April 8, 2022

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 CT1030
435 Mill Street, Southington, CT 06489 (the "Property")
Latitude: 41.604591 N Longitude: 72.894336 W

Dear Ms. Bachman:

AT&T currently maintains (9) antennas at the 98' level on the existing 120' lattice tower ("Tower") at 435 Mill Street, Southington, CT. The Tower and property are owned by the Town of Southington. ("Town"). The Tower is operated by the Southington Water Department. AT&T intends to modify its facility by removing (3) antennas and adding (3) AIR6449 B77 at the 96' level & (3) AIR6419 B77G antennas at the 99'8" level of the tower. The AIR6649 B77 & AIR6419 B77G antennas are stacked one on top of the other. The height of AT&Ts existing antennas is 98'and proposed antennas is 96', 98' & 99'8" on the Tower.

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 Southington site plan & special permit approval on August 21, 2018. AT&T received CT Siting Council approval under TS-CING-131-200326 on April 23, 2020. There were no conditions that could be feasibility be violated by this modification, including total facility height and mounting restrictions. The AT&T modification complies with the above-mentioned approvals.

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 the Mr. Mark J. Sciota, Town Manager as tower & property owner, Town of Southington, Ms. Maryellen Edwards, Director of Planning & Community Development, Town of Southington and Mr. Doug Arndt, Superintendent, Southington Water Company.

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

4. The operation of the 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 and foundation can support the proposed loading.

For the foregoing reasons, AT&T respectfully submits the proposed 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:
Mr. Mark J. Sciota, Town Manager, Town of Southington, chief elected official, tower & property owner
Ms. Maryellen Edwards, Director of Planning & Community Development, Town of Southington
Mr. Doug Arndt, Superintendent, Southington Water Company

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

Calculated Radio Frequency Exposure

CT1030

435 Mill Street, Southington, CT

March 28, 2022

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List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of the AT&T antenna arrays on an existing tower located at 435 Mill Street in Southington CT. The coordinates of the existing tower are 41° 36' 16.43" N, 72° 53' 39.61" W.

AT&T is proposing the following:

1) Install twelve (12) multi-band antennas (four (4) per sector) to support its commercial wireless network and the FirstNet National Public Safety Broadband Network ("NPSBN").

This report considers the planned antenna configuration for AT&T[1] to derive the resulting % Maximum Permissible Exposure of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

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

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

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

[1] As referenced to AT&T's Radio Frequency Design Sheet dated 01/17/2022.

3. RF Exposure Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65, and Connecticut Siting Council recommendations:

$$\text{Power Density} = \left(\frac{1.6^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2}\right) \text{X Off Beam Loss}$$

Where:

ERP = Effective Radiated Power

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

H = Horizontal Distance from antenna

V = Vertical Distance from radiation center of antenna

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

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

4. Calculation Results

Table 1 below outlines the cumulative power density information for the AT&T modification on the existing tower at the site. The proposed antennas are directional in nature; therefore, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	% MPE
Verizon	88	746	1	2814	0.1505	0.4973	3.03%
Verizon	88	2110	1	6750	0.3610	1.0000	3.61%
Verizon	88	1970	1	6299	0.3369	1.0000	3.37%
Verizon	88	869	1	2946	0.1576	0.5793	2.72%
Verizon	88	3660	1	377	0.0202	1.0000	0.20%
T-Mobile	110	600	2	591.73	0.0393	0.4000	0.98%
T-Mobile	110	600	1	1578	0.0525	0.4000	1.31%
T-Mobile	110	700	2	649	0.0432	0.4667	0.92%
T-Mobile	110	1900	2	2204	0.1466	1.0000	1.47%
T-Mobile	110	2100	2	1295	0.0861	1.0000	0.86%
T-Mobile	110	1900	4	1028	0.1367	1.0000	1.37%
T-Mobile	110	1900	2	2057	0.1368	1.0000	1.37%
T-Mobile	110	2100	2	2308	0.1535	1.0000	1.53%
T-Mobile	110	2500	1	19239	0.6397	1.0000	6.40%
T-Mobile	110	2500	1	19239	0.6397	1.0000	6.40%
AT&T	98	700	1	3541	0.0151	0.4667	3.23%
AT&T	98	700	1	3541	0.0151	0.4667	3.23%
AT&T	98	885	1	4458	0.0189	0.5900	3.21%
AT&T	98	1900	4	6297	0.1071	1.0000	10.71%
AT&T	98	2100	2	9890	0.0841	1.0000	8.41%
AT&T	98	2300	1	6153	0.0262	1.0000	2.62%
AT&T	99.67	3500	1	24286	0.0996	1.0000	9.96%
AT&T	96	3500	1	24286	0.1079	1.0000	10.79%
						Total	**87.67%**

Table 1: Carrier Information[2]

[2] The existing record in the CSC Power Density Table for AT&T should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for Verizon and T-Mobile was taken directly from the CSC database dated 01/21/2022. Please note that % MPE values listed are rounded to two decimal points and the total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not identically match the total value reflected in the table.

5. Conclusion

The above analysis concludes that RF exposure at ground level from the proposed facility will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using conservative calculation methods, the highest expected percent of Maximum Permissible Exposure at ground level is **87.67% of the FCC General Population/Uncontrolled limit**.

As noted previously, the calculated % MPE levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

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

March 28, 2022
Date

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

Attachment A: References

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

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

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

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

(A) Limits for Occupational/Controlled Exposure[3]

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

(B) Limits for General Population/Uncontrolled Exposure[4]

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

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

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

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

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

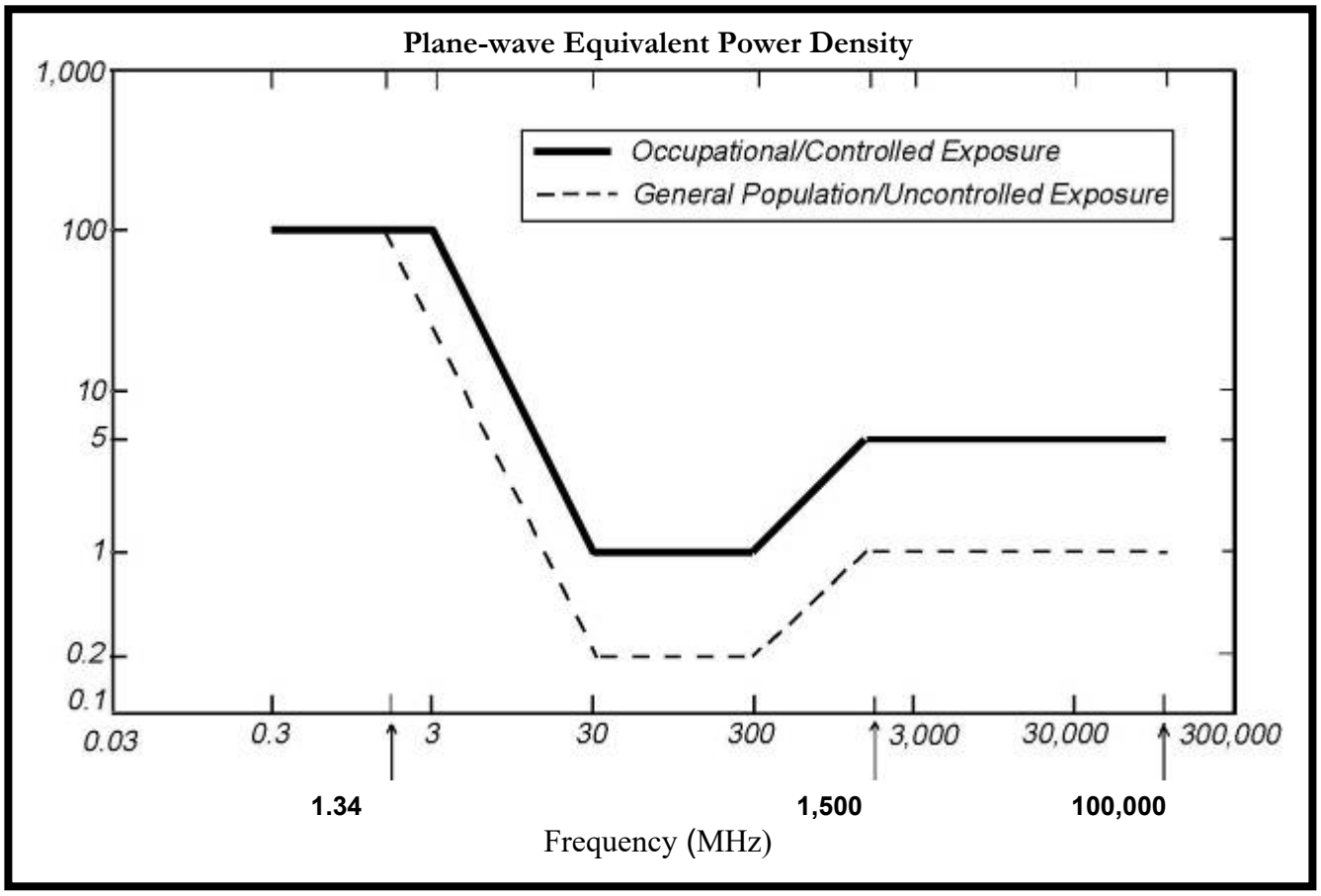
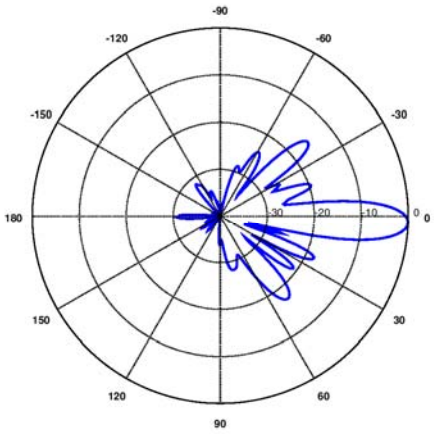
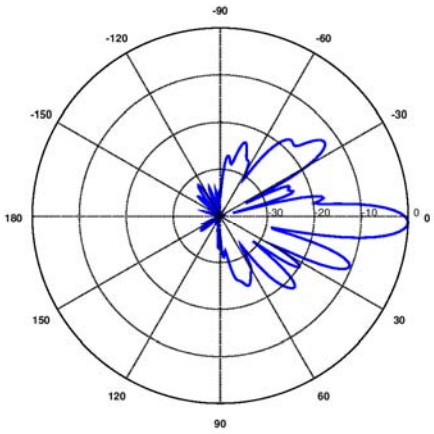
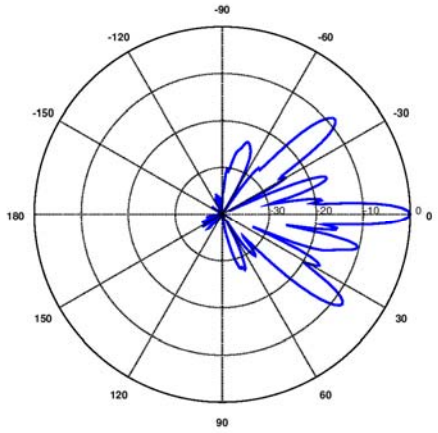
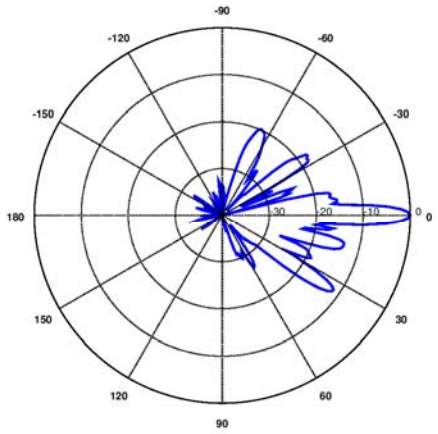
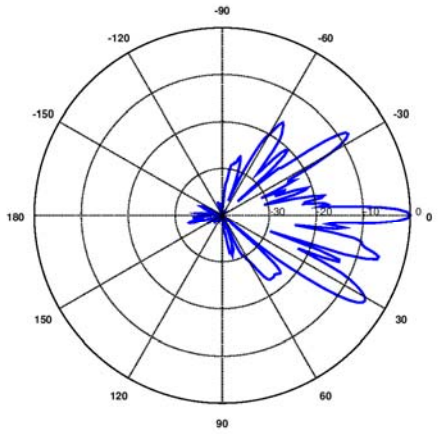


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

700 MHz Manufacturer: CCI Products Model #: TPA65R-BU8D Frequency Band: 698-806 MHz Gain: 15.6 dBi Vertical Beamwidth: 9.5° Horizontal Beamwidth: 74° Polarization: Dual Linear 45° Size L x W x D: 96.0” x 20.7” x 7.7”	
885 MHz Manufacturer: CCI Products Model #: TPA65R-BU8D Frequency Band: 824 - 896 MHz Gain: 16.6 dBi Vertical Beamwidth: 8.0° Horizontal Beamwidth: 63° Polarization: Dual Linear 45° Size L x W x D: 96.0” x 20.7” x 7.7”	

1900 MHz Manufacturer: CCI Products Model #: TPA65R-BU8D Frequency Band: 1920-1990 MHz Gain: 18.1 dBi Vertical Beamwidth: 5.1° Horizontal Beamwidth: 67° Polarization: Dual Linear 45° Size L x W x D: 96.0” x 20.7” x 7.7”	
2100 MHz Manufacturer: CCI Products Model #: TPA65R-BU8D Frequency Band: 1920-2180 MHz Gain: 18.3 dBi Vertical Beamwidth: 4.7° Horizontal Beamwidth: 67° Polarization: Dual Linear 45° Size L x W x D: 96.0” x 20.7” x 7.7”	
2300 MHz Manufacturer: CCI Products Model #: TPA65R-BU8D Frequency Band: 2300-2400 MHz Gain: 18.0 dBi Vertical Beamwidth: 4.1° Horizontal Beamwidth: 62° Polarization: Dual Linear 45° Size L x W x D: 96.0” x 20.7” x 7.7”	

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING SELF SUPPORT TOWER: • NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T ANTENNAS: AIR6449 B77 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T ANTENNAS: TPA65R–BU8D (TYP. OF 1 PER SECTOR, TOTAL OF 3). (TO BE RELOCATED @ POS 2). • EXISTING AT&T RRUS: 4478 B14 (TYP. OF 1 PER SECTOR, TOTAL OF 3). (TO BE RELOCATED @ POS 2). • ADD (6) Y–CABLES. • PROPOSED MOUNT MODS (SEE S–1 SHEET). ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION: • ADD (1) 6648 + XCEDE CABLE. • ADD (3) RECTIFIERS. • ADD (12) UP–CONVERTERS. ITEMS TO BE REMOVED: • EXISTING AT&T ANTENNAS: OPA65R–BU8D (TYP. OF 1 PER SECTOR, TOTAL OF 3). • EXISTING AT&T (6) COAX CABLES. ITEMS TO REMAIN: • (6) ANTENNAS, (12) RRU'S, (3) SURGE ARRESTOR, (6) DC POWER & (2) FIBER
SITE ADDRESS:	435 MILL STREET SOUTHINGTON, CT 06489
LATITUDE:	41.604591° N, 41° 36' 16.53" N
LONGITUDE:	72.894336° W, 72° 53' 39.61" W
TYPE OF SITE:	SELF SUPPORT TOWER / EQUIPMENT SHELTER
STRUCTURE HEIGHT:	120'–0"±
RAD CENTER:	98'–0"± (LTE), 99'–8"± (DoD), 96'–0"± (C–Band)
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	1
GN–1	GENERAL NOTES	1
A–1	COMPOUND & EQUIPMENT PLANS	1
A–2	ANTENNA LAYOUTS & ELEVATION	1
A–3	DETAILS	1
SN–1	STRUCTURAL NOTES	1
S–1	MOUNT MODIFICATION DESIGN	1
G–1	GROUNDING DETAILS	1
RF–1	RF PLUMBING DIAGRAM	1

SITE NUMBER: CT1030

SITE NAME: SOUTHINGTON MILL ST. H20 TANK

FA CODE: 10035264

PACE ID: MRCTB056723, MRCTB054176, MRCTB053382, MRCTB056831

PROJECT: 5G NR 1SR CBAND UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

MERGE ONTO I–91 N. CONTINUE ON I–91 N TO EAST HARTFORD. TAKE EXIT 3 FROM CT–2 W MERGE ONTO I–91 N. TAKE EXIT 29 TO MERGE ONTO CT–15 N/US–5 N TOWARD I–84 E/E HARTFORD/BOSTON. CONTINUE ONTO CT–15 N. TAKE EXIT 90 TOWARD CT–2 W. KEEP RIGHT TO STAY ON EXIT 90, FOLLOW SIGNS FOR CT–2 W/E RIVER DR AND MERGE ONTO CT–2 W. TAKE EXIT 3 FOR PITKIN ST. CONTINUE ON PITKIN ST TO YOUR DESTINATION. TURN LEFT ONTO PITKIN ST. TURN RIGHT ONTO DARLIN ST. TURN LEFT ONTO E RIVER DR. TURN RIGHT. TURN RIGHT. DESTINATION WILL BE ON THE LEFT. 99 E RIVER DR EAST HARTFORD, CT 06108

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.

72 HOURS

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

UNDERGROUND SERVICE ALERT

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1030
SITE NAME: SOUTHINGTON MILL ST. H20 TANK

435 MILL STREET
SOUTHINGTON, CT 06489
HARTFORD COUNTY

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/24/22	ISSUED FOR CONSTRUCTION	HC	HC	DPH
A	02/15/22	ISSUED FOR REVIEW	BS	HC	DPH

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

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

AT&T

TITLE SHEET
5G NR 1SR CBAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1030	T–1	1

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 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    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 CL	RADIATION CENTER LINE (ANTENNAS)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1030
SITE NAME: SOUTHINGTON MILL ST. H20 TANK

435 MILL STREET
SOUTHINGTON, CT 06489
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/24/22	ISSUED FOR CONSTRUCTION	PS	HC	DPH
A	02/15/22	ISSUED FOR REVIEW	PS	HC	DPH

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

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

AT&T

GENERAL NOTES

5G NR 1SR CBAND UPGRADE

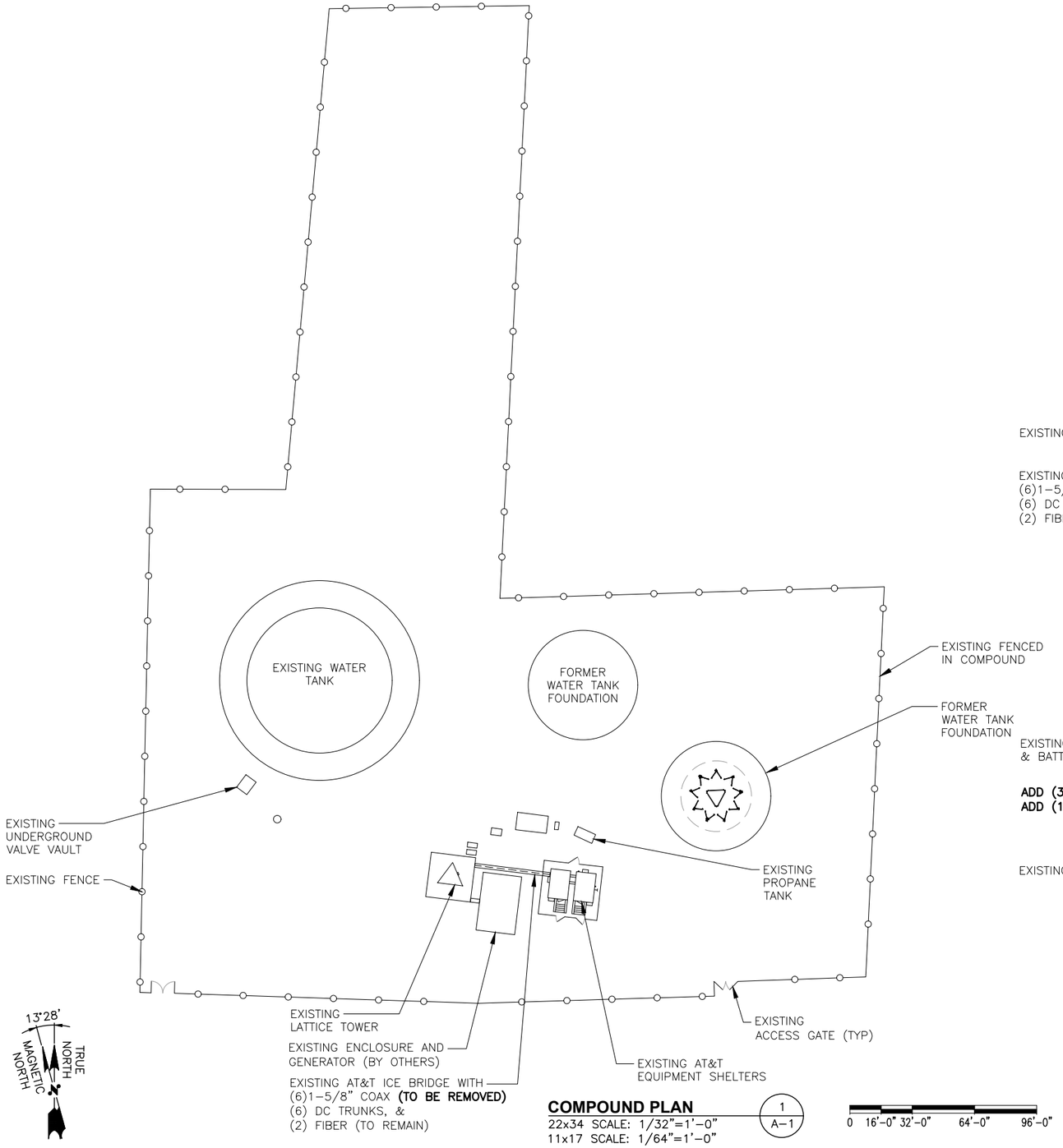
SITE NUMBER	DRAWING NUMBER	REV
CT1030	GN-1	1

NOTE:

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

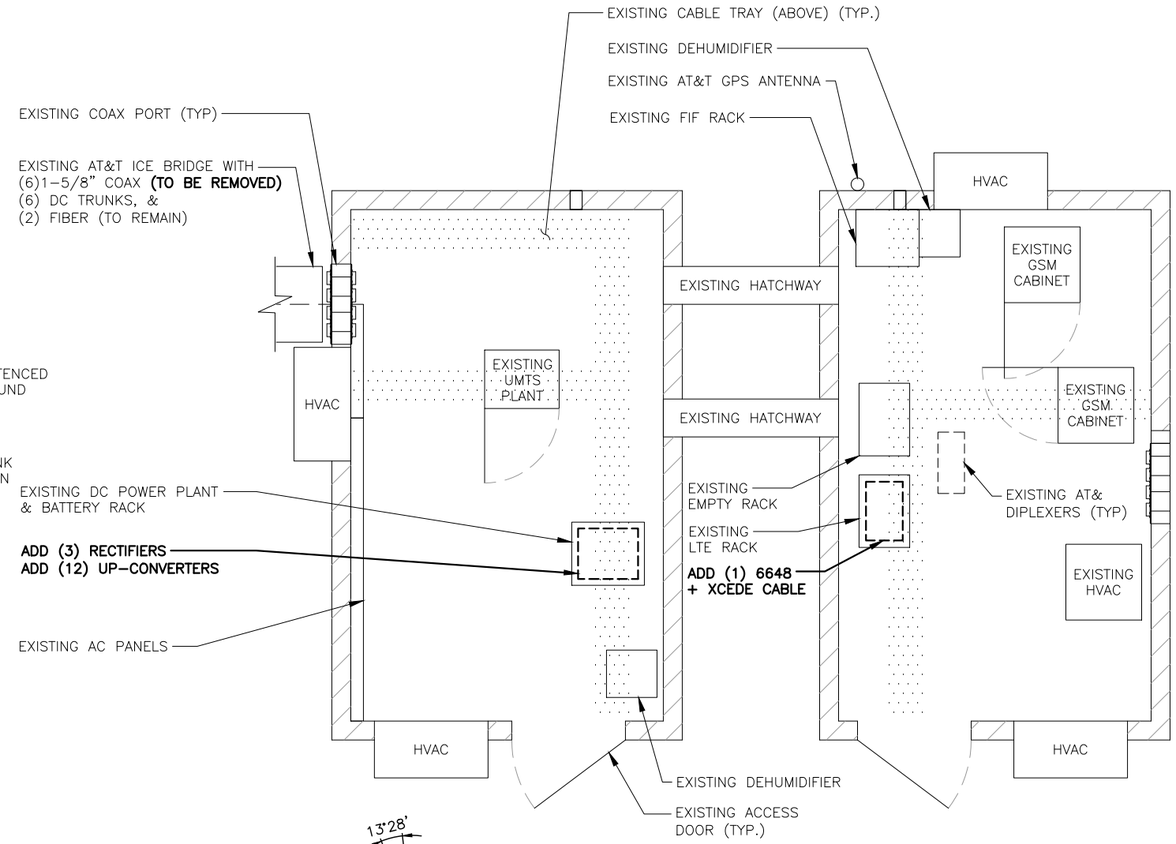
NOTE:

REFER TO **STRUCTURAL ANALYSIS** BY: HUDSON DESIGN GROUP, LLC. DATED: JANUARY 28, 2022. FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



COMPOUND PLAN (1, A-1)
22x34 SCALE: 1/32"=1'-0"
11x17 SCALE: 1/64"=1'-0"

0 16'-0" 32'-0" 64'-0" 96'-0"



EQUIPMENT PLAN (2, A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

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

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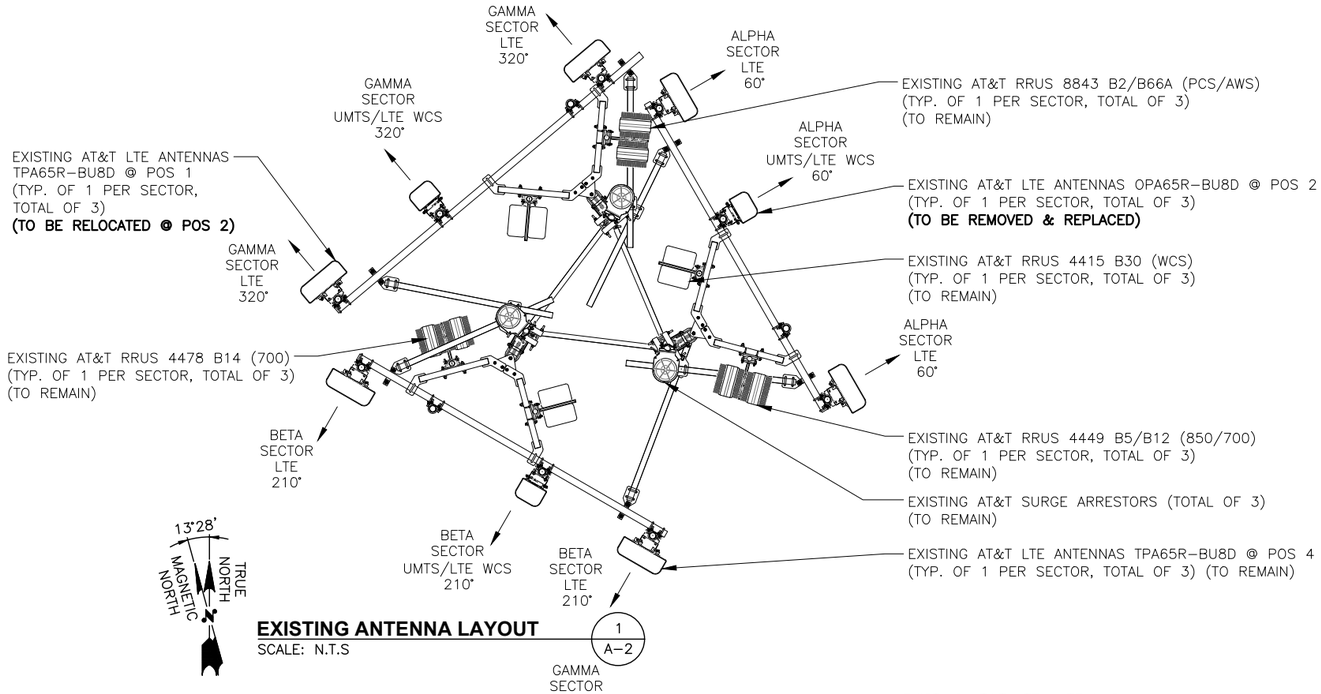
COMPOUND & EQUIPMENT PLANS
5G NR 1SR CBAND UPGRADE

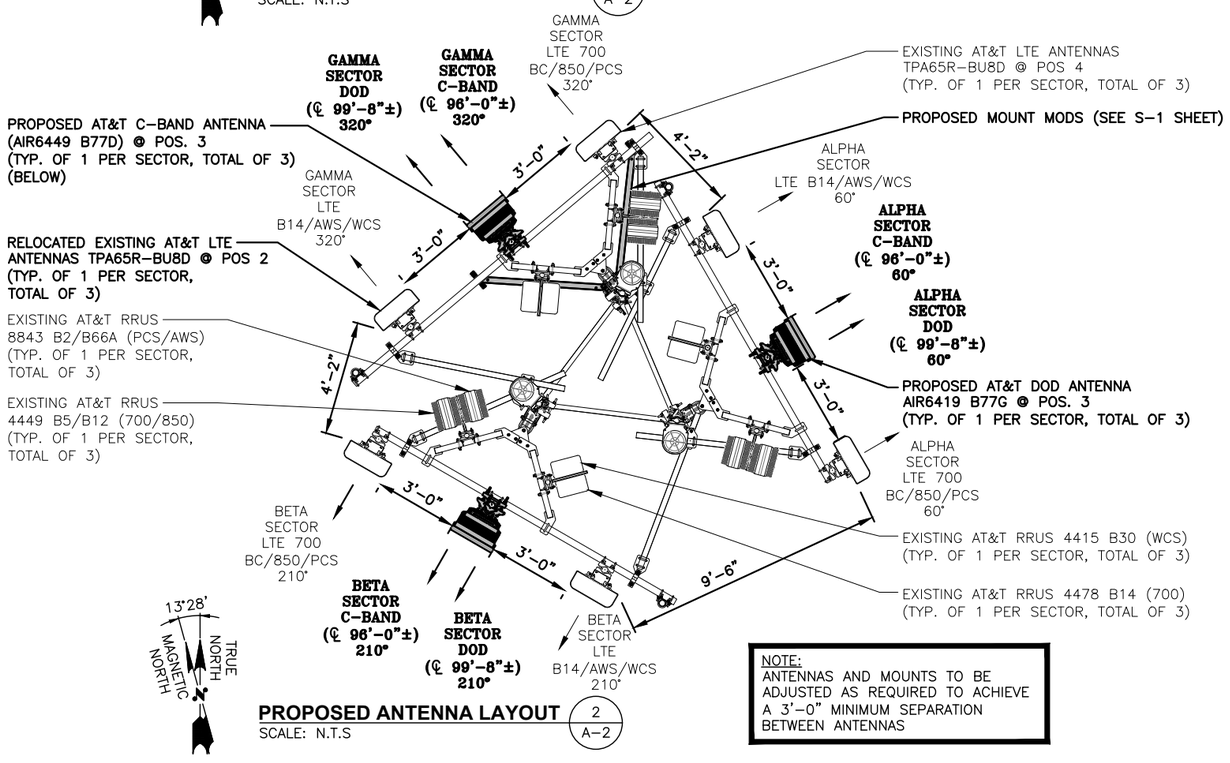
SITE NUMBER	DRAWING NUMBER	REV
CT1030	A-1	1



EXISTING ANTENNA LAYOUT

SCALE: N.T.S

1 / A-2



PROPOSED ANTENNA LAYOUT

SCALE: N.T.S

2 / A-2

NOTE:
ANTENNAS AND MOUNTS TO BE ADJUSTED AS REQUIRED TO ACHIEVE A 3'-0" MINIMUM SEPARATION BETWEEN ANTENNAS

NOTE:

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

NOTE:

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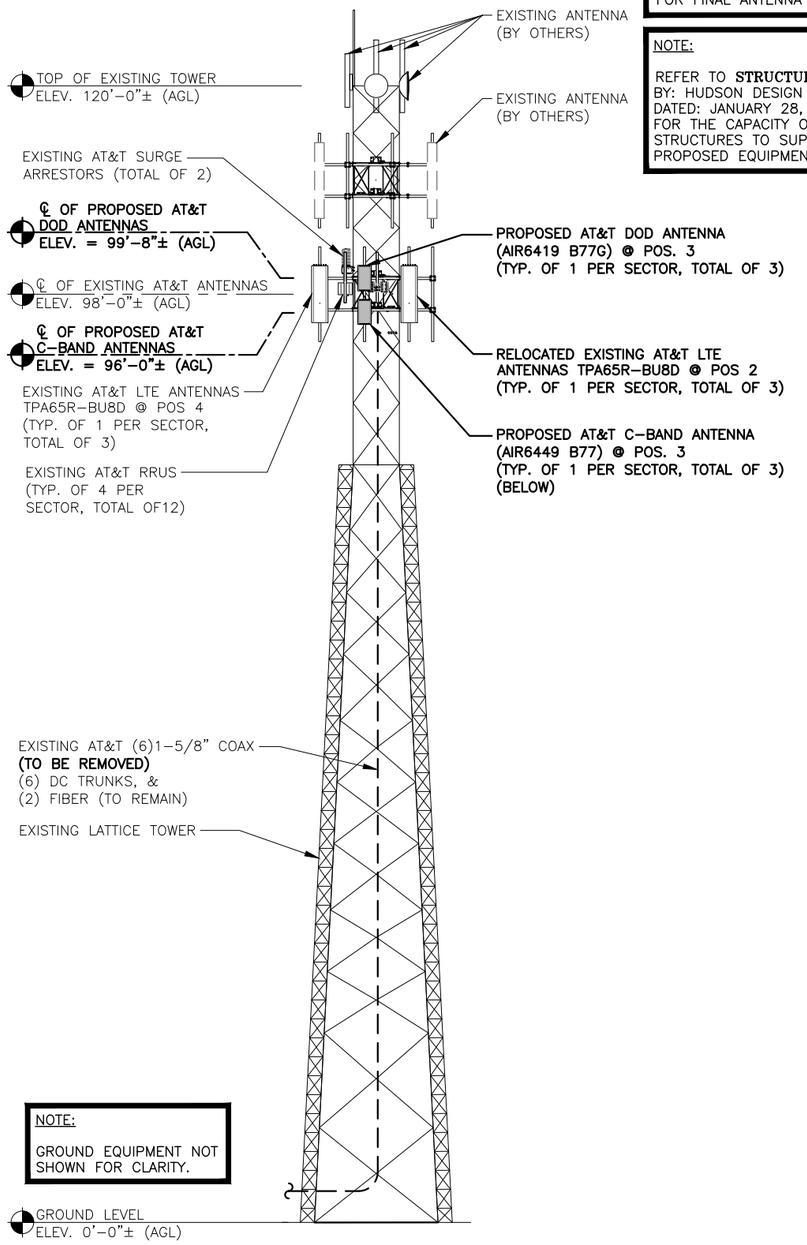

NOTE:

GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

ELEVATION

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

3 / A-2

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

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ANTENNA LAYOUTS & ELEVATION
5G NR 1SR CBAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1030	A-2	1

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (LxWxD)	ANTENNA ℄ HEIGHT	ANTENNA TIP HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (LxWxD)	FEEDER	RAYCAP
A1	–	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8F
A2	EXISTING	LTE B14/AWS/WCS	TPA65R-BU8D	95.9X11.7X8.4	98'-0"±	101'-0"±	60°	–	(E)(1) 4478 B14 (700) (E)(1) 4415 B30 (WCS)	–	(E)(2) DC POWER & (1) FIBER	
A3	**PROPOSED**	**DOD C-BAND**	**AIR6419 B77G AIR6449 B77 (STACKED)**	**31.1"X16.1X7.3" 30.6"X15.9"X10.6"**	**99'-8"± 96'-0"±**	**101'-0"± 97'-5"±**	**60°**	–	–	–	–	
A4	EXISTING	LTE 700 BC/850/PCS	TPA65R-BU8D	96X21X7.8	98'-0"±	101'-5"±	60°	–	(E)(1) 4449 B5/B12 (700/850) (E)(1) 8843 B2/B66A (PCS/AWS)	–	**(P)(2) Y-CABLE**	
B1	–	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8F
B2	EXISTING	LTE 700 BC/850/PCS	TPA65R-BU8D	96X21X7.8	98'-0"±	101'-0"±	210°	–	(E)(1) 4478 B14 (700) (E)(1) 4415 B30 (WCS)	–	(E)(2) DC POWER & (1) FIBER	
B3	**PROPOSED**	**DOD C-BAND**	**AIR6419 B77G AIR6449 B77 (STACKED)**	**31.1"X16.1X7.3" 30.6"X15.9"X10.6"**	**99'-8"± 96'-0"±**	**101'-0"± 97'-5"±**	**210°**	–	–	–	–	
B4	EXISTING	LTE 700 BC/850/PCS	TPA65R-BU8D	96X21X7.8	98'-0"±	101'-5"±	210°	–	(E)(1) 4449 B5/B12 (700/850) (E)(1) 8843 B2/B66A (PCS/AWS)	–	**(P)(2) Y-CABLE**	
C1	–	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-08F
C2	EXISTING	LTE B14/AWS/WCS	TPA65R-BU8D	95.9X11.7X8.4	98'-0"±	101'-0"±	320°	–	(E)(1) 4478 B14 (700) (E)(1) 4415 B30 (WCS)	–	(E)(2) DC POWER	
C3	**PROPOSED**	**DOD C-BAND**	**AIR6419 B77G AIR6449 B77 (STACKED)**	**31.1"X16.1X7.3" 30.6"X15.9"X10.6"**	**99'-8"± 96'-0"±**	**101'-0"± 97'-5"±**	**320°**	–	–	–	–	
C4	EXISTING	LTE 700 BC/850/PCS	TPA65R-BU8D	96X21X7.8	98'-0"±	101'-5"±	320°	–	(E)(1) 4449 B5/B12 (700/850) (E)(1) 8843 B2/B66A (PCS/AWS)	–	**(P)(2) Y-CABLE**	

FINAL ANTENNA SCHEDULE (1 / A-3)
SCALE: N.T.S

RRU CHART

QUANTITY	MODEL	SIZE (LxWxD)
E(3)	4449 B5/B12 (700/850)	14.9"x13.2"x10.4"
E(3)	8843 B2/B66A (PCS/AWS)	14.9"x13.2"x10.9"
E(3)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	4415 B30 (WCS)	16.5"x13.4"x5.9"

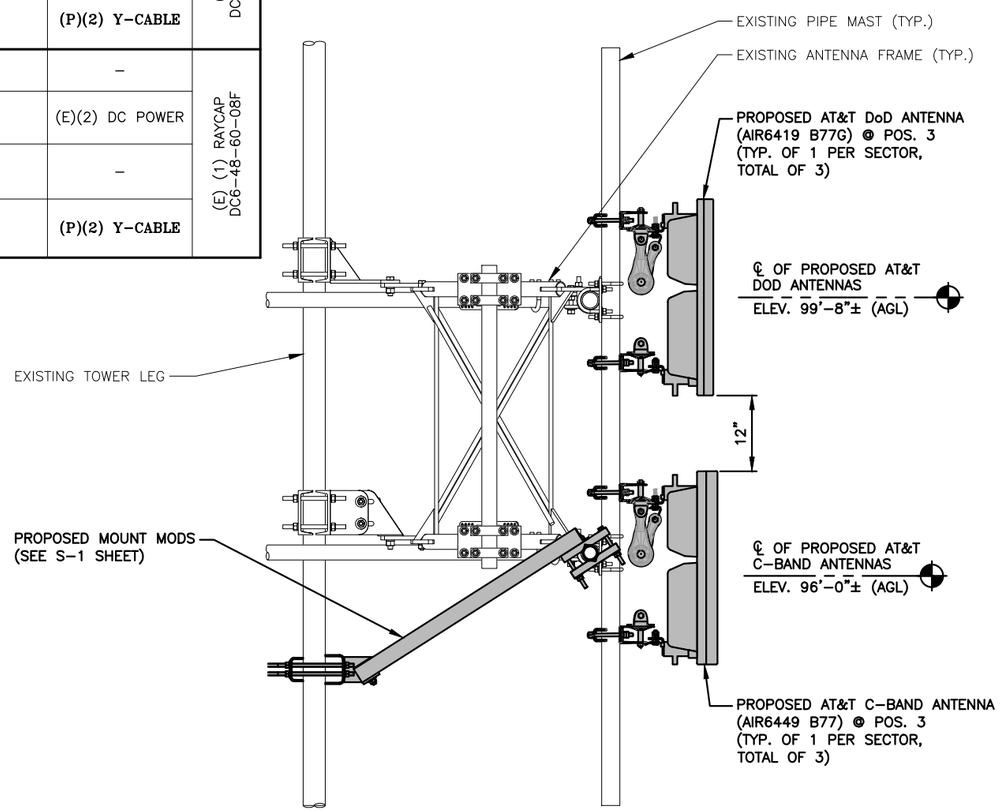
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

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

NOTE:

REFER TO **STRUCTURAL ANALYSIS** BY: HUDSON DESIGN GROUP, LLC. DATED: JANUARY 28, 2022. FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



PROPOSED C-BAND ANTENNA MOUNTING DETAIL
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

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

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

STATE OF CONNECTICUT
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LICENSED PROFESSIONAL ENGINEER

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DETAILS
5G NR 1SR CBAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1030	A-3	1

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 D1.1. 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:	

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1030
SITE NAME: SOUTHINGTON MILL ST. H20 TANK

435 MILL STREET
SOUTHINGTON, CT 06489
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/24/22	ISSUED FOR CONSTRUCTION	JC	HC	DPH
A	02/15/22	ISSUED FOR REVIEW	JC	HC	DPH

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

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

AT&T

DETAILS

5G NR 1SR CBAND UPGRADE

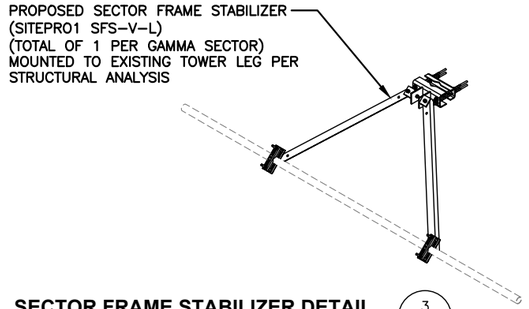
SITE NUMBER	DRAWING NUMBER	REV
CT1030	SN-1	1

NOTE:

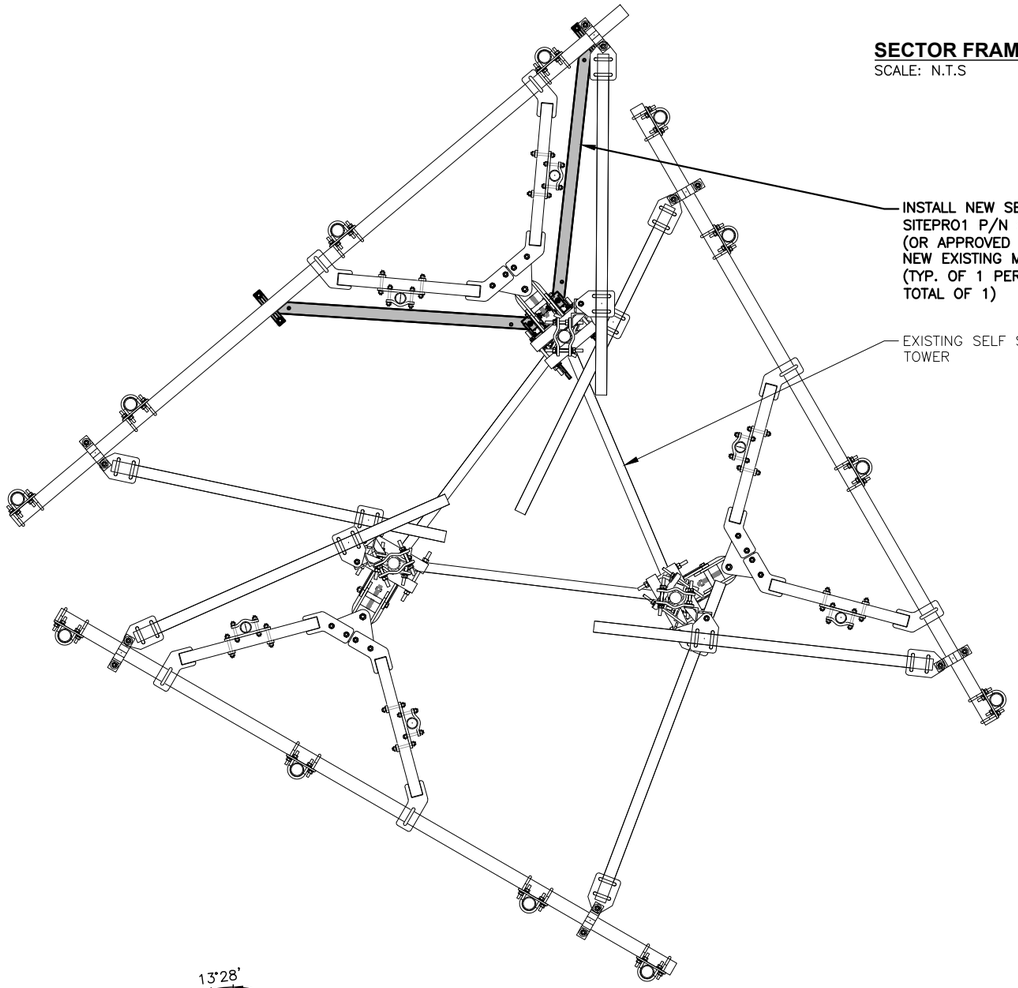
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

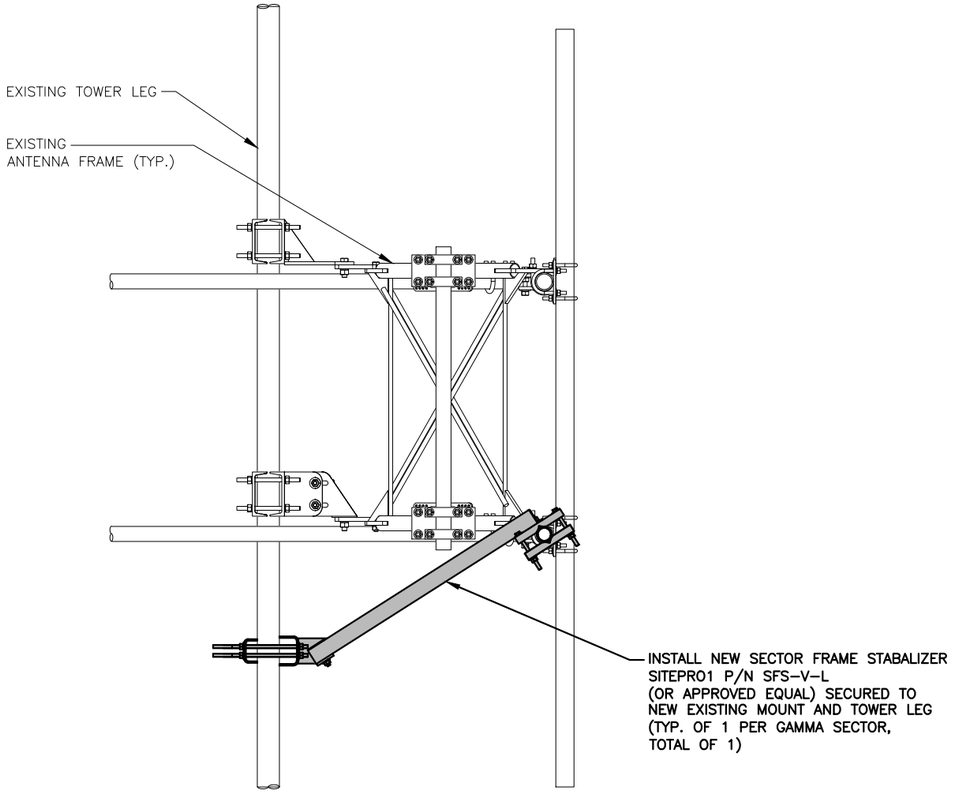
NOTE:

REFER TO **STRUCTURAL ANALYSIS** BY: HUDSON DESIGN GROUP, LLC. DATED: JANUARY 28, 2022. FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



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





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

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

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

0 0'-6" 1'-0"

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SAI
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NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	02/15/22	ISSUED FOR REVIEW	BS	HC	DPH

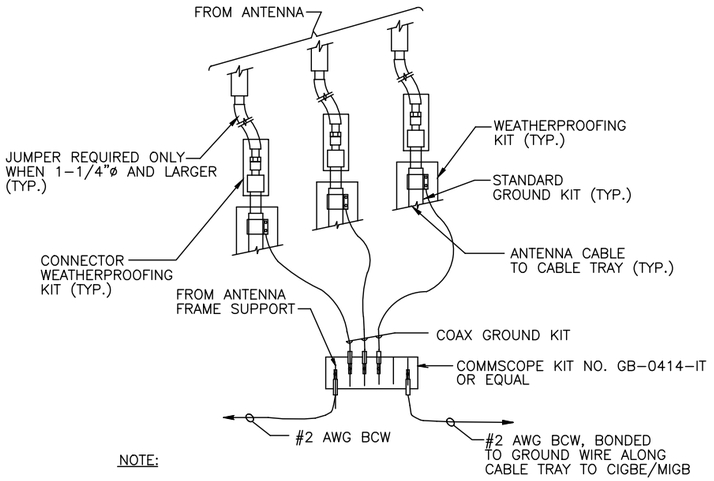
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: PS

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

AT&T

DETAILS
5G NR 1SR CBAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1030	S-1	1



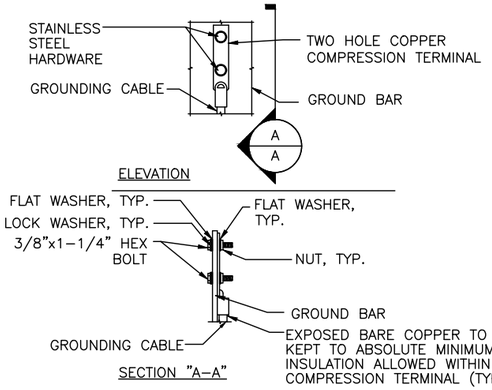
NOTE:

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

1 / G-1

SCALE: N.T.S



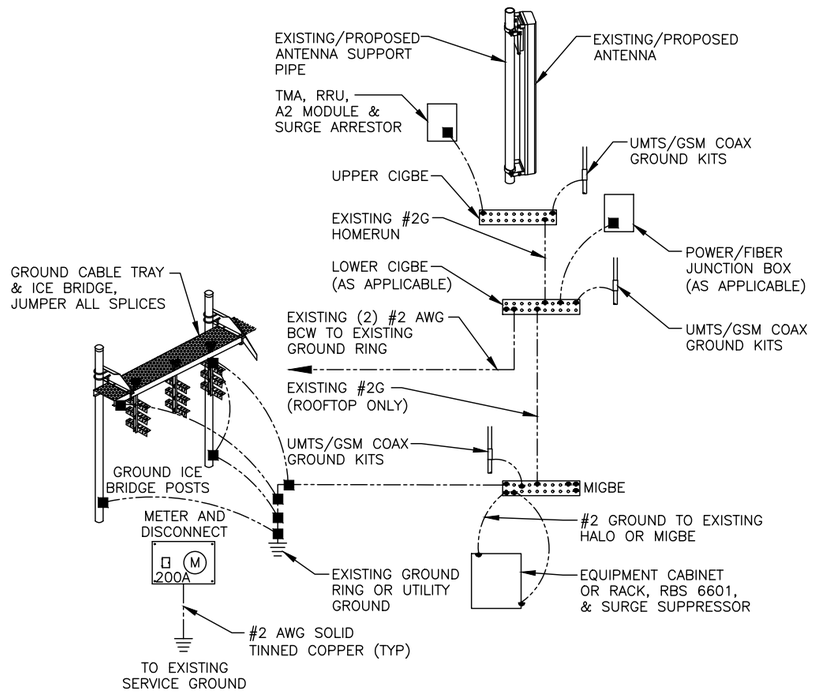
NOTES:

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

3 / G-1

SCALE: N.T.S



GROUNDING RISER DIAGRAM

2 / G-1

SCALE: N.T.S

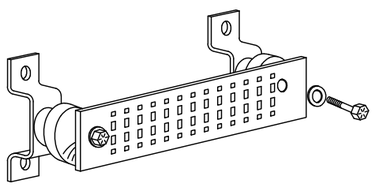
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	02/15/22	ISSUED FOR REVIEW	HC	DPH	

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

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

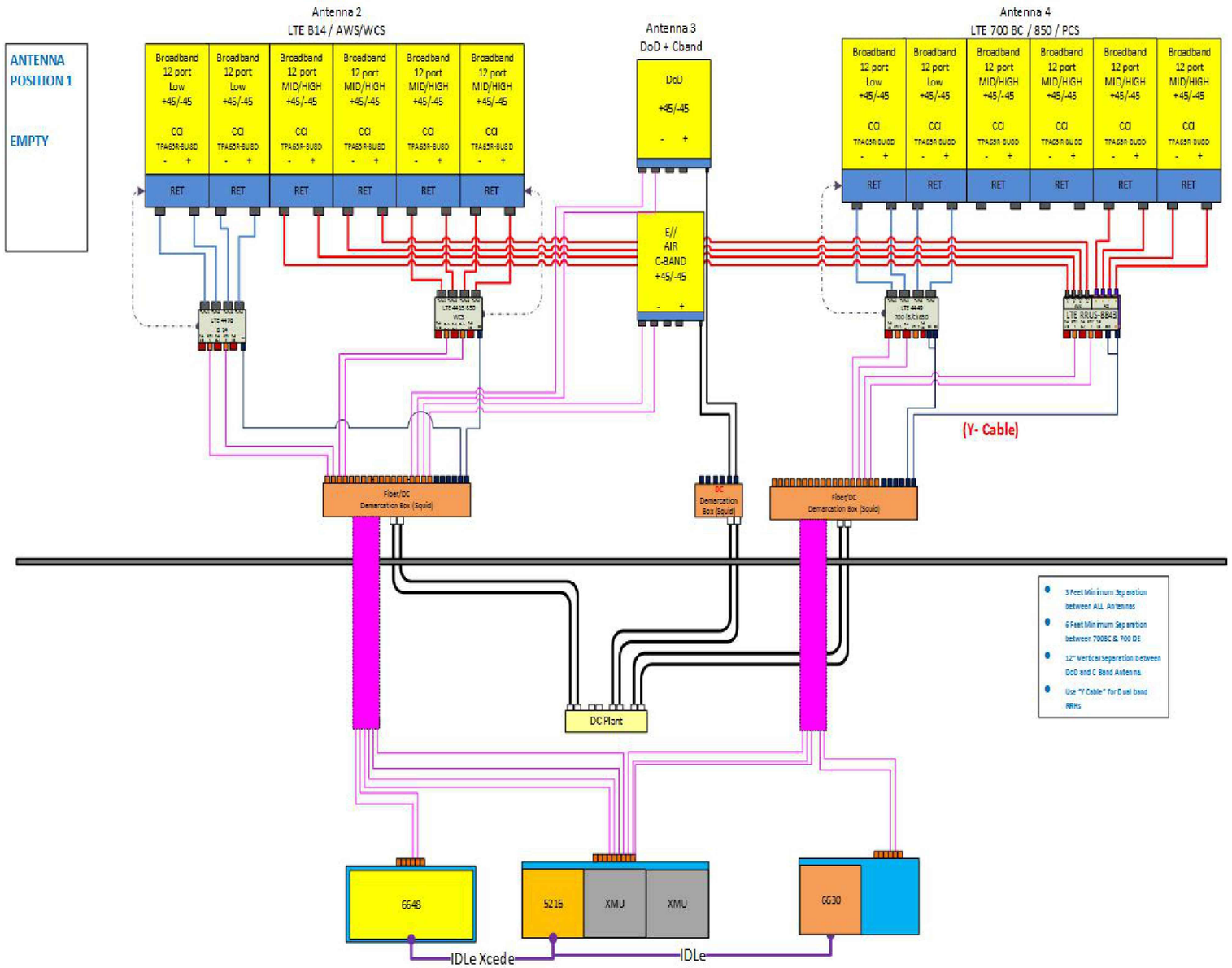
AT&T

GROUNDING DETAILS
5G NR 1SR CBAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1030	G-1	1

NOTE:

REV: 2
DATED: 01/17/2022
RFDS ID: 4541361



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

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.

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NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	02/15/22	ISSUED FOR REVIEW	PS	HC	DPH

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

AT&T

RF PLUMBING DIAGRAM
5G NR 1SR CBAND UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1030	RF–1	1

STRUCTURAL ANALYSIS REPORT

For

SITE NUMBER: CT1030

SITE NAME: SOUTHINGTON MILL ST. H20 TANK

FA CODE: 10035264

435 MILL STREET
SOUTHINGTON, CT 06489

Prepared for:

Dated: January 28, 2022

Prepared by:

HUDSON Design Group LLC

45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 120' self-supporting tower supporting the proposed AT&T's antennas located at elevation 98' above the ground level.

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

Record drawings of the existing tower prepared by Valmont Structures, dated December 12, 2019, were available and obtained for our use. The previous structural analysis report prepared by Tectonic Engineering, dated March 27, 2020, was provided to this office.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower and foundation **are in conformance** with the ANSI/TIA-222-G Standard for the loadings considered under the criteria listed in this report. The tower structure is rated at **82.8%** - (Legs at Tower Section T5 from EL.20' to EL.40' Controlling).

HUDSON Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	(2) BA4040-67-DIN	120'	Tower Leg
	(1) DB404-B	120'	Tower Leg
	(1) G5R	120'	Tower Leg
	(3) PTP	120'	Tower Leg
	(2) VHLP800-11	120'	Tower Leg
T-Mobile	(3) APXVAARR24_43-U-NA20 Antennas	110'	VFA12
T-Mobile	(3) AIR 32 B66AA/B2P Antennas	110'	VFA12
T-Mobile	(3) 4415 B66A	110'	VFA12
T-Mobile	(3) 4449 B71/B85	110'	VFA12
AT&T	(6) TPA65R-BU8D Antennas	98'	VFA12 – WLL - 30120
AT&T	***(3) AIR6449 B77D Antennas***	98'	VFA12 – WLL - 30120
AT&T	***(3) AIR6419 B77G Antennas***	98'	VFA12 – WLL - 30120
AT&T	(3) 4449 B5/B12	98'	VFA12 – WLL - 30120
AT&T	(3) 8843 B2/B66A	98'	VFA12 – WLL - 30120
AT&T	(3) 4478 B14	98'	VFA12 – WLL - 30120
AT&T	(3) 4415 B30	98'	VFA12 – WLL - 30120
AT&T	(2) DC6-48-60-18-8F	98'	Tower Leg
AT&T	(1) DC6-48-60-0-8F	98'	Tower Leg

Proposed AT&T Appurtenances shown in Bold.

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(6) 1 5/8" Cables	98'	Tower Face
AT&T	(6) DC Power Cables	98'	Tower Face
AT&T	(2) Fiber Cables	98'	Tower Face

Proposed AT&T Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Legs	**82.8 %**	20 – 40	PASS	**Controlling**
Diagonals	69.7 %	80 – 100	PASS	
Horizontal	47.1 %	80 – 100	PASS	
Top Girt	9.9 %	80 – 100	PASS	
Bottom Girt	23.5 %	100 – 120	PASS	
Mid Girt	10.4 %	80 – 100	PASS	

FOUNDATION COMPARISON SUMMARY:

	Design Reactions	Proposed Reactions	Pass/Fail	Comments
AXIAL	**40.9 k**	29.2 k	PASS	
SHEAR	**37.1 k**	30.9 k	PASS	
MOMENT	**2799 ft-k**	2476 ft-k	PASS	
COMP./LEG	**270.7 k**	248.0 k	PASS	
TENSION/LEG	**244.4 k**	228.9 k	PASS	

HUDSON Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

2. Connecticut State Building Code

   County: Hartford
   City/Town: Southington
   Wind Load: 105 mph
   Structural Class: III
   Exposure Category: B
   Topographic Category: 1
   Crest Height: 0 ft.
   Ice Thickness: 1.0 inch

3. Approximate height above grade to proposed antennas: 98'

ASSUMPTIONS:

1. The tower dimensions, member sizes and material strength are as indicated in the record drawings of the existing tower prepared by Valmont Structures, dated December 12, 2019.

2. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

3. The tower and foundation are properly constructed and maintained. 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. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

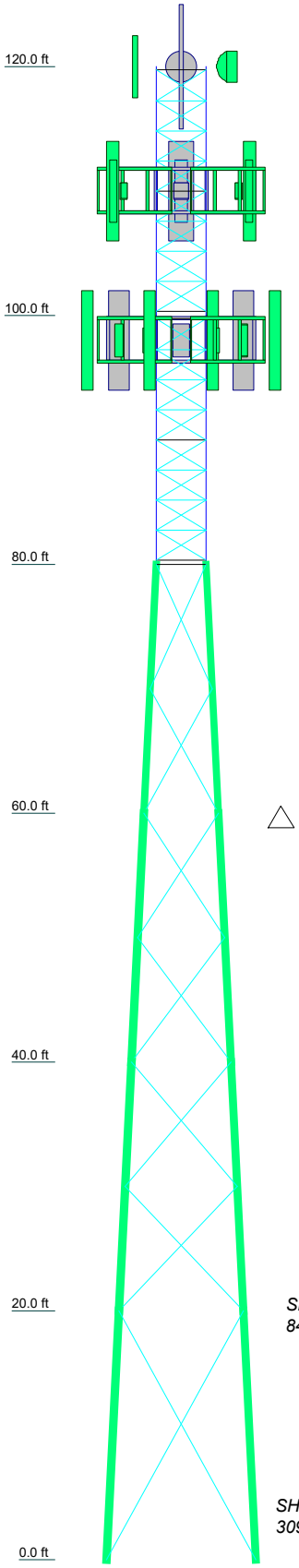
SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas be mounted on the existing steel frame supported by the tower.

HUDSON
Design Group LLC

TNX INPUT/OUTPUT

Section	T1	T2	T3	T4	T5	T6
Legs	SR 1 3/4	SR 2 1/4	Pirod 105217 mod	Pirod 105218 mod	Pirod 105218 mod	Pirod 105219 mod
Leg Grade	A572-55					
Diagonals	SR 3/4	SR 7/8	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x5/16	2L3 1/2x3 1/2x1/4
Diagonal Grade	A572-50					
Top Girts	SR 7/8	SR 1	L3x3x3/16	N.A.	N.A.	
Mid Girts	SR 7/8	SR 1		N.A.		
Bottom Girts	SR 7/8	SR 1		N.A.		
Horizontals	SR 3/4			N.A.		
Face Width (ft)	4	16 @ 2.42708		6	8	10
# Panels @ (ft)				6 @ 10		1 @ 20
Weight (lb) 14696.6	1010.6	1475.8	2360.9	2609.3	2961.9	4278.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BA4040-67-DIN	120	AIR6419 B77G w/mount pipe	98
BA4040-67-DIN	120	AIR6419 B77G w/mount pipe	98
DB404-B	120	SitePro VFA12 (ATI - existing)	98
10' Dipole	120	SitePro VFA12	98
PTP 49400	120	SitePro VFA12	98
PTP 49400	120	(2) TPA65R-BU8D w/mount pipe	98
PTP 49400	120	(2) TPA65R-BU8D w/mount pipe	98
Andrew VHLP800-11	120	(2) TPA65R-BU8D w/mount pipe	98
Andrew VHLP800-11	120	4449 B5/B12	98
SitePro VFA12 (T-Mobile)	110	8843 B2/B66A	98
SitePro VFA12	110	8843 B2/B66A	98
SitePro VFA12	110	8843 B2/B66A	98
APXVAARR24_43-U-NA20 w/mount pipe	110	DC6-48-60-18-8F	98
		DC6-48-60-18-8F	98
APXVAARR24_43-U-NA20 w/mount pipe	110	DC6-48-60-0-8F	98
APXVAARR24_43-U-NA20 w/mount pipe	110	4478 B14	98
		4478 B14	98
AIR 32 B66AA/B2P w/mount pipe	110	4478 B14	98
AIR 32 B66AA/B2P w/mount pipe	110	4415 B30	98
AIR 32 B66AA/B2P w/mount pipe	110	4415 B30	98
Radio 4415 B66A	110	4415 B30	98
Radio 4415 B66A	110	AIR6449 B77D w/mount pipe (ATI - proposed)	98
Radio 4415 B66A	110	AIR6449 B77D w/mount pipe	98
Radio 4449	110	AIR6449 B77D w/mount pipe	98
Radio 4449	110	4449 B5/B12	98
Radio 4449	110	4449 B5/B12	98
AIR6419 B77G w/mount pipe	98		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-55	55 ksi	70 ksi	A572-50	50 ksi	65 ksi

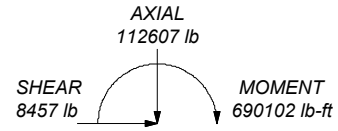
TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 82.8%

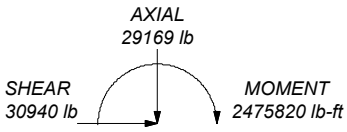
ALL REACTIONS
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 247953 lb
SHEAR: 25392 lb

UPLIFT: -228943 lb
SHEAR: 23218 lb



TORQUE 369 lb-ft
50 mph WIND - 1.0000 in ICE



TORQUE 1784 lb-ft
REACTIONS - 105 mph WIND

Hudson Design Group LLC
45 Beechwood Drive
North Andover, MA 01845
Phone: (P) 978.557.5553
FAX: (F) 978.336.5586

Job: ***CT1030***			
Project: ***120 ft Self Supporting Tower***			
Client: AT&T	Drawn by: kw		App'd:
Code: TIA-222-G	Date: 01/27/22		Scale: NTS
Path: C:\CT1030\CT1030.eri			Dwg No. E-1

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 120.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 4.00 ft at the top and 12.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 105 mph.
Structure Class III.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	120.00-100.00			4.00	1	20.00
T2	100.00-80.00			4.00	1	20.00
T3	80.00-60.00			4.00	1	20.00
T4	60.00-40.00			6.00	1	20.00
T5	40.00-20.00			8.00	1	20.00
T6	20.00-0.00			10.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	*Tower Elevation*	*Diagonal Spacing*	*Bracing Type*	*Has K Brace End Panels*	*Has Horizontals*	*Top Girt Offset*	*Bottom Girt Offset*
	ft	*ft*				*in*	*in*
T1	120.00-100.00	2.43	X Brace	No	Yes	3.5000	3.5000
T2	100.00-80.00	2.43	X Brace	No	Yes	3.5000	3.5000
T3	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T4	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T5	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T6	20.00-0.00	20.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 120.00-100.00	Solid Round	1 3/4	A572-55 (55 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 100.00-80.00	Solid Round	2 1/4	A572-55 (55 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 80.00-60.00	Truss Leg	Pirod 105217 mod	A572-55 (55 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A572-50 (50 ksi)
T4 60.00-40.00	Truss Leg	Pirod 105218 mod	A572-55 (55 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A572-50 (50 ksi)
T5 40.00-20.00	Truss Leg	Pirod 105218 mod	A572-55 (55 ksi)	Equal Angle	L2 1/2x2 1/2x5/16	A572-50 (50 ksi)
T6 20.00-0.00	Truss Leg	Pirod 105219 mod	A572-55 (55 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A572-50 (50 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 120.00-100.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 100.00-80.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T3 80.00-60.00	Equal Angle	L3x3x3/16	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 120.00-100.00	1	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 100.00-80.00	1	Solid Round	1	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8 (AT&T)	A	No	Yes	Ar (CaAa)	98.00 - 6.00	6	6	0.0000	1.9800		1.04
DC Power Cable	A	No	Yes	Ar (CaAa)	98.00 - 6.00	6	6	0.0000	0.8200		0.58
FB-L98B-002	A	No	Yes	Ar (CaAa)	98.00 - 6.00	2	2	0.0000	0.4000		0.25

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
**********											
7/8	C	No	Yes	Ar (CaAa)	120.00 - 6.00	18	9	0.0000	1.1100		0.54
**********											
1 5/8 Fiber Cable	B	No	Yes	Ar (CaAa)	110.00 - 8.00	3	3	0.0000	1.9800		1.04

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
SitePro VFA12	A	From Leg	2.00	0.0000	98.00	No Ice	15.40	14.00	558.00
(AT&T - existing)			0.00			1/2" Ice	21.30	20.81	741.00
			0.00			1" Ice	27.20	27.62	924.00
SitePro VFA12	B	From Leg	2.00	0.0000	98.00	No Ice	15.40	14.00	558.00
			0.00			1/2" Ice	21.30	20.81	741.00
			0.00			1" Ice	27.20	27.62	924.00
SitePro VFA12	C	From Leg	2.00	0.0000	98.00	No Ice	15.40	14.00	558.00
			0.00			1/2" Ice	21.30	20.81	741.00
			0.00			1" Ice	27.20	27.62	924.00
(2) TPA65R-BU8D w/mount pipe	A	From Leg	3.50	0.0000	98.00	No Ice	18.16	10.71	139.21
			0.00			1/2" Ice	18.89	12.24	264.73
			0.00			1" Ice	19.61	13.58	401.95
(2) TPA65R-BU8D w/mount pipe	B	From Leg	3.50	0.0000	98.00	No Ice	18.16	10.71	139.21
			0.00			1/2" Ice	18.89	12.24	264.73
			0.00			1" Ice	19.61	13.58	401.95
(2) TPA65R-BU8D w/mount pipe	C	From Leg	3.50	0.0000	98.00	No Ice	18.16	10.71	139.21
			0.00			1/2" Ice	18.89	12.24	264.73
			0.00			1" Ice	19.61	13.58	401.95
4449 B5/B12	A	From Leg	2.00	0.0000	98.00	No Ice	1.64	1.29	74.00
			0.00			1/2" Ice	1.80	1.44	91.12
			0.00			1" Ice	1.97	1.59	110.94
4449 B5/B12	B	From Leg	2.00	0.0000	98.00	No Ice	1.64	1.29	74.00
			0.00			1/2" Ice	1.80	1.44	91.12
			0.00			1" Ice	1.97	1.59	110.94
4449 B5/B12	C	From Leg	2.00	0.0000	98.00	No Ice	1.64	1.29	74.00
			0.00			1/2" Ice	1.80	1.44	91.12
			0.00			1" Ice	1.97	1.59	110.94
8843 B2/B66A	A	From Leg	2.00	0.0000	98.00	No Ice	1.64	1.35	74.00
			0.00			1/2" Ice	1.80	1.50	91.60
			0.00			1" Ice	1.97	1.65	111.91
8843 B2/B66A	B	From Leg	2.00	0.0000	98.00	No Ice	1.64	1.35	74.00
			0.00			1/2" Ice	1.80	1.50	91.60
			0.00			1" Ice	1.97	1.65	111.91
8843 B2/B66A	C	From Leg	2.00	0.0000	98.00	No Ice	1.64	1.35	74.00
			0.00			1/2" Ice	1.80	1.50	91.60
			0.00			1" Ice	1.97	1.65	111.91
DC6-48-60-18-8F	A	From Leg	1.00	0.0000	98.00	No Ice	0.79	0.79	20.00
			0.00			1/2" Ice	1.27	1.27	35.12
			0.00			1" Ice	1.45	1.45	52.57
DC6-48-60-18-8F	B	From Leg	1.00	0.0000	98.00	No Ice	0.79	0.79	20.00
			0.00			1/2" Ice	1.27	1.27	35.12
			0.00			1" Ice	1.45	1.45	52.57

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
DC6-48-60-0-8F	C	From Leg	1.00	0.0000	98.00	No Ice	2.20	2.20	18.90
			0.00			1/2" Ice	2.40	2.40	41.46
			0.00			1" Ice	2.60	2.60	67.19
4478 B14	A	From Leg	2.00	0.0000	98.00	No Ice	2.02	1.25	59.40
			0.00			1/2" Ice	2.20	1.40	77.06
			0.00			1" Ice	2.39	1.56	97.48
4478 B14	B	From Leg	2.00	0.0000	98.00	No Ice	2.02	1.25	59.40
			0.00			1/2" Ice	2.20	1.40	77.06
			0.00			1" Ice	2.39	1.56	97.48
4478 B14	C	From Leg	2.00	0.0000	98.00	No Ice	2.02	1.25	59.40
			0.00			1/2" Ice	2.20	1.40	77.06
			0.00			1" Ice	2.39	1.56	97.48
4415 B30	A	From Leg	2.00	0.0000	98.00	No Ice	1.84	0.82	47.40
			0.00			1/2" Ice	2.01	0.94	61.47
			0.00			1" Ice	2.19	1.07	78.06
4415 B30	B	From Leg	2.00	0.0000	98.00	No Ice	1.84	0.82	47.40
			0.00			1/2" Ice	2.01	0.94	61.47
			0.00			1" Ice	2.19	1.07	78.06
4415 B30	C	From Leg	2.00	0.0000	98.00	No Ice	1.84	0.82	47.40
			0.00			1/2" Ice	2.01	0.94	61.47
			0.00			1" Ice	2.19	1.07	78.06
**********									
AIR6449 B77D w/mount pipe (AT&T - proposed)	A	From Leg	3.50	0.0000	98.00	No Ice	4.35	3.01	117.60
			0.00			1/2" Ice	4.70	3.47	157.89
			0.00			1" Ice	5.06	3.94	203.17
AIR6449 B77D w/mount pipe	B	From Leg	3.50	0.0000	98.00	No Ice	4.35	3.01	117.60
			0.00			1/2" Ice	4.70	3.47	157.89
			0.00			1" Ice	5.06	3.94	203.17
AIR6449 B77D w/mount pipe	C	From Leg	3.50	0.0000	98.00	No Ice	4.35	3.01	117.60
			0.00			1/2" Ice	4.70	3.47	157.89
			0.00			1" Ice	5.06	3.94	203.17
AIR6419 B77G w/mount pipe	A	From Leg	3.50	0.0000	98.00	No Ice	4.48	2.88	109.60
			0.00			1/2" Ice	4.83	3.34	149.47
			0.00			1" Ice	5.19	3.81	194.34
AIR6419 B77G w/mount pipe	B	From Leg	3.50	0.0000	98.00	No Ice	4.48	2.88	109.60
			0.00			1/2" Ice	4.83	3.34	149.47
			0.00			1" Ice	5.19	3.81	194.34
AIR6419 B77G w/mount pipe	C	From Leg	3.50	0.0000	98.00	No Ice	4.48	2.88	109.60
			0.00			1/2" Ice	4.83	3.34	149.47
			0.00			1" Ice	5.19	3.81	194.34
**********									
BA4040-67-DIN	A	From Leg	2.00	0.0000	120.00	No Ice	12.78	4.92	18.00
			0.00			1/2" Ice	13.51	6.04	72.96
			0.00			1" Ice	14.25	7.18	136.61
BA4040-67-DIN	B	From Leg	2.00	0.0000	120.00	No Ice	12.78	4.92	18.00
			0.00			1/2" Ice	13.51	6.04	72.96
			0.00			1" Ice	14.25	7.18	136.61
DB404-B	C	From Leg	2.00	0.0000	120.00	No Ice	5.65	2.29	14.00
			0.00			1/2" Ice	6.03	2.65	42.65
			0.00			1" Ice	6.42	3.02	76.22
10' Dipole	A	From Leg	2.00	0.0000	120.00	No Ice	3.34	3.34	25.00
			0.00			1/2" Ice	4.97	4.97	53.13
			0.00			1" Ice	5.57	5.57	87.92
PTP 49400	A	From Leg	1.00	0.0000	120.00	No Ice	1.75	0.48	12.10
			0.00			1/2" Ice	1.92	0.58	23.53
			0.00			1" Ice	2.09	0.69	37.28
PTP 49400	B	From Leg	1.00	0.0000	120.00	No Ice	1.75	0.48	12.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00				1/2" Ice	1.92	0.58	23.53
			0.00				1" Ice	2.09	0.69	37.28
PTP 49400	C	From Leg	1.00		0.0000	120.00	No Ice	1.75	0.48	12.10
			0.00				1/2" Ice	1.92	0.58	23.53
			0.00				1" Ice	2.09	0.69	37.28
**********										
SitePro VFA12 (T-Mobile)	A	From Leg	2.00		0.0000	110.00	No Ice	15.40	14.00	558.00
			0.00				1/2" Ice	21.30	20.81	741.00
			0.00				1" Ice	27.20	27.62	924.00
SitePro VFA12	B	From Leg	2.00		0.0000	110.00	No Ice	15.40	14.00	558.00
			0.00				1/2" Ice	21.30	20.81	741.00
			0.00				1" Ice	27.20	27.62	924.00
SitePro VFA12	C	From Leg	2.00		0.0000	110.00	No Ice	15.40	14.00	558.00
			0.00				1/2" Ice	21.30	20.81	741.00
			0.00				1" Ice	27.20	27.62	924.00
APXVAARR24_43-U-NA20 w/mount pipe	A	From Leg	4.00		0.0000	110.00	No Ice	20.24	11.19	174.32
			0.00				1/2" Ice	20.89	12.62	311.78
			0.00				1" Ice	21.55	13.71	460.89
APXVAARR24_43-U-NA20 w/mount pipe	B	From Leg	4.00		0.0000	110.00	No Ice	20.24	11.19	174.32
			0.00				1/2" Ice	20.89	12.62	311.78
			0.00				1" Ice	21.55	13.71	460.89
APXVAARR24_43-U-NA20 w/mount pipe	C	From Leg	4.00		0.0000	110.00	No Ice	20.24	11.19	174.32
			0.00				1/2" Ice	20.89	12.62	311.78
			0.00				1" Ice	21.55	13.71	460.89
AIR 32 B66AA/B2P w/mount pipe	A	From Leg	4.00		0.0000	110.00	No Ice	7.12	6.41	153.90
			0.00				1/2" Ice	7.60	7.28	217.59
			0.00				1" Ice	8.07	8.03	288.39
AIR 32 B66AA/B2P w/mount pipe	B	From Leg	4.00		0.0000	110.00	No Ice	7.12	6.41	153.90
			0.00				1/2" Ice	7.60	7.28	217.59
			0.00				1" Ice	8.07	8.03	288.39
AIR 32 B66AA/B2P w/mount pipe	C	From Leg	4.00		0.0000	110.00	No Ice	7.12	6.41	153.90
			0.00				1/2" Ice	7.60	7.28	217.59
			0.00				1" Ice	8.07	8.03	288.39
Radio 4415 B66A	A	From Leg	3.00		0.0000	110.00	No Ice	1.84	0.82	46.00
			0.00				1/2" Ice	2.01	0.94	60.07
			0.00				1" Ice	2.19	1.07	76.66
Radio 4415 B66A	B	From Leg	3.00		0.0000	110.00	No Ice	1.84	0.82	46.00
			0.00				1/2" Ice	2.01	0.94	60.07
			0.00				1" Ice	2.19	1.07	76.66
Radio 4415 B66A	C	From Leg	3.00		0.0000	110.00	No Ice	1.84	0.82	46.00
			0.00				1/2" Ice	2.01	0.94	60.07
			0.00				1" Ice	2.19	1.07	76.66
Radio 4449	A	From Leg	3.00		0.0000	110.00	No Ice	1.65	1.16	74.00
			0.00				1/2" Ice	1.81	1.30	90.16
			0.00				1" Ice	1.98	1.45	108.95
Radio 4449	B	From Leg	3.00		0.0000	110.00	No Ice	1.65	1.16	74.00
			0.00				1/2" Ice	1.81	1.30	90.16
			0.00				1" Ice	1.98	1.45	108.95
Radio 4449	C	From Leg	3.00		0.0000	110.00	No Ice	1.65	1.16	74.00
			0.00				1/2" Ice	1.81	1.30	90.16
			0.00				1" Ice	1.98	1.45	108.95

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
Andrew VHLP800-11	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	0.0000		120.00	2.50	No Ice 1/2" Ice 1" Ice	6.00 6.40 6.80	49.00 77.00 105.00
Andrew VHLP800-11	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	0.0000		120.00	2.50	No Ice 1/2" Ice 1" Ice	6.00 6.40 6.80	49.00 77.00 105.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service

Comb. No.	Description
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	234372.16	20696.59	-11976.42
	Max. H_x	18	234372.16	20696.59	-11976.42
	Max. H_z	9	-187204.50	-15573.52	11110.52
	Min. Vert	7	-214647.09	-18733.14	10842.49
	Min. H_x	7	-214647.09	-18733.14	10842.49
	Min. H_z	20	204655.82	17196.79	-12089.98
Leg B	Max. Vert	10	238826.84	-21198.47	-12283.33
	Max. H_x	23	-219864.35	19290.58	11205.90
	Max. H_z	23	-219864.35	19290.58	11205.90
	Min. Vert	23	-219864.35	19290.58	11205.90
	Min. H_x	10	238826.84	-21198.47	-12283.33
	Min. H_z	10	238826.84	-21198.47	-12283.33
Leg A	Max. Vert	2	247952.76	14.85	25391.60
	Max. H_x	8	9159.68	3448.36	1042.95
	Max. H_z	2	247952.76	14.85	25391.60
	Min. Vert	15	-228943.19	-36.03	-23218.32
	Min. H_x	20	11147.92	-3461.94	1203.72
	Min. H_z	15	-228943.19	-36.03	-23218.32

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	24307.45	0.00	-0.00	-199.26	-158.52	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	29168.94	-148.84	-30940.04	-2475756.44	17798.24	1174.18
0.9 Dead+1.6 Wind 0 deg - No Ice	21876.70	-148.84	-30940.06	-2471857.00	17810.33	1173.02
1.2 Dead+1.6 Wind 30 deg - No Ice	29168.94	14712.58	-25584.50	-2077532.13	-1192469.06	657.79
0.9 Dead+1.6 Wind 30 deg - No Ice	21876.70	14712.56	-25584.50	-2074219.79	-1190546.85	657.13
1.2 Dead+1.6 Wind 60 deg - No Ice	29168.94	24541.94	-14169.29	-1155188.48	-2000606.77	-489.68
0.9 Dead+1.6 Wind 60 deg - No Ice	21876.70	24541.91	-14169.28	-1153308.90	-1997408.69	-489.04
1.2 Dead+1.6 Wind 90 deg - No Ice	29168.94	29122.85	50.79	5854.03	-2341066.02	-1501.31

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
0.9 Dead+1.6 Wind 90 deg - No Ice	21876.70	29122.83	50.80	5911.68	-2337373.93	-1499.59
1.2 Dead+1.6 Wind 120 deg - No Ice	29168.94	25748.90	15038.00	1205769.43	-2053095.00	-1663.86
0.9 Dead+1.6 Wind 120 deg - No Ice	21876.70	25748.92	15038.01	1203955.17	-2049870.86	-1662.11
1.2 Dead+1.6 Wind 150 deg - No Ice	29168.94	15382.04	26678.32	2135778.85	-1230907.42	-1584.19
0.9 Dead+1.6 Wind 150 deg - No Ice	21876.70	15382.04	26678.30	2132518.10	-1228956.70	-1582.88
1.2 Dead+1.6 Wind 180 deg - No Ice	29168.94	93.03	30406.16	2458821.57	-11461.94	-1294.73
0.9 Dead+1.6 Wind 180 deg - No Ice	21876.70	93.03	30406.12	2455030.56	-11390.33	-1293.59
1.2 Dead+1.6 Wind 210 deg - No Ice	29168.94	-14681.82	25669.70	2087391.80	1188292.90	-679.34
0.9 Dead+1.6 Wind 210 deg - No Ice	21876.70	-14681.82	25669.69	2084171.66	1186491.98	-678.67
1.2 Dead+1.6 Wind 240 deg - No Ice	29168.94	-25065.71	14471.70	1167208.08	2021902.24	489.78
0.9 Dead+1.6 Wind 240 deg - No Ice	21876.71	-25065.73	14471.70	1165448.61	2018797.24	489.13
1.2 Dead+1.6 Wind 270 deg - No Ice	29168.94	-29181.25	-120.02	-14808.42	2347743.75	1522.85
0.9 Dead+1.6 Wind 270 deg - No Ice	21876.70	-29181.24	-120.01	-14708.66	2344134.73	1521.12
1.2 Dead+1.6 Wind 300 deg - No Ice	29168.94	-25314.42	-14722.71	-1192213.72	2041813.64	1784.32
0.9 Dead+1.6 Wind 300 deg - No Ice	21876.70	-25314.39	-14722.69	-1190282.42	2038669.14	1782.59
1.2 Dead+1.6 Wind 330 deg - No Ice	29168.94	-15413.08	-26660.39	-2134082.79	1234299.46	1584.16
0.9 Dead+1.6 Wind 330 deg - No Ice	21876.70	-15413.06	-26660.39	-2130713.44	1232422.00	1582.86
1.2 Dead+1.0 Ice+1.0 Temp	112606.57	0.00	-0.00	-1995.39	-1197.38	-0.27
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	112606.57	-23.91	-8456.64	-690099.89	1718.89	200.67
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	112606.56	4175.67	-7248.80	-594795.70	-342298.59	64.38
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	112606.56	7154.78	-4130.81	-340298.83	-587066.67	-150.26
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	112606.56	8235.42	8.16	-1074.43	-673869.27	-322.55
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	112606.57	7208.76	4189.59	339531.10	-586997.31	-349.80
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	112606.56	4199.89	7280.17	591565.61	-343561.03	-316.82
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	112606.56	14.94	8412.00	684860.30	-3099.86	-220.08
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	112606.56	-4170.74	7262.48	592355.04	339174.84	-67.80
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	112606.57	-7203.30	4158.83	337399.77	586743.29	149.15
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	112606.56	-8244.80	-19.27	-4477.47	672541.23	326.01
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	112606.56	-7174.58	-4159.50	-342173.89	584115.79	369.06
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	112606.56	-4204.86	-7277.29	-595347.71	341705.25	316.81
Dead+Wind 0 deg - Service	24307.45	-26.41	-5496.82	-439792.84	3030.11	210.74
Dead+Wind 30 deg - Service	24307.45	2613.98	-4545.58	-369090.85	-211879.37	97.67

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead+Wind 60 deg - Service	24307.45	4360.54	-2517.56	-205304.70	-355408.81	-104.48
Dead+Wind 90 deg - Service	24307.45	5174.32	9.02	888.52	-415870.40	-277.53
Dead+Wind 120 deg - Service	24307.45	4574.76	2671.74	213965.09	-364730.76	-314.14
Dead+Wind 150 deg - Service	24307.45	2732.80	4739.69	379096.49	-218708.23	-304.50
Dead+Wind 180 deg - Service	24307.45	16.51	5402.03	436455.67	-2155.60	-232.08
Dead+Wind 210 deg - Service	24307.45	-2608.53	4560.69	370512.01	210902.06	-101.40
Dead+Wind 240 deg - Service	24307.45	-4453.52	2571.24	207127.96	358945.56	103.65
Dead+Wind 270 deg - Service	24307.45	-5184.68	-21.29	-2773.52	416801.44	281.27
Dead+Wind 300 deg - Service	24307.45	-4497.63	-2615.77	-211867.81	362465.37	335.90
Dead+Wind 330 deg - Service	24307.45	-2738.29	-4736.52	-379118.71	219047.63	304.50

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-24307.45	-0.00	-0.00	24307.45	0.00	0.000%
2	-148.84	-29168.94	-30940.17	148.84	29168.94	30940.04	0.000%
3	-148.84	-21876.71	-30940.17	148.84	21876.70	30940.06	0.000%
4	14712.55	-29168.94	-25584.56	-14712.58	29168.94	25584.50	0.000%
5	14712.55	-21876.71	-25584.56	-14712.56	21876.70	25584.50	0.000%
6	24541.85	-29168.94	-14169.24	-24541.94	29168.94	14169.29	0.000%
7	24541.85	-21876.71	-14169.24	-24541.91	21876.70	14169.28	0.000%
8	29122.88	-29168.94	50.84	-29122.85	29168.94	-50.79	0.000%
9	29122.88	-21876.71	50.84	-29122.83	21876.70	-50.80	0.000%
10	25749.00	-29168.94	15038.06	-25748.90	29168.94	-15038.00	0.000%
11	25749.00	-21876.71	15038.06	-25748.92	21876.70	-15038.01	0.000%
12	15382.11	-29168.94	26678.33	-15382.04	29168.94	-26678.32	0.000%
13	15382.11	-21876.71	26678.33	-15382.04	21876.70	-26678.30	0.000%
14	93.03	-29168.94	30406.04	-93.03	29168.94	-30406.16	0.000%
15	93.03	-21876.71	30406.04	-93.03	21876.70	-30406.12	0.000%
16	-14681.88	-29168.94	25669.70	14681.82	29168.94	-25669.70	0.000%
17	-14681.88	-21876.71	25669.70	14681.82	21876.70	-25669.69	0.000%
18	-25065.80	-29168.94	14471.75	25065.71	29168.94	-14471.70	0.000%
19	-25065.80	-21876.71	14471.75	25065.73	21876.71	-14471.70	0.000%
20	-29181.28	-29168.94	-119.97	29181.25	29168.94	120.02	0.000%
21	-29181.28	-21876.71	-119.97	29181.24	21876.70	120.01	0.000%
22	-25314.33	-29168.94	-14722.66	25314.42	29168.94	14722.71	0.000%
23	-25314.33	-21876.71	-14722.66	25314.39	21876.70	14722.69	0.000%
24	-15413.05	-29168.94	-26660.46	15413.08	29168.94	26660.39	0.000%
25	-15413.05	-21876.71	-26660.46	15413.06	21876.70	26660.39	0.000%
26	0.00	-112606.57	-0.00	-0.00	112606.57	0.00	0.000%
27	-23.91	-112606.57	-8456.64	23.91	112606.57	8456.64	0.000%
28	4175.67	-112606.57	-7248.80	-4175.67	112606.56	7248.80	0.000%
29	7154.77	-112606.57	-4130.81	-7154.78	112606.56	4130.81	0.000%
30	8235.42	-112606.57	8.17	-8235.42	112606.56	-8.16	0.000%
31	7208.76	-112606.57	4189.59	-7208.76	112606.57	-4189.59	0.000%
32	4199.89	-112606.57	7280.16	-4199.89	112606.56	-7280.17	0.000%
33	14.94	-112606.57	8411.99	-14.94	112606.56	-8412.00	0.000%
34	-4170.74	-112606.57	7262.48	4170.74	112606.56	-7262.48	0.000%
35	-7203.30	-112606.57	4158.83	7203.30	112606.57	-4158.83	0.000%
36	-8244.80	-112606.57	-19.27	8244.80	112606.56	19.27	0.000%
37	-7174.57	-112606.57	-4159.49	7174.58	112606.56	4159.50	0.000%
38	-4204.86	-112606.57	-7277.29	4204.86	112606.56	7277.29	0.000%
39	-26.41	-24307.45	-5496.82	26.41	24307.45	5496.82	0.000%
40	2613.98	-24307.45	-4545.58	-2613.98	24307.45	4545.58	0.000%
41	4360.54	-24307.45	-2517.56	-4360.54	24307.45	2517.56	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
42	5174.32	-24307.45	9.02	-5174.32	24307.45	-9.02	0.000%
43	4574.76	-24307.45	2671.74	-4574.76	24307.45	-2671.74	0.000%
44	2732.80	-24307.45	4739.69	-2732.80	24307.45	-4739.69	0.000%
45	16.51	-24307.45	5402.03	-16.51	24307.45	-5402.03	0.000%
46	-2608.53	-24307.45	4560.69	2608.53	24307.45	-4560.69	0.000%
47	-4453.52	-24307.45	2571.24	4453.52	24307.45	-2571.24	0.000%
48	-5184.68	-24307.45	-21.29	5184.68	24307.45	21.29	0.000%
49	-4497.63	-24307.45	-2615.77	4497.63	24307.45	2615.77	0.000%
50	-2738.29	-24307.45	-4736.52	2738.29	24307.45	4736.52	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 100	3.132	39	0.2450	0.0293
T2	100 - 80	2.103	39	0.2303	0.0169
T3	80 - 60	1.198	39	0.1702	0.0089
T4	60 - 40	0.608	39	0.1050	0.0033
T5	40 - 20	0.244	39	0.0631	0.0010
T6	20 - 0	0.047	39	0.0246	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120.00	Andrew VHLP800-11	39	3.132	0.2450	0.0293	220452
110.00	SitePro VFA12	39	2.612	0.2419	0.0227	110226
98.00	SitePro VFA12	39	2.003	0.2262	0.0159	39859

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	120 - 100	Leg	1 3/4	3	-29955.50	83362.50	35.9	Pass
T2	100 - 80	Leg	2 1/4	81	-126350.00	158641.00	79.6	Pass
T3	80 - 60	Leg	Pirod 105217 mod	159	-158229.00	233885.00	67.7	Pass
T4	60 - 40	Leg	Pirod 105218 mod	177	-190415.00	328216.00	58.0	Pass
T5	40 - 20	Leg	Pirod 105218 mod	190	-210307.00	328216.00	82.8	Pass
T6	20 - 0	Leg	Pirod 105219 mod	207	-222054.00	385152.00	57.7	Pass
T1	120 - 100	Diagonal	3/4	16	-4079.63	5920.60	68.9	Pass
T2	100 - 80	Diagonal	7/8	94	-7779.35	11155.80	69.7	Pass
T3	80 - 60	Diagonal	L2 1/2x2 1/2x1/4	165	-7473.79	16704.70	44.7	Pass
T4	60 - 40	Diagonal	L2 1/2x2 1/2x3/16	186	-5656.10	11091.80	51.0	Pass
T5	40 - 20	Diagonal	L2 1/2x2 1/2x5/16	198	-6770.43	12823.60	52.8	Pass
T6	20 - 0	Diagonal	2L3 1/2x3 1/2x1/4	212	-16271.30	48326.20	33.7	Pass
T1	120 - 100	Horizontal	3/4	28	-321.76	3347.61	9.6	Pass
T2	100 - 80	Horizontal	3/4	97	-1612.98	3421.18	47.1	Pass
T1	120 - 100	Top Girt	7/8	4	-398.66	6201.87	6.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T2	100 - 80	Top Girt	1	82	-1066.48	10812.60	9.9	Pass
T3	80 - 60	Top Girt	L3x3x3/16	160	-1880.28	24986.20	7.5	Pass
T1	120 - 100	Bottom Girt	7/8	7	-1454.62	6201.87	23.5	Pass
T2	100 - 80	Bottom Girt	1	85	-761.47	10812.60	7.0	Pass
T1	120 - 100	Mid Girt	7/8	11	-556.35	6201.87	9.0	Pass
T2	100 - 80	Mid Girt	1	88	-1129.13	10812.60	10.4	Pass
							Summary	
						Leg (T5)	82.8	Pass
						Diagonal (T2)	69.7	Pass
						Horizontal (T2)	47.1	Pass
						Top Girt (T2)	9.9	Pass
						Bottom Girt (T1)	23.5	Pass
						Mid Girt (T2)	10.4	Pass
						RATING =	**82.8**	**Pass**

January 24, 2022

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:

Site Number:	CT1030
FA Number:	10035264
PACE Number:	MRCTB056831
PT Number:	2051A11NGX
Site Name:	SOUTHINGTON MILL ST H20 TANK
Site Address:	435 Mill Street Southington, CT 06489

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by SAI Communications to perform a mount analysis on the proposed AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading:

- (6) TPA65R-BU8D Antenna (96.0"x20.7"x7.7"– Wt. = 88 lbs. /each)
- (3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)
- (3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)
- (3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) 4415 B30 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)
- (3) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) AIR6419 Antennas (31.0"x16.1"x7.3" – Wt. = 66 lbs. /each)**

*Proposed equipment shown in bold

Mount fabrication drawings prepared by SitePro1 P/N VFA12-WLL-30120, dated May 3, 2018 were used to perform this analysis. HDG conducted a ground audit of the existing AT&T antenna mounts on September 21, 2021.

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 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R16.
- HDG 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 N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 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 1.67 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.185 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.064.
- 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 4.
- 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 self-supporting tower with threaded rods and steel plates tightened around the tower leg. HDG 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. HDG recommends the following modifications:

- **Install new sector frame stabilizer, SitePro1 P/N SFS-V-L (or approved equal) secured to new existing mount and tower leg (typ. of 1 per gamma sector, total of 1).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating (Alpha and Beta Sector)	96	LC50	88%	**PASS**
Existing Mount Rating (Gamma Sector)	96	LC46	109%	**FAIL**
Modified Mount Rating (Gamma Sector)	137	LC46	70%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1 P/N VFA12- WLL-30120, dated May 3, 2018.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG 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 proposed mount will be 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. HDG 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,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:






p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 203.208.3919 f: 203.234.6398 a: 110 Washington Avenue, 4th Floor, North Haven CT 06473






p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 203.208.3919 f: 203.234.6398 a: 110 Washington Avenue, 4th Floor, North Haven CT 06473

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 1/24/2022
Project Name: SOUTHINGTON MILL ST H20 TANK
Project No.: CT1030
Designed By: ID **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

z=	98	(ft)
z_g=	1200	(ft)
α=	7.0	
K_z=	**0.983**	

$K_{zmin} \le K_z \le 2.01$

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}= **#DIV/0!**

K_h=	#DIV/0!	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	98	
z_s=	318	(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=	1.0	(from Table 2-3)
K_{iz} =	1.11	(from Sec. 2.6.10)

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

t_{iz} = 1.67 in

Date: 1/24/2022
Project Name: SOUTHINGTON MILL ST H20 TANK
Project No.: CT1030
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

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=	120	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=	0.983	(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=	**33.02**	K_e=	0.99	(from 2.6.8)
$q_{z\ (ice)}$=	**5.28**	K_d=	0.85	(from Table 2-2)
$q_{z\ (30)}$=	**1.90**	V_{max}=	125	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: 1/24/2022
Project Name: SOUTHINGTON MILL ST H20 TANK
Project No.: CT1030
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

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 = **1.67** 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)
TPA65R-BU8D Antenna	96.0	20.7	7.7	13.80	4.64	1.30	**590**	**114**	**34**
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	**134**	**29**	**8**
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.93	1.20	**137**	**29**	**8**
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.36	1.20	**65**	**15**	**4**
4449 B5/B12 RRH (Side)	17.9	9.5	13.2	1.18	1.88	1.20	**47**	**12**	**3**
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.20	**54**	**13**	**3**
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	**45**	**11**	**3**
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	**67**	**16**	**4**
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	**41**	**11**	**2**
4415 B30 RRH	16.5	13.4	5.9	1.54	1.23	1.20	**61**	**15**	**4**
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	2.80	1.21	**27**	**8**	**2**
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	**37**	**9**	**2**
PL 3-1/2x5/8	3.5	0.6	-	0.02	5.60	1.20	**1**		
PL 11-1/4x5/8	11.3	0.5	-	0.04	22.50	1.20	**2**		
5/8" Round Bar	0.6	12.0	-	0.05	0.05	1.20	**2**		
3/4" Round Bar	0.8	12.0	-	0.06	0.06	1.20	**2**		
2" Pipe	2.4	12.0	-	0.20	0.20	1.20	**8**		
2-1/2" Pipe	2.9	12.0	-	0.24	0.24	1.20	**9**		
2-1/2-2-1/2 Angle	2.5	12.0	-	0.21	0.21	1.20	**8**		

Date: 1/24/2022
Project Name: SOUTHINGTON MILL ST H20 TANK
Project No.: CT1030
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.67	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)
TPA65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	590	268	510
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	134	91	123
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	137	66	120
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	65	47	60
4449 B5/B12 RRH (Side)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	47	65	51
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	54	45	52
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	45	54	47
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	67	41	60
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	41	67	48
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	61	27	52
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	27	61	36

WIND LOADS WITH ICE:

TPA65R-BU8D Antenna	99.3	24.0	11.0	16.59	7.62	4.13	8.99	1.27	1.47	112	59	98
AIR6449 Antenna	33.9	19.2	13.9	4.54	3.29	1.76	2.43	1.20	1.20	29	21	27
AIR6419 Antenna	34.3	19.4	10.6	4.64	2.54	1.77	3.23	1.20	1.23	29	17	26
4449 B5/B12 RRH	21.2	16.5	12.8	2.44	1.90	1.28	1.65	1.20	1.20	15	12	15
4449 B5/B12 RRH (Side)	21.2	12.8	16.5	1.90	2.44	1.65	1.28	1.20	1.20	12	15	13
B2/B66A 8843 RRH	18.2	16.5	14.2	2.10	1.80	1.10	1.28	1.20	1.20	13	11	13
B2/B66A 8843 RRH (Side)	18.2	14.2	16.5	1.80	2.10	1.28	1.10	1.20	1.20	11	13	12
B14 4478 RRH	21.4	16.7	11.6	2.49	1.73	1.28	1.84	1.20	1.20	16	11	15
B14 4478 RRH (Side)	21.4	11.6	16.7	1.73	2.49	1.84	1.28	1.20	1.20	11	16	12
4415 B30 RRH	19.8	16.7	9.2	2.31	1.27	1.19	2.15	1.20	1.20	15	8	13
4415 B30 RRH (Side)	19.8	9.2	16.7	1.27	2.31	2.15	1.19	1.20	1.20	8	15	10

WIND LOADS AT 30 MPH:

TPA65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	34	15	29
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	8	5	7
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	8	4	7
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	4	3	3
4449 B5/B12 RRH (Side)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	3	4	3
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	3	3	3
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	3	3
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	4	2	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	4	2	3
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	2

Date: 1/24/2022
Project Name: SOUTHINGTON MILL ST H20 TANK
Project No.: CT1030
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.67	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)
TPA65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	590	268	349
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	134	91	101
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	137	66	84
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	65	47	51
4449 B5/B12 RRH (Side)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	47	65	60
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	54	45	47
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	45	54	52
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	67	41	48
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	41	67	60
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	61	27	36
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	27	61	52

WIND LOADS WITH ICE:

TPA65R-BU8D Antenna	99.3	24.0	11.0	16.59	7.62	4.13	8.99	1.27	1.47	112	59	72
AIR6449 Antenna	33.9	19.2	13.9	4.54	3.29	1.76	2.43	1.20	1.20	29	21	23
AIR6419 Antenna	34.3	19.4	10.6	4.64	2.54	1.77	3.23	1.20	1.23	29	17	20
4449 B5/B12 RRH	21.2	16.5	12.8	2.44	1.90	1.28	1.65	1.20	1.20	15	12	13
4449 B5/B12 RRH (Side)	21.2	12.8	16.5	1.90	2.44	1.65	1.28	1.20	1.20	12	15	15
B2/B66A 8843 RRH	18.2	16.5	14.2	2.10	1.80	1.10	1.28	1.20	1.20	13	11	12
B2/B66A 8843 RRH (Side)	18.2	14.2	16.5	1.80	2.10	1.28	1.10	1.20	1.20	11	13	13
B14 4478 RRH	21.4	16.7	11.6	2.49	1.73	1.28	1.84	1.20	1.20	16	11	12
B14 4478 RRH (Side)	21.4	11.6	16.7	1.73	2.49	1.84	1.28	1.20	1.20	11	16	15
4415 B30 RRH	19.8	16.7	9.2	2.31	1.27	1.19	2.15	1.20	1.20	15	8	10
4415 B30 RRH (Side)	19.8	9.2	16.7	1.27	2.31	2.15	1.19	1.20	1.20	8	15	13

WIND LOADS AT 30 MPH:

TPA65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	34	15	20
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	8	5	6
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	8	4	5
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	4	3	3
4449 B5/B12 RRH (Side)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	3	4	3
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	3	3	3
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	3	3
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	4	2	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	4	2	2
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	3

Date: 1/24/2022
Project Name: SOUTHINGTON MILL ST H20 TANK
Project No.: CT1030
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.67	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)
TPA65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	590	268	268
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	134	91	91
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	137	66	66
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	65	47	47
4449 B5/B12 RRH (Side)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	47	65	65
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	54	45	45
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	45	54	54
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	67	41	48
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	41	67	67
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	61	27	36
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	27	61	61

WIND LOADS WITH ICE:

TPA65R-BU8D Antenna	99.3	24.0	11.0	16.59	7.62	4.13	8.99	1.27	1.47	112	59	59
AIR6449 Antenna	33.9	19.2	13.9	4.54	3.29	1.76	2.43	1.20	1.20	29	21	21
AIR6419 Antenna	34.3	19.4	10.6	4.64	2.54	1.77	3.23	1.20	1.23	29	17	17
4449 B5/B12 RRH	21.2	16.5	12.8	2.44	1.90	1.28	1.65	1.20	1.20	15	12	12
4449 B5/B12 RRH (Side)	21.2	12.8	16.5	1.90	2.44	1.65	1.28	1.20	1.20	12	15	15
B2/B66A 8843 RRH	18.2	16.5	14.2	2.10	1.80	1.10	1.28	1.20	1.20	13	11	11
B2/B66A 8843 RRH (Side)	18.2	14.2	16.5	1.80	2.10	1.28	1.10	1.20	1.20	11	13	13
B14 4478 RRH	21.4	16.7	11.6	2.49	1.73	1.28	1.84	1.20	1.20	16	11	12
B14 4478 RRH (Side)	21.4	11.6	16.7	1.73	2.49	1.84	1.28	1.20	1.20	11	16	16
4415 B30 RRH	19.8	16.7	9.2	2.31	1.27	1.19	2.15	1.20	1.20	15	8	10
4415 B30 RRH (Side)	19.8	9.2	16.7	1.27	2.31	2.15	1.19	1.20	1.20	8	15	15

WIND LOADS AT 30 MPH:

TPA65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	34	15	15
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	8	5	5
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	8	4	4
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	4	3	3
4449 B5/B12 RRH (Side)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	3	4	4
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	3	3	3
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	3	3
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	4	2	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	4
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	4	2	2
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4

Date: 1/24/2022
Project Name: SOUTHINGTON MILL ST H20 TANK
Project No.: CT1030
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.67	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)
TPA65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	590	268	349
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	134	91	101
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	137	66	84
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	65	47	51
4449 B5/B12 RRH (Side)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	47	65	60
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	54	45	47
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	45	54	52
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	67	41	48
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	41	67	60
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	61	27	36
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	27	61	52

WIND LOADS WITH ICE:

TPA65R-BU8D Antenna	99.3	24.0	11.0	16.59	7.62	4.13	8.99	1.27	1.47	112	59	72
AIR6449 Antenna	33.9	19.2	13.9	4.54	3.29	1.76	2.43	1.20	1.20	29	21	23
AIR6419 Antenna	34.3	19.4	10.6	4.64	2.54	1.77	3.23	1.20	1.23	29	17	20
4449 B5/B12 RRH	21.2	16.5	12.8	2.44	1.90	1.28	1.65	1.20	1.20	15	12	13
4449 B5/B12 RRH (Side)	21.2	12.8	16.5	1.90	2.44	1.65	1.28	1.20	1.20	12	15	15
B2/B66A 8843 RRH	18.2	16.5	14.2	2.10	1.80	1.10	1.28	1.20	1.20	13	11	12
B2/B66A 8843 RRH (Side)	18.2	14.2	16.5	1.80	2.10	1.28	1.10	1.20	1.20	11	13	13
B14 4478 RRH	21.4	16.7	11.6	2.49	1.73	1.28	1.84	1.20	1.20	16	11	12
B14 4478 RRH (Side)	21.4	11.6	16.7	1.73	2.49	1.84	1.28	1.20	1.20	11	16	15
4415 B30 RRH	19.8	16.7	9.2	2.31	1.27	1.19	2.15	1.20	1.20	15	8	10
4415 B30 RRH (Side)	19.8	9.2	16.7	1.27	2.31	2.15	1.19	1.20	1.20	8	15	13

WIND LOADS AT 30 MPH:

TPA65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	34	15	20
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	8	5	6
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	8	4	5
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	4	3	3
4449 B5/B12 RRH (Side)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	3	4	3
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	3	3	3
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	3	3
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	4	2	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	4	2	2
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	3

Date: 1/24/2022
Project Name: SOUTHINGTON MILL ST H20 TANK
Project No.: CT1030
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 150 (deg)

Ice Thickness = 1.67 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)
TPA65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	590	268	510
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	134	91	123
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	137	66	120
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	65	47	60
4449 B5/B12 RRH (Side)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	47	65	51
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	54	45	52
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	45	54	47
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	67	41	48
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	41	67	48
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	61	27	36
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	27	61	36

WIND LOADS WITH ICE:

TPA65R-BU8D Antenna	99.3	24.0	11.0	16.59	7.62	4.13	8.99	1.27	1.47	112	59	98
AIR6449 Antenna	33.9	19.2	13.9	4.54	3.29	1.76	2.43	1.20	1.20	29	21	27
AIR6419 Antenna	34.3	19.4	10.6	4.64	2.54	1.77	3.23	1.20	1.23	29	17	26
4449 B5/B12 RRH	21.2	16.5	12.8	2.44	1.90	1.28	1.65	1.20	1.20	15	12	15
4449 B5/B12 RRH (Side)	21.2	12.8	16.5	1.90	2.44	1.65	1.28	1.20	1.20	12	15	13
B2/B66A 8843 RRH	18.2	16.5	14.2	2.10	1.80	1.10	1.28	1.20	1.20	13	11	13
B2/B66A 8843 RRH (Side)	18.2	14.2	16.5	1.80	2.10	1.28	1.10	1.20	1.20	11	13	12
B14 4478 RRH	21.4	16.7	11.6	2.49	1.73	1.28	1.84	1.20	1.20	16	11	12
B14 4478 RRH (Side)	21.4	11.6	16.7	1.73	2.49	1.84	1.28	1.20	1.20	11	16	12
4415 B30 RRH	19.8	16.7	9.2	2.31	1.27	1.19	2.15	1.20	1.20	15	8	10
4415 B30 RRH (Side)	19.8	9.2	16.7	1.27	2.31	2.15	1.19	1.20	1.20	8	15	10

WIND LOADS AT 30 MPH:

TPA65R-BU8D Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	34	15	29
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	8	5	7
AIR6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	8	4	7
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	4	3	3
4449 B5/B12 RRH (Side)	17.9	9.5	13.2	1.18	1.64	1.88	1.36	1.20	1.20	3	4	3
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	3	3	3
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	3	3
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	4	2	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	4	2	2
4415 B30 RRH (Side)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	2

Date: 1/24/2022
Project Name: SOUTHINGTON MILL ST H20 TANK
Project No.: CT1030
Designed By: ID **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.67 in.
Density of ice: 56 pcf

TPA65R-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:		388 lbs
Weight of object:	88.0 lbs	
Combined weight of ice and object:		476 lbs

AIR6449 Antenna

Weight of ice based on total radial SF area:

Height (in):	30.6	
Width (in):	15.9	
Depth (in):	10.6	
Total weight of ice on object:		108 lbs
Weight of object:	82.0 lbs	
Combined weight of ice and object:		190 lbs

AIR6419 Antenna

Weight of ice based on total radial SF area:

Height (in):	31.0	
Width (in):	16.1	
Depth (in):	7.3	
Total weight of ice on object:		102 lbs
Weight of object:	66.0 lbs	
Combined weight of ice and object:		168 lbs

8843 B2/B66A RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:		48 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		120 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:		54 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		127 lbs

4415 B30 RRH

Weight of ice based on total radial SF area:

Height (in):	16.5	
Width (in):	13.4	
Depth (in):	5.9	
Total weight of ice on object:		46 lbs
Weight of object:	46.0 lbs	
Combined weight of ice and object:		92 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:		54 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		114 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		46 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		79 lbs

PL 3-1/2x5/8

Weight of ice based on total radial SF area:

Height (in):	3.5	
Width (in):	0.625	
Per foot weight of ice on object:		11 plf

PL 11-1/4x5/8

Weight of ice based on total radial SF area:

Height (in):	11.25	
Width (in):	0.625	
Per foot weight of ice on object:		26 plf

5/8" Round Bar

Per foot weight of ice:

diameter (in):	0.625	
Per foot weight of ice on object:		5 plf

3/4" Round Bar

Per foot weight of ice:

diameter (in):	0.75	
Per foot weight of ice on object:		5 plf

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

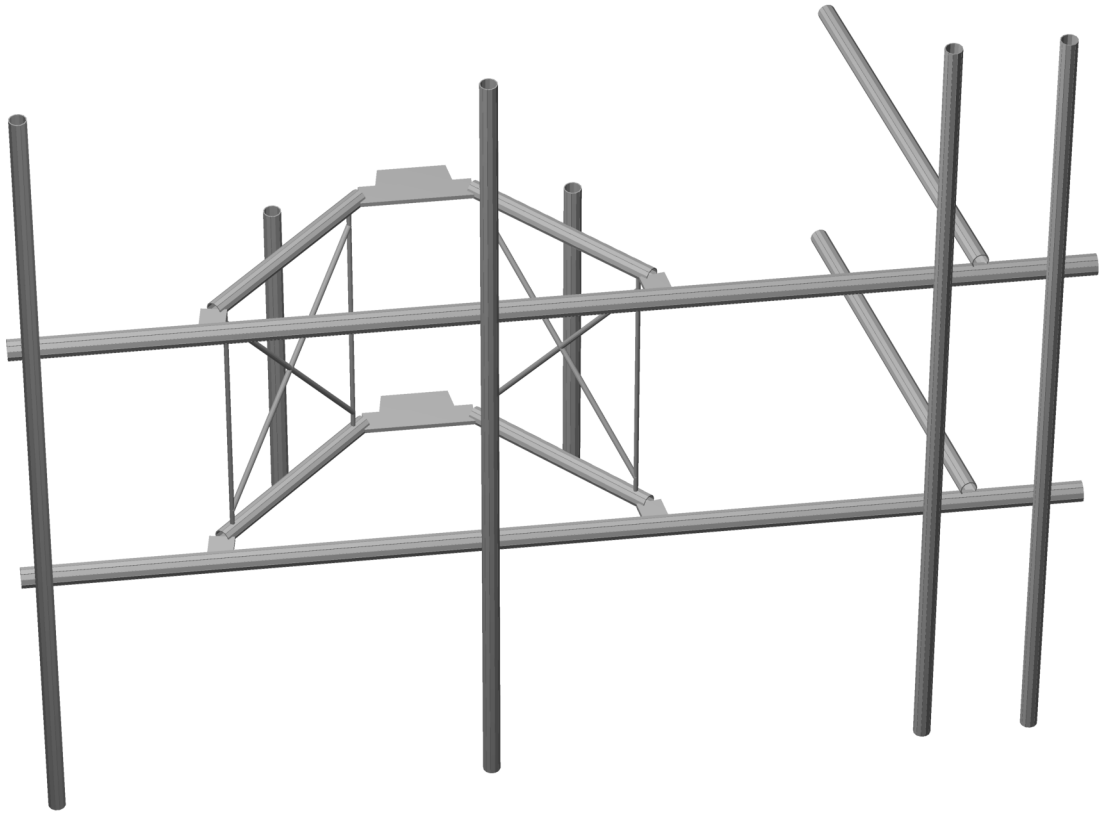
L 2-1/2x2-1/2 Angles

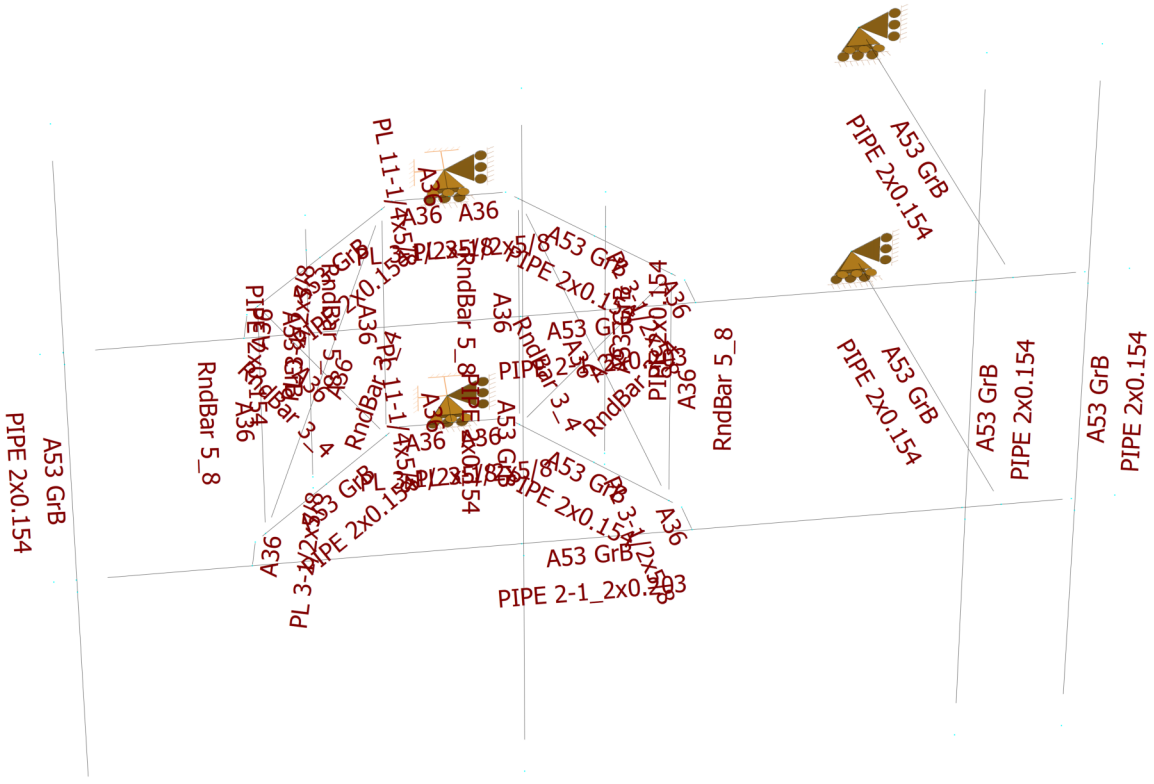
Weight of ice based on total radial SF area:

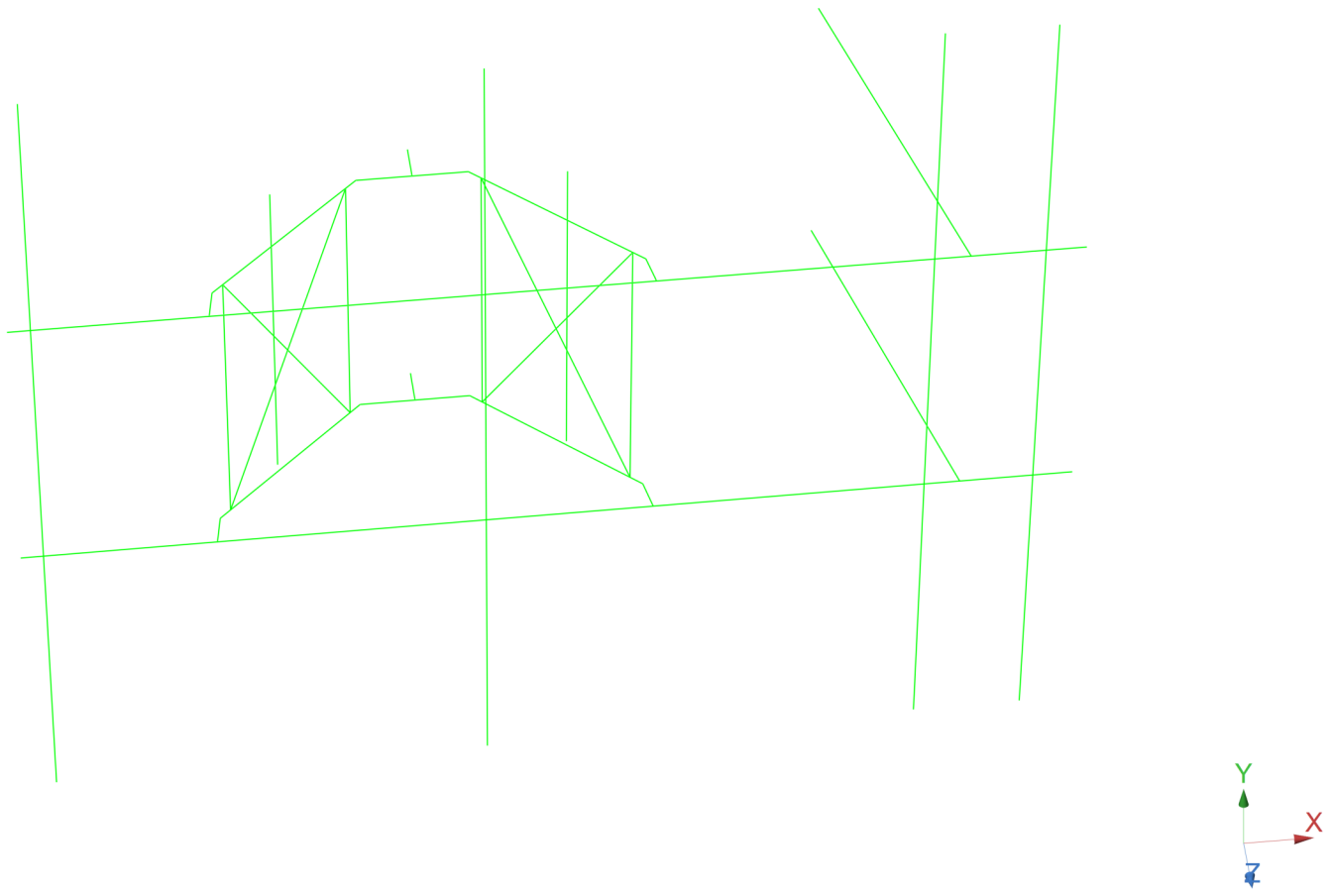
Height (in):	2.5	
Width (in):	2.5	
Per foot weight of ice on object:		11 plf

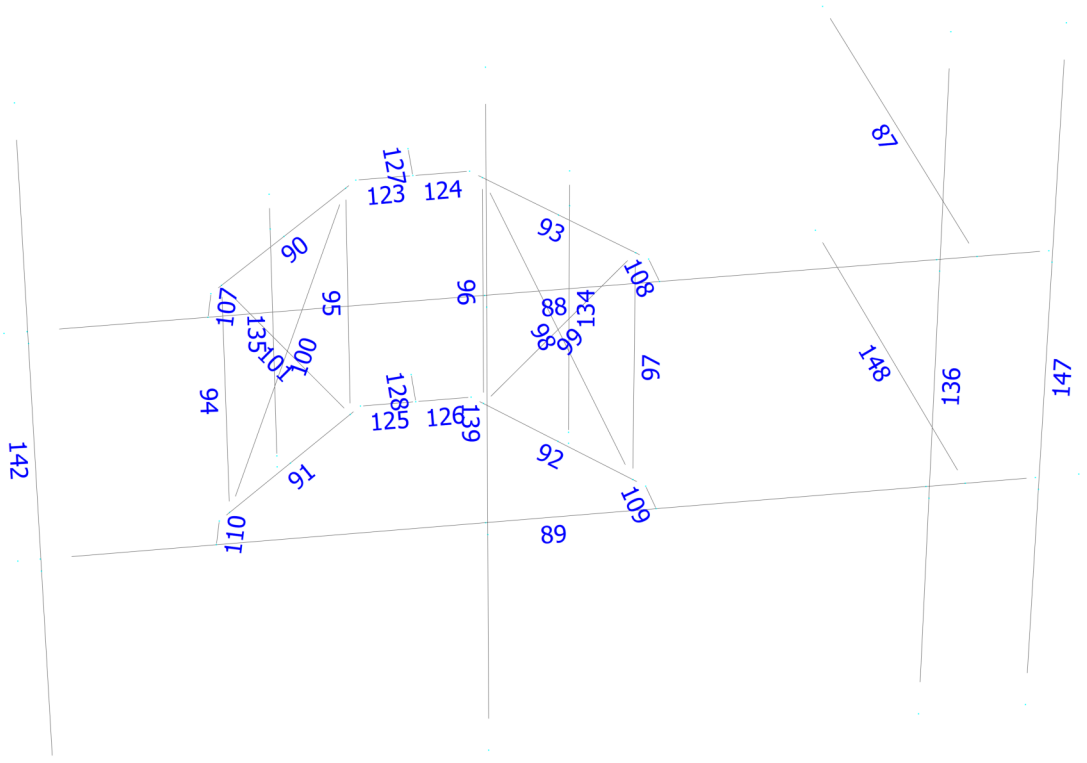
HUDSON
Design Group LLC

Alpha and Beta Sector Mount Calculations (Existing Conditions)


Y
X
Z


A53 GrB
PIPE 2x0.154
RndBar 5_8
A36
PL 11-1/4x5/8
PL 3-1/2x5/8
PIPE 2-1_2x0.203
RndBar 3_4
Y
X
Z


Design status
Not designed
Error on design
Design O.K.
With warnings
Y
X
Z


127
123
124
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107
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125
128
126
129
92
142
76
109
110
89
87
148
136
147
Y
X
Z

Current Date: 1/25/2022 12:10 PM
Units system: English

Load data

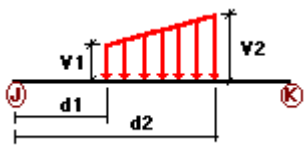
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	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
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members



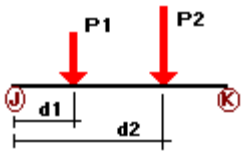
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	87	z	-0.008	-0.008	0.00	No	100.00	Yes
	88	z	-0.009	-0.009	0.00	No	100.00	Yes
	89	z	-0.009	-0.009	0.00	No	100.00	Yes
	90	z	-0.008	-0.008	0.00	No	100.00	Yes
	91	z	-0.008	-0.008	0.00	No	100.00	Yes
	92	z	-0.008	-0.008	0.00	No	100.00	Yes
	93	z	-0.008	-0.008	0.00	No	100.00	Yes
	94	z	-0.002	-0.002	0.00	No	100.00	Yes
	95	z	-0.002	-0.002	0.00	No	100.00	Yes
	96	z	-0.002	-0.002	0.00	No	100.00	Yes
	97	z	-0.002	-0.002	0.00	No	100.00	Yes
	98	z	-0.002	-0.002	0.00	No	100.00	Yes
	99	z	-0.002	-0.002	0.00	No	100.00	Yes
	100	z	-0.002	-0.002	0.00	No	100.00	Yes
	101	z	-0.002	-0.002	0.00	No	100.00	Yes
	107	z	-0.001	-0.001	0.00	No	100.00	Yes
	108	z	-0.001	-0.001	0.00	No	100.00	Yes
	109	z	-0.001	-0.001	0.00	No	100.00	Yes
	110	z	-0.001	-0.001	0.00	No	100.00	Yes
	123	z	-0.001	-0.001	0.00	No	100.00	Yes
	124	z	-0.001	-0.001	0.00	No	100.00	Yes
	125	z	-0.001	-0.001	0.00	No	100.00	Yes
	126	z	-0.001	-0.001	0.00	No	100.00	Yes
	127	z	-0.002	-0.002	0.00	No	100.00	Yes
	128	z	-0.002	-0.002	0.00	No	100.00	Yes
	147	z	-0.008	-0.009	0.00	No	100.00	Yes
	148	z	-0.008	-0.008	0.00	No	100.00	Yes
W30	87	z	-0.008	-0.008	0.00	No	100.00	Yes
	88	z	-0.009	-0.009	0.00	No	100.00	Yes
	89	z	-0.009	-0.009	0.00	No	100.00	Yes
	90	z	-0.008	-0.008	0.00	No	100.00	Yes
	91	z	-0.008	-0.008	0.00	No	100.00	Yes
	92	z	-0.008	-0.008	0.00	No	100.00	Yes
	93	z	-0.008	-0.008	0.00	No	100.00	Yes
	94	z	-0.002	-0.002	0.00	No	100.00	Yes
	95	z	-0.002	-0.002	0.00	No	100.00	Yes
	96	z	-0.002	-0.002	0.00	No	100.00	Yes
	97	z	-0.002	-0.002	0.00	No	100.00	Yes
	98	z	-0.002	-0.002	0.00	No	100.00	Yes
	99	z	-0.002	-0.002	0.00	No	100.00	Yes
	100	z	-0.002	-0.002	0.00	No	100.00	Yes
	101	z	-0.002	-0.002	0.00	No	100.00	Yes
	107	z	-0.001	-0.001	0.00	No	100.00	Yes
	108	z	-0.001	-0.001	0.00	No	100.00	Yes
	109	z	-0.001	-0.001	0.00	No	100.00	Yes
	110	z	-0.001	-0.001	0.00	No	100.00	Yes
	123	z	-0.001	-0.001	0.00	No	100.00	Yes
	124	z	-0.001	-0.001	0.00	No	100.00	Yes
	125	z	-0.001	-0.001	0.00	No	100.00	Yes
	126	z	-0.001	-0.001	0.00	No	100.00	Yes
	127	z	-0.002	-0.002	0.00	No	100.00	Yes
	128	z	-0.002	-0.002	0.00	No	100.00	Yes
	136	z	-0.008	-0.008	0.00	No	100.00	Yes
	139	z	-0.008	-0.008	0.00	No	100.00	Yes
	142	z	-0.008	-0.008	0.00	No	100.00	Yes
	147	z	-0.008	-0.008	0.00	No	100.00	Yes
	148	z	-0.008	-0.008	0.00	No	100.00	Yes
W60	87	x	-0.008	-0.008	0.00	No	100.00	Yes
	88	x	-0.009	-0.009	0.00	No	100.00	Yes
	89	x	-0.009	-0.009	0.00	No	100.00	Yes

	90	x	-0.008	-0.008	0.00	No	100.00	Yes
	91	x	-0.008	-0.008	0.00	No	100.00	Yes
	92	x	-0.008	-0.008	0.00	No	100.00	Yes
	93	x	-0.008	-0.008	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	107	x	-0.001	-0.001	0.00	No	100.00	Yes
	108	x	-0.001	-0.001	0.00	No	100.00	Yes
	109	x	-0.001	-0.001	0.00	No	100.00	Yes
	110	x	-0.001	-0.001	0.00	No	100.00	Yes
	123	x	-0.001	-0.001	0.00	No	100.00	Yes
	124	x	-0.001	-0.001	0.00	No	100.00	Yes
	125	x	-0.001	-0.001	0.00	No	100.00	Yes
	126	x	-0.001	-0.001	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
	136	x	-0.008	-0.008	0.00	No	100.00	Yes
	139	x	-0.008	-0.008	0.00	No	100.00	Yes
	142	x	-0.008	-0.008	0.00	No	100.00	Yes
	147	x	-0.008	-0.008	0.00	No	100.00	Yes
	148	x	-0.008	-0.008	0.00	No	100.00	Yes
W90	87	x	-0.008	-0.008	0.00	No	100.00	Yes
	88	x	-0.009	-0.009	0.00	No	100.00	Yes
	89	x	-0.009	-0.009	0.00	No	100.00	Yes
	90	x	-0.008	-0.008	0.00	No	100.00	Yes
	91	x	-0.008	-0.008	0.00	No	100.00	Yes
	92	x	-0.008	-0.008	0.00	No	100.00	Yes
	93	x	-0.008	-0.008	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	107	x	-0.001	-0.001	0.00	No	100.00	Yes
	108	x	-0.001	-0.001	0.00	No	100.00	Yes
	109	x	-0.001	-0.001	0.00	No	100.00	Yes
	110	x	-0.001	-0.001	0.00	No	100.00	Yes
	123	x	-0.001	-0.001	0.00	No	100.00	Yes
	124	x	-0.001	-0.001	0.00	No	100.00	Yes
	125	x	-0.001	-0.001	0.00	No	100.00	Yes
	126	x	-0.001	-0.001	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
	136	x	-0.008	-0.008	0.00	No	100.00	Yes
	139	x	-0.008	-0.008	0.00	No	100.00	Yes
	142	x	-0.008	-0.008	0.00	No	100.00	Yes
	147	x	-0.008	-0.008	0.00	No	100.00	Yes
	148	x	-0.008	-0.008	0.00	No	100.00	Yes
W120	87	x	-0.008	-0.008	0.00	No	100.00	Yes
	88	x	-0.009	-0.009	0.00	No	100.00	Yes
	89	x	-0.009	-0.009	0.00	No	100.00	Yes

	90	x	-0.008	-0.008	0.00	No	100.00	Yes
	91	x	-0.008	-0.008	0.00	No	100.00	Yes
	92	x	-0.008	-0.008	0.00	No	100.00	Yes
	93	x	-0.008	-0.008	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	107	x	-0.001	-0.001	0.00	No	100.00	Yes
	108	x	-0.001	-0.001	0.00	No	100.00	Yes
	109	x	-0.001	-0.001	0.00	No	100.00	Yes
	110	x	-0.001	-0.001	0.00	No	100.00	Yes
	123	x	-0.001	-0.001	0.00	No	100.00	Yes
	124	x	-0.001	-0.001	0.00	No	100.00	Yes
	125	x	-0.001	-0.001	0.00	No	100.00	Yes
	126	x	-0.001	-0.001	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
	136	x	-0.008	-0.008	0.00	No	100.00	Yes
	139	x	-0.008	-0.008	0.00	No	100.00	Yes
	142	x	-0.008	-0.008	0.00	No	100.00	Yes
	147	x	-0.008	-0.008	0.00	No	100.00	Yes
	148	x	-0.008	-0.008	0.00	No	100.00	Yes
W150	87	z	0.008	0.008	0.00	No	100.00	Yes
	88	z	0.009	0.009	0.00	No	100.00	Yes
	89	z	0.009	0.009	0.00	No	100.00	Yes
	90	z	0.008	0.008	0.00	No	100.00	Yes
	91	z	0.008	0.008	0.00	No	100.00	Yes
	92	z	0.008	0.008	0.00	No	100.00	Yes
	93	z	0.008	0.008	0.00	No	100.00	Yes
	94	z	0.002	0.002	0.00	No	100.00	Yes
	95	z	0.002	0.002	0.00	No	100.00	Yes
	96	z	0.002	0.002	0.00	No	100.00	Yes
	97	z	0.002	0.002	0.00	No	100.00	Yes
	98	z	0.002	0.002	0.00	No	100.00	Yes
	99	z	0.002	0.002	0.00	No	100.00	Yes
	100	z	0.002	0.002	0.00	No	100.00	Yes
	101	z	0.002	0.002	0.00	No	100.00	Yes
	107	z	0.001	0.001	0.00	No	100.00	Yes
	108	z	0.001	0.001	0.00	No	100.00	Yes
	109	z	0.001	0.001	0.00	No	100.00	Yes
	110	z	0.001	0.001	0.00	No	100.00	Yes
	123	z	0.001	0.001	0.00	No	100.00	Yes
	124	z	0.001	0.001	0.00	No	100.00	Yes
	125	z	0.001	0.001	0.00	No	100.00	Yes
	126	z	0.001	0.001	0.00	No	100.00	Yes
	127	z	0.002	0.002	0.00	No	100.00	Yes
	128	z	0.002	0.002	0.00	No	100.00	Yes
	136	z	0.008	0.008	0.00	No	100.00	Yes
	139	z	0.008	0.008	0.00	No	100.00	Yes
	142	z	0.008	0.008	0.00	No	100.00	Yes
	147	z	0.008	0.008	0.00	No	100.00	Yes
	148	z	0.008	0.008	0.00	No	100.00	Yes
Di	87	y	-0.008	-0.008	0.00	No	100.00	Yes
	88	y	-0.009	-0.009	0.00	No	100.00	Yes
	89	y	-0.009	-0.009	0.00	No	100.00	Yes

90	y	-0.008	-0.008	0.00	No	100.00	Yes
91	y	-0.008	-0.008	0.00	No	100.00	Yes
92	y	-0.008	-0.008	0.00	No	100.00	Yes
93	y	-0.008	-0.008	0.00	No	100.00	Yes
94	y	-0.005	-0.005	0.00	No	100.00	Yes
95	y	-0.005	-0.005	0.00	No	100.00	Yes
96	y	-0.005	-0.005	0.00	No	100.00	Yes
97	y	-0.005	-0.005	0.00	No	100.00	Yes
98	y	-0.005	-0.005	0.00	No	100.00	Yes
99	y	-0.005	-0.005	0.00	No	100.00	Yes
100	y	-0.005	-0.005	0.00	No	100.00	Yes
101	y	-0.005	-0.005	0.00	No	100.00	Yes
107	y	-0.011	-0.011	0.00	No	100.00	Yes
108	y	-0.011	-0.011	0.00	No	100.00	Yes
109	y	-0.011	-0.011	0.00	No	100.00	Yes
110	y	-0.011	-0.011	0.00	No	100.00	Yes
123	y	-0.011	-0.011	0.00	No	100.00	Yes
124	y	-0.011	-0.011	0.00	No	100.00	Yes
125	y	-0.005	-0.005	0.00	No	100.00	Yes
126	y	-0.005	-0.005	0.00	No	100.00	Yes
127	y	-0.026	-0.026	0.00	No	100.00	Yes
128	y	-0.026	-0.026	0.00	No	100.00	Yes
134	y	-0.008	-0.008	0.00	No	100.00	Yes
135	y	-0.008	-0.008	0.00	No	100.00	Yes
136	y	-0.008	-0.008	0.00	No	100.00	Yes
139	y	-0.008	-0.008	0.00	No	100.00	Yes
142	y	-0.008	-0.008	0.00	No	100.00	Yes
147	y	-0.008	-0.008	0.00	No	100.00	Yes
148	y	-0.008	-0.008	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	134	y	-0.06	2.50	No
		y	-0.046	2.50	No
	135	y	-0.073	2.50	No
		y	-0.072	2.50	No
	136	y	-0.044	1.50	No
		y	-0.044	8.50	No
	139	y	-0.041	1.50	No
		y	-0.041	4.50	No
		y	-0.033	5.50	No
		y	-0.033	8.50	No
	142	y	-0.044	1.50	No
		y	-0.044	8.50	No
Wo	134	z	-0.041	2.50	No
		z	-0.027	2.50	No
	135	z	-0.047	2.50	No
		z	-0.045	2.50	No

	136	z	-0.295	1.50	No
		z	-0.295	8.50	No
	139	z	-0.067	1.50	No
		z	-0.067	4.50	No
		z	-0.069	5.50	No
		z	-0.069	8.50	No
	142	z	-0.295	1.50	No
		z	-0.296	8.50	No
W30	134	3	-0.048	2.50	No
		3	-0.036	2.50	No
	135	3	-0.051	2.50	No
		3	-0.047	2.50	No
	136	3	-0.255	1.50	No
		3	-0.255	8.50	No
	139	3	-0.062	1.50	No
		3	-0.062	4.50	No
		3	-0.06	5.50	No
		3	-0.06	8.50	No
	142	3	-0.255	1.50	No
		3	-0.255	8.50	No
W60	134	3	-0.06	2.50	No
		3	-0.052	2.50	No
	135	3	-0.06	2.50	No
		3	-0.052	2.50	No
	136	3	-0.175	1.50	No
		3	-0.175	8.50	No
	139	3	-0.051	1.50	No
		3	-0.051	4.50	No
		3	-0.043	5.50	No
		3	-0.043	8.50	No
	142	3	-0.175	1.50	No
		3	-0.175	8.50	No
W90	134	x	-0.067	2.50	No
		x	-0.061	2.50	No
	135	x	-0.065	2.50	No
		x	-0.054	2.50	No
	136	x	-0.134	1.50	No
		x	-0.134	8.50	No
	139	x	-0.046	1.50	No
		x	-0.046	4.50	No
		x	-0.034	5.50	No
		x	-0.034	8.50	No
	142	x	-0.134	1.50	No
		x	-0.134	8.50	No
W120	134	2	-0.06	2.50	No
		2	-0.052	2.50	No
	135	2	-0.06	2.50	No
		2	-0.052	2.50	No
	136	2	-0.175	1.50	No
		2	-0.175	8.50	No
	139	2	-0.051	1.50	No
		2	-0.051	4.50	No
		2	-0.043	5.50	No
		2	-0.043	8.50	No
	142	2	-0.175	1.50	No
		2	-0.175	8.50	No
W150	134	2	-0.048	2.50	No
		2	-0.036	2.50	No
	135	2	-0.051	2.50	No
		2	-0.047	2.50	No

	136	2	-0.255	1.50	No
		2	-0.255	8.50	No
	139	2	-0.062	1.50	No
		2	-0.062	4.50	No
		2	-0.06	5.50	No
		2	-0.06	8.50	No
	142	2	-0.255	1.50	No
		2	-0.255	8.50	No
Di	134	y	-0.054	2.50	No
		y	-0.046	2.50	No
	135	y	-0.054	2.50	No
		y	-0.048	2.50	No
	136	y	-0.194	1.50	No
		y	-0.194	8.50	No
	139	y	-0.054	1.50	No
		y	-0.054	4.50	No
		y	-0.051	5.50	No
		y	-0.051	8.50	No
	142	y	-0.194	1.50	No
		y	-0.194	8.50	No
WI0	134	z	-0.011	2.50	No
		z	-0.008	2.50	No
	135	z	-0.012	2.50	No
		z	-0.011	2.50	No
	136	z	-0.057	1.50	No
		z	-0.057	8.50	No
	139	z	-0.015	1.50	No
		z	-0.015	4.50	No
		z	-0.015	5.50	No
		z	-0.015	8.50	No
	142	z	-0.057	1.50	No
		z	-0.057	8.50	No
WI30	134	3	-0.012	2.50	No
		3	-0.01	2.50	No
	135	3	-0.013	2.50	No
		3	-0.012	2.50	No
	136	3	-0.049	1.50	No
		3	-0.049	8.50	No
	139	3	-0.014	1.50	No
		3	-0.014	4.50	No
		3	-0.014	5.50	No
		3	-0.014	8.50	No
	142	3	-0.049	1.50	No
		3	-0.049	8.50	No
WI60	134	3	-0.015	2.50	No
		3	-0.013	2.50	No
	135	3	-0.015	2.50	No
		3	-0.013	2.50	No
	136	3	-0.036	1.50	No
		3	-0.036	8.50	No
	139	3	-0.012	1.50	No
		3	-0.012	4.50	No
		3	-0.01	5.50	No
		3	-0.01	8.50	No
	142	3	-0.036	1.50	No
		3	-0.036	8.50	No
WI90	134	x	-0.016	2.50	No
		x	-0.015	2.50	No
	135	x	-0.015	2.50	No
		x	-0.013	2.50	No

	136	x	-0.03	1.50	No
		x	-0.03	8.50	No
	139	x	-0.011	1.50	No
		x	-0.011	4.50	No
		x	-0.009	5.50	No
		x	-0.009	8.50	No
	142	x	-0.03	1.50	No
		x	-0.03	8.50	No
WI120	134	2	-0.015	2.50	No
		2	-0.013	2.50	No
	135	2	-0.015	2.50	No
		2	-0.013	2.50	No
	136	2	-0.036	1.50	No
		2	-0.036	8.50	No
	139	2	-0.012	1.50	No
		2	-0.012	4.50	No
		2	-0.01	5.50	No
		2	-0.01	8.50	No
	142	2	-0.036	1.50	No
		2	-0.036	8.50	No
WI150	134	2	-0.012	2.50	No
		2	-0.01	2.50	No
	135	2	-0.013	2.50	No
		2	-0.012	2.50	No
	136	2	-0.049	1.50	No
		2	-0.049	8.50	No
	139	2	-0.014	1.50	No
		2	-0.014	4.50	No
		2	-0.014	5.50	No
		2	-0.014	8.50	No
	142	2	-0.049	1.50	No
		2	-0.049	8.50	No
WL0	134	z	-0.002	2.50	No
		z	-0.002	2.50	No
	135	z	-0.003	2.50	No
		z	-0.003	2.50	No
	136	z	-0.017	1.50	No
		z	-0.017	8.50	No
	139	z	-0.004	1.50	No
		z	-0.004	4.50	No
		z	-0.004	5.50	No
		z	-0.004	8.50	No
	142	z	-0.017	1.50	No
		z	-0.017	8.50	No
WL30	134	3	-0.003	2.50	No
		3	-0.002	2.50	No
	135	3	-0.003	2.50	No
		3	-0.003	2.50	No
	136	3	-0.015	1.50	No
		3	-0.015	8.50	No
	139	3	-0.004	1.50	No
		3	-0.004	4.50	No
		3	-0.004	5.50	No
		3	-0.004	8.50	No
	142	3	-0.015	1.50	No
		3	-0.015	8.50	No
WL60	134	3	-0.003	2.50	No
		3	-0.003	2.50	No
	135	3	-0.004	2.50	No
		3	-0.003	2.50	No

	136	3	-0.01	1.50	No
		3	-0.01	8.50	No
	139	3	-0.003	1.50	No
		3	-0.003	4.50	No
		3	-0.003	5.50	No
		3	-0.003	8.50	No
	142	3	-0.01	1.50	No
		3	-0.01	8.50	No
WL90	134	x	-0.004	2.50	No
		x	-0.004	2.50	No
	135	x	-0.004	2.50	No
		x	-0.003	2.50	No
	136	x	-0.008	1.50	No
		x	-0.008	8.50	No
	139	x	-0.003	1.50	No
		x	-0.003	4.50	No
		x	-0.002	5.50	No
		x	-0.002	8.50	No
	142	x	-0.008	1.50	No
		x	-0.008	8.50	No
WL120	134	2	-0.003	2.50	No
		2	-0.003	2.50	No
	135	2	-0.003	2.50	No
		2	-0.003	2.50	No
	136	2	-0.01	1.50	No
		2	-0.01	8.50	No
	139	2	-0.003	1.50	No
		2	-0.003	4.50	No
		2	-0.003	5.50	No
		2	-0.003	8.50	No
	142	2	-0.01	1.50	No
		2	-0.01	8.50	No
WL150	134	2	-0.003	2.50	No
		2	-0.002	2.50	No
	135	2	-0.003	2.50	No
		2	-0.003	2.50	No
	136	2	-0.015	1.50	No
		2	-0.015	8.50	No
	139	2	-0.004	1.50	No
		2	-0.004	4.50	No
		2	-0.004	5.50	No
		2	-0.004	8.50	No
	142	2	-0.015	1.50	No
		2	-0.015	8.50	No
LL1	88	y	-0.25	50.00	Yes
LL2	88	y	-0.25	100.00	Yes
LL3	88	y	-0.25	0.00	Yes
LLa1	147	y	-0.50	5.00	No
LLa2	136	y	-0.50	5.00	No
LLa3	139	y	-0.50	5.00	No
LLa4	142	y	-0.50	5.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	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
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00

LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

Current Date: 1/25/2022 12:11 PM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1
LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2
LC54=1.2D+WL30+1.5LLa2
LC55=1.2D+WL60+1.5LLa2

LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2-1_2x0.203	**88**	LC2 at 60.16%	0.65	OK	Eq. H1-1b
		89	LC8 at 60.16%	**0.66**	**OK**	Eq. H1-1b
	PIPE 2x0.154	**87**	LC6 at 100.00%	0.06	OK	Eq. H1-1b
		90	LC84 at 93.75%	0.35	OK	Eq. H1-1b
		91	LC78 at 93.75%	0.28	OK	Eq. H1-1b
		92	LC42 at 93.75%	0.39	OK	Eq. H1-1b
		93	LC48 at 93.75%	0.48	OK	Eq. H1-1b
		134	LC50 at 12.50%	0.20	OK	Eq. H1-1b
		135	LC80 at 12.50%	0.16	OK	Eq. H1-1b
		136	LC48 at 33.33%	**0.69**	**OK**	Eq. H1-1b
		139	LC31 at 33.33%	0.29	OK	Eq. H1-1b
		142	LC7 at 66.67%	0.62	OK	Eq. H1-1b
		147	LC47 at 33.33%	0.48	OK	Eq. H1-1b
		148	LC12 at 100.00%	0.07	OK	Eq. H1-1b
	PL 11-1/4x5/8	**127**	LC31 at 100.00%	**0.39**	**OK**	Eq. H1-1b
		128	LC31 at 100.00%	0.29	OK	Eq. H1-1b
	PL 3-1/2x5/8	**107**	LC88 at 100.00%	0.38	OK	Eq. H1-1b
		108	LC41 at 100.00%	0.55	OK	Eq. H1-1b
		109	LC47 at 100.00%	0.60	OK	Eq. H1-1b
		110	LC83 at 100.00%	0.41	OK	Eq. H1-1b
		123	LC82 at 100.00%	0.59	OK	Eq. H1-1b
		124	LC48 at 0.00%	0.78	OK	Eq. H1-1b
		125	LC88 at 100.00%	0.57	OK	Eq. H1-1b
		126	LC42 at 0.00%	**0.78**	**OK**	Eq. H1-1b
	RndBar 3_4	**98**	LC48 at 0.00%	**0.39**	**OK**	Eq. H1-1a

	99	LC42 at 0.00%	0.31	OK	Eq. H1-1b
	100	LC83 at 100.00%	0.22	OK	Eq. H1-1b
	101	LC77 at 100.00%	0.23	OK	Eq. H1-1b
RndBar 5_8	**94**	LC77 at 87.50%	0.66	OK	Eq. H1-1a
	95	LC80 at 87.50%	0.64	OK	Eq. H1-1a
	96	LC50 at 87.50%	**0.88**	**OK**	Eq. H1-1a
	97	LC41 at 87.50%	0.86	OK	Eq. H1-1a

Current Date: 1/25/2022 10:47 AM
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
142	0.00	0.00	0.00	0
143	-0.6362	0.00	0.4783	0
144	0.00	-3.3333	0.00	0
145	-0.6362	-3.3333	0.4783	0
146	0.6362	-3.3333	0.4783	0
147	0.6362	0.00	0.4783	0
156	6.00	0.00	2.63	0
157	5.00	0.00	-2.00	0
158	-4.70	0.00	2.63	0
159	7.30	0.00	2.63	0
160	-4.70	-3.3333	2.63	0
161	7.30	-3.3333	2.63	0
162	-2.4126	0.00	2.2374	0
163	-2.4126	-3.3333	2.2374	0
164	2.4126	-3.3333	2.2374	0
165	2.4126	0.00	2.2374	0
166	-2.2835	0.00	2.1096	0
167	-2.2835	-3.3333	2.1096	0
168	-0.7653	0.00	0.6062	0
169	-0.7653	-3.3333	0.6062	0
170	0.7653	0.00	0.6062	0
171	0.7653	-3.3333	0.6062	0
172	2.2835	0.00	2.1096	0

173	2.2835	-3.3333	2.1096	0
174	-3.00	0.00	2.63	0
175	-0.50	0.00	-1.00	0
184	-2.4792	0.00	2.63	0
185	2.4792	0.00	2.63	0
186	2.4792	-3.3333	2.63	0
187	-2.4792	-3.3333	2.63	0
208	0.00	0.00	0.4783	0
209	0.00	-3.3333	0.4783	0
210	1.5244	-3.3333	1.3579	0
211	1.5244	0.00	1.3579	0
212	1.6658	-3.3333	1.2165	0
213	1.6658	0.00	1.2165	0
214	-1.5244	-3.3333	1.3579	0
215	-1.5244	0.00	1.3579	0
216	-1.6658	-3.3333	1.2165	0
217	-1.6658	0.00	1.2165	0
218	1.6658	0.50	1.2165	0
220	1.6658	-3.50	1.2165	0
224	-1.6658	0.50	1.2165	0
225	-1.6658	-3.50	1.2165	0
226	5.55	-6.6667	2.83	0
227	5.55	3.3333	2.83	0
228	5.55	0.00	2.63	0
229	5.55	-3.3333	2.63	0
230	5.55	3.33E-06	2.83	0
231	5.55	-3.3333	2.83	0
232	0.55	-6.6667	2.83	0
233	0.55	3.3333	2.83	0
234	0.55	3.33E-06	2.83	0
235	0.55	3.33E-06	2.63	0
236	0.55	-3.3333	2.83	0
237	0.55	-3.3333	2.63	0
238	-4.45	-6.6667	2.83	0
239	-4.45	3.3333	2.83	0
240	-4.45	0.00	2.63	0
241	-4.45	-3.3333	2.63	0
242	-4.45	3.33E-06	2.83	0
243	-4.45	-3.3333	2.83	0
244	6.80	-6.6667	2.83	0
245	6.80	0.00	2.63	0
246	6.80	-3.3333	2.63	0
247	6.80	3.33E-06	2.83	0
248	6.80	-3.3333	2.83	0
249	6.80	3.3333	2.83	0
250	6.00	-3.3333	2.63	0
251	5.00	-3.3333	-2.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
142	1	1	1	1	0	1
144	1	1	1	1	0	1
157	1	1	1	0	0	0
175	1	1	1	0	0	0
251	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
87	156	157		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
88	158	159		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
89	160	161		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
90	162	143		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
91	163	145		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
92	164	146		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
93	165	147		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	166	167		RndBar 5_8	A36	0.00	0.00	0.00
95	168	169		RndBar 5_8	A36	0.00	0.00	0.00
96	170	171		RndBar 5_8	A36	0.00	0.00	0.00
97	172	173		RndBar 5_8	A36	0.00	0.00	0.00
98	170	173		RndBar 3_4	A36	0.00	0.00	0.00
99	171	172		RndBar 3_4	A36	0.00	0.00	0.00
100	167	168		RndBar 3_4	A36	0.00	0.00	0.00
101	166	169		RndBar 3_4	A36	0.00	0.00	0.00
102	174	175		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
107	162	184		PL 3-1/2x5/8	A36	0.00	0.00	0.00
108	165	185		PL 3-1/2x5/8	A36	0.00	0.00	0.00
109	164	186		PL 3-1/2x5/8	A36	0.00	0.00	0.00
110	163	187		PL 3-1/2x5/8	A36	0.00	0.00	0.00
123	143	208		PL 3-1/2x5/8	A36	0.00	0.00	0.00
124	208	147		PL 3-1/2x5/8	A36	0.00	0.00	0.00
125	145	209		PL 3-1/2x5/8	A36	0.00	0.00	0.00
126	209	146		PL 3-1/2x5/8	A36	0.00	0.00	0.00
127	208	142		PL 11-1/4x5/8	A36	11.25	9.25	0.00
128	209	144		PL 11-1/4x5/8	A36	11.25	9.25	0.00
134	218	220		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
135	224	225		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
136	227	226		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
139	233	232		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
142	239	238		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
147	249	244		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
148	250	251		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

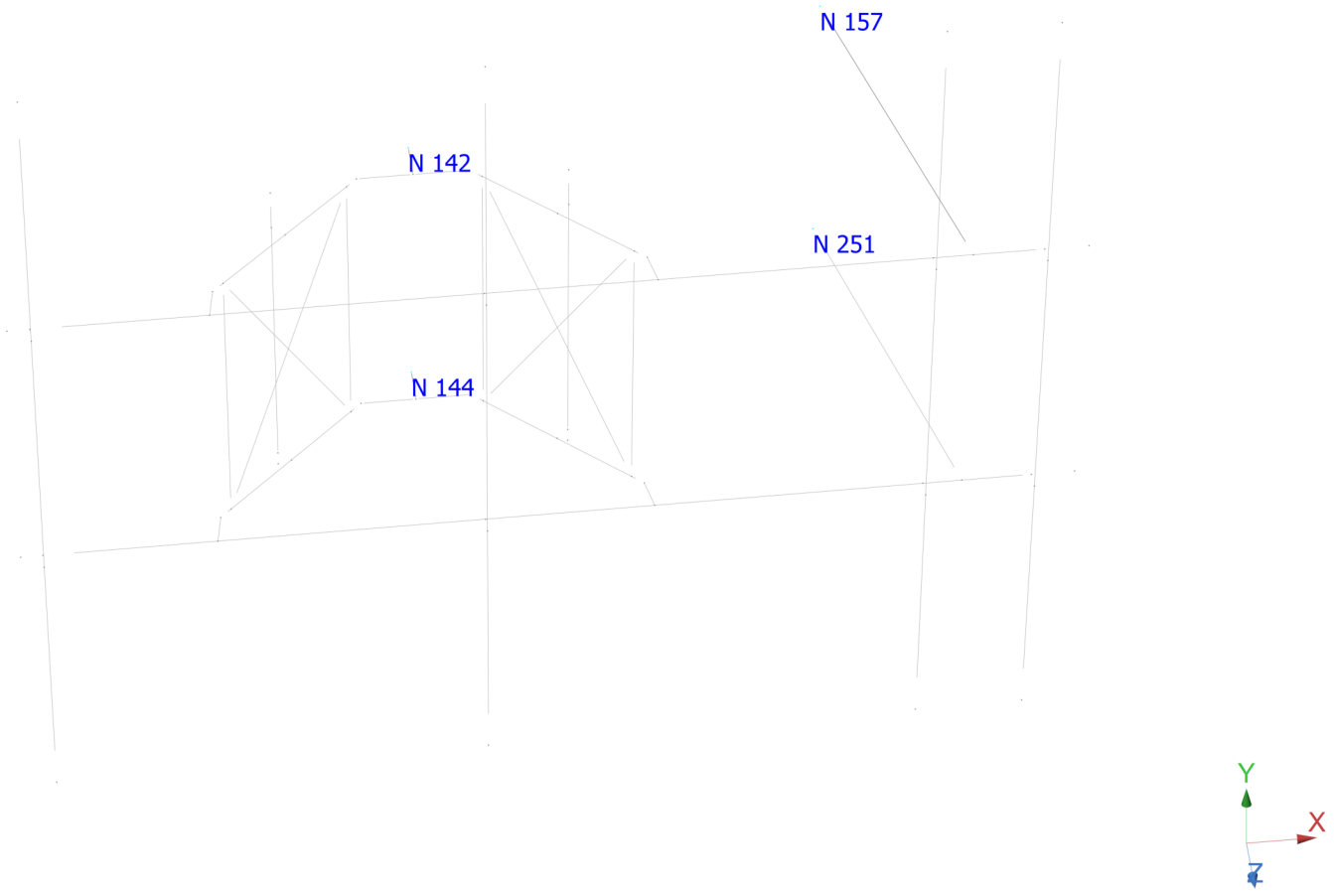
Member	Rotation [Deg]	Axes23	NX	NY	NZ
94	0.00	2	0.00	0.00	1.00
95	0.00	2	0.00	0.00	1.00
96	0.00	2	0.00	0.00	1.00
97	0.00	2	0.00	0.00	1.00
107	90.00	0	0.00	0.00	0.00
108	90.00	0	0.00	0.00	0.00
109	90.00	0	0.00	0.00	0.00
110	90.00	0	0.00	0.00	0.00
123	90.00	0	0.00	0.00	0.00
124	90.00	0	0.00	0.00	0.00
125	90.00	0	0.00	0.00	0.00
126	90.00	0	0.00	0.00	0.00
127	90.00	0	0.00	0.00	0.00
128	90.00	0	0.00	0.00	0.00
134	315.00	0	0.00	0.00	0.00
135	315.00	0	0.00	0.00	0.00
136	315.00	0	0.00	0.00	0.00
139	315.00	0	0.00	0.00	0.00
142	315.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
87	0.00	2.00	0.00	0.00	2.00	0.00
98	0.00	-3.50	0.00	0.00	3.50	0.00
99	0.00	3.50	0.00	0.00	-3.50	0.00
100	0.00	3.50	0.00	0.00	-3.50	0.00
101	0.00	-3.50	0.00	0.00	3.50	0.00
102	0.00	2.00	0.00	0.00	2.00	0.00
127	0.00	-0.625	0.00	0.00	-0.625	0.00
128	0.00	-0.625	0.00	0.00	-0.625	0.00
148	0.00	2.00	0.00	0.00	2.00	0.00

Hinges

	Node-J				Node-K						
Member	M33	M22	V3	V2	M33	M22	V3	V2	TOR	AXL	Axial rigidity
87	1	1	0	0	0	0	0	0	0	0	Full
99	0	0	0	0	0	0	0	0	0	0	Tension only
101	0	0	0	0	0	0	0	0	0	0	Tension only
102	1	1	0	0	0	0	0	0	0	0	Full
107	1	1	0	0	0	0	0	0	0	0	Full
108	1	1	0	0	0	0	0	0	0	0	Full
109	1	1	0	0	0	0	0	0	0	0	Full
110	1	1	0	0	0	0	0	0	0	0	Full
148	1	1	0	0	0	0	0	0	0	0	Full

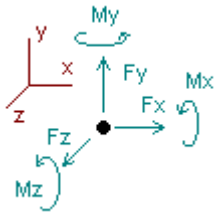

N 157
N 142
N 251
N 144
Y
X
Z

Current Date: 1/25/2022 12:14 PM
Units system: English

Analysis result

Envelope for nodal reactions

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



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1

LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2
LC54=1.2D+WL30+1.5LLa2
LC55=1.2D+WL60+1.5LLa2
LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

		Forces						Moments					
Node		**Fx** [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
142	Max	0.716	LC82	1.549	LC30	0.461	LC14	-0.15243	LC20	0.00000	LC1	0.27514	LC46
	Min	-1.639	LC52	0.478	LC24	-1.751	LC31	-0.53939	LC26	0.00000	LC1	-0.13257	LC88
144	Max	1.643	LC46	1.302	LC26	1.761	LC25	-0.15774	LC20	0.00000	LC1	0.30978	LC46
	Min	-0.720	LC88	0.410	LC24	-0.488	LC20	-0.54686	LC26	0.00000	LC1	-0.14381	LC88
157	Max	0.076	LC24	0.029	LC36	0.354	LC24	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.080	LC6	-0.006	LC18	-0.377	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1
251	Max	0.092	LC12	0.032	LC36	0.426	LC12	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.085	LC18	-0.007	LC18	-0.400	LC18	0.00000	LC1	0.00000	LC1	0.00000	LC1

Date: 1/25/2022
Project Name: SOUTHINGTON MILL ST H20 TANK
Project No.: CT1030
Designed By: ID **Checked By:** MSC

HUDSON Design Group LLC

CHECK CONNECTION CAPACITY (Worst Case) (Alpha/ Beta Sector)

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

Bolt Type = A36 5/8" Threaded Rod

Allowable Tensile Load =

F_{Tall} = 6673 lbs.

Allowable Shear Load =

F_{Vall}= 4004 lbs.

TENSILE FORCES

Reaction **F =** 1751 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 1639 lbs. (See Bentley Output)
Reactions in Y direction: 1549 lbs. (See Bentley Output)

Resultant: 2255 lbs.

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

Tension Design Load /Bolts =

f_t= 437.75 lbs. < 6673 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

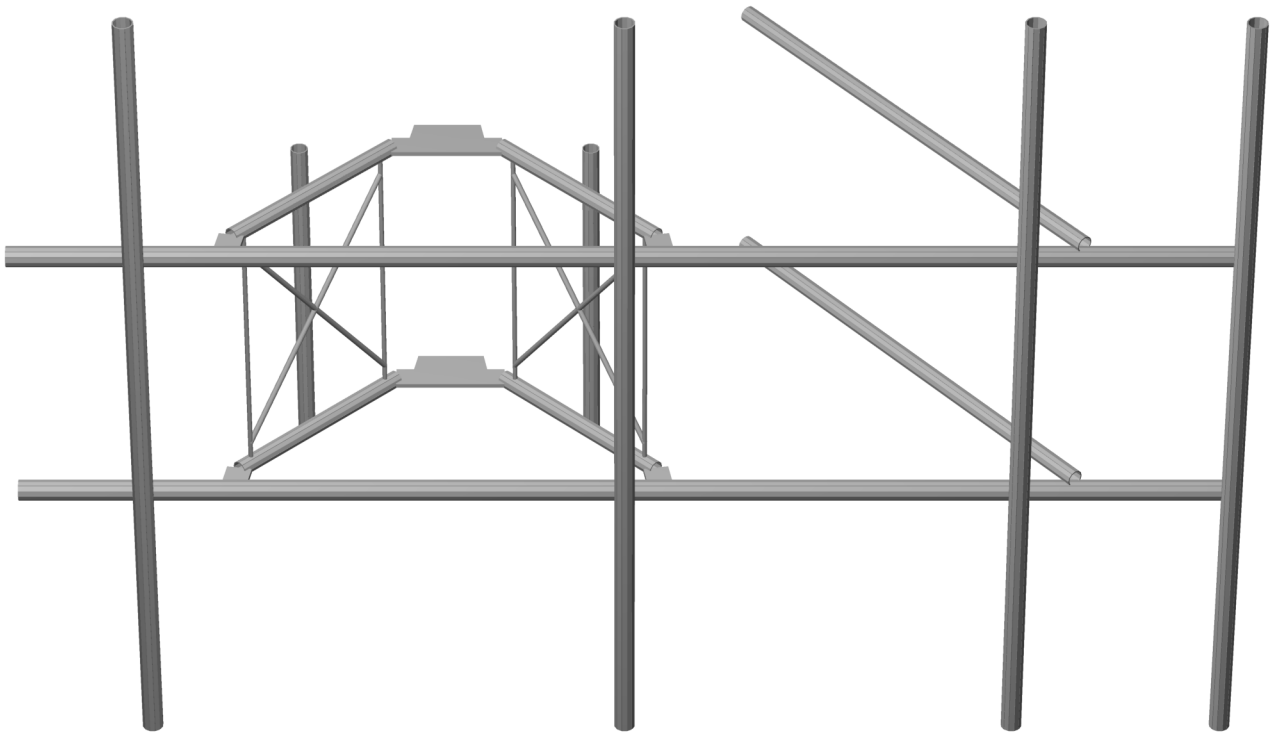
f_v= 563.79 lbs. < 4004 lbs. **Therefore, OK !**

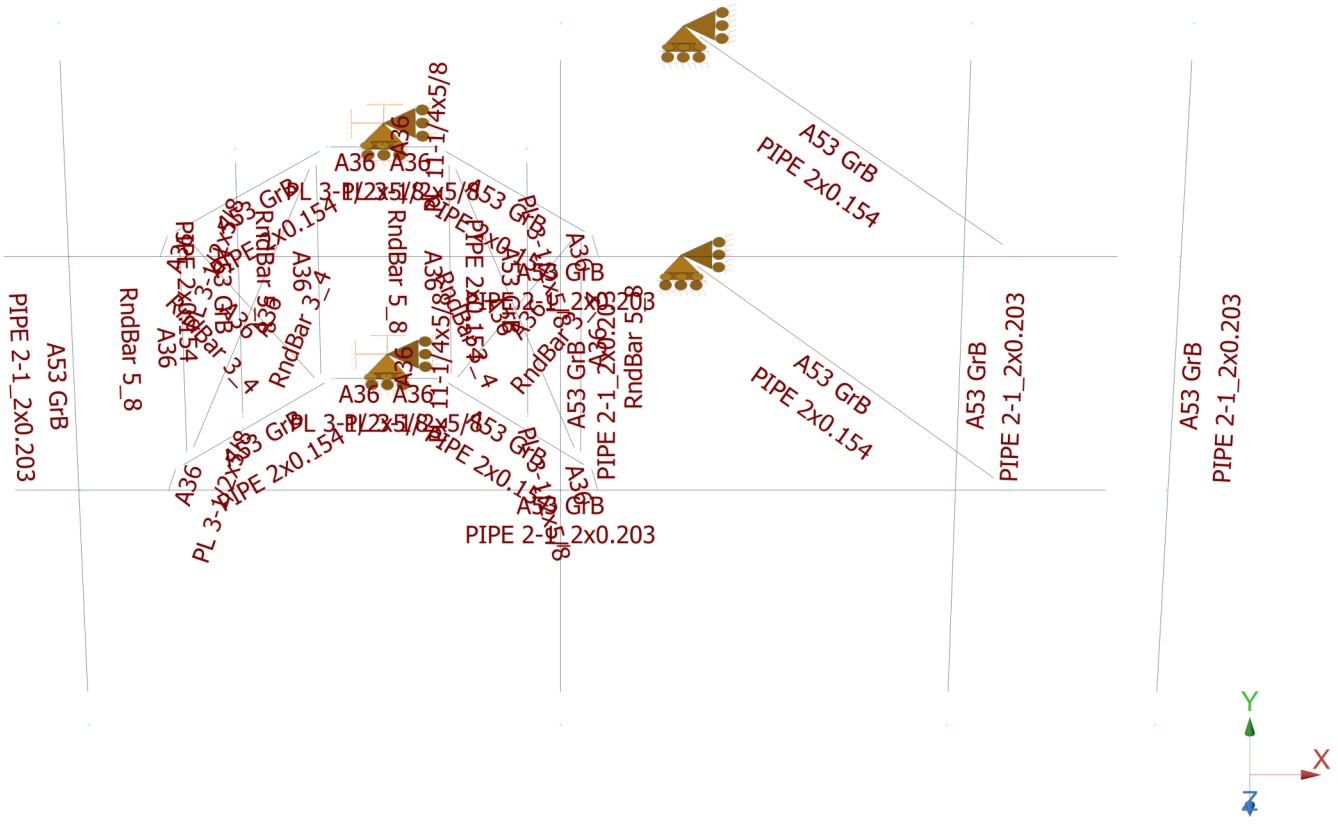
CHECK COMBINED TENSION AND SHEAR

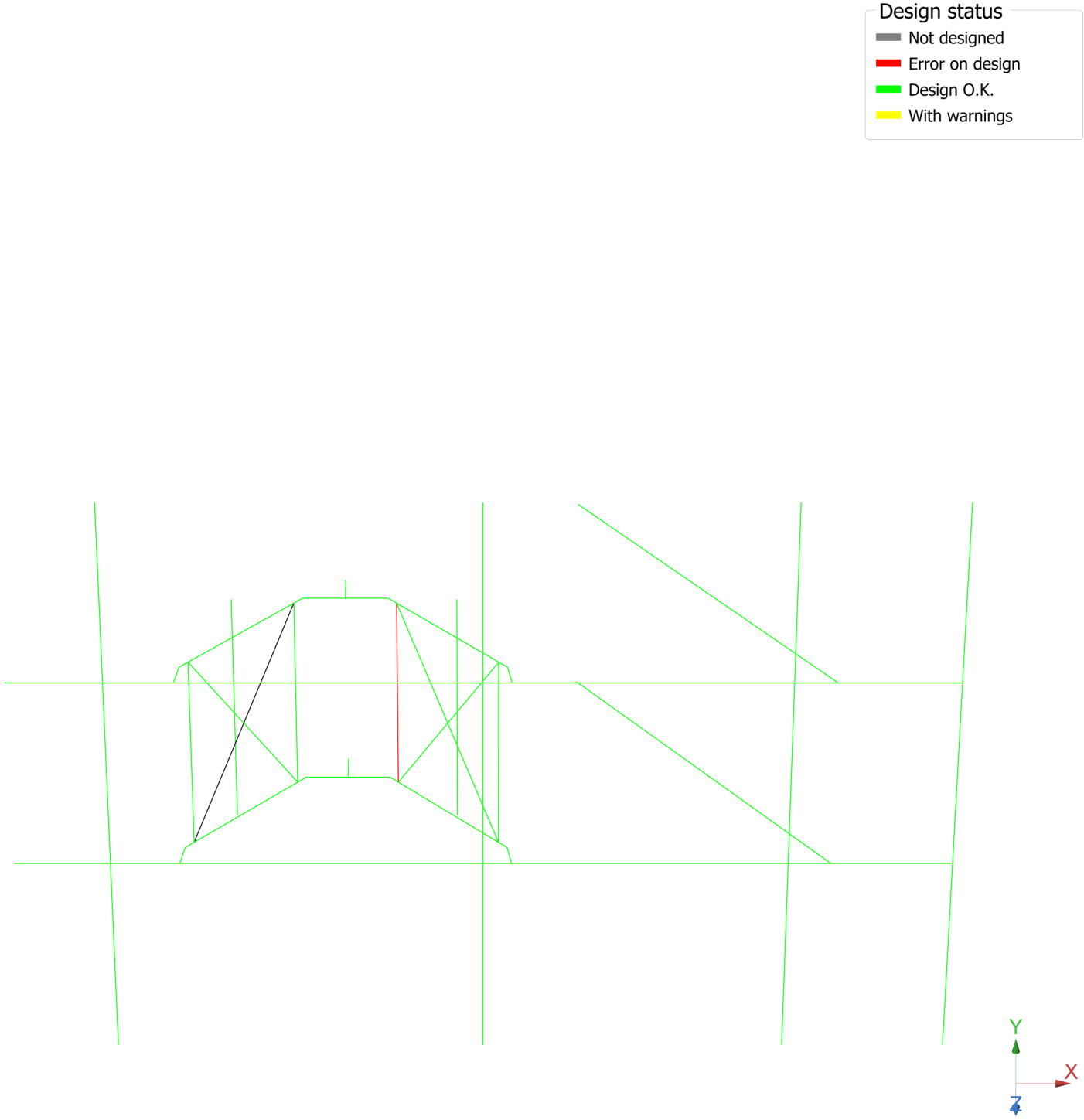
f_t / F_T	+	f_v / F_V	≤	1.0			
0.066	+	0.141	=	0.206	<	1.0	**Therefore, OK !**

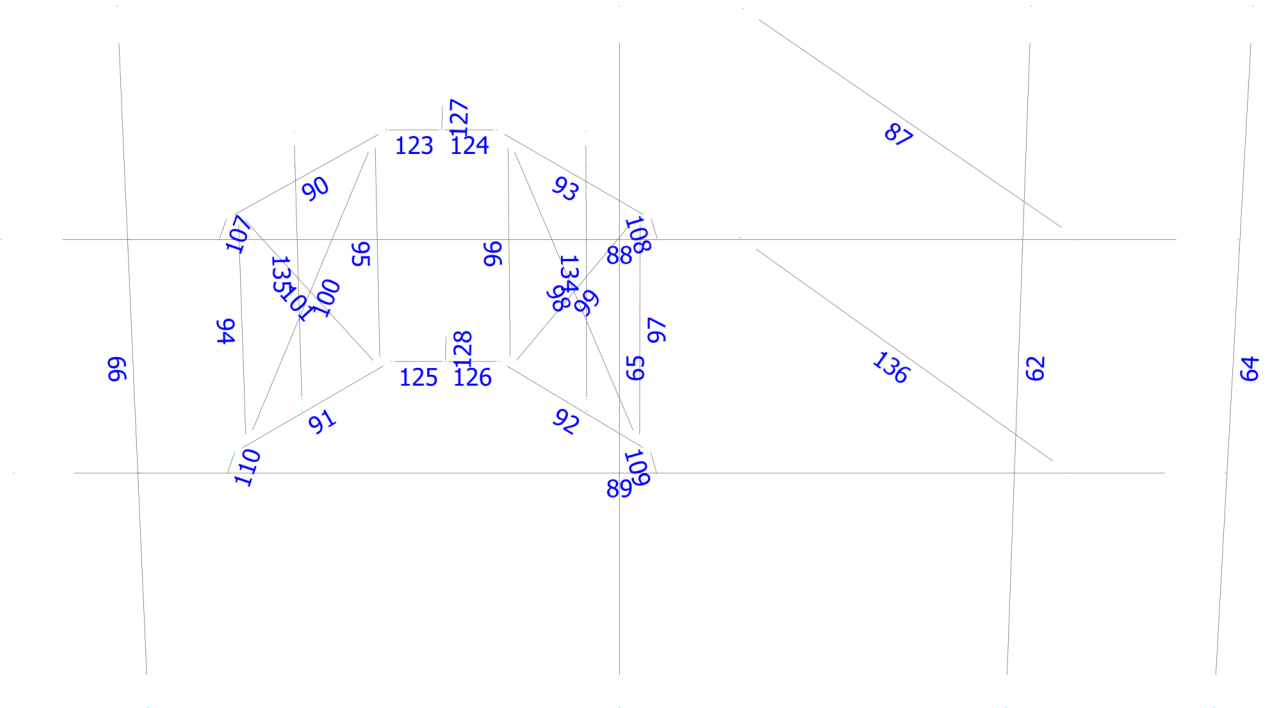
HUDSON
Design Group LLC

Gamma Sector
Mount Calculations
(Existing Conditions)


Y
X
Z


A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2-1_2x0.203
RndBar 5_8
A36
PL 3-PL235/8x5/8
PIPE 2x0.154
RndBar 3_4
PIPE 2-1_2x0.203
Y
X
Z


Design status
Not designed
Error on design
Design O.K.
With warnings
Y
X
Z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128
125
126
65
91
92
110
109
89
87
136
62
64
Y
X
Z

Current Date: 1/25/2022 12:19 PM
Units system: English

Load data

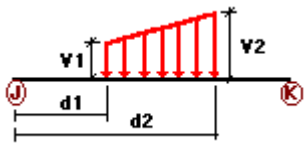
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	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
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members



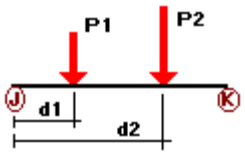
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	64	z	-0.009	-0.009	0.00	No	100.00	Yes
	87	z	-0.008	-0.008	0.00	No	100.00	Yes
	88	z	-0.009	-0.009	0.00	No	100.00	Yes
	89	z	-0.009	-0.009	0.00	No	100.00	Yes
	90	z	-0.008	-0.008	0.00	No	100.00	Yes
	91	z	-0.008	-0.008	0.00	No	100.00	Yes
	92	z	-0.008	-0.008	0.00	No	100.00	Yes
	93	z	-0.008	-0.008	0.00	No	100.00	Yes
	94	z	-0.002	-0.002	0.00	No	100.00	Yes
	95	z	-0.002	-0.002	0.00	No	100.00	Yes
	96	z	-0.002	-0.002	0.00	No	100.00	Yes
	97	z	-0.002	-0.002	0.00	No	100.00	Yes
	98	z	-0.002	-0.002	0.00	No	100.00	Yes
	99	z	-0.002	-0.002	0.00	No	100.00	Yes
	100	z	-0.002	-0.002	0.00	No	100.00	Yes
	101	z	-0.002	-0.002	0.00	No	100.00	Yes
	107	z	-0.001	-0.001	0.00	No	100.00	Yes
	108	z	-0.001	-0.001	0.00	No	100.00	Yes
	109	z	-0.001	-0.001	0.00	No	100.00	Yes
	110	z	-0.001	-0.001	0.00	No	100.00	Yes
	123	z	-0.001	-0.001	0.00	No	100.00	Yes
	124	z	-0.001	-0.001	0.00	No	100.00	Yes
	125	z	-0.001	-0.001	0.00	No	100.00	Yes
	126	z	-0.001	-0.001	0.00	No	100.00	Yes
	127	z	-0.002	-0.002	0.00	No	100.00	Yes
	128	z	-0.002	-0.002	0.00	No	100.00	Yes
	136	z	-0.008	-0.008	0.00	No	100.00	Yes
W30	62	z	-0.009	-0.009	0.00	No	100.00	Yes
	64	z	-0.009	-0.009	0.00	No	100.00	Yes
	65	z	-0.009	-0.009	0.00	No	100.00	Yes
	66	z	-0.009	-0.009	0.00	No	100.00	Yes
	87	z	-0.008	-0.008	0.00	No	100.00	Yes
	88	z	-0.009	-0.009	0.00	No	100.00	Yes
	89	z	-0.009	-0.009	0.00	No	100.00	Yes
	90	z	-0.008	-0.008	0.00	No	100.00	Yes
	91	z	-0.008	-0.008	0.00	No	100.00	Yes
	92	z	-0.008	-0.008	0.00	No	100.00	Yes
	93	z	-0.008	-0.008	0.00	No	100.00	Yes
	94	z	-0.002	-0.002	0.00	No	100.00	Yes
	95	z	-0.002	-0.002	0.00	No	100.00	Yes
	96	z	-0.002	-0.002	0.00	No	100.00	Yes
	97	z	-0.002	-0.002	0.00	No	100.00	Yes
	98	z	-0.002	-0.002	0.00	No	100.00	Yes
	99	z	-0.002	-0.002	0.00	No	100.00	Yes
	100	z	-0.002	-0.002	0.00	No	100.00	Yes
	101	z	-0.002	-0.002	0.00	No	100.00	Yes
	107	z	-0.001	-0.001	0.00	No	100.00	Yes
	108	z	-0.001	-0.001	0.00	No	100.00	Yes
	109	z	-0.001	-0.001	0.00	No	100.00	Yes
	110	z	-0.001	-0.001	0.00	No	100.00	Yes
	123	z	-0.001	-0.001	0.00	No	100.00	Yes
	124	z	-0.001	-0.001	0.00	No	100.00	Yes
	125	z	-0.001	-0.001	0.00	No	100.00	Yes
	126	z	-0.001	-0.001	0.00	No	100.00	Yes
	127	z	-0.002	-0.002	0.00	No	100.00	Yes
	128	z	-0.002	-0.002	0.00	No	100.00	Yes
	136	z	-0.008	-0.008	0.00	No	100.00	Yes
W60	62	x	-0.009	-0.009	0.00	No	100.00	Yes
	64	x	-0.009	-0.009	0.00	No	100.00	Yes
	65	x	-0.009	-0.009	0.00	No	100.00	Yes

	66	x	-0.009	-0.009	0.00	No	100.00	Yes
	87	x	-0.008	-0.008	0.00	No	100.00	Yes
	88	x	-0.009	-0.009	0.00	No	100.00	Yes
	89	x	-0.009	-0.009	0.00	No	100.00	Yes
	90	x	-0.008	-0.008	0.00	No	100.00	Yes
	91	x	-0.008	-0.008	0.00	No	100.00	Yes
	92	x	-0.008	-0.008	0.00	No	100.00	Yes
	93	x	-0.008	-0.008	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	107	x	-0.001	-0.001	0.00	No	100.00	Yes
	108	x	-0.001	-0.001	0.00	No	100.00	Yes
	109	x	-0.001	-0.001	0.00	No	100.00	Yes
	110	x	-0.001	-0.001	0.00	No	100.00	Yes
	123	x	-0.001	-0.001	0.00	No	100.00	Yes
	124	x	-0.001	-0.001	0.00	No	100.00	Yes
	125	x	-0.001	-0.001	0.00	No	100.00	Yes
	126	x	-0.001	-0.001	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
	136	x	-0.008	-0.008	0.00	No	100.00	Yes
W90	62	x	-0.009	-0.009	0.00	No	100.00	Yes
	64	x	-0.009	-0.009	0.00	No	100.00	Yes
	65	x	-0.009	-0.009	0.00	No	100.00	Yes
	66	x	-0.009	-0.009	0.00	No	100.00	Yes
	87	x	-0.008	-0.008	0.00	No	100.00	Yes
	90	x	-0.008	-0.008	0.00	No	100.00	Yes
	91	x	-0.008	-0.008	0.00	No	100.00	Yes
	92	x	-0.008	-0.008	0.00	No	100.00	Yes
	93	x	-0.008	-0.008	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	107	x	-0.001	-0.001	0.00	No	100.00	Yes
	108	x	-0.001	-0.001	0.00	No	100.00	Yes
	109	x	-0.001	-0.001	0.00	No	100.00	Yes
	110	x	-0.001	-0.001	0.00	No	100.00	Yes
	124	x	-0.001	-0.001	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
	136	x	-0.008	-0.008	0.00	No	100.00	Yes
W120	62	x	-0.009	-0.009	0.00	No	100.00	Yes
	64	x	-0.009	-0.009	0.00	No	100.00	Yes
	65	x	-0.009	-0.009	0.00	No	100.00	Yes
	66	x	-0.009	-0.009	0.00	No	100.00	Yes
	87	x	-0.008	-0.008	0.00	No	100.00	Yes
	88	x	-0.009	-0.009	0.00	No	100.00	Yes
	89	x	-0.009	-0.009	0.00	No	100.00	Yes
	90	x	-0.008	-0.008	0.00	No	100.00	Yes

	91	x	-0.008	-0.008	0.00	No	100.00	Yes
	92	x	-0.008	-0.008	0.00	No	100.00	Yes
	93	x	-0.008	-0.008	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	107	x	-0.001	-0.001	0.00	No	100.00	Yes
	108	x	-0.001	-0.001	0.00	No	100.00	Yes
	109	x	-0.001	-0.001	0.00	No	100.00	Yes
	110	x	-0.001	-0.001	0.00	No	100.00	Yes
	123	x	-0.001	-0.001	0.00	No	100.00	Yes
	124	x	-0.001	-0.001	0.00	No	100.00	Yes
	125	x	-0.001	-0.001	0.00	No	100.00	Yes
	126	x	-0.001	-0.001	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
	136	x	-0.008	-0.008	0.00	No	100.00	Yes
W150	62	z	0.009	0.009	0.00	No	100.00	Yes
	64	z	0.009	0.009	0.00	No	100.00	Yes
	65	z	0.009	0.009	0.00	No	100.00	Yes
	66	z	0.009	0.009	0.00	No	100.00	Yes
	87	z	0.008	0.008	0.00	No	100.00	Yes
	88	z	0.009	0.009	0.00	No	100.00	Yes
	89	z	0.009	0.009	0.00	No	100.00	Yes
	90	z	0.008	0.008	0.00	No	100.00	Yes
	91	z	0.008	0.008	0.00	No	100.00	Yes
	92	z	0.008	0.008	0.00	No	100.00	Yes
	93	z	0.008	0.008	0.00	No	100.00	Yes
	94	z	0.002	0.002	0.00	No	100.00	Yes
	95	z	0.002	0.002	0.00	No	100.00	Yes
	96	z	0.002	0.002	0.00	No	100.00	Yes
	97	z	0.002	0.002	0.00	No	100.00	Yes
	98	z	0.002	0.002	0.00	No	100.00	Yes
	99	z	0.002	0.002	0.00	No	100.00	Yes
	100	z	0.002	0.002	0.00	No	100.00	Yes
	101	z	0.002	0.002	0.00	No	100.00	Yes
	107	z	0.001	0.001	0.00	No	100.00	Yes
	108	z	0.001	0.001	0.00	No	100.00	Yes
	109	z	0.001	0.001	0.00	No	100.00	Yes
	110	z	0.001	0.001	0.00	No	100.00	Yes
	123	z	0.001	0.001	0.00	No	100.00	Yes
	124	z	0.001	0.001	0.00	No	100.00	Yes
	125	z	0.001	0.001	0.00	No	100.00	Yes
	126	z	0.001	0.001	0.00	No	100.00	Yes
	127	z	0.002	0.002	0.00	No	100.00	Yes
	128	z	0.002	0.002	0.00	No	100.00	Yes
	136	z	0.008	0.008	0.00	No	100.00	Yes
Di	62	y	-0.009	-0.009	0.00	No	100.00	Yes
	64	y	-0.009	-0.009	0.00	No	100.00	Yes
	65	y	-0.009	-0.009	0.00	No	100.00	Yes
	66	y	-0.009	-0.009	0.00	No	100.00	Yes
	87	y	-0.008	-0.008	0.00	No	100.00	Yes
	88	y	-0.009	-0.009	0.00	No	100.00	Yes
	89	y	-0.009	-0.009	0.00	No	100.00	Yes
	90	y	-0.008	-0.008	0.00	No	100.00	Yes

91	y	-0.008	-0.008	0.00	No	100.00	Yes
92	y	-0.008	-0.008	0.00	No	100.00	Yes
93	y	-0.008	-0.008	0.00	No	100.00	Yes
94	y	-0.005	-0.005	0.00	No	100.00	Yes
95	y	-0.005	-0.005	0.00	No	100.00	Yes
96	y	-0.005	-0.005	0.00	No	100.00	Yes
97	y	-0.005	-0.005	0.00	No	100.00	Yes
98	y	-0.005	-0.005	0.00	No	100.00	Yes
99	y	-0.005	-0.005	0.00	No	100.00	Yes
100	y	-0.005	-0.005	0.00	No	100.00	Yes
101	y	-0.005	-0.005	0.00	No	100.00	Yes
107	y	-0.005	-0.005	0.00	No	100.00	Yes
108	y	-0.005	-0.005	0.00	No	100.00	Yes
109	y	-0.005	-0.005	0.00	No	100.00	Yes
110	y	-0.005	-0.005	0.00	No	100.00	Yes
123	y	-0.005	-0.005	0.00	No	100.00	Yes
124	y	-0.005	-0.005	0.00	No	100.00	Yes
125	y	-0.005	-0.005	0.00	No	100.00	Yes
126	y	-0.005	-0.005	0.00	No	100.00	Yes
127	y	-0.011	-0.011	0.00	No	100.00	Yes
128	y	-0.011	-0.011	0.00	No	100.00	Yes
134	y	-0.008	-0.008	0.00	No	100.00	Yes
135	y	-0.008	-0.008	0.00	No	100.00	Yes
136	y	-0.008	-0.008	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	62	y	-0.044	1.50	No
		y	-0.044	8.50	No
	65	y	-0.041	1.50	No
		y	-0.041	4.50	No
		y	-0.033	5.50	No
		y	-0.033	8.50	No
	66	y	-0.044	1.50	No
		y	-0.044	8.50	No
	134	y	-0.06	50.00	Yes
		y	-0.046	50.00	Yes
	135	y	-0.073	2.50	No
		y	-0.072	2.50	No
Wo	62	z	-0.296	1.50	No
		z	-0.296	8.50	No
	65	z	-0.067	1.50	No
		z	-0.067	4.50	No
		z	-0.069	5.50	No
		z	-0.069	8.50	No
	66	z	-0.296	1.50	No
		z	-0.296	8.50	No
	134	z	-0.041	50.00	Yes

		z	-0.027	50.00	Yes
	135	z	-0.047	50.00	Yes
		z	-0.045	50.00	Yes
W30	62	3	-0.255	1.50	No
		3	-0.255	8.50	No
	65	3	-0.062	1.50	No
		3	-0.062	4.50	No
		3	-0.06	5.50	No
		3	-0.06	8.50	No
	66	3	-0.255	1.50	No
		3	-0.255	8.50	No
	134	3	-0.048	50.00	Yes
	135	3	-0.051	50.00	Yes
W60	62	3	-0.175	1.50	No
		3	-0.175	8.50	No
	65	3	-0.051	1.50	No
		3	-0.051	4.50	No
		3	-0.043	5.50	No
		3	-0.043	8.50	No
	66	3	-0.175	1.50	No
		3	-0.175	8.50	No
	134	3	-0.06	50.00	Yes
	135	3	-0.06	50.00	Yes
W90	62	x	-0.135	1.50	No
		x	-0.135	8.50	No
	65	x	-0.046	1.50	No
		x	-0.046	4.50	No
		x	-0.034	5.50	No
		x	-0.034	8.50	No
	66	x	-0.135	1.50	No
		x	-0.135	8.50	No
	134	x	-0.067	50.00	Yes
	135	x	-0.065	50.00	Yes
W120	62	2	-0.175	1.50	No
		2	-0.175	8.50	No
	65	2	-0.051	1.50	No
		2	-0.051	4.50	No
		2	-0.043	5.50	No
		2	-0.043	8.50	No
	66	2	-0.175	1.50	No
		2	-0.175	8.50	No
	134	2	-0.06	50.00	Yes
	135	2	-0.06	50.00	Yes
W150	62	2	-0.255	1.50	No
		2	-0.255	8.50	No
	65	2	-0.062	1.50	No
		2	-0.062	4.50	No
		2	-0.06	5.50	No
		2	-0.06	8.50	No
	66	2	-0.255	1.50	No
		2	-0.255	8.50	No
	134	2	-0.048	50.00	Yes
	135	2	-0.051	50.00	Yes
Di	62	y	-0.194	1.50	No
		y	-0.194	8.50	No
	65	y	-0.054	1.50	No
		y	-0.054	4.50	No
		y	-0.051	5.50	No
		y	-0.051	8.50	No
	66	y	-0.194	1.50	No

		y	-0.194	8.50	No
	134	y	-0.054	50.00	Yes
		y	-0.046	50.00	Yes
	135	y	-0.054	50.00	Yes
		y	-0.048	50.00	Yes
WI0	62	z	-0.057	1.50	No
		z	-0.057	8.50	No
	65	z	-0.015	1.50	No
		z	-0.015	4.50	No
		z	-0.015	5.50	No
		z	-0.015	8.50	No
	66	z	-0.057	1.50	No
		z	-0.057	8.50	No
	134	z	-0.011	50.00	Yes
		z	-0.008	50.00	Yes
	135	z	-0.012	50.00	Yes
		z	-0.011	50.00	Yes
WI30	62	3	-0.05	1.50	No
		3	-0.05	8.50	No
	65	3	-0.014	1.50	No
		3	-0.014	4.50	No
		3	-0.014	5.50	No
		3	-0.014	8.50	No
	66	3	-0.05	1.50	No
		3	-0.05	8.50	No
	134	3	-0.012	50.00	Yes
	135	3	-0.013	50.00	Yes
WI60	62	3	-0.037	1.50	No
		3	-0.037	8.50	No
	65	3	-0.012	1.50	No
		3	-0.012	4.50	No
		3	-0.01	5.50	No
		3	-0.01	8.50	No
	66	3	-0.037	1.50	No
		3	-0.037	8.50	No
	134	3	-0.015	50.00	Yes
	135	3	-0.015	50.00	Yes
WI90	62	x	-0.03	1.50	No
		x	-0.03	8.50	No
	65	x	-0.011	1.50	No
		x	-0.011	4.50	No
		x	-0.009	5.50	No
		x	-0.009	8.50	No
	66	x	-0.03	1.50	No
		x	-0.03	8.50	No
	134	x	-0.016	50.00	Yes
	135	x	-0.015	50.00	Yes
WI120	62	2	-0.037	1.50	No
		2	-0.037	8.50	No
	65	2	-0.012	1.50	No
		2	-0.012	4.50	No
		2	-0.01	5.50	No
		2	-0.01	8.50	No
	66	2	-0.037	1.50	No
		2	-0.037	8.50	No
	134	2	-0.015	50.00	Yes
	135	2	-0.015	50.00	Yes
WI150	62	2	-0.05	1.50	No
		2	-0.05	8.50	No
	65	2	-0.014	1.50	No

		2	-0.014	4.50	No
		2	-0.014	5.50	No
		2	-0.014	8.50	No
	66	2	-0.05	1.50	No
		2	-0.05	8.50	No
	134	2	-0.012	50.00	Yes
	135	2	-0.013	50.00	Yes
WL0	62	z	-0.017	1.50	No
		z	-0.017	8.50	No
	65	z	-0.004	1.50	No
		z	-0.004	4.50	No
		z	-0.004	5.50	No
		z	-0.004	8.50	No
	66	z	-0.017	1.50	No
		z	-0.017	8.50	No
	134	z	-0.002	50.00	Yes
	135	z	-0.003	50.00	Yes
WL30	62	3	-0.015	1.50	No
		3	-0.015	8.50	No
	65	3	-0.004	1.50	No
		3	-0.004	4.50	No
		3	-0.004	5.50	No
		3	-0.004	8.50	No
	66	3	-0.015	1.50	No
		3	-0.015	8.50	No
	134	3	-0.003	50.00	Yes
	135	3	-0.003	50.00	Yes
WL60	62	3	-0.011	1.50	No
		3	-0.011	8.50	No
	65	3	-0.003	1.50	No
		3	-0.003	4.50	No
		3	-0.003	5.50	No
		3	-0.003	8.50	No
	66	3	-0.011	1.50	No
		3	-0.011	8.50	No
	134	3	-0.003	50.00	Yes
	135	3	-0.004	50.00	Yes
WL90	62	x	-0.008	1.50	No
		x	-0.008	8.50	No
	65	x	-0.003	1.50	No
		x	-0.003	4.50	No
		x	-0.002	5.50	No
		x	-0.002	8.50	No
	66	x	-0.008	1.50	No
		x	-0.008	8.50	No
	134	x	-0.004	50.00	Yes
	135	x	-0.004	50.00	Yes
WL120	62	2	-0.011	1.50	No
		2	-0.011	8.50	No
	65	2	-0.003	1.50	No
		2	-0.003	4.50	No
		2	-0.003	5.50	No
		2	-0.003	8.50	No
	66	2	-0.011	1.50	No
		2	-0.011	8.50	No
	134	2	-0.003	50.00	Yes
	135	2	-0.003	50.00	Yes
WL150	62	2	-0.015	1.50	No
		2	-0.015	8.50	No
	65	2	-0.004	1.50	No

		2	-0.004	4.50	No
		2	-0.004	5.50	No
		2	-0.004	8.50	No
	66	2	-0.015	1.50	No
		2	-0.015	8.50	No
	134	2	-0.003	50.00	Yes
	135	2	-0.003	50.00	Yes
LL1	88	y	-0.25	50.00	Yes
LL2	88	y	-0.25	100.00	Yes
LL3	88	y	-0.25	0.00	Yes
LLa1	64	y	-0.50	5.00	No
LLa2	62	y	-0.50	5.00	No
LLa3	65	y	-0.50	5.00	No
LLa4	66	y	-0.50	5.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	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
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1
LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2
LC54=1.2D+WL30+1.5LLa2
LC55=1.2D+WL60+1.5LLa2

LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2-1_2x0.203	**62**	LC52 at 33.33%	0.64	OK	Eq. H1-1b
		64	LC46 at 33.33%	0.45	OK	Eq. H1-1b
		65	LC41 at 64.58%	0.27	OK	Eq. H1-1b
		66	LC7 at 66.67%	0.32	OK	Eq. H1-1b
		88	LC10 at 53.57%	0.82	OK	Eq. H1-1b
		89	LC4 at 53.57%	**0.90**	**OK**	Eq. H1-1b
	PIPE 2x0.154	**87**	LC24 at 100.00%	0.12	OK	Eq. H1-1b
		90	LC84 at 93.75%	0.30	OK	Eq. H1-1b
		91	LC78 at 93.75%	0.23	OK	Eq. H1-1b
		92	LC42 at 93.75%	0.49	OK	Eq. H1-1b
		93	LC48 at 93.75%	**0.59**	**OK**	Eq. H1-1b
		134	LC50 at 12.50%	0.24	OK	Eq. H1-1b
		135	LC80 at 12.50%	0.12	OK	Eq. H1-1b
		136	LC12 at 100.00%	0.15	OK	Eq. H1-1b
	PL 11-1/4x5/8	**127**	LC32 at 100.00%	**0.41**	**OK**	Eq. H1-1b
		128	LC31 at 100.00%	0.31	OK	Eq. H1-1b
	PL 3-1/2x5/8	**107**	LC88 at 100.00%	0.30	OK	Eq. H1-1b
		108	LC52 at 100.00%	0.65	OK	Eq. H1-1b
		109	LC46 at 100.00%	0.78	OK	Eq. H1-1b
		110	LC83 at 100.00%	0.34	OK	Eq. H1-1b
		123	LC82 at 100.00%	0.51	OK	Eq. H1-1b
		124	LC48 at 0.00%	0.96	OK	Eq. H1-1b
		125	LC88 at 100.00%	0.48	OK	Eq. H1-1b
		126	LC42 at 0.00%	**0.97**	**OK**	Eq. H1-1b
	RndBar 3_4	**98**	LC48 at 0.00%	**0.47**	**OK**	Eq. H1-1a

	99	LC42 at 0.00%	0.39	OK	Eq. H1-1b
	100	LC84 at 100.00%	0.18	With warnings	Eq. H1-1b
	101	LC78 at 100.00%	0.19	OK	Eq. H1-1b
RndBar 5_8	**94**	LC77 at 87.50%	0.55	OK	Eq. H1-1a
	95	LC80 at 87.50%	0.52	OK	Eq. H1-1a
	96	LC46 at 87.50%	**1.09**	**N.G.**	Eq. H1-1a
	97	LC41 at 87.50%	0.97	OK	Eq. H1-1a

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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
142	0.25	0.00	0.00	0
143	-0.3862	0.00	0.4783	0
144	0.25	-3.3333	0.00	0
145	-0.3862	-3.3333	0.4783	0
146	0.8862	-3.3333	0.4783	0
147	0.8862	0.00	0.4783	0
152	9.30	-6.6667	2.83	0
153	9.30	3.3333	2.83	0
154	-3.25	-6.6667	2.83	0
155	-3.25	3.3333	2.83	0
156	7.50	0.00	2.63	0
157	3.75	0.00	-2.00	0
158	-3.25	0.00	2.63	0
159	9.30	0.00	2.63	0
160	-3.25	-3.3333	2.63	0
161	9.30	-3.3333	2.63	0
162	-2.1626	0.00	2.2374	0
163	-2.1626	-3.3333	2.2374	0
164	2.6626	-3.3333	2.2374	0
165	2.6626	0.00	2.2374	0
166	-2.0335	0.00	2.1096	0
167	-2.0335	-3.3333	2.1096	0
168	-0.5153	0.00	0.6062	0

169	-0.5153	-3.3333	0.6062	0
170	1.0153	0.00	0.6062	0
171	1.0153	-3.3333	0.6062	0
172	2.5335	0.00	2.1096	0
173	2.5335	-3.3333	2.1096	0
176	2.30	-6.6667	2.83	0
177	2.30	3.3333	2.83	0
184	-2.2292	0.00	2.63	0
185	2.7292	0.00	2.63	0
186	2.7292	-3.3333	2.63	0
187	-2.2292	-3.3333	2.63	0
188	6.85	-6.6667	2.83	0
189	6.85	3.3333	2.83	0
192	-3.25	3.33E-06	2.83	0
193	9.30	3.33E-06	2.83	0
194	2.30	3.33E-06	2.83	0
195	2.30	3.33E-06	2.63	0
198	6.85	3.33E-06	2.83	0
199	6.85	3.33E-06	2.63	0
200	-3.25	-3.3333	2.83	0
201	2.30	-3.3333	2.83	0
202	2.30	-3.3333	2.63	0
203	6.85	-3.3333	2.83	0
204	6.85	-3.3333	2.63	0
207	9.30	-3.3333	2.83	0
208	0.25	0.00	0.4783	0
209	0.25	-3.3333	0.4783	0
210	1.7744	-3.3333	1.3579	0
211	1.7744	0.00	1.3579	0
212	1.9158	-3.3333	1.2165	0
213	1.9158	0.00	1.2165	0
214	-1.2744	-3.3333	1.3579	0
215	-1.2744	0.00	1.3579	0
216	-1.4158	-3.3333	1.2165	0
217	-1.4158	0.00	1.2165	0
218	1.9158	0.50	1.2165	0
220	1.9158	-3.50	1.2165	0
224	-1.4158	0.50	1.2165	0
225	-1.4158	-3.50	1.2165	0
226	-4.70	0.00	2.63	0
227	-4.70	-3.3333	2.63	0
228	7.50	-3.3333	2.63	0
229	3.75	-3.3333	-2.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
142	1	1	1	1	0	1
144	1	1	1	1	0	1
157	1	1	1	0	0	0
229	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
62	189	188		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
64	153	152		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
65	177	176		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
66	155	154		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
87	156	157		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
88	226	159		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
89	227	161		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
90	162	143		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
91	163	145		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
92	164	146		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
93	165	147		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	166	167		RndBar 5_8	A36	0.00	0.00	0.00
95	168	169		RndBar 5_8	A36	0.00	0.00	0.00
96	170	171		RndBar 5_8	A36	0.00	0.00	0.00
97	172	173		RndBar 5_8	A36	0.00	0.00	0.00
98	170	173		RndBar 3_4	A36	0.00	0.00	0.00
99	171	172		RndBar 3_4	A36	0.00	0.00	0.00
100	167	168		RndBar 3_4	A36	0.00	0.00	0.00
101	166	169		RndBar 3_4	A36	0.00	0.00	0.00
107	162	184		PL 3-1/2x5/8	A36	0.00	0.00	0.00
108	165	185		PL 3-1/2x5/8	A36	0.00	0.00	0.00
109	164	186		PL 3-1/2x5/8	A36	0.00	0.00	0.00
110	163	187		PL 3-1/2x5/8	A36	0.00	0.00	0.00
123	143	208		PL 3-1/2x5/8	A36	0.00	0.00	0.00
124	208	147		PL 3-1/2x5/8	A36	0.00	0.00	0.00
125	145	209		PL 3-1/2x5/8	A36	0.00	0.00	0.00
126	209	146		PL 3-1/2x5/8	A36	0.00	0.00	0.00
127	208	142		PL 11-1/4x5/8	A36	11.25	9.25	0.00
128	209	144		PL 11-1/4x5/8	A36	11.25	9.25	0.00
134	218	220		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
135	224	225		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
136	228	229		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
62	315.00	0	0.00	0.00	0.00
64	315.00	0	0.00	0.00	0.00
65	315.00	0	0.00	0.00	0.00
66	315.00	0	0.00	0.00	0.00
94	0.00	2	0.00	0.00	1.00
95	0.00	2	0.00	0.00	1.00
96	0.00	2	0.00	0.00	1.00
97	0.00	2	0.00	0.00	1.00
107	90.00	0	0.00	0.00	0.00
108	90.00	0	0.00	0.00	0.00
109	90.00	0	0.00	0.00	0.00
110	90.00	0	0.00	0.00	0.00
123	90.00	0	0.00	0.00	0.00
124	90.00	0	0.00	0.00	0.00
125	90.00	0	0.00	0.00	0.00
126	90.00	0	0.00	0.00	0.00
127	90.00	0	0.00	0.00	0.00
128	90.00	0	0.00	0.00	0.00
134	315.00	0	0.00	0.00	0.00

135	315.00	0	0.00	0.00	0.00

Rigid end offsets

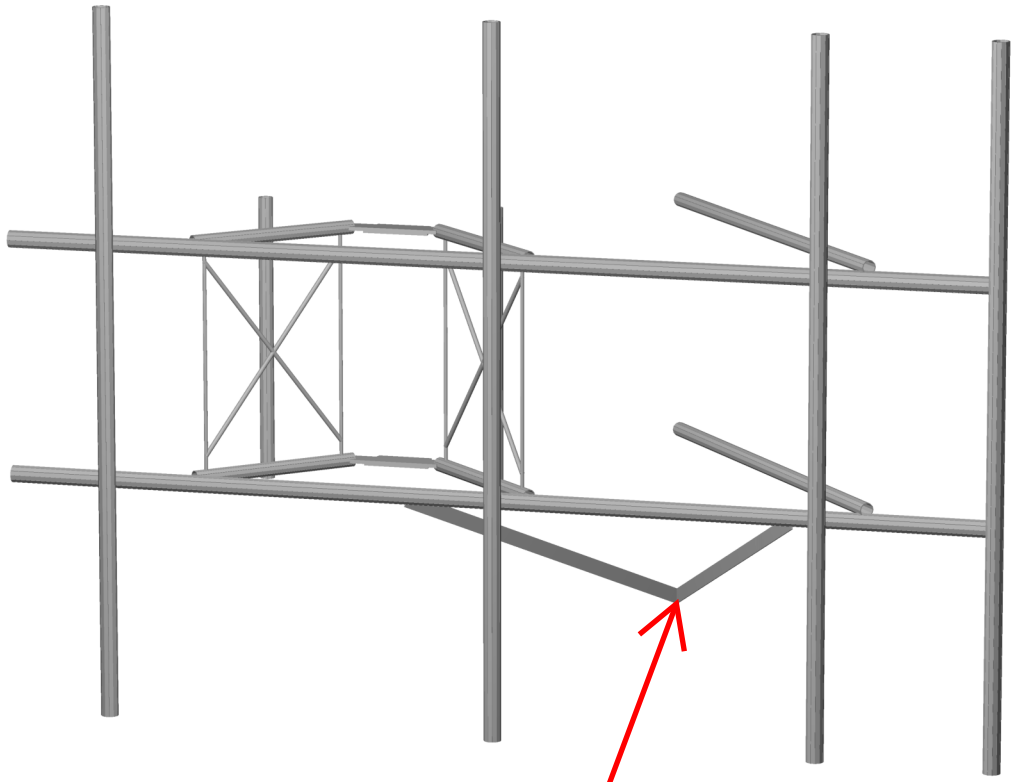
Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
87	0.00	2.00	0.00	0.00	2.00	0.00
98	0.00	-3.50	0.00	0.00	3.50	0.00
99	0.00	3.50	0.00	0.00	-3.50	0.00
100	0.00	3.50	0.00	0.00	-3.50	0.00
101	0.00	-3.50	0.00	0.00	3.50	0.00
127	0.00	-0.625	0.00	0.00	-0.625	0.00
128	0.00	-0.625	0.00	0.00	-0.625	0.00
136	0.00	2.00	0.00	0.00	2.00	0.00

Hinges

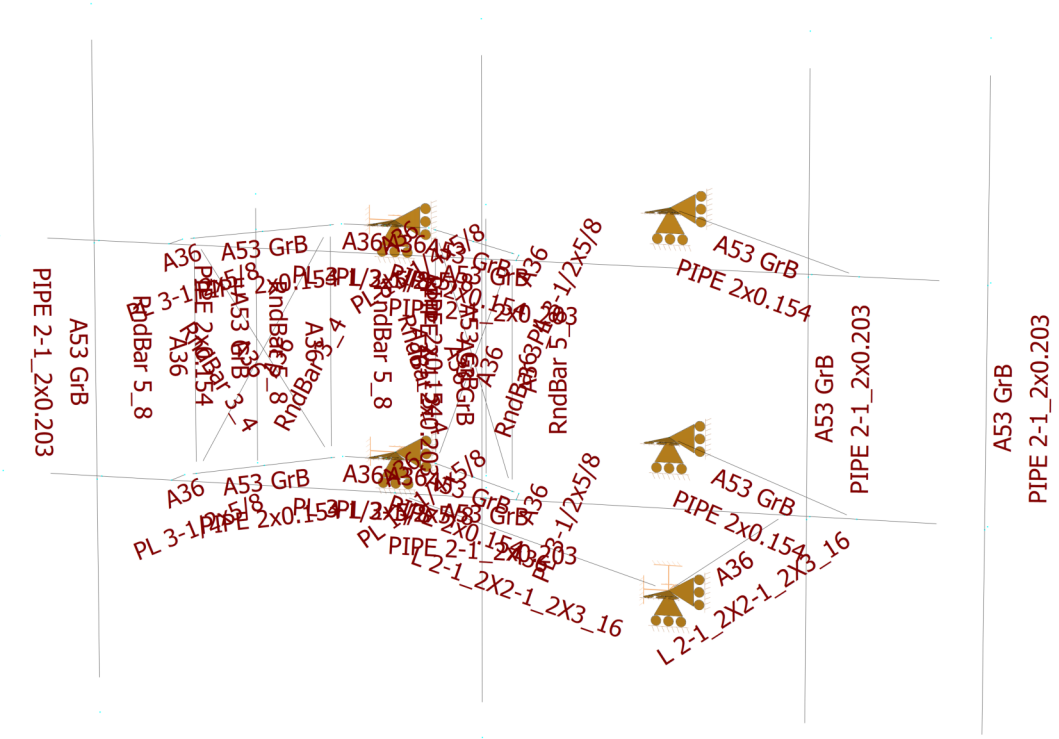
	Node-J				Node-K						
Member	M33	M22	V3	V2	M33	M22	V3	V2	TOR	AXL	Axial rigidity
87	1	1	0	0	0	0	0	0	0	0	Full
99	0	0	0	0	0	0	0	0	0	0	Tension only
101	0	0	0	0	0	0	0	0	0	0	Tension only
107	1	1	0	0	0	0	0	0	0	0	Full
108	1	1	0	0	0	0	0	0	0	0	Full
109	1	1	0	0	0	0	0	0	0	0	Full
110	1	1	0	0	0	0	0	0	0	0	Full
136	1	1	0	0	0	0	0	0	0	0	Full

HUDSON
Design Group LLC

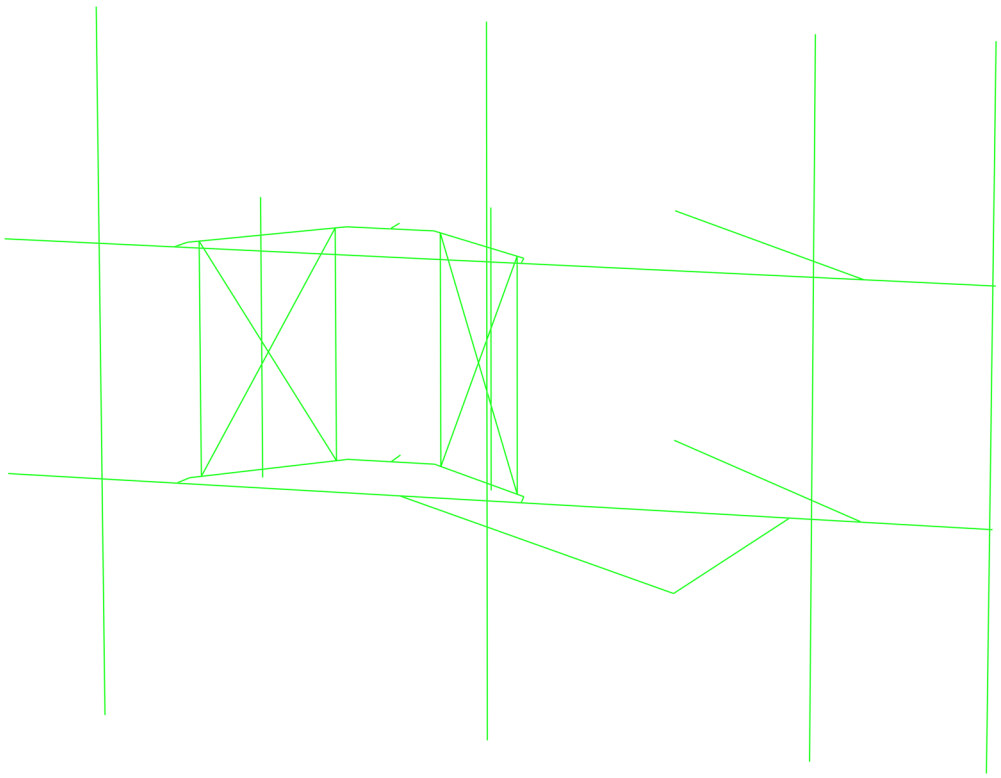
Gamma Sector
Mount Calculations
(Modified Conditions)

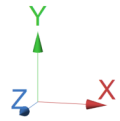


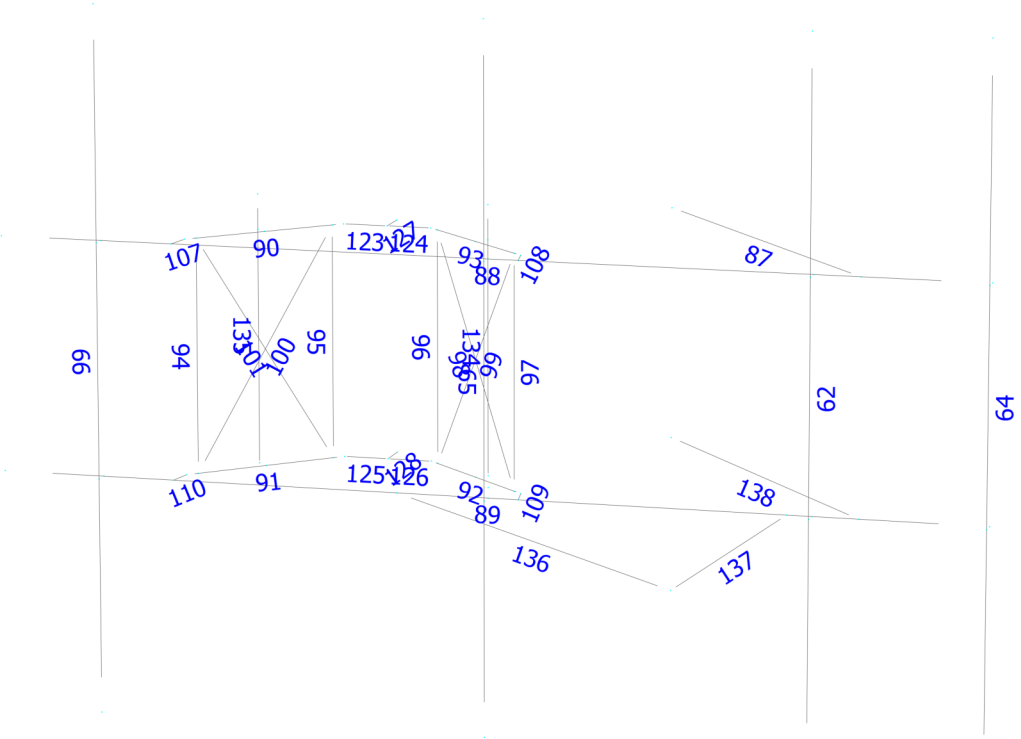
Install new sector frame stabilizer, SitePro1 P/N SFS-V-L (or approved equal) secured to new existing mount and tower leg (typ. of 1 per gamma sector, total of 1).


A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2-1_2x0.203
A53 GrB
PIPE 2-1_2x0.203
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A36
L 2-1_2X2-1_2X3_16
A36
L 2-1_2X2-1_2X3_16
RndBar 5_8
RndBar 5_8
Y
Z
X

Design status
- Not designed
- Error on design
- Design O.K.
- With warnings






107
90
123
124
93
88
108
87
66
94
133
101
100
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134
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62
64
110
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125
126
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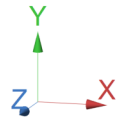
89
109
138
136
137


Y
Z
X

Current Date: 1/25/2022 12:27 PM
Units system: English

Load data

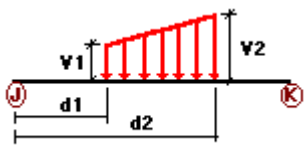
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	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
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members



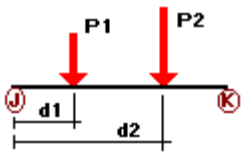
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	64	z	-0.009	-0.009	0.00	No	100.00	Yes
	87	z	-0.008	-0.008	0.00	No	100.00	Yes
	88	z	-0.009	-0.009	0.00	No	100.00	Yes
	89	z	-0.009	-0.009	0.00	No	100.00	Yes
	90	z	-0.008	-0.008	0.00	No	100.00	Yes
	91	z	-0.008	-0.008	0.00	No	100.00	Yes
	92	z	-0.008	-0.008	0.00	No	100.00	Yes
	93	z	-0.008	-0.008	0.00	No	100.00	Yes
	94	z	-0.002	-0.002	0.00	No	100.00	Yes
	95	z	-0.002	-0.002	0.00	No	100.00	Yes
	96	z	-0.002	-0.002	0.00	No	100.00	Yes
	97	z	-0.002	-0.002	0.00	No	100.00	Yes
	98	z	-0.002	-0.002	0.00	No	100.00	Yes
	99	z	-0.002	-0.002	0.00	No	100.00	Yes
	100	z	-0.002	-0.002	0.00	No	100.00	Yes
	101	z	-0.002	-0.002	0.00	No	100.00	Yes
	107	z	-0.001	-0.001	0.00	No	100.00	Yes
	108	z	-0.001	-0.001	0.00	No	100.00	Yes
	109	z	-0.001	-0.001	0.00	No	100.00	Yes
	110	z	-0.001	-0.001	0.00	No	100.00	Yes
	123	z	-0.001	-0.001	0.00	No	100.00	Yes
	124	z	-0.001	-0.001	0.00	No	100.00	Yes
	125	z	-0.001	-0.001	0.00	No	100.00	Yes
	126	z	-0.001	-0.001	0.00	No	100.00	Yes
	127	z	-0.002	-0.002	0.00	No	100.00	Yes
	128	z	-0.002	-0.002	0.00	No	100.00	Yes
	136	z	-0.008	0.00	0.00	No	0.00	No
	137	z	-0.008	0.00	0.00	No	0.00	No
	138	z	-0.008	-0.008	0.00	No	100.00	Yes
W30	62	z	-0.009	-0.009	0.00	No	100.00	Yes
	64	z	-0.009	-0.009	0.00	No	100.00	Yes
	65	z	-0.009	-0.009	0.00	No	100.00	Yes
	66	z	-0.009	-0.009	0.00	No	100.00	Yes
	87	z	-0.008	-0.008	0.00	No	100.00	Yes
	88	z	-0.009	-0.009	0.00	No	100.00	Yes
	89	z	-0.009	-0.009	0.00	No	100.00	Yes
	90	z	-0.008	-0.008	0.00	No	100.00	Yes
	91	z	-0.008	-0.008	0.00	No	100.00	Yes
	92	z	-0.008	-0.008	0.00	No	100.00	Yes
	93	z	-0.008	-0.008	0.00	No	100.00	Yes
	94	z	-0.002	-0.002	0.00	No	100.00	Yes
	95	z	-0.002	-0.002	0.00	No	100.00	Yes
	96	z	-0.002	-0.002	0.00	No	100.00	Yes
	97	z	-0.002	-0.002	0.00	No	100.00	Yes
	98	z	-0.002	-0.002	0.00	No	100.00	Yes
	99	z	-0.002	-0.002	0.00	No	100.00	Yes
	100	z	-0.002	-0.002	0.00	No	100.00	Yes
	101	z	-0.002	-0.002	0.00	No	100.00	Yes
	107	z	-0.001	-0.001	0.00	No	100.00	Yes
	108	z	-0.001	-0.001	0.00	No	100.00	Yes
	109	z	-0.001	-0.001	0.00	No	100.00	Yes
	110	z	-0.001	-0.001	0.00	No	100.00	Yes
	123	z	-0.001	-0.001	0.00	No	100.00	Yes
	124	z	-0.001	-0.001	0.00	No	100.00	Yes
	125	z	-0.001	-0.001	0.00	No	100.00	Yes
	126	z	-0.001	-0.001	0.00	No	100.00	Yes
	127	z	-0.002	-0.002	0.00	No	100.00	Yes
	128	z	-0.002	-0.002	0.00	No	100.00	Yes
	136	z	-0.008	0.00	0.00	No	0.00	No
	137	z	-0.008	0.00	0.00	No	0.00	No

	138	z	-0.008	-0.008	0.00	No	100.00	Yes
W60	62	x	-0.009	-0.009	0.00	No	100.00	Yes
	64	x	-0.009	-0.009	0.00	No	100.00	Yes
	65	x	-0.009	-0.009	0.00	No	100.00	Yes
	66	x	-0.009	-0.009	0.00	No	100.00	Yes
	87	x	-0.008	-0.008	0.00	No	100.00	Yes
	88	x	-0.009	-0.009	0.00	No	100.00	Yes
	89	x	-0.009	-0.009	0.00	No	100.00	Yes
	90	x	-0.008	-0.008	0.00	No	100.00	Yes
	91	x	-0.008	-0.008	0.00	No	100.00	Yes
	92	x	-0.008	-0.008	0.00	No	100.00	Yes
	93	x	-0.008	-0.008	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	107	x	-0.001	-0.001	0.00	No	100.00	Yes
	108	x	-0.001	-0.001	0.00	No	100.00	Yes
	109	x	-0.001	-0.001	0.00	No	100.00	Yes
	110	x	-0.001	-0.001	0.00	No	100.00	Yes
	123	x	-0.001	-0.001	0.00	No	100.00	Yes
	124	x	-0.001	-0.001	0.00	No	100.00	Yes
	125	x	-0.001	-0.001	0.00	No	100.00	Yes
	126	x	-0.001	-0.001	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
	136	x	-0.008	0.00	0.00	No	0.00	No
	137	x	-0.008	0.00	0.00	No	0.00	No
	138	x	-0.008	-0.008	0.00	No	100.00	Yes
W90	62	x	-0.009	-0.009	0.00	No	100.00	Yes
	64	x	-0.009	-0.009	0.00	No	100.00	Yes
	65	x	-0.009	-0.009	0.00	No	100.00	Yes
	66	x	-0.009	-0.009	0.00	No	100.00	Yes
	87	x	-0.008	-0.008	0.00	No	100.00	Yes
	90	x	-0.008	-0.008	0.00	No	100.00	Yes
	91	x	-0.008	-0.008	0.00	No	100.00	Yes
	92	x	-0.008	-0.008	0.00	No	100.00	Yes
	93	x	-0.008	-0.008	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	107	x	-0.001	-0.001	0.00	No	100.00	Yes
	108	x	-0.001	-0.001	0.00	No	100.00	Yes
	109	x	-0.001	-0.001	0.00	No	100.00	Yes
	110	x	-0.001	-0.001	0.00	No	100.00	Yes
	124	x	-0.001	-0.001	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
	136	x	-0.008	0.00	0.00	No	0.00	No
	137	x	-0.008	0.00	0.00	No	0.00	No
	138	x	-0.008	-0.008	0.00	No	100.00	Yes

W120	62	x	-0.009	-0.009	0.00	No	100.00	Yes
	64	x	-0.009	-0.009	0.00	No	100.00	Yes
	65	x	-0.009	-0.009	0.00	No	100.00	Yes
	66	x	-0.009	-0.009	0.00	No	100.00	Yes
	87	x	-0.008	-0.008	0.00	No	100.00	Yes
	88	x	-0.009	-0.009	0.00	No	100.00	Yes
	89	x	-0.009	-0.009	0.00	No	100.00	Yes
	90	x	-0.008	-0.008	0.00	No	100.00	Yes
	91	x	-0.008	-0.008	0.00	No	100.00	Yes
	92	x	-0.008	-0.008	0.00	No	100.00	Yes
	93	x	-0.008	-0.008	0.00	No	100.00	Yes
	94	x	-0.002	-0.002	0.00	No	100.00	Yes
	95	x	-0.002	-0.002	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.002	-0.002	0.00	No	100.00	Yes
	101	x	-0.002	-0.002	0.00	No	100.00	Yes
	107	x	-0.001	-0.001	0.00	No	100.00	Yes
	108	x	-0.001	-0.001	0.00	No	100.00	Yes
	109	x	-0.001	-0.001	0.00	No	100.00	Yes
	110	x	-0.001	-0.001	0.00	No	100.00	Yes
	123	x	-0.001	-0.001	0.00	No	100.00	Yes
	124	x	-0.001	-0.001	0.00	No	100.00	Yes
	125	x	-0.001	-0.001	0.00	No	100.00	Yes
	126	x	-0.001	-0.001	0.00	No	100.00	Yes
	127	x	-0.002	-0.002	0.00	No	100.00	Yes
	128	x	-0.002	-0.002	0.00	No	100.00	Yes
	136	x	-0.008	0.00	0.00	No	0.00	No
	137	x	-0.008	0.00	0.00	No	0.00	No
	138	x	-0.008	-0.008	0.00	No	100.00	Yes
W150	62	z	0.009	0.009	0.00	No	100.00	Yes
	64	z	0.009	0.009	0.00	No	100.00	Yes
	65	z	0.009	0.009	0.00	No	100.00	Yes
	66	z	0.009	0.009	0.00	No	100.00	Yes
	87	z	0.008	0.008	0.00	No	100.00	Yes
	88	z	0.009	0.009	0.00	No	100.00	Yes
	89	z	0.009	0.009	0.00	No	100.00	Yes
	90	z	0.008	0.008	0.00	No	100.00	Yes
	91	z	0.008	0.008	0.00	No	100.00	Yes
	92	z	0.008	0.008	0.00	No	100.00	Yes
	93	z	0.008	0.008	0.00	No	100.00	Yes
	94	z	0.002	0.002	0.00	No	100.00	Yes
	95	z	0.002	0.002	0.00	No	100.00	Yes
	96	z	0.002	0.002	0.00	No	100.00	Yes
	97	z	0.002	0.002	0.00	No	100.00	Yes
	98	z	0.002	0.002	0.00	No	100.00	Yes
	99	z	0.002	0.002	0.00	No	100.00	Yes
	100	z	0.002	0.002	0.00	No	100.00	Yes
	101	z	0.002	0.002	0.00	No	100.00	Yes
	107	z	0.001	0.001	0.00	No	100.00	Yes
	108	z	0.001	0.001	0.00	No	100.00	Yes
	109	z	0.001	0.001	0.00	No	100.00	Yes
	110	z	0.001	0.001	0.00	No	100.00	Yes
	123	z	0.001	0.001	0.00	No	100.00	Yes
	124	z	0.001	0.001	0.00	No	100.00	Yes
	125	z	0.001	0.001	0.00	No	100.00	Yes
	126	z	0.001	0.001	0.00	No	100.00	Yes
	127	z	0.002	0.002	0.00	No	100.00	Yes

	128	z	0.002	0.002	0.00	No	100.00	Yes
	136	z	0.008	0.00	0.00	No	0.00	No
	137	z	0.008	0.00	0.00	No	0.00	No
	138	z	0.008	0.008	0.00	No	100.00	Yes
Di	62	y	-0.009	-0.009	0.00	No	100.00	Yes
	64	y	-0.009	-0.009	0.00	No	100.00	Yes
	65	y	-0.009	-0.009	0.00	No	100.00	Yes
	66	y	-0.009	-0.009	0.00	No	100.00	Yes
	87	y	-0.008	-0.008	0.00	No	100.00	Yes
	88	y	-0.009	-0.009	0.00	No	100.00	Yes
	89	y	-0.009	-0.009	0.00	No	100.00	Yes
	90	y	-0.008	-0.008	0.00	No	100.00	Yes
	91	y	-0.008	-0.008	0.00	No	100.00	Yes
	92	y	-0.008	-0.008	0.00	No	100.00	Yes
	93	y	-0.008	-0.008	0.00	No	100.00	Yes
	94	y	-0.005	-0.005	0.00	No	100.00	Yes
	95	y	-0.005	-0.005	0.00	No	100.00	Yes
	96	y	-0.005	-0.005	0.00	No	100.00	Yes
	97	y	-0.005	-0.005	0.00	No	100.00	Yes
	98	y	-0.005	-0.005	0.00	No	100.00	Yes
	99	y	-0.005	-0.005	0.00	No	100.00	Yes
	100	y	-0.005	-0.005	0.00	No	100.00	Yes
	101	y	-0.005	-0.005	0.00	No	100.00	Yes
	107	y	-0.005	-0.005	0.00	No	100.00	Yes
	108	y	-0.005	-0.005	0.00	No	100.00	Yes
	109	y	-0.005	-0.005	0.00	No	100.00	Yes
	110	y	-0.005	-0.005	0.00	No	100.00	Yes
	123	y	-0.005	-0.005	0.00	No	100.00	Yes
	124	y	-0.005	-0.005	0.00	No	100.00	Yes
	125	y	-0.005	-0.005	0.00	No	100.00	Yes
	126	y	-0.005	-0.005	0.00	No	100.00	Yes
	127	y	-0.011	-0.011	0.00	No	100.00	Yes
	128	y	-0.011	-0.011	0.00	No	100.00	Yes
	134	y	-0.008	-0.008	0.00	No	100.00	Yes
	135	y	-0.008	-0.008	0.00	No	100.00	Yes
	136	y	-0.011	0.00	0.00	No	0.00	No
	137	y	-0.011	0.00	0.00	No	0.00	No
	138	y	-0.008	-0.008	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	62	y	-0.044	1.50	No
		y	-0.044	8.50	No
	65	y	-0.041	1.50	No
		y	-0.041	4.50	No
		y	-0.033	5.50	No
		y	-0.033	8.50	No
	66	y	-0.044	1.50	No

		y	-0.044	8.50	No
	134	y	-0.06	50.00	Yes
		y	-0.046	50.00	Yes
	135	y	-0.073	2.50	No
		y	-0.072	2.50	No
Wo	62	z	-0.296	1.50	No
		z	-0.296	8.50	No
	65	z	-0.067	1.50	No
		z	-0.067	4.50	No
		z	-0.069	5.50	No
		z	-0.069	8.50	No
	66	z	-0.296	1.50	No
		z	-0.296	8.50	No
	134	z	-0.041	50.00	Yes
		z	-0.027	50.00	Yes
	135	z	-0.047	50.00	Yes
		z	-0.045	50.00	Yes
W30	62	3	-0.255	1.50	No
		3	-0.255	8.50	No
	65	3	-0.062	1.50	No
		3	-0.062	4.50	No
		3	-0.06	5.50	No
		3	-0.06	8.50	No
	66	3	-0.255	1.50	No
		3	-0.255	8.50	No
	134	3	-0.048	50.00	Yes
	135	3	-0.051	50.00	Yes
W60	62	3	-0.175	1.50	No
		3	-0.175	8.50	No
	65	3	-0.051	1.50	No
		3	-0.051	4.50	No
		3	-0.043	5.50	No
		3	-0.043	8.50	No
	66	3	-0.175	1.50	No
		3	-0.175	8.50	No
	134	3	-0.06	50.00	Yes
	135	3	-0.06	50.00	Yes
W90	62	x	-0.135	1.50	No
		x	-0.135	8.50	No
	65	x	-0.046	1.50	No
		x	-0.046	4.50	No
		x	-0.034	5.50	No
		x	-0.034	8.50	No
	66	x	-0.135	1.50	No
		x	-0.135	8.50	No
	134	x	-0.067	50.00	Yes
	135	x	-0.065	50.00	Yes
W120	62	2	-0.175	1.50	No
		2	-0.175	8.50	No
	65	2	-0.051	1.50	No
		2	-0.051	4.50	No
		2	-0.043	5.50	No
		2	-0.043	8.50	No
	66	2	-0.175	1.50	No
		2	-0.175	8.50	No
	134	2	-0.06	50.00	Yes
	135	2	-0.06	50.00	Yes
W150	62	2	-0.255	1.50	No
		2	-0.255	8.50	No
	65	2	-0.062	1.50	No

		2	-0.062	4.50	No
		2	-0.06	5.50	No
		2	-0.06	8.50	No
	66	2	-0.255	1.50	No
		2	-0.255	8.50	No
	134	2	-0.048	50.00	Yes
	135	2	-0.051	50.00	Yes
Di	62	y	-0.194	1.50	No
		y	-0.194	8.50	No
	65	y	-0.054	1.50	No
		y	-0.054	4.50	No
		y	-0.051	5.50	No
		y	-0.051	8.50	No
	66	y	-0.194	1.50	No
		y	-0.194	8.50	No
	134	y	-0.054	50.00	Yes
		y	-0.046	50.00	Yes
	135	y	-0.054	50.00	Yes
		y	-0.048	50.00	Yes
WI0	62	z	-0.057	1.50	No
		z	-0.057	8.50	No
	65	z	-0.015	1.50	No
		z	-0.015	4.50	No
		z	-0.015	5.50	No
		z	-0.015	8.50	No
	66	z	-0.057	1.50	No
		z	-0.057	8.50	No
	134	z	-0.011	50.00	Yes
		z	-0.008	50.00	Yes
	135	z	-0.012	50.00	Yes
		z	-0.011	50.00	Yes
WI30	62	3	-0.05	1.50	No
		3	-0.05	8.50	No
	65	3	-0.014	1.50	No
		3	-0.014	4.50	No
		3	-0.014	5.50	No
		3	-0.014	8.50	No
	66	3	-0.05	1.50	No
		3	-0.05	8.50	No
	134	3	-0.012	50.00	Yes
	135	3	-0.013	50.00	Yes
WI60	62	3	-0.037	1.50	No
		3	-0.037	8.50	No
	65	3	-0.012	1.50	No
		3	-0.012	4.50	No
		3	-0.01	5.50	No
		3	-0.01	8.50	No
	66	3	-0.037	1.50	No
		3	-0.037	8.50	No
	134	3	-0.015	50.00	Yes
	135	3	-0.015	50.00	Yes
WI90	62	x	-0.03	1.50	No
		x	-0.03	8.50	No
	65	x	-0.011	1.50	No
		x	-0.011	4.50	No
		x	-0.009	5.50	No
		x	-0.009	8.50	No
	66	x	-0.03	1.50	No
		x	-0.03	8.50	No
	134	x	-0.016	50.00	Yes

	135	x	-0.015	50.00	Yes
WI120	62	2	-0.037	1.50	No
		2	-0.037	8.50	No
	65	2	-0.012	1.50	No
		2	-0.012	4.50	No
		2	-0.01	5.50	No
		2	-0.01	8.50	No
	66	2	-0.037	1.50	No
		2	-0.037	8.50	No
	134	2	-0.015	50.00	Yes
	135	2	-0.015	50.00	Yes
WI150	62	2	-0.05	1.50	No
		2	-0.05	8.50	No
	65	2	-0.014	1.50	No
		2	-0.014	4.50	No
		2	-0.014	5.50	No
		2	-0.014	8.50	No
	66	2	-0.05	1.50	No
		2	-0.05	8.50	No
	134	2	-0.012	50.00	Yes
	135	2	-0.013	50.00	Yes
WL0	62	z	-0.017	1.50	No
		z	-0.017	8.50	No
	65	z	-0.004	1.50	No
		z	-0.004	4.50	No
		z	-0.004	5.50	No
		z	-0.004	8.50	No
	66	z	-0.017	1.50	No
		z	-0.017	8.50	No
	134	z	-0.002	50.00	Yes
	135	z	-0.003	50.00	Yes
WL30	62	3	-0.015	1.50	No
		3	-0.015	8.50	No
	65	3	-0.004	1.50	No
		3	-0.004	4.50	No
		3	-0.004	5.50	No
		3	-0.004	8.50	No
	66	3	-0.015	1.50	No
		3	-0.015	8.50	No
	134	3	-0.003	50.00	Yes
	135	3	-0.003	50.00	Yes
WL60	62	3	-0.011	1.50	No
		3	-0.011	8.50	No
	65	3	-0.003	1.50	No
		3	-0.003	4.50	No
		3	-0.003	5.50	No
		3	-0.003	8.50	No
	66	3	-0.011	1.50	No
		3	-0.011	8.50	No
	134	3	-0.003	50.00	Yes
	135	3	-0.004	50.00	Yes
WL90	62	x	-0.008	1.50	No
		x	-0.008	8.50	No
	65	x	-0.003	1.50	No
		x	-0.003	4.50	No
		x	-0.002	5.50	No
		x	-0.002	8.50	No
	66	x	-0.008	1.50	No
		x	-0.008	8.50	No
	134	x	-0.004	50.00	Yes

	135	x	-0.004	50.00	Yes
WL120	62	2	-0.011	1.50	No
		2	-0.011	8.50	No
	65	2	-0.003	1.50	No
		2	-0.003	4.50	No
		2	-0.003	5.50	No
		2	-0.003	8.50	No
	66	2	-0.011	1.50	No
		2	-0.011	8.50	No
	134	2	-0.003	50.00	Yes
	135	2	-0.003	50.00	Yes
WL150	62	2	-0.015	1.50	No
		2	-0.015	8.50	No
	65	2	-0.004	1.50	No
		2	-0.004	4.50	No
		2	-0.004	5.50	No
		2	-0.004	8.50	No
	66	2	-0.015	1.50	No
		2	-0.015	8.50	No
	134	2	-0.003	50.00	Yes
	135	2	-0.003	50.00	Yes
LL1	88	y	-0.25	50.00	Yes
LL2	88	y	-0.25	100.00	Yes
LL3	88	y	-0.25	0.00	Yes
LLa1	64	y	-0.50	5.00	No
LLa2	62	y	-0.50	5.00	No
LLa3	65	y	-0.50	5.00	No
LLa4	66	y	-0.50	5.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	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
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

Current Date: 1/25/2022 12:27 PM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1
LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2
LC54=1.2D+WL30+1.5LLa2
LC55=1.2D+WL60+1.5LLa2

LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	L 2-1_2X2-1_2X3_16	**136**	LC22 at 100.00%	0.21	OK	Eq. H2-1
		137	LC46 at 100.00%	**0.70**	**OK**	Eq. H2-1
	PIPE 2-1_2x0.203	**62**	LC1 at 66.67%	0.32	OK	Eq. H1-1b
		64	LC46 at 33.33%	0.30	OK	Eq. H1-1b
		65	LC76 at 64.58%	0.14	OK	Eq. H1-1b
		66	LC7 at 66.67%	0.32	OK	Eq. H1-1b
		88	LC46 at 83.04%	0.30	OK	Eq. H1-1b
		89	LC48 at 80.56%	**0.69**	**OK**	Eq. H1-1a
	PIPE 2x0.154	**87**	LC12 at 100.00%	0.09	OK	Eq. H1-1b
		90	LC82 at 93.75%	0.32	OK	Eq. H1-1b
		91	LC77 at 93.75%	0.25	OK	Eq. H1-1b
		92	LC30 at 93.75%	0.24	OK	Eq. H1-1b
		93	LC30 at 93.75%	**0.33**	**OK**	Eq. H1-1b
		134	LC30 at 12.50%	0.12	OK	Eq. H1-1b
		135	LC80 at 12.50%	0.13	OK	Eq. H1-1b
		138	LC48 at 100.00%	0.32	OK	Eq. H1-1b
	PL 11-1/4x5/8	**127**	LC30 at 100.00%	**0.36**	**OK**	Eq. H1-1b
		128	LC30 at 100.00%	0.27	OK	Eq. H1-1b
	PL 3-1/2x5/8	**107**	LC77 at 100.00%	0.33	OK	Eq. H1-1b
		108	LC26 at 100.00%	0.33	OK	Eq. H1-1b
		109	LC6 at 100.00%	0.41	OK	Eq. H1-1b
		110	LC82 at 100.00%	0.40	OK	Eq. H1-1b
		123	LC82 at 100.00%	0.55	OK	Eq. H1-1b
		124	LC30 at 0.00%	**0.61**	**OK**	Eq. H1-1b
		125	LC78 at 100.00%	0.53	OK	Eq. H1-1b

	126	LC26 at 0.00%	0.60	OK	Eq. H1-1b
RndBar 3_4	**98**	LC30 at 0.00%	0.21	OK	Eq. H1-1b
	99	LC30 at 0.00%	**0.22**	**OK**	Eq. H1-1b
	100	LC82 at 100.00%	0.20	OK	Eq. H1-1b
	101	LC78 at 100.00%	0.21	OK	Eq. H1-1b
RndBar 5_8	**94**	LC77 at 87.50%	0.58	OK	Eq. H1-1a
	95	LC78 at 87.50%	0.58	OK	Eq. H1-1a
	96	LC30 at 87.50%	0.60	OK	Eq. H1-1a
	97	LC26 at 87.50%	**0.60**	**OK**	Eq. H1-1a

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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
142	0.25	0.00	0.00	0
143	-0.3862	0.00	0.4783	0
144	0.25	-3.3333	0.00	0
145	-0.3862	-3.3333	0.4783	0
146	0.8862	-3.3333	0.4783	0
147	0.8862	0.00	0.4783	0
152	9.30	-6.6667	2.83	0
153	9.30	3.3333	2.83	0
154	-3.25	-6.6667	2.83	0
155	-3.25	3.3333	2.83	0
156	7.50	0.00	2.63	0
157	3.75	0.00	-2.00	0
158	-3.25	0.00	2.63	0
159	9.30	0.00	2.63	0
160	-3.25	-3.3333	2.63	0
161	9.30	-3.3333	2.63	0
162	-2.1626	0.00	2.2374	0
163	-2.1626	-3.3333	2.2374	0
164	2.6626	-3.3333	2.2374	0
165	2.6626	0.00	2.2374	0
166	-2.0335	0.00	2.1096	0
167	-2.0335	-3.3333	2.1096	0
168	-0.5153	0.00	0.6062	0

169	-0.5153	-3.3333	0.6062	0
170	1.0153	0.00	0.6062	0
171	1.0153	-3.3333	0.6062	0
172	2.5335	0.00	2.1096	0
173	2.5335	-3.3333	2.1096	0
176	2.30	-6.6667	2.83	0
177	2.30	3.3333	2.83	0
184	-2.2292	0.00	2.63	0
185	2.7292	0.00	2.63	0
186	2.7292	-3.3333	2.63	0
187	-2.2292	-3.3333	2.63	0
188	6.85	-6.6667	2.83	0
189	6.85	3.3333	2.83	0
192	-3.25	3.33E-06	2.83	0
193	9.30	3.33E-06	2.83	0
194	2.30	3.33E-06	2.83	0
195	2.30	3.33E-06	2.63	0
198	6.85	3.33E-06	2.83	0
199	6.85	3.33E-06	2.63	0
200	-3.25	-3.3333	2.83	0
201	2.30	-3.3333	2.83	0
202	2.30	-3.3333	2.63	0
203	6.85	-3.3333	2.83	0
204	6.85	-3.3333	2.63	0
207	9.30	-3.3333	2.83	0
208	0.25	0.00	0.4783	0
209	0.25	-3.3333	0.4783	0
210	1.7744	-3.3333	1.3579	0
211	1.7744	0.00	1.3579	0
212	1.9158	-3.3333	1.2165	0
213	1.9158	0.00	1.2165	0
214	-1.2744	-3.3333	1.3579	0
215	-1.2744	0.00	1.3579	0
216	-1.4158	-3.3333	1.2165	0
217	-1.4158	0.00	1.2165	0
218	1.9158	0.50	1.2165	0
220	1.9158	-3.50	1.2165	0
224	-1.4158	0.50	1.2165	0
225	-1.4158	-3.50	1.2165	0
226	-4.70	0.00	2.63	0
227	-4.70	-3.3333	2.63	0
228	6.50	-3.3333	2.63	0
230	1.00	-3.3333	2.63	0
231	3.75	-5.5833	-2.00	0
232	3.75	-3.3333	-2.00	0
233	7.50	-3.3333	2.63	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
142	1	1	1	1	0	1
144	1	1	1	1	0	1
157	1	1	1	0	0	0
231	1	1	1	1	1	1
232	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
62	189	188		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
64	153	152		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
65	177	176		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
66	155	154		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
87	156	157		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
88	226	159		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
89	227	161		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
90	162	143		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
91	163	145		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
92	164	146		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
93	165	147		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	166	167		RndBar 5_8	A36	0.00	0.00	0.00
95	168	169		RndBar 5_8	A36	0.00	0.00	0.00
96	170	171		RndBar 5_8	A36	0.00	0.00	0.00
97	172	173		RndBar 5_8	A36	0.00	0.00	0.00
98	170	173		RndBar 3_4	A36	0.00	0.00	0.00
99	171	172		RndBar 3_4	A36	0.00	0.00	0.00
100	167	168		RndBar 3_4	A36	0.00	0.00	0.00
101	166	169		RndBar 3_4	A36	0.00	0.00	0.00
107	162	184		PL 3-1/2x5/8	A36	0.00	0.00	0.00
108	165	185		PL 3-1/2x5/8	A36	0.00	0.00	0.00
109	164	186		PL 3-1/2x5/8	A36	0.00	0.00	0.00
110	163	187		PL 3-1/2x5/8	A36	0.00	0.00	0.00
123	143	208		PL 3-1/2x5/8	A36	0.00	0.00	0.00
124	208	147		PL 3-1/2x5/8	A36	0.00	0.00	0.00
125	145	209		PL 3-1/2x5/8	A36	0.00	0.00	0.00
126	209	146		PL 3-1/2x5/8	A36	0.00	0.00	0.00
127	208	142		PL 11-1/4x5/8	A36	11.25	9.25	0.00
128	209	144		PL 11-1/4x5/8	A36	11.25	9.25	0.00
134	218	220		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
135	224	225		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
136	230	231		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
137	228	231		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
138	233	232		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
62	315.00	0	0.00	0.00	0.00
64	315.00	0	0.00	0.00	0.00
65	315.00	0	0.00	0.00	0.00
66	315.00	0	0.00	0.00	0.00
94	0.00	2	0.00	0.00	1.00
95	0.00	2	0.00	0.00	1.00
96	0.00	2	0.00	0.00	1.00
97	0.00	2	0.00	0.00	1.00

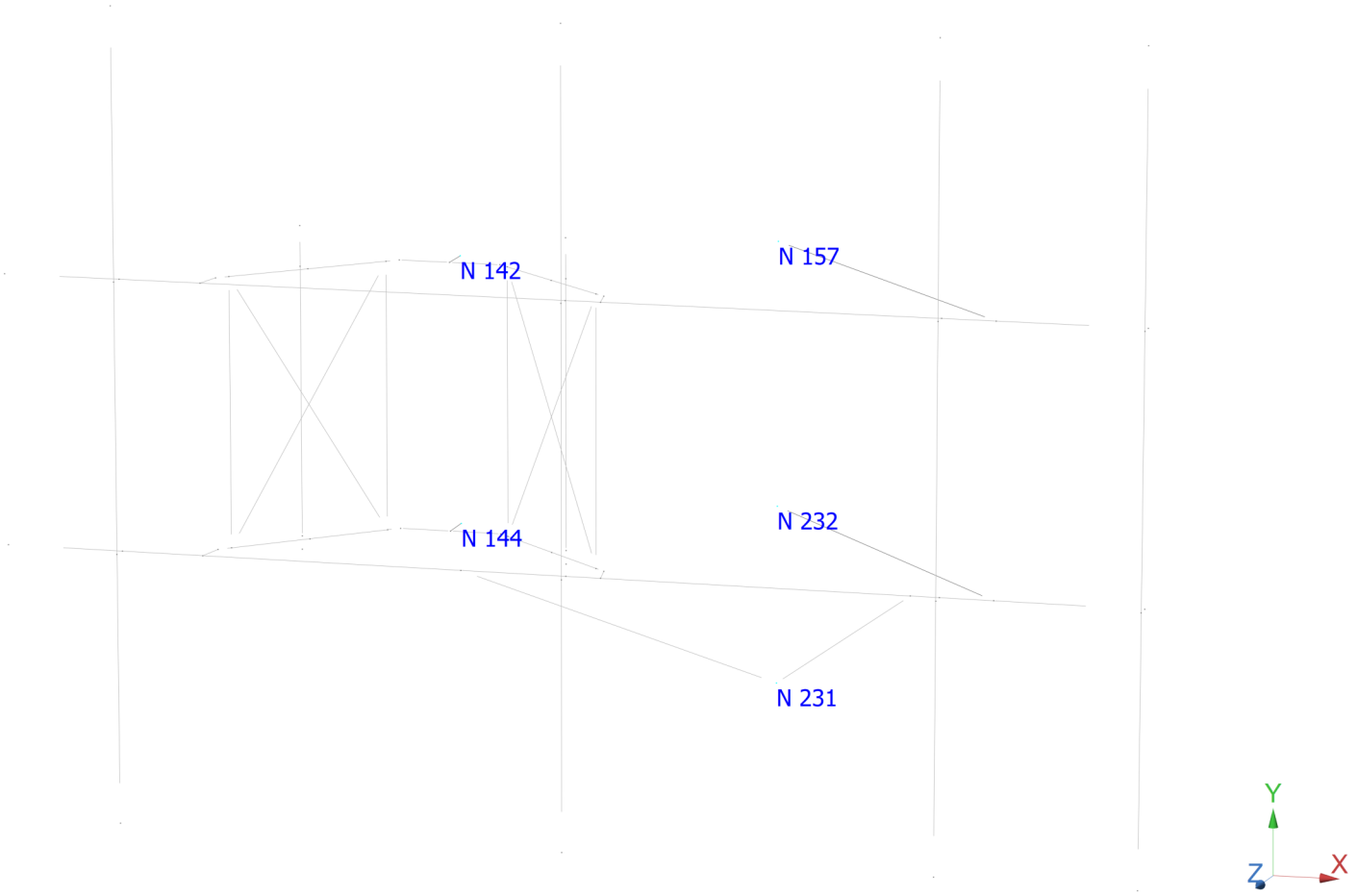
107	90.00	0	0.00	0.00	0.00
108	90.00	0	0.00	0.00	0.00
109	90.00	0	0.00	0.00	0.00
110	90.00	0	0.00	0.00	0.00
123	90.00	0	0.00	0.00	0.00
124	90.00	0	0.00	0.00	0.00
125	90.00	0	0.00	0.00	0.00
126	90.00	0	0.00	0.00	0.00
127	90.00	0	0.00	0.00	0.00
128	90.00	0	0.00	0.00	0.00
134	315.00	0	0.00	0.00	0.00
135	315.00	0	0.00	0.00	0.00
136	180.00	0	0.00	0.00	0.00
137	90.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
87	0.00	2.00	0.00	0.00	2.00	0.00
98	0.00	-3.50	0.00	0.00	3.50	0.00
99	0.00	3.50	0.00	0.00	-3.50	0.00
100	0.00	3.50	0.00	0.00	-3.50	0.00
101	0.00	-3.50	0.00	0.00	3.50	0.00
127	0.00	-0.625	0.00	0.00	-0.625	0.00
128	0.00	-0.625	0.00	0.00	-0.625	0.00
138	0.00	2.00	0.00	0.00	2.00	0.00

Hinges

	Node-J				Node-K						
Member	**M33**	**M22**	**V3**	**V2**	**M33**	**M22**	**V3**	**V2**	**TOR**	**AXL**	**Axial rigidity**
87	1	1	0	0	0	0	0	0	0	0	Full
99	0	0	0	0	0	0	0	0	0	0	Tension only
101	0	0	0	0	0	0	0	0	0	0	Tension only
107	1	1	0	0	0	0	0	0	0	0	Full
108	1	1	0	0	0	0	0	0	0	0	Full
109	1	1	0	0	0	0	0	0	0	0	Full
110	1	1	0	0	0	0	0	0	0	0	Full
136	1	1	0	0	0	0	0	0	0	0	Full
137	1	1	0	0	0	0	0	0	0	0	Full
138	1	1	0	0	0	0	0	0	0	0	Full


N 142
N 157
N 144
N 232
N 231
Y
Z
X

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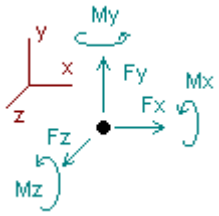
Analysis result

Envelope for nodal reactions

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



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1

LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2
LC54=1.2D+WL30+1.5LLa2
LC55=1.2D+WL60+1.5LLa2
LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

		Forces						Moments					
Node		**Fx** [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
142	Max	0.550	LC82	1.422	LC30	0.351	LC24	-0.06425	LC22	0.00000	LC1	0.12562	LC46
	Min	-0.919	LC52	0.190	LC22	-1.529	LC31	-0.50010	LC26	0.00000	LC1	-0.10637	LC88
144	Max	0.856	LC6	1.210	LC30	2.098	LC3	-0.02929	LC22	0.00000	LC1	0.14464	LC46
	Min	-0.701	LC24	0.128	LC22	-1.045	LC21	-0.51631	LC26	0.00000	LC1	-0.11516	LC88
157	Max	0.320	LC12	0.038	LC36	0.409	LC12	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.316	LC18	-0.005	LC18	-0.407	LC18	0.00000	LC1	0.00000	LC1	0.00000	LC1
231	Max	1.529	LC42	0.799	LC10	1.581	LC10	0.00424	LC24	0.26287	LC46	0.04701	LC47
	Min	-0.006	LC21	-0.364	LC16	-0.852	LC16	-0.31751	LC30	-0.10384	LC23	-0.02000	LC15
232	Max	0.065	LC14	0.012	LC14	0.095	LC14	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.292	LC48	-0.037	LC48	-1.601	LC48	0.00000	LC1	0.00000	LC1	0.00000	LC1

Date: 1/25/2022
Project Name: SOUTHINGTON MILL ST H20 TANK
Project No.: CT1030
Designed By: ID **Checked By:** MSC

HUDSON Design Group LLC

CHECK CONNECTION CAPACITY (Worst Case) (Gamma Sector)

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

Bolt Type = A36 5/8" Threaded Rod

Allowable Tensile Load =

F_{Tall} = 6673 lbs.

Allowable Shear Load =

F_{Vall} = 4004 lbs.

TENSILE FORCES

Reaction **F =** 2098 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 856 lbs. (See Bentley Output)
Reactions in Y direction: 1210 lbs. (See Bentley Output)

Resultant: 1482 lbs.

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

Tension Design Load /Bolts =

f_t = 524.50 lbs. < 6673 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v = 370.54 lbs. < 4004 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.079	+	0.093	=	0.171	<	1.0	**Therefore, OK !**

435 MILL ST

Location	435 MILL ST	**Mblu**	109/ / 120/ /
Acct#	14081	**Owner**	SOUTHINGTON TOWN OF
Assessment	$790,370	**Appraisal**	$1,129,100
PID	10843	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$840,990	$288,110	$1,129,100

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$588,690	$201,680	$790,370

Owner of Record

Owner	SOUTHINGTON TOWN OF	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	75 MAIN ST SOUTHINGTON, CT 06489-2504	**Book & Page**	0087/0075
		Sale Date	09/30/1938
		Instrument	25

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
SOUTHINGTON TOWN OF	$0		0087/0075	25	09/30/1938

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Building Percent Good:

Building Attributes	
Field	**Description**
Style	Vacant w/OB

Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Total Kitchens	
Fireplaces	
Whirlpool Tubs	
Fin Bsmt Area	
Fin Bsmt Quality	
Bsmt Garages	
.	
Bsmt Type	
Attic Type	
Cath Ceiling	
Fndtn Cndtn	
Basement	

Building Photo

109 120 05/21/2015

(http://images.vgsi.com/photos2/SouthingtonCTPhotos//\00\04\35\89.JPG)

Building Layout

(ParcelSketch.ashx?pid=10843&bid=10843)

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	903V
Description	Municipality Lnd
Zone	R-20/25
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	2.8
Depth	

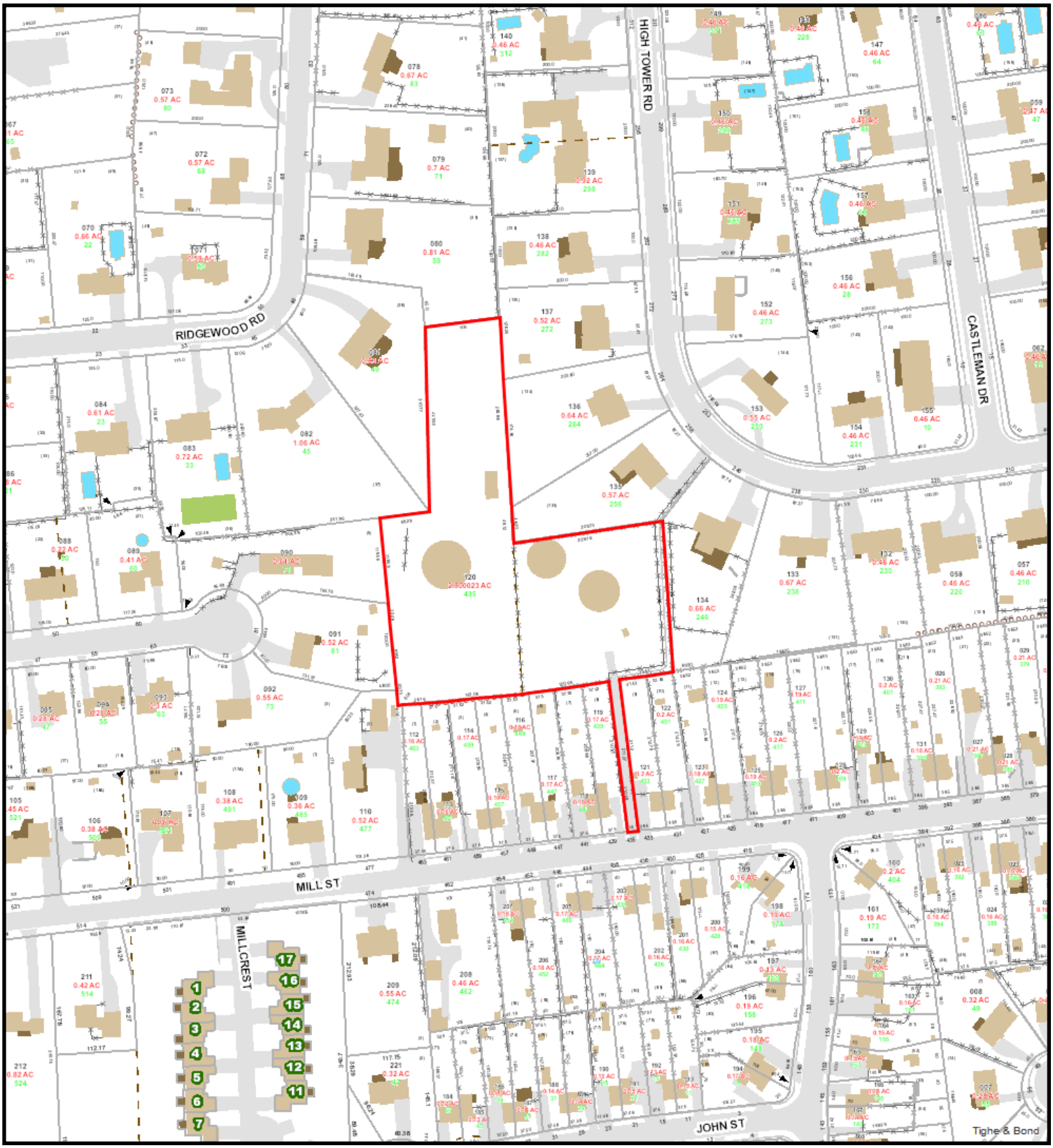
Outbuildings

Outbuildings					Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Bldg #**
FN1	Fence - Chain			4848.00 L.F.	1
PCS	PreCast Shed/Bldg			80.00 S.F.	1
PCS	PreCast Shed/Bldg			80.00 S.F.	1
CTR	Cell Recievers			4.00 Units	1
TNK5	Elevated Tank			2000000.00 Gals	1
SHD1	Shed	MS	Masonry	160.00 S.F.	1
GEN	Generator		Generator	1.00 Units	1
PAV1	Paving	CN	Concrete	160.00 S.F.	1
GEN	Generator		Generator	1.00 Units	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$840,990	$288,110	$1,129,100
2020	$839,570	$288,110	$1,127,680
2019	$217,730	$109,610	$327,340
2018	$217,730	$87,980	$305,710
2017	$217,730	$87,980	$305,710

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$588,690	$201,680	$790,370
2020	$587,700	$201,680	$789,380
2019	$152,410	$76,730	$229,140
2018	$152,410	$61,590	$214,000
2017	$152,410	$61,590	$214,000



435 Mill St

1/29/2022 12:39:24 PM

Scale: 1"=188'

Scale is approximate

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

PLANNING AND ZONING DEPARTMENT

JOHN WEICHSEL MUNICIPAL CENTER – 196 NORTH MAIN STREET
SOUTHINGTON, CONNECTICUT 06489
Phone: (860)276-6248 / Fax: (860)628-3511

August 27, 2018

Southington Water Department
605 West Queen Street
PO Box 111
Southington, CT 06489

RE: Site plan application – 435 and 471 (rear) Mill Street (SPR #1760)

Dear Sir:

Please be advised that on August 21, 2018, the Southington Planning and Zoning Commission voted to approve your site plan application to construct a new 65 ft tall water storage tank and a 120' tall communications tower. The Commission also granted a waiver of the communications tower fall radius.

Please submit six sets of revised plans addressing Engineering comments prior to bidding. Building and zoning permits and a preconstruction meeting will also be required. Please note that this approval is good for a period of five (5) years, which will expire on August 21, 2023. You can request a five year extension prior to the expiration date if the work has not been completed.

Respectfully,

Robert A. Phillips, AICP
Director of Planning and Community Development

cc: Engineering Dept.
Building Dept.
Assessor's Dept.

PLANNING AND ZONING DEPARTMENT

JOHN WEICHSEL MUNICIPAL CENTER – 196 NORTH MAIN STREET
SOUTHINGTON, CONNECTICUT 06489
Phone: (860)276-6248 / Fax: (860)628-3511

August 28, 2018

Southington Water Department
605 West Queen Street
PO Box 111
Southington, CT 06489

RE: Special Permit Approval – 435 and 471 (rear) Mill Street (SPU #605)

Dear Sir:

On August 21, 2018, the Planning and Zoning Commission voted to approve your Special Permit Application to construct a new 65-ft water storage tank and a 120-ft tall communications tower on properties located at 435 and 471 (rear) Mill Street.

The special permit use becomes effective upon the filing of the approved special permit use plan with the Town Planner's office and the filing **of this original approval letter in the office of the Town Clerk**, pursuant to Section 8-3d of the General Statutes of Connecticut. Such plan shall be certified by the Planning and Zoning Commission prior to filing. An approved special permit use not put into effect within one year becomes null and void. A single one year extension may be granted before the approval's first anniversary date (Section 8-03.3).

Respectfully,

Robert A. Phillips, AICP
Director of Planning and Community Development

cc: Town Engineer
Building Dept.
Town Assessor

I:\Planning and Zoning\PZC Meetings 2018\August 21\SPU 605 approval.doc

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
Web Site: www.ct.gov/csc

VIA ELECTRONIC MAIL

April 24, 2020

Lucia Chiocchio, Esq.
Cuddy & Feder LLP
445 Hamilton Avenue, 14th Floor
White Plains, NY 10601

RE: **TS-CING-131-200326** – New Cingular Wireless PCS, LLC (AT&T) request for an order to approve tower sharing at an existing telecommunications facility located at 435 Mill Street, Southington, Connecticut.

Dear Attorney Chiocchio:

At a public meeting held on April 23, 2020, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures with the following conditions:

1. AT&T's antennas and antenna mount shall be installed in accordance with the Mount Analysis prepared by Hudson Design Group, LLC, dated March 10, 2020 (Rev.3) and stamped and signed by Daniel Hamm;
2. Within 45 days following the completion of equipment installation, AT&T shall provide documentation certified by a Professional Engineer that its installation complied with the Mount Analysis;
3. Approval of any minor changes be delegated to Council staff;
4. Any deviation from the proposed installation as specified in the original tower share request and supporting materials with the Council shall render this decision invalid;
5. Any material changes to the proposed installation as specified in the original tower share request and supporting materials filed with the Council shall require an explicit request for modification to the Council pursuant to Connecticut General Statutes § 16-50aa, including 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;
6. Not less than 45 days after completion of the proposed installation, the Council shall be notified in writing that the installation has been completed;
7. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by AT&T shall be removed within 60 days of the date the antenna ceased to function;
8. The validity of this action shall expire one year from the date of this letter; and
9. 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.

This decision is under the exclusive jurisdiction of the Council and applies only to this request for tower sharing dated March 26, 2020. This facility has 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. Any deviation from the approved tower sharing request is enforceable under the provisions of Connecticut General Statutes § 16-50u.

The proposed shared use is to be implemented as specified in your letter dated March 26, 2020, including the placement of all necessary equipment and shelters within the tower compound.

Please be advised that the validity of this action shall expire one year from the date of this letter.

Thank you for your attention and cooperation.

Sincerely,

s/ Melanie A. Bachman

Melanie Bachman
Executive Director

MAB/IN/emr

c: The Honorable Victoria Triano, Chairwoman, Town of Southington
Mark J. Sciota, Town Manager, Town of Southington
Robert Phillips, Director of Planning and Community Development, Town of Southington

April 8, 2022

SENT VIA EMAIL

Southington Water Company
Attn: Mr. Doug Arndt
Superintendent
75 Main Street
Southington, CT 06489

RE: AT&T Wireless Equipment at: 435 Mill Street, Southington, CT
Site Name: Southington Water Tank Site Number: CT1030 FA Code: 10035264

Dear Mr. Arndt:

SAI Communications is a contractor for New Cingular Wireless PCS, LLC ("AT&T"). In order to maintain AT&T's commitment to the highest standards of service and technology, AT&T will need to make modifications to their equipment at the above referenced wireless communications facility.

Pursuant to the Lease Agreement, dated August 8, 1998, as amended, your consent is required for these modifications. AT&T will be modifying their existing antenna configuration which may include, but is not limited to, adding antennas and ancillary equipment within AT&T's leased premises. The improvements are described in the enclosed construction drawings by Hudson Design Group LLC, Revision 1, dated March 24, 2022.

As the Landlord, I hereby consent to this work and authorize AT&T Wireless, its agents or representatives, to apply for any and all permits that may be required for this project.

If you have any questions, please don't hesitate to contact me directly at (860) 834-6964. Please indicate your consent by signing below and returning the letter to me either by email or the address listed below. Thank you for your attention to this matter. I appreciate your time.

Sincerely,

Hollis M. Redding

Hollis M. Redding
Site Acquisition Specialist

Enclosure

Landlord/Authorized Agent's Consent

Name: Douglas Arndt - Superintendent

Signature: Doug Arndt

Date: 4/8/2022

Telephone: 860-628-5598

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SAI GROUP
12 INDUSTRIAL WAY
SALEM NH 03079-2837

Expected Delivery Date: 04/14/22
Ref#: CT1030
0006

C019

SHIP TO: MARK J SCIOTA TOWN MANAGER
SOUTHINGTON TOWN HALL
75 MAIN ST
SOUTHINGTON CT 06489-2504

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HOLLIS M REDDING
SAI GROUP
12 INDUSTRIAL WAY
SALEM NH 03079-2837

Expected Delivery Date: 04/14/22
Ref#: CT1030
0006

C020

SHIP TO: MS. Maryellen Edwards DIRECTOR PLANNING &
SOUTHINGTON MUNICIPAL CENTER
196 N MAIN ST
SOUTHINGTON CT 06489-2514

USPS TRACKING #

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04/11/2022 Mailed from 03079

PRIORITY MAIL 2-DAY™

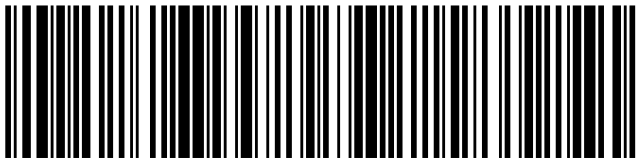
HOLLIS M REDDING
SAI GROUP
12 INDUSTRIAL WAY
SALEM NH 03079-2837

Expected Delivery Date: 04/14/22
Ref#: CT1030
0006

C009

SHIP TO: DOUG ARNDT AL FIORILLO
SOUTHINGTON WATER DEPARTMENT
605 W QUEEN ST
SOUTHINGTON CT 06489-6010

USPS TRACKING #



9405 5036 9930 0216 7250 00

Electronic Rate Approved #038555749

Cut on dotted line.

From: auto-reply@usps.com
Sent: Saturday, April 9, 2022 6:24 PM
To: Hollis Redding
Subject: USPS® Arrived at USPS Regional Facility 9405503699300216724966

UNITED STATES POSTAL SERVICE®

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Your item arrived at our USPS facility in SPRINGFIELD MA NETWORK DISTRIBUTION CENTER on April 9, 2022 at 6:20 pm. The item is currently in transit to the destination.

Tracking Number: **9405503699300216724966**

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To: Hollis Redding
Subject: USPS® Arrived at USPS Regional Facility 9405503699300216724980

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Your item arrived at our USPS facility in SPRINGFIELD MA NETWORK DISTRIBUTION CENTER on April 9, 2022 at 6:20 pm. The item is currently in transit to the destination.

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From: auto-reply@usps.com
Sent: Saturday, April 9, 2022 6:25 PM
To: Hollis Redding
Subject: USPS® Arrived at USPS Regional Facility 9405503699300216725000

UNITED STATES POSTAL SERVICE®

Hello **HOLLIS M REDDING**,

Your item arrived at our USPS facility in SPRINGFIELD MA NETWORK DISTRIBUTION CENTER on April 9, 2022 at 6:20 pm. The item is currently in transit to the destination.

Tracking Number: **9405503699300216725000**

Tracking & Delivery Options

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