April 11, 2023

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

Re: Notice of Exempt Modification New Cingular Wireless PCS LLC ("AT&T") Site CT1195
345 North Main Street, West Hartford, CT 06107 (the "Property")
Latitude: 41.78458 N Longitude: 72.74864 W

Dear Ms. Bachman:

AT&T currently maintains (9) antennas at the 68' level on the existing 83' guyed lattice tower ("Tower") and (3) antennas at the 56'+- level on the existing AT&T rooftop equipment shelter at 345 North Main Street aka 2523 Albany Avenue in West Hartford, CT. The Tower is owned by Vertical Bridge ("Vertical") and the property is owned by Bishop's Corner SC LLC. AT&T intends to modify its facility by replacing all (12) antennas with (2) DMP65R-BU8D & (1) DMP65R-BU6D antennas at the 68' level, (3) AIR6419 B77G antennas at the 70' 8" level, (3) AIR6449 B77 antennas at the 67' level of the existing tower and (2) TPA65R-BU8D & (1) TPA65R-BU6D antennas at the 56' level of the existing AT&T shelter. The AIR6419 B77G & AIR6649 B77 antennas are stacked one on top of the other. AT&T also intends on removing (3) Remote Radio Units and replacing them with (3) 4478 B14 at the 56' level on the shelter, (3) 4449 B5/B12 at the 68' level & (3) 4426 B66 RRUs at the 68' level of the Tower. The height of AT&Ts existing antennas & RRUS is 68' & 56' and the proposed antennas and RRUs is 56', 67', 68', and 70'8" level on the Tower and rooftop.

This modification may include B2, B5, B17, B14, B29, B30, B66 & n77 hardware that is 4G(LTE) and/or 5GNR capable through remote software configuration and either or both services may be turned on or off at various times.

The Tower received Town of West Hartford site plan approval on June 12, 1997. AT&T received Building/Zoning Permit approval at the same time. The CT Siting Council approved AT&T's modifications to its facility on November 9, 2012, under EM-CING-155-121022.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies ("R.C.S.A") §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A §16-50j-72(b)(2). In accordance with to R.C.S.A §16-50j-73, a copy of this letter is being sent to the Hon. Shari Cantor, Mayor, Town of West Hartford, Mr. Todd Dumais, Town Planner, Town of West Hartford, Bishop's Corner SC, LLC, the property owner and Vertical Bridge, the Tower owner.

The planned modification of the facility falls squarely within those activities explicitly provided for in R.C.S.A §16-50j-72(b)(2). Specifically:

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

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

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

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

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

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

For the foregoing reasons, AT&T respectfully submits the proposed equipment modifications to the above referenced telecommunication facility constitute an exempt modification pursuant to R.C.S.A §16-50j-72(b)(2).

Sincerely,

Hollis M. Redding

Hollis M. Redding
SAI Communications, LLC
12 Industrial Way
Salem, NH 03079
Mobile: 860-834-6964
hredding@saigrp.com

Enclosures

Cc: Hon. Shari Cantor, Mayor, Town of West Hartford
Mr. Todd Dumais, Town Planner, Town of West Hartford
Bishop's Corner SC, LLC, the property owner
Vertical Bridge, the tower owner

SAI Group
12 Industrial Way
Salem, NH 03079
(603) 421-0470
www.saigrp.com

Radio Frequency Exposure Theoretical Study

Prepared For:

AT&T Mobility

Site Name:	West Hartford Bishops Corner
FA#:	10035096
Site ID:	CT1195
Address:	345 North Main Street, West Hartford, CT 06117

Prepared by: **SAI Group**
12 Industrial Way
Salem, NH 03079
(603) 421-0470

Date of Report: April 10, 2023

Statement of Compliance

AT&T's proposed antenna installation along with other existing antennas is calculated to be within *13.5%* of FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure (MPE).

Table of Contents

1 General Summary

SAI Group was contracted by AT&T Mobility to conduct a Radio Frequency (RF) Analysis for a wireless facility located at 345 North Main Street, West Hartford, CT to determine whether the radio facility is in compliance with Federal Communications Commission (FCC) regulations and standards regarding RF exposure.

RF exposure is calculated in accordance with FCC's suggested prediction methods.

2 Site Compliance Summary

Compliance Summary (General Public Limit)	
Site Compliance	Yes
Maximum Calculated %MPE at 0-6' Ground Level (Cumulative)	13.5% at about 182ft West of the tower.

3 RF Design Specifications

Table below shows the technical data used for the calculation of cumulative %MPE results.

Ant ID	Operator	Antenna Make	Antenna Model	Type	TX Freq (MHz)	Az (Deg)	Ant Gain (dBd)	Total ERP (Watts)	Z Rad Center (ft)
1	AT&T	CCI	TPA65R-BU8D	Panel	700	30	12.95	3156	56.00
1	AT&T	CCI	TPA65R-BU8D	Panel	2300	30	14.65	2917	56.00
1	AT&T	CCI	TPA65R-BU8D	Panel	1900	30	15.15	2619	56.00
1	AT&T	CCI	TPA65R-BU8D	Panel	1900	30	15.15	1309	56.00
1	AT&T	CCI	TPA65R-BU8D	Panel	1900	30	15.15	1309	56.00
2	AT&T	ERICSSON	AIR6419 B77G	Panel	3500	30	23.45	23990	70.67
3	AT&T	ERICSSON	AIR6449 B77	Panel	3700	30	23.5	24268	67.00
4	AT&T	CCI	DMP65R-BU8D	Panel	700	30	12.25	1343	68.00
4	AT&T	CCI	DMP65R-BU8D	Panel	850	30	12.55	1439	68.00
4	AT&T	CCI	DMP65R-BU8D	Panel	2100	30	15.45	4209	68.00
4	AT&T	CCI	DMP65R-BU8D	Panel	2100	30	15.45	4209	68.00
5	AT&T	CCI	TPA65R-BU8D	Panel	700	160	12.95	3156	56.00
5	AT&T	CCI	TPA65R-BU8D	Panel	2300	160	14.65	2917	56.00
5	AT&T	CCI	TPA65R-BU8D	Panel	1900	160	15.15	2619	56.00
5	AT&T	CCI	TPA65R-BU8D	Panel	1900	160	15.15	1309	56.00
5	AT&T	CCI	TPA65R-BU8D	Panel	1900	160	15.15	1309	56.00
6	AT&T	ERICSSON	AIR6419 B77G	Panel	3500	160	23.45	23990	70.67
7	AT&T	ERICSSON	AIR6449 B77	Panel	3700	160	23.5	24268	67.00
8	AT&T	CCI	DMP65R-BU8D	Panel	700	160	12.25	1343	68.00
8	AT&T	CCI	DMP65R-BU8D	Panel	850	160	12.75	1507	68.00
8	AT&T	CCI	DMP65R-BU8D	Panel	2100	160	15.45	4209	68.00
8	AT&T	CCI	DMP65R-BU8D	Panel	2100	160	15.45	4209	68.00
9	AT&T	CCI	TPA65R-BU8D	Panel	700	280	12.95	3156	56.00
9	AT&T	CCI	TPA65R-BU8D	Panel	2300	280	14.65	2917	56.00
9	AT&T	CCI	TPA65R-BU8D	Panel	1900	280	15.15	2619	56.00
9	AT&T	CCI	TPA65R-BU8D	Panel	1900	280	15.15	1309	56.00
9	AT&T	CCI	TPA65R-BU8D	Panel	1900	280	15.15	1309	56.00
10	AT&T	ERICSSON	AIR6419 B77G	Panel	3500	280	23.45	23990	70.67
11	AT&T	ERICSSON	AIR6449 B77	Panel	3700	280	23.5	24268	67.00
12	AT&T	CCI	DMP65R-BU8D	Panel	700	280	12.25	1343	68.00
12	AT&T	CCI	DMP65R-BU8D	Panel	850	280	12.55	1439	68.00
12	AT&T	CCI	DMP65R-BU8D	Panel	2100	280	15.45	4209	68.00
12	AT&T	CCI	DMP65R-BU8D	Panel	2100	280	15.45	4209	68.00
13	SPRINT	RFS	APXVTM14 ALU-I20	Panel	2500	30	15.85	6153	100.00
14	SPRINT	COMMSCOPE	NNVV-65B-R4	Panel	850	30	12.54	1795	100.00
14	SPRINT	COMMSCOPE	NNVV-65B-R4	Panel	1900	30	14.74	5361	100.00
14	SPRINT	COMMSCOPE	NNVV-65B-R4	Panel	850	30	12.54	1795	100.00
15	SPRINT	RFS	APXVTM14 ALU-I20	Panel	2500	130	15.85	6153	100.00
16	SPRINT	COMMSCOPE	NNVV-65B-R4	Panel	850	130	12.54	1795	100.00
16	SPRINT	COMMSCOPE	NNVV-65B-R4	Panel	1900	130	14.74	5361	100.00
16	SPRINT	COMMSCOPE	NNVV-65B-R4	Panel	850	130	12.54	1795	100.00
17	SPRINT	RFS	APXVTM14 ALU-I20	Panel	2500	270	15.85	6153	100.00
18	SPRINT	COMMSCOPE	NNVV-65B-R4	Panel	850	270	12.54	1795	100.00
18	SPRINT	COMMSCOPE	NNVV-65B-R4	Panel	1900	270	14.74	5361	100.00
18	SPRINT	COMMSCOPE	NNVV-65B-R4	Panel	850	270	12.54	1795	100.00

NOTE: The Z value indicates the distance of radiation center of the antenna height above the ground site level unless otherwise indicated. Effective Radiated Power (ERP) is provided by the operator or calculated based on SAI Group experience. SAI Group has assumed transmission parameters for "Unknown" RF emitters based on either similar installations found at other radio communications sites or from the latest data available for the site. "Generic" antenna models have been used where existing antenna part numbers or radiation patterns are not available. The frequencies presented in this table may have been assumed in order to represent the approximate band of operation and to support a worst-case calculation of power density

4 Conclusion

I certify to the best of my knowledge that the statements contained in this report are true and accurate. The theoretical computations contained are based on FCC recommended methods, with industry standard assumptions & formulas, and complies with FCC mandated Maximum Permissible RF Exposure requirements.

A comprehensive field survey was not performed prior to the generation of this report. If questions arise regarding the calculations herein, SAI Group recommends that a comprehensive field survey be performed to resolve any disputes.

Sanket Joshi
RF Engineer
SAI Group

April 10, 2023
Date

Matthew Smelcer
RF Engineering Manager

April 10, 2023
Date

Appendix A – FCC Rules and Regulations

In 1996, the Federal Communication Commission (FCC) adopted procedures and guidelines for evaluating of the effects of RF exposure. This guideline from the FCC Office of Engineering and Technology is Bulletin 65 ("OET Bulletin 65"), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate.

Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following Tables and diagram:

Table 1. MPE Limits for General Population/ Uncontrolled Exposure

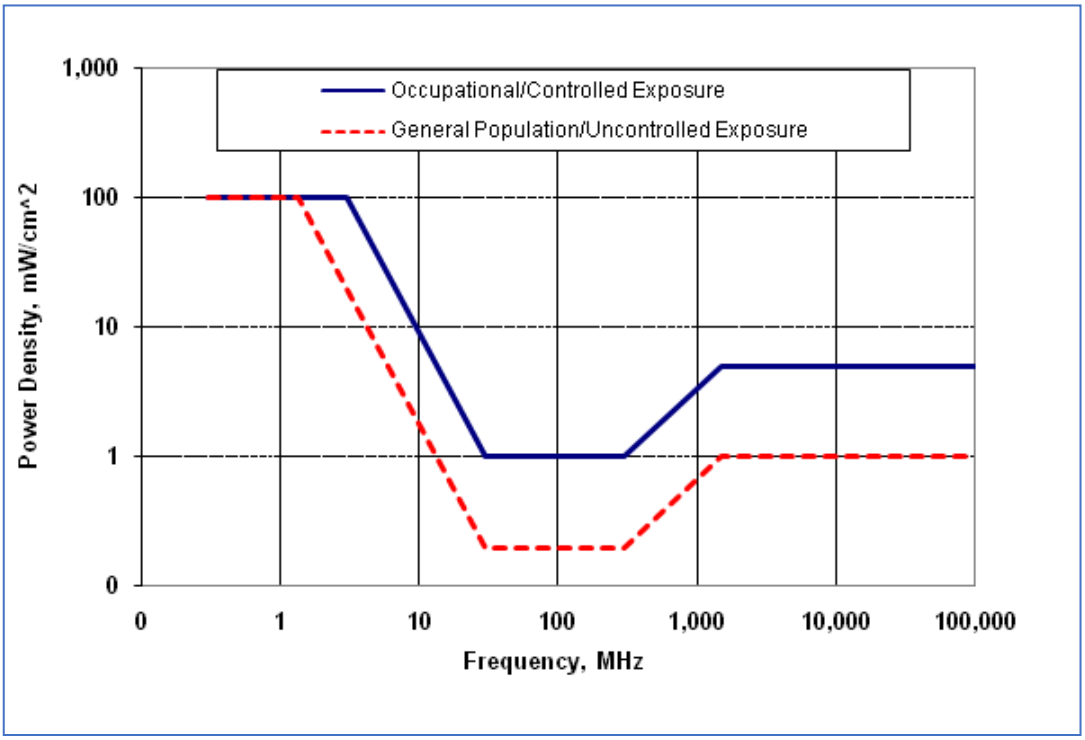
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time for $\|E\|^2$, $\|H\|^2$, or S (Minutes)
0.3 – 1.34	614	1.63	(100)*	30
1.34 -30	824/f	2.19/f	$(180/f^2)$*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	--	--	f/1500	30
1500– 100,000	--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

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 can't exercise control over their exposure. A site is evaluated with General Public limits if there is no access controls or no RF warning signage present.

Table 2. MPE Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time for $\|E\|^2$, $\|H\|^2$, 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	--	--	5.0	6
f = frequency in MHz		* = Plane wave equivalent power density		

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 such occupational/controlled limits apply provided he or she is made aware of the potential for exposure. Typical criteria to remediate controlled environment are restricted access to the areas where antennas are located along with appropriate RF warning signage. A site with Controlled environment is evaluated with Occupational limits.



Maximum Permissible Exposures. Occupational/Controlled and General Population/Uncontrolled MPE's are functions of frequency.

Appendix B – Calculations Methodology and Assumptions

SAI Group has performed theoretical analysis using Waterford Consultants' RoofMaster™ 2020 Version 30.5.26.2022 which uses a cylindrical model for very conservative power density calculations within the near field of the antenna where the antenna pattern has not truly formed yet. The Cylindrical Model is used to determine the spatially averaged power density in the near field directly in front of an antenna. In order to implement this model in all directions, the calculations utilize the antenna manufacturer horizontal pattern data. Additionally, the model also incorporates factors that reduce the power density by inverse square of horizontal and vertical distances beyond the near field region.

RoofMaster™ uses far field model to calculate the spatial peak power density. The RoofMaster™ implementation of this model incorporated manufacturer's horizontal and vertical pattern data to determine the power density in all directions.

The calculations are based on worst-case assumptions that, all antennas are always operating at full power.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur, but are shown as a prediction that could be realized.

Appendix C – Informative References

The following references can be followed for further information about RF Health and Safety.

FCC Radio Frequency Safety
http://www.fcc.gov/encyclopedia/radio-frequency-safety

FCC OET Bulletin 56
https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf

FCC OET Bulletin 65
https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65.pdf

National Council on Radiation Protection and Measurements (NCRP)
http://www.ncrponline.org

American National Standards Institute (ANSI)
http://www.ansi.org

Environmental Protection Agency (EPA)
https://www3.epa.gov/radtown/wireless-technology.html

National Institutes of Health (NIH)
http://www.niehs.nih.gov/health/topics/agents/emf/

Occupational Safety and Health Agency (OSHA)
http://www.osha.gov/SLTC/radiofrequencyradiation/

International Commission on Non-Ionizing Radiation Protection (ICNIRP)
http://www.icnirp.org/

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING ROOF TOP:
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: TPA65R-BU8D (TYP. OF 1 PER ALPHA & GAMMA SECTOR, TOTAL OF 2).
- NEW AT&T ANTENNAS: DMP65R-BU8D (TYP. OF 1 PER ALPHA & GAMMA SECTOR, TOTAL OF 2).
- NEW AT&T ANTENNAS: TPA65R-BU6D (TOTAL OF 1 PER BETA SECTOR).
- NEW AT&T ANTENNAS: DMP65R-BU6D (TOTAL OF 1 PER BETA SECTOR).
- NEW AT&T RRUS: 4478 B14 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4449 B5/B12 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4426 B66 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: RRUS-32 B2 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 1).
- EXISTING AT&T RRUS: RRUS-32 B30 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 1).
- NEW AT&T SURGE ARRESTOR: DC9-48-60-24-8C-EV (TOTAL OF 1) (ON THE TOWER) WITH (2) DC POWER TRUNK & (1) 24-PAIR FIBER TRUNK.
- PROPOSED MOUNT MODS (SEE S-1 SHEET).

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADD (1) 6648 + XCEDE CABLE.
- ADD (1) 6630 W/IDLe CABLE.
- PROPOSED AT&T (DC12-48-60-RMTO).
- ADD NETSURE 7100 -48V POWER PLANT.
- ADD NEW BATTERY RACK WITH (6) STRINGS.
- ADD (10) RECTIFIERS.

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNA: 7770 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T ANTENNA: TPA-65R-LCUUU-H8 (TYP. OF 1 PER ALPHA & GAMMA SECTOR, TOTAL OF 2).
- EXISTING AT&T ANTENNA: P65-17-XLH-RR (TYP. OF 2 PER ALPHA & GAMMA SECTOR, TOTAL OF 2).
- EXISTING AT&T ANTENNA: QS66512-2 (TOTAL OF 1 PER BETA SECTOR).
- EXISTING AT&T ANTENNA: AM-X-CD-16-65-00T-RET (TOTAL OF 1 PER BETA SECTOR).
- EXISTING AT&T RRUS: RRUS-11 B12 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T TMA'S: TT19-08BP111-001 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T DIPLEXER: LGP21901 (TYP. OF 4 PER SECTOR, TOTAL OF 12).
- EXISTING AT&T SURGE ARRESTOR: DC6-48-60-18-8F (TOTAL OF 3).
- EXISTING (12) COAX CABLES.

ITEMS TO REMAIN:
(6) RRU'S, (4) SURGE ARRESTOR, (8) DC POWER & (4) FIBER.

SITE ADDRESS:	345 NORTH MAIN STREET WEST HARTFORD, CT 06117
LATITUDE:	41.78458° N, 41° 47' 4.47" N
LONGITUDE:	72.74864° W, 72° 44' 55.09" W
TYPE OF SITE:	ROOF TOP / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	33'-0"±
RAD CENTER:	56'-0"± & 68'-0"± (LTE), 70'-8"± 3.45GHZ & 67'-0"± C-BAND
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	4
GN-1	GENERAL NOTES	4
A-1	ROOFTOP & EQUIPMENT PLANS	4
A-2	EXISTING ANTENNA PLAN	4
A-3	PROPOSED ANTENNA PLAN	4
A-4	ELEVATION	4
A-5	DETAILS	4
A-6	DETAILS	4
A-7	DETAILS	4
SN-1	STRUCTURAL NOTES	4
S-1	MOUNT MODIFICATION DESIGN	4
S-2	STRUCTURAL MODIFICATION DESIGN	4
S-3	STRUCTURAL MODIFICATION DESIGN	4
S-4	STRUCTURAL MODIFICATION DESIGN	4
G-1	GROUNDING DETAILS	4
RF-1	RF PLUMBING DIAGRAM	4

SITE NUMBER: CT1195

SITE NAME: WEST HARTFORD BISHOPS CORNER

FA CODE: 10035096

PACE ID: MRCTB052246, MRCTB050863, MRCTB051344, MRCTB051306, MRCTB050745, MRCTB050954

PROJECT: 5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD LTE 4TH CARRIER UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

DIRECTION TO SITE:
START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. 0.4 MI TURN LEFT ONTO CAPITOL BLVD. 0.3 MI TURN LEFT ONTO WEST ST. 0.2 MI MERGE ONTO I-91 N VIA THE RAMP ON THE LEFT TOWARD HARTFORD. 9.2 MI TAKE THE I-84 W EXIT ON THE LEFT TOWARD WATERBURY. 0.2 MI TAKE THE I-91 N/TRUMBULL ST EXIT. 0.1 MI TAKE THE TRUMBULL STREET EXIT, EXIT 32B, ON THE LEFT. 0.2 MI TURN SLIGHT LEFT ONTO TRUMBULL ST. 0.2 MI TURN RIGHT ONTO US-44/MAIN ST. CONTINUE TO FOLLOW US-44. 4.1 MI TURN LEFT ONTO N MAIN ST. 0.2 MI END AT 345 N MAIN ST WEST HARTFORD, CT 06117.

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.
5. NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

   TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_ LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	T-1	4

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SAI
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2021 WITH 2022 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2020 NATIONAL ELECTRICAL CODE (NFPA 70-2020)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

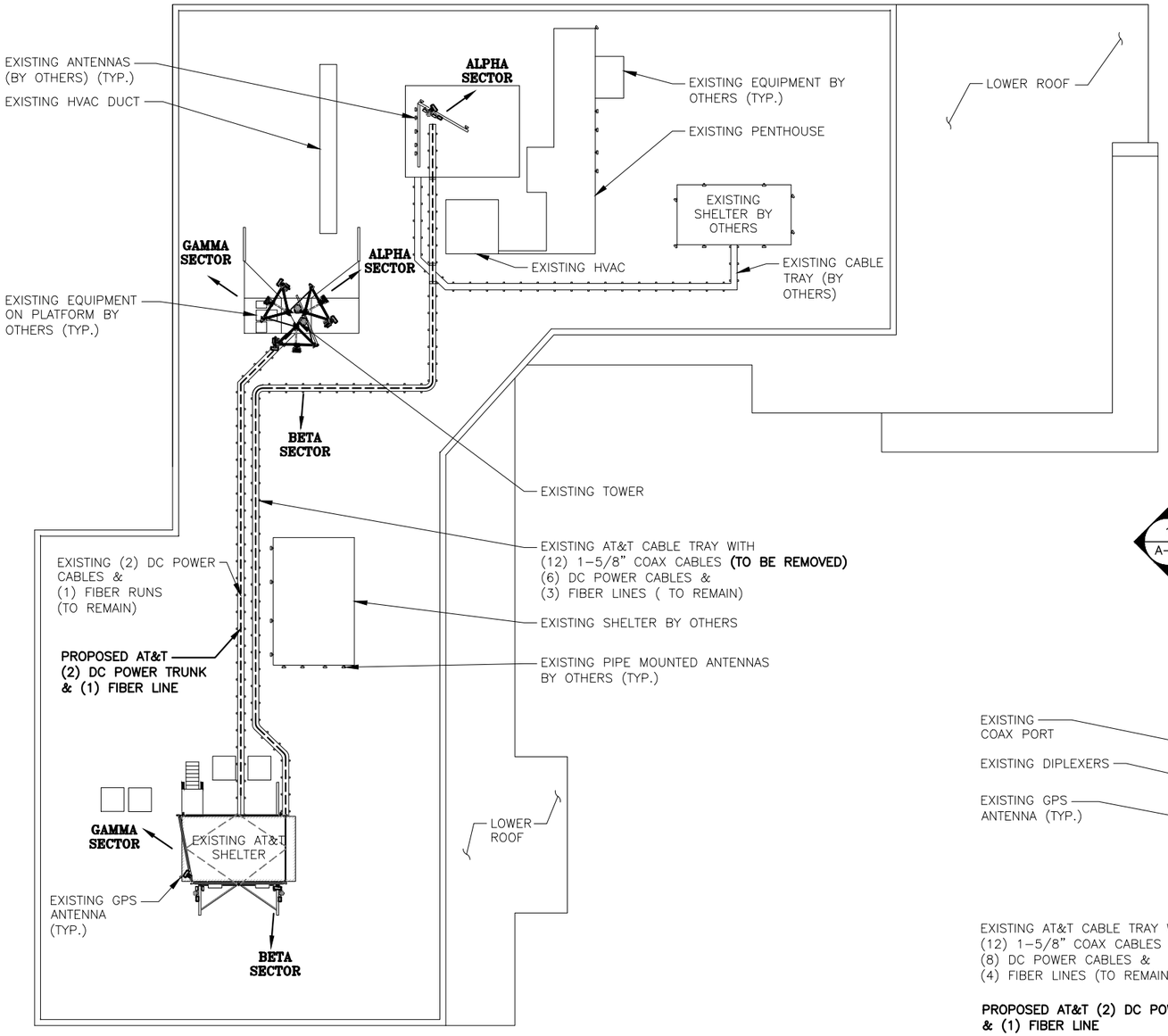
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_ LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	GN-1	4

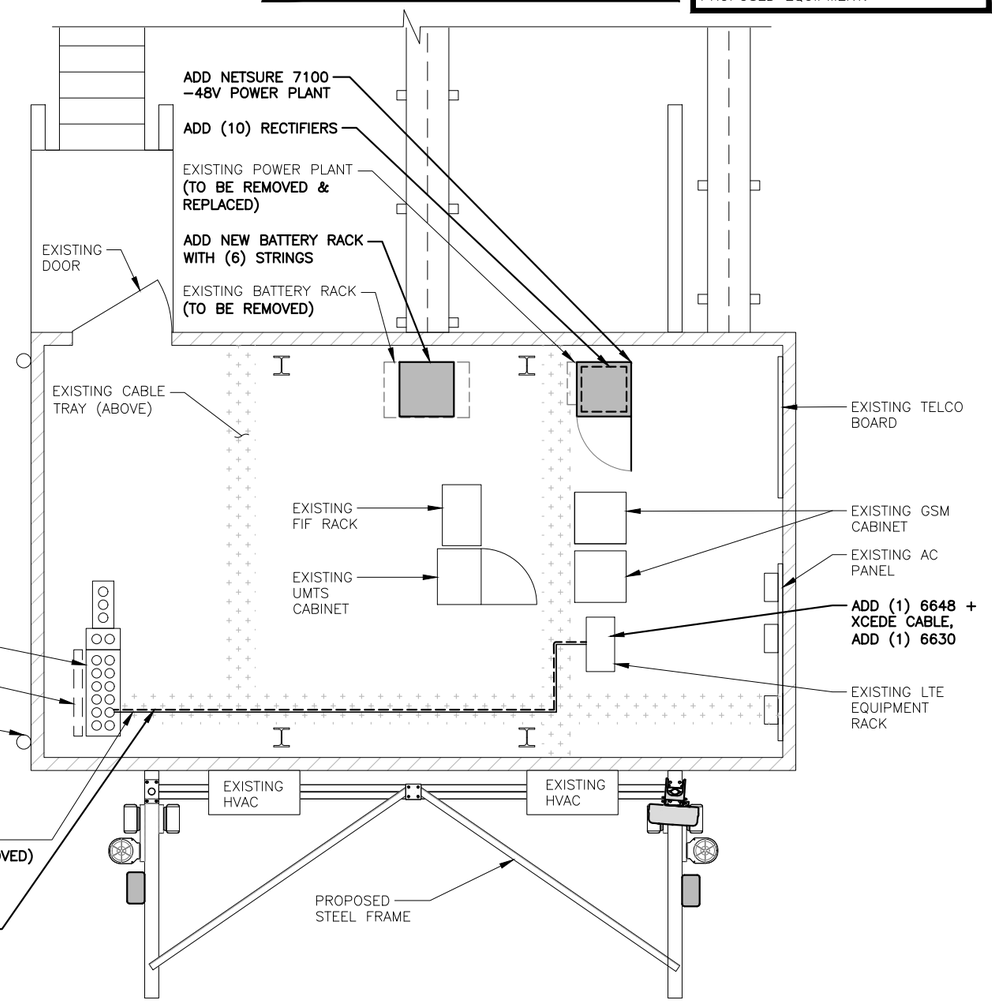


ROOF PLAN

22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"

1
A-1

0 8'-0" 16'-0" 32'-0" 48'-0"



EQUIPMENT PLAN

22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

1'-4" 2'-8" 5'-4" 8'-0"

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

REFER TO **STRUCTURAL ANALYSIS** BY: TEP OPCO, LLC.
DATED: MARCH 10, 2023 (Rev.2).
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

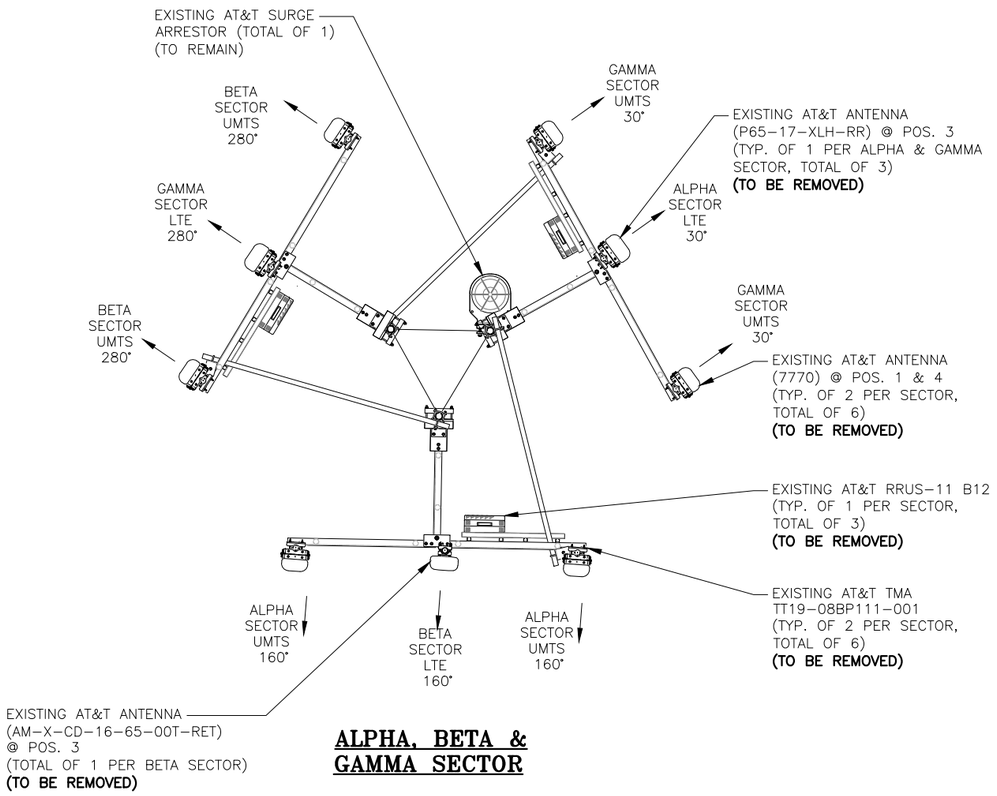
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

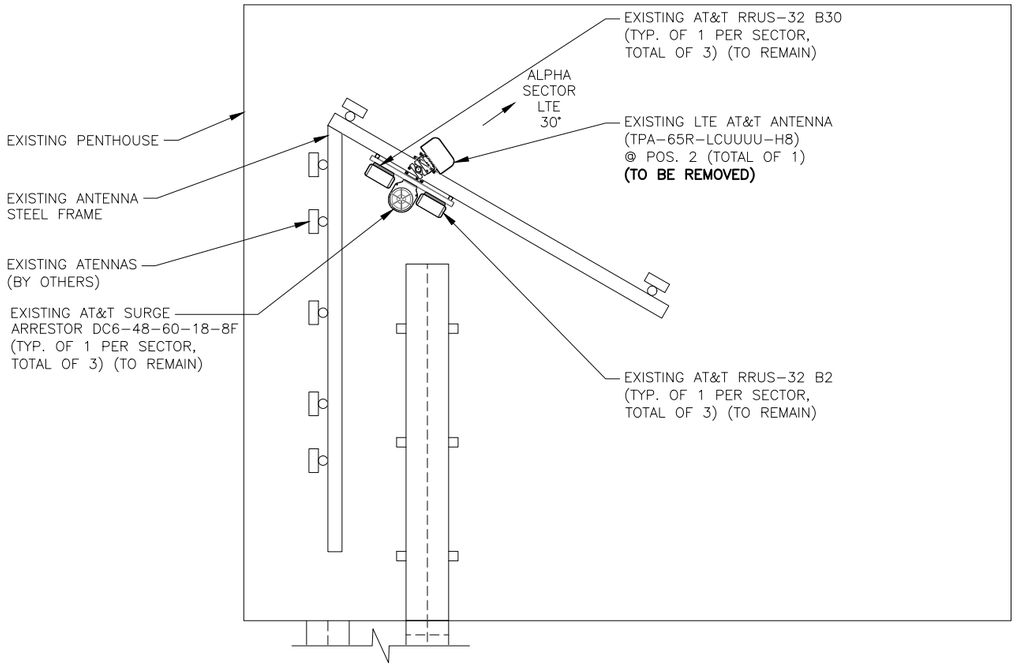
AT&T

ROOFTOP & EQUIPMENT PLANS
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_ LTE 4TH CARRIER UPGRADE

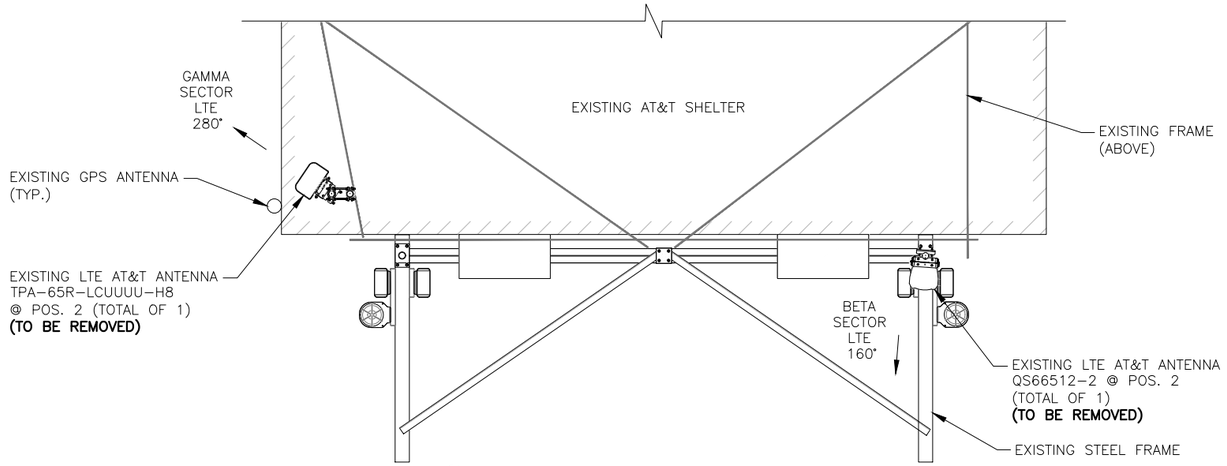
SITE NUMBER	DRAWING NUMBER	REV
CT1195	A-1	4



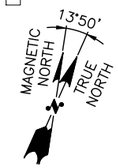
ALPHA, BETA & GAMMA SECTOR



ALPHA SECTOR



BETA & GAMMA SECTOR



EXISTING ANTENNA PLAN

SCALE: N.T.S

1 / A-2

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: TEP OPCO, LLC
DATED: MARCH 01, 2023 (Rev2).

NOTE:

REFER TO **STRUCTURAL ANALYSIS**
BY: TEP OPCO, LLC.
DATED: MARCH 10, 2023 (Rev.2).
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

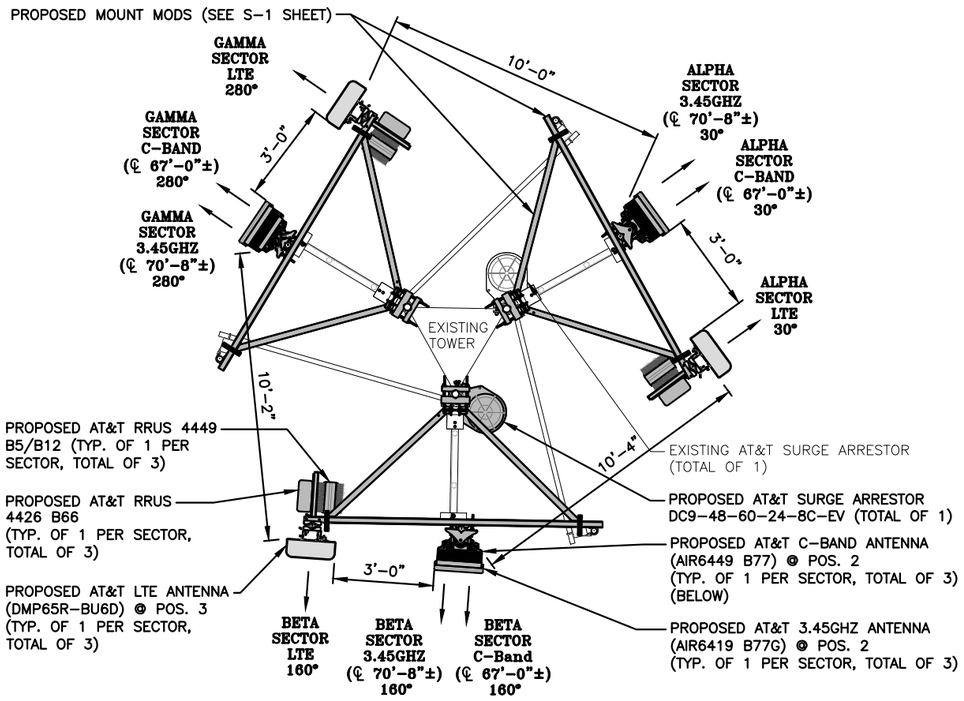
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

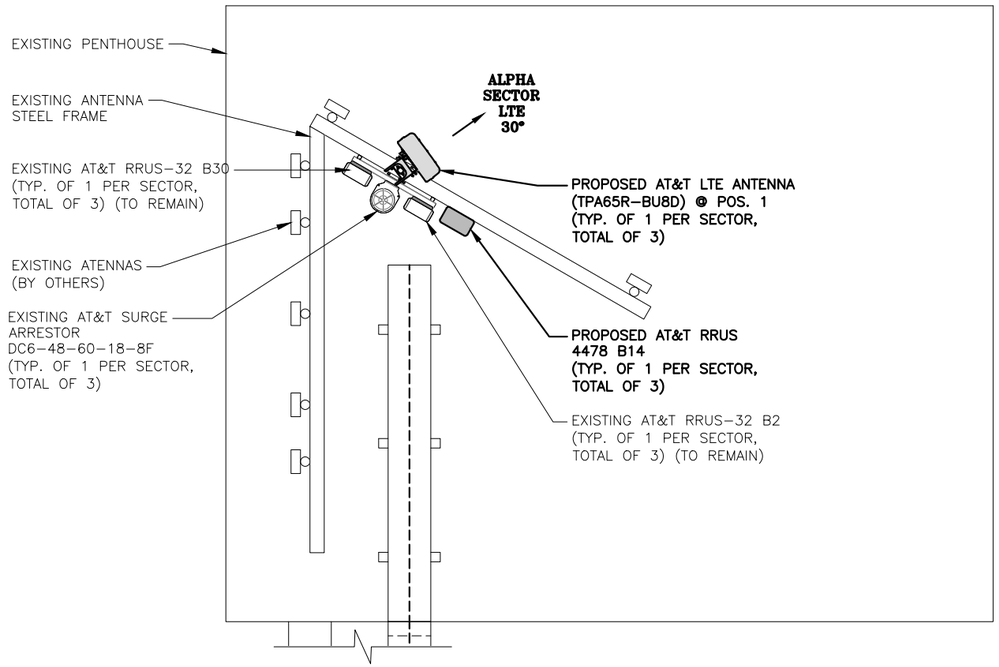
STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

EXISTING ANTENNA PLAN
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_
LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	A-2	4





ALPHA SECTOR

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: TEP OPCO, LLC
DATED: MARCH 01, 2023 (Rev2).

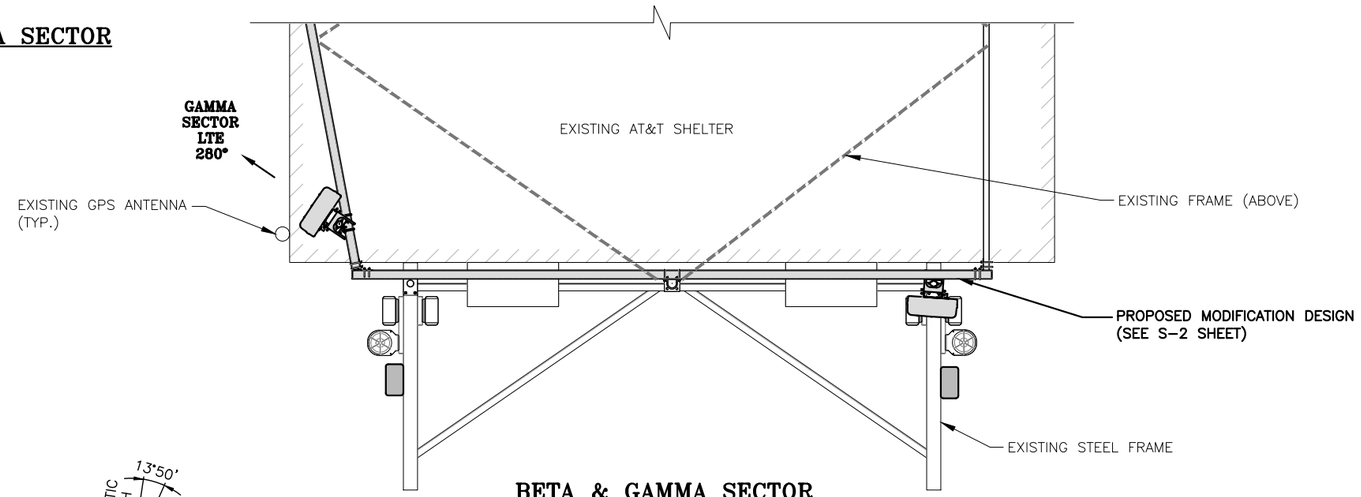
NOTE:

REFER TO **STRUCTURAL ANALYSIS**
BY: TEP OPCO, LLC.
DATED: MARCH 10, 2023 (Rev.2).
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

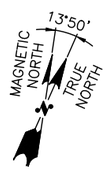
NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

ALPHA, BETA & GAMMA SECTOR



BETA & GAMMA SECTOR



PROPOSED ANTENNA PLAN

SCALE: N.T.S

1 / A-3

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

PROPOSED ANTENNA PLAN
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_
LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	A-3	4

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

NOTE:

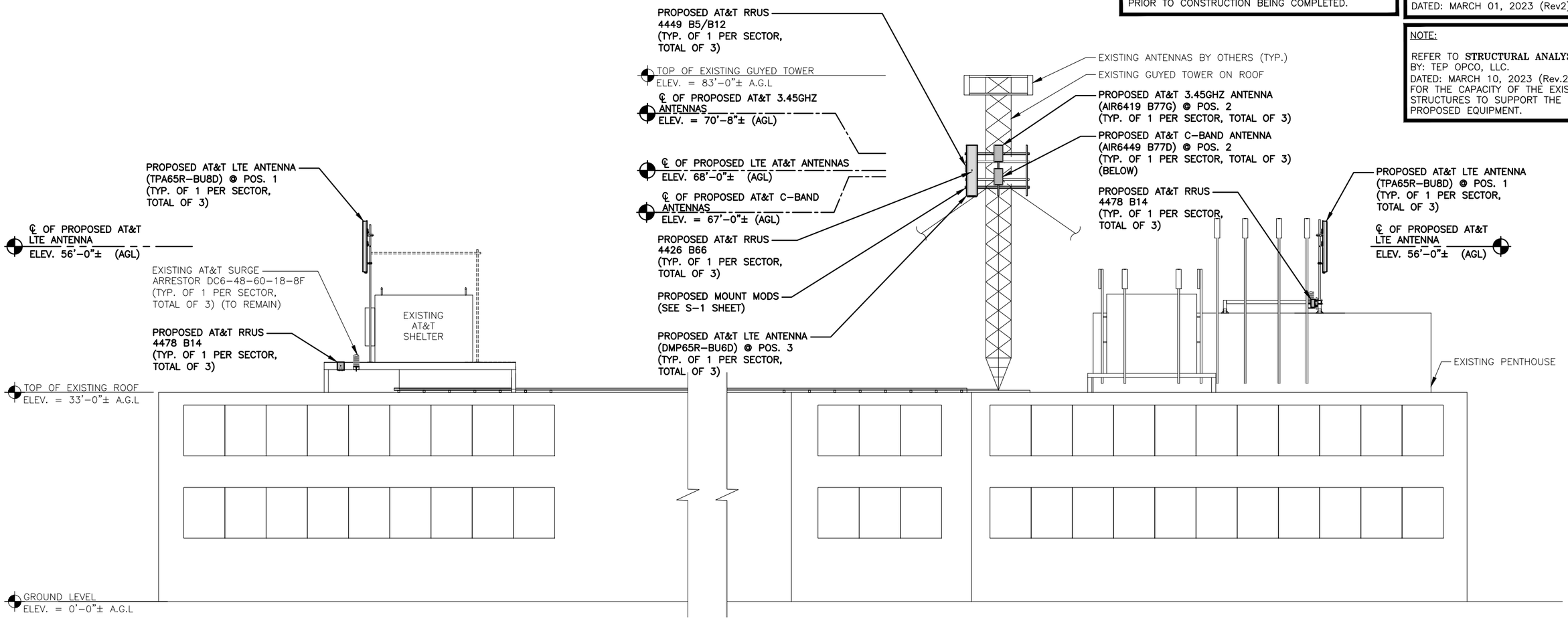
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: TEP OPCO, LLC
DATED: MARCH 01, 2023 (Rev2).

NOTE:

REFER TO **STRUCTURAL ANALYSIS**
BY: TEP OPCO, LLC.
DATED: MARCH 10, 2023 (Rev.2).
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



ELEVATION (1 / A-4)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

ELEVATION
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_
LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	A-4	4

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	PROPOSED	LTE 700/PCS/WCS	TPA65R-BU8D	96X21X7.8	56'-0"±	30°	–	(P)(1) 4478 B14 (700) (E)(1) RRUS-32 B2 (WCS) (E)(1) RRUS-32 B30 (PCS)	18.1"x13.4"x8.3" – –	–	(E)(1) DC6-48-60-18
A2	PROPOSED	3.45GHZ+CBAND	AIR6419 B77G + AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	70'-8"± 67'-0"±	30°	–	–	–	(E)(2) DC POWER & (1) FIBER	
A3	PROPOSED	LTE 700/850/AWS	DMP65R-BU8D	96X20.7X7.7	68'-0"±	30°	–	(P)(1) 4449 B5/B12 (700/850) (P)(1) 4426 B66 (AWS)	17.9"x13.2"x10.4" 14.9"x13.2"x5.8"	–	
A4	–	–	–	–	–	–	–	–	–	–	
B1	PROPOSED	LTE 700/PCS/WCS	TPA65R-BU6D	71.2X21X7.8	56'-0"±	160°	–	(P)(1) 4478 B14 (700) (E)(1) RRUS-32 B2 (WCS) (E)(1) RRUS-32 B30 (PCS)	18.1"x13.4"x8.3" – –	–	(E)(2) DC6-48-60-18
B2	PROPOSED	3.45GHZ+CBAND	AIR6419 B77G + AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	70'-8"± 67'-0"±	160°	–	–	–	(E)(4) DC POWER & (2) FIBER	
B3	PROPOSED	LTE 700/850/AWS	DMP65R-BU6D	71.2X20.7X7.7	68'-0"±	160°	–	(P)(1) 4449 B5/B12 (700/850) (P)(1) 4426 B66 (AWS)	17.9"x13.2"x10.4" 14.9"x13.2"x5.8"	–	
B4	–	–	–	–	–	–	–	–	–	–	
C1	PROPOSED	LTE 700/PCS/WCS	TPA65R-BU8D	96X21X7.8	56'-0"±	280°	–	(P)(1) 4478 B14 (700) (E)(1) RRUS-32 B2 (WCS) (E)(1) RRUS-32 B30 (PCS)	18.1"x13.4"x8.3" – –	–	(E)(1) DC6-48-60-18 (P) (1) RAYCAP DC9-48-60-24-8C-EV
C2	PROPOSED	3.45GHZ+CBAND	AIR6419 B77G + AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	70'-8"± 67'-0"±	280°	–	–	–	(E)(2) DC POWER & (1) FIBER, (P)(2) DC POWER & (1) FIBER	
C3	PROPOSED	LTE 700/850/AWS	DMP65R-BU8D	96X20.7X7.7	68'-0"±	280°	–	(P)(1) 4449 B5/B12 (700/850) (P)(1) 4426 B66 (AWS)	17.9"x13.2"x10.4" 14.9"x13.2"x5.8"	–	
C4	–	–	–	–	–	–	–	–	–	–	

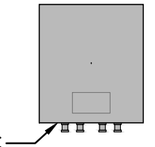
FINAL ANTENNA SCHEDULE (1 / A-5)
SCALE: N.T.S

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
P(3)	4449 B5/B12 (850/700)	17.9"x13.2"x10.4"
P(3)	4478 B14 (700)	18.1"x13.4"x8.3"
P(3)	4426 B66 (AWS)	14.9"x13.2"x5.8"
E(1)	RRUS-32 B2 (WCS)	27.2"x12.1"x7.0"
E(1)	RRUS-32 B30 (PCS)	27.2"x12.1"x7.0"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (2 / A-5)
SCALE: N.T.S

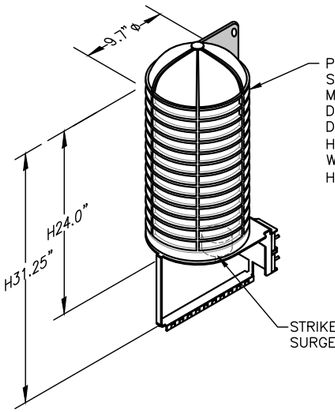
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: TEP OPCO, LLC
DATED: MARCH 01, 2023 (Rev2).

NOTE:
REFER TO **STRUCTURAL ANALYSIS**
BY: TEP OPCO, LLC.
DATED: MARCH 10, 2023 (Rev.2).
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE TO GENERAL CONTRACTOR:
(PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

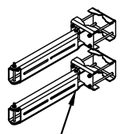


PROPOSED SURGE SUPPRESSOR
MODEL NUMBERS:
DC9-48-60-24-8C-EV
DIMENSIONS:
H24.0"x9.7"ø
WITH BRACKET:
H31.25"X9.7"ø

STRIKESORB 30-V1
SURGE PROTECTIVE DEVICE

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (4 / A-5)
SCALE: N.T.S

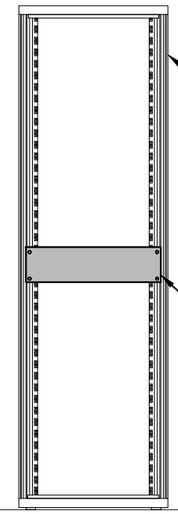


DUAL RRU MOUNT
(ROSENBERGER PART# D220RRUDSM) (TYP. OF 2 PER SECTOR, TOTAL OF 6)

DUAL RRU MOUNT DETAIL (5 / A-5)
SCALE: N.T.S

PROPOSED VERTIV/NETSURE 7100 POWER PLANT
(TO REPLACE EXISTING)

PROPOSED VERTIV/NETSURE 7100 POWER PLANT DETAIL (6 / A-5)
SCALE: N.T.S

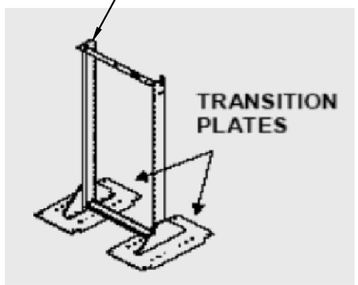


EXISTING LTE RACK

PROPOSED AT&T
(DC12-48-60-RMTO)
(TOTAL OF 1)

PROPOSED DC12 MOUNTING DETAIL (7 / A-5)
SCALE: N.T.S

PROPOSED BATTERY RACK
VERTIV #562353 WITH
6 STR BATT



NOTE:
MOUNT PROPOSED EQUIPMENT PER MANUFACTURER'S SPECIFICATIONS

PROPOSED VERTIV BATTERY RACK (8 / A-5)
SCALE: N.T.S

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

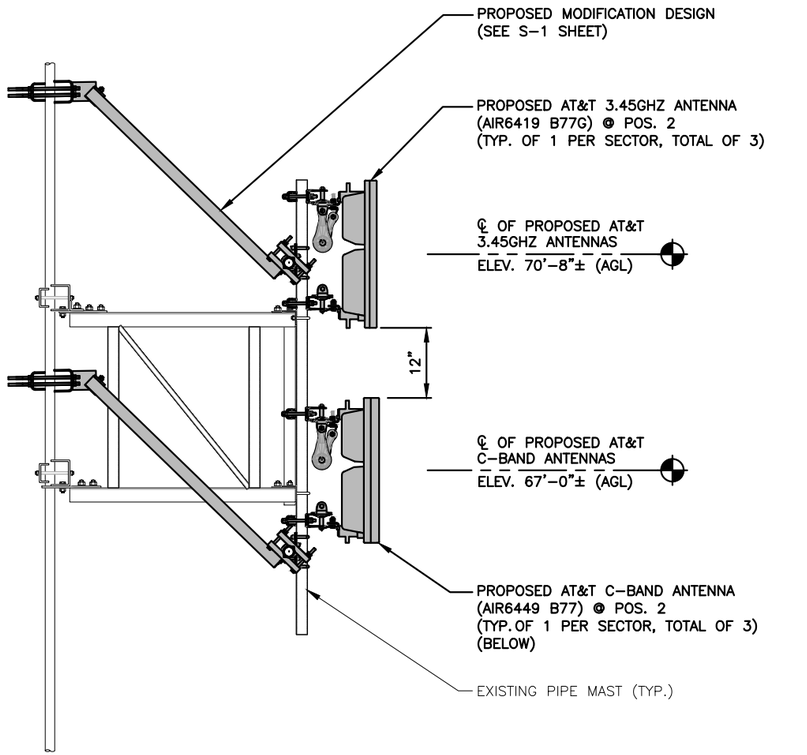
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_
LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	A-5	4

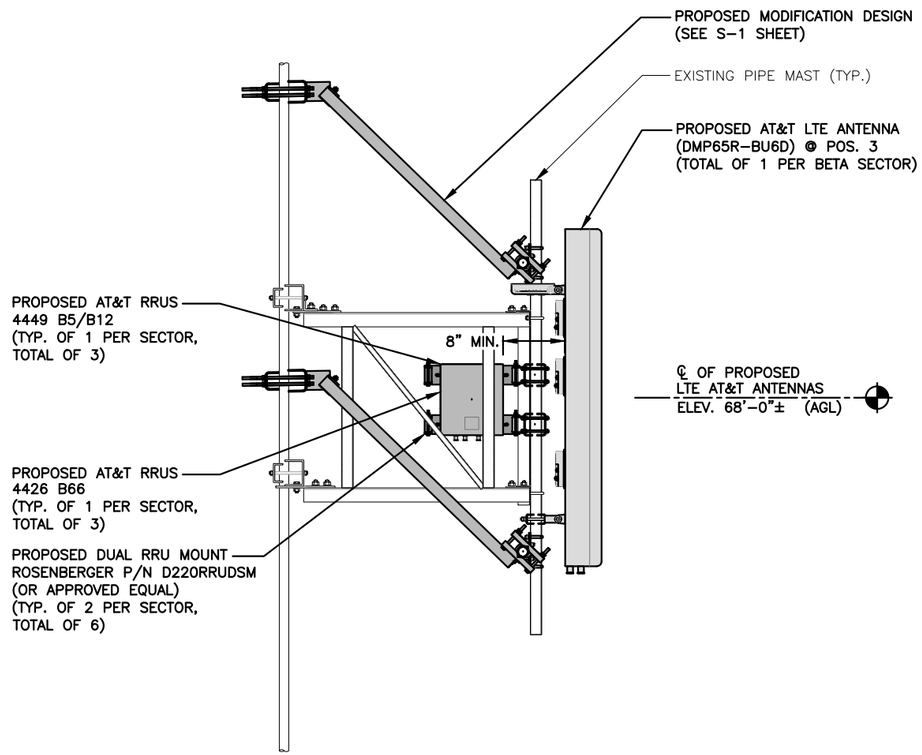


PROPOSED C-BAND ANTENNA MOUNTING DETAIL @ TOWER (POS. 2)

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

1 / A-6

0 8" 1'-4" 2'-8" 4'-0"



PROPOSED LTE ANTENNA MOUNTING DETAIL @ TOWER (POS. 3)

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

2 / A-6

0 8" 1'-4" 2'-8" 4'-0"

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: TEP OPCO, LLC
DATED: MARCH 01, 2023 (Rev2).

NOTE:

REFER TO **STRUCTURAL ANALYSIS**
BY: TEP OPCO, LLC.
DATED: MARCH 10, 2023 (Rev.2).
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

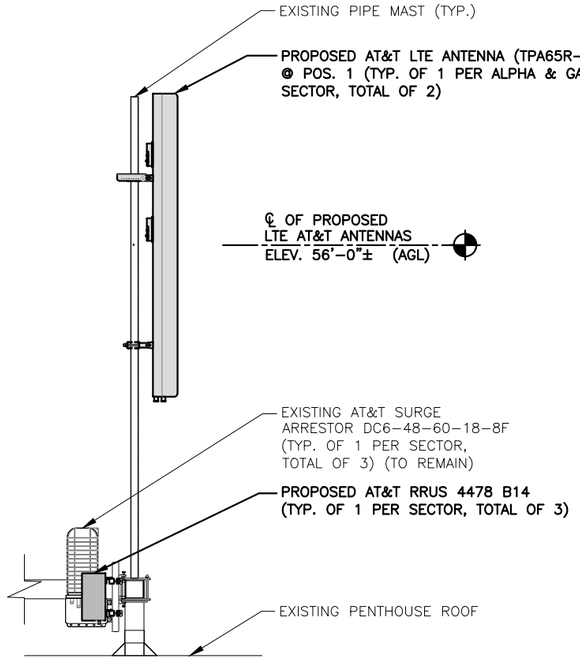
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

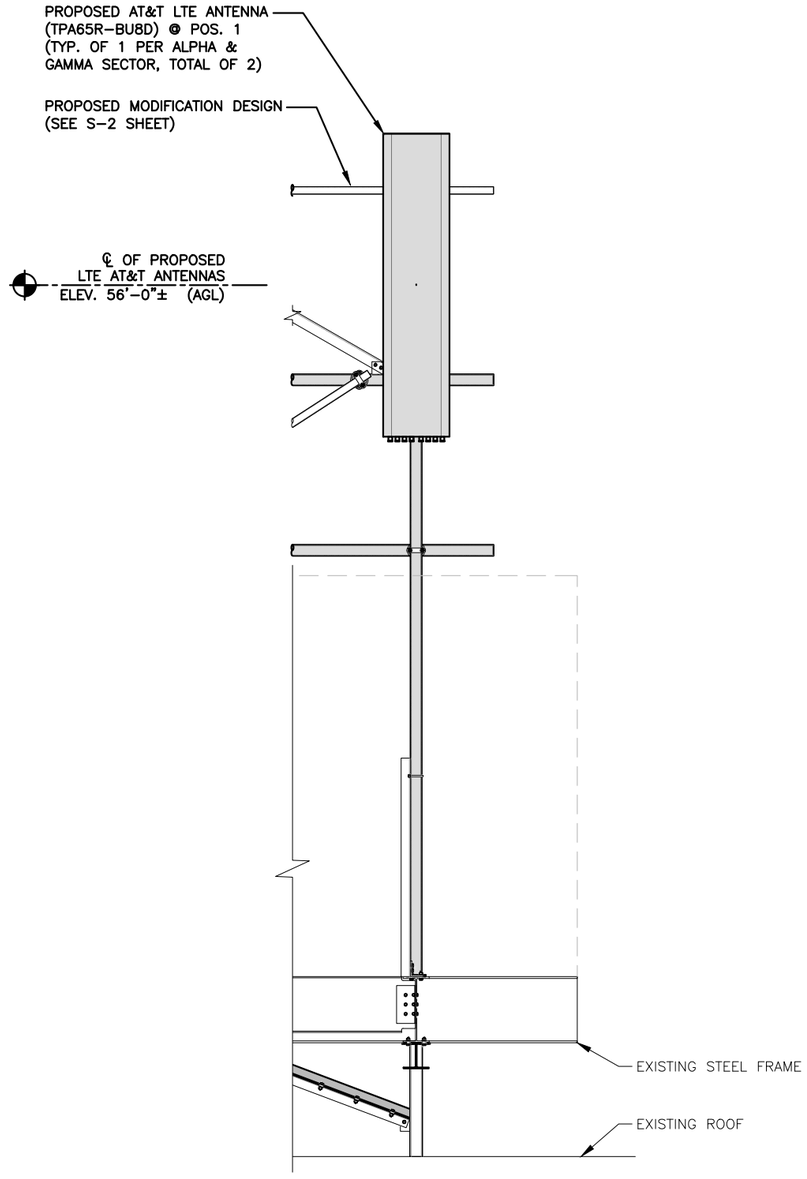
DETAILS
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_
LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	A-6	4



PROPOSED LTE ANTENNA MOUNTING DETAIL (ALPHA SECTOR) 1 / A-7

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"



PROPOSED LTE ANTENNA MOUNTING DETAIL (BETA & GAMMA SECTORS) 2 / A-7

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: TEP OPCO, LLC
DATED: MARCH 01, 2023 (Rev2).

NOTE:

REFER TO **STRUCTURAL ANALYSIS** BY: TEP OPCO, LLC.
DATED: MARCH 10, 2023 (Rev.2).
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_ LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	A-7	4

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
REQUIRED	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

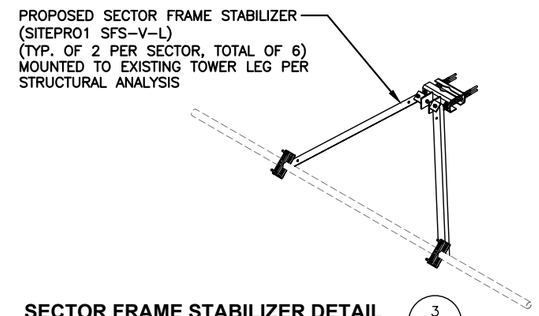
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

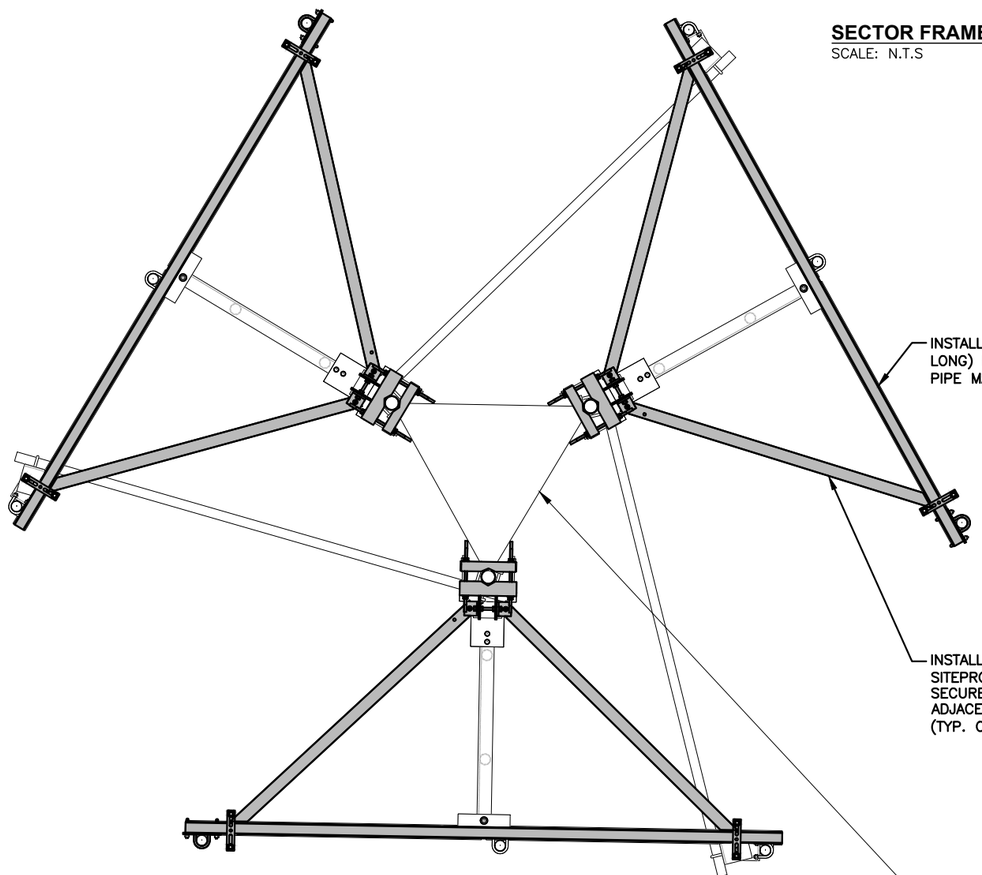
STRUCTURAL NOTES
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_ LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	SN-1	4



PROPOSED SECTOR FRAME STABILIZER
(SITEPRO1 SFS-V-L)
(TYP. OF 2 PER SECTOR, TOTAL OF 6)
MOUNTED TO EXISTING TOWER LEG PER
STRUCTURAL ANALYSIS

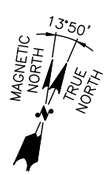
SECTOR FRAME STABILIZER DETAIL 3 / S-1
SCALE: N.T.S



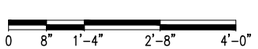
INSTALL PROPOSED 2-1/2" STD. (2.88" O.D.) (10'-6" LONG) HORIZONTAL PIPES SECURED TO THE EXISTING PIPE MASTS (TYP. OF 2 PER SECTOR, TOTAL OF 6)

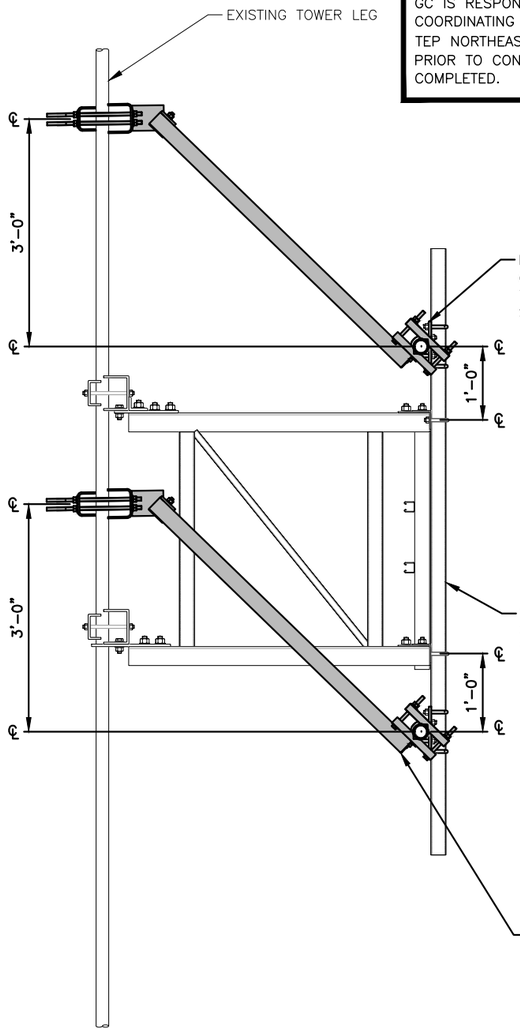
INSTALL PROPOSED SECTOR FRAME STABILIZER SITEPRO1 P/N SFS-V-L (OR APPROVED EQUAL) SECURED TO PROPOSED HORIZONTAL PIPES AND ADJACENT TOWER LEG (TYP. OF 2 PER SECTOR, TOTAL OF 6)

EXISTING SELF SUPPORT TOWER



PROPOSED MOUNT MODIFICATIONS PLAN 1 / S-1
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"





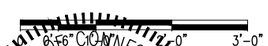
EXISTING TOWER LEG

INSTALL PROPOSED 2-1/2" STD. (2.88" O.D.) (10'-6" LONG) HORIZONTAL PIPES SECURED TO THE EXISTING PIPE MASTS (TYP. OF 2 PER SECTOR, TOTAL OF 6)

VERTICALLY CENTER THE EXISTING PIPE MASTS ON THE EXISTING MOUNT (TYP. OF 2 PER SECTOR, TOTAL OF 6)

INSTALL PROPOSED SECTOR FRAME STABILIZER SITEPRO1 P/N SFS-V-L (OR APPROVED EQUAL) SECURED TO PROPOSED HORIZONTAL PIPES AND ADJACENT TOWER LEG (TYP. OF 2 PER SECTOR, TOTAL OF 6)

PROPOSED MOUNT MODIFICATIONS ELEVATION 2 / S-1
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"



NOTE TO GENERAL CONTRACTOR:
(PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: TEP OPCO, LLC
DATED: MARCH 01, 2023 (Rev2).

NOTE:

REFER TO **STRUCTURAL ANALYSIS**
BY: TEP OPCO, LLC.
DATED: MARCH 10, 2023 (Rev.2).
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

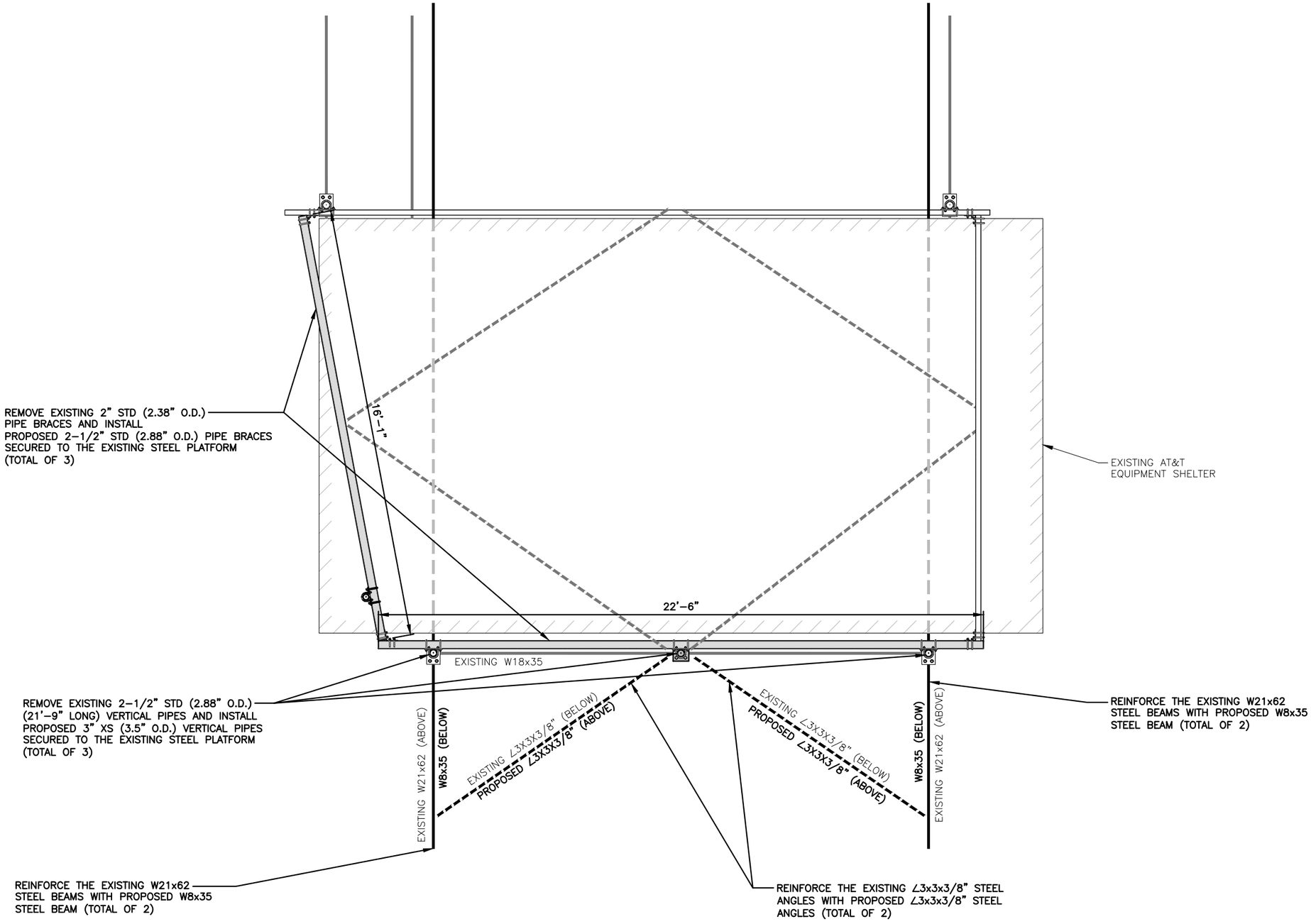
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

MOUNT MODIFICATION DESIGN
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_
LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	S-1	4



PROPOSED FRAMING PLAN (BETA & GAMMA SECTORS) (1 / S-2)

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: TEP OPCO, LLC
DATED: MARCH 01, 2023 (Rev2).

NOTE:

REFER TO **STRUCTURAL ANALYSIS** BY: TEP OPCO, LLC.
DATED: MARCH 10, 2023 (Rev.2).
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

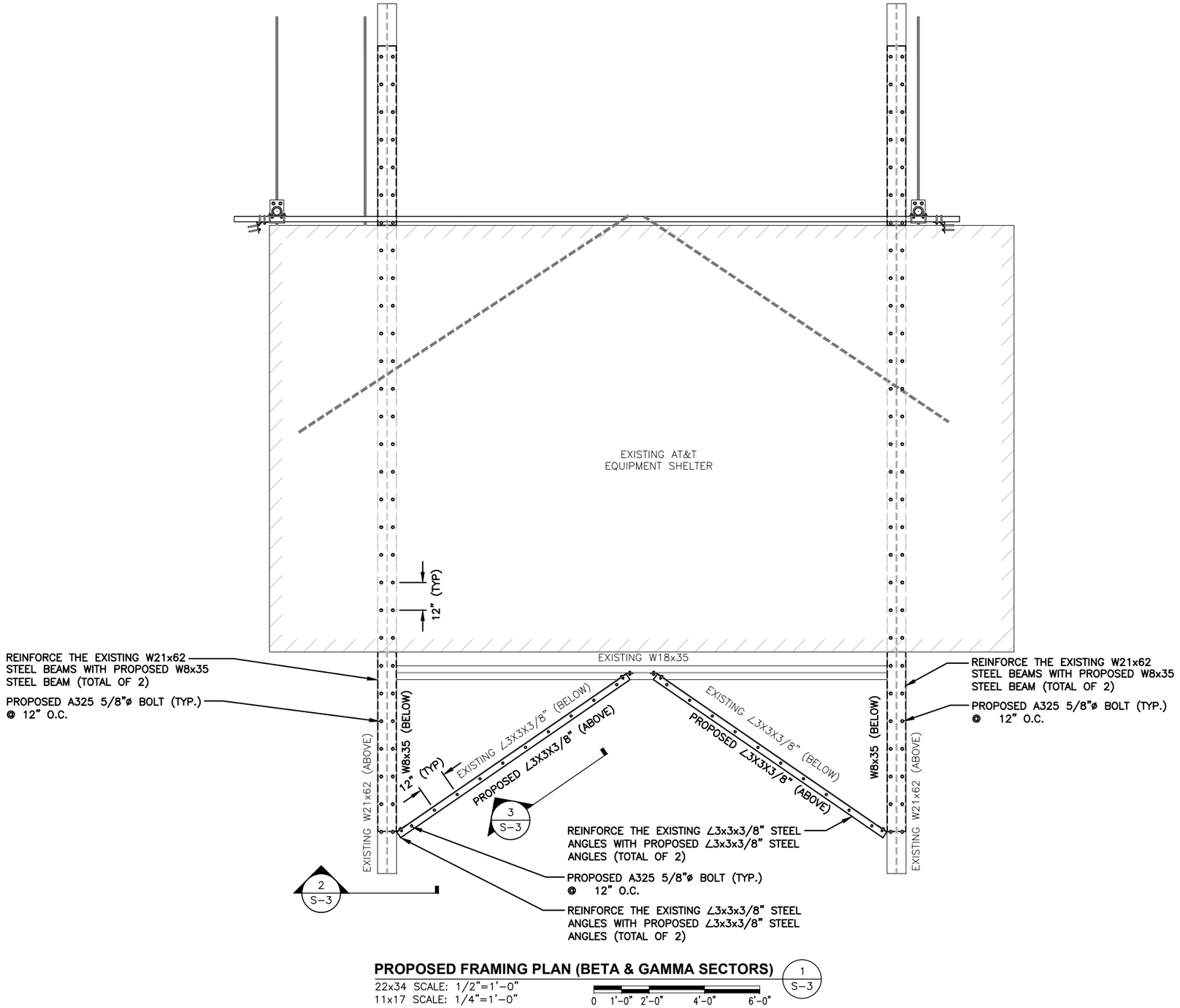
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL MODIFICATION DESIGN
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_ LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	S-2	4

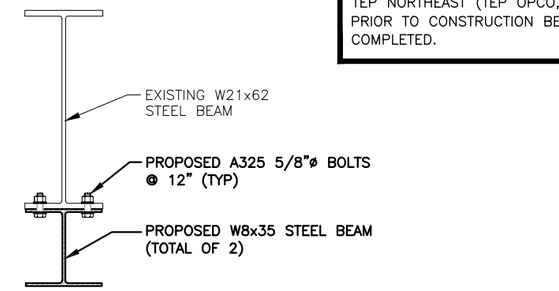


PROPOSED FRAMING PLAN (BETA & GAMMA SECTORS)

1 S-3

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

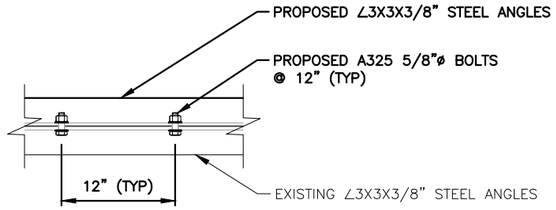


CONNECTION DETAIL

2 S-3

22x34 SCALE: 1-1/2"=1'-0"
11x17 SCALE: 3/4"=1'-0"

0 0'-4" 0'-8" 1'-4" 2'-0"



CONNECTION DETAIL

3 S-3

22x34 SCALE: 1-1/2"=1'-0"
11x17 SCALE: 3/4"=1'-0"

0 0'-4" 0'-8" 1'-4" 2'-0"

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: TEP OPCO, LLC
DATED: MARCH 01, 2023 (Rev2).

NOTE:

REFER TO **STRUCTURAL ANALYSIS** BY: TEP OPCO, LLC.
DATED: MARCH 10, 2023 (Rev.2).
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

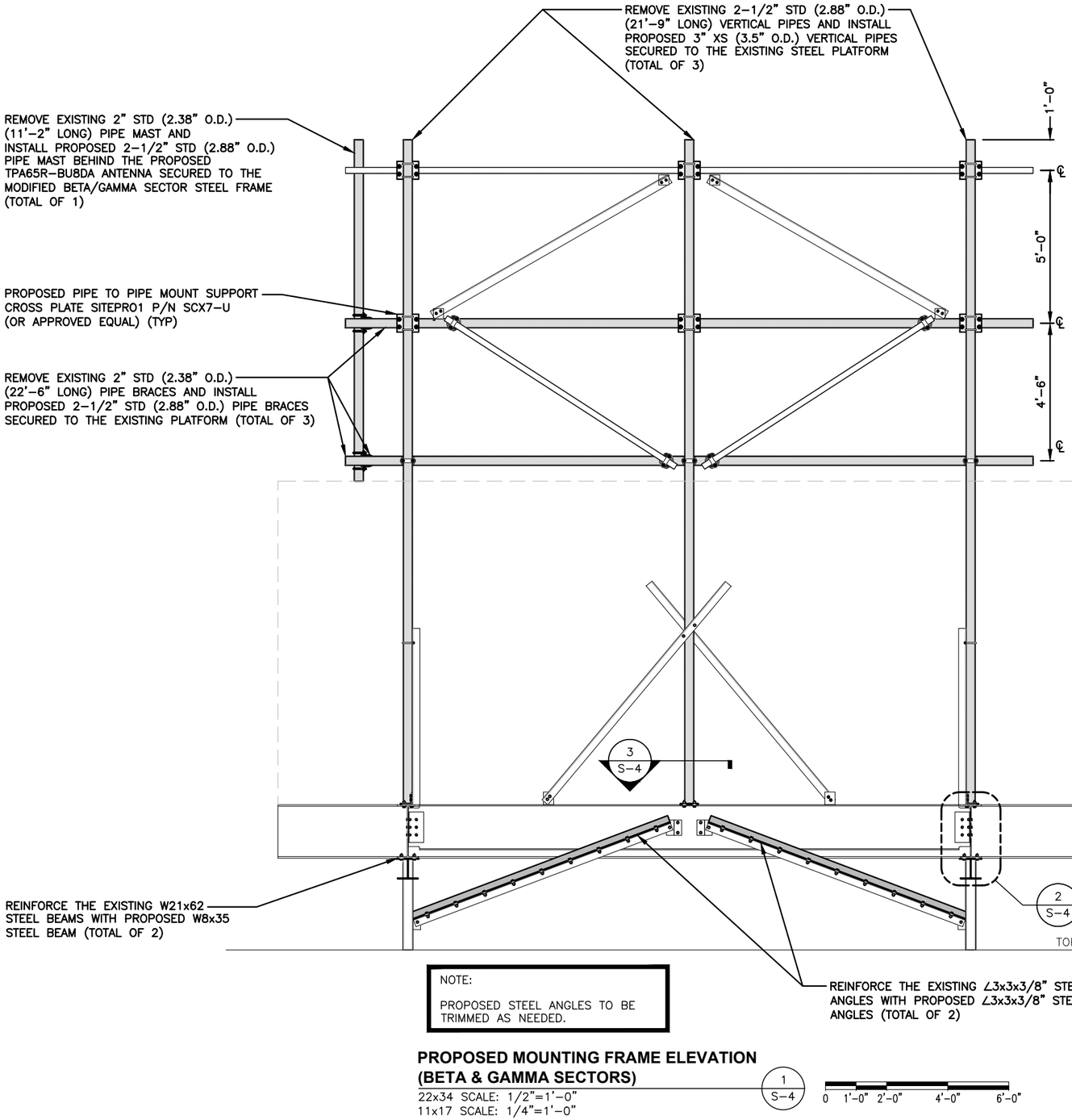
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT DANIEL P. HAMM No. 24178 LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL MODIFICATION DESIGN
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_
LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	S-3	4



NOTE:

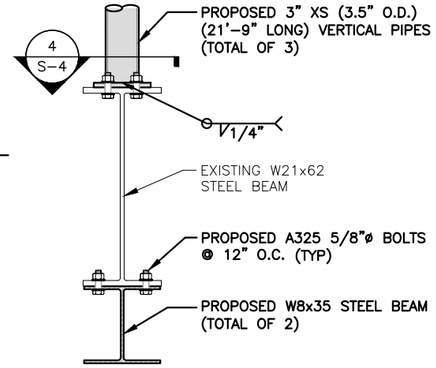
PROPOSED STEEL ANGLES TO BE TRIMMED AS NEEDED.

PROPOSED MOUNTING FRAME ELEVATION (BETA & GAMMA SECTORS) 1 S–4

22x34 SCALE: 1/2"=1'–0"
11x17 SCALE: 1/4"=1'–0"

0 1'–0" 2'–0" 4'–0" 6'–0"

TOP OF PROPOSED PIPE ELEV. = 26'–6"±

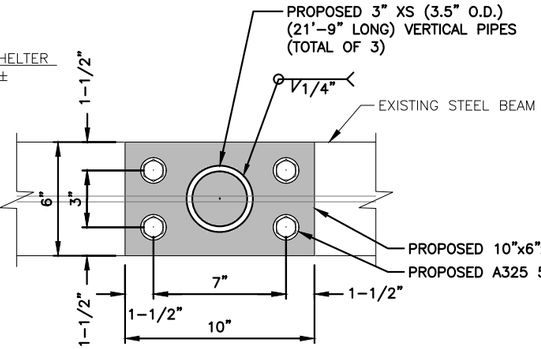


CONNECTION DETAIL 2 S–4

22x34 SCALE: 1–1/2"=1'–0"
11x17 SCALE: 3/4"=1'–0"

0 0'–4" 0'–8" 1'–4" 2'–0"

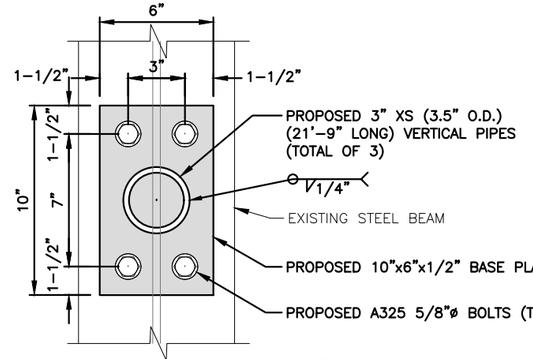
TOP OF AT&T SHELTER ELEV. = 15'–4"±



CONNECTION DETAIL 3 S–4

22x34 SCALE: 1–1/2"=1'–0"
11x17 SCALE: 3/4"=1'–0"

0 0'–4" 0'–8" 1'–4" 2'–0"



CONNECTION DETAIL 4 S–4

22x34 SCALE: 1–1/2"=1'–0"
11x17 SCALE: 3/4"=1'–0"

0 0'–4" 0'–8" 1'–4" 2'–0"

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: TEP OPCO, LLC
DATED: MARCH 01, 2023 (Rev2).

NOTE:

REFER TO **STRUCTURAL ANALYSIS**
BY: TEP OPCO, LLC.
DATED: MARCH 10, 2023 (Rev.2).
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

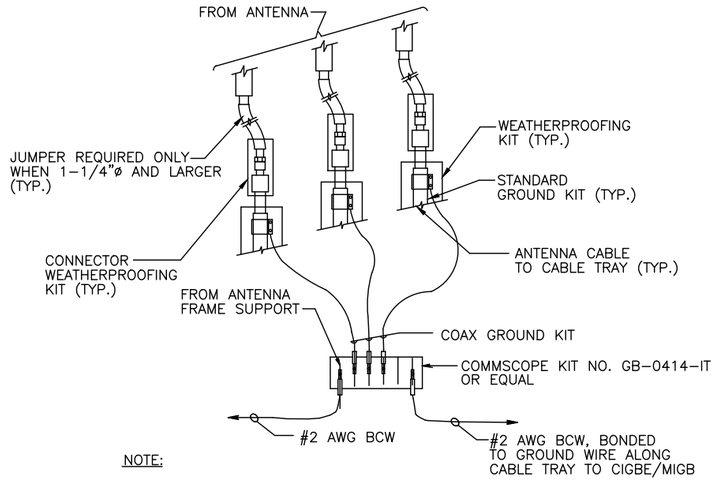
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL MODIFICATION DESIGN
5G NR 1SR CBAND_5G NR 1DR–1_BBU ADD_
LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	S–4	4



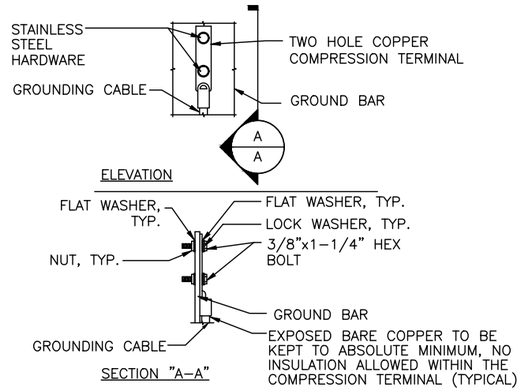
NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

1 / G-1



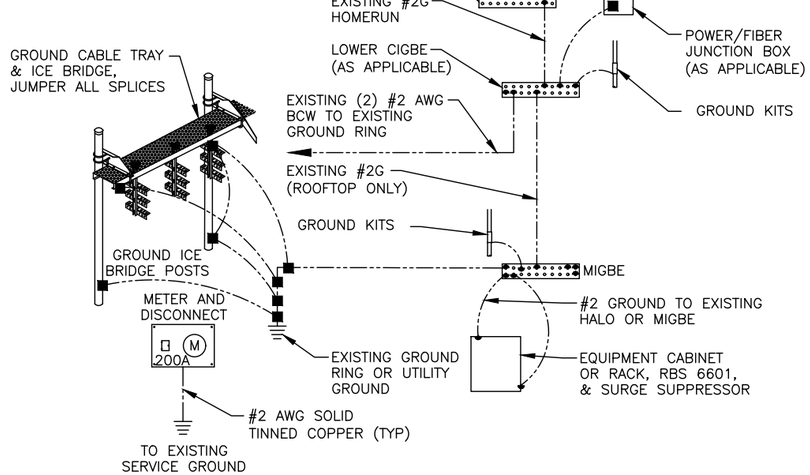
NOTES:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1

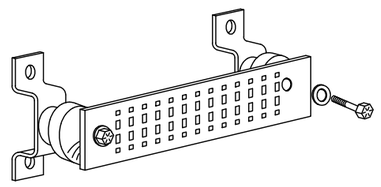
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
+24V POWER SUPPLY RETURN BAR (#2 AWG)
-48V POWER SUPPLY RETURN BAR (#2 AWG)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2 AWG)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
BUILDING STEEL (IF AVAILABLE) (#2 AWG)



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

4 / G-1

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

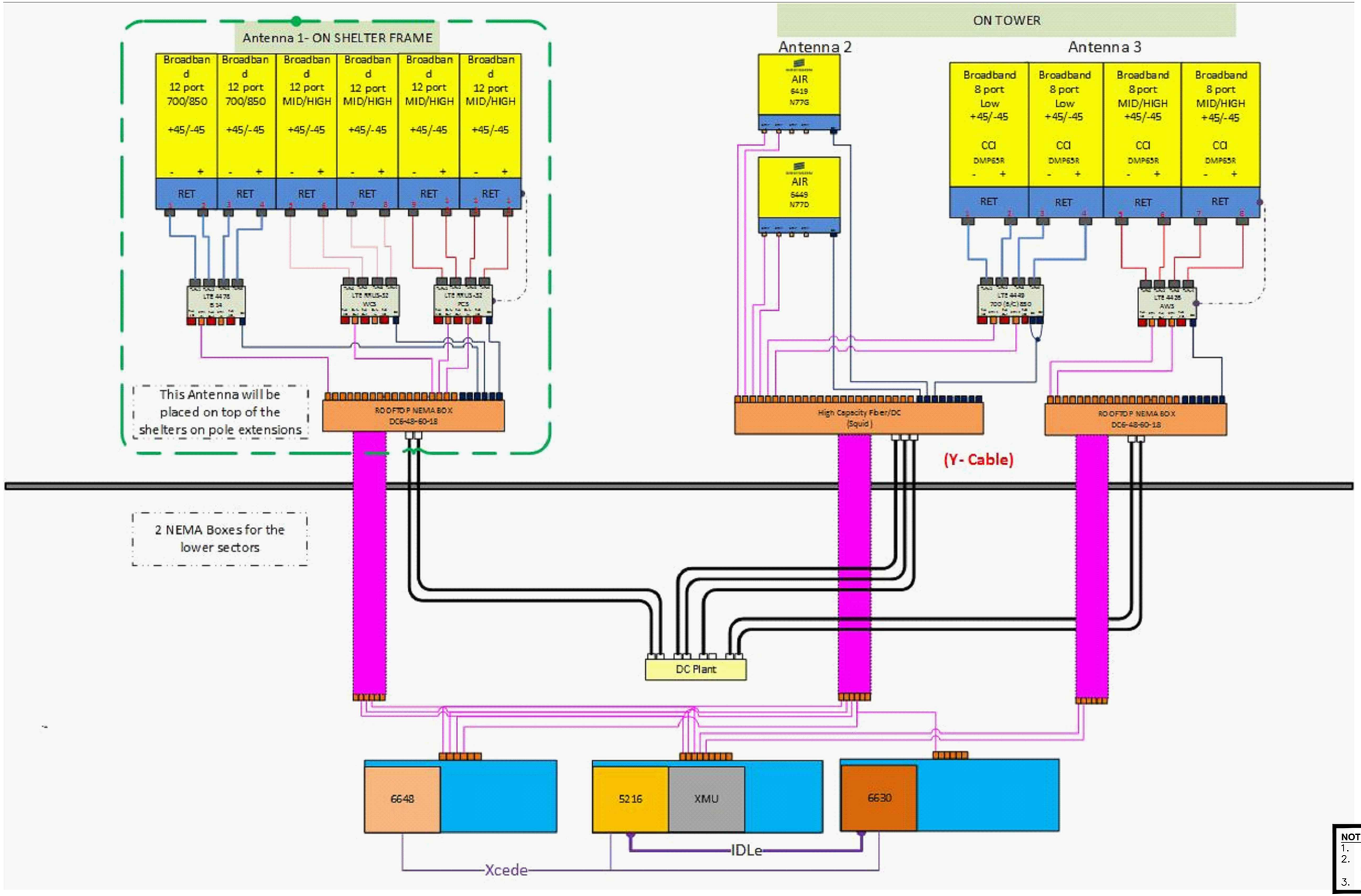
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
5G NR 1SR CBAND_5G NR 1DR-1_BBU ADD_ LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	G-1	4



RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

NOTE:
REV: 6
DATED: 06/24/2022
RFDS ID: 4371185

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.
3. RFDS USED FOR REFERENCE.

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1195
SITE NAME: WEST HARTFORD BISHOPS CORNER

345 NORTH MAIN STREET
WEST HARTFORD, CT 06117
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	03/14/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
3	07/26/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
2	07/07/22	ISSUED FOR REVIEW	GA	HC	DPH
1	05/01/22	ISSUED FOR CONSTRUCTION	GA	HC	DPH
A	02/25/22	ISSUED FOR REVIEW	SS	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: SS

AT&T

RF PLUMBING DIAGRAM
5G NR 1SR CBAND_5G NR 1DR–1_BBU ADD_
LTE 4TH CARRIER UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1195	RF–1	4

(REVISED)
STRUCTURAL ANALYSIS REPORT

For

AT&T Site Number: CT1195

TEP Project Number: 390595

AT&T Site Name: WEST HARTFORD BISHOPS CORNER

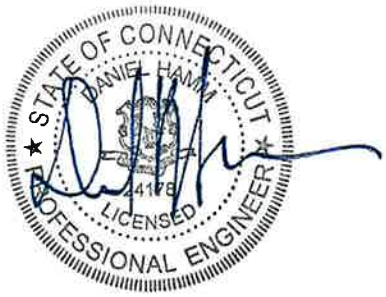
345 North Main Street
West Hartford, CT 06117

Antennas Mounted on Steel Frames on Building and Penthouse Roofs; Equipment Located in Shelter on Roof

Prepared for:

SAI at&t

Dated: March 10, 2023 (Rev.2)
July 12, 2022 (Rev.1)
March 8, 2022



Prepared by:

TEP NORTHEAST

(TEP OPCO, LLC)
45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553
www.tepgroup.net

SCOPE OF WORK:

TEP Northeast (TEP NE) has been authorized by AT&T to conduct a structural evaluation of the structure supporting the proposed equipment located in the areas depicted in the latest TEP NE construction drawings.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's proposed antennas listed below.

This office conducted an on-site visual survey of the above site on January 17, 2022.

The following documents were used for our reference:

- Partial Building Plans prepared by Walter J. Douglas dated December 1, 1958.
- Construction Drawings prepared by URS Greiner, Inc. dated July 21, 1997.
- Previous Structural Analysis Report prepared by Hudson Design Group LLC dated February 23, 2017.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing structure **IS CAPABLE** of supporting the proposed equipment loading.

Based on our evaluation, we have determined that the existing steel frames **ARE NOT CAPABLE** of supporting the proposed equipment loading. TEP NE recommends the following modifications:

- **Remove the existing 2" std. (2.38" O.D.) pipe braces and install proposed 2-1/2" std. (2.88" O.D.) pipe braces secured to the existing steel platform (total of 3 per Beta/Gamma Sector).**
- **Remove the existing 2-1/2" std. (2.88" O.D.) vertical pipes and install proposed 3" XS (3.5" O.D.) vertical pipes secured to the existing steel platform (total of 3 per Beta/Gamma Sector).**
- **Reinforce the existing L3x3x3/8 steel angles with proposed L3x3x3/8 steel angles (total of 2 per Beta/Gamma Sector).**
- **Reinforce the existing W21x62 steel beams with proposed W8x35 steel beam (total of 2 per Beta/Gamma Sector).**

	Member	Controlling Load Case	Stress Ratio	Pass/Fail
Alpha Sector Existing Steel Frame	7	LC1	59%	**PASS**
Beta/Gamma Sector Existing Steel Frame	1	LC8	168%	**FAIL**
Beta/Gamma Sector Modified Steel Frame	3	LC8	88%	**PASS**

Based on our evaluation, we have determined that the existing connections **ARE CAPABLE** of supporting the proposed equipment loading.

	Member	Stress Ratio	Pass/Fail
Alpha Sector Existing Connection	3/4" Threaded Rod	4%	**PASS**

*Reference documents attached.

APPURTENANCE CONFIGURATION:

Appurtenances	Dimensions	Weight	**Elevation	Mount
(3) RRUS-32 B2 RRH's	27.2"x12.1"x7.0"	60 lbs	-	Steel Frame
(3) RRUS-32 B30 RRH's	27.2"x12.1"x7.0"	60 lbs	-	Steel Frame
(3) DC6-48-60-18 Surge Arrestors	31.4"x10.2" Ø	29 lbs	-	Steel Frame
(1) FIF Rack	-	2000 lbs	-	Equipment Shelter
(1) UMTS Cabinet	-	500 lbs	-	Equipment Shelter
(2) GSM Cabinet	-	400 lbs	-	Equipment Shelter
(1) LTE Rack	-	2000 lbs	-	Equipment Shelter
(2) HVAC Units	-	8000 lbs	-	Equipment Shelter
(1) TPA65R-BU6DA Antennas	71.2"x20.7"x7.7"	69 lbs	56'	Steel Frame
(2) TPA65R-BU8DA Antennas	96.0"x20.7"x7.7"	88 lbs	56'	Steel Frame
(3) 4478 B14 RRH's	18.1"x13.4"x8.3"	60 lbs	-	Unistrut
(1) Battery Rack w/ (24) 190Ah Batteries	84.0"x25.8"x22.5"	3400 lbs	-	Equipment Shelter
(1) Netsure 7100 -48V Power Plant	84.0"x27.5"x22.7"	2000 lbs	-	Equipment Shelter

** Proposed equipment shown in bold.*
*** Elevation to antenna centerline.*

DESIGN CRITERIA:

International Building Code (IBC) 2021 with 2022 Connecticut State Building Code Amendments, and ASCE 7-16 (Minimum Design Loads for Buildings and Other Structures).		
Wind		
Reference Wind Speed:	120 mph	(2022 CSBC Appendix P)
Exposure Category:	B	(ASCE 7-16 Chapter 26)
Risk Category:	II	(ASCE 7-16 Table 1.5-1)
Snow		
Ground Snow, P_g:	30 psf	(2022 CSBC Appendix P)
Importance Factor (I_s):	1.0	(ASCE 7-16 Table 1.5-2)
Exposure Factor (C_e):	0.9	(Fully Exposed, Table 7.3-1)
Thermal Factor (C_t):	1.0	(ASCE 7-16 Table 7.3-2)
Flat Roof Snow Load:	19 psf	(ASCE 7-16 Equation 7.3-1)
Min. Flat Roof Snow Load:	30 psf	
EIA/TIA-222-H Structural Standards for Steel Antenna Towers and Antenna Supporting Structures		
Wind		
City/Town:	West Hartford	
County:	Hartford	
Wind Load:	120 mph	(TIA-222-H Figure B-2)
Ice		
Design Ice Thickness (t_i):	1.50 in	(TIA-222-H Figure B-9)
Structure Class:	II	(TIA-222-H Table 2-1)
Importance Factor (I_i):	1.0	(TIA-222-H Table 2-3)
Factored Thickness of Radial Ice (t_{iz}):	1.58 in	(TIA-222-H Sec. 2.6.10)

EXISTING ROOF CONSTRUCTION:

The existing roof construction consists of a roofing membrane over rigid insulation over metal decking supported by a system of steel open web bar joists, steel beams, and steel columns.

ANTENNA SUPPORT RECOMMENDATIONS:

- The proposed Alpha Sector antenna is to be mounted on an existing pipe mast installed on the existing steel frame secured to the penthouse roof with threaded rods and backer plates.

- The proposed Beta/Gamma Sector antennas are to be mounted on existing pipe masts installed on the existing AT&T equipment shelter platform located on the roof directly over steel columns.

RRH/SURGE ARRESTOR SUPPORT RECOMMENDATIONS:

- The proposed Alpha Sector RRH and surge arrestor are to be mounted on existing Unistrut components installed on the existing steel frame secured to the penthouse roof.

- The proposed Beta/Gamma Sector RRH's and surge arrestor are to be mounted on existing Unistrut components installed on the existing steel beam attached to the existing steel-framed equipment platform on the roof.

EQUIPMENT SUPPORT RECOMMENDATIONS:

The proposed AT&T equipment is to be installed within the existing equipment shelter located on the roof, supported by steel columns.

Limitations and Assumptions:

1. Reference the latest TEP NE construction drawings for all the equipment locations and details.
2. All detail requirements will be designed and furnished in the construction drawings.
3. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
4. TEP NE is not responsible for any modifications completed prior to and hereafter which TEP NE was not directly involved.
5. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.
6. If field conditions differ from what is assumed in this report, then the engineer of record is to be notified as soon as possible.

FIELD PHOTOS:

Photo 1: Sample photo illustrating the existing Alpha sector.

Photo 2: Sample photo illustrating the existing Beta and Gamma sector.

Wind and Ice Calculations

Date: 3/10/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: LBW **Checked By:** MSC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01 (z/z_g)^{2/\alpha}$

z=	56	(ft)
z_g=	1200	(ft)
α=	7.0	
K_z=	**0.837**	

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}=	**1**	
K_h=	1	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	56	
z_s=	160	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.99	(from 2.6.8)

(If Category 1 then K_{zt}=1.0)

Category= **1**

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i = 1.50 in
Importance Factor = I= 1.00 (from Table 2-3)
K_{iz} = 1.05 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

t_{iz} = 1.58 in

Date: 3/10/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: LBW Checked By: MSC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	33	G_h=	0.85
2.6.9.2 Guyed Masts		G_h=	0.85
2.6.9.3 Pole Structures		G_h=	1.1
2.6.9 Appurtenances		G_h=	1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

q_z= $0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	0.837	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**26.09**	K_e=	0.99	(from 2.6.8)
$q_{z\ (ice)}$=	**4.53**	K_d=	0.85	(from Table 2-2)
$q_{z\ (30)}$=	**1.63**	V_{max}=	120	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 3/10/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: LBW Checked By: MSC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.58** in | **Angle =** **0 (deg)** | **Equivalent Angle =** **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	4.64	1.30	**466**
TPA65R-BU8DA Antenna (Side)	96.0	7.7	20.7	5.13	12.47	1.58	**212**
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	**332**
TPA65R-BU6DA Antenna (Side)	71.2	7.7	20.7	3.81	9.25	1.47	**146**
RRUS-32 RRH	27.2	12.1	7.0	2.29	2.25	1.20	**72**
RRUS-32 RRH (Side)	27.2	7.0	12.1	1.32	3.89	1.26	**44**
4478 B14 RRH	18.1	13.4	8.3	1.68	1.35	1.20	**53**
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	**33**
DC6 Surge Arrestor	31.4	10.2	-	2.22	3.08	0.70	**41**
2" Pipe	2.4	12.0	-	0.20	0.20	1.20	**6**
2-1/2" Pipe	2.9	12.0	-	0.24	0.24	1.20	**8**
3" Pipe	3.5	12.0	-	0.29	0.29	1.20	**9**
3/4" Round Bar	0.4	12.0	-	0.03	0.03	1.20	**1**
L 3x3 Angle	3.0	12.0	-	0.25	0.25	2.00	**13**
L 3-1/2x3-1/2 Angle	3.5	12.0	-	0.29	0.29	2.00	**15**
L 4x4 Angle	4.0	12.0	-	0.33	0.33	2.00	**17**
HSS 4x4	4.0	12.0	-	0.33	0.33	1.25	**11**
HSS 6x6	6.0	12.0	-	0.50	0.50	1.25	**16**
HSS 8x8	8.0	12.0	-	0.67	0.67	1.25	**22**

Date: 3/10/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: LBW **Checked By:** MSC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.58 in.
Density of ice: 56 pcf

TPA65R-BU8DA Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		365 lbs
Weight of object:	88.0 lbs	
Combined weight of ice and object:		453 lbs

TPA65R-BU6DA Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		271 lbs
Weight of object:	69.0 lbs	
Combined weight of ice and object:		340 lbs

RRUS-32 B2 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		68 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		128 lbs

RRUS-32 B30 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		68 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		128 lbs

4478 B14 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		50 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		110 lbs

DC6-48-60-18 Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:		60 lbs
Weight of object:	29 lbs	
Combined weight of ice and object:		89 lbs

2" Pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		8 plf

2-1/2" Pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		9 plf

3" Pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		10 plf

3/4" Round Bar

Per foot weight of ice:

diameter (in):	0.75	
Per foot weight of ice on object:		4 plf

L 3x3 Angles

Weight of ice based on total radial SF area:

Height (in):	3	
Width (in):	3	
Per foot weight of ice on object:		11 plf

L 3-1/2x3-1/2 Angle

Weight of ice based on total radial SF area:

Height (in):	3.5	
Width (in):	3.5	
Per foot weight of ice on object:		13 plf

L 4x4 Angle

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		14 plf

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		14 plf

HSS 6x6

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		14 plf

HSS 8x8

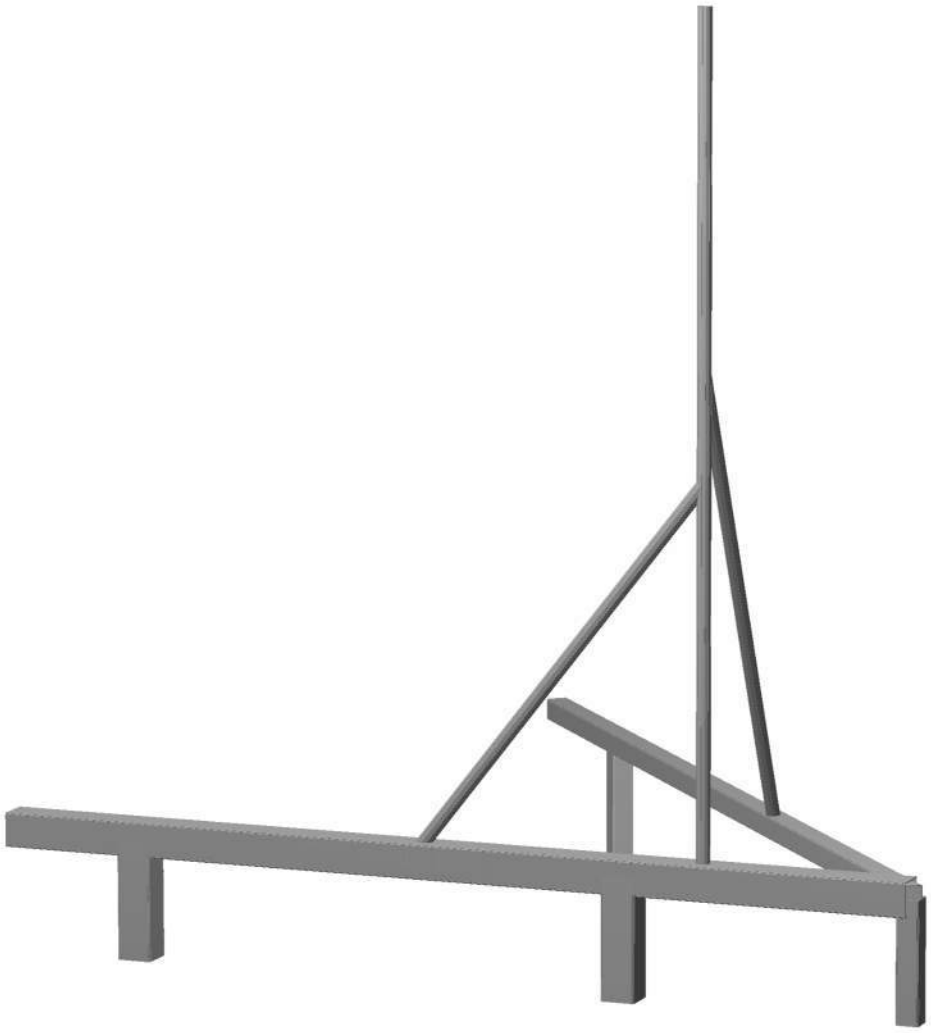
Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		14 plf

Alpha Sector
Calculations

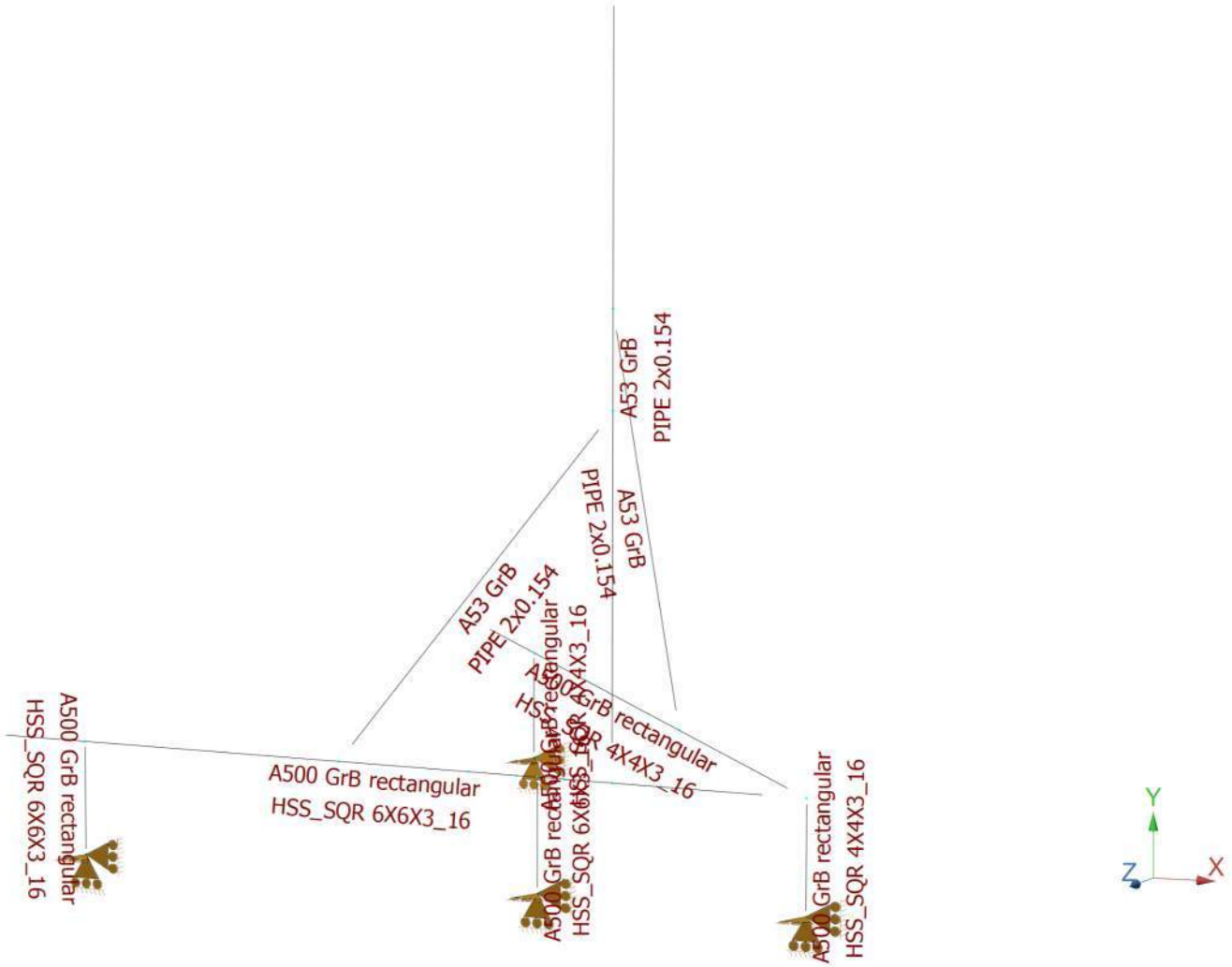
TEP Northeast

Current Date: 3/10/2023 8:29 AM
Units system: English



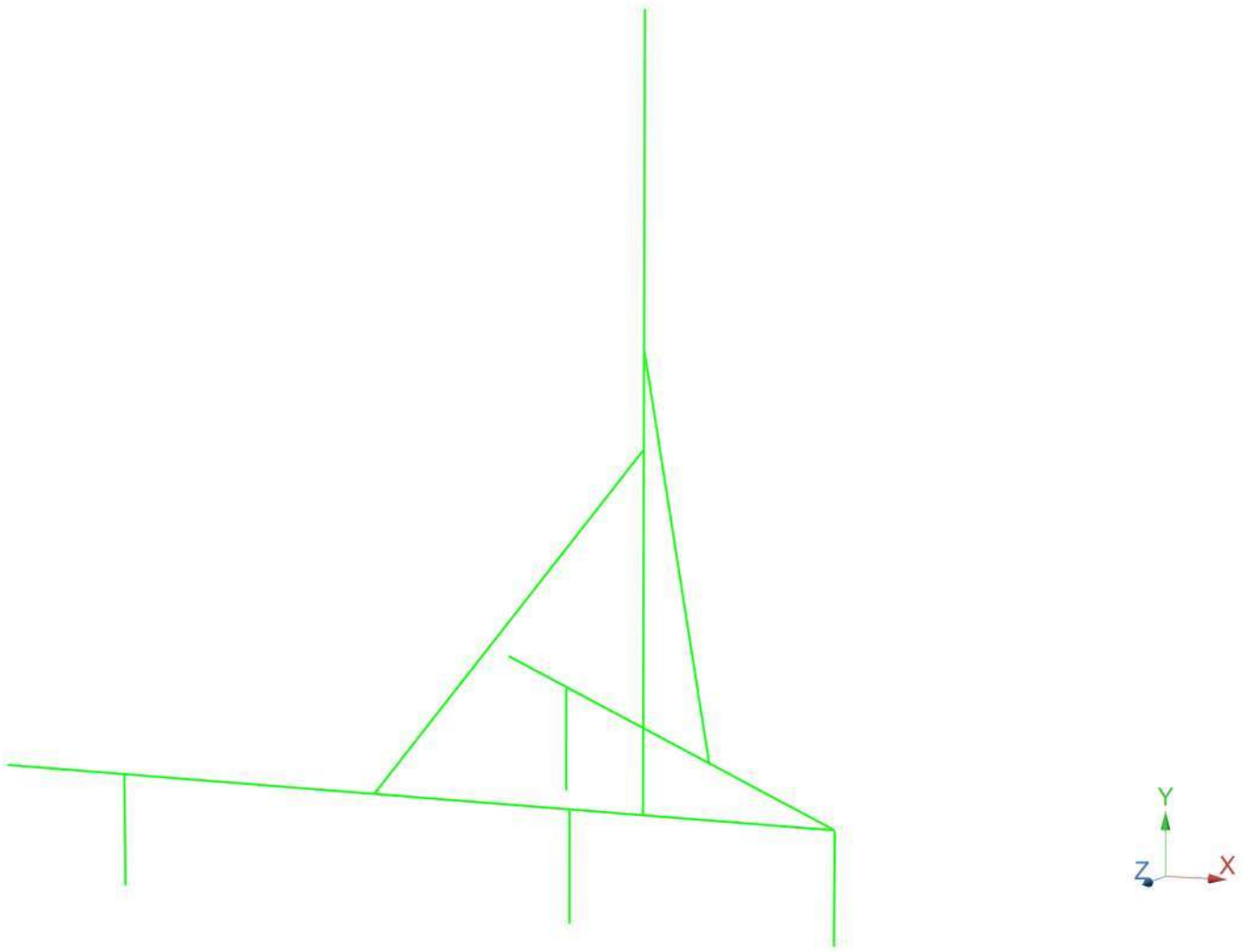
TEP Northeast

Current Date: 3/10/2023 8:30 AM
Units system: English



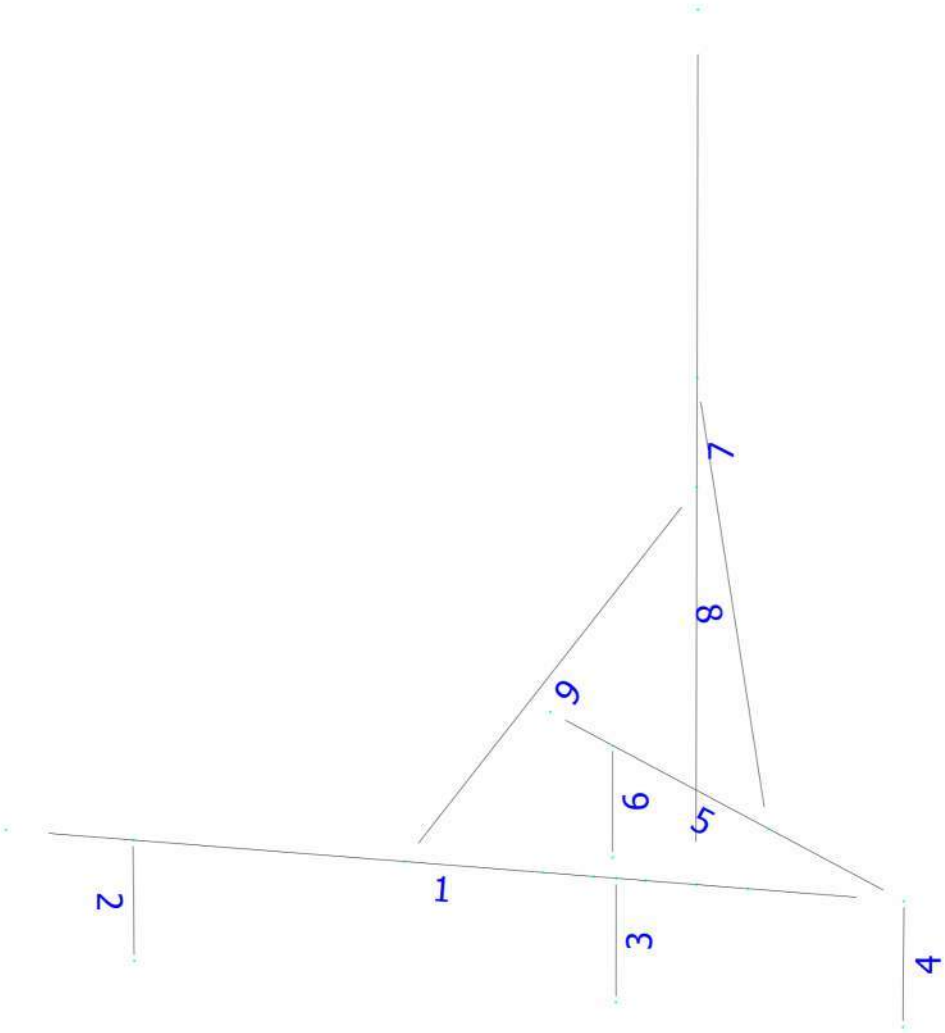
TEP Northeast

Current Date: 3/10/2023 8:30 AM
Units system: English



TEP Northeast

Current Date: 3/10/2023 8:31 AM
Units system: English



RAM® Elements
CONNECT Edition

TEP Northeast

Current Date: 3/10/2023 8:31 AM
Units system: English

Load data

GLOSSARY

Comb : Indicates if load condition is a load combination

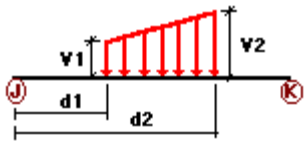
Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wf	Wind Load (FRONT)	No	WIND
Ws	Wind Load (SIDE)	No	WIND
Wfice	Wind ICE (FRONT)	No	WIND
Wsice	Wind ICE (SIDE)	No	WIND
Di	Ice Load	No	LL

Load on nodes

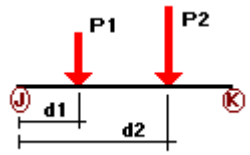
Condition	Node	FX [Kip]	FY [Kip]	FZ [Kip]	MX [Kip*ft]	MY [Kip*ft]	MZ [Kip*ft]
DL	17	0.00	-0.06	0.00	0.00	0.00	0.00
	18	0.00	-0.06	0.00	0.00	0.00	0.00
	19	0.00	-0.06	0.00	0.00	0.00	0.00
	20	0.00	-0.035	0.00	0.00	0.00	0.00
Wf	17	0.00	0.00	-0.072	0.00	0.00	0.00
	18	0.00	0.00	-0.072	0.00	0.00	0.00
	19	0.00	0.00	-0.053	0.00	0.00	0.00
	20	0.00	0.00	-0.041	0.00	0.00	0.00
Ws	17	-0.044	0.00	0.00	0.00	0.00	0.00
	18	-0.044	0.00	0.00	0.00	0.00	0.00
	19	-0.033	0.00	0.00	0.00	0.00	0.00
	20	-0.041	0.00	0.00	0.00	0.00	0.00
Wfice	17	0.00	0.00	-0.017	0.00	0.00	0.00
	18	0.00	0.00	-0.017	0.00	0.00	0.00
	19	0.00	0.00	-0.013	0.00	0.00	0.00
	20	0.00	0.00	-0.01	0.00	0.00	0.00
Wsice	17	-0.012	0.00	0.00	0.00	0.00	0.00
	18	-0.012	0.00	0.00	0.00	0.00	0.00
	19	-0.009	0.00	0.00	0.00	0.00	0.00
	20	-0.01	0.00	0.00	0.00	0.00	0.00
Di	17	0.00	-0.068	0.00	0.00	0.00	0.00
	18	0.00	-0.068	0.00	0.00	0.00	0.00
	19	0.00	-0.05	0.00	0.00	0.00	0.00
	20	0.00	-0.06	0.00	0.00	0.00	0.00

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wf	1	z	-0.016	0.00	0.00	No	0.00	No
	2	z	-0.016	0.00	0.00	No	0.00	No
	3	z	-0.016	0.00	0.00	No	0.00	No
	4	z	-0.011	0.00	0.00	No	0.00	No
	5	z	-0.011	0.00	0.00	No	0.00	No
	6	z	-0.011	0.00	0.00	No	0.00	No
	7	z	-0.006	-0.006	8.00	No	12.00	No
	8	z	-0.006	0.00	0.00	No	0.00	No
	9	z	-0.006	0.00	0.00	No	0.00	No
Ws	2	x	-0.018	0.00	0.00	No	0.00	No
	3	x	-0.018	0.00	0.00	No	0.00	No
	4	x	-0.012	0.00	0.00	No	0.00	No
	5	x	-0.012	0.00	0.00	No	0.00	No
	6	x	-0.012	0.00	0.00	No	0.00	No
	7	x	-0.007	0.00	0.00	No	0.00	No
	8	x	-0.007	0.00	0.00	No	0.00	No
	9	x	-0.007	0.00	0.00	No	0.00	No
Di	1	y	-0.019	0.00	0.00	No	0.00	No
	5	y	-0.014	0.00	0.00	No	0.00	No
	7	y	-0.008	0.00	0.00	No	0.00	No
	8	y	-0.008	0.00	0.00	No	0.00	No
	9	y	-0.008	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	7	y	-0.044	0.50	No
		y	-0.044	7.50	No
Wf	7	z	-0.234	0.50	No
		z	-0.234	7.50	No
Ws	7	x	-0.106	0.50	No
		x	-0.106	7.50	No
Wfice	7	z	-0.049	0.50	No
		z	-0.049	7.50	No
Wsice	7	x	-0.027	0.50	No
		x	-0.027	7.50	No
Di	7	y	-0.183	0.50	No
		y	-0.183	7.50	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
Wf	Wind Load (FRONT)	No	0.00	0.00	0.00
Ws	Wind Load (SIDE)	No	0.00	0.00	0.00
Wfice	Wind ICE (FRONT)	No	0.00	0.00	0.00
Wsice	Wind ICE (SIDE)	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	-1.00	0.00

RAM® Elements
CONNECT Edition

TEP Northeast

Current Date: 3/10/2023 8:31 AM
Units system: English

Steel Code Check

Report: Summary - Group by member

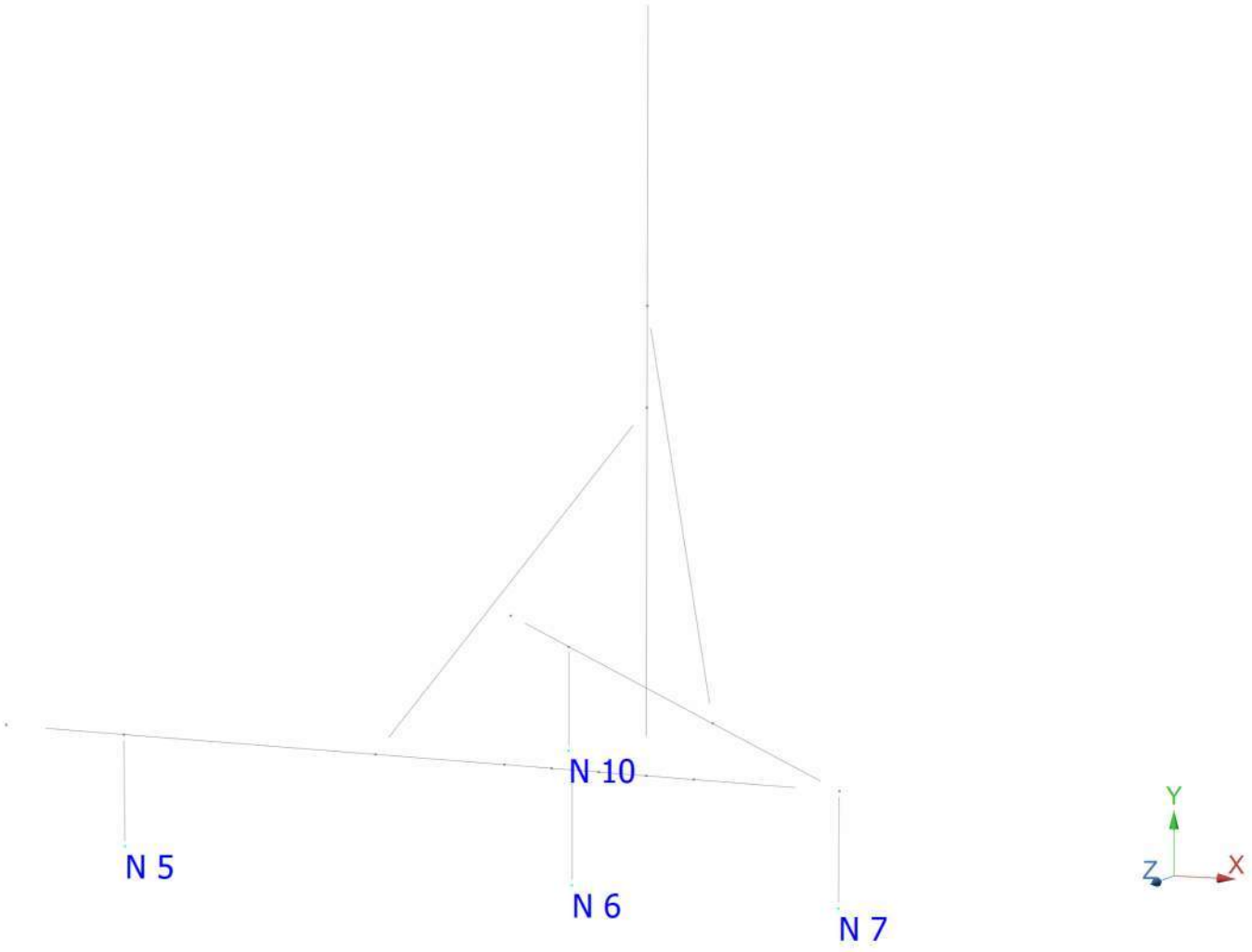
Load conditions to be included in design :

LC1=1.2DL+Wf
LC2=1.2DL+Ws
LC3=0.9DL+Wf
LC4=0.9DL+Ws
LC5=1.2DL+Wfice+Di
LC6=1.2DL+Wsice+Di
LC7=1.4DL
LC8=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X3_16	**4**	LC1 at 0.00%	0.10	OK	
		5	LC1 at 35.42%	0.23	OK	
		6	LC1 at 0.00%	**0.24**	**OK**	
	HSS_SQR 6X6X3_16	**1**	LC1 at 100.00%	0.04	OK	
		2	LC2 at 0.00%	0.03	OK	
		3	LC3 at 0.00%	**0.06**	**OK**	
	PIPE 2x0.154	**7**	LC1 at 41.67%	**0.59**	**OK**	
		8	LC1 at 100.00%	0.09	OK	
		9	LC2 at 100.00%	0.05	OK	

TEP Northeast

Current Date: 3/10/2023 8:32 AM
Units system: English



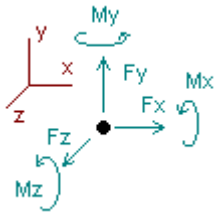
RAM® Elements
CONNECT Edition

TEP Northeast

Current Date: 3/10/2023 8:32 AM
Units system: English

Analysis result

Reactions



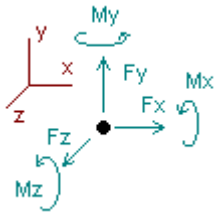
Direction of positive forces and moments

	Forces [Kip]			Moments [Kip*ft]		
Node	**FX**	**FY**	**FZ**	**MX**	**MY**	**MZ**
Condition **LC1=1.2DL+Wf**						
5	-0.20761	0.00781	0.18087	0.00000	0.00000	0.00000
6	-0.53409	-0.40704	0.34025	0.00000	0.00000	0.00000
7	-0.13818	0.54895	-0.56958	0.00000	0.00000	0.00000
10	0.87989	0.79202	1.27909	0.00000	0.00000	0.00000
SUM	0.00000	0.94174	1.23063	0.00000	0.00000	0.00000
Condition **LC2=1.2DL+Ws**						
5	0.47393	0.47041	-0.00106	0.00000	0.00000	0.00000
6	0.07700	0.46873	-0.03581	0.00000	0.00000	0.00000
7	0.13561	-0.12097	0.02799	0.00000	0.00000	0.00000
10	0.10936	0.12356	0.00888	0.00000	0.00000	0.00000
SUM	0.79590	0.94174	0.00000	0.00000	0.00000	0.00000
Condition **LC3=0.9DL+Wf**						
5	-0.20891	-0.02097	0.18036	0.00000	0.00000	0.00000
6	-0.53422	-0.53940	0.34200	0.00000	0.00000	0.00000
7	-0.12559	0.50609	-0.55730	0.00000	0.00000	0.00000
10	0.86872	0.76058	1.26558	0.00000	0.00000	0.00000
SUM	0.00000	0.70630	1.23063	0.00000	0.00000	0.00000
Condition **LC4=0.9DL+Ws**						
5	0.47212	0.44121	-0.00152	0.00000	0.00000	0.00000
6	0.07672	0.33588	-0.03433	0.00000	0.00000	0.00000
7	0.14814	-0.16345	0.03950	0.00000	0.00000	0.00000
10	0.09893	0.09266	-0.00365	0.00000	0.00000	0.00000
SUM	0.79590	0.70630	0.00000	0.00000	0.00000	0.00000

Condition **LC5=1.2DL+Wfice+Di**						
5	-0.02328	0.29193	0.01430	0.00000	0.00000	0.00000
6	-0.07197	1.24185	0.02712	0.00000	0.00000	0.00000
7	-0.17601	0.55373	-0.23949	0.00000	0.00000	0.00000
10	0.27127	0.48148	0.35307	0.00000	0.00000	0.00000
SUM	0.00000	2.56899	0.15500	0.00000	0.00000	0.00000
Condition **LC6=1.2DL+Wsice+Di**						
5	0.08392	0.37005	0.00646	0.00000	0.00000	0.00000
6	0.00596	1.38740	-0.01829	0.00000	0.00000	0.00000
7	-0.12387	0.44616	-0.14451	0.00000	0.00000	0.00000
10	0.13100	0.36539	0.15634	0.00000	0.00000	0.00000
SUM	0.09700	2.56899	0.00000	0.00000	0.00000	0.00000
Condition **LC7=1.4DL**						
5	0.00699	0.13484	0.00216	0.00000	0.00000	0.00000
6	0.00253	0.62121	-0.00693	0.00000	0.00000	0.00000
7	-0.05838	0.19833	-0.05399	0.00000	0.00000	0.00000
10	0.04886	0.14431	0.05876	0.00000	0.00000	0.00000
SUM	0.00000	1.09869	0.00000	0.00000	0.00000	0.00000
Condition **LC8=0.9DL**						
5	0.00450	0.08669	0.00139	0.00000	0.00000	0.00000
6	0.00164	0.39937	-0.00445	0.00000	0.00000	0.00000
7	-0.03753	0.12749	-0.03469	0.00000	0.00000	0.00000
10	0.03139	0.09276	0.03775	0.00000	0.00000	0.00000
SUM	0.00000	0.70630	0.00000	0.00000	0.00000	0.00000

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2DL+Wf
LC2=1.2DL+Ws
LC3=0.9DL+Wf
LC4=0.9DL+Ws
LC5=1.2DL+Wfice+Di
LC6=1.2DL+Wsice+Di
LC7=1.4DL
LC8=0.9DL

Node		Forces						Moments					
		Fx [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
5	Max	0.474	LC2	0.470	LC2	0.181	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.209	LC3	-0.021	LC3	-0.002	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
6	Max	0.077	LC2	1.387	LC6	0.342	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.534	LC3	-0.539	LC3	-0.036	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
7	Max	0.148	LC4	0.554	LC5	0.039	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.176	LC5	-0.163	LC4	-0.570	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
10	Max	0.880	LC1	0.792	LC1	1.279	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.031	LC8	0.093	LC4	-0.004	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1

Date: 3/10/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: LBW **Checked By:** MSC

CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A325 3/4" Threaded Rod

Allowable Tensile Load =

F_{Tall} = 19880 lbs.

Allowable Shear Load =

F_{Vall} = 11928 lbs.

TENSILE FORCES

Reaction **F =** 792 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 880 lbs. (See Bentley Output)
Reactions in Z direction: 1279 lbs. (See Bentley Output)

Resultant: 1552 lbs.

No. of Supports = 1
No. of Bolts / Support = 4

Tension Design Load /Bolts =

f_t = 198.00 lbs. < 19880 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v = 388.12 lbs. < 11928 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.010	+	0.033	=	0.042	<	1.0	**Therefore, OK !**

Existing Beta/Gamma Sector Calculations

Date: 3/10/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: LBW **Checked By:** MSC

Wind Analysis → Equipment Shelter

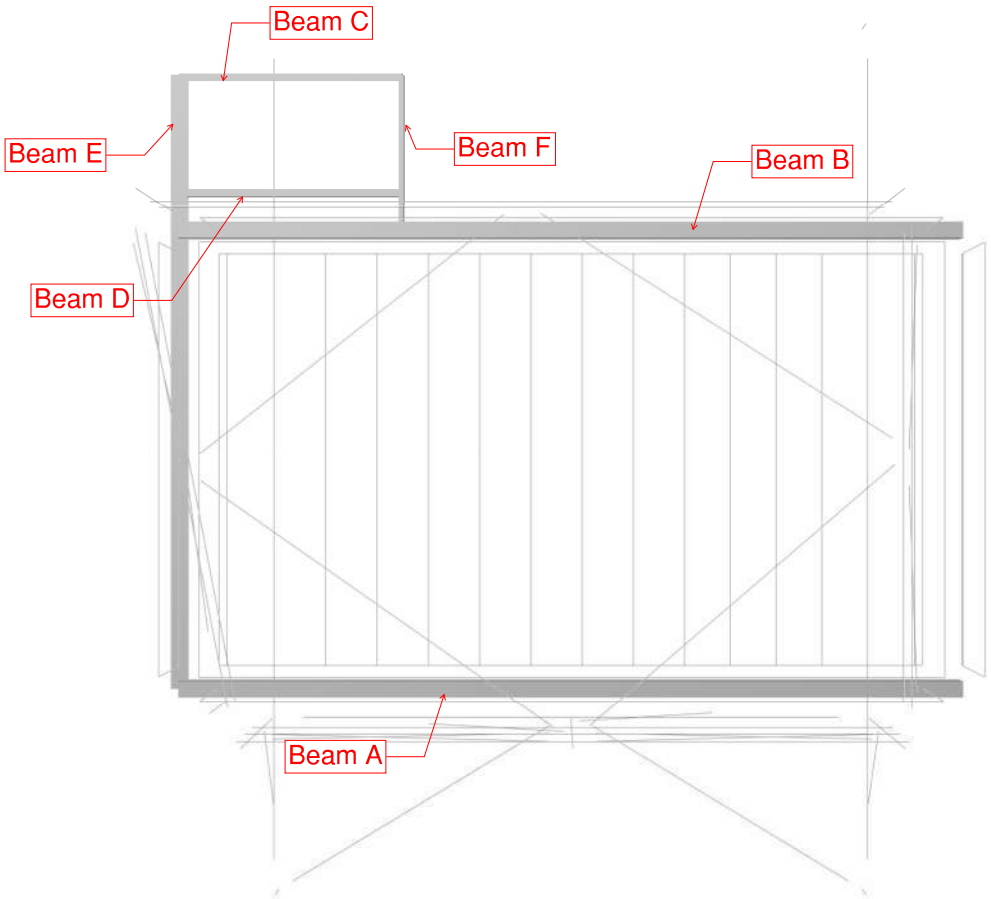
Reference Codes:

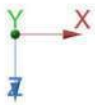
-Connecticut State Building Code

-International Building Code 2015 (IBC 2015)

-Minimum Design Loads for Buildings and Other Structures (ASCE 7-10)

Structure Classification		II		(ASCE 7-10 Table 1.5-1)
Basic Wind Speed, V		120	mph	(CT Building Code Appendix N)
Importance Factor, I		1		(ASCE 7-10 Table 1.5-2)
Exposure Category		B		(ASCE 7-10 Section 26.7)
Height Above Ground Level, z		48	ft	(Top of Shelter)
Exposure Coefficient, K_z		0.80		(ASCE 7-10 Table 29-3.1)
Wind Directionality Coef., K_d		0.90		(ASCE 7-10 Table 26.6-1)
Topographic Factor, K_{zt}		1.00		(ASCE 7-10 Section 26.8.2)
Velocity Pressure, q_z	$= 0.00256K_zK_{zt}K_dV^2$			(ASCE 7-10 Equation 29.3-1)
	= **26.54** **psf**			
Gust Factor, G		0.85		(ASCE 7-10 Section 26.9)
Enclosure Shape:		Square		
Net Force Coefficient, C_f		1.29		(ASCE 7-10 Figure 29.5-1)
Area Wind Force, F	= q_zGC_f			(ASCE 7-10 Equation 29.5-2)
	= **29.17** **psf**			


Beam C
Beam E
Beam F
Beam B
Beam D
Beam A


Y
X
Z

Date: 3/10/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: LBW **Checked By:** MSC

Steel Platform Design Calculations:

Live Loads:

Snow Load	30	psf
Service Load	25	psf

Dead Loads:

Grating	15	psf
Railing	10	plf
Wall, Roof, and Floor Load	10	psf
(1) Battery Rack	3400	lbs.
(1) DC Plant	2000	lbs.
(1) FIF Rack	2000	lbs.
(1) UMTS Cabinet	500	lbs.
(2) GSM Cabinet	400	lbs.
(1) LTE Rack	2000	lbs.
(2) HVAC Unit	8000	lbs.
Total=	**18300**	**lbs.**

Shelter Area (26.33 ft. x 15.42 ft.)	405.97	ft^2

Area/Load=	45.08 psf

Date: 3/10/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: LBW Checked By: MSC

Load Breakdown

- **Beam A and B**

Live Load

→ Service Load	25	psf	x	7.71	ft. (Tributary Width)
=	**192.71**	**plf**			

Dead Load

→ Equipment	45.08	psf	x	7.71	ft. (Tributary Width)
	347.47	plf			
→ Wall	10.00	psf	x	11.5	ft. (Wall Height)
	115.00	plf			
→ Roof	10.00	psf	x	7.71	ft. (Tributary Width)
	77.08	plf			
→ Floor	10.00	psf	x	7.71	ft. (Tributary Width)
	77.08	plf			
Total =	**616.63**	**plf**			

- **Beam C**

Live Load

→ Service Load	25	psf	x	2.0	ft. (Tributary Width)
=	**50.00**	**plf**			

Dead Load

→ Grating	15.00	psf	x	2.0	ft. (Tributary Width)
	30.00	**plf**			
→ Railing	10.00	plf			

Date: 3/10/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: LBW Checked By: MSC

Load Breakdown Cont.

- **Beam D**

Live Load

→ Service Load	25	psf	x	2.4	ft. (Tributary Width)
=	**59.38**	**plf**			

Dead Load

→ Grating	15.00	psf	x	2.4	ft. (Tributary Width)
	35.63	**plf**			

- **Beam E and F**

Dead Load

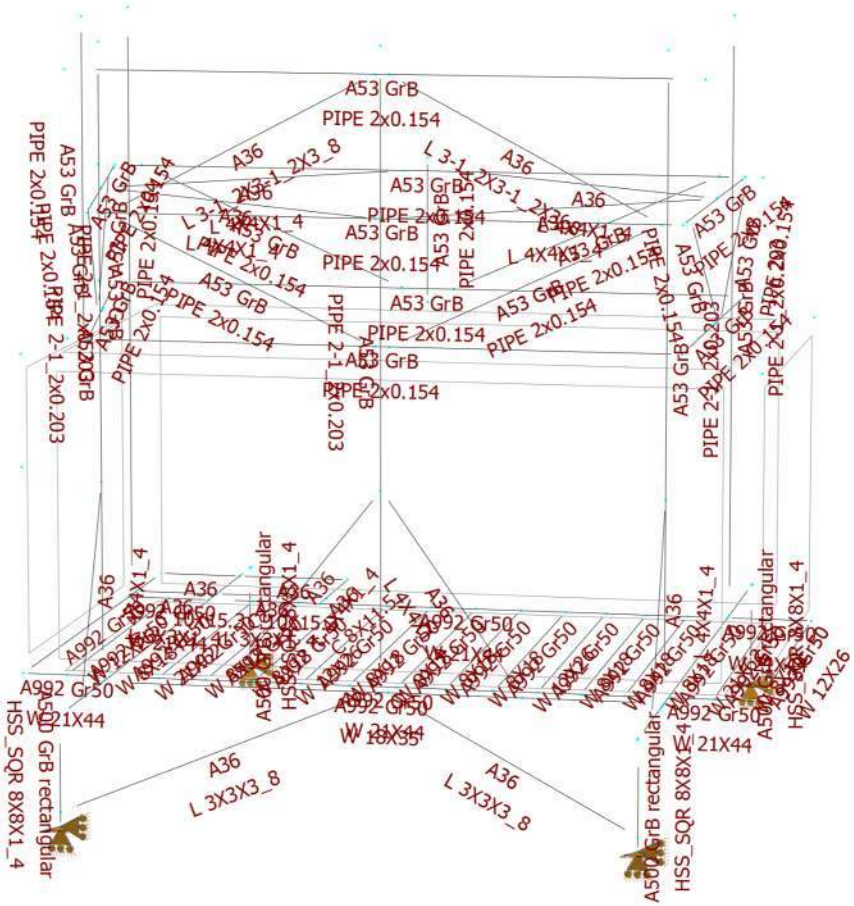
→ Railing	10.00	plf

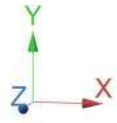
TEP Northeast

Current Date: 3/10/2023 8:27 AM
Units system: English

TEP Northeast

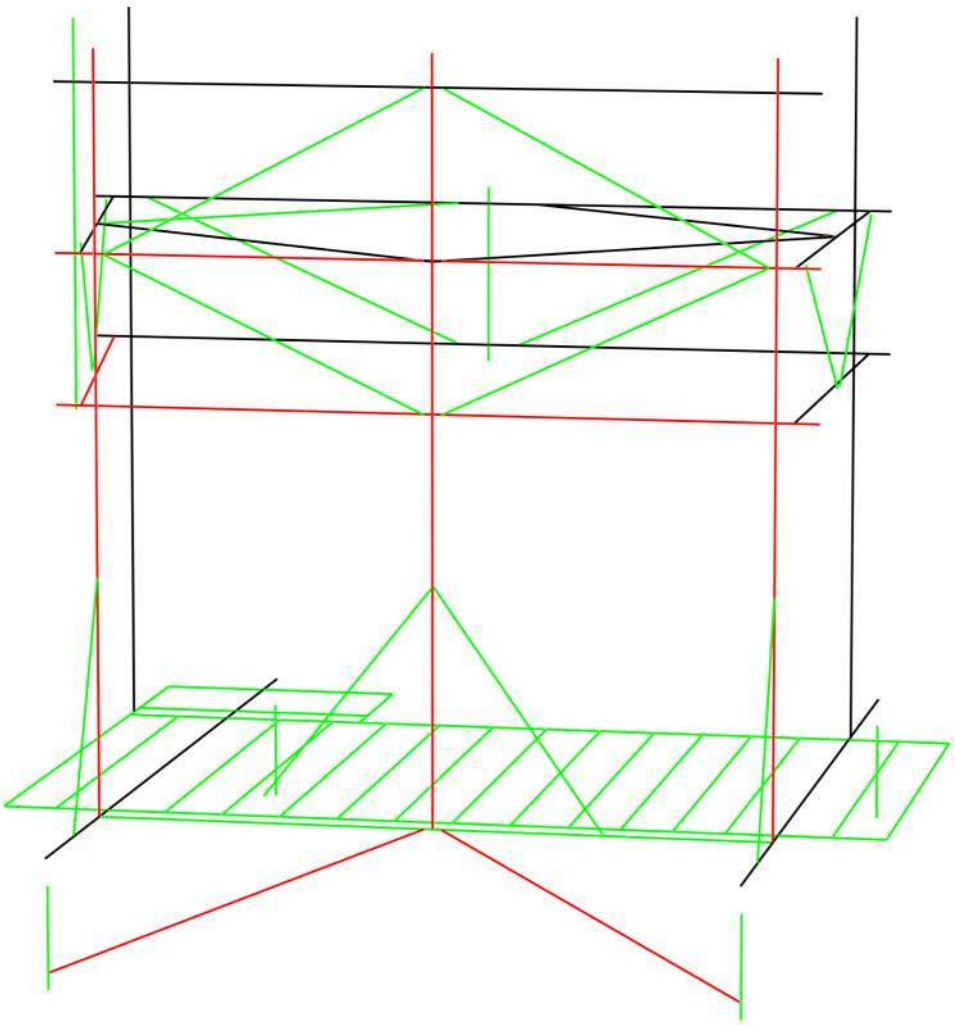
Current Date: 3/10/2023 8:28 AM
Units system: English





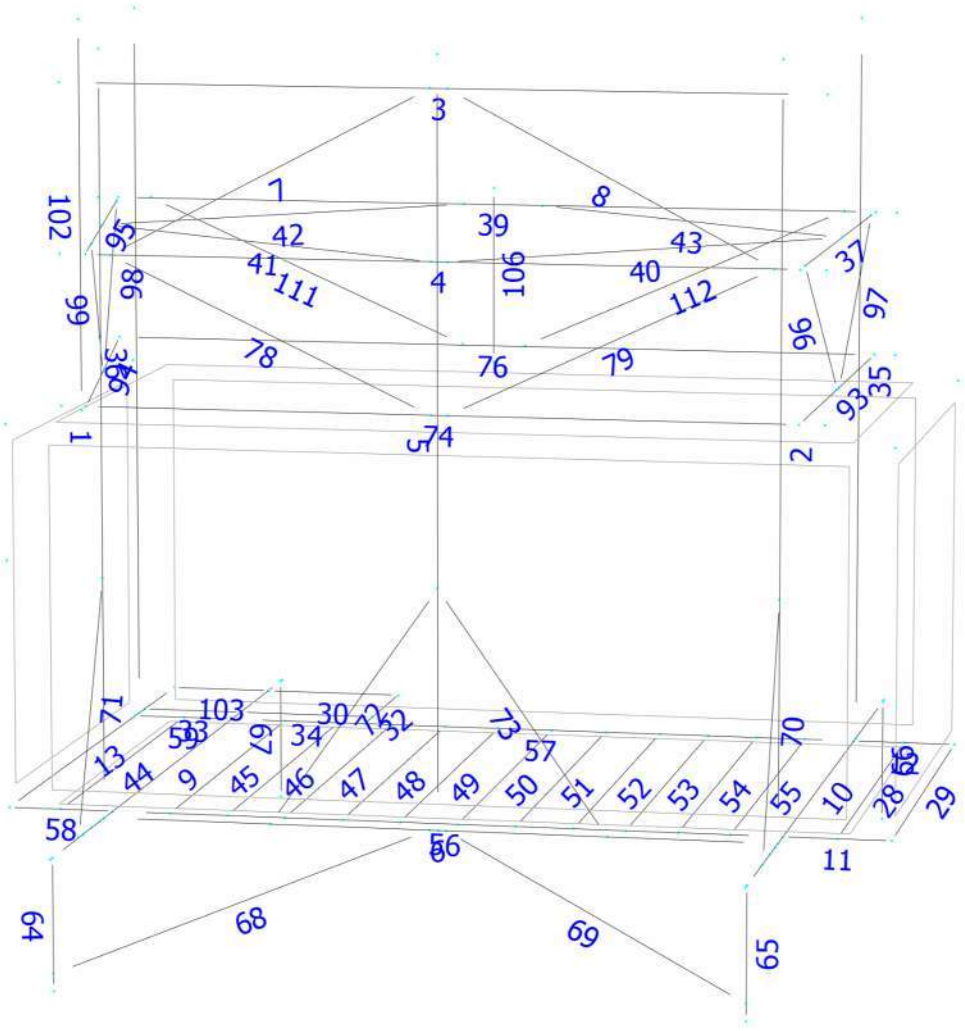
TEP Northeast

Current Date: 3/10/2023 8:28 AM
Units system: English



TEP Northeast

Current Date: 3/10/2023 8:28 AM
Units system: English



RAM® Elements
CONNECT Edition

TEP Northeast

Current Date: 3/10/2023 8:56 AM
Units system: English

Load data

GLOSSARY

Comb : Indicates if load condition is a load combination

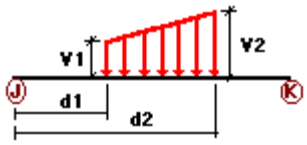
Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
LL	Live Load	No	LL
SL	Snow Load	No	SNOW
WL1	Wind Load Side 1	No	WIND
WL2	Wind Load Side 2	No	WIND
WL3	Wind Load Side 3	No	WIND
WL4	Wind Load Side 4	No	WIND

Load on nodes

Condition	Node	FX [Kip]	FY [Kip]	FZ [Kip]	MX [Kip*ft]	MY [Kip*ft]	MZ [Kip*ft]
DL	260	0.00	-0.12	0.00	0.00	0.00	0.00
	261	0.00	-0.12	0.00	0.00	0.00	0.00
	262	0.00	-0.029	0.00	0.00	0.00	0.00
	265	0.00	-0.06	0.00	0.00	0.00	0.00
	281	0.00	-0.029	0.00	0.00	0.00	0.00
	282	0.00	-0.06	0.00	0.00	0.00	0.00
WL1	260	0.00	0.00	-0.088	0.00	0.00	0.00
	261	0.00	0.00	-0.088	0.00	0.00	0.00
WL2	260	-0.072	0.00	0.00	0.00	0.00	0.00
	261	-0.072	0.00	0.00	0.00	0.00	0.00
	262	-0.041	0.00	0.00	0.00	0.00	0.00
	265	-0.053	0.00	0.00	0.00	0.00	0.00
	281	-0.041	0.00	0.00	0.00	0.00	0.00
	282	-0.053	0.00	0.00	0.00	0.00	0.00
WL4	260	0.072	0.00	0.00	0.00	0.00	0.00
	261	0.072	0.00	0.00	0.00	0.00	0.00
	262	0.041	0.00	0.00	0.00	0.00	0.00
	265	0.053	0.00	0.00	0.00	0.00	0.00
	281	0.041	0.00	0.00	0.00	0.00	0.00
	282	0.053	0.00	0.00	0.00	0.00	0.00

Distributed force on members

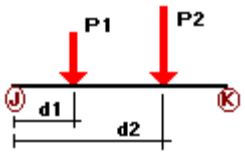


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	11	y	-0.617	0.00	0.00	No	0.00	No
	12	y	-0.617	0.00	0.00	No	0.00	No
	13	y	-0.01	-0.01	75.00	Yes	100.00	Yes
	30	y	-0.01	0.00	0.00	No	0.00	No
		y	-0.03	0.00	0.00	No	0.00	No
	32	y	-0.01	0.00	0.00	No	0.00	No
	33	y	-0.036	0.00	0.00	No	0.00	No
	34	y	-0.036	0.00	0.00	No	0.00	No
	56	y	-0.617	0.00	0.00	No	0.00	No
	57	y	-0.617	0.00	0.00	No	0.00	No
	58	y	-0.617	0.00	0.00	No	0.00	No
	59	y	-0.617	0.00	0.00	No	0.00	No
	103	y	-0.01	0.00	0.00	No	0.00	No
		y	-0.03	0.00	0.00	No	0.00	No
LL	11	y	-0.193	0.00	0.00	No	0.00	No
	12	y	-0.193	0.00	0.00	No	0.00	No
	30	y	-0.05	0.00	0.00	No	0.00	No
	33	y	-0.06	0.00	0.00	No	0.00	No
	34	y	-0.06	0.00	0.00	No	0.00	No
	56	y	-0.193	0.00	0.00	No	0.00	No
	57	y	-0.193	0.00	0.00	No	0.00	No
	58	y	-0.193	0.00	0.00	No	0.00	No
	59	y	-0.193	0.00	0.00	No	0.00	No
	103	y	-0.05	0.00	0.00	No	0.00	No
WL1	1	z	-0.008	0.00	0.00	No	0.00	No
	2	z	-0.008	-0.008	35.00	Yes	100.00	Yes
	3	z	-0.006	0.00	0.00	No	0.00	No
	4	z	-0.006	0.00	0.00	No	0.00	No
	5	z	-0.008	0.00	0.00	No	0.00	No
	7	z	-0.015	0.00	0.00	No	0.00	No
	8	z	-0.015	0.00	0.00	No	0.00	No
	35	z	-0.008	-0.008	0.00	Yes	50.00	Yes
	36	z	-0.008	-0.008	0.00	Yes	50.00	Yes
	39	z	-0.006	0.00	0.00	No	0.00	No
	64	z	-0.022	0.00	0.00	No	0.00	No
	65	z	-0.022	0.00	0.00	No	0.00	No
	68	z	-0.013	0.00	0.00	No	0.00	No
	69	z	-0.013	0.00	0.00	No	0.00	No
	70	z	-0.017	0.00	0.00	No	0.00	No
	71	z	-0.017	0.00	0.00	No	0.00	No
	72	z	-0.017	0.00	0.00	No	0.00	No
	73	z	-0.017	0.00	0.00	No	0.00	No
	74	z	-0.006	0.00	0.00	No	0.00	No
	76	z	-0.006	0.00	0.00	No	0.00	No
	78	z	-0.006	0.00	0.00	No	0.00	No
	79	z	-0.006	0.00	0.00	No	0.00	No
	94	z	-0.006	0.00	0.00	No	0.00	No
	95	z	-0.006	0.00	0.00	No	0.00	No
	98	z	-0.006	0.00	0.00	No	0.00	No
	99	z	-0.006	0.00	0.00	No	0.00	No
	102	z	-0.006	0.00	0.00	No	0.00	No
	106	z	-0.006	0.00	0.00	No	0.00	No
	111	z	-0.006	0.00	0.00	No	0.00	No
	112	z	-0.006	0.00	0.00	No	0.00	No

WL2	1	x	-0.008	0.00	0.00	No	0.00	No
	2	x	-0.008	0.00	0.00	No	0.00	No
	5	x	-0.008	0.00	0.00	No	0.00	No
	35	x	-0.008	0.00	0.00	No	0.00	No
	36	x	-0.008	0.00	0.00	No	0.00	No
	37	x	-0.006	0.00	0.00	No	0.00	No
	65	x	-0.022	0.00	0.00	No	0.00	No
	66	x	-0.022	0.00	0.00	No	0.00	No
	68	x	-0.013	0.00	0.00	No	0.00	No
	69	x	-0.013	0.00	0.00	No	0.00	No
	70	x	-0.017	0.00	0.00	No	0.00	No
	71	x	-0.017	0.00	0.00	No	0.00	No
	72	x	-0.017	0.00	0.00	No	0.00	No
	73	x	-0.017	0.00	0.00	No	0.00	No
	93	x	-0.006	0.00	0.00	No	0.00	No
	94	x	-0.006	0.00	0.00	No	0.00	No
	95	x	-0.006	0.00	0.00	No	0.00	No
	96	x	-0.006	0.00	0.00	No	0.00	No
	97	x	-0.006	0.00	0.00	No	0.00	No
	98	x	-0.006	0.00	0.00	No	0.00	No
	99	x	-0.006	0.00	0.00	No	0.00	No
	102	x	-0.006	0.00	0.00	No	0.00	No
	106	x	-0.006	0.00	0.00	No	0.00	No
WL3	1	z	0.008	0.008	0.00	Yes	50.00	Yes
	2	z	0.008	0.008	0.00	Yes	50.00	Yes
	3	z	0.006	0.00	0.00	No	0.00	No
	4	z	0.006	0.00	0.00	No	0.00	No
	5	z	0.008	0.008	0.00	Yes	50.00	Yes
	7	z	0.015	0.00	0.00	No	0.00	No
	8	z	0.015	0.00	0.00	No	0.00	No
	35	z	0.008	0.00	0.00	No	0.00	No
	36	z	0.008	0.00	0.00	No	0.00	No
	39	z	0.006	0.00	0.00	No	0.00	No
	66	z	0.022	0.00	0.00	No	0.00	No
	67	z	0.022	0.00	0.00	No	0.00	No
	74	z	0.006	0.00	0.00	No	0.00	No
	76	z	0.006	0.00	0.00	No	0.00	No
	78	z	0.006	0.00	0.00	No	0.00	No
	79	z	0.006	0.00	0.00	No	0.00	No
	94	z	0.006	0.00	0.00	No	0.00	No
	95	z	0.006	0.00	0.00	No	0.00	No
	98	z	0.006	0.00	0.00	No	0.00	No
	99	z	0.006	0.00	0.00	No	0.00	No
	102	z	0.006	0.00	0.00	No	0.00	No
	106	z	0.006	0.00	0.00	No	0.00	No
	111	z	0.006	0.00	0.00	No	0.00	No
	112	z	0.006	0.00	0.00	No	0.00	No
WL4	1	x	0.008	0.008	35.00	Yes	100.00	Yes
	2	x	0.008	0.00	0.00	No	0.00	No
	5	x	0.008	0.00	0.00	No	0.00	No
	35	x	0.008	0.00	0.00	No	0.00	No
	36	x	0.008	0.00	0.00	No	0.00	No
	37	x	0.006	0.00	0.00	No	0.00	No
	64	x	0.022	0.00	0.00	No	0.00	No
	67	x	0.022	0.00	0.00	No	0.00	No
	68	x	0.013	0.00	0.00	No	0.00	No
	69	x	0.013	0.00	0.00	No	0.00	No
	70	x	0.017	0.00	0.00	No	0.00	No
	71	x	0.017	0.00	0.00	No	0.00	No
	72	x	0.017	0.00	0.00	No	0.00	No

73	x	0.017	0.00	0.00	No	0.00	No
93	x	0.006	0.00	0.00	No	0.00	No
94	x	0.006	0.00	0.00	No	0.00	No
95	x	0.006	0.00	0.00	No	0.00	No
96	x	0.006	0.00	0.00	No	0.00	No
97	x	0.006	0.00	0.00	No	0.00	No
98	x	0.006	0.00	0.00	No	0.00	No
99	x	0.006	0.00	0.00	No	0.00	No
106	x	0.006	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	2	y	-0.035	0.50	No
		y	-0.035	5.50	No
	102	y	-0.044	0.50	No
		y	-0.044	7.50	No
WL1	2	z	-0.166	0.50	No
		z	-0.166	5.50	No
	102	z	-0.106	0.50	No
		z	-0.106	7.50	No
WL2	2	x	-0.074	0.50	No
		x	-0.074	5.50	No
	102	x	-0.234	0.50	No
		x	-0.234	7.50	No
WL3	2	z	0.166	0.50	No
		z	0.166	5.50	No
	102	z	0.106	0.50	No
		z	0.106	7.50	No
WL4	2	x	0.074	0.50	No
		x	0.074	5.50	No
	102	x	0.234	0.50	No
		x	0.234	7.50	No

Load on shells

Condition	Shell	Pressure [Kip/ft2]	Temp. [F]
SL	5	0.03	0.00
WL1	1	0.03	0.00
WL2	2	0.03	0.00
WL3	3	0.03	0.00
WL4	4	0.03	0.00

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
LL	Live Load	No	0.00	0.00	0.00
SL	Snow Load	No	0.00	0.00	0.00
WL1	Wind Load Side 1	No	0.00	0.00	0.00
WL2	Wind Load Side 2	No	0.00	0.00	0.00
WL3	Wind Load Side 3	No	0.00	0.00	0.00
WL4	Wind Load Side 4	No	0.00	0.00	0.00

RAM® Elements
CONNECT Edition

TEP Northeast

Current Date: 3/10/2023 8:56 AM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.4DL
LC2=1.2DL+1.6LL+0.5SL
LC3=1.2DL+LL+1.6SL
LC4=1.2DL+1.6SL+0.5WL1
LC5=1.2DL+1.6SL+0.5WL2
LC6=1.2DL+1.6SL+0.5WL3
LC7=1.2DL+1.6SL+0.5WL4
LC8=1.2DL+LL+0.5SL+WL1
LC9=1.2DL+LL+0.5SL+WL2
LC10=1.2DL+LL+0.5SL+WL3
LC11=1.2DL+LL+0.5SL+WL4
LC12=1.2DL+LL+0.2SL
LC13=0.9DL+WL1
LC14=0.9DL+WL2
LC15=0.9DL+WL3
LC16=0.9DL+WL4
LC17=0.9DL

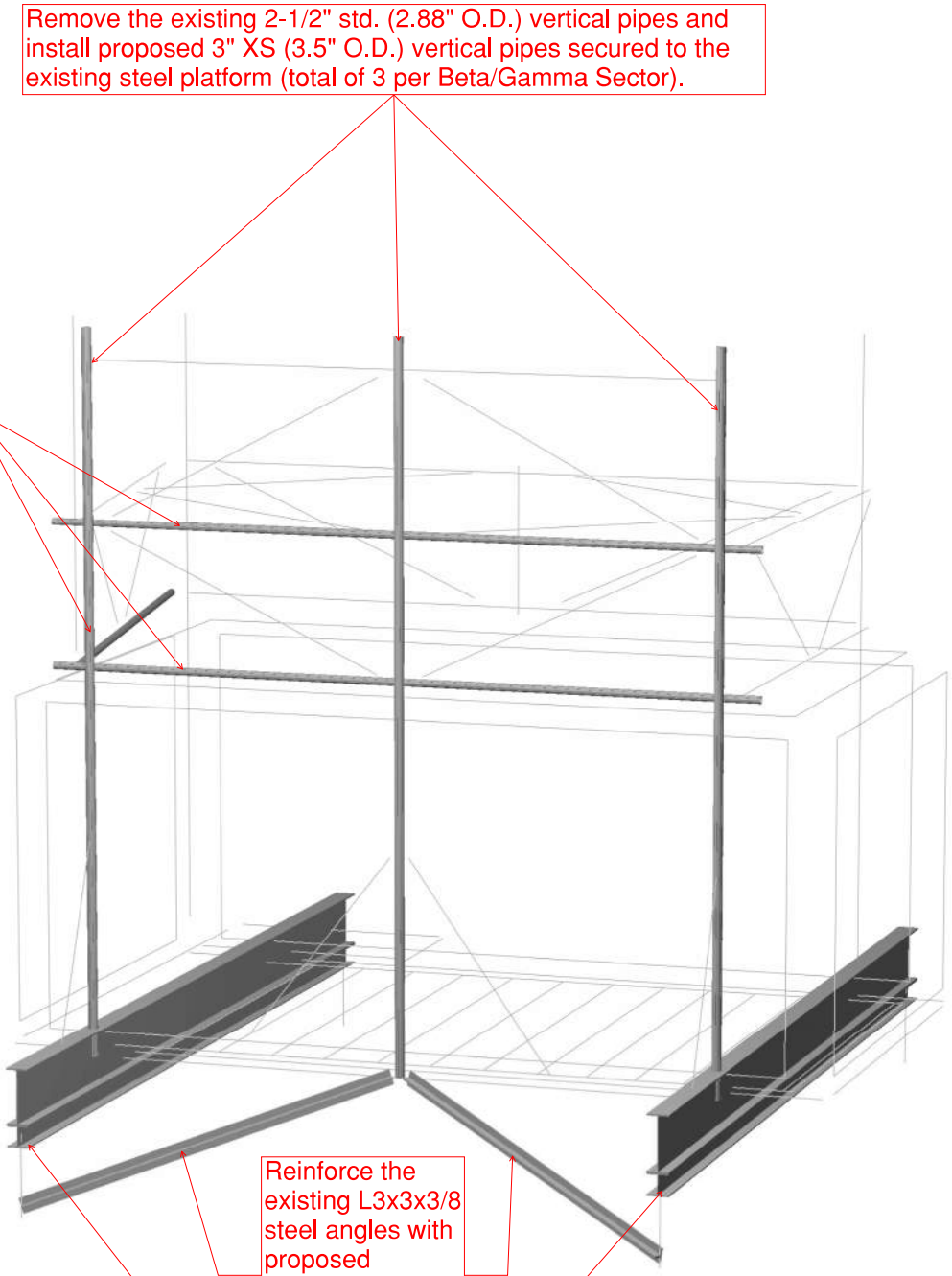
Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 10X15.3	**30**	LC2 at 0.00%	0.05	OK	
		103	LC11 at 100.00%	**0.06**	**OK**	
	C 8X11.5	**32**	LC2 at 75.00%	**0.02**	**OK**	
	HSS_SQR 8X8X1_4	**64**	LC8 at 0.00%	**0.34**	**OK**	
		65	LC8 at 0.00%	0.32	OK	
		66	LC3 at 100.00%	0.07	OK	
		67	LC3 at 100.00%	0.08	OK	
	L 3-1_2X3-1_2X3_8	**7**	LC8 at 50.00%	**0.16**	**OK**	
		8	LC8 at 50.00%	0.15	OK	
	L 3X3X1_4	**33**	LC2 at 50.00%	0.10	OK	
		34	LC2 at 50.00%	**0.20**	**OK**	
	L 3X3X3_8	**68**	LC9 at 0.00%	**1.28**	**N.G.**	
		69	LC11 at 100.00%	1.24	N.G.	
	L 4X4X1_4	**40**	LC10 at 96.88%	0.20	With warnings	
		41	LC10 at 96.88%	0.18	With warnings	
		42	LC10 at 50.00%	0.08	OK	
		43	LC11 at 50.00%	0.09	With warnings	
		70	LC13 at 100.00%	0.27	OK	
		71	LC13 at 93.75%	**0.32**	**OK**	
		72	LC16 at 0.00%	0.13	OK	
		73	LC14 at 100.00%	0.13	OK	
	PIPE 2-1_2x0.203	**1**	LC8 at 68.75%	**1.68**	**N.G.**	
		2	LC8 at 68.75%	1.49	N.G.	
		5	LC9 at 46.25%	1.47	N.G.	
		35	LC9 at 47.92%	0.46	With warnings	

	36	LC11 at 47.92%	0.46	With warnings
PIPE 2x0.154	**3**	LC8 at 48.96%	0.83	With warnings
	4	LC15 at 50.00%	1.16	N.G.
	37	LC8 at 4.69%	0.60	With warnings
	39	LC10 at 49.38%	0.51	With warnings
	74	LC14 at 50.00%	**1.29**	**N.G.**
	76	LC9 at 95.31%	0.22	With warnings
	78	LC16 at 100.00%	0.14	OK
	79	LC14 at 100.00%	0.20	OK
	93	LC15 at 0.00%	0.84	With warnings
	94	LC15 at 0.00%	1.19	N.G.
	95	LC13 at 6.25%	0.83	With warnings
	96	LC8 at 100.00%	0.07	OK
	97	LC15 at 100.00%	0.08	OK
	98	LC15 at 100.00%	0.09	OK
	99	LC8 at 100.00%	0.06	OK
	102	LC9 at 58.33%	0.86	OK
	106	LC8 at 89.58%	0.19	OK
	111	LC10 at 50.00%	0.08	OK
	112	LC10 at 50.00%	0.08	OK
W 12X26	**13**	LC2 at 77.68%	**0.02**	**OK**
	29	LC14 at 25.00%	0.00	OK
	47	LC10 at 56.25%	0.01	OK
	52	LC10 at 48.44%	0.01	OK
W 18X35	**6**	LC11 at 47.92%	**0.09**	**OK**
W 21X44	**11**	LC3 at 0.00%	0.02	OK
	12	LC3 at 0.00%	0.02	OK
	56	LC11 at 96.35%	**0.04**	**OK**
	57	LC8 at 4.33%	0.03	OK
	58	LC3 at 100.00%	0.02	OK
	59	LC3 at 100.00%	0.02	OK
W 21X62	**9**	LC3 at 24.17%	**0.98**	**OK**
	10	LC3 at 24.11%	0.95	OK
W 8X18	**28**	LC9 at 50.00%	**0.15**	**OK**
	44	LC11 at 50.00%	0.14	OK
	45	LC8 at 50.00%	0.06	OK
	46	LC15 at 75.00%	0.01	OK
	48	LC10 at 75.00%	0.02	OK
	49	LC10 at 75.00%	0.02	OK
	50	LC10 at 75.00%	0.02	OK
	51	LC10 at 75.00%	0.02	OK
	53	LC10 at 75.00%	0.02	OK
	54	LC10 at 75.00%	0.01	OK
	55	LC8 at 50.00%	0.07	OK

Modified Beta/Gamma Sector Calculations

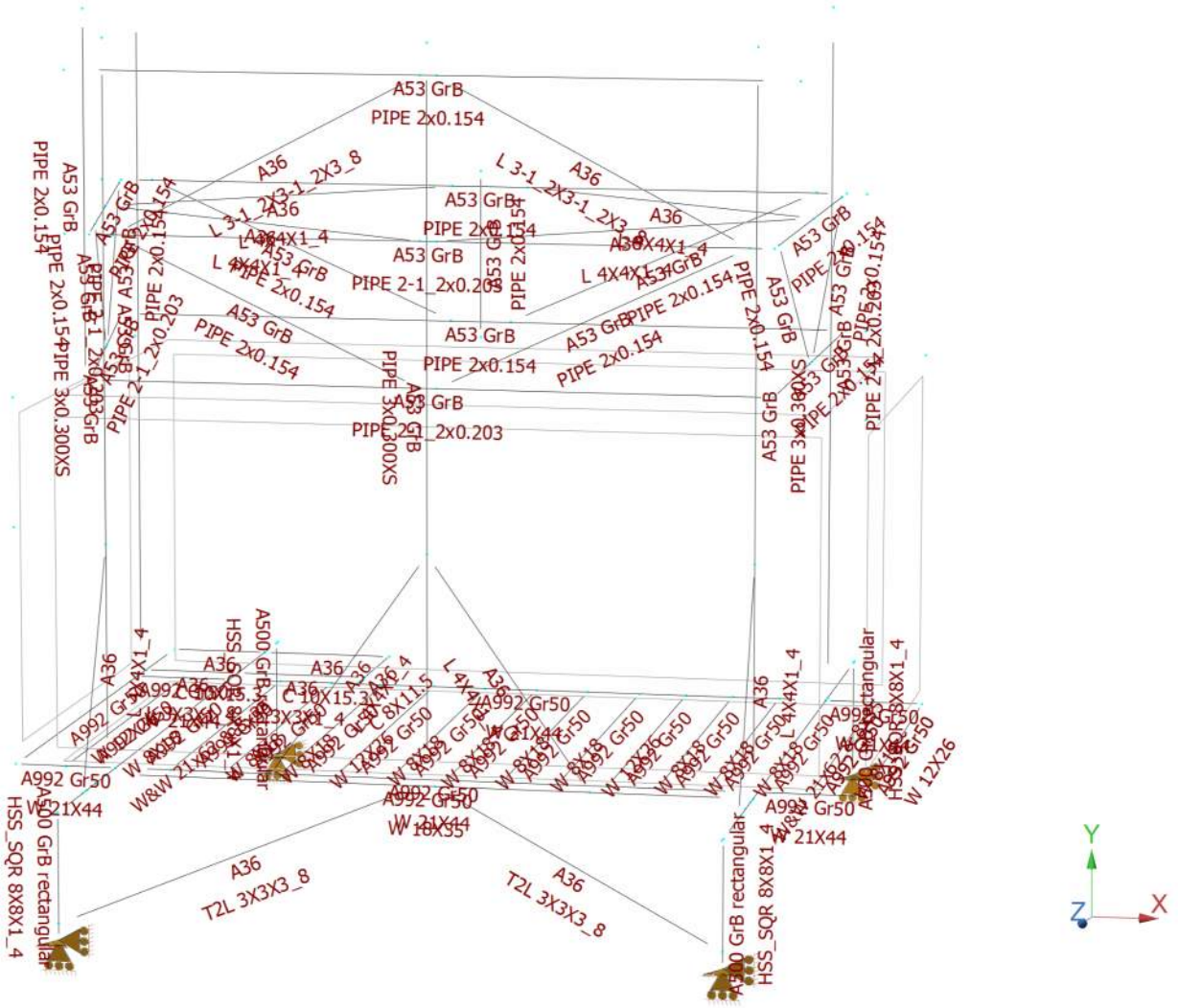
TEP Northeast

Current Date: 3/10/2023 2:59 PM
Units system: English



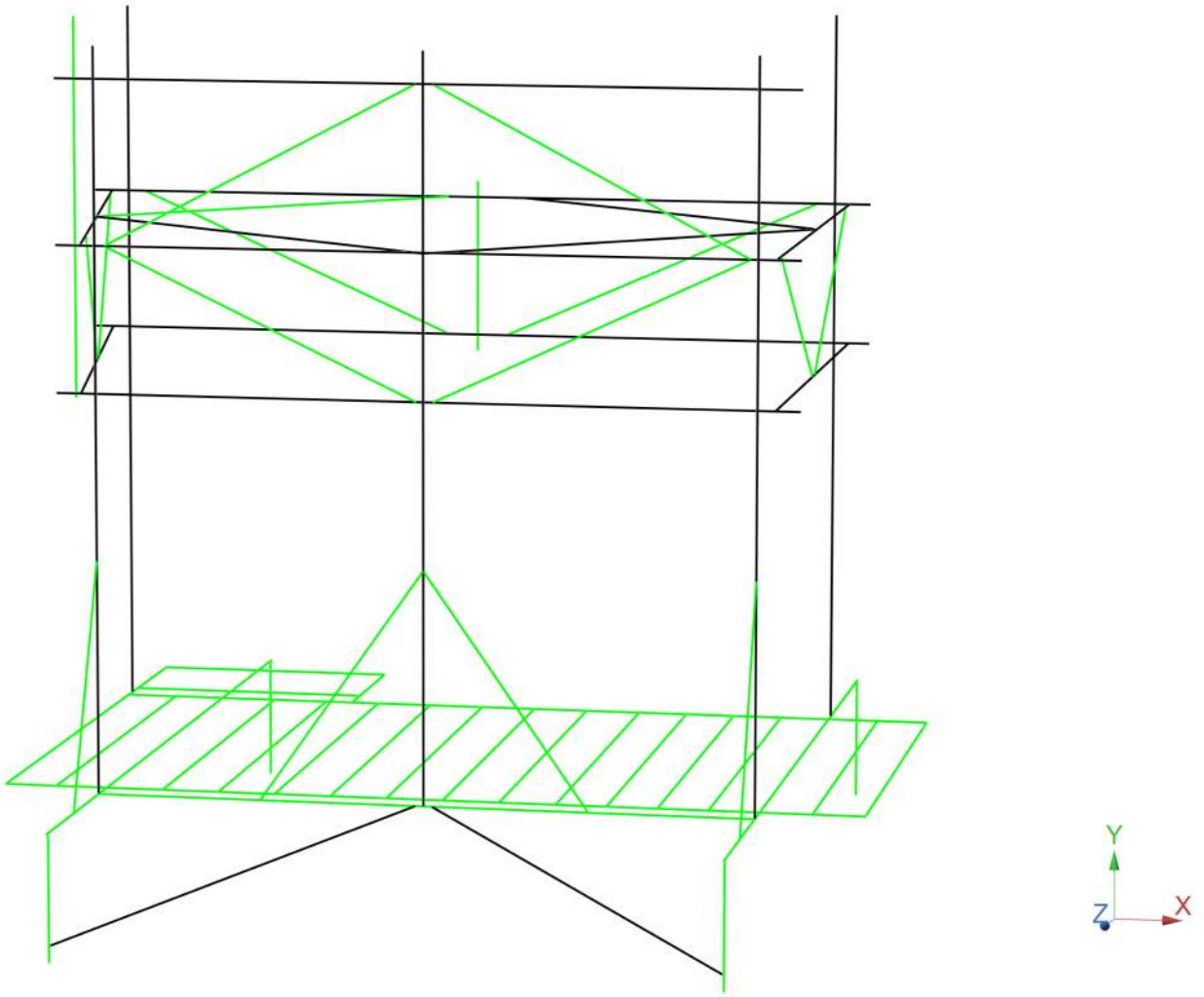
TEP Northeast

Current Date: 3/10/2023 3:04 PM
Units system: English



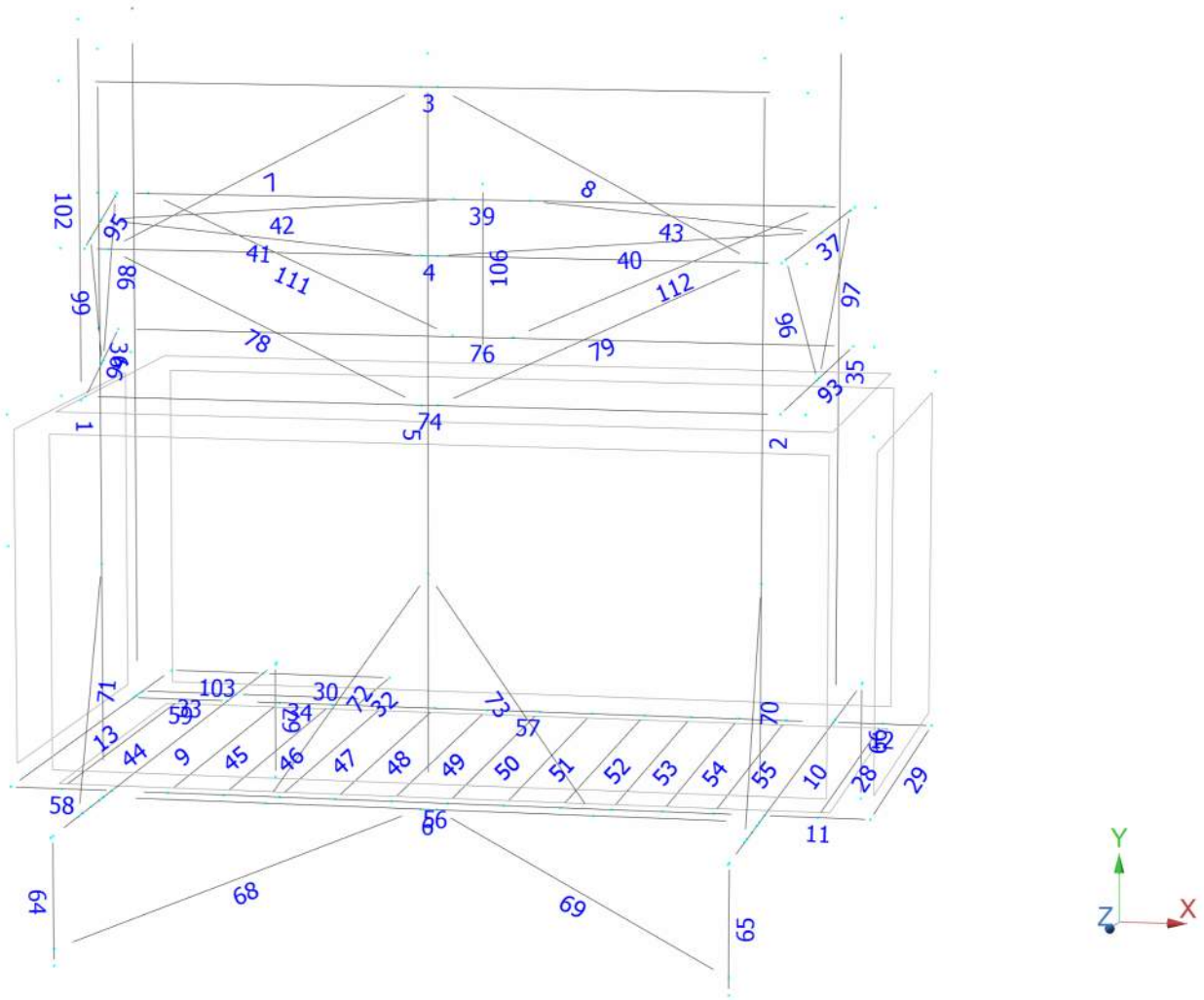
TEP Northeast

Current Date: 3/10/2023 3:05 PM
Units system: English



TEP Northeast

Current Date: 3/10/2023 3:05 PM
Units system: English



RAM® Elements
CONNECT Edition

TEP Northeast

Current Date: 3/10/2023 3:06 PM
Units system: English

Load data

GLOSSARY

Comb : Indicates if load condition is a load combination

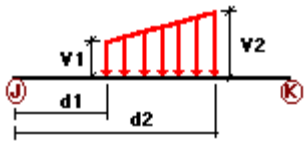
Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
LL	Live Load	No	LL
SL	Snow Load	No	SNOW
WL1	Wind Load Side 1	No	WIND
WL2	Wind Load Side 2	No	WIND
WL3	Wind Load Side 3	No	WIND
WL4	Wind Load Side 4	No	WIND

Load on nodes

Condition	Node	FX [Kip]	FY [Kip]	FZ [Kip]	MX [Kip*ft]	MY [Kip*ft]	MZ [Kip*ft]
DL	260	0.00	-0.12	0.00	0.00	0.00	0.00
	261	0.00	-0.12	0.00	0.00	0.00	0.00
	262	0.00	-0.029	0.00	0.00	0.00	0.00
	265	0.00	-0.06	0.00	0.00	0.00	0.00
	281	0.00	-0.06	0.00	0.00	0.00	0.00
	282	0.00	-0.029	0.00	0.00	0.00	0.00
WL1	260	0.00	0.00	-0.088	0.00	0.00	0.00
	261	0.00	0.00	-0.088	0.00	0.00	0.00
WL2	260	-0.072	0.00	0.00	0.00	0.00	0.00
	261	-0.072	0.00	0.00	0.00	0.00	0.00
	262	-0.041	0.00	0.00	0.00	0.00	0.00
	265	-0.053	0.00	0.00	0.00	0.00	0.00
	281	-0.053	0.00	0.00	0.00	0.00	0.00
	282	-0.041	0.00	0.00	0.00	0.00	0.00
WL4	260	0.072	0.00	0.00	0.00	0.00	0.00
	261	0.072	0.00	0.00	0.00	0.00	0.00
	262	0.041	0.00	0.00	0.00	0.00	0.00
	265	0.053	0.00	0.00	0.00	0.00	0.00
	281	0.053	0.00	0.00	0.00	0.00	0.00
	282	0.041	0.00	0.00	0.00	0.00	0.00

Distributed force on members

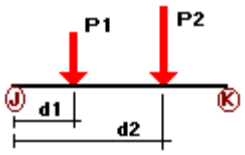


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	11	y	-0.617	0.00	0.00	No	0.00	No
	12	y	-0.617	0.00	0.00	No	0.00	No
	13	y	-0.01	-0.01	75.00	Yes	100.00	Yes
	30	y	-0.01	0.00	0.00	No	0.00	No
		y	-0.03	0.00	0.00	No	0.00	No
	32	y	-0.01	0.00	0.00	No	0.00	No
	33	y	-0.036	0.00	0.00	No	0.00	No
	34	y	-0.036	0.00	0.00	No	0.00	No
	56	y	-0.617	0.00	0.00	No	0.00	No
	57	y	-0.617	0.00	0.00	No	0.00	No
	58	y	-0.617	0.00	0.00	No	0.00	No
	59	y	-0.617	0.00	0.00	No	0.00	No
	103	y	-0.01	0.00	0.00	No	0.00	No
		y	-0.03	0.00	0.00	No	0.00	No
LL	11	y	-0.193	0.00	0.00	No	0.00	No
	12	y	-0.193	0.00	0.00	No	0.00	No
	30	y	-0.05	0.00	0.00	No	0.00	No
	33	y	-0.06	0.00	0.00	No	0.00	No
	34	y	-0.06	0.00	0.00	No	0.00	No
	56	y	-0.193	0.00	0.00	No	0.00	No
	57	y	-0.193	0.00	0.00	No	0.00	No
	58	y	-0.193	0.00	0.00	No	0.00	No
	59	y	-0.193	0.00	0.00	No	0.00	No
	103	y	-0.05	0.00	0.00	No	0.00	No
WL1	1	z	-0.009	0.00	0.00	No	0.00	No
	2	z	-0.009	-0.009	35.00	Yes	100.00	Yes
	3	z	-0.006	0.00	0.00	No	0.00	No
	4	z	-0.008	0.00	0.00	No	0.00	No
	5	z	-0.009	0.00	0.00	No	0.00	No
	7	z	-0.015	0.00	0.00	No	0.00	No
	8	z	-0.015	0.00	0.00	No	0.00	No
	35	z	-0.008	-0.008	0.00	Yes	50.00	Yes
	36	z	-0.008	-0.008	0.00	Yes	50.00	Yes
	39	z	-0.006	0.00	0.00	No	0.00	No
	64	z	-0.022	0.00	0.00	No	0.00	No
	65	z	-0.022	0.00	0.00	No	0.00	No
	68	z	-0.013	0.00	0.00	No	0.00	No
	69	z	-0.013	0.00	0.00	No	0.00	No
	70	z	-0.017	0.00	0.00	No	0.00	No
	71	z	-0.017	0.00	0.00	No	0.00	No
	72	z	-0.017	0.00	0.00	No	0.00	No
	73	z	-0.017	0.00	0.00	No	0.00	No
	74	z	-0.008	0.00	0.00	No	0.00	No
	76	z	-0.006	0.00	0.00	No	0.00	No
	78	z	-0.006	0.00	0.00	No	0.00	No
	79	z	-0.006	0.00	0.00	No	0.00	No
	94	z	-0.008	0.00	0.00	No	0.00	No
	95	z	-0.006	0.00	0.00	No	0.00	No
	98	z	-0.006	0.00	0.00	No	0.00	No
	99	z	-0.006	0.00	0.00	No	0.00	No
	102	z	-0.006	0.00	0.00	No	0.00	No
	106	z	-0.006	0.00	0.00	No	0.00	No
	111	z	-0.006	0.00	0.00	No	0.00	No
	112	z	-0.006	0.00	0.00	No	0.00	No

WL2	1	x	-0.009	0.00	0.00	No	0.00	No
	2	x	-0.009	0.00	0.00	No	0.00	No
	5	x	-0.009	0.00	0.00	No	0.00	No
	35	x	-0.008	0.00	0.00	No	0.00	No
	36	x	-0.008	0.00	0.00	No	0.00	No
	37	x	-0.006	0.00	0.00	No	0.00	No
	65	x	-0.022	0.00	0.00	No	0.00	No
	66	x	-0.022	0.00	0.00	No	0.00	No
	68	x	-0.013	0.00	0.00	No	0.00	No
	69	x	-0.013	0.00	0.00	No	0.00	No
	70	x	-0.017	0.00	0.00	No	0.00	No
	71	x	-0.017	0.00	0.00	No	0.00	No
	72	x	-0.017	0.00	0.00	No	0.00	No
	73	x	-0.017	0.00	0.00	No	0.00	No
	93	x	-0.006	0.00	0.00	No	0.00	No
	94	x	-0.008	0.00	0.00	No	0.00	No
	95	x	-0.006	0.00	0.00	No	0.00	No
	96	x	-0.006	0.00	0.00	No	0.00	No
	97	x	-0.006	0.00	0.00	No	0.00	No
	98	x	-0.006	0.00	0.00	No	0.00	No
	99	x	-0.006	0.00	0.00	No	0.00	No
	102	x	-0.006	0.00	0.00	No	0.00	No
	106	x	-0.006	0.00	0.00	No	0.00	No
WL3	1	z	0.009	0.009	0.00	Yes	50.00	Yes
	2	z	0.009	0.009	0.00	Yes	50.00	Yes
	3	z	0.006	0.00	0.00	No	0.00	No
	4	z	0.008	0.00	0.00	No	0.00	No
	5	z	0.009	0.009	0.00	Yes	50.00	Yes
	7	z	0.015	0.00	0.00	No	0.00	No
	8	z	0.015	0.00	0.00	No	0.00	No
	35	z	0.008	0.00	0.00	No	0.00	No
	36	z	0.008	0.00	0.00	No	0.00	No
	39	z	0.006	0.00	0.00	No	0.00	No
	66	z	0.022	0.00	0.00	No	0.00	No
	67	z	0.022	0.00	0.00	No	0.00	No
	74	z	0.008	0.00	0.00	No	0.00	No
	76	z	0.006	0.00	0.00	No	0.00	No
	78	z	0.006	0.00	0.00	No	0.00	No
	79	z	0.006	0.00	0.00	No	0.00	No
	94	z	0.008	0.00	0.00	No	0.00	No
	95	z	0.006	0.00	0.00	No	0.00	No
	98	z	0.006	0.00	0.00	No	0.00	No
	99	z	0.006	0.00	0.00	No	0.00	No
	102	z	0.006	0.00	0.00	No	0.00	No
	106	z	0.006	0.00	0.00	No	0.00	No
	111	z	0.006	0.00	0.00	No	0.00	No
	112	z	0.006	0.00	0.00	No	0.00	No
WL4	1	x	0.009	0.008	35.00	Yes	100.00	Yes
	2	x	0.009	0.00	0.00	No	0.00	No
	5	x	0.009	0.00	0.00	No	0.00	No
	35	x	0.008	0.00	0.00	No	0.00	No
	36	x	0.008	0.00	0.00	No	0.00	No
	37	x	0.006	0.00	0.00	No	0.00	No
	64	x	0.022	0.00	0.00	No	0.00	No
	67	x	0.022	0.00	0.00	No	0.00	No
	68	x	0.013	0.00	0.00	No	0.00	No
	69	x	0.013	0.00	0.00	No	0.00	No
	70	x	0.017	0.00	0.00	No	0.00	No
	71	x	0.017	0.00	0.00	No	0.00	No
	72	x	0.017	0.00	0.00	No	0.00	No

73	x	0.017	0.00	0.00	No	0.00	No
93	x	0.006	0.00	0.00	No	0.00	No
94	x	0.008	0.00	0.00	No	0.00	No
95	x	0.006	0.00	0.00	No	0.00	No
96	x	0.006	0.00	0.00	No	0.00	No
97	x	0.006	0.00	0.00	No	0.00	No
98	x	0.006	0.00	0.00	No	0.00	No
99	x	0.006	0.00	0.00	No	0.00	No
106	x	0.006	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	2	y	-0.035	0.50	No
		y	-0.035	5.50	No
	102	y	-0.044	0.50	No
		y	-0.044	7.50	No
WL1	2	z	-0.166	0.50	No
		z	-0.166	5.50	No
	102	z	-0.106	0.50	No
		z	-0.106	7.50	No
WL2	2	x	-0.074	0.50	No
		x	-0.074	5.50	No
	102	x	-0.234	0.50	No
		x	-0.234	7.50	No
WL3	2	z	0.166	0.50	No
		z	0.166	5.50	No
	102	z	0.106	0.50	No
		z	0.106	7.50	No
WL4	2	x	0.074	0.50	No
		x	0.074	5.50	No
	102	x	0.234	0.50	No
		x	0.234	7.50	No

Load on shells

Condition	Shell	Pressure [Kip/ft2]	Temp. [F]
SL	5	0.03	0.00
WL1	1	0.03	0.00
WL2	2	0.03	0.00
WL3	3	0.03	0.00
WL4	4	0.03	0.00

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
LL	Live Load	No	0.00	0.00	0.00
SL	Snow Load	No	0.00	0.00	0.00
WL1	Wind Load Side 1	No	0.00	0.00	0.00
WL2	Wind Load Side 2	No	0.00	0.00	0.00
WL3	Wind Load Side 3	No	0.00	0.00	0.00
WL4	Wind Load Side 4	No	0.00	0.00	0.00

RAM® Elements
CONNECT Edition

TEP Northeast

Current Date: 3/10/2023 3:06 PM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

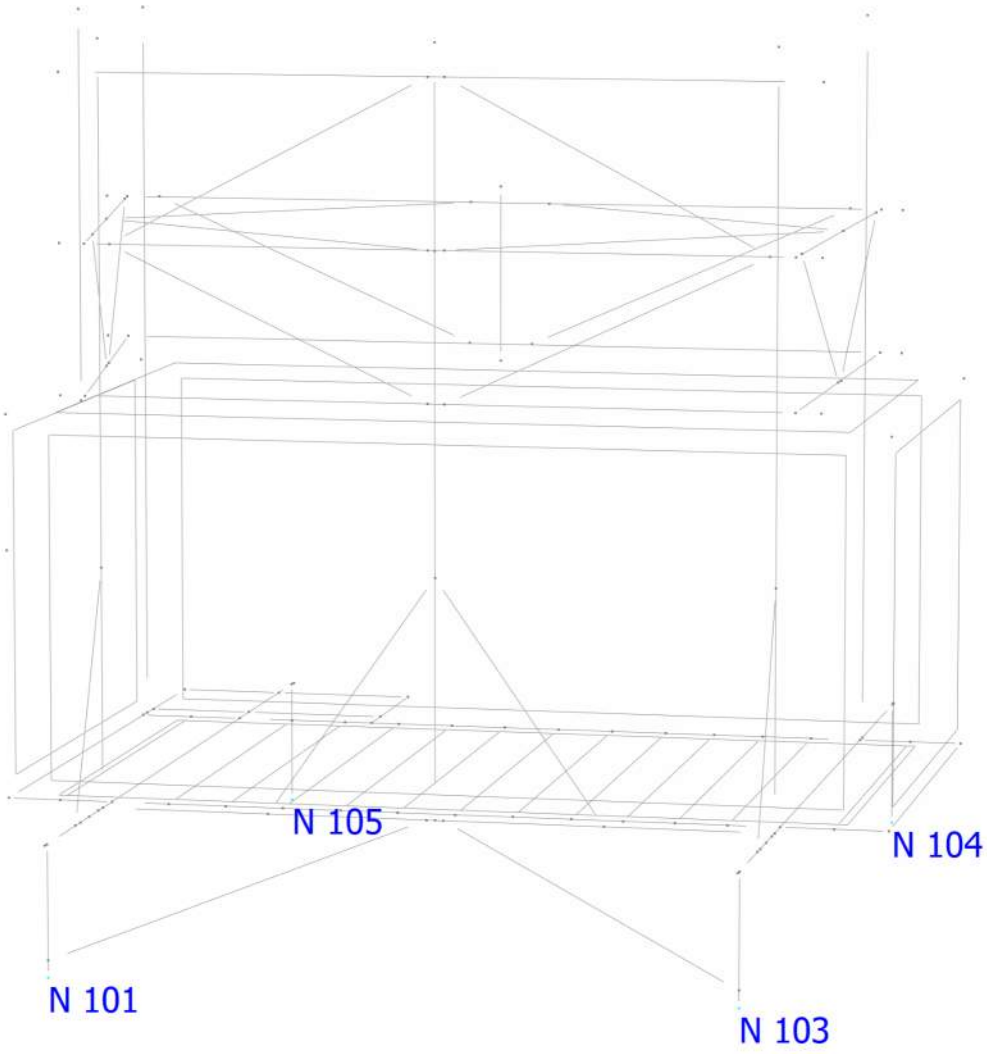
LC1=1.4DL
LC2=1.2DL+1.6LL+0.5SL
LC3=1.2DL+LL+1.6SL
LC4=1.2DL+1.6SL+0.5WL1
LC5=1.2DL+1.6SL+0.5WL2
LC6=1.2DL+1.6SL+0.5WL3
LC7=1.2DL+1.6SL+0.5WL4
LC8=1.2DL+LL+0.5SL+WL1
LC9=1.2DL+LL+0.5SL+WL2
LC10=1.2DL+LL+0.5SL+WL3
LC11=1.2DL+LL+0.5SL+WL4
LC12=1.2DL+LL+0.2SL
LC13=0.9DL+WL1
LC14=0.9DL+WL2
LC15=0.9DL+WL3
LC16=0.9DL+WL4
LC17=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 10X15.3	**30**	LC2 at 0.00%	**0.06**	**OK**	
		103	LC2 at 100.00%	0.06	OK	
	C 8X11.5	**32**	LC2 at 75.00%	**0.02**	**OK**	
	HSS_SQR 8X8X1_4	**64**	LC8 at 0.00%	**0.33**	**OK**	
		65	LC8 at 0.00%	0.32	OK	
		66	LC3 at 100.00%	0.08	OK	
		67	LC3 at 100.00%	0.08	OK	
	L 3-1_2X3-1_2X3_8	**7**	LC8 at 50.00%	**0.16**	**OK**	
		8	LC8 at 50.00%	0.16	OK	
	L 3X3X1_4	**33**	LC2 at 50.00%	0.10	OK	
		34	LC2 at 50.00%	**0.20**	**OK**	
	L 4X4X1_4	**40**	LC10 at 96.88%	0.20	With warnings	
		41	LC10 at 96.88%	0.18	With warnings	
		42	LC9 at 50.00%	0.08	OK	
		43	LC11 at 50.00%	0.09	With warnings	
		70	LC13 at 100.00%	0.29	OK	
		71	LC13 at 93.75%	**0.34**	**OK**	
		72	LC16 at 0.00%	0.14	OK	
		73	LC14 at 100.00%	0.13	OK	
	PIPE 2-1_2x0.203	**4**	LC15 at 50.00%	0.55	With warnings	
		35	LC8 at 27.08%	0.45	With warnings	
		36	LC8 at 27.08%	0.45	With warnings	
		74	LC14 at 50.00%	**0.62**	**With warnings**	
		94	LC15 at 0.00%	0.57	With warnings	
	PIPE 2x0.154	**3**	LC8 at 50.00%	**0.88**	**With warnings**	

	37	LC8 at 4.69%	0.60	With warnings
	39	LC10 at 53.13%	0.52	With warnings
	76	LC9 at 3.91%	0.16	With warnings
	78	LC16 at 100.00%	0.14	OK
	79	LC14 at 50.00%	0.23	OK
	93	LC15 at 0.00%	0.74	With warnings
	95	LC13 at 6.25%	0.84	With warnings
	96	LC8 at 100.00%	0.07	OK
	97	LC15 at 100.00%	0.08	OK
	98	LC15 at 100.00%	0.09	OK
	99	LC8 at 100.00%	0.06	OK
	102	LC9 at 58.33%	0.86	OK
	106	LC8 at 89.58%	0.17	OK
	111	LC10 at 50.00%	0.08	OK
	112	LC10 at 50.00%	0.08	OK
PIPE 3x0.300XS	**1**	LC8 at 68.75%	**0.79**	**With warnings**
	2	LC8 at 68.75%	0.69	With warnings
	5	LC9 at 46.25%	0.73	With warnings
T2L 3X3X3_8	**68**	LC9 at 43.75%	**0.52**	**With warnings**
	69	LC11 at 56.25%	0.50	With warnings
W 12X26	**13**	LC8 at 18.75%	**0.05**	**OK**
	29	LC3 at 25.00%	0.03	OK
	47	LC8 at 43.75%	0.01	OK
	52	LC10 at 48.44%	0.01	OK
W 18X35	**6**	LC11 at 47.92%	**0.09**	**OK**
W 21X44	**11**	LC3 at 50.00%	0.02	OK
	12	LC3 at 50.00%	0.02	OK
	56	LC11 at 96.35%	**0.08**	**OK**
	57	LC8 at 0.00%	0.08	OK
	58	LC3 at 50.00%	0.02	OK
	59	LC3 at 50.00%	0.02	OK
W 8X18	**28**	LC9 at 50.00%	0.13	OK
	44	LC11 at 50.00%	**0.13**	**OK**
	45	LC3 at 25.00%	0.10	OK
	46	LC8 at 25.00%	0.04	OK
	48	LC10 at 75.00%	0.02	OK
	49	LC10 at 75.00%	0.02	OK
	50	LC10 at 75.00%	0.02	OK
	51	LC10 at 75.00%	0.02	OK
	53	LC8 at 35.94%	0.03	OK
	54	LC3 at 25.00%	0.05	OK
	55	LC3 at 25.00%	0.10	OK
W&W 21x62 & 8x35	**9**	LC3 at 75.83%	**0.51**	**OK**
	10	LC3 at 24.11%	0.50	OK

TEP Northeast

Current Date: 3/10/2023 3:06 PM
Units system: English



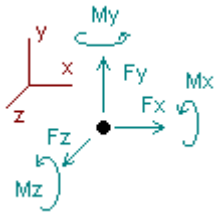
RAM® Elements
CONNECT Edition

TEP Northeast

Current Date: 3/10/2023 3:07 PM
Units system: English

Analysis result

Reactions



Direction of positive forces and moments

	Forces [Kip]			Moments [Kip*ft]		
Node	**FX**	**FY**	**FZ**	**MX**	**MY**	**MZ**
Condition **LC1=1.4DL**						
101	0.00303	18.29383	0.07572	0.00000	0.00000	0.00000
105	0.01236	18.01434	-0.05457	0.00000	0.00000	0.00000
104	0.00219	16.86297	-0.04950	0.00000	0.00000	0.00000
103	-0.01758	17.82529	0.02835	0.00000	0.00000	0.00000
SUM	0.00000	70.99643	0.00000	0.00000	0.00000	0.00000
Condition **LC2=1.2DL+1.6LL+0.5SL**						
101	-0.00443	21.50823	0.11298	0.00000	0.00000	0.00000
105	0.01874	22.06965	-0.08012	0.00000	0.00000	0.00000
104	0.00392	20.12156	-0.07020	0.00000	0.00000	0.00000
103	-0.01822	20.82775	0.03734	0.00000	0.00000	0.00000
SUM	0.00000	84.52719	0.00000	0.00000	0.00000	0.00000
Condition **LC3=1.2DL+LL+1.6SL**						
101	-0.00627	23.24550	0.12870	0.00000	0.00000	0.00000
105	0.02132	23.50059	-0.09228	0.00000	0.00000	0.00000
104	0.00374	21.90667	-0.08332	0.00000	0.00000	0.00000
103	-0.01879	22.67773	0.04689	0.00000	0.00000	0.00000
SUM	0.00000	91.33049	0.00000	0.00000	0.00000	0.00000
Condition **LC4=1.2DL+1.6SL+0.5WL1**						
101	-0.15086	19.24410	3.45000	0.00000	0.00000	0.00000
105	0.01979	21.61873	-0.09832	0.00000	0.00000	0.00000
104	0.00401	20.52114	-0.09034	0.00000	0.00000	0.00000
103	0.12705	18.95683	3.23960	0.00000	0.00000	0.00000
SUM	0.00000	80.34080	6.50095	0.00000	0.00000	0.00000

Condition **LC5=1.2DL+1.6SL+0.5WL2**

101	2.24068	22.86489	-2.77739	0.00000	0.00000	0.00000
105	-0.02355	20.49702	-0.06238	0.00000	0.00000	0.00000
104	-0.02106	19.12240	-0.07190	0.00000	0.00000	0.00000
103	2.17540	17.85648	2.91168	0.00000	0.00000	0.00000
SUM	4.37148	80.34080	0.00000	0.00000	0.00000	0.00000

Condition **LC6=1.2DL+1.6SL+0.5WL3**

101	0.02694	21.81985	-2.96898	0.00000	0.00000	0.00000
105	0.01251	19.04457	-0.06273	0.00000	0.00000	0.00000
104	0.00079	18.13542	-0.05995	0.00000	0.00000	0.00000
103	-0.04024	21.34096	-2.89715	0.00000	0.00000	0.00000
SUM	0.00000	80.34080	-5.98881	0.00000	0.00000	0.00000

Condition **LC7=1.2DL+1.6SL+0.5WL4**

101	-2.22422	18.30427	2.94406	0.00000	0.00000	0.00000
105	0.03828	20.14110	-0.07739	0.00000	0.00000	0.00000
104	0.04165	19.47825	-0.05745	0.00000	0.00000	0.00000
103	-2.15336	22.41718	-2.80921	0.00000	0.00000	0.00000
SUM	-4.29766	80.34080	0.00000	0.00000	0.00000	0.00000

Condition **LC8=1.2DL+LL+0.5SL+WL1**

101	-0.30064	17.26783	6.80513	0.00000	0.00000	0.00000
105	0.02403	22.77848	-0.12647	0.00000	0.00000	0.00000
104	0.00679	20.98074	-0.11141	0.00000	0.00000	0.00000
103	0.26983	16.90632	6.43463	0.00000	0.00000	0.00000
SUM	0.00000	77.93337	13.00189	0.00000	0.00000	0.00000

Condition **LC9=1.2DL+LL+0.5SL+WL2**

101	4.47968	24.50689	-5.64677	0.00000	0.00000	0.00000
105	-0.06306	20.53681	-0.05227	0.00000	0.00000	0.00000
104	-0.03917	18.18295	-0.07319	0.00000	0.00000	0.00000
103	4.36549	14.70672	5.77223	0.00000	0.00000	0.00000
SUM	8.74295	77.93337	0.00000	0.00000	0.00000	0.00000

Condition **LC10=1.2DL+LL+0.5SL+WL3**

101	0.05511	22.41939	-6.03193	0.00000	0.00000	0.00000
105	0.00945	17.63012	-0.05618	0.00000	0.00000	0.00000
104	0.00028	16.20995	-0.05411	0.00000	0.00000	0.00000
103	-0.06483	21.67393	-5.83540	0.00000	0.00000	0.00000
SUM	0.00001	77.93338	-11.97762	0.00000	0.00000	0.00000

Condition **LC11=1.2DL+LL+0.5SL+WL4**

101	-4.44543	15.38987	5.78361	0.00000	0.00000	0.00000
105	0.05919	19.82264	-0.08207	0.00000	0.00000	0.00000
104	0.07912	18.89694	-0.04549	0.00000	0.00000	0.00000
103	-4.28822	23.82393	-5.65605	0.00000	0.00000	0.00000
SUM	-8.59533	77.93337	0.00000	0.00000	0.00000	0.00000

Condition **LC12=1.2DL+LL+0.2SL**

101	-0.00065	18.98150	0.08573	0.00000	0.00000	0.00000
105	0.01410	19.24035	-0.06119	0.00000	0.00000	0.00000
104	0.00281	17.65426	-0.05408	0.00000	0.00000	0.00000
103	-0.01627	18.40350	0.02953	0.00000	0.00000	0.00000
SUM	0.00000	74.27961	0.00000	0.00000	0.00000	0.00000

Condition **LC13=0.9DL+WL1**

101	-0.29254	9.14330	6.71148	0.00000	0.00000	0.00000
105	0.00989	14.19678	-0.05874	0.00000	0.00000	0.00000
104	0.00294	13.25351	-0.05251	0.00000	0.00000	0.00000
103	0.27971	9.04696	6.40165	0.00000	0.00000	0.00000
SUM	0.00000	45.64056	13.00189	0.00000	0.00000	0.00000

Condition **LC14=0.9DL+WL2**

101	4.45055	16.33806	-5.60069	0.00000	0.00000	0.00000
105	-0.03870	11.98027	-0.01403	0.00000	0.00000	0.00000
104	-0.00635	10.43719	-0.02775	0.00000	0.00000	0.00000
103	4.33745	6.88504	5.64248	0.00000	0.00000	0.00000
SUM	8.74295	45.64056	0.00000	0.00000	0.00000	0.00000

Condition **LC15=0.9DL+WL3**

101	0.05808	14.28292	-6.06773	0.00000	0.00000	0.00000
105	0.00190	9.05893	-0.03257	0.00000	0.00000	0.00000
104	-0.00046	8.48502	-0.03298	0.00000	0.00000	0.00000
103	-0.05951	13.81370	-5.84434	0.00000	0.00000	0.00000
SUM	0.00001	45.64057	-11.97762	0.00000	0.00000	0.00000

Condition **LC16=0.9DL+WL4**

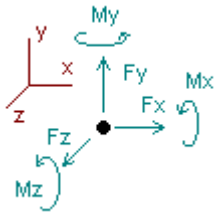
101	-4.40508	7.29659	5.61152	0.00000	0.00000	0.00000
105	0.01314	11.22679	-0.03046	0.00000	0.00000	0.00000
104	0.04299	11.19039	-0.01225	0.00000	0.00000	0.00000
103	-4.24638	15.92679	-5.56881	0.00000	0.00000	0.00000
SUM	-8.59533	45.64056	0.00000	0.00000	0.00000	0.00000

Condition **LC17=0.9DL**

101	0.00396	11.76453	0.03086	0.00000	0.00000	0.00000
105	0.00496	11.57693	-0.02245	0.00000	0.00000	0.00000
104	0.00082	10.83928	-0.02040	0.00000	0.00000	0.00000
103	-0.00975	11.45982	0.01199	0.00000	0.00000	0.00000
SUM	0.00000	45.64056	0.00000	0.00000	0.00000	0.00000

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



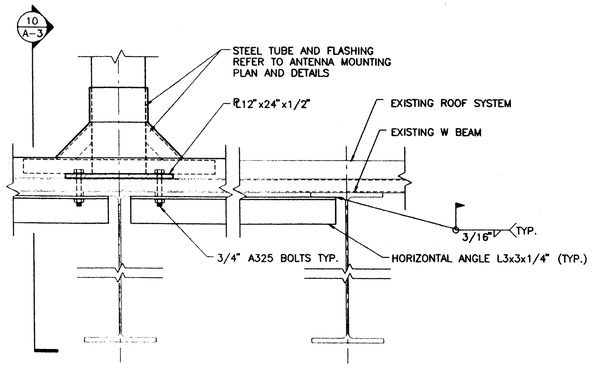
Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.4DL
LC2=1.2DL+1.6LL+0.5SL
LC3=1.2DL+LL+1.6SL
LC4=1.2DL+1.6SL+0.5WL1
LC5=1.2DL+1.6SL+0.5WL2
LC6=1.2DL+1.6SL+0.5WL3
LC7=1.2DL+1.6SL+0.5WL4
LC8=1.2DL+LL+0.5SL+WL1
LC9=1.2DL+LL+0.5SL+WL2
LC10=1.2DL+LL+0.5SL+WL3
LC11=1.2DL+LL+0.5SL+WL4
LC12=1.2DL+LL+0.2SL
LC13=0.9DL+WL1
LC14=0.9DL+WL2
LC15=0.9DL+WL3
LC16=0.9DL+WL4
LC17=0.9DL

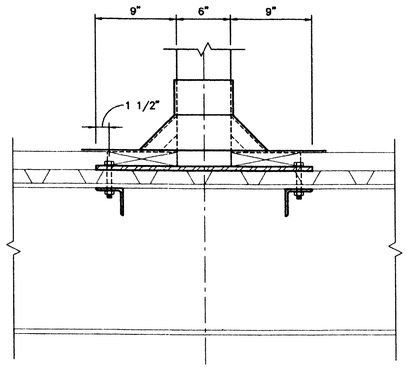
		Forces						Moments					
Node		**Fx** [Kip]	**Ic**	**Fy** [Kip]	**Ic**	**Fz** [Kip]	**Ic**	**Mx** [Kip*ft]	**Ic**	**My** [Kip*ft]	**Ic**	**Mz** [Kip*ft]	**Ic**
101	Max	4.480	LC9	24.507	LC9	6.805	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-4.445	LC11	7.297	LC16	-6.068	LC15	0.00000	LC1	0.00000	LC1	0.00000	LC1
105	Max	0.059	LC11	23.501	LC3	-0.014	LC14	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.063	LC9	9.059	LC15	-0.126	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1
104	Max	0.079	LC11	21.907	LC3	-0.012	LC16	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.039	LC9	8.485	LC15	-0.111	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1
103	Max	4.365	LC9	23.824	LC11	6.435	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-4.288	LC11	6.885	LC14	-5.844	LC15	0.00000	LC1	0.00000	LC1	0.00000	LC1

Reference Documents



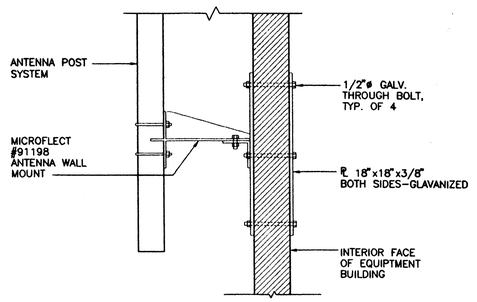
NOTES:

1. REMOVE EXISTING INSULATION AS REQ'D. PROVIDE 2x PRESSURE TREATED BLOCKING SECURED TO PLATE W/ COUNTER SUNK FASTENER ALL SIDES. REPAIR AND FLASH ROOF PENETRATIONS W/ MATERIALS THAT ARE COMPATIBLE WITH EXISTING ROOFING AND FLASHINGS.
2. ℄ 12"x24"x1/2" TO BE PROVIDED W/(4) 1/2"ø x1 1/2" LONG THREADED ROD WELDED TO PLATE W/ COUNTER SUNK FASTENERS TO SECURE BLOCKING



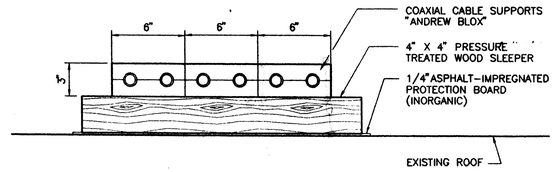
10 A-3 ANTENNA SECTION • STRUCTURE

SCALE: 1 1/2" = 1'-0"



9 A-3 WALL MOUNTED ANTENNA BRACKET

SCALE: 1 1/2" = 1'-0"

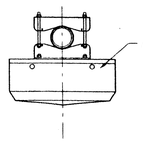


8 A-3 DETAIL AT CABLE ROUTING

SCALE: 1 1/2" = 1'-0"

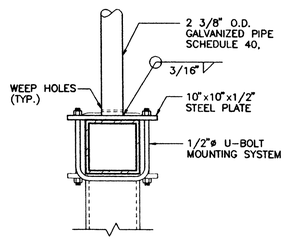
11 A-3 ANTENNA SECTION • STRUCTURE

SCALE: 1 1/2" = 1'-0"



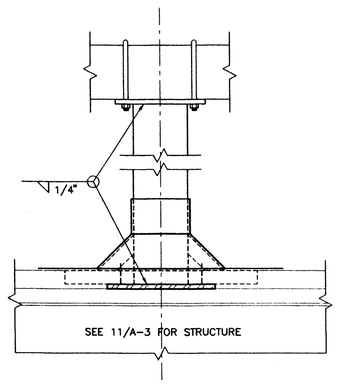
7 A-3 ANTENNA SECTION

SCALE: 1 1/2" = 1'-0"



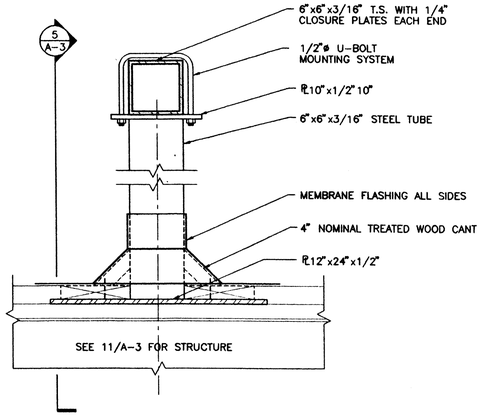
6 A-3 ANTENNA MOUNTING DETAIL

SCALE: 1 1/2" = 1'-0"



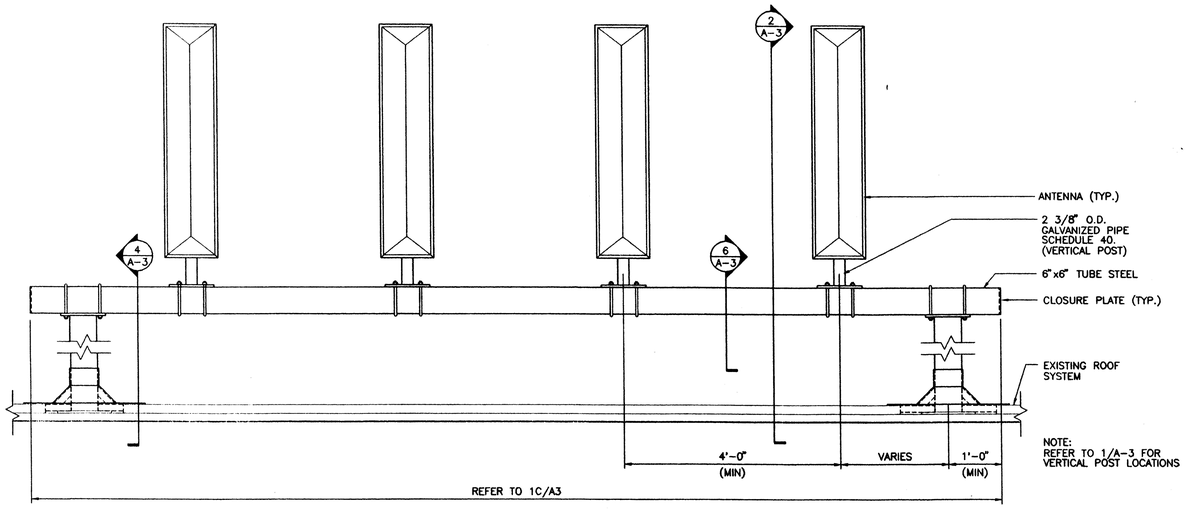
5 A-3 ANTENNA SECTION

SCALE: 1 1/2" = 1'-0"



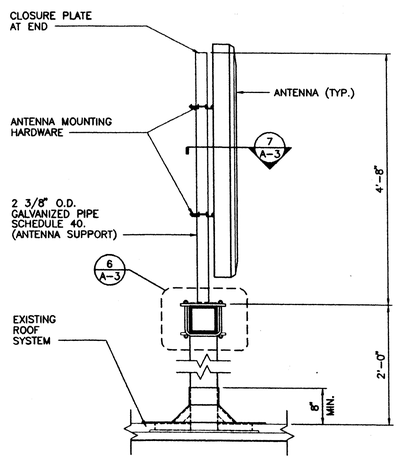
4 A-3 ANTENNA SECTION

SCALE: 1 1/2" = 1'-0"



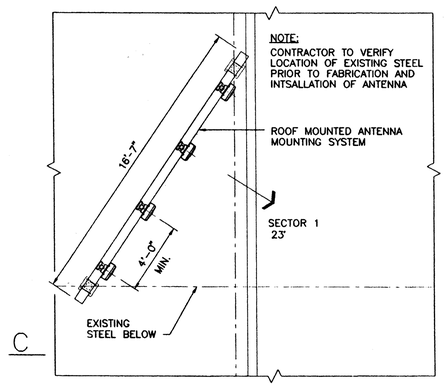
3 A-3 TYP. ANTENNA ELEVATION

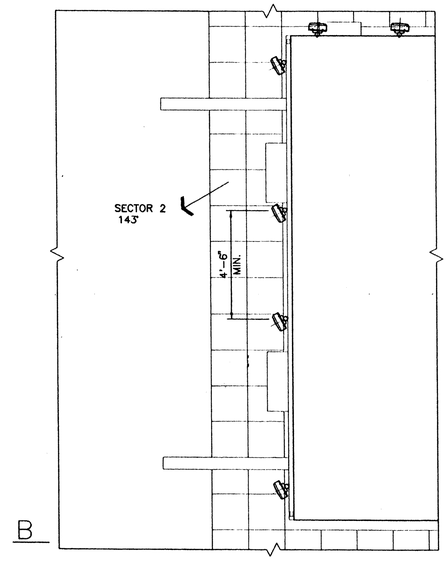
SCALE: 3/4" = 1'-0"

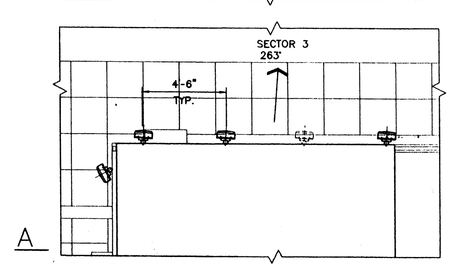


2 A-3 TYP. ANTENNA SECTION

SCALE: 3/4" = 1'-0"







1 A-3 ANTENNA (SECTOR#1,#2,#3) - PLAN

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

NORTH

REV.	DATE	DESCRIPTION
Job No. F301049.31		File No. A-3.DWG

2523 ALBANY AVE
(BISHOPS CORNER WEST @119)
1346 NORTH MAIN STREET)
WEST HARTFORD, CONNECTICUT

ANTENNA MOUNTING PLAN AND DETAILS
SNET MOBILITY, INC.

URS Greiner, Inc. A-E-S
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT

Designed by: DJR/TCM/HFJ
Drawn by: HO/JMP/RGC
Checked by:
Approved by:

Scale: AS NOTED
Date: 7/21/97
Dwg. 4 Of 14
Dwg. No. A-3

R:\CADD\FACIL 2\ A-3 7-21-97 9:15:5 AM EST

STRUCTURAL NOTES

1. PREFABRICATED MODULAR BUILDING SHALL BE DESIGNED AND MANUFACTURED TO MEET ALL STATE AND LOCAL CODES. ITS LAYOUT SHALL BE COORDINATED WITH SNET MOBILITY, INC.

2. PROVIDE A STAIR/GUARD AS INDICATED. STAIR/GUARD SHALL BE OPEN GALVANIZED STEEL WITH AN 11" TREAD AND A 7" (MAXIMUM) RISER. PROVIDE HANDRAILS, GUARDS AND ALL REQUIRED MATERIALS TO SECURE STAIR/GUARD TO STRUCTURE. ALL STEEL, RAILINGS, HARDWARE AND CONNECTIONS SHALL BE HOT DIPPED GALVANIZED STEEL, AFTER FABRICATION. STAIR, HANDRAIL, AND GUARD SHALL BE DESIGNED BY CONTRACTOR'S ENGINEER IN ACCORDANCE WITH THE STATE OF CONNECTICUT CODE REQUIREMENTS. SUBMIT SHOP DRAWINGS FOR REVIEW.

3. NOTE SPACES BELOW EXISTING ROOF MAY BE OCCUPIED DURING CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL USE CAUTION TO AVOID UNNECESSARY DISTURBANCE TO OCCUPANTS. CONTRACTOR SHALL SCHEDULE AND COORDINATE THE WORK TO COMPLY WITH THIS REQUIREMENT.

DESIGN BASIS	STATE OF CONNECTICUT
GOVERNING CODE	STATE BUILDING CODE CURRENT EDITION
FLOOR LIVE LOAD	200 PSF
ROOF SNOW LOAD	30 PSF
PLUS SNOW DRIFT	

GENERAL NOTES

SHOP DRAWINGS ARE TO BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED TO THE ARCHITECT FOR REVIEW.

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS BEFORE PROCEEDING WITH ANY WORK.

THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.

WHERE DETAILS ARE NOT INDICATED, THEY SHALL BE CONSIDERED TYPICAL AND APPLY AT SAME AND SIMILAR CONDITIONS.

COORDINATION WORK DRAWINGS WITH MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATIONS OF OPENINGS, RECESSES, BUILT-IN WORK, ETC. STRUCTURAL STEEL

MATERIALS

STRUCTURAL STEEL, PLATES, ANGLES		ASTM A36
PIPE COLUMNS		ASTM A53 GRADE B
TUBE COLUMNS	F=46.KS	ASTM A500
BOLTS		ASTM A325
WELDING ELECTRODE		ASTM E 70

SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL STEEL WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. SUBMIT 6 SETS OF PRINTS TO THE ARCHITECT FOR REVIEW.

THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING SAME.

STRUCTURAL STEEL SHALL CONFORM TO THE CURRENT "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", AND THE "AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".

ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER IN ACCORDANCE WITH A.W.S. STANDARDS.

CONNECTIONS

CONNECTIONS SHALL CONFORM TO ALL REQUIREMENTS OF THE "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION, AND THE "SPECIFICATION FOR STRUCTURAL STEEL JOINTS USING ASTM A325 OR A490 BOLTS" APPROVED APRIL 26, 1978.

CONNECTIONS TO TUBE COLUMNS SHALL BE STANDARD 3/8" THRU PLATE CONNECTIONS UNLESS OTHERWISE NOTED.

CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 5/16 INCHES.

CONNECTIONS SHALL HAVE A MINIMUM OF TWO BOLT ROWS.

SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.

CONNECTIONS AND SEAT STIFFENERS SHALL CLEAR ARCHITECTURAL FINISHES.

UNLESS SPECIFICALLY NOTED BOLTS SHALL BE 3/4" TYPE A325-N.

THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE WORK IS FULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.

THE CONTRACTOR SHALL PROVIDE CLOSURE ANGLES, CELL CLOSURES AND ALL OTHER ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.

SHOP PRIMER SHALL BE TNEMEC 10-99 MODIFIED ALKYD RUST INHIBITIVE RED PRIMER SURFACE PREPARATION SHALL BE IN ACCORDANCE WITH STRUCTURAL STEEL PAINTING COUNCIL SPECIFICATION SP-6" COMMERCIAL BLAST CLEANING". MINIMUM DRY FILM THICKNESS OF SHOP PRIMER 2.0 MILS.

MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

BOLT HOLES SHALL BE PUNCHED OR DRILLED. FLAME CUT HOLES ARE NOT ACCEPTABLE.

FABRICATE BEAMS WITH MILL CAMBER UP.

LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.

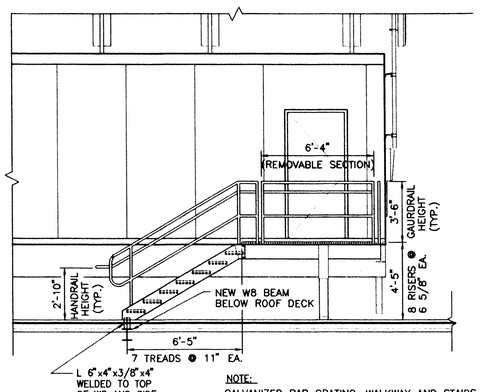
COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY, BE PAID BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. THE INSPECTOR SHALL OBSERVE INSTALLATION OF BOLTS AND TEST WITH A CALIBRATED TORQUE WRENCH NOT LESS THAN 20% OF THE BOLTS AND NOT LESS THAN TWO BOLTS, SELECTED AT RANDOM, IN EACH CONNECTION.

FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ARCHITECT WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

PROVIDE SPRAYED-ON FIREPROOFING ON ALL STEEL, FRAMING AND CONNECTIONS AND ANY AREAS DAMAGED BY CONSTRUCTION.

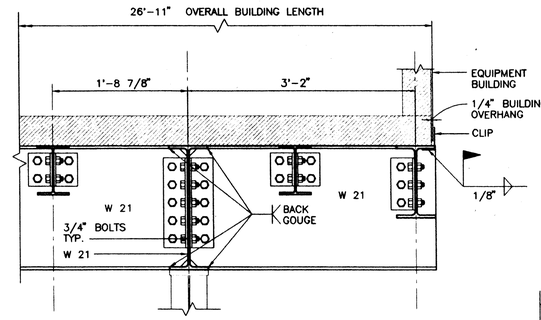
good recess here



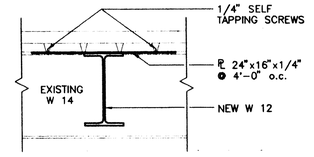
NOTE:-
GALVANIZED BAR GRATING, WALKWAY AND STAIRS Mc NICHOLS CO. GW-125 1 1/4"x3/16" BRG BAR

ALL EXPOSED METAL TO BE PAINTED WITH SPECIFIED MATERIAL-NOXIDE BY MATHY'S WATERPROOFING OR EQUAL.

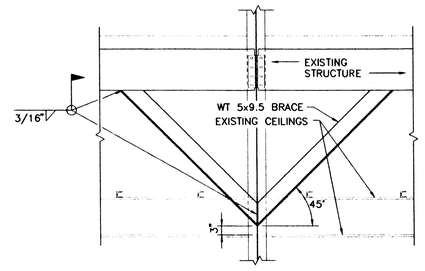
11 S-1 STAIR DETAIL
SCALE: 1/4"= 1'-0"



10 S-1 CONNECTION DETAIL
SCALE: 1"= 1'-0"

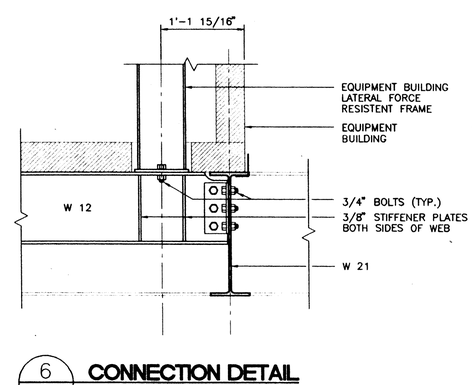


9 S-1 CONNECTION DETAIL
SCALE: 1"= 1'-0"

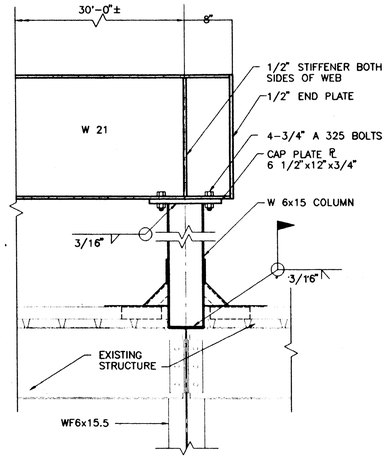


NOTE:
REMOVE AND REINSTALL EXISTING CEILING SYSTEM. FINISH TO MATCH EXISTING. SPRAY ON FIREPROOFING AT EXPOSED STEEL BRACING AS REQUIRED TO PROVIDE A 2 HR. RATING.

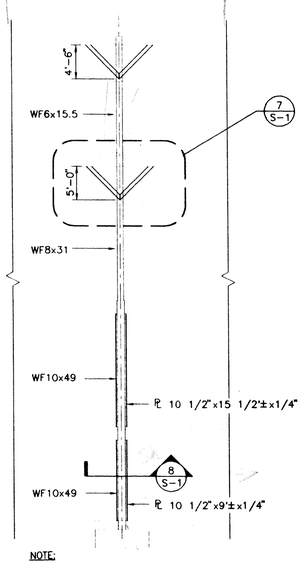
7 S-1 TYPICAL COLUMN BRACING DETAIL
SCALE: 1/2"= 1'-0"



6 S-1 CONNECTION DETAIL
SCALE: 1"= 1'-0"

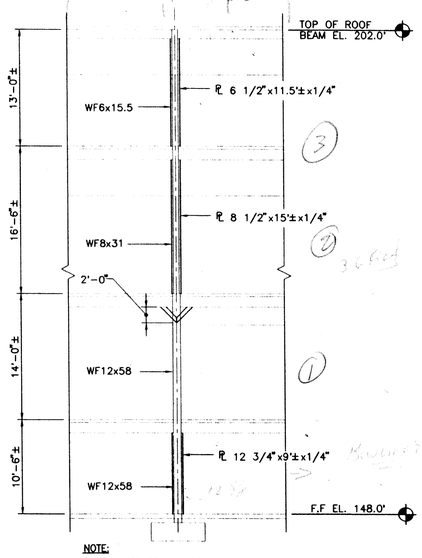


5 S-1 CONNECTION DETAIL
SCALE: 1"= 1'-0"



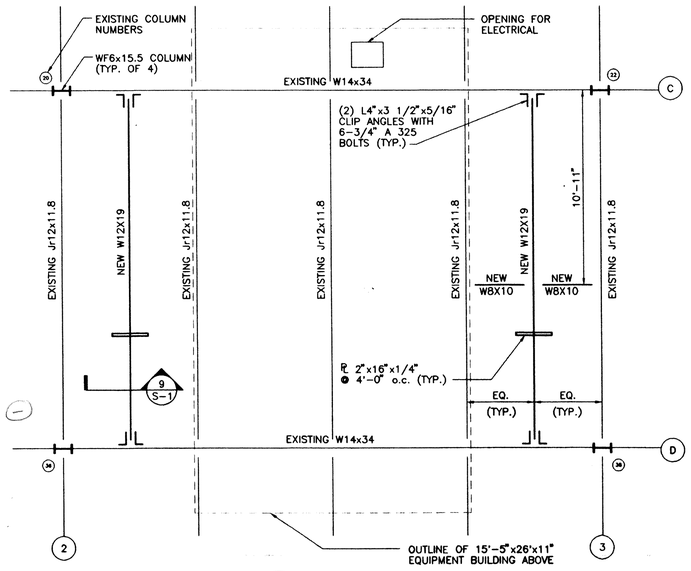
NOTE:
TYPICAL FOR COLUMNS 20, 36 AND 38

4 S-2 EXISTING COLUMN REINFORCEMENT
SCALE: 1/8"= 1'-0"

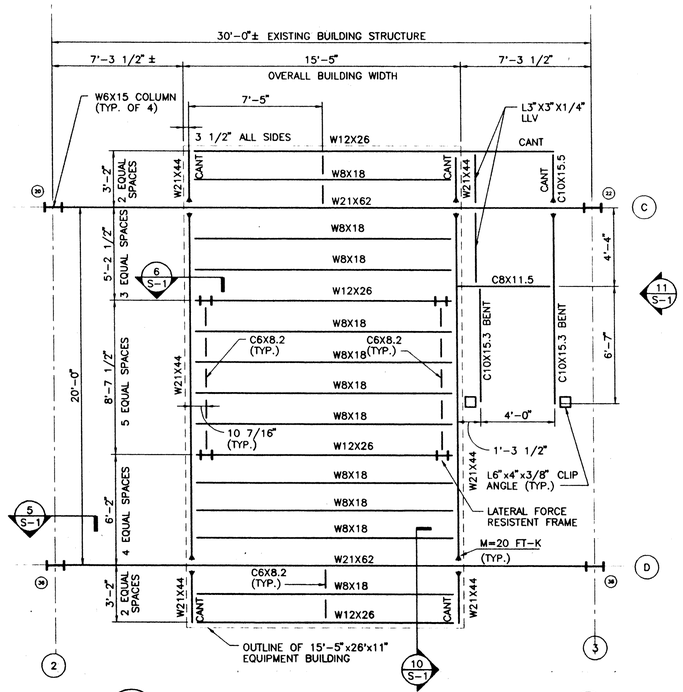


NOTE:
TYPICAL FOR COLUMN 22

3 S-2 EXISTING COLUMN REINFORCEMENT
SCALE: 1/8"= 1'-0"



2 S-1 ROOF FRAMING
SCALE: 1/8"= 1'-0"



1 S-1 EQUIPMENT ROOM FRAMING PLAN
SCALE: 1/4"= 1'-0"

NORTH

REV.	DATE	DESCRIPTION

Job No. F301049.31
File No. S-1.DWG

2523 ALBANY AVE
(BISHOP CORNER WEST #119)
(345 NORTH MAIN STREET)
WEST HARTFORD, CONNECTICUT

FRAMING PLAN. DETAILS AND NOTES
SNET MOBILITY, INC.

URS Grelner, Inc. A-E-S
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT

Designed by: DJR/TCM/HFJ
Drawn by: RGG
Checked by:
Approved by:

Scale: AS NOTED

Date: 7/21/97

Dwg. 7 Of 14

Dwg. No. S-1

ROOF CORNER ON FLD NOTES

LOWER ROOF AREA

ROOF TEXTEL SHELTER

SHELT SHELTER LOCATION

EXIST PENTHOUSE

PENTHOUSE FLOOR FRAMING PLAN (PART 'A')

SCALE 1/8"=1'-0"

SECTION THRU D-D

SCALE: 3/4"=1'-0"

SECTION THRU A7-A7

SHOWING LINTEL L-3

FRAMING PLANS

SHOPS BUILDING

DISHOPS CORNER WEST HARTFORD, CONN.

WALTER J. DOUGLAS

CONSULTING ENGINEER

DRAWN BY: W.J.D DATE: Dec. 1, 1962

SCALE: As Shown SHEET: F-5

Structural Analysis Report

Structure	**:** 50’ Guyed Tower (On 54’ Rooftop)
VB Site Name	**:** CT03XC074
VB Site Number	**:** US-CT-5020
Deal Number	**:** P-019285
Proposed Carrier	**:** New Cingular Wireless PCS, LLC (ATT)
Carrier Site Name	**:** West Hartford Bishops Corner
Carrier Site Number	**:** CT1195
Site Location	**:** 345 North Main Street West Hartford, CT 06001 (Hartford County) 41.7849999, -72.74860
Date	**:** February 21, 2023
Max Member Stress Level	**:** 78.3% (Tower)
Result	**: PASS**

Prepared by:

CELLSITE SOLUTIONS, LLC

02/21/2023

Table of Contents

Introduction

We have completed our structural analysis of the proposed equipment installation on the foregoing tower to determine its ability to support the new loads proposed by **New Cingular Wireless PCS, LLC (AT&T)**. The objective of the analysis was to determine if the tower meets the current structural codes and standards with the proposed equipment installation.

Existing Structural Information

The following documents for the existing structure were made available for our structural analysis.

Tower Information	Rohn Drawings Referenced File No. 34599SW, dated July 28, 1997. Structural Analysis provided by Semaan Engineering Solutions, Job No. CT03XC074, dated October 20, 2014. Structural Analysis by Ramaker & Associates, Project No. 22995, dated April 5, 2018.
Foundation Information	No Foundation Information was available at the time of analysis.
Geotechnical Information	N/A (Rooftop Installation)
Equipment Information	Vertical Bridge Collocation Application Version 2. (2/21/2022)
Tower Reinforcement Information	Tower has been previously modified. These modifications are considered in the analysis results. Modification Design by Semaan Engineering Solutions, Job No. CT03XC074, dated October 20, 2014.

Final Proposed Equipment Loading for New Cingular Wireless PCS, LLC (ATT)

The following proposed loading was obtained from the Vertical Bridge Collocation Application:

Antenna/Equipment					Coax	
Mount (Ft.)	RAD (Ft.)	Qty.	Antenna	Type	Qty.	Size/Type
89.5	-	3	Sector Frames	Mount	9 2 1 1 **3**	1.625 Cables 1.0 DC Power 0.4375 Fiber 0.375 RET **1.0 DC Power**
	89.5	**3**	**Ericsson AIR6449**	**Panel**		
		3	**Ericsson AIR6419N77G**	**Panel**		
		2	**CCI DMP65R-BU8D**	**Panel**		
		1	**CCI DMP65R-BU6D**	**Panel**		
		3	**Ericsson 4426 B66**	**RRU**		
		3	**Ericsson 4449 B5/B12**	**RRU**		
		1	**Raycap DC9-48-60-24-8C-EV**	**Surge**		
		1	**Raycap DC6-48-60-0-8C-EC**	**Surge**		
		6	Powerwave TT19-08BP111-001	TMA		

Note: Proposed equipment shown in bold.
Note: Other existing loading can be found on the tower profile attached.
Note: Additional Loading to reach 27,000 sq. inches has been considered in the analysis results.
Note: Elevation for equipment includes 54' for the building height.

Design Criteria

The tower was analyzed using tnxTower (Version 8.1.1.0) tower analysis software using the following design criteria.

State	Connecticut
City/County Building Code	Hartford County (IBC 2022)
TIA/EIA Standard Code	TIA-222-H
Basic Wind Speed	125 MPH (Vult)
Basic Wind Speed w/ Ice	50 MPH w/ 1.50" Ice
Steel Grade	50 KSI Tower Legs / 42 KSI Tower Bracing / A325 Bolts
Exposure Category	C
Topographic Category (height)	1 (0.0 Ft.)
Risk Category	II
S_s	0.185
Seismic Design Category	B

Analysis Results

Based on the foregoing information, our structural analysis determined that **the existing tower is structurally capable of supporting the proposed equipment loads without modification.** No foundation information was available at the time of analysis. Based on the remaining capacity, the existing tower foundation should be within acceptable tolerance. **Further information will need to be provided to determine the actual foundation capacity.** A seismic analysis has been performed on this tower and is not controlling.

Assumptions

The below assumptions are true, complete, and accurate.

1. The existing tower has been maintained to manufacturer's specifications and is in good condition.
2. Foundations are considered to have been properly designed for the original design loads.
3. All member connections are considered to have been designed to meet the load carrying capacity of the connected member.
4. Antenna mount loads have been estimated based on generally accepted industry standards.
5. The mounts for the proposed antennas have been analyzed and designed by others.
6. See additional assumptions contained in the report attached.
7. Tower is within acceptable engineering tolerance at 105%.
8. Foundations are within acceptable engineering tolerance at 110%.

Conclusions

The existing tower described above **does have sufficient capacity** to support the proposed loading based on the governing Building Code. The tower foundation has not been evaluated but should be within acceptable tolerance. A seismic analysis has been performed on this tower and is not controlling.

We appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance, please call us anytime at 561-948-6367.

Sincerely,

Analysis by:

Michael T. De Boer, PE
Vice President of Engineering
Cellsite Solutions, LLC

02/21/2023

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but not necessarily limited, to:

- Information supplied by the client regarding the structure itself, the antenna and transmission line loading on the structure and it components, or relevant information.

- Information from drawings in possession of Vertical Bridge Engineering, LLC, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Vertical Bridge Engineering, LLC and used in the performance of our engineering services is correct and complete. In the absence of information contrary, we consider that all structures were constructed in accordance with the drawings and specifications and are in a un- corroded condition and have not deteriorated; and we, therefore consider that their capacity has not significantly changed from the original design condition.

All services will be performed to the codes and standards specified by the client, and we do not imply to meet any other code and standard requirements unless explicitly agreed to in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes and standards, the client shall specify the exact requirements. In the absence of information to the contrary, all work will be performed in accordance with the revision of ANSI/TIA/EIA-222-H requested.

All services are performed, results obtained and recommendations made in accordance with the generally accepted engineering principles and practices. Vertical Bridge Engineering LLC, is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Disclaimer of Warranties

The engineering services by Vertical Bridge Engineering, LLC in connection with this Structural Analysis are limited to a computer analysis of the tower structure, size and capacity of its members. Vertical Bridge Engineering, LLC does not analyze the fabrication, including welding, except as may be expressly included in this report.

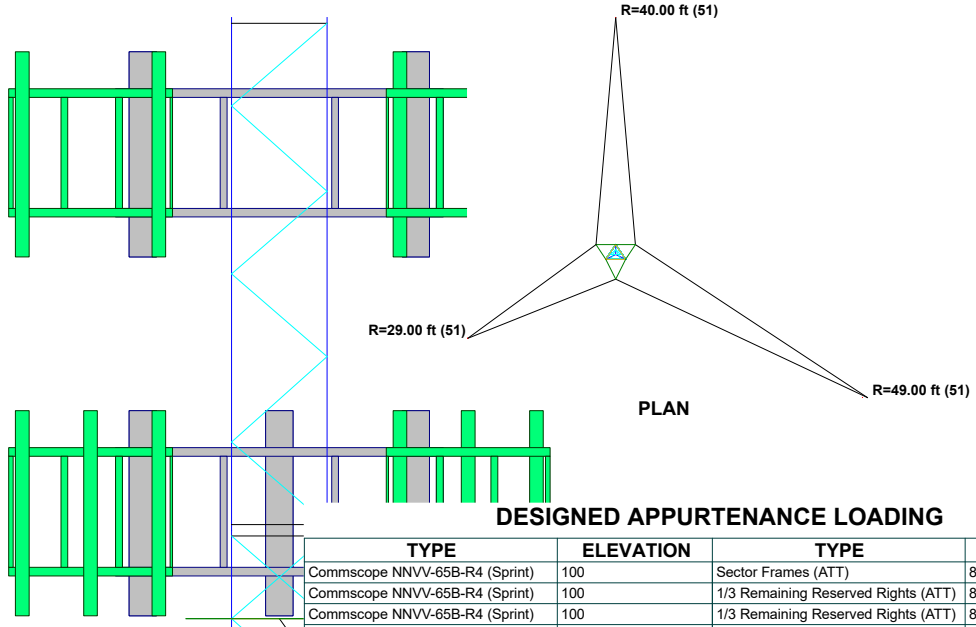
The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines. Any mention of structural modifications are reasonable estimates and should not be used a precise construction document. Precise modification drawings are obtainable from Vertical Bridge Engineering, LLC but are beyond the scope of this report.

Vertical Bridge Engineering, LLC makes no warranties, express or implied, in connection with this report and disclaims any liability arising from material, fabrication and erection of this tower, or installation and compliance with legal and permitting requirements of the proposed equipment. Vertical Bridge Engineering, LLC will not be responsible whatsoever for or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of Vertical Bridge Engineering, LLC pursuant to this report will be limited to the total fee received for preparation of this report.

Attachment 1:
Calculations

Section	T4	T3	T2	T1
Legs		ROHN 2.5 X-STR	ROHN 2.5 EH	ROHN 2.5 X-STR
Leg Grade		A572-50		
Diagonals	N.A.	ROHN 1.5 x 16GA	ROHN 1.5 x 11GA	ROHN 1.5 x 11GA
Diagonal Grade	N.A.	A53-B-42		
Top Girts	N.A.	ROHN 1.5 x 16GA	ROHN 1.5 x 11GA	
Bottom Girts	N.A.	ROHN 1.5 x 16GA	ROHN 1.5 x 11GA	
Horizontals	L4x4x1/4	N.A.		
Top Guy Pull-Offs	N.A.	SR 1 1/4	N.A.	
Face Width (ft)		18 @ 2.44444		3.417
# Panels @ (ft)	4 @ 1.16667			
Weight (K)	2.4	0.4	1.2	0.5

104.0 ft
89.0 ft
86.4 ft
74.0 ft
59.0 ft
54.0 ft



PLAN

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Commscope NNVV-65B-R4 (Sprint)	100	Sector Frames (ATT)	89.5
Commscope NNVV-65B-R4 (Sprint)	100	1/3 Remaining Reserved Rights (ATT)	89.5
Commscope NNVV-65B-R4 (Sprint)	100	1/3 Remaining Reserved Rights (ATT)	89.5
RFS APXVTM14-ALU-120 (Sprint)	100	1/3 Remaining Reserved Rights (ATT)	89.5
RFS APXVTM14-ALU-120 (Sprint)	100	Ericsson AIR6449 (ATT)	89.5
RFS APXVTM14-ALU-120 (Sprint)	100	Ericsson AIR6449 (ATT)	89.5
ALU 1900 MHz 4x40WRRH (Sprint)	100	Ericsson AIR6449 (ATT)	89.5
ALU 1900 MHz 4x40WRRH (Sprint)	100	Ericsson AIR6419N77G (ATT)	89.5
ALU 1900 MHz 4x40WRRH (Sprint)	100	Ericsson AIR6419N77G (ATT)	89.5
(2) ALU 800 MHZ 2x50W RRH (Sprint)	100	Ericsson AIR6419N77G (ATT)	89.5
(2) ALU 800 MHZ 2x50W RRH (Sprint)	100	CCI DMP65R-BU8D (ATT)	89.5
(2) ALU 800 MHZ 2x50W RRH (Sprint)	100	CCI DMP65R-BU8D (ATT)	89.5
ALU TD-RRH8x20-25 (Sprint)	100	CCI DMP65R-BU6D (ATT)	89.5
ALU TD-RRH8x20-25 (Sprint)	100	Ericsson 4426 B66 RRU (ATT)	89.5
ALU TD-RRH8x20-25 (Sprint)	100	Ericsson 4426 B66 RRU (ATT)	89.5
Sector Frames (Sprint)	100	Ericsson 4426 B66 RRU (ATT)	89.5
Raycap DC9-48-60-24-8C-EV (ATT)	89.5	Ericsson 4449 B5/B12 RRU (ATT)	89.5
(2) Powerwave TT19-08BP111-001 (ATT)	89.5	Ericsson 4449 B5/B12 RRU (ATT)	89.5
		Ericsson 4449 B5/B12 RRU (ATT)	89.5
(2) Powerwave TT19-08BP111-001 (ATT)	89.5	Raycap DC6-48-60-0-8C-EC (ATT)	89.5
(2) Powerwave TT19-08BP111-001 (ATT)	89.5		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A53-B-42	42 ksi	63 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 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. Weld together tower sections have flange connections.
9. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
10. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
11. Welds are fabricated with ER-70S-6 electrodes.
12. TOWER RATING: 78.3%

ALL REACTIONS ARE FACTORED

Cellsite Solutions, LLC
4150 C Street SW
Cedar Rapids, IA 52404
Phone: 319-826-3404
FAX:

Job: ***US-CT-5020 (West Hartford CT)***			
Project: ***Structural Analysis of a 50' GT on a Rooftop***			
Client: Vertical Bridge (ATT)	Drawn by: mike.deboer	App'd:	
Code: TIA-222-H	Date: 03/31/22	Scale: NTS	
Path: C:\Users\mike.deboer\OneDrive - CellSite Solutions LLC\Documents\US-CT-5020_SA_031622_ATT\US-CT-5020_SA_031722_ATT.eri		Dwg No. E-1	

Tower Input Data

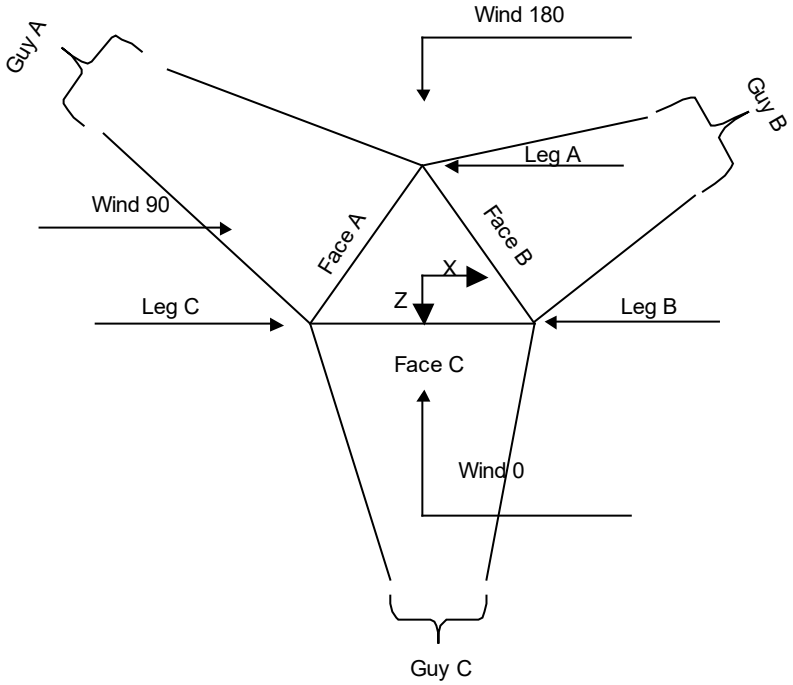
The main tower is a 3x guyed tower with an overall height of 104.00 ft above the ground line.
The base of the tower is set at an elevation of 54.00 ft above the ground line.
The face width of the tower is 3.42 ft at the top and tapered at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- Tower base elevation above sea level: 214.03 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.00 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50.00 °F.
- Deflections calculated using a wind speed of 60 mph.
- Weld together tower sections have flange connections..
- Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
- Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
- Welds are fabricated with ER-70S-6 electrodes..
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.
- Safety factor used in guy design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Outside and Inside Corner Radii Are Known



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	104.00-89.00			3.42	1	15.00
T2	89.00-74.00			3.42	1	15.00
T3	74.00-59.00			3.42	1	15.00
T4	59.00-54.00			3.42	1	5.00

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	104.00-89.00	2.44	K Brace Right	No	Yes	2.000	2.000
T2	89.00-74.00	2.44	X Brace	No	Yes	2.000	2.000
T3	74.00-59.00	2.44	K Brace Right	No	Yes	2.000	2.000
T4	59.00-54.00	1.17	K Brace Right	No	Yes	2.000	2.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 104.00-89.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN 1.5 x 11GA	A53-B-42 (42 ksi)
T2 89.00-74.00	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)
T3 74.00-59.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)
T4 59.00-54.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe		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 104.00-89.00	Pipe	ROHN 1.5 x 11GA	A36 (36 ksi)	Pipe	ROHN 1.5 x 11GA	A36 (36 ksi)
T2 89.00-74.00	Pipe	ROHN 1.5 x 16GA	A36 (36 ksi)	Pipe	ROHN 1.5 x 16GA	A36 (36 ksi)
T3 74.00-59.00	Pipe	ROHN 1.5 x 16GA	A36 (36 ksi)	Pipe	ROHN 1.5 x 16GA	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
T4 59.00-54.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L4x4x1/4	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 104.00-89.00	0.00	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T2 89.00-74.00	0.00	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T3 74.00-59.00	0.00	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T4 59.00-54.00	0.00	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Factors[1] Single Diags X	Single Diags Y	K Factors[1] Girts X	Girts Y	K Factors[1] Horiz. X	Horiz. Y	K Factors[1] Sec. Horiz. X	Sec. Horiz. Y	K Factors[1] Inner Brace X	Inner Brace Y
T1	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
104.00-89.00				1	1	1	1	1	1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
89.00-74.00				1	1	1	1	1	1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
74.00-59.00				1	1	1	1	1	1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
59.00-54.00				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 104.00-89.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 89.00-74.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 74.00-59.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 59.00-54.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	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 104.00-89.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 89.00-74.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 74.00-59.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 59.00-54.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
86.3889	EHS	A	1/2	2.69	10%	21000.00	0.52	52.01	40.00	0.00	51.00	100%
		B	1/2	2.69	10%	21000.00	0.52	58.90	49.00	0.00	51.00	100%
		C	1/2	2.69	10%	21000.00	0.52	44.62	29.00	0.00	51.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
86.3889	Torque Arm	6.83	0.00	Channel	A36 (36 ksi)	Channel	C10x30

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
86.39	A572-50 (50 ksi)	Solid Round			No	A572-50 (50 ksi)	Solid Round	1 1/4

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
86.3889	0.03	0.03	0.02		0.26 0.9 sec/pulse	0.33 1.0 sec/pulse	0.19 0.8 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
86.3889	No	No	1	1	1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
86.3889	0.000 A325N	0	0.000	1	0.625 A325N	0	0.000	0.75	0.625 A325N	0	0.000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z ksf	q_z Ice ksf	Ice Thickness in
86.3889	A	68.69	0.04	0.01	1.614
	B	68.69	0.04	0.01	1.614
	C	68.69	0.04	0.01	1.614

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning 0 F Initial Tension K	0 F Intercept ft	20 F Initial Tension K	20 F Intercept ft	40 F Initial Tension K	40 F Intercept ft	60 F Initial Tension K	60 F Intercept ft	80 F Initial Tension K	80 F Intercept ft	100 F Initial Tension K	100 F Intercept ft	120 F Initial Tension K	120 F Intercept ft
86.3889	A	38.18	35.39	3.348	0.21	3.128	0.22	2.909	0.24	2.690	0.26	2.471	0.28	2.253	0.31	2.035	0.34
	B	47.15	35.39	3.471	0.26	3.210	0.28	2.950	0.30	2.690	0.33	2.431	0.37	2.172	0.41	1.916	0.47
	C	27.24	35.39	3.146	0.16	2.994	0.17	2.842	0.18	2.690	0.19	2.538	0.20	2.387	0.22	2.235	0.23

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
****ATT****													
1.58" Coax (ATT)	C	No	No	Ar (CaAa)	89.00 - 57.00	0.000	0.25	9	5	0.000	1.980		0.82
1.58" Fiber (ATT)	C	No	No	Ar (CaAa)	89.00 - 57.00	0.000	0.05	1	1	0.000	1.980		0.82
RET Cable (ATT)	C	No	No	Ar (CaAa)	89.00 - 57.00	0.000	0	1	1	0.440	0.440		0.08
DC Power Cables (ATT)	C	No	No	Ar (CaAa)	89.00 - 57.00	0.000	-0.12	2	2	0.000	1.550		0.66
DC Power Cables (ATT)	C	No	No	Ar (CaAa)	89.00 - 57.00	0.000	-0.2	3	2	0.000	1.550		0.66
****Sprint****													
1.25" Hybrid Cables (Sprint)	B	No	No	Ar (CaAa)	100.00 - 57.00	0.000	0	3	2	0.000	1.550		0.66

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	104.00-89.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	5.115	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.00
T2	89.00-74.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	6.975	0.000	0.03
		C	0.000	0.000	41.985	0.000	0.17
T3	74.00-59.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	6.975	0.000	0.03
		C	0.000	0.000	41.985	0.000	0.17
T4	59.00-54.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.930	0.000	0.00
		C	0.000	0.000	5.598	0.000	0.02

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	104.00-89.00	A	1.670	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	12.523	0.000	0.14
		C		0.000	0.000	0.000	0.000	0.00
T2	89.00-74.00	A	1.642	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	16.928	0.000	0.18
		C		0.000	0.000	73.629	0.000	0.96
T3	74.00-59.00	A	1.609	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	16.752	0.000	0.18
		C		0.000	0.000	72.913	0.000	0.94
T4	59.00-54.00	A	1.583	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.215	0.000	0.02

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	9.647	0.000	0.12

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	104.00-89.00	1.573	-0.908	1.350	-0.780
T2	89.00-74.00	-0.813	3.797	0.120	2.684
T3	74.00-59.00	-0.891	4.251	0.179	4.389
T4	59.00-54.00	-0.277	1.322	0.018	0.382

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	8	1.25" Hybrid Cables	89.00 - 100.00	0.6000	0.5332
T2	2	1.58" Coax	74.00 - 89.00	0.6000	0.3585
T2	3	1.58" Fiber	74.00 - 89.00	0.6000	0.3585
T2	4	RET Cable	74.00 - 89.00	0.6000	0.3585
T2	5	DC Power Cables	74.00 - 89.00	0.6000	0.3585
T2	6	DC Power Cables	74.00 - 89.00	0.6000	0.3585
T2	8	1.25" Hybrid Cables	74.00 - 89.00	0.6000	0.3585
T3	2	1.58" Coax	59.00 - 74.00	0.6000	0.5423
T3	3	1.58" Fiber	59.00 - 74.00	0.6000	0.5423
T3	4	RET Cable	59.00 - 74.00	0.6000	0.5423
T3	5	DC Power Cables	59.00 - 74.00	0.6000	0.5423
T3	6	DC Power Cables	59.00 - 74.00	0.6000	0.5423
T3	8	1.25" Hybrid Cables	59.00 - 74.00	0.6000	0.5423
T4	2	1.58" Coax	57.00 - 59.00	0.4835	0.1187
T4	3	1.58" Fiber	57.00 - 59.00	0.4835	0.1187
T4	4	RET Cable	57.00 - 59.00	0.4835	0.1187
T4	5	DC Power Cables	57.00 - 59.00	0.4835	0.1187
T4	6	DC Power Cables	57.00 - 59.00	0.4835	0.1187
T4	8	1.25" Hybrid Cables	57.00 - 59.00	0.4835	0.1187

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
****ATT****									
Ericsson AIR6449	A	From Leg	4.00	0.00	89.50	No Ice	5.66	2.48	0.11
(ATT)			0.00			1/2" Ice	5.96	2.70	0.15
			0.00			1" Ice	6.27	2.94	0.20
						2" Ice	6.91	3.43	0.30
Ericsson AIR6449	B	From Leg	4.00	0.00	89.50	No Ice	5.66	2.48	0.11
(ATT)			0.00			1/2" Ice	5.96	2.70	0.15
			0.00			1" Ice	6.27	2.94	0.20
						2" Ice	6.91	3.43	0.30
Ericsson AIR6449	C	From Leg	4.00	0.00	89.50	No Ice	5.66	2.48	0.11
(ATT)			0.00			1/2" Ice	5.96	2.70	0.15
			0.00			1" Ice	6.27	2.94	0.20
						2" Ice	6.91	3.43	0.30
Ericsson AIR6419N77G	A	From Leg	4.00	0.00	89.50	No Ice	4.17	2.02	0.04
(ATT)			0.00			1/2" Ice	4.44	2.23	0.07
			0.00			1" Ice	4.71	2.44	0.11
						2" Ice	5.28	2.90	0.18
Ericsson AIR6419N77G	B	From Leg	4.00	0.00	89.50	No Ice	4.17	2.02	0.04
(ATT)			0.00			1/2" Ice	4.44	2.23	0.07
			0.00			1" Ice	4.71	2.44	0.11
						2" Ice	5.28	2.90	0.18
Ericsson AIR6419N77G	C	From Leg	4.00	0.00	89.50	No Ice	4.17	2.02	0.04
(ATT)			0.00			1/2" Ice	4.44	2.23	0.07
			0.00			1" Ice	4.71	2.44	0.11
						2" Ice	5.28	2.90	0.18
CCI DMP65R-BU8D	A	From Leg	4.00	0.00	89.50	No Ice	17.87	8.12	0.12
(ATT)			0.00			1/2" Ice	18.50	8.72	0.22
			0.00			1" Ice	19.14	9.32	0.32
						2" Ice	20.44	10.54	0.56
CCI DMP65R-BU8D	C	From Leg	4.00	0.00	89.50	No Ice	17.87	8.12	0.12
(ATT)			0.00			1/2" Ice	18.50	8.72	0.22
			0.00			1" Ice	19.14	9.32	0.32
						2" Ice	20.44	10.54	0.56
CCI DMP65R-BU6D	B	From Leg	4.00	0.00	89.50	No Ice	12.71	5.62	0.10
(ATT)			0.00			1/2" Ice	13.21	6.07	0.17
			0.00			1" Ice	13.71	6.53	0.25
						2" Ice	14.74	7.47	0.43
Ericsson 4426 B66 RRU	A	From Leg	3.00	0.00	89.50	No Ice	1.64	0.73	0.05
(ATT)			0.00			1/2" Ice	1.80	0.84	0.06
			0.00			1" Ice	1.97	0.97	0.08
						2" Ice	2.33	1.24	0.11
Ericsson 4426 B66 RRU	B	From Leg	3.00	0.00	89.50	No Ice	1.64	0.73	0.05
(ATT)			0.00			1/2" Ice	1.80	0.84	0.06
			0.00			1" Ice	1.97	0.97	0.08
						2" Ice	2.33	1.24	0.11
Ericsson 4426 B66 RRU	C	From Leg	3.00	0.00	89.50	No Ice	1.64	0.73	0.05
(ATT)			0.00			1/2" Ice	1.80	0.84	0.06
			0.00			1" Ice	1.97	0.97	0.08
						2" Ice	2.33	1.24	0.11
Ericsson 4449 B5/B12 RRU	A	From Leg	3.00	0.00	89.50	No Ice	1.64	1.30	0.07
(ATT)			0.00			1/2" Ice	1.80	1.44	0.09
			0.00			1" Ice	1.97	1.59	0.11
						2" Ice	2.33	1.92	0.16
Ericsson 4449 B5/B12 RRU	B	From Leg	3.00	0.00	89.50	No Ice	1.64	1.30	0.07
(ATT)			0.00			1/2" Ice	1.80	1.44	0.09
			0.00			1" Ice	1.97	1.59	0.11
						2" Ice	2.33	1.92	0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Ericsson 4449 B5/B12 RRU (ATT)	C	From Leg	3.00 0.00 0.00	0.00	89.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.33	1.30 1.44 1.59 1.92	0.07 0.09 0.11 0.16
Raycap DC6-48-60-0-8C-EC (ATT)	A	From Leg	2.00 0.00 0.00	0.00	89.50	No Ice 1/2" Ice 1" Ice 2" Ice	4.78 5.06 5.35 5.95	2.74 2.96 3.20 3.68	0.02 0.05 0.09 0.19
Raycap DC9-48-60-24-8C-EV (ATT)	A	From Leg	2.00 0.00 0.00	0.00	89.50	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.40 2.60 3.04	2.20 2.40 2.60 3.04	0.03 0.05 0.08 0.14
(2) Powerwave TT19-08BP111-001 (ATT)	A	From Leg	3.50 0.00 0.00	0.00	89.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
(2) Powerwave TT19-08BP111-001 (ATT)	B	From Leg	3.50 0.00 0.00	0.00	89.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
(2) Powerwave TT19-08BP111-001 (ATT)	C	From Leg	3.50 0.00 0.00	0.00	89.50	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
Sector Frames (ATT)	C	None		0.00	89.50	No Ice 1/2" Ice 1" Ice 2" Ice	27.00 33.00 39.00 51.00	27.00 33.00 39.00 51.00	1.25 1.60 1.95 2.65
1/3 Remaining Reserved Rights (ATT)	A	From Leg	3.00 0.00 0.00	0.00	89.50	No Ice 1/2" Ice 1" Ice 2" Ice	35.00 40.00 45.00 55.00	24.00 30.00 36.00 48.00	0.25 0.33 0.41 0.57
1/3 Remaining Reserved Rights (ATT)	B	From Leg	3.00 0.00 0.00	0.00	89.50	No Ice 1/2" Ice 1" Ice 2" Ice	35.00 40.00 45.00 55.00	24.00 30.00 36.00 48.00	0.25 0.33 0.41 0.57
1/3 Remaining Reserved Rights (ATT)	C	From Leg	3.00 0.00 0.00	0.00	89.50	No Ice 1/2" Ice 1" Ice 2" Ice	35.00 40.00 45.00 55.00	24.00 30.00 36.00 48.00	0.25 0.33 0.41 0.57
****Sprint****									
Commscope NNVV-65B-R4 (Sprint)	A	From Leg	4.00 0.00 0.00	0.00	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.27 12.77 13.27 14.29	5.63 6.09 6.55 7.50	0.08 0.15 0.23 0.40
Commscope NNVV-65B-R4 (Sprint)	B	From Leg	4.00 0.00 0.00	0.00	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.27 12.77 13.27 14.29	5.63 6.09 6.55 7.50	0.08 0.15 0.23 0.40
Commscope NNVV-65B-R4 (Sprint)	C	From Leg	4.00 0.00 0.00	0.00	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.27 12.77 13.27 14.29	5.63 6.09 6.55 7.50	0.08 0.15 0.23 0.40
RFS APXVTM14-ALU-120 (Sprint)	A	From Leg	4.00 0.00 0.00	0.00	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.34 6.72 7.10 7.88	3.61 3.97 4.33 5.07	0.06 0.10 0.14 0.25

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RFS APXVTM14-ALU-120	B	From Leg	4.00	0.00	100.00	No Ice	6.34	3.61	0.06
(Sprint)			0.00			1/2" Ice	6.72	3.97	0.10
			0.00			1" Ice	7.10	4.33	0.14
						2" Ice	7.88	5.07	0.25
RFS APXVTM14-ALU-120	C	From Leg	4.00	0.00	100.00	No Ice	6.34	3.61	0.06
(Sprint)			0.00			1/2" Ice	6.72	3.97	0.10
			0.00			1" Ice	7.10	4.33	0.14
						2" Ice	7.88	5.07	0.25
ALU 1900 MHz 4x40WRRH	A	From Leg	3.00	0.00	100.00	No Ice	3.90	1.58	0.05
(Sprint)			0.00			1/2" Ice	4.15	1.77	0.08
			0.00			1" Ice	4.40	1.95	0.11
						2" Ice	4.94	2.35	0.18
ALU 1900 MHz 4x40WRRH	B	From Leg	3.00	0.00	100.00	No Ice	3.90	1.58	0.05
(Sprint)			0.00			1/2" Ice	4.15	1.77	0.08
			0.00			1" Ice	4.40	1.95	0.11
						2" Ice	4.94	2.35	0.18
ALU 1900 MHz 4x40WRRH	C	From Leg	3.00	0.00	100.00	No Ice	3.90	1.58	0.05
(Sprint)			0.00			1/2" Ice	4.15	1.77	0.08
			0.00			1" Ice	4.40	1.95	0.11
						2" Ice	4.94	2.35	0.18
(2) ALU 800 MHZ 2x50W	A	From Leg	3.00	0.00	100.00	No Ice	3.60	1.63	0.05
RRH			0.00			1/2" Ice	3.84	1.80	0.08
(Sprint)			0.00			1" Ice	4.08	1.99	0.11
						2" Ice	4.59	2.37	0.18
(2) ALU 800 MHZ 2x50W	B	From Leg	3.00	0.00	100.00	No Ice	3.60	1.63	0.05
RRH			0.00			1/2" Ice	3.84	1.80	0.08
(Sprint)			0.00			1" Ice	4.08	1.99	0.11
						2" Ice	4.59	2.37	0.18
(2) ALU 800 MHZ 2x50W	C	From Leg	3.00	0.00	100.00	No Ice	3.60	1.63	0.05
RRH			0.00			1/2" Ice	3.84	1.80	0.08
(Sprint)			0.00			1" Ice	4.08	1.99	0.11
						2" Ice	4.59	2.37	0.18
ALU TD-RRH8x20-25	A	From Leg	3.00	0.00	100.00	No Ice	3.71	1.29	0.06
(Sprint)			0.00			1/2" Ice	3.95	1.46	0.08
			0.00			1" Ice	4.20	1.64	0.11
						2" Ice	4.72	2.02	0.18
ALU TD-RRH8x20-25	B	From Leg	3.00	0.00	100.00	No Ice	3.71	1.29	0.06
(Sprint)			0.00			1/2" Ice	3.95	1.46	0.08
			0.00			1" Ice	4.20	1.64	0.11
						2" Ice	4.72	2.02	0.18
ALU TD-RRH8x20-25	C	From Leg	3.00	0.00	100.00	No Ice	3.71	1.29	0.06
(Sprint)			0.00			1/2" Ice	3.95	1.46	0.08
			0.00			1" Ice	4.20	1.64	0.11
						2" Ice	4.72	2.02	0.18
Sector Frames	C	None		0.00	100.00	No Ice	24.00	24.00	1.20
(Sprint)						1/2" Ice	30.00	30.00	1.50
						1" Ice	36.00	36.00	1.80
						2" Ice	48.00	48.00	2.40
*****									

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	96.50	1.256	0.04	54.849	A	0.000	10.912	7.188	65.87	0.000	0.000
104.00-89.00					B	0.000	10.912		65.87	5.115	0.000
					C	0.000	10.912		65.87	0.000	0.000
T2 89.00-74.00	81.50	1.212	0.04	54.849	A	0.000	14.173	7.188	50.71	0.000	0.000
					B	0.000	14.173		50.71	6.975	0.000
					C	0.000	14.173		50.71	41.985	0.000
T3 74.00-59.00	66.50	1.161	0.04	54.849	A	0.000	10.912	7.188	65.87	0.000	0.000
					B	0.000	10.912		65.87	6.975	0.000
					C	0.000	10.912		65.87	41.985	0.000
T4 59.00-54.00	56.50	1.122	0.04	9.808	A	2.490	2.576	2.576	50.84	0.000	0.000
					B	2.490	2.576		50.84	0.930	0.000
					C	2.490	2.576		50.84	5.598	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 104.00-89.00	96.50	1.256	0.01	1.670	59.024	A	0.000	27.554	15.537	56.39	0.000	0.000
						B	0.000	27.554		56.39	12.523	0.000
						C	0.000	27.554		56.39	0.000	0.000
T2 89.00-74.00	81.50	1.212	0.01	1.642	58.954	A	0.000	37.820	15.397	40.71	0.000	0.000
						B	0.000	37.820		40.71	16.928	0.000
						C	0.000	37.820		40.71	73.629	0.000
T3 74.00-59.00	66.50	1.161	0.01	1.609	58.871	A	0.000	26.946	15.232	56.53	0.000	0.000
						B	0.000	26.946		56.53	16.752	0.000
						C	0.000	26.946		56.53	72.913	0.000
T4 59.00-54.00	56.50	1.122	0.01	1.583	11.202	A	2.490	7.382	5.412	54.82	0.000	0.000
						B	2.490	7.382		54.82	2.215	0.000
						C	2.490	7.382		54.82	9.647	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	96.50	1.256	0.01	54.849	A	0.000	10.912	7.188	65.87	0.000	0.000
104.00-89.00					B	0.000	10.912		65.87	5.115	0.000
					C	0.000	10.912		65.87	0.000	0.000
T2 89.00-74.00	81.50	1.212	0.01	54.849	A	0.000	14.173	7.188	50.71	0.000	0.000
					B	0.000	14.173		50.71	6.975	0.000
					C	0.000	14.173		50.71	41.985	0.000

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T3 74.00-59.00	66.50	1.161	0.01	54.849	A	0.000	10.912	7.188	65.87	0.000	0.000
					B	0.000	10.912		65.87	6.975	0.000
					C	0.000	10.912		65.87	41.985	0.000
T4 59.00-54.00	56.50	1.122	0.01	9.808	A	2.490	2.576	2.576	50.84	0.000	0.000
					B	2.490	2.576		50.84	0.930	0.000
					C	2.490	2.576		50.84	5.598	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.02	0.52	A	0.199	2.6	0.04	1	1	6.267	0.68	45.35	C
104.00-89.00			B	0.199	2.6		1	1	6.267			
			C	0.199	2.6		1	1	6.267			
T2	0.20	0.54	A	0.258	2.413	0.04	1	1	8.321	1.50	100.21	C
89.00-74.00		TA 0.62	B	0.258	2.413		1	1	8.321			
			C	0.258	2.413		1	1	8.321			
T3	0.20	0.43	A	0.199	2.6	0.04	1	1	6.267	1.31	87.59	C
74.00-59.00			B	0.199	2.6		1	1	6.267			
			C	0.199	2.6		1	1	6.267			
T4	0.03	0.29	A	0.516	1.88	0.04	1	1	4.278	0.34	67.85	C
59.00-54.00			B	0.516	1.88		1	1	4.278			
			C	0.516	1.88		1	1	4.278			
Sum Weight:	0.46	2.39								3.84		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.02	0.52	A	0.199	2.6	0.04	0.8	1	6.267	0.68	45.35	C
104.00-89.00			B	0.199	2.6		0.8	1	6.267			
			C	0.199	2.6		0.8	1	6.267			
T2	0.20	0.54	A	0.258	2.413	0.04	0.8	1	8.321	1.50	100.21	A
89.00-74.00		TA 0.62	B	0.258	2.413		0.8	1	8.321			
			C	0.258	2.413		0.8	1	8.321			
T3	0.20	0.43	A	0.199	2.6	0.04	0.8	1	6.267	1.31	87.59	A
74.00-59.00			B	0.199	2.6		0.8	1	6.267			
			C	0.199	2.6		0.8	1	6.267			
T4	0.03	0.29	A	0.516	1.88	0.04	0.8	1	3.780	0.31	61.81	A
59.00-54.00			B	0.516	1.88		0.8	1	3.780			
			C	0.516	1.88		0.8	1	3.780			
Sum Weight:	0.46	2.39								3.81		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.02	0.52	A	0.199	2.6	0.04	0.85	1	6.267	0.68	45.35	C
104.00-89.00			B	0.199	2.6		0.85	1	6.267			
			C	0.199	2.6		0.85	1	6.267			
T2	0.20	0.54	A	0.258	2.413	0.04	0.85	1	8.321	1.45	96.33	B
89.00-74.00		TA 0.62	B	0.258	2.413		0.85	1	8.321			
			C	0.258	2.413		0.85	1	8.321			
T3	0.20	0.43	A	0.199	2.6	0.04	0.85	1	6.267	1.26	83.88	B
74.00-59.00			B	0.199	2.6		0.85	1	6.267			
			C	0.199	2.6		0.85	1	6.267			
T4	0.03	0.29	A	0.516	1.88	0.04	0.85	1	3.904	0.31	62.16	B
59.00-54.00			B	0.516	1.88		0.85	1	3.904			
			C	0.516	1.88		0.85	1	3.904			
Sum Weight:	0.46	2.39								3.69		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.14	1.55	A	0.467	1.947	0.01	1	1	18.396	0.23	15.61	C
104.00-89.00			B	0.467	1.947		1	1	18.396			
			C	0.467	1.947		1	1	18.396			
T2	1.14	2.09	A	0.642	1.784	0.01	1	1	29.151	0.44	29.19	C
89.00-74.00		TA 1.11	B	0.642	1.784		1	1	29.151			
			C	0.642	1.784		1	1	29.151			
T3	1.12	1.42	A	0.458	1.961	0.01	1	1	17.867	0.40	26.64	C
74.00-59.00			B	0.458	1.961		1	1	17.867			
			C	0.458	1.961		1	1	17.867			
T4	0.15	0.78	A	0.881	1.899	0.01	1	1	9.505	0.10	19.81	C
59.00-54.00			B	0.881	1.899		1	1	9.505			
			C	0.881	1.899		1	1	9.505			
Sum Weight:	2.54	6.96								1.17		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.14	1.55	A	0.467	1.947	0.01	0.8	1	18.396	0.23	15.61	C
104.00-89.00			B	0.467	1.947		0.8	1	18.396			
			C	0.467	1.947		0.8	1	18.396			
T2	1.14	2.09	A	0.642	1.784	0.01	0.8	1	29.151	0.44	29.19	A
89.00-74.00		TA 1.11	B	0.642	1.784		0.8	1	29.151			
			C	0.642	1.784		0.8	1	29.151			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T3	1.12	1.42	A	0.458	1.961	0.01	0.8	1	17.867	0.40	26.64	A
74.00-59.00			B	0.458	1.961		0.8	1	17.867			
			C	0.458	1.961		0.8	1	17.867			
T4	0.15	0.78	A	0.881	1.899	0.01	0.8	1	9.007	0.09	18.84	A
59.00-54.00			B	0.881	1.899		0.8	1	9.007			
			C	0.881	1.899		0.8	1	9.007			
Sum Weight:	2.54	6.96								1.17		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.14	1.55	A	0.467	1.947	0.01	0.85	1	18.396	0.23	15.61	C
104.00-89.00			B	0.467	1.947		0.85	1	18.396			
			C	0.467	1.947		0.85	1	18.396			
T2	1.14	2.09	A	0.642	1.784	0.01	0.85	1	29.151	0.43	28.73	B
89.00-74.00		TA 1.11	B	0.642	1.784		0.85	1	29.151			
			C	0.642	1.784		0.85	1	29.151			
T3	1.12	1.42	A	0.458	1.961	0.01	0.85	1	17.867	0.39	25.97	B
74.00-59.00			B	0.458	1.961		0.85	1	17.867			
			C	0.458	1.961		0.85	1	17.867			
T4	0.15	0.78	A	0.881	1.899	0.01	0.85	1	9.132	0.10	19.02	B
59.00-54.00			B	0.881	1.899		0.85	1	9.132			
			C	0.881	1.899		0.85	1	9.132			
Sum Weight:	2.54	6.96								1.15		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.02	0.52	A	0.199	2.6	0.01	1	1	6.267	0.16	10.45	C
104.00-89.00			B	0.199	2.6		1	1	6.267			
			C	0.199	2.6		1	1	6.267			
T2	0.20	0.54	A	0.258	2.413	0.01	1	1	8.321	0.35	23.09	C
89.00-74.00		TA 0.62	B	0.258	2.413		1	1	8.321			
			C	0.258	2.413		1	1	8.321			
T3	0.20	0.43	A	0.199	2.6	0.01	1	1	6.267	0.30	20.18	C
74.00-59.00			B	0.199	2.6		1	1	6.267			
			C	0.199	2.6		1	1	6.267			
T4	0.03	0.29	A	0.516	1.88	0.01	1	1	4.278	0.08	15.63	C
59.00-54.00			B	0.516	1.88		1	1	4.278			
			C	0.516	1.88		1	1	4.278			
Sum Weight:	0.46	2.39								0.88		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.02	0.52	A	0.199	2.6	0.01	0.8	1	6.267	0.16	10.45	C
104.00-89.00			B	0.199	2.6		0.8	1	6.267			
			C	0.199	2.6		0.8	1	6.267			
T2	0.20	0.54	A	0.258	2.413	0.01	0.8	1	8.321	0.35	23.09	A
89.00-74.00		TA 0.62	B	0.258	2.413		0.8	1	8.321			
			C	0.258	2.413		0.8	1	8.321			
T3	0.20	0.43	A	0.199	2.6	0.01	0.8	1	6.267	0.30	20.18	A
74.00-59.00			B	0.199	2.6		0.8	1	6.267			
			C	0.199	2.6		0.8	1	6.267			
T4	0.03	0.29	A	0.516	1.88	0.01	0.8	1	3.780	0.07	14.24	A
59.00-54.00			B	0.516	1.88		0.8	1	3.780			
			C	0.516	1.88		0.8	1	3.780			
Sum Weight:	0.46	2.39								0.88		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.02	0.52	A	0.199	2.6	0.01	0.85	1	6.267	0.16	10.45	C
104.00-89.00			B	0.199	2.6		0.85	1	6.267			
			C	0.199	2.6		0.85	1	6.267			
T2	0.20	0.54	A	0.258	2.413	0.01	0.85	1	8.321	0.33	22.20	B
89.00-74.00		TA 0.62	B	0.258	2.413		0.85	1	8.321			
			C	0.258	2.413		0.85	1	8.321			
T3	0.20	0.43	A	0.199	2.6	0.01	0.85	1	6.267	0.29	19.33	B
74.00-59.00			B	0.199	2.6		0.85	1	6.267			
			C	0.199	2.6		0.85	1	6.267			
T4	0.03	0.29	A	0.516	1.88	0.01	0.85	1	3.904	0.07	14.32	B
59.00-54.00			B	0.516	1.88		0.85	1	3.904			
			C	0.516	1.88		0.85	1	3.904			
Sum Weight:	0.46	2.39								0.85		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Torques kip-ft
Leg Weight	1.16			
Bracing Weight	1.23			

Load Case	*Vertical Forces* K	*Sum of Forces X* K	*Sum of Forces Z* K	*Sum of Torques* kip-ft
Total Member Self-Weight	2.39			
Guy Weight	0.16			
Total Weight	8.52			
Wind 0 deg - No Ice		0.03	-13.17	-0.49
Wind 30 deg - No Ice		6.49	-11.30	-0.10
Wind 60 deg - No Ice		10.96	-6.40	0.02
Wind 90 deg - No Ice		12.49	-0.03	-0.03
Wind 120 deg - No Ice		10.95	6.35	0.23
Wind 150 deg - No Ice		6.44	11.26	0.57
Wind 180 deg - No Ice		-0.03	13.14	0.49
Wind 210 deg - No Ice		-6.49	11.30	0.10
Wind 240 deg - No Ice		-10.99	6.41	-0.02
Wind 270 deg - No Ice		-12.49	0.03	0.03
Wind 300 deg - No Ice		-10.93	-6.34	-0.23
Wind 330 deg - No Ice		-6.44	-11.26	-0.57
Member Ice	4.56			
Guy Ice	1.30			
Total Weight Ice	24.53			
Wind 0 deg - Ice		0.01	-3.33	-0.03
Wind 30 deg - Ice		1.65	-2.87	0.04
Wind 60 deg - Ice		2.82	-1.64	0.06
Wind 90 deg - Ice		3.24	-0.01	0.05
Wind 120 deg - Ice		2.82	1.63	0.07
Wind 150 deg - Ice		1.64	2.86	0.08
Wind 180 deg - Ice		-0.01	3.32	0.03
Wind 210 deg - Ice		-1.65	2.87	-0.04
Wind 240 deg - Ice		-2.82	1.64	-0.06
Wind 270 deg - Ice		-3.24	0.01	-0.05
Wind 300 deg - Ice		-2.82	-1.63	-0.07
Wind 330 deg - Ice		-1.64	-2.86	-0.08
Total Weight	8.52			
Wind 0 deg - Service		0.01	-3.03	-0.11
Wind 30 deg - Service		1.50	-2.60	-0.02
Wind 60 deg - Service		2.53	-1.47	0.01
Wind 90 deg - Service		2.88	-0.01	-0.01
Wind 120 deg - Service		2.52	1.46	0.05
Wind 150 deg - Service		1.48	2.60	0.13
Wind 180 deg - Service		-0.01	3.03	0.11
Wind 210 deg - Service		-1.50	2.60	0.02
Wind 240 deg - Service		-2.53	1.48	-0.01
Wind 270 deg - Service		-2.88	0.01	0.01
Wind 300 deg - Service		-2.52	-1.46	-0.05
Wind 330 deg - Service		-1.48	-2.60	-0.13

Load Combinations

Comb. No.	*Description*
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy

Comb. No.	Description
7	1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	104 - 89	Leg	Max Tension	12	10.67	-0.33	-0.36
			Max. Compression	2	-15.55	0.21	0.26
			Max. Mx	5	7.81	0.97	-0.02
			Max. My	8	8.62	-0.14	0.99
			Max. Vy	11	-3.83	0.34	-0.00
			Max. Vx	8	4.40	-0.16	-0.27
		Diagonal	Max Tension	3	3.81	0.00	0.00
			Max. Compression	13	-3.80	0.00	0.00
			Max. Mx	18	0.55	0.02	0.00
			Max. My	2	-0.03	0.00	0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	5	0.15	0.00	0.00
			Max. Compression	11	-0.15	0.00	0.00
			Max. Mx	23	0.00	0.01	0.00
			Max. My	2	-0.14	0.00	0.00
			Max. Vy	23	-0.01	0.00	0.00
			Max. Vx	2	-0.00	0.00	0.00
		Bottom Girt	Max Tension	12	1.67	0.00	0.00
			Max. Compression	2	-1.58	0.00	0.00
			Max. Mx	22	-0.23	0.01	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-1.58	0.00	0.00
			Max. Vy	22	-0.01	0.00	0.00
			Max. Vx	2	-0.00	0.00	0.00
T2	89 - 74	Leg	Max Tension	12	14.81	0.93	0.35
			Max. Compression	2	-23.45	-0.02	0.01
			Max. Mx	5	-2.37	-1.33	0.07
			Max. My	3	-2.22	-0.64	1.15
			Max. Vy	11	-3.83	0.98	0.18
			Max. Vx	8	4.41	-0.17	-1.00
		Diagonal	Max Tension	9	4.14	0.00	0.00
			Max. Compression	3	-4.27	0.00	0.00
			Max. Mx	23	-0.35	-0.01	0.00
			Max. My	9	-4.19	0.00	0.00
			Max. Vy	23	0.01	-0.01	0.00
			Max. Vx	9	0.00	0.00	0.00
		Top Girt	Max Tension	12	0.36	0.00	0.00
			Max. Compression	2	-0.39	0.00	0.00
			Max. Mx	22	-0.03	0.01	0.00
			Max. Vy	22	-0.01	0.00	0.00
		Bottom Girt	Max Tension	13	0.26	0.00	0.00
			Max. Compression	11	-0.12	0.00	0.00
			Max. Mx	22	0.06	0.01	0.00
			Max. Vy	22	-0.01	0.00	0.00
		Guy A	Bottom Tension	9	10.69		
			Top Tension	9	10.71		
			Top Cable Vert	9	7.29		
			Top Cable Norm	9	7.85		
			Top Cable Tan	9	0.02		
			Bot Cable Vert	9	-7.23		
			Bot Cable Norm	9	7.87		
			Bot Cable Tan	9	0.06		
		Guy B	Bottom Tension	13	9.86		
			Top Tension	13	9.88		
			Top Cable Vert	13	5.95		
			Top Cable Norm	13	7.89		
			Top Cable Tan	13	0.01		
			Bot Cable Vert	13	-5.89		
			Bot Cable Norm	13	7.91		
			Bot Cable Tan	13	0.05		
		Guy C	Bottom Tension	3	12.62		
			Top Tension	3	12.64		
			Top Cable Vert	3	10.01		
			Top Cable Norm	3	7.72		
			Top Cable Tan	3	0.04		
			Bot Cable Vert	3	-9.96		
			Bot Cable Norm	3	7.75		
			Bot Cable Tan	3	0.08		
		Top Guy Pull-Off	Max Tension	8	7.17	0.00	0.00
			Max. Compression	2	-6.82	0.00	0.00
			Max. Mx	22	1.78	0.02	0.00
			Max. My	2	3.38	0.00	-0.00
			Max. Vy	22	-0.02	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Torque Arm Top	Max Tension	9	8.84	0.00	0.00
			Max. Compression	3	-5.20	0.00	0.00
			Max. Mx	3	-0.75	-33.19	0.00
			Max. My	2	-4.24	-16.98	-0.00
			Max. Vy	3	9.77	-33.19	0.00
			Max. Vx	2	-0.00	-16.98	-0.00
T3	74 - 59	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-16.57	0.00	-0.04

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	2	-13.05	-0.31	0.18
			Max. My	19	-13.48	-0.00	-0.32
			Max. Vy	18	1.19	-0.30	0.16
			Max. Vx	2	1.35	0.03	-0.08
		Diagonal	Max Tension	11	1.33	0.00	0.00
			Max. Compression	13	-1.28	0.00	0.00
			Max. Mx	18	0.08	0.01	0.00
			Max. My	17	0.04	0.00	-0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	17	0.00	0.00	0.00
		Top Girt	Max Tension	13	0.37	0.00	0.00
			Max. Compression	11	-0.33	0.00	0.00
			Max. Mx	26	-0.02	0.01	0.00
			Max. Vy	26	-0.01	0.00	0.00
		Bottom Girt	Max Tension	17	0.74	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	20	0.71	0.01	0.00
			Max. Vy	20	0.01	0.00	0.00
T4	59 - 54	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	18	-15.20	-0.11	0.01
			Max. Mx	17	-12.73	-0.38	0.03
			Max. My	13	-11.00	-0.08	-0.12
			Max. Vy	18	3.81	-0.35	0.01
			Max. Vx	13	0.15	0.27	0.01
		Horizontal	Max Tension	17	2.48	0.10	-0.04
			Max. Compression	6	-0.13	0.05	-0.02
			Max. Mx	6	2.37	0.15	-0.04
			Max. My	2	-0.06	0.01	-0.09
			Max. Vy	13	-0.21	0.15	-0.04
			Max. Vx	2	-0.12	0.11	0.02

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Max. Vert	19	41.55	-0.16	0.04
	Max. H_x	5	36.75	0.15	0.22
	Max. H_z	6	39.02	0.12	0.32
	Max. M_x	1	0.00	-0.10	0.02
	Max. M_z	1	0.00	-0.10	0.02
	Max. Torsion	13	0.30	-0.30	-0.17
	Min. Vert	36	19.27	-0.13	0.00
	Min. H_x	11	29.07	-0.45	-0.03
	Min. H_z	13	32.15	-0.30	-0.17
	Min. M_x	1	0.00	-0.10	0.02
	Min. M_z	1	0.00	-0.10	0.02
	Min. Torsion	7	-0.23	0.01	0.22
Guy C @ 29 ft Elev 51 ft Azimuth 240 deg	Max. Vert	10	-0.20	-0.09	0.05
	Max. H_x	10	-0.20	-0.09	0.05
	Max. H_z	3	-19.83	-13.22	7.78
	Min. Vert	3	-19.83	-13.22	7.78
	Min. H_x	3	-19.83	-13.22	7.78
	Min. H_z	10	-0.20	-0.09	0.05
Guy B @ 49 ft	Max. Vert	6	-0.05	0.04	0.02

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Elev 51 ft Azimuth 120 deg					
	Max. H_x	13	-11.65	13.50	7.89
	Max. H_z	13	-11.65	13.50	7.89
	Min. Vert	13	-11.65	13.50	7.89
	Min. H_x	6	-0.05	0.04	0.02
	Min. H_z	6	-0.05	0.04	0.02
Guy A @ 40 ft Elev 51 ft Azimuth 0 deg	Max. Vert	2	-0.10	-0.00	-0.07
	Max. H_x	10	-12.28	0.14	-13.31
	Max. H_z	2	-0.10	-0.00	-0.07
	Min. Vert	9	-14.38	0.09	-15.61
	Min. H_x	6	-12.10	-0.16	-13.12
	Min. H_z	9	-14.38	0.09	-15.61

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	19.76	0.10	-0.02	0.00	0.00	-0.01
1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy	37.64	0.34	0.14	0.00	0.00	-0.20
1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy	36.18	0.28	0.12	0.00	0.00	0.01
1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy	29.31	0.05	-0.03	0.00	0.00	0.13
1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy	36.75	-0.15	-0.22	0.00	0.00	0.15
1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy	39.02	-0.12	-0.32	0.00	0.00	0.20
1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy	34.61	-0.01	-0.22	0.00	0.00	0.23
1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy	25.27	0.02	-0.03	0.00	0.00	0.10
1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy	30.81	0.19	-0.07	0.00	0.00	-0.11
1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy	32.65	0.38	-0.09	0.00	0.00	-0.15
1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy	29.07	0.45	0.03	0.00	0.00	-0.11
1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy	22.73	0.29	0.15	0.00	0.00	-0.20
1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy	32.15	0.30	0.17	0.00	0.00	-0.30
1.2 Dead+1.0 Ice+1.0 Temp+Guy	40.21	0.11	-0.04	0.00	0.00	-0.02
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	40.62	0.14	-0.12	0.00	0.00	-0.03
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	41.04	0.18	-0.12	0.00	0.00	0.01
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	41.34	0.18	-0.09	0.00	0.00	0.03
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	41.55	0.17	-0.07	0.00	0.00	0.03
1.2 Dead+1.0 Wind 120	41.55	0.16	-0.04	0.00	0.00	0.03

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 150	41.04	0.13	0.00	0.00	0.00	0.01
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 180	40.47	0.09	0.03	0.00	0.00	-0.02
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 210	40.01	0.05	0.03	0.00	0.00	-0.06
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 240	39.68	0.04	0.02	0.00	0.00	-0.08
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 270	39.57	0.06	-0.01	0.00	0.00	-0.07
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 300	39.69	0.08	-0.04	0.00	0.00	-0.07
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 330	40.07	0.10	-0.09	0.00	0.00	-0.06
deg+1.0 Ice+1.0 Temp+1.0 Guy Dead+Wind 0 deg - Service+Guy	19.79	0.12	-0.04	0.00	0.00	-0.03
Dead+Wind 30 deg - Service+Guy	20.05	0.12	-0.04	0.00	0.00	0.01
Dead+Wind 60 deg - Service+Guy	20.23	0.09	-0.03	0.00	0.00	0.03
Dead+Wind 90 deg - Service+Guy	20.28	0.06	-0.05	0.00	0.00	0.02
Dead+Wind 120 deg - Service+Guy	20.21	0.07	-0.05	0.00	0.00	0.03
Dead+Wind 150 deg - Service+Guy	20.01	0.08	-0.03	0.00	0.00	0.03
Dead+Wind 180 deg - Service+Guy	19.75	0.07	-0.01	0.00	0.00	0.01
Dead+Wind 210 deg - Service+Guy	19.50	0.07	-0.01	0.00	0.00	-0.04
Dead+Wind 240 deg - Service+Guy	19.32	0.10	-0.01	0.00	0.00	-0.05
Dead+Wind 270 deg - Service+Guy	19.27	0.13	-0.00	0.00	0.00	-0.05
Dead+Wind 300 deg - Service+Guy	19.34	0.13	0.01	0.00	0.00	-0.05
Dead+Wind 330 deg - Service+Guy	19.53	0.11	-0.01	0.00	0.00	-0.05

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-8.52	0.00	-0.00	8.52	0.00	0.005%
2	0.06	-10.21	-13.50	-0.06	10.21	13.50	0.003%
3	6.69	-10.19	-11.61	-6.69	10.19	11.61	0.002%
4	11.27	-10.17	-6.59	-11.27	10.17	6.59	0.007%
5	12.84	-10.19	-0.05	-12.84	10.19	0.05	0.002%
6	11.23	-10.21	6.50	-11.23	10.21	-6.50	0.003%
7	6.58	-10.19	11.53	-6.58	10.19	-11.53	0.002%
8	-0.06	-10.17	13.47	0.06	10.17	-13.47	0.005%
9	-6.69	-10.20	11.61	6.69	10.20	-11.61	0.001%
10	-11.30	-10.22	6.61	11.30	10.22	-6.61	0.001%
11	-12.84	-10.20	0.05	12.84	10.20	-0.05	0.001%
12	-11.21	-10.17	-6.48	11.21	10.17	6.48	0.002%
13	-6.58	-10.19	-11.53	6.58	10.19	11.53	0.002%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
14	0.00	-26.20	0.00	0.00	26.20	0.00	0.001%
15	0.04	-26.22	-3.73	-0.04	26.22	3.73	0.003%
16	1.88	-26.20	-3.24	-1.88	26.20	3.24	0.002%
17	3.19	-26.17	-1.87	-3.19	26.17	1.87	0.003%
18	3.64	-26.19	-0.03	-3.64	26.19	0.03	0.001%
19	3.15	-26.22	1.80	-3.15	26.22	-1.80	0.002%
20	1.81	-26.20	3.18	-1.81	26.20	-3.18	0.001%
21	-0.04	-26.18	3.72	0.04	26.18	-3.72	0.003%
22	-1.88	-26.21	3.24	1.88	26.21	-3.24	0.001%
23	-3.20	-26.23	1.87	3.20	26.23	-1.87	0.002%
24	-3.64	-26.21	0.03	3.64	26.21	-0.03	0.002%
25	-3.15	-26.18	-1.80	3.15	26.18	1.80	0.001%
26	-1.81	-26.20	-3.18	1.81	26.20	3.18	0.002%
27	0.01	-8.52	-3.11	-0.01	8.52	3.11	0.001%
28	1.54	-8.52	-2.68	-1.54	8.52	2.68	0.001%
29	2.60	-8.51	-1.52	-2.60	8.51	1.52	0.002%
30	2.96	-8.52	-0.01	-2.96	8.52	0.01	0.002%
31	2.59	-8.52	1.50	-2.59	8.52	-1.50	0.002%
32	1.52	-8.52	2.66	-1.52	8.52	-2.66	0.001%
33	-0.01	-8.52	3.10	0.01	8.52	-3.10	0.005%
34	-1.54	-8.52	2.68	1.54	8.52	-2.68	0.003%
35	-2.60	-8.53	1.52	2.60	8.53	-1.52	0.004%
36	-2.96	-8.52	0.01	2.96	8.52	-0.01	0.003%
37	-2.58	-8.52	-1.49	2.58	8.52	1.49	0.003%
38	-1.52	-8.52	-2.66	1.52	8.52	2.66	0.005%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	7	0.00000001	0.00013391
2	Yes	12	0.00000001	0.00011742
3	Yes	12	0.00000001	0.00009419
4	Yes	11	0.00000001	0.00008321
5	Yes	12	0.00000001	0.00010076
6	Yes	12	0.00000001	0.00012775
7	Yes	12	0.00000001	0.00009116
8	Yes	11	0.00000001	0.00010811
9	Yes	12	0.00000001	0.00003970
10	Yes	12	0.00000001	0.00005036
11	Yes	12	0.00000001	0.00003583
12	Yes	11	0.00000001	0.00004819
13	Yes	12	0.00000001	0.00008185
14	Yes	8	0.00000001	0.00003824
15	Yes	8	0.00000001	0.00014805
16	Yes	8	0.00000001	0.00009045
17	Yes	8	0.00000001	0.00013180
18	Yes	9	0.00000001	0.00006424
19	Yes	9	0.00000001	0.00009220
20	Yes	9	0.00000001	0.00006119
21	Yes	8	0.00000001	0.00013341
22	Yes	8	0.00000001	0.00003589
23	Yes	7	0.00000001	0.00008482
24	Yes	7	0.00000001	0.00007774
25	Yes	8	0.00000001	0.00004714
26	Yes	8	0.00000001	0.00010870

27	Yes	7	0.00000001	0.00003998
28	Yes	7	0.00000001	0.00004117
29	Yes	7	0.00000001	0.00005033
30	Yes	7	0.00000001	0.00006090
31	Yes	7	0.00000001	0.00006882
32	Yes	7	0.00000001	0.00005279
33	Yes	6	0.00000001	0.00011957
34	Yes	6	0.00000001	0.00006935
35	Yes	6	0.00000001	0.00007962
36	Yes	6	0.00000001	0.00006229
37	Yes	6	0.00000001	0.00006979
38	Yes	6	0.00000001	0.00012198

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
T1	104 - 89	0.07	29	0.09	0.00
T2	89 - 74	0.05	29	0.09	0.00
T3	74 - 59	0.03	29	0.08	0.01
T4	59 - 54	0.01	29	0.08	0.01

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection ft	Tilt °	Twist °	Radius of Curvature ft
100.00	Commscope NNVV-65B-R4	29	0.06	0.09	0.00	97245
89.50	Ericsson AIR6449	29	0.05	0.09	0.00	35434
86.39	Guy	29	0.04	0.08	0.00	34094

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
T1	104 - 89	0.53	2	0.67	0.04
T2	89 - 74	0.35	2	0.64	0.04
T3	74 - 59	0.20	2	0.58	0.05
T4	59 - 54	0.05	2	0.57	0.04

Critical Deflections and Radius of Curvature - Design Wind

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

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection ft	Tilt °	Twist °	Radius of Curvature ft
100.00	Commscope NNVV-65B-R4	2	0.48	0.67	0.04	23266
89.50	Ericsson AIR6449	2	0.36	0.64	0.04	8505
86.39	Guy	2	0.33	0.61	0.04	8336

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T2	86.39 (A) (126)	1/2 EHS	2.69	26.90	10.71	16.14	1.000	1.507 ✔
	86.39 (A) (127)	1/2 EHS	2.69	26.90	10.68	16.14	1.000	1.512 ✔
	86.39 (B) (122)	1/2 EHS	2.69	26.90	9.88	16.14	1.000	1.633 ✔
	86.39 (B) (123)	1/2 EHS	2.69	26.90	9.69	16.14	1.000	1.666 ✔
	86.39 (C) (115)	1/2 EHS	2.69	26.90	12.54	16.14	1.000	1.287 ✔
	86.39 (C) (116)	1/2 EHS	2.69	26.90	12.64	16.14	1.000	1.277 ✔

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 89	ROHN 2.5 X-STR	15.00	2.44	63.5 K=2.00	2.254	1.00	-15.55	75.52	0.206 [1] ✔
T2	89 - 74	ROHN 2.5 EH	15.00	2.44	31.7 K=1.00	2.254	1.00	-23.45	94.21	0.249 [1] ✔
T3	74 - 59	ROHN 2.5 X-STR	15.00	2.44	63.5 K=2.00	2.254	1.00	-16.57	75.52	0.219 [1] ✔
T4	59 - 54	ROHN 2.5 X-STR	5.38	1.43	18.6 K=1.00	2.254	0.98	-15.20	97.36	0.156 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 89	ROHN 1.5 x 11GA	4.20	3.91	95.7 K=1.00	0.520	-3.80	11.20	0.339 [1] ✔
T2	89 - 74	ROHN 1.5 x 16GA	4.20	1.95	45.9 K=1.00	0.263	-4.27	8.72	0.489 [1] ✔
T3	74 - 59	ROHN 1.5 x 16GA	4.20	3.91	91.9 K=1.00	0.263	-1.28	5.91	0.216 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	59 - 54	L4x4x1/4	3.30	3.06	83.1 K=1.80	1.940	-0.28	60.79	0.005 [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 in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 89	ROHN 1.5 x 11GA	3.42	3.18	77.9 K=1.00	0.520	-0.15	12.25	0.013 [1] ✔
T2	89 - 74	ROHN 1.5 x 16GA	3.42	3.18	74.7 K=1.00	0.263	-0.41	6.34	0.064 [1] ✔
T3	74 - 59	ROHN 1.5 x 16GA	3.42	3.18	74.7 K=1.00	0.263	-0.33	6.34	0.052 [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 in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 89	ROHN 1.5 x 11GA	3.42	3.18	77.9 K=1.00	0.520	-1.58	12.25	0.129 [1] ✔
T2	89 - 74	ROHN 1.5 x 16GA	3.42	3.18	74.7 K=1.00	0.263	-0.41	6.34	0.064 [1] ✔
T3	74 - 59	ROHN 1.5 x 16GA	3.42	3.18	74.7 K=1.00	0.263	-0.29	6.34	0.045 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	89 - 74	1 1/4	3.42	3.18	122.0 K=1.00	1.227	-6.82	18.62	0.366 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T2	89 - 74	1 1/4	0.00	1.22	0.000	0.00	1.22	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	89 - 74	1 1/4	0.366	0.000	0.000	0.366 [1]	1.000	4.8.1

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	89 - 74 (117)	C10x30	3.42	3.30	59.1 K=1.00	8.820	-5.20	237.71	0.022
T2	89 - 74 (118)	C10x30	3.42	3.30	59.1 K=1.00	8.820	-5.01	237.71	0.021
T2	89 - 74 (124)	C10x30	3.42	3.30	59.1 K=1.00	8.820	-0.63	237.71	0.003

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	89 - 74 (125)	C10x30	3.42	3.30	59.1 K=1.00	8.820	-0.75	237.71	0.003
T2	89 - 74 (128)	C10x30	3.42	3.30	59.1 K=1.00	8.820	-4.86	237.71	0.020
T2	89 - 74 (129)	C10x30	3.42	3.30	59.1 K=1.00	8.820	-0.58	237.71	0.002

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T2	89 - 74 (117)	C10x30	-32.63	70.87	0.460	-0.00	6.68	0.000
T2	89 - 74 (118)	C10x30	-23.84	70.87	0.336	-0.00	6.68	0.000
T2	89 - 74 (124)	C10x30	-20.40	70.87	0.288	0.00	6.68	0.000
T2	89 - 74 (125)	C10x30	-33.19	70.87	0.468	0.00	6.68	0.000
T2	89 - 74 (128)	C10x30	-19.41	70.87	0.274	-0.00	6.68	0.000
T2	89 - 74 (129)	C10x30	-24.50	70.87	0.346	-0.00	6.68	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	89 - 74 (117)	C10x30	0.022	0.460	0.000	0.471 ✔	1.000	4.8.1 ✔
T2	89 - 74 (118)	C10x30	0.021	0.336	0.000	0.347 ✔	1.000	4.8.1 ✔
T2	89 - 74 (124)	C10x30	0.003	0.288	0.000	0.289 ✔	1.000	4.8.1 ✔
T2	89 - 74 (125)	C10x30	0.003	0.468	0.000	0.470 ✔	1.000	4.8.1 ✔
T2	89 - 74 (128)	C10x30	0.020	0.274	0.000	0.284 ✔	1.000	4.8.1 ✔
T2	89 - 74 (129)	C10x30	0.002	0.346	0.000	0.347 ✔	1.000	4.8.1 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 89	ROHN 2.5 X-STR	15.00	2.44	31.7	2.254	10.67	101.41	0.105 [1] ✔
T2	89 - 74	ROHN 2.5 EH	15.00	2.44	31.7	2.254	14.81	101.41	0.146 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 89	ROHN 1.5 x 11GA	4.20	3.91	95.7	0.520	3.81	19.67	0.194 [1] ✔
T2	89 - 74	ROHN 1.5 x 16GA	4.20	1.95	45.9	0.263	4.14	9.93	0.417 [1] ✔
T3	74 - 59	ROHN 1.5 x 16GA	4.20	3.91	91.9	0.263	1.33	9.93	0.134 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	59 - 54	L4x4x1/4	3.30	3.06	29.4	1.455	2.48	70.93	0.035 [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 in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 89	ROHN 1.5 x 11GA	3.42	3.18	77.9	0.520	0.15	16.86	0.009 [1] ✔
T2	89 - 74	ROHN 1.5 x 16GA	3.42	3.18	74.7	0.263	0.41	8.51	0.048 [1] ✔
T3	74 - 59	ROHN 1.5 x 16GA	3.42	3.18	74.7	0.263	0.37	8.51	0.043 [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 in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	104 - 89	ROHN 1.5 x 11GA	3.42	3.18	77.9	0.520	1.67	16.86	0.099 [1] ✔
T2	89 - 74	ROHN 1.5 x 16GA	3.42	3.18	74.7	0.263	0.41	8.51	0.048 [1] ✔
T3	74 - 59	ROHN 1.5 x 16GA	3.42	3.18	74.7	0.263	0.74	8.51	0.087 [1] ✔

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	89 - 74	1 1/4	3.42	3.18	122.0	1.227	7.17	55.22	0.130 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T2	89 - 74	1 1/4	0.00	1.22	0.000	0.00	1.22	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	89 - 74	1 1/4	0.130	0.000	0.000	0.130 [1] ✔	1.000	4.8.1 ✔

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	89 - 74 (117)	C10x30	3.42	3.30	59.1	8.820	3.04	285.77	0.011
T2	89 - 74 (118)	C10x30	3.42	3.30	59.1	8.820	3.02	285.77	0.011
T2	89 - 74 (124)	C10x30	3.42	3.30	59.1	8.820	3.19	285.77	0.011
T2	89 - 74 (125)	C10x30	3.42	3.30	59.1	8.820	3.21	285.77	0.011
T2	89 - 74 (128)	C10x30	3.42	3.30	59.1	8.820	3.31	285.77	0.012
T2	89 - 74 (129)	C10x30	3.42	3.30	59.1	8.820	3.27	285.77	0.011

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T2	89 - 74 (117)	C10x30	-28.70	70.87	0.405	-0.00	6.68	0.000
T2	89 - 74 (118)	C10x30	-21.58	70.87	0.305	-0.00	6.68	0.000
T2	89 - 74 (124)	C10x30	-18.56	70.87	0.262	0.00	6.68	0.000
T2	89 - 74 (125)	C10x30	-29.36	70.87	0.414	0.00	6.68	0.000
T2	89 - 74 (128)	C10x30	-17.75	70.87	0.250	-0.00	6.68	0.000
T2	89 - 74 (129)	C10x30	-21.51	70.87	0.304	-0.00	6.68	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	89 - 74 (117)	C10x30	0.011	0.405	0.000	0.410 ✔	1.000	4.8.1 ✔
T2	89 - 74 (118)	C10x30	0.011	0.305	0.000	0.310 ✔	1.000	4.8.1 ✔
T2	89 - 74 (124)	C10x30	0.011	0.262	0.000	0.267 ✔	1.000	4.8.1 ✔
T2	89 - 74 (125)	C10x30	0.011	0.414	0.000	0.420 ✔	1.000	4.8.1 ✔
T2	89 - 74 (128)	C10x30	0.012	0.250	0.000	0.256 ✔	1.000	4.8.1 ✔
T2	89 - 74 (129)	C10x30	0.011	0.304	0.000	0.309 ✔	1.000	4.8.1 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	104 - 89	Leg	ROHN 2.5 X-STR	3	-15.55	75.52	20.6	Pass
		Diagonal	ROHN 1.5 x 11GA	11	-3.80	11.20	33.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Top Girt	ROHN 1.5 x 11GA	4	-0.15	12.25	1.3	Pass
		Bottom Girt	ROHN 1.5 x 11GA	9	-1.58	12.25	12.9	Pass
T2	89 - 74	Leg	ROHN 2.5 EH	30	-23.45	94.21	24.9	Pass
		Diagonal	ROHN 1.5 x 16GA	71	-4.27	8.72	48.9	Pass
		Top Girt	ROHN 1.5 x 16GA	32	-0.41	6.34	6.4	Pass
		Bottom Girt	ROHN 1.5 x 16GA	35	-0.41	6.34	6.4	Pass
		Guy A@86.3889	1/2	126	10.71	16.14	66.3	Pass
		Guy B@86.3889	1/2	122	9.88	16.14	61.2	Pass
		Guy C@86.3889	1/2	116	12.64	16.14	78.3	Pass
		Top Guy Pull-Off@86.3889	1 1/4	119	-6.82	18.62	36.6	Pass
		Torque Arm Top@86.3889	C10x30	117	-5.20	237.71	47.1	Pass
T3	74 - 59	Leg	ROHN 2.5 X-STR	74	-16.57	75.52	21.9	Pass
		Diagonal	ROHN 1.5 x 16GA	98	-1.28	5.91	21.6	Pass
		Top Girt	ROHN 1.5 x 16GA	76	-0.33	6.34	5.2	Pass
		Bottom Girt	ROHN 1.5 x 16GA	79	0.74	8.51	8.7	Pass
T4	59 - 54	Leg	ROHN 2.5 X-STR	100	-15.20	97.36	15.6	Pass
		Horizontal	L4x4x1/4	103	2.48	70.93	3.5	Pass
						Summary		
						Leg (T2)	24.9	Pass
						Diagonal (T2)	48.9	Pass
						Horizontal (T4)	3.5	Pass
						Top Girt (T2)	6.4	Pass
						Bottom Girt (T1)	12.9	Pass
						Guy A (T2)	66.3	Pass
						Guy B (T2)	61.2	Pass
						Guy C (T2)	78.3	Pass
						Top Guy Pull-Off (T2)	36.6	Pass
						Torque Arm Top (T2)	47.1	Pass
						RATING =	**78.3**	**Pass**

BU:	US-CT-5020	Structure:	A
WO:			
Order:		Rev:	

Location

	Decimal Degrees		Deg	Min	Sec
Lat:	41.784998	+	41	47	5.99
Long:	-72.748600	-	72	44	54.96

Code and Site Parameters

Seismic Design Code:	TIA-222-H	
Site Soil:	D (Default)	Default
Risk Category:	II	

USGS Seismic Reference			
	S_S:	0.1850	g
	S_1:	0.0550	g
	T_L:	6	s

Seismic Design Category Determination

Importance Factor, I_e:	1	
Acceleration-based site coefficient, F_a:	1.6000	
Velocity-based site coefficient, F_v:	2.4000	
Design spectral response acceleration short period, S_{DS}:	0.1973	g
Design spectral response acceleration 1 s period, S_{D1}:	0.0880	g
Seismic Design Category Based on S_{DS}:	B	
Seismic Design Category Based on S_{D1}:	B	
Seismic Design Category Based on S_1:	N/A	
Controlling Seismic Design Category:	B	

BU:	US-CT-5020	Structure:	A
WO:			
Order:		Rev:	

Tower Details

Tower Type:	Guyed Tower		
Height, h:	50	ft	
Effective Seismic Weight, W:	2.47	kips	
Amplification Factor, A_s:	1.0		2.7.8.1

Seismic Base Shear

Response Modification Factor, R:	3		
C_g:	176.5		
K_g:	0.0087		
F_a:	10.3129	hz	
Approximate Fundamental Period Guyed Towers, T_a:	0.0970	s	2.7.7.1.3.4
Seismic Response Coefficient, C_s	0.0658		2.7.7.1.1
Seismic Response Coefficient Max 1, C_{smax}	0.3025		2.7.7.1.1
Seismic Response Coefficient Max 2, C_{smax}	N/A		2.7.7.1.1
Seismic Response Coefficient Min 1, C_{smin}	0.0300		2.7.7.1.1
Seismic Response Coefficient Min 2, C_{smin}	N/A		2.7.7.1.1
Controlling Seismic Response Coefficient, C_{sc}	0.0658		
Seismic Base Shear, V	0.163	kips	2.7.7.1.1

Vertical Distribution Factors

Period Related Exponent, k:	1.000	2.7.7.1.2
Sum of $w_i h_i^k$	62.43	2.7.7.1.2

Tower Section Loads								
Section Number	**Length**	**Top Height**	**Mid Height, h_x**	**Section Weight, w_x**	**$w_x h_x^k$**	**C_{vx}**	**F_{xh}**	**F_{xv}**
1	15.00	50.00	42.50	0.5152	21.90	0.3508	0.0571	0.0203
2	15.00	35.00	27.50	1.1568	31.81	0.5096	0.0829	0.0457
3	15.00	20.00	12.50	0.4310	5.39	0.0863	0.0140	0.0170
4	5.00	5.00	2.50	0.2906	0.73	0.0116	0.0019	0.0115
			Sum	2.3936	59.82			

Guy Loads						
Guy Attachment Elevation, h_x	**Total Guy Weight**	**Effective Guy Weight, w_x**	**$w_x h_x^k$**	**C_{vx}**	**F_{xh}**	**F_{xv}**
32.39	0.1608	0.0804	2.60	0.0417	0.0068	0.0032
Sum	0.1608	0.0804	2.60			

Discrete Loads						
Name	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}

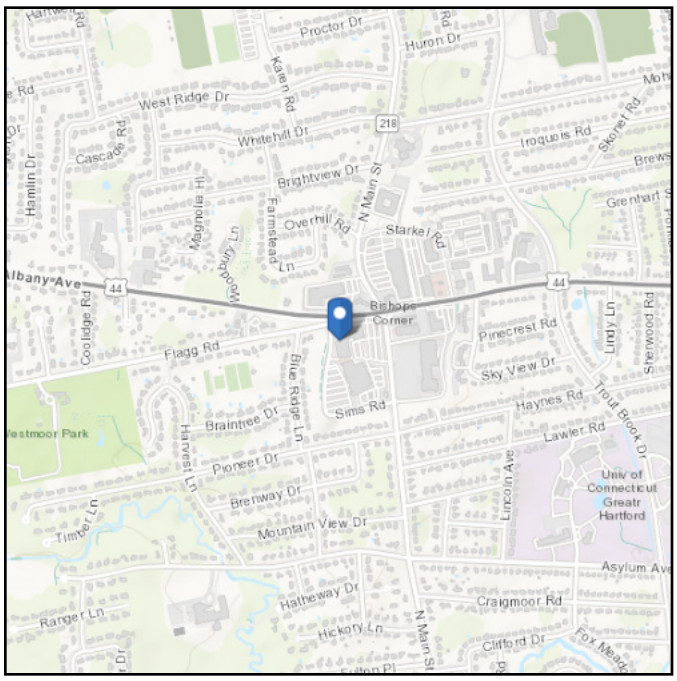
Linear Loads								
Name	Start Height	End Height	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}

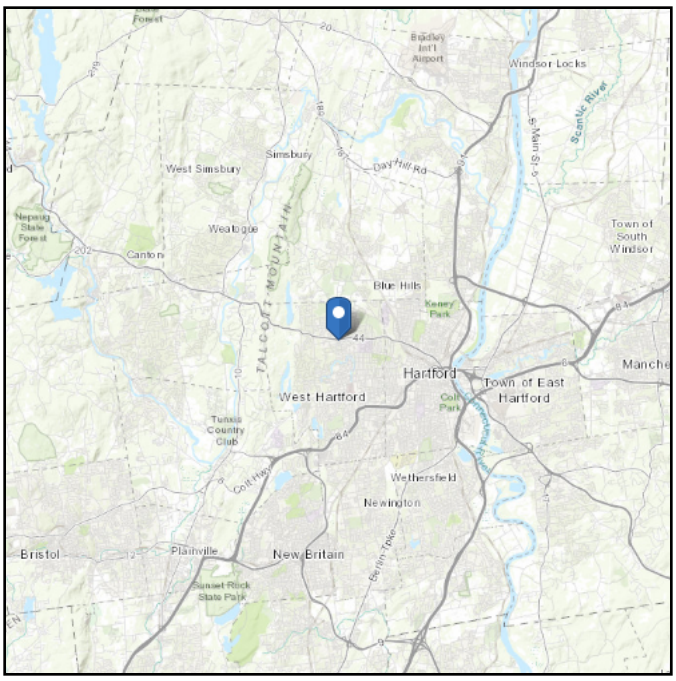
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 160.03 ft (NAVD 88)
Latitude: 41.785
Longitude: -72.7486





Wind

Results:

Wind Speed	117 Vmph	(Used 125 mph Ultimate wind speed per local requirements)
10-year MRI	75 Vmph	
25-year MRI	84 Vmph	
50-year MRI	90 Vmph	
100-year MRI	97 Vmph	

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Wed Mar 16 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

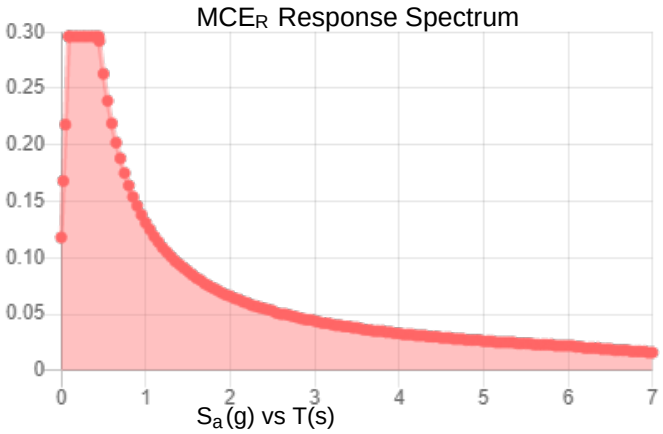
Seismic

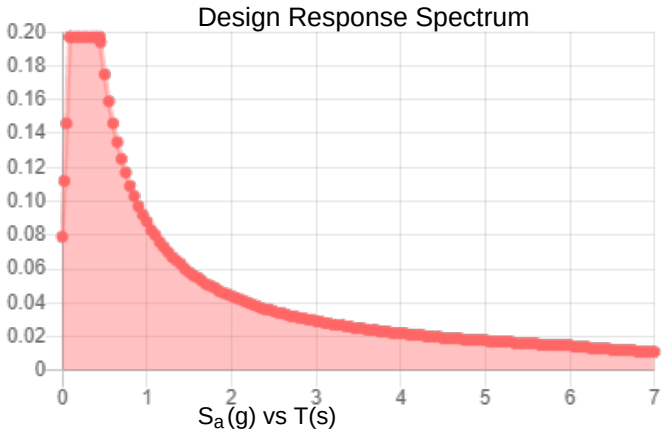
Site Soil Class: D - Default (see Section 11.4.3)

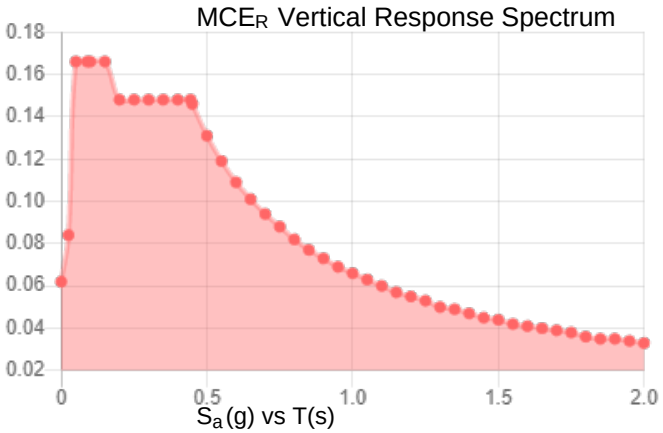
Results:

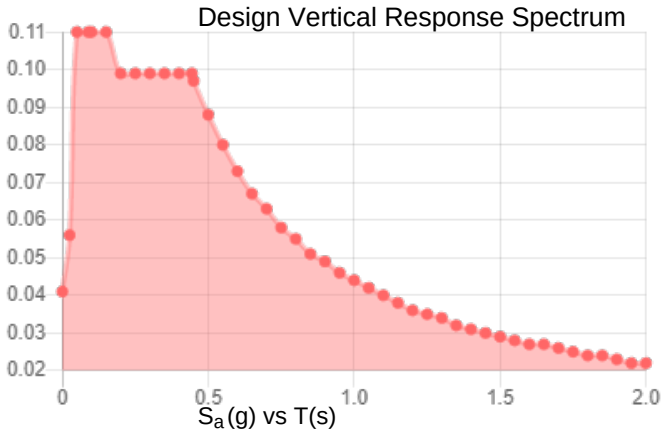
S_S :	0.185	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.099
F_v :	2.4	PGA_M :	0.159
S_{MS} :	0.296	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.197	C_v :	0.7

Seismic Design Category B









Data Accessed: **Wed Mar 16 2022**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Mar 16 2022

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

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

Attachment 2:
Collocation Application

COLOCATION APPLICATION
US-CT-5020
Version 3
New Cingular Wireless PCS, LLC

Vertical Bridge REIT, LLC.
750 Park of Commerce Drive
Suite 200
Boca Raton, FL 33487

SUMMARY

PRIMARY INFO

Application #: P-019285

Application Version: 3 (Submitted: 3/18/2022 4:32:00 PM)

Application Type: Broadband

Application Name: CT1195 West Hartford Bishops Corner

Lease Type: Amendment

Description:
Swap (9) antennas, swap (6) RRUs, add (1) squid, (3) DC lines, remove (3) Coax, mount modifications per the mount analysis.

VERTICAL BRIDGE SITE INFO

VB Site #: US-CT-5020

VB Site Name: CT03XC074

Latitude: 41.78499999

Longitude: -72.74860000

Structure Type: Guyed Tower

Structure Height: 50.0000

Site Address: 345 North Main Street -
West Hartford, CT 6001

VERTICAL BRIDGE DEAL TEAM

RLM: Floyd Jenkins
FJenkins@verticalbridge.com
(301) 667-0069

RLS: Sam Bowden
SBowden@verticalbridge.com

ROM: Joe Bascelli
JBascelli@verticalbridge.com
(484) 288-9586

TENANT LEGAL INFO

Tenant Legal Name: New Cingular Wireless PCS, LLC

State of Registration: Delaware

Type of Entity: LLC

Carrier NOC #: 8006382822

Tenant Site #: CT1195

Tenant Site Name: West Hartford Bishops Corner

APPLICANT

Name: Hollis Reddng

Address 12 Industrial Way
Salem, NH 03079

Phone Number:: (860) 834-6964

Email Address: hredding@saigrp.com

FINAL LEASED RIGHTS CONFIGURATION TOTALS

This is a summary of your remaining existing equipment plus the new equipment.

FINAL EQUIPMENT

Qty	Equipment Type
2	Surge Arrestor/Raycap/Squid
6	RRU
6	TMA

FINAL LINES

Qty	Line Type
1	Fiber
1	RET Home Run Cable
5	DC Power

Qty	Equipment Type
9	Panel

Qty	Line Type
9	Coax

FREQUENCY & TECHNOLOGY INFO

Type of Technology: Broadband Wireless

Is TX Frequency Licensed: Yes

TX Frequency: 716-728, 734-746, 788-789, 880-894, 1930-1935, 1945-1950, 1965-1970, 1975-1990, 2170-2180, 2345-2360, 3860-3940.

Is RX Frequency Licensed: Yes

RX Frequency: 704-716, 758-769, 835-849, 1770-1780, 1850-1855, 1865-1870, 1895-1910, 2305-2320.

MOUNT & STRUCTURAL ANALYSIS

MOUNT ANALYSIS

Provided by Tenant: Yes

To Be Run by VB:

Include Mount Mapping:

STRUCTURAL HARD COPIES

Required: No

Number of Hard Copies

CONTACTS

INVOICE CONTACT

Attention To	Name	Address	Phone Number 1	Phone Number 2	Email 1	Email 2
SAI Group	Jhana Arsenault	12 industrial Way Salem, NH 03079	(603) 560-8742		SAPORMOD@SAI-Comm.com	SAPORMOD@SAI-Comm.com

PO CONTACT

Name	Phone Number	Email
Jhana Aresnault	(603) 560-8742	SAPORMOD@SAI-Comm.com

LEASING CONTACT

Name	Phone Number	Email
HOLLIS REDDING	(860) 834-6964	hredding@saigrp.com

NOTICE CONTACT

Notice To	Attention To	Name	Address
Network Real Estate Administration	Leasing	CT1195 FA Code 10035096	1025 Lenox Park Blvd NE 3rd Floor Atlanta, GA 303195309

COPY NOTICE CONTACT

Vertical Bridge REIT, LLC.
750 Park of Commerce Drive
Suite 200
Boca Raton, FL 33487

Notice To	Attention To	Name	Address
AT&T Legal Dept-Network	Leasing	CT1195 FA Code 10035096	208 South Akard Street Dallas, TX 752024206

RF CONTACT

Name	Phone Number	Email
Mohammed Hussain	(510) 493-3024	mh705r@att.com

EMERGENCY CONTACT

Name	Phone Number	Email
Noc Noc	(800) 638-2822	nocnoc@att.com

LINE & EQUIPMENT

EXISTING LINE(S)

Qty	Line Type	Line Diameter(in.)	Line Location	Comments	Remain
9	Coax	1.625	Exterior		Yes
3	Coax	1.625	Exterior	Replacing 3 coax with 3 DC Fiber lines	No
2	DC Power	1	Exterior		Yes
1	Fiber	0.4375	Exterior		Yes
1	RET Home Run Cable	0.375	Exterior		Yes

NEW LINE(S)

Qty	Line Type	Line Size(in.)	Line Location	Comments
3	DC Power	1	Exterior	Replacing 3 coax with these 3 DC lines.

EXISTING EQUIPMENT

Qty	Equipment Type	RAD Height	Mount (H')	Mount Type	Manufacturer	Model Number	Dimensions (H"xW"xD")	Weight (Lbs.)	Azimuth	Comments	Remain
3	Panel	35.50	35.50	Sector Frames	Powerwave	7770	55.00 x 11.00 x 5.00	35.00	160, 280, 30		No
3	Panel	35.50	35.50	Sector Frames	Powerwave	7770	55.00 x 11.00 x 5.00	35.00	160, 280, 30		No
1	Surge Arrestor/Raycap/Squid	35.50	35.50	Sector Frames	SA	1000860	24.00 x 9.70 x 0.00	32.80	30		No
6	TMA	35.50	35.50	Sector Frames	Powerwave	TT19-08BP111-001	14.40 x 9.20 x 2.60	14.10	160, 280, 30		Yes
6	RRU	35.50	35.50	Sector Frames	Ericsson	11 B12	26.00 x 24.00 x 13.00	52.00	160, 280, 30		No

2	Panel	35.50	35.50	Sector Frames	Powerwave	P65-17-XLH-RR	96.00 x 12.00 x 6.00	70.00	30, 280		No
1	Panel	35.50	35.50	Sector Frames	KMW	AM-X-CD-16-65-007-RET	55.00 x 11.00 x 5.00	35.00	160		No

NEW EQUIPMENT

Qty	Equipment Type	RAD Height	Mount (H')	Mount Type	Manufacturer	Model Number	Dimensions (H"xW"xD")	Weight (Lbs.)	Azimuth	Comments
1	Surge Arrestor/Raycap/Squid	35.50	35.50	Sector Frames	Raycap	DC6-48-60-0-8C-EC	18.28 x 31.40 x 10.24	16.00	30	
3	RRU	35.50	35.50	Sector Frames	Ericsson	4449 B5/B12	17.90 x 13.19 x 9.44	71.00	30, 160, 280	
3	Panel	35.50	35.50	Sector Frames	Ericsson	Air6419 N77G	31.10 x 16.10 x 7.30	44.00	30, 160, 280	
3	RRU	35.50	35.50	Sector Frames	Ericsson	4426 B66	14.96 x 13.90 x 5.80	48.40	30, 160, 280	
1	Surge Arrestor/Raycap/Squid	35.50	35.50	Sector Frames	Raycap	DC9-48-60-24-8C-EV	31.40 x 10.24 x 18.28	16.00	30	
1	Panel	35.50	35.50	Sector Frames	CCI	DMP65R-BU6D	71.20 x 20.70 x 7.70	96.00	160	
2	Panel	35.50	35.50	Sector Frames	CCI	DMP65R-BU8D	96.00 x 20.70 x 7.70	119.00	30, 280	
3	Panel	35.50	35.50	Sector Frames	Ericsson	AIR6449	30.60 x 15.90 x 10.60	82.50	30, 160, 280	

ADDITIONAL SITE REQUIREMENTS

GROUND & INTERIOR SPACE REQUIREMENTS

Requirement Type	Total Lease Area (L x W)	Cabinet Required	Cabinet Area (L x W)	Shelter Required	Shelter Pad (L x W)	Comments
No Changes	x		x		x	

GENERATOR REQUIREMENTS

Requirement Type	Fuel Type	Kilowatt Size	Pad Dimensions (L x D)	Generator Manufacturer	Fuel Tank Manufacturer	Comments
No Changes			x			

AC POWER REQUIREMENTS

Meter Type	Additional Details	Comments
Existing Tenant Meter	V, $, Amps	

BACKHAUL REQUIREMENTS

Requirement Type	Cable Type	Number Of Points Of Entry	Riser Size (Inches)	Comments
No Changes				

March 1, 2023 (Rev.2)
July 11, 2022 (Rev.1)
February 15, 2022

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	AT&T Site Number:	CT1195
	FA Number:	10035096
	PACE Number:	MRCTB052246
	PT Number:	2051A102AA
	TEP Site Number:	390595
	AT&T Site Name:	WEST HARTFORD BISHOPS CORNER
	Site Address:	345 North Main Street West Hartford, CT 06117

To Whom It May Concern:

TEP Northeast (TEP NE) has been authorized by SAI Communications to perform a mount analysis on the existing AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading:

- (1) DC6-48-60-18 Surge Arrestor (31.4"x10.2"Ø – Wt. = 29 lbs.) (tower mounted)
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. 82 lbs. /each)**
- **(2) DMP65R-BU8D Antennas (96.0"x20.7"x7.7" – Wt. = 119 lbs. /each)**
- **(1) DMP65R-BU6D Antenna (71.2"x20.7"x7.7" – Wt. = 96 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(3) 4426 B66 RRH's (14.9"x13.2"x5.8" – Wt. = 49 lbs. /each)**
- **(1) DC9-48-60-24-8C-EV Surge Arrestor (31.4"x10.2"Ø – Wt. = 29 lbs.) (tower mounted)**

  **Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. ProVertic LLC conducted a survey climb and mapping of the existing AT&T antenna mounts on January 17, 2022.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2021 with 2022 Connecticut State Building Code, and AT&T Mount Technical Directive – R22.

- TEP NE considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix P of the Connecticut State Building Code, the max basic wind speed for this site is equal to 120 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.61 in was used for this analysis.

- TEP NE considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.

- TEP NE considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.

- TEP NE considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.187 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.055.

- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 3.

- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.

- The existing mount is secured to the existing guyed tower with threaded rods and steel plates tightened around the tower leg. TEP NE considers the threaded rods as the governing connection members.

Based on our evaluation, we have determined that the existing mounts **ARE NOT CAPABLE** of supporting the proposed installation. TEP NE recommends the following modifications:

- **Vertically center the existing pipe masts at antenna positions 1 and 3 on the existing mount face (typ. of 2 per sector, total of 6).**

- **Install proposed 2-1/2" std. (2.88" O.D.) horizontal pipes secured to the existing antenna pipe masts (typ. of 2 per sector, total of 6).**

- **Install proposed sector frame stabilizer kit, SitePro1 P/N SFS-V-L (or approved equal), secured to proposed horizontal pipes and adjacent tower leg (typ. of 2 per sector, total of 6).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	7	LC3	314%	**FAIL**
Modified Mount Rating	7	LC9	91%	**PASS**

Reference Documents:

- Mount mapping report prepared by ProVertic LLC.

This determination was based on the following limitations and assumptions:

1. TEP NE is not responsible for any modifications completed prior to and hereafter which TEP NE was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. TEP NE performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

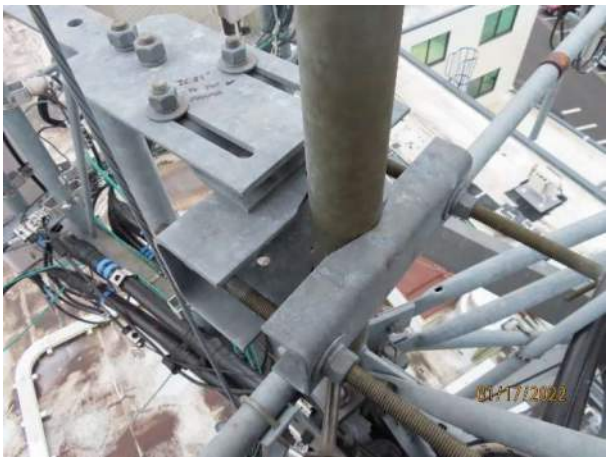
Respectfully Submitted,
TEP Northeast

Michael Cabral
Director

Daniel P. Hamm, PE
Vice President

FIELD PHOTOS:

FIELD PHOTOS: (CONT.)



Wind & Ice
Calculations

Date: 3/1/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: CL **Checked By:** MSC

TEP NORTHEAST

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

	z=	68 (ft)
	z_g=	1200 (ft)
K_z= 0.885	α=	7.0

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c\ K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= 1

(If Category 1 then K_{zt} =1.0)

Category= **1**

	K_h=	1
	K_c=	0.9 (from Table 2-4)
	K_t=	0 (from Table 2-5)
	f=	0 (from Table 2-5)
	z=	68
	z_s=	160 (Mean elevation of base of structure above sea level)
	H=	0 (Ht. of the crest above surrounding terrain)
	K_{zt}=	1.00 (from 2.6.6.2.1)
	K_e=	0.99 (from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i =	1.50 in
Importance Factor =	I=	1.00 (from Table 2-3)
	K_{iz} =	1.07 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.61 in

Date: 3/1/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: CL Checked By: MSC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	83	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

F= $q_z * G_h * (EPA)_A$

q_z= $0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	0.885	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**27.57**	K_e=	0.99	(from 2.6.8)
$q_{z\,(ice)}$=	**4.79**	K_d=	0.85	(from Table 2-2)
$q_{z\,(30)}$=	**1.72**	V_{max}=	120	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 3/1/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: CL Checked By: MSC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	**C < 39** (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{-1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.61** in **Angle =** **0 (deg)** **Equivalent Angle =** **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.93	1.20	**115**	**26**	**7**
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	**112**	**26**	**7**
DMP65R-BU8D Antenna	96.0	20.7	7.7	13.80	4.64	1.30	**493**	**102**	**31**
DMP65R-BU6D Antenna	71.2	20.7	7.7	10.24	3.44	1.24	**350**	**74**	**22**
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.90	1.20	**39**	**11**	**2**
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	**20**	**7**	**1**
4426 B66 RRH	14.9	5.8	13.2	0.60	2.57	1.20	**20**	**7**	**1**
4426 B66 RRH (Shielded)	14.9	2.9	13.2	0.30	5.14	1.32	**11**	**5**	**1**
DC6-48-60-18 Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	**43**	**11**	**3**
DC9-48-60-24-8C-EV Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	**43**	**11**	**3**
2" Pipe	2.4	12.0		0.20	0.20	1.20	**7**		
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	**8**		
3/4" Round Bar	0.4	12.0		0.03	0.03	1.20	**1**		
L 2-1/2x2-1/2 Angle	2.5	12.0		0.21	0.21	2.00	**11**		
L 3x3 Angle	3.0	12.0		0.25	0.25	2.00	**14**		
PL 7x3/8"	0.4	12.0		0.03	0.03	2.00	**2**		

Date: 3/1/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.61	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	115	56	100
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	112	76	103
DMP65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	493	224	426
DMP65R-BU6D Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	350	155	302
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	39	54	43
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	20	54	29
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	20	45	26
4426 B66 RRH (Shielded)	14.9	2.9	13.2	0.30	1.37	5.14	1.13	1.32	1.20	11	45	19

WIND LOADS WITH ICE:

AIR6419 Antenna	34.3	19.3	10.5	4.61	2.51	1.78	3.26	1.20	1.23	26	15	24
AIR6449 Antenna	33.8	19.1	13.8	4.49	3.25	1.77	2.45	1.20	1.20	26	19	24
DMP65R-BU8D Antenna	99.2	23.9	10.9	16.49	7.53	4.15	9.08	1.27	1.47	100	53	89
DMP65R-BU6D Antenna	74.4	23.9	10.9	12.37	5.65	3.11	6.81	1.23	1.39	73	38	64
4449 B5/B12 RRH	21.1	12.6	16.4	1.85	2.41	1.67	1.29	1.20	1.20	11	14	11
4449 B5/B12 RRH (Shielded)	21.1	7.9	16.4	1.16	2.41	2.67	1.29	1.21	1.20	7	14	9
4426 B66 RRH	18.1	9.0	16.4	1.14	2.07	2.01	1.10	1.20	1.20	7	12	8
4426 B66 RRH (Shielded)	18.1	6.1	16.4	0.77	2.07	2.96	1.10	1.22	1.20	5	12	6

WIND LOADS AT 30 MPH:

AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	7	3	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	7	5	6
DMP65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	31	14	27
DMP65R-BU6D Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	22	10	19
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	2	3	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	1	3	2
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	1	3	2
4426 B66 RRH (Shielded)	14.9	2.9	13.2	0.30	1.37	5.14	1.13	1.32	1.20	1	3	1

Date: 3/1/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.61	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	115	56	70
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	112	76	85
DMP65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	493	224	291
DMP65R-BU6D Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	350	155	204
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	39	54	50
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	20	54	46
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	20	45	39
4426 B66 RRH (Shielded)	14.9	2.9	13.2	0.30	1.37	5.14	1.13	1.32	1.20	11	45	37

WIND LOADS WITH ICE:

AIR6419 Antenna	34.3	19.3	10.5	4.61	2.51	1.78	3.26	1.20	1.23	26	15	18
AIR6449 Antenna	33.8	19.1	13.8	4.49	3.25	1.77	2.45	1.20	1.20	26	19	20
DMP65R-BU8D Antenna	99.2	23.9	10.9	16.49	7.53	4.15	9.08	1.27	1.47	100	53	65
DMP65R-BU6D Antenna	74.4	23.9	10.9	12.37	5.65	3.11	6.81	1.23	1.39	73	38	46
4449 B5/B12 RRH	21.1	12.6	16.4	1.85	2.41	1.67	1.29	1.20	1.20	11	14	13
4449 B5/B12 RRH (Shielded)	21.1	7.9	16.4	1.16	2.41	2.67	1.29	1.21	1.20	7	14	12
4426 B66 RRH	18.1	9.0	16.4	1.14	2.07	2.01	1.10	1.20	1.20	7	12	11
4426 B66 RRH (Shielded)	18.1	6.1	16.4	0.77	2.07	2.96	1.10	1.22	1.20	5	12	10

WIND LOADS AT 30 MPH:

AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	7	3	4
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	7	5	5
DMP65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	31	14	18
DMP65R-BU6D Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	22	10	13
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	2	3	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	1	3	3
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	1	3	2
4426 B66 RRH (Shielded)	14.9	2.9	13.2	0.30	1.37	5.14	1.13	1.32	1.20	1	3	2

Date: 3/1/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.61	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	115	56	56
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	112	76	76
DMP65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	493	224	224
DMP65R-BU6D Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	350	155	155
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	39	54	54
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	20	54	54
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	20	45	45
4426 B66 RRH (Shielded)	14.9	2.9	13.2	0.30	1.37	5.14	1.13	1.32	1.20	11	45	45

WIND LOADS WITH ICE:

AIR6419 Antenna	34.3	19.3	10.5	4.61	2.51	1.78	3.26	1.20	1.23	26	15	15
AIR6449 Antenna	33.8	19.1	13.8	4.49	3.25	1.77	2.45	1.20	1.20	26	19	19
DMP65R-BU8D Antenna	99.2	23.9	10.9	16.49	7.53	4.15	9.08	1.27	1.47	100	53	53
DMP65R-BU6D Antenna	74.4	23.9	10.9	12.37	5.65	3.11	6.81	1.23	1.39	73	38	38
4449 B5/B12 RRH	21.1	12.6	16.4	1.85	2.41	1.67	1.29	1.20	1.20	11	14	14
4449 B5/B12 RRH (Shielded)	21.1	7.9	16.4	1.16	2.41	2.67	1.29	1.21	1.20	7	14	14
4426 B66 RRH	18.1	9.0	16.4	1.14	2.07	2.01	1.10	1.20	1.20	7	12	12
4426 B66 RRH (Shielded)	18.1	6.1	16.4	0.77	2.07	2.96	1.10	1.22	1.20	5	12	12

WIND LOADS AT 30 MPH:

AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	7	3	3
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	7	5	5
DMP65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	31	14	14
DMP65R-BU6D Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	22	10	10
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	2	3	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	1	3	3
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	1	3	3
4426 B66 RRH (Shielded)	14.9	2.9	13.2	0.30	1.37	5.14	1.13	1.32	1.20	1	3	3

Date: 3/1/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.61	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	115	56	70
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	112	76	85
DMP65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	493	224	291
DMP65R-BU6D Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	350	155	204
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	39	54	50
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	20	54	46
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	20	45	39
4426 B66 RRH (Shielded)	14.9	2.9	13.2	0.30	1.37	5.14	1.13	1.32	1.20	11	45	37

WIND LOADS WITH ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AIR6419 Antenna	34.3	19.3	10.5	4.61	2.51	1.78	3.26	1.20	1.23	26	15	18
AIR6449 Antenna	33.8	19.1	13.8	4.49	3.25	1.77	2.45	1.20	1.20	26	19	20
DMP65R-BU8D Antenna	99.2	23.9	10.9	16.49	7.53	4.15	9.08	1.27	1.47	100	53	65
DMP65R-BU6D Antenna	74.4	23.9	10.9	12.37	5.65	3.11	6.81	1.23	1.39	73	38	46
4449 B5/B12 RRH	21.1	12.6	16.4	1.85	2.41	1.67	1.29	1.20	1.20	11	14	13
4449 B5/B12 RRH (Shielded)	21.1	7.9	16.4	1.16	2.41	2.67	1.29	1.21	1.20	7	14	12
4426 B66 RRH	18.1	9.0	16.4	1.14	2.07	2.01	1.10	1.20	1.20	7	12	11
4426 B66 RRH (Shielded)	18.1	6.1	16.4	0.77	2.07	2.96	1.10	1.22	1.20	5	12	10

WIND LOADS AT 30 MPH:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	7	3	4
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	7	5	5
DMP65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	31	14	18
DMP65R-BU6D Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	22	10	13
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	2	3	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	1	3	3
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	1	3	2
4426 B66 RRH (Shielded)	14.9	2.9	13.2	0.30	1.37	5.14	1.13	1.32	1.20	1	3	2

Date: 3/1/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.61	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	115	56	100
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	112	76	103
DMP65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	493	224	426
DMP65R-BU6D Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	350	155	302
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	39	54	43
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	20	54	29
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	20	45	26
4426 B66 RRH (Shielded)	14.9	2.9	13.2	0.30	1.37	5.14	1.13	1.32	1.20	11	45	19

WIND LOADS WITH ICE:

AIR6419 Antenna	34.3	19.3	10.5	4.61	2.51	1.78	3.26	1.20	1.23	26	15	24
AIR6449 Antenna	33.8	19.1	13.8	4.49	3.25	1.77	2.45	1.20	1.20	26	19	24
DMP65R-BU8D Antenna	99.2	23.9	10.9	16.49	7.53	4.15	9.08	1.27	1.47	100	53	89
DMP65R-BU6D Antenna	74.4	23.9	10.9	12.37	5.65	3.11	6.81	1.23	1.39	73	38	64
4449 B5/B12 RRH	21.1	12.6	16.4	1.85	2.41	1.67	1.29	1.20	1.20	11	14	11
4449 B5/B12 RRH (Shielded)	21.1	7.9	16.4	1.16	2.41	2.67	1.29	1.21	1.20	7	14	9
4426 B66 RRH	18.1	9.0	16.4	1.14	2.07	2.01	1.10	1.20	1.20	7	12	8
4426 B66 RRH (Shielded)	18.1	6.1	16.4	0.77	2.07	2.96	1.10	1.22	1.20	5	12	6

WIND LOADS AT 30 MPH:

AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	7	3	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	7	5	6
DMP65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	31	14	27
DMP65R-BU6D Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	22	10	19
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	2	3	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	1	3	2
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	1	3	2
4426 B66 RRH (Shielded)	14.9	2.9	13.2	0.30	1.37	5.14	1.13	1.32	1.20	1	3	1

Date: 3/1/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: CL **Checked By:** MSC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.61 in.
Density of ice: 56 pcf

AIR6419 Antenna
Weight of ice based on total radial SF area:

Height (in):	28.0	
Width (in):	15.7	
Depth (in):	6.7	
Total weight of ice on object:		86 lbs
Weight of object:	66.0 lbs	
Combined weight of ice and object:		152 lbs

AIR6449 Antenna
Weight of ice based on total radial SF area:

Height (in):	30.4	
Width (in):	15.9	
Depth (in):	8.1	
Total weight of ice on object:		97 lbs
Weight of object:	82.0 lbs	
Combined weight of ice and object:		179 lbs

DMP65R-BU8D Antenna
Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		373 lbs
Weight of object:	119.0 lbs	
Combined weight of ice and object:		492 lbs

DMP65R-BU6D Antenna
Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		277 lbs
Weight of object:	96.0 lbs	
Combined weight of ice and object:		373 lbs

4449 B5/B12 RRH
Weight of ice based on total radial SF area:

Height (in):	17.9	
Width (in):	13.2	
Depth (in):	9.4	
Total weight of ice on object:		52 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		125 lbs

4426 B66 RRH
Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	5.8	
Total weight of ice on object:		39 lbs
Weight of object:	49.0 lbs	
Combined weight of ice and object:		88 lbs

DC6-48-60-18 Surge Arrestor
Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:		61 lbs
Weight of object:	29 lbs	
Combined weight of ice and object:		90 lbs

DC9-48-60-24-8C-EV Surge Arrestor
Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:		61 lbs
Weight of object:	29 lbs	
Combined weight of ice and object:		90 lbs

2" Pipe
Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		8 plf

2-1/2" Pipe
Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		9 plf

3/4" Round Bar
Per foot weight of ice:

diameter (in):	0.75	
Per foot weight of ice on object:		5 plf

L 2-1/2x2-1/2 Angle
Weight of ice based on total radial SF area:

Height (in):	2.5	
Width (in):	2.5	
Per foot weight of ice on object:		10 plf

L 3x3 Angle
Weight of ice based on total radial SF area:

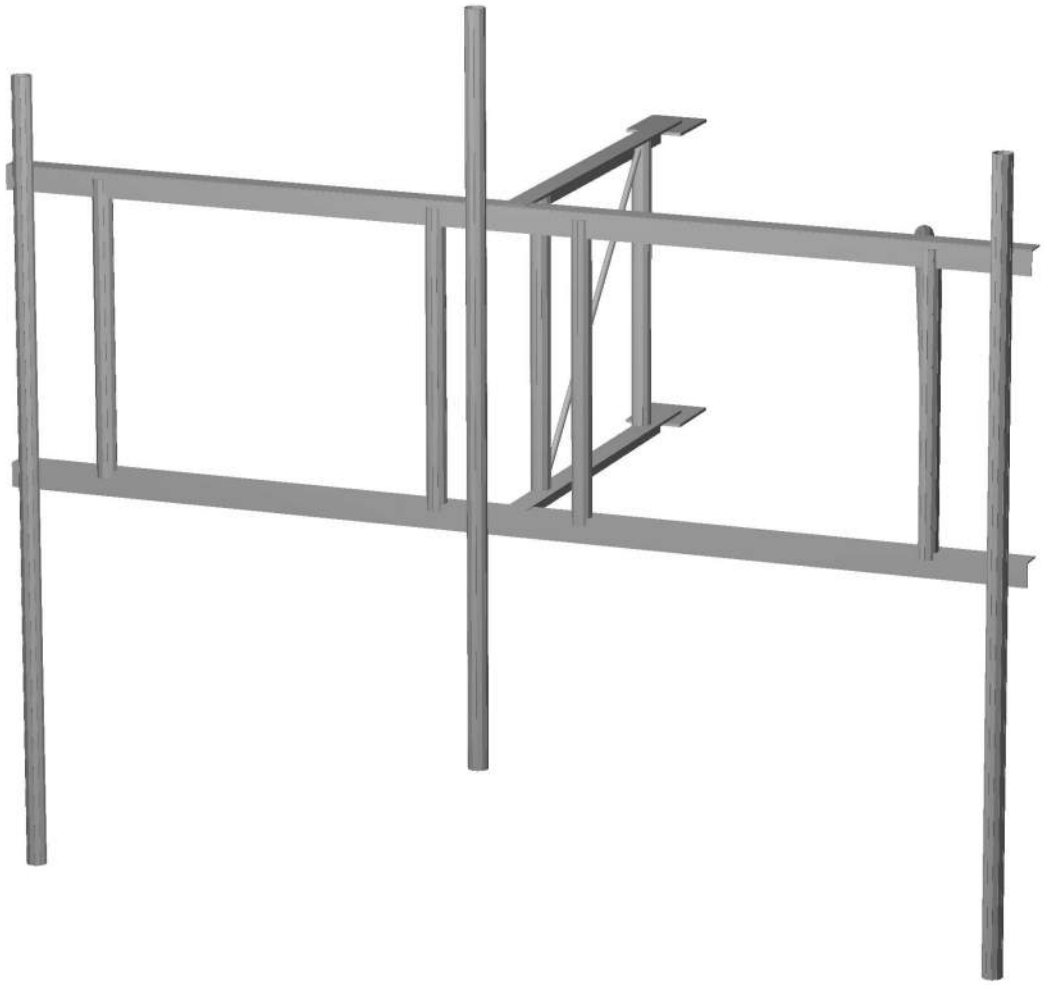
Height (in):	3	
Width (in):	3	
Per foot weight of ice on object:		12 plf

PL 7x3/8"
Weight of ice based on total radial SF area:

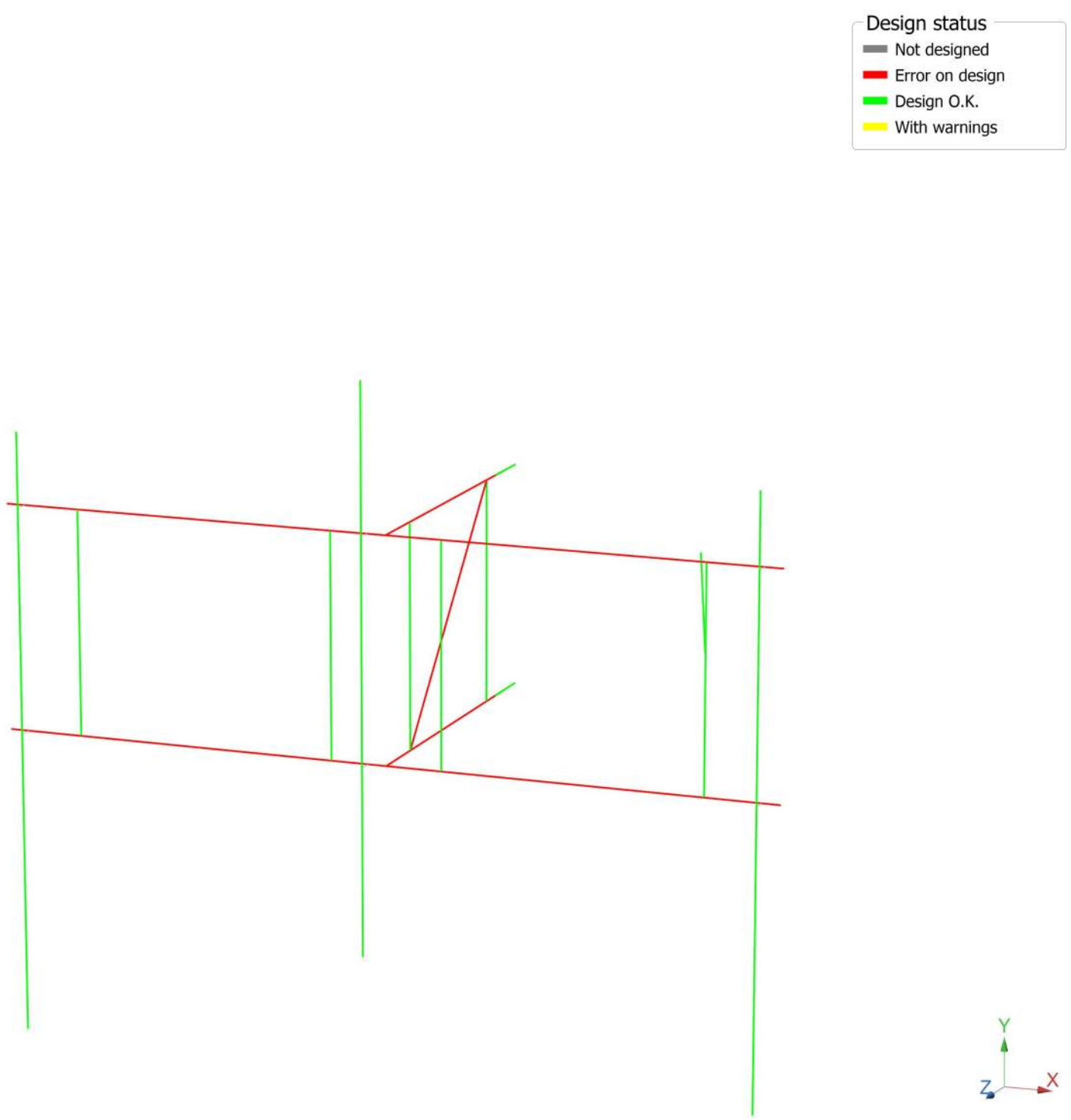
Height (in):	0.375	
Width (in):	7	
Per foot weight of ice on object:		17 plf

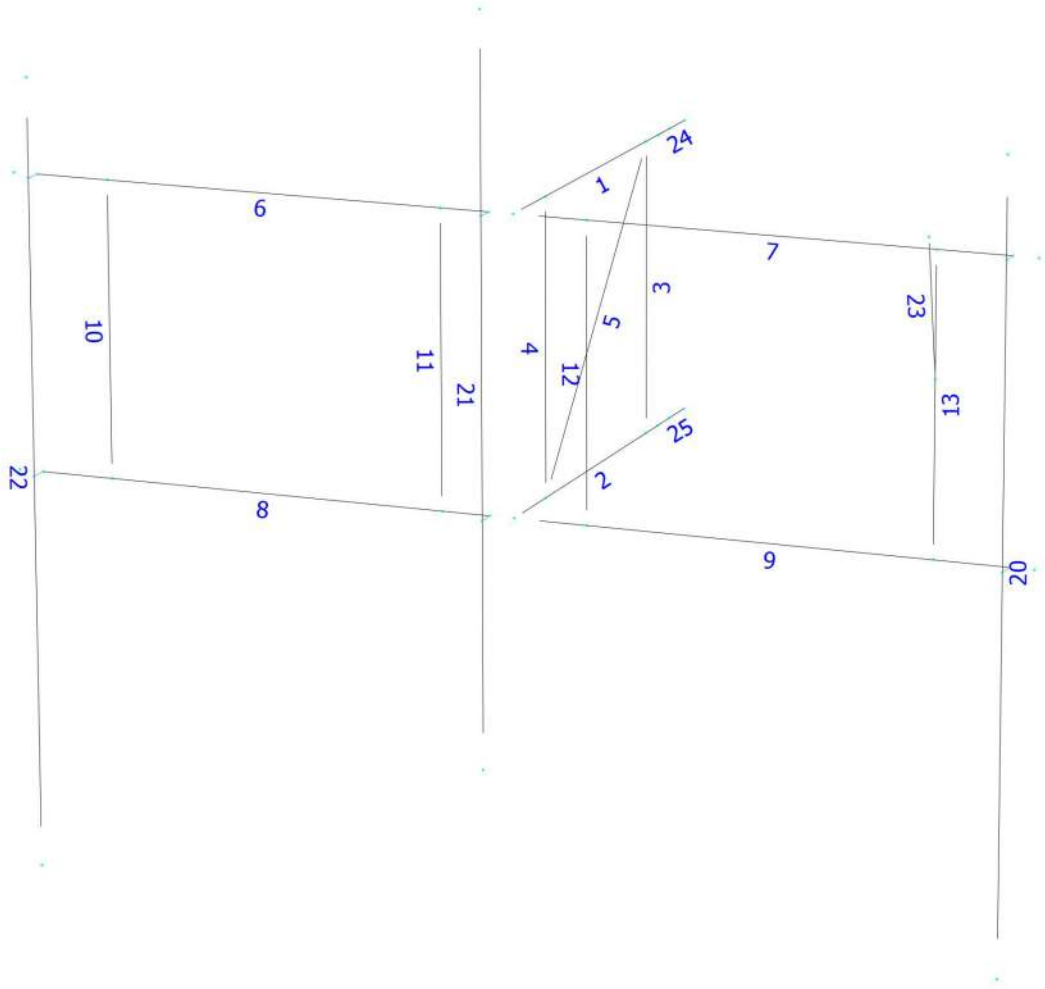
Mount Calculations
(Existing Conditions)

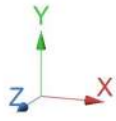
Current Date: 3/1/2023 12:54 PM
Units system: English




A36
L 3X3X3_16
A53 GrB
PIPE 2x0.154
A36
L 3X3X3_8
A36
PL 7x3/8"
RndBar
Y
Z
X


Design status
Not designed
Error on design
Design O.K.
With warnings
Y
Z
X


6
10
11
21
22
8
24
1
7
3
5
4
12
23
13
25
2
9
20


Y
Z
X

RAM® Elements
CONNECT Edition

Current Date: 3/1/2023 12:54 PM
Units system: English

Load data

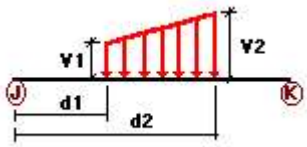
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL

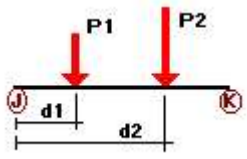
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	3	z	-0.007	-0.007	0.00	No	100.00	Yes
	4	z	-0.007	-0.007	0.00	No	100.00	Yes
	5	z	-0.001	-0.001	0.00	No	100.00	Yes
	6	z	-0.014	-0.014	0.00	No	100.00	Yes
	7	z	-0.014	-0.014	0.00	No	100.00	Yes
	8	z	-0.014	-0.014	0.00	No	100.00	Yes
	9	z	-0.014	-0.014	0.00	No	100.00	Yes
	10	z	-0.007	-0.007	0.00	No	100.00	Yes
	11	z	-0.007	-0.007	0.00	No	100.00	Yes
	12	z	-0.007	-0.007	0.00	No	100.00	Yes
	13	z	-0.007	-0.007	0.00	No	100.00	Yes
	20	z	-0.007	-0.007	0.00	No	100.00	Yes
	23	z	-0.007	-0.007	0.00	No	100.00	Yes
W30	3	z	-0.007	-0.007	0.00	No	100.00	Yes
	4	z	-0.007	-0.007	0.00	No	100.00	Yes
	5	z	-0.001	-0.001	0.00	No	100.00	Yes
	6	z	-0.014	-0.014	0.00	No	100.00	Yes
	7	z	-0.014	-0.014	0.00	No	100.00	Yes
	8	z	-0.014	-0.014	0.00	No	100.00	Yes
	9	z	-0.014	-0.014	0.00	No	100.00	Yes
	10	z	-0.007	-0.007	0.00	No	100.00	Yes
	11	z	-0.007	-0.007	0.00	No	100.00	Yes
	12	z	-0.007	-0.007	0.00	No	100.00	Yes
	13	z	-0.007	-0.007	0.00	No	100.00	Yes
	20	z	-0.007	-0.007	0.00	No	100.00	Yes
	23	z	-0.007	-0.007	0.00	No	100.00	Yes
W60	1	x	-0.014	-0.014	0.00	No	100.00	Yes
	2	x	-0.014	-0.014	0.00	No	100.00	Yes
	3	x	-0.007	-0.007	0.00	No	100.00	Yes
	4	x	-0.007	-0.007	0.00	No	100.00	Yes
	5	x	-0.001	-0.001	0.00	No	100.00	Yes
	10	x	-0.007	-0.007	0.00	No	100.00	Yes
	11	x	-0.007	-0.007	0.00	No	100.00	Yes
	12	x	-0.007	-0.007	0.00	No	100.00	Yes
	13	x	-0.007	-0.007	0.00	No	100.00	Yes
	20	x	-0.007	-0.007	0.00	No	100.00	Yes
	21	x	-0.007	-0.007	0.00	No	100.00	Yes
	22	x	-0.007	-0.007	0.00	No	100.00	Yes
	23	x	-0.007	-0.007	0.00	No	100.00	Yes
	24	x	-0.002	-0.002	0.00	No	100.00	Yes
	25	x	-0.002	-0.002	0.00	No	100.00	Yes
W90	1	x	-0.014	-0.014	0.00	No	100.00	Yes
	2	x	-0.014	-0.014	0.00	No	100.00	Yes
	3	x	-0.007	-0.007	0.00	No	100.00	Yes
	4	x	-0.007	-0.007	0.00	No	100.00	Yes
	5	x	-0.001	-0.001	0.00	No	100.00	Yes
	10	x	-0.007	-0.007	0.00	No	100.00	Yes
	11	x	-0.007	-0.007	0.00	No	100.00	Yes
	12	x	-0.007	-0.007	0.00	No	100.00	Yes
	13	x	-0.007	-0.007	0.00	No	100.00	Yes
	20	x	-0.007	-0.007	0.00	No	100.00	Yes
	21	x	-0.007	-0.007	0.00	No	100.00	Yes
	22	x	-0.007	-0.007	0.00	No	100.00	Yes
	23	x	-0.007	-0.007	0.00	No	100.00	Yes
	24	x	-0.002	-0.002	0.00	No	100.00	Yes
	25	x	-0.002	-0.002	0.00	No	100.00	Yes
W120	1	x	-0.014	-0.014	0.00	No	100.00	Yes
	2	x	-0.014	-0.014	0.00	No	100.00	Yes
	3	x	-0.007	-0.007	0.00	No	100.00	Yes
	4	x	-0.007	-0.007	0.00	No	100.00	Yes

	5	x	-0.001	-0.001	0.00	No	100.00	Yes
	10	x	-0.007	-0.007	0.00	No	100.00	Yes
	11	x	-0.007	-0.007	0.00	No	100.00	Yes
	12	x	-0.007	-0.007	0.00	No	100.00	Yes
	13	x	-0.007	-0.007	0.00	No	100.00	Yes
	20	x	-0.007	-0.007	0.00	No	100.00	Yes
	21	x	-0.007	-0.007	0.00	No	100.00	Yes
	22	x	-0.007	-0.007	0.00	No	100.00	Yes
	23	x	-0.007	-0.007	0.00	No	100.00	Yes
	24	x	-0.002	-0.002	0.00	No	100.00	Yes
	25	x	-0.002	-0.002	0.00	No	100.00	Yes
W150	3	z	0.007	0.007	0.00	No	100.00	Yes
	4	z	0.007	0.007	0.00	No	100.00	Yes
	5	z	0.001	0.001	0.00	No	100.00	Yes
	6	z	0.014	0.014	0.00	No	100.00	Yes
	7	z	0.014	0.014	0.00	No	100.00	Yes
	8	z	0.014	0.014	0.00	No	100.00	Yes
	9	z	0.014	0.014	0.00	No	100.00	Yes
	10	z	0.007	0.007	0.00	No	100.00	Yes
	11	z	0.007	0.007	0.00	No	100.00	Yes
	12	z	0.007	0.007	0.00	No	100.00	Yes
	13	z	0.007	0.007	0.00	No	100.00	Yes
	20	z	0.007	0.007	0.00	No	100.00	Yes
	21	z	0.007	0.007	0.00	No	100.00	Yes
	22	z	0.007	0.007	0.00	No	100.00	Yes
	23	z	0.007	0.007	0.00	No	100.00	Yes
Di	1	y	-0.012	-0.012	0.00	No	100.00	Yes
	2	y	-0.012	-0.012	0.00	No	100.00	Yes
	3	y	-0.008	-0.008	0.00	No	100.00	Yes
	4	y	-0.008	-0.008	0.00	No	100.00	Yes
	5	y	-0.005	-0.005	0.00	No	100.00	Yes
	6	y	-0.012	-0.012	0.00	No	100.00	Yes
	7	y	-0.012	-0.012	0.00	No	100.00	Yes
	8	y	-0.012	-0.012	0.00	No	100.00	Yes
	9	y	-0.012	-0.012	0.00	No	100.00	Yes
	10	y	-0.008	-0.008	0.00	No	100.00	Yes
	11	y	-0.008	-0.008	0.00	No	100.00	Yes
	12	y	-0.008	-0.008	0.00	No	100.00	Yes
	13	y	-0.008	-0.008	0.00	No	100.00	Yes
	20	y	-0.008	-0.008	0.00	No	100.00	Yes
	21	y	-0.008	-0.008	0.00	No	100.00	Yes
	22	y	-0.008	-0.008	0.00	No	100.00	Yes
	23	y	-0.008	-0.008	0.00	No	100.00	Yes
	24	y	-0.017	-0.017	0.00	No	100.00	Yes
	25	y	-0.017	-0.017	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	21	y	-0.033	0.50	No
		y	-0.033	3.00	No
		y	-0.041	4.00	No
		y	-0.041	6.50	No
	22	y	-0.06	0.50	No
		y	-0.06	7.50	No
		y	-0.073	4.00	No
		y	-0.049	4.00	No
Wo	21	z	-0.058	0.50	No
		z	-0.058	3.00	No
		z	-0.056	4.00	No
		z	-0.056	6.50	No
	22	z	-0.247	0.50	No
		z	-0.247	7.50	No
		z	-0.02	4.00	No
		z	-0.011	4.00	No
W30	21	3	-0.05	0.50	No
		3	-0.05	3.00	No
		3	-0.052	4.00	No
		3	-0.052	6.50	No
	22	3	-0.0213	0.50	No
		3	-0.0213	7.50	No
		3	-0.029	4.00	No
W60	21	3	-0.035	0.50	No
		3	-0.035	3.00	No
		3	-0.043	4.00	No
		3	-0.043	6.50	No
	22	3	-0.146	0.50	No
		3	-0.146	7.50	No
		3	-0.046	4.00	No
W90	21	x	-0.028	0.50	No
		x	-0.028	3.00	No
		x	-0.038	4.00	No
		x	-0.038	6.50	No
	22	x	-0.112	0.50	No
		x	-0.112	7.50	No
		x	-0.054	4.00	No
W120	21	2	-0.035	0.50	No
		2	-0.035	3.00	No
		2	-0.043	4.00	No
		2	-0.043	6.50	No
	22	2	-0.146	0.50	No
		2	-0.146	7.50	No
		2	-0.046	4.00	No
W150	21	2	-0.05	0.50	No
		2	-0.05	3.00	No
		2	-0.052	4.00	No
		2	-0.052	6.50	No
	22	2	-0.0213	0.50	No
		2	-0.0213	7.50	No
		2	-0.029	4.00	No
Di	21	y	-0.043	0.50	No
		y	-0.043	3.00	No
		y	-0.049	4.00	No
		y	-0.049	6.50	No
	22	y	-0.187	0.50	No
		y	-0.187	7.50	No
		y	-0.052	4.00	No
		y	-0.039	4.00	No
WI0	21	z	-0.013	0.50	No

		z	-0.013	3.00	No
		z	-0.013	4.00	No
		z	-0.013	6.50	No
	22	z	-0.051	0.50	No
		z	-0.051	7.50	No
		z	-0.007	4.00	No
		z	-0.005	4.00	No
WI30	21	3	-0.012	0.50	No
		3	-0.012	3.00	No
		3	-0.012	4.00	No
		3	-0.012	6.50	No
	22	3	-0.045	0.50	No
		3	-0.045	7.50	No
		3	-0.009	4.00	No
WI60	21	3	-0.009	0.50	No
		3	-0.009	3.00	No
		3	-0.01	4.00	No
		3	-0.01	6.50	No
	22	3	-0.033	0.50	No
		3	-0.033	7.50	No
		3	-0.012	4.00	No
WI90	21	x	-0.008	0.50	No
		x	-0.008	3.00	No
		x	-0.01	4.00	No
		x	-0.01	6.50	No
	22	x	-0.027	0.50	No
		x	-0.027	7.50	No
		x	-0.014	4.00	No
WI120	21	2	-0.009	0.50	No
		2	-0.009	3.00	No
		2	-0.01	4.00	No
		2	-0.01	6.50	No
	22	2	-0.033	0.50	No
		2	-0.033	7.50	No
		2	-0.012	4.00	No
WI150	21	2	-0.012	0.50	No
		2	-0.012	3.00	No
		2	-0.012	4.00	No
		2	-0.012	6.50	No
	22	2	-0.045	0.50	No
		2	-0.045	7.50	No
		2	-0.009	4.00	No
WL0	21	z	-0.004	0.50	No
		z	-0.004	3.00	No
		z	-0.004	4.00	No
		z	-0.004	6.50	No
	22	z	-0.016	0.50	No
		z	-0.016	7.50	No
		z	-0.001	4.00	No
		z	-0.001	4.00	No
WL30	21	3	-0.003	0.50	No
		3	-0.003	3.00	No
		3	-0.003	4.00	No
		3	-0.003	6.50	No
	22	3	-0.014	0.50	No
		3	-0.014	7.50	No
		3	-0.002	4.00	No
WL60	21	3	-0.002	0.50	No
		3	-0.002	3.00	No
		3	-0.003	4.00	No

		3	-0.003	6.50	No
	22	3	-0.009	0.50	No
		3	-0.009	7.50	No
		3	-0.003	4.00	No
WL90	21	x	-0.002	0.50	No
		x	-0.002	3.00	No
		x	-0.003	4.00	No
		x	-0.003	6.50	No
	22	x	-0.007	0.50	No
		x	-0.007	7.50	No
		x	-0.003	4.00	No
WL120	21	2	-0.002	0.50	No
		2	-0.002	3.00	No
		2	-0.003	4.00	No
		2	-0.003	6.50	No
	22	2	-0.009	0.50	No
		2	-0.009	7.50	No
		2	-0.003	4.00	No
WL150	21	2	-0.003	0.50	No
		2	-0.003	3.00	No
		2	-0.003	4.00	No
		2	-0.003	6.50	No
	22	2	-0.014	0.50	No
		2	-0.014	7.50	No
		2	-0.002	4.00	No
LL1	6	y	-0.25	100.00	Yes
LL2	7	y	-0.25	100.00	Yes
LL3	6	y	-0.25	0.00	Yes
LLa1	20	y	-0.50	50.00	Yes
LLa2	21	y	-0.50	50.00	Yes
LLa3	22	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	0.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00

WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00

RAM® Elements
CONNECT Edition

Current Date: 3/1/2023 12:54 PM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+Wo
LC2=1.2DL+W30
LC3=1.2DL+W60
LC4=1.2DL+W90
LC5=1.2DL+W120
LC6=1.2DL+W150
LC7=1.2DL-Wo
LC8=1.2DL-W30
LC9=1.2DL-W60
LC10=1.2DL-W90
LC11=1.2DL-W120
LC12=1.2DL-W150
LC13=0.9DL+Wo
LC14=0.9DL+W30
LC15=0.9DL+W60
LC16=0.9DL+W90
LC17=0.9DL+W120
LC18=0.9DL+W150
LC19=0.9DL-Wo
LC20=0.9DL-W30
LC21=0.9DL-W60
LC22=0.9DL-W90
LC23=0.9DL-W120
LC24=0.9DL-W150
LC25=1.2DL+Di+WI0
LC26=1.2DL+Di+WI30
LC27=1.2DL+Di+WI60
LC28=1.2DL+Di+WI90
LC29=1.2DL+Di+WI120
LC30=1.2DL+Di+WI150
LC31=1.2DL+Di-WI0
LC32=1.2DL+Di-WI30
LC33=1.2DL+Di-WI60
LC34=1.2DL+Di-WI90
LC35=1.2DL+Di-WI120
LC36=1.2DL+Di-WI150
LC37=1.2DL+1.6LL1
LC38=1.2DL+1.6LL2
LC39=1.2DL+1.6LL3
LC40=1.2DL+WL0+1.6LLa1
LC41=1.2DL+WL30+1.6LLa1
LC42=1.2DL+WL60+1.6LLa1
LC43=1.2DL+WL90+1.6LLa1
LC44=1.2DL+WL120+1.6LLa1
LC45=1.2DL+WL150+1.6LLa1
LC46=1.2DL-WL0+1.6LLa1
LC47=1.2DL-WL30+1.6LLa1
LC48=1.2DL-WL60+1.6LLa1
LC49=1.2DL-WL90+1.6LLa1
LC50=1.2DL-WL120+1.6LLa1
LC51=1.2DL-WL150+1.6LLa1
LC52=1.2DL+WL0+1.6LLa2
LC53=1.2DL+WL30+1.6LLa2
LC54=1.2DL+WL60+1.6LLa2

LC55=1.2DL+WL90+1.6LLa2
LC56=1.2DL+WL120+1.6LLa2
LC57=1.2DL+WL150+1.6LLa2
LC58=1.2DL-WL0+1.6LLa2
LC59=1.2DL-WL30+1.6LLa2
LC60=1.2DL-WL60+1.6LLa2
LC61=1.2DL-WL90+1.6LLa2
LC62=1.2DL-WL120+1.6LLa2
LC63=1.2DL-WL150+1.6LLa2
LC64=1.2DL+WL0+1.6LLa3
LC65=1.2DL+WL30+1.6LLa3
LC66=1.2DL+WL60+1.6LLa3
LC67=1.2DL+WL90+1.6LLa3
LC68=1.2DL+WL120+1.6LLa3
LC69=1.2DL+WL150+1.6LLa3
LC70=1.2DL-WL0+1.6LLa3
LC71=1.2DL-WL30+1.6LLa3
LC72=1.2DL-WL60+1.6LLa3
LC73=1.2DL-WL90+1.6LLa3
LC74=1.2DL-WL120+1.6LLa3
LC75=1.2DL-WL150+1.6LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	L 3X3X3_16	**6**	LC70 at 100.00%	1.73	N.G.	
		7	LC3 at 0.00%	**3.14**	**N.G.**	
		8	LC64 at 100.00%	1.92	N.G.	
		9	LC9 at 0.00%	2.95	N.G.	
	L 3X3X3_8	**1**	LC3 at 100.00%	1.68	N.G.	
		2	LC10 at 100.00%	**1.70**	**N.G.**	
	PIPE 2x0.154	**3**	LC32 at 0.00%	0.28	OK	
		4	LC3 at 0.00%	0.49	OK	
		10	LC64 at 100.00%	0.55	OK	
		11	LC65 at 0.00%	0.59	OK	
		12	LC40 at 0.00%	0.37	OK	
		13	LC15 at 59.38%	**0.87**	**OK**	
		20	LC41 at 12.50%	0.20	OK	
		21	LC3 at 27.08%	0.38	OK	
		22	LC13 at 50.00%	0.65	OK	
		23	LC21 at 0.00%	0.09	OK	
	PL 7x3/8"	**24**	LC36 at 0.00%	**0.32**	**OK**	
		25	LC36 at 0.00%	0.30	OK	
	RndBar 3_4	**5**	LC71 at 0.00%	**1.06**	**N.G.**	

RAM® Elements
CONNECT Edition

Current Date: 3/1/2023 12:55 PM
Units system: English

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
2	0.00	0.00	0.667	0
3	0.00	0.00	3.417	0
4	0.00	0.00	4.25	0
5	0.00	3.00	0.00	0
6	0.00	3.00	0.667	0
7	0.00	3.00	3.417	0
8	0.00	3.00	4.25	0
9	5.25	0.00	4.25	0
10	5.25	3.00	4.25	0
11	-5.25	0.00	4.25	0
12	-5.25	3.00	4.25	0
13	-4.25	0.00	4.25	0
14	-4.25	3.00	4.25	0
15	4.25	0.00	4.25	0
16	4.25	3.00	4.25	0
17	0.75	0.00	4.25	0
18	0.75	3.00	4.25	0
19	-0.75	0.00	4.25	0
20	-0.75	3.00	4.25	0
33	-5.00	4.00	4.45	0
34	5.00	4.00	4.45	0
35	-0.25	5.00	4.45	0

36	5.00	-4.00	4.45	0
37	-0.25	-2.50	4.45	0
38	-5.00	-4.00	4.45	0
39	4.25	1.75	4.25	0
40	2.25	1.75	-1.50	0
41	0.00	3.00	0.3335	0
42	0.00	0.00	0.3335	0
43	0.00	3.00	-0.4165	0
44	0.00	0.00	-0.4165	0
45	-5.00	3.00	4.45	0
46	5.00	3.00	4.45	0
47	-0.25	3.00	4.45	0
48	5.00	0.00	4.45	0
49	-0.25	0.00	4.45	0
50	-5.00	0.00	4.45	0
51	-5.00	3.00	4.25	0
52	5.00	3.00	4.25	0
53	-0.25	3.00	4.25	0
54	5.00	0.00	4.25	0
55	-0.25	0.00	4.25	0
56	-5.00	0.00	4.25	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
40	1	1	1	0	0	0
43	1	1	1	1	0	1
44	1	1	1	1	0	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	5	8		L 3X3X3_8	A36	0.00	0.00	0.00
2	1	4		L 3X3X3_8	A36	0.00	0.00	0.00
3	6	2		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
4	7	3		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	6	3		RndBar 3_4	A36	0.00	0.00	0.00
6	12	8		L 3X3X3_16	A36	0.00	0.00	0.00
7	8	10		L 3X3X3_16	A36	0.00	0.00	0.00
8	11	4		L 3X3X3_16	A36	0.00	0.00	0.00
9	4	9		L 3X3X3_16	A36	0.00	0.00	0.00
10	13	14		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
11	19	20		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
12	17	18		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
13	15	16		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
20	34	36		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
21	35	37		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
22	33	38		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
23	39	40		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
24	43	41		PL 7x3/8"	A36	0.00	0.00	0.00

25	44	42	PL 7x3/8"	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
1	180.00	0	0.00	0.00	0.00
2	180.00	0	0.00	0.00	0.00
6	180.00	0	0.00	0.00	0.00
7	180.00	0	0.00	0.00	0.00
8	180.00	0	0.00	0.00	0.00
9	180.00	0	0.00	0.00	0.00
20	315.00	0	0.00	0.00	0.00
21	315.00	0	0.00	0.00	0.00
22	315.00	0	0.00	0.00	0.00
24	90.00	0	0.00	0.00	0.00
25	90.00	0	0.00	0.00	0.00

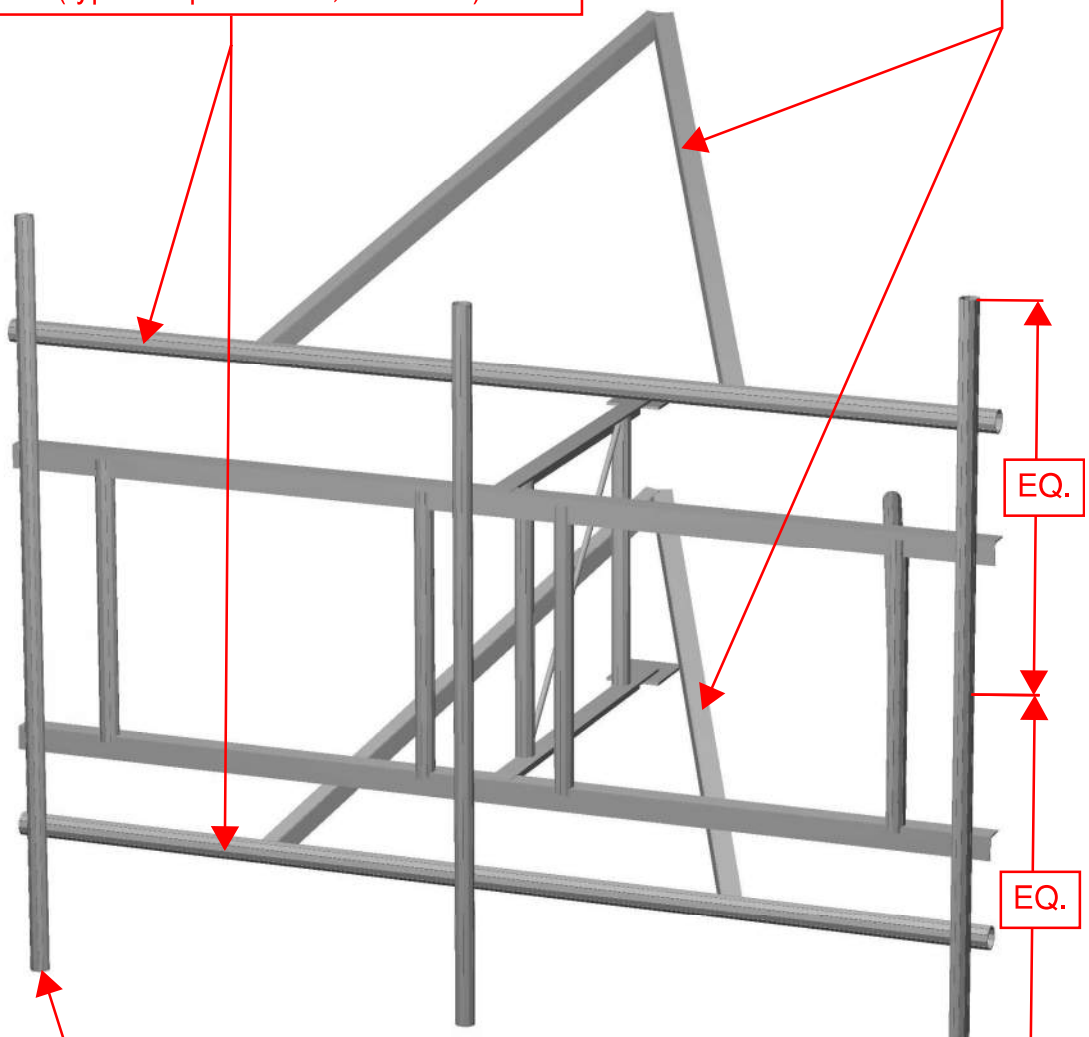
Hinges

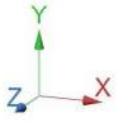
	Node-J				Node-K						
Member	M33	M22	V3	V2	M33	M22	V3	V2	TOR	AXL	Axial rigidity
5	0	0	0	0	0	0	0	0	0	0	Tension only
23	1	1	0	0	0	0	0	0	0	0	Full

Mount Calculations
(Modified Conditions)

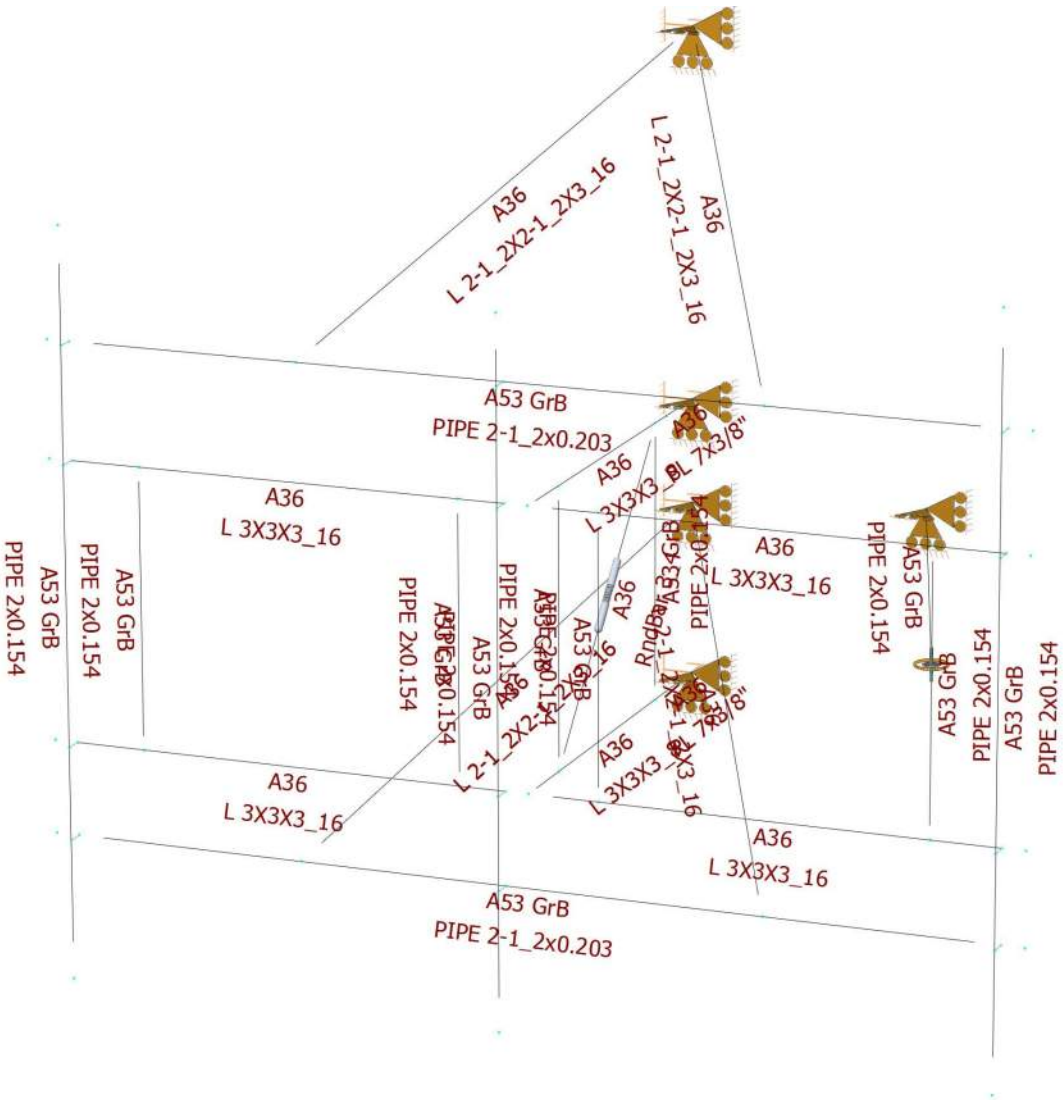
Install proposed sector frame stabilizer kit, SitePro1 P/N SFS-V-L (or approved equal), secured to proposed horizontal pipes and adjacent tower leg (typ. of 2 per sector, total of 6).

Install proposed 2-1/2" std. (2.88" O.D.) horizontal pipes secured to the existing antenna pipe masts (typ. of 2 per sector, total of 6).

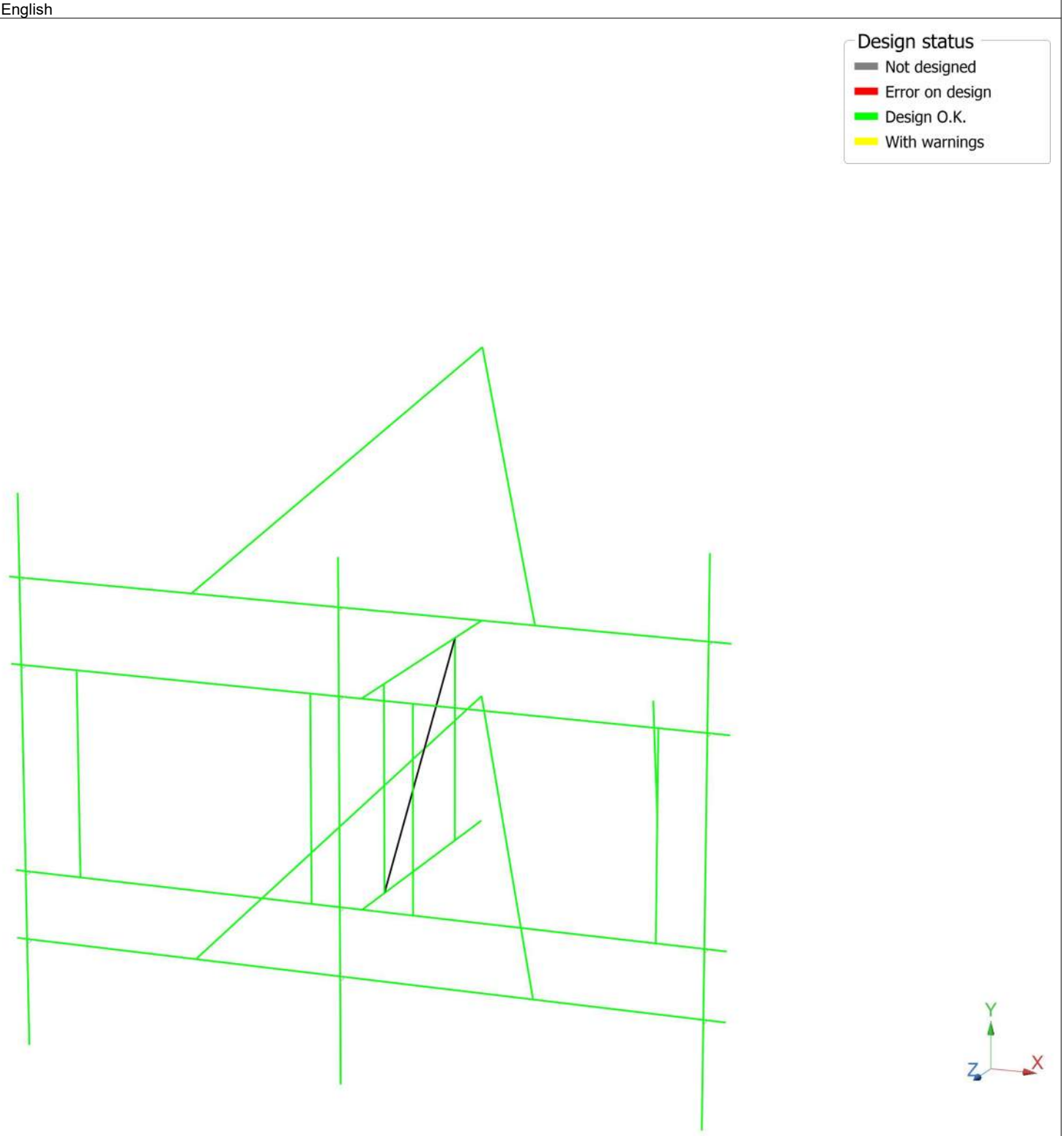


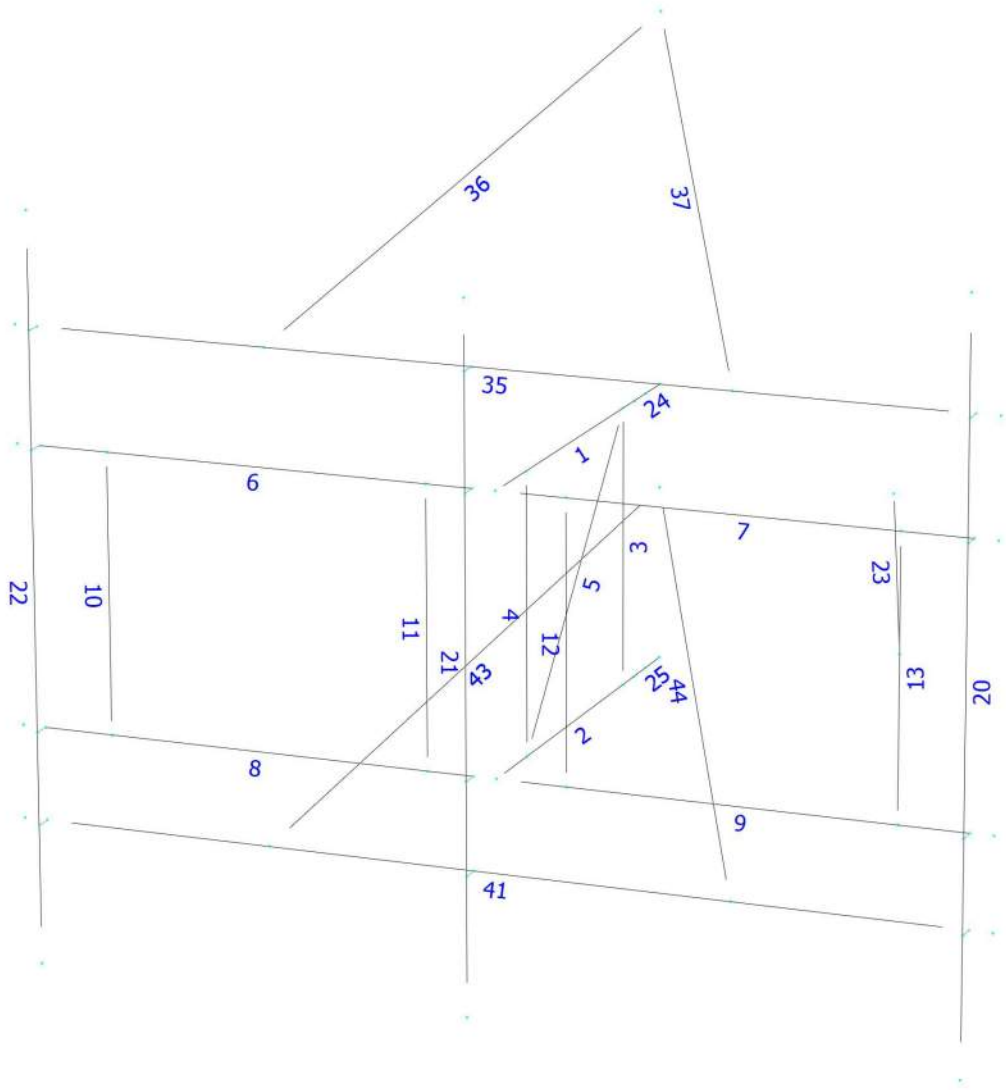


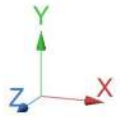
Vertically center the existing pipe masts at antenna positions 1 and 3 on the existing mount face (typ. of 2 per sector, total of 6).


A36
L 2-1_2X2-1_2X3_16
A36
L 2-1_2X2-1_2X3_16
A53 GrB
PIPE 2-1_2x0.203
A36
L 3X3X3_16
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A36
L 3X3X3_16
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A36
L 3X3X3_16
A36
L 3X3X3_16
A53 GrB
PIPE 2-1_2x0.203

Current Date: 3/1/2023 12:50 PM
Units system: English




36
37
35
24
1
6
7
3
5
4
12
22
10
11
21
43
25
44
23
13
20
2
8
9
41


Y
Z
X

RAM® Elements
CONNECT Edition

Current Date: 3/1/2023 12:51 PM
Units system: English

Load data

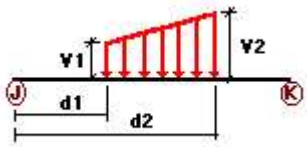
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL

Distributed force on members

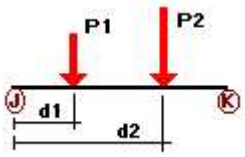


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	3	z	-0.007	-0.007	0.00	No	100.00	Yes
	4	z	-0.007	-0.007	0.00	No	100.00	Yes
	5	z	-0.001	-0.001	0.00	No	100.00	Yes
	6	z	-0.014	-0.014	0.00	No	100.00	Yes
	7	z	-0.014	-0.014	0.00	No	100.00	Yes
	8	z	-0.014	-0.014	0.00	No	100.00	Yes
	9	z	-0.014	-0.014	0.00	No	100.00	Yes
	10	z	-0.007	-0.007	0.00	No	100.00	Yes
	11	z	-0.007	-0.007	0.00	No	100.00	Yes
	12	z	-0.007	-0.007	0.00	No	100.00	Yes
	13	z	-0.007	-0.007	0.00	No	100.00	Yes
	20	z	-0.007	-0.007	0.00	No	100.00	Yes
	23	z	-0.007	-0.007	0.00	No	100.00	Yes
	35	z	-0.008	-0.008	0.00	No	100.00	Yes
	36	z	-0.011	-0.011	0.00	No	100.00	Yes
	37	z	-0.011	-0.011	0.00	No	100.00	Yes
	41	z	-0.008	-0.008	0.00	No	100.00	Yes
	43	z	-0.011	-0.011	0.00	No	100.00	Yes
	44	z	-0.011	-0.011	0.00	No	100.00	Yes
W30	3	z	-0.007	-0.007	0.00	No	100.00	Yes
	4	z	-0.007	-0.007	0.00	No	100.00	Yes
	5	z	-0.001	-0.001	0.00	No	100.00	Yes
	6	z	-0.014	-0.014	0.00	No	100.00	Yes
	7	z	-0.014	-0.014	0.00	No	100.00	Yes
	8	z	-0.014	-0.014	0.00	No	100.00	Yes
	9	z	-0.014	-0.014	0.00	No	100.00	Yes
	10	z	-0.007	-0.007	0.00	No	100.00	Yes
	11	z	-0.007	-0.007	0.00	No	100.00	Yes
	12	z	-0.007	-0.007	0.00	No	100.00	Yes
	13	z	-0.007	-0.007	0.00	No	100.00	Yes
	20	z	-0.007	-0.007	0.00	No	100.00	Yes
	23	z	-0.007	-0.007	0.00	No	100.00	Yes
	35	z	-0.008	-0.008	0.00	No	100.00	Yes
	36	z	-0.011	-0.011	0.00	No	100.00	Yes
	37	z	-0.011	-0.011	0.00	No	100.00	Yes
	41	z	-0.008	-0.008	0.00	No	100.00	Yes
	43	z	-0.011	-0.011	0.00	No	100.00	Yes
	44	z	-0.011	-0.011	0.00	No	100.00	Yes
W60	1	x	-0.014	-0.014	0.00	No	100.00	Yes
	2	x	-0.014	-0.014	0.00	No	100.00	Yes
	3	x	-0.007	-0.007	0.00	No	100.00	Yes
	4	x	-0.007	-0.007	0.00	No	100.00	Yes
	5	x	-0.001	-0.001	0.00	No	100.00	Yes
	10	x	-0.007	-0.007	0.00	No	100.00	Yes
	11	x	-0.007	-0.007	0.00	No	100.00	Yes
	12	x	-0.007	-0.007	0.00	No	100.00	Yes
	13	x	-0.007	-0.007	0.00	No	100.00	Yes
	20	x	-0.007	-0.007	0.00	No	100.00	Yes
	21	x	-0.007	-0.007	0.00	No	100.00	Yes
	22	x	-0.007	-0.007	0.00	No	100.00	Yes
	23	x	-0.007	-0.007	0.00	No	100.00	Yes
	24	x	-0.002	-0.002	0.00	No	100.00	Yes
	25	x	-0.002	-0.002	0.00	No	100.00	Yes
	36	x	-0.011	-0.011	0.00	No	100.00	Yes
	37	x	-0.011	-0.011	0.00	No	100.00	Yes
	43	x	-0.011	-0.011	0.00	No	100.00	Yes
	44	x	-0.011	-0.011	0.00	No	100.00	Yes
W90	1	x	-0.014	-0.014	0.00	No	100.00	Yes
	2	x	-0.014	-0.014	0.00	No	100.00	Yes
	3	x	-0.007	-0.007	0.00	No	100.00	Yes

	4	x	-0.007	-0.007	0.00	No	100.00	Yes
	5	x	-0.001	-0.001	0.00	No	100.00	Yes
	10	x	-0.007	-0.007	0.00	No	100.00	Yes
	11	x	-0.007	-0.007	0.00	No	100.00	Yes
	12	x	-0.007	-0.007	0.00	No	100.00	Yes
	13	x	-0.007	-0.007	0.00	No	100.00	Yes
	20	x	-0.007	-0.007	0.00	No	100.00	Yes
	21	x	-0.007	-0.007	0.00	No	100.00	Yes
	22	x	-0.007	-0.007	0.00	No	100.00	Yes
	23	x	-0.007	-0.007	0.00	No	100.00	Yes
	24	x	-0.002	-0.002	0.00	No	100.00	Yes
	25	x	-0.002	-0.002	0.00	No	100.00	Yes
	36	x	-0.011	-0.011	0.00	No	100.00	Yes
	37	x	-0.011	-0.011	0.00	No	100.00	Yes
	43	x	-0.011	-0.011	0.00	No	100.00	Yes
	44	x	-0.011	-0.011	0.00	No	100.00	Yes
W120	1	x	-0.014	-0.014	0.00	No	100.00	Yes
	2	x	-0.014	-0.014	0.00	No	100.00	Yes
	3	x	-0.007	-0.007	0.00	No	100.00	Yes
	4	x	-0.007	-0.007	0.00	No	100.00	Yes
	5	x	-0.001	-0.001	0.00	No	100.00	Yes
	10	x	-0.007	-0.007	0.00	No	100.00	Yes
	11	x	-0.007	-0.007	0.00	No	100.00	Yes
	12	x	-0.007	-0.007	0.00	No	100.00	Yes
	13	x	-0.007	-0.007	0.00	No	100.00	Yes
	20	x	-0.007	-0.007	0.00	No	100.00	Yes
	21	x	-0.007	-0.007	0.00	No	100.00	Yes
	22	x	-0.007	-0.007	0.00	No	100.00	Yes
	23	x	-0.007	-0.007	0.00	No	100.00	Yes
	24	x	-0.002	-0.002	0.00	No	100.00	Yes
	25	x	-0.002	-0.002	0.00	No	100.00	Yes
	36	x	-0.011	-0.011	0.00	No	100.00	Yes
	37	x	-0.011	-0.011	0.00	No	100.00	Yes
	43	x	-0.011	-0.011	0.00	No	100.00	Yes
	44	x	-0.011	-0.011	0.00	No	100.00	Yes
W150	3	z	0.007	0.007	0.00	No	100.00	Yes
	4	z	0.007	0.007	0.00	No	100.00	Yes
	5	z	0.001	0.001	0.00	No	100.00	Yes
	6	z	0.014	0.014	0.00	No	100.00	Yes
	7	z	0.014	0.014	0.00	No	100.00	Yes
	8	z	0.014	0.014	0.00	No	100.00	Yes
	9	z	0.014	0.014	0.00	No	100.00	Yes
	10	z	0.007	0.007	0.00	No	100.00	Yes
	11	z	0.007	0.007	0.00	No	100.00	Yes
	12	z	0.007	0.007	0.00	No	100.00	Yes
	13	z	0.007	0.007	0.00	No	100.00	Yes
	20	z	0.007	0.007	0.00	No	100.00	Yes
	21	z	0.007	0.007	0.00	No	100.00	Yes
	22	z	0.007	0.007	0.00	No	100.00	Yes
	23	z	0.007	0.007	0.00	No	100.00	Yes
	35	z	0.008	0.008	0.00	No	100.00	Yes
	36	z	0.011	0.011	0.00	No	100.00	Yes
	37	z	0.011	0.011	0.00	No	100.00	Yes
	41	z	0.008	0.008	0.00	No	100.00	Yes
	43	z	0.011	0.011	0.00	No	100.00	Yes
	44	z	0.011	0.011	0.00	No	100.00	Yes
Di	1	y	-0.012	-0.012	0.00	No	100.00	Yes
	2	y	-0.012	-0.012	0.00	No	100.00	Yes
	3	y	-0.008	-0.008	0.00	No	100.00	Yes
	4	y	-0.008	-0.008	0.00	No	100.00	Yes

5	y	-0.005	-0.005	0.00	No	100.00	Yes
6	y	-0.012	-0.012	0.00	No	100.00	Yes
7	y	-0.012	-0.012	0.00	No	100.00	Yes
8	y	-0.012	-0.012	0.00	No	100.00	Yes
9	y	-0.012	-0.012	0.00	No	100.00	Yes
10	y	-0.008	-0.008	0.00	No	100.00	Yes
11	y	-0.008	-0.008	0.00	No	100.00	Yes
12	y	-0.008	-0.008	0.00	No	100.00	Yes
13	y	-0.008	-0.008	0.00	No	100.00	Yes
20	y	-0.008	-0.008	0.00	No	100.00	Yes
21	y	-0.008	-0.008	0.00	No	100.00	Yes
22	y	-0.008	-0.008	0.00	No	100.00	Yes
23	y	-0.008	-0.008	0.00	No	100.00	Yes
24	y	-0.017	-0.017	0.00	No	100.00	Yes
25	y	-0.017	-0.017	0.00	No	100.00	Yes
35	y	-0.009	-0.009	0.00	No	100.00	Yes
36	y	-0.01	-0.01	0.00	No	100.00	Yes
37	y	-0.01	-0.01	0.00	No	100.00	Yes
41	y	-0.009	-0.009	0.00	No	100.00	Yes
43	y	-0.01	-0.01	0.00	No	100.00	Yes
44	y	-0.01	-0.01	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	21	y	-0.033	0.50	No
		y	-0.033	3.00	No
		y	-0.041	4.00	No
		y	-0.041	6.50	No
	22	y	-0.06	0.50	No
		y	-0.06	7.50	No
		y	-0.073	4.00	No
		y	-0.049	4.00	No
Wo	21	z	-0.058	0.50	No
		z	-0.058	3.00	No
		z	-0.056	4.00	No
		z	-0.056	6.50	No
	22	z	-0.247	0.50	No
		z	-0.247	7.50	No
		z	-0.02	4.00	No
		z	-0.011	4.00	No
W30	21	3	-0.05	0.50	No
		3	-0.05	3.00	No
		3	-0.052	4.00	No
		3	-0.052	6.50	No
	22	3	-0.0213	0.50	No
		3	-0.0213	7.50	No
		3	-0.029	4.00	No
W60	21	3	-0.035	0.50	No

		3	-0.035	3.00	No
		3	-0.043	4.00	No
		3	-0.043	6.50	No
	22	3	-0.146	0.50	No
		3	-0.146	7.50	No
		3	-0.046	4.00	No
W90	21	x	-0.028	0.50	No
		x	-0.028	3.00	No
		x	-0.038	4.00	No
		x	-0.038	6.50	No
	22	x	-0.112	0.50	No
		x	-0.112	7.50	No
		x	-0.054	4.00	No
W120	21	2	-0.035	0.50	No
		2	-0.035	3.00	No
		2	-0.043	4.00	No
		2	-0.043	6.50	No
	22	2	-0.146	0.50	No
		2	-0.146	7.50	No
		2	-0.046	4.00	No
W150	21	2	-0.05	0.50	No
		2	-0.05	3.00	No
		2	-0.052	4.00	No
		2	-0.052	6.50	No
	22	2	-0.0213	0.50	No
		2	-0.0213	7.50	No
		2	-0.029	4.00	No
Di	21	y	-0.043	0.50	No
		y	-0.043	3.00	No
		y	-0.049	4.00	No
		y	-0.049	6.50	No
	22	y	-0.187	0.50	No
		y	-0.187	7.50	No
		y	-0.052	4.00	No
		y	-0.039	4.00	No
WI0	21	z	-0.013	0.50	No
		z	-0.013	3.00	No
		z	-0.013	4.00	No
		z	-0.013	6.50	No
	22	z	-0.051	0.50	No
		z	-0.051	7.50	No
		z	-0.007	4.00	No
		z	-0.005	4.00	No
WI30	21	3	-0.012	0.50	No
		3	-0.012	3.00	No
		3	-0.012	4.00	No
		3	-0.012	6.50	No
	22	3	-0.045	0.50	No
		3	-0.045	7.50	No
		3	-0.009	4.00	No
WI60	21	3	-0.009	0.50	No
		3	-0.009	3.00	No
		3	-0.01	4.00	No
		3	-0.01	6.50	No
	22	3	-0.033	0.50	No
		3	-0.033	7.50	No
		3	-0.012	4.00	No
WI90	21	x	-0.008	0.50	No
		x	-0.008	3.00	No
		x	-0.01	4.00	No

		x	-0.01	6.50	No
	22	x	-0.027	0.50	No
		x	-0.027	7.50	No
		x	-0.014	4.00	No
WI120	21	2	-0.009	0.50	No
		2	-0.009	3.00	No
		2	-0.01	4.00	No
		2	-0.01	6.50	No
	22	2	-0.033	0.50	No
		2	-0.033	7.50	No
		2	-0.012	4.00	No
WI150	21	2	-0.012	0.50	No
		2	-0.012	3.00	No
		2	-0.012	4.00	No
		2	-0.012	6.50	No
	22	2	-0.045	0.50	No
		2	-0.045	7.50	No
		2	-0.009	4.00	No
WL0	21	z	-0.004	0.50	No
		z	-0.004	3.00	No
		z	-0.004	4.00	No
		z	-0.004	6.50	No
	22	z	-0.016	0.50	No
		z	-0.016	7.50	No
		z	-0.001	4.00	No
		z	-0.001	4.00	No
WL30	21	3	-0.003	0.50	No
		3	-0.003	3.00	No
		3	-0.003	4.00	No
		3	-0.003	6.50	No
	22	3	-0.014	0.50	No
		3	-0.014	7.50	No
		3	-0.002	4.00	No
WL60	21	3	-0.002	0.50	No
		3	-0.002	3.00	No
		3	-0.003	4.00	No
		3	-0.003	6.50	No
	22	3	-0.009	0.50	No
		3	-0.009	7.50	No
		3	-0.003	4.00	No
WL90	21	x	-0.002	0.50	No
		x	-0.002	3.00	No
		x	-0.003	4.00	No
		x	-0.003	6.50	No
	22	x	-0.007	0.50	No
		x	-0.007	7.50	No
		x	-0.003	4.00	No
WL120	21	2	-0.002	0.50	No
		2	-0.002	3.00	No
		2	-0.003	4.00	No
		2	-0.003	6.50	No
	22	2	-0.009	0.50	No
		2	-0.009	7.50	No
		2	-0.003	4.00	No
WL150	21	2	-0.003	0.50	No
		2	-0.003	3.00	No
		2	-0.003	4.00	No
		2	-0.003	6.50	No
	22	2	-0.014	0.50	No
		2	-0.014	7.50	No

		2	-0.002	4.00	No
LL1	6	y	-0.25	100.00	Yes
LL2	7	y	-0.25	100.00	Yes
LL3	6	y	-0.25	0.00	Yes
LLa1	20	y	-0.50	50.00	Yes
LLa2	21	y	-0.50	50.00	Yes
LLa3	22	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	0.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00

RAM® Elements
CONNECT Edition

Current Date: 3/1/2023 12:51 PM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+Wo
LC2=1.2DL+W30
LC3=1.2DL+W60
LC4=1.2DL+W90
LC5=1.2DL+W120
LC6=1.2DL+W150
LC7=1.2DL-Wo
LC8=1.2DL-W30
LC9=1.2DL-W60
LC10=1.2DL-W90
LC11=1.2DL-W120
LC12=1.2DL-W150
LC13=0.9DL+Wo
LC14=0.9DL+W30
LC15=0.9DL+W60
LC16=0.9DL+W90
LC17=0.9DL+W120
LC18=0.9DL+W150
LC19=0.9DL-Wo
LC20=0.9DL-W30
LC21=0.9DL-W60
LC22=0.9DL-W90
LC23=0.9DL-W120
LC24=0.9DL-W150
LC25=1.2DL+Di+WI0
LC26=1.2DL+Di+WI30
LC27=1.2DL+Di+WI60
LC28=1.2DL+Di+WI90
LC29=1.2DL+Di+WI120
LC30=1.2DL+Di+WI150
LC31=1.2DL+Di-WI0
LC32=1.2DL+Di-WI30
LC33=1.2DL+Di-WI60
LC34=1.2DL+Di-WI90
LC35=1.2DL+Di-WI120
LC36=1.2DL+Di-WI150
LC37=1.2DL+1.6LL1
LC38=1.2DL+1.6LL2
LC39=1.2DL+1.6LL3
LC40=1.2DL+WL0+1.6LLa1
LC41=1.2DL+WL30+1.6LLa1
LC42=1.2DL+WL60+1.6LLa1
LC43=1.2DL+WL90+1.6LLa1
LC44=1.2DL+WL120+1.6LLa1
LC45=1.2DL+WL150+1.6LLa1
LC46=1.2DL-WL0+1.6LLa1
LC47=1.2DL-WL30+1.6LLa1
LC48=1.2DL-WL60+1.6LLa1
LC49=1.2DL-WL90+1.6LLa1
LC50=1.2DL-WL120+1.6LLa1
LC51=1.2DL-WL150+1.6LLa1
LC52=1.2DL+WL0+1.6LLa2
LC53=1.2DL+WL30+1.6LLa2
LC54=1.2DL+WL60+1.6LLa2

LC55=1.2DL+WL90+1.6LLa2
LC56=1.2DL+WL120+1.6LLa2
LC57=1.2DL+WL150+1.6LLa2
LC58=1.2DL-WL0+1.6LLa2
LC59=1.2DL-WL30+1.6LLa2
LC60=1.2DL-WL60+1.6LLa2
LC61=1.2DL-WL90+1.6LLa2
LC62=1.2DL-WL120+1.6LLa2
LC63=1.2DL-WL150+1.6LLa2
LC64=1.2DL+WL0+1.6LLa3
LC65=1.2DL+WL30+1.6LLa3
LC66=1.2DL+WL60+1.6LLa3
LC67=1.2DL+WL90+1.6LLa3
LC68=1.2DL+WL120+1.6LLa3
LC69=1.2DL+WL150+1.6LLa3
LC70=1.2DL-WL0+1.6LLa3
LC71=1.2DL-WL30+1.6LLa3
LC72=1.2DL-WL60+1.6LLa3
LC73=1.2DL-WL90+1.6LLa3
LC74=1.2DL-WL120+1.6LLa3
LC75=1.2DL-WL150+1.6LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	L 2-1_2X2-1_2X3_16	**36**	LC75 at 100.00%	0.56	OK	
		37	LC9 at 100.00%	0.58	OK	
		43	LC71 at 100.00%	0.47	OK	
		44	LC9 at 100.00%	**0.77**	**OK**	
	L 3X3X3_16	**6**	LC64 at 100.00%	0.46	OK	
		7	LC9 at 0.00%	**0.91**	**OK**	
		8	LC64 at 100.00%	0.55	OK	
		9	LC9 at 0.00%	0.90	OK	
	L 3X3X3_8	**1**	LC9 at 81.25%	0.48	OK	
		2	LC9 at 100.00%	**0.55**	**OK**	
	PIPE 2-1_2x0.203	**35**	LC3 at 73.96%	0.42	OK	
		41	LC9 at 73.96%	**0.76**	**OK**	
	PIPE 2x0.154	**3**	LC25 at 0.00%	0.22	OK	
		4	LC21 at 100.00%	0.31	OK	
		10	LC75 at 100.00%	0.29	OK	
		11	LC75 at 0.00%	0.25	OK	
		12	LC9 at 0.00%	0.22	OK	
		13	LC15 at 59.38%	**0.90**	**OK**	
		20	LC9 at 30.00%	0.58	OK	
		21	LC9 at 78.75%	0.25	OK	
		22	LC65 at 16.25%	0.41	OK	
		23	LC21 at 0.00%	0.10	OK	
	PL 7x3/8"	**24**	LC26 at 0.00%	0.31	OK	
		25	LC26 at 0.00%	**0.31**	**OK**	
	RndBar 3_4	**5**	LC26 at 0.00%	**0.18**	**With warnings**	

RAM® Elements
CONNECT Edition

Current Date: 3/1/2023 12:51 PM
Units system: English

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
2	0.00	0.00	0.667	0
3	0.00	0.00	3.417	0
4	0.00	0.00	4.25	0
5	0.00	3.00	0.00	0
6	0.00	3.00	0.667	0
7	0.00	3.00	3.417	0
8	0.00	3.00	4.25	0
9	5.25	0.00	4.25	0
10	5.25	3.00	4.25	0
11	-5.25	0.00	4.25	0
12	-5.25	3.00	4.25	0
13	-4.25	0.00	4.25	0
14	-4.25	3.00	4.25	0
15	4.25	0.00	4.25	0
16	4.25	3.00	4.25	0
17	0.75	0.00	4.25	0
18	0.75	3.00	4.25	0
19	-0.75	0.00	4.25	0
20	-0.75	3.00	4.25	0
33	-5.00	5.50	4.45	0
34	5.00	5.50	4.45	0
35	-0.25	5.00	4.45	0

36	5.00	-2.50	4.45	0
37	-0.25	-2.50	4.45	0
38	-5.00	-2.50	4.45	0
39	4.25	1.75	4.25	0
40	2.25	1.75	-1.50	0
41	0.00	3.00	0.3335	0
42	0.00	0.00	0.3335	0
43	0.00	3.00	-0.4165	0
44	0.00	0.00	-0.4165	0
45	-5.00	3.00	4.45	0
46	5.00	3.00	4.45	0
47	-0.25	3.00	4.45	0
48	5.00	0.00	4.45	0
49	-0.25	0.00	4.45	0
50	-5.00	0.00	4.45	0
51	-5.00	3.00	4.25	0
52	5.00	3.00	4.25	0
53	-0.25	3.00	4.25	0
54	5.00	0.00	4.25	0
55	-0.25	0.00	4.25	0
56	-5.00	0.00	4.25	0
57	-5.25	4.25	4.25	0
58	-5.00	4.25	4.45	0
59	-5.00	4.25	4.25	0
60	5.25	4.25	4.25	0
61	5.00	4.25	4.45	0
62	5.00	4.25	4.25	0
63	-0.25	4.25	4.45	0
64	-0.25	4.25	4.25	0
65	-2.50	4.25	4.25	0
66	2.50	4.25	4.25	0
67	0.00	7.00	-0.4165	0
68	-5.25	-1.00	4.25	0
69	-5.00	-1.00	4.25	0
70	-5.00	-1.00	4.45	0
71	5.25	-1.00	4.25	0
72	5.00	-1.00	4.25	0
73	5.00	-1.00	4.45	0
78	-0.25	-1.00	4.25	0
79	-0.25	-1.00	4.45	0
80	0.00	1.875	-0.4165	0
81	-2.50	-1.00	4.25	0
82	2.50	-1.00	4.25	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
40	1	1	1	0	0	0
43	1	1	1	1	0	1
44	1	1	1	1	0	1
67	1	1	1	1	0	1
80	1	1	1	1	0	1

Members

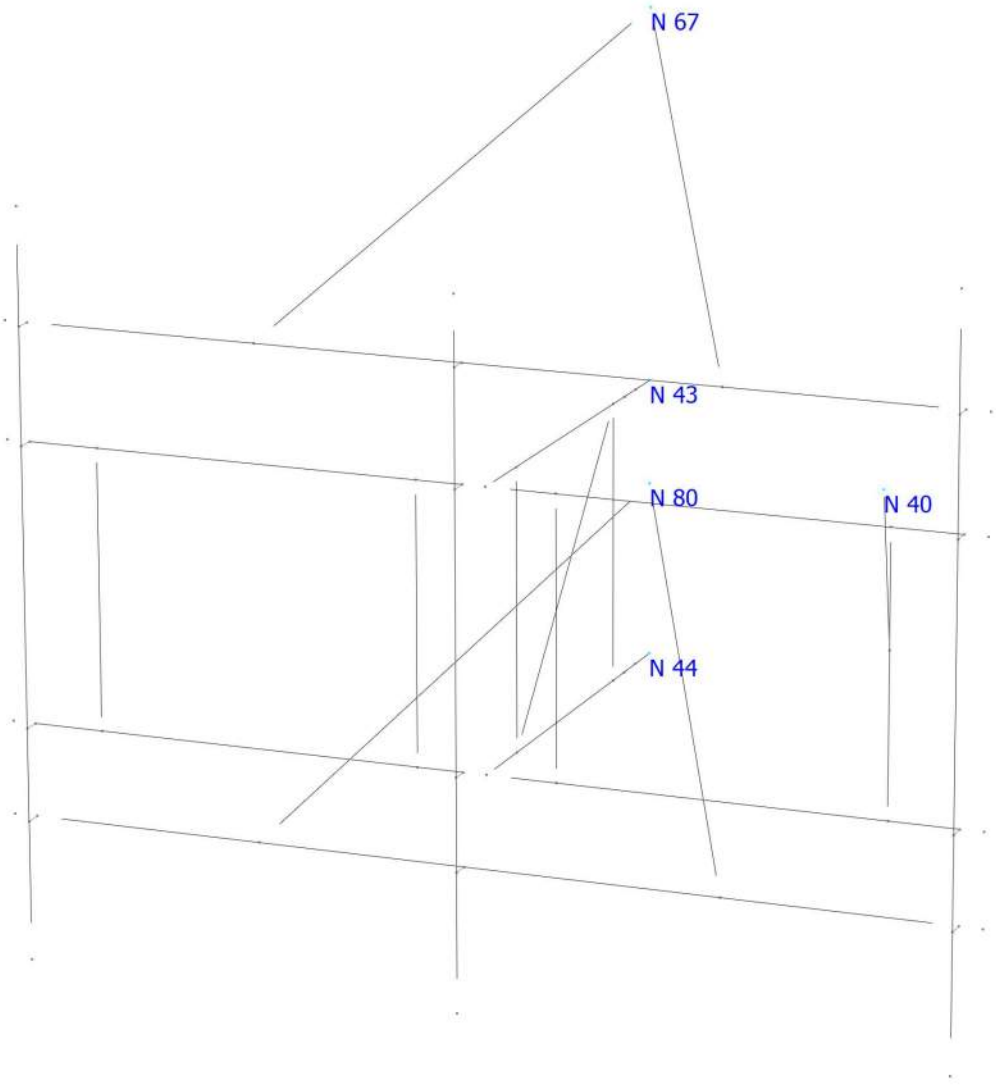
Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	5	8		L 3X3X3_8	A36	0.00	0.00	0.00
2	1	4		L 3X3X3_8	A36	0.00	0.00	0.00
3	6	2		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
4	7	3		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	6	3		RndBar 3_4	A36	0.00	0.00	0.00
6	12	8		L 3X3X3_16	A36	0.00	0.00	0.00
7	8	10		L 3X3X3_16	A36	0.00	0.00	0.00
8	11	4		L 3X3X3_16	A36	0.00	0.00	0.00
9	4	9		L 3X3X3_16	A36	0.00	0.00	0.00
10	13	14		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
11	19	20		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
12	17	18		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
13	15	16		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
20	34	36		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
21	35	37		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
22	33	38		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
23	39	40		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
24	43	41		PL 7x3/8"	A36	0.00	0.00	0.00
25	44	42		PL 7x3/8"	A36	0.00	0.00	0.00
35	57	60		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
36	65	67		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
37	66	67		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
41	68	71		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
43	81	80		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
44	82	80		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00

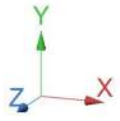
Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
1	180.00	0	0.00	0.00	0.00
2	180.00	0	0.00	0.00	0.00
6	180.00	0	0.00	0.00	0.00
7	180.00	0	0.00	0.00	0.00
8	180.00	0	0.00	0.00	0.00
9	180.00	0	0.00	0.00	0.00
20	315.00	0	0.00	0.00	0.00
21	315.00	0	0.00	0.00	0.00
22	315.00	0	0.00	0.00	0.00
24	90.00	0	0.00	0.00	0.00
25	90.00	0	0.00	0.00	0.00
36	180.00	0	0.00	0.00	0.00
37	90.00	0	0.00	0.00	0.00
43	180.00	0	0.00	0.00	0.00
44	90.00	0	0.00	0.00	0.00

Hinges

Member	Node-J				Node-K				TOR	AXL	Axial rigidity
	M33	M22	V3	V2	M33	M22	V3	V2			
5	0	0	0	0	0	0	0	0	0	0	Tension only
23	1	1	0	0	0	0	0	0	0	0	Full


N 67
N 43
N 80
N 40
N 44

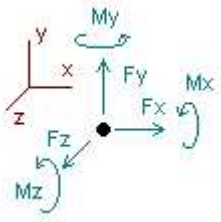

Y
Z
X

RAM® Elements
CONNECT Edition

Current Date: 3/1/2023 12:51 PM
Units system: English

Analysis result

Reactions



Direction of positive forces and moments

	Forces [Kip]			Moments [Kip*ft]		
Node	**FX**	**FY**	**FZ**	**MX**	**MY**	**MZ**
Condition **LC1=1.2DL+Wo**						
40	-0.31525	0.00093	-0.92224	0.00000	0.00000	0.00000
43	0.02618	0.63707	-1.38307	-0.15984	0.00000	-0.00340
44	-0.04015	0.61559	2.24081	-0.15572	0.00000	-0.00334
67	0.25317	-0.33797	0.74067	-0.20765	0.00000	-0.04324
80	0.07605	-0.44762	0.90342	-0.22785	0.00000	-0.00831
SUM	0.00000	0.46800	1.57958	-0.75106	0.00000	-0.05829
Condition **LC2=1.2DL+W30**						
40	-0.12332	-0.00002	-0.35110	0.00000	0.00000	0.00000
43	0.00311	0.36788	-0.69513	-0.09311	0.00000	-0.00362
44	-0.03508	0.35694	1.42385	-0.09071	0.00000	-0.00354
67	0.24685	-0.10540	0.28288	-0.11705	0.00000	-0.03602
80	0.10332	-0.15140	0.36097	-0.13291	0.00000	-0.02789
SUM	0.19488	0.46800	1.02146	-0.43378	0.00000	-0.07108
Condition **LC3=1.2DL+W60**						
40	-0.62873	0.01896	-2.00606	0.00000	0.00000	0.00000
43	0.16602	0.62444	-1.40194	-0.14733	0.00000	0.01930
44	0.20685	0.58653	2.20831	-0.13948	0.00000	0.01735
67	0.40886	-0.39313	0.74824	-0.15750	0.00000	0.18753
80	0.89289	-0.36879	0.80075	-0.27716	0.00000	0.25181
SUM	1.04588	0.46800	0.34931	-0.72147	0.00000	0.47599
Condition **LC4=1.2DL+W90**						
40	-0.51283	0.01356	-1.62861	0.00000	0.00000	0.00000
43	0.14093	0.47266	-1.04495	-0.11017	0.00000	0.01770
44	0.20848	0.44099	1.69784	-0.10335	0.00000	0.01588
67	0.40258	-0.25454	0.48308	-0.11098	0.00000	0.17634
80	0.86740	-0.20467	0.49264	-0.21792	0.00000	0.22648
SUM	1.10657	0.46800	0.00000	-0.54242	0.00000	0.43640

Condition **LC5=1.2DL+W120**

40	-0.32600	0.00588	-1.03567	0.00000	0.00000	0.00000
43	0.10149	0.28134	-0.60010	-0.06434	0.00000	0.01250
44	0.17070	0.25900	1.03811	-0.05941	0.00000	0.01093
67	0.38084	-0.07009	0.13712	-0.05519	0.00000	0.12675
80	0.71884	-0.00813	0.11121	-0.13295	0.00000	0.15537
SUM	1.04588	0.46800	-0.34931	-0.31189	0.00000	0.30555

Condition **LC6=1.2DL+W150**

40	-0.08996	-0.00035	-0.26522	0.00000	0.00000	0.00000
43	0.00314	0.07633	-0.31517	-0.01967	0.00000	-0.00456
44	-0.03448	0.06814	0.07170	-0.01800	0.00000	-0.00445
67	0.24130	0.16702	-0.32027	0.00976	0.00000	-0.04666
80	0.07487	0.15686	-0.30099	0.01884	0.00000	-0.04341
SUM	0.19488	0.46800	-1.12996	-0.00907	0.00000	-0.09908

Condition **LC7=1.2DL-Wo**

40	0.30918	0.00601	0.84634	0.00000	0.00000	0.00000
43	-0.04769	-0.13265	-0.07128	0.03975	0.00000	-0.01406
44	-0.17431	-0.12268	-0.79496	0.03748	0.00000	-0.01375
67	0.16734	0.32967	-0.74038	0.21747	0.00000	-0.14169
80	-0.25452	0.38765	-0.81931	0.23588	0.00000	-0.18585
SUM	0.00000	0.46800	-1.57958	0.53058	0.00000	-0.35534

Condition **LC8=1.2DL-W30**

40	0.11979	0.00194	0.32817	0.00000	0.00000	0.00000
43	-0.03629	-0.01605	-0.10817	-0.00027	0.00000	-0.01494
44	-0.16191	-0.01356	-0.27136	-0.00103	0.00000	-0.01457
67	0.18285	0.27636	-0.51219	0.03258	0.00000	-0.16022
80	-0.29932	0.21931	-0.45790	0.09180	0.00000	-0.17921
SUM	-0.19488	0.46800	-1.02146	0.12307	0.00000	-0.36894

Condition **LC9=1.2DL-W60**

40	0.71166	0.03029	1.93252	0.00000	0.00000	0.00000
43	-0.15843	-0.15493	0.05864	0.03486	0.00000	-0.03624
44	-0.48329	-0.12186	-0.83835	0.02769	0.00000	-0.03422
67	-0.00997	0.39934	-0.77196	0.16586	0.00000	-0.37841
80	-1.10585	0.31516	-0.73017	0.30565	0.00000	-0.45525
SUM	-1.04588	0.46800	-0.34931	0.53405	0.00000	-0.90413

Condition **LC10=1.2DL-W90**

40	0.58405	0.02355	1.60990	0.00000	0.00000	0.00000
43	-0.14923	-0.08773	0.06610	0.01224	0.00000	-0.03598
44	-0.46001	-0.06117	-0.49795	0.00639	0.00000	-0.03394
67	0.00953	0.36818	-0.64592	0.06539	0.00000	-0.37767
80	-1.09091	0.22518	-0.53212	0.21994	0.00000	-0.44057
SUM	-1.10657	0.46800	0.00000	0.30396	0.00000	-0.88817

Condition **LC11=1.2DL-W120**

40	0.36860	0.01266	1.05487	0.00000	0.00000	0.00000
43	-0.13295	0.05615	-0.16802	-0.02586	0.00000	-0.03185
44	-0.38674	0.07245	0.06777	-0.02944	0.00000	-0.02984
67	0.04604	0.25073	-0.38542	-0.02534	0.00000	-0.33366
80	-0.94083	0.07601	-0.21989	0.11246	0.00000	-0.37451
SUM	-1.04588	0.46800	0.34931	0.03181	0.00000	-0.76987

Condition **LC12=1.2DL-W150**

40	0.09608	0.00130	0.27844	0.00000	0.00000	0.00000
43	-0.04428	0.26810	-0.47019	-0.07229	0.00000	-0.01480
44	-0.15396	0.26868	1.05405	-0.07233	0.00000	-0.01436
67	0.19190	0.01297	0.07652	-0.09391	0.00000	-0.15624
80	-0.28462	-0.08305	0.19114	-0.05618	0.00000	-0.17120
SUM	-0.19488	0.46800	1.12996	-0.29470	0.00000	-0.35660

Condition **LC13=0.9DL+Wo**

40	-0.31579	0.00166	-0.92618	0.00000	0.00000	0.00000
43	0.03160	0.59373	-1.28525	-0.14833	0.00000	-0.00092
44	-0.01648	0.57414	2.10115	-0.14444	0.00000	-0.00096
67	0.19842	-0.36134	0.77200	-0.19720	0.00000	-0.01765
80	0.10224	-0.45719	0.91786	-0.22317	0.00000	0.01863
SUM	0.00000	0.35100	1.57958	-0.71314	0.00000	-0.00091

Condition **LC14=0.9DL+W30**

40	-0.12379	0.00025	-0.35334	0.00000	0.00000	0.00000
43	0.00817	0.32470	-0.59706	-0.08161	0.00000	-0.00119
44	-0.01150	0.31513	1.28346	-0.07942	0.00000	-0.00119
67	0.19255	-0.12819	0.31349	-0.10653	0.00000	-0.01066
80	0.12945	-0.16089	0.37491	-0.12801	0.00000	-0.00110
SUM	0.19488	0.35100	1.02146	-0.39558	0.00000	-0.01415

Condition **LC15=0.9DL+W60**

40	-0.62769	0.02047	-2.00784	0.00000	0.00000	0.00000
43	0.16931	0.58062	-1.30219	-0.13573	0.00000	0.02169
44	0.23261	0.54429	2.06622	-0.12806	0.00000	0.01967
67	0.35402	-0.41535	0.77827	-0.14739	0.00000	0.21238
80	0.91762	-0.37903	0.81484	-0.27115	0.00000	0.27802
SUM	1.04588	0.35100	0.34931	-0.68233	0.00000	0.53176

Condition **LC16=0.9DL+W90**

40	-0.51180	0.01477	-1.62943	0.00000	0.00000	0.00000
43	0.14417	0.42894	-0.94512	-0.09857	0.00000	0.02007
44	0.23409	0.39856	1.55541	-0.09193	0.00000	0.01819
67	0.34802	-0.27648	0.51274	-0.10081	0.00000	0.20107
80	0.89209	-0.21478	0.50640	-0.21186	0.00000	0.25260
SUM	1.10657	0.35100	0.00000	-0.50318	0.00000	0.49193

Condition **LC17=0.9DL+W120**

40	-0.32514	0.00665	-1.03553	0.00000	0.00000	0.00000
43	0.10497	0.23778	-0.50040	-0.05277	0.00000	0.01484
44	0.19583	0.21642	0.89553	-0.04800	0.00000	0.01323
67	0.32657	-0.09186	0.16649	-0.04488	0.00000	0.15144
80	0.74365	-0.01799	0.12461	-0.12700	0.00000	0.18149
SUM	1.04588	0.35100	-0.34931	-0.27266	0.00000	0.36100

Condition **LC18=0.9DL+W150**

40	-0.08928	-0.00016	-0.26385	0.00000	0.00000	0.00000
43	0.00780	0.03284	-0.21579	-0.00809	0.00000	-0.00221
44	-0.01068	0.02545	-0.07109	-0.00662	0.00000	-0.00216
67	0.18736	0.14506	-0.29101	0.02046	0.00000	-0.02194
80	0.09968	0.14781	-0.28821	0.02419	0.00000	-0.01729
SUM	0.19488	0.35100	-1.12996	0.02993	0.00000	-0.04361

Condition **LC19=0.9DL-Wo**

40	0.30953	0.00548	0.84893	0.00000	0.00000	0.00000
43	-0.04367	-0.15109	-0.08397	0.04696	0.00000	-0.01170
44	-0.15187	-0.14019	-0.89245	0.04452	0.00000	-0.01146
67	0.11399	0.27854	-0.67395	0.24507	0.00000	-0.11658
80	-0.22799	0.35825	-0.77813	0.25050	0.00000	-0.15923
SUM	0.00000	0.35100	-1.57958	0.58705	0.00000	-0.29897

Condition **LC20=0.9DL-W30**

40	0.11993	0.00173	0.32923	0.00000	0.00000	0.00000
43	-0.03202	-0.03442	-0.12092	0.00693	0.00000	-0.01257
44	-0.13933	-0.03082	-0.36827	0.00599	0.00000	-0.01226
67	0.12917	0.22461	-0.44516	0.06014	0.00000	-0.13493
80	-0.27263	0.18990	-0.41633	0.10617	0.00000	-0.15252
SUM	-0.19488	0.35100	-1.02146	0.17923	0.00000	-0.31228

Condition **LC21=0.9DL-W60**

40	0.71061	0.02901	1.93347	0.00000	0.00000	0.00000
43	-0.15493	-0.17334	0.04547	0.04205	0.00000	-0.03383
44	-0.46169	-0.13890	-0.93439	0.03464	0.00000	-0.03187
67	-0.06260	0.34744	-0.70477	0.19362	0.00000	-0.35259
80	-1.07727	0.28678	-0.68910	0.31891	0.00000	-0.42802
SUM	-1.04588	0.35100	-0.34931	0.58922	0.00000	-0.84632

Condition **LC22=0.9DL-W90**

40	0.58286	0.02246	1.60990	0.00000	0.00000	0.00000
43	-0.14558	-0.10608	0.05292	0.01942	0.00000	-0.03356
44	-0.43831	-0.07807	-0.59364	0.01332	0.00000	-0.03158
67	-0.04332	0.31594	-0.57838	0.09312	0.00000	-0.35173
80	-1.06221	0.19674	-0.49080	0.23309	0.00000	-0.41327
SUM	-1.10657	0.35100	0.00000	0.35896	0.00000	-0.83014

Condition **LC23=0.9DL-W120**

40	0.36735	0.01183	1.05389	0.00000	0.00000	0.00000
43	-0.12595	0.01325	-0.07089	-0.01440	0.00000	-0.02941
44	-0.36537	0.03066	-0.07223	-0.01823	0.00000	-0.02750
67	-0.00765	0.22745	-0.35471	-0.01421	0.00000	-0.30810
80	-0.91425	0.06781	-0.20675	0.11622	0.00000	-0.34755
SUM	-1.04588	0.35100	0.34931	0.06937	0.00000	-0.71255

Condition **LC24=0.9DL-W150**

40	0.09503	0.00108	0.27611	0.00000	0.00000	0.00000
43	-0.03838	0.22513	-0.37276	-0.06082	0.00000	-0.01235
44	-0.13135	0.22701	0.91431	-0.06109	0.00000	-0.01200
67	0.13782	-0.01014	0.10738	-0.08318	0.00000	-0.13067
80	-0.25800	-0.09209	0.20492	-0.05181	0.00000	-0.14421
SUM	-0.19488	0.35100	1.12996	-0.25690	0.00000	-0.29923

Condition **LC25=1.2DL+Di+WI0**

40	-0.07446	0.02306	-0.21099	0.00000	0.00000	0.00000
43	-0.05538	0.76602	-1.66777	-0.19731	0.00000	-0.02279
44	-0.21052	0.73096	2.39275	-0.19128	0.00000	-0.02190
67	0.55555	0.29467	-0.25745	-0.24187	0.00000	-0.23877
80	-0.21520	0.14500	-0.09054	-0.16465	0.00000	-0.24347
SUM	0.00000	1.95971	0.16600	-0.79512	0.00000	-0.52693

Condition **LC26=1.2DL+Di+WI30**

40	-0.11215	0.02272	-0.31948	0.00000	0.00000	0.00000
43	-0.04326	0.77118	-1.67506	-0.19768	0.00000	-0.02018
44	-0.18589	0.73447	2.42537	-0.19128	0.00000	-0.01940
67	0.56808	0.28180	-0.23959	-0.24038	0.00000	-0.20997
80	-0.12284	0.14955	-0.08729	-0.17702	0.00000	-0.21150
SUM	0.10394	1.95971	0.10394	-0.80636	0.00000	-0.46106

Condition **LC27=1.2DL+Di+WI60**

40	-0.08803	0.02298	-0.25012	0.00000	0.00000	0.00000
43	-0.04809	0.75247	-1.63261	-0.19334	0.00000	-0.02099
44	-0.19362	0.71718	2.36103	-0.18718	0.00000	-0.02019
67	0.56279	0.30029	-0.27411	-0.23489	0.00000	-0.21847
80	-0.15103	0.16680	-0.12216	-0.16750	0.00000	-0.22276
SUM	0.08202	1.95971	0.08202	-0.78290	0.00000	-0.48241

Condition **LC28=1.2DL+Di+WI90**

40	-0.06508	0.02332	-0.18461	0.00000	0.00000	0.00000
43	-0.04969	0.72064	-1.55867	-0.18544	0.00000	-0.02095
44	-0.19327	0.68697	2.25636	-0.17950	0.00000	-0.02016
67	0.56040	0.32749	-0.32743	-0.22473	0.00000	-0.21741
80	-0.14836	0.20130	-0.18566	-0.15611	0.00000	-0.22439
SUM	0.10400	1.95971	0.00000	-0.74578	0.00000	-0.48291

Condition **LC29=1.2DL+Di+WI120**

40	-0.01356	0.02411	-0.03828	0.00000	0.00000	0.00000
43	-0.05787	0.67330	-1.45036	-0.17417	0.00000	-0.02227
44	-0.20646	0.64282	2.09419	-0.16876	0.00000	-0.02144
67	0.55197	0.37211	-0.41125	-0.21115	0.00000	-0.23103
80	-0.19205	0.24736	-0.27632	-0.13385	0.00000	-0.24349
SUM	0.08202	1.95971	-0.08202	-0.68793	0.00000	-0.51822

Condition **LC30=1.2DL+Di+WI150**

40	-0.01782	0.02404	-0.05032	0.00000	0.00000	0.00000
43	-0.05601	0.66996	-1.44169	-0.17318	0.00000	-0.02180
44	-0.20204	0.63943	2.08752	-0.16775	0.00000	-0.02099
67	0.55448	0.37320	-0.41528	-0.20904	0.00000	-0.22559
80	-0.17466	0.25308	-0.28417	-0.13512	0.00000	-0.23809
SUM	0.10394	1.95971	-0.10394	-0.68509	0.00000	-0.50647

Condition **LC31=1.2DL+Di-WI0**

40	0.08029	0.02610	0.22443	0.00000	0.00000	0.00000
43	-0.07427	0.60213	-1.28767	-0.15761	0.00000	-0.02536
44	-0.23885	0.57696	1.84760	-0.15315	0.00000	-0.02443
67	0.53252	0.44253	-0.54153	-0.19135	0.00000	-0.26392
80	-0.29969	0.31200	-0.40883	-0.09602	0.00000	-0.28625
SUM	0.00000	1.95971	-0.16600	-0.59813	0.00000	-0.59995

Condition **LC32=1.2DL+Di-WI30**

40	0.11969	0.02728	0.33281	0.00000	0.00000	0.00000
43	-0.08543	0.59660	-1.27947	-0.15715	0.00000	-0.02795
44	-0.26506	0.57318	1.81414	-0.15307	0.00000	-0.02692
67	0.51952	0.45531	-0.55939	-0.19266	0.00000	-0.29280
80	-0.39266	0.30735	-0.41203	-0.08316	0.00000	-0.31836
SUM	-0.10394	1.95971	-0.10394	-0.58604	0.00000	-0.66603

Condition **LC33=1.2DL+Di-WI60**

40	0.09482	0.02658	0.26430	0.00000	0.00000	0.00000
43	-0.08140	0.61528	-1.32198	-0.16150	0.00000	-0.02716
44	-0.25633	0.59049	1.87829	-0.15717	0.00000	-0.02616
67	0.52519	0.43706	-0.52517	-0.19824	0.00000	-0.28440
80	-0.36431	0.29031	-0.37747	-0.09281	0.00000	-0.30720
SUM	-0.08202	1.95971	-0.08202	-0.60972	0.00000	-0.64491

Condition **LC34=1.2DL+Di-WI90**

40	0.07172	0.02602	0.20023	0.00000	0.00000	0.00000
43	-0.08058	0.64688	-1.39551	-0.16937	0.00000	-0.02724
44	-0.25599	0.62056	1.98213	-0.16481	0.00000	-0.02622
67	0.52797	0.41024	-0.47238	-0.20843	0.00000	-0.28572
80	-0.36712	0.25601	-0.31446	-0.10405	0.00000	-0.30585
SUM	-0.10400	1.95971	0.00000	-0.64665	0.00000	-0.64503

Condition **LC35=1.2DL+Di-WI120**

40	0.01936	0.02477	0.05432	0.00000	0.00000	0.00000
43	-0.07305	0.69434	-1.50416	-0.18067	0.00000	-0.02594
44	-0.24188	0.66480	2.14450	-0.17558	0.00000	-0.02495
67	0.53672	0.36575	-0.38869	-0.22210	0.00000	-0.27213
80	-0.32318	0.21005	-0.22394	-0.12650	0.00000	-0.28675
SUM	-0.08202	1.95971	0.08202	-0.70485	0.00000	-0.60977

Condition **LC36=1.2DL+Di-WI150**

40	0.02376	0.02487	0.06661	0.00000	0.00000	0.00000
43	-0.07498	0.69764	-1.51271	-0.18165	0.00000	-0.02641
44	-0.24633	0.66815	2.15098	-0.17658	0.00000	-0.02540
67	0.53426	0.36473	-0.38478	-0.22420	0.00000	-0.27764
80	-0.34066	0.20432	-0.21615	-0.12513	0.00000	-0.29223
SUM	-0.10394	1.95971	0.10394	-0.70756	0.00000	-0.62168

Condition **LC37=1.2DL+1.6LL1**

40	0.00042	0.00000	0.00118	0.00000	0.00000	0.00000
43	-0.02625	0.34004	-0.80132	-0.08791	0.00000	-0.00940
44	-0.09373	0.32179	1.07679	-0.08417	0.00000	-0.00912
67	0.21804	0.13995	-0.18314	-0.07322	0.00000	-0.09948
80	-0.09848	0.06622	-0.09352	-0.03642	0.00000	-0.10473
SUM	0.00000	0.86800	0.00000	-0.28172	0.00000	-0.22273

Condition **LC38=1.2DL+1.6LL2**

40	-0.00042	0.00000	-0.00122	0.00000	0.00000	0.00000
43	-0.00268	0.33035	-0.77713	-0.08175	0.00000	0.00487
44	0.03381	0.30402	1.09311	-0.07617	0.00000	0.00468
67	-0.08042	0.14019	-0.17890	-0.09168	0.00000	0.05170
80	0.04971	0.09345	-0.13587	-0.05140	0.00000	0.05321
SUM	0.00000	0.86800	0.00000	-0.30100	0.00000	0.11446

Condition **LC39=1.2DL+1.6LL3**

40	0.00184	0.00004	0.00517	0.00000	0.00000	0.00000
43	-0.04797	0.31265	-0.70134	-0.08498	0.00000	-0.02372
44	-0.22485	0.30907	1.03135	-0.08437	0.00000	-0.02297
67	0.51574	0.17004	-0.21629	-0.08931	0.00000	-0.24898
80	-0.24476	0.07621	-0.11889	-0.03233	0.00000	-0.26094
SUM	0.00000	0.86800	0.00000	-0.29099	0.00000	-0.55662

Condition **LC40=1.2DL+WL0+1.6LLa1**

40	-0.02524	0.00063	-0.07460	0.00000	0.00000	0.00000
43	0.02075	0.50774	-1.18797	-0.12263	0.00000	0.01769
44	0.14012	0.46049	1.68785	-0.11281	0.00000	0.01699
67	-0.35029	0.19199	-0.23732	-0.14061	0.00000	0.18409
80	0.21466	0.10715	-0.13797	-0.09592	0.00000	0.19885
SUM	0.00000	1.26800	0.05000	-0.47197	0.00000	0.41762

Condition **LC41=1.2DL+WL30+1.6LLa1**

40	-0.03525	0.00091	-0.10433	0.00000	0.00000	0.00000
43	0.02383	0.50854	-1.18896	-0.12257	0.00000	0.01840
44	0.14710	0.46084	1.69428	-0.11266	0.00000	0.01767
67	-0.34652	0.18910	-0.23339	-0.14012	0.00000	0.19205
80	0.24053	0.10861	-0.13791	-0.09885	0.00000	0.20759
SUM	0.02970	1.26800	0.02970	-0.47422	0.00000	0.43571

Condition **LC42=1.2DL+WL60+1.6LLa1**

40	-0.02614	0.00066	-0.07730	0.00000	0.00000	0.00000
43	0.02188	0.50132	-1.17218	-0.12089	0.00000	0.01811
44	0.14450	0.45407	1.67014	-0.11106	0.00000	0.01739
67	-0.34869	0.19641	-0.24707	-0.13785	0.00000	0.18901
80	0.23038	0.11554	-0.15167	-0.09531	0.00000	0.20354
SUM	0.02192	1.26800	0.02192	-0.46511	0.00000	0.42805

Condition **LC43=1.2DL+WL90+1.6LLa1**

40	-0.01933	0.00049	-0.05712	0.00000	0.00000	0.00000
43	0.02092	0.49241	-1.15103	-0.11869	0.00000	0.01806
44	0.14459	0.44553	1.64018	-0.10893	0.00000	0.01735
67	-0.34930	0.20428	-0.26224	-0.13500	0.00000	0.18883
80	0.23012	0.12530	-0.16979	-0.09196	0.00000	0.20262
SUM	0.02700	1.26800	0.00000	-0.45458	0.00000	0.42686

Condition **LC44=1.2DL+WL120+1.6LLa1**

40	-0.00610	0.00015	-0.01800	0.00000	0.00000	0.00000
43	0.01837	0.47997	-1.12217	-0.11572	0.00000	0.01770
44	0.14169	0.43380	1.59707	-0.10609	0.00000	0.01701
67	-0.35129	0.21612	-0.28446	-0.13125	0.00000	0.18526
80	0.21926	0.13797	-0.19436	-0.08631	0.00000	0.19767
SUM	0.02192	1.26800	-0.02192	-0.43938	0.00000	0.41764

Condition **LC45=1.2DL+WL150+1.6LLa1**

40	-0.00677	0.00017	-0.01998	0.00000	0.00000	0.00000
43	0.01876	0.47805	-1.11697	-0.11520	0.00000	0.01783
44	0.14305	0.43189	1.59307	-0.10557	0.00000	0.01714
67	-0.35019	0.21739	-0.28742	-0.13032	0.00000	0.18689
80	0.22486	0.14050	-0.19839	-0.08627	0.00000	0.19920
SUM	0.02970	1.26800	-0.02970	-0.43736	0.00000	0.42106

Condition **LC46=1.2DL-WL0+1.6LLa1**

40	0.02071	-0.00048	0.06095	0.00000	0.00000	0.00000
43	0.01278	0.45844	-1.07326	-0.11070	0.00000	0.01677
44	0.13344	0.41368	1.52253	-0.10134	0.00000	0.01613
67	-0.35629	0.23759	-0.32456	-0.12463	0.00000	0.17581
80	0.18935	0.15878	-0.23565	-0.07578	0.00000	0.18534
SUM	0.00000	1.26800	-0.05000	-0.41245	0.00000	0.39406

Condition **LC47=1.2DL-WL30+1.6LLa1**

40	0.03087	-0.00069	0.09070	0.00000	0.00000	0.00000
43	0.00978	0.45760	-1.07219	-0.11074	0.00000	0.01606
44	0.12633	0.41329	1.51601	-0.10149	0.00000	0.01544
67	-0.36009	0.24048	-0.32850	-0.12510	0.00000	0.16785
80	0.16342	0.15732	-0.23572	-0.07279	0.00000	0.17659
SUM	-0.02970	1.26800	-0.02970	-0.41012	0.00000	0.37594

Condition **LC48=1.2DL-WL60+1.6LLa1**

40	0.02168	-0.00049	0.06375	0.00000	0.00000	0.00000
43	0.01164	0.46482	-1.08898	-0.11243	0.00000	0.01636
44	0.12904	0.42007	1.54015	-0.10309	0.00000	0.01573
67	-0.35788	0.23320	-0.31485	-0.12738	0.00000	0.17087
80	0.17360	0.15041	-0.22199	-0.07635	0.00000	0.18063
SUM	-0.02192	1.26800	-0.02192	-0.41925	0.00000	0.38358

Condition **LC49=1.2DL-WL90+1.6LLa1**

40	0.01485	-0.00034	0.04368	0.00000	0.00000	0.00000
43	0.01254	0.47372	-1.11011	-0.11463	0.00000	0.01640
44	0.12901	0.42860	1.57004	-0.10522	0.00000	0.01576
67	-0.35724	0.22535	-0.29971	-0.13023	0.00000	0.17104
80	0.17385	0.14067	-0.20390	-0.07969	0.00000	0.18153
SUM	-0.02700	1.26800	0.00000	-0.42978	0.00000	0.38472

Condition **LC50=1.2DL-WL120+1.6LLa1**

40	0.00156	-0.00004	0.00459	0.00000	0.00000	0.00000
43	0.01505	0.48617	-1.13898	-0.11759	0.00000	0.01676
44	0.13197	0.44034	1.61317	-0.10806	0.00000	0.01610
67	-0.35523	0.21352	-0.27751	-0.13399	0.00000	0.17461
80	0.18473	0.12801	-0.17935	-0.08535	0.00000	0.18647
SUM	-0.02192	1.26800	0.02192	-0.44500	0.00000	0.39394

Condition **LC51=1.2DL-WL150+1.6LLa1**

40	0.00224	-0.00005	0.00659	0.00000	0.00000	0.00000
43	0.01465	0.48808	-1.14418	-0.11812	0.00000	0.01663
44	0.13061	0.44224	1.61716	-0.10858	0.00000	0.01597
67	-0.35632	0.21226	-0.27456	-0.13492	0.00000	0.17297
80	0.17912	0.12547	-0.17532	-0.08539	0.00000	0.18494
SUM	-0.02970	1.26800	0.02970	-0.44701	0.00000	0.39051

Condition **LC52=1.2DL+WL0+1.6LLa2**

40	-0.02239	-0.00017	-0.06394	0.00000	0.00000	0.00000
43	-0.03204	0.51759	-1.23528	-0.13267	0.00000	-0.01006
44	-0.10340	0.49201	1.67043	-0.12766	0.00000	-0.00975
67	0.25045	0.19101	-0.24136	-0.11086	0.00000	-0.10667
80	-0.09262	0.06756	-0.07985	-0.06401	0.00000	-0.10930
SUM	0.00000	1.26800	0.05000	-0.43521	0.00000	-0.23578

Condition **LC53=1.2DL+WL30+1.6LLa2**

40	-0.03291	-0.00023	-0.09409	0.00000	0.00000	0.00000
43	-0.02891	0.51860	-1.23691	-0.13267	0.00000	-0.00934
44	-0.09609	0.49256	1.67757	-0.12756	0.00000	-0.00905
67	0.25406	0.18778	-0.23709	-0.11026	0.00000	-0.09855
80	-0.06645	0.06929	-0.07977	-0.06741	0.00000	-0.10038
SUM	0.02970	1.26800	0.02970	-0.43789	0.00000	-0.21731

Condition **LC54=1.2DL+WL60+1.6LLa2**

40	-0.02363	-0.00017	-0.06749	0.00000	0.00000	0.00000
43	-0.03059	0.51135	-1.22001	-0.13097	0.00000	-0.00962
44	-0.09904	0.48578	1.65343	-0.12595	0.00000	-0.00932
67	0.25187	0.19501	-0.25066	-0.10805	0.00000	-0.10154
80	-0.07669	0.07603	-0.09335	-0.06374	0.00000	-0.10441
SUM	0.02192	1.26800	0.02192	-0.42871	0.00000	-0.22489

Condition **LC55=1.2DL+WL90+1.6LLa2**

40	-0.01686	-0.00013	-0.04815	0.00000	0.00000	0.00000
43	-0.03118	0.50251	-1.19902	-0.12878	0.00000	-0.00964
44	-0.09926	0.47733	1.62388	-0.12382	0.00000	-0.00934
67	0.25116	0.20262	-0.26550	-0.10523	0.00000	-0.10156
80	-0.07686	0.08567	-0.11120	-0.06046	0.00000	-0.10520
SUM	0.02700	1.26800	0.00000	-0.41830	0.00000	-0.22574

Condition **LC56=1.2DL+WL120+1.6LLa2**

40	-0.00352	-0.00003	-0.01003	0.00000	0.00000	0.00000
43	-0.03324	0.49009	-1.17016	-0.12582	0.00000	-0.00998
44	-0.10268	0.46566	1.58103	-0.12099	0.00000	-0.00966
67	0.24907	0.21423	-0.28739	-0.10157	0.00000	-0.10495
80	-0.08772	0.09806	-0.13537	-0.05473	0.00000	-0.11001
SUM	0.02192	1.26800	-0.02192	-0.40311	0.00000	-0.23460

Condition **LC57=1.2DL+WL150+1.6LLa2**

40	-0.00430	-0.00003	-0.01226	0.00000	0.00000	0.00000
43	-0.03275	0.48823	-1.16512	-0.12531	0.00000	-0.00984
44	-0.10130	0.46381	1.57724	-0.12048	0.00000	-0.00953
67	0.25010	0.21538	-0.29021	-0.10063	0.00000	-0.10325
80	-0.08206	0.10062	-0.13934	-0.05480	0.00000	-0.10842
SUM	0.02970	1.26800	-0.02970	-0.40121	0.00000	-0.23104

Condition **LC58=1.2DL-WL0+1.6LLa2**

40	0.02372	0.00022	0.06745	0.00000	0.00000	0.00000
43	-0.03803	0.46849	-1.12093	-0.12076	0.00000	-0.01086
44	-0.11194	0.44553	1.50661	-0.11622	0.00000	-0.01052
67	0.24401	0.23547	-0.32710	-0.09518	0.00000	-0.11419
80	-0.11776	0.11829	-0.17603	-0.04385	0.00000	-0.12223
SUM	0.00000	1.26800	-0.05000	-0.37601	0.00000	-0.25780

Condition **LC59=1.2DL-WL30+1.6LLa2**

40	0.03438	0.00034	0.09761	0.00000	0.00000	0.00000
43	-0.04108	0.46745	-1.11921	-0.12076	0.00000	-0.01159
44	-0.11938	0.44495	1.49938	-0.11632	0.00000	-0.01122
67	0.24036	0.23870	-0.33138	-0.09576	0.00000	-0.12232
80	-0.14398	0.11656	-0.17610	-0.04041	0.00000	-0.13117
SUM	-0.02970	1.26800	-0.02970	-0.37325	0.00000	-0.27629

Condition **LC60=1.2DL-WL60+1.6LLa2**

40	0.02502	0.00024	0.07109	0.00000	0.00000	0.00000
43	-0.03948	0.47470	-1.13612	-0.12246	0.00000	-0.01130
44	-0.11632	0.45174	1.52350	-0.11793	0.00000	-0.01095
67	0.24259	0.23149	-0.31783	-0.09798	0.00000	-0.11934
80	-0.13373	0.10984	-0.16256	-0.04409	0.00000	-0.12715
SUM	-0.02192	1.26800	-0.02192	-0.38246	0.00000	-0.26874

Condition **LC61=1.2DL-WL90+1.6LLa2**

40	0.01824	0.00017	0.05185	0.00000	0.00000	0.00000
43	-0.03895	0.48353	-1.15708	-0.12465	0.00000	-0.01129
44	-0.11606	0.46018	1.55301	-0.12005	0.00000	-0.01093
67	0.24333	0.22391	-0.30303	-0.10080	0.00000	-0.11934
80	-0.13356	0.10021	-0.14474	-0.04736	0.00000	-0.12638
SUM	-0.02700	1.26800	0.00000	-0.39286	0.00000	-0.26793

Condition **LC62=1.2DL-WL120+1.6LLa2**

40	0.00484	0.00004	0.01377	0.00000	0.00000	0.00000
43	-0.03694	0.49596	-1.18597	-0.12762	0.00000	-0.01096
44	-0.11257	0.47186	1.59586	-0.12288	0.00000	-0.01061
67	0.24544	0.21231	-0.28116	-0.10447	0.00000	-0.11595
80	-0.12269	0.08783	-0.12058	-0.05310	0.00000	-0.12156
SUM	-0.02192	1.26800	0.02192	-0.40807	0.00000	-0.25907

Condition **LC63=1.2DL-WL150+1.6LLa2**

40	0.00563	0.00005	0.01602	0.00000	0.00000	0.00000
43	-0.03744	0.49781	-1.19100	-0.12813	0.00000	-0.01110
44	-0.11395	0.47371	1.59964	-0.12340	0.00000	-0.01074
67	0.24442	0.21117	-0.27835	-0.10541	0.00000	-0.11765
80	-0.12835	0.08526	-0.11662	-0.05303	0.00000	-0.12316
SUM	-0.02970	1.26800	0.02970	-0.40996	0.00000	-0.26265

Condition **LC64=1.2DL+WL0+1.6LLa3**

40	-0.01893	-0.00059	-0.05267	0.00000	0.00000	0.00000
43	-0.07482	0.47641	-1.04555	-0.12908	0.00000	-0.03525
44	-0.32537	0.46801	1.56470	-0.12787	0.00000	-0.03399
67	0.79372	0.25142	-0.31249	-0.13554	0.00000	-0.36895
80	-0.37460	0.07274	-0.10399	-0.05919	0.00000	-0.38725
SUM	0.00000	1.26800	0.05000	-0.45168	0.00000	-0.82543

Condition **LC65=1.2DL+WL30+1.6LLa3**

40	-0.02990	-0.00091	-0.08331	0.00000	0.00000	0.00000
43	-0.07176	0.47762	-1.04775	-0.12912	0.00000	-0.03450
44	-0.31768	0.46874	1.57249	-0.12780	0.00000	-0.03327
67	0.79723	0.24784	-0.30786	-0.13482	0.00000	-0.36062
80	-0.34819	0.07472	-0.10386	-0.06302	0.00000	-0.37810
SUM	0.02970	1.26800	0.02970	-0.45476	0.00000	-0.80649

Condition **LC66=1.2DL+WL60+1.6LLa3**

40	-0.02047	-0.00063	-0.05697	0.00000	0.00000	0.00000
43	-0.07317	0.47033	-1.03075	-0.12741	0.00000	-0.03478
44	-0.32097	0.46193	1.54834	-0.12618	0.00000	-0.03354
67	0.79499	0.25503	-0.32136	-0.13268	0.00000	-0.36362
80	-0.35846	0.08134	-0.11734	-0.05924	0.00000	-0.38217
SUM	0.02192	1.26800	0.02192	-0.44551	0.00000	-0.81412

Condition **LC67=1.2DL+WL90+1.6LLa3**

40	-0.01376	-0.00042	-0.03827	0.00000	0.00000	0.00000
43	-0.07342	0.46153	-1.00991	-0.12523	0.00000	-0.03478
44	-0.32145	0.45353	1.51911	-0.12406	0.00000	-0.03355
67	0.79416	0.26242	-0.33592	-0.12989	0.00000	-0.36354
80	-0.35853	0.09094	-0.13502	-0.05604	0.00000	-0.38288
SUM	0.02700	1.26800	0.00000	-0.43522	0.00000	-0.81476

Condition **LC68=1.2DL+WL120+1.6LLa3**

40	-0.00030	-0.00001	-0.00084	0.00000	0.00000	0.00000
43	-0.07500	0.44910	-0.98104	-0.12225	0.00000	-0.03510
44	-0.32537	0.44188	1.47647	-0.12122	0.00000	-0.03386
67	0.79192	0.27386	-0.35755	-0.12632	0.00000	-0.36686
80	-0.36932	0.10316	-0.15896	-0.05025	0.00000	-0.38766
SUM	0.02192	1.26800	-0.02192	-0.42004	0.00000	-0.82348

Condition **LC69=1.2DL+WL150+1.6LLa3**

40	-0.00118	-0.00004	-0.00328	0.00000	0.00000	0.00000
43	-0.07445	0.44729	-0.97614	-0.12175	0.00000	-0.03495
44	-0.32395	0.44006	1.47285	-0.12072	0.00000	-0.03372
67	0.79289	0.27490	-0.36023	-0.12536	0.00000	-0.36510
80	-0.36361	0.10578	-0.16290	-0.05042	0.00000	-0.38601
SUM	0.02970	1.26800	-0.02970	-0.41825	0.00000	-0.81978

Condition **LC70=1.2DL-WL0+1.6LLa3**

40	0.02733	0.00088	0.07573	0.00000	0.00000	0.00000
43	-0.07895	0.42741	-0.93154	-0.11716	0.00000	-0.03596
44	-0.33564	0.42169	1.40208	-0.11642	0.00000	-0.03471
67	0.78665	0.29500	-0.39700	-0.12013	0.00000	-0.37609
80	-0.39939	0.12302	-0.19928	-0.03906	0.00000	-0.39994
SUM	0.00000	1.26800	-0.05000	-0.39278	0.00000	-0.84671

Condition **LC71=1.2DL-WL30+1.6LLa3**

40	0.03845	0.00127	0.10638	0.00000	0.00000	0.00000
43	-0.08193	0.42617	-0.92925	-0.11711	0.00000	-0.03671
44	-0.34347	0.42094	1.39422	-0.11648	0.00000	-0.03543
67	0.78310	0.29858	-0.40164	-0.12084	0.00000	-0.38442
80	-0.42585	0.12104	-0.19941	-0.03519	0.00000	-0.40911
SUM	-0.02970	1.26800	-0.02970	-0.38963	0.00000	-0.86567

Condition **LC72=1.2DL-WL60+1.6LLa3**

40	0.02893	0.00095	0.08012	0.00000	0.00000	0.00000
43	-0.08061	0.43346	-0.94627	-0.11882	0.00000	-0.03643
44	-0.34007	0.42775	1.41835	-0.11810	0.00000	-0.03516
67	0.78539	0.29141	-0.38816	-0.12299	0.00000	-0.38143
80	-0.41556	0.11444	-0.18595	-0.03899	0.00000	-0.40505
SUM	-0.02192	1.26800	-0.02192	-0.39891	0.00000	-0.85806

Condition **LC73=1.2DL-WL90+1.6LLa3**

40	0.02221	0.00073	0.06152	0.00000	0.00000	0.00000
43	-0.08041	0.44224	-0.96708	-0.12101	0.00000	-0.03643
44	-0.33954	0.43614	1.44752	-0.12022	0.00000	-0.03515
67	0.78624	0.28404	-0.37365	-0.12578	0.00000	-0.38153
80	-0.41550	0.10485	-0.16831	-0.04217	0.00000	-0.40436
SUM	-0.02700	1.26800	0.00000	-0.40919	0.00000	-0.85747

Condition **LC74=1.2DL-WL120+1.6LLa3**

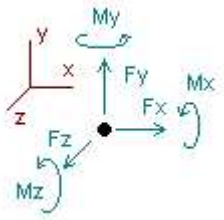
40	0.00870	0.00028	0.02412	0.00000	0.00000	0.00000
43	-0.07888	0.45467	-0.99597	-0.12399	0.00000	-0.03612
44	-0.33556	0.44780	1.49017	-0.12306	0.00000	-0.03484
67	0.78851	0.27261	-0.35203	-0.12936	0.00000	-0.37821
80	-0.40469	0.09263	-0.14438	-0.04798	0.00000	-0.39958
SUM	-0.02192	1.26800	0.02192	-0.42438	0.00000	-0.84875

Condition **LC75=1.2DL-WL150+1.6LLa3**

40	0.00959	0.00031	0.02659	0.00000	0.00000	0.00000
43	-0.07944	0.45648	-1.00086	-0.12449	0.00000	-0.03627
44	-0.33698	0.44961	1.49377	-0.12356	0.00000	-0.03498
67	0.78754	0.27158	-0.34935	-0.13031	0.00000	-0.37998
80	-0.41041	0.09001	-0.14045	-0.04780	0.00000	-0.40124
SUM	-0.02970	1.26800	0.02970	-0.42616	0.00000	-0.85247

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2DL+Wo
LC2=1.2DL+W30
LC3=1.2DL+W60
LC4=1.2DL+W90
LC5=1.2DL+W120
LC6=1.2DL+W150
LC7=1.2DL-Wo
LC8=1.2DL-W30
LC9=1.2DL-W60
LC10=1.2DL-W90
LC11=1.2DL-W120
LC12=1.2DL-W150
LC13=0.9DL+Wo
LC14=0.9DL+W30
LC15=0.9DL+W60
LC16=0.9DL+W90
LC17=0.9DL+W120
LC18=0.9DL+W150
LC19=0.9DL-Wo
LC20=0.9DL-W30
LC21=0.9DL-W60
LC22=0.9DL-W90
LC23=0.9DL-W120
LC24=0.9DL-W150
LC25=1.2DL+Di+WI0
LC26=1.2DL+Di+WI30
LC27=1.2DL+Di+WI60
LC28=1.2DL+Di+WI90
LC29=1.2DL+Di+WI120
LC30=1.2DL+Di+WI150
LC31=1.2DL+Di-WI0
LC32=1.2DL+Di-WI30
LC33=1.2DL+Di-WI60
LC34=1.2DL+Di-WI90
LC35=1.2DL+Di-WI120
LC36=1.2DL+Di-WI150
LC37=1.2DL+1.6LL1
LC38=1.2DL+1.6LL2
LC39=1.2DL+1.6LL3
LC40=1.2DL+WL0+1.6LLa1
LC41=1.2DL+WL30+1.6LLa1
LC42=1.2DL+WL60+1.6LLa1
LC43=1.2DL+WL90+1.6LLa1
LC44=1.2DL+WL120+1.6LLa1
LC45=1.2DL+WL150+1.6LLa1
LC46=1.2DL-WL0+1.6LLa1
LC47=1.2DL-WL30+1.6LLa1
LC48=1.2DL-WL60+1.6LLa1
LC49=1.2DL-WL90+1.6LLa1
LC50=1.2DL-WL120+1.6LLa1
LC51=1.2DL-WL150+1.6LLa1

LC52=1.2DL+WL0+1.6LLa2
LC53=1.2DL+WL30+1.6LLa2
LC54=1.2DL+WL60+1.6LLa2
LC55=1.2DL+WL90+1.6LLa2
LC56=1.2DL+WL120+1.6LLa2
LC57=1.2DL+WL150+1.6LLa2
LC58=1.2DL-WL0+1.6LLa2
LC59=1.2DL-WL30+1.6LLa2
LC60=1.2DL-WL60+1.6LLa2
LC61=1.2DL-WL90+1.6LLa2
LC62=1.2DL-WL120+1.6LLa2
LC63=1.2DL-WL150+1.6LLa2
LC64=1.2DL+WL0+1.6LLa3
LC65=1.2DL+WL30+1.6LLa3
LC66=1.2DL+WL60+1.6LLa3
LC67=1.2DL+WL90+1.6LLa3
LC68=1.2DL+WL120+1.6LLa3
LC69=1.2DL+WL150+1.6LLa3
LC70=1.2DL-WL0+1.6LLa3
LC71=1.2DL-WL30+1.6LLa3
LC72=1.2DL-WL60+1.6LLa3
LC73=1.2DL-WL90+1.6LLa3
LC74=1.2DL-WL120+1.6LLa3
LC75=1.2DL-WL150+1.6LLa3

		Forces						Moments					
Node		**Fx** [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
40	Max	0.712	LC9	0.030	LC9	1.933	LC21	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.629	LC3	-0.001	LC65	-2.008	LC15	0.00000	LC1	0.00000	LC1	0.00000	LC1
43	Max	0.169	LC15	0.771	LC26	0.066	LC10	0.04696	LC19	0.00000	LC1	0.02169	LC15
	Min	-0.158	LC9	-0.173	LC21	-1.675	LC26	-0.19768	LC26	0.00000	LC1	-0.03671	LC71
44	Max	0.234	LC16	0.734	LC26	2.425	LC26	0.04452	LC19	0.00000	LC1	0.01967	LC15
	Min	-0.483	LC9	-0.140	LC19	-0.934	LC21	-0.19128	LC26	0.00000	LC1	-0.03543	LC71
67	Max	0.797	LC65	0.455	LC32	0.778	LC15	0.24507	LC19	0.00000	LC1	0.21238	LC15
	Min	-0.360	LC47	-0.415	LC15	-0.772	LC9	-0.24187	LC25	0.00000	LC1	-0.38442	LC71
80	Max	0.918	LC15	0.388	LC7	0.918	LC13	0.31891	LC21	0.00000	LC1	0.27802	LC15
	Min	-1.106	LC9	-0.457	LC13	-0.819	LC7	-0.27716	LC3	0.00000	LC1	-0.45525	LC9

Connection Check

Date: 3/1/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: CL **Checked By:** MSC

CHECK CONNECTION CAPACITY (Worst Case) → EXISTING STANDOFF CONNECTION

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A325 3/8" Threaded Rod

Allowable Tensile Load =

F_{Tall} = 4970 lbs.

Allowable Shear Load =

F_{Vall} = 2982 lbs.

TENSILE FORCES

Reaction **F =** 734 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 483 lbs. (See Bentley Output)
Reactions in Z direction: 2425 lbs. (See Bentley Output)

Resultant: 2473 lbs.

No. of Supports = 1
No. of Bolts / Support = 2

Tension Design Load /Bolts =

f_t = 367.00 lbs. < 4970 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v = 1236.32 lbs. < 2982 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.074	+	0.415	=	0.488	<	1.0	**Therefore, OK !**

Date: 3/1/2023
Project Name: WEST HARTFORD BISHOPS CORNER
Project No.: CT1195
Designed By: CL **Checked By:** MSC

CHECK CONNECTION CAPACITY (Worst Case) → PROPOSED LIFT KIT CONNECTION

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A36 1/2" Threaded Rod

Allowable Tensile Load =

F_{Tall} = 4271 lbs.

Allowable Shear Load =

F_{Vall} = 2562 lbs.

TENSILE FORCES

Reaction **F =** 918 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 1106 lbs. (See Bentley Output)
Reactions in Y direction: 457 lbs. (See Bentley Output)

Resultant: 1197 lbs.

No. of Supports = 1
No. of Bolts / Support = 4

Tension Design Load /Bolts =

f_t = 229.50 lbs. < 4271 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v = 299.17 lbs. < 2562 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.054	+	0.117	=	0.170	<	1.0	**Therefore, OK !**

2523 ALBANY AVENUE

Location	2523 ALBANY AVENUE	**Mblu**	E4/ 0031/ 2523/ /
Parcel ID	0031 1 2523 0001	**Owner**	BISHOPS CORNER SC LLC
Assessment	$21,065,100	**Appraisal**	$30,093,000
Vision Id #	267	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$25,012,700	$5,080,300	$30,093,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$17,508,890	$3,556,210	$21,065,100

Owner of Record

Owner	BISHOPS CORNER SC LLC	**Sale Price**	$37,240,000
Co-Owner	BISHOPS CORNER SC TIC 1 LLC ET AL	**Book & Page**	5281/414
Address	151 BODMAN PLACE SUITE 201 RED BANK, NJ 07701	**Sale Date**	12/01/2022
		Instrument	25

Ownership History

Ownership History				
Owner	**Sale Price**	**Book & Page**	**Instrument**	**Sale Date**
BISHOPS CORNER SC LLC	$37,240,000	5281/414	25	12/01/2022
BISHOP'S CORNER (E+A) LLC	$24,947,021	3948/0030	Q	06/01/2006
SUMMIT GREEN LLC	$11,200,000	3575/0056	03	08/06/2004
BISHOPS CORNER WEST LLC	$0	2516/0153	U	12/21/1999
BISHOPS CORNER ASSOCIATES LTD PARTNERSH	$1	1470/0317	U	12/22/1989

Building Information

Building 1 : Section 1

Year Built:	1954
Living Area:	132,471

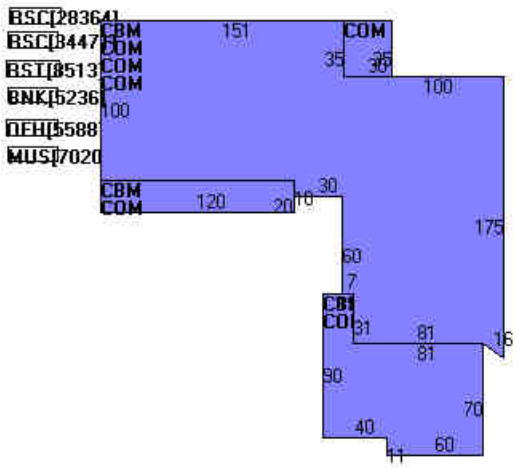
Replacement Cost: $36,243,706
Building Percent Good: 67
Replacement Cost Less Depreciation: $24,283,300

Building Attributes	
Field	**Description**
Style:	Multi Use Office
Model	Comm/Ind
Grade	B 1.20
Stories:	3
Occupancy	
Exterior Wall 1	Brick
Exterior Wall 2	Stucco
Roof Structure	Flat
Roof Cover	Comp - Roll
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Concrete Slab
Floor Cover	None
Heating Fuel	Typical
Heating Type	Complete HVAC
AC Type	Complete HVAC
As Built Use	
Bldg Use	Commercial
Num of Bedrooms	
Total Baths	
Type	
Wet Sprinkler	100
Dry Sprinkler	
1st Floor Use:	
Class	Class B
Frame Type	Masonry
Plumbing	AVERAGE
Ceiling	Not Applicable
Group1	OFF
Wall Height	10.00
Adjustment	

Building Photo

(https://images.vgsi.com/photos/WestHartfordCTPhotos//\00\02\21\66.jpg)

Building Layout



(https://images.vgsi.com/photos/WestHartfordCTPhotos//Sketches/267_26

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
RSC	REGIONAL SHOP CENTER	62,835	62,835
OFH	HIGH RISE OFFICE BLDG	55,887	55,887
RST	RESTAURANT	8,513	8,513
BNK	BRNCH BNK W DRV IN	5,236	5,236
CBM	BSMT COMM - NV	41,492	0
COM	COMMERCIAL - NV	106,427	0
MUS	MULTI USE STORAGE	7,020	0
		287,410	132,471

Building 2 : Section 1

Year Built: 1954
Living Area: 130
Replacement Cost: $45,946
Building Percent Good: 57

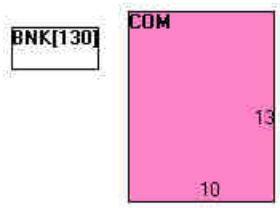
Replacement Cost
Less Depreciation: $26,200

Building Attributes : Bldg 2 of 2	
Field	**Description**
Style:	Multi Use Retail
Model	Comm/Ind
Grade	B 1.00
Stories:	3
Occupancy	
Exterior Wall 1	Concrete Block
Exterior Wall 2	Brick Veneer
Roof Structure	Flat
Roof Cover	Built Up
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Wood
Floor Cover	Tile
Heating Fuel	Typical
Heating Type	Hot Water
AC Type	Complete HVAC
As Built Use	MLTR
Bldg Use	Commercial
Num of Bedrooms	
Total Baths	
Type	
Wet Sprinkler	100
Dry Sprinkler	
1st Floor Use:	
Class	Class B
Frame Type	Rigid Steel
Plumbing	AVERAGE
Ceiling	Acoustic Tile
Group1	COM
Wall Height	12.00
Adjustment	

Building Photo

(https://images.vgsi.com/photos/WestHartfordCTPhotos//\00\02\21\67.jpg)

Building Layout



(https://images.vgsi.com/photos/WestHartfordCTPhotos//Sketches/267_30

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BNK	BRNCH BNK W DRV IN	130	130
COM	COMMERCIAL - NV	130	0
		260	130

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	201
Description	Commercial
Zone	BS
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	6.34
Frontage	
Depth	
Assessed Value	$3,556,210
Appraised Value	$5,080,300

Outbuildings

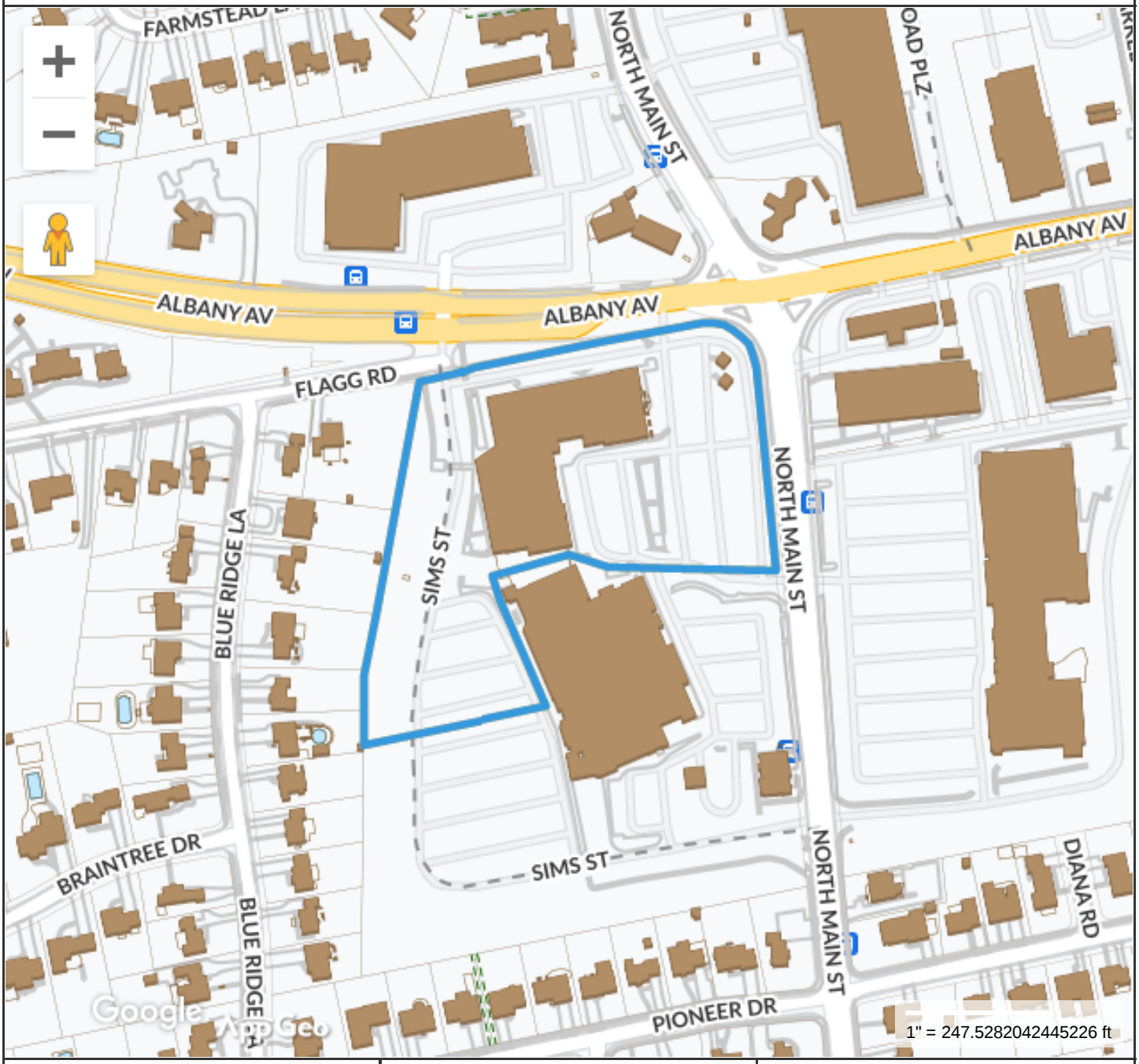
Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CLP4	Paving, Asphalt			150000.00 SF	$701,300	1
CCP6	Canopy-roof & slab			65.00 SF	$1,900	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$25,012,700	$5,080,300	$30,093,000
2021	$25,012,700	$5,080,300	$30,093,000
2020	$21,582,300	$4,417,700	$26,000,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$17,508,890	$3,556,210	$21,065,100
2021	$17,508,890	$3,556,210	$21,065,100
2020	$15,107,610	$3,092,390	$18,200,000

2523 Albany Ave Tax Map



Property Information

Property ID	0031 1 2523 0001
Location	2523 ALBANY AVENUE
Owner	BISHOPS CORNER SC LLC

WEST HARTFORD

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of West Hartford, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 12/23/2021
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

DEPARTMENT OF
COMMUNITY SERVICES

REVISED

June 12, 1997

Julie Reach
Sprint PCS
9 Barnes Road North
Wallingford, CT 06492

Subject: 345 North Main Street

Dear Ms. Reach:

Donald R. Foster, Town Planner, has approved the site plan application for the construction of a roof-top telecommunications facility at the subject property. Approval is for a 50' guy tower and associated equipment as indicated on the site plan submission set entitled "Sprint PCS, Lucent Technologies/Bechtel Alliance" (rev. date: May 9, 1997.)

Please submit to the Planning Office three (3) blueprint copies and one (1) mylar of the entire plan set as soon as possible.

If you have questions or comments, please call me at 523-3123.

Very truly yours,

Mila Limson
Senior Planner

c: Donald R. Foster, Town Planner

345NorthMain

APPLICATION FOR BUILDING/ZONING PERMIT

FINAL INSPECTIONS:
Building 1/13/97 COMPLETED
Plumbing
HVAC
Electri
Fire
Affid
Approved

2523 ALBANY AVENUE
ADDRESS

LOT NO
2C505
PERMIT #

AICA
345 N. Main St.

DATE: 06/12/97

Est Cost :$ ~~150,000~~ 125,000
Permit Fee :$ 1890
Occupancy Fee :$ 0
Additional Fee:$ 0

Revised Plans Rec'd:
T.C.O. Issue Date :

Approved:
Initials:

PROPERTY OWNER
LTD PARTNERSHIP ET AL BIS
2410 ALBANY AVENUE
WEST HARTFORD, CT 06117
TEL:
FAX:

BUILDER
SNET
MICHELE CARLO
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067
LIC #:
EXPIR: / /
TEL:513-7700
FAX:513-7190

Zone Use Group Construction Type

Purpose of this Permit:
ERECTING A OPERATION OF ROOF TOP COMMUNICATION FACILITY PER PLANS SUBMITTED

OK. DMF 6/13

TO THE BUILDING DEPARTMENT, TOWN OF WEST HARTFORD,CT: I, the undersigned hereby agree to conform to all the requirements of the Laws of the State of Connecticut and the Ordinances of the Town of West Hartford and to notify the Building Inspector of any alteration in the plans or specifications of the building for which this permit is asked, and agree that this building is to be located the proper distance from all street lines, side yard lines, rear yard lines, and required distances from all other zones and is located in a zone in which this building and its use is allowed.

Signed: Michele Carlo Property Owner Authorized Agent

By placing my signature below I am hereby certifying my compliance with Public Act 95-277 concerning Workman's Compensation Insurance Coverage.

Signed: Michele Carlo

PLANS REVIEWED BY DATE 6/13/97
ZONING REVIEWED BY DMF DATE 6/13
APPROVED BY DATE

PLUMBING PERMIT NO.
HEATING PERMIT NO.
ELECTRICAL PERMIT NO. 19615
FIRE PROTECTION PERMIT NO.

SEPTIC
SEWER

Sprint

Sprint PCS™

Engineering & Operations
9 Barnes Industrial Road
Wallingford, Connecticut 06492

Telephone: 203 294 5600
Fax: 203 294 5647

May 29, 1997

Town of West Hartford
Bureau of Building Inspections
50 South Main St.
West Hartford, CT 06107

RE: **ANTENNA INSTALLATION:** **Bishops Corner, 2523 Albany Ave.**
Sprint PCS Site #: **#03-074 West Hartford**

Dear Mr. Haight:

On behalf of Sprint Spectrum L.P., we are pleased to submit the following information pertaining to the Building Permit for an antenna installation at **2523 Albany Ave. , West Hartford, Connecticut**. Enclosed please find the following items relative to this application.

1. Completed application for a building permit in the Town of **West Hartford**.
2. Three (3) copies of the construction plans/details and specifications for the proposed improvement.
3. Letter of Authorization.
4. Permit fee with the amount to be determined at application.

We request that our office be informed of the Building Permit fee when it is determined; and that the executed be returned to our office.

If you have any questions or require any additional information, please contact me at (203) 294-5609.

Very truly yours,

Mike Evanchick
Construction Manager

Enclosures

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

November 9, 2012

Peter LaMontagne
New Cingular Wireless PCS, LLC
95 Ryan Drive, Suite #1
Raynham, MA 02767

RE: **EM-CING-155-121022** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 345 North Main Street, West Hartford, Connecticut.

Dear Mr. LaMontagne:

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

- Prior to antenna installation, the building reinforcements identified in the Structural Analysis Report prepared by Hudson Design Group dated September 18, 2012, and stamped by Daniel Hamm shall be implemented; and
- Not more than 45 days following completion of the antenna installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the tower and building do not exceed 100 percent of the post-construction structural rating.
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated October 19, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General

Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

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

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable Scott Slifka, Mayor, Town of West Hartford
Ronald VanWinkle, Town Manager, Town of West Hartford
Milagros Limsom, Town Planner, Town of West Hartford

February 15, 2023

AT&T Site ID: CT1195
Vertical Bridge Site ID: US-CT-5020

Site Address: 345 North Main Street, West Hartford, CT

RE: Application for Permitting in the Town of West Hartford, County of Hartford CT.

To Whom It May Concern:

This letter authorizes SAI Group, its employees, or agents, to file for all necessary administrative approvals and building permits (local, state and federal) for the purposes of upgrading, installing, operating and maintaining a telecommunications facility at the site/property referenced above on behalf of AT&T. This letter shall not authorize SAI Group, its employees, or agents, to file, seek or otherwise pursue any zoning changes.

Subject to the foregoing limitation, all fees or charges associated with any applications or permits, and any conditions placed on the Applicant shall be the responsibility of AT&T, its subsidiaries and/or agents.

Signature: DocuSigned by: Kurt Padavano 3127FE859F45425...

Print Name: Kurt Padavano – Authorized Signatory

By: FNRP Realty Advisors LLC, a Delaware limited liabliity company and appointed Asset Manager of BISHOPS CORNER SC LLC, BISHOPS CORNER SC TIC 1 LLC, BISHOPS CORNER SC TIC 2 LLC, BISHOPS CORNER SC TIC 3 LLC, BISHOPS CORNER SC TIC 4 LLC, BISHOPS CORNER SC TIC 6 LLC AND BISHOPS CORNER SC TIC 7 LLC, each a Delaware limited liability company as tenants-in-common

Phone No.: 800-605-4966

Date: 2/15/2023

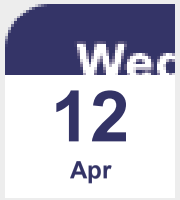
From: auto-reply@usps.com
Sent: Tuesday, April 11, 2023 12:52 PM
To: Hollis Redding
Subject: USPS® Expected Delivery by Wednesday, April 12, 2023 arriving by 9:00pm 9405503699300521152133

Hello **HOLLIS M REDDING**,

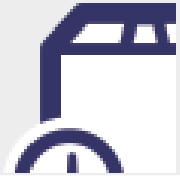
USPS is now in possession of your item as of 12:23 pm on April 11, 2023 in MERIDEN, CT 06450.

Tracking Number: **9405503699300521152133**

Expected Delivery By



By 9:00pm



Hollis Redding

Tower Owner Copy

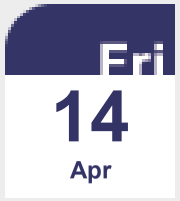
From: auto-reply@usps.com
Sent: Tuesday, April 11, 2023 12:52 PM
To: Hollis Redding
Subject: USPS® Expected Delivery by Friday, April 14, 2023 arriving by 9:00pm 9405503699300521152119

Hello **HOLLIS M REDDING**,

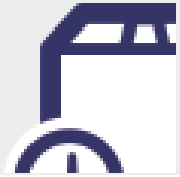
USPS is now in possession of your item as of 12:23 pm on April 11, 2023 in MERIDEN, CT 06450.

Tracking Number: **9405503699300521152119**

Expected Delivery By



By 9:00pm



USPS Tracking®

Property Owner Copy

FAQs >

Remove ×

Tracking Number:

9405503699300521152102

Copy **Add to Informed Delivery (https://informeddelivery.usps.com/)**

Expected Delivery by

THURSDAY

13 April 2023 ⓘ

by

9:00pm ⓘ

USPS is now in possession of your item as of 12:23 pm on April 11, 2023 in MERIDEN, CT 06450.

Get More Out of USPS Tracking:

USPS Tracking Plus®

Delivered

Out for Delivery

Preparing for Delivery

In Transit

Accepted

USPS in possession of item

MERIDEN, CT 06450
April 11, 2023, 12:23 pm

Pre-Shipment Info Sent to USPS, USPS Awaiting Item

April 11, 2023

Feedback

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

P

usps.com
$9.95
US POSTAGE
Legal Flat Rt Env

9405 5036 9930 0521 1521 26 0099 5000 0020 6051

U.S. POSTAGE PAID
Click-N-Ship®

04/11/2023 Mailed from 03079 986760375695858

PRIORITY MAIL®

HOLLIS M REDDING
SAI GROUP
12 INDUSTRIAL WAY
SALEM NH 03079-2837

Expected Delivery Date: 04/13/23

0000

C006

MELANIE BACHMAN EXECUTIVE DIRECTOR
CT SITING COUNCIL
10 FRANKLIN SQ
NEW BRITAIN CT 06051-2655

USPS TRACKING #

9405 5036 9930 0521 1521 26

Electronic Rate Approved #038555749

Cut on dotted line.

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

P

usps.com
$9.95
US POSTAGE
Legal Flat Rt Env

9405 5036 9930 0521 1521 33 0099 5000 0020 6107

U.S. POSTAGE PAID
Click-N-Ship®

04/11/2023 Mailed from 03079 986760375693979

PRIORITY MAIL®

HOLLIS M REDDING
SAI GROUP
12 INDUSTRIAL WAY
SALEM NH 03079-2837

Expected Delivery Date: 04/13/23
Ref#: CT1195

0000

C024

SHARI CANTOR, MAYOR TODD DUMAS, TOWN
WEST HARTFORD TOWN HALL
50 S MAIN ST
WEST HARTFORD CT 06107-2485

USPS TRACKING #

9405 5036 9930 0521 1521 33

Electronic Rate Approved #038555749

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

P

usps.com
$9.65
US POSTAGE
Flat Rate Env

9405 5036 9930 0521 1521 02 0096 5000 0030 7701

U.S. POSTAGE PAID
Click-N-Ship®

04/11/2023 Mailed from 03079 986760375699164

PRIORITY MAIL®

HOLLIS M REDDING
SAI GROUP
12 INDUSTRIAL WAY
SALEM NH 03079-2837

Expected Delivery Date: 04/13/23
Ref#: CT1196
0000

C002

BISHOPS CORNER SC LLC
BISHOPS CORNER SC TIC LLC ET AL
STE 201
151 BODMAN PL
RED BANK NJ 07701-1064

USPS TRACKING #

9405 5036 9930 0521 1521 02

Electronic Rate Approved #038555749

Cut on dotted line.

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

P

usps.com
$9.65
US POSTAGE
Flat Rate Env

9405 5036 9930 0521 1521 19 0096 5000 0063 3487

U.S. POSTAGE PAID
Click-N-Ship®

04/11/2023 Mailed from 03079 986760375698502

PRIORITY MAIL®

HOLLIS M REDDING
SAI GROUP
12 INDUSTRIAL WAY
SALEM NH 03079-2837

Expected Delivery Date: 04/14/23
Ref#: CT1195
0000

C057

ASHLEY N COX, ASSET MANAGER
VERITCAL BRIDGE REIT LLC
STE 200
750 PARK OF COMMERCE DR
BOCA RATON FL 33487-3650

USPS TRACKING #

9405 5036 9930 0521 1521 19

Electronic Rate Approved #038555749