Robinson+Cole

KENNETH C. BALDWIN

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Also admitted in Massachusetts
and New York

May 18, 2023

Via Electronic Mail

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

Re: **Notice of Exempt Modification – Facility Modification**
1021 Straights Turnpike, Middlebury, Connecticut

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains an existing wireless telecommunications facility at the above-referenced property address (the "Property"). The facility consists of antennas and remote radio heads attached to a tower and associated equipment on the ground near the base of the tower. The tower was approved by the Town of Middlebury in September of 1999[1]. Cellco's shared use of the tower was approved by the Siting Council ("Council") in May of 1999 (TS-BAM-081-990428). A copy of the Town's Application for Permit and the Council's TS-BAM-081-990428 approval letter are included in Attachment 1.

Cellco now intends to modify its facility by replacing nine (9) existing antennas with three (3) new Samsung MT6407-77A antennas and six (6) MX06FRO660-03 antennas on Cellco's existing antenna mounts. Cellco also intends to install three (3) remote radio heads ("RRHs') behind its new antennas. A set of project plans showing Cellco's proposed facility modifications and the specifications for Cellco's new antennas and RRH are included in Attachment 2.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction

[1] The Application for Permit included in Attachment 1 has been used in previous Council filings as evidence of local approval. It appears to be an approval for Omnipoint's installation of antennas on the tower not the actual Town tower approval. Cellco's real estate consultant did reach out to Town officials in an effort to obtain additional local approvals for the tower, however, the Town was unable to locate any additional evidence of local permits or approvals.

that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Town's Chief Elected Official and Land Use Officer. The Town of Middlebury is the owner of the Property.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas will be installed on its existing antenna mount.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

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

4. The installation of Cellco's new antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A Calculated Radio Frequency Emission Report for Cellco's modified facility is included in Attachment 3. The modified facility will be capable of providing Cellco's 5G wireless service.

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

6. According to the attached Structural Analysis Report ("SA") and Post Modification Antenna Mount Analysis Report ("MA"), the existing tower, tower foundation, and antenna mounts, with certain modifications to the antenna mounts, can support Cellco's proposed modifications. Copies of the SA and MA are included in Attachment 4.

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.

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

Robinson+Cole

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Edward B. St. John, Middlebury First Selectman
Curtis Bosco, Zoning Enforcement Officer
Kamoya Bautista De Leon, Verizon Wireless

ATTACHMENT 1

16981

APPLICATION FOR PERMIT TOWN OF MIDDLEBURY

LOCATION OF JOB | **FEE SCHEDULE** | **TYPE OF JOB**

4-06 425
MAP LOT BLOCK

1021 Straits Turnpike
NO. STREET NAME

Middlebury CT 06762
TOWN STATE ZIP

BUILDING OFFICIAL MAY REQUIRE AFFIDAVIT OF ACTUAL VALUE

_ BUILDING _ ELECTRIC
_ PLUMBING _ MECHANICAL
_ NEW ✓ ADDITION
_ REPAIR _ ALTERATION
_ DEMOLITION
_ CHANGE OF USE

OWNER | **VALUE - FEE** | **REQUIREMENTS**

Town of Middlebury
LAST NAME FIRST NAME

PO Box 392
NO. STREET NAME

Middlebury CT 06762
TOWN STATE ZIP

$100,000
CONSTRUCTION VALUE

$800.00
FEE AMOUNT

_ ZONING _ HEALTH DEPT.
_ FIRE MARSHAL _ PLOT PLAN
_ INSURANCE PROOF (W. C.)
_ HISTORICAL APPROVAL
_ FLOOD PLAIN APPROVAL
_ TWO SETS OF PLANS

APPLICANT | **DECISION** | **TYPE OF BUILDING**

Nextel Communications
LAST NAME FIRST NAME

100 Corporate Place
NO. STREET NAME

Rocky Hill CT 06067
TOWN STATE ZIP

APPLICATION IS HEREBY
✓ APPROVED
_ DISAPPROVED

Sept. 3 1999 [signature]
DATE CODE OFFICIAL

CONSTRUCTION TYPE 3C - MASONRY
USE GROUP UTILITY

BUILDER / CONTRACTOR INFORMATION

Anthony's Bldg. Co INC
NAME

953 Putnam Pike
NO. STREET NAME

Chepachet RI 02814
TOWN STATE ZIP

00900617
LICENSE OR REGISTRATION NUMBER AND CLASS

6, 30, 2000 (401) 567.0600
EXPIRATION DATE CONTRACTOR TELEPHONE

[signature]
CONTRACTOR SIGNATURE

Need + Insurance Certificate

PERMITS EXPIRE ONE YEAR FROM DATE OF ISSUE

REMARKS OR A BRIEF DESCRIPTION OF WORK PROPOSED:

Installation of an unmanned wireless telecommunications facility at an existing Omnipoint Communications site. A 10' x 20' pre-fabricated concrete equipment shelter and 12 wireless panel antennas will be installed. New telco. and electric services will be run from the existing demarc. and meter bank.

THIS IS TO CERTIFY THAT I AM THE OWNER OR AUTHORIZED AGENT FOR THE OWNER. ALL WORK COVERED BY THIS APPLICATION HAS BEEN AUTHORIZED BY THE OWNER OF THE ABOVE DESCRIBED PROPERTY AND WILL BE DONE ACCORDING TO THE CONNECTICUT BASIC BUILDING CODE. AS THE APPLICANT I UNDERSTAND THAT A FINAL INSPECTION AND A CERTIFICATE OF USE AND OR OCCUPANCY IS REQUIRED BEFORE OCCUPANCY OR USE.

FEE PAID BY:

CK NO. 22225

AMOUNT $800.00

8/24/99
DATE

Scott M. Chasse, P.E.
APPLICANT SIGNATURE

Dep 10.00 pd ck# 22279

May 12, 1999

Sandy M. Carter
Manager- Regulatory
Bell Atlantic Mobile
20 Alexander Drive
P.O. Box 5029
Wallingford, CT 06492-2430

Re: TS-BAM-081-990428- Bell Atlantic request for an order to approve tower sharing at an existing telecommunications facility located at The Town of Middlebury Public Works Yard, 1021 Staits Turnpike (Route 63) in Middlebury, Connecticut.

Dear Ms. Carter:

At a public meeting held May 11, 1999, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures.

This facility has been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequency now used on this tower. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed-shared use is to be implemented as specified in your letter dated April 28, 1999. Notify the Council when all work is complete.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/RKE/tsg

c: Honorable Edward B. St. John, First Selectman, Town of Middlebury

l:\siting\em\bam\middlebury\dc051199.doc

ATTACHMENT 2

verizon

WIRELESS COMMUNICATIONS FACILITY

MIDDLEBURY CT
1021 STRAITS T-PIKE
MIDDLEBURY CT 06762

DRAWING INDEX

SITE DIRECTIONS

START: 20 ALEXANDER DRIVE
WALLINGFORD, CONNECTICUT 06492

END: 1021 STRAITS T-PIKE
MIDDLEBURY CT 06762

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 PARK ROAD	0.1 MI
6.	TURN LEFT AT FIRST CROSS STREET ONTO CT-68W	0.4 MI
7.	TURN RIGHT	0.2 MI
8.	TURN RIGHT ONTO N COLONY ROAD	0.3 MI
9.	TURN RIGHT TO MERGE ONTO CT-15 TOWARD HARTFORD	0.5 MI
10.	MERGE ONTO CT-15 N	3.1 FT
11.	USE MIDDLE LANE TO STAY ON CT-15 N	0.1 MI
12.	TAKE EXIT 68W TO MERGE ONTO I-691 W TOWARD MERIDEN/DANBURY	7.7 MI
13.	USE ANY LANE TO TAKE EXIT 1 FOR I-84 W TOWARD WATERBURY/DANBURY	1.2 MI
14.	MERGE ONTO I-84	1.6 MI
15.	KEEP LEFT TO STAY ON I-84	13.3 MI
16.	TAKE EXIT 17 FOR CT-64 TOWARD CT-63/MIDDLEBURY/WATERTOWN	0.3 MI
17.	CONTINUE ONTO CT-64 W CHASE/PARKWAY	0.3 MI
18.	TURN LEFT ONTO CT-63S	1.3 MI
19.	END AT 1021 STRAITS TURNPIKE	0.3 MI

LOCATION MAP
SCALE : 1" = 200'-0"

SITE INFORMATION

VZ SITE NAME:	MIDDLEBURY CT
VZ PROJ FUZE I.D.:	16081589
VZ LOCATION CODE:	467831
VZ PROJECT CODE:	202112246551
LOCATION:	1021 STRAITS T-PIKE MIDDLEBURY CT 06762
PROJECT SCOPE:	REFER TO NOTES ON DRAWING C-1 FOR SCOPE OF WORK.
MAP/BLOCK/LOT:	4-06/403A
ZONING DISTRICT:	CA40 (COMMERCIAL DISTRICT)
LATITUDE:	41° 32' 08.8008" N (41.535778° N)
LONGITUDE:	73° 05' 21.2316" W (73.089231° W)
GROUND ELEVATION:	428'± AMSL
PROPERTY OWNER:	TOWN OF MIDDLEBURY 1212 WHITTEMORE ROAD MIDDLEBURY, CT06762
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 CORPORATION, P.C 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385 (860) 663-1697

SITE COORDINATES AND GROUND ELEVATION OBTAINED FROM VERIZON RFDS & GOOGLE EARTH.

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	11/02/21	FOR REVIEW: JRM
1	06/23/22	FOR FILING: JRM
2	11/11/22	REV. RFDS: JRM
3	04/05/23	FOR FILING: JRM
4	05/04/23	ADDED DISH EQUIP.
5	05/17/23	UPDATED MA REFERENCE
		FOR FILING: JRM

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: TOWN OF MIDDLEBURY
ADDRESS: 1212 WHITTEMORE ROAD MIDDLEBURY, CT06762

MIDDLEBURY CT

SITE ADDRESS: 1021 STRAITS T-PIKE MIDDLEBURY CT 06762

APT FILING NUMBER: CT141_12860

DRAWN BY: ELZ

DATE: 11/02/21 CHECKED BY: JRM

VZ PROJECT CODE: 202112246551

VZ LOCATION CODE: 467831

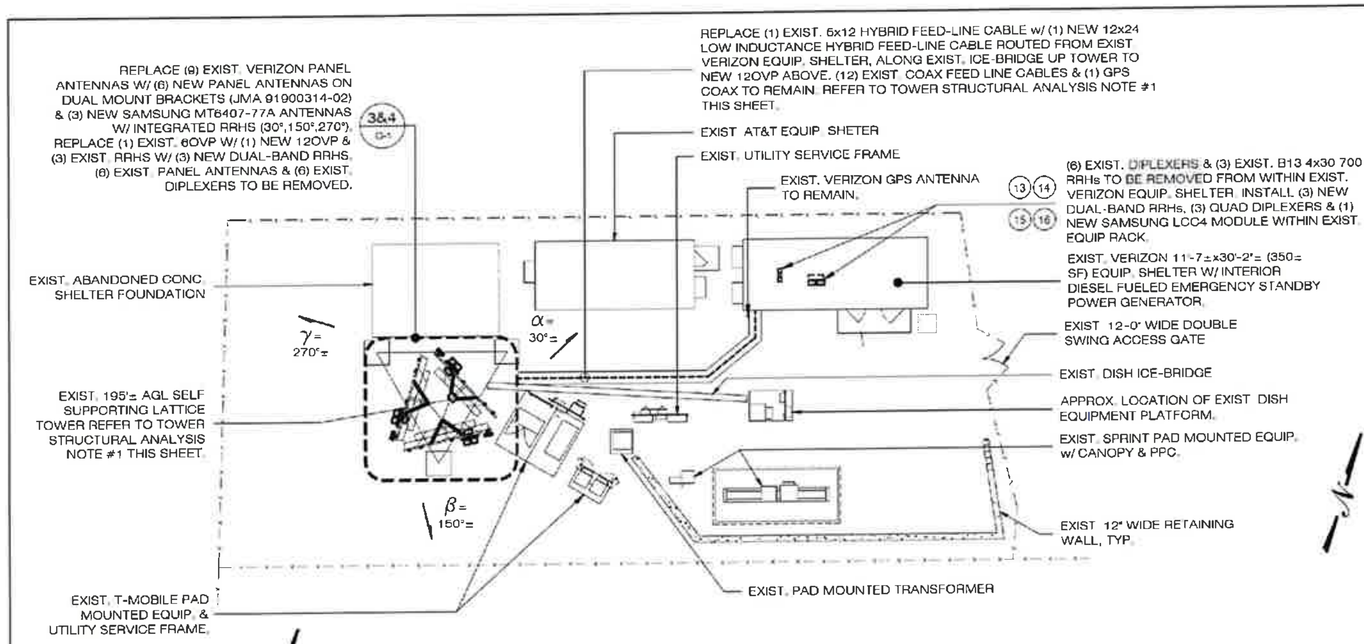
VZ FUZE ID: 16081589

SHEET TITLE:

TITLE SHEET

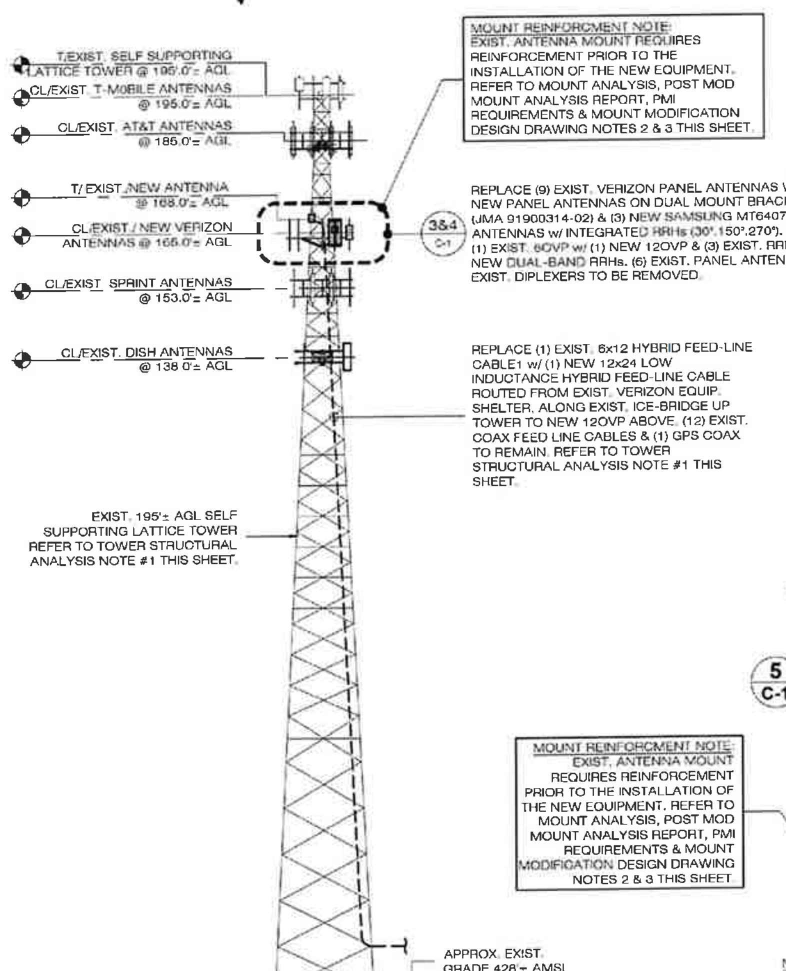
SHEET NUMBER:

T-1



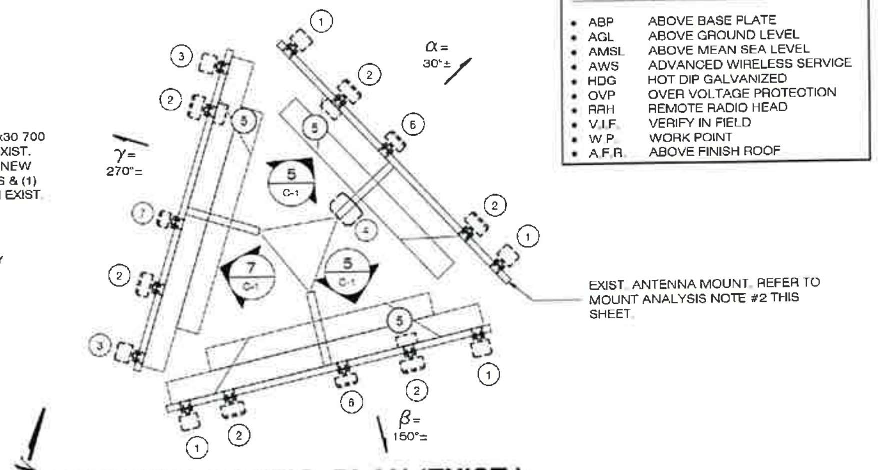
1 COMPOUND PLAN
C-1 SCALE : 1" = 10'-0"

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

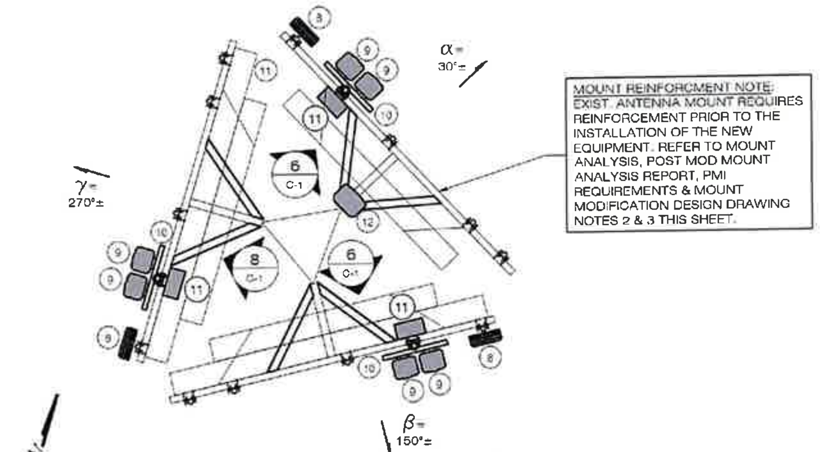


2 TOWER ELEVATION
C-1 SCALE : 1" = 15'-0"

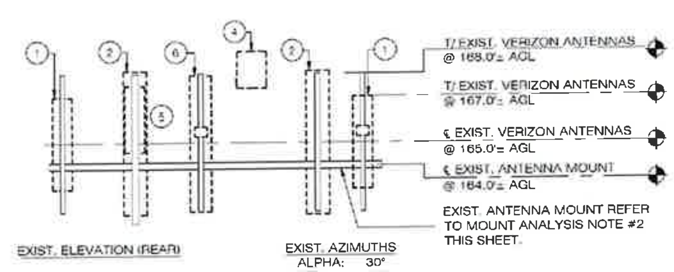
(IN FEET) 1 inch = 15ft.



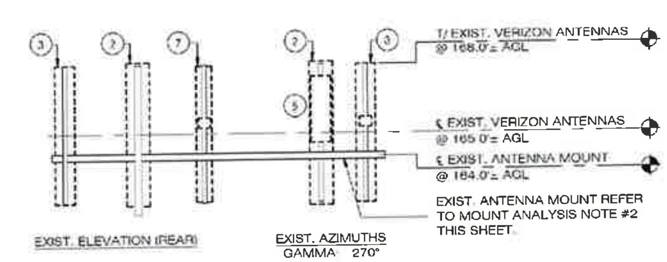
3 EQUIP. CONFIG. PLAN (EXIST.)
C-1 SCALE : ¼" = 1'-0"



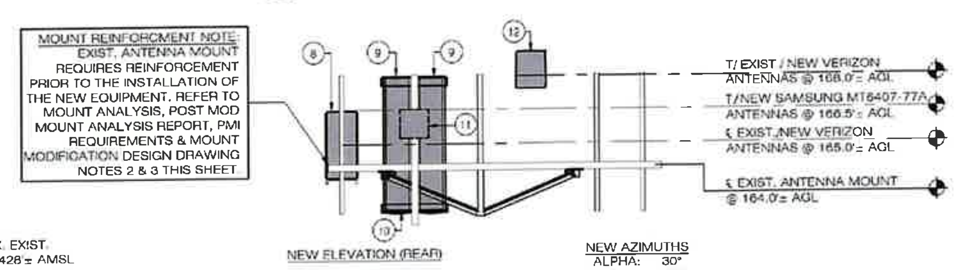
4 EQUIP. CONFIG. PLAN (NEW)
C-1 SCALE : ¼" = 1'-0"



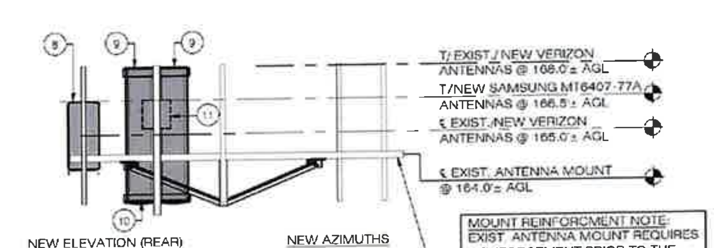
5 EQUIP. MOUNTING CONFIG. ALPHA/BETA (EXIST.)
C-1 SCALE : ¾" = 1'-0"



7 EQUIP. MOUNTING CONFIG. GAMMA (EXIST.)
C-1 SCALE : ¾" = 1'-0"



6 EQUIP. MOUNTING CONFIG. ALPHA/BETA (NEW)
C-1 SCALE : ¾" = 1'-0"



MOUNT REINFORCMENT NOTE: EXIST. ANTENNA MOUNT REQUIRES REINFORCEMENT PRIOR TO THE INSTALLATION OF THE NEW EQUIPMENT. REFER TO MOUNT ANALYSIS, POST MOD MOUNT ANALYSIS REPORT, PMI REQUIREMENTS & MOUNT MODIFICATION DESIGN DRAWING NOTES 2 & 3 THIS SHEET.

8 EQUIP. MOUNTING CONFIG. GAMMA (NEW)
C-1 SCALE : ¾" = 1'-0"

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

NOTES:

1. REFER TO TOWER STRUCTURAL ANALYSIS REPORT PREPARED BY TOWER ENGINEERING PROFESSIONALS, DATED 02/23/23, AVAILABLE UNDER SEPARATE COVER.
2. REFER TO MOUNT ANALYSIS REPORT PREPARED BY MASER CONSULTING, CONNECTICUT, PROJECT #21777795A MARKED REV1, DATED 01/25/22. AVAILABLE UNDER SEPARATE COVER.
3. REFER TO POST-MODIFICATION ANTENNA MOUNT ANALYSIS REPORT AND PMI REQUIREMENTS, PROJECT #21777795, MARKED REV3, DATED MAY 12, 2023 & MOUNT MODIFICATION DESIGN DRAWINGS, MARKED REV3, DATED 05/15/23, PREPARED BY COLLIERS ENGINEERING, AVAILABLE UNDER SEPARATE COVER.
4. BASE MAPPING OBTAINED FROM FIELD MEASUREMENTS CONDUCTED FROM GRADE BY ALL-POINTS TECHNOLOGY CORPORATION, P.C. ON 09/30/21.
5. PROJECT SCOPE INCLUDES THE FOLLOWING:
   - REPLACEMENT OF (9) EXIST. PANEL ANTENNAS w/ (6) NEW PANEL ANTENNAS ON DUAL MOUNT BRACKETS & (3) NEW SAMSUNG MT6407-77A ANTENNAS w/ INTEGRATED RRHs
   - REPLACEMENT OF (3) EXIST. RRHs w/ (3) NEW DUAL-BAND RRHs (TOWER).
   - REPLACEMENT OF (1) EXIST. 6OVP w/ (1) NEW 12OVP (ALPHA) (MOUNTED TO TOWER LEG).
   - REPLACEMENT OF (1) EXIST. 6x12 HYBRID FEED-LINE CABLE w/ (1) NEW 12x24 LOW INDUCTANCE (L.I.) HYBRID FEED-LINE CABLE.
   - REMOVAL OF (3) RRHs & (6) DIPLEXERS FROM WITHIN EXIST VERIZON EQUIP. SHELTER.
   - INSTALL (1) NEW LCC4 MODULE IN EXIST. EQUIP RACK WITHIN EXIST. VERIZON EQUIP. SHELTER
   - INSTALL (3) NEW DUAL-BAND RRHs & (3) QUAD DIPLEXERS WITHIN EXIST. VERIZON EQUIP. SHELTER
   - REMOVAL OF (6) EXIST. PANEL ANTENNAS
   - REMOVAL OF (6) EXIST. DIPLEXERS (TOWER)
6. ALL EXPOSED STEEL AND HARDWARE TO BE HOT DIP GALV (HDG). PAINT TO MATCH EXIST. (WHERE APPLICABLE)
7. CAP & WEATHERPROOF ALL UN-USED CABLE ENTRY PORTS (WHERE APPLICABLE)
8. MOUNT & GROUND ALL NEW EQUIPMENT IN ACCORDANCE WITH NEC (NFPA-70), NESC AND MANUFACTURERS SPECIFICATION
9. SECURE ALL NEW ANTENNA CABLES PER MANUFACTURER RECOMMENDATIONS.
10. BOND NEW ANTENNA MOUNTING PIPES TO ANTENNA SECTOR GROUND BAR w/ # 2 AWG. BCW, (WHERE APPLICABLE).
11. ANTENNA CONFIGURATIONS SHOWN HEREIN ARE FRONT ELEVATIONS. (UNLESS OTHERWISE NOTED).
12. ANTENNA SPACING DIMENSIONS ARE TO THE CENTER OF THE EXIST. ANTENNA AND PROP. ANTENNA FACE.
13. REFER TO THE FINAL RFDS PROVIDED BY VERIZON FOR THE LATEST INFORMATION REGARDING EQUIPMENT MODELS, REQUIRED CABLING & DOWN-TILT INFORMATION.
14. PAINT ALL LSUB6 ANTENNAS TO MATCH EXISTING STRUCTURE (WHERE APPLICABLE). COORDINATE W/ LSUB6 MANUFACTURER INSTALLATION MANUAL REQUIREMENTS, VERIZON CONSTRUCTION MANAGER & OWNER.
15. PAINT ALL NEW NON LSUB6 ANTENNAS & APPURTENANCES TO MATCH EXIST. STRUCTURE (WHERE APPLICABLE) COORDINATE W/ VERIZON CONSTRUCTION MANAGER & BUILDING OWNER.

SCOPE OF WORK (ALL) SECTORS

(1) EXIST. ANTENNA (TO BE REMOVED) MODEL: DECIBEL DB844G65ZAXYH
(2) EXIST. ANTENNA (TO BE REPLACED) MODEL: ANDREW HBXX-6517DS-A2M
(3) EXIST. ANTENNA (TO BE REPLACED) MODEL: ANDREW DB846F65ZAXY
(4) EXIST. 6OVP (TO BE REPLACED) (MOUNTED TO TOWER LEG) MODEL: RAYCAP RRFDC-3315-PF-48 (V.I.F.)
(5) EXIST. RRH (TO BE REPLACED) MODEL: NOKIA B4 RRH 2x60-4R AWS
(6) EXIST. ANTENNA (TO BE REMOVED) MODEL: ANTEL BXA-70063-6CF
(7) EXIST. ANTENNA (TO BE REMOVED) MODEL: ANTEL BXA-70080-6CF
(8) NEW ANTENNA MODEL: SAMSUNG MT6407-77A w/ INTEGRATED RRH
(9) NEW ANTENNA MODEL: JMA WIRELESS MX06FRO660-03
(10) NEW DUAL MOUNT BRACKET MODEL: JMA WIRELESS 91900314-02
(11) NEW DUAL BAND RRH MODEL: SAMSUNG B13/B5 RRH (RF4440d-13A)
(12) NEW 12OVP (ALPHA) (MOUNTED TO TOWER LEG) MODEL: RAYCAP RVZDC-6627-PF-48
(13) EXIST. RRH & DIPLEXERS (TO BE REMOVED FROM WITHIN EXIST. VERIZON EQUIP. SHELTER MODEL: NOKIA B13 4x30 700 RRH MODEL: RFS FTL8Z5002-36 (V.I.F.)
(14) NEW DUAL BAND RRH MODEL: SAMSUNG B2/B66A RRH (RF4439d-25A) MOUNTED WITHIN EXIST. VERIZON EQUIP. SHELTER
(15) NEW QUAD DIPLEXER MODEL: COMMSCOPE CDX1923Q-DS-43 MOUNTED WITHIN EXIST. VERIZON EQUIP. SHELTER
(16) NEW LCC4 MODULE MODEL: SAMSUNG LCC4-B1A MODULE MOUNTED WITHIN EXIST. VERIZON EQUIP. SHELTER

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	11/02/21	FOR REVIEW: JRM
1	06/23/22	FOR FILING: JRM
2	11/11/22	REV. RFDS: JRM
3	04/05/23	FOR FILING: JRM
4	05/04/23	ADDED DISH EQUIP.
5	05/17/23	UPDATED MA REFERENCE
		FOR FILING: JRM

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: TOWN OF MIDDLEBURY
ADDRESS: 1212 WHITTEMORE ROAD MIDDLEBURY, CT06762

MIDDLEBURY CT

SITE ADDRESS: 1021 STRAITS T-PIKE MIDDLEBURY CT 06762

APT FILING NUMBER: CT141_12860

DRAWN BY: ELZ

DATE: 11/02/21 CHECKED BY: JRM

VZ PROJECT CODE: 202112246551

VZ LOCATION CODE: 467831

VZ FUZE ID: 16081589

SHEET TITLE:

COMPOUND PLAN, TOWER ELEVATION, EQUIP. CONFIGURATION PLANS & ELEVATIONS

SHEET NUMBER:

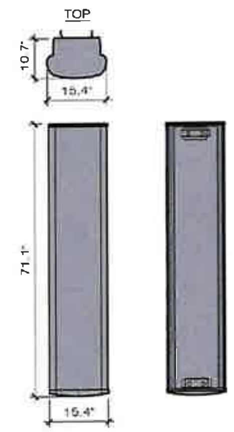
C-1

EQUIPMENT DATA

EQUIPMENT SPECIFICATIONS

SECTOR	ANTENNA MAKE/MODEL	QTY	AZIMUTH	EQUIPMENT STATUS	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	WEIGHT (LBS)
ALPHA	SAMSUNG MT6407-77A	1	30°	NEW	35.1[3]	16.1[3]	5.51[3]	87.1[2,3]
	700/8501900/2100: JMA WIRELESS MX06FRO660-03	1	30°	NEW	71.1	15.4	10.7	60.0[2]
	700/8501900/2100: JMA WIRELESS MX06FRO660-03	1	30°	NEW	71.1	15.4	10.7	60.0[2]
BETA	SAMSUNG MT6407-77A	1	150°	NEW	35.1[3]	16.1[3]	5.51[3]	87.1[2,3]
	700/8501900/2100: JMA WIRELESS MX06FRO660-03	1	150°	NEW	71.1	15.4	10.7	60.0[2]
	700/8501900/2100: JMA WIRELESS MX06FRO660-03	1	150°	NEW	71.1	15.4	10.7	60.0[2]
GAMMA	SAMSUNG MT6407-77A	1	270°	NEW	35.1[3]	16.1[3]	5.51[3]	87.1[2,3]
	700/8501900/2100: JMA WIRELESS MX06FRO660-03	1	270°	NEW	71.1	15.4	10.7	60.0[2]
	700/8501900/2100: JMA WIRELESS MX06FRO660-03	1	270°	NEW	71.1	15.4	10.7	60.0[2]
	APPURTENANCE MAKE/MODEL							
	SAMSUNG B5/B13 RRH (RF440d-13A)	3	-	NEW	15.0	15.0	9.1	82.0
	RAYCAP RVZDC-6627-PF-48	1	-	NEW	29.5	16.5	12.6	32.0
	SAMSUNG B2/B66A RRH (RF4439d-25A)	3	-	NEW	15.0	15.0	10.1	97.5
	COMMSCOPE QUAD DIPLEXER (CDX1923Q-DS-43)	3	-	NEW	6.9	5.5	8.2	16.5

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

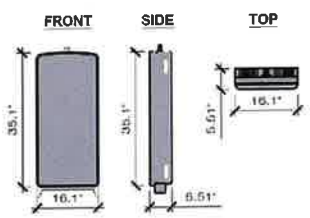


JMA MX06FRO660-03
X-POL ANTENNA
7.60 SF (FRONT)
(60.0 lbs)

2 NEW ANTENNA DETAIL
B-1 SCALE : ½" = 1'-0"

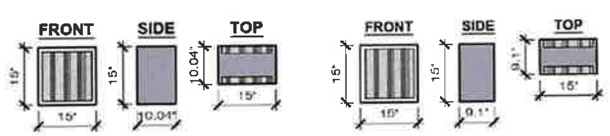
	DESCRIPTION	QUANTITY	LENGTH	COMMENTS
	BILL OF MATERIALS			
1	LSUB6 ANTENNA w/ INTEGRATED RRH	3		SAMSUNG MT6407-77A
2	700/850/1900/2100 ANTENNA	6		JMA WIRELESS MX06FRO660-03
3	1/2" JUMPER CABLE	12	15 FT	ROUTE FROM RRH TO ANTENNAS
4	ANTENNA LINK CABLES	6	15 M	ROUTE FROM UPPER OVP TO ANTENNAS
5	ANTENNA POWER CABLES	3	15 M	PROPIETARY POWER CABLE FROM EXIST. OVP TO ANTENNAS
6	700/850 RRH	3		SAMSUNG B5/B13 RRH (RF4440d-13A)
7	RRH CABLES	6	15M	PROPIETARY POWER & FIBER CABLES
8	UPPER 12OVP	1		(RAYCAP RVZDC-6627-PF-48)
9	PCS/AWS RRH	3		SAMSUNG B2/B66A RRH (RF4439d-25A)
10	QUAD DIPLEXER	3		COMMSCOPE CDX1923Q-DS-43
11	HYBRID CABLES	1	250'± FT	12x24 LOW INDUCTANCE HYBRID CABLE

NOTES:
1. INFORMATION SHOWN HEREON IS FOR USE BY VERIZON EQUIPMENT OPERATIONS.
2. INFORMATION IS BASED ON LATEST VERIZON 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.
7. CONTRACTOR SHALL INSTALL NEW SIDE-BY-SIDE & DUAL-MOUNT BRACKETS PER ANTENNA MOUNT MANUFACTURER RECOMMENDATIONS, INCLUDING VERIFICATION OF MINIMUM PIPE MAST DIAMETER REQUIRED TO INSTALL NEW MOUNT BRACKETS. CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD SHOULD EXIST. PIPE MAST REQUIRE REPLACEMENT TO SUPPORT THE NEW MOUNT BRACKETS.



SAMSUNG MT6407-77A ANTENNA
HxWxD=35.1"x16.1"x5.51"
WT=87.1 Lbs
(NOT TO EXCEED)

3 NEW ANTENNA DETAIL
B-1 SCALE : ½" = 1'-0"

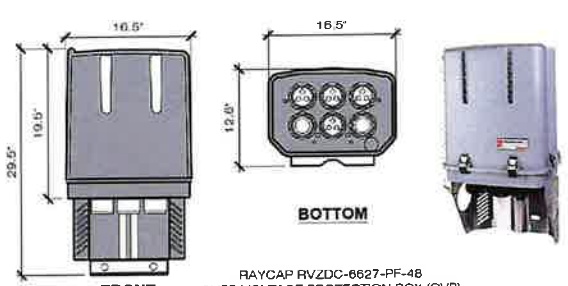


SAMSUNG DUAL HIGH BAND B2/B66A (RF4439d-25A) RRH PCS/AWS REMOTE RADIO HEAD (RRH) HxWxD=15.0"x15.0"x10.1" (97.5 Lbs)

SAMSUNG DUAL LOW BAND B5/B13 (RF4440d-13A) RRH 850/700 REMOTE RADIO HEAD (RRH) HxWxD=15.0"x15.0"x9.1" (82.0 Lbs)

NOTE: WEIGHTS INCLUDE SOLAR SHEILD & MOUNTING BRACKET

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

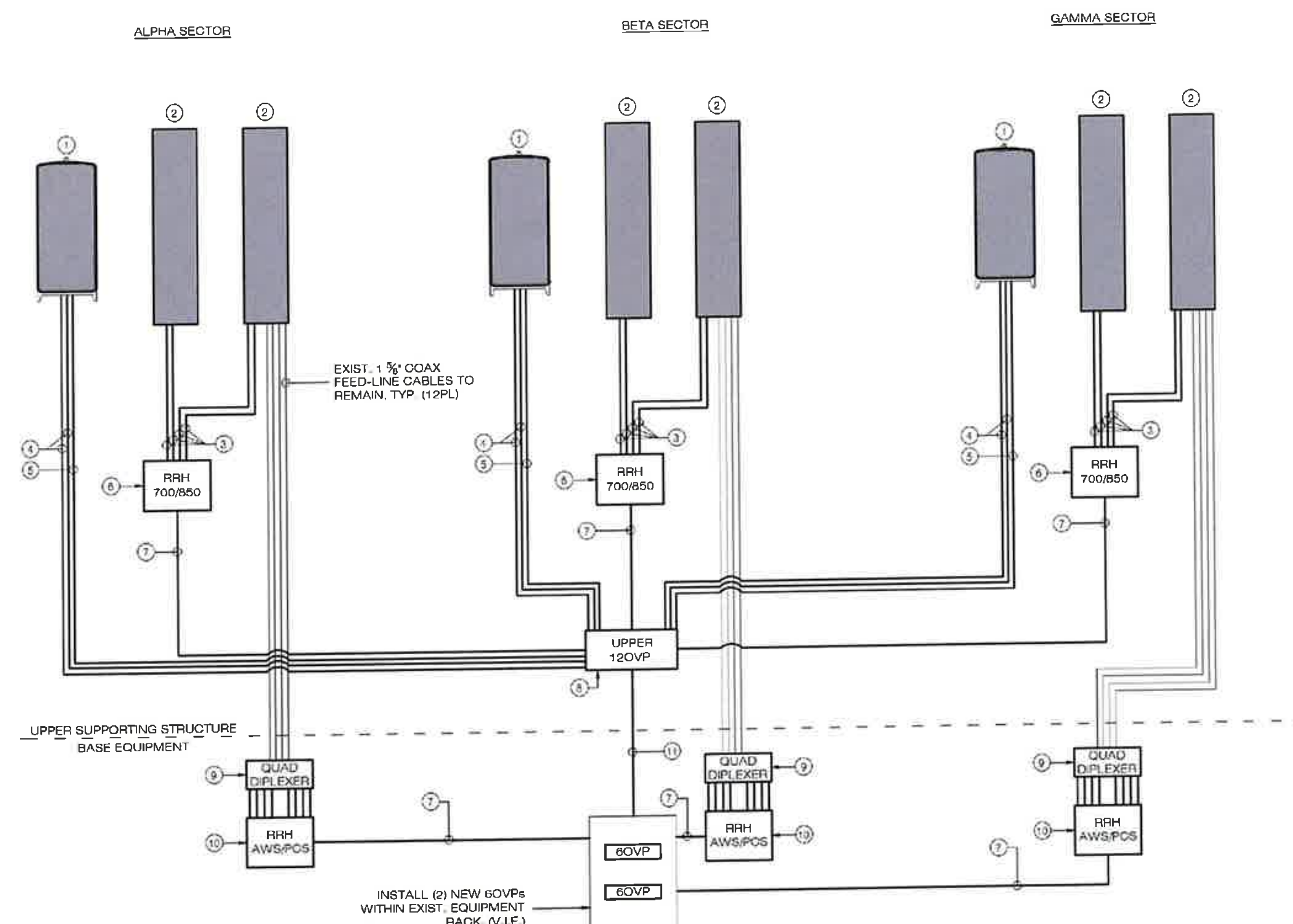


RAYCAP RVZDC-6627-PF-48
OVER VOLTAGE PROTECTION BOX (OVP)
WxDxH = 16.5"x12.6"x29.5" (32.0 lbs)

5 OVER VOLTAGE PROTECTION BOX (OVP)
B-1 SCALE: 1" = 1'-0"

COMMSCOPE CDX1923Q-DS-43
QUAD DIPLEXER
HxWxD=6.9"x5.5"x8.2" (16.5 Lbs)

5 QUAD DIPLEXER
B-1 SCALE: 1" = 1'-0"



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

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

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	11/02/21	FOR REVIEW: JRM
1	06/23/22	FOR FILING: JRM
2	11/11/22	REV. RFDS: JRM
3	04/05/23	FOR FILING: JRM
4	05/04/23	ADDED DISH EQUIP.
5	05/17/23	UPDATED MA REFERENCE FOR FILING: JRM

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: TOWN OF MIDDLEBURY
ADDRESS: 1212 WHITTEMORE ROAD MIDDLEBURY, CT06762

MIDDLEBURY CT

SITE ADDRESS: 1021 STRAITS T-PIKE MIDDLEBURY CT 06762
APT FILING NUMBER: CT141_12860
DRAWN BY: ELZ
DATE: 11/02/21
CHECKED BY: JRM
VZ PROJECT CODE: 202112246551
VZ LOCATION CODE: 467831
VZ FUZE ID: 16081589

SHEET TITLE:
RF BILL OF MATERIALS, EQUIPMENT SPECIFICATIONS & 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 (TOWER)

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 OWNERS 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 NEWERLY 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 NEWERLY 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 CONTRACTORS 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 SAFE 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 A325
GRATING	TYPE GW-2 (1-1/4x3/16" 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 B, PARTS I 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 REINSTALL ALL FIRE PROOFING AS REQUIRED DURING CONSTRUCTION.

THE STEEL STRUCTURE SHALL BE DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER COMPLETION. IT IS THE CONTRACTORS 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 MANUFACTURERS DESIGN 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 A MAXIMUM 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 NEWERLY FORMED 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 TERMINATIONS, 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 NEWLY 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 VERIFY THAT IT MEETS PROJECT REQUIREMENTS WITHOUT MODIFICATION. IF IT IS TO BE ADDED OR REPLACED AS A PART OF THIS WORK, CONTRACTOR SHALL OBTAIN FROM, COORDINATE WITH, AND GAIN APPROVAL FROM THE ELECTRIC 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 NEWERLY 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 CIRCUITS OVERCURRENT PROTECTIVE DEVICE (OCPD) SIZE. WHERE THE UNGROUNDED CONDUCTORS ARE INCREASED IN SIZE ABOVE THE STANDARD FOR THE CIRCUITS OCPD, INCREASE THE GROUNDING CONDUCTOR NEWORTIONATELY 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 FOR 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. NON-DEDICATED COMMUNICATION SITES):

- WHERE FEASIBLE WITH ENOUGH SPACE AVAILABLE, INSTALL 4 MINIMUM OR 4, MAXIMUM 10 RING RADIALS.
- EACH RADIALS 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 MANUFACTURERS AND OWNERS 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
- 20 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 1-1-1994.

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

CABLE LADDER TRAY SHALL BE SUPPORTED IN ACCORDANCE WITH MANUFACTURERS 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	11/02/21	FOR REVIEW: JRM
1	06/23/22	FOR FILING: JRM
2	11/11/22	REV. RFDS: JRM
3	04/05/23	FOR FILING: JRM
4	05/04/23	ADDED DISH EQUIP.
5	05/17/23	UPDATED MA REFERENCE FOR FILING: JRM

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: TOWN OF MIDDLEBURY
ADDRESS: 1212 WHITTEMORE ROAD MIDDLEBURY, CT06762

MIDDLEBURY CT

SITE ADDRESS: 1021 STRAITS T-PIKE MIDDLEBURY CT 06762

APT FILING NUMBER: CT141_12860

DRAWN BY: ELZ

DATE: 11/02/21 CHECKED BY: JRM

VZ PROJECT CODE: 20211224 6551

VZ LOCATION CODE: 467831

VZ FUZE ID: 16081589

SHEET TITLE:

NOTES & SPECIFICATIONS

SHEET NUMBER:

N-1

MX06FRO660-03

NWAV™ X-Pol Hex-Port Antenna

X-Pol Hex-Port 6 ft 60° Fast Roll Off antenna with independent tilt on 700 & 850 MHz: 2 ports 698-798, 824-894 MHz and 4 ports 1695-2180 MHz

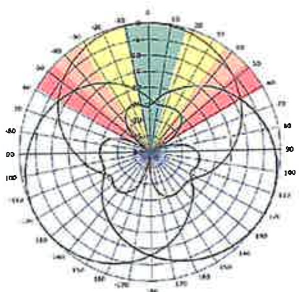
- Fast Roll Off (FRO™) azimuth beam pattern improves Intra- and Inter-cell SINR
- Compatible with dual band 700/850 MHz radios with independent low band EDT without external diplexers
- Fully integrated (iRETs) with independent RET control for low and high bands for ease of network optimization
- SON-Ready array spacing supports beamforming capabilities
- Suitable for LTE/CDMA/PCS/UMTS/GSM air interface technologies
- Integrated Smart Bias-Ts reduce leasing costs

nWAV

Fast Roll-Off antennas increase data throughput without compromising coverage

The horizontal beam produced by Fast Roll-Off (FRO) technology increases the Signal to Interference & Noise Ratio (SINR) by eliminating overlap between sectors.

Non-FRO antenna



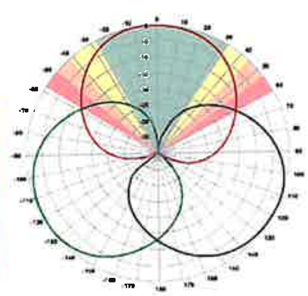
Large traditional antenna pattern overlap creates harmful interference.

JMA's FRO antenna pattern minimizes overlap, thereby minimizing interference.

LTE throughput	SINR	Speed (bps/Hz)	Speed increase	CQI
Excellent	>18	>4.5	333+%	8-10
Good	15-18	3.3-4.5	277%	6-7
Fair	10-15	2-3.3	160%	4-6
Poor	<10	<2	0%	1-3

The LTE radio automatically selects the best throughput based on measured SINR.

JMA FRO antenna



Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-798	824-894	1695-1880	1850-1990	1920-2180
Polarization	± 45°		± 45°		
Average gain over all tilts, dBi	14.4	14.0	17.6	18.0	18.2
Horizontal beamwidth (HBW), degrees	60.5	53.0	55.0	55.0	55.5
Front-to-back ratio, co-polar power @180°± 30°, dB	>24	>24.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>15.0	>14.2	>18	>18	>15
Sector power ratio, percent	<3.5	<3.0	<3.7	<3.8	<3.6
Vertical beamwidth (VBW), degrees[1]	13.1	11.8	6.0	5.5	5.5
Electrical downtilt (EDT) range, degrees	2-14	2-14	0-9		
First upper side lobe (USLS) suppression, dB[1]	≤-15.0	≤-16.5	≤-16.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0		1.5:1 / -14.0		
Max passive intermodulation (PIM), 2x20W carrier, dBc	-153		-153		
Max input power per any port, watts	300		250		
Total composite power all ports, watts	1500				

[1] Typical value over frequency and tilt

 +1 315.431.7100 customerservice@jmawireless.com

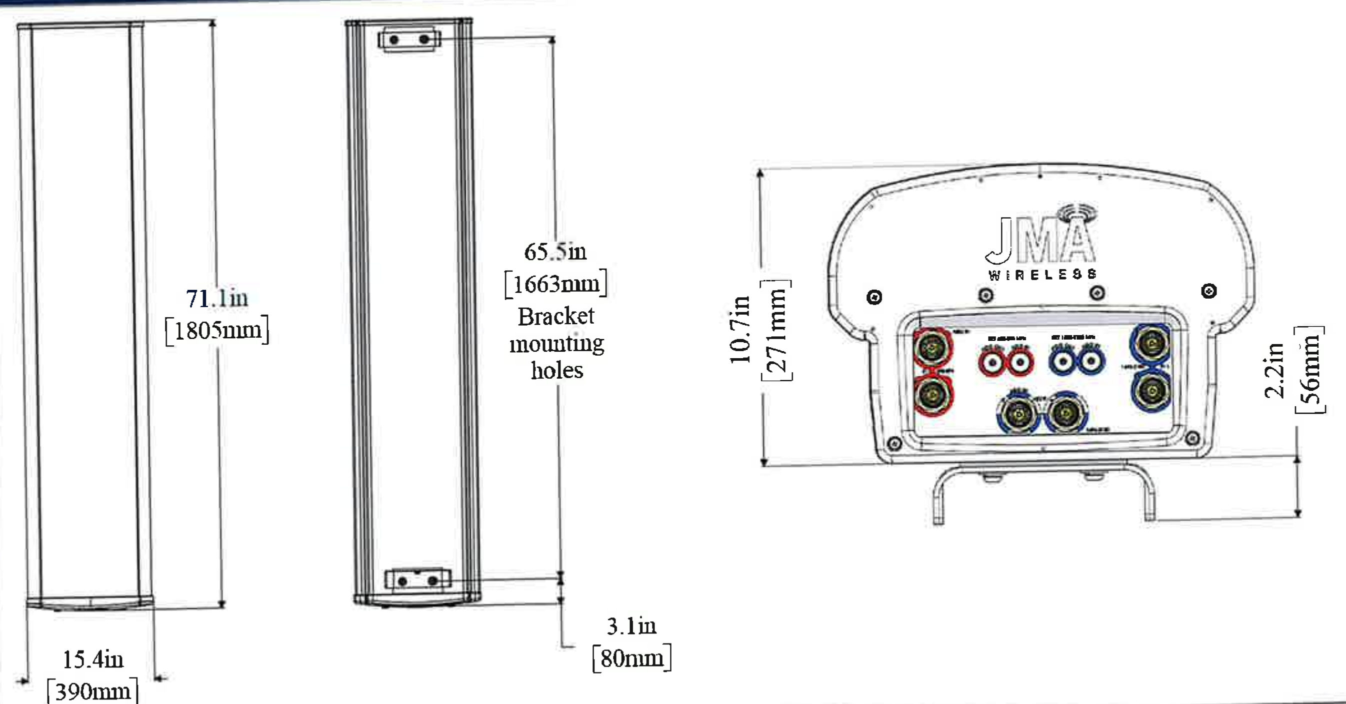
JMA WIRELESS

MX06FRO660-03

NWAV™ X-Pol Hex-Port Antenna

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	71.3/ 15.4/ 10.7 (1811/ 392/ 273)
Shipping dimensions length/width/height, inches (mm)	82/ 20/ 15 (2083/ 508/ 381)
No. of RF input ports, connector type, and location	6 x 4.3-10 female, bottom
RF connector torque	96 lbf·in (10.85 N·m or 8 lbf·ft)
Net antenna weight, lb (kg)	60 (27.0)
Shipping weight, lb (kg)	90 (41.0)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	18 (8.18)
Range of mechanical up/down tilt	-2° to 14°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal, lateral, and rear wind loading @ 150 km/h, lbf (N)	154 (685), 73 (325), 158 (703)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	2.6

Front view | Back view | Bottom view



Ordering information	
Antenna model	**Description**
MX06FRO660-03	6F X-Pol HEX FRO 60° independent tilt 700/850 RET, 4.3-10 & SBT
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations

MX06FRO660-03

NWAV™ X-Pol Hex-Port Antenna

Remote electrical tilt (RET 1000) information

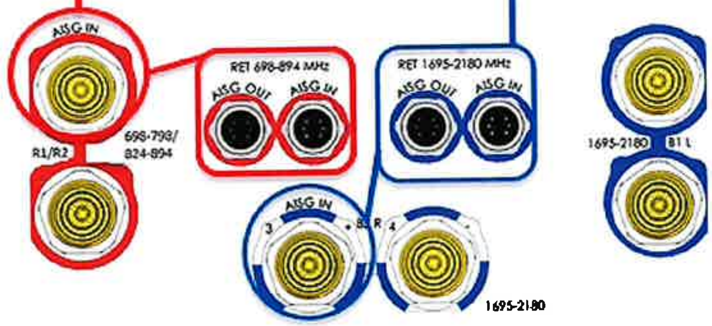
RET location	Integrated into antenna
RET interface connector type	8-pin AISG connector per IEC 60130-9
RET connector torque	Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)
RET interface connector quantity	2 pairs of AISG male/female connectors
RET interface connector location	Bottom of the antenna
Total no. of internal RETs (low bands)	2
Total no. of internal RETs (high bands)	1
RET input operating voltage, vdc	10-30
RET max power consumption, idle state, W	≤ 2.0
RET max power consumption, normal operating conditions, W	≤ 13.0
RET communication protocol	AISG 2.0 / 3GPP

RET and RF connector topology

Each RET device can be controlled either via the designated external AISG connector or RF port as shown below:

RET device	Band	RF port
R1	698-798	1-2
R2	824-894	1-2

RET device	Band	RF port
B1/B2	1695-2180	3-6

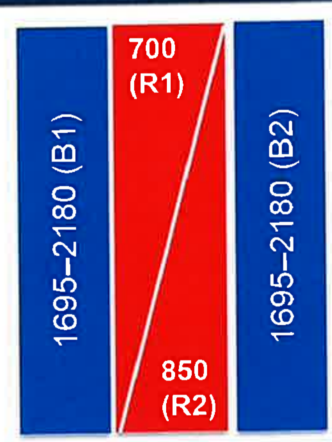


Array topology

3 sets of radiating arrays

R1/R2: 698-894 MHz
B1: 1695-2180 MHz
B2: 1695-2180 MHz

Band	RF port
1695-2180	3-4
698-894	1-2
1695-2180	5-6



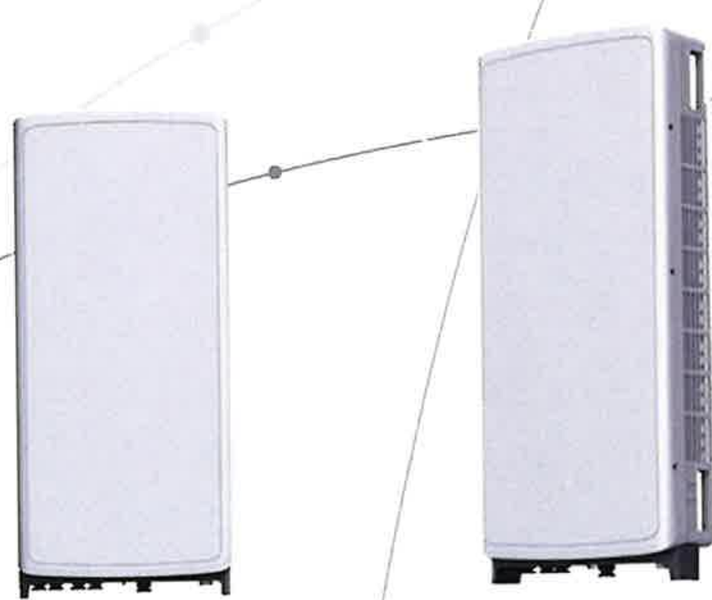
SAMSUNG

SAMSUNG C-Band 64T64R Massive MIMO Radio

for High Capacity and Wide Coverage

Samsung C-Band 64T64R Massive MIMO Radio enables mobile operators to increase coverage range, boost data speeds and ultimately offer enriched 5G experiences to users in the U.S..

Model Code : MT6407-77A



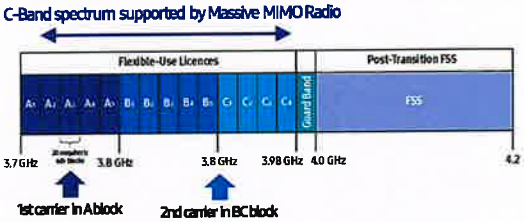
Points of Differentiation

Wide Bandwidth

With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

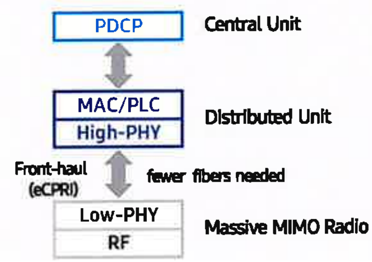
Samsung C-Band massive MIMO Radio covers the entire C-Band 280 MHz spectrum, so it can meet the operator's needs in current A block and future B/C blocks

C-Band spectrum supported by Massive MIMO Radio



Future Proof Product

Samsung C-Band 64T64R Massive MIMO radio supports not only CPRI but also eCPRI as front-haul interface.
It enables operators can cut down on OPEX/CAPEX by reducing front-haul bandwidth through low layer split and using ethernet based higher efficient line.



Enhanced Performance

C-Band massive MIMO Radio creates sharp beams and extends networks' coverage on the critical mid-band spectrum using a large number of antenna elements and high output power to boost data speeds.

This helps operators reduce their CAPEX as they now need less products to cover the same area than before.

Furthermore, as C-Band massive MIMO Radio supports MU-MIMO(Multi-user MIMO) , it enables to increase user throughput by minimizing interference.

Well Matched Design

Samsung C-Band Massive MIMO radio utilizes 64 antennas, supports up to 280MHz bandwidth, and delivers a 200W output power. despite the above advanced performance, the Radio has a compact size of 50.9L and 79.4lbs. This makes it easy to install the Radio.

It is designed to look solid and compact, with a low profile appearance so that, when installed, harmonizes well with the surrounding environment..

Technical Specifications

Item	Specification
Tech	NR
Band	n77
Frequency Band	3700 - 3980 MHz
EIRP	78.5dBm (53.0 dBm+25.5 dBi)
IBW/OBW	280 MHz / 200 MHz
Installation	Pole/Wall
Size/ Weight	16.06 x 35.06 x 5.51 inch (50.86L)/ 79.4 lbs

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.

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

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

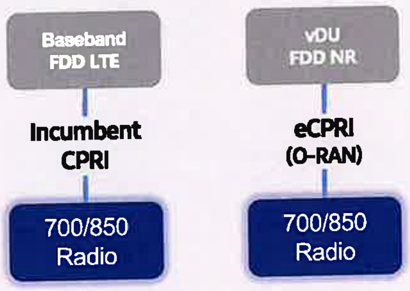
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

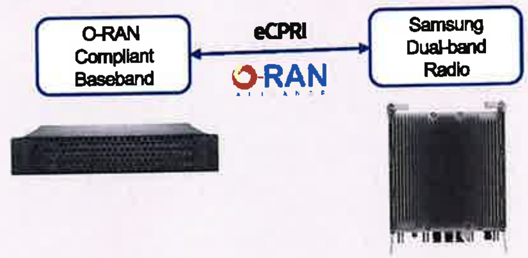
Samsung's 700/850MHz macro radio can support each incumbent CPRI interface as well as an advanced eCPRI interface. This feature provides installable options for both legacy LTE networks and added NR networks.



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.

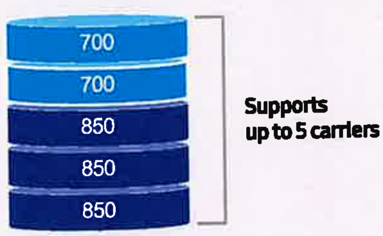
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



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.

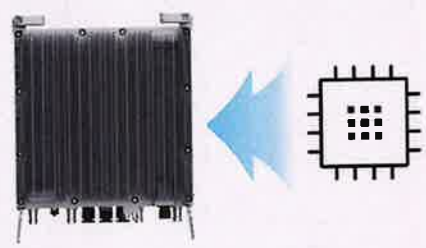
The new 700/850MHz dual-band radio can support up to 2 carriers in the B13 (700MHz) band and 3 carriers in the B5 (850MHz) band, respectively.



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

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report

verizon

Middlebury CT

1021 Straits Turnpike, Middlebury, CT 06762

April 28, 2023

Table of Contents

List of Figures

List of Tables

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of Verizon's antenna arrays to be mounted at 165' AGL on an existing self-support tower located at 1021 Straits Turnpike in Middlebury, CT. The coordinates of the monopole tower are 41° 32' 8.80" N, 73° 5' 21.23" W.

Verizon is proposing the following:

1) Remove twelve (12) existing antennas;
2) Install nine (9) multi-band antennas, three (3) per sector to support its commercial LTE network.

This report considers the planned antenna configuration for Verizon[1] and the existing antennas for AT&T[2], Dish[3], T-Mobile[4], and Sprint[5] to derive the resulting % MPE of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment C contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

---

[1] As referenced to Verizon's Radio Frequency Design Sheet updated 10/21/2022.

[2] As referenced to AT&T's filing, Connecticut Siting Council Notice of Exempt Modification – Antenna Add - 1021 Straits Turnpike (aka 1 Service Road) Middlebury, CT, dated 9/23/2022.

[3] As referenced to Dish Wireless LLC's filing, Connecticut Siting Council Tower Share Application – 1021 Straits Turnpike, Middlebury, CT, dated 11/19/2021.

[4] As referenced to T-Mobile's filing, Connecticut Siting Council Notice of Exempt Modification – 1021 Straits Turnpike, Middlebury, CT, dated 10/1/2020.

[5] As referenced in AT&T's filing, Connecticut Siting Council Notice of Exempt Modification – Structural Analysis Report dated 9/21/2022.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{PowerDensity} = \left(\frac{EIRP}{\pi \times R^2}\right) \times \text{Off BeamLoss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Antenna Inventory

Table 1 below outlines Verizon's proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Call Sign	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 30°	700	160	15.0	5060	MX06FRO660-03	62.5	0	5.9	165
		850	160	14.7	4722		53.5			
		1900	160	18.0	10095		55			
		2100	240	18.2	15857		55			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	165
	Beta / 150°	700	160	15.0	5060	MX06FRO660-03	62.5	0	5.9	165
		850	160	14.7	4722		53.5			
		1900	160	18.0	10095		55			
		2100	240	18.2	15857		55			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	165
	Gamma / 270°	700	160	15.0	5060	MX06FRO660-03	62.5	0	5.9	165
		850	160	14.7	4722		53.5			
		1900	160	18.0	10095		55			
		2100	240	18.2	15857		55			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	165

Table 1: Proposed Antenna Inventory[6] [7]

[6] Antenna heights are in reference to Verizon's Radio Frequency Design Sheet updated 10/21/2022.

[7] Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

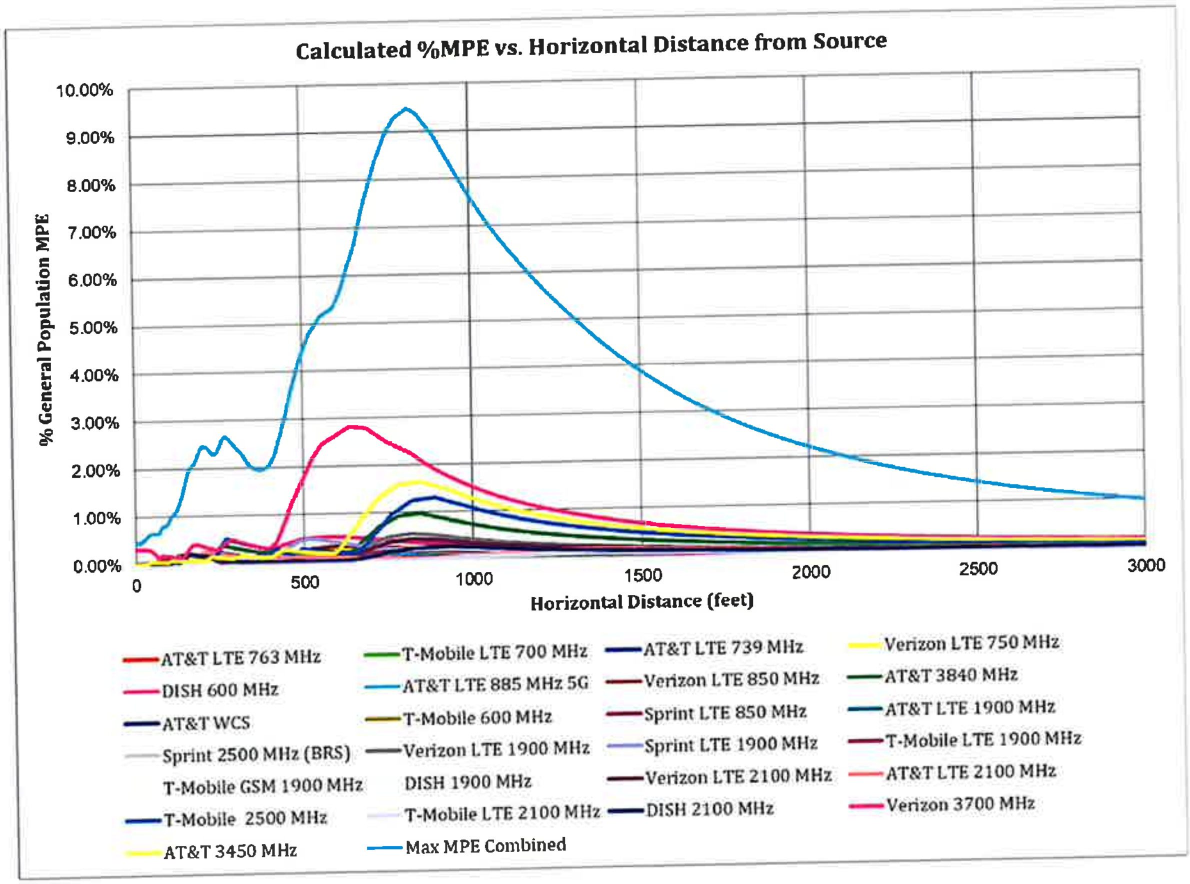


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (9.48% of the General Population limit) is calculated to occur at a horizontal distance of 818 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 818 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm^2)	Limit (mW/cm^2)	% MPE
AT&T 3450 MHz	1	108.4	186.0	818	0.016306	1.000	1.63%
AT&T 3840 MHz	1	108.4	186.0	818	0.009577	1.000	0.96%
AT&T LTE 1900 MHz	1	160.0	186.0	818	0.000501	1.000	0.05%
AT&T LTE 2100 MHz	1	240.0	186.0	818	0.000467	1.000	0.05%
AT&T LTE 739 MHz	1	160.0	186.0	818	0.000726	0.493	0.15%
AT&T LTE 763 MHz	1	160.0	186.0	818	0.000724	0.509	0.14%
AT&T LTE 885 MHz 5G	1	160.0	186.0	818	0.000579	0.590	0.10%
AT&T WCS	1	100.0	186.0	818	0.000223	1.000	0.02%
DISH 1900 MHz	1	160.0	138.0	818	0.002138	1.000	0.21%
DISH 2100 MHz	1	160.0	138.0	818	0.002318	1.000	0.23%
DISH 600 MHz	4	61.5	138.0	818	0.001520	0.400	0.38%
Sprint 2500 MHz (BRS)	1	160.0	153.0	818	0.000054	1.000	0.01%
Sprint LTE 1900 MHz	1	180.0	153.0	818	0.002198	1.000	0.22%
Sprint LTE 850 MHz	1	100.0	153.0	818	0.000381	0.567	0.07%
T-Mobile 2500 MHz	1	160.0	195.0	818	0.012395	1.000	1.24%
T-Mobile 600 MHz	1	140.0	195.0	818	0.000256	0.400	0.06%
T-Mobile GSM 1900 MHz	1	120.0	195.0	818	0.000189	1.000	0.02%
T-Mobile LTE 1900 MHz	2	120.0	195.0	818	0.001938	1.000	0.19%
T-Mobile LTE 2100 MHz	1	120.0	195.0	818	0.000065	1.000	0.01%
T-Mobile LTE 700 MHz	1	60.0	195.0	818	0.000057	0.467	0.01%
Verizon 3700 MHz	1	200.0	165.0	818	0.022409	1.000	2.24%
Verizon LTE 1900 MHz	2	160.0	165.0	818	0.005553	1.000	0.56%
Verizon LTE 2100 MHz	1	240.0	165.0	818	0.004463	1.000	0.45%
Verizon LTE 750 MHz	1	160.0	165.0	818	0.001240	0.500	0.25%
Verizon LTE 850 MHz	1	160.0	165.0	818	0.001360	0.567	0.24%
						Total	**9.48%**

Table 2: Maximum Percent of General Population Exposure Values

6. Conclusion

The above analysis verifies that RF exposure levels from the site with Verizon's proposed antenna configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be **9.48% of the FCC limit (General Population/Uncontrolled)**. This maximum cumulative percent of MPE value is calculated to occur 818 feet away from the site.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

Report Approved By: Martin J. Lavin
Senior RF Engineer
C Squared Systems, LLC

April 28, 2023
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Verizon's Radio Frequency Design Sheet updated 10/21/2022

AT&T's filing, Connecticut Siting Council Notice of Exempt Modification – Antenna Add - 1021 Straits Turnpike (aka 1 Service Road) Middlebury, CT, dated 9/23/2022

As referenced to Dish Wireless LLC's filing, Connecticut Siting Council Tower Share Application – 1021 Straits Turnpike, Middlebury, CT, dated 11/19/2021

T-Mobile's filing, Connecticut Siting Council Notice of Exempt Modification – 1021 Straits Turnpike, Middlebury, CT, dated 10/1/2020

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[8]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[9]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure

[8] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[9] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

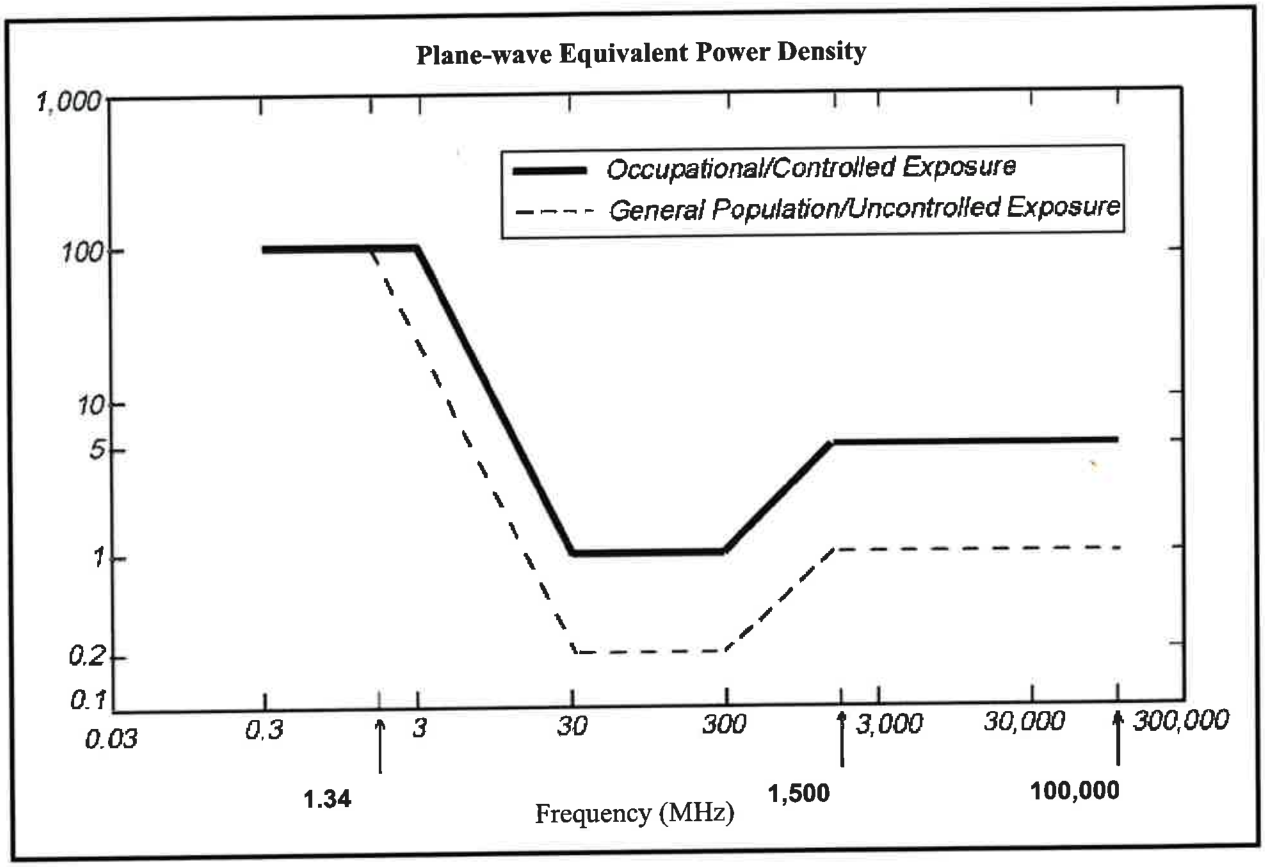
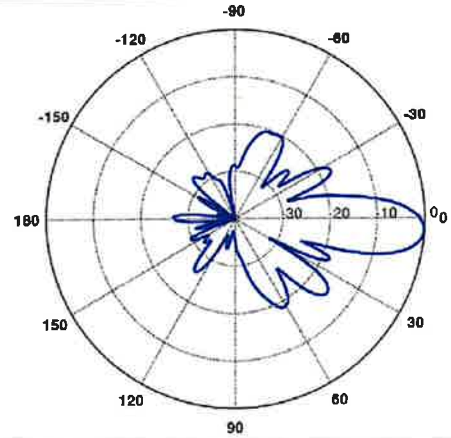


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns

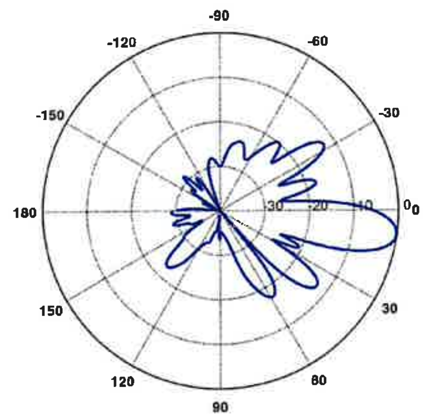
750 MHz

Manufacturer:	JMA
Model #:	MX06FRO660-03
Frequency Band:	698-798 MHz
Gain:	14.4 dBi
Vertical Beamwidth:	13.1°
Horizontal Beamwidth:	60.5°
Polarization:	±45°
Dimensions (L x W x D):	71.3" x 15.4" x 10.7"



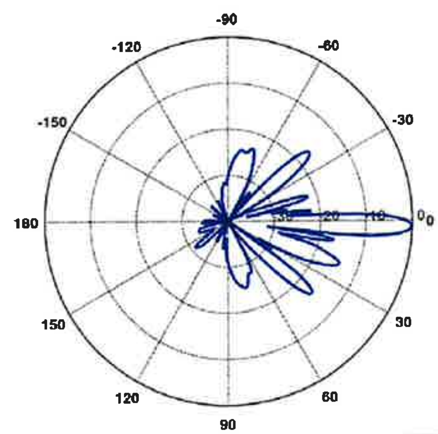
885 MHz

Manufacturer:	JMA
Model #:	MX06FRO660-03
Frequency Band:	824-894 MHz
Gain:	14.0 dBi
Vertical Beamwidth:	11.8°
Horizontal Beamwidth:	53.0°
Polarization:	±45°
Dimensions (L x W x D):	71.3" x 15.4" x 10.7"



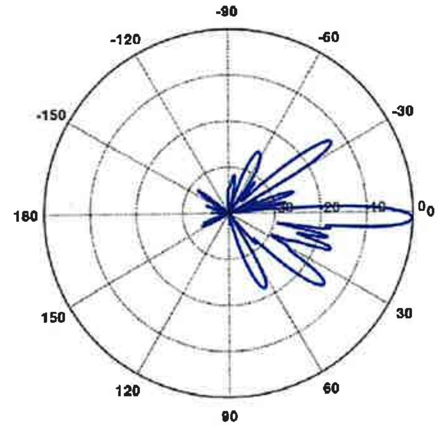
1900 MHz

Manufacturer:	JMA
Model #:	MX06FRO660-03
Frequency Band:	1850-1990 MHz
Gain:	18.0 dBi
Vertical Beamwidth:	5.5°
Horizontal Beamwidth:	55.0°
Polarization:	±45°
Dimensions (L x W x D):	71.3" x 15.4" x 10.7"



2100 MHz

Manufacturer:	JMA
Model #:	MX06FRO660-03
Frequency Band:	1920-2180 MHz
Gain:	18.2 dBi
Vertical Beamwidth:	5.5°
Horizontal Beamwidth:	55.5°
Polarization:	±45°
Dimensions (L x W x D):	71.3" x 15.4" x 10.7"



ATTACHMENT 4

February 23, 2023

Tower Engineering Professionals, Inc.
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
structures@tepgroup.net

Chelsi Monihan
Phoenix Tower International
999 Yamato Road, Suite 100
Boca Raton, FL 33431
(503) 593-0282

Subject: **Structural Analysis Report**

Carrier Designation:	***Verizon Wireless* Reconfiguration**	
	Carrier Site Number & Name:	Middlebury, CT / 467831
	Carrier Project Number/Name:	Middlebury, CT / 467831
Phoenix Tower Designation:	**PTI Site Number:**	US-CT-1003
	PTI Site Name:	Straits Turnpike
Engineering Firm Designation:	**TEP Project Number:**	25628.819998
Site Data:	**1021 Straits Turnpike, Middlebury, New Haven County, CT 06762**	
	Latitude *41° 32' 8.75"*, Longitude *-73° 05' 21.16"*	
	195 Foot - Self Supporting Tower	

Dear Chelsi Monihan,

Tower Engineering Professionals, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

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

LC1: Existing + Proposed + Future Loading **Sufficient Capacity**
Note: See Table 1 for the existing, proposed, and future loading

Structure Capacity	**Foundation Capacity**
86.7%	67.5%

The analysis has been performed in accordance with the ANSI/TIA-222-H-2017 Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures and the 2022 Connecticut State Building Code.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Table 1 and the attached drawings for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals, Inc.,* appreciate the opportunity of providing our continuing professional services to you and *Phoenix Tower International.* If you have any questions or need further assistance on this or any other projects, please give us a call.

Structural analysis prepared by: Kedis Wasef

Respectfully submitted by:

Aaron T. Rucker, P.E.

STATE OF CONNECTICUT AARON THOMAS RUCKER 32608 LICENSED PROFESSIONAL ENGINEER

02/23/2023

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 195-ft self-supporting tower designed by Fred A. Nudd Corporation in May of 1998. The tower was originally designed for a wind speed of 85 mph per ANSI/EIA/TIA-222-F. TEP visited the site in June of 2010 to gather existing steel and appurtenance information. This tower has been modified multiple times in the past to accommodate additional loading. All other information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	B
Topographic Category:	1 (Kzt = 1.0)
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic Design Category:	B
Seismic Ss:	0.191
Seismic S1:	0.064
Service Wind Speed:	60 mph

Table 1 - Existing, Proposed, and Future Antenna and Cable Information

Existing/ Proposed	Elev. (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size (in)	Coax Location	Owner/ Tenant
Future	***195.0***	**-**	***T-Mobile Future Loading[1]***	-	***2***	***1-5/8***	***AB Face***	***T-Mobile***
Existing	195.0	3	Ericsson AIR 6449 B41	(3) 12.5' Sector Frames	18[2] 4	1-5/8[2] Hybrid	AB Face	T-Mobile
		3	Ericsson Radio 4415 B25					
		3	Commscope SDX1926Q-43					
		3	RFS APXVAAR24-43-U-NA20					
		3	Ericsson AIR 32 KRD901146-1_B66A_B2A					
		3	Ericsson Radio 4449 B71/B12					
		6[3]	Ericsson KRY-112-71[3]					
Reserved	***186.0***	***3***	***CCI TPA65R-BU6DA-K***	(3) 15.0' T-Frames with Catwalk and MT195-14 Handrail Kit	***4 2 3***	***8AWG6 6AWG6 Fiber***	***CA Face***	***AT&T***
		3	***Ericsson AIR6449 B77D***					
		3	***Ericsson AIR6419 B77G***					
Existing	186.0	3	CCI DMP65R-BU6DA		3	1-5/8	CA Face	AT&T
		3	Ericsson 4449 B5/B12					
		3	Ericsson 4478 B14					
		3	Ericsson 8843 B2/B66A					
		3	Ericsson RRUS-32 B30					
To Be Removed	*186.0*	*3*	*Powerwave 7770*	-	*9 2*	*1-5/8 3/8"Ø Fiber*	*CA Face*	*AT&T*
		3	*Andrew SBNHH-1D65A*					
		2	*CCI DMP65R-BU8DA*					
		1	*CCI DMP65R-BU6DA*					
		6	*Powerwave LGP21401*					
		6	*Powerwave LGP 21901*					

Table 1 - Existing, Proposed, and Future Antenna and Cable Information (continued)

Existing/ Proposed	Elev. (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size (in)	Coax Location	Owner/ Tenant
Proposed	***169.0***	***6***	***Samsung MX06FRO660-03***	(3) 15.0' T-Frames with Catwalk	-	-	-	***Verizon***
		3	***Samsung MT6407-77A***					
		3	***Samsung RF4440d-13A***					
		1	***Commscope RCMDC-6627-PF-48***					
Existing	169.0	-	-		13	1-5/8	AB Face	Verizon
To Be Removed	*169.0*	*1*	*Antel BXA 70080/6CF*	-	-	-	-	*Verizon*
		2	*Antel BXA-70063/6CF*					
		6	*Andrew HBXX-6517DS-A2M*					
		4	*Decibel DB844G65ZAXY*					
		2	*Andrew DB846F65ZAXY*					
		3	*ALURRH2x60-AWS*					
		3	*ALU RRH2x60-PCS*					
		6	*RFS FD9R6004*					
		1	*RFS DB-T1-6Z-8AB-0Z*					
Existing	153.0	3	Commscope DT465B-2XR	(3) 12.0' Sector Frames	4	1-1/4" Hybridflex	BC Face	Sprint
		3	ALU TD-RRH8x20-25 w/ Solar shield					
		3	ALU RRH2x50-08					
		3	RFS APXVSPP18-C-A20					
		3	ALU RRH 1900 4x45 65MHz					
		3	ALU 2x50W 800 MHz RRH					
Future	***138.0***	**-**	***Dish Future Loading[4]***	-	-	-	-	***Dish***
Existing	138.0	3	JMA MX08FRO665-20	(3) Sabre HD V-Boom Sectors	1	1.6" Ø	BC Face	Dish
		3	Fujitsu TA08025-B605					
		3	Fujitsu TA08025-B604					
		1	Junction Box					
Existing	75.5	1	GPS Antenna	4.5' Standoff	1	5/8"Ø	BC Face	Unknown

Notes:

1) T-Mobile Future Loading consists of 955.40 in^2 of wind area and (2) feed lines at the 195-ft level.
2) (12) 1-5/8 of the (18) 1-5/8 are considered reserved loading in this analysis.
3) (3) Ericsson KRY-112-71 are considered reserved loading in this analysis.
4) Dish Future Loading consists of 5,523.34 in^2 of wind area at the 138-ft level.

Table 2(a) - Detailed Future Loading Information – T-Mobile[1]

Existing/ Proposed	Elevation (ft)	Wind Area (in^2) (includes Ca factors)	Weight (lb)	Qty Coax	Coax Size	% Capacity	Owner/ Tenant
Proposed	***195***	***3,452.03***	***520.47***	***1***	***Hybrid***	***86.6***	***T-Mobile***
Existing	195	20,575.54	2,710.93	18 3	1-5/8 Hybrid	86.6	T-Mobile
To Be Removed	*195*	*2,982.97*	*187.80*	-	-	-	*T-Mobile*
Future	***195***	***955.40***	***138.18***	***2***	***1-5/8***	-	***T-Mobile***
Total	195	22,000.00	3,181.78	20 4	1-5/8 Hybrid	88.5	T-Mobile

Notes:
1) T-Mobile Future Loading and capacities based on previous SA by TEP No. 25628.511278

Table 2(b) - Detailed Future Loading Information – Dish[1]

Existing/ Proposed	Elevation (ft)	Wind Area (in^2) (includes Ca factors)	Weight (lb)	Qty Coax	Coax Size	% Capacity	Owner/ Tenant
Proposed	***138***	***10,025.76***	***2,092.35***	***1***	***1.6"***	***95.0***	***Dish***
Existing	138	-	-	-	-	-	Dish
To Be Removed	*138*	-	-	-	-	-	*Dish*
Future	***138***	***4,974.24***	***1,038.111***	-	-	***95.0***	***Dish***
Total	138	15,000.00	3,235.87	1	1.6"	95.0	Dish

Notes:
1) Dish Future Loading and capacities based on previous SA by TEP No. 25628.511278

Table 2(c) - Detailed Future Loading Information – Verizon[1]

Existing/ Proposed	Elevation (ft)	Wind Area (in^2) (includes Ca factors)	Weight (lb)	Qty Coax	Coax Size	% Capacity	Owner/ Tenant
Proposed	***169***	***9,160.12***	***1,157.42***	-	-	***86.7***	***Verizon***
Existing	169	22,112.53	2,540.78	13	1-5/8	86.7	Verizon
To Be Removed	*169*	*19,007.89*	*1,145.38*	-	-	-	*Verizon*
Total	169	12,264.76	2,552.82	13	1-5/8	86.7	Verizon

Table 2(d) - Detailed Future Loading Information – AT&T[1]

Existing/ Proposed	Elevation (ft)	Wind Area (in^2) (includes Ca factors)	Weight (lb)	Qty Coax	Coax Size	% Capacity	Owner/ Tenant
Proposed	***186***	***9,775.77***	***783.90***	***4 2 3***	***8AWG6 6AWG6 Fiber***	***88.6***	***AT&T***
Existing	186	26,822.70	3,659.76	3	1-5/8	-	AT&T
To Be Removed	*186*	*13,475.41*	*854.83*	*9 2*	*1-5/8 Fiber*	-	*AT&T*
Future	***186***	-	-	-	-	***88.6***	***AT&T***
Total	186	23,123.07	3,588.83	4 2 3 3	8AWG6 6AWG6 Fiber 1-5/8	88.6	AT&T
Does AT&T's Loading Exceed 24,000 in^2?			No	If yes, by how much (in^2)?		-	

Notes:
1) AT&T Future Loading and capacities based on previous SA by TEP No. 25628.743882 - Rev 1

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Source
Tower and Foundation Drawings	Fred A. Nudd Corporation, dated May 6, 1998 Project No. 5974	PTI
Structural Modification Drawings	Fred A. Nudd Corporation, dated April 30, 1999 Drawing No. 99-6726-1	PTI
Steel and Appurtenance Mapping	Tower Engineering Professionals, Inc., dated June 3, 2010 TEP No. 102056	TEP
Post Modification Inspection	Tower Engineering Professionals, Inc., dated April 21, 2011 TEP No. 102056	TEP
Geotechnical Report	Dr. Clarence Welti, P.E., P.C., dated April 17, 1998 Project No. 25628	PTI
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated August 29, 2011 TEP No. 102056	TEP
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated July 26, 2012 TEP No. 102056	TEP
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated August 1, 2013 TEP No. 25628.4865	TEP
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated August 24, 2016 TEP No. 25628.93911	TEP
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated April 19, 2016 TEP No. 25628.47301	TEP
Post Modification Inspection	Tower Engineering Professionals, Inc., dated October 26, 2016 TEP No. 25628.58752	TEP
Previous Structural Analysis	Tower Engineering Professionals, Inc., dated December 19, 2022 TEP No. 25628.796111	TEP
Preliminary Construction Drawings	All Points Technology Corporation, APT No. CT141_12860	PTI
Correspondence	Correspondence with Phoenix Tower International regarding the existing, proposed, and future loading, dated February 1, 2023	PTI

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) The tower and foundation were built and maintained in accordance with the manufacturer's specification.
2) The configuration of existing antennas, transmission cables, mounts and other appurtenances are as specified in the tower mapping report by TEP.
3) Unless specified by the client or tower mapping, the location of the existing and proposed coax is assumed by TEP and listed in Table 1.
4) All tower components are in sufficient condition to carry their full design capacity.
5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ØP_allow (lb)	% Capacity	Pass / Fail
T1	195 - 180	Leg	PIPE 2.5 STD (SCH 40)	1	-34805.10	74059.12	47.0	Pass
T2	180 - 175	Leg	PIPE 2.5 STD (SCH 40)	43	-38987.90	80957.20	48.2	Pass
T3	175 - 170	Leg	PIPE 2.5 STD (SCH 40)	55	-50083.30	81066.08	61.8	Pass
T4	170 - 160	Leg	2-1/2SCH40 w/ 3SCH80 Half Sleeve	67	-71558.80	101521.35	70.5	Pass
T5	160 - 150	Leg	Pipe 3.5 Std (SCH40)	88	-91769.80	133278.59	68.9	Pass
T6	150 - 140	Leg	3.5SCH40 w/ 4SCH40 Half Sleeve	109	-115021.00	193419.44	59.5	Pass
T7	140 - 133.333	Leg	5 STD w/ 6 XH Half Sleeve	130	-130005.00	321764.09	40.4	Pass
T8	133.333 - 126.667	Leg	5 STD w/ 6 XH Half Sleeve	139	-145956.00	321764.09	45.4	Pass
T9	126.667 - 120	Leg	5 STD w/ 6 XH Half Sleeve	148	-161942.00	321764.09	50.3	Pass
T10	120 - 113.333	Leg	Pipe 6 STD	157	-175189.00	282257.84	62.1	Pass
T11	113.333 - 106.667	Leg	Pipe 6 STD	169	-190198.00	282290.39	67.4	Pass
T12	106.667 - 100	Leg	Pipe 6 STD	181	-204141.00	282318.74	72.3	Pass
T13	100 - 80	Leg	6 STD w/ 7 XH Half Sleeve	193	-246613.00	433439.98	56.9	Pass
T14	80 - 60	Leg	Pipe 8 STD	223	-286479.00	411193.63	69.7	Pass
T15	60 - 50	Leg	Pipe 8 STD	244	-300350.00	421200.13	71.3	Pass
T16	50 - 40	Leg	Pipe 8 STD	256	-319529.00	421253.68	75.9	Pass
T17	40 - 20	Leg	Pipe 8 EH	268	-357046.00	576516.12	61.9	Pass
T18	20 - 0	Leg	Pipe 8 EH	283	-391196.00	577189.17	67.8 71.5 (b)	Pass
T1	195 - 180	Diagonal	5/8	12	9002.31	10437.21	86.3	Pass
T2	180 - 175	Diagonal	L1 1/2x1 1/2x3/16	51	-4336.56	10303.15	42.1 77.0 (b)	Pass
T3	175 - 170	Diagonal	L2x2x3/16	63	-3454.36	18093.28	19.1 50.0 (b)	Pass
T4	170 - 160	Diagonal	2L1 1/2x1 1/2x3/16x1/4	84	-4836.86	29692.00	16.3 52.7 (b)	Pass
T5	160 - 150	Diagonal	2L2x2x3/16x1/4	93	-5842.43	42662.23	13.7 67.4 (b)	Pass
T6	150 - 140	Diagonal	2L2x2x3/16x1/4	114	-5402.45	40665.03	13.3 61.6 (b)	Pass
T7	140 - 133.333	Diagonal	L2 1/2x2 1/2x1/4	133	-6197.57	24892.98	24.9 47.2 (b)	Pass
T8	133.333 - 126.667	Diagonal	L2 1/2x2 1/2x1/4	142	-6747.17	22767.36	29.6 52.0 (b)	Pass
T9	126.667 - 120	Diagonal	L2 1/2x2 1/2x3/16	151	-6517.94	15740.23	41.4 82.7 (b)	Pass
T10	120 - 113.333	Diagonal	L3x3x1/4	160	-8330.68	30888.79	27.0 58.0 (b)	Pass
T11	113.333 - 106.667	Diagonal	L3x3x1/4	172	-8170.68	28895.68	28.3 57.8 (b)	Pass
T12	106.667 - 100	Diagonal	L2 1/2x2 1/2x1/4	184	-8508.50	15373.78	55.3 60.6 (b)	Pass
T13	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	205	-8637.21	36323.59	23.8 33.7 (b)	Pass
T14	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	226	-8133.13	28986.72	28.1 35.5 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ØP_allow (lb)	% Capacity	Pass / Fail
T15	60 - 50	Diagonal	L3x3x5/16	247	-11187.30	18196.81	61.5	Pass
T16	50 - 40	Diagonal	L3x3x5/16	259	-10849.90	16846.72	64.4	Pass
T17	40 - 20	Diagonal	L4x4x3/8	271	-10226.00	38479.45	26.6 37.0 (b)	Pass
T18	20 - 0	Diagonal	L5x5x5/16	286	-11410.00	51837.13	22.0 41.3 (b)	Pass
T1	195 - 180	Horizontal	L1 1/2x1 1/2x3/16	17	-5501.50	9640.76	57.1	Pass
T2	180 - 175	Secondary Horizontal	L2x2x3/16	54	676.13	19675.95	3.4 9.9 (b)	Pass
T3	175 - 170	Secondary Horizontal	L2x2x3/16	66	869.70	19675.95	4.4 12.7 (b)	Pass
T4	170 - 160	Secondary Horizontal	L2x2x3/16	78	-1242.06	19156.30	6.5 18.2 (b)	Pass
T5	160 - 150	Secondary Horizontal	L2x2x3/16	99	-1594.05	17984.61	8.9 23.3 (b)	Pass
T6	150 - 140	Secondary Horizontal	L2x2x3/16	120	-1995.79	16658.04	12.0 29.2 (b)	Pass
T10	120 - 113.333	Secondary Horizontal	L3x3x3/16	168	-3040.15	26358.46	11.5 38.8 (b)	Pass
T11	113.333 - 106.667	Secondary Horizontal	L3x3x3/16	180	-3301.57	25488.01	13.0 42.2 (b)	Pass
T12	106.667 - 100	Secondary Horizontal	L3x3x3/16	192	-3542.94	24590.26	14.4 45.2 (b)	Pass
T13	100 - 80	Secondary Horizontal	L3x3x1/4	204	-4276.79	27498.45	15.6 30.8 (b)	Pass
T15	60 - 50	Secondary Horizontal	L4x4x3/8	255	-5209.58	61409.77	8.5 37.7 (b)	Pass
T16	50 - 40	Secondary Horizontal	L4x4x1/4	267	-5542.40	39562.21	14.0 38.6 (b)	Pass
T1	195 - 180	Top Girt	L1 1/2x1 1/2x3/16	6	-1674.66	9640.76	17.4	Pass
T1	195 - 180	Bottom Girt	L1 1/2x1 1/2x3/16	8	-3009.45	9640.76	31.2	Pass
							Summary	
						Leg (T16)	75.9	Pass
						Diagonal (T1)	86.3	Pass
						Horizontal (T1)	57.1	Pass
						Secondary Horizontal (T12)	45.2	Pass
						Top Girt (T1)	17.4	Pass
						Bottom Girt (T1)	31.2	Pass
						Bolt Checks	78.8	Pass
						RATING =	**86.3**	**Pass**

Table 5 - Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	86.7	Pass
1,2	Base Foundation - Structural	-	67.5	Pass
1,2	Base Foundation - Soil Interaction	-	24.3	Pass

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

Structure Rating (max from all components) =	86.7%

Table 6 - Dish Twist/Sway Results for 60 mph Service Wind Speed

Elevation (ft)	Dish Model	Beam Deflection		
		Deflection (in)	Tilt (deg)	Twist (deg)
-	-	-	-	-

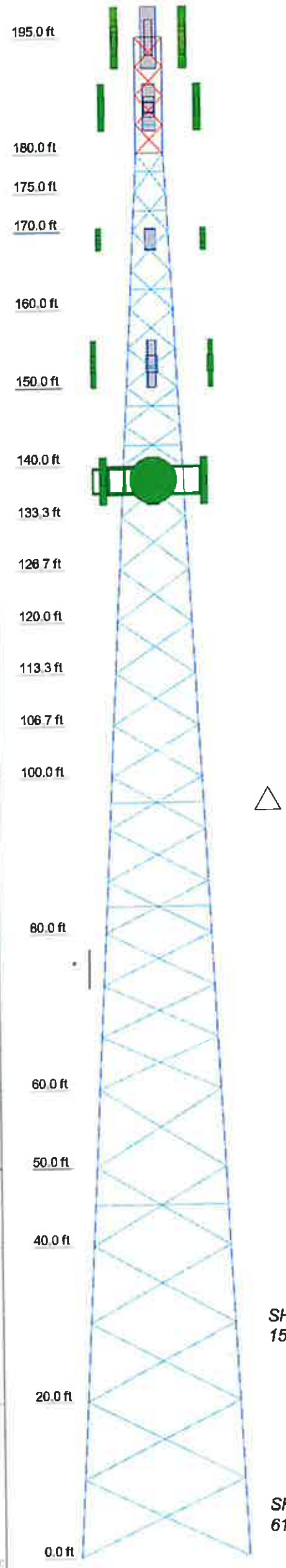
4.1) Recommendations

1) If the load differs from that described in Table 1 of this report, or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The tower and its foundation have sufficient capacity to carry the existing, proposed, and future loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Legs	Leg Grade	Diagonals	Diagonal Grade	Top Girts	Bottom Girts	Horizontals	Sec. Horizontals	Face Width (ft)	# Panels @ (ft)	Weight (lb)
T1	PIPE 2.5 STD (SCH 40)	A572-55	SR 5/8	A36	L1 1/2x1 1/2x3/16	L1 1/2x1 1/2x3/16	L1 1/2x1 1/2x3/16	N.A.	3.5	4 @ 3.75	484.2
T2			F						4		181.8
T3			G								214.0
T4	A	A53-B-35	H		N.A.	N.A.	N.A.	L2x2x3/16	4.5	8 @ 5	710.7
T5	B	A572-55	2L2x2x3/16x1/4						5.5		617.6
T6	C	A500-50							6.5		1040.7
T7	D	A500-46	L2 1/2x2 1/2x1/4					N.A.	7.5		829.5
T8									8.16667		842.1
T9			I						8.83333		788.4
T10	Pipe 6 STD	A572-55	L3x3x1/4					L3x3x3/16	9.5	12 @ 6.66667	839.1
T11									10.1667		862.9
T12			J						10.8333		820.6
T13	E	A53-B-42	L3 1/2x3 1/2x1/4					L3x3x1/4	11.5		4004.0
T14	Pipe 8 STD	A572-55						N.A.	13.5	4 @ 10	3370.0
T15			L3x3x5/16					L4x4x3/8	15.5		2011.3
T16								L4x4x1/4	16.5		1912.1
T17	Pipe 8 EH		L4x4x3/8					N.A.	17.5		5066.4
T18			L5x5x5/16						19.5	2 @ 9.95833	5429.7
									21.5		30525.2



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2-1/2SCH40 w/ 3SCH80 Half Sleeve	F	L1 1/2x1 1/2x3/16
B	Pipe 3.5 Std (SCH40)	G	L2x2x3/16
C	3.5SCH40 w/ 4SCH40 Half Sleeve	H	2L1 1/2x1 1/2x3/16x1/4
D	5 STD w/ 6 XH Half Sleeve	I	L2 1/2x2 1/2x3/16
E	6 STD w/ 7 XH Half Sleeve	J	L2 1/2x2 1/2x1/4

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-55	55 ksi	70 ksi	A500-50	50 ksi	62 ksi
A36	36 ksi	58 ksi	A500-46	46 ksi	62 ksi
A53-B-35	35 ksi	60 ksi	A53-B-42	42 ksi	63 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 86.3%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 400108 lb
SHEAR: 39361 lb

UPLIFT: -348314 lb
SHEAR: 34631 lb

AXIAL 165710 lb
SHEAR 15962 lb
MOMENT 1928185 lb-ft
TORQUE 11689 lb-ft
50 mph WIND - 1.5000 in ICE

AXIAL 67792 lb
SHEAR 61450 lb
MOMENT 7029079 lb-ft
TORQUE 47933 lb-ft
REACTIONS - 125 mph WIND

TOWER ENGINEERING PROFESSIONALS, INC.
326 TRYON RD
RALEIGH, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Tower Engineering Professionals, Inc

Job:	US-CT-1003 Straits Turnpike
Project:	TEP No. 25628.819998
Client:	Phoenix Tower International
Drawn by:	Kedis Wasef
App'd:	
Code:	TIA-222-H
Date:	02/23/23
Scale:	NTS
Path:	[illegible]
Dwg No.	E-1

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 195.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.50 ft at the top and 21.50 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in New Haven County, Connecticut.
- Tower base elevation above sea level: 432.77 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

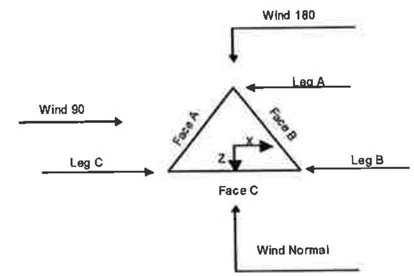
Consider Moments - Legs
Consider Moments - Horizontals
Consider Moments - Diagonals
Use Moment Magnification
√ Use Code Stress Ratios
√ Use Code Safety Factors - Guys
Escalate Ice
Always Use Max Kz
Use Special Wind Profile
√ Include Bolts In Member Capacity
Leg Bolts Are At Top Of Section
√ Secondary Horizontal Braces Leg
Use Diamond Inner Bracing (4 Sided)
√ SR Members Have Cut Ends
SR Members Are Concentric

Distribute Leg Loads As Uniform
Assume Legs Pinned
√ Assume Rigid Index Plate
√ Use Clear Spans For Wind Area
√ Use Clear Spans For KL/r
Retension Guys To Initial Tension
√ Bypass Mast Stability Checks
√ Use Azimuth Dish Coefficients
√ Project Wind Area of Appurt.
Autocalc Torque Arm Areas
Add IBC .6D+W Combination
√ Sort Capacity Reports By Component
Triangulate Diamond Inner Bracing
Treat Feed Line Bundles As Cylinder
Ignore KL/ry For 60 Deg. Angle Legs

Use ASCE 10 X-Brace Ly Rules
√ Calculate Redundant Bracing Forces
Ignore Redundant Members in FEA
√ SR Leg Bolts Resist Compression
All Leg Panels Have Same Allowable
√ Offset Girt At Foundation
√ Consider Feed Line Torque
√ Include Angle Block Shear Check
Use TIA-222-H Bracing Resist. Exemption
Use TIA-222-H Tension Splice Exemption

Poles

Include Shear-Torsion Interaction
Always Use Sub-Critical Flow
Use Top Mounted Sockets
Pole Without Linear Attachments
Pole With Shroud Or No Appurtenances
Outside and Inside Corner Radii Are Known



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	195.00-180.00			3.50	1	15.00
T2	180.00-175.00			3.50	1	5.00
T3	175.00-170.00			4.00	1	5.00
T4	170.00-160.00			4.50	1	10.00
T5	160.00-150.00			5.50	1	10.00
T6	150.00-140.00			6.50	1	10.00
T7	140.00-133.33			7.50	1	6.67
T8	133.33-126.67			8.17	1	6.67
T9	126.67-120.00			8.83	1	6.67
T10	120.00-113.33			9.50	1	6.67
T11	113.33-106.67			10.17	1	6.67
T12	106.67-100.00			10.83	1	6.67
T13	100.00-80.00			11.50	1	20.00
T14	80.00-60.00			13.50	1	20.00
T15	60.00-50.00			15.50	1	10.00
T16	50.00-40.00			16.50	1	10.00
T17	40.00-20.00			17.50	1	20.00
T18	20.00-0.00			19.50	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	195.00-180.00	3.75	TX Brace	No	Yes	0.0000	0.0000
T2	180.00-175.00	5.00	X Brace	No	Yes	0.0000	0.0000
T3	175.00-170.00	5.00	X Brace	No	Yes	0.0000	0.0000
T4	170.00-160.00	5.00	X Brace	No	Yes	0.0000	0.0000
T5	160.00-150.00	5.00	X Brace	No	Yes	0.0000	0.0000
T6	150.00-140.00	5.00	X Brace	No	Yes	0.0000	0.0000
T7	140.00-133.33	6.67	X Brace	No	No	0.0000	0.0000
T8	133.33-126.67	6.67	X Brace	No	No	0.0000	0.0000
T9	126.67-120.00	6.67	X Brace	No	No	0.0000	0.0000
T10	120.00-113.33	6.67	X Brace	No	Yes	0.0000	0.0000
T11	113.33-106.67	6.67	X Brace	No	Yes	0.0000	0.0000
T12	106.67-100.00	6.67	X Brace	No	Yes	0.0000	0.0000
T13	100.00-80.00	6.67	X Brace	No	Yes	0.0000	0.0000
T14	80.00-60.00	6.67	X Brace	No	No	0.0000	0.0000
T15	60.00-50.00	10.00	X Brace	No	Yes	0.0000	0.0000
T16	50.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T17	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T18	20.00-0.00	9.96	X Brace	No	No	0.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 195.00-180.00	Pipe	PIPE 2.5 STD (SCH 40)	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T2 180.00-175.00	Pipe	PIPE 2.5 STD (SCH 40)	A572-55 (55 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 175.00-170.00	Pipe	PIPE 2.5 STD (SCH 40)	A572-55 (55 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 170.00-160.00	Arbitrary Shape	2-1/2SCH40 w/ 3SCH80 Half Sleeve	A53-B-35 (35 ksi)	Double Equal Angle	2L1 1/2x1 1/2x3/16x1/4	A36 (36 ksi)
T5 160.00-150.00	Pipe	Pipe 3.5 Std (SCH40)	A572-55 (55 ksi)	Double Angle	2L2x2x3/16x1/4	A36 (36 ksi)
T6 150.00-140.00	Arbitrary Shape	3.5SCH40 w/ 4SCH40 Half Sleeve	A500-50 (50 ksi)	Double Angle	2L2x2x3/16x1/4	A36 (36 ksi)
T7 140.00-133.33	Arbitrary Shape	5 STD w/ 6 XH Half Sleeve	A500-46 (46 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 133.33-126.67	Arbitrary Shape	5 STD w/ 6 XH Half Sleeve	A500-46 (46 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 126.67-120.00	Arbitrary Shape	5 STD w/ 6 XH Half Sleeve	A500-46 (46 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T10 120.00-113.33	Pipe	Pipe 6 STD	A572-55 (55 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T11 113.33-106.67	Pipe	Pipe 6 STD	A572-55 (55 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T12 106.67-100.00	Pipe	Pipe 6 STD	A572-55 (55 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T13 100.00-80.00	Arbitrary Shape	6 STD w/ 7 XH Half Sleeve	A53-B-42 (42 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T14 80.00-60.00	Pipe	Pipe 8 STD	A572-55 (55 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T15 60.00-50.00	Pipe	Pipe 8 STD	A572-55 (55 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T16 50.00-40.00	Pipe	Pipe 8 STD	A572-55 (55 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T17 40.00-20.00	Pipe	Pipe 8 EH	A572-55 (55 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)
T18 20.00-0.00	Pipe	Pipe 8 EH	A572-55 (55 ksi)	Equal Angle	L5x5x5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 195.00-180.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 195.00-180.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T2 180.00-175.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 175.00-170.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 170.00-160.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T5 160.00-150.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T6 150.00-140.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T10 120.00-113.33	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T11 113.33-106.67	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T12 106.67-100.00	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T13 100.00-80.00	Equal Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T15 60.00-50.00	Equal Angle	L4x4x3/8	A36	Solid Round		A36

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T16 50.00-40.00	Equal Angle	L4x4x1/4	(36 ksi) A36 (36 ksi)	Solid Round		(36 ksi) A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 195.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T2 180.00-175.00	0.00	0.2500	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T3 175.00-170.00	0.00	0.2500	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T4 170.00-160.00	0.00	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	0.0000	36.0000
T5 160.00-150.00	0.00	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	0.0000	36.0000
T6 150.00-140.00	0.00	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	0.0000	36.0000
T7 140.00-133.33	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T8 133.33-126.67	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T9 126.67-120.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T10 120.00-113.33	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T11 113.33-106.67	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T12 106.67-100.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T13 100.00-80.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T14 80.00-60.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T15 60.00-50.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T16 50.00-40.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T17 40.00-20.00	0.00	0.4375	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T18 20.00-0.00	0.00	0.4375	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000

Tower Section Geometry *(cont'd)*

K Factors[1]

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 195.00-180.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 180.00-175.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T3 175.00-170.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T4 170.00-160.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T5 160.00-150.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T6 150.00-140.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T7 140.00-133.33	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 133.33-126.67	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 126.67-120.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 120.00-113.33	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T11 113.33-106.67	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T12 106.67-100.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T13 100.00-80.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T14 80.00-60.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T15 60.00-50.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T16 50.00-40.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T17 40.00-20.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T18 20.00-0.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 195.00-180.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 180.00-175.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 175.00-170.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T4 170.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 160.00-150.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 150.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 140.00-133.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 133.33-126.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 126.67-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 120.00-113.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 113.33-106.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 106.67-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 60.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 50.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T18 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 195.00-180.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 180.00-175.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 175.00-170.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 170.00-160.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 160.00-150.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 150.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 140.00-133.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 133.33-126.67	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 126.67-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T10 120.00-113.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 113.33-106.67	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 106.67-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 100.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 60.00-50.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 50.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 40.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T18 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 195.00-180.00	Flange	0.7500 A325N	4	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T2 180.00-175.00	Flange	0.7500 A325N	0	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T3 175.00-170.00	Flange	0.7500 A325N	0	0.5000 A325X	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T4 170.00-160.00	Flange	0.7500 A325N	6	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T5 160.00-150.00	Flange	1.0000 A325N	0	0.5000 A325X	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T6 150.00-140.00	Flange	1.0000 A325N	6	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T7 140.00-133.33	Flange	1.0000 A325N	0	0.6250 A325X	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T8 133.33-126.67	Flange	1.0000 A325N	0	0.6250 A325X	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T9 126.67-120.00	Flange	1.0000 A325N	8	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T10 120.00-113.33	Flange	1.0000 A325N	0	0.6250 A325X	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T11 113.33-106.67	Flange	1.0000 A325N	0	0.6250 A325X	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T12 106.67-100.00	Flange	1.0000 A325N	8	0.6250 A325X	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T13 100.00-80.00	Flange	1.2500 A325N	8	0.6250 A325N	2	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.7500 A325N	1

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T14 80.00-60.00	Flange	1.2500 A325N	8	0.6250 A325N	2	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.7500 A325X	0
T15 60.00-50.00	Flange	1.2500 A325N	0	0.6250 A325N	2	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T16 50.00-40.00	Flange	1.2500 A325N	8	0.6250 A325N	2	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.7500 A325X	1
T17 40.00-20.00	Flange	1.2500 A325N	8	0.6250 A325N	2	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T18 20.00-0.00	Flange	1.5000 A36	8	0.6250 A325N	2	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A (1-5/8 FOAM)	B	No	No	Ar (CaAa)	169.00 - 8.00	-2.0000	0.35	13	13	0.5000	1.9800		0.82
WG Rail 1.5x1.5x1/4 ****	B	No	No	Af (CaAa)	170.00 - 8.00	-2.0000	0.35	2	2	36.5000	1.5000		2.40
1 5/8" Hybrid	B	No	No	Ar (CaAa)	195.00 - 8.00	0.0000	0	4	4	0.5000	1.6250		0.75
WG Rail 1.5x1.5x3/16 ****	B	No	No	Af (CaAa)	195.00 - 0.00	0.0000	0	2	2	36.0000	1.5000		1.81
LDF7-50A (1-5/8 FOAM) ****	B	No	No	Ar (CaAa)	195.00 - 8.00	0.0000	0	20	9	0.5000	1.9800		0.82
5/8" dia. coax	C	No	No	Ar (CaAa)	75.50 - 10.00	0.0000	0	1	1	0.5000	0.6250		0.15
1 1/4 Hybriflex Cable	C	No	No	Ar (CaAa)	153.00 - 10.00	0.0000	0.04	4	4	0.5000	1.2500		1.44
WG Rail 1.5x1.5x3/16 ****	C	No	No	Af (CaAa)	160.00 - 0.00	0.0000	0.1	2	2	35.0000	1.5000		1.81
LDF7-50A (1-5/8 FOAM)	A	No	No	Ar (CaAa)	186.00 - 8.00	0.0000	0.3	3	3	0.5000	1.9800		0.82
7/16" Fiber Cable (24 fibers Max)	A	No	No	Ar (CaAa)	186.00 - 8.00	0.0000	0.375	3	3	0.5000	0.4375		0.03
0.88" 8AWG6	A	No	No	Ar (CaAa)	186.00 - 8.00	0.0000	0.35	4	4	0.8750	0.8750		0.19
EUCAHYBRID 78-6AWG6-1 8SM-CP(7/8")	A	No	No	Ar (CaAa)	186.00 - 8.00	0.0000	0.35	2	2	1.1020	1.1020		0.84
WG Rail 1.5x1.5x1/8 ****	A	No	No	Af (CaAa)	186.00 - 2.00	0.0000	0.3	2	2	34.0000	1.5000		1.23
Safety Line 3/8	A	No	No	Ar (CaAa)	195.00 - 0.00	0.0000	0.5	1	1	0.3750	0.3750		0.22

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Step Pegs (5/8" SR) 7-in. w/30" step	A	No	No	Ar (CaAa)	195.00 - 0.00	0.0000	0.5	1	1	0.3500	0.3500		0.49
Step Pegs (5/8" SR) 7-in. w/30" step	B	No	No	Ar (CaAa)	60.00 - 0.00	0.0000	0.5	1	1	0.3500	0.3500		0.49
Step Pegs (5/8" SR) 7-in. w/30" step ****	C	No	No	Ar (CaAa)	60.00 - 0.00	0.0000	0.5	1	1	0.3500	0.3500		0.49
Rung L1.5x1.5x1/8 (36.25"w, 34"s)	B	No	No	Af (CaAa)	170.00 - 8.00	-2.0000	0.35	1	1	0.5000	0.0001		1.31
Rung L1.5x1.5x1/8 (36"w, 34"s)	B	No	No	Af (CaAa)	181.00 - 0.00	0.0000	0	1	1	0.5000	0.0001		1.29
Rung L2x1.5x1/8 (35"w, 48"s)	C	No	No	Af (CaAa)	160.00 - 0.00	0.0000	0.1	1	1	0.5000	0.0001		1.05
Rung L1.5x1.5x1/8 (36"w, 34"s) *****	A	No	No	Af (CaAa)	180.00 - 2.00	0.0000	0.3	1	1	0.5000	0.0001		1.29
1.6" Feedline	C	No	No	Ar (CaAa)	138.00 - 10.00	0.0000	0	1	1	1.5840	1.6000		0.62
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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 ft²/ft	Weight plf
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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
T1	195.00-180.00	A	0.000	0.000	11.861	0.000	55.31
		B	0.000	0.000	76.650	0.000	346.59
		C	0.000	0.000	0.000	0.000	0.00
T2	180.00-175.00	A	0.000	0.000	9.341	0.000	47.26
		B	0.000	0.000	25.550	0.000	121.58
		C	0.000	0.000	0.000	0.000	0.00
T3	175.00-170.00	A	0.000	0.000	9.341	0.000	47.26
		B	0.000	0.000	25.550	0.000	121.58
		C	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
T4	170.00-160.00	A	0.000	0.000	18.682	0.000	94.52
		B	0.000	0.000	79.266	0.000	400.22
		C	0.000	0.000	0.000	0.000	0.00
T5	160.00-150.00	A	0.000	0.000	18.682	0.000	94.52
		B	0.000	0.000	81.840	0.000	410.88
		C	0.000	0.000	6.500	0.000	63.90
T6	150.00-140.00	A	0.000	0.000	18.682	0.000	94.52
		B	0.000	0.000	81.840	0.000	410.88
		C	0.000	0.000	10.000	0.000	104.11
T7	140.00-133.33	A	0.000	0.000	12.454	0.000	63.01
		B	0.000	0.000	54.560	0.000	273.92
		C	0.000	0.000	7.413	0.000	72.30
T8	133.33-126.67	A	0.000	0.000	12.454	0.000	63.01
		B	0.000	0.000	54.560	0.000	273.92
		C	0.000	0.000	7.733	0.000	73.55
T9	126.67-120.00	A	0.000	0.000	12.454	0.000	63.01
		B	0.000	0.000	54.560	0.000	273.92
		C	0.000	0.000	7.733	0.000	73.55
T10	120.00-113.33	A	0.000	0.000	12.454	0.000	63.01
		B	0.000	0.000	54.560	0.000	273.92
		C	0.000	0.000	7.733	0.000	73.55
T11	113.33-106.67	A	0.000	0.000	12.454	0.000	63.01
		B	0.000	0.000	54.560	0.000	273.92
		C	0.000	0.000	7.733	0.000	73.55
T12	106.67-100.00	A	0.000	0.000	12.454	0.000	63.01
		B	0.000	0.000	54.560	0.000	273.92
		C	0.000	0.000	7.733	0.000	73.55
T13	100.00-80.00	A	0.000	0.000	37.363	0.000	189.04
		B	0.000	0.000	163.681	0.000	821.76
		C	0.000	0.000	23.200	0.000	220.64
T14	80.00-60.00	A	0.000	0.000	37.363	0.000	189.04
		B	0.000	0.000	163.681	0.000	821.76
		C	0.000	0.000	24.169	0.000	222.97
T15	60.00-50.00	A	0.000	0.000	18.682	0.000	94.52
		B	0.000	0.000	82.190	0.000	415.75
		C	0.000	0.000	12.575	0.000	116.69
T16	50.00-40.00	A	0.000	0.000	18.682	0.000	94.52
		B	0.000	0.000	82.190	0.000	415.75
		C	0.000	0.000	12.575	0.000	116.69
T17	40.00-20.00	A	0.000	0.000	37.363	0.000	189.04
		B	0.000	0.000	164.381	0.000	831.50
		C	0.000	0.000	25.150	0.000	233.38
T18	20.00-0.00	A	0.000	0.000	25.998	0.000	141.61
		B	0.000	0.000	102.909	0.000	542.12
		C	0.000	0.000	17.925	0.000	168.23

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
T1	195.00-180.00	A	1.517	0.000	0.000	43.128	0.000	480.11
		B		0.000	0.000	89.575	0.000	1581.34
		C		0.000	0.000	0.000	0.000	0.00
T2	180.00-175.00	A	1.509	0.000	0.000	32.265	0.000	378.24
		B		0.000	0.000	31.222	0.000	560.42
		C		0.000	0.000	0.000	0.000	0.00
T3	175.00-170.00	A	1.504	0.000	0.000	32.214	0.000	376.96

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
		B		0.000	0.000	31.195	0.000	559.23
		C		0.000	0.000	0.000	0.000	0.00
T4	170.00-160.00	A	1.498	0.000	0.000	64.272	0.000	749.96
		B		0.000	0.000	115.769	0.000	1916.41
		C		0.000	0.000	0.000	0.000	0.00
T5	160.00-150.00	A	1.488	0.000	0.000	64.052	0.000	744.45
		B		0.000	0.000	119.956	0.000	1966.91
		C		0.000	0.000	17.821	0.000	294.33
T6	150.00-140.00	A	1.478	0.000	0.000	63.819	0.000	738.63
		B		0.000	0.000	119.745	0.000	1956.60
		C		0.000	0.000	26.809	0.000	416.93
T7	140.00-133.33	A	1.470	0.000	0.000	42.409	0.000	489.01
		B		0.000	0.000	79.706	0.000	1298.36
		C		0.000	0.000	19.937	0.000	304.90
T8	133.33-126.67	A	1.462	0.000	0.000	42.294	0.000	486.16
		B		0.000	0.000	79.601	0.000	1293.29
		C		0.000	0.000	20.789	0.000	315.50
T9	126.67-120.00	A	1.455	0.000	0.000	42.174	0.000	483.18
		B		0.000	0.000	79.492	0.000	1287.99
		C		0.000	0.000	20.731	0.000	313.76
T10	120.00-113.33	A	1.447	0.000	0.000	42.047	0.000	480.06
		B		0.000	0.000	79.377	0.000	1282.44
		C		0.000	0.000	20.671	0.000	311.94
T11	113.33-106.67	A	1.438	0.000	0.000	41.914	0.000	476.78
		B		0.000	0.000	79.257	0.000	1276.61
		C		0.000	0.000	20.607	0.000	310.02
T12	106.67-100.00	A	1.429	0.000	0.000	41.774	0.000	473.34
		B		0.000	0.000	79.129	0.000	1270.46
		C		0.000	0.000	20.539	0.000	308.01
T13	100.00-80.00	A	1.410	0.000	0.000	124.398	0.000	1397.53
		B		0.000	0.000	236.551	0.000	3771.16
		C		0.000	0.000	61.175	0.000	910.90
T14	80.00-60.00	A	1.375	0.000	0.000	122.753	0.000	1357.87
		B		0.000	0.000	235.059	0.000	3699.90
		C		0.000	0.000	65.615	0.000	942.10
T15	60.00-50.00	A	1.342	0.000	0.000	60.607	0.000	660.63
		B		0.000	0.000	119.865	0.000	1849.47
		C		0.000	0.000	36.165	0.000	499.52
T16	50.00-40.00	A	1.315	0.000	0.000	59.981	0.000	645.92
		B		0.000	0.000	119.244	0.000	1821.75
		C		0.000	0.000	35.758	0.000	488.87
T17	40.00-20.00	A	1.263	0.000	0.000	117.510	0.000	1235.12
		B		0.000	0.000	236.054	0.000	3535.98
		C		0.000	0.000	69.919	0.000	936.77
T18	20.00-0.00	A	1.132	0.000	0.000	78.087	0.000	798.95
		B		0.000	0.000	149.486	0.000	2128.00
		C		0.000	0.000	47.357	0.000	620.74

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	195.00-180.00	5.0776	-6.3983	3.1470	-6.1834
T2	180.00-175.00	3.4148	-7.9911	2.2280	-9.0711
T3	175.00-170.00	3.5062	-8.4694	2.4027	-9.9549
T4	170.00-160.00	7.3187	-4.5324	5.9952	-6.9587

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T5	160.00-150.00	7.2829	-3.5983	5.8960	-5.8335
T6	150.00-140.00	7.7482	-3.8178	6.3531	-6.2084
T7	140.00-133.33	7.1749	-3.5647	6.6444	-6.3668
T8	133.33-126.67	7.6225	-3.7126	7.0703	-6.6317
T9	126.67-120.00	8.0819	-3.9509	7.5226	-7.0624
T10	120.00-113.33	9.0287	-4.2786	7.9571	-7.3065
T11	113.33-106.67	9.4090	-4.4845	8.3509	-7.6810
T12	106.67-100.00	10.1646	-4.8247	8.8910	-8.1540
T13	100.00-80.00	10.0197	-4.8909	9.1884	-8.5294
T14	80.00-60.00	12.0773	-5.6787	10.8225	-9.4763
T15	60.00-50.00	12.8734	-5.8315	11.3250	-8.6796
T16	50.00-40.00	13.3500	-6.0801	11.8105	-9.0570
T17	40.00-20.00	14.8700	-6.7314	13.2181	-10.0431
T18	20.00-0.00	9.9861	-5.5449	9.6687	-9.0181

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	4	1 5/8" Hybrid	180.00 - 195.00	0.6000	0.4557
T1	5	WG Rail 1.5x1.5x3/16	180.00 - 195.00	0.6000	0.4557
T1	7	LDF7-50A (1-5/8 FOAM)	180.00 - 195.00	0.6000	0.4557
T1	13	LDF7-50A (1-5/8 FOAM)	180.00 - 186.00	0.6000	0.4557
T1	14	7/16" Fiber Cable (24 fibers Max)	180.00 - 186.00	0.6000	0.4557
T1	15	0.88" 8AWG6	180.00 - 186.00	0.6000	0.4557
T1	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	180.00 - 186.00	0.6000	0.4557
T1	18	WG Rail 1.5x1.5x1/8	180.00 - 186.00	0.6000	0.4557
T1	20	Safety Line 3/8	180.00 - 195.00	0.6000	0.4557
T1	21	Step Pegs (5/8" SR) 7-in. w/30" step	180.00 - 195.00	0.6000	0.4557
T1	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	180.00 - 181.00	0.6000	0.4557
T2	4	1 5/8" Hybrid	175.00 - 180.00	0.6000	0.4913
T2	5	WG Rail 1.5x1.5x3/16	175.00 - 180.00	0.6000	0.4913
T2	7	LDF7-50A (1-5/8 FOAM)	175.00 - 180.00	0.6000	0.4913
T2	13	LDF7-50A (1-5/8 FOAM)	175.00 - 180.00	0.6000	0.4913
T2	14	7/16" Fiber Cable (24 fibers Max)	175.00 - 180.00	0.6000	0.4913
T2	15	0.88" 8AWG6	175.00 - 180.00	0.6000	0.4913
T2	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	175.00 - 180.00	0.6000	0.4913

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	18	WG Rail 1.5x1.5x1/8	175.00 - 180.00	0.6000	0.4913
T2	20	Safety Line 3/8	175.00 - 180.00	0.6000	0.4913
T2	21	Step Pegs (5/8" SR) 7-in. w/30" step	175.00 - 180.00	0.6000	0.4913
T2	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	175.00 - 180.00	0.6000	0.4913
T2	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	175.00 - 180.00	0.6000	0.4913
T3	4	1 5/8" Hybrid	170.00 - 175.00	0.6000	0.5042
T3	5	WG Rail 1.5x1.5x3/16	170.00 - 175.00	0.6000	0.5042
T3	7	LDF7-50A (1-5/8 FOAM)	170.00 - 175.00	0.6000	0.5042
T3	13	LDF7-50A (1-5/8 FOAM)	170.00 - 175.00	0.6000	0.5042
T3	14	7/16" Fiber Cable (24 fibers Max)	170.00 - 175.00	0.6000	0.5042
T3	15	0.88" 8AWG6	170.00 - 175.00	0.6000	0.5042
T3	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	170.00 - 175.00	0.6000	0.5042
T3	18	WG Rail 1.5x1.5x1/8	170.00 - 175.00	0.6000	0.5042
T3	20	Safety Line 3/8	170.00 - 175.00	0.6000	0.5042
T3	21	Step Pegs (5/8" SR) 7-in. w/30" step	170.00 - 175.00	0.6000	0.5042
T3	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	170.00 - 175.00	0.6000	0.5042
T3	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	170.00 - 175.00	0.6000	0.5042
T4	1	LDF7-50A (1-5/8 FOAM)	160.00 - 169.00	0.6000	0.5443
T4	2	WG Rail 1.5x1.5x1/4	160.00 - 170.00	0.6000	0.5443
T4	4	1 5/8" Hybrid	160.00 - 170.00	0.6000	0.5443
T4	5	WG Rail 1.5x1.5x3/16	160.00 - 170.00	0.6000	0.5443
T4	7	LDF7-50A (1-5/8 FOAM)	160.00 - 170.00	0.6000	0.5443
T4	13	LDF7-50A (1-5/8 FOAM)	160.00 - 170.00	0.6000	0.5443
T4	14	7/16" Fiber Cable (24 fibers Max)	160.00 - 170.00	0.6000	0.5443
T4	15	0.88" 8AWG6	160.00 - 170.00	0.6000	0.5443
T4	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	160.00 - 170.00	0.6000	0.5443
T4	18	WG Rail 1.5x1.5x1/8	160.00 - 170.00	0.6000	0.5443
T4	20	Safety Line 3/8	160.00 - 170.00	0.6000	0.5443
T4	21	Step Pegs (5/8" SR) 7-in. w/30" step	160.00 - 170.00	0.6000	0.5443
T4	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	160.00 - 170.00	0.6000	0.5443
T4	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	160.00 - 170.00	0.6000	0.5443

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	160.00 - 170.00	0.6000	0.5443
T5	1	LDF7-50A (1-5/8 FOAM)	150.00 - 160.00	0.6000	0.5658
T5	2	WG Rail 1.5x1.5x1/4	150.00 - 160.00	0.6000	0.5658
T5	4	1 5/8" Hybrid	150.00 - 160.00	0.6000	0.5658
T5	5	WG Rail 1.5x1.5x3/16	150.00 - 160.00	0.6000	0.5658
T5	7	LDF7-50A (1-5/8 FOAM)	150.00 - 160.00	0.6000	0.5658
T5	10	1 1/4 Hybriflex Cable	150.00 - 153.00	0.6000	0.5658
T5	11	WG Rail 1.5x1.5x3/16	150.00 - 160.00	0.6000	0.5658
T5	13	LDF7-50A (1-5/8 FOAM)	150.00 - 160.00	0.6000	0.5658
T5	14	7/16" Fiber Cable (24 fibers Max)	150.00 - 160.00	0.6000	0.5658
T5	15	0.88" 8AWG6	150.00 - 160.00	0.6000	0.5658
T5	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	150.00 - 160.00	0.6000	0.5658
T5	18	WG Rail 1.5x1.5x1/8	150.00 - 160.00	0.6000	0.5658
T5	20	Safety Line 3/8	150.00 - 160.00	0.6000	0.5658
T5	21	Step Pegs (5/8" SR) 7-in. w/30" step	150.00 - 160.00	0.6000	0.5658
T5	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	150.00 - 160.00	0.6000	0.5658
T5	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	150.00 - 160.00	0.6000	0.5658
T5	28	Rung L2x1.5x1/8 (35"w, 48"s)	150.00 - 160.00	0.6000	0.5658
T5	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	150.00 - 160.00	0.6000	0.5658
T6	1	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.5872
T6	2	WG Rail 1.5x1.5x1/4	140.00 - 150.00	0.6000	0.5872
T6	4	1 5/8" Hybrid	140.00 - 150.00	0.6000	0.5872
T6	5	WG Rail 1.5x1.5x3/16	140.00 - 150.00	0.6000	0.5872
T6	7	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.5872
T6	10	1 1/4 Hybriflex Cable	140.00 - 150.00	0.6000	0.5872
T6	11	WG Rail 1.5x1.5x3/16	140.00 - 150.00	0.6000	0.5872
T6	13	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.5872
T6	14	7/16" Fiber Cable (24 fibers Max)	140.00 - 150.00	0.6000	0.5872
T6	15	0.88" 8AWG6	140.00 - 150.00	0.6000	0.5872
T6	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	140.00 - 150.00	0.6000	0.5872
T6	18	WG Rail 1.5x1.5x1/8	140.00 - 150.00	0.6000	0.5872

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	20	Safety Line 3/8	140.00 - 150.00	0.6000	0.5872
T6	21	Step Pegs (5/8" SR) 7-in. w/30" step	140.00 - 150.00	0.6000	0.5872
T6	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	140.00 - 150.00	0.6000	0.5872
T6	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	140.00 - 150.00	0.6000	0.5872
T6	28	Rung L2x1.5x1/8 (35"w, 48"s)	140.00 - 150.00	0.6000	0.5872
T6	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	140.00 - 150.00	0.6000	0.5872
T7	1	LDF7-50A (1-5/8 FOAM)	133.33 - 140.00	0.6000	0.6000
T7	2	WG Rail 1.5x1.5x1/4	133.33 - 140.00	0.6000	0.6000
T7	4	1 5/8" Hybrid	133.33 - 140.00	0.6000	0.6000
T7	5	WG Rail 1.5x1.5x3/16	133.33 - 140.00	0.6000	0.6000
T7	7	LDF7-50A (1-5/8 FOAM)	133.33 - 140.00	0.6000	0.6000
T7	10	1 1/4 Hybriflex Cable	133.33 - 140.00	0.6000	0.6000
T7	11	WG Rail 1.5x1.5x3/16	133.33 - 140.00	0.6000	0.6000
T7	13	LDF7-50A (1-5/8 FOAM)	133.33 - 140.00	0.6000	0.6000
T7	14	7/16" Fiber Cable (24 fibers Max)	133.33 - 140.00	0.6000	0.6000
T7	15	0.88" 8AWG6	133.33 - 140.00	0.6000	0.6000
T7	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	133.33 - 140.00	0.6000	0.6000
T7	18	WG Rail 1.5x1.5x1/8	133.33 - 140.00	0.6000	0.6000
T7	20	Safety Line 3/8	133.33 - 140.00	0.6000	0.6000
T7	21	Step Pegs (5/8" SR) 7-in. w/30" step	133.33 - 140.00	0.6000	0.6000
T7	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	133.33 - 140.00	0.6000	0.6000
T7	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	133.33 - 140.00	0.6000	0.6000
T7	28	Rung L2x1.5x1/8 (35"w, 48"s)	133.33 - 140.00	0.6000	0.6000
T7	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	133.33 - 140.00	0.6000	0.6000
T7	32	1.6" Feedline	133.33 - 138.00	0.6000	0.6000
T8	1	LDF7-50A (1-5/8 FOAM)	126.67 - 133.33	0.6000	0.6000
T8	2	WG Rail 1.5x1.5x1/4	126.67 - 133.33	0.6000	0.6000
T8	4	1 5/8" Hybrid	126.67 - 133.33	0.6000	0.6000
T8	5	WG Rail 1.5x1.5x3/16	126.67 - 133.33	0.6000	0.6000
T8	7	LDF7-50A (1-5/8 FOAM)	126.67 - 133.33	0.6000	0.6000
T8	10	1 1/4 Hybriflex Cable	126.67 - 133.33	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	11	WG Rail 1.5x1.5x3/16	126.67 - 133.33	0.6000	0.6000
T8	13	LDF7-50A (1-5/8 FOAM)	126.67 - 133.33	0.6000	0.6000
T8	14	7/16" Fiber Cable (24 fibers Max)	126.67 - 133.33	0.6000	0.6000
T8	15	0.88" 8AWG6	126.67 - 133.33	0.6000	0.6000
T8	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	126.67 - 133.33	0.6000	0.6000
T8	18	WG Rail 1.5x1.5x1/8	126.67 - 133.33	0.6000	0.6000
T8	20	Safety Line 3/8	126.67 - 133.33	0.6000	0.6000
T8	21	Step Pegs (5/8" SR) 7-in. w/30" step	126.67 - 133.33	0.6000	0.6000
T8	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	126.67 - 133.33	0.6000	0.6000
T8	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	126.67 - 133.33	0.6000	0.6000
T8	28	Rung L2x1.5x1/8 (35"w, 48"s)	126.67 - 133.33	0.6000	0.6000
T8	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	126.67 - 133.33	0.6000	0.6000
T8	32	1.6" Feedline	126.67 - 133.33	0.6000	0.6000
T9	1	LDF7-50A (1-5/8 FOAM)	120.00 - 126.67	0.6000	0.6000
T9	2	WG Rail 1.5x1.5x1/4	120.00 - 126.67	0.6000	0.6000
T9	4	1 5/8" Hybrid	120.00 - 126.67	0.6000	0.6000
T9	5	WG Rail 1.5x1.5x3/16	120.00 - 126.67	0.6000	0.6000
T9	7	LDF7-50A (1-5/8 FOAM)	120.00 - 126.67	0.6000	0.6000
T9	10	1 1/4 Hybriflex Cable	120.00 - 126.67	0.6000	0.6000
T9	11	WG Rail 1.5x1.5x3/16	120.00 - 126.67	0.6000	0.6000
T9	13	LDF7-50A (1-5/8 FOAM)	120.00 - 126.67	0.6000	0.6000
T9	14	7/16" Fiber Cable (24 fibers Max)	120.00 - 126.67	0.6000	0.6000
T9	15	0.88" 8AWG6	120.00 - 126.67	0.6000	0.6000
T9	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	120.00 - 126.67	0.6000	0.6000
T9	18	WG Rail 1.5x1.5x1/8	120.00 - 126.67	0.6000	0.6000
T9	20	Safety Line 3/8	120.00 - 126.67	0.6000	0.6000
T9	21	Step Pegs (5/8" SR) 7-in. w/30" step	120.00 - 126.67	0.6000	0.6000
T9	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	120.00 - 126.67	0.6000	0.6000
T9	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	120.00 - 126.67	0.6000	0.6000
T9	28	Rung L2x1.5x1/8 (35"w, 48"s)	120.00 - 126.67	0.6000	0.6000
T9	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	120.00 - 126.67	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	32	1.6" Feedline	120.00 - 126.67	0.6000	0.6000
T10	1	LDF7-50A (1-5/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T10	2	WG Rail 1.5x1.5x1/4	113.33 - 120.00	0.6000	0.6000
T10	4	1 5/8" Hybrid	113.33 - 120.00	0.6000	0.6000
T10	5	WG Rail 1.5x1.5x3/16	113.33 - 120.00	0.6000	0.6000
T10	7	LDF7-50A (1-5/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T10	10	1 1/4 Hybriflex Cable	113.33 - 120.00	0.6000	0.6000
T10	11	WG Rail 1.5x1.5x3/16	113.33 - 120.00	0.6000	0.6000
T10	13	LDF7-50A (1-5/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T10	14	7/16" Fiber Cable (24 fibers Max)	113.33 - 120.00	0.6000	0.6000
T10	15	0.88" 8AWG6	113.33 - 120.00	0.6000	0.6000
T10	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	113.33 - 120.00	0.6000	0.6000
T10	18	WG Rail 1.5x1.5x1/8	113.33 - 120.00	0.6000	0.6000
T10	20	Safety Line 3/8	113.33 - 120.00	0.6000	0.6000
T10	21	Step Pegs (5/8" SR) 7-in. w/30" step	113.33 - 120.00	0.6000	0.6000
T10	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	113.33 - 120.00	0.6000	0.6000
T10	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	113.33 - 120.00	0.6000	0.6000
T10	28	Rung L2x1.5x1/8 (35"w, 48"s)	113.33 - 120.00	0.6000	0.6000
T10	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	113.33 - 120.00	0.6000	0.6000
T10	32	1.6" Feedline	113.33 - 120.00	0.6000	0.6000
T11	1	LDF7-50A (1-5/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T11	2	WG Rail 1.5x1.5x1/4	106.67 - 113.33	0.6000	0.6000
T11	4	1 5/8" Hybrid	106.67 - 113.33	0.6000	0.6000
T11	5	WG Rail 1.5x1.5x3/16	106.67 - 113.33	0.6000	0.6000
T11	7	LDF7-50A (1-5/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T11	10	1 1/4 Hybriflex Cable	106.67 - 113.33	0.6000	0.6000
T11	11	WG Rail 1.5x1.5x3/16	106.67 - 113.33	0.6000	0.6000
T11	13	LDF7-50A (1-5/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T11	14	7/16" Fiber Cable (24 fibers Max)	106.67 - 113.33	0.6000	0.6000
T11	15	0.88" 8AWG6	106.67 - 113.33	0.6000	0.6000
T11	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	106.67 - 113.33	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	18	WG Rail 1.5x1.5x1/8	106.67 - 113.33	0.6000	0.6000
T11	20	Safety Line 3/8	106.67 - 113.33	0.6000	0.6000
T11	21	Step Pegs (5/8" SR) 7-in. w/30" step	106.67 - 113.33	0.6000	0.6000
T11	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	106.67 - 113.33	0.6000	0.6000
T11	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	106.67 - 113.33	0.6000	0.6000
T11	28	Rung L2x1.5x1/8 (35"w, 48"s)	106.67 - 113.33	0.6000	0.6000
T11	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	106.67 - 113.33	0.6000	0.6000
T11	32	1.6" Feedline	106.67 - 113.33	0.6000	0.6000
T12	1	LDF7-50A (1-5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T12	2	WG Rail 1.5x1.5x1/4	100.00 - 106.67	0.6000	0.6000
T12	4	1 5/8" Hybrid	100.00 - 106.67	0.6000	0.6000
T12	5	WG Rail 1.5x1.5x3/16	100.00 - 106.67	0.6000	0.6000
T12	7	LDF7-50A (1-5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T12	10	1 1/4 Hybriflex Cable	100.00 - 106.67	0.6000	0.6000
T12	11	WG Rail 1.5x1.5x3/16	100.00 - 106.67	0.6000	0.6000
T12	13	LDF7-50A (1-5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T12	14	7/16" Fiber Cable (24 fibers Max)	100.00 - 106.67	0.6000	0.6000
T12	15	0.88" 8AWG6	100.00 - 106.67	0.6000	0.6000
T12	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	100.00 - 106.67	0.6000	0.6000
T12	18	WG Rail 1.5x1.5x1/8	100.00 - 106.67	0.6000	0.6000
T12	20	Safety Line 3/8	100.00 - 106.67	0.6000	0.6000
T12	21	Step Pegs (5/8" SR) 7-in. w/30" step	100.00 - 106.67	0.6000	0.6000
T12	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	100.00 - 106.67	0.6000	0.6000
T12	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	100.00 - 106.67	0.6000	0.6000
T12	28	Rung L2x1.5x1/8 (35"w, 48"s)	100.00 - 106.67	0.6000	0.6000
T12	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	100.00 - 106.67	0.6000	0.6000
T12	32	1.6" Feedline	100.00 - 106.67	0.6000	0.6000
T13	1	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T13	2	WG Rail 1.5x1.5x1/4	80.00 - 100.00	0.6000	0.6000
T13	4	1 5/8" Hybrid	80.00 - 100.00	0.6000	0.6000
T13	5	WG Rail 1.5x1.5x3/16	80.00 - 100.00	0.6000	0.6000
T13	7	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T13	10	1 1/4 Hybriflex Cable	80.00 - 100.00	0.6000	0.6000
T13	11	WG Rail 1.5x1.5x3/16	80.00 - 100.00	0.6000	0.6000
T13	13	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	14	7/16" Fiber Cable (24 fibers Max)	80.00 - 100.00	0.6000	0.6000
T13	15	0.88" 8AWG6	80.00 - 100.00	0.6000	0.6000
T13	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	80.00 - 100.00	0.6000	0.6000
T13	18	WG Rail 1.5x1.5x1/8	80.00 - 100.00	0.6000	0.6000
T13	20	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T13	21	Step Pegs (5/8" SR) 7-in. w/30" step	80.00 - 100.00	0.6000	0.6000
T13	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	80.00 - 100.00	0.6000	0.6000
T13	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	80.00 - 100.00	0.6000	0.6000
T13	28	Rung L2x1.5x1/8 (35"w, 48"s)	80.00 - 100.00	0.6000	0.6000
T13	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	80.00 - 100.00	0.6000	0.6000
T13	32	1.6" Feedline	80.00 - 100.00	0.6000	0.6000
T14	1	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T14	2	WG Rail 1.5x1.5x1/4	60.00 - 80.00	0.6000	0.6000
T14	4	1 5/8" Hybrid	60.00 - 80.00	0.6000	0.6000
T14	5	WG Rail 1.5x1.5x3/16	60.00 - 80.00	0.6000	0.6000
T14	7	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T14	9	5/8" dia. coax	60.00 - 75.50	0.6000	0.6000
T14	10	1 1/4 Hybriflex Cable	60.00 - 80.00	0.6000	0.6000
T14	11	WG Rail 1.5x1.5x3/16	60.00 - 80.00	0.6000	0.6000
T14	13	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T14	14	7/16" Fiber Cable (24 fibers Max)	60.00 - 80.00	0.6000	0.6000
T14	15	0.88" 8AWG6	60.00 - 80.00	0.6000	0.6000
T14	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	60.00 - 80.00	0.6000	0.6000
T14	18	WG Rail 1.5x1.5x1/8	60.00 - 80.00	0.6000	0.6000
T14	20	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T14	21	Step Pegs (5/8" SR) 7-in. w/30" step	60.00 - 80.00	0.6000	0.6000
T14	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	60.00 - 80.00	0.6000	0.6000
T14	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	60.00 - 80.00	0.6000	0.6000
T14	28	Rung L2x1.5x1/8 (35"w, 48"s)	60.00 - 80.00	0.6000	0.6000
T14	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	60.00 - 80.00	0.6000	0.6000
T14	32	1.6" Feedline	60.00 - 80.00	0.6000	0.6000
T15	1	LDF7-50A (1-5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T15	2	WG Rail 1.5x1.5x1/4	50.00 - 60.00	0.6000	0.6000
T15	4	1 5/8" Hybrid	50.00 - 60.00	0.6000	0.6000
T15	5	WG Rail 1.5x1.5x3/16	50.00 - 60.00	0.6000	0.6000
T15	7	LDF7-50A (1-5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T15	9	5/8" dia. coax	50.00 - 60.00	0.6000	0.6000
T15	10	1 1/4 Hybriflex Cable	50.00 - 60.00	0.6000	0.6000
T15	11	WG Rail 1.5x1.5x3/16	50.00 - 60.00	0.6000	0.6000
T15	13	LDF7-50A (1-5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T15	14	7/16" Fiber Cable (24 fibers Max)	50.00 - 60.00	0.6000	0.6000
T15	15	0.88" 8AWG6	50.00 - 60.00	0.6000	0.6000
T15	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	50.00 - 60.00	0.6000	0.6000
T15	18	WG Rail 1.5x1.5x1/8	50.00 - 60.00	0.6000	0.6000
T15	20	Safety Line 3/8	50.00 - 60.00	0.6000	0.6000
T15	21	Step Pegs (5/8" SR) 7-in.	50.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T15	22	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 60.00	0.6000	0.6000
T15	23	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 60.00	0.6000	0.6000
T15	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	50.00 - 60.00	0.6000	0.6000
T15	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	50.00 - 60.00	0.6000	0.6000
T15	28	Rung L2x1.5x1/8 (35"w, 48"s)	50.00 - 60.00	0.6000	0.6000
T15	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	50.00 - 60.00	0.6000	0.6000
T15	32	1.6" Feedline	50.00 - 60.00	0.6000	0.6000
T16	1	LDF7-50A (1-5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T16	2	WG Rail 1.5x1.5x1/4	40.00 - 50.00	0.6000	0.6000
T16	4	1 5/8" Hybrid	40.00 - 50.00	0.6000	0.6000
T16	5	WG Rail 1.5x1.5x3/16	40.00 - 50.00	0.6000	0.6000
T16	7	LDF7-50A (1-5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T16	9	5/8" dia. coax	40.00 - 50.00	0.6000	0.6000
T16	10	1 1/4 Hybriflex Cable	40.00 - 50.00	0.6000	0.6000
T16	11	WG Rail 1.5x1.5x3/16	40.00 - 50.00	0.6000	0.6000
T16	13	LDF7-50A (1-5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T16	14	7/16" Fiber Cable (24 fibers Max)	40.00 - 50.00	0.6000	0.6000
T16	15	0.88" 8AWG6	40.00 - 50.00	0.6000	0.6000
T16	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	40.00 - 50.00	0.6000	0.6000
T16	18	WG Rail 1.5x1.5x1/8	40.00 - 50.00	0.6000	0.6000
T16	20	Safety Line 3/8	40.00 - 50.00	0.6000	0.6000
T16	21	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T16	22	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T16	23	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T16	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	40.00 - 50.00	0.6000	0.6000
T16	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	40.00 - 50.00	0.6000	0.6000
T16	28	Rung L2x1.5x1/8 (35"w, 48"s)	40.00 - 50.00	0.6000	0.6000
T16	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	40.00 - 50.00	0.6000	0.6000
T16	32	1.6" Feedline	40.00 - 50.00	0.6000	0.6000
T17	1	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T17	2	WG Rail 1.5x1.5x1/4	20.00 - 40.00	0.6000	0.6000
T17	4	1 5/8" Hybrid	20.00 - 40.00	0.6000	0.6000
T17	5	WG Rail 1.5x1.5x3/16	20.00 - 40.00	0.6000	0.6000
T17	7	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T17	9	5/8" dia. coax	20.00 - 40.00	0.6000	0.6000
T17	10	1 1/4 Hybriflex Cable	20.00 - 40.00	0.6000	0.6000
T17	11	WG Rail 1.5x1.5x3/16	20.00 - 40.00	0.6000	0.6000
T17	13	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T17	14	7/16" Fiber Cable (24 fibers Max)	20.00 - 40.00	0.6000	0.6000
T17	15	0.88" 8AWG6	20.00 - 40.00	0.6000	0.6000
T17	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	20.00 - 40.00	0.6000	0.6000
T17	18	WG Rail 1.5x1.5x1/8	20.00 - 40.00	0.6000	0.6000
T17	20	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T17	21	Step Pegs (5/8" SR) 7-in.	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T17	22	w/30" step Step Pegs (5/8" SR) 7-in. w/30" step	20.00 - 40.00	0.6000	0.6000
T17	23	Step Pegs (5/8" SR) 7-in. w/30" step	20.00 - 40.00	0.6000	0.6000
T17	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	20.00 - 40.00	0.6000	0.6000
T17	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	20.00 - 40.00	0.6000	0.6000
T17	28	Rung L2x1.5x1/8 (35"w, 48"s)	20.00 - 40.00	0.6000	0.6000
T17	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	20.00 - 40.00	0.6000	0.6000
T17	32	1.6" Feedline	20.00 - 40.00	0.6000	0.6000
T18	1	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T18	2	WG Rail 1.5x1.5x1/4	8.00 - 20.00	0.6000	0.6000
T18	4	1 5/8" Hybrid	8.00 - 20.00	0.6000	0.6000
T18	5	WG Rail 1.5x1.5x3/16	0.00 - 20.00	0.6000	0.6000
T18	7	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T18	9	5/8" dia. coax	10.00 - 20.00	0.6000	0.6000
T18	10	1 1/4 Hybriflex Cable	10.00 - 20.00	0.6000	0.6000
T18	11	WG Rail 1.5x1.5x3/16	0.00 - 20.00	0.6000	0.6000
T18	13	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T18	14	7/16" Fiber Cable (24 fibers Max)	8.00 - 20.00	0.6000	0.6000
T18	15	0.88" 8AWG6	8.00 - 20.00	0.6000	0.6000
T18	16	EUCAHYBRID 78-6AWG6-18SM-CP(7/8")	8.00 - 20.00	0.6000	0.6000
T18	18	WG Rail 1.5x1.5x1/8	2.00 - 20.00	0.6000	0.6000
T18	20	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T18	21	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 20.00	0.6000	0.6000
T18	22	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 20.00	0.6000	0.6000
T18	23	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 20.00	0.6000	0.6000
T18	25	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	8.00 - 20.00	0.6000	0.6000
T18	27	Rung L1.5x1.5x1/8 (36"w, 34"s)	0.00 - 20.00	0.6000	0.6000
T18	28	Rung L2x1.5x1/8 (35"w, 48"s)	0.00 - 20.00	0.6000	0.6000
T18	30	Rung L1.5x1.5x1/8 (36"w, 34"s)	2.00 - 20.00	0.6000	0.6000
T18	32	1.6" Feedline	10.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft	ft²	ft²	lb

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)
1.75" Dia x 5-ft Pipe	C	From Leg	2.25	0.0000	75.50	No Ice	0.88	0.88	12.00
			0.00			1/2" Ice	1.32	1.32	19.06
			0.00			1" Ice	1.63	1.63	29.51
						2" Ice	2.28	2.28	61.18
GPS0015	C	From Leg	4.50	0.0000	75.50	No Ice	0.08	0.08	0.50
			0.00			1/2" Ice	0.13	0.13	2.29
			0.75			1" Ice	0.19	0.19	4.89
						2" Ice	0.33	0.33	13.15
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Sector Mount [SM 502-3]	C	None		0.0000	153.00	No Ice	33.02	33.02	1673.10
						1/2" Ice	47.36	47.36	2223.90
						1" Ice	61.70	61.70	2774.70
						2" Ice	90.38	90.38	3876.30
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	5.00	0.0000	153.00	No Ice	8.02	6.71	78.90
			0.00			1/2" Ice	8.48	7.66	144.31
			0.00			1" Ice	8.94	8.49	217.47
						2" Ice	9.89	10.20	390.34
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	5.00	0.0000	153.00	No Ice	8.02	6.71	78.90
			0.00			1/2" Ice	8.48	7.66	144.31
			0.00			1" Ice	8.94	8.49	217.47
						2" Ice	9.89	10.20	390.34
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	5.00	0.0000	153.00	No Ice	8.02	6.71	78.90
			0.00			1/2" Ice	8.48	7.66	144.31
			0.00			1" Ice	8.94	8.49	217.47
						2" Ice	9.89	10.20	390.34
DT465B-2XR w/ Mount Pipe	A	From Leg	5.00	0.0000	153.00	No Ice	9.34	7.63	83.52
			0.00			1/2" Ice	9.91	8.82	160.00
			0.00			1" Ice	10.44	9.72	244.63
						2" Ice	11.53	11.54	442.00
DT465B-2XR w/ Mount Pipe	B	From Leg	5.00	0.0000	153.00	No Ice	9.34	7.63	83.52
			0.00			1/2" Ice	9.91	8.82	160.00
			0.00			1" Ice	10.44	9.72	244.63
						2" Ice	11.53	11.54	442.00
DT465B-2XR w/ Mount Pipe	C	From Leg	5.00	0.0000	153.00	No Ice	9.34	7.63	83.52
			0.00			1/2" Ice	9.91	8.82	160.00
			0.00			1" Ice	10.44	9.72	244.63
						2" Ice	11.53	11.54	442.00
RRH2x50-08	A	From Leg	5.00	0.0000	153.00	No Ice	1.70	1.28	52.90
			0.00			1/2" Ice	1.86	1.43	69.91
			0.00			1" Ice	2.03	1.58	89.61
						2" Ice	2.40	1.91	137.85
RRH2x50-08	B	From Leg	5.00	0.0000	153.00	No Ice	1.70	1.28	52.90
			0.00			1/2" Ice	1.86	1.43	69.91
			0.00			1" Ice	2.03	1.58	89.61
						2" Ice	2.40	1.91	137.85
RRH2x50-08	C	From Leg	5.00	0.0000	153.00	No Ice	1.70	1.28	52.90
			0.00			1/2" Ice	1.86	1.43	69.91
			0.00			1" Ice	2.03	1.58	89.61
						2" Ice	2.40	1.91	137.85
800MHZ 2X50W RRH	A	From Leg	5.00	0.0000	153.00	No Ice	2.13	1.77	53.00
			0.00			1/2" Ice	2.32	1.95	74.19
			0.00			1" Ice	2.51	2.13	98.39
						2" Ice	2.92	2.51	156.61
800MHZ 2X50W RRH	B	From Leg	5.00	0.0000	153.00	No Ice	2.13	1.77	53.00
			0.00			1/2" Ice	2.32	1.95	74.19
			0.00			1" Ice	2.51	2.13	98.39

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)
						2" Ice	2.92	2.51	156.61
800MHZ 2X50W RRH	C	From Leg	5.00	0.0000	153.00	No Ice	2.13	1.77	53.00
			0.00			1/2" Ice	2.32	1.95	74.19
			0.00			1" Ice	2.51	2.13	98.39
						2" Ice	2.92	2.51	156.61
PCS 1900MHz 4x45W-65MHz	A	From Leg	5.00	0.0000	153.00	No Ice	2.32	2.24	60.00
			0.00			1/2" Ice	2.53	2.44	83.13
			0.00			1" Ice	2.74	2.65	109.50
						2" Ice	3.19	3.09	172.72
PCS 1900MHz 4x45W-65MHz	B	From Leg	5.00	0.0000	153.00	No Ice	2.32	2.24	60.00
			0.00			1/2" Ice	2.53	2.44	83.13
			0.00			1" Ice	2.74	2.65	109.50
						2" Ice	3.19	3.09	172.72
PCS 1900MHz 4x45W-65MHz	C	From Leg	5.00	0.0000	153.00	No Ice	2.32	2.24	60.00
			0.00			1/2" Ice	2.53	2.44	83.13
			0.00			1" Ice	2.74	2.65	109.50
						2" Ice	3.19	3.09	172.72
TD-RRH8x20-25	A	From Leg	5.00	0.0000	153.00	No Ice	3.70	1.29	66.00
			0.00			1/2" Ice	3.95	1.46	89.94
			0.00			1" Ice	4.20	1.64	117.22
						2" Ice	4.72	2.02	182.59
TD-RRH8x20-25	B	From Leg	5.00	0.0000	153.00	No Ice	3.70	1.29	66.00
			0.00			1/2" Ice	3.95	1.46	89.94
			0.00			1" Ice	4.20	1.64	117.22
						2" Ice	4.72	2.02	182.59
TD-RRH8x20-25	C	From Leg	5.00	0.0000	153.00	No Ice	3.70	1.29	66.00
			0.00			1/2" Ice	3.95	1.46	89.94
			0.00			1" Ice	4.20	1.64	117.22
						2" Ice	4.72	2.02	182.59
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(3) Sector Mounts 169-ft	C	None		0.0000	169.00	No Ice	21.56	21.56	1395.40
						1/2" Ice	29.77	29.77	2140.10
						1" Ice	37.98	37.98	2884.80
						2" Ice	54.40	54.40	4374.20
(2) MX06FRO660-03 w/ Mount Pipe	A	From Leg	5.00	0.0000	169.00	No Ice	6.54	5.55	103.38
			0.00			1/2" Ice	7.06	6.05	184.56
			0.00			1" Ice	7.60	6.57	276.87
						2" Ice	8.70	7.65	496.32
(2) MX06FRO660-03 w/ Mount Pipe	B	From Leg	5.00	0.0000	169.00	No Ice	6.54	5.55	103.38
			0.00			1/2" Ice	7.06	6.05	184.56
			0.00			1" Ice	7.60	6.57	276.87
						2" Ice	8.70	7.65	496.32
(2) MX06FRO660-03 w/ Mount Pipe	C	From Leg	5.00	0.0000	169.00	No Ice	6.54	5.55	103.38
			0.00			1/2" Ice	7.06	6.05	184.56
			0.00			1" Ice	7.60	6.57	276.87
						2" Ice	8.70	7.65	496.32
MT6407-77A w/ Mount Pipe	A	From Leg	5.00	0.0000	169.00	No Ice	4.91	2.68	95.88
			0.00			1/2" Ice	5.26	3.14	135.60
			0.00			1" Ice	5.61	3.62	180.44
						2" Ice	6.36	4.63	288.00
MT6407-77A w/ Mount Pipe	B	From Leg	5.00	0.0000	169.00	No Ice	4.91	2.68	95.88
			0.00			1/2" Ice	5.26	3.14	135.60
			0.00			1" Ice	5.61	3.62	180.44
						2" Ice	6.36	4.63	288.00
MT6407-77A w/ Mount Pipe	C	From Leg	5.00	0.0000	169.00	No Ice	4.91	2.68	95.88
			0.00			1/2" Ice	5.26	3.14	135.60
			0.00			1" Ice	5.61	3.62	180.44

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight lb
						2" Ice	6.36	4.63	288.00
RF4440d-13A	A	From Leg	5.00	0.0000	169.00	No Ice	1.87	1.13	72.50
			0.00			1/2" Ice	2.03	1.27	89.83
			0.00			1" Ice	2.21	1.41	109.89
						2" Ice	2.59	1.72	158.94
RF4440d-13A	B	From Leg	5.00	0.0000	169.00	No Ice	1.87	1.13	72.50
			0.00			1/2" Ice	2.03	1.27	89.83
			0.00			1" Ice	2.21	1.41	109.89
						2" Ice	2.59	1.72	158.94
RF4440d-13A	C	From Leg	5.00	0.0000	169.00	No Ice	1.87	1.13	72.50
			0.00			1/2" Ice	2.03	1.27	89.83
			0.00			1" Ice	2.21	1.41	109.89
						2" Ice	2.59	1.72	158.94
RCMDC-6627-PF-48	A	From Leg	5.00	0.0000	169.00	No Ice	4.06	3.10	32.00
			0.00			1/2" Ice	4.32	3.34	68.49
			0.00			1" Ice	4.58	3.58	108.97
						2" Ice	5.14	4.09	202.69
TBR *****									
(3) Sector Mounts 185-ft	C	None		0.0000	186.00	No Ice	21.56	21.56	1395.40
						1/2" Ice	29.77	29.77	2140.10
						1" Ice	37.98	37.98	2884.80
						2" Ice	54.40	54.40	4374.20
Miscellaneous [NA 510-1]	C	None		0.0000	186.00	No Ice	6.00	6.00	255.70
						1/2" Ice	8.50	8.50	339.50
						1" Ice	11.00	11.00	409.12
						2" Ice	16.00	16.00	562.54
RRUS-32 B30	A	From Leg	5.00	0.0000	186.00	No Ice	3.31	2.42	77.00
			0.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
						2" Ice	4.33	3.32	211.15
RRUS-32 B30	B	From Leg	5.00	0.0000	186.00	No Ice	3.31	2.42	77.00
			0.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
						2" Ice	4.33	3.32	211.15
RRUS-32 B30	C	From Leg	5.00	0.0000	186.00	No Ice	3.31	2.42	77.00
			0.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
						2" Ice	4.33	3.32	211.15
DMP65R-BU6D w/ Mount Pipe	A	From Leg	5.00	0.0000	186.00	No Ice	12.95	7.26	104.71
			0.00			1/2" Ice	13.55	8.43	196.98
			0.00			1" Ice	14.11	9.31	297.77
						2" Ice	15.26	11.13	528.51
DMP65R-BU6D w/ Mount Pipe	B	From Leg	5.00	0.0000	186.00	No Ice	12.95	7.26	104.71
			0.00			1/2" Ice	13.55	8.43	196.98
			0.00			1" Ice	14.11	9.31	297.77
						2" Ice	15.26	11.13	528.51
DMP65R-BU6D w/ Mount Pipe	C	From Leg	5.00	0.0000	186.00	No Ice	12.95	7.26	104.71
			0.00			1/2" Ice	13.55	8.43	196.98
			0.00			1" Ice	14.11	9.31	297.77
						2" Ice	15.26	11.13	528.51
RRUS 4449 B5/B12	A	From Leg	5.00	0.0000	186.00	No Ice	1.97	1.41	71.00
			0.00			1/2" Ice	2.14	1.56	89.51
			0.00			1" Ice	2.33	1.73	110.84
						2" Ice	2.72	2.07	162.74
RRUS 4449 B5/B12	B	From Leg	5.00	0.0000	186.00	No Ice	1.97	1.41	71.00
			0.00			1/2" Ice	2.14	1.56	89.51

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight lb
						1" Ice	2.33	1.73	110.84
			0.00			2" Ice	2.72	2.07	162.74
RRUS 4449 B5/B12	C	From Leg	5.00	0.0000	186.00	No Ice	1.97	1.41	71.00
			0.00			1/2" Ice	2.14	1.56	89.51
			0.00			1" Ice	2.33	1.73	110.84
						2" Ice	2.72	2.07	162.74
RRUS 4478 B14	A	From Leg	5.00	0.0000	186.00	No Ice	1.84	1.06	59.90
			0.00			1/2" Ice	2.01	1.20	75.78
			0.00			1" Ice	2.19	1.34	94.29
						2" Ice	2.57	1.66	139.98
RRUS 4478 B14	B	From Leg	5.00	0.0000	186.00	No Ice	1.84	1.06	59.90
			0.00			1/2" Ice	2.01	1.20	75.78
			0.00			1" Ice	2.19	1.34	94.29
						2" Ice	2.57	1.66	139.98
RRUS 4478 B14	C	From Leg	5.00	0.0000	186.00	No Ice	1.84	1.06	59.90
			0.00			1/2" Ice	2.01	1.20	75.78
			0.00			1" Ice	2.19	1.34	94.29
						2" Ice	2.57	1.66	139.98
RRUS 8843 B2/B66A	A	From Leg	5.00	0.0000	186.00	No Ice	1.64	1.35	72.00
			0.00			1/2" Ice	1.80	1.50	89.60
			0.00			1" Ice	1.97	1.65	109.91
						2" Ice	2.32	1.99	159.50
RRUS 8843 B2/B66A	B	From Leg	5.00	0.0000	186.00	No Ice	1.64	1.35	72.00
			0.00			1/2" Ice	1.80	1.50	89.60
			0.00			1" Ice	1.97	1.65	109.91
						2" Ice	2.32	1.99	159.50
RRUS 8843 B2/B66A	C	From Leg	5.00	0.0000	186.00	No Ice	1.64	1.35	72.00
			0.00			1/2" Ice	1.80	1.50	89.60
			0.00			1" Ice	1.97	1.65	109.91
						2" Ice	2.32	1.99	159.50
TPA65R-BU6DA-K w/ Mount Pipe	A	From Leg	5.00	0.0000	186.00	No Ice	12.95	7.26	93.61
			0.00			1/2" Ice	13.55	8.43	185.88
			0.00			1" Ice	14.11	9.31	286.67
						2" Ice	15.26	11.13	517.41
TPA65R-BU6DA-K w/ Mount Pipe	B	From Leg	5.00	0.0000	186.00	No Ice	12.95	7.26	93.61
			0.00			1/2" Ice	13.55	8.43	185.88
			0.00			1" Ice	14.11	9.31	286.67
						2" Ice	15.26	11.13	517.41
TPA65R-BU6DA-K w/ Mount Pipe	C	From Leg	5.00	0.0000	186.00	No Ice	12.95	7.26	93.61
			0.00			1/2" Ice	13.55	8.43	185.88
			0.00			1" Ice	14.11	9.31	286.67
						2" Ice	15.26	11.13	517.41
AIR 6449 B77D w/ Mount Pipe	A	From Leg	5.00	0.0000	186.00	No Ice	4.23	2.87	94.49
			0.00			1/2" Ice	4.55	3.30	133.47
			0.00			1" Ice	4.88	3.74	177.35
						2" Ice	5.58	4.68	282.16
AIR 6449 B77D w/ Mount Pipe	B	From Leg	5.00	0.0000	186.00	No Ice	4.23	2.87	94.49
			0.00			1/2" Ice	4.55	3.30	133.47
			0.00			1" Ice	4.88	3.74	177.35
						2" Ice	5.58	4.68	282.16
AIR 6449 B77D w/ Mount Pipe	C	From Leg	5.00	0.0000	186.00	No Ice	4.23	2.87	94.49
			0.00			1/2" Ice	4.55	3.30	133.47
			0.00			1" Ice	4.88	3.74	177.35
						2" Ice	5.58	4.68	282.16
AIR 6419 B77G w/ Mount Pipe	A	From Leg	5.00	0.0000	186.00	No Ice	5.46	3.92	73.20
			0.00			1/2" Ice	6.28	4.95	123.49
			0.00			1" Ice	7.01	5.84	179.59

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)
						2" Ice	8.25	7.29	313.20
AIR 6419 B77G w/ Mount Pipe	B	From Leg	5.00	0.0000	186.00	No Ice	5.46	3.92	73.20
			0.00			1/2" Ice	6.28	4.95	123.49
			0.00			1" Ice	7.01	5.84	179.59
						2" Ice	8.25	7.29	313.20
AIR 6419 B77G w/ Mount Pipe	C	From Leg	5.00	0.0000	186.00	No Ice	5.46	3.92	73.20
			0.00			1/2" Ice	6.28	4.95	123.49
			0.00			1" Ice	7.01	5.84	179.59
						2" Ice	8.25	7.29	313.20
**									
**									
AT&T TBR									
****									
Sector Mount [SM 802-3]	C	None		0.0000	195.00	No Ice	24.41	24.41	930.00
						1/2" Ice	31.39	31.39	1362.00
						1" Ice	38.37	38.37	1794.00
						2" Ice	52.33	52.33	2658.00
HSS Top Mount	C	None		0.0000	195.00	No Ice	8.08	8.08	328.90
						1/2" Ice	9.70	9.70	415.20
						1" Ice	11.32	11.32	501.50
						2" Ice	14.56	14.56	674.10
*									
KRY 112 71	A	From Leg	3.00	0.0000	195.00	No Ice	0.63	0.61	18.07
			0.00			1/2" Ice	0.75	0.79	26.97
			0.00			1" Ice	0.89	0.99	38.22
						2" Ice	1.18	1.44	69.33
KRY 112 71	B	From Leg	3.00	0.0000	195.00	No Ice	0.63	0.61	18.07
			0.00			1/2" Ice	0.75	0.79	26.97
			0.00			1" Ice	0.89	0.99	38.22
						2" Ice	1.18	1.44	69.33
KRY 112 71	C	From Leg	3.00	0.0000	195.00	No Ice	0.63	0.61	18.07
			0.00			1/2" Ice	0.75	0.79	26.97
			0.00			1" Ice	0.89	0.99	38.22
						2" Ice	1.18	1.44	69.33
APXVAARR24_43-U-NA20 w/ MP	A	From Leg	3.00	0.0000	195.00	No Ice	20.24	10.79	157.20
			0.00			1/2" Ice	20.89	12.21	290.89
			0.00			1" Ice	21.55	13.49	435.20
						2" Ice	22.88	15.72	759.63
APXVAARR24_43-U-NA20 w/ MP	B	From Leg	3.00	0.0000	195.00	No Ice	20.24	10.79	157.20
			0.00			1/2" Ice	20.89	12.21	290.89
			0.00			1" Ice	21.55	13.49	435.20
						2" Ice	22.88	15.72	759.63
APXVAARR24_43-U-NA20 w/ MP	C	From Leg	3.00	0.0000	195.00	No Ice	20.24	10.79	157.20
			0.00			1/2" Ice	20.89	12.21	290.89
			0.00			1" Ice	21.55	13.49	435.20
						2" Ice	22.88	15.72	759.63
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	3.00	0.0000	195.00	No Ice	6.75	6.07	153.07
			0.00			1/2" Ice	7.20	6.87	214.04
			0.00			1" Ice	7.65	7.58	281.89
						2" Ice	8.57	9.06	441.43
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	3.00	0.0000	195.00	No Ice	6.75	6.07	153.07
			0.00			1/2" Ice	7.20	6.87	214.04
			0.00			1" Ice	7.65	7.58	281.89
						2" Ice	8.57	9.06	441.43
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	3.00	0.0000	195.00	No Ice	6.75	6.07	153.07
			0.00			1/2" Ice	7.20	6.87	214.04
			0.00			1" Ice	7.65	7.58	281.89

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)
						2" Ice	8.57	9.06	441.43
RADIO 4449 B12/B71	A	From Leg	3.00	0.0000	195.00	No Ice	1.64	1.15	75.00
			0.00			1/2" Ice	1.80	1.29	91.07
			0.00			1" Ice	1.97	1.44	109.76
						2" Ice	2.33	1.75	155.77
RADIO 4449 B12/B71	B	From Leg	3.00	0.0000	195.00	No Ice	1.64	1.15	75.00
			0.00			1/2" Ice	1.80	1.29	91.07
			0.00			1" Ice	1.97	1.44	109.76
						2" Ice	2.33	1.75	155.77
RADIO 4449 B12/B71	C	From Leg	3.00	0.0000	195.00	No Ice	1.64	1.15	75.00
			0.00			1/2" Ice	1.80	1.29	91.07
			0.00			1" Ice	1.97	1.44	109.76
						2" Ice	2.33	1.75	155.77
KRY 112 71	A	From Leg	3.00	0.0000	195.00	No Ice	0.63	0.61	18.07
			0.00			1/2" Ice	0.75	0.79	26.97
			0.00			1" Ice	0.89	0.99	38.22
						2" Ice	1.18	1.44	69.33
KRY 112 71	B	From Leg	3.00	0.0000	195.00	No Ice	0.63	0.61	18.07
			0.00			1/2" Ice	0.75	0.79	26.97
			0.00			1" Ice	0.89	0.99	38.22
						2" Ice	1.18	1.44	69.33
KRY 112 71	C	From Leg	3.00	0.0000	195.00	No Ice	0.63	0.61	18.07
			0.00			1/2" Ice	0.75	0.79	26.97
			0.00			1" Ice	0.89	0.99	38.22
						2" Ice	1.18	1.44	69.33
AIR6449 B41 w/ Mount Pipe	A	From Leg	3.00	0.0000	195.00	No Ice	5.89	3.28	117.72
			0.00			1/2" Ice	6.26	3.74	166.88
			0.00			1" Ice	6.63	4.22	221.50
						2" Ice	7.41	5.21	349.57
AIR6449 B41 w/ Mount Pipe	B	From Leg	3.00	0.0000	195.00	No Ice	5.89	3.28	117.72
			0.00			1/2" Ice	6.26	3.74	166.88
			0.00			1" Ice	6.63	4.22	221.50
						2" Ice	7.41	5.21	349.57
AIR6449 B41 w/ Mount Pipe	C	From Leg	3.00	0.0000	195.00	No Ice	5.89	3.28	117.72
			0.00			1/2" Ice	6.26	3.74	166.88
			0.00			1" Ice	6.63	4.22	221.50
						2" Ice	7.41	5.21	349.57
RADIO 4415	A	From Leg	3.00	0.0000	195.00	No Ice	1.86	0.87	49.60
			0.00			1/2" Ice	2.03	1.00	64.16
			0.00			1" Ice	2.20	1.14	81.26
						2" Ice	2.58	1.44	123.89
RADIO 4415	B	From Leg	3.00	0.0000	195.00	No Ice	1.86	0.87	49.60
			0.00			1/2" Ice	2.03	1.00	64.16
			0.00			1" Ice	2.20	1.14	81.26
						2" Ice	2.58	1.44	123.89
RADIO 4415	C	From Leg	3.00	0.0000	195.00	No Ice	1.86	0.87	49.60
			0.00			1/2" Ice	2.03	1.00	64.16
			0.00			1" Ice	2.20	1.14	81.26
						2" Ice	2.58	1.44	123.89
E14 F05P85 / SDX1926Q-43	A	From Leg	3.00	0.0000	195.00	No Ice	0.24	0.10	6.17
			0.00			1/2" Ice	0.31	0.14	8.64
			0.00			1" Ice	0.38	0.19	12.22
						2" Ice	0.55	0.32	23.45
E14 F05P85 / SDX1926Q-43	B	From Leg	3.00	0.0000	195.00	No Ice	0.24	0.10	6.17
			0.00			1/2" Ice	0.31	0.14	8.64
			0.00			1" Ice	0.38	0.19	12.22
						2" Ice	0.55	0.32	23.45

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)
E14 F05P85 / SDX1926Q-43	C	From Leg	3.00	0.0000	195.00	No Ice	0.24	0.10	6.17
			0.00			1/2" Ice	0.31	0.14	8.64
			0.00			1" Ice	0.38	0.19	12.22
						2" Ice	0.55	0.32	23.45
****									
TMO Future Loading	C	None		0.0000	195.00	No Ice	6.63	6.63	138.18
						1/2" Ice	7.31	7.31	201.85
						1" Ice	7.99	7.99	265.51
						2" Ice	9.35	9.35	392.85
*****									
Sabre 12' HD V-Boom Mounts (3) (C10857001C)	C	None		0.0000	138.00	No Ice	15.85	15.85	1335.00
						1/2" Ice	23.23	23.23	1602.00
						1" Ice	30.61	30.61	1869.00
						2" Ice	45.37	45.37	2403.00
MX08FRO665-20 w/ Mount Pipe	A	From Leg	3.00	0.0000	138.00	No Ice	12.73	7.53	79.55
			0.00			1/2" Ice	13.33	8.72	171.83
			0.00			1" Ice	13.89	9.62	272.67
						2" Ice	15.05	11.45	503.65
MX08FRO665-20 w/ Mount Pipe	B	From Leg	3.00	0.0000	138.00	No Ice	12.73	7.53	79.55
			0.00			1/2" Ice	13.33	8.72	171.83
			0.00			1" Ice	13.89	9.62	272.67
						2" Ice	15.05	11.45	503.65
MX08FRO665-20 w/ Mount Pipe	C	From Leg	3.00	0.0000	138.00	No Ice	12.73	7.53	79.55
			0.00			1/2" Ice	13.33	8.72	171.83
			0.00			1" Ice	13.89	9.62	272.67
						2" Ice	15.05	11.45	503.65
TA08025-B604	A	From Leg	3.00	0.0000	138.00	No Ice	1.96	0.98	63.90
			0.00			1/2" Ice	2.14	1.11	80.65
			0.00			1" Ice	2.32	1.25	100.10
						2" Ice	2.71	1.55	147.85
TA08025-B604	B	From Leg	3.00	0.0000	138.00	No Ice	1.96	0.98	63.90
			0.00			1/2" Ice	2.14	1.11	80.65
			0.00			1" Ice	2.32	1.25	100.10
						2" Ice	2.71	1.55	147.85
TA08025-B604	C	From Leg	3.00	0.0000	138.00	No Ice	1.96	0.98	63.90
			0.00			1/2" Ice	2.14	1.11	80.65
			0.00			1" Ice	2.32	1.25	100.10
						2" Ice	2.71	1.55	147.85
TA08025-B605	A	From Leg	3.00	0.0000	138.00	No Ice	1.96	1.13	75.00
			0.00			1/2" Ice	2.14	1.27	92.97
			0.00			1" Ice	2.32	1.41	113.72
						2" Ice	2.71	1.72	164.31
TA08025-B605	B	From Leg	3.00	0.0000	138.00	No Ice	1.96	1.13	75.00
			0.00			1/2" Ice	2.14	1.27	92.97
			0.00			1" Ice	2.32	1.41	113.72
						2" Ice	2.71	1.72	164.31
TA08025-B605	C	From Leg	3.00	0.0000	138.00	No Ice	1.96	1.13	75.00
			0.00			1/2" Ice	2.14	1.27	92.97
			0.00			1" Ice	2.32	1.41	113.72
						2" Ice	2.71	1.72	164.31
Junction Box	C	From Leg	1.00	0.0000	138.00	No Ice	3.81	1.37	48.00
			0.00			1/2" Ice	4.06	1.55	72.33
			0.00			1" Ice	4.32	1.74	100.07
						2" Ice	4.85	2.14	166.55
Dish Future Loading	C	None		0.0000	138.00	No Ice	34.54	34.54	1038.11
						1/2" Ice	39.74	39.74	1371.70
						1" Ice	44.94	44.94	1705.29

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)
						2" Ice	55.34	55.34	2372.46

Load Combinations

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

Comb. No.	Description
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	195 - 180	6.818	41	0.3958	0.0674
T2	180 - 175	5.520	41	0.3706	0.0311
T3	175 - 170	5.135	41	0.3470	0.0290
T4	170 - 160	4.783	41	0.3205	0.0283
T5	160 - 150	4.138	47	0.2894	0.0273
T6	150 - 140	3.576	47	0.2474	0.0261
T7	140 - 133.333	3.083	47	0.2190	0.0246
T8	133.333 - 126.667	2.778	47	0.2092	0.0232
T9	126.667 - 120	2.486	47	0.1991	0.0216
T10	120 - 113.333	2.205	47	0.1888	0.0197
T11	113.333 - 106.667	1.946	47	0.1724	0.0183
T12	106.667 - 100	1.709	47	0.1557	0.0169
T13	100 - 80	1.495	47	0.1389	0.0153
T14	80 - 60	0.943	47	0.1138	0.0115
T15	60 - 50	0.510	47	0.0796	0.0075
T16	50 - 40	0.347	47	0.0624	0.0058
T17	40 - 20	0.223	47	0.0452	0.0041
T18	20 - 0	0.064	47	0.0225	0.0020

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	Sector Mount [SM 802-3]	41	6.818	0.3958	0.0674	27214
186.00	(3) Sector Mounts 185-ft	41	6.022	0.3869	0.0416	15119
169.00	(3) Sector Mounts 169-ft	41	4.716	0.3163	0.0282	17056
153.00	Sector Mount [SM 502-3]	47	3.736	0.2602	0.0265	15051
138.00	Sabre 12' HD V-Boom Mounts (3) (C10857001C)	47	2.990	0.2157	0.0242	34182
75.50	1.75" Dia x 5-ft Pipe	47	0.834	0.1074	0.0106	40456

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	195 - 180	28.249	18	1.6444	0.2481
T2	180 - 175	22.871	18	1.5219	0.1283
T3	175 - 170	21.284	18	1.4263	0.1194

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T4	170 - 160	19.839	18	1.3189	0.1167
T5	160 - 150	17.174	18	1.1926	0.1127
T6	150 - 140	14.829	18	1.0220	0.1077
T7	140 - 133.333	12.778	18	0.9060	0.1013
T8	133.333 - 126.667	11.511	18	0.8662	0.0955
T9	126.667 - 120	10.295	18	0.8247	0.0893
T10	120 - 113.333	9.127	18	0.7823	0.0812
T11	113.333 - 106.667	8.051	18	0.7148	0.0756
T12	106.667 - 100	7.069	18	0.6459	0.0699
T13	100 - 80	6.180	18	0.5768	0.0631
T14	80 - 60	3.890	18	0.4721	0.0475
T15	60 - 50	2.098	18	0.3297	0.0310
T16	50 - 40	1.428	18	0.2583	0.0239
T17	40 - 20	0.914	18	0.1871	0.0169
T18	20 - 0	0.261	18	0.0931	0.0081

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	Sector Mount [SM 802-3]	18	28.249	1.6444	0.2481	6787
186.00	(3) Sector Mounts 185-ft	18	24.946	1.5929	0.1638	3770
169.00	(3) Sector Mounts 169-ft	18	19.560	1.3019	0.1162	4197
153.00	Sector Mount [SM 502-3]	18	15.498	1.0741	0.1093	3688
138.00	Sabre 12' HD V-Boom Mounts (3) (C10857001C)	18	12.392	0.8926	0.0996	8385
75.50	1.75" Dia x 5-ft Pipe	18	3.441	0.4456	0.0439	9787

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	195	Leg	A325N	0.7500	4	4503.76	30101.40	0.150	1.05	Bolt Tension
T2	180	Diagonal	A325N	0.5000	1	3609.15	4689.84	0.770	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	676.13	6830.86	0.099	1.05	Member Block Shear
T3	175	Diagonal	A325X	0.5000	1	3623.77	7245.70	0.500	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	869.70	6830.86	0.127	1.05	Member Block Shear
T4	170	Leg	A325N	0.7500	6	10524.70	30101.40	0.350	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	4358.88	8265.00	0.527	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	1242.06	6830.86	0.182	1.05	Member Block Shear
T5	160	Diagonal	A325X	0.5000	1	5571.82	8265.00	0.674	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	1594.05	6830.86	0.233	1.05	Member Block Shear
T6	150	Leg	A325N	1.0000	6	17048.50	54517.00	0.313	1.05	Bolt Tension

TOWER ENGINEERING PROFESSIONALS, INC.
326 TRYON RD
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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load/Allowable	Allowable Ratio	Criteria
		Diagonal	A325N	0.5000	1	5095.27	8265.00	0.616	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	1995.79	6830.86	0.292	1.05	Member Block Shear
T7	140	Diagonal	A325X	0.6250	1	6003.57	12712.50	0.472	1.05	Member Block Shear
T8	133.333	Diagonal	A325X	0.6250	1	6610.49	12712.50	0.520	1.05	Member Block Shear
T9	126.667	Leg	A325N	1.0000	8	17926.00	54517.00	0.329	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	6476.24	7830.00	0.827	1.05	Member Bearing
T10	120	Diagonal	A325X	0.6250	1	7564.09	13050.00	0.580	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	3040.15	7830.00	0.388	1.05	Member Bearing
T11	113.333	Diagonal	A325X	0.6250	1	7539.31	13050.00	0.578	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	3301.57	7830.00	0.422	1.05	Member Bearing
T12	106.667	Leg	A325N	1.0000	8	22713.60	54517.00	0.417	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	7701.67	12712.50	0.606	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	3542.94	7830.00	0.452	1.05	Member Bearing
T13	100	Leg	A325N	1.2500	8	27317.60	87219.80	0.313	1.05	Bolt Tension
		Diagonal	A325N	0.6250	2	3911.15	11622.70	0.337	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.7500	1	4276.79	13898.40	0.308	1.05	Member Block Shear
T14	80	Leg	A325N	1.2500	8	31674.50	87219.80	0.363	1.05	Bolt Tension
		Diagonal	A325N	0.6250	2	4126.50	11622.70	0.355	1.05	Member Block Shear
T15	60	Diagonal	A325N	0.6250	2	5593.67	13805.80	0.405	1.05	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	5209.58	13805.80	0.377	1.05	Bolt Shear
T16	50	Leg	A325N	1.2500	8	35210.70	87219.80	0.404	1.05	Bolt Tension
		Diagonal	A325N	0.6250	2	5424.94	13805.80	0.393	1.05	Bolt Shear
		Secondary Horizontal	A325X	0.7500	1	5542.40	14355.00	0.386	1.05	Member Bearing
T17	40	Leg	A325N	1.2500	8	39162.80	87219.80	0.449	1.05	Bolt Tension
		Diagonal	A325N	0.6250	2	5113.02	13805.80	0.370	1.05	Bolt Shear
T18	20	Leg	A36	1.5000	8	43718.00	61128.30	0.715	1.05	Bolt Tension
		Diagonal	A325N	0.6250	2	5704.99	13805.80	0.413	1.05	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	195 - 180	PIPE 2.5 STD (SCH 40)	15.00	3.75	47.4 K=1.00	1.7072	-34805.10	70532.50	0.493 [1]
T2	180 - 175	PIPE 2.5 STD (SCH 40)	5.01	2.67	33.8 K=1.00	1.7072	-38987.90	77102.10	0.506 [1]
T3	175 - 170	PIPE 2.5 STD (SCH 40)	5.01	2.65	33.5	1.7072	-50083.30	77205.80	0.649 [1]

TOWER ENGINEERING PROFESSIONALS, INC.
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Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	170 - 160	2-1/2SCH40 w/ 3SCH80 Half Sleeve	10.02	2.62	K=1.00 34.2 K=1.00	3.2590	-71558.80	96687.00	0.740 [1]
T5	160 - 150	Pipe 3.5 Std (SCH40)	10.02	2.60	23.4 K=1.00	2.6795	-91769.80	126932.00	0.723 [1]
T6	150 - 140	3.5SCH40 w/ 4SCH40 Half Sleeve	10.02	2.59	23.8 K=1.00	4.2666	-115021.00	184209.00	0.624 [1]
T7	140 - 133.333	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4 K=1.00	8.5023	-130005.00	306442.00	0.424 [1]
T8	133.333 - 126.667	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4 K=1.00	8.5023	-145956.00	306442.00	0.476 [1]
T9	126.667 - 120	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4 K=1.00	8.5023	-161942.00	306442.00	0.528 [1]
T10	120 - 113.333	Pipe 6 STD	6.68	3.45	18.4 K=1.00	5.5813	-175189.00	268817.00	0.652 [1]
T11	113.333 - 106.667	Pipe 6 STD	6.68	3.44	18.4 K=1.00	5.5813	-190198.00	268848.00	0.707 [1]
T12	106.667 - 100	Pipe 6 STD	6.68	3.44	18.4 K=1.00	5.5813	-204141.00	268875.00	0.759 [1]
T13	100 - 80	6 STD w/ 7 XH Half Sleeve	20.03	3.42	19.5 K=1.00	11.1800	-246613.00	412800.00	0.597 [1]
T14	80 - 60	Pipe 8 STD	20.03	6.68	27.3 K=1.00	8.3993	-286479.00	391613.00	0.732 [1]
T15	60 - 50	Pipe 8 STD	10.02	5.16	21.1 K=1.00	8.3993	-300350.00	401143.00	0.749 [1]
T16	50 - 40	Pipe 8 STD	10.02	5.16	21.1 K=1.00	8.3993	-319529.00	401194.00	0.796 [1]
T17	40 - 20	Pipe 8 EH	20.03	10.02	41.8 K=1.00	12.7627	-357046.00	549063.00	0.650 [1]
T18	20 - 0	Pipe 8 EH	20.03	9.97	41.6 K=1.00	12.7627	-391196.00	549704.00	0.712 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	180 - 175	L1 1/2x1 1/2x3/16	6.25	3.03	124.0 K=1.00	0.5273	-4336.56	9812.52	0.442 [1]
T3	175 - 170	L2x2x3/16	6.56	3.18	102.5 K=1.06	0.7150	-3454.36	17231.70	0.200 [1]
T4	170 - 160	2L1 1/2x1 1/2x3/16x1/4	6.90	3.36	88.3 K=1.00	1.0547	-4836.86	28278.10	0.171 [1]
T5	160 - 150	2L 'a' > 19.4307 in - 84 2L2x2x3/16x1/4	8.01	3.83	76.6 K=1.00	1.4297	-5842.43	40630.70	0.144 [1]
T6	150 - 140	2L 'a' > 22.0154 in - 93 2L2x2x3/16x1/4	8.81	4.22	84.4 K=1.00	1.4297	-5402.45	38728.60	0.139 [1]
T7	140 - 133.333	2L 'a' > 24.2504 in - 114 L2 1/2x2 1/2x1/4	10.29	4.87	119.2 K=1.00	1.1900	-6197.57	23707.60	0.261 [1]
T8	133.333 - 126.667	L2 1/2x2 1/2x1/4	10.80	5.13	125.3 K=1.00	1.1900	-6747.17	21683.20	0.311 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	126.667 - 120	L2 1/2x2 1/2x3/16	11.34	5.41	131.3 K=1.00	0.9023	-6517.94	14990.70	0.435 [1]
T10	120 - 113.333	L3x3x1/4	11.88	5.67	117.3 K=1.01	1.4400	-8330.68	29417.90	0.283 [1]
T11	113.333 - 106.667	L3x3x1/4	12.44	5.95	122.1 K=1.00	1.4400	-8170.68	27519.70	0.297 [1]
T12	106.667 - 100	L2 1/2x2 1/2x1/4	13.01	6.24	152.5 K=1.00	1.1900	-8508.50	14641.70	0.581 [1]
T13	100 - 80	L3 1/2x3 1/2x1/4	14.17	6.72	117.1 K=1.01	1.6900	-8637.21	34593.90	0.250 [1]
T14	80 - 60	L3 1/2x3 1/2x1/4	16.57	7.88	132.4 K=0.97	1.6900	-8133.13	27606.40	0.295 [1]
T15	60 - 50	L3x3x5/16	18.87	9.11	171.5 K=0.91	1.7800	-11187.30	17330.30	0.646 [1]
T16	50 - 40	L3x3x5/16	19.73	9.54	178.2 K=0.91	1.7800	-10849.90	16044.50	0.676 [1]
T17	40 - 20	L4x4x3/8	21.47	10.41	149.5 K=0.94	2.8600	-10226.00	36647.10	0.279 [1]
T18	20 - 0	L5x5x5/16	23.24	11.30	132.5 K=0.97	3.0300	-11410.00	49368.70	0.231 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	0.5273	-5501.50	9181.68	0.599 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	180 - 175	L2x2x3/16	3.73	1.63	84.8 K=1.71	0.7150	-676.13	19923.20	0.034 [1]
T3	175 - 170	L2x2x3/16	4.24	1.88	88.6 K=1.55	0.7150	-869.70	19386.80	0.045 [1]
T4	170 - 160	L2x2x3/16	5.24	2.38	96.2 K=1.33	0.7150	-1242.06	18244.10	0.068 [1]
T5	160 - 150	L2x2x3/16	6.24	2.83	103.2 K=1.20	0.7150	-1594.05	17128.20	0.093 [1]
T6	150 - 140	L2x2x3/16	7.24	3.31	110.5 K=1.09	0.7150	-1995.79	15864.80	0.126 [1]
T10	120 - 113.333	L3x3x3/16	9.82	4.52	105.5 K=1.16	1.0900	-3040.15	25103.30	0.121 [1]
T11	113.333 -	L3x3x3/16	10.49	4.85	108.8	1.0900	-3301.57	24274.30	0.136 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
	106.667				K=1.11				
T12	106.667 - 100	L3x3x3/16	11.16	5.18	112.2 K=1.08	1.0900	-3542.94	23419.30	0.151 [1]
T13	100 - 80	L3x3x1/4	13.16	6.12	125.4 K=1.00	1.4400	-4276.79	26189.00	0.163 [1]
T15	60 - 50	L4x4x3/8	15.98	7.51	117.2 K=1.02	2.8600	-5209.58	58485.50	0.089 [1]
T16	50 - 40	L4x4x1/4	16.99	7.99	120.6 K=1.00	1.9400	-5542.40	37678.30	0.147 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	0.5273	-1674.66	9181.68	0.182 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	0.5273	-3009.45	9181.68	0.328 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	195 - 180	PIPE 2.5 STD (SCH 40)	15.00	3.75	47.4	1.7072	18015.00	84508.30	0.213 [1]
T2	180 - 175	PIPE 2.5 STD (SCH 40)	5.01	2.34	29.5	1.7072	34692.60	84508.30	0.411 [1]
T3	175 - 170	PIPE 2.5 STD (SCH 40)	5.01	2.36	29.8	1.7072	44088.60	84508.30	0.522 [1]
T4	170 - 160	2-1/2SCH40 w/ 3SCH80 Half Sleeve	10.02	2.38	31.1	3.2590	63193.10	102659.00	0.616 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $P_u/\phi P_n$
T5	160 - 150	Pipe 3.5 Std (SCH40)	10.02	2.40	21.6	2.6795	81429.20	132637.00	0.614 [1]
T6	150 - 140	3.5SCH40 w/ 4SCH40 Half Sleeve	10.02	2.42	22.2	4.2666	102371.00	191997.00	0.533 [1]
T7	140 - 133.333	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4	8.5023	114991.00	351995.00	0.327 [1]
T8	133.333 - 126.667	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4	8.5023	128796.00	351995.00	0.366 [1]
T9	126.667 - 120	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4	8.5023	143408.00	351995.00	0.407 [1]
T10	120 - 113.333	Pipe 6 STD	6.68	3.23	17.2	5.5813	155818.00	276277.00	0.564 [1]
T11	113.333 - 106.667	Pipe 6 STD	6.68	3.23	17.3	5.5813	169285.00	276277.00	0.613 [1]
T12	106.667 - 100	Pipe 6 STD	6.68	3.24	17.3	5.5813	181929.00	276277.00	0.659 [1]
T13	100 - 80	6 STD w/ 7 XH Half Sleeve	20.03	3.25	18.6	11.1800	218747.00	422604.00	0.518 [1]
T14	80 - 60	Pipe 8 STD	20.03	6.68	27.3	8.3993	253396.00	415763.00	0.609 [1]
T15	60 - 50	Pipe 8 STD	10.02	4.85	19.8	8.3993	265591.00	415763.00	0.639 [1]
T16	50 - 40	Pipe 8 STD	10.02	4.86	19.9	8.3993	282009.00	415763.00	0.678 [1]
T17	40 - 20	Pipe 8 EH	20.03	10.02	41.8	12.7627	313303.00	631755.00	0.496 [1]
T18	20 - 0	Pipe 8 EH	20.03	0.08	0.3	12.7627	349744.00	631755.00	0.554 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $P_u/\phi P_n$
T1	195 - 180	5/8	5.13	4.78	366.9	0.3068	9002.31	9940.20	0.906 [1]
T2	180 - 175	L1 1/2x1 1/2x3/16	6.25	3.03	82.4	0.3076	3609.15	13381.30	0.270 [1]
T3	175 - 170	L2x2x3/16	6.56	3.18	64.0	0.4484	3623.77	19503.60	0.186 [1]
T4	170 - 160	2L1 1/2x1 1/2x3/16x1/4 2L 'a' > 19.4307 in - 81	6.90	3.36	91.1	0.6152	4358.88	26762.70	0.163 [1]
T5	160 - 150	2L2x2x3/16x1/4 2L 'a' > 22.0154 in - 93	8.01	3.83	76.8	0.8965	5571.82	38997.10	0.143 [1]
T6	150 - 140	2L2x2x3/16x1/4 2L 'a' > 24.2504 in - 114	8.81	4.22	84.1	0.8965	5095.27	38997.10	0.131 [1]
T7	140 - 133.333	L2 1/2x2 1/2x1/4	10.29	4.87	78.0	0.7519	6003.57	32706.60	0.184 [1]
T8	133.333 - 126.667	L2 1/2x2 1/2x1/4	10.80	5.13	82.1	0.7519	6610.49	32706.60	0.202 [1]
T9	126.667 - 120	L2 1/2x2 1/2x3/16	11.34	5.41	85.3	0.5713	6476.24	24851.10	0.261 [1]
T10	120 - 113.333	L3x3x1/4	11.88	5.67	75.3	0.9394	7564.09	40862.80	0.185 [1]
T11	113.333 - 106.667	L3x3x1/4	12.44	5.95	78.9	0.9394	7539.31	40862.80	0.185 [1]
T12	106.667 - 100	L2 1/2x2 1/2x1/4	13.01	6.24	99.5	0.7519	7701.67	32706.60	0.235 [1]
T13	100 - 80	L3 1/2x3 1/2x1/4	14.17	6.72	76.1	1.1269	7822.30	49019.10	0.160 [1]
T14	80 - 60	L3 1/2x3 1/2x1/4	16.57	7.88	88.9	1.1269	8253.00	49019.10	0.168 [1]
T15	60 - 50	L3x3x5/16	18.87	9.11	121.6	1.1592	10030.10	50426.00	0.199 [1]
T16	50 - 40	L3x3x5/16	19.73	9.54	127.3	1.1592	9701.34	50426.00	0.192 [1]
T17	40 - 20	L4x4x3/8	20.59	9.98	99.3	1.9341	9372.28	84131.70	0.111 [1]
T18	20 - 0	L5x5x5/16	23.24	11.30	87.9	2.0967	10176.20	91207.30	0.112 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $P_u/\phi P_n$
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	602.84	17085.90	0.035 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $P_u/\phi P_n$
T2	180 - 175	L2x2x3/16	3.73	1.63	67.9	0.4308	676.13	18739.00	0.036 [1]
T3	175 - 170	L2x2x3/16	4.24	1.88	77.7	0.4308	869.70	18739.00	0.046 [1]
T4	170 - 160	L2x2x3/16	4.74	2.13	87.5	0.4308	1242.06	18739.00	0.066 [1]
T5	160 - 150	L2x2x3/16	5.74	2.58	105.1	0.4308	1594.05	18739.00	0.085 [1]
T6	150 - 140	L2x2x3/16	7.24	3.31	133.5	0.4308	1995.79	18739.00	0.107 [1]
T10	120 - 113.333	L3x3x3/16	9.82	4.52	118.5	0.7120	3040.15	30973.40	0.098 [1]
T11	113.333 - 106.667	L3x3x3/16	10.49	4.85	127.0	0.7120	3301.57	30973.40	0.107 [1]
T12	106.667 - 100	L3x3x3/16	11.16	5.18	135.5	0.7120	3542.94	30973.40	0.114 [1]
T13	100 - 80	L3x3x1/4	12.49	5.78	153.6	0.9159	4276.79	39843.30	0.107 [1]
T15	60 - 50	L4x4x3/8	15.98	7.51	148.9	1.9341	5209.58	84131.70	0.062 [1]
T16	50 - 40	L4x4x1/4	16.99	7.99	156.2	1.2909	5542.40	56155.80	0.099 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $P_u/\phi P_n$
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	834.77	17085.90	0.049 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $P_u/\phi P_n$
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	676.13	17085.90	0.040 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	øP_allow lb	% Capacity	Pass Fail
T1	195 - 180	Leg	PIPE 2.5 STD (SCH 40)	1	-34805.10	74059.12	47.0	Pass
T2	180 - 175	Leg	PIPE 2.5 STD (SCH 40)	43	-38987.90	80957.20	48.2	Pass
T3	175 - 170	Leg	PIPE 2.5 STD (SCH 40)	55	-50083.30	81066.08	61.8	Pass
T4	170 - 160	Leg	2-1/2SCH40 w/ 3SCH80 Half Sleeve	67	-71558.80	101521.35	70.5	Pass
T5	160 - 150	Leg	Pipe 3.5 Std (SCH40)	88	-91769.80	133278.59	68.9	Pass
T6	150 - 140	Leg	3.5SCH40 w/ 4SCH40 Half Sleeve	109	-115021.00	193419.44	59.5	Pass
T7	140 - 133.333	Leg	5 STD w/ 6 XH Half Sleeve	130	-130005.00	321764.09	40.4	Pass
T8	133.333 - 126.667	Leg	5 STD w/ 6 XH Half Sleeve	139	-145956.00	321764.09	45.4	Pass
T9	126.667 - 120	Leg	5 STD w/ 6 XH Half Sleeve	148	-161942.00	321764.09	50.3	Pass
T10	120 - 113.333	Leg	Pipe 6 STD	157	-175189.00	282257.84	62.1	Pass
T11	113.333 - 106.667	Leg	Pipe 6 STD	169	-190198.00	282290.39	67.4	Pass
T12	106.667 - 100	Leg	Pipe 6 STD	181	-204141.00	282318.74	72.3	Pass
T13	100 - 80	Leg	6 STD w/ 7 XH Half Sleeve	193	-246613.00	433439.98	56.9	Pass
T14	80 - 60	Leg	Pipe 8 STD	223	-286479.00	411193.63	69.7	Pass
T15	60 - 50	Leg	Pipe 8 STD	244	-300350.00	421200.13	71.3	Pass
T16	50 - 40	Leg	Pipe 8 STD	256	-319529.00	421253.68	75.9	Pass
T17	40 - 20	Leg	Pipe 8 EH	268	-357046.00	576516.12	61.9	Pass
T18	20 - 0	Leg	Pipe 8 EH	283	-391196.00	577189.17	67.8	Pass
T1	195 - 180	Diagonal	5/8	12	9002.31	10437.21	71.5 (b) 86.3	Pass
T2	180 - 175	Diagonal	L1 1/2x1 1/2x3/16	51	-4336.56	10303.15	42.1	Pass
T3	175 - 170	Diagonal	L2x2x3/16	63	-3454.36	18093.28	77.0 (b) 19.1	Pass
T4	170 - 160	Diagonal	2L1 1/2x1 1/2x3/16x1/4	84	-4836.86	29692.00	50.0 (b) 16.3	Pass
T5	160 - 150	Diagonal	2L2x2x3/16x1/4	93	-5842.43	42662.23	52.7 (b) 13.7	Pass
T6	150 - 140	Diagonal	2L2x2x3/16x1/4	114	-5402.45	40665.03	67.4 (b) 13.3	Pass
T7	140 - 133.333	Diagonal	L2 1/2x2 1/2x1/4	133	-6197.57	24892.98	61.6 (b) 24.9	Pass
T8	133.333 - 126.667	Diagonal	L2 1/2x2 1/2x1/4	142	-6747.17	22767.36	47.2 (b) 29.6	Pass
T9	126.667 - 120	Diagonal	L2 1/2x2 1/2x3/16	151	-6517.94	15740.23	52.0 (b) 41.4	Pass
T10	120 - 113.333	Diagonal	L3x3x1/4	160	-8330.68	30888.79	82.7 (b) 27.0	Pass
T11	113.333 - 106.667	Diagonal	L3x3x1/4	172	-8170.68	28895.68	58.0 (b) 28.3	Pass
T12	106.667 - 100	Diagonal	L2 1/2x2 1/2x1/4	184	-8508.50	15373.78	57.8 (b) 55.3	Pass
T13	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	205	-8637.21	36323.59	60.6 (b) 23.8	Pass
T14	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	226	-8133.13	28986.72	33.7 (b) 28.1	Pass
T15	60 - 50	Diagonal	L3x3x5/16	247	-11187.30	18196.81	35.5 (b) 61.5	Pass
T16	50 - 40	Diagonal	L3x3x5/16	259	-10849.90	16846.72	64.4	Pass
T17	40 - 20	Diagonal	L4x4x3/8	271	-10226.00	38479.45	26.6	Pass
T18	20 - 0	Diagonal	L5x5x5/16	286	-11410.00	51837.13	37.0 (b) 22.0	Pass
T1	195 - 180	Horizontal	L1 1/2x1 1/2x3/16	17	-5501.50	9640.76	41.3 (b) 57.1	Pass
T2	180 - 175	Secondary Horizontal	L2x2x3/16	54	676.13	19675.95	3.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	øP_allow lb	% Capacity	Pass Fail
T3	175 - 170	Secondary Horizontal	L2x2x3/16	66	869.70	19675.95	9.9 (b) 4.4	Pass
T4	170 - 160	Secondary Horizontal	L2x2x3/16	78	-1242.06	19156.30	12.7 (b) 6.5	Pass
T5	160 - 150	Secondary Horizontal	L2x2x3/16	99	-1594.05	17984.61	18.2 (b) 8.9	Pass
T6	150 - 140	Secondary Horizontal	L2x2x3/16	120	-1995.79	16658.04	23.3 (b) 12.0	Pass
T10	120 - 113.333	Secondary Horizontal	L3x3x3/16	168	-3040.15	26358.46	29.2 (b) 11.5	Pass
T11	113.333 - 106.667	Secondary Horizontal	L3x3x3/16	180	-3301.57	25488.01	38.8 (b) 13.0	Pass
T12	106.667 - 100	Secondary Horizontal	L3x3x3/16	192	-3542.94	24590.26	42.2 (b) 14.4	Pass
T13	100 - 80	Secondary Horizontal	L3x3x1/4	204	-4276.79	27498.45	45.2 (b) 15.6	Pass
T15	60 - 50	Secondary Horizontal	L4x4x3/8	255	-5209.58	61409.77	30.8 (b) 8.5	Pass
T16	50 - 40	Secondary Horizontal	L4x4x1/4	267	-5542.40	39562.21	37.7 (b) 14.0	Pass
T1	195 - 180	Top Girt	L1 1/2x1 1/2x3/16	6	-1674.66	9640.76	38.6 (b) 17.4	Pass
T1	195 - 180	Bottom Girt	L1 1/2x1 1/2x3/16	8	-3009.45	9640.76	31.2	Pass
							Summary	
						Leg (T16)	75.9	Pass
						Diagonal (T1)	86.3	Pass
						Horizontal (T1)	57.1	Pass
						Secondary Horizontal (T12)	45.2	Pass
						Top Girt (T1)	17.4	Pass
						Bottom Girt (T1)	31.2	Pass
						Bolt Checks	78.8	Pass
						RATING =	**86.3**	**Pass**

APPENDIX B

ADDITIONAL CALCULATIONS

Project Name:	Straits Turnpike	**Engineer:**	KFW
Project Number:	TEP No. 25628.819998	**Check:**	JHJ
Client Site Number:	US-CT-1003	**Date:**	2/23/2023
Elevation:	160 - 170ft	**CODE:**	TIA-H

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

Mast St.: 1.00 - from tnxTower

ϕc_L =	0.90	- LRFD strength reduction factor (leg, compression)
ϕt_L =	0.90	- LRFD strength reduction factor (leg, tension)
ϕc_S =	0.90	- LRFD strength reduction factor (sleeve, compression)
ϕt_S =	0.90	- LRFD strength reduction factor (sleeve, tension)
ϕw =	0.75	- LRFD strength reduction factor (weld shear)
ϕv =	0.75	- LRFD strength reduction factor (shear)

Quick Check

Weld Size:	OK
Weld Connection:	22.4%
Crushing Check:	45.1%
Leg Comp. Check:	45.7%
Sleeve Check:	65.3%
Built-up Check:	73.7%
Slenderness Check:	OK
Leg Tension Check:	59.5%

*TIA-222-H Section 15.5 applied

Input - Loads

$P_{initial}$:	4.23	kips - force from initial load (no wind)
P_{wind}:	71.56	kips - force due to final loading including reinforcement
T_u:	63.19	kips - maximum load on leg

Input - Tower Leg

2.5 STD

K:	1.00	- effective length factor for leg
L_u:	2.64	ft - unbraced length of tower leg
F_{y_leg}:	55.00	ksi - minimum specified yield strength of tower leg
F_{u_leg}:	70.00	ksi - minimum specified ultimate strength of tower leg
r:	0.95	in - minimum radius of gyration of tower leg
A_{leg}:	1.70	in^2 - area of tower leg
Di:	2.47	in - inside diameter of tower leg
t_{leg}:	0.203	in - thickness of tower leg
f'_c:	0.00	ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

Input - Sleeve R/F

3 XS

Gap Check: OK

F_{y_sleeve}:	35.00	ksi - minimum specified yield strength of sleeve r/f
F_{u_sleeve}:	60.00	ksi - minimum specified ultimate strength of sleeve r/f
r_{x_sleeve}:	0.50	in - minimum radius of gyration of sleeve r/f about the x-axis
r_{y_sleeve}:	1.14	in - minimum radius of gyration of sleeve r/f about the y-axis
A_{sleeve}:	1.51	in^2 - area of sleeve r/f
t_{sleeve}:	0.300	in - thickness of sleeve r/f

Termination: Connected to Flange

Input - Sleeve Connection to Leg

a:	12.00	in - spacing of connectors connecting the sleeve to the leg
D:	3.00	- weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
Length //:	12.00	in - length of weld on each side of the leg at the termination
Length ⊥:	5.50	in - length of weld at the bottom/top of the leg sleeve at termination (πD/2)
No:	2.00	- number of longitudinal welds per end of the leg (typically near side & far side, so 2)
F_{EXX}:	70.00	ksi - weld electrode classification
Width:	3.50	in - maximum width of the built-up leg
Gap:	0.00	in - length of leg considered for crushing

Input - Built-up Leg Section

2.5 STD w/3 XS Half Sleeve

r_{x_bu}:	0.92	in - minimum radius of gyration of the built-up section about the x-axis
r_{y_bu}:	1.04	in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

Ec:	0	ksi - Modulus of Elasticity of Grout
E_leg:	29,000	ksi - Modulus of Elasticity of Leg
E_sleeve:	29,000	ksi - Modulus of Elasticity of Sleeve

Project Name:	Straits Turnpike	**Engineer:**	KFW
Project Number:	TEP No. 25628.819998	**Check:**	JHJ
Client Site Number:	US-CT-1003	**Date:**	2/23/2023
Elevation:	140 - 150ft	**CODE:**	TIA-H

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

ϕc_L = 0.90 - LRFD strength reduction factor (leg, compression)
ϕt_L = 0.90 - LRFD strength reduction factor (leg, tension)
ϕc_S = 0.90 - LRFD strength reduction factor (sleeve, compression)
ϕt_S = 0.90 - LRFD strength reduction factor (sleeve, tension)
ϕw = 0.75 - LRFD strength reduction factor (weld shear)
ϕv = 0.75 - LRFD strength reduction factor (shear)

Mast St.: 1.00 - from tnxTower

Input - Loads

$P_{initial}$: 6.22 kips - force from initial load (no wind)
P_{wind}: 115.02 kips - force due to final loading including reinforcement
T_u: 102.37 kips - maximum load on leg

Quick Check

Weld Size:	OK
Weld Connection:	26.7%
Crushing Check:	53.5%
Leg Comp. Check:	53.9%
Sleeve Check:	55.3%
Built-up Check:	67.2%
Slenderness Check:	Decrease Connector Spacing
Leg Tension Check:	50.8%

*TIA-222-H Section 15.5 applied

Input - Tower Leg

3.5 STD

K: 1.00 - effective length factor for leg
L_u: 2.60 ft - unbraced length of tower leg
F_{y_leg}: 55.00 ksi - minimum specified yield strength of tower leg
F_{u_leg}: 70.00 ksi - minimum specified ultimate strength of tower leg
r: 1.34 in - minimum radius of gyration of tower leg
A_{leg}: 2.68 in^2 - area of tower leg
Di: 3.55 in - inside diameter of tower leg
t_{leg}: 0.226 in - thickness of tower leg
f'_c: 0.00 ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

Input - Sleeve R/F

4 STD

Gap Check: OK

F_{y_sleeve}: 50.00 ksi - minimum specified yield strength of sleeve r/f
F_{u_sleeve}: 62.00 ksi - minimum specified ultimate strength of sleeve r/f
r_{x_sleeve}: 0.66 in - minimum radius of gyration of sleeve r/f about the x-axis
r_{y_sleeve}: 1.51 in - minimum radius of gyration of sleeve r/f about the y-axis
A_{sleeve}: 1.59 in^2 - area of sleeve r/f
t_{sleeve}: 0.237 in - thickness of sleeve r/f
Termination: Connected to Flange

Input - Sleeve Connection to Leg

a: 12.00 in - spacing of connectors connecting the sleeve to the leg
D: 3.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
Length //: 12.00 in - length of weld on each side of the leg at the termination
Length ⊥: 7.07 in - length of weld at the bottom/top of the leg sleeve at termination ($\pi D/2$)
No: 2.00 - number of longitudinal welds per end of the leg (typically near side & far side, so 2)
F_{EXX}: 70.00 ksi - weld electrode classification
Width: 4.50 in - maximum width of the built-up leg
Gap: 0.00 in - length of leg considered for crushing

Input - Built-up Leg Section

3.5 STD w/4 STD Half Sleeve

r_{x_bu}: 1.31 in - minimum radius of gyration of the built-up section about the x-axis
r_{y_bu}: 1.40 in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

Ec: 0 ksi - Modulus of Elasticity of Grout
E_leg: 29,000 ksi - Modulus of Elasticity of Leg
E_sleeve: 29,000 ksi - Modulus of Elasticity of Sleeve

Project Name:	Straits Turnpike	**Engineer:**	KFW
Project Number:	TEP No. 25628.819998	**Check:**	JHJ
Client Site Number:	US-CT-1003	**Date:**	2/23/2023
Elevation:	120 - 140ft	**CODE:**	TIA-H

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

ϕc_L = 0.90 - LRFD strength reduction factor (leg, compression)
ϕt_L = 0.90 - LRFD strength reduction factor (leg, tension)
ϕc_S = 0.90 - LRFD strength reduction factor (sleeve, compression)
ϕt_S = 0.90 - LRFD strength reduction factor (sleeve, tension)
ϕw = 0.75 - LRFD strength reduction factor (weld shear)
ϕv = 0.75 - LRFD strength reduction factor (shear)

Mast St.: 1.00 - from tnxTower

Quick Check

Weld Size:	OK
Weld Connection:	26.3%
Crushing Check:	38.3%
Leg Comp. Check:	38.5%
Sleeve Check:	42.5%
Built-up Check:	51.2%
Slenderness Check:	OK
Leg Tension Check:	38.8%

*TIA-222-H Section 15.5 applied

Input - Loads

$P_{initial}$: 7.64 kips - force from initial load (no wind)
P_{wind}: 161.94 kips - force due to final loading including reinforcement
T_u: 143.41 kips - maximum load on leg

Input - Tower Leg

5 STD

K: 1.00 - effective length factor for leg
L_u: 6.68 ft - unbraced length of tower leg
F_{y_leg}: 55.00 ksi - minimum specified yield strength of tower leg
F_{u_leg}: 70.00 ksi - minimum specified ultimate strength of tower leg
r: 1.88 in - minimum radius of gyration of tower leg
A_{leg}: 4.30 in^2 - area of tower leg
Di: 5.05 in - inside diameter of tower leg
t_{leg}: 0.258 in - thickness of tower leg
f'_c: 0.00 ksi - minimum specified compressive strength of grout (if ungrouted enter 0)

Input - Sleeve R/F

6 XH Gap Check: OK

F_{y_sleeve}: 46.00 ksi - minimum specified yield strength of sleeve r/f
F_{u_sleeve}: 62.00 ksi - minimum specified ultimate strength of sleeve r/f
r_{x_sleeve}: 0.96 in - minimum radius of gyration of sleeve r/f about the x-axis
r_{y_sleeve}: 2.19 in - minimum radius of gyration of sleeve r/f about the y-axis
A_{sleeve}: 4.20 in^2 - area of sleeve r/f
t_{sleeve}: 0.432 in - thickness of sleeve r/f
Termination: Connected to Flange

Input - Sleeve Connection to Leg

a: 15.50 in - spacing of connectors connecting the sleeve to the leg
D: 5.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
Length //: 12.00 in - length of weld on each side of the leg at the termination
Length ⊥: 10.41 in - length of weld at the bottom/top of the leg sleeve at termination ($\pi D/2$)
No: 2.00 - number of longitudinal welds per end of the leg (typically near side & far side, so 2)
F_{EXX}: 70.00 ksi - weld electrode classification
Width: 6.63 in - maximum width of the built-up leg
Gap: 0.00 in - length of leg considered for crushing

Input - Built-up Leg Section

5 STD w/6 XH Half Sleeve

r_{x_bu}: 1.77 in - minimum radius of gyration of the built-up section about the x-axis
r_{y_bu}: 2.04 in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

Ec: 0 ksi - Modulus of Elasticity of Grout
E_leg: 29,000 ksi - Modulus of Elasticity of Leg
E_sleeve: 29,000 ksi - Modulus of Elasticity of Sleeve

Project Name:	Straits Turnpike	**Engineer:**	KFW
Project Number:	TEP No. 25628.819998	**Check:**	JHJ
Client Site Number:	US-CT-1003	**Date:**	2/23/2023
Elevation:	80 - 100ft	**CODE:**	TIA-H

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

ϕc_L = 0.90 - LRFD strength reduction factor (leg, compression)
ϕt_L = 0.90 - LRFD strength reduction factor (leg, tension)
ϕc_S = 0.90 - LRFD strength reduction factor (sleeve, compression)
ϕt_S = 0.90 - LRFD strength reduction factor (sleeve, tension)
ϕw = 0.75 - LRFD strength reduction factor (weld shear)
ϕv = 0.75 - LRFD strength reduction factor (shear)

Mast St.: 1.00 - from tnxTower

Input - Loads

$P_{initial}$: 10.90 kips - force from initial load (no wind)
P_{wind}: 246.61 kips - force due to final loading including reinforcement
T_u: 218.75 kips - maximum load on leg

Quick Check

Weld Size:	OK
Weld Connection:	38.5%
Crushing Check:	44.3%
Leg Comp. Check:	44.4%
Sleeve Check:	53.5%
Built-up Check:	57.3%
Slenderness Check:	OK
Leg Tension Check:	49.3%

*TIA-222-H Section 15.5 applied

Input - Tower Leg 6 STD

K: 1.00 - effective length factor for leg
L_u: 3.43 ft - unbraced length of tower leg
F_{y_leg}: 55.00 ksi - minimum specified yield strength of tower leg
F_{u_leg}: 70.00 ksi - minimum specified ultimate strength of tower leg
r: 2.25 in - minimum radius of gyration of tower leg
A_{leg}: 5.58 in^2 - area of tower leg
Di: 6.07 in - inside diameter of tower leg
t_{leg}: 0.280 in - thickness of tower leg
f'_c: 0.00 ksi - minimum specified compressive strength of grout (if ungrouted enter 0)

Input - Sleeve R/F 7 XH

Gap Check: OK

F_{y_sleeve}: 42.00 ksi - minimum specified yield strength of sleeve r/f
F_{u_sleeve}: 63.00 ksi - minimum specified ultimate strength of sleeve r/f
r_{x_sleeve}: 1.10 in - minimum radius of gyration of sleeve r/f about the x-axis
r_{y_sleeve}: 2.53 in - minimum radius of gyration of sleeve r/f about the y-axis
A_{sleeve}: 5.60 in^2 - area of sleeve r/f
t_{sleeve}: 0.500 in - thickness of sleeve r/f
Termination: Connected to Flange

Input - Sleeve Connection to Leg

a: 12.00 in - spacing of connectors connecting the sleeve to the leg
D: 5.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
Length //: 12.00 in - length of weld on each side of the leg at the termination
Length ⊥: 11.98 in - length of weld at the bottom/top of the leg sleeve at termination (πD/2)
No: 2.00 - number of longitudinal welds per end of the leg (typically near side & far side, so 2)
F_{EXX}: 70.00 ksi - weld electrode classification
Width: 7.63 in - maximum width of the built-up leg
Gap: 0.00 in - length of leg considered for crushing

Input - Built-up Leg Section 6 STD w/7 XH Half Sleeve

r_{x_bu}: 2.10 in - minimum radius of gyration of the built-up section about the x-axis
r_{y_bu}: 2.39 in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

Ec: 0 ksi - Modulus of Elasticity of Grout
E_leg: 29,000 ksi - Modulus of Elasticity of Leg
E_sleeve: 29,000 ksi - Modulus of Elasticity of Sleeve

Self Support Anchor Rod Capacity

Site Info	
Site #	US-CT-1003
Site Name	Straits Turnpike
TEP #	25628.819998

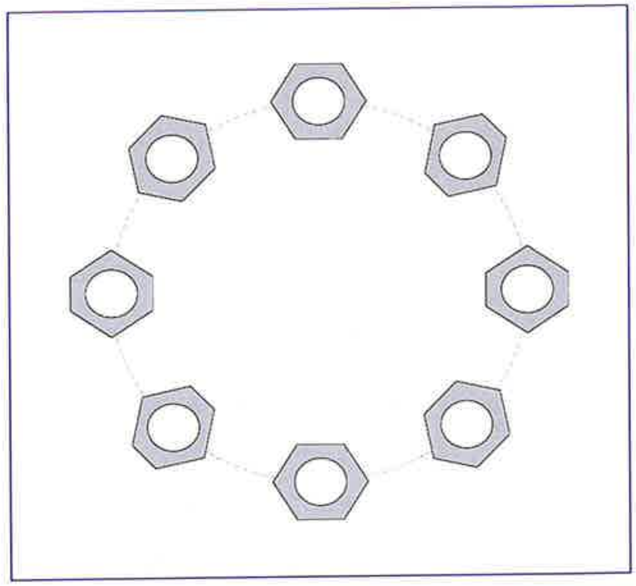
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	0
I_{ar} (in)	0

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	400.11	348.31
Shear Force (kips)	39.36	34.63

**TIA-222-H Section 15.5 Applied*

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

**Anchor Rod Eccentricity Applied*



Connection Properties

Anchor Rod Data

(8) 1-1/2" ø bolts (A36 N; Fy=36 ksi, Fu=58 ksi)

I_{ar} (in): 0

Analysis Results

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

Pu_c = 50.01	ϕPn_c = 57.26	**Stress Rating**
Vu = 4.92	ϕVn = 25.76	**86.7%**
Mu = n/a	ϕMn = n/a	Pass

Pier and Pad Foundation

Site #:	US-CT-1003
Site Name:	Straits Turnpike
TEP Number:	25628.819998

TIA-222 Revision:	H
Tower Type:	Self Support

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	400.108	kips
Compression Shear, Vu_comp:	39.361	kips
Uplift, P_{uplift}:	348.314	kips
Uplift Shear, V_{u_uplift}:	34.631	kips
Tower Height, H:	195	ft
Base Face Width, BW:	21.5	ft
BP Dist. Above Fdn, bp_{dist}:	0	in

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Uplift (kips)	1365.49	348.31	**24.3%**	**Pass**
Lateral (Sliding) (kips)	532.83	34.63	**6.2%**	**Pass**
Bearing Pressure (ksf)	9.88	1.90	**18.3%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	1232.94	223.02	**17.2%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	276.81	196.22	**67.5%**	**Pass**
Pier Compression (kip)	7637.76	416.43	**5.2%**	**Pass**
*Pad Flexure (kip*ft)*	5161.39	1285.16	**23.7%**	**Pass**
Pad Shear - 1-way (kips)	1415.26	132.95	**8.9%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.025	**14.5%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	4946.30	133.81	**2.6%**	**Pass**
Pad Shear - 2-way (Uplift) (ksi)	0.164	0.026	**15.3%**	**Pass**
*Flexural 2-way (Tension) (kip*ft)*	4946.30	117.73	**2.3%**	**Pass**

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

Structural Rating*:	**67.5%**
Soil Rating*:	**24.3%**

Pier Properties		
Pier Shape:	Square	
Pier Diameter, dpier:	4	ft
Ext. Above Grade, E:	0.25	ft
Pier Rebar Size, Sc:	8	
Pier Rebar Quantity, mc:	11	
Pier Tie/Spiral Size, St:	4	
Pier Tie/Spiral Quantity, mt:	4	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, D:	9.416	ft
Pad Width, W_1:	33	ft
Pad Thickness, T:	4	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	34	
Pad Clear Cover, cc_{pad}:	3	in

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

Soil Properties			
Total Soil Unit Weight, γ:	125	pcf	
Ultimate Net Bearing, Qnet:	12.000	ksf	<--Toggle between Gross and Net
Cohesion, Cu:		ksf	
Friction Angle, φ:	30	degrees	
SPT Blow Count, N_{blows}:			
Base Friction, μ:			
Neglected Depth, N:	3.33	ft	
Foundation Bearing on Rock?	No		
Groundwater Depth, gw:	13	ft	

Version 4.1.1

Colliers Engineering & Design
1055 Washington Blvd
Stamford, CT 06901
203.324.0800
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Post-Modification Antenna Mount Analysis Report and PMI Requirements

Mount Fix

SMART Tool Project #: 10183729
Colliers Engineering & Design Project #: 21777795 (Rev 3)

May 12, 2023

Site Information

Site ID:	*5000385567-VZW / MIDDLEBURY CT*
Site Name:	*MIDDLEBURY CT*
Carrier Name:	*Verizon Wireless*
Address:	*1021 Straits T-Pike Middlebury, Connecticut 06762 New Haven County*
Latitude:	*41.535778°*
Longitude:	*-73.089231°*

Structure Information

Tower Type:	*208-Ft Self Support*
Mount Type:	*14.25-Ft T-Arm*

FUZE ID # 16081589

Analysis Results

T-Arm: **83.5% Pass w/ Modifications***

***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: Carol Luengas

STATE OF CONNECTICUT
PETER M. ALBANO
35459
LICENSED
PROFESSIONAL ENGINEER

Executive Summary:

The objective of this report is to summarize the analysis results of the antenna support mount including the proposed modifications at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

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: 324347* *Dated October 21, 2022*
Mount Mapping Report	*Structural Components Site ID: 2177795* *Dated April 20, 2021*
Construction Drawings	*All Points Technology Filing #: CT141_12860* *Dated November 11, 2022*
Previous Mount Analysis	*Colliers Engineering & Design Project #: 21777795A Rev 2,* *dated December 9, 2022*
Mount Modification Drawing	*Colliers Engineering & Design Project #: 21777795A Rev 2,* *dated May 12, 2022*

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H 2022 Connecticut State Building Code (CSBC), Effective October 1, 2022	
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT}:	120 mph
	Ice Wind Speed (3-sec. Gust):	50 mph
	Design Ice Thickness:	1.00 in
	Risk Category:	II
	Exposure Category:	B
	Topographic Category:	1
	Topographic Feature Considered:	N/A
	Topographic Method:	N/A
	Ground Elevation Factor, K_e:	0.984
Seismic Parameters:	S_S:	0.194
	S_1:	0.054
Maintenance Parameters:	Wind Speed (3-sec. Gust):	30 mph
	Maintenance Load, Lv:	250 lbs.
	Maintenance Load, Lm:	500 lbs.
Analysis Software:	RISA-3D (V17)	

Final Loading Configuration:

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

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
164.00	165.00	6	JMA Wireless	MX06FRO660-03	Added
		3	Samsung	MT6407-77A	
		1	Raycap	RVZDC-6627-PF-48	
		3	Samsung	RF4440d-13A	

The recent mount mapping reported existing OVP units. 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 unless replacing an existing OVP.

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.

   Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping and reported in the Mount Mapping Report are assumed to be corrected and documented as part of the PMI process and are not considered in the mount analysis.

   The mount analysis and the mount mapping are not a condition assessment of the mount. Proper maintenance and condition assessments are still required post analysis.

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

8. Any mount modifications listed under Sources of Information are assumed to have been installed per the design specifications.

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

Analysis Results:

Component	Utilization %	Pass/Fail
Face Horizontal	83.5 %	Pass
Standoff Arm	50.3 %	Pass
Mast Pipe	39.0 %	Pass
Grating Angle	15.0 %	Pass
Collar Arm	16.0 %	Pass
Antenna Pipe	43.9 %	Pass
Tieback	6.3 %	Pass
Mod Angle	28.5 %	Pass
Mount Connection	44.7 %	Pass

Structure Rating – *(Controlling Utilization of all Components)*	**83.5%**

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

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	14.9	13.3	23.5	21.8
0.5	17.6	19.2	31.4	29.7
1	21.2	23.0	38.9	36.8

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(s).
- Ka factors included in (EPA)a calculations

Requirements:

The existing mounts will be **SUFFICIENT** for the final loading configuration (attachment 2) after the modifications detailed in attachment 3 are successfully completed.

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 PMI Report Deliverables**
2. Antenna Placement Diagrams
3. Mount Modification Drawings
4. Mount Photos
5. Mount Mapping Report (for reference only)
6. Analysis Calculations

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – Mount Modification

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 #: 5000385567 SMART Project #: 10183729 Fuze Project ID: 16081589

Purpose – to upload the proper documentation to the SMART Tool in order to allow the SMART Tool engineering vendor 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 modification was completed in accordance with the modification drawings.
- Contractor shall relay any data that can impact the performance of the mount or the mount modification, this includes safety issues.

Base Requirements:

- If installation of the modification 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 drawings" showing contractor's name, 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 post-modification passing mount analysis (MA) contact the SMART Tool vendor immediately.
- Each photo shall be time and date stamped.
- Photos should be high resolution.
- Contractor shall ensure that the safety climb wire rope is 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 of the modifications.
    - Photos of the mount after installation of the modifications; if the mounts are at different rad elevations, pictures must be provided for all elevations that the modifications were installed

- *Photos taken at Mount Elevation*
    - Photos showing the safety climb wire rope above and below the mount prior to modification.
    - Photos showing the climbing facility and safety climb if present.

- Photos showing each individual sector after installation of modifications. Each entire sector must 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 modification per the modification drawings; pictures shall also include connection hardware (U-bolts, bolts, nuts, all-threaded rods, etc.)
- Photos showing the distances (relative distance between collars) of the installed modifications from the appropriate reference locations shown in the modification drawings.
- Photos showing the installed modifications onto the tower (i.e. ring/collar mounts, tie-backs, V-bracing kits, etc.); if the existing mount elevation needs to be changed according to the modification drawings, an elevation measurement shall be provided before the elevation change.

Material Certification:

- Materials utilized must be as per specification on the drawings or the equivalent as validated by the SMART Tool vendor.
  - If the materials are as specified on the drawings
    - The contractor shall provide the packing list, or the materials certifications for the materials utilized to perform the mount modification
    - Commscope, Metrosite, Perfect Vision, Sabre, and Site Pro have all agreed to support Verizon vendors with the necessary material certifications
  - If seeking permission to use an equivalent
    - It is required that the SMART Tool engineering vendor approval of such is included in the contractor submission package. There may be an additional charge for approval if the equivalent submission doesn't meet specifications as prescribed in the drawings.

☐ All hardware has been properly installed, and the existing hardware was inspected.

☐ The material utilized was as specified on the SMART Tool engineering vendor Mount Modification Drawings and included in the material certification folder is a packing list or invoice for these materials.

OR

☐ The material utilized was approved by a SMART Tool engineering vendor as an "equivalent" and this approval is included as part of the contractor submission.

Antenna & Equipment Placement and Geometry Confirmation:

☐ 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.

Comments:

Was the mount modification completed in conjunction with the equipment change / installation?

☐ Yes ☐ No

Special Instructions / Validation as required from the MA or Mod Drawings:

Issue:

N/A

Response:

Special Instruction Confirmation:

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

Comments:

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:

Certifying Individual:

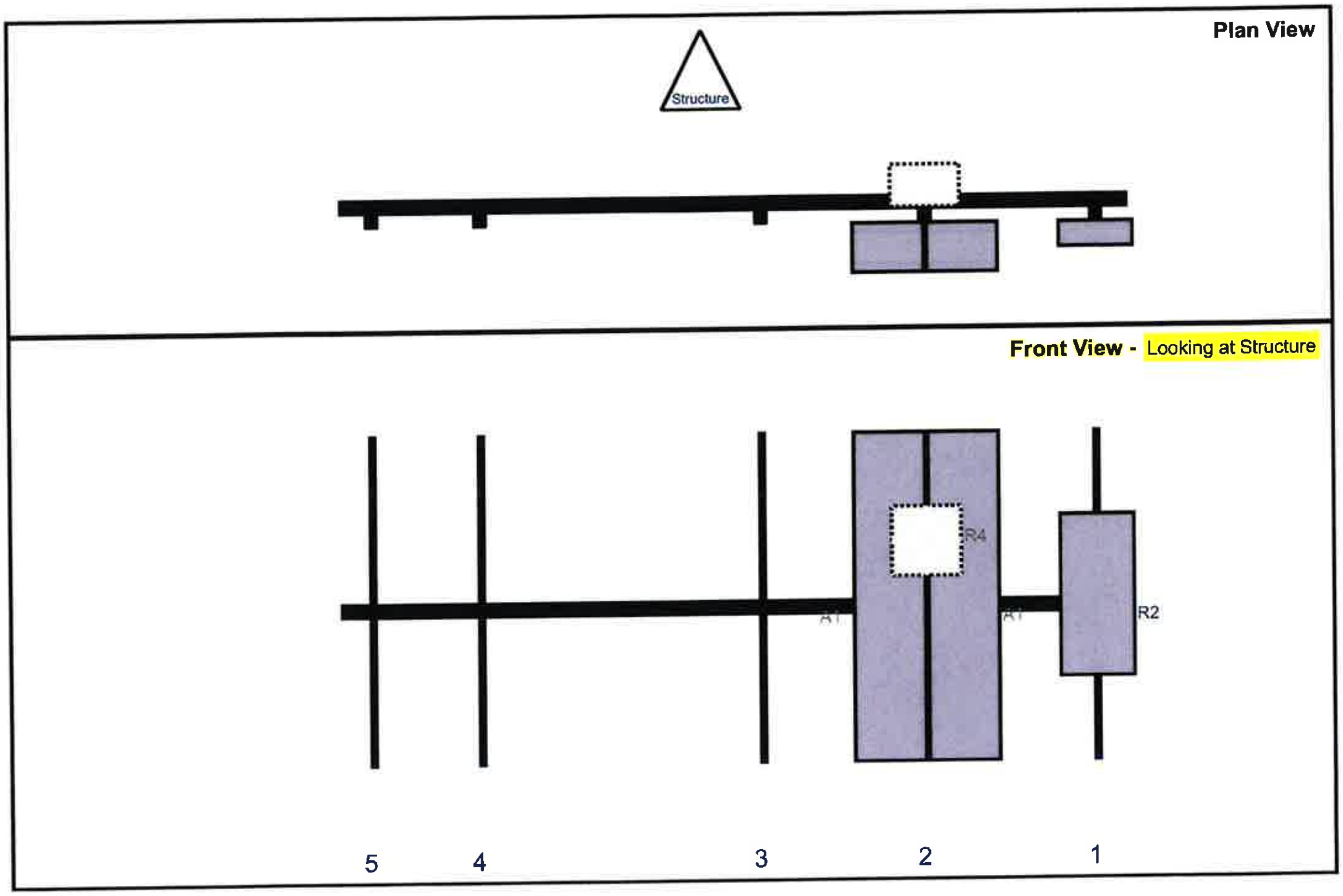
Company:	
Employee Name:	
Contact Phone:	
Email:	
Date:	

Structure: 5000385567-VZW - MIDDLEBURY CT

Sector: **A** | 5/11/2023

Structure Type: Self Support | 10183729

Mount Elev: 164.00



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
R2	MT6407-77A	35.1	16.1	164	1	a	Front	36	0	Added	
A1	MX06FRO660-03	71.3	15.4	127	2	a	Front	36	8	Added	
A1	MX06FRO660-03	71.3	15.4	127	2	b	Front	36	-8	Added	
R4	RF4440d-13A	15	15	127	2	a	Behind	24	0	Added	
M30	RVZDC-6627-PF-48	29.5	16.5		Member					Added	

Structure: 5000385567-VZW - MIDDLEBURY CT

Sector: B

Structure Type: Self Support

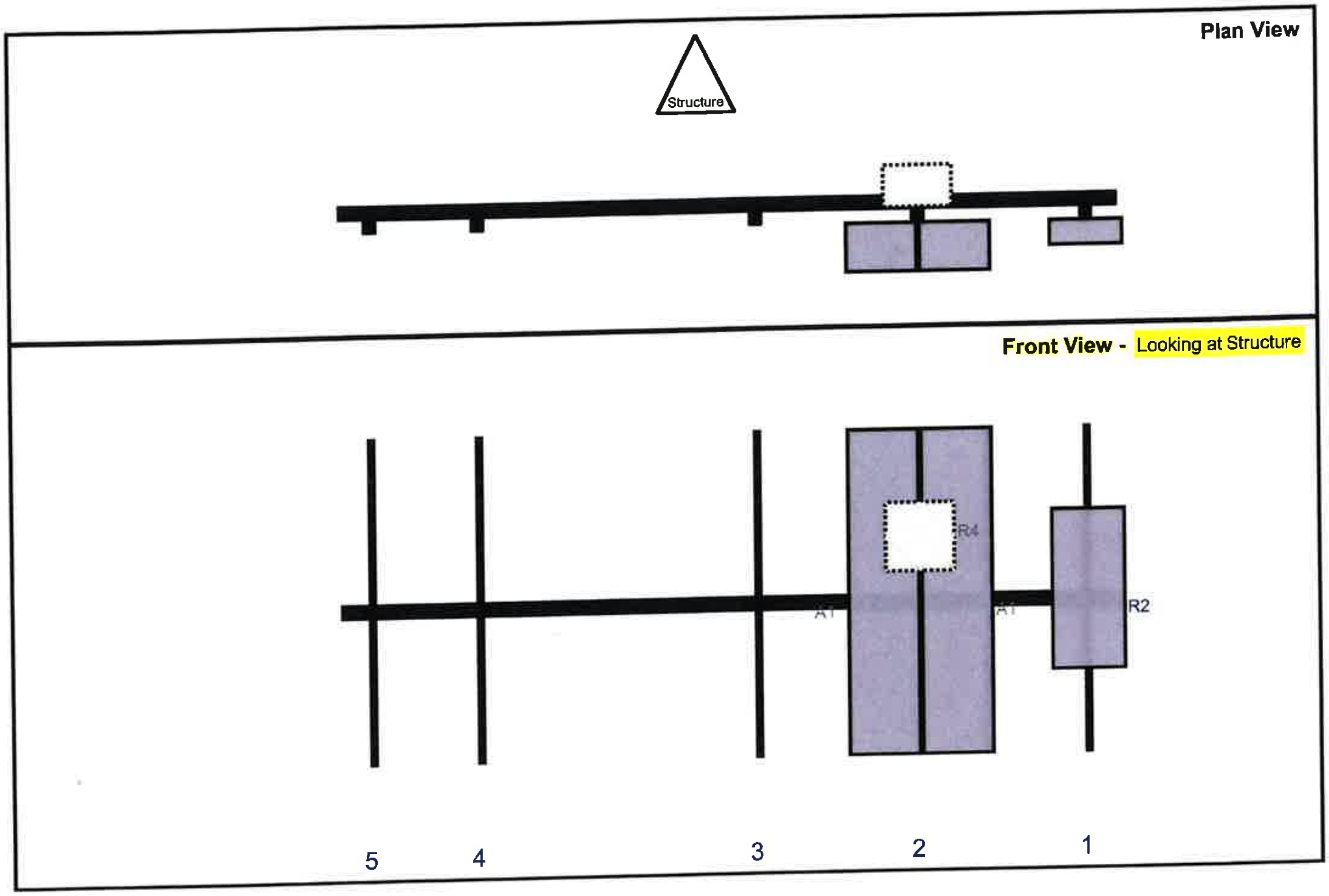
Mount Elev: 164.00

10183729

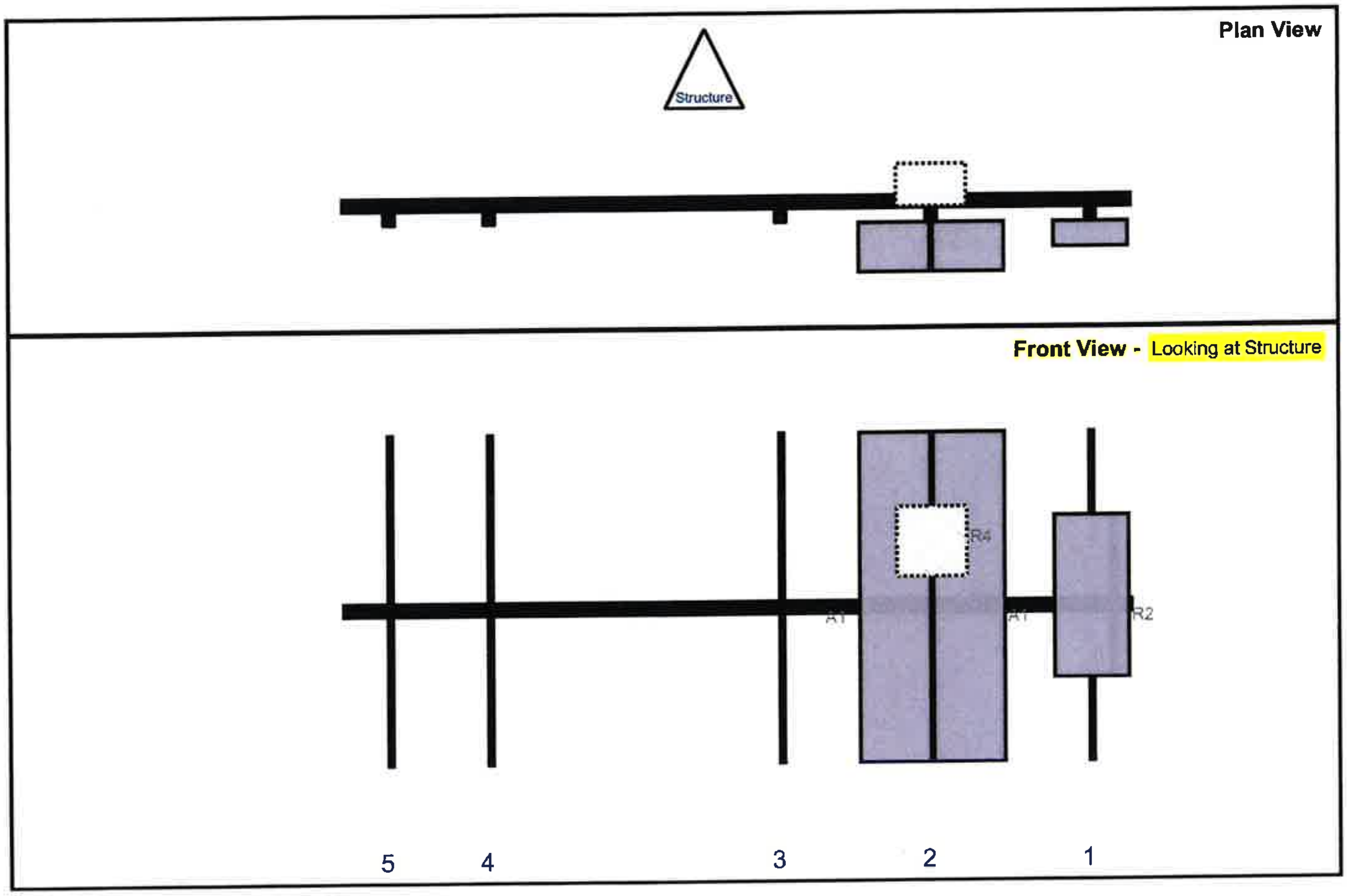
5/11/2023

Page: 2

Colliers Engineering & Design



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
R2	MT6407-77A	35.1	16.1	164	1	a	Front	36	0	Added	
A1	MX06FRO660-03	71.3	15.4	127	2	a	Front	36	8	Added	
A1	MX06FRO660-03	71.3	15.4	127	2	b	Front	36	-8	Added	
R4	RF4440d-13A	15	15	127	2	a	Behind	24	0	Added	



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
R2	MT6407-77A	35.1	16.1	162	1	a	Front	36	0	Added	
A1	MX06FRO660-03	71.3	15.4	127.5	2	a	Front	36	8	Added	
A1	MX06FRO660-03	71.3	15.4	127.5	2	b	Front	36	-8	Added	
R4	RF4440d-13A	15	15	127.5	2	a	Behind	24	0	Added	


04 20 2021 09:29


04 20 2021 08:49

V4.0 Updated on 3-31-2021

MASER CONSULTING P.A.

Antenna Mount Mapping Form (PATENT PENDING)

FCC #

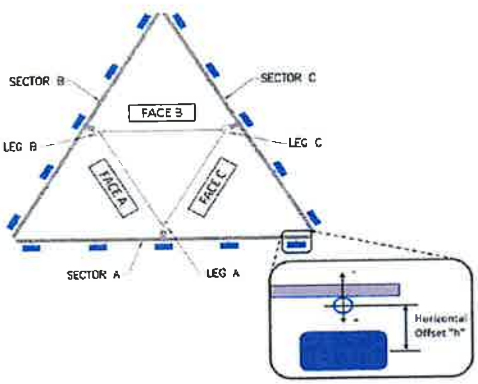
Tower Owner:	Phoenix Tower International	Mapping Date:	4/20/2021
Site Name:	Middlebury CT	Tower Type:	Self Support
Site Number or ID:	2177795	Tower Height (Ft.):	208
Mapping Contractor:	Structrual Components	Mount Elevation (Ft.):	182

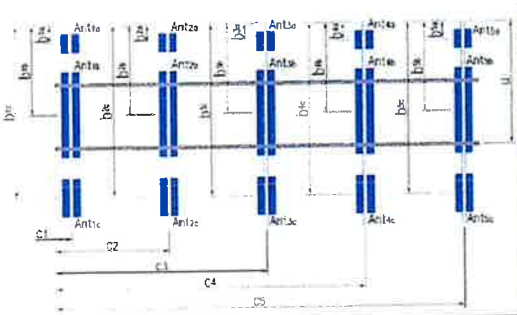
Please insert the sketches of the antenna mount from the "Sketches" tab with dimensions and members here.

Mount Pipe Configuration and Geometries [Unit = Inches]

Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "u"	Horizontal Offset "C1, C2, C3, etc."	Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "u"	Horizontal Offset "C1, C2, C3, etc."
A1	2-3/8x0.154x72	38.50	7.00	C1	2-3/8x0.154x72	46.00	12.00
A2	3.545x0.122x78	54.00	44.00	C2	3.545x0.122x78	55.00	46.50
A3	2-3/8x0.154x72	42.00	79.50	C3	2-3/8x0.154x72	40.00	79.00
A4	2-3/8x0.154x72	38.00	140.50	C4	2-3/8x0.154x72	36.00	142.00
A5	2-3/8x0.154x72	38.00	164.00	C5	2-3/8x0.154x72	39.50	163.50
A6				C6			
B1	2-3/8x0.154x72	36.00	7.00	D1			
B2	3.545x0.122x78	57.00	45.00	D2			
B3	2-3/8x0.154x72	43.00	80.50	D3			
B4	2-3/8x0.154x72	36.00	142.50	D4			
B5	2-3/8x0.154x72	36.00	166.00	D5			
B6				D6			

Distance between bottom rail and mount CL elevation (dim d). Unit is inches. See 'Mount Elev Ref' tab for details. :	
Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.) :	90
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.) :	60
Please enter additional infomation or comments below.	
Tower Face Width at Mount Elev. (ft.):	
Tower Leg Size or Pole Shaft Diameter at Mount Elev. (in.):	2.875
For T-Arms/Platforms on monopoles, report the weld size from the main standoff to the plate bolting into the collar mount.	





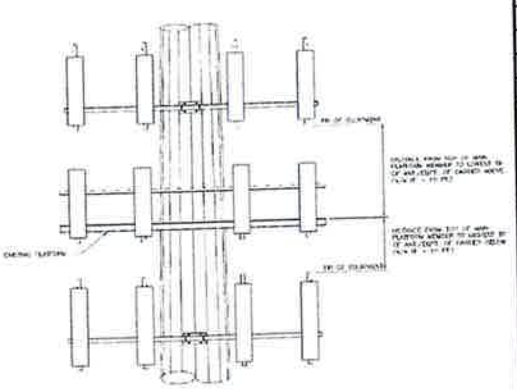
Antenna Layout (Looking Out From Tower)

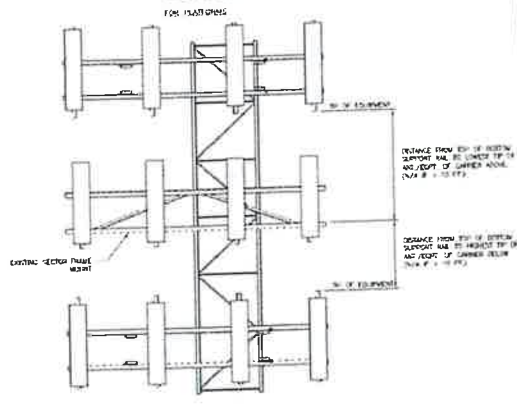
Ants. Items	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Antenna Center-line (Ft.)	Vertical Distances "b_{1a}, b_{2a}, b_{3a}, b_{1b}...." (Inches)	Horiz. Offset "h" (Use "-" if Ant. is behind)	Antenna Azimuth (Degrees)	Photo Numbers
	Enter antenna model. If not labeled, enter "Unknown".						Mounting Locations (Units are inches and degrees)			Photos of antennas
Sector A										
Ant_{1a}										
Ant_{1b}	db844g65zaxy	9.50	7.50	48.00	) 1-5/8"	183.208	24.00	9.00	35.00	23
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	hbxx-6517ds-a2m	12.00	6.50	75.00	jumper	183.375	37.50	10.00	35.00	23
Ant_{2c}	b4rrh2x60-4r	10.50	5.50	34.50	jumper	184.458	24.50	-7.00		23
Ant_{3a}										
Ant_{3b}	bxa-70063-6cf-edin-2	11.00	5.00	71.00	jumper	182.625	34.50	9.00	35.00	23
Ant_{3c}	RFS Diplexor	6.50	0.75	5.00	) 1-5/8"	183.708	21.50	-3.00		23
Ant_{4a}										
Ant_{4b}	hbxx-6517ds-a2m	12.00	6.50	75.00	) 1-5/8"	183.375	21.50	9.00	35.00	24
Ant_{4c}										
Ant_{5a}										
Ant_{5b}	db844g65zaxy	9.50	7.50	48.00	jumper	183.167	24.00	9.50	35.00	24
Ant_{5c}	RFS Diplexor	6.50	0.75	5.00	) 1-5/8"	183.625	18.50	-2.50		24
Ant on Standoff										
Ant on Standoff										
Ant on Tower	Raycap SSD	14.00	9.00	19.00	.5" Hybrid					29
Ant on Tower										

Mount Azimuth (Degree) for Each Sector			Tower Leg Azimuth (Degree) for Each Sector		
Sector A:	45.00	Deg	Leg A:	45.00	Deg
Sector B:	165.00	Deg	Leg B:	165.00	Deg
Sector C:	285.00	Deg	Leg C:	285.00	Deg
Sector D:		Deg	Leg D:		Deg

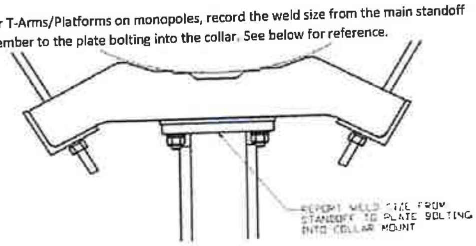
Climbing Facility Information			
Location:	Leg A	Deg	Sector A
Climbing Facility	Corrosion Type:		Good condition.
	Access:		N/A
	Condition:		Good condition.

Please insert a photo of the mount centerline measurement here.





For T-Arms/Platforms on monopoles, record the weld size from the main standoff member to the plate bolting into the collar. See below for reference.



Sector B

Ant_{1a}										
Ant_{1b}	db844g65zaxy	9.50	7.50	48.00	1) 1-5/8" T	183	24.00	10.00	155.00	31
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	hbxx-6517ds-a2m	12.00	6.50	75.00	jumper	183.667	37.00	9.50	155.00	31
Ant_{2c}	b4rrh2x60-4r	10.50	5.50	34.50	jumper	184.729	24.25	-6.50		31
Ant_{3a}										
Ant_{3b}	bxa-70063-6cf-edin-2	11.00	5.00	71.00	jumper	182.833	33.00	9.00	155.00	31
Ant_{3c}	RFS Diplexor	6.50	0.75	5.00	1) 1-5/8" T	184.083	18.00	-2.50		31
Ant_{4a}										
Ant_{4b}	hbxx-6517ds-a2m	12.00	6.50	75.00	1) 1-5/8" T	183.208	21.50	8.75	155.00	31
Ant_{4c}										
Ant_{5a}										
Ant_{5b}	db844g65zaxy	9.50	7.50	48.00	jumper	183.042	23.50	10.00	155.00	31
Ant_{5c}	RFS Diplexor	6.50	0.75	5.00	1) 1-5/8" T	183.5	18.00	-2.50		31
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Sector C

Ant_{1a}										
Ant_{1b}	db844g65zaxy	9.50	7.50	48.00	1) 1-5/8" T	183.917	23.00	8.00	275.00	28
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	hbxx-6517ds-a2m	12.00	6.50	75.00	jumper	183.458	37.50	9.50	275.00	28
Ant_{2c}	b4rrh2x60-4r	10.50	5.50	34.50	jumper	184.563	24.25	-6.50		28
Ant_{3a}										
Ant_{3b}	bxa70080-6cfedin2	8.00	6.00	71.00	jumper	182.667	32.00	8.50	275.00	28
Ant_{3c}	RFS Diplexor	6.50	0.75	5.00	1) 1-5/8" T	183.75	19.00	-2.50		28
Ant_{4a}										
Ant_{4b}	hbxx-6517ds-a2m	12.00	6.50	75.00	1) 1-5/8" T	183.292	20.50	8.75	275.00	28
Ant_{4c}										
Ant_{5a}										
Ant_{5b}	db844g65zaxy	9.50	7.50	48.00	jumper	183.5	21.50	8.00	275.00	28
Ant_{5c}	RFS Diplexor	6.50	0.75	5.00	1) 1-5/8" T	183.917	16.50	-2.50		28
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Sector D

Ant_{1a}										
Ant_{1b}										
Ant_{1c}										
Ant_{2a}										
Ant_{2b}										
Ant_{2c}										
Ant_{3a}										
Ant_{3b}										
Ant_{3c}										
Ant_{4a}										
Ant_{4b}										
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Observed Safety and Structural Issues During the Mount Mapping		
Issue #	Description of Issue	Photo #
1		
2		
3		
4		
5		
6		
7		
8		

Observed Obstructions to Tower Lighting System					
If the tower lighting system is being obstructed by the carrier's equipment (for example: a light nested by the antennas), please provide photos and fill in the information below.					Photo #
Description of Obstruction:					
Type of Light:		Photo #		Additional Comments:	
Lighting Technology:		Photo #			
Elevation (AGL) at base of light (Ft.):		Photo #			
Is a service loop available?		Photo #			
Is beacon installed on an extension?		Photo #			

Mapping Notes

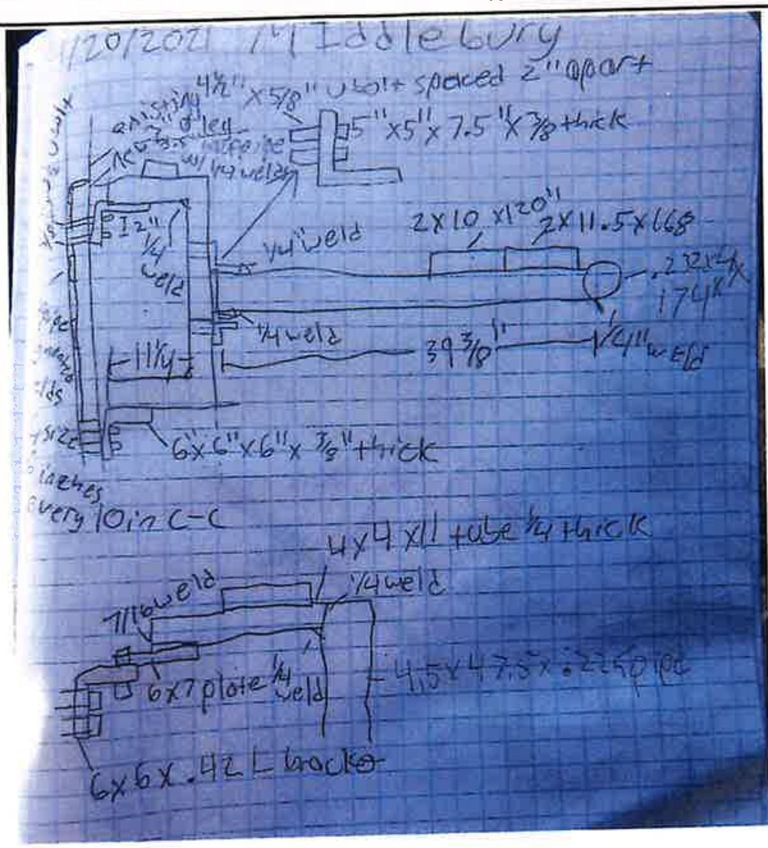
1. Please report any visible structural or safety issues observed on the antenna mounts (Damaged members, loose connections, tilting mounts, safety climb issues, etc.)
2. If the thickness of the existing pipes or tubing can't be obtained from a general tool (such as Caliper), please use an ultrasonic measurement tool (thickness gauge) to measure the thickness.
3. Please create all required detail sketches of the mounts and insert them into the "Sketches" tab.
4. Please measure and enter the bolt sizes and types under the Members Box in the spreadsheet of the mount type.
5. Take and label the photos of the tower, mounts, connections, antennas and all measurements. Minimum 50 photos are required.
6. Please measure and report the size and length of all existing antenna mounting pipes.
7. Please measure and report the antenna information for all sectors.
8. Don't delete or rearrange any sheet or contents of any sheet from this mapping form.

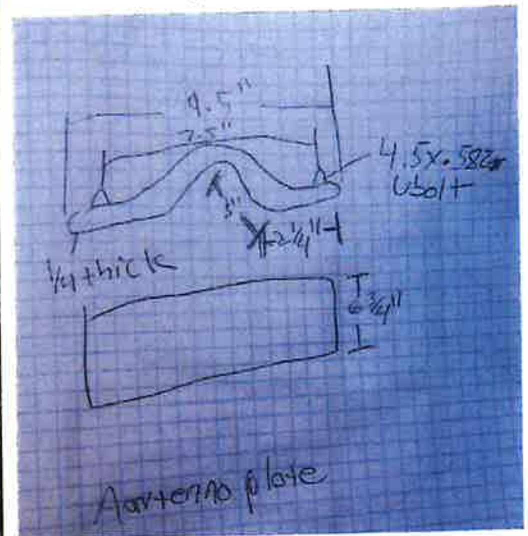
Standard Conditions

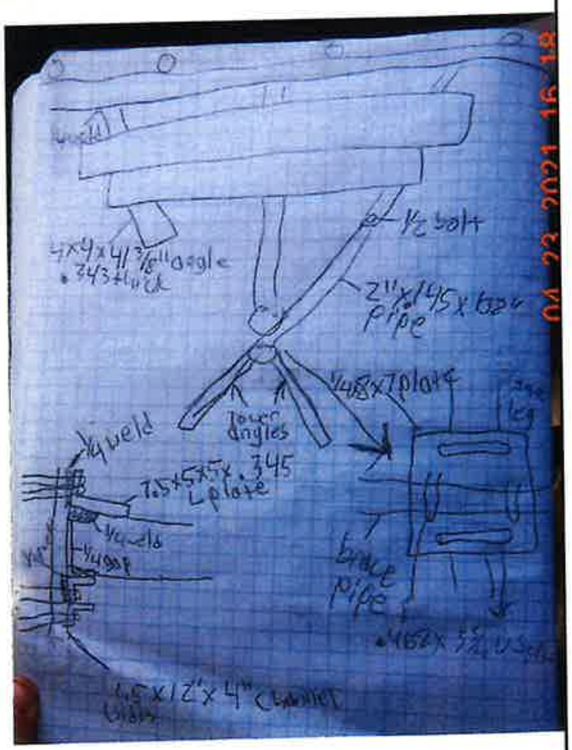
1. Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping are to be reported in this mapping. However, this mount mapping is not a condition assessment of the mount.

MASER CONSULTING P.A.	Antenna Mount Mapping Form (PATENT PENDING)				FCC #
			Mapping Date:	4/20/2021	
	Tower Owner:	Phoenix Tower International	Tower Type:	Self Support	
	Site Name:	Middlebury CT	Tower Height (Ft.):	208	
	Site Number or ID:	2177795	Mount Elevation (Ft.):	182	
	Mapping Contractor:	Structrual Components			

Please Insert Sketches of the Antenna Mount

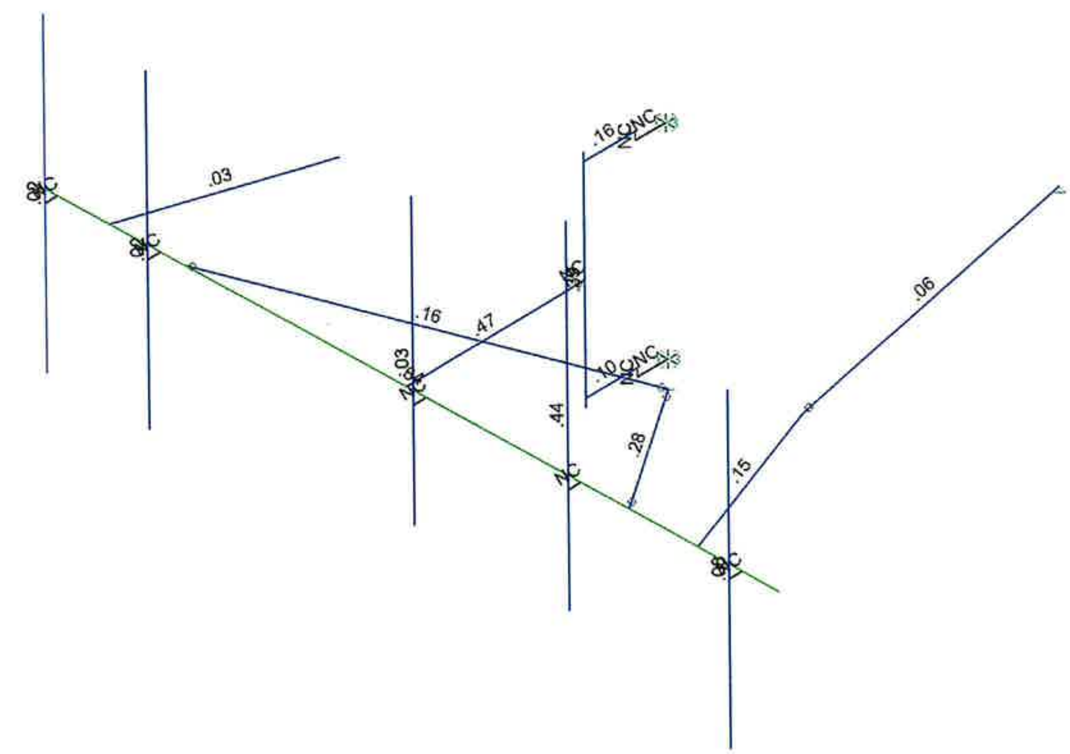






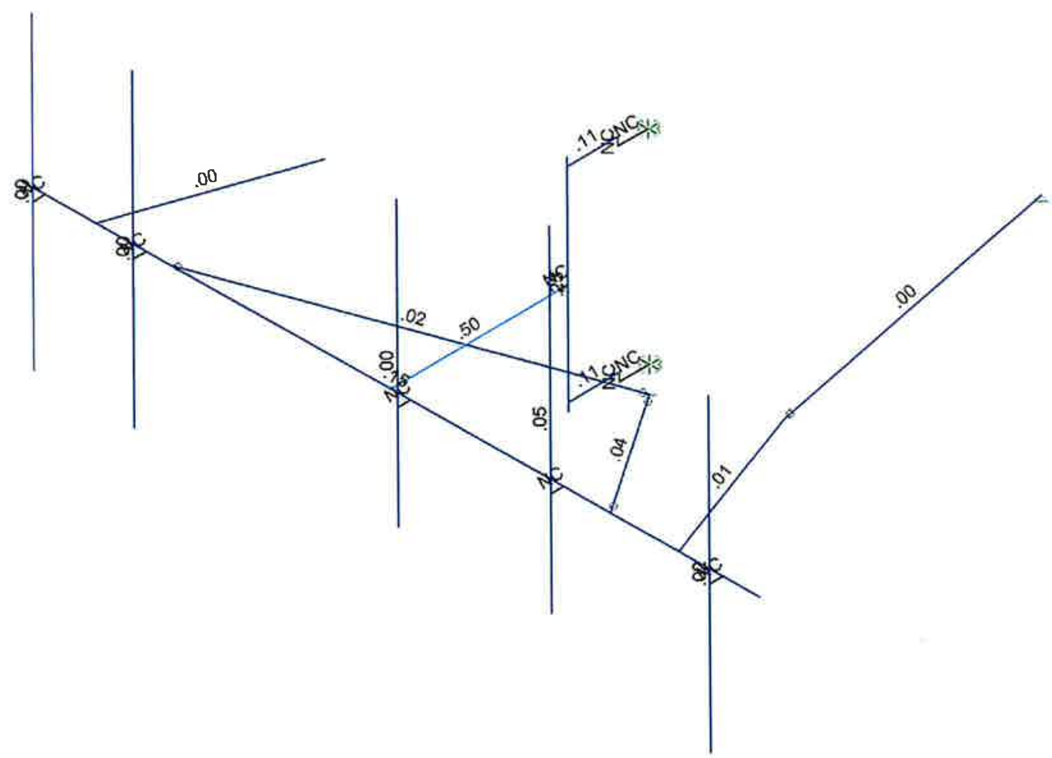
Envelope Only Solution

		SK - 1
		May 11, 2023 at 2:11 PM
		5000385567-VZW_MT_LOT_A_H.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

		SK - 2
		May 11, 2023 at 2:11 PM
		5000385567-VZW_MT_LOT_A_H.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

		SK - 3
		May 11, 2023 at 2:11 PM
		5000385567-VZW_MT_LOT_A_H.r3d

Basic Load Cases

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

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
54	Structure Wi (30 Deg)	None						30		
55	Structure Wi (60 Deg)	None						30		
56	Structure Wi (90 Deg)	None						30		
57	Structure Wi (120 De..	None						30		
58	Structure Wi (150 De..	None						30		
59	Structure Wi (180 De..	None						30		
60	Structure Wi (210 De..	None						30		
61	Structure Wi (240 De..	None						30		
62	Structure Wi (270 De..	None						30		
63	Structure Wi (300 De..	None						30		
64	Structure Wi (330 De..	None						30		
65	Structure Wm (0 Deg)	None						30		
66	Structure Wm (30 De..	None						30		
67	Structure Wm (60 De..	None						30		
68	Structure Wm (90 De..	None						30		
69	Structure Wm (120 D..	None						30		
70	Structure Wm (150 D..	None						30		
71	Structure Wm (180 D..	None						30		
72	Structure Wm (210 D..	None						30		
73	Structure Wm (240 D..	None						30		
74	Structure Wm (270 D..	None						30		
75	Structure Wm (300 D..	None						30		
76	Structure Wm (330 D..	None						30		
77	Lm1	None					1			
78	Lm2	None					1			
79	Lv1	None					1			
80	Lv2	None					1			
81	Antenna Ev	None					24			
82	Antenna Eh (0 Deg)	None					16			
83	Antenna Eh (90 Deg)	None					16			
84	Structure Ev	ELY		-.041						
85	Structure Eh (0 Deg)	ELZ			-.103					
86	Structure Eh (90 Deg)	ELX	.103							

Load Combinations

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
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...	Yes	Y		1	1.2	39	1.2	2	1	40	1	15	1	53	1								
14	1.2D + 1.0Di + 1.0Wi (3...	Yes	Y		1	1.2	39	1.2	2	1	40	1	16	1	54	1								
15	1.2D + 1.0Di + 1.0Wi (6...	Yes	Y		1	1.2	39	1.2	2	1	40	1	17	1	55	1								
16	1.2D + 1.0Di + 1.0Wi (9...	Yes	Y		1	1.2	39	1.2	2	1	40	1	18	1	56	1								
17	1.2D + 1.0Di + 1.0Wi (1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	19	1	57	1								
18	1.2D + 1.0Di + 1.0Wi (1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	20	1	58	1								
19	1.2D + 1.0Di + 1.0Wi (1...	Yes	Y		1	1.2	39	1.2	2	1	40	1	21	1	59	1								

Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
20	1.2D + 1.0Di + 1.0Wi (2...	Yes	Y		1	1.2	39	1.2	2	1	40	1	22	1	60	1								
21	1.2D + 1.0Di + 1.0Wi (2...	Yes	Y		1	1.2	39	1.2	2	1	40	1	23	1	61	1								
22	1.2D + 1.0Di + 1.0Wi (2...	Yes	Y		1	1.2	39	1.2	2	1	40	1	24	1	62	1								
23	1.2D + 1.0Di + 1.0Wi (3...	Yes	Y		1	1.2	39	1.2	2	1	40	1	25	1	63	1								
24	1.2D + 1.0Di + 1.0Wi (3...	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										
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 (0.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	1	83		ELZ	1	E...					
53	1.2D + 1.0Ev + 1.0Eh (3.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	.866	83	.5	ELZ	.866	E...	.5				
54	1.2D + 1.0Ev + 1.0Eh (6.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	.5	83	.866	ELZ	.5	E...	.866				
55	1.2D + 1.0Ev + 1.0Eh (9.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82		83	1	ELZ		E...	1				
56	1.2D + 1.0Ev + 1.0Eh (1.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	-.5	83	.866	ELZ	-.5	E...	.866				
57	1.2D + 1.0Ev + 1.0Eh (1.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	-.866	83	.5	ELZ	-.866	E...	.5				
58	1.2D + 1.0Ev + 1.0Eh (1.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	-1	83		ELZ	-1	E...					
59	1.2D + 1.0Ev + 1.0Eh (2.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	-.866	83	-.5	ELZ	-.866	E...	-.5				
60	1.2D + 1.0Ev + 1.0Eh (2.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	-.5	83	-.866	ELZ	-.5	E...	-.866				
61	1.2D + 1.0Ev + 1.0Eh (2.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82		83	-1	ELZ		E...	-1				
62	1.2D + 1.0Ev + 1.0Eh (3.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	.5	83	-.866	ELZ	.5	E...	-.866				
63	1.2D + 1.0Ev + 1.0Eh (3.	Yes	Y		1	1.2	39	1.2	81	1	E...	1	82	.866	83	-.5	ELZ	.866	E...	-.5				
64	0.9D - 1.0Ev + 1.0Eh (0...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	1	83		ELZ	1	E...					
65	0.9D - 1.0Ev + 1.0Eh (3...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	.866	83	.5	ELZ	.866	E...	.5				
66	0.9D - 1.0Ev + 1.0Eh (6...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	.5	83	.866	ELZ	.5	E...	.866				
67	0.9D - 1.0Ev + 1.0Eh (9...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82		83	1	ELZ		E...	1				
68	0.9D - 1.0Ev + 1.0Eh (1...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	-.5	83	.866	ELZ	-.5	E...	.866				
69	0.9D - 1.0Ev + 1.0Eh (1...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	-.866	83	.5	ELZ	-.866	E...	.5				
70	0.9D - 1.0Ev + 1.0Eh (1...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	-1	83		ELZ	-1	E...					
71	0.9D - 1.0Ev + 1.0Eh (2...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	-.866	83	-.5	ELZ	-.866	E...	-.5				
72	0.9D - 1.0Ev + 1.0Eh (2...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	-.5	83	-.866	ELZ	-.5	E...	-.866				
73	0.9D - 1.0Ev + 1.0Eh (2...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82		83	-1	ELZ		E...	-1				
74	0.9D - 1.0Ev + 1.0Eh (3...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	.5	83	-.866	ELZ	.5	E...	-.866				
75	0.9D - 1.0Ev + 1.0Eh (3...	Yes	Y		1	.9	39	.9	81	-1	E...	-1	82	.866	83	-.5	ELZ	.866	E...	-.5				

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N43	-.875	0	0.	0	
2	N44	13.375	0	-0.	0	
3	N45	6.25	0	0.	0	
4	N46	6.25	0	-3.250003	0	
5	N47	6.25	0	-3.4375	0	
6	N48	6.25	1.979167	-3.4375	0	
7	N49	6.25	-1.979167	-3.4375	0	
8	N50	0.5625	0	0.	0	
9	N52	11.8125	0	-0.	0	
10	N54	6.25	1.812167	-4.436667	0	
11	N55	6.25	-2.1455	-4.436667	0	
12	N56	6.25	0	-2.708003	0	
13	N59	6.25	0	-1.37467	0	
14	N63	6.25	1.978833	-4.436667	0	
15	N64	6.25	1.8125	-5.020334	0	
16	N66	6.25	-1.978833	-4.436667	0	
17	N67	6.25	-2.145833	-5.020334	0	
18	N68	12.666667	0	0.	0	
19	N69	9.583333	0	0	0	
20	N70	6.625	0	0.	0	
21	N71	1.541667	0	0.	0	
22	N72	12.666667	0	.25	0	
23	N73	9.583333	0	.25	0	
24	N74	6.625	0	.25	0	
25	N75	1.541667	0	.25	0	
26	N76	12.666667	3.166667	.25	0	
27	N77	9.583333	4.5	.25	0	
28	N78	6.625	3.5	.25	0	
29	N79	1.541667	3.166667	.25	0	
30	N80	12.666667	-2.833333	.25	0	
31	N81	9.583333	-2	.25	0	
32	N82	6.625	-2	.25	0	
33	N83	1.541667	-2.833333	.25	0	
34	N38	1.741757	0	-3.239982	0	
35	N39	10.633243	0	-3.239982	0	
36	N38A	-0.416667	0	0.	0	
37	N39A	-0.416667	0	.25	0	
38	N40	-0.416667	3.166667	.25	0	
39	N41	-0.416667	-2.833333	.25	0	
40	N43A	6.25	2.145833	-3.4375	0	
41	N44A	6.25	-2.145833	-3.4375	0	
42	N51	9.424381	0	-9.449412	0	
43	N51A	10.5	0	0.	0	
44	N52A	2	0	0.	0	
45	N53	6.25	-2.65	-5.020334	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Antenna Pipe	PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
2	Collar Arm	HSS4X4X4	Beam	SquareTube	A500 Gr. B 46	Typical	3.37	7.8	7.8	12.8
3	Mast Pipe	PIPE_4.0	Beam	Pipe	A53 Gr. B	Typical	2.96	6.82	6.82	13.6
4	Standoff Arm	HSS4X4X4	Beam	SquareTube	A500 Gr. B 46	Typical	3.37	7.8	7.8	12.8
5	Grating Pipe	PIPE_2.0	Beam	Single Angle	A36 Gr.36	Typical	1.02	.627	.627	1.25
6	Face Horizontal	PIPE_3.5	Beam	Pipe	A53 Gr. B	Typical	2.5	4.52	4.52	9.04

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
7	Rear Plate	PL1/2x6	Beam	BAR	A36 Gr.36	Typical	3	.063	9	.237
8	Grating Angle	L4X4X6	Beam	Single Angle	A36 Gr.36	Typical	2.86	4.32	4.32	.141
9	Tieback	PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
10	Dual Mount Pipe	PIPE_2.5	Beam	Pipe	A53 Gr. B	Typical	1.61	1.45	1.45	2.89
11	mod angle	L2.5x2.5x4	Beam	Pipe	A36 Gr.36	Typical	1.19	.692	.692	.026
12	Dual Pipe	PIPE_2.5	Beam	Pipe	A53 Gr. B	Typical	1.61	1.45	1.45	2.89

Hot Rolled Steel Properties

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

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M27	N43	N44			Face Horizontal	Beam	Pipe	A53 Gr. B	Typical
2	M28	N45	N46			Standoff Arm	Beam	SquareTube	A500 Gr. ...	Typical
3	M29	N46	N47			RIGID	None	None	RIGID	Typical
4	M30	N43A	N44A			Mast Pipe	Beam	Pipe	A53 Gr. B	Typical
5	M32	N50	N38		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
6	M34	N52	N39		180	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
7	M39	N48	N63			Collar Arm	Beam	SquareTube	A500 Gr. ...	Typical
8	M40	N63	N54			RIGID	None	None	RIGID	Typical
9	M41	N54	N64		90	RIGID	None	None	RIGID	Typical
10	M42	N49	N66			Collar Arm	Beam	SquareTube	A500 Gr. ...	Typical
11	M43	N66	N55			RIGID	None	None	RIGID	Typical
12	M44	N55	N67		90	RIGID	None	None	RIGID	Typical
13	M45	N75	N71			RIGID	None	None	RIGID	Typical
14	M46	N74	N70			RIGID	None	None	RIGID	Typical
15	M47	N73	N69			RIGID	None	None	RIGID	Typical
16	M48	N72	N68			RIGID	None	None	RIGID	Typical
17	MP4A	N79	N83			Antenna Pipe	Beam	Pipe	A53 Gr. B	Typical
18	MP3A	N78	N82			Antenna Pipe	Beam	Pipe	A53 Gr. B	Typical
19	MP2A	N77	N81			Antenna Pipe	Beam	Pipe	A53 Gr. B	Typical
20	MP1A	N76	N80			Antenna Pipe	Beam	Pipe	A53 Gr. B	Typical
21	M21	N39A	N38A			RIGID	None	None	RIGID	Typical
22	MP5A	N40	N41			Antenna Pipe	Beam	Pipe	A53 Gr. B	Typical
23	M24	N51	N39			Tieback	Beam	Pipe	A53 Gr. B	Typical
24	M24A	N52A	N53			mod angle	Beam	Pipe	A36 Gr.36	Typical
25	M25	N51A	N53		270	mod angle	Beam	Pipe	A36 Gr.36	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	M27						Yes	Default			None
2	M28						Yes				None
3	M29		OOOOOO				Yes	** NA **			None
4	M30						Yes				None
5	M32						Yes	Default			None
6	M34						Yes	Default			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
7	M39						Yes				None
8	M40						Yes	** NA **			None
9	M41						Yes	** NA **			None
10	M42						Yes				None
11	M43						Yes	** NA **			None
12	M44						Yes	** NA **			None
13	M45						Yes	** NA **			None
14	M46						Yes	** NA **			None
15	M47						Yes	** NA **			None
16	M48						Yes	** NA **			None
17	MP4A						Yes				None
18	MP3A						Yes	Default			None
19	MP2A						Yes				None
20	MP1A						Yes				None
21	M21						Yes	** NA **			None
22	MP5A						Yes				None
23	M24		BenPIN				Yes				None
24	M24A	BenPIN	BenPIN				Yes				None
25	M25	BenPIN	BenPIN				Yes				None

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Y	-39	1
2	MP2A	My	-.019	1
3	MP2A	Mz	.026	1
4	MP2A	Y	-39	5
5	MP2A	My	-.019	5
6	MP2A	Mz	.026	5
7	MP2A	Y	-39	1
8	MP2A	My	-.019	1
9	MP2A	Mz	-.026	1
10	MP2A	Y	-39	5
11	MP2A	My	-.019	5
12	MP2A	Mz	-.026	5
13	MP1A	Y	-43.55	2
14	MP1A	My	-.022	2
15	MP1A	Mz	0	2
16	MP1A	Y	-43.55	4
17	MP1A	My	-.022	4
18	MP1A	Mz	0	4
19	M30	Y	-32	1
20	M30	My	0	1
21	M30	Mz	0	1
22	MP2A	Y	-70.3	2
23	MP2A	My	.035	2
24	MP2A	Mz	0	2

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Y	-84.007	1
2	MP2A	My	-.042	1
3	MP2A	Mz	.056	1
4	MP2A	Y	-84.007	5
5	MP2A	My	-.042	5
6	MP2A	Mz	.056	5

Member Point Loads (BLC 2 : Antenna Di) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
7	MP2A	Y	-84.007	1
8	MP2A	My	-.042	1
9	MP2A	Mz	-.056	1
10	MP2A	Y	-84.007	5
11	MP2A	My	-.042	5
12	MP2A	Mz	-.056	5
13	MP1A	Y	-36.299	2
14	MP1A	My	-.018	2
15	MP1A	Mz	0	2
16	MP1A	Y	-36.299	4
17	MP1A	My	-.018	4
18	MP1A	Mz	0	4
19	M30	Y	-89.576	1
20	M30	My	0	1
21	M30	Mz	0	1
22	MP2A	Y	-43.596	2
23	MP2A	My	.022	2
24	MP2A	Mz	0	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1
2	MP2A	Z	-83.529	1
3	MP2A	Mx	-.056	1
4	MP2A	X	0	5
5	MP2A	Z	-83.529	5
6	MP2A	Mx	-.056	5
7	MP2A	X	0	1
8	MP2A	Z	-83.529	1
9	MP2A	Mx	.056	1
10	MP2A	X	0	5
11	MP2A	Z	-83.529	5
12	MP2A	Mx	.056	5
13	MP1A	X	0	2
14	MP1A	Z	-69.225	2
15	MP1A	Mx	0	2
16	MP1A	X	0	4
17	MP1A	Z	-69.225	4
18	MP1A	Mx	0	4
19	M30	X	0	1
20	M30	Z	-105.25	1
21	M30	Mx	0	1
22	MP2A	X	0	2
23	MP2A	Z	-54.744	2
24	MP2A	Mx	0	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	39.138	1
2	MP2A	Z	-67.789	1
3	MP2A	Mx	-.065	1
4	MP2A	X	39.138	5
5	MP2A	Z	-67.789	5
6	MP2A	Mx	-.065	5
7	MP2A	X	39.138	1
8	MP2A	Z	-67.789	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
9	MP2A	Mx	.026	1
10	MP2A	X	39.138	5
11	MP2A	Z	-67.789	5
12	MP2A	Mx	.026	5
13	MP1A	X	28.939	2
14	MP1A	Z	-50.125	2
15	MP1A	Mx	-.014	2
16	MP1A	X	28.939	4
17	MP1A	Z	-50.125	4
18	MP1A	Mx	-.014	4
19	M30	X	45.915	1
20	M30	Z	-79.526	1
21	M30	Mx	0	1
22	MP2A	X	24.679	2
23	MP2A	Z	-42.745	2
24	MP2A	Mx	.012	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	58.689	1
2	MP2A	Z	-33.884	1
3	MP2A	Mx	-.052	1
4	MP2A	X	58.689	5
5	MP2A	Z	-33.884	5
6	MP2A	Mx	-.052	5
7	MP2A	X	58.689	1
8	MP2A	Z	-33.884	1
9	MP2A	Mx	-.007	1
10	MP2A	X	58.689	5
11	MP2A	Z	-33.884	5
12	MP2A	Mx	-.007	5
13	MP1A	X	30.472	2
14	MP1A	Z	-17.593	2
15	MP1A	Mx	-.015	2
16	MP1A	X	30.472	4
17	MP1A	Z	-17.593	4
18	MP1A	Mx	-.015	4
19	M30	X	73.715	1
20	M30	Z	-42.559	1
21	M30	Mx	0	1
22	MP2A	X	33.416	2
23	MP2A	Z	-19.293	2
24	MP2A	Mx	.017	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	62.514	1
2	MP2A	Z	0	1
3	MP2A	Mx	-.031	1
4	MP2A	X	62.514	5
5	MP2A	Z	0	5
6	MP2A	Mx	-.031	5
7	MP2A	X	62.514	1
8	MP2A	Z	0	1
9	MP2A	Mx	-.031	1
10	MP2A	X	62.514	5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
11	MP2A	Z	0	5
12	MP2A	Mx	-.031	5
13	MP1A	X	23.84	2
14	MP1A	Z	0	2
15	MP1A	Mx	-.012	2
16	MP1A	X	23.84	4
17	MP1A	Z	0	4
18	MP1A	Mx	-.012	4
19	M30	X	91.829	1
20	M30	Z	0	1
21	M30	Mx	0	1
22	MP2A	X	33.2	2
23	MP2A	Z	0	2
24	MP2A	Mx	.017	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	58.689	1
2	MP2A	Z	33.884	1
3	MP2A	Mx	-.007	1
4	MP2A	X	58.689	5
5	MP2A	Z	33.884	5
6	MP2A	Mx	-.007	5
7	MP2A	X	58.689	1
8	MP2A	Z	33.884	1
9	MP2A	Mx	-.052	1
10	MP2A	X	58.689	5
11	MP2A	Z	33.884	5
12	MP2A	Mx	-.052	5
13	MP1A	X	30.472	2
14	MP1A	Z	17.593	2
15	MP1A	Mx	-.015	2
16	MP1A	X	30.472	4
17	MP1A	Z	17.593	4
18	MP1A	Mx	-.015	4
19	M30	X	91.149	1
20	M30	Z	52.625	1
21	M30	Mx	0	1
22	MP2A	X	33.416	2
23	MP2A	Z	19.293	2
24	MP2A	Mx	.017	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	39.138	1
2	MP2A	Z	67.789	1
3	MP2A	Mx	.026	1
4	MP2A	X	39.138	5
5	MP2A	Z	67.789	5
6	MP2A	Mx	.026	5
7	MP2A	X	39.138	1
8	MP2A	Z	67.789	1
9	MP2A	Mx	-.065	1
10	MP2A	X	39.138	5
11	MP2A	Z	67.789	5
12	MP2A	Mx	-.065	5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
13	MP1A	X	28.939	2
14	MP1A	Z	50.125	2
15	MP1A	Mx	-.014	2
16	MP1A	X	28.939	4
17	MP1A	Z	50.125	4
18	MP1A	Mx	-.014	4
19	M30	X	55.98	1
20	M30	Z	96.961	1
21	M30	Mx	0	1
22	MP2A	X	24.679	2
23	MP2A	Z	42.745	2
24	MP2A	Mx	.012	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1
2	MP2A	Z	83.529	1
3	MP2A	Mx	.056	1
4	MP2A	X	0	5
5	MP2A	Z	83.529	5
6	MP2A	Mx	.056	5
7	MP2A	X	0	1
8	MP2A	Z	83.529	1
9	MP2A	Mx	-.056	1
10	MP2A	X	0	5
11	MP2A	Z	83.529	5
12	MP2A	Mx	-.056	5
13	MP1A	X	0	2
14	MP1A	Z	69.225	2
15	MP1A	Mx	0	2
16	MP1A	X	0	4
17	MP1A	Z	69.225	4
18	MP1A	Mx	0	4
19	M30	X	0	1
20	M30	Z	105.25	1
21	M30	Mx	0	1
22	MP2A	X	0	2
23	MP2A	Z	54.744	2
24	MP2A	Mx	0	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-39.138	1
2	MP2A	Z	67.789	1
3	MP2A	Mx	.065	1
4	MP2A	X	-39.138	5
5	MP2A	Z	67.789	5
6	MP2A	Mx	.065	5
7	MP2A	X	-39.138	1
8	MP2A	Z	67.789	1
9	MP2A	Mx	-.026	1
10	MP2A	X	-39.138	5
11	MP2A	Z	67.789	5
12	MP2A	Mx	-.026	5
13	MP1A	X	-28.939	2
14	MP1A	Z	50.125	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	MP1A	Mx	.014	2
16	MP1A	X	-28.939	4
17	MP1A	Z	50.125	4
18	MP1A	Mx	.014	4
19	M30	X	-45.915	1
20	M30	Z	79.526	1
21	M30	Mx	0	1
22	MP2A	X	-24.679	2
23	MP2A	Z	42.745	2
24	MP2A	Mx	-.012	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-58.689	1
2	MP2A	Z	33.884	1
3	MP2A	Mx	.052	1
4	MP2A	X	-58.689	5
5	MP2A	Z	33.884	5
6	MP2A	Mx	.052	5
7	MP2A	X	-58.689	1
8	MP2A	Z	33.884	1
9	MP2A	Mx	.007	1
10	MP2A	X	-58.689	5
11	MP2A	Z	33.884	5
12	MP2A	Mx	.007	5
13	MP1A	X	-30.472	2
14	MP1A	Z	17.593	2
15	MP1A	Mx	.015	2
16	MP1A	X	-30.472	4
17	MP1A	Z	17.593	4
18	MP1A	Mx	.015	4
19	M30	X	-73.715	1
20	M30	Z	42.559	1
21	M30	Mx	0	1
22	MP2A	X	-33.416	2
23	MP2A	Z	19.293	2
24	MP2A	Mx	-.017	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-62.514	1
2	MP2A	Z	0	1
3	MP2A	Mx	.031	1
4	MP2A	X	-62.514	5
5	MP2A	Z	0	5
6	MP2A	Mx	.031	5
7	MP2A	X	-62.514	1
8	MP2A	Z	0	1
9	MP2A	Mx	.031	1
10	MP2A	X	-62.514	5
11	MP2A	Z	0	5
12	MP2A	Mx	.031	5
13	MP1A	X	-23.84	2
14	MP1A	Z	0	2
15	MP1A	Mx	.012	2
16	MP1A	X	-23.84	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
17	MP1A	Z	0	4
18	MP1A	Mx	.012	4
19	M30	X	-91.829	1
20	M30	Z	0	1
21	M30	Mx	0	1
22	MP2A	X	-33.2	2
23	MP2A	Z	0	2
24	MP2A	Mx	-.017	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-58.689	1
2	MP2A	Z	-33.884	1
3	MP2A	Mx	.007	1
4	MP2A	X	-58.689	5
5	MP2A	Z	-33.884	5
6	MP2A	Mx	.007	5
7	MP2A	X	-58.689	1
8	MP2A	Z	-33.884	1
9	MP2A	Mx	.052	1
10	MP2A	X	-58.689	5
11	MP2A	Z	-33.884	5
12	MP2A	Mx	.052	5
13	MP1A	X	-30.472	2
14	MP1A	Z	-17.593	2
15	MP1A	Mx	.015	2
16	MP1A	X	-30.472	4
17	MP1A	Z	-17.593	4
18	MP1A	Mx	.015	4
19	M30	X	-91.149	1
20	M30	Z	-52.625	1
21	M30	Mx	0	1
22	MP2A	X	-33.416	2
23	MP2A	Z	-19.293	2
24	MP2A	Mx	-.017	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-39.138	1
2	MP2A	Z	-67.789	1
3	MP2A	Mx	-.026	1
4	MP2A	X	-39.138	5
5	MP2A	Z	-67.789	5
6	MP2A	Mx	-.026	5
7	MP2A	X	-39.138	1
8	MP2A	Z	-67.789	1
9	MP2A	Mx	.065	1
10	MP2A	X	-39.138	5
11	MP2A	Z	-67.789	5
12	MP2A	Mx	.065	5
13	MP1A	X	-28.939	2
14	MP1A	Z	-50.125	2
15	MP1A	Mx	.014	2
16	MP1A	X	-28.939	4
17	MP1A	Z	-50.125	4
18	MP1A	Mx	.014	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
19	M30	X	-55.98	1
20	M30	Z	-96.961	1
21	M30	Mx	0	1
22	MP2A	X	-24.679	2
23	MP2A	Z	-42.745	2
24	MP2A	Mx	-.012	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1
2	MP2A	Z	-33.046	1
3	MP2A	Mx	-.022	1
4	MP2A	X	0	5
5	MP2A	Z	-33.046	5
6	MP2A	Mx	-.022	5
7	MP2A	X	0	1
8	MP2A	Z	-33.046	1
9	MP2A	Mx	.022	1
10	MP2A	X	0	5
11	MP2A	Z	-33.046	5
12	MP2A	Mx	.022	5
13	MP1A	X	0	2
14	MP1A	Z	-16.312	2
15	MP1A	Mx	0	2
16	MP1A	X	0	4
17	MP1A	Z	-16.312	4
18	MP1A	Mx	0	4
19	M30	X	0	1
20	M30	Z	-26.717	1
21	M30	Mx	0	1
22	MP2A	X	0	2
23	MP2A	Z	-13.761	2
24	MP2A	Mx	0	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	15.518	1
2	MP2A	Z	-26.879	1
3	MP2A	Mx	-.026	1
4	MP2A	X	15.518	5
5	MP2A	Z	-26.879	5
6	MP2A	Mx	-.026	5
7	MP2A	X	15.518	1
8	MP2A	Z	-26.879	1
9	MP2A	Mx	.01	1
10	MP2A	X	15.518	5
11	MP2A	Z	-26.879	5
12	MP2A	Mx	.01	5
13	MP1A	X	6.987	2
14	MP1A	Z	-12.101	2
15	MP1A	Mx	-.003	2
16	MP1A	X	6.987	4
17	MP1A	Z	-12.101	4
18	MP1A	Mx	-.003	4
19	M30	X	11.821	1
20	M30	Z	-20.474	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
21	M30	Mx	0	1
22	MP2A	X	6.264	2
23	MP2A	Z	-10.849	2
24	MP2A	Mx	.003	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	23.398	1
2	MP2A	Z	-13.509	1
3	MP2A	Mx	-.021	1
4	MP2A	X	23.398	5
5	MP2A	Z	-13.509	5
6	MP2A	Mx	-.021	5
7	MP2A	X	23.398	1
8	MP2A	Z	-13.509	1
9	MP2A	Mx	-.003	1
10	MP2A	X	23.398	5
11	MP2A	Z	-13.509	5
12	MP2A	Mx	-.003	5
13	MP1A	X	8.051	2
14	MP1A	Z	-4.648	2
15	MP1A	Mx	-.004	2
16	MP1A	X	8.051	4
17	MP1A	Z	-4.648	4
18	MP1A	Mx	-.004	4
19	M30	X	19.142	1
20	M30	Z	-11.052	1
21	M30	Mx	0	1
22	MP2A	X	8.712	2
23	MP2A	Z	-5.03	2
24	MP2A	Mx	.004	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	25.008	1
2	MP2A	Z	0	1
3	MP2A	Mx	-.013	1
4	MP2A	X	25.008	5
5	MP2A	Z	0	5
6	MP2A	Mx	-.013	5
7	MP2A	X	25.008	1
8	MP2A	Z	0	1
9	MP2A	Mx	-.013	1
10	MP2A	X	25.008	5
11	MP2A	Z	0	5
12	MP2A	Mx	-.013	5
13	MP1A	X	6.958	2
14	MP1A	Z	0	2
15	MP1A	Mx	-.003	2
16	MP1A	X	6.958	4
17	MP1A	Z	0	4
18	MP1A	Mx	-.003	4
19	M30	X	23.642	1
20	M30	Z	0	1
21	M30	Mx	0	1
22	MP2A	X	8.826	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
23	MP2A	Z	0	2
24	MP2A	Mx	.004	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	23.398	1
2	MP2A	Z	13.509	1
3	MP2A	Mx	-.003	1
4	MP2A	X	23.398	5
5	MP2A	Z	13.509	5
6	MP2A	Mx	-.003	5
7	MP2A	X	23.398	1
8	MP2A	Z	13.509	1
9	MP2A	Mx	-.021	1
10	MP2A	X	23.398	5
11	MP2A	Z	13.509	5
12	MP2A	Mx	-.021	5
13	MP1A	X	8.051	2
14	MP1A	Z	4.648	2
15	MP1A	Mx	-.004	2
16	MP1A	X	8.051	4
17	MP1A	Z	4.648	4
18	MP1A	Mx	-.004	4
19	M30	X	23.138	1
20	M30	Z	13.359	1
21	M30	Mx	0	1
22	MP2A	X	8.712	2
23	MP2A	Z	5.03	2
24	MP2A	Mx	.004	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	15.518	1
2	MP2A	Z	26.879	1
3	MP2A	Mx	.01	1
4	MP2A	X	15.518	5
5	MP2A	Z	26.879	5
6	MP2A	Mx	.01	5
7	MP2A	X	15.518	1
8	MP2A	Z	26.879	1
9	MP2A	Mx	-.026	1
10	MP2A	X	15.518	5
11	MP2A	Z	26.879	5
12	MP2A	Mx	-.026	5
13	MP1A	X	6.987	2
14	MP1A	Z	12.101	2
15	MP1A	Mx	-.003	2
16	MP1A	X	6.987	4
17	MP1A	Z	12.101	4
18	MP1A	Mx	-.003	4
19	M30	X	14.128	1
20	M30	Z	24.47	1
21	M30	Mx	0	1
22	MP2A	X	6.264	2
23	MP2A	Z	10.849	2
24	MP2A	Mx	.003	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1
2	MP2A	Z	33.046	1
3	MP2A	Mx	.022	1
4	MP2A	X	0	5
5	MP2A	Z	33.046	5
6	MP2A	Mx	.022	5
7	MP2A	X	0	1
8	MP2A	Z	33.046	1
9	MP2A	Mx	-.022	1
10	MP2A	X	0	5
11	MP2A	Z	33.046	5
12	MP2A	Mx	-.022	5
13	MP1A	X	0	2
14	MP1A	Z	16.312	2
15	MP1A	Mx	0	2
16	MP1A	X	0	4
17	MP1A	Z	16.312	4
18	MP1A	Mx	0	4
19	M30	X	0	1
20	M30	Z	26.717	1
21	M30	Mx	0	1
22	MP2A	X	0	2
23	MP2A	Z	13.761	2
24	MP2A	Mx	0	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-15.518	1
2	MP2A	Z	26.879	1
3	MP2A	Mx	.026	1
4	MP2A	X	-15.518	5
5	MP2A	Z	26.879	5
6	MP2A	Mx	.026	5
7	MP2A	X	-15.518	1
8	MP2A	Z	26.879	1
9	MP2A	Mx	-.01	1
10	MP2A	X	-15.518	5
11	MP2A	Z	26.879	5
12	MP2A	Mx	-.01	5
13	MP1A	X	-6.987	2
14	MP1A	Z	12.101	2
15	MP1A	Mx	.003	2
16	MP1A	X	-6.987	4
17	MP1A	Z	12.101	4
18	MP1A	Mx	.003	4
19	M30	X	-11.821	1
20	M30	Z	20.474	1
21	M30	Mx	0	1
22	MP2A	X	-6.264	2
23	MP2A	Z	10.849	2
24	MP2A	Mx	-.003	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-23.398	1
2	MP2A	Z	13.509	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
3	MP2A	Mx	.021	1
4	MP2A	X	-23.398	5
5	MP2A	Z	13.509	5
6	MP2A	Mx	.021	5
7	MP2A	X	-23.398	1
8	MP2A	Z	13.509	1
9	MP2A	Mx	.003	1
10	MP2A	X	-23.398	5
11	MP2A	Z	13.509	5
12	MP2A	Mx	.003	5
13	MP1A	X	-8.051	2
14	MP1A	Z	4.648	2
15	MP1A	Mx	.004	2
16	MP1A	X	-8.051	4
17	MP1A	Z	4.648	4
18	MP1A	Mx	.004	4
19	M30	X	-19.142	1
20	M30	Z	11.052	1
21	M30	Mx	0	1
22	MP2A	X	-8.712	2
23	MP2A	Z	5.03	2
24	MP2A	Mx	-.004	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-25.008	1
2	MP2A	Z	0	1
3	MP2A	Mx	.013	1
4	MP2A	X	-25.008	5
5	MP2A	Z	0	5
6	MP2A	Mx	.013	5
7	MP2A	X	-25.008	1
8	MP2A	Z	0	1
9	MP2A	Mx	.013	1
10	MP2A	X	-25.008	5
11	MP2A	Z	0	5
12	MP2A	Mx	.013	5
13	MP1A	X	-6.958	2
14	MP1A	Z	0	2
15	MP1A	Mx	.003	2
16	MP1A	X	-6.958	4
17	MP1A	Z	0	4
18	MP1A	Mx	.003	4
19	M30	X	-23.642	1
20	M30	Z	0	1
21	M30	Mx	0	1
22	MP2A	X	-8.826	2
23	MP2A	Z	0	2
24	MP2A	Mx	-.004	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-23.398	1
2	MP2A	Z	-13.509	1
3	MP2A	Mx	.003	1
4	MP2A	X	-23.398	5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
5	MP2A	Z	-13.509	5
6	MP2A	Mx	.003	5
7	MP2A	X	-23.398	1
8	MP2A	Z	-13.509	1
9	MP2A	Mx	.021	1
10	MP2A	X	-23.398	5
11	MP2A	Z	-13.509	5
12	MP2A	Mx	.021	5
13	MP1A	X	-8.051	2
14	MP1A	Z	-4.648	2
15	MP1A	Mx	.004	2
16	MP1A	X	-8.051	4
17	MP1A	Z	-4.648	4
18	MP1A	Mx	.004	4
19	M30	X	-23.138	1
20	M30	Z	-13.359	1
21	M30	Mx	0	1
22	MP2A	X	-8.712	2
23	MP2A	Z	-5.03	2
24	MP2A	Mx	-.004	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-15.518	1
2	MP2A	Z	-26.879	1
3	MP2A	Mx	-.01	1
4	MP2A	X	-15.518	5
5	MP2A	Z	-26.879	5
6	MP2A	Mx	-.01	5
7	MP2A	X	-15.518	1
8	MP2A	Z	-26.879	1
9	MP2A	Mx	.026	1
10	MP2A	X	-15.518	5
11	MP2A	Z	-26.879	5
12	MP2A	Mx	.026	5
13	MP1A	X	-6.987	2
14	MP1A	Z	-12.101	2
15	MP1A	Mx	.003	2
16	MP1A	X	-6.987	4
17	MP1A	Z	-12.101	4
18	MP1A	Mx	.003	4
19	M30	X	-14.128	1
20	M30	Z	-24.47	1
21	M30	Mx	0	1
22	MP2A	X	-6.264	2
23	MP2A	Z	-10.849	2
24	MP2A	Mx	-.003	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1
2	MP2A	Z	-5.221	1
3	MP2A	Mx	-.003	1
4	MP2A	X	0	5
5	MP2A	Z	-5.221	5
6	MP2A	Mx	-.003	5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
7	MP2A	X	0	1
8	MP2A	Z	-5.221	1
9	MP2A	Mx	.003	1
10	MP2A	X	0	5
11	MP2A	Z	-5.221	5
12	MP2A	Mx	.003	5
13	MP1A	X	0	2
14	MP1A	Z	-4.327	2
15	MP1A	Mx	0	2
16	MP1A	X	0	4
17	MP1A	Z	-4.327	4
18	MP1A	Mx	0	4
19	M30	X	0	1
20	M30	Z	-6.578	1
21	M30	Mx	0	1
22	MP2A	X	0	2
23	MP2A	Z	-3.422	2
24	MP2A	Mx	0	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	2.446	1
2	MP2A	Z	-4.237	1
3	MP2A	Mx	-.004	1
4	MP2A	X	2.446	5
5	MP2A	Z	-4.237	5
6	MP2A	Mx	-.004	5
7	MP2A	X	2.446	1
8	MP2A	Z	-4.237	1
9	MP2A	Mx	.002	1
10	MP2A	X	2.446	5
11	MP2A	Z	-4.237	5
12	MP2A	Mx	.002	5
13	MP1A	X	1.809	2
14	MP1A	Z	-3.133	2
15	MP1A	Mx	-.000904	2
16	MP1A	X	1.809	4
17	MP1A	Z	-3.133	4
18	MP1A	Mx	-.000904	4
19	M30	X	2.87	1
20	M30	Z	-4.97	1
21	M30	Mx	0	1
22	MP2A	X	1.542	2
23	MP2A	Z	-2.672	2
24	MP2A	Mx	.000771	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	3.668	1
2	MP2A	Z	-2.118	1
3	MP2A	Mx	-.003	1
4	MP2A	X	3.668	5
5	MP2A	Z	-2.118	5
6	MP2A	Mx	-.003	5
7	MP2A	X	3.668	1
8	MP2A	Z	-2.118	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
9	MP2A	Mx	-.000422	1
10	MP2A	X	3.668	5
11	MP2A	Z	-2.118	5
12	MP2A	Mx	-.000422	5
13	MP1A	X	1.905	2
14	MP1A	Z	-1.1	2
15	MP1A	Mx	-.000952	2
16	MP1A	X	1.905	4
17	MP1A	Z	-1.1	4
18	MP1A	Mx	-.000952	4
19	M30	X	4.607	1
20	M30	Z	-2.66	1
21	M30	Mx	0	1
22	MP2A	X	2.089	2
23	MP2A	Z	-1.206	2
24	MP2A	Mx	.001	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	3.907	1
2	MP2A	Z	0	1
3	MP2A	Mx	-.002	1
4	MP2A	X	3.907	5
5	MP2A	Z	0	5
6	MP2A	Mx	-.002	5
7	MP2A	X	3.907	1
8	MP2A	Z	0	1
9	MP2A	Mx	-.002	1
10	MP2A	X	3.907	5
11	MP2A	Z	0	5
12	MP2A	Mx	-.002	5
13	MP1A	X	1.49	2
14	MP1A	Z	0	2
15	MP1A	Mx	-.000745	2
16	MP1A	X	1.49	4
17	MP1A	Z	0	4
18	MP1A	Mx	-.000745	4
19	M30	X	5.739	1
20	M30	Z	0	1
21	M30	Mx	0	1
22	MP2A	X	2.075	2
23	MP2A	Z	0	2
24	MP2A	Mx	.001	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	3.668	1
2	MP2A	Z	2.118	1
3	MP2A	Mx	-.000422	1
4	MP2A	X	3.668	5
5	MP2A	Z	2.118	5
6	MP2A	Mx	-.000422	5
7	MP2A	X	3.668	1
8	MP2A	Z	2.118	1
9	MP2A	Mx	-.003	1
10	MP2A	X	3.668	5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
11	MP2A	Z	2.118	5
12	MP2A	Mx	-.003	5
13	MP1A	X	1.905	2
14	MP1A	Z	1.1	2
15	MP1A	Mx	-.000952	2
16	MP1A	X	1.905	4
17	MP1A	Z	1.1	4
18	MP1A	Mx	-.000952	4
19	M30	X	5.697	1
20	M30	Z	3.289	1
21	M30	Mx	0	1
22	MP2A	X	2.089	2
23	MP2A	Z	1.206	2
24	MP2A	Mx	.001	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	2.446	1
2	MP2A	Z	4.237	1
3	MP2A	Mx	.002	1
4	MP2A	X	2.446	5
5	MP2A	Z	4.237	5
6	MP2A	Mx	.002	5
7	MP2A	X	2.446	1
8	MP2A	Z	4.237	1
9	MP2A	Mx	-.004	1
10	MP2A	X	2.446	5
11	MP2A	Z	4.237	5
12	MP2A	Mx	-.004	5
13	MP1A	X	1.809	2
14	MP1A	Z	3.133	2
15	MP1A	Mx	-.000904	2
16	MP1A	X	1.809	4
17	MP1A	Z	3.133	4
18	MP1A	Mx	-.000904	4
19	M30	X	3.499	1
20	M30	Z	6.06	1
21	M30	Mx	0	1
22	MP2A	X	1.542	2
23	MP2A	Z	2.672	2
24	MP2A	Mx	.000771	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1
2	MP2A	Z	5.221	1
3	MP2A	Mx	.003	1
4	MP2A	X	0	5
5	MP2A	Z	5.221	5
6	MP2A	Mx	.003	5
7	MP2A	X	0	1
8	MP2A	Z	5.221	1
9	MP2A	Mx	-.003	1
10	MP2A	X	0	5
11	MP2A	Z	5.221	5
12	MP2A	Mx	-.003	5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
13	MP1A	X	0	2
14	MP1A	Z	4.327	2
15	MP1A	Mx	0	2
16	MP1A	X	0	4
17	MP1A	Z	4.327	4
18	MP1A	Mx	0	4
19	M30	X	0	1
20	M30	Z	6.578	1
21	M30	Mx	0	1
22	MP2A	X	0	2
23	MP2A	Z	3.422	2
24	MP2A	Mx	0	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-2.446	1
2	MP2A	Z	4.237	1
3	MP2A	Mx	.004	1
4	MP2A	X	-2.446	5
5	MP2A	Z	4.237	5
6	MP2A	Mx	.004	5
7	MP2A	X	-2.446	1
8	MP2A	Z	4.237	1
9	MP2A	Mx	-.002	1
10	MP2A	X	-2.446	5
11	MP2A	Z	4.237	5
12	MP2A	Mx	-.002	5
13	MP1A	X	-1.809	2
14	MP1A	Z	3.133	2
15	MP1A	Mx	.000904	2
16	MP1A	X	-1.809	4
17	MP1A	Z	3.133	4
18	MP1A	Mx	.000904	4
19	M30	X	-2.87	1
20	M30	Z	4.97	1
21	M30	Mx	0	1
22	MP2A	X	-1.542	2
23	MP2A	Z	2.672	2
24	MP2A	Mx	-.000771	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-3.668	1
2	MP2A	Z	2.118	1
3	MP2A	Mx	.003	1
4	MP2A	X	-3.668	5
5	MP2A	Z	2.118	5
6	MP2A	Mx	.003	5
7	MP2A	X	-3.668	1
8	MP2A	Z	2.118	1
9	MP2A	Mx	.000422	1
10	MP2A	X	-3.668	5
11	MP2A	Z	2.118	5
12	MP2A	Mx	.000422	5
13	MP1A	X	-1.905	2
14	MP1A	Z	1.1	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	MP1A	Mx	.000952	2
16	MP1A	X	-1.905	4
17	MP1A	Z	1.1	4
18	MP1A	Mx	.000952	4
19	M30	X	-4.607	1
20	M30	Z	2.66	1
21	M30	Mx	0	1
22	MP2A	X	-2.089	2
23	MP2A	Z	1.206	2
24	MP2A	Mx	-.001	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-3.907	1
2	MP2A	Z	0	1
3	MP2A	Mx	.002	1
4	MP2A	X	-3.907	5
5	MP2A	Z	0	5
6	MP2A	Mx	.002	5
7	MP2A	X	-3.907	1
8	MP2A	Z	0	1
9	MP2A	Mx	.002	1
10	MP2A	X	-3.907	5
11	MP2A	Z	0	5
12	MP2A	Mx	.002	5
13	MP1A	X	-1.49	2
14	MP1A	Z	0	2
15	MP1A	Mx	.000745	2
16	MP1A	X	-1.49	4
17	MP1A	Z	0	4
18	MP1A	Mx	.000745	4
19	M30	X	-5.739	1
20	M30	Z	0	1
21	M30	Mx	0	1
22	MP2A	X	-2.075	2
23	MP2A	Z	0	2
24	MP2A	Mx	-.001	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-3.668	1
2	MP2A	Z	-2.118	1
3	MP2A	Mx	.000422	1
4	MP2A	X	-3.668	5
5	MP2A	Z	-2.118	5
6	MP2A	Mx	.000422	5
7	MP2A	X	-3.668	1
8	MP2A	Z	-2.118	1
9	MP2A	Mx	.003	1
10	MP2A	X	-3.668	5
11	MP2A	Z	-2.118	5
12	MP2A	Mx	.003	5
13	MP1A	X	-1.905	2
14	MP1A	Z	-1.1	2
15	MP1A	Mx	.000952	2
16	MP1A	X	-1.905	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
17	MP1A	Z	-1.1	4
18	MP1A	Mx	.000952	4
19	M30	X	-5.697	1
20	M30	Z	-3.289	1
21	M30	Mx	0	1
22	MP2A	X	-2.089	2
23	MP2A	Z	-1.206	2
24	MP2A	Mx	-.001	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-2.446	1
2	MP2A	Z	-4.237	1
3	MP2A	Mx	-.002	1
4	MP2A	X	-2.446	5
5	MP2A	Z	-4.237	5
6	MP2A	Mx	-.002	5
7	MP2A	X	-2.446	1
8	MP2A	Z	-4.237	1
9	MP2A	Mx	.004	1
10	MP2A	X	-2.446	5
11	MP2A	Z	-4.237	5
12	MP2A	Mx	.004	5
13	MP1A	X	-1.809	2
14	MP1A	Z	-3.133	2
15	MP1A	Mx	.000904	2
16	MP1A	X	-1.809	4
17	MP1A	Z	-3.133	4
18	MP1A	Mx	.000904	4
19	M30	X	-3.499	1
20	M30	Z	-6.06	1
21	M30	Mx	0	1
22	MP2A	X	-1.542	2
23	MP2A	Z	-2.672	2
24	MP2A	Mx	-.000771	2

Member Point Loads (BLC 77 : Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M27	Y	-500	%95

Member Point Loads (BLC 78 : Lm2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M27	Y	-500	%73

Member Point Loads (BLC 79 : Lv1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M27	Y	-250	%50

Member Point Loads (BLC 80 : Lv2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M27	Y	-250	0

Member Point Loads (BLC 81 : Antenna Ev)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

Member Point Loads (BLC 81 : Antenna Ev) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Y	-1.614	1
2	MP2A	My	-.000807	1
3	MP2A	Mz	.001	1
4	MP2A	Y	-1.614	5
5	MP2A	My	-.000807	5
6	MP2A	Mz	.001	5
7	MP2A	Y	-1.614	1
8	MP2A	My	-.000807	1
9	MP2A	Mz	-.001	1
10	MP2A	Y	-1.614	5
11	MP2A	My	-.000807	5
12	MP2A	Mz	-.001	5
13	MP1A	Y	-1.802	2
14	MP1A	My	-.000901	2
15	MP1A	Mz	0	2
16	MP1A	Y	-1.802	4
17	MP1A	My	-.000901	4
18	MP1A	Mz	0	4
19	M30	Y	-1.324	1
20	M30	My	0	1
21	M30	Mz	0	1
22	MP2A	Y	-2.909	2
23	MP2A	My	.001	2
24	MP2A	Mz	0	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Z	-4.035	1
2	MP2A	Mx	-.003	1
3	MP2A	Z	-4.035	5
4	MP2A	Mx	-.003	5
5	MP2A	Z	-4.035	1
6	MP2A	Mx	.003	1
7	MP2A	Z	-4.035	5
8	MP2A	Mx	.003	5
9	MP1A	Z	-4.506	2
10	MP1A	Mx	0	2
11	MP1A	Z	-4.506	4
12	MP1A	Mx	0	4
13	M30	Z	-3.311	1
14	M30	Mx	0	1
15	MP2A	Z	-7.274	2
16	MP2A	Mx	0	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	4.035	1
2	MP2A	Mx	-.002	1
3	MP2A	X	4.035	5
4	MP2A	Mx	-.002	5
5	MP2A	X	4.035	1
6	MP2A	Mx	-.002	1
7	MP2A	X	4.035	5
8	MP2A	Mx	-.002	5
9	MP1A	X	4.506	2
10	MP1A	Mx	-.002	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
11	MP1A	X	4.506	4
12	MP1A	Mx	-.002	4
13	M30	X	3.311	1
14	M30	Mx	0	1
15	MP2A	X	7.274	2
16	MP2A	Mx	.004	2

Joint Loads and Enforced Displacements

Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2/...
	No Data to Print ...		

Member Distributed Loads (BLC 40 : Structure Di)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	Y	-7.42	-7.42	0	%100
2	M28	Y	-9.797	-9.797	0	%100
3	M30	Y	-8.137	-8.137	0	%100
4	M32	Y	-9.797	-9.797	0	%100
5	M34	Y	-9.797	-9.797	0	%100
6	M39	Y	-9.797	-9.797	0	%100
7	M42	Y	-9.797	-9.797	0	%100
8	MP4A	Y	-5.09	-5.09	0	%100
9	MP3A	Y	-5.09	-5.09	0	%100
10	MP2A	Y	-5.09	-5.09	0	%100
11	MP1A	Y	-5.09	-5.09	0	%100
12	MP5A	Y	-5.09	-5.09	0	%100
13	M24	Y	-5.09	-5.09	0	%100
14	M24A	Y	-6.754	-6.754	0	%100
15	M25	Y	-6.754	-6.754	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	-13.012	-13.012	0	%100
3	M28	X	0	0	0	%100
4	M28	Z	0	0	0	%100
5	M30	X	0	0	0	%100
6	M30	Z	-10.558	-10.558	0	%100
7	M32	X	0	0	0	%100
8	M32	Z	-2.082	-2.082	0	%100
9	M34	X	0	0	0	%100
10	M34	Z	-2.082	-2.082	0	%100
11	M39	X	0	0	0	%100
12	M39	Z	-1e-6	-1e-6	0	%100
13	M42	X	0	0	0	%100
14	M42	Z	-1e-6	-1e-6	0	%100
15	MP4A	X	0	0	0	%100
16	MP4A	Z	-8.388	-8.388	0	%100
17	MP3A	X	0	0	0	%100
18	MP3A	Z	-8.388	-8.388	0	%100
19	MP2A	X	0	0	0	%100
20	MP2A	Z	-8.388	-8.388	0	%100
21	MP1A	X	0	0	0	%100
22	MP1A	Z	-8.388	-8.388	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
23	MP5A	X	0	0	0	%100
24	MP5A	Z	-8.388	-8.388	0	%100
25	M24	X	0	0	0	%100
26	M24	Z	-.306	-.306	0	%100
27	M24A	X	0	0	0	%100
28	M24A	Z	-7.341	-7.341	0	%100
29	M25	X	0	0	0	%100
30	M25	Z	-7.341	-7.341	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	4.88	4.88	0	%100
2	M27	Z	-8.452	-8.452	0	%100
3	M28	X	1.403	1.403	0	%100
4	M28	Z	-2.43	-2.43	0	%100
5	M30	X	5.279	5.279	0	%100
6	M30	Z	-9.144	-9.144	0	%100
7	M32	X	.268	.268	0	%100
8	M32	Z	-.465	-.465	0	%100
9	M34	X	5.221	5.221	0	%100
10	M34	Z	-9.043	-9.043	0	%100
11	M39	X	1.259	1.259	0	%100
12	M39	Z	-2.181	-2.181	0	%100
13	M42	X	1.259	1.259	0	%100
14	M42	Z	-2.181	-2.181	0	%100
15	MP4A	X	4.194	4.194	0	%100
16	MP4A	Z	-7.264	-7.264	0	%100
17	MP3A	X	4.194	4.194	0	%100
18	MP3A	Z	-7.264	-7.264	0	%100
19	MP2A	X	4.194	4.194	0	%100
20	MP2A	Z	-7.264	-7.264	0	%100
21	MP1A	X	4.194	4.194	0	%100
22	MP1A	Z	-7.264	-7.264	0	%100
23	MP5A	X	4.194	4.194	0	%100
24	MP5A	Z	-7.264	-7.264	0	%100
25	M24	X	1.806	1.806	0	%100
26	M24	Z	-3.129	-3.129	0	%100
27	M24A	X	1.228	1.228	0	%100
28	M24A	Z	-2.127	-2.127	0	%100
29	M25	X	6.635	6.635	0	%100
30	M25	Z	-11.493	-11.493	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	2.817	2.817	0	%100
2	M27	Z	-1.627	-1.627	0	%100
3	M28	X	7.291	7.291	0	%100
4	M28	Z	-4.209	-4.209	0	%100
5	M30	X	9.144	9.144	0	%100
6	M30	Z	-5.279	-5.279	0	%100
7	M32	X	6.367	6.367	0	%100
8	M32	Z	-3.676	-3.676	0	%100
9	M34	X	14.946	14.946	0	%100
10	M34	Z	-8.629	-8.629	0	%100
11	M39	X	6.542	6.542	0	%100
12	M39	Z	-3.777	-3.777	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
13	M42	X	6.542	6.542	0	%100
14	M42	Z	-3.777	-3.777	0	%100
15	MP4A	X	7.264	7.264	0	%100
16	MP4A	Z	-4.194	-4.194	0	%100
17	MP3A	X	7.264	7.264	0	%100
18	MP3A	Z	-4.194	-4.194	0	%100
19	MP2A	X	7.264	7.264	0	%100
20	MP2A	Z	-4.194	-4.194	0	%100
21	MP1A	X	7.264	7.264	0	%100
22	MP1A	Z	-4.194	-4.194	0	%100
23	MP5A	X	7.264	7.264	0	%100
24	MP5A	Z	-4.194	-4.194	0	%100
25	M24	X	6.496	6.496	0	%100
26	M24	Z	-3.75	-3.75	0	%100
27	M24A	X	3.032	3.032	0	%100
28	M24A	Z	-1.75	-1.75	0	%100
29	M25	X	12.397	12.397	0	%100
30	M25	Z	-7.158	-7.158	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	0	0	0	%100
3	M28	X	11.225	11.225	0	%100
4	M28	Z	0	0	0	%100
5	M30	X	10.558	10.558	0	%100
6	M30	Z	0	0	0	%100
7	M32	X	15.713	15.713	0	%100
8	M32	Z	0	0	0	%100
9	M34	X	15.713	15.713	0	%100
10	M34	Z	0	0	0	%100
11	M39	X	10.072	10.072	0	%100
12	M39	Z	0	0	0	%100
13	M42	X	10.072	10.072	0	%100
14	M42	Z	0	0	0	%100
15	MP4A	X	8.388	8.388	0	%100
16	MP4A	Z	0	0	0	%100
17	MP3A	X	8.388	8.388	0	%100
18	MP3A	Z	0	0	0	%100
19	MP2A	X	8.388	8.388	0	%100
20	MP2A	Z	0	0	0	%100
21	MP1A	X	8.388	8.388	0	%100
22	MP1A	Z	0	0	0	%100
23	MP5A	X	8.388	8.388	0	%100
24	MP5A	Z	0	0	0	%100
25	M24	X	8.082	8.082	0	%100
26	M24	Z	0	0	0	%100
27	M24A	X	9.431	9.431	0	%100
28	M24A	Z	0	0	0	%100
29	M25	X	9.431	9.431	0	%100
30	M25	Z	0	0	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	2.817	2.817	0	%100
2	M27	Z	1.627	1.627	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
3	M28	X	7.291	7.291	0	%100
4	M28	Z	4.209	4.209	0	%100
5	M30	X	9.144	9.144	0	%100
6	M30	Z	5.279	5.279	0	%100
7	M32	X	14.946	14.946	0	%100
8	M32	Z	8.629	8.629	0	%100
9	M34	X	6.367	6.367	0	%100
10	M34	Z	3.676	3.676	0	%100
11	M39	X	6.542	6.542	0	%100
12	M39	Z	3.777	3.777	0	%100
13	M42	X	6.542	6.542	0	%100
14	M42	Z	3.777	3.777	0	%100
15	MP4A	X	7.264	7.264	0	%100
16	MP4A	Z	4.194	4.194	0	%100
17	MP3A	X	7.264	7.264	0	%100
18	MP3A	Z	4.194	4.194	0	%100
19	MP2A	X	7.264	7.264	0	%100
20	MP2A	Z	4.194	4.194	0	%100
21	MP1A	X	7.264	7.264	0	%100
22	MP1A	Z	4.194	4.194	0	%100
23	MP5A	X	7.264	7.264	0	%100
24	MP5A	Z	4.194	4.194	0	%100
25	M24	X	4.136	4.136	0	%100
26	M24	Z	2.388	2.388	0	%100
27	M24A	X	12.397	12.397	0	%100
28	M24A	Z	7.158	7.158	0	%100
29	M25	X	3.032	3.032	0	%100
30	M25	Z	1.75	1.75	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	4.88	4.88	0	%100
2	M27	Z	8.452	8.452	0	%100
3	M28	X	1.403	1.403	0	%100
4	M28	Z	2.43	2.43	0	%100
5	M30	X	5.279	5.279	0	%100
6	M30	Z	9.144	9.144	0	%100
7	M32	X	5.221	5.221	0	%100
8	M32	Z	9.043	9.043	0	%100
9	M34	X	.268	.268	0	%100
10	M34	Z	.465	.465	0	%100
11	M39	X	1.259	1.259	0	%100
12	M39	Z	2.181	2.181	0	%100
13	M42	X	1.259	1.259	0	%100
14	M42	Z	2.181	2.181	0	%100
15	MP4A	X	4.194	4.194	0	%100
16	MP4A	Z	7.264	7.264	0	%100
17	MP3A	X	4.194	4.194	0	%100
18	MP3A	Z	7.264	7.264	0	%100
19	MP2A	X	4.194	4.194	0	%100
20	MP2A	Z	7.264	7.264	0	%100
21	MP1A	X	4.194	4.194	0	%100
22	MP1A	Z	7.264	7.264	0	%100
23	MP5A	X	4.194	4.194	0	%100
24	MP5A	Z	7.264	7.264	0	%100
25	M24	X	.444	.444	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
26	M24	Z	.769	.769	0	%100
27	M24A	X	6.635	6.635	0	%100
28	M24A	Z	11.493	11.493	0	%100
29	M25	X	1.228	1.228	0	%100
30	M25	Z	2.127	2.127	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	13.012	13.012	0	%100
3	M28	X	0	0	0	%100
4	M28	Z	0	0	0	%100
5	M30	X	0	0	0	%100
6	M30	Z	10.558	10.558	0	%100
7	M32	X	0	0	0	%100
8	M32	Z	2.082	2.082	0	%100
9	M34	X	0	0	0	%100
10	M34	Z	2.082	2.082	0	%100
11	M39	X	0	0	0	%100
12	M39	Z	1e-6	1e-6	0	%100
13	M42	X	0	0	0	%100
14	M42	Z	1e-6	1e-6	0	%100
15	MP4A	X	0	0	0	%100
16	MP4A	Z	8.388	8.388	0	%100
17	MP3A	X	0	0	0	%100
18	MP3A	Z	8.388	8.388	0	%100
19	MP2A	X	0	0	0	%100
20	MP2A	Z	8.388	8.388	0	%100
21	MP1A	X	0	0	0	%100
22	MP1A	Z	8.388	8.388	0	%100
23	MP5A	X	0	0	0	%100
24	MP5A	Z	8.388	8.388	0	%100
25	M24	X	0	0	0	%100
26	M24	Z	.306	.306	0	%100
27	M24A	X	0	0	0	%100
28	M24A	Z	7.341	7.341	0	%100
29	M25	X	0	0	0	%100
30	M25	Z	7.341	7.341	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-4.88	-4.88	0	%100
2	M27	Z	8.452	8.452	0	%100
3	M28	X	-1.403	-1.403	0	%100
4	M28	Z	2.43	2.43	0	%100
5	M30	X	-5.279	-5.279	0	%100
6	M30	Z	9.144	9.144	0	%100
7	M32	X	-.268	-.268	0	%100
8	M32	Z	.465	.465	0	%100
9	M34	X	-5.221	-5.221	0	%100
10	M34	Z	9.043	9.043	0	%100
11	M39	X	-1.259	-1.259	0	%100
12	M39	Z	2.181	2.181	0	%100
13	M42	X	-1.259	-1.259	0	%100
14	M42	Z	2.181	2.181	0	%100
15	MP4A	X	-4.194	-4.194	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
16	MP4A	Z	7.264	7.264	0	%100
17	MP3A	X	-4.194	-4.194	0	%100
18	MP3A	Z	7.264	7.264	0	%100
19	MP2A	X	-4.194	-4.194	0	%100
20	MP2A	Z	7.264	7.264	0	%100
21	MP1A	X	-4.194	-4.194	0	%100
22	MP1A	Z	7.264	7.264	0	%100
23	MP5A	X	-4.194	-4.194	0	%100
24	MP5A	Z	7.264	7.264	0	%100
25	M24	X	-1.806	-1.806	0	%100
26	M24	Z	3.129	3.129	0	%100
27	M24A	X	-1.228	-1.228	0	%100
28	M24A	Z	2.127	2.127	0	%100
29	M25	X	-6.635	-6.635	0	%100
30	M25	Z	11.493	11.493	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-2.817	-2.817	0	%100
2	M27	Z	1.627	1.627	0	%100
3	M28	X	-7.291	-7.291	0	%100
4	M28	Z	4.209	4.209	0	%100
5	M30	X	-9.144	-9.144	0	%100
6	M30	Z	5.279	5.279	0	%100
7	M32	X	-6.367	-6.367	0	%100
8	M32	Z	3.676	3.676	0	%100
9	M34	X	-14.946	-14.946	0	%100
10	M34	Z	8.629	8.629	0	%100
11	M39	X	-6.542	-6.542	0	%100
12	M39	Z	3.777	3.777	0	%100
13	M42	X	-6.542	-6.542	0	%100
14	M42	Z	3.777	3.777	0	%100
15	MP4A	X	-7.264	-7.264	0	%100
16	MP4A	Z	4.194	4.194	0	%100
17	MP3A	X	-7.264	-7.264	0	%100
18	MP3A	Z	4.194	4.194	0	%100
19	MP2A	X	-7.264	-7.264	0	%100
20	MP2A	Z	4.194	4.194	0	%100
21	MP1A	X	-7.264	-7.264	0	%100
22	MP1A	Z	4.194	4.194	0	%100
23	MP5A	X	-7.264	-7.264	0	%100
24	MP5A	Z	4.194	4.194	0	%100
25	M24	X	-6.496	-6.496	0	%100
26	M24	Z	3.75	3.75	0	%100
27	M24A	X	-3.032	-3.032	0	%100
28	M24A	Z	1.75	1.75	0	%100
29	M25	X	-12.397	-12.397	0	%100
30	M25	Z	7.158	7.158	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	0	0	0	%100
3	M28	X	-11.225	-11.225	0	%100
4	M28	Z	0	0	0	%100
5	M30	X	-10.558	-10.558	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
6	M30	Z	0	0	0	%100
7	M32	X	-15.713	-15.713	0	%100
8	M32	Z	0	0	0	%100
9	M34	X	-15.713	-15.713	0	%100
10	M34	Z	0	0	0	%100
11	M39	X	-10.072	-10.072	0	%100
12	M39	Z	0	0	0	%100
13	M42	X	-10.072	-10.072	0	%100
14	M42	Z	0	0	0	%100
15	MP4A	X	-8.388	-8.388	0	%100
16	MP4A	Z	0	0	0	%100
17	MP3A	X	-8.388	-8.388	0	%100
18	MP3A	Z	0	0	0	%100
19	MP2A	X	-8.388	-8.388	0	%100
20	MP2A	Z	0	0	0	%100
21	MP1A	X	-8.388	-8.388	0	%100
22	MP1A	Z	0	0	0	%100
23	MP5A	X	-8.388	-8.388	0	%100
24	MP5A	Z	0	0	0	%100
25	M24	X	-8.082	-8.082	0	%100
26	M24	Z	0	0	0	%100
27	M24A	X	-9.431	-9.431	0	%100
28	M24A	Z	0	0	0	%100
29	M25	X	-9.431	-9.431	0	%100
30	M25	Z	0	0	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-2.817	-2.817	0	%100
2	M27	Z	-1.627	-1.627	0	%100
3	M28	X	-7.291	-7.291	0	%100
4	M28	Z	-4.209	-4.209	0	%100
5	M30	X	-9.144	-9.144	0	%100
6	M30	Z	-5.279	-5.279	0	%100
7	M32	X	-14.946	-14.946	0	%100
8	M32	Z	-8.629	-8.629	0	%100
9	M34	X	-6.367	-6.367	0	%100
10	M34	Z	-3.676	-3.676	0	%100
11	M39	X	-6.542	-6.542	0	%100
12	M39	Z	-3.777	-3.777	0	%100
13	M42	X	-6.542	-6.542	0	%100
14	M42	Z	-3.777	-3.777	0	%100
15	MP4A	X	-7.264	-7.264	0	%100
16	MP4A	Z	-4.194	-4.194	0	%100
17	MP3A	X	-7.264	-7.264	0	%100
18	MP3A	Z	-4.194	-4.194	0	%100
19	MP2A	X	-7.264	-7.264	0	%100
20	MP2A	Z	-4.194	-4.194	0	%100
21	MP1A	X	-7.264	-7.264	0	%100
22	MP1A	Z	-4.194	-4.194	0	%100
23	MP5A	X	-7.264	-7.264	0	%100
24	MP5A	Z	-4.194	-4.194	0	%100
25	M24	X	-4.136	-4.136	0	%100
26	M24	Z	-2.388	-2.388	0	%100
27	M24A	X	-12.397	-12.397	0	%100
28	M24A	Z	-7.158	-7.158	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
29	M25	X	-3.032	-3.032	0	%100
30	M25	Z	-1.75	-1.75	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-4.88	-4.88	0	%100
2	M27	Z	-8.452	-8.452	0	%100
3	M28	X	-1.403	-1.403	0	%100
4	M28	Z	-2.43	-2.43	0	%100
5	M30	X	-5.279	-5.279	0	%100
6	M30	Z	-9.144	-9.144	0	%100
7	M32	X	-5.221	-5.221	0	%100
8	M32	Z	-9.043	-9.043	0	%100
9	M34	X	-.268	-.268	0	%100
10	M34	Z	-.465	-.465	0	%100
11	M39	X	-1.259	-1.259	0	%100
12	M39	Z	-2.181	-2.181	0	%100
13	M42	X	-1.259	-1.259	0	%100
14	M42	Z	-2.181	-2.181	0	%100
15	MP4A	X	-4.194	-4.194	0	%100
16	MP4A	Z	-7.264	-7.264	0	%100
17	MP3A	X	-4.194	-4.194	0	%100
18	MP3A	Z	-7.264	-7.264	0	%100
19	MP2A	X	-4.194	-4.194	0	%100
20	MP2A	Z	-7.264	-7.264	0	%100
21	MP1A	X	-4.194	-4.194	0	%100
22	MP1A	Z	-7.264	-7.264	0	%100
23	MP5A	X	-4.194	-4.194	0	%100
24	MP5A	Z	-7.264	-7.264	0	%100
25	M24	X	-.444	-.444	0	%100
26	M24	Z	-.769	-.769	0	%100
27	M24A	X	-6.635	-6.635	0	%100
28	M24A	Z	-11.493	-11.493	0	%100
29	M25	X	-1.228	-1.228	0	%100
30	M25	Z	-2.127	-2.127	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	-3.892	-3.892	0	%100
3	M28	X	0	0	0	%100
4	M28	Z	0	0	0	%100
5	M30	X	0	0	0	%100
6	M30	Z	-3.425	-3.425	0	%100
7	M32	X	0	0	0	%100
8	M32	Z	-.507	-.507	0	%100
9	M34	X	0	0	0	%100
10	M34	Z	-.507	-.507	0	%100
11	M39	X	0	0	0	%100
12	M39	Z	0	0	0	%100
13	M42	X	0	0	0	%100
14	M42	Z	0	0	0	%100
15	MP4A	X	0	0	0	%100
16	MP4A	Z	-2.896	-2.896	0	%100
17	MP3A	X	0	0	0	%100
18	MP3A	Z	-2.896	-2.896	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
19	MP2A	X	0	0	0	%100
20	MP2A	Z	-2.896	-2.896	0	%100
21	MP1A	X	0	0	0	%100
22	MP1A	Z	-2.896	-2.896	0	%100
23	MP5A	X	0	0	0	%100
24	MP5A	Z	-2.896	-2.896	0	%100
25	M24	X	0	0	0	%100
26	M24	Z	-.106	-.106	0	%100
27	M24A	X	0	0	0	%100
28	M24A	Z	-1.993	-1.993	0	%100
29	M25	X	0	0	0	%100
30	M25	Z	-1.993	-1.993	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	1.46	1.46	0	%100
2	M27	Z	-2.528	-2.528	0	%100
3	M28	X	.396	.396	0	%100
4	M28	Z	-.685	-.685	0	%100
5	M30	X	1.712	1.712	0	%100
6	M30	Z	-2.966	-2.966	0	%100
7	M32	X	.065	.065	0	%100
8	M32	Z	-.113	-.113	0	%100
9	M34	X	1.271	1.271	0	%100
10	M34	Z	-2.202	-2.202	0	%100
11	M39	X	.332	.332	0	%100
12	M39	Z	-.575	-.575	0	%100
13	M42	X	.332	.332	0	%100
14	M42	Z	-.575	-.575	0	%100
15	MP4A	X	1.448	1.448	0	%100
16	MP4A	Z	-2.508	-2.508	0	%100
17	MP3A	X	1.448	1.448	0	%100
18	MP3A	Z	-2.508	-2.508	0	%100
19	MP2A	X	1.448	1.448	0	%100
20	MP2A	Z	-2.508	-2.508	0	%100
21	MP1A	X	1.448	1.448	0	%100
22	MP1A	Z	-2.508	-2.508	0	%100
23	MP5A	X	1.448	1.448	0	%100
24	MP5A	Z	-2.508	-2.508	0	%100
25	M24	X	.624	.624	0	%100
26	M24	Z	-1.08	-1.08	0	%100
27	M24A	X	.333	.333	0	%100
28	M24A	Z	-.577	-.577	0	%100
29	M25	X	1.801	1.801	0	%100
30	M25	Z	-3.119	-3.119	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	.843	.843	0	%100
2	M27	Z	-.487	-.487	0	%100
3	M28	X	2.056	2.056	0	%100
4	M28	Z	-1.187	-1.187	0	%100
5	M30	X	2.966	2.966	0	%100
6	M30	Z	-1.712	-1.712	0	%100
7	M32	X	1.55	1.55	0	%100
8	M32	Z	-.895	-.895	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
9	M34	X	3.639	3.639	0	%100
10	M34	Z	-2.101	-2.101	0	%100
11	M39	X	1.726	1.726	0	%100
12	M39	Z	-.997	-.997	0	%100
13	M42	X	1.726	1.726	0	%100
14	M42	Z	-.997	-.997	0	%100
15	MP4A	X	2.508	2.508	0	%100
16	MP4A	Z	-1.448	-1.448	0	%100
17	MP3A	X	2.508	2.508	0	%100
18	MP3A	Z	-1.448	-1.448	0	%100
19	MP2A	X	2.508	2.508	0	%100
20	MP2A	Z	-1.448	-1.448	0	%100
21	MP1A	X	2.508	2.508	0	%100
22	MP1A	Z	-1.448	-1.448	0	%100
23	MP5A	X	2.508	2.508	0	%100
24	MP5A	Z	-1.448	-1.448	0	%100
25	M24	X	2.243	2.243	0	%100
26	M24	Z	-1.295	-1.295	0	%100
27	M24A	X	.823	.823	0	%100
28	M24A	Z	-.475	-.475	0	%100
29	M25	X	3.365	3.365	0	%100
30	M25	Z	-1.943	-1.943	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	0	0	0	%100
3	M28	X	3.165	3.165	0	%100
4	M28	Z	0	0	0	%100
5	M30	X	3.425	3.425	0	%100
6	M30	Z	0	0	0	%100
7	M32	X	3.825	3.825	0	%100
8	M32	Z	0	0	0	%100
9	M34	X	3.825	3.825	0	%100
10	M34	Z	0	0	0	%100
11	M39	X	2.658	2.658	0	%100
12	M39	Z	0	0	0	%100
13	M42	X	2.658	2.658	0	%100
14	M42	Z	0	0	0	%100
15	MP4A	X	2.896	2.896	0	%100
16	MP4A	Z	0	0	0	%100
17	MP3A	X	2.896	2.896	0	%100
18	MP3A	Z	0	0	0	%100
19	MP2A	X	2.896	2.896	0	%100
20	MP2A	Z	0	0	0	%100
21	MP1A	X	2.896	2.896	0	%100
22	MP1A	Z	0	0	0	%100
23	MP5A	X	2.896	2.896	0	%100
24	MP5A	Z	0	0	0	%100
25	M24	X	2.79	2.79	0	%100
26	M24	Z	0	0	0	%100
27	M24A	X	2.56	2.56	0	%100
28	M24A	Z	0	0	0	%100
29	M25	X	2.56	2.56	0	%100
30	M25	Z	0	0	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	.843	.843	0	%100
2	M27	Z	.487	.487	0	%100
3	M28	X	2.056	2.056	0	%100
4	M28	Z	1.187	1.187	0	%100
5	M30	X	2.966	2.966	0	%100
6	M30	Z	1.712	1.712	0	%100
7	M32	X	3.639	3.639	0	%100
8	M32	Z	2.101	2.101	0	%100
9	M34	X	1.55	1.55	0	%100
10	M34	Z	.895	.895	0	%100
11	M39	X	1.726	1.726	0	%100
12	M39	Z	.997	.997	0	%100
13	M42	X	1.726	1.726	0	%100
14	M42	Z	.997	.997	0	%100
15	MP4A	X	2.508	2.508	0	%100
16	MP4A	Z	1.448	1.448	0	%100
17	MP3A	X	2.508	2.508	0	%100
18	MP3A	Z	1.448	1.448	0	%100
19	MP2A	X	2.508	2.508	0	%100
20	MP2A	Z	1.448	1.448	0	%100
21	MP1A	X	2.508	2.508	0	%100
22	MP1A	Z	1.448	1.448	0	%100
23	MP5A	X	2.508	2.508	0	%100
24	MP5A	Z	1.448	1.448	0	%100
25	M24	X	1.428	1.428	0	%100
26	M24	Z	.824	.824	0	%100
27	M24A	X	3.365	3.365	0	%100
28	M24A	Z	1.943	1.943	0	%100
29	M25	X	.823	.823	0	%100
30	M25	Z	.475	.475	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	1.46	1.46	0	%100
2	M27	Z	2.528	2.528	0	%100
3	M28	X	.396	.396	0	%100
4	M28	Z	.685	.685	0	%100
5	M30	X	1.712	1.712	0	%100
6	M30	Z	2.966	2.966	0	%100
7	M32	X	1.271	1.271	0	%100
8	M32	Z	2.202	2.202	0	%100
9	M34	X	.065	.065	0	%100
10	M34	Z	.113	.113	0	%100
11	M39	X	.332	.332	0	%100
12	M39	Z	.575	.575	0	%100
13	M42	X	.332	.332	0	%100
14	M42	Z	.575	.575	0	%100
15	MP4A	X	1.448	1.448	0	%100
16	MP4A	Z	2.508	2.508	0	%100
17	MP3A	X	1.448	1.448	0	%100
18	MP3A	Z	2.508	2.508	0	%100
19	MP2A	X	1.448	1.448	0	%100
20	MP2A	Z	2.508	2.508	0	%100
21	MP1A	X	1.448	1.448	0	%100
22	MP1A	Z	2.508	2.508	0	%100
23	MP5A	X	1.448	1.448	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
24	MP5A	Z	2.508	2.508	0	%100
25	M24	X	.153	.153	0	%100
26	M24	Z	.265	.265	0	%100
27	M24A	X	1.801	1.801	0	%100
28	M24A	Z	3.119	3.119	0	%100
29	M25	X	.333	.333	0	%100
30	M25	Z	.577	.577	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	3.892	3.892	0	%100
3	M28	X	0	0	0	%100
4	M28	Z	0	0	0	%100
5	M30	X	0	0	0	%100
6	M30	Z	3.425	3.425	0	%100
7	M32	X	0	0	0	%100
8	M32	Z	.507	.507	0	%100
9	M34	X	0	0	0	%100
10	M34	Z	.507	.507	0	%100
11	M39	X	0	0	0	%100
12	M39	Z	0	0	0	%100
13	M42	X	0	0	0	%100
14	M42	Z	0	0	0	%100
15	MP4A	X	0	0	0	%100
16	MP4A	Z	2.896	2.896	0	%100
17	MP3A	X	0	0	0	%100
18	MP3A	Z	2.896	2.896	0	%100
19	MP2A	X	0	0	0	%100
20	MP2A	Z	2.896	2.896	0	%100
21	MP1A	X	0	0	0	%100
22	MP1A	Z	2.896	2.896	0	%100
23	MP5A	X	0	0	0	%100
24	MP5A	Z	2.896	2.896	0	%100
25	M24	X	0	0	0	%100
26	M24	Z	.106	.106	0	%100
27	M24A	X	0	0	0	%100
28	M24A	Z	1.993	1.993	0	%100
29	M25	X	0	0	0	%100
30	M25	Z	1.993	1.993	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-1.46	-1.46	0	%100
2	M27	Z	2.528	2.528	0	%100
3	M28	X	-.396	-.396	0	%100
4	M28	Z	.685	.685	0	%100
5	M30	X	-1.712	-1.712	0	%100
6	M30	Z	2.966	2.966	0	%100
7	M32	X	-.065	-.065	0	%100
8	M32	Z	.113	.113	0	%100
9	M34	X	-1.271	-1.271	0	%100
10	M34	Z	2.202	2.202	0	%100
11	M39	X	-.332	-.332	0	%100
12	M39	Z	.575	.575	0	%100
13	M42	X	-.332	-.332	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
14	M42	Z	.575	.575	0	%100
15	MP4A	X	-1.448	-1.448	0	%100
16	MP4A	Z	2.508	2.508	0	%100
17	MP3A	X	-1.448	-1.448	0	%100
18	MP3A	Z	2.508	2.508	0	%100
19	MP2A	X	-1.448	-1.448	0	%100
20	MP2A	Z	2.508	2.508	0	%100
21	MP1A	X	-1.448	-1.448	0	%100
22	MP1A	Z	2.508	2.508	0	%100
23	MP5A	X	-1.448	-1.448	0	%100
24	MP5A	Z	2.508	2.508	0	%100
25	M24	X	-.624	-.624	0	%100
26	M24	Z	1.08	1.08	0	%100
27	M24A	X	-.333	-.333	0	%100
28	M24A	Z	.577	.577	0	%100
29	M25	X	-1.801	-1.801	0	%100
30	M25	Z	3.119	3.119	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-.843	-.843	0	%100
2	M27	Z	.487	.487	0	%100
3	M28	X	-2.056	-2.056	0	%100
4	M28	Z	1.187	1.187	0	%100
5	M30	X	-2.966	-2.966	0	%100
6	M30	Z	1.712	1.712	0	%100
7	M32	X	-1.55	-1.55	0	%100
8	M32	Z	.895	.895	0	%100
9	M34	X	-3.639	-3.639	0	%100
10	M34	Z	2.101	2.101	0	%100
11	M39	X	-1.726	-1.726	0	%100
12	M39	Z	.997	.997	0	%100
13	M42	X	-1.726	-1.726	0	%100
14	M42	Z	.997	.997	0	%100
15	MP4A	X	-2.508	-2.508	0	%100
16	MP4A	Z	1.448	1.448	0	%100
17	MP3A	X	-2.508	-2.508	0	%100
18	MP3A	Z	1.448	1.448	0	%100
19	MP2A	X	-2.508	-2.508	0	%100
20	MP2A	Z	1.448	1.448	0	%100
21	MP1A	X	-2.508	-2.508	0	%100
22	MP1A	Z	1.448	1.448	0	%100
23	MP5A	X	-2.508	-2.508	0	%100
24	MP5A	Z	1.448	1.448	0	%100
25	M24	X	-2.243	-2.243	0	%100
26	M24	Z	1.295	1.295	0	%100
27	M24A	X	-.823	-.823	0	%100
28	M24A	Z	.475	.475	0	%100
29	M25	X	-3.365	-3.365	0	%100
30	M25	Z	1.943	1.943	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	0	0	0	%100
3	M28	X	-3.165	-3.165	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
4	M28	Z	0	0	0	%100
5	M30	X	-3.425	-3.425	0	%100
6	M30	Z	0	0	0	%100
7	M32	X	-3.825	-3.825	0	%100
8	M32	Z	0	0	0	%100
9	M34	X	-3.825	-3.825	0	%100
10	M34	Z	0	0	0	%100
11	M39	X	-2.658	-2.658	0	%100
12	M39	Z	0	0	0	%100
13	M42	X	-2.658	-2.658	0	%100
14	M42	Z	0	0	0	%100
15	MP4A	X	-2.896	-2.896	0	%100
16	MP4A	Z	0	0	0	%100
17	MP3A	X	-2.896	-2.896	0	%100
18	MP3A	Z	0	0	0	%100
19	MP2A	X	-2.896	-2.896	0	%100
20	MP2A	Z	0	0	0	%100
21	MP1A	X	-2.896	-2.896	0	%100
22	MP1A	Z	0	0	0	%100
23	MP5A	X	-2.896	-2.896	0	%100
24	MP5A	Z	0	0	0	%100
25	M24	X	-2.79	-2.79	0	%100
26	M24	Z	0	0	0	%100
27	M24A	X	-2.56	-2.56	0	%100
28	M24A	Z	0	0	0	%100
29	M25	X	-2.56	-2.56	0	%100
30	M25	Z	0	0	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-.843	-.843	0	%100
2	M27	Z	-.487	-.487	0	%100
3	M28	X	-2.056	-2.056	0	%100
4	M28	Z	-1.187	-1.187	0	%100
5	M30	X	-2.966	-2.966	0	%100
6	M30	Z	-1.712	-1.712	0	%100
7	M32	X	-3.639	-3.639	0	%100
8	M32	Z	-2.101	-2.101	0	%100
9	M34	X	-1.55	-1.55	0	%100
10	M34	Z	-.895	-.895	0	%100
11	M39	X	-1.726	-1.726	0	%100
12	M39	Z	-.997	-.997	0	%100
13	M42	X	-1.726	-1.726	0	%100
14	M42	Z	-.997	-.997	0	%100
15	MP4A	X	-2.508	-2.508	0	%100
16	MP4A	Z	-1.448	-1.448	0	%100
17	MP3A	X	-2.508	-2.508	0	%100
18	MP3A	Z	-1.448	-1.448	0	%100
19	MP2A	X	-2.508	-2.508	0	%100
20	MP2A	Z	-1.448	-1.448	0	%100
21	MP1A	X	-2.508	-2.508	0	%100
22	MP1A	Z	-1.448	-1.448	0	%100
23	MP5A	X	-2.508	-2.508	0	%100
24	MP5A	Z	-1.448	-1.448	0	%100
25	M24	X	-1.428	-1.428	0	%100
26	M24	Z	-.824	-.824	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
27	M24A	X	-3.365	-3.365	0	%100
28	M24A	Z	-1.943	-1.943	0	%100
29	M25	X	-.823	-.823	0	%100
30	M25	Z	-.475	-.475	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-1.46	-1.46	0	%100
2	M27	Z	-2.528	-2.528	0	%100
3	M28	X	-.396	-.396	0	%100
4	M28	Z	-.685	-.685	0	%100
5	M30	X	-1.712	-1.712	0	%100
6	M30	Z	-2.966	-2.966	0	%100
7	M32	X	-1.271	-1.271	0	%100
8	M32	Z	-2.202	-2.202	0	%100
9	M34	X	-.065	-.065	0	%100
10	M34	Z	-.113	-.113	0	%100
11	M39	X	-.332	-.332	0	%100
12	M39	Z	-.575	-.575	0	%100
13	M42	X	-.332	-.332	0	%100
14	M42	Z	-.575	-.575	0	%100
15	MP4A	X	-1.448	-1.448	0	%100
16	MP4A	Z	-2.508	-2.508	0	%100
17	MP3A	X	-1.448	-1.448	0	%100
18	MP3A	Z	-2.508	-2.508	0	%100
19	MP2A	X	-1.448	-1.448	0	%100
20	MP2A	Z	-2.508	-2.508	0	%100
21	MP1A	X	-1.448	-1.448	0	%100
22	MP1A	Z	-2.508	-2.508	0	%100
23	MP5A	X	-1.448	-1.448	0	%100
24	MP5A	Z	-2.508	-2.508	0	%100
25	M24	X	-.153	-.153	0	%100
26	M24	Z	-.265	-.265	0	%100
27	M24A	X	-1.801	-1.801	0	%100
28	M24A	Z	-3.119	-3.119	0	%100
29	M25	X	-.333	-.333	0	%100
30	M25	Z	-.577	-.577	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	-.813	-.813	0	%100
3	M28	X	0	0	0	%100
4	M28	Z	0	0	0	%100
5	M30	X	0	0	0	%100
6	M30	Z	-.66	-.66	0	%100
7	M32	X	0	0	0	%100
8	M32	Z	-.13	-.13	0	%100
9	M34	X	0	0	0	%100
10	M34	Z	-.13	-.13	0	%100
11	M39	X	0	0	0	%100
12	M39	Z	0	0	0	%100
13	M42	X	0	0	0	%100
14	M42	Z	0	0	0	%100
15	MP4A	X	0	0	0	%100
16	MP4A	Z	-.524	-.524	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
17	MP3A	X	0	0	0	%100
18	MP3A	Z	-.524	-.524	0	%100
19	MP2A	X	0	0	0	%100
20	MP2A	Z	-.524	-.524	0	%100
21	MP1A	X	0	0	0	%100
22	MP1A	Z	-.524	-.524	0	%100
23	MP5A	X	0	0	0	%100
24	MP5A	Z	-.524	-.524	0	%100
25	M24	X	0	0	0	%100
26	M24	Z	-.019	-.019	0	%100
27	M24A	X	0	0	0	%100
28	M24A	Z	-.459	-.459	0	%100
29	M25	X	0	0	0	%100
30	M25	Z	-.459	-.459	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	.305	.305	0	%100
2	M27	Z	-.528	-.528	0	%100
3	M28	X	.088	.088	0	%100
4	M28	Z	-.152	-.152	0	%100
5	M30	X	.33	.33	0	%100
6	M30	Z	-.571	-.571	0	%100
7	M32	X	.017	.017	0	%100
8	M32	Z	-.029	-.029	0	%100
9	M34	X	.326	.326	0	%100
10	M34	Z	-.565	-.565	0	%100
11	M39	X	.079	.079	0	%100
12	M39	Z	-.136	-.136	0	%100
13	M42	X	.079	.079	0	%100
14	M42	Z	-.136	-.136	0	%100
15	MP4A	X	.262	.262	0	%100
16	MP4A	Z	-.454	-.454	0	%100
17	MP3A	X	.262	.262	0	%100
18	MP3A	Z	-.454	-.454	0	%100
19	MP2A	X	.262	.262	0	%100
20	MP2A	Z	-.454	-.454	0	%100
21	MP1A	X	.262	.262	0	%100
22	MP1A	Z	-.454	-.454	0	%100
23	MP5A	X	.262	.262	0	%100
24	MP5A	Z	-.454	-.454	0	%100
25	M24	X	.113	.113	0	%100
26	M24	Z	-.196	-.196	0	%100
27	M24A	X	.077	.077	0	%100
28	M24A	Z	-.133	-.133	0	%100
29	M25	X	.415	.415	0	%100
30	M25	Z	-.718	-.718	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	.176	.176	0	%100
2	M27	Z	-.102	-.102	0	%100
3	M28	X	.456	.456	0	%100
4	M28	Z	-.263	-.263	0	%100
5	M30	X	.571	.571	0	%100
6	M30	Z	-.33	-.33	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
7	M32	X	.398	.398	0	%100
8	M32	Z	-.23	-.23	0	%100
9	M34	X	.934	.934	0	%100
10	M34	Z	-.539	-.539	0	%100
11	M39	X	.409	.409	0	%100
12	M39	Z	-.236	-.236	0	%100
13	M42	X	.409	.409	0	%100
14	M42	Z	-.236	-.236	0	%100
15	MP4A	X	.454	.454	0	%100
16	MP4A	Z	-.262	-.262	0	%100
17	MP3A	X	.454	.454	0	%100
18	MP3A	Z	-.262	-.262	0	%100
19	MP2A	X	.454	.454	0	%100
20	MP2A	Z	-.262	-.262	0	%100
21	MP1A	X	.454	.454	0	%100
22	MP1A	Z	-.262	-.262	0	%100
23	MP5A	X	.454	.454	0	%100
24	MP5A	Z	-.262	-.262	0	%100
25	M24	X	.406	.406	0	%100
26	M24	Z	-.234	-.234	0	%100
27	M24A	X	.189	.189	0	%100
28	M24A	Z	-.109	-.109	0	%100
29	M25	X	.775	.775	0	%100
30	M25	Z	-.447	-.447	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	0	0	0	%100
3	M28	X	.702	.702	0	%100
4	M28	Z	0	0	0	%100
5	M30	X	.66	.66	0	%100
6	M30	Z	0	0	0	%100
7	M32	X	.982	.982	0	%100
8	M32	Z	0	0	0	%100
9	M34	X	.982	.982	0	%100
10	M34	Z	0	0	0	%100
11	M39	X	.63	.63	0	%100
12	M39	Z	0	0	0	%100
13	M42	X	.63	.63	0	%100
14	M42	Z	0	0	0	%100
15	MP4A	X	.524	.524	0	%100
16	MP4A	Z	0	0	0	%100
17	MP3A	X	.524	.524	0	%100
18	MP3A	Z	0	0	0	%100
19	MP2A	X	.524	.524	0	%100
20	MP2A	Z	0	0	0	%100
21	MP1A	X	.524	.524	0	%100
22	MP1A	Z	0	0	0	%100
23	MP5A	X	.524	.524	0	%100
24	MP5A	Z	0	0	0	%100
25	M24	X	.505	.505	0	%100
26	M24	Z	0	0	0	%100
27	M24A	X	.589	.589	0	%100
28	M24A	Z	0	0	0	%100
29	M25	X	.589	.589	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
30	M25	Z	0	0	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	.176	.176	0	%100
2	M27	Z	.102	.102	0	%100
3	M28	X	.456	.456	0	%100
4	M28	Z	.263	.263	0	%100
5	M30	X	.571	.571	0	%100
6	M30	Z	.33	.33	0	%100
7	M32	X	.934	.934	0	%100
8	M32	Z	.539	.539	0	%100
9	M34	X	.398	.398	0	%100
10	M34	Z	.23	.23	0	%100
11	M39	X	.409	.409	0	%100
12	M39	Z	.236	.236	0	%100
13	M42	X	.409	.409	0	%100
14	M42	Z	.236	.236	0	%100
15	MP4A	X	.454	.454	0	%100
16	MP4A	Z	.262	.262	0	%100
17	MP3A	X	.454	.454	0	%100
18	MP3A	Z	.262	.262	0	%100
19	MP2A	X	.454	.454	0	%100
20	MP2A	Z	.262	.262	0	%100
21	MP1A	X	.454	.454	0	%100
22	MP1A	Z	.262	.262	0	%100
23	MP5A	X	.454	.454	0	%100
24	MP5A	Z	.262	.262	0	%100
25	M24	X	.258	.258	0	%100
26	M24	Z	.149	.149	0	%100
27	M24A	X	.775	.775	0	%100
28	M24A	Z	.447	.447	0	%100
29	M25	X	.189	.189	0	%100
30	M25	Z	.109	.109	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	.305	.305	0	%100
2	M27	Z	.528	.528	0	%100
3	M28	X	.088	.088	0	%100
4	M28	Z	.152	.152	0	%100
5	M30	X	.33	.33	0	%100
6	M30	Z	.571	.571	0	%100
7	M32	X	.326	.326	0	%100
8	M32	Z	.565	.565	0	%100
9	M34	X	.017	.017	0	%100
10	M34	Z	.029	.029	0	%100
11	M39	X	.079	.079	0	%100
12	M39	Z	.136	.136	0	%100
13	M42	X	.079	.079	0	%100
14	M42	Z	.136	.136	0	%100
15	MP4A	X	.262	.262	0	%100
16	MP4A	Z	.454	.454	0	%100
17	MP3A	X	.262	.262	0	%100
18	MP3A	Z	.454	.454	0	%100
19	MP2A	X	.262	.262	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
20	MP2A	Z	.454	.454	0	%100
21	MP1A	X	.262	.262	0	%100
22	MP1A	Z	.454	.454	0	%100
23	MP5A	X	.262	.262	0	%100
24	MP5A	Z	.454	.454	0	%100
25	M24	X	.028	.028	0	%100
26	M24	Z	.048	.048	0	%100
27	M24A	X	.415	.415	0	%100
28	M24A	Z	.718	.718	0	%100
29	M25	X	.077	.077	0	%100
30	M25	Z	.133	.133	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	.813	.813	0	%100
3	M28	X	0	0	0	%100
4	M28	Z	0	0	0	%100
5	M30	X	0	0	0	%100
6	M30	Z	.66	.66	0	%100
7	M32	X	0	0	0	%100
8	M32	Z	.13	.13	0	%100
9	M34	X	0	0	0	%100
10	M34	Z	.13	.13	0	%100
11	M39	X	0	0	0	%100
12	M39	Z	0	0	0	%100
13	M42	X	0	0	0	%100
14	M42	Z	0	0	0	%100
15	MP4A	X	0	0	0	%100
16	MP4A	Z	.524	.524	0	%100
17	MP3A	X	0	0	0	%100
18	MP3A	Z	.524	.524	0	%100
19	MP2A	X	0	0	0	%100
20	MP2A	Z	.524	.524	0	%100
21	MP1A	X	0	0	0	%100
22	MP1A	Z	.524	.524	0	%100
23	MP5A	X	0	0	0	%100
24	MP5A	Z	.524	.524	0	%100
25	M24	X	0	0	0	%100
26	M24	Z	.019	.019	0	%100
27	M24A	X	0	0	0	%100
28	M24A	Z	.459	.459	0	%100
29	M25	X	0	0	0	%100
30	M25	Z	.459	.459	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-.305	-.305	0	%100
2	M27	Z	.528	.528	0	%100
3	M28	X	-.088	-.088	0	%100
4	M28	Z	.152	.152	0	%100
5	M30	X	-.33	-.33	0	%100
6	M30	Z	.571	.571	0	%100
7	M32	X	-.017	-.017	0	%100
8	M32	Z	.029	.029	0	%100
9	M34	X	-.326	-.326	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
10	M34	Z	.565	.565	0	%100
11	M39	X	-.079	-.079	0	%100
12	M39	Z	.136	.136	0	%100
13	M42	X	-.079	-.079	0	%100
14	M42	Z	.136	.136	0	%100
15	MP4A	X	-.262	-.262	0	%100
16	MP4A	Z	.454	.454	0	%100
17	MP3A	X	-.262	-.262	0	%100
18	MP3A	Z	.454	.454	0	%100
19	MP2A	X	-.262	-.262	0	%100
20	MP2A	Z	.454	.454	0	%100
21	MP1A	X	-.262	-.262	0	%100
22	MP1A	Z	.454	.454	0	%100
23	MP5A	X	-.262	-.262	0	%100
24	MP5A	Z	.454	.454	0	%100
25	M24	X	-.113	-.113	0	%100
26	M24	Z	.196	.196	0	%100
27	M24A	X	-.077	-.077	0	%100
28	M24A	Z	.133	.133	0	%100
29	M25	X	-.415	-.415	0	%100
30	M25	Z	.718	.718	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-.176	-.176	0	%100
2	M27	Z	.102	.102	0	%100
3	M28	X	-.456	-.456	0	%100
4	M28	Z	.263	.263	0	%100
5	M30	X	-.571	-.571	0	%100
6	M30	Z	.33	.33	0	%100
7	M32	X	-.398	-.398	0	%100
8	M32	Z	.23	.23	0	%100
9	M34	X	-.934	-.934	0	%100
10	M34	Z	.539	.539	0	%100
11	M39	X	-.409	-.409	0	%100
12	M39	Z	.236	.236	0	%100
13	M42	X	-.409	-.409	0	%100
14	M42	Z	.236	.236	0	%100
15	MP4A	X	-.454	-.454	0	%100
16	MP4A	Z	.262	.262	0	%100
17	MP3A	X	-.454	-.454	0	%100
18	MP3A	Z	.262	.262	0	%100
19	MP2A	X	-.454	-.454	0	%100
20	MP2A	Z	.262	.262	0	%100
21	MP1A	X	-.454	-.454	0	%100
22	MP1A	Z	.262	.262	0	%100
23	MP5A	X	-.454	-.454	0	%100
24	MP5A	Z	.262	.262	0	%100
25	M24	X	-.406	-.406	0	%100
26	M24	Z	.234	.234	0	%100
27	M24A	X	-.189	-.189	0	%100
28	M24A	Z	.109	.109	0	%100
29	M25	X	-.775	-.775	0	%100
30	M25	Z	.447	.447	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	0	0	0	%100
2	M27	Z	0	0	0	%100
3	M28	X	-.702	-.702	0	%100
4	M28	Z	0	0	0	%100
5	M30	X	-.66	-.66	0	%100
6	M30	Z	0	0	0	%100
7	M32	X	-.982	-.982	0	%100
8	M32	Z	0	0	0	%100
9	M34	X	-.982	-.982	0	%100
10	M34	Z	0	0	0	%100
11	M39	X	-.63	-.63	0	%100
12	M39	Z	0	0	0	%100
13	M42	X	-.63	-.63	0	%100
14	M42	Z	0	0	0	%100
15	MP4A	X	-.524	-.524	0	%100
16	MP4A	Z	0	0	0	%100
17	MP3A	X	-.524	-.524	0	%100
18	MP3A	Z	0	0	0	%100
19	MP2A	X	-.524	-.524	0	%100
20	MP2A	Z	0	0	0	%100
21	MP1A	X	-.524	-.524	0	%100
22	MP1A	Z	0	0	0	%100
23	MP5A	X	-.524	-.524	0	%100
24	MP5A	Z	0	0	0	%100
25	M24	X	-.505	-.505	0	%100
26	M24	Z	0	0	0	%100
27	M24A	X	-.589	-.589	0	%100
28	M24A	Z	0	0	0	%100
29	M25	X	-.589	-.589	0	%100
30	M25	Z	0	0	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-.176	-.176	0	%100
2	M27	Z	-.102	-.102	0	%100
3	M28	X	-.456	-.456	0	%100
4	M28	Z	-.263	-.263	0	%100
5	M30	X	-.571	-.571	0	%100
6	M30	Z	-.33	-.33	0	%100
7	M32	X	-.934	-.934	0	%100
8	M32	Z	-.539	-.539	0	%100
9	M34	X	-.398	-.398	0	%100
10	M34	Z	-.23	-.23	0	%100
11	M39	X	-.409	-.409	0	%100
12	M39	Z	-.236	-.236	0	%100
13	M42	X	-.409	-.409	0	%100
14	M42	Z	-.236	-.236	0	%100
15	MP4A	X	-.454	-.454	0	%100
16	MP4A	Z	-.262	-.262	0	%100
17	MP3A	X	-.454	-.454	0	%100
18	MP3A	Z	-.262	-.262	0	%100
19	MP2A	X	-.454	-.454	0	%100
20	MP2A	Z	-.262	-.262	0	%100
21	MP1A	X	-.454	-.454	0	%100
22	MP1A	Z	-.262	-.262	0	%100
23	MP5A	X	-.454	-.454	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
24	MP5A	Z	-.262	-.262	0	%100
25	M24	X	-.258	-.258	0	%100
26	M24	Z	-.149	-.149	0	%100
27	M24A	X	-.775	-.775	0	%100
28	M24A	Z	-.447	-.447	0	%100
29	M25	X	-.189	-.189	0	%100
30	M25	Z	-.109	-.109	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	-.305	-.305	0	%100
2	M27	Z	-.528	-.528	0	%100
3	M28	X	-.088	-.088	0	%100
4	M28	Z	-.152	-.152	0	%100
5	M30	X	-.33	-.33	0	%100
6	M30	Z	-.571	-.571	0	%100
7	M32	X	-.326	-.326	0	%100
8	M32	Z	-.565	-.565	0	%100
9	M34	X	-.017	-.017	0	%100
10	M34	Z	-.029	-.029	0	%100
11	M39	X	-.079	-.079	0	%100
12	M39	Z	-.136	-.136	0	%100
13	M42	X	-.079	-.079	0	%100
14	M42	Z	-.136	-.136	0	%100
15	MP4A	X	-.262	-.262	0	%100
16	MP4A	Z	-.454	-.454	0	%100
17	MP3A	X	-.262	-.262	0	%100
18	MP3A	Z	-.454	-.454	0	%100
19	MP2A	X	-.262	-.262	0	%100
20	MP2A	Z	-.454	-.454	0	%100
21	MP1A	X	-.262	-.262	0	%100
22	MP1A	Z	-.454	-.454	0	%100
23	MP5A	X	-.262	-.262	0	%100
24	MP5A	Z	-.454	-.454	0	%100
25	M24	X	-.028	-.028	0	%100
26	M24	Z	-.048	-.048	0	%100
27	M24A	X	-.415	-.415	0	%100
28	M24A	Z	-.718	-.718	0	%100
29	M25	X	-.077	-.077	0	%100
30	M25	Z	-.133	-.133	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...	LC	MY [k-ft]	LC	MZ [k...	LC
1	N64	m...	349.288	10	1334.108	17	78.377	12	-.14	11	0	75	1.342	28
2		min	-1089.094	28	109.454	11	-2139.647	18	-1.314	17	0	1	-.5	10
3	N67	m...	1005.461	28	334.81	2	975.413	17	.181	7	0	75	1.045	28
4		min	-337.81	10	-80.672	8	13.936	11	-.264	1	0	1	-.35	10
5	N51	m...	239.01	3	32.884	20	1234.967	3	0	75	0	75	0	75
6		min	-219.32	8	-14.545	3	-1249.87	9	0	1	0	1	0	1

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k...	LC	MY [k-ft]	LC	MZ [k...	LC
7	N53	m...	1235.748	10	759.371	11	1386.736	11	.003	26	.005	27	.009	27
8		min	-1215.355	4	-149.74	5	-424.73	5	0	9	-.002	10	-.003	10
9	Totals:	m...	1069.575	10	2066.908	23	1235.366	1						
10		min	-1069.587	4	704.625	67	-1235.327	7						

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

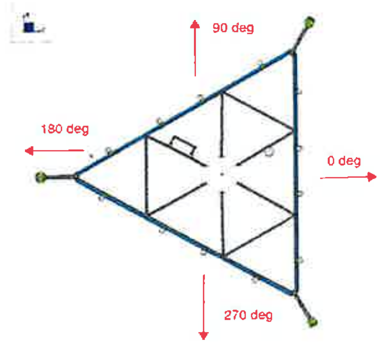
	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	L...	Dir	LC	phi*Pn...	phi*P...	phi*Mn y...	phi*Mn ...	...	Eqn
1	M27	PIPE_...	.835	7.125	28	.151	7...		7	58659...	78750	7.954	7.954	...	H1-...
2	M28	HSS4...	.469	3.25	28	.503	3...	y	28	13348...	139518	16.181	16.181	...	H3-6
3	M30	PIPE_...	.390	2.146	29	.233	....		28	87905...	93240	10.631	10.631	...	H1-...
4	M32	L4X4X6	.032	0	17	.003	0	z	24	79875...	92664	4.398	9.886	...	H2-1
5	M34	L4X4X6	.150	0	2	.006	3...	z	9	79875...	92664	4.398	9.886	...	H2-1
6	M39	HSS4...	.160	0	29	.114	....	y	28	13893...	139518	16.181	16.181	...	H1-...
7	M42	HSS4...	.098	0	27	.114	0	z	28	13893...	139518	16.181	16.181	...	H1-...
8	MP4A	PIPE_...	.022	3.125	4	.003	3...		4	20866...	32130	1.872	1.872	...	H1-...
9	MP3A	PIPE_...	.028	3.495	4	.003	3...		4	22356...	32130	1.872	1.872	...	H1-...
10	MP2A	PIPE_...	.439	4.469	7	.053	1...		4	19360...	32130	1.872	1.872	...	H1-...
11	MP1A	PIPE_...	.080	3.125	7	.018	3...		6	20866...	32130	1.872	1.872	...	H1-...
12	MP5A	PIPE_...	.022	3.125	4	.003	3...		4	20866...	32130	1.872	1.872	...	H1-...
13	M24	PIPE_...	.063	0	3	.003	6...		22	19885...	32130	1.872	1.872	...	H1-...
14	M24A	L2.5x2...	.156	3.62	15	.023	0	y	28	8624.77	38556	1.114	2.059	...	H2-1
15	M25	L2.5x2...	.285	3.62	9	.044	0	z	27	8624.77	38556	1.114	2.059	...	H2-1

VzW SMART Tool© Vendor			
Client:	Verizon Wireless	Date:	5/11/2023
Site Name:	Middlebury CT		
MDG #:	5000385567		
Fuze ID #:	16081589	Page:	1
			Version 1.01

I. Mount-to-Tower Connection Check

Custom Orientation Required: **Yes**

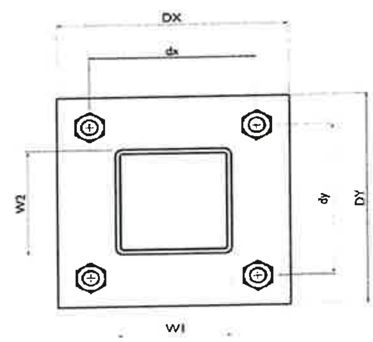
Nodes (labeled per Risa)	Orientation (per graphic of typical platform)
N64	0
N67	0



Tower Connection Bolt Checks: **Yes**

Bolt Orientation: **Parallel**

Bolt Quantity per Reaction:	4
d_x (in) *(Delta X of typ. bolt config. sketch)*:	4.625
d_y (in) *(Delta Y of typ. bolt config. sketch)*:	2
Bolt Type:	A36
Bolt Diameter (in):	0.625
Required Tensile Strength / bolt (kips):	4.5
Required Shear Strength / bolt (kips):	1.4
Tensile Capacity / bolt (kips):	10.0
Shear Capacity / bolt (kips):	6.0
Bolt Overall Utilization:	**44.7%**



Tower Connection Baseplate Checks: **No**

verizon

MOUNT MODIFICATION DRAWINGS
EXISTING 14.25' T-ARM

TOWER OWNER: PHOENIX TOWER INTERNATIONAL
TOWER OWNER SITE NUMBER: CT-1003PTI

CARRIER SITE NAME: MIDDLEBURY CT
CARRIER SITE NUMBER: 5000385567
FUZE ID: 16081589

1021 STRAITS T-PIKE
MIDDLEBURY, CT 06762
NEW HAVEN COUNTY

LATITUDE: 41.535778° N
LONGITUDE: 73.089231° W

DESIGN CRITERIA

WIND LOADS

BASIC WIND SPEED (3 SECOND GUST), V = 120 MPH
EXPOSURE CATEGORY B
TOPOGRAPHIC CATEGORY: 1
TOPOGRAPHIC CONSIDERED: N/A
TOPOGRAPHIC METHOD: N/A
MEAN BASE ELEVATION (AMSL) = 432.77'

ICE LOADS

ICE WIND SPEED (3 SECOND GUST), V = 50 MPH
ICE THICKNESS = 1.00 IN

SEISMIC LOADS

SEISMIC DESIGN CATEGORY B
SHORT TERM MCER GROUND MOTION, S_S = .194
LONG TERM MCER GROUND MOTION, S_1 = .054

PROJECT INFORMATION

APPLICANT/LESSEE

COMPANY: VERIZON WIRELESS

CLIENT REPRESENTATIVE

COMPANY: VERIZON WIRELESS

PROJECT MANAGER

COMPANY: COLLIERS ENGINEERING & DESIGN
CONTACT: PETER ALBANO
PHONE: 856.797.0412
E-MAIL: PETER.ALBANO@COLLIERSENG.COM

CONTRACTOR PMI REQUIREMENTS

PMI LOCATION: HTTPS://PMI.VZWSMART.COM
SMART TOOL PROJECT #: 10183729
VZW MDG #: 5000385567
ANALYSIS DATE: 5/15/2023

PMI REQUIREMENTS EMBEDDED WITHIN MOUNT MODIFICATION REPORT

SHEET INDEX

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REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
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0	8/09/2021	ISSUED FOR CONSTRUCTION	SC	EA

STATE OF CONNECTICUT PETER M. ALBANO 35459 LICENSED PROFESSIONAL ENGINEER
COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JPC.0000131

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NEW HAVEN COUNTY

Colliers Engineering & Design
RED BANK (Headquarters)
331 Newman Springs Road, Suite 203
Red Bank, NJ 07701
Phone: 732.383.1950
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SHEET TITLE: TITLE SHEET

SHEET NUMBER: ST-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

BILL OF MATERIALS

SECTION 1 - VZWSMART KITS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
3	VZWSMART	VZWSMART-SFK3	V-BRACING KIT	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1.	122	366
3	VZWSMART	VZWSMART-AL333	CLIP ANGLE		3	9

SECTION 2 - OTHER REQUIRED PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)

SECTION 3 - REQUIRED SAFETY CLIMB PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
1	PERFECT VISION	PV-CLAMP-LW-0106	CLAMP BRACKET	OR EOR APPROVED EQUIVALENT	-	-
1	PERFECT VISION	PV-CMX-CG-SM	WIRE ROPE GUIDE	OR EOR APPROVED EQUIVALENT	-	-
					TOTAL:	375

NOTES:

1. THE MANUFACTURERS LISTED ARE THE APPROVED VENDORS FOR THE VZW MOUNT KITS. EACH MANUFACTURER WILL BE AWARE OF WHICH KITS HAVE BEEN THROUGH THE VZW APPROVAL PROCESS AND THEY ARE IN TURN APPROVED TO SELL. PLEASE NOTE THAT THE MATERIAL UTILIZED ON THE MOUNT MODIFICATIONS WILL BE REVIEWED AS A PART OF THE DESKTOP PMI COMPLETED BY THE SMART TOOL VENDOR. IT WILL BE REQUIRED THAT THE VZW KITS SPECIFIED ARE UTILIZED IN THE MODIFICATIONS.
2. ALL MATERIALS REQUIRED FOR THE DESIGNED MODIFICATIONS BUT NOT LISTED IN THIS SHEET ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.

VZWSMART KITS - APPROVED VENDORS

COMMSCOPE	
CONTACT	SALVADOR ANGUIANO
PHONE	(817) 304-7492
EMAIL	SALVADOR.ANGUIANO@COMMSCOPE.COM
WEBSITE	WWW.COMMSCOPE.COM

METROSITE FABRICATORS, LLC	
CONTACT	KENT RAMEY
PHONE	(706) 335-7045 (O), (706) 982-9788 (M)
EMAIL	KENT@METROSITELLC.COM
WEBSITE	METROSITEFABRICATORS.COM

PERFECTVISION	
CONTACT	WIRELESS SALES
PHONE	(844) 887-6723
EMAIL	WWW.PERFECT-VISION.COM
WEBSITE	WIRELESSSALES@PERFECT-VISION.COM

SABRE INDUSTRIES, INC.	
CONTACT	ANGIE WELCH
PHONE	(866) 428-6937
EMAIL	AKWELCH@SABREINDUSTRIES.COM
WEBSITE	WWW.SABRESITESOLUTIONS.COM

SITE PRO 1	
CONTACT	PAULA BOSWELL
PHONE	(972) 236-9843
EMAIL	PAULA.BOSWELL@VALMONT.COM
WEBSITE	WWW.SITEPRO1.COM

NEWAVE	
CONTACT	NEWAVE SALES TEAM
PHONE	(971) 239-4762
EMAIL	SALES@NEWAVETC.COM
WEBSITE	WWW.NEWAVETC.COM

BETTER METAL, LLC	
CONTACT	DAVID STANSBERRY
PHONE	(615) 535-0990 (O), (615) 631-2520 (M)
EMAIL	DLS@BETTERMETAL.COM
WEBSITE	WWW.BETTERMETAL.COM

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SHEET TITLE: BILL OF MATERIALS

SHEET NUMBER: SBOM-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

GENERAL NOTES

1. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE TELECOMMUNICATIONS INDUSTRY STANDARD TIA-222-H. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES.
2. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO EXISTING STRUCTURES. ANY DAMAGE TO EXISTING STRUCTURES AS A RESULT OF THE CONTRACTOR'S WORK OR FROM DAMAGE DUE TO OTHER CAUSES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE BEGINNING WORK, ORDERING MATERIAL, AND PREPARING OF SHOP DRAWINGS. ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, NOTIFY THE ENGINEER IMMEDIATELY.
4. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE.
5. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
6. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/TIA-322 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-322 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS IN ACCORDANCE WITH APPLICABLE SAFETY CODES.
8. WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 30-MPH). THE STRUCTURE SHOWN ON THE DRAWINGS IS STRUCTURALLY SOUND ONLY IN THE COMPLETED FORM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRENGTH AND STABILITY OF THE STRUCTURE DURING ERECTION. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT, SHORING, BRACING AND ANY OTHER STRUCTURAL SYSTEMS AS REQUIRED TO RESIST ALL FORCES THAT MAY OCCUR DURING HANDLING AND ERECTION UNTIL THE STRUCTURE IS FULLY COMPLETED. TEMPORARY SUPPORTS, BRACING AND OTHER STRUCTURAL SYSTEMS REQUIRED DURING CONSTRUCTION SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER THEIR USE.
9. ALL INSTALLATIONS PERFORMED ON THIS STRUCTURE SHALL BE COMPLETED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE STANDARD FOR INSTALLATION, ALTERATION AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, ANSI/TIA-322.
10. CONTRACTOR SHALL SECURE SITE BACK TO EXISTING CONDITION UNDER SUPERVISION OF OWNER. ALL FENCE, STONE, GEOFABRIC, GROUNDING, AND SURROUNDING GRADE SHALL BE REPLACED AND REPAIRED AS REQUIRED TO ACHIEVE OWNER APPROVAL. POSITIVE DRAINAGE AWAY FROM TOWER SITE SHALL BE MAINTAINED.
11. CONNECTIONS BETWEEN ITEMS SUPPORTED BY THE STRUCTURE AND THE STRUCTURE NOT SPECIFICALLY DETAILED IN THE CONTRACT DOCUMENTS ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUCH CONNECTIONS SHALL BE DESIGNED, COORDINATED AND INSPECTED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF THE PROJECT. SUBMIT SIGNED AND SEALED CALCULATIONS DURING SHOP DRAWING REVIEW.
12. DO NOT SCALE DRAWINGS.
13. DO NOT USE THESE DRAWINGS FOR ANY OTHER SITE.
14. ALL MATERIAL UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZE AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING.
15. THE MOUNT UNDER NO CIRCUMSTANCES SHOULD BE USED AS A TIE OFF POINT.

STRUCTURAL STEEL

1. DESIGN, DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING PUBLICATIONS EXCEPT AS SPECIFICALLY INDICATED IN THE CONTRACT DOCUMENTS.
   a. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION (15TH EDITION)
   b. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS
   c. AISC CODE OF STANDARD PRACTICE
2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE SHOWN:

CHANNELS, ANGLES, PLATES, ETC.	ASTM A36 (GR 36)
STEEL PIPE	ASTM A53 (GR 35)
BOLTS	ASTM A325
NUTS	ASTM A563
LOCK WASHERS	LOCKING STRUCTURAL GRADE

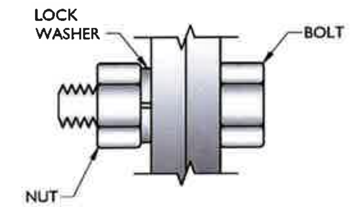
3. ALL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR VERIFYING THE SUBSTITUTE IS SUITABLE FOR USE AND MEETS ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
4. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
   a. SUBMIT SHOP DRAWINGS TO
      PETER.ALBANO@COLLIERSENG.COM
   b. PROVIDE COLLIERS ENGINEERING & DESIGN PROJECT # AND COLLIERS ENGINEERING & DESIGN PROJECT ENGINEER CONTACT IN THE BODY OF THE EMAIL.
5. DRILL NO HOLES IN ANY NEW OR EXISTING STRUCTURAL STEEL MEMBERS OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS WITHOUT THE APPROVAL OF THE ENGINEER OF RECORD.
6. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
7. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
8. ALL BOLT ASSEMBLIES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKING DEVICES TO BE INSTALLED IN ACCORDANCE WITH TIA-222-H SECTION 4.9.2 REQUIREMENTS.
9. WHERE CONNECTIONS ARE NOT FULLY DETAILED ON THESE DRAWINGS, FABRICATOR SHALL DESIGN CONNECTIONS TO RESIST LOADS AND FORCES WHERE SHOWN ON DRAWINGS AND AS OUTLINED IN SPECIFICATIONS.
10. FOR MEMBERS BEING REPLACED, PROVIDE NEW BOLTS AND MATCH EXISTING SIZE AND GRADE. MAINTAIN AISC REQUIREMENTS FOR MINIMUM BOLT DISTANCE AND SPACING.
11. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT IS AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
12. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
13. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
14. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB INCLUDING AREAS UNDER STIFFENER PLATES SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING (ZINC COTE, OR EOR APPROVED EQUAL), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).
15. ALL HOLES IN STEEL MEMBERS SHALL BE SIZED 1/16" LARGER THAN THE BOLT DIAMETER. STANDARD HOLES SHALL BE USED UNLESS NOTED OTHERWISE.

BOLT SCHEDULE (IN.)

BOLT DIAMETER	STANDARD HOLE	SHORT SLOT	MIN. EDGE DISTANCE	SPACING
1/2	9/16	9/16 x 11/16	7/8	1 1/2
5/8	11/16	11/16 x 7/8	1 1/8	1 7/8
3/4	13/16	13/16 x 1	1 1/4	2 1/4
7/8	15/16	15/16 x 1 1/8	1 1/2	2 5/8
1	1 1/16	1 1/16 x 1 5/16	1 3/4	3

WORKABLE GAGES (IN.)

LEG	GAGE
4	2 1/2
3 1/2	2
3	1 3/4
2 1/2	1 3/8
2	1 1/8

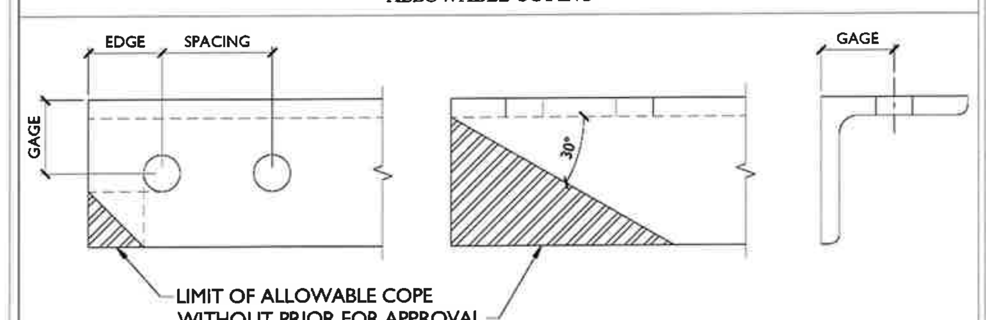


TYP. BOLT ASSEMBLY

NOTES:

1. ALL DIMENSIONS REPRESENTED IN THE ABOVE TABLES ARE AISC MINIMUM REQUIREMENTS. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN FIELD AND NOTIFY ENGINEER IF DISTANCES ARE LESS THAN THOSE PROVIDED.
2. THE DIMENSIONS PROVIDED ARE MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS OF PROPOSED MEMBERS WITHIN THESE DRAWINGS MAY VARY FROM THE AISC MINIMUM REQUIREMENTS.
3. SHORT SLOT HOLES SHALL ONLY BE USED WHEN DEPICTED IN THE DRAWINGS
4. MATCH EXISTING GAGES WHEN APPLICABLE, UNLESS MINIMUM EDGE DISTANCES ARE COMPROMISED.

ALLOWABLE COPING



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SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
SGN-1

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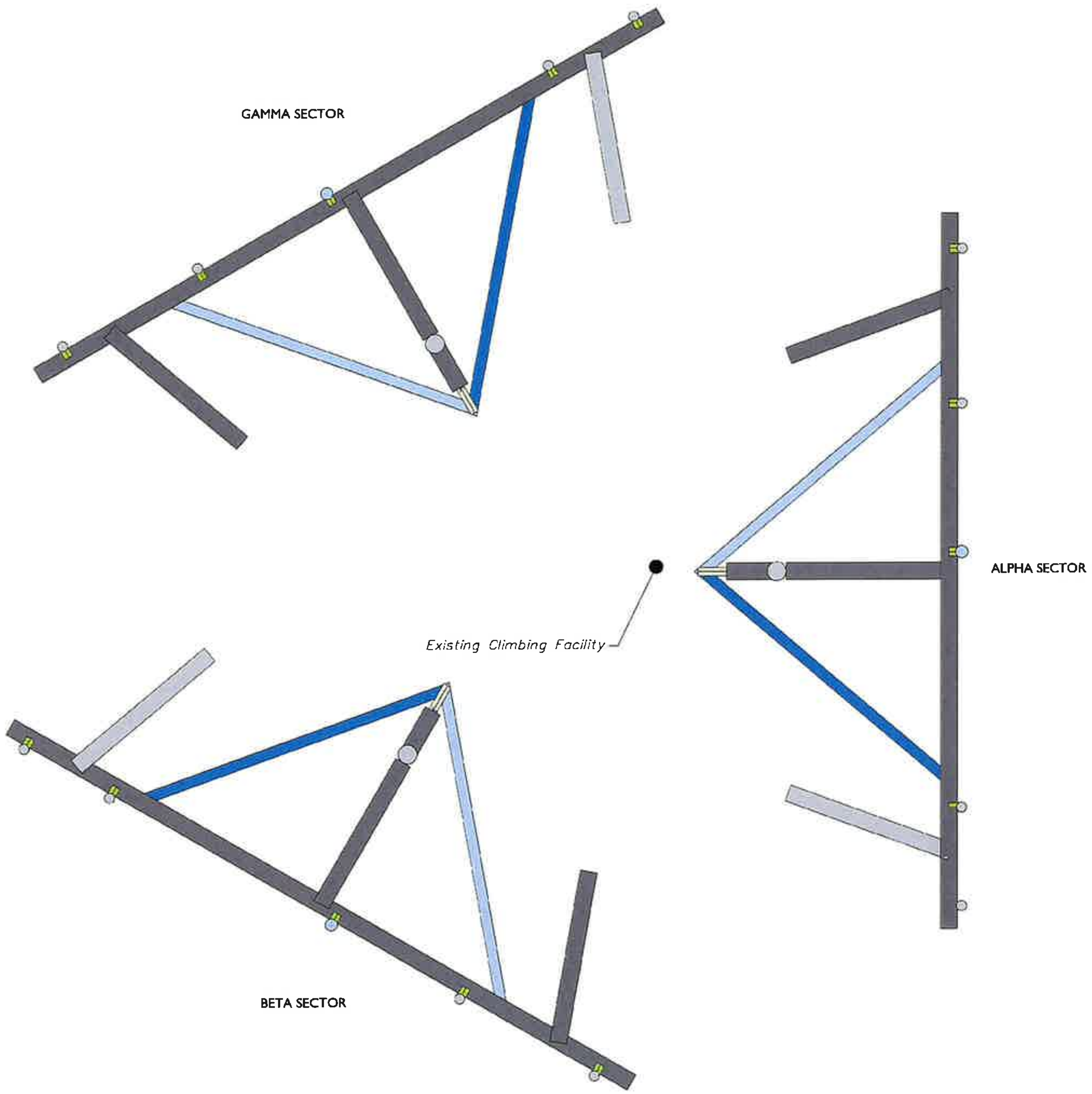


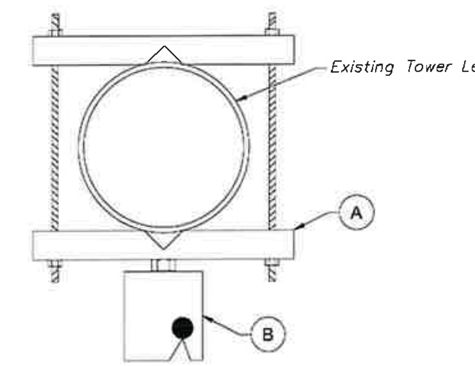
① CLIMBING FACILITY LOCATION

SCALE : N.T.S.

STRUCTURAL NOTES:

1. PER THE MOUNT MAPPING COMPLETED BY STRUCTURAL COMPONENTS ON 4/20/2021, THE SAFETY CLIMB AND CLIMBING FACILITIES UP TO THE VERIZON MOUNT ELEVATION (164'-0") ARE IN GOOD CONDITION. COLLIERS ENGINEERING & DESIGN DOES NOT WARRANT THIS INFORMATION.

2. INSTALL SHALL NOT CAUSE HARM TO THE STRUCTURE, CLIMBING FACILITY, SAFETY CLIMB, OR ANY SYSTEM INSTALLED ON THE STRUCTURE. TIMELY NOTICE AND DOCUMENTATION SHALL BE PROVIDED BY CONTRACTORS TO THE EOR (OF STRUCTURAL DESIGN) IF AN OBSTRUCTION WAS REQUIRED TO MEET THE RF SYSTEM DESIGN REQUIREMENTS AND PERFORMANCES.



ITEM #	QTY	PART NUMBER	DESCRIPTIONS
A	1	PV-CLAMP-LW-0106	CLAMP BRACKET (PERFECT VISION OR EOR APPROVED EQ.)
B	1	PV-CMX-CG-SM	WIRE ROPE GUIDE (PERFECT VISION OR EOR APPROVED EQ.)

② PROPOSED WIRE ROPE GUIDE ATTACHMENT - PLAN VIEW

SCALE : N.T.S.

NOTE: CONTRACTOR SHALL ENSURE THAT WIRE ROPE GUIDE DOES NOT PUSH THE WIRE ROPE OUTSIDE OF THE VERTICAL PLANE OF THE SAFETY CLIMB. CONTRACT EOR WITH PHOTOS OF SAFETY CLIMB AND COLLAR FOR FURTHER DIRECTION IF NEEDED.

CLIMBING FACILITY PHOTO

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SHEET TITLE: CLIMBING FACILITY DETAIL

SHEET NUMBER: SCF-1

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LEGEND:

(blue)	PROPOSED
(light blue)	RELOCATED
(gray)	EXISTING

MOUNT MODIFICATION SCHEDULE

NO.	ELEVATION	QUANTITY	DESCRIPTION	NOTES
1	164'-0"	3	PROPOSED V-BRACING KIT (PART #: VZWSMART-SFK3)	CONTRACTOR SHALL INSTALL ONE PROPOSED CLIP ANGLE (PART #:VZWSMART-AL333) AT EITHER END OF EACH LONG ANGLE IN THE SFK3 KIT. CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1. SEE GENERAL NOTE B.

GENERAL NOTES:

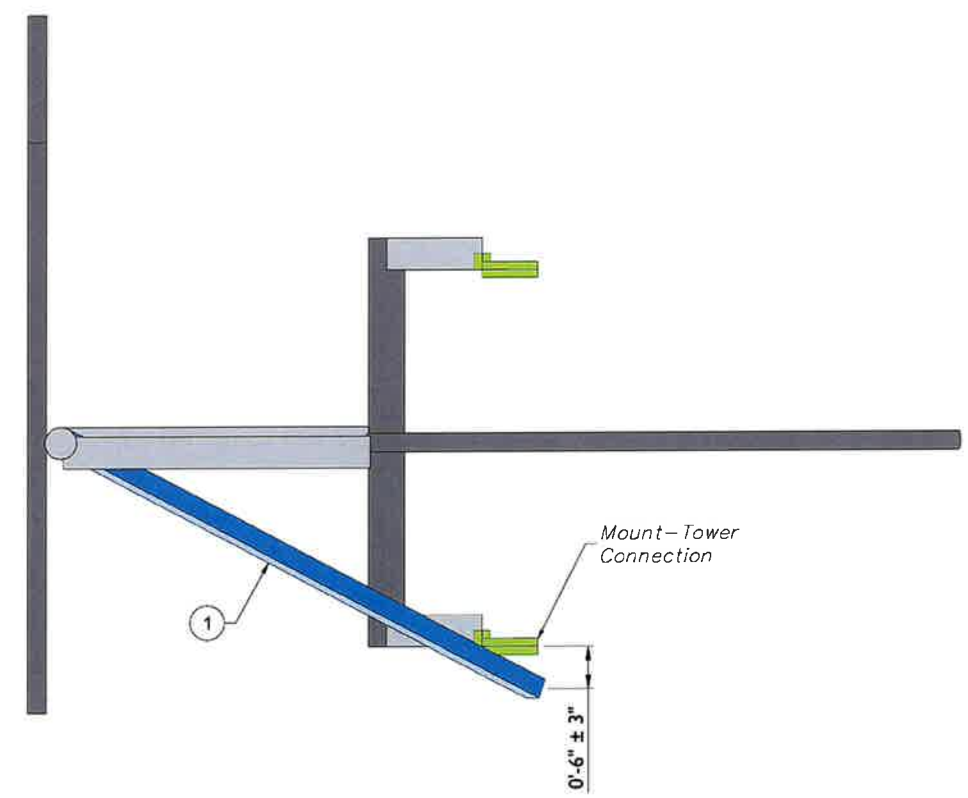
A. CONTRACTOR SHALL VERIFY THAT NEW & EXISTING STEEL IS FREE OF CORROSION. VISIBLE MINOR CORROSION SHALL BE WIRE BRUSHED CLEAN AND TREATED WITH COLD GALVANIZATION. REPORT ANY SIGNIFICANT CORROSION TO EOR

B. THREADED ROD FROM PROPOSED KITS SHALL BE TRIMMED TO EXTEND NO MORE THAN 3" BEYOND THE LOCK NUT. TREAT ALL CUT ENDS WITH (2) COATS OF COLD GALVANIZATION (ZINC KOTE, OR EOR APPROVED EQUAL).

C. MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.

1 PROPOSED ISOMETRIC VIEW (TYP. ALL SECTORS)

SCALE : N.T.S.



2 PROPOSED SIDE ELEVATION VIEW (TYP. ALL SECTORS)

SCALE : N.T.S.

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SHEET TITLE: MODIFICATION DETAILS

SHEET NUMBER: SS-1

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MOUNT PHOTO 1

MOUNT PHOTO 2

MOUNT PHOTO 3

MOUNT PHOTO 4

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE:	JOB NUMBER:
AS SHOWN	21777795

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
3	5/15/2023	ISSUED FOR CONSTRUCTION	CL	PMA
2	12/23/2022	ISSUED FOR CONSTRUCTION	CL	DRH
1	1/27/2022	ISSUED FOR CONSTRUCTION	SC	DRH
0	8/09/2021	ISSUED FOR CONSTRUCTION	SC	EA

STATE OF CONNECTICUT PETER M. ALBANO 35459 LICENSED PROFESSIONAL ENGINEER

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JPC.0000131

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

SITE NAME:

MIDDLEBURY CT
5000385567

1021 STRAITS T-PIKE
MIDDLEBURY, CT 06762
NEW HAVEN COUNTY

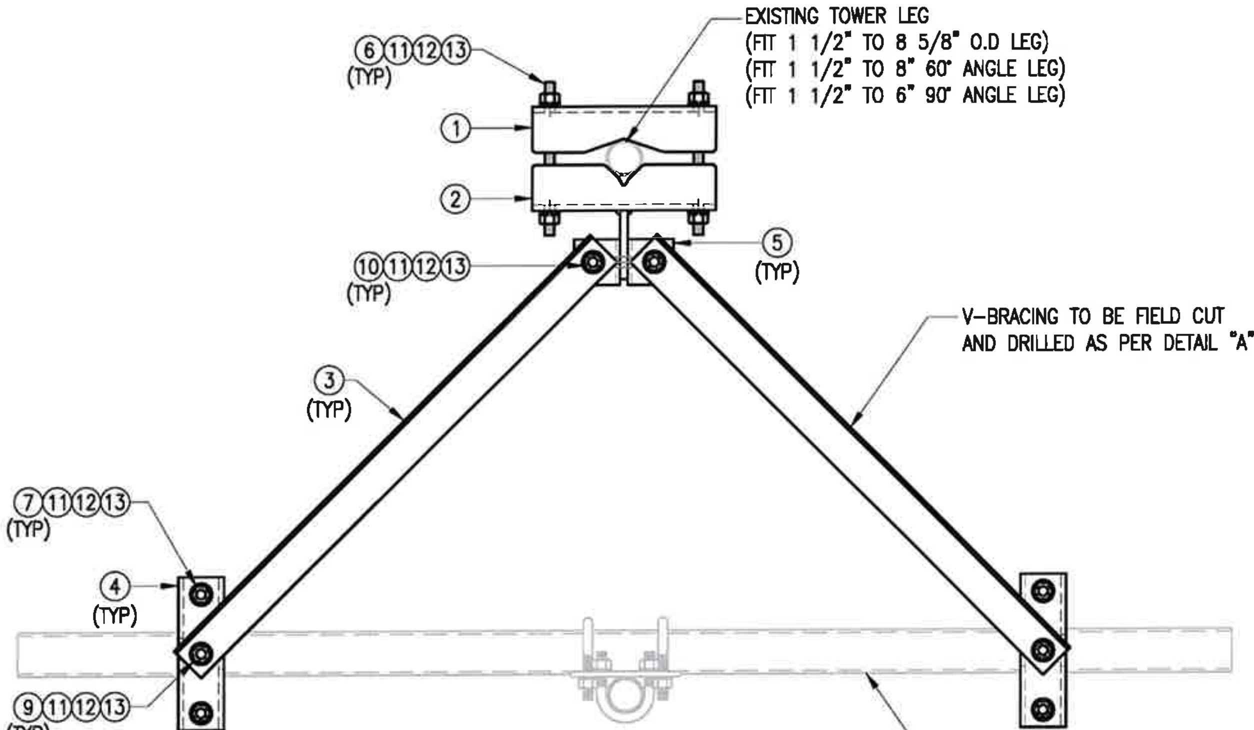
Colliers Engineering & Design

RED BANK (Headquarters)
331 Newman Springs Road, Suite 203
Red Bank, NJ 07701
Phone: 732.383.1950
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

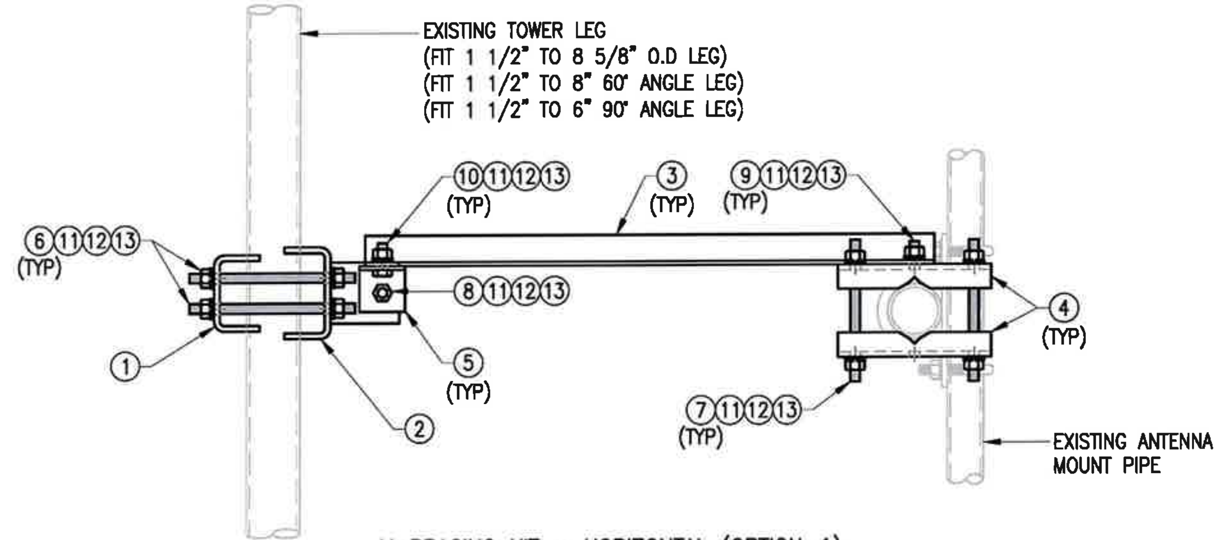
SHEET TITLE:
MOUNT PHOTOS

SHEET NUMBER:
SS-2

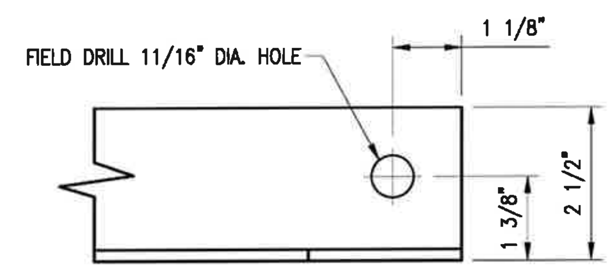
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



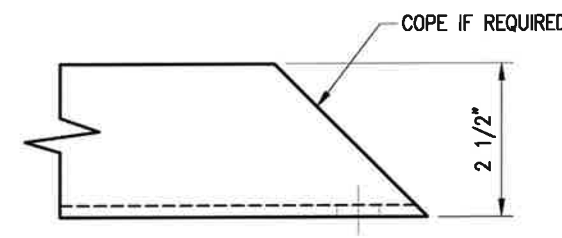
V-BRACING FOR SECTOR MOUNT
PLAN VIEW



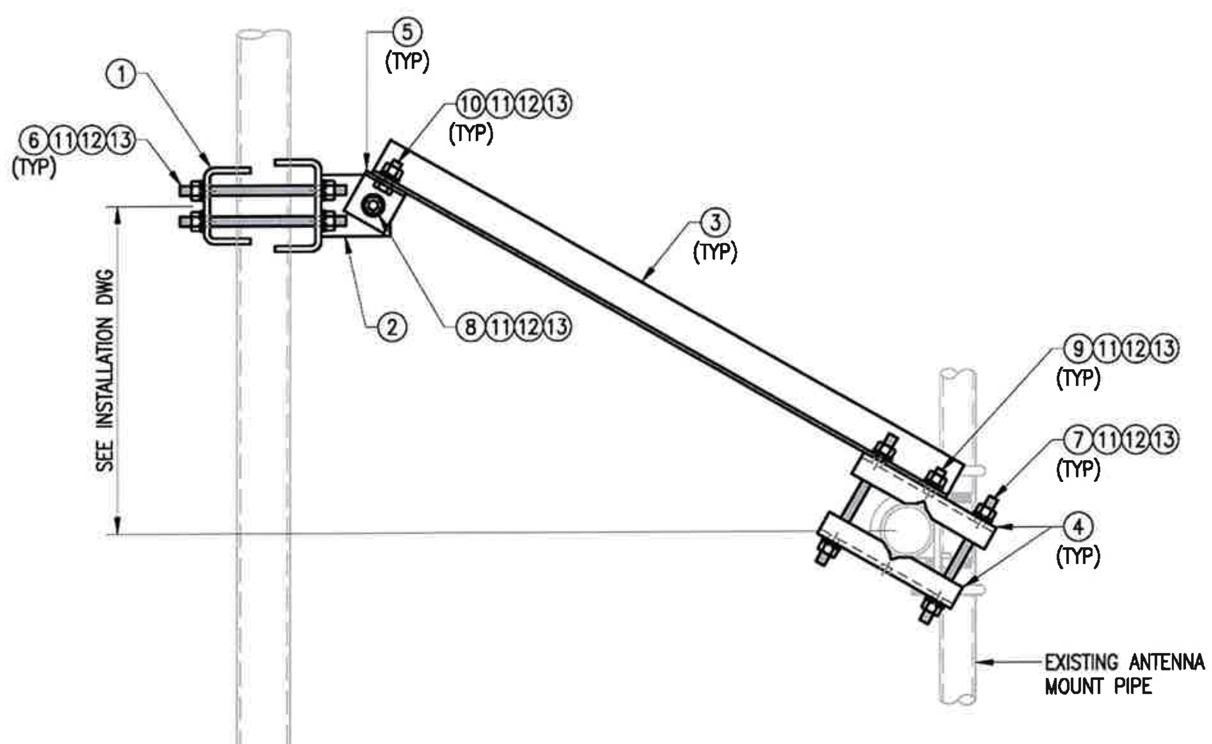
V-BRACING KIT – HORIZONTAL (OPTION-1)
SIDE VIEW



PLAN VIEW



FRONT VIEW
DETAIL "A"



V-BRACING KIT – VERTICAL (OPTION-2)
SIDE VIEW

VZWSMART-SFK3 (V-BRACING KIT)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	BP9625-12	PL 3/8" X 9 5/8" X 1'-0" A36 BENT PLATE	VBSM-F1	12
2	1	BRKW-VBSM	WELDMENT BRACKET	VBSM-F3	16
3	2	L252525-8	L 2 1/2" X 2 1/2" X 1/4" X 8'-0" A36	VBSM-F5	67
4	4	BP6875-10	PL 3/8" X 6 7/8" X 10" A36 BENT PLATE	VBSM-F2	20
5	2	AL-333	L 3" X 3" X 1/4" X 3" A36	VBSM-F2	3
6	4	---	THREADED ROD 5/8" DIA. X 1'-6" F1554-36 HDG	---	--
7	4	---	THREADED ROD 5/8" DIA. X 10" F1554-36 HDG	---	--
8	1	---	BOLT 5/8" X 2 1/4" A325	---	--
9	2	---	BOLT 5/8" X 2" A325	---	--
10	2	---	BOLT 5/8" X 1 3/4" A325	---	--
11	21	FW-625	5/8" HDG USS FLAT WASHER	---	2
12	21	LW-625	5/8" HDG LOCK WASHER	---	0
13	21	NUT-625	5/8" HDG HEX NUT	---	2
				GALVANIZED WT	122

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

VzW
SMART Tool©
Vendor

verizon✓

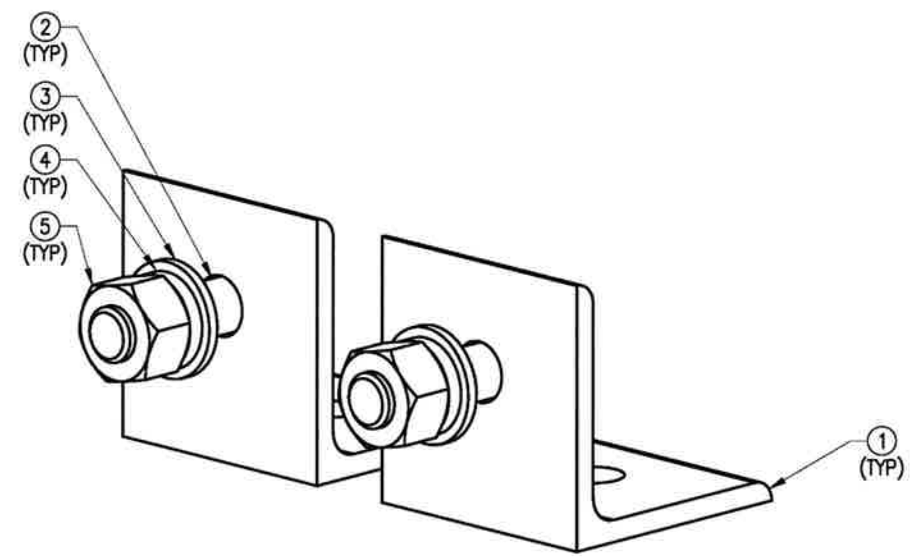
FOR REFERENCE ONLY

DRAWN BY: H.R. | CHECKED BY: HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	H.R.	05/08/20

SHEET TITLE:
VZWSMART-SFK3
V-BRACING KIT

SHEET NUMBER: VZWSMART-SFK3
REV #: 0



CLIP ANGLE
ISOMETRIC VIEW

VZWSMART-AL333 (CLIP ANGLE)					
ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	2	AL-333	L 3" X 3" X 1/4" X 3" A36	AL333-F1	2.50
2	2	---	BOLT 5/8" X 2" FULL THREAD SAE GR-5	---	0.77
3	2	FW-625	5/8" HDG USS FLAT WASHER	---	0
4	2	LW-625	5/8" HDG LOCK WASHER	---	0
5	2	NUT-625	5/8" HDG HEX NUT	---	0
				GALVANIZED WT	3.27

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

VzW SMART Tool© Vendor

verizon✓

FOR REFERENCE ONLY

DRAWN BY: JBM | CHECKED BY: ----

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	JBM	10/08/21

SHEET TITLE:
VZWSMART-AL333
CLIP ANGLE

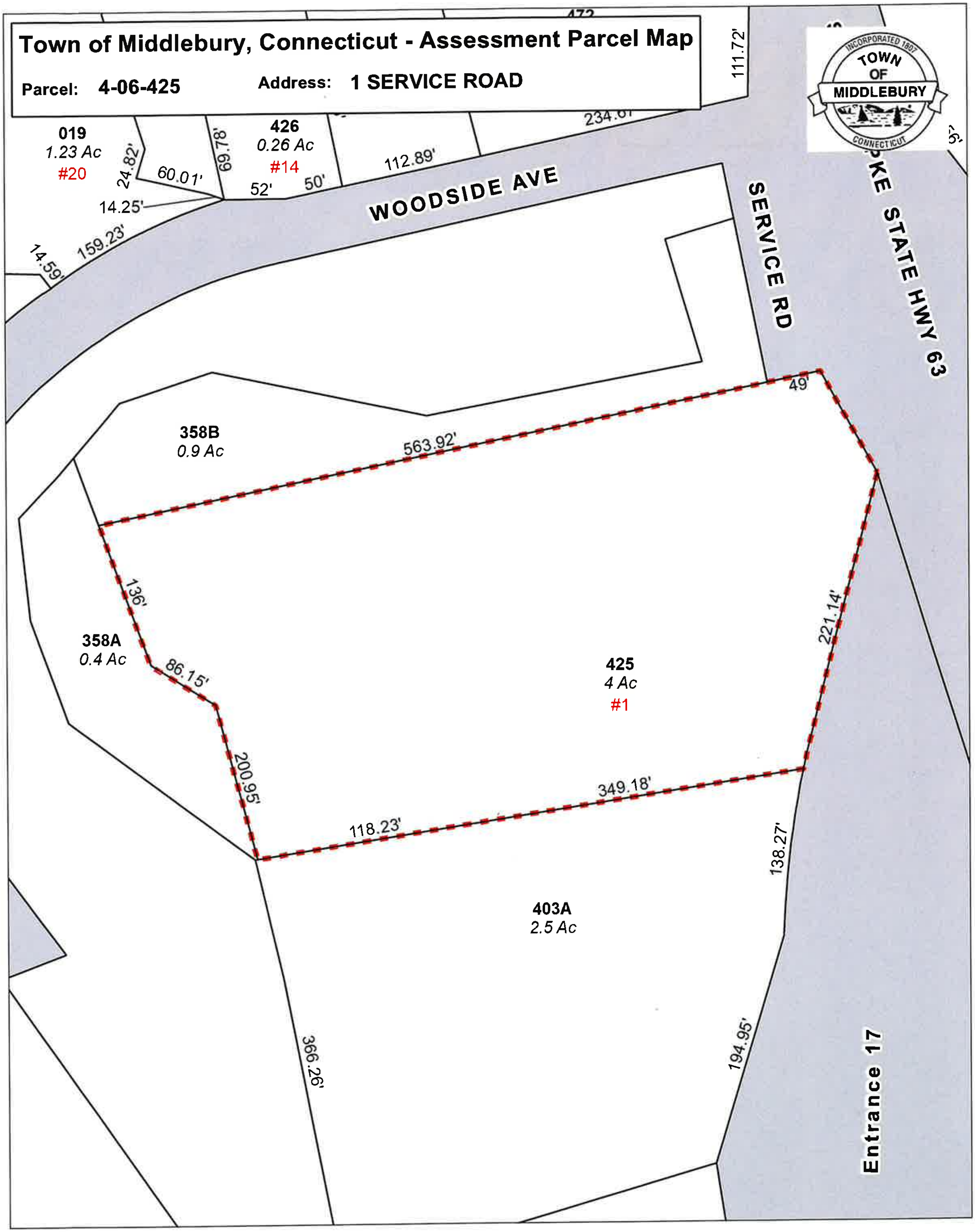
SHEET NUMBER: VZWSMART-AL333

REV #: 0

ATTACHMENT 5

Town of Middlebury, Connecticut - Assessment Parcel Map

Parcel: 4-06-425 **Address:** 1 SERVICE ROAD



Map Produced May 2020

Approximate Scale: 1 inch = 100 feet

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user.
The Town of Middlebury and its mapping contractors assume no legal responsibility for the information contained her

1 SERVICE ROAD

Location	1 SERVICE ROAD	**Mblu**	4-06/ / 425/ /
Acct#	M0336100	**Owner**	MIDDLEBURY TOWN OF
Assessment	$1,438,700	**Appraisal**	$2,055,100
PID	2352	**Building Count**	3

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$1,463,100	$592,000	$2,055,100
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$1,024,300	$414,400	$1,438,700

Owner of Record

Owner MIDDLEBURY TOWN OF
Co-Owner (TOWN GARAGE/DOG POUND/TRANSFER/PUBLIC W
Address 1 SERVICE RD
1212 WHITTEMORE RD
MIDDLEBURY, CT 06762

Sale Price $0
Certificate 1944
Book & Page 0040/0013
Sale Date .07/21/1944
Instrument XX

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
MIDDLEBURY TOWN OF	$0	1944	0040/0013	XX	07/21/1944

Building Information

Building 1 : Section 1

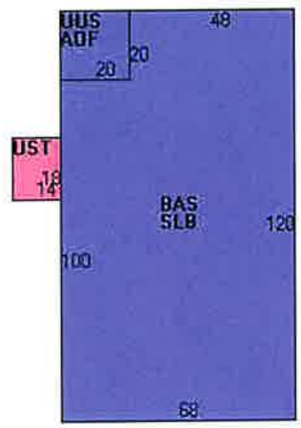
Year Built: 1991
Living Area: 8,160
Replacement Cost: $244,244
Building Percent Good: 75
Replacement Cost Less Depreciation: $183,200

Building Attributes	
Field	**Description**
Style	Pre-Eng Garage
Model	Comm/Ind
Grade	C
Stories	1 Story
Occupancy	1.00
Exterior Wall A	Pre-finsh Metl
Exterior Wall B	
Roof Structure	Gable
Roof Cover	Enam Metal
Interior Wall A	Minimum
Interior Wall B	
Interior Floor A	Concrete
Interior Floor B	
Heating Fuel	Gas
Heating Type	Hot Air-No Duc
AC Type	Partial
Struct Class	
Bldg Use	Mun Bldg Com
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use	
Heat/AC	NONE
Frame Type	STEEL
Baths/Plumbing	AVERAGE
Ceiling/Walls	NONE
Rooms/Prtns	AVERAGE
Wall Height	16.00
% Comn Wall	

Building Photo

(https://images.vgsi.com/photos/MiddleburyCTPhotos//\00\00\66\05.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	7,760	7,760
AOF	Office	400	400
SLB	Slab	7,760	0
UST	Utility Storage	252	0
UUS	Unfinished Upper Story	400	0
		16,572	8,160

Building 2 : Section 1

Year Built: 1991
Living Area: 952
Replacement Cost: $114,326
Building Percent Good: 75
Replacement Cost Less Depreciation: $85,700

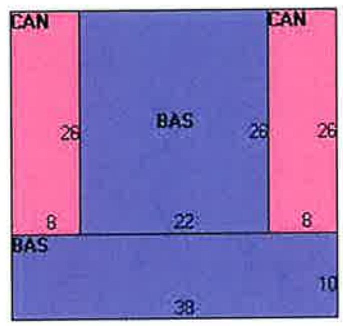
Building Attributes : Bldg 2 of 3	
Field	**Description**

Style	Vets Office
Model	Commercial
Grade	D+
Stories	1 Story
Occupancy	1.00
Exterior Wall A	Pre-finsh Metl
Exterior Wall B	Concr/Cinder
Roof Structure	Gable
Roof Cover	Enam Metal
Interior Wall A	Minimum
Interior Wall B	Drywall
Interior Floor A	Concrete
Interior Floor B	Vinyl
Heating Fuel	Gas
Heating Type	Hot Air-No Duc
AC Type	Central
Struct Class	
Bldg Use	Mun Bldg Com
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use	
Heat/AC	HEAT/AC PKGS
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Walls	NONE
Rooms/Prtns	AVERAGE
Wall Height	16.00
% Comn Wall	

Building Photo

(https://images.vgsi.com/photos/MiddleburyCTPhotos//\00\00\66\06.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	952	952
CAN	Canopy	416	0
		1,368	952

Building 3 : Section 1

Year Built: 1991
Living Area: 17,640
Replacement Cost: $868,374
Building Percent Good: 75
Replacement Cost Less Depreciation: $651,300

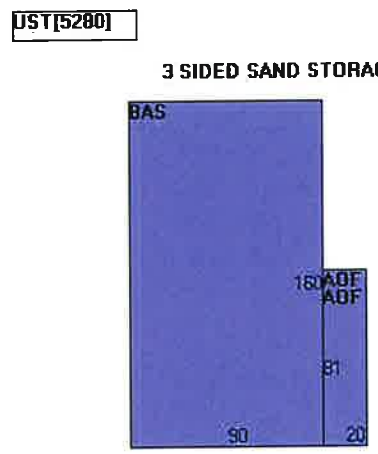
Building Attributes : Bldg 3 of 3	
Field	**Description**
Style	Pre-Eng Warehs
Model	Commercial
Grade	B

Stories	1 Story
Occupancy	1.00
Exterior Wall A	Pre-finsh Metl
Exterior Wall B	
Roof Structure	Gable
Roof Cover	Enam Metal
Interior Wall A	Drywall
Interior Wall B	
Interior Floor A	Concrete
Interior Floor B	Vinyl
Heating Fuel	Gas
Heating Type	Hot Air-No Duc
AC Type	Partial
Struct Class	
Bldg Use	Mun Bldg Com
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use	
Heat/AC	HEAT/AC SPLIT
Frame Type	STEEL
Baths/Plumbing	AVERAGE
Ceiling/Walls	NONE
Rooms/Prtns	AVERAGE
Wall Height	25.00
% Comn Wall	

Building Photo

(https://images.vgsi.com/photos/MiddleburyCTPhotos//\00\00\66\07.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	14,400	14,400
AOF	Office	3,240	3,240
UST	Utility Storage	6,400	0
		24,040	17,640

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
A/C	Partial AC	3242.00 S.F.	$3,600	3
SPR1	Sprinklers- Wet	17621.00 S.F.	$27,800	3
SPR1	Sprinklers- Wet	952.00 S.F.	$1,500	2
SPR1	Sprinklers- Wet	8160.00 S.F.	$12,900	1
SOL	Solar Panels	0.00 Units	$0	1
GEN3	Perm Bkup Generator 30kw	1.00 Units	$800	1

GEN3	Perm Bkup Generator 30kw		1.00 Units	$800	3

Land

Land Use

Use Code 931
Description Mun Garage
Zone CA40
Neighborhood C100
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 4
Frontage 0
Depth 0
Assessed Value $414,400
Appraised Value $592,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
ANTG	Guyed Tower	C	Cellular	295.00 L.F.	$36,800	2
IMP	Implement Shed			286.00 S.F.	$1,500	1
FN1	4' Chain Fence			5000.00 L.F.	$26,300	2
IMP	Implement Shed			360.00 S.F.	$1,900	1
IMP	Implement Shed			200.00 S.F.	$1,100	1
PAV1	Paving-Asphalt			20000.00 S.F.	$20,000	3
TWR	Cell Tower			1.00 Units	$378,000	1
KSK3	Kiosk - Office			128.00 S.F.	$10,100	1
KSK3	Kiosk - Office			160.00 S.F.	$7,600	1
GCAN	Gas Canopy			814.00 S.F.	$12,200	3

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$1,450,300	$592,000	$2,042,300
2019	$1,450,300	$592,000	$2,042,300
2018	$1,450,300	$592,000	$2,042,300

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$1,015,300	$414,400	$1,429,700
2019	$1,015,300	$414,400	$1,429,700
2018	$1,015,300	$414,400	$1,429,700

ATTACHMENT 6

Middlebury

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	2	2	neopost 05/18/2023 US POSTAGE $003.19 ZIP 06103 041L12203937 OLD STATE HOUSE STATION 06103 MAY 18 2023 USPS
	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.	Edward B. St. John, First Selectman Town of Middlebury 1212 Whittemore Road Middlebury, CT 06762				
2.	Curtis Bosco, Zoning Enforcement Officer Town of Middlebury 1212 Whittemore Road Middlebury, CT 06762				
3.					
4.					
5.					
6.					

PS Form **3665,** January 2017 (Page 1 of 1) PSN 7530-17-000-5549

See Reverse for Instructions