CROWN CASTLE

1 Cityplace Dr, Suite 490
Creve Coeur, MO 63141

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

April 16, 2021

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

RE: **Notice of Exempt Modification for T-Mobile**
Crown Site ID# 876361; T-Mobile Site ID# CTNH318A
20 Great Oak Road, Oxford, CT 06478
Latitude: 41.42635930 / Longitude: -73.14425970

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 150-foot mount on the existing 150-foot Monopole Tower located at 20 Great Oak Rd. in Oxford. The property and Tower are owned by Crown Castle. T-Mobile now intends to replace six (6) existing antennas and add three (3) new 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) Commscope – NNVV-65-R4 Antennas **(REMOVE) -** (3) RFS APX16DWV-16DWV-S-E-A20 Antennas – **(REPLACE)**

(3) RFS/Celwave – APXVTM14-ALU-120 Antennas **(REMOVE) –** (3) RFS – APXVAALL24_43-U-NA20 Antennas **(REPLACE)**

(3) Alcatel Lucent – TD-RRH8X20-25 Radio **(REMOVE) -** (3) Ericsson 4449 B71+B85 Radio **(REPLACE)**

(3) Alcatel Lucent – 800MHZ Radio **(REMOVE) –** (3) Ericsson 4415 B66A Radio **(REPLACE)**

(3) Alcatel Lucent – 800MHZ w/Notch Filter Radio **(REMOVE) –** (3) Ericsson 4424 B25 Radio **(REPLACE)**

(4) Sprint Cables **(REMOVE) -** (4) 6x24 HCS 4AWG 100m Cables **(REPLACE)**

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Install New:
(3) Ericsson AIR6449 B41 Antennas
(3) Back-to-Back Radio Mounts
(1) Site Pro 1 HRK12-3HD Handrail Kit

Remove:
(3) Alcatel Lucent – 1900MHZ RRH Radio

Ground:

Remove and Replace:
(1) Sprint Cabinet **(REMOVE) -** (1) 6160 Site Support Cabinet (SSC) **(REPLACE)**
(1) Sprint Cabinet **(REMOVE)** – (1) B160 Cabinet **(REPLACE)**
(1) 100A PPC **(REMOVE) –** (1) 200A PPC **(REPLACE)**

Install New:
(4) BB 6648 in 6160 SSC
(1) DUG20 in 6160 SSC
(1) PSU 4813 Booster in 6160 SSC
(1) IXRE Router in 6160 SSC
Upgrade Power Service from 100A to 200A

The facility was approved by the Town of Oxford Planning and Zoning Commission by way of a Site Plan Application Z-99-182 on November 18th, 1999.

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 George Temple, First Selectman for the Town of Oxford and Steven Macary, Zoning Enforcement Official for the Town of Oxford. 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:

George Temple, First Selectman *(via email only to selectmen@oxford-ct.gov)*
Town of Oxford
486 Oxford Road
Oxford, CT 06478
203-888-2543, ext. 3012

Steven Macary, Zoning Enforcement Official *(via email only to zoningenforce@oxford-ct.gov)*
Town of Oxford
486 Oxford Road
Oxford, CT 06478
203-828-6503

Colin Robinson

From: Colin Robinson
Sent: Friday, April 16, 2021 2:33 AM
To: selectmen@oxford-ct.gov
Cc: Colin Robinson
Subject: CSC Exempt Modification Application 20 Great Oak Rd. Oxford CT 876361
Attachments: CSC Exempt Modification Application 20 Great Oak Rd. Oxford CT 876361 041621.pdf

Good Morning Mr. Temple,

Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 20 Great Oak Rd. Oxford CT.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,

Colin

Colin Robinson
Project Manager
NETWORK BUILDING + CONSULTING
100 Apollo Drive | Suite 303 | Chelmsford, MA | 01824
M 360.561.3311

Colin Robinson

From: Colin Robinson
Sent: Friday, April 16, 2021 2:33 AM
To: zoningenforce@oxford-ct.gov
Cc: Colin Robinson
Subject: CSC Exempt Modification Application 20 Great Oak Rd. Oxford CT 876361
Attachments: CSC Exempt Modification Application 20 Great Oak Rd. Oxford CT 876361 041621.pdf

Good Morning Mr. Macary,

Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 20 Great Oak Rd. Oxford CT.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,

Colin

Colin Robinson
Project Manager
NETWORK BUILDING + CONSULTING
100 Apollo Drive | Suite 303 | Chelmsford, MA | 01824
M 360.561.3311

Exhibit A

Original Facility Approval

PLANNING & ZONING COMMISSION
TOWN OF OXFORD
486 Oxford Road
Oxford, CT 06478
(203) 888-2543

Z#: Z-99-182
Date Rec'd: 9/23/99
Date on Agenda:
65-Day Expiration:

ZONING PERMIT APPLICATION

(This permit is hereby applied for in accordance with the requirements of the Oxford Zoning Regulations)

Property Identification

Street Address: 20 Great Oak Road
Subdivision Name: _____ Date Approved: _____
Map: 21 Block: 61 Lot: 1A Zoning district: Municipal Property

Owner/Applicant

Owner Name: TOWN OF OXFORD
Owner Address: 486 Oxford Road, Oxford, Connecticut 06478
Owner Telephone: (203) ~~XXXXXXX~~ 888-2543

Applicant Name: SPRINT SPECTRUM L.P.
Applicant Address: 9 Barnes Industrial Road, Wallingford, CT 06492
Applicant Telephone: (203) 294-5644
Alison - (860) 509-6583

Miscellaneous Information

Special Exception: Article 10 Section 8.4 Yes No
Site Plan Approval: Article _____ Section _____ Yes No
Estimated Cost of Construction: $200,000
Variance Granted: _____ Date Granted: _____

Signatures/Authorization

Application for Zoning Permit approval as described herein is hereby made. The Oxford Planning & Zoning Commission and its technical staff are authorized to enter the property for the purpose of evaluating this application.

Permit Void If: a) Work or activity not commenced within 1 year of the date of issuance or b) Authorized construction not completed within 2 years of the date of issuance.

This permit, if issued, is based upon the plot plan submitted. Falsification, by misrepresentation or omission, or failure to comply with the conditions of approval of this permit constitute a violation of the Oxford Zoning Regulations.

Paul T. Schuler — Property Owner or Agent
9-2-99 — Date

Purpose
___ New Home
___ Addition
___ Garage
___ Cottage Business
___ Swimming Pool IG AG
___ Sign
___ Shed
___ Barn
___ Change of Use
___ Excavating/Filling
___ Trailer
✓ Other Wireless telecommunications tower/facility

Use
✓ Single-Family Residence
___ Multi-Family Residence
___ Commercial
___ Industrial
___ Residential/POD
___ Other _____

Required Approvals and Dates* 4083
✓ Inland Wetlands 9/23/99 (cm)
✓ P.D.D.H. _____
___ Fire Marshal _____
___ Z.B.A. _____
___ W.P.C.A. _____
___ Floodplain _____
✓ Copy of Deed 9/8/99 (cm)
___ Driveway _____
___ Erosion Control Plan
✓ Plot Plan * Rec'd 9/21/99
___ Other _____

$180.00 Town Fee $350 - 5/15/97, $30 - Zone, Inc.
$10.00 State Fee
$190.00 Total Fee (cm)

*Draw plot plan of proposed construction and attach. Plan must show property boundaries and dimensions; location of proposed buildings on property with respect to boundaries; location of existing buildings on property; outside dimensions of all buildings proposed or now existing; location of water supply; location of sewage system. All copies must have a complete sketch. Construction and use must be exactly as described in this application. If later changes from this plan are desired prior approval of an amended application is necessary.

Denied **Approved** By: Kelly Weymer for per P&Z Comm. mtg of 11-18-99 (cm)
Title: ZEO Date: 11-18-99
Reason for Denial _____

ZPA-1
(Adopted 5/15/97)

White - P&Z Files / Yellow - Building Department / Pink - Applicant

Exhibit B

Property Card

20 GREAT OAK RD

Location	20 GREAT OAK RD	**Mblu**	21/ 61/ 1A/ CELL/
Acct#	O041290C	**Owner**	STC FIVE LLC
Assessment	$425,200	**Appraisal**	$607,400
PID	5982	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$607,400	$0	$607,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$425,200	$0	$425,200

Owner of Record

Owner	STC FIVE LLC
Co-Owner	C/O CROWN CASTLE
Address	4017 WASHINGTON RD PMB 331 MCMURRAY , PA 15317

Sale Price	$0
Book & Page	000/ 000
Sale Date	10/01/2010
Instrument	

Ownership History

Ownership History				
Owner	**Sale Price**	**Book & Page**	**Instrument**	**Sale Date**
STC FIVE LLC	$0	000/ 000		10/01/2010

Building Information

Building 1 : Section 1

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

Building Attributes

Field	Description
Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Extra Kitchens	
Fireplace(s)	
Extra Opening(s)	
Gas Fireplace(s)	
Blocked FPL(s)	
Woodstove(s)	
Bsmt Garage(s)	
SF Fin Bsmt	
FBM Quality	
Dormer LF	
Int Millwork	
Ext Millwork	
Foundation	

Building Photo

(http://images.vgsi.com/photos/OxfordCTPhotos//\00\01\26/16.jpg)

Building Layout

Building Layout

(http://images.vgsi.com/photos/OxfordCTPhotos//Sketches/5982_20227.jp

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

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	307
Description	Cell Tower
Zone	
Neighborhood	090
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0
Frontage	
Depth	
Assessed Value	$0
Appraised Value	$0

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CELL	Cell Site			3 SITES	$528,000	1
SHD4	Cell Shed			288 S.F.	$77,800	1
FN5	Fence 10'			240 L.F.	$1,600	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$607,400	$0	$607,400
2018	$607,400	$0	$607,400
2017	$607,400	$0	$607,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$425,200	$0	$425,200
2018	$425,200	$0	$425,200
2017	$425,200	$0	$425,200

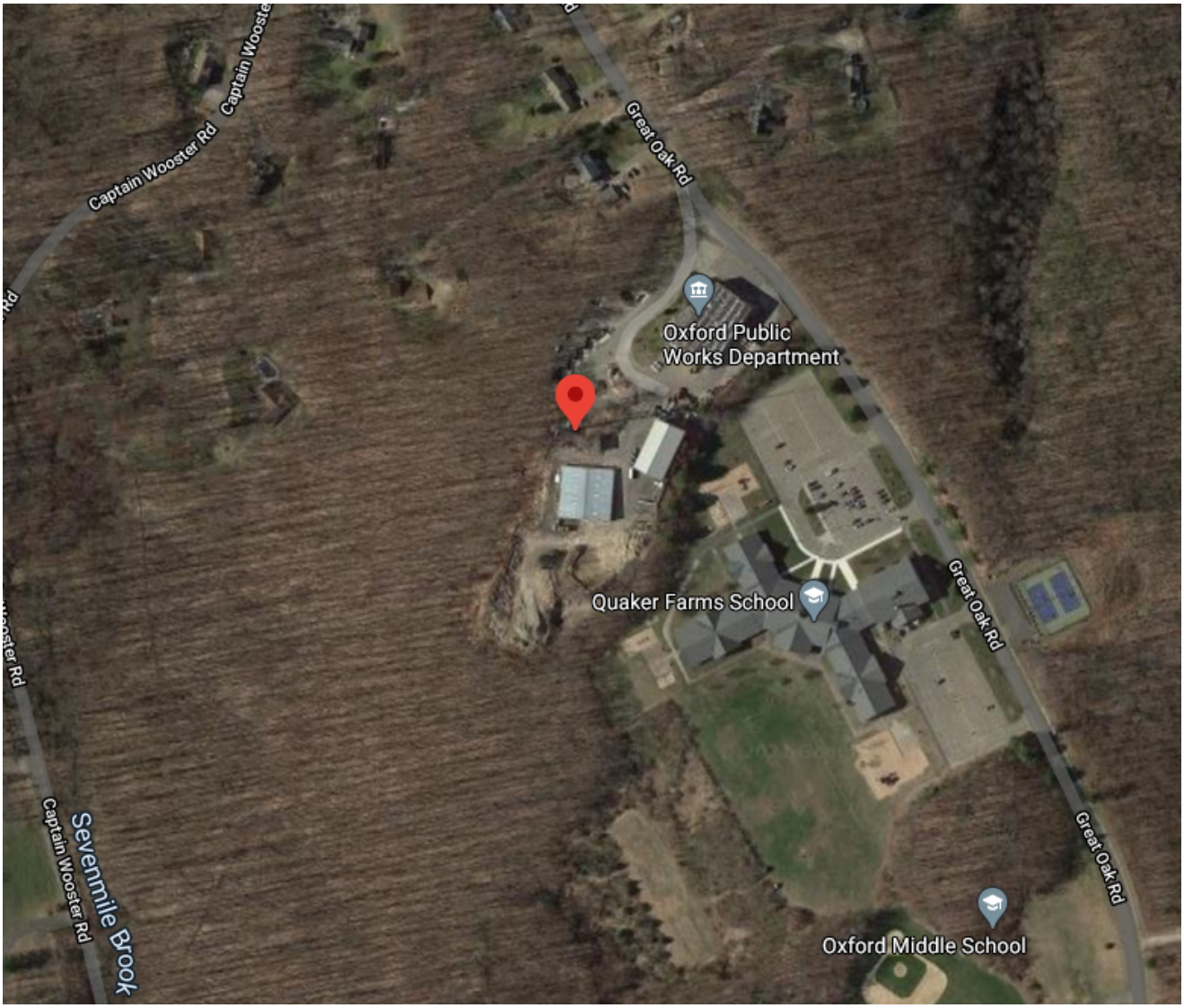

Captain Wooster Rd
Great Oak Rd
Oxford Public
Works Department
Quaker Farms School
Great Oak Rd
Great Oak Rd
Oxford Middle School
Sevenmile Brook
Captain Wooster Rd

Exhibit C

Construction Drawings

T-Mobile

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

T-MOBILE SITE NUMBER: CTNH318A
T-MOBILE SITE NAME: CT23XC507
SITE TYPE: MONOPOLE
TOWER HEIGHT: 150'-0"

BUSINESS UNIT #: 876361
SITE ADDRESS: 20 GREAT OAK RD. OXFORD, CT 06478
COUNTY: NEW HAVEN
JURISDICTION: TOWN OF OXFORD

T-MOBILE SPRINT-RETAIN SITE CONFIGURATION: 67D5998C_1XAIR+1QP+1OP (GSM ONLY)

SITE INFORMATION

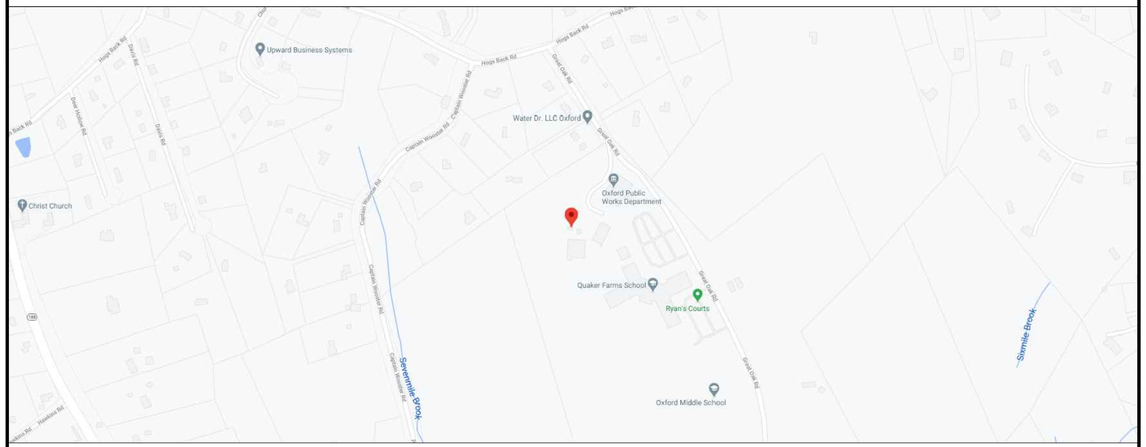
CROWN CASTLE USA INC. SITE NAME:	SEYMOUR 2 / OXFORD TOWN GARAGE
SITE ADDRESS:	20 GREAT OAK RD. OXFORD, CT 06478
COUNTY:	NEW HAVEN
TAX MAP/PARCEL #:	21/61/1A/CELL
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41° 25' 34.91" (41.42635930)
LONGITUDE:	-73° 8' 39.33" (-73.14425970)
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	740 FT (AMSL)
CURRENT ZONING:	R-A - RESIDENTIAL A DISTRICT
JURISDICTION:	TOWN OF OXFORD
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	STC FIVE LLC 4017 WASHINGTON RD MCMURRAY, PA 15317
TOWER OWNER:	CROWN CASTLE USA, INC. 1200 MACARTHUR BLVD, SUITE 200 MAHWAH, NJ 07430
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	CONNECTICUT LIGHT & POWER CO. 800-286-2000
TELCO PROVIDER:	AT&T (800) 288-2020

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	FINAL SITE PLAN
C-1.2	EXISTING & FINAL EQUIPMENT PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	EQUIPMENT SPECS
C-5	EQUIPMENT SPECS
C-6	CABINET SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
ATTACHED	HANDRAIL SPECS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 22x34. 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.

LOCATION MAP



NO SCALE

PROJECT TEAM

A&E FIRM:	TOWER ENGINEERING PROFESSIONALS 326 TRYON ROAD RALEIGH, NC 27603
	JOSEPH T. CRESS - PROJECT MANAGER (919) 661-6351
	GRAHAM M. ANDRES - CIVIL ENGINEER (919) 661-6351
	GRAHAM M. ANDRES - ELECTRICAL ENGINEER (919) 661-6351
CROWN CASTLE USA INC. DISTRICT CONTACTS:	4511 N. HIMES AVENUE, STE 210 TAMPA, FL 33614
	NITSA CRENSHAW - A&E SPECIALIST (813) 342-3871
	TRICIA PELON - PROJECT MANAGER TRICIA.PELON@CROWNCASTLE.COM
	JASON D'AMICO - CONSTRUCTION MANAGER JASON.DAMICO@CROWNCASTLE.COM

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

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 (4) EXISTING SPRINT CABLES
- REMOVE (6) EXISTING SPRINT ANTENNAS
- REMOVE (12) EXISTING SPRINT RRHs
- REMOVE (3) EXISTING SPRINT FILTERS
- REUSE (1) PLATFORM MOUNT
- INSTALL (9) ANTENNAS
- INSTALL (9) RRHs
- INSTALL (3) BACK-TO-BACK RADIO MOUNTS
- INSTALL (4) 6x24 HCS 4AWG 100m CABLES
- INSTALL (1) HANDRAIL KIT

GROUND SCOPE OF WORK:
- REMOVE LEGACY SPRINT CABINET(S) AS NEEDED
- INSTALL (2) CABINETS
- INSTALL (4) BB 6648, (1) DUG20, (1) IXRE ROUTER, (1) PSU 4813 BOOSTER
- REUSE EXISTING SPRINT PAD, ICE BRIDGE & UTILITY EQUIPMENT
- UPGRADE POWER SERVICE FROM 100A TO 200A
- REPLACE EXISTING 100A PPC WITH 200A PPC
- INTALL NEW CAM-LOK GENERATOR INTERFACE

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 CONNECTICUT STATE BUILDING CODE
MECHANICAL	2018 INTERNATIONAL MECHANICAL CODE
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	TOWER ENGINEERING PROFESSIONALS
DATED:	02/18/2021
MOUNT ANALYSIS:	GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORPORATION
DATED:	02/03/2021
ORDER ID:	538756
REVISION:	0
RFDS VERSION:	1
DATED:	01/11/2021

ANALYSIS CRITERIA:

APPLICABLE CODES:	TIA-222-H / ASCE 7-16
WIND SPEED:	V = 150 MPH (ULTIMATE 3 SECOND GUST)
EXPOSURE CATEGORY:	B
RISK CATEGORY:	II
TOPOGRAPHIC CATEGORY:	1
SEISMIC Ss:	0.196
SEISMIC S1:	0.064
SERVICE WIND SPEED:	60 MPH

APPROVALS

APPROVAL	SIGNATURE	DATE
RF		
CONST.		
FAA		
OPS		
RE		
SR DEV MGR		
REG DIR		

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
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351

TEP JOB #: 25610.504518

T-MOBILE SITE NUMBER:
CTNH318A

BU #: **876361**
SEYMOUR 2 / OXFORD TOWN GARAGE

20 GREAT OAK RD.
OXFORD, CT 06478
(NEW HAVEN COUNTY)

EXISTING 150'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/09/21	SBS	PRELIMINARY	BSE
0	03/31/21	JW	CONSTRUCTION	BSE

SEAL:

GRAHAM M. ANDRES
29538
LICENSED
PROFESSIONAL ENGINEER

03/31/21

SHEET NUMBER: T-1
REVISION: 0

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" 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
BLOOMFIELD, CT 06002

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351
TEP JOB #: 25610.504518

T-MOBILE SITE NUMBER:
CTNH318A

BU #: **876361**
SEYMOUR 2 / OXFORD TOWN GARAGE

20 GREAT OAK RD.
OXFORD, CT 06478
(NEW HAVEN COUNTY)

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/09/21	SBS	PRELIMINARY	BSE
0	03/31/21	JW	CONSTRUCTION	BSE

SEAL:

03/31/21

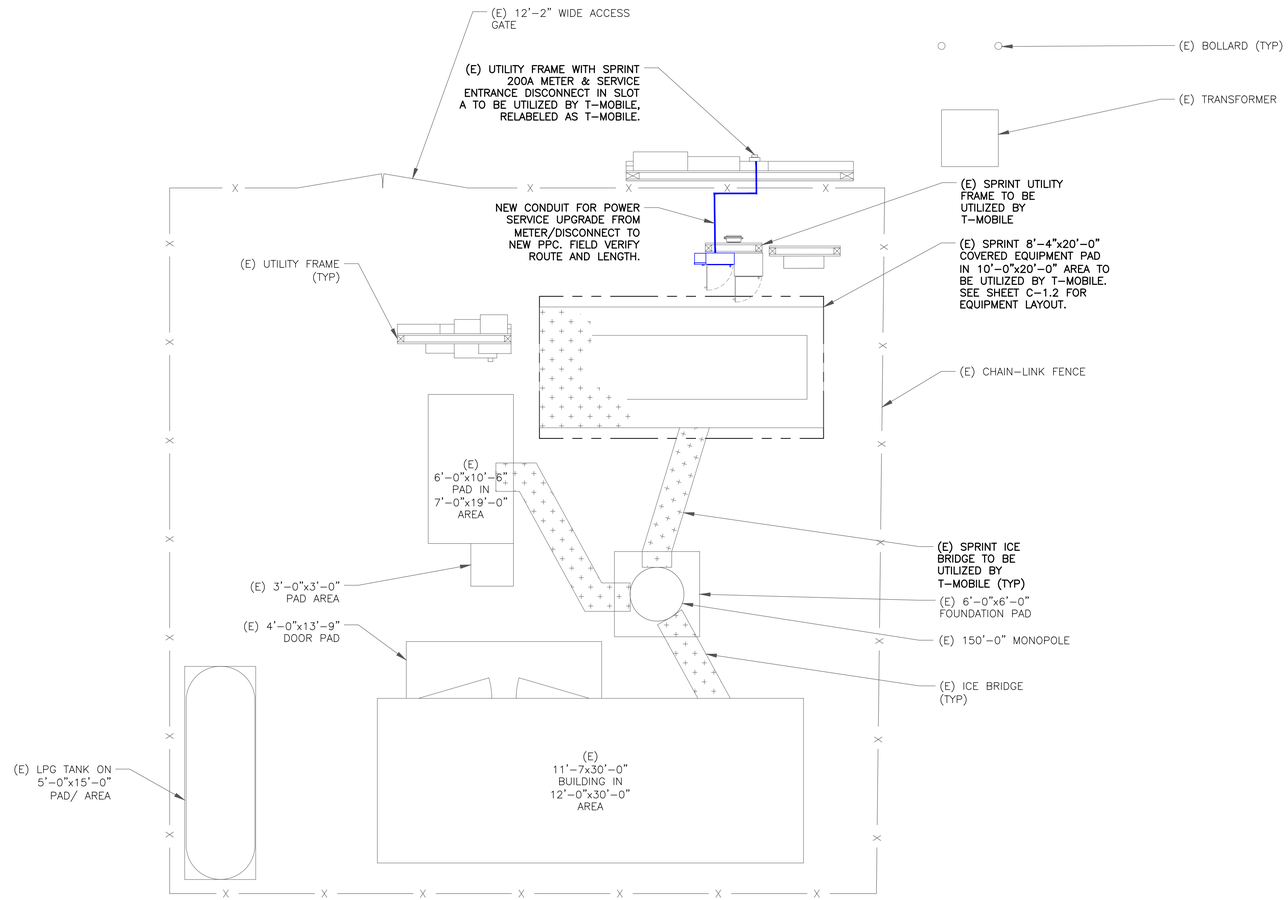
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-2

REVISION: 0

NOTE:
SITE PLAN SHOWN BELOW WAS REPRODUCED FROM INFORMATION PROVIDED BY CROWN CASTLE AND SITE WALK CONDUCTED BY TEP. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION IS AS INDICATED ON SITE PLAN. CONTRACTOR IS TO ESTABLISH THE EXISTENCE AND LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES. IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES.

FLOODPLAIN NOTE:
THE TOWER IS LOCATED IN ZONE "X" AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO FEMA COMMUNITY PANEL #09009C0242H, DATED 12/17/2010.



1 SITE PLAN
SCALE: 2' 1' 0 2' 3/8"=1'-0" (FULL SIZE) 3/16"=1'-0" (11x17)

N

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351
TEP JOB #: 25610.504518

T-MOBILE SITE NUMBER:
CTNH318A

BU #: **876361**
SEYMOUR 2 / OXFORD TOWN GARAGE

20 GREAT OAK RD.
OXFORD, CT 06478
(NEW HAVEN COUNTY)

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/09/21	SBS	PRELIMINARY	BSE
0	03/31/21	JW	CONSTRUCTION	BSE

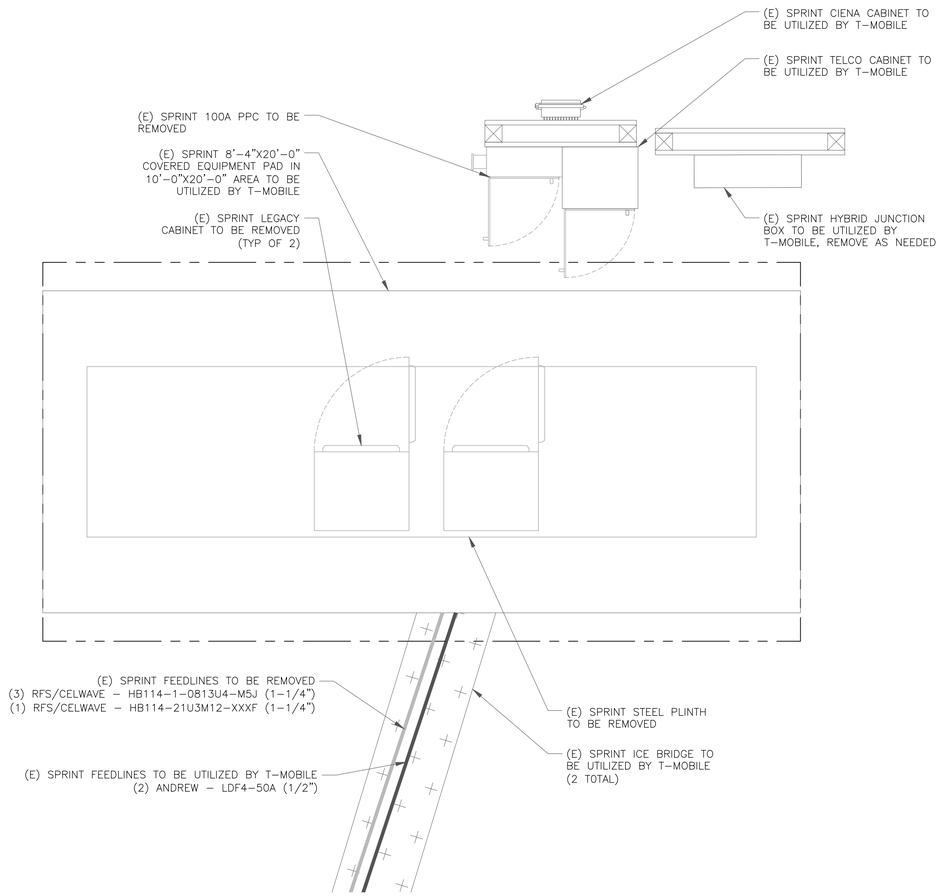
SEAL:

GEORGE S. ANGUS III
STATE OF CONNECTION
29538
LICENSED PROFESSIONAL ENGINEER

03/31/21

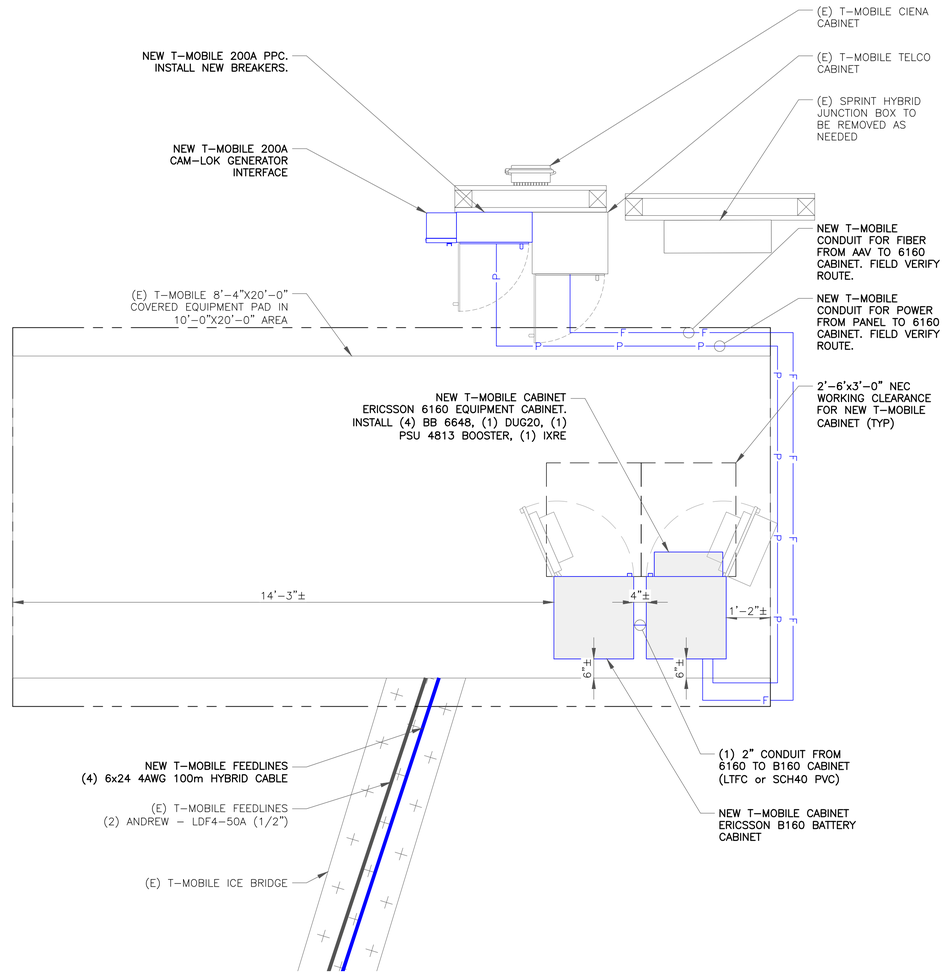
SHEET NUMBER: C-1.1
REVISION: 0

FLOODPLAIN NOTE:
THE TOWER IS LOCATED IN ZONE "X" AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO FEMA COMMUNITY PANEL #09009C0242H, DATED 12/17/2010.



1 EXISTING EQUIPMENT PLAN
SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

N



2 FINAL EQUIPMENT PLAN
SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

N

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351
TEP JOB #: 25610.504518

T-MOBILE SITE NUMBER:
CTNH318A

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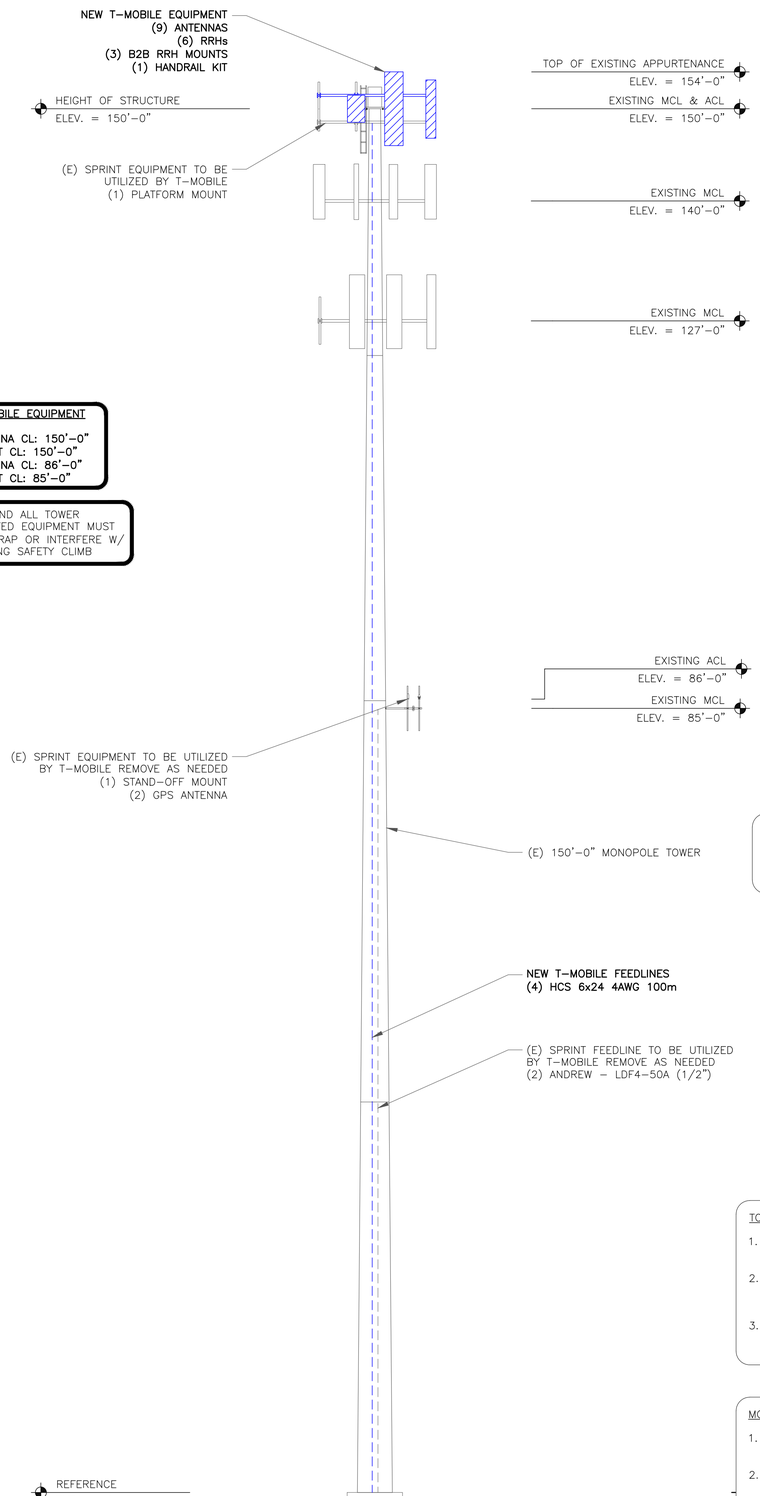
SEAL:

03/31/21

SHEET NUMBER: C-1.2
REVISION: 0



1 FINAL ELEVATION
SCALE: NOT TO SCALE

INSTALLER NOTE:

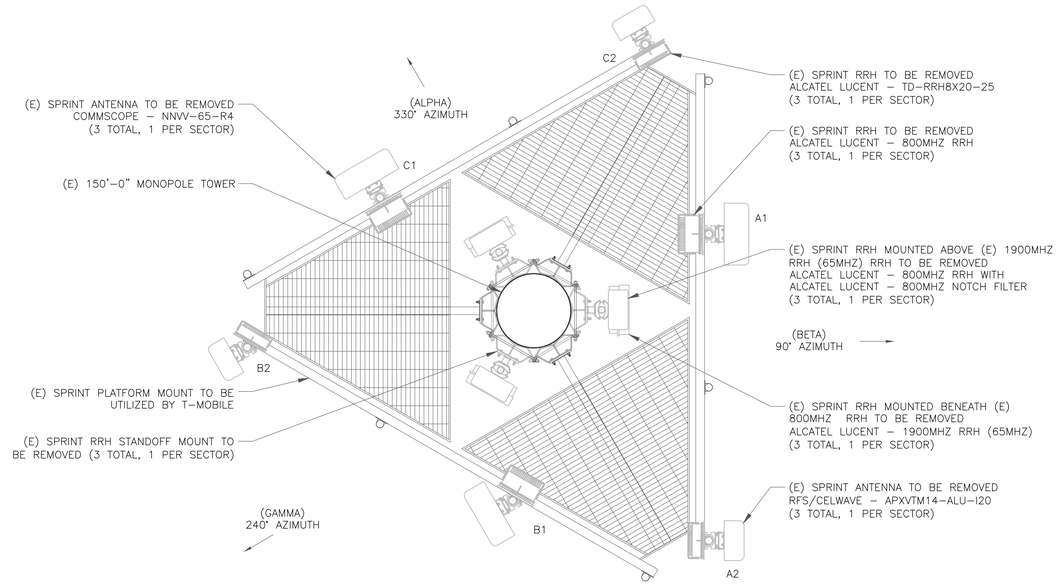
EXISTING AND PROPOSED ANTENNA/ EQUIPMENT POSITIONING SHOWN PER RFDS. FIELD CONDITIONS MAY VARY.

TOWER ANALYSIS NOTES:

1. THE DESIGN DEPICTED IN THESE DRAWINGS IS VALID WHEN ACCOMPANIED BY A CORRESPONDING PASSING TOWER ANALYSIS.
2. CONSTRUCTION MANAGER / GENERAL CONTRACTOR SHALL REVIEW THE TOWER ANALYSIS FOR ANY CONDITIONS PRIOR TO INSTALLATION.
3. ANY REQUIRED TOWER MODIFICATION DESIGN OR TOWER REPLACEMENT SHALL BE APPROVED BY EOR.

MOUNT ANALYSIS NOTES:

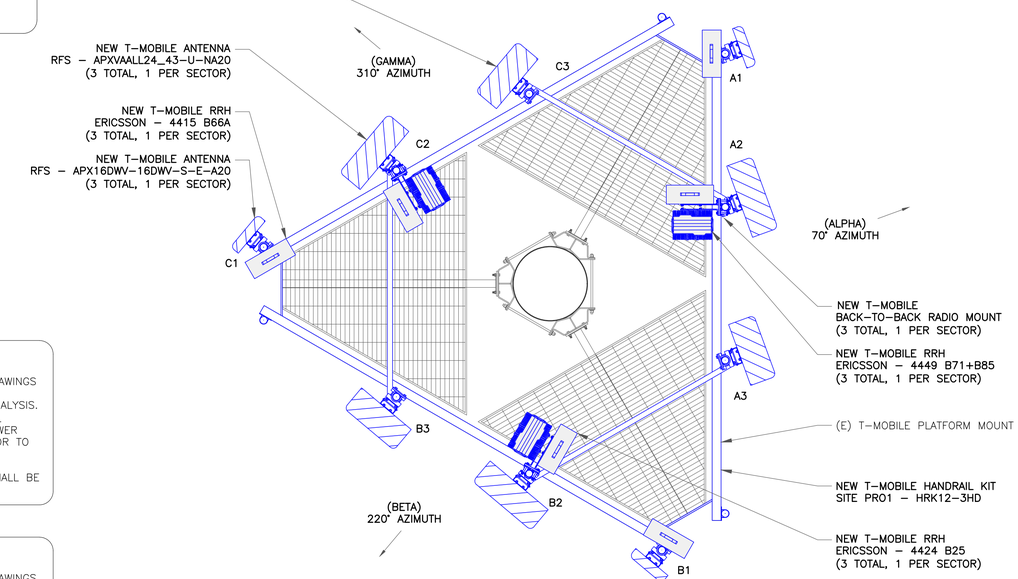
1. THE DESIGN DEPICTED IN THESE DRAWINGS IS VALID WHEN ACCOMPANIED BY A CORRESPONDING PASSING MOUNT ANALYSIS.
2. CONSTRUCTION MANAGER / GENERAL CONTRACTOR SHALL REVIEW THE MOUNT ANALYSIS FOR ANY CONDITIONS PRIOR TO INSTALLATION.
3. ANY REQUIRED MOUNT MODIFICATION DESIGN OR MOUNT REPLACEMENT SHALL BE APPROVED BY EOR.



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE

RRH NOTE:

CONTRACTOR TO ENSURE RRHs ARE INSTALLED MIN 8" AWAY FROM ANTENNA



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

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SEAL:

03/31/21

SHEET NUMBER: C-2

REVISION: 0

FINAL ANTENNA SCHEDULE

SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L2100	150'–0"	70°	RFS	APX16DWV–16DWV–S–E–A20 (QUAD)	–	–	(1) ERICSSON – 4415 B66A	HYBRID (SHARED)
ALPHA	A2	L700, L600, N600, L1900, G1900	150'–0"	70°	RFS	APXVAALL24_43–U–NA20 (OCTO)	–	–	(1) ERICSSON – 4449 B71+B85 (1) ERICSSON – 4424 B25	(1) 6x24 4AWG 100m
ALPHA	A3	L2500, N2500	150'–0"	70°	ERICSSON	AIR6449 B41 (ACTIVE ANTENNA – MASSIVE MIMO)	–	–	–	(1) 6x24 4AWG 100m
BETA	B1	L2100	150'–0"	220°	RFS	APX16DWV–16DWV–S–E–A20 (QUAD)	–	–	(1) ERICSSON – 4415 B66A	HYBRID (SHARED)
BETA	B2	L700, L600, N600, L1900, G1900	150'–0"	220°	RFS	APXVAALL24_43–U–NA20 (OCTO)	–	–	(1) ERICSSON – 4449 B71+B85 (1) ERICSSON – 4424 B25	(1) 6x24 4AWG 100m
BETA	B3	L2500, N2500	150'–0"	220°	ERICSSON	AIR6449 B41 (ACTIVE ANTENNA – MASSIVE MIMO)	–	–	–	HYBRID (SHARED)
GAMMA	C1	L2100	150'–0"	310°	RFS	APX16DWV–16DWV–S–E–A20 (QUAD)	–	–	(1) ERICSSON – 4415 B66A	HYBRID (SHARED)
GAMMA	C2	L700, L600, N600, L1900, G1900	150'–0"	310°	RFS	APXVAALL24_43–U–NA20 (OCTO)	–	–	(1) ERICSSON – 4449 B71+B85 (1) ERICSSON – 4424 B25	(1) 6x24 4AWG 100m
GAMMA	C3	L2500, N2500	150'–0"	310°	ERICSSON	AIR6449 B41 (ACTIVE ANTENNA – MASSIVE MIMO)	–	–	–	HYBRID (SHARED)

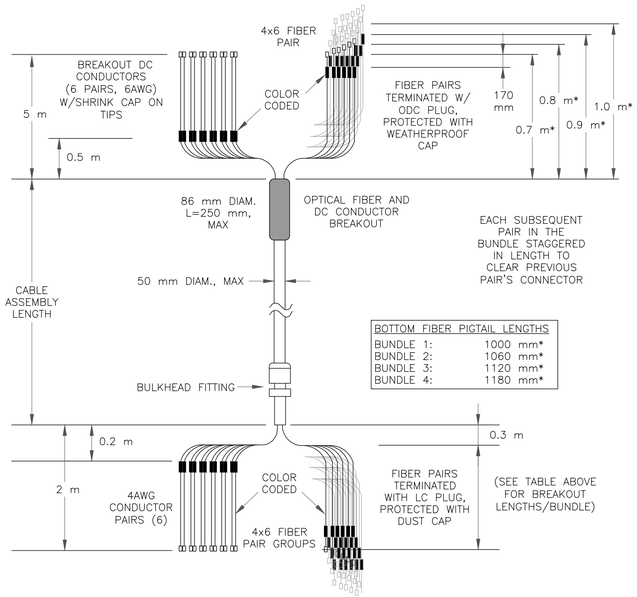
PROPOSED ANTENNA/EQUIPMENT SHOWN IN BOLD

FINAL CABLE SCHEDULE

STATUS	CABLE TYPE	SIZE	QUANTITY
NEW	HCS	6x24 4AWG 100m	4
CABLE QUANTITY			4

NOTE:
(3) HYBRID SHARED BETWEEN APX/4415/4449/4424 PER SECTOR
(1) HYBRID SHARED BETWEEN 6449 ANTENNAS PER SECTOR

1 PROPOSED ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE



2 HCS DETAIL
SCALE: NOT TO SCALE

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SEAL:

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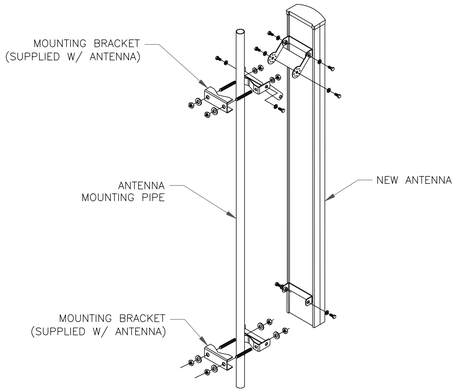
SHEET NUMBER: C-3

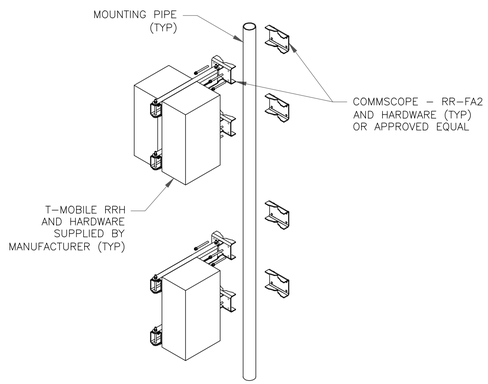
REVISION: 0



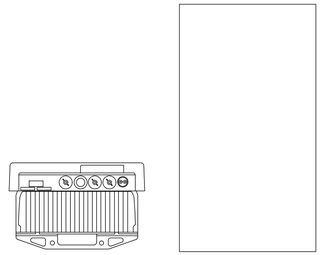
1 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

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.

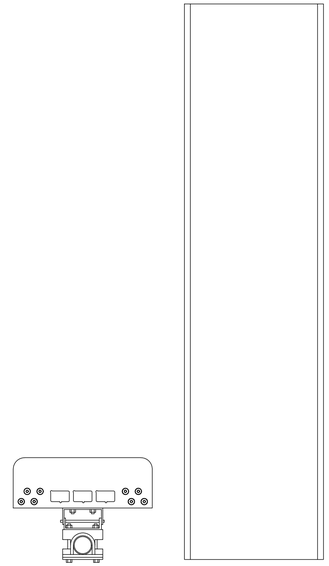


2 RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE



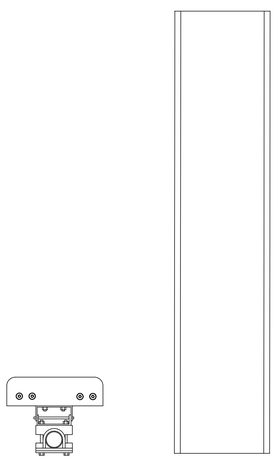
ERICSSON – AIR6449 B41
WEIGHT: 104.0 LBS
SIZE (HxWxD): 33.10x20.60x8.60 IN.

3 ERICSSON – AIR6449 B41
SCALE: NOT TO SCALE



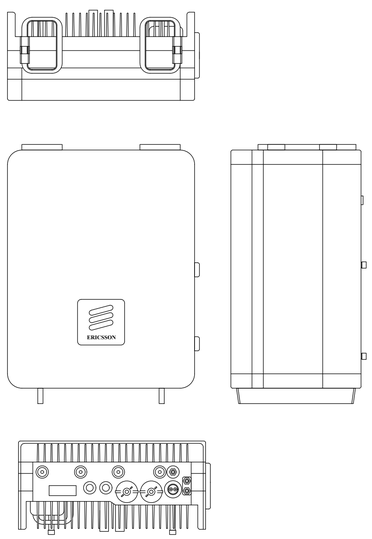
RFS/CELWAVE – APXVAALL24_43-U-NA20
WEIGHT (WITHOUT MOUNTING HARDWARE): 149.9 LBS
SIZE (HxWxD): 95.9x24.0x8.5 IN.

4 RFS/CELWAVE – APXVAALL24_43-U-NA20
SCALE: NOT TO SCALE



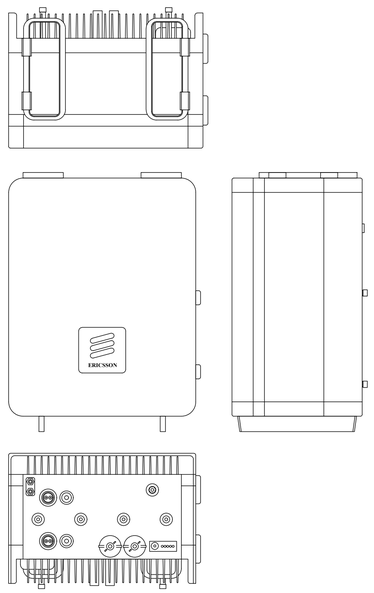
RFS/CELWAVE – APX16DWV-16DWV-S-E-A20
WEIGHT (WITHOUT MOUNTING HARDWARE): 40.7 LBS
SIZE (HxWxD): 55.90x13.30x3.15 IN.

5 RFS/CELWAVE – APX16DWV-16DWV-S-E-A20
SCALE: NOT TO SCALE



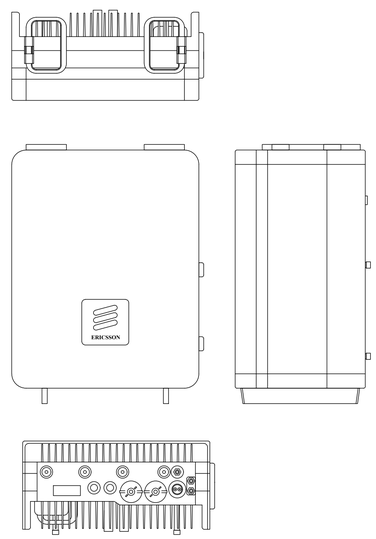
ERICSSON – RADIO 4415 B66A
WEIGHT: 46.0 LBS
SIZE (HxWxD): 14.90x13.20x5.40 IN.

6 ERICSSON – RADIO 4415 B66A
SCALE: NOT TO SCALE



ERICSSON – RADIO 4449 B71/B85
WEIGHT: 73.21 LBS
SIZE (HxWxD): 17.91x13.2x10.63 IN.

7 ERICSSON – RADIO 4449 B71/B85
SCALE: NOT TO SCALE



ERICSSON – RADIO 4425 B25
WEIGHT: 86.0 LBS
SIZE (HxWxD): 17.10x14.40x11.30 IN.

8 ERICSSON – RADIO 4424 B25
SCALE: NOT TO SCALE

T-Mobile
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(919) 661-6351

TEP JOB #: 25610.504518

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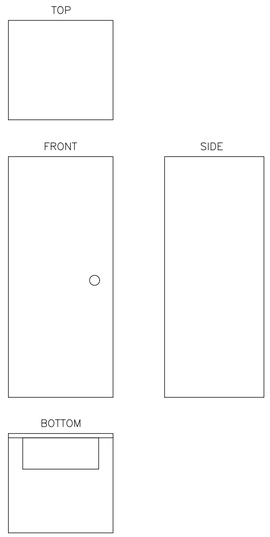
SEAL:

03/31/21

SHEET NUMBER: C-4

REVISION: 0



INTERSECT – CAM–LOK GENERATOR CONNECTOR
WEIGHT: 13 LBS
SIZE (HxWxD): 23x10x9.5 IN.

1 INTERSECT – CAM–LOK GENERATOR CONNECTOR
SCALE: NOT TO SCALE

T-Mobile

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CROWN CASTLE

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SEAL:

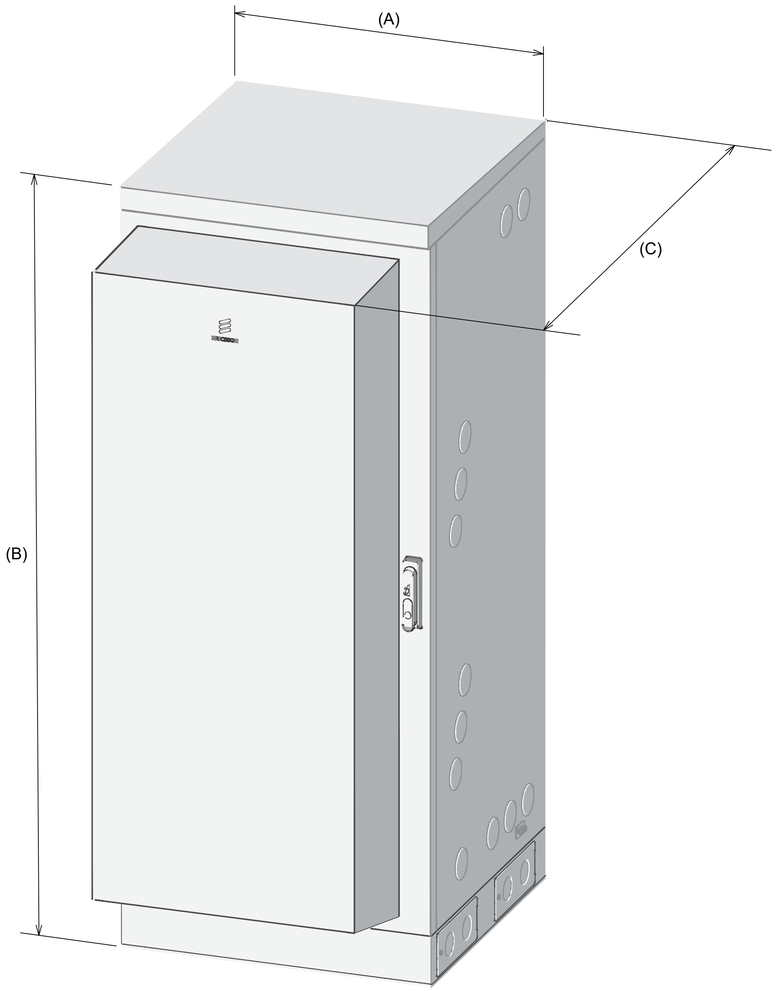
03/31/21

SHEET NUMBER: C-5

REVISION: 0

INSTALLER NOTES:

1. INFORMATION SHOWN PROVIDED BY T–MOBILE. CONTRACTOR TO REFERENCE CABINET MANUFACTURER'S SPECIFICATIONS FOR FURTHER DETAILS.
2. CONTRACTOR TO FOLLOW THE LATEST VERSION OF T–MOBILE REGIONAL CONSTRUCTION STANDARDS. CONTACT T–MOBILE FOR DETAILS.



Dimensions	
Width (A)	650 mm / 25.5906 in
Height (B)	1450 mm / 57.08661 in (without base frame) 1600 mm / 62.99213 in (with base frame)
Depth (C)	850 mm / 33.4646 in
Weight	
Empty enclosure	176 kg / 388.014 lb

1 ERICSSON 6160 CABINET DETAILS
SCALE: NOT TO SCALE

2 ERICSSON B160 CABINET DETAILS
SCALE: NOT TO SCALE

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SEAL:

03/31/21

SHEET NUMBER: C-6

REVISION: 0

NOTE:
LOAD CALCULATIONS TAKEN FROM INFORMATION PROVIDED BY CROWN CASTLE & POWER ANALYSIS TOOL BASED ON THE RFDS DATED 01/11/2021 V1. CONTRACTOR TO VERIFY LOADS WITH MANUFACTURER'S SPECIFICATIONS PRIOR TO CONSTRUCTION.

***EXISTING 100A M.C.B, 240/120 VAC, 1ø, 3W PPC PANEL SCHEDULE

LOAD SERVED	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	LOAD SERVED
*UNKOWN (OFF)	0		*100	1	A	2	**60	100		**SURGE PROTECTOR
		0		3	B	4			100	
**TELCO FAN	340		10	5	A	6	*100	9600		*MMBTS
*UNKNOWN (OFF)		0	20	7	B	8			9600	
*FAN (OFF)	0		100	9	A	10	**15	180		**TELCO GFI
		0		11	B	12	–		–	SPARE
VOLT AMPS	340	0						9880	9700	VOLT AMPS

L1 VOLT AMPERES	10200	10040	L2 VOLT AMPERES
	10200		MAX VOLT AMPERES
	85.2		MAX AMPS
	106.5		MAX AMPS x 125%

*NOTE – EXISTING BREAKER TO BE REMOVED. NOTIFY TEP IF BREAKER IS TO REMAIN.
**NOTE – EXISTING BREAKER TO BE RELOCATED TO NEW PANEL
***NOTE – EXISTING PANEL TO BE REPLACED.

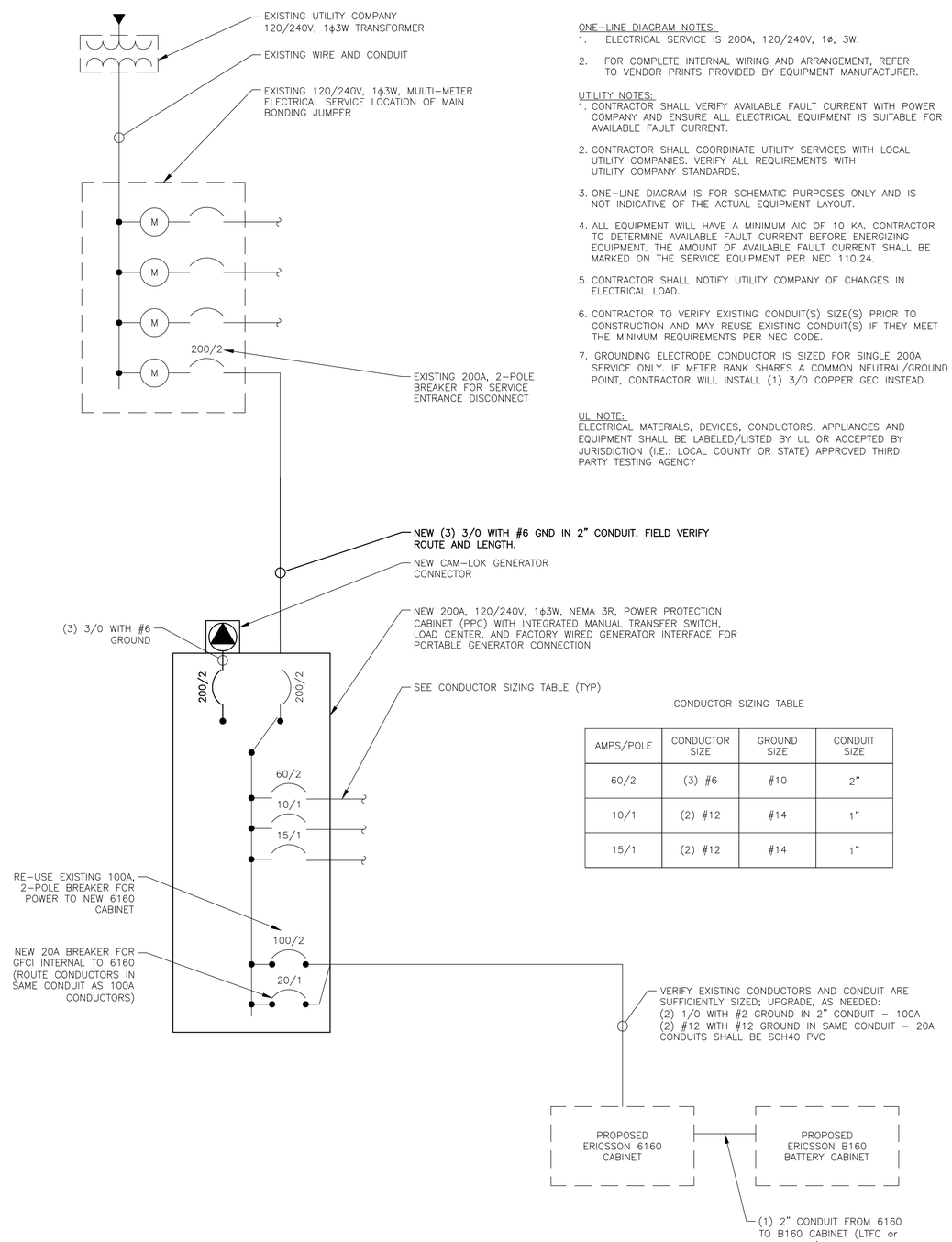
PROPOSED 200A M.C.B, 240/120 VAC, 1ø, 3W PPC PANEL SCHEDULE

LOAD SERVED	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	LOAD SERVED
6160 ENCLOSURE	7410		100	1	A	2	60	100		SURGE PROTECTOR
		7410		3	B	4			100	
TELCO FAN	340		10	5	A	6	–	–		SPARE
GFCI INTERNAL IN 6160		180	20	7	B	8	–		–	SPARE
SPARE	–		–	9	A	10	–	–		SPARE
SPARE		–	–	11	B	12	15		180	TELCO GFI
VOLT AMPS	7750	7590						100	280	VOLT AMPS

L1 VOLT AMPERES	7850	7870	L2 VOLT AMPERES
	7870		MAX VOLT AMPERES
	65.6		MAX AMPS
	84.0		MAX AMPS x 125%

NOTE – PROPOSED BREAKER IN BOLD

1 AC PANEL SCHEDULES
SCALE: NOT TO SCALE



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

GENERAL NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-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.

ONE-LINE DIAGRAM NOTES:

1. ELECTRICAL SERVICE IS 200A, 120/240V, 1ø, 3W.
2. FOR COMPLETE INTERNAL WIRING AND ARRANGEMENT, REFER TO VENDOR PRINTS PROVIDED BY EQUIPMENT MANUFACTURER.

UTILITY NOTES:

1. CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH POWER COMPANY AND ENSURE ALL ELECTRICAL EQUIPMENT IS SUITABLE FOR AVAILABLE FAULT CURRENT.
2. CONTRACTOR SHALL COORDINATE UTILITY SERVICES WITH LOCAL UTILITY COMPANIES. VERIFY ALL REQUIREMENTS WITH UTILITY COMPANY STANDARDS.
3. ONE-LINE DIAGRAM IS FOR SCHEMATIC PURPOSES ONLY AND IS NOT INDICATIVE OF THE ACTUAL EQUIPMENT LAYOUT.
4. ALL EQUIPMENT WILL HAVE A MINIMUM AIC OF 10 KA. CONTRACTOR TO DETERMINE AVAILABLE FAULT CURRENT BEFORE ENERGIZING EQUIPMENT. THE AMOUNT OF AVAILABLE FAULT CURRENT SHALL BE MARKED ON THE SERVICE EQUIPMENT PER NEC 110.24.
5. CONTRACTOR SHALL NOTIFY UTILITY COMPANY OF CHANGES IN ELECTRICAL LOAD.
6. CONTRACTOR TO VERIFY EXISTING CONDUIT(S) SIZE(S) PRIOR TO CONSTRUCTION AND MAY REUSE EXISTING CONDUIT(S) IF THEY MEET THE MINIMUM REQUIREMENTS PER NEC CODE.
7. GROUNDING ELECTRODE CONDUCTOR IS SIZED FOR SINGLE 200A SERVICE ONLY. IF METER BANK SHARES A COMMON NEUTRAL/GROUND POINT, CONTRACTOR WILL INSTALL (1) 3/0 COPPER GEC INSTEAD.

UL NOTE:
ELECTRICAL MATERIALS, DEVICES, CONDUCTORS, APPLIANCES AND EQUIPMENT SHALL BE LABELED/LISTED BY UL OR ACCEPTED BY JURISDICTION (I.E.: LOCAL COUNTY OR STATE) APPROVED THIRD PARTY TESTING AGENCY

CONDUCTOR SIZING TABLE

AMPS/POLE	CONDUCTOR SIZE	GROUND SIZE	CONDUIT SIZE
60/2	(3) #6	#10	2"
10/1	(2) #12	#14	1"
15/1	(2) #12	#14	1"

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BLOOMFIELD, CT 06002

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351

TEP JOB #: 25610.504518

T-MOBILE SITE NUMBER:
CTNH318A

BU #: **876361**
SEYMOUR 2 / OXFORD TOWN GARAGE

20 GREAT OAK RD.
OXFORD, CT 06478
(NEW HAVEN COUNTY)

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/09/21	SBS	PRELIMINARY	BSE
0	03/31/21	JW	CONSTRUCTION	BSE

SEAL:

03/31/21

SHEET NUMBER: E-1

REVISION: 0

T-MOBILE GROUNDING NOTES:

ALL GROUNDS MUST ROUTE DOWNHILL FOR ENTIRE DURATION OF ROUTE

1. PROVIDE LABOR, MATERIALS, INSPECTION, AND TESTING TO PROVIDE CODE COMPLIANCE FOR ELECTRIC, TELEPHONE, AND GROUNDING/LIGHTNING SYSTEMS.

ICE BRIDGE/ EQUIPMENT POST:

#2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED TO GROUND RING (BOTH ENDS), FINAL WELD COLD GALVANIZED, IN ½" NON-METALLIC SEAL TIGHT CONDUIT, SEALED WITH SILICONE, ANCHORED TO PAD/PLATFORM TO AVOID TRIP HAZARD USING HAMMER SET ANCHORS.

PEDESTALS, PLINTHS, SSC CABINET, FCOA CABINETS:

1. #2 SOLID COPPER TINNED, 2 HOLE LUG WITH FLAT AND LOCK WASHER AT EQUIPMENT; EXOTHERMICALLY WELDED TO GROUND RING, FINAL WELD COLD GALVANIZED, IN ½" NON-METALLIC SEAL TIGHT CONDUIT, SEALED WITH SILICONE, ANCHORED TO PAD TO AVOID TRIP HAZARD USING HAMMER SET ANCHORS. EACH PART REQUIRES A SEPARATE DOWNLEAD, NO DAISY CHAINS.

2. ALL COMPONENTS INSIDE FCOA CABINETS REQUIRE A DEDICATED GROUND.

COVP's:

#6 THHN STRANDED (GREEN JACKET), CONNECTED AT EQUIPMENT SIDE USING OVP TERMINAL BLOCK CONNECTION; MECHANICALLY CONNECTED TO GROUND REFERENCE AT MASTER BUSS BAR USING 2 HOLE LUG WITH FLAT AND LOCK WASHER, IN ½" NON-METALLIC SEAL TIGHT CONDUIT, SEALED WITH SILICONE, AND ANCHORED TO PAD/PLATFORM TO AVOID TRIP HAZARD.

ANTENNA/ COVP/ RRU MAST PIPES:

1. ALL VERTICAL MAST PIPES: #2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED TO TOP OF PIPE (PIPE, DOWN MOLD), FINAL WELD COLD GALVANIZED, BONDED TO TOP BUSS BAR WITH 2 HOLE COPPER COMPRESSION LUG, FLAT AND LOCK WASHER.

2. EXISTING/REUSED PIPES: #2 SOLID COPPER TINNED, BONDED WITH COLD WATER CLAMP TO TOP OF PIPE, BONDED TO TOP BUSS WITH 2 HOLE COPPER COMPRESSION LUG, FLAT AND LOCK WASHER

AIR TERMINALS:

TO BE INSTALLED, ONLY IF REQUIRED

TMA's, DIPLEXERS AND TRIPLEXERS:

1. #6 THHN, WITH PROPER COPPER COMPRESSION LUG, FLATS AND LOCK WASHERS

2. ALL GROUND LUGS ON TMA MUST BE GROUNDED WITH SEPARATE DOWNLEAD TO BUSS BAR (NO DAISY CHAINS)

ELEVATED STEEL PLATFORMS WITH LUNAR FEET:

#2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED (FLAT PLATE MOLD) TO OUTSIDE PERIMETER BEAMS IN FOUR (4) PLACES, FINAL WELD COLD GALVANIZED, BONDED DIRECTLY TO SUBGRADE GROUND RING.

STEEL CANOPY (STEEL PLATFORM OR CONCRETE PAD):

1. #2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED (PIPE, DOWN MOLD) TO BOTTOM OF ALL VERTICAL SUPPORT POSTS, TYPICALLY FOUR (4) PIPES, FINAL WELD COLD GALVANIZED, BONDED DIRECTLY TO SUBGRADE GROUND RING.

2. #2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED (PIPE, UP MOLD) TO TOP OF ALL VERTICAL SUPPORT POSTS, TYPICALLY FOUR (4) PIPES, FINAL WELD COLD GALVANIZED, BONDED UP TO CANOPY GRIP-STRUT USING 2 HOLE COPPER COMPRESSION LUG, FLAT AND LOCK WASHER.

RRU:

#6 THHN, WITH PROPER COPPER COMPRESSION LUG, ANTI-OXIDANT TO SECTOR BUSS BAR

FSBE ALARM BOX:

#6 THHN WITH ONE HOLE LUG BONDED TO PREVIOUSLY GROUNDED FCOA, PLINTH OR BUSS BAR.

SURGE SUPPRESSORS:

#6 THHN TO PREVIOUSLY GROUNDED BUSS BAR USING PROPER LUGS

FYGA/FYGB BRACKET:

1. #6 THHN TO PREVIOUSLY GROUNDED BUSS BAR USING PROPER LUGS

2. THROUGH BOLTS WITH FLAT, LOCK ON BRACKET

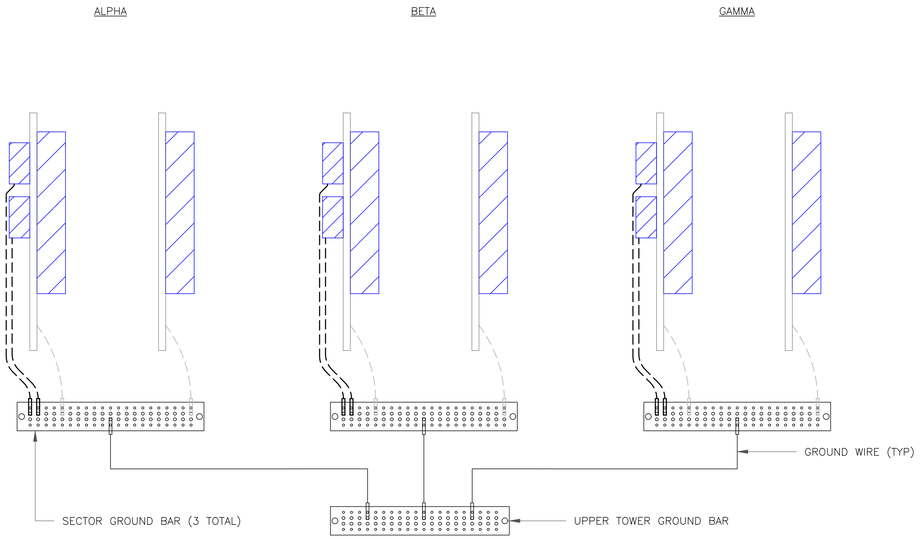
BUSS BARS:

1. PLATFORM / PAD BUSS BAR SHOULD BE MINIMUM 12" TINNED COPPER WITH INSULATORS, AND SHOULD HAVE TWO (2) EXOTHERMICALLY WELDED DOWN LEADS DIRECTLY TO GROUND RING USING #2 SOLID COPPER TINNED WIRE.

2. SECTOR BUSS BAR SHOULD BE PROPERLY SIZED TO ACCOMMODATE NECESSARY GROUNDING FOR EQUIPMENT ON EACH MOUNT, AND MAY BE SOLID COPPER (TINNED NOT REQUIRED). DO NOT USE INSULATORS ON SECTOR BUSS BARS ATTACH DIRECTLY TO TOWER MOUNT STEEL.

GENERAL:

- NO GROUND KITS ON HYBRID TRUNKS (TOP OR BOTTOM)
- NO GROUND KITS ON MICROWAVE IF CABLES (TOP OR BOTTOM)
- MICROWAVE SURGE SUPPRESSORS ARE NOT TO BE INSTALLED UPSTAIRS ON TOWER, DOWNSTAIRS ONLY (BULKHEAD PREFERRED)
- MICROWAVE ODU MUST BE GROUNDED TO TOWER TOP SECTOR OR COLLECTOR BUSS BAR
- ALL TMA'S AND DIPLEXERS MUST BE GROUNDED TO BUSS BAR. NO DAISY CHAIN ON TWIN/DUAL TMA
- ALL LUGS SHOULD BE PROPERLY SIZED FOR CONDUCTOR, BURNDY TINNED COPPER COMPRESSION STYLE
  1. INDOOR (OR INSIDE CABINET) SHOULD HAVE WINDOW
  2. OUTDOOR SHOULD NOT HAVE WINDOW
- CONTRACTOR TO VERIFY EXISTENCE AND LOCATION OF EXISTING SITE GROUND SYSTEM.
- CONTRACTOR SHALL VERIFY THAT GROUNDING ELECTRODES SHALL BE CONNECTED IN A RING USING #2 AWG BARE TINNED COPPER WIRE. THE TOP OF THE GROUND RODS AND THE RING CONDUCTOR SHALL BE 30" BELOW FINISHED GRADE, OR TO FROST DEPTH, WHICHEVER IS GREATER. GROUNDING ELECTRODES SHALL BE DRIVEN ON 10'-0" CENTERS (PROVIDE AND INSTALL AS REQUIRED. REQUIRED PER PLAN BELOW).
- GROUNDING CONDUCTORS SHALL BE OF EQUAL LENGTH, MATERIAL, AND BONDING TECHNIQUE.
- CONTRACTOR SHALL ENSURE GROUND RING IS WITHIN 12 TO 36 INCHES OF THE EQUIPMENT PAD. PROVIDE AND INSTALL GROUNDING CONNECTIONS SHOWN BELOW AS NEEDED PER EXISTING SITE GROUNDING SYSTEM. CONTRACTOR SHALL VERIFY ALL EXISTING SITE GROUNDING CONDITIONS BEFORE STARTING WORK OR PURCHASING EQUIPMENT.
- ALL DOWN CONDUCTORS MUST GO DOWN.



NOTE:

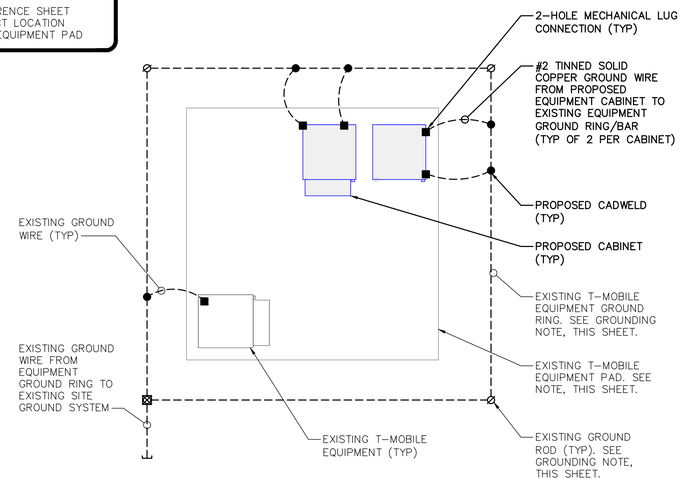
ALL NEW GROUNDS TO BE #6 STRANDED COPPER WITH GREEN INSULATION UNLESS NOTED OTHERWISE.

GROUNDING SHOWN TYPICAL PER SECTOR.

1 TYPICAL ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

NOTE:

CONTRACTOR TO REFERENCE SHEET C-1.1 & 1.2 FOR EXACT LOCATION AND ORIENTATION OF EQUIPMENT PAD



2 TYPICAL CABINET GROUNDING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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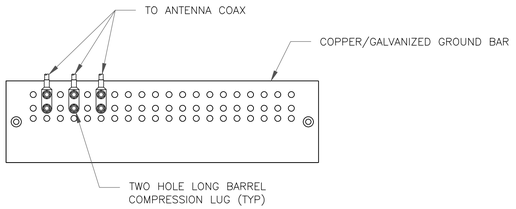
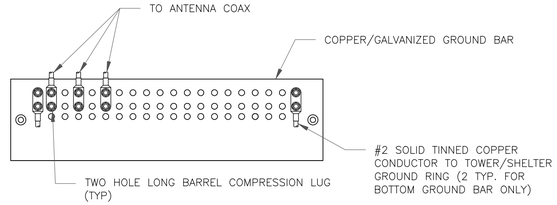


NOTES:

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.

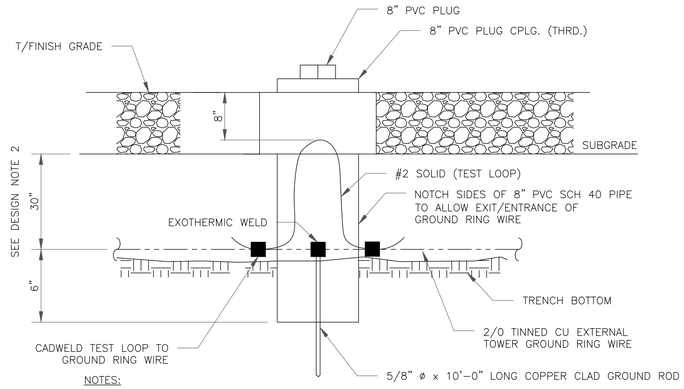
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

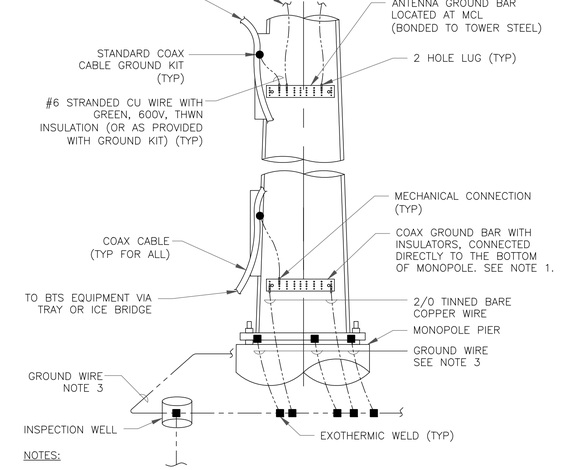
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

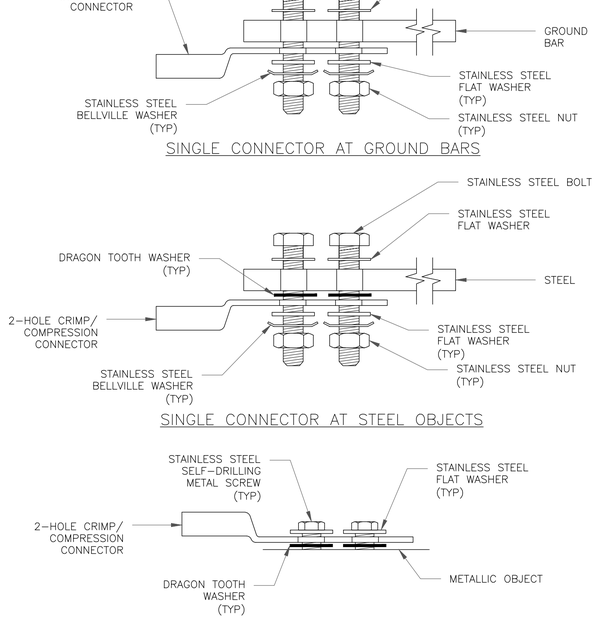
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



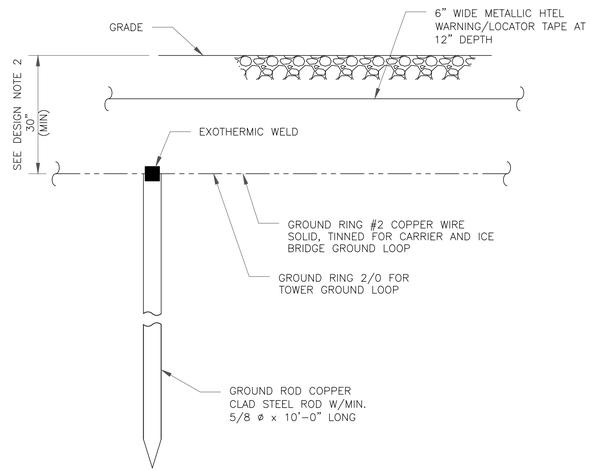
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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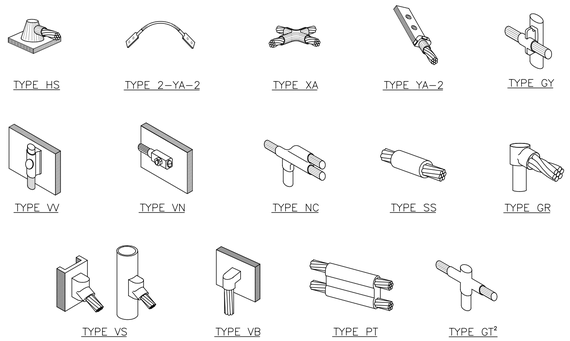
SEAL:

STATE OF CONNECTICUT 29538 LICENSED PROFESSIONAL ENGINEER

03/31/21

SHEET NUMBER: G-2

REVISION: 0

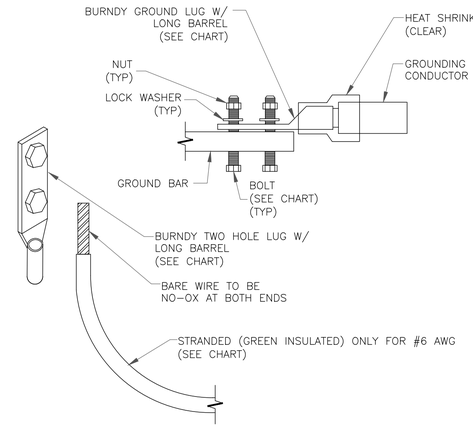


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

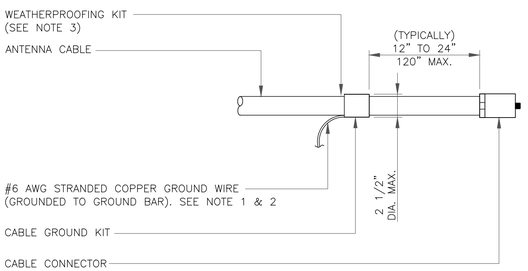
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER,GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

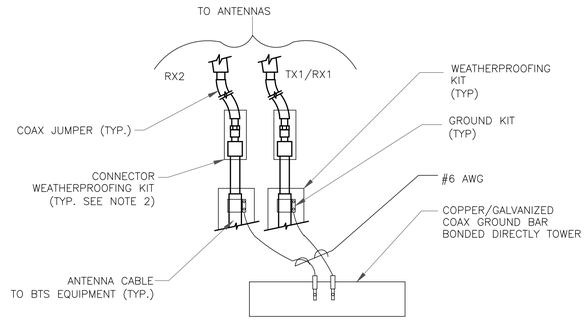
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



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.

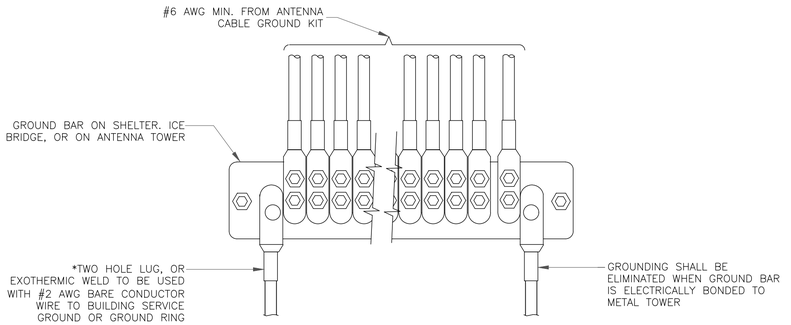
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



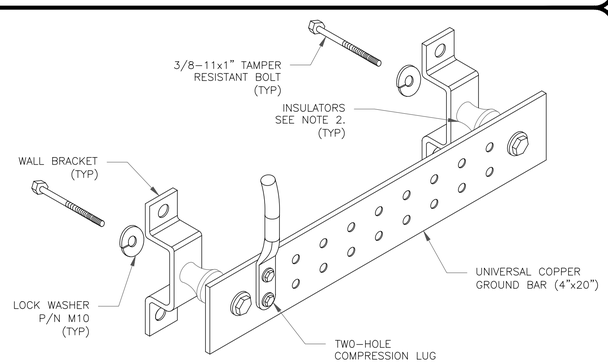
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



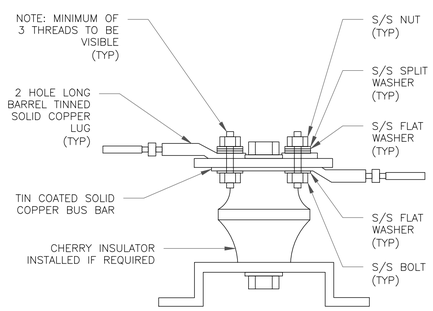
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



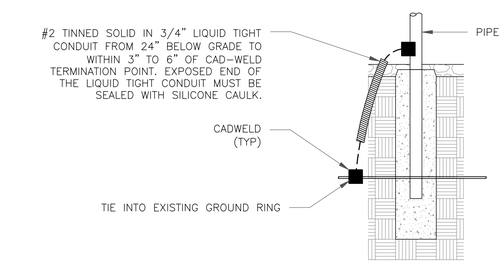
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

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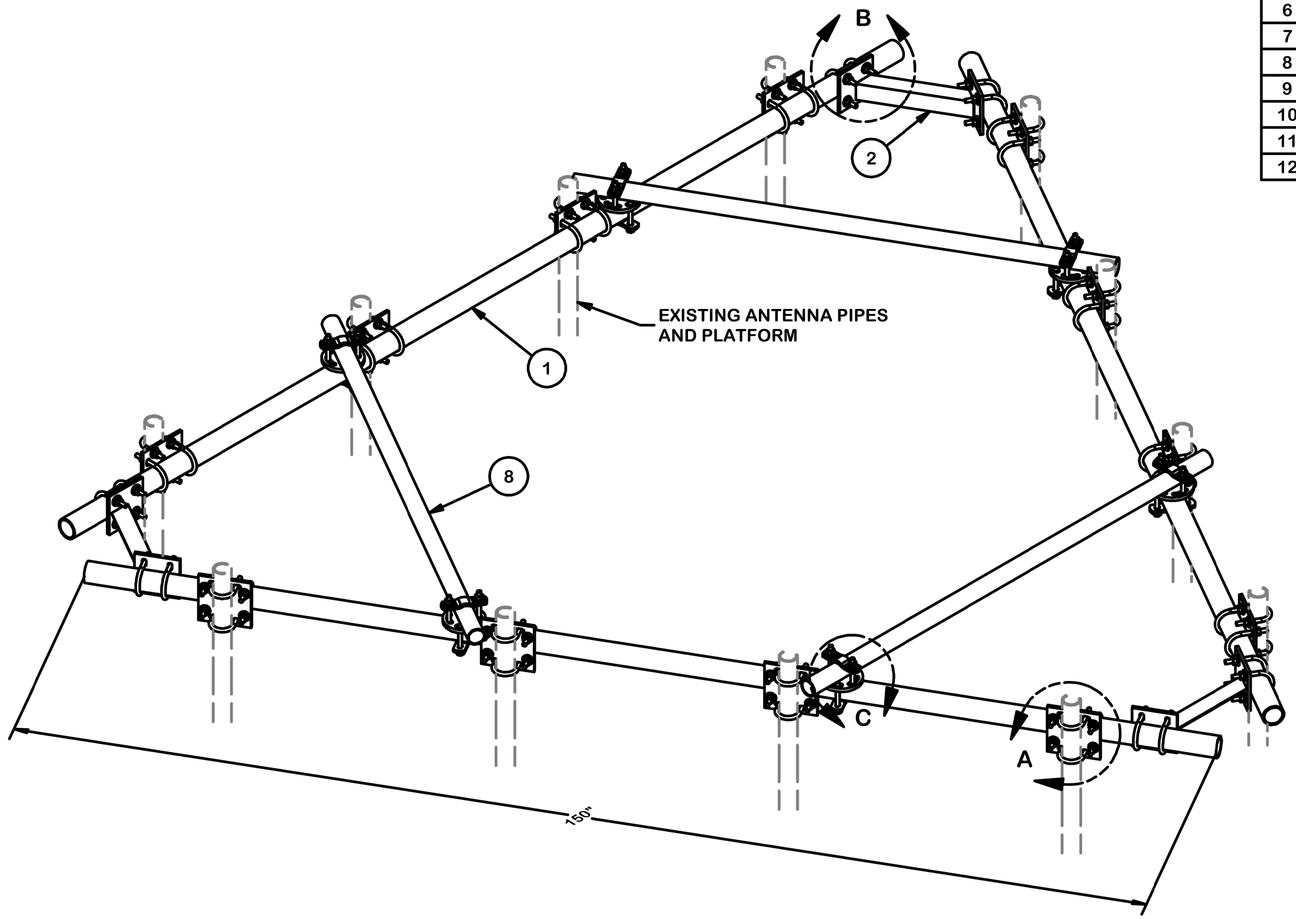
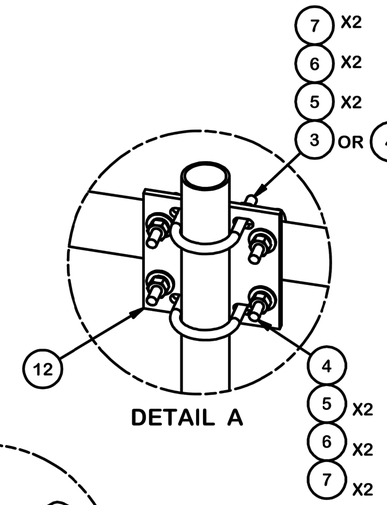
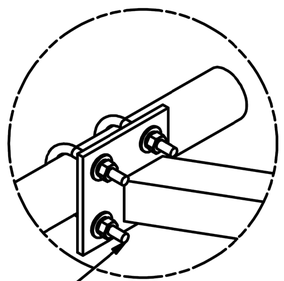


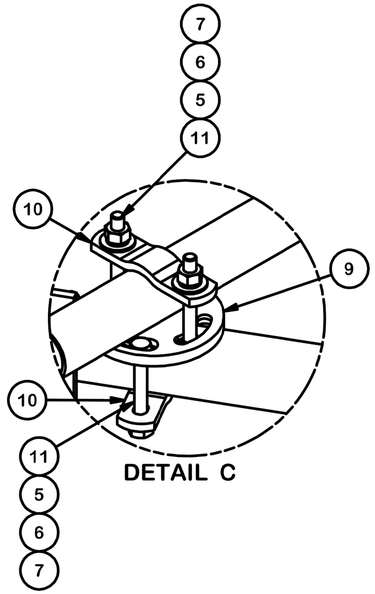
PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P30150	2-7/8" O.D. X 150" SCH. 40 PIPE	150 in	76.94	230.81
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.73	17.56
4	60	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.73	43.90
5	144	G12FW	1/2" HDG USS FLATWASHER		0.03	4.91
6	144	G12LW	1/2" HDG LOCKWASHER		0.01	2.00
7	144	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	10.31
8	3	P272	2-3/8" X 72" SCH 40 GALVANIZED PIPE	72 in	23.07	69.20
9	6	X-127594	FLAT DISK CLAMP PLATE 4" CENTERS (GALVANIZED)		2.48	14.90
10	12	X-100064	CLAMP (S) (4" V-CLAMP) GALVANIZED		0.91	10.95
11	24	G1204	1/2" x 4" HDG HEX BOLT GR5 FULL THREAD	4 in	0.27	6.48
12	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
					TOTAL WT. #	502.34



DETAIL A



DETAIL B



DETAIL C

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")*

DESCRIPTION
HEAY DUTY HANDRAIL KIT
FOR 12' PLATFORMS WITH
2-7/8" HANDRAIL PIPES

SITE PRO 1
A valmont COMPANY
Engineering
Support Team:
1-888-753-7446
Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
	CEK 4/6/2015		HRK12-3HD	1 OF 1

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 4/7/2015	HRK12-3HD

Exhibit D

Structural Analysis Report

Date: **February 18, 2021**

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351

Subject: Structural Analysis Report

Carrier Designation:	***Sprint PCS* Co-Locate**	
	Site Number:	CTNH318A
	Site Name:	CTNH318A
Crown Castle Designation:	**BU Number:**	876361
	Site Name:	Seymour 2 / Oxford Town Garage
	JDE Job Number:	628845
	Work Order Number:	1918888
	Order Number:	538756 Rev. 1
Engineering Firm Designation:	**TEP Project Number:**	25610.498327
Site Data:	**20 Great Oak Rd., Oxford, New Haven County, CT 06478** **Latitude *41° 25' 34.91"*, Longitude *-73° 8' 39.33"*** **150 Foot - Monopole Tower**	

Tower Engineering Professionals 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:

LC5: Proposed Equipment Configuration **Sufficient Capacity**

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.

Structural analysis prepared by: Ihar V. Viarenich / JSC

Respectfully submitted by:

Aaron T. Rucker, P.E.

Electronic Copy

02/18/2021

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1) INTRODUCTION

This tower is a 150-ft monopole tower designed by Engineered Endeavors, Inc. The tower has been modified per reinforcement drawings prepared by Paul J. Ford and Company in June of 2012.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor:	1.0
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)
150.0	150.0	3	RFS Celwave	APX16DWV-16DWV-S-E-A20	4	1-5/8
		3	RFS Celwave	APXVAALL24_43-U-NA20_TMO		
		3	Ericsson	AIR6449 B41_T-Mobile		
		3	Ericsson	Radio 4415 B66A_CCIV3		
		3	Ericsson	Radio 4424 B25_TMO		
		3	Ericsson	Radio 4449 B71 B85A_T-Mobile		
		1	Site Pro 1	HRK12-3HD Supporting Rail Kit		
		1	Tower Mounts	Platform Mount [LP 604-1]		
85.0	86.0	1	Lucent	KS24019-L112D	2	1/2
		1	Lucent	KS24019-L112A		
	85.0	1	Tower Mounts	Side Arm Mount [SO 701-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
148.0	150.0	3	Alcatel Lucent	800MHZ RRH	-	-
		3	Alcatel Lucent	800 External Notch Filter		
	148.0	3	Alcatel Lucent	1900MHz RRH (65MHz)		
		1	Tower Mounts	Pipe Mount [PM 601-3]		
140.0	141.0	6	Antel	LPA-80063-6CF-EDIN-2 w/ Mount Pipe	18	1-5/8
		3	Antel	BXA-70063-6CF-2 w/ Mount Pipe		
		3	Antel	BXA-171063-12BF w/ Mount Pipe		
	140.0	1	Tower Mounts	Platform Mount [LP 714-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
127.0	128.0	3	Andrew	SBNH-1D6565C w/ Mount Pipe	2 4 12	3/8 3/4 1-1/4
		4	Kathrein	80010966 w/ Mount Pipe		
		2	Kathrein	80010965 w/ Mount Pipe		
		3	Ericsson	RRUS 8843 B2/B66A		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Communication Components Inc.	DTMABP7819VG12A		
		1	Raycap	DC6-48-60-18-8F		
		1	Raycap	DC6-48-60-18-8C-EV		
	127.0	1	Tower Mounts	Platform Mount [LP 305-1_HR-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	1532984	CCISites
Tower Foundation Drawings	1447042	CCISites
Tower Manufacturer Drawings	1446979	CCISites
Tower Design Calculations	1440577	CCISites
Tower Reinforcement Drawings	3354881	CCISites
Post-Modification Inspection	3680653	CCISites
Post-Modification Inspection	3772404	CCISites

3.1) Analysis Method

tnxTower (version 8.0.7.5), 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 presented in Appendix C.

3.2) Assumptions

1) The tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2, and the referenced drawings.
3) The following material grades were assumed:
   a) Concrete compressive strength: f'c = 3 ksi
   b) Foundation reinforcement (ties): fy = 40 ksi
   c) Foundation flexural reinforcement: fy = 60 ksi

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)[1,2]

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP16.08x15x0.1875	Pole	13.1%	Pass
145 - 140	Pole	TP17.16x16.08x0.1875	Pole	23.6%	Pass
140 - 135	Pole	TP18.239x17.16x0.1875	Pole	41.8%	Pass
135 - 130	Pole	TP19.319x18.239x0.1875	Pole	55.8%	Pass
130 - 126.59	Pole	TP20.74x19.319x0.1875	Pole	65.5%	Pass
126.59 - 121.59	Pole	TP20.744x19.68x0.25	Pole	61.1%	Pass
121.59 - 117	Pole	TP21.72x20.744x0.25	Pole	69.3%	Pass
117 - 116.75	Pole + Reinf.	TP21.773x21.72x0.5625	Reinf. 6 Connection	65.7%	Pass
116.75 - 111.75	Pole + Reinf.	TP22.836x21.773x0.55	Reinf. 6 Compression	74.5%	Pass
111.75 - 106.75	Pole + Reinf.	TP23.899x22.836x0.525	Reinf. 6 Compression	82.3%	Pass
106.75 - 101.75	Pole	TP24.962x23.899x0.25	Pole	88.7%	Pass
101.75 - 96.75	Pole	TP26.026x24.962x0.25	Pole	93.7%	Pass
96.75 - 91.75	Pole	TP27.089x26.026x0.25	Pole	98.1%	Pass
91.75 - 90.04	Pole	TP28.32x27.089x0.25	Pole	99.4%	Pass
90.04 - 84.96	Pole + Reinf.	TP28.035x26.952x0.675	Reinf. 5 Connection	80.6%	Pass
84.96 - 79.96	Pole	TP29.1x28.035x0.3125	Pole	83.8%	Pass
79.96 - 74.96	Pole	TP30.165x29.1x0.3125	Pole	85.2%	Pass
74.96 - 69.96	Pole	TP31.23x30.165x0.3125	Pole	87.0%	Pass
69.96 - 64.96	Pole	TP32.296x31.23x0.3125	Pole	88.5%	Pass
64.96 - 60.5	Pole	TP33.246x32.296x0.3125	Pole	89.7%	Pass
60.5 - 60.25	Pole + Reinf.	TP33.299x33.246x0.6	Reinf. 4 Tension Rupture	67.6%	Pass
60.25 - 55.25	Pole + Reinf.	TP34.364x33.299x0.5875	Reinf. 4 Tension Rupture	69.0%	Pass
55.25 - 50.25	Pole + Reinf.	TP35.43x34.364x0.5875	Reinf. 4 Tension Rupture	70.2%	Pass
50.25 - 47.58	Pole + Reinf.	TP37.1x35.43x0.575	Reinf. 4 Tension Rupture	70.8%	Pass
47.58 - 41.41	Pole + Reinf.	TP36.687x35.374x0.6375	Reinf. 4 Tension Rupture	66.8%	Pass
41.41 - 36.41	Pole + Reinf.	TP37.751x36.687x0.625	Reinf. 4 Tension Rupture	67.6%	Pass
36.41 - 31.41	Pole + Reinf.	TP38.815x37.751x0.625	Reinf. 4 Tension Rupture	68.2%	Pass
31.41 - 30.5	Pole + Reinf.	TP39.009x38.815x0.6125	Reinf. 4 Tension Rupture	68.4%	Pass
30.5 - 30.25	Pole + Reinf.	TP39.062x39.009x0.6125	Reinf. 3 Tension Rupture	68.4%	Pass
30.25 - 25.25	Pole + Reinf.	TP40.126x39.062x0.6125	Reinf. 3 Tension Rupture	69.0%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
25.25 - 20.25	Pole + Reinf.	TP41.19x40.126x0.6	Reinf. 3 Tension Rupture	69.5%	Pass
20.25 - 18	Pole + Reinf.	TP41.669x41.19x0.6	Reinf. 3 Tension Rupture	69.7%	Pass
18 - 17.75	Pole + Reinf.	TP41.722x41.669x0.5563	Reinf. 1 Tension Rupture	71.6%	Pass
17.75 - 12.75	Pole + Reinf.	TP42.786x41.722x0.55	Reinf. 1 Tension Rupture	72.0%	Pass
12.75 - 7.75	Pole + Reinf.	TP43.851x42.786x0.55	Reinf. 1 Tension Rupture	72.3%	Pass
7.75 - 2.75	Pole + Reinf.	TP44.915x43.851x0.5375	Reinf. 1 Tension Rupture	72.6%	Pass
2.75 - 0	Pole + Reinf.	TP45.5x44.915x0.5375	Reinf. 1 Tension Rupture	72.7%	Pass
				Summary	
			Pole	99.4%	Pass
			Reinforcement	82.3%	Pass
			Overall	**99.4%**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	61.9	Pass
1,2	Base Plate	-	71.0	Pass
1,2	Base Foundation Soil Interaction	-	98.8	Pass
1,2	Base Foundation Structural	-	87.5	Pass

Structure Rating (max from all components) =	**99.4%**

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) Rating per TIA-222-H Section 15.5

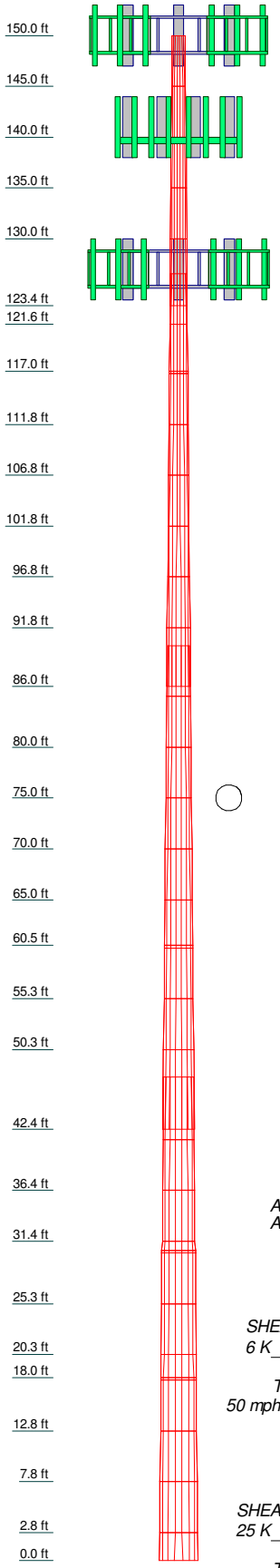
4.1) Recommendations

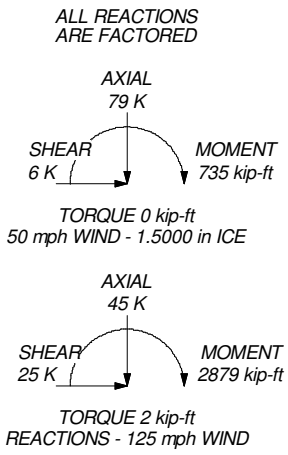
1) The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	18	0.1875		15.0000	16.0798		0.2
2	5.00	18	0.1875		16.0798	17.1595		0.2
3	5.00	18	0.1875		17.1595	18.2393		0.2
4	5.00	18	0.1875		18.2393	19.3190		0.2
5	6.58	18	0.1875	3.17	19.3190	20.7400		0.3
6	5.00	18	0.2500		20.7400	21.7436		0.3
7	4.59	18	0.2500		21.7436	22.8360		0.3
8	0.00	18	0.2500		22.8360	22.8360		0.0
9	5.00	18	0.5500		22.8360	23.8992		0.6
10	5.00	18	0.5250		23.8992	24.9624		0.6
11	5.00	18	0.2500		24.9624	26.0256		0.3
12	5.00	18	0.2500		26.0256	27.0888		0.3
13	5.00	18	0.2500		27.0888	28.1520		0.4
14	5.00	18	0.2500	4.08	28.1520	29.2152		0.4
15	5.00	18	0.6750		29.2152	30.0344		0.9
16	5.00	18	0.3125		30.0344	31.1000		0.5
17	5.00	18	0.3125		31.1000	32.1652		0.5
18	5.00	18	0.3125		32.1652	33.2305		0.5
19	5.00	18	0.3125		33.2305	34.2957		0.5
20	5.46	18	0.3125		34.2957	35.4297		0.5
21	0.00	18	0.7500		35.4297	35.4297		0.0
22	5.00	18	0.5875		35.4297	36.6875		1.0
23	5.00	18	0.5875		36.6875	37.7500		1.0
24	6.84	18	0.5750	5.17	37.7500	39.0686		1.6
25	0.00	18	0.6375		39.0686	39.0686		1.4
26	5.00	18	0.6250		39.0686	40.1260		1.2
27	5.00	18	0.6250		40.1260	41.1902		1.2
28	0.00	18	0.6250		41.1902	41.1902		0.0
30	5.00	18	0.6000		41.1902	42.2545		1.2
31	5.00	18	0.6000		42.2545	43.3187		1.2
32	0.25	18	0.5625		43.3187	43.4506		0.0
34	5.00	18	0.5500		43.4506	44.5148		1.3
35	5.00	18	0.5500		44.5148	45.5790		1.3
36	5.00	18	0.5375		45.5790	46.6432		1.3
37	2.75	18	0.5375		46.6432	47.0000		0.7
							A572-65	23.0





MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 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: 99.4%

Tower Engineering Professionals

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Job:	***Seymour 2 / Oxford Town Garage (BU 876361)***		
Project:	***TEP No. 25610.498327***		
Client: Crown Castle	Drawn by: Ihar V. Viarenich, P.E.	App'd:	
Code: TIA-222-H	Date: 02/18/21	Scale: NTS	
Path: C:\Users\iviarenich\Desktop\25610_Seymour 2_Oxford Town Garage\tnxTower\mods.eri		Dwg No. E-1	

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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 New Haven County, Connecticut.
Tower base elevation above sea level: 734.00 ft.
Basic wind speed of 125 mph.
Risk Category II.
Exposure Category B.
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.
Tower Rating: 99.4%.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.05.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.00-145.00	5.00	0.00	18	15.0000	16.0798	0.1875	0.7500	A572-65 (65 ksi)
L2	145.00-140.00	5.00	0.00	18	16.0798	17.1595	0.1875	0.7500	A572-65 (65 ksi)
L3	140.00-135.00	5.00	0.00	18	17.1595	18.2393	0.1875	0.7500	A572-65 (65 ksi)
L4	135.00-130.00	5.00	0.00	18	18.2393	19.3190	0.1875	0.7500	A572-65 (65 ksi)
L5	130.00-123.42	6.58	3.17	18	19.3190	20.7400	0.1875	0.7500	A572-65 (65 ksi)
L6	123.42-121.59	5.00	0.00	18	19.6804	20.7436	0.2500	1.0000	A572-65 (65 ksi)
L7	121.59-117.00	4.59	0.00	18	20.7436	21.7197	0.2500	1.0000	A572-65 (65 ksi)
L8	117.00-116.75	0.25	0.00	18	21.7197	21.7728	0.5625	2.2500	A572-65 (65 ksi)
L9	116.75-111.75	5.00	0.00	18	21.7728	22.8360	0.5500	2.2000	A572-65 (65 ksi)
L10	111.75-106.75	5.00	0.00	18	22.8360	23.8992	0.5250	2.1000	A572-65 (65 ksi)
L11	106.75-101.75	5.00	0.00	18	23.8992	24.9624	0.2500	1.0000	A572-65 (65 ksi)
L12	101.75-96.75	5.00	0.00	18	24.9624	26.0256	0.2500	1.0000	A572-65 (65 ksi)
L13	96.75-91.75	5.00	0.00	18	26.0256	27.0888	0.2500	1.0000	A572-65 (65 ksi)
L14	91.75-85.96	5.79	4.08	18	27.0888	28.3200	0.2500	1.0000	A572-65 (65 ksi)
L15	85.96-84.96	5.08	0.00	18	26.9524	28.0347	0.6750	2.7000	A572-65 (65 ksi)
L16	84.96-79.96	5.00	0.00	18	28.0347	29.1000	0.3125	1.2500	A572-65 (65 ksi)
L17	79.96-74.96	5.00	0.00	18	29.1000	30.1652	0.3125	1.2500	A572-65 (65 ksi)
L18	74.96-69.96	5.00	0.00	18	30.1652	31.2305	0.3125	1.2500	A572-65 (65 ksi)
L19	69.96-64.96	5.00	0.00	18	31.2305	32.2957	0.3125	1.2500	A572-65 (65 ksi)
L20	64.96-60.50	4.46	0.00	18	32.2957	33.2459	0.3125	1.2500	A572-65 (65 ksi)
L21	60.50-60.25	0.25	0.00	18	33.2459	33.2992	0.6000	2.4000	A572-65 (65 ksi)
L22	60.25-55.25	5.00	0.00	18	33.2992	34.3644	0.5875	2.3500	A572-65 (65 ksi)
L23	55.25-50.25	5.00	0.00	18	34.3644	35.4297	0.5875	2.3500	A572-65 (65 ksi)
L24	50.25-42.41	7.84	5.17	18	35.4297	37.1000	0.5750	2.3000	A572-65 (65 ksi)
L25	42.41-41.41	6.17	0.00	18	35.3735	36.6867	0.6375	2.5500	A572-65 (65 ksi)
L26	41.41-36.41	5.00	0.00	18	36.6867	37.7508	0.6250	2.5000	A572-65 (65 ksi)
L27	36.41-31.41	5.00	0.00	18	37.7508	38.8150	0.6250	2.5000	A572-65 (65 ksi)
L28	31.41-30.50	0.91	0.00	18	38.8150	39.0087	0.6125	2.4500	A572-65 (65 ksi)
L29	30.50-30.25	0.25	0.00	18	39.0087	39.0619	0.6125	2.4500	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L30	30.25-25.25	5.00	0.00	18	39.0619	40.1260	0.6125	2.4500	A572-65 (65 ksi)
L31	25.25-20.25	5.00	0.00	18	40.1260	41.1902	0.6000	2.4000	A572-65 (65 ksi)
L32	20.25-18.00	2.25	0.00	18	41.1902	41.6691	0.6000	2.4000	A572-65 (65 ksi)
L33	18.00-17.75	0.25	0.00	18	41.6691	41.7223	0.5563	2.2250	A572-65 (65 ksi)
L34	17.75-12.75	5.00	0.00	18	41.7223	42.7864	0.5500	2.2000	A572-65 (65 ksi)
L35	12.75-7.75	5.00	0.00	18	42.7864	43.8506	0.5500	2.2000	A572-65 (65 ksi)
L36	7.75-2.75	5.00	0.00	18	43.8506	44.9147	0.5375	2.1500	A572-65 (65 ksi)
L37	2.75-0.00	2.75		18	44.9147	45.5000	0.5375	2.1500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	15.2025	8.8153	244.3603	5.2584	7.6200	32.0683	489.0422	4.4085	2.3100	12.32
	16.2989	9.4579	301.7884	5.6418	8.1685	36.9453	603.9739	4.7298	2.5000	13.334
L2	16.2989	9.4579	301.7884	5.6418	8.1685	36.9453	603.9739	4.7298	2.5000	13.334
	17.3953	10.1005	367.5751	6.0251	8.7170	42.1674	735.6339	5.0512	2.6901	14.347
L3	17.3953	10.1005	367.5751	6.0251	8.7170	42.1674	735.6339	5.0512	2.6901	14.347
	18.4917	10.7431	442.2884	6.4084	9.2656	47.7347	885.1589	5.3726	2.8801	15.361
L4	18.4917	10.7431	442.2884	6.4084	9.2656	47.7347	885.1589	5.3726	2.8801	15.361
	19.5881	11.3857	526.4962	6.7917	9.8141	53.6471	1053.6852	5.6939	3.0702	16.374
L5	19.5881	11.3857	526.4962	6.7917	9.8141	53.6471	1053.6852	5.6939	3.0702	16.374
	21.0310	12.2313	652.7391	7.2961	10.5359	61.9537	1306.3371	6.1168	3.3202	17.708
L6	20.6299	15.4180	735.4139	6.8978	9.9977	73.5586	1471.7954	7.7105	3.0238	12.095
	21.0251	16.2617	862.8618	7.2752	10.5378	81.8828	1726.8590	8.1324	3.2109	12.844
L7	21.0251	16.2617	862.8618	7.2752	10.5378	81.8828	1726.8590	8.1324	3.2109	12.844
	22.0161	17.0362	992.1089	7.6217	11.0336	89.9172	1985.5232	8.5197	3.3827	13.531
L8	21.9679	37.7734	2136.1830	7.5108	11.0336	193.6074	4275.1769	18.8903	2.8327	5.036
	22.0219	37.8684	2152.3258	7.5297	11.0606	194.5942	4307.4837	18.9378	2.8420	5.052
L9	22.0238	37.0487	2108.2193	7.5341	11.0606	190.6064	4219.2126	18.5279	2.8640	5.207
	23.1034	38.9047	2441.2044	7.9115	11.6007	210.4361	4885.6210	19.4560	3.0511	5.548
L10	23.1073	37.1780	2338.0914	7.9204	11.6007	201.5475	4679.2593	18.5925	3.0951	5.896
	24.1869	38.9496	2688.5283	8.2978	12.1408	221.4457	5380.5942	19.4785	3.2823	6.252
L11	24.2293	18.7656	1325.9722	8.3955	12.1408	109.2162	2653.6891	9.3846	3.7663	15.065
	25.3089	19.6093	1512.9683	8.7729	12.6809	119.3107	3027.9275	9.8065	3.9534	15.814
L12	25.3089	19.6093	1512.9683	8.7729	12.6809	119.3107	3027.9275	9.8065	3.9534	15.814
	26.3885	20.4529	1716.7671	9.1503	13.2210	129.8514	3435.7932	10.2284	4.1405	16.562
L13	26.3885	20.4529	1716.7671	9.1503	13.2210	129.8514	3435.7932	10.2284	4.1405	16.562
	27.4681	21.2966	1938.0918	9.5278	13.7611	140.8383	3878.7338	10.6503	4.3276	17.311
L14	27.4681	21.2966	1938.0918	9.5278	13.7611	140.8383	3878.7338	10.6503	4.3276	17.311
	28.7183	22.2735	2217.2345	9.9649	14.3866	154.1185	4437.3864	11.1389	4.5443	18.177
L15	28.1467	56.2981	4911.3028	9.3285	13.6918	358.7031	9829.0680	28.1544	3.5556	5.268
	28.3631	58.6168	5543.4889	9.7127	14.2416	389.2452	11094.2722	29.3140	3.7461	5.55
L16	28.4190	27.4970	2669.7986	9.8414	14.2416	187.4643	5343.1102	13.7511	4.3841	14.029
	29.5007	28.5536	2989.5442	10.2196	14.7828	202.2315	5983.0221	14.2795	4.5716	14.629
L17	29.5007	28.5536	2989.5442	10.2196	14.7828	202.2315	5983.0221	14.2795	4.5716	14.629
	30.5824	29.6102	3333.8511	10.5977	15.3239	217.5585	6672.0890	14.8079	4.7591	15.229
L18	30.5824	29.6102	3333.8511	10.5977	15.3239	217.5585	6672.0890	14.8079	4.7591	15.229

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	31.6640	30.6668	3703.6283	10.9759	15.8651	233.4453	7412.1299	15.3363	4.9466	15.829
L19	31.6640	30.6668	3703.6283	10.9759	15.8651	233.4453	7412.1299	15.3363	4.9466	15.829
	32.7457	31.7234	4099.7845	11.3540	16.4062	249.8920	8204.9637	15.8647	5.1340	16.429
L20	32.7457	31.7234	4099.7845	11.3540	16.4062	249.8920	8204.9637	15.8647	5.1340	16.429
	33.7106	32.6658	4476.1547	11.6914	16.8889	265.0348	8958.1993	16.3360	5.3013	16.964
L21	33.6662	62.1709	8371.1006	11.5893	16.8889	495.6561	16753.2160	31.0914	4.7953	7.992
	33.7203	62.2723	8412.1407	11.6082	16.9160	497.2894	16835.3503	31.1421	4.8047	8.008
L22	33.7223	60.9983	8246.3376	11.6126	16.9160	487.4878	16503.5259	30.5049	4.8267	8.216
	34.8039	62.9847	9078.4786	11.9908	17.4571	520.0440	18168.9029	31.4983	5.0141	8.535
L23	34.8039	62.9847	9078.4786	11.9908	17.4571	520.0440	18168.9029	31.4983	5.0141	8.535
	35.8856	64.9711	9964.7981	12.3690	17.9983	553.6528	19942.7081	32.4917	5.2016	8.854
L24	35.8875	63.6115	9763.2816	12.3734	17.9983	542.4563	19539.4100	31.8118	5.2236	9.085
	37.5836	66.6600	11235.2539	12.9664	18.8468	596.1359	22485.2914	33.3363	5.5176	9.596
L25	36.9382	70.2858	10714.3331	12.3313	17.9698	596.2426	21442.7643	35.1496	5.1037	8.006
	37.1543	72.9428	11975.9859	12.7975	18.6368	642.5974	23967.7301	36.4784	5.3349	8.368
L26	37.1562	71.5374	11753.3805	12.8019	18.6368	630.6530	23522.2265	35.7755	5.3569	8.571
	38.2368	73.6484	12824.8857	13.1797	19.1774	668.7489	25666.6466	36.8312	5.5441	8.871
L27	38.2368	73.6484	12824.8857	13.1797	19.1774	668.7489	25666.6466	36.8312	5.5441	8.871
	39.3174	75.7594	13959.6104	13.5574	19.7180	707.9621	27937.5892	37.8869	5.7314	9.17
L28	39.3193	74.2685	13693.8558	13.5619	19.7180	694.4844	27405.7303	37.1413	5.7534	9.393
	39.5160	74.6450	13903.1856	13.6306	19.8164	701.5997	27824.6653	37.3296	5.7875	9.449
L29	39.5160	74.6450	13903.1856	13.6306	19.8164	701.5997	27824.6653	37.3296	5.7875	9.449
	39.5700	74.7485	13961.0653	13.6495	19.8434	703.5609	27940.5008	37.3813	5.7969	9.464
L30	39.5700	74.7485	13961.0653	13.6495	19.8434	703.5609	27940.5008	37.3813	5.7969	9.464
	40.6506	76.8173	15152.6312	14.0273	20.3840	743.3582	30325.2007	38.4159	5.9842	9.77
L31	40.6525	75.2734	14857.4853	14.0317	20.3840	728.8789	29734.5205	37.6438	6.0062	10.01
	41.7331	77.2999	16090.0990	14.4095	20.9246	768.9556	32201.3697	38.6573	6.1935	10.322
L32	41.7331	77.2999	16090.0990	14.4095	20.9246	768.9556	32201.3697	38.6573	6.1935	10.322
	42.2193	78.2119	16666.3202	14.5795	21.1679	787.3401	33354.5703	39.1134	6.2778	10.463
L33	42.2261	72.5862	15500.4994	14.5950	21.1679	732.2651	31021.3947	36.3000	6.3548	11.424
	42.2801	72.6801	15560.7582	14.6139	21.1949	734.1743	31141.9916	36.3470	6.3641	11.441
L34	42.2810	71.8744	15392.9271	14.6162	21.1949	726.2559	30806.1087	35.9440	6.3751	11.591
	43.3616	73.7321	16617.5941	14.9939	21.7355	764.5371	33257.0540	36.8731	6.5624	11.932
L35	43.3616	73.7321	16617.5941	14.9939	21.7355	764.5371	33257.0540	36.8731	6.5624	11.932
	44.4422	75.5898	17905.5535	15.3717	22.2761	803.8016	35834.6677	37.8021	6.7497	12.272
L36	44.4441	73.8932	17513.7680	15.3761	22.2761	786.2138	35050.5811	36.9536	6.7717	12.599
	45.5247	75.7086	18836.6223	15.7539	22.8167	825.5638	37698.0304	37.8615	6.9590	12.947
L37	45.5247	75.7086	18836.6223	15.7539	22.8167	825.5638	37698.0304	37.8615	6.9590	12.947
	46.1190	76.7071	19591.7935	15.9617	23.1140	847.6159	39209.3663	38.3609	7.0620	13.139

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 150.00-145.00				1	1	1			
L2 145.00-140.00				1	1	1			
L3 140.00-135.00				1	1	1			
L4 135.00-130.00				1	1	1			
L5 130.00-123.42				1	1	1			
L6 123.42-121.59				1	1	1			
L7 121.59-117.00				1	1	1			
L8 117.00-116.75				1	1	0.898612			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L9 116.75-111.75				1	1	0.89636			
L10 111.75-106.75				1	1	0.916986			
L11 106.75-101.75				1	1	1			
L12 101.75-96.75				1	1	1			
L13 96.75-91.75				1	1	1			
L14 91.75-85.96				1	1	1			
L15 85.96-84.96				1	1	0.902606			
L16 84.96-79.96				1	1	1			
L17 79.96-74.96				1	1	1			
L18 74.96-69.96				1	1	1			
L19 69.96-64.96				1	1	1			
L20 64.96-60.50				1	1	1			
L21 60.50-60.25				1	1	0.933474			
L22 60.25-55.25				1	1	0.939691			
L23 55.25-50.25				1	1	0.927224			
L24 50.25-42.41				1	1	0.940561			
L25 42.41-41.41				1	1	0.940886			
L26 41.41-36.41				1	1	0.94907			
L27 36.41-31.41				1	1	0.939344			
L28 31.41-30.50				1	1	0.956455			
L29 30.50-30.25				1	1	0.955979			
L30 30.25-25.25				1	1	0.946722			
L31 25.25-20.25				1	1	0.957196			
L32 20.25-18.00				1	1	0.953322			
L33 18.00-17.75				1	1	1.02675			
L34 17.75-12.75				1	1	1.02928			
L35 12.75-7.75				1	1	1.02074			
L36 7.75-2.75				1	1	1.03587			
L37 2.75-0.00				1	1	1.03147			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
***										
Safety Line 3/8	B	No	Surface Ar (CaAa)	150.00 - 0.00	1	1	0.000 0.000	0.3750		0.00
***										
HB158-21U6S24-xxM_TMO(1-5/8)	A	No	Surface Ar (CaAa)	150.00 - 0.00	4	4	0.000 0.000	1.9960		0.00
***										
LDF7-50A(1-5/8)	C	No	Surface Ar (CaAa)	140.00 - 0.00	6	6	0.000 0.000	1.9800		0.00
***										
LDF4-50A(1/2)	A	No	Surface Ar (CaAa)	85.00 - 0.00	2	2	0.500 0.500	0.6250		0.00
***										
(Area) Aero MP3-06 (H)	A	No	Surface Af (CaAa)	90.50 - 0.00	1	1	0.000 0.000	6.8900	18.9800	0.00
(Area) Aero MP3-06 (H)	B	No	Surface Af (CaAa)	90.50 - 0.00	1	1	0.000 0.000	6.8900	18.9800	0.00
(Area) Aero MP3-06 (H)	C	No	Surface Af (CaAa)	90.50 - 15.50	1	1	0.000 0.000	6.8900	18.9800	0.00
(Area) Aero MP3-06 (H)	C	No	Surface Af (CaAa)	20.50 - 0.00	1	1	0.000 0.000	6.8900	18.9800	0.00
*										
(Area) Aero MP3-05 (H)	A	No	Surface Af (CaAa)	118.00 - 88.00	1	1	0.000 0.000	5.3300	14.8400	0.00
(Area) Aero MP3-05 (H)	B	No	Surface Af (CaAa)	118.00 - 88.00	1	1	0.000 0.000	5.3300	14.8400	0.00
(Area) Aero MP3-05 (H)	C	No	Surface Af (CaAa)	118.00 - 88.00	1	1	0.000 0.000	5.3300	14.8400	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 klf
LDF7-50A(1-5/8)	C	No	No	Inside Pole	140.00 - 0.00	12	No Ice	0.00	0.00
							1/2" Ice	0.00	0.00
							1" Ice	0.00	0.00
							2" Ice	0.00	0.00
***									
LDF6-50A(1-1/4)	A	No	No	Inside Pole	127.00 - 0.00	12	No Ice	0.00	0.00
							1/2" Ice	0.00	0.00
							1" Ice	0.00	0.00
							2" Ice	0.00	0.00
FB-L98B-002-75000 (3/8)	A	No	No	Inside Pole	127.00 - 0.00	1	No Ice	0.00	0.00
							1/2" Ice	0.00	0.00
							1" Ice	0.00	0.00
							2" Ice	0.00	0.00
FB-L98B-034-XXX(3/8)	A	No	No	Inside Pole	127.00 - 0.00	1	No Ice	0.00	0.00
							1/2" Ice	0.00	0.00
							1" Ice	0.00	0.00
							2" Ice	0.00	0.00
WR-VG86ST-BRD(3/4)	A	No	No	Inside Pole	127.00 - 0.00	4	No Ice	0.00	0.00
							1/2" Ice	0.00	0.00

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
2" Flexible Conduit	C	No	No	Inside Pole	127.00 - 0.00	1	1" Ice	0.00	0.00
							2" Ice	0.00	0.00
							No Ice	0.00	0.00
							1/2" Ice	0.00	0.00
							1" Ice	0.00	0.00
							2" Ice	0.00	0.00

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	150.00-145.00	A	0.000	0.000	3.992	0.000	0.05
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	145.00-140.00	A	0.000	0.000	3.992	0.000	0.05
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	140.00-135.00	A	0.000	0.000	3.992	0.000	0.05
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	5.940	0.000	0.07
L4	135.00-130.00	A	0.000	0.000	3.992	0.000	0.05
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	5.940	0.000	0.07
L5	130.00-123.42	A	0.000	0.000	5.253	0.000	0.10
		B	0.000	0.000	0.247	0.000	0.00
		C	0.000	0.000	7.817	0.000	0.10
L6	123.42-121.59	A	0.000	0.000	1.461	0.000	0.04
		B	0.000	0.000	0.069	0.000	0.00
		C	0.000	0.000	2.174	0.000	0.03
L7	121.59-117.00	A	0.000	0.000	4.553	0.000	0.09
		B	0.000	0.000	1.060	0.000	0.00
		C	0.000	0.000	6.341	0.000	0.07
L8	117.00-116.75	A	0.000	0.000	0.422	0.000	0.00
		B	0.000	0.000	0.231	0.000	0.00
		C	0.000	0.000	0.519	0.000	0.00
L9	116.75-111.75	A	0.000	0.000	8.434	0.000	0.10
		B	0.000	0.000	4.629	0.000	0.00
		C	0.000	0.000	10.382	0.000	0.08
L10	111.75-106.75	A	0.000	0.000	8.434	0.000	0.10
		B	0.000	0.000	4.629	0.000	0.00
		C	0.000	0.000	10.382	0.000	0.08
L11	106.75-101.75	A	0.000	0.000	8.434	0.000	0.10
		B	0.000	0.000	4.629	0.000	0.00
		C	0.000	0.000	10.382	0.000	0.08
L12	101.75-96.75	A	0.000	0.000	8.434	0.000	0.10
		B	0.000	0.000	4.629	0.000	0.00
		C	0.000	0.000	10.382	0.000	0.08
L13	96.75-91.75	A	0.000	0.000	8.434	0.000	0.10
		B	0.000	0.000	4.629	0.000	0.00
		C	0.000	0.000	10.382	0.000	0.08
L14	91.75-85.96	A	0.000	0.000	13.167	0.000	0.11
		B	0.000	0.000	8.762	0.000	0.00
		C	0.000	0.000	15.423	0.000	0.09

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
L15	85.96-84.96	A	0.000	0.000	1.952	0.000	0.02
		B	0.000	0.000	1.186	0.000	0.00
		C	0.000	0.000	2.336	0.000	0.02
L16	84.96-79.96	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	11.682	0.000	0.08
L17	79.96-74.96	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	11.682	0.000	0.08
L18	74.96-69.96	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	11.682	0.000	0.08
L19	69.96-64.96	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	11.682	0.000	0.08
L20	64.96-60.50	A	0.000	0.000	9.240	0.000	0.09
		B	0.000	0.000	5.289	0.000	0.00
		C	0.000	0.000	10.420	0.000	0.07
L21	60.50-60.25	A	0.000	0.000	0.518	0.000	0.00
		B	0.000	0.000	0.296	0.000	0.00
		C	0.000	0.000	0.584	0.000	0.00
L22	60.25-55.25	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	11.682	0.000	0.08
L23	55.25-50.25	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	11.682	0.000	0.08
L24	50.25-42.41	A	0.000	0.000	16.242	0.000	0.16
		B	0.000	0.000	9.297	0.000	0.00
		C	0.000	0.000	18.317	0.000	0.12
L25	42.41-41.41	A	0.000	0.000	2.072	0.000	0.02
		B	0.000	0.000	1.186	0.000	0.00
		C	0.000	0.000	2.336	0.000	0.02
L26	41.41-36.41	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	11.682	0.000	0.08
L27	36.41-31.41	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	11.682	0.000	0.08
L28	31.41-30.50	A	0.000	0.000	1.885	0.000	0.02
		B	0.000	0.000	1.079	0.000	0.00
		C	0.000	0.000	2.126	0.000	0.01
L29	30.50-30.25	A	0.000	0.000	0.518	0.000	0.00
		B	0.000	0.000	0.296	0.000	0.00
		C	0.000	0.000	0.584	0.000	0.00
L30	30.25-25.25	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	11.682	0.000	0.08
L31	25.25-20.25	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	11.969	0.000	0.08
L32	20.25-18.00	A	0.000	0.000	4.661	0.000	0.04
		B	0.000	0.000	2.668	0.000	0.00
		C	0.000	0.000	7.840	0.000	0.03
L33	18.00-17.75	A	0.000	0.000	0.518	0.000	0.00
		B	0.000	0.000	0.296	0.000	0.00
		C	0.000	0.000	0.871	0.000	0.00
L34	17.75-12.75	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	14.265	0.000	0.08
L35	12.75-7.75	A	0.000	0.000	10.359	0.000	0.10

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	5.929	0.000	0.00
		C	0.000	0.000	11.682	0.000	0.08
L36	7.75-2.75	A	0.000	0.000	10.359	0.000	0.10
		B	0.000	0.000	5.929	0.000	0.00
		C	0.000	0.000	11.682	0.000	0.08
L37	2.75-0.00	A	0.000	0.000	5.697	0.000	0.05
		B	0.000	0.000	3.261	0.000	0.00
		C	0.000	0.000	6.425	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	150.00-145.00	A	1.481	0.000	0.000	6.841	0.000	0.12
		B		0.000	0.000	1.668	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.00
L2	145.00-140.00	A	1.476	0.000	0.000	6.835	0.000	0.12
		B		0.000	0.000	1.663	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.00
L3	140.00-135.00	A	1.471	0.000	0.000	6.828	0.000	0.12
		B		0.000	0.000	1.658	0.000	0.02
		C		0.000	0.000	9.263	0.000	0.17
L4	135.00-130.00	A	1.465	0.000	0.000	6.821	0.000	0.12
		B		0.000	0.000	1.653	0.000	0.02
		C		0.000	0.000	9.256	0.000	0.17
L5	130.00-123.42	A	1.459	0.000	0.000	8.966	0.000	0.19
		B		0.000	0.000	2.166	0.000	0.02
		C		0.000	0.000	12.171	0.000	0.22
L6	123.42-121.59	A	1.454	0.000	0.000	2.494	0.000	0.06
		B		0.000	0.000	0.602	0.000	0.01
		C		0.000	0.000	3.385	0.000	0.06
L7	121.59-117.00	A	1.450	0.000	0.000	7.423	0.000	0.17
		B		0.000	0.000	2.681	0.000	0.03
		C		0.000	0.000	9.658	0.000	0.17
L8	117.00-116.75	A	1.447	0.000	0.000	0.634	0.000	0.01
		B		0.000	0.000	0.376	0.000	0.00
		C		0.000	0.000	0.756	0.000	0.01
L9	116.75-111.75	A	1.444	0.000	0.000	12.680	0.000	0.22
		B		0.000	0.000	7.516	0.000	0.07
		C		0.000	0.000	15.115	0.000	0.23
L10	111.75-106.75	A	1.437	0.000	0.000	12.665	0.000	0.22
		B		0.000	0.000	7.503	0.000	0.07
		C		0.000	0.000	15.100	0.000	0.23
L11	106.75-101.75	A	1.430	0.000	0.000	12.650	0.000	0.22
		B		0.000	0.000	7.490	0.000	0.07
		C		0.000	0.000	15.085	0.000	0.22
L12	101.75-96.75	A	1.423	0.000	0.000	12.634	0.000	0.22
		B		0.000	0.000	7.476	0.000	0.07
		C		0.000	0.000	15.069	0.000	0.22
L13	96.75-91.75	A	1.416	0.000	0.000	12.618	0.000	0.22
		B		0.000	0.000	7.461	0.000	0.07
		C		0.000	0.000	15.053	0.000	0.22
L14	91.75-85.96	A	1.408	0.000	0.000	18.695	0.000	0.29
		B		0.000	0.000	12.726	0.000	0.12
		C		0.000	0.000	21.515	0.000	0.30
L15	85.96-84.96	A	1.402	0.000	0.000	2.800	0.000	0.05
		B		0.000	0.000	1.749	0.000	0.02

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	3.267	0.000	0.05
L16	84.96-79.96	A	1.397	0.000	0.000	16.403	0.000	0.25
		B		0.000	0.000	8.724	0.000	0.08
		C		0.000	0.000	16.310	0.000	0.23
L17	79.96-74.96	A	1.389	0.000	0.000	16.373	0.000	0.25
		B		0.000	0.000	8.706	0.000	0.08
		C		0.000	0.000	16.291	0.000	0.23
L18	74.96-69.96	A	1.379	0.000	0.000	16.340	0.000	0.25
		B		0.000	0.000	8.688	0.000	0.08
		C		0.000	0.000	16.270	0.000	0.23
L19	69.96-64.96	A	1.369	0.000	0.000	16.306	0.000	0.25
		B		0.000	0.000	8.668	0.000	0.08
		C		0.000	0.000	16.248	0.000	0.23
L20	64.96-60.50	A	1.360	0.000	0.000	14.514	0.000	0.22
		B		0.000	0.000	7.714	0.000	0.07
		C		0.000	0.000	14.473	0.000	0.20
L21	60.50-60.25	A	1.354	0.000	0.000	0.813	0.000	0.01
		B		0.000	0.000	0.432	0.000	0.00
		C		0.000	0.000	0.811	0.000	0.01
L22	60.25-55.25	A	1.348	0.000	0.000	16.232	0.000	0.25
		B		0.000	0.000	8.626	0.000	0.08
		C		0.000	0.000	16.200	0.000	0.23
L23	55.25-50.25	A	1.336	0.000	0.000	16.190	0.000	0.24
		B		0.000	0.000	8.602	0.000	0.08
		C		0.000	0.000	16.173	0.000	0.22
L24	50.25-42.41	A	1.319	0.000	0.000	25.290	0.000	0.38
		B		0.000	0.000	13.433	0.000	0.12
		C		0.000	0.000	25.298	0.000	0.35
L25	42.41-41.41	A	1.306	0.000	0.000	3.226	0.000	0.05
		B		0.000	0.000	1.713	0.000	0.02
		C		0.000	0.000	3.227	0.000	0.04
L26	41.41-36.41	A	1.296	0.000	0.000	16.049	0.000	0.24
		B		0.000	0.000	8.521	0.000	0.07
		C		0.000	0.000	16.083	0.000	0.22
L27	36.41-31.41	A	1.278	0.000	0.000	15.987	0.000	0.24
		B		0.000	0.000	8.486	0.000	0.07
		C		0.000	0.000	16.043	0.000	0.22
L28	31.41-30.50	A	1.267	0.000	0.000	2.902	0.000	0.04
		B		0.000	0.000	1.540	0.000	0.01
		C		0.000	0.000	2.915	0.000	0.04
L29	30.50-30.25	A	1.264	0.000	0.000	0.797	0.000	0.01
		B		0.000	0.000	0.423	0.000	0.00
		C		0.000	0.000	0.801	0.000	0.01
L30	30.25-25.25	A	1.253	0.000	0.000	15.899	0.000	0.23
		B		0.000	0.000	8.435	0.000	0.07
		C		0.000	0.000	15.986	0.000	0.21
L31	25.25-20.25	A	1.228	0.000	0.000	15.812	0.000	0.23
		B		0.000	0.000	8.386	0.000	0.07
		C		0.000	0.000	16.279	0.000	0.21
L32	20.25-18.00	A	1.207	0.000	0.000	7.082	0.000	0.10
		B		0.000	0.000	3.755	0.000	0.03
		C		0.000	0.000	10.274	0.000	0.12
L33	18.00-17.75	A	1.199	0.000	0.000	0.786	0.000	0.01
		B		0.000	0.000	0.416	0.000	0.00
		C		0.000	0.000	1.140	0.000	0.01
L34	17.75-12.75	A	1.180	0.000	0.000	15.644	0.000	0.22
		B		0.000	0.000	8.290	0.000	0.07
		C		0.000	0.000	18.937	0.000	0.23
L35	12.75-7.75	A	1.134	0.000	0.000	15.483	0.000	0.22
		B		0.000	0.000	8.198	0.000	0.06
		C		0.000	0.000	15.719	0.000	0.20

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
L36	7.75-2.75	A	1.061	0.000	0.000	15.225	0.000	0.21
		B		0.000	0.000	8.051	0.000	0.06
		C		0.000	0.000	15.553	0.000	0.19
L37	2.75-0.00	A	0.928	0.000	0.000	8.118	0.000	0.11
		B		0.000	0.000	4.281	0.000	0.03
		C		0.000	0.000	8.390	0.000	0.10

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.00-145.00	-3.2351	-2.0341	-1.9294	-1.7472
L2	145.00-140.00	-3.3104	-2.0825	-1.9941	-1.8090
L3	140.00-135.00	-2.0914	2.4359	-1.3174	1.4565
L4	135.00-130.00	-2.1593	2.5155	-1.3670	1.5126
L5	130.00-123.42	-2.2345	2.6036	-1.4226	1.5757
L6	123.42-121.59	-2.2652	2.6394	-1.4451	1.6010
L7	121.59-117.00	-1.9622	2.2866	-1.3325	1.4772
L8	117.00-116.75	-1.3023	1.5177	-1.0067	1.1163
L9	116.75-111.75	-1.3252	1.5445	-1.0249	1.1369
L10	111.75-106.75	-1.3681	1.5947	-1.0590	1.1756
L11	106.75-101.75	-1.4096	1.6432	-1.0922	1.2132
L12	101.75-96.75	-1.4508	1.6913	-1.1253	1.2506
L13	96.75-91.75	-1.4911	1.7385	-1.1578	1.2875
L14	91.75-85.96	-1.2024	1.4021	-1.0035	1.1166
L15	85.96-84.96	-1.3744	1.5927	-1.1188	1.2209
L16	84.96-79.96	-1.3726	1.3525	-1.0590	0.6151
L17	79.96-74.96	-1.4077	1.3868	-1.0876	0.6334
L18	74.96-69.96	-1.4422	1.4205	-1.1159	0.6517
L19	69.96-64.96	-1.4761	1.4537	-1.1439	0.6702
L20	64.96-60.50	-1.5077	1.4845	-1.1700	0.6879
L21	60.50-60.25	-1.5237	1.5001	-1.1834	0.6971
L22	60.25-55.25	-1.5408	1.5169	-1.1978	0.7071
L23	55.25-50.25	-1.5731	1.5483	-1.2250	0.7265
L24	50.25-42.41	-1.6136	1.5879	-1.2597	0.7520
L25	42.41-41.41	-1.6230	1.5971	-1.2673	0.7564
L26	41.41-36.41	-1.6415	1.6152	-1.2854	0.7747
L27	36.41-31.41	-1.6720	1.6450	-1.3124	0.7967
L28	31.41-30.50	-1.6898	1.6624	-1.3284	0.8102
L29	30.50-30.25	-1.6933	1.6657	-1.3316	0.8129
L30	30.25-25.25	-1.7089	1.6810	-1.3459	0.8256
L31	25.25-20.25	-1.7261	1.8517	-1.3666	0.9562
L32	20.25-18.00	-1.5420	4.2361	-1.2672	2.7917
L33	18.00-17.75	-1.5486	4.2540	-1.2739	2.8075
L34	17.75-12.75	-1.6758	2.9690	-1.3556	1.8110
L35	12.75-7.75	-1.8097	1.7794	-1.4469	0.9328
L36	7.75-2.75	-1.8375	1.8066	-1.4826	0.9856
L37	2.75-0.00	-1.8587	1.8273	-1.5250	1.0705

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	Safety Line 3/8	145.00 - 150.00	1.0000	1.0000
L1	4	HB158-21U6S24-xxM_TMO (1-5/8)	145.00 - 150.00	1.0000	1.0000
L2	2	Safety Line 3/8	140.00 - 145.00	1.0000	1.0000
L2	4	HB158-21U6S24-xxM_TMO (1-5/8)	140.00 - 145.00	1.0000	1.0000
L3	2	Safety Line 3/8	135.00 - 140.00	1.0000	1.0000
L3	4	HB158-21U6S24-xxM_TMO (1-5/8)	135.00 - 140.00	1.0000	1.0000
L3	6	LDF7-50A(1-5/8)	135.00 - 140.00	1.0000	1.0000
L4	2	Safety Line 3/8	130.00 - 135.00	1.0000	1.0000
L4	4	HB158-21U6S24-xxM_TMO (1-5/8)	130.00 - 135.00	1.0000	1.0000
L4	6	LDF7-50A(1-5/8)	130.00 - 135.00	1.0000	1.0000
L5	2	Safety Line 3/8	123.42 - 130.00	1.0000	1.0000
L5	4	HB158-21U6S24-xxM_TMO (1-5/8)	123.42 - 130.00	1.0000	1.0000
L5	6	LDF7-50A(1-5/8)	123.42 - 130.00	1.0000	1.0000
L6	2	Safety Line 3/8	121.59 - 123.42	1.0000	1.0000
L6	4	HB158-21U6S24-xxM_TMO (1-5/8)	121.59 - 123.42	1.0000	1.0000
L6	6	LDF7-50A(1-5/8)	121.59 - 123.42	1.0000	1.0000
L7	2	Safety Line 3/8	117.00 - 121.59	1.0000	1.0000
L7	4	HB158-21U6S24-xxM_TMO (1-5/8)	117.00 - 121.59	1.0000	1.0000
L7	6	LDF7-50A(1-5/8)	117.00 - 121.59	1.0000	1.0000
L7	22	(Area) Aero MP3-05 (H)	117.00 - 118.00	1.0000	1.0000
L7	23	(Area) Aero MP3-05 (H)	117.00 - 118.00	1.0000	1.0000
L7	24	(Area) Aero MP3-05 (H)	117.00 - 118.00	1.0000	1.0000
L8	2	Safety Line 3/8	116.75 - 117.00	1.0000	1.0000
L8	4	HB158-21U6S24-xxM_TMO (1-5/8)	116.75 - 117.00	1.0000	1.0000
L8	6	LDF7-50A(1-5/8)	116.75 - 117.00	1.0000	1.0000
L8	22	(Area) Aero MP3-05 (H)	116.75 - 117.00	1.0000	1.0000
L8	23	(Area) Aero MP3-05 (H)	116.75 - 117.00	1.0000	1.0000
L8	24	(Area) Aero MP3-05 (H)	116.75 - 117.00	1.0000	1.0000
L9	2	Safety Line 3/8	111.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			116.75		
L9	4	HB158-21U6S24-xxM_TMO (1-5/8)	111.75 - 116.75	1.0000	1.0000
L9	6	LDF7-50A(1-5/8)	111.75 - 116.75	1.0000	1.0000
L9	22	(Area) Aero MP3-05 (H)	111.75 - 116.75	1.0000	1.0000
L9	23	(Area) Aero MP3-05 (H)	111.75 - 116.75	1.0000	1.0000
L9	24	(Area) Aero MP3-05 (H)	111.75 - 116.75	1.0000	1.0000
L10	2	Safety Line 3/8	106.75 - 111.75	1.0000	1.0000
L10	4	HB158-21U6S24-xxM_TMO (1-5/8)	106.75 - 111.75	1.0000	1.0000
L10	6	LDF7-50A(1-5/8)	106.75 - 111.75	1.0000	1.0000
L10	22	(Area) Aero MP3-05 (H)	106.75 - 111.75	1.0000	1.0000
L10	23	(Area) Aero MP3-05 (H)	106.75 - 111.75	1.0000	1.0000
L10	24	(Area) Aero MP3-05 (H)	106.75 - 111.75	1.0000	1.0000
L11	2	Safety Line 3/8	101.75 - 106.75	1.0000	1.0000
L11	4	HB158-21U6S24-xxM_TMO (1-5/8)	101.75 - 106.75	1.0000	1.0000
L11	6	LDF7-50A(1-5/8)	101.75 - 106.75	1.0000	1.0000
L11	22	(Area) Aero MP3-05 (H)	101.75 - 106.75	1.0000	1.0000
L11	23	(Area) Aero MP3-05 (H)	101.75 - 106.75	1.0000	1.0000
L11	24	(Area) Aero MP3-05 (H)	101.75 - 106.75	1.0000	1.0000
L12	2	Safety Line 3/8	96.75 - 101.75	1.0000	1.0000
L12	4	HB158-21U6S24-xxM_TMO (1-5/8)	96.75 - 101.75	1.0000	1.0000
L12	6	LDF7-50A(1-5/8)	96.75 - 101.75	1.0000	1.0000
L12	22	(Area) Aero MP3-05 (H)	96.75 - 101.75	1.0000	1.0000
L12	23	(Area) Aero MP3-05 (H)	96.75 - 101.75	1.0000	1.0000
L12	24	(Area) Aero MP3-05 (H)	96.75 - 101.75	1.0000	1.0000
L13	2	Safety Line 3/8	91.75 - 96.75	1.0000	1.0000
L13	4	HB158-21U6S24-xxM_TMO (1-5/8)	91.75 - 96.75	1.0000	1.0000
L13	6	LDF7-50A(1-5/8)	91.75 - 96.75	1.0000	1.0000
L13	22	(Area) Aero MP3-05 (H)	91.75 - 96.75	1.0000	1.0000
L13	23	(Area) Aero MP3-05 (H)	91.75 - 96.75	1.0000	1.0000
L13	24	(Area) Aero MP3-05 (H)	91.75 - 96.75	1.0000	1.0000
L14	2	Safety Line 3/8	85.96 - 91.75	1.0000	1.0000
L14	4	HB158-21U6S24-xxM_TMO (1-5/8)	85.96 - 91.75	1.0000	1.0000
L14	6	LDF7-50A(1-5/8)	85.96 - 91.75	1.0000	1.0000
L14	17	(Area) Aero MP3-06 (H)	85.96 - 90.50	1.0000	1.0000
L14	18	(Area) Aero MP3-06 (H)	85.96 - 90.50	1.0000	1.0000
L14	19	(Area) Aero MP3-06 (H)	85.96 - 90.50	1.0000	1.0000
L14	22	(Area) Aero MP3-05 (H)	88.00 - 91.75	1.0000	1.0000
L14	23	(Area) Aero MP3-05 (H)	88.00 - 91.75	1.0000	1.0000
L14	24	(Area) Aero MP3-05 (H)	88.00 - 91.75	1.0000	1.0000
L15	2	Safety Line 3/8	84.96 - 85.96	1.0000	1.0000
L15	4	HB158-21U6S24-xxM_TMO (1-5/8)	84.96 - 85.96	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L15	6	LDF7-50A(1-5/8)	84.96 - 85.96	1.0000	1.0000
L15	15	LDF4-50A(1/2)	84.96 - 85.00	1.0000	1.0000
L15	17	(Area) Aero MP3-06 (H)	84.96 - 85.96	1.0000	1.0000
L15	18	(Area) Aero MP3-06 (H)	84.96 - 85.96	1.0000	1.0000
L15	19	(Area) Aero MP3-06 (H)	84.96 - 85.96	1.0000	1.0000
L16	2	Safety Line 3/8	79.96 - 84.96	1.0000	1.0000
L16	4	HB158-21U6S24-xxM_TMO (1-5/8)	79.96 - 84.96	1.0000	1.0000
L16	6	LDF7-50A(1-5/8)	79.96 - 84.96	1.0000	1.0000
L16	15	LDF4-50A(1/2)	79.96 - 84.96	1.0000	1.0000
L16	17	(Area) Aero MP3-06 (H)	79.96 - 84.96	1.0000	1.0000
L16	18	(Area) Aero MP3-06 (H)	79.96 - 84.96	1.0000	1.0000
L16	19	(Area) Aero MP3-06 (H)	79.96 - 84.96	1.0000	1.0000
L17	2	Safety Line 3/8	74.96 - 79.96	1.0000	1.0000
L17	4	HB158-21U6S24-xxM_TMO (1-5/8)	74.96 - 79.96	1.0000	1.0000
L17	6	LDF7-50A(1-5/8)	74.96 - 79.96	1.0000	1.0000
L17	15	LDF4-50A(1/2)	74.96 - 79.96	1.0000	1.0000
L17	17	(Area) Aero MP3-06 (H)	74.96 - 79.96	1.0000	1.0000
L17	18	(Area) Aero MP3-06 (H)	74.96 - 79.96	1.0000	1.0000
L17	19	(Area) Aero MP3-06 (H)	74.96 - 79.96	1.0000	1.0000
L18	2	Safety Line 3/8	69.96 - 74.96	1.0000	1.0000
L18	4	HB158-21U6S24-xxM_TMO (1-5/8)	69.96 - 74.96	1.0000	1.0000
L18	6	LDF7-50A(1-5/8)	69.96 - 74.96	1.0000	1.0000
L18	15	LDF4-50A(1/2)	69.96 - 74.96	1.0000	1.0000
L18	17	(Area) Aero MP3-06 (H)	69.96 - 74.96	1.0000	1.0000
L18	18	(Area) Aero MP3-06 (H)	69.96 - 74.96	1.0000	1.0000
L18	19	(Area) Aero MP3-06 (H)	69.96 - 74.96	1.0000	1.0000
L19	2	Safety Line 3/8	64.96 - 69.96	1.0000	1.0000
L19	4	HB158-21U6S24-xxM_TMO (1-5/8)	64.96 - 69.96	1.0000	1.0000
L19	6	LDF7-50A(1-5/8)	64.96 - 69.96	1.0000	1.0000
L19	15	LDF4-50A(1/2)	64.96 - 69.96	1.0000	1.0000
L19	17	(Area) Aero MP3-06 (H)	64.96 - 69.96	1.0000	1.0000
L19	18	(Area) Aero MP3-06 (H)	64.96 - 69.96	1.0000	1.0000
L19	19	(Area) Aero MP3-06 (H)	64.96 - 69.96	1.0000	1.0000
L20	2	Safety Line 3/8	60.50 - 64.96	1.0000	1.0000
L20	4	HB158-21U6S24-xxM_TMO (1-5/8)	60.50 - 64.96	1.0000	1.0000
L20	6	LDF7-50A(1-5/8)	60.50 - 64.96	1.0000	1.0000
L20	15	LDF4-50A(1/2)	60.50 - 64.96	1.0000	1.0000
L20	17	(Area) Aero MP3-06 (H)	60.50 - 64.96	1.0000	1.0000
L20	18	(Area) Aero MP3-06 (H)	60.50 - 64.96	1.0000	1.0000
L20	19	(Area) Aero MP3-06 (H)	60.50 - 64.96	1.0000	1.0000
L21	2	Safety Line 3/8	60.25 - 60.50	1.0000	1.0000
L21	4	HB158-21U6S24-xxM_TMO (1-5/8)	60.25 - 60.50	1.0000	1.0000
L21	6	LDF7-50A(1-5/8)	60.25 - 60.50	1.0000	1.0000
L21	15	LDF4-50A(1/2)	60.25 - 60.50	1.0000	1.0000
L21	17	(Area) Aero MP3-06 (H)	60.25 - 60.50	1.0000	1.0000
L21	18	(Area) Aero MP3-06 (H)	60.25 - 60.50	1.0000	1.0000
L21	19	(Area) Aero MP3-06 (H)	60.25 - 60.50	1.0000	1.0000
L22	2	Safety Line 3/8	55.25 - 60.25	1.0000	1.0000
L22	4	HB158-21U6S24-xxM_TMO (1-5/8)	55.25 - 60.25	1.0000	1.0000
L22	6	LDF7-50A(1-5/8)	55.25 - 60.25	1.0000	1.0000
L22	15	LDF4-50A(1/2)	55.25 - 60.25	1.0000	1.0000
L22	17	(Area) Aero MP3-06 (H)	55.25 - 60.25	1.0000	1.0000
L22	18	(Area) Aero MP3-06 (H)	55.25 - 60.25	1.0000	1.0000
L22	19	(Area) Aero MP3-06 (H)	55.25 - 60.25	1.0000	1.0000
L23	2	Safety Line 3/8	50.25 - 55.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L23	4	HB158-21U6S24-xxM_TMO (1-5/8)	50.25 - 55.25	1.0000	1.0000
L23	6	LDF7-50A(1-5/8)	50.25 - 55.25	1.0000	1.0000
L23	15	LDF4-50A(1/2)	50.25 - 55.25	1.0000	1.0000
L23	17	(Area) Aero MP3-06 (H)	50.25 - 55.25	1.0000	1.0000
L23	18	(Area) Aero MP3-06 (H)	50.25 - 55.25	1.0000	1.0000
L23	19	(Area) Aero MP3-06 (H)	50.25 - 55.25	1.0000	1.0000
L24	2	Safety Line 3/8	42.41 - 50.25	1.0000	1.0000
L24	4	HB158-21U6S24-xxM_TMO (1-5/8)	42.41 - 50.25	1.0000	1.0000
L24	6	LDF7-50A(1-5/8)	42.41 - 50.25	1.0000	1.0000
L24	15	LDF4-50A(1/2)	42.41 - 50.25	1.0000	1.0000
L24	17	(Area) Aero MP3-06 (H)	42.41 - 50.25	1.0000	1.0000
L24	18	(Area) Aero MP3-06 (H)	42.41 - 50.25	1.0000	1.0000
L24	19	(Area) Aero MP3-06 (H)	42.41 - 50.25	1.0000	1.0000
L25	2	Safety Line 3/8	41.41 - 42.41	1.0000	1.0000
L25	4	HB158-21U6S24-xxM_TMO (1-5/8)	41.41 - 42.41	1.0000	1.0000
L25	6	LDF7-50A(1-5/8)	41.41 - 42.41	1.0000	1.0000
L25	15	LDF4-50A(1/2)	41.41 - 42.41	1.0000	1.0000
L25	17	(Area) Aero MP3-06 (H)	41.41 - 42.41	1.0000	1.0000
L25	18	(Area) Aero MP3-06 (H)	41.41 - 42.41	1.0000	1.0000
L25	19	(Area) Aero MP3-06 (H)	41.41 - 42.41	1.0000	1.0000
L26	2	Safety Line 3/8	36.41 - 41.41	1.0000	1.0000
L26	4	HB158-21U6S24-xxM_TMO (1-5/8)	36.41 - 41.41	1.0000	1.0000
L26	6	LDF7-50A(1-5/8)	36.41 - 41.41	1.0000	1.0000
L26	15	LDF4-50A(1/2)	36.41 - 41.41	1.0000	1.0000
L26	17	(Area) Aero MP3-06 (H)	36.41 - 41.41	1.0000	1.0000
L26	18	(Area) Aero MP3-06 (H)	36.41 - 41.41	1.0000	1.0000
L26	19	(Area) Aero MP3-06 (H)	36.41 - 41.41	1.0000	1.0000
L27	2	Safety Line 3/8	31.41 - 36.41	1.0000	1.0000
L27	4	HB158-21U6S24-xxM_TMO (1-5/8)	31.41 - 36.41	1.0000	1.0000
L27	6	LDF7-50A(1-5/8)	31.41 - 36.41	1.0000	1.0000
L27	15	LDF4-50A(1/2)	31.41 - 36.41	1.0000	1.0000
L27	17	(Area) Aero MP3-06 (H)	31.41 - 36.41	1.0000	1.0000
L27	18	(Area) Aero MP3-06 (H)	31.41 - 36.41	1.0000	1.0000
L27	19	(Area) Aero MP3-06 (H)	31.41 - 36.41	1.0000	1.0000
L28	2	Safety Line 3/8	30.50 - 31.41	1.0000	1.0000
L28	4	HB158-21U6S24-xxM_TMO (1-5/8)	30.50 - 31.41	1.0000	1.0000
L28	6	LDF7-50A(1-5/8)	30.50 - 31.41	1.0000	1.0000
L28	15	LDF4-50A(1/2)	30.50 - 31.41	1.0000	1.0000
L28	17	(Area) Aero MP3-06 (H)	30.50 - 31.41	1.0000	1.0000
L28	18	(Area) Aero MP3-06 (H)	30.50 - 31.41	1.0000	1.0000
L28	19	(Area) Aero MP3-06 (H)	30.50 - 31.41	1.0000	1.0000
L29	2	Safety Line 3/8	30.25 - 30.50	1.0000	1.0000
L29	4	HB158-21U6S24-xxM_TMO (1-5/8)	30.25 - 30.50	1.0000	1.0000
L29	6	LDF7-50A(1-5/8)	30.25 - 30.50	1.0000	1.0000
L29	15	LDF4-50A(1/2)	30.25 - 30.50	1.0000	1.0000
L29	17	(Area) Aero MP3-06 (H)	30.25 - 30.50	1.0000	1.0000
L29	18	(Area) Aero MP3-06 (H)	30.25 - 30.50	1.0000	1.0000
L29	19	(Area) Aero MP3-06 (H)	30.25 - 30.50	1.0000	1.0000
L30	2	Safety Line 3/8	25.25 - 30.25	1.0000	1.0000
L30	4	HB158-21U6S24-xxM_TMO (1-5/8)	25.25 - 30.25	1.0000	1.0000
L30	6	LDF7-50A(1-5/8)	25.25 - 30.25	1.0000	1.0000
L30	15	LDF4-50A(1/2)	25.25 - 30.25	1.0000	1.0000
L30	17	(Area) Aero MP3-06 (H)	25.25 - 30.25	1.0000	1.0000
L30	18	(Area) Aero MP3-06 (H)	25.25 - 30.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L30	19	(Area) Aero MP3-06 (H)	25.25 - 30.25	1.0000	1.0000
L31	2	Safety Line 3/8	20.25 - 25.25	1.0000	1.0000
L31	4	HB158-21U6S24-xxM_TMO (1-5/8)	20.25 - 25.25	1.0000	1.0000
L31	6	LDF7-50A(1-5/8)	20.25 - 25.25	1.0000	1.0000
L31	15	LDF4-50A(1/2)	20.25 - 25.25	1.0000	1.0000
L31	17	(Area) Aero MP3-06 (H)	20.25 - 25.25	1.0000	1.0000
L31	18	(Area) Aero MP3-06 (H)	20.25 - 25.25	1.0000	1.0000
L31	19	(Area) Aero MP3-06 (H)	20.25 - 25.25	1.0000	1.0000
L31	20	(Area) Aero MP3-06 (H)	20.25 - 20.50	1.0000	1.0000
L32	2	Safety Line 3/8	18.00 - 20.25	1.0000	1.0000
L32	4	HB158-21U6S24-xxM_TMO (1-5/8)	18.00 - 20.25	1.0000	1.0000
L32	6	LDF7-50A(1-5/8)	18.00 - 20.25	1.0000	1.0000
L32	15	LDF4-50A(1/2)	18.00 - 20.25	1.0000	1.0000
L32	17	(Area) Aero MP3-06 (H)	18.00 - 20.25	1.0000	1.0000
L32	18	(Area) Aero MP3-06 (H)	18.00 - 20.25	1.0000	1.0000
L32	19	(Area) Aero MP3-06 (H)	18.00 - 20.25	1.0000	1.0000
L32	20	(Area) Aero MP3-06 (H)	18.00 - 20.25	1.0000	1.0000
L33	2	Safety Line 3/8	17.75 - 18.00	1.0000	1.0000
L33	4	HB158-21U6S24-xxM_TMO (1-5/8)	17.75 - 18.00	1.0000	1.0000
L33	6	LDF7-50A(1-5/8)	17.75 - 18.00	1.0000	1.0000
L33	15	LDF4-50A(1/2)	17.75 - 18.00	1.0000	1.0000
L33	17	(Area) Aero MP3-06 (H)	17.75 - 18.00	1.0000	1.0000
L33	18	(Area) Aero MP3-06 (H)	17.75 - 18.00	1.0000	1.0000
L33	19	(Area) Aero MP3-06 (H)	17.75 - 18.00	1.0000	1.0000
L33	20	(Area) Aero MP3-06 (H)	17.75 - 18.00	1.0000	1.0000
L34	2	Safety Line 3/8	12.75 - 17.75	1.0000	1.0000
L34	4	HB158-21U6S24-xxM_TMO (1-5/8)	12.75 - 17.75	1.0000	1.0000
L34	6	LDF7-50A(1-5/8)	12.75 - 17.75	1.0000	1.0000
L34	15	LDF4-50A(1/2)	12.75 - 17.75	1.0000	1.0000
L34	17	(Area) Aero MP3-06 (H)	12.75 - 17.75	1.0000	1.0000
L34	18	(Area) Aero MP3-06 (H)	12.75 - 17.75	1.0000	1.0000
L34	19	(Area) Aero MP3-06 (H)	15.50 - 17.75	1.0000	1.0000
L34	20	(Area) Aero MP3-06 (H)	12.75 - 17.75	1.0000	1.0000
L35	2	Safety Line 3/8	7.75 - 12.75	1.0000	1.0000
L35	4	HB158-21U6S24-xxM_TMO (1-5/8)	7.75 - 12.75	1.0000	1.0000
L35	6	LDF7-50A(1-5/8)	7.75 - 12.75	1.0000	1.0000
L35	15	LDF4-50A(1/2)	7.75 - 12.75	1.0000	1.0000
L35	17	(Area) Aero MP3-06 (H)	7.75 - 12.75	1.0000	1.0000
L35	18	(Area) Aero MP3-06 (H)	7.75 - 12.75	1.0000	1.0000
L35	20	(Area) Aero MP3-06 (H)	7.75 - 12.75	1.0000	1.0000
L36	2	Safety Line 3/8	2.75 - 7.75	1.0000	1.0000
L36	4	HB158-21U6S24-xxM_TMO (1-5/8)	2.75 - 7.75	1.0000	1.0000
L36	6	LDF7-50A(1-5/8)	2.75 - 7.75	1.0000	1.0000
L36	15	LDF4-50A(1/2)	2.75 - 7.75	1.0000	1.0000
L36	17	(Area) Aero MP3-06 (H)	2.75 - 7.75	1.0000	1.0000
L36	18	(Area) Aero MP3-06 (H)	2.75 - 7.75	1.0000	1.0000
L36	20	(Area) Aero MP3-06 (H)	2.75 - 7.75	1.0000	1.0000
L37	2	Safety Line 3/8	0.00 - 2.75	1.0000	1.0000
L37	4	HB158-21U6S24-xxM_TMO (1-5/8)	0.00 - 2.75	1.0000	1.0000
L37	6	LDF7-50A(1-5/8)	0.00 - 2.75	1.0000	1.0000
L37	15	LDF4-50A(1/2)	0.00 - 2.75	1.0000	1.0000
L37	17	(Area) Aero MP3-06 (H)	0.00 - 2.75	1.0000	1.0000
L37	18	(Area) Aero MP3-06 (H)	0.00 - 2.75	1.0000	1.0000
L37	20	(Area) Aero MP3-06 (H)	0.00 - 2.75	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
L7	22	(Area) Aero MP3-05 (H)	117.00 - 118.00	Auto	0.3689
L7	23	(Area) Aero MP3-05 (H)	117.00 - 118.00	Auto	0.3689
L7	24	(Area) Aero MP3-05 (H)	117.00 - 118.00	Auto	0.3689
L8	22	(Area) Aero MP3-05 (H)	116.75 - 117.00	Auto	0.4677
L8	23	(Area) Aero MP3-05 (H)	116.75 - 117.00	Auto	0.4677
L8	24	(Area) Aero MP3-05 (H)	116.75 - 117.00	Auto	0.4677
L9	22	(Area) Aero MP3-05 (H)	111.75 - 116.75	Auto	0.4451
L9	23	(Area) Aero MP3-05 (H)	111.75 - 116.75	Auto	0.4451
L9	24	(Area) Aero MP3-05 (H)	111.75 - 116.75	Auto	0.4451
L10	22	(Area) Aero MP3-05 (H)	106.75 - 111.75	Auto	0.4017
L10	23	(Area) Aero MP3-05 (H)	106.75 - 111.75	Auto	0.4017
L10	24	(Area) Aero MP3-05 (H)	106.75 - 111.75	Auto	0.4017
L11	22	(Area) Aero MP3-05 (H)	101.75 - 106.75	Auto	0.2758
L11	23	(Area) Aero MP3-05 (H)	101.75 - 106.75	Auto	0.2758
L11	24	(Area) Aero MP3-05 (H)	101.75 - 106.75	Auto	0.2758
L12	22	(Area) Aero MP3-05 (H)	96.75 - 101.75	Auto	0.2407
L12	23	(Area) Aero MP3-05 (H)	96.75 - 101.75	Auto	0.2407
L12	24	(Area) Aero MP3-05 (H)	96.75 - 101.75	Auto	0.2407
L13	22	(Area) Aero MP3-05 (H)	91.75 - 96.75	Auto	0.2056
L13	23	(Area) Aero MP3-05 (H)	91.75 - 96.75	Auto	0.2056
L13	24	(Area) Aero MP3-05 (H)	91.75 - 96.75	Auto	0.2056
L14	17	(Area) Aero MP3-06 (H)	85.96 - 90.50	Auto	0.3528
L14	18	(Area) Aero MP3-06 (H)	85.96 - 90.50	Auto	0.3528
L14	19	(Area) Aero MP3-06 (H)	85.96 - 90.50	Auto	0.3528
L14	22	(Area) Aero MP3-05 (H)	88.00 - 91.75	Auto	0.1749
L14	23	(Area) Aero MP3-05 (H)	88.00 - 91.75	Auto	0.1749
L14	24	(Area) Aero MP3-05 (H)	88.00 - 91.75	Auto	0.1749
L15	17	(Area) Aero MP3-06 (H)	84.96 - 85.96	Auto	0.4590
L15	18	(Area) Aero MP3-06 (H)	84.96 - 85.96	Auto	0.4590
L15	19	(Area) Aero MP3-06 (H)	84.96 - 85.96	Auto	0.4590
L16	17	(Area) Aero MP3-06 (H)	79.96 - 84.96	Auto	0.3501
L16	18	(Area) Aero MP3-06 (H)	79.96 - 84.96	Auto	0.3501
L16	19	(Area) Aero MP3-06 (H)	79.96 - 84.96	Auto	0.3501
L17	17	(Area) Aero MP3-06 (H)	74.96 - 79.96	Auto	0.3229
L17	18	(Area) Aero MP3-06 (H)	74.96 - 79.96	Auto	0.3229

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L17	19	(Area) Aero MP3-06 (H)	74.96 - 79.96	Auto	0.3229
L18	17	(Area) Aero MP3-06 (H)	69.96 - 74.96	Auto	0.2957
L18	18	(Area) Aero MP3-06 (H)	69.96 - 74.96	Auto	0.2957
L18	19	(Area) Aero MP3-06 (H)	69.96 - 74.96	Auto	0.2957
L19	17	(Area) Aero MP3-06 (H)	64.96 - 69.96	Auto	0.2685
L19	18	(Area) Aero MP3-06 (H)	64.96 - 69.96	Auto	0.2685
L19	19	(Area) Aero MP3-06 (H)	64.96 - 69.96	Auto	0.2685
L20	17	(Area) Aero MP3-06 (H)	60.50 - 64.96	Auto	0.2427
L20	18	(Area) Aero MP3-06 (H)	60.50 - 64.96	Auto	0.2427
L20	19	(Area) Aero MP3-06 (H)	60.50 - 64.96	Auto	0.2427
L21	17	(Area) Aero MP3-06 (H)	60.25 - 60.50	Auto	0.3033
L21	18	(Area) Aero MP3-06 (H)	60.25 - 60.50	Auto	0.3033
L21	19	(Area) Aero MP3-06 (H)	60.25 - 60.50	Auto	0.3033
L22	17	(Area) Aero MP3-06 (H)	55.25 - 60.25	Auto	0.2859
L22	18	(Area) Aero MP3-06 (H)	55.25 - 60.25	Auto	0.2859
L22	19	(Area) Aero MP3-06 (H)	55.25 - 60.25	Auto	0.2859
L23	17	(Area) Aero MP3-06 (H)	50.25 - 55.25	Auto	0.2587
L23	18	(Area) Aero MP3-06 (H)	50.25 - 55.25	Auto	0.2587
L23	19	(Area) Aero MP3-06 (H)	50.25 - 55.25	Auto	0.2587
L24	17	(Area) Aero MP3-06 (H)	42.41 - 50.25	Auto	0.2205
L24	18	(Area) Aero MP3-06 (H)	42.41 - 50.25	Auto	0.2205
L24	19	(Area) Aero MP3-06 (H)	42.41 - 50.25	Auto	0.2205
L25	17	(Area) Aero MP3-06 (H)	41.41 - 42.41	Auto	0.2284
L25	18	(Area) Aero MP3-06 (H)	41.41 - 42.41	Auto	0.2284
L25	19	(Area) Aero MP3-06 (H)	41.41 - 42.41	Auto	0.2284
L26	17	(Area) Aero MP3-06 (H)	36.41 - 41.41	Auto	0.2089
L26	18	(Area) Aero MP3-06 (H)	36.41 - 41.41	Auto	0.2089
L26	19	(Area) Aero MP3-06 (H)	36.41 - 41.41	Auto	0.2089
L27	17	(Area) Aero MP3-06 (H)	31.41 - 36.41	Auto	0.1817
L27	18	(Area) Aero MP3-06 (H)	31.41 - 36.41	Auto	0.1817
L27	19	(Area) Aero MP3-06 (H)	31.41 - 36.41	Auto	0.1817
L28	17	(Area) Aero MP3-06 (H)	30.50 - 31.41	Auto	0.1625
L28	18	(Area) Aero MP3-06 (H)	30.50 - 31.41	Auto	0.1625
L28	19	(Area) Aero MP3-06 (H)	30.50 - 31.41	Auto	0.1625
L29	17	(Area) Aero MP3-06 (H)	30.25 - 30.50	Auto	0.1593
L29	18	(Area) Aero MP3-06 (H)	30.25 - 30.50	Auto	0.1593
L29	19	(Area) Aero MP3-06 (H)	30.25 - 30.50	Auto	0.1593
L30	17	(Area) Aero MP3-06 (H)	25.25 - 30.25	Auto	0.1451
L30	18	(Area) Aero MP3-06 (H)	25.25 - 30.25	Auto	0.1451
L30	19	(Area) Aero MP3-06 (H)	25.25 - 30.25	Auto	0.1451
L31	17	(Area) Aero MP3-06 (H)	20.25 - 25.25	Auto	0.1147
L31	18	(Area) Aero MP3-06 (H)	20.25 - 25.25	Auto	0.1147
L31	19	(Area) Aero MP3-06 (H)	20.25 - 25.25	Auto	0.1147
L31	20	(Area) Aero MP3-06 (H)	20.25 - 20.50	Auto	0.1018
L32	17	(Area) Aero MP3-06 (H)	18.00 - 20.25	Auto	0.0950
L32	18	(Area) Aero MP3-06 (H)	18.00 - 20.25	Auto	0.0950
L32	19	(Area) Aero MP3-06 (H)	18.00 - 20.25	Auto	0.0950
L32	20	(Area) Aero MP3-06 (H)	18.00 - 20.25	Auto	0.0950
L33	17	(Area) Aero MP3-06 (H)	17.75 - 18.00	Auto	0.0770
L33	18	(Area) Aero MP3-06 (H)	17.75 - 18.00	Auto	0.0770
L33	19	(Area) Aero MP3-06 (H)	17.75 - 18.00	Auto	0.0770
L33	20	(Area) Aero MP3-06 (H)	17.75 - 18.00	Auto	0.0770
L34	17	(Area) Aero MP3-06 (H)	12.75 - 17.75	Auto	0.0611
L34	18	(Area) Aero MP3-06 (H)	12.75 - 17.75	Auto	0.0611
L34	19	(Area) Aero MP3-06 (H)	15.50 - 17.75	Auto	0.0686
L34	20	(Area) Aero MP3-06 (H)	12.75 - 17.75	Auto	0.0611
L35	17	(Area) Aero MP3-06 (H)	7.75 - 12.75	Auto	0.0340
L35	18	(Area) Aero MP3-06 (H)	7.75 - 12.75	Auto	0.0340
L35	20	(Area) Aero MP3-06 (H)	7.75 - 12.75	Auto	0.0340
L36	17	(Area) Aero MP3-06 (H)	2.75 - 7.75	Auto	0.0054
L36	18	(Area) Aero MP3-06 (H)	2.75 - 7.75	Auto	0.0054

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L36	20	(Area) Aero MP3-06 (H)	2.75 - 7.75	Auto	0.0054
L37	17	(Area) Aero MP3-06 (H)	0.00 - 2.75	Auto	0.0000
L37	18	(Area) Aero MP3-06 (H)	0.00 - 2.75	Auto	0.0000
L37	20	(Area) Aero MP3-06 (H)	0.00 - 2.75	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
150									
APX16DWV-16DWV-S-E-A20	A	From Centroid-Face	4.00 -6.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.26 6.85 7.46 8.72	1.50 2.00 2.52 3.62	0.04 0.07 0.11 0.20
APX16DWV-16DWV-S-E-A20	B	From Centroid-Face	4.00 -6.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.26 6.85 7.46 8.72	1.50 2.00 2.52 3.62	0.04 0.07 0.11 0.20
APX16DWV-16DWV-S-E-A20	C	From Centroid-Face	4.00 -6.00 0.00	40.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.26 6.85 7.46 8.72	1.50 2.00 2.52 3.62	0.04 0.07 0.11 0.20
APXVAALL24_43-U-NA20_TMO	A	From Centroid-Face	4.00 0.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.26 0.38 0.65
APXVAALL24_43-U-NA20_TMO	B	From Centroid-Face	4.00 0.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.26 0.38 0.65
APXVAALL24_43-U-NA20_TMO	C	From Centroid-Face	4.00 0.00 0.00	40.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.26 0.38 0.65
AIR6449 B41_T-MOBILE	A	From Centroid-Face	4.00 6.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.66 5.96 6.27 6.91	2.48 2.70 2.94 3.43	0.11 0.15 0.20 0.30
AIR6449 B41_T-MOBILE	B	From Centroid-Face	4.00 6.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.66 5.96 6.27 6.91	2.48 2.70 2.94 3.43	0.11 0.15 0.20 0.30
AIR6449 B41_T-MOBILE	C	From Centroid-Face	4.00 6.00 0.00	40.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.66 5.96 6.27 6.91	2.48 2.70 2.94 3.43	0.11 0.15 0.20 0.30
RADIO 4415 B66A_CCIV3	A	From Centroid-Face	4.00 -6.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.05 0.06 0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	2.32	1.18	0.11
RADIO 4415 B66A_CCIV3	B	From Centroid-Face	4.00 -6.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.32	0.68 0.79 0.91 1.18	0.05 0.06 0.07 0.11
RADIO 4415 B66A_CCIV3	C	From Centroid-Face	4.00 -6.00 0.00	40.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.32	0.68 0.79 0.91 1.18	0.05 0.06 0.07 0.11
RADIO 4424 B25_TMO	A	From Centroid-Face	4.00 0.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.05 2.23 2.42 2.81	1.61 1.77 1.94 2.30	0.09 0.11 0.13 0.19
RADIO 4424 B25_TMO	B	From Centroid-Face	4.00 0.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.05 2.23 2.42 2.81	1.61 1.77 1.94 2.30	0.09 0.11 0.13 0.19
RADIO 4424 B25_TMO	C	From Centroid-Face	4.00 0.00 0.00	40.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.05 2.23 2.42 2.81	1.61 1.77 1.94 2.30	0.09 0.11 0.13 0.19
RADIO 4449 B71 B85A_T-MOBILE	A	From Centroid-Face	4.00 0.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	0.07 0.09 0.12 0.17
RADIO 4449 B71 B85A_T-MOBILE	B	From Centroid-Face	4.00 0.00 0.00	10.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	0.07 0.09 0.12 0.17
RADIO 4449 B71 B85A_T-MOBILE	C	From Centroid-Face	4.00 0.00 0.00	40.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	0.07 0.09 0.12 0.17
8' Ladder	C	From Centroid-Face	2.00 2.00 -2.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.53 4.36 7.19 12.86	5.33 8.08 10.83 16.33	0.10 0.11 0.13 0.16
2.4" Dia. x 10.5' Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.49 3.58 4.69 6.39	2.49 3.58 4.69 6.39	0.04 0.07 0.10 0.17
2.4" Dia. x 10.5' Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.49 3.58 4.69 6.39	2.49 3.58 4.69 6.39	0.04 0.07 0.10 0.17
2.4" Dia. x 10.5' Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.49 3.58 4.69 6.39	2.49 3.58 4.69 6.39	0.04 0.07 0.10 0.17
Miscellaneous [NA 507-3]	C	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.17 16.47 20.42 27.62	12.17 16.47 20.42 27.62	0.51 0.70 0.95 1.65
Platform Mount [LP 604-1]	C	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	23.03 26.44 29.80 36.34	23.03 26.44 29.80 36.34	0.93 1.32 1.77 2.80

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
148									
1900MHz RRH (65MHz)	A	From Leg	1.00 0.00 0.00	-30.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.31 2.52 2.73 3.17	2.38 2.58 2.79 3.24	0.06 0.08 0.11 0.18
1900MHz RRH (65MHz)	B	From Leg	1.00 0.00 0.00	-30.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.31 2.52 2.73 3.17	2.38 2.58 2.79 3.24	0.06 0.08 0.11 0.18
1900MHz RRH (65MHz)	C	From Leg	1.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.31 2.52 2.73 3.17	2.38 2.58 2.79 3.24	0.06 0.08 0.11 0.18
800 EXTERNAL NOTCH FILTER	A	From Leg	1.00 0.00 0.00	-30.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.66 0.76 0.87 1.11	0.32 0.40 0.48 0.67	0.01 0.02 0.02 0.04
800 EXTERNAL NOTCH FILTER	B	From Leg	1.00 0.00 0.00	-30.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.66 0.76 0.87 1.11	0.32 0.40 0.48 0.67	0.01 0.02 0.02 0.04
800 EXTERNAL NOTCH FILTER	C	From Leg	1.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.66 0.76 0.87 1.11	0.32 0.40 0.48 0.67	0.01 0.02 0.02 0.04
800MHZ RRH	A	From Leg	1.00 0.00 0.00	-30.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	B	From Leg	1.00 0.00 0.00	-30.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	C	From Leg	1.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
Pipe Mount [PM 601-3]	C	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.17 3.79 4.42 5.76	3.17 3.79 4.42 5.76	0.20 0.23 0.28 0.40
140									
(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	30.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.97 10.54 11.08 12.17	10.25 11.42 12.31 14.13	0.05 0.15 0.25 0.48
(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.97 10.54 11.08 12.17	10.25 11.42 12.31 14.13	0.05 0.15 0.25 0.48
(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.97 10.54 11.08 12.17	10.25 11.42 12.31 14.13	0.05 0.15 0.25 0.48
BXA-70063-6CF-2 w/ Mount Pipe	A	From Centroid-Leg	4.00 -2.00 1.00	30.0000	140.00	No Ice 1/2" Ice 1" Ice	7.81 8.36 8.87	5.80 6.95 7.82	0.04 0.10 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	9.93	9.60	0.34
BXA-70063-6CF-2 w/ Mount Pipe	B	From Centroid-Leg	4.00 -2.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.81 8.36 8.87 9.93	5.80 6.95 7.82 9.60	0.04 0.10 0.17 0.34
BXA-70063-6CF-2 w/ Mount Pipe	C	From Centroid-Leg	4.00 -2.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.81 8.36 8.87 9.93	5.80 6.95 7.82 9.60	0.04 0.10 0.17 0.34
BXA-171063-12BF w/ Mount Pipe	A	From Centroid-Leg	4.00 2.00 1.00	60.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.97 5.52 6.04 7.09	5.23 6.39 7.26 9.05	0.04 0.09 0.14 0.27
BXA-171063-12BF w/ Mount Pipe	B	From Centroid-Leg	4.00 2.00 1.00	60.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.97 5.52 6.04 7.09	5.23 6.39 7.26 9.05	0.04 0.09 0.14 0.27
BXA-171063-12BF w/ Mount Pipe	C	From Centroid-Leg	4.00 2.00 1.00	60.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.97 5.52 6.04 7.09	5.23 6.39 7.26 9.05	0.04 0.09 0.14 0.27
Platform Mount [LP 714-1]	C	None		0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	37.51 41.70 45.89 54.29	37.51 41.70 45.89 54.29	1.60 2.50 3.46 5.58
127									
SBNH-1D6565C w/ Mount Pipe	A	From Centroid-Face	4.00 -6.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.56 6.07 6.59 7.65	4.47 4.97 5.47 6.52	0.08 0.17 0.26 0.50
SBNH-1D6565C w/ Mount Pipe	B	From Centroid-Face	4.00 -6.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.56 6.07 6.59 7.65	4.47 4.97 5.47 6.52	0.08 0.17 0.26 0.50
SBNH-1D6565C w/ Mount Pipe	C	From Centroid-Face	4.00 -6.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.56 6.07 6.59 7.65	4.47 4.97 5.47 6.52	0.08 0.17 0.26 0.50
(2) 80010966 w/ Mount Pipe	A	From Centroid-Face	4.00 3.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.61 15.47 16.35 18.14	6.84 7.63 8.42 10.06	0.16 0.27 0.39 0.68
(2) 80010966 w/ Mount Pipe	B	From Centroid-Face	4.00 3.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.61 15.47 16.35 18.14	6.84 7.63 8.42 10.06	0.16 0.27 0.39 0.68
(2) 80010965 w/ Mount Pipe	C	From Centroid-Face	4.00 3.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.26 13.03 13.80 15.41	5.79 6.47 7.17 8.60	0.14 0.23 0.33 0.57
RRUS 8843 B2/B66A	A	From Centroid-Face	4.00 -6.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.35 1.50 1.65 1.99	0.07 0.09 0.11 0.16
RRUS 8843 B2/B66A	B	From Centroid-Face	4.00 -6.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.35 1.50 1.65	0.07 0.09 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	0.00	1.99	0.16
RRUS 8843 B2/B66A	C	From Centroid-Face	4.00 -6.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.35 1.50 1.65 1.99	0.07 0.09 0.11 0.16
RRUS 4449 B5/B12	A	From Centroid-Face	4.00 0.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
RRUS 4449 B5/B12	B	From Centroid-Face	4.00 0.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
RRUS 4449 B5/B12	C	From Centroid-Face	4.00 0.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
DTMABP7819VG12A	A	From Centroid-Face	4.00 6.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.10 1.23 1.52	0.34 0.42 0.51 0.71	0.02 0.03 0.04 0.06
DTMABP7819VG12A	B	From Centroid-Face	4.00 6.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.10 1.23 1.52	0.34 0.42 0.51 0.71	0.02 0.03 0.04 0.06
DTMABP7819VG12A	C	From Centroid-Face	4.00 6.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.10 1.23 1.52	0.34 0.42 0.51 0.71	0.02 0.03 0.04 0.06
DC6-48-60-18-8F	B	From Centroid-Face	4.00 0.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.03 0.05 0.08 0.14
DC6-48-60-18-8C-EV	C	From Centroid-Face	4.00 0.00 1.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.14 1.79 2.00 2.45	1.14 1.79 2.00 2.45	0.03 0.05 0.07 0.13
Pipe Mount [PM 601-3]	C	None		0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.17 3.79 4.42 5.76	3.17 3.79 4.42 5.76	0.20 0.23 0.28 0.40
Platform Mount [LP 305-1_HR-1]	C	None		0.0000	127.00	No Ice 1/2" Ice 1" Ice 2" Ice	19.59 24.48 29.24 38.49	19.59 24.48 29.24 38.49	1.37 1.78 2.29 3.56
85									
KS24019-L112D	A	From Leg	3.00 0.00 1.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.14 0.20 0.26 0.41	0.14 0.20 0.26 0.41	0.01 0.01 0.01 0.02
KS24019-L112A	A	From Leg	3.00 0.00 1.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.08 0.13 0.19 0.35	0.08 0.13 0.19 0.35	0.01 0.01 0.01 0.02
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***						2" Ice	2.01	4.35	0.12

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

Comb. No.	Description
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 Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	31.305	48	2.2183	0.0135
L2	145 - 140	28.989	48	2.2018	0.0109
L3	140 - 135	26.704	48	2.1589	0.0087
L4	135 - 130	24.480	48	2.0858	0.0071
L5	130 - 123.42	22.346	48	1.9859	0.0058
L6	126.59 - 121.59	20.956	48	1.9070	0.0049
L7	121.59 - 117	18.992	48	1.8298	0.0043
L8	117 - 116.75	17.285	48	1.7206	0.0036
L9	116.75 - 111.75	17.195	48	1.7177	0.0036
L10	111.75 - 106.75	15.428	48	1.6574	0.0033
L11	106.75 - 101.75	13.727	48	1.5919	0.0030
L12	101.75 - 96.75	12.131	48	1.4563	0.0025
L13	96.75 - 91.75	10.678	48	1.3196	0.0021
L14	91.75 - 85.96	9.367	48	1.1831	0.0017
L15	90.04 - 84.96	8.952	48	1.1366	0.0016
L16	84.96 - 79.96	7.764	48	1.0936	0.0015
L17	79.96 - 74.96	6.678	48	0.9809	0.0012
L18	74.96 - 69.96	5.709	48	0.8703	0.0010
L19	69.96 - 64.96	4.855	48	0.7621	0.0009
L20	64.96 - 60.5	4.112	48	0.6565	0.0007
L21	60.5 - 60.25	3.542	48	0.5645	0.0006
L22	60.25 - 55.25	3.512	48	0.5618	0.0006
L23	55.25 - 50.25	2.953	48	0.5071	0.0005
L24	50.25 - 42.41	2.450	48	0.4538	0.0004
L25	47.58 - 41.41	2.204	48	0.4254	0.0004
L26	41.41 - 36.41	1.675	48	0.3893	0.0003
L27	36.41 - 31.41	1.293	48	0.3404	0.0003
L28	31.41 - 30.5	0.961	48	0.2929	0.0002
L29	30.5 - 30.25	0.906	48	0.2844	0.0002
L30	30.25 - 25.25	0.892	48	0.2820	0.0002
L31	25.25 - 20.25	0.621	48	0.2353	0.0002
L32	20.25 - 18	0.399	48	0.1891	0.0002
L33	18 - 17.75	0.314	48	0.1687	0.0001
L34	17.75 - 12.75	0.306	48	0.1663	0.0001
L35	12.75 - 7.75	0.157	48	0.1182	0.0001
L36	7.75 - 2.75	0.058	48	0.0715	0.0001
L37	2.75 - 0	0.007	48	0.0250	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	APX16DWV-16DWV-S-E-A20	48	31.305	2.2183	0.0138	9315
148.00	1900MHz RRH (65MHz)	48	30.377	2.2135	0.0127	9315
140.00	(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	48	26.704	2.1589	0.0090	4996
127.00	SBNH-1D6565C w/ Mount Pipe	48	21.121	1.9150	0.0052	3162
85.00	KS24019-L112D	48	7.773	1.0941	0.0015	3642

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	144.906	20	10.2834	0.0602
L2	145 - 140	134.220	20	10.2106	0.0485
L3	140 - 135	123.676	20	10.0148	0.0384
L4	135 - 130	113.403	20	9.6787	0.0304
L5	130 - 123.42	103.544	20	9.2184	0.0244
L6	126.59 - 121.59	97.115	20	8.8542	0.0210
L7	121.59 - 117	88.033	20	8.4964	0.0184
L8	117 - 116.75	80.132	20	7.9901	0.0154
L9	116.75 - 111.75	79.716	20	7.9768	0.0154
L10	111.75 - 106.75	71.533	20	7.6968	0.0141
L11	106.75 - 101.75	63.654	20	7.3928	0.0129
L12	101.75 - 96.75	56.260	20	6.7632	0.0108
L13	96.75 - 91.75	49.524	20	6.1283	0.0089
L14	91.75 - 85.96	43.450	20	5.4942	0.0073
L15	90.04 - 84.96	41.523	20	5.2784	0.0068
L16	84.96 - 79.96	36.014	20	5.0786	0.0063
L17	79.96 - 74.96	30.977	20	4.5546	0.0054
L18	74.96 - 69.96	26.481	20	4.0407	0.0045
L19	69.96 - 64.96	22.517	20	3.5380	0.0037
L20	64.96 - 60.5	19.072	20	3.0472	0.0030
L21	60.5 - 60.25	16.427	20	2.6199	0.0025
L22	60.25 - 55.25	16.290	20	2.6073	0.0024
L23	55.25 - 50.25	13.694	20	2.3529	0.0021
L24	50.25 - 42.41	11.361	20	2.1055	0.0018
L25	47.58 - 41.41	10.221	20	1.9735	0.0017
L26	41.41 - 36.41	7.767	20	1.8061	0.0015
L27	36.41 - 31.41	5.995	20	1.5790	0.0013
L28	31.41 - 30.5	4.458	20	1.3587	0.0011
L29	30.5 - 30.25	4.203	20	1.3188	0.0010
L30	30.25 - 25.25	4.134	20	1.3078	0.0010
L31	25.25 - 20.25	2.878	20	1.0912	0.0008
L32	20.25 - 18	1.848	20	0.8767	0.0007
L33	18 - 17.75	1.458	20	0.7823	0.0006
L34	17.75 - 12.75	1.417	20	0.7711	0.0006
L35	12.75 - 7.75	0.727	20	0.5480	0.0004
L36	7.75 - 2.75	0.267	20	0.3312	0.0002
L37	2.75 - 0	0.033	20	0.1159	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	APX16DWV-16DWV-S-E-A20	20	144.906	10.2834	0.0656	2214
148.00	1900MHz RRH (65MHz)	20	140.623	10.2625	0.0606	2214
140.00	(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	20	123.676	10.0148	0.0430	1161
127.00	SBNH-1D6565C w/ Mount Pipe	20	97.878	8.8911	0.0255	718
85.00	KS24019-L112D	20	36.056	5.0808	0.0071	795

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	150 - 145 (1)	TP16.0798x15x0.1875	5.00	0.00	0.0	9.4579	-3.66	553.29	0.007
L2	145 - 140 (2)	TP17.1595x16.0798x0.1875	5.00	0.00	0.0	10.1005	-3.90	590.88	0.007
L3	140 - 135 (3)	TP18.2393x17.1595x0.1875	5.00	0.00	0.0	10.7431	-5.97	628.47	0.010
L4	135 - 130 (4)	TP19.319x18.2393x0.1875	5.00	0.00	0.0	11.3857	-6.40	666.06	0.010
L5	130 - 123.42 (5)	TP20.74x19.319x0.1875	6.58	0.00	0.0	11.8239	-10.03	691.70	0.015
L6	123.42 - 121.59 (6)	TP20.7436x19.6804x0.25	5.00	0.00	0.0	16.2617	-10.75	951.31	0.011
L7	121.59 - 117 (7)	TP21.7197x20.7436x0.25	4.59	0.00	0.0	17.0362	-11.38	996.62	0.011
L8	117 - 116.75 (8)	TP21.7728x21.7197x0.5625	0.25	0.00	0.0	37.8684	-11.45	2215.30	0.005
L9	116.75 - 111.75 (9)	TP22.836x21.7728x0.55	5.00	0.00	0.0	38.9047	-12.39	2275.92	0.005
L10	111.75 - 106.75 (10)	TP23.8992x22.836x0.525	5.00	0.00	0.0	38.9496	-13.31	2278.55	0.006
L11	106.75 - 101.75 (11)	TP24.9624x23.8992x0.25	5.00	0.00	0.0	19.6093	-14.06	1147.14	0.012
L12	101.75 - 96.75 (12)	TP26.0256x24.9624x0.25	5.00	0.00	0.0	20.4529	-14.84	1196.50	0.012
L13	96.75 - 91.75 (13)	TP27.0888x26.0256x0.25	5.00	0.00	0.0	21.2966	-15.64	1245.85	0.013
L14	91.75 - 85.96 (14)	TP28.32x27.0888x0.25	5.79	0.00	0.0	21.5851	-15.91	1262.73	0.013
L15	85.96 - 84.96 (15)	TP28.0347x26.9524x0.675	5.08	0.00	0.0	58.6168	-17.70	3429.09	0.005
L16	84.96 - 79.96 (16)	TP29.1x28.0347x0.3125	5.00	0.00	0.0	28.5536	-18.62	1670.38	0.011
L17	79.96 - 74.96 (17)	TP30.1652x29.1x0.3125	5.00	0.00	0.0	29.6102	-19.57	1732.19	0.011
L18	74.96 - 69.96 (18)	TP31.2305x30.1652x0.3125	5.00	0.00	0.0	30.6668	-20.55	1794.01	0.011
L19	69.96 - 64.96 (19)	TP32.2957x31.2305x0.3125	5.00	0.00	0.0	31.7234	-21.55	1855.82	0.012
L20	64.96 - 60.5 (20)	TP33.2459x32.2957x0.3125	4.46	0.00	0.0	32.6658	-22.46	1910.95	0.012
L21	60.5 - 60.25 (21)	TP33.2992x33.2459x0.6	0.25	0.00	0.0	62.2723	-22.55	3642.93	0.006
L22	60.25 - 55.25 (22)	TP34.3644x33.2992x0.5875	5.00	0.00	0.0	62.9847	-24.02	3684.61	0.007
L23	55.25 - 50.25	TP35.4297x34.3644x0.5875	5.00	0.00	0.0	64.9711	-25.52	3800.81	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	(23)								
L24	50.25 - 42.41 (24)	TP37.1x35.4297x0.575	7.84	0.00	0.0	64.6497	-26.33	3782.01	0.007
L25	42.41 - 41.41 (25)	TP36.6867x35.3735x0.6375	6.17	0.00	0.0	72.5122	-29.32	4241.96	0.007
L26	41.41 - 36.41 (26)	TP37.7508x36.6867x0.625	5.00	0.00	0.0	71.5374	-29.66	4184.94	0.007
L27	36.41 - 31.41 (27)	TP38.815x37.7508x0.625	5.00	0.00	0.0	73.6484	-31.36	4308.43	0.007
L28	31.41 - 30.5 (28)	TP39.0087x38.815x0.6125	0.91	0.00	0.0	74.2685	-33.08	4344.71	0.008
L29	30.5 - 30.25 (29)	TP39.0619x39.0087x0.6125	0.25	0.00	0.0	74.6450	-33.39	4366.74	0.008
L30	30.25 - 25.25 (30)	TP40.126x39.0619x0.6125	5.00	0.00	0.0	74.7485	-33.48	4372.79	0.008
L31	25.25 - 20.25 (31)	TP41.1902x40.126x0.6	5.00	0.00	0.0	75.2734	-35.24	4403.49	0.008
L32	20.25 - 18 (32)	TP41.6691x41.1902x0.6	2.25	0.00	0.0	77.2999	-37.02	4522.05	0.008
L33	18 - 17.75 (33)	TP41.7223x41.6691x0.5563	0.25	0.00	0.0	72.5862	-37.83	4246.29	0.009
L34	17.75 - 12.75 (34)	TP42.7864x41.7223x0.55	5.00	0.00	0.0	71.8744	-37.93	4204.65	0.009
L35	12.75 - 7.75 (35)	TP43.8506x42.7864x0.55	5.00	0.00	0.0	73.7321	-39.76	4313.33	0.009
L36	7.75 - 2.75 (36)	TP44.9147x43.8506x0.5375	5.00	0.00	0.0	73.8932	-41.61	4322.75	0.010
L37	2.75 - 0 (37)	TP45.5x44.9147x0.5375	2.75	0.00	0.0	75.7086	-43.50	4428.96	0.010

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	150 - 145 (1)	TP16.0798x15x0.1875	30.26	228.74	0.132	0.00	228.74	0.000
L2	145 - 140 (2)	TP17.1595x16.0798x0.1875	63.20	261.07	0.242	0.00	261.07	0.000
L3	140 - 135 (3)	TP18.2393x17.1595x0.1875	126.78	294.64	0.430	0.00	294.64	0.000
L4	135 - 130 (4)	TP19.319x18.2393x0.1875	188.34	326.33	0.577	0.00	326.33	0.000
L5	130 - 123.42 (5)	TP20.74x19.319x0.1875	235.23	348.54	0.675	0.00	348.54	0.000
L6	123.42 - 121.59 (6)	TP20.7436x19.6804x0.25	320.42	506.96	0.632	0.00	506.96	0.000
L7	121.59 - 117 (7)	TP21.7197x20.7436x0.25	399.73	556.70	0.718	0.00	556.70	0.000
L8	117 - 116.75 (8)	TP21.7728x21.7197x0.5625	404.08	1204.78	0.335	0.00	1204.78	0.000
L9	116.75 - 111.75 (9)	TP22.836x21.7728x0.55	491.92	1302.86	0.378	0.00	1302.86	0.000
L10	111.75 - 106.75 (10)	TP23.8992x22.836x0.525	581.96	1371.03	0.424	0.00	1371.03	0.000
L11	106.75 - 101.75 (11)	TP24.9624x23.8992x0.25	673.74	731.67	0.921	0.00	731.67	0.000
L12	101.75 - 96.75 (12)	TP26.0256x24.9624x0.25	766.84	787.73	0.973	0.00	787.73	0.000
L13	96.75 - 91.75 (13)	TP27.0888x26.0256x0.25	861.21	845.08	1.019	0.00	845.08	0.000
L14	91.75 - 85.96 (14)	TP28.32x27.0888x0.25	893.77	864.98	1.033	0.00	864.98	0.000
L15	85.96 - 84.96 (15)	TP28.0347x26.9524x0.675	992.08	2409.92	0.412	0.00	2409.92	0.000
L16	84.96 - 79.96	TP29.1x28.0347x0.3125	1091.14	1252.07	0.871	0.00	1252.07	0.000

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 $\frac{M_{uy}}{\phi M_{ny}}$
	(16)							
L17	79.96 - 74.96	TP30.1652x29.1x0.3125	1191.64	1345.38	0.886	0.00	1345.38	0.000
	(17)							
L18	74.96 - 69.96	TP31.2305x30.1652x0.3125	1293.55	1431.28	0.904	0.00	1431.28	0.000
	(18)							
L19	69.96 - 64.96	TP32.2957x31.2305x0.3125	1396.80	1518.88	0.920	0.00	1518.88	0.000
	(19)							
L20	64.96 - 60.5	TP33.2459x32.2957x0.3125	1489.99	1598.42	0.932	0.00	1598.42	0.000
	(20)							
L21	60.5 - 60.25	TP33.2992x33.2459x0.6	1495.25	3078.84	0.486	0.00	3078.84	0.000
	(21)							
L22	60.25 - 55.25	TP34.3644x33.2992x0.5875	1601.26	3219.72	0.497	0.00	3219.72	0.000
	(22)							
L23	55.25 - 50.25	TP35.4297x34.3644x0.5875	1709.00	3427.80	0.499	0.00	3427.80	0.000
	(23)							
L24	50.25 - 42.41	TP37.1x35.4297x0.575	1767.21	3469.91	0.509	0.00	3469.91	0.000
	(24)							
L25	42.41 - 41.41	TP36.6867x35.3735x0.6375	1881.52	3931.23	0.479	0.00	3931.23	0.000
	(25)							
L26	41.41 - 36.41	TP37.7508x36.6867x0.625	1903.88	3904.53	0.488	0.00	3904.53	0.000
	(26)							
L27	36.41 - 31.41	TP38.815x37.7508x0.625	2016.58	4140.39	0.487	0.00	4140.39	0.000
	(27)							
L28	31.41 - 30.5	TP39.0087x38.815x0.6125	2130.73	4299.73	0.496	0.00	4299.73	0.000
	(28)							
L29	30.5 - 30.25	TP39.0619x39.0087x0.6125	2151.67	4343.78	0.495	0.00	4343.78	0.000
	(29)							
L30	30.25 - 25.25	TP40.126x39.0619x0.6125	2157.43	4355.93	0.495	0.00	4355.93	0.000
	(30)							
L31	25.25 - 20.25	TP41.1902x40.126x0.6	2273.27	4512.68	0.504	0.00	4512.68	0.000
	(31)							
L32	20.25 - 18 (32)	TP41.6691x41.1902x0.6	2390.44	4760.80	0.502	0.00	4760.80	0.000
L33	18 - 17.75 (33)	TP41.7223x41.6691x0.5563	2443.63	4533.63	0.539	0.00	4533.63	0.000
L34	17.75 - 12.75	TP42.7864x41.7223x0.55	2449.56	4496.43	0.545	0.00	4496.43	0.000
	(34)							
L35	12.75 - 7.75	TP43.8506x42.7864x0.55	2568.88	4733.44	0.543	0.00	4733.44	0.000
	(35)							
L36	7.75 - 2.75 (36)	TP44.9147x43.8506x0.5375	2689.47	4867.65	0.553	0.00	4867.65	0.000
L37	2.75 - 0 (37)	TP45.5x44.9147x0.5375	2811.28	5111.27	0.550	0.00	5111.27	0.000

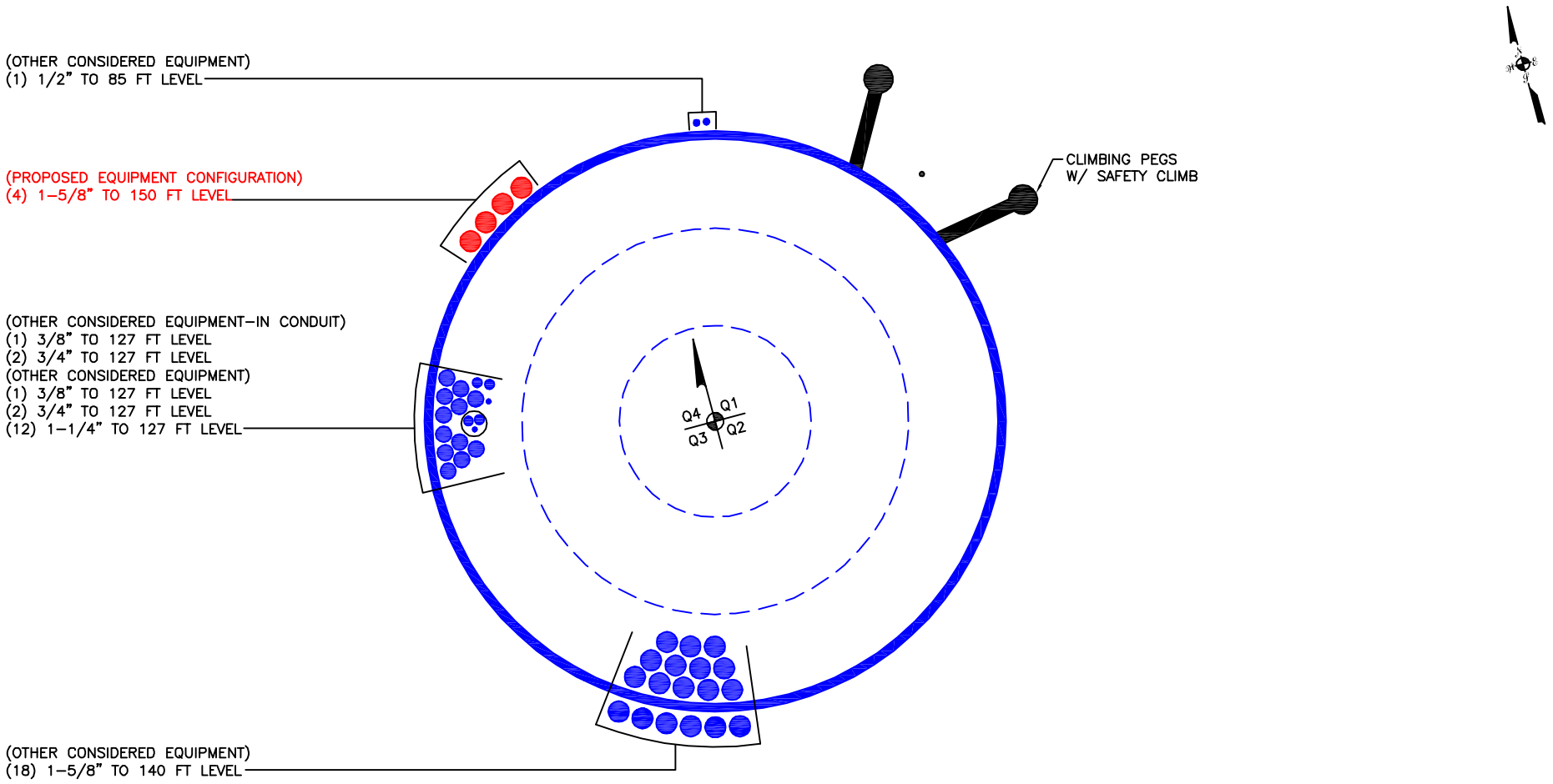
Pole Shear Design Data

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	150 - 145 (1)	TP16.0798x15x0.1875	6.46	165.99	0.039	1.79	231.01	0.008
L2	145 - 140 (2)	TP17.1595x16.0798x0.1875	6.71	177.26	0.038	1.79	263.47	0.007
L3	140 - 135 (3)	TP18.2393x17.1595x0.1875	12.19	188.54	0.065	1.68	298.06	0.006
L4	135 - 130 (4)	TP19.319x18.2393x0.1875	12.43	199.82	0.062	1.68	334.78	0.005
L5	130 - 123.42	TP20.74x19.319x0.1875	16.89	207.51	0.081	1.79	361.05	0.005
	(5)							
L6	123.42 -	TP20.7436x19.6804x0.25	17.18	285.39	0.060	1.79	512.20	0.003
	121.59 (6)							
L7	121.59 - 117	TP21.7197x20.7436x0.25	17.39	298.99	0.058	1.79	562.15	0.003
	(7)							
L8	117 - 116.75	TP21.7728x21.7197x0.5625	17.41	664.59	0.026	1.79	1234.47	0.001
	(8)							
L9	116.75 -	TP22.836x21.7728x0.55	17.73	682.78	0.026	1.79	1332.58	0.001

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 $\frac{T_u}{\phi T_n}$
L10	111.75 (9) 111.75 - 106.75 (10)	TP23.8992x22.836x0.525	18.22	683.57	0.027	1.39	1399.26	0.001
L11	106.75 - 101.75 (11)	TP24.9624x23.8992x0.25	18.50	344.14	0.054	1.39	744.79	0.002
L12	101.75 - 96.75 (12)	TP26.0256x24.9624x0.25	18.75	358.95	0.052	1.39	810.26	0.002
L13	96.75 - 91.75 (13)	TP27.0888x26.0256x0.25	19.00	373.76	0.051	1.38	878.48	0.002
L14	91.75 - 85.96 (14)	TP28.32x27.0888x0.25	19.11	378.82	0.050	1.38	902.44	0.002
L15	85.96 - 84.96 (15)	TP28.0347x26.9524x0.675	19.66	1028.73	0.019	1.38	2464.85	0.001
L16	84.96 - 79.96 (16)	TP29.1x28.0347x0.3125	19.96	501.12	0.040	1.17	1263.34	0.001
L17	79.96 - 74.96 (17)	TP30.1652x29.1x0.3125	20.25	519.66	0.039	1.17	1358.57	0.001
L18	74.96 - 69.96 (18)	TP31.2305x30.1652x0.3125	20.52	538.20	0.038	1.17	1457.26	0.001
L19	69.96 - 64.96 (19)	TP32.2957x31.2305x0.3125	20.79	556.75	0.037	1.16	1559.40	0.001
L20	64.96 - 60.5 (20)	TP33.2459x32.2957x0.3125	21.02	573.29	0.037	1.16	1653.44	0.001
L21	60.5 - 60.25 (21)	TP33.2992x33.2459x0.6	21.02	1092.88	0.019	1.16	3129.60	0.000
L22	60.25 - 55.25 (22)	TP34.3644x33.2992x0.5875	21.37	1105.38	0.019	1.16	3269.73	0.000
L23	55.25 - 50.25 (23)	TP35.4297x34.3644x0.5875	21.71	1140.24	0.019	1.16	3479.22	0.000
L24	50.25 - 42.41 (24)	TP37.1x35.4297x0.575	21.89	1134.60	0.019	1.16	3519.78	0.000
L25	42.41 - 41.41 (25)	TP36.6867x35.3735x0.6375	22.39	1280.15	0.017	1.16	3993.85	0.000
L26	41.41 - 36.41 (26)	TP37.7508x36.6867x0.625	22.45	1262.89	0.018	1.16	3964.93	0.000
L27	36.41 - 31.41 (27)	TP38.815x37.7508x0.625	22.74	1299.94	0.017	1.16	4202.39	0.000
L28	31.41 - 30.5 (28)	TP39.0087x38.815x0.6125	23.02	1310.02	0.018	1.16	4360.68	0.000
L29	30.5 - 30.25 (29)	TP39.0619x39.0087x0.6125	23.02	1311.84	0.018	1.16	4405.00	0.000
L30	30.25 - 25.25 (30)	TP40.126x39.0619x0.6125	23.08	1319.10	0.018	1.16	4417.22	0.000
L31	25.25 - 20.25 (31)	TP41.1902x40.126x0.6	23.35	1328.16	0.018	1.16	4572.79	0.000
L32	20.25 - 18 (32)	TP41.6691x41.1902x0.6	23.64	1364.62	0.017	1.16	4822.33	0.000
L33	18 - 17.75 (33)	TP41.7223x41.6691x0.5563	23.71	1275.54	0.019	1.16	4586.57	0.000
L34	17.75 - 12.75 (34)	TP42.7864x41.7223x0.55	23.78	1267.92	0.019	1.16	4548.17	0.000
L35	12.75 - 7.75 (35)	TP43.8506x42.7864x0.55	24.04	1300.52	0.018	1.16	4786.31	0.000
L36	7.75 - 2.75 (36)	TP44.9147x43.8506x0.5375	24.29	1303.20	0.019	1.16	4919.04	0.000
L37	2.75 - 0 (37)	TP45.5x44.9147x0.5375	24.54	1337.45	0.018	1.16	5163.72	0.000

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 85 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(4) 1-5/8" TO 150 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(1) 3/8" TO 127 FT LEVEL
(2) 3/4" TO 127 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 127 FT LEVEL
(2) 3/4" TO 127 FT LEVEL
(12) 1-1/4" TO 127 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(18) 1-5/8" TO 140 FT LEVEL
CLIMBING PEGS
W/ SAFETY CLIMB
Q4
Q1
Q3
Q2

APPENDIX C

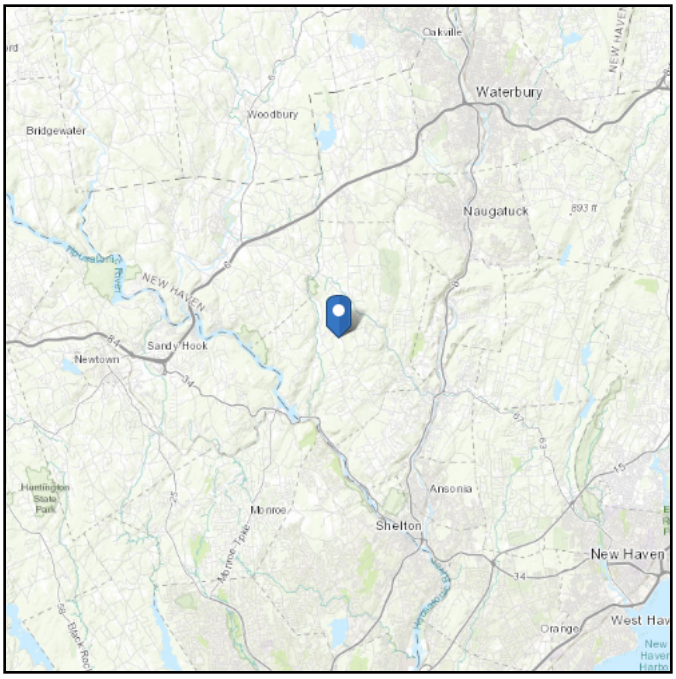
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 734.07 ft (NAVD 88)
Latitude: 41.426364
Longitude: -73.144258



Wind

Results:

Wind Speed:	121 Vmph	125 Vmph per Local Jurisdiction
10-year MRI	76 Vmph	
25-year MRI	86 Vmph	
50-year MRI	92 Vmph	
100-year MRI	98 Vmph	

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

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 7-10 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 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

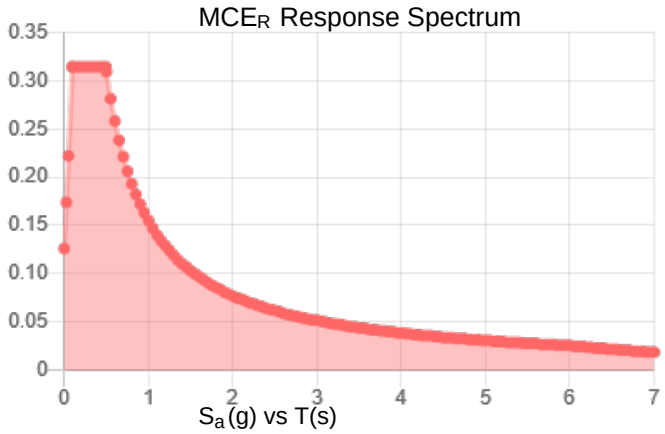
Seismic

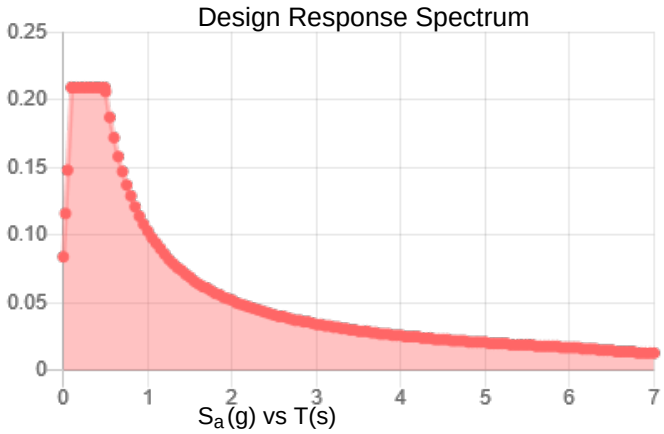
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.196	S_{DS} :	0.209
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.104
S_{MS} :	0.314	PGA_M :	0.165
S_{M1} :	0.155	F_{PGA} :	1.592
		I_e :	1

Seismic Design Category B





Data Accessed: Sun Feb 14 2021

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Sun Feb 14 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.

CCIpole

per TIA-222- H

Site BU: 876361

Work Order: 1918888

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	150	26.58	3.17	18	15	20.74	0.1875	Auto	A572-65
2	126.59	40.63	4.08	18	19.68	28.32	0.25	Auto	A572-65
3	90.04	47.63	5.17	18	26.95	37.1	0.3125	Auto	A572-65
4	47.58	47.58	0	18	35.37	45.5	0.375	Auto	A572-65

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	30.5	channel	MP3-06 (1.1875in)	2						x												x
2	0	18	channel	MP3-06 (1.1875in)	1											x							
3	18	30.5	channel	MP3-06 (1.1875in)	1												x						
4	30.5	60.5	channel	MP3-06 (1.1875in)	3						x						x						x
5	60.5	89	channel	MP3-06 (MOD)	3						x						x						x
6	89	117	channel	MP3-05 (MOD)	3	x						x						x					
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	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
2	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
3	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
4	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
5	6.89	2.61	8.47	0.93	Capacity Input	n/a	Capacity Input	n/a	24.000	7.670	1.1875	A572-65
6	5.33	2.09	5.65	0.79	Capacity Input	n/a	Capacity Input	n/a	18.000	5.025	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 (MOD)	Top	-	-	-	-				-	-		-	-	216.12
	Bottom	-	-	-	-				-	-		-	-	216.12
MP3-06 (MOD)	Top	-	-	-	-				-	-		-	-	324.18
	Bottom	-	-	-	-				-	-		-	-	324.18

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	150 - 145	5		18	15.000	16.080	0.1875	A572-65	1.000
2	145 - 140	5		18	16.080	17.160	0.1875	A572-65	1.000
3	140 - 135	5		18	17.160	18.239	0.1875	A572-65	1.000
4	135 - 130	5		18	18.239	19.319	0.1875	A572-65	1.000
5	130 - 126.59	6.58	3.17	18	19.319	20.740	0.1875	A572-65	1.000
6	126.59 - 121.59	5		18	19.680	20.744	0.25	A572-65	1.000
7	121.59 - 117	4.59		18	20.744	21.720	0.25	A572-65	1.000
8	117 - 116.75	0.25		18	21.720	21.773	0.5625	A572-65	0.899
9	116.75 - 111.75	5		18	21.773	22.836	0.55	A572-65	0.896
10	111.75 - 106.75	5		18	22.836	23.899	0.525	A572-65	0.917
11	106.75 - 101.75	5		18	23.899	24.962	0.25	A572-65	1.000
12	101.75 - 96.75	5		18	24.962	26.026	0.25	A572-65	1.000
13	96.75 - 91.75	5		18	26.026	27.089	0.25	A572-65	1.000
14	91.75 - 90.04	5.79	4.08	18	27.089	28.320	0.25	A572-65	1.000
15	90.04 - 84.96	5.08		18	26.952	28.035	0.675	A572-65	0.903
16	84.96 - 79.96	5		18	28.035	29.100	0.3125	A572-65	1.000
17	79.96 - 74.96	5		18	29.100	30.165	0.3125	A572-65	1.000
18	74.96 - 69.96	5		18	30.165	31.230	0.3125	A572-65	1.000
19	69.96 - 64.96	5		18	31.230	32.296	0.3125	A572-65	1.000
20	64.96 - 60.5	4.46		18	32.296	33.246	0.3125	A572-65	1.000
21	60.5 - 60.25	0.25		18	33.246	33.299	0.6	A572-65	0.933
22	60.25 - 55.25	5		18	33.299	34.364	0.5875	A572-65	0.940
23	55.25 - 50.25	5		18	34.364	35.430	0.5875	A572-65	0.927
24	50.25 - 47.58	7.84	5.17	18	35.430	37.100	0.575	A572-65	0.941
25	47.58 - 41.41	6.17		18	35.374	36.687	0.6375	A572-65	0.941
26	41.41 - 36.41	5		18	36.687	37.751	0.625	A572-65	0.949
27	36.41 - 31.41	5		18	37.751	38.815	0.625	A572-65	0.939
28	31.41 - 30.5	0.91		18	38.815	39.009	0.6125	A572-65	0.956
29	30.5 - 30.25	0.25		18	39.009	39.062	0.6125	A572-65	0.956
30	30.25 - 25.25	5		18	39.062	40.126	0.6125	A572-65	0.947
31	25.25 - 20.25	5		18	40.126	41.190	0.6	A572-65	0.957
32	20.25 - 18	2.25		18	41.190	41.669	0.6	A572-65	0.953
33	18 - 17.75	0.25		18	41.669	41.722	0.55625	A572-65	1.027
34	17.75 - 12.75	5		18	41.722	42.786	0.55	A572-65	1.029
35	12.75 - 7.75	5		18	42.786	43.851	0.55	A572-65	1.021
36	7.75 - 2.75	5		18	43.851	44.915	0.5375	A572-65	1.036
37	2.75 - 0	2.75		18	44.915	45.500	0.5375	A572-65	1.031

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	150 - 145	3.66	30.26	6.46
2	145 - 140	3.90	63.21	6.71
3	140 - 135	5.97	126.78	12.19
4	135 - 130	6.40	188.34	12.43
5	130 - 126.59	10.03	235.23	16.89
6	126.59 - 121.59	10.75	320.42	17.18
7	121.59 - 117	11.38	399.73	17.39
8	117 - 116.75	11.45	404.08	17.41
9	116.75 - 111.75	12.39	491.92	17.73
10	111.75 - 106.75	13.31	581.95	18.22
11	106.75 - 101.75	14.06	673.74	18.50
12	101.75 - 96.75	14.84	766.84	18.75
13	96.75 - 91.75	15.64	861.20	19.00
14	91.75 - 90.04	15.91	893.77	19.11
15	90.04 - 84.96	17.70	992.08	19.66
16	84.96 - 79.96	18.62	1091.14	19.96
17	79.96 - 74.96	19.57	1191.65	20.25
18	74.96 - 69.96	20.55	1293.55	20.52
19	69.96 - 64.96	21.55	1396.80	20.79
20	64.96 - 60.5	22.46	1490.00	21.01
21	60.5 - 60.25	22.55	1495.25	21.02
22	60.25 - 55.25	24.02	1601.26	21.37
23	55.25 - 50.25	25.52	1709.00	21.71
24	50.25 - 47.58	26.33	1767.21	21.89
25	47.58 - 41.41	29.64	1903.87	22.39
26	41.41 - 36.41	31.34	2016.57	22.69
27	36.41 - 31.41	33.06	2130.74	22.97
28	31.41 - 30.5	33.38	2151.66	23.02
29	30.5 - 30.25	33.47	2157.42	23.02
30	30.25 - 25.25	35.22	2273.27	23.30
31	25.25 - 20.25	37.01	2390.44	23.56
32	20.25 - 18	37.82	2443.62	23.71
33	18 - 17.75	37.92	2449.55	23.71
34	17.75 - 12.75	39.74	2568.87	24.00
35	12.75 - 7.75	41.59	2689.48	24.24
36	7.75 - 2.75	43.48	2811.27	24.47
37	2.75 - 0	44.52	2878.76	24.61

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP16.08x15x0.1875	Pole	13.1%	Pass
145 - 140	Pole	TP17.16x16.08x0.1875	Pole	23.6%	Pass
140 - 135	Pole	TP18.239x17.16x0.1875	Pole	41.8%	Pass
135 - 130	Pole	TP19.319x18.239x0.1875	Pole	55.8%	Pass
130 - 126.59	Pole	TP20.74x19.319x0.1875	Pole	65.5%	Pass
126.59 - 121.59	Pole	TP20.744x19.68x0.25	Pole	61.1%	Pass
121.59 - 117	Pole	TP21.72x20.744x0.25	Pole	69.3%	Pass
117 - 116.75	Pole + Reinf.	TP21.773x21.72x0.5625	Reinf. 6 Connection	65.7%	Pass
116.75 - 111.75	Pole + Reinf.	TP22.836x21.773x0.55	Reinf. 6 Compression	74.5%	Pass
111.75 - 106.75	Pole + Reinf.	TP23.899x22.836x0.525	Reinf. 6 Compression	82.3%	Pass
106.75 - 101.75	Pole	TP24.962x23.899x0.25	Pole	88.7%	Pass
101.75 - 96.75	Pole	TP26.026x24.962x0.25	Pole	93.7%	Pass
96.75 - 91.75	Pole	TP27.089x26.026x0.25	Pole	98.1%	Pass
91.75 - 90.04	Pole	TP28.32x27.089x0.25	Pole	99.4%	Pass
90.04 - 84.96	Pole + Reinf.	TP28.035x26.952x0.675	Reinf. 5 Connection	80.6%	Pass
84.96 - 79.96	Pole	TP29.1x28.035x0.3125	Pole	83.8%	Pass
79.96 - 74.96	Pole	TP30.165x29.1x0.3125	Pole	85.2%	Pass
74.96 - 69.96	Pole	TP31.23x30.165x0.3125	Pole	87.0%	Pass
69.96 - 64.96	Pole	TP32.296x31.23x0.3125	Pole	88.5%	Pass
64.96 - 60.5	Pole	TP33.246x32.296x0.3125	Pole	89.7%	Pass
60.5 - 60.25	Pole + Reinf.	TP33.299x33.246x0.6	Reinf. 4 Tension Rupture	67.6%	Pass
60.25 - 55.25	Pole + Reinf.	TP34.364x33.299x0.5875	Reinf. 4 Tension Rupture	69.0%	Pass
55.25 - 50.25	Pole + Reinf.	TP35.43x34.364x0.5875	Reinf. 4 Tension Rupture	70.2%	Pass
50.25 - 47.58	Pole + Reinf.	TP37.1x35.43x0.575	Reinf. 4 Tension Rupture	70.8%	Pass
47.58 - 41.41	Pole + Reinf.	TP36.687x35.374x0.6375	Reinf. 4 Tension Rupture	66.8%	Pass
41.41 - 36.41	Pole + Reinf.	TP37.751x36.687x0.625	Reinf. 4 Tension Rupture	67.6%	Pass
36.41 - 31.41	Pole + Reinf.	TP38.815x37.751x0.625	Reinf. 4 Tension Rupture	68.2%	Pass
31.41 - 30.5	Pole + Reinf.	TP39.009x38.815x0.6125	Reinf. 4 Tension Rupture	68.4%	Pass
30.5 - 30.25	Pole + Reinf.	TP39.062x39.009x0.6125	Reinf. 3 Tension Rupture	68.4%	Pass
30.25 - 25.25	Pole + Reinf.	TP40.126x39.062x0.6125	Reinf. 3 Tension Rupture	69.0%	Pass
25.25 - 20.25	Pole + Reinf.	TP41.19x40.126x0.6	Reinf. 3 Tension Rupture	69.5%	Pass
20.25 - 18	Pole + Reinf.	TP41.669x41.19x0.6	Reinf. 3 Tension Rupture	69.7%	Pass
18 - 17.75	Pole + Reinf.	TP41.722x41.669x0.5563	Reinf. 1 Tension Rupture	71.6%	Pass
17.75 - 12.75	Pole + Reinf.	TP42.786x41.722x0.55	Reinf. 1 Tension Rupture	72.0%	Pass
12.75 - 7.75	Pole + Reinf.	TP43.851x42.786x0.55	Reinf. 1 Tension Rupture	72.3%	Pass
7.75 - 2.75	Pole + Reinf.	TP44.915x43.851x0.5375	Reinf. 1 Tension Rupture	72.6%	Pass
2.75 - 0	Pole + Reinf.	TP45.5x44.915x0.5375	Reinf. 1 Tension Rupture	72.7%	Pass
				Summary	
			Pole	99.4%	Pass
			Reinforcement	82.3%	Pass
			Overall	99.4%	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	R6
150 - 145	302	n/a	302	9.46	n/a	9.46	13.1%						
145 - 140	367	n/a	367	10.10	n/a	10.10	23.6%						
140 - 135	442	n/a	442	10.74	n/a	10.74	41.8%						
135 - 130	526	n/a	526	11.39	n/a	11.39	55.8%						
130 - 126.59	589	n/a	589	11.82	n/a	11.82	65.5%						
126.59 - 121.59	863	n/a	863	16.26	n/a	16.26	61.1%						
121.59 - 117	992	n/a	992	17.04	n/a	17.04	69.3%						
117 - 116.75	999	1166	2165	17.08	16.95	34.03	31.8%						65.7%
116.75 - 111.75	1155	1274	2429	17.92	16.95	34.87	36.2%						74.5%
111.75 - 106.75	1326	1386	2712	18.76	16.95	35.71	40.1%						82.3%
106.75 - 101.75	1512	n/a	1512	19.61	n/a	19.61	88.7%						
101.75 - 96.75	1716	n/a	1716	20.45	n/a	20.45	93.7%						
96.75 - 91.75	1937	n/a	1937	21.30	n/a	21.30	98.1%						
91.75 - 90.04	2017	n/a	2017	21.58	n/a	21.58	99.4%						
90.04 - 84.96	2669	2864	5533	27.50	25.41	52.91	39.2%					80.6%	
84.96 - 79.96	2989	n/a	2989	28.55	n/a	28.55	83.8%						
79.96 - 74.96	3333	n/a	3333	29.61	n/a	29.61	85.2%						
74.96 - 69.96	3702	n/a	3702	30.67	n/a	30.67	87.0%						
69.96 - 64.96	4098	n/a	4098	31.72	n/a	31.72	88.5%						
64.96 - 60.5	4475	n/a	4475	32.66	n/a	32.66	89.7%						
60.5 - 60.25	4496	3952	8448	32.72	25.41	58.13	47.2%				67.6%		
60.25 - 55.25	4946	4194	9140	33.77	25.41	59.18	48.6%				69.0%		
55.25 - 50.25	5425	4442	9867	34.83	25.41	60.24	50.0%				70.2%		
50.25 - 47.58	5693	4578	10271	35.39	25.41	60.80	50.7%				70.8%		
47.58 - 41.41	7197	4745	11942	43.22	25.41	68.63	45.8%				66.8%		
41.41 - 36.41	7849	5009	12858	44.48	25.41	69.89	46.7%				67.6%		
36.41 - 31.41	8538	5281	13819	45.75	25.41	71.16	47.6%				68.2%		
31.41 - 30.5	8668	5331	13999	45.98	25.41	71.39	47.8%				68.4%		
30.5 - 30.25	8704	5345	14048	46.05	25.41	71.46	47.8%	68.4%		68.4%			
30.25 - 25.25	9442	5625	15067	47.31	25.41	72.72	48.6%	69.0%		69.0%			
25.25 - 20.25	10221	5912	16133	48.58	25.41	73.99	49.4%	69.5%		69.5%			
20.25 - 18	10585	6044	16629	49.15	25.41	74.56	49.7%	69.7%		69.7%			
18 - 17.75	10656	4933	15589	49.21	25.41	74.62	55.8%	71.6%	68.6%				
17.75 - 12.75	11499	5176	16675	50.48	25.41	75.89	56.5%	72.0%	69.0%				
12.75 - 7.75	12385	5426	17811	51.74	25.41	77.15	57.1%	72.3%	69.4%				
7.75 - 2.75	13315	5681	18997	53.01	25.41	78.42	57.8%	72.6%	69.7%				
2.75 - 0	13847	5824	19671	53.71	25.41	79.12	58.1%	72.7%	69.8%				

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

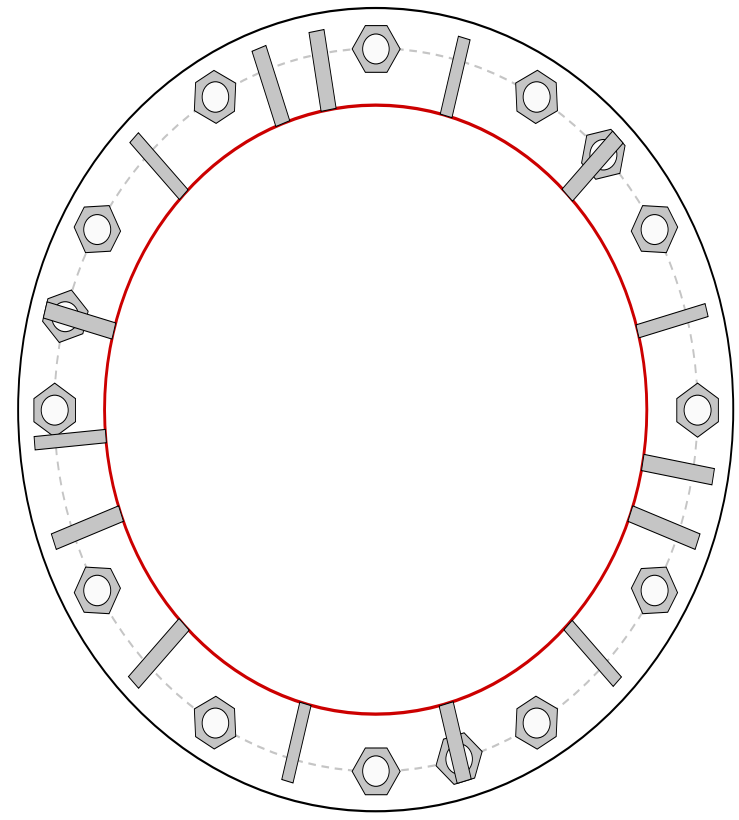
Monopole Base Plate Connection

Site Info	
BU #	876361
Site Name	our 2 / Oxford Town G
Order #	538756 Rev. 1

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

Applied Loads	
Moment (kip-ft)	2879.00
Axial Force (kips)	45.00
Shear Force (kips)	25.00

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 54" BC
GROUP 2: (3) 2-1/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 54" BC

Base Plate Data

60" OD x 1.75" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

Group 1: (6) 18"H x 6"W x 1"T, Notch: 0.75"
plate: Fy= 65 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.375" groove, 45° dbl bevel, 0.5" fillet
vert. weld: 0.375" fillet

Group 2: (6) 51"H x 6"W x 1.25"T, Notch: 0.75"
plate: Fy= 65 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.5" groove, 45° dbl bevel, 0.625" fillet
vert. weld: 0.375" fillet

Group 3: (3) 30"H x 6"W x 1.25"T, Notch: 0.75"
plate: Fy= 65 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.5" groove, 45° dbl bevel, 0.625" fillet
vert. weld: 0.375" fillet

Pole Data

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

Analysis Results

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

GROUP 1:		
Pu_c = 174.24	ϕPn_c = 268.39	**Stress Rating**
Vu = 2.08	ϕVn = 120.77	**61.9%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 170.49	ϕPn_c = 375.74	**Stress Rating**
Vu = 0	ϕVn = 169.08	**43.2%**
Mu = 0	ϕMn = 179.4	**Pass**

Base Plate Summary

Max Stress (ksi):	40.25	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**71.0%**	**Pass**

Stiffener Summary

Horizontal Weld:	**69.3%**	**Pass**
Vertical Weld:	**30.8%**	**Pass**
Plate Flexure+Shear:	**6.6%**	**Pass**
Plate Tension+Shear:	**30.6%**	**Pass**
Plate Compression:	**32.2%**	**Pass**

Pole Summary

Punching Shear:	**9.5%**	**Pass**

Pier and Pad Foundation

BU # :	876361
Site Name:	Seymour 2 / Oxford
App. Number:	538756 Rev. 1

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	45	kips
Base Shear, Vu_comp:	25	kips
Moment, M_u:	2879	ft-kips
Tower Height, **H**:	150	ft
BP Dist. Above Fdn, bp_{dist}:	4.5	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	6	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	30	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	6	ft
Pad Width, W_1:	21.5	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Top dir.2), Sp_{top2}:	8	
Pad Rebar Quantity (Top dir. 2), mp_{top2}:	20	
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	33	
Pad Clear Cover, cc_{pad}:	3	in

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

Soil Properties		
Total Soil Unit Weight, γ:	120	pcf
Ultimate Gross Bearing, Qult:	12.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:		degrees
SPT Blow Count, N_{blows}:	60	
Base Friction, μ:		
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	24.10	25.00	**98.8%**	**Pass**
Bearing Pressure (ksf)	9.00	3.68	**40.9%**	**Pass**
*Overturning (kip*ft)*	3721.39	3063.38	**82.3%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	3243.80	2979.00	**87.5%**	**Pass**
Pier Compression (kip)	17184.96	70.92	**0.4%**	**Pass**
*Pad Flexure (kip*ft)*	3555.96	1457.18	**39.0%**	**Pass**
Pad Shear - 1-way (kips)	667.70	249.95	**35.7%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	3964.87	1787.40	**42.9%**	**Pass**

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

Soil Rating*:	**98.8%**
Structural Rating*:	**87.5%**

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: CTNH318A

CT23XC507
20 Great Oak Road
Oxford, Connecticut 06478

April 6, 2021

EBI Project Number: 6221001640

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**22.19%**

April 6, 2021

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

Emissions Analysis for Site: CTNH318A - CT23XC507

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **20 Great Oak Road** in **Oxford, 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 20 Great Oak Road in Oxford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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

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

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

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

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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

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

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

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

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

12) The antenna mounting height centerline of the proposed antennas is 150 feet above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE %:	**0.81%**	Antenna B1 MPE %:	**0.81%**	Antenna C1 MPE %:	**0.81%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Channel Count:	11	Channel Count:	11	Channel Count:	11
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	12,569.87	ERP (W):	12,569.87	ERP (W):	12,569.87
Antenna A2 MPE %:	**3.17%**	Antenna B2 MPE %:	**3.17%**	Antenna C2 MPE %:	**3.17%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	17.3 dBd / 17.3 dBd	Gain:	17.3 dBd / 17.3 dBd	Gain:	17.3 dBd / 17.3 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	12,888.76	ERP (W):	12,888.76	ERP (W):	12,888.76
Antenna A3 MPE %:	**2.23%**	Antenna B3 MPE %:	**2.23%**	Antenna C3 MPE %:	**2.23%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	6.22%
Sprint	2.66%
AT&T	11.7%
Verizon	1.61%
Site Total MPE % :	22.19%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	6.22%
T-Mobile Sector B Total:	6.22%
T-Mobile Sector C Total:	6.22%
Site Total MPE % :	22.19%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 2100 MHz LTE	2	2334.27	150.0	8.09	2100 MHz LTE	1000	0.81%
T-Mobile 600 MHz LTE	2	591.73	150.0	2.05	600 MHz LTE	400	0.51%
T-Mobile 600 MHz NR	1	1577.94	150.0	2.74	600 MHz NR	400	0.68%
T-Mobile 700 MHz LTE	2	695.22	150.0	2.41	700 MHz LTE	467	0.52%
T-Mobile 1900 MHz GSM	4	1052.26	150.0	7.30	1900 MHz GSM	1000	0.73%
T-Mobile 1900 MHz LTE	2	2104.51	150.0	7.30	1900 MHz LTE	1000	0.73%
T-Mobile 2500 MHz LTE	1	6444.38	150.0	11.17	2500 MHz LTE	1000	1.12%
T-Mobile 2500 MHz LTE	1	6444.38	150.0	11.17	2500 MHz LTE	1000	1.12%
						Total:	**6.22%**

• 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:	6.22%
Sector B:	6.22%
Sector C:	6.22%
T-Mobile Maximum MPE % (Sector A):	6.22%
Site Total:	22.19%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **22.19%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit E

Mount Analysis

Date: **February 3, 2021**

GPD Engineering and Architecture
Professional Corporation
520 South Main Street, Suite 2531
Akron, Ohio 44311
(216) 927-8663
CrownMA@gpdgroup.com

Darcy Tarr
Crown Castle
6325 Ardrey Kell Road, Suite 600
Charlotte, NC 28277
(704) 405-6589

Subject:	**Mount Analysis Report**	
Carrier Designation:	***Sprint PCS* Loading Modification**	
	Carrier Site Number:	CTNH318A
	Carrier Site Name:	CTNH318A
Crown Castle Designation:	**Crown Castle BU Number:**	876361
	Crown Castle Site Name:	SEYMOUR 2 / OXFORD TOWN GARAGE
	Crown Castle JDE Job Number:	628845
	Crown Castle Order Number:	538756 Rev. 0
Engineering Firm Designation:	**GPD Report Designation:**	2021777.876361.01
Site Data:	**20 Great Oak Rd., Oxford, New Haven County, CT 06478** **Latitude 41° 25' 34.91" Longitude -73° 8' 39.33"**	
Structure Information:	**Tower Height & Type:**	**150.0 ft Monopole Tower**
	Mount Elevation:	**150.0 ft**
	Mount Type:	**10.7 ft Platform Mount**

Dear Darcy Tarr,

GPD is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of Sprint PCS's antenna mounting system with the proposed appurtenance and equipment addition on the above mentioned 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.

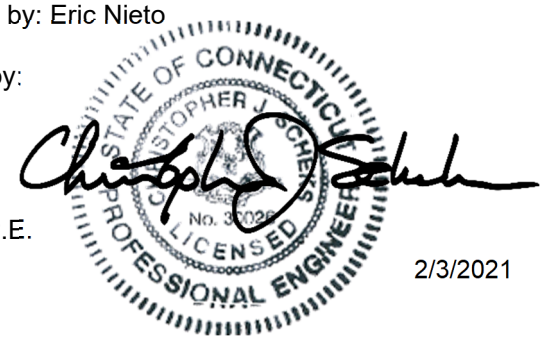
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Platform Mount **Sufficient – 42.3%***
***The mount has sufficient capacity once the loading changes, as described in Section 4.1 Recommendations of this report, are completed.**

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: Eric Nieto

Respectfully Submitted by:



Christopher J. Scheks, P.E.
Connecticut #: 0030026

2/3/2021

TABLE OF CONTENTS

1) INTRODUCTION

This is a 10.7' Platform Mount. Mount geometry was obtained from site photos and experience with similar mounts.

A proposed support rail designed by Site Pro 1 (Part #: HRK12-3HD, or engineer approved equivalent) has been assumed for the purpose of this analysis. In order for the analysis results to be valid, the proposed support rail shall be installed 36" above the existing channel horizontals. See Appendices A & E.

New mount pipes have been assumed for all positions (4 pipes per sector). In addition, it has been assumed that the new mount pipes attach to the proposed support rails, existing platform channels, and existing bottom face horizontals. See Appendix A.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
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 Details
150.0	150.0	3	Ericsson	AIR6449 B41_T-MOBILE	10.7 ft. Platform Mount
		3	RFS/Celwave	APX16DWV-16DWV-S-E-A20	
		3	RFS/Celwave	APXVAALL24_43-U-NA20_TMO	
		3	Ericsson	RADIO 4415 B66A_CCIV3	
		3	Ericsson	RADIO 4424 B25_TMO	
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Application	Crown Order Number 538756 Rev. 0	-	CCI
RF Data Sheet	Site ID: CTNH318A, Draft Rev. 1, dated 1/11/2021	-	CCI
Support Rail Design	Site Pro 1 DWG #: HRK12-3HD, dated 4/7/2015	-	Site Pro 1

3.1) Analysis Method

RISA-3D Edition (Version 17.0.2), 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 by GPD, using Microsoft Excel, 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 C).

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) This analysis assumes all information reference in Table 2 is current and correct.
5) The mount was modeled from site photos. Member information and dimensions not provided have been assumed based on previous experience with similar mounts. No guarantee can be made as to the accuracy of these assumptions without a complete mount mapping.
6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle	ASTM A36 (GR 36)
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. GPD 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 Mount)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,3	Platform Channels	M83	150.0	35.8	Pass
	Platform Inner Bracing	M2		29.3	Pass
	Bottom Face Horizontal	M36		13.0	Pass
	Pipe Mount	C2		31.0	Pass
	Ladder Support Bracing	M94		27.9	Pass
	Support Rail	M71		9.8	Pass
	Support Rail Corner Pipe	M80		2.1	Pass
	Support Rail Corner Angle	M77		18.9	Pass
2,3	Mount to Tower Connection	-		42.3	Pass

Structure Rating (max from all components) =	42.3%[3]

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in "Appendix D - Additional Calculations" for calculations supporting the % capacity consumed.
3) Ratings per TIA-222-H section 15.5.

4.1) Recommendations

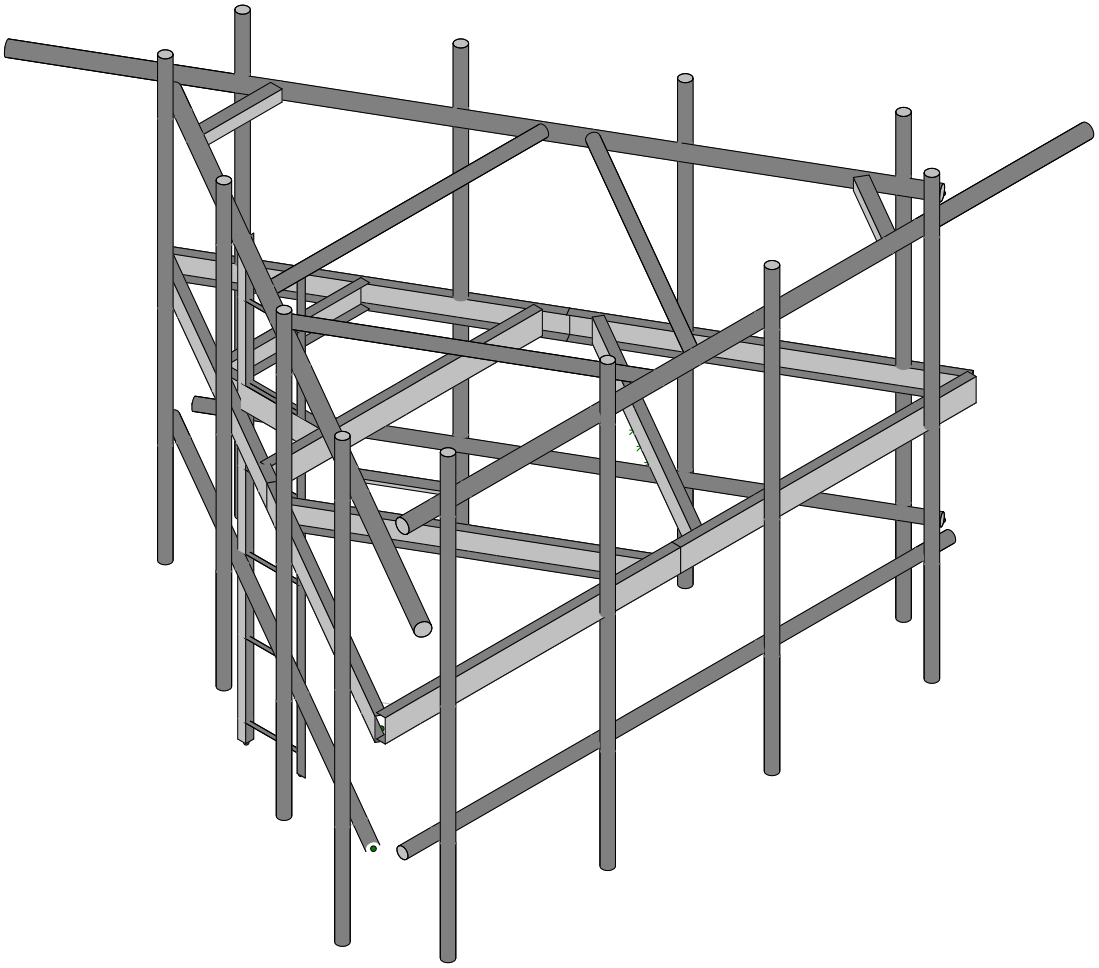
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the loading modification listed below must be completed.

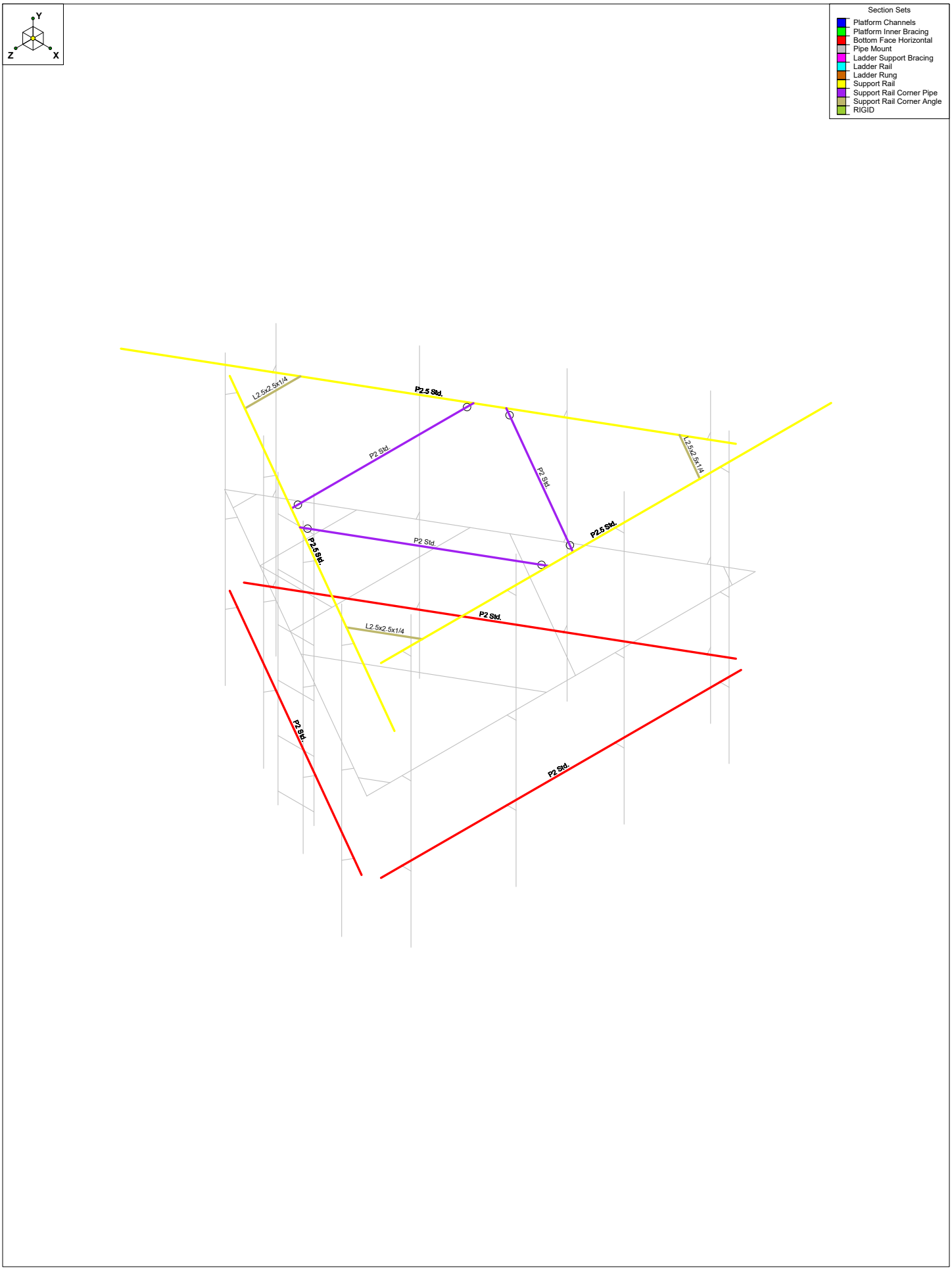
1. Install a support rail designed by Site Pro 1 (Part #: HRK12-3HD, or engineer approved equivalent) 36” above the existing channel horizontals. See Appendices A & E.

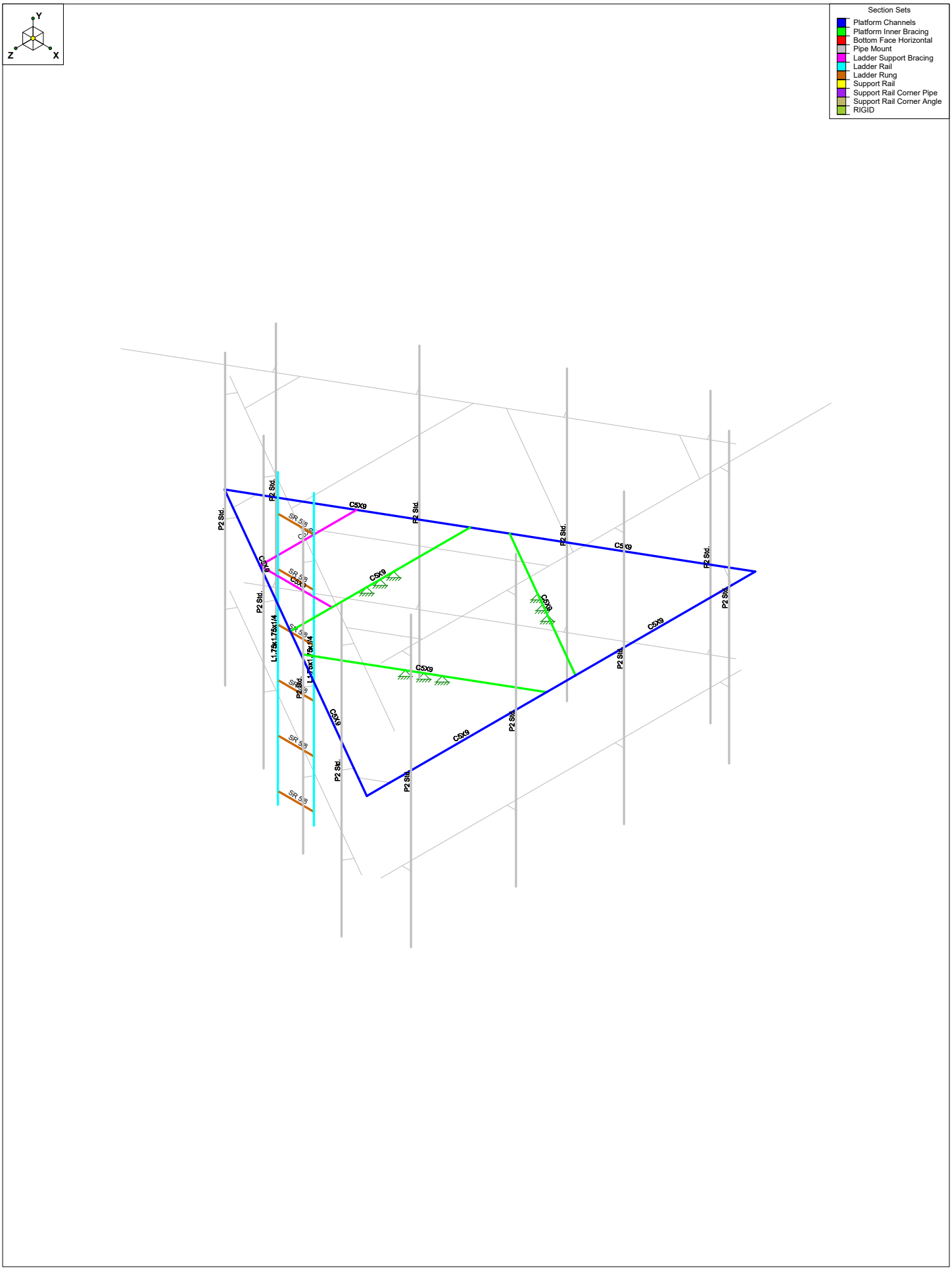
No structural modifications are required at this time, provided that the above-listed changes are implemented.

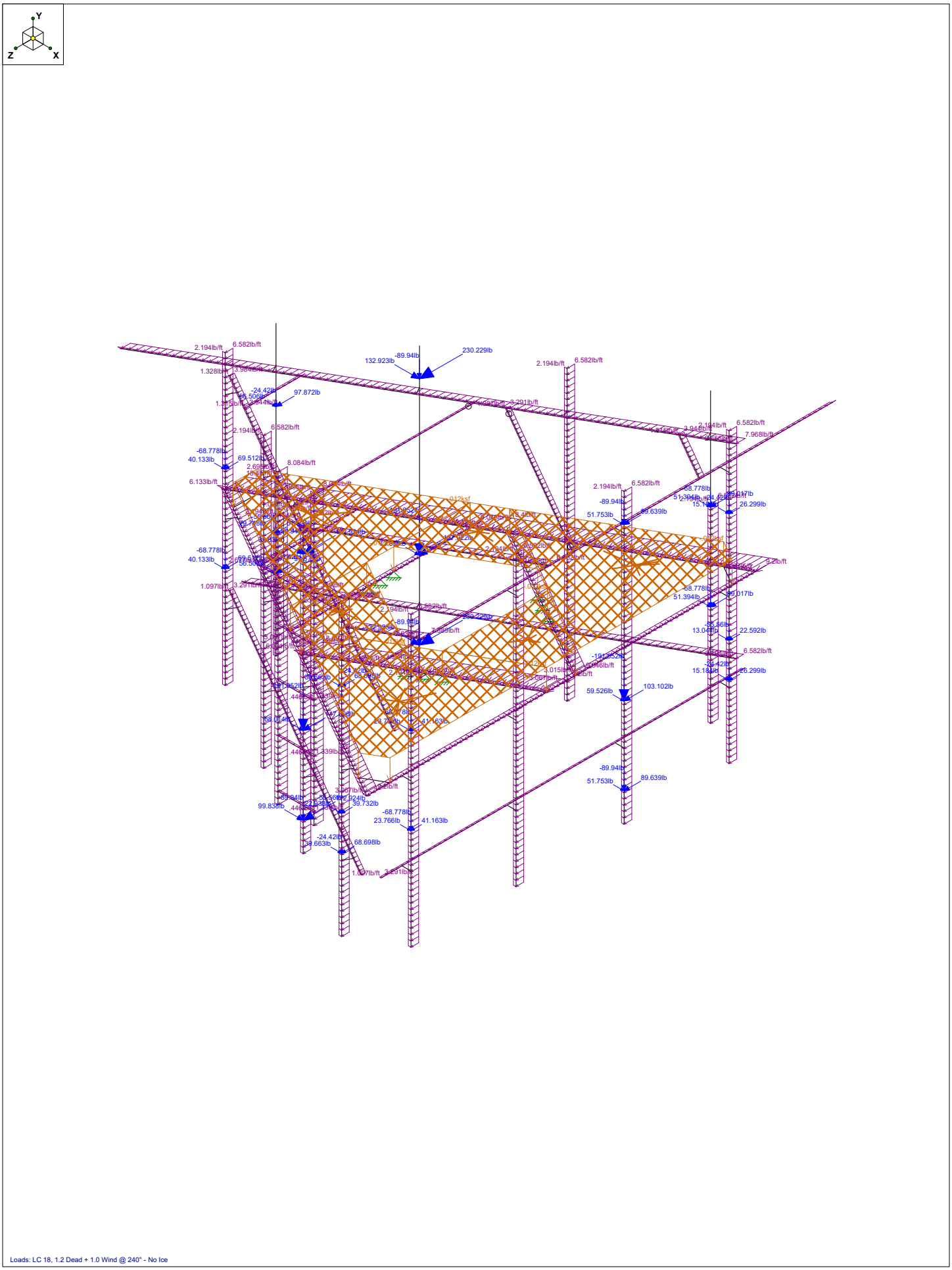
APPENDIX A

WIRE FRAME AND RENDERED MODELS

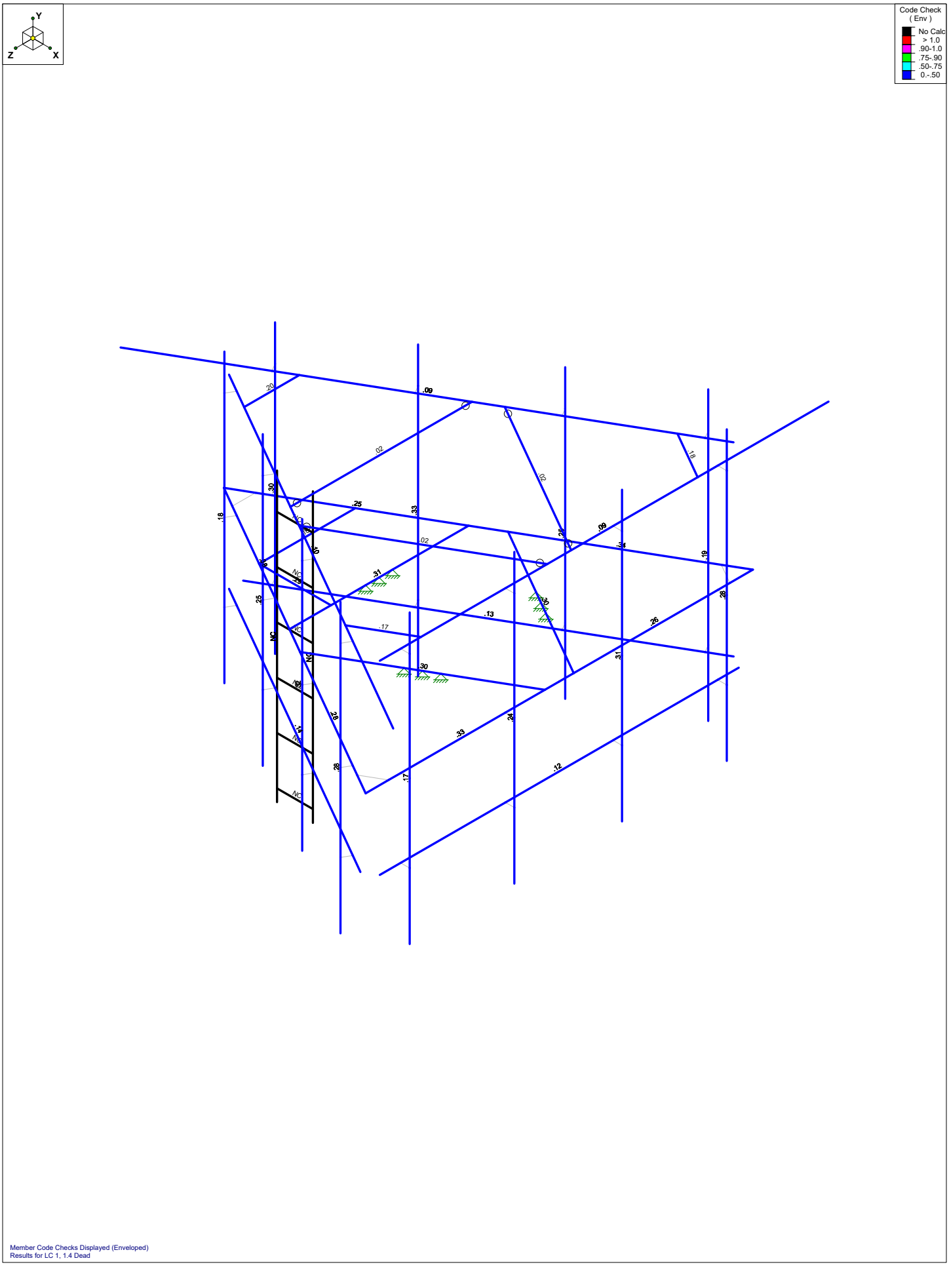

Y
Z
X

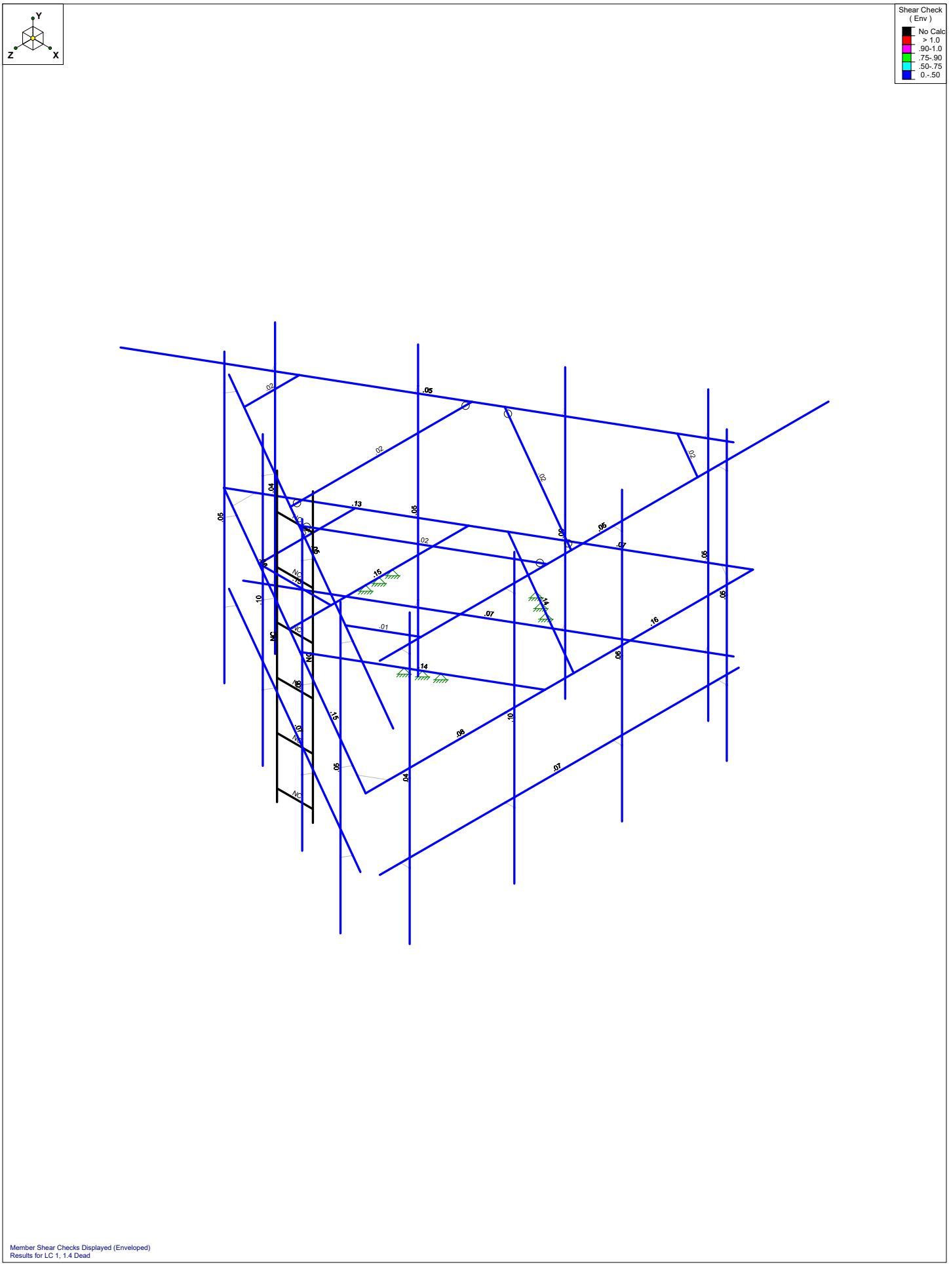

Y
Z
X
Section Sets
Platform Channels
Platform Inner Bracing
Bottom Face Horizontal
Pipe Mount
Ladder Support Bracing
Ladder Rail
Ladder Rung
Support Rail
Support Rail Corner Pipe
Support Rail Corner Angle
RIGID
L2.5x2.5x1/4
P2.5 Std.
P2 Std.
P2 Std.
L2.5x2.5x1/4
P2.5 Std.
P2 Std.
P2.5 Std.
P2 Std.
L2.5x2.5x1/4
P2 Std.
P2 Std.


Y
Z
X
Section Sets
Platform Channels
Platform Inner Bracing
Bottom Face Horizontal
Pipe Mount
Ladder Support Bracing
Ladder Rail
Ladder Rung
Support Rail
Support Rail Corner Pipe
Support Rail Corner Angle
RIGID
P2 Std.
C5X9
SR 5/8
L1.75x1.75x1/4



Loads: LC 18, 1.2 Dead + 1.0 Wind @ 240° - No Ice


Y
Z
X
Code Check
(Env)
No Calc
> 1.0
.90-1.0
.75-.90
.50-.75
0.-.50
Member Code Checks Displayed (Enveloped)
Results for LC 1, 1.4 Dead



Member Shear Checks Displayed (Enveloped)
Results for LC 1, 1.4 Dead

APPENDIX B

SOFTWARE INPUT CALCULATIONS

TIA-222-H: Mount Analysis Wind Loading
876361 - SEYMOUR 2 / OXFORD TOWN GARAGE
2021777.876361.01

Structure Information		
Structure Type:	Monopole	
Structure Height:	150	ft
z (Mount Centerline) =	150	ft
Gh (Mount Gust Effect Factor) =	1.00	
Risk Category:	II	

Code Specifications		
TIA/EIA Code:	H	
Ultimate Wind Speed (No Ice) =	125	mph (3-s gust)
Ultimate Wind Speed (With Ice) =	50	mph (3-s gust)
Ice Thickness	1.5	in
Exposure Category	B	
Tower Base Elevation (AMSL)	734	ft

Topographic Inputs	
Topographic Feature:	N/A

Section Sets										No Ice	Ice Output	
Mount Components	Member Type	Length (in)	Side (Longest seeing wind) (in)	Other Side (in)	Calculated Dc, for ice weight (in)	Dc, for ice weight (in)	Area Type (Round or Flat)	K_a	User's Wind Multiplier	Normal Wind Force (lb/ft)*	Normal Ice Wind Force (lb/ft)*	Ice Weight (lb/ft)*
Platform Channels	Square/Rect.	64.000	5	1.89		5.35	Flat	0.90	1.00	27.26	5.43	15.12
Platform Inner Bracing	Square/Rect.	60.000	5	1.89		5.35	Flat	0.90	1.00	26.80	5.37	15.12
Bottom Face Horizontal	Pipe	120.000	2.375	2.375		2.38	Round	0.90	1.00	9.75	3.53	8.79
Pipe Mount	Pipe	96.000	2.375	2.375		2.38	Round	0.90	1.00	9.75	3.24	8.79
Ladder Support Bracing	Square/Rect.	34.000	5	1.89		5.35	Flat	0.90	1.00	23.80	4.87	15.12
Ladder Rail	Angle	96.000	1.75	1.75		2.47	Flat	0.90	1.00	11.98	3.71	9.00
Ladder Rung	Pipe	12.000	0.625	0.625		0.63	Round	0.90	1.00	2.29	1.60	5.05
Support Rail	Pipe	150.000	2.875	2.875		2.88	Round	0.90	1.00	11.80	4.07	9.85
Support Rail Corner Pipe	Pipe	72.000	2.375	2.375		2.38	Round	0.90	1.00	9.75	2.95	8.79
Support Rail Corner Angle	Angle	15.600	2.5	2.5		3.54	Flat	0.90	1.00	11.69	2.99	11.26

*All forces are unfactored.

Appurtenances							Shielding			No Ice		Ice Output	
Appurtenance Model	Loading Elevation (ft)	Height (in)	Front Width (in)	Side Depth (in)	Wt (lbs)	Type for Area	Front Shielding (%)	Side Shielding (%)	K_a and/or block shielding	Normal Wind Force (lbs)*	Wt (lbs) (no ice)*	Normal Wind Force (lbs) (w/ ice)*	Wt (lbs) (only ice)*
(3) AIR6449 B41_T-MOBILE	150	33.11	20.51	8.54	114.63	Flat	0%	0%	0.90	209.12	114.63	39.19	154.53
(3) APX16DWV-16DWV-S-E-A20	150	55.9	13.3	3.15	40.7	CFD	0%	0%	0.90	231.33	40.70	49.66	140.69
(3) APXVAALL24_43-U-NA20_TMO	150	95.9	24	8.5	149.9	CFD	0%	0%	0.90	542.11	149.90	102.89	431.04
(3) RADIO 4415 B66A_CCIV3	150	14.9	13.2	5.4	46.3	Flat	0%	0%	0.90	60.57	46.30	12.86	54.02
(3) RADIO 4424 B25_TMO	150	17.1	14.4	11.3	86	Flat	0%	0%	0.90	75.83	86.00	15.64	86.39
(3) RADIO 4449 B71 B85A_T-MOBILE	150	17.91	13.2	10.63	73.21	Flat	0%	0%	0.90	72.80	73.21	15.12	82.01

*All forces are unfactored.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Desig...	A [in2]	Iyy [i...	Izz [i...	J [in4]
1	Platform Channels	C5X9	None	None	A36 Gr.36	Typical	2.64	.624	8.89	.109
2	Platform Inner Bracing	C5X9	None	None	A36 Gr.36	Typical	2.64	.624	8.89	.109
3	Bottom Face Horizontal	P2 Std.	None	None	A53 Gr.B	Typical	1.077	.67	.67	1.34
4	Pipe Mount	P2 Std.	None	None	A53 Gr.B	Typical	1.077	.67	.67	1.34
5	Ladder Support Bracing	C5X9	None	None	A36 Gr.36	Typical	2.64	.624	8.89	.109
6	Ladder Rail	L1.75x1.75x1/4	None	None	A36 Gr.36	Typical	.813	.227	.227	.015
7	Ladder Rung	SR 5/8	None	None	A36 Gr.36	Typical	.307	.007	.007	.015
8	Support Rail	P2.5 Std.	None	None	A53 Gr.B	Typical	1.707	1.538	1.538	3.076
9	Support Rail Corner Pipe	P2 Std.	None	None	A53 Gr.B	Typical	1.077	.67	.67	1.34
10	Support Rail Corner Ang...	L2.5x2.5x1/4	None	None	A36 Gr.36	Typical	1.188	.703	.703	.023

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distrib...	Area(Member)	Surface(Plate/W...
1	Dead	DL		-1			30		6	
2	No Ice Wind 0 deg	None					30	36		
3	No Ice Wind 30 deg	None					60	72		
4	No Ice Wind 60 deg	None					60	86		
5	No Ice Wind 90 deg	None					30	35		
6	No Ice Wind 120 deg	None					60	86		
7	No Ice Wind 150 deg	None					60	72		
8	No Ice Wind 180 deg	None					30	36		
9	No Ice Wind 210 deg	None					60	72		
10	No Ice Wind 240 deg	None					60	86		
11	No Ice Wind 270 deg	None					30	35		
12	No Ice Wind 300 deg	None					60	86		
13	No Ice Wind 330 deg	None					60	72		
14	Ice Weight	None					30	43	6	
15	Ice Wind 0 deg	None					30	36		
16	Ice Wind 30 deg	None					60	72		
17	Ice Wind 60 deg	None					60	86		
18	Ice Wind 90 deg	None					30	35		
19	Ice Wind 120 deg	None					60	86		
20	Ice Wind 150 deg	None					60	72		
21	Ice Wind 180 deg	None					30	36		
22	Ice Wind 210 deg	None					60	72		
23	Ice Wind 240 deg	None					60	86		
24	Ice Wind 270 deg	None					30	35		
25	Ice Wind 300 deg	None					60	86		
26	Ice Wind 330 deg	None					60	72		
27	Live Load - A1	None					1			
28	Live Load - A2	None					1			
29	Live Load - A3	None					1			
30	Live Load - A4	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distrib...	Area(Member)	Surface(Plate/W...
31	Live Load - B1	None					1			
32	Live Load - B2	None					1			
33	Live Load - B3	None					1			
34	Live Load - B4	None					1			
35	Live Load - C1	None					1			
36	Live Load - C2	None					1			
37	Live Load - C3	None					1			
38	Live Load - C4	None					1			
39	Live Load - M1 (Start)	None					1			
40	Live Load - M1 (Middle)	None					1			
41	Live Load - M1 (End)	None					1			
42	Live Load - M2 (Start)	None					1			
43	Live Load - M2 (Middle)	None					1			
44	Live Load - M2 (End)	None					1			
45	Live Load - M21 (Start)	None					1			
46	Live Load - M21 (Middle)	None					1			
47	Live Load - M21 (End)	None					1			
48	Live Load - M24A (Start)	None					1			
49	Live Load - M24A (Middle)	None					1			
50	Live Load - M24A (End)	None					1			
51	Live Load - M32 (Start)	None					1			
52	Live Load - M32 (Middle)	None					1			
53	Live Load - M32 (End)	None					1			
54	Live Load - M33 (Start)	None					1			
55	Live Load - M33 (Middle)	None					1			
56	Live Load - M33 (End)	None					1			
57	Live Load - M36 (Start)	None					1			
58	Live Load - M36 (Middle)	None					1			
59	Live Load - M36 (End)	None					1			
60	Live Load - M49 (Start)	None					1			
61	Live Load - M49 (Middle)	None					1			
62	Live Load - M49 (End)	None					1			
63	Live Load - M52 (Start)	None					1			
64	Live Load - M52 (Middle)	None					1			
65	Live Load - M52 (End)	None					1			
66	Live Load - M63 (Start)	None					1			
67	Live Load - M63 (Middle)	None					1			
68	Live Load - M63 (End)	None					1			
69	Live Load - M64 (Start)	None					1			
70	Live Load - M64 (Middle)	None					1			
71	Live Load - M64 (End)	None					1			
72	Live Load - M83 (Start)	None					1			
73	Live Load - M83 (Middle)	None					1			
74	Live Load - M83 (End)	None					1			
75	Live Load - M94 (Start)	None					1			
76	Live Load - M94 (Middle)	None					1			
77	Live Load - M94 (End)	None					1			
78	Live Load - M95 (Start)	None					1			
79	Live Load - M95 (Middle)	None					1			
80	Live Load - M95 (End)	None					1			
81	BLC 1 Transient Area Loads	None						83		
82	BLC 14 Transient Area Loads	None						83		

Load Combinations

	Description	S...	PDel...	SRSS	B...	Fa...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4 Dead	Y...	Y		1	1.4	0		0		0		0		0		0		0					
2	1.2 Dead + 1.0 Wind @ 0° - No Ice	Y...	Y		1	1.2	2	1	0		0		0		0		0		0					
3	0.9 Dead + 1.0 Wind @ 0° - No Ice	Y...	Y		1	.9	2	1	0		0		0		0		0		0					
4	1.2 Dead + 1.0 Wind @ 30° - No Ice	Y...	Y		1	1.2	3	1	0		0		0		0		0		0					
5	0.9 Dead + 1.0 Wind @ 30° - No Ice	Y...	Y		1	.9	3	1	0		0		0		0		0		0					
6	1.2 Dead + 1.0 Wind @ 60° - No Ice	Y...	Y		1	1.2	4	1	0		0		0		0		0		0					
7	0.9 Dead + 1.0 Wind @ 60° - No Ice	Y...	Y		1	.9	4	1	0		0		0		0		0		0					
8	1.2 Dead + 1.0 Wind @ 90° - No Ice	Y...	Y		1	1.2	5	1	0		0		0		0		0		0					
9	0.9 Dead + 1.0 Wind @ 90° - No Ice	Y...	Y		1	.9	5	1	0		0		0		0		0		0					
10	1.2 Dead + 1.0 Wind @ 120° - No I...	Y...	Y		1	1.2	6	1	0		0		0		0		0		0					
11	0.9 Dead + 1.0 Wind @ 120° - No I...	Y...	Y		1	.9	6	1	0		0		0		0		0		0					
12	1.2 Dead + 1.0 Wind @ 150° - No I...	Y...	Y		1	1.2	7	1	0		0		0		0		0		0					
13	0.9 Dead + 1.0 Wind @ 150° - No I...	Y...	Y		1	.9	7	1	0		0		0		0		0		0					
14	1.2 Dead + 1.0 Wind @ 180° - No I...	Y...	Y		1	1.2	8	1	0		0		0		0		0		0					
15	0.9 Dead + 1.0 Wind @ 180° - No I...	Y...	Y		1	.9	8	1	0		0		0		0		0		0					
16	1.2 Dead + 1.0 Wind @ 210° - No I...	Y...	Y		1	1.2	9	1	0		0		0		0		0		0					
17	0.9 Dead + 1.0 Wind @ 210° - No I...	Y...	Y		1	.9	9	1	0		0		0		0		0		0					
18	1.2 Dead + 1.0 Wind @ 240° - No I...	Y...	Y		1	1.2	10	1	0		0		0		0		0		0					
19	0.9 Dead + 1.0 Wind @ 240° - No I...	Y...	Y		1	.9	10	1	0		0		0		0		0		0					
20	1.2 Dead + 1.0 Wind @ 270° - No I...	Y...	Y		1	1.2	11	1	0		0		0		0		0		0					
21	0.9 Dead + 1.0 Wind @ 270° - No I...	Y...	Y		1	.9	11	1	0		0		0		0		0		0					
22	1.2 Dead + 1.0 Wind @ 300° - No I...	Y...	Y		1	1.2	12	1	0		0		0		0		0		0					
23	0.9 Dead + 1.0 Wind @ 300° - No I...	Y...	Y		1	.9	12	1	0		0		0		0		0		0					
24	1.2 Dead + 1.0 Wind @ 330° - No I...	Y...	Y		1	1.2	13	1	0		0		0		0		0		0					
25	0.9 Dead + 1.0 Wind @ 330° - No I...	Y...	Y		1	.9	13	1	0		0		0		0		0		0					
26	1.2 Dead + 1.0 Ice Wind @ 0°+ 1.0...	Y...	Y		1	1.2	15	1	14	1		1	0		0		0		0					
27	1.2 Dead + 1.0 Ice Wind @ 30°+ 1...	Y...	Y		1	1.2	16	1	14	1		1	0		0		0		0					
28	1.2 Dead + 1.0 Ice Wind @ 60°+ 1...	Y...	Y		1	1.2	17	1	14	1		1	0		0		0		0					
29	1.2 Dead + 1.0 Ice Wind @ 90°+ 1...	Y...	Y		1	1.2	18	1	14	1		1	0		0		0		0					
30	1.2 Dead + 1.0 Ice Wind @ 120°+ ...	Y...	Y		1	1.2	19	1	14	1		1	0		0		0		0					
31	1.2 Dead + 1.0 Ice Wind @ 150°+ ...	Y...	Y		1	1.2	20	1	14	1		1	0		0		0		0					
32	1.2 Dead + 1.0 Ice Wind @ 180°+ ...	Y...	Y		1	1.2	21	1	14	1		1	0		0		0		0					
33	1.2 Dead + 1.0 Ice Wind @ 210°+ ...	Y...	Y		1	1.2	22	1	14	1		1	0		0		0		0					
34	1.2 Dead + 1.0 Ice Wind @ 240°+ ...	Y...	Y		1	1.2	23	1	14	1		1	0		0		0		0					
35	1.2 Dead + 1.0 Ice Wind @ 270°+ ...	Y...	Y		1	1.2	24	1	14	1		1	0		0		0		0					
36	1.2 Dead + 1.0 Ice Wind @ 300°+ ...	Y...	Y		1	1.2	25	1	14	1		1	0		0		0		0					
37	1.2 Dead + 1.0 Ice Wind @ 330°+ ...	Y...	Y		1	1.2	26	1	14	1		1	0		0		0		0					
38	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	2	.058	0		0		0		0		0					
39	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	3	.058	0		0		0		0		0					
40	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	4	.058	0		0		0		0		0					
41	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	5	.058	0		0		0		0		0					
42	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	6	.058	0		0		0		0		0					
43	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	7	.058	0		0		0		0		0					
44	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	8	.058	0		0		0		0		0					
45	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	9	.058	0		0		0		0		0					
46	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	10	.058	0		0		0		0		0					
47	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	11	.058	0		0		0		0		0					
48	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	12	.058	0		0		0		0		0					
49	1.2 Dead + 1.5 Live_M - A1 + 1.0 ...	Y...	Y		1	1.2	27	1.5	13	.058	0		0		0		0		0					
50	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	2	.058	0		0		0		0		0					
51	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	3	.058	0		0		0		0		0					
52	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	4	.058	0		0		0		0		0					
53	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	5	.058	0		0		0		0		0					
54	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	6	.058	0		0		0		0		0					
55	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	7	.058	0		0		0		0		0					
56	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	8	.058	0		0		0		0		0					

Load Combinations (Continued)

	Description	S...	PDel...	SRSS	B...	Fa...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
57	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	9	.058	0		0		0		0					
58	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	10	.058	0		0		0		0					
59	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	11	.058	0		0		0		0					
60	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	12	.058	0		0		0		0					
61	1.2 Dead + 1.5 Live_M - A2 + 1.0 ...	Y...	Y		1	1.2	28	1.5	13	.058	0		0		0		0					
62	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	2	.058	0		0		0		0					
63	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	3	.058	0		0		0		0					
64	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	4	.058	0		0		0		0					
65	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	5	.058	0		0		0		0					
66	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	6	.058	0		0		0		0					
67	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	7	.058	0		0		0		0					
68	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	8	.058	0		0		0		0					
69	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	9	.058	0		0		0		0					
70	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	10	.058	0		0		0		0					
71	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	11	.058	0		0		0		0					
72	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	12	.058	0		0		0		0					
73	1.2 Dead + 1.5 Live_M - A3 + 1.0 ...	Y...	Y		1	1.2	29	1.5	13	.058	0		0		0		0					
74	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	2	.058	0		0		0		0					
75	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	3	.058	0		0		0		0					
76	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	4	.058	0		0		0		0					
77	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	5	.058	0		0		0		0					
78	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	6	.058	0		0		0		0					
79	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	7	.058	0		0		0		0					
80	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	8	.058	0		0		0		0					
81	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	9	.058	0		0		0		0					
82	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	10	.058	0		0		0		0					
83	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	11	.058	0		0		0		0					
84	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	12	.058	0		0		0		0					
85	1.2 Dead + 1.5 Live_M - A4 + 1.0 ...	Y...	Y		1	1.2	30	1.5	13	.058	0		0		0		0					
86	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	2	.058	0		0		0		0					
87	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	3	.058	0		0		0		0					
88	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	4	.058	0		0		0		0					
89	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	5	.058	0		0		0		0					
90	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	6	.058	0		0		0		0					
91	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	7	.058	0		0		0		0					
92	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	8	.058	0		0		0		0					
93	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	9	.058	0		0		0		0					
94	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	10	.058	0		0		0		0					
95	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	11	.058	0		0		0		0					
96	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	12	.058	0		0		0		0					
97	1.2 Dead + 1.5 Live_M - B1 + 1.0 ...	Y...	Y		1	1.2	31	1.5	13	.058	0		0		0		0					
98	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	2	.058	0		0		0		0					
99	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	3	.058	0		0		0		0					
100	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	4	.058	0		0		0		0					
101	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	5	.058	0		0		0		0					
102	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	6	.058	0		0		0		0					
103	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	7	.058	0		0		0		0					
104	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	8	.058	0		0		0		0					
105	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	9	.058	0		0		0		0					
106	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	10	.058	0		0		0		0					
107	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	11	.058	0		0		0		0					
108	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	12	.058	0		0		0		0					
109	1.2 Dead + 1.5 Live_M - B2 + 1.0 ...	Y...	Y		1	1.2	32	1.5	13	.058	0		0		0		0					
110	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	2	.058	0		0		0		0					
111	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	3	.058	0		0		0		0					
112	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	4	.058	0		0		0		0					
113	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	5	.058	0		0		0		0					

Load Combinations (Continued)

	Description	S...	PDel...	SRSS	B...	Fa...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
114	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	6	.058	0		0		0		0					
115	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	7	.058	0		0		0		0					
116	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	8	.058	0		0		0		0					
117	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	9	.058	0		0		0		0					
118	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	10	.058	0		0		0		0					
119	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	11	.058	0		0		0		0					
120	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	12	.058	0		0		0		0					
121	1.2 Dead + 1.5 Live_M - B3 + 1.0 ...	Y...	Y		1	1.2	33	1.5	13	.058	0		0		0		0					
122	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	2	.058	0		0		0		0					
123	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	3	.058	0		0		0		0					
124	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	4	.058	0		0		0		0					
125	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	5	.058	0		0		0		0					
126	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	6	.058	0		0		0		0					
127	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	7	.058	0		0		0		0					
128	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	8	.058	0		0		0		0					
129	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	9	.058	0		0		0		0					
130	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	10	.058	0		0		0		0					
131	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	11	.058	0		0		0		0					
132	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	12	.058	0		0		0		0					
133	1.2 Dead + 1.5 Live_M - B4 + 1.0 ...	Y...	Y		1	1.2	34	1.5	13	.058	0		0		0		0					
134	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	2	.058	0		0		0		0					
135	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	3	.058	0		0		0		0					
136	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	4	.058	0		0		0		0					
137	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	5	.058	0		0		0		0					
138	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	6	.058	0		0		0		0					
139	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	7	.058	0		0		0		0					
140	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	8	.058	0		0		0		0					
141	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	9	.058	0		0		0		0					
142	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	10	.058	0		0		0		0					
143	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	11	.058	0		0		0		0					
144	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	12	.058	0		0		0		0					
145	1.2 Dead + 1.5 Live_M - C1 + 1.0 ...	Y...	Y		1	1.2	35	1.5	13	.058	0		0		0		0					
146	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	2	.058	0		0		0		0					
147	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	3	.058	0		0		0		0					
148	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	4	.058	0		0		0		0					
149	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	5	.058	0		0		0		0					
150	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	6	.058	0		0		0		0					
151	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	7	.058	0		0		0		0					
152	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	8	.058	0		0		0		0					
153	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	9	.058	0		0		0		0					
154	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	10	.058	0		0		0		0					
155	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	11	.058	0		0		0		0					
156	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	12	.058	0		0		0		0					
157	1.2 Dead + 1.5 Live_M - C2 + 1.0 ...	Y...	Y		1	1.2	36	1.5	13	.058	0		0		0		0					
158	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	2	.058	0		0		0		0					
159	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	3	.058	0		0		0		0					
160	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	4	.058	0		0		0		0					
161	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	5	.058	0		0		0		0					
162	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	6	.058	0		0		0		0					
163	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	7	.058	0		0		0		0					
164	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	8	.058	0		0		0		0					
165	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	9	.058	0		0		0		0					
166	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	10	.058	0		0		0		0					
167	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	11	.058	0		0		0		0					
168	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	12	.058	0		0		0		0					
169	1.2 Dead + 1.5 Live_M - C3 + 1.0 ...	Y...	Y		1	1.2	37	1.5	13	.058	0		0		0		0					
170	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	2	.058	0		0		0		0					

Load Combinations (Continued)

	Description	S...	PDel...	SRSS	B...	Fa...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
171	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	3	.058	0		0		0		0		0					
172	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	4	.058	0		0		0		0		0					
173	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	5	.058	0		0		0		0		0					
174	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	6	.058	0		0		0		0		0					
175	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	7	.058	0		0		0		0		0					
176	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	8	.058	0		0		0		0		0					
177	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	9	.058	0		0		0		0		0					
178	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	10	.058	0		0		0		0		0					
179	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	11	.058	0		0		0		0		0					
180	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	12	.058	0		0		0		0		0					
181	1.2 Dead + 1.5 Live_M - C4 + 1.0 ...	Y...	Y		1	1.2	38	1.5	13	.058	0		0		0		0		0					
182	1.2 Dead + 1.5 Live_V - M1 (Start)	Y...	Y		1	1.2	39	1.5	0		0		0		0		0		0					
183	1.2 Dead + 1.5 Live_V - M1 (Middle)	Y...	Y		1	1.2	40	1.5	0		0		0		0		0		0					
184	1.2 Dead + 1.5 Live_V - M1 (End)	Y...	Y		1	1.2	41	1.5	0		0		0		0		0		0					
185	1.2 Dead + 1.5 Live_V - M2 (Start)	Y...	Y		1	1.2	42	1.5	0		0		0		0		0		0					
186	1.2 Dead + 1.5 Live_V - M2 (Middle)	Y...	Y		1	1.2	43	1.5	0		0		0		0		0		0					
187	1.2 Dead + 1.5 Live_V - M2 (End)	Y...	Y		1	1.2	44	1.5	0		0		0		0		0		0					
188	1.2 Dead + 1.5 Live_V - M21 (Start)	Y...	Y		1	1.2	45	1.5	0		0		0		0		0		0					
189	1.2 Dead + 1.5 Live_V - M21 (Midd...	Y...	Y		1	1.2	46	1.5	0		0		0		0		0		0					
190	1.2 Dead + 1.5 Live_V - M21 (End)	Y...	Y		1	1.2	47	1.5	0		0		0		0		0		0					
191	1.2 Dead + 1.5 Live_V - M24A (Sta...	Y...	Y		1	1.2	48	1.5	0		0		0		0		0		0					
192	1.2 Dead + 1.5 Live_V - M24A (Mid...	Y...	Y		1	1.2	49	1.5	0		0		0		0		0		0					
193	1.2 Dead + 1.5 Live_V - M24A (End)	Y...	Y		1	1.2	50	1.5	0		0		0		0		0		0					
194	1.2 Dead + 1.5 Live_V - M32 (Start)	Y...	Y		1	1.2	51	1.5	0		0		0		0		0		0					
195	1.2 Dead + 1.5 Live_V - M32 (Midd...	Y...	Y		1	1.2	52	1.5	0		0		0		0		0		0					
196	1.2 Dead + 1.5 Live_V - M32 (End)	Y...	Y		1	1.2	53	1.5	0		0		0		0		0		0					
197	1.2 Dead + 1.5 Live_V - M33 (Start)	Y...	Y		1	1.2	54	1.5	0		0		0		0		0		0					
198	1.2 Dead + 1.5 Live_V - M33 (Midd...	Y...	Y		1	1.2	55	1.5	0		0		0		0		0		0					
199	1.2 Dead + 1.5 Live_V - M33 (End)	Y...	Y		1	1.2	56	1.5	0		0		0		0		0		0					
200	1.2 Dead + 1.5 Live_V - M36 (Start)	Y...	Y		1	1.2	57	1.5	0		0		0		0		0		0					
201	1.2 Dead + 1.5 Live_V - M36 (Midd...	Y...	Y		1	1.2	58	1.5	0		0		0		0		0		0					
202	1.2 Dead + 1.5 Live_V - M36 (End)	Y...	Y		1	1.2	59	1.5	0		0		0		0		0		0					
203	1.2 Dead + 1.5 Live_V - M49 (Start)	Y...	Y		1	1.2	60	1.5	0		0		0		0		0		0					
204	1.2 Dead + 1.5 Live_V - M49 (Midd...	Y...	Y		1	1.2	61	1.5	0		0		0		0		0		0					
205	1.2 Dead + 1.5 Live_V - M49 (End)	Y...	Y		1	1.2	62	1.5	0		0		0		0		0		0					
206	1.2 Dead + 1.5 Live_V - M52 (Start)	Y...	Y		1	1.2	63	1.5	0		0		0		0		0		0					
207	1.2 Dead + 1.5 Live_V - M52 (Midd...	Y...	Y		1	1.2	64	1.5	0		0		0		0		0		0					
208	1.2 Dead + 1.5 Live_V - M52 (End)	Y...	Y		1	1.2	65	1.5	0		0		0		0		0		0					
209	1.2 Dead + 1.5 Live_V - M63 (Start)	Y...	Y		1	1.2	66	1.5	0		0		0		0		0		0					
210	1.2 Dead + 1.5 Live_V - M63 (Midd...	Y...	Y		1	1.2	67	1.5	0		0		0		0		0		0					
211	1.2 Dead + 1.5 Live_V - M63 (End)	Y...	Y		1	1.2	68	1.5	0		0		0		0		0		0					
212	1.2 Dead + 1.5 Live_V - M64 (Start)	Y...	Y		1	1.2	69	1.5	0		0		0		0		0		0					
213	1.2 Dead + 1.5 Live_V - M64 (Midd...	Y...	Y		1	1.2	70	1.5	0		0		0		0		0		0					
214	1.2 Dead + 1.5 Live_V - M64 (End)	Y...	Y		1	1.2	71	1.5	0		0		0		0		0		0					
215	1.2 Dead + 1.5 Live_V - M83 (Start)	Y...	Y		1	1.2	72	1.5	0		0		0		0		0		0					
216	1.2 Dead + 1.5 Live_V - M83 (Midd...	Y...	Y		1	1.2	73	1.5	0		0		0		0		0		0					
217	1.2 Dead + 1.5 Live_V - M83 (End)	Y...	Y		1	1.2	74	1.5	0		0		0		0		0		0					
218	1.2 Dead + 1.5 Live_V - M94 (Start)	Y...	Y		1	1.2	75	1.5	0		0		0		0		0		0					
219	1.2 Dead + 1.5 Live_V - M94 (Midd...	Y...	Y		1	1.2	76	1.5	0		0		0		0		0		0					
220	1.2 Dead + 1.5 Live_V - M94 (End)	Y...	Y		1	1.2	77	1.5	0		0		0		0		0		0					
221	1.2 Dead + 1.5 Live_V - M95 (Start)	Y...	Y		1	1.2	78	1.5	0		0		0		0		0		0					
222	1.2 Dead + 1.5 Live_V - M95 (Midd...	Y...	Y		1	1.2	79	1.5	0		0		0		0		0		0					
223	1.2 Dead + 1.5 Live_V - M95 (End)	Y...	Y		1	1.2	80	1.5	0		0		0		0		0		0					

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N7	m...	989.102	3	6048.438	33	1280.709	15	0	223	0	223	0	223
2		min	-1002.2...	14	613.239	87	-1301.801	2	0	1	0	1	0	1
3	N6	m...	1426.722	15	-2209.433	25	3.392	11	0	223	0	223	0	223
4		min	-1429.2...	2	-8839.022	31	-3.392	18	0	1	0	1	0	1
5	N5	m...	1133.969	24	6527.59	31	2110.636	6	0	223	0	223	0	223
6		min	-1119.4...	13	731.927	181	-2092.022	19	0	1	0	1	0	1
7	N62	m...	1830.828	3	5539.207	33	390.389	7	0	223	0	223	0	223
8		min	-1868.4...	14	464.552	75	-434.057	18	0	1	0	1	0	1
9	N63	m...	596.63	11	-2218.249	13	1059.434	22	0	223	0	223	0	223
10		min	-613.32	22	-8309.796	37	-1030.526	11	0	1	0	1	0	1
11	N64	m...	960.642	4	5933.044	37	1483.002	10	0	223	0	223	0	223
12		min	-903.778	17	632.606	139	-1486.253	22	0	1	0	1	0	1
13	N119	m...	1107.269	22	5464.107	27	1473.437	11	0	223	0	223	0	223
14		min	-1055.8...	11	465.044	129	-1481.765	22	0	1	0	1	0	1
15	N120	m...	664.226	21	-2210.608	17	1142.639	21	0	223	0	223	0	223
16		min	-679.216	8	-8353.269	27	-1168.602	8	0	1	0	1	0	1
17	N121	m...	1688.99	7	6100.181	29	702.052	10	0	223	0	223	0	223
18		min	-1728.3...	18	640.389	47	-647.976	23	0	1	0	1	0	1
19	Totals:	m...	4665.509	2	10024.752	29	4729.621	8						
20		min	-4665.5...	15	2902.618	15	-4729.618	21						

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

	Member	Shape	Code Che...	Loc[in]	LC	Shear Che...	Loc[in]	Dir	LC	phi*...	phi*...	phi*...	phi*...	...	Eqn
1	M83	C5X9	.376	4.72	18	.061	5.394	y	35	3363..	85536	1.909	11.8...	...	H1-...
2	M21	C5X9	.335	4.72	14	.072	5.394	y	28	3363..	85536	1.909	11.8...	...	H1-...
3	M52	C5X9	.331	4.72	22	.076	5.394	y	32	3363..	85536	1.909	11.8...	...	H1-...
4	C2	P2 Std.	.326	48	18	.051	48		20	3724..	3392..	2.006	2.006	...	H1-...
5	B2	P2 Std.	.324	48	10	.058	48		10	3724..	3392..	2.006	2.006	...	H1-...
6	A2	P2 Std.	.312	47	2	.063	48		2	3724..	3392..	2.006	2.006	...	H1-...
7	M2	C5X9	.308	34.948	26	.145	34.324	y	31	3845..	85536	1.909	11.8...	...	H1-...
8	C1	P2 Std.	.305	48	18	.045	48		18	3724..	3392..	2.006	2.006	...	H1-...
9	M64	C5X9	.304	25.587	28	.145	25.587	y	29	3845..	85536	1.909	11.8...	...	H1-...
10	M33	C5X9	.298	25.587	36	.141	25.587	y	37	3845..	85536	1.909	11.8...	...	H1-...
11	M94	C5X9	.293	24	8	.154	6	z	20	7523..	85536	1.909	11.8...	...	H1-...
12	B1	P2 Std.	.285	48	22	.050	48		10	3724..	3392..	2.006	2.006	...	H1-...
13	A1	P2 Std.	.285	48	14	.052	48		2	3724..	3392..	2.006	2.006	...	H1-...
14	M63	C5X9	.282	60.012	14	.150	11.463	z	11	3363..	85536	1.909	11.8...	...	H1-...
15	M32	C5X9	.256	60.012	6	.157	11.463	z	14	3363..	85536	1.909	11.8...	...	H1-...
16	B3	P2 Std.	.249	48	8	.096	48		8	3724..	3392..	2.006	2.006	...	H1-...
17	C3	P2 Std.	.247	48	18	.090	48		16	3724..	3392..	2.006	2.006	...	H1-...
18	M1	C5X9	.246	60.012	20	.131	11.463	z	6	3363..	85536	1.909	11.8...	...	H1-...
19	A3	P2 Std.	.237	48	2	.096	48		24	3724..	3392..	2.006	2.006	...	H1-...
20	M77	L2.5x2.5x1/4	.198	18.483	18	.020	0	y	20	3571..	38475	1.145	2.565	...	H2-1
21	C4	P2 Std.	.187	48	33	.047	48		29	3724..	3392..	2.006	2.006	...	H1-...
22	M78	L2.5x2.5x1/4	.183	18.483	2	.016	0	y	2	3571..	38475	1.145	2.565	...	H2-1
23	B4	P2 Std.	.182	48	8	.050	48		29	3724..	3392..	2.006	2.006	...	H1-...
24	A4	P2 Std.	.172	48	24	.043	48		24	3724..	3392..	2.006	2.006	...	H1-...
25	M79	L2.5x2.5x1/4	.169	18.483	10	.014	0	y	10	3571..	38475	1.145	2.565	...	H2-1
26	M36	P2 Std.	.136	41.25	26	.071	42.5		10	1051..	3392..	2.006	2.006	...	H1-...
27	M49	P2 Std.	.128	41.25	32	.074	42.5		18	1051..	3392..	2.006	2.006	...	H1-...
28	M24A	P2 Std.	.115	41.25	36	.070	42.5		2	1051..	3392..	2.006	2.006	...	H1-...
29	M95	C5X9	.104	0	8	.013	10.062	y	222	6790..	85536	1.909	11.8...	...	H1-...
30	M71	P2.5 Std.	.103	40.625	34	.046	40.625		30	1544..	5377..	3.827	3.827	...	H1-...
31	M76	P2.5 Std.	.092	40.625	26	.048	104.6..		18	1544..	5377..	3.827	3.827	...	H1-...

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

	Member	Shape	Code Che...	Loc[in]	LC	Shear Che...	Loc[in]	Dir	LC	phi*...	phi*...	phi*...	phi*...	...	Eqn
32	M66	P2.5 Std.	.085	40.625	30	.045	104.6..		2	1544..	5377..	3.827	3.827	...	H1-...
33	M80	P2 Std.	.022	30.366	26	.019	60.732		8	2504..	3392..	2.006	2.006	...	H1-...
34	M82A	P2 Std.	.022	30.366	28	.018	60.732		24	2504..	3392..	2.006	2.006	...	H1-...
35	M81	P2 Std.	.022	30.366	36	.018	60.732		16	2504..	3392..	2.006	2.006	...	H1-...

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

	Member	Shape	Code Check Actual	Code Check Allowable	Ratio (Act./Allow.)	Loc[in]	LC	Shear Check	Shear Check Allowable	Ratio (Act./Allow.)	Loc[in]	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M83	C5X9	0.376	1.05	0.358*	4.72	18	0.061	1.05	0.058*	5.394	33638.136	85536	1.909	11.853	1.767	H1-1b
2	M21	C5X9	0.335	1.05	0.319*	4.72	14	0.072	1.05	0.069*	5.394	33638.135	85536	1.909	11.853	2.606	H1-1b
3	M52	C5X9	0.331	1.05	0.315*	4.72	22	0.076	1.05	0.072*	5.394	33638.135	85536	1.909	11.853	2.617	H1-1b
4	C2	P2 Std.	0.326	1.05	0.31*	48	18	0.051	1.05	0.049*	48	3724.205	33925.5	2.006	2.006	1.628	H1-1b
5	B2	P2 Std.	0.324	1.05	0.309*	48	10	0.058	1.05	0.055*	48	3724.205	33925.5	2.006	2.006	1.658	H1-1b
6	A2	P2 Std.	0.312	1.05	0.297*	47	2	0.063	1.05	0.06*	48	3724.205	33925.5	2.006	2.006	1.627	H1-1b
7	M2	C5X9	0.308	1.05	0.293*	34.95	26	0.145	1.05	0.138*	34.32	38455.723	85536	1.909	11.853	1.623	H1-1b
8	C1	P2 Std.	0.305	1.05	0.29*	48	18	0.045	1.05	0.043*	48	3724.205	33925.5	2.006	2.006	1.647	H1-1b
9	M64	C5X9	0.304	1.05	0.29*	25.59	28	0.145	1.05	0.138*	25.59	38455.723	85536	1.909	11.853	1.587	H1-1b
10	M33	C5X9	0.298	1.05	0.284*	25.59	36	0.141	1.05	0.134*	25.59	38455.722	85536	1.909	11.853	1.575	H1-1b
11	M94	C5X9	0.293	1.05	0.279*	24	8	0.154	1.05	0.147*	6	75237.284	85536	1.909	11.853	1.762	H1-1b
12	B1	P2 Std.	0.285	1.05	0.271*	48	22	0.05	1.05	0.048*	48	3724.205	33925.5	2.006	2.006	1.664	H1-1b
13	A1	P2 Std.	0.285	1.05	0.271*	48	14	0.052	1.05	0.05*	48	3724.205	33925.5	2.006	2.006	1.792	H1-1b
14	M63	C5X9	0.282	1.05	0.269*	60.01	14	0.15	1.05	0.143*	11.46	33638.135	85536	1.909	11.853	3.769	H1-1b
15	M32	C5X9	0.256	1.05	0.244*	60.01	6	0.157	1.05	0.15*	11.46	33638.136	85536	1.909	11.853	3.858	H1-1b
16	B3	P2 Std.	0.249	1.05	0.237*	48	8	0.096	1.05	0.091*	48	3724.205	33925.5	2.006	2.006	1.355	H1-1b
17	C3	P2 Std.	0.247	1.05	0.235*	48	18	0.09	1.05	0.086*	48	3724.205	33925.5	2.006	2.006	1.697	H1-1b
18	M1	C5X9	0.246	1.05	0.234*	60.01	20	0.131	1.05	0.125*	11.46	33638.135	85536	1.909	11.853	3.814	H1-1b
19	A3	P2 Std.	0.237	1.05	0.226*	48	2	0.096	1.05	0.091*	48	3724.205	33925.5	2.006	2.006	1.674	H1-1b
20	M77	L2.5x2.5x1/4	0.198	1.05	0.189*	18.48	18	0.02	1.05	0.019*	0	35714.243	38475	1.145	2.565	1.773	H2-1
21	C4	P2 Std.	0.187	1.05	0.178*	48	33	0.047	1.05	0.045*	48	3724.205	33925.5	2.006	2.006	1.53	H1-1b
22	M78	L2.5x2.5x1/4	0.183	1.05	0.174*	18.48	2	0.016	1.05	0.015*	0	35714.243	38475	1.145	2.565	1.822	H2-1
23	B4	P2 Std.	0.182	1.05	0.173*	48	8	0.05	1.05	0.048*	48	3724.205	33925.5	2.006	2.006	1.701	H1-1b
24	A4	P2 Std.	0.172	1.05	0.164*	48	24	0.043	1.05	0.041*	48	3724.205	33925.5	2.006	2.006	1.562	H1-1b
25	M79	L2.5x2.5x1/4	0.169	1.05	0.161*	18.48	10	0.014	1.05	0.013*	0	35714.243	38475	1.145	2.565	1.755	H2-1
26	M36	P2 Std.	0.136	1.05	0.13*	41.25	26	0.071	1.05	0.068*	42.5	10511.197	33925.5	2.006	2.006	2.869	H1-1b
27	M49	P2 Std.	0.128	1.05	0.122*	41.25	32	0.074	1.05	0.07*	42.5	10511.197	33925.5	2.006	2.006	2.822	H1-1b
28	M24A	P2 Std.	0.115	1.05	0.11*	41.25	36	0.07	1.05	0.067*	42.5	10511.197	33925.5	2.006	2.006	2.908	H1-1b
29	M95	C5X9	0.104	1.05	0.099*	0	8	0.013	1.05	0.012*	10.06	67900.01	85536	1.909	11.853	1.895	H1-1b
30	M71	P2.5 Std.	0.103	1.05	0.098*	40.63	34	0.046	1.05	0.044*	40.63	15442.36	53770.5	3.827	3.827	2.058	H1-1b
31	M76	P2.5 Std.	0.092	1.05	0.088*	40.63	26	0.048	1.05	0.046*	104.7	15442.36	53770.5	3.827	3.827	1.91	H1-1b
32	M66	P2.5 Std.	0.085	1.05	0.081*	40.63	30	0.045	1.05	0.043*	104.7	15442.36	53770.5	3.827	3.827	2.106	H1-1b
33	M80	P2 Std.	0.022	1.05	0.021*	30.37	26	0.019	1.05	0.018*	60.73	25045.859	33925.5	2.006	2.006	1.136	H1-1b
34	M82A	P2 Std.	0.022	1.05	0.021*	30.37	28	0.018	1.05	0.017*	60.73	25045.859	33925.5	2.006	2.006	1.136	H1-1b
35	M81	P2 Std.	0.022	1.05	0.021*	30.37	36	0.018	1.05	0.017*	60.73	25045.859	33925.5	2.006	2.006	1.136	H1-1b

*Rating per TIA-222-H, Section 15.5

APPENDIX D

ADDITIONAL CALCULATIONS

TIA-222-H CONNECTION CHECK
Mount to Tower Connection - Typ. All Sectors
2021777.876361.01

Bolt Information		
Bolt Diameter (d)	0.75	in
Net Tensile Area (An)	0.334	in^2
# of Bolts Total (n)	1	
Bolt Grade	A325N	
Bolt Tensile Strength (F_{ub})	120	ksi

RISA 3D Reactions		
Moment (M)	0.00	k-ft
Axial (T)	0.30	kips
Shear (V)	8.84	kips

Bolt Capacity		
Nominal Tensile Strength (R_{nt})	40.135	kips
Nominal Shear Strength (R_{nv})	26.51	kips
Bolt Tensile Force (T_{ub})	0.30	kips
Bolt Shear Force (V_{ub})	8.839	kips
$T_{ub}/\phi R_{nt}$	0.00960	
$V_{ub}/\phi R_{nv}$	0.42344	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.18836	
Bolt Capacity =	42.3%	OK

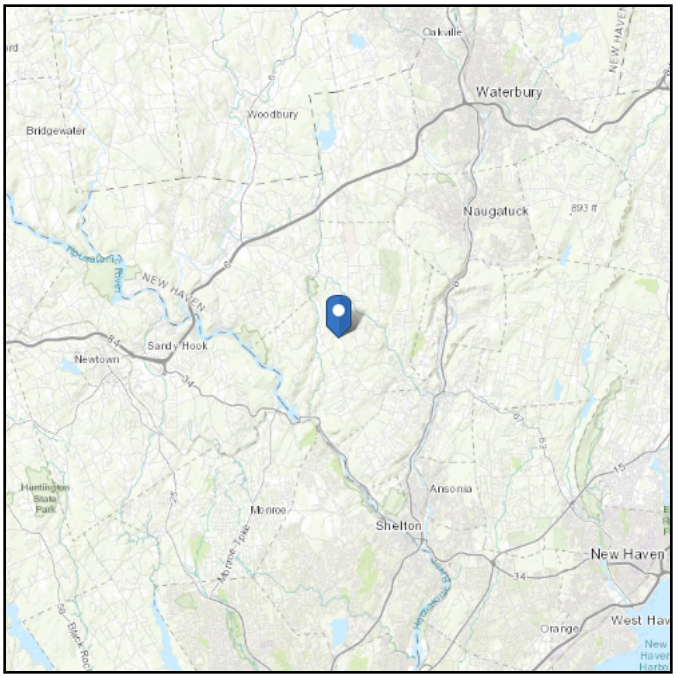
*Rating per TIA-222-H, Section 15.5

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 734.07 ft (NAVD 88)
Latitude: 41.426364
Longitude: -73.144258



Wind

Results:

Wind Speed:	~~121 Vmph~~ 125 Vpmh per 2018 Connecticut Building Code Appendix N
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	98 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Tue Feb 02 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 7-10 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 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

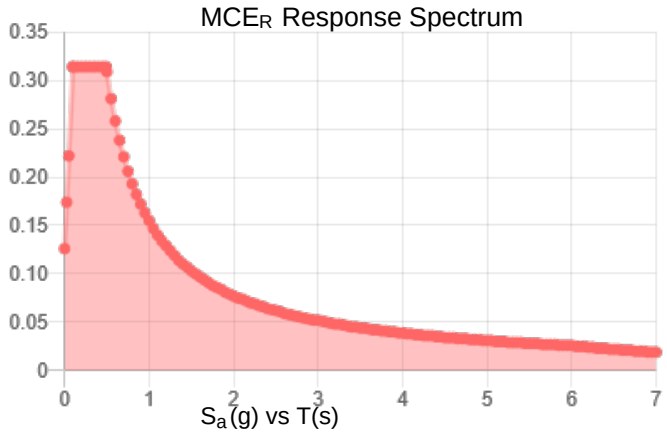
Seismic

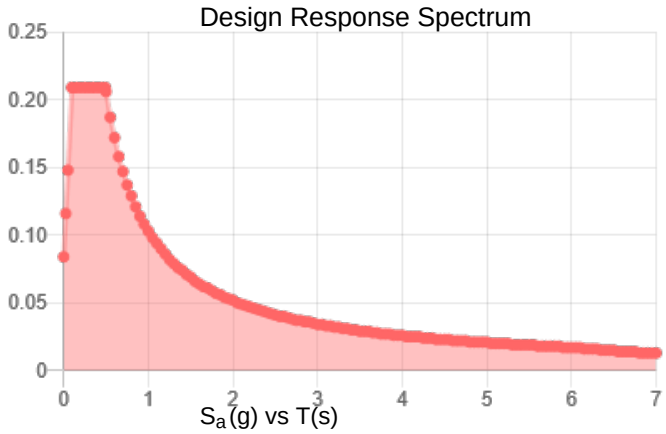
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.196	S_{DS} :	0.209
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.104
S_{MS} :	0.314	PGA_M :	0.165
S_{M1} :	0.155	F_{PGA} :	1.592
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Feb 02 2021

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Feb 02 2021

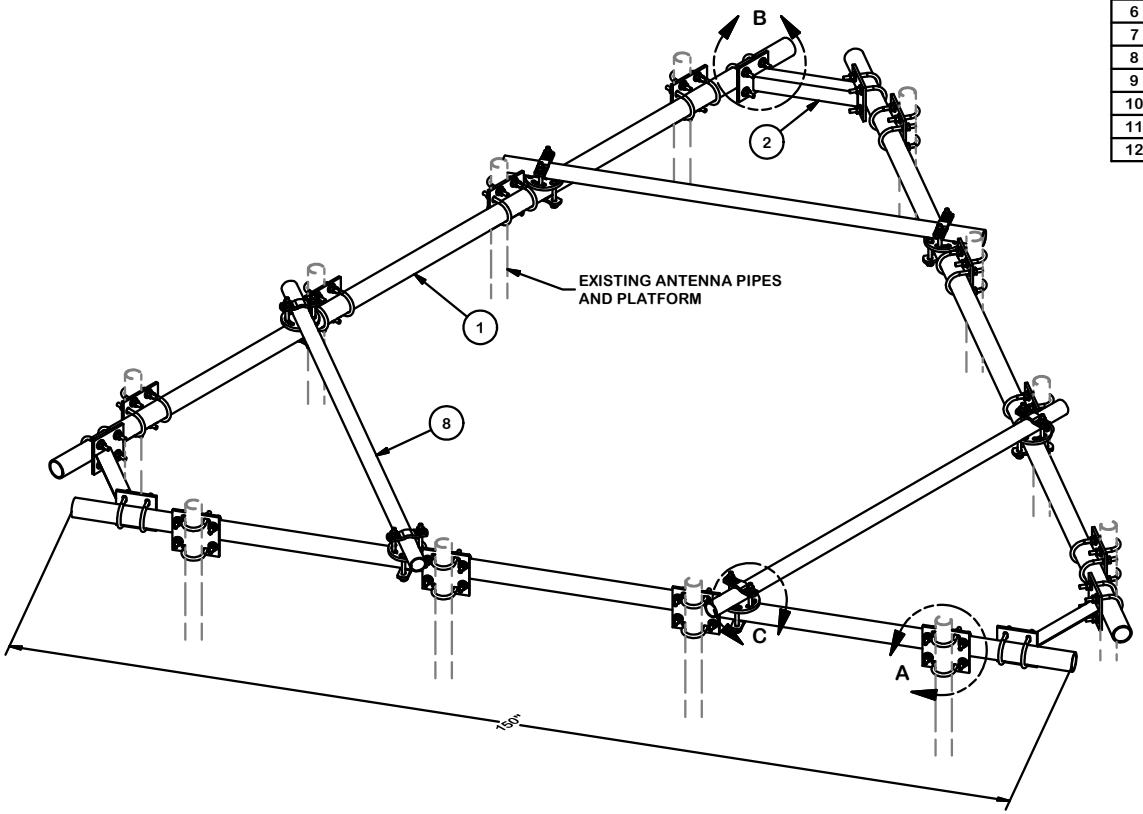
Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

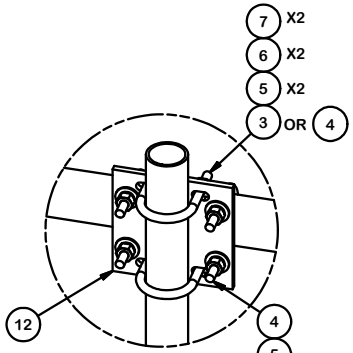
Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from 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.

APPENDIX E

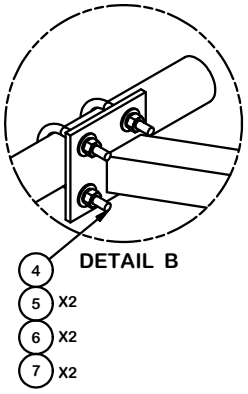
SUPPLEMENTAL DRAWINGS

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P30150	2-7/8" O.D. X 150" SCH. 40 PIPE	150 in	76.94	230.81
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.73	17.56
4	60	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.73	43.90
5	144	G12FW	1/2" HDG USS FLATWASHER		0.03	4.91
6	144	G12LW	1/2" HDG LOCKWASHER		0.01	2.00
7	144	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	10.31
8	3	P272	2-3/8" X 72" SCH 40 GALVANIZED PIPE	72 in	23.07	69.20
9	6	X-127594	FLAT DISK CLAMP PLATE 4" CENTERS (GALVANIZED)		2.48	14.90
10	12	X-100064	CLAMP (S) (4" V-CLAMP) GALVANIZED		0.91	10.95
11	24	G1204	1/2" x 4" HDG HEX BOLT GR5 FULL THREAD	4 in	0.27	6.48
12	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
					TOTAL WT. #	502.34

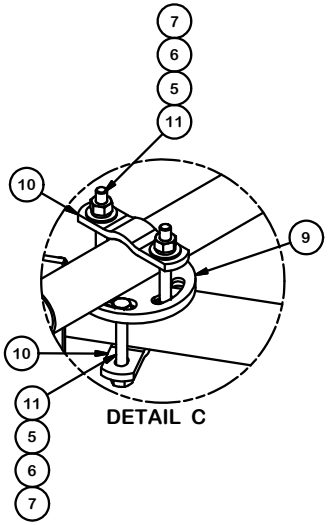




DETAIL A



DETAIL B



DETAIL C

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")*

DESCRIPTION
HEAY DUTY HANDRAIL KIT
FOR 12' PLATFORMS WITH
2-7/8" HANDRAIL PIPES

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 4/6/2015		HRK12-3HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 4/7/2015	HRK12-3HD