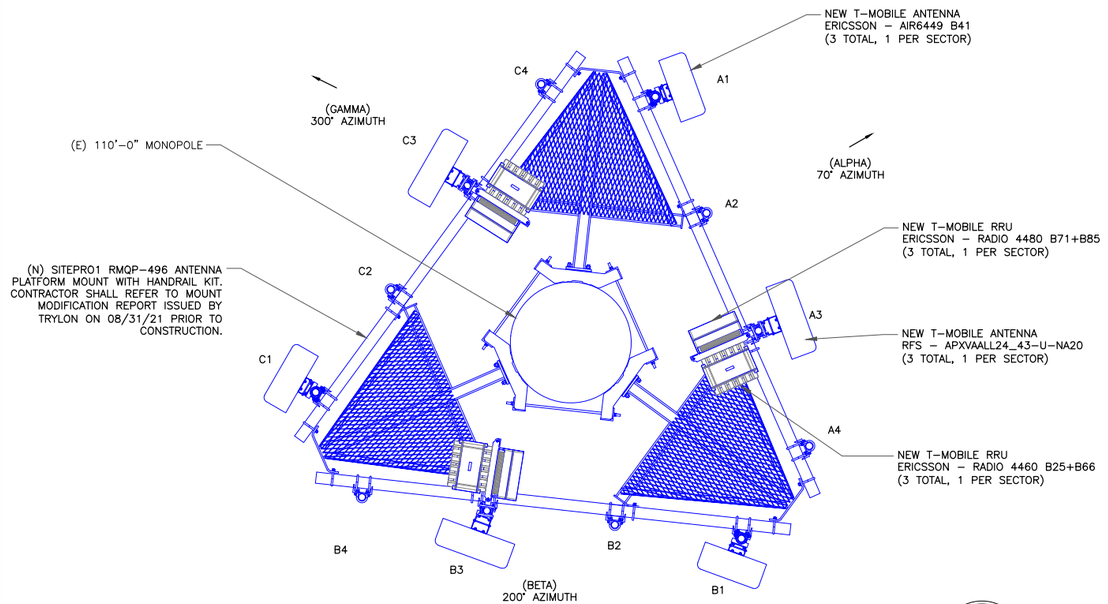
ANTENNA CL: 108'-0"
MOUNT CL: 107'-0"

ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB

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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T-MOBILE SITE NUMBER:
CTHA662A

BU #: **876325**
WESTON SQUARE

92 WESTON STREET
HARTFORD, CT 06103-1217

EXISTING 110'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	06/01/21	RCD	FINAL	SS
1	09/13/21	HL	FINAL	SS
2	10/28/21	HL	FINAL	SS
3	12/03/21	TJ	AZIMUTH UPDATE	SS

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

12/03/2021

SHEET NUMBER: C-2

REVISION: 3

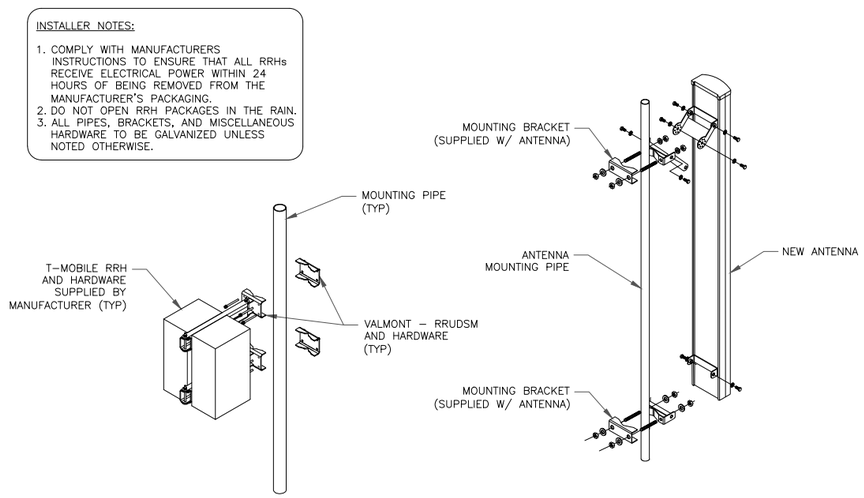
ANTENNA SCHEDULE

SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L2500, N2500	108'-0"	70°	ERICSSON	AIR6449 B41	--	--	--	(3) 1-5/8" HYBRID CABLES
ALPHA	A2	--	--	--	--	--	--	--	--	
ALPHA	A3	L700, L600, N600, L1900, G1900, L2100	108'-0"	70°	RFS	APXVAALL24_43-U-NA20	--	--	(1) ERICSSON - RRUS 4480 B71+B85 (1) ERICSSON - RRUS 4460 B25+B66	
ALPHA	A4	--	--	--	--	--	--	--	--	
BETA	B1	L2500, N2500	108'-0"	200°	ERICSSON	AIR6449 B41	--	--	--	(3) 1-5/8" HYBRID CABLES
BETA	B2	--	--	--	--	--	--	--	--	
BETA	B3	L700, L600, N600, L1900, G1900, L2100	108'-0"	200°	RFS	APXVAALL24_43-U-NA20	--	--	(1) ERICSSON - RRUS 4480 B71+B85 (1) ERICSSON - RRUS 4460 B25+B66	
BETA	B4	--	--	--	--	--	--	--	--	
GAMMA	C1	L2500, N2500	108'-0"	300°	ERICSSON	AIR6449 B41	--	--	--	(3) 1-5/8" HYBRID CABLES
GAMMA	C2	--	--	--	--	--	--	--	--	
GAMMA	C3	L700, L600, N600, L1900, G1900, L2100	108'-0"	300°	RFS	APXVAALL24_43-U-NA20	--	--	(1) ERICSSON - RRUS 4480 B71+B85 (1) ERICSSON - RRUS 4460 B25+B66	
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 #: **876325**
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STATE OF CONNECTICUT
SHUHEI SAKAMOTO
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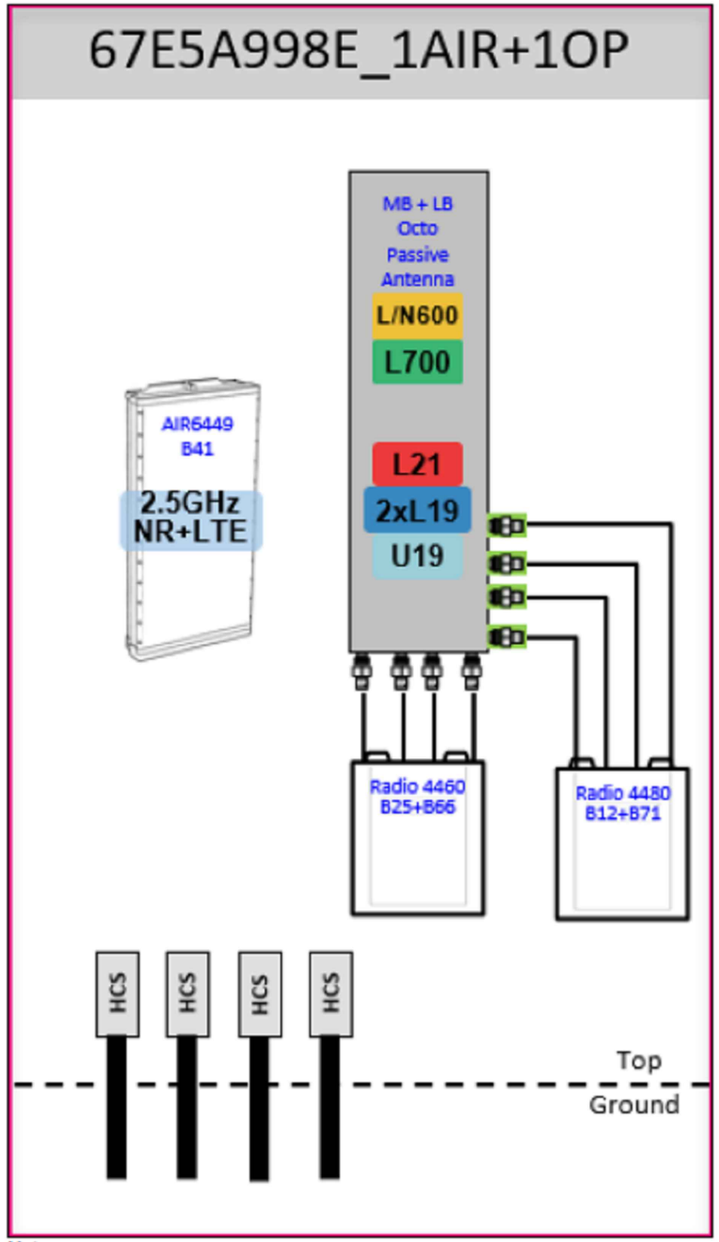
LICENSED PROFESSIONAL ENGINEER

12/03/2021

SHEET NUMBER: C-3

REVISION: 3



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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BU #: **876325**
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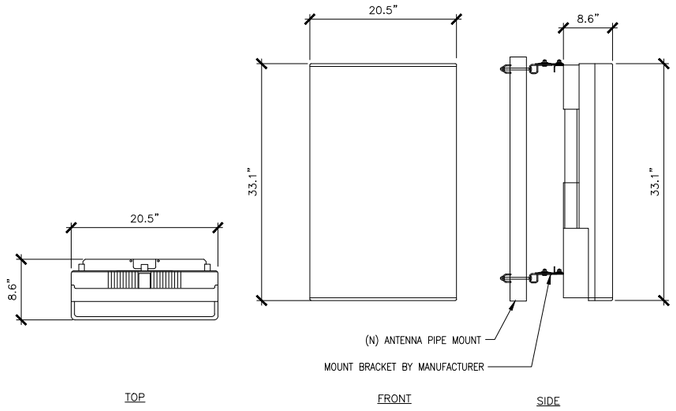
STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

12/03/2021

SHEET NUMBER: C-4

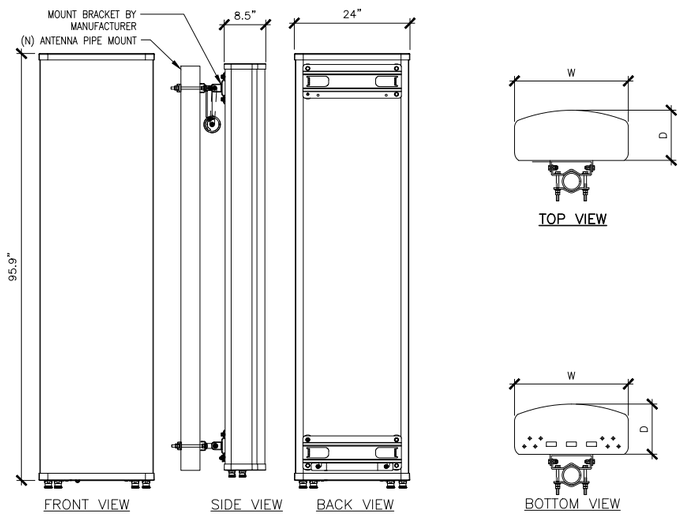
REVISION: 3

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

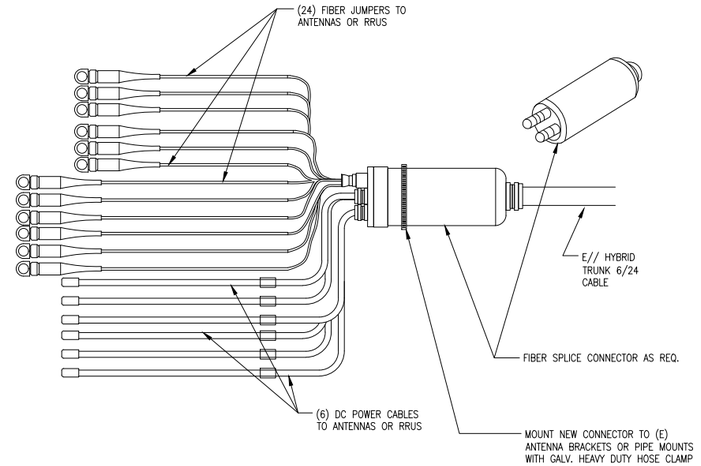


1 (N) AIR6449 B41 ANTENNA SPEC
SCALE: NOT TO SCALE

RFS ANTENNAS	
MODEL	WEIGHT (lb)
(8') APXVAALL24_43-U-NA20	122.8
WEIGHT W/ MOUNTING BRACKET (lb):	149.9

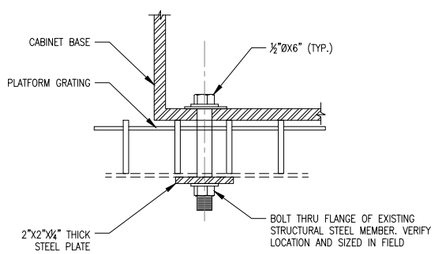


2 (N) APXVAAL24_43-UNA20 ANTENNA SPEC
SCALE: NOT TO SCALE

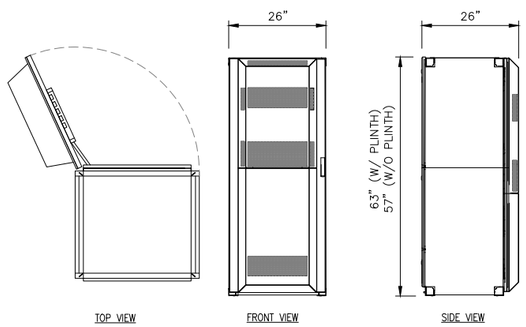


NOTE:
NUMBER OF LINES SHOWN FOR REFERENCE ONLY. ACTUAL # OF DC AND FIBER LINES SPECIFIC TO MODEL OF HCS CABLES

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

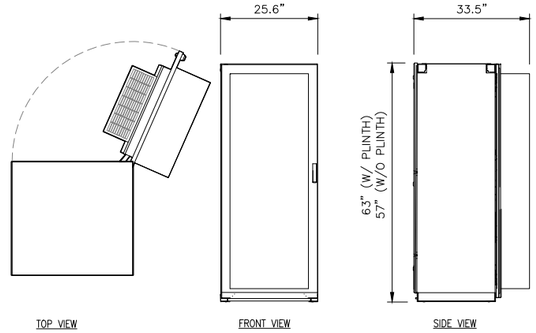


4 (N) EQUIPMENT CABINET MOUNTING DETAIL
SCALE: NOT TO SCALE



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

5 (N) B160 BATTERY 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

6 (N) 6160 EQUIPMENT CABINET DETAIL
SCALE: NOT TO SCALE

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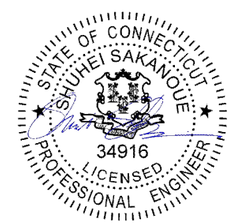
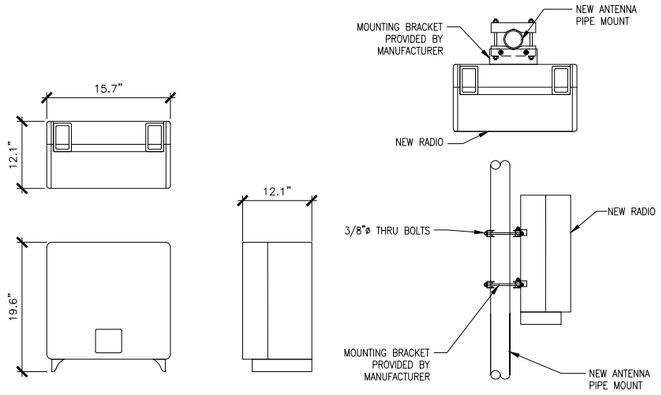


12/03/2021

SHEET NUMBER: C-5

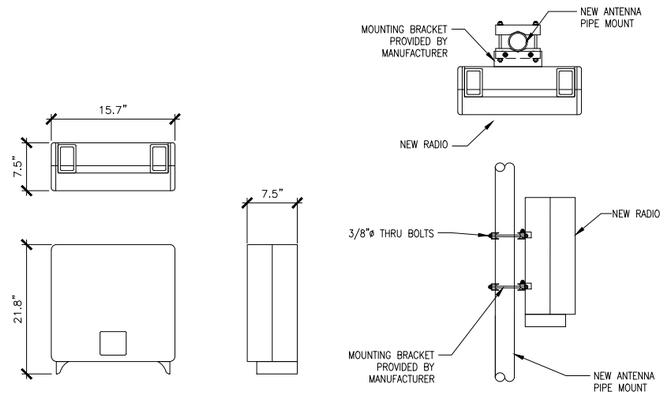
REVISION: 3

DIMENSIONS, WxDxH:	15.7"x12.1"x19.6"
TOTAL WEIGHT:	109 lbs
TEMPERATURE:	−40° TO 55° C



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

DIMENSIONS, WxDxH:	15.2"x7.5"x19.2"
TOTAL WEIGHT:	92.5 lbs
TEMPERATURE:	−40° TO 55° C

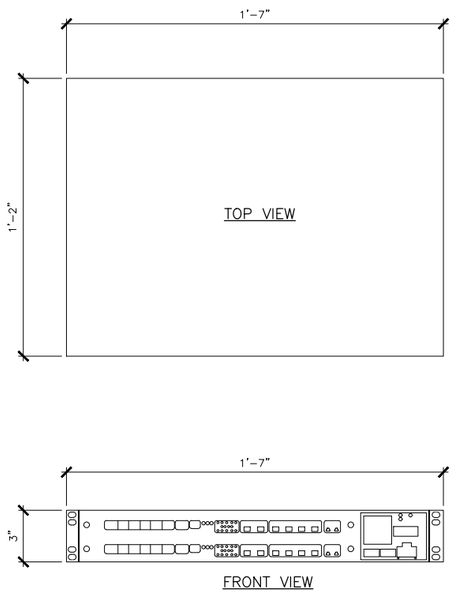


2 (N) RADIO 4480 B71+B85 SPEC
SCALE: NOT TO SCALE

DIGITAL UNIT FOR GSM
THE DIGITAL UNIT GSM, DUG 20 CAN CONTROL UP TO 12 GSM CARRIERS. IF MORE THAN 12 TRXS ARE REQUIRED, THEN AN ADDITIONAL DUG CAN BE INSTALLED IN THE RBS 6601 MAIN UNIT AND SYNCHRONIZED WITH THE OTHER DUG IN THE MAIN UNIT.
THE DUG SUPPORTS THE CROSS−CONNECTION OF INDIVIDUAL TIME SLOTS TO SPECIFIC TRXS AND EXTRACTS THE SYNCHRONIZATION INFORMATION FROM THE PULSE−CODE MODULATION (PCM) LINK TO GENERATE A TIMING REFERENCE FOR THE RBS.
THE DUG 20 SUPPORTS:

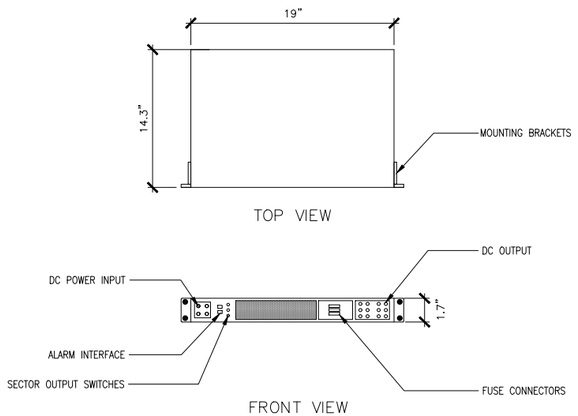
- E1/T1 transmission interface
- Baseband processing
- Link Access Procedures on D-Channel (LAPD) concentration / multiplexing
- Abis optimization
- Multi-drop (cascading)
- Synchronized radio network, through an external GPS receiver
- Transceiver Group (TG) synchronization
- Site LAN

3 (N) DUG20 SPEC
SCALE: NOT TO SCALE



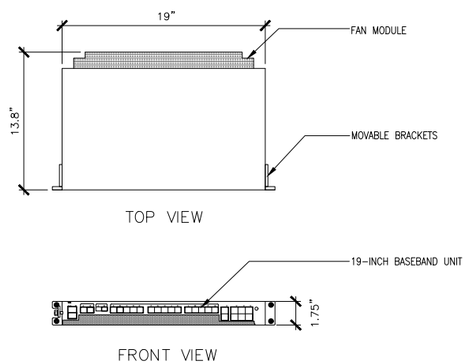
4 (N) RBS 6601 MAIN UNIT SPEC
SCALE: NOT TO SCALE

DIMENSIONS, WxDxH:	19"x14.3"x1.7"
TOTAL WEIGHT:	< 17.3 lbs



5 (N) PSU 4813 SPEC
SCALE: NOT TO SCALE

DIMENSIONS, WxDxH:	(19"x13.78"x1.75")
MAX POWER CONSUMPTION:	180 W
BREAKER SIZE:	MIN 10 A, MAX 30 A
TOTAL WEIGHT:	± 14.33 lbs



6 (N) BASEBAND 6648 SPEC
SCALE: NOT TO SCALE

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STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

12/03/2021

SHEET NUMBER: C-6

REVISION: 3

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

DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	PHASE LOADS (VA) A	PHASE LOADS (VA) B	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
6160	**7000**	**C**	**100**	**1**	7001		2	60	NC	1	SURGE ARRESTOR
	7000	**C**		**3**		7001	4		NC	1	
6160 GFI	**180**	**NC**	**20**	**5**	180		6	60	NC	0	NA (OFF)
NA				7		0	8		NC	0	
MMBTS (OFF)	0	NC	20	9	180		10	20	NC	180	TELCO GFI
FAN	900	NC	10	11		900	12				NA
				BASE LOAD (VA) =	7361	7901					
				25% OF CONTINUOUS LOAD (VA) =	1750	1750					
				TOTAL LOAD (VA) =	9111	9651					
				TOTAL LOAD (A) =	76	80					

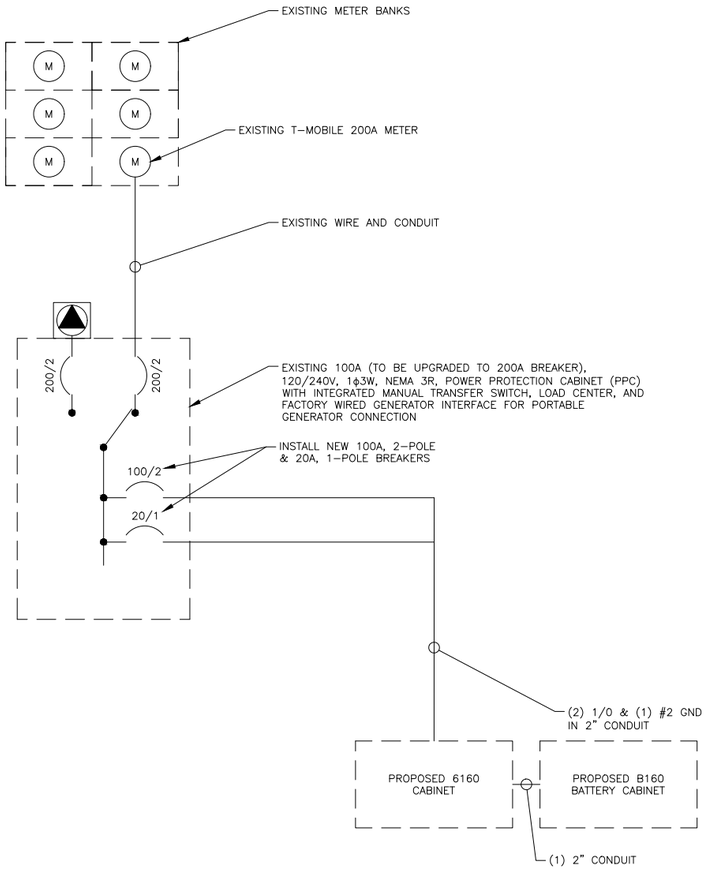
C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD

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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STATE OF CONNECTICUT
SHUHEI SAKANOUE
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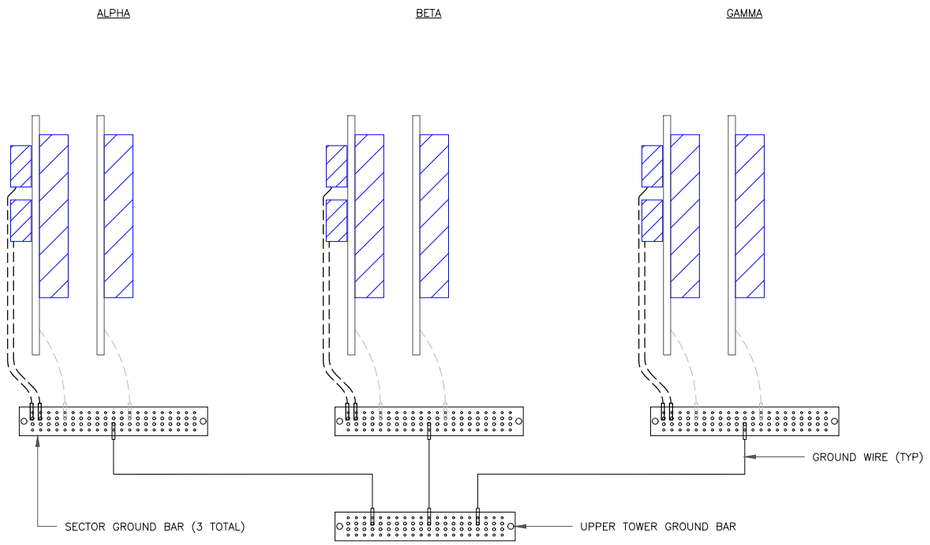
LICENSED PROFESSIONAL ENGINEER

12/03/2021

SHEET NUMBER: E-1

REVISION: 3



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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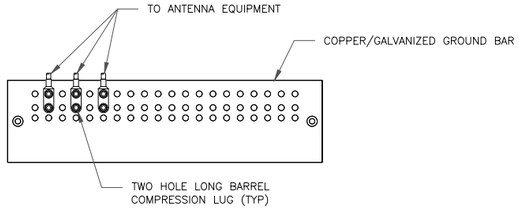
STATE OF CONNECTICUT
STEPHEN SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

12/03/2021

SHEET NUMBER: G-1

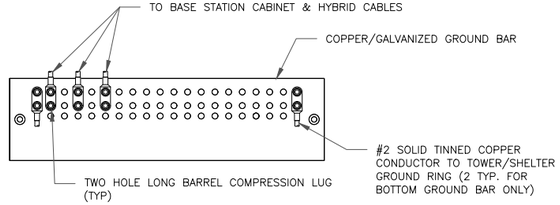
REVISION: 3



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.

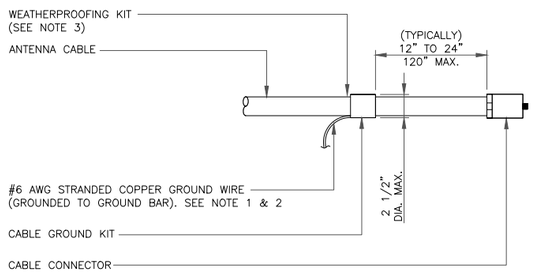
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

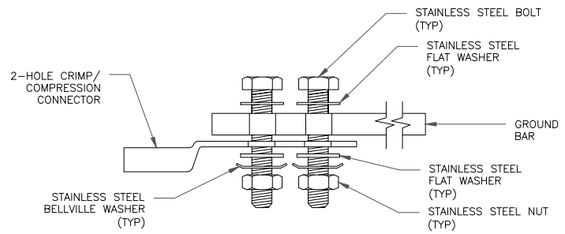
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



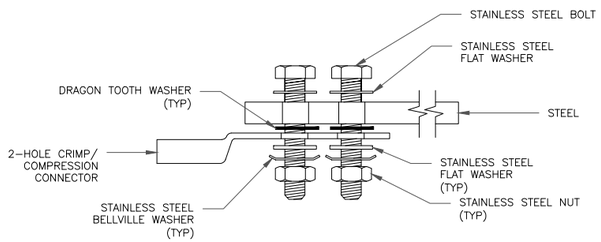
NOTES:

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.

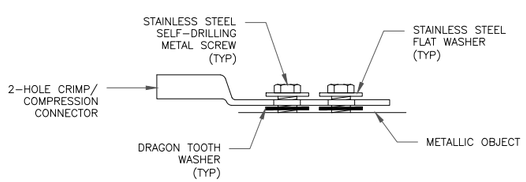
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



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

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1500 CORPORATE DRIVE
CANONSBURG, PA 15317

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T-MOBILE SITE NUMBER:
CTHA662A

BU #: **876325**
WESTON SQUARE

92 WESTON STREET
HARTFORD, CT 06103-1217

EXISTING 110'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	06/01/21	RCD	FINAL	SS
1	09/13/21	HL	FINAL	SS
2	10/28/21	HL	FINAL	SS
3	12/03/21	TJ	AZIMUTH UPDATE	SS

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

12/03/2021

SHEET NUMBER: G-2
REVISION: 3

Exhibit D

Structural Analysis Report

Date: **September 20, 2021**

Crown Castle
2000 Corporate Drive
Canonsburg. PA 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Sprint PCS* Co-Locate**	
	Site Number:	CTHA662A
	Site Name:	CT03XC064
Crown Castle Designation:	**BU Number:**	876325
	Site Name:	WESTON SQUARE
	JDE Job Number:	650689
	Work Order Number:	2014744
	Order Number:	557897 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	2014744
Site Data:	**92 Weston Street, Hartford, HARTFORD County, CT**	
	Latitude *41° 47' 12.3"*, Longitude *-72° 39' 44.42"*	
	110 Foot - Monopole Tower	

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

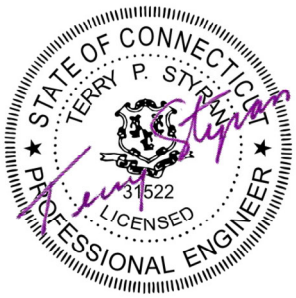
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity-99.8%**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 117 mph. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Kibreab Gebremariam

Respectfully submitted by:



Terry P. Styran, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 110 ft Monopole tower designed by ROHN. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	117 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 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)
107.0	108.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	3	1-5/8
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	ericsson	Radio 4480_TMOV2		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
	107.0	1	Site Pro 1	RMQP-4xx + HRK12 12.5' Platform with Handrails		

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)
105.0	105.0	3	alcatel lucent	800MHZ 2X50W RRH W/FILTER	-	-
		6	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ		
		3	rfs celwave	IBC1900BB-1		
		3	rfs celwave	IBC1900HG-2A		
		1	tower mounts	Side Arm Mount [SO 102-3]		
90.0	91.0	3	ericsson	AIR 6419 B77G w/ Mount Pipe	3 4 4	3/8 13/16 7/8
		3	ericsson	AIR 6449 N77 w/ Mount Pipe		
	90.0	1	tower mounts	SitePro1 RMQLP-4120-H10		
		3	cci antennas	DMP65R-BU6D w/ Mount Pipe		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 32 B66A		
		3	ericsson	RRUS 4415 B25		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS E2 B29		
		3	quintel technology	QD6616-7 w/ Mount Pipe		
		4	raycap	DC6-48-60-18-8F		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
76.0	76.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	6 3	7/8 1-5/8
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RRUS 4415 B25		
		3	commscope	SDX1926Q-43		
		1	tower mounts	Site Pro 1 RMQP-xxx + HRK12 12.5' Platform with Handrails		
64.0	64.0	1	tower mounts	PV-VPP12M-HR-B	2	1-7/8
		3	commscope	BSAMNT-SBS-1-2 (Mount Bracket)		
		6	commscope	NHH-65B-R2B		
		2	raycap	RVZDC-6627-PF-48		
		3	samsung telecommunications	20W CBRS		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
54.0	54.0	3	fujitsu	TA08025-B604	1	1-3/8
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2192540	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1615433	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1615400	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2356066	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3187227	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3667858	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6702634	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	8892341	CCISITES
4-POST-MODIFICATION INSPECTION	6996864	CCISITES
4-POST-MODIFICATION INSPECTION	4075332	CCISITES
4-POST-MODIFICATION INSPECTION	3355603	CCISITES
4-POST-MODIFICATION INSPECTION	2561266	CCISITES
4-POST-MODIFICATION INSPECTION	1956491	CCISITES

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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are included in Appendix C.

3.2) Assumptions

1) 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.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
110 - 105	Pole	TP24x24x0.25	Pole	3.1%	Pass
105 - 100	Pole	TP24x24x0.25	Pole	9.7%	Pass
100 - 95	Pole	TP24x24x0.25	Pole	16.5%	Pass
95 - 90	Pole	TP24x24x0.25	Pole	23.6%	Pass
90 - 85	Pole	TP24x24x0.375	Pole	24.4%	Pass
85 - 80	Pole	TP24x24x0.375	Pole	33.5%	Pass
80 - 75	Pole	TP24x24x0.375	Pole	43.7%	Pass
75 - 70	Pole	TP24x24x0.375	Pole	55.8%	Pass
70 - 65	Pole	TP24x24x0.375	Pole	68.0%	Pass
65 - 60	Pole	TP24x24x0.375	Pole	82.5%	Pass
60 - 55	Pole	TP30x30x0.375	Pole	64.3%	Pass
55 - 50	Pole	TP30x30x0.375	Pole	75.5%	Pass
50 - 45	Pole	TP30x30x0.375	Pole	86.8%	Pass
45 - 40	Pole	TP30x30x0.375	Pole	98.3%	Pass
40 - 39.33	Pole	TP30x30x0.375	Pole	99.8%	Pass
39.33 - 39.08	Pole + Reinf.	TP30x30x0.4875	Pole	78.3%	Pass
39.08 - 34.08	Pole + Reinf.	TP30x30x0.4875	Pole	87.4%	Pass
34.08 - 30	Pole + Reinf.	TP30x30x0.4875	Pole	95.0%	Pass
30 - 29.75	Pole	TP30x30x0.5	Pole	88.8%	Pass
29.75 - 25	Pole	TP30x30x0.5	Pole	97.1%	Pass
25 - 24.75	Pole + Reinf.	TP30x30x0.5563	Pole	87.7%	Pass

24.75 - 19.75	Pole + Reinf.	TP30x30x0.5563	Pole	95.7%	Pass
19.75 - 18.58	Pole + Reinf.	TP30x30x0.5563	Pole	97.6%	Pass
18.58 - 18.33	Pole + Reinf.	TP30x30x0.6875	Pole	84.8%	Pass
18.33 - 13.33	Pole + Reinf.	TP30x30x0.6875	Pole	91.9%	Pass
13.33 - 8.42	Pole + Reinf.	TP30x30x0.6875	Pole	99.0%	Pass
8.42 - 8.07	Pole + Reinf.	TP30x30x0.8625	Pole	76.3%	Pass
8.07 - 7.83	Pole + Reinf.	TP30x30x0.8625	Pole	76.6%	Pass
7.83 - 6	Pole + Reinf.	TP30x30x0.8625	Pole	78.6%	Pass
6 - 5.75	Pole + Reinf.	TP30x30x0.8	Pole	84.5%	Pass
5.75 - 2	Pole + Reinf.	TP30x30x0.8	Pole	89.0%	Pass
2 - 1.75	Pole + Reinf.	TP30x30x1.45	Pole	60.5%	Pass
1.75 - 0	Pole + Reinf.	TP30x30x1.45	Pole	62.0%	Pass
				Summary	
			Pole	99.8%	Pass
			Reinforcement	88.6%	Pass
			Overall	99.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	99.3	Pass
1	Base Plate	0	66.5	Pass
1	Base Foundation (Structure)	0	88.3	Pass
1	Base Foundation (Soil Interaction)	0	26.3	Pass
1	Flange Bolts	90	13.7	Pass
1,2	Flange Plate		23.6	Pass
1	Flange Bolts	60	43.7	Pass
1,2	Flange Plate		82.5	Pass
1	Flange Bolts	30.	20.6	Pass
1	Flange Plate		19.6	Pass
1	Flange Jump		64.1	Pass

Structure Rating (max from all components) =	**99.8%**

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity. Rating per TIA-222-H Section 15.5.
2) Flange plates are assumed to have the same capacity as their respective splice shaft.

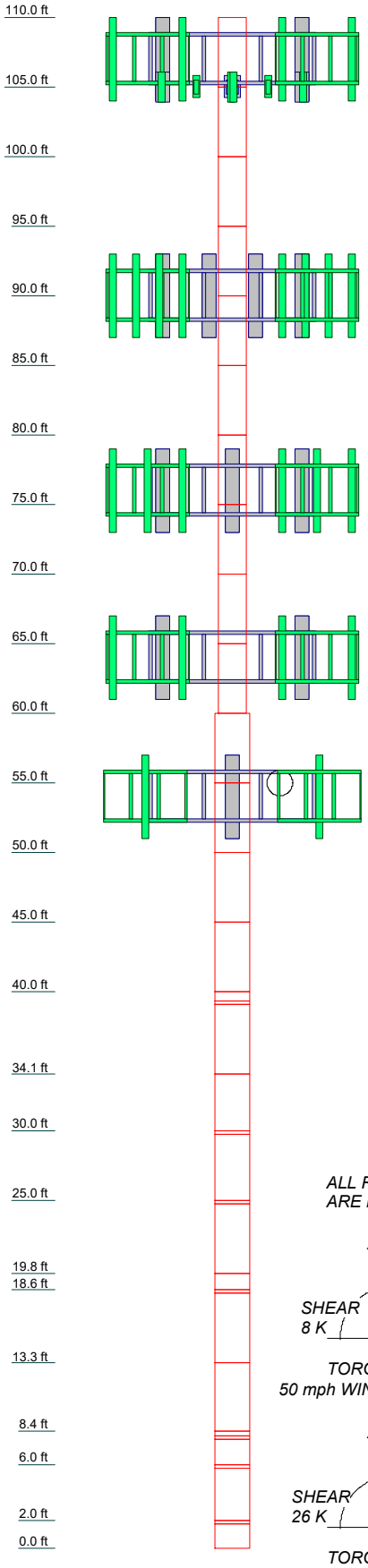
4.1) Recommendations

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	Size	Length (ft)	Grade	Weight (K)
1	P24x0.25	5.00	A53-B-42	0.3
2	P24x0.25	5.00		0.3
3	P24x0.25	5.00		0.3
4	P24x0.25	5.00		0.3
5	P24x0.375	5.00		0.5
6	P24x0.375	5.00		0.5
7	P24x0.375	5.00		0.5
8	P24x0.375	5.00		0.5
9	P24x0.375	5.00		0.5
10	P24x0.375	5.00		0.5
11	P30x0.375	5.00		0.6
12	P30x0.375	5.00		0.6
13	P30x0.375	5.00		0.6
14	P30x0.375	5.00		0.6
15				
16				
17		5.00		0.7
18		4.08		0.6
19				
20		4.75		0.7
21		0.25		0.1
22		5.00		1.1
23				
24				
25		5.00		1.4
26		4.92		1.4
27				
28				
29				
30				
31		3.75		0.9
32				
33		1.75		0.6
				15.3



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 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 0.00 ft
8. TOWER RATING: 99.8%

ALL REACTIONS ARE FACTORED

AXIAL 76 K

SHEAR 8 K *MOMENT 588 kip-ft*

TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL 46 K

SHEAR 26 K *MOMENT 1934 kip-ft*

TORQUE 0 kip-ft
REACTIONS - 117 mph WIND

CROWN CASTLE
The pathway to Possible

Crown Castle
2000 Corporate Drive
Canonsburg. PA 15317
Phone: (724) 416-2000
FAX:

Job: ***BU# 876325***			
Project:			
Client: Crown Castle	Drawn by: KGebremariam		App'd:
Code: TIA-222-H	Date: 09/20/21		Scale: NTS
Path: C:\Users\KGebremariam\Desktop\Work Area\876325\WO 2014744 - SA\Prod\876325 R.er			Dwg No. E-1

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 Hartford County, Connecticut.
- Tower base elevation above sea level: 10.00 ft.
- Basic wind speed of 117 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- 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

Pole Section Geometry

Section	*Elevation* ft	*Section Length* ft	*Pole Size*	*Pole Grade*	*Socket Length* ft
L1	110.00-105.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L2	105.00-100.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L3	100.00-95.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L4	95.00-90.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L5	90.00-85.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L6	85.00-80.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L7	80.00-75.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L8	75.00-70.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L9	70.00-65.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L10	65.00-60.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L11	60.00-55.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L12	55.00-50.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L13	50.00-45.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L14	45.00-40.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L15	40.00-39.33	0.67	P30x0.375	A53-B-42 (42 ksi)	
L16	39.33-39.08	0.25	P30x0.4875	A53-B-42 (42 ksi)	
L17	39.08-34.08	5.00	P30x0.4875	A53-B-42 (42 ksi)	
L18	34.08-30.00	4.08	P30x0.4875	A53-B-42 (42 ksi)	
L19	30.00-29.75	0.25	P30x0.5	A53-B-42 (42 ksi)	
L20	29.75-25.00	4.75	P30x0.5	A53-B-42 (42 ksi)	
L21	25.00-24.75	0.25	P30x0.55625	A53-B-42 (42 ksi)	
L22	24.75-19.75	5.00	P30x0.55625	A53-B-42 (42 ksi)	
L23	19.75-18.58	1.17	P30x0.55625	A53-B-42 (42 ksi)	
L24	18.58-18.33	0.25	P30x0.6875	A53-B-42 (42 ksi)	
L25	18.33-13.33	5.00	P30x0.6875	A53-B-42 (42 ksi)	
L26	13.33-8.42	4.92	P30x0.6875	A53-B-42 (42 ksi)	
L27	8.42-8.07	0.35	P30x0.8625	A53-B-42 (42 ksi)	
L28	8.07-7.83	0.23	P30x0.8625	A53-B-42 (42 ksi)	
L29	7.83-6.00	1.83	P30x0.8625	A53-B-42 (42 ksi)	
L30	6.00-5.75	0.25	P30x0.8	A53-B-42 (42 ksi)	
L31	5.75-2.00	3.75	P30x0.8	A53-B-42 (42 ksi)	
L32	2.00-1.75	0.25	P30x1.45	A53-B-42 (42 ksi)	
L33	1.75-0.00	1.75	P30x1.45	A53-B-42 (42 ksi)	

Tower Elevation	*Gusset Area (per face)*	*Gusset Thickness*	*Gusset Grade*	*Adjust. Factor A_f*	*Adjust. Factor A_r*	*Weight Mult.*	*Double Angle Stitch Bolt Spacing Diagonals*	*Double Angle Stitch Bolt Spacing Horizontals*	*Double Angle Stitch Bolt Spacing Redundants*
ft	*ft^2*	*in*					*in*	*in*	*in*
L1 110.00-105.00				1	1	1			
L2 105.00-100.00				1	1	1			
L3 100.00-95.00				1	1	1			
L4 95.00-90.00				1	1	1			
L5 90.00-85.00				1	1	1			
L6 85.00-80.00				1	1	1			
L7 80.00-75.00				1	1	1			
L8 75.00-70.00				1	1	1			
L9 70.00-65.00				1	1	1			
L10 65.00-60.00				1	1	1			
L11 60.00-55.00				1	1	1			
L12 55.00-50.00				1	1	1			
L13 50.00-45.00				1	1	1			
L14 45.00-40.00				1	1	1			
L15 40.00-39.33				1	1	1			
L16 39.33-39.08				1	1	0.965972			
L17 39.08-34.08				1	1	0.965972			
L18 34.08-30.00				1	1	0.965972			
L19 30.00-29.75				1	1	1			
L20 29.75-25.00				1	1	1			
L21 25.00-24.75				1	1	1.25043			
L22 24.75-19.75				1	1	1.25043			
L23 19.75-18.58				1	1	1.25043			
L24 18.58-18.33				1	1	1.28397			
L25 18.33-13.33				1	1	1.28397			
L26 13.33-8.42				1	1	1.28397			
L27 8.42-8.07				1	1	1.10116			
L28 8.07-7.83				1	1	1.10116			
L29 7.83-6.00				1	1	1.10116			
L30 6.00-5.75				1	1	0.939375			
L31 5.75-2.00				1	1	0.939375			
L32 2.00-1.75				1	1	0.799194			
L33 1.75-0.00				1	1	0.799194			

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 plf*
3" Flexible Conduit	A	No	Surface Ar (CaAa)	90.00 - 0.00	4	4	-0.500 0.010	3.0000		0.30
***										
810921-001(7/8)	B	No	Surface Ar (CaAa)	76.00 - 0.00	6	6	-0.500 -0.230	1.1120		0.40
***										
HB158-U12S24-160-LI(1-7/8)	C	No	Surface Ar (CaAa)	64.00 - 0.00	2	2	-0.500 -0.350	1.6250		3.20
***										
CU12PSM9P8XXX(1-3/8)	C	No	Surface Ar (CaAa)	54.00 - 0.00	1	1	-0.100 -0.050	1.4110		1.66
***										
*** Existing Modifications ***										
Aero Channel MP305	A	No	Surface Af (CaAa)	10.50 - 0.50	1	1	0.000 0.000	5.3125	14.8400	0.00
Aero Channel MP305	B	No	Surface Af (CaAa)	10.50 - 0.50	1	1	0.000 0.000	5.3125	14.8400	0.00
Aero Channel MP305	C	No	Surface Af (CaAa)	10.50 - 0.50	1	1	0.000 0.000	5.3125	14.8400	0.00
Aero Channel MP305	C	No	Surface Af (CaAa)	10.50 - 0.50	1	1	0.000 0.000	5.3125	14.8400	0.00
***										
Aero Channel MP303	A	No	Surface Af (CaAa)	40.50 - 30.50	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	B	No	Surface Af (CaAa)	40.50 - 30.50	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	C	No	Surface Af (CaAa)	40.50 - 30.50	1	1	0.000 0.000	4.0625	11.2600	0.00
***										
Aero Channel MP305	A	No	Surface Af (CaAa)	21.00 - 6.00	1	1	0.000 0.000	5.3125	14.8400	0.00
Aero Channel MP305	B	No	Surface Af (CaAa)	21.00 - 6.00	1	1	0.000 0.000	5.3125	14.8400	0.00
Aero Channel MP305	C	No	Surface Af (CaAa)	21.00 - 6.00	1	1	0.000 0.000	5.3125	14.8400	0.00
***										
CCI-SFP-045100	A	No	Surface Af (CaAa)	26.50 - 4.50	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	B	No	Surface Af (CaAa)	26.50 - 4.50	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	C	No	Surface Af (CaAa)	26.50 - 4.50	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	C	No	Surface Af (CaAa)	26.50 - 4.50	1	1	0.000 0.000	4.5000	11.0000	0.00
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	*Face or Leg*	*Allow Shield*	*Exclude From Torque Calculation*	*Component Type*	*Placement ft*	*Total Number*		*C_AA_A ft^2/ft*	*Weight plf*
***									
HB158-21U6S24-xxM_TMO(1-5/8)	C	No	No	Inside Pole	107.00 - 0.00	3	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50
							2" Ice	0.00	2.50
***									
PWRT-606-S(7/8)	C	No	No	Inside Pole	90.00 - 0.00	4	No Ice	0.00	0.89
							1/2" Ice	0.00	0.89
							1" Ice	0.00	0.89
							2" Ice	0.00	0.89
PWRT-608-S(13/16)	C	No	No	Inside Pole	90.00 - 0.00	4	No Ice	0.00	0.62
							1/2" Ice	0.00	0.62

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							1" Ice	0.00	0.62
							2" Ice	0.00	0.62
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	90.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	90.00 - 0.00	2	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	B	No	No	Inside Pole	76.00 - 0.00	2	No Ice	0.00	1.07
							1/2" Ice	0.00	1.07
							1" Ice	0.00	1.07
							2" Ice	0.00	1.07
***									
***									

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	110.00-105.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L2	105.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.04
L3	100.00-95.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.04
L4	95.00-90.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.04
L5	90.00-85.00	A	0.000	0.000	6.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L6	85.00-80.00	A	0.000	0.000	6.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L7	80.00-75.00	A	0.000	0.000	6.000	0.000	0.01
		B	0.000	0.000	0.667	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L8	75.00-70.00	A	0.000	0.000	6.000	0.000	0.01
		B	0.000	0.000	3.336	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.07
L9	70.00-65.00	A	0.000	0.000	6.000	0.000	0.01
		B	0.000	0.000	3.336	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.07
L10	65.00-60.00	A	0.000	0.000	6.000	0.000	0.01
		B	0.000	0.000	3.336	0.000	0.02
		C	0.000	0.000	1.300	0.000	0.09
L11	60.00-55.00	A	0.000	0.000	6.000	0.000	0.01
		B	0.000	0.000	3.336	0.000	0.02
		C	0.000	0.000	1.625	0.000	0.10
L12	55.00-50.00	A	0.000	0.000	6.000	0.000	0.01
		B	0.000	0.000	3.336	0.000	0.02
		C	0.000	0.000	2.189	0.000	0.11
L13	50.00-45.00	A	0.000	0.000	6.000	0.000	0.01
		B	0.000	0.000	3.336	0.000	0.02
		C	0.000	0.000	2.330	0.000	0.11
L14	45.00-40.00	A	0.000	0.000	6.339	0.000	0.01

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
		B	0.000	0.000	3.675	0.000	0.02
		C	0.000	0.000	2.669	0.000	0.11
L15	40.00-39.33	A	0.000	0.000	1.252	0.000	0.00
		B	0.000	0.000	0.897	0.000	0.00
		C	0.000	0.000	0.763	0.000	0.01
L16	39.33-39.08	A	0.000	0.000	0.469	0.000	0.00
		B	0.000	0.000	0.336	0.000	0.00
		C	0.000	0.000	0.286	0.000	0.01
L17	39.08-34.08	A	0.000	0.000	9.385	0.000	0.01
		B	0.000	0.000	6.721	0.000	0.02
		C	0.000	0.000	5.716	0.000	0.11
L18	34.08-30.00	A	0.000	0.000	7.326	0.000	0.00
		B	0.000	0.000	5.150	0.000	0.02
		C	0.000	0.000	4.329	0.000	0.09
L19	30.00-29.75	A	0.000	0.000	0.300	0.000	0.00
		B	0.000	0.000	0.167	0.000	0.00
		C	0.000	0.000	0.117	0.000	0.01
L20	29.75-25.00	A	0.000	0.000	6.825	0.000	0.01
		B	0.000	0.000	4.294	0.000	0.02
		C	0.000	0.000	4.464	0.000	0.10
L21	25.00-24.75	A	0.000	0.000	0.487	0.000	0.00
		B	0.000	0.000	0.354	0.000	0.00
		C	0.000	0.000	0.492	0.000	0.01
L22	24.75-19.75	A	0.000	0.000	10.857	0.000	0.01
		B	0.000	0.000	8.193	0.000	0.02
		C	0.000	0.000	10.937	0.000	0.11
L23	19.75-18.58	A	0.000	0.000	3.309	0.000	0.00
		B	0.000	0.000	2.687	0.000	0.01
		C	0.000	0.000	3.328	0.000	0.03
L24	18.58-18.33	A	0.000	0.000	0.709	0.000	0.00
		B	0.000	0.000	0.576	0.000	0.00
		C	0.000	0.000	0.713	0.000	0.01
L25	18.33-13.33	A	0.000	0.000	14.177	0.000	0.01
		B	0.000	0.000	11.513	0.000	0.02
		C	0.000	0.000	14.258	0.000	0.11
L26	13.33-8.42	A	0.000	0.000	15.660	0.000	0.01
		B	0.000	0.000	13.041	0.000	0.02
		C	0.000	0.000	17.461	0.000	0.11
L27	8.42-8.07	A	0.000	0.000	1.282	0.000	0.00
		B	0.000	0.000	1.095	0.000	0.00
		C	0.000	0.000	1.576	0.000	0.01
L28	8.07-7.83	A	0.000	0.000	0.857	0.000	0.00
		B	0.000	0.000	0.732	0.000	0.00
		C	0.000	0.000	1.054	0.000	0.01
L29	7.83-6.00	A	0.000	0.000	6.712	0.000	0.00
		B	0.000	0.000	5.735	0.000	0.01
		C	0.000	0.000	8.256	0.000	0.04
L30	6.00-5.75	A	0.000	0.000	0.694	0.000	0.00
		B	0.000	0.000	0.561	0.000	0.00
		C	0.000	0.000	0.905	0.000	0.01
L31	5.75-2.00	A	0.000	0.000	8.536	0.000	0.00
		B	0.000	0.000	6.538	0.000	0.02
		C	0.000	0.000	9.820	0.000	0.08
L32	2.00-1.75	A	0.000	0.000	0.507	0.000	0.00
		B	0.000	0.000	0.373	0.000	0.00
		C	0.000	0.000	0.530	0.000	0.01
L33	1.75-0.00	A	0.000	0.000	3.133	0.000	0.00
		B	0.000	0.000	2.201	0.000	0.01
		C	0.000	0.000	2.882	0.000	0.04

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	110.00-105.00	A	1.435	0.000	0.000	0.000	0.000	0.00

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
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L2	105.00-100.00	A	1.428	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.04
L3	100.00-95.00	A	1.421	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.04
L4	95.00-90.00	A	1.413	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.04
L5	90.00-85.00	A	1.406	0.000	0.000	9.257	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.07
L6	85.00-80.00	A	1.397	0.000	0.000	9.247	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.07
L7	80.00-75.00	A	1.389	0.000	0.000	9.236	0.000	0.10
		B		0.000	0.000	1.181	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.07
L8	75.00-70.00	A	1.379	0.000	0.000	9.224	0.000	0.10
		B		0.000	0.000	5.894	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.07
L9	70.00-65.00	A	1.370	0.000	0.000	9.212	0.000	0.10
		B		0.000	0.000	5.882	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.07
L10	65.00-60.00	A	1.359	0.000	0.000	9.199	0.000	0.10
		B		0.000	0.000	5.869	0.000	0.08
		C		0.000	0.000	2.984	0.000	0.12
L11	60.00-55.00	A	1.348	0.000	0.000	9.185	0.000	0.10
		B		0.000	0.000	5.855	0.000	0.07
		C		0.000	0.000	3.716	0.000	0.13
L12	55.00-50.00	A	1.336	0.000	0.000	9.169	0.000	0.10
		B		0.000	0.000	5.839	0.000	0.07
		C		0.000	0.000	5.334	0.000	0.16
L13	50.00-45.00	A	1.322	0.000	0.000	9.153	0.000	0.10
		B		0.000	0.000	5.823	0.000	0.07
		C		0.000	0.000	5.712	0.000	0.16
L14	45.00-40.00	A	1.308	0.000	0.000	9.558	0.000	0.10
		B		0.000	0.000	6.228	0.000	0.08
		C		0.000	0.000	6.102	0.000	0.17
L15	40.00-39.33	A	1.299	0.000	0.000	1.781	0.000	0.02
		B		0.000	0.000	1.336	0.000	0.02
		C		0.000	0.000	1.318	0.000	0.03
L16	39.33-39.08	A	1.297	0.000	0.000	0.667	0.000	0.01
		B		0.000	0.000	0.501	0.000	0.01
		C		0.000	0.000	0.494	0.000	0.01
L17	39.08-34.08	A	1.288	0.000	0.000	13.330	0.000	0.14
		B		0.000	0.000	10.000	0.000	0.11
		C		0.000	0.000	9.855	0.000	0.20
L18	34.08-30.00	A	1.271	0.000	0.000	10.440	0.000	0.11
		B		0.000	0.000	7.720	0.000	0.09
		C		0.000	0.000	7.588	0.000	0.16
L19	30.00-29.75	A	1.262	0.000	0.000	0.454	0.000	0.00
		B		0.000	0.000	0.287	0.000	0.00
		C		0.000	0.000	0.279	0.000	0.01
L20	29.75-25.00	A	1.251	0.000	0.000	10.111	0.000	0.10
		B		0.000	0.000	6.948	0.000	0.08
		C		0.000	0.000	8.276	0.000	0.18
L21	25.00-24.75	A	1.239	0.000	0.000	0.702	0.000	0.01
		B		0.000	0.000	0.535	0.000	0.01
		C		0.000	0.000	0.775	0.000	0.01
L22	24.75-19.75	A	1.226	0.000	0.000	15.401	0.000	0.14
		B		0.000	0.000	12.071	0.000	0.12
		C		0.000	0.000	16.839	0.000	0.24
L23	19.75-18.58	A	1.208	0.000	0.000	4.558	0.000	0.04
		B		0.000	0.000	3.781	0.000	0.04
		C		0.000	0.000	4.885	0.000	0.06
L24	18.58-18.33	A	1.203	0.000	0.000	0.976	0.000	0.01

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
		B		0.000	0.000	0.809	0.000	0.01
		C		0.000	0.000	1.045	0.000	0.01
L25	18.33-13.33	A	1.185	0.000	0.000	19.466	0.000	0.17
		B		0.000	0.000	16.136	0.000	0.15
		C		0.000	0.000	20.822	0.000	0.27
L26	13.33-8.42	A	1.141	0.000	0.000	20.996	0.000	0.18
		B		0.000	0.000	17.722	0.000	0.16
		C		0.000	0.000	24.225	0.000	0.30
L27	8.42-8.07	A	1.110	0.000	0.000	1.679	0.000	0.01
		B		0.000	0.000	1.446	0.000	0.01
		C		0.000	0.000	2.095	0.000	0.02
L28	8.07-7.83	A	1.106	0.000	0.000	1.122	0.000	0.01
		B		0.000	0.000	0.966	0.000	0.01
		C		0.000	0.000	1.400	0.000	0.02
L29	7.83-6.00	A	1.091	0.000	0.000	8.767	0.000	0.07
		B		0.000	0.000	7.546	0.000	0.06
		C		0.000	0.000	10.929	0.000	0.12
L30	6.00-5.75	A	1.073	0.000	0.000	0.919	0.000	0.01
		B		0.000	0.000	0.753	0.000	0.01
		C		0.000	0.000	1.212	0.000	0.01
L31	5.75-2.00	A	1.029	0.000	0.000	11.308	0.000	0.09
		B		0.000	0.000	8.811	0.000	0.08
		C		0.000	0.000	13.226	0.000	0.18
L32	2.00-1.75	A	0.957	0.000	0.000	0.668	0.000	0.01
		B		0.000	0.000	0.501	0.000	0.00
		C		0.000	0.000	0.710	0.000	0.01
L33	1.75-0.00	A	0.887	0.000	0.000	4.169	0.000	0.03
		B		0.000	0.000	3.003	0.000	0.03
		C		0.000	0.000	3.967	0.000	0.07

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	110.00-105.00	0.0000	0.0000	0.0000	0.0000
L2	105.00-100.00	0.0000	0.0000	0.0000	0.0000
L3	100.00-95.00	0.0000	0.0000	0.0000	0.0000
L4	95.00-90.00	0.0000	0.0000	0.0000	0.0000
L5	90.00-85.00	-6.5057	-0.0681	-4.7524	-0.0498
L6	85.00-80.00	-6.5057	-0.0681	-4.7523	-0.0498
L7	80.00-75.00	-5.9966	-0.6780	-4.3200	-0.5572
L8	75.00-70.00	-4.3906	-2.6018	-3.0094	-2.0968
L9	70.00-65.00	-4.3906	-2.6018	-3.0110	-2.0960
L10	65.00-60.00	-3.2989	-1.7903	-1.8687	-1.2137
L11	60.00-55.00	-3.4964	-1.8797	-1.8395	-1.1903
L12	55.00-50.00	-3.3198	-1.3637	-1.6888	-0.5889
L13	50.00-45.00	-3.2773	-1.2395	-1.6571	-0.4489
L14	45.00-40.00	-3.1124	-1.1771	-1.6178	-0.4409
L15	40.00-39.33	-2.1422	-0.8102	-1.3025	-0.3562
L16	39.33-39.08	-2.1422	-0.8102	-1.3029	-0.3566
L17	39.08-34.08	-2.1422	-0.8102	-1.3056	-0.3586
L18	34.08-30.00	-2.2370	-0.8461	-1.3467	-0.3724
L19	30.00-29.75	-3.2773	-1.2395	-1.6816	-0.4666
L20	29.75-25.00	-2.6278	-0.2260	-1.4781	0.0662
L21	25.00-24.75	-1.4908	0.8157	-1.1605	0.8606
L22	24.75-19.75	-1.3756	0.7527	-1.0906	0.8035
L23	19.75-18.58	-1.1168	0.6110	-0.9199	0.6719
L24	18.58-18.33	-1.1168	0.6110	-0.9209	0.6711
L25	18.33-13.33	-1.1168	0.6110	-0.9246	0.6679
L26	13.33-8.42	-0.9822	0.9769	-0.8424	0.9546
L27	8.42-8.07	-0.8439	1.3529	-0.7485	1.2703
L28	8.07-7.83	-0.8439	1.3529	-0.7491	1.2699
L29	7.83-6.00	-0.8439	1.3529	-0.7516	1.2684
L30	6.00-5.75	-1.0413	1.6693	-0.9103	1.5284

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L31	5.75-2.00	-1.2719	1.2544	-1.1019	1.1127
L32	2.00-1.75	-1.4303	0.9694	-1.2432	0.8301
L33	1.75-0.00	-1.6223	0.6101	-1.3961	0.5212

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
L5	11	3" Flexible Conduit	85.00 - 90.00	1.0000	1.0000
L6	11	3" Flexible Conduit	80.00 - 85.00	1.0000	1.0000
L7	11	3" Flexible Conduit	75.00 - 80.00	1.0000	1.0000
L7	22	810921-001(7/8)	75.00 - 76.00	1.0000	1.0000
L8	11	3" Flexible Conduit	70.00 - 75.00	1.0000	1.0000
L8	22	810921-001(7/8)	70.00 - 75.00	1.0000	1.0000
L9	11	3" Flexible Conduit	65.00 - 70.00	1.0000	1.0000
L9	22	810921-001(7/8)	65.00 - 70.00	1.0000	1.0000
L10	11	3" Flexible Conduit	60.00 - 65.00	1.0000	1.0000
L10	22	810921-001(7/8)	60.00 - 65.00	1.0000	1.0000
L10	25	HB158-U12S24-160-LI(1-7/8)	60.00 - 64.00	1.0000	1.0000
L11	11	3" Flexible Conduit	55.00 - 60.00	1.0000	1.0000
L11	22	810921-001(7/8)	55.00 - 60.00	1.0000	1.0000
L11	25	HB158-U12S24-160-LI(1-7/8)	55.00 - 60.00	1.0000	1.0000
L12	11	3" Flexible Conduit	50.00 - 55.00	1.0000	1.0000
L12	22	810921-001(7/8)	50.00 - 55.00	1.0000	1.0000
L12	25	HB158-U12S24-160-LI(1-7/8)	50.00 - 55.00	1.0000	1.0000
L12	27	CU12PSM9P8XXX(1-3/8)	50.00 - 54.00	1.0000	1.0000
L13	11	3" Flexible Conduit	45.00 - 50.00	1.0000	1.0000
L13	22	810921-001(7/8)	45.00 - 50.00	1.0000	1.0000
L13	25	HB158-U12S24-160-LI(1-7/8)	45.00 - 50.00	1.0000	1.0000
L13	27	CU12PSM9P8XXX(1-3/8)	45.00 - 50.00	1.0000	1.0000
L14	11	3" Flexible Conduit	40.00 - 45.00	1.0000	1.0000
L14	22	810921-001(7/8)	40.00 - 45.00	1.0000	1.0000
L14	25	HB158-U12S24-160-LI(1-7/8)	40.00 - 45.00	1.0000	1.0000
L14	27	CU12PSM9P8XXX(1-3/8)	40.00 -	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
			45.00		
L14	35	Aero Channel MP303	40.00 - 40.50	1.0000	1.0000
L14	36	Aero Channel MP303	40.00 - 40.50	1.0000	1.0000
L14	37	Aero Channel MP303	40.00 - 40.50	1.0000	1.0000
L15	11	3" Flexible Conduit	39.33 - 40.00	1.0000	1.0000
L15	22	810921-001(7/8)	39.33 - 40.00	1.0000	1.0000
L15	25	HB158-U12S24-160-LI(1-7/8)	39.33 - 40.00	1.0000	1.0000
L15	27	CU12PSM9P8XXX(1-3/8)	39.33 - 40.00	1.0000	1.0000
L15	35	Aero Channel MP303	39.33 - 40.00	1.0000	1.0000
L15	36	Aero Channel MP303	39.33 - 40.00	1.0000	1.0000
L15	37	Aero Channel MP303	39.33 - 40.00	1.0000	1.0000
L16	11	3" Flexible Conduit	39.08 - 39.33	1.0000	1.0000
L16	22	810921-001(7/8)	39.08 - 39.33	1.0000	1.0000
L16	25	HB158-U12S24-160-LI(1-7/8)	39.08 - 39.33	1.0000	1.0000
L16	27	CU12PSM9P8XXX(1-3/8)	39.08 - 39.33	1.0000	1.0000
L16	35	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L16	36	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L16	37	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L17	11	3" Flexible Conduit	34.08 - 39.08	1.0000	1.0000
L17	22	810921-001(7/8)	34.08 - 39.08	1.0000	1.0000
L17	25	HB158-U12S24-160-LI(1-7/8)	34.08 - 39.08	1.0000	1.0000
L17	27	CU12PSM9P8XXX(1-3/8)	34.08 - 39.08	1.0000	1.0000
L17	35	Aero Channel MP303	34.08 - 39.08	1.0000	1.0000
L17	36	Aero Channel MP303	34.08 - 39.08	1.0000	1.0000
L17	37	Aero Channel MP303	34.08 - 39.08	1.0000	1.0000
L18	11	3" Flexible Conduit	30.00 - 34.08	1.0000	1.0000
L18	22	810921-001(7/8)	30.00 - 34.08	1.0000	1.0000
L18	25	HB158-U12S24-160-LI(1-7/8)	30.00 - 34.08	1.0000	1.0000
L18	27	CU12PSM9P8XXX(1-3/8)	30.00 - 34.08	1.0000	1.0000
L18	35	Aero Channel MP303	30.50 - 34.08	1.0000	1.0000
L18	36	Aero Channel MP303	30.50 - 34.08	1.0000	1.0000
L18	37	Aero Channel MP303	30.50 - 34.08	1.0000	1.0000
L19	11	3" Flexible Conduit	29.75 - 30.00	1.0000	1.0000
L19	22	810921-001(7/8)	29.75 - 30.00	1.0000	1.0000
L19	25	HB158-U12S24-160-LI(1-7/8)	29.75 - 30.00	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L19	27	CU12PSM9P8XXX(1-3/8)	29.75 - 30.00	1.0000	1.0000
L20	11	3" Flexible Conduit	25.00 - 29.75	1.0000	1.0000
L20	22	810921-001(7/8)	25.00 - 29.75	1.0000	1.0000
L20	25	HB158-U12S24-160-LI(1-7/8)	25.00 - 29.75	1.0000	1.0000
L20	27	CU12PSM9P8XXX(1-3/8)	25.00 - 29.75	1.0000	1.0000
L20	43	CCI-SFP-045100	25.00 - 26.50	1.0000	1.0000
L20	44	CCI-SFP-045100	25.00 - 26.50	1.0000	1.0000
L20	45	CCI-SFP-045100	25.00 - 26.50	1.0000	1.0000
L20	46	CCI-SFP-045100	25.00 - 26.50	1.0000	1.0000
L21	11	3" Flexible Conduit	24.75 - 25.00	1.0000	1.0000
L21	22	810921-001(7/8)	24.75 - 25.00	1.0000	1.0000
L21	25	HB158-U12S24-160-LI(1-7/8)	24.75 - 25.00	1.0000	1.0000
L21	27	CU12PSM9P8XXX(1-3/8)	24.75 - 25.00	1.0000	1.0000
L21	43	CCI-SFP-045100	24.75 - 25.00	1.0000	1.0000
L21	44	CCI-SFP-045100	24.75 - 25.00	1.0000	1.0000
L21	45	CCI-SFP-045100	24.75 - 25.00	1.0000	1.0000
L21	46	CCI-SFP-045100	24.75 - 25.00	1.0000	1.0000
L22	11	3" Flexible Conduit	19.75 - 24.75	1.0000	1.0000
L22	22	810921-001(7/8)	19.75 - 24.75	1.0000	1.0000
L22	25	HB158-U12S24-160-LI(1-7/8)	19.75 - 24.75	1.0000	1.0000
L22	27	CU12PSM9P8XXX(1-3/8)	19.75 - 24.75	1.0000	1.0000
L22	39	Aero Channel MP305	19.75 - 21.00	1.0000	1.0000
L22	40	Aero Channel MP305	19.75 - 21.00	1.0000	1.0000
L22	41	Aero Channel MP305	19.75 - 21.00	1.0000	1.0000
L22	43	CCI-SFP-045100	19.75 - 24.75	1.0000	1.0000
L22	44	CCI-SFP-045100	19.75 - 24.75	1.0000	1.0000
L22	45	CCI-SFP-045100	19.75 - 24.75	1.0000	1.0000
L22	46	CCI-SFP-045100	19.75 - 24.75	1.0000	1.0000
L23	11	3" Flexible Conduit	18.58 - 19.75	1.0000	1.0000
L23	22	810921-001(7/8)	18.58 - 19.75	1.0000	1.0000
L23	25	HB158-U12S24-160-LI(1-7/8)	18.58 - 19.75	1.0000	1.0000
L23	27	CU12PSM9P8XXX(1-3/8)	18.58 - 19.75	1.0000	1.0000
L23	39	Aero Channel MP305	18.58 - 19.75	1.0000	1.0000
L23	40	Aero Channel MP305	18.58 - 19.75	1.0000	1.0000
L23	41	Aero Channel MP305	18.58 -	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
			19.75		
L23	43	CCI-SFP-045100	18.58 - 19.75	1.0000	1.0000
L23	44	CCI-SFP-045100	18.58 - 19.75	1.0000	1.0000
L23	45	CCI-SFP-045100	18.58 - 19.75	1.0000	1.0000
L23	46	CCI-SFP-045100	18.58 - 19.75	1.0000	1.0000
L24	11	3" Flexible Conduit	18.33 - 18.58	1.0000	1.0000
L24	22	810921-001(7/8)	18.33 - 18.58	1.0000	1.0000
L24	25	HB158-U12S24-160-LI(1-7/8)	18.33 - 18.58	1.0000	1.0000
L24	27	CU12PSM9P8XXX(1-3/8)	18.33 - 18.58	1.0000	1.0000
L24	39	Aero Channel MP305	18.33 - 18.58	1.0000	1.0000
L24	40	Aero Channel MP305	18.33 - 18.58	1.0000	1.0000
L24	41	Aero Channel MP305	18.33 - 18.58	1.0000	1.0000
L24	43	CCI-SFP-045100	18.33 - 18.58	1.0000	1.0000
L24	44	CCI-SFP-045100	18.33 - 18.58	1.0000	1.0000
L24	45	CCI-SFP-045100	18.33 - 18.58	1.0000	1.0000
L24	46	CCI-SFP-045100	18.33 - 18.58	1.0000	1.0000
L25	11	3" Flexible Conduit	13.33 - 18.33	1.0000	1.0000
L25	22	810921-001(7/8)	13.33 - 18.33	1.0000	1.0000
L25	25	HB158-U12S24-160-LI(1-7/8)	13.33 - 18.33	1.0000	1.0000
L25	27	CU12PSM9P8XXX(1-3/8)	13.33 - 18.33	1.0000	1.0000
L25	39	Aero Channel MP305	13.33 - 18.33	1.0000	1.0000
L25	40	Aero Channel MP305	13.33 - 18.33	1.0000	1.0000
L25	41	Aero Channel MP305	13.33 - 18.33	1.0000	1.0000
L25	43	CCI-SFP-045100	13.33 - 18.33	1.0000	1.0000
L25	44	CCI-SFP-045100	13.33 - 18.33	1.0000	1.0000
L25	45	CCI-SFP-045100	13.33 - 18.33	1.0000	1.0000
L25	46	CCI-SFP-045100	13.33 - 18.33	1.0000	1.0000
L26	11	3" Flexible Conduit	8.42 - 13.33	1.0000	1.0000
L26	22	810921-001(7/8)	8.42 - 13.33	1.0000	1.0000
L26	25	HB158-U12S24-160-LI(1-7/8)	8.42 - 13.33	1.0000	1.0000
L26	27	CU12PSM9P8XXX(1-3/8)	8.42 - 13.33	1.0000	1.0000
L26	30	Aero Channel MP305	8.42 - 10.50	1.0000	1.0000
L26	31	Aero Channel MP305	8.42 - 10.50	1.0000	1.0000
L26	32	Aero Channel MP305	8.42 - 10.50	1.0000	1.0000
L26	33	Aero Channel MP305	8.42 - 10.50	1.0000	1.0000
L26	39	Aero Channel MP305	8.42 - 13.33	1.0000	1.0000
L26	40	Aero Channel MP305	8.42 - 13.33	1.0000	1.0000
L26	41	Aero Channel MP305	8.42 - 13.33	1.0000	1.0000
L26	43	CCI-SFP-045100	8.42 - 13.33	1.0000	1.0000
L26	44	CCI-SFP-045100	8.42 - 13.33	1.0000	1.0000
L26	45	CCI-SFP-045100	8.42 - 13.33	1.0000	1.0000
L26	46	CCI-SFP-045100	8.42 - 13.33	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L27	11	3" Flexible Conduit	8.07 - 8.42	1.0000	1.0000
L27	22	810921-001(7/8)	8.07 - 8.42	1.0000	1.0000
L27	25	HB158-U12S24-160-LI(1-7/8)	8.07 - 8.42	1.0000	1.0000
L27	27	CU12PSM9P8XXX(1-3/8)	8.07 - 8.42	1.0000	1.0000
L27	30	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	31	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	32	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	33	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	39	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	40	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	41	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	43	CCI-SFP-045100	8.07 - 8.42	1.0000	1.0000
L27	44	CCI-SFP-045100	8.07 - 8.42	1.0000	1.0000
L27	45	CCI-SFP-045100	8.07 - 8.42	1.0000	1.0000
L27	46	CCI-SFP-045100	8.07 - 8.42	1.0000	1.0000
L28	11	3" Flexible Conduit	7.83 - 8.07	1.0000	1.0000
L28	22	810921-001(7/8)	7.83 - 8.07	1.0000	1.0000
L28	25	HB158-U12S24-160-LI(1-7/8)	7.83 - 8.07	1.0000	1.0000
L28	27	CU12PSM9P8XXX(1-3/8)	7.83 - 8.07	1.0000	1.0000
L28	30	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	31	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	32	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	33	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	39	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	40	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	41	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	43	CCI-SFP-045100	7.83 - 8.07	1.0000	1.0000
L28	44	CCI-SFP-045100	7.83 - 8.07	1.0000	1.0000
L28	45	CCI-SFP-045100	7.83 - 8.07	1.0000	1.0000
L28	46	CCI-SFP-045100	7.83 - 8.07	1.0000	1.0000
L29	11	3" Flexible Conduit	6.00 - 7.83	1.0000	1.0000
L29	22	810921-001(7/8)	6.00 - 7.83	1.0000	1.0000
L29	25	HB158-U12S24-160-LI(1-7/8)	6.00 - 7.83	1.0000	1.0000
L29	27	CU12PSM9P8XXX(1-3/8)	6.00 - 7.83	1.0000	1.0000
L29	30	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	31	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	32	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	33	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	39	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	40	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	41	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	43	CCI-SFP-045100	6.00 - 7.83	1.0000	1.0000
L29	44	CCI-SFP-045100	6.00 - 7.83	1.0000	1.0000
L29	45	CCI-SFP-045100	6.00 - 7.83	1.0000	1.0000
L29	46	CCI-SFP-045100	6.00 - 7.83	1.0000	1.0000
L30	11	3" Flexible Conduit	5.75 - 6.00	1.0000	1.0000
L30	22	810921-001(7/8)	5.75 - 6.00	1.0000	1.0000
L30	25	HB158-U12S24-160-LI(1-7/8)	5.75 - 6.00	1.0000	1.0000
L30	27	CU12PSM9P8XXX(1-3/8)	5.75 - 6.00	1.0000	1.0000
L30	30	Aero Channel MP305	5.75 - 6.00	1.0000	1.0000
L30	31	Aero Channel MP305	5.75 - 6.00	1.0000	1.0000
L30	32	Aero Channel MP305	5.75 - 6.00	1.0000	1.0000
L30	33	Aero Channel MP305	5.75 - 6.00	1.0000	1.0000
L30	43	CCI-SFP-045100	5.75 - 6.00	1.0000	1.0000
L30	44	CCI-SFP-045100	5.75 - 6.00	1.0000	1.0000
L30	45	CCI-SFP-045100	5.75 - 6.00	1.0000	1.0000
L30	46	CCI-SFP-045100	5.75 - 6.00	1.0000	1.0000
L31	11	3" Flexible Conduit	2.00 - 5.75	1.0000	1.0000
L31	22	810921-001(7/8)	2.00 - 5.75	1.0000	1.0000
L31	25	HB158-U12S24-160-LI(1-7/8)	2.00 - 5.75	1.0000	1.0000
L31	27	CU12PSM9P8XXX(1-3/8)	2.00 - 5.75	1.0000	1.0000
L31	30	Aero Channel MP305	2.00 - 5.75	1.0000	1.0000
L31	31	Aero Channel MP305	2.00 - 5.75	1.0000	1.0000
L31	32	Aero Channel MP305	2.00 - 5.75	1.0000	1.0000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L31	33	Aero Channel MP305	2.00 - 5.75	1.0000	1.0000
L31	43	CCI-SFP-045100	4.50 - 5.75	1.0000	1.0000
L31	44	CCI-SFP-045100	4.50 - 5.75	1.0000	1.0000
L31	45	CCI-SFP-045100	4.50 - 5.75	1.0000	1.0000
L31	46	CCI-SFP-045100	4.50 - 5.75	1.0000	1.0000
L32	11	3" Flexible Conduit	1.75 - 2.00	1.0000	1.0000
L32	22	810921-001(7/8)	1.75 - 2.00	1.0000	1.0000
L32	25	HB158-U12S24-160-LI(1-7/8)	1.75 - 2.00	1.0000	1.0000
L32	27	CU12PSM9P8XXX(1-3/8)	1.75 - 2.00	1.0000	1.0000
L32	30	Aero Channel MP305	1.75 - 2.00	1.0000	1.0000
L32	31	Aero Channel MP305	1.75 - 2.00	1.0000	1.0000
L32	32	Aero Channel MP305	1.75 - 2.00	1.0000	1.0000
L32	33	Aero Channel MP305	1.75 - 2.00	1.0000	1.0000
L33	11	3" Flexible Conduit	0.00 - 1.75	1.0000	1.0000
L33	22	810921-001(7/8)	0.00 - 1.75	1.0000	1.0000
L33	25	HB158-U12S24-160-LI(1-7/8)	0.00 - 1.75	1.0000	1.0000
L33	27	CU12PSM9P8XXX(1-3/8)	0.00 - 1.75	1.0000	1.0000
L33	30	Aero Channel MP305	0.50 - 1.75	1.0000	1.0000
L33	31	Aero Channel MP305	0.50 - 1.75	1.0000	1.0000
L33	32	Aero Channel MP305	0.50 - 1.75	1.0000	1.0000
L33	33	Aero Channel MP305	0.50 - 1.75	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	*Attachment Record No.*	*Description*	*Attachment Segment Elev.*	*Ratio Calculation Method*	*Effective Width Ratio*
L14	35	Aero Channel MP303	40.00 - 40.50	Auto	1.0000
L14	36	Aero Channel MP303	40.00 - 40.50	Auto	1.0000
L14	37	Aero Channel MP303	40.00 - 40.50	Auto	1.0000
L15	35	Aero Channel MP303	39.33 - 40.00	Auto	1.0000
L15	36	Aero Channel MP303	39.33 - 40.00	Auto	1.0000
L15	37	Aero Channel MP303	39.33 - 40.00	Auto	1.0000
L16	35	Aero Channel MP303	39.08 - 39.33	Auto	1.0000
L16	36	Aero Channel MP303	39.08 - 39.33	Auto	1.0000
L16	37	Aero Channel MP303	39.08 - 39.33	Auto	1.0000
L17	35	Aero Channel MP303	34.08 - 39.08	Auto	1.0000
L17	36	Aero Channel MP303	34.08 - 39.08	Auto	1.0000
L17	37	Aero Channel MP303	34.08 - 39.08	Auto	1.0000
L18	35	Aero Channel MP303	30.50 - 34.08	Auto	1.0000
L18	36	Aero Channel MP303	30.50 - 34.08	Auto	1.0000
L18	37	Aero Channel MP303	30.50 - 34.08	Auto	1.0000
L20	43	CCI-SFP-045100	25.00 -	Auto	1.0000

Tower Section	*Attachment Record No.*	*Description*	*Attachment Segment Elev.*	*Ratio Calculation Method*	*Effective Width Ratio*
L20	44	CCI-SFP-045100	26.50 25.00 -	Auto	1.0000
L20	45	CCI-SFP-045100	26.50 25.00 -	Auto	1.0000
L20	46	CCI-SFP-045100	26.50 25.00 -	Auto	1.0000
L21	43	CCI-SFP-045100	26.50 24.75 -	Auto	1.0000
L21	44	CCI-SFP-045100	25.00 24.75 -	Auto	1.0000
L21	45	CCI-SFP-045100	25.00 24.75 -	Auto	1.0000
L21	46	CCI-SFP-045100	25.00 24.75 -	Auto	1.0000
L22	39	Aero Channel MP305	25.00 19.75 -	Auto	1.0000
L22	40	Aero Channel MP305	21.00 19.75 -	Auto	1.0000
L22	41	Aero Channel MP305	21.00 19.75 -	Auto	1.0000
L22	43	CCI-SFP-045100	21.00 19.75 -	Auto	1.0000
L22	44	CCI-SFP-045100	24.75 19.75 -	Auto	1.0000
L22	45	CCI-SFP-045100	24.75 19.75 -	Auto	1.0000
L22	46	CCI-SFP-045100	24.75 19.75 -	Auto	1.0000
L23	39	Aero Channel MP305	24.75 18.58 -	Auto	1.0000
L23	40	Aero Channel MP305	19.75 18.58 -	Auto	1.0000
L23	41	Aero Channel MP305	19.75 18.58 -	Auto	1.0000
L23	43	CCI-SFP-045100	19.75 18.58 -	Auto	1.0000
L23	44	CCI-SFP-045100	19.75 18.58 -	Auto	1.0000
L23	45	CCI-SFP-045100	19.75 18.58 -	Auto	1.0000
L23	46	CCI-SFP-045100	19.75 18.58 -	Auto	1.0000
L24	39	Aero Channel MP305	19.75 18.33 -	Auto	1.0000
L24	40	Aero Channel MP305	18.58 18.33 -	Auto	1.0000
L24	41	Aero Channel MP305	18.58 18.33 -	Auto	1.0000
L24	43	CCI-SFP-045100	18.58 18.33 -	Auto	1.0000
L24	44	CCI-SFP-045100	18.58 18.33 -	Auto	1.0000
L24	45	CCI-SFP-045100	18.58 18.33 -	Auto	1.0000
L24	46	CCI-SFP-045100	18.58 18.33 -	Auto	1.0000
L25	39	Aero Channel MP305	18.58 13.33 -	Auto	1.0000
L25	40	Aero Channel MP305	18.33 13.33 -	Auto	1.0000
L25	41	Aero Channel MP305	18.33 13.33 -	Auto	1.0000
L25	43	CCI-SFP-045100	18.33 13.33 -	Auto	1.0000
L25	44	CCI-SFP-045100	18.33 13.33 -	Auto	1.0000
L25	45	CCI-SFP-045100	18.33 13.33 -	Auto	1.0000

Tower Section	*Attachment Record No.*	*Description*	*Attachment Segment Elev.*	*Ratio Calculation Method*	*Effective Width Ratio*
L25	46	CCI-SFP-045100	18.33 13.33 - 18.33	Auto	1.0000
L26	30	Aero Channel MP305	8.42 - 10.50	Auto	1.0000
L26	31	Aero Channel MP305	8.42 - 10.50	Auto	1.0000
L26	32	Aero Channel MP305	8.42 - 10.50	Auto	1.0000
L26	33	Aero Channel MP305	8.42 - 10.50	Auto	1.0000
L26	39	Aero Channel MP305	8.42 - 13.33	Auto	1.0000
L26	40	Aero Channel MP305	8.42 - 13.33	Auto	1.0000
L26	41	Aero Channel MP305	8.42 - 13.33	Auto	1.0000
L26	43	CCI-SFP-045100	8.42 - 13.33	Auto	1.0000
L26	44	CCI-SFP-045100	8.42 - 13.33	Auto	1.0000
L26	45	CCI-SFP-045100	8.42 - 13.33	Auto	1.0000
L26	46	CCI-SFP-045100	8.42 - 13.33	Auto	1.0000
L27	30	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	31	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	32	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	33	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	39	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	40	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	41	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	43	CCI-SFP-045100	8.07 - 8.42	Auto	1.0000
L27	44	CCI-SFP-045100	8.07 - 8.42	Auto	1.0000
L27	45	CCI-SFP-045100	8.07 - 8.42	Auto	1.0000
L27	46	CCI-SFP-045100	8.07 - 8.42	Auto	1.0000
L28	30	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	31	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	32	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	33	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	39	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	40	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	41	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	43	CCI-SFP-045100	7.83 - 8.07	Auto	1.0000
L28	44	CCI-SFP-045100	7.83 - 8.07	Auto	1.0000
L28	45	CCI-SFP-045100	7.83 - 8.07	Auto	1.0000
L28	46	CCI-SFP-045100	7.83 - 8.07	Auto	1.0000
L29	30	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	31	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	32	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	33	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	39	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	40	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	41	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	43	CCI-SFP-045100	6.00 - 7.83	Auto	1.0000
L29	44	CCI-SFP-045100	6.00 - 7.83	Auto	1.0000
L29	45	CCI-SFP-045100	6.00 - 7.83	Auto	1.0000
L29	46	CCI-SFP-045100	6.00 - 7.83	Auto	1.0000
L30	30	Aero Channel MP305	5.75 - 6.00	Auto	1.0000
L30	31	Aero Channel MP305	5.75 - 6.00	Auto	1.0000
L30	32	Aero Channel MP305	5.75 - 6.00	Auto	1.0000
L30	33	Aero Channel MP305	5.75 - 6.00	Auto	1.0000
L30	43	CCI-SFP-045100	5.75 - 6.00	Auto	1.0000
L30	44	CCI-SFP-045100	5.75 - 6.00	Auto	1.0000
L30	45	CCI-SFP-045100	5.75 - 6.00	Auto	1.0000
L30	46	CCI-SFP-045100	5.75 - 6.00	Auto	1.0000
L31	30	Aero Channel MP305	2.00 - 5.75	Auto	1.0000
L31	31	Aero Channel MP305	2.00 - 5.75	Auto	1.0000
L31	32	Aero Channel MP305	2.00 - 5.75	Auto	1.0000
L31	33	Aero Channel MP305	2.00 - 5.75	Auto	1.0000
L31	43	CCI-SFP-045100	4.50 - 5.75	Auto	1.0000
L31	44	CCI-SFP-045100	4.50 - 5.75	Auto	1.0000
L31	45	CCI-SFP-045100	4.50 - 5.75	Auto	1.0000
L31	46	CCI-SFP-045100	4.50 - 5.75	Auto	1.0000
L32	30	Aero Channel MP305	1.75 - 2.00	Auto	1.0000
L32	31	Aero Channel MP305	1.75 - 2.00	Auto	1.0000
L32	32	Aero Channel MP305	1.75 - 2.00	Auto	1.0000
L32	33	Aero Channel MP305	1.75 - 2.00	Auto	1.0000
L33	30	Aero Channel MP305	0.50 - 1.75	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L33	31	Aero Channel MP305	0.50 - 1.75	Auto	1.0000
L33	32	Aero Channel MP305	0.50 - 1.75	Auto	1.0000
L33	33	Aero Channel MP305	0.50 - 1.75	Auto	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft
Site Pro 1 RMQP-4xx + HRK12 12.5' Platform with Handrails	C	None		0.00	107.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.00	107.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.00	107.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.00	107.00
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.00	107.00
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.00	107.00
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.00	107.00
Radio 4480_TMOV2	A	From Leg	4.00 0.00 1.00	0.00	107.00
Radio 4480_TMOV2	B	From Leg	4.00 0.00 1.00	0.00	107.00
Radio 4480_TMOV2	C	From Leg	4.00 0.00 1.00	0.00	107.00
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 1.00	0.00	107.00
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 1.00	0.00	107.00
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 1.00	0.00	107.00
(2) 6'x2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	107.00
(2) 6'x2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	107.00
(2) 6'x2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	107.00

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Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft
Side Arm Mount [SO 102-3]	C	None		0.00	105.00
(3) 1'x2" Mount Pipe	A	From Leg	2.00 0.00 0.00	0.00	105.00
(3) 1'x2" Mount Pipe	B	From Leg	2.00 0.00 0.00	0.00	105.00
(3) 1'x2" Mount Pipe	C	From Leg	2.00 0.00 0.00	0.00	105.00
800MHZ 2X50W RRH W/FILTER	A	From Leg	2.00 0.00 0.00	0.00	105.00
800MHZ 2X50W RRH W/FILTER	B	From Leg	2.00 0.00 0.00	0.00	105.00
800MHZ 2X50W RRH W/FILTER	C	From Leg	2.00 0.00 0.00	0.00	105.00
(2) PCS 1900MHZ 4X45W-65MHZ	A	From Leg	2.00 0.00 0.00	0.00	105.00
(2) PCS 1900MHZ 4X45W-65MHZ	B	From Leg	2.00 0.00 0.00	0.00	105.00
(2) PCS 1900MHZ 4X45W-65MHZ	C	From Leg	2.00 0.00 0.00	0.00	105.00
IBC1900BB-1	A	From Leg	2.00 0.00 0.00	0.00	105.00
IBC1900BB-1	B	From Leg	2.00 0.00 0.00	0.00	105.00
IBC1900BB-1	C	From Leg	2.00 0.00 0.00	0.00	105.00
IBC1900HG-2A	A	From Leg	2.00 0.00 0.00	0.00	105.00
IBC1900HG-2A	B	From Leg	2.00 0.00 0.00	0.00	105.00
IBC1900HG-2A	C	From Leg	2.00 0.00 0.00	0.00	105.00
***					
SitePro1 RMQLP-4120-H10	C	None		0.00	90.00
AIR 6449 N77 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.00	90.00
AIR 6449 N77 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.00	90.00
AIR 6449 N77 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.00	90.00
QD6616-7 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	90.00
QD6616-7 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	90.00
QD6616-7 w/ Mount Pipe	C	From Leg	4.00 0.00	0.00	90.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
AIR 6419 B77G w/ Mount Pipe	A	From Leg	0.00 4.00 0.00	0.00	90.00
AIR 6419 B77G w/ Mount Pipe	B	From Leg	1.00 4.00 0.00	0.00	90.00
AIR 6419 B77G w/ Mount Pipe	C	From Leg	1.00 4.00 0.00	0.00	90.00
DMP65R-BU6D w/ Mount Pipe	A	From Leg	1.00 4.00 0.00	0.00	90.00
DMP65R-BU6D w/ Mount Pipe	B	From Leg	0.00 4.00 0.00	0.00	90.00
DMP65R-BU6D w/ Mount Pipe	C	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 4449 B5/B12	A	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 4449 B5/B12	B	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 4449 B5/B12	C	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 32 B30	A	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 32 B30	B	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 32 B30	C	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS E2 B29	A	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS E2 B29	B	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS E2 B29	C	From Leg	0.00 4.00 0.00	0.00	90.00
DC6-48-60-18-8F	A	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 32 B66A	A	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 32 B66A	B	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 32 B66A	C	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 4415 B25	A	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 4415 B25	B	From Leg	0.00 4.00 0.00	0.00	90.00
RRUS 4415 B25	C	From Leg	0.00 4.00	0.00	90.00

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* °	*Placement* *ft*
			0.00 0.00		
DC6-48-60-18-8F	A	From Leg	4.00 0.00	0.00	90.00
			0.00		
DC6-48-60-18-8F	B	From Leg	4.00 0.00	0.00	90.00
			0.00		
DC6-48-60-18-8F	C	From Leg	4.00 0.00	0.00	90.00
			0.00		
***					
Site Pro 1 RMQP-xxx + HRK12 12.5' Platform with Handrails	C	None		0.00	76.00
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.00 0.00	0.00	76.00
			0.00		
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.00 0.00	0.00	76.00
			0.00		
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.00 0.00	0.00	76.00
			0.00		
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00	0.00	76.00
			0.00		
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00	0.00	76.00
			0.00		
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00	0.00	76.00
			0.00		
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00	0.00	76.00
			0.00		
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00	0.00	76.00
			0.00		
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00	0.00	76.00
			0.00		
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.00 0.00	0.00	76.00
			0.00		
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.00 0.00	0.00	76.00
			0.00		
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00 0.00	0.00	76.00
			0.00		
KRY 112 144/1	A	From Leg	4.00 0.00	0.00	76.00
			0.00		
KRY 112 144/1	B	From Leg	4.00 0.00	0.00	76.00
			0.00		
KRY 112 144/1	C	From Leg	4.00 0.00	0.00	76.00
			0.00		
RRUS 4415 B25	A	From Leg	4.00 0.00	0.00	76.00
			0.00		
RRUS 4415 B25	B	From Leg	4.00 0.00	0.00	76.00
			0.00		

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft
RRUS 4415 B25	C	From Leg	4.00 0.00 0.00	0.00	76.00
SDX1926Q-43	B	From Leg	4.00 0.00 0.00	0.00	76.00
(2) SDX1926Q-43	C	From Leg	4.00 0.00 0.00	0.00	76.00
***					
PV-VPP12M-HR-B	C	None		0.00	64.00
(4) 8'x2'' Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	64.00
(4) 8'x2'' Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	64.00
(4) 8'x2'' Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	64.00
BSAMNT-SBS-1-2 (Mount Bracket)	A	From Leg	4.00 0.00 0.00	0.00	64.00
BSAMNT-SBS-1-2 (Mount Bracket)	B	From Leg	4.00 0.00 0.00	0.00	64.00
BSAMNT-SBS-1-2 (Mount Bracket)	C	From Leg	4.00 0.00 0.00	0.00	64.00
(2) NHH-65B-R2B	A	From Leg	4.00 0.00 0.00	0.00	64.00
(2) NHH-65B-R2B	B	From Leg	4.00 0.00 0.00	0.00	64.00
(2) NHH-65B-R2B	C	From Leg	4.00 0.00 0.00	0.00	64.00
RVZDC-6627-PF-48	B	From Leg	4.00 0.00 0.00	0.00	64.00
RVZDC-6627-PF-48	C	From Leg	4.00 0.00 0.00	0.00	64.00
RFV01U-D1A	A	From Leg	4.00 0.00 0.00	0.00	64.00
RFV01U-D1A	B	From Leg	4.00 0.00 0.00	0.00	64.00
RFV01U-D1A	C	From Leg	4.00 0.00 0.00	0.00	64.00
RFV01U-D2A	A	From Leg	4.00 0.00 0.00	0.00	64.00
RFV01U-D2A	B	From Leg	4.00 0.00 0.00	0.00	64.00
RFV01U-D2A	C	From Leg	4.00 0.00 0.00	0.00	64.00
20W CBRS	A	From Leg	4.00 0.00 0.00	0.00	64.00

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* °	*Placement* *ft*
20W CBRS	B	From Leg	4.00 0.00 0.00	0.00	64.00
20W CBRS	C	From Leg	4.00 0.00 0.00	0.00	64.00
***					
Commscope MC-PK8-DSH	C	None		0.00	54.00
(2) 8'x2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	54.00
(2) 8'x2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	54.00
(2) 8'x2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	54.00
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	54.00
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	54.00
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	54.00
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.00	54.00
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.00	54.00
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.00	54.00
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.00	54.00
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.00	54.00
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.00	54.00
RDIDC-9181-PF-48	B	From Leg	4.00 0.00 0.00	0.00	54.00
***					
*** Flange Modifications ***					
Bridge Stiffener 72" x 1.25" x 11"	A	From Face	0.00 0.00 0.00	0.00	30.00
Bridge Stiffener 72" x 1.25" x 11"	B	From Face	0.00 0.00 0.00	0.00	30.00
Bridge Stiffener 72" x 1.25" x 11"	C	From Face	0.00 0.00 0.00	0.00	30.00
***					
Jump Plate 116" x 6.25" x 1"	A	From Face	0.00 0.00 0.00	0.00	30.00
Jump Plate 116" x 6.25" x 1"	B	From Face	0.00 0.00 0.00	0.00	30.00

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft
Jump Plate 116'' x 6.25'' x 1''	C	From Face	0.00 0.00 0.00	0.00	30.00
**********					

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	110 - 105	Pole	Max Tension	45	0.00	0.00	0.00
			Max. Compression	26	-7.81	0.00	0.00
			Max. Mx	8	-3.79	-10.37	-0.00
			Max. My	14	-3.79	-0.00	-10.38
			Max. Vy	8	4.03	-10.37	-0.00
			Max. Vx	14	4.03	-0.00	-10.38
			Max. Torque	6			0.00
L2	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.43	0.00	0.00
			Max. Mx	8	-5.01	-36.96	-0.00
			Max. My	14	-5.01	-0.00	-36.97
			Max. Vy	8	5.47	-36.96	-0.00
			Max. Vx	14	5.47	-0.00	-36.97
			Max. Torque	6			0.00
L3	100 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.07	0.00	0.00
			Max. Mx	8	-5.42	-65.04	-0.00
			Max. My	14	-5.42	-0.00	-65.06
			Max. Vy	8	5.76	-65.04	-0.00
			Max. Vx	14	5.76	-0.00	-65.06
			Max. Torque	6			0.00
L4	95 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.72	0.00	0.00
			Max. Mx	8	-5.83	-94.56	-0.00
			Max. My	14	-5.83	-0.00	-94.60
			Max. Vy	8	6.05	-94.56	-0.00
			Max. Vx	14	6.05	-0.00	-94.60
			Max. Torque	6			0.00
L5	90 - 85	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.69	0.10	0.53
			Max. Mx	20	-10.75	152.54	0.10
			Max. My	2	-10.75	0.01	152.74
			Max. Vy	8	11.60	-152.53	0.10
			Max. Vx	14	11.62	0.00	-152.52
			Max. Torque	8			0.22
L6	85 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.67	0.20	0.59
			Max. Mx	20	-11.41	211.25	0.11
			Max. My	2	-11.41	0.01	211.59
			Max. Vy	8	11.88	-211.22	0.10
			Max. Vx	14	11.92	0.01	-211.37
			Max. Torque	8			0.22
L7	80 - 75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.35	0.37	0.53
			Max. Mx	20	-15.90	274.69	0.05
			Max. My	2	-15.90	0.05	275.19
			Max. Vy	8	15.49	-274.59	0.05
			Max. Vx	14	15.55	0.04	-275.09
			Max. Torque	8			0.22
L8	75 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.40	0.41	0.62
			Max. Mx	20	-16.63	352.72	0.05
			Max. My	2	-16.62	0.03	353.54
			Max. Vy	8	15.73	-352.63	0.07
			Max. Vx	14	15.80	0.05	-353.44
			Max. Torque	8			0.19
L9	70 - 65	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.45	0.45	0.71
			Max. Mx	20	-17.37	431.84	0.05
			Max. My	2	-17.36	0.01	433.09
			Max. Vy	8	15.94	-431.77	0.08
			Max. Vx	14	16.03	0.05	-432.98
			Max. Torque	8			0.19
L10	65 - 60	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-42.48	0.49	0.07
			Max. Mx	20	-21.31	523.29	-0.14
			Max. My	14	-21.29	0.05	-524.99
			Max. Vy	8	18.95	-523.23	-0.08
			Max. Vx	14	19.02	0.05	-524.99
			Max. Torque	20			0.23
L11	60 - 55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.78	0.54	0.09
			Max. Mx	20	-22.23	618.65	-0.19
			Max. My	14	-22.22	0.05	-620.75
			Max. Vy	8	19.21	-618.61	-0.12
			Max. Vx	14	19.29	0.05	-620.75
			Max. Torque	20			0.23
L12	55 - 50	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.76	0.19	-0.16
			Max. Mx	8	-26.26	-725.71	-0.27
			Max. My	14	-26.25	-0.10	-728.14
			Max. Vy	8	22.04	-725.71	-0.27
			Max. Vx	14	22.09	-0.10	-728.14
			Max. Torque	18			0.37
L13	50 - 45	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.09	0.24	-0.18
			Max. Mx	8	-27.23	-836.34	-0.38
			Max. My	14	-27.22	-0.17	-839.09
			Max. Vy	8	22.23	-836.34	-0.38
			Max. Vx	14	22.29	-0.17	-839.09
			Max. Torque	18			0.37
L14	45 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.43	0.28	-0.21
			Max. Mx	8	-28.22	-947.84	-0.50
			Max. My	14	-28.22	-0.24	-950.92
			Max. Vy	8	22.39	-947.84	-0.50
			Max. Vx	14	22.45	-0.24	-950.92
			Max. Torque	18			0.37
L15	40 - 39.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.62	0.29	-0.21
			Max. Mx	8	-28.36	-962.77	-0.51
			Max. My	14	-28.35	-0.25	-965.91
			Max. Vy	8	22.41	-962.77	-0.51
			Max. Vx	14	22.50	-0.25	-965.91
			Max. Torque	18			0.37
L16	39.333 - 39.083	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.70	0.29	-0.21
			Max. Mx	8	-28.43	-968.37	-0.52
			Max. My	14	-28.42	-0.26	-971.53
			Max. Vy	8	22.41	-968.37	-0.52
			Max. Vx	14	22.52	-0.26	-971.53
			Max. Torque	18			0.37
L17	39.083 - 34.083	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.32	0.34	-0.24
			Max. Mx	8	-29.58	-1080.89	-0.63
			Max. My	14	-29.56	-0.32	-1085.22
			Max. Vy	8	22.61	-1080.89	-0.63
			Max. Vx	14	22.96	-0.32	-1085.22
			Max. Torque	18			0.37
L18	34.083 - 30	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.62	0.37	-0.26
			Max. Mx	8	-30.53	-1173.40	-0.72
			Max. My	14	-30.52	-0.38	-1179.14
			Max. Vy	8	22.73	-1173.40	-0.72
			Max. Vx	14	23.06	-0.38	-1179.14
			Max. Torque	18			0.37
L19	30 - 29.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.38	0.37	-0.26
			Max. Mx	8	-35.47	-1179.12	-0.73
			Max. My	14	-35.45	-0.38	-1184.94
			Max. Vy	8	22.89	-1179.12	-0.73

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	23.22	-0.38	-1184.94
			Max. Torque	18			0.37
L20	29.75 - 25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.89	0.41	-0.30
			Max. Mx	8	-36.63	-1287.99	-0.83
			Max. My	14	-36.62	-0.45	-1295.41
			Max. Vy	8	22.97	-1287.99	-0.83
			Max. Vx	14	23.30	-0.45	-1295.41
			Max. Torque	18			0.37
L21	25 - 24.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.99	0.42	-0.30
			Max. Mx	8	-36.73	-1293.73	-0.84
			Max. My	14	-36.71	-0.45	-1301.23
			Max. Vy	8	22.96	-1293.73	-0.84
			Max. Vx	14	23.30	-0.45	-1301.23
			Max. Torque	18			0.37
L22	24.75 - 19.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.07	0.46	-0.38
			Max. Mx	8	-38.33	-1408.76	-0.95
			Max. My	14	-38.31	-0.52	-1418.51
			Max. Vy	8	23.07	-1408.76	-0.95
			Max. Vx	14	23.62	-0.52	-1418.51
			Max. Torque	18			0.37
L23	19.75 - 18.583	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.58	0.47	-0.39
			Max. Mx	8	-38.70	-1435.72	-0.98
			Max. My	14	-38.69	-0.53	-1446.09
			Max. Vy	8	23.17	-1435.72	-0.98
			Max. Vx	14	23.69	-0.53	-1446.09
			Max. Torque	18			0.37
L24	18.583 - 18.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.70	0.47	-0.40
			Max. Mx	8	-38.81	-1441.51	-0.98
			Max. My	14	-38.80	-0.54	-1452.01
			Max. Vy	8	23.17	-1441.51	-0.98
			Max. Vx	14	23.69	-0.54	-1452.01
			Max. Torque	18			0.37
L25	18.333 - 13.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.21	0.51	-0.47
			Max. Mx	8	-40.74	-1558.36	-1.09
			Max. My	14	-40.73	-0.60	-1571.23
			Max. Vy	8	23.59	-1558.36	-1.09
			Max. Vx	14	24.01	-0.60	-1571.23
			Max. Torque	18			0.37
L26	13.333 - 8.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.71	0.55	-0.56
			Max. Mx	8	-42.66	-1675.22	-1.20
			Max. My	14	-42.66	-0.67	-1689.86
			Max. Vy	8	23.99	-1675.22	-1.20
			Max. Vx	14	24.29	-0.67	-1689.86
			Max. Torque	18			0.37
L27	8.417 - 8.067	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.90	0.55	-0.57
			Max. Mx	8	-42.82	-1683.61	-1.20
			Max. My	14	-42.82	-0.67	-1698.36
			Max. Vy	8	24.00	-1683.61	-1.20
			Max. Vx	14	24.28	-0.67	-1698.36
			Max. Torque	18			0.37
L28	8.067 - 7.833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.03	0.55	-0.58
			Max. Mx	8	-42.92	-1689.23	-1.21
			Max. My	14	-42.91	-0.68	-1704.04

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	24.03	-1689.23	-1.21
			Max. Vx	14	24.30	-0.68	-1704.04
			Max. Torque	18			0.37
L29	7.833 - 6	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.02	0.57	-0.62
			Max. Mx	8	-43.65	-1733.42	-1.25
			Max. My	14	-43.65	-0.70	-1748.69
			Max. Vy	8	24.24	-1733.42	-1.25
			Max. Vx	14	24.45	-0.70	-1748.69
			Max. Torque	20			0.38
L30	6 - 5.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.13	0.57	-0.63
			Max. Mx	8	-43.76	-1739.47	-1.26
			Max. My	14	-43.75	-0.70	-1754.80
			Max. Vy	8	24.22	-1739.47	-1.26
			Max. Vx	14	24.43	-0.70	-1754.80
			Max. Torque	20			0.38
L31	5.75 - 2	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.72	0.60	-0.69
			Max. Mx	8	-45.02	-1830.77	-1.34
			Max. My	14	-45.02	-0.75	-1846.73
			Max. Vy	8	24.50	-1830.77	-1.34
			Max. Vx	14	24.62	-0.75	-1846.73
			Max. Torque	20			0.39
L32	2 - 1.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.85	0.60	-0.70
			Max. Mx	8	-45.16	-1836.89	-1.34
			Max. My	14	-45.16	-0.76	-1852.88
			Max. Vy	8	24.49	-1836.89	-1.34
			Max. Vx	14	24.60	-0.76	-1852.88
			Max. Torque	20			0.39
L33	1.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.79	0.61	-0.72
			Max. Mx	8	-45.98	-1879.78	-1.38
			Max. My	14	-45.97	-0.78	-1896.04
			Max. Vy	8	24.56	-1879.78	-1.38
			Max. Vx	14	24.73	-0.78	-1896.04
			Max. Torque	20			0.39

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	34	75.79	3.75	-6.49
	Max. H_x	20	45.99	24.53	0.01
	Max. H_z	2	45.99	0.01	24.40
	Max. M_x	2	1882.42	0.01	24.40
	Max. M_z	8	1879.78	-24.53	-0.01
	Max. Torsion	20	0.39	24.53	0.01
	Min. Vert	19	34.49	20.67	-11.90
	Min. H_x	8	45.99	-24.53	-0.01
	Min. H_z	14	45.99	-0.01	-24.70
	Min. M_x	14	-1896.04	-0.01	-24.70
	Min. M_z	20	-1879.43	24.53	0.01
	Min. Torsion	8	-0.39	-24.53	-0.01

Tower Mast Reaction Summary

Load Combination	*Vertical*	*Shear$_x$*	*Shear$_z$*	*Overturning Moment, M$_x$*	*Overturning Moment, M$_z$*	*Torque*
	K	*K*	*K*	*kip-ft*	*kip-ft*	*kip-ft*
Dead Only	38.33	0.00	0.00	0.62	-0.14	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	45.99	-0.01	-24.40	-1882.42	0.43	0.17
0.9 Dead+1.0 Wind 0 deg - No Ice	34.49	-0.01	-24.40	-1855.41	0.47	0.17
1.2 Dead+1.0 Wind 30 deg - No Ice	45.99	13.11	-22.67	-1674.15	-968.94	0.20
0.9 Dead+1.0 Wind 30 deg - No Ice	34.49	13.11	-22.67	-1650.49	-955.09	0.20
1.2 Dead+1.0 Wind 60 deg - No Ice	45.99	21.43	-12.33	-942.48	-1638.17	0.37
0.9 Dead+1.0 Wind 60 deg - No Ice	34.49	21.43	-12.33	-929.09	-1614.54	0.37
1.2 Dead+1.0 Wind 90 deg - No Ice	45.99	24.53	0.01	1.38	-1879.78	0.39
0.9 Dead+1.0 Wind 90 deg - No Ice	34.49	24.53	0.01	1.17	-1852.60	0.39
1.2 Dead+1.0 Wind 120 deg - No Ice	45.99	20.68	11.92	934.78	-1620.93	0.20
0.9 Dead+1.0 Wind 120 deg - No Ice	34.49	20.68	11.92	921.04	-1597.40	0.20
1.2 Dead+1.0 Wind 150 deg - No Ice	45.99	12.25	21.16	1633.01	-944.99	0.07
0.9 Dead+1.0 Wind 150 deg - No Ice	34.49	12.25	21.16	1609.24	-931.31	0.07
1.2 Dead+1.0 Wind 180 deg - No Ice	45.99	0.01	24.70	1896.04	-0.78	-0.17
0.9 Dead+1.0 Wind 180 deg - No Ice	34.49	0.01	24.70	1868.54	-0.73	-0.17
1.2 Dead+1.0 Wind 210 deg - No Ice	45.99	-13.04	22.55	1674.16	967.70	-0.20
0.9 Dead+1.0 Wind 210 deg - No Ice	34.49	-13.04	22.55	1650.09	953.94	-0.20
1.2 Dead+1.0 Wind 240 deg - No Ice	45.99	-20.67	11.90	933.73	1619.98	-0.37
0.9 Dead+1.0 Wind 240 deg - No Ice	34.49	-20.67	11.90	920.00	1596.55	-0.37
1.2 Dead+1.0 Wind 270 deg - No Ice	45.99	-24.53	-0.01	0.17	1879.43	-0.39
0.9 Dead+1.0 Wind 270 deg - No Ice	34.49	-24.53	-0.01	-0.03	1852.34	-0.39
1.2 Dead+1.0 Wind 300 deg - No Ice	45.99	-21.44	-12.35	-943.53	1638.42	-0.20
0.9 Dead+1.0 Wind 300 deg - No Ice	34.49	-21.44	-12.35	-930.13	1614.88	-0.20
1.2 Dead+1.0 Wind 330 deg - No Ice	45.99	-12.47	-21.53	-1637.11	947.90	-0.07
0.9 Dead+1.0 Wind 330 deg - No Ice	34.49	-12.47	-21.53	-1613.71	934.29	-0.07
1.2 Dead+1.0 Ice+1.0 Temp	75.79	0.00	0.00	0.72	0.61	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	75.79	-0.00	-7.24	-580.79	0.81	0.04
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	75.79	3.77	-6.52	-507.63	-293.20	0.05
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	75.79	6.30	-3.63	-290.04	-503.85	0.08
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	75.79	7.40	0.00	0.86	-583.28	0.08
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	75.79	6.26	3.61	291.46	-503.50	0.03
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	75.79	3.67	6.34	505.31	-291.13	0.01
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	75.79	0.00	7.24	582.28	0.58	-0.04
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	75.79	-3.75	6.49	508.85	294.43	-0.05
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	75.79	-6.26	3.61	291.26	504.78	-0.08
1.2 Dead+1.0 Wind 270	75.79	-7.40	-0.00	0.63	584.67	-0.08

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	75.79	-6.30	-3.63	-290.24	505.36	-0.03
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	75.79	-3.68	-6.36	-504.09	292.68	-0.01
Dead+Wind 0 deg - Service	38.33	-0.00	-6.05	-462.35	0.00	0.04
Dead+Wind 30 deg - Service	38.33	3.25	-5.62	-411.20	-238.35	0.05
Dead+Wind 60 deg - Service	38.33	5.31	-3.06	-231.27	-402.87	0.09
Dead+Wind 90 deg - Service	38.33	6.08	0.00	0.79	-462.26	0.09
Dead+Wind 120 deg - Service	38.33	5.13	2.95	230.27	-398.61	0.04
Dead+Wind 150 deg - Service	38.33	3.04	5.25	401.94	-232.44	0.01
Dead+Wind 180 deg - Service	38.33	0.00	6.12	466.61	-0.30	-0.04
Dead+Wind 210 deg - Service	38.33	-3.23	5.59	412.10	237.84	-0.05
Dead+Wind 240 deg - Service	38.33	-5.12	2.95	230.01	398.17	-0.09
Dead+Wind 270 deg - Service	38.33	-6.08	-0.00	0.49	461.97	-0.09
Dead+Wind 300 deg - Service	38.33	-5.32	-3.06	-231.53	402.72	-0.04
Dead+Wind 330 deg - Service	38.33	-3.09	-5.34	-402.05	232.95	-0.01

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-38.33	0.00	0.00	38.33	0.00	0.000%
2	-0.01	-45.99	-24.40	0.01	45.99	24.40	0.000%
3	-0.01	-34.49	-24.40	0.01	34.49	24.40	0.000%
4	13.11	-45.99	-22.67	-13.11	45.99	22.67	0.000%
5	13.11	-34.49	-22.67	-13.11	34.49	22.67	0.000%
6	21.43	-45.99	-12.33	-21.43	45.99	12.33	0.000%
7	21.43	-34.49	-12.33	-21.43	34.49	12.33	0.000%
8	24.53	-45.99	0.01	-24.53	45.99	-0.01	0.000%
9	24.53	-34.49	0.01	-24.53	34.49	-0.01	0.000%
10	20.68	-45.99	11.92	-20.68	45.99	-11.92	0.000%
11	20.68	-34.49	11.92	-20.68	34.49	-11.92	0.000%
12	12.25	-45.99	21.16	-12.25	45.99	-21.16	0.000%
13	12.25	-34.49	21.16	-12.25	34.49	-21.16	0.000%
14	0.01	-45.99	24.70	-0.01	45.99	-24.70	0.000%
15	0.01	-34.49	24.70	-0.01	34.49	-24.70	0.000%
16	-13.04	-45.99	22.55	13.04	45.99	-22.55	0.000%
17	-13.04	-34.49	22.55	13.04	34.49	-22.55	0.000%
18	-20.67	-45.99	11.90	20.67	45.99	-11.90	0.000%
19	-20.67	-34.49	11.90	20.67	34.49	-11.90	0.000%
20	-24.53	-45.99	-0.01	24.53	45.99	0.01	0.000%
21	-24.53	-34.49	-0.01	24.53	34.49	0.01	0.000%
22	-21.44	-45.99	-12.35	21.44	45.99	12.35	0.000%
23	-21.44	-34.49	-12.35	21.44	34.49	12.35	0.000%
24	-12.47	-45.99	-21.53	12.47	45.99	21.53	0.000%
25	-12.47	-34.49	-21.53	12.47	34.49	21.53	0.000%
26	0.00	-75.79	0.00	0.00	75.79	0.00	0.000%
27	-0.00	-75.79	-7.24	0.00	75.79	7.24	0.000%
28	3.77	-75.79	-6.52	-3.77	75.79	6.52	0.000%
29	6.30	-75.79	-3.63	-6.30	75.79	3.63	0.000%
30	7.40	-75.79	0.00	-7.40	75.79	-0.00	0.000%
31	6.26	-75.79	3.61	-6.26	75.79	-3.61	0.000%
32	3.67	-75.79	6.34	-3.67	75.79	-6.34	0.000%
33	0.00	-75.79	7.24	-0.00	75.79	-7.24	0.000%
34	-3.75	-75.79	6.49	3.75	75.79	-6.49	0.000%
35	-6.26	-75.79	3.61	6.26	75.79	-3.61	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
36	-7.40	-75.79	-0.00	7.40	75.79	0.00	0.000%
37	-6.30	-75.79	-3.63	6.30	75.79	3.63	0.000%
38	-3.68	-75.79	-6.36	3.68	75.79	6.36	0.000%
39	-0.00	-38.33	-6.05	0.00	38.33	6.05	0.000%
40	3.25	-38.33	-5.62	-3.25	38.33	5.62	0.000%
41	5.31	-38.33	-3.06	-5.31	38.33	3.06	0.000%
42	6.08	-38.33	0.00	-6.08	38.33	-0.00	0.000%
43	5.13	-38.33	2.95	-5.13	38.33	-2.95	0.000%
44	3.04	-38.33	5.25	-3.04	38.33	-5.25	0.000%
45	0.00	-38.33	6.12	-0.00	38.33	-6.12	0.000%
46	-3.23	-38.33	5.59	3.23	38.33	-5.59	0.000%
47	-5.12	-38.33	2.95	5.12	38.33	-2.95	0.000%
48	-6.08	-38.33	-0.00	6.08	38.33	0.00	0.000%
49	-5.32	-38.33	-3.06	5.32	38.33	3.06	0.000%
50	-3.09	-38.33	-5.34	3.09	38.33	5.34	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	0.00024084
3	Yes	5	0.00000001	0.00009130
4	Yes	6	0.00000001	0.00056462
5	Yes	6	0.00000001	0.00019257
6	Yes	6	0.00000001	0.00054366
7	Yes	6	0.00000001	0.00018617
8	Yes	5	0.00000001	0.00026869
9	Yes	5	0.00000001	0.00010815
10	Yes	6	0.00000001	0.00054772
11	Yes	6	0.00000001	0.00018806
12	Yes	6	0.00000001	0.00055111
13	Yes	6	0.00000001	0.00018878
14	Yes	5	0.00000001	0.00024341
15	Yes	5	0.00000001	0.00009275
16	Yes	6	0.00000001	0.00055948
17	Yes	6	0.00000001	0.00019063
18	Yes	6	0.00000001	0.00054906
19	Yes	6	0.00000001	0.00018862
20	Yes	5	0.00000001	0.00026412
21	Yes	5	0.00000001	0.00010549
22	Yes	6	0.00000001	0.00054598
23	Yes	6	0.00000001	0.00018702
24	Yes	6	0.00000001	0.00055127
25	Yes	6	0.00000001	0.00018881
26	Yes	4	0.00000001	0.00000001
27	Yes	6	0.00000001	0.00065282
28	Yes	6	0.00000001	0.00075613
29	Yes	6	0.00000001	0.00075296
30	Yes	6	0.00000001	0.00065293
31	Yes	6	0.00000001	0.00075397
32	Yes	6	0.00000001	0.00075391
33	Yes	6	0.00000001	0.00065311
34	Yes	6	0.00000001	0.00075791
35	Yes	6	0.00000001	0.00075620
36	Yes	6	0.00000001	0.00065495
37	Yes	6	0.00000001	0.00075560
38	Yes	6	0.00000001	0.00075551
39	Yes	4	0.00000001	0.00077005
40	Yes	5	0.00000001	0.00015683
41	Yes	5	0.00000001	0.00014787
42	Yes	4	0.00000001	0.00077517
43	Yes	5	0.00000001	0.00015078
44	Yes	5	0.00000001	0.00015149
45	Yes	4	0.00000001	0.00077384

46	Yes	5	0.00000001	0.00015391
47	Yes	5	0.00000001	0.00015181
48	Yes	4	0.00000001	0.00077443
49	Yes	5	0.00000001	0.00014905
50	Yes	5	0.00000001	0.00015109

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 105	18.0609	46	1.26	0.00
L2	105 - 100	16.7436	46	1.26	0.00
L3	100 - 95	15.4295	46	1.25	0.00
L4	95 - 90	14.1258	46	1.24	0.00
L5	90 - 85	12.8401	46	1.22	0.00
L6	85 - 80	11.5769	46	1.19	0.00
L7	80 - 75	10.3423	46	1.16	0.00
L8	75 - 70	9.1474	46	1.12	0.00
L9	70 - 65	8.0045	46	1.06	0.00
L10	65 - 60	6.9280	46	0.99	0.00
L11	60 - 55	5.9332	46	0.91	0.00
L12	55 - 50	5.0113	46	0.85	0.00
L13	50 - 45	4.1489	46	0.79	0.00
L14	45 - 40	3.3560	46	0.72	0.00
L15	40 - 39.333	2.6434	46	0.64	0.00
L16	39.333 - 39.083	2.5550	46	0.63	0.00
L17	39.083 - 34.083	2.5223	46	0.62	0.00
L18	34.083 - 30	1.9069	46	0.55	0.00
L19	30 - 29.75	1.4641	46	0.48	0.00
L20	29.75 - 25	1.4388	46	0.48	0.00
L21	25 - 24.75	1.0013	46	0.40	0.00
L22	24.75 - 19.75	0.9805	46	0.39	0.00
L23	19.75 - 18.583	0.6123	46	0.31	0.00
L24	18.583 - 18.333	0.5396	46	0.29	0.00
L25	18.333 - 13.333	0.5247	46	0.28	0.00
L26	13.333 - 8.417	0.2690	46	0.20	0.00
L27	8.417 - 8.067	0.1010	46	0.12	0.00
L28	8.067 - 7.833	0.0923	46	0.12	0.00
L29	7.833 - 6	0.0868	46	0.11	0.00
L30	6 - 5.75	0.0487	46	0.09	0.00
L31	5.75 - 2	0.0444	46	0.08	0.00
L32	2 - 1.75	0.0042	46	0.02	0.00
L33	1.75 - 0	0.0032	46	0.02	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
107.00	Site Pro 1 RMQP-4xx + HRK12 12.5' Platform with Handrails	46	17.2703	1.26	0.00	91975
105.00	Side Arm Mount [SO 102-3]	46	16.7436	1.26	0.00	91975
90.00	SitePro1 RMQLP-4120-H10	46	12.8401	1.22	0.00	13344
76.00	Site Pro 1 RMQP-xxx + HRK12 12.5' Platform with Handrails	46	9.3826	1.13	0.00	6055
64.00	PV-VPP12M-HR-B	46	6.7224	0.97	0.00	3664
54.00	Commscope MC-PK8-DSH	46	4.8340	0.84	0.00	5016
30.00	Bridge Stiffener 72" x 1.25" x 11"	46	1.4641	0.48	0.00	3445

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 105	73.4689	16	5.13	0.00
L2	105 - 100	68.1113	16	5.13	0.00
L3	100 - 95	62.7669	16	5.10	0.00
L4	95 - 90	57.4642	16	5.05	0.00
L5	90 - 85	52.2349	16	4.96	0.00
L6	85 - 80	47.0968	16	4.87	0.00
L7	80 - 75	42.0751	16	4.74	0.00
L8	75 - 70	37.2148	16	4.56	0.00
L9	70 - 65	32.5656	16	4.33	0.00
L10	65 - 60	28.1863	16	4.04	0.00
L11	60 - 55	24.1390	16	3.69	0.00
L12	55 - 50	20.3884	16	3.48	0.00
L13	50 - 45	16.8793	16	3.23	0.00
L14	45 - 40	13.6532	16	2.93	0.00
L15	40 - 39.333	10.7538	16	2.60	0.00
L16	39.333 - 39.083	10.3941	16	2.55	0.00
L17	39.083 - 34.083	10.2609	16	2.54	0.00
L18	34.083 - 30	7.7570	16	2.24	0.00
L19	30 - 29.75	5.9552	16	1.97	0.00
L20	29.75 - 25	5.8525	16	1.95	0.00
L21	25 - 24.75	4.0724	16	1.62	0.00
L22	24.75 - 19.75	3.9880	16	1.60	0.00
L23	19.75 - 18.583	2.4902	16	1.25	0.00
L24	18.583 - 18.333	2.1945	16	1.17	0.00
L25	18.333 - 13.333	2.1338	16	1.15	0.00
L26	13.333 - 8.417	1.0936	4	0.83	0.00
L27	8.417 - 8.067	0.4107	4	0.49	0.00
L28	8.067 - 7.833	0.3755	4	0.47	0.00
L29	7.833 - 6	0.3527	4	0.46	0.00
L30	6 - 5.75	0.1982	4	0.35	0.00
L31	5.75 - 2	0.1804	4	0.33	0.00
L32	2 - 1.75	0.0172	4	0.08	0.00
L33	1.75 - 0	0.0132	4	0.07	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
107.00	Site Pro 1 RMQP-4xx + HRK12 12.5' Platform with Handrails	16	70.2537	5.13	0.00	22880
105.00	Side Arm Mount [SO 102-3]	16	68.1113	5.13	0.00	22880
90.00	SitePro1 RMQLP-4120-H10	16	52.2349	4.96	0.00	3316
76.00	Site Pro 1 RMQP-xxx + HRK12 12.5' Platform with Handrails	16	38.1716	4.60	0.00	1503
64.00	PV-VPP12M-HR-B	16	27.3501	3.97	0.00	906
54.00	Commscope MC-PK8-DSH	16	19.6670	3.43	0.00	1240
30.00	Bridge Stiffener 72" x 1.25" x 11"	16	5.9552	1.97	0.00	848

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	110 - 105 (1)	P24x0.25	5.00	0.00	0.0	18.6532	-3.78	662.26	0.006
L2	105 - 100 (2)	P24x0.25	5.00	0.00	0.0	18.6532	-5.01	662.26	0.008
L3	100 - 95 (3)	P24x0.25	5.00	0.00	0.0	18.6532	-5.42	662.26	0.008
L4	95 - 90 (4)	P24x0.25	5.00	0.00	0.0	18.6532	-5.83	662.26	0.009
L5	90 - 85 (5)	P24x0.375	5.00	0.00	0.0	27.8325	-10.74	1052.07	0.010
L6	85 - 80 (6)	P24x0.375	5.00	0.00	0.0	27.8325	-11.40	1052.07	0.011
L7	80 - 75 (7)	P24x0.375	5.00	0.00	0.0	27.8325	-15.88	1052.07	0.015
L8	75 - 70 (8)	P24x0.375	5.00	0.00	0.0	27.8325	-16.61	1052.07	0.016
L9	70 - 65 (9)	P24x0.375	5.00	0.00	0.0	27.8325	-17.35	1052.07	0.016
L10	65 - 60 (10)	P24x0.375	5.00	0.00	0.0	27.8325	-21.28	1052.07	0.020
L11	60 - 55 (11)	P30x0.375	5.00	0.00	0.0	34.9011	-22.20	1311.06	0.017
L12	55 - 50 (12)	P30x0.375	5.00	0.00	0.0	34.9011	-26.23	1311.06	0.020
L13	50 - 45 (13)	P30x0.375	5.00	0.00	0.0	34.9011	-27.20	1311.06	0.021
L14	45 - 40 (14)	P30x0.375	5.00	0.00	0.0	34.9011	-28.19	1311.06	0.022
L15	40 - 39.333 (15)	P30x0.375	0.67	0.00	0.0	34.9011	-28.33	1311.06	0.022
L16	39.333 - 39.083 (16)	P30x0.4875	0.25	0.00	0.0	45.1992	-28.39	1708.53	0.017
L17	39.083 - 34.083 (17)	P30x0.4875	5.00	0.00	0.0	45.1992	-29.53	1708.53	0.017
L18	34.083 - 30 (18)	P30x0.4875	4.08	0.00	0.0	45.1992	-30.48	1708.53	0.018
L19	30 - 29.75 (19)	P30x0.5	0.25	0.00	0.0	46.3385	-35.42	1751.60	0.020
L20	29.75 - 25 (20)	P30x0.5	4.75	0.00	0.0	46.3385	-36.59	1751.60	0.021
L21	25 - 24.75 (21)	P30x0.55625	0.25	0.00	0.0	51.4533	-36.68	1944.93	0.019
L22	24.75 - 19.75 (22)	P30x0.55625	5.00	0.00	0.0	51.4533	-38.28	1944.93	0.020
L23	19.75 - 18.583 (23)	P30x0.55625	1.17	0.00	0.0	51.4533	-38.66	1944.93	0.020
L24	18.583 - 18.333 (24)	P30x0.6875	0.25	0.00	0.0	63.3105	-38.77	2393.14	0.016
L25	18.333 - 13.333 (25)	P30x0.6875	5.00	0.00	0.0	63.3105	-40.71	2393.14	0.017
L26	13.333 - 8.417 (26)	P30x0.6875	4.92	0.00	0.0	63.3105	-42.64	2393.14	0.018
L27	8.417 - 8.067 (27)	P30x0.8625	0.35	0.00	0.0	78.9517	-42.80	2984.37	0.014
L28	8.067 - 7.833 (28)	P30x0.8625	0.23	0.00	0.0	78.9517	-42.90	2984.37	0.014
L29	7.833 - 6 (29)	P30x0.8625	1.83	0.00	0.0	78.9517	-43.64	2984.37	0.015
L30	6 - 5.75 (30)	P30x0.8	0.25	0.00	0.0	73.3876	-43.74	2774.05	0.016
L31	5.75 - 2 (31)	P30x0.8	3.75	0.00	0.0	73.3876	-45.02	2774.05	0.016
L32	2 - 1.75 (32)	P30x1.45	0.25	0.00	0.0	130.0540	-45.15	4916.04	0.009
L33	1.75 - 0 (33)	P30x1.45	1.75	0.00	0.0	130.0540	-45.97	4916.04	0.009

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	110 - 105 (1)	P24x0.25	10.38	396.68	0.026	0.00	396.68	0.000
L2	105 - 100 (2)	P24x0.25	36.99	396.68	0.093	0.00	396.68	0.000
L3	100 - 95 (3)	P24x0.25	65.09	396.68	0.164	0.00	396.68	0.000
L4	95 - 90 (4)	P24x0.25	94.64	396.68	0.239	0.00	396.68	0.000
L5	90 - 85 (5)	P24x0.375	152.82	623.72	0.245	0.00	623.72	0.000
L6	85 - 80 (6)	P24x0.375	211.71	623.72	0.339	0.00	623.72	0.000
L7	80 - 75 (7)	P24x0.375	275.35	623.72	0.441	0.00	623.72	0.000
L8	75 - 70 (8)	P24x0.375	353.78	623.72	0.567	0.00	623.72	0.000
L9	70 - 65 (9)	P24x0.375	433.41	623.72	0.695	0.00	623.72	0.000
L10	65 - 60 (10)	P24x0.375	525.47	623.72	0.842	0.00	623.72	0.000
L11	60 - 55 (11)	P30x0.375	621.66	947.86	0.656	0.00	947.86	0.000
L12	55 - 50 (12)	P30x0.375	729.63	947.86	0.770	0.00	947.86	0.000
L13	50 - 45 (13)	P30x0.375	841.46	947.86	0.888	0.00	947.86	0.000
L14	45 - 40 (14)	P30x0.375	954.39	947.86	1.007	0.00	947.86	0.000
L15	40 - 39.333 (15)	P30x0.375	969.54	947.86	1.023	0.00	947.86	0.000
L16	39.333 - 39.083 (16)	P30x0.4875	975.24	1273.78	0.766	0.00	1273.78	0.000
L17	39.083 - 34.083 (17)	P30x0.4875	1090.61	1273.78	0.856	0.00	1273.78	0.000
L18	34.083 - 30 (18)	P30x0.4875	1186.83	1273.78	0.932	0.00	1273.78	0.000
L19	30 - 29.75 (19)	P30x0.5	1192.82	1311.10	0.910	0.00	1311.10	0.000
L20	29.75 - 25 (20)	P30x0.5	1306.84	1311.10	0.997	0.00	1311.10	0.000
L21	25 - 24.75 (21)	P30x0.55625	1312.85	1481.77	0.886	0.00	1481.77	0.000
L22	24.75 - 19.75 (22)	P30x0.55625	1434.22	1481.77	0.968	0.00	1481.77	0.000
L23	19.75 - 18.583 (23)	P30x0.55625	1462.83	1481.77	0.987	0.00	1481.77	0.000
L24	18.583 - 18.333 (24)	P30x0.6875	1468.97	1861.09	0.789	0.00	1861.09	0.000
L25	18.333 - 13.333 (25)	P30x0.6875	1593.03	1861.09	0.856	0.00	1861.09	0.000
L26	13.333 - 8.417 (26)	P30x0.6875	1716.99	1861.09	0.923	0.00	1861.09	0.000
L27	8.417 - 8.067 (27)	P30x0.8625	1725.89	2307.28	0.748	0.00	2307.28	0.000
L28	8.067 - 7.833 (28)	P30x0.8625	1731.85	2307.28	0.751	0.00	2307.28	0.000
L29	7.833 - 6 (29)	P30x0.8625	1778.68	2307.28	0.771	0.00	2307.28	0.000
L30	6 - 5.75 (30)	P30x0.8	1785.09	2149.19	0.831	0.00	2149.19	0.000
L31	5.75 - 2 (31)	P30x0.8	1882.13	2149.19	0.876	0.00	2149.19	0.000
L32	2 - 1.75 (32)	P30x1.45	1888.63	3726.18	0.507	0.00	3726.18	0.000
L33	1.75 - 0 (33)	P30x1.45	1934.33	3726.18	0.519	0.00	3726.18	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	110 - 105 (1)	P24x0.25	4.03	201.86	0.020	0.00	324.23	0.000
L2	105 - 100 (2)	P24x0.25	5.47	201.86	0.027	0.00	324.23	0.000
L3	100 - 95 (3)	P24x0.25	5.77	201.86	0.029	0.00	324.23	0.000
L4	95 - 90 (4)	P24x0.25	6.06	201.86	0.030	0.00	324.23	0.000
L5	90 - 85 (5)	P24x0.375	11.63	315.62	0.037	0.11	655.57	0.000
L6	85 - 80 (6)	P24x0.375	11.93	315.62	0.038	0.11	655.57	0.000
L7	80 - 75 (7)	P24x0.375	15.56	315.62	0.049	0.11	655.57	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L8	75 - 70 (8)	P24x0.375	15.82	315.62	0.050	0.11	655.57	0.000
L9	70 - 65 (9)	P24x0.375	16.04	315.62	0.051	0.11	655.57	0.000
L10	65 - 60 (10)	P24x0.375	19.09	315.62	0.060	0.10	655.57	0.000
L11	60 - 55 (11)	P30x0.375	19.40	395.78	0.049	0.10	994.73	0.000
L12	55 - 50 (12)	P30x0.375	22.25	395.78	0.056	0.31	994.73	0.000
L13	50 - 45 (13)	P30x0.375	22.49	395.78	0.057	0.31	994.73	0.000
L14	45 - 40 (14)	P30x0.375	22.70	395.78	0.057	0.31	994.73	0.000
L15	40 - 39.333 (15)	P30x0.375	22.76	395.78	0.058	0.31	994.73	0.000
L16	39.333 - 39.083 (16)	P30x0.4875	22.79	512.56	0.044	0.31	1329.93	0.000
L17	39.083 - 34.083 (17)	P30x0.4875	23.36	512.56	0.046	0.28	1329.93	0.000
L18	34.083 - 30 (18)	P30x0.4875	23.79	512.56	0.046	0.25	1329.93	0.000
L19	30 - 29.75 (19)	P30x0.5	23.95	525.48	0.046	0.24	1362.88	0.000
L20	29.75 - 25 (20)	P30x0.5	24.08	525.48	0.046	0.24	1362.88	0.000
L21	25 - 24.75 (21)	P30x0.55625	24.06	583.48	0.041	0.24	1510.43	0.000
L22	24.75 - 19.75 (22)	P30x0.55625	24.49	583.48	0.042	0.23	1510.43	0.000
L23	19.75 - 18.583 (23)	P30x0.55625	24.59	583.48	0.042	0.23	1510.43	0.000
L24	18.583 - 18.333 (24)	P30x0.6875	24.59	717.94	0.034	0.23	1850.21	0.000
L25	18.333 - 13.333 (25)	P30x0.6875	25.03	717.94	0.035	0.22	1850.21	0.000
L26	13.333 - 8.417 (26)	P30x0.6875	25.44	717.94	0.035	0.21	1850.21	0.000
L27	8.417 - 8.067 (27)	P30x0.8625	25.44	895.31	0.028	0.21	2293.54	0.000
L28	8.067 - 7.833 (28)	P30x0.8625	25.46	895.31	0.028	0.21	2293.54	0.000
L29	7.833 - 6 (29)	P30x0.8625	25.67	895.31	0.029	0.21	2293.54	0.000
L30	6 - 5.75 (30)	P30x0.8	25.65	832.22	0.031	0.21	2136.47	0.000
L31	5.75 - 2 (31)	P30x0.8	26.06	832.22	0.031	0.21	2136.47	0.000
L32	2 - 1.75 (32)	P30x1.45	26.05	1474.81	0.018	0.20	3701.88	0.000
L33	1.75 - 0 (33)	P30x1.45	26.22	1474.81	0.018	0.20	3701.88	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	110 - 105 (1)	0.006	0.026	0.000	0.020	0.000	0.032	1.050	4.8.2
L2	105 - 100 (2)	0.008	0.093	0.000	0.027	0.000	0.102	1.050	4.8.2
L3	100 - 95 (3)	0.008	0.164	0.000	0.029	0.000	0.173	1.050	4.8.2
L4	95 - 90 (4)	0.009	0.239	0.000	0.030	0.000	0.248	1.050	4.8.2
L5	90 - 85 (5)	0.010	0.245	0.000	0.037	0.000	0.257	1.050	4.8.2
L6	85 - 80 (6)	0.011	0.339	0.000	0.038	0.000	0.352	1.050	4.8.2
L7	80 - 75 (7)	0.015	0.441	0.000	0.049	0.000	0.459	1.050	4.8.2
L8	75 - 70 (8)	0.016	0.567	0.000	0.050	0.000	0.586	1.050	4.8.2
L9	70 - 65 (9)	0.016	0.695	0.000	0.051	0.000	0.714	1.050	4.8.2
L10	65 - 60 (10)	0.020	0.842	0.000	0.060	0.000	0.866	1.050	4.8.2
L11	60 - 55 (11)	0.017	0.656	0.000	0.049	0.000	0.675	1.050	4.8.2
L12	55 - 50 (12)	0.020	0.770	0.000	0.056	0.000	0.793	1.050	4.8.2
L13	50 - 45 (13)	0.021	0.888	0.000	0.057	0.000	0.912	1.050	4.8.2
L14	45 - 40 (14)	0.022	1.007	0.000	0.057	0.000	1.032	1.050	4.8.2
L15	40 - 39.333 (15)	0.022	1.023	0.000	0.058	0.000	1.048	1.050	4.8.2
L16	39.333 -	0.017	0.766	0.000	0.044	0.000	0.784	1.050	4.8.2

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
	39.083 (16)								
L17	39.083 - 34.083 (17)	0.017	0.856	0.000	0.046	0.000	0.876	1.050	4.8.2
L18	34.083 - 30 (18)	0.018	0.932	0.000	0.046	0.000	0.952	1.050	4.8.2
L19	30 - 29.75 (19)	0.020	0.910	0.000	0.046	0.000	0.932	1.050	4.8.2
L20	29.75 - 25 (20)	0.021	0.997	0.000	0.046	0.000	1.020	1.050	4.8.2
L21	25 - 24.75 (21)	0.019	0.886	0.000	0.041	0.000	0.907	1.050	4.8.2
L22	24.75 - 19.75 (22)	0.020	0.968	0.000	0.042	0.000	0.989	1.050	4.8.2
L23	19.75 - 18.583 (23)	0.020	0.987	0.000	0.042	0.000	1.009	1.050	4.8.2
L24	18.583 - 18.333 (24)	0.016	0.789	0.000	0.034	0.000	0.807	1.050	4.8.2
L25	18.333 - 13.333 (25)	0.017	0.856	0.000	0.035	0.000	0.874	1.050	4.8.2
L26	13.333 - 8.417 (26)	0.018	0.923	0.000	0.035	0.000	0.942	1.050	4.8.2
L27	8.417 - 8.067 (27)	0.014	0.748	0.000	0.028	0.000	0.763	1.050	4.8.2
L28	8.067 - 7.833 (28)	0.014	0.751	0.000	0.028	0.000	0.766	1.050	4.8.2
L29	7.833 - 6 (29)	0.015	0.771	0.000	0.029	0.000	0.786	1.050	4.8.2
L30	6 - 5.75 (30)	0.016	0.831	0.000	0.031	0.000	0.847	1.050	4.8.2
L31	5.75 - 2 (31)	0.016	0.876	0.000	0.031	0.000	0.893	1.050	4.8.2
L32	2 - 1.75 (32)	0.009	0.507	0.000	0.018	0.000	0.516	1.050	4.8.2
L33	1.75 - 0 (33)	0.009	0.519	0.000	0.018	0.000	0.529	1.050	4.8.2

Section Capacity Table

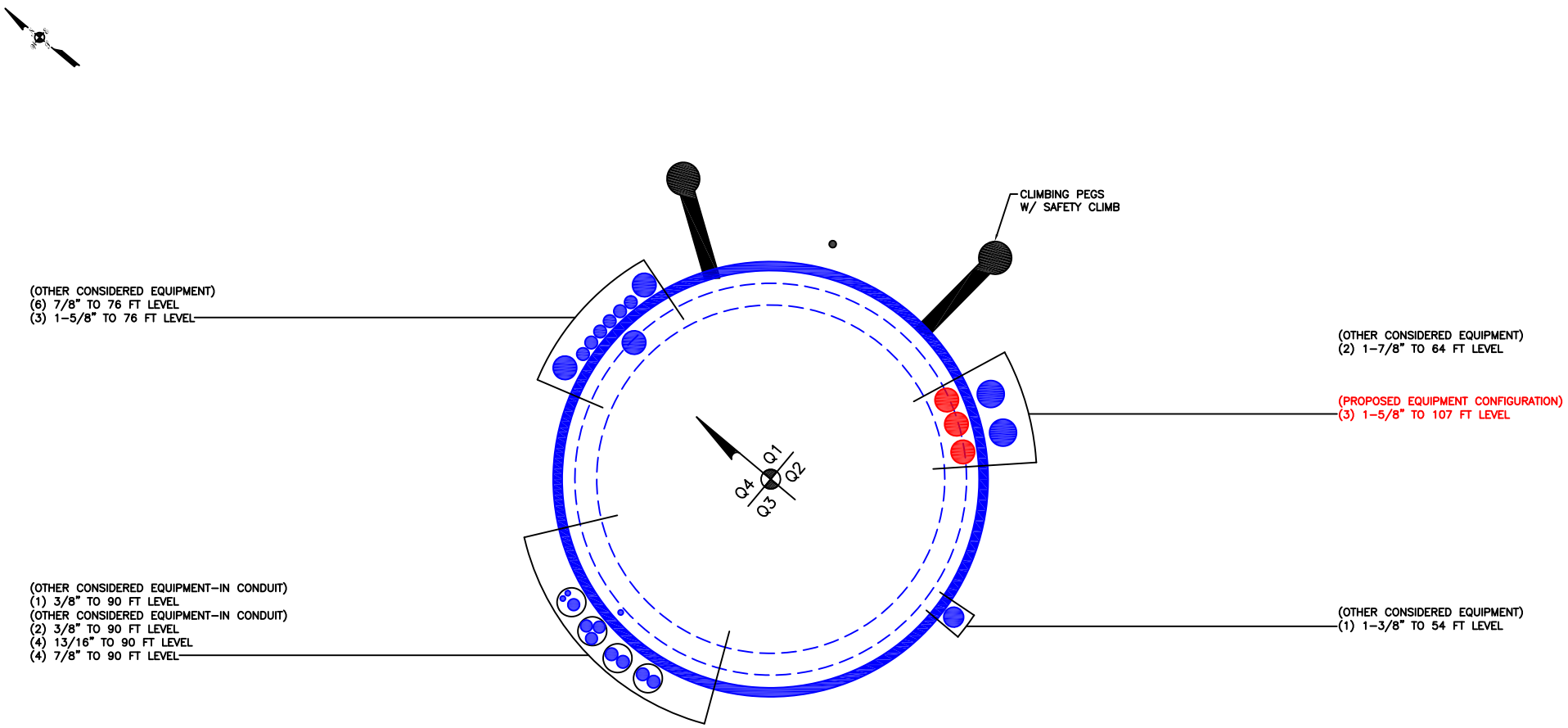
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	110 - 105	Pole	P24x0.25	1	-3.78	695.38	3.1	Pass
L2	105 - 100	Pole	P24x0.25	2	-5.01	695.38	9.7	Pass
L3	100 - 95	Pole	P24x0.25	3	-5.42	695.38	16.5	Pass
L4	95 - 90	Pole	P24x0.25	4	-5.83	695.38	23.6	Pass
L5	90 - 85	Pole	P24x0.375	5	-10.74	1104.67	24.4	Pass
L6	85 - 80	Pole	P24x0.375	6	-11.40	1104.67	33.5	Pass
L7	80 - 75	Pole	P24x0.375	7	-15.88	1104.67	43.7	Pass
L8	75 - 70	Pole	P24x0.375	8	-16.61	1104.67	55.8	Pass
L9	70 - 65	Pole	P24x0.375	9	-17.35	1104.67	68.0	Pass
L10	65 - 60	Pole	P24x0.375	10	-21.28	1104.67	82.5	Pass
L11	60 - 55	Pole	P30x0.375	11	-22.20	1376.61	64.3	Pass
L12	55 - 50	Pole	P30x0.375	12	-26.23	1376.61	75.5	Pass
L13	50 - 45	Pole	P30x0.375	13	-27.20	1376.61	86.8	Pass
L14	45 - 40	Pole	P30x0.375	14	-28.19	1376.61	98.3	Pass
L15	40 - 39.333	Pole	P30x0.375	15	-28.33	1376.61	99.8	Pass
L16	39.333 - 39.083	Pole	P30x0.4875	16	-28.39	1793.96	74.7	Pass
L17	39.083 - 34.083	Pole	P30x0.4875	17	-29.53	1793.96	83.4	Pass
L18	34.083 - 30	Pole	P30x0.4875	18	-30.48	1793.96	90.6	Pass
L19	30 - 29.75	Pole	P30x0.5	19	-35.42	1839.18	88.8	Pass
L20	29.75 - 25	Pole	P30x0.5	20	-36.59	1839.18	97.1	Pass
L21	25 - 24.75	Pole	P30x0.55625	21	-36.68	2042.18	86.3	Pass
L22	24.75 - 19.75	Pole	P30x0.55625	22	-38.28	2042.18	94.2	Pass
L23	19.75 - 18.583	Pole	P30x0.55625	23	-38.66	2042.18	96.1	Pass
L24	18.583 - 18.333	Pole	P30x0.6875	24	-38.77	2512.80	76.8	Pass
L25	18.333 - 13.333	Pole	P30x0.6875	25	-40.71	2512.80	83.3	Pass
L26	13.333 - 8.417	Pole	P30x0.6875	26	-42.64	2512.80	89.7	Pass
L27	8.417 - 8.067	Pole	P30x0.8625	27	-42.80	3133.59	72.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L28	8.067 - 7.833	Pole	P30x0.8625	28	-42.90	3133.59	72.9	Pass
L29	7.833 - 6	Pole	P30x0.8625	29	-43.64	3133.59	74.9	Pass
L30	6 - 5.75	Pole	P30x0.8	30	-43.74	2912.75	80.7	Pass
L31	5.75 - 2	Pole	P30x0.8	31	-45.02	2912.75	85.0	Pass
L32	2 - 1.75	Pole	P30x1.45	32	-45.15	5161.84	49.2	Pass
L33	1.75 - 0	Pole	P30x1.45	33	-45.97	5161.84	50.4	Pass
							Summary	
						Pole (L15)	99.8	Pass
						RATING =	**99.8**	**Pass**

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(6) 7/8" TO 76 FT LEVEL
(3) 1-5/8" TO 76 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1-7/8" TO 64 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(3) 1-5/8" TO 107 FT LEVEL
Q1
Q2
Q3
Q4
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(1) 3/8" TO 90 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(2) 3/8" TO 90 FT LEVEL
(4) 13/16" TO 90 FT LEVEL
(4) 7/8" TO 90 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-3/8" TO 54 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 876325

Work Order: 2014744

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	110	20		0	24	24	0.25		A53-B-42
2	90	30		0	24.00	24	0.375		A53-B-42
3	60	30		0	30.00	30	0.375		A53-B-42
4	30	30		0	30.00	30	0.5		A53-B-42

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	8.083	channel	MP3-05 (bottom weld	4	45	135	225	315														
2	30	39.333	channel	MP3-03 (1.1875in)	3	105	225	345															
3	8.417	18.583	channel	MP3-05 (1.1875in)	3	0	90	270															
4	0	2	plate	TA 7" x 1.25"	4	15	105	255	345														
5	6	25	plate	CCI-SFP-045100	4	70	110	250	290														
6																							
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	5.33	2.09	5.65	0.79	Welded	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
2	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.545	1.1875	A572-65
3	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
4	1.25	7	8.75	3.5	Welded	n/a	Welded	n/a	0.000	8.750	0.0000	A572-65
5	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
MP3-05 (bottom weld)	Top	10	N	3	2	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	70	None	-	-	-	-	30	0.375	-
TA 7" x 1.25"	Top	-	-	-	-	70	PJP Groove	7	0.625	45	0.625	21	0.375	-
	Bottom	-	-	-	-	70	PJP Groove	7	0.625	45	0.625	21	0.375	-

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	110 - 105	5		0	24.000	24.000	0.25	A53-B-42	1.000
2	105 - 100	5		0	24.000	24.000	0.25	A53-B-42	1.000
3	100 - 95	5		0	24.000	24.000	0.25	A53-B-42	1.000
4	95 - 90	5	0	0	24.000	24.000	0.25	A53-B-42	1.000
5	90 - 85	5		0	24.000	24.000	0.375	A53-B-42	1.000
6	85 - 80	5		0	24.000	24.000	0.375	A53-B-42	1.000
7	80 - 75	5		0	24.000	24.000	0.375	A53-B-42	1.000
8	75 - 70	5		0	24.000	24.000	0.375	A53-B-42	1.000
9	70 - 65	5		0	24.000	24.000	0.375	A53-B-42	1.000
10	65 - 60	5	0	0	24.000	24.000	0.375	A53-B-42	1.000
11	60 - 55	5		0	30.000	30.000	0.375	A53-B-42	1.000
12	55 - 50	5		0	30.000	30.000	0.375	A53-B-42	1.000
13	50 - 45	5		0	30.000	30.000	0.375	A53-B-42	1.000
14	45 - 40	5		0	30.000	30.000	0.375	A53-B-42	1.000
15	40 - 39.333	0.667		0	30.000	30.000	0.375	A53-B-42	1.000
16	39.333 - 39.083	0.25		0	30.000	30.000	0.4875	A53-B-42	0.966
17	39.083 - 34.083	5		0	30.000	30.000	0.4875	A53-B-42	0.966
18	34.083 - 30	4.083	0	0	30.000	30.000	0.4875	A53-B-42	0.966
19	30 - 29.75	0.25		0	30.000	30.000	0.5	A53-B-42	1.000
20	29.75 - 25	4.75		0	30.000	30.000	0.5	A53-B-42	1.000
21	25 - 24.75	0.25		0	30.000	30.000	0.55625	A53-B-42	1.250
22	24.75 - 19.75	5		0	30.000	30.000	0.55625	A53-B-42	1.250
23	19.75 - 18.583	1.167		0	30.000	30.000	0.55625	A53-B-42	1.250
24	18.583 - 18.333	0.25		0	30.000	30.000	0.6875	A53-B-42	1.284
25	18.333 - 13.333	5		0	30.000	30.000	0.6875	A53-B-42	1.284
26	13.333 - 8.417	4.916		0	30.000	30.000	0.6875	A53-B-42	1.284
27	8.417 - 8.067	0.35		0	30.000	30.000	0.8625	A53-B-42	1.101
28	8.067 - 7.833	0.234		0	30.000	30.000	0.8625	A53-B-42	1.101
29	7.833 - 6	1.833		0	30.000	30.000	0.8625	A53-B-42	1.101
30	6 - 5.75	0.25		0	30.000	30.000	0.8	A53-B-42	0.939
31	5.75 - 2	3.75		0	30.000	30.000	0.8	A53-B-42	0.939
32	2 - 1.75	0.25		0	30.000	30.000	1.45	A53-B-42	0.799
33	1.75 - 0	1.75		0	30.000	30.000	1.45	A53-B-42	0.799

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	110 - 105	3.78	10.38	4.03
2	105 - 100	5.01	36.99	5.47
3	100 - 95	5.42	65.09	5.77
4	95 - 90	5.83	94.64	6.06
5	90 - 85	10.74	152.82	11.63
6	85 - 80	11.40	211.71	11.93
7	80 - 75	15.88	275.35	15.56
8	75 - 70	16.61	353.78	15.82
9	70 - 65	17.35	433.41	16.04
10	65 - 60	21.28	525.47	19.09
11	60 - 55	22.20	621.67	19.40
12	55 - 50	26.23	729.63	22.25
13	50 - 45	27.20	841.45	22.49
14	45 - 40	28.19	954.39	22.70
15	40 - 39.333	28.33	969.54	22.76
16	39.333 - 39.083	28.39	975.24	22.79
17	39.083 - 34.083	29.53	1090.61	23.36
18	34.083 - 30	30.48	1186.83	23.79
19	30 - 29.75	35.42	1192.81	23.95
20	29.75 - 25	36.59	1306.84	24.08
21	25 - 24.75	36.68	1312.85	24.06
22	24.75 - 19.75	38.28	1434.21	24.49
23	19.75 - 18.583	38.66	1462.83	24.59
24	18.583 - 18.333	38.77	1468.98	24.59
25	18.333 - 13.333	40.71	1593.02	25.03
26	13.333 - 8.417	42.64	1716.99	25.44
27	8.417 - 8.067	42.80	1725.89	25.44
28	8.067 - 7.833	42.90	1731.85	25.46
29	7.833 - 6	43.64	1778.68	25.67
30	6 - 5.75	43.74	1785.09	25.65
31	5.75 - 2	45.02	1882.13	26.06
32	2 - 1.75	45.15	1888.63	26.05
33	1.75 - 0	45.97	1934.33	26.22

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
110 - 105	Pole	TP24x24x0.25	Pole	3.1%	Pass
105 - 100	Pole	TP24x24x0.25	Pole	9.7%	Pass
100 - 95	Pole	TP24x24x0.25	Pole	16.5%	Pass
95 - 90	Pole	TP24x24x0.25	Pole	23.6%	Pass
90 - 85	Pole	TP24x24x0.375	Pole	24.4%	Pass
85 - 80	Pole	TP24x24x0.375	Pole	33.5%	Pass
80 - 75	Pole	TP24x24x0.375	Pole	43.7%	Pass
75 - 70	Pole	TP24x24x0.375	Pole	55.8%	Pass
70 - 65	Pole	TP24x24x0.375	Pole	68.0%	Pass
65 - 60	Pole	TP24x24x0.375	Pole	82.5%	Pass
60 - 55	Pole	TP30x30x0.375	Pole	64.3%	Pass
55 - 50	Pole	TP30x30x0.375	Pole	75.5%	Pass
50 - 45	Pole	TP30x30x0.375	Pole	86.8%	Pass
45 - 40	Pole	TP30x30x0.375	Pole	98.3%	Pass
40 - 39.33	Pole	TP30x30x0.375	Pole	99.8%	Pass
39.33 - 39.08	Pole + Reinf.	TP30x30x0.4875	Pole	78.3%	Pass
39.08 - 34.08	Pole + Reinf.	TP30x30x0.4875	Pole	87.4%	Pass
34.08 - 30	Pole + Reinf.	TP30x30x0.4875	Pole	95.0%	Pass
30 - 29.75	Pole	TP30x30x0.5	Pole	88.8%	Pass
29.75 - 25	Pole	TP30x30x0.5	Pole	97.1%	Pass
25 - 24.75	Pole + Reinf.	TP30x30x0.5563	Pole	87.7%	Pass
24.75 - 19.75	Pole + Reinf.	TP30x30x0.5563	Pole	95.7%	Pass
19.75 - 18.58	Pole + Reinf.	TP30x30x0.5563	Pole	97.6%	Pass
18.58 - 18.33	Pole + Reinf.	TP30x30x0.6875	Pole	84.8%	Pass
18.33 - 13.33	Pole + Reinf.	TP30x30x0.6875	Pole	91.9%	Pass
13.33 - 8.42	Pole + Reinf.	TP30x30x0.6875	Pole	99.0%	Pass
8.42 - 8.07	Pole + Reinf.	TP30x30x0.8625	Pole	76.3%	Pass
8.07 - 7.83	Pole + Reinf.	TP30x30x0.8625	Pole	76.6%	Pass
7.83 - 6	Pole + Reinf.	TP30x30x0.8625	Pole	78.6%	Pass
6 - 5.75	Pole + Reinf.	TP30x30x0.8	Pole	84.5%	Pass
5.75 - 2	Pole + Reinf.	TP30x30x0.8	Pole	89.0%	Pass
2 - 1.75	Pole + Reinf.	TP30x30x1.45	Pole	60.5%	Pass
1.75 - 0	Pole + Reinf.	TP30x30x1.45	Pole	62.0%	Pass
				Summary	
			Pole	99.8%	Pass
			Reinforcement	88.6%	Pass
			Overall	99.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*					
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5
110 - 105	1315	n/a	1315	18.65	n/a	18.65	3.1%					
105 - 100	1315	n/a	1315	18.65	n/a	18.65	9.7%					
100 - 95	1315	n/a	1315	18.65	n/a	18.65	16.5%					
95 - 90	1315	n/a	1315	18.65	n/a	18.65	23.6%					
90 - 85	1942	n/a	1942	27.83	n/a	27.83	24.4%					
85 - 80	1942	n/a	1942	27.83	n/a	27.83	33.5%					
80 - 75	1942	n/a	1942	27.83	n/a	27.83	43.7%					
75 - 70	1942	n/a	1942	27.83	n/a	27.83	55.8%					
70 - 65	1942	n/a	1942	27.83	n/a	27.83	68.0%					
65 - 60	1942	n/a	1942	27.83	n/a	27.83	82.5%					
60 - 55	3829	n/a	3829	34.90	n/a	34.90	64.3%					
55 - 50	3829	n/a	3829	34.90	n/a	34.90	75.5%					
50 - 45	3829	n/a	3829	34.90	n/a	34.90	86.8%					
45 - 40	3829	n/a	3829	34.90	n/a	34.90	98.3%					
40 - 39.33	3829	n/a	3829	34.90	n/a	34.90	99.8%					
39.33 - 39.08	3829	1067	4897	34.90	8.76	43.66	78.3%		73.0%			
39.08 - 34.08	3829	1067	4897	34.90	8.76	43.66	87.4%		81.5%			
34.08 - 30	3829	1067	4897	34.90	8.76	43.66	95.0%		88.6%			
30 - 29.75	5042	n/a	5042	46.34	n/a	46.34	88.8%					
29.75 - 25	5042	n/a	5042	46.34	n/a	46.34	97.1%					
25 - 24.75	5042	533	5575	46.34	18.00	64.34	87.7%					68.8%
24.75 - 19.75	5042	533	5575	46.34	18.00	64.34	95.7%					75.1%
19.75 - 18.58	5042	533	5575	46.34	18.00	64.34	97.6%					76.6%
18.58 - 18.33	5098	1801	6899	46.34	34.95	81.29	84.8%			70.1%		63.3%
18.33 - 13.33	5098	1801	6899	46.34	34.95	81.29	91.9%			76.0%		68.6%
13.33 - 8.42	5098	1801	6899	46.34	34.95	81.29	99.0%			81.9%		73.9%
8.42 - 8.07	5042	3365	8407	46.34	40.60	86.94	76.3%	64.0%				65.3%
8.07 - 7.83	5042	3365	8407	46.34	40.60	86.94	76.6%	64.3%				65.5%
7.83 - 6	5042	3365	8407	46.34	40.60	86.94	78.6%	66.0%				67.3%
6 - 5.75	5042	2832	7874	46.34	22.60	68.94	84.5%	80.4%				
5.75 - 2	5042	2832	7874	46.34	22.60	68.94	89.0%	84.8%				
2 - 1.75	5267	8166	13433	46.34	57.60	103.94	60.5%	54.7%			52.5%	
1.75 - 0	5267	8166	13433	46.34	57.60	103.94	62.0%	56.0%			53.7%	

Note: Section capacity checked using 5 degree increments.
Rating per TIA-222-H Section 15.5.

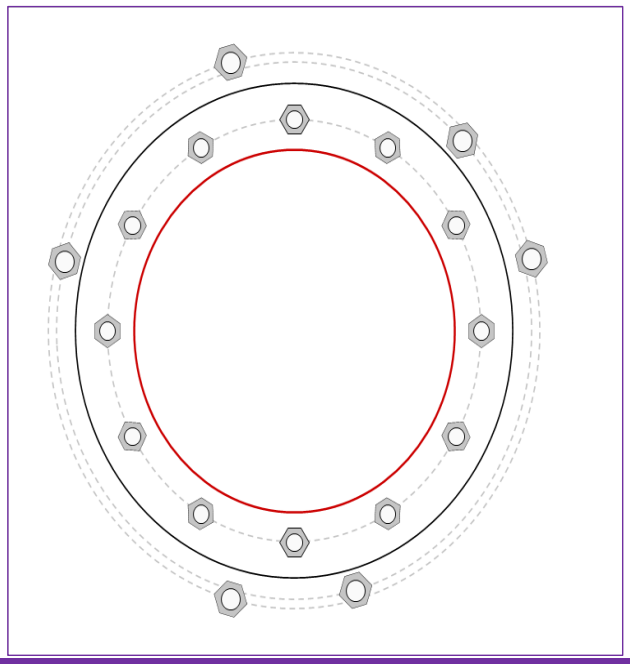
Monopole Base Plate Connection

Site Info	
BU #	876325
Site Name	WESTON SQUARE
Order #	557897 rev# 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{ar} (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	1934.33
Axial Force (kips)	45.97
Shear Force (kips)	26.22

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (12) 1-1/2" ø bolts (A354-BC N; Fy=109 ksi, Fu=125 ksi) on 35" BC
GROUP 2: (3) 1-3/4" ø bolts (A722 N; Fy=120 ksi, Fu=125 ksi) on 44.5" BC
GROUP 3: (3) 1-3/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 46" BC
pos. (deg): 15, 105, 255

Base Plate Data

41" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Stiffener Data

N/A

Pole Data

30" x 0.5" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

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

GROUP 1:		
Pu_t = 102.57	ϕPn_t = 132.19	**Stress Rating**
Vu = 2.18	ϕVn = 82.83	**73.9%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_t = 248.89	ϕPn_t = 243.75	**Stress Rating**
Vu = 0	ϕVn = 121.88	**99.3%**
Mu = 0	ϕMn = 108.42	**Pass**
GROUP 3:		
Pu_t = 172.01	ϕPn_t = 178.13	**Stress Rating**
Vu = 0	ϕVn = 112.75	**92.0%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	22.62	(Flexural)
Allowable Stress (ksi):	32.4	
Stress Rating:	**66.5%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

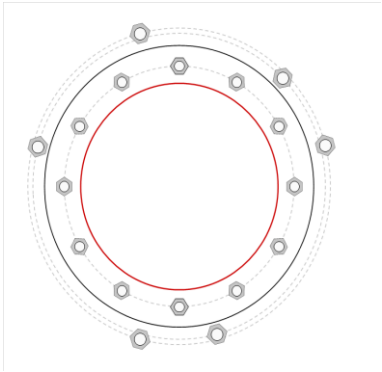
note: Bending interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending	Grout Considered	Apply at BARB Elevation	BARB CL Elevation (ft)
1	Yes	Yes	Yes	No	No	
2	No	No	No	No	No	
3	No	No	No	No	No	

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, n:	l_{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	0	1.5	A354-BC	35	0.5	0.75	N-Included		No
2	1	30	1.5	A354-BC	35	0.5	0.75	N-Included		No
3	1	60	1.5	A354-BC	35	0.5	0.75	N-Included		No
4	1	90	1.5	A354-BC	35	0.5	0.75	N-Included		No
5	1	120	1.5	A354-BC	35	0.5	0.75	N-Included		No
6	1	150	1.5	A354-BC	35	0.5	0.75	N-Included		No
7	1	180	1.5	A354-BC	35	0.5	0.75	N-Included		No
8	1	210	1.5	A354-BC	35	0.5	0.75	N-Included		No
9	1	240	1.5	A354-BC	35	0.5	0.75	N-Included		No
10	1	270	1.5	A354-BC	35	0.5	0.75	N-Included		No
11	1	300	1.5	A354-BC	35	0.5	0.75	N-Included		No
12	1	330	1.5	A354-BC	35	0.5	0.75	N-Included		No
13	2	45	1.75	A722	44.5	0.5	2	N-Included	2.6	No
14	2	165	1.75	A722	44.5	0.5	2	N-Included	2.6	No
15	2	285	1.75	A722	44.5	0.5	2	N-Included	2.6	No
16	3	15	1.75	A193 Gr. B7	46	0.5	1	N-Included		No
17	3	105	1.75	A193 Gr. B7	46	0.5	1	N-Included		No
18	3	255	1.75	A193 Gr. B7	46	0.5	1	N-Included		No

Plot Graphic



Monopole Flange Plate Connection

Elevation = 30 ft.

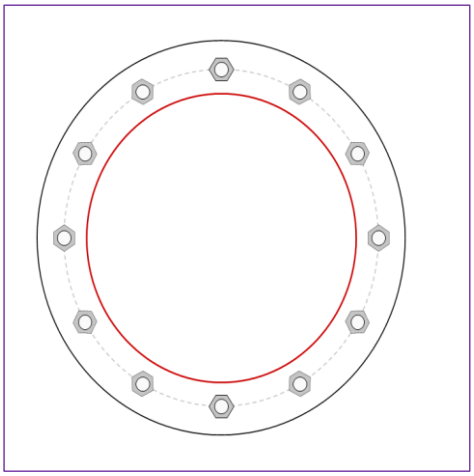
BU #	876325
Site Name	WESTON SQUARE
Order #	557897 rev# 1

TIA-222 Revision	H

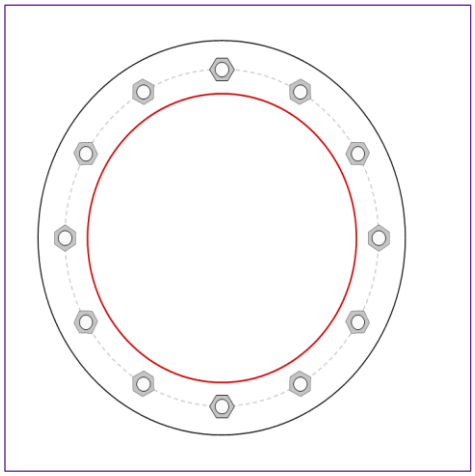
Applied Loads to Flange Connections		Applied Loads to Bridge Stiffeners	
Moment (kip-ft)	262.63	Moment (kip-ft)	924.20
Axial Force (kips)	30.48	Axial Force (kips)	0.00
Shear Force (kips)	23.79	Shear Force (kips)	0.00

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(12) 1-1/2" ø bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 35" BC

Top Plate Data

41" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

41" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

30" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

30" x 0.5" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bridge Stiffener Group 1 Data

(3) Welded, 5''x1.25'', A572-65, Lu=4.125", Upper Plate Width=11'', Lower Plate Width=11'', Neglect Flange in MOI: No

Bridge Stiffener Group 2 Data

(3) Bolted, 6.25''x1'', A572-65, Lu=20", Neglect Flange in MOI: No

Analysis Results

Bolt Capacity

Max Load (kips)	27.45	
Allowable (kips)	126.86	
Stress Rating:	**20.6%**	Pass

Top Plate Capacity

Max Stress (ksi):	6.66	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**19.6%**	Pass
Tension Side Stress Rating:	**6.2%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	6.66	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**19.6%**	Pass
Tension Side Stress Rating:	**6.2%**	Pass

Bridge Stiffener Group 1 Analysis Capacity

Max Compression (kip):	178.66	
Max Tension (kip):	178.66	
Comp. Capacity (kip):	361.11	
Tens. Capacity (kip):	365.63	(Yield)
Comp. Stress Rating:	**47.1%**	Pass
Tens. Stress Rating:	**46.5%**	Pass

Bridge Stiffener Group 2 Analysis Capacity

Max Compression (kip):	155.85	
Max Tension (kip):	155.85	
Comp. Capacity (kip):	231.68	
Tens. Capacity (kip):	300.00	(Rupture)
Comp. Stress Rating:	**64.1%**	Pass
Tens. Stress Rating:	**49.5%**	Pass

Welded Bridge Stiffener Design

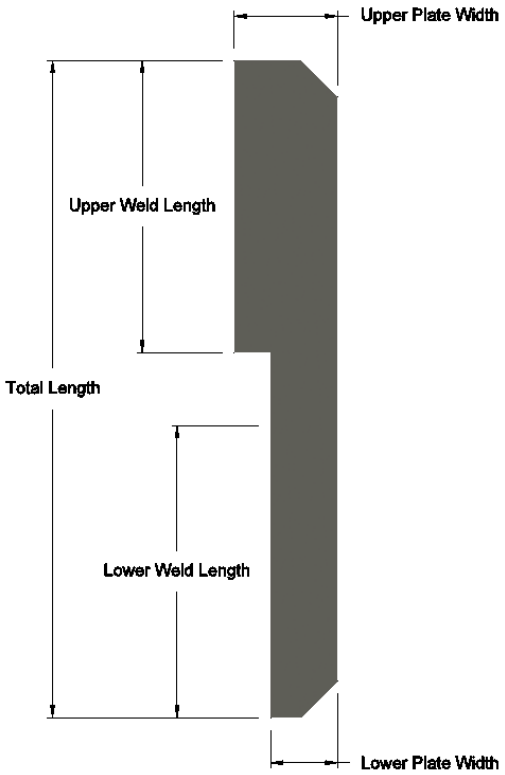
Elevation = 30 ft.

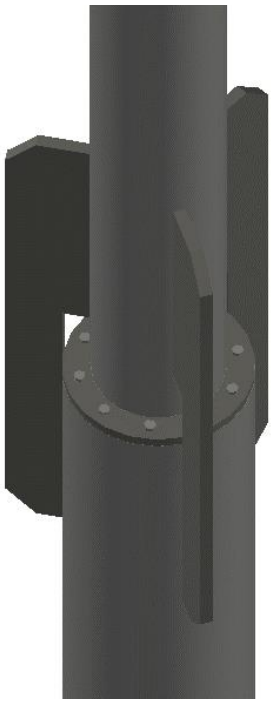
BU #	876325
Site Name	WESTON SQUARE
Order #	557897 rev# 1

TIA-222 Revision	H

Applied Loads to Design Groups	
Moment (kip-ft)	524.82
Axial Force (kips)	0.00
Shear Force (kips)	0.00

**TIA-222-H Section 15.5 Applied*





Design Properties

Bridge Stiffener Group 1 Data

(3) Welded, 5''x1.25'', A572-65, Lu=4.125", Upper Plate Width=11'', Lower Plate Width=11'', Neglect Flange in MOI: No

Total Length:	72	in
Weld Type:	Fillet (both sides)	
Weld Size:	0.375	in
Exx:	80	ksi
Upper Weld Length:	34.75	in
Upper Plate Width:	11	in
Lower Weld Length:	33.125	in
Lower Plate Width:	11	in
Stiffener Front EPA (No Ice):	6.74	ft²
Stiffener Side EPA (No Ice):	1.25	ft²
Stiffener Front EPA (1/2'' Ice):	7.13	ft²
Stiffener Side EPA (1/2'' Ice):	2.28	ft²
Stiffener Weight (No Ice):	0.249	kip
Stiffener Weight (1/2'' Ice):	0.275	kip

Upper Weld Size:	***Good***
Upper Weld Rating:	**31.71%**
Lower Weld Size:	***Good***
Lower Weld Rating:	**33.78%**
Top Plate Lateral-Torsional Buckling Rating:	**7.17%**
Top Plate Tension Yield Rating:	**10.04%**
Top Plate Tension Rupture Rating:	**10.88%**
Top Plate Interaction Rating:	**8.42%**
Bottom Plate Lateral-Torsional Buckling Rating:	**7.86%**
Bottom Plate Tension Yield Rating:	**10.54%**
Bottom Plate Tension Rupture Rating:	**11.41%**
Bottom Plate Interaction Rating:	**9.22%**
Top Pole Punching Shear Rating:	**25.35%**
Bottom Pole Punching Shear Rating:	**20.92%**

Monopole Flange Plate Connection

Elevation = 60 ft.

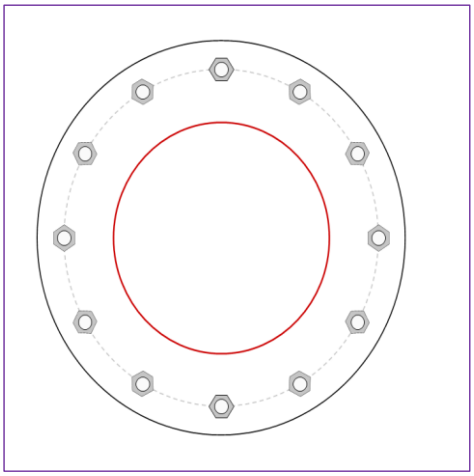
BU #	876325
Site Name	WESTON SQUARE
Order #	557897 rev# 1

TIA-222 Revision	H

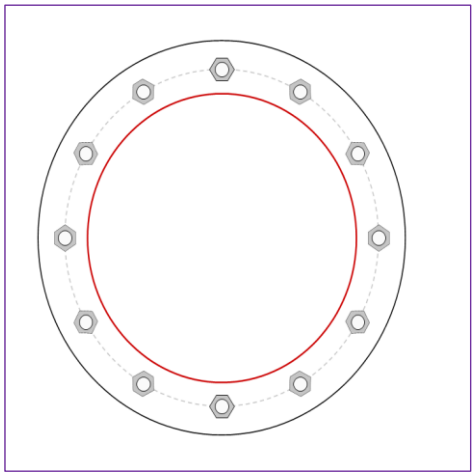
Applied Loads	
Moment (kip-ft)	525.47
Axial Force (kips)	21.28
Shear Force (kips)	19.09

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(12) 1-1/2" ø bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 35" BC

Top Plate Data

41" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

41" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

24" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

30" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	58.24	
Allowable (kips)	126.87	
Stress Rating:	**43.7%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Rohn OK**
Tension Side Stress Rating:	**Rohn OK**

Bottom Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Rohn OK**
Tension Side Stress Rating:	**Rohn OK**

Monopole Flange Plate Connection

Elevation = 90 ft.

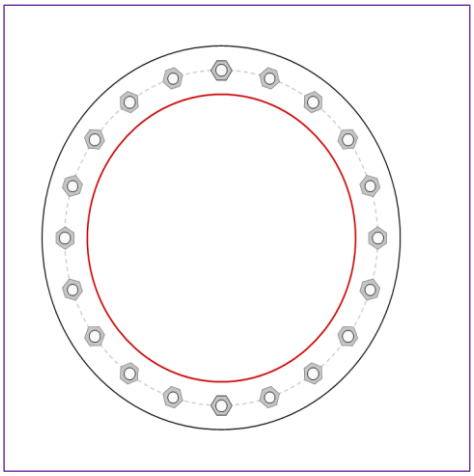
BU #	876325
Site Name	WESTON SQUARE
Order #	557897 rev# 1

TIA-222 Revision	H

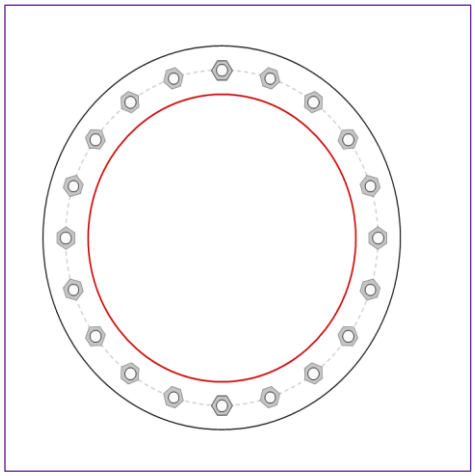
Applied Loads	
Moment (kip-ft)	94.64
Axial Force (kips)	5.83
Shear Force (kips)	6.06

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(20) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 28" BC

Top Plate Data

32" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

32" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

24" x 0.25" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

24" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	7.82	
Allowable (kips)	54.54	
Stress Rating:	**13.7%**	Pass

Top Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Rohn OK**
Tension Side Stress Rating:	**Rohn OK**

Bottom Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Rohn OK**
Tension Side Stress Rating:	**Rohn OK**

Drilled Pier Foundation

BU # :	876325
Site Name:	WESTON SQUARE
Order Number:	557897 rev# 1
TIA-222 Revison:	H
Tower Type:	Monopole

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☑
Override Critical Depth:	☐

Go to Soil Calculations

Applied Loads	Comp.	Uplift
Moment (kip-ft)	1934	
Axial Force (kips)	46	
Shear Force (kips)	26	

Material Properties			Rebar 2, Fy Override (ksi)
Concrete Strength, f'c:	3	ksi	
Rebar Strength, Fy:	60	ksi	80
Tie Yield Strength, Fyt:	60	ksi	

Pier Design Data		
Depth	37	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 24.83' below grade		
Pier Diameter	5	ft
Rebar Quantity	16	
Rebar Size	9	
Clear Cover to Ties	3	in
Tie Size	4	
Tie Spacing	12	in
Rebar Quantity	3	
Rebar Size	10	
Rebar Cage Diameter	44.5	in
Pier Section 2		
From 24.83' below grade to 37' below grade		
Pier Diameter	5	ft
Rebar Quantity	16	
Rebar Size	9	
Clear Cover to Ties	3	in
Tie Size	4	
Tie Spacing	12	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	8.94	-
Soil Safety Factor	5.28	-
Max Moment (kip-ft)	2106.10	-
Rating*	*24.0%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	395.02	-
End Bearing (kips)	135.00	-
Weight of Concrete (kips)	100.17	-
Total Capacity (kips)	530.01	-
Axial (kips)	146.17	-
Rating*	*26.3%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	8.64	-
Critical Moment (kip-ft)	2105.85	-
Critical Moment Capacity	2270.26	-
Rating*	*88.3%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	23.12	-
Critical Shear (kip)	183.49	-
Critical Shear Capacity	1008.00	-
Rating*	*17.3%*	-

Shear-Friction Methodology is Applied

Structural Foundation Rating*	**88.3%**
Soil Interaction Rating*	**26.3%**

*Rating per TIA-222-H Section 15.5

Soil Profile

Groundwater Depth	15

# of Layers	8

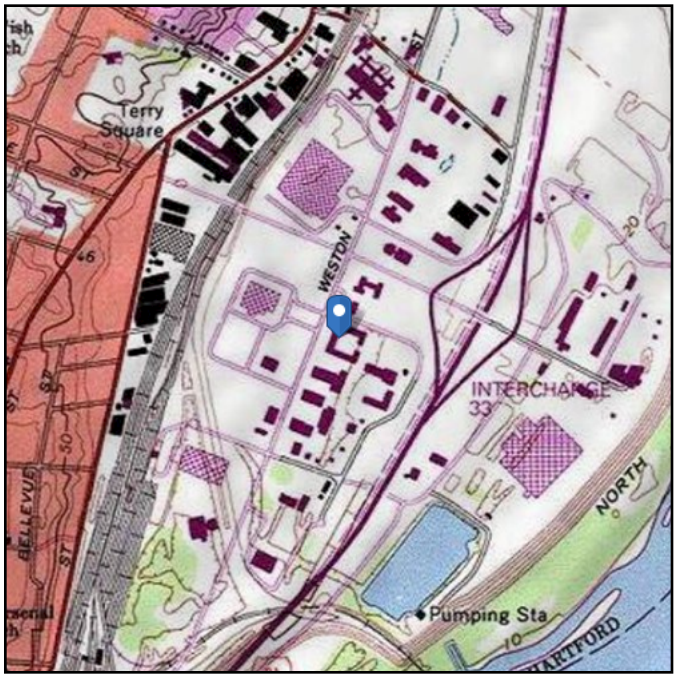
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2	2	120	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	2	3.33	1.33	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	3.33	6	2.67	110	150	0	30	0.000	0.000	0.00	0.00			Cohesionless
4	6	13	7	110	150	0.75	0	0.413	0.413	0.40	0.40			Cohesive
5	13	15	2	105	150	0	30	0.000	0.000	1.70	1.70			Cohesionless
6	15	28	13	52.6	87.6	0	32	0.000	0.000	1.70	1.70			Cohesionless
7	28	33	5	37.6	87.6	0.75	0	0.41	0.41	0.39	0.39			Cohesive
8	33	37	4	57.6	87.6	1.5	0	0.83	0.83	0.79	0.79	9.167		Cohesive

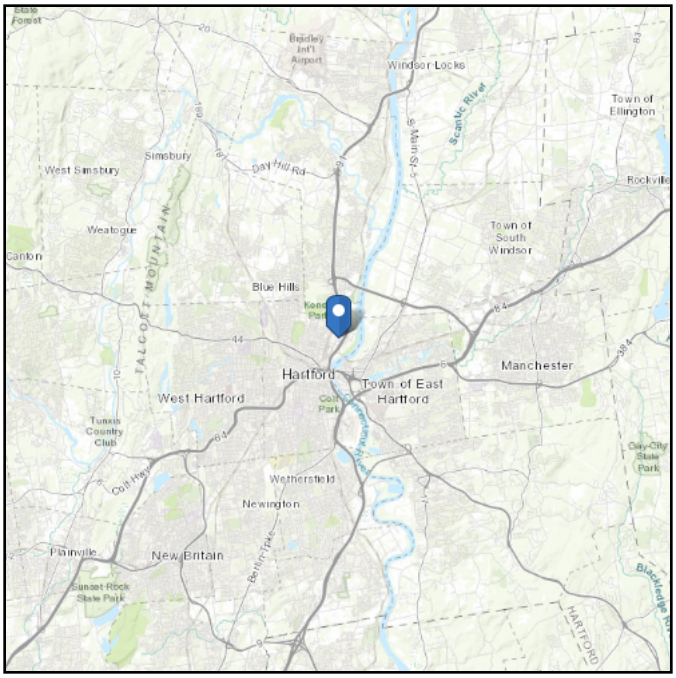
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 0 ft (NAVD 88)
Latitude: 41.78675
Longitude: -72.662339





Wind

Results:

Wind Speed:	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 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:	Mon Sep 20 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.

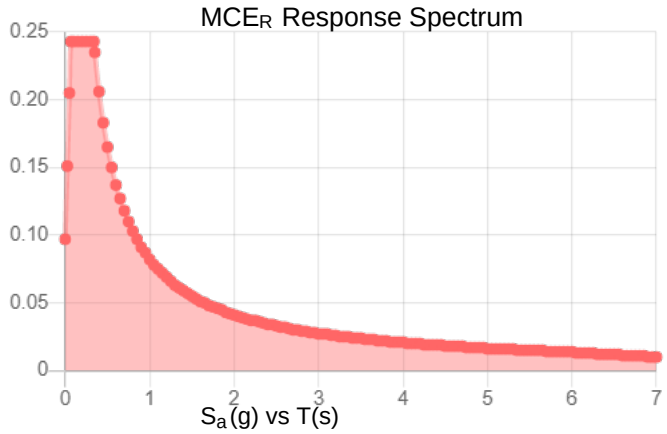
Seismic

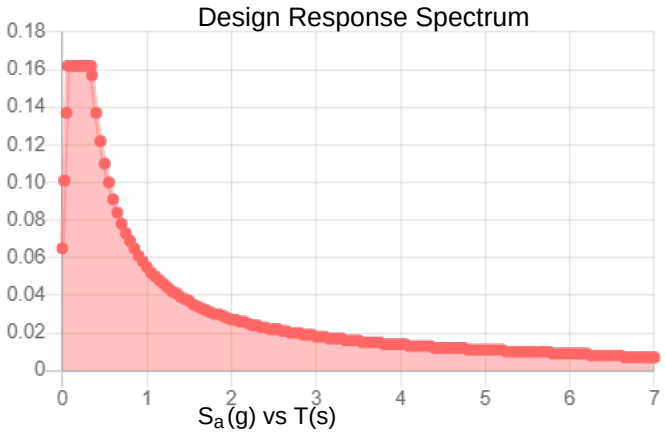
Site Soil Class: C - Very Dense Soil and Soft Rock

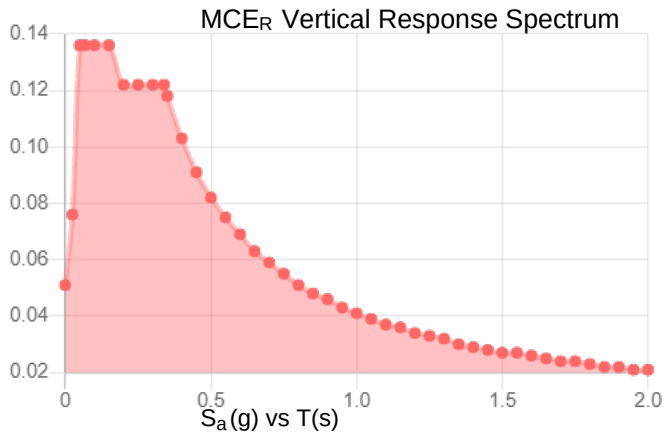
Results:

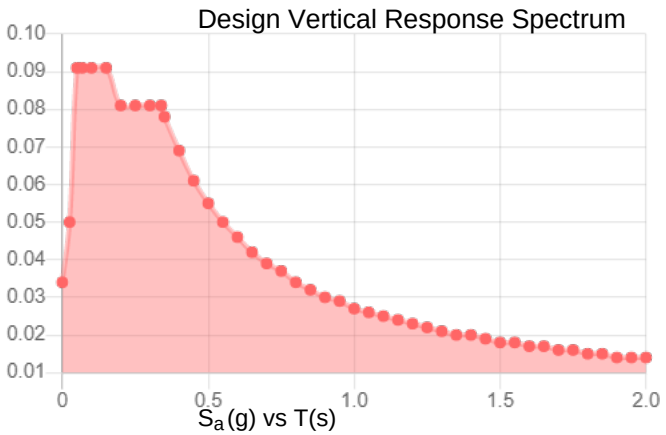
S_S :	0.187	S_{D1} :	0.055
S_1 :	0.055	T_L :	6
F_a :	1.3	PGA :	0.1
F_v :	1.5	PGA_M :	0.131
S_{MS} :	0.243	F_{PGA} :	1.3
S_{M1} :	0.082	I_e :	1
S_{DS} :	0.162	C_v :	0.7

Seismic Design Category A









Data Accessed: Mon Sep 20 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:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Mon Sep 20 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.

Exhibit E

Mount Analysis

Date: **August 31, 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 Replacement Analysis Report**	
Carrier Designation:	**T-Mobile Sprint Retain**	
	Carrier Site Number:	CTHA662A
	Carrier Site Name:	CT03XC064
Crown Castle Designation:	**Crown Castle BU Number:**	876325
	Crown Castle Site Name:	Weston Square
	Crown Castle JDE Job Number:	650689
	Crown Castle Order Number:	557897 Rev. *1*
Engineering Firm Designation:	**Trylon Report Designation:**	190949
Site Data:	**92 Weston Street, Hartford, Hartford County, CT, 06103-1217 Latitude 41°47'12.30" Longitude -72°39'44.42"**	
Structure Information:	**Tower Height & Type:**	**110.0 ft Monopole**
	Mount Elevation:	**107.0 ft**
	Mount Type:	**12.5 ft Platform**

Dear Darcy Tarr,

Trylon is pleased to submit this **"Mount Replacement 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 125 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: Trevor Leahy, E.I.T.

Respectfully Submitted by:
Cliff Abernathy, P.E.

08/31/2021

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3-sector 12.5 ft Platform, designed by Site Pro 1.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	2.00 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.181
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
107.0	108.0	3	Ericsson	AIR6449 B41_T-MOBILE	12.5 ft Platform [Site Pro 1 RMQP-496 w/ HRK12]
		3	RFS/Celwave	APXVAALL24_43-U-NA20_TMO	
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO	
		3	Ericsson	RADIO 4480_TMOV2	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	557897 Rev. 1	CCI Sites
Radio Frequency Data Sheet	T-Mobile	CTHA662A	CCI Sites
Tower Structural Analysis Report	Black & Veatch	9497781	CCI Sites
Mount Manufacturer Drawings	Site Pro 1	RMQP-496	Trylon
Handrail Manufacturer Drawings	Site Pro 1	HRK12	Trylon

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, 3	Mount Pipe(s)	MP6	107.0	45.3	Pass
	Horizontal(s)	H1		19.0	Pass
	Standoff(s)	SA2		42.7	Pass
	Brace(s)	B3		21.3	Pass
	Handrail(s)	HRC2		29.9	Pass
	Plate(s)	M96B		43.4	Pass
	Connection(s)	-		34.4	Pass

Structure Rating (max from all components) =	45.3%

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

4.1) Recommendations

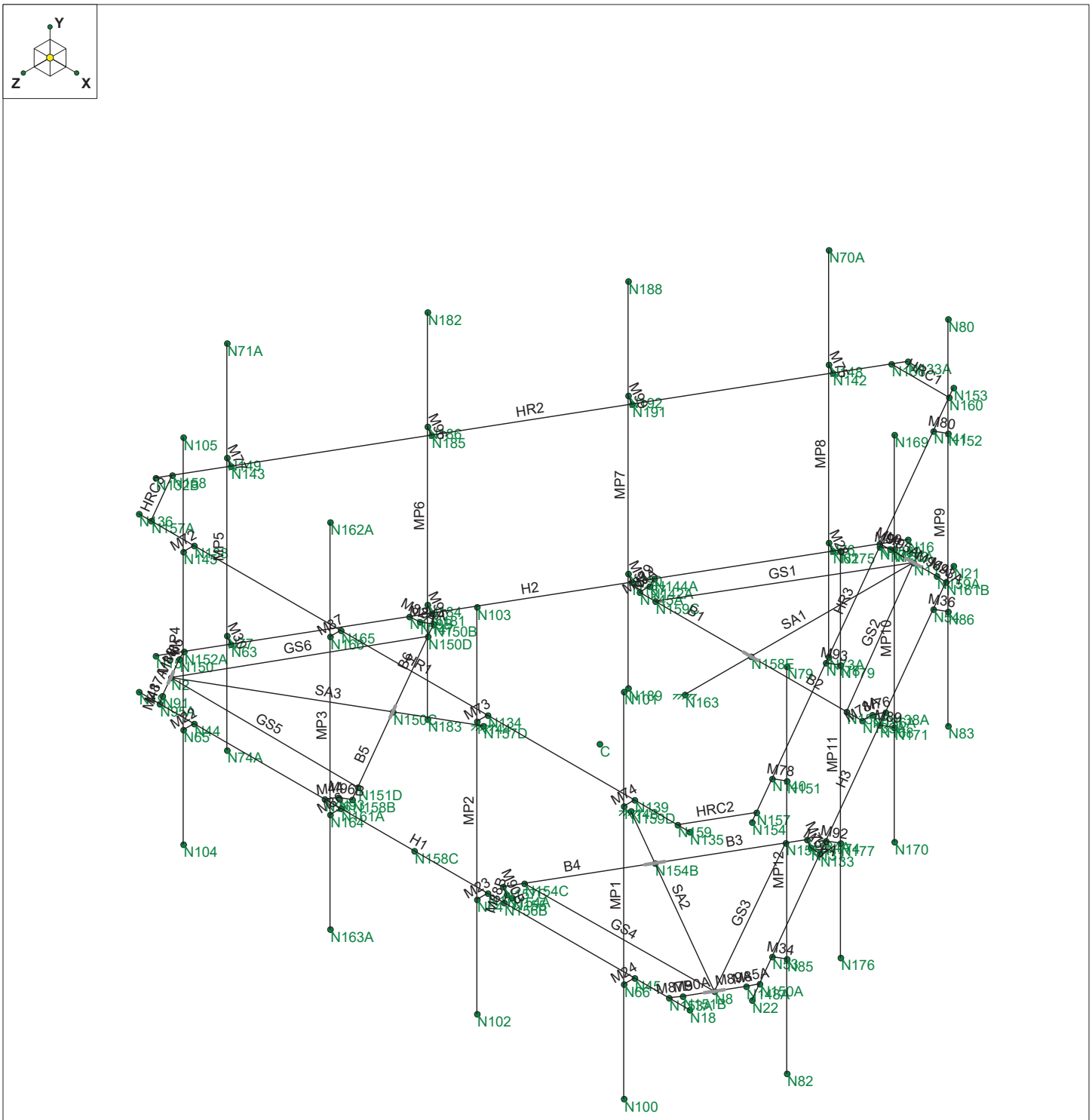
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. SitePro1 RMQP-496 w/ HRK12.

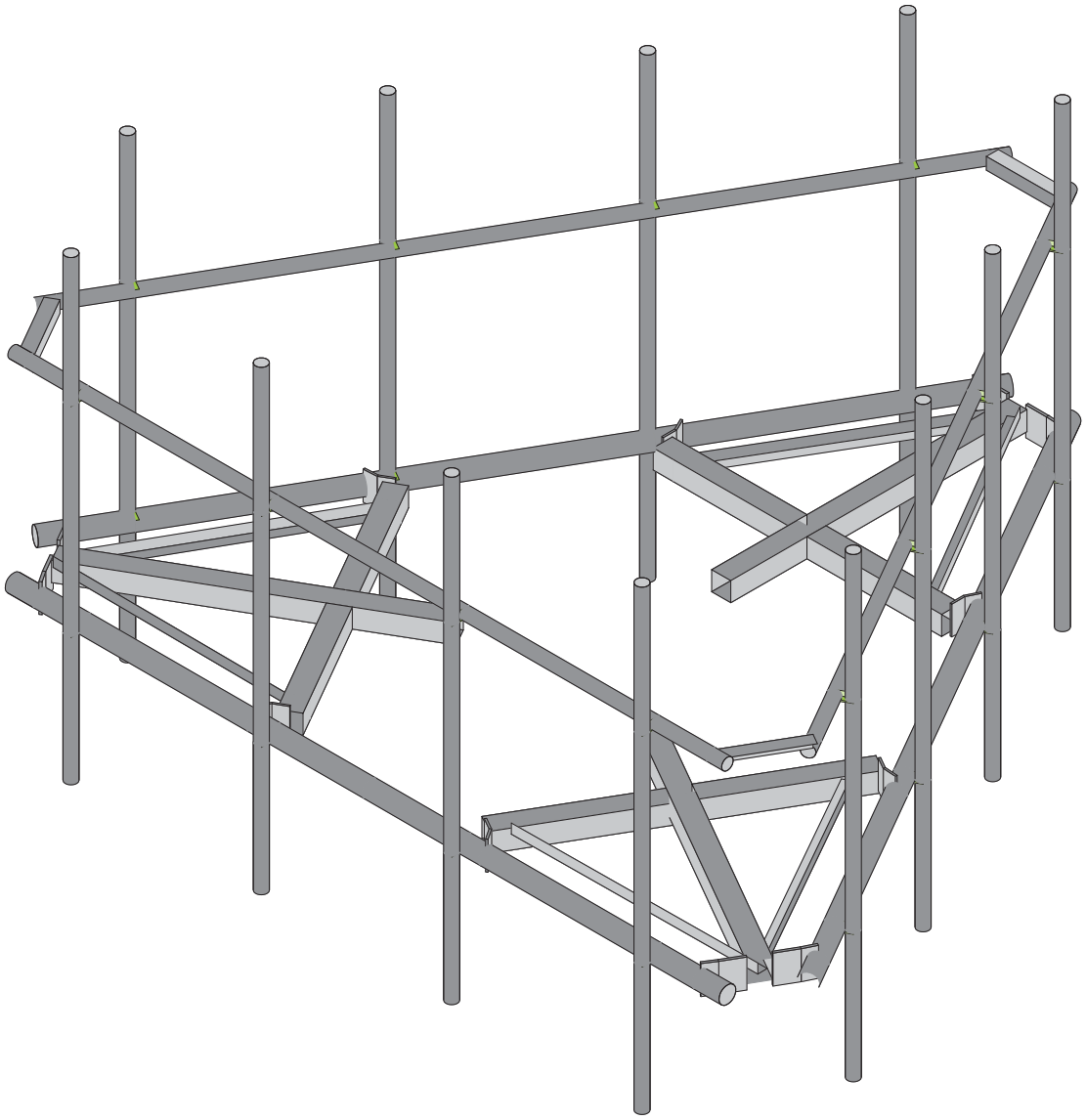
No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Trylon	Weston Square (BU 876325 Order 557897 R1)	SK - 1
TAL		Aug 31, 2021 at 9:24 AM
190949		RMQP-496 + HRK Support Rail (B...



Trylon	Weston Square (BU 876325 Order 557897 R1)	SK - 2
TAL		Aug 31, 2021 at 9:24 AM
190949		RMQP-496 + HRK Support Rail (B...

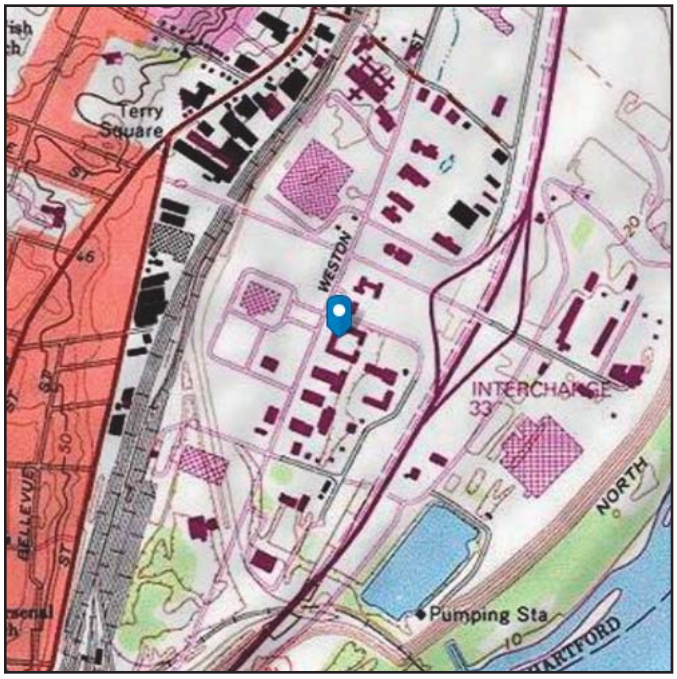
APPENDIX B

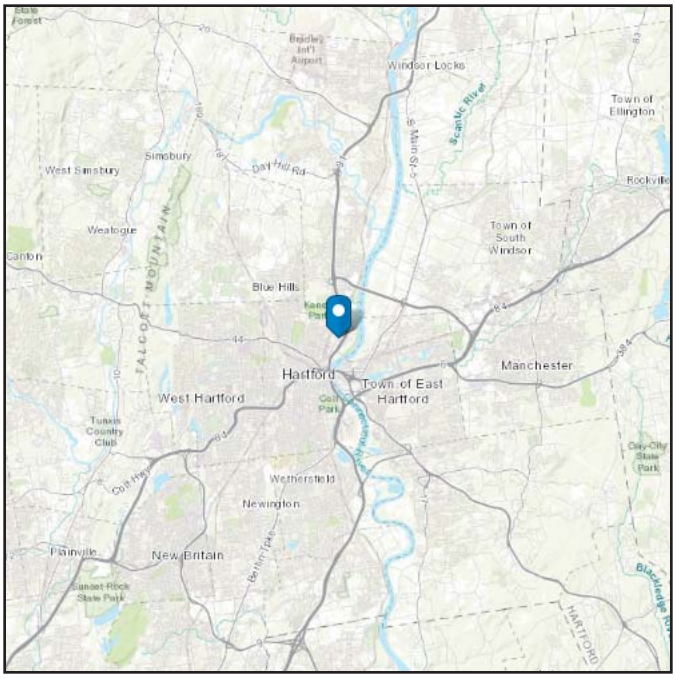
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	10.46 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.78675
Soil Class:	D - Stiff Soil	**Longitude:**	-72.662339





Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Thu Apr 29 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.

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

TIA LOAD CALCULATOR 2.1

PROJECT DATA	
Job Code:	190949
Carrier Site ID:	CTHA662A
Carrier Site Name:	CT03XC064

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

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	107.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	110.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	10.46	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:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.28	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	48.76	psf
Ground Elevation Factor (K_e):	1.00	--

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	2.00	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	48.76	psf
Mount Ice Thickness (t_{iz}):	2.25	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	87.78	psf
Round Member Pressure:	52.67	psf
Ice Wind Pressure:	7.38	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.18	g
1 Second Accel (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.19	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)
AIR6449 B41_T-MOBILE	3	108	No Ice	5.27	2.03	114.63
--	--	--	w/ Ice	7.12	3.49	209.76
APXVAALL24_43-U-NA20_TMO	3	108	No Ice	14.67	5.32	149.90
--	--	--	w/ Ice	17.86	8.13	572.01
RADIO 4480_TMOV2	3	108	No Ice	2.88	1.40	81.00
--	--	--	w/ Ice	3.56	1.96	124.35
RADIO 4460 B2/B25 B66_TMO	3	108	No Ice	2.14	1.69	109.00
--	--	--	w/ Ice	2.73	2.23	125.09
			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 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			
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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 WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
AIR6449 B41_T-MOBILE	3	108	1.00	1.29	0.95	2.25	48.86	7.82
XVAALL24_43-U-NA20_TI	3	108	1.00	1.29	0.95	2.25	48.86	7.82
RADIO 4480_TMOV2	3	108	1.00	1.29	0.95	2.25	48.86	7.82
ADIO 4460 B2/B25 B66_TM	3	108	1.00	1.29	0.95	2.25	48.86	7.82

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
AIR6449 B41_T-MOBILE	3	No Ice	231.75	124.89	196.13	89.27	196.13	124.89
--	--	w/ Ice	50.11	30.94	43.72	24.56	43.72	30.94
APXVAALL24_43-U-NA20_TMO	3	No Ice	645.11	336.73	542.32	233.94	542.32	336.73
--	--	w/ Ice	125.64	74.30	108.53	57.19	108.53	74.30
RADIO 4480_TMOV2	3	No Ice	126.57	77.72	110.29	61.44	110.29	77.72
--	--	w/ Ice	25.07	16.59	22.25	13.77	22.25	16.59
RADIO 4460 B2/B25 B66_TMO	3	No Ice	94.07	79.12	89.09	74.13	89.09	79.12
--	--	w/ Ice	19.22	16.56	18.33	15.68	18.33	16.56
		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						

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						
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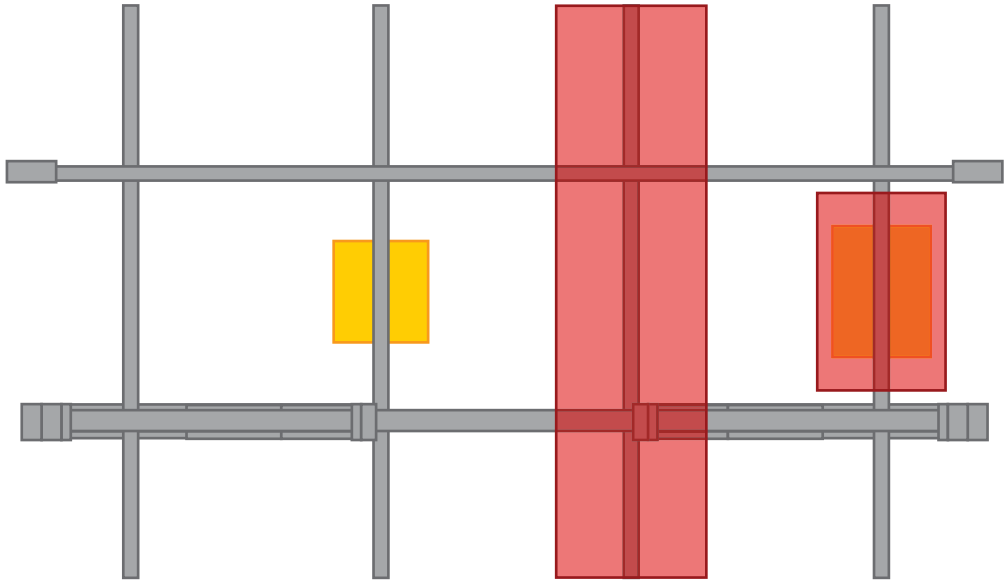
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

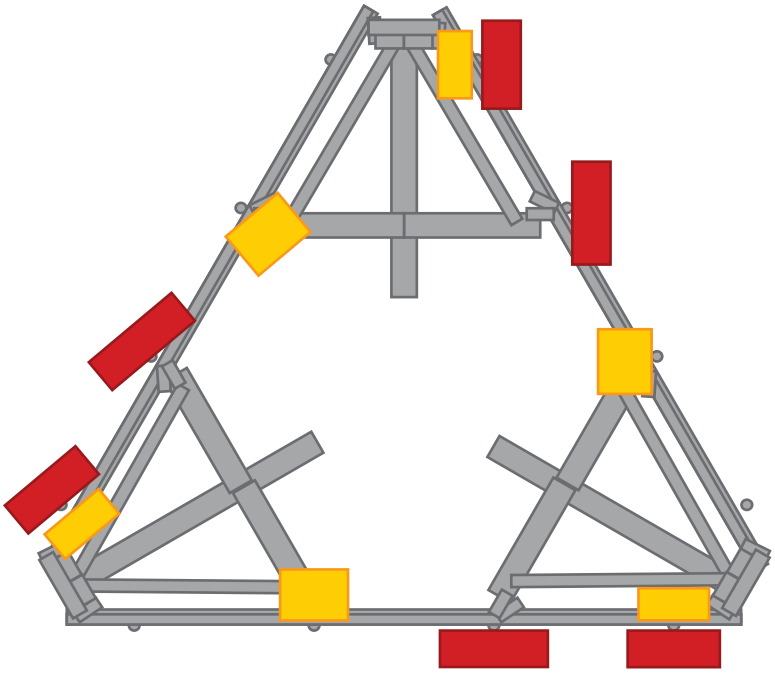
Appurtenance Name	Qty.	Elevation [ft]	Weight [lbs]	F_p [lbs]
AIR6449 B41_T-MOBILE	3	108	114.63	13.28
APXVAALL24_43-U-NA20_TMO	3	108	149.9	17.36
RADIO 4480_TMOV2	3	108	81	9.38
RADIO 4460 B2/B25 B66_TMO	3	108	109	12.63

ELEVATION VIEW



*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
AIR6449 B41_T-MOBILE	3	108	MP1/MP5/MP9	0/140/270
APXVAALL24_43-U-NA20_TMO	3	108	MP2/MP6/MP10	0/140/270
RADIO 4480_TMOV2	3	108	MP1/MP5/MP9	0/140/270
RADIO 4460 B2/B25 B66_TMO	3	108	MP3/MP7/MP11	0/140/270

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
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?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	AWC NDS-18: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
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?	No
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 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk 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 (/1E...	Density[k/ft...	Yield[psi]	Ry	Fu[psi]	Rt
1	A992	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65	.49	50000	1.4	65000	1.3
8	Q235-GB	29000	11154	.3	.65	.49	35000	1.5	58000	1.2
9	Q345	29000	11154	.3	.65	.49	36000	1.1	58000	1.1

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[psi]	Fu[psi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33000	45000
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50000	65000

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Standoff	HSS4X4X4	Beam	None	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
2	Horizontal	PIPE_3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	Platform Angle	L2x2x3	Beam	None	A36 Gr.36	Typical	.722	.271	.271	.009
4	Mount Pipe	PIPE_2.0	Column	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	Corner Plate	6"x1/2" Plate	Beam	None	A36 Gr.36	Typical	3	.063	9	.237
6	Handrail Horizontal	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
7	Angle Handrail Cor...	L2.5x2.5x4	Beam	None	A36 Gr.36	Typical	1.19	.692	.692	.026
8	Connection Plates	PL6x.375	Beam	None	A36 Gr.36	Typical	2.25	.026	6.75	.101

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X057	Beam	None	A653 SS Gr33	Typical	.581	.057	4.41	.00063

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	N163	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N157D	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N159D	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL		-1			18		3	
2	Structure Wind Z	WLZ						84		
3	Structure Wind X	WLX						84		
4	Wind Load 0 AZI	WLZ					36			
5	Wind Load 30 AZI	None					36			
6	Wind Load 45 AZI	None					36			
7	Wind Load 60 AZI	None					36			
8	Wind Load 90 AZI	WLX					36			
9	Wind Load 120 AZI	None					36			
10	Wind Load 135 AZI	None					36			
11	Wind Load 150 AZI	None					36			
12	Ice Weight	OL1					18	84	3	
13	Ice Structure Wind Z	OL2						84		
14	Ice Structure Wind X	OL3						84		
15	Ice Wind Load 0 AZI	OL2					36			
16	Ice Wind Load 30 AZI	None					36			
17	Ice Wind Load 45 AZI	None					36			
18	Ice Wind Load 60 AZI	None					36			
19	Ice Wind Load 90 AZI	OL3					36			
20	Ice Wind Load 120 AZI	None					36			
21	Ice Wind Load 135 AZI	None					36			
22	Ice Wind Load 150 AZI	None					36			
23	Seismic Load Z	ELZ			-.116		18			
24	Seismic Load X	ELX	-.116				18			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
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	Maintenance Load 1 (Lm)	None					1			
35	Maintenance Load 2 (Lm)	None					1			
36	Maintenance Load 3 (Lm)	None					1			
37	Maintenance Load 4 (Lm)	None					1			
38	Maintenance Load 5 (Lm)	None					1			
39	Maintenance Load 6 (Lm)	None					1			
40	Maintenance Load 7 (Lm)	None					1			
41	Maintenance Load 8 (Lm)	None					1			
42	Maintenance Load 9 (Lm)	None					1			
43	Maintenance Load 10 (Lm)	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
44	Maintenance Load 11 (Lm)	None					1			
45	Maintenance Load 12 (Lm)	None					1			
46	BLC 1 Transient Area Loads	None						21		
47	BLC 12 Transient Area Loads	None						21		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	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												
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 AZI	Yes	Y		DL	1.2	O...	1	13	1	14		15	1										
35	1.2DL + 1DLi + 1WLi 30 AZI	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1										
36	1.2DL + 1DLi + 1WLi 45 AZI	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1										
37	1.2DL + 1DLi + 1WLi 60 AZI	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1										
38	1.2DL + 1DLi + 1WLi 90 AZI	Yes	Y		DL	1.2	O...	1	13		14	1	19	1										
39	1.2DL + 1DLi + 1WLi 120 AZI	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1										
40	1.2DL + 1DLi + 1WLi 135 AZI	Yes	Y		DL	1.2	O...	1	13	-.7...	14	.707	21	1										
41	1.2DL + 1DLi + 1WLi 150 AZI	Yes	Y		DL	1.2	O...	1	13	-.8...	14	.5	22	1										
42	1.2DL + 1DLi + 1WLi 180 AZI	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1										
43	1.2DL + 1DLi + 1WLi 210 AZI	Yes	Y		DL	1.2	O...	1	13	-.8...	14	-.5	16	-1										
44	1.2DL + 1DLi + 1WLi 225 AZI	Yes	Y		DL	1.2	O...	1	13	-.7...	14	-.7...	17	-1										
45	1.2DL + 1DLi + 1WLi 240 AZI	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.8...	18	-1										
46	1.2DL + 1DLi + 1WLi 270 AZI	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1										
47	1.2DL + 1DLi + 1WLi 300 AZI	Yes	Y		DL	1.2	O...	1	13	.5	14	-.8...	20	-1										
48	1.2DL + 1DLi + 1WLi 315 AZI	Yes	Y		DL	1.2	O...	1	13	.707	14	-.7...	21	-1										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
49	1.2DL + 1DLi + 1WLi 330 AZI	Yes	Y		DL	1.2	O...	1	13	.866	14	-.5	22	-1										
50	(1.2+0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	1.2...	23	1	24															
51	(1.2+0.2Sds)DL + 1E 30 AZI	Yes	Y		DL	1.2...	23	.866	24	.5														
52	(1.2+0.2Sds)DL + 1E 45 AZI	Yes	Y		DL	1.2...	23	.707	24	.707														
53	(1.2+0.2Sds)DL + 1E 60 AZI	Yes	Y		DL	1.2...	23	.5	24	.866														
54	(1.2+0.2Sds)DL + 1E 90 AZI	Yes	Y		DL	1.2...	23		24	1														
55	(1.2+0.2Sds)DL + 1E 120 AZI	Yes	Y		DL	1.2...	23	-.5	24	.866														
56	(1.2+0.2Sds)DL + 1E 135 AZI	Yes	Y		DL	1.2...	23	-.7...	24	.707														
57	(1.2+0.2Sds)DL + 1E 150 AZI	Yes	Y		DL	1.2...	23	-.8...	24	.5														
58	(1.2+0.2Sds)DL + 1E 180 AZI	Yes	Y		DL	1.2...	23	-1	24															
59	(1.2+0.2Sds)DL + 1E 210 AZI	Yes	Y		DL	1.2...	23	-.8...	24	-.5														
60	(1.2+0.2Sds)DL + 1E 225 AZI	Yes	Y		DL	1.2...	23	-.7...	24	-.7...														
61	(1.2+0.2Sds)DL + 1E 240 AZI	Yes	Y		DL	1.2...	23	-.5	24	-.8...														
62	(1.2+0.2Sds)DL + 1E 270 AZI	Yes	Y		DL	1.2...	23		24	-1														
63	(1.2+0.2Sds)DL + 1E 300 AZI	Yes	Y		DL	1.2...	23	.5	24	-.8...														
64	(1.2+0.2Sds)DL + 1E 315 AZI	Yes	Y		DL	1.2...	23	.707	24	-.7...														
65	(1.2+0.2Sds)DL + 1E 330 AZI	Yes	Y		DL	1.2...	23	.866	24	-.5														
66	(0.9-0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	.861	23	1	24															
67	(0.9-0.2Sds)DL + 1E 30 AZI	Yes	Y		DL	.861	23	.866	24	.5														
68	(0.9-0.2Sds)DL + 1E 45 AZI	Yes	Y		DL	.861	23	.707	24	.707														
69	(0.9-0.2Sds)DL + 1E 60 AZI	Yes	Y		DL	.861	23	.5	24	.866														
70	(0.9-0.2Sds)DL + 1E 90 AZI	Yes	Y		DL	.861	23		24	1														
71	(0.9-0.2Sds)DL + 1E 120 AZI	Yes	Y		DL	.861	23	-.5	24	.866														
72	(0.9-0.2Sds)DL + 1E 135 AZI	Yes	Y		DL	.861	23	-.7...	24	.707														
73	(0.9-0.2Sds)DL + 1E 150 AZI	Yes	Y		DL	.861	23	-.8...	24	.5														
74	(0.9-0.2Sds)DL + 1E 180 AZI	Yes	Y		DL	.861	23	-1	24															
75	(0.9-0.2Sds)DL + 1E 210 AZI	Yes	Y		DL	.861	23	-.8...	24	-.5														
76	(0.9-0.2Sds)DL + 1E 225 AZI	Yes	Y		DL	.861	23	-.7...	24	-.7...														
77	(0.9-0.2Sds)DL + 1E 240 AZI	Yes	Y		DL	.861	23	-.5	24	-.8...														
78	(0.9-0.2Sds)DL + 1E 270 AZI	Yes	Y		DL	.861	23		24	-1														
79	(0.9-0.2Sds)DL + 1E 300 AZI	Yes	Y		DL	.861	23	.5	24	-.8...														
80	(0.9-0.2Sds)DL + 1E 315 AZI	Yes	Y		DL	.861	23	.707	24	-.7...														
81	(0.9-0.2Sds)DL + 1E 330 AZI	Yes	Y		DL	.861	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 + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	34	1.5	2	.058	3		4	.058										
92	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	34	1.5	2	.05	3	.029	5	.058										
93	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	34	1.5	2	.041	3	.041	6	.058										
94	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	34	1.5	2	.029	3	.05	7	.058										
95	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	34	1.5	2		3	.058	8	.058										
96	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	.05	9	.058										
97	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	.041	10	.058										
98	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	.029	11	.058										
99	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3		4	-.0...										
100	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	-.0...	5	-.0...										
101	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	-.0...	6	-.0...										
102	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	34	1.5	2	-.0...	3	-.05	7	-.0...										
103	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	34	1.5	2		3	-.0...	8	-.0...										
104	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	34	1.5	2	.029	3	-.05	9	-.0...										
105	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	34	1.5	2	.041	3	-.0...	10	-.0...										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
106	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	34	1.5	2	.05	3	-.0...	11	-.0...												
107	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	35	1.5	2	.058	3		4	.058												
108	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	35	1.5	2	.05	3	.029	5	.058												
109	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	35	1.5	2	.041	3	.041	6	.058												
110	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	35	1.5	2	.029	3	.05	7	.058												
111	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	35	1.5	2		3	.058	8	.058												
112	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	.05	9	.058												
113	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	.041	10	.058												
114	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	.029	11	.058												
115	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3		4	-.0...												
116	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	-.0...	5	-.0...												
117	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	-.0...	6	-.0...												
118	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	35	1.5	2	-.0...	3	-.05	7	-.0...												
119	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	35	1.5	2		3	-.0...	8	-.0...												
120	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	35	1.5	2	.029	3	-.05	9	-.0...												
121	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	35	1.5	2	.041	3	-.0...	10	-.0...												
122	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	35	1.5	2	.05	3	-.0...	11	-.0...												
123	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	36	1.5	2	.058	3		4	.058												
124	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	36	1.5	2	.05	3	.029	5	.058												
125	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	36	1.5	2	.041	3	.041	6	.058												
126	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	36	1.5	2	.029	3	.05	7	.058												
127	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	36	1.5	2		3	.058	8	.058												
128	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	.05	9	.058												
129	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	.041	10	.058												
130	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	36	1.5	2	-.05	3	.029	11	.058												
131	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3		4	-.0...												
132	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	36	1.5	2	-.05	3	-.0...	5	-.0...												
133	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	-.0...	6	-.0...												
134	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	36	1.5	2	-.0...	3	-.05	7	-.0...												
135	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	36	1.5	2		3	-.0...	8	-.0...												
136	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	36	1.5	2	.029	3	-.05	9	-.0...												
137	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	36	1.5	2	.041	3	-.0...	10	-.0...												
138	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	36	1.5	2	.05	3	-.0...	11	-.0...												
139	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	37	1.5	2	.058	3		4	.058												
140	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	37	1.5	2	.05	3	.029	5	.058												
141	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	37	1.5	2	.041	3	.041	6	.058												
142	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	37	1.5	2	.029	3	.05	7	.058												
143	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	37	1.5	2		3	.058	8	.058												
144	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	.05	9	.058												
145	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	.041	10	.058												
146	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	37	1.5	2	-.05	3	.029	11	.058												
147	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3		4	-.0...												
148	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	37	1.5	2	-.05	3	-.0...	5	-.0...												
149	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	-.0...	6	-.0...												
150	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	37	1.5	2	-.0...	3	-.05	7	-.0...												
151	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	37	1.5	2		3	-.0...	8	-.0...												
152	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	37	1.5	2	.029	3	-.05	9	-.0...												
153	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	37	1.5	2	.041	3	-.0...	10	-.0...												
154	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	37	1.5	2	.05	3	-.0...	11	-.0...												
155	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	38	1.5	2	.058	3		4	.058												
156	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	38	1.5	2	.05	3	.029	5	.058												
157	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	38	1.5	2	.041	3	.041	6	.058												
158	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	38	1.5	2	.029	3	.05	7	.058												
159	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	38	1.5	2		3	.058	8	.058												
160	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	.05	9	.058												
161	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	.041	10	.058												
162	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	38	1.5	2	-.05	3	.029	11	.058												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
163	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3		4	-.0...												
164	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	38	1.5	2	-.05	3	-.0...	5	-.0...												
165	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	-.0...	6	-.0...												
166	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	38	1.5	2	-.0...	3	-.05	7	-.0...												
167	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	38	1.5	2		3	-.0...	8	-.0...												
168	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	38	1.5	2	.029	3	-.05	9	-.0...												
169	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	38	1.5	2	.041	3	-.0...	10	-.0...												
170	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	38	1.5	2	.05	3	-.0...	11	-.0...												
171	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	39	1.5	2	.058	3		4	.058												
172	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	39	1.5	2	.05	3	.029	5	.058												
173	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	39	1.5	2	.041	3	.041	6	.058												
174	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	39	1.5	2	.029	3	.05	7	.058												
175	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	39	1.5	2		3	.058	8	.058												
176	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	.05	9	.058												
177	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	.041	10	.058												
178	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	39	1.5	2	-.05	3	.029	11	.058												
179	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3		4	-.0...												
180	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	39	1.5	2	-.05	3	-.0...	5	-.0...												
181	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	-.0...	6	-.0...												
182	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	39	1.5	2	-.0...	3	-.05	7	-.0...												
183	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	39	1.5	2		3	-.0...	8	-.0...												
184	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	39	1.5	2	.029	3	-.05	9	-.0...												
185	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	39	1.5	2	.041	3	-.0...	10	-.0...												
186	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	39	1.5	2	.05	3	-.0...	11	-.0...												
187	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	40	1.5	2	.058	3		4	.058												
188	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	40	1.5	2	.05	3	.029	5	.058												
189	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	40	1.5	2	.041	3	.041	6	.058												
190	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	40	1.5	2	.029	3	.05	7	.058												
191	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	40	1.5	2		3	.058	8	.058												
192	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	.05	9	.058												
193	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	.041	10	.058												
194	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	40	1.5	2	-.05	3	.029	11	.058												
195	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3		4	-.0...												
196	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	40	1.5	2	-.05	3	-.0...	5	-.0...												
197	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	-.0...	6	-.0...												
198	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	40	1.5	2	-.0...	3	-.05	7	-.0...												
199	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	40	1.5	2		3	-.0...	8	-.0...												
200	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	40	1.5	2	.029	3	-.05	9	-.0...												
201	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	40	1.5	2	.041	3	-.0...	10	-.0...												
202	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	40	1.5	2	.05	3	-.0...	11	-.0...												
203	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	41	1.5	2	.058	3		4	.058												
204	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	41	1.5	2	.05	3	.029	5	.058												
205	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	41	1.5	2	.041	3	.041	6	.058												
206	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	41	1.5	2	.029	3	.05	7	.058												
207	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	41	1.5	2		3	.058	8	.058												
208	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	.05	9	.058												
209	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	.041	10	.058												
210	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	41	1.5	2	-.05	3	.029	11	.058												
211	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3		4	-.0...												
212	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	41	1.5	2	-.05	3	-.0...	5	-.0...												
213	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	-.0...	6	-.0...												
214	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	41	1.5	2	-.0...	3	-.05	7	-.0...												
215	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	41	1.5	2		3	-.0...	8	-.0...												
216	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	41	1.5	2	.029	3	-.05	9	-.0...												
217	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	41	1.5	2	.041	3	-.0...	10	-.0...												
218	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	41	1.5	2	.05	3	-.0...	11	-.0...												
219	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	42	1.5	2	.058	3		4	.058												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
220	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	42	1.5	2	.05	3	.029	5	.058										
221	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	42	1.5	2	.041	3	.041	6	.058										
222	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	42	1.5	2	.029	3	.05	7	.058										
223	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	42	1.5	2		3	.058	8	.058										
224	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	.05	9	.058										
225	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	.041	10	.058										
226	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	42	1.5	2	-.05	3	.029	11	.058										
227	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3		4	-.0...										
228	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	42	1.5	2	-.05	3	-.0...	5	-.0...										
229	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	-.0...	6	-.0...										
230	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	42	1.5	2	-.0...	3	-.05	7	-.0...										
231	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	42	1.5	2		3	-.0...	8	-.0...										
232	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	42	1.5	2	.029	3	-.05	9	-.0...										
233	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	42	1.5	2	.041	3	-.0...	10	-.0...										
234	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	42	1.5	2	.05	3	-.0...	11	-.0...										
235	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	43	1.5	2	.058	3		4	.058										
236	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	43	1.5	2	.05	3	.029	5	.058										
237	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	43	1.5	2	.041	3	.041	6	.058										
238	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	43	1.5	2	.029	3	.05	7	.058										
239	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	43	1.5	2		3	.058	8	.058										
240	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	43	1.5	2	-.0...	3	.05	9	.058										
241	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	43	1.5	2	-.0...	3	.041	10	.058										
242	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	43	1.5	2	-.05	3	.029	11	.058										
243	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	43	1.5	2	-.0...	3		4	-.0...										
244	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	43	1.5	2	-.05	3	-.0...	5	-.0...										
245	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	43	1.5	2	-.0...	3	-.0...	6	-.0...										
246	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	43	1.5	2	-.0...	3	-.05	7	-.0...										
247	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	43	1.5	2		3	-.0...	8	-.0...										
248	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	43	1.5	2	.029	3	-.05	9	-.0...										
249	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	43	1.5	2	.041	3	-.0...	10	-.0...										
250	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	43	1.5	2	.05	3	-.0...	11	-.0...										
251	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	44	1.5	2	.058	3		4	.058										
252	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	44	1.5	2	.05	3	.029	5	.058										
253	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	44	1.5	2	.041	3	.041	6	.058										
254	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	44	1.5	2	.029	3	.05	7	.058										
255	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	44	1.5	2		3	.058	8	.058										
256	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	44	1.5	2	-.0...	3	.05	9	.058										
257	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	44	1.5	2	-.0...	3	.041	10	.058										
258	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	44	1.5	2	-.05	3	.029	11	.058										
259	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	44	1.5	2	-.0...	3		4	-.0...										
260	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	44	1.5	2	-.05	3	-.0...	5	-.0...										
261	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	44	1.5	2	-.0...	3	-.0...	6	-.0...										
262	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	44	1.5	2	-.0...	3	-.05	7	-.0...										
263	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	44	1.5	2		3	-.0...	8	-.0...										
264	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	44	1.5	2	.029	3	-.05	9	-.0...										
265	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	44	1.5	2	.041	3	-.0...	10	-.0...										
266	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	44	1.5	2	.05	3	-.0...	11	-.0...										
267	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	45	1.5	2	.058	3		4	.058										
268	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	45	1.5	2	.05	3	.029	5	.058										
269	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	45	1.5	2	.041	3	.041	6	.058										
270	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	45	1.5	2	.029	3	.05	7	.058										
271	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	45	1.5	2		3	.058	8	.058										
272	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	45	1.5	2	-.0...	3	.05	9	.058										
273	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	45	1.5	2	-.0...	3	.041	10	.058										
274	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	45	1.5	2	-.05	3	.029	11	.058										
275	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	45	1.5	2	-.0...	3		4	-.0...										
276	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	45	1.5	2	-.05	3	-.0...	5	-.0...										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
277	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	45	1.5	2	-.0...	3	-.0...	6	-.0...										
278	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	45	1.5	2	-.0...	3	-.05	7	-.0...										
279	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	45	1.5	2		3	-.0...	8	-.0...										
280	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	45	1.5	2	.029	3	-.05	9	-.0...										
281	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	45	1.5	2	.041	3	-.0...	10	-.0...										
282	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	45	1.5	2	.05	3	-.0...	11	-.0...										

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	N163	max	1490.042	6	3655.778	34	1998.407	18	7095.025	34	1729.619	14	893.41	14
2		min	-1488.203	30	-23.015	26	-2067.782	10	-794.122	26	-1722.584	22	-749.264	22
3	N157D	max	1694.841	22	3638.532	39	1426.233	2	478.805	33	1372.237	3	523.836	30
4		min	-1756.244	14	59.371	31	-1394.131	26	-3268.383	41	-1364.786	27	-6286.5	39
5	N159D	max	1833.165	5	3657.375	45	1634.326	2	693.998	19	1199.903	9	5970.532	45
6		min	-1773.61	29	-51.607	20	-1597.715	26	-3928.94	43	-1193.472	33	-755.44	21
7	Totals:	max	4805.855	22	10258.566	35	5049.629	18						
8		min	-4805.854	30	2270.113	74	-5049.642	10						

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

	Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	MP6	PIPE_2.0	.476	69	12	.064	27		5	14916.0...	32130	1871.625	1871.625	1.386	H1-1b
2	MP2	PIPE_2.0	.468	69	2	.071	27		11	14916.0...	32130	1871.625	1871.625	4.576	H1-1b
3	SA2	HSS4X4X4	.448	0	45	.133	0	y	42	131968....	139518	16180.5	16180.5	1	H1-1b
4	SA1	HSS4X4X4	.443	0	34	.132	0	y	47	131968....	139518	16180.5	16180.5	1	H1-1b
5	SA3	HSS4X4X4	.440	0	39	.133	0	y	36	131968....	139518	16180.5	16180.5	1	H1-1b
6	MP10	PIPE_2.0	.435	27	14	.057	27		15	14916.0...	32130	1871.625	1871.625	1.27	H1-1b
7	MP3	PIPE_2.0	.404	69	2	.106	69		10	14916.0...	32130	1871.625	1871.625	2.799	H1-1b
8	MP7	PIPE_2.0	.389	69	13	.105	69		4	14916.0...	32130	1871.625	1871.625	2.961	H1-1b
9	MP11	PIPE_2.0	.365	69	6	.107	69		14	14916.0...	32130	1871.625	1871.625	3.248	H1-1b
10	MP9	PIPE_2.0	.339	69	13	.169	69		14	14916.0...	32130	1871.625	1871.625	4.356	H1-1b
11	MP5	PIPE_2.0	.332	69	3	.176	69		4	14916.0...	32130	1871.625	1871.625	3.048	H1-1b
12	MP12	PIPE_2.0	.320	69	34	.109	69		15	14916.0...	32130	1871.625	1871.625	3.86	H1-1b
13	MP4	PIPE_2.0	.319	69	45	.123	69		11	14916.0...	32130	1871.625	1871.625	4.096	H1-1b
14	MP8	PIPE_2.0	.319	69	39	.116	69		5	14916.0...	32130	1871.625	1871.625	4.48	H1-1b
15	HRC2	L2.5x2.5x4	.314	0	10	.106	0	y	17	36453.4...	38556	1113.554	2537.388	1.676	H2-1
16	MP1	PIPE_2.0	.301	69	37	.179	69		10	14916.0...	32130	1871.625	1871.625	4.017	H1-1b
17	HR3	PIPE_2.0	.281	95.3...	14	.178	134....		7	25978.8...	32130	1871.625	1871.625	1	H1-1b
18	HRC3	L2.5x2.5x4	.278	0	5	.124	0	y	11	36453.4...	38556	1113.554	2537.388	1.753	H2-1
19	HR2	PIPE_2.0	.278	95.3...	3	.195	134....		13	25978.8...	32130	1871.625	1871.625	1	H1-1b
20	HRC1	L2.5x2.5x4	.257	15.7...	15	.119	15.7...	z	6	36453.5...	38556	1113.554	2537.388	1.715	H2-1
21	HR1	PIPE_2.0	.255	95.3...	10	.210	134....		2	25978.8...	32130	1871.625	1871.625	1	H1-1b
22	B4	HSS4X4X4	.224	28.3...	43	.068	28.3...	y	42	136307....	139518	16180.5	16180.5	1.699	H1-1b
23	B6	HSS4X4X4	.224	28.3...	38	.068	28.3...	y	37	136307....	139518	16180.5	16180.5	1.7	H1-1b
24	B2	HSS4X4X4	.222	28.3	49	.068	28.3	y	47	136307....	139518	16180.5	16180.5	1.701	H1-1b
25	M78A	PL6x.375	.220	2.75	14	.323	2.75	y	6	70464.9...	72900	569.533	9112.5	1.082	H1-1b
26	B3	HSS4X4X4	.213	0	46	.056	0	y	47	136307....	139518	16180.5	16180.5	1.701	H1-1b
27	B1	HSS4X4X4	.213	0	35	.057	0	y	37	136307....	139518	16180.5	16180.5	1.701	H1-1b
28	B5	HSS4X4X4	.212	0	41	.057	0	y	42	136307....	139518	16180.5	16180.5	1.702	H1-1b
29	H1	PIPE_3.0	.199	51.5...	38	.120	51.5...		10	59302.8...	65205	5748.75	5748.75	1	H1-1b
30	H3	PIPE_3.0	.199	51.5...	43	.113	50		46	59302.8...	65205	5748.75	5748.75	1	H1-1b
31	H2	PIPE_3.0	.199	51.5...	34	.116	51.5...		5	59302.8...	65205	5748.75	5748.75	1	H1-1b
32	M84A	PL6x.375	.186	2.75	3	.344	2.75	y	12	70464.9...	72900	569.533	9112.5	1.079	H1-1b
33	GS4	L2x2x3	.184	51.3...	26	.013	51.3...	y	49	9346.209	23392.8	557.717	1239.29	2.801	H2-1
34	M76	PL6x.375	.168	2.704	6	.174	0	y	6	70544.2	72900	569.533	9112.5	1.076	H1-1b

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

	Member	Shape	Code ...	Loc[in]	LC	Shear ..	Loc[in]	Dir	LC	phi*Pnc ..	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
35	M90B	PL6x.375	.166	2.75	9	.330	2.75	y	2	70464.9...	72900	569.533	9112.5	1.088	H1-1b
36	GS6	L2x2x3	.165	51.3...	21	.013	51.3...	y	43	9346.21	23392.8	557.717	1235.255	2.49	H2-1
37	M73A	PL6x.375	.164	2.704	6	.242	0	y	41	70544.2	72900	569.533	9112.5	1.04	H1-1b
38	M81A	PL6x.375	.157	2.75	14	.426	2.75	y	13	70465.57	72900	569.533	9112.5	1.089	H1-1b
39	GS2	L2x2x3	.157	51.3...	31	.013	51.3...	y	38	9346.27	23392.8	557.717	1239.29	2.657	H2-1
40	M82A	PL6x.375	.151	2.704	14	.180	0	y	11	70544.2	72900	569.533	9112.5	1.046	H1-1b
41	GS3	L2x2x3	.150	0	44	.014	51.3...	z	41	9346.076	23392.8	557.717	1210.784	2.176	H2-1
42	GS5	L2x2x3	.148	51.3...	10	.014	51.3...	z	35	9346.076	23392.8	557.717	1239.29	3.173	H2-1
43	M89A	6"x1/2" Plate	.148	4.338	13	.086	0	y	10	92686.4...	97200	1012.5	12150	1.017	H1-1b
44	M79	PL6x.375	.148	2.704	14	.244	0	y	46	70544.2	72900	569.533	9112.5	1.068	H1-1b
45	GS1	L2x2x3	.147	0	34	.014	51.3...	z	46	9346.157	23392.8	557.717	1216.427	2.243	H2-1
46	M90A	6"x1/2" Plate	.146	0	12	.089	0	y	49	92686.4...	97200	1012.5	12150	1.077	H1-1b
47	M95A	6"x1/2" Plate	.145	4.338	3	.091	0	y	14	92685.8...	97200	1012.5	12150	1.014	H1-1b
48	M96B	PL6x.375	.141	2.75	3	.456	2.75	y	3	70464.9...	72900	569.533	9112.5	1.082	H1-1b
49	M85A	6"x1/2" Plate	.139	2.704	13	.104	2.704	y	9	95420.3...	97200	1012.5	12150	1.01	H1-1b
50	M96A	6"x1/2" Plate	.139	0	2	.090	0	y	38	92687.0...	97200	1012.5	12150	1.087	H1-1b
51	M91	6"x1/2" Plate	.135	2.704	3	.114	2.704	y	14	95420.3...	97200	1012.5	12150	1.008	H1-1b
52	M88	6"x1/2" Plate	.133	0	6	.090	0	y	43	92686.4...	97200	1012.5	12150	1.072	H1-1b
53	M87A	6"x1/2" Plate	.129	4.338	8	.096	0	y	3	92686.4...	97200	1012.5	12150	1.011	H1-1b
54	M44	PL6x.375	.125	2.704	17	.245	0	y	35	70544.2	72900	569.533	9112.5	1.043	H1-1b
55	M88B	PL6x.375	.122	2.704	3	.161	0	y	17	70544.2	72900	569.533	9112.5	1.036	H1-1b
56	M41	6"x1/2" Plate	.122	2.704	8	.121	2.704	y	3	95420.3...	97200	1012.5	12150	1.006	H1-1b
57	M87B	6"x1/2" Plate	.121	2.704	12	.112	2.704	y	2	95420.3...	97200	1012.5	12150	1.057	H1-1b
58	M93A	6"x1/2" Plate	.120	2.704	2	.104	0	y	6	95420.3...	97200	1012.5	12150	1.065	H1-1b
59	M75A	PL6x.375	.110	2.75	9	.393	2.75	y	8	70464.9...	72900	569.533	9112.5	1.096	H1-1b
60	M85	6"x1/2" Plate	.108	2.704	7	.114	0	y	12	95420.3...	97200	1012.5	12150	1.069	H1-1b

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

Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc[i...	Dir	LC	phi*Pn[...	phi*Tn[...	phi*Mn...	phi*Mn...	phi*...	phi*...	Cb	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCULATIONS

Trylon

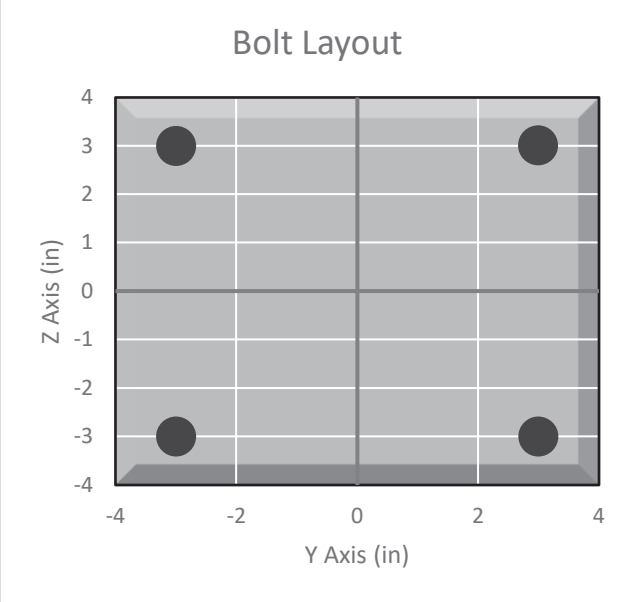
Analysis date: 8/31/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	190949
Carrier Site ID:	CTHA662A
Carrier Site Name:	CT03XC064

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

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 Collar Connection

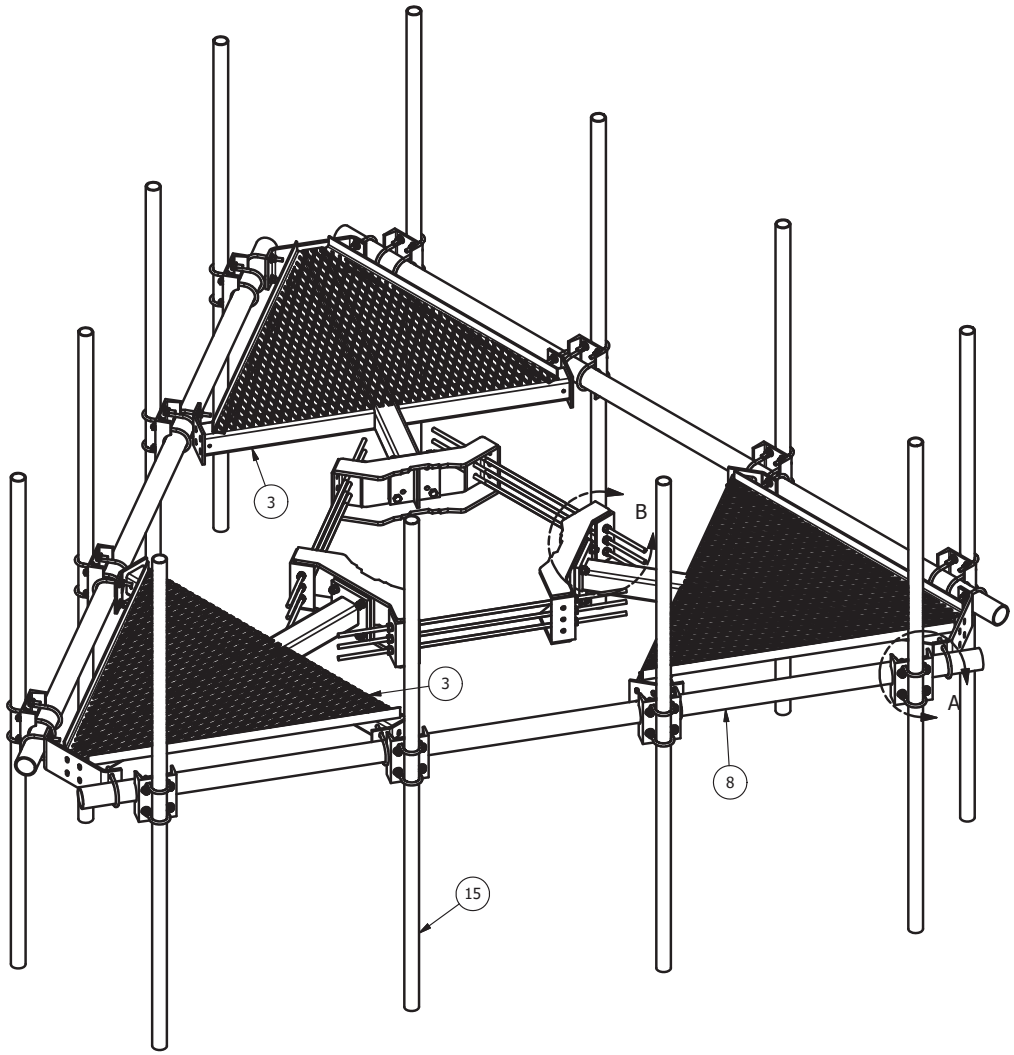
Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	7342.9	lbs
Shear Force (V_u):	749.8	lbs
Tension Usage:	34.4%	--
Shear Usage:	5.2%	--
Interaction:	34.4%	Pass
Controlling Member:	SA2	--
Controlling LC:	45	--

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

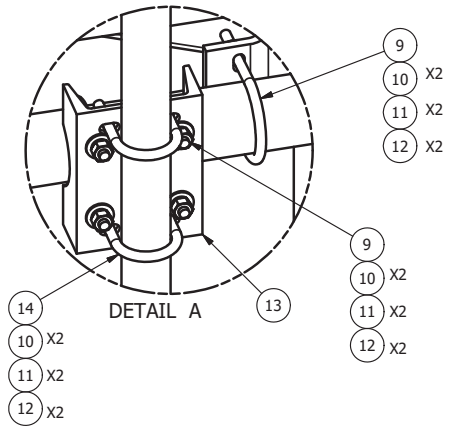
1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

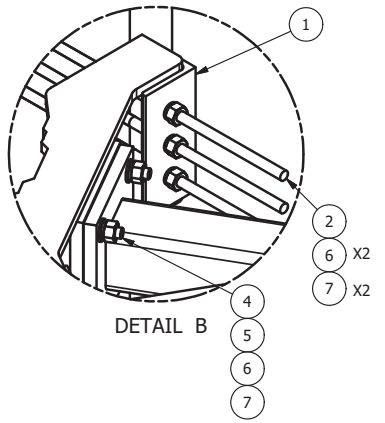
APPENDIX E

SUPPLEMENTAL DRAWINGS



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.40	3.59
2	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.40	3.59
3	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31
4	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
5	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
6	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
7	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
8	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150.000 in	94.80	284.40
9	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	9.25
10	120	G12FW	1/2" HDG USS FLATWASHER		0.03	4.09
11	120	G12LW	1/2" HDG LOCKWASHER		0.01	1.67
12	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
13	12	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	103.33
14	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	6.17
15	12	B	ANTENNA MOUNTING PIPE	C	D	E





2-3/8" O.D. VERTICAL MOUNTING PIPES					
ASSEMBLY NO. "A"	PART NO. "B"	LENGTH, "C"	UNIT WEIGHT, "D"	NET WEIGHT, "E"	TOTAL WEIGHT
RMQP-463	P263	63"	20.18	242.16	1591.11
RMQP-472	P272	72"	23.07	276.84	1625.79
RMQP-484	P284	84"	26.91	322.92	1671.87
RMQP-496	P296	96"	30.76	369.12	1718.07
RMQP-4126	P2126	126"	40.75	489.00	1837.95

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES		CEK	7/9/2015

REVISION HISTORY

TOLERANCE NOTE

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")

DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH
FOR 12" - 38" DIAMETER POLES

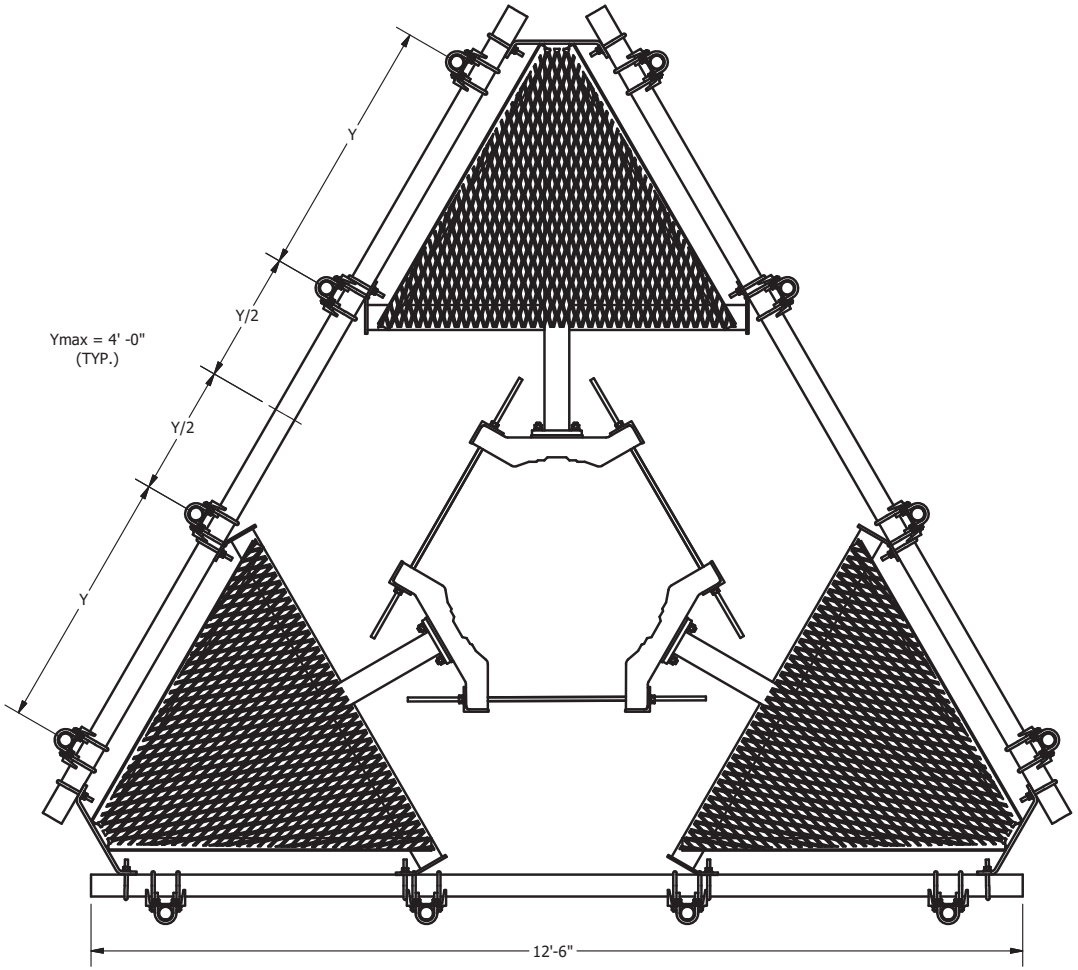
SITE PRO 1
A valmont COMPANY

Engineering Support Team:
1-888-753-7446

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

DRAWN BY	CPD NO.	DRAWING USAGE	PART NO.
CEK 1/20/2012	semb	CUSTOMER	SEE ASSEMBLY NO. "A"

ENG. APPROVAL	CHECKED BY	DWG. NO.
	BMC 7/9/2015	RMQP-4XX



TOLERANCE NOTE

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")

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES		CEK	7/9/2015

REVISION HISTORY

DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH
FOR 12" - 38" DIAMETER POLES

SITE PRO 1
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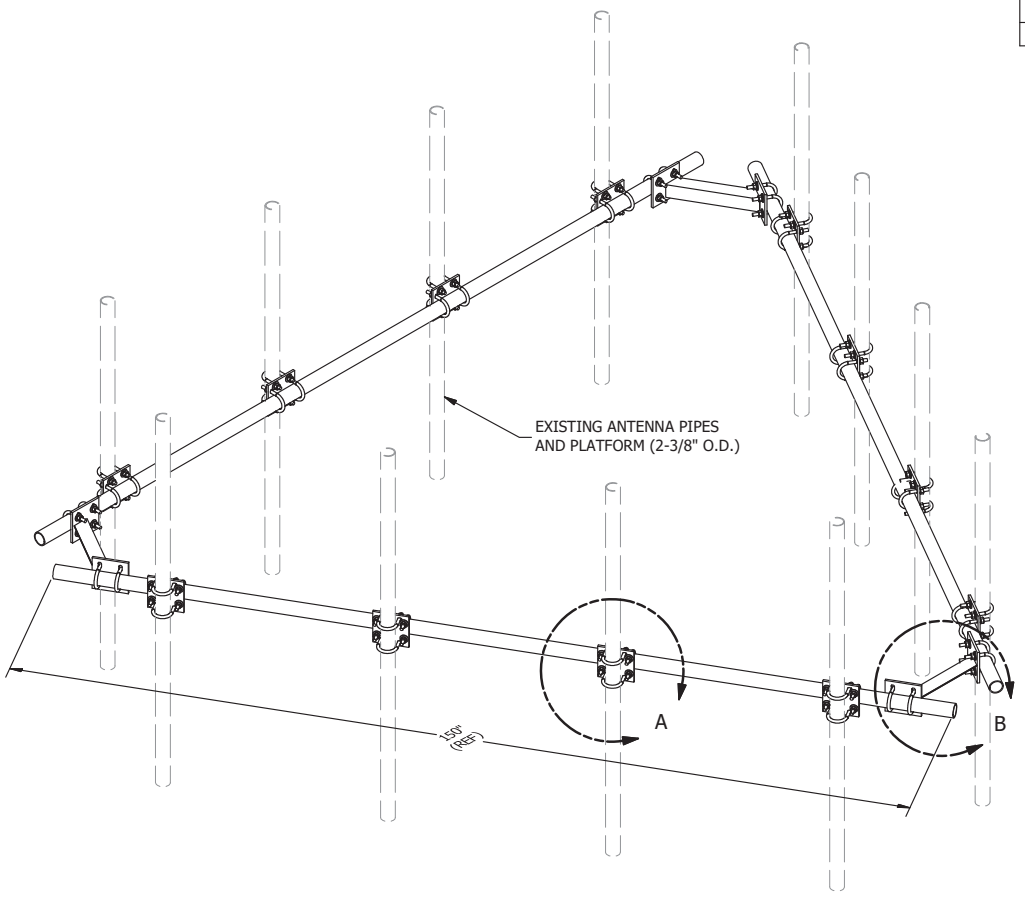
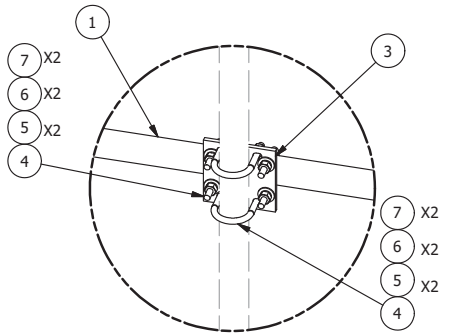
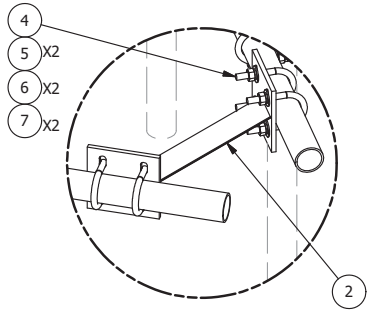
DRAWN BY	CPD NO.	DRAWING USAGE	PART NO.
CEK 1/20/2012	semb	CUSTOMER	SEE ASSEMBLY NO. "A"
ENG. APPROVAL	CHECKED BY	DWG. NO.	PAGE
	BMC 7/9/2015	RMQP-4XX	2 OF 2

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	272.43





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")*

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/10/2014

REVISION HISTORY

DESCRIPTION: HANDRAIL KIT FOR 12'-6" FACE

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	KC8 5/30/2012		HRK12

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 7/13/2014	HRK12

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

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: CTHA662A

876325
92 Weston Street
Hartford, Connecticut 06103

December 20, 2021

EBI Project Number: 6221007680

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**78.70%**

December 20, 2021

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

Emissions Analysis for Site: CTHA662A - 876325

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **92 Weston Street** in **Hartford, 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 92 Weston Street in Hartford, 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 APXVAALL24_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 APXVAALL24_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 APXVAALL24_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 108 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 APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 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 / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd
Height (AGL):	108 feet	Height (AGL):	108 feet	Height (AGL):	108 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):	17,868.72	ERP (W):	17,868.72	ERP (W):	17,868.72
Antenna A1 MPE %:	**8.15%**	Antenna B1 MPE %:	**8.15%**	Antenna C1 MPE %:	**8.15%**
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	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	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):	108 feet	Height (AGL):	108 feet	Height (AGL):	108 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 %:	**12.56%**	Antenna B2 MPE %:	**12.56%**	Antenna C2 MPE %:	**12.56%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	20.72%
Verizon	27.67%
T-Mobile (Existing)	13.36%
AT&T	16.95%
Site Total MPE % :	78.70%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	20.72%
T-Mobile Sector B Total:	20.72%
T-Mobile Sector C Total:	20.72%
Site Total MPE % :	78.70%

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	108.0	4.09	600 MHz LTE	400	1.02%
T-Mobile 600 MHz NR	1	1577.94	108.0	5.45	600 MHz NR	400	1.36%
T-Mobile 700 MHz LTE	2	695.22	108.0	4.80	700 MHz LTE	467	1.03%
T-Mobile 1900 MHz GSM	4	1052.26	108.0	14.54	1900 MHz GSM	1000	1.45%
T-Mobile 1900 MHz LTE	2	2104.51	108.0	14.54	1900 MHz LTE	1000	1.45%
T-Mobile 2100 MHz LTE	2	2649.42	108.0	18.31	2100 MHz LTE	1000	1.83%
T-Mobile 2500 MHz LTE 1C & 2C Traffic	1	11044.63	108.0	38.17	2500 MHz LTE 1C & 2C Traffic	1000	3.82%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	108.0	3.71	2500 MHz LTE 1C & 2C Broadcast	1000	0.37%
T-Mobile 2500 MHz NR Traffic	1	22089.26	108.0	76.33	2500 MHz NR Traffic	1000	7.63%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	108.0	7.42	2500 MHz NR Broadcast	1000	0.74%
						Total:	**20.72%**

• 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:	20.72%
Sector B:	20.72%
Sector C:	20.72%
T-Mobile Maximum MPE % (Sector A):	20.72%
Site Total:	78.70%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **78.70%** 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.