Robinson+Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in New York
and Massachusetts

April 25, 2023

Via Hand Delivery

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

Re: **Notice of a Temporary Telecommunications Facility to be Installed on the Existing Tower at 667 Main Street, Cromwell, Connecticut**

2023 and 2024 Travelers Championships

Dear Attorney Bachman:

Pursuant to R.C.S.A. Section 16-50j-72(d), this letter will serve as notice that Cellco Partnership d/b/a Verizon Wireless ("Cellco") intends to install a temporary wireless antenna on its existing tower at 667 Main Street in Cromwell for use during the 2023 and 2024 Travelers Championship golf tournaments in Cromwell. Cellco's existing wireless facility was approved by the Siting Council (the "Council") in September of 2018 (Docket No. 481). A copy of the Council's Docket No. 481 Decision and Order is included in Attachment 1.

Cellco continues to own and operate the existing wireless facility. The proposed modifications will remain within the limits of Cellco's existing leased area. Therefore, no further approvals or authorizations from the property owner are required. The temporary wireless installation will consist of a single multi-beam antenna attached to the existing tower at height of 110 feet above ground level ("AGL"), ten feet below Cellco's existing antennas. The new antenna will be mounted below Cellco's existing Beta Sector antennas. Cellco will also replace six (6) existing remote radio heads ("RRHs") and install three (3) new RRHs as a part of this

modification. A set of Project Plans along with the new antenna and RRH specification sheets are included in Attachment 2. Included in Attachment 3 is a Structural Analysis Report and Mount Analysis confirming that the tower and proposed antenna mounts can support the new antenna, RRHs and related equipment.

The proposed temporary telecommunications facility satisfies the criteria set forth in R.C.S.A. Section 16-50j-72(d), as a facility that will provide temporary wireless service for an event of State-wide significance, the PGA Tour's Travelers Championship. The temporary facility will provide additional network capacity needed to accommodate the large crowds and the anticipated need for increased wireless voice and data services during the event. Cellco expects that the temporary installation will be installed on or about May 29, 2023 and will be removed on or about August 30, 2024.

The operation of the temporary wireless facility will not result in a total radio frequency (RF) emissions levels that exceed the Federal Communications Commission (FCC) safety standard. Included in Attachment 4 are Far Field Approximation Tables for Cellco's existing antennas at the 120-foot level and the proposed temporary multi-band antenna at the 110-foot level. These tables demonstrate that the existing and temporary facilities will operate well within (3.1%) the FCC emissions standards.

In accordance with R.C.S.A. Section 16-50j-73, a copy of this filing has been sent to Anthony Salvatore, Town Manager of the Town of Cromwell, Stuart Popper, Director of Planning and Development and Cromwell Concrete Products, Inc., the underlying property owner. A copy of the parcel map and property owner information is included in Attachment 5. A Certificate of Mailing verifying that this filing was sent to municipal officials and the property owner is included in Attachment 6.

Based on the foregoing, Cellco respectfully requests acknowledgement of this notice for the installation of a temporary wireless facility at the property. Please feel free to contact me if you have any questions or need any additional information.

Sincerely,

Kenneth C. Baldwin

Attachments

Copy to:

Anthony Salvatore, Town Manager
Stuart Popper, Director of Planning and Development
Cromwell Concrete Products, Inc.
Ziad Cheiban, Verizon RF Engineer

ATTACHMENT 1

DOCKET NO. 481 - Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at 667, 665, 663 and 663R Main Street, Cromwell, Connecticut.	}	Connecticut
	}	Siting
	}	Council

July 19, 2018

Decision and Order

Pursuant to Connecticut General Statutes §16-50p and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment, ecological balance, public health and safety, scenic, historic, and recreational values, agriculture, forests and parks, air and water purity, and fish, aquaculture and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Cellco Partnership d/b/a Verizon Wireless, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 667, 665, 663 and 663R Main Street, Cromwell, Connecticut.

Unless otherwise approved by the Council, the facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole at a height of 120 feet above ground level to provide the proposed wireless services, sufficient to accommodate the antennas of Cellco Partnership d/b/a Verizon Wireless and other entities, both public and private. The height of the tower may be extended after the date of this Decision and Order pursuant to regulations of the Federal Communications Commission.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town Cromwell for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a) final site plan(s) for development of the facility that employ the governing standard in the State of Connecticut for tower design in accordance with the currently adopted International Building Code and include specifications for the tower, tower foundation, antennas and equipment compound including, but not limited to, fencing, radio equipment, access road, utility installation and emergency backup generator with consideration of additional run time capacity;
    b) the tower shall be designed with a yield point to ensure that the tower setback radius remains within the boundaries of the subject property;
    c) construction plans for site clearing, grading, landscaping, water drainage and stormwater control, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;
    d) eastern box turtle protection plan;
    e) plans to protect the tree roots from the utility trench; and
    f) proposed hours and days of the week for construction activities.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

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

6. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

7. Any request for extension of the time period referred to in Condition 6 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Cromwell.

8. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council within 90 days from the one year period of cessation of service. The Certificate Holder may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period.

9. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

10. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.

11. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

12. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

13. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.

14. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.

15. This Certificate may be surrendered by the Certificate Holder upon written notification and acknowledgment by the Council.

We hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed in the Service List, dated March 1, 2018, and notice of issuance published in the Hartford Courant.

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

ATTACHMENT 2

verizon

WIRELESS COMMUNICATIONS FACILITY

CROMWELL NORTH 2 CT
667 MAIN STREET
CROMWELL, CT 06416

DRAWING INDEX

SITE DIRECTIONS

START: 20 ALEXANDER DRIVE
WALLINGFORD, CONNECTICUT 06492

END: 667 MAIN STREET
CROMWELL, CT 06416

1.	HEAD SOUTH TOWARDS ALEXANDER DRIVE	279 FT
2.	SLIGHT RIGHT TOWARDS ALEXANDER DRIVE	289 FT
3.	TURN RIGHT TOWARDS ALEXANDER DRIVE	167 FT
4.	TURN RIGHT ONTO ALEXANDER DRIVE	0.3 MI
5.	TURN RIGHT ONTO BARNES INDUSTRIAL RD S.	0.1 MI
6.	TURN RIGHT ONTO CT-68 W	1.6 MI
7.	CONTINUE STRAIGHT TO STAY ON CT-68 E	0.2 MI
8.	SHARP LEFT TO MERGE ONTO I-91 N	0.3 MI
9.	MERGE ONTO I-91 N	12.6 MI
10.	TAKE EXIT 23 FOR WEST STREET	0.6 MI
11.	TURN RIGHT ONTO STATE HWY 411/WEST STREET	0.1 MI
12.	TURN RIGHT ONTO CAPITAL BOULEVARD	0.5 MI
13.	TURN RIGHT ONTO HENKEL WAY	0.3 MI
14.	TURN LEFT ONTO BROOK STREET	0.9 MI
15.	TURN RIGHT ONTO CT-99 S (DESTINATION ON RIGHT)	1.0 MI

LOCATION MAP
SCALE : 1" = 500'-0"

SITE INFORMATION

VZ SITE NAME: CROMWELL NORTH 2 CT
VZ PROJ FUZE I.D.: 17002768
VZ LOCATION CODE: 469424
VZ PROJECT CODE: ----
LOCATION: 667 MAIN STREET
CROMWELL, CT 06416

PROJECT SCOPE: REFER TO NOTES ON DRAWING C-1 FOR SCOPE OF WORK.

MAP/BLOCK/LOT: 48/15/28C

ZONING DISTRICT: BP (BUSINESS PARK)

LATITUDE: 41° 37' 56.625" N (41.63239583° N)

LONGITUDE: 72° 39' 10.727" W (-72.65297972° W)

SITE COORDINATES AND GROUND ELEVATION OBTAINED FROM FAA-1A CERTIFICATION PREPARED BY MARTINEZ & COUCH, DATED NOVEMBER 19, 2018

GROUND ELEVATION: 147'± AMSL

PROPERTY OWNER: CROMWELL CONCRETE PRODUCTS, INC
667 MAIN STREET
CROMWELL, CT 06416

APPLICANT: CELLCO PARTNERSHIP
d/b/a VERIZON WIRELESS
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

LEGAL/REGULATORY COUNSEL: ROBINSON & COLE, LLP
KENNETH C. BALDWIN, ESQ.
280 TRUMBULL STREET
HARTFORD, CT 06103

ENGINEER CONTACT: ALL-POINTS TECHNOLOGY CORP., P.C.
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385
(860) 663-1697

Cellco Partnership d/b/a
verizon
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	04/12/23	FOR REVIEW: JRM
1	04/18/23	FOR FILING: JRM
2	04/19/23	REV. FOR FILING: JRM
3		
4		
5		
6		

STATE OF CONNECTICUT
MICHAEL TRODDEN
33313
LICENSED
PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: CROMWELL CONCRETE
ADDRESS: PRODUCTS, INC 667 MAIN STREET CROMWELL, CT 06416

CROMWELL NORTH 2 CT

SITE ADDRESS: 667 MAIN STREET CROMWELL, CT 06416

APT FILING NUMBER: CT141_12280

DRAWN BY: ELZ
DATE: 04/12/23
CHECKED BY: JRM

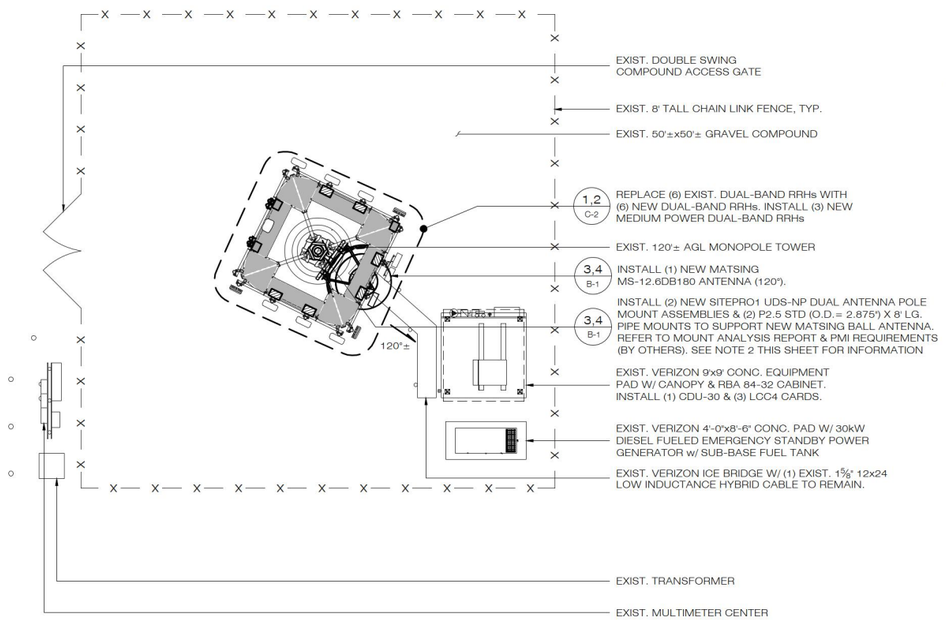
VZ PROJECT CODE: ----
VZ LOCATION CODE: 469424
VZ FUZE ID: 17002768

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1

GENERAL ABBREVIATION LIST:

- ABP ABOVE BASE PLATE
- AGL ABOVE GROUND LEVEL
- AMSL ABOVE MEAN SEA LEVEL
- AWS ADVANCED WIRELESS SERVICE
- HDG HOT DIP GALVANIZED
- OVP OVER VOLTAGE PROTECTION
- RRH REMOTE RADIO HEAD
- V.I.F. VERIFY IN FIELD
- W.P. WORK POINT
- A.F.R. ABOVE FINISH ROOF

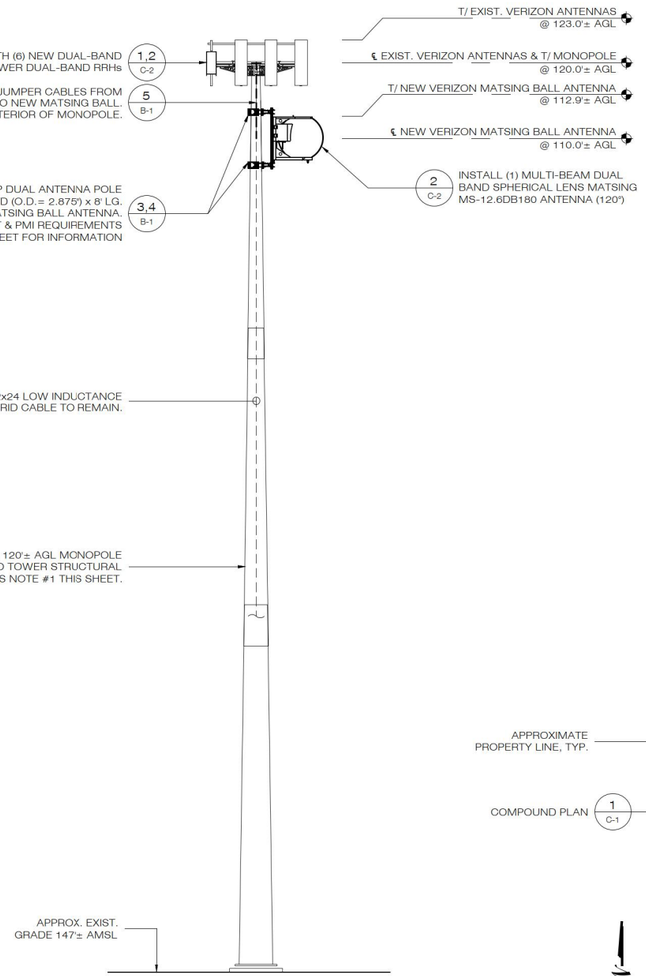


1 C-1 COMPOUND PLAN

SCALE : ⅛" = 1'-0"

8' 0 4' 8' 16'

⅛" SCALE: 1 INCH= 8'-0"



2 C-1 TOWER ELEVATION

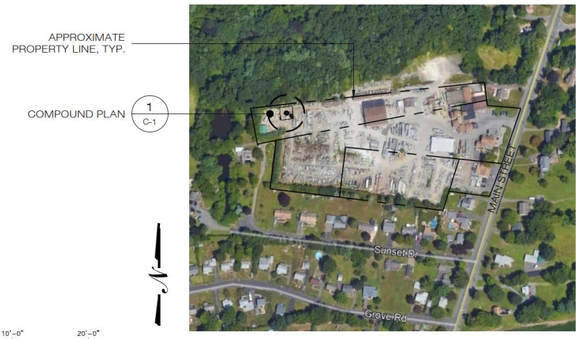
SCALE : 1" = 10'-0"

10'-0" 0 5'-0" 10'-0" 20'-0"

10' SCALE: 1 INCH= 10'-0"

NOTES:

1. REFER TO TOWER STRUCTURAL ANALYSIS REPORT PREPARED BY ALL-POINTS TECHNOLOGY CORPORATION, P.C., MARKED REV1, DATED 04/19/23, AVAILABLE UNDER SEPARATE COVER.
2. REFER TO MOUNT ANALYSIS REPORT & PMI REQUIREMENTS PREPARED BY COLLIERS ENGINEERING & DESIGN, PROJECT #23777003 MARKED REV1, DATED 04/19/23, AVAILABLE UNDER SEPARATE COVER.
3. BASE MAPPING FROM FIELD MEASUREMENTS TAKEN BY ALL-POINTS TECHNOLOGY CORPORATION, P.C. ON 07/02/20 & 04/05/23, COP IMAGES & AS-BUILT DATA (BY OTHERS), DATED 09/21/21.
4. PROJECT SCOPE INCLUDES THE FOLLOWING:
   - REPLACEMENT OF SIX (6) EXIST. RRHs w/ SIX (6) NEW SAMSUNG ORAN DUAL HIGH BAND RRHs (2 PER SECTOR)
   - INSTALLATION OF (3) NEW DUAL-BAND MEDIUM POWER ORAN RRHs
   - INSTALLATION OF (1) NEW MATSING MS-12.6DB180 ANTENNA (120°) & ASSOCIATED MOUNTS.
   - INSTALLATION OF (18) NEW ½" JUMPER CABLES
4. ALL EXPOSED STEEL AND HARDWARE TO BE HOT DIP GALV. (HDG). PAINT TO MATCH EXIST. (WHERE APPLICABLE)
5. CAP & WEATHERPROOF ALL UN-USED CABLE ENTRY PORTS (WHERE APPLICABLE).
6. MOUNT & GROUND ALL NEW EQUIPMENT IN ACCORDANCE WITH NEC (NFPA-70), NESC AND MANUFACTURERS SPECIFICATION.
7. SECURE ALL NEW ANTENNA CABLES PER MANUFACTURER RECOMMENDATIONS.
8. BOND NEW ANTENNA MOUNTING PIPES TO ANTENNA SECTOR GROUND BAR w/ # 2 AWG, BCW, (WHERE APPLICABLE).
9. ANTENNA CONFIGURATIONS SHOWN HEREIN ARE FRONT ELEVATIONS.
10. ANTENNA SPACING DIMENSIONS ARE TO THE CENTER OF THE EXIST. ANTENNA AND PROP. ANTENNA FACE.
11. REFER TO THE FINAL RFDS PROVIDED BY VERIZON FOR THE LATEST INFORMATION REGARDING EQUIPMENT MODELS, REQUIRED CABLING & DOWN-TILT INFORMATION.



LOCATION PLAN

SCALE: 1" = 300'

Cellco Partnership d/b/a
verizon
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	04/12/23	FOR REVIEW: JRM
1	04/18/23	FOR FILING: JRM
2	04/19/23	REV. FOR FILING: JRM
3		
4		
5		
6		

STATE OF CONNECTICUT MICHAEL TRODDEN 33313 LICENSED PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: CROMWELL CONCRETE
ADDRESS: PRODUCTS, INC 667 MAIN STREET CROMWELL, CT 06416

CROMWELL NORTH 2 CT

SITE ADDRESS: 667 MAIN STREET CROMWELL, CT 06416

APT FILING NUMBER: CT141_12280

DRAWN BY: ELZ
DATE: 04/12/23 CHECKED BY: JRM

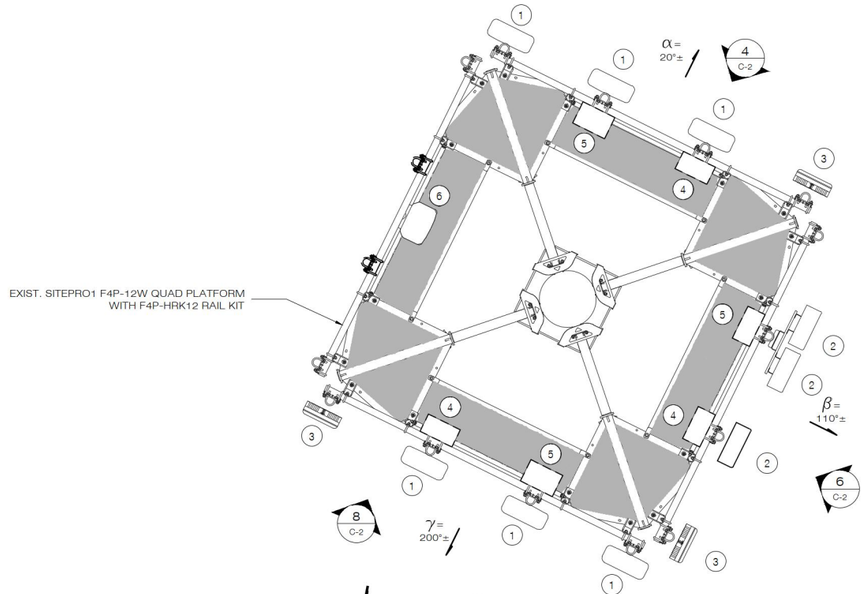
VZ PROJECT CODE: ----
VZ LOCATION CODE: 469424
VZ FUZE ID: 17002768

SHEET TITLE:

COMPOUND PLAN, TOWER ELEVATION & NOTES

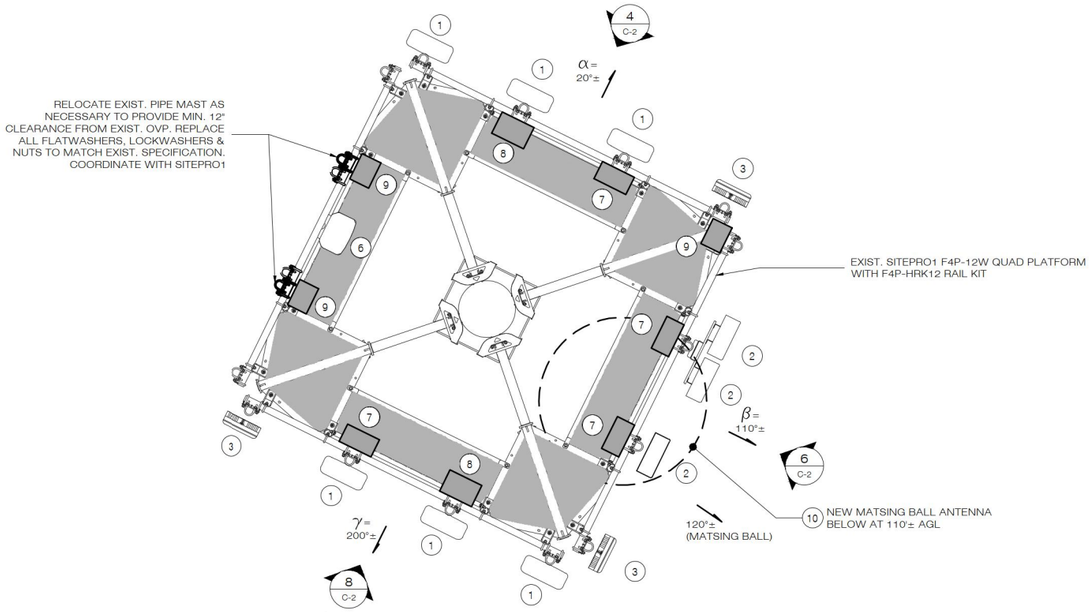
SHEET NUMBER:

C-1



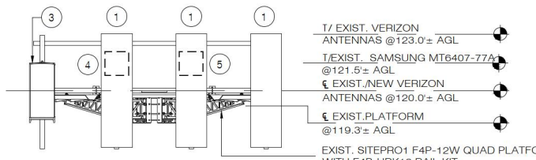
1 C-2 EXIST. EQUIPMENT CONFIGURATION PLAN

SCALE : 3/8" = 1'-0"



2 C-2 NEW EQUIPMENT CONFIGURATION PLAN

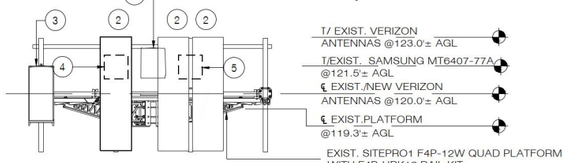
SCALE : 3/8" = 1'-0"



NEW ELEVATION (FRONT) EXIST. AZIMUTHS ALPHA: 20°

3 C-2 EXIST. EQUIP. MOUNTING CONFIG. (ALPHA)

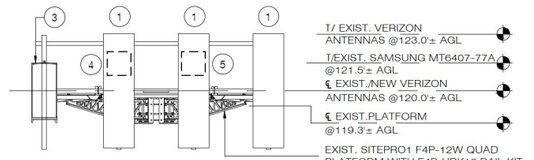
SCALE : 1/4" = 1'-0"



NEW ELEVATION (FRONT) EXIST. AZIMUTHS BETA: 110°

5 C-2 EXIST. EQUIP. MOUNTING CONFIG. (BETA)

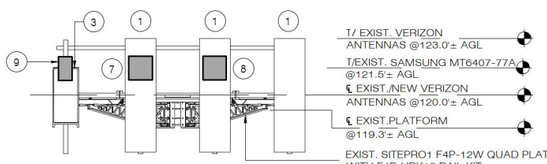
SCALE : 1/4" = 1'-0"



NEW ELEVATION (FRONT) EXIST. AZIMUTHS GAMMA: 200°

7 C-2 EXIST. EQUIP. MOUNTING CONFIG. (GAMMA)

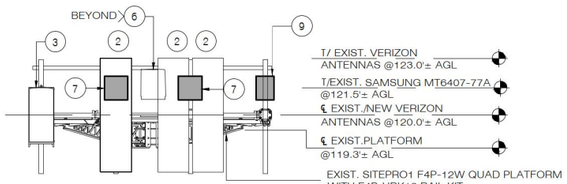
SCALE : 1/4" = 1'-0"



NEW ELEVATION (FRONT) EXIST. AZIMUTHS ALPHA: 20°

4 C-2 NEW EQUIP. MOUNTING CONFIG. (ALPHA)

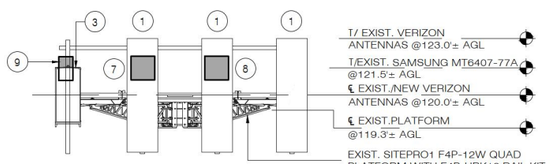
SCALE : 1/4" = 1'-0"



NEW ELEVATION (FRONT) EXIST. AZIMUTHS BETA: 110°

6 C-2 NEW EQUIP. MOUNTING CONFIG. (BETA)

SCALE : 1/4" = 1'-0"



NEW ELEVATION (FRONT) EXIST. AZIMUTHS GAMMA: 200°

8 C-2 NEW EQUIP. MOUNTING CONFIG. (GAMMA)

SCALE : 1/4" = 1'-0"

NOTES:

1. ANTENNA CONFIGURATIONS SHOWN HEREIN ARE FRONT ELEVATIONS.
2. ANTENNA SPACING DIMENSIONS ARE TO THE CENTER OF THE EXIST. ANTENNA AND PROP. ANTENNA FACE.
3. REFER TO THE FINAL RFDS PROVIDED BY VERIZON FOR THE LATEST INFORMATION REGARDING EQUIPMENT MODELS, REQUIRED CABLING & DOWN-TILT INFORMATION.

GENERAL ABBREVIATION LIST:

- ABP ABOVE BASE PLATE
- AGL ABOVE GROUND LEVEL
- AMSL ABOVE MEAN SEA LEVEL
- AWS ADVANCED WIRELESS SERVICE
- HDG HOT DIP GALVANIZED
- OVP OVER VOLTAGE PROTECTION
- RRH REMOTE RADIO HEAD
- V.I.F. VERIFY IN FIELD
- W.P. WORK POINT
- A.F.R. ABOVE FINISH ROOF

SCOPE OF WORK (ALL) SECTORS

1. EXIST. ANTENNA (TO REMAIN) MODEL: COMMSCOPE NNHH-65B-R4-V1
2. EXIST. ANTENNA (TO REMAIN) MODEL: COMMSCOPE NHH-45B-R2B
3. EXIST. ANTENNA (TO FEMAIN) MODEL: SAMSUNG MT6407-77A
4. EXIST. DUAL BAND RRH (TO BE REPLACED) MODEL: SAMSUNG B5/B13 RRH-BR04C (RFV01U-D2A)
5. EXIST. DUAL BAND RRH (TO BE REPLACED) MODEL: SAMSUNG B2A/B66 RRH-BR049 (RFV01U-D1A)
6. EXIST. 12OVP (TO REMAIN) MODEL: RAYCAP RVZDC-6627-PF-48
7. NEW DUAL BAND ORAN RRH MODEL: SAMSUNG B5/B13 RRH ORAN (RF4440d-13A)
8. NEW DUAL BAND ORAN RRH MODEL: SAMSUNG B2/B66a RRH ORAN (RF4439-25A)
9. NEW DUAL BAND MEDIUM POWER ORAN RRH MODEL: SAMSUNG B2/B66a RRH ORAN (RF4402D-D1A)
10. NEW ANTENNA (BELOW PLATFORM) MODEL: MATSING MS-12.6DB180

Cellco Partnership d/b/a
verizon
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	04/12/23	FOR REVIEW: JRM
1	04/18/23	FOR FILING: JRM
2	04/19/23	REV. FOR FILING: JRM
3		
4		
5		
6		

STATE OF CONNECTICUT · MICHAEL TRODDEN · 33313 · LICENSED PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: CROMWELL CONCRETE PRODUCTS, INC
ADDRESS: 667 MAIN STREET CROMWELL, CT 06416

CROMWELL NORTH 2 CT

SITE ADDRESS: 667 MAIN STREET CROMWELL, CT 06416

APT FILING NUMBER: CT141_12280

DRAWN BY: ELZ
DATE: 04/12/23 CHECKED BY: JRM

VZ PROJECT CODE: ----
VZ LOCATION CODE: 469424
VZ FUZE ID: 17002768

SHEET TITLE:
EXISTING & NEW EQUIPMENT MOUNTING CONFIGURATIONS

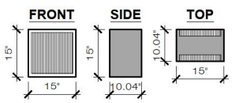
SHEET NUMBER:
C-2

EQUIPMENT DATA

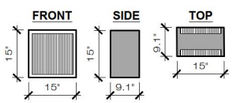
EQUIPMENT SPECIFICATIONS

SECTOR	ANTENNA MAKE/MODEL	QTY	AZIMUTH	EQUIPMENT STATUS	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	WEIGHT (LBS)
ALPHA	SPARE: COMMSCOPE NNHH-65B-R4-V1	1	20°	ETR	72.0	19.6	7.6	78.4 (2)
	700/850/1900/2100: COMMSCOPE NNHH-65B-R4-V1	1	20°	ETR	72.0	19.6	7.6	78.4 (2)
	700/850/1900/2100: COMMSCOPE NNHH-65B-R4-V1	1	20°	ETR	72.0	19.6	7.6	78.4 (2)
	SAMSUNG MT6407-77A	1	20°	ETR	35.1 (5)	16.1 (5)	5.5 (5)	87.1 (2)(5)
BETA	700/850/1900/2100: COMMSCOPE NHH-45B-R2B	1	110°	ETR	72.0	18.0	7.0	73.6 (2)
	700/850/1900/2100: COMMSCOPE NHH-45B-R2B	1	110°	ETR	72.0	18.0	7.0	73.6 (2)
	SPARE: COMMSCOPE NHH-45B-R2B	1	110°	ETR	72.0	18.0	7.0	73.6 (2)
	SAMSUNG MT6407-77A	1	110°	ETR	35.1 (5)	16.1 (5)	5.5 (5)	87.1 (2)(5)
GAMMA	SPARE: COMMSCOPE NNHH-65B-R4-V1	1	200°	ETR	72.0	19.6	7.6	78.4 (2)
	700/850/1900/2100: COMMSCOPE NNHH-65B-R4-V1	1	200°	ETR	72.0	19.6	7.6	78.4 (2)
	700/850/1900/2100: COMMSCOPE NNHH-65B-R4-V1	1	200°	ETR	72.0	19.6	7.6	78.4 (2)
	SAMSUNG MT6407-77A	1	200°	ETR	35.1 (5)	16.1 (5)	5.5 (5)	87.1 (2)(5)
	APPURTENANCE MAKE/MODEL							
	SAMSUNG B2/B66A RRH ORAN (RF4439d-25A)	2	-	NEW	15.0	15.0	10.04	74.7
	SAMSUNG B5/B13 RRH ORAN (RF4440d-13A)	4	-	NEW	15.0	15.0	9.1	70.3
	SAMSUNG B2/B66A RRH (RF4402d-D1A)	3	-	NEW	15.0	11.8	8.9	62.8
	RAYCAP RVZDC-6627-PF-48	1	-	ETR	29.5	16.5	12.6	32

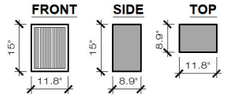
(1) 'ETR' DENOTES EXIST. TO REMAIN
(2) WEIGHT WITHOUT MOUNTING BRACKET
(3) ANTENNA DATA BASED ON LATEST VERIZON RFDS
(4) EQUIPMENT CONFIGURATION INDICATED ABOVE AS VIEWED FROM BEHIND
(5) NOT TO EXCEED



SAMSUNG DUAL HIGH BAND B2/B66A
(RF4439d-25A) ORAN REMOTE RADIO
HEAD (RRH)
HxWxD=15.0"x15.0"x10.1" (74.7 Lbs)

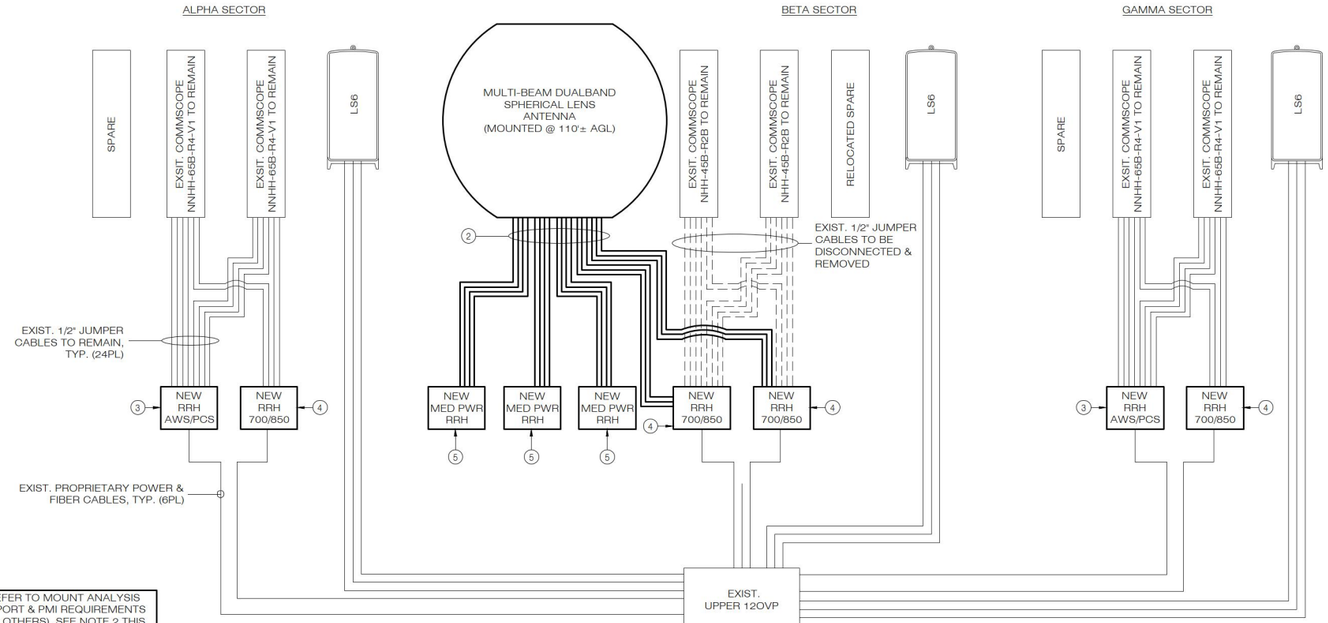


SAMSUNG DUAL LOW BAND B5/B13
(RF4440d-13A) ORAN
REMOTE RADIO HEAD (RRH)
HxWxD=15.0"x15.0"x9.1" (70.3 Lbs)



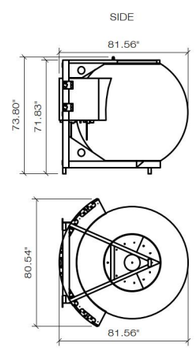
SAMSUNG MEDIUM POWER
B2/B66A (RF4402d-D1A) AWS/PCS
REMOTE RADIO HEAD (RRH)
HxWxD=15.0"x11.8"x8.9" (62.8 Lbs)

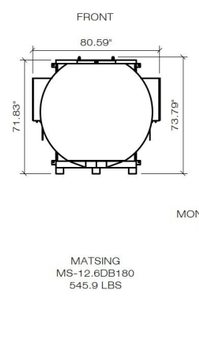
2 B-1 RRH EQUIPMENT
SCALE : ½" = 1'-0"



NOTE:
ANTENNA CONFIGURATIONS SHOWN WITHIN PLUMBING DIAGRAM ARE VIEWED FROM BEHIND.

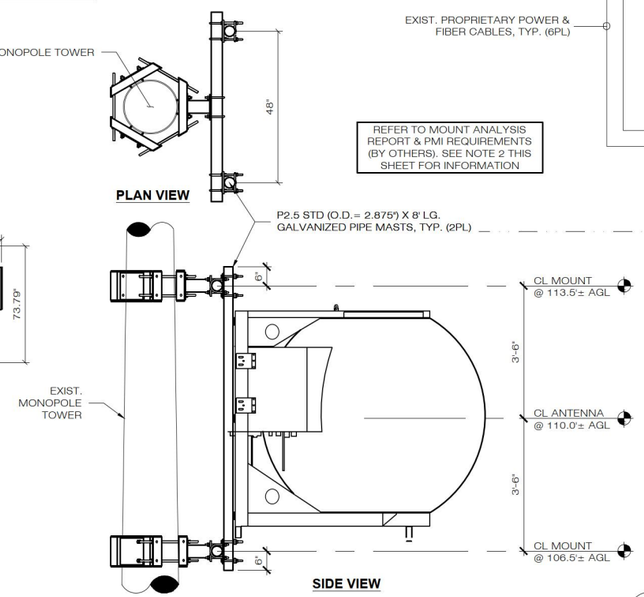
1 B-1 PLUMBING DIAGRAM
SCALE : ½" = 1'-0"



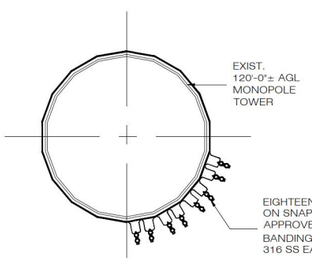


MATSING
MS-12.6DB180
545.9 LBS

3 B-1 ANTENNA DETAIL
SCALE : ¼" = 1'-0"



4 B-1 MOUNT DETAIL
SCALE : ½" = 1'-0"



EIGHTEEN (18) ½ " COAXIAL JUMPER CABLES w/ SNAP-IN HANGERS SUPPORTED ON SNAP-IN STAND-OFF ADAPTERS (COMMSCOPE P/N/ 294562) OR ENGINNER APPROVED EQUAL. SECURE HANGERS TO MONOPOLE TOWER w/ TYPE 316 SS BANDING; ¾" WIDE x 0.03" THICK (BAND-IT P/N C40699) AND HEAVY DUTY TYPE 316 SS EAR-LOKT BUCKLES (BAND-IT P/N C45699) @ 4'-0" O.C. (MAX.) (TYP.)

NOTE:
CABLES SHALL BE FLUSH MOUNTED TO MONOPOLE TOWER IN TWO ROWS

5 B-1 CABLE SUPPORT DETAIL
SCALE : 1" = 1'-0"

BILL OF MATERIALS

		QUANTITY	LENGTH	COMMENTS
1	MULTI-BEAM DUALBAND SPHERICAL LENS ANTENNA			MATSING MS-12.6DB180
2	½" JUMPER CABLES	18	40 FT +/-	ROUTE FROM NEW RRHs TO MATSING BALL ANTENNA
3	AWS/PCS RRH	2		SAMSUNG B2/B66A RRH ORAN (RF4439d-25A)
4	700/850 RRH	4		SAMSUNG B5/B13 RRH ORAN (RF4440d-13A)
5	AWS/PCS MEDIUM POWER RRH	3		SAMSUNG B2/B66A RRH (RF4402d-D1A)

NOTES:
1. INFORMATION SHOWN HEREON IS FOR USE BY VERIZON EQUIPMENT OPERATIONS.
2. INFORMATION IS BASED ON LATEST RFDS
3. * DENOTES EQUIPMENT DESIGNATED "FOR LEASING ONLY" (WHERE APPLICABLE)
4. INSTALL ALARM BOARDS AT ALL OVPs WHERE REQUIRED. COORDINATE w/ VERIZON EQUIPMENT ENGINEERING.
5. INSTALL UP-CONVERTER(S) LOCATED AT BASE OVPs WHERE REQUIRED. COORDINATE w/ VERIZON EQUIPMENT ENGINEERING AS NECESSARY.
6. COORDINATE ANTENNA CABLING REQUIREMENTS WITH VERIZON ENGINEERING.

Cellco Partnership d/b/a
verizon
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	04/12/23	FOR REVIEW: JRM
1	04/18/23	FOR FILING: JRM
2	04/19/23	REV. FOR FILING: JRM
3		
4		
5		
6		

STATE OF CONNECTICUT
MICHAEL TRODDEN
33313
LICENSED
PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: CROMWELL CONCRETE
ADDRESS: PRODUCTS, INC 667 MAIN STREET CROMWELL, CT 06416

CROMWELL NORTH 2 CT

SITE ADDRESS: 667 MAIN STREET CROMWELL, CT 06416
APT FILING NUMBER: CT141_12280
DRAWN BY: ELZ
DATE: 04/12/23
CHECKED BY: JRM
VZ PROJECT CODE: ----
VZ LOCATION CODE: 469424
VZ FUZE ID: 17002768

SHEET TITLE:
RF BILL OF MATERIALS, MECHANICAL SPECIFICATIONS & EQUIPMENT DETAILS

SHEET NUMBER:
B-1

DESIGN BASIS:

GOVERNING CODES/DESIGN STANDARDS:

2021 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE 2022 CONNECTICUT STATE BUILDING CODE
ASCE 7-16
TIA-222-H

DESIGN CRITERIA:

RISK CATEGORY (TOWER) :	II	(TIA-222-H, TABLE 2-1)

WIND LOADS:

ULTIMATE BASIC WIND SPEED, V_{ULT}: (3-SECOND GUST)	120 MPH	(2022 CSBC APPENDIX P)
EXPOSURE CATEGORY	C	(2021 IBC SEC. 1609.4.3)

ICE LOAD

BASIC WIND SPEED (V_i) = W/ ICE 3-SEC GUST	50 MPH	(TIA-222-H, ANNEX B)
DESIGN ICE THICKNESS (T_i) =	1.50"	(TIA-222-H, ANNEX B)

SEISMIC LOAD:

REFER TO SECTION 1613 OF THE 2015 IBC/2018 CONNECTICUT STATE BUILDING CODE FOR SEISMIC CLASSIFICATION AND LOADING DETERMINATION.

01 GENERAL:

ABBREVIATIONS USED IN THESE SPECIFICATIONS INCLUDE THE FOLLOWING:

ACI	AMERICAN CONCRETE INSTITUTE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AWS	AMERICAN WELDING SOCIETY
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN STANDARDS AND TESTING METHODS
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
ICC-ES	INTERNATIONAL CODE COUNCIL EVALUATION SERVICE
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
UL	UNDERWRITERS LABORATORIES
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

EVERY INDIVIDUAL TRADE, DISCIPLINE, AND CONTRACTOR SHALL INCLUDE THESE GENERAL SPECIFICATIONS.

THE ENGINEER IS NOT RESPONSIBLE FOR NOR A GUARANTOR OF THE INSTALLING CONTRACTORS WORK, ADEQUACY OF ANY SITE COMPONENT, SUPERVISION OF ANY WORK, AND SAFETY IN, ON, OR ABOUT THE WORK SITE.

ANY REFERENCE HEREIN TO AN OR EQUAL ITEM, THAT EQUAL ITEM SHALL BE PRE-APPROVED BY THE CONSTRUCTION MANAGER BEFORE INSTALLATION

ALL TRADES SHALL COORDINATE THEIR WORK WITH ALL OTHER TRADES AND OTHER WORK AND CONDITIONS AS APPROPRIATE OR REQUIRED TO AVOID CONFLICTS. RESOLVE AND COORDINATE ALL CONFLICTS WITH ALL AFFECTED WORK AND SITE OPERATIONS. COORDINATION WITH THE SITE SHALL BE WITH THE OWNER, OR OWNER'S SPECIFIED REPRESENTATIVE, FOR EVERYTHING RELATED TO THE INSTALLATION OF THIS PROJECT.

ALL WORK SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE EDITIONS OF ALL APPLICABLE CODES AND SHALL BE ACCEPTABLE TO ALL AUTHORITIES HAVING JURISDICTION (AHJ). WHERE A CONFLICT EXISTS BETWEEN CODES, PLANS, SPECIFICATIONS, AND/OR AHJ, THE MORE STRINGENT AUTHORITY SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLANS AND SPECIFICATIONS, PLAN SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLAN SHEETS, CONSTRUCTION MANAGER SHALL BE CONSULTED PRIOR TO COMMENCING ANY WORK.

CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND PROPERLY OPERATIVE AND USABLE SYSTEM THROUGHOUT AND AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN AND/OR OTHERWISE REQUIRED.

CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, INSTALLATIONS, AND EQUIPMENT IN THE FIELD PRIOR TO BID, FABRICATION, AND INSTALLATION OF ANY WORK.

CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. THE ENGINEER SHALL BE NOTIFIED FOR INSPECTIONS PRIOR TO CLOSING PENETRATIONS AND OF ANY CONDITIONS WHICH PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

CONTRACTOR SHALL VISIT THE SITE TO MANAGE AND GAIN APPROVAL FOR ALL TENANT DISRUPTIONS, POWER OUTAGES, WORK SCHEDULES, DEFINITION OF WORK AREA AND WORK STORAGE, NEWER BUILDING/SITE ACCESS, NOISE AND CLEANLINESS REQUIREMENTS WITH THE BUILDING/SITE MANAGEMENT PRIOR TO ALL WORK. ANY DISRUPTIONS SHALL BE KEPT TO A MINIMUM AND SHALL BE IMPLEMENTED ONLY UPON WRITTEN APPROVAL OF THE OWNER.

THE CONTRACTOR SHALL SAFEGUARD AGAINST CREATING ANY HAZARD AFFECTING TENANT EGRESS OR COMPROMISING SITE SECURITY MEASURES.

PRIOR TO ALL BELOW-GRADE WORK AND ANY SURFACE WORK IN A NEW AREA FOR STRUCTURES OR VEHICLES, CONTRACTOR SHALL ENGAGE A MARKOUT SERVICE TO IDENTIFY ANY UNDERGROUND STRUCTURES, CONDUITS, AND PIPELINES IN THE AREA. ALL EXISTING SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, AND OTHER UNDERGROUND UTILITIES IDENTIFIED OR ENCOUNTERED, SHALL BE PROTECTED AT ALL TIMES. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN DIGGING OR EXCAVATING IN ANY MANNER AROUND OR NEAR SUCH UTILITIES. CONTRACTOR IS RESPONSIBLE FOR REPAIRS, REPLACEMENT, AND ALL DAMAGES DUE TO DAMAGE OF UTILITIES BY HIS OPERATIONS.

ALL EXISTING AND NEW EQUIPMENT AND MATERIAL LOCATIONS, ROUTING, ORIENTATION, MOUNTING, SPECIFICATIONS AND GENERAL INSTALLED CHARACTERISTICS SHALL BE CONSIDERED DIAGRAMMATIC ON THE PLANS. EXACT CONDITIONS SHALL BE DETERMINED IN THE FIELD PRIOR TO ANY INSTALLATION. ANY DIFFERENCES THAT MAY CAUSE SCHEDULE, COST, OR QUALITY SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER OR ENGINEER PRIOR TO ANY WORK.

ALL REFERENCES HEREIN TO VERIFICATION OF ANY CONDITION OF SITE, FIELD, PLANS, OR SPECIFICATIONS PRIOR TO ANY WORK SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR. ANY AND ALL ADDITIONS, MODIFICATIONS, CHANGES, REPAIR, OR DEMOLITION AS A RESULT OF FAILURE TO BRING ANY EXISTING CONDITION PROPERLY TO THE ATTENTION OF THE OWNER OR ENGINEER SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR WITHOUT DELAY, COST, OR CHANGES IN QUALITY.

ALL NOTES THIS SHEET SHALL APPLY UNLESS SPECIFICALLY NOTED OTHERWISE ON THE INCLUDED DRAWINGS OR IN SEPARATE PROJECT SPECIFICATIONS AS APPLICABLE. ALL SPECIFICATIONS SHALL BE CONSIDERED REQUIRED UNLESS APPROVED EQUAL BY THE OWNER, CONSTRUCTION MANAGER, OR ENGINEER AS APPLICABLE.

THE WORDS "PROVIDE" OR "INSTALL" SHALL MEAN FURNISH AND INSTALL.

CONTRACTOR SHALL PROVIDE ALL CUTTING AND PATCHING AS REQUIRED FOR THE INSTALLATION OF HIS WORK. ANY PATCHING SHALL MATCH EXISTING SURROUNDING AREA IN ALL RESPECTS. ALL REMOVED MATERIAL SHALL BE REMOVED FROM THE PREMISES DAILY IN AN APPROVED SAFE MANNER.

ALL SURPLUS MATERIAL SHALL BE REMOVED FROM THE SITE PROMPTLY WHEN DEEMED TO BE SURPLUS.

EVERY CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF HIS WORK AND NEWLY INSTALLED OR EXISTING WORK, INCLUDING PROTECTION OF THE SITE, ALL STRUCTURES, AND ALL OCCUPANTS. FURNISH, INSTALL, MAINTAIN, AND REMOVE AS APPROPRIATE, ALL APPROPRIATE BARRIERS, SAFETY GUARDS, SIGNAGE, AND SECURITY AS REQUIRED.

EVERY CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR RESPECTIVE FEES, PERMITS, INSPECTIONS, TESTING, CERTIFICATES, AND ALL MANAGEMENT OF SAME REQUIRED FOR COMPLETION OF AND LEGAL OCCUPANCY OF THE FINISHED PROJECT.

ALL CONTRACTORS SHALL PROVIDE ALL NECESSARY TOOLS, FIXTURES, SERVICES, MATERIALS, JOB AIDS, AND PERSONNEL REQUIRED FOR THE EXECUTION OF THEIR WORK.

EACH CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP BY THEM TO BE FREE OF DEFECTS AND MAINTAINED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE INSTALLATION BY THE OWNER AND ENGINEER.

ALL WORK SHALL BE PERFORMED BY LICENSED CONTRACTORS IN THE TRADE HAVING JURISDICTION.

ANY DEVIATION, MODIFICATION, ADDITION, OR CHANGE IN DESIGN SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE OWNER OR ENGINEER.

ALL CONTRACTORS SHALL SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT AND MATERIALS TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION AND INSTALLATION, AND SHALL NOT PROCEED UNTIL ENGINEER APPROVAL IN WRITING IS RETURNED. EACH CONTRACTOR SHALL MAINTAIN ON JOB SITE A COMPLETE SET OF SHOP DRAWINGS WITH ANY DEVIATIONS FROM THE ORIGINAL DESIGN SHALL BE NOTED.

ALL MATERIALS AND EQUIPMENT SHALL BE NEW, WITHOUT BLEMISH OR DEFECT, AND SUITABLE AND LISTED FOR THE INSTALLATION AND SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS OR SPECIFICATIONS. ALL ITEMS OF EQUIPMENT OR MATERIAL THAT ARE OF ONE GENERIC TYPE SHALL BE ONE MANUFACTURER THROUGHOUT.

ALL MATERIALS, EQUIPMENT, TOOLS, AND ITEMS UNDER THE CONTRACTOR'S RESPONSIBILITY ON THE JOBSITE SHALL BE ADEQUATELY SECURED, MAINTAINED, AND PROTECTED, SO AS NOT TO BECOME DAMAGED OR CREATE ANY HAZARD TO PERSONNEL OR PROPERTY.

THE CONTRACTORS HOURS OF WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES AND BE APPROVED BY THE OWNER.

CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR ALL OF HIS CREW AND INSURE THAT EVERY CREW MEMBER FOLLOWS SAVE WORK PRACTICES. SAFETY TRAINING SHALL INCLUDE, BUT NOT BE LIMITED TO, FALL PROTECTION, CONFINED SPACE ENTRY, ELECTRICAL SAFETY, AND TRENCHING/EXCAVATION SAFETY WHERE SUCH WORK IS EXECUTED OR ENCOUNTERED.

ALL TEMPORARY WORK REQUIRED OR SPECIFIED AS A PART OF THIS WORK, SHALL MEET ALL OF THE SAME REQUIREMENTS AS PERMANENT INSTALLATIONS, SHALL MEET ALL APPLICABLE CODE REQUIREMENTS, AND SHALL BE COMPLETELY REMOVED AFTER ITS PURPOSES HAVE BEEN SERVED.

ANY EXISTING UTILITY, SERVICE, STRUCTURE, EQUIPMENT, OR FIXTURE OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER.

IF ASBESTOS IS ENCOUNTERED DURING WORK EXECUTION, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER AND CEASE ALL ACTIVITIES IN AFFECTED AREAS UNTIL NOTIFIED BY THE CONSTRUCTION TO RESUME OPERATIONS.

EXIST. ELECTRICAL AND MECHANICAL FIXTURES, PIPING, WIRING AND EQUIPMENT OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER. TEMPORARY SERVICE INTERRUPTIONS MUST BE COORDINATED WITH OWNER.

05 STEEL:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

MATERIALS:

WIDE FLANGE	ASTM A992, GR 50
TUBING	ASTM A500, GR B
PIPE	ASTM A53, GR B
BOLTS	ASTM F3125, GRADE A325
GRATING	TYPE GW-2 (1-1/4"x3/16" BARS)
EXISTING METALS	ASTM A36

PROVIDE CERTIFICATION THAT WELDERS TO BE USED IN WORK ARE LICENSED AND HAVE SATISFACTORILY PASSED AWS QUALIFICATION TEST UNDER THE PROVISIONS OF APPENDIX D, PARTS II AND III OF THE AWS CODE FOR WELDING IN BUILDING CONSTRUCTION.

ALL BUILDING CONNECTION POINTS TO BE CENTERED ON EXISTING STRUCTURAL BEARING POINTS AND THE LOCATIONS ARE TO BE VERIFIED IN FIELD PRIOR TO THE FABRICATION OF STEEL.

DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF AISC SPECIFICATION FOR *"THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS"*.

NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIAMETER GALVANIZED ASTM A 307 BOLTS UNLESS OTHERWISE NOTED.

ALL STEEL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIPPED GALVANIZED) COATINGS" ON IRON AND STEEL PRODUCTS WITH A COATING WEIGHT OF 2 OZ/SF.

ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE EXPOSED TO WEATHER SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE."

DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY TOUCHING UP ALL DAMAGED GALVANIZED STEEL WITH COLD ZINC, "GALVANOX", "DRY GALV", OR "ZINC IT", IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH UP DAMAGED NON-GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.

THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW. FIELD CUTTING OF STRUCTURAL STEEL IS NOT PERMITTED EXCEPT WITH THE PRIOR APPROVAL OF THE ENGINEER.

CONTRACTOR TO REMOVE AND RE-INSTALL ALL FIRE PROOFING AS REQUIRED DURING CONSTRUCTION.

THE STEEL STRUCTURE SHALL BE DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER COMPLETION. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION.

ALL STEEL ELEMENTS SHALL BE INSTALLED PLUMB AND LEVEL.

TOWER MANUFACTURER'S DESIGNS SHALL PREVAIL FOR TOWER.

CONNECTIONS SHALL BE DESIGNED BY THE FABRICATOR AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC *"MANUAL OF STEEL CONSTRUCTION"*. CONNECTIONS SHALL BE PROVIDED TO CONFORM TO THE REQUIREMENTS OF TYPE 2 CONSTRUCTION.

STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE MINIMUM 3/4" DIAMETER AND EACH CONNECTION SHALL HAVE MINIMUM TWO BOLTS. LOCK WASHERS ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES. IF TENSION CONTROL BOLTS ARE USED, CONNECTIONS SHALL BE DESIGNED FOR SLIP CRITICAL BOLT ALLOWABLE LOAD VALUES.

DESIGN CONNECTIONS AT BEAM ENDS FOR 10 KIPS (MIN).

ALL U-BOLTED CONNECTIONS SHALL BE COMPLETED WITH DOUBLE NUTS OR A LOCK WASHER.

CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS *"STANDARD QUALIFICATION PROCEDURES"*. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND SHALL CONFORM TO AISC AND D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE LARGER OF 1/4" FILLET OR MINIMUM SIZE PER TABLE J2.4 IN THE AISC *"MANUAL OF STEEL CONSTRUCTION"*. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED. SEE NOTE REGARDING DAMAGED GALVANIZED SURFACES.

ALL ARC AND GAS WELDING SHALL BE DONE BY A LICENSED AND CERTIFIED WELDER IN ACCORDANCE WITH AWS.

SEAL ALL PENETRATIONS AND SEAMS BETWEEN MASONRY AND STEEL WITH DOW CORNING 790 SILICONE BUILDING SEALANT OR EQUAL.

26 ELECTRICAL:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

ALL ELECTRICAL CONDUCTORS:

- INSULATION SHALL BE MINIMUM 600V TYPE THHN, THWN-2, OR XHHW.
- BRANCH CIRCUIT CONDUCTORS SHALL BE SOFT DRAWN 98% MINIMUM CONDUCTIVITY PROPERLY REFINED COPPER.
- FEEDER CIRCUIT CONDUCTORS SHALL BE EITHER COPPER OR ALUMINUM OF THE APPROPRIATE SIZE FOR THE APPLICATION, OR AS SPECIFICALLY NOTED.
- PERMANENTLY LABEL OR TAG ALL CONDUCTORS WITH THEIR CIRCUIT DESIGNATION AT ALL TERMINATION ENDS, SPLICES, AND VISIBLE AS PASS-THROUGH IN ALL ENCLOSURES.

ALL CONDUIT, RACEWAY, WIREWAYS, DUCTS, ETC. SHALL BE LISTED AND SUITABLE FOR THE APPLICATION. ONLY THE FOLLOWING CONDUITS AS APPROVED AND LISTED FOR THE APPLICATION SHALL BE ACCEPTABLE:

- ELECTRICAL METALLIC TUBING (EMT).
- COMPRESSION COUPLINGS AND CONNECTORS ONLY MADE UP WRENCH TIGHT.
- FLEXIBLE METAL CONDUIT (FMC) AND LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC).
- FINAL CONNECTIONS TO VIBRATING OR ADJUSTABLE EQUIPMENT INCLUDING, BUT NOT LIMITED TO, LIGHT FIXTURES, HVAC UNITS, TRANSFORMERS, MOTORS, ETC. OR WHERE EQUIPMENT IS PLACED UPON SLAB ON-GRADE.
- RIGID GALVANIZED STEEL (RGS).
- ALL FITTINGS, CONNECTORS, AND COUPLINGS SHALL BE THREADED MADE UP WRENCH TIGHT.
- RIGID POLYVINYL CHLORIDE (PVC) SCHEDULE 40 OR SCHEDULE 80.
- MAY BE USED FOR SERVICES, EXTERIOR, BELOW GRADE, AND WET LOCATIONS.
- SHALL NOT BE USED IN CONCRETE SLABS NOR EXPOSED WITHIN A BUILDING OR STRUCTURE.
- METAL-CLAD CABLE (MC)
- CONCEALED INSTALLATIONS ONLY.
- WITHIN A DUCT WITH SMOOTH OR CORRUGATED METAL JACKET AND NO OUTER COVERING OVER THE METAL JACKET.

IN FINISHED SPACES, ALL CONDUITS SHALL BE CONCEALED EXCEPT TO MAKE A FINAL CONNECTION TO EQUIPMENT NOT MOUNTED IN OR AGAINST FINISH MATERIAL.

ALL FEEDER AND BRANCH CIRCUITS SHALL HAVE A SEPARATE PROPERLY SIZED AND MARKED GROUNDING CONDUCTOR, PER APPLICABLE CODES, THAT BONDS ALL ENCLOSURES, BOXES, ETC. CONDUIT SHALL NOT BE USED AS A GROUNDING OR BONDING CONDUCTOR.

IF EXISTING ELECTRIC SERVICE IS TO REMAIN, CONTRACTOR SHALL BE VERIFY THAT IT MEETS PROJECT REQUIREMENTS WITHOUT MODIFICATION. IF IT IS TO BE ADDED OR REPLACED AS A PART OF THIS WORK, CONTRACTOR SHALL ORDER FROM, COORDINATE WITH, AND GAIN APPROVAL FROM THE ELECTRICAL UTILITY. ALL ELECTRICAL EQUIPMENT SHALL BE AS SPECIFIED AND AS APPROVED BY THE LOCAL UTILITY WHERE APPLICABLE.

ALL EQUIPMENT, ENCLOSURES, ETC. SHALL BE SUITABLE FOR THE INSTALLED ENVIRONMENT, MINIMUM NEMA 3R FOR ALL EXTERIOR INSTALLATIONS.

WIRING DEVICES SHALL BE SPECIFICATION GRADE AND WIRING DEVICE COVER PLATES SHALL BE PLASTIC WITH ENGRAVING AS SPECIFIED. COLOR SHALL BE IVORY. ALL DEVICES AND COVER PLATES SHALL BE OF THE SAME MANUFACTURER.

ALL FIRE-RATED PENETRATIONS SHALL BE SEALED USING A SUITABLE AND LISTED FIRE SEALING DEVICE OR GROUT THAT WILL MAINTAIN THE FIRE RATING OF THE STRUCTURE PENETRATED.

PROVIDE PERMANENTLY AFFIXED ENGRAVED NAMEPLATES FOR ALL CODE REQUIRED LABELING AND ON ALL PANELS, METERING, DISCONNECTS, AND ELECTRICAL EQUIPMENT THAT IDENTIFIES EQUIPMENT SERVED, ELECTRICAL SOURCE WITH CIRCUIT IDENTIFICATION, AND VOLTAGES WITHIN.

ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL FINAL TERMINATIONS TO ALL EQUIPMENT.

ALL ELECTRICAL APPURTENANCES THAT ARE DISCONNECTED SHALL BE COMPLETELY REMOVED WITH EXISTING STRUCTURES TO REMAIN, REPAIRED, FINISHED, FILLED, PAINTED, ETC. ALL PANEL SCHEDULES, EQUIPMENT LABELING, AND CODE-REQUIRED LABELING, SHALL BE VERIFIED AND PROPERLY COMPLETED TO MATCH THE INSTALLATION.

26 GROUNDING:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

GROUND ALL SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH BEST INDUSTRY PRACTICE, THE REQUIREMENTS OF THE NFPA 70 NATIONAL ELECTRICAL CODE (NEC), AND ALL OTHER APPLICABLE CODES AND REGULATIONS.

ALL GROUNDING ELECTRODES PRESENT AT EACH SERVICE LOCATION SHALL BE BONDED TOGETHER TO FORM THE GROUNDING ELECTRODE SYSTEM.

ALL EQUIPMENT ENCLOSURES, DEVICES, AND CONDUITS SHALL BE GROUNDED BY THE INSTALLATION OF A SEPARATE GROUNDING CONDUCTOR FOR ALL FEEDER AND BRANCH CIRCUITS THAT IS SIZED PER CODE OR IS OF THE SIZE INDICATED ON THE DRAWINGS, SHALL BE CONTINUOUS IN LENGTH, AND SHALL BE BONDED TO EACH ENCLOSURE PASSED THROUGH. CONDUIT SHALL NOT BE USED AS A GROUNDING OR BONDING WIRE OR CIRCUIT.

BOND ALL METALLIC CONDUITS TOGETHER THAT ARE CONNECTED TO NON-METALLIC ENCLOSURES, IN-GROUND BOXES, AND TO AN ENCLOSURE WHERE A GROUND BUS IS SPECIFIED OR SUPPLIED. ACCOMPLISH THIS BOND WITH GROUNDING CONDUCTORS MINIMUM SIZED TO THE LARGEST GROUNDING CONDUCTOR PRESENT IN THE ENCLOSURE CONNECTED TO A GROUNDING TYPE BUSHING EQUALLY SIZED OR MAXIMUM GROUND WIRE ACCOMMODATION AVAILABLE IN STANDARD MANUFACTURE FOR THE CONDUIT SIZE, WHICHEVER IS LESS.

EQUIPMENT GROUNDING AND LOAD SIDE BONDING CONDUCTORS SHALL BE SIZED PER THE CIRCUIT'S OVER-CURRENT PROTECTIVE DEVICE (OCPD) SIZE. WHERE THE UNGROUNDED CONDUCTORS ARE INCREASED IN SIZE ABOVE THE STANDARD FOR THE CIRCUIT'S OCPD, INCREASE THE GROUNDING CONDUCTOR PROPORTIONATELY TO THE CROSS-SECTIONAL AREA OF THE UNGROUNDED CONDUCTORS.

SERVICE MAIN BONDING JUMPERS AND GROUNDING ELECTRODE CONDUCTORS SHALL BE SIZED AND INSTALLED PER THE MINIMUM OF ALL APPLICABLE CODES AND REGULATIONS.

26 LIGHTNING PROTECTION:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS AND THE GROUNDING SPECIFICATIONS HEREIN.

THE LIGHTNING PROTECTION GROUNDING SYSTEM (LPGS) SHALL CONSIST OF BONDING ALL EQUIPMENT AND CONDUCTIVE STRUCTURES TO LOCALIZED SINGLE-POINT GROUNDING CONNECTIONS (TYPICALLY GROUND BARS) WHICH ARE BONDED TOGETHER AND TO AN IN-GROUND SYSTEM. IF THE LPGS IS ON A BUILDING, IT SHALL BE EFFECTIVELY BONDED TO THE ELECTRICAL SERVICE MAIN BONDING JUMPER AND TO ADDITIONAL IN-GROUND ELECTRODES AS MAY BE REQUIRED OR INDICATED. IF THE LPGS IS ON A DEDICATED COMMUNICATION SITE, ALL EQUIPMENT AREAS AND TOWERS SHALL EACH HAVE THEIR OWN IN-GROUND RING WITH EVERY RING BONDED TOGETHER, AND ALL CONDUCTIVE STRUCTURES IN CLOSE PROXIMITY (FENCES, ICE BRIDGES, ISOLATED EQUIPMENT, ETC.) ALSO BONDED TO PROVIDE A COMMON ELECTRICAL EQUIPOTENTIAL SYSTEM FOR ALL CONDUCTIVE ELEMENTS AND STRUCTURES.

CONDUCTORS:

- MIN #2 AWG SOLID BARE TINNED COPPER (SBTC) FOR ALL IN-GROUND CONDUCTORS.
- MIN #2 AWG COPPER GREEN STRANDED FOR BONDING STRUCTURES, AND FOR INTER-SYSTEM BONDING OF INDIVIDUAL ELEMENTS SUCH AS GROUND BAR TO GROUND BAR.
- MIN #6 AWG COPPER GREEN STRANDED OR ALL EQUIPMENT BONDING.
- INSTALL ALL IN-GROUND CONDUCTORS IN THE SAME HORIZONTAL PLANE OR IN A DOWNWARD DIRECTION AWAY FROM THE TOWER AND EQUIPMENT AREAS.
- AVOID LONG RUNS. MAKE DIRECT RUNS AS MUCH AS POSSIBLE.
- PLACE THROUGH NON-METALLIC SLEEVES WHEN PASSING THROUGH FLOORS, WALLS, CEILINGS, AND SIMILAR STRUCTURES.
- MAKE ALL CONNECTIONS IN CONTACT WITH EARTH WITH EXOTHERMIC WELDING. MAKE ALL OTHER CONNECTIONS WITH EXOTHERMIC WELDING, IRREVERSIBLE COMPRESSION CONNECTORS, OR LISTED COMPRESSION TWO-HOLE LUGS.
- INSTALL ALL CONDUCTORS WITH A MINIMUM 18 INCH BEND RADIUS AND NO BEND LONGER THAN A 90 DEGREE ARC. ALL BENDS SHALL BE HORIZONTAL, OR DOWNWARD TOWARDS EARTH.
- ALL CONDUCTORS PASSING FROM ABOVE-GROUND TO IN-GROUND CONNECTIONS, WHERE EXPOSED, SHALL BE COVERED AND PROTECTED WITH A NON-METALLIC CONDUIT SEALED AT BOTH ENDS.
- IF 2 OR MORE IN-GROUND CONDUCTORS ARE IN THE SAME PATH (2 RINGS OVERLAPPING, BONDING FOLLOWING ANOTHER RING OR RADIAL, OR SIMILAR), COMBINE WITH A SHARED SINGLE CONDUCTOR.

EQUIPMENT AND TOWER GROUND RINGS SHALL BE:

- BONDED TO ANY CONDUCTIVE OBJECT OR STRUCTURE WITHIN 5 FEET OF EQUIPMENT GROUND RINGS AND WITHIN 20 FEET OF TOWER GROUND RINGS.
- INSTALLED MINIMUM 18 INCHES FROM FOUNDATIONS, FOOTINGS, AND SIMILAR.

INSTALL ALL IN-GROUND RINGS, RADIALS, BONDS CONNECTING THEM, AND ALL SIMILAR GROUNDING:

- MIN 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE, WHICHEVER IS GREATER DEPTH.
- MIN 2 FEET FROM FOUNDATIONS, FOOTINGS, OTHER GROUNDING SYSTEMS, AND SIMILAR STRUCTURES, EXCEPT WHEN MAKING A BOND TO ANY OF THESE STRUCTURES. DO NOT BOND TO FOUNDATION INTERNAL REINFORCEMENT.

ALL EQUIPMENT GROUPED IN A COMMON AREA, COMPOUND, STRUCTURE, OR SIMILAR SHALL BE BONDED TO A SINGLE-POINT GROUND, PREFERABLY AN ISOLATED GROUND BAR. BOND THE GROUND BAR TO THE SYSTEM WITH MINIMUM SINGLE BONDING CONDUCTOR. IF BONDING TO AN IN-GROUND RING, INSTALL 2 BONDING CONDUCTORS MINIMUM WITH EACH CONDUCTOR INSTALLED DIRECTIONALLY AWAY FROM EACH OTHER AND PARALLEL TO THE IN-GROUND CONDUCTOR, WITH NO TEE CONNECTIONS.

TOWER GROUNDING:

- EACH TOWER LEG SHALL BE BONDED TO ITS RING. SINGLE-LEGGED TOWERS, OR MONOPOLES, SHALL HAVE 2 BONDS ON OPPOSITE SIDES.
- BOND TO TOWER BASE, NOT TO VERTICAL TOWER STRUCTURE, AWAY FROM TOWER MOUNTING HARDWARE.
- EACH BOND SHALL HAVE A CORRESPONDING GROUND ROD ON THE RING.
- EACH BOND SHALL CONSIST OF 2 CONDUCTORS FROM THE TOWER TO ITS RING WITH EACH CONDUCTOR DIRECTED IN OPPOSITE DIRECTIONS WITH A PARALLEL CONNECTION ON THE RING ON OPPOSITE SIDES OF THE GROUND ROD.

EQUIPMENT AREA GROUNDING:

- COMMUNICATION AREAS ON EARTH SHALL HAVE A GROUND RING.
- BOND ALL EQUIPMENT TO A SINGLE-POINT GROUND (GROUND BAR).
- BOND THE EQUIPMENT SINGLE-POINT GROUND TO THE EQUIPMENT GROUND RING WITH MINIMUM 2 CONDUCTORS DIRECTED IN OPPOSITE DIRECTIONS WITH PARALLEL CONNECTIONS ON THE RING.
- IF EQUIPMENT IS ENCLOSED IN A SHELTER:
- IF THE SHELTER IS CONSIDERED TO BE EXPOSED TO A DIRECT LIGHTNING STRIKE, INSTALL A BUILDING LIGHTNING PROTECTION SYSTEM PER APPLICABLE VERSION OF NFPA 780.
- BOND ALL FIXED CONDUCTIVE BUILDING COMPONENTS TOGETHER AND TO THE BUILDING RING GROUND AT THE CORNERS. THIS IS TYPICALLY CALLED THE HALO GROUND. DO NOT BOND EQUIPMENT TO THE HALO GROUND.
- BOND ALL EQUIPMENT TOGETHER TO A SINGLE-POINT OR INTERIOR EQUIPMENT RING GROUND (IEGR). BOND THE SINGLE-POINT OR IEGR TO THE EXTERNAL EQUIPMENT RING GROUND.
- PLACE GROUND RODS AT THE EQUIPMENT GROUND RING CORNERS.

GROUND RODS:

- SEPARATION SPACE BETWEEN ANY 2 GROUND RODS SHALL BE NO CLOSER THAN THEIR DEPTH. THIS APPLIES TO ALL RODS IN THE COMPLETE SYSTEM.
- DRIVE VERTICALLY IN UNDISTURBED SOIL WITH THE TOP AT SAME DEPTH AS THE IN-GROUND CONDUCTOR. IF NOT POSSIBLE TO INSTALL VERTICALLY, PLACE AS CLOSE TO VERTICAL AS POSSIBLE AND IN A DIRECTION AWAY FROM THE NEAREST ABOVE-GROUND CONDUCTIVE ELEMENT (TOWER, EQUIPMENT, ETC.).

RADIALS (TYP. NEW DEDICATED COMMUNICATION SITES):

- WHERE FEASIBLE WITH ENOUGH SPACE AVAILABLE, INSTALL A MINIMUM OF 4, MAXIMUM 10 RING RADIALS.
- EACH RADIAL'S LENGTH SHALL BE MIN 20 FT, MAX 80 FT.
- EXTEND RADIALS PERPENDICULAR FROM RINGS IN AS STRAIGHT LINE AS POSSIBLE, AWAY FROM OTHER RING GROUNDS, RADIALS, BONDS, AND SIMILAR.
- A COMMON PRACTICE IS TO PLACE 4 RADIALS FROM THE TOWER RING TO THE 4 CORNERS OF THE AVAILABLE AREA.

AT A MINIMUM, BOND ALL COMPOUND CONDUCTIVE FENCE CORNER POSTS AND GATE POSTS TO THE LPGS. PREFERABLY, INSTALL A GROUND RING THAT FOLLOWS THE FENCE LINE, BONDING ALL POSTS TO THE RING.

27 ANTENNAS & CABLES:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TRANSMISSION CABLES, JUMPERS, CONNECTORS, GROUNDING STRAPS, ANTENNAS, MOUNT AND HARDWARE. ALL MATERIALS SHALL BE INSPECTED BY THE CONTRACTOR FOR DAMAGE UPON DELIVERY. JUMPERS SHALL BE SUPPLIED AT ANTENNAS AND EQUIPMENT INSIDE SHELTER. COORDINATE LENGTH OF JUMPER CABLES WITH OWNER. COORDINATE AND VERIFY ALL OF THE MATERIALS TO BE PROVIDED WITH OWNER PRIOR TO SUBMITTING BID AND ORDERING MATERIALS.

AFTER INSTALLATION, THE TRANSMISSION LINE SYSTEM SHALL BE PIM / SWEEP TESTED FOR NEWER INSTALLATION AND DAMAGE WITH ANTENNAS CONNECTED. CONTRACTOR SHALL OBTAIN AND USE LATEST TESTING PROCEDURES FROM OWNER OR MANUFACTURER PRIOR TO BIDDING.

ANTENNA CABLES SHALL BE UNIQUELY COLOR-CODED AT THE ANTENNAS, BOTH SIDES OF EQUIPMENT SHELTER WALL, AND JUMPER CABLES AT THE EQUIPMENT.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONNECTORS, ASSOCIATED CABLE MOUNTING AND GROUNDING HARDWARE, WALL MOUNTS, STANDOFFS, AND ALL ASSOCIATED HARDWARE TO INSTALL ALL CABLES AND ANTENNAS TO THE MANUFACTURER'S AND OWNER'S SPECIFICATIONS.

ANTENNA CABLES SHALL BE FOAM DIELECTRIC COAXIAL CABLES AS FOLLOWS:

- BASE STATION ANTENNAS:
  - 7/8" DIAMETER FOR CABLE LENGTHS UP TO 100 FT.
  - 1-5/8" DIAMETER FOR CABLE LENGTHS GREATER THAN 100 FT.
  - GPS ANTENNAS:
  - 7/8" DIAMETER FOR CABLE LENGTHS UP TO 200 FT.
  - 1-5/8" DIAMETER FOR CABLE LENGTHS GREATER THAN 200 FT.

MINIMUM BENDING RADIUS FOR COAXIAL CABLES SHALL BE:

- 15 FT FOR 7/8" COAXIAL CABLES.
- 25 FT FOR 1-5/8" COAXIAL CABLES.

CABLE SHALL BE INSTALLED WITH A MINIMUM NUMBER OF BENDS WHERE POSSIBLE. CABLE SHALL NOT BE LEFT UNTERMINATED AND SHALL BE SEALED IMMEDIATELY AFTER BEING INSTALLED.

ALL EXTERIOR CABLE CONNECTIONS SHALL BE COVERED WITH A WATERPROOF SPLICING KIT.

CONTRACTOR SHALL VERIFY EXACT LENGTH AND DIRECTION OF TRAVEL IN FIELD PRIOR TO CONSTRUCTION.

CABLE SHALL BE FURNISHED AND INSTALLED WITHOUT SPLICES AND WITH CONNECTORS AT EACH END.

27 CABLE TRAY:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

CABLE TRAY SHALL BE MADE OF EITHER CORROSION RESISTANT METAL OR WITH A CORROSION RESISTANT FINISH.

CABLE TRAY SHALL BE OF LADDER TRAY TYPE WITH FLAT COVER CLAMPED TO SIDE RAILS.

CABLE LADDER SHALL BE SIZED TO FIT ALL CABLES IN ACCORDANCE WITH NEC AND NEMA 11-15-84.

CABLE LADDER TRAYS SHALL BE NEMA CLASS 12A BY PW INDUSTRIES, INC. OR EQUAL.

CABLE LADDER TRAY SHALL BE SUPPORTED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

ALL WORKMANSHIP SHALL CONFORM TO THESE REQUIREMENTS AND ALL LOCAL CODES AND STANDARDS TO ENSURE SAFE AND ADEQUATE GROUNDING SYSTEM.

Cellco Partnership d/b/a

verizon

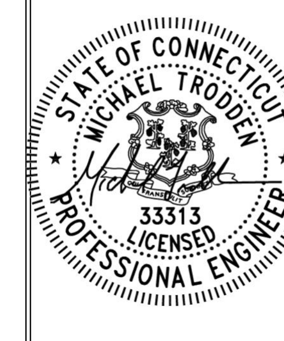
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	04/12/23	FOR REVIEW: JRM
1	04/18/23	FOR FILING: JRM
2	04/19/23	REV. FOR FILING: JRM
3		
4		
5		
6		



DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: CROMWELL CONCRETE
ADDRESS: PRODUCTS, INC
667 MAIN STREET
CROMWELL, CT 06416

CROMWELL NORTH 2 CT

SITE ADDRESS: 667 MAIN STREET
CROMWELL, CT 06416

APT FILING NUMBER: CT141_12280

	DRAWN BY: ELZ
DATE: 04/12/23	CHECKED BY: JRM

VZ PROJECT CODE: ----
VZ LOCATION CODE: 469424
VZ FUZE ID: 17002768

SHEET TITLE:

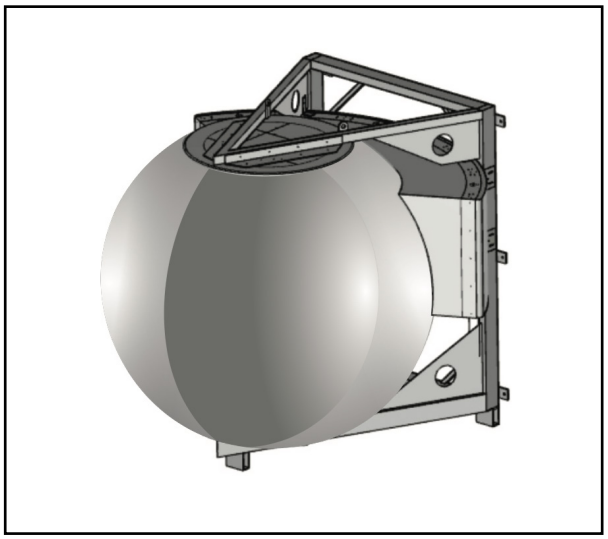
NOTES & SPECIFICATIONS

SHEET NUMBER:

N-1

MATSING®

LENS TECHNOLOGY ENABLED



MS-12.6DB180

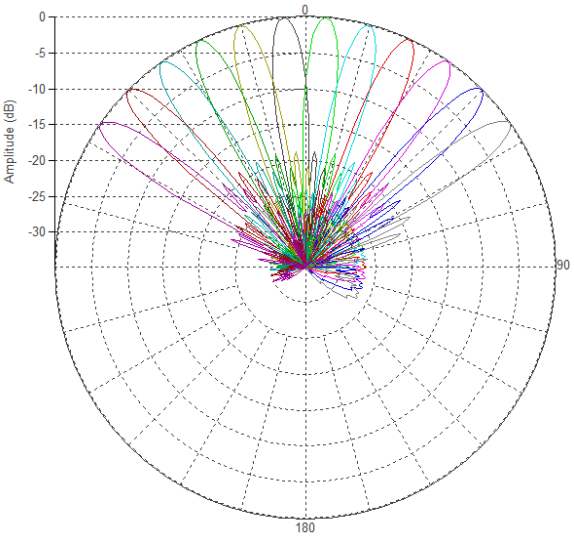
Multi-Beam Dual Band Spherical Lens Antenna: 6 independent low frequency (698-960MHz) cross-polarized beams and 12 independent high-frequency (1695-2690MHz) cross-polarized beams, with 0-15° tilt for each 20° sector and 2X2 MIMO support. Sector consists of 1 low-band beam and 2 high-band beams.

External RET Controller MS-EXT-RET-12.6 Option available

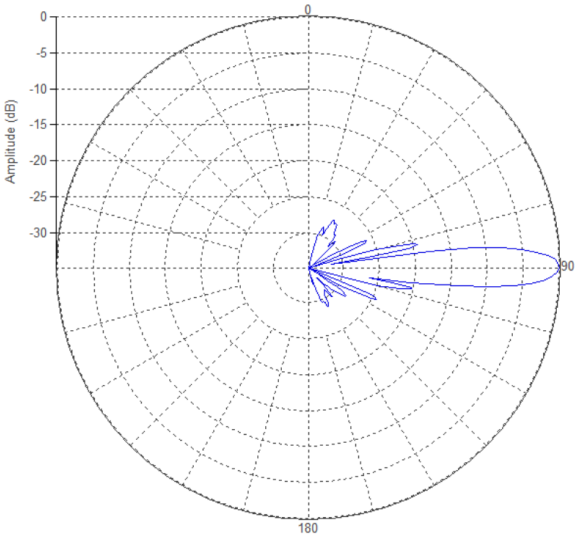
LENS TECHNOLOGY ENABLED®

PATTERN RESULTS:

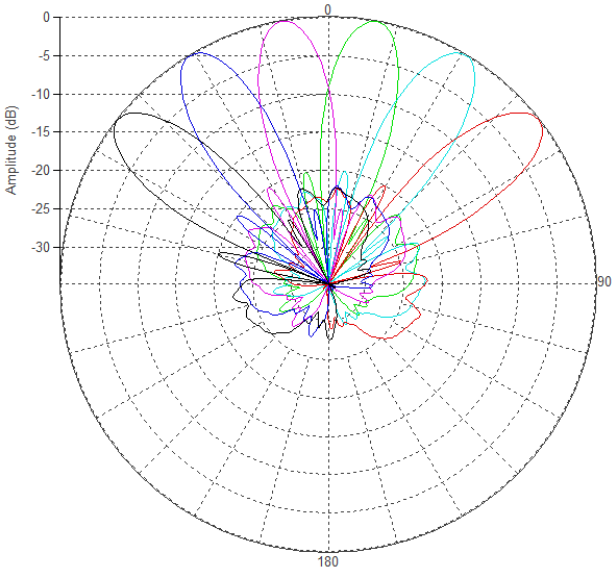
High-Band Horizontal Pattern (1.80GHz)



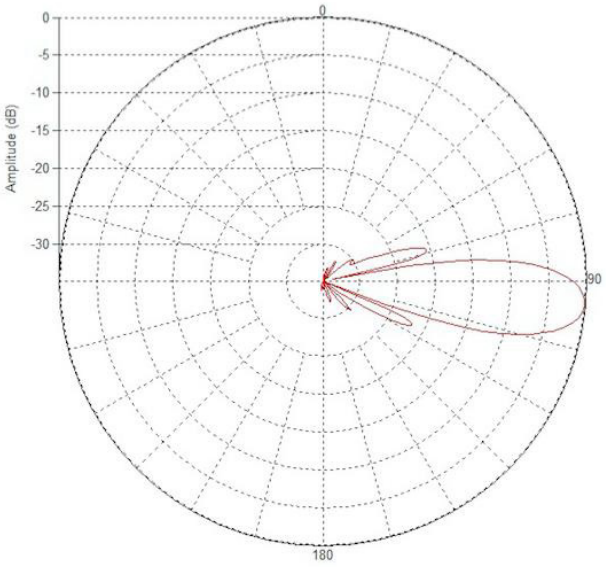
High-Band Vertical pattern (1.80GHz)



Low-Band Horizontal Pattern (0.85GHz)



Low-Band Vertical Pattern (0.85GHz)



EMAIL: info@matsing.com **WEBSITE:** www.matsing.com **PHONE:** (949)585-5144

MATSING®

LENS TECHNOLOGY ENABLED

MS-12.6DB180

TECHNICAL SPECIFICATIONS PER BEAM

Frequency	698-960 MHz	1695-2690 MHz
Gain	20.5dBi	27.5dBi
VSWR	<1.5:1	<1.5:1
Polarization	Dual Slant ±45°	Dual Slant ±45°
Horizontal Coverage	120°	120°
Horizontal Beamwidth (10dB level) Horizontal Beamwidth (3dB level)	20° 12°	10° 6°
Vertical Beamwidth (10dB level) Vertical Beamwidth (3dB level)	20° 12°	10° 6°
Beam Cross-over	10dB typical	10dB typical
Total Number of Beams	6	12
Manual Adjustable Tilt per 20° sector (each sector having 2 high-band beams and 1 low- band beam)	5° to 20°	0° to 15°
First Sidelobe level	<-15dB	<-16dB
Front to Back Ratio	>28dB	>28dB
Isolation Port to Port - Polarization	>28dB	>28dB
Isolation Port to Port - Beam	>26dB	>28dB
Power Rating	250W per port	250W per port
Total Applied Power	≤ 2.5KWatts	
Intermodulation	<-153dBc	<-153dBc
Impedance	50 ohm	50 ohm
Connector Quantity and Type	12 X 4.3-10 female	24 X 4.3-10 female

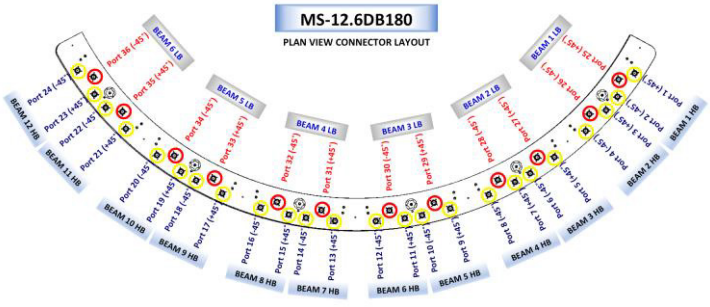
MECHANICAL DATA

Dimensions (H x W x D)	Spherical Lens diameter: 180cm/70inch Antenna dimensions: 187.1 X 207 X 204.4 cm 73.7 X 81.5 X 80.5 inch
Antenna Weight	247.6 kg 545.9 lbs
Radome Material	Fiber Glass
Mounting	Adjustable Clamps Compatible pipe diameter: 6.1 – 11.4 cm 2.4 – 4.5 inch

ENVIRONMENTAL RATINGS

Humidity	95% RH @ +30°C
Temperature	-40°C to +70°C
Wind load (Front)	1892 N @ 160km/hr 425 lbf @ 160km/hr

CONNECTOR LAYOUT:



EMAIL: info@matsing.com WEBSITE: www.matsing.com PHONE: (949)585-5144

SAMSUNG 5G

SAMSUNG

PUBLIC USAGE

SAMSUNG Medium AWS/PCS RRU

4G Service Expansion and Rapid 5G Migration

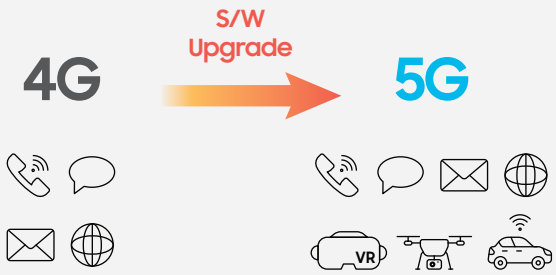
Samsung's RF4402d-D1A is a 5G NR-ready, compact remote Radio Unit (RU) designed for high-density deployments that require rapid deployment and installation flexibility.

Points of Differentiation

Upgraded to Enhance Product

Samsung Medium Power RRU supports eCPRI interface, thus, it can be used as 5G RU in the future.

To provide 5G service, operators only need to update software since the hardware is already ready.

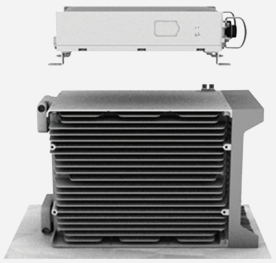


OPEX Reduction

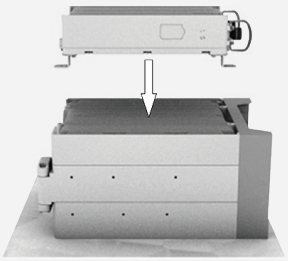
AC/DC converter can be easily installed. AC/DC converter can be mounted by RRU's side. (front/side installation)

Operators can reduce their renting cost as AC/DC converter can be directly installed on the RRU without using footprint.

Front Installation



Side Installation

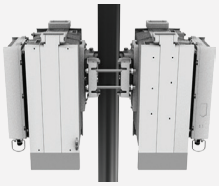


Easy Installation

A single worker can very easily install this product in various place such as Wall, Pole, Tower with its small volume.

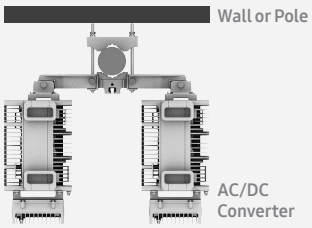
It is possible to install 2 or 3 products by using 'Back to Back' method or 'Side by Side' method. Operators can effectively use their installation space.

Back to back



Pole

Side by side



<Top view>

Technical Specifications

Item	Specification	
Tech	LTE/5G NR ready	
Band	Band 66/Band 2	
Frequency Band	DL(2,110-2,180MHz)/UL(1,710-1,780MHz) DL(1,930-1,990MHz)/UL(1,850-1,910MHz)	
RF Chain	4T4R/2T4R/2T2R (x2, dual-band)	
IBW/OBW	70 MHz (B66) +60MHz (B2)	
Size/Weight	RRU	11.8 x 8.9 x 15 inches (25.6L), 62.8 lbs
	AC/DC	13.3 x 6.8 x 3.1 inches (4.7L), 12.8 lbs
	RRH+AC/DC	11.8 x 13.2 x 15 inches (38.2L), 75.6 lb
Installation	Pole/Wall/Tower (back to back, Side by side)	
Output Power	Total 160 W	
Input Power	- 48V DC	
	15A @ 100 V AC (AC/DC converter)	
Operating Temp	-40 - 55°(w/o solar load)	
Cooling	Natural Convection	

SAMSUNG

About Samsung Electronics Co., Ltd.

Samsung inspires the world and shapes the future with transformative ideas and technologies. The company is redefining the worlds of TVs, smartphones, wearable devices, tablets, digital appliances, network systems, and memory, system LSI, foundry and LED solutions.

Address : 129 Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, Korea

SAMSUNG

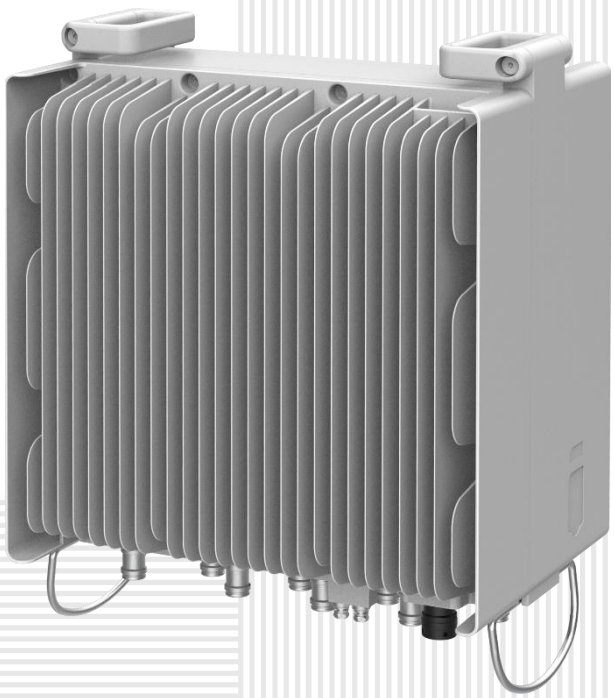
AWS/PCS MACRO RADIO

DUAL-BAND AND HIGH POWER FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This AWS/PCS 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

57196

Model Code	RF4439d-25A



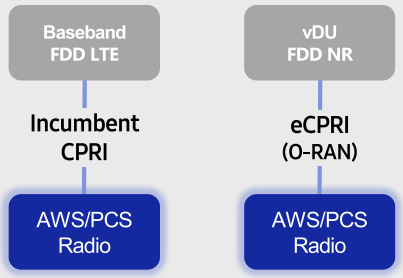
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

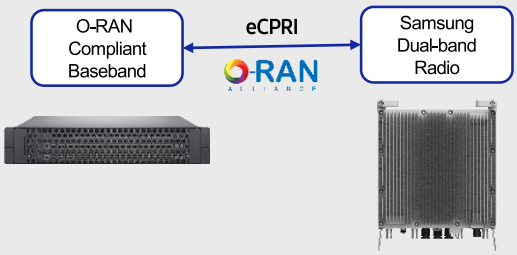
Samsung's AWS/PCS macro radio can support each incumbent CPRI interface as well as advanced eCPRI interfaces. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help in implementing cost-effective networks, which are capable of sending more data without compromising additional investments.

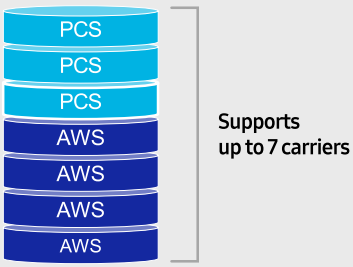
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



Optimum Spectrum Utilization

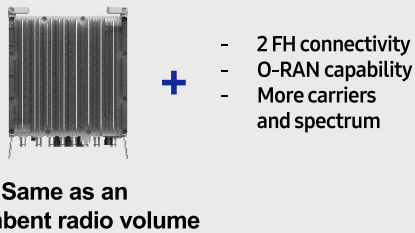
The number of required carriers varies according to site (region). Supporting many carriers is essential for using all frequencies that the operator has available.

The new AWS/PCS dual-band radio can support up to 3 carriers in the PCS (1.9GHz) band and 4 carriers in the AWS (2.1GHz) band, respectively.



Brand New Features in a Compact Size

Samsung's AWS/PCS macro radio offers several features, such as dual connectivity for baseband for both CDU and vDU, O-RAN capability, more carriers and an enlarged PCS spectrum, combined into an incumbent radio volume of 36.8L.



Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B25(PCS), B66(AWS)
Frequency Band	DL: 1930 – 1995MHz, UL: 1850 – 1915MHz DL: 2110 – 2200MHz, UL: 1710 – 1780MHz
RF Power	(B25) 4 × 40W or 2 × 60W (B66) 4 × 60W or 2 × 80W
IBW/OBW	(B25) 65MHz / 30MHz (B66) DL 90MHz, UL 70MHz / 60MHz
Installation	Pole, Wall
Size/ Weight	14.96 x 14.96 x 10.04inch (36.8L) / 74.7lb

SAMSUNG

700/850MHZ MACRO RADIO

DUAL-BAND AND HIGH POWER FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This 700/850MHz 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code	RF4440d-13A

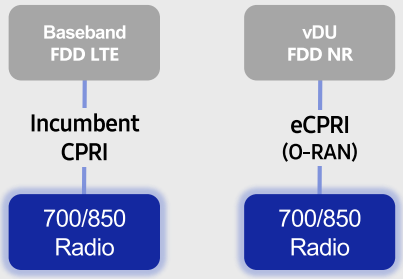
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

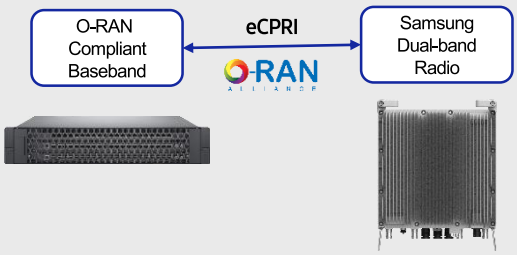
Samsung's 700/850MHz macro radio can support each incumbent CPRI interface as well as an advanced eCPRI interface. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help when implementing cost-effective networks because it is capable of sending more data without compromising additional investments.

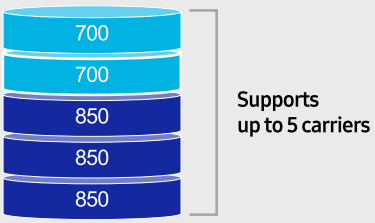
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



Optimum Spectrum Utilization

The number of required carriers varies according to site (region). The ability to support many carriers is essential for using all frequencies that the operator has available.

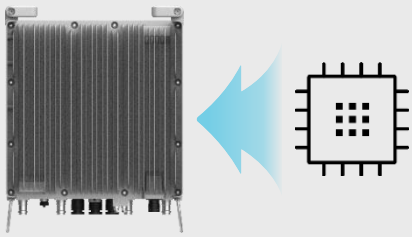
The new 700/850MHz dual-band radio can support up to 2 carriers in the B13 (700MHz) band and 3 carriers in the B5 (850MHz) band, respectively.



Secured Integrity

Access to sensitive data is allowed only to authorized software.

The Samsung radio's CPU can protect root of trust, which is credential information to verify SW integrity, and secure storage provides access control to sensitive data by using dedicated hardware (TPM).



Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B13(700MHz), B5(850MHz)
Frequency Band	DL: 746 – 756MHz, UL: 777 – 787MHz DL: 869 – 894MHz, UL: 824 – 849MHz
RF Power	(B13) 4 × 40W or 2 × 60W (B5) 4 × 40W or 2 × 60W
IBW/OBW	(B13) 10MHz / 10MHz (B5) 25MHz / 25MHz
Installation	Pole, Wall
Size/ Weight	14.96 x 14.96 x 9.05inch (33.2L) / 70.33 lb

ATTACHMENT 3

STRUCTURAL ANALYSIS REPORT
FOR A PROPOSED ANTENNA & APPURTENANCE INSTALLATION ON AN EXISTING 120'± MONOPOLE TOWER
CROMWELL, CONNECTICUT

Prepared for
Verizon Wireless

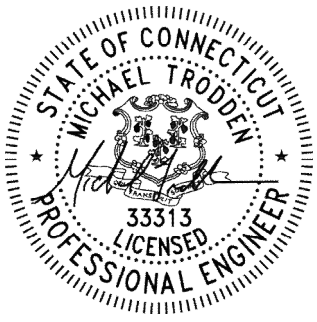
Verizon Site Ref:
469424; Cromwell N 2 CT

Site Address: 667 Main Street, Cromwell, Connecticut 06416

APT Filing No. CT141_13790

FUZE ID: 17002768
Location Code: 469424
Project Type: Modification

~~Rev 0 April 18, 2023~~
Rev 1 April 19, 2023



ALL-POINTS TECHNOLOGY CORPORATION, P.C.
567 VAUXHALL STREET EXTENSION · SUITE 311 · WATERFORD, CT 06385 · PHONE 860-663-1697

STRUCTURAL ANALYSIS REPORT
120'± MONOPOLE TOWER
CROMWELL, CONNECTICUT
prepared for
Verizon Wireless

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a structural evaluation of an existing 120'± monopole tower structure to support a proposed Verizon equipment modification.

The proposed Verizon antenna and appurtenance installation consists of one (1) new Matsing Multi-Beam Dual Band Spherical Lens antenna supported by two (2) new SitePro1 UDS-NP mounts and two (2) P2.5STD x 8' Lg. pipe masts, the replacement of six (6) existing dual-band Remote Radio Heads (RRHs) with six (6) new dual-band ORAN RRHs, and the installation of three (3) new Medium Power Dual-band RRHs. The proposed Matsing Spherical Lens antenna will be fed by eighteen (18) 1/2" coaxial cables routed from the Verizon RRHs via. the exterior of the existing monopole tower. Reference can be made to the inventory table on the following page for additional information.

The results of this analysis indicate that the mono-pine structure meets the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard with Verizon's proposed equipment installation.

Evaluation of the existing foundation was limited to a comparison of the base reactions calculated under the proposed loading against the design reactions indicated within original design documents prepared by Valmont Structures. Reactions imposed by the proposed installation are less than the published design reactions, indicating that the foundation is adequately sized.

The tower steel component usage is summarized in the table below:

Elevation/Component	Capacity
80.92'-120' (L1)	42%
43' – 80.92' (L2)	33%
1' – 43' (L3)	33%
Anchor Bolts	37%
Base Plate	33%

INTRODUCTION:

A structural analysis of the subject communications tower was performed by APT for Verizon Wireless. The subject tower is located at 667 Main Street in Cromwell, Connecticut.

The following information was utilized in the preparation of this analysis:

- Verizon RFDS, marked Rev. 4, dated 03/17/23.
- Construction Drawings prepared by APT, marked Rev2, dated 04/19/23.
- Structural Analysis Report prepared by APT (Project No. CT141_12280), marked Rev. 2, dated 05/14/21.
- Tower Inspection Report prepared by APT, inspected on June 26, 2020 and submitted on July 2, 2020.
- Field observations compiled during a site visit conducted by APT on June 26, 2020.

- Communication Pole Record Drawings prepared by Valmont Structures (Order No. 456660) dated December 13, 2019.
- Communication Structure Calculation Package prepared by Valmont Structures (Order No. 456600-P1), dated October 23, 2019.

The structure is a 120'±, galvanized steel, 18-sided mono-pine tower structure designed and manufactured by Valmont Structures.

The analysis was conducted using the following equipment inventory (proposed equipment shown in **bold** text):

Carrier	Antenna and Appurtenance Make/Model	Elevation (AGL)	Status (1)	Mount Type	Coax/Feed-Line
Verizon	(3) Commscope NHH-45B-R2B, (6) Commscope NNHH-65B-R4 panels, (3) Samsung MT6407-77A antennas, **(4) Samsung B5/B13 ORAN (RF4440d-13A) RRHs** **(2) Samsung B2/B66A ORAN (RF4439d-25A) RRHs,** **(3) B2/B66A Med Power ORAN (RF4402d-D1A) RRHs** (1) Raycap RVZDC-6627-PF-48 (12OVP)	120' 121' 122.5'	ETR **P** ETR	SitePro1 F4P-12W Four-Sided Fortress Platform w/ F4P-HRK12 Handrail kit & (16) P2STD x 8' Lg. Pipe Mounts	(1) 12x24 LI Hybrid
Verizon	**Matsing MS-12.6DB180**	**110'**	**P**	**(2) SitePro1 UDS-NP Dual Antenna Pole Mount Assembly with (2) P2.5STD x 8' Lg. Pipe Mounts**	**(18) 1/2"** (4)

Notes:

1. ETR = Existing to Remain; **P** = Proposed.
2. Elevations are measured above ground level (AGL). Tower is approximately 1' above grade.
3. All feed-lines noted above shall be routed within interior of the pole unless otherwise noted.
4. Feed lines to be routed on exterior of pole from existing Verizon RRHs to proposed Verizon Matsing Ball antenna

STRUCTURAL ANALYSIS:

Methodology:

This structural analysis has been prepared in accordance with the ANSI/TIA-222-H standard entitled "Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures"; American Institute of Steel Construction (AISC) Manual of Steel Construction, and the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code utilizing the following criteria:

- Load Case 1: 120 mph (3-second gust), 0" ice (1)
- Load Case 2: 50 mph (3-second gust) w/ 1.5" ice thickness
- Load Case 3: 60 mph (3-second gust) (Service Load)
- Risk Category: II
- Exposure Category: C
- Topographic Category: 1

ANALYSIS RESULTS:

The analysis was conducted in accordance with the criteria outlined above with the aforementioned loading. The following table summarizes the results of the analysis:

Elevation/Component	Capacity
80.92'-120' (L1)	42%
43' – 80.92' (L2)	33%
1' – 43' (L3)	33%
Anchor Bolts	37%
Base Plate	33%

Foundation:

Evaluation of the existing foundation was limited to a comparison of the base reactions calculated under the proposed loading against the design reactions indicated within original design documents prepared by Valmont Structures. Reactions imposed by the proposed installation are less than the published design reactions, indicating that the foundation is adequately sized.

The calculated base reactions with the proposed equipment loading are indicated within the table below:

Load Effect	Original Design (TIA-222-H)	Calculated Reactions	Result
Axial	36.2 k [5]	23.3 k [5]	PASS
Base Shear	47.7 k	20.2 k	PASS
Overturning Moment	4,686 ft-k	1,753 ft-k	PASS

Notes:

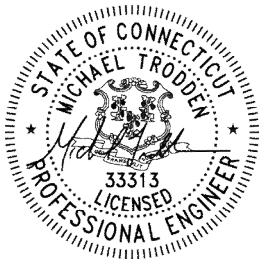
5. Original vertical reaction based on 0.9DL load combination.
6. Equivalent calculated vertical reaction based on 0.9DL load combination.

CONCLUSIONS AND RECOMMENDATIONS:

In conclusion, our analysis indicates that the existing tower structure located at 667 Main Street in Cromwell, Connecticut, meets the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard with Verizon's proposed equipment installation.

Sincerely,
All-Points Technology Corp., P.C.

Michael S. Trodden, P.E.
Senior Structural Engineer



Prepared by:
All-Points Technology Corp., P.C.

Jason R. Mead
Department Manager -
Structural Services

LIMITATIONS:

This report is based on the following:

1. Tower/structure is properly installed and maintained.
2. All members and components are in a non-deteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower/structure is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
7. Material yield stress values as follows:

   Monopole: A572 Gr. 65
   Base plate: A572 Gr. 50
   Anchor bolts: A615 Gr. 75

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or reinforcing bracing members.
2. Reinforcing members in any manner.
3. Installing antenna mounts or waveguide cables.
4. Adding or relocating antennas.
5. Extending tower/structure.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Appendix A

Design Criteria

Municipality	Basic Design Wind Speeds, V (mph)				Allowable Stress Design Wind Speeds, V_{asd} (mph)				Ground Snow Load p_g (psf)	MCE Ground Accelerations		Wind-Borne Debris Region[1]		Hurricane-Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		S_S (g)	S_1 (g)	Risk Cat. III Occup. I-2	Risk Cat. IV	
Cornwall	105	115	125	130	81	89	97	101	40	0.172	0.054			
Coventry	110	120	130	135	85	93	101	105	30	0.188	0.055			Yes
Cromwell	110	120	130	135	85	93	101	105	30	0.207	0.056			Yes
Danbury	110	120	125	130	85	93	97	101	30	0.225	0.056			Yes
Darien	110	120	130	135	85	93	101	105	30	0.250	0.057		Type B	Yes
Deep River	115	125	135	140	89	97	105	108	30	0.210	0.054			Yes
Derby	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes
Durham	110	120	130	135	85	93	101	105	30	0.211	0.055			Yes
East Granby	110	120	125	130	85	93	97	101	35	0.173	0.054			Yes
East Haddam	115	125	135	135	89	97	105	105	30	0.214	0.056			Yes
East Hampton	110	125	130	135	85	97	101	105	30	0.210	0.056			Yes
East Hartford	110	120	130	135	85	93	101	105	30	0.191	0.055			Yes
East Haven	110	125	135	135	85	97	105	105	30	0.200	0.053	Type B	Type B	Yes
East Lyme	120	130	135	140	93	101	105	108	30	0.198	0.053	Type B	Type B	Yes
East Windsor	110	120	130	135	85	93	101	105	30	0.177	0.055			Yes
Eastford	110	120	130	135	85	93	101	105	40	0.180	0.055			Yes
Easton	110	120	130	135	85	93	101	105	30	0.218	0.055			Yes
Ellington	110	120	130	135	85	93	101	105	35	0.178	0.055			Yes
Enfield	110	120	125	130	85	93	97	101	35	0.172	0.055			Yes
Essex	115	125	135	140	89	97	105	108	30	0.207	0.054			Yes
Fairfield	110	120	130	135	85	93	101	105	30	0.219	0.055		Type B	Yes
Farmington	110	120	130	135	85	93	101	105	35	0.188	0.055			Yes
Franklin	115	125	135	140	89	97	105	108	30	0.195	0.054			Yes
Glastonbury	110	120	130	135	85	93	101	105	30	0.200	0.055			Yes
Goshen	110	115	125	130	85	89	97	101	40	0.172	0.054			
Granby	110	120	125	130	85	93	97	101	35	0.171	0.054			Yes
Greenwich	110	120	130	135	85	93	101	105	30	0.274	0.059		Type B	Yes
Griswold	120	125	135	140	93	97	105	108	30	0.189	0.054			Yes
Groton	120	130	140	140	93	101	108	108	30	0.190	0.052	Type B	Type A	Yes
Guilford	115	125	135	140	89	97	105	108	30	0.204	0.054	Type B	Type B	Yes
Haddam	115	125	135	135	89	97	105	105	30	0.214	0.055			Yes
Hamden	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Mar 28 2023

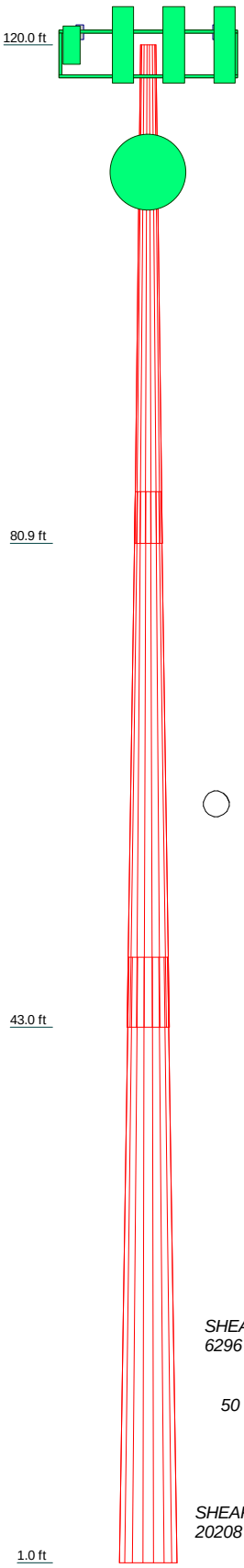
Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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

Appendix B

Tower Schematic

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	39.08	18	0.3125	4.08	13.0000	26.6300		2572.6
2	42.00	18	0.4375	5.50	24.5810	39.2300	A572-65	6245.1
3	47.50	18	0.4375		36.4367	53.0000		9938.7
								18756.4



ALL REACTIONS ARE FACTORED

AXIAL 50654 lb

SHEAR 6296 lb *MOMENT 564512 lb-ft*

TORQUE 3019 lb-ft
50 mph WIND - 1.5000 in ICE

AXIAL 31007 lb

SHEAR 20208 lb *MOMENT 1752793 lb-ft*

TORQUE 9015 lb-ft
REACTIONS - 120 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Raycap RDC-6627-PF-48 OVP (VzW)	122.5	NNHH-65B-R4-V1 (VzW)	120
Samsung B2/B66A ORAN RRH (RF4439d-25A) (VzW - Prop)	121	NHH-45B-R2B (VzW)	120
Samsung B5/B13 ORAN RRH (RF4440d-13A) (VzW - Prop)	121	NHH-45B-R2B (VzW)	120
Samsung B5/B13 ORAN RRH (RF4440d-13A) (VzW - Prop)	121	NHH-45B-R2B (VzW)	120
Samsung B5/B13 ORAN RRH (RF4440d-13A) (VzW - Prop)	121	NNHH-65B-R4-V1 (VzW)	120
Samsung B2/B66A ORAN RRH (RF4439d-25A) (VzW - Prop)	121	NNHH-65B-R4-V1 (VzW)	120
Samsung B5/B13 ORAN RRH (RF4440d-13A) (VzW - Prop)	121	NNHH-65B-R4-V1 (VzW)	120
(2) Samsung B2/B66 ORAN RRH (RF4402d-D1A) (VzW - Prop)	121	NNHH-65B-R4-V1 (VzW)	120
Samsung B2/B66 ORAN RRH (RF4402d-D1A) (VzW - Prop)	121	MT6407-77A (VzW)	120
SitePro1 F4P-HRK12 Hand Rail (VzW)	121	(4) P2.0 x 8.0' Pipe Mount (VzW)	120
MT6407-77A (VzW)	120	(4) P2.0 x 8.0' Pipe Mount (VzW)	120
MT6407-77A (VzW)	120	(4) P2.0 x 8.0' Pipe Mount (VzW)	120
NNHH-65B-R4-V1 (VzW)	120	(4) P2.0 x 8.0' Pipe Mount (VzW)	120
		SitePro1 F4P-12[W] 12' Quad Platform (VzW)	119.25
		SitePro1 UDS-NP (VzW - Prop)	113.5
		Matsing Ball MS-12.6DB180 (VzW - Prop)	110
		(2) P2.5 Std x 8.0' Pipe Mount (VzW - Prop)	110
		SitePro1 UDS-NP (VzW - Prop)	106.5

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft

All-Points Technology Corporation, P.C.
567 Vauxhall Streeet Ext., Suite 311
Waterford, CT 06385
Phone: (860) 663-1697
FAX:

Job:	***120' Monopole Tower ~ REV1***		
Project:	***17002768 Cromwell North 2 CT***		
Client: Verizon	Drawn by: JRM	App'd:	
Code: TIA-222-H	Date: 04/19/23	Scale: NTS	
Path:		Dwg No. E-1	

Appendix C

Calculations

Tower Input Data

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

Tower base elevation above sea level: 1.00 ft.
Basic wind speed of 120 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.5000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	*Sector*	*Exclude From Torque Calculation*	*Component Type*	*Placement* *ft*	*Total Number*	*Number Per Row*	*Start/End Position*	*Width or Diameter* *in*	*Perimeter* *in*	*Weight* *plf*
1/2 (VzW)	C	Yes	Surface Ar (CaAa)	120.00 - 110.00	18	9	0.000 0.000	0.5800		0.25

Feed Line/Linear Appurtenances - Entered As Area

Description	*Face or Leg*	*Allow Shield*	*Exclude From Torque Calculation*	*Component Type*	*Placement* *ft*	*Total Number*		*C_AA_A* *ft^2/ft*	*Weight* *plf*
1-5/8" 12x24 LI Hybrid (VzW)	C	No	Yes	Inside Pole	120.00 - 9.00	1	No Ice	0.00	3.20
							1/2" Ice	0.00	3.20
							1" Ice	0.00	3.20
							2" Ice	0.00	3.20
3/8" safety cable	A	No	Yes	CaAa (Out Of Face)	120.00 - 9.00	1	No Ice	0.04	0.22
							1/2" Ice	0.14	0.83
							1" Ice	0.24	1.98
							2" Ice	0.44	6.10

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
NNHH-65B-R4-V1 (VzW)	A	From Face	6.00 -6.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.27 12.76 13.26 14.29	5.72 6.18 6.64 7.59	78.48 150.48 229.11 407.04
NNHH-65B-R4-V1 (VzW)	A	From Face	6.00 -2.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.27 12.76 13.26 14.29	5.72 6.18 6.64 7.59	78.48 150.48 229.11 407.04
NNHH-65B-R4-V1 (VzW)	A	From Face	6.00 2.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.27 12.76 13.26 14.29	5.72 6.18 6.64 7.59	78.48 150.48 229.11 407.04
NHH-45B-R2B (VzW)	B	From Face	6.00 -3.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.40 11.89 12.38 13.39	5.29 5.74 6.20 7.15	73.63 139.26 211.37 375.83
NHH-45B-R2B (VzW)	B	From Face	6.00 -2.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.40 11.89 12.38 13.39	5.29 5.74 6.20 7.15	73.63 139.26 211.37 375.83
NHH-45B-R2B (VzW)	B	From Face	6.00 2.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.40 11.89 12.38 13.39	5.29 5.74 6.20 7.15	73.63 139.26 211.37 375.83
NNHH-65B-R4-V1 (VzW)	C	From Face	6.00 -6.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.27 12.76 13.26 14.29	5.72 6.18 6.64 7.59	78.48 150.48 229.11 407.04
NNHH-65B-R4-V1 (VzW)	C	From Face	6.00 -2.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.27 12.76 13.26 14.29	5.72 6.18 6.64 7.59	78.48 150.48 229.11 407.04
NNHH-65B-R4-V1 (VzW)	C	From Face	6.00 2.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.27 12.76 13.26 14.29	5.72 6.18 6.64 7.59	78.48 150.48 229.11 407.04
MT6407-77A (VzW)	A	From Face	6.00 6.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.71 5.00 5.29 5.91	1.84 2.07 2.30 2.78	87.10 116.43 149.62 228.40
MT6407-77A (VzW)	B	From Face	6.00 6.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.71 5.00 5.29 5.91	1.84 2.07 2.30 2.78	87.10 116.43 149.62 228.40
MT6407-77A (VzW)	C	From Face	6.00 6.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.71 5.00 5.29 5.91	1.84 2.07 2.30 2.78	87.10 116.43 149.62 228.40
Samsung B2/B66A ORAN RRH (RF4439d-25A) (VzW - Prop)	A	From Face	4.50 -2.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.25 1.39 1.54 1.87	74.70 93.02 114.12 165.45

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Samsung B5/B13 ORAN	A	From Face	4.50	0.0000	121.00	No Ice	1.87	1.13	70.33
RRH (RF4440d-13A)			2.00			1/2" Ice	2.03	1.27	87.65
(VzW - Prop)			0.00			1" Ice	2.21	1.41	107.70
						2" Ice	2.59	1.72	156.72
Samsung B5/B13 ORAN	B	From Face	4.50	0.0000	121.00	No Ice	1.87	1.13	70.33
RRH (RF4440d-13A)			-2.00			1/2" Ice	2.03	1.27	87.65
(VzW - Prop)			0.00			1" Ice	2.21	1.41	107.70
						2" Ice	2.59	1.72	156.72
Samsung B5/B13 ORAN	B	From Face	4.50	0.0000	121.00	No Ice	1.87	1.13	70.33
RRH (RF4440d-13A)			2.00			1/2" Ice	2.03	1.27	87.65
(VzW - Prop)			0.00			1" Ice	2.21	1.41	107.70
						2" Ice	2.59	1.72	156.72
Samsung B2/B66A ORAN	C	From Face	4.50	0.0000	121.00	No Ice	1.87	1.25	74.70
RRH (RF4439d-25A)			-2.00			1/2" Ice	2.03	1.39	93.02
(VzW - Prop)			0.00			1" Ice	2.21	1.54	114.12
						2" Ice	2.59	1.87	165.45
Samsung B5/B13 ORAN	C	From Face	4.50	0.0000	121.00	No Ice	1.87	1.13	70.33
RRH (RF4440d-13A)			2.00			1/2" Ice	2.03	1.27	87.65
(VzW - Prop)			0.00			1" Ice	2.21	1.41	107.70
						2" Ice	2.59	1.72	156.72
(2) Samsung B2/B66 ORAN	C	From Face	4.50	0.0000	121.00	No Ice	1.48	1.11	62.80
RRH (RF4402d-D1A)			2.00			1/2" Ice	1.63	1.25	77.46
(VzW - Prop)			0.00			1" Ice	1.79	1.39	94.62
						2" Ice	2.13	1.70	137.25
Samsung B2/B66 ORAN	B	From Face	4.50	0.0000	121.00	No Ice	1.48	1.11	62.80
RRH (RF4402d-D1A)			-6.00			1/2" Ice	1.63	1.25	77.46
(VzW - Prop)			0.00			1" Ice	1.79	1.39	94.62
						2" Ice	2.13	1.70	137.25
Raycap RDC-6627-PF-48	A	From Face	4.50	0.0000	122.50	No Ice	4.06	3.10	32.00
OVP			0.00			1/2" Ice	4.32	3.34	68.49
(VzW)			0.00			1" Ice	4.58	3.58	108.97
						2" Ice	5.14	4.09	202.69
SitePro1 F4P-12[W] 12' Quad	C	None		0.0000	119.25	No Ice	46.21	46.21	2636.00
Platform						1/2" Ice	58.75	58.75	3477.00
(VzW)						1" Ice	75.54	75.54	4638.00
						2" Ice	96.37	96.37	6000.00
SitePro1 F4P-HRK12 Hand	C	None		0.0000	121.00	No Ice	7.57	7.57	507.00
Rail						1/2" Ice	10.54	10.54	618.00
(VzW)						1" Ice	13.63	13.63	772.00
						2" Ice	19.45	19.45	951.00
(4) P2.0 x 8.0' Pipe Mount	A	From Face	5.50	0.0000	120.00	No Ice	1.90	1.90	29.28
(VzW)			0.00			1/2" Ice	2.73	2.73	43.62
			0.00			1" Ice	3.40	3.40	63.24
						2" Ice	4.40	4.40	118.94
(4) P2.0 x 8.0' Pipe Mount	B	From Face	5.50	0.0000	120.00	No Ice	1.90	1.90	29.28
(VzW)			0.00			1/2" Ice	2.73	2.73	43.62
			0.00			1" Ice	3.40	3.40	63.24
						2" Ice	4.40	4.40	118.94
(4) P2.0 x 8.0' Pipe Mount	C	From Face	5.50	0.0000	120.00	No Ice	1.90	1.90	29.28
(VzW)			0.00			1/2" Ice	2.73	2.73	43.62
			0.00			1" Ice	3.40	3.40	63.24
						2" Ice	4.40	4.40	118.94
(4) P2.0 x 8.0' Pipe Mount	C	From Face	5.50	0.0000	120.00	No Ice	1.90	1.90	29.28
(VzW)			0.00			1/2" Ice	2.73	2.73	43.62
			0.00			1" Ice	3.40	3.40	63.24
						2" Ice	4.40	4.40	118.94
SitePro1 UDS-NP	C	None		0.0000	113.50	No Ice	4.24	4.18	402.00

All-Points Technology Corporation, P.C.
567 Vauxhall Streeet Ext., Suite 311
Waterford, CT 06385
Phone: (860) 663-1697
FAX:

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(VzW - Prop)						1/2" Ice	5.14	5.04	459.00
						1" Ice	6.11	5.98	533.00
						2" Ice	7.84	7.62	630.00
SitePro1 UDS-NP	C	None		0.0000	106.50	No Ice	4.24	4.18	402.00
(VzW - Prop)						1/2" Ice	5.14	5.04	459.00
						1" Ice	6.11	5.98	533.00
						2" Ice	7.84	7.62	630.00
Matsing Ball MS-12.6DB180	C	From Face	3.00	0.0000	110.00	No Ice	28.00	28.00	546.00
(VzW - Prop)			0.00			1/2" Ice	36.40	36.40	1092.00
			0.00			1" Ice	44.80	44.80	1638.00
						2" Ice	61.60	61.60	2730.00
(2) P2.5 Std x 8.0' Pipe	C	From Face	1.00	0.0000	110.00	No Ice	2.30	2.30	46.40
Mount			0.00			1/2" Ice	3.13	3.13	63.28
(VzW - Prop)			0.00			1" Ice	3.62	3.62	85.48
						2" Ice	4.62	4.62	146.51

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 80.9167	9.588	59	0.9338	0.0344
L2	85 - 43	4.075	59	0.5206	0.0077
L3	48.5 - 1	1.186	63	0.2415	0.0023

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.50	Raycap RDC-6627-PF-48 OVP	59	9.588	0.9338	0.0344	28421
121.00	Samsung B2/B66A ORAN RRH (RF4439d-25A)	59	9.588	0.9338	0.0344	28421
120.00	NNHH-65B-R4-V1	59	9.588	0.9338	0.0344	28421
119.25	SitePro1 F4P-12[W] 12' Quad Platform	59	9.457	0.9243	0.0337	28421
113.50	SitePro1 UDS-NP	59	8.456	0.8512	0.0285	21863
110.00	Matsing Ball MS-12.6DB180	59	7.854	0.8072	0.0254	14211
106.50	SitePro1 UDS-NP	59	7.263	0.7637	0.0223	10526

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 80.9167	42.431	26	4.0606	0.1532
L2	85 - 43	18.245	26	2.3199	0.0343
L3	48.5 - 1	5.322	26	1.0838	0.0100

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.50	Raycap RDC-6627-PF-48 OVP	26	42.431	4.0606	0.1533	6627
121.00	Samsung B2/B66A ORAN RRH (RF4439d-25A)	26	42.431	4.0606	0.1533	6627
120.00	NNHH-65B-R4-V1	26	42.431	4.0606	0.1533	6627
119.25	SitePro1 F4P-12[W] 12' Quad Platform	26	41.857	4.0203	0.1502	6627
113.50	SitePro1 UDS-NP	26	37.477	3.7126	0.1269	5098
110.00	Matsing Ball MS-12.6DB180	26	34.844	3.5271	0.1130	3313
106.50	SitePro1 UDS-NP	26	32.255	3.3438	0.0995	2454

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	120 - 80.9167	Pole	TP26.63x13x0.3125	1	-10338.80	1444440.00	41.7	Pass
L2	80.9167 - 43	Pole	TP39.23x24.581x0.4375	2	-13326.70	2383140.00	32.5	Pass
L3	43 - 1	Pole	TP53x36.4367x0.4375	3	-20062.00	3080170.00	33.1	Pass
							Summary	
						Pole (L1)	41.7	Pass
						RATING =	**41.7**	**Pass**

Anchor Bolt and Base Plate Analysis (Non-Grouted Base Plate)

Note: The following rational circular base analysis methdology shall be utilzied when base plate design does not conform to conditions 1 thru 10 of TIA-222-H Annex Q, Section Q3.0.

Input Data:

Tower Reactions (1.2DL +1.0WL):

Overturning Moment =	$M_u := 1753 \cdot ft \cdot kip$	(Input From tnxTower)
Axial Force =	$R_u := 31.0 \cdot kip$	(Input From tnxTower)
Shear Force =	$V_u := 20.2 \cdot kip$	(Input From tnxTower)

Anchor Bolt Data:

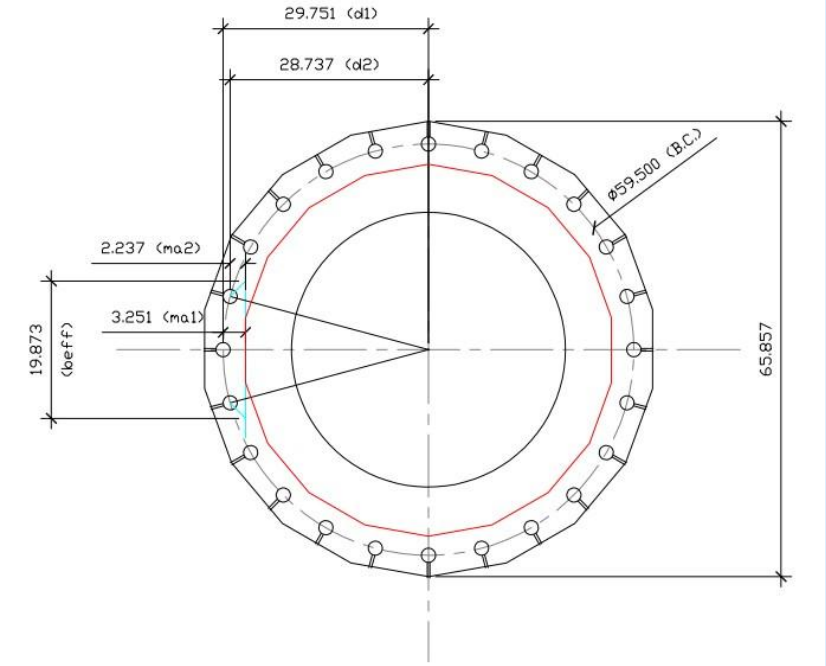
Anchor Bolt Grade =	ASTM A615 Gr. 75	(User Input)
Number of Anchor Bolts =	$N := 24$	(User Input)
Diameter of Bolt Circle =	$D_{BC} := 59.50 \cdot in$	(User Input)
Bolt "Column" Distance =	$l_{ar} := 1.0\ in$	(Defined as anchor rod projection from supporting structure to bottom of leveling nut)
Bolt Ultimate Stress =	$F_{ub} := 100 \cdot ksi$	(User Input)
Bolt Yield Stress =	$F_{yb} := 75 \cdot ksi$	(User Input)
Bolt Modulus of Elasticity =	$E := 29000 \cdot ksi$	(User Input)
Nominal Diameter of Anchor Bolts =	$D := 1.75\ in$	(User Input)
Threads per Inch =	$n := 5.0$	(User Input)

Base Plate Data:

ASTM A572-50

Plate Yield Strength =	$F_{yf} := 50 \cdot ksi$	(User Input)
Base Plate Thickness =	$t_{bp} := 2.500\ in$	(User Input)
Base Plate Diameter =	$D_{bp} := 65.86 \cdot in$	(User Input)
Outer Pole Diameter =	$D_T := 53.00 \cdot in$	(User Input)

Geometric Layout Data:



ANCHOR BOLT AND PLATE GEOMETRY

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{BC}}{2} = 29.75\ in$

Distance to Bolts = $i := 1 .. N$

$$d_i := \left\| \begin{array}{l} \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N}\right) \\ d \leftarrow R_{bc} \cdot \sin(\theta) \end{array} \right.$$

$d_1 = 7.70\ in$

$d_2 = 14.88\ in$

$d_3 = 21.04\ in$

$d_4 = 25.76\ in$

$d_5 = 28.74\ in$

$d_6 = 29.75\ in$

Outer Pole Radius = $R_{pole} := \frac{D_T}{2} = 26.5\ in$

Moment Arms of Bolts about Neutral Axis = $MA_i := \text{if}\left(d_i \geq R_{pole}, d_i - R_{pole}, 0 \cdot in\right)$

$MA_1 = 0.00\ in$ $MA_7 = 2.24\ in$

$MA_2 = 0.00\ in$ $MA_8 = 0.00\ in$

$MA_3 = 0.00\ in$ $MA_9 = 0.00\ in$

$MA_4 = 0.00\ in$ $MA_{10} = 0.00\ in$

$MA_5 = 2.24\ in$ $MA_{11} = 0.00\ in$

$MA_6 = 3.25\ in$ *etc.*

Effective Width of Baseplate for Bending = $B_{eff} := 19.87\ in$ (User Input)

Anchor Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = \left(1.062 \cdot 10^4\right)\ in^2$

Nominal Unthreaded Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 2.405\ in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 1.899\ in^2$

Tensile Root Diameter = $D_{rt} := D - \frac{0.9743 \cdot in}{n} = 1.555\ in$

Plastic Section Modulus of Bolt = $Z_x := \frac{D_{rt}^3}{6} = 0.627\ in^3$

Bolt Radius of Gyration = $r := \frac{D_{rt}}{4} = 0.389\ in$

Bolt Critical Compression Stress = $F_{cr} = 74.92\ ksi$

Anchor Bolt Forces:

Maximum Bolt Tension Force = $P_{ut} := M_u \cdot \frac{R_{bc}}{I_p} - \frac{R_u}{N} = 57.6\ kip$

Maximum Bolt Compression Force = $P_{uc} := M_u \cdot \frac{R_{bc}}{I_p} + \frac{R_u}{N} = 60.2\ kip$

Maximum Bolt Shear Force = $V_u := \frac{V_u}{N} = 0.84\ kip$

Bolt Bending Moment = $M_{ub} := 0.65 \cdot V_u \cdot l_{ar} = 0.547\ in \cdot kip$

Anchor Bolt Strengths:

Bolt Design Tension Strength = $\phi_t R_{nt} := 0.75 \cdot F_{ub} \cdot A_n = 142.46\ kip$

Bolt Design Compression Yield Strength = $\phi_c R_{nc} := 0.90 \cdot F_{yb} \cdot A_g = 162.36\ kip$

Bolt Design Shear Rupture Strength = $\phi_v R_{nv} := 0.75 \cdot 0.5 \cdot F_{ub} \cdot A_g = 90.2\ kip$

Bolt Design Shear Yield Strength = $\phi_c R_{nvc} := 0.90 \cdot 0.6 \cdot 0.75 \cdot F_{yb} \cdot A_g = 73.06\ kip$

Bolt Design Buckling Strength = $\phi_c R_{nb} := 0.90 \cdot F_{cr} \cdot A_g = 162.19\ kip$

Bolt Design Flexural Strength = $\phi_f M_n := 0.90\ F_{yb} \cdot Z_x = 42.31\ in \cdot kip$

Anchor Rod Usage =

$$Usage1 := \begin{cases} \text{if } l_{ar} \le 1.0 \cdot D \\ \quad \max\left(\begin{bmatrix} \left(\frac{P_{ut}}{\phi_t R_{nt}}\right)^2 + \left(\frac{V_u}{\phi_v R_{nv}}\right)^2 \\ \left(\frac{P_{uc}}{\phi_c R_{nc}}\right) + \left(\frac{V_u}{\phi_c R_{nvc}}\right)^2 \end{bmatrix}\right) \\ \text{also if } 1.0 \cdot D < l_{ar} \le 4.0 \cdot D \\ \quad \max\left(\begin{bmatrix} \left(\left(\frac{P_{ut}}{\phi_t R_{nt}}\right) + \left(\frac{M_{ub}}{\phi_f M_n}\right)\right)^2 + \left(\frac{V_u}{\phi_v R_{nv}}\right)^2 \\ \left(\frac{P_{uc}}{\phi_c R_{nc}}\right) + \left(\frac{M_{ub}}{\phi_f M_n}\right) + \left(\frac{V_u}{\phi_c R_{nvc}}\right)^2 \end{bmatrix}\right) \\ \text{else} \\ \quad \max\left(\begin{bmatrix} \left(\left(\frac{P_{ut}}{\phi_t R_{nt}}\right) + \left(\frac{M_{ub}}{\phi_f M_n}\right)\right)^2 + \left(\frac{V_u}{\phi_v R_{nv}}\right)^2 \\ \left(\frac{P_{uc}}{\phi_c R_{nb}}\right) + \left(\frac{M_{ub}}{\phi_f M_n}\right) + \left(\frac{V_u}{\phi_c R_{nvc}}\right)^2 \end{bmatrix}\right) \end{cases} = 0.37$$

Note:
Per TIA-222-H Section . . when the anchor rod pro ection (lar) exceeds 1(d) but is not more than 3 in., it shall be permitted to consider (lar) less than or e ual to 1(d) when 5,000 psi min. 7 day strength non shrink, non metallic grout is installed between the supporting structure and the leveling nuts, otherwise all interaction e uations shall be investigated based on (lar).

Base Plate Analysis:

Plate Plastic Section Modulus =

$$Z_p := \frac{B_{eff} \cdot t_{bp}^{\ 2}}{4} = 31.05\ \textit{in}^3$$

Plate Bending =

$$M_p := \sum_i C_i \cdot MA_i = 456.04\ \textit{in} \cdot \textit{kip}$$

Available Plate Bending Strength =

$$\phi M_n := 0.90 \cdot F_{yf} \cdot Z_p = 1397.11\ \textit{in} \cdot \textit{kip}$$

Plate Flexural Usage =

$$Usage2 := \frac{M_p}{\phi M_n} = 0.33$$

Anchor Bolt and Base Plate Analysis Summary:

Anchor Bolt Usage
(of Capacity) = *Usage1* = 37%

Base Plate Bending Usage
(of Capacity) = *Usage2* = 33%

Colliers Engineering & Design
1055 Washington Boulevard
Stamford, CT 06901
860.395.0055
peter.albano@collierseng.com

New/Replacement Antenna Mount Analysis Report and PMI Requirements

Mount ReAnalysis

SMART Tool Project #: 10191663
Colliers Engineering & Design Project #: 23777003 (Rev. 1)

April 19, 2023

Site Information	*Site ID:*	*5000234399-VZW / CROMWELL N 2 CT - Cromwell Concrete*
	Site Name:	*CROMWELL N 2 CT - Cromwell Concrete*
	Carrier Name:	*Verizon Wireless*
	Address:	*667 Main St* *Cromwell, Connecticut 06416* *Middlesex County*
	Latitude:	*41.63239583°*
	Longitude:	*-72.65297972°*
Structure Information	*Tower Type:*	*120-Ft Monopole*
	Mount Type:	*12.50-Ft Platform* *6.00-Ft T-Arm*

FUZE ID # 17002768

Analysis Results

Platform: **51.1% Pass***
T-Arm: **23.5% Pass w/ New Mount***
(2 Site Pro 1: UDS-NP)

***Antennas and equipment to be installed in compliance with PMI Requirements of this mount analysis.**

******Contractor PMI Requirements*:**
Included at the end of this MA report
Available & Submitted via portal at https://pmi.vzwsmart.com
For additional questions and support, please reach out to:
pmisupport@colliersengineering.com

Report Prepared By: Frank Centone

Executive Summary:

The objective of this report is to determine the capacity of the proposed antenna support mount at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards. The proposed mount was assumed to be installed properly to the existing tower per the manufacturer's instructions. Colliers Engineering & Design cannot verify that the proposed mount will fit properly and is not liable for any fit-up issues during installation.

This analysis is inclusive of the mount structure only and does not address the structural capacity of the supporting structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent person.

Sources of Information:

Document Type	Remarks
Radio Frequency Data Sheet (RFDS)	*Verizon RFDS, Site ID: 2994680, dated March 17, 2023*
Desktop Mount Mapping Report	*Paul J. Ford & Company, Site ID: PSLC:469424, dated April 8, 2021*
Construction Drawings	*All-Points Technology Corporation Project #: NY141NB6710, dated March 25, 2021*
Closeout Photos	*Photos dated March 27, 2020*
Previous Mount Analysis Report	*Colliers Engineering & Design, Project #: 21777002A, dated June 1, 2021*
Mount Manufacturer Drawings	*Site Pro 1, Part #: UDS-NP*

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H	
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT}:	119 mph
	Ice Wind Speed (3-sec. Gust):	50 mph
	Design Ice Thickness:	1.50 in
	Risk Category:	II
	Exposure Category:	C
	Topographic Category:	1
	Topographic Feature Considered:	N/A
	Topographic Method:	N/A
	Ground Elevation Factor, K_e:	0.995
Seismic Parameters:	S_S:	0.203 g
	S_1:	0.055 g
Maintenance Parameters:	Wind Speed (3-sec. Gust):	30 mph
	Maintenance Live Load, Lv:	250 lbs.
	Maintenance Live Load, Lm:	500 lbs.
Analysis Software:	RISA-3D (V17)	

Final Loading Configuration:

The following equipment has been considered for the analysis of the mount:

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
119.25	120.00	6	Commscope	NNHH-65B-R4	Retained
		3	Commscope	NHH-45B-R2B	
		1	Raycap	RHSDC-6627-PF-48	
		3	Samsung	MT6407-77A	
		3	Samsung	RF4402D-D1A	Added
		2	Samsung	RF4439d-25A	
		4	Samsung	RF4440d-13A	
110.00	110.00	1	MatSing	MS-12.6DB180	

It is acceptable to install up to any three (3) of the OVP model numbers listed below as required at any location other than the mount face without affecting the structural capacity of the mount. If OVP units are installed on the mount face, a mount re-analysis may be required.

Model Number	Ports	AKA
DB-B1-6C-12AB-0Z	6	OVP-6
RVZDC-6627-PF-48	12	OVP-12

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Colliers Engineering & Design and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation. Any deviation from the loading locations specified in this report shall be communicated to Colliers Engineering & Design to verify deviation will not adversely impact the analysis.

2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped in accordance with the NSTD-446 Standard, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

4. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.

6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Colliers Engineering & Design is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

7. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
   - Channel, Solid Round, Angle, Plate — ASTM A36 (Gr. 36)
   - HSS (Rectangular) — ASTM 500 (Gr. B-46)
   - Pipe — ASTM A53 (Gr. B-35)
   - Threaded Rod — F1554 (Gr. 36)
   - Bolts — ASTM A325

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Colliers Engineering & Design.

Analysis Results:

Platform:

Component	Utilization %	Pass/Fail
Mount Support	30.1%	Pass
Mount Pipe	51.1%	Pass
Connector Angle	14.2%	Pass
Support Rail	17.6%	Pass
Face Horizontal	23.9%	Pass
Secondary Standoff	39.5%	Pass
Lower Standoff	42.4%	Pass
Grating Bracing	43.6%	Pass
Side Bracing	17.0%	Pass
Standoff Horizontal	15.7%	Pass
Grating Support	47.5%	Pass
Mount Support	30.1%	Pass
Mount Pipe	51.1%	Pass
Mount Connection	30.9%	Pass

Structure Rating – *(Controlling Utilization of all Components)*	**51.1%**

T-Arm:

Component	Utilization %	Pass/Fail
Mount Pipe	14.3%	Pass
Face Horizontal	21.5%	Pass
Standoff	13.2%	Pass
Mount Connection	23.5%	Pass

Structure Rating – *(Controlling Utilization of all Components)*	**23.5%**

Mount Steel (EPA)a per ANSI/TIA-222-H Section 2.6.11.2:

Platform:

Ice Thickness (In)	Mount Pipes Excluded		Mount Pipes Included	
	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)
0	45.7	45.7	70.1	70.1
0.5	66.2	66.2	100.8	100.8
1	83.5	83.5	128.3	128.3

Notes:
- (EPA)a values listed above may be used in the absence of more precise information
- (EPA)a values in the table above include 4 sectors.
- Ka factors included in (EPA)a calculations

T-Arm:

Ice Thickness (In)	Mount Pipes Excluded		Mount Pipes Included	
	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)
0	2.0	0.2	6.5	4.8
0.5	2.7	0.3	9.1	6.8
1	3.3	0.3	11.7	8.7

Notes:
- (EPA)a values listed above may be used in the absence of more precise information
- (EPA)a values in the table above include 1 sector.
- Ka factors included in (EPA)a calculations

Requirements:

The proposed antenna mounts are **SUFFICIENT** for the final loading configuration (attachment 2) upon completion of the new mount (attachment 3) and requirements below.

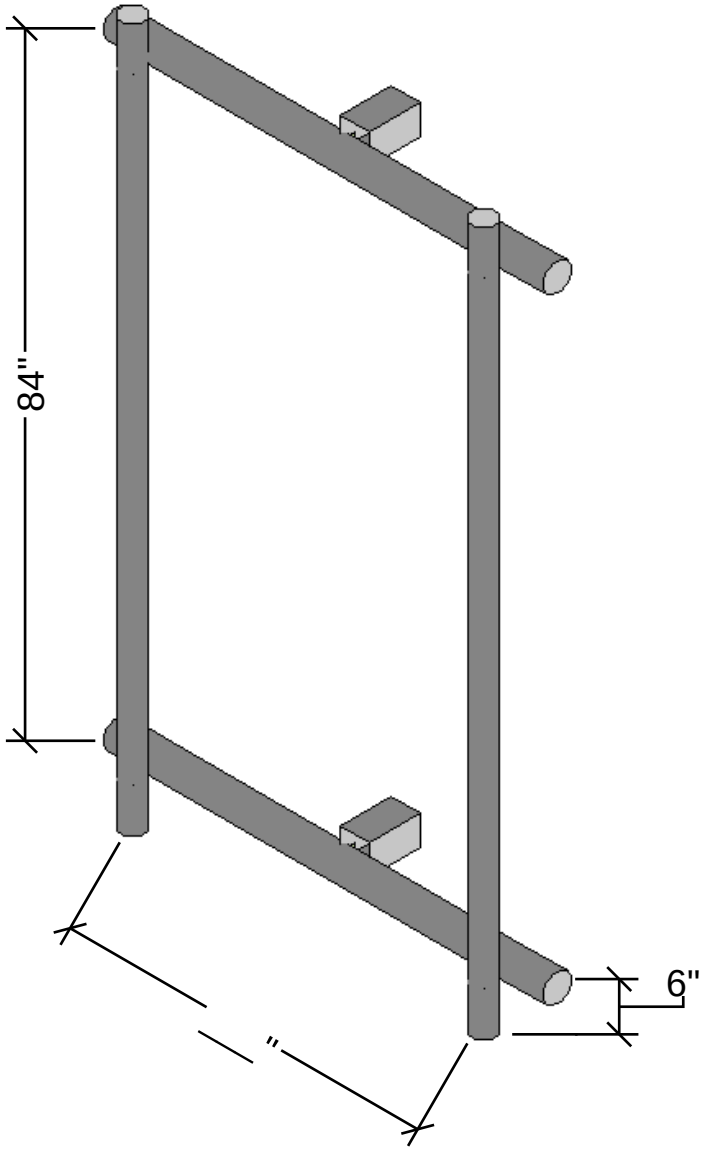
Refer to document at the end of this form for special instructions. Contact EOR if special instructions are not available.

ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other, if required. Separate review fees will apply.

Attachments:

1. **Contractor Required Post Installation Inspection (PMI) Report Deliverables**
2. Antenna Placement Diagrams
3. Mount Manufacturer Drawings
4. Desktop Mount Mapping
5. Existing Mount Photos
6. Analysis Calculations

NEW MOUNT SKETCH



MOUNT ISOMETRIC VIEW

N.T.S

MDG: **5000234399**
Site Name: **CROMWELL N2 CT - Cromwell Concrete**
FUZE: **17002768**

PMI Notes:

Contractor shall inspect climbing facilities and safety climb, if present, and ensure they are in good condition. Contractor shall install safety climb wire rope guides in locations where wire rope is rubbing against the mount or mount-to-tower connection steel. Wire brush clean any observed corrosion and protect with two (2) coats of cold galvanization (Zinga or Zinc Kote). Contractor shall provide photos of wire rope guide installation as part of PMI documents. Contact EOR if additional guidance is required.

Contractor shall install the proposed UDS-NP mounts in accordance with manufacturer specifications and the New Mount Sketch. Contact EOR if these documents are not available.

Contractor shall install (2) 96” long PIPE 2.5 SCH40 mount pipes on proposed mount. Contractor shall install mount pipes with vertical offsets as shown in the Mount Replacement Sketch. Contact EOR if these documents are not available.

Contractor does not need to install the other four sectors’ face horizontals provided in the kits.

Contractor to field verify horizontal distance of mount pipes needed to adequately attach the proposed antenna along its six attachment points.

In order to connect the new Multi-Beam Dual Band Spherical Lens Antenna to the new mount, we will connect the (3) tabs on each side (total of 6) of the antenna frame to the (2) new mount pipes on the frame - proposed (6) new 1/2" Dia. U-Bolts to connect the tabs to the new mount pipes.

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – New Mount Passing MA

Electronic pdf version of this can be downloaded at https://pmi.vzwsmart.com
For additional questions and support, please reach out to pmisupport@colliersengineering.com

---

MDG #: 5000234399 SMART Project #: 10191663 Fuze Project ID: 17002768

Purpose – to provide SMART Tool structural vendor the proper documentation in order to complete the required Mount Desktop review of the Post Modification Inspection Report.

- Contractor is responsible for making certain the photos provided as noted below provide confirmation that the installation was completed in accordance with this Passing Mount Analysis.
- Contractor shall relay any data that can impact the performance of the mount, this includes safety issues.

Base Requirements:

- If installation will cause damage to the structure, the climbing facility, or safety climb if present or any installed system, SMART Tool vendor to be notified prior to install. Any special photos outside of the standard requirements will be indicated on the drawings.
- Provide "as built mount drawings" showing contractor's name, contact information, preparer's signature, and date. Any deviations from the drawings (Proposed modification) shall be shown. NOTE: If loading is different than what is conveyed in the passing mount analysis (MA) contact the SMART Tool vendor immediately.
- Each photo should be time and date stamped.
- Photos should be high resolution.
- Contractor shall ensure that the safety climb wire rope is supported and not adversely impacted by the install of the modification components. This may involve the install of wire rope guides, or other items to protect the wire rope. If there is conflict, contact the SMART Tool engineer for recommendations.
- The PMI can be accessed at the following portal: ***https://pmi.vzwsmart.com***

Photo Requirements:

- *Photos taken at ground level*
  - Photo of Gate Signs showing the tower owner, site name, and number.
  - Overall tower structure after installation.
  - Photos of the mount after installation; if the mounts are at different rad elevations, pictures must be provided for all elevations that equipment was installed.
- *Photos taken at Mount Elevation*
  - Photos showing the safety climb wire rope above and below the mount prior to installation.
  - Photos showing the climbing facility and safety climb if present.
  - Photos showing each individual sector after installation of mounts. Each entire sector shall be in one photo to show the interconnection of members.

        - These photos shall also certify that the placement and geometry of the equipment on the mount is as depicted in the antenna placement diagram in this form.
    - Photos that show the model number of each antenna and piece of equipment installed per sector.
    - Photos of each installed mount; pictures shall also include connection hardware (U-bolts, bolts, nuts, all-threaded rods, etc.)
    - Photos showing the installed mount elevation.

Antenna & Equipment Placement and Geometry Confirmation:

- The contractor shall certify that the antenna & equipment placement and geometry is in accordance with the sketch and table as included in the mount analysis and noted below.

☐ The contractor certifies that the photos support and the equipment on the mount is as depicted on the sketch and table included in this form and with the mount analysis provided.

OR

☐ The contractor notes that the equipment on the mount is not in accordance with the sketch and has noted the differences below and provided photo documentation of any alterations.

Special Instructions / Validation as required from the MA or any other information the contractor deems necessary to share that was identified:

Issue:

Refer to document at the end of this form for special instructions. Contact EOR if special instructions are not available.

Response:

Special Instruction Confirmation:

☐ The contractor has read and acknowledges the above special instructions.

Contractor certifies that the climbing facility / safety climb was not damaged prior to starting work:

☐ Yes ☐ No

Contractor certifies no new damage created during the current installation:

☐ Yes ☐ No

Contractor to certify the condition of the safety climb and verify no damage when leaving the site:

☐ Safety Climb in Good Condition ☐ Safety Climb Damaged

Comments:

New Mount Certification:

☐ The contractor certifies that the New Mount installed is as specified in the Passing Mount Analysis.

☐ The contractor notes that the New Mount installed is not as specified and engineering approval was received for the New Mount installed.

Certifying Individual:

Company:	
Employee Name:	
Contact Phone:	
Email:	
Date:	

Structure: 5000234399-VZW - Cromwell N2

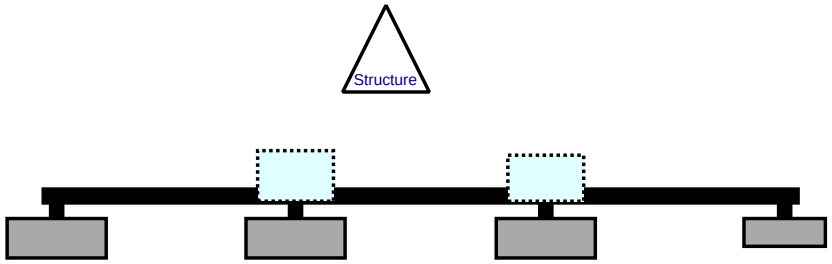
Sector: **A** 3/22/2023

Structure Type: Monopole 10191663

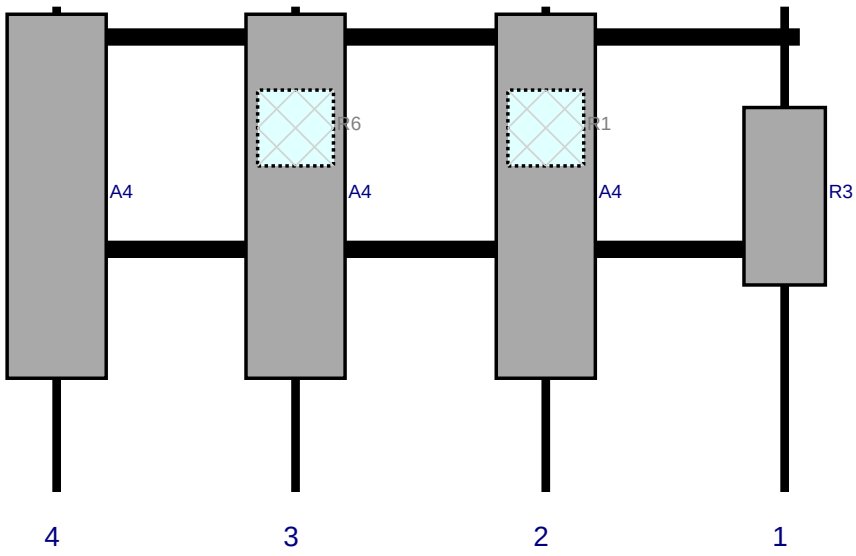
Mount Elev: 119.25 Page: 1

Colliers Engineering & Design

Plan View

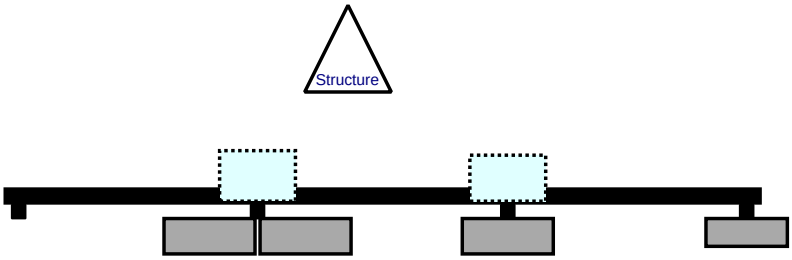


Front View - Looking at Structure

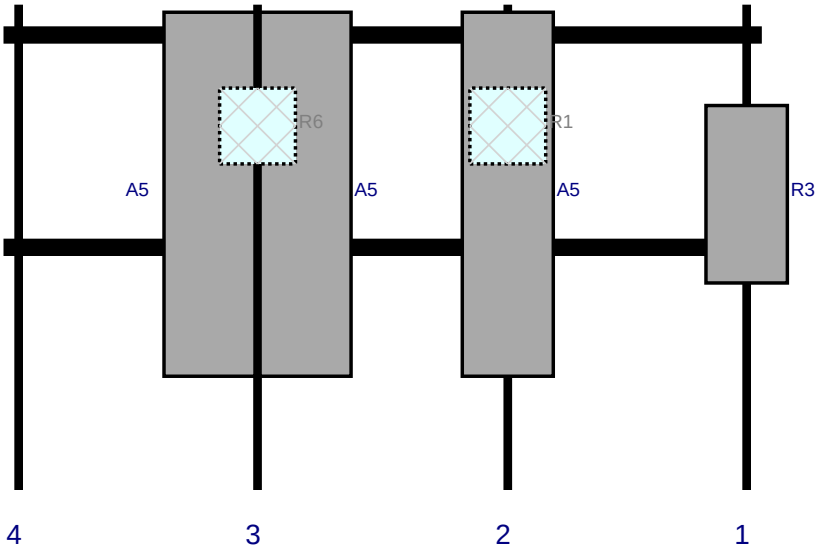


Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
R3	MT6407-77A	35.1	16.1	147	1	a	Front	37.5	0	Retained	09/14/2021
A4	NNHH-65B-R4	72	19.6	99.75	2	a	Front	37.5	0	Retained	09/14/2021
R1	RF4440d-13A	15	15	99.75	2	a	Behind	24	0	Added	
A4	NNHH-65B-R4	72	19.6	50.25	3	a	Front	37.5	0	Retained	09/14/2021
R6	RF4439d-25A	15	15	50.25	3	a	Behind	24	0	Added	
A4	NNHH-65B-R4	72	19.6	3	4	a	Front	37.5	0	Retained	09/14/2021

Plan View

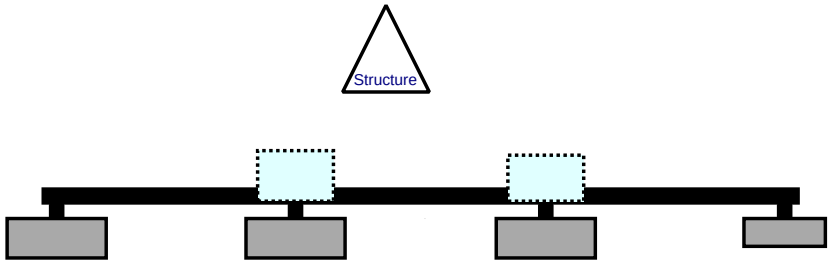


Front View - Looking at Structure

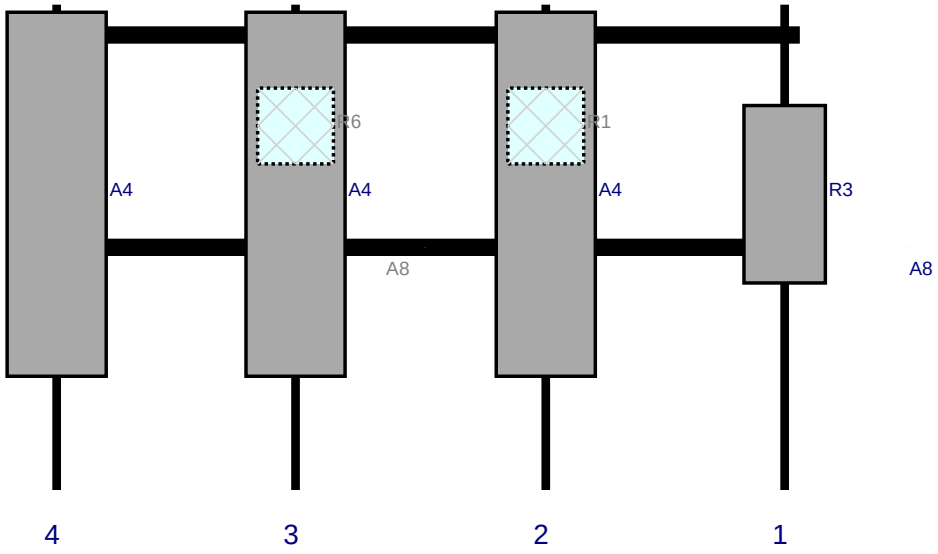


Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
R3	MT6407-77A	35.1	16.1	147	1	a	Front	37.5	0	Retained	09/14/2021
A5	NHH-45B-R2B	72	18	99.75	2	a	Front	37.5	0	Retained	09/14/2021
R1	RF4440d-13A	15	15	99.75	2	a	Behind	24	0	Added	
A5	NHH-45B-R2B	72	18	50.25	3	a	Front	37.5	9.5	Retained	09/14/2021
A5	NHH-45B-R2B	72	18	50.25	3	b	Front	37.5	-9.5	Retained	09/14/2021
R6	RF4439d-25A	15	15	50.25	3	a	Behind	24	0	Added	

Plan View



Front View - Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A8	MS-12.6DB180	0	0	147	1	a	Front	48	24	None	
R3	MT6407-77A	35.1	16.1	147	1	a	Front	37.5	0	Retained	09/14/2021
A4	NNHH-65B-R4	72	19.6	99.75	2	a	Front	37.5	0	Retained	09/14/2021
A8	MS-12.6DB180	0	0	99.75	2	a	Front	48	-24	None	
R1	RF4440d-13A	15	15	99.75	2	a	Behind	24	0	Added	
A4	NNHH-65B-R4	72	19.6	50.25	3	a	Front	37.5	0	Retained	09/14/2021
R6	RF4439d-25A	15	15	50.25	3	a	Behind	24	0	Added	
A4	NNHH-65B-R4	72	19.6	3	4	a	Front	37.5	0	Retained	09/14/2021

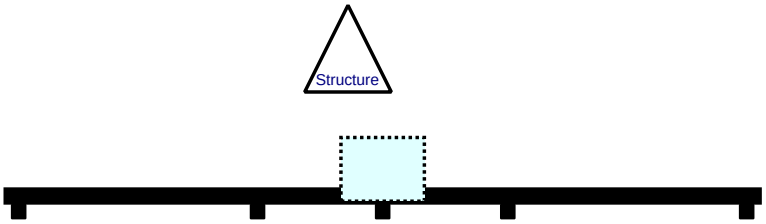
Structure: 5000234399-VZW - Cromwell N2

Sector: **D** 3/22/2023

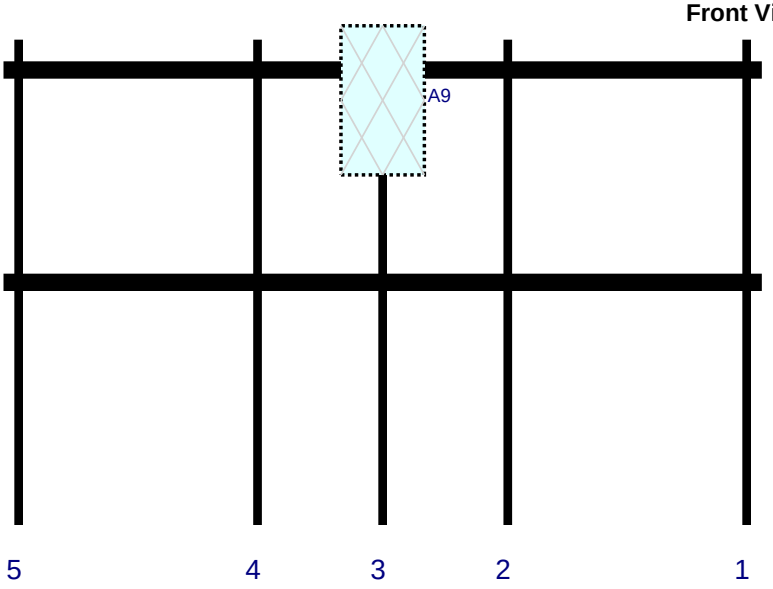
Structure Type: Monopole 10191663

Mount Elev: 119.25 Page: 1

Plan View

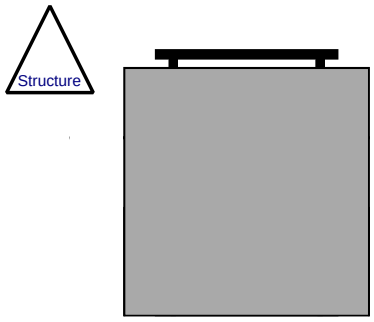


Front View - Looking at Structure

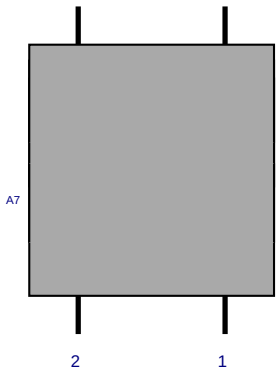


Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A9	RHSDC-6627-PF-48	29.5	16.5	75	3	a	Behind	12	0	Retained	

Plan View

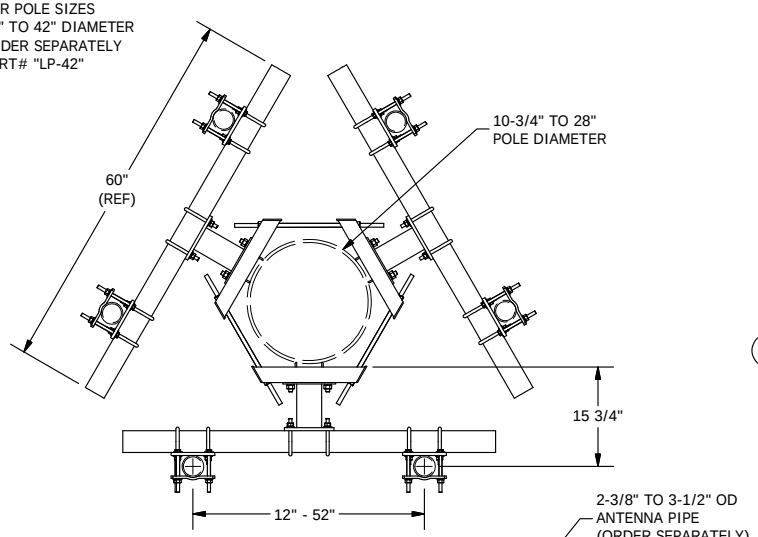


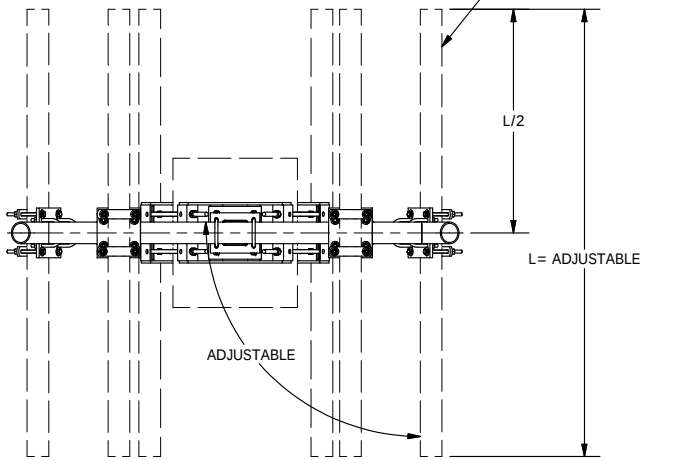
Front View - Looking at Structure

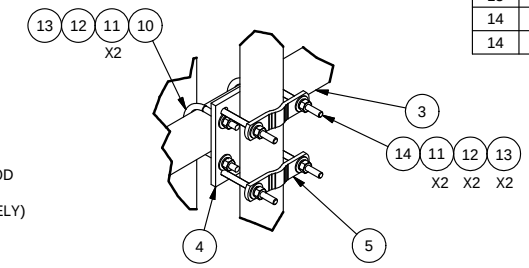


Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A7	MS-12.6DB180	71	80	54	1	a	Front	48	-24	Added	

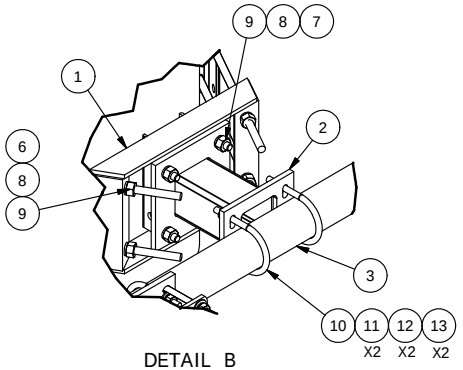
NOTE:
FOR POLE SIZES
28" TO 42" DIAMETER
OPDER SEPARATELY
PART# "LP-42"



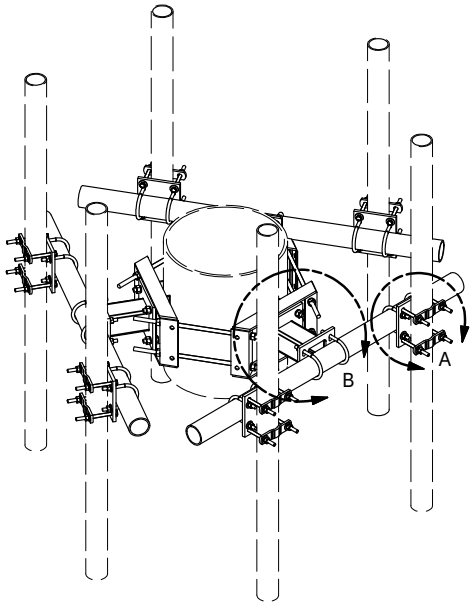




DETAIL A



DETAIL B



PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-UGLM	MINI RING MOUNT WELDMENT		21.67	65.00
2	3	X-WWM01	8" STAND-OFF ARM / WALL MOUNT		18.12	54.37
3	3	P360	3-1/2" X 60" (3" SCH 40) GALVANIZED PIPE	60 in	37.97	113.90
4	6	SCX7	CROSSOVER PLATE	8 in	7.55	45.29
5	12	X-115765	5" V-CLAMP	7 1/16 in	1.03	12.31
6	6	G58R-14	5/8" x 14" THREADED ROD (HDG.)	14 in	0.40	2.39
6	6	G58R-24	5/8" x 24" THREADED ROD (HDG.)	24 in	0.40	2.39
7	12	G5802	5/8" x 2" HDG HEX BOLT GR5	2 in	0.27	3.24
8	24	G58LW	5/8" HDG LOCKWASHER		0.03	0.63
9	24	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	3.12
10	18	X-UB1358	1/2" X 3-5/8" x 5-1/2" X 3" U-BOLT	5 1/2 in	0.77	13.90
11	84	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	2.86
12	60	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.83
13	60	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	4.30
14	24	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	9.83
14	24	G12045	1/2" x 4.5" HDG HEX BOLT GR5 FULL THREAD	4 1/2 in	0.30	7.15
					TOTAL WT. #	356.53

TOLERANCE NOTES

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

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REDRAWN IN INV.		KC8	8/27/2012

REVISION HISTORY

DESCRIPTION
DUAL ANTENNA POLE MOUNT ASSEMBLY
15-3/4" STANDOFF
10-3/4" TO 28" MONOPOLE DIAMETER

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.
	BMC 1/24/2011		UDS-NP

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	CEK 8/27/2012	UDS-NP

PAUL J. FORD & COMPANY

Desktop Mount Mapping Form

Site Name:	Cromwell N 2 CT	**Tower Type:**	Monopole
Site ID:		**Tower Owner:**	
PSLC:	469424	**Tower Height (Ft.):**	120
Customer:		**Mount Elevation (Ft.):**	120
Colliers Project No.	21777002A	**Date:**	4/8/2021

Document Type	Provided? (Yes/No)	Source Name	Project No.	Dated	Comments/Remarks
Previous Mount Mapping	No				
Previous Mapping Photos	No				
Previous Mount Analysis	No				
Previous Mount Modifications	No				
Previous Structural Analysis	No				
Construction Drawings	Yes	Cromwell N 2 CT CD Rev0 11-04-2019	NY141NB6710	11/4/2019	Provided and is the primary source of mount information. Mount part numbers along with graphical details are shown.
Closeout Package	Yes				
Closeout Photos	Yes				Photos are helpful for MA
Handover Package	No				
New Build 445 Documentation	No				
Other	No				
Previous PMI	No				

The desktop mount mapping is based on the engineering review of the available site documents in FUZE, as listed above, in place of a full mount mapping. It is assumed that the information provided in the documents listed above, provide an accurate representation of the existing mount. EOR reserves the right and will typically require additional clarification and verification as will be included in the PMI requirements. During the Post Modification Inspection (PMI) process, the GC on site will be required to confirm all questions, confirmations, and validations as posed by the EOR. The engineering review for this desktop mount mapping was performed in accordance to the ANSI/TIA-222-H requirements and Verizon's NSTD446 standard.

Photo taken from: Closeout Package Photos

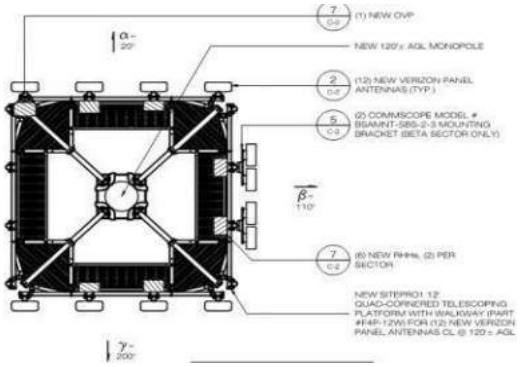
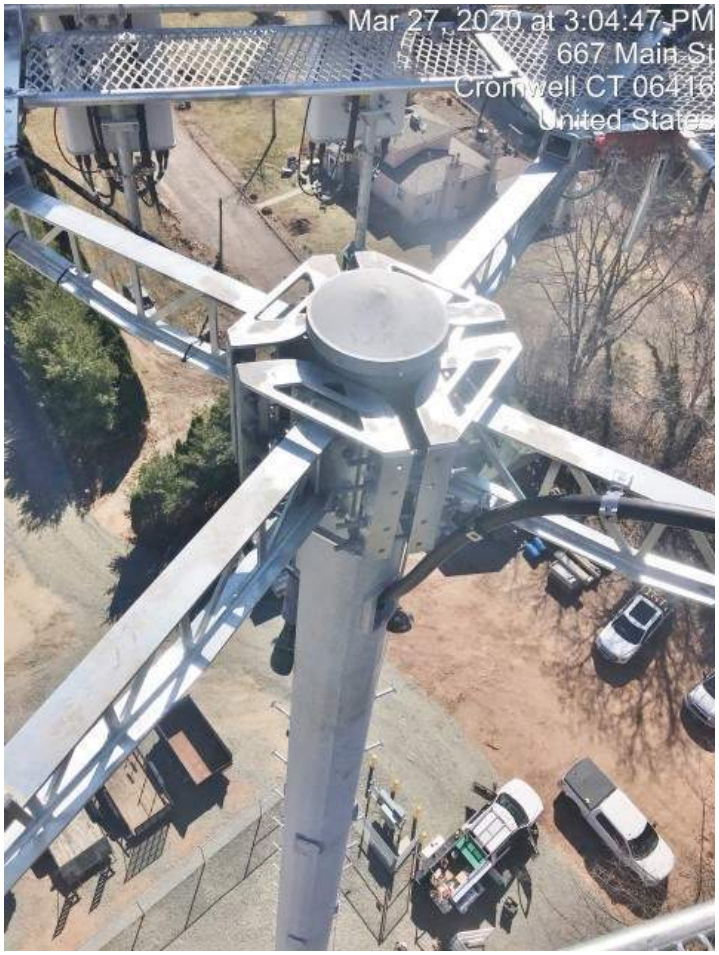
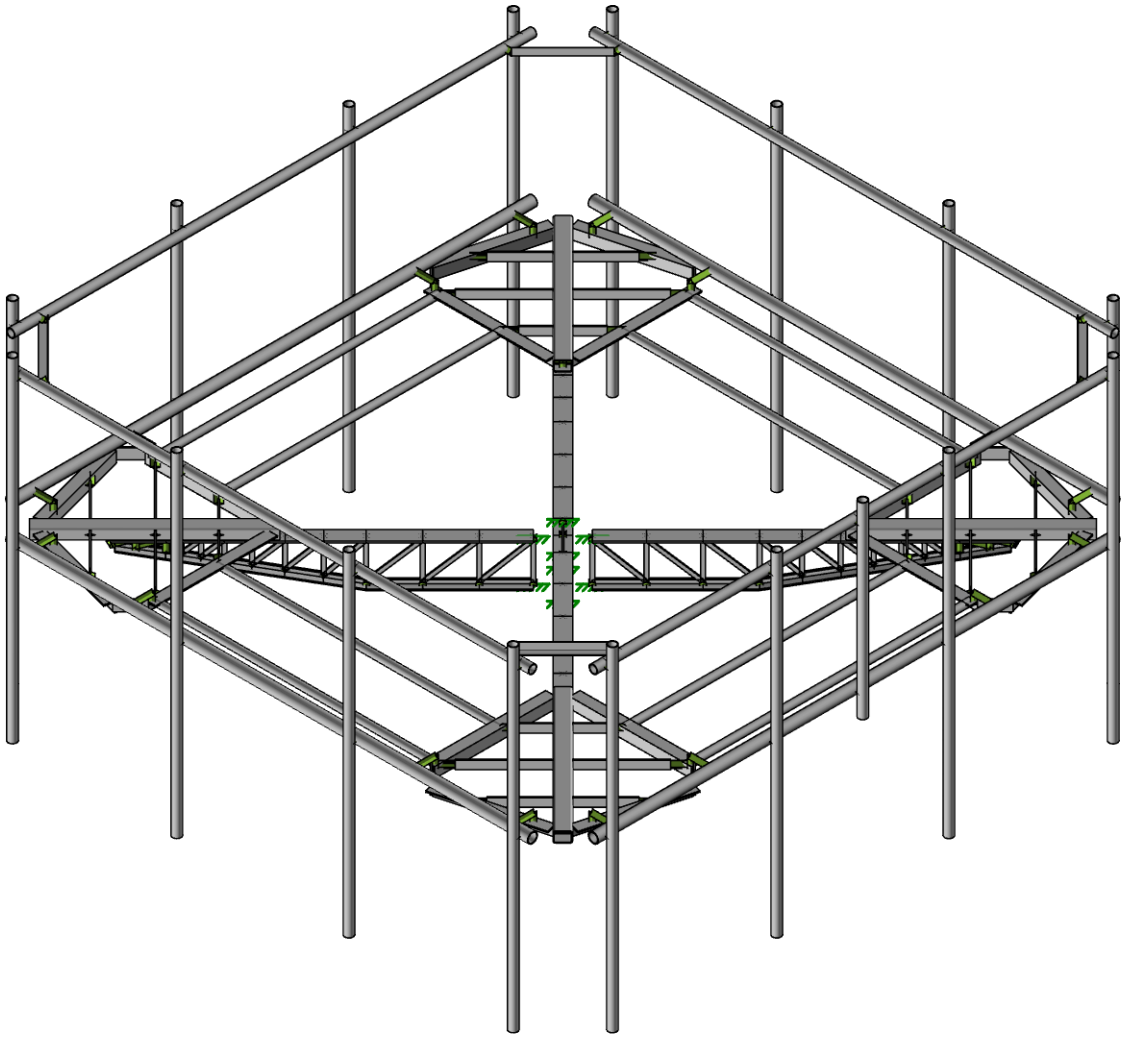


Photo taken from: CDs

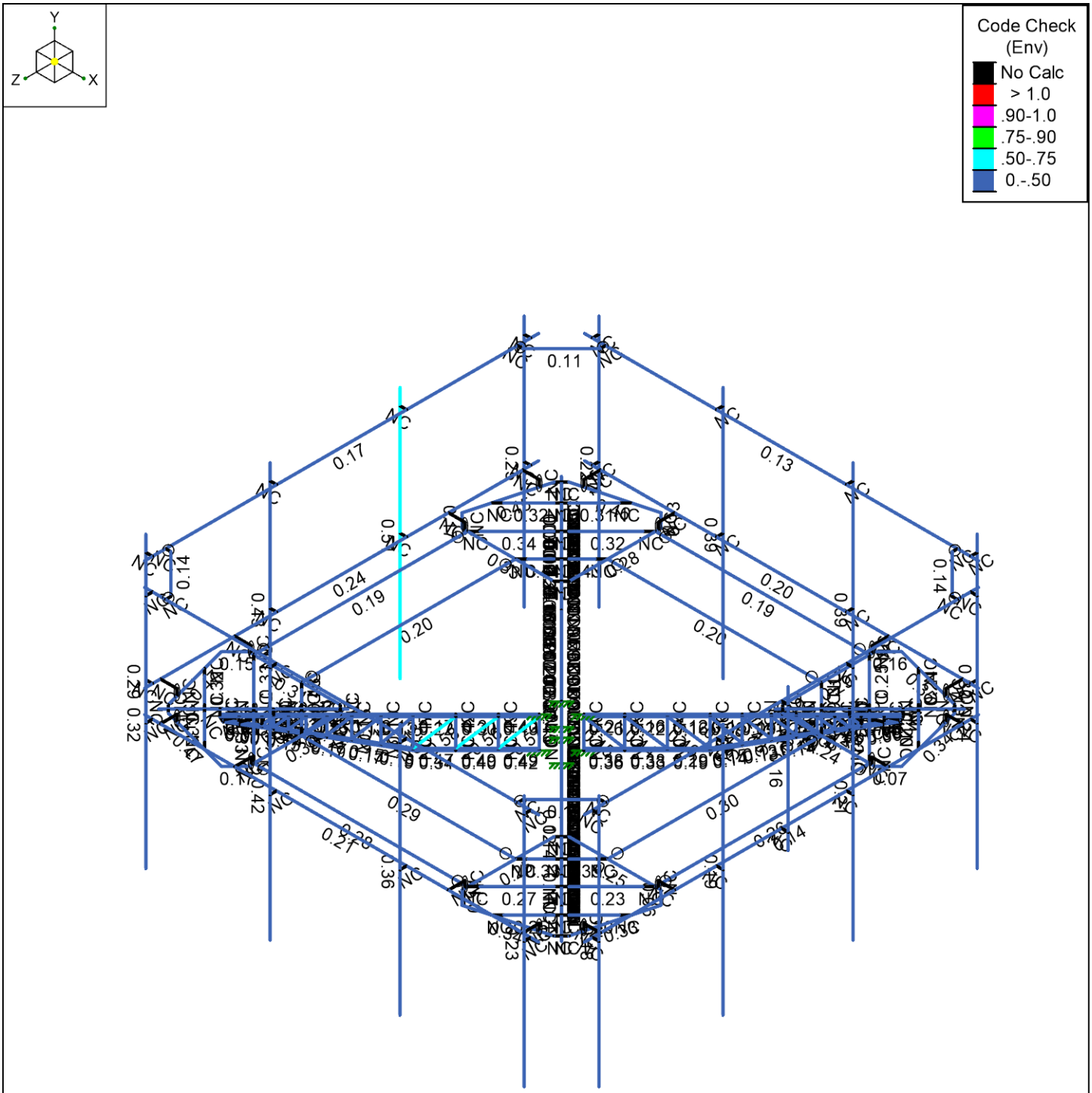

Mar 27, 2020 at 3:04:47 PM
667 Main St
Cromwell CT 06416
United States


Mar 27, 2020 at 3:03:36 PM
667 Main St
Cromwell CT 06416
United States



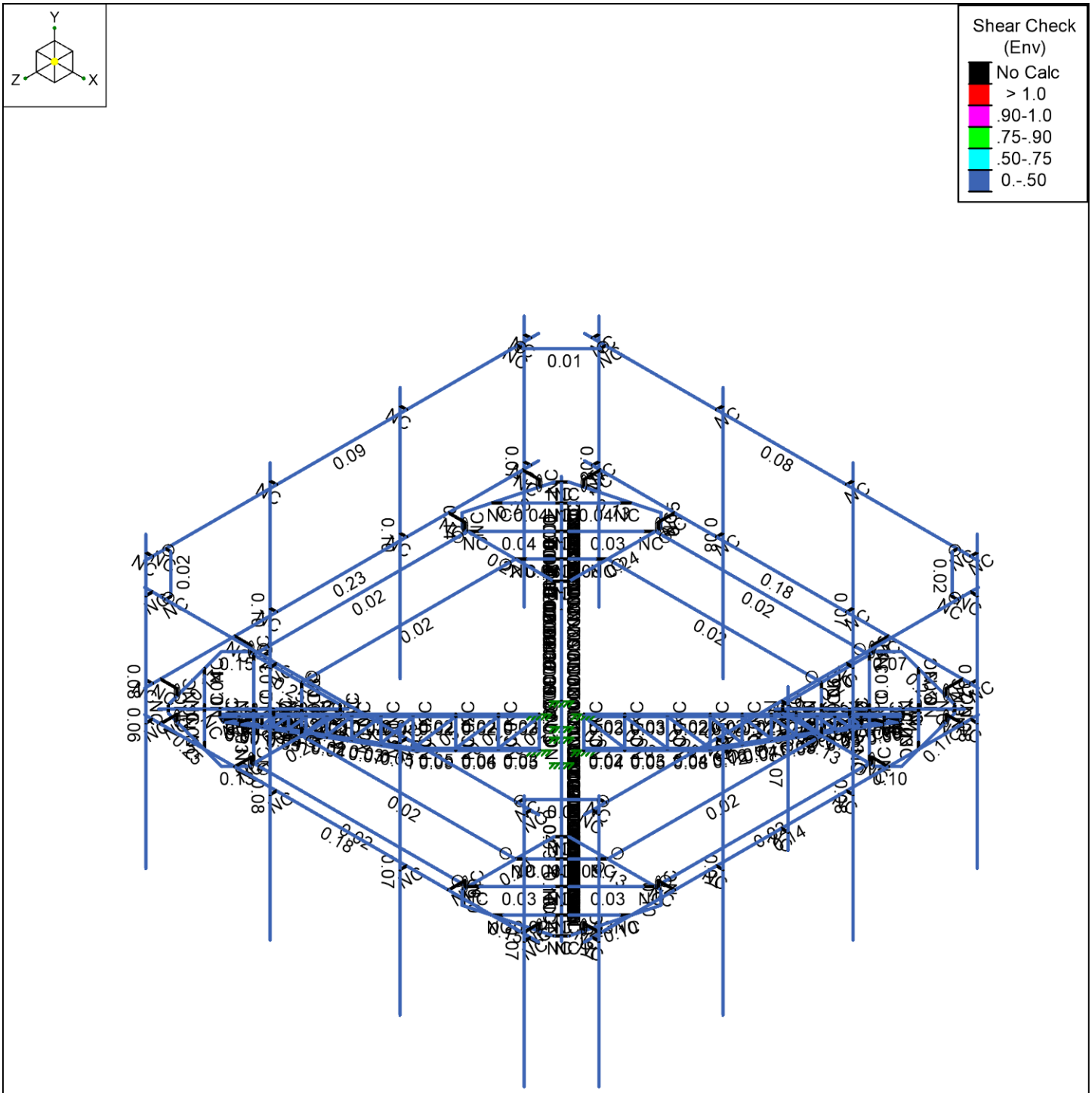
Envelope Only Solution

		SK-2
		Mar 22, 2023
		469424-VZW_MT_LO_H.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

		SK-1
		Mar 23, 2023
		5000234399-VZW_MT_LO_H.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

		SK-2
		Mar 23, 2023
		5000234399-VZW_MT_LO_H.r3d

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed	Area(Member)
1	Antenna D	None				102		
2	Antenna Di	None				102		
3	Antenna Wo (0 Deg)	None				102		
4	Antenna Wo (30 Deg)	None				102		
5	Antenna Wo (60 Deg)	None				102		
6	Antenna Wo (90 Deg)	None				102		
7	Antenna Wo (120 Deg)	None				102		
8	Antenna Wo (150 Deg)	None				102		
9	Antenna Wo (180 Deg)	None				102		
10	Antenna Wo (210 Deg)	None				102		
11	Antenna Wo (240 Deg)	None				102		
12	Antenna Wo (270 Deg)	None				102		
13	Antenna Wo (300 Deg)	None				102		
14	Antenna Wo (330 Deg)	None				102		
15	Antenna Wi (0 Deg)	None				102		
16	Antenna Wi (30 Deg)	None				102		
17	Antenna Wi (60 Deg)	None				102		
18	Antenna Wi (90 Deg)	None				102		
19	Antenna Wi (120 Deg)	None				102		
20	Antenna Wi (150 Deg)	None				102		
21	Antenna Wi (180 Deg)	None				102		
22	Antenna Wi (210 Deg)	None				102		
23	Antenna Wi (240 Deg)	None				102		
24	Antenna Wi (270 Deg)	None				102		
25	Antenna Wi (300 Deg)	None				102		
26	Antenna Wi (330 Deg)	None				102		
27	Antenna Wm (0 Deg)	None				102		
28	Antenna Wm (30 Deg)	None				102		
29	Antenna Wm (60 Deg)	None				102		
30	Antenna Wm (90 Deg)	None				102		
31	Antenna Wm (120 Deg)	None				102		
32	Antenna Wm (150 Deg)	None				102		
33	Antenna Wm (180 Deg)	None				102		
34	Antenna Wm (210 Deg)	None				102		
35	Antenna Wm (240 Deg)	None				102		
36	Antenna Wm (270 Deg)	None				102		
37	Antenna Wm (300 Deg)	None				102		
38	Antenna Wm (330 Deg)	None				102		
39	Structure D	None		-1				22
40	Structure Di	None					297	22
41	Structure Wo (0 Deg)	None					594	
42	Structure Wo (30 Deg)	None					594	
43	Structure Wo (60 Deg)	None					594	
44	Structure Wo (90 Deg)	None					594	
45	Structure Wo (120 Deg)	None					594	
46	Structure Wo (150 Deg)	None					594	
47	Structure Wo (180 Deg)	None					594	
48	Structure Wo (210 Deg)	None					594	
49	Structure Wo (240 Deg)	None					594	
50	Structure Wo (270 Deg)	None					594	
51	Structure Wo (300 Deg)	None					594	
52	Structure Wo (330 Deg)	None					594	
53	Structure Wi (0 Deg)	None					594	
54	Structure Wi (30 Deg)	None					594	
55	Structure Wi (60 Deg)	None					594	

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed	Area(Member)
56	Structure Wi (90 Deg)	None					594	
57	Structure Wi (120 Deg)	None					594	
58	Structure Wi (150 Deg)	None					594	
59	Structure Wi (180 Deg)	None					594	
60	Structure Wi (210 Deg)	None					594	
61	Structure Wi (240 Deg)	None					594	
62	Structure Wi (270 Deg)	None					594	
63	Structure Wi (300 Deg)	None					594	
64	Structure Wi (330 Deg)	None					594	
65	Structure Wm (0 Deg)	None					594	
66	Structure Wm (30 Deg)	None					594	
67	Structure Wm (60 Deg)	None					594	
68	Structure Wm (90 Deg)	None					594	
69	Structure Wm (120 Deg)	None					594	
70	Structure Wm (150 Deg)	None					594	
71	Structure Wm (180 Deg)	None					594	
72	Structure Wm (210 Deg)	None					594	
73	Structure Wm (240 Deg)	None					594	
74	Structure Wm (270 Deg)	None					594	
75	Structure Wm (300 Deg)	None					594	
76	Structure Wm (330 Deg)	None					594	
77	Lm1	None				1		
78	Lm2	None				1		
79	Lv1	None				1		
80	Lv2	None				1		
81	Antenna Ev	None				102		
82	Antenna Eh (0 Deg)	None				68		
83	Antenna Eh (90 Deg)	None				68		
84	Structure Ev	ELY		-0.043				22
85	Structure Eh (0 Deg)	ELZ			-0.108			22
86	Structure Eh (90 Deg)	ELX	0.108					22
87	BLC 39 Transient Area Loads	None					376	
88	BLC 40 Transient Area Loads	None					376	
89	BLC 84 Transient Area Loads	None					376	
90	BLC 85 Transient Area Loads	None					376	
91	BLC 86 Transient Area Loads	None					376	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.2D+1.0Wo (0 Deg)	Yes	Y	1	1.2	39	1.2	3	1	41	1								
2	1.2D+1.0Wo (30 Deg)	Yes	Y	1	1.2	39	1.2	4	1	42	1								
3	1.2D+1.0Wo (60 Deg)	Yes	Y	1	1.2	39	1.2	5	1	43	1								
4	1.2D+1.0Wo (90 Deg)	Yes	Y	1	1.2	39	1.2	6	1	44	1								
5	1.2D+1.0Wo (120 Deg)	Yes	Y	1	1.2	39	1.2	7	1	45	1								
6	1.2D+1.0Wo (150 Deg)	Yes	Y	1	1.2	39	1.2	8	1	46	1								
7	1.2D+1.0Wo (180 Deg)	Yes	Y	1	1.2	39	1.2	9	1	47	1								
8	1.2D+1.0Wo (210 Deg)	Yes	Y	1	1.2	39	1.2	10	1	48	1								
9	1.2D+1.0Wo (240 Deg)	Yes	Y	1	1.2	39	1.2	11	1	49	1								
10	1.2D+1.0Wo (270 Deg)	Yes	Y	1	1.2	39	1.2	12	1	50	1								
11	1.2D+1.0Wo (300 Deg)	Yes	Y	1	1.2	39	1.2	13	1	51	1								
12	1.2D+1.0Wo (330 Deg)	Yes	Y	1	1.2	39	1.2	14	1	52	1								
13	1.2D + 1.0Di + 1.0Wi (0 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	15	1	53	1				
14	1.2D + 1.0Di + 1.0Wi (30 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	16	1	54	1				
15	1.2D + 1.0Di + 1.0Wi (60 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	17	1	55	1				
16	1.2D + 1.0Di + 1.0Wi (90 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	18	1	56	1				

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
17	1.2D + 1.0Di + 1.0Wi (120 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	19	1	57	1				
18	1.2D + 1.0Di + 1.0Wi (150 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	20	1	58	1				
19	1.2D + 1.0Di + 1.0Wi (180 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	21	1	59	1				
20	1.2D + 1.0Di + 1.0Wi (210 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	22	1	60	1				
21	1.2D + 1.0Di + 1.0Wi (240 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	23	1	61	1				
22	1.2D + 1.0Di + 1.0Wi (270 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	24	1	62	1				
23	1.2D + 1.0Di + 1.0Wi (300 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	25	1	63	1				
24	1.2D + 1.0Di + 1.0Wi (330 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	26	1	64	1				
25	1.2D + 1.5Lm1 + 1.0Wm (0 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	27	1	65	1						
26	1.2D + 1.5Lm1 + 1.0Wm (30 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	28	1	66	1						
27	1.2D + 1.5Lm1 + 1.0Wm (60 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	29	1	67	1						
28	1.2D + 1.5Lm1 + 1.0Wm (90 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	30	1	68	1						
29	1.2D + 1.5Lm1 + 1.0Wm (120 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	31	1	69	1						
30	1.2D + 1.5Lm1 + 1.0Wm (150 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	32	1	70	1						
31	1.2D + 1.5Lm1 + 1.0Wm (180 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	33	1	71	1						
32	1.2D + 1.5Lm1 + 1.0Wm (210 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	34	1	72	1						
33	1.2D + 1.5Lm1 + 1.0Wm (240 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	35	1	73	1						
34	1.2D + 1.5Lm1 + 1.0Wm (270 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	36	1	74	1						
35	1.2D + 1.5Lm1 + 1.0Wm (300 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	37	1	75	1						
36	1.2D + 1.5Lm1 + 1.0Wm (330 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	38	1	76	1						
37	1.2D + 1.5Lm2 + 1.0Wm (0 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	27	1	65	1						
38	1.2D + 1.5Lm2 + 1.0Wm (30 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	28	1	66	1						
39	1.2D + 1.5Lm2 + 1.0Wm (60 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	29	1	67	1						
40	1.2D + 1.5Lm2 + 1.0Wm (90 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	30	1	68	1						
41	1.2D + 1.5Lm2 + 1.0Wm (120 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	31	1	69	1						
42	1.2D + 1.5Lm2 + 1.0Wm (150 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	32	1	70	1						
43	1.2D + 1.5Lm2 + 1.0Wm (180 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	33	1	71	1						
44	1.2D + 1.5Lm2 + 1.0Wm (210 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	34	1	72	1						
45	1.2D + 1.5Lm2 + 1.0Wm (240 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	35	1	73	1						
46	1.2D + 1.5Lm2 + 1.0Wm (270 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	36	1	74	1						
47	1.2D + 1.5Lm2 + 1.0Wm (300 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	37	1	75	1						
48	1.2D + 1.5Lm2 + 1.0Wm (330 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	38	1	76	1						
49	1.2D + 1.5Lv1	Yes	Y	1	1.2	39	1.2	79	1.5										
50	1.2D + 1.5Lv2	Yes	Y	1	1.2	39	1.2	80	1.5										
51	1.4D	Yes	Y	1	1.4	39	1.4												
52	1.2D + 1.0Ev + 1.0Eh (0 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	1	83		ELZ	1	ELX	
53	1.2D + 1.0Ev + 1.0Eh (30 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.866	83	0.5	ELZ	0.866	ELX	0.5
54	1.2D + 1.0Ev + 1.0Eh (60 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.5	83	0.866	ELZ	0.5	ELX	0.866
55	1.2D + 1.0Ev + 1.0Eh (90 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82		83	1	ELZ		ELX	1
56	1.2D + 1.0Ev + 1.0Eh (120 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.5	83	0.866	ELZ	-0.5	ELX	0.866
57	1.2D + 1.0Ev + 1.0Eh (150 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.866	83	0.5	ELZ	-0.866	ELX	0.5
58	1.2D + 1.0Ev + 1.0Eh (180 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-1	83		ELZ	-1	ELX	
59	1.2D + 1.0Ev + 1.0Eh (210 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.866	83	-0.5	ELZ	-0.866	ELX	-0.5
60	1.2D + 1.0Ev + 1.0Eh (240 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.5	83	-0.866	ELZ	-0.5	ELX	-0.866
61	1.2D + 1.0Ev + 1.0Eh (270 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82		83	-1	ELZ		ELX	-1
62	1.2D + 1.0Ev + 1.0Eh (300 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.5	83	-0.866	ELZ	0.5	ELX	-0.866
63	1.2D + 1.0Ev + 1.0Eh (330 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.866	83	-0.5	ELZ	0.866	ELX	-0.5
64	0.9D - 1.0Ev + 1.0Eh (0 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	1	83		ELZ	1	ELX	
65	0.9D - 1.0Ev + 1.0Eh (30 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.866	83	0.5	ELZ	0.866	ELX	0.5
66	0.9D - 1.0Ev + 1.0Eh (60 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.5	83	0.866	ELZ	0.5	ELX	0.866
67	0.9D - 1.0Ev + 1.0Eh (90 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82		83	1	ELZ		ELX	1
68	0.9D - 1.0Ev + 1.0Eh (120 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.5	83	0.866	ELZ	-0.5	ELX	0.866
69	0.9D - 1.0Ev + 1.0Eh (150 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.866	83	0.5	ELZ	-0.866	ELX	0.5
70	0.9D - 1.0Ev + 1.0Eh (180 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-1	83		ELZ	-1	ELX	
71	0.9D - 1.0Ev + 1.0Eh (210 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.866	83	-0.5	ELZ	-0.866	ELX	-0.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
72	0.9D - 1.0Ev + 1.0Eh (240 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.5	83	-0.866	ELZ	-0.5	ELX	-0.866
73	0.9D - 1.0Ev + 1.0Eh (270 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82		83	-1	ELZ		ELX	-1
74	0.9D - 1.0Ev + 1.0Eh (300 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.5	83	-0.866	ELZ	0.5	ELX	-0.866
75	0.9D - 1.0Ev + 1.0Eh (330 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.866	83	-0.5	ELZ	0.866	ELX	-0.5

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Face Horizontal	PIPE_2.5	None	None	Q235	Typical	1.61	1.45	1.45	2.89
2	Mount Pipe	PIPE_2.0	None	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
3	Standoff Horizontal	HSS4X3X4	None	None	Q235	Typical	2.91	3.91	6.15	7.96
4	Connector Angle	L2X2X2	None	None	Q235	Typical	0.491	0.189	0.189	0.003
5	Grating Support	L3X3X6	None	None	Q235	Typical	2.11	1.75	1.75	0.101
6	Secondary Standoff	PL1/2X4	None	None	Q235	Typical	2	0.042	2.667	0.154
7	Lower Standoff	PL3/8X4	VBrace	RECT	Q235	Typical	3	0.035	16	0.136
8	Bracing	PL3/8X1	None	None	Q235	Typical	0.375	0.004	0.031	0.013
9	Grating Bracing	PL3/8X2.375	None	None	Q235	Typical	0.891	0.01	0.419	0.038
10	Side Bracing	PL3/8X3	VBrace	RECT	Q235	Typical	1.125	0.013	0.844	0.049
11	Support Rail	PIPE_2.0	None	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
12	Support Rail Corner	WT2.5X8	None	None	A36 Gr.36	Typical	2.35	3.75	0.845	0.096
13	Mount Support	PIPE_1.5	None	None	Q235	Typical	0.749	0.293	0.293	0.586
14	TES Grating Bracing	PL3/8X3_HRA	None	None	Q235	Typical	2.25	0.026	6.75	0.101
15	TES Support Rail Corner	L3X3X6	None	None	Q235	Typical	2.11	1.75	1.75	0.101

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	Q235	29000	11154	0.3	0.65	0.49	35	1.5	58	1.2

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	R3	N77	N35		RIGID	None	None	RIGID	Typical
2	R4	N27	N38		RIGID	None	None	RIGID	Typical
3	R5	N28	N39		RIGID	None	None	RIGID	Typical
4	R6	N79	N41		RIGID	None	None	RIGID	Typical
5	R7	N29	N41A		RIGID	None	None	RIGID	Typical
6	R8	N31	N42		RIGID	None	None	RIGID	Typical
7	R9	N47	N50		RIGID	None	None	RIGID	Typical
8	R10	N49	N52A		RIGID	None	None	RIGID	Typical
9	M57	N77	N69		RIGID	None	None	RIGID	Typical
10	M58	N27	N70		RIGID	None	None	RIGID	Typical
11	M59	N28	N71		RIGID	None	None	RIGID	Typical
12	M63	N64	N72		RIGID	None	None	RIGID	Typical
13	M64	N67	N73		RIGID	None	None	RIGID	Typical
14	M65	N68	N74		RIGID	None	None	RIGID	Typical
15	M67	N47	N78		RIGID	None	None	RIGID	Typical
16	M70	N49	N80		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
17	M71	N54	N55		RIGID	None	None	RIGID	Typical
18	M72	N55	N56		RIGID	None	None	RIGID	Typical
19	M74A	N58	N59A		RIGID	None	None	RIGID	Typical
20	M75C	N59A	N59		RIGID	None	None	RIGID	Typical
21	M75A	N60A	N61		RIGID	None	None	RIGID	Typical
22	M76	N61	N62A		RIGID	None	None	RIGID	Typical
23	M77	N64A	N65		RIGID	None	None	RIGID	Typical
24	M78	N65	N63		RIGID	None	None	RIGID	Typical
25	M100	N88	N94		RIGID	None	None	RIGID	Typical
26	M101	N90	N95		RIGID	None	None	RIGID	Typical
27	M102	N91	N96		RIGID	None	None	RIGID	Typical
28	M106	N89	N97		RIGID	None	None	RIGID	Typical
29	M107	N92	N98		RIGID	None	None	RIGID	Typical
30	M108	N93	N99		RIGID	None	None	RIGID	Typical
31	M109	N100	N102		RIGID	None	None	RIGID	Typical
32	M111	N101	N104		RIGID	None	None	RIGID	Typical
33	M133	N88	N108		RIGID	None	None	RIGID	Typical
34	M134	N90	N109		RIGID	None	None	RIGID	Typical
35	M135	N91	N110		RIGID	None	None	RIGID	Typical
36	M139	N105	N111		RIGID	None	None	RIGID	Typical
37	M140	N106	N112		RIGID	None	None	RIGID	Typical
38	M141	N107	N113		RIGID	None	None	RIGID	Typical
39	M143	N100	N114		RIGID	None	None	RIGID	Typical
40	M145	N101	N116		RIGID	None	None	RIGID	Typical
41	M146	N117	N118		RIGID	None	None	RIGID	Typical
42	M147	N118	N119		RIGID	None	None	RIGID	Typical
43	M151	N123	N124		RIGID	None	None	RIGID	Typical
44	M152	N124	N120		RIGID	None	None	RIGID	Typical
45	M153	N125	N126		RIGID	None	None	RIGID	Typical
46	M154	N126	N127		RIGID	None	None	RIGID	Typical
47	M155	N129	N130		RIGID	None	None	RIGID	Typical
48	M156	N130	N128		RIGID	None	None	RIGID	Typical
49	M178	N153	N159		RIGID	None	None	RIGID	Typical
50	M179	N155	N160		RIGID	None	None	RIGID	Typical
51	M180	N156	N161		RIGID	None	None	RIGID	Typical
52	M184	N154	N162		RIGID	None	None	RIGID	Typical
53	M185	N157	N163		RIGID	None	None	RIGID	Typical
54	M186	N158	N164		RIGID	None	None	RIGID	Typical
55	M187	N165	N167		RIGID	None	None	RIGID	Typical
56	M189	N166	N169		RIGID	None	None	RIGID	Typical
57	M211	N153	N173		RIGID	None	None	RIGID	Typical
58	M212	N155	N174		RIGID	None	None	RIGID	Typical
59	M213	N156	N175		RIGID	None	None	RIGID	Typical
60	M217	N170	N176		RIGID	None	None	RIGID	Typical
61	M218	N171	N177		RIGID	None	None	RIGID	Typical
62	M219	N172	N178		RIGID	None	None	RIGID	Typical
63	M221	N165	N179		RIGID	None	None	RIGID	Typical
64	M223	N166	N181		RIGID	None	None	RIGID	Typical
65	M224	N182	N183		RIGID	None	None	RIGID	Typical
66	M225	N183	N184		RIGID	None	None	RIGID	Typical
67	M229	N188	N189		RIGID	None	None	RIGID	Typical
68	M230	N189	N185		RIGID	None	None	RIGID	Typical
69	M231	N190	N191		RIGID	None	None	RIGID	Typical
70	M232	N191	N192		RIGID	None	None	RIGID	Typical
71	M233	N194	N195		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
72	M234	N195	N193		RIGID	None	None	RIGID	Typical
73	M256	N218	N224		RIGID	None	None	RIGID	Typical
74	M257	N220	N225		RIGID	None	None	RIGID	Typical
75	M258	N221	N226		RIGID	None	None	RIGID	Typical
76	M262	N219	N227		RIGID	None	None	RIGID	Typical
77	M263	N222	N228		RIGID	None	None	RIGID	Typical
78	M264	N223	N229		RIGID	None	None	RIGID	Typical
79	M265	N230	N232		RIGID	None	None	RIGID	Typical
80	M267	N231	N234		RIGID	None	None	RIGID	Typical
81	M289	N218	N238		RIGID	None	None	RIGID	Typical
82	M290	N220	N239		RIGID	None	None	RIGID	Typical
83	M291	N221	N240		RIGID	None	None	RIGID	Typical
84	M295	N235	N241		RIGID	None	None	RIGID	Typical
85	M296	N236	N242		RIGID	None	None	RIGID	Typical
86	M297	N237	N243		RIGID	None	None	RIGID	Typical
87	M299	N230	N244		RIGID	None	None	RIGID	Typical
88	M301	N231	N246		RIGID	None	None	RIGID	Typical
89	M302	N247	N248		RIGID	None	None	RIGID	Typical
90	M303	N248	N249		RIGID	None	None	RIGID	Typical
91	M307	N253	N254		RIGID	None	None	RIGID	Typical
92	M308	N254	N250		RIGID	None	None	RIGID	Typical
93	M309	N255	N256		RIGID	None	None	RIGID	Typical
94	M310	N256	N257		RIGID	None	None	RIGID	Typical
95	M311	N259	N260		RIGID	None	None	RIGID	Typical
96	M312	N260	N258		RIGID	None	None	RIGID	Typical
97	M45A	N50	N52	180	Grating Support	None	None	Q235	Typical
98	M68	N78	N79A	90	Grating Support	None	None	Q235	Typical
99	M74B	N80	N60	180	Grating Support	None	None	Q235	Typical
100	M75B	N52A	N62	90	Grating Support	None	None	Q235	Typical
101	M110	N102	N103	180	Grating Support	None	None	Q235	Typical
102	M144	N114	N115	90	Grating Support	None	None	Q235	Typical
103	M148	N116	N121	180	Grating Support	None	None	Q235	Typical
104	M150	N104	N122	90	Grating Support	None	None	Q235	Typical
105	M188	N167	N168	180	Grating Support	None	None	Q235	Typical
106	M222	N179	N180	90	Grating Support	None	None	Q235	Typical
107	M226	N181	N186	180	Grating Support	None	None	Q235	Typical
108	M228	N169	N187	90	Grating Support	None	None	Q235	Typical
109	M266	N232	N233	180	Grating Support	None	None	Q235	Typical
110	M300	N244	N245	90	Grating Support	None	None	Q235	Typical
111	M304	N246	N251	180	Grating Support	None	None	Q235	Typical
112	M306	N234	N252	90	Grating Support	None	None	Q235	Typical
113	M54	N74A	N75A	90	Standoff Horizontal	None	None	Q235	Typical
114	M130	N85	N86	90	Standoff Horizontal	None	None	Q235	Typical
115	M208	N150	N151	90	Standoff Horizontal	None	None	Q235	Typical
116	M286	N215	N216	90	Standoff Horizontal	None	None	Q235	Typical
117	M66	N79A	N60		Side Bracing	VBrace	RECT	Q235	Typical
118	M74C	N52	N62		Side Bracing	VBrace	RECT	Q235	Typical
119	M142	N115	N121		Side Bracing	VBrace	RECT	Q235	Typical
120	M149	N103	N122		Side Bracing	VBrace	RECT	Q235	Typical
121	M220	N180	N186		Side Bracing	VBrace	RECT	Q235	Typical
122	M227	N168	N187		Side Bracing	VBrace	RECT	Q235	Typical
123	M298	N245	N251		Side Bracing	VBrace	RECT	Q235	Typical
124	M305	N233	N252		Side Bracing	VBrace	RECT	Q235	Typical
125	M31	N38	N29		Grating Bracing	None	None	Q235	Typical
126	M33	N39	N31		Grating Bracing	None	None	Q235	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
127	M34A	N35	N79		Grating Bracing	None	None	Q235	Typical
128	M60	N70	N67		Grating Bracing	None	None	Q235	Typical
129	M61	N71	N68		Grating Bracing	None	None	Q235	Typical
130	M62	N69	N64		Grating Bracing	None	None	Q235	Typical
131	M103	N95	N92		Grating Bracing	None	None	Q235	Typical
132	M104	N96	N93		Grating Bracing	None	None	Q235	Typical
133	M105	N94	N89		Grating Bracing	None	None	Q235	Typical
134	M136	N109	N106		Grating Bracing	None	None	Q235	Typical
135	M137	N110	N107		Grating Bracing	None	None	Q235	Typical
136	M138	N108	N105		Grating Bracing	None	None	Q235	Typical
137	M181	N160	N157		Grating Bracing	None	None	Q235	Typical
138	M182	N161	N158		Grating Bracing	None	None	Q235	Typical
139	M183	N159	N154		Grating Bracing	None	None	Q235	Typical
140	M214	N174	N171		Grating Bracing	None	None	Q235	Typical
141	M215	N175	N172		Grating Bracing	None	None	Q235	Typical
142	M216	N173	N170		Grating Bracing	None	None	Q235	Typical
143	M259	N225	N222		Grating Bracing	None	None	Q235	Typical
144	M260	N226	N223		Grating Bracing	None	None	Q235	Typical
145	M261	N224	N219		Grating Bracing	None	None	Q235	Typical
146	M292	N239	N236		Grating Bracing	None	None	Q235	Typical
147	M293	N240	N237		Grating Bracing	None	None	Q235	Typical
148	M294	N238	N235		Grating Bracing	None	None	Q235	Typical
149	MT1	T8	T1		RIGID	None	None	RIGID	Typical
150	MT2	T15	T9		RIGID	None	None	RIGID	Typical
151	MT3	T16	T10		RIGID	None	None	RIGID	Typical
152	MT4	T17	T11		RIGID	None	None	RIGID	Typical
153	MT5	T18	T12		RIGID	None	None	RIGID	Typical
154	MT6	T19	T3		RIGID	None	None	RIGID	Typical
155	MT7	T20	T13		RIGID	None	None	RIGID	Typical
156	MT8	T21	T14		RIGID	None	None	RIGID	Typical
157	MT9	T39	T4		RIGID	None	None	RIGID	Typical
158	MT10	T37	T5		RIGID	None	None	RIGID	Typical
159	MT11	T7	T37		RIGID	None	None	RIGID	Typical
160	MT12	T7	T38		RIGID	None	None	RIGID	Typical
161	MT13	T41	T40		RIGID	None	None	RIGID	Typical
162	MT14	T30	T36		RIGID	None	None	RIGID	Typical
163	MT15	T29	T35		RIGID	None	None	RIGID	Typical
164	MT16	T28	T34		RIGID	None	None	RIGID	Typical
165	MT17	T27	T33		RIGID	None	None	RIGID	Typical
166	MT18	T25	T32		RIGID	None	None	RIGID	Typical
167	MT19	T26	T23		RIGID	None	None	RIGID	Typical
168	MT20	T24	T31		RIGID	None	None	RIGID	Typical
169	MT21	T6	T22		RIGID	None	None	RIGID	Typical
170	MT22	T5	T14	90	Secondary Standoff	None	None	Q235	Typical
171	MT23	T7	T30	90	Lower Standoff	VBrace	RECT	Q235	Typical
172	MT24	T14	T12	90	Secondary Standoff	None	None	Q235	Typical
173	MT25	T12	T10	90	Secondary Standoff	None	None	Q235	Typical
174	MT26	T10	T9	90	Secondary Standoff	None	None	Q235	Typical
175	MT27	T9	T1	90	Secondary Standoff	None	None	Q235	Typical
176	MT28	T30	T27	90	Lower Standoff	VBrace	RECT	Q235	Typical
177	MT29	T27	T26	90	Lower Standoff	VBrace	RECT	Q235	Typical
178	MT30	T26	T24	90	Lower Standoff	VBrace	RECT	Q235	Typical
179	MT31	T24	T6	90	Lower Standoff	VBrace	RECT	Q235	Typical
180	MT32	T37	T21		Bracing	None	None	Q235	Typical
181	MT33	T38	T36		Bracing	None	None	Q235	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
182	MT34	T21	T18		Bracing	None	None	Q235	Typical
183	MT35	T18	T16		Bracing	None	None	Q235	Typical
184	MT36	T16	T15		Bracing	None	None	Q235	Typical
185	MT37	T15	T8		Bracing	None	None	Q235	Typical
186	MT38	T36	T33		Bracing	None	None	Q235	Typical
187	MT39	T33	T23		Bracing	None	None	Q235	Typical
188	MT40	T23	T31		Bracing	None	None	Q235	Typical
189	MT41	T31	T22		Bracing	None	None	Q235	Typical
190	MT42	T22	T8	315	Bracing	None	None	Q235	Typical
191	MT43	T40	T39		RIGID	None	None	RIGID	Typical
192	MT44	T8	T31		Bracing	None	None	Q235	Typical
193	MT45	T31	T15	315	Bracing	None	None	Q235	Typical
194	MT46	T15	T23		Bracing	None	None	Q235	Typical
195	MT47	T23	T16	315	Bracing	None	None	Q235	Typical
196	MT48	T32	T16		Bracing	None	None	Q235	Typical
197	MT49	T32	T17	315	Bracing	None	None	Q235	Typical
198	MT50	T33	T17		Bracing	None	None	Q235	Typical
199	MT51	T33	T18	315	Bracing	None	None	Q235	Typical
200	MT52	T34	T18		Bracing	None	None	Q235	Typical
201	MT53	T34	T19	315	Bracing	None	None	Q235	Typical
202	MT54	T35	T19		Bracing	None	None	Q235	Typical
203	MT55	T35	T20	315	Bracing	None	None	Q235	Typical
204	MT56	T36	T20		Bracing	None	None	Q235	Typical
205	MT57	T36	T21		RIGID	None	None	RIGID	Typical
206	MT58	T8	T44		Bracing	None	None	Q235	Typical
207	MT59	T44	T48		Bracing	None	None	Q235	Typical
208	MT60	T48	T52		Bracing	None	None	Q235	Typical
209	MT61	T22	T45		Bracing	None	None	Q235	Typical
210	MT62	T45	T49		Bracing	None	None	Q235	Typical
211	MT63	T49	T53		Bracing	None	None	Q235	Typical
212	MT64	T53	T52	315	Bracing	None	None	Q235	Typical
213	MT65	T6	T43	90	Lower Standoff	VBrace	RECT	Q235	Typical
214	MT66	T43	T47	90	Lower Standoff	VBrace	RECT	Q235	Typical
215	MT67	T47	R4A	90	Lower Standoff	VBrace	RECT	Q235	Typical
216	MT68	T1	T42	90	Secondary Standoff	None	None	Q235	Typical
217	MT69	T42	T46	90	Secondary Standoff	None	None	Q235	Typical
218	MT70	T46	R4	90	Secondary Standoff	None	None	Q235	Typical
219	MT71	T22	T44		Bracing	None	None	Q235	Typical
220	MT72	T45	T44	315	Bracing	None	None	Q235	Typical
221	MT73	T45	T48		Bracing	None	None	Q235	Typical
222	MT74	T49	T48	315	Bracing	None	None	Q235	Typical
223	MT75	T44	T42		RIGID	None	None	RIGID	Typical
224	MT76	T48	T46		RIGID	None	None	RIGID	Typical
225	MT77	T52	R4		RIGID	None	None	RIGID	Typical
226	MT78	R4A	T53		RIGID	None	None	RIGID	Typical
227	MT79	T47	T49		RIGID	None	None	RIGID	Typical
228	MT80	T43	T45		RIGID	None	None	RIGID	Typical
229	MT81	T49	T52		Bracing	None	None	Q235	Typical
230	M250	T13	N76		RIGID	None	None	RIGID	Typical
231	M251	N272A	N47		RIGID	None	None	RIGID	Typical
232	M252	N282	N275A		RIGID	None	None	RIGID	Typical
233	M253	N289	N283		RIGID	None	None	RIGID	Typical
234	M254	N290	N284		RIGID	None	None	RIGID	Typical
235	M255	N291	N285		RIGID	None	None	RIGID	Typical
236	M256A	N292	N286		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
237	M257A	N293	N277		RIGID	None	None	RIGID	Typical
238	M258A	N294	N287		RIGID	None	None	RIGID	Typical
239	M259A	N295	N288		RIGID	None	None	RIGID	Typical
240	M260A	N313	N278		RIGID	None	None	RIGID	Typical
241	M261A	N311	N279		RIGID	None	None	RIGID	Typical
242	M262A	N281	N311		RIGID	None	None	RIGID	Typical
243	M263A	N281	N312		RIGID	None	None	RIGID	Typical
244	M264A	N315	N314		RIGID	None	None	RIGID	Typical
245	M265A	N304	N310		RIGID	None	None	RIGID	Typical
246	M266A	N303	N309		RIGID	None	None	RIGID	Typical
247	M267A	N302	N308		RIGID	None	None	RIGID	Typical
248	M268	N301	N307		RIGID	None	None	RIGID	Typical
249	M269	N299	N306		RIGID	None	None	RIGID	Typical
250	M270	N300	N297		RIGID	None	None	RIGID	Typical
251	M271	N298	N305		RIGID	None	None	RIGID	Typical
252	M272	N280	N296		RIGID	None	None	RIGID	Typical
253	M273	N279	N288	90	Secondary Standoff	None	None	Q235	Typical
254	M274	N281	N304	90	Lower Standoff	VBrace	RECT	Q235	Typical
255	M275	N288	N286	90	Secondary Standoff	None	None	Q235	Typical
256	M276	N286	N284	90	Secondary Standoff	None	None	Q235	Typical
257	M277	N284	N283	90	Secondary Standoff	None	None	Q235	Typical
258	M278	N283	N275A	90	Secondary Standoff	None	None	Q235	Typical
259	M279	N304	N301	90	Lower Standoff	VBrace	RECT	Q235	Typical
260	M280	N301	N300	90	Lower Standoff	VBrace	RECT	Q235	Typical
261	M281	N300	N298	90	Lower Standoff	VBrace	RECT	Q235	Typical
262	M282	N298	N280	90	Lower Standoff	VBrace	RECT	Q235	Typical
263	M283	N311	N295		Bracing	None	None	Q235	Typical
264	M284	N312	N310		Bracing	None	None	Q235	Typical
265	M285	N295	N292		Bracing	None	None	Q235	Typical
266	M286A	N292	N290		Bracing	None	None	Q235	Typical
267	M287	N290	N289		Bracing	None	None	Q235	Typical
268	M288	N289	N282		Bracing	None	None	Q235	Typical
269	M289A	N310	N307		Bracing	None	None	Q235	Typical
270	M290A	N307	N297		Bracing	None	None	Q235	Typical
271	M291A	N297	N305		Bracing	None	None	Q235	Typical
272	M292A	N305	N296		Bracing	None	None	Q235	Typical
273	M293A	N296	N282	45	Bracing	None	None	Q235	Typical
274	M294A	N314	N313		RIGID	None	None	RIGID	Typical
275	M295A	N282	N305		Bracing	None	None	Q235	Typical
276	M296A	N305	N289	45	Bracing	None	None	Q235	Typical
277	M297A	N289	N297		Bracing	None	None	Q235	Typical
278	M298A	N297	N290	45	Bracing	None	None	Q235	Typical
279	M299A	N306	N290		Bracing	None	None	Q235	Typical
280	M300A	N306	N291	45	Bracing	None	None	Q235	Typical
281	M301A	N307	N291		Bracing	None	None	Q235	Typical
282	M302A	N307	N292	45	Bracing	None	None	Q235	Typical
283	M303A	N308	N292		Bracing	None	None	Q235	Typical
284	M304A	N308	N293	45	Bracing	None	None	Q235	Typical
285	M305A	N309	N293		Bracing	None	None	Q235	Typical
286	M306A	N309	N294	45	Bracing	None	None	Q235	Typical
287	M307A	N310	N294		Bracing	None	None	Q235	Typical
288	M308A	N310	N295		RIGID	None	None	RIGID	Typical
289	M309A	N282	N318		Bracing	None	None	Q235	Typical
290	M310A	N318	N322		Bracing	None	None	Q235	Typical
291	M311A	N322	N326		Bracing	None	None	Q235	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
292	M312A	N296	N319		Bracing	None	None	Q235	Typical
293	M313A	N319	N323		Bracing	None	None	Q235	Typical
294	M314A	N323	N327		Bracing	None	None	Q235	Typical
295	M315A	N327	N326	45	Bracing	None	None	Q235	Typical
296	M316A	N280	N317	90	Lower Standoff	VBrace	RECT	Q235	Typical
297	M317	N317	N321	90	Lower Standoff	VBrace	RECT	Q235	Typical
298	M318	N321	R1A	90	Lower Standoff	VBrace	RECT	Q235	Typical
299	M319	N275A	N316	90	Secondary Standoff	None	None	Q235	Typical
300	M320	N316	N320	90	Secondary Standoff	None	None	Q235	Typical
301	M321	N320	R1	90	Secondary Standoff	None	None	Q235	Typical
302	M322	N296	N318		Bracing	None	None	Q235	Typical
303	M323	N319	N318	45	Bracing	None	None	Q235	Typical
304	M324	N319	N322		Bracing	None	None	Q235	Typical
305	M325	N323	N322	45	Bracing	None	None	Q235	Typical
306	M326	N318	N316		RIGID	None	None	RIGID	Typical
307	M327	N322	N320		RIGID	None	None	RIGID	Typical
308	M328	N326	R1		RIGID	None	None	RIGID	Typical
309	M329	R1A	N327		RIGID	None	None	RIGID	Typical
310	M330	N321	N323		RIGID	None	None	RIGID	Typical
311	M331	N317	N319		RIGID	None	None	RIGID	Typical
312	M332	N323	N326		Bracing	None	None	Q235	Typical
313	M333	N287	N273		RIGID	None	None	RIGID	Typical
314	M334	N329	N100		RIGID	None	None	RIGID	Typical
315	M335	N338	N331		RIGID	None	None	RIGID	Typical
316	M336	N345	N339		RIGID	None	None	RIGID	Typical
317	M337	N346	N340		RIGID	None	None	RIGID	Typical
318	M338	N347	N341		RIGID	None	None	RIGID	Typical
319	M339	N348	N342		RIGID	None	None	RIGID	Typical
320	M340	N349	N333		RIGID	None	None	RIGID	Typical
321	M341	N350	N343		RIGID	None	None	RIGID	Typical
322	M342	N351	N344		RIGID	None	None	RIGID	Typical
323	M343	N369	N334		RIGID	None	None	RIGID	Typical
324	M344	N367	N335		RIGID	None	None	RIGID	Typical
325	M345	N337	N367		RIGID	None	None	RIGID	Typical
326	M346	N337	N368		RIGID	None	None	RIGID	Typical
327	M347	N371	N370		RIGID	None	None	RIGID	Typical
328	M348	N360	N366		RIGID	None	None	RIGID	Typical
329	M349	N359	N365		RIGID	None	None	RIGID	Typical
330	M350	N358	N364		RIGID	None	None	RIGID	Typical
331	M351	N357	N363		RIGID	None	None	RIGID	Typical
332	M352	N355	N362		RIGID	None	None	RIGID	Typical
333	M353	N356	N353		RIGID	None	None	RIGID	Typical
334	M354	N354	N361		RIGID	None	None	RIGID	Typical
335	M355	N336	N352		RIGID	None	None	RIGID	Typical
336	M356	N335	N344	90	Secondary Standoff	None	None	Q235	Typical
337	M357	N337	N360	90	Lower Standoff	VBrace	RECT	Q235	Typical
338	M358	N344	N342	90	Secondary Standoff	None	None	Q235	Typical
339	M359	N342	N340	90	Secondary Standoff	None	None	Q235	Typical
340	M360	N340	N339	90	Secondary Standoff	None	None	Q235	Typical
341	M361	N339	N331	90	Secondary Standoff	None	None	Q235	Typical
342	M362	N360	N357	90	Lower Standoff	VBrace	RECT	Q235	Typical
343	M363	N357	N356	90	Lower Standoff	VBrace	RECT	Q235	Typical
344	M364	N356	N354	90	Lower Standoff	VBrace	RECT	Q235	Typical
345	M365	N354	N336	90	Lower Standoff	VBrace	RECT	Q235	Typical
346	M366	N367	N351		Bracing	None	None	Q235	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
347	M367	N368	N366		Bracing	None	None	Q235	Typical
348	M368	N351	N348		Bracing	None	None	Q235	Typical
349	M369	N348	N346		Bracing	None	None	Q235	Typical
350	M370	N346	N345		Bracing	None	None	Q235	Typical
351	M371	N345	N338		Bracing	None	None	Q235	Typical
352	M372	N366	N363		Bracing	None	None	Q235	Typical
353	M373	N363	N353		Bracing	None	None	Q235	Typical
354	M374	N353	N361		Bracing	None	None	Q235	Typical
355	M375	N361	N352		Bracing	None	None	Q235	Typical
356	M376	N352	N338	315	Bracing	None	None	Q235	Typical
357	M377	N370	N369		RIGID	None	None	RIGID	Typical
358	M378	N338	N361		Bracing	None	None	Q235	Typical
359	M379	N361	N345	315	Bracing	None	None	Q235	Typical
360	M380	N345	N353		Bracing	None	None	Q235	Typical
361	M381	N353	N346	315	Bracing	None	None	Q235	Typical
362	M382	N362	N346		Bracing	None	None	Q235	Typical
363	M383	N362	N347	315	Bracing	None	None	Q235	Typical
364	M384	N363	N347		Bracing	None	None	Q235	Typical
365	M385	N363	N348	315	Bracing	None	None	Q235	Typical
366	M386	N364	N348		Bracing	None	None	Q235	Typical
367	M387	N364	N349	315	Bracing	None	None	Q235	Typical
368	M388	N365	N349		Bracing	None	None	Q235	Typical
369	M389	N365	N350	315	Bracing	None	None	Q235	Typical
370	M390	N366	N350		Bracing	None	None	Q235	Typical
371	M391	N366	N351		RIGID	None	None	RIGID	Typical
372	M392	N338	N374		Bracing	None	None	Q235	Typical
373	M393	N374	N378		Bracing	None	None	Q235	Typical
374	M394	N378	N382		Bracing	None	None	Q235	Typical
375	M395	N352	N375		Bracing	None	None	Q235	Typical
376	M396	N375	N379		Bracing	None	None	Q235	Typical
377	M397	N379	N383		Bracing	None	None	Q235	Typical
378	M398	N383	N382	315	Bracing	None	None	Q235	Typical
379	M399	N336	N373	90	Lower Standoff	VBrace	RECT	Q235	Typical
380	M400	N373	N377	90	Lower Standoff	VBrace	RECT	Q235	Typical
381	M401	N377	R2A	90	Lower Standoff	VBrace	RECT	Q235	Typical
382	M402	N331	N372	90	Secondary Standoff	None	None	Q235	Typical
383	M403	N372	N376	90	Secondary Standoff	None	None	Q235	Typical
384	M404	N376	R2	90	Secondary Standoff	None	None	Q235	Typical
385	M405	N352	N374		Bracing	None	None	Q235	Typical
386	M406	N375	N374	315	Bracing	None	None	Q235	Typical
387	M407	N375	N378		Bracing	None	None	Q235	Typical
388	M408	N379	N378	315	Bracing	None	None	Q235	Typical
389	M409	N374	N372		RIGID	None	None	RIGID	Typical
390	M410	N378	N376		RIGID	None	None	RIGID	Typical
391	M411	N382	R2		RIGID	None	None	RIGID	Typical
392	M412	R2A	N383		RIGID	None	None	RIGID	Typical
393	M413	N377	N379		RIGID	None	None	RIGID	Typical
394	M414	N373	N375		RIGID	None	None	RIGID	Typical
395	M415	N379	N382		Bracing	None	None	Q235	Typical
396	M416	N343	N330		RIGID	None	None	RIGID	Typical
397	M417	N385	N165		RIGID	None	None	RIGID	Typical
398	M418	N394	N387		RIGID	None	None	RIGID	Typical
399	M419	N401	N395		RIGID	None	None	RIGID	Typical
400	M420	N402	N396		RIGID	None	None	RIGID	Typical
401	M421	N403	N397		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
402	M422	N404	N398		RIGID	None	None	RIGID	Typical
403	M423	N405	N389		RIGID	None	None	RIGID	Typical
404	M424	N406	N399		RIGID	None	None	RIGID	Typical
405	M425	N407	N400		RIGID	None	None	RIGID	Typical
406	M426	N425	N390		RIGID	None	None	RIGID	Typical
407	M427	N423	N391		RIGID	None	None	RIGID	Typical
408	M428	N393	N423		RIGID	None	None	RIGID	Typical
409	M429	N393	N424		RIGID	None	None	RIGID	Typical
410	M430	N427	N426		RIGID	None	None	RIGID	Typical
411	M431	N416	N422		RIGID	None	None	RIGID	Typical
412	M432	N415	N421		RIGID	None	None	RIGID	Typical
413	M433	N414	N420		RIGID	None	None	RIGID	Typical
414	M434	N413	N419		RIGID	None	None	RIGID	Typical
415	M435	N411	N418		RIGID	None	None	RIGID	Typical
416	M436	N412	N409		RIGID	None	None	RIGID	Typical
417	M437	N410	N417		RIGID	None	None	RIGID	Typical
418	M438	N392	N408		RIGID	None	None	RIGID	Typical
419	M439	N391	N400	90	Secondary Standoff	None	None	Q235	Typical
420	M440	N393	N416	90	Lower Standoff	VBrace	RECT	Q235	Typical
421	M441	N400	N398	90	Secondary Standoff	None	None	Q235	Typical
422	M442	N398	N396	90	Secondary Standoff	None	None	Q235	Typical
423	M443	N396	N395	90	Secondary Standoff	None	None	Q235	Typical
424	M444	N395	N387	90	Secondary Standoff	None	None	Q235	Typical
425	M445	N416	N413	90	Lower Standoff	VBrace	RECT	Q235	Typical
426	M446	N413	N412	90	Lower Standoff	VBrace	RECT	Q235	Typical
427	M447	N412	N410	90	Lower Standoff	VBrace	RECT	Q235	Typical
428	M448	N410	N392	90	Lower Standoff	VBrace	RECT	Q235	Typical
429	M449	N423	N407		Bracing	None	None	Q235	Typical
430	M450	N424	N422		Bracing	None	None	Q235	Typical
431	M451	N407	N404		Bracing	None	None	Q235	Typical
432	M452	N404	N402		Bracing	None	None	Q235	Typical
433	M453	N402	N401		Bracing	None	None	Q235	Typical
434	M454	N401	N394		Bracing	None	None	Q235	Typical
435	M455	N422	N419		Bracing	None	None	Q235	Typical
436	M456	N419	N409		Bracing	None	None	Q235	Typical
437	M457	N409	N417		Bracing	None	None	Q235	Typical
438	M458	N417	N408		Bracing	None	None	Q235	Typical
439	M459	N408	N394	45	Bracing	None	None	Q235	Typical
440	M460	N426	N425		RIGID	None	None	RIGID	Typical
441	M461	N394	N417		Bracing	None	None	Q235	Typical
442	M462	N417	N401	45	Bracing	None	None	Q235	Typical
443	M463	N401	N409		Bracing	None	None	Q235	Typical
444	M464	N409	N402	45	Bracing	None	None	Q235	Typical
445	M465	N418	N402		Bracing	None	None	Q235	Typical
446	M466	N418	N403	45	Bracing	None	None	Q235	Typical
447	M467	N419	N403		Bracing	None	None	Q235	Typical
448	M468	N419	N404	45	Bracing	None	None	Q235	Typical
449	M469	N420	N404		Bracing	None	None	Q235	Typical
450	M470	N420	N405	45	Bracing	None	None	Q235	Typical
451	M471	N421	N405		Bracing	None	None	Q235	Typical
452	M472	N421	N406	45	Bracing	None	None	Q235	Typical
453	M473	N422	N406		Bracing	None	None	Q235	Typical
454	M474	N422	N407		RIGID	None	None	RIGID	Typical
455	M475	N394	N430		Bracing	None	None	Q235	Typical
456	M476	N430	N434		Bracing	None	None	Q235	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
457	M477	N434	N438		Bracing	None	None	Q235	Typical
458	M478	N408	N431		Bracing	None	None	Q235	Typical
459	M479	N431	N435		Bracing	None	None	Q235	Typical
460	M480	N435	N439		Bracing	None	None	Q235	Typical
461	M481	N439	N438	45	Bracing	None	None	Q235	Typical
462	M482	N392	N429	90	Lower Standoff	VBrace	RECT	Q235	Typical
463	M483	N429	N433	90	Lower Standoff	VBrace	RECT	Q235	Typical
464	M484	N433	R3A	90	Lower Standoff	VBrace	RECT	Q235	Typical
465	M485	N387	N428	90	Secondary Standoff	None	None	Q235	Typical
466	M486	N428	N432	90	Secondary Standoff	None	None	Q235	Typical
467	M487	N432	R3	90	Secondary Standoff	None	None	Q235	Typical
468	M488	N408	N430		Bracing	None	None	Q235	Typical
469	M489	N431	N430	45	Bracing	None	None	Q235	Typical
470	M490	N431	N434		Bracing	None	None	Q235	Typical
471	M491	N435	N434	45	Bracing	None	None	Q235	Typical
472	M492	N430	N428		RIGID	None	None	RIGID	Typical
473	M493	N434	N432		RIGID	None	None	RIGID	Typical
474	M494	N438	R3		RIGID	None	None	RIGID	Typical
475	M495	R3A	N439		RIGID	None	None	RIGID	Typical
476	M496	N433	N435		RIGID	None	None	RIGID	Typical
477	M497	N429	N431		RIGID	None	None	RIGID	Typical
478	M498	N435	N438		Bracing	None	None	Q235	Typical
479	M499	N399	N386		RIGID	None	None	RIGID	Typical
480	M500	N441	N230		RIGID	None	None	RIGID	Typical
481	M501	N295	N314		RIGID	None	None	RIGID	Typical
482	M502	N312	N313		RIGID	None	None	RIGID	Typical
483	M503	N407	N426		RIGID	None	None	RIGID	Typical
484	M504	N425	N424		RIGID	None	None	RIGID	Typical
485	M505	T21	T40		RIGID	None	None	RIGID	Typical
486	M506	T39	T38		RIGID	None	None	RIGID	Typical
487	M507	N351	N370		RIGID	None	None	RIGID	Typical
488	M508	N369	N368		RIGID	None	None	RIGID	Typical
489	M504A	N437	N436		Face Horizontal	None	None	Q235	Typical
490	M509	N391	N437A		RIGID	None	None	RIGID	Typical
491	M510	T5	N434B		RIGID	None	None	RIGID	Typical
492	M511	N279	N435B		RIGID	None	None	RIGID	Typical
493	M512	N335	N436A		RIGID	None	None	RIGID	Typical
494	MP4A	N446	N462		Mount Pipe	None	None	A53 Gr.B	Typical
495	MP3A	N440	N456		Mount Pipe	None	None	A53 Gr.B	Typical
496	MP2A	N441A	N457		Mount Pipe	None	None	A53 Gr.B	Typical
497	MP1A	N444	N460		Mount Pipe	None	None	A53 Gr.B	Typical
498	M696A	N629B	N628B		Face Horizontal	None	None	Q235	Typical
499	M698A	N633	N632		Face Horizontal	None	None	Q235	Typical
500	M700A	N637	N636		Face Horizontal	None	None	Q235	Typical
501	M501A	N659	N429A		RIGID	None	None	RIGID	Typical
502	M502A	N267	N427A		RIGID	None	None	RIGID	Typical
503	M503A	N268	N428A		RIGID	None	None	RIGID	Typical
504	M504B	N661	N430A		RIGID	None	None	RIGID	Typical
505	M505A	N434A	N433A		Support Rail	None	None	A53 Gr.B	Typical
506	M506A	N435A	N439A		RIGID	None	None	RIGID	Typical
507	M507A	N431A	N437B		RIGID	None	None	RIGID	Typical
508	M508A	N432A	N438A		RIGID	None	None	RIGID	Typical
509	M509A	N436B	N440A		RIGID	None	None	RIGID	Typical
510	M510A	N444A	N443		Support Rail	None	None	A53 Gr.B	Typical
511	M511A	N445	N449		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
512	M512A	N441B	N447		RIGID	None	None	RIGID	Typical
513	M513	N442	N448		RIGID	None	None	RIGID	Typical
514	M514	N446A	N450		RIGID	None	None	RIGID	Typical
515	M515	N454	N453		Support Rail	None	None	A53 Gr.B	Typical
516	M516	N455	N459		RIGID	None	None	RIGID	Typical
517	M517	N451	N457A		RIGID	None	None	RIGID	Typical
518	M518	N452	N458		RIGID	None	None	RIGID	Typical
519	M519	N456A	N460A		RIGID	None	None	RIGID	Typical
520	M520	N464	N463		Support Rail	None	None	A53 Gr.B	Typical
521	M521	N465	N469		RIGID	None	None	RIGID	Typical
522	M522	N461	N467		RIGID	None	None	RIGID	Typical
523	M523	N462A	N468		RIGID	None	None	RIGID	Typical
524	M524	N466	N470		RIGID	None	None	RIGID	Typical
525	MP4D	N476	N480		Mount Pipe	None	None	A53 Gr.B	Typical
526	MP3D	N473	N477		Mount Pipe	None	None	A53 Gr.B	Typical
527	MP2D	N474	N478		Mount Pipe	None	None	A53 Gr.B	Typical
528	MP1D	N475	N479		Mount Pipe	None	None	A53 Gr.B	Typical
529	M529	N481	N485		RIGID	None	None	RIGID	Typical
530	M530	N471	N483		RIGID	None	None	RIGID	Typical
531	M531	N472	N484		RIGID	None	None	RIGID	Typical
532	M532	N482	N486		RIGID	None	None	RIGID	Typical
533	MP4C	N492	N496		Mount Pipe	None	None	A53 Gr.B	Typical
534	MP3C	N489	N493		Mount Pipe	None	None	A53 Gr.B	Typical
535	MP2C	N490	N494		Mount Pipe	None	None	A53 Gr.B	Typical
536	MP1C	N491	N495		Mount Pipe	None	None	A53 Gr.B	Typical
537	M537	N497	N501		RIGID	None	None	RIGID	Typical
538	M538	N487	N499		RIGID	None	None	RIGID	Typical
539	M539	N488	N500		RIGID	None	None	RIGID	Typical
540	M540	N498	N502		RIGID	None	None	RIGID	Typical
541	MP4B	N508	N512		Mount Pipe	None	None	A53 Gr.B	Typical
542	MP3B	N505	N509		Mount Pipe	None	None	A53 Gr.B	Typical
543	MP2B	N506	N510		Mount Pipe	None	None	A53 Gr.B	Typical
544	MP1B	N507	N511		Mount Pipe	None	None	A53 Gr.B	Typical
545	M545	N513	N517		RIGID	None	None	RIGID	Typical
546	M546	N503	N515		RIGID	None	None	RIGID	Typical
547	M547	N504	N516		RIGID	None	None	RIGID	Typical
548	M548	N514	N518		RIGID	None	None	RIGID	Typical
549	M549	N519	N520		RIGID	None	None	RIGID	Typical
550	M550	N521	N522		RIGID	None	None	RIGID	Typical
551	M551	N523	N524		RIGID	None	None	RIGID	Typical
552	M552	N525	N526		RIGID	None	None	RIGID	Typical
553	M553	N527	N528		RIGID	None	None	RIGID	Typical
554	M554	N529	N530		RIGID	None	None	RIGID	Typical
555	M555	N531	N532		RIGID	None	None	RIGID	Typical
556	M556	N533	N534		RIGID	None	None	RIGID	Typical
557	M557	N522	N532	270	Connector Angle	None	None	Q235	Typical
558	M558	N534	N528	270	Connector Angle	None	None	Q235	Typical
559	M559	N530	N524	270	Connector Angle	None	None	Q235	Typical
560	M560	N526	N520	270	Connector Angle	None	None	Q235	Typical
561	M561	N535	N536		RIGID	None	None	RIGID	Typical
562	OVP	N538	N539		Mount Pipe	None	None	A53 Gr.B	Typical
563	M563	N537	N540		RIGID	None	None	RIGID	Typical
564	M564	N228	N73		Mount Support	None	None	Q235	Typical
565	M565	N227	N72		Mount Support	None	None	Q235	Typical
566	M566	N177	N98		Mount Support	None	None	Q235	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
567	M567	N176	N97		Mount Support	None	None	Q235	Typical
568	M568	N41A	N112		Mount Support	None	None	Q235	Typical
569	M569	N41	N111		Mount Support	None	None	Q235	Typical
570	M570	N242	N163		Mount Support	None	None	Q235	Typical
571	M571	N241	N162		Mount Support	None	None	Q235	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	K y-y	K z-z	Channel Conn.	a [ft]	Function
1	M45A	Grating Support	2.914	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
2	M68	Grating Support	2.914	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
3	M74B	Grating Support	2.386	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
4	M75B	Grating Support	2.386	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
5	M110	Grating Support	2.914	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
6	M144	Grating Support	2.914	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
7	M148	Grating Support	2.386	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
8	M150	Grating Support	2.386	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
9	M188	Grating Support	2.914	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
10	M222	Grating Support	2.914	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
11	M226	Grating Support	2.386	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
12	M228	Grating Support	2.386	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
13	M266	Grating Support	2.914	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
14	M300	Grating Support	2.914	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
15	M304	Grating Support	2.386	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
16	M306	Grating Support	2.386	Segment	Segment	Lbyy	0.65	0.65	N/A	N/A	Lateral
17	M54	Standoff Horizontal	4.244			Lbyy	1	1	N/A	N/A	Lateral
18	M130	Standoff Horizontal	4.244			Lbyy	1	1	N/A	N/A	Lateral
19	M208	Standoff Horizontal	4.244			Lbyy	1	1	N/A	N/A	Lateral
20	M286	Standoff Horizontal	4.244			Lbyy	1	1	N/A	N/A	Lateral
21	M66	Side Bracing	0.605			Lbyy	0.65	0.65	N/A	N/A	Lateral
22	M74C	Side Bracing	0.605			Lbyy	0.65	0.65	N/A	N/A	Lateral
23	M142	Side Bracing	0.605			Lbyy	0.65	0.65	N/A	N/A	Lateral
24	M149	Side Bracing	0.605			Lbyy	0.65	0.65	N/A	N/A	Lateral
25	M220	Side Bracing	0.605			Lbyy	0.65	0.65	N/A	N/A	Lateral
26	M227	Side Bracing	0.605			Lbyy	0.65	0.65	N/A	N/A	Lateral
27	M298	Side Bracing	0.605			Lbyy	0.65	0.65	N/A	N/A	Lateral
28	M305	Side Bracing	0.605			Lbyy	0.65	0.65	N/A	N/A	Lateral
29	M31	Grating Bracing	1.659	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
30	M33	Grating Bracing	1.124	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
31	M34A	Grating Bracing	0.583	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
32	M60	Grating Bracing	1.659	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
33	M61	Grating Bracing	1.124	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
34	M62	Grating Bracing	0.583	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
35	M103	Grating Bracing	1.659	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
36	M104	Grating Bracing	1.124	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
37	M105	Grating Bracing	0.583	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
38	M136	Grating Bracing	1.659	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
39	M137	Grating Bracing	1.124	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
40	M138	Grating Bracing	0.583	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
41	M181	Grating Bracing	1.659	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
42	M182	Grating Bracing	1.124	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
43	M183	Grating Bracing	0.583	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
44	M214	Grating Bracing	1.659	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
45	M215	Grating Bracing	1.124	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
46	M216	Grating Bracing	0.583	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
47	M259	Grating Bracing	1.659	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	K y-y	K z-z	Channel Conn.	a [ft]	Function
48	M260	Grating Bracing	1.124	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
49	M261	Grating Bracing	0.583	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
50	M292	Grating Bracing	1.659	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
51	M293	Grating Bracing	1.124	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
52	M294	Grating Bracing	0.583	0.5	0.5	Lbyy	0.65	0.65	N/A	N/A	Lateral
53	MT22	Secondary Standoff	0.943				0.65	0.65	N/A	N/A	Lateral
54	MT23	Lower Standoff	0.874				0.65	0.65	N/A	N/A	Lateral
55	MT24	Secondary Standoff	0.989				0.65	0.65	N/A	N/A	Lateral
56	MT25	Secondary Standoff	1.028				0.65	0.65	N/A	N/A	Lateral
57	MT26	Secondary Standoff	0.655				0.65	0.65	N/A	N/A	Lateral
58	MT27	Secondary Standoff	0.718				0.65	0.65	N/A	N/A	Lateral
59	MT28	Lower Standoff	1.006				0.65	0.65	N/A	N/A	Lateral
60	MT29	Lower Standoff	1.045				0.65	0.65	N/A	N/A	Lateral
61	MT30	Lower Standoff	0.667				0.65	0.65	N/A	N/A	Lateral
62	MT31	Lower Standoff	0.742				0.65	0.65	N/A	N/A	Lateral
63	MT32	Bracing	0.943				0.65	0.65	N/A	N/A	Lateral
64	MT33	Bracing	0.872				0.65	0.65	N/A	N/A	Lateral
65	MT34	Bracing	0.989				0.65	0.65	N/A	N/A	Lateral
66	MT35	Bracing	1.028				0.65	0.65	N/A	N/A	Lateral
67	MT36	Bracing	0.655				0.65	0.65	N/A	N/A	Lateral
68	MT37	Bracing	0.718				0.65	0.65	N/A	N/A	Lateral
69	MT38	Bracing	1.006				0.65	0.65	N/A	N/A	Lateral
70	MT39	Bracing	1.045				0.65	0.65	N/A	N/A	Lateral
71	MT40	Bracing	0.667				0.65	0.65	N/A	N/A	Lateral
72	MT41	Bracing	0.731				0.65	0.65	N/A	N/A	Lateral
73	MT42	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
74	MT44	Bracing	1.028				0.65	0.65	N/A	N/A	Lateral
75	MT45	Bracing	0.735				0.65	0.65	N/A	N/A	Lateral
76	MT46	Bracing	0.898				0.65	0.65	N/A	N/A	Lateral
77	MT47	Bracing	0.613				0.65	0.65	N/A	N/A	Lateral
78	MT48	Bracing	0.756				0.65	0.65	N/A	N/A	Lateral
79	MT49	Bracing	0.51				0.65	0.65	N/A	N/A	Lateral
80	MT50	Bracing	0.631				0.65	0.65	N/A	N/A	Lateral
81	MT51	Bracing	0.422				0.65	0.65	N/A	N/A	Lateral
82	MT52	Bracing	0.527				0.65	0.65	N/A	N/A	Lateral
83	MT53	Bracing	0.349				0.65	0.65	N/A	N/A	Lateral
84	MT54	Bracing	0.44				0.65	0.65	N/A	N/A	Lateral
85	MT55	Bracing	0.287				0.65	0.65	N/A	N/A	Lateral
86	MT56	Bracing	0.353				0.65	0.65	N/A	N/A	Lateral
87	MT58	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
88	MT59	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
89	MT60	Bracing	0.917				0.65	0.65	N/A	N/A	Lateral
90	MT61	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
91	MT62	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
92	MT63	Bracing	0.917				0.65	0.65	N/A	N/A	Lateral
93	MT64	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
94	MT65	Lower Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
95	MT66	Lower Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
96	MT67	Lower Standoff	0.917				0.65	0.65	N/A	N/A	Lateral
97	MT68	Secondary Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
98	MT69	Secondary Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
99	MT70	Secondary Standoff	0.917				0.65	0.65	N/A	N/A	Lateral
100	MT71	Bracing	1.295				0.65	0.65	N/A	N/A	Lateral
101	MT72	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
102	MT73	Bracing	1.295				0.65	0.65	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	K y-y	K z-z	Channel Conn.	a [ft]	Function
103	MT74	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
104	MT81	Bracing	1.264				0.65	0.65	N/A	N/A	Lateral
105	M273	Secondary Standoff	0.943				0.65	0.65	N/A	N/A	Lateral
106	M274	Lower Standoff	0.874				0.65	0.65	N/A	N/A	Lateral
107	M275	Secondary Standoff	0.989				0.65	0.65	N/A	N/A	Lateral
108	M276	Secondary Standoff	1.028				0.65	0.65	N/A	N/A	Lateral
109	M277	Secondary Standoff	0.655				0.65	0.65	N/A	N/A	Lateral
110	M278	Secondary Standoff	0.718				0.65	0.65	N/A	N/A	Lateral
111	M279	Lower Standoff	1.006				0.65	0.65	N/A	N/A	Lateral
112	M280	Lower Standoff	1.045				0.65	0.65	N/A	N/A	Lateral
113	M281	Lower Standoff	0.667				0.65	0.65	N/A	N/A	Lateral
114	M282	Lower Standoff	0.742				0.65	0.65	N/A	N/A	Lateral
115	M283	Bracing	0.943				0.65	0.65	N/A	N/A	Lateral
116	M284	Bracing	0.872				0.65	0.65	N/A	N/A	Lateral
117	M285	Bracing	0.989				0.65	0.65	N/A	N/A	Lateral
118	M286A	Bracing	1.028				0.65	0.65	N/A	N/A	Lateral
119	M287	Bracing	0.655				0.65	0.65	N/A	N/A	Lateral
120	M288	Bracing	0.718				0.65	0.65	N/A	N/A	Lateral
121	M289A	Bracing	1.006				0.65	0.65	N/A	N/A	Lateral
122	M290A	Bracing	1.045				0.65	0.65	N/A	N/A	Lateral
123	M291A	Bracing	0.667				0.65	0.65	N/A	N/A	Lateral
124	M292A	Bracing	0.731				0.65	0.65	N/A	N/A	Lateral
125	M293A	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
126	M295A	Bracing	1.028				0.65	0.65	N/A	N/A	Lateral
127	M296A	Bracing	0.735				0.65	0.65	N/A	N/A	Lateral
128	M297A	Bracing	0.898				0.65	0.65	N/A	N/A	Lateral
129	M298A	Bracing	0.613				0.65	0.65	N/A	N/A	Lateral
130	M299A	Bracing	0.756				0.65	0.65	N/A	N/A	Lateral
131	M300A	Bracing	0.51				0.65	0.65	N/A	N/A	Lateral
132	M301A	Bracing	0.631				0.65	0.65	N/A	N/A	Lateral
133	M302A	Bracing	0.422				0.65	0.65	N/A	N/A	Lateral
134	M303A	Bracing	0.527				0.65	0.65	N/A	N/A	Lateral
135	M304A	Bracing	0.349				0.65	0.65	N/A	N/A	Lateral
136	M305A	Bracing	0.44				0.65	0.65	N/A	N/A	Lateral
137	M306A	Bracing	0.287				0.65	0.65	N/A	N/A	Lateral
138	M307A	Bracing	0.353				0.65	0.65	N/A	N/A	Lateral
139	M309A	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
140	M310A	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
141	M311A	Bracing	0.917				0.65	0.65	N/A	N/A	Lateral
142	M312A	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
143	M313A	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
144	M314A	Bracing	0.917				0.65	0.65	N/A	N/A	Lateral
145	M315A	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
146	M316A	Lower Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
147	M317	Lower Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
148	M318	Lower Standoff	0.917				0.65	0.65	N/A	N/A	Lateral
149	M319	Secondary Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
150	M320	Secondary Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
151	M321	Secondary Standoff	0.917				0.65	0.65	N/A	N/A	Lateral
152	M322	Bracing	1.295				0.65	0.65	N/A	N/A	Lateral
153	M323	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
154	M324	Bracing	1.295				0.65	0.65	N/A	N/A	Lateral
155	M325	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
156	M332	Bracing	1.264				0.65	0.65	N/A	N/A	Lateral
157	M356	Secondary Standoff	0.943				0.65	0.65	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	K y-y	K z-z	Channel Conn.	a [ft]	Function
158	M357	Lower Standoff	0.874				0.65	0.65	N/A	N/A	Lateral
159	M358	Secondary Standoff	0.989				0.65	0.65	N/A	N/A	Lateral
160	M359	Secondary Standoff	1.028				0.65	0.65	N/A	N/A	Lateral
161	M360	Secondary Standoff	0.655				0.65	0.65	N/A	N/A	Lateral
162	M361	Secondary Standoff	0.718				0.65	0.65	N/A	N/A	Lateral
163	M362	Lower Standoff	1.006				0.65	0.65	N/A	N/A	Lateral
164	M363	Lower Standoff	1.045				0.65	0.65	N/A	N/A	Lateral
165	M364	Lower Standoff	0.667				0.65	0.65	N/A	N/A	Lateral
166	M365	Lower Standoff	0.742				0.65	0.65	N/A	N/A	Lateral
167	M366	Bracing	0.943				0.65	0.65	N/A	N/A	Lateral
168	M367	Bracing	0.872				0.65	0.65	N/A	N/A	Lateral
169	M368	Bracing	0.989				0.65	0.65	N/A	N/A	Lateral
170	M369	Bracing	1.028				0.65	0.65	N/A	N/A	Lateral
171	M370	Bracing	0.655				0.65	0.65	N/A	N/A	Lateral
172	M371	Bracing	0.718				0.65	0.65	N/A	N/A	Lateral
173	M372	Bracing	1.006				0.65	0.65	N/A	N/A	Lateral
174	M373	Bracing	1.045				0.65	0.65	N/A	N/A	Lateral
175	M374	Bracing	0.667				0.65	0.65	N/A	N/A	Lateral
176	M375	Bracing	0.731				0.65	0.65	N/A	N/A	Lateral
177	M376	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
178	M378	Bracing	1.028				0.65	0.65	N/A	N/A	Lateral
179	M379	Bracing	0.735				0.65	0.65	N/A	N/A	Lateral
180	M380	Bracing	0.898				0.65	0.65	N/A	N/A	Lateral
181	M381	Bracing	0.613				0.65	0.65	N/A	N/A	Lateral
182	M382	Bracing	0.756				0.65	0.65	N/A	N/A	Lateral
183	M383	Bracing	0.51				0.65	0.65	N/A	N/A	Lateral
184	M384	Bracing	0.631				0.65	0.65	N/A	N/A	Lateral
185	M385	Bracing	0.422				0.65	0.65	N/A	N/A	Lateral
186	M386	Bracing	0.527				0.65	0.65	N/A	N/A	Lateral
187	M387	Bracing	0.349				0.65	0.65	N/A	N/A	Lateral
188	M388	Bracing	0.44				0.65	0.65	N/A	N/A	Lateral
189	M389	Bracing	0.287				0.65	0.65	N/A	N/A	Lateral
190	M390	Bracing	0.353				0.65	0.65	N/A	N/A	Lateral
191	M392	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
192	M393	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
193	M394	Bracing	0.917				0.65	0.65	N/A	N/A	Lateral
194	M395	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
195	M396	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
196	M397	Bracing	0.917				0.65	0.65	N/A	N/A	Lateral
197	M398	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
198	M399	Lower Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
199	M400	Lower Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
200	M401	Lower Standoff	0.917				0.65	0.65	N/A	N/A	Lateral
201	M402	Secondary Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
202	M403	Secondary Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
203	M404	Secondary Standoff	0.917				0.65	0.65	N/A	N/A	Lateral
204	M405	Bracing	1.295				0.65	0.65	N/A	N/A	Lateral
205	M406	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
206	M407	Bracing	1.295				0.65	0.65	N/A	N/A	Lateral
207	M408	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
208	M415	Bracing	1.264				0.65	0.65	N/A	N/A	Lateral
209	M439	Secondary Standoff	0.943				0.65	0.65	N/A	N/A	Lateral
210	M440	Lower Standoff	0.874				0.65	0.65	N/A	N/A	Lateral
211	M441	Secondary Standoff	0.989				0.65	0.65	N/A	N/A	Lateral
212	M442	Secondary Standoff	1.028				0.65	0.65	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	K y-y	K z-z	Channel Conn.	a [ft]	Function
213	M443	Secondary Standoff	0.655				0.65	0.65	N/A	N/A	Lateral
214	M444	Secondary Standoff	0.718				0.65	0.65	N/A	N/A	Lateral
215	M445	Lower Standoff	1.006				0.65	0.65	N/A	N/A	Lateral
216	M446	Lower Standoff	1.045				0.65	0.65	N/A	N/A	Lateral
217	M447	Lower Standoff	0.667				0.65	0.65	N/A	N/A	Lateral
218	M448	Lower Standoff	0.742				0.65	0.65	N/A	N/A	Lateral
219	M449	Bracing	0.943				0.65	0.65	N/A	N/A	Lateral
220	M450	Bracing	0.872				0.65	0.65	N/A	N/A	Lateral
221	M451	Bracing	0.989				0.65	0.65	N/A	N/A	Lateral
222	M452	Bracing	1.028				0.65	0.65	N/A	N/A	Lateral
223	M453	Bracing	0.655				0.65	0.65	N/A	N/A	Lateral
224	M454	Bracing	0.718				0.65	0.65	N/A	N/A	Lateral
225	M455	Bracing	1.006				0.65	0.65	N/A	N/A	Lateral
226	M456	Bracing	1.045				0.65	0.65	N/A	N/A	Lateral
227	M457	Bracing	0.667				0.65	0.65	N/A	N/A	Lateral
228	M458	Bracing	0.731				0.65	0.65	N/A	N/A	Lateral
229	M459	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
230	M461	Bracing	1.028				0.65	0.65	N/A	N/A	Lateral
231	M462	Bracing	0.735				0.65	0.65	N/A	N/A	Lateral
232	M463	Bracing	0.898				0.65	0.65	N/A	N/A	Lateral
233	M464	Bracing	0.613				0.65	0.65	N/A	N/A	Lateral
234	M465	Bracing	0.756				0.65	0.65	N/A	N/A	Lateral
235	M466	Bracing	0.51				0.65	0.65	N/A	N/A	Lateral
236	M467	Bracing	0.631				0.65	0.65	N/A	N/A	Lateral
237	M468	Bracing	0.422				0.65	0.65	N/A	N/A	Lateral
238	M469	Bracing	0.527				0.65	0.65	N/A	N/A	Lateral
239	M470	Bracing	0.349				0.65	0.65	N/A	N/A	Lateral
240	M471	Bracing	0.44				0.65	0.65	N/A	N/A	Lateral
241	M472	Bracing	0.287				0.65	0.65	N/A	N/A	Lateral
242	M473	Bracing	0.353				0.65	0.65	N/A	N/A	Lateral
243	M475	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
244	M476	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
245	M477	Bracing	0.917				0.65	0.65	N/A	N/A	Lateral
246	M478	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
247	M479	Bracing	0.958				0.65	0.65	N/A	N/A	Lateral
248	M480	Bracing	0.917				0.65	0.65	N/A	N/A	Lateral
249	M481	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
250	M482	Lower Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
251	M483	Lower Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
252	M484	Lower Standoff	0.917				0.65	0.65	N/A	N/A	Lateral
253	M485	Secondary Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
254	M486	Secondary Standoff	0.958				0.65	0.65	N/A	N/A	Lateral
255	M487	Secondary Standoff	0.917				0.65	0.65	N/A	N/A	Lateral
256	M488	Bracing	1.295				0.65	0.65	N/A	N/A	Lateral
257	M489	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
258	M490	Bracing	1.295				0.65	0.65	N/A	N/A	Lateral
259	M491	Bracing	0.871				0.65	0.65	N/A	N/A	Lateral
260	M498	Bracing	1.264				0.65	0.65	N/A	N/A	Lateral
261	M504A	Face Horizontal	12.5			Lbyy	0.65	0.65	N/A	N/A	Lateral
262	MP4A	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
263	MP3A	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
264	MP2A	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
265	MP1A	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
266	M696A	Face Horizontal	12.5			Lbyy	0.65	0.65	N/A	N/A	Lateral
267	M698A	Face Horizontal	12.5			Lbyy	0.65	0.65	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	K y-y	K z-z	Channel Conn.	a [ft]	Function
268	M700A	Face Horizontal	12.5			Lbyy	0.65	0.65	N/A	N/A	Lateral
269	M505A	Support Rail	12.5			Lbyy	0.65	0.65	N/A	N/A	Lateral
270	M510A	Support Rail	12.5			Lbyy	0.65	0.65	N/A	N/A	Lateral
271	M515	Support Rail	12.5			Lbyy	0.65	0.65	N/A	N/A	Lateral
272	M520	Support Rail	12.5			Lbyy	0.65	0.65	N/A	N/A	Lateral
273	MP4D	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
274	MP3D	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
275	MP2D	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
276	MP1D	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
277	MP4C	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
278	MP3C	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
279	MP2C	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
280	MP1C	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
281	MP4B	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
282	MP3B	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
283	MP2B	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
284	MP1B	Mount Pipe	8			Lbyy			N/A	N/A	Lateral
285	M557	Connector Angle	1.739						N/A	N/A	Lateral
286	M558	Connector Angle	1.739						N/A	N/A	Lateral
287	M559	Connector Angle	1.739						N/A	N/A	Lateral
288	M560	Connector Angle	1.739						N/A	N/A	Lateral
289	OVP	Mount Pipe	4.5			Lbyy			N/A	N/A	Lateral
290	M564	Mount Support	6.784			Lbyy	0.65	0.65	N/A	N/A	Lateral
291	M565	Mount Support	6.784			Lbyy	0.65	0.65	N/A	N/A	Lateral
292	M566	Mount Support	6.784			Lbyy	0.65	0.65	N/A	N/A	Lateral
293	M567	Mount Support	6.784			Lbyy	0.65	0.65	N/A	N/A	Lateral
294	M568	Mount Support	6.784			Lbyy	0.65	0.65	N/A	N/A	Lateral
295	M569	Mount Support	6.784			Lbyy	0.65	0.65	N/A	N/A	Lateral
296	M570	Mount Support	6.784			Lbyy	0.65	0.65	N/A	N/A	Lateral
297	M571	Mount Support	6.784			Lbyy	0.65	0.65	N/A	N/A	Lateral

Member Area Loads (BLC 39 : Structure D)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	N251	N245	N244	N246	Y	Two Way	-0.005
2	N244	N230	N231	N246	Y	Two Way	-0.005
3	N252	N233	N232	N234	Y	Two Way	-0.005
4	N234	N231	N230	N232	Y	Two Way	-0.005
5	N62	N52	N50	N52A	Y	Two Way	-0.005
6	N52A	N49	N47	N50	Y	Two Way	-0.005
7	N60	N79A	N78	N80	Y	Two Way	-0.005
8	N80	N49	N47	N78	Y	Two Way	-0.005
9	N121	N115	N114	N116	Y	Two Way	-0.005
10	N116	N101	N100	N114	Y	Two Way	-0.005
11	N122	N103	N102	N104	Y	Two Way	-0.005
12	N104	N101	N100	N102	Y	Two Way	-0.005
13	N186	N180	N179	N181	Y	Two Way	-0.005
14	N181	N166	N165	N179	Y	Two Way	-0.005
15	N187	N168	N167	N169	Y	Two Way	-0.005
16	N169	N166	N165	N167	Y	Two Way	-0.005
17	N241	N162	N163	N242	Y	Two Way	-0.005
18	N111	N41	N41A	N112	Y	Two Way	-0.005
19	N72	N227	N228	N73	Y	Two Way	-0.005
20	N176	N97	N98	N177	Y	Two Way	-0.005
21	N97	N176	N177	N98	Y	Two Way	-0.005
22	N162	N241	N242	N163	Y	Two Way	-0.005

Member Area Loads (BLC 40 : Structure Di)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	N251	N245	N244	N246	Y	Two Way	-0.016
2	N244	N230	N231	N246	Y	Two Way	-0.016
3	N252	N233	N232	N234	Y	Two Way	-0.016
4	N234	N231	N230	N232	Y	Two Way	-0.016
5	N62	N52	N50	N52A	Y	Two Way	-0.016
6	N52A	N49	N47	N50	Y	Two Way	-0.016
7	N60	N79A	N78	N80	Y	Two Way	-0.016
8	N80	N49	N47	N78	Y	Two Way	-0.016
9	N121	N115	N114	N116	Y	Two Way	-0.016
10	N116	N101	N100	N114	Y	Two Way	-0.016
11	N122	N103	N102	N104	Y	Two Way	-0.016
12	N104	N101	N100	N102	Y	Two Way	-0.016
13	N186	N180	N179	N181	Y	Two Way	-0.016
14	N181	N166	N165	N179	Y	Two Way	-0.016
15	N187	N168	N167	N169	Y	Two Way	-0.016
16	N169	N166	N165	N167	Y	Two Way	-0.016
17	N241	N162	N163	N242	Y	Two Way	-0.016
18	N111	N41	N41A	N112	Y	Two Way	-0.016
19	N72	N227	N228	N73	Y	Two Way	-0.016
20	N176	N97	N98	N177	Y	Two Way	-0.016
21	N97	N176	N177	N98	Y	Two Way	-0.016
22	N162	N241	N242	N163	Y	Two Way	-0.016

Member Area Loads (BLC 84 : Structure Ev)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	N251	N245	N244	N246	Y	Two Way	-0.000225
2	N244	N230	N231	N246	Y	Two Way	-0.000225
3	N252	N233	N232	N234	Y	Two Way	-0.000225
4	N234	N231	N230	N232	Y	Two Way	-0.000225
5	N62	N52	N50	N52A	Y	Two Way	-0.000225
6	N52A	N49	N47	N50	Y	Two Way	-0.000225
7	N60	N79A	N78	N80	Y	Two Way	-0.000225
8	N80	N49	N47	N78	Y	Two Way	-0.000225
9	N121	N115	N114	N116	Y	Two Way	-0.000225
10	N116	N101	N100	N114	Y	Two Way	-0.000225
11	N122	N103	N102	N104	Y	Two Way	-0.000225
12	N104	N101	N100	N102	Y	Two Way	-0.000225
13	N186	N180	N179	N181	Y	Two Way	-0.000225
14	N181	N166	N165	N179	Y	Two Way	-0.000225
15	N187	N168	N167	N169	Y	Two Way	-0.000225
16	N169	N166	N165	N167	Y	Two Way	-0.000225
17	N241	N162	N163	N242	Y	Two Way	-0.000225
18	N111	N41	N41A	N112	Y	Two Way	-0.000225
19	N72	N227	N228	N73	Y	Two Way	-0.000225
20	N176	N97	N98	N177	Y	Two Way	-0.000225
21	N97	N176	N177	N98	Y	Two Way	-0.000225
22	N162	N241	N242	N163	Y	Two Way	-0.000225

Member Area Loads (BLC 85 : Structure Eh (0 Deg))

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	N251	N245	N244	N246	Z	Two Way	-0.000563
2	N244	N230	N231	N246	Z	Two Way	-0.000563

Member Area Loads (BLC 85 : Structure Eh (0 Deg)) (Continued)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
3	N252	N233	N232	N234	Z	Two Way	-0.000563
4	N234	N231	N230	N232	Z	Two Way	-0.000563
5	N62	N52	N50	N52A	Z	Two Way	-0.000563
6	N52A	N49	N47	N50	Z	Two Way	-0.000563
7	N60	N79A	N78	N80	Z	Two Way	-0.000563
8	N80	N49	N47	N78	Z	Two Way	-0.000563
9	N121	N115	N114	N116	Z	Two Way	-0.000563
10	N116	N101	N100	N114	Z	Two Way	-0.000563
11	N122	N103	N102	N104	Z	Two Way	-0.000563
12	N104	N101	N100	N102	Z	Two Way	-0.000563
13	N186	N180	N179	N181	Z	Two Way	-0.000563
14	N181	N166	N165	N179	Z	Two Way	-0.000563
15	N187	N168	N167	N169	Z	Two Way	-0.000563
16	N169	N166	N165	N167	Z	Two Way	-0.000563
17	N241	N162	N163	N242	Z	Two Way	-0.000563
18	N111	N41	N41A	N112	Z	Two Way	-0.000563
19	N72	N227	N228	N73	Z	Two Way	-0.000563
20	N176	N97	N98	N177	Z	Two Way	-0.000563
21	N97	N176	N177	N98	Z	Two Way	-0.000563
22	N162	N241	N242	N163	Z	Two Way	-0.000563

Member Area Loads (BLC 86 : Structure Eh (90 Deg))

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	N251	N245	N244	N246	X	Two Way	0.000563
2	N244	N230	N231	N246	X	Two Way	0.000563
3	N252	N233	N232	N234	X	Two Way	0.000563
4	N234	N231	N230	N232	X	Two Way	0.000563
5	N62	N52	N50	N52A	X	Two Way	0.000563
6	N52A	N49	N47	N50	X	Two Way	0.000563
7	N60	N79A	N78	N80	X	Two Way	0.000563
8	N80	N49	N47	N78	X	Two Way	0.000563
9	N121	N115	N114	N116	X	Two Way	0.000563
10	N116	N101	N100	N114	X	Two Way	0.000563
11	N122	N103	N102	N104	X	Two Way	0.000563
12	N104	N101	N100	N102	X	Two Way	0.000563
13	N186	N180	N179	N181	X	Two Way	0.000563
14	N181	N166	N165	N179	X	Two Way	0.000563
15	N187	N168	N167	N169	X	Two Way	0.000563
16	N169	N166	N165	N167	X	Two Way	0.000563
17	N241	N162	N163	N242	X	Two Way	0.000563
18	N111	N41	N41A	N112	X	Two Way	0.000563
19	N72	N227	N228	N73	X	Two Way	0.000563
20	N176	N97	N98	N177	X	Two Way	0.000563
21	N97	N176	N177	N98	X	Two Way	0.000563
22	N162	N241	N242	N163	X	Two Way	0.000563

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	R4	max	14743.964	24	4036.568	24	14740.866	24	-0.007	5	0.601	3	0.164	24
2		min	361.097	6	1029.498	69	174.803	6	-0.168	23	-0.674	9	0.009	6
3	R4A	max	-4327.254	6	178.368	24	-4424.608	6	-0.005	3	0.899	11	0.049	24
4		min	-18997.007	24	53.129	69	-18885.116	24	-0.049	21	-0.704	5	0.001	6
5	R1	max	16603.035	20	4338.559	20	-602.442	2	0.186	20	0.604	11	0.186	20

Envelope Node Reactions (Continued)

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
6		min	821.161	2	1074.728	65	-16666.57	20	0.013	3	-0.588	5	0.013	2
7	R1A	max	-4736.944	2	185.997	20	20811.71	20	0.055	23	0.816	3	0.057	20
8		min	-20807.518	20	54.992	65	4847.291	2	0.006	5	-0.852	9	0.002	2
9	R2	max	1677.114	12	3289.074	18	1720.335	12	0.116	18	0.281	11	0.015	12
10		min	-10406.875	18	753.005	74	-10488.361	18	-0.01	12	-0.214	5	-0.124	18
11	R2A	max	14594.565	18	156.27	18	14910.489	18	0.035	17	0.487	11	-0.004	9
12		min	2279.775	12	41.224	74	2295.964	12	-0.005	11	-0.969	5	-0.034	15
13	R3	max	1389.651	8	3434.107	14	11609.266	14	0.006	8	0.211	7	0.013	8
14		min	-11505.105	14	777.284	72	-1457.747	8	-0.127	14	-0.299	1	-0.136	14
15	R3A	max	15753.974	14	160.146	14	-2545.273	8	0.004	9	1.034	3	-0.005	7
16		min	2600.512	8	42.25	72	-16034.371	14	-0.039	15	-0.631	9	-0.039	17
17	Totals:	max	6549.934	10	15428.617	20	7289.316	1						
18		min	-6549.84	4	3900.528	65	-7289.309	7						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M45A	L3X3X6	0.33	2.761	4	0.269	2.914	y	23	66460.728	66465	2.243	5.174	1.5	H2-1
2	M68	L3X3X6	0.283	0	19	0.245	2.914	z	13	65547.821	66465	2.243	5.174	1.373	H2-1
3	M74B	L3X3X6	0.458	0	13	0.134	0	y	1	66373.078	66465	2.243	5.174	1.077	H2-1
4	M75B	L3X3X6	0.455	0	22	0.204	0	z	10	66373.078	66465	2.243	5.174	1.5	H2-1
5	M110	L3X3X6	0.303	2.761	1	0.266	2.914	y	19	66460.728	66465	2.243	5.174	1.5	H2-1
6	M144	L3X3X6	0.307	2.761	4	0.255	2.914	z	22	66460.728	66465	2.243	5.174	1	H2-1
7	M148	L3X3X6	0.475	0	22	0.168	0	y	10	66373.078	66465	2.243	5.174	1.077	H2-1
8	M150	L3X3X6	0.475	0	19	0.246	0	z	7	66373.078	66465	2.243	5.174	1.5	H2-1
9	M188	L3X3X6	0.251	0	22	0.125	2.914	y	17	65547.821	66465	2.243	5.174	1.141	H2-1
10	M222	L3X3X6	0.248	0	24	0.198	2.838	y	18	65547.821	66465	2.243	5.174	1.5	H2-1
11	M226	L3X3X6	0.344	0	19	0.148	0	y	7	66373.078	66465	2.243	5.174	1.106	H2-1
12	M228	L3X3X6	0.325	0	16	0.104	0.377	y	7	66373.078	66465	2.243	5.174	1.5	H2-1
13	M266	L3X3X6	0.292	2.761	1	0.199	2.914	z	13	66460.728	66465	2.243	5.174	1	H2-1
14	M300	L3X3X6	0.238	0	22	0.126	2.914	z	16	65547.821	66465	2.243	5.174	1.5	H2-1
15	M304	L3X3X6	0.337	0	16	0.169	0.377	z	1	66373.078	66465	2.243	5.174	1.04	H2-1
16	M306	L3X3X6	0.353	0	13	0.247	0	z	1	66373.078	66465	2.243	5.174	1.5	H2-1
17	M54	HSS4X3X4	0.151	4.021	13	0.111	2.904	z	22	83040.402	91665	8.19	10.001	1.702	H1-1b
18	M130	HSS4X3X4	0.157	4.021	19	0.131	2.904	z	19	83040.402	91665	8.19	10.001	1.731	H1-1b
19	M208	HSS4X3X4	0.111	4.021	19	0.1	2.904	z	19	83040.402	91665	8.19	10.001	1.22	H1-1b
20	M286	HSS4X3X4	0.115	4.021	13	0.119	2.904	z	13	83040.402	91665	8.19	10.001	1.267	H1-1b
21	M66	PL3/8X3	0.13	0	1	0.148	0.605	y	22	32152.653	35437.5	0.277	2.215	1.72	H1-1b
22	M74C	PL3/8X3	0.169	0	10	0.14	0.605	y	13	32152.653	35437.5	0.277	2.215	1.673	H1-1b
23	M142	PL3/8X3	0.152	0	10	0.153	0.605	y	19	32152.653	35437.5	0.277	2.215	1.705	H1-1b
24	M149	PL3/8X3	0.17	0	7	0.128	0.605	y	22	32152.653	35437.5	0.277	2.215	1.669	H1-1b
25	M220	PL3/8X3	0.142	0	19	0.087	0.605	y	18	32152.653	35437.5	0.277	2.215	1.802	H1-1b
26	M227	PL3/8X3	0.063	0	31	0.099	0.605	y	19	32152.653	35437.5	0.277	2.215	2.147	H1-1b
27	M298	PL3/8X3	0.071	0	1	0.099	0.605	y	13	32152.653	35437.5	0.277	2.215	2.19	H1-1b
28	M305	PL3/8X3	0.16	0	1	0.073	0.605	y	15	32152.653	35437.5	0.277	2.215	1.632	H1-1b
29	M31	PL3/8X2.375	0.339	0	14	0.037	0	y	4	26251.56	28054.688	0.219	1.388	1.487	H1-1b
30	M33	PL3/8X2.375	0.317	0	22	0.038	0	y	13	26251.56	28054.688	0.219	1.388	1.513	H1-1b
31	M34A	PL3/8X2.375	0.436	0	15	0.082	0	y	23	26251.56	28054.688	0.219	1.388	1.351	H1-1b
32	M60	PL3/8X2.375	0.323	0	18	0.03	0	y	7	26251.56	28054.688	0.219	1.388	1.443	H1-1b
33	M61	PL3/8X2.375	0.312	0	13	0.04	0	y	22	26251.56	28054.688	0.219	1.388	1.537	H1-1b
34	M62	PL3/8X2.375	0.429	0	21	0.083	0	y	13	26251.56	28054.688	0.219	1.388	1.349	H1-1b
35	M103	PL3/8X2.375	0.328	0	14	0.035	0	y	1	26251.56	28054.688	0.219	1.388	1.518	H1-1b
36	M104	PL3/8X2.375	0.317	0	19	0.033	0	y	22	26251.56	28054.688	0.219	1.388	1.495	H1-1b
37	M105	PL3/8X2.375	0.417	0	24	0.08	0	y	19	26251.56	28054.688	0.219	1.388	1.353	H1-1b
38	M136	PL3/8X2.375	0.328	0	18	0.035	0	y	4	26251.56	28054.688	0.219	1.388	1.452	H1-1b
39	M137	PL3/8X2.375	0.317	0	22	0.042	0	y	19	26251.56	28054.688	0.219	1.388	1.546	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
40	M138	PL3/8X2.375	0.434	0	17	0.082	0	y	22	26251.56	28054.688	0.219	1.388	1.351	H1-1b
41	M181	PL3/8X2.375	0.227	0	23	0.026	0	y	22	26251.56	28054.688	0.219	1.388	1.535	H1-1b
42	M182	PL3/8X2.375	0.204	0	16	0.03	0	y	19	26251.56	28054.688	0.219	1.388	1.614	H1-1b
43	M183	PL3/8X2.375	0.354	0	19	0.055	0	y	18	26251.56	28054.688	0.219	1.388	1.355	H1-1b
44	M214	PL3/8X2.375	0.27	0	20	0.026	0	y	1	26251.56	28054.688	0.219	1.388	1.509	H1-1b
45	M215	PL3/8X2.375	0.246	0	19	0.024	0	y	19	26251.56	28054.688	0.219	1.388	1.507	H1-1b
46	M216	PL3/8X2.375	0.33	0	13	0.063	0	y	19	26251.56	28054.688	0.219	1.388	1.354	H1-1b
47	M259	PL3/8X2.375	0.253	0	16	0.03	0	y	7	26251.56	28054.688	0.219	1.388	1.577	H1-1b
48	M260	PL3/8X2.375	0.241	0	13	0.028	0	y	13	26251.56	28054.688	0.219	1.388	1.469	H1-1b
49	M261	PL3/8X2.375	0.315	0	19	0.059	0	y	13	26251.56	28054.688	0.219	1.388	1.356	H1-1b
50	M292	PL3/8X2.375	0.222	0	21	0.027	0	y	24	26251.56	28054.688	0.219	1.388	1.565	H1-1b
51	M293	PL3/8X2.375	0.204	0	16	0.031	0	y	13	26251.56	28054.688	0.219	1.388	1.633	H1-1b
52	M294	PL3/8X2.375	0.348	0	13	0.051	0	y	16	26251.56	28054.688	0.219	1.388	1.356	H1-1b
53	MT22	PL1/2X4	0	0.943	4	0	0.943	z	18	55152.186	63000	0.656	5.25	1.728	H1-1b*
54	MT23	PL3/8X4	0	0.874	16	0	0.874	z	13	77076.695	94500	0.738	15.75	2.175	H1-1b*
55	MT24	PL1/2X4	0.093	0.286	13	0.045	0.26	y	10	54437.008	63000	0.656	5.25	1.366	H1-1b
56	MT25	PL1/2X4	0.253	0.784	11	0.031	1.028	y	4	53800.851	63000	0.656	5.25	3	H1-1b
57	MT26	PL1/2X4	0.148	0	10	0.021	0.655	y	9	59083.088	63000	0.656	5.25	1.136	H1-1b
58	MT27	PL1/2X4	0.117	0.718	12	0.027	0.718	y	9	58324.528	63000	0.656	5.25	1.551	H1-1b*
59	MT28	PL3/8X4	0.126	1.006	24	0.028	1.006	y	3	72147.55	94500	0.738	15.75	1.19	H1-1b*
60	MT29	PL3/8X4	0.165	1.045	24	0.047	0.495	y	11	70597.548	94500	0.738	15.75	1.416	H1-1b*
61	MT30	PL3/8X4	0.152	0.667	24	0.076	0	y	11	83933.069	94500	0.738	15.75	2.269	H1-1b*
62	MT31	PL3/8X4	0.17	0.742	24	0.118	0	y	11	81579.527	94500	0.738	15.75	1.394	H1-1b*
63	MT32	PL3/8X1	0.001	0.943	8	0	0.943	y	18	9324.721	11812.5	0.092	0.246	1.727	H1-1b
64	MT33	PL3/8X1	0.001	0.872	9	0	0.872	y	13	9649.585	11812.5	0.092	0.246	2.376	H1-1b
65	MT34	PL3/8X1	0.134	0.286	24	0.039	0.572	y	13	9110.863	11812.5	0.092	0.246	2.31	H1-1b
66	MT35	PL3/8X1	0.139	1.028	23	0.02	0.46	y	13	8922.461	11812.5	0.092	0.246	2.042	H1-1b
67	MT36	PL3/8X1	0.112	0.655	23	0.017	0.655	y	20	10538.698	11812.5	0.092	0.246	2.276	H1-1b
68	MT37	PL3/8X1	0.114	0.718	12	0.014	0.718	y	9	10299.381	11812.5	0.092	0.246	2.275	H1-1b*
69	MT38	PL3/8X1	0.154	1.006	24	0.038	0.582	y	13	9029.527	11812.5	0.092	0.246	1.817	H1-1b
70	MT39	PL3/8X1	0.16	1.045	24	0.025	1.045	y	11	8836.412	11812.5	0.092	0.246	2.12	H1-1b
71	MT40	PL3/8X1	0.145	0.667	17	0.036	0.667	y	5	10497.297	11812.5	0.092	0.246	2.28	H1-1b
72	MT41	PL3/8X1	0.173	0.731	23	0.058	0.731	y	11	10249.195	11812.5	0.092	0.246	2.234	H1-1b
73	MT42	PL3/8X1	0.175	0	5	0.023	0.871	y	9	9657.416	11812.5	0.092	0.246	1.941	H1-1b
74	MT44	PL3/8X1	0.135	0	17	0.036	0	y	11	8921.838	11812.5	0.092	0.246	1.904	H1-1b*
75	MT45	PL3/8X1	0.133	0	5	0.017	0.735	y	9	10232.577	11812.5	0.092	0.246	2.149	H1-1b
76	MT46	PL3/8X1	0.153	0	17	0.025	0	y	3	9536.081	11812.5	0.092	0.246	2.55	H1-1b*
77	MT47	PL3/8X1	0.135	0	18	0.01	0	y	18	10688.698	11812.5	0.092	0.246	2.227	H1-1b*
78	MT48	PL3/8X1	0.16	0.756	24	0.027	0	y	3	10146.905	11812.5	0.092	0.246	2.183	H1-1b*
79	MT49	PL3/8X1	0.134	0	24	0.01	0.51	y	1	11025.158	11812.5	0.092	0.246	2.225	H1-1b*
80	MT50	PL3/8X1	0.146	0.631	24	0.026	0.631	y	3	10626.842	11812.5	0.092	0.246	1.659	H1-1b*
81	MT51	PL3/8X1	0.124	0.422	13	0.018	0.422	y	13	11265.531	11812.5	0.092	0.246	2.272	H1-1b
82	MT52	PL3/8X1	0.161	0.527	24	0.02	0	y	3	10972.087	11812.5	0.092	0.246	1.498	H1-1b*
83	MT53	PL3/8X1	0.141	0.349	13	0.024	0.349	y	13	11436.264	11812.5	0.092	0.246	2.262	H1-1b
84	MT54	PL3/8X1	0.159	0.44	24	0.016	0	y	3	11220.726	11812.5	0.092	0.246	1.141	H1-1b*
85	MT55	PL3/8X1	0.131	0	24	0.016	0.287	y	22	11556.566	11812.5	0.092	0.246	2.21	H1-1b*
86	MT56	PL3/8X1	0.048	0.353	9	0.013	0.353	y	3	11426.997	11812.5	0.092	0.246	2.17	H1-1b
87	MT58	PL3/8X1	0.202	0.958	24	0.022	0.958	y	22	9254.828	11812.5	0.092	0.246	2.268	H1-1b
88	MT59	PL3/8X1	0.271	0.958	24	0.026	0.958	y	22	9254.828	11812.5	0.092	0.246	2.278	H1-1b
89	MT60	PL3/8X1	0.319	0.917	24	0.028	0.917	y	23	9448.941	11812.5	0.092	0.246	2.257	H1-1b
90	MT61	PL3/8X1	0.434	0.958	24	0.053	0.958	y	9	9254.828	11812.5	0.092	0.246	2.29	H1-1a
91	MT62	PL3/8X1	0.445	0.958	24	0.04	0.958	y	9	9254.828	11812.5	0.092	0.246	2.272	H1-1a
92	MT63	PL3/8X1	0.449	0.917	24	0.031	0.917	y	9	9448.941	11812.5	0.092	0.246	2.27	H1-1a
93	MT64	PL3/8X1	0.003	0	1	0	0.871	y	5	9657.416	11812.5	0.092	0.246	2.384	H1-1b
94	MT65	PL3/8X4	0.318	0.958	24	0.094	0.958	y	9	73956.083	94500	0.738	15.75	1.223	H1-1a

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
95	MT66	PL3/8X4	0.371	0.958	24	0.067	0.958	y	9	73956.083	94500	0.738	15.75	1.14	H1-1a
96	MT67	PL3/8X4	0.401	0.917	24	0.051	0.917	y	9	75514.417	94500	0.738	15.75	1.099	H1-1a
97	MT68	PL1/2X4	0.147	0.958	24	0.026	0.958	y	10	54919.25	63000	0.656	5.25	1.114	H1-1b
98	MT69	PL1/2X4	0.203	0.958	21	0.026	0.958	y	10	54919.25	63000	0.656	5.25	1.402	H1-1b
99	MT70	PL1/2X4	0.357	0.917	22	0.023	0.917	y	10	55564.307	63000	0.656	5.25	1.241	H1-1a
100	MT71	PL3/8X1	0.535	0	24	0.048	1.295	y	11	7566.368	11812.5	0.092	0.246	2.226	H1-1a
101	MT72	PL3/8X1	0.395	0	24	0.024	0.871	y	9	9657.416	11812.5	0.092	0.246	2.256	H1-1a
102	MT73	PL3/8X1	0.518	1.295	24	0.025	1.295	y	11	7566.368	11812.5	0.092	0.246	2.341	H1-1a
103	MT74	PL3/8X1	0.404	0.871	23	0.017	0.871	y	9	9657.416	11812.5	0.092	0.246	2.197	H1-1a
104	MT81	PL3/8X1	0.529	1.264	24	0.016	1.264	y	9	7725.066	11812.5	0.092	0.246	2.295	H1-1a
105	M273	PL1/2X4	0	0.943	1	0	0.943	z	14	55152.186	63000	0.656	5.25	1.728	H1-1b*
106	M274	PL3/8X4	0	0.874	16	0	0.874	z	19	77076.695	94500	0.738	15.75	2.215	H1-1b*
107	M275	PL1/2X4	0.1	0.286	19	0.046	0.26	y	4	54437.008	63000	0.656	5.25	1.204	H1-1b
108	M276	PL1/2X4	0.228	0.784	9	0.027	0.487	y	7	53800.851	63000	0.656	5.25	3	H1-1b
109	M277	PL1/2X4	0.127	0	7	0.019	0.655	y	41	59083.088	63000	0.656	5.25	1.156	H1-1b
110	M278	PL1/2X4	0.13	0.718	20	0.023	0.718	y	11	58324.528	63000	0.656	5.25	2.209	H1-1b*
111	M279	PL3/8X4	0.148	1.006	20	0.026	1.006	y	47	72147.55	94500	0.738	15.75	1.086	H1-1b*
112	M280	PL3/8X4	0.188	1.045	20	0.041	0.495	y	9	70597.548	94500	0.738	15.75	1.09	H1-1b*
113	M281	PL3/8X4	0.171	0.667	20	0.066	0	y	9	83933.069	94500	0.738	15.75	1.051	H1-1b*
114	M282	PL3/8X4	0.19	0.742	20	0.105	0	y	9	81579.527	94500	0.738	15.75	1.043	H1-1b*
115	M283	PL3/8X1	0.001	0.943	12	0	0.943	y	14	9324.721	11812.5	0.092	0.246	1.727	H1-1b
116	M284	PL3/8X1	0.001	0.872	11	0	0.872	y	19	9649.585	11812.5	0.092	0.246	2.376	H1-1b
117	M285	PL3/8X1	0.145	0.286	20	0.04	0.572	y	19	9110.863	11812.5	0.092	0.246	2.293	H1-1b
118	M286A	PL3/8X1	0.15	1.028	20	0.021	0.46	y	19	8922.461	11812.5	0.092	0.246	2.077	H1-1b
119	M287	PL3/8X1	0.122	0.655	20	0.017	0.655	y	41	10538.698	11812.5	0.092	0.246	2.269	H1-1b
120	M288	PL3/8X1	0.133	0.718	20	0.013	0.718	y	12	10299.381	11812.5	0.092	0.246	2.138	H1-1b*
121	M289A	PL3/8X1	0.166	1.006	20	0.037	0.582	y	23	9029.527	11812.5	0.092	0.246	1.83	H1-1b
122	M290A	PL3/8X1	0.171	1.045	20	0.022	1.045	y	9	8836.412	11812.5	0.092	0.246	2.148	H1-1b
123	M291A	PL3/8X1	0.153	0.667	15	0.034	0.667	y	3	10497.297	11812.5	0.092	0.246	2.27	H1-1b
124	M292A	PL3/8X1	0.183	0.731	21	0.053	0.731	y	3	10249.195	11812.5	0.092	0.246	2.227	H1-1b
125	M293A	PL3/8X1	0.165	0	3	0.021	0.871	y	11	9657.416	11812.5	0.092	0.246	1.847	H1-1b
126	M295A	PL3/8X1	0.133	0	14	0.033	0	y	9	8921.838	11812.5	0.092	0.246	1.947	H1-1b*
127	M296A	PL3/8X1	0.129	0	14	0.015	0	y	12	10232.577	11812.5	0.092	0.246	2.189	H1-1b*
128	M297A	PL3/8X1	0.151	0	14	0.024	0	y	5	9536.081	11812.5	0.092	0.246	2.488	H1-1b*
129	M298A	PL3/8X1	0.133	0	14	0.009	0	y	41	10688.698	11812.5	0.092	0.246	2.231	H1-1b*
130	M299A	PL3/8X1	0.167	0.756	20	0.025	0.756	y	6	10146.905	11812.5	0.092	0.246	2.163	H1-1b*
131	M300A	PL3/8X1	0.14	0	20	0.011	0.51	y	46	11025.158	11812.5	0.092	0.246	2.236	H1-1b*
132	M301A	PL3/8X1	0.153	0.631	20	0.024	0.631	y	5	10626.842	11812.5	0.092	0.246	1.564	H1-1b*
133	M302A	PL3/8X1	0.127	0.422	19	0.017	0.422	y	23	11265.531	11812.5	0.092	0.246	2.27	H1-1b
134	M303A	PL3/8X1	0.169	0.527	20	0.019	0	y	6	10972.087	11812.5	0.092	0.246	1.412	H1-1b*
135	M304A	PL3/8X1	0.149	0.349	19	0.024	0.349	y	23	11436.264	11812.5	0.092	0.246	2.261	H1-1b
136	M305A	PL3/8X1	0.166	0.44	20	0.016	0	y	6	11220.726	11812.5	0.092	0.246	2.725	H1-1b*
137	M306A	PL3/8X1	0.137	0	20	0.016	0	y	16	11556.566	11812.5	0.092	0.246	2.2	H1-1b*
138	M307A	PL3/8X1	0.055	0.353	7	0.015	0	y	7	11426.997	11812.5	0.092	0.246	1.739	H1-1b
139	M309A	PL3/8X1	0.223	0.958	20	0.02	0.958	y	18	9254.828	11812.5	0.092	0.246	2.264	H1-1b
140	M310A	PL3/8X1	0.299	0.958	20	0.024	0.958	y	19	9254.828	11812.5	0.092	0.246	2.276	H1-1b
141	M311A	PL3/8X1	0.433	0.917	20	0.027	0.917	y	16	9448.941	11812.5	0.092	0.246	2.255	H1-1a
142	M312A	PL3/8X1	0.475	0.958	20	0.053	0.958	y	11	9254.828	11812.5	0.092	0.246	2.29	H1-1a
143	M313A	PL3/8X1	0.485	0.958	20	0.039	0.958	y	11	9254.828	11812.5	0.092	0.246	2.269	H1-1a
144	M314A	PL3/8X1	0.488	0.917	20	0.03	0.917	y	11	9448.941	11812.5	0.092	0.246	2.267	H1-1a
145	M315A	PL3/8X1	0.003	0	7	0	0.871	y	3	9657.416	11812.5	0.092	0.246	2.384	H1-1b
146	M316A	PL3/8X4	0.345	0.958	20	0.091	0.958	y	11	73956.083	94500	0.738	15.75	1.012	H1-1a
147	M317	PL3/8X4	0.397	0.958	20	0.064	0.958	y	11	73956.083	94500	0.738	15.75	1.002	H1-1a
148	M318	PL3/8X4	0.424	0.917	20	0.049	0.917	y	5	75514.417	94500	0.738	15.75	1.011	H1-1a
149	M319	PL1/2X4	0.167	0.958	20	0.022	0.958	y	1	54919.25	63000	0.656	5.25	1.48	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
150	M320	PL1/2X4	0.312	0.958	20	0.022	0.958	y	1	54919.25	63000	0.656	5.25	1.237	H1-1a
151	M321	PL1/2X4	0.395	0.917	19	0.018	0.917	y	1	55564.307	63000	0.656	5.25	1.195	H1-1a
152	M322	PL3/8X1	0.578	0	20	0.046	1.295	y	9	7566.368	11812.5	0.092	0.246	2.233	H1-1a
153	M323	PL3/8X1	0.425	0	20	0.022	0.871	y	11	9657.416	11812.5	0.092	0.246	2.252	H1-1a
154	M324	PL3/8X1	0.557	1.295	20	0.024	1.295	y	9	7566.368	11812.5	0.092	0.246	2.331	H1-1a
155	M325	PL3/8X1	0.432	0.871	20	0.015	0	y	12	9657.416	11812.5	0.092	0.246	2.191	H1-1a
156	M332	PL3/8X1	0.569	1.264	20	0.016	1.264	y	5	7725.066	11812.5	0.092	0.246	2.288	H1-1a
157	M356	PL1/2X4	0	0.943	10	0	0.943	z	23	55152.186	63000	0.656	5.25	1.73	H1-1b*
158	M357	PL3/8X4	0	0.874	13	0	0.874	z	19	77076.695	94500	0.738	15.75	1	H1-1b*
159	M358	PL1/2X4	0.086	0	30	0.041	0.26	y	8	54437.008	63000	0.656	5.25	2.663	H1-1b
160	M359	PL1/2X4	0.228	0.784	12	0.038	0.784	y	26	53800.851	63000	0.656	5.25	3	H1-1b
161	M360	PL1/2X4	0.125	0	7	0.026	0.655	y	35	59083.088	63000	0.656	5.25	1.118	H1-1b
162	M361	PL1/2X4	0.097	0	7	0.022	0.718	y	31	58324.528	63000	0.656	5.25	1.172	H1-1b
163	M362	PL3/8X4	0.106	0.291	18	0.036	1.006	y	29	72147.55	94500	0.738	15.75	1.161	H1-1b
164	M363	PL3/8X4	0.119	1.045	18	0.047	1.045	y	5	70597.548	94500	0.738	15.75	1.285	H1-1b*
165	M364	PL3/8X4	0.112	0.667	18	0.071	0	y	9	83933.069	94500	0.738	15.75	1.488	H1-1b*
166	M365	PL3/8X4	0.128	0.742	18	0.114	0	y	9	81579.527	94500	0.738	15.75	2.02	H1-1b*
167	M366	PL3/8X1	0.001	0.943	9	0	0.943	y	23	9324.721	11812.5	0.092	0.246	1.727	H1-1b
168	M367	PL3/8X1	0.001	0.872	8	0	0.872	y	19	9649.585	11812.5	0.092	0.246	2.376	H1-1b
169	M368	PL3/8X1	0.097	0.286	18	0.03	0.572	y	17	9110.863	11812.5	0.092	0.246	2.296	H1-1b
170	M369	PL3/8X1	0.093	1.028	18	0.017	1.028	y	15	8922.461	11812.5	0.092	0.246	2.059	H1-1b
171	M370	PL3/8X1	0.085	0.655	12	0.022	0.655	y	24	10538.698	11812.5	0.092	0.246	2.29	H1-1b*
172	M371	PL3/8X1	0.085	0.718	6	0.016	0.718	y	23	10299.381	11812.5	0.092	0.246	2.042	H1-1b*
173	M372	PL3/8X1	0.115	1.006	18	0.035	0.582	y	17	9029.527	11812.5	0.092	0.246	1.805	H1-1b
174	M373	PL3/8X1	0.126	1.045	18	0.025	1.045	y	18	8836.412	11812.5	0.092	0.246	2.12	H1-1b
175	M374	PL3/8X1	0.127	0.667	20	0.035	0.667	y	9	10497.297	11812.5	0.092	0.246	2.292	H1-1b
176	M375	PL3/8X1	0.145	0.731	19	0.056	0.731	y	9	10249.195	11812.5	0.092	0.246	2.251	H1-1b
177	M376	PL3/8X1	0.16	0	9	0.013	0	y	11	9657.416	11812.5	0.092	0.246	1.781	H1-1b
178	M378	PL3/8X1	0.123	0	23	0.035	0	y	5	8921.838	11812.5	0.092	0.246	1.651	H1-1b*
179	M379	PL3/8X1	0.117	0	23	0.014	0	y	35	10232.577	11812.5	0.092	0.246	2.204	H1-1b*
180	M380	PL3/8X1	0.14	0	23	0.026	0.898	y	5	9536.081	11812.5	0.092	0.246	2.026	H1-1b*
181	M381	PL3/8X1	0.14	0.613	13	0.015	0	y	24	10688.698	11812.5	0.092	0.246	2.213	H1-1b
182	M382	PL3/8X1	0.123	0.756	18	0.02	0.756	y	5	10146.905	11812.5	0.092	0.246	2.833	H1-1b*
183	M383	PL3/8X1	0.104	0	18	0.013	0.51	y	27	11025.158	11812.5	0.092	0.246	2.188	H1-1b*
184	M384	PL3/8X1	0.107	0.631	18	0.017	0.631	y	25	10626.842	11812.5	0.092	0.246	1.866	H1-1b*
185	M385	PL3/8X1	0.098	0.422	16	0.02	0.422	y	16	11265.531	11812.5	0.092	0.246	2.277	H1-1b
186	M386	PL3/8X1	0.118	0.527	18	0.011	0	y	25	10972.087	11812.5	0.092	0.246	1.498	H1-1b*
187	M387	PL3/8X1	0.104	0.349	17	0.025	0.349	y	16	11436.264	11812.5	0.092	0.246	2.264	H1-1b
188	M388	PL3/8X1	0.116	0.44	18	0.009	0.44	y	1	11220.726	11812.5	0.092	0.246	1.107	H1-1b*
189	M389	PL3/8X1	0.094	0	18	0.019	0.287	y	19	11556.566	11812.5	0.092	0.246	2.208	H1-1b*
190	M390	PL3/8X1	0.037	0.353	19	0.009	0.353	y	1	11426.997	11812.5	0.092	0.246	2.273	H1-1b*
191	M392	PL3/8X1	0.153	0.958	18	0.024	0.958	y	19	9254.828	11812.5	0.092	0.246	2.28	H1-1b
192	M393	PL3/8X1	0.206	0.958	18	0.027	0.958	y	19	9254.828	11812.5	0.092	0.246	2.287	H1-1b
193	M394	PL3/8X1	0.246	0.917	18	0.028	0.917	y	19	9448.941	11812.5	0.092	0.246	2.264	H1-1b
194	M395	PL3/8X1	0.277	0.958	18	0.044	0.958	y	5	9254.828	11812.5	0.092	0.246	2.282	H1-1b
195	M396	PL3/8X1	0.28	0.958	18	0.028	0.958	y	5	9254.828	11812.5	0.092	0.246	2.279	H1-1b
196	M397	PL3/8X1	0.359	0.917	18	0.022	0.917	y	23	9448.941	11812.5	0.092	0.246	2.278	H1-1a
197	M398	PL3/8X1	0.003	0	7	0	0.871	y	11	9657.416	11812.5	0.092	0.246	2.384	H1-1b
198	M399	PL3/8X4	0.183	0.958	18	0.08	0.958	y	11	73956.083	94500	0.738	15.75	1.325	H1-1b
199	M400	PL3/8X4	0.312	0.958	18	0.05	0.958	y	11	73956.083	94500	0.738	15.75	1.179	H1-1a
200	M401	PL3/8X4	0.345	0.917	18	0.036	0.917	y	5	75514.417	94500	0.738	15.75	1.118	H1-1a
201	M402	PL1/2X4	0.109	0.958	18	0.021	0.958	y	31	54919.25	63000	0.656	5.25	1.307	H1-1b
202	M403	PL1/2X4	0.141	0.958	19	0.021	0.958	y	7	54919.25	63000	0.656	5.25	2.271	H1-1b
203	M404	PL1/2X4	0.192	0.917	19	0.019	0.917	y	7	55564.307	63000	0.656	5.25	1.373	H1-1b
204	M405	PL3/8X1	0.439	0	18	0.047	1.295	y	5	7566.368	11812.5	0.092	0.246	2.205	H1-1a

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
205	M406	PL3/8X1	0.329	0	18	0.013	0.871	y	31	9657.416	11812.5	0.092	0.246	2.269	H1-1a
206	M407	PL3/8X1	0.422	1.295	18	0.025	1.295	y	5	7566.368	11812.5	0.092	0.246	2.373	H1-1a
207	M408	PL3/8X1	0.334	0.871	18	0.009	0.871	y	7	9657.416	11812.5	0.092	0.246	2.214	H1-1a
208	M415	PL3/8X1	0.432	1.264	18	0.012	1.264	y	5	7725.066	11812.5	0.092	0.246	2.315	H1-1a
209	M439	PL1/2X4	0	0.943	7	0	0.943	z	20	55152.186	63000	0.656	5.25	1.729	H1-1b*
210	M440	PL3/8X4	0	0.874	22	0	0.874	z	13	77076.695	94500	0.738	15.75	2.263	H1-1b*
211	M441	PL1/2X4	0.086	0	14	0.055	0.26	y	1	54437.008	63000	0.656	5.25	2.805	H1-1b
212	M442	PL1/2X4	0.229	0.784	8	0.039	1.028	y	7	53800.851	63000	0.656	5.25	3	H1-1b
213	M443	PL1/2X4	0.141	0	1	0.019	0.655	y	6	59083.088	63000	0.656	5.25	1.122	H1-1b
214	M444	PL1/2X4	0.109	0	1	0.017	0.718	y	1	58324.528	63000	0.656	5.25	1.18	H1-1b
215	M445	PL3/8X4	0.11	0.291	14	0.031	1.006	y	3	72147.55	94500	0.738	15.75	1.17	H1-1b
216	M446	PL3/8X4	0.136	1.045	14	0.05	1.045	y	3	70597.548	94500	0.738	15.75	1.298	H1-1b*
217	M447	PL3/8X4	0.126	0.667	14	0.075	0	y	2	83933.069	94500	0.738	15.75	1.527	H1-1b*
218	M448	PL3/8X4	0.141	0.742	14	0.115	0	y	11	81579.527	94500	0.738	15.75	1.904	H1-1b*
219	M449	PL3/8X1	0.001	0.943	11	0	0.943	y	20	9324.721	11812.5	0.092	0.246	1.727	H1-1b
220	M450	PL3/8X1	0.001	0.872	12	0	0.872	y	13	9649.585	11812.5	0.092	0.246	2.376	H1-1b
221	M451	PL3/8X1	0.101	0.286	14	0.03	0.26	y	1	9110.863	11812.5	0.092	0.246	2.259	H1-1b
222	M452	PL3/8X1	0.102	1.028	14	0.017	1.028	y	17	8922.461	11812.5	0.092	0.246	2.053	H1-1b
223	M453	PL3/8X1	0.086	0.655	14	0.021	0.655	y	20	10538.698	11812.5	0.092	0.246	2.278	H1-1b
224	M454	PL3/8X1	0.088	0.718	2	0.015	0.718	y	21	10299.381	11812.5	0.092	0.246	2.316	H1-1b*
225	M455	PL3/8X1	0.123	1.006	14	0.033	0.582	y	15	9029.527	11812.5	0.092	0.246	1.815	H1-1b
226	M456	PL3/8X1	0.133	1.045	14	0.025	1.045	y	14	8836.412	11812.5	0.092	0.246	2.127	H1-1b
227	M457	PL3/8X1	0.129	0.667	24	0.036	0.667	y	11	10497.297	11812.5	0.092	0.246	2.284	H1-1b
228	M458	PL3/8X1	0.15	0.731	13	0.057	0.731	y	11	10249.195	11812.5	0.092	0.246	2.244	H1-1b
229	M459	PL3/8X1	0.158	0	8	0.012	0	y	9	9657.416	11812.5	0.092	0.246	1.94	H1-1b
230	M461	PL3/8X1	0.116	0	20	0.036	0	y	3	8921.838	11812.5	0.092	0.246	1.827	H1-1b*
231	M462	PL3/8X1	0.118	0	8	0.013	0	y	21	10232.577	11812.5	0.092	0.246	2.171	H1-1b
232	M463	PL3/8X1	0.131	0	20	0.026	0.898	y	3	9536.081	11812.5	0.092	0.246	2.263	H1-1b*
233	M464	PL3/8X1	0.124	0.613	19	0.014	0	y	20	10688.698	11812.5	0.092	0.246	2.216	H1-1b
234	M465	PL3/8X1	0.122	0.756	14	0.02	0.756	y	3	10146.905	11812.5	0.092	0.246	1.79	H1-1b*
235	M466	PL3/8X1	0.103	0	14	0.012	0.51	y	17	11025.158	11812.5	0.092	0.246	2.207	H1-1b*
236	M467	PL3/8X1	0.108	0.631	14	0.017	0.631	y	7	10626.842	11812.5	0.092	0.246	1.766	H1-1b*
237	M468	PL3/8X1	0.094	0.422	16	0.019	0.422	y	16	11265.531	11812.5	0.092	0.246	2.273	H1-1b
238	M469	PL3/8X1	0.119	0.527	14	0.013	0.527	y	7	10972.087	11812.5	0.092	0.246	1.378	H1-1b*
239	M470	PL3/8X1	0.105	0.349	13	0.024	0.349	y	16	11436.264	11812.5	0.092	0.246	2.262	H1-1b
240	M471	PL3/8X1	0.116	0.44	14	0.012	0.44	y	7	11220.726	11812.5	0.092	0.246	2.633	H1-1b*
241	M472	PL3/8X1	0.095	0	14	0.018	0.287	y	13	11556.566	11812.5	0.092	0.246	2.196	H1-1b*
242	M473	PL3/8X1	0.047	0.353	1	0.012	0	y	1	11426.997	11812.5	0.092	0.246	1.815	H1-1b
243	M475	PL3/8X1	0.165	0.958	14	0.024	0.958	y	13	9254.828	11812.5	0.092	0.246	2.276	H1-1b
244	M476	PL3/8X1	0.221	0.958	14	0.028	0.958	y	13	9254.828	11812.5	0.092	0.246	2.285	H1-1b
245	M477	PL3/8X1	0.262	0.917	14	0.029	0.917	y	13	9448.941	11812.5	0.092	0.246	2.262	H1-1b
246	M478	PL3/8X1	0.294	0.958	14	0.044	0.958	y	3	9254.828	11812.5	0.092	0.246	2.284	H1-1b
247	M479	PL3/8X1	0.377	0.958	14	0.029	0.958	y	21	9254.828	11812.5	0.092	0.246	2.277	H1-1a
248	M480	PL3/8X1	0.381	0.917	14	0.023	0.917	y	21	9448.941	11812.5	0.092	0.246	2.275	H1-1a
249	M481	PL3/8X1	0.003	0	1	0	0.871	y	9	9657.416	11812.5	0.092	0.246	2.384	H1-1b
250	M482	PL3/8X4	0.193	0.958	14	0.083	0.958	y	9	73956.083	94500	0.738	15.75	1.313	H1-1b
251	M483	PL3/8X4	0.33	0.958	14	0.052	0.958	y	9	73956.083	94500	0.738	15.75	1.175	H1-1a
252	M484	PL3/8X4	0.362	0.917	14	0.037	0.917	y	9	75514.417	94500	0.738	15.75	1.117	H1-1a
253	M485	PL1/2X4	0.118	0.958	14	0.024	0.958	y	1	54919.25	63000	0.656	5.25	1.381	H1-1b
254	M486	PL1/2X4	0.159	0.958	13	0.026	0.958	y	1	54919.25	63000	0.656	5.25	2.161	H1-1b
255	M487	PL1/2X4	0.214	0.917	13	0.023	0.917	y	1	55564.307	63000	0.656	5.25	1.315	H1-1b
256	M488	PL3/8X1	0.458	0	14	0.048	1.295	y	3	7566.368	11812.5	0.092	0.246	2.212	H1-1a
257	M489	PL3/8X1	0.342	0	14	0.015	0.871	y	1	9657.416	11812.5	0.092	0.246	2.267	H1-1a
258	M490	PL3/8X1	0.441	1.295	14	0.025	1.295	y	3	7566.368	11812.5	0.092	0.246	2.363	H1-1a
259	M491	PL3/8X1	0.348	0.871	14	0.011	0.871	y	1	9657.416	11812.5	0.092	0.246	2.21	H1-1a

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
260	M498	PL3/8X1	0.45	1.264	14	0.012	1.264	y	9	7725.066	11812.5	0.092	0.246	2.309	H1-1a
261	M504A	PIPE_2.5	0.137	11.842	21	0.142	12.171		1	29547.045	50715	3.596	3.596	1	H1-1b
262	MP4A	PIPE_2.0	0.316	4	1	0.065	0.632		10	14916.096	32130	1.872	1.872	1	H1-1b
263	MP3A	PIPE_2.0	0.416	4	1	0.076	4		11	14916.096	32130	1.872	1.872	1	H1-1b
264	MP2A	PIPE_2.0	0.359	4	1	0.072	4		5	14916.096	32130	1.872	1.872	1	H1-1b
265	MP1A	PIPE_2.0	0.229	4	15	0.074	4		7	14916.096	32130	1.872	1.872	1	H1-1b
266	M696A	PIPE_2.5	0.2	9.539	7	0.182	2.961		7	29547.045	50715	3.596	3.596	1	H1-1b
267	M698A	PIPE_2.5	0.239	2.961	4	0.231	2.961		4	29547.045	50715	3.596	3.596	1	H1-1b
268	M700A	PIPE_2.5	0.208	2.961	1	0.182	2.961		1	29547.045	50715	3.596	3.596	1	H1-1b
269	M505A	PIPE_2.0	0.176	8.553	28	0.073	11.513		7	14559.939	32130	1.872	1.872	1	H1-1b
270	M510A	PIPE_2.0	0.098	11.842	1	0.098	8.224		1	14559.939	32130	1.872	1.872	1	H1-1b
271	M515	PIPE_2.0	0.127	8.224	9	0.079	11.513		1	14559.939	32130	1.872	1.872	1	H1-1b
272	M520	PIPE_2.0	0.174	3.947	10	0.093	8.224		7	14559.939	32130	1.872	1.872	1	H1-1b
273	MP4D	PIPE_2.0	0.178	4	7	0.066	4		7	14916.096	32130	1.872	1.872	1	H1-1b
274	MP3D	PIPE_2.0	0.194	4	7	0.075	4		7	14916.096	32130	1.872	1.872	1	H1-1b
275	MP2D	PIPE_2.0	0.21	4	1	0.084	4		1	14916.096	32130	1.872	1.872	1	H1-1b
276	MP1D	PIPE_2.0	0.236	4	1	0.079	4		1	14916.096	32130	1.872	1.872	1	H1-1b
277	MP4C	PIPE_2.0	0.297	4	7	0.066	4		5	14916.096	32130	1.872	1.872	1	H1-1b
278	MP3C	PIPE_2.0	0.394	4	7	0.073	4		3	14916.096	32130	1.872	1.872	1	H1-1b
279	MP2C	PIPE_2.0	0.391	4	8	0.081	1.263		10	14916.096	32130	1.872	1.872	1	H1-1b
280	MP1C	PIPE_2.0	0.222	4	10	0.083	4		1	14916.096	32130	1.872	1.872	1	H1-1b
281	MP4B	PIPE_2.0	0.253	4	2	0.074	4		10	14916.096	32130	1.872	1.872	1	H1-1b
282	MP3B	PIPE_2.0	0.511	4	4	0.097	4		11	14916.096	32130	1.872	1.872	1	H1-1b
283	MP2B	PIPE_2.0	0.426	4	4	0.097	4		7	14916.096	32130	1.872	1.872	1	H1-1b
284	MP1B	PIPE_2.0	0.287	4	7	0.079	1.895		7	14916.096	32130	1.872	1.872	1	H1-1b
285	M557	L2X2X2	0.142	1.098	7	0.016	0	y	7	11845.375	15466.5	0.391	0.786	1.006	H2-1
286	M558	L2X2X2	0.114	0.915	11	0.013	0	y	10	11845.375	15466.5	0.391	0.788	1.014	H2-1
287	M559	L2X2X2	0.139	1.098	1	0.019	0	y	1	11845.375	15466.5	0.391	0.786	1.006	H2-1
288	M560	L2X2X2	0.106	0.686	7	0.012	0	z	31	11845.375	15466.5	0.391	0.787	1.008	H2-1
289	OVP	PIPE_2.0	0.155	3.908	1	0.07	3.908		1	25203.807	32130	1.872	1.872	1	H1-1b
290	M564	PIPE_1.5	0.188	3.392	19	0.024	6.784		22	16356.78	23593.5	1.105	1.105	1	H1-1b
291	M565	PIPE_1.5	0.204	3.392	19	0.022	6.784		22	16356.78	23593.5	1.105	1.105	1	H1-1b
292	M566	PIPE_1.5	0.28	3.392	13	0.024	6.784		16	16356.78	23593.5	1.105	1.105	1	H1-1b
293	M567	PIPE_1.5	0.289	3.392	13	0.024	6.784		13	16356.78	23593.5	1.105	1.105	1	H1-1b
294	M568	PIPE_1.5	0.19	3.392	16	0.022	6.784		19	16356.78	23593.5	1.105	1.105	1	H1-1b
295	M569	PIPE_1.5	0.203	3.392	16	0.019	6.784		19	16356.78	23593.5	1.105	1.105	1	H1-1b
296	M570	PIPE_1.5	0.261	3.392	22	0.024	6.784		19	16356.78	23593.5	1.105	1.105	1	H1-1b
297	M571	PIPE_1.5	0.301	3.392	22	0.023	6.784		23	16356.78	23593.5	1.105	1.105	1	H1-1b

VzW SMART Tool© Vendor

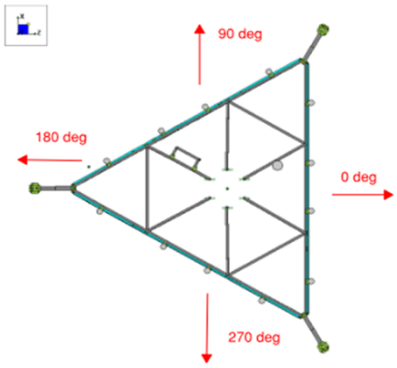
Client:	VERIZON WIRELESS	Date:	3/23/2023
Site Name:	CROMWELL N2		
MDG #:	5000234399		
Fuze ID #:	17002768	Page:	1

Version 1.01

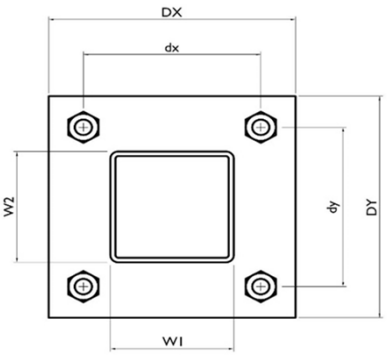
I. Mount-to-Tower Connection Check: Existing Mount @ 120'

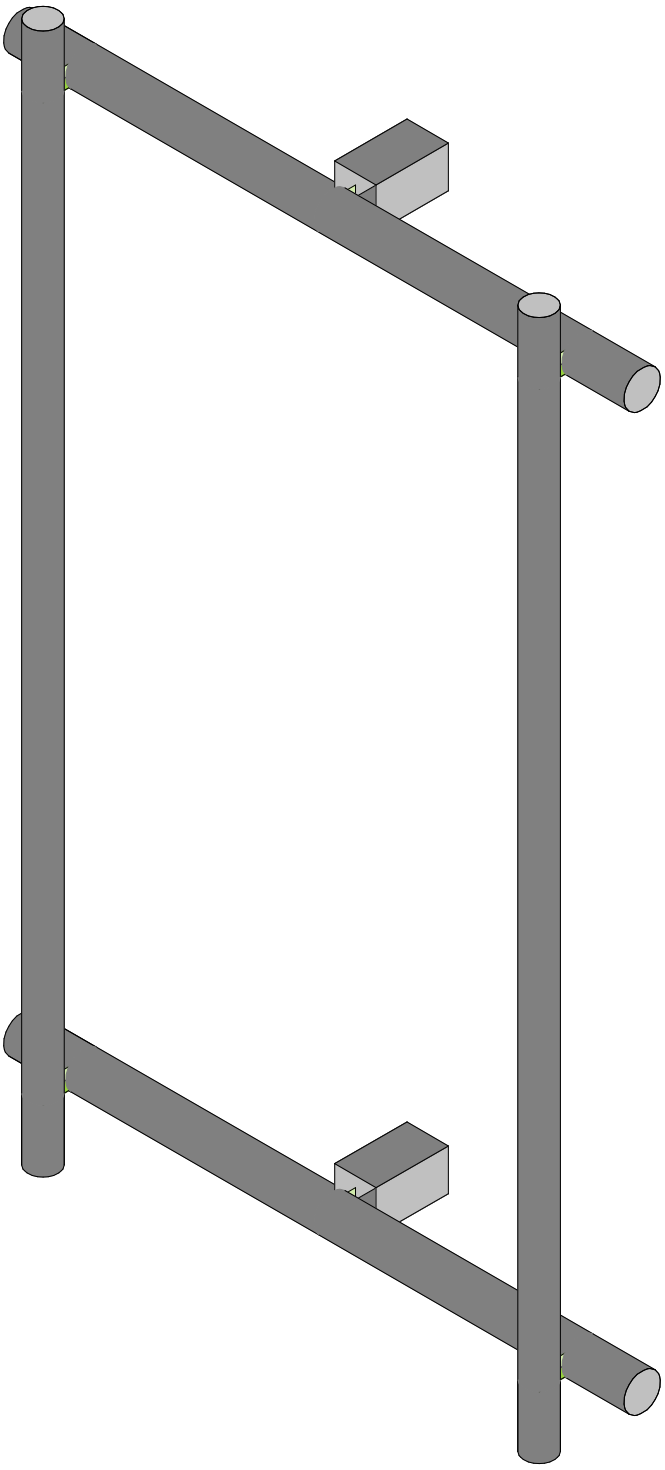
Custom Orientation Required	Yes

Nodes (labeled per Risa)	Orientation (per graphic of typical platform)
R1	315
R2	45
R3	135
R4	225
R1A	315
R2A	45
R3A	135
R4A	225



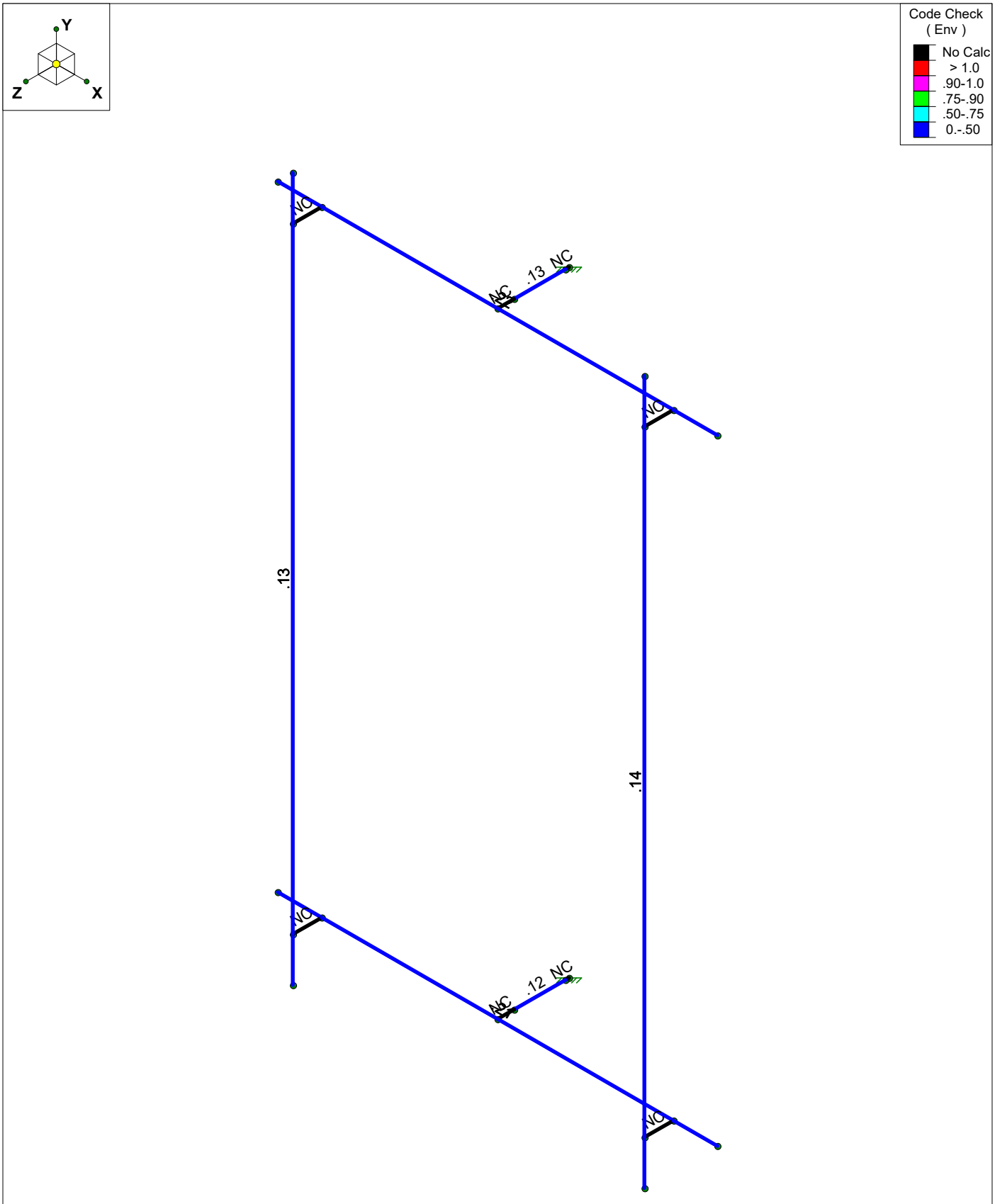
Tower Connection Bolt Checks	Yes
Bolt Orientation	Parallel
Bolt Quantity per Reaction:	4
d_x (in) *(Delta X of typ. bolt config. sketch)* :	6
d_y (in) *(Delta Y of typ. bolt config. sketch)* :	4
Bolt Type:	A325N
Bolt Diameter (in):	0.625
Required Tensile Strength / bolt (kips):	6.4
Required Shear Strength / bolt (kips):	1.1
Tensile Capacity / bolt (kips):	20.7
Shear Capacity / bolt (kips):	12.4
Bolt Overall Utilization:	**30.9%**
Tower Connection Baseplate Checks	No





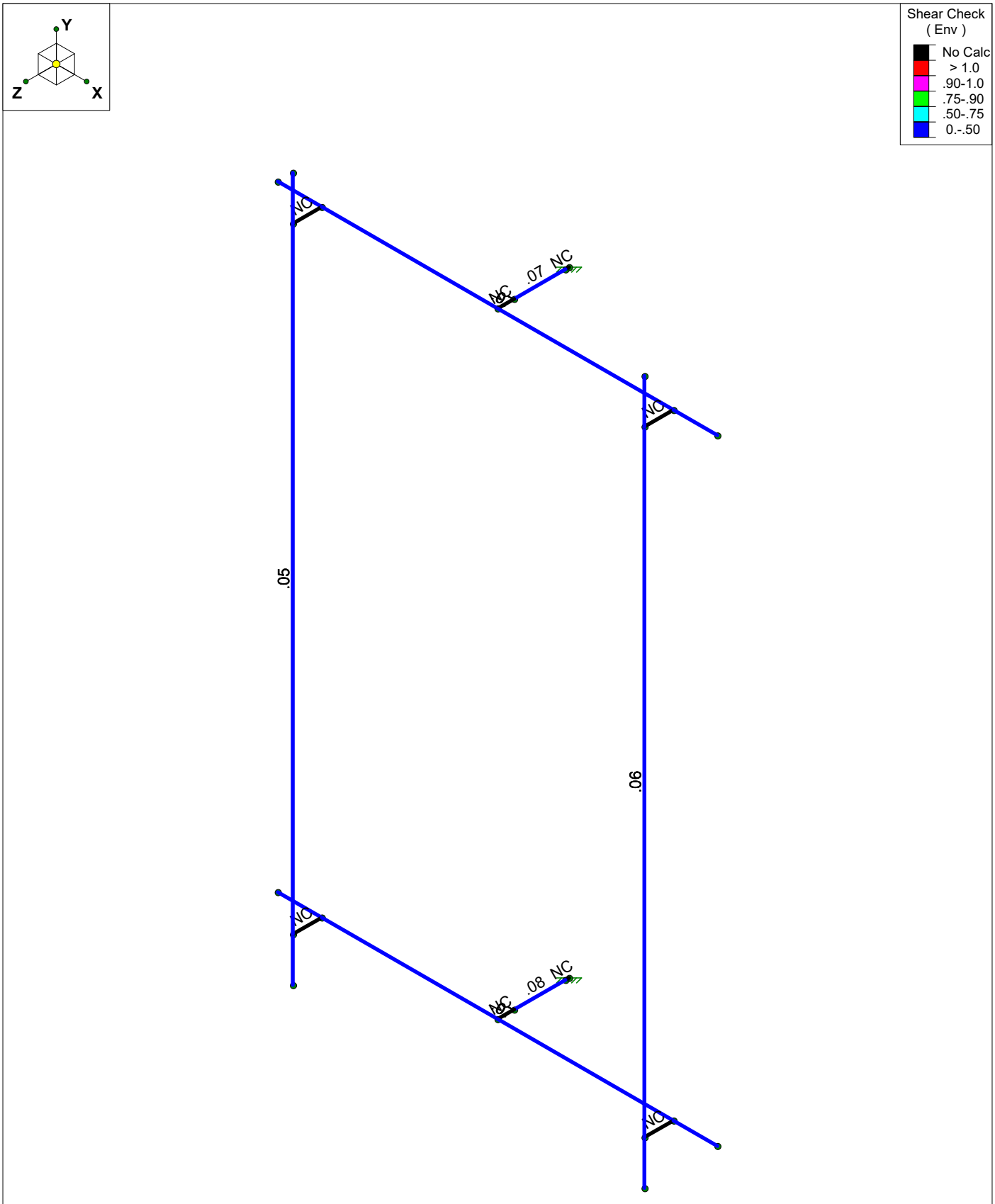
Envelope Only Solution

		SK - 1
		Apr 18, 2023 at 3:52 PM
		5000234399-VZW_MT_LO_H_11...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

		SK - 2
		Apr 18, 2023 at 3:52 PM
		5000234399-VZW_MT_LO_H_11...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

		SK - 3
		Apr 18, 2023 at 3:52 PM
		5000234399-VZW_MT_LO_H_11...

Basic Load Cases

	BLC Description	Category	X Grav...	Y Grav...	Z Grav...	Joint	Point	Distrib...	Area(Member)	Surface(Plate/Wall)
1	Antenna D	None					18			
2	Antenna Di	None					18			
3	Antenna Wo (0...	None					18			
4	Antenna Wo (3...	None					18			
5	Antenna Wo (6...	None					18			
6	Antenna Wo (9...	None					18			
7	Antenna Wo (1...	None					18			
8	Antenna Wo (1...	None					18			
9	Antenna Wo (1...	None					18			
10	Antenna Wo (2...	None					18			
11	Antenna Wo (2...	None					18			
12	Antenna Wo (2...	None					18			
13	Antenna Wo (3...	None					18			
14	Antenna Wo (3...	None					18			
15	Antenna Wi (0 ...	None					18			
16	Antenna Wi (30...	None					18			
17	Antenna Wi (60...	None					18			
18	Antenna Wi (90...	None					18			
19	Antenna Wi (12...	None					18			
20	Antenna Wi (15...	None					18			
21	Antenna Wi (18...	None					18			
22	Antenna Wi (21...	None					18			
23	Antenna Wi (24...	None					18			
24	Antenna Wi (27...	None					18			
25	Antenna Wi (30...	None					18			
26	Antenna Wi (33...	None					18			
27	Antenna Wm (...	None					18			
28	Antenna Wm (...	None					18			
29	Antenna Wm (...	None					18			
30	Antenna Wm (...	None					18			
31	Antenna Wm (...	None					18			
32	Antenna Wm (...	None					18			
33	Antenna Wm (...	None					18			
34	Antenna Wm (...	None					18			
35	Antenna Wm (...	None					18			
36	Antenna Wm (...	None					18			
37	Antenna Wm (...	None					18			
38	Antenna Wm (...	None					18			
39	Structure D	None		-1						
40	Structure Di	None						6		
41	Structure Wo (...	None						12		
42	Structure Wo (...	None						12		
43	Structure Wo (...	None						12		
44	Structure Wo (...	None						12		
45	Structure Wo (...	None						12		
46	Structure Wo (...	None						12		
47	Structure Wo (...	None						12		
48	Structure Wo (...	None						12		
49	Structure Wo (...	None						12		
50	Structure Wo (...	None						12		
51	Structure Wo (...	None						12		
52	Structure Wo (...	None						12		
53	Structure Wi (...	None						12		
54	Structure Wi (...	None						12		
55	Structure Wi (...	None						12		
56	Structure Wi (...	None						12		
57	Structure Wi (...	None						12		
58	Structure Wi (...	None						12		

Basic Load Cases (Continued)

	BLC Description	Category	X Grav...	Y Grav...	Z Grav...	Joint	Point	Distrib...	Area(Member)	Surface(Plate/Wall)
59	Structure Wi (...	None						12		
60	Structure Wi (...	None						12		
61	Structure Wi (...	None						12		
62	Structure Wi (...	None						12		
63	Structure Wi (...	None						12		
64	Structure Wi (...	None						12		
65	Structure Wm ...	None						12		
66	Structure Wm ...	None						12		
67	Structure Wm ...	None						12		
68	Structure Wm ...	None						12		
69	Structure Wm ...	None						12		
70	Structure Wm ...	None						12		
71	Structure Wm ...	None						12		
72	Structure Wm ...	None						12		
73	Structure Wm ...	None						12		
74	Structure Wm ...	None						12		
75	Structure Wm ...	None						12		
76	Structure Wm ...	None						12		
77	Lm1	None					1			
78	Lm2	None					1			
79	Lv1	None					1			
80	Lv2	None					1			
81	Antenna Ev	None					18			
82	Antenna Eh (0 ...	None					12			
83	Antenna Eh (90...	None					12			
84	Structure Ev	ELY		-.043						
85	Structure Eh (0...	ELZ			-.108					
86	Structure Eh (9...	ELX	.108							

Load Combinations

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
1	1.2D+1.0Wo (0 Deg)	Yes	Y		1	1.2	39	1.2	3	1	41	1												
2	1.2D+1.0Wo (30 Deg)	Yes	Y		1	1.2	39	1.2	4	1	42	1												
3	1.2D+1.0Wo (60 Deg)	Yes	Y		1	1.2	39	1.2	5	1	43	1												
4	1.2D+1.0Wo (90 Deg)	Yes	Y		1	1.2	39	1.2	6	1	44	1												
5	1.2D+1.0Wo (120 Deg)	Yes	Y		1	1.2	39	1.2	7	1	45	1												
6	1.2D+1.0Wo (150 Deg)	Yes	Y		1	1.2	39	1.2	8	1	46	1												
7	1.2D+1.0Wo (180 Deg)	Yes	Y		1	1.2	39	1.2	9	1	47	1												
8	1.2D+1.0Wo (210 Deg)	Yes	Y		1	1.2	39	1.2	10	1	48	1												
9	1.2D+1.0Wo (240 Deg)	Yes	Y		1	1.2	39	1.2	11	1	49	1												
10	1.2D+1.0Wo (270 Deg)	Yes	Y		1	1.2	39	1.2	12	1	50	1												
11	1.2D+1.0Wo (300 Deg)	Yes	Y		1	1.2	39	1.2	13	1	51	1												
12	1.2D+1.0Wo (330 Deg)	Yes	Y		1	1.2	39	1.2	14	1	52	1												
13	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	15	1	53	1								
14	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	16	1	54	1								
15	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	17	1	55	1								
16	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	18	1	56	1								
17	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	19	1	57	1								
18	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	20	1	58	1								
19	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	21	1	59	1								
20	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	22	1	60	1								
21	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	23	1	61	1								
22	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	24	1	62	1								
23	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	25	1	63	1								
24	1.2D + 1.0Di + 1.0Wi (...	Yes	Y		1	1.2	39	1.2	2	1	40	1	26	1	64	1								
25	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	27	1	65	1										
26	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	28	1	66	1										

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
27	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	29	1	67	1										
28	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	30	1	68	1										
29	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	31	1	69	1										
30	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	32	1	70	1										
31	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	33	1	71	1										
32	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	34	1	72	1										
33	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	35	1	73	1										
34	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	36	1	74	1										
35	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	37	1	75	1										
36	1.2D + 1.5Lm1 + 1.0W...	Yes	Y		1	1.2	39	1.2	77	1.5	38	1	76	1										
37	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	27	1	65	1										
38	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	28	1	66	1										
39	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	29	1	67	1										
40	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	30	1	68	1										
41	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	31	1	69	1										
42	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	32	1	70	1										
43	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	33	1	71	1										
44	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	34	1	72	1										
45	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	35	1	73	1										
46	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	36	1	74	1										
47	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	37	1	75	1										
48	1.2D + 1.5Lm2 + 1.0W...	Yes	Y		1	1.2	39	1.2	78	1.5	38	1	76	1										
49	1.2D + 1.5Lv1	Yes	Y		1	1.2	39	1.2	79	1.5														
50	1.2D + 1.5Lv2	Yes	Y		1	1.2	39	1.2	80	1.5														
51	1.4D	Yes	Y		1	1.4	39	1.4																
52	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	1	83		ELZ	1	ELX					
53	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	.866	83	.5	ELZ	.866	ELX	.5				
54	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	.5	83	.866	ELZ	.5	ELX	.866				
55	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82		83	1	ELZ		ELX	1				
56	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	-.5	83	.866	ELZ	-.5	ELX	.866				
57	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	-.866	83	.5	ELZ	-.866	ELX	.5				
58	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	-1	83		ELZ	-1	ELX					
59	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	-.866	83	-.5	ELZ	-.866	ELX	-.5				
60	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	-.5	83	-.866	ELZ	-.5	ELX	-.866				
61	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82		83	-1	ELZ		ELX	-1				
62	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	.5	83	-.866	ELZ	.5	ELX	-.866				
63	1.2D + 1.0Ev + 1.0Eh ...	Yes	Y		1	1.2	39	1.2	81	1	ELY	1	82	.866	83	-.5	ELZ	.866	ELX	-.5				
64	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	1	83		ELZ	1	ELX					
65	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	.866	83	.5	ELZ	.866	ELX	.5				
66	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	.5	83	.866	ELZ	.5	ELX	.866				
67	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82		83	1	ELZ		ELX	1				
68	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.5	83	.866	ELZ	-.5	ELX	.866				
69	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.866	83	.5	ELZ	-.866	ELX	.5				
70	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-1	83		ELZ	-1	ELX					
71	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.866	83	-.5	ELZ	-.866	ELX	-.5				
72	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	-.5	83	-.866	ELZ	-.5	ELX	-.866				
73	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82		83	-1	ELZ		ELX	-1				
74	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	.5	83	-.866	ELZ	.5	ELX	-.866				
75	0.9D - 1.0Ev + 1.0Eh (...	Yes	Y		1	.9	39	.9	81	-1	ELY	-1	82	.866	83	-.5	ELZ	.866	ELX	-.5				

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N2	0	-3.5	.5	0	
2	N3	0	-3.5	1.125	0	
3	N4	0	-3.5	1.3125	0	
4	N5	-2.5	-3.5	1.3125	0	
5	N6	2.5	-3.5	1.3125	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
6	N7	2	-3.5	1.3125	0	
7	N8	2	-3.5	1.641667	0	
8	N10	2	4	1.641667	0	
9	N11	2	-4	1.641667	0	
10	N16	0	-3.5	0.541667	0	
11	N28	-2	-3.5	1.3125	0	
12	N29	-2	-3.5	1.641667	0	
13	N31	-2	4	1.641667	0	
14	N32	-2	-4	1.641667	0	
15	N15	0	3.5	.5	0	
16	N16A	0	3.5	1.125	0	
17	N17	0	3.5	1.3125	0	
18	N18	-2.5	3.5	1.3125	0	
19	N19	2.5	3.5	1.3125	0	
20	N20	2	3.5	1.3125	0	
21	N21	2	3.5	1.641667	0	
22	N22	0	3.5	0.541667	0	
23	N23	-2	3.5	1.3125	0	
24	N24	-2	3.5	1.641667	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mount Pipe	PIPE_2.5	Beam	HSS Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
2	Face Horizontal	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	Standoff	HSS4X4X3	Beam	Tube	A500 Gr....	Typical	2.58	6.21	6.21	10

Hot Rolled Steel Properties

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

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N16	N3			Standoff	Beam	Tube	A500 Gr.B...	Typical
2	M2	N3	N4			RIGID	None	None	RIGID	Typical
3	M3	N5	N6			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
4	M4	N7	N8			RIGID	None	None	RIGID	Typical
5	MP1	N10	N11			Mount Pipe	Beam	HSS Pipe	A53 Gr.B	Typical
6	M8	N16	N2			RIGID	None	None	RIGID	Typical
7	M9	N28	N29			RIGID	None	None	RIGID	Typical
8	MP2	N31	N32			Mount Pipe	Beam	HSS Pipe	A53 Gr.B	Typical
9	M9A	N22	N16A			Standoff	Beam	Tube	A500 Gr.B...	Typical
10	M10	N16A	N17			RIGID	None	None	RIGID	Typical
11	M11	N18	N19			Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
12	M12	N20	N21			RIGID	None	None	RIGID	Typical
13	M13	N22	N15			RIGID	None	None	RIGID	Typical
14	M14	N23	N24			RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	Default			None
2	M2						Yes	** NA **			None
3	M3						Yes				None
4	M4						Yes	** NA **			None
5	MP1						Yes	Default			None
6	M8						Yes	** NA **			None
7	M9						Yes	** NA **			None
8	MP2						Yes	Default			None
9	M9A						Yes	Default			None
10	M10						Yes	** NA **			None
11	M11						Yes				None
12	M12						Yes	** NA **			None
13	M13						Yes	** NA **			None
14	M14						Yes	** NA **			None

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	Y	-90.67	1.25
2	MP1	My	0	1.25
3	MP1	Mz	0	1.25
4	MP1	Y	-90.67	3.75
5	MP1	My	0	3.75
6	MP1	Mz	0	3.75
7	MP1	Y	-90.67	6.25
8	MP1	My	0	6.25
9	MP1	Mz	0	6.25
10	MP2	Y	-90.67	1.25
11	MP2	My	0	1.25
12	MP2	Mz	0	1.25
13	MP2	Y	-90.67	3.75
14	MP2	My	0	3.75
15	MP2	Mz	0	3.75
16	MP2	Y	-90.67	6.25
17	MP2	My	0	6.25
18	MP2	Mz	0	6.25

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	Y	-712.201	1.25
2	MP1	My	0	1.25
3	MP1	Mz	0	1.25
4	MP1	Y	-123.041	3.75
5	MP1	My	0	3.75
6	MP1	Mz	0	3.75
7	MP1	Y	-123.041	6.25
8	MP1	My	0	6.25
9	MP1	Mz	0	6.25
10	MP2	Y	-712.201	1.25
11	MP2	My	0	1.25
12	MP2	Mz	0	1.25
13	MP2	Y	-123.041	3.75
14	MP2	My	0	3.75
15	MP2	Mz	0	3.75
16	MP2	Y	-123.041	6.25
17	MP2	My	0	6.25
18	MP2	Mz	0	6.25

Member Point Loads (BLC 3 : Antenna Wo (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	0	1.25
2	MP1	Z	-236.157	1.25
3	MP1	Mx	0	1.25
4	MP1	X	0	3.75
5	MP1	Z	-161.737	3.75
6	MP1	Mx	0	3.75
7	MP1	X	0	6.25
8	MP1	Z	-161.737	6.25
9	MP1	Mx	0	6.25
10	MP2	X	0	1.25
11	MP2	Z	-236.157	1.25
12	MP2	Mx	0	1.25
13	MP2	X	0	3.75
14	MP2	Z	-161.737	3.75
15	MP2	Mx	0	3.75
16	MP2	X	0	6.25
17	MP2	Z	-161.737	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 4 : Antenna Wo (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	224.504	1.25
2	MP1	Z	-388.852	1.25
3	MP1	Mx	0	1.25
4	MP1	X	37.839	3.75
5	MP1	Z	-65.54	3.75
6	MP1	Mx	0	3.75
7	MP1	X	37.839	6.25
8	MP1	Z	-65.54	6.25
9	MP1	Mx	0	6.25
10	MP2	X	224.504	1.25
11	MP2	Z	-388.852	1.25
12	MP2	Mx	0	1.25
13	MP2	X	37.839	3.75
14	MP2	Z	-65.54	3.75
15	MP2	Mx	0	3.75
16	MP2	X	37.839	6.25
17	MP2	Z	-65.54	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 5 : Antenna Wo (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	539.122	1.25
2	MP1	Z	-311.262	1.25
3	MP1	Mx	0	1.25
4	MP1	X	4.783	3.75
5	MP1	Z	-2.762	3.75
6	MP1	Mx	0	3.75
7	MP1	X	4.783	6.25
8	MP1	Z	-2.762	6.25
9	MP1	Mx	0	6.25
10	MP2	X	539.122	1.25
11	MP2	Z	-311.262	1.25
12	MP2	Mx	0	1.25
13	MP2	X	4.783	3.75
14	MP2	Z	-2.762	3.75
15	MP2	Mx	0	3.75
16	MP2	X	4.783	6.25

Member Point Loads (BLC 5 : Antenna Wo (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
17	MP2	Z	-2.762	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 6 : Antenna Wo (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	583.191	1.25
2	MP1	Z	0	1.25
3	MP1	Mx	0	1.25
4	MP1	X	21.426	3.75
5	MP1	Z	0	3.75
6	MP1	Mx	0	3.75
7	MP1	X	21.426	6.25
8	MP1	Z	0	6.25
9	MP1	Mx	0	6.25
10	MP2	X	583.191	1.25
11	MP2	Z	0	1.25
12	MP2	Mx	0	1.25
13	MP2	X	21.426	3.75
14	MP2	Z	0	3.75
15	MP2	Mx	0	3.75
16	MP2	X	21.426	6.25
17	MP2	Z	0	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 7 : Antenna Wo (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	320.725	1.25
2	MP1	Z	185.17	1.25
3	MP1	Mx	0	1.25
4	MP1	X	93.085	3.75
5	MP1	Z	53.742	3.75
6	MP1	Mx	0	3.75
7	MP1	X	93.085	6.25
8	MP1	Z	53.742	6.25
9	MP1	Mx	0	6.25
10	MP2	X	320.725	1.25
11	MP2	Z	185.17	1.25
12	MP2	Mx	0	1.25
13	MP2	X	93.085	3.75
14	MP2	Z	53.742	3.75
15	MP2	Mx	0	3.75
16	MP2	X	93.085	6.25
17	MP2	Z	53.742	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 8 : Antenna Wo (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	98.412	1.25
2	MP1	Z	170.454	1.25
3	MP1	Mx	0	1.25
4	MP1	X	88.82	3.75
5	MP1	Z	153.841	3.75
6	MP1	Mx	0	3.75
7	MP1	X	88.82	6.25
8	MP1	Z	153.841	6.25
9	MP1	Mx	0	6.25
10	MP2	X	98.412	1.25

Member Point Loads (BLC 8 : Antenna Wo (150 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
11	MP2	Z	170.454	1.25
12	MP2	Mx	0	1.25
13	MP2	X	88.82	3.75
14	MP2	Z	153.841	3.75
15	MP2	Mx	0	3.75
16	MP2	X	88.82	6.25
17	MP2	Z	153.841	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 9 : Antenna Wo (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	0	1.25
2	MP1	Z	236.157	1.25
3	MP1	Mx	0	1.25
4	MP1	X	0	3.75
5	MP1	Z	161.737	3.75
6	MP1	Mx	0	3.75
7	MP1	X	0	6.25
8	MP1	Z	161.737	6.25
9	MP1	Mx	0	6.25
10	MP2	X	0	1.25
11	MP2	Z	236.157	1.25
12	MP2	Mx	0	1.25
13	MP2	X	0	3.75
14	MP2	Z	161.737	3.75
15	MP2	Mx	0	3.75
16	MP2	X	0	6.25
17	MP2	Z	161.737	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 10 : Antenna Wo (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-224.504	1.25
2	MP1	Z	388.852	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-37.839	3.75
5	MP1	Z	65.54	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-37.839	6.25
8	MP1	Z	65.54	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-224.504	1.25
11	MP2	Z	388.852	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-37.839	3.75
14	MP2	Z	65.54	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-37.839	6.25
17	MP2	Z	65.54	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 11 : Antenna Wo (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-539.122	1.25
2	MP1	Z	311.262	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-4.783	3.75

Member Point Loads (BLC 11 : Antenna Wo (240 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
5	MP1	Z	2.762	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-4.783	6.25
8	MP1	Z	2.762	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-539.122	1.25
11	MP2	Z	311.262	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-4.783	3.75
14	MP2	Z	2.762	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-4.783	6.25
17	MP2	Z	2.762	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 12 : Antenna Wo (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-583.191	1.25
2	MP1	Z	0	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-21.426	3.75
5	MP1	Z	0	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-21.426	6.25
8	MP1	Z	0	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-583.191	1.25
11	MP2	Z	0	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-21.426	3.75
14	MP2	Z	0	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-21.426	6.25
17	MP2	Z	0	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 13 : Antenna Wo (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-320.725	1.25
2	MP1	Z	-185.17	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-93.085	3.75
5	MP1	Z	-53.742	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-93.085	6.25
8	MP1	Z	-53.742	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-320.725	1.25
11	MP2	Z	-185.17	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-93.085	3.75
14	MP2	Z	-53.742	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-93.085	6.25
17	MP2	Z	-53.742	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 14 : Antenna Wo (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-98.412	1.25
2	MP1	Z	-170.454	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-88.82	3.75
5	MP1	Z	-153.841	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-88.82	6.25
8	MP1	Z	-153.841	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-98.412	1.25
11	MP2	Z	-170.454	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-88.82	3.75
14	MP2	Z	-153.841	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-88.82	6.25
17	MP2	Z	-153.841	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 15 : Antenna Wi (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	0	1.25
2	MP1	Z	-70.421	1.25
3	MP1	Mx	0	1.25
4	MP1	X	0	3.75
5	MP1	Z	-56.251	3.75
6	MP1	Mx	0	3.75
7	MP1	X	0	6.25
8	MP1	Z	-56.251	6.25
9	MP1	Mx	0	6.25
10	MP2	X	0	1.25
11	MP2	Z	-70.421	1.25
12	MP2	Mx	0	1.25
13	MP2	X	0	3.75
14	MP2	Z	-56.251	3.75
15	MP2	Mx	0	3.75
16	MP2	X	0	6.25
17	MP2	Z	-56.251	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 16 : Antenna Wi (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	49.68	1.25
2	MP1	Z	-86.048	1.25
3	MP1	Mx	0	1.25
4	MP1	X	14.138	3.75
5	MP1	Z	-24.487	3.75
6	MP1	Mx	0	3.75
7	MP1	X	14.138	6.25
8	MP1	Z	-24.487	6.25
9	MP1	Mx	0	6.25
10	MP2	X	49.68	1.25
11	MP2	Z	-86.048	1.25
12	MP2	Mx	0	1.25
13	MP2	X	14.138	3.75
14	MP2	Z	-24.487	3.75
15	MP2	Mx	0	3.75
16	MP2	X	14.138	6.25

Member Point Loads (BLC 16 : Antenna Wi (30 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
17	MP2	Z	-24.487	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 17 : Antenna Wi (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	106.478	1.25
2	MP1	Z	-61.475	1.25
3	MP1	Mx	0	1.25
4	MP1	X	4.737	3.75
5	MP1	Z	-2.735	3.75
6	MP1	Mx	0	3.75
7	MP1	X	4.737	6.25
8	MP1	Z	-2.735	6.25
9	MP1	Mx	0	6.25
10	MP2	X	106.478	1.25
11	MP2	Z	-61.475	1.25
12	MP2	Mx	0	1.25
13	MP2	X	4.737	3.75
14	MP2	Z	-2.735	3.75
15	MP2	Mx	0	3.75
16	MP2	X	4.737	6.25
17	MP2	Z	-2.735	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 18 : Antenna Wi (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	117.602	1.25
2	MP1	Z	0	1.25
3	MP1	Mx	0	1.25
4	MP1	X	10.639	3.75
5	MP1	Z	0	3.75
6	MP1	Mx	0	3.75
7	MP1	X	10.639	6.25
8	MP1	Z	0	6.25
9	MP1	Mx	0	6.25
10	MP2	X	117.602	1.25
11	MP2	Z	0	1.25
12	MP2	Mx	0	1.25
13	MP2	X	10.639	3.75
14	MP2	Z	0	3.75
15	MP2	Mx	0	3.75
16	MP2	X	10.639	6.25
17	MP2	Z	0	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 19 : Antenna Wi (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	76.786	1.25
2	MP1	Z	44.332	1.25
3	MP1	Mx	0	1.25
4	MP1	X	33.442	3.75
5	MP1	Z	19.307	3.75
6	MP1	Mx	0	3.75
7	MP1	X	33.442	6.25
8	MP1	Z	19.307	6.25
9	MP1	Mx	0	6.25
10	MP2	X	76.786	1.25

Member Point Loads (BLC 19 : Antenna Wi (120 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
11	MP2	Z	44.332	1.25
12	MP2	Mx	0	1.25
13	MP2	X	33.442	3.75
14	MP2	Z	19.307	3.75
15	MP2	Mx	0	3.75
16	MP2	X	33.442	6.25
17	MP2	Z	19.307	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 20 : Antenna Wi (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	32.537	1.25
2	MP1	Z	56.356	1.25
3	MP1	Mx	0	1.25
4	MP1	X	30.711	3.75
5	MP1	Z	53.192	3.75
6	MP1	Mx	0	3.75
7	MP1	X	30.711	6.25
8	MP1	Z	53.192	6.25
9	MP1	Mx	0	6.25
10	MP2	X	32.537	1.25
11	MP2	Z	56.356	1.25
12	MP2	Mx	0	1.25
13	MP2	X	30.711	3.75
14	MP2	Z	53.192	3.75
15	MP2	Mx	0	3.75
16	MP2	X	30.711	6.25
17	MP2	Z	53.192	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 21 : Antenna Wi (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	0	1.25
2	MP1	Z	70.421	1.25
3	MP1	Mx	0	1.25
4	MP1	X	0	3.75
5	MP1	Z	56.251	3.75
6	MP1	Mx	0	3.75
7	MP1	X	0	6.25
8	MP1	Z	56.251	6.25
9	MP1	Mx	0	6.25
10	MP2	X	0	1.25
11	MP2	Z	70.421	1.25
12	MP2	Mx	0	1.25
13	MP2	X	0	3.75
14	MP2	Z	56.251	3.75
15	MP2	Mx	0	3.75
16	MP2	X	0	6.25
17	MP2	Z	56.251	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 22 : Antenna Wi (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-49.68	1.25
2	MP1	Z	86.048	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-14.138	3.75

Member Point Loads (BLC 22 : Antenna Wi (210 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
5	MP1	Z	24.487	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-14.138	6.25
8	MP1	Z	24.487	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-49.68	1.25
11	MP2	Z	86.048	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-14.138	3.75
14	MP2	Z	24.487	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-14.138	6.25
17	MP2	Z	24.487	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 23 : Antenna Wi (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-106.478	1.25
2	MP1	Z	61.475	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-4.737	3.75
5	MP1	Z	2.735	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-4.737	6.25
8	MP1	Z	2.735	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-106.478	1.25
11	MP2	Z	61.475	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-4.737	3.75
14	MP2	Z	2.735	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-4.737	6.25
17	MP2	Z	2.735	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 24 : Antenna Wi (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-117.602	1.25
2	MP1	Z	0	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-10.639	3.75
5	MP1	Z	0	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-10.639	6.25
8	MP1	Z	0	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-117.602	1.25
11	MP2	Z	0	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-10.639	3.75
14	MP2	Z	0	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-10.639	6.25
17	MP2	Z	0	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 25 : Antenna Wi (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-76.786	1.25
2	MP1	Z	-44.332	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-33.442	3.75
5	MP1	Z	-19.307	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-33.442	6.25
8	MP1	Z	-19.307	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-76.786	1.25
11	MP2	Z	-44.332	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-33.442	3.75
14	MP2	Z	-19.307	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-33.442	6.25
17	MP2	Z	-19.307	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 26 : Antenna Wi (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-32.537	1.25
2	MP1	Z	-56.356	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-30.711	3.75
5	MP1	Z	-53.192	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-30.711	6.25
8	MP1	Z	-53.192	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-32.537	1.25
11	MP2	Z	-56.356	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-30.711	3.75
14	MP2	Z	-53.192	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-30.711	6.25
17	MP2	Z	-53.192	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 27 : Antenna Wm (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	0	1.25
2	MP1	Z	-15.009	1.25
3	MP1	Mx	0	1.25
4	MP1	X	0	3.75
5	MP1	Z	-10.279	3.75
6	MP1	Mx	0	3.75
7	MP1	X	0	6.25
8	MP1	Z	-10.279	6.25
9	MP1	Mx	0	6.25
10	MP2	X	0	1.25
11	MP2	Z	-15.009	1.25
12	MP2	Mx	0	1.25
13	MP2	X	0	3.75
14	MP2	Z	-10.279	3.75
15	MP2	Mx	0	3.75
16	MP2	X	0	6.25

Member Point Loads (BLC 27 : Antenna Wm (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
17	MP2	Z	-10.279	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 28 : Antenna Wm (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	14.268	1.25
2	MP1	Z	-24.713	1.25
3	MP1	Mx	0	1.25
4	MP1	X	2.405	3.75
5	MP1	Z	-4.165	3.75
6	MP1	Mx	0	3.75
7	MP1	X	2.405	6.25
8	MP1	Z	-4.165	6.25
9	MP1	Mx	0	6.25
10	MP2	X	14.268	1.25
11	MP2	Z	-24.713	1.25
12	MP2	Mx	0	1.25
13	MP2	X	2.405	3.75
14	MP2	Z	-4.165	3.75
15	MP2	Mx	0	3.75
16	MP2	X	2.405	6.25
17	MP2	Z	-4.165	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 29 : Antenna Wm (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	34.264	1.25
2	MP1	Z	-19.782	1.25
3	MP1	Mx	0	1.25
4	MP1	X	.304	3.75
5	MP1	Z	-.176	3.75
6	MP1	Mx	0	3.75
7	MP1	X	.304	6.25
8	MP1	Z	-.176	6.25
9	MP1	Mx	0	6.25
10	MP2	X	34.264	1.25
11	MP2	Z	-19.782	1.25
12	MP2	Mx	0	1.25
13	MP2	X	.304	3.75
14	MP2	Z	-.176	3.75
15	MP2	Mx	0	3.75
16	MP2	X	.304	6.25
17	MP2	Z	-.176	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 30 : Antenna Wm (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	37.065	1.25
2	MP1	Z	0	1.25
3	MP1	Mx	0	1.25
4	MP1	X	1.362	3.75
5	MP1	Z	0	3.75
6	MP1	Mx	0	3.75
7	MP1	X	1.362	6.25
8	MP1	Z	0	6.25
9	MP1	Mx	0	6.25
10	MP2	X	37.065	1.25

Member Point Loads (BLC 30 : Antenna Wm (90 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
11	MP2	Z	0	1.25
12	MP2	Mx	0	1.25
13	MP2	X	1.362	3.75
14	MP2	Z	0	3.75
15	MP2	Mx	0	3.75
16	MP2	X	1.362	6.25
17	MP2	Z	0	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 31 : Antenna Wm (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	20.384	1.25
2	MP1	Z	11.768	1.25
3	MP1	Mx	0	1.25
4	MP1	X	5.916	3.75
5	MP1	Z	3.416	3.75
6	MP1	Mx	0	3.75
7	MP1	X	5.916	6.25
8	MP1	Z	3.416	6.25
9	MP1	Mx	0	6.25
10	MP2	X	20.384	1.25
11	MP2	Z	11.768	1.25
12	MP2	Mx	0	1.25
13	MP2	X	5.916	3.75
14	MP2	Z	3.416	3.75
15	MP2	Mx	0	3.75
16	MP2	X	5.916	6.25
17	MP2	Z	3.416	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 32 : Antenna Wm (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	6.255	1.25
2	MP1	Z	10.833	1.25
3	MP1	Mx	0	1.25
4	MP1	X	5.645	3.75
5	MP1	Z	9.777	3.75
6	MP1	Mx	0	3.75
7	MP1	X	5.645	6.25
8	MP1	Z	9.777	6.25
9	MP1	Mx	0	6.25
10	MP2	X	6.255	1.25
11	MP2	Z	10.833	1.25
12	MP2	Mx	0	1.25
13	MP2	X	5.645	3.75
14	MP2	Z	9.777	3.75
15	MP2	Mx	0	3.75
16	MP2	X	5.645	6.25
17	MP2	Z	9.777	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 33 : Antenna Wm (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	0	1.25
2	MP1	Z	15.009	1.25
3	MP1	Mx	0	1.25
4	MP1	X	0	3.75

Member Point Loads (BLC 33 : Antenna Wm (180 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
5	MP1	Z	10.279	3.75
6	MP1	Mx	0	3.75
7	MP1	X	0	6.25
8	MP1	Z	10.279	6.25
9	MP1	Mx	0	6.25
10	MP2	X	0	1.25
11	MP2	Z	15.009	1.25
12	MP2	Mx	0	1.25
13	MP2	X	0	3.75
14	MP2	Z	10.279	3.75
15	MP2	Mx	0	3.75
16	MP2	X	0	6.25
17	MP2	Z	10.279	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 34 : Antenna Wm (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-14.268	1.25
2	MP1	Z	24.713	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-2.405	3.75
5	MP1	Z	4.165	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-2.405	6.25
8	MP1	Z	4.165	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-14.268	1.25
11	MP2	Z	24.713	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-2.405	3.75
14	MP2	Z	4.165	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-2.405	6.25
17	MP2	Z	4.165	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 35 : Antenna Wm (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-34.264	1.25
2	MP1	Z	19.782	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-.304	3.75
5	MP1	Z	.176	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-.304	6.25
8	MP1	Z	.176	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-34.264	1.25
11	MP2	Z	19.782	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-.304	3.75
14	MP2	Z	.176	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-.304	6.25
17	MP2	Z	.176	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 36 : Antenna Wm (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-37.065	1.25
2	MP1	Z	0	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-1.362	3.75
5	MP1	Z	0	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-1.362	6.25
8	MP1	Z	0	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-37.065	1.25
11	MP2	Z	0	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-1.362	3.75
14	MP2	Z	0	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-1.362	6.25
17	MP2	Z	0	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 37 : Antenna Wm (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-20.384	1.25
2	MP1	Z	-11.768	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-5.916	3.75
5	MP1	Z	-3.416	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-5.916	6.25
8	MP1	Z	-3.416	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-20.384	1.25
11	MP2	Z	-11.768	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-5.916	3.75
14	MP2	Z	-3.416	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-5.916	6.25
17	MP2	Z	-3.416	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 38 : Antenna Wm (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	-6.255	1.25
2	MP1	Z	-10.833	1.25
3	MP1	Mx	0	1.25
4	MP1	X	-5.645	3.75
5	MP1	Z	-9.777	3.75
6	MP1	Mx	0	3.75
7	MP1	X	-5.645	6.25
8	MP1	Z	-9.777	6.25
9	MP1	Mx	0	6.25
10	MP2	X	-6.255	1.25
11	MP2	Z	-10.833	1.25
12	MP2	Mx	0	1.25
13	MP2	X	-5.645	3.75
14	MP2	Z	-9.777	3.75
15	MP2	Mx	0	3.75
16	MP2	X	-5.645	6.25

Member Point Loads (BLC 38 : Antenna Wm (330 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
17	MP2	Z	-9.777	6.25
18	MP2	Mx	0	6.25

Member Point Loads (BLC 77 : Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-500	0

Member Point Loads (BLC 78 : Lm2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M9	Y	-500	0

Member Point Loads (BLC 79 : Lv1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M3	Y	-250	0

Member Point Loads (BLC 80 : Lv2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M3	Y	-250	%50

Member Point Loads (BLC 81 : Antenna Ev)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	Y	-3.927	1.25
2	MP1	My	0	1.25
3	MP1	Mz	0	1.25
4	MP1	Y	-3.927	3.75
5	MP1	My	0	3.75
6	MP1	Mz	0	3.75
7	MP1	Y	-3.927	6.25
8	MP1	My	0	6.25
9	MP1	Mz	0	6.25
10	MP2	Y	-3.927	1.25
11	MP2	My	0	1.25
12	MP2	Mz	0	1.25
13	MP2	Y	-3.927	3.75
14	MP2	My	0	3.75
15	MP2	Mz	0	3.75
16	MP2	Y	-3.927	6.25
17	MP2	My	0	6.25
18	MP2	Mz	0	6.25

Member Point Loads (BLC 82 : Antenna Eh (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	Z	-9.817	1.25
2	MP1	Mx	0	1.25
3	MP1	Z	-9.817	3.75
4	MP1	Mx	0	3.75
5	MP1	Z	-9.817	6.25
6	MP1	Mx	0	6.25
7	MP2	Z	-9.817	1.25
8	MP2	Mx	0	1.25
9	MP2	Z	-9.817	3.75
10	MP2	Mx	0	3.75
11	MP2	Z	-9.817	6.25
12	MP2	Mx	0	6.25

Member Point Loads (BLC 83 : Antenna Eh (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1	X	9.817	1.25
2	MP1	Mx	0	1.25
3	MP1	X	9.817	3.75
4	MP1	Mx	0	3.75
5	MP1	X	9.817	6.25
6	MP1	Mx	0	6.25
7	MP2	X	9.817	1.25
8	MP2	Mx	0	1.25
9	MP2	X	9.817	3.75
10	MP2	Mx	0	3.75
11	MP2	X	9.817	6.25
12	MP2	Mx	0	6.25

Member Distributed Loads (BLC 40 : Structure Di)

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	Y	-15.19	-15.19	0	%100
2	M3	Y	-10.732	-10.732	0	%100
3	MP1	Y	-8.407	-8.407	0	%100
4	MP2	Y	-8.407	-8.407	0	%100
5	M9A	Y	-15.19	-15.19	0	%100
6	M11	Y	-10.732	-10.732	0	%100

Member Distributed Loads (BLC 41 : Structure Wo (0 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	-11.827	-11.827	0	%100
5	MP1	X	0	0	0	%100
6	MP1	Z	-9.457	-9.457	0	%100
7	MP2	X	0	0	0	%100
8	MP2	Z	-9.457	-9.457	0	%100
9	M9A	X	0	0	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	-11.827	-11.827	0	%100

Member Distributed Loads (BLC 42 : Structure Wo (30 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	1.41	1.41	0	%100
2	M1	Z	-2.443	-2.443	0	%100
3	M3	X	4.435	4.435	0	%100
4	M3	Z	-7.682	-7.682	0	%100
5	MP1	X	4.728	4.728	0	%100
6	MP1	Z	-8.19	-8.19	0	%100
7	MP2	X	4.728	4.728	0	%100
8	MP2	Z	-8.19	-8.19	0	%100
9	M9A	X	1.41	1.41	0	%100
10	M9A	Z	-2.443	-2.443	0	%100
11	M11	X	4.435	4.435	0	%100
12	M11	Z	-7.682	-7.682	0	%100

Member Distributed Loads (BLC 43 : Structure Wo (60 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	7.328	7.328	0	%100
2	M1	Z	-4.231	-4.231	0	%100

Member Distributed Loads (BLC 43 : Structure Wo (60 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
3	M3	X	2.561	2.561	0	%100
4	M3	Z	-1.478	-1.478	0	%100
5	MP1	X	8.19	8.19	0	%100
6	MP1	Z	-4.728	-4.728	0	%100
7	MP2	X	8.19	8.19	0	%100
8	MP2	Z	-4.728	-4.728	0	%100
9	M9A	X	7.328	7.328	0	%100
10	M9A	Z	-4.231	-4.231	0	%100
11	M11	X	2.561	2.561	0	%100
12	M11	Z	-1.478	-1.478	0	%100

Member Distributed Loads (BLC 44 : Structure Wo (90 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	11.282	11.282	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	0	0	0	%100
5	MP1	X	9.457	9.457	0	%100
6	MP1	Z	0	0	0	%100
7	MP2	X	9.457	9.457	0	%100
8	MP2	Z	0	0	0	%100
9	M9A	X	11.282	11.282	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	0	0	0	%100

Member Distributed Loads (BLC 45 : Structure Wo (120 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	7.328	7.328	0	%100
2	M1	Z	4.231	4.231	0	%100
3	M3	X	2.561	2.561	0	%100
4	M3	Z	1.478	1.478	0	%100
5	MP1	X	8.19	8.19	0	%100
6	MP1	Z	4.728	4.728	0	%100
7	MP2	X	8.19	8.19	0	%100
8	MP2	Z	4.728	4.728	0	%100
9	M9A	X	7.328	7.328	0	%100
10	M9A	Z	4.231	4.231	0	%100
11	M11	X	2.561	2.561	0	%100
12	M11	Z	1.478	1.478	0	%100

Member Distributed Loads (BLC 46 : Structure Wo (150 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	1.41	1.41	0	%100
2	M1	Z	2.443	2.443	0	%100
3	M3	X	4.435	4.435	0	%100
4	M3	Z	7.682	7.682	0	%100
5	MP1	X	4.728	4.728	0	%100
6	MP1	Z	8.19	8.19	0	%100
7	MP2	X	4.728	4.728	0	%100
8	MP2	Z	8.19	8.19	0	%100
9	M9A	X	1.41	1.41	0	%100
10	M9A	Z	2.443	2.443	0	%100
11	M11	X	4.435	4.435	0	%100
12	M11	Z	7.682	7.682	0	%100

Member Distributed Loads (BLC 47 : Structure Wo (180 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	11.827	11.827	0	%100
5	MP1	X	0	0	0	%100
6	MP1	Z	9.457	9.457	0	%100
7	MP2	X	0	0	0	%100
8	MP2	Z	9.457	9.457	0	%100
9	M9A	X	0	0	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	11.827	11.827	0	%100

Member Distributed Loads (BLC 48 : Structure Wo (210 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-1.41	-1.41	0	%100
2	M1	Z	2.443	2.443	0	%100
3	M3	X	-4.435	-4.435	0	%100
4	M3	Z	7.682	7.682	0	%100
5	MP1	X	-4.728	-4.728	0	%100
6	MP1	Z	8.19	8.19	0	%100
7	MP2	X	-4.728	-4.728	0	%100
8	MP2	Z	8.19	8.19	0	%100
9	M9A	X	-1.41	-1.41	0	%100
10	M9A	Z	2.443	2.443	0	%100
11	M11	X	-4.435	-4.435	0	%100
12	M11	Z	7.682	7.682	0	%100

Member Distributed Loads (BLC 49 : Structure Wo (240 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-7.328	-7.328	0	%100
2	M1	Z	4.231	4.231	0	%100
3	M3	X	-2.561	-2.561	0	%100
4	M3	Z	1.478	1.478	0	%100
5	MP1	X	-8.19	-8.19	0	%100
6	MP1	Z	4.728	4.728	0	%100
7	MP2	X	-8.19	-8.19	0	%100
8	MP2	Z	4.728	4.728	0	%100
9	M9A	X	-7.328	-7.328	0	%100
10	M9A	Z	4.231	4.231	0	%100
11	M11	X	-2.561	-2.561	0	%100
12	M11	Z	1.478	1.478	0	%100

Member Distributed Loads (BLC 50 : Structure Wo (270 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-11.282	-11.282	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	0	0	0	%100
5	MP1	X	-9.457	-9.457	0	%100
6	MP1	Z	0	0	0	%100
7	MP2	X	-9.457	-9.457	0	%100
8	MP2	Z	0	0	0	%100
9	M9A	X	-11.282	-11.282	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	0	0	0	%100

Member Distributed Loads (BLC 51 : Structure Wo (300 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-7.328	-7.328	0	%100
2	M1	Z	-4.231	-4.231	0	%100
3	M3	X	-2.561	-2.561	0	%100
4	M3	Z	-1.478	-1.478	0	%100
5	MP1	X	-8.19	-8.19	0	%100
6	MP1	Z	-4.728	-4.728	0	%100
7	MP2	X	-8.19	-8.19	0	%100
8	MP2	Z	-4.728	-4.728	0	%100
9	M9A	X	-7.328	-7.328	0	%100
10	M9A	Z	-4.231	-4.231	0	%100
11	M11	X	-2.561	-2.561	0	%100
12	M11	Z	-1.478	-1.478	0	%100

Member Distributed Loads (BLC 52 : Structure Wo (330 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-1.41	-1.41	0	%100
2	M1	Z	-2.443	-2.443	0	%100
3	M3	X	-4.435	-4.435	0	%100
4	M3	Z	-7.682	-7.682	0	%100
5	MP1	X	-4.728	-4.728	0	%100
6	MP1	Z	-8.19	-8.19	0	%100
7	MP2	X	-4.728	-4.728	0	%100
8	MP2	Z	-8.19	-8.19	0	%100
9	M9A	X	-1.41	-1.41	0	%100
10	M9A	Z	-2.443	-2.443	0	%100
11	M11	X	-4.435	-4.435	0	%100
12	M11	Z	-7.682	-7.682	0	%100

Member Distributed Loads (BLC 53 : Structure Wi (0 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	-4.161	-4.161	0	%100
5	MP1	X	0	0	0	%100
6	MP1	Z	-4.048	-4.048	0	%100
7	MP2	X	0	0	0	%100
8	MP2	Z	-4.048	-4.048	0	%100
9	M9A	X	0	0	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	-4.161	-4.161	0	%100

Member Distributed Loads (BLC 54 : Structure Wi (30 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.422	.422	0	%100
2	M1	Z	-.732	-.732	0	%100
3	M3	X	1.56	1.56	0	%100
4	M3	Z	-2.703	-2.703	0	%100
5	MP1	X	2.024	2.024	0	%100
6	MP1	Z	-3.506	-3.506	0	%100
7	MP2	X	2.024	2.024	0	%100
8	MP2	Z	-3.506	-3.506	0	%100
9	M9A	X	.422	.422	0	%100
10	M9A	Z	-.732	-.732	0	%100
11	M11	X	1.56	1.56	0	%100
12	M11	Z	-2.703	-2.703	0	%100

Member Distributed Loads (BLC 55 : Structure Wi (60 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	2.195	2.195	0	%100
2	M1	Z	-1.267	-1.267	0	%100
3	M3	X	.901	.901	0	%100
4	M3	Z	-.52	-.52	0	%100
5	MP1	X	3.506	3.506	0	%100
6	MP1	Z	-2.024	-2.024	0	%100
7	MP2	X	3.506	3.506	0	%100
8	MP2	Z	-2.024	-2.024	0	%100
9	M9A	X	2.195	2.195	0	%100
10	M9A	Z	-1.267	-1.267	0	%100
11	M11	X	.901	.901	0	%100
12	M11	Z	-.52	-.52	0	%100

Member Distributed Loads (BLC 56 : Structure Wi (90 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	3.379	3.379	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	0	0	0	%100
5	MP1	X	4.048	4.048	0	%100
6	MP1	Z	0	0	0	%100
7	MP2	X	4.048	4.048	0	%100
8	MP2	Z	0	0	0	%100
9	M9A	X	3.379	3.379	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	0	0	0	%100

Member Distributed Loads (BLC 57 : Structure Wi (120 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	2.195	2.195	0	%100
2	M1	Z	1.267	1.267	0	%100
3	M3	X	.901	.901	0	%100
4	M3	Z	.52	.52	0	%100
5	MP1	X	3.506	3.506	0	%100
6	MP1	Z	2.024	2.024	0	%100
7	MP2	X	3.506	3.506	0	%100
8	MP2	Z	2.024	2.024	0	%100
9	M9A	X	2.195	2.195	0	%100
10	M9A	Z	1.267	1.267	0	%100
11	M11	X	.901	.901	0	%100
12	M11	Z	.52	.52	0	%100

Member Distributed Loads (BLC 58 : Structure Wi (150 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.422	.422	0	%100
2	M1	Z	.732	.732	0	%100
3	M3	X	1.56	1.56	0	%100
4	M3	Z	2.703	2.703	0	%100
5	MP1	X	2.024	2.024	0	%100
6	MP1	Z	3.506	3.506	0	%100
7	MP2	X	2.024	2.024	0	%100
8	MP2	Z	3.506	3.506	0	%100
9	M9A	X	.422	.422	0	%100
10	M9A	Z	.732	.732	0	%100
11	M11	X	1.56	1.56	0	%100
12	M11	Z	2.703	2.703	0	%100

Member Distributed Loads (BLC 59 : Structure Wi (180 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	4.161	4.161	0	%100
5	MP1	X	0	0	0	%100
6	MP1	Z	4.048	4.048	0	%100
7	MP2	X	0	0	0	%100
8	MP2	Z	4.048	4.048	0	%100
9	M9A	X	0	0	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	4.161	4.161	0	%100

Member Distributed Loads (BLC 60 : Structure Wi (210 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.422	-.422	0	%100
2	M1	Z	.732	.732	0	%100
3	M3	X	-1.56	-1.56	0	%100
4	M3	Z	2.703	2.703	0	%100
5	MP1	X	-2.024	-2.024	0	%100
6	MP1	Z	3.506	3.506	0	%100
7	MP2	X	-2.024	-2.024	0	%100
8	MP2	Z	3.506	3.506	0	%100
9	M9A	X	-.422	-.422	0	%100
10	M9A	Z	.732	.732	0	%100
11	M11	X	-1.56	-1.56	0	%100
12	M11	Z	2.703	2.703	0	%100

Member Distributed Loads (BLC 61 : Structure Wi (240 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-2.195	-2.195	0	%100
2	M1	Z	1.267	1.267	0	%100
3	M3	X	-.901	-.901	0	%100
4	M3	Z	.52	.52	0	%100
5	MP1	X	-3.506	-3.506	0	%100
6	MP1	Z	2.024	2.024	0	%100
7	MP2	X	-3.506	-3.506	0	%100
8	MP2	Z	2.024	2.024	0	%100
9	M9A	X	-2.195	-2.195	0	%100
10	M9A	Z	1.267	1.267	0	%100
11	M11	X	-.901	-.901	0	%100
12	M11	Z	.52	.52	0	%100

Member Distributed Loads (BLC 62 : Structure Wi (270 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-3.379	-3.379	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	0	0	0	%100
5	MP1	X	-4.048	-4.048	0	%100
6	MP1	Z	0	0	0	%100
7	MP2	X	-4.048	-4.048	0	%100
8	MP2	Z	0	0	0	%100
9	M9A	X	-3.379	-3.379	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	0	0	0	%100

Member Distributed Loads (BLC 63 : Structure Wi (300 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-2.195	-2.195	0	%100
2	M1	Z	-1.267	-1.267	0	%100
3	M3	X	-.901	-.901	0	%100
4	M3	Z	-.52	-.52	0	%100
5	MP1	X	-3.506	-3.506	0	%100
6	MP1	Z	-2.024	-2.024	0	%100
7	MP2	X	-3.506	-3.506	0	%100
8	MP2	Z	-2.024	-2.024	0	%100
9	M9A	X	-2.195	-2.195	0	%100
10	M9A	Z	-1.267	-1.267	0	%100
11	M11	X	-.901	-.901	0	%100
12	M11	Z	-.52	-.52	0	%100

Member Distributed Loads (BLC 64 : Structure Wi (330 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.422	-.422	0	%100
2	M1	Z	-.732	-.732	0	%100
3	M3	X	-1.56	-1.56	0	%100
4	M3	Z	-2.703	-2.703	0	%100
5	MP1	X	-2.024	-2.024	0	%100
6	MP1	Z	-3.506	-3.506	0	%100
7	MP2	X	-2.024	-2.024	0	%100
8	MP2	Z	-3.506	-3.506	0	%100
9	M9A	X	-.422	-.422	0	%100
10	M9A	Z	-.732	-.732	0	%100
11	M11	X	-1.56	-1.56	0	%100
12	M11	Z	-2.703	-2.703	0	%100

Member Distributed Loads (BLC 65 : Structure Wm (0 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	-.752	-.752	0	%100
5	MP1	X	0	0	0	%100
6	MP1	Z	-.601	-.601	0	%100
7	MP2	X	0	0	0	%100
8	MP2	Z	-.601	-.601	0	%100
9	M9A	X	0	0	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	-.752	-.752	0	%100

Member Distributed Loads (BLC 66 : Structure Wm (30 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.09	.09	0	%100
2	M1	Z	-.155	-.155	0	%100
3	M3	X	.282	.282	0	%100
4	M3	Z	-.488	-.488	0	%100
5	MP1	X	.301	.301	0	%100
6	MP1	Z	-.521	-.521	0	%100
7	MP2	X	.301	.301	0	%100
8	MP2	Z	-.521	-.521	0	%100
9	M9A	X	.09	.09	0	%100
10	M9A	Z	-.155	-.155	0	%100
11	M11	X	.282	.282	0	%100
12	M11	Z	-.488	-.488	0	%100

Member Distributed Loads (BLC 67 : Structure Wm (60 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.466	.466	0	%100
2	M1	Z	-.269	-.269	0	%100
3	M3	X	.163	.163	0	%100
4	M3	Z	-.094	-.094	0	%100
5	MP1	X	.521	.521	0	%100
6	MP1	Z	-.301	-.301	0	%100
7	MP2	X	.521	.521	0	%100
8	MP2	Z	-.301	-.301	0	%100
9	M9A	X	.466	.466	0	%100
10	M9A	Z	-.269	-.269	0	%100
11	M11	X	.163	.163	0	%100
12	M11	Z	-.094	-.094	0	%100

Member Distributed Loads (BLC 68 : Structure Wm (90 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.717	.717	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	0	0	0	%100
5	MP1	X	.601	.601	0	%100
6	MP1	Z	0	0	0	%100
7	MP2	X	.601	.601	0	%100
8	MP2	Z	0	0	0	%100
9	M9A	X	.717	.717	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	0	0	0	%100

Member Distributed Loads (BLC 69 : Structure Wm (120 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.466	.466	0	%100
2	M1	Z	.269	.269	0	%100
3	M3	X	.163	.163	0	%100
4	M3	Z	.094	.094	0	%100
5	MP1	X	.521	.521	0	%100
6	MP1	Z	.301	.301	0	%100
7	MP2	X	.521	.521	0	%100
8	MP2	Z	.301	.301	0	%100
9	M9A	X	.466	.466	0	%100
10	M9A	Z	.269	.269	0	%100
11	M11	X	.163	.163	0	%100
12	M11	Z	.094	.094	0	%100

Member Distributed Loads (BLC 70 : Structure Wm (150 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.09	.09	0	%100
2	M1	Z	.155	.155	0	%100
3	M3	X	.282	.282	0	%100
4	M3	Z	.488	.488	0	%100
5	MP1	X	.301	.301	0	%100
6	MP1	Z	.521	.521	0	%100
7	MP2	X	.301	.301	0	%100
8	MP2	Z	.521	.521	0	%100
9	M9A	X	.09	.09	0	%100
10	M9A	Z	.155	.155	0	%100
11	M11	X	.282	.282	0	%100
12	M11	Z	.488	.488	0	%100

Member Distributed Loads (BLC 71 : Structure Wm (180 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	.752	.752	0	%100
5	MP1	X	0	0	0	%100
6	MP1	Z	.601	.601	0	%100
7	MP2	X	0	0	0	%100
8	MP2	Z	.601	.601	0	%100
9	M9A	X	0	0	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	.752	.752	0	%100

Member Distributed Loads (BLC 72 : Structure Wm (210 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.09	-.09	0	%100
2	M1	Z	.155	.155	0	%100
3	M3	X	-.282	-.282	0	%100
4	M3	Z	.488	.488	0	%100
5	MP1	X	-.301	-.301	0	%100
6	MP1	Z	.521	.521	0	%100
7	MP2	X	-.301	-.301	0	%100
8	MP2	Z	.521	.521	0	%100
9	M9A	X	-.09	-.09	0	%100
10	M9A	Z	.155	.155	0	%100
11	M11	X	-.282	-.282	0	%100
12	M11	Z	.488	.488	0	%100

Member Distributed Loads (BLC 73 : Structure Wm (240 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.466	-.466	0	%100
2	M1	Z	.269	.269	0	%100
3	M3	X	-.163	-.163	0	%100
4	M3	Z	.094	.094	0	%100
5	MP1	X	-.521	-.521	0	%100
6	MP1	Z	.301	.301	0	%100
7	MP2	X	-.521	-.521	0	%100
8	MP2	Z	.301	.301	0	%100
9	M9A	X	-.466	-.466	0	%100
10	M9A	Z	.269	.269	0	%100
11	M11	X	-.163	-.163	0	%100
12	M11	Z	.094	.094	0	%100

Member Distributed Loads (BLC 74 : Structure Wm (270 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.717	-.717	0	%100
2	M1	Z	0	0	0	%100
3	M3	X	0	0	0	%100
4	M3	Z	0	0	0	%100
5	MP1	X	-.601	-.601	0	%100
6	MP1	Z	0	0	0	%100
7	MP2	X	-.601	-.601	0	%100
8	MP2	Z	0	0	0	%100
9	M9A	X	-.717	-.717	0	%100
10	M9A	Z	0	0	0	%100
11	M11	X	0	0	0	%100
12	M11	Z	0	0	0	%100

Member Distributed Loads (BLC 75 : Structure Wm (300 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.466	-.466	0	%100
2	M1	Z	-.269	-.269	0	%100
3	M3	X	-.163	-.163	0	%100
4	M3	Z	-.094	-.094	0	%100
5	MP1	X	-.521	-.521	0	%100
6	MP1	Z	-.301	-.301	0	%100
7	MP2	X	-.521	-.521	0	%100
8	MP2	Z	-.301	-.301	0	%100
9	M9A	X	-.466	-.466	0	%100
10	M9A	Z	-.269	-.269	0	%100
11	M11	X	-.163	-.163	0	%100
12	M11	Z	-.094	-.094	0	%100

Member Distributed Loads (BLC 76 : Structure Wm (330 Deg))

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.09	-.09	0	%100
2	M1	Z	-.155	-.155	0	%100
3	M3	X	-.282	-.282	0	%100
4	M3	Z	-.488	-.488	0	%100
5	MP1	X	-.301	-.301	0	%100
6	MP1	Z	-.521	-.521	0	%100
7	MP2	X	-.301	-.301	0	%100
8	MP2	Z	-.521	-.521	0	%100
9	M9A	X	-.09	-.09	0	%100
10	M9A	Z	-.155	-.155	0	%100
11	M11	X	-.282	-.282	0	%100
12	M11	Z	-.488	-.488	0	%100

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N2	max	376.766	11	1575.109	13	624.625	1	-.093	1	.453	11	.541	34
2		min	-376.775	5	232.92	7	-575.141	7	-1.462	19	-.454	5	-.541	40
3	N15	max	1189.266	10	1591.121	19	880.569	2	-.084	7	1.282	10	.472	30
4		min	-1189.266	4	233.501	1	-930.06	8	-1.479	13	-1.282	4	-.472	48
5	Totals:	max	1416.557	10	3031.867	13	1388.843	1						
6		min	-1416.557	4	610.933	70	-1388.843	7						

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

	Member	Shape	Code Ch...	Lo...	LC	She...	Lo.....		LC	phi*...	phi*...	phi*...	phi*Mn z-...	Cb	Eqn
1	M1	HSS4X...	.120	0	18	.079	0	y	39	1066...	1068...	12.662	12.662	1.319	H1-1b
2	M3	PIPE_3...	.212	2.5	24	.068	2.5		18	5703...	65205	5.749	5.749	1.644	H1-1b
3	MP1	PIPE_2...	.143	7.5	24	.057	.5		3	3003...	50715	3.596	3.596	2.201	H1-1b
4	MP2	PIPE_2...	.133	7.5	14	.048	.5		10	3003...	50715	3.596	3.596	2.148	H1-1b
5	M9A	HSS4X...	.132	0	3	.071	0	y	30	1066...	1068...	12.662	12.662	1.189	H1-1b
6	M11	PIPE_3...	.215	2.5	18	.069	2.5		1	5703...	65205	5.749	5.749	1.643	H1-1b

VzW SMART Tool© Vendor

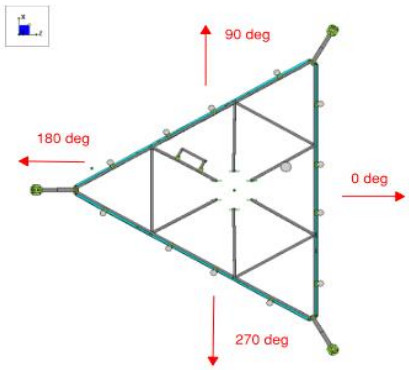
Client:	VERIZON WIRELESS	Date:	4/18/2023
Site Name:	CROMWELL N2		
MDG #:	5000234399		
Fuze ID #:	17002768	Page:	1

Version 1.01

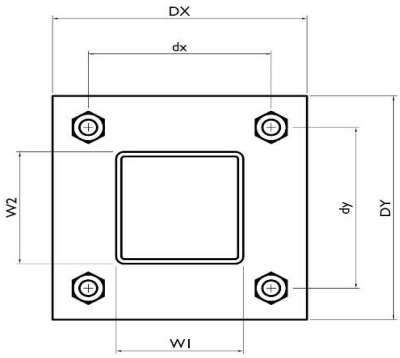
I. Mount-to-Tower Connection Check: Proposed Moutn @ 110'

Custom Orientation Required	Yes

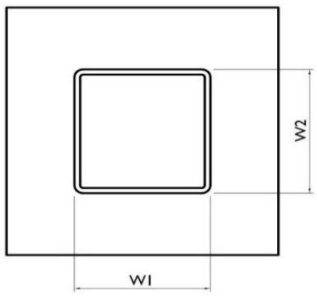
Nodes (labeled per Risa)	Orientation (per graphic of typical platform)
N2	0
N15	0



Tower Connection Bolt Checks	Yes
Bolt Orientation	Parallel
Bolt Quantity per Reaction:	4
d_x (in) *(Delta X of typ. bolt config. sketch)*:	6
d_y (in) *(Delta Y of typ. bolt config. sketch)*:	6
Bolt Type:	A325N
Bolt Diameter (in):	0.625
Required Tensile Strength / bolt (kips):	1.7
Required Shear Strength / bolt (kips):	0.4
Tensile Capacity / bolt (kips):	20.7
Shear Capacity / bolt (kips):	12.4
Bolt Overall Utilization:	**8.2%**



Tower Connection Baseplate Checks	Yes
Connecting Standoff Member Shape:	Rect Tube
Weld Stiffener Configuration:	No Stiffeners
Plate Width, D_x (in):	8
Plate Height, D_y (in):	8
W1(in):	4
W2 (in):	4
Member Thickness (in):	0.25
Stiffener location a_1 (in):	
Stiffener location b_1 (in):	
Stiffener location a_2 (in):	
Stiffener location b_2 (in):	
F_y (ksi, plate):	36
Plate Thickness (in):	0.5
Length of Yield Line, L_y (in):	5.85
Bolt Eccentricity, e (in):	1.65
M_u (kip-in):	2.78
Phi*M_n (kip-in):	11.85
Plate Bending Utilization:	**23.5%**



VzW SMART Tool© Vendor

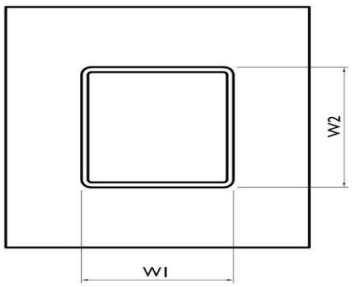
Client:	VERIZON WIRELESS	Date:	4/18/2023
Site Name:	CROMWELL N2		
MDG #:	5000234399		
Fuze ID #:	17002768	Page:	2

Version 1.01

Tower Connection Weld Checks

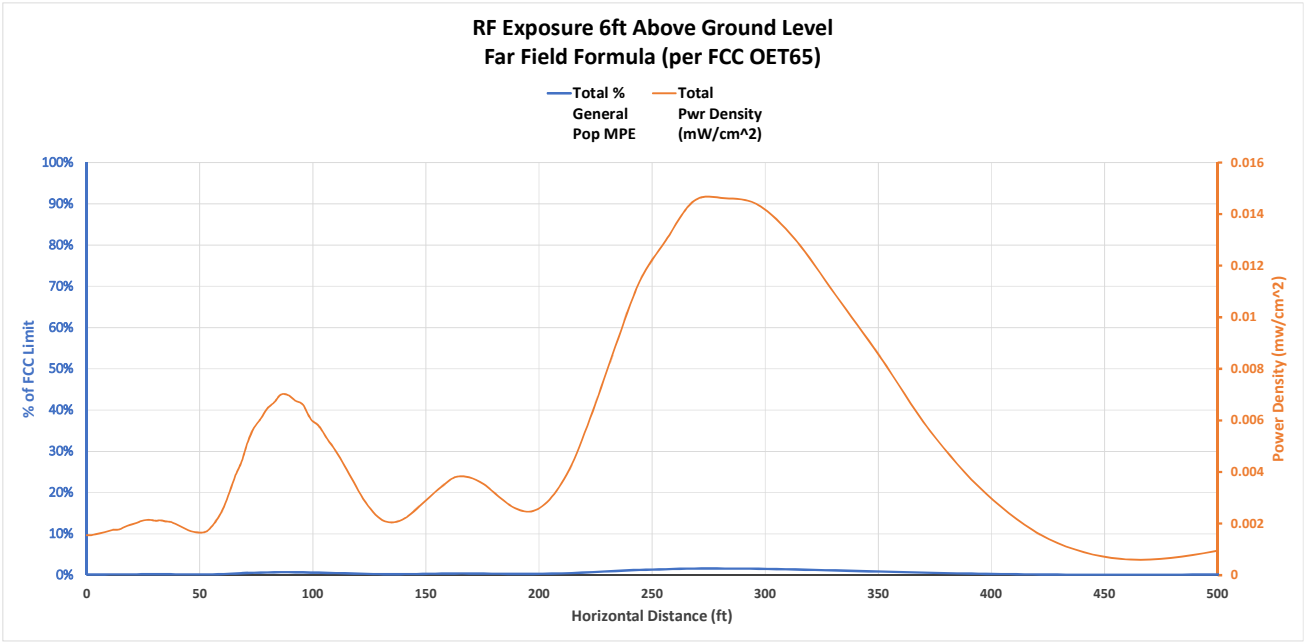
	Yes

Weld Shape:	Rectangle
Weld Stiffener Configuration:	None
Weld Size (1/16 in):	4
W1 (in):	4
W2 (in):	4
Weld Total Length (in):	16.00
Z_x (in^3/in):	21.33
Z_y (in^3/in):	21.33
J_p (in^4/in):	85.33
c_x (in)	2.25
c_y (in)	2.25
Required combined strength (kip/in):	0.65
Weld Capacity (kip/in):	5.57
Weld Utilization:	**11.7%**



ATTACHMENT 4

Location	Cromwell N 2 CT - Part 1 of 3 Alpha & Gamma				
Date	4/19/2023				
Band	C-Band	AWS	PCS	850-LTE	700
Operating Frequency (MHz)	3,700	2,145	1,970	880	746
General Population MPE (mW/cm^2)	1	1	1	0.586666667	0.497333333
ERP Per Transmitter (Watts)	13,335	1,466	1,213	463	621
Number of Transmitters	2	4	4	4	4
Antenna Centerline (feet)	120	120	120	120	120
Total ERP (Watts)	26,670	5,862	4,854	1,853	2,482
Total ERP (dBm)	74	68	67	63	64
Maximum % of General Population Limit	1.6%				

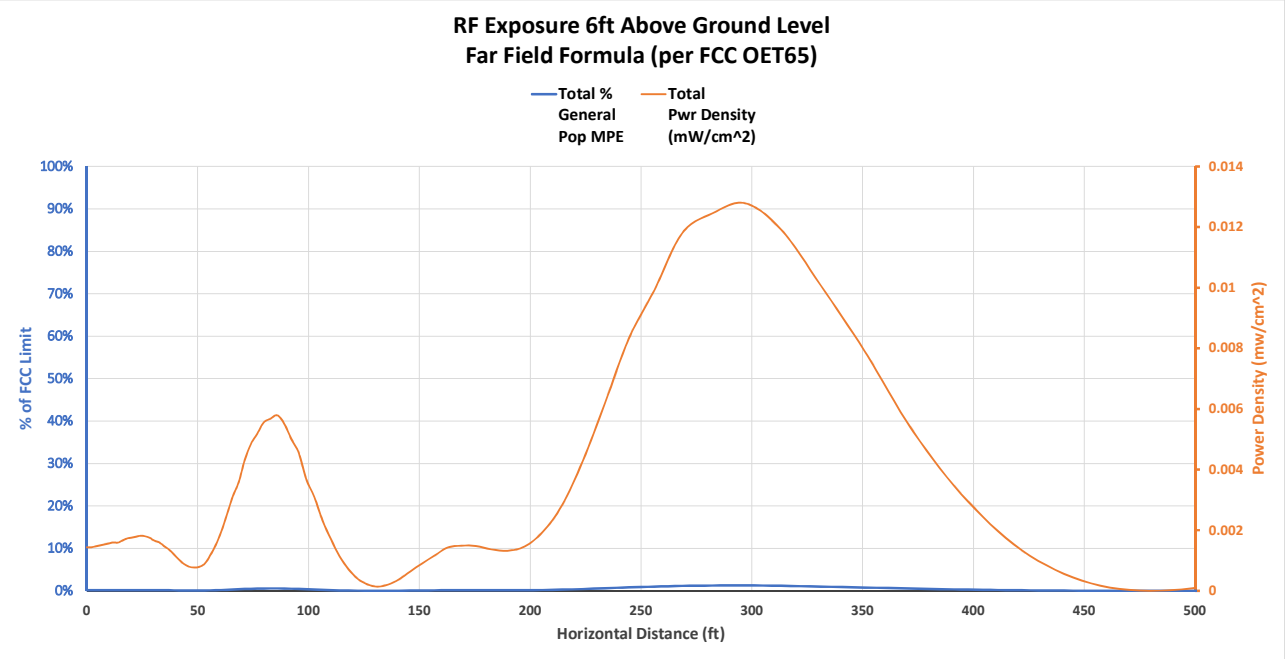


Angle Below Horizon	Power Density (mW/cm^2)					Percent of General Population MPE									Distance	Total Pwr Density (mW/cm^2)	Total % General Pop MPE
	C-Band	AWS	PCS	850-LTE	700 MHz	39GHz	28GHz	C-Band	CBRS	AWS	PCS	Cellular	CDMA	700 MHz			
90	0.001439011	4.23735E-05	2.03749E-05	3.16148E-05	1.57359E-05	0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0	0.00154911	0.16%
89	0.001438572	4.74201E-05	1.56661E-05	3.79978E-05	1.16616E-05	0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	1.989877402	0.001551318	0.16%
88	0.001470736	4.97239E-05	1.43405E-05	4.35875E-05	7.69773E-06	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	3.980967722	0.001586086	0.16%
87	0.001502702	5.35678E-05	1.49246E-05	4.77199E-05	4.42283E-06	0.00%	0.00%	0.15%	0.00%	0.01%	0.00%	0.01%	0.00%	0.00%	5.974486838	0.001623337	0.17%
86	0.001534425	6.45619E-05	1.49615E-05	5.10238E-05	2.11239E-06	0.00%	0.00%	0.15%	0.00%	0.01%	0.00%	0.01%	0.00%	0.00%	7.971656562	0.001667084	0.17%
85	0.001565858	8.25626E-05	1.32368E-05	5.32818E-05	8.58184E-07	0.00%	0.00%	0.16%	0.00%	0.01%	0.00%	0.01%	0.00%	0.00%	9.973707642	0.001715798	0.18%
84	0.001596955	0.000100536	1.04069E-05	5.434E-05	3.17776E-07	0.00%	0.00%	0.16%	0.00%	0.01%	0.00%	0.01%	0.00%	0.00%	11.98188282	0.001762556	0.18%
83	0.001590616	0.000111326	8.15823E-06	5.5385E-05	1.58633E-07	0.00%	0.00%	0.16%	0.00%	0.01%	0.00%	0.01%	0.00%	0.00%	13.99743994	0.001765644	0.18%
82	0.001657943	0.000116306	7.91772E-06	5.64152E-05	1.17057E-07	0.00%	0.00%	0.17%	0.00%	0.01%	0.00%	0.01%	0.00%	0.00%	16.02165516	0.001838698	0.19%
81	0.001727046	0.000121993	1.06007E-05	5.87666E-05	1.11207E-07	0.00%	0.00%	0.17%	0.00%	0.01%	0.00%	0.01%	0.00%	0.00%	18.0558262	0.001918517	0.20%
80	0.00175698	0.000133905	1.67031E-05	6.26028E-05	2.25733E-07	0.00%	0.00%	0.18%	0.00%	0.01%	0.00%	0.01%	0.00%	0.00%	20.1012758	0.001970417	0.20%
79	0.001786311	0.000153104	2.64233E-05	6.51304E-05	6.17711E-07	0.00%	0.00%	0.18%	0.00%	0.02%	0.00%	0.01%	0.00%	0.00%	22.15935524	0.002031587	0.21%
78	0.001814984	0.00017738	3.95279E-05	6.92946E-05	1.43781E-06	0.00%	0.00%	0.18%	0.00%	0.02%	0.00%	0.01%	0.00%	0.00%	24.23144803	0.002102624	0.22%
77	0.001800992	0.000205846	5.51496E-05	7.36781E-05	2.65668E-06	0.00%	0.00%	0.18%	0.00%	0.02%	0.01%	0.01%	0.00%	0.00%	26.31897379	0.002138323	0.22%

76	0.001745309	0.000237631	7.27617E-05	7.82887E-05	4.08038E-06	0.00%	0.00%	0.17%	0.00%	0.02%	0.01%	0.01%	0.00%	0.00%	28.42339232	0.00213807	0.22%
75	0.001651777	0.000271008	9.31069E-05	8.70519E-05	5.45481E-06	0.00%	0.00%	0.17%	0.00%	0.03%	0.01%	0.01%	0.00%	0.00%	30.54620794	0.002108399	0.22%
74	0.001598627	0.000306745	0.000118244	9.67329E-05	6.49494E-06	0.00%	0.00%	0.16%	0.00%	0.03%	0.01%	0.02%	0.00%	0.00%	32.68897398	0.002126844	0.22%
73	0.001476579	0.000345372	0.000150068	0.00010742	6.88786E-06	0.00%	0.00%	0.15%	0.00%	0.03%	0.02%	0.02%	0.00%	0.00%	34.85329769	0.002086326	0.22%
72	0.00136294	0.000384156	0.000188585	0.000121984	6.50586E-06	0.00%	0.00%	0.14%	0.00%	0.04%	0.02%	0.02%	0.00%	0.00%	37.04084537	0.002064171	0.22%
71	0.001200616	0.000414414	0.000231438	0.00013843	5.22675E-06	0.00%	0.00%	0.12%	0.00%	0.04%	0.02%	0.02%	0.00%	0.00%	39.25334792	0.001990125	0.21%
70	0.001032846	0.000425663	0.000274831	0.000156987	3.49031E-06	0.00%	0.00%	0.10%	0.00%	0.04%	0.03%	0.03%	0.00%	0.00%	41.49260671	0.001893818	0.20%
69	0.000887907	0.000413426	0.000313616	0.000173858	1.68731E-06	0.00%	0.00%	0.09%	0.00%	0.04%	0.03%	0.03%	0.00%	0.00%	43.76049999	0.001790494	0.19%
68	0.000798722	0.000378814	0.000343895	0.000188028	4.27783E-07	0.00%	0.00%	0.08%	0.00%	0.04%	0.03%	0.03%	0.00%	0.00%	46.05898975	0.001709888	0.18%
67	0.000769336	0.000331243	0.000364038	0.000198583	4.21642E-07	0.00%	0.00%	0.08%	0.00%	0.03%	0.04%	0.03%	0.00%	0.00%	48.39012905	0.001663622	0.18%
66	0.000793459	0.000280902	0.000372868	0.000200148	2.44541E-06	0.00%	0.00%	0.08%	0.00%	0.03%	0.04%	0.03%	0.00%	0.00%	50.75607013	0.001649822	0.18%
65	0.000896634	0.000236944	0.000369527	0.000196989	7.26848E-06	0.00%	0.00%	0.09%	0.00%	0.02%	0.04%	0.03%	0.00%	0.00%	53.15907303	0.001707363	0.19%
64	0.001162477	0.000209612	0.000349474	0.000185017	1.56391E-05	0.00%	0.00%	0.12%	0.00%	0.02%	0.03%	0.03%	0.00%	0.00%	55.6015151	0.001922218	0.21%
63	0.001506003	0.000211766	0.000308927	0.000169689	2.73309E-05	0.00%	0.00%	0.15%	0.00%	0.02%	0.03%	0.03%	0.00%	0.01%	58.08590124	0.002223716	0.24%
62	0.001949548	0.000258205	0.000247152	0.000148512	4.35273E-05	0.00%	0.00%	0.19%	0.00%	0.03%	0.02%	0.03%	0.00%	0.01%	60.61487521	0.002646944	0.28%
61	0.002521753	0.000354596	0.00016972	0.00012692	6.17349E-05	0.00%	0.00%	0.25%	0.00%	0.04%	0.02%	0.02%	0.00%	0.01%	63.19123187	0.003234723	0.34%
60	0.003112614	0.000482121	9.293E-05	0.000105914	8.35513E-05	0.00%	0.00%	0.31%	0.00%	0.05%	0.01%	0.02%	0.00%	0.02%	65.81793069	0.00387713	0.40%
59	0.003582574	0.000591869	4.12312E-05	8.63022E-05	0.000105444	0.00%	0.00%	0.36%	0.00%	0.06%	0.00%	0.01%	0.00%	0.02%	68.49811057	0.004407421	0.46%
58	0.004314247	0.000626521	3.84535E-05	7.19005E-05	0.000126979	0.00%	0.00%	0.43%	0.00%	0.06%	0.00%	0.01%	0.00%	0.03%	71.23510612	0.005178101	0.54%
57	0.004844476	0.000560115	0.000101456	6.12454E-05	0.000149305	0.00%	0.00%	0.48%	0.00%	0.06%	0.01%	0.01%	0.00%	0.03%	74.03246562	0.005716598	0.59%
56	0.005190538	0.000412328	0.000234554	5.33383E-05	0.00016751	0.00%	0.00%	0.52%	0.00%	0.04%	0.02%	0.01%	0.00%	0.03%	76.89397092	0.006058269	0.63%
55	0.005556394	0.000244244	0.000427389	4.97302E-05	0.000183494	0.00%	0.00%	0.56%	0.00%	0.02%	0.04%	0.01%	0.00%	0.04%	79.82365936	0.006461251	0.67%
54	0.005675175	0.000115083	0.000660708	4.6324E-05	0.000196249	0.00%	0.00%	0.57%	0.00%	0.01%	0.07%	0.01%	0.00%	0.04%	82.82584819	0.006693539	0.69%
53	0.005791102	6.163E-05	0.000903216	4.21297E-05	0.000204922	0.00%	0.00%	0.58%	0.00%	0.01%	0.09%	0.01%	0.00%	0.04%	85.90516171	0.007003	0.72%
52	0.005509704	9.59752E-05	0.001122429	3.65557E-05	0.000213775	0.00%	0.00%	0.55%	0.00%	0.01%	0.11%	0.01%	0.00%	0.04%	89.06656142	0.006978439	0.72%
51	0.005001142	0.000223409	0.001282625	3.09668E-05	0.000222791	0.00%	0.00%	0.50%	0.00%	0.02%	0.13%	0.01%	0.00%	0.04%	92.31537978	0.006760933	0.70%
50	0.004534944	0.000454572	0.001357071	2.39E-05	0.000231953	0.00%	0.00%	0.45%	0.00%	0.05%	0.14%	0.00%	0.00%	0.05%	95.65735795	0.00660244	0.69%
49	0.003661202	0.000799198	0.001320244	1.71969E-05	0.000246861	0.00%	0.00%	0.37%	0.00%	0.08%	0.13%	0.00%	0.00%	0.05%	99.09868811	0.006044702	0.63%
48	0.003091797	0.001242343	0.001175551	1.18042E-05	0.000262445	0.00%	0.00%	0.31%	0.00%	0.12%	0.12%	0.00%	0.00%	0.05%	102.646061	0.00578394	0.61%
47	0.002324443	0.001711393	0.000957965	7.55346E-06	0.000285198	0.00%	0.00%	0.23%	0.00%	0.17%	0.10%	0.00%	0.00%	0.06%	106.3067198	0.005286552	0.56%
46	0.001705816	0.002098761	0.000709517	5.2937E-06	0.000302524	0.00%	0.00%	0.17%	0.00%	0.21%	0.07%	0.00%	0.00%	0.06%	110.0885203	0.004821911	0.51%
45	0.001140339	0.002280682	0.000484244	5.35625E-06	0.000327991	0.00%	0.00%	0.11%	0.00%	0.23%	0.05%	0.00%	0.00%	0.07%	114	0.004238613	0.46%
44	0.000710569	0.002221454	0.00032258	8.57893E-06	0.000339183	0.00%	0.00%	0.07%	0.00%	0.22%	0.03%	0.00%	0.00%	0.07%	118.0504558	0.003602365	0.40%
43	0.000394122	0.001970886	0.000232628	1.57564E-05	0.000350315	0.00%	0.00%	0.04%	0.00%	0.20%	0.02%	0.00%	0.00%	0.07%	122.2500329	0.002963706	0.33%
42	0.000213347	0.001656214	0.00020004	2.8901E-05	0.000353113	0.00%	0.00%	0.02%	0.00%	0.17%	0.02%	0.00%	0.00%	0.07%	126.6098267	0.002451615	0.28%
41	0.00013866	0.001393095	0.000202293	4.8281E-05	0.000331725	0.00%	0.00%	0.01%	0.00%	0.14%	0.02%	0.01%	0.00%	0.07%	131.1419984	0.002114053	0.25%
40	0.000206157	0.001239452	0.000227106	7.51668E-05	0.000304107	0.00%	0.00%	0.02%	0.00%	0.12%	0.02%	0.01%	0.00%	0.06%	135.8599096	0.00205199	0.24%
39	0.000376537	0.001190799	0.000281733	0.00010657	0.000253884	0.00%	0.00%	0.04%	0.00%	0.12%	0.03%	0.02%	0.00%	0.05%	140.7782758	0.002209523	0.25%
38	0.000640838	0.001207199	0.000380872	0.00014407	0.000202104	0.00%	0.00%	0.06%	0.00%	0.12%	0.04%	0.02%	0.00%	0.04%	145.9133461	0.002575082	0.29%
37	0.000905712	0.001241712	0.000529689	0.000181475	0.000146493	0.00%	0.00%	0.09%	0.00%	0.12%	0.05%	0.03%	0.00%	0.03%	151.2831097	0.003005081	0.33%
36	0.001165471	0.001254678	0.000707183	0.000208127	9.66784E-05	0.00%	0.00%	0.12%	0.00%	0.13%	0.07%	0.04%	0.00%	0.02%	156.9075389	0.003432137	0.37%
35	0.001429706	0.001205806	0.00086552	0.000227548	6.82456E-05	0.00%	0.00%	0.14%	0.00%	0.12%	0.09%	0.04%	0.00%	0.01%	162.8088728	0.003796825	0.40%
34	0.001490004	0.001069592	0.000942362	0.000221317	7.11238E-05	0.00%	0.00%	0.15%	0.00%	0.11%	0.09%	0.04%	0.00%	0.01%	169.0119504	0.003794398	0.40%
33	0.001480067	0.000847837	0.000898074	0.000191473	0.000111972	0.00%	0.00%	0.15%	0.00%	0.08%	0.09%	0.03%	0.00%	0.02%	175.5446059	0.003529424	0.38%
32	0.001369252	0.000573475	0.000740481	0.000143983	0.000201981	0.00%	0.00%	0.14%	0.00%	0.06%	0.07%	0.02%	0.00%	0.04%	182.4381363	0.003029172	0.33%
31	0.001323557	0.000321939	0.000516147	8.78152E-05	0.000331566	0.00%	0.00%	0.13%	0.00%	0.03%	0.05%	0.01%	0.00%	0.07%	189.727861	0.002581024	0.30%
30	0.001465561	0.000176618	0.000305516	3.61269E-05	0.000506795	0.00%	0.00%	0.15%	0.00%	0.02%	0.03%	0.01%	0.00%	0.10%	197.4537921	0.002490617	0.30%
29	0.001946285	0.000201947	0.000178335	4.17862E-06	0.000704749	0.00%	0.00%	0.19%	0.00%	0.02%	0.02%	0.00%	0.00%	0.14%	205.6614441	0.003035495	0.38%
28	0.002826719	0.000402081	0.000163423	6.65441E-06	0.000891478	0.00%	0.00%	0.28%	0.00%	0.04%	0.02%	0.00%	0.00%	0.18%	214.402817	0.004290354	0.52%
27	0.00428704	0.000711522	0.000234524	5.05806E-05	0.001073953	0.00%	0.00%	0.43%	0.00%	0.07%	0.02%	0.01%	0.00%	0.22%	223.7375976	0.00635762	0.75%
26	0.006190816	0.001011064	0.000324174	0.000136011	0.00120386	0.00%	0.00%	0.62%	0.00%	0.10%	0.03%	0.02%	0.00%	0.24%	233.7346379	0.008865925	1.02%
25	0.008316881	0.001174874	0.000364746	0.000246483	0.001284661	0.00%	0.00%	0.83%	0.00%	0.12%	0.04%	0.04%	0.00%	0.26%	244.4737889	0.011387646	1.29%
24	0.009924088	0.001126474	0.0003219	0.000361841	0.001246001	0.00%	0.00%	0.99%	0.00%	0.11%	0.03%	0.06%	0.00%	0.25%	256.0481922	0.012980304	1.45%
23	0.011798316	0.000880746	0.000215204	0.000471679	0.001149868	0.00%	0.00%	1.18%	0.00%	0.09%	0.02%	0.08%	0.00%	0.23%	268.5671697	0.014515813	1.60%
22	0.012451304	0.000543558	9.95968E-05	0.000533386	0.000986377	0.00%	0.00%	1.25%	0.00%	0.05%	0.01%	0.09%	0.00%	0.20%	282.1599013	0.014614221	1.60%
21	0.012785635	0.000250468	2.63483E-05	0.000535241	0.000750845	0.00%	0.00%	1.28%	0.00%	0.03%	0.00%	0.09%	0.00%	0.15%	296.9801534	0.014348538	1.55%
20	0.011917011	9.62051E-05	1.10968E-05	0.000487522	0.000506985	0.00%	0.00%	1.19%	0.00%	0.01%	0.00%	0.08%	0.00%	0.10%	313.2124258	0.013018821	1.39%
19	0.010077384	8.04227E-05	2.94021E-05	0.000384746	0.000289852	0.00%	0.00%	1.01%	0.00%	0.01%	0.00%	0.07%	0.00%	0.06%	331.0800401	0.010861807	1.14%
18	0.007907309	0.000122478	4.36575E-05	0.000256954	0.00012214	0.00%	0.00%	0.79%	0.00%	0.01%	0.00%	0.04%	0.00%	0.02%	350.8559232	0.008452539	0.88%
17	0.005247285	0.000138027	3.58068E-05	0.000138599	3.70478E-05	0.00%	0.00%	0.52%	0.00%	0.01%	0.00%	0.02%	0.00%	0.01%	372.8771985	0.005596767	0.57%
16	0.00294266	0.000103698	1.87832E-05	5.13531E-05	4.54536E-05	0.00%	0.00%	0.29%	0.00%	0.01%	0.00%	0.01%	0.00%	0.01%	397.5652466	0.003161948	0.32%
15	0.001158928	5.9032E-05	1.79509E-05	2.11779E-05	0.000142195	0.00%	0.00%	0.12%	0.00%	0.01%	0.00%	0.00%	0.00%	0.03%	425.4537921	0.001399284	0.16%
14	0.000171955	4.64992E-05	4.04991E-05	5.85115E-05	0.000312063	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.01%	0.00%	0.06%	457.2290264	0.000629528	0.10%
13	4.92312E-05	5.98785E-05	6.52035E-05	0.00015998	0.000514124	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.03%	0.00%	0.10%	493.7882497	0.000848418	0.15%
12	0.000682059	5.96833E-05	6.39517E-05	0.000298984	0.000728869	0.00%	0.00%	0.07%	0.00%	0.01%	0.01%	0.05%	0.00%	0.15%	536.3278325	0.001833548	0.28%
11	0.001775259	3.57514E-05	3.7093E-05	0.000447805	0.000908008	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.08%	0.00%	0.18%	586.4791578	0.003203916	0.44%
10	0.003143435	4.30958E-05	2.66339E-05	0.000587802	0.001014454	0.00%	0.00%	0.31%	0.00%	0.00%	0.00%	0.10%	0.00%	0.20%	646.5261274	0.004815421	0.63%
9	0.004433318	0.000162091	8.92811E-05	0.0006585	0.00103647	0.00%	0.00%	0.44%	0.00%	0.02%	0.01%	0.11%	0.00%	0.21%	719.7676727	0.00637966	0.79%
8	0.005190087	0.000413243	0.00024672	0.000671431	0.000986285	0.00%	0.00%	0.52%	0.00%	0.04%	0.02%	0.11%	0.00%	0.20%	811.1521484	0.007507766	0.90%
7	0.005621509	0.000715952	0.000454866	0.000618984	0.000868322	0.00%	0.00%	0.56%	0.00%	0.07%	0.05%	0.11%	0.00%	0.17%	928.4554928	0.008279633	0.96%
6	0.005327619	0.00092377	0.000621675	0.000522829	0.000700424	0.00%	0.00%	0.53%	0.00%	0.09%	0.06%	0.09%	0.00%	0.14%	1084.637548	0.008096317	0.92%

5	0.004351671	0.000930437	0.000664793	0.000380612	0.000521776	0.00%	0.00%	0.44%	0.00%	0.09%	0.07%	0.06%	0.00%	0.10%	1303.025963	0.006849288	0.76%
4	0.003275164	0.000736654	0.000558809	0.000249494	0.000334242	0.00%	0.00%	0.33%	0.00%	0.07%	0.06%	0.04%	0.00%	0.07%	1630.275953	0.005154363	0.57%
3	0.001930476	0.000444319	0.000361989	0.000134119	0.000183862	0.00%	0.00%	0.19%	0.00%	0.04%	0.04%	0.02%	0.00%	0.04%	2175.249582	0.003054765	0.33%
2	0.00087842	0.000185239	0.000163581	5.43913E-05	7.6301E-05	0.00%	0.00%	0.09%	0.00%	0.02%	0.02%	0.01%	0.00%	0.02%	3264.532874	0.001357933	0.15%
1	0.000224789	3.80895E-05	3.69662E-05	1.15771E-05	1.7006E-05	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6531.055626	0.000328428	0.04%

Location	Cromwell N 2 CT - Part 2 of 3 Beta 120'
Date	4/19/2023
Band	C-Band
Operating Frequency (MHz)	3,700
General Population MPE (mW/cm^2)	1
ERP Per Transmitter (Watts)	13,335
Number of Transmitters	2
Antenna Centerline (feet)	120
Total ERP (Watts)	26,670
Total ERP (dBm)	74
Maximum % of General Population Limit	1.3%

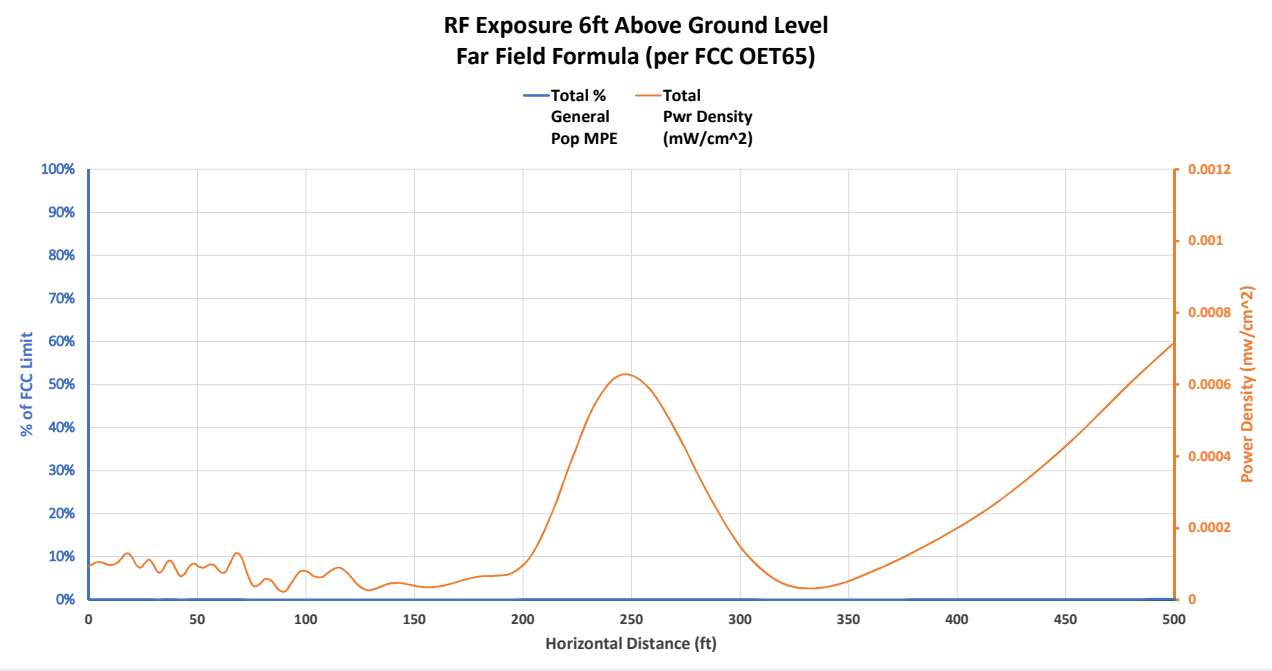


Angle Below Horizon	Power Density (mW/cm^2) C-Band	Percent of General Population MPE 39GHz	28GHz	C-Band	CBRS	AWS	PCS	Cellular	CDMA	700 MHz	Distance	Total Pwr Density (mW/cm^2)	Total % General Pop MPE
90	0.001439011	0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0.001439011	0.14%
89	0.001438572	0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.989877402	0.001438572	0.14%
88	0.001470736	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.980967722	0.001470736	0.15%
87	0.001502702	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.974486838	0.001502702	0.15%
86	0.001534425	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.971656562	0.001534425	0.15%
85	0.001565858	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.973707642	0.001565858	0.16%
84	0.001596955	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.98188282	0.001596955	0.16%
83	0.001590616	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	13.99743994	0.001590616	0.16%
82	0.001657943	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.02165516	0.001657943	0.17%
81	0.001727046	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	18.0558262	0.001727046	0.17%
80	0.00175698	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.1012758	0.00175698	0.18%

79	0.001786311	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	22.15935524	0.001786311	0.18%
78	0.001814984	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	24.23144803	0.001814984	0.18%
77	0.001800992	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	26.31897379	0.001800992	0.18%
76	0.001745309	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	28.42339232	0.001745309	0.17%
75	0.001651777	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	30.54620794	0.001651777	0.17%
74	0.001598627	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	32.68897398	0.001598627	0.16%
73	0.001476579	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	34.85329769	0.001476579	0.15%
72	0.00136294	0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	37.04084537	0.00136294	0.14%
71	0.001200616	0.00%	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	39.25334792	0.001200616	0.12%
70	0.001032846	0.00%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	41.49260671	0.001032846	0.10%
69	0.000887907	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	43.76049999	0.000887907	0.09%
68	0.000798722	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	46.05898975	0.000798722	0.08%
67	0.000769336	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	48.39012905	0.000769336	0.08%
66	0.000793459	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.75607013	0.000793459	0.08%
65	0.000896634	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	53.15907303	0.000896634	0.09%
64	0.001162477	0.00%	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	55.6015151	0.001162477	0.12%
63	0.001506003	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	58.08590124	0.001506003	0.15%
62	0.001949548	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	60.61487521	0.001949548	0.19%
61	0.002521753	0.00%	0.00%	0.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	63.19123187	0.002521753	0.25%
60	0.003112614	0.00%	0.00%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	65.81793069	0.003112614	0.31%
59	0.003582574	0.00%	0.00%	0.36%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	68.49811057	0.003582574	0.36%
58	0.004314247	0.00%	0.00%	0.43%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	71.23510612	0.004314247	0.43%
57	0.004844476	0.00%	0.00%	0.48%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	74.03246562	0.004844476	0.48%
56	0.005190538	0.00%	0.00%	0.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	76.89397092	0.005190538	0.52%
55	0.005556394	0.00%	0.00%	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	79.82365936	0.005556394	0.56%
54	0.005675175	0.00%	0.00%	0.57%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	82.82584819	0.005675175	0.57%
53	0.005791102	0.00%	0.00%	0.58%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	85.90516171	0.005791102	0.58%
52	0.005509704	0.00%	0.00%	0.55%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	89.06656142	0.005509704	0.55%
51	0.005001142	0.00%	0.00%	0.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	92.31537978	0.005001142	0.50%
50	0.004534944	0.00%	0.00%	0.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	95.65735795	0.004534944	0.45%
49	0.003661202	0.00%	0.00%	0.37%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	99.09868811	0.003661202	0.37%
48	0.003091797	0.00%	0.00%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	102.646061	0.003091797	0.31%
47	0.002324443	0.00%	0.00%	0.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	106.3067198	0.002324443	0.23%
46	0.001705816	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	110.0885203	0.001705816	0.17%
45	0.001140339	0.00%	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	114	0.001140339	0.11%
44	0.000710569	0.00%	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	118.0504558	0.000710569	0.07%
43	0.000394122	0.00%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	122.2500329	0.000394122	0.04%
42	0.000213347	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	126.6098267	0.000213347	0.02%
41	0.00013866	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	131.1419984	0.00013866	0.01%
40	0.000206157	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	135.8599096	0.000206157	0.02%
39	0.000376537	0.00%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	140.7782758	0.000376537	0.04%
38	0.000640838	0.00%	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	145.9133461	0.000640838	0.06%
37	0.000905712	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	151.2831097	0.000905712	0.09%
36	0.001165471	0.00%	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	156.9075389	0.001165471	0.12%
35	0.001429706	0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	162.8088728	0.001429706	0.14%
34	0.001490004	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	169.0119504	0.001490004	0.15%
33	0.001480067	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	175.5446059	0.001480067	0.15%
32	0.001369252	0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	182.4381363	0.001369252	0.14%
31	0.001323557	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	189.727861	0.001323557	0.13%
30	0.001465561	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	197.4537921	0.001465561	0.15%
29	0.001946285	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	205.6614441	0.001946285	0.19%
28	0.002826719	0.00%	0.00%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	214.402817	0.002826719	0.28%
27	0.00428704	0.00%	0.00%	0.43%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	223.7375976	0.00428704	0.43%
26	0.006190816	0.00%	0.00%	0.62%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	233.7346379	0.006190816	0.62%
25	0.008316881	0.00%	0.00%	0.83%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	244.4737889	0.008316881	0.83%
24	0.009924088	0.00%	0.00%	0.99%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	256.0481922	0.009924088	0.99%
23	0.011798316	0.00%	0.00%	1.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	268.5671697	0.011798316	1.18%
22	0.012451304	0.00%	0.00%	1.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	282.1599013	0.012451304	1.25%
21	0.012785635	0.00%	0.00%	1.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	296.9801534	0.012785635	1.28%
20	0.011917011	0.00%	0.00%	1.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	313.2124258	0.011917011	1.19%
19	0.010077384	0.00%	0.00%	1.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	331.0800401	0.010077384	1.01%
18	0.007907309	0.00%	0.00%	0.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	350.8559232	0.007907309	0.79%
17	0.005247285	0.00%	0.00%	0.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	372.8771985	0.005247285	0.52%
16	0.00294266	0.00%	0.00%	0.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	397.5652466	0.00294266	0.29%
15	0.001158928	0.00%	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	425.4537921	0.001158928	0.12%
14	0.000171955	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	457.2290264	0.000171955	0.02%
13	4.92312E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	493.7882497	4.92312E-05	0.00%
12	0.000682059	0.00%	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	536.3278325	0.000682059	0.07%

11	0.001775259	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	586.4791578	0.001775259	0.18%
10	0.003143435	0.00%	0.00%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	646.5261274	0.003143435	0.31%
9	0.004433318	0.00%	0.00%	0.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	719.7676727	0.004433318	0.44%
8	0.005190087	0.00%	0.00%	0.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	811.1521484	0.005190087	0.52%
7	0.005621509	0.00%	0.00%	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	928.4554928	0.005621509	0.56%
6	0.005327619	0.00%	0.00%	0.53%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1084.637548	0.005327619	0.53%
5	0.004351671	0.00%	0.00%	0.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1303.025963	0.004351671	0.44%
4	0.003275164	0.00%	0.00%	0.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1630.275953	0.003275164	0.33%
3	0.001930476	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2175.249582	0.001930476	0.19%
2	0.00087842	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3264.532874	0.00087842	0.09%
1	0.000224789	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6531.055626	0.000224789	0.02%

Location	Cromwell N 2 CT - Part 3 of 3 Beta 110'			
Date	4/19/2023			
Band	AWS	PCS	850-LTE	700
Operating Frequency (MHz)	2,145	1,970	880	746
General Population MPE (mW/cm^2)	1	1	0.586666667	0.497333333
ERP Per Transmitter (Watts)	4,035	3,688	451	1,056
Number of Transmitters	2	2	2	2
Antenna Centerline (feet)	110	110	110	110
Total ERP (Watts)	8,069	7,376	901	2,113
Total ERP (dBm)	69	69	60	63
Maximum % of General Population Limit	0.2%			

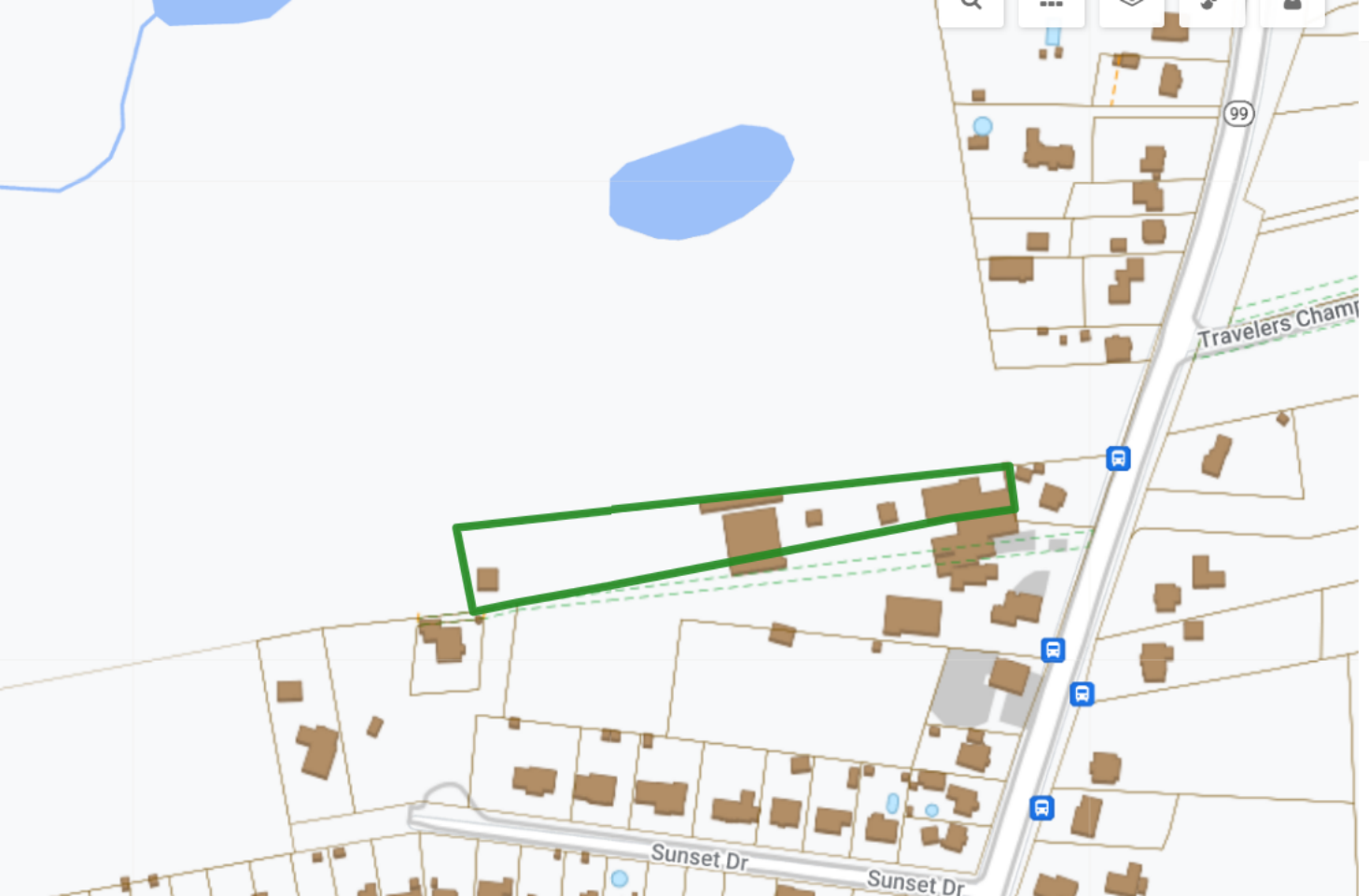


Angle Below Horizon	Power Density (mW/cm^2)				Percent of General Population MPE									Distance	Total Pwr Density (mW/cm^2)	Total % General Pop MPE
	AWS	PCS	850-LTE	700 MHz	39GHz	28GHz	C-Band	CBRS	AWS	PCS	Cellular	CDMA	700 MHz			
90	3.0875E-07	1.0583E-05	9.78606E-06	7.20455E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0	9.27233E-05	0.02%
89	1.67678E-06	1.55767E-05	1.03152E-05	7.21896E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	1.815326753	9.97582E-05	0.02%
88	5.26112E-06	1.5925E-05	1.10174E-05	7.22899E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	3.631760027	0.000104493	0.02%
87	6.56775E-06	1.4074E-05	1.17874E-05	7.28477E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	5.450409045	0.000105277	0.02%
86	4.2706E-06	1.10787E-05	1.25455E-05	7.31962E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	7.272388442	0.000101091	0.02%
85	4.07658E-06	6.46094E-06	1.3131E-05	7.35013E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	9.098821007	9.71698E-05	0.02%
84	8.20042E-06	1.4888E-06	1.33302E-05	7.42738E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	10.93084047	9.72932E-05	0.02%
83	1.35553E-05	6.51792E-07	1.35553E-05	7.41495E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	12.76959433	0.000101912	0.02%
82	1.87548E-05	6.90419E-06	1.34932E-05	7.31328E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	14.61624681	0.000112285	0.02%
81	2.61124E-05	1.43168E-05	1.35784E-05	7.17541E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	16.47198179	0.000125762	0.02%

80	3.19382E-05	1.40059E-05	1.34993E-05	6.92324E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	18.33800599	0.000128676	0.02%
79	2.75741E-05	7.86141E-06	1.36302E-05	6.58415E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	20.21555215	0.000114907	0.02%
78	1.15722E-05	7.30157E-06	1.38489E-05	6.18608E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	22.10588241	9.45835E-05	0.02%
77	7.24529E-07	1.72606E-05	1.41272E-05	5.76839E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	24.01029188	8.97962E-05	0.02%
76	9.14989E-06	2.57286E-05	1.44018E-05	5.38784E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	25.9301123	0.000103159	0.02%
75	2.55561E-05	2.08687E-05	1.45377E-05	5.07568E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	27.86671601	0.000111719	0.02%
74	2.74341E-05	6.64188E-06	1.41349E-05	4.83382E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	29.82152012	9.6549E-05	0.02%
73	1.55525E-05	7.56485E-07	1.37025E-05	4.69677E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	31.79599087	7.69792E-05	0.01%
72	1.21624E-05	9.37605E-06	1.28535E-05	4.65607E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	33.79164841	8.09527E-05	0.01%
71	2.49429E-05	1.92729E-05	1.18018E-05	4.69837E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	35.81007178	0.000103001	0.02%
70	3.36961E-05	1.54376E-05	1.06802E-05	4.84818E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	37.85290436	0.000108296	0.02%
69	2.22285E-05	4.19673E-06	9.54798E-06	5.03397E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	39.92185964	8.63129E-05	0.01%
68	4.49717E-06	1.5064E-07	8.6884E-06	5.24733E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	42.01872749	6.58095E-05	0.01%
67	4.52543E-06	5.56749E-06	7.95537E-06	5.45329E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	44.14538089	7.25812E-05	0.01%
66	2.10896E-05	8.1671E-06	7.53474E-06	5.67632E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	46.30378327	9.35547E-05	0.02%
65	3.11286E-05	3.06308E-06	7.38175E-06	5.90416E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	48.49599645	0.000100615	0.02%
64	2.22807E-05	1.18557E-06	7.44609E-06	6.09435E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	50.72418921	9.18558E-05	0.02%
63	7.43651E-06	1.195E-05	7.75121E-06	6.24264E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	52.99064675	8.95642E-05	0.02%
62	1.6923E-06	2.44612E-05	8.30764E-06	6.28748E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	55.29778089	9.73359E-05	0.02%
61	2.50176E-06	2.25033E-05	9.12529E-06	6.2122E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	57.64814135	9.62523E-05	0.02%
60	1.71265E-06	8.3113E-06	1.01782E-05	5.97954E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	60.044428	7.99975E-05	0.01%
59	1.41169E-06	6.835E-06	1.15542E-05	5.5685E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	62.48950438	7.54858E-05	0.01%
58	7.36968E-06	3.05808E-05	1.29852E-05	4.9825E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	64.9864126	0.000100761	0.02%
57	1.44474E-05	5.76488E-05	1.45141E-05	4.24414E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%	67.53838969	0.000129052	0.02%
56	1.27866E-05	5.68533E-05	1.5731E-05	3.40216E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%	70.14888575	0.000119393	0.02%
55	4.65947E-06	2.77547E-05	1.64565E-05	2.57831E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	72.82158397	7.46538E-05	0.01%
54	2.55578E-06	2.44075E-06	1.63879E-05	1.80519E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	75.56042291	3.94363E-05	0.01%
53	8.43927E-06	6.25611E-06	1.53216E-05	1.20866E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	78.36962121	4.21036E-05	0.01%
52	1.12376E-05	2.53321E-05	1.33252E-05	8.36895E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	81.25370516	5.82638E-05	0.01%
51	5.3903E-06	2.84848E-05	1.0632E-05	7.12216E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	84.21753945	5.16292E-05	0.01%
50	2.7297E-07	1.23628E-05	7.62282E-06	8.26256E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	87.26636164	2.85211E-05	0.00%
49	5.57401E-06	2.17354E-06	4.70076E-06	1.1096E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	90.40582073	2.35443E-05	0.00%
48	1.30844E-05	1.93979E-05	2.33214E-06	1.48168E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	93.64202061	4.96312E-05	0.01%
47	1.03959E-05	4.79581E-05	1.01359E-06	1.82752E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	96.98156896	7.76428E-05	0.01%
46	2.66364E-06	5.45099E-05	7.31941E-07	2.08197E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	100.4316326	7.87252E-05	0.01%
45	9.09029E-06	3.22535E-05	1.44404E-06	2.16061E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	104	6.4394E-05	0.01%
44	3.38961E-05	6.71661E-06	2.82586E-06	2.06609E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	107.6951526	6.40995E-05	0.01%
43	5.44721E-05	4.07544E-06	4.40732E-06	1.82883E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	111.5263458	8.12432E-05	0.01%
42	4.87113E-05	1.99816E-05	5.76275E-06	1.49496E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	115.5037015	8.94051E-05	0.01%
41	2.35773E-05	2.94777E-05	6.49372E-06	1.15742E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	119.6383144	7.11229E-05	0.01%
40	4.41309E-06	2.13178E-05	6.52744E-06	8.82555E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	123.9423736	4.10839E-05	0.01%
39	3.3756E-06	9.75778E-06	5.98896E-06	7.18374E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	128.4293043	2.63061E-05	0.00%
38	9.82407E-06	1.10737E-05	5.21545E-06	6.73427E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	133.1139297	3.28475E-05	0.00%
37	1.13119E-05	2.12097E-05	4.57651E-06	7.25325E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	138.0126614	4.43513E-05	0.01%
36	1.08654E-05	2.32298E-05	4.35557E-06	8.11043E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	143.1437197	4.65612E-05	0.01%
35	1.44142E-05	1.22402E-05	4.94072E-06	8.92872E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	148.5273927	4.05239E-05	0.01%
34	1.71684E-05	2.51612E-06	6.19058E-06	9.36979E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	154.1863407	3.52449E-05	0.00%
33	1.14505E-05	6.94744E-06	8.01356E-06	9.70117E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	160.1459562	3.61127E-05	0.01%
32	3.39646E-06	2.02781E-05	9.6389E-06	1.06176E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	166.434791	4.3931E-05	0.01%
31	5.91952E-06	2.53097E-05	1.12535E-05	1.32521E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	173.0850662	5.57348E-05	0.01%
30	1.78052E-05	1.56512E-05	1.24322E-05	1.89037E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	180.133284	6.47923E-05	0.01%
29	2.06419E-05	3.9605E-06	1.35441E-05	2.86912E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	187.6209665	6.68378E-05	0.01%
28	7.79518E-06	1.09352E-05	1.46834E-05	4.30354E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	195.5955524	7.64491E-05	0.01%
27	7.02589E-07	4.82726E-05	1.62443E-05	6.13339E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	204.1114926	0.000126553	0.02%
26	2.82028E-05	0.000112277	1.87194E-05	8.13375E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.02%	213.2315995	0.000240537	0.03%
25	9.17285E-05	0.000186425	2.20041E-05	0.000100347	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.00%	0.00%	0.02%	223.0287197	0.000400504	0.05%
24	0.000160781	0.000249594	2.58366E-05	0.000114877	0.00%	0.00%	0.00%	0.00%	0.02%	0.02%	0.00%	0.00%	0.02%	233.5878245	0.000551088	0.07%
23	0.000198319	0.000277564	2.93335E-05	0.00012144	0.00%	0.00%	0.00%	0.00%	0.02%	0.03%	0.01%	0.00%	0.02%	245.008646	0.000626657	0.08%
22	0.000189129	0.000255716	3.13155E-05	0.000117424	0.00%	0.00%	0.00%	0.00%	0.02%	0.03%	0.01%	0.00%	0.02%	257.4090328	0.000593585	0.07%
21	0.000142648	0.00018848	3.09219E-05	0.000102392	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.01%	0.00%	0.02%	270.9292627	0.000464442	0.06%
20	7.91974E-05	0.000104884	2.72089E-05	7.81106E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%	0.02%	285.7376516	0.000289401	0.04%
19	2.42042E-05	3.87161E-05	2.06963E-05	4.9305E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	302.0379313	0.000132922	0.02%
18	1.74009E-06	7.95376E-06	1.24616E-05	2.22112E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	320.0790879	4.43666E-05	0.01%
17	2.14032E-05	5.05217E-06	4.82479E-06	4.57591E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	340.1686723	3.58561E-05	0.00%
16	6.62649E-05	1.31912E-05	3.66677E-07	3.60814E-06	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	362.6911022	8.34309E-05	0.01%
15	0.000105342	2.72019E-05	2.20597E-06	2.4581E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	388.133284	0.000159331	0.02%
14	0.000125014	5.88786E-05	1.24726E-05	6.96558E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%	0.01%	417.1212171	0.000266021	0.03%

13	0.000142162	0.000120167	3.20468E-05	0.000136705	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.00%	0.03%	450.4734909	0.00043108	0.06%
12	0.000180039	0.000199235	5.98916E-05	0.00021896	0.00%	0.00%	0.00%	0.00%	0.02%	0.02%	0.01%	0.00%	0.04%	489.2815314	0.000658125	0.09%
11	0.000229512	0.000255744	9.30691E-05	0.000306059	0.00%	0.00%	0.00%	0.00%	0.02%	0.03%	0.02%	0.00%	0.06%	535.0336177	0.000884383	0.13%
10	0.000246007	0.000246574	0.00012675	0.00038632	0.00%	0.00%	0.00%	0.00%	0.02%	0.02%	0.02%	0.00%	0.08%	589.8133092	0.001005652	0.15%
9	0.000190227	0.000163408	0.000155336	0.000446963	0.00%	0.00%	0.00%	0.00%	0.02%	0.02%	0.03%	0.00%	0.09%	656.6301575	0.000955934	0.15%
8	8.36986E-05	5.55544E-05	0.000174068	0.000477219	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.03%	0.00%	0.10%	739.9984511	0.000790539	0.14%
7	7.16798E-06	4.15333E-06	0.000178812	0.000470322	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.03%	0.00%	0.09%	847.0120285	0.000660456	0.13%
6	3.67347E-05	6.1387E-05	0.00016791	0.000427638	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.03%	0.00%	0.09%	989.4939032	0.00069367	0.12%
5	0.000169122	0.000200539	0.000142626	0.000354976	0.00%	0.00%	0.00%	0.00%	0.02%	0.02%	0.02%	0.00%	0.07%	1188.725439	0.000867263	0.13%
4	0.00030816	0.000324173	0.000107591	0.000261683	0.00%	0.00%	0.00%	0.00%	0.03%	0.03%	0.02%	0.00%	0.05%	1487.269291	0.001001607	0.13%
3	0.000340571	0.000335898	6.85817E-05	0.000164516	0.00%	0.00%	0.00%	0.00%	0.03%	0.03%	0.01%	0.00%	0.03%	1984.438216	0.000909567	0.11%
2	0.000232941	0.000221435	3.34385E-05	7.92949E-05	0.00%	0.00%	0.00%	0.00%	0.02%	0.02%	0.01%	0.00%	0.02%	2978.170341	0.000567109	0.07%
1	7.46996E-05	6.93934E-05	8.87807E-06	2.08601E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	5958.15601	0.000173831	0.02%

ATTACHMENT 5



Advanced Search

Download Results | More

Showing 1-1 results. Scroll to see more.

667 MAIN STREE
CROMWELL CONCRETE PRODUCTS INC
2647

TOWN OF CROMWELL

Printed By: Shawna 11/04/2022 3:41:16PM

Parcel ID: **00285900** ***Location:*** 667 MAIN STREET ***Map-Lot*** 48-28C ***Last Revaluation -*** ***October 1, 2022***

Patriot
Properties Inc.

Current Owner	***Percent***
CROMWELL CONCRETE PRODUCTS INC	100

667 MAIN STREET
CROMWELL CT 06416

Previous Owner(s)

Current Value Information

Mkt Adj Cost

Use Code	Land Value	PA 490 Value	Building Value	Outbuildings	Total Value	Total Assessed
201	211,400	0	501,300	102,500	815,200	570,640
TOTAL	**211,400**	**0**	**501,300**	**102,500**	**815,200**	**570,640**

Previous Value Information

Tax Yr	Land Value	Bldg Value	Outbuildings	Total Value	Total Assessment
2021	184,000	344,900	99,800	628,700	440,090
2020	184,000	344,900	99,800	628,700	440,090
2019	184,000	344,900	99,800	628,700	440,090
2018	184,000	344,900	99,800	628,700	440,090
2017	184,000	324,500	99,800	608,300	425,810
2016	213,470	328,340	41,800	583,610	408,520

Property Factors

Census 5702
Flood:
Topo:
Street: Paved
Dev. Map VV-11
Dev. Map

Zoning Data

Desc.	%
BP	100.00

Utilities

2 Public Water

BAA

07K

General Notes

CROMWELL CONCRETE

BQ SHED(15X32) IS OFFICE W/ 2PC LAV; 3(1 4X12) OHD`S;

Commercial Garage for fixing company vechicles

Sales Information

Grantee	Vol-Page	Type	SaleDate	SalePrice	Sale Verif	GeneralNotes
CROMWELL CONCRETE PRO	42-487		10/24/1950	0		

Activity Information

Date	Results	Visited By
08/15/2022	Change - Value Change Company	DM
09/06/2018	Permit - Measure Exterior	Assessor Office
09/09/2017	Change - Value Change Company	John Valente
06/15/2017	Permit - Measure Exterior	Mike Mordarski
05/19/2017	No Change - Field Review	Dave Stannard
09/13/2016	Permit - Walk Exterior	Mike Mordarski
10/28/2015	Permit- Miscellaneous	Assessor Office
03/25/2013	Permit- Miscellaneous	Assessor Office
09/12/2012	Permit- Miscellaneous	Assessor Office
09/12/2012	Permit- Miscellaneous	Assessor Office

Building Permit Information

Date	Permit #	Description	Amount	% Comp	Visit Date	CO Date	GeneralNotes
07/16/2021	27842	Electric	19,000	100		14-Sep-2021	CELL SITE
10/29/2015	23731	Addition	10,000	100	06-Sep-2018		Cold Storage Building
03/25/2013	21504	Propane Tank	1,000	100	25-Mar-2013		120gal
04/30/2012	20716	Electric	1,000	100	12-Sep-2012		For propane filling stati
03/15/2012	20592	Propane Tank	1,000	100	12-Sep-2012	26-Mar-2013	1000gal ag tank/pump stat

Land Data

Use	Description	Units	Unit Type	Neigh	Land Adjustments	Special Land Calc	Appraised Value	PA 490 Asmt	Neigh Order	Notes
201	Commercial	43,560	SF	CF			185,100	0	4240	
201	Commercial	1.000	AC	CF			26,300	0	4240	SITE

Total Area: 2.00 **PA 490 Use Asmt: 0** **Total Appraised: 211,400** **Assessed Value: 147,980**

ParcelID: 00285900 **Location:** 667 MAIN STREET **Printed By:** Shawna 11/04/2022 3:41:16PM

Bldg Seq 1 **Of** 2

Exterior Information

Building Type:	Light Indust	
Story Ht:	1 Story	
Living Units:	0	
Foundation:		
Prim. Ext. Wall:	Concrete	50%
Sec. Ext. Wall:	Pre-Fab Wood	50%
Roof Type:	Gable	
Roof Cover:	Asphalt Shin	
Avg. Wall Ht:	14.00	
Color:		

Interior Information

Prime Wall:	Minimum		
Sec. Wall:			
Floor Type:	Concrete		
Sec. Floor:			
Heat Fuel:	Oil		
Heat Type:	Hot Air-No D		
Sec. Ht Type:			
% A/C:	0		
% Sprinkled:	0		
Bsmt. Gar:	0		
Kitchens:	0	**Add. Kit:**	0
Fireplaces:	0	**Gas:**	0
Int. Condition:	Typical		

Room Count

Total Rooms:	
Bedrooms:	

Bath Features

Full Baths:	0
Addl. Full Baths:	0
Half Baths:	0
Addl. Half Baths:	0
Full Bths Below:	0
Half Bths Below:	0
Other Fixtures:	0
Total Baths:	0.0

Condo Information

Name:	
Style:	
Location:	
Tot Units:	

General Information

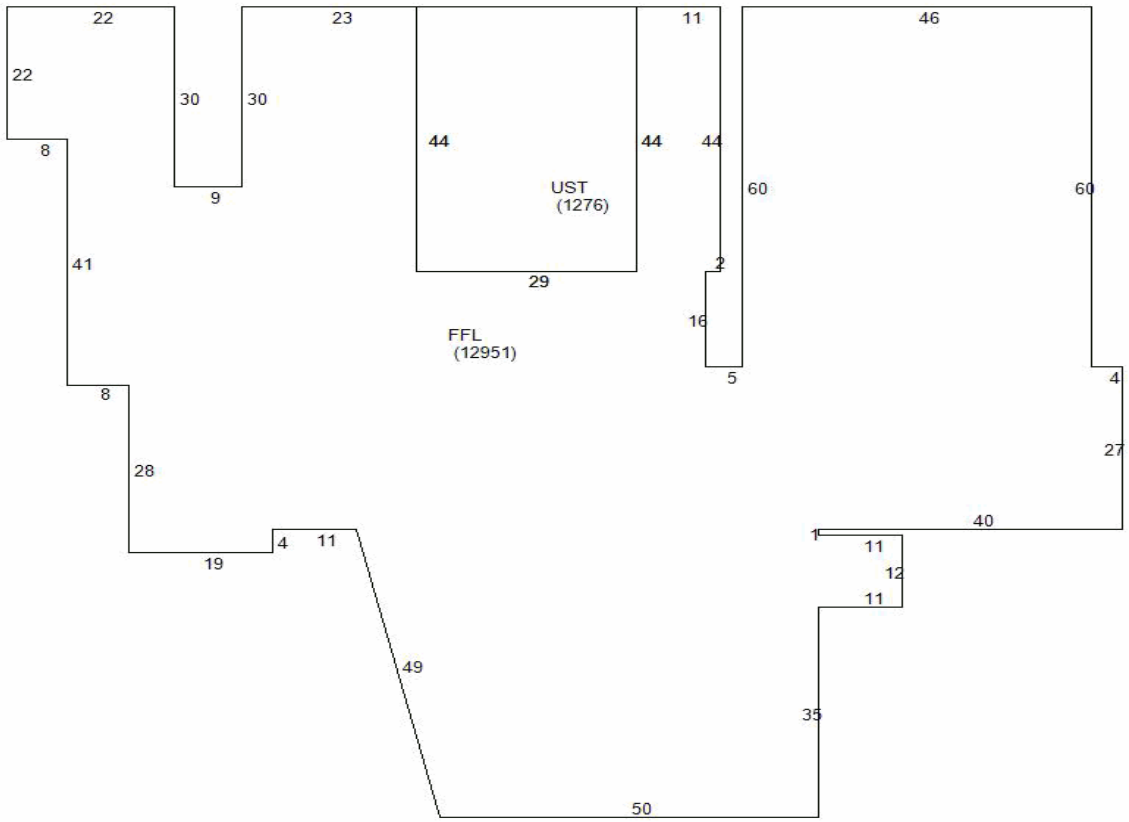
Year Blt:	1900
Grade:	D
Remodeled Yr:	
Rem. Kitchen Yr:	
Rem. Bath Yr:	

Depreciation %

Phys Cond	Fair	45.90
Func		0.00
Econ		0.00
Spec		0.00
OV		
Total %Dep:		**45.90**

Calculation

Basic $/SQ	75.00
Replacement Cost	656,563
Depreciation	301,362
Depreciated Value	355,201
Final Total (Rounded)	**355,200**



Extra Features / Yard Items (1st 10 Lines Displayed)

Code	Description	Qty	Size	Cond.	Year	Unit Price	Dep%	UndepValue	Appraised Value	Assessment
LNFR	Lean-To Fram	1	180	AV	2002	15.60	18	2,808	2,300	1,610
LNFR	Lean-To Fram	1	1,220	AV	2002	15.60	18	19,032	15,600	10,920
MEZ1	Mezzanine Un	1	240	VG	1971	39.60	46	9,504	5,100	3,570
PAV1	Paving Asph.	1	16,700	FR	1987	4.80	37	80,160	50,500	35,350
		1	1,000	PR	2002	0.00	0	0	0	0
GAR1	Garage Frame	1	432	AV	1966	38.40	35	16,589	10,800	7,560

Total Sp. Features: 5,100 **Total Yard Items:** 79,200 **Total Appraised:** 84,300 **Total Assessed Value:** 59,010

Sub Area Detail

Code	Desc.	Living	Gross Area
FFL	First Floor	12,951	12,951
UST	Utility Stor	0	1,276
Total		**12,951**	**14,227**

ParcelID: 00285900 **Location:** 667 MAIN STREET **Printed By:** Shawna 11/04/2022 3:41:16PM

Bldg Seq 2 **Of** 2

Exterior Information

Building Type:	Service Shop
Story Ht:	1 Story
Living Units:	0
Foundation:	
Prim. Ext. Wall:	Concrete
Sec. Ext. Wall:	
Roof Type:	Gable
Roof Cover:	Asphalt Shin
Avg. Wall Ht:	14.00
Color:	

Interior Information

Prime Wall:	Minimum
Sec. Wall:	
Floor Type:	Concrete
Sec. Floor:	
Heat Fuel:	Oil
Heat Type:	Hot Air-No D
Sec. Ht Type:	
% A/C:	0
% Sprinkled:	0
Bsmt. Gar:	0
Kitchens:	0 **Add. Kit:** 0
Fireplaces:	0 **Gas:** 0
Int. Condition:	Typical

Room Count

Total Rooms:	
Bedrooms:	

Bath Features

Full Baths:	0
Addl. Full Baths:	0
Half Baths:	0
Addl. Half Baths:	0
Full Bths Below:	0
Half Bths Below:	0
Other Fixtures:	0
Total Baths:	0.0

Condo Information

Name:	
Style:	
Location:	
Tot Units:	

General Information

Year Blt:	1945
Grade:	D
Remodeled Yr:	
Rem. Kitchen Yr:	
Rem. Bath Yr:	

Depreciation %

Phys Cond	Fair	45.90
Func		0.00
Econ		0.00
Spec		0.00
OV		
Total %Dep:		**45.90**

Calculation

Basic $/SQ	63.00
Replacement Cost	270,058
Depreciation	123,957
Depreciated Value	146,101
Final Total (Rounded)	**146,100**

Extra Features / Yard Items (1st 10 Lines Displayed)

Code	Description	Qty	Size	Cond.	Year	Unit Price	Dep%	UndepValue	Appraised Value	Assessment
SH1F	Shed Frame	1	480	AV	1966	30.00	35	14,400	9,400	6,580
SH1F	Shed Frame	1	711	AV	1966	30.00	35	21,330	13,900	9,730

Total Sp. Features: **Total Yard Items:** **23,300** **Total Appraised:** **23,300** **Total Assessed Value:** **16,310**

Sub Area Detail

Code	Desc.	Living	Gross Area
FFL	First Floor	7,040	7,040
Total		**7,040**	**7,040**

ATTACHMENT 6

Cromwell North 2

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	3	3	neopost 04/25/2023 US POSTAGE $003.19 ZIP 06103 041L1220393 HARTFORD, CT 06103 APR 25 2023 OLD STATE HOUSE POST OFFICE
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Anthony Salvatore, Town Manger Town of Cromwell 41 West Street Cromwell, CT 06416				
2.	Stuart Popper, Director of Planning and Development Town of Cromwell 41 West Street Cromwell, CT 06416				
3.	Cromwell Concrete Products, Inc. 667 Main Street Cromwell, CT 06416				
4.					
5.					
6.					