10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

Transcend Wireless

June 30, 2021

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

RE: Notice of Exempt Modification
89 Dr. Nott Road, North Franklin, CT, 06254 (AKA 99 Dr. Nott Road)
Latitude: 41.59766
Longitude: -72.14497
T-Mobile Site#: CTNL313A - Sprint Keep Project

Dear Ms. Bachman:

T-Mobile/Sprint currently maintains six (6) antennas at the 180-foot level of the existing 300-foot Guyed Tower at 89 Dr. Nott Road, North Franklin, Connecticut. The 300-foot Guyed Tower is owned and operated by American Tower. The ground space is owned by Penske Aitchison Victoria L Etal. T-Mobile now intends to remove all Sprint equipment including antennas, cables, and ground equipment. T-mobile will be adding nine (9) antennas. The new antennas will be installed at the same 180-foot level. The new antennas support 5G services.

Planned Modifications:
Tower:
Remove
(6) Sprint Antennas
(12) Sprint RRHs
(4) Sprint Hybrid Cables
(9) 1 ⅝" Sprint Coax Cables

Install New:
(3) APX16DWV-16DWV Antennas
(3) APXVAALL24 43-U-NA20 Antennas
(3) AIR6449 Antennas
(3) Ericsson Radio 4449 B71+B85
(3) Ericsson 4424 B25

(3) Ericsson Radio 4415 B66A RRU
(3) 6/24 Hybrid Cables

Ground:
Install New:
(1) B160s
(3) BB 6648s
(1) DUG20
(1) RBS6601
(1) PSU 4813
(1) CSR IXRE V2s

To Be Removed:
All Sprint Ground Equipment

This facility was originally approved by the Town of Franklin in 1999. The zoning department was not able to locate the original approval for the tower.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to First Selectman - Charles Grant, Elected Official, and Ronald Chalecki, Zoning Enforcement Officer, as well as the tower and property owner.

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

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

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

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

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

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

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

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

Sincerely,

Eric Breun
Transcend Wireless

Cell: 201-658-7728
Email: ebreun@transcendwireless.com

Attachments
cc: Charles Grant – as First Selectman of Franklin
Ronald Chalecki - Zoning Enforcement Officer
American Tower - Tower Owner
Penske Aitchison Victoria L ETAL - Land Owner

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
FIRST SELECTMAN CHARLES GRANT
7 MEETINGHOUSE ROAD
FRANKLIN CT 06254

CT 063 0-03

UPS GROUND
TRACKING #: 1Z V25 742 43 9206 8898

BILLING: P/P

Reference #1: CTNL313A

XOL 21.05.18 NV45 25.0A 06/2021*

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
CONTACTS MANAGEMENT
AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBURN MA 01801

MA 018 9-04

UPS GROUND
TRACKING #: 1Z V25 742 03 9271 0884

BILLING: P/P

Reference #1: CTNL313A

XOL 21.05.18 NV45 25.0A 06/2021*


ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430
1 LBS
1 OF 1
SHIP TO:
PENSKE AITCHISON VICTORIA L
89 DOCTOR NOTT ROAD
FRANKLIN CT 06254
CT 063 0-03
UPS GROUND
TRACKING #: 1Z V25 742 03 9909 3977
BILLING: P/P
Reference #1: CTNL313A
XOL 21.05.18 NV45 25.0A 06/2021*


ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430
1 LBS
1 OF 1
SHIP TO:
RONALD CHALECKI
7 MEETINGHOUSE HILL ROAD
NORTH FRANKLIN CT 06254
CT 063 0-03
UPS GROUND
TRACKING #: 1Z V25 742 43 9463 0909
BILLING: P/P
XOL 21.05.18 NV45 25.0A 06/2021*

Parcel Information

Location:	89 DR NOTT RD	Property Use:	Residential	Primary Use:	Residential
Unique ID:	S1080900	Map Block Lot:	36 8	Acres:	44.16
490 Acres:	0.00	Zone:	R080	Volume / Page:	103/ 226
Developers Map / Lot:		Census:			

Value Information

	Appraised Value	Assessed Value
Land	138,500	96,940
Buildings	221,367	154,960
Detached Outbuildings	293,995	205,800
Total	653,862	457,700

Owner's Information

Owner's Data
PENSKE AITCHISON VICTORIA L ETAL PO BOX 1128 BETHLEHEM PA 18016

Building 1

Building Use:	Single Family	Style:	Colonial	Living Area:	2,786
Stories:	2.00	Construction:	Wood Frame	Year Built:	1986
Total Rooms:	8	Bedrooms:	3	Full Baths:	2
Half Baths:	1	Fireplaces:	0	Heating:	Hot Water
Fuel:	Oil	Cooling Percent:	0	Basement Area:	816
Basement Finished Area:	0	Basement Garages:	0	Roof Material:	Asphalt
Siding:	Clapboards	Units:			

Special Features

Attached Components

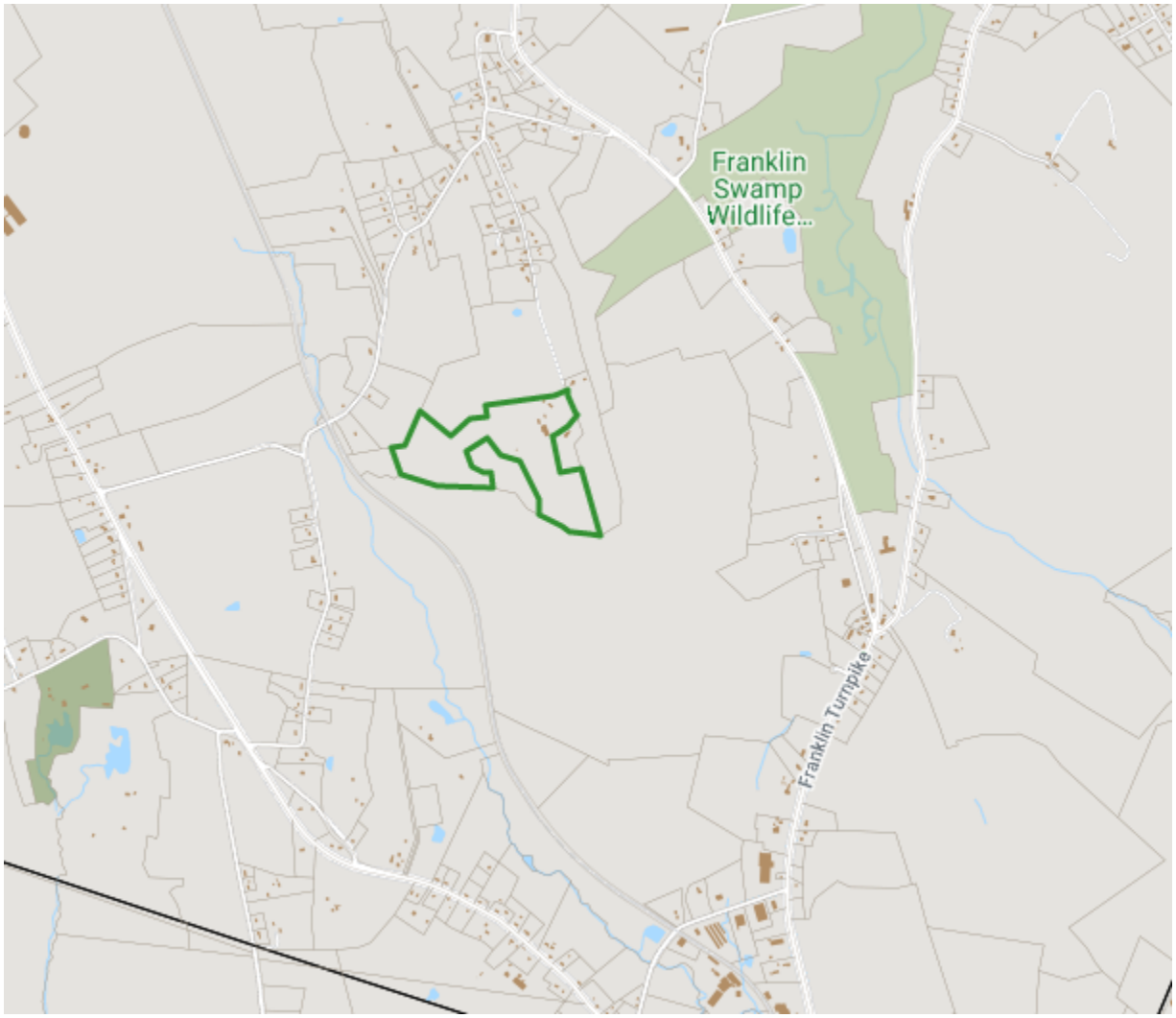
Type:	Year Built:	Area:
Wood Deck	1986	112
Wood Deck	1986	25
Attatched Frame Garage	1986	576
Open Porch	1986	44

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Barn w/Loft	1986	0.00	0.00	768
Barn w/Loft	2007	30.00	60.00	1,800
Pole Barn	2000	0.00	0.00	7,200
Canopy	1986	0.00	0.00	345
Farm Utility Storage Shed	2000	0.00	0.00	408
Farm Utility Storage Shed	1999	0.00	0.00	200
Farm Utility Storage Shed	1999	0.00	0.00	480
6 Ft Chain Fence	0000	1,000.00	0.00	1,000
Detached 1 Story Garage	1986	0.00	0.00	925
Site Value	1986	0.00	0.00	1
Lean To Shed	1986	0.00	0.00	288
Cell Tower	1999	0.00	0.00	1

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
PENSKE AITCHISON VICTORIA L ETAL	103	226	05/27/2020	Warranty Deed	No	$653,862
HIDDEN BROOK FARMS LLC	0091	0719	08/29/2013		Yes	$650,000
SHAKUN THOMAS J	0091	0030	05/14/2013		No	$0
SHAKUN THOMAS J AND	0084	0530	01/14/2010		No	$0
SHAKUN THOMAS J	0066	0180	01/16/2003		No	$0
SHAKUN THOMAS J AND DOROTHY M	0032	0115			No	$0


Franklin
Swamp
Wildlife...
Franklin Turnpike

RE: [Franklin CT] Dr. Nott Road Cell Site Zoning Approval (Sent by Eric Breun, ebreun@transcendwireless.com)

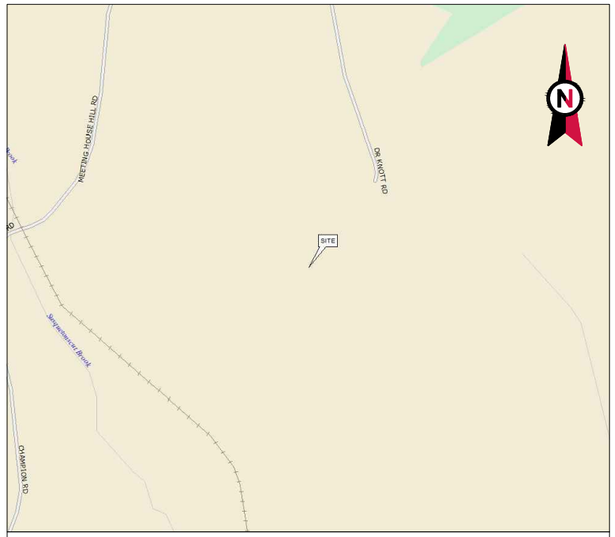
External Inbox ×

Ron Chalecki <zeo@franklinct.com> 7:19 PM (0 minutes ago)

to me

Eric,
I am having trouble locating the original approval for the tower.....I started to research it and it looks like that it dates back to around 1999.
Records being that old are archived in our basement files and require extra time to research.
I will continue to look it up for you.

Ron Chalecki
Town Of Franklin
Zoning Enforcement Offical
7 Meetinghouse Hill Road
Franklin, CT 06254
860-642-6055, ext. 13



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: FRANKLIN CT
ATC SITE NUMBER: 6310
T-MOBILE SITE NAME: CTNL313A
T-MOBILE SITE NUMBER: CTNL313A
SITE ADDRESS: 89 DR. NOTT RD
NORTH FRANKLIN, CT 06254-1316

LOCATION MAP

T-MOBILE SPRINT RETAIN ANTENNA AMENDMENT PLAN
67D5A998C CONFIGURATION

COMPLIANCE CODE

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

1. 2015 INTERNATIONAL BUILDING CODE (IBC)
2. 2017 NATIONAL ELECTRIC CODE (NEC)
3. LOCAL BUILDING CODE
4. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: EVERSOURCE ENERGY
PHONE: (800) 286-2000

TELEPHONE COMPANY: SOUTHERN NEW ENGLAND
PHONE: (877) 713-2084

811 Know what's below. Call before you dig.

PROJECT SUMMARY

SITE ADDRESS:

89 DR. NOTT RD

NORTH FRANKLIN, CT 06254-1316

COUNTY: NEW LONDON

GEOGRAPHIC COORDINATES:

LATITUDE: 41.59766

LONGITUDE: -72.14497

GROUND ELEVATION: 499' AMSL

PROJECT TEAM

TOWER OWNER:
AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

APPLICANT:
T-MOBILE

ENGINEER:
TOWER ENGINEERING PROFESSIONALS
326 TYRON ROAD
RALEIGH, NC 27603-3530

PROPERTY OWNER:
HIDDEN BROOK FARMS LLC
248 ROUTE 32
FRANKLIN, CT 6254

PROJECT LOCATION DIRECTIONS

395 SOUTH TO 608 WEST. FOLLOW TO 32 NORTH TO LEFT ON POUND HILL RD. LEFT ON DR. NOTT RD. SITE IS BEHIND FARM.

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:

TOWER WORK:

REMOVE (6) ANTENNA(S), (12) RRH(s), (9) 1-5/8" COAX CABLE(S), AND (4) 1-1/4" HYBRIFLEX CABLE(S).

INSTALL (9) ANTENNA(S), (9) RRU(s), (3) DUAL SWIVEL MOUNT(S), AND (3) 6/24 4AWG HYBRID TRUNK(S).

GROUND WORK:

REMOVE (1) EQUIPMENT RACK(S), (1) MM BTS CABINET(S), (1) BATTERY RACK(S), AND (1) FIBER JUNCTION BOX(ES).

INSTALL (1) 19 INCH RACK(s), (1) B160(s), (1) RBS 6601(s), (1) PSU 4813(s), (4) BB6648(s), (1) DUG 20(s), AND (1) CSR IXRE V2(s).

NOTE: THIS CONSTRUCTION DRAWING SET IS NOT INTENDED TO ADDRESS ANY ELECTRICAL UPGRADES NEEDED. ANY ELECTRICAL UPGRADES WILL BE SHOWN IN A SEPARATE CONSTRUCTION DRAWING SET.

PROJECT NOTES

1. THE FACILITY IS UNMANNED.
2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.
3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.
4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.
5. HANDICAP ACCESS IS NOT REQUIRED.

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	06/04/21	GV
G-002	GENERAL NOTES	0	06/04/21	GV
C-101	DETAILED SITE PLAN	0	06/04/21	GV
C-102	DETAILED EQUIPMENT LAYOUT	0	06/04/21	GV
C-201	TOWER ELEVATION	0	06/04/21	GV
C-401	ANTENNA INFORMATION & SCHEDULE	0	06/04/21	GV
C-501	CONSTRUCTION DETAILS	0	06/04/21	GV
C-502	CONSTRUCTION DETAILS	0	06/04/21	GV
E-501	GROUNDING DETAILS	0	06/04/21	GV
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			
R-603	SUPPLEMENTAL			
R-604	SUPPLEMENTAL			
R-605	SUPPLEMENTAL			
R-606	SUPPLEMENTAL			
R-607	SUPPLEMENTAL			

AMERICAN TOWER

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

REV.	DESCRIPTION	BY	DATE
A	PRELIMINARY	RRG	05/13/21
0	100% CONSTRUCTION	GV	06/04/21

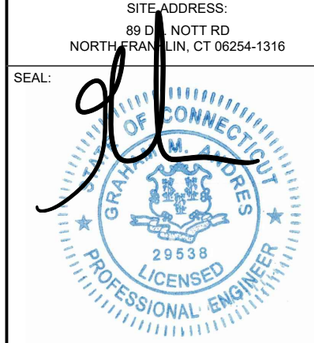
ATC SITE NUMBER:
6310

ATC SITE NAME:
FRANKLIN CT

T-MOBILE SITE NAME:
CTNL313A

SITE ADDRESS:
89 DR. NOTT RD
NORTH FRANKLIN, CT 06254-1316

SEAL:



06/04/21

T-Mobile

DATE DRAWN:	06/04/21
ATC JOB NO:	13653965
CUSTOMER NAME:	CTNL313A
CUSTOMER ID:	CTNL313A

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	0

GENERAL CONSTRUCTION NOTES:

1. OWNER FURNISHED MATERIALS, T-MOBILE "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL
   - A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
   - B. AC/TELCO INTERFACE BOX (PPC)
   - C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
   - D. TOWERS, MONOPOLES
   - E. TOWER LIGHTING
   - F. GENERATORS & LIQUID PROPANE TANK
   - G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
   - H. ANTENNAS (INSTALLED BY OTHERS)
   - I. TRANSMISSION LINE
   - J. TRANSMISSION LINE JUMPERS
   - K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
   - L. TRANSMISSION LINE GROUND KITS
   - M. HANGERS
   - N. HOISTING GRIPS
   - O. BTS EQUIPMENT
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF T-MOBILE TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE REP PRIOR TO PROCEEDING.
13. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE CONSTRUCTION MANAGER.
15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE REP AND ENGINEER OF RECORD IMMEDIATELY.
17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20. CONTRACTOR SHALL FURNISH T-MOBILE AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE SPECIFICATIONS AND REQUIREMENTS.
24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27. CONTRACTOR SHALL NOTIFY T-MOBILE REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
29. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
30. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE REP. ANY WORK FOUND BY THE T-MOBILE REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
31. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
32. T-MOBILE FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE T-MOBILE WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
33. T-MOBILE OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO T-MOBILE OR THEIR ARCHITECT/ENGINEER.

SPECIAL CONSTRUCTION ANTENNA INSTALLATION NOTES:

1. WORK INCLUDED:

A. ANTENNA AND COAXIAL CABLES ARE FURNISHED BY T-MOBILE UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OD COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL AND

B. INSTALL ANTENNA AS INDICATE ON DRAWINGS AND T-MOBILE SPECIFICATIONS.

C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS

D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE.

E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TESTS USING ANRITZU-PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER(FDR) TESTS RESULTS TO THE PROJECT MANAGER. SWEEP TESTS SHALL BE AS PER ATTACHED RFS "MINIMUM FIELD TESTING RECOMMENDED FOR ANTENNA AND HELIAX COAXIAL CABLE SYSTEMS" DATED 10/5/93. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.

F. INSTALL COAXIAL CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.

G. ANTENNA AND COAXIAL CABLE GROUNDING:

2. ALL EXTERIOR #6 GREED GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.

3. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS)

ALL DISCREPANCIES FROM WHAT IS SHOWN ON THESE CONSTRUCTION DRAWINGS SHALL BE COMMUNICATED TO ATC ENGINEERING IMMEDIATELY FOR CORRECTION OR RE-DESIGN. FAILURE TO COMMUNICATE DIRECTLY WITH ATC ENGINEERING OR ANY CHANGES FROM THE DESIGN CONDUCTED WITHOUT PRIOR APPROVAL FROM ATC ENGINEERING SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

AMERICAN TOWER

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

REV.	DESCRIPTION	BY	DATE
A	PRELIMINARY	RRG	05/13/21
0	100% CONSTRUCTION	GV	06/04/21

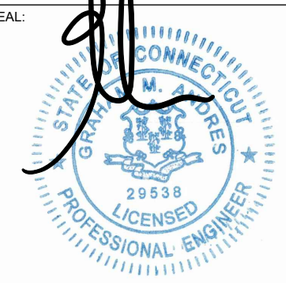
ATC SITE NUMBER:
6310

ATC SITE NAME:
FRANKLIN CT

T-MOBILE SITE NAME:
CTNL313A

SITE ADDRESS:
89 N. NOTT RD
NORTH FRANKLIN, CT 06254-1316

SEAL:



06/04/21

T-Mobile

DATE DRAWN:	06/04/21
ATC JOB NO:	13653965
CUSTOMER NAME:	CTNL313A
CUSTOMER ID:	CTNL313A

GENERAL NOTES

SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

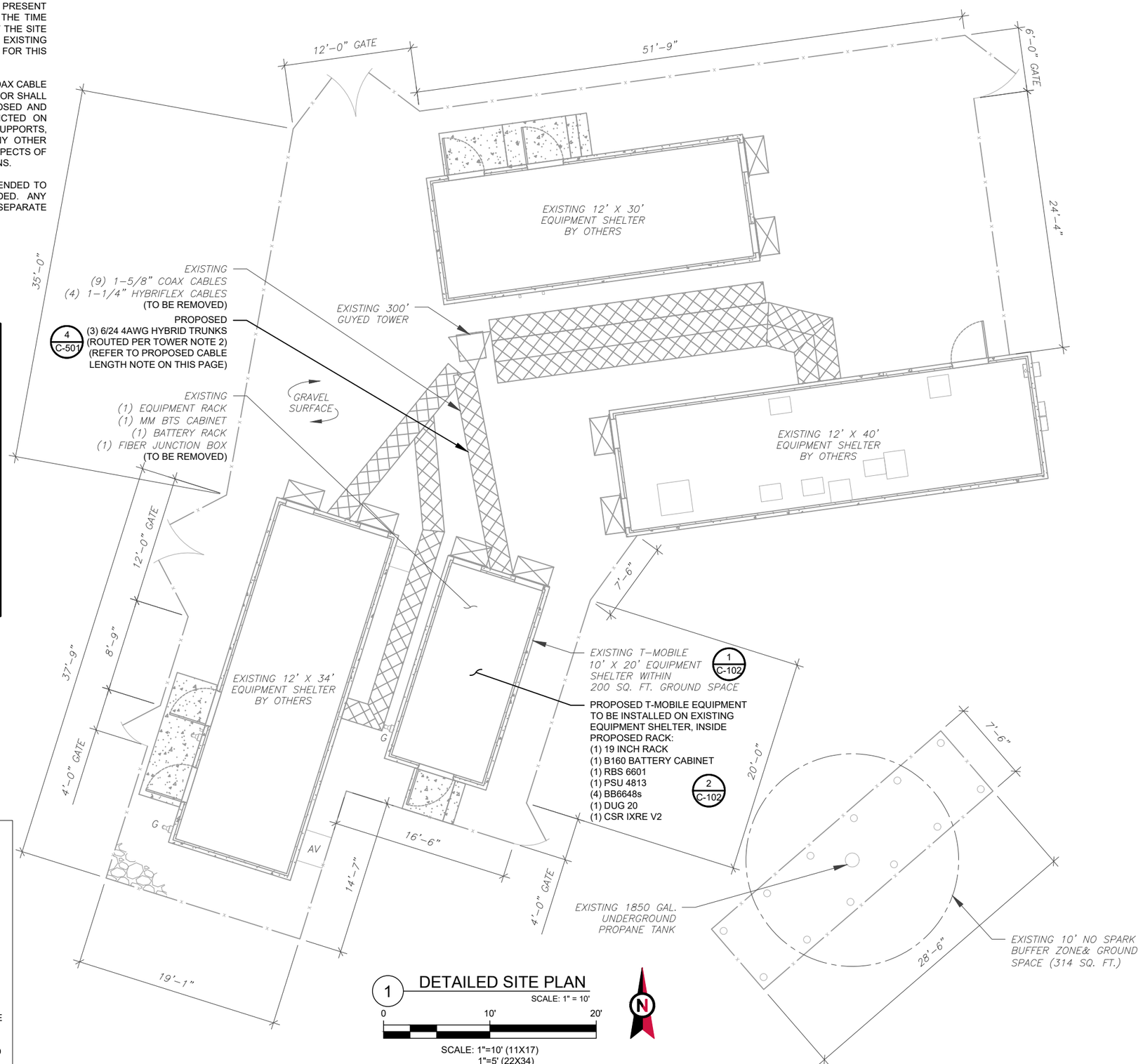
1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.

3. THIS CONSTRUCTION DRAWING SET IS NOT INTENDED TO ADDRESS ANY ELECTRICAL UPGRADES NEEDED. ANY ELECTRICAL UPGRADES WILL BE SHOWN IN A SEPARATE CONSTRUCTION DRAWING SET.

LEGEND

⊗	GROUNDING TEST WELL
ATS	AUTOMATIC TRANSFER SWITCH
B	BOLLARD
CSC	CELL SITE CABINET
D	DISCONNECT
E	ELECTRICAL
F	FIBER
GEN	GENERATOR
G	GENERATOR RECEPTACAL
HH, V	HAND HOLE, VAULT
IB	ICE BRIDGE
K	KENTROX BOX
LC	LIGHTING CONTROL
M	METER
PB	PULL BOX
PP	POWER POLE
T	TELCO
TRN	TRANSFORMER
——x——	CHAINLINK FENCE



1 DETAILED SITE PLAN
SCALE: 1" = 10'

0 10' 20'

SCALE: 1"=10' (11X17)
1"=5' (22X34)

N

PROPOSED CABLE LENGTH:

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **240'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES), CDS DEFER TO GREATEST CABLE LENGTH.
2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. WHERE POSSIBLE UTILIZE EXISTING CABLE SUPPORT STRUCTURES AS PROVIDED FOR CARRIER TO ADEQUATELY SECURE CABLES, USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER. OTHERWISE, ATTACH CABLES TO HORIZONTAL OR DIAGONAL TOWER MEMBERS USING PROPOSED STAINLESS STEEL ADAPTERS (DO NOT ATTACH TO TOWER LEG).

AMERICAN TOWER

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

REV.	DESCRIPTION	BY	DATE
A	PRELIMINARY	RRG	05/13/21
0	100% CONSTRUCTION	GV	06/04/21

ATC SITE NUMBER:
6310

ATC SITE NAME:
FRANKLIN CT

T-MOBILE SITE NAME:
CTNL313A

SITE ADDRESS:
8 DR SCOTT RD
NORTH FRANKLIN, CT 06254-1316

SEAL:

STATE OF CONNECTICUT
ALEXANDRES
29538
LICENSED
PROFESSIONAL ENGINEER

06/04/21

T-Mobile

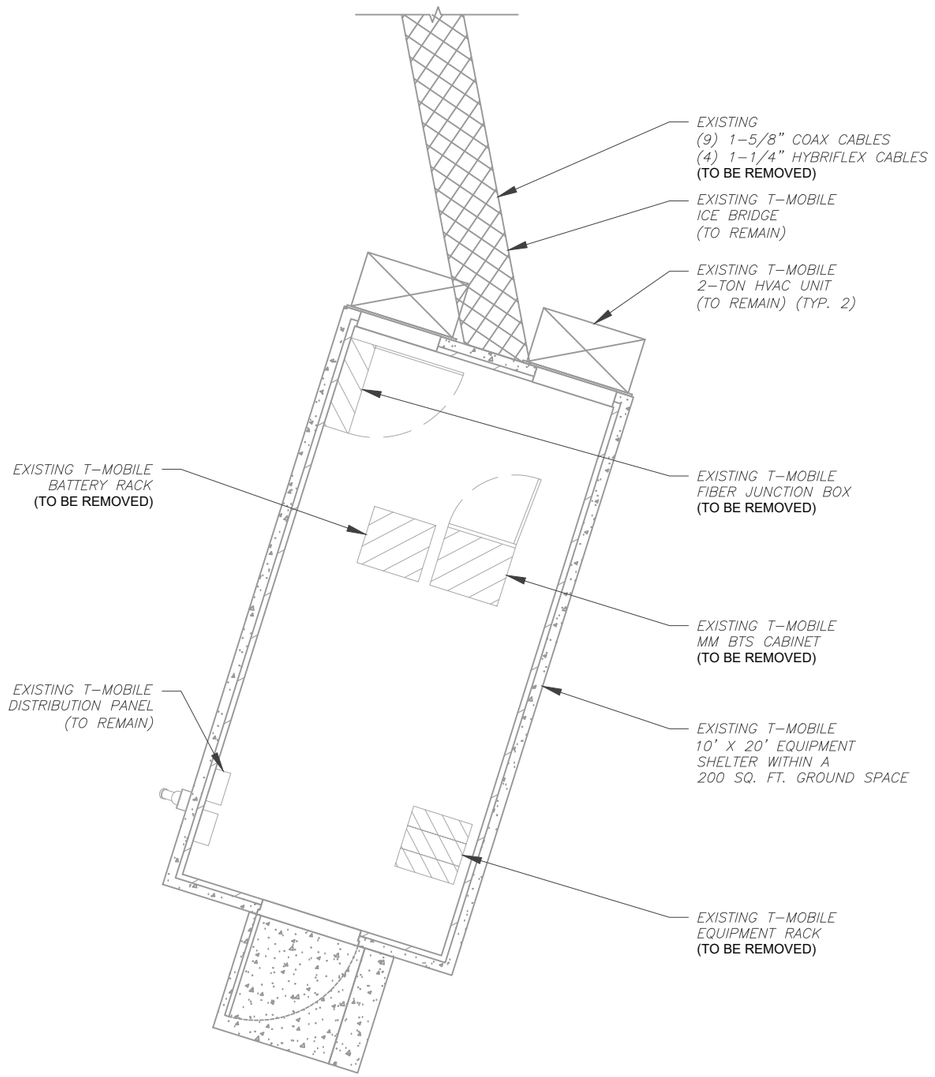
DATE DRAWN:	06/04/21
ATC JOB NO:	13653965
CUSTOMER NAME:	CTNL313A
CUSTOMER ID:	CTNL313A

DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	0

SITE PLAN NOTES:

1. CONTRACTOR TO VERIFY THERE IS NO LIVE AAV FIBER RUNNING THROUGH EXISTING DEAD EQUIPMENT. IF SO, THIS WILL NEED TO BE RERUN THROUGH CONDUIT PRIOR TO REMOVING DEAD 2G (6201 CABS) EQUIPMENT.
2. REMOVE EXISTING 2G CABINETS, AND POWER / TELCO WHIPS ASSOCIATED WITH THE DEAD EQUIPMENT IF APPLICABLE.
3. ALL OPEN PORTS NEED TO BE SEALED / WEATHERPROOFED PROPERLY
4. ALL UNNEEDED / EXCESS EQUIPMENT AND GARBAGE TO BE REMOVED FROM EQUIPMENT AREA. DISPOSE OF MATERIALS PROPERLY OFF SITE.



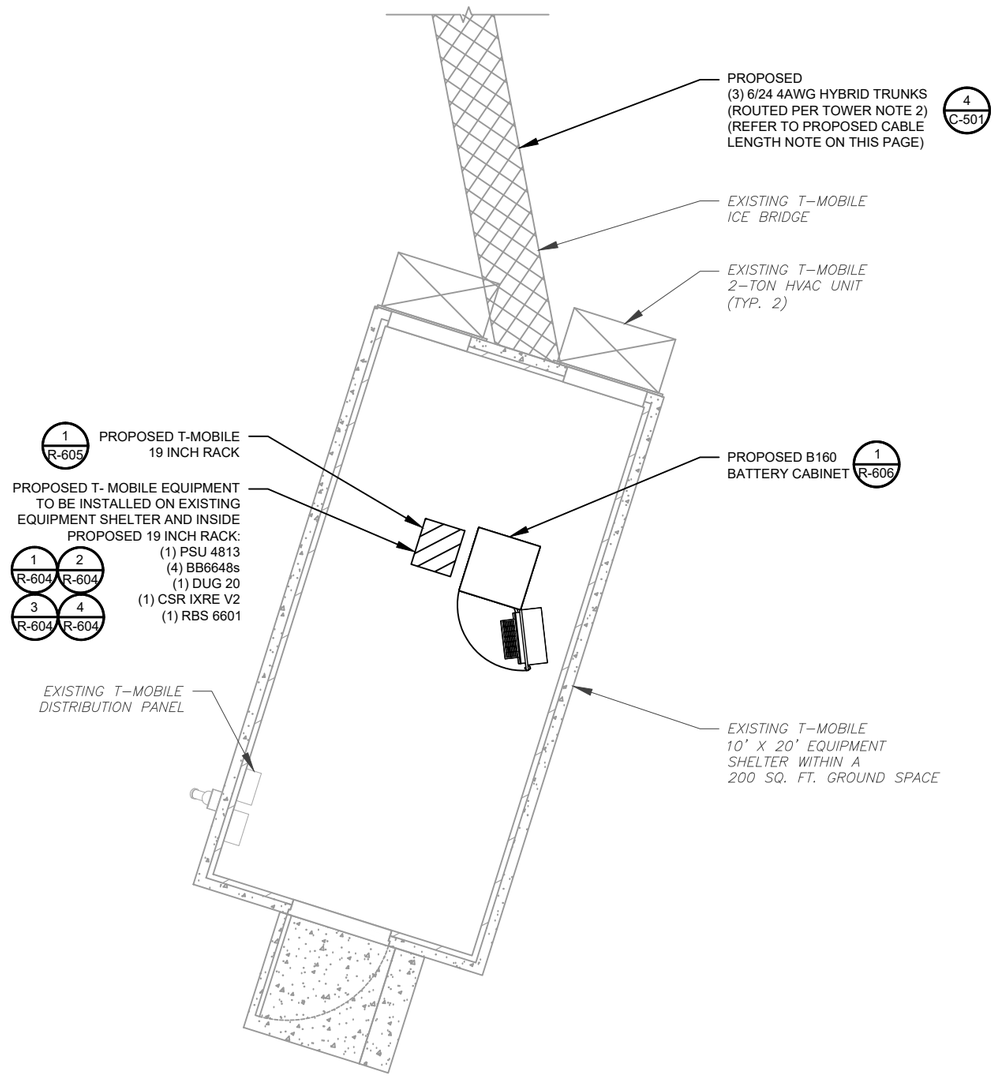
1 EXISTING GROUND EQUIPMENT LAYOUT

SCALE: 1" = 5'

0 5' 10'

SCALE: 1"=5' (11X17)
1"=2.5' (22X34)

T-MOBILE CM APPROVAL REQUIRED BEFORE INSTALLING CABINETS



2 PROPOSED GROUND EQUIPMENT LAYOUT

SCALE: 1" = 5'

0 5' 10'

SCALE: 1"=5' (11X17)
1"=2.5' (22X34)

AMERICAN TOWER

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

REV.	DESCRIPTION	BY	DATE
A	PRELIMINARY	RRG	05/13/21
0	100% CONSTRUCTION	GV	06/04/21

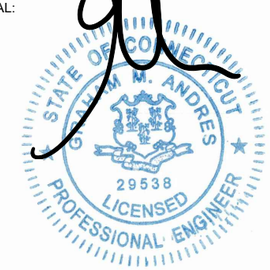
ATC SITE NUMBER:
6310

ATC SITE NAME:
FRANKLIN CT

T-MOBILE SITE NAME:
CTNL313A

SITE ADDRESS:
89 DR. NOTT RD
NORTH FRANKLIN, CT 06254-1316

SEAL:



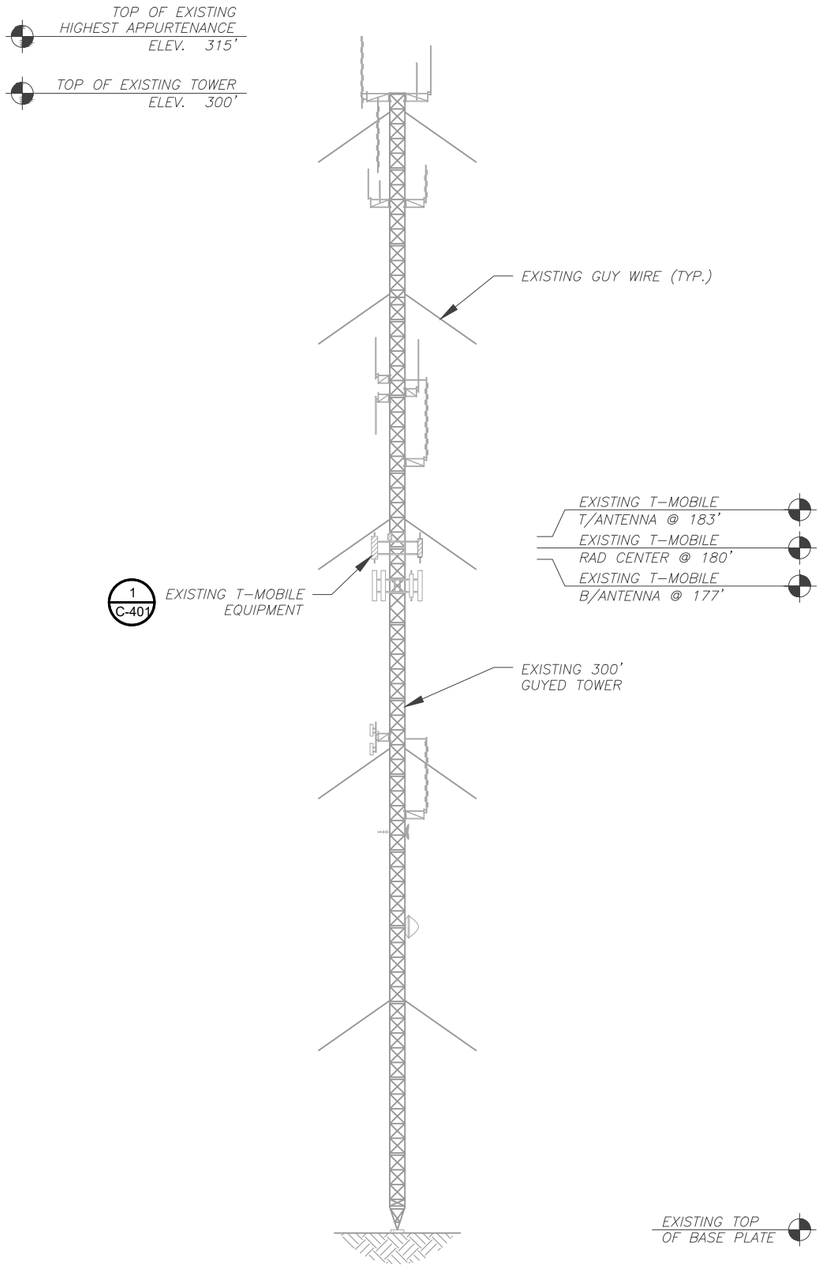
06/04/21

T-Mobile

DATE DRAWN:	06/04/21
ATC JOB NO:	13653965
CUSTOMER NAME:	CTNL313A
CUSTOMER ID:	CTNL313A

DETAILED EQUIPMENT LAYOUT

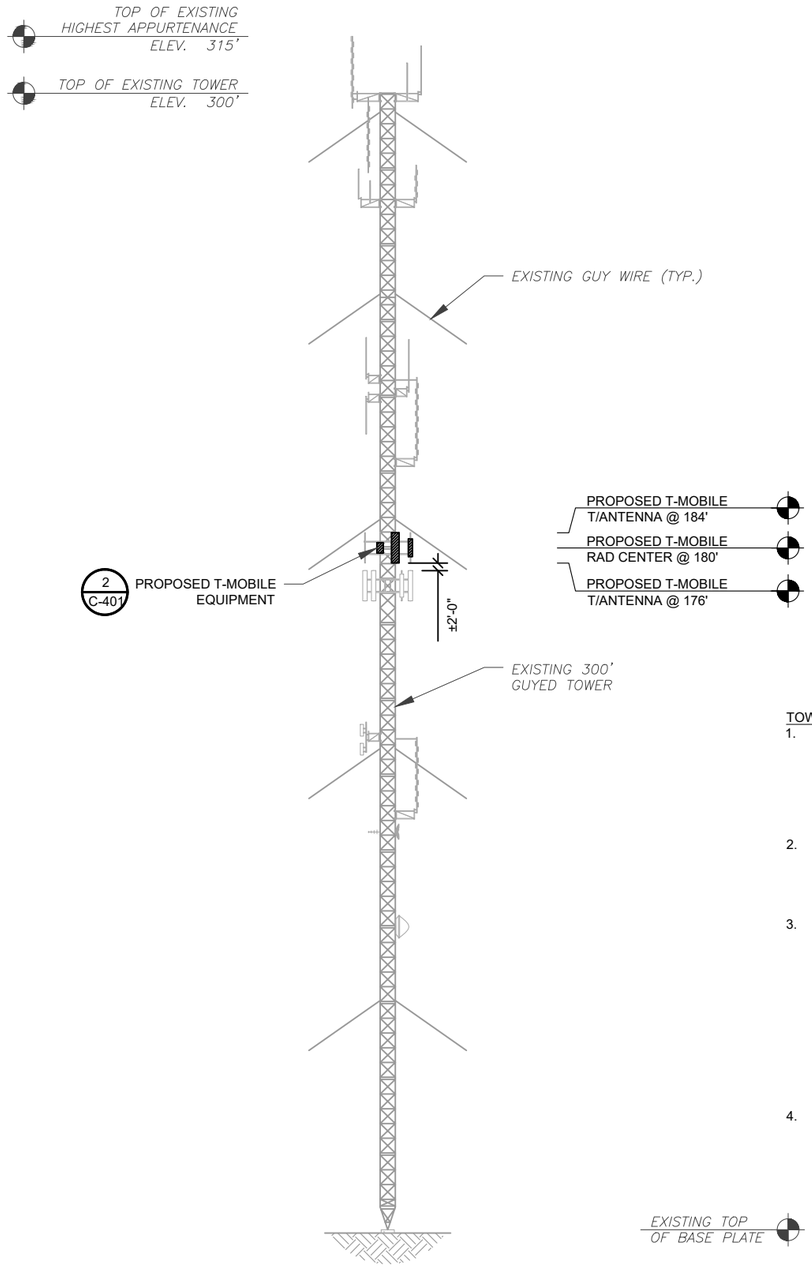
SHEET NUMBER:	REVISION:
C-102	0



1 EXISTING TOWER ELEVATION

SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY SMJ INTERNATIONAL LLC, DATED APRIL 30, 2021 THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING



2 PROPOSED TOWER ELEVATION

SCALE: N.T.S.

TOWER NOTE:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC. SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
3. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. WHERE POSSIBLE UTILIZE EXISTING CABLE SUPPORT STRUCTURES AS PROVIDED FOR CARRIER TO ADEQUATELY SECURE CABLES, USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER. OTHERWISE, ATTACH CABLES TO HORIZONTAL OR DIAGONAL TOWER MEMBERS USING PROPOSED STAINLESS STEEL ADAPTERS (DO NOT ATTACH TO TOWER LEG).
4. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)

AMERICAN TOWER

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

REV.	DESCRIPTION	BY	DATE
A	PRELIMINARY	RRG	05/13/21
0	100% CONSTRUCTION	GV	06/04/21

ATC SITE NUMBER:
6310

ATC SITE NAME:
FRANKLIN CT

T-MOBILE SITE NAME:
CTNL313A

SITE ADDRESS:
89 DEVINOTT RD
NORTH FRANKLIN, CT 06254-1316

SEAL:

STATE OF CONNECTICUT
GRAHAM M. ANDRES
29538
LICENSED
PROFESSIONAL ENGINEER

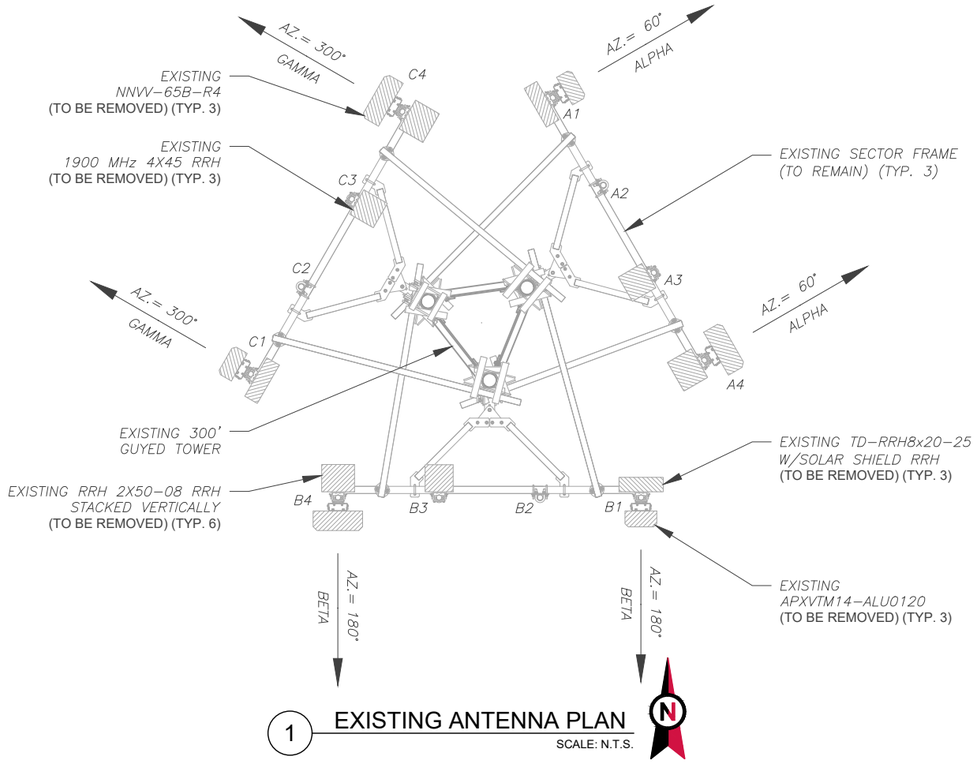
06/04/21

T-Mobile

DATE DRAWN:	06/04/21
ATC JOB NO:	13653965
CUSTOMER NAME:	CTNL313A
CUSTOMER ID:	CTNL313A

TOWER ELEVATION

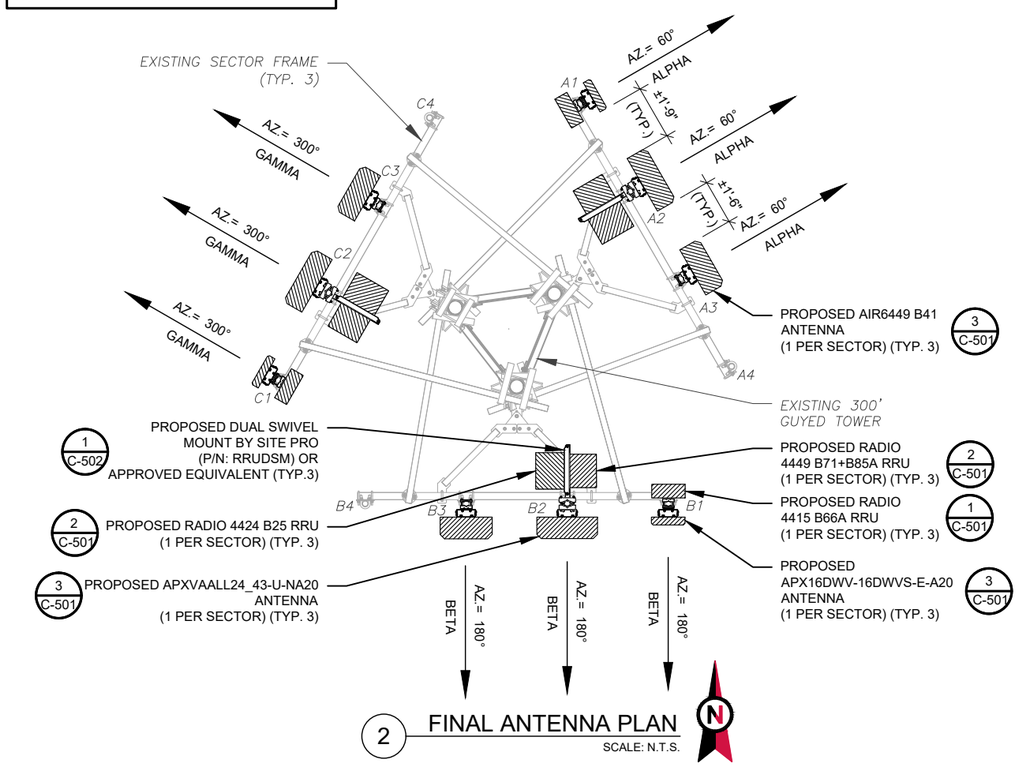
SHEET NUMBER:	REVISION:
C-201	0



1 EXISTING ANTENNA PLAN

SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY
SMJ INTERNATIONAL LLC, DATED APRIL 30, 2021
THE EXISTING MOUNT CAN ADEQUATELY
SUPPORT THE PROPOSED LOADING



2 FINAL ANTENNA PLAN

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY					NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	180'	60°	A1	APXVTM14-ALU0120	–	–	RMV	(1) TD-RRH8X20-25 W/SOLAR SHIELD	RMV
			A2	–	–	–	–	–	
			A3	–	–	–	–	(1) 1900 MHZ 4X45	RMV
			A4	NNVV-65B-R4	–	–	RMV	(2) RRH2X50-08	RMV
BETA	180'	180°	B1	APXVTM14-ALU0120	–	–	RMV	(1) TD-RRH8X20-25 W/SOLAR SHIELD	RMV
			B2	–	–	–	–	–	
			B3	–	–	–	–	(1) 1900 MHZ 4X45	RMV
			B4	NNVV-65B-R4	–	–	RMV	(2) RRH2X50-08	RMV
GAMMA	180'	300°	C1	APXVTM14-ALU0120	–	–	RMV	(1) TD-RRH8X20-25 W/SOLAR SHIELD	RMV
			C2	–	–	–	–	–	
			C3	–	–	–	–	(1) 1900 MHZ 4X45	RMV
			C4	NNVV-65B-R4	–	–	RMV	(2) RRH2X50-08	RMV

NOTES

1. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
2. CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.
3. TEP DID NOT VERIFY THE EXISTING LOADING. LOADING DATA PROVIDED BY ATC AND T-MOBILE.

STATUS ABBREVIATIONS

RMV: TO BE REMOVED
RMN: TO REMAIN
REL: TO BE RELOCATED
ADD: TO BE ADDED

CABLE LENGTHS FOR JUMPERS

JUNCTION BOX TO RRU: 15'
RRU TO ANTENNA: 10'

FINAL ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY					NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	180'	60°	A1	APX16DWV-16DWV-S-E-A20	L2100	0°/2°	ADD	(1) RADIO 4415 B66A	ADD
			A2	APXVAALL24_43-U-NA20	L600/L700/N600/ L1900/G1900	0°/2°	ADD	(1) RADIO 4449 B71+B85A (1) RADIO 4424 B25	ADD ADD
			A3	AIR 6449 B41	L2500/N2500	0°/2°	ADD	-	-
			A4	-	-	-	-	-	-
BETA	180'	180°	B1	APX16DWV-16DWV-S-E-A20	L2100	0°/2°	ADD	(1) RADIO 4415 B66A	ADD
			B2	APXVAALL24_43-U-NA20	L600/L700/N600/ L1900/G1900	0°/2°	ADD	(1) RADIO 4449 B71+B85A (1) RADIO 4424 B25	ADD ADD
			B3	AIR 6449 B41	L2500/N2500	0°/2°	ADD	-	-
			B4	-	-	-	-	-	-
GAMMA	180'	300°	C1	APX16DWV-16DWV-S-E-A20	L2100	0°/2°	ADD	(1) RADIO 4415 B66A	ADD
			C2	APXVAALL24_43-U-NA20	L600/L700/N600/ L1900/G1900	0°/2°	ADD	(1) RADIO 4449 B71+B85A (1) RADIO 4424 B25	ADD ADD
			C3	AIR 6449 B41	L2500/N2500	0°/2°	ADD	-	-
			C4	-	-	-	-	-	-

EXISTING FIBER DISTRIBUTION/OVP BOX		EXISTING CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
–	–	(9) 1-5/8"	(4) 1-1/4"	RMV

3 EQUIPMENT SCHEDULES

FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	-	(3) 6/24 HCS 4AWG	ADD

AMERICAN TOWER

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

REV.	DESCRIPTION	BY	DATE
A	PRELIMINARY	RRG	05/13/21
0	100% CONSTRUCTION	GV	06/04/21

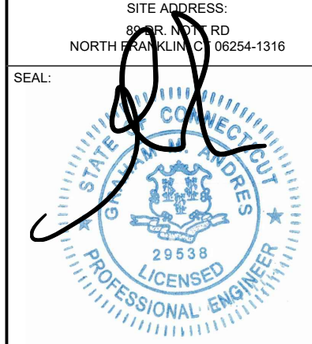
ATC SITE NUMBER:
6310

ATC SITE NAME:
FRANKLIN CT

T-MOBILE SITE NAME:
CTNL313A

SITE ADDRESS:
89 DR. NOTT RD
NORTH FRANKLIN, CT 06254-1316

SEAL:



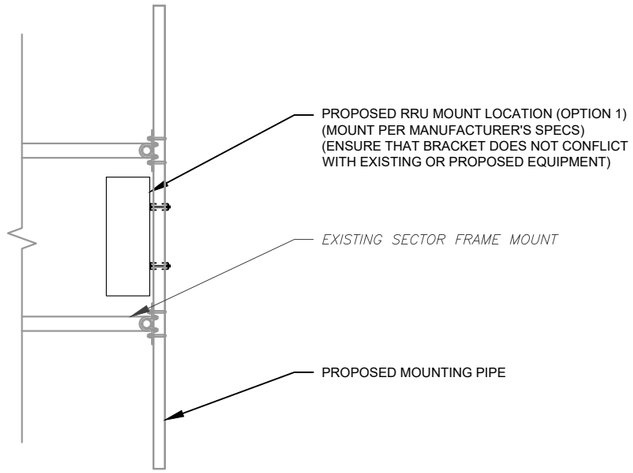
06/04/21

T-Mobile

DATE DRAWN:	06/04/21
ATC JOB NO:	13653965
CUSTOMER NAME:	CTNL313A
CUSTOMER ID:	CTNL313A

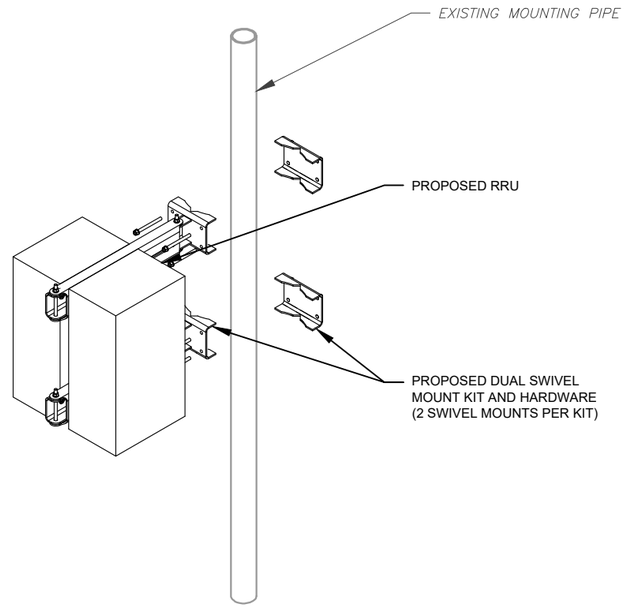
ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-401	0



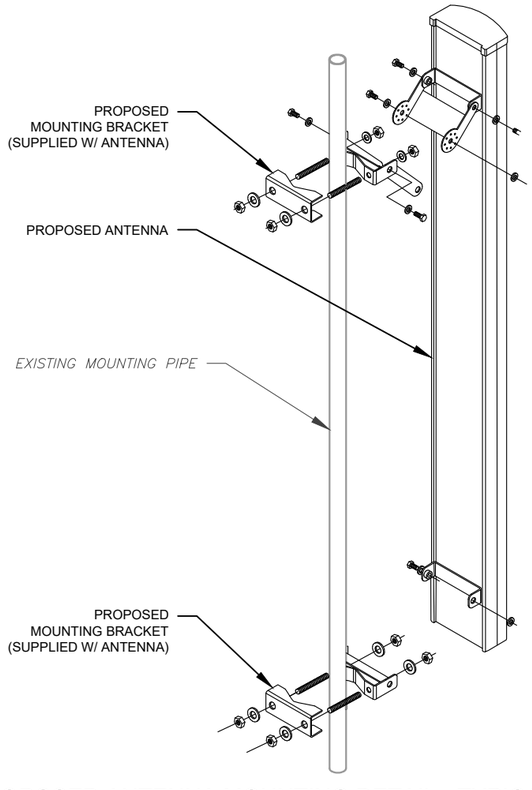
1 PROPOSED RRU MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



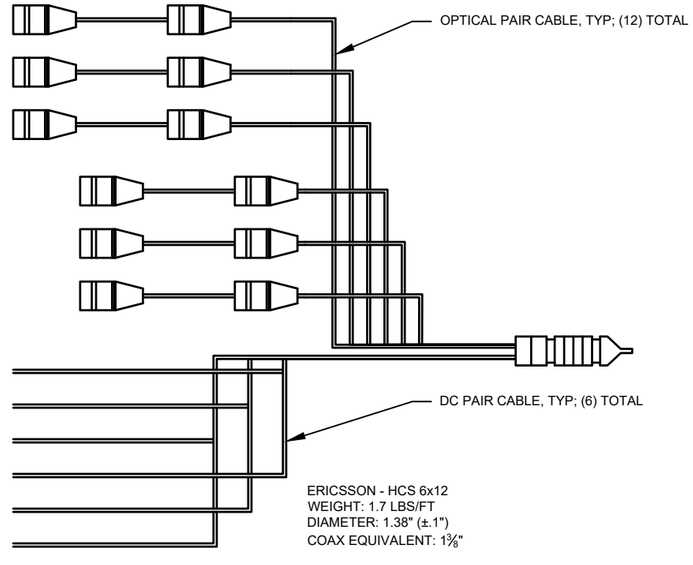
2 PROPOSED RRU MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



3 PROPOSED ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



4 PROPOSED HCS DETAIL - TYPICAL

SCALE: N.T.S.

AMERICAN TOWER

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

REV.	DESCRIPTION	BY	DATE
A	PRELIMINARY	RRG	05/13/21
0	100% CONSTRUCTION	GV	06/04/21

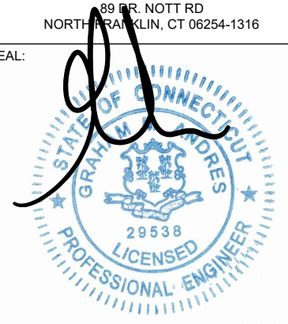
ATC SITE NUMBER:
6310

ATC SITE NAME:
FRANKLIN CT

T-MOBILE SITE NAME:
CTNL313A

SITE ADDRESS:
89 DR. NOTT RD
NORTH FRANKLIN, CT 06254-1316

SEAL:



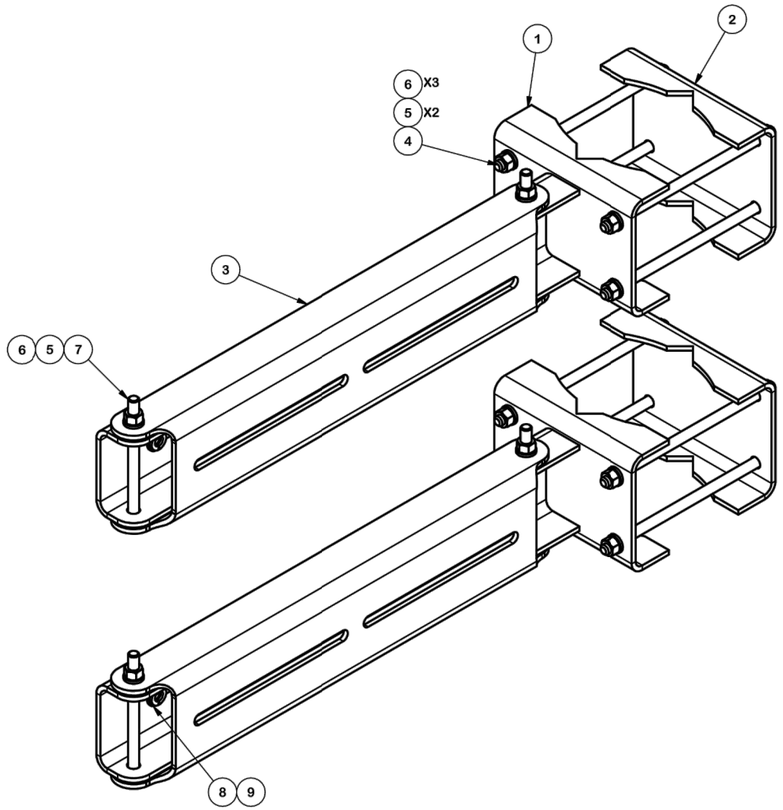
06/04/21

T··Mobile·

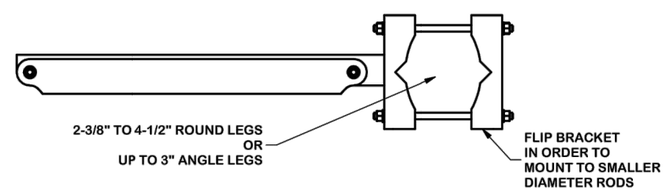
DATE DRAWN:	06/04/21
ATC JOB NO:	13653965
CUSTOMER NAME:	CTNL313A
CUSTOMER ID:	CTNL313A

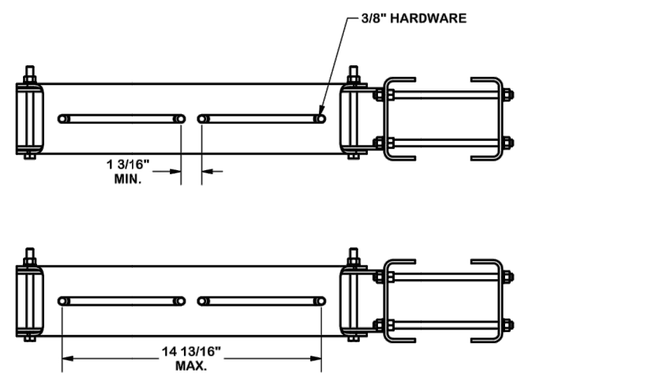
CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	0



PARTS LIST					
ITEM	QTY	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	MOUNTING ARM		8.99	17.97
2	2	CLAMP PLATE		2.35	4.69
3	2	SWIVEL MOUNT		6.65	13.30
4	8	3/8"-16 UNC X 8" GALV. THREADED ROD		0.25	2.00
5	20	3/8" GALV LOCK WASHER		0.01	0.13
6	28	3/8"-16 UNC GALV HEX NUT		0.02	0.52
7	4	3/8" X 5" GALV BOLT		0.18	0.71
8	8	3/8" SS FLAT WASHER		0.01	0.06
9	8	3/8" SS LOCK WASHER		0.01	0.05
				TOTAL WT. #	39.43





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	CPD NO.	CLASS	SUB	DRAWN BY	ENG. APPROVAL	CHECKED BY	PART NO.	DWG. NO.	PAGE
RRU DUAL SWIVEL MOUNT		81	01	CEK 1/12/2015		BMC 2/3/2015	RRUDSM	RRUDSM	1 OF 1

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

1 PROPOSED RRU DUAL SWIVEL MOUNT DETAIL
SCALE: N.T.S.

AMERICAN TOWER

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

REV.	DESCRIPTION	BY	DATE
A	PRELIMINARY	RRG	05/13/21
0	100% CONSTRUCTION	GV	06/04/21

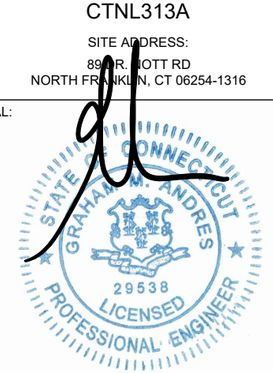
ATC SITE NUMBER:
6310

ATC SITE NAME:
FRANKLIN CT

T-MOBILE SITE NAME:
CTNL313A

SITE ADDRESS:
89[illegible] R. SCOTT RD
NORTH FRANKLIN, CT 06254-1316

SEAL:



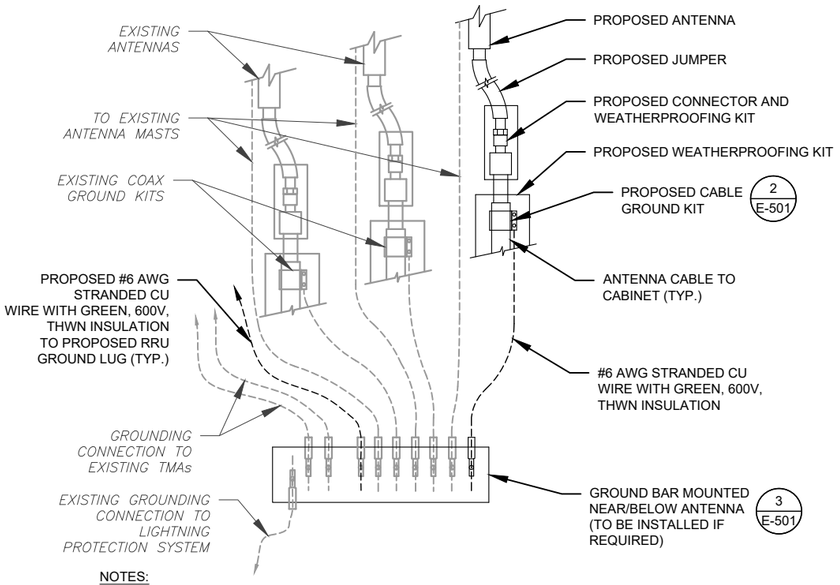
06/04/21

T-Mobile

DATE DRAWN:	06/04/21
ATC JOB NO:	13653965
CUSTOMER NAME:	CTNL313A
CUSTOMER ID:	CTNL313A

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-502	0

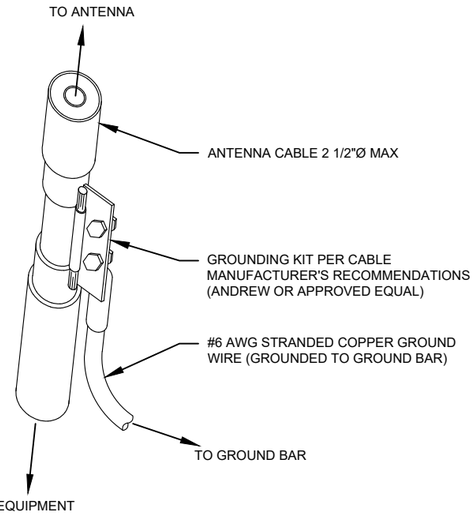


NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

1 TYPICAL ANTENNA GROUNDING DIAGRAM

SCALE: N.T.S.

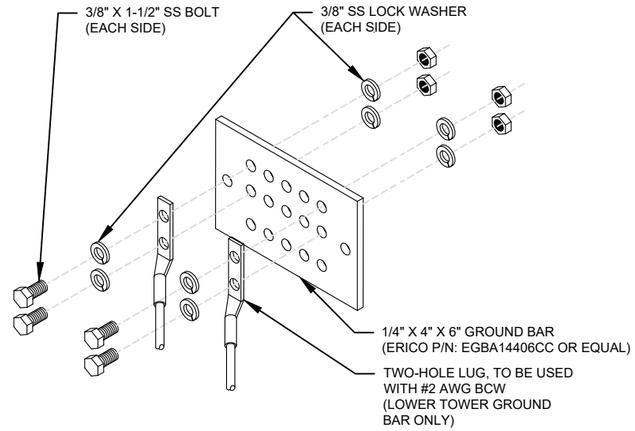


GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL

SCALE: N.T.S.



GROUND BAR NOTES:

1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL

SCALE: N.T.S.

ELECTRICAL NOTES:

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
2. ATC HAS NOT VERIFIED ANY EXISTING T-MOBILE GROUND EQUIPMENT OR ELECTRICAL LOADING. PROPOSED WORK BASED ON INSTALLATION CONFIGURATION PROVIDED BY T-MOBILE. CONTRACTOR TO VERIFY EXISTING T-MOBILE PANEL HAS SUFFICIENT SPACE FOR PROPOSED BREAKER. PROPOSED CABLE AND CONDUIT SHALL BE MINIMUM SIZE PER BELOW IN CHART.
3. FOR SPECIFIC CABINET/ ANCILLARY EQUIPMENT WIRING REQUIREMENTS, THE T-MOBILE CONTRACTOR SHOULD PREFERENCE DESIGN DOCUMENTS PROVIDED BY T-MOBILE FOR THIS CURRENT PROJECT CONFIGURATION, IN ACCORDANCE WITH LOCAL JURISDICTION REQUIREMENTS & NEC STANDARDS & PRACTICES.

OCPD SIZE	WIRE SIZE	GROUND SIZE	CONDUIT SIZE
80A/2P	2#3 AWG	#8 AWG	1-1/4"
100/2P	2#2 AWG	#8 AWG	1-1/4"
125A/2P	2#1 AWG	#8 AWG	1-1/2"
150A/2P	2#1/0 AWG	#8 AWG	1-1/2"

AMERICAN TOWER

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

REV.	DESCRIPTION	BY	DATE
A	PRELIMINARY	RRG	05/13/21
0	100% CONSTRUCTION	GV	06/04/21

ATC SITE NUMBER:
6310

ATC SITE NAME:
FRANKLIN CT

T-MOBILE SITE NAME:
CTNL313A

SITE ADDRESS:
89 DR. NOTT RD
NORTH FRANKLIN, CT 06254-1316

SEAL:

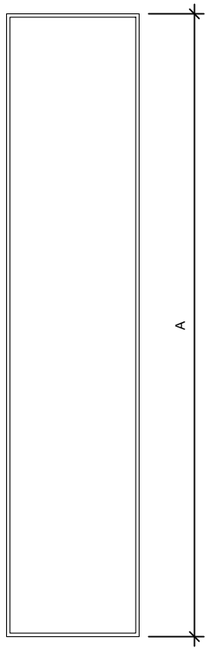
06/04/21

T-Mobile

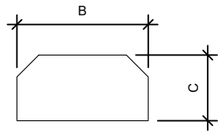
DATE DRAWN:	06/04/21
ATC JOB NO:	13653965
CUSTOMER NAME:	CTNL313A
CUSTOMER ID:	CTNL313A

GROUNDING DETAILS

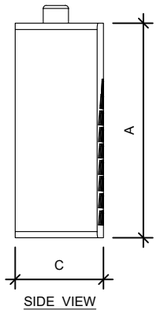
SHEET NUMBER:	REVISION:
E-501	0



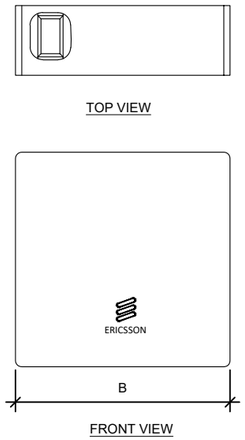
FRONT VIEW



TOP VIEW



SIDE VIEW



FRONT VIEW

TOP VIEW

ANTENNA SPECIFICATIONS				
ANTENNA MODEL	A	B	C	WEIGHT (LBS)
APX16DWV-16DWVS-E-A20	55.9"	13.3"	3.1"	40.7
APXVAALL24 43-U-NA20	95.9"	24"	8.5"	122.8
AIR 6449 B41	33.1"	20.6"	8.6"	104

RRU SPECIFICATIONS				
RRU MODEL	A	B	C	WEIGHT (LBS)
RADIO 4449 B71 B85A	15"	13.2"	10.5"	75
RADIO 4415 B66	15"	13.2"	5.4"	46
RADIO 4424 B25	17.1"	14.4"	11.3"	86.0

- EQUIPMENT SPECIFICATIONS

SCALE: N.T.S.

SUPPLEMENTAL

SHEET NUMBER: R-601

REVISION: -

Proposed RAN Equipment

Template: 67D5A998C Indoor (GSM only)

Enclosure	1	2	3	4
Enclosure Type	Ancillary Equipment (Ericsson)	19 Inch Rack (Ericsson)	B160	RBS 6601
Baseband		BB 6648 N2500 BB 6648 L2100 L1900 BB 6648 L700 L600 N600 BB 6648 L2500		DUG20 G1900
Hybrid Cable System	PSU 4813			
Transport System		CSR IXRe V2 (Gen2)		
Functionality Groups	Ericsson Hybrid Trunk 6/24 4AWG *Select Length* **(x 3)**			

RAN Scope of Work:

CT73XC005
Existing & planned azimuth: 60/180/300
Existing power 200A

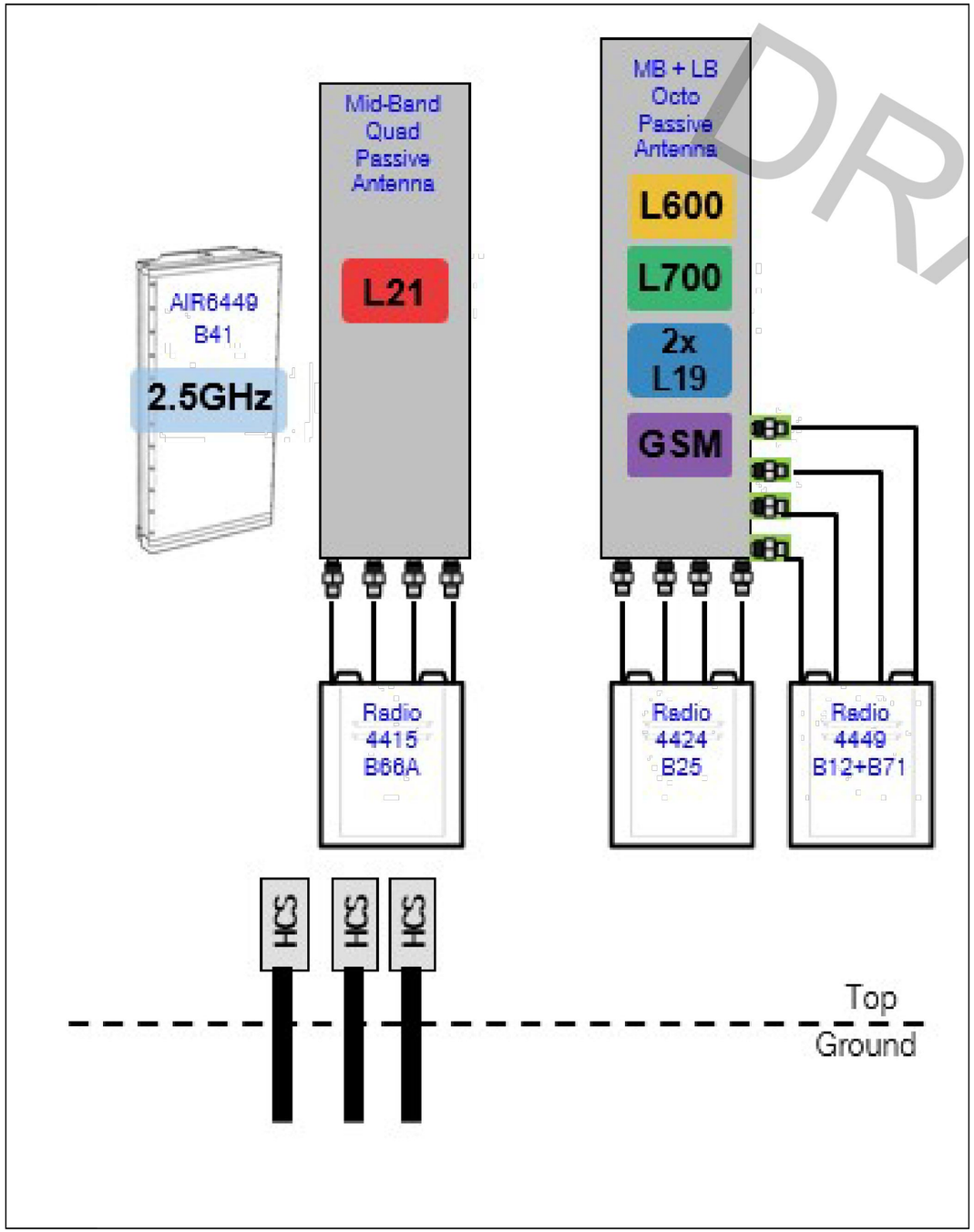
- PROPOSED CABINET CONFIGURATION
SCALE: NOT TO SCALE

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER: R-602

REVISION: -



- PROPOSED ANTENNA CONFIGURATION

SCALE: NOT TO SCALE

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-603	-

Hardware Architecture

This section contains an overview of the hardware units of the 19-inch baseband unit.

Figure 5 Baseband 6648 Hardware Architecture

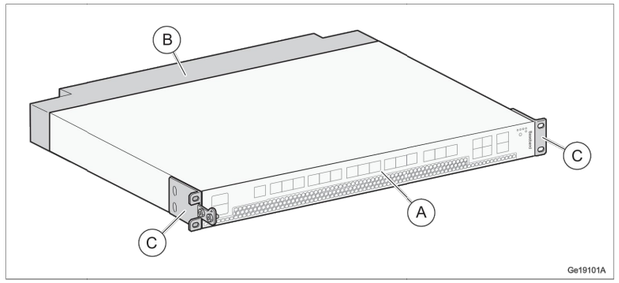


Table 6 19-Inch Baseband Hardware Units

Position	Name of Units	Number of Units
A	19-inch baseband unit	1
B	Fan module	1
C	Movable Brackets	2

1 PROPOSED BB 6648 DETAIL
SCALE: N.T.S.

RBS 6601 Hardware Architecture

The Main–Remote solution has the similar architecture as the other products in the RBS 6000 family.

The main Remote Solution is divided into a Main Unit (MU) and multiple Remote Radio Unit (RRU) that are connected to the MU through optical fiber cables.

Figure 2 RBS 6601, Main Unit (MU) and Remote Radio Unit (RRU)

2 PROPOSED RBS 6601 DETAIL
SCALE: N.T.S.

Voltage Booster specs

- The Voltage Booster will be required at certain HCS lengths for our AAS Antennas. See the HCS Guidelines for this.

Voltage Booster Design Doc from Cell Site Innovations

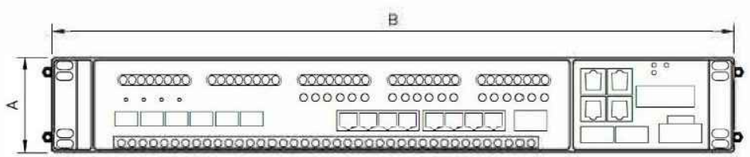
Attribute	Value
Min Input Voltage	-38 VDC
Output Voltage	3x -58 V DC ports
CB rating	30A/40A/50A
Efficiency	96%
Total output power	6000 Watts (2000 W/port)
Operating Temp	-40°C to +60°C
Alarms	Output fault, DC SPD failure
Mechanical	1 U 19", 13" depth
Certification	IEC 62368-1, UL 62368-1
MTBF	143 Years
Air Flow	Front to Back

Slide / 1 T-Mobile Confidential

3 PROPOSED PSU 4813 DETAIL
SCALE: N.T.S.

MANUFACTURER:		ERICSSON
MODEL NO.:		DUG 20
DIMENSIONS:		TOTAL WEIGHT :
A	2.8"	
B	19"	23 LBS
DEPTH	13.78"	

*INSTALLATION INTO EXISTING CABINET OR RACK REQUIRES NO SPECIAL INSPECTIONS.



4 PROPOSED DUG20 DETAIL
SCALE: N.T.S.

SUPPLEMENTAL

SHEET NUMBER: R-604

REVISION: -

Network Equipment Racks & Accessories

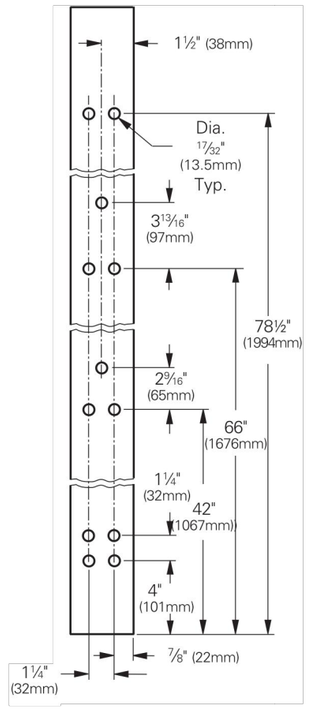
Two-Post Rack

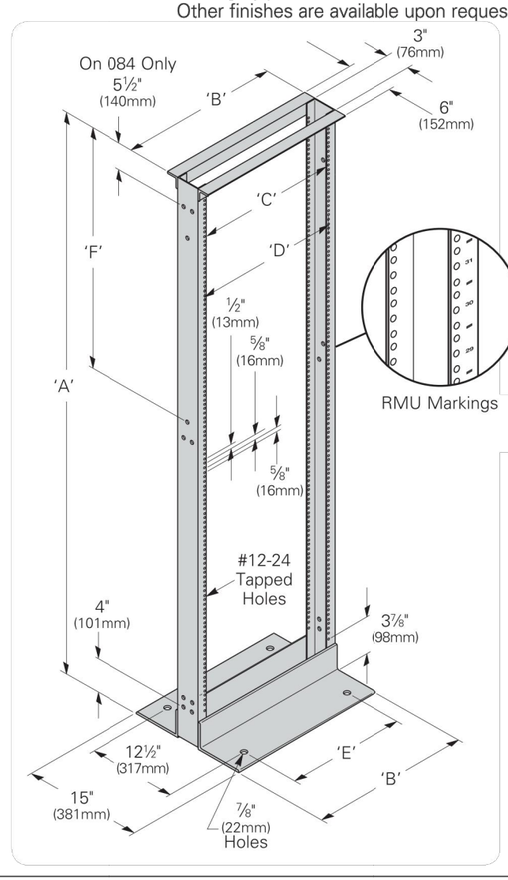
Network equipment racks & accessories

Two-Post Network Equipment Rack
3" Uprights, 19" & 23" Panel Mounting, Customer Premise

- Universal junction hole pattern matches most manufacturers racks
- #12-24 panel mounting holes
- Conformance to EIA/ECA-310-E
- Load Rating: 1200 lbs. (544kg) for up to 84" (2133mm) height or 1000 lbs. (453kg) for 96" (2438mm) and 108" (2743mm) weight capacity when evenly distributed along the height of the rack
- Permanently stamped rack mount unit (RMU) markings included
- Packaged unassembled in protective carton suitable for parcel shipment
- Assembles in about ten (10) minutes using standard hand tools
- Includes thirty (30) dog point combo head (Phillips and flat blade) mounting screws
- Double sided universal [⅝" (16mm), ⅝" (16mm), ½" (13mm)] mounting spacing
- Twin 1½" (58mm) x 1¼" (50mm) top angles for rigidity
- Tapped assembly holes eliminate the need for nuts and simplifies assembly and squaring
- UL Listed (File No. E171936) as a communications circuit accessory
- Material: Aluminum uprights with steel top/bottom angles
- See page ii for link to OPM approvals
- See SB588A page 44 for anchor kits
- Finish ___: Aluminum - brushed (AL) uprights with silver powder coated top & bottom angles
  Flat black powder coat (FB)
  Telco gray powder coat (TG)
  Other finishes are available upon request

Junction Hole Pattern for 84" tall rails





1 PROPOSED 19" EQUIPMENT RACK
SCALE: N.T.S.

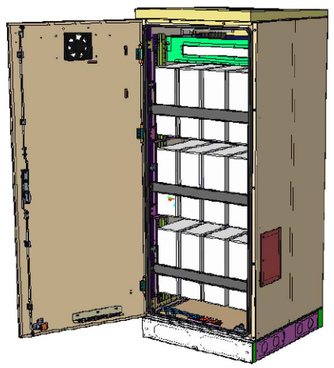
NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

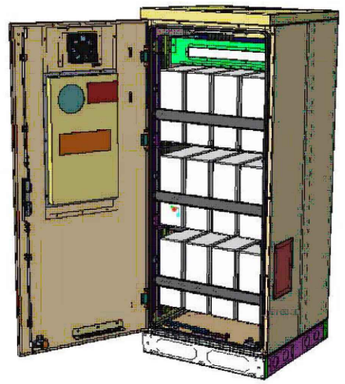
SHEET NUMBER: R-605

REVISION: -

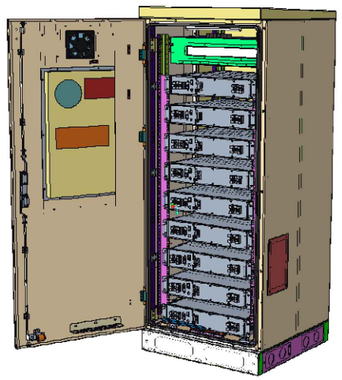
Enclosure B160



Enclosure B160
AirCon + VRLA



Enclosure B160
AirCon + Li-Ion



Enclosure B160
Convection Cooling
+ VRLA

Enclosure B160

Capacity
- VRLA 12V: 100Ah / 150Ah / 170Ah / 190Ah / 210Ah
- Li-Ion: 24U 19" / 23"
- Sodium-Nickel: 3x FIAMM

Electrical specification
- DC Output: -48VDC/200A
- Battery breakers: 2x 125/2p
- Alarms: Door open, Climate failure, MCB Connection

Mechanical specification
- Weight: 134kg
- Dimensions: 63 x 26 x 26 in. (incl. Base frame)
- Base frame height: 6 in.
- Material: Galvanized steel (180g/m^2)
- Color: Powder paint NCS 2002-B
- Door: Front access
- Locking type: Pad lock / cylinder

Environmental specification
- Ingress protection: VRLA/Sodium IP44
Li-Ion IP55
- Relative humidity: 15-100%

Climate system
- Air Conditioner
  - Fan type: DC
  - Cooling capacity: 500W @L35/L35
- Convection cooling
  - Emergency fan

1 PROPOSED ENCLOSURE B160 BATTERY CABINET
SCALE: N.T.S.

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

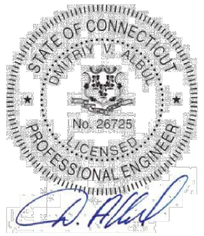
SHEET NUMBER: R-606

REVISION: -

SMJ International

SMJ International LLC
49030 Pontiac Trail, Suite 100
Wixom, MI 48393
(616) 745-4777
info@smj-llc.com

STRUCTURAL EVALUATION LETTER
ANTENNA MOUNT ANALYSIS



04-30-21

SITE INFORMATION:

ATC Site Name:	Franklin CT, CT
ATC Site Number:	6310
ATC Engineering Number:	13653965_C8_02
Site Type:	Guyed Tower
Site Address:	89 Dr. Nott Road, North Franklin, New London County, CT
Sprint Nextel Site Name:	CTNL313A
Sprint Nextel Site Number:	CTNL313A

CURRENT WIND CRITERIA:

1. ANSI/TIA-222-H Standard

DATA SOURCES:

1. Preview Exhibit by American Tower Corporation
2. Radio Frequency Data Sheet by Sprint Nextel (Version 1), dated March 1, 2021
3. Mount Photos by American Tower Corporation, dated September 4, 2019
4. Site Pro 1 VFA12-HD Spec Sheet

ASSUMPTIONS:

1. Tower mount and connections were built in accordance with the manufacturer's specifications, ANSI/TIA-222 standard, and governing building code.
2. The tower mounting system and connections have been maintained in accordance with the manufacturer's specification.
3. Tower mount connections and attachments are assumed not to control the design of mounting system and have been assumed adequate based on main member capacities.

Table 1 - Final Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Antenna Model	Mount Pipe Position Number (view from behind)	Antenna Mount System
179.0	180.0	(3) RFS APX16DWV-16DWVS-E-A20	1	(3) 12.5' Sector Frames (SitePro1 VFA12-HD)
		(3) RFS APXVAALL24_43-U-NA20	2	
		(3) Ericsson AIR6449 B41	3	
		(3) Ericsson Radio 4449 B71 B85A	2	
		(3) Ericsson 4424 B25	2	
		(3) Ericsson RRUS 4415 B66	1	

CONCLUSION:

Based on our analysis, we have determined the existing mount system **IS** sufficient for the final loading configuration. If existing conditions in the field differ from those shown on the above referenced documents or the antenna loading is modified to be other than that shown on Table 1, this review letter will be required to be revised.

Table 2 - Mount Analysis Results

Mount Centerline (ft)	Structural Components	Controlling Usage	Pass/Fail	Necessary Modification
179.0	**Frame Rails**	**25%**	**Sufficient (64%)**	-
	Arms	**22%**		
	Bracing	**62%**		
	Mount Pipes	**45%**		
	Connection Plates	**64%**		
	Bolt Connections	**19%**		

We at SMJ International, LLC appreciate the opportunity of providing our continuing professional services. If you have any questions or need further assistance on this or any other projects, please give us a call.

- MOUNT ANALYSIS

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONSTRUCTION.

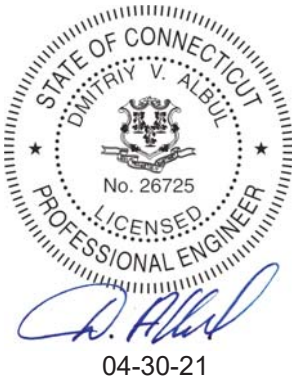
SUPPLEMENTAL

SHEET NUMBER: R-607

REVISION: -

SMJ International

SMJ International LLC
49030 Pontiac Trail, Suite 100
Wixom, MI 48393
(616) 745-4777
info@smj-llc.com



04-30-21

STRUCTURAL EVALUATION LETTER
ANTENNA MOUNT ANALYSIS

SITE INFORMATION:

ATC Site Name:	Franklin CT, CT
ATC Site Number:	6310
ATC Engineering Number:	13653965_C8_02
Site Type:	Guyed Tower
Site Address:	89 Dr. Nott Road, North Franklin, New London County, CT
Sprint Nextel Site Name:	CTNL313A
Sprint Nextel Site Number:	CTNL313A

CURRENT WIND CRITERIA:

1. ANSI/TIA-222-H Standard

DATA SOURCES:

1. Preview Exhibit by American Tower Corporation
2. Radio Frequency Data Sheet by Sprint Nextel (Version 1), dated March 1, 2021
3. Mount Photos by American Tower Corporation, dated September 4, 2019
4. Site Pro 1 VFA12-HD Spec Sheet

ASSUMPTIONS:

1. Tower mount and connections were built in accordance with the manufacturer's specifications, ANSI/TIA-222 standard, and governing building code.
2. The tower mounting system and connections have been maintained in accordance with the manufacturer's specification.
3. Tower mount connections and attachments are assumed not to control the design of mounting system and have been assumed adequate based on main member capacities.

Table 1 - Final Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Antenna Model	Mount Pipe Position Number (view from behind)	Antenna Mount System
179.0	180.0	(3) RFS APX16DWV-16DWVS-E-A20	1	(3) 12.5' Sector Frames (SitePro1 VFA12-HD)
		(3) RFS APXVAALL24_43-U-NA20	2	
		(3) Ericsson AIR6449 B41	3	
		(3) Ericsson Radio 4449 B71 B85A	2	
		(3) Ericsson 4424 B25	2	
		(3) Ericsson RRUS 4415 B66	1	

CONCLUSION:

Based on our analysis, we have determined the existing mount system **IS** sufficient for the final loading configuration. If existing conditions in the field differ from those shown on the above referenced documents or the antenna loading is modified to be other than that shown on Table 1, this review letter will be required to be revised.

Table 2 - Mount Analysis Results

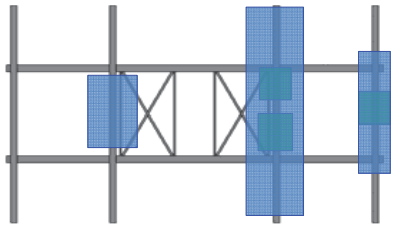
Mount Centerline (ft)	Structural Components	Controlling Usage	Pass/Fail	Necessary Modification
179.0	**Frame Rails**	**25%**	**Sufficient (64%)**	-
	Arms	**22%**		
	Bracing	**62%**		
	Mount Pipes	**45%**		
	Connection Plates	**64%**		
	Bolt Connections	**19%**		

We at SMJ International, LLC appreciate the opportunity of providing our continuing professional services. If you have any questions or need further assistance on this or any other projects, please give us a call.

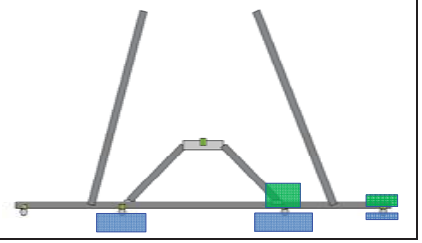
SMJ International

Date:	4/30/2021		**Decimal Degrees**	
Site:	Franklin CT, CT		**Latitude:**	41.5977
Engineer:	DVA		**Longitude:**	-72.1450
Location:	NEW LONDON	CT		
Project No:	13653965_C8_02			
Contractor:	SMJ International, LLC			
Carrier:	Sprint Nextel			
Mount Type:	Sector Mount			
TIA Rev.	H		**Mount Existing?**	Existing
ASCE Standard	ASCE 7-16		**Run Seismic?**	Yes

ELEVATION VIEW



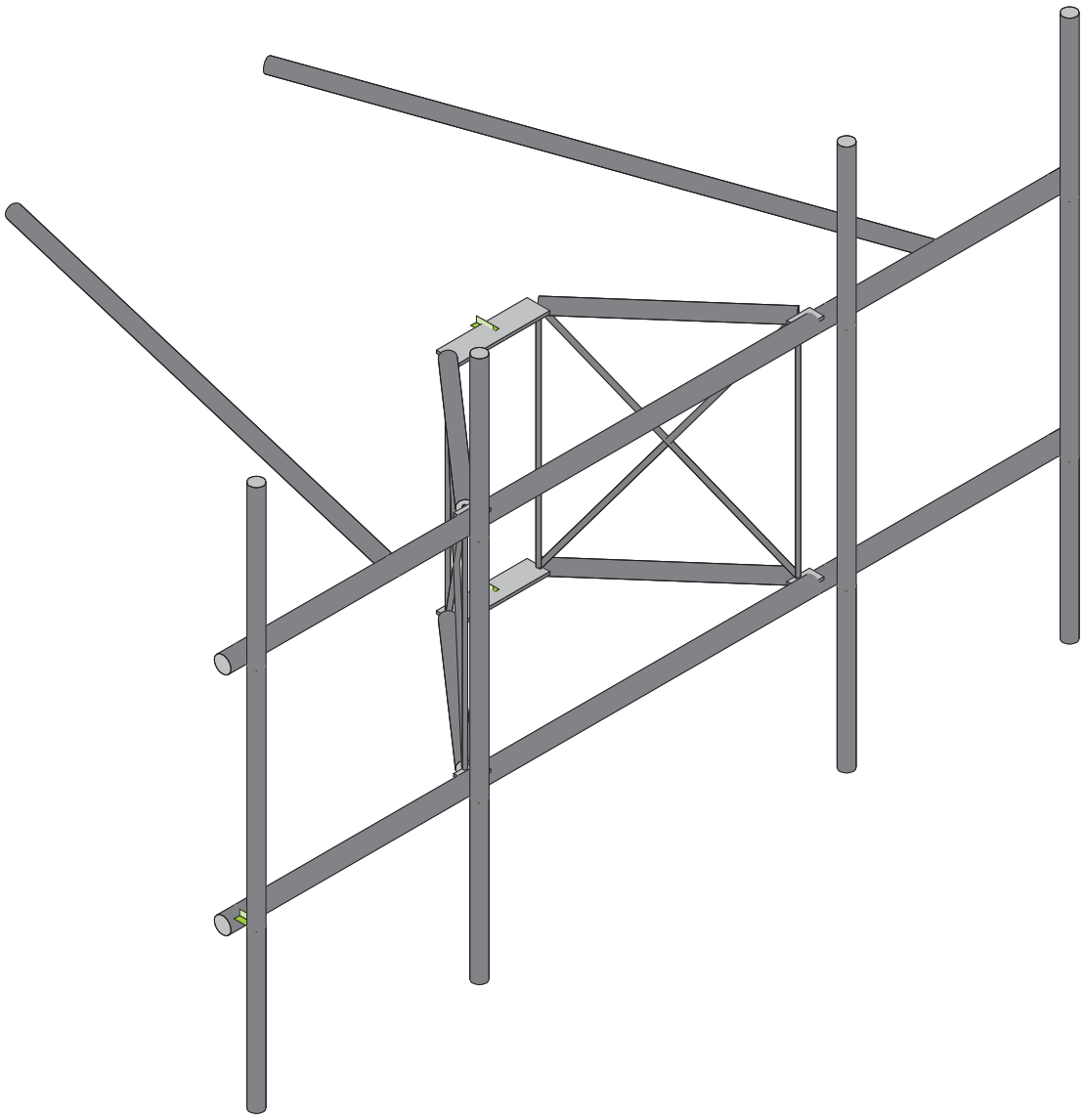
PLAN VIEW



Ultimate Wind Speed:	123	mph				q_z:	54.35	psf
Exposure Category:	B		**Esc. Ice:**	1.120	in	$q_{z\ ice}$:	9.63	psf
Service Wind:	30	mph	**I:**	1.00		$q_{z\ live}$:	3.47	psf
Risk Category:	II		G_h:	1.00				
Ice Thickness:	1	in	Z_g:	1200		**S1:**	0.054	
Ice Wind Speed:	50	mph	K_{zmin}:	0.70		**Sds:**	0.208	
Centerline AGL	180	ft	**α:**	7.00		**Cs:**	0.104	
Ground Elevation	505.05	ft	K_z:	1.17		**Cs min:**	0.030	
Site Soil:	D (Default)		K_d:	0.95				
Topographic Method:	2		K_{zt}:	1.355				
Topographic Category:	5		**Ks:**	1.00				
Crest Height (H):	344	ft	**Ke:**	0.982				
Topographic Feature:	Hill		**Ka:**	0.90				
Slope Distance (L):	1850	ft	**Kes(Wind)**	0.950				
Distance from Crest (x):	0	ft	**Kes(Ice)**	0.850				

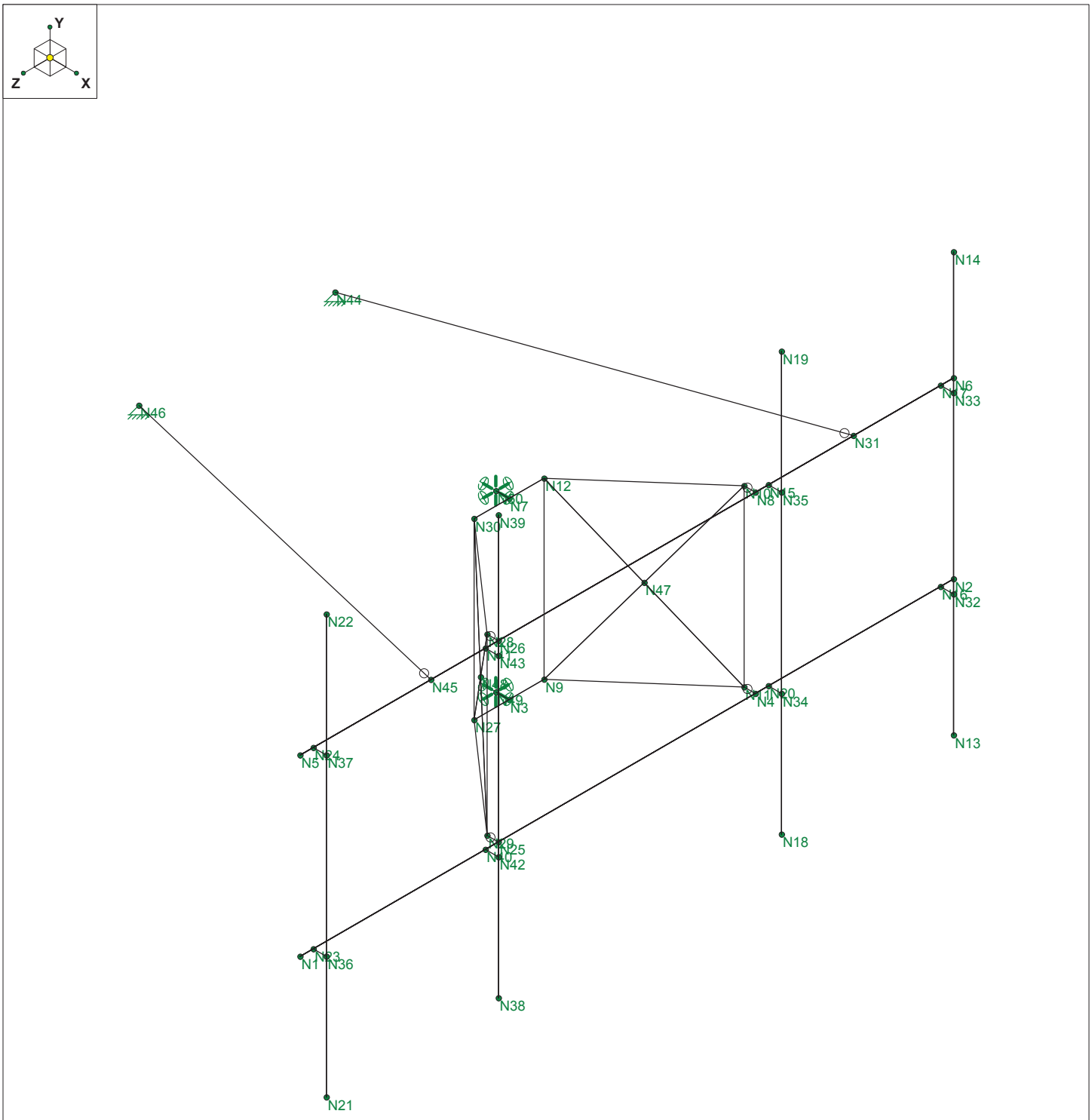
Antennas		Existing / Proposed	Weight (lb)	Height (in)	Width (in)	Depth (in)	Type	Mount Labels	Wind Load (F_A), lb				Wind Load Ice Case (F_A), lb					Wind Load Live Case (F_A), lb				Seismic Load, lb		
									0 deg	30 deg	60 deg	90 deg	0 deg	30 deg	60 deg	90 deg	Weightl ce	0 deg	30 deg	60 deg	90 deg	0 deg	90 deg	Vertical
ERICSSON	AIR6449 B41	Proposed	104.0	33.1	20.6	8.6	Flat	M30	278	239	161	122	58	51	36	29	90	18	15	10	8	11	11	21
RFS/CELWAVE	APXVAALL24_43-U-NA20	Proposed	122.8	95.9	24	8.5	Flat	M12	990	849	568	427	196	172	122	98	297	63	54	36	27	13	13	25
RFS/CELWAVE	APX16DWV-16DWVS-E-A20	Proposed	40.7	55.9	13.3	3.1	Flat	M11	322	268	159	104	69	60	42	33	96	21	17	10	7	4	4	8
ERICSSON	Radio 4449 B71 B85A	Proposed	75.0	15	13.2	10.5	Flat	M12	81	77	68	64	19	18	17	16	31	5	5	4	4	8	8	15
ERICSSON	4424 B25	Proposed	86.0	17.1	14.4	11.3	Flat	M12	100	95	84	79	23	22	20	19	39	6	6	5	5	9	9	17
ERICSSON	RRUS 4415 B66	Proposed	46.0	15	13.2	5.4	Flat	M11	81	69	45	33	19	17	12	10	27	5	4	3	2	5	5	9

Lm (man live load) = ***500 lb***
Lv (man live load) = ***250 lb***



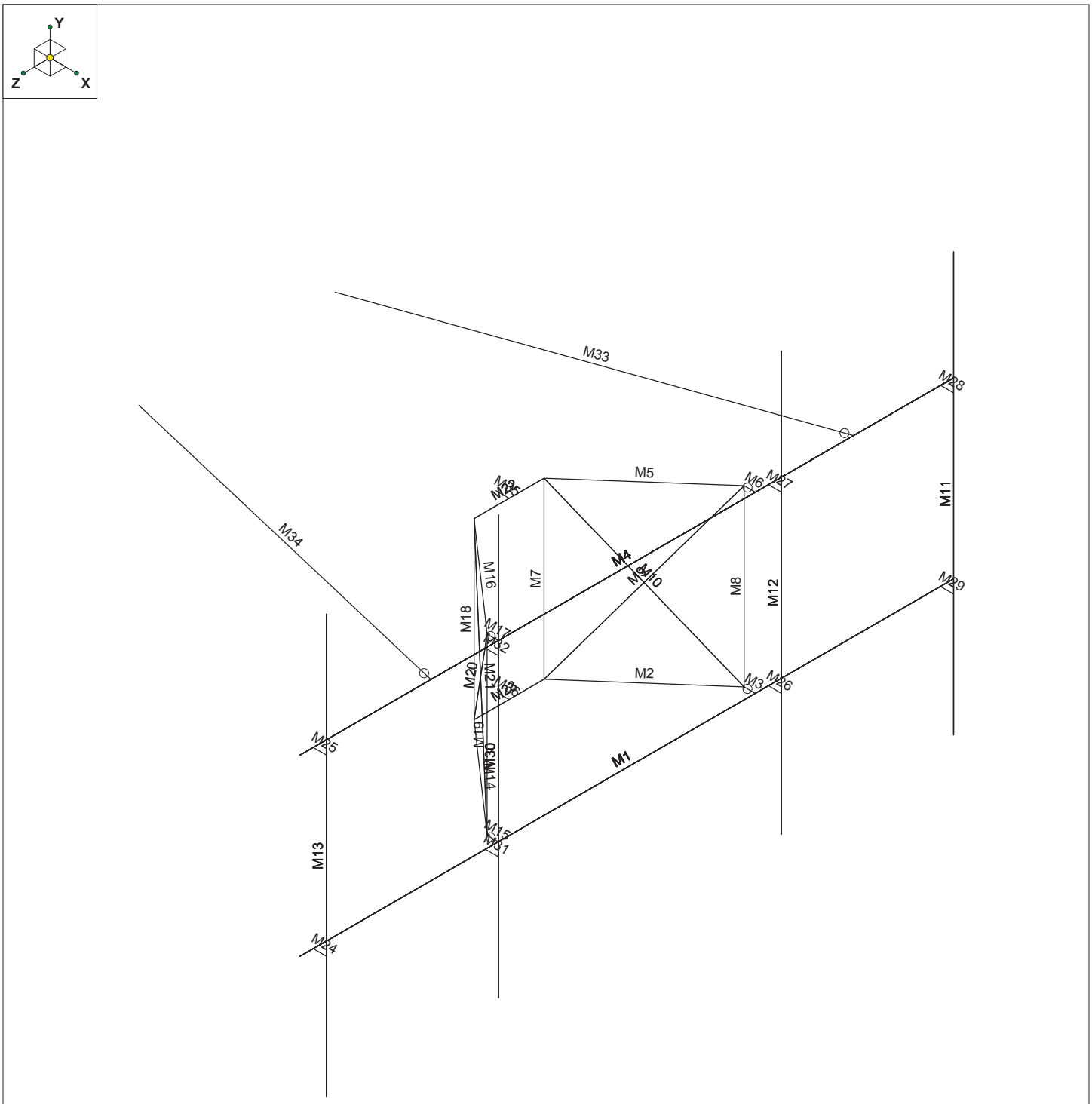
Envelope Only Solution

SMJ International, LLC		SK - 1
DVA	Franklin CT, CT	Apr 30, 2021 at 2:32 PM
13653965_C8_02	Mount Frame Model	6310_13653965_C8_02_Sprint Ne...



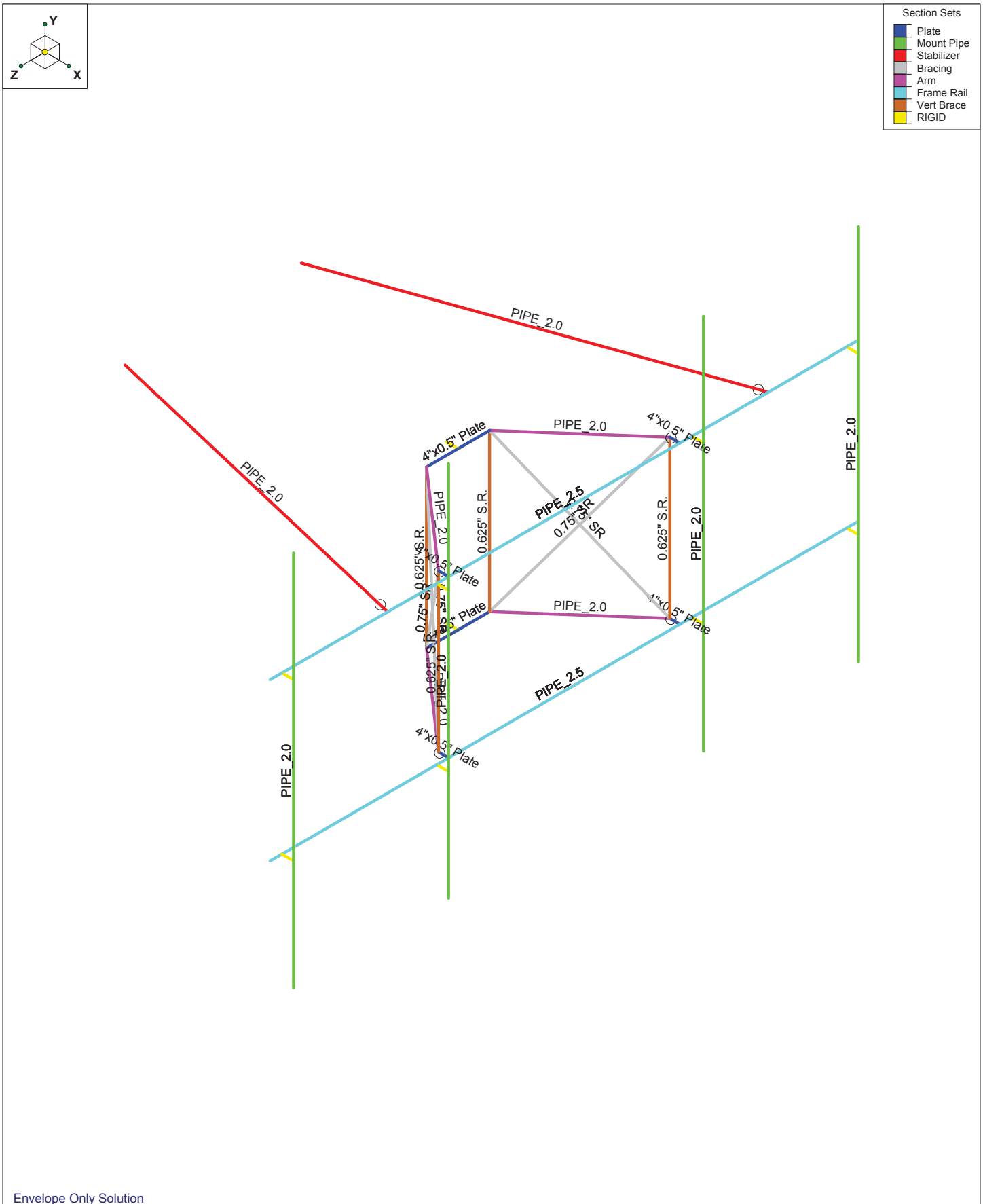
Envelope Only Solution

SMJ International, LLC		SK - 2
DVA	Franklin CT, CT	Apr 30, 2021 at 2:32 PM
13653965_C8_02	Joint Labels	6310_13653965_C8_02_Sprint Ne...



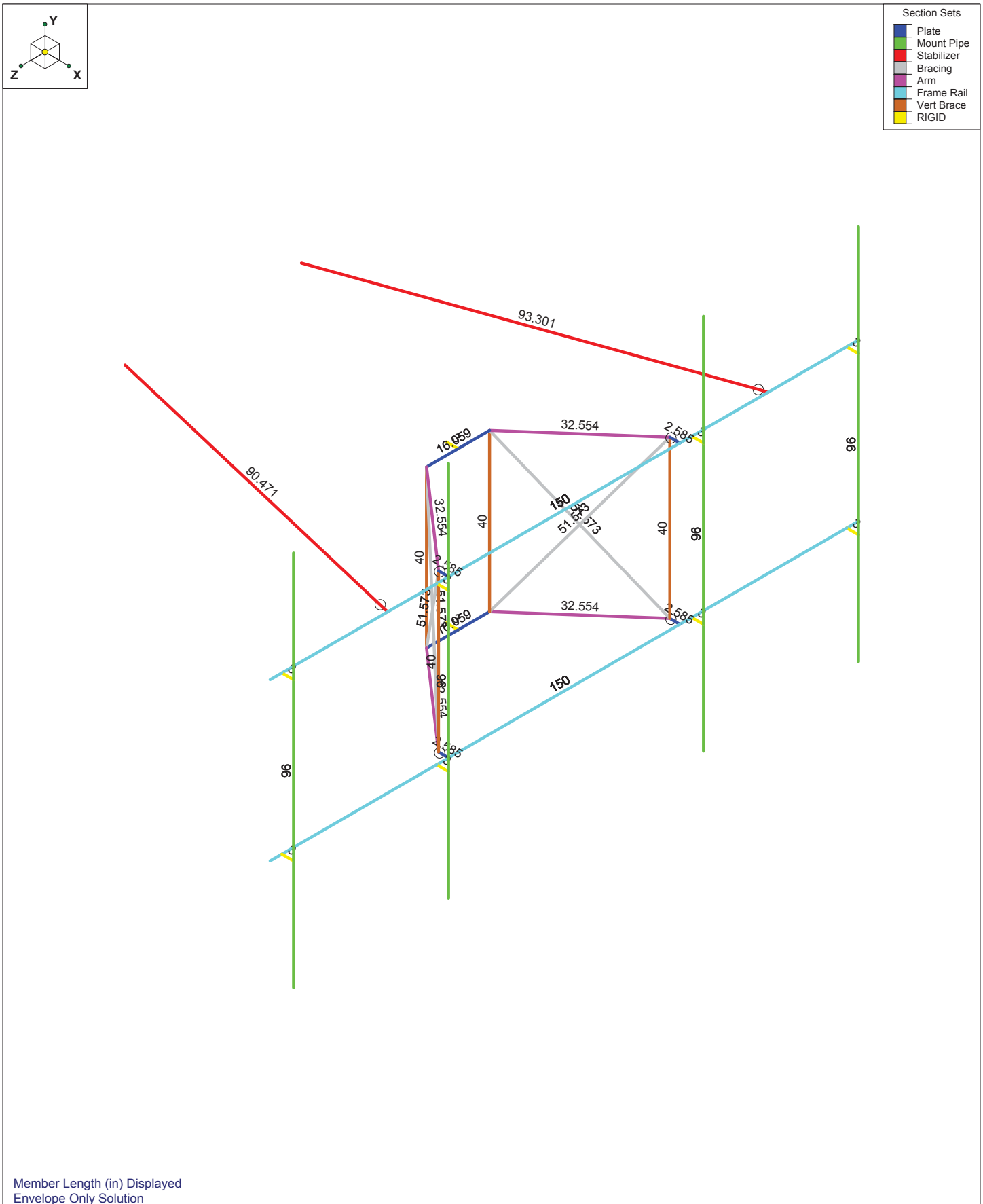
Envelope Only Solution

SMJ International, LLC		SK - 3
DVA	Franklin CT, CT	Apr 30, 2021 at 2:32 PM
13653965_C8_02	Member Labels	6310_13653965_C8_02_Sprint Ne...

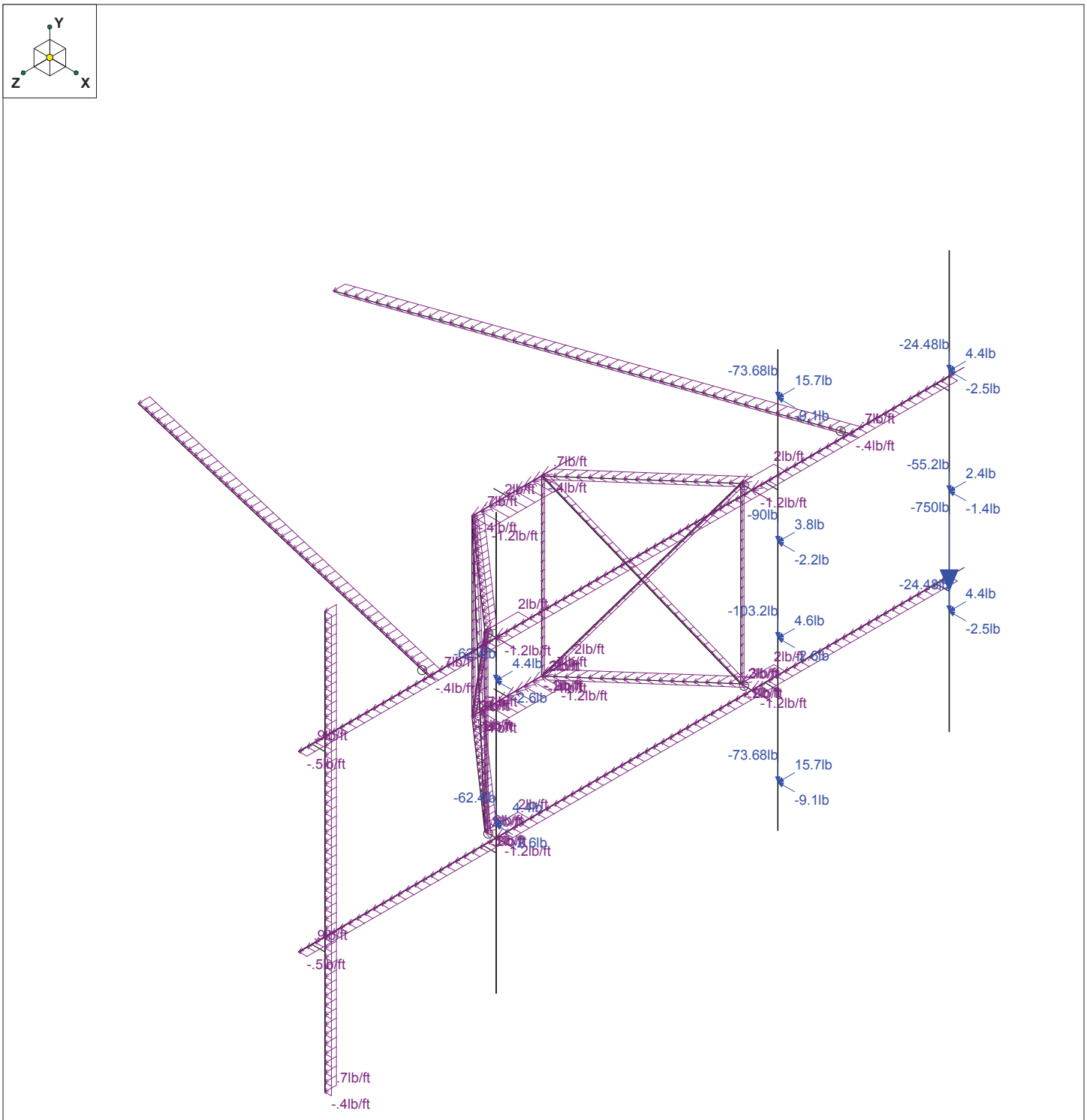


Envelope Only Solution

SMJ International, LLC		SK - 4
DVA	Franklin CT, CT	Apr 30, 2021 at 2:32 PM
13653965_C8_02	Member Shapes	6310_13653965_C8_02_Sprint Ne...

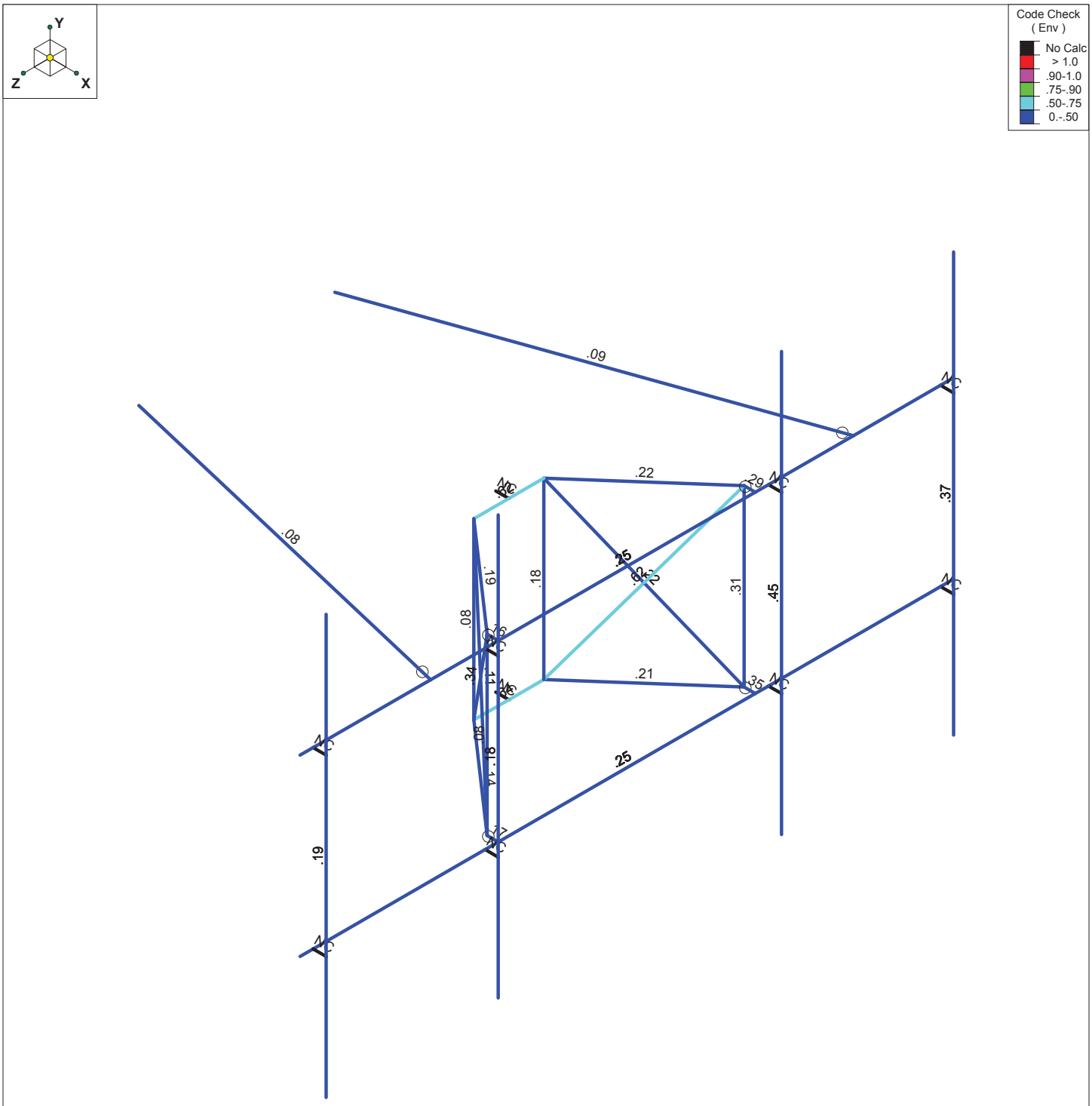


SMJ International, LLC		SK - 5
DVA	Franklin CT, CT	Apr 30, 2021 at 2:32 PM
13653965_C8_02	Member Lengths	6310_13653965_C8_02_Sprint Ne...



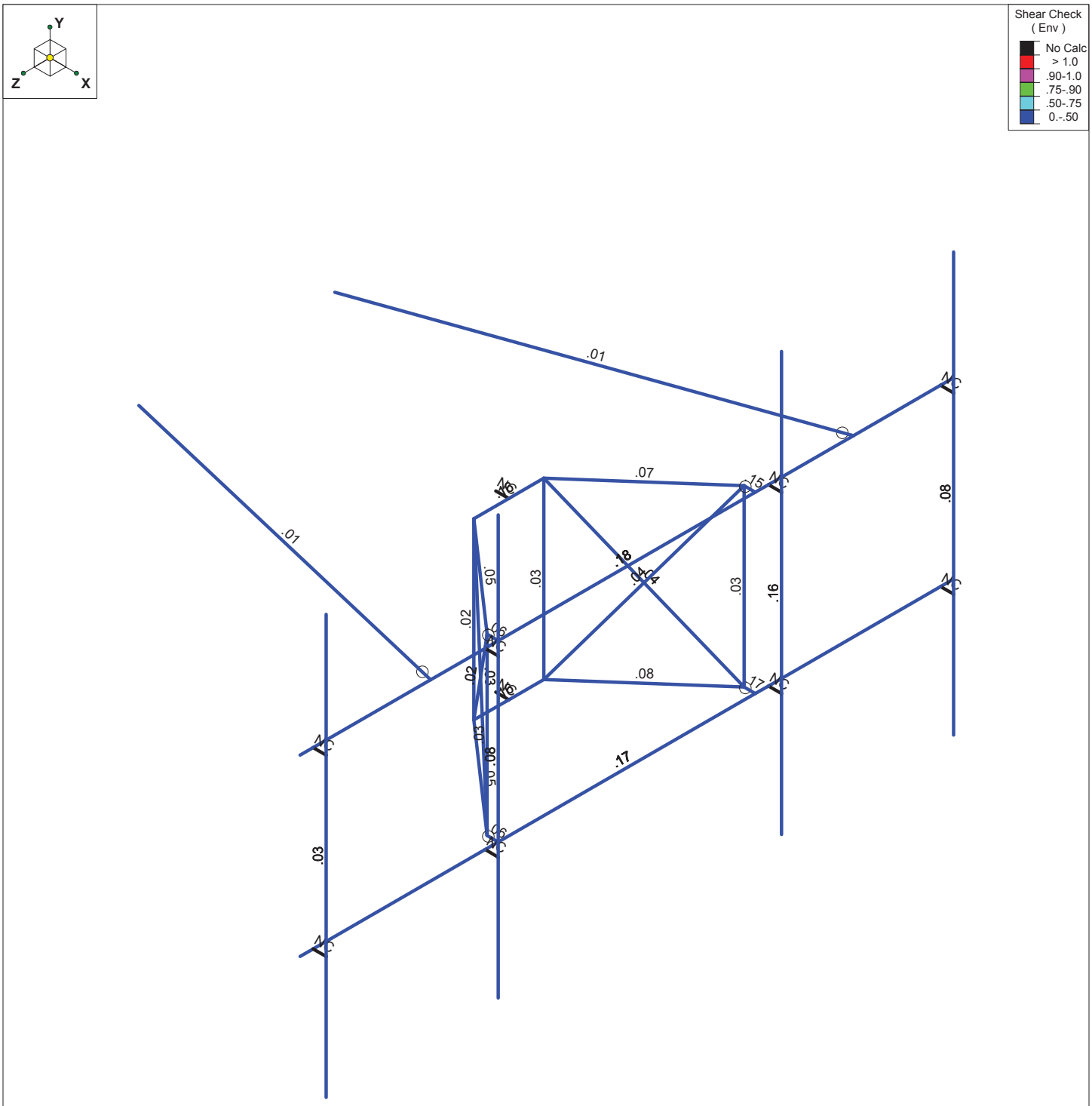
Loads: LC 28, 1.2DL+1.5LLm1+1.0WL(60)
Envelope Only Solution

SMJ International, LLC		SK - 6
DVA	Franklin CT, CT	Apr 30, 2021 at 2:32 PM
13653965_C8_02	Controlling Load Case	6310_13653965_C8_02_Sprint Ne...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

SMJ International, LLC		SK - 7
DVA	Franklin CT, CT	Apr 30, 2021 at 2:32 PM
13653965_C8_02	Member Bending Check	6310_13653965_C8_02_Sprint Ne...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

SMJ International, LLC		SK - 8
DVA	Franklin CT, CT	Apr 30, 2021 at 2:32 PM
13653965_C8_02	Member Shear Check	6310_13653965_C8_02_Sprint Ne...

Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: LRFD
Wood Code	AF&PA NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: LRFD - Building

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

Global, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Om Z	1
Om X	1
Rho Z	1
Rho X	1

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			Frame Rail	Beam	Pipe	A53 Gr.B	Typical
2	M2	N9	N11			Arm	Beam	Pipe	A53 Gr.B	Typical
3	M3	N11	N4		90	Plate	Beam	BAR	A36 Gr.36	Typical
4	M4	N5	N6			Frame Rail	Beam	Pipe	A53 Gr.B	Typical
5	M5	N12	N10			Arm	Beam	Pipe	A53 Gr.B	Typical
6	M6	N10	N8		90	Plate	Beam	BAR	A36 Gr.36	Typical
7	M7	N9	N12			Vert Brace	VBrace	BAR	A36 Gr.36	Typical
8	M8	N11	N10			Vert Brace	VBrace	BAR	A36 Gr.36	Typical
9	M9	N9	N10			Bracing	VBrace	BAR	A36 Gr.36	Typical
10	M10	N11	N12			Bracing	VBrace	BAR	A36 Gr.36	Typical
11	M11	N13	N14			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
12	M12	N18	N19			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
13	M13	N21	N22			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
14	M14	N27	N29			Arm	Beam	Pipe	A53 Gr.B	Typical
15	M15	N29	N25		90	Plate	Beam	BAR	A36 Gr.36	Typical
16	M16	N30	N28			Arm	Beam	Pipe	A53 Gr.B	Typical
17	M17	N28	N26		90	Plate	Beam	BAR	A36 Gr.36	Typical
18	M18	N27	N30			Vert Brace	VBrace	BAR	A36 Gr.36	Typical
19	M19	N29	N28			Vert Brace	VBrace	BAR	A36 Gr.36	Typical
20	M20	N27	N28			Bracing	VBrace	BAR	A36 Gr.36	Typical
21	M21	N29	N30			Bracing	VBrace	BAR	A36 Gr.36	Typical
22	M22	N30	N12		90	Plate	Beam	BAR	A36 Gr.36	Typical
23	M23	N9	N27		90	Plate	Beam	BAR	A36 Gr.36	Typical
24	M24	N23	N36			RIGID	None	None	RIGID	Typical
25	M25	N24	N37			RIGID	None	None	RIGID	Typical
26	M26	N20	N34			RIGID	None	None	RIGID	Typical
27	M27	N15	N35			RIGID	None	None	RIGID	Typical
28	M28	N17	N33			RIGID	None	None	RIGID	Typical
29	M29	N16	N32			RIGID	None	None	RIGID	Typical
30	M30	N38	N39			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
31	M31	N40	N42			RIGID	None	None	RIGID	Typical
32	M32	N41	N43			RIGID	None	None	RIGID	Typical
33	M33	N31	N44			Stabilizer	HBrace	Pipe	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
34	M34	N45	N46			Stabilizer	HBrace	Pipe	A53 Gr.B	Typical
35	M35	N7	N50			RIGID	None	None	RIGID	Typical
36	M36	N3	N49			RIGID	None	None	RIGID	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		10	30	0
3	Total General		10	30	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	0.625" S.R.	4	160	0
7	A36 Gr.36	0.75" SR	4	206.3	0
8	A36 Gr.36	4"x0.5" Plate	6	42.5	0
9	A53 Gr.B	PIPE_2.0	10	698	.2
10	A53 Gr.B	PIPE_2.5	2	300	.1
11	Total HR Steel		26	1406.7	.4

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	N7							
2	N3							
3	N44	Reaction	Reaction	Reaction				
4	N46	Reaction	Reaction	Reaction				
5	N49	Reaction	Reaction	Reaction	Reaction		Reaction	
6	N50	Reaction	Reaction	Reaction	Reaction		Reaction	

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distributed	Area(Member)	Surfac...
1	Dead	None		-1			12			
2	Wind (0 deg)	None					12	19		
3	Wind (90 deg)	None					12	22		
4	Wind (30 deg)	None					24	46		
5	Wind (60 deg)	None					24	46		
6	Wind (120 deg)	None					24	46		
7	Wind (150 deg)	None					24	46		
8	Dead Ice	None					12	26		
9	Wind + Ice (0 deg)	None					12	19		
10	Wind + Ice (90 deg)	None					12	22		
11	Wind + Ice (30 deg)	None					24	46		
12	Wind + Ice (60 deg)	None					24	46		
13	Wind + Ice (120 deg)	None					24	46		
14	Wind + Ice (150 deg)	None					24	46		
15	Live Lm1	None					1			
16	Live Lm2	None					1			
17	Live Lm3	None					1			
18	Wind + Live Lm (0 deg)	None					12	19		
19	Wind + Live Lm (90 deg)	None					12	22		
20	Wind + Live Lm (30 deg)	None					24	46		
21	Wind + Live Lm (60 deg)	None					24	46		
22	Wind + Live Lm (120 de...	None					24	46		
23	Wind + Live Lm (150 de...	None					24	46		

Basic Load Cases (Continued)

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distributed	Area(Member)	Surfac...
24	Live Lv1	None					1			
25	Live Lv2	None					1			
26	Live Lv3	None					1			
27	Seismic Antenna (0 deg)	None					12			
28	Seismic Antenna (90 de...	None					12			
29	Seismic (0 deg)	None	-.104	-.042						
30	Seismic (90 deg)	None		-.042	.104					
31	Seismic (30 deg)	None	-.09	-.042	.052					
32	Seismic (60 deg)	None	-.052	-.042	.09					
33	Seismic (120 deg)	None	.052	-.042	.09					
34	Seismic (150 deg)	None	.09	-.042	.052					
35	Seismic Vertical	None					12			

Load Combinations

	Description	Solve	PDe...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL	Yes	Y		1	1.4																				
2	1.2DL+1.0WL(0)	Yes	Y		1	1.2	2	1																		
3	1.2DL+1.0WL(30)	Yes	Y		1	1.2	4	1																		
4	1.2DL+1.0WL(60)	Yes	Y		1	1.2	5	1																		
5	1.2DL+1.0WL(90)	Yes	Y		1	1.2	3	1																		
6	1.2DL+1.0WL(120)	Yes	Y		1	1.2	6	1																		
7	1.2DL+1.0WL(150)	Yes	Y		1	1.2	7	1																		
8	1.2DL+1.0WL(180)	Yes	Y		1	1.2	2	-1																		
9	1.2DL+1.0WL(210)	Yes	Y		1	1.2	4	-1																		
10	1.2DL+1.0WL(240)	Yes	Y		1	1.2	5	-1																		
11	1.2DL+1.0WL(270)	Yes	Y		1	1.2	3	-1																		
12	1.2DL+1.0WL(300)	Yes	Y		1	1.2	6	-1																		
13	1.2DL+1.0WL(330)	Yes	Y		1	1.2	7	-1																		
14	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	9	1																
15	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	11	1																
16	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	12	1																
17	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	10	1																
18	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	13	1																
19	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	14	1																
20	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	9	-1																
21	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	11	-1																
22	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	12	-1																
23	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	10	-1																
24	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	13	-1																
25	1.2DL+1.0DLi+1.0WLi(...	Yes	Y		1	1.2	8	1	14	-1																
26	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	18	1																
27	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	20	1																
28	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	21	1																
29	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	19	1																
30	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	22	1																
31	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	23	1																
32	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	18	-1																
33	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	20	-1																
34	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	21	-1																
35	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	19	-1																
36	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	22	-1																
37	1.2DL+1.5LLm1+1.0W...	Yes	Y		1	1.2	15	1.5	23	-1																
38	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	18	1																
39	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	20	1																
40	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	21	1																

Load Combinations (Continued)

	Description	Solve	PDe...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
41	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	19	1																
42	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	22	1																
43	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	23	1																
44	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	18	-1																
45	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	20	-1																
46	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	21	-1																
47	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	19	-1																
48	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	22	-1																
49	1.2DL+1.5LLm2+1.0W...	Yes	Y		1	1.2	16	1.5	23	-1																
50	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	18	1																
51	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	20	1																
52	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	21	1																
53	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	19	1																
54	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	22	1																
55	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	23	1																
56	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	18	-1																
57	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	20	-1																
58	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	21	-1																
59	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	19	-1																
60	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	22	-1																
61	1.2DL+1.5LLm3+1.0W...	Yes	Y		1	1.2	17	1.5	23	-1																
62	1.2DL+1.5LLv1	Yes	Y		1	1.2	24	1.5																		
63	1.2DL+1.5LLv2	Yes	Y		1	1.2	25	1.5																		
64	1.2DL+1.5LLv3	Yes	Y		1	1.2	26	1.5																		
65	1.2DL+1.0Ev+1.0Eh(0)	Yes	Y		1	1.2	35	1	29	1	27	1	28													
66	1.2DL+1.0Ev+1.0Eh(30)	Yes	Y		1	1.2	35	1	31	1	27	.867	28	.5												
67	1.2DL+1.0Ev+1.0Eh(60)	Yes	Y		1	1.2	35	1	32	1	27	.5	28	.866												
68	1.2DL+1.0Ev+1.0Eh(90)	Yes	Y		1	1.2	35	1	30	1	27		28	1												
69	1.2DL+1.0Ev+1.0Eh(1...	Yes	Y		1	1.2	35	1	33	1	27	-.5	28	.866												
70	1.2DL+1.0Ev+1.0Eh(1...	Yes	Y		1	1.2	35	1	34	1	27	-.8...	28	.5												
71	1.2DL+1.0Ev+1.0Eh(1...	Yes	Y		1	1.2	35	1	29	-1	27	-1	28													
72	1.2DL+1.0Ev+1.0Eh(2...	Yes	Y		1	1.2	35	1	31	-1	27	-.8...	28	-.5												
73	1.2DL+1.0Ev+1.0Eh(2...	Yes	Y		1	1.2	35	1	32	-1	27	-.5	28	-.8...												
74	1.2DL+1.0Ev+1.0Eh(2...	Yes	Y		1	1.2	35	1	30	-1	27		28	-1												
75	1.2DL+1.0Ev+1.0Eh(3...	Yes	Y		1	1.2	35	1	33	-1	27	.5	28	-.8...												
76	1.2DL+1.0Ev+1.0Eh(3...	Yes	Y		1	1.2	35	1	34	-1	27	.866	28	-.5												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-...	LC	MY [lb-...	LC	MZ [lb-ft]	LC
1	N44	max	1296.596	13	35.734	19	421.059	7	0	1	0	1	0	1
2		min	-1314.291	7	15.402	13	-417.646	13	0	1	0	1	0	1
3	N46	max	834.421	4	34.249	22	151.596	4	0	1	0	1	0	1
4		min	-854.141	10	15.158	71	-155.1	10	0	1	0	1	0	1
5	N49	max	2058.976	2	1069.68	20	498.829	10	340.436	31	0	1	225.166	20
6		min	-643.8	8	391.176	2	-1568.383	28	-67.233	61	0	1	60.845	3
7	N50	max	-191.894	13	1082.178	14	1792.096	12	337.859	31	0	1	229.461	14
8		min	-1506.451	19	393.218	8	-1150.517	6	-65.095	61	0	1	55.923	9
9	Totals:	max	2895.829	2	2160.527	22	1871.624	12						
10		min	-2895.831	8	1052.751	7	-1871.624	6						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc.....		LC	phi*Pn...	phi*Pn...	phi*Mn...	phi*Mn...	...	Eqn
1	M23	4"x0.5" Plate	.641	8.029	28	.158	8.029	y	28	33772....	64800	675	5400	1...	H1-1b
2	M22	4"x0.5" Plate	.623	8.029	31	.158	8.029	y	32	33772....	64800	675	5400	1...	H1-1b
3	M9	0.75" SR	.623	0	30	.036	25....		37	2773.4...	14320.8	184.32	184.32	2...	H1-1a
4	M12	PIPE_2.0	.451	68	2	.163	68		7	14916....	32130	1871.6...	1871.6...	1...	H1-1b
5	M11	PIPE_2.0	.367	68	32	.077	48		13	14916....	32130	1871.6...	1871.6...	4...	H1-1b
6	M3	4"x0.5" Plate	.350	0	8	.166	0	y	8	63714....	64800	675	5400	1...	H1-1b
7	M20	0.75" SR	.343	0	60	.020	25....		33	2773.4...	14320.8	184.32	184.32	2...	H1-1a
8	M8	0.625" S.R.	.307	0	2	.032	0		28	2158.2...	9940.19	103.542	103.542	1...	H1-1a
9	M6	4"x0.5" Plate	.287	0	26	.153	0	y	2	63714....	64800	675	5400	1...	H1-1b
10	M1	PIPE_2.5	.253	107.813	37	.171	104...		8	14558....	50715	3596.25	3596.25	2...	H1-1b
11	M4	PIPE_2.5	.247	107.813	7	.176	126...		7	14558....	50715	3596.25	3596.25	2...	H1-1b
12	M10	0.75" SR	.220	51.573	36	.041	25....		7	2773.4...	14320.8	184.32	184.32	2...	H1-1b
13	M5	PIPE_2.0	.216	0	12	.075	32....		15	29416....	32130	1871.6...	1871.6...	2...	H1-1b
14	M2	PIPE_2.0	.210	0	30	.075	32....		20	29416....	32130	1871.6...	1871.6...	2...	H1-1b
15	M13	PIPE_2.0	.194	28	62	.032	28		62	14916....	32130	1871.6...	1871.6...	2...	H1-1b
16	M16	PIPE_2.0	.193	0	12	.054	32....		50	29416....	32130	1871.6...	1871.6...	2...	H1-1b
17	M30	PIPE_2.0	.184	28	7	.081	63		4	14916....	32130	1871.6...	1871.6...	3...	H1-1b
18	M7	0.625" S.R.	.180	0	32	.029	40		13	2158.2...	9940.19	103.542	103.542	2...	H1-1b
19	M15	4"x0.5" Plate	.166	0	60	.059	0	y	2	63714....	64800	675	5400	1...	H1-1b
20	M17	4"x0.5" Plate	.158	0	61	.061	0	y	7	63714....	64800	675	5400	1...	H1-1b
21	M14	PIPE_2.0	.140	0	28	.055	32....		58	29416....	32130	1871.6...	1871.6...	1...	H1-1b
22	M21	0.75" SR	.109	51.573	52	.032	25....		12	2773.4...	14320.8	184.32	184.32	2...	H1-1b
23	M33	PIPE_2.0	.086	47.622	13	.005	93....		6	15564....	32130	1871.6...	1871.6...	1...	H1-1b
24	M18	0.625" S.R.	.083	0	58	.024	0		13	2158.2...	9940.19	103.542	103.542	2...	H1-1b
25	M19	0.625" S.R.	.077	40	4	.029	0		31	2158.2...	9940.19	103.542	103.542	2...	H1-1b
26	M34	PIPE_2.0	.075	45.235	4	.005	0		5	16253....	32130	1871.6...	1871.6...	1...	H1-1b

SMJ International

BOLT CONNECTION CALCULATION

BOLT PROPERTIES

Date:	*4/30/2021*
Site:	*Franklin CT, CT*
Engineer:	*DVA*
Project No:	*13653965_C8_02*
Connection Location:	*Sector Mount to Tower Leg*

Bolt Capacity Equation	TIA-222-H	
Connection Type	Steel	
Bolt Size, **d**	5/8	in
Threads per Inch, **n**	11	
Steel Grade	A325	
Bolt Ultimate Tensile Stress, $\mathbf{F_u}$	120	ksi
Threads Exclusion	N	
Shear Plane	1	

Net Bolt Cross-Sectional Area, **An**	0.226	in^2
Gross Bolt Cross-Sectional Area, **Ag**	0.307	in^2
Tensile Steel Strength (per bolt), $\mathbf{\varphi R_{nt}}$	20340	lbs
Shear Steel Strength (per bolt), $\mathbf{\varphi R_{nv}}$	13806	lbs

SMJ International

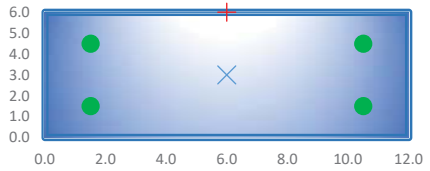
BOLT CONNECTION CALCULATION
BOLT GROUP CHECK

Date:	*4/30/2021*
Site:	*Franklin CT, CT*
Engineer:	*DVA*
Project No:	*13653965_C8_02*
Connection Location:	*Sector Mount to Tower Leg*

Loads Properties					
Controlling LC:	24				
Load Point Number:	N50				
X-Coordinate (in.)	6.00				
Y-Coordinate (in.)	6.00				
Z-Coordinate (in.)	12.00				
Shear Load, Px (lbs)	-1113.000	0	0	0	0
Shear Load, Py (lbs)	-1057.000	0	0	0	0
Axial Load, Pz (lbs)	1290.000	0	0	0	0
Moment, Mx (lb-in)	-218.000	0	0	0	0
Moment, My (lb-in)	0.000	0	0	0	0
Moment, Mz (lb-in)	148.000	0	0	0	0

Member Properties	***X***	***Y***
Start Coordinates:	0.0	0.0
Dimentions:	12.0	6.0

Bolt Group Pattern



Number of Bolts: 4

		Bolt Coordinates		***Bolt Loads***		***Steel Bolt Usage***			
No.	***Bolt Type***	***Xo (in)***	***Yo (in)***	***Axial (lbs)***	***Shear (lbs)***	***Tension***	***Shear***	***Combined***	***Max. Capacity***
1	Main Type	1.5	1.5	-3142.17	348.17	0.0%	2.5%	2.5%	2.5%
2	Main Type	1.5	4.5	2303.17	237.78	11.3%	1.7%	11.3%	11.3%
3	Main Type	10.5	4.5	3787.17	490.74	18.6%	3.6%	18.6%	18.6%
4	Main Type	10.5	1.5	-1658.17	552.73	0.0%	4.0%	4.0%	4.0%

Bolt Group Properties:

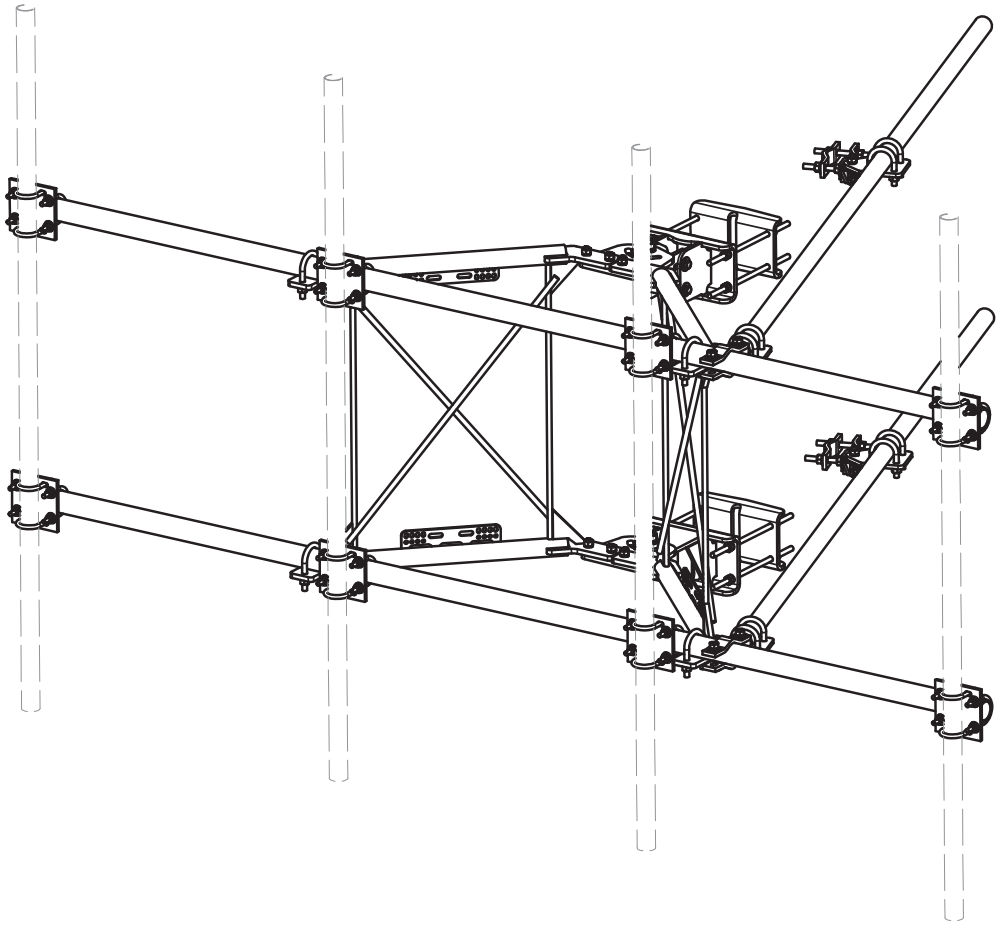
Xc =	6.00	in.
Yc =	3.00	in.
Ic.y =	24.85	in.^2
Ic.x =	2.76	in.^2
Ic.xy =	27.61	in.^2

Loads at Center of Gravity of Bolt Group:

Pz =	1290.00	lbs
Px =	-1113.00	lbs
Py =	-1057.00	lbs
Mx =	16336.00	lb-in
My =	-13356.00	lb-in
Mz =	3487.00	lb-in

U-bolt Connection: No

Total Capacity for Bolt Group: 19%



PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	X-VFAW	SUPPORT ARM		71.41	142.81
2	1	X-HDCAMTBW	CLAMP WELDMENT FOR BCAM-HD		33.86	33.86
3	1	X-MHTPHD	MULTI-HOLE TAPER PLATE WELDMENT		36.24	36.24
4	2	X-VFAPL4	VFA-HD PIVOT PLATE	12 in	15.88	31.77
5	2	X-LCBP4	BENT BACKING PLATE	13 in	19.00	38.01
6	1	X-HDCAMSS	ANGLE ADJUSTMENT WELDMENT FOR BCAM-HD		16.39	16.39
7	4	X-SPTB	SLIDING PIPE TIE BACK PLATE	5 1/2 in	5.87	23.49
8	1	X-HDCAMSP	POSITIONING PLATE WELDMENT FOR BCAM-HD		2.58	2.58
9	4	X-TBCA	TIE BACK CLIP ANGLE		2.01	8.02
10	8	SCX2	CROSSOVER PLATE	7 in	4.80	38.37
11	4	MCP	CLAMP HALF 1/2" THICK, 11-5/8" LONG	12 1/16 in	3.59	14.37
12	8	DCP	1/2" THICK, 5-3/4" CNTER TO CENTER CLAMP HALF	8 1/8 in	2.36	18.90
13	2	P2126	2-3/8" X 126" (2" SCH. 40) GALVANIZED PIPE	126 in	40.75	81.50
14	2	P30150	2-7/8" X 150" (2-1/2" SCH. 40) GALVANIZED PIPE	150 in	76.94	153.87
15	4	A34212	3/4" x 2-1/2" UNC HEX BOLT (A325)	2 1/2 in	0.48	1.92
16	4	G34FW	3/4" HDG USS FLATWASHER		0.06	0.24
17	4	G34LW	3/4" HDG LOCKWASHER		0.04	0.17
18	4	G34NUT	3/4" HDG HEAVY 2H HEX NUT		0.21	0.85
19	8	G58R-18	5/8" x 18" THREADED ROD (HDG.)	18 in	0.40	3.19
20	4	G58R-12	5/8" x 12" THREADED ROD (HDG.)		1.05	4.18
21	4	G58R-8	5/8" x 8" THREADED ROD (HDG.)		0.70	2.79
22	4	X-UB5300	5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.)		1.15	4.60
23	8	X-UB5258	5/8" X 2-5/8" X 4-1/2" X 2" U-BOLT (HDG.)		1.00	8.00
24	2	G5807	5/8" x 7" HDG HEX BOLT GR5 FULL THREAD	7 in	0.70	1.41
25	1	G5806	5/8" x 6" HDG HEX BOLT GR5 FULL THREAD	6 in	0.62	0.62
26	8	G5804	5/8" x 4" HDG HEX BOLT GR5		0.44	3.55
27	4	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.08
28	8	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	2.50
29	25	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	1.76
30	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
31	71	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	9.22
32	32	X-UB1300	1/2" X 3" X 5" X 2" GALV U-BOLT		0.74	23.64
33	16	X-UB1212	1/2" X 2" X 3" X 1-1/4" U-BOLT (HDG.)		0.60	9.56
34	64	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	2.18
35	64	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.89
36	64	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	4.58
					TOTAL WT. #	738.06

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

REVISION HISTORY

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
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

SITE PRO 1
A valmont COMPANY

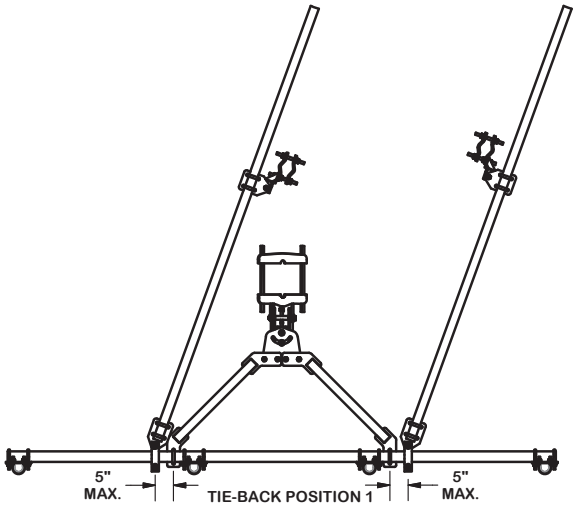
Engineering Support Team:
1-888-753-7446

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

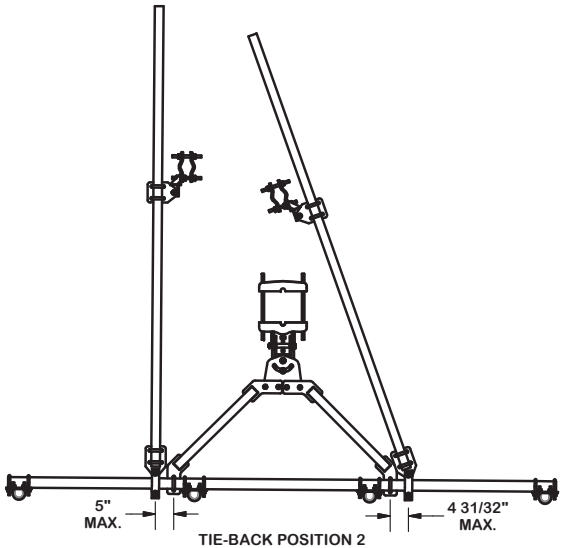
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD

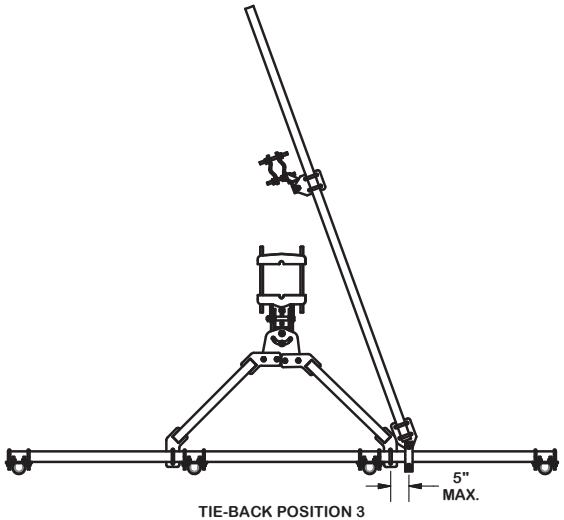
TIE-BACK POSITIONS



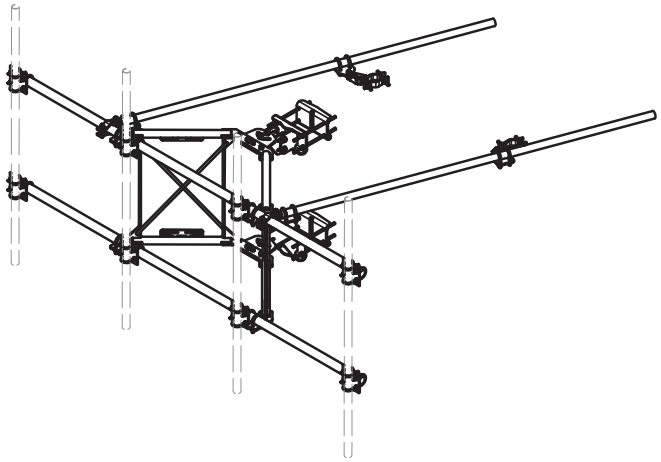
TIE-BACK POSITION 1
-20° / +20° TOP PARALLEL

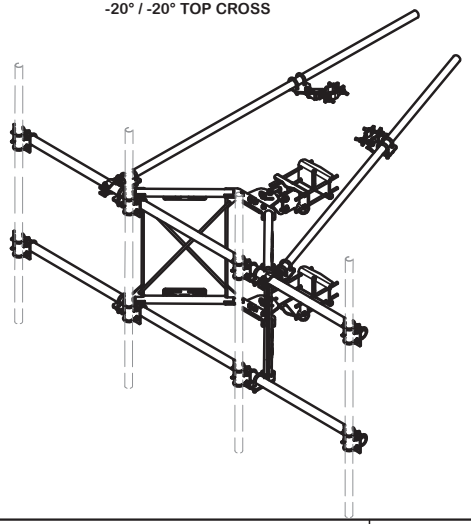


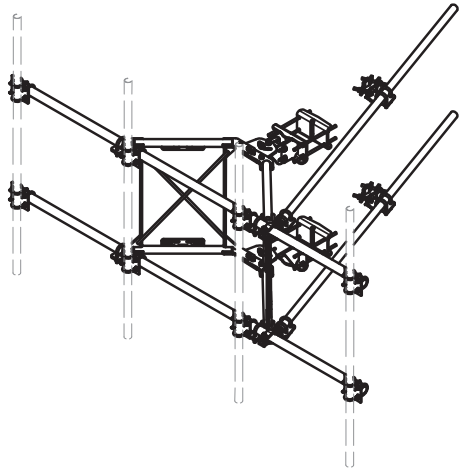
TIE-BACK POSITION 2
-20° / -20° TOP CROSS



TIE-BACK POSITION 3
-20° SAME SIDE STACKED







REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

REVISION HISTORY

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
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

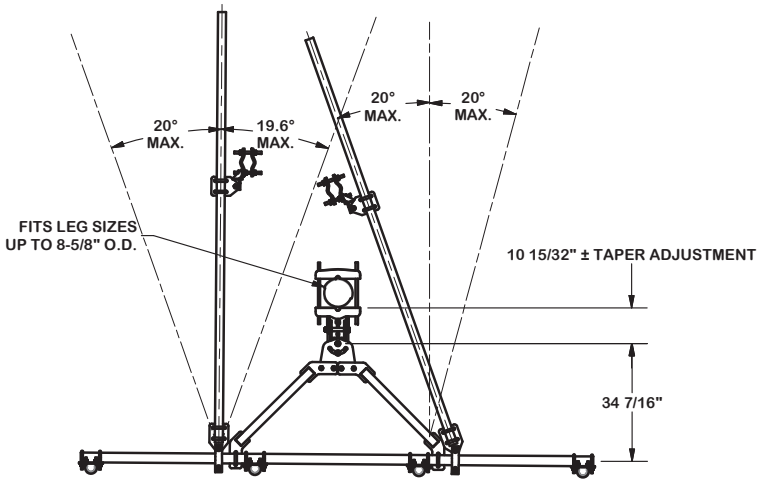
SITE PRO 1
A valmont COMPANY

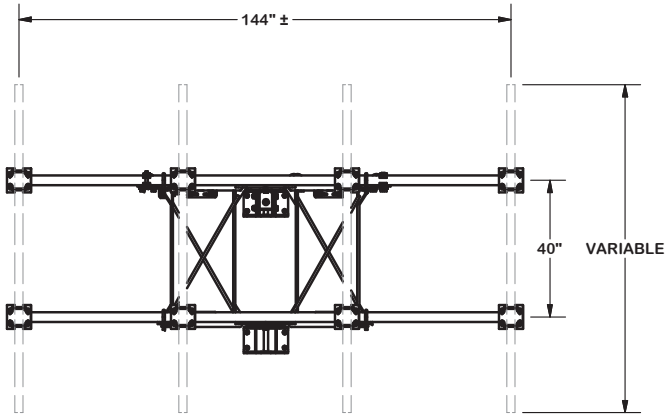
Engineering
Support Team:
1-888-753-7446

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

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

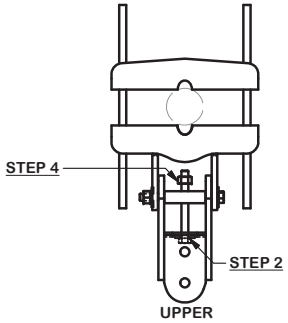
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD

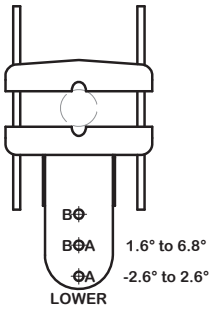


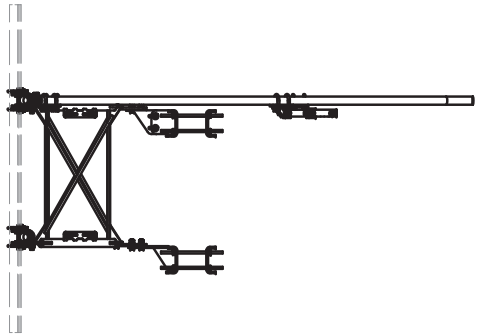


ANGLE CALIBRATING PROCEDURE:

1. MEASURE TOWER TAPER AND PICK LOWER BRACKET HOLE:
   - HOLE A = -2.6° TO 2.6°
   - HOLE B = 1.6° TO 6.8°
2. USE CALIBRATING BOLT TO ADJUST FRAME TO DESIRED TAPER
3. TORQUE LOCKING BOLTS TO 100 ft.-lbs.
4. ADVANCE LOCKING NUT TO POSITIONING PLATE, THEN TIGHTEN.







REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

REVISION HISTORY

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
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

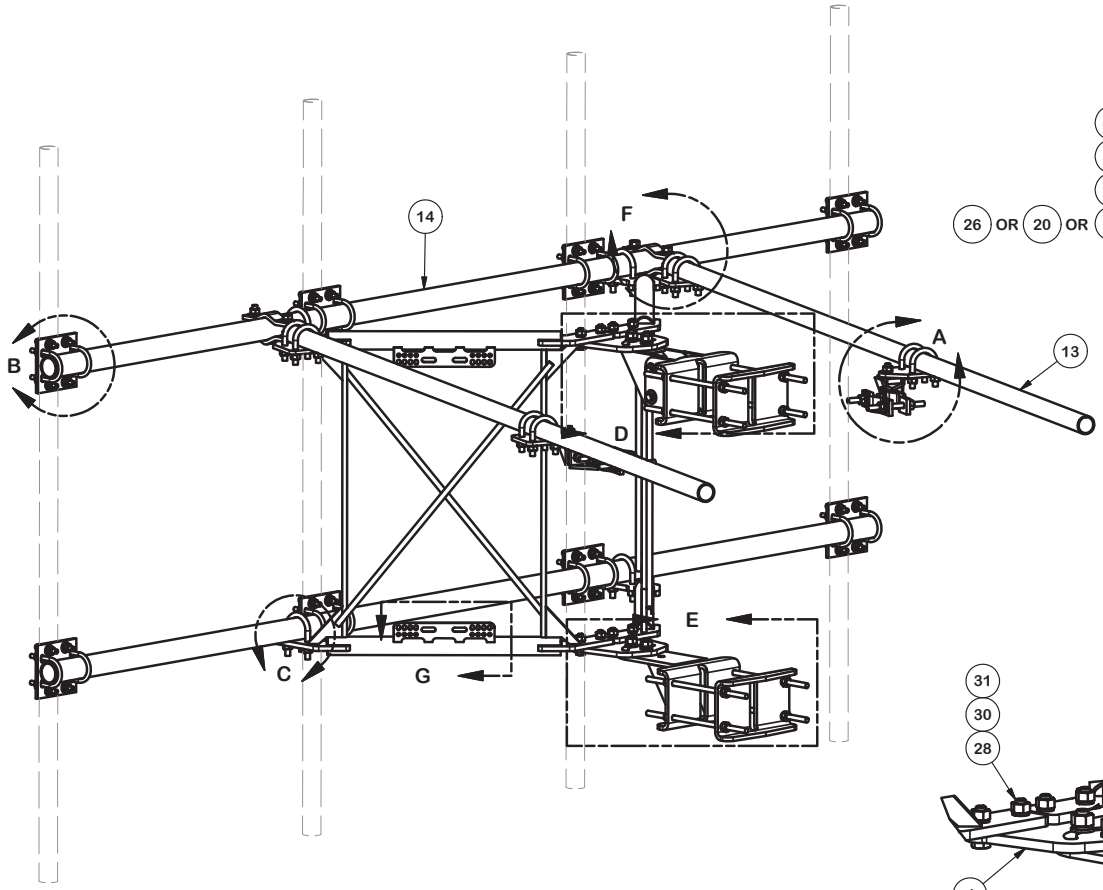
SITE PRO 1
A valmont COMPANY

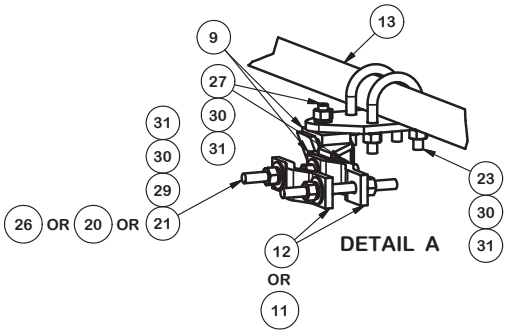
Engineering Support Team:
1-888-753-7446

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

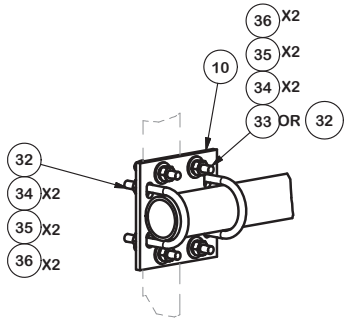
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD



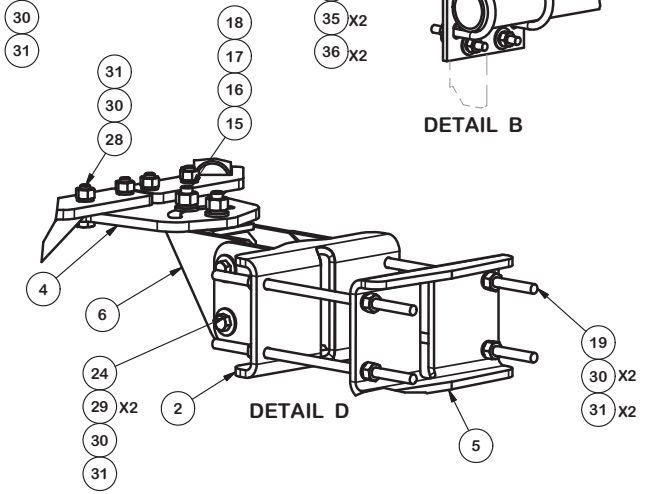


DETAIL A

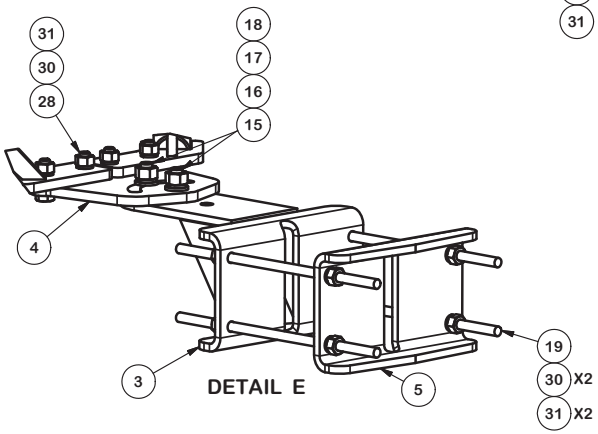


DETAIL B

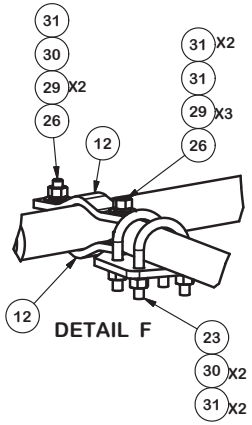
DETAIL C



DETAIL D



DETAIL E

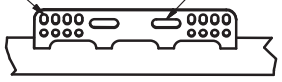


DETAIL F

7/16" LUG HOLES

REVIEW CARRIER STANDARDS FOR PROPER SURFACE PREPARTION AND ASSEMBLY OF ELECTRICAL CONNECTIONS

9/16" SLOTTED HOLE FOR EQUIPMENT PIPE U-BOLT



DETAIL G

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

REVISION HISTORY

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
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

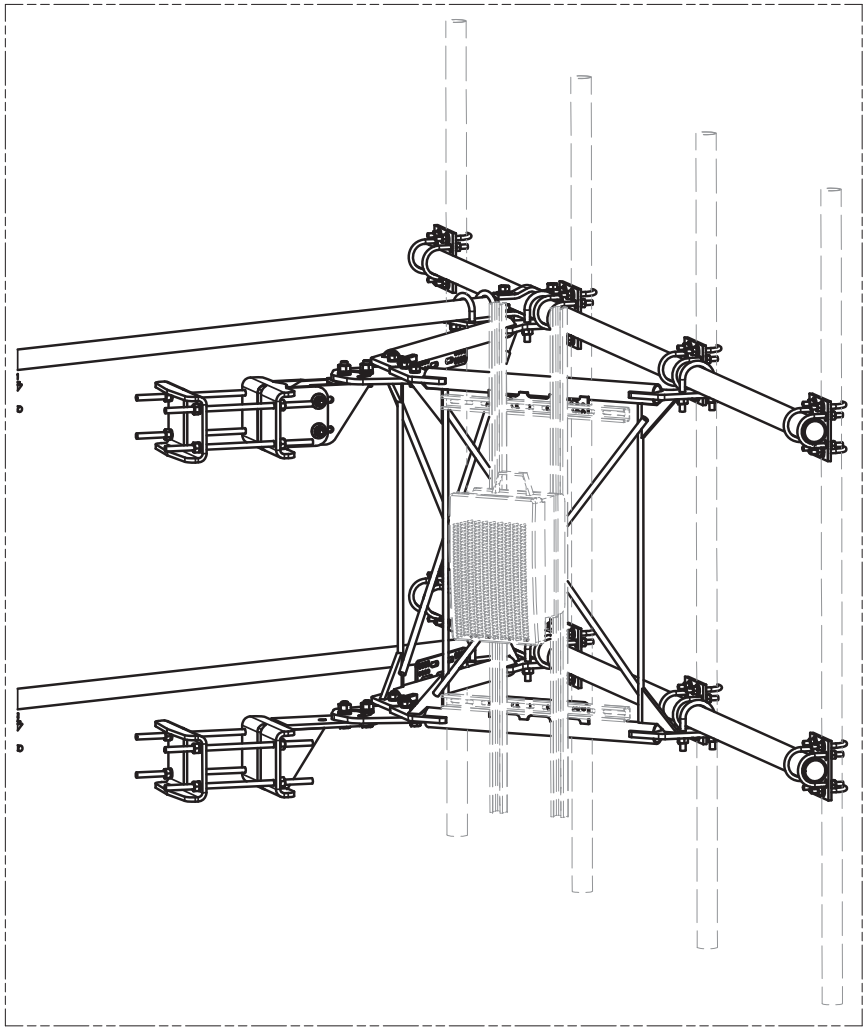
SITE PRO 1
A valmont COMPANY

Engineering Support Team:
1-888-753-7446

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

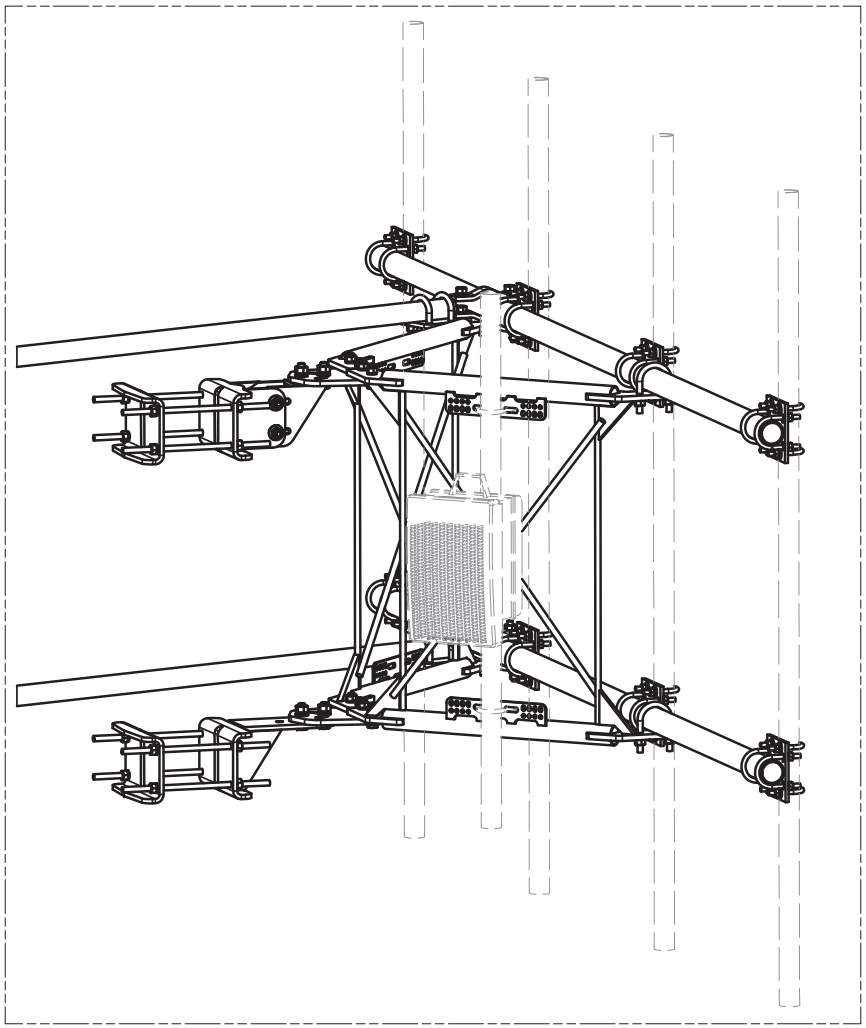
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD



UNISTRUT AND HARDWARE
SOLD SEPARATELY.

REQUIRES 3/8" HARDWARE



EQUIPMENT PIPE AND HARDWARE
SOLD SEPARATELY.

REQUIRES 1/2" HARDWARE
AND 2-3/8" TO 4-1/2" O.D. PIPE

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

REVISION HISTORY

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
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

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 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**300 ft Guyed Tower**
ATC Site Name	:	**FRANKLIN CT, CT**
ATC Asset Number	:	**6310**
Engineering Number	:	**13653965_C3_03**
Proposed Carrier	:	**SPRINT NEXTEL**
Carrier Site Name	:	**CTNL313A**
Carrier Site Number	:	**CTNL313A**
Site Location	:	**89 Dr. Nott Road** **North Franklin, CT 06254-1316** **41.597700, -72.145000**
County	:	**New London**
Date	:	**May 6, 2021**
Max Usage	:	**76%**
Result	:	**Pass**

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

Prepared By:
Isaac P. Dodson
Structural Engineer III

Reviewed By:

Authorized by "EOR"
17 May 2021 08:21:00 cosign

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

AMERICAN TOWER®
CORPORATION

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 300 ft guyed tower to reflect the change in loading by SPRINT NEXTEL.

Supporting Documents

Tower Drawings	FWT Job #18504, dated January, 20, 1999
Foundation Drawing	FWT Job #18504, dated January, 20, 1999
Geotechnical Report	Tectonic Engineering Consultants P.C. dated October 26, 1998
Modifications	ATC Project #430070H1, dated March 5, 1999

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	123 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Hill
Crest Height (H):	344 ft
Crest Length (L):	1850 ft
Spectral Response:	Ss = 0.19, S_1 = 0.05
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

AMERICAN TOWER®
CORPORATION

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
307.0	1	Generic 10' Omni	Rigid Side Arms	(3) 7/8" Coax	OTHER
306.0	1	Generic 20' Dipole			
303.0	1	Generic 13' Omni			
302.0	1	Generic 6' Yagi			
288.0	1	Generic 18' Dipole		(2) 1 1/4" Coax	
277.0	1	Generic 10' Dipole	Rigid Side Arms	(2) 7/8" Coax	
276.0	1	Generic 8' Omni			
	1	Generic 24" x 24" Junction Box			
274.0	1	Generic 6' Omni			
241.0	1	Generic 13' Omni	Rigid Side Arms	-	
230.0	1	Generic 11' Omni			
228.0	1	Generic 14' Omni			
215.0	1	Decibel DB224	Side Arm	(1) 7/8" Coax	NEW ENGLAND CENTRAL RAILROAD
213.0	1	Generic 22' Dipole	Side Arm	-	OTHER
	1	Andrew DB224	Leg	(1) 1/2" Coax	PROV & WORCESTER RR
196.0	3	Ericsson AIR 6449 B77D/ C-Band	Sector Frame	(2) 0.39" Fiber Trunk (4) 0.92" Cable	AT&T MOBILITY
	3	Ericsson RRUS 4449 B5, B12			
	3	Ericsson RRUS 4478 B14			
	3	Ericsson RRUS 8843 B2, B66A			
	2	Raycap DC9-48-60-24-8C-EV			
	3	CCI TPA65R-BU8D			
	3	CCI DMP65R-BU8D			
170.0	3	Commscope CBC78T-DS-43-2X	Sector Frame	(1) 1 1/4" Fiber (11) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Samsung B5/B13 RRH-BR04C			
	3	Samsung B2/B66A RRH-BR049			
	1	Raycap RCMDC-6627-PF-48			
	3	Samsung MT6407-77A			
	3	Commscope LNX-8513DS-A1M			
	6	Commscope JAHH-65B-R3B			
160.0	1	Procom CXL 900-3LW	Side Arm	(1) 1/2" Coax	SIGFOX S.A.
	1	Generic 5" x 3" x 2" Cavity Filter			
	1	Generic Low Noise Amplifier			
130.0	2	Scala AP7-850/065	Side Arm	(4) 0.41" LMR-400 (2) 1 5/8" Coax	AT&T MOBILITY
	1	Generic 24" x 24" Junction Box			
115.0	1	Generic 20' Dipole	Side Arm	(1) 1/2" Coax	NEW ENGLAND CENTRAL RAILROAD
105.0	1	Generic 5' Yagi	Leg	-	OTHER
	1	Generic 2' x 4' Rectangular Grid Dish			
82.0	1	Generic 6' Ice Shield	Leg	(1) EW52	AT&T MOBILITY
80.0	1	RFS PA6-65AC w/ Radome			

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
180.0	6	Alcatel-Lucent RRH2x50-08	-	(4) 1 1/4" Hybriflex Cable (9) 1 5/8" Coax	SPRINT NEXTEL
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
	3	Commscope NNVV-65B-R4			
	3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
	3	RFS APXVTM14-ALU-I20			
	3	Decibel DB844H90E-XY			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
180.0	3	Ericsson Radio 4449 B71 B85A	Sector Frame	(3) 1 5/8" Hybriflex	SPRINT NEXTEL
	3	Ericsson RRUS 4415 B66			
	3	Ericsson 4424 B25			
	3	Ericsson Air6449 B41			
	3	RFS APX16DWV-16DWVS-E-A20			
	3	RFS APXVAALL24 43-U-NA20			

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed coax in the place of the existing SPRINT NEXTEL coax.

Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

Site Number:	**6310**	**Code:**	**ANSI/TIA-222-H**	
Site Name:	**FRANKLIN CT, CT**	**Engineering Number:**	**13653965_C3_03**	5/14/2021 5:07:17 PM
Customer:	**Sprint Nextel**			

Analysis Parameters

Location:	**New London County, CT**	**Height (ft):**	**300**
Code:	**ANSI/TIA-222-H**	**Base Elevation (ft):**	**0.00**
Shape:	**Triangle**	**Bottom Face Width (ft):**	**4.00**
Tower Manufacturer:	**FWT Inc**	**Top Face Width (ft):**	**4.00**
Tower Type:	**Guyed**		
Kd:	**0.85**		
Ke:	**0.98**		

Ice & Wind Parameters

Exposure Category:	**B**	**Design Windspeed Without Ice:**	**123 mph**
Risk Category:	**II**	**Design Windspeed With Ice:**	**50 mph**
Topographic Factor Procedure:	**Method 2**	**Operational Windspeed:**	**60 mph**
Feature:	**Hill**	**Design Ice Thickness:**	**1.00 in**
Crest Height (H):	**344 ft**	**HMSL:**	**499.00 ft**
Crest Length (L):	**1850 ft**		
Distance from Apex (x):	**0 ft**		
Upwind / Downwind	**Upwind**		

Seismic Parameters

Analysis Method:	**Equivalent Lateral Force Method**				
Site Class:	**D - Stiff Soil**				
Period Based on Rayleigh Method (sec):	**0.84**				
T_L (sec):	**6**	**p:**	**1.3**	**C_S:**	**0.034**
S_S :	**0.195**	**S_1 :**	**0.054**	**C_S, Max:**	**0.034**
F_a :	**1.600**	**F_V :**	**2.400**	**C_S, Min:**	**0.030**
S_{ds} :	**0.208**	**S_{d1} :**	**0.086**		

Load Cases

1.2D + 1.0W Normal	**123 mph Normal with No Ice**
1.2D + 1.0W 60 deg	**123 mph 60 degree with No Ice**
1.2D + 1.0W 90 deg	**123 mph 90 degree with No Ice**
1.2D + 1.0W 120 deg	**123 mph 120 degree with No Ice**
1.2D + 1.0W 180 deg	**123 mph 180 degree with No Ice**
1.2D + 1.0W 210 deg	**123 mph 210 degree with No Ice**
1.2D + 1.0W 240 deg	**123 mph 240 degree with No Ice**
1.2D + 1.0W 300 deg	**123 mph 300 degree with No Ice**
1.2D + 1.0W 330 deg	**123 mph 330 degree with No Ice**
1.2D + 1.0Di + 1.0Wi Normal	**50 mph Normal with 1.00 in Radial Ice**
1.2D + 1.0Di + 1.0Wi 60 deg	**50 mph 60 deg with 1.00 in Radial Ice**
1.2D + 1.0Di + 1.0Wi 90 deg	**50 mph 90 deg with 1.00 in Radial Ice**
1.2D + 1.0Di + 1.0Wi 120 deg	**50 mph 120 deg with 1.00 in Radial Ice**
1.2D + 1.0Di + 1.0Wi 180 deg	**50 mph 180 deg with 1.00 in Radial Ice**

Analysis Parameters

1.2D + 1.0Di + 1.0Wi 210 deg	50 mph 210 deg with 1.00 in Radial Ice
1.2D + 1.0Di + 1.0Wi 240 deg	50 mph 240 deg with 1.00 in Radial Ice
1.2D + 1.0Di + 1.0Wi 300 deg	50 mph 300 deg with 1.00 in Radial Ice
1.2D + 1.0Di + 1.0Wi 330 deg	50 mph 330 deg with 1.00 in Radial Ice
1.2D + 1.0Ev + 1.0Eh Normal	Seismic Normal
1.2D + 1.0Ev + 1.0Eh 60 deg	Seismic 60 deg
1.2D + 1.0Ev + 1.0Eh 90 deg	Seismic 90 deg
1.2D + 1.0Ev + 1.0Eh 120 deg	Seismic 120 deg
1.2D + 1.0Ev + 1.0Eh 180 deg	Seismic 180 deg
1.2D + 1.0Ev + 1.0Eh 210 deg	Seismic 210 deg
1.2D + 1.0Ev + 1.0Eh 240 deg	Seismic 240 deg
1.2D + 1.0Ev + 1.0Eh 300 deg	Seismic 300 deg
1.2D + 1.0Ev + 1.0Eh 330 deg	Seismic 330 deg
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL) Normal
0.9D - 1.0Ev + 1.0Eh 60 deg	Seismic (Reduced DL) 60 deg
0.9D - 1.0Ev + 1.0Eh 90 deg	Seismic (Reduced DL) 90 deg
0.9D - 1.0Ev + 1.0Eh 120 deg	Seismic (Reduced DL) 120 deg
0.9D - 1.0Ev + 1.0Eh 180 deg	Seismic (Reduced DL) 180 deg
0.9D - 1.0Ev + 1.0Eh 210 deg	Seismic (Reduced DL) 210 deg
0.9D - 1.0Ev + 1.0Eh 240 deg	Seismic (Reduced DL) 240 deg
0.9D - 1.0Ev + 1.0Eh 300 deg	Seismic (Reduced DL) 300 deg
0.9D - 1.0Ev + 1.0Eh 330 deg	Seismic (Reduced DL) 330 deg
1.0D + 1.0W Service Normal	Serviceability - 60 mph Wind Normal
1.0D + 1.0W Service 60 deg	Serviceability - 60 mph Wind 60 deg
1.0D + 1.0W Service 90 deg	Serviceability - 60 mph Wind 90 deg
1.0D + 1.0W Service 120 deg	Serviceability - 60 mph Wind 120 deg
1.0D + 1.0W Service 180 deg	Serviceability - 60 mph Wind 180 deg
1.0D + 1.0W Service 210 deg	Serviceability - 60 mph Wind 210 deg
1.0D + 1.0W Service 240 deg	Serviceability - 60 mph Wind 240 deg
1.0D + 1.0W Service 300 deg	Serviceability - 60 mph Wind 300 deg
1.0D + 1.0W Service 330 deg	Serviceability - 60 mph Wind 330 deg

Tower Loading

Discrete Appurtenance Properties 1.2D + 1.0W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
300.0	Generic 10' Omni	1	25	3.0	10.0	3.0	3.0	1.00	1.00	5.0	672.3	52.73	134	30
300.0	Generic 13' Omni	1	40	3.9	13.0	3.0	3.0	1.00	1.00	6.5	1136.5	52.74	175	48
300.0	Generic 18' Dipole	1	55	6.8	18.0	3.0	3.0	1.00	1.00	-9.0	2723.9	52.59	303	66
300.0	Generic 20' Dipole	1	60	7.5	20.0	3.0	3.0	1.00	1.00	10.0	3373.6	52.78	337	72
300.0	Generic 6' Yagi	1	25	8.9	6.0	60.0	3.0	1.00	1.00	3.0	1203.0	52.71	401	30
300.0	Round Side Arm	3	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	52.68	468	540
268.0	Generic 10' Dipole	1	30	3.8	10.0	3.0	3.0	1.00	1.00	5.0	837.6	52.42	168	36
268.0	Generic 24" x 24"	1	20	4.8	2.0	24.0	8.0	1.00	1.00	0.0	0.0	52.37	214	24
268.0	Generic 6' Omni	1	25	1.8	6.0	3.0	3.0	1.00	1.00	3.0	235.2	52.40	78	30
268.0	Generic 8' Omni	1	25	2.4	8.0	3.0	3.0	1.00	1.00	4.0	427.6	52.41	107	30
268.0	Round Side Arm	3	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	52.37	465	540
233.0	Generic 11' Omni	1	40	3.3	11.0	3.0	3.0	1.00	1.00	-5.5	800.9	51.92	146	48
233.0	Generic 13' Omni	1	40	3.9	13.0	3.0	3.0	1.00	1.00	6.5	1121.8	52.06	173	48
233.0	Generic 14' Omni	1	40	4.2	14.0	3.0	3.0	1.00	1.00	-7.0	1296.9	51.90	185	48
233.0	Round Side Arm	3	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	51.98	462	540
215.0	Decibel DB224	1	32	5.4	21.3	2.0	2.0	1.00	1.00	0.0	0.0	51.76	240	38
213.0	Andrew DB224	1	38	6.1	23.0	0.0	0.0	1.00	1.00	0.0	0.0	51.73	266	46
213.0	Generic 22' Dipole	1	66	8.3	22.0	3.0	3.0	1.00	1.00	0.0	0.0	51.73	364	79
213.0	Side Arm	2	150	6.3	0.0	0.0	0.0	0.90	0.90	0.0	0.0	51.73	449	360
196.0	CCI DMP65R-BU8D	3	96	17.9	8.0	20.7	7.7	0.80	0.63	0.0	0.0	51.48	1182	345
196.0	CCI TPA65R-BU8D	3	83	18.1	8.0	21.0	7.8	0.80	0.63	0.0	0.0	51.48	1197	297
196.0	Ericsson AIR 6449	3	82	4.0	2.5	15.9	10.6	0.80	0.70	0.0	0.0	51.48	296	294
196.0	Ericsson RRUS 4449	3	71	2.0	1.5	13.2	9.4	0.80	0.50	0.0	0.0	51.48	103	256
196.0	Ericsson RRUS 4478	3	60	1.8	1.4	13.4	7.7	0.80	0.50	0.0	0.0	51.48	97	216
196.0	Ericsson RRUS 8843	3	72	1.6	1.2	13.2	10.9	0.80	0.50	0.0	0.0	51.48	86	259
196.0	Raycap DC9-48-60-	2	16	4.8	2.6	18.3	10.2	0.80	0.75	0.0	0.0	51.48	251	38
196.0	Sabre C10857001	3	462	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	51.48	950	1663
180.0	Ericsson 4424 B25	3	86	2.1	1.4	14.4	11.3	0.80	0.67	0.0	0.0	51.20	144	310
180.0	Ericsson Air6449	3	104	5.7	2.8	20.6	8.6	0.80	0.63	0.0	0.0	51.20	374	374
180.0	Ericsson Radio 4449	3	75	1.6	1.3	13.2	10.5	0.80	0.50	0.0	0.0	51.20	86	270
180.0	Ericsson RRUS 4415	3	46	1.6	1.3	13.2	5.4	0.80	0.50	0.0	0.0	51.20	86	166
180.0	RFS APX16DWV-	3	41	6.6	4.7	13.3	3.1	0.80	0.60	0.0	0.0	51.20	413	147
180.0	RFS APXVAALL24	3	123	20.2	8.0	24.0	8.5	0.80	0.63	0.0	0.0	51.20	1332	442
180.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	51.20	1058	1080
170.0	Commscope	3	21	0.6	0.8	6.9	6.4	0.80	0.50	0.0	0.0	51.00	29	75
170.0	Commscope JAHH-	6	61	9.1	6.0	13.8	8.2	0.80	0.69	0.0	0.0	51.00	1308	436
170.0	Commscope LNX-	3	39	8.2	6.1	11.9	7.1	0.80	0.69	0.0	0.0	51.00	587	141
170.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	51.00	1309	1440
170.0	Raycap RCMDC-	1	32	4.1	2.5	16.5	12.6	0.80	1.00	0.0	0.0	51.00	141	38
170.0	Samsung B2/B66A	3	84	1.9	1.3	15.0	10.0	0.80	0.50	0.0	0.0	51.00	98	304
170.0	Samsung B5/B13	3	70	1.9	1.3	15.0	8.1	0.80	0.50	0.0	0.0	51.00	98	253
170.0	Samsung MT6407-	3	82	4.7	2.9	16.1	5.5	0.80	0.61	0.0	0.0	51.00	299	294
160.0	Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	0.67	0.0	0.0	50.77	182	180
160.0	Generic 5" x 3" x 2"	1	2	0.1	0.4	3.2	1.9	1.00	0.50	0.0	0.0	50.77	3	2
160.0	Generic Low Noise	1	2	0.2	0.4	4.0	2.0	1.00	0.50	0.0	0.0	50.77	4	2
160.0	Procom CXL 900-	1	2	0.1	2.3	0.6	0.6	1.00	1.00	0.0	0.0	50.77	6	2
130.0	Generic 24" x 24"	1	20	4.8	2.0	24.0	8.0	0.90	0.67	0.0	0.0	49.88	123	24
130.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	49.88	148	180
130.0	Scala AP7-850/065	2	3	1.1	1.1	10.0	4.0	0.90	0.62	0.0	0.0	49.88	52	7
125.0	Flat Side Arm	3	150	6.3	0.0	0.0	0.0	1.00	0.67	0.0	0.0	49.69	535	540
115.0	Generic 20' Dipole	1	60	7.5	20.0	3.0	3.0	1.00	1.00	0.0	0.0	49.26	315	72
115.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	49.26	218	180
105.0	Generic 2' x 4'	1	40	7.5	4.0	48.0	24.0	1.00	1.00	0.0	0.0	48.76	309	48
105.0	Generic 5' Yagi	1	20	7.3	5.0	60.0	3.0	1.00	1.00	0.0	0.0	48.76	302	24

Tower Loading

105.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	48.76	216	180
82.00	Generic 6' Ice Shield	1	450	3.9	1.2	100.0	48.0	1.00	1.00	0.0	0.0	47.20	156	540
80.00	RFS PA6-65AC w/	1	308	24.4	6.0	72.0	0.0	1.00	1.00	0.0	0.0	47.04	976	370
	Totals	113	11784	742.1									20199	14141

Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elevation (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
300.0	Generic 10' Omni	1	83	5.8	10.0	3.0	3.0	1.00	1.00	5.0	213.5	8.71	43	88
300.0	Generic 13' Omni	1	115	7.5	13.0	3.0	3.0	1.00	1.00	6.5	359.6	8.72	55	123
300.0	Generic 18' Dipole	1	208	15.0	18.0	3.0	3.0	1.00	1.00	-9.0	995.9	8.69	111	219
300.0	Generic 20' Dipole	1	230	16.6	20.0	3.0	3.0	1.00	1.00	10.0	1232.9	8.72	123	242
300.0	Generic 6' Yagi	1	220	27.3	6.0	60.0	3.0	1.00	1.00	3.0	605.8	8.71	202	225
300.0	Round Side Arm	3	206	7.3	0.0	0.0	0.0	1.00	0.67	0.0	0.0	8.71	108	709
268.0	Generic 10' Dipole	1	115	8.4	10.0	3.0	3.0	1.00	1.00	5.0	307.6	8.66	62	121
268.0	Generic 24" x 24"	1	108	5.9	2.0	24.0	8.0	1.00	1.00	0.0	0.0	8.65	43	112
268.0	Generic 6' Omni	1	60	2.7	6.0	3.0	3.0	1.00	1.00	3.0	60.2	8.66	20	65
268.0	Generic 8' Omni	1	72	4.5	8.0	3.0	3.0	1.00	1.00	4.0	132.7	8.66	33	77
268.0	Round Side Arm	3	206	7.3	0.0	0.0	0.0	1.00	0.67	0.0	0.0	8.65	108	708
233.0	Generic 11' Omni	1	104	6.3	11.0	3.0	3.0	1.00	1.00	-5.5	253.6	8.58	46	112
233.0	Generic 13' Omni	1	115	7.5	13.0	3.0	3.0	1.00	1.00	6.5	354.4	8.60	55	123
233.0	Generic 14' Omni	1	121	8.0	14.0	3.0	3.0	1.00	1.00	-7.0	409.4	8.58	58	129
233.0	Round Side Arm	3	206	7.3	0.0	0.0	0.0	1.00	0.67	0.0	0.0	8.59	107	708
215.0	Decibel DB224	1	159	17.8	21.3	2.0	2.0	1.00	1.00	0.0	0.0	8.55	129	166
213.0	Andrew DB224	1	180	20.0	23.0	0.0	0.0	1.00	1.00	0.0	0.0	8.55	146	188
213.0	Generic 22' Dipole	1	252	18.2	22.0	3.0	3.0	1.00	1.00	0.0	0.0	8.55	133	265
213.0	Side Arm	2	206	8.2	0.0	0.0	0.0	0.90	0.90	0.0	0.0	8.55	96	472
196.0	CCI DMP65R-BU8D	3	355	20.7	8.0	20.7	7.7	0.80	0.63	0.0	0.0	8.51	226	1124
196.0	CCI TPA65R-BU8D	3	346	20.9	8.0	21.0	7.8	0.80	0.63	0.0	0.0	8.51	229	1087
196.0	Ericsson AIR 6449	3	171	5.1	2.5	15.9	10.6	0.80	0.70	0.0	0.0	8.51	62	561
196.0	Ericsson RRUS 4449	3	120	2.7	1.5	13.2	9.4	0.80	0.50	0.0	0.0	8.51	23	403
196.0	Ericsson RRUS 4478	3	102	2.5	1.4	13.4	7.7	0.80	0.50	0.0	0.0	8.51	22	342
196.0	Ericsson RRUS 8843	3	119	2.3	1.2	13.2	10.9	0.80	0.50	0.0	0.0	8.51	20	400
196.0	Raycap DC9-48-60-	2	115	5.9	2.6	18.3	10.2	0.80	0.75	0.0	0.0	8.51	51	236
196.0	Sabre C10857001	3	708	22.1	0.0	0.0	0.0	0.75	0.67	0.0	0.0	8.51	241	2401
180.0	Ericsson 4424 B25	3	142	2.8	1.4	14.4	11.3	0.80	0.67	0.0	0.0	8.46	32	476
180.0	Ericsson Air6449	3	208	6.9	2.8	20.6	8.6	0.80	0.63	0.0	0.0	8.46	75	686
180.0	Ericsson Radio 4449	3	121	2.3	1.3	13.2	10.5	0.80	0.50	0.0	0.0	8.46	20	408
180.0	Ericsson RRUS 4415	3	79	2.3	1.3	13.2	5.4	0.80	0.50	0.0	0.0	8.46	20	265
180.0	RFS APX16DWV-	3	130	8.2	4.7	13.3	3.1	0.80	0.60	0.0	0.0	8.46	85	414
180.0	RFS APXVAALL24	3	420	23.1	8.0	24.0	8.5	0.80	0.63	0.0	0.0	8.46	251	1333
180.0	Round Sector Frame	3	580	27.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.46	328	1921
170.0	Commscope	3	38	0.9	0.8	6.9	6.4	0.80	0.50	0.0	0.0	8.43	8	125
170.0	Commscope JAHH-	6	215	11.2	6.0	13.8	8.2	0.80	0.69	0.0	0.0	8.43	266	1362
170.0	Commscope LNX-	3	173	10.3	6.1	11.9	7.1	0.80	0.69	0.0	0.0	8.43	122	544
170.0	Flat Light Sector	3	629	29.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.43	355	2128
170.0	Raycap RCMDC-	1	129	5.1	2.5	16.5	12.6	0.80	1.00	0.0	0.0	8.43	29	135
170.0	Samsung B2/B66A	3	133	2.6	1.3	15.0	10.0	0.80	0.50	0.0	0.0	8.43	22	450
170.0	Samsung B5/B13	3	114	2.6	1.3	15.0	8.1	0.80	0.50	0.0	0.0	8.43	22	384
170.0	Samsung MT6407-	3	159	5.9	2.9	16.1	5.5	0.80	0.61	0.0	0.0	8.43	62	527
160.0	Flat Side Arm	1	206	8.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	8.39	39	236
160.0	Generic 5" x 3" x 2"	1	5	0.3	0.4	3.2	1.9	1.00	0.50	0.0	0.0	8.39	1	6
160.0	Generic Low Noise	1	6	0.4	0.4	4.0	2.0	1.00	0.50	0.0	0.0	8.39	1	7
160.0	Procom CXL 900-	1	6	0.7	2.3	0.6	0.6	1.00	1.00	0.0	0.0	8.39	5	6
130.0	Generic 24" x 24"	1	107	5.9	2.0	24.0	8.0	0.90	0.67	0.0	0.0	8.24	25	111

Tower Loading

130.0	Round Side Arm	1	205	7.3	0.0	0.0	0.0	1.00	0.67	0.0	0.0	8.24	34	235
130.0	Scala AP7-850/065	2	29	1.4	1.1	10.0	4.0	0.90	0.62	0.0	0.0	8.24	11	59
125.0	Flat Side Arm	3	205	8.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	8.21	115	706
115.0	Generic 20' Dipole	1	227	16.5	20.0	3.0	3.0	1.00	1.00	0.0	0.0	8.14	114	239
115.0	Round Side Arm	1	205	7.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	8.14	50	235
105.0	Generic 2' x 4'	1	209	45.1	4.0	48.0	24.0	1.00	1.00	0.0	0.0	8.06	309	217
105.0	Generic 5' Yagi	1	180	22.3	5.0	60.0	3.0	1.00	1.00	0.0	0.0	8.06	153	184
105.0	Round Side Arm	1	205	7.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	8.06	50	235
82.00	Generic 6' Ice Shield	1	918	6.6	1.2	100.0	48.0	1.00	1.00	0.0	0.0	7.80	43	1008
80.00	RFS PA6-65AC w/	1	832	26.2	6.0	72.0	0.0	1.00	1.00	0.0	0.0	7.77	173	893
	Totals	113	24586	1120.2									5371	26943

Discrete Appurtenance Properties 1.0D + 1.0W Service

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
300.0	Generic 10' Omni	1	25	3.0	10.0	3.0	3.0	1.00	1.00	5.0	160.0	12.55	32	25
300.0	Generic 13' Omni	1	40	3.9	13.0	3.0	3.0	1.00	1.00	6.5	270.4	12.55	42	40
300.0	Generic 18' Dipole	1	55	6.8	18.0	3.0	3.0	1.00	1.00	-9.0	648.2	12.52	72	55
300.0	Generic 20' Dipole	1	60	7.5	20.0	3.0	3.0	1.00	1.00	10.0	802.8	12.56	80	60
300.0	Generic 6' Yagi	1	25	8.9	6.0	60.0	3.0	1.00	1.00	3.0	286.3	12.54	95	25
300.0	Round Side Arm	3	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	12.54	111	450
268.0	Generic 10' Dipole	1	30	3.8	10.0	3.0	3.0	1.00	1.00	5.0	199.3	12.47	40	30
268.0	Generic 24" x 24"	1	20	4.8	2.0	24.0	8.0	1.00	1.00	0.0	0.0	12.46	51	20
268.0	Generic 6' Omni	1	25	1.8	6.0	3.0	3.0	1.00	1.00	3.0	56.0	12.47	19	25
268.0	Generic 8' Omni	1	25	2.4	8.0	3.0	3.0	1.00	1.00	4.0	101.8	12.47	25	25
268.0	Round Side Arm	3	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	12.46	111	450
233.0	Generic 11' Omni	1	40	3.3	11.0	3.0	3.0	1.00	1.00	-5.5	190.6	12.35	35	40
233.0	Generic 13' Omni	1	40	3.9	13.0	3.0	3.0	1.00	1.00	6.5	266.9	12.39	41	40
233.0	Generic 14' Omni	1	40	4.2	14.0	3.0	3.0	1.00	1.00	-7.0	308.6	12.35	44	40
233.0	Round Side Arm	3	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	12.37	110	450
215.0	Decibel DB224	1	32	5.4	21.3	2.0	2.0	1.00	1.00	0.0	0.0	12.32	57	32
213.0	Andrew DB224	1	38	6.1	23.0	0.0	0.0	1.00	1.00	0.0	0.0	12.31	63	38
213.0	Generic 22' Dipole	1	66	8.3	22.0	3.0	3.0	1.00	1.00	0.0	0.0	12.31	87	66
213.0	Side Arm	2	150	6.3	0.0	0.0	0.0	0.90	0.90	0.0	0.0	12.31	107	300
196.0	CCI DMP65R-BU8D	3	96	17.9	8.0	20.7	7.7	0.80	0.63	0.0	0.0	12.25	281	287
196.0	CCI TPA65R-BU8D	3	83	18.1	8.0	21.0	7.8	0.80	0.63	0.0	0.0	12.25	285	248
196.0	Ericsson AIR 6449	3	82	4.0	2.5	15.9	10.6	0.80	0.70	0.0	0.0	12.25	70	245
196.0	Ericsson RRUS 4449	3	71	2.0	1.5	13.2	9.4	0.80	0.50	0.0	0.0	12.25	25	213
196.0	Ericsson RRUS 4478	3	60	1.8	1.4	13.4	7.7	0.80	0.50	0.0	0.0	12.25	23	180
196.0	Ericsson RRUS 8843	3	72	1.6	1.2	13.2	10.9	0.80	0.50	0.0	0.0	12.25	20	216
196.0	Raycap DC9-48-60-	2	16	4.8	2.6	18.3	10.2	0.80	0.75	0.0	0.0	12.25	60	32
196.0	Sabre C10857001	3	462	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	12.25	226	1386
180.0	Ericsson 4424 B25	3	86	2.1	1.4	14.4	11.3	0.80	0.67	0.0	0.0	12.18	34	258
180.0	Ericsson Air6449	3	104	5.7	2.8	20.6	8.6	0.80	0.63	0.0	0.0	12.18	89	312
180.0	Ericsson Radio 4449	3	75	1.6	1.3	13.2	10.5	0.80	0.50	0.0	0.0	12.18	21	225
180.0	Ericsson RRUS 4415	3	46	1.6	1.3	13.2	5.4	0.80	0.50	0.0	0.0	12.18	21	138
180.0	RFS APX16DWV-	3	41	6.6	4.7	13.3	3.1	0.80	0.60	0.0	0.0	12.18	98	122
180.0	RFS APXVAALL24	3	123	20.2	8.0	24.0	8.5	0.80	0.63	0.0	0.0	12.18	317	368
180.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	12.18	252	900
170.0	Commscope	3	21	0.6	0.8	6.9	6.4	0.80	0.50	0.0	0.0	12.14	7	62
170.0	Commscope JAHH-	6	61	9.1	6.0	13.8	8.2	0.80	0.69	0.0	0.0	12.14	311	364
170.0	Commscope LNX-	3	39	8.2	6.1	11.9	7.1	0.80	0.69	0.0	0.0	12.14	140	118
170.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	12.14	312	1200
170.0	Raycap RCMDC-	1	32	4.1	2.5	16.5	12.6	0.80	1.00	0.0	0.0	12.14	33	32
170.0	Samsung B2/B66A	3	84	1.9	1.3	15.0	10.0	0.80	0.50	0.0	0.0	12.14	23	253

Tower Loading

170.0	Samsung B5/B13	3	70	1.9	1.3	15.0	8.1	0.80	0.50	0.0	0.0	12.14	23	211
170.0	Samsung MT6407-	3	82	4.7	2.9	16.1	5.5	0.80	0.61	0.0	0.0	12.14	71	245
160.0	Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	0.67	0.0	0.0	12.08	43	150
160.0	Generic 5" x 3" x 2"	1	2	0.1	0.4	3.2	1.9	1.00	0.50	0.0	0.0	12.08	1	2
160.0	Generic Low Noise	1	2	0.2	0.4	4.0	2.0	1.00	0.50	0.0	0.0	12.08	1	2
160.0	Procom CXL 900-	1	2	0.1	2.3	0.6	0.6	1.00	1.00	0.0	0.0	12.08	1	2
130.0	Generic 24" x 24"	1	20	4.8	2.0	24.0	8.0	0.90	0.67	0.0	0.0	11.87	29	20
130.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	11.87	35	150
130.0	Scala AP7-850/065	2	3	1.1	1.1	10.0	4.0	0.90	0.62	0.0	0.0	11.87	12	6
125.0	Flat Side Arm	3	150	6.3	0.0	0.0	0.0	1.00	0.67	0.0	0.0	11.82	127	450
115.0	Generic 20' Dipole	1	60	7.5	20.0	3.0	3.0	1.00	1.00	0.0	0.0	11.72	75	60
115.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	11.72	52	150
105.0	Generic 2' x 4'	1	40	7.5	4.0	48.0	24.0	1.00	1.00	0.0	0.0	11.60	74	40
105.0	Generic 5' Yagi	1	20	7.3	5.0	60.0	3.0	1.00	1.00	0.0	0.0	11.60	72	20
105.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	11.60	51	150
82.00	Generic 6' Ice Shield	1	450	3.9	1.2	100.0	48.0	1.00	1.00	0.0	0.0	11.23	37	450
80.00	RFS PA6-65AC w/	1	308	24.4	6.0	72.0	0.0	1.00	1.00	0.0	0.0	11.19	232	308
	Totals	113	11784	742.1									4806	11784

Tower Loading

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out Of Zone	Spacing (in)	Orientation Factor	Ka Override
5.00	300.0	1 1/4" Coax	2	1.55	0.63	100	1	Individual	0.00	N	1.00	1.00	0.00
5.00	300.0	7/8" Coax	1	1.09	0.33	100	1	Individual	0.00	N	1.00	1.00	0.00
5.00	300.0	7/8" Coax	1	1.09	0.33	100	2	Individual	0.00	N	1.00	1.00	0.00
5.00	300.0	7/8" Coax	1	1.09	0.33	100	2	Individual	0.00	N	1.00	1.00	0.00
0.00	268.0	7/8" Coax	1	1.09	0.33	100	1	Individual	0.00	N	1.00	1.00	0.00
0.00	268.0	7/8" Coax	1	1.09	0.33	100	1	Individual	0.00	N	1.00	1.00	0.00
0.00	215.0	7/8" Coax	1	1.09	0.33	100	1	Individual	0.00	N	1.00	1.00	0.00
5.00	213.0	1/2" Coax	1	0.63	0.15	100	1	Individual	0.00	N	1.00	1.00	0.00
0.00	196.0	0.39" (10mm) Fiber	2	0.39	0.06	100	2	Individual	0.00	N	1.00	1.00	0.00
0.00	196.0	0.92" (23.4mm)	4	0.92	0.89	100	2	Individual	0.00	N	1.00	1.00	0.00
0.00	180.0	1 5/8" Hybriflex	3	1.98	1.30	100	None	Individual	0.00	N	1.00	1.00	0.00
0.00	170.0	1 5/8" Coax	6	1.98	0.82	100	1	Individual	0.00	N	1.00	1.00	0.00
0.00	170.0	1 5/8" Coax	5	1.98	0.82	100	1	Individual	0.00	N	1.00	1.00	0.00
0.00	170.0	1 5/8" Hybriflex	1	1.98	1.30	100	1	Individual	0.00	N	1.00	1.00	0.00
0.00	170.0	1 5/8" Hybriflex	1	1.98	1.30	100	1	Individual	0.00	N	1.00	1.00	0.00
0.00	160.0	1/2" Coax	1	0.63	0.15	100	1	Individual	0.00	N	1.00	1.00	0.00
0.00	130.0	1 5/8" Coax	2	1.98	0.82	100	3	Individual	0.00	N	1.00	1.00	0.00
5.00	130.0	0.41" (10.3mm)	4	0.41	0.07	100	3	Individual	0.00	N	1.00	1.00	0.00
5.00	115.0	1/2" Coax	1	0.63	0.15	100	3	Individual	0.00	N	1.00	1.00	0.00
0.00	80.00	EW52	1	2.25	0.59	100	3	Individual	0.00	N	1.00	1.00	0.00

Force/Stress Summary

Section: 1 Base — Bot Elev (ft): 0.00 — Height (ft): 4.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	-75.18	1.2D + 1.0Di + 1.0Wi	2.31	100	100	100	49.3	50.0	149.83	0	0	0.00	0.00	50	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG PL - PL 2 x 0.5"	-2.63	1.2D + 1.0W Normal	3.651	50	50	50	136.6	36.0	15.33	0	0	0.00	0.00		Member Y

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG	0.00		0	0	0.00	0	0	0.00	0.00		0	
HORIZ SAE - 3X3X0.3125	19.32	1.2D + 1.0Di + 1.0Wi	36	58	57.67	0	0	0.00	0.00	0.00	33	Member
DIAG	0.00		0	0	0.00	0	0	0.00	0.00	0.00	0	

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	60.22	1.2D + 1.0Di + 1.0Wi	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Section: 2 16'-4 Bays — Bot Elev (ft): 4.00 — Height (ft): 16.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	-66.97	1.2D + 1.0Di + 1.0Wi	3.90	100	100	100	83.2	50.0	107.86	0	0	0.00	0.00	62	Member X
HORIZ SAE - 2X2X0.1875	-1.52	1.2D + 1.0W 90 deg	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	11	Member Z
DIAG SOL - 5/8" SOLID	-1.35	1.2D + 1.0W Normal	5.587	50	50	50	193.4	50.0	1.85	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG	0.00		0	0	0.00	0	0	0.00	0.00		0	
HORIZ SAE - 2X2X0.1875	4.79	1.2D + 1.0Di + 1.0Wi	36	58	23.17	0	0	0.00	0.00	0.00	20	Member
DIAG SOL - 5/8" SOLID	2.24	1.2D + 1.0W 330 deg	50	65	13.81	0	0	0.00	0.00	0.00	16	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	67.21	1.2D + 1.0Di + 1.0Wi	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 3 20'-5 Bays Bot Elev (ft): 20.00 Height (ft): 20.000

Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	SOL - 2 1/4" SOLID	-66.63	1.2D + 1.0Di + 1.0Wi	3.92	100	100	100	83.6	50.0	107.30	0	0	0.00	0.00	62	Member X
HORIZ	SAE - 2X2X0.1875	-1.40	1.2D + 1.0W 90 deg	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	10	Member Z
DIAG	SOL - 5/8" SOLID	-1.39	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG		0.00		0	0	0.00	0	0	0.00	0.00		0	
HORIZ	SAE - 2X2X0.1875	2.42	1.2D + 1.0W Normal	36	58	23.17	0	0	0.00	0.00	0.00	10	Member
DIAG	SOL - 5/8" SOLID	2.27	1.2D + 1.0W 90 deg	50	65	13.81	0	0	0.00	0.00	0.00	16	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	62.91	1.2D + 1.0Di + 1.0Wi	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Section: 4 20'-5 Bays Bot Elev (ft): 40.00 Height (ft): 20.000

Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	SOL - 2 1/4" SOLID	-70.90	1.2D + 1.0W 120 deg	3.92	100	100	100	83.6	50.0	107.30	0	0	0.00	0.00	66	Member X
HORIZ	SAE - 2X2X0.1875	-3.34	1.2D + 1.0W 90 deg	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	24	Member Z
DIAG	SOL - 5/8" SOLID	-1.55	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG		0.00		0	0	0.00	0	0	0.00	0.00		0	
HORIZ	SAE - 2X2X0.1875	2.47	1.2D + 1.0Di + 1.0Wi	36	58	23.17	0	0	0.00	0.00	0.00	10	Member
DIAG	SOL - 5/8" SOLID	4.96	1.2D + 1.0W 90 deg	50	65	13.81	0	0	0.00	0.00	0.00	35	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	70.40	1.2D + 1.0W 120 deg	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 5 20'-5 Bays Bot Elev (ft): 60.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	-69.98	1.2D + 1.0W Normal	3.92	100	100	100	83.6	50.0	107.30	0	0	0.00	0.00	65	Member X
HORIZ SAE - 2X2X0.1875	-4.29	1.2D + 1.0W 90 deg	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	31	Member Z
DIAG SOL - 5/8" SOLID	-1.15	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG	0.00		0	0	0.00	0	0	0.00	0.00		0	
HORIZ SAE - 2X2X0.1875	2.32	1.2D + 1.0Di + 1.0Wi	36	58	23.17	0	0	0.00	0.00	0.00	10	Member
DIAG SOL - 5/8" SOLID	6.39	1.2D + 1.0W 330 deg	50	65	13.81	0	0	0.00	0.00	0.00	46	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	56.70	1.2D + 1.0Di + 1.0Wi	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Section: 6 20'-5 Bays Bot Elev (ft): 80.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	-55.92	1.2D + 1.0Di + 1.0Wi	3.92	100	100	100	83.6	50.0	107.30	0	0	0.00	0.00	52	Member X
HORIZ SAE - 2X2X0.1875	-1.10	1.2D + 1.0W Normal	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	7	Member Z
DIAG SOL - 5/8" SOLID	-1.51	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG	0.00		0	0	0.00	0	0	0.00	0.00		0	
HORIZ SAE - 2X2X0.1875	2.29	1.2D + 1.0W Normal	36	58	23.17	0	0	0.00	0.00	0.00	9	Member
DIAG SOL - 5/8" SOLID	1.81	1.2D + 1.0W Normal	50	65	13.81	0	0	0.00	0.00	0.00	13	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	55.82	1.2D + 1.0Di + 1.0Wi	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 7 20'-5 Bays Bot Elev (ft): 100.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	-54.78	1.2D + 1.0W 120 deg	3.92	100	100	100	83.6	50.0	107.30	0	0	0.00	0.00	51	Member X
HORIZ SAE - 2X2X0.1875	-3.57	1.2D + 1.0W 90 deg	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	26	Member Z
DIAG SOL - 5/8" SOLID	-1.50	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG	0.00		0	0	0.00	0	0	0.00	0.00		0	
HORIZ SAE - 2X2X0.1875	2.36	1.2D + 1.0W Normal	36	58	23.17	0	0	0.00	0.00	0.00	10	Member
DIAG SOL - 5/8" SOLID	5.76	1.2D + 1.0W 90 deg	50	65	13.81	0	0	0.00	0.00	0.00	41	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	54.80	1.2D + 1.0W 120 deg	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Section: 8 20'-5 Bays Bot Elev (ft): 120.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	-62.98	1.2D + 1.0W 120 deg	3.92	100	100	100	83.6	50.0	107.30	0	0	0.00	0.00	58	Member X
HORIZ SAE - 2X2X0.1875	-5.65	1.2D + 1.0W 90 deg	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	41	Member Z
DIAG SOL - 5/8" SOLID	-0.78	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG	0.00		0	0	0.00	0	0	0.00	0.00		0	
HORIZ SAE - 2X2X0.1875	1.64	1.2D + 1.0W Normal	36	58	23.17	0	0	0.00	0.00	0.00	7	Member
DIAG SOL - 5/8" SOLID	8.13	1.2D + 1.0W 90 deg	50	65	13.81	0	0	0.00	0.00	0.00	58	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	43.79	1.2D + 1.0Di + 1.0Wi	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 9 20'-5 Bays Bot Elev (ft): 140.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	-60.33	1.2D + 1.0W 330 deg	3.92	100	100	100	83.6	50.0	107.30	0	0	0.00	0.00	56	Member X
HORIZ SAE - 2X2X0.1875	-3.63	1.2D + 1.0W 90 deg	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	26	Member Z
DIAG SOL - 5/8" SOLID	-1.38	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	5.38	1.2D + 1.0W Normal	50	65	178.92	0	0	0.00	0.00		3	Member
HORIZ SAE - 2X2X0.1875	2.17	1.2D + 1.0W Normal	36	58	23.17	0	0	0.00	0.00	0.00	9	Member
DIAG SOL - 5/8" SOLID	5.55	1.2D + 1.0W 90 deg	50	65	13.81	0	0	0.00	0.00	0.00	40	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	5.38	1.2D + 1.0W Normal	0.00	0	0	
Top Compression	60.27	1.2D + 1.0W 330 deg	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Section: 10 20'-5 Bays Bot Elev (ft): 160.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	-61.70	1.2D + 1.0W 330 deg	3.92	100	100	100	83.6	50.0	107.30	0	0	0.00	0.00	57	Member X
HORIZ SAE - 2X2X0.1875	-2.69	1.2D + 1.0W 90 deg	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	19	Member Z
DIAG SOL - 5/8" SOLID	-1.53	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	9.74	1.2D + 1.0W Normal	50	65	178.92	0	0	0.00	0.00		5	Member
HORIZ SAE - 2X2X0.1875	2.93	1.2D + 1.0W Normal	36	58	23.17	0	0	0.00	0.00	0.00	12	Member
DIAG SOL - 5/8" SOLID	4.30	1.2D + 1.0W 210 deg	50	65	13.81	0	0	0.00	0.00	0.00	31	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	49.28	1.2D + 1.0W 330 deg	0.00	0		
Bot Tension	5.38	1.2D + 1.0W Normal	0.00	0		
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 11 20'-5 Bays Bot Elev (ft): 180.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2" SOLID	-48.09	1.2D + 1.0W 330 deg	3.92	100	100	100	94.1	50.0	74.01	0	0	0.00	0.00	64	Member X
HORIZ SAE - 2X2X0.1875	-3.92	1.2D + 1.0W 90 deg	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	28	Member Z
DIAG SOL - 5/8" SOLID	-1.48	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG SOL - 2" SOLID	10.70	1.2D + 1.0W Normal	50	65	141.37	0	0	0.00	0.00		7	Member
HORIZ SAE - 2X2X0.1875	2.56	1.2D + 1.0W Normal	36	58	23.17	0	0	0.00	0.00	0.00	11	Member
DIAG SOL - 5/8" SOLID	8.15	1.2D + 1.0W 90 deg	50	65	13.81	0	0	0.00	0.00	0.00	59	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	10.60	1.2D + 1.0W 240 deg	0.00	0	0	
Top Compression	37.53	1.2D + 1.0W 330 deg	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Section: 12 20'-5 Bays Bot Elev (ft): 200.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2" SOLID	-36.32	1.2D + 1.0W 330 deg	3.92	100	100	100	94.1	50.0	74.01	0	0	0.00	0.00	49	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SOL - 5/8" SOLID	-0.44	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG SOL - 2" SOLID	11.36	1.2D + 1.0W 240 deg	50	65	141.37	0	0	0.00	0.00		8	Member
HORIZ SAE - 2X2X0.1875	1.92	1.2D + 1.0W Normal	36	58	23.17	0	0	0.00	0.00	0.00	8	Member
DIAG SOL - 5/8" SOLID	0.56	1.2D + 1.0W Normal	50	65	13.81	0	0	0.00	0.00	0.00	4	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	5.48	1.2D + 1.0W 240 deg	0.00	0	0	
Top Compression	33.23	1.2D + 1.0W 330 deg	0.00	0		
Bot Tension	10.60	1.2D + 1.0W 240 deg	0.00	0		
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 13 20'-5 Bays Bot Elev (ft): 220.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2" SOLID	-31.92	1.2D + 1.0W 330 deg	3.92	100	100	100	94.1	50.0	74.01	0	0	0.00	0.00	43	Member X
HORIZ SAE - 2X2X0.1875	-3.20	1.2D + 1.0W 210 deg	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	23	Member Z
DIAG SOL - 5/8" SOLID	-1.18	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG SOL - 2" SOLID	4.95	1.2D + 1.0W Normal	50	65	141.37	0	0	0.00	0.00		3	Member
HORIZ SAE - 2X2X0.1875	1.59	1.2D + 1.0W Normal	36	58	23.17	0	0	0.00	0.00	0.00	6	Member
DIAG SOL - 5/8" SOLID	4.72	1.2D + 1.0W 330 deg	50	65	13.81	0	0	0.00	0.00	0.00	34	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	23.25	1.2D + 1.0W 210 deg	0.00	0		
Bot Tension	5.48	1.2D + 1.0W 240 deg	0.00	0		
Bot Compression	0.00		0.00	0		

Section: 14 20'-5 Bays Bot Elev (ft): 240.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2" SOLID	-24.80	1.2D + 1.0W Normal	3.92	100	100	100	94.1	50.0	74.01	0	0	0.00	0.00	33	Member X
HORIZ SAE - 2X2X0.1875	-1.94	1.2D + 1.0W Normal	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	14	Member Z
DIAG SOL - 5/8" SOLID	-0.49	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG SOL - 2" SOLID	11.04	1.2D + 1.0W 180 deg	50	65	141.37	0	0	0.00	0.00		7	Member
HORIZ SAE - 2X2X0.1875	0.93	1.2D + 1.0W 120 deg	36	58	23.17	0	0	0.00	0.00	0.00	4	Member
DIAG SOL - 5/8" SOLID	5.14	1.2D + 1.0W 210 deg	50	65	13.81	0	0	0.00	0.00	0.00	37	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	12.08	1.2D + 1.0W 210 deg	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 15 20'-5 Bays Bot Elev (ft): 260.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2" SOLID	-11.36	1.2D + 1.0W 210 deg	3.92	100	100	100	94.1	50.0	74.01	0	0	0.00	0.00	15	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SOL - 5/8" SOLID	-1.04	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG	0.00		0	0	0.00	0	0	0.00	0.00		0	
HORIZ SAE - 2X2X0.1875	0.64	1.2D + 1.0W Normal	36	58	23.17	0	0	0.00	0.00	0.00	2	Member
DIAG SOL - 5/8" SOLID	0.73	1.2D + 1.0W 60 deg	50	65	13.81	0	0	0.00	0.00	0.00	5	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	10.27	1.2D + 1.0W 120 deg	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Section: 16 20'-5 Bays Bot Elev (ft): 280.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2" SOLID	-8.98	1.2D + 1.0W 90 deg	3.92	100	100	100	94.1	50.0	74.01	0	0	0.00	0.00	12	Member X
HORIZ SAE - 2X2X0.1875	-0.61	1.2D + 1.0W 180 deg	4.000	100	100	100	121.8	36.0	13.73	0	0	0.00	0.00	4	Member Z
DIAG SOL - 5/8" SOLID	-0.32	1.2D + 1.0W Normal	5.601	50	50	50	193.9	50.0	1.84	0	0	0.00	0.00		Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG SOL - 2" SOLID	4.50	1.2D + 1.0W 180 deg	50	65	141.37	0	0	0.00	0.00		3	Member
HORIZ SAE - 2X2X0.1875	0.64	1.2D + 1.0W Normal	36	58	23.17	0	0	0.00	0.00	0.00	2	Member
DIAG SOL - 5/8" SOLID	1.30	1.2D + 1.0W Normal	50	65	13.81	0	0	0.00	0.00	0.00	9	Member

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	0.68	1.2D + 1.0Di + 1.0Wi	0.00	0		
Bot Tension	0.00		0.00	0		
Bot Compression	0.00		0.00	0		

Detailed Reactions

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
1.2D + 1.0W Normal	0.00	00.00		1	-0.01	155.77	-1.92	
	190.00	07.00	0	A1	0.00	-3.49	2.72	
	190.00	03.00	240	A1a	-56.29	-53.60	-34.62	
	201.00	-08.00	120	A1b	56.28	-54.11	-34.65	
1.2D + 1.0W 60 deg	0.00	00.00		1	-2.17	132.04	-1.30	
	190.00	07.00	0	A1	-1.53	-12.96	14.09	
	190.00	03.00	240	A1a	-65.80	-62.06	-37.98	
	201.00	-08.00	120	A1b	11.37	-13.32	-8.40	
1.2D + 1.0W 90 deg	0.00	00.00		1	-2.10	146.09	-0.39	
	190.00	07.00	0	A1	-2.04	-33.45	41.32	
	190.00	03.00	240	A1a	-67.35	-62.62	-37.74	
	201.00	-08.00	120	A1b	4.08	-5.96	-3.22	
1.2D + 1.0W 120 deg	0.00	00.00		1	-1.70	154.41	1.00	
	190.00	07.00	0	A1	-1.82	-52.41	66.20	
	190.00	03.00	240	A1a	-58.27	-53.76	-31.54	
	201.00	-08.00	120	A1b	2.53	-3.80	-1.46	
1.2D + 1.0W 180 deg	0.00	00.00		1	0.03	131.20	2.56	
	190.00	07.00	0	A1	-0.01	-60.65	76.06	
	190.00	03.00	240	A1a	-13.08	-13.41	-5.78	
	201.00	-08.00	120	A1b	13.10	-13.46	-5.73	
1.2D + 1.0W 210 deg	0.00	00.00		1	0.71	145.13	2.05	
	190.00	07.00	0	A1	0.98	-60.87	76.91	
	190.00	03.00	240	A1a	-4.59	-5.74	-1.82	
	201.00	-08.00	120	A1b	36.63	-34.41	-18.72	
1.2D + 1.0W 240 deg	0.00	00.00		1	1.67	154.71	1.00	
	190.00	07.00	0	A1	1.83	-52.32	66.10	
	190.00	03.00	240	A1a	-2.40	-3.67	-1.38	
	201.00	-08.00	120	A1b	58.21	-54.18	-31.45	
1.2D + 1.0W 300 deg	0.00	00.00		1	2.17	131.12	-1.27	
	190.00	07.00	0	A1	1.53	-12.47	13.40	
	190.00	03.00	240	A1a	-10.81	-12.77	-8.01	
	201.00	-08.00	120	A1b	65.20	-62.08	-37.64	
1.2D + 1.0W 330 deg	0.00	00.00		1	1.38	146.38	-1.59	
	190.00	07.00	0	A1	0.71	-5.41	4.71	
	190.00	03.00	240	A1a	-34.38	-33.94	-22.22	
	201.00	-08.00	120	A1b	65.97	-62.83	-39.25	
1.2D + 1.0Di + 1.0Wi Normal	0.00	00.00		1	0.03	190.60	-0.68	
	190.00	07.00	0	A1	0.00	-11.64	17.22	
	190.00	03.00	240	A1a	-34.18	-29.96	-21.07	
	201.00	-08.00	120	A1b	34.13	-30.14	-21.10	
1.2D + 1.0Di + 1.0Wi 60 deg	0.00	00.00		1	-0.54	191.44	-0.38	
	190.00	07.00	0	A1	-1.15	-18.06	24.96	
	190.00	03.00	240	A1a	-41.39	-36.47	-23.89	
	201.00	-08.00	120	A1b	20.96	-18.68	-13.48	
1.2D + 1.0Di + 1.0Wi 90 deg	0.00	00.00		1	-0.67	190.93	-0.02	
	190.00	07.00	0	A1	-1.43	-23.66	32.69	
	190.00	03.00	240	A1a	-40.02	-34.67	-22.45	
	201.00	-08.00	120	A1b	16.58	-14.11	-10.24	

1.2D + 1.0Di + 1.0Wi 120 deg	0.00	00.00		1	-0.58	190.54	0.32
	190.00	07.00	0	A1	-1.16	-29.32	40.51
	190.00	03.00	240	A1a	-35.66	-30.14	-19.24
	201.00	-08.00	120	A1b	15.27	-12.31	-8.81
1.2D + 1.0Di + 1.0Wi 180 deg	0.00	00.00		1	0.03	191.16	0.67
	190.00	07.00	0	A1	0.00	-35.54	47.81
	190.00	03.00	240	A1a	-22.24	-18.65	-11.51
	201.00	-08.00	120	A1b	22.25	-18.77	-11.47
1.2D + 1.0Di + 1.0Wi 210 deg	0.00	00.00		1	0.37	190.67	0.60
	190.00	07.00	0	A1	0.56	-33.73	45.71
	190.00	03.00	240	A1a	-17.03	-13.99	-9.19
	201.00	-08.00	120	A1b	28.89	-24.43	-14.97
1.2D + 1.0Di + 1.0Wi 240 deg	0.00	00.00		1	0.59	190.22	0.33
	190.00	07.00	0	A1	1.16	-29.18	40.15
	190.00	03.00	240	A1a	-14.93	-12.04	-8.62
	201.00	-08.00	120	A1b	35.37	-30.16	-19.03
1.2D + 1.0Di + 1.0Wi 300 deg	0.00	00.00		1	0.59	190.70	-0.34
	190.00	07.00	0	A1	1.14	-17.79	24.51
	190.00	03.00	240	A1a	-20.64	-18.30	-13.24
	201.00	-08.00	120	A1b	40.96	-36.31	-23.65
1.2D + 1.0Di + 1.0Wi 330 deg	0.00	00.00		1	0.36	190.52	-0.59
	190.00	07.00	0	A1	0.55	-13.33	19.02
	190.00	03.00	240	A1a	-27.17	-24.03	-17.33
	201.00	-08.00	120	A1b	39.01	-34.57	-23.20
1.2D + 1.0Ev + 1.0Eh Normal M1	0.00	00.00		1	0.01	88.78	0.02
	190.00	07.00	0	A1	0.00	-13.22	17.80
	190.00	03.00	240	A1a	-16.61	-14.95	-9.59
	201.00	-08.00	120	A1b	16.61	-15.12	-9.59
1.2D + 1.0Ev + 1.0Eh 60 deg M1	0.00	00.00		1	0.03	88.84	0.00
	190.00	07.00	0	A1	0.00	-13.67	18.28
	190.00	03.00	240	A1a	-17.07	-15.46	-9.85
	201.00	-08.00	120	A1b	15.82	-14.22	-9.14
1.2D + 1.0Ev + 1.0Eh 90 deg M1	0.00	00.00		1	0.04	88.87	-0.01
	190.00	07.00	0	A1	0.00	-14.14	18.77
	190.00	03.00	240	A1a	-16.96	-15.34	-9.79
	201.00	-08.00	120	A1b	15.53	-13.89	-8.97
1.2D + 1.0Ev + 1.0Eh 120 deg M1	0.00	00.00		1	0.03	88.88	-0.02
	190.00	07.00	0	A1	0.00	-14.61	19.25
	190.00	03.00	240	A1a	-16.67	-15.00	-9.62
	201.00	-08.00	120	A1b	15.43	-13.77	-8.91
1.2D + 1.0Ev + 1.0Eh 180 deg M1	0.00	00.00		1	0.01	88.84	-0.03
	190.00	07.00	0	A1	0.00	-15.04	19.70
	190.00	03.00	240	A1a	-15.84	-14.06	-9.14
	201.00	-08.00	120	A1b	15.85	-14.24	-9.15
1.2D + 1.0Ev + 1.0Eh 210 deg M1	0.00	00.00		1	0.00	88.81	-0.03
	190.00	07.00	0	A1	0.00	-14.91	19.56
	190.00	03.00	240	A1a	-15.53	-13.72	-8.97
	201.00	-08.00	120	A1b	16.23	-14.68	-9.37
1.2D + 1.0Ev + 1.0Eh 240 deg M1	0.00	00.00		1	-0.01	88.78	-0.02
	190.00	07.00	0	A1	0.00	-14.55	19.19
	190.00	03.00	240	A1a	-15.44	-13.63	-8.92
	201.00	-08.00	120	A1b	16.61	-15.11	-9.59

1.2D + 1.0Ev + 1.0Eh 300 deg M1	0.00	00.00		1	-0.01	88.75	0.00
	190.00	07.00	0	A1	0.00	-13.68	18.28
	190.00	03.00	240	A1a	-15.82	-14.05	-9.13
	201.00	-08.00	120	A1b	16.98	-15.53	-9.81
1.2D + 1.0Ev + 1.0Eh 330 deg M1	0.00	00.00		1	0.00	88.75	0.01
	190.00	07.00	0	A1	0.00	-13.34	17.92
	190.00	03.00	240	A1a	-16.21	-14.49	-9.36
	201.00	-08.00	120	A1b	16.90	-15.44	-9.76
0.9D - 1.0Ev + 1.0Eh Normal M1	0.00	00.00		1	0.01	76.72	0.02
	190.00	07.00	0	A1	0.00	-13.43	18.02
	190.00	03.00	240	A1a	-16.80	-15.17	-9.70
	201.00	-08.00	120	A1b	16.80	-15.33	-9.70
0.9D - 1.0Ev + 1.0Eh 60 deg M1	0.00	00.00		1	0.03	76.78	0.00
	190.00	07.00	0	A1	0.00	-13.90	18.51
	190.00	03.00	240	A1a	-17.23	-15.65	-9.95
	201.00	-08.00	120	A1b	16.02	-14.45	-9.25
0.9D - 1.0Ev + 1.0Eh 90 deg M1	0.00	00.00		1	0.04	76.81	-0.01
	190.00	07.00	0	A1	0.00	-14.36	18.98
	190.00	03.00	240	A1a	-17.15	-15.56	-9.90
	201.00	-08.00	120	A1b	15.72	-14.10	-9.08
0.9D - 1.0Ev + 1.0Eh 120 deg M1	0.00	00.00		1	0.03	76.82	-0.02
	190.00	07.00	0	A1	0.00	-14.83	19.47
	190.00	03.00	240	A1a	-16.86	-15.22	-9.73
	201.00	-08.00	120	A1b	15.62	-13.99	-9.02
0.9D - 1.0Ev + 1.0Eh 180 deg M1	0.00	00.00		1	0.01	76.78	-0.03
	190.00	07.00	0	A1	0.00	-15.26	19.92
	190.00	03.00	240	A1a	-16.03	-14.28	-9.25
	201.00	-08.00	120	A1b	16.03	-14.46	-9.26
0.9D - 1.0Ev + 1.0Eh 210 deg M1	0.00	00.00		1	0.00	76.75	-0.03
	190.00	07.00	0	A1	0.00	-15.13	19.78
	190.00	03.00	240	A1a	-15.72	-13.94	-9.08
	201.00	-08.00	120	A1b	16.42	-14.90	-9.48
0.9D - 1.0Ev + 1.0Eh 240 deg M1	0.00	00.00		1	-0.01	76.72	-0.02
	190.00	07.00	0	A1	0.00	-14.77	19.41
	190.00	03.00	240	A1a	-15.63	-13.84	-9.02
	201.00	-08.00	120	A1b	16.80	-15.32	-9.70
0.9D - 1.0Ev + 1.0Eh 300 deg M1	0.00	00.00		1	-0.01	76.69	0.00
	190.00	07.00	0	A1	0.00	-13.89	18.49
	190.00	03.00	240	A1a	-16.00	-14.26	-9.24
	201.00	-08.00	120	A1b	17.17	-15.75	-9.91
0.9D - 1.0Ev + 1.0Eh 330 deg M1	0.00	00.00		1	0.00	76.70	0.01
	190.00	07.00	0	A1	0.00	-13.55	18.14
	190.00	03.00	240	A1a	-16.39	-14.70	-9.47
	201.00	-08.00	120	A1b	17.09	-15.66	-9.87
1.0D + 1.0W Service Normal	0.00	00.00		1	0.01	83.58	-0.72
	190.00	07.00	0	A1	0.00	-7.33	9.82
	190.00	03.00	240	A1a	-21.12	-19.24	-12.62
	201.00	-08.00	120	A1b	21.10	-19.43	-12.62
1.0D + 1.0W Service 60 deg	0.00	00.00		1	-0.60	84.00	-0.36
	190.00	07.00	0	A1	-0.36	-11.44	14.94
	190.00	03.00	240	A1a	-25.56	-23.29	-14.76
	201.00	-08.00	120	A1b	12.74	-11.88	-7.79
1.0D + 1.0W Service 90 deg	0.00	00.00		1	-0.70	83.84	-0.01

	190.00	07.00	0	A1	-0.45	-15.15	19.89
	190.00	03.00	240	A1a	-24.64	-22.26	-14.02
	201.00	-08.00	120	A1b	9.80	-8.96	-5.86
1.0D + 1.0W Service 120 deg	0.00	00.00		1	-0.61	83.74	0.35
	190.00	07.00	0	A1	-0.36	-18.92	24.92
	190.00	03.00	240	A1a	-21.77	-19.43	-12.14
	201.00	-08.00	120	A1b	8.79	-7.84	-5.07
1.0D + 1.0W Service 180 deg	0.00	00.00		1	0.01	83.92	0.70
	190.00	07.00	0	A1	0.00	-22.76	29.60
	190.00	03.00	240	A1a	-13.18	-11.83	-7.20
	201.00	-08.00	120	A1b	13.19	-11.95	-7.18
1.0D + 1.0W Service 210 deg	0.00	00.00		1	0.36	83.66	0.61
	190.00	07.00	0	A1	0.18	-21.66	28.25
	190.00	03.00	240	A1a	-9.89	-8.83	-5.51
	201.00	-08.00	120	A1b	17.36	-15.69	-9.49
1.0D + 1.0W Service 240 deg	0.00	00.00		1	0.63	83.46	0.35
	190.00	07.00	0	A1	0.36	-18.79	24.67
	190.00	03.00	240	A1a	-8.55	-7.60	-4.94
	201.00	-08.00	120	A1b	21.54	-19.49	-12.00
1.0D + 1.0W Service 300 deg	0.00	00.00		1	0.62	83.54	-0.36
	190.00	07.00	0	A1	0.36	-11.28	14.66
	190.00	03.00	240	A1a	-12.51	-11.59	-7.64
	201.00	-08.00	120	A1b	25.26	-23.28	-14.59
1.0D + 1.0W Service 330 deg	0.00	00.00		1	0.37	83.48	-0.62
	190.00	07.00	0	A1	0.17	-8.40	11.07
	190.00	03.00	240	A1a	-16.69	-15.34	-10.15
	201.00	-08.00	120	A1b	24.13	-22.24	-14.15

Guy Anchor Design Loads

Radius (ft)	Drop (ft)	Azimuth (°)	Uplift (kip)	Shear (kip)
190.00	7.00	0	60.87	76.92
190.00	3.00	240	62.62	77.21
201.00	-8.00	120	62.83	76.77

Maximum Cable Forces Summary

Load Case	Elevation (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use %
1.2D + 1.0W 330 deg	59.79	3/4 EHS	A1b	22a	34.98	17.70	51
1.2D + 1.0W 90 deg	124.12	3/4 EHS	A1a	46b	34.98	25.01	72
1.2D + 1.0W 90 deg	184.11	3/4 EHS	A1a	67b	34.98	26.45	76
1.2D + 1.0W 60 deg	244.11	3/4 EHS	A1a	88b	34.98	20.98	60
1.2D + 1.0W 180 deg	291.95	5/8 EHS	A1	104	25.44	13.36	53

Maximum Torque Arm Stress Summary

Load Case	Elevation (ft)	Member	Type	Compression %	Tension %
1.2D + 1.0W Normal	59.75	PL 4.5 x 0.375"	Horiz		18
1.2D + 1.0W Normal	124.00	PL 4.5 x 0.375"	Horiz		21
1.2D + 1.0W Normal	184.00	PL 4.5 x 0.375"	Horiz		20
1.2D + 1.0W Normal	244.00	PL 4.5 x 0.375"	Horiz		12
1.2D + 1.0W Normal	292.00	PL 4.5 x 0.375"	Horiz		7

Deflections and Rotations

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
123 mph Normal with No Ice	80.00	0.721	-0.0362	0.6812	0.6821
123 mph Normal with No Ice	80.20	0.723	-0.0363	0.6689	0.6699
123 mph Normal with No Ice	104.12	0.937	-0.0381	0.4151	0.4168
123 mph Normal with No Ice	115.88	1.015	-0.0381	0.4003	0.4021
123 mph Normal with No Ice	124.12	1.065	-0.0378	0.5172	0.5186
123 mph Normal with No Ice	128.04	1.108	-0.0385	0.6623	0.6640
123 mph Normal with No Ice	160.00	1.429	-0.0449	0.4899	0.4920
123 mph Normal with No Ice	168.04	1.480	-0.0453	0.3008	0.3050
123 mph Normal with No Ice	180.00	1.521	-0.0447	0.0446	0.0632
123 mph Normal with No Ice	195.88	1.580	-0.0461	0.1799	0.1858
123 mph Normal with No Ice	211.96	1.600	-0.0470	0.0139	0.0511
123 mph Normal with No Ice	215.88	1.599	-0.0472	0.0266	0.0549
123 mph Normal with No Ice	231.96	1.566	-0.0468	0.2425	0.2478
123 mph Normal with No Ice	268.04	1.493	-0.0472	0.0346	0.0589
123 mph Normal with No Ice	300.00	1.450	-0.0479	0.5128	0.5153
123 mph 60 degree with No Ice	80.00	0.417	-0.0287	0.4003	0.4011
123 mph 60 degree with No Ice	80.20	0.418	-0.0286	0.3888	0.3897
123 mph 60 degree with No Ice	104.12	0.530	-0.0317	0.1943	0.1963
123 mph 60 degree with No Ice	115.88	0.565	-0.0344	0.1971	0.1991
123 mph 60 degree with No Ice	124.12	0.588	-0.0295	0.3220	0.3233
123 mph 60 degree with No Ice	128.04	0.616	-0.0357	0.4472	0.4481
123 mph 60 degree with No Ice	160.00	0.843	-0.0328	0.3462	0.3474
123 mph 60 degree with No Ice	168.04	0.882	-0.0334	0.2046	0.2070
123 mph 60 degree with No Ice	180.00	0.904	-0.0360	0.0919	0.0980
123 mph 60 degree with No Ice	195.88	0.952	-0.0346	0.1688	0.1723
123 mph 60 degree with No Ice	211.96	0.977	-0.0322	0.0438	0.0552
123 mph 60 degree with No Ice	215.88	0.980	-0.0327	0.0380	0.0513
123 mph 60 degree with No Ice	231.96	0.969	-0.0407	0.0768	0.0850
123 mph 60 degree with No Ice	268.04	0.970	-0.0397	0.0933	0.1014
123 mph 60 degree with No Ice	300.00	0.997	-0.0395	0.5000	0.5015
123 mph 90 degree with No Ice	80.00	0.598	0.2888	0.5841	0.6516
123 mph 90 degree with No Ice	80.20	0.600	0.2885	0.5722	0.6408
123 mph 90 degree with No Ice	104.12	0.777	0.2255	0.3552	0.4197
123 mph 90 degree with No Ice	115.88	0.839	0.1577	0.3443	0.3770
123 mph 90 degree with No Ice	124.12	0.879	0.1116	0.4555	0.4674
123 mph 90 degree with No Ice	128.04	0.918	0.1272	0.6068	0.6198
123 mph 90 degree with No Ice	160.00	1.211	0.2341	0.4362	0.4950
123 mph 90 degree with No Ice	168.04	1.258	0.1843	0.2828	0.3349
123 mph 90 degree with No Ice	180.00	1.296	0.1820	0.1040	0.2053
123 mph 90 degree with No Ice	195.88	1.352	0.2091	0.1788	0.2751
123 mph 90 degree with No Ice	211.96	1.372	0.2079	0.0223	0.2091
123 mph 90 degree with No Ice	215.88	1.372	0.2069	0.0246	0.2081
123 mph 90 degree with No Ice	231.96	1.352	0.3127	0.1097	0.3268
123 mph 90 degree with No Ice	268.04	1.295	0.3228	0.1544	0.3578
123 mph 90 degree with No Ice	300.00	1.257	0.3218	0.5374	0.6257
123 mph 120 degree with No Ice	80.00	0.678	-0.0002	0.6560	0.6560
123 mph 120 degree with No Ice	80.20	0.680	-0.0004	0.6447	0.6447
123 mph 120 degree with No Ice	104.12	0.882	0.0007	0.3960	0.3960
123 mph 120 degree with No Ice	115.88	0.956	0.0019	0.3863	0.3863
123 mph 120 degree with No Ice	124.12	1.004	0.0016	0.5079	0.5079
123 mph 120 degree with No Ice	128.04	1.047	0.0029	0.6548	0.6550
123 mph 120 degree with No Ice	160.00	1.367	-0.0051	0.4970	0.4971
123 mph 120 degree with No Ice	168.04	1.419	-0.0029	0.3099	0.3102
123 mph 120 degree with No Ice	180.00	1.463	-0.0016	0.0303	0.0313
123 mph 120 degree with No Ice	195.88	1.527	-0.0038	0.1995	0.1997

123 mph 120 degree with No Ice	211.96	1.554	-0.0074	0.0228	0.0256
123 mph 120 degree with No Ice	215.88	1.554	-0.0076	0.0115	0.0150
123 mph 120 degree with No Ice	231.96	1.528	-0.0044	0.1348	0.1352
123 mph 120 degree with No Ice	268.04	1.469	-0.0104	0.1395	0.1399
123 mph 120 degree with No Ice	300.00	1.427	-0.0124	0.5475	0.5476
123 mph 180 degree with No Ice	80.00	0.407	0.0252	0.3896	0.3903
123 mph 180 degree with No Ice	80.20	0.408	0.0251	0.3783	0.3790
123 mph 180 degree with No Ice	104.12	0.516	0.0279	0.1834	0.1850
123 mph 180 degree with No Ice	115.88	0.549	0.0303	0.1861	0.1876
123 mph 180 degree with No Ice	124.12	0.570	0.0252	0.3110	0.3119
123 mph 180 degree with No Ice	128.04	0.598	0.0311	0.4357	0.4364
123 mph 180 degree with No Ice	160.00	0.818	0.0262	0.3345	0.3352
123 mph 180 degree with No Ice	168.04	0.856	0.0264	0.1947	0.1962
123 mph 180 degree with No Ice	180.00	0.876	0.0279	0.1006	0.1036
123 mph 180 degree with No Ice	195.88	0.922	0.0310	0.1747	0.1768
123 mph 180 degree with No Ice	211.96	0.947	0.0535	0.0410	0.0665
123 mph 180 degree with No Ice	215.88	0.949	0.0531	0.0364	0.0644
123 mph 180 degree with No Ice	231.96	0.938	0.0563	0.1431	0.1532
123 mph 180 degree with No Ice	268.04	0.945	0.0518	0.1724	0.1799
123 mph 180 degree with No Ice	300.00	0.989	0.0531	0.6649	0.6668
123 mph 210 degree with No Ice	80.00	0.600	0.3420	0.5780	0.6712
123 mph 210 degree with No Ice	80.20	0.602	0.3423	0.5674	0.6622
123 mph 210 degree with No Ice	104.12	0.779	0.3060	0.3496	0.4631
123 mph 210 degree with No Ice	115.88	0.839	0.2369	0.3361	0.4089
123 mph 210 degree with No Ice	124.12	0.878	0.1895	0.4437	0.4798
123 mph 210 degree with No Ice	128.04	0.916	0.2062	0.5943	0.6288
123 mph 210 degree with No Ice	160.00	1.201	0.3233	0.4175	0.5280
123 mph 210 degree with No Ice	168.04	1.244	0.2761	0.2644	0.3802
123 mph 210 degree with No Ice	180.00	1.279	0.2739	0.1024	0.2877
123 mph 210 degree with No Ice	195.88	1.329	0.3063	0.1634	0.3471
123 mph 210 degree with No Ice	211.96	1.345	0.3076	0.0390	0.3100
123 mph 210 degree with No Ice	215.88	1.343	0.3071	0.0488	0.3108
123 mph 210 degree with No Ice	231.96	1.318	0.4134	0.1848	0.4528
123 mph 210 degree with No Ice	268.04	1.252	0.3966	0.2020	0.4447
123 mph 210 degree with No Ice	300.00	1.217	0.3980	0.6707	0.7784
123 mph 240 degree with No Ice	80.00	0.711	0.0227	0.6748	0.6750
123 mph 240 degree with No Ice	80.20	0.713	0.0227	0.6630	0.6632
123 mph 240 degree with No Ice	104.12	0.924	0.0562	0.4092	0.4124
123 mph 240 degree with No Ice	115.88	1.001	0.0577	0.3955	0.3988
123 mph 240 degree with No Ice	124.12	1.050	0.0572	0.5135	0.5159
123 mph 240 degree with No Ice	128.04	1.093	0.0595	0.6590	0.6617
123 mph 240 degree with No Ice	160.00	1.412	0.0610	0.4892	0.4927
123 mph 240 degree with No Ice	168.04	1.463	0.0634	0.3002	0.3069
123 mph 240 degree with No Ice	180.00	1.505	0.0643	0.0436	0.0723
123 mph 240 degree with No Ice	195.88	1.564	0.0655	0.1801	0.1898
123 mph 240 degree with No Ice	211.96	1.584	0.0630	0.0124	0.0642
123 mph 240 degree with No Ice	215.88	1.583	0.0631	0.0270	0.0678
123 mph 240 degree with No Ice	231.96	1.549	0.0671	0.1570	0.1694
123 mph 240 degree with No Ice	268.04	1.470	0.0618	0.1767	0.1869
123 mph 240 degree with No Ice	300.00	1.410	0.0636	0.5792	0.5824
123 mph 300 degree with No Ice	80.00	0.447	0.0002	0.4290	0.4290
123 mph 300 degree with No Ice	80.20	0.449	0.0002	0.4210	0.4210
123 mph 300 degree with No Ice	104.12	0.570	0.0020	0.2074	0.2074
123 mph 300 degree with No Ice	115.88	0.608	0.0044	0.2067	0.2067
123 mph 300 degree with No Ice	124.12	0.631	-0.0005	0.3287	0.3287
123 mph 300 degree with No Ice	128.04	0.660	0.0054	0.4527	0.4527
123 mph 300 degree with No Ice	160.00	0.887	0.0008	0.3413	0.3413
123 mph 300 degree with No Ice	168.04	0.925	0.0010	0.1973	0.1973
123 mph 300 degree with No Ice	180.00	0.945	0.0028	0.1017	0.1017
123 mph 300 degree with No Ice	195.88	0.989	0.0008	0.1511	0.1511
123 mph 300 degree with No Ice	211.96	1.008	-0.0022	0.0209	0.0209
123 mph 300 degree with No Ice	215.88	1.009	-0.0018	0.0149	0.0150

123 mph 300 degree with No Ice	231.96	0.991	0.0054	0.0912	0.0912
123 mph 300 degree with No Ice	268.04	0.974	0.0038	0.1001	0.1002
123 mph 300 degree with No Ice	300.00	0.985	0.0040	0.5148	0.5148
123 mph 330 degree with No Ice	80.00	0.643	0.2878	0.6116	0.6760
123 mph 330 degree with No Ice	80.20	0.645	0.2875	0.5995	0.6649
123 mph 330 degree with No Ice	104.12	0.831	0.2226	0.3721	0.4323
123 mph 330 degree with No Ice	115.88	0.896	0.1552	0.3561	0.3869
123 mph 330 degree with No Ice	124.12	0.937	0.1093	0.4625	0.4737
123 mph 330 degree with No Ice	128.04	0.976	0.1250	0.6114	0.6238
123 mph 330 degree with No Ice	160.00	1.269	0.2389	0.4284	0.4905
123 mph 330 degree with No Ice	168.04	1.315	0.2169	0.2716	0.3441
123 mph 330 degree with No Ice	180.00	1.350	0.2150	0.1111	0.2375
123 mph 330 degree with No Ice	195.88	1.397	0.2148	0.1456	0.2595
123 mph 330 degree with No Ice	211.96	1.411	0.2116	0.0243	0.2130
123 mph 330 degree with No Ice	215.88	1.408	0.2109	0.0403	0.2147
123 mph 330 degree with No Ice	231.96	1.380	0.3188	0.2332	0.3890
123 mph 330 degree with No Ice	268.04	1.306	0.3039	0.0181	0.3040
123 mph 330 degree with No Ice	300.00	1.265	0.3047	0.4877	0.5725
50 mph Normal with 1.00 in Radial Ice	80.00	0.197	-0.0308	0.2052	0.2075
50 mph Normal with 1.00 in Radial Ice	80.20	0.198	-0.0308	0.2011	0.2034
50 mph Normal with 1.00 in Radial Ice	104.12	0.246	-0.0320	0.0651	0.0736
50 mph Normal with 1.00 in Radial Ice	115.88	0.252	-0.0318	0.0307	0.0445
50 mph Normal with 1.00 in Radial Ice	124.12	0.253	-0.0315	0.0771	0.0837
50 mph Normal with 1.00 in Radial Ice	128.04	0.261	-0.0322	0.1406	0.1453
50 mph Normal with 1.00 in Radial Ice	160.00	0.302	-0.0354	0.0212	0.0412
50 mph Normal with 1.00 in Radial Ice	168.04	0.301	-0.0357	0.0269	0.0451
50 mph Normal with 1.00 in Radial Ice	180.00	0.291	-0.0361	0.1545	0.1587
50 mph Normal with 1.00 in Radial Ice	195.88	0.268	-0.0366	0.0927	0.0996
50 mph Normal with 1.00 in Radial Ice	211.96	0.236	-0.0374	0.1488	0.1535
50 mph Normal with 1.00 in Radial Ice	215.88	0.225	-0.0375	0.1588	0.1630
50 mph Normal with 1.00 in Radial Ice	231.96	0.174	-0.0382	0.2297	0.2328
50 mph Normal with 1.00 in Radial Ice	268.04	0.053	-0.0394	0.1887	0.1927
50 mph Normal with 1.00 in Radial Ice	300.00	0.103	-0.0401	0.0417	0.0586
50 mph 60 deg with 1.00 in Radial Ice	80.00	0.166	-0.0226	0.1734	0.1743
50 mph 60 deg with 1.00 in Radial Ice	80.20	0.166	-0.0226	0.1708	0.1718
50 mph 60 deg with 1.00 in Radial Ice	104.12	0.206	-0.0250	0.0402	0.0466
50 mph 60 deg with 1.00 in Radial Ice	115.88	0.212	-0.0264	0.0364	0.0428
50 mph 60 deg with 1.00 in Radial Ice	124.12	0.215	-0.0239	0.0922	0.0949
50 mph 60 deg with 1.00 in Radial Ice	128.04	0.224	-0.0271	0.1546	0.1563
50 mph 60 deg with 1.00 in Radial Ice	160.00	0.290	-0.0261	0.0812	0.0854
50 mph 60 deg with 1.00 in Radial Ice	168.04	0.298	-0.0263	0.0536	0.0600
50 mph 60 deg with 1.00 in Radial Ice	180.00	0.306	-0.0284	0.0459	0.0540
50 mph 60 deg with 1.00 in Radial Ice	195.88	0.314	-0.0282	0.0389	0.0483
50 mph 60 deg with 1.00 in Radial Ice	211.96	0.322	-0.0290	0.0150	0.0334
50 mph 60 deg with 1.00 in Radial Ice	215.88	0.323	-0.0292	0.0126	0.0322
50 mph 60 deg with 1.00 in Radial Ice	231.96	0.320	-0.0303	0.0288	0.0420
50 mph 60 deg with 1.00 in Radial Ice	268.04	0.319	-0.0319	0.0222	0.0389
50 mph 60 deg with 1.00 in Radial Ice	300.00	0.320	-0.0331	0.1909	0.1936
50 mph 90 deg with 1.00 in Radial Ice	80.00	0.194	0.2747	0.1940	0.3363
50 mph 90 deg with 1.00 in Radial Ice	80.20	0.195	0.2754	0.1898	0.3345
50 mph 90 deg with 1.00 in Radial Ice	104.12	0.239	0.2790	0.0545	0.2842
50 mph 90 deg with 1.00 in Radial Ice	115.88	0.245	0.2557	0.0410	0.2590
50 mph 90 deg with 1.00 in Radial Ice	124.12	0.244	0.2051	0.0865	0.2201
50 mph 90 deg with 1.00 in Radial Ice	128.04	0.253	0.1985	0.1487	0.2447
50 mph 90 deg with 1.00 in Radial Ice	160.00	0.306	0.1395	0.0648	0.1530
50 mph 90 deg with 1.00 in Radial Ice	168.04	0.312	0.1410	0.0407	0.1466
50 mph 90 deg with 1.00 in Radial Ice	180.00	0.312	0.1438	0.0895	0.1694
50 mph 90 deg with 1.00 in Radial Ice	195.88	0.309	0.1530	0.0551	0.1619
50 mph 90 deg with 1.00 in Radial Ice	211.96	0.301	0.1547	0.0852	0.1765
50 mph 90 deg with 1.00 in Radial Ice	215.88	0.297	0.1550	0.0915	0.1798
50 mph 90 deg with 1.00 in Radial Ice	231.96	0.277	0.1564	0.1126	0.1923
50 mph 90 deg with 1.00 in Radial Ice	268.04	0.237	0.1590	0.1547	0.2219

50 mph 90 deg with 1.00 in Radial Ice	300.00	0.220	0.1608	0.3070	0.3461
50 mph 120 deg with 1.00 in Radial Ice	80.00	0.199	-0.0007	0.2107	0.2108
50 mph 120 deg with 1.00 in Radial Ice	80.20	0.199	-0.0008	0.2067	0.2067
50 mph 120 deg with 1.00 in Radial Ice	104.12	0.250	-0.0013	0.0728	0.0730
50 mph 120 deg with 1.00 in Radial Ice	115.88	0.258	0.0007	0.0391	0.0393
50 mph 120 deg with 1.00 in Radial Ice	124.12	0.260	-0.0002	0.0869	0.0870
50 mph 120 deg with 1.00 in Radial Ice	128.04	0.269	0.0008	0.1507	0.1509
50 mph 120 deg with 1.00 in Radial Ice	160.00	0.316	-0.0038	0.0310	0.0313
50 mph 120 deg with 1.00 in Radial Ice	168.04	0.317	-0.0034	0.0117	0.0129
50 mph 120 deg with 1.00 in Radial Ice	180.00	0.309	-0.0024	0.1409	0.1410
50 mph 120 deg with 1.00 in Radial Ice	195.88	0.290	-0.0037	0.0793	0.0794
50 mph 120 deg with 1.00 in Radial Ice	211.96	0.260	-0.0039	0.1366	0.1367
50 mph 120 deg with 1.00 in Radial Ice	215.88	0.250	-0.0040	0.1469	0.1470
50 mph 120 deg with 1.00 in Radial Ice	231.96	0.201	-0.0043	0.1916	0.1917
50 mph 120 deg with 1.00 in Radial Ice	268.04	0.071	-0.0046	0.2335	0.2335
50 mph 120 deg with 1.00 in Radial Ice	300.00	0.057	-0.0054	0.3641	0.3641
50 mph 180 deg with 1.00 in Radial Ice	80.00	0.161	0.0214	0.1687	0.1696
50 mph 180 deg with 1.00 in Radial Ice	80.20	0.161	0.0214	0.1662	0.1671
50 mph 180 deg with 1.00 in Radial Ice	104.12	0.200	0.0231	0.0362	0.0421
50 mph 180 deg with 1.00 in Radial Ice	115.88	0.204	0.0244	0.0323	0.0382
50 mph 180 deg with 1.00 in Radial Ice	124.12	0.206	0.0216	0.0879	0.0902
50 mph 180 deg with 1.00 in Radial Ice	128.04	0.216	0.0245	0.1500	0.1514
50 mph 180 deg with 1.00 in Radial Ice	160.00	0.278	0.0230	0.0762	0.0795
50 mph 180 deg with 1.00 in Radial Ice	168.04	0.286	0.0236	0.0491	0.0542
50 mph 180 deg with 1.00 in Radial Ice	180.00	0.293	0.0243	0.0497	0.0553
50 mph 180 deg with 1.00 in Radial Ice	195.88	0.300	0.0247	0.0352	0.0427
50 mph 180 deg with 1.00 in Radial Ice	211.96	0.307	0.0253	0.0128	0.0284
50 mph 180 deg with 1.00 in Radial Ice	215.88	0.307	0.0254	0.0112	0.0275
50 mph 180 deg with 1.00 in Radial Ice	231.96	0.305	0.0259	0.0414	0.0488
50 mph 180 deg with 1.00 in Radial Ice	268.04	0.304	0.0270	0.0463	0.0534
50 mph 180 deg with 1.00 in Radial Ice	300.00	0.311	0.0286	0.2354	0.2369
50 mph 210 deg with 1.00 in Radial Ice	80.00	0.185	0.3398	0.1803	0.3847
50 mph 210 deg with 1.00 in Radial Ice	80.20	0.186	0.3399	0.1763	0.3829
50 mph 210 deg with 1.00 in Radial Ice	104.12	0.224	0.3196	0.0420	0.3224
50 mph 210 deg with 1.00 in Radial Ice	115.88	0.228	0.2975	0.0372	0.2998
50 mph 210 deg with 1.00 in Radial Ice	124.12	0.226	0.2479	0.0762	0.2571
50 mph 210 deg with 1.00 in Radial Ice	128.04	0.234	0.2424	0.1364	0.2761
50 mph 210 deg with 1.00 in Radial Ice	160.00	0.281	0.1897	0.0638	0.1995
50 mph 210 deg with 1.00 in Radial Ice	168.04	0.285	0.1921	0.0500	0.1982
50 mph 210 deg with 1.00 in Radial Ice	180.00	0.285	0.1962	0.1048	0.2224
50 mph 210 deg with 1.00 in Radial Ice	195.88	0.281	0.2070	0.0742	0.2193
50 mph 210 deg with 1.00 in Radial Ice	211.96	0.274	0.2102	0.1038	0.2342
50 mph 210 deg with 1.00 in Radial Ice	215.88	0.271	0.2109	0.1098	0.2374
50 mph 210 deg with 1.00 in Radial Ice	231.96	0.255	0.2138	0.1400	0.2556
50 mph 210 deg with 1.00 in Radial Ice	268.04	0.240	0.2189	0.1623	0.2723
50 mph 210 deg with 1.00 in Radial Ice	300.00	0.261	0.2223	0.3075	0.3784
50 mph 240 deg with 1.00 in Radial Ice	80.00	0.193	0.0337	0.2014	0.2037
50 mph 240 deg with 1.00 in Radial Ice	80.20	0.194	0.0336	0.1973	0.1996
50 mph 240 deg with 1.00 in Radial Ice	104.12	0.240	0.0343	0.0622	0.0711
50 mph 240 deg with 1.00 in Radial Ice	115.88	0.246	0.0365	0.0281	0.0434
50 mph 240 deg with 1.00 in Radial Ice	124.12	0.246	0.0356	0.0750	0.0821
50 mph 240 deg with 1.00 in Radial Ice	128.04	0.255	0.0374	0.1385	0.1435
50 mph 240 deg with 1.00 in Radial Ice	160.00	0.295	0.0367	0.0191	0.0409
50 mph 240 deg with 1.00 in Radial Ice	168.04	0.294	0.0375	0.0269	0.0458
50 mph 240 deg with 1.00 in Radial Ice	180.00	0.283	0.0390	0.1551	0.1594
50 mph 240 deg with 1.00 in Radial Ice	195.88	0.260	0.0382	0.0930	0.1003
50 mph 240 deg with 1.00 in Radial Ice	211.96	0.227	0.0389	0.1495	0.1543
50 mph 240 deg with 1.00 in Radial Ice	215.88	0.217	0.0389	0.1596	0.1640
50 mph 240 deg with 1.00 in Radial Ice	231.96	0.165	0.0394	0.2016	0.2054
50 mph 240 deg with 1.00 in Radial Ice	268.04	0.042	0.0402	0.2456	0.2489
50 mph 240 deg with 1.00 in Radial Ice	300.00	0.117	0.0415	0.3823	0.3846
50 mph 300 deg with 1.00 in Radial Ice	80.00	0.173	0.0041	0.1757	0.1757

50 mph 300 deg with 1.00 in Radial Ice	80.20	0.174	0.0040	0.1731	0.1731
50 mph 300 deg with 1.00 in Radial Ice	104.12	0.214	0.0051	0.0375	0.0379
50 mph 300 deg with 1.00 in Radial Ice	115.88	0.219	0.0062	0.0313	0.0313
50 mph 300 deg with 1.00 in Radial Ice	124.12	0.221	0.0033	0.0853	0.0853
50 mph 300 deg with 1.00 in Radial Ice	128.04	0.230	0.0060	0.1470	0.1470
50 mph 300 deg with 1.00 in Radial Ice	160.00	0.289	0.0031	0.0664	0.0664
50 mph 300 deg with 1.00 in Radial Ice	168.04	0.295	0.0035	0.0365	0.0366
50 mph 300 deg with 1.00 in Radial Ice	180.00	0.299	0.0037	0.0619	0.0620
50 mph 300 deg with 1.00 in Radial Ice	195.88	0.301	0.0037	0.0141	0.0145
50 mph 300 deg with 1.00 in Radial Ice	211.96	0.302	0.0038	0.0167	0.0170
50 mph 300 deg with 1.00 in Radial Ice	215.88	0.300	0.0038	0.0219	0.0222
50 mph 300 deg with 1.00 in Radial Ice	231.96	0.289	0.0038	0.0442	0.0444
50 mph 300 deg with 1.00 in Radial Ice	268.04	0.266	0.0040	0.0549	0.0551
50 mph 300 deg with 1.00 in Radial Ice	300.00	0.247	0.0044	0.2170	0.2170
50 mph 330 deg with 1.00 in Radial Ice	80.00	0.195	0.2592	0.1909	0.3219
50 mph 330 deg with 1.00 in Radial Ice	80.20	0.196	0.2599	0.1867	0.3200
50 mph 330 deg with 1.00 in Radial Ice	104.12	0.238	0.2624	0.0473	0.2667
50 mph 330 deg with 1.00 in Radial Ice	115.88	0.244	0.2658	0.0305	0.2674
50 mph 330 deg with 1.00 in Radial Ice	124.12	0.243	0.2205	0.0757	0.2307
50 mph 330 deg with 1.00 in Radial Ice	128.04	0.251	0.2134	0.1370	0.2504
50 mph 330 deg with 1.00 in Radial Ice	160.00	0.296	0.1524	0.0501	0.1597
50 mph 330 deg with 1.00 in Radial Ice	168.04	0.299	0.1538	0.0315	0.1568
50 mph 330 deg with 1.00 in Radial Ice	180.00	0.296	0.1564	0.1068	0.1894
50 mph 330 deg with 1.00 in Radial Ice	195.88	0.288	0.1655	0.0596	0.1752
50 mph 330 deg with 1.00 in Radial Ice	211.96	0.274	0.1671	0.0961	0.1926
50 mph 330 deg with 1.00 in Radial Ice	215.88	0.268	0.1674	0.1026	0.1964
50 mph 330 deg with 1.00 in Radial Ice	231.96	0.242	0.1687	0.1573	0.2303
50 mph 330 deg with 1.00 in Radial Ice	268.04	0.189	0.1713	0.1097	0.2033
50 mph 330 deg with 1.00 in Radial Ice	300.00	0.168	0.1736	0.1119	0.2048
Seismic Normal M1	80.00	0.006	0.0000	0.0071	0.0071
Seismic Normal M1	80.20	0.006	0.0000	0.0072	0.0072
Seismic Normal M1	104.12	0.009	0.0000	0.0088	0.0088
Seismic Normal M1	115.88	0.010	0.0000	0.0098	0.0098
Seismic Normal M1	124.12	0.012	0.0000	0.0122	0.0122
Seismic Normal M1	128.04	0.013	0.0000	0.0135	0.0135
Seismic Normal M1	160.00	0.020	0.0000	0.0131	0.0131
Seismic Normal M1	168.04	0.021	0.0000	0.0093	0.0093
Seismic Normal M1	180.00	0.023	0.0000	0.0033	0.0033
Seismic Normal M1	195.88	0.024	0.0000	0.0062	0.0062
Seismic Normal M1	211.96	0.026	0.0000	0.0031	0.0031
Seismic Normal M1	215.88	0.026	0.0000	0.0031	0.0031
Seismic Normal M1	231.96	0.026	0.0000	0.0026	0.0026
Seismic Normal M1	268.04	0.026	0.0000	0.0024	0.0024
Seismic Normal M1	300.00	0.026	0.0000	0.0026	0.0026
Seismic 60 deg M1	80.00	0.004	-0.0001	0.0072	0.0072
Seismic 60 deg M1	80.20	0.004	-0.0001	0.0071	0.0071
Seismic 60 deg M1	104.12	0.007	-0.0001	0.0093	0.0093
Seismic 60 deg M1	115.88	0.009	-0.0001	0.0112	0.0112
Seismic 60 deg M1	124.12	0.011	0.0000	0.0133	0.0133
Seismic 60 deg M1	128.04	0.012	-0.0001	0.0155	0.0155
Seismic 60 deg M1	160.00	0.020	0.0000	0.0154	0.0154
Seismic 60 deg M1	168.04	0.022	0.0000	0.0116	0.0116
Seismic 60 deg M1	180.00	0.023	0.0000	0.0051	0.0051
Seismic 60 deg M1	195.88	0.026	0.0000	0.0088	0.0088
Seismic 60 deg M1	211.96	0.028	0.0000	0.0055	0.0055
Seismic 60 deg M1	215.88	0.028	0.0000	0.0054	0.0054
Seismic 60 deg M1	231.96	0.029	0.0000	0.0028	0.0028
Seismic 60 deg M1	268.04	0.031	0.0000	0.0042	0.0042
Seismic 60 deg M1	300.00	0.032	0.0000	0.0034	0.0034
Seismic 90 deg M1	80.00	0.003	0.0000	0.0073	0.0073
Seismic 90 deg M1	80.20	0.003	0.0000	0.0072	0.0072
Seismic 90 deg M1	104.12	0.007	-0.0001	0.0099	0.0099

Seismic 90 deg M1	115.88	0.009	-0.0001	0.0117	0.0117
Seismic 90 deg M1	124.12	0.010	0.0000	0.0142	0.0142
Seismic 90 deg M1	128.04	0.011	0.0000	0.0160	0.0160
Seismic 90 deg M1	160.00	0.020	0.0000	0.0161	0.0161
Seismic 90 deg M1	168.04	0.022	0.0000	0.0123	0.0123
Seismic 90 deg M1	180.00	0.024	0.0000	0.0057	0.0057
Seismic 90 deg M1	195.88	0.027	0.0000	0.0094	0.0094
Seismic 90 deg M1	211.96	0.029	0.0000	0.0060	0.0060
Seismic 90 deg M1	215.88	0.029	0.0000	0.0058	0.0058
Seismic 90 deg M1	231.96	0.030	0.0000	0.0028	0.0028
Seismic 90 deg M1	268.04	0.033	0.0000	0.0045	0.0045
Seismic 90 deg M1	300.00	0.034	0.0000	0.0036	0.0036
Seismic 120 deg M1	80.00	0.003	0.0000	0.0071	0.0071
Seismic 120 deg M1	80.20	0.003	0.0000	0.0071	0.0071
Seismic 120 deg M1	104.12	0.006	0.0000	0.0100	0.0100
Seismic 120 deg M1	115.88	0.008	0.0000	0.0116	0.0116
Seismic 120 deg M1	124.12	0.010	0.0000	0.0145	0.0145
Seismic 120 deg M1	128.04	0.011	0.0000	0.0159	0.0159
Seismic 120 deg M1	160.00	0.020	0.0000	0.0161	0.0161
Seismic 120 deg M1	168.04	0.021	0.0000	0.0124	0.0124
Seismic 120 deg M1	180.00	0.024	0.0000	0.0056	0.0056
Seismic 120 deg M1	195.88	0.026	0.0000	0.0096	0.0096
Seismic 120 deg M1	211.96	0.029	0.0000	0.0061	0.0061
Seismic 120 deg M1	215.88	0.029	0.0000	0.0058	0.0058
Seismic 120 deg M1	231.96	0.030	0.0000	0.0028	0.0028
Seismic 120 deg M1	268.04	0.033	0.0000	0.0046	0.0046
Seismic 120 deg M1	300.00	0.034	0.0000	0.0036	0.0036
Seismic 180 deg M1	80.00	0.002	0.0000	0.0061	0.0061
Seismic 180 deg M1	80.20	0.002	0.0000	0.0060	0.0060
Seismic 180 deg M1	104.12	0.005	0.0000	0.0083	0.0083
Seismic 180 deg M1	115.88	0.007	0.0000	0.0103	0.0103
Seismic 180 deg M1	124.12	0.008	0.0001	0.0124	0.0124
Seismic 180 deg M1	128.04	0.009	0.0000	0.0145	0.0145
Seismic 180 deg M1	160.00	0.017	0.0001	0.0142	0.0142
Seismic 180 deg M1	168.04	0.018	0.0001	0.0105	0.0105
Seismic 180 deg M1	180.00	0.020	0.0001	0.0042	0.0042
Seismic 180 deg M1	195.88	0.022	0.0001	0.0078	0.0078
Seismic 180 deg M1	211.96	0.024	0.0001	0.0046	0.0046
Seismic 180 deg M1	215.88	0.024	0.0001	0.0045	0.0045
Seismic 180 deg M1	231.96	0.025	0.0000	0.0024	0.0024
Seismic 180 deg M1	268.04	0.027	0.0000	0.0037	0.0037
Seismic 180 deg M1	300.00	0.028	0.0000	0.0031	0.0031
Seismic 210 deg M1	80.00	0.003	0.0000	0.0059	0.0059
Seismic 210 deg M1	80.20	0.003	0.0000	0.0059	0.0059
Seismic 210 deg M1	104.12	0.006	0.0000	0.0080	0.0080
Seismic 210 deg M1	115.88	0.008	0.0000	0.0097	0.0097
Seismic 210 deg M1	124.12	0.009	0.0001	0.0119	0.0119
Seismic 210 deg M1	128.04	0.010	0.0000	0.0137	0.0137
Seismic 210 deg M1	160.00	0.017	0.0001	0.0133	0.0133
Seismic 210 deg M1	168.04	0.018	0.0001	0.0096	0.0096
Seismic 210 deg M1	180.00	0.020	0.0001	0.0036	0.0036
Seismic 210 deg M1	195.88	0.022	0.0001	0.0069	0.0069
Seismic 210 deg M1	211.96	0.023	0.0001	0.0038	0.0038
Seismic 210 deg M1	215.88	0.023	0.0001	0.0038	0.0038
Seismic 210 deg M1	231.96	0.023	0.0001	0.0025	0.0025
Seismic 210 deg M1	268.04	0.024	0.0000	0.0031	0.0031
Seismic 210 deg M1	300.00	0.025	0.0000	0.0029	0.0029
Seismic 240 deg M1	80.00	0.004	0.0000	0.0061	0.0061
Seismic 240 deg M1	80.20	0.004	0.0000	0.0062	0.0062
Seismic 240 deg M1	104.12	0.007	0.0000	0.0079	0.0079
Seismic 240 deg M1	115.88	0.009	0.0000	0.0089	0.0089
Seismic 240 deg M1	124.12	0.010	0.0001	0.0113	0.0113

Seismic 240 deg M1	128.04	0.011	0.0000	0.0126	0.0126
Seismic 240 deg M1	160.00	0.017	0.0001	0.0120	0.0120
Seismic 240 deg M1	168.04	0.018	0.0001	0.0083	0.0083
Seismic 240 deg M1	180.00	0.020	0.0001	0.0025	0.0025
Seismic 240 deg M1	195.88	0.021	0.0001	0.0052	0.0052
Seismic 240 deg M1	211.96	0.022	0.0001	0.0023	0.0023
Seismic 240 deg M1	215.88	0.022	0.0001	0.0024	0.0024
Seismic 240 deg M1	231.96	0.022	0.0000	0.0028	0.0028
Seismic 240 deg M1	268.04	0.022	0.0000	0.0022	0.0022
Seismic 240 deg M1	300.00	0.021	0.0000	0.0026	0.0026
Seismic 300 deg M1	80.00	0.006	0.0000	0.0069	0.0069
Seismic 300 deg M1	80.20	0.006	0.0000	0.0067	0.0067
Seismic 300 deg M1	104.12	0.009	0.0000	0.0078	0.0078
Seismic 300 deg M1	115.88	0.010	0.0000	0.0091	0.0091
Seismic 300 deg M1	124.12	0.011	0.0000	0.0107	0.0107
Seismic 300 deg M1	128.04	0.012	0.0000	0.0127	0.0127
Seismic 300 deg M1	160.00	0.019	0.0000	0.0117	0.0117
Seismic 300 deg M1	168.04	0.020	0.0001	0.0076	0.0076
Seismic 300 deg M1	180.00	0.021	0.0001	0.0008	0.0008
Seismic 300 deg M1	195.88	0.022	0.0000	0.0040	0.0040
Seismic 300 deg M1	211.96	0.023	0.0000	0.0004	0.0004
Seismic 300 deg M1	215.88	0.023	0.0000	0.0005	0.0005
Seismic 300 deg M1	231.96	0.022	0.0000	0.0030	0.0030
Seismic 300 deg M1	268.04	0.021	0.0000	0.0011	0.0011
Seismic 300 deg M1	300.00	0.020	0.0000	0.0024	0.0024
Seismic 330 deg M1	80.00	0.006	0.0000	0.0071	0.0071
Seismic 330 deg M1	80.20	0.006	0.0000	0.0071	0.0071
Seismic 330 deg M1	104.12	0.009	0.0000	0.0085	0.0085
Seismic 330 deg M1	115.88	0.011	0.0000	0.0096	0.0096
Seismic 330 deg M1	124.12	0.012	0.0000	0.0116	0.0116
Seismic 330 deg M1	128.04	0.013	0.0000	0.0132	0.0132
Seismic 330 deg M1	160.00	0.020	0.0000	0.0124	0.0124
Seismic 330 deg M1	168.04	0.021	0.0001	0.0085	0.0085
Seismic 330 deg M1	180.00	0.022	0.0000	0.0020	0.0020
Seismic 330 deg M1	195.88	0.024	0.0000	0.0051	0.0051
Seismic 330 deg M1	211.96	0.025	0.0000	0.0019	0.0019
Seismic 330 deg M1	215.88	0.025	0.0000	0.0018	0.0018
Seismic 330 deg M1	231.96	0.025	0.0000	0.0027	0.0027
Seismic 330 deg M1	268.04	0.024	0.0000	0.0015	0.0015
Seismic 330 deg M1	300.00	0.023	0.0000	0.0023	0.0023
Seismic (Reduced DL) Normal M1	80.00	0.006	0.0000	0.0071	0.0071
Seismic (Reduced DL) Normal M1	80.20	0.006	0.0000	0.0071	0.0071
Seismic (Reduced DL) Normal M1	104.12	0.009	0.0000	0.0087	0.0087
Seismic (Reduced DL) Normal M1	115.88	0.010	0.0000	0.0097	0.0097
Seismic (Reduced DL) Normal M1	124.12	0.012	0.0000	0.0121	0.0121
Seismic (Reduced DL) Normal M1	128.04	0.013	0.0000	0.0135	0.0135
Seismic (Reduced DL) Normal M1	160.00	0.020	0.0000	0.0131	0.0131
Seismic (Reduced DL) Normal M1	168.04	0.021	0.0000	0.0092	0.0092
Seismic (Reduced DL) Normal M1	180.00	0.023	0.0000	0.0032	0.0032
Seismic (Reduced DL) Normal M1	195.88	0.024	0.0000	0.0061	0.0061
Seismic (Reduced DL) Normal M1	211.96	0.025	0.0000	0.0031	0.0031
Seismic (Reduced DL) Normal M1	215.88	0.026	0.0000	0.0031	0.0031
Seismic (Reduced DL) Normal M1	231.96	0.026	0.0000	0.0025	0.0025
Seismic (Reduced DL) Normal M1	268.04	0.026	0.0000	0.0024	0.0024
Seismic (Reduced DL) Normal M1	300.00	0.026	0.0000	0.0026	0.0026
Seismic (Reduced DL) 60 deg M1	80.00	0.004	0.0000	0.0070	0.0070
Seismic (Reduced DL) 60 deg M1	80.20	0.004	0.0000	0.0069	0.0069
Seismic (Reduced DL) 60 deg M1	104.12	0.007	-0.0001	0.0090	0.0090
Seismic (Reduced DL) 60 deg M1	115.88	0.009	-0.0001	0.0108	0.0108
Seismic (Reduced DL) 60 deg M1	124.12	0.010	0.0000	0.0128	0.0129
Seismic (Reduced DL) 60 deg M1	128.04	0.011	0.0000	0.0150	0.0150
Seismic (Reduced DL) 60 deg M1	160.00	0.019	0.0000	0.0148	0.0148

Seismic (Reduced DL) 60 deg M1	168.04	0.021	0.0000	0.0110	0.0110
Seismic (Reduced DL) 60 deg M1	180.00	0.023	0.0000	0.0045	0.0045
Seismic (Reduced DL) 60 deg M1	195.88	0.025	0.0000	0.0081	0.0081
Seismic (Reduced DL) 60 deg M1	211.96	0.027	0.0000	0.0049	0.0049
Seismic (Reduced DL) 60 deg M1	215.88	0.027	0.0000	0.0047	0.0047
Seismic (Reduced DL) 60 deg M1	231.96	0.028	0.0000	0.0023	0.0023
Seismic (Reduced DL) 60 deg M1	268.04	0.029	0.0000	0.0038	0.0038
Seismic (Reduced DL) 60 deg M1	300.00	0.031	0.0000	0.0031	0.0031
Seismic (Reduced DL) 90 deg M1	80.00	0.003	0.0000	0.0071	0.0071
Seismic (Reduced DL) 90 deg M1	80.20	0.003	0.0000	0.0071	0.0071
Seismic (Reduced DL) 90 deg M1	104.12	0.007	-0.0001	0.0096	0.0096
Seismic (Reduced DL) 90 deg M1	115.88	0.009	-0.0001	0.0114	0.0114
Seismic (Reduced DL) 90 deg M1	124.12	0.010	0.0000	0.0140	0.0140
Seismic (Reduced DL) 90 deg M1	128.04	0.011	0.0000	0.0158	0.0158
Seismic (Reduced DL) 90 deg M1	160.00	0.020	0.0000	0.0158	0.0158
Seismic (Reduced DL) 90 deg M1	168.04	0.021	0.0000	0.0121	0.0121
Seismic (Reduced DL) 90 deg M1	180.00	0.024	0.0000	0.0055	0.0055
Seismic (Reduced DL) 90 deg M1	195.88	0.026	0.0000	0.0093	0.0093
Seismic (Reduced DL) 90 deg M1	211.96	0.028	0.0000	0.0059	0.0059
Seismic (Reduced DL) 90 deg M1	215.88	0.029	0.0000	0.0057	0.0057
Seismic (Reduced DL) 90 deg M1	231.96	0.030	0.0000	0.0027	0.0027
Seismic (Reduced DL) 90 deg M1	268.04	0.032	0.0000	0.0045	0.0045
Seismic (Reduced DL) 90 deg M1	300.00	0.034	0.0000	0.0035	0.0035
Seismic (Reduced DL) 120 deg M1	80.00	0.003	0.0000	0.0069	0.0069
Seismic (Reduced DL) 120 deg M1	80.20	0.003	0.0000	0.0070	0.0070
Seismic (Reduced DL) 120 deg M1	104.12	0.006	0.0000	0.0097	0.0097
Seismic (Reduced DL) 120 deg M1	115.88	0.008	0.0000	0.0113	0.0113
Seismic (Reduced DL) 120 deg M1	124.12	0.010	0.0000	0.0142	0.0142
Seismic (Reduced DL) 120 deg M1	128.04	0.011	0.0000	0.0157	0.0157
Seismic (Reduced DL) 120 deg M1	160.00	0.019	0.0000	0.0159	0.0159
Seismic (Reduced DL) 120 deg M1	168.04	0.021	0.0000	0.0122	0.0122
Seismic (Reduced DL) 120 deg M1	180.00	0.023	0.0000	0.0054	0.0054
Seismic (Reduced DL) 120 deg M1	195.88	0.026	0.0000	0.0094	0.0094
Seismic (Reduced DL) 120 deg M1	211.96	0.028	0.0000	0.0060	0.0060
Seismic (Reduced DL) 120 deg M1	215.88	0.028	0.0000	0.0057	0.0057
Seismic (Reduced DL) 120 deg M1	231.96	0.029	0.0000	0.0027	0.0027
Seismic (Reduced DL) 120 deg M1	268.04	0.032	0.0000	0.0045	0.0045
Seismic (Reduced DL) 120 deg M1	300.00	0.034	0.0000	0.0036	0.0036
Seismic (Reduced DL) 180 deg M1	80.00	0.002	0.0000	0.0060	0.0060
Seismic (Reduced DL) 180 deg M1	80.20	0.002	0.0000	0.0059	0.0059
Seismic (Reduced DL) 180 deg M1	104.12	0.005	0.0000	0.0081	0.0081
Seismic (Reduced DL) 180 deg M1	115.88	0.007	0.0000	0.0101	0.0101
Seismic (Reduced DL) 180 deg M1	124.12	0.008	0.0001	0.0122	0.0122
Seismic (Reduced DL) 180 deg M1	128.04	0.009	0.0000	0.0144	0.0144
Seismic (Reduced DL) 180 deg M1	160.00	0.017	0.0001	0.0140	0.0140
Seismic (Reduced DL) 180 deg M1	168.04	0.018	0.0001	0.0103	0.0103
Seismic (Reduced DL) 180 deg M1	180.00	0.020	0.0001	0.0040	0.0040
Seismic (Reduced DL) 180 deg M1	195.88	0.022	0.0001	0.0077	0.0077
Seismic (Reduced DL) 180 deg M1	211.96	0.024	0.0001	0.0045	0.0045
Seismic (Reduced DL) 180 deg M1	215.88	0.024	0.0001	0.0044	0.0044
Seismic (Reduced DL) 180 deg M1	231.96	0.025	0.0000	0.0023	0.0023
Seismic (Reduced DL) 180 deg M1	268.04	0.026	0.0000	0.0037	0.0037
Seismic (Reduced DL) 180 deg M1	300.00	0.027	0.0000	0.0031	0.0031
Seismic (Reduced DL) 210 deg M1	80.00	0.003	0.0000	0.0059	0.0059
Seismic (Reduced DL) 210 deg M1	80.20	0.003	0.0000	0.0059	0.0059
Seismic (Reduced DL) 210 deg M1	104.12	0.006	0.0000	0.0079	0.0079
Seismic (Reduced DL) 210 deg M1	115.88	0.007	0.0000	0.0095	0.0095
Seismic (Reduced DL) 210 deg M1	124.12	0.009	0.0001	0.0118	0.0118
Seismic (Reduced DL) 210 deg M1	128.04	0.010	0.0000	0.0136	0.0136
Seismic (Reduced DL) 210 deg M1	160.00	0.017	0.0001	0.0130	0.0130
Seismic (Reduced DL) 210 deg M1	168.04	0.018	0.0001	0.0094	0.0094
Seismic (Reduced DL) 210 deg M1	180.00	0.020	0.0001	0.0035	0.0035

Seismic (Reduced DL) 210 deg M1	195.88	0.021	0.0001	0.0067	0.0067
Seismic (Reduced DL) 210 deg M1	211.96	0.023	0.0001	0.0037	0.0037
Seismic (Reduced DL) 210 deg M1	215.88	0.023	0.0001	0.0037	0.0037
Seismic (Reduced DL) 210 deg M1	231.96	0.023	0.0001	0.0024	0.0024
Seismic (Reduced DL) 210 deg M1	268.04	0.024	0.0000	0.0031	0.0031
Seismic (Reduced DL) 210 deg M1	300.00	0.025	0.0000	0.0029	0.0029
Seismic (Reduced DL) 240 deg M1	80.00	0.004	0.0000	0.0061	0.0061
Seismic (Reduced DL) 240 deg M1	80.20	0.004	0.0000	0.0062	0.0062
Seismic (Reduced DL) 240 deg M1	104.12	0.007	0.0000	0.0078	0.0078
Seismic (Reduced DL) 240 deg M1	115.88	0.009	0.0000	0.0088	0.0088
Seismic (Reduced DL) 240 deg M1	124.12	0.010	0.0001	0.0112	0.0112
Seismic (Reduced DL) 240 deg M1	128.04	0.010	0.0000	0.0126	0.0126
Seismic (Reduced DL) 240 deg M1	160.00	0.017	0.0001	0.0120	0.0120
Seismic (Reduced DL) 240 deg M1	168.04	0.018	0.0001	0.0082	0.0082
Seismic (Reduced DL) 240 deg M1	180.00	0.020	0.0001	0.0024	0.0024
Seismic (Reduced DL) 240 deg M1	195.88	0.021	0.0001	0.0051	0.0051
Seismic (Reduced DL) 240 deg M1	211.96	0.022	0.0001	0.0022	0.0022
Seismic (Reduced DL) 240 deg M1	215.88	0.022	0.0001	0.0023	0.0023
Seismic (Reduced DL) 240 deg M1	231.96	0.022	0.0000	0.0027	0.0027
Seismic (Reduced DL) 240 deg M1	268.04	0.021	0.0000	0.0021	0.0021
Seismic (Reduced DL) 240 deg M1	300.00	0.021	0.0000	0.0025	0.0025
Seismic (Reduced DL) 300 deg M1	80.00	0.006	0.0000	0.0069	0.0069
Seismic (Reduced DL) 300 deg M1	80.20	0.006	0.0000	0.0068	0.0068
Seismic (Reduced DL) 300 deg M1	104.12	0.009	0.0000	0.0078	0.0078
Seismic (Reduced DL) 300 deg M1	115.88	0.010	0.0000	0.0091	0.0091
Seismic (Reduced DL) 300 deg M1	124.12	0.012	0.0000	0.0107	0.0107
Seismic (Reduced DL) 300 deg M1	128.04	0.012	0.0000	0.0128	0.0128
Seismic (Reduced DL) 300 deg M1	160.00	0.019	0.0000	0.0117	0.0117
Seismic (Reduced DL) 300 deg M1	168.04	0.020	0.0001	0.0076	0.0076
Seismic (Reduced DL) 300 deg M1	180.00	0.021	0.0001	0.0008	0.0008
Seismic (Reduced DL) 300 deg M1	195.88	0.022	0.0000	0.0040	0.0040
Seismic (Reduced DL) 300 deg M1	211.96	0.023	0.0000	0.0004	0.0004
Seismic (Reduced DL) 300 deg M1	215.88	0.023	0.0000	0.0004	0.0004
Seismic (Reduced DL) 300 deg M1	231.96	0.022	0.0000	0.0030	0.0030
Seismic (Reduced DL) 300 deg M1	268.04	0.021	0.0000	0.0010	0.0010
Seismic (Reduced DL) 300 deg M1	300.00	0.020	0.0000	0.0023	0.0023
Seismic (Reduced DL) 330 deg M1	80.00	0.006	0.0000	0.0071	0.0071
Seismic (Reduced DL) 330 deg M1	80.20	0.006	0.0000	0.0071	0.0071
Seismic (Reduced DL) 330 deg M1	104.12	0.009	0.0000	0.0084	0.0084
Seismic (Reduced DL) 330 deg M1	115.88	0.011	0.0000	0.0095	0.0095
Seismic (Reduced DL) 330 deg M1	124.12	0.012	0.0000	0.0116	0.0116
Seismic (Reduced DL) 330 deg M1	128.04	0.013	0.0000	0.0133	0.0133
Seismic (Reduced DL) 330 deg M1	160.00	0.020	0.0000	0.0124	0.0124
Seismic (Reduced DL) 330 deg M1	168.04	0.021	0.0001	0.0085	0.0085
Seismic (Reduced DL) 330 deg M1	180.00	0.022	0.0000	0.0019	0.0019
Seismic (Reduced DL) 330 deg M1	195.88	0.024	0.0000	0.0051	0.0051
Seismic (Reduced DL) 330 deg M1	211.96	0.025	0.0000	0.0020	0.0020
Seismic (Reduced DL) 330 deg M1	215.88	0.025	0.0000	0.0018	0.0018
Seismic (Reduced DL) 330 deg M1	231.96	0.025	0.0000	0.0026	0.0026
Seismic (Reduced DL) 330 deg M1	268.04	0.024	0.0000	0.0015	0.0015
Seismic (Reduced DL) 330 deg M1	300.00	0.023	0.0000	0.0023	0.0023
Serviceability - 60 mph Wind Normal	80.00	0.093	-0.0048	0.0838	0.0840
Serviceability - 60 mph Wind Normal	80.20	0.093	-0.0048	0.0820	0.0821
Serviceability - 60 mph Wind Normal	104.12	0.117	-0.0050	0.0457	0.0460
Serviceability - 60 mph Wind Normal	115.88	0.125	-0.0052	0.0437	0.0440
Serviceability - 60 mph Wind Normal	124.12	0.130	-0.0053	0.0559	0.0562
Serviceability - 60 mph Wind Normal	128.04	0.134	-0.0053	0.0638	0.0640
Serviceability - 60 mph Wind Normal	160.00	0.165	-0.0057	0.0406	0.0410
Serviceability - 60 mph Wind Normal	168.04	0.168	-0.0058	0.0122	0.0137
Serviceability - 60 mph Wind Normal	180.00	0.167	-0.0060	0.0506	0.0509
Serviceability - 60 mph Wind Normal	195.88	0.163	-0.0061	0.0200	0.0209
Serviceability - 60 mph Wind Normal	211.96	0.154	-0.0063	0.0496	0.0500

Serviceability - 60 mph Wind Normal	215.88	0.150	-0.0063	0.0532	0.0535
Serviceability - 60 mph Wind Normal	231.96	0.131	-0.0065	0.0902	0.0904
Serviceability - 60 mph Wind Normal	268.04	0.092	-0.0068	0.0341	0.0348
Serviceability - 60 mph Wind Normal	300.00	0.062	-0.0070	0.0858	0.0861
Serviceability - 60 mph Wind 60 deg	80.00	0.081	-0.0062	0.0747	0.0750
Serviceability - 60 mph Wind 60 deg	80.20	0.082	-0.0062	0.0728	0.0730
Serviceability - 60 mph Wind 60 deg	104.12	0.103	-0.0065	0.0433	0.0438
Serviceability - 60 mph Wind 60 deg	115.88	0.111	-0.0068	0.0464	0.0469
Serviceability - 60 mph Wind 60 deg	124.12	0.117	-0.0063	0.0596	0.0601
Serviceability - 60 mph Wind 60 deg	128.04	0.121	-0.0069	0.0702	0.0705
Serviceability - 60 mph Wind 60 deg	160.00	0.158	-0.0072	0.0593	0.0597
Serviceability - 60 mph Wind 60 deg	168.04	0.164	-0.0070	0.0337	0.0345
Serviceability - 60 mph Wind 60 deg	180.00	0.168	-0.0074	0.0255	0.0267
Serviceability - 60 mph Wind 60 deg	195.88	0.173	-0.0076	0.0138	0.0160
Serviceability - 60 mph Wind 60 deg	211.96	0.173	-0.0079	0.0113	0.0140
Serviceability - 60 mph Wind 60 deg	215.88	0.172	-0.0080	0.0144	0.0167
Serviceability - 60 mph Wind 60 deg	231.96	0.165	-0.0084	0.0298	0.0310
Serviceability - 60 mph Wind 60 deg	268.04	0.152	-0.0089	0.0325	0.0337
Serviceability - 60 mph Wind 60 deg	300.00	0.142	-0.0091	0.1284	0.1288
Serviceability - 60 mph Wind 90 deg	80.00	0.088	0.0378	0.0785	0.0870
Serviceability - 60 mph Wind 90 deg	80.20	0.088	0.0378	0.0768	0.0855
Serviceability - 60 mph Wind 90 deg	104.12	0.111	0.0384	0.0456	0.0594
Serviceability - 60 mph Wind 90 deg	115.88	0.119	0.0387	0.0463	0.0603
Serviceability - 60 mph Wind 90 deg	124.12	0.125	0.0398	0.0596	0.0710
Serviceability - 60 mph Wind 90 deg	128.04	0.129	0.0391	0.0691	0.0793
Serviceability - 60 mph Wind 90 deg	160.00	0.164	0.0395	0.0525	0.0654
Serviceability - 60 mph Wind 90 deg	168.04	0.169	0.0401	0.0266	0.0479
Serviceability - 60 mph Wind 90 deg	180.00	0.171	0.0403	0.0346	0.0525
Serviceability - 60 mph Wind 90 deg	195.88	0.173	0.0405	0.0127	0.0422
Serviceability - 60 mph Wind 90 deg	211.96	0.169	0.0404	0.0315	0.0512
Serviceability - 60 mph Wind 90 deg	215.88	0.167	0.0404	0.0348	0.0533
Serviceability - 60 mph Wind 90 deg	231.96	0.155	0.0406	0.0423	0.0584
Serviceability - 60 mph Wind 90 deg	268.04	0.130	0.0408	0.0616	0.0739
Serviceability - 60 mph Wind 90 deg	300.00	0.112	0.0411	0.1543	0.1597
Serviceability - 60 mph Wind 120 deg	80.00	0.093	-0.0002	0.0844	0.0844
Serviceability - 60 mph Wind 120 deg	80.20	0.093	-0.0002	0.0826	0.0826
Serviceability - 60 mph Wind 120 deg	104.12	0.117	-0.0002	0.0473	0.0473
Serviceability - 60 mph Wind 120 deg	115.88	0.126	-0.0004	0.0458	0.0458
Serviceability - 60 mph Wind 120 deg	124.12	0.131	0.0001	0.0585	0.0585
Serviceability - 60 mph Wind 120 deg	128.04	0.135	-0.0004	0.0665	0.0665
Serviceability - 60 mph Wind 120 deg	160.00	0.167	-0.0003	0.0438	0.0438
Serviceability - 60 mph Wind 120 deg	168.04	0.171	0.0000	0.0151	0.0151
Serviceability - 60 mph Wind 120 deg	180.00	0.170	-0.0002	0.0471	0.0471
Serviceability - 60 mph Wind 120 deg	195.88	0.168	-0.0002	0.0167	0.0167
Serviceability - 60 mph Wind 120 deg	211.96	0.159	-0.0004	0.0471	0.0471
Serviceability - 60 mph Wind 120 deg	215.88	0.155	-0.0005	0.0508	0.0508
Serviceability - 60 mph Wind 120 deg	231.96	0.137	-0.0007	0.0682	0.0682
Serviceability - 60 mph Wind 120 deg	268.04	0.097	-0.0008	0.0724	0.0724
Serviceability - 60 mph Wind 120 deg	300.00	0.063	-0.0010	0.1561	0.1561
Serviceability - 60 mph Wind 180 deg	80.00	0.079	0.0061	0.0725	0.0727
Serviceability - 60 mph Wind 180 deg	80.20	0.079	0.0061	0.0705	0.0708
Serviceability - 60 mph Wind 180 deg	104.12	0.100	0.0063	0.0411	0.0416
Serviceability - 60 mph Wind 180 deg	115.88	0.107	0.0063	0.0443	0.0447
Serviceability - 60 mph Wind 180 deg	124.12	0.113	0.0070	0.0577	0.0580
Serviceability - 60 mph Wind 180 deg	128.04	0.117	0.0064	0.0681	0.0684
Serviceability - 60 mph Wind 180 deg	160.00	0.153	0.0070	0.0571	0.0575
Serviceability - 60 mph Wind 180 deg	168.04	0.158	0.0074	0.0318	0.0325
Serviceability - 60 mph Wind 180 deg	180.00	0.162	0.0074	0.0273	0.0281
Serviceability - 60 mph Wind 180 deg	195.88	0.167	0.0076	0.0127	0.0146
Serviceability - 60 mph Wind 180 deg	211.96	0.167	0.0076	0.0120	0.0140
Serviceability - 60 mph Wind 180 deg	215.88	0.166	0.0076	0.0149	0.0167
Serviceability - 60 mph Wind 180 deg	231.96	0.158	0.0077	0.0474	0.0480

Serviceability - 60 mph Wind 180 deg	268.04	0.146	0.0079	0.0135	0.0156
Serviceability - 60 mph Wind 180 deg	300.00	0.141	0.0084	0.1302	0.1305
Serviceability - 60 mph Wind 210 deg	80.00	0.084	0.0491	0.0743	0.0889
Serviceability - 60 mph Wind 210 deg	80.20	0.084	0.0492	0.0726	0.0876
Serviceability - 60 mph Wind 210 deg	104.12	0.105	0.0503	0.0415	0.0650
Serviceability - 60 mph Wind 210 deg	115.88	0.113	0.0508	0.0424	0.0661
Serviceability - 60 mph Wind 210 deg	124.12	0.118	0.0522	0.0557	0.0756
Serviceability - 60 mph Wind 210 deg	128.04	0.122	0.0516	0.0652	0.0831
Serviceability - 60 mph Wind 210 deg	160.00	0.155	0.0528	0.0495	0.0720
Serviceability - 60 mph Wind 210 deg	168.04	0.159	0.0536	0.0249	0.0589
Serviceability - 60 mph Wind 210 deg	180.00	0.161	0.0541	0.0380	0.0655
Serviceability - 60 mph Wind 210 deg	195.88	0.162	0.0547	0.0158	0.0567
Serviceability - 60 mph Wind 210 deg	211.96	0.158	0.0550	0.0334	0.0642
Serviceability - 60 mph Wind 210 deg	215.88	0.156	0.0550	0.0363	0.0659
Serviceability - 60 mph Wind 210 deg	231.96	0.145	0.0556	0.0592	0.0812
Serviceability - 60 mph Wind 210 deg	268.04	0.124	0.0565	0.0490	0.0747
Serviceability - 60 mph Wind 210 deg	300.00	0.113	0.0575	0.1479	0.1585
Serviceability - 60 mph Wind 240 deg	80.00	0.092	0.0053	0.0827	0.0829
Serviceability - 60 mph Wind 240 deg	80.20	0.092	0.0053	0.0809	0.0810
Serviceability - 60 mph Wind 240 deg	104.12	0.115	0.0057	0.0450	0.0453
Serviceability - 60 mph Wind 240 deg	115.88	0.123	0.0057	0.0431	0.0435
Serviceability - 60 mph Wind 240 deg	124.12	0.128	0.0065	0.0556	0.0559
Serviceability - 60 mph Wind 240 deg	128.04	0.132	0.0059	0.0635	0.0638
Serviceability - 60 mph Wind 240 deg	160.00	0.162	0.0066	0.0406	0.0411
Serviceability - 60 mph Wind 240 deg	168.04	0.166	0.0071	0.0122	0.0141
Serviceability - 60 mph Wind 240 deg	180.00	0.165	0.0071	0.0502	0.0506
Serviceability - 60 mph Wind 240 deg	195.88	0.162	0.0074	0.0193	0.0205
Serviceability - 60 mph Wind 240 deg	211.96	0.152	0.0075	0.0490	0.0495
Serviceability - 60 mph Wind 240 deg	215.88	0.148	0.0074	0.0526	0.0531
Serviceability - 60 mph Wind 240 deg	231.96	0.130	0.0076	0.0686	0.0690
Serviceability - 60 mph Wind 240 deg	268.04	0.089	0.0078	0.0744	0.0748
Serviceability - 60 mph Wind 240 deg	300.00	0.056	0.0082	0.1598	0.1600
Serviceability - 60 mph Wind 300 deg	80.00	0.087	0.0005	0.0773	0.0773
Serviceability - 60 mph Wind 300 deg	80.20	0.087	0.0005	0.0753	0.0753
Serviceability - 60 mph Wind 300 deg	104.12	0.110	0.0006	0.0438	0.0438
Serviceability - 60 mph Wind 300 deg	115.88	0.118	0.0006	0.0459	0.0459
Serviceability - 60 mph Wind 300 deg	124.12	0.123	0.0012	0.0583	0.0583
Serviceability - 60 mph Wind 300 deg	128.04	0.128	0.0006	0.0685	0.0685
Serviceability - 60 mph Wind 300 deg	160.00	0.163	0.0009	0.0552	0.0552
Serviceability - 60 mph Wind 300 deg	168.04	0.168	0.0013	0.0289	0.0289
Serviceability - 60 mph Wind 300 deg	180.00	0.171	0.0011	0.0309	0.0309
Serviceability - 60 mph Wind 300 deg	195.88	0.174	0.0013	0.0066	0.0067
Serviceability - 60 mph Wind 300 deg	211.96	0.172	0.0012	0.0194	0.0194
Serviceability - 60 mph Wind 300 deg	215.88	0.171	0.0012	0.0227	0.0227
Serviceability - 60 mph Wind 300 deg	231.96	0.161	0.0011	0.0374	0.0374
Serviceability - 60 mph Wind 300 deg	268.04	0.142	0.0011	0.0414	0.0414
Serviceability - 60 mph Wind 300 deg	300.00	0.127	0.0012	0.1342	0.1342
Serviceability - 60 mph Wind 330 deg	80.00	0.091	0.0386	0.0790	0.0878
Serviceability - 60 mph Wind 330 deg	80.20	0.091	0.0386	0.0773	0.0863
Serviceability - 60 mph Wind 330 deg	104.12	0.114	0.0394	0.0445	0.0592
Serviceability - 60 mph Wind 330 deg	115.88	0.122	0.0397	0.0444	0.0595
Serviceability - 60 mph Wind 330 deg	124.12	0.127	0.0409	0.0570	0.0695
Serviceability - 60 mph Wind 330 deg	128.04	0.132	0.0402	0.0662	0.0774
Serviceability - 60 mph Wind 330 deg	160.00	0.164	0.0408	0.0480	0.0626
Serviceability - 60 mph Wind 330 deg	168.04	0.169	0.0414	0.0220	0.0467
Serviceability - 60 mph Wind 330 deg	180.00	0.170	0.0416	0.0392	0.0566
Serviceability - 60 mph Wind 330 deg	195.88	0.170	0.0419	0.0120	0.0434
Serviceability - 60 mph Wind 330 deg	211.96	0.165	0.0419	0.0354	0.0548
Serviceability - 60 mph Wind 330 deg	215.88	0.162	0.0419	0.0388	0.0571
Serviceability - 60 mph Wind 330 deg	231.96	0.149	0.0421	0.0703	0.0818
Serviceability - 60 mph Wind 330 deg	268.04	0.121	0.0425	0.0286	0.0511
Serviceability - 60 mph Wind 330 deg	300.00	0.102	0.0432	0.1095	0.1174

Maximum Reactions Summary

Anchor Group	UpLift	Shear
Base	191.44	2.56
A1	62.83	77.21

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: CTNL313A

89 Dr. Nott Road
North Franklin, Connecticut 06254

June 17, 2021

EBI Project Number: 6221002963

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**9.08%**

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

June 17, 2021

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

Emissions Analysis for Site: CTNL313A

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **89 Dr. Nott Road** in **North Franklin, 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 89 Dr. Nott Road in North Franklin, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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

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

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

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

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

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

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

7) 1 LTE Traffic channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts.

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

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

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

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

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

13) The antennas used in this modeling are the RFS 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 / 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 / 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 / 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated

transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

14) The antenna mounting height centerline of the proposed antennas is 180 feet above ground level (AGL).

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

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

EBI Consulting

environmental | engineering | due diligence

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):	180 feet	Height (AGL):	180 feet	Height (AGL):	180 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 %:	**0.55%**	Antenna B1 MPE %:	**0.55%**	Antenna C1 MPE %:	**0.55%**
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):	180 feet	Height (AGL):	180 feet	Height (AGL):	180 feet
Channel Count:	11	Channel Count:	11	Channel Count:	11
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	12,569.87	ERP (W):	12,569.87	ERP (W):	12,569.87
Antenna A2 MPE %:	**2.17%**	Antenna B2 MPE %:	**2.17%**	Antenna C2 MPE %:	**2.17%**
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 / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd
Height (AGL):	180 feet	Height (AGL):	180 feet	Height (AGL):	180 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	36,356.09	ERP (W):	36,356.09	ERP (W):	36,356.09
Antenna A3 MPE %:	**4.32%**	Antenna B3 MPE %:	**4.32%**	Antenna C3 MPE %:	**4.32%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	7.04%
Verizon	1.69%
AT&T	0.35%
Site Total MPE % :	9.08%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	7.04%
T-Mobile Sector B Total:	7.04%
T-Mobile Sector C Total:	7.04%
Site Total MPE % :	9.08%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 2100 MHz LTE	2	2334.27	180.0	5.54	2100 MHz LTE	1000	0.55%
T-Mobile 600 MHz LTE	2	591.73	180.0	1.41	600 MHz LTE	400	0.35%
T-Mobile 600 MHz NR	1	1577.94	180.0	1.87	600 MHz NR	400	0.47%
T-Mobile 700 MHz LTE	2	695.22	180.0	1.65	700 MHz LTE	467	0.35%
T-Mobile 1900 MHz GSM	4	1052.26	180.0	5.00	1900 MHz GSM	1000	0.50%
T-Mobile 1900 MHz LTE	2	2104.51	180.0	5.00	1900 MHz LTE	1000	0.50%
T-Mobile 2500 MHz LTE 1C & 2C Traffic	1	11044.63	180.0	13.12	2500 MHz LTE 1C & 2C Traffic	1000	1.31%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	180.0	1.28	2500 MHz LTE 1C & 2C Broadcast	1000	0.13%
T-Mobile 2500 MHz NR Traffic	1	22089.26	180.0	26.23	2500 MHz NR Traffic	1000	2.62%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	180.0	2.55	2500 MHz NR Broadcast	1000	0.26%
						Total:	**7.04%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	7.04%
Sector B:	7.04%
Sector C:	7.04%
T-Mobile Maximum MPE % (Sector A):	7.04%
Site Total:	9.08%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.08%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

RAN Template:	A&L Template:
67D5A998C Indoor (GSM only)	67D5998C_1xAIR+1QP+1OP (GSM only)

CTNL313A_Sprint Retain_1_draft

Print Name: Standard

Section 1 - Site Information

Site ID: CTNL313A
Status: Draft
Version: 1
Project Type: Sprint Retain
Approved: Not Approved
Approved By: Not Approved
Last Modified: 4/12/2021 7:45:37 PM
Last Modified By: MARIA.ROMASHENKOVA@T-MOBILE.COM

Site Name: CTNL313A
Site Class: Guyed Tower
Site Type: Structure Non Building
Plan Year: 2021
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Not Specified

Latitude: 41.59766389
Longitude: -72.14498333
Address: 139 Meeting House Hill Rd
City, State: North Franklin, CT
Region: NORTHEAST

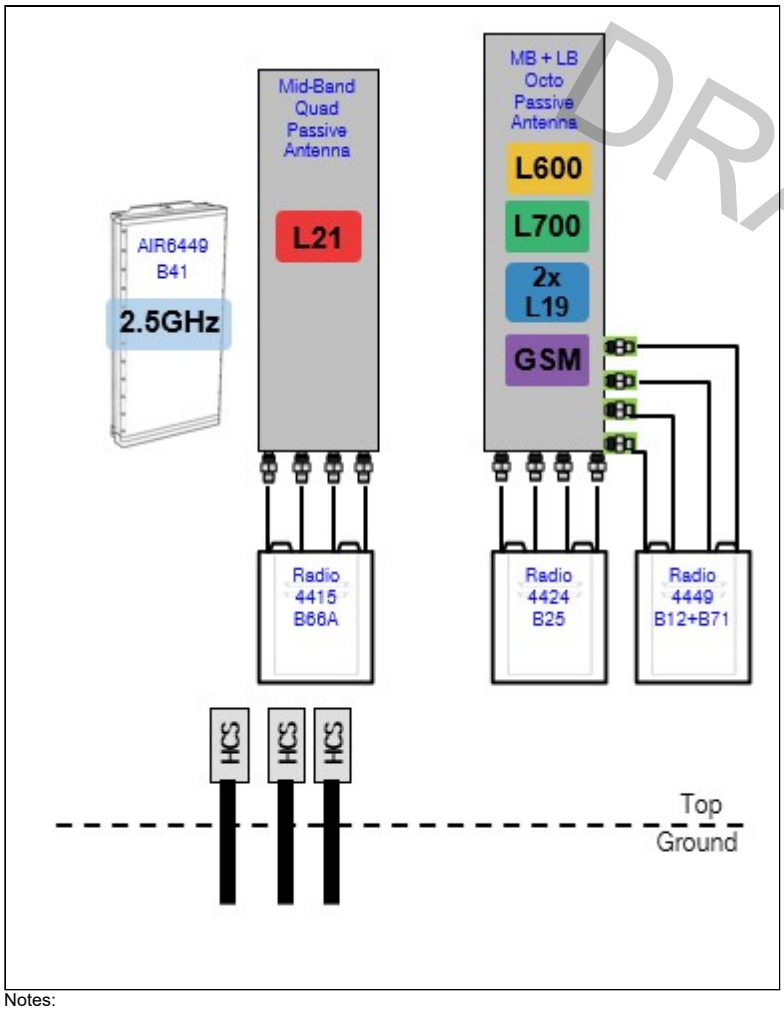
RAN Template: 67D5A998C Indoor (GSM only)			AL Template: 67D5998C_1xAIR+1QP+1OP (GSM only)	
Sector Count: 3	**Antenna Count:** 9	**Coax Line Count:** 0	**TMA Count:** 0	**RRU Count:** 9

Section 2 - Existing Template Images

----- This section is intentionally blank. -----

Section 3 - Proposed Template Images

67D5A998C_1xAIR+1xQP+1xOP.jpg



Notes:

Section 4 - Siteplan Images

----- This section is intentionally blank. -----

RAN Template:	A&L Template:
67D5A998C Indoor (GSM only)	67D5998C_1xAIR+1QP+1OP (GSM only)

CTNL313A_Sprint Retain_1_draft

Print Name: Standard

Section 5 - RAN Equipment

Existing RAN Equipment

----- This section is intentionally blank. -----

Proposed RAN Equipment

Template: 67D5A998C Indoor (GSM only)

Enclosure	1	2	3	4
Enclosure Type	Ancillary Equipment (Ericsson)	19 Inch Rack (Ericsson)	B160	RBS 6601
Baseband		BB 6648 N2500 BB 6648 L2100 L1900 BB 6648 L700 L600 N600 BB 6648 L2500		DUG20 G1900
Hybrid Cable System	PSU 4813			
Transport System		CSR IXRe V2 (Gen2)		
Functionality Groups	Ericsson Hybrid Trunk 6/24 4AWG *Select Length* **(x 3)**			

RAN Scope of Work:

CT73XC005
Existing & planned azimuth: 60/180/300
Existing power 200A

RAN Template:	A&L Template:
67D5A998C Indoor (GSM only)	67D5998C_1xAIR+1QP+1OP (GSM only)

CTNL313A_Sprint Retain_1_draft

Print Name: Standard

Section 6 - A&L Equipment

Existing Template: Custom
Proposed Template: 67D5998C_1xAIR+1QP+1OP (GSM only)

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)				Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)	
Azimuth	60		60				60	
M. Tilt	0		0				0	
Height	180		180				180	
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	L2100	L2100	L700 L600 N600	L700 L600 N600	L1900 G1900	L1900 G1900	L2500 N2500	L2500 N2500
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	2	2	2	2	2	2	2
Cables	Coax Jumper **(x4)**	SHARED Coax Jumper **(x4)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**		
TMAs								
Diplexers / Combiners								
Radio	Radio 4415 B66A (At Antenna)	SHARED Radio 4415 B66A (At Antenna)	Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4424 B25 (At Antenna)	SHARED Radio 4424 B25 (At Antenna)		
Sector Equipment								

Unconnected Equipment:

Scope of Work:

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A998C Indoor (GSM only)	67D5998C_1xAIR+1QP+1OP (GSM only)

CTNL313A_Sprint Retain_1_draft

Print Name: Standard

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)				Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)	
Azimuth	180		180				180	
M. Tilt	0		0				0	
Height	180		180				180	
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	L2100	L2100	L700 L600 N600	L700 L600 N600	L1900 G1900	L1900 G1900	L2500 N2500	L2500 N2500
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	2	2	2	2	2	2	2
Cables	Coax Jumper **(x4)**	SHARED Coax Jumper **(x4)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**		
TMAs								
Diplexers / Combiners								
Radio	Radio 4415 B66A (At Antenna)	SHARED Radio 4415 B66A (At Antenna)	Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4424 B25 (At Antenna)	SHARED Radio 4424 B25 (At Antenna)		
Sector Equipment								

Unconnected Equipment:

Scope of Work:

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A998C Indoor (GSM only)	67D5998C_1xAIR+1QP+1OP (GSM only)

CTNL313A_Sprint Retain_1_draft

Print Name: Standard

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		RFS - APXVAALL24_43-U-NA20 (Octo)				Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)	
Azimuth	300		300				300	
M. Tilt	0		0				0	
Height	180		180				180	
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	L2100	L2100	L700 L600 N600	L700 L600 N600	L1900 G1900	L1900 G1900	L2500 N2500	L2500 N2500
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	2	2	2	2	2	2	2
Cables	Coax Jumper **(x4)**	SHARED Coax Jumper **(x4)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**		
TMAs								
Diplexers / Combiners								
Radio	Radio 4415 B66A (At Antenna)	SHARED Radio 4415 B66A (At Antenna)	Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4424 B25 (At Antenna)	SHARED Radio 4424 B25 (At Antenna)		
Sector Equipment								

Unconnected Equipment:

Scope of Work:

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A998C Indoor (GSM only)	67D5998C_1xAIR+1QP+1OP (GSM only)

CTNL313A_Sprint Retain_1_draft

Print Name: Standard

Section 7 - Power Systems Equipment

Existing Power Systems Equipment

----- This section is intentionally blank. -----

Proposed Power Systems Equipment