



**QC Development**

PO Box 916

Storrs, CT 06268

860-670-9068

Mark.Roberts@QCDevelopment.net

December 4, 2020

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

**Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT1144**  
**482 Pigeon Hill Road, Windsor, CT 06095**  
**N 41.8666361**  
**W -72.674775**

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 169-foot level of the existing 160-foot Self Support Tower at 482 Pigeon Hill Road, Windsor, CT. The tower and property are owned by Verizon (Cellco Partnership). AT&T now intends to remove (6) KMW antennas and install (3) new Kathrein 800-10965 antennas. AT&T will also remove (3) Ericsson RRUS-11 B12, and (3) RRUS-32 B2 and install (3) RRU 4449 B5/B12, (3) RRU 8843 B2/B66A and (3) RRUS-32 B30. The new antennas and RRUs will also be installed at the 169' level of the tower. This modification/proposal includes B2, B5, and B12 hardware that is both 4G (LTE) and 5G NR capable through remote software configuration and either or both services may be turned on or off at various times.

This facility was approved by the Connecticut Siting Council in Docket # 58.11 on July 11, 1996. This modification complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Peter Souza,

Windsor Town Manager and to the Windsor Planning and Zoning Department, as well as to the tower and property owner.

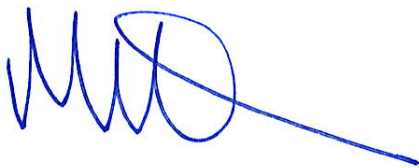
The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,



Mark Roberts  
QC Development  
Consultant for AT&T

Attachments

cc: Peter Souza – Town Manager  
Eric Barz – Town Planner  
Cellco Partnership - Tower & Property Owner

## Power Density

### Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm <sup>2</sup> )	Freq. Band (MHz <sup>**</sup> )	Limit S (mW/cm <sup>2</sup> )	%MPE
Other Carriers*							5.23%
AT&T UMTS	2	552	169	0.0149	850	0.5667	0.26%
AT&T UMTS	2	780	169	0.0211	1900	1.0000	0.21%
AT&T LTE	2	730	169	0.0198	700	0.4667	0.42%
AT&T LTE	2	1456	169	0.0394	1900	1.0000	0.39%
Site Total							6.52%

\*Per CSC Records (available upon request, includes calculation formulas)

\*\* If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

### Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm <sup>2</sup> )	Freq. Band (MHz <sup>**</sup> )	Limit S (mW/cm <sup>2</sup> )	%MPE
Other Carriers*							5.23%
AT&T UMTS	1	324	169	0.0044	850	0.5667	0.08%
AT&T LTE	1	1476	169	0.0200	700	0.4667	0.43%
AT&T LTE	1	1000	169	0.0135	850	0.5667	0.24%
AT&T 5G	1	1000	169	0.0135	850	0.5667	0.24%
AT&T LTE	2	3664	169	0.0992	1900	1.0000	0.99%
AT&T LTE	1	3837	169	0.0519	2100	1.0000	0.52%
AT&T LTE	1	1285	169	0.0174	2300	1.0000	0.17%
Site Total							7.90%

\*Per CSC Records (available upon request, includes calculation formulas)

\*\* If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880





**SITE NAME: WINDSOR-PIGEON HILL**  
**SITE NUMBER: CT1144**  
**482 PIGEON-HILL ROAD**  
**WINDSOR, CT 06095**  
**FA#: 10035288**

**PACE#: MRCTB035124, MRCTB035173, MRCTB035165, MRCTB035336, MRCTB035338**  
**SCOPE: LTE 3C, 4C, 5C, 4TX4RX**



500 ENTERPRISE DRIVE SUITE 3A  
 ROCKY HILL, CT 06067



12 INDUSTRIAL WAY  
 SALEM, NH 03079

**CT1144**  
**WINDSOR-PIGEON HILL**

**CONSTRUCTION DRAWINGS**

DATE	DESCRIPTION
0 12/01/20	ISSUED AS FINAL
C 11/23/20	REVISED PER COMMENTS
B 02/27/20	REVISED PER COMMENTS
A 02/06/19	ISSUED FOR REVIEW



Dewberry Engineers Inc.  
 600 PARSIPPANY ROAD  
 SUITE 301  
 PARSIPPANY, NJ 07054  
 PHONE: 973.739.9400  
 FAX: 973.739.9710



DRAWN BY: JC  
 REVIEWED BY: BSH  
 CHECKED BY: GHN  
 PROJECT NUMBER: 50055106  
 JOB NUMBER: 50093838  
 SITE ADDRESS:

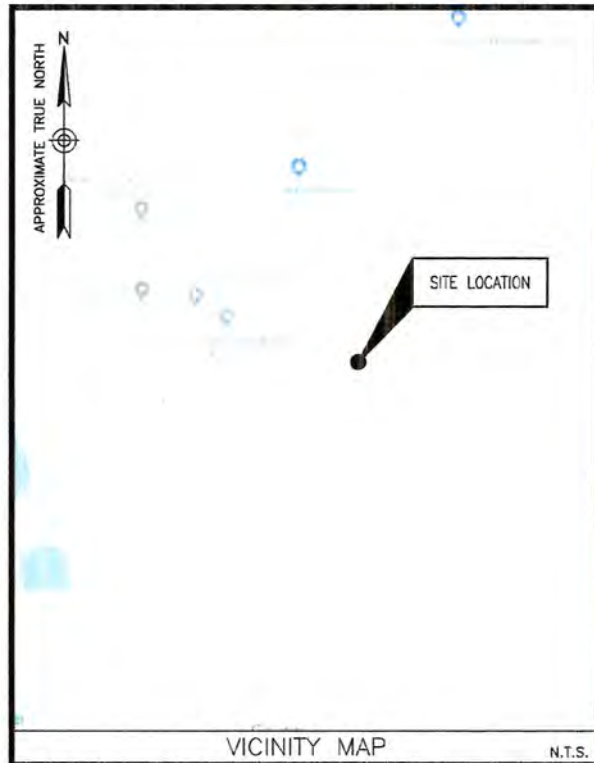
482 PIGEON-HILL ROAD  
 WINDSOR, CT 06095  
 HARTFORD COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



VICINITY MAP

N.T.S.

DIRECTIONS FROM 500 ENTERPRISE DRIVE, ROCKY HILL, CT:

GET ON I-91 N FROM ENTERPRISE DR. FOLLOW I-91 N TO CT-305 W/BLOOMFIELD AVE IN WINDSOR. TAKE EXIT 37 FROM I-91 N. CONTINUE ON CT-305 W/BLOOMFIELD AVE. TURN RIGHT ONTO ADDISON RD. TURN RIGHT ONTO PIGEON HILL RD. SITE WILL BE ON THE LEFT.

**SITE COORDINATES:**  
 LATITUDE: 41°-51'-59.871" N (NAD83)  
 LONGITUDE: 72°-40'-29.196" W (NAD83)  
 (PER GOOGLE EARTH)

**ELEVATION DATA:**  
 GRADE ELEVATION AT TOWER = 175'± A.M.S.L.  
 (PER GOOGLE EARTH)

**SITE INFORMATION**

- INSTALL MOUNT MODIFICATIONS IN ACCORDANCE WITH THE MODIFICATION DRAWINGS BY B+T GROUP DATED 05/20/20.
  - REMOVE (3) EXISTING UMTS ANTENNAS AT POSITION 1.
  - MERGE (3) EXISTING UMTS ANTENNAS WITH LTE AT POSITION 2 & RELOCATE TO POSITION 1.
  - SWAP (1) EXISTING GSM ANTENNA FOR (1) 4' 800-10964 OCTO ANTENNA AT ALPHA SECTOR POSITION 4.
  - SWAP (2) EXISTING GSM ANTENNAS FOR (2) 6' 800-10965 OCTO ANTENNAS AT BETA/GAMMA SECTORS POSITION 4.
  - SWAP (3) EXISTING RRUS-32 B2 FOR (3) 8843 B2/866A RRU'S.
  - SWAP (3) EXISTING RRUS-11 FOR (3) 4449 B5/B12 RRU'S.
  - ADD (3) RRUS-32 B30 WCS UP ON TOWER.
  - ADD (1) DC/FIBER SQUID UP ON TOWER.
  - REMOVE (6) EXISTING TT19-08BP111-01 TMA'S UP ON TOWER.
  - REMOVE (6) GSM COAX CABLES.
  - ADD (2) DC POWER CABLES & (1) FIBER TRUNK LINE.
  - ADD (6) Y-CABLES.
  - GROUND - SWAP DUS WITH RBS 6630, ADD (1) XMU, ADD 5G RBS 6630.
- PROJECT DESCRIPTION**

**SITE NAME:**  
 WINDSOR-PIGEON HILL

**SITE NUMBER:**  
 CT1144

**SITE ADDRESS:**  
 482 PIGEON-HILL ROAD  
 WINDSOR, CT 06095  
 HARTFORD COUNTY

**APPLICANT/LESSEE:**  
 AT&T MOBILITY  
 500 ENTERPRISE DRIVE, SUITE 3A  
 ROCKY HILL, CT 06067

**PROJECT INFORMATION**

THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

A.D.A. COMPLIANCE:  
 FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.

SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
G-1	GENERAL NOTES
C-1	COMPOUND PLAN
C-2	EXISTING & PROPOSED EQUIPMENT LAYOUTS
C-3	EXISTING & PROPOSED SOUTH ELEVATIONS
C-4	EXISTING & PROPOSED ANTENNA LAYOUTS
C-5	CONSTRUCTION DETAILS I
C-6	CONSTRUCTION DETAILS II
C-7	PLUMBING DIAGRAM
E-1	GROUNDING NOTES & DETAILS

**SHEET INDEX**



**GENERAL NOTES:**

- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
PROJECT MANAGEMENT - SAI COMMUNICATIONS, INC.  
CONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)  
OWNER - AT&T MOBILITY  
OEM - ORIGINAL EQUIPMENT MANUFACTURER
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR 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 PROJECT MANAGEMENT.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR 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.
- DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY PROJECT MANAGEMENT.
- CONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. CONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. CONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH PROJECT MANAGEMENT.
- THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- CONTRACTOR 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
- THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
- CONTRACTOR SHALL NOTIFY DEWBERRY 48 HOURS IN ADVANCE OF POURING CONCRETE, OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEER REVIEW.
- CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. CONTRACTOR SHALL NOTIFY PROJECT MANAGEMENT OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
- THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY CONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH LAND LORD. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
- 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.

**SITE WORK GENERAL NOTES:**

- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO:  
A) FALL PROTECTION  
B) CONFINED SPACE  
C) ELECTRICAL SAFETY  
D) TRENCHING & EXCAVATION.
- ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
- IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, TOP SOIL AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE AT&T SPECIFICATION FOR SITE SIGNAGE.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE TRANSMISSION EQUIPMENT AND TOWER AREAS.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION. SEE SOIL COMPACTION NOTES.
- THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
- EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

**STRUCTURAL STEEL NOTES:**

- ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS UNLESS NOTED OTHERWISE. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".
- ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.
- BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"Ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
- NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.
- ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

**SOIL COMPACTION NOTES FOR SLAB ON GRADE:**

- EXCAVATE AS REQUIRED TO REMOVE VEGETATION & TOPSOIL EXPOSE UNDISTURBED NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.
- COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.
- AS AN ALTERNATIVE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.
- COMPACTED SUBBASE SHALL BE UNIFORM & LEVELED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING 1" SIEVE.
- AS AN ALTERNATIVE TO ITEMS 2 AND 3 PROOFLOR THE SUBGRADE SOILS WITH 5 PASSES OF A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/38) OR HAND-OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS BOMAG BW 55E). ANY SOFT AREAS THAT ARE ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH A WELL-GRADED GRANULAR FILL, AND COMPACTED AS STATED ABOVE.

**COMPACTION EQUIPMENT:**

- HAND OPERATED DOUBLE DRUM, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

**CONSTRUCTION NOTES:**

- FIELD VERIFICATION:  
CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, AT&T ANTENNA PLATFORM LOCATION AND ANTENNAS TO BE REPLACED.
- COORDINATION OF WORK:  
CONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH PROJECT MANAGEMENT
- CABLE LADDER RACK:  
CONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW SITS LOCATION.

**ELECTRICAL INSTALLATION NOTES:**

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
- CONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW SITS EQUIPMENT. CONTRACTOR SHALL SUBMIT MODIFICATIONS TO PROJECT MANAGEMENT FOR APPROVAL.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
- EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA, AND MATCH EXISTING INSTALLATION REQUIREMENTS.
- ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
- PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL.) PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (SIZE 6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
- ALL POWER AND POWER GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
- NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
- RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
- CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM PROJECT MANAGEMENT BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.



500 ENTERPRISE DRIVE SUITE 3A  
ROCKY HILL, CT 06067



12 INDUSTRIAL WAY  
SALEM, NH 03079

**CT1144**  
**WINDSOR-PIGEON**  
**HILL**

**CONSTRUCTION DRAWINGS**

NO.	DATE	DESCRIPTION
0	12/01/20	ISSUED AS FINAL
C	11/23/20	REVISED PER COMMENTS
B	02/27/20	REVISED PER COMMENTS
A	02/05/19	ISSUED FOR REVIEW



Dewberry Engineers Inc.  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07054  
PHONE: 973.730.8400  
FAX: 973.730.8710



DRAWN BY: JC

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50055106

JOB NUMBER: 50093838

SITE ADDRESS:

482 PIGEON-HILL ROAD  
WINDSOR, CT 06095  
HARTFORD COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

G-1

























500 ENTERPRISE DRIVE SUITE 3A  
ROCKY HILL, CT 06067



12 INDUSTRIAL WAY  
SALEM, NH 03079

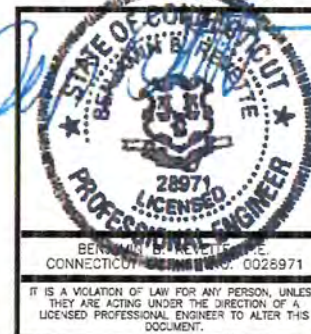
**CT1144**  
**WINDSOR-PIGEON**  
**HILL**

**CONSTRUCTION DRAWINGS**

D	12/01/20	ISSUED AS FINAL
C	11/23/20	REVISED PER COMMENTS
B	02/27/20	REVISED PER COMMENTS
A	02/05/19	ISSUED FOR REVIEW



Dewberry Engineers Inc.  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07054  
PHONE: 973.739.9400  
FAX: 973.739.9710



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

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50093838
SITE ADDRESS:	

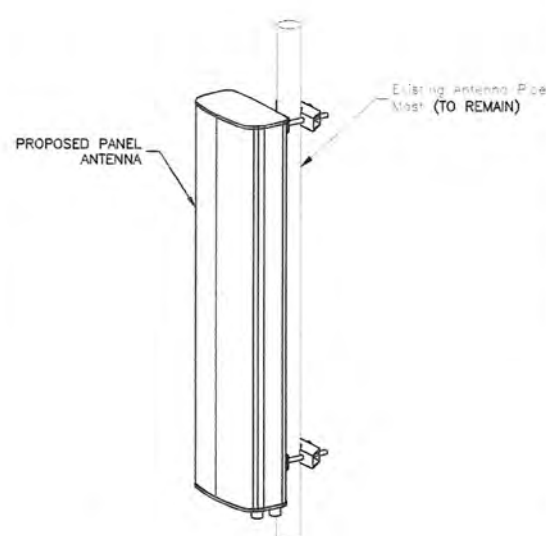
482 PIGEON-HILL ROAD  
WINDSOR, CT 06095  
HARTFORD COUNTY

SHEET TITLE

CONSTRUCTION  
DETAILS II

SHEET NUMBER

C-6



**NOTES:**

1. MOUNT ANTENNA PER MANUFACTURER'S RECOMMENDATIONS.
2. WEIGHT INCLUDES MOUNTING BRACKETS.

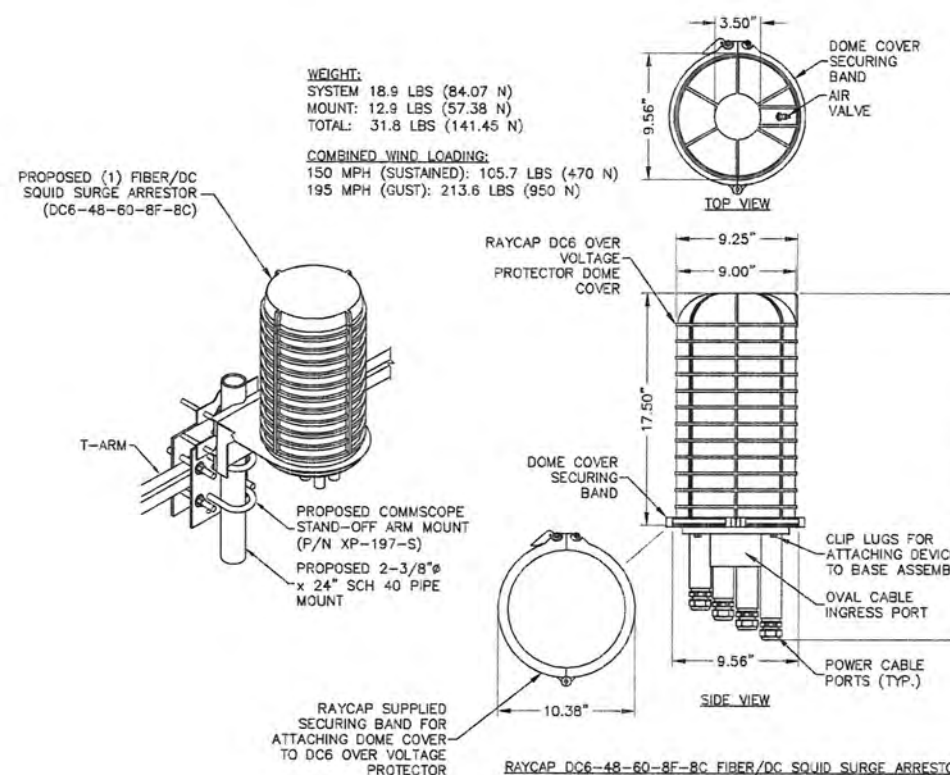
ANTENNA SPECIFICATIONS	
MANUFACTURER	KATHREIN
MODEL NUMBER	800-10965
DIMENSIONS (HxWxD)	78.7" x 20.0" x 6.9"
WEIGHT	108.6 LBS

ANTENNA SPECIFICATIONS	
MANUFACTURER	KATHREIN
MODEL NUMBER	800-10964
DIMENSIONS (HxWxD)	59.0" x 20.0" x 6.9"
WEIGHT	83.8 LBS

**ANTENNA DETAIL**

SCALE: N.T.S.

1



**TOWER MOUNTED SURGE ARRESTOR DETAIL**

SCALE: N.T.S.

2













## Structural Analysis Report

Prepared for:

**KGI**

805 Las Cimas Parkway, Building Three, Suite 370  
Austin, TX 78746

ATTN: Mr. Sean Rock

**Structure** : 160 ft Self Supported Tower  
**Site ID** : 28229  
**Proposed Carrier** : AT&T Wireless  
**Site Name** : Windsor  
**Site Location** : 482 Pigeon Hill Road  
Windsor, CT  
41.8666, -72.6748  
**County** : Hartford  
**Date** : October 21, 2020  
**Max Usage** : 97%  
**Result** : Pass

Prepared By:  
Jung Hyun Hong, E.I.T  
Structural Engineer

A handwritten signature in black ink, appearing to read "JH Hong", is written below the name of the preparer.



EXP. 01/31/2021

Thomas  
Taylor

Digitally signed by Thomas Taylor  
DN: cn=Thomas Taylor, o=Semaan  
Engineering Solutions 402-289-1888,  
ou=Location: Elkhorn, NE Reason: I  
am the author of this document,  
email=toimt@semaaneng.com, c=US  
Date: 2020.10.22 14:18:34 -05'00'





Site ID 28229  
October 21, 2020

**Table of Contents**

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Supporting Documents -----	1
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Conclusion -----	1
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Proposed Equipment -----	2
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Foundations -----	3
Standard Conditions -----	4
Calculations -----	Attached



**Introduction**

The purpose of this report is to summarize results of a structural analysis performed on the 160 ft Self Supported Tower to reflect the change in loading by AT&T Wireless.

**Supporting Documents**

<b>Tower Drawing</b>	Rohn Drawing #A870542-1, dated April 20, 1987 HighTower Solutions Mapping, dated February 20, 2019
<b>Foundation Drawing</b>	Rohn Drawing #A870543-1, dated April 20, 1987 FDH Foundation Mapping Project #08-04006E N1, dated April 18, 2008
<b>Geotechnical Report</b>	Geotechnical Engineering, dated September 20, 2010
<b>Modifications</b>	CENTEK Foundation Reinforcement Job #10001.000, dated November 9, 2010*
<b>Mount Modifications</b>	B+T Mount Modification Project #130652.004.01 REV A, dated May 20, 2020
<b>Mount Analysis</b>	B+T Mount Analysis Project #130652.005.01 REV A, dated September 1, 2020

\* This analysis assumes the modifications previously outlined in the CENTEK Foundation Reinforcement Drawing dated November 9, 2010 were installed and approved. This analysis is not valid if these previous modifications were not installed as intended.

**Analysis**

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

<b>Basic Wind Speed</b>	116 mph (3-Second Gust) Vult
<b>Basic Wind Speed w/Ice</b>	50 mph (3-Second Gust) w/ 1-1/2" radial ice concurrent
<b>Code</b>	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
<b>Risk Category</b>	II
<b>Exposure Category</b>	B
<b>Topographic Category</b>	1
<b>Crest Height</b>	0 ft
<b>Spectral Response</b>	Ss = 0.179 , S1 = 0.055
<b>Site Class</b>	D - Stiff Soil
<b>Ground Elevation</b>	169.4 ft

**Conclusion**

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

If you have any questions or require additional information, please contact Semaan Engineering Solutions at 402-289-1888.



**Existing and Reserved Equipment**

This loading is included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier	
Mount	Equip.						
159.0	168.0	1	16 ft Whip	Pipe	(1) 7/8"	City of Windsor	
157.0	169.0	1	DC6-48-60-18-8F	(3) T-Arms with Platform on (1) 18 ft Pipe w/Face Frame	(1) 0.39" Fiber (2) 0.78" DC (6) 1 1/4"	AT&T	
		3	QS66512-2				
	157.0	157.0	12	10"x7"x2" TMA	Platform w/Rail	(3) 1 1/4" Hybrid (12) 1 5/8" Stacked 6/6	Verizon
			12	BXA-70080/8CF			
			3	OVP Junction Box			
			6	RRH 3JR52709AA 2x60			
			3	RRH 4x30-4T4R B13			
			3	RRH 4x30-4T4R B25			
146.0	146.0	3	11"x6"x3.5" TMA	(3) Sector Frames	(18) 1 5/8" Stacked 9/9	T-Mobile	
		3	7"x6"x2.5" TMA				
		3	APX16DWV-16DWVS-C-A20				
		3	LNx-6515DS-A1M				
132.0	-	-	-	Empty 14 ft Face Mount	-	-	
126.5	126.5	1	16 ft Whip	(1) 6 ft Sidearm	(1) 7/8"	City of Windsor	
107.0	107.0	1	16 ft Whip	(1) 6 ft Sidearm	(1) 7/8"		
47.5	52.0	1	10 ft Dipole	(1) 4 ft Sidearm	(1) 1/2"	Verizon	
37.5	45.0	1	12 ft Whip	(1) 4 ft Sidearm	(1) 1/2"	City of Windsor	

**Equipment to be Removed**

This loading is not included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
169.0	172.5	6	AM-X-CD-14-65-00T	-	(6) 1 1/4"	AT&T
		6	TT19-08DB111			
	172.0	3	RRUS 32 B2			
	168.0	3	RRUS 11 B12			

**Proposed Equipment**

This loading is included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
157.0	169.0	3	4449 B5/B12 RRU	(3) T-Arms with Platform on (1) 18 ft Pipe w/Face Frame w/Proposed Modifications	(1) 0.39" Fiber (2) 0.78" DC	AT&T
		1	800-10964			
		2	800-10965			
		3	8843 B2/B66A RRU			
		1	DC6-48-60-18-8C			
		3	RRUS 32 B30			

Install proposed coax anywhere on tower.



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Legs	97%	Pass
Diagonals	79%	Pass
Horizontals	7%	Pass
Anchor Bolts	59%	Pass
Bolts	83%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Axial (Kips)	225.8	24%
Uplift (Kips)	189.8	28%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.





### **Standard Conditions**

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

--Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

--Information from drawings in the possession of Semaan Engineering Solutions, or generated by field inspections or measurements of the structure.

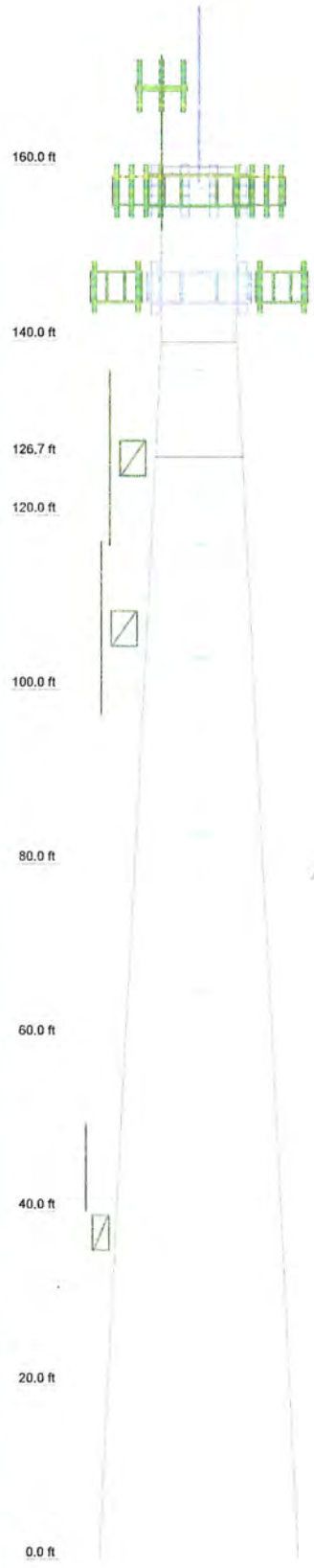
It is the responsibility of the client to ensure that the information provided to Semaan Engineering Solutions Holdings and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and Semaan Engineering Solutions, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

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



Section	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROH 6 EHS<ERW>	P5x.375<ERW>	P4x.337<ERW>	P3x.3<ERW>	P2.5x.552<ERW>	P2.5x.278<ERW>	P2.5x.203<ERW>	
Leg Grade	L4x4x1/4	L3 1/2x3 1/2x1/4	L3x3x1/4	L3x3x3/16	L2 1/2x2 1/2x3/16	L2x2x1/4	L1 3/4x1 3/4x3/16	
Diagonals								
Diagonal Grade								
Top Girts								
Sec. Horizontals								
Face Width (ft)	20.8646	18.7708	14.6979	12.6875	10.6458	9.9781	8.6458	
# Panels @ (ft)	2 @ 9.80208	2 @ 9.75	2 @ 9.72517	6 @ 6.5	1 @ 6.417	2 @ 6.5415	4 @ 4.875	
Weight (K)	17.7	2.5	2.4	2.1	1.9	1.6	1.0	



**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
Feed Line (ATT)	163	(3) RRUS 32 B30 (ATT)	157
Feed Line (ATT)	163	(3) 4449 B5/B12 RRU (ATT)	157
16 ft Whip (City of Windsor)	159	(3) 8843 B2/B66A RRU (ATT)	157
(4) BXA-70080/BCF (Verizon)	157	(4) BXA-70080/BCF (Verizon)	157
(4) BXA-70080/BCF (Verizon)	157	Platform w/Rail (Verizon)	157
(4) RRUS A2 Module (Verizon)	157	Sector Frame (T-Mobile)	146
(4) RRUS A2 Module (Verizon)	157	APX16DWW-16DWVS-C-A20 (T-Mobile)	146
(2) RRH 3JR52709AA 2x60 (Verizon)	157	APX16DWW-16DWVS-C-A20 (T-Mobile)	146
(2) RRH 3JR52709AA 2x60 (Verizon)	157	APX16DWW-16DWVS-C-A20 (T-Mobile)	146
RRH 4x30-4T4R B13 (Verizon)	157	LNx-6515DS-A1M (T-Mobile)	146
RRH 4x30-4T4R B13 (Verizon)	157	LNx-6515DS-A1M (T-Mobile)	146
RRH 4x30-4T4R B13 (Verizon)	157	LNx-6515DS-A1M (T-Mobile)	146
RRH 4x30-4T4R B25 (Verizon)	157	11"x6"x3.5" TMA (T-Mobile)	146
RRH 4x30-4T4R B25 (Verizon)	157	11"x6"x3.5" TMA (T-Mobile)	146
RRH 4x30-4T4R B25 (Verizon)	157	11"x6"x3.5" TMA (T-Mobile)	146
(4) 10"x7"x2" TMA (Verizon)	157	7"x6"x2.5" TMA (T-Mobile)	146
(4) 10"x7"x2" TMA (Verizon)	157	7"x6"x2.5" TMA (T-Mobile)	146
(4) 10"x7"x2" TMA (Verizon)	157	7"x6"x2.5" TMA (T-Mobile)	146
OVP Junction Box (Verizon)	157	Sector Frame (T-Mobile)	146
OVP Junction Box (Verizon)	157	Sector Frame (T-Mobile)	146
OVP Junction Box (Verizon)	157	14 ft Face Mount	132
Face Frame (ATT)	157	16 ft Whip (City of Windsor)	126.5
18 ft Pipe (ATT)	157	6 ft Sidearm (City of Windsor)	126.5
Modified Mount (ATT)	157	6 ft Sidearm (City of Windsor)	107
(3) T-Arms with Platform (ATT)	157	16 ft Whip (City of Windsor)	107
800-10965 (ATT)	157	4 ft Sidearm (Verizon)	47.5
800-10965 (ATT)	157	10 ft Dipole (Verizon)	47.5
800-10964 (ATT)	157	4 ft Sidearm (City of Windsor)	37.5
DC6-48-60-18-8C (ATT)	157	12 ft Whip (City of Windsor)	37.5
DC6-48-60-18-8F (ATT)	157		
(3) QS66512-2 (ATT)	157		

**SYMBOL LIST**

MARK	SIZE	MARK	SIZE
A	L3x3x3/16		

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

<p><b>SEMAAN</b> ENGINEERING SOLUTIONS</p> <p>SEMAAN Engineering</p>	<p><b>SEMAAN Engineering Solutions</b></p> <p>1047 N 205th St Elkhorn, NE 68022 Phone: (402) 289-1888 FAX:</p>		<p>Job: <b>28229 Windsor</b></p> <p>Project: <b>REV05</b></p>	
	Client: <b>KGI</b>	Drawn by: <b>JungH</b>	App'd:	
	Code: <b>TIA-222-H</b>	Date: <b>10/21/20</b>	Scale: <b>NTS</b>	
	Path: <b>UDM28\SERVER\01\Comment\TXN files\28229\REV05\28229_REV05.dwg</b>		Dwg No. <b>E-1</b>	
	<p>SEMAAN Engineering Solutions</p>			



Section	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 6 EHS<ERW>	P5x.375<ERW>	P4x.337<ERW>	P3x.3<ERW>	P2.5x.552<ERW>	P2.5x.276<ERW>	P2.5x.203<ERW>		
Leg Grade	L4x4x1/4	L3 1/2x3 1/2x1/4	L3x3x1/4	L3x3x3/16	L2 1/2x2 1/2x3/16	L2x2x1/4	L1 3/4x1 3/4x3/16		
Diagonal Grade				A35					
Top Chits									
Sec. Horizontals		N.A.	L3x3x1/4	L3x3x3/16	L2 1/2x2 1/2x3/16	L2x2x1/4	L2x2x5/16	N.A.	
Face Width (ft)	20.8646	18.7706	16.7708	14.6979	12.6875	10.6458	8.6458		
# Panels @ (ft)	2 @ 9.80208	2 @ 9.75	2 @ 9.72517	6 @ 6.5	1 @ 6.417	2 @ 6.5415	4 @ 4.875		
Weight (K)	17.7	3.3	2.6	2.1	1.8	0.8	1.2	1.3	

160.0 ft  
140.0 ft  
126.7 ft  
120.0 ft  
100.0 ft  
80.0 ft  
60.0 ft  
40.0 ft  
20.0 ft  
0.0 ft



### SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L3x3x3/16		

### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

### TOWER DESIGN NOTES

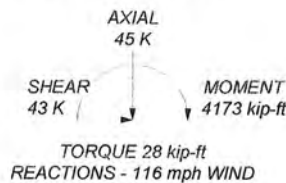
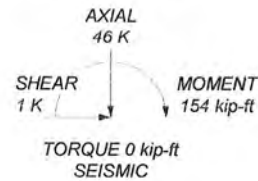
1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 116 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. Weld together tower sections have flange connections.
9. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
10. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
11. Welds are fabricated with ER-70S-6 electrodes.
12. CCISeismic Note: Seismic loads generated by CCISeismic 3.2.3
13. CCISeismic Note: Seismic calculations are in accordance with TIA-222-H
14. TOWER RATING: 96.8%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:

DOWN: 226 K  
SHEAR: 26 K

UPLIFT: -190 K  
SHEAR: 23 K

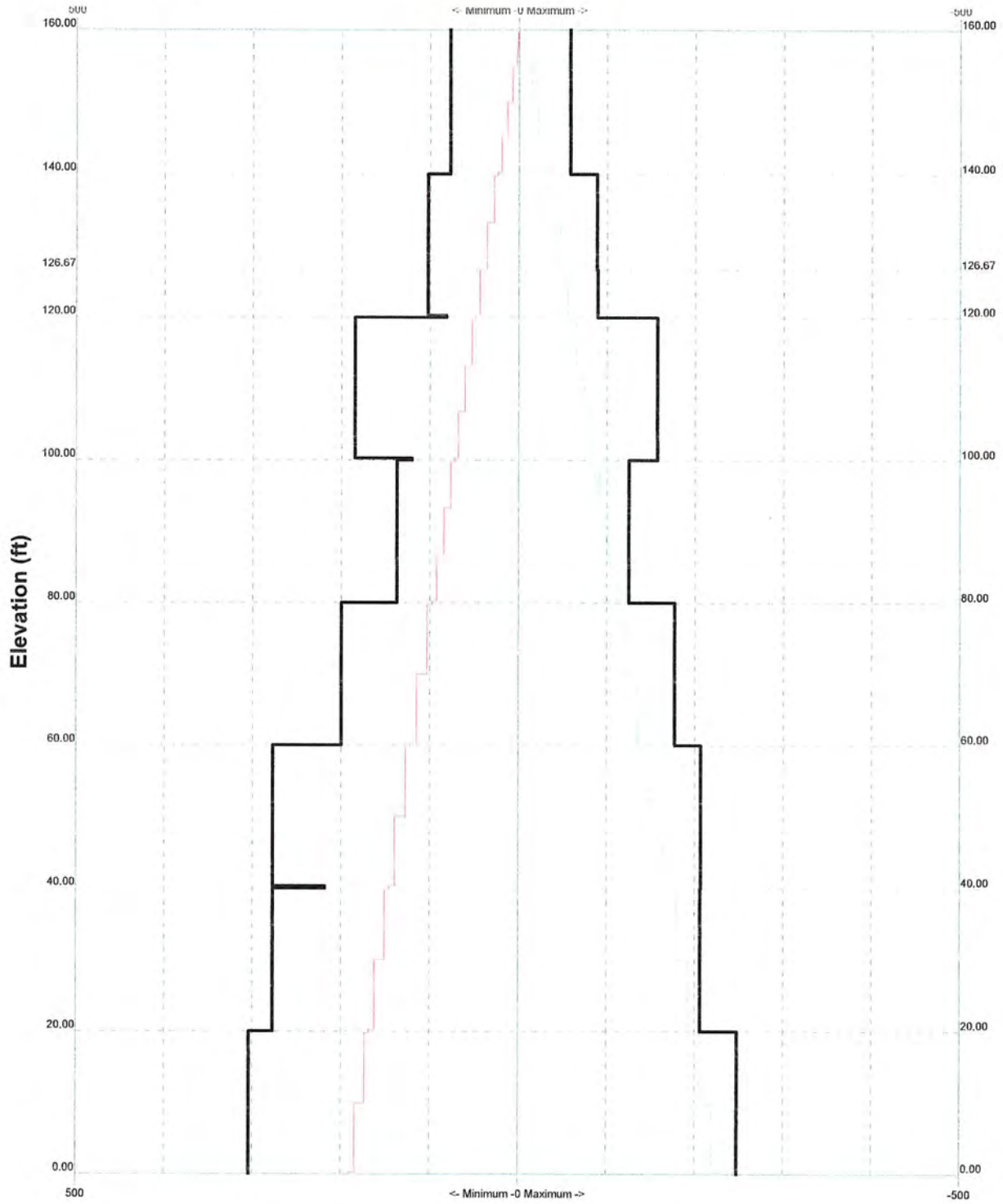



**SEMAAN Engineering Solutions**  
1047 N 205th St  
Elkhorn, NE 68022  
Phone: (402) 289-1888  
FAX:

Job: 28229 Windsor		
Project: REV05		
Client: KGI	Drawn by: JungH	App'd:
Code: TIA-222-H	Date: 10/21/20	Scale: NTS
Path: \\QMZSESSERVER01\Common\TNX files\28229\REV05\28229_REV05.dwg		Dwg No. E-1

TIA-222-H - 116 mph/50 mph 1.50 in Ice Exposure B

Leg Capacity ——— Leg Compression (K)



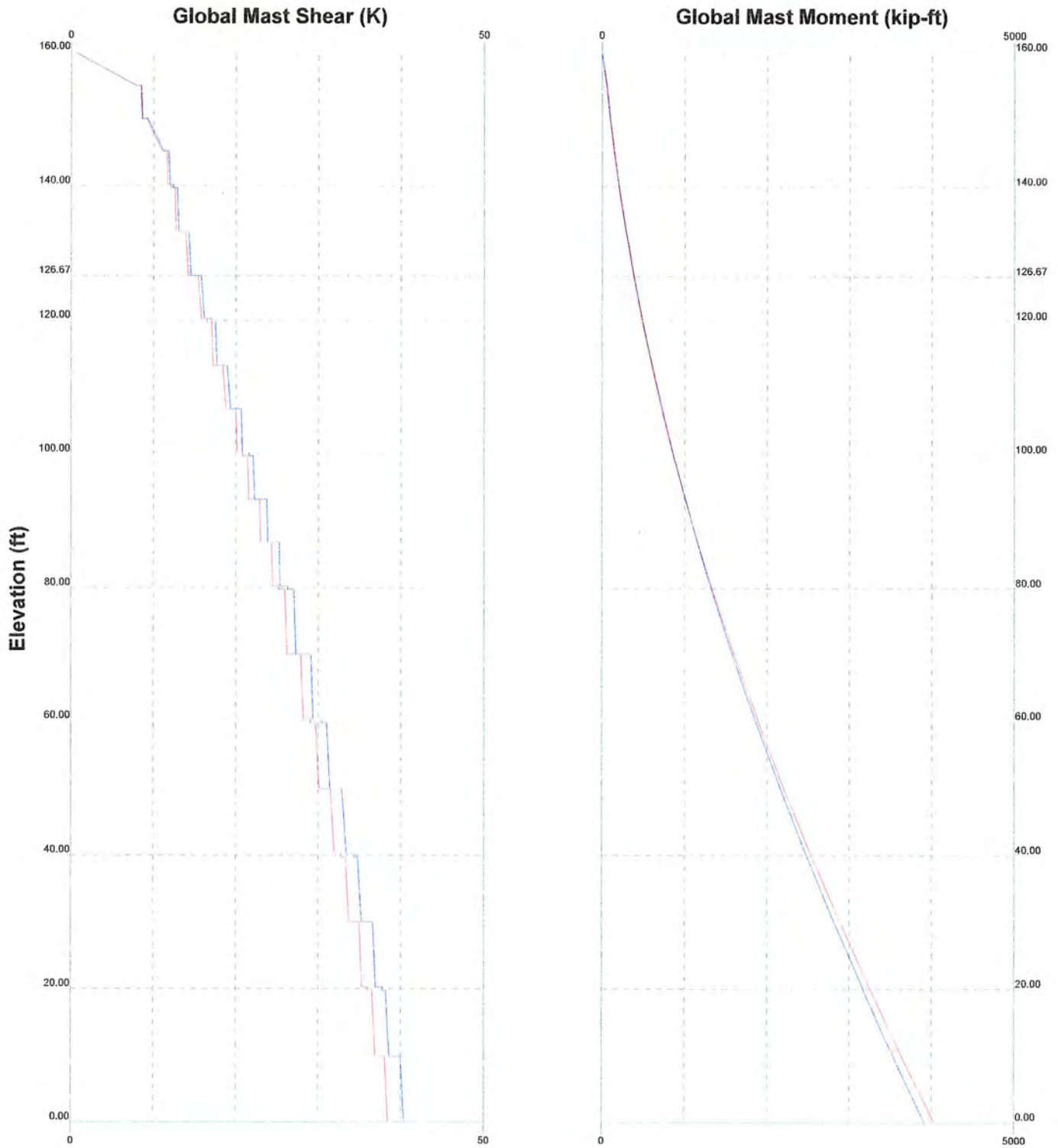
 <p><b>SEMAAN</b> ENGINEERING SOLUTIONS</p>	<p><b>SEMAAN Engineering Solutions</b></p>		<p>Job: <b>28229 Windsor</b></p>		
	<p>1047 N 205th St</p>		<p>Project: <b>REV05</b></p>		
	<p>Elkhorn, NE 68022</p>		<p>Client: <b>KGI</b></p>	<p>Drawn by: <b>JungH</b></p>	<p>App'd:</p>
	<p>Phone: (402) 289-1888</p>		<p>Code: <b>TIA-222-H</b></p>	<p>Date: <b>10/21/20</b></p>	<p>Scale: <b>NTS</b></p>
	<p>FAX:</p>		<p>Path: \\DMZ3ESSESERVER01\C\comment\TX files\28229\REV05\28229_REV05.en</p>		


Dwg No. **E-3**

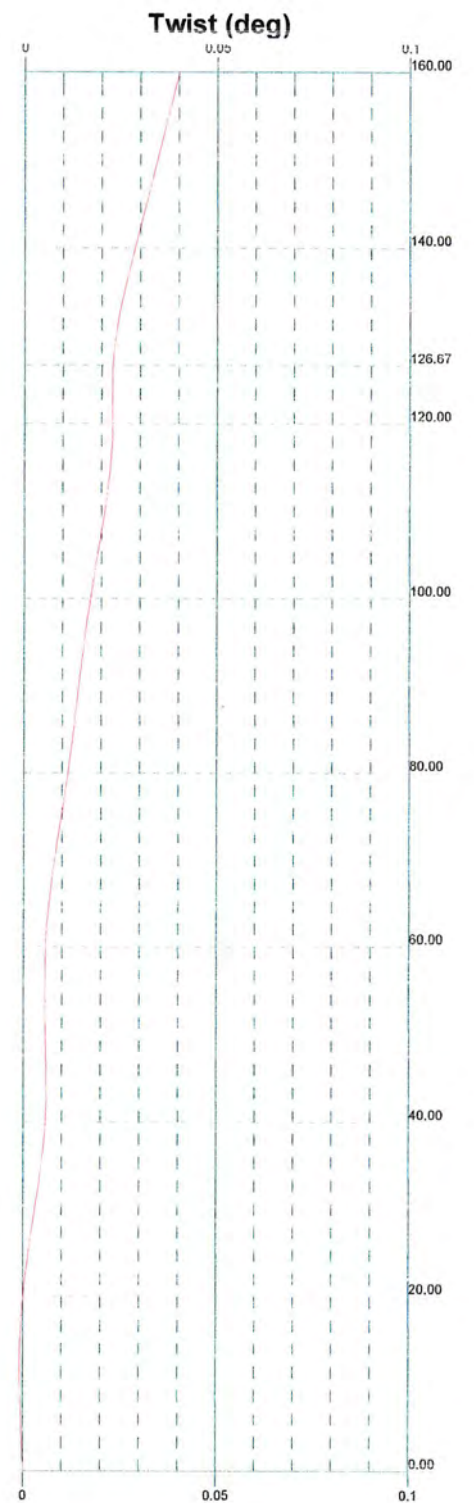
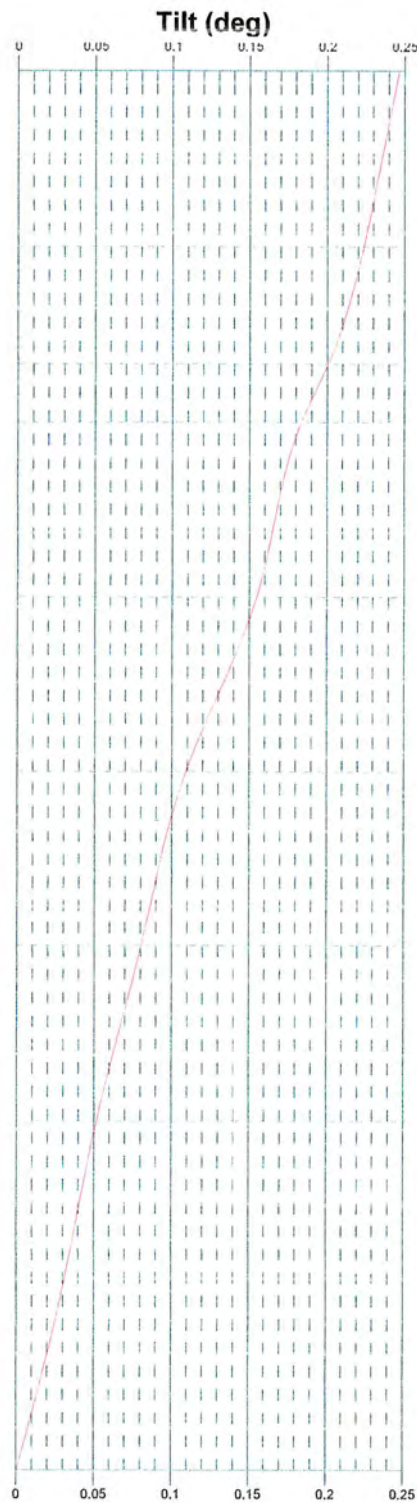
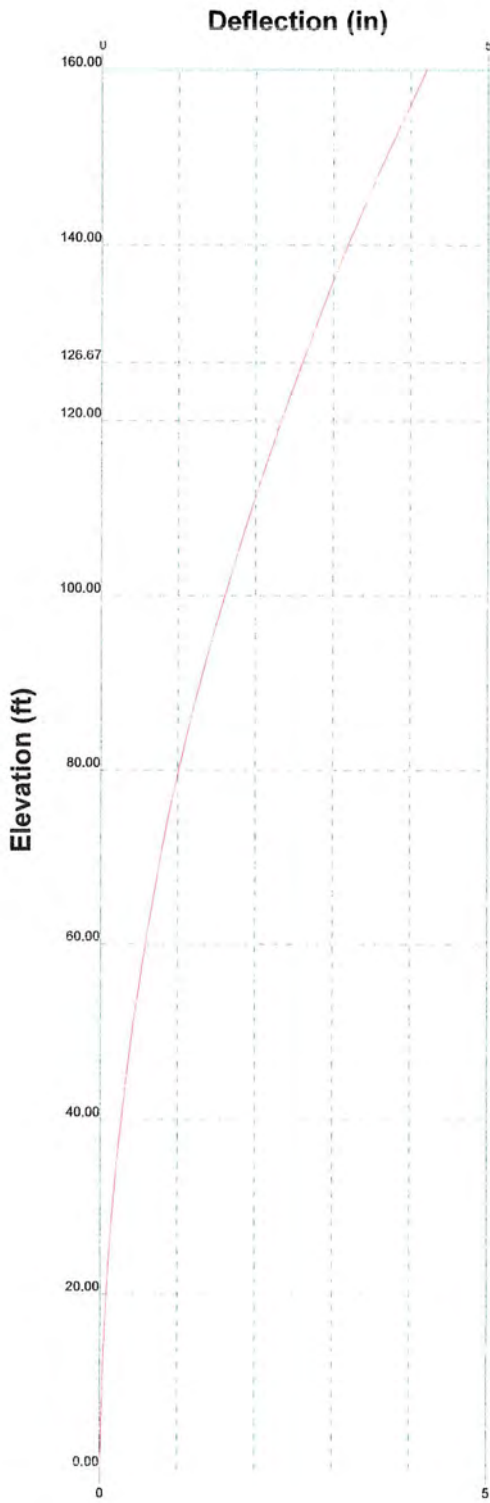



Vx Vz

Mx Mz



 <p>SEMAAN Engineering Solutions 1047 N 205th St Elkhorn, NE 68022 Phone: (402) 289-1888 FAX:</p>	<p>Job: <b>28229 Windsor</b></p>		
	<p>Project: <b>REV05</b></p>		
	<p>Client: <b>KGI</b></p>	<p>Drawn by: <b>JungH</b></p>	<p>App'd:</p>
	<p>Code: <b>TIA-222-H</b></p>	<p>Date: <b>10/21/20</b></p>	<p>Scale: <b>NTS</b></p>
	<p>Path: <small>\\DM7SE68SERVER011\Common\TXN files\28229\REV05\28229 REV05.dwg</small></p>		<p>Dwg No. <b>E-4</b></p>



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	<p>Project: <b>REV05</b></p>		<p>Client: <b>KGI</b></p>	
	<p>Code: <b>TIA-222-H</b></p>		<p>Drawn by: <b>JungH</b></p>	
	<p>Path: <small>IDMZSESSERVER01\Common\TINX_files\28229\REV05\28229_REV05.en</small></p>		<p>Date: <b>10/21/20</b></p>	
			<p>App'd:</p> <p>Scale: <b>NTS</b></p> <p>Dwg No. <b>E-5</b></p>	



# Feed Line Plan

Round \_\_\_\_\_ Flat \_\_\_\_\_ App In Face \_\_\_\_\_ App Out Face \_\_\_\_\_

(6) 1 1/4" Coax (ATT)


1/2" Coax (Verizon)  
 (2) 0.78" DC (ATT)  
 (2) 0.78" DC (ATT)  
 0.39" Fiber Trunk (ATT)

(18) 1 5/8" Coax (T-Mobile)

1/2" Coax (City of Windsor)  
 7/8" Coax (City of Windsor)  
 7/8" Coax (City of Windsor)  
 7/8" Coax (City of Windsor)

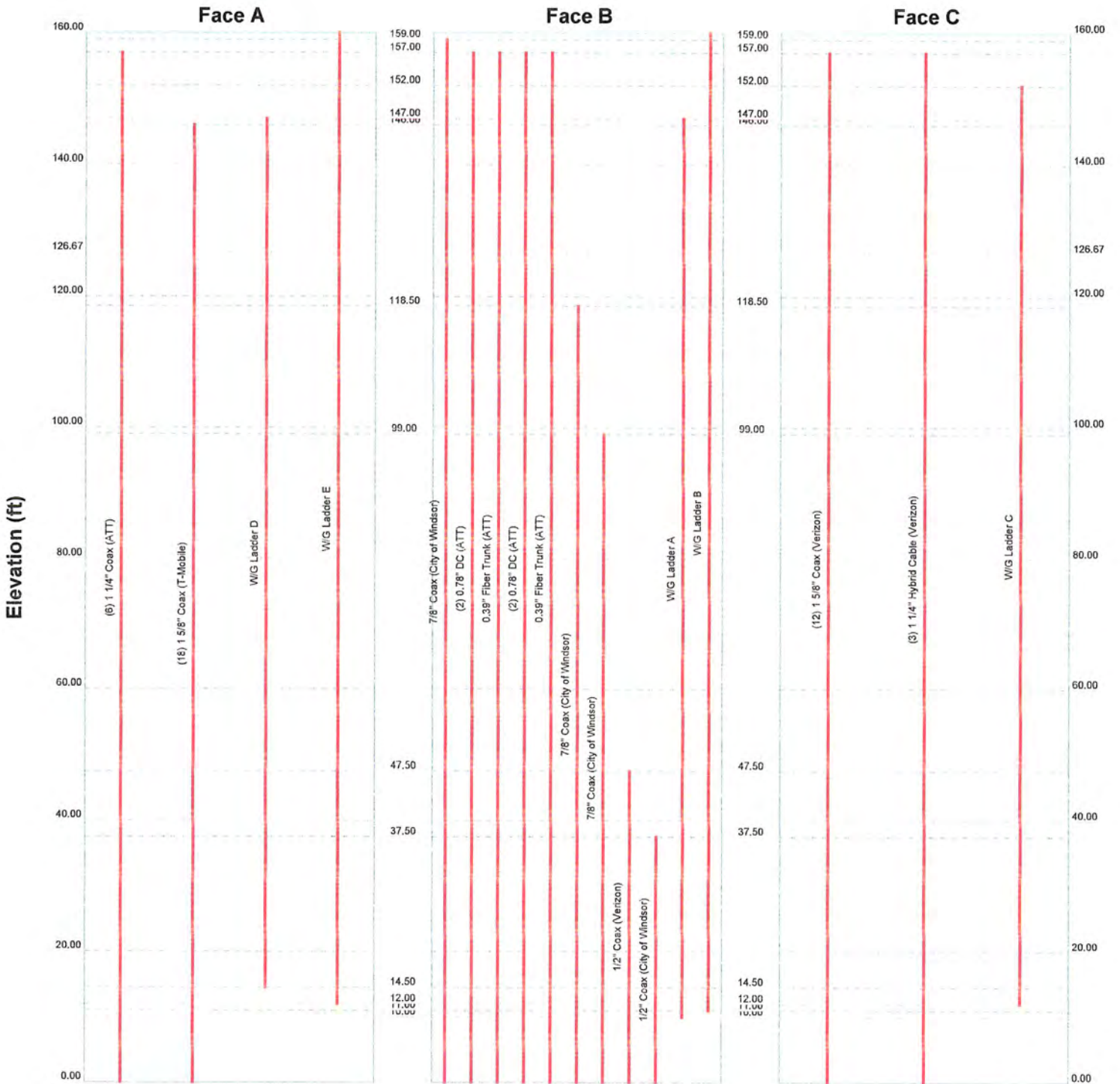
(3) 1 1/4" Hybrid Cable (Verizon)

(12) 1 5/8" Coax (Verizon)

 <p>SEMAAN Engineering</p>	<b>SEMAAN Engineering Solutions</b>		Job: <b>28229_Windsor</b>		
	1047 N 205th St Elkhorn, NE 68022		Project: <b>REV05</b>		
	Phone: (402) 289-1888		Client: <b>KGI</b>	Drawn by: <b>JungH</b>	App'd:
	FAX:		Code: <b>TIA-222-H</b>	Date: <b>10/21/20</b>	Scale: <b>NTS</b>
			Path: <small>WDMZSESSERVER01\Common\TNX files\28229\REV05\28229_REV05.en</small>	Dwg No. <b>E-7</b>	

# Feed Line Distribution Chart 0' - 160'

— Round   
 — Flat   
 — App In Face   
 — App Out Face   
 — Truss Leg



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 FAX:

<b>Job: 28229_Windsor</b>		
Project: REV05		
Client: KGI	Drawn by: JungH	App'd:
Code: TIA-222-H	Date: 10/21/20	Scale: NTS
Path: \\WMZ3\3\GIS-RV\R01\Common\INX Files\26229\REV05\28229_REV05.dwg		Dwg No. E-7



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	<b>Client</b> KGI	<b>Designed by</b> JungH

## Tower Input Data

The main tower is a 3x free standing tower with an overall height of 160.00 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 8.65 ft at the top and 22.86 ft at the base.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

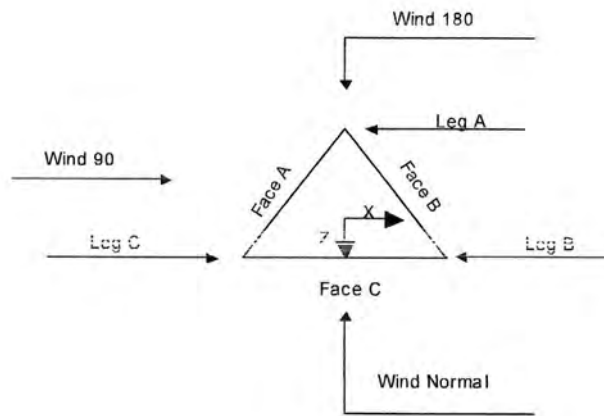
- Tower is located in Hartford County, Connecticut.
- Tower base elevation above sea level: 169.40 ft.
- Basic wind speed of 116 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: I.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.50 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.
- Weld together tower sections have flange connections..
- Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
- Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
- Welds are fabricated with ER-70S-6 electrodes..
- CCISeismic Note: Seismic loads generated by CCISeismic 3.2.3.
- CCISeismic Note: Seismic calculations are in accordance with TIA-222-H.
- 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.

## Options

- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li>Consider Moments - Legs</li> <li>Consider Moments - Horizontals</li> <li>Consider Moments - Diagonals</li> <li>Use Moment Magnification</li> <li>√ Use Code Stress Ratios</li> <li>Use Code Safety Factors - Guys</li> <li>Escalate Ice</li> <li>Always Use Max Kz</li> <li>Use Special Wind Profile</li> <li>Include Bolts in Member Capacity</li> <li>Leg Bolts Are At Top Of Section</li> <li>√ Secondary Horizontal Braces Leg</li> <li>Use Diamond Inner Bracing (4 Sided)</li> <li>SR Members Have Cut Ends</li> <li>SR Members Are Concentric</li> </ul> | <ul style="list-style-type: none"> <li>Distribute Leg Loads As Uniform</li> <li>Assume Legs Pinned</li> <li>√ Assume Rigid Index Plate</li> <li>√ Use Clear Spans For Wind Area</li> <li>√ Use Clear Spans For KL/r</li> <li>Retension Guys To Initial Tension</li> <li>√ Bypass Mast Stability Checks</li> <li>√ Use Azimuth Dish Coefficients</li> <li>√ Project Wind Area of Appurt.</li> <li>Automatic Torque Arm Areas</li> <li>Add IBC .6D+W Combination</li> <li>Sort Capacity Reports By Component</li> <li>Triangulate Diamond Inner Bracing</li> <li>Treat Feed Line Bundles As Cylinder</li> <li>√ Ignore KL/ry For 60 Deg. Angle Legs</li> </ul> | <ul style="list-style-type: none"> <li>Use ASCE 10 X-Brace Ly Rules</li> <li>√ Calculate Redundant Bracing Forces</li> <li>Ignore Redundant Members in FEA</li> <li>√ SR Leg Bolts Resist Compression</li> <li>√ All Leg Panels Have Same Allowable</li> <li>Offset Girt At Foundation</li> <li>√ Consider Feed Line Torque</li> <li>√ Include Angle Block Shear Check</li> <li>Use TIA-222-H Bracing Resist. Exemption</li> <li>Use TIA-222-H Tension Splice Exemption</li> <li>    Poles</li> <li>√ Include Shear-Torsion Interaction</li> <li>Always Use Sub-Critical Flow</li> <li>Use Top Mounted Sockets</li> <li>Pole Without Linear Attachments</li> </ul> |
|--|--|--|

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Pole With Shroud Or No Appurtenances  
 Outside and Inside Corner Radii Are  
 Known



**Triangular Tower**

**Tower Section Geometry**

<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Assembly Database</i>	<i>Description</i>	<i>Section Width</i>	<i>Number of Sections</i>	<i>Section Length</i>
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	160.00-140.00			8.65	1	20.00
T2	140.00-126.67			8.65	1	13.33
T3	126.67-120.00			9.98	1	6.67
T4	120.00-100.00			10.65	1	20.00
T5	100.00-80.00			12.69	1	20.00
T6	80.00-60.00			14.70	1	20.00
T7	60.00-40.00			16.77	1	20.00
T8	40.00-20.00			18.77	1	20.00
T9	20.00-0.00			20.86	1	20.00

**Tower Section Geometry (cont'd)**



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Tower Section	Tower Elevation <i>ft</i>	Diagonal Spacing <i>ft</i>	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset <i>in</i>	Bottom Girt Offset <i>in</i>
T1	160.00-140.00	4.88	X Brace	No	No	3.00	3.00
T2	140.00-126.67	6.54	X Brace	No	Yes	3.00	0.00
T3	126.67-120.00	6.42	X Brace	No	Yes	0.00	3.00
T4	120.00-100.00	6.50	X Brace	No	Yes	3.00	3.00
T5	100.00-80.00	6.50	X Brace	No	Yes	3.00	3.00
T6	80.00-60.00	9.73	X Brace	No	Yes	3.25	3.25
T7	60.00-40.00	9.72	X Brace	No	No	3.75	3.00
T8	40.00-20.00	9.75	X Brace	No	No	3.00	3.00
T9	20.00-0.00	9.80	X Brace	No	No	3.00	1.75

### Tower Section Geometry (cont'd)

Tower Elevation <i>ft</i>	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 160.00-140.00	Pipe	P2.5x.203<ERW>	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 140.00-126.67	Pipe	P2.5x.276<ERW>	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T3 126.67-120.00	Pipe	P2.5x.276<ERW>	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T4 120.00-100.00	Pipe	P2.5x.552<ERW>	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 100.00-80.00	Pipe	P3x.3<ERW>	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T6 80.00-60.00	Pipe	P4x.337<ERW>	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T7 60.00-40.00	Pipe	P5x.375<ERW>	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 40.00-20.00	Pipe	P5x.375<ERW>	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 20.00-0.00	Pipe	ROHN 6 EHS<ERW>	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation <i>ft</i>	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 160.00-140.00	Equal Angle	L2x2x5/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T2 140.00-126.67	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T3 126.67-120.00	Equal Angle	L3x3x3/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

### Tower Section Geometry (cont'd)







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Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T3 126.67-120.00	Flange	0.63 A325N	4	0.63 A325N	1	0.63 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	2
T4 120.00-100.00	Flange	0.75 A325N	4	0.63 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.75 A325N	2
T5 100.00-80.00	Flange	0.88 A325N	4	0.63 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.75 A325N	2
T6 80.00-60.00	Flange	1.00 A325N	4	0.63 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.75 A325N	2
T7 60.00-40.00	Flange	1.00 A325N	4	0.63 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T8 40.00-20.00	Flange	1.00 A325N	6	0.63 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T9 20.00-0.00	Flange	0.75 A325N	0	0.63 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0

**Feed Line/Linear Appurtenances - Entered As Round Or Flat**

Description	Face or Shield Leg	Allow	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8" Coax (City of Windsor)	B	No	No	Ar (CaAa)	159.00 - 0.00	0.00	0.44	1	1	1.00	1.11		0.520
1 1/4" Coax (ATT)	A	No	No	Ar (CaAa)	157.00 - 0.00	0.00	0.35	6	6	1.00	1.55		0.660
0.78" DC (ATT)	B	No	No	Ar (CaAa)	157.00 - 0.00	0.00	-0.3	2	2	0.75 1.00	0.78		0.590
0.39" Fiber Trunk (ATT)	B	No	No	Ar (CaAa)	157.00 - 0.00	0.00	-0.3	1	1	1.00	0.39		0.060
0.78" DC (ATT)	B	No	No	Ar (CaAa)	157.00 - 0.00	0.00	-0.32	2	2	0.75 1.00	0.78		0.590
0.39" Fiber Trunk (ATT)	B	No	No	Ar (CaAa)	157.00 - 0.00	0.00	-0.28	1	1	1.00	0.39		0.060
1 5/8" Coax (Verizon)	C	No	No	Ar (CaAa)	157.00 - 0.00	0.00	-0.3	12	6	1.00	1.98		1.040
1 1/4" Hybrid Cable (Verizon)	C	No	No	Ar (CaAa)	157.00 - 0.00	0.00	0.7	3	3	1.00	1.75		0.950
1 5/8" Coax (T-Mobile)	A	No	No	Ar (CaAa)	146.00 - 0.00	0.00	-0.35	18	9	1.00	1.98		1.040
7/8" Coax (City of Windsor)	B	No	No	Ar (CaAa)	118.50 - 0.00	0.00	0.48	1	1	1.00	1.11		0.520
7/8" Coax (City of Windsor)	B	No	No	Ar (CaAa)	99.00 - 0.00	0.00	0.46	1	1	1.00	1.11		0.520
1/2" Coax (Verizon)	B	No	No	Ar (CaAa)	47.50 - 0.00	0.00	-0.35	1	1	1.00	0.65		0.160
1/2" Coax (City of Windsor)	B	No	No	Ar (CaAa)	37.50 - 0.00	0.00	0.4	1	1	1.00	0.65		0.160
W/G Ladder A	B	No	No	Al (CaAa)	147.00 - 0.00	0.00	-0.35	1	1	1.00	3.50		6.000



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Description	Face or Shield Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
					10.00								
W/G Ladder B	B	No	No	Af (CaAa)	160.00 - 11.00	0.00	0.45	1	1	1.00	3.00		6.000
W/G Ladder C	C	No	No	Af (CaAa)	152.00 - 12.00	0.00	-0.45	1	1	1.00	3.00		6.000
W/G Ladder D	A	No	No	Af (CaAa)	147.00 - 14.50	0.00	-0.35	1	1	1.00	3.00		6.000
W/G Ladder E	A	No	No	Af (CaAa)	160.00 - 12.00	0.00	0.35	1	1	1.00	3.00		6.000

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_d A_d$ In Face ft <sup>2</sup>	$C_d A_d$ Out Face ft <sup>2</sup>	Weight K
T1	160.00-140.00	A	0.000	0.000	50.694	0.000	0.34
		B	0.000	0.000	22.822	0.000	0.21
		C	0.000	0.000	52.767	0.000	0.33
T2	140.00-126.67	A	0.000	0.000	73.252	0.000	0.46
		B	0.000	0.000	21.124	0.000	0.20
		C	0.000	0.000	43.346	0.000	0.28
T3	126.67-120.00	A	0.000	0.000	36.628	0.000	0.23
		B	0.000	0.000	10.563	0.000	0.10
		C	0.000	0.000	21.674	0.000	0.14
T4	120.00-100.00	A	0.000	0.000	109.880	0.000	0.69
		B	0.000	0.000	33.740	0.000	0.31
		C	0.000	0.000	65.020	0.000	0.43
T5	100.00-80.00	A	0.000	0.000	109.880	0.000	0.69
		B	0.000	0.000	36.016	0.000	0.32
		C	0.000	0.000	65.020	0.000	0.43
T6	80.00-60.00	A	0.000	0.000	109.880	0.000	0.69
		B	0.000	0.000	36.127	0.000	0.32
		C	0.000	0.000	65.020	0.000	0.43
T7	60.00-40.00	A	0.000	0.000	109.880	0.000	0.69
		B	0.000	0.000	36.614	0.000	0.32
		C	0.000	0.000	65.020	0.000	0.43
T8	40.00-20.00	A	0.000	0.000	109.880	0.000	0.69
		B	0.000	0.000	38.564	0.000	0.33
		C	0.000	0.000	65.020	0.000	0.43
T9	20.00-0.00	A	0.000	0.000	96.630	0.000	0.53
		B	0.000	0.000	27.393	0.000	0.20
		C	0.000	0.000	59.020	0.000	0.35

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_d A_d$ In Face ft <sup>2</sup>	$C_d A_d$ Out Face ft <sup>2</sup>	Weight K
T1	160.00-140.00	A	1.745	0.000	0.000	85.095	0.000	1.60
		B		0.000	0.000	76.054	0.000	1.09
		C		0.000	0.000	79.122	0.000	1.57
T2	140.00-126.67	A	1.725	0.000	0.000	104.019	0.000	2.12
		B		0.000	0.000	63.779	0.000	0.93

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
T3	126.67-120.00	C		0.000	0.000	65.149	0.000	1.29
		A	1.711	0.000	0.000	51.923	0.000	1.06
		B		0.000	0.000	31.740	0.000	0.46
T4	120.00-100.00	C		0.000	0.000	32.500	0.000	0.64
		A	1.692	0.000	0.000	155.364	0.000	3.14
		B		0.000	0.000	152.868	0.000	1.49
T5	100.00-80.00	C		0.000	0.000	97.159	0.000	1.91
		A	1.658	0.000	0.000	154.681	0.000	3.10
		B		0.000	0.000	133.676	0.000	1.58
T6	80.00-60.00	C		0.000	0.000	96.579	0.000	1.89
		A	1.617	0.000	0.000	153.845	0.000	3.05
		B		0.000	0.000	109.392	0.000	1.54
T7	60.00-40.00	C		0.000	0.000	95.870	0.000	1.85
		A	1.564	0.000	0.000	152.759	0.000	2.99
		B		0.000	0.000	109.979	0.000	1.51
T8	40.00-20.00	C		0.000	0.000	94.949	0.000	1.81
		A	1.486	0.000	0.000	151.180	0.000	2.89
		B		0.000	0.000	117.461	0.000	1.54
T9	20.00-0.00	C		0.000	0.000	93.610	0.000	1.75
		A	1.331	0.000	0.000	127.750	0.000	2.31
		B		0.000	0.000	93.724	0.000	1.06
		C		0.000	0.000	81.765	0.000	1.46

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>X</sub> in	CP <sub>Z</sub> in	CP <sub>X</sub> Ice in	CP <sub>Z</sub> Ice in
T1	160.00-140.00	8.22	-2.95	8.44	-5.82
T2	140.00-126.67	3.80	-0.72	5.00	-4.34
T3	126.67-120.00	3.85	-0.71	5.16	-4.47
T4	120.00-100.00	4.86	-0.49	7.02	-4.32
T5	100.00-80.00	5.50	-0.16	8.73	-3.80
T6	80.00-60.00	6.69	-0.15	10.42	-4.43
T7	60.00-40.00	7.68	-0.30	11.92	-5.58
T8	40.00-20.00	8.61	-0.40	13.95	-6.17
T9	20.00-0.00	7.73	0.57	13.64	-5.89

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T1	1	7/8" Coax	140.00 - 159.00	0.6000	0.6000
T1	2	1 1/4" Coax	140.00 - 157.00	0.6000	0.6000
T1	3	0.78" DC	140.00 - 157.00	0.6000	0.6000
T1	4	0.39" Fiber Trunk	140.00 - 157.00	0.6000	0.6000
T1	5	0.78" DC	140.00 -	0.6000	0.6000



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	<p><b>Client</b></p> <p>KGI</p>	<p><b>Designed by</b></p> <p>JungH</p>

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T1	6	0.39" Fiber Trunk	157.00 140.00 - 157.00	0.6000	0.6000
T1	7	1 5/8" Coax	140.00 - 157.00	0.6000	0.6000
T1	8	1 1/4" Hybrid Cable	140.00 - 157.00	0.6000	0.6000
T1	9	1 5/8" Coax	140.00 - 146.00	0.6000	0.6000
T1	14	W/G Ladder A	140.00 - 147.00	0.6000	0.6000
T1	15	W/G Ladder B	140.00 - 160.00	0.6000	0.6000
T1	16	W/G Ladder C	140.00 - 152.00	0.6000	0.6000
T1	17	W/G Ladder D	140.00 - 147.00	0.6000	0.6000
T1	18	W/G Ladder E	140.00 - 160.00	0.6000	0.6000
T2	1	7/8" Coax	126.67 - 140.00	0.6000	0.6000
T2	2	1 1/4" Coax	126.67 - 140.00	0.6000	0.6000
T2	3	0.78" DC	126.67 - 140.00	0.6000	0.6000
T2	4	0.39" Fiber Trunk	126.67 - 140.00	0.6000	0.6000
T2	5	0.78" DC	126.67 - 140.00	0.6000	0.6000
T2	6	0.39" Fiber Trunk	126.67 - 140.00	0.6000	0.6000
T2	7	1 5/8" Coax	126.67 - 140.00	0.6000	0.6000
T2	8	1 1/4" Hybrid Cable	126.67 - 140.00	0.6000	0.6000
T2	9	1 5/8" Coax	126.67 - 140.00	0.6000	0.6000
T2	14	W/G Ladder A	126.67 - 140.00	0.6000	0.6000
T2	15	W/G Ladder B	126.67 - 140.00	0.6000	0.6000
T2	16	W/G Ladder C	126.67 - 140.00	0.6000	0.6000
T2	17	W/G Ladder D	126.67 - 140.00	0.6000	0.6000
T2	18	W/G Ladder E	126.67 - 140.00	0.6000	0.6000
T3	1	7/8" Coax	120.00 - 126.67	0.6000	0.6000
T3	2	1 1/4" Coax	120.00 - 126.67	0.6000	0.6000
T3	3	0.78" DC	120.00 - 126.67	0.6000	0.6000
T3	4	0.39" Fiber Trunk	120.00 - 126.67	0.6000	0.6000
T3	5	0.78" DC	120.00 - 126.67	0.6000	0.6000
T3	6	0.39" Fiber Trunk	120.00 - 126.67	0.6000	0.6000
T3	7	1 5/8" Coax	120.00 - 126.67	0.6000	0.6000
T3	8	1 1/4" Hybrid Cable	120.00 -	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T3	9	1 5/8" Coax	126.67	0.6000	0.6000
T3	14	W/G Ladder A	120.00 - 126.67	0.6000	0.6000
T3	15	W/G Ladder B	120.00 - 126.67	0.6000	0.6000
T3	16	W/G Ladder C	120.00 - 126.67	0.6000	0.6000
T3	17	W/G Ladder D	120.00 - 126.67	0.6000	0.6000
T3	18	W/G Ladder E	120.00 - 126.67	0.6000	0.6000
T4	1	7/8" Coax	100.00 - 120.00	0.6000	0.6000
T4	2	1 1/4" Coax	100.00 - 120.00	0.6000	0.6000
T4	3	0.78" DC	100.00 - 120.00	0.6000	0.6000
T4	4	0.39" Fiber Trunk	100.00 - 120.00	0.6000	0.6000
T4	5	0.78" DC	100.00 - 120.00	0.6000	0.6000
T4	6	0.39" Fiber Trunk	100.00 - 120.00	0.6000	0.6000
T4	7	1 5/8" Coax	100.00 - 120.00	0.6000	0.6000
T4	8	1 1/4" Hybrid Cable	100.00 - 120.00	0.6000	0.6000
T4	9	1 5/8" Coax	100.00 - 120.00	0.6000	0.6000
T4	10	7/8" Coax	100.00 - 118.50	0.6000	0.6000
T4	14	W/G Ladder A	100.00 - 120.00	0.6000	0.6000
T4	15	W/G Ladder B	100.00 - 120.00	0.6000	0.6000
T4	16	W/G Ladder C	100.00 - 120.00	0.6000	0.6000
T4	17	W/G Ladder D	100.00 - 120.00	0.6000	0.6000
T4	18	W/G Ladder E	100.00 - 120.00	0.6000	0.6000
T5	1	7/8" Coax	80.00 - 100.00	0.6000	0.6000
T5	2	1 1/4" Coax	80.00 - 100.00	0.6000	0.6000
T5	3	0.78" DC	80.00 - 100.00	0.6000	0.6000
T5	4	0.39" Fiber Trunk	80.00 - 100.00	0.6000	0.6000
T5	5	0.78" DC	80.00 - 100.00	0.6000	0.6000
T5	6	0.39" Fiber Trunk	80.00 - 100.00	0.6000	0.6000
T5	7	1 5/8" Coax	80.00 - 100.00	0.6000	0.6000
T5	8	1 1/4" Hybrid Cable	80.00 - 100.00	0.6000	0.6000
T5	9	1 5/8" Coax	80.00 - 100.00	0.6000	0.6000
T5	10	7/8" Coax	80.00 - 100.00	0.6000	0.6000
T5	11	7/8" Coax	80.00 - 99.00	0.6000	0.6000
T5	14	W/G Ladder A	80.00 - 100.00	0.6000	0.6000
T5	15	W/G Ladder B	80.00 - 100.00	0.6000	0.6000
T5	16	W/G Ladder C	80.00 - 100.00	0.6000	0.6000
T5	17	W/G Ladder D	80.00 - 100.00	0.6000	0.6000
T5	18	W/G Ladder E	80.00 - 100.00	0.6000	0.6000
T6	1	7/8" Coax	60.00 - 80.00	0.6000	0.6000
T6	2	1 1/4" Coax	60.00 - 80.00	0.6000	0.6000
T6	3	0.78" DC	60.00 - 80.00	0.6000	0.6000



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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T6	4	0.39" Fiber Trunk	60.00 - 80.00	0.6000	0.6000
T6	5	0.78" DC	60.00 - 80.00	0.6000	0.6000
T6	6	0.39" Fiber Trunk	60.00 - 80.00	0.6000	0.6000
T6	7	1 5/8" Coax	60.00 - 80.00	0.6000	0.6000
T6	8	1 1/4" Hybrid Cable	60.00 - 80.00	0.6000	0.6000
T6	9	1 5/8" Coax	60.00 - 80.00	0.6000	0.6000
T6	10	7/8" Coax	60.00 - 80.00	0.6000	0.6000
T6	11	7/8" Coax	60.00 - 80.00	0.6000	0.6000
T6	14	W/G Ladder A	60.00 - 80.00	0.6000	0.6000
T6	15	W/G Ladder B	60.00 - 80.00	0.6000	0.6000
T6	16	W/G Ladder C	60.00 - 80.00	0.6000	0.6000
T6	17	W/G Ladder D	60.00 - 80.00	0.6000	0.6000
T6	18	W/G Ladder E	60.00 - 80.00	0.6000	0.6000
T7	1	7/8" Coax	40.00 - 60.00	0.6000	0.6000
T7	2	1 1/4" Coax	40.00 - 60.00	0.6000	0.6000
T7	3	0.78" DC	40.00 - 60.00	0.6000	0.6000
T7	4	0.39" Fiber Trunk	40.00 - 60.00	0.6000	0.6000
T7	5	0.78" DC	40.00 - 60.00	0.6000	0.6000
T7	6	0.39" Fiber Trunk	40.00 - 60.00	0.6000	0.6000
T7	7	1 5/8" Coax	40.00 - 60.00	0.6000	0.6000
T7	8	1 1/4" Hybrid Cable	40.00 - 60.00	0.6000	0.6000
T7	9	1 5/8" Coax	40.00 - 60.00	0.6000	0.6000
T7	10	7/8" Coax	40.00 - 60.00	0.6000	0.6000
T7	11	7/8" Coax	40.00 - 60.00	0.6000	0.6000
T7	12	1/2" Coax	40.00 - 47.50	0.6000	0.6000
T7	14	W/G Ladder A	40.00 - 60.00	0.6000	0.6000
T7	15	W/G Ladder B	40.00 - 60.00	0.6000	0.6000
T7	16	W/G Ladder C	40.00 - 60.00	0.6000	0.6000
T7	17	W/G Ladder D	40.00 - 60.00	0.6000	0.6000
T7	18	W/G Ladder E	40.00 - 60.00	0.6000	0.6000
T8	1	7/8" Coax	20.00 - 40.00	0.6000	0.6000
T8	2	1 1/4" Coax	20.00 - 40.00	0.6000	0.6000
T8	3	0.78" DC	20.00 - 40.00	0.6000	0.6000
T8	4	0.39" Fiber Trunk	20.00 - 40.00	0.6000	0.6000
T8	5	0.78" DC	20.00 - 40.00	0.6000	0.6000
T8	6	0.39" Fiber Trunk	20.00 - 40.00	0.6000	0.6000
T8	7	1 5/8" Coax	20.00 - 40.00	0.6000	0.6000
T8	8	1 1/4" Hybrid Cable	20.00 - 40.00	0.6000	0.6000
T8	9	1 5/8" Coax	20.00 - 40.00	0.6000	0.6000
T8	10	7/8" Coax	20.00 - 40.00	0.6000	0.6000
T8	11	7/8" Coax	20.00 - 40.00	0.6000	0.6000
T8	12	1/2" Coax	20.00 - 40.00	0.6000	0.6000
T8	13	1/2" Coax	20.00 - 37.50	0.6000	0.6000
T8	14	W/G Ladder A	20.00 - 40.00	0.6000	0.6000
T8	15	W/G Ladder B	20.00 - 40.00	0.6000	0.6000
T8	16	W/G Ladder C	20.00 - 40.00	0.6000	0.6000
T8	17	W/G Ladder D	20.00 - 40.00	0.6000	0.6000
T8	18	W/G Ladder E	20.00 - 40.00	0.6000	0.6000
T9	1	7/8" Coax	0.00 - 20.00	0.6000	0.6000
T9	2	1 1/4" Coax	0.00 - 20.00	0.6000	0.6000
T9	3	0.78" DC	0.00 - 20.00	0.6000	0.6000
T9	4	0.39" Fiber Trunk	0.00 - 20.00	0.6000	0.6000
T9	5	0.78" DC	0.00 - 20.00	0.6000	0.6000
T9	6	0.39" Fiber Trunk	0.00 - 20.00	0.6000	0.6000
T9	7	1 5/8" Coax	0.00 - 20.00	0.6000	0.6000
T9	8	1 1/4" Hybrid Cable	0.00 - 20.00	0.6000	0.6000
T9	9	1 5/8" Coax	0.00 - 20.00	0.6000	0.6000
T9	10	7/8" Coax	0.00 - 20.00	0.6000	0.6000
T9	11	7/8" Coax	0.00 - 20.00	0.6000	0.6000
T9	12	1/2" Coax	0.00 - 20.00	0.6000	0.6000
T9	13	1/2" Coax	0.00 - 20.00	0.6000	0.6000
T9	14	W/G Ladder A	10.00 - 20.00	0.6000	0.6000

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	<b>Client</b> KGI	<b>Designed by</b> JungH

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T9	15	W/G Ladder B	11.00 - 20.00	0.6000	0.6000
T9	16	W/G Ladder C	12.00 - 20.00	0.6000	0.6000
T9	17	W/G Ladder D	14.50 - 20.00	0.6000	0.6000
T9	18	W/G Ladder E	12.00 - 20.00	0.6000	0.6000

### User Defined Loads - Seismic

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_v$	$E_{nc}$	$E_{nc}$	$E_h$
	ft	ft	°	K	K	K	K
CCISeismic Tower Section 1	150.00	0.000	0.000	0.02	0.00	0.00	0.05
CCISeismic Tower Section 2	133.33	0.000	0.000	0.02	0.00	0.00	0.04
CCISeismic Tower Section 3	123.33	0.000	0.000	0.01	0.00	0.00	0.02
CCISeismic Tower Section 4	110.00	0.000	0.000	0.04	0.00	0.00	0.07
CCISeismic Tower Section 5	90.00	0.000	0.000	0.04	0.00	0.00	0.06
CCISeismic Tower Section 6	70.00	0.000	0.000	0.05	0.00	0.00	0.06
CCISeismic Tower Section 7	50.00	0.000	0.000	0.06	0.00	0.00	0.04
CCISeismic Tower Section 8	30.00	0.000	0.000	0.06	0.00	0.00	0.03
CCISeismic Tower Section 9	10.00	0.000	0.000	0.07	0.00	0.00	0.01
CCISeismic 16 ft Whip	159.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic tower mounts Platform w/Rail	157.00	0.000	0.000	0.05	0.00	0.00	0.13
CCISeismic (4) amphenol BXA-70080/8CF	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) amphenol BXA-70080/8CF	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) amphenol BXA-70080/8CF	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) ericsson RRUS A2 Module	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) ericsson RRUS A2 Module	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) ericsson RRUS A2 Module	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) RRH 3JR52709AA 2x60	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic (2) RRH 3JR52709AA 2x60	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic (2) RRH 3JR52709AA 2x60	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic RRH 4x30-4T4R B13	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic RRH 4x30-4T4R B13	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic RRH 4x30-4T4R B13	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic RRH 4x30-4T4R B25	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic RRH 4x30-4T4R B25	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic RRH 4x30-4T4R B25	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) miscel 10"x7"x2" TMA	157.00	0.000	0.000	0.00	0.00	0.00	0.00



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	<b>Client</b> KGI	<b>Designed by</b> JungH

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_x$	$E_{hx}$	$E_{hz}$	$E_h$
	ft	ft	°	K	K	K	K
CCISeismic (4) miscel 10"x7"x2" TMA	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (4) miscel 10"x7"x2" TMA	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic OVP Junction Box	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic OVP Junction Box	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic OVP Junction Box	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 14 ft Face Frame	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 18 ft Pipe	157.00	0.000	0.000	0.01	0.00	0.00	0.03
CCISeismic Modified Mount	157.00	0.000	0.000	0.01	0.00	0.00	0.02
CCISeismic (3) T-Arms with Platform	157.00	0.000	0.000	0.02	0.00	0.00	0.04
CCISeismic kathrein 800-10965	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic kathrein 800-10965	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic kathrein 800-10964	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic DC6-48-60-18-8C	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic raycap DC6-48-60-18-8F	157.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) quintel QS66512-2	157.00	0.000	0.000	0.01	0.00	0.00	0.02
CCISeismic (3) ericsson RRUS 32 B30	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic (3) ericsson 4449 B5/B12 RRU	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic (3) ericsson 8843 B2/B66A RRU	157.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic tower mounts Sector Frame	146.00	0.000	0.000	0.01	0.00	0.00	0.02
CCISeismic tower mounts Sector Frame	146.00	0.000	0.000	0.01	0.00	0.00	0.02
CCISeismic tower mounts Sector Frame	146.00	0.000	0.000	0.01	0.00	0.00	0.02
CCISeismic APX16DWV-16DWVS-C-A20	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic APX16DWV-16DWVS-C-A20	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic APX16DWV-16DWVS-C-A20	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic LNX-6515DS-A1M	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic LNX-6515DS-A1M	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic LNX-6515DS-A1M	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 11"x6"x3.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 11"x6"x3.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 11"x6"x3.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 7"x6"x2.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 7"x6"x2.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 7"x6"x2.5" TMA	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 14 ft Face Mount	132.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic tower mounts 6 ft Sidearm	126.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 16 ft Whip	126.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic tower mounts 6 ft Sidearm	107.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 16 ft Whip	107.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic tower mounts 4 ft Sidearm	47.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 10 ft Dipole	47.50	0.000	0.000	0.00	0.00	0.00	0.00

<p style="text-align: center;"><b>tnxTower</b></p> <p style="text-align: center;"><b>SEMAAN Engineering</b> Solutions 1047 N 205th St Elkhorn, NE 68022 Phone: (402) 389-1888 FAX:</p>	<p><b>Job</b></p> <p style="text-align: center;">28229_Windsor</p>	<p><b>Page</b></p> <p style="text-align: center;">14 of 51</p>
	<p><b>Project</b></p> <p style="text-align: center;">REV05</p>	<p><b>Date</b></p> <p style="text-align: center;">16:21:09 10/21/20</p>
	<p><b>Client</b></p> <p style="text-align: center;">KGI</p>	<p><b>Designed by</b></p> <p style="text-align: center;">JungH</p>

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_v$	$E_{hc}$	$E_{lc}$	$E_h$
	ft	ft	°	K	K	K	K
CCISeismic tower mounts 4 ft Sidearm	37.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic 12 ft Whip	37.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic Feed Line	163.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic Feed Line	163.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 159 (140ft to159ft)	149.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 159 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 159 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 159 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 159 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 159 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 159 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 159 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 159 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (6) general cable 1/4" Coax From 0 to 159 (140ft to159ft)	149.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (6) general cable 1/4" Coax From 0 to 159 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (6) general cable 1/4" Coax From 0 to 159 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (6) general cable 1/4" Coax From 0 to 159 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (6) general cable 1/4" Coax From 0 to 159 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (6) general cable 1/4" Coax From 0 to 159 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (6) general cable 1/4" Coax From 0 to 159 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (6) general cable 1/4" Coax From 0 to 159 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (6) general cable 1/4" Coax From 0 to 159 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157	133.33	0.000	0.000	0.00	0.00	0.00	0.00



<p><b>tnxTower</b></p> <p><b>SEMAAN Engineering Solutions</b>  1047 N 205th St  Elkhorn, NE 68022  Phone: (402) 289-1888  FAX:</p>	<b>Job</b> 28229_Windsor	<b>Page</b> 15 of 51
	<b>Project</b> REV05	<b>Date</b> 16:21:09 10/21/20
	<b>Client</b> KGI	<b>Designed by</b> JungH

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_v$	$E_{hw}$	$E_{hz}$	$E_h$
	ft	ft	°	K	K	K	K
(126.667ft to 140ft)							
CCISeismic (2) general cable 0.78" DC From 0 to 157 (120ft to 126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (100ft to 120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (80ft to 100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (60ft to 80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (40ft to 60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (20ft to 40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (0ft to 20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (140ft to 157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (126.667ft to 140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (120ft to 126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (100ft to 120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (80ft to 100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (60ft to 80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (40ft to 60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (20ft to 40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (0ft to 20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (140ft to 157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (126.667ft to 140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (120ft to 126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (100ft to 120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00

<p><b>inxTower</b></p> <p><b>SEMAAN Engineering Solutions</b> 1047 N 205th St Elkhorn, NE 68022 Phone: (402) 382-1888 FAX:</p>	<p><b>Job</b></p> <p>28229_Windsor</p>	<p><b>Page</b></p> <p>16 of 51</p>
	<p><b>Project</b></p> <p>REV05</p>	<p><b>Date</b></p> <p>16:21:09 10/21/20</p>
	<p><b>Client</b></p> <p>KGI</p>	<p><b>Designed by</b></p> <p>JungH</p>

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_v$	$E_{hc}$	$E_{lc}$	$E_h$
	ft	ft	°	K	K	K	K
to120ft)							
CCISeismic (2) general cable 0.78" DC From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (2) general cable 0.78" DC From 0 to 157 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 0.39" Fiber Trunk From 0 to 157 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00



<b>tnxTower</b>  <b>SEMAAN Engineering Solutions</b> 1047 N 205th St Elkhorn, NE 68022 Phone: (402) 289-1888 FAX:	<b>Job</b> 28229_Windsor	<b>Page</b> 17 of 51
	<b>Project</b> REV05	<b>Date</b> 16:21:09 10/21/20
	<b>Client</b> KGI	<b>Designed by</b> JungH

Description	Elevation	Offset From Centroid	Azimuth Angle	E <sub>v</sub>	E <sub>hc</sub>	E <sub>hc</sub>	E <sub>h</sub>
	ft	ft	°	K	K	K	K
to80ft)							
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (12) general cable 1 5/8" Coax From 0 to 157 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) general cable 1 1/4" Hybrid Cable From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) general cable 1 1/4" Hybrid Cable From 0 to 157 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) general cable 1 1/4" Hybrid Cable From 0 to 157 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) general cable 1 1/4" Hybrid Cable From 0 to 157 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) general cable 1 1/4" Hybrid Cable From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) general cable 1 1/4" Hybrid Cable From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) general cable 1 1/4" Hybrid Cable From 0 to 157 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) general cable 1 1/4" Hybrid Cable From 0 to 157 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (3) general cable 1 1/4" Hybrid Cable From 0 to 157 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (18) general cable 1 5/8" Coax From 0 to 157 (140ft to157ft)	148.50	0.000	0.000	0.01	0.00	0.00	0.01
CCISeismic (18) general cable 1 5/8" Coax From 0 to 157 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic (18) general cable 1 5/8" Coax From 0 to 157 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic (18) general cable 1 5/8" Coax From 0 to 157 (100ft to120ft)	110.00	0.000	0.000	0.01	0.00	0.00	0.01
CCISeismic (18) general cable 1 5/8" Coax From 0 to 157 (80ft to100ft)	90.00	0.000	0.000	0.01	0.00	0.00	0.01
CCISeismic (18) general cable 1 5/8" Coax From 0 to 157 (60ft to80ft)	70.00	0.000	0.000	0.01	0.00	0.00	0.01
CCISeismic (18) general cable 1 5/8" Coax From 0 to 157 (40ft to60ft)	50.00	0.000	0.000	0.01	0.00	0.00	0.01
CCISeismic (18) general cable 1 5/8" Coax From 0 to 157 (20ft to40ft)	30.00	0.000	0.000	0.01	0.00	0.00	0.00

<p><b>tnxTower</b></p> <p><b>SEMAAN Engineering Solutions</b>  1047 N 205th St  Elkhorn, NE 68022  Phone: (402) 289-1888  FAX:</p>	<b>Job</b> 28229_Windsor	<b>Page</b> 18 of 51
	<b>Project</b> REV05	<b>Date</b> 16:21:09 10/21/20
	<b>Client</b> KGI	<b>Designed by</b> JungH

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_v$	$E_{hw}$	$E_{hz}$	$E_b$
	ft	ft	°	K	K	K	K
to40ft)							
CCISeismic (18) general cable 1 5/8" Coax From 0 to 157 (0ft to20ft)	10.00	0.000	0.000	0.01	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 146 (140ft to146ft)	143.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 146 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 146 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 146 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 146 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 146 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 146 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 146 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 146 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 118.5 (100ft to118.5ft)	109.25	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 118.5 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 118.5 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 118.5 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 118.5 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 7/8" Coax From 0 to 118.5 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 1/2" Coax From 0 to 99 (80ft to99ft)	89.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 1/2" Coax From 0 to 99 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 1/2" Coax From 0 to 99 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 1/2" Coax From 0 to 99 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 1/2" Coax From 0 to 99 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 1/2" Coax From 0 to 47.5 (40ft to47.5ft)	43.75	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic general cable 1/2" Coax From 0 to 47.5 (20ft	30.00	0.000	0.000	0.00	0.00	0.00	0.00



<b>tnxTower</b>  <b>SEMAAN Engineering</b> <i>Solutions</i> 1047 N 205th St Elkhorn, NE 68022 Phone: (402) 389-1888 FAX:	<b>Job</b> 28229_Windsor	<b>Page</b> 19 of 51
	<b>Project</b> REV05	<b>Date</b> 16:21:09 10/21/20
	<b>Client</b> KGI	<b>Designed by</b> JungH

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_v$	$E_{hc}$	$E_{lc}$	$E_{li}$
	ft	ft	°	K	K	K	K
to40ft)							
CCISeismic general cable 1/2"	10.00	0.000	0.000	0.00	0.00	0.00	0.00
Coax From 0 to 47.5 (0ft to20ft)							
CCISeismic W/G Ladder A From 0 to 37.5 (20ft to37.5ft)	28.75	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder A From 0 to 37.5 (0ft to20ft)	10.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder B From 10 to 147 (140ft to147ft)	143.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder B From 10 to 147 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder B From 10 to 147 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder B From 10 to 147 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder B From 10 to 147 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder B From 10 to 147 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder B From 10 to 147 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder B From 10 to 147 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder B From 10 to 147 (10ft to20ft)	15.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (140ft to160ft)	150.00	0.000	0.000	0.00	0.00	0.00	0.01
CCISeismic W/G Ladder C From 11 to 160 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (60ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (40ft to60ft)	50.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (20ft to40ft)	30.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder C From 11 to 160 (11ft to20ft)	15.50	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (140ft to152ft)	146.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (126.667ft to140ft)	133.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (120ft to126.667ft)	123.33	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (100ft to120ft)	110.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (80ft to100ft)	90.00	0.000	0.000	0.00	0.00	0.00	0.00
CCISeismic W/G Ladder D From 12 to 152 (70ft to80ft)	70.00	0.000	0.000	0.00	0.00	0.00	0.00

<p><b>tnxTower</b></p> <p><b>SEMAAN Engineering Solutions</b> 1047 N 205th St Elkhorn, NE 68022 Phone: (402) 289-1888 FAX:</p>	<p><b>Job</b></p> <p>28229_Windsor</p>	<p><b>Page</b></p> <p>20 of 51</p>
	<p><b>Project</b></p> <p>REV05</p>	<p><b>Date</b></p> <p>16:21:09 10/21/20</p>
	<p><b>Client</b></p> <p>KGI</p>	<p><b>Designed by</b></p> <p>JungH</p>

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_v$	$E_{hc}$	$E_{lc}$	$E_h$
	ft	ft	°	K	K	K	K
From 12 to 152 (60ft to80ft) CCISeismic W/G Ladder D	50.00	0.000	0.000	0.00	0.00	0.00	0.00
From 12 to 152 (40ft to60ft) CCISeismic W/G Ladder D	30.00	0.000	0.000	0.00	0.00	0.00	0.00
From 12 to 152 (20ft to40ft) CCISeismic W/G Ladder D	16.00	0.000	0.000	0.00	0.00	0.00	0.00
From 12 to 152 (12ft to20ft) CCISeismic W/G Ladder E	143.50	0.000	0.000	0.00	0.00	0.00	0.00
From 14.5 to 147 (140ft to147ft) CCISeismic W/G Ladder E	133.33	0.000	0.000	0.00	0.00	0.00	0.00
From 14.5 to 147 (126.667ft to140ft) CCISeismic W/G Ladder E	123.33	0.000	0.000	0.00	0.00	0.00	0.00
From 14.5 to 147 (120ft to126.667ft) CCISeismic W/G Ladder E	110.00	0.000	0.000	0.00	0.00	0.00	0.00
From 14.5 to 147 (100ft to120ft) CCISeismic W/G Ladder E	90.00	0.000	0.000	0.00	0.00	0.00	0.00
From 14.5 to 147 (80ft to100ft) CCISeismic W/G Ladder E	70.00	0.000	0.000	0.00	0.00	0.00	0.00
From 14.5 to 147 (60ft to80ft) CCISeismic W/G Ladder E	50.00	0.000	0.000	0.00	0.00	0.00	0.00
From 14.5 to 147 (40ft to60ft) CCISeismic W/G Ladder E	30.00	0.000	0.000	0.00	0.00	0.00	0.00
From 14.5 to 147 (20ft to40ft) CCISeismic W/G Ladder E	17.25	0.000	0.000	0.00	0.00	0.00	0.00
From 14.5 to 147 (14.5ft to20ft)							

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	$C_A A_1$ Front	$C_A A_1$ Side	Weight	
			ft ft ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
16 ft Whip (City of Windsor)	A	From Leg	0.00	0.000	159.00	No Ice	4.70	4.70	0.04
			0.000			1/2" Ice	6.65	6.65	0.07
			9.000			1" Ice	8.60	8.60	0.10
						2" Ice	12.50	12.50	0.16
Platform w/Rail (Verizon)	C	None		0.000	157.00	No Ice	35.85	35.85	2.50
						1/2" Ice	40.46	40.46	3.50
						1" Ice	45.07	45.07	4.50
						2" Ice	54.29	54.29	6.50
(4) BXA-70080/8CF (Verizon)	A	From Leg	3.00	0.000	157.00	No Ice	8.29	6.45	0.02
			0.000			1/2" Ice	8.88	7.02	0.07
			0.000			1" Ice	9.47	7.61	0.13
						2" Ice	10.69	8.79	0.26
(4) BXA-70080/8CF (Verizon)	B	From Leg	3.00	0.000	157.00	No Ice	8.29	6.45	0.02
			0.000			1/2" Ice	8.88	7.02	0.07
			0.000			1" Ice	9.47	7.61	0.13
						2" Ice	10.69	8.79	0.26
(4) BXA-70080/8CF (Verizon)	C	From Leg	3.00	0.000	157.00	No Ice	8.29	6.45	0.02
			0.000			1/2" Ice	8.88	7.02	0.07
						1" Ice	9.47	7.61	0.13



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	<b>Client</b>	KGi	<b>Designed by</b>	JungH

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Veri ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>FA</sub> Front ft <sup>2</sup>	C <sub>SA</sub> Side ft <sup>2</sup>	Weight K
			0.000			1" Ice 9.47	7.61	0.13
						2" Ice 10.69	8.79	0.20
(4) RRUS A2 Module (Verizon)	A	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 1.60 1/2" Ice 1.76 1" Ice 1.92	0.46 0.56 0.67	0.02 0.03 0.04
						2" Ice 2.28	0.91	0.08
(4) RRUS A2 Module (Verizon)	B	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 1.60 1/2" Ice 1.76 1" Ice 1.92	0.46 0.56 0.67	0.02 0.03 0.04
						2" Ice 2.28	0.91	0.08
(4) RRUS A2 Module (Verizon)	C	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 1.60 1/2" Ice 1.76 1" Ice 1.92	0.46 0.56 0.67	0.02 0.03 0.04
						2" Ice 2.28	0.91	0.08
(2) RRH 3JR52709AA 2x60 (Verizon)	A	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 3.36 1/2" Ice 3.61 1" Ice 3.88	2.00 2.24 2.48	0.06 0.08 0.10
						2" Ice 4.42	2.97	0.17
(2) RRH 3JR52709AA 2x60 (Verizon)	B	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 3.36 1/2" Ice 3.61 1" Ice 3.88	2.00 2.24 2.48	0.06 0.08 0.10
						2" Ice 4.42	2.97	0.17
(2) RRH 3JR52709AA 2x60 (Verizon)	C	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 3.36 1/2" Ice 3.61 1" Ice 3.88	2.00 2.24 2.48	0.06 0.08 0.10
						2" Ice 4.42	2.97	0.17
RRH 4x30-4T4R B13 (Verizon)	A	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 2.16 1/2" Ice 2.35 1" Ice 2.55	1.62 1.79 1.97	0.06 0.08 0.10
						2" Ice 2.97	2.36	0.15
RRH 4x30-4T4R B13 (Verizon)	B	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 2.16 1/2" Ice 2.35 1" Ice 2.55	1.62 1.79 1.97	0.06 0.08 0.10
						2" Ice 2.97	2.36	0.15
RRH 4x30-4T4R B13 (Verizon)	C	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 2.16 1/2" Ice 2.35 1" Ice 2.55	1.62 1.79 1.97	0.06 0.08 0.10
						2" Ice 2.97	2.36	0.15
RRH 4x30-4T4R B25 (Verizon)	A	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 2.14 1/2" Ice 2.33 1" Ice 2.52	1.30 1.46 1.62	0.05 0.07 0.09
						2" Ice 2.94	1.98	0.14
RRH 4x30-4T4R B25 (Verizon)	B	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 2.14 1/2" Ice 2.33 1" Ice 2.52	1.30 1.46 1.62	0.05 0.07 0.09
						2" Ice 2.94	1.98	0.14
RRH 4x30-4T4R B25 (Verizon)	C	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 2.14 1/2" Ice 2.33 1" Ice 2.52	1.30 1.46 1.62	0.05 0.07 0.09
						2" Ice 2.94	1.98	0.14
(4) 10"x7"x2" TMA (Verizon)	A	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 0.58 1/2" Ice 0.68 1" Ice 0.79	0.18 0.25 0.33	0.02 0.02 0.02
						2" Ice 1.02	0.50	0.04
(4) 10"x7"x2" TMA (Verizon)	B	From Leg	3.00 0.000 0.000	0.000	157.00	No Ice 0.58 1/2" Ice 0.68 1" Ice 0.79	0.18 0.25 0.33	0.02 0.02 0.02

<b>tnxTower</b>  <b>SEMAAN Engineering Solutions</b> 1047 N 205th St Elkhorn, NE 68022 Phone: (402) 389-1888 FAX:	<b>Job</b> 28229_Windsor	<b>Page</b> 22 of 51
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	<b>Client</b> KGi	<b>Designed by</b> JungH

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C <sub>ice</sub> A <sub>1</sub> Front ft <sup>2</sup>	C <sub>ice</sub> A <sub>1</sub> Side ft <sup>2</sup>	Weight K
(4) 10"x7"x2" TMA (Verizon)	C	From Leg	3.00 0.000 0.000	0.000	157.00	2" Ice	1.02	0.50	0.04
						No Ice	0.58	0.18	0.02
						1/2" Ice	0.68	0.25	0.02
						1" Ice	0.79	0.33	0.02
OVP Junction Box (Verizon)	A	From Leg	3.00 0.000 0.000	0.000	157.00	2" Ice	1.02	0.50	0.04
						No Ice	3.25	1.04	0.02
						1/2" Ice	3.47	1.18	0.04
						1" Ice	3.70	1.33	0.07
OVP Junction Box (Verizon)	B	From Leg	3.00 0.000 0.000	0.000	157.00	2" Ice	4.19	1.66	0.13
						No Ice	3.25	1.04	0.02
						1/2" Ice	3.47	1.18	0.04
						1" Ice	3.70	1.33	0.07
OVP Junction Box (Verizon)	C	From Leg	3.00 0.000 0.000	0.000	157.00	2" Ice	4.19	1.66	0.13
						No Ice	3.25	1.04	0.02
						1/2" Ice	3.47	1.18	0.04
						1" Ice	3.70	1.33	0.07
***									
Face Frame (ATT)	C	From Face	0.00 0.000 0.000	0.000	157.00	2" Ice	4.19	1.66	0.13
						No Ice	19.00	0.00	0.11
						1/2" Ice	21.30	0.00	0.17
						1" Ice	23.60	0.00	0.22
18 ft Pipe (ATT)	C	From Leg	0.00 0.000 5.500	0.000	157.00	2" Ice	28.20	0.00	0.33
						No Ice	15.53	15.53	0.51
						1/2" Ice	17.40	17.40	0.62
						1" Ice	19.27	19.27	0.73
Modified Mount (ATT)	B	From Face	0.00 0.000 0.000	0.000	157.00	2" Ice	23.01	23.01	0.94
						No Ice	17.00	0.00	0.40
						1/2" Ice	21.50	10.00	0.60
						1" Ice	26.00	12.00	0.80
(3) T-Arms with Platform (ATT)	C	From Leg	0.00 0.000 12.000	0.000	157.00	2" Ice	35.00	0.00	1.20
						No Ice	18.50	18.50	0.73
						1/2" Ice	25.00	25.00	0.90
						1" Ice	31.50	31.50	1.08
800-10965 (ATT)	C	From Leg	0.00 0.000 12.000	0.000	157.00	2" Ice	44.50	44.50	1.44
						No Ice	13.81	5.83	0.11
						1/2" Ice	14.35	6.32	0.19
						1" Ice	14.89	6.82	0.27
800-10965 (ATT)	C	From Leg	0.00 0.000 12.000	0.000	157.00	2" Ice	15.99	7.84	0.46
						No Ice	13.81	5.83	0.11
						1/2" Ice	14.35	6.32	0.19
						1" Ice	14.89	6.82	0.27
800-10964 (ATT)	C	From Leg	0.00 0.000 12.000	0.000	157.00	2" Ice	15.99	7.84	0.46
						No Ice	10.00	4.10	0.09
						1/2" Ice	10.42	4.48	0.15
						1" Ice	10.86	4.87	0.22
DC6-48-60-18-8C (ATT)	C	From Leg	0.00 0.000 12.000	0.000	157.00	2" Ice	11.74	5.63	0.37
						No Ice	1.14	1.14	0.03
						1/2" Ice	1.79	1.79	0.05
						1" Ice	2.00	2.00	0.07
DC6-48-60-18-8I (ATT)	C	From Leg	0.00 0.000 12.000	0.000	157.00	2" Ice	2.45	2.45	0.13
						No Ice	0.92	0.92	0.03
						1/2" Ice	1.46	1.46	0.05
						1" Ice	1.64	1.64	0.07
(3) QS66512-2 (ATT)	C	From Leg	0.00 0.000 12.000	0.000	157.00	2" Ice	2.04	2.04	0.12
						No Ice	8.13	6.80	0.11
						1/2" Ice	8.59	7.27	0.17
						1" Ice	9.05	7.72	0.23



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	<b>Client</b> KGI	<b>Designed by</b> JungH

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>FA</sub> Front	C <sub>SA</sub> Side	Weight
			Horz	Lateral					
(3) RRUS 32 B30 (ATT)	C	From Leg	0.00	0.000	157.00	2" Ice	10.00	8.65	0.38
						No Ice	2.75	1.67	0.05
						1/2" Ice	2.97	1.86	0.07
						1" Ice	3.20	2.05	0.10
(3) 4449 B5/B12 RRU (ATT)	C	From Leg	0.00	0.000	157.00	2" Ice	3.68	2.46	0.16
						No Ice	1.97	1.41	0.07
						1/2" Ice	2.14	1.56	0.09
						1" Ice	2.33	1.73	0.11
(3) 8843 B2/B66A RRU (ATT)	C	From Leg	0.00	0.000	157.00	2" Ice	2.72	2.07	0.16
						No Ice	1.64	1.35	0.07
						1/2" Ice	1.80	1.50	0.09
						1" Ice	1.97	1.65	0.11
*** Sector Frame (T-Mobile)	A	From Leg	1.50	0.000	146.00	2" Ice	2.32	1.99	0.16
						No Ice	15.00	10.00	0.50
						1/2" Ice	20.60	15.00	0.65
						1" Ice	26.20	20.00	0.80
Sector Frame (T-Mobile)	B	From Leg	1.50	0.000	146.00	2" Ice	37.40	30.00	1.10
						No Ice	15.00	10.00	0.50
						1/2" Ice	20.60	15.00	0.65
						1" Ice	26.20	20.00	0.80
Sector Frame (T-Mobile)	C	From Leg	1.50	0.000	146.00	2" Ice	37.40	30.00	1.10
						No Ice	15.00	10.00	0.50
						1/2" Ice	20.60	15.00	0.65
						1" Ice	26.20	20.00	0.80
APX16DWV-16DWVS-C-A 20 (T-Mobile)	A	From Leg	3.00	0.000	146.00	2" Ice	37.40	30.00	1.10
						No Ice	6.59	2.15	0.04
						1/2" Ice	6.96	2.49	0.07
						1" Ice	7.34	2.84	0.11
APX16DWV-16DWVS-C-A 20 (T-Mobile)	B	From Leg	3.00	0.000	146.00	2" Ice	8.13	3.55	0.20
						No Ice	6.59	2.15	0.04
						1/2" Ice	6.96	2.49	0.07
						1" Ice	7.34	2.84	0.11
APX16DWV-16DWVS-C-A 20 (T-Mobile)	C	From Leg	3.00	0.000	146.00	2" Ice	8.13	3.55	0.20
						No Ice	6.59	2.15	0.04
						1/2" Ice	6.96	2.49	0.07
						1" Ice	7.34	2.84	0.11
LNX-6515DS-A1M (T-Mobile)	A	From Leg	3.00	0.000	146.00	2" Ice	8.13	3.55	0.20
						No Ice	11.56	7.78	0.04
						1/2" Ice	12.18	8.38	0.11
						1" Ice	12.81	8.98	0.18
LNX-6515DS-A1M (T-Mobile)	B	From Leg	3.00	0.000	146.00	2" Ice	14.08	10.21	0.36
						No Ice	11.56	7.78	0.04
						1/2" Ice	12.18	8.38	0.11
						1" Ice	12.81	8.98	0.18
LNX-6515DS-A1M (T-Mobile)	C	From Leg	3.00	0.000	146.00	2" Ice	14.08	10.21	0.36
						No Ice	11.56	7.78	0.04
						1/2" Ice	12.18	8.38	0.11
						1" Ice	12.81	8.98	0.18
11"x6"x3.5" TMA (T-Mobile)	A	From Leg	3.00	0.000	146.00	2" Ice	14.08	10.21	0.36
						No Ice	0.55	0.33	0.01
						1/2" Ice	0.70	0.45	0.02
						1" Ice	0.85	0.58	0.02
11"x6"x3.5" TMA (T-Mobile)	B	From Leg	3.00	0.000	146.00	2" Ice	1.15	0.83	0.03
						No Ice	0.55	0.33	0.01
						1/2" Ice	0.70	0.45	0.02
						1" Ice	0.85	0.58	0.02





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	<b>Client</b> KGI	<b>Designed by</b> JungH

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>A</sub> A <sub>1</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>1</sub> Side ft <sup>2</sup>	Weight K	
Feed Line (ATT)	B	From Face	0.000	0.000	163.00	1" Ice	25.81	25.81	0.23
			0.000			2" Ice	40.46	40.46	0.41
			0.000			No Ice	4.68	4.68	0.03
			0.000			1/2" Ice	11.96	11.96	0.08
			0.000			1" Ice	19.25	19.25	0.13
			0.000			2" Ice	33.82	33.82	0.23

### Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>s</sub> ksf	A <sub>G</sub> ft <sup>2</sup>	F <sub>a</sub> c e	A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>A</sub> A <sub>1</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>1</sub> Out Face ft <sup>2</sup>
T1 160.00-140.00	150.00	1.11	0.032	177.708	A	12.814	9.583	9.583	42.79	50.694	0.000
					B	12.814	9.583	42.79	22.822	0.000	
					C	12.814	9.583	42.79	52.767	0.000	
T2 140.00-126.67	133.33	1.073	0.031	127.361	A	12.335	6.399	6.399	34.16	73.252	0.000
					B	12.335	6.399	34.16	21.124	0.000	
					C	12.335	6.399	34.16	43.346	0.000	
T3 126.67-120.00	123.33	1.049	0.031	70.352	A	8.215	3.200	3.200	28.03	36.628	0.000
					B	8.215	3.200	28.03	10.563	0.000	
					C	8.215	3.200	28.03	21.674	0.000	
T4 120.00-100.00	110.00	1.016	0.030	238.131	A	23.646	9.600	9.600	28.88	109.880	0.000
					B	23.646	9.600	28.88	33.740	0.000	
					C	23.646	9.600	28.88	65.020	0.000	
T5 100.00-80.00	90.00	0.959	0.028	279.695	A	32.454	11.686	11.686	26.48	109.880	0.000
					B	32.454	11.686	26.48	36.016	0.000	
					C	32.454	11.686	26.48	65.020	0.000	
T6 80.00-60.00	70.00	0.892	0.026	322.197	A	25.888	15.027	15.027	36.73	109.880	0.000
					B	25.888	15.027	36.73	36.127	0.000	
					C	25.888	15.027	36.73	65.020	0.000	
T7 60.00-40.00	50.00	0.811	0.024	364.699	A	23.175	18.574	18.574	44.49	109.880	0.000
					B	23.175	18.574	44.49	36.614	0.000	
					C	23.175	18.574	44.49	65.020	0.000	
T8 40.00-20.00	30.00	0.701	0.020	405.638	A	25.322	18.577	18.577	42.32	109.880	0.000
					B	25.322	18.577	42.32	38.564	0.000	
					C	25.322	18.577	42.32	65.020	0.000	
T9 20.00-0.00	10.00	0.7	0.020	448.347	A	31.305	22.120	22.120	41.40	96.630	0.000
					B	31.305	22.120	41.40	27.393	0.000	
					C	31.305	22.120	41.40	59.020	0.000	

### Tower Pressure - With Ice

$G_H = 0.850$

<b>tnxTower</b>  <b>SEMAAN Engineering Solutions</b> 1047 N 205th St Elkhorn, NE 68022 Phone: (402) 289-1888 FAX:	<b>Job</b> 28229_Windsor	<b>Page</b> 26 of 51
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	<b>Client</b> KGi	<b>Designed by</b> JungH

Section Elevation	z	K <sub>z</sub>	q <sub>z</sub>	t <sub>z</sub>	A <sub>G</sub>	F a c	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>d</sub> A <sub>l</sub> In Face	C <sub>d</sub> A <sub>l</sub> Out Face
ft	ft		ksf	in	ft <sup>2</sup>	e	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T1 160.00-140.00	150.00	1.11	0.006	1.75	183.525	A	12.814	46.347	21.218	35.86	85.095	0.000
						B	12.814	46.347		35.86	76.054	0.000
						C	12.814	46.347		35.86	79.122	0.000
T2 140.00-126.67	133.33	1.073	0.006	1.72	131.199	A	12.335	34.708	14.078	29.92	104.019	0.000
						B	12.335	34.708		29.92	63.779	0.000
						C	12.335	34.708		29.92	65.149	0.000
T3 126.67-120.00	123.33	1.049	0.006	1.71	72.256	A	8.215	19.640	7.010	25.16	51.923	0.000
						B	8.215	19.640		25.16	31.740	0.000
						C	8.215	19.640		25.16	32.500	0.000
T4 120.00-100.00	110.00	1.016	0.005	1.69	243.778	A	23.646	52.917	20.899	27.30	155.364	0.000
						B	23.646	52.917		27.30	102.868	0.000
						C	23.646	52.917		27.30	97.159	0.000
T5 100.00-80.00	90.00	0.959	0.005	1.66	285.229	A	32.454	58.686	22.760	24.97	154.681	0.000
						B	32.454	58.686		24.97	110.676	0.000
						C	32.454	58.686		24.97	96.579	0.000
T6 80.00-60.00	70.00	0.892	0.005	1.62	327.595	A	25.888	53.782	25.827	32.42	153.845	0.000
						B	25.888	53.782		32.42	109.392	0.000
						C	25.888	53.782		32.42	95.870	0.000
T7 60.00-40.00	50.00	0.811	0.004	1.56	369.918	A	23.175	49.790	29.016	39.77	152.759	0.000
						B	23.175	49.790		39.77	109.979	0.000
						C	23.175	49.790		39.77	94.949	0.000
T8 40.00-20.00	30.00	0.701	0.004	1.49	410.598	A	25.322	50.063	28.500	37.81	151.180	0.000
						B	25.322	50.063		37.81	117.461	0.000
						C	25.322	50.063		37.81	93.610	0.000
T9 20.00-0.00	10.00	0.7	0.004	1.33	452.790	A	31.305	51.918	31.009	37.26	127.750	0.000
						B	31.305	51.918		37.26	93.724	0.000
						C	31.305	51.918		37.26	81.765	0.000

### Tower Pressure - Service

$G_H = 0.850$

Section Elevation	z	K <sub>z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>d</sub> A <sub>l</sub> In Face	C <sub>d</sub> A <sub>l</sub> Out Face
ft	ft		ksf	ft <sup>2</sup>	e	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T1 160.00-140.00	150.00	1.11	0.009	177.708	A	12.814	9.583	9.583	42.79	50.694	0.000
					B	12.814	9.583		42.79	22.822	0.000
					C	12.814	9.583		42.79	52.767	0.000
T2 140.00-126.67	133.33	1.073	0.008	127.361	A	12.335	6.399	6.399	34.16	73.252	0.000
					B	12.335	6.399		34.16	21.124	0.000
					C	12.335	6.399		34.16	43.346	0.000
T3 126.67-120.00	123.33	1.049	0.008	70.352	A	8.215	3.200	3.200	28.03	36.628	0.000
					B	8.215	3.200		28.03	10.563	0.000
					C	8.215	3.200		28.03	21.674	0.000
T4 120.00-100.00	110.00	1.016	0.008	238.131	A	23.646	9.600	9.600	28.88	109.880	0.000
					B	23.646	9.600		28.88	33.740	0.000
					C	23.646	9.600		28.88	65.020	0.000
T5 100.00-80.00	90.00	0.959	0.007	279.695	A	32.454	11.686	11.686	26.48	109.880	0.000
					B	32.454	11.686		26.48	36.016	0.000
					C	32.454	11.686		26.48	65.020	0.000
T6 80.00-60.00	70.00	0.892	0.007	322.197	A	25.888	15.027	15.027	36.73	109.880	0.000
					B	25.888	15.027		36.73	36.127	0.000
					C	25.888	15.027		36.73	65.020	0.000
T7 60.00-40.00	50.00	0.811	0.006	364.699	A	23.175	18.574	18.574	44.49	109.880	0.000



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	<b>Project</b> REV05	<b>Date</b> 16:21:09 10/21/20
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Section Elevation ft	z ft	K <sub>z</sub>	q <sub>z</sub> ksf	A <sub>G</sub> ft <sup>2</sup>	F <sub>a c e</sub>	A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>i</sub> A <sub>i</sub> In Face ft <sup>2</sup>	C <sub>i</sub> A <sub>i</sub> Out Face ft <sup>2</sup>
T8 40.00-20.00	30.00	0.701	0.005	405.638	B	23.175	18.574	18.577	44.49	36.614	0.000
					C	23.175	18.574		44.49	65.020	0.000
					A	25.322	18.577		42.32	109.880	0.000
T9 20.00-0.00	10.00	0.7	0.005	448.347	B	25.322	18.577	22.120	42.32	38.564	0.000
					C	25.322	18.577		42.32	65.020	0.000
					A	31.305	22.120		41.40	96.630	0.000
					B	31.305	22.120		41.40	27.393	0.000
					C	31.305	22.120		41.40	59.020	0.000

### Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F <sub>a c e</sub>	e	C <sub>F</sub>	q <sub>z</sub> ksf	D <sub>F</sub>	D <sub>R</sub>	A <sub>F</sub> ft <sup>2</sup>	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.89	0.95	A	0.126	2.862	0.032	1	1	18.233	3.11	155.515	C
			B	0.126	2.862	1	1	18.233				
			C	0.126	2.862	1	1	18.233				
T2 140.00-126.67	0.95	1.00	A	0.147	2.782	0.031	1	1	15.966	2.99	223.922	A
			B	0.147	2.782	1	1	15.966				
			C	0.147	2.782	1	1	15.966				
T3 126.67-120.00	0.48	0.60	A	0.162	2.727	0.031	1	1	10.036	1.59	239.057	A
			B	0.162	2.727	1	1	10.036				
			C	0.162	2.727	1	1	10.036				
T4 120.00-100.00	1.43	1.88	A	0.14	2.81	0.030	1	1	29.085	4.65	232.459	A
			B	0.14	2.81	1	1	29.085				
			C	0.14	2.81	1	1	29.085				
T5 100.00-80.00	1.45	2.09	A	0.158	2.743	0.028	1	1	39.097	5.03	251.379	A
			B	0.158	2.743	1	1	39.097				
			C	0.158	2.743	1	1	39.097				
T6 80.00-60.00	1.45	2.44	A	0.127	2.858	0.026	1	1	34.267	4.48	223.764	A
			B	0.127	2.858	1	1	34.267				
			C	0.127	2.858	1	1	34.267				
T7 60.00-40.00	1.45	2.64	A	0.114	2.907	0.024	1	1	32.946	4.03	201.365	A
			B	0.114	2.907	1	1	32.946				
			C	0.114	2.907	1	1	32.946				
T8 40.00-20.00	1.45	2.77	A	0.108	2.931	0.020	1	1	35.347	3.64	181.835	A
			B	0.108	2.931	1	1	35.347				
			C	0.108	2.931	1	1	35.347				
T9 20.00-0.00	1.10	3.28	A	0.119	2.888	0.020	1	1	42.486	3.65	182.416	A
			B	0.119	2.888	1	1	42.486				
			C	0.119	2.888	1	1	42.486				
Sum Weight:	10.64	17.69						OTM	2685.30 kip-ft	33.15		

### Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F <sub>a c e</sub>	e	C <sub>F</sub>	q <sub>z</sub> ksf	D <sub>F</sub>	D <sub>R</sub>	A <sub>F</sub> ft <sup>2</sup>	F K	w plf	Ctrl. Face
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Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K				ksf			ft <sup>2</sup>	K	plf	
T1 160.00-140.00	0.89	0.95	A	0.126	2.862	0.032	0.8	1	15.671	2.91	145.451	A
			B	0.126	2.862		0.8	1	15.671			
			C	0.126	2.862		0.8	1	15.671			
T2 140.00-126.67	0.95	1.00	A	0.147	2.782	0.031	0.8	1	13.498	2.80	210.259	B
			B	0.147	2.782		0.8	1	13.498			
			C	0.147	2.782		0.8	1	13.498			
T3 126.67-120.00	0.48	0.60	A	0.162	2.727	0.031	0.8	1	8.393	1.48	221.615	B
			B	0.162	2.727		0.8	1	8.393			
			C	0.162	2.727		0.8	1	8.393			
T4 120.00-100.00	1.43	1.88	A	0.14	2.81	0.030	0.8	1	24.356	4.32	215.768	B
			B	0.14	2.81		0.8	1	24.356			
			C	0.14	2.81		0.8	1	24.356			
T5 100.00-80.00	1.45	2.09	A	0.158	2.743	0.028	0.8	1	32.606	4.61	230.264	B
			B	0.158	2.743		0.8	1	32.606			
			C	0.158	2.743		0.8	1	32.606			
T6 80.00-60.00	1.45	2.44	A	0.127	2.858	0.026	0.8	1	29.089	4.15	207.430	B
			B	0.127	2.858		0.8	1	29.089			
			C	0.127	2.858		0.8	1	29.089			
T7 60.00-40.00	1.45	2.64	A	0.114	2.907	0.024	0.8	1	28.311	3.76	187.858	B
			B	0.114	2.907		0.8	1	28.311			
			C	0.114	2.907		0.8	1	28.311			
T8 40.00-20.00	1.45	2.77	A	0.108	2.931	0.020	0.8	1	30.282	3.38	168.973	B
			B	0.108	2.931		0.8	1	30.282			
			C	0.108	2.931		0.8	1	30.282			
T9 20.00-0.00	1.10	3.28	A	0.119	2.888	0.020	0.8	1	36.225	3.34	166.760	B
			B	0.119	2.888		0.8	1	36.225			
			C	0.119	2.888		0.8	1	36.225			
Sum Weight:	10.64	17.69						OTM	2494.52 kip-ft	30.73		

**Tower Forces - No Ice - Wind 90 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K				ksf			ft <sup>2</sup>	K	plf	
T1 160.00-140.00	0.89	0.95	A	0.126	2.862	0.032	0.85	1	16.311	3.05	152.584	B
			B	0.126	2.862		0.85	1	16.311			
			C	0.126	2.862		0.85	1	16.311			
T2 140.00-126.67	0.95	1.00	A	0.147	2.782	0.031	0.85	1	14.115	2.86	214.879	B
			B	0.147	2.782		0.85	1	14.115			
			C	0.147	2.782		0.85	1	14.115			
T3 126.67-120.00	0.48	0.60	A	0.162	2.727	0.031	0.85	1	8.803	1.51	227.153	B
			B	0.162	2.727		0.85	1	8.803			
			C	0.162	2.727		0.85	1	8.803			
T4 120.00-100.00	1.43	1.88	A	0.14	2.81	0.030	0.85	1	25.538	4.42	221.081	B
			B	0.14	2.81		0.85	1	25.538			
			C	0.14	2.81		0.85	1	25.538			
T5 100.00-80.00	1.45	2.09	A	0.158	2.743	0.028	0.85	1	34.228	4.73	236.619	B
			B	0.158	2.743		0.85	1	34.228			
			C	0.158	2.743		0.85	1	34.228			
T6 80.00-60.00	1.45	2.44	A	0.127	2.858	0.026	0.85	1	30.384	4.25	212.516	B
			B	0.127	2.858		0.85	1	30.384			
			C	0.127	2.858		0.85	1	30.384			



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	<b>Project</b> REV05	<b>Date</b> 16:21:09 10/21/20
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Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K				ksf			ft <sup>2</sup>	K	plf	
T7 60.00-40.00	1.45	2.64	A	0.114	2.907	0.024	0.85	1	29.470	3.84	192.144	B
			B	0.114	2.907		0.85	1	29.470			
			C	0.114	2.907		0.85	1	29.470			
T8 40.00-20.00	1.45	2.77	A	0.108	2.931	0.020	0.85	1	31.548	3.46	172.975	B
			B	0.108	2.931		0.85	1	31.548			
			C	0.108	2.931		0.85	1	31.548			
T9 20.00-0.00	1.10	3.28	A	0.119	2.888	0.020	0.85	1	37.790	3.43	171.460	B
			B	0.119	2.888		0.85	1	37.790			
			C	0.119	2.888		0.85	1	37.790			
Sum Weight:	10.64	17.69						OTM	2566.57 kip-ft	31.57		

### Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K				ksf			ft <sup>2</sup>	K	plf	
T1 160.00-140.00	4.27	3.94	A	0.322	2.238	0.006	1	1	40.771	1.06	53.080	A
			B	0.322	2.238		1	1	40.771			
			C	0.322	2.238		1	1	40.771			
T2 140.00-126.67	4.36	3.53	A	0.359	2.152	0.006	1	1	33.691	0.94	70.342	A
			B	0.359	2.152		1	1	33.691			
			C	0.359	2.152		1	1	33.691			
T3 126.67-120.00	2.18	2.15	A	0.386	2.093	0.006	1	1	20.450	0.49	73.415	A
			B	0.386	2.093		1	1	20.450			
			C	0.386	2.093		1	1	20.450			
T4 120.00-100.00	6.56	6.18	A	0.314	2.259	0.005	1	1	55.444	1.43	71.311	A
			B	0.314	2.259		1	1	55.444			
			C	0.314	2.259		1	1	55.444			
T5 100.00-80.00	6.58	7.45	A	0.32	2.245	0.005	1	1	67.843	1.48	74.310	A
			B	0.32	2.245		1	1	67.843			
			C	0.32	2.245		1	1	67.843			
T6 80.00-60.00	6.46	6.83	A	0.243	2.458	0.005	1	1	57.139	1.33	66.332	A
			B	0.243	2.458		1	1	57.139			
			C	0.243	2.458		1	1	57.139			
T7 60.00-40.00	6.32	6.49	A	0.197	2.605	0.004	1	1	51.637	1.18	59.046	A
			B	0.197	2.605		1	1	51.637			
			C	0.197	2.605		1	1	51.637			
T8 40.00-20.00	6.20	6.64	A	0.184	2.652	0.004	1	1	53.837	1.06	52.865	A
			B	0.184	2.652		1	1	53.837			
			C	0.184	2.652		1	1	53.837			
T9 20.00-0.00	4.85	7.32	A	0.184	2.651	0.004	1	1	60.894	1.01	50.267	A
			B	0.184	2.651		1	1	60.894			
			C	0.184	2.651		1	1	60.894			
Sum Weight:	47.77	50.56						OTM	828.80 kip-ft	9.97		

### Tower Forces - With Ice - Wind 60 To Face

<p><b>tnxTower</b></p> <p><b>SEMAAN Engineering Solutions</b> 1047 N 205th St Elkhorn, NE 68022 Phone: (402) 389-1888 FAX:</p>	<b>Job</b> 28229_Windsor	<b>Page</b> 30 of 51
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Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K				ksf			ft <sup>2</sup>	K	plf	
T1 160.00-140.00	4.27	3.94	A	0.322	2.238	0.006	0.8	1	38.208	1.03	51.617	B
			B	0.322	2.238		0.8	1	38.208			
			C	0.322	2.238		0.8	1	38.208			
T2 140.00-126.67	4.36	3.53	A	0.359	2.152	0.006	0.8	1	31.224	0.91	68.378	B
			B	0.359	2.152		0.8	1	31.224			
			C	0.359	2.152		0.8	1	31.224			
T3 126.67-120.00	2.18	2.15	A	0.386	2.093	0.006	0.8	1	18.806	0.47	70.927	B
			B	0.386	2.093		0.8	1	18.806			
			C	0.386	2.093		0.8	1	18.806			
T4 120.00-100.00	6.56	6.18	A	0.314	2.259	0.005	0.8	1	50.715	1.38	68.818	B
			B	0.314	2.259		0.8	1	50.715			
			C	0.314	2.259		0.8	1	50.715			
T5 100.00-80.00	6.58	7.45	A	0.32	2.245	0.005	0.8	1	61.352	1.42	70.999	B
			B	0.32	2.245		0.8	1	61.352			
			C	0.32	2.245		0.8	1	61.352			
T6 80.00-60.00	6.46	6.83	A	0.243	2.458	0.005	0.8	1	51.962	1.27	63.722	B
			B	0.243	2.458		0.8	1	51.962			
			C	0.243	2.458		0.8	1	51.962			
T7 60.00-40.00	6.32	6.49	A	0.197	2.605	0.004	0.8	1	47.002	1.14	56.797	B
			B	0.197	2.605		0.8	1	47.002			
			C	0.197	2.605		0.8	1	47.002			
T8 40.00-20.00	6.20	6.64	A	0.184	2.652	0.004	0.8	1	48.772	1.01	50.703	B
			B	0.184	2.652		0.8	1	48.772			
			C	0.184	2.652		0.8	1	48.772			
T9 20.00-0.00	4.85	7.32	A	0.184	2.651	0.004	0.8	1	54.633	0.95	47.597	B
			B	0.184	2.651		0.8	1	54.633			
			C	0.184	2.651		0.8	1	54.633			
Sum Weight:	47.77	50.56						OTM	799.88 kip-ft	9.59		

### Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K				ksf			ft <sup>2</sup>	K	plf	
T1 160.00-140.00	4.27	3.94	A	0.322	2.238	0.006	0.85	1	38.849	1.06	52.768	B
			B	0.322	2.238		0.85	1	38.849			
			C	0.322	2.238		0.85	1	38.849			
T2 140.00-126.67	4.36	3.53	A	0.359	2.152	0.006	0.85	1	31.840	0.91	68.515	B
			B	0.359	2.152		0.85	1	31.840			
			C	0.359	2.152		0.85	1	31.840			
T3 126.67-120.00	2.18	2.15	A	0.386	2.093	0.006	0.85	1	19.217	0.47	71.203	B
			B	0.386	2.093		0.85	1	19.217			
			C	0.386	2.093		0.85	1	19.217			
T4 120.00-100.00	6.56	6.18	A	0.314	2.259	0.005	0.85	1	51.897	1.38	69.106	B
			B	0.314	2.259		0.85	1	51.897			
			C	0.314	2.259		0.85	1	51.897			
T5 100.00-80.00	6.58	7.45	A	0.32	2.245	0.005	0.85	1	62.975	1.43	71.485	B
			B	0.32	2.245		0.85	1	62.975			
			C	0.32	2.245		0.85	1	62.975			
T6 80.00-60.00	6.46	6.83	A	0.243	2.458	0.005	0.85	1	53.256	1.28	64.080	B
			B	0.243	2.458		0.85	1	53.256			



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Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K				ksf			ft <sup>2</sup>	K	plf	
T7 60.00-40.00	6.32	6.49	C	0.243	2.458		0.85	1	53.256			
			A	0.197	2.605	0.004	0.85	1	48.161	1.14	57.092	B
			B	0.197	2.605		0.85	1	48.161			
			C	0.197	2.605		0.85	1	48.161			
T8 40.00-20.00	6.20	6.64	A	0.184	2.652	0.004	0.85	1	50.038	1.02	51.012	B
			B	0.184	2.652		0.85	1	50.038			
			C	0.184	2.652		0.85	1	50.038			
T9 20.00-0.00	4.85	7.32	A	0.184	2.651	0.004	0.85	1	56.198	0.96	48.033	B
			B	0.184	2.651		0.85	1	56.198			
			C	0.184	2.651		0.85	1	56.198			
Sum Weight:	47.77	50.56						OTM	806.38 kip-ft	9.66		

### Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K				ksf			ft <sup>2</sup>	K	plf	
T1 160.00-140.00	0.89	0.95	A	0.126	2.862	0.009	1	1	18.233	0.83	41.606	C
			B	0.126	2.862		1	1	18.233			
			C	0.126	2.862		1	1	18.233			
T2 140.00-126.67	0.95	1.00	A	0.147	2.782	0.008	1	1	15.966	0.80	59.908	A
			B	0.147	2.782		1	1	15.966			
			C	0.147	2.782		1	1	15.966			
T3 126.67-120.00	0.48	0.60	A	0.162	2.727	0.008	1	1	10.036	0.43	63.957	A
			B	0.162	2.727		1	1	10.036			
			C	0.162	2.727		1	1	10.036			
T4 120.00-100.00	1.43	1.88	A	0.14	2.81	0.008	1	1	29.085	1.24	62.192	A
			B	0.14	2.81		1	1	29.085			
			C	0.14	2.81		1	1	29.085			
T5 100.00-80.00	1.45	2.09	A	0.158	2.743	0.007	1	1	39.097	1.35	67.254	A
			B	0.158	2.743		1	1	39.097			
			C	0.158	2.743		1	1	39.097			
T6 80.00-60.00	1.45	2.44	A	0.127	2.858	0.007	1	1	34.267	1.20	59.866	A
			B	0.127	2.858		1	1	34.267			
			C	0.127	2.858		1	1	34.267			
T7 60.00-40.00	1.45	2.64	A	0.114	2.907	0.006	1	1	32.946	1.08	53.873	A
			B	0.114	2.907		1	1	32.946			
			C	0.114	2.907		1	1	32.946			
T8 40.00-20.00	1.45	2.77	A	0.108	2.931	0.005	1	1	35.347	0.97	48.648	A
			B	0.108	2.931		1	1	35.347			
			C	0.108	2.931		1	1	35.347			
T9 20.00-0.00	1.10	3.28	A	0.119	2.888	0.005	1	1	42.486	0.98	48.803	A
			B	0.119	2.888		1	1	42.486			
			C	0.119	2.888		1	1	42.486			
Sum Weight:	10.64	17.69						OTM	718.42 kip-ft	8.87		

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**Tower Forces - Service - Wind 60 To Face**

Section Elevation ft	Add Weight K	Self Weight K	F a e e	e	C <sub>F</sub>	q <sub>z</sub> ksf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.89	0.95	A	0.126	2.862	0.009	0.8	1	15.671	0.78	38.914	A
			B	0.126	2.862		0.8	1	15.671			
			C	0.126	2.862		0.8	1	15.671			
T2 140.00-126.67	0.95	1.00	A	0.147	2.782	0.008	0.8	1	13.498	0.75	56.252	B
			B	0.147	2.782		0.8	1	13.498			
			C	0.147	2.782		0.8	1	13.498			
T3 126.67-120.00	0.48	0.60	A	0.162	2.727	0.008	0.8	1	8.393	0.40	59.291	B
			B	0.162	2.727		0.8	1	8.393			
			C	0.162	2.727		0.8	1	8.393			
T4 120.00-100.00	1.43	1.88	A	0.14	2.81	0.008	0.8	1	24.356	1.15	57.726	B
			B	0.14	2.81		0.8	1	24.356			
			C	0.14	2.81		0.8	1	24.356			
T5 100.00-80.00	1.45	2.09	A	0.158	2.743	0.007	0.8	1	32.606	1.23	61.604	B
			B	0.158	2.743		0.8	1	32.606			
			C	0.158	2.743		0.8	1	32.606			
T6 80.00-60.00	1.45	2.44	A	0.127	2.858	0.007	0.8	1	29.089	1.11	55.496	B
			B	0.127	2.858		0.8	1	29.089			
			C	0.127	2.858		0.8	1	29.089			
T7 60.00-40.00	1.45	2.64	A	0.114	2.907	0.006	0.8	1	28.311	1.01	50.259	B
			B	0.114	2.907		0.8	1	28.311			
			C	0.114	2.907		0.8	1	28.311			
T8 40.00-20.00	1.45	2.77	A	0.108	2.931	0.005	0.8	1	30.282	0.90	45.207	B
			B	0.108	2.931		0.8	1	30.282			
			C	0.108	2.931		0.8	1	30.282			
T9 20.00-0.00	1.10	3.28	A	0.119	2.888	0.005	0.8	1	36.225	0.89	44.615	B
			B	0.119	2.888		0.8	1	36.225			
			C	0.119	2.888		0.8	1	36.225			
Sum Weight:	10.64	17.69						OTM	667.38 kip-ft	8.22		

**Tower Forces - Service - Wind 90 To Face**

Section Elevation ft	Add Weight K	Self Weight K	F a e e	e	C <sub>F</sub>	q <sub>z</sub> ksf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.89	0.95	A	0.126	2.862	0.009	0.85	1	16.311	0.82	40.822	B
			B	0.126	2.862		0.85	1	16.311			
			C	0.126	2.862		0.85	1	16.311			
T2 140.00-126.67	0.95	1.00	A	0.147	2.782	0.008	0.85	1	14.115	0.77	57.488	B
			B	0.147	2.782		0.85	1	14.115			
			C	0.147	2.782		0.85	1	14.115			
T3 126.67-120.00	0.48	0.60	A	0.162	2.727	0.008	0.85	1	8.803	0.41	60.772	B
			B	0.162	2.727		0.85	1	8.803			
			C	0.162	2.727		0.85	1	8.803			
T4 120.00-100.00	1.43	1.88	A	0.14	2.81	0.008	0.85	1	25.538	1.18	59.148	B
			B	0.14	2.81		0.85	1	25.538			
			C	0.14	2.81		0.85	1	25.538			
T5 100.00-80.00	1.45	2.09	A	0.158	2.743	0.007	0.85	1	34.228	1.27	63.305	B
			B	0.158	2.743		0.85	1	34.228			
			C	0.158	2.743		0.85	1	34.228			



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Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K				ksf			ft <sup>2</sup>	K	plf	
T6 80.00-60.00	1.45	2.44	A	0.127	2.858	0.007	0.85	1	30.384	1.14	56.856	B
			B	0.127	2.858		0.85	1	30.384			
			C	0.127	2.858		0.85	1	30.384			
T7 60.00-40.00	1.45	2.64	A	0.114	2.907	0.006	0.85	1	29.470	1.03	51.406	B
			B	0.114	2.907		0.85	1	29.470			
			C	0.114	2.907		0.85	1	29.470			
T8 40.00-20.00	1.45	2.77	A	0.108	2.931	0.005	0.85	1	31.548	0.93	46.277	B
			B	0.108	2.931		0.85	1	31.548			
			C	0.108	2.931		0.85	1	31.548			
T9 20.00-0.00	1.10	3.28	A	0.119	2.888	0.005	0.85	1	37.790	0.92	45.872	B
			B	0.119	2.888		0.85	1	37.790			
			C	0.119	2.888		0.85	1	37.790			
Sum Weight:	10.64	17.69						OTM	686.66 kip-ft	8.45		

### Force Totals

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M <sub>x</sub>	Sum of Overturning Moments, M <sub>z</sub>	Sum of Torques
	K	K	K	kip-ft	kip-ft	kip-ft
Leg Weight	6.74					
Bracing Weight	10.90					
Total Member Self-Weight	17.65				12.59	
Gusset Weight	0.04					
Total Weight	37.72			15.58	12.59	
Wind 0 deg - No Ice		0.34	-40.94	-4016.79	-46.92	1.64
Wind 30 deg - No Ice		18.55	-31.60	-3178.33	-1883.25	15.35
Wind 60 deg - No Ice		31.57	-18.32	-1850.62	-3190.52	2.42
Wind 90 deg - No Ice		39.00	-0.34	-43.93	-3867.95	4.34
Wind 120 deg - No Ice		37.16	21.15	2052.89	-3605.92	27.41
Wind 150 deg - No Ice		20.49	35.64	3507.09	-1986.35	25.38
Wind 180 deg - No Ice		-0.34	38.51	3857.19	72.10	-1.64
Wind 210 deg - No Ice		-18.55	31.60	3209.50	1908.44	-15.35
Wind 240 deg - No Ice		-33.67	19.53	1977.17	3380.93	-2.42
Wind 270 deg - No Ice		-39.00	0.34	75.10	3893.14	-4.34
Wind 300 deg - No Ice		-35.06	-19.94	-1926.34	3465.89	-27.41
Wind 330 deg - No Ice		-20.49	-35.64	-3475.92	2011.53	-25.38
Member Ice	32.87					
Gusset Ice	0.08					
Total Weight Ice	124.45			43.74	29.88	
Wind 0 deg - Ice		0.07	-12.54	-1214.38	17.20	2.26
Wind 30 deg - Ice		5.96	-10.20	-996.31	-582.16	3.62
Wind 60 deg - Ice		10.19	-5.90	-560.80	-1011.91	-0.69
Wind 90 deg - Ice		12.36	-0.07	31.07	-1216.51	-2.43
Wind 120 deg - Ice		11.36	6.49	683.95	-1099.04	1.17
Wind 150 deg - Ice		6.36	11.05	1145.87	-603.38	2.08
Wind 180 deg - Ice		-0.07	12.16	1272.93	42.55	-2.26
Wind 210 deg - Ice		-5.96	10.20	1083.79	641.92	-3.62
Wind 240 deg - Ice		-10.52	6.09	662.74	1096.71	0.69
Wind 270 deg - Ice		-12.36	0.07	56.41	1276.26	2.43
Wind 300 deg - Ice		-11.03	-6.30	-582.01	1133.74	-1.17
Wind 330 deg - Ice		-6.36	-11.05	-1058.40	663.13	-2.08
Total Weight	37.72			15.58	12.59	

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Load Case	Vertical Forces $\bar{K}$	Sum of Forces X $\bar{K}$	Sum of Forces Z $\bar{K}$	Sum of Overturning Moments, $M_x$ $\bar{K}$ -ft	Sum of Overturning Moments, $M_z$ $\bar{K}$ -ft	Sum of Torques $\bar{K}$ -ft
Wind 0 deg - Service		0.09	-10.95	-1071.93	-3.60	0.44
Wind 30 deg - Service		4.96	-8.45	-847.61	-494.89	4.11
Wind 60 deg - Service		8.45	-4.90	-492.40	-844.63	0.65
Wind 90 deg - Service		10.44	-0.09	-9.04	-1025.87	1.16
Wind 120 deg - Service		9.94	5.66	551.94	-955.77	7.33
Wind 150 deg - Service		5.48	9.54	941.00	-522.47	6.79
Wind 180 deg - Service		-0.09	10.30	1034.66	28.24	-0.44
Wind 210 deg - Service		-4.96	8.45	861.38	519.54	-4.11
Wind 240 deg - Service		-9.01	5.22	531.69	913.48	-0.65
Wind 270 deg - Service		-10.44	0.09	22.81	1050.52	-1.16
Wind 300 deg - Service		-9.38	-5.33	-512.65	936.21	-7.33
Wind 330 deg - Service		-5.48	-9.54	-927.23	547.12	-6.79
Seismic Vertical	0.76					
Seismic Horizontal 0 deg		0.00	-1.06	-129.15	0.00	0.00
Seismic Horizontal 30 deg		0.53	-0.92	-111.85	-64.57	0.00
Seismic Horizontal 60 deg		0.92	-0.53	-64.57	-111.85	0.00
Seismic Horizontal 90 deg		1.06	0.00	0.00	-129.15	0.00
Seismic Horizontal 120 deg		0.92	0.53	64.57	-111.85	0.00
Seismic Horizontal 150 deg		0.53	0.92	111.85	-64.57	0.00
Seismic Horizontal 180 deg		0.00	1.06	129.15	0.00	0.00
Seismic Horizontal 210 deg		-0.53	0.92	111.85	64.57	0.00
Seismic Horizontal 240 deg		-0.92	0.53	64.57	111.85	0.00
Seismic Horizontal 270 deg		-1.06	0.00	0.00	129.15	0.00
Seismic Horizontal 300 deg		-0.92	-0.53	-64.57	111.85	0.00
Seismic Horizontal 330 deg		-0.53	-0.92	-111.85	64.57	0.00

### Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp



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Comb. No.	Description
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
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
51	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
52	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
53	1.2 Dead+1.0 Ev+1.0 Eh 30 deg
54	0.9 Dead-1.0 Ev+1.0 Eh 30 deg
55	1.2 Dead+1.0 Ev+1.0 Eh 60 deg
56	0.9 Dead-1.0 Ev+1.0 Eh 60 deg
57	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
58	0.9 Dead-1.0 Ev+1.0 Eh 90 deg
59	1.2 Dead+1.0 Ev+1.0 Eh 120 deg
60	0.9 Dead-1.0 Ev+1.0 Eh 120 deg
61	1.2 Dead+1.0 Ev+1.0 Eh 150 deg
62	0.9 Dead-1.0 Ev+1.0 Eh 150 deg
63	1.2 Dead+1.0 Ev+1.0 Eh 180 deg
64	0.9 Dead-1.0 Ev+1.0 Eh 180 deg
65	1.2 Dead+1.0 Ev+1.0 Eh 210 deg
66	0.9 Dead-1.0 Ev+1.0 Eh 210 deg
67	1.2 Dead+1.0 Ev+1.0 Eh 240 deg
68	0.9 Dead-1.0 Ev+1.0 Eh 240 deg
69	1.2 Dead+1.0 Ev+1.0 Eh 270 deg
70	0.9 Dead-1.0 Ev+1.0 Eh 270 deg
71	1.2 Dead+1.0 Ev+1.0 Eh 300 deg
72	0.9 Dead-1.0 Ev+1.0 Eh 300 deg
73	1.2 Dead+1.0 Ev+1.0 Eh 330 deg
74	0.9 Dead-1.0 Ev+1.0 Eh 330 deg

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	160 - 140	Leg	Max Tension	15	23.40	-0.10	1.08
			Max. Compression	18	-33.52	0.48	-0.28
			Max. Mx	20	-9.12	-2.42	0.00
			Max. My	14	-7.30	0.00	2.72
			Max. Vy	10	5.91	-0.47	-0.21

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft	
T2	140 - 126.667	Diagonal	Max. Vx	2	-6.68	-0.04	0.53	
			Max Tension	4	5.18	0.00	0.00	
			Max. Compression	16	-5.26	0.00	0.00	
			Max. Mx	33	1.53	0.04	-0.00	
			Max. My	14	-3.92	0.01	-0.01	
			Max. Vy	33	-0.03	0.04	-0.00	
		Top Girt	Max. Vx	14	-0.00	0.00	0.00	
			Max Tension	7	0.31	0.00	0.00	
			Max. Compression	18	-0.37	0.00	0.00	
			Max. Mx	29	-0.10	-0.14	0.00	
			Max. My	12	-0.05	0.00	0.00	
			Max. Vy	29	-0.06	0.00	0.00	
		Leg	Max. Vx	12	0.00	0.00	0.00	
			Max Tension	15	35.81	0.01	-0.02	
			Max. Compression	18	-47.22	-0.21	-0.00	
			Max. Mx	2	-29.74	1.77	0.19	
			Max. My	24	-5.63	-0.04	0.82	
			Max. Vy	6	5.00	-1.71	0.02	
			Diagonal	Max. Vx	24	-2.36	-0.04	0.82
				Max Tension	4	5.05	0.00	0.00
				Max. Compression	4	-5.14	-0.00	0.01
				Max. Mx	35	1.12	0.06	-0.01
				Max. My	2	-4.47	-0.00	0.01
				Max. Vy	34	0.04	0.06	0.01
Secondary Horizontal	Max. Vx	33	-0.00	0.00	0.00			
	Max Tension	18	0.82	0.00	0.00			
	Max. Compression	18	-0.82	0.02	-0.00			
	Max. Mx	32	0.30	0.05	0.00			
	Max. My	36	0.04	0.04	0.01			
	Max. Vy	32	0.04	0.05	0.00			
Top Girt	Max. Vx	34	-0.00	0.00	0.00			
	Max Tension	3	0.03	0.00	0.00			
	Max. Compression	33	-0.23	0.00	0.00			
	Max. Mx	29	-0.23	-0.14	0.00			
	Max. My	32	-0.19	0.00	0.00			
	Max. Vy	29	0.06	0.00	0.00			
T3	126.667 - 120	Leg	Max. Vx	32	0.00	0.00	0.00	
			Max Tension	15	48.68	1.29	0.08	
			Max. Compression	18	-61.35	0.12	-0.00	
			Max. Mx	10	-57.36	-1.36	0.14	
			Max. My	24	-6.63	-0.07	-0.34	
			Max. Vy	10	-6.86	0.15	-0.04	
		Diagonal	Max. Vx	24	-2.57	-0.05	0.30	
			Max Tension	23	5.36	0.03	0.00	
			Max. Compression	10	-5.86	0.00	0.00	
			Max. Mx	34	1.26	0.06	0.01	
			Max. My	10	-5.84	-0.00	-0.01	
			Max. Vy	33	0.04	0.05	-0.01	
		Secondary Horizontal	Max. Vx	33	-0.00	0.00	0.00	
			Max Tension	18	0.97	0.00	0.00	
			Max. Compression	18	-0.97	0.01	0.00	
			Max. Mx	36	0.01	0.04	0.01	
			Max. My	36	0.01	0.04	0.01	
			Max. Vy	36	0.04	0.04	0.01	
		Top Girt	Max. Vx	34	-0.00	0.00	0.00	
			Max Tension	14	0.44	0.00	0.00	
			Max. Compression	19	-0.42	0.00	0.00	
			Max. Mx	26	0.10	-0.21	0.00	
			Max. My	32	0.10	0.00	0.01	



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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
14	120 - 100	Leg	Max. Vy	26	-0.08	0.00	0.00
			Max. Vx	32	0.00	0.00	0.00
			Max. Tension	15	12.93	1.53	0.08
			Max. Compression	18	-88.12	0.06	-0.00
			Max. Mx	10	-57.38	1.85	-0.22
			Max. My	24	-6.64	-0.03	0.93
		Diagonal	Max. Vy	10	-7.63	0.09	-0.04
			Max. Vx	24	-3.35	-0.02	0.30
			Max. Tension	10	6.08	0.03	-0.00
			Max. Compression	10	-6.25	0.00	0.00
			Max. Mx	35	1.42	0.09	-0.01
			Max. My	32	-1.26	0.08	-0.01
		Secondary Horizontal	Max. Vy	33	0.06	0.09	0.01
			Max. Vx	32	-0.00	0.00	0.00
			Max. Tension	18	1.44	0.00	0.00
			Max. Compression	18	-1.44	0.01	0.00
			Max. Mx	37	-0.11	0.08	0.01
			Max. My	36	-0.07	0.08	0.01
T5	100 - 80	Leg	Max. Vy	37	-0.06	0.08	0.01
			Max. Vx	35	-0.00	0.00	0.00
			Max. Tension	23	97.58	1.76	-0.10
			Max. Compression	10	-115.12	0.14	-0.08
			Max. Mx	10	-115.11	-2.14	0.12
			Max. My	24	-7.88	-0.04	1.14
		Diagonal	Max. Vy	10	-9.11	0.14	-0.08
			Max. Vx	24	-3.71	-0.07	0.76
			Max. Tension	11	6.54	0.03	-0.00
			Max. Compression	10	-7.08	0.00	0.00
			Max. Mx	35	1.45	0.14	-0.01
			Max. My	10	-6.14	-0.02	-0.02
		Secondary Horizontal	Max. Vy	35	-0.07	0.14	-0.01
			Max. Vx	37	0.00	0.00	0.00
			Max. Tension	18	1.90	0.00	0.00
			Max. Compression	18	-1.90	0.02	-0.00
			Max. Mx	32	0.49	0.12	0.01
			Max. My	36	-0.09	0.09	0.02
16	80 - 60	Leg	Max. Vy	32	0.07	0.12	0.01
			Max. Vx	34	-0.00	0.00	0.00
			Max. Tension	23	121.93	2.56	-0.15
			Max. Compression	10	-143.97	-0.31	-0.03
			Max. Mx	10	-143.96	-3.04	0.18
			Max. My	24	-9.35	-0.05	1.76
		Diagonal	Max. Vy	10	-10.08	-0.31	-0.03
			Max. Vx	24	-3.87	-0.05	0.47
			Max. Tension	11	7.49	0.07	0.00
			Max. Compression	10	-8.18	0.00	0.00
			Max. Mx	35	1.66	0.18	0.02
			Max. My	37	-2.28	0.15	0.02
		Secondary Horizontal	Max. Vy	33	0.09	0.17	0.02
			Max. Vx	37	0.00	0.00	0.00
			Max. Tension	10	2.35	0.05	-0.00
			Max. Compression	10	-2.35	0.00	0.00
			Max. Mx	29	0.15	0.14	0.03
			Max. My	32	-0.07	0.13	0.03
T7	60 - 40	Leg	Max. Vy	31	0.09	0.13	0.03
			Max. Vx	34	-0.01	0.00	0.00
			Max. Tension	23	145.94	1.87	-0.12
			Max. Compression	10	-172.60	0.62	-0.04

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T8	40 - 20	Diagonal	Max. Mx	10	-143.95	2.94	-0.27
			Max. My	24	-10.84	-0.01	1.68
			Max. Vy	10	-11.39	0.62	-0.04
			Max. Vx	24	-4.09	0.02	0.35
			Max Tension	10	7.83	0.00	0.00
			Max. Compression	10	-8.24	0.00	0.00
			Max. Mx	35	1.86	0.25	-0.03
			Max. My	32	-0.75	0.19	-0.03
		Leg	Max. Vy	33	0.11	0.22	0.03
			Max. Vx	32	-0.01	0.00	0.00
			Max Tension	23	168.43	1.33	-0.10
			Max. Compression	10	-199.76	1.42	-0.07
			Max. Mx	10	-172.63	3.36	-0.21
			Max. My	24	-12.36	0.05	1.37
			Max. Vy	10	-11.84	1.42	-0.07
			Max. Vx	24	-4.16	0.06	0.34
T9	20 - 0	Diagonal	Max Tension	10	7.96	0.00	0.00
			Max. Compression	10	-8.37	0.00	0.00
			Max. Mx	33	1.25	0.29	-0.03
			Max. My	32	-1.47	0.26	-0.04
			Max. Vy	33	0.12	0.29	-0.03
			Max. Vx	32	-0.01	0.00	0.00
			Max Tension	23	190.80	1.67	-0.10
			Max. Compression	10	-226.94	0.00	0.00
		Leg	Max. Mx	10	-199.74	4.52	-0.26
			Max. My	25	-10.39	0.09	1.38
			Max. Vy	10	-13.55	0.00	0.00
			Max. Vx	24	-4.16	0.11	1.38
			Max Tension	10	8.69	0.00	0.00
			Max. Compression	10	-9.35	0.00	0.00
			Max. Mx	33	0.86	0.40	-0.04
			Max. My	37	-3.52	0.36	0.05
Diagonal	Max. Vy	33	0.14	0.40	-0.04		
	Max. Vx	37	0.01	0.00	0.00		

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	214.28	20.87	-11.97
	Max. H <sub>x</sub>	18	214.28	20.87	-11.97
	Max. H <sub>y</sub>	7	-175.90	-17.88	10.26
	Min. Vert	7	-175.90	-17.88	10.26
	Min. H <sub>x</sub>	7	-175.90	-17.88	10.26
	Min. H <sub>y</sub>	18	214.28	20.87	-11.97
Leg B	Max. Vert	10	225.84	-23.00	-12.46
	Max. H <sub>x</sub>	23	-189.78	20.07	10.78
	Max. H <sub>y</sub>	25	-165.20	16.77	10.87
	Min. Vert	23	-189.78	20.07	10.78
	Min. H <sub>x</sub>	10	225.84	-23.00	-12.46
	Min. H <sub>y</sub>	10	225.84	-23.00	-12.46
Leg A	Max. Vert	2	219.00	0.02	25.13
	Max. H <sub>x</sub>	21	7.58	2.99	0.61
	Max. H <sub>y</sub>	2	219.00	0.02	25.13
	Min. Vert	15	-184.28	-0.05	-21.76
	Min. H <sub>x</sub>	9	13.63	-3.02	1.06



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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H <sub>r</sub>	15	-184.28	-0.05	-21.76

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>y</sub> K	Shear <sub>z</sub> K	Overtuning Moment, M <sub>x</sub> kip-ft	Overtuning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	37.72	0.00	-0.00	15.66	12.68	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	45.26	0.34	-40.94	-4037.67	-44.70	1.50
0.9 Dead+1.0 Wind 0 deg - No Ice	33.95	0.34	-40.94	-4036.22	-48.44	1.55
1.2 Dead+1.0 Wind 30 deg - No Ice	45.26	18.55	-31.60	-3194.59	-1892.31	15.33
0.9 Dead+1.0 Wind 30 deg - No Ice	33.95	18.55	-31.60	-3194.33	-1893.10	15.34
1.2 Dead+1.0 Wind 60 deg - No Ice	45.26	31.57	-18.32	-1858.83	-3207.50	2.48
0.9 Dead+1.0 Wind 60 deg - No Ice	33.95	31.57	-18.32	-1860.63	-3206.32	2.46
1.2 Dead+1.0 Wind 90 deg - No Ice	45.26	39.00	-0.34	-41.12	-3888.70	4.46
0.9 Dead+1.0 Wind 90 deg - No Ice	33.95	39.00	-0.34	-45.75	-3886.55	4.43
1.2 Dead+1.0 Wind 120 deg - No Ice	45.26	37.16	21.15	2068.23	-3624.66	27.61
0.9 Dead+1.0 Wind 120 deg - No Ice	33.95	37.16	21.15	2060.40	-3623.00	27.55
1.2 Dead+1.0 Wind 150 deg - No Ice	45.26	20.49	35.64	3531.25	-1995.46	25.62
0.9 Dead+1.0 Wind 150 deg - No Ice	33.95	20.49	35.64	3521.15	-1996.27	25.56
1.2 Dead+1.0 Wind 180 deg - No Ice	45.26	-0.34	38.51	3883.75	75.30	-1.43
0.9 Dead+1.0 Wind 180 deg - No Ice	33.95	-0.34	38.51	3873.03	71.31	-1.47
1.2 Dead+1.0 Wind 210 deg - No Ice	45.26	-18.55	31.60	3232.38	1922.84	-15.25
0.9 Dead+1.0 Wind 210 deg - No Ice	33.95	-18.55	31.60	3222.62	1915.98	-15.26
1.2 Dead+1.0 Wind 240 deg - No Ice	45.26	-33.67	19.53	1992.44	3404.09	-2.47
0.9 Dead+1.0 Wind 240 deg - No Ice	33.95	-33.67	19.53	1984.62	3394.99	-2.46
1.2 Dead+1.0 Wind 270 deg - No Ice	45.26	-39.00	0.34	78.88	3919.30	-4.53
0.9 Dead+1.0 Wind 270 deg - No Ice	33.95	-39.00	0.34	74.00	3909.42	-4.50
1.2 Dead+1.0 Wind 300 deg - No Ice	45.26	-35.06	-19.94	-1934.53	3489.32	-27.68
0.9 Dead+1.0 Wind 300 deg - No Ice	33.95	-35.06	-19.94	-1936.32	3480.15	-27.63
1.2 Dead+1.0 Wind 330 deg - No Ice	45.26	-20.49	-35.64	-3493.42	2026.19	-25.63
0.9 Dead+1.0 Wind 330 deg - No Ice	33.95	-20.49	-35.64	-3492.83	2019.28	-25.56
1.2 Dead+1.0 Ice+1.0 Temp	131.99	-0.00	0.00	48.00	33.57	0.00

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	Client	KGi	Designed by	JungH

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>y</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>y</sub> kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	131.99	0.07	-12.54	-1232.70	20.59	2.14
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	131.99	5.96	-10.20	-1010.92	-589.67	3.57
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	131.99	10.19	-5.90	-567.54	-1027.18	-0.64
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	131.99	12.36	-0.07	35.06	-1235.29	-2.30
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	131.99	11.36	6.49	699.63	-1115.49	1.34
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	131.99	6.36	11.05	1169.92	-610.98	2.25
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	131.99	-0.07	12.16	1299.46	46.56	-2.14
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	131.99	-5.96	10.20	1107.03	656.81	-3.57
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	131.99	-10.52	6.09	678.32	1119.75	0.64
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	131.99	-12.36	0.07	61.04	1302.44	2.30
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	131.99	-11.03	-6.30	-588.84	1157.23	-1.35
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	131.99	-6.36	-11.05	-1073.81	678.13	-2.25
Dead+Wind 0 deg - Service	37.72	0.09	-10.95	-1068.50	-3.31	0.40
Dead+Wind 30 deg - Service	37.72	4.96	-8.45	-843.15	-497.10	4.10
Dead+Wind 60 deg - Service	37.72	8.45	-4.90	-486.14	-848.62	0.66
Dead+Wind 90 deg - Service	37.72	10.44	-0.09	-0.32	-1030.70	1.19
Dead+Wind 120 deg - Service	37.72	9.94	5.66	563.44	-960.16	7.39
Dead+Wind 150 deg - Service	37.72	5.48	9.54	954.46	-524.71	6.84
Dead+Wind 180 deg - Service	37.72	-0.09	10.30	1048.67	28.75	-0.40
Dead+Wind 210 deg - Service	37.72	-4.96	8.45	874.57	522.55	-4.09
Dead+Wind 240 deg - Service	37.72	-9.01	5.22	543.18	918.45	-0.66
Dead+Wind 270 deg - Service	37.72	-10.44	0.09	31.74	1056.15	-1.20
Dead+Wind 300 deg - Service	37.72	-9.38	-5.33	-506.40	941.23	-7.39
Dead+Wind 330 deg - Service	37.72	-5.48	-9.54	-923.04	550.17	-6.84
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	46.02	0.00	-1.06	-111.08	15.30	-0.01
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	33.19	0.00	-1.06	-115.60	11.43	-0.01
1.2 Dead+1.0 Ev+1.0 Eh 30 deg	46.02	0.53	-0.92	-93.66	-49.68	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 30 deg	33.19	0.53	-0.92	-98.22	-53.43	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 60 deg	46.02	0.92	-0.53	-46.10	-97.23	0.00
0.9 Dead-1.0 Ev+1.0 Eh 60 deg	33.19	0.92	-0.53	-50.74	-100.90	0.00
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	46.02	1.06	0.00	18.88	-114.66	0.01
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	33.19	1.06	0.00	14.12	-118.29	0.01
1.2 Dead+1.0 Ev+1.0 Eh 120 deg	46.02	0.92	0.53	83.85	-97.24	0.01
0.9 Dead-1.0 Ev+1.0 Eh 120 deg	33.19	0.92	0.53	78.98	-100.91	0.01
1.2 Dead+1.0 Ev+1.0 Eh 150 deg	46.02	0.53	0.92	131.43	-49.69	0.01
0.9 Dead-1.0 Ev+1.0 Eh 150 deg	33.19	0.53	0.92	126.48	-53.43	0.01
1.2 Dead+1.0 Ev+1.0 Eh 180 deg	46.02	0.00	1.06	148.85	15.30	0.01
0.9 Dead-1.0 Ev+1.0 Eh 180 deg	33.19	0.00	1.06	143.86	11.43	0.01
1.2 Dead+1.0 Ev+1.0 Eh 210 deg	46.02	-0.53	0.92	131.45	80.29	0.00
0.9 Dead-1.0 Ev+1.0 Eh 210 deg	33.19	-0.53	0.92	126.48	76.30	0.00
1.2 Dead+1.0 Ev+1.0 Eh 240 deg	46.02	-0.92	0.53	83.87	127.87	-0.00



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Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
deg						
0.9 Dead-1.0 Ev+1.0 Eh 240	33.19	-0.92	0.53	78.99	123.79	-0.00
deg						
1.2 Dead+1.0 Ev+1.0 Eh 270	46.02	-1.06	-0.00	18.88	145.27	-0.01
deg						
0.9 Dead-1.0 Ev+1.0 Eh 270	33.19	-1.06	-0.00	14.12	141.17	-0.00
deg						
1.2 Dead+1.0 Ev+1.0 Eh 300	46.02	-0.92	-0.53	-46.11	127.85	-0.01
deg						
0.9 Dead-1.0 Ev+1.0 Eh 300	33.19	-0.92	-0.53	-50.75	123.79	-0.01
deg						
1.2 Dead+1.0 Ev+1.0 Eh 330	46.02	-0.53	-0.92	-93.67	80.27	-0.01
deg						
0.9 Dead-1.0 Ev+1.0 Eh 330	33.19	-0.53	-0.92	-98.23	76.30	-0.01
deg						

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-37.72	0.00	-0.00	37.72	0.00	0.000%
2	0.34	-45.26	-40.94	-0.34	45.26	40.94	0.000%
3	0.34	-33.95	-40.94	-0.34	33.95	40.94	0.000%
4	18.55	-45.26	-31.60	-18.55	45.26	31.60	0.000%
5	18.55	-33.95	-31.60	-18.55	33.95	31.60	0.000%
6	31.57	-45.26	-18.32	-31.57	45.26	18.32	0.000%
7	31.57	-33.95	-18.32	-31.57	33.95	18.32	0.000%
8	39.00	-45.26	-0.34	-39.00	45.26	0.34	0.000%
9	39.00	-33.95	-0.34	-39.00	33.95	0.34	0.000%
10	37.16	-45.26	21.15	-37.16	45.26	-21.15	0.000%
11	37.16	-33.95	21.15	-37.16	33.95	-21.15	0.000%
12	20.49	-45.26	35.64	-20.49	45.26	-35.64	0.000%
13	20.49	-33.95	35.64	-20.49	33.95	-35.64	0.000%
14	-0.34	-45.26	38.51	0.34	45.26	-38.51	0.000%
15	-0.34	-33.95	38.51	0.34	33.95	-38.51	0.000%
16	-18.55	-45.26	31.60	18.55	45.26	-31.60	0.000%
17	-18.55	-33.95	31.60	18.55	33.95	-31.60	0.000%
18	-33.67	-45.26	19.53	33.67	45.26	-19.53	0.000%
19	-33.67	-33.95	19.53	33.67	33.95	-19.53	0.000%
20	-39.00	-45.26	0.34	39.00	45.26	-0.34	0.000%
21	-39.00	-33.95	0.34	39.00	33.95	-0.34	0.000%
22	-35.06	-45.26	-19.94	35.06	45.26	19.94	0.000%
23	-35.06	-33.95	-19.94	35.06	33.95	19.94	0.000%
24	-20.49	-45.26	-35.64	20.49	45.26	35.64	0.000%
25	-20.49	-33.95	-35.64	20.49	33.95	35.64	0.000%
26	0.00	-131.99	0.00	0.00	131.99	-0.00	0.000%
27	0.07	-131.99	-12.54	-0.07	131.99	12.54	0.000%
28	5.96	-131.99	-10.20	-5.96	131.99	10.20	0.000%
29	10.19	-131.99	-5.90	-10.19	131.99	5.90	0.000%
30	12.36	-131.99	-0.07	-12.36	131.99	0.07	0.000%
31	11.36	-131.99	6.49	-11.36	131.99	-6.49	0.000%
32	6.36	-131.99	11.05	-6.36	131.99	-11.05	0.000%
33	-0.07	-131.99	12.16	0.07	131.99	-12.16	0.000%
34	-5.96	-131.99	10.20	5.96	131.99	-10.20	0.000%
35	-10.52	-131.99	6.09	10.52	131.99	-6.09	0.000%
36	-12.36	-131.99	0.07	12.36	131.99	-0.07	0.000%
37	-11.03	-131.99	-6.30	11.03	131.99	6.30	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
38	-6.36	-131.99	-11.05	6.36	131.99	11.05	0.000%
39	0.09	-37.72	-10.95	-0.09	37.72	10.95	0.000%
40	4.96	-37.72	-8.45	-4.96	37.72	8.45	0.000%
41	8.45	-37.72	-4.90	-8.45	37.72	4.90	0.000%
42	10.44	-37.72	-0.09	-10.44	37.72	0.09	0.000%
43	9.94	-37.72	5.66	-9.94	37.72	-5.66	0.000%
44	5.48	-37.72	9.54	-5.48	37.72	-9.54	0.000%
45	-0.09	-37.72	10.30	0.09	37.72	-10.30	0.000%
46	-4.96	-37.72	8.45	4.96	37.72	-8.45	0.000%
47	-9.01	-37.72	5.22	9.01	37.72	-5.22	0.000%
48	-10.44	-37.72	0.09	10.44	37.72	-0.09	0.000%
49	-9.38	-37.72	-5.33	9.38	37.72	5.33	0.000%
50	-5.48	-37.72	-9.54	5.48	37.72	9.54	0.000%
51	0.00	-46.02	-1.06	-0.00	46.02	1.06	0.000%
52	0.00	-33.19	-1.06	-0.00	33.19	1.06	0.000%
53	0.53	-46.02	-0.92	-0.53	46.02	0.92	0.000%
54	0.53	-33.19	-0.92	-0.53	33.19	0.92	0.000%
55	0.92	-46.02	-0.53	-0.92	46.02	0.53	0.000%
56	0.92	-33.19	-0.53	-0.92	33.19	0.53	0.000%
57	1.06	-46.02	0.00	-1.06	46.02	0.00	0.000%
58	1.06	-33.19	0.00	-1.06	33.19	0.00	0.000%
59	0.92	-46.02	0.53	-0.92	46.02	-0.53	0.000%
60	0.92	-33.19	0.53	-0.92	33.19	-0.53	0.000%
61	0.53	-46.02	0.92	-0.53	46.02	-0.92	0.000%
62	0.53	-33.19	0.92	-0.53	33.19	-0.92	0.000%
63	0.00	-46.02	1.06	0.00	46.02	-1.06	0.000%
64	0.00	-33.19	1.06	-0.00	33.19	-1.06	0.000%
65	-0.53	-46.02	0.92	0.53	46.02	-0.92	0.000%
66	-0.53	-33.19	0.92	0.53	33.19	-0.92	0.000%
67	-0.92	-46.02	0.53	0.92	46.02	-0.53	0.000%
68	-0.92	-33.19	0.53	0.92	33.19	-0.53	0.000%
69	-1.06	-46.02	0.00	1.06	46.02	0.00	0.000%
70	-1.06	-33.19	0.00	1.06	33.19	0.00	0.000%
71	-0.92	-46.02	-0.53	0.92	46.02	0.53	0.000%
72	-0.92	-33.19	-0.53	0.92	33.19	0.53	0.000%
73	-0.53	-46.02	-0.92	0.53	46.02	0.92	0.000%
74	-0.53	-33.19	-0.92	0.53	33.19	0.92	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000358
3	Yes	4	0.00000001	0.00000333
4	Yes	4	0.00000001	0.00000380
5	Yes	4	0.00000001	0.00000329
6	Yes	4	0.00000001	0.00000384
7	Yes	4	0.00000001	0.00000331
8	Yes	4	0.00000001	0.00000412
9	Yes	4	0.00000001	0.00000418
10	Yes	4	0.00000001	0.00000401
11	Yes	4	0.00000001	0.00000373
12	Yes	4	0.00000001	0.00000476
13	Yes	4	0.00000001	0.00000419
14	Yes	4	0.00000001	0.00000423



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15	Yes	4	0.00000001	0.00000366
16	Yes	4	0.00000001	0.00000385
17	Yes	4	0.00000001	0.00000333
18	Yes	4	0.00000001	0.00000323
19	Yes	4	0.00000001	0.00000290
20	Yes	4	0.00000001	0.00000410
21	Yes	4	0.00000001	0.00000416
22	Yes	4	0.00000001	0.00000444
23	Yes	4	0.00000001	0.00000389
24	Yes	4	0.00000001	0.00000470
25	Yes	4	0.00000001	0.00000415
26	Yes	4	0.00000001	0.00000319
27	Yes	4	0.00000001	0.00001490
28	Yes	4	0.00000001	0.00001463
29	Yes	4	0.00000001	0.00001481
30	Yes	4	0.00000001	0.00001497
31	Yes	4	0.00000001	0.00001536
32	Yes	4	0.00000001	0.00001604
33	Yes	4	0.00000001	0.00001647
34	Yes	4	0.00000001	0.00001626
35	Yes	4	0.00000001	0.00001608
36	Yes	4	0.00000001	0.00001621
37	Yes	4	0.00000001	0.00001631
38	Yes	4	0.00000001	0.00001568
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001
51	Yes	4	0.00000001	0.00000001
52	Yes	4	0.00000001	0.00000001
53	Yes	4	0.00000001	0.00000001
54	Yes	4	0.00000001	0.00000001
55	Yes	4	0.00000001	0.00000001
56	Yes	4	0.00000001	0.00000001
57	Yes	4	0.00000001	0.00000001
58	Yes	4	0.00000001	0.00000001
59	Yes	4	0.00000001	0.00000001
60	Yes	4	0.00000001	0.00000001
61	Yes	4	0.00000001	0.00000001
62	Yes	4	0.00000001	0.00000001
63	Yes	4	0.00000001	0.00000001
64	Yes	4	0.00000001	0.00000001
65	Yes	4	0.00000001	0.00000001
66	Yes	4	0.00000001	0.00000001
67	Yes	4	0.00000001	0.00000001
68	Yes	4	0.00000001	0.00000001
69	Yes	4	0.00000001	0.00000001
70	Yes	4	0.00000001	0.00000001
71	Yes	4	0.00000001	0.00000001
72	Yes	4	0.00000001	0.00000001
73	Yes	4	0.00000001	0.00000001
74	Yes	4	0.00000001	0.00000001

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### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 140	4.207	47	0.246	0.040
T2	140 - 126.667	3.186	47	0.223	0.031
T3	126.667 - 120	2.602	43	0.198	0.026
T4	120 - 100	2.332	43	0.183	0.023
T5	100 - 80	1.601	43	0.155	0.015
T6	80 - 60	1.007	43	0.111	0.010
T7	60 - 40	0.580	43	0.079	0.007
T8	40 - 20	0.276	43	0.053	0.004
T9	20 - 0	0.082	43	0.026	0.002

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
163.00	Feed Line	47	4.207	0.246	0.040	109128
159.00	16 ft Whip	47	4.155	0.245	0.039	109128
157.00	Platform w/Rail	47	4.050	0.243	0.038	109128
150.00	CCISeismic Tower Section 1	47	3.686	0.236	0.035	54564
149.50	CCISeismic general cable 7/8" Coax From 0 to 159 (140ft to159ft)	47	3.660	0.235	0.035	51966
148.50	CCISeismic (2) general cable 0.78" DC From 0 to 157 (140ft to157ft)	47	3.609	0.234	0.034	47447
146.00	Sector Frame	47	3.482	0.231	0.033	38974
143.50	CCISeismic W/G Ladder B From 10 to 147 (140ft to147ft)	47	3.357	0.228	0.032	33127
143.00	CCISeismic general cable 7/8" Coax From 0 to 146 (140ft to146ft)	47	3.333	0.227	0.032	32227
133.33	CCISeismic Tower Section 2	43	2.884	0.211	0.028	30237
132.00	14 ft Face Mount	43	2.827	0.209	0.028	30907
126.50	6 ft Sidearm	43	2.595	0.197	0.026	33555
123.33	CCISeismic Tower Section 3	43	2.466	0.190	0.024	34277
110.00	CCISeismic Tower Section 4	43	1.952	0.168	0.019	34377
109.25	CCISeismic general cable 7/8" Coax From 0 to 118.5 (100ft to118.5ft)	43	1.924	0.167	0.019	34353
107.00	6 ft Sidearm	43	1.843	0.165	0.018	34282
90.00	CCISeismic Tower Section 5	43	1.284	0.134	0.012	28530
89.50	CCISeismic general cable 1/2" Coax From 0 to 99 (80ft to99ft)	43	1.269	0.133	0.012	28301
70.00	CCISeismic Tower Section 6	43	0.775	0.093	0.008	31183
50.00	CCISeismic Tower Section 7	43	0.415	0.066	0.005	45246
47.50	4 ft Sidearm	43	0.378	0.063	0.005	45924
43.75	CCISeismic general cable 1/2" Coax From 0 to 47.5 (40ft to47.5ft)	43	0.325	0.058	0.005	46963
37.50	4 ft Sidearm	43	0.246	0.050	0.004	45408
30.00	CCISeismic Tower Section 8	43	0.164	0.040	0.003	39287
28.75	CCISeismic W/G Ladder A From 0 to 37.5 (20ft to37.5ft)	43	0.152	0.038	0.003	38408
17.25	CCISeismic W/G Ladder E From 14.5 to 147 (14.5ft to20ft)	43	0.065	0.022	0.002	38728
16.00	CCISeismic W/G Ladder D From 12 to 152 (12ft to20ft)	43	0.058	0.021	0.001	41535
15.50	CCISeismic W/G Ladder C From 11 to 160 (11ft to20ft)	43	0.056	0.020	0.001	42855



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Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
15.00	CCISeismic W/G Ladder B From 10 to 147 (10ft to20ft)	43	0.053	0.019	0.001	44280
10.00	CCISeismic Tower Section 9	43	0.032	0.013	0.001	66420

### Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	160 - 140	15.535	10	0.875	0.150
T2	140 - 126.667	11.966	10	0.803	0.116
T3	126.667 - 120	9.784	10	0.719	0.096
T4	120 - 100	8.766	10	0.672	0.086
T5	100 - 80	6.012	10	0.578	0.058
T6	80 - 60	3.779	10	0.419	0.037
T7	60 - 40	2.176	10	0.295	0.025
T8	40 - 20	1.035	10	0.199	0.015
T9	20 - 0	0.306	10	0.097	0.007

### Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
163.00	Feed Line	10	15.535	0.875	0.150	34335
159.00	16 ft Whip	10	15.353	0.872	0.148	34335
157.00	Platform w/Rail	10	14.959	0.866	0.144	34335
150.00	CCISeismic Tower Section 1	10	13.723	0.844	0.132	17167
149.50	CCISeismic general cable 7/8" Coax From 0 to 159 (140ft to159ft)	10	13.633	0.842	0.131	16350
148.50	CCISeismic (2) general cable 0.78" DC From 0 to 157 (140ft to157ft)	10	13.455	0.839	0.129	14928
146.00	Sector Frame	10	13.011	0.829	0.125	12262
143.50	CCISeismic W/G Ladder B From 10 to 147 (140ft to147ft)	10	12.572	0.819	0.121	10421
143.00	CCISeismic general cable 7/8" Coax From 0 to 146 (140ft to146ft)	10	12.484	0.817	0.120	10135
133.33	CCISeismic Tower Section 2	10	10.851	0.765	0.106	9056
132.00	14 ft Face Mount	10	10.633	0.757	0.104	9157
126.50	6 ft Sidearm	10	9.758	0.718	0.096	9574
123.33	CCISeismic Tower Section 3	10	9.269	0.695	0.091	9777
110.00	CCISeismic Tower Section 4	10	7.331	0.624	0.071	9686
109.25	CCISeismic general cable 7/8" Coax From 0 to 118.5 (100ft to118.5ft)	10	7.228	0.621	0.070	9664
107.00	6 ft Sidearm	10	6.923	0.612	0.067	9599
90.00	CCISeismic Tower Section 5	10	4.820	0.503	0.046	7851
89.50	CCISeismic general cable 1/2" Coax From 0 to 99 (80ft to99ft)	10	4.764	0.499	0.046	7787
70.00	CCISeismic Tower Section 6	10	2.906	0.350	0.030	8446
50.00	CCISeismic Tower Section 7	10	1.556	0.247	0.020	12037
47.50	4 ft Sidearm	10	1.416	0.235	0.019	12218
43.75	CCISeismic general cable 1/2" Coax	10	1.219	0.217	0.017	12495

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Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
37.50	From 0 to 47.5 (40ft to47.5ft) 4 ft Sidearm	10	0.920	0.187	0.014	12086
30.00	CCISeismic Tower Section 8	10	0.613	0.148	0.011	10464
28.75	CCISeismic W/G Ladder A From 0 to 37.5 (20ft to37.5ft)	10	0.568	0.142	0.010	10231
17.25	CCISeismic W/G Ladder E From 14.5 to 147 (14.5ft to20ft)	10	0.244	0.083	0.006	10323
16.00	CCISeismic W/G Ladder D From 12 to 152 (12ft to20ft)	10	0.218	0.077	0.005	11071
15.50	CCISeismic W/G Ladder C From 11 to 160 (11ft to20ft)	10	0.209	0.074	0.005	11423
15.00	CCISeismic W/G Ladder B From 10 to 147 (10ft to20ft)	10	0.200	0.072	0.005	11803
10.00	CCISeismic Tower Section 9	10	0.119	0.048	0.003	17704

### Bolt Design Data

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria	
	ft			in							
T1	160	Leg	A325N	0.63	4	5.85	20.34	0.288	✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	5.18	6.67	0.777	✓	1	Member Block Shear
		Top Girt	A325N	0.63	1	0.31	10.44	0.029	✓	1	Gusset Bearing
T2	140	Diagonal	A325N	0.63	1	5.05	10.25	0.493	✓	1	Member Block Shear
		Secondary Horizontal	A325N	0.63	2	0.41	8.92	0.046	✓	1	Member Block Shear
		Top Girt	A325N	0.63	1	0.23	13.05	0.018	✓	1	Member Bearing
T3	126.667	Leg	A325N	0.63	4	12.17	20.34	0.598	✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	5.36	10.25	0.523	✓	1	Member Block Shear
		Secondary Horizontal	A325N	0.63	2	0.48	8.92	0.054	✓	1	Member Block Shear
T4	120	Top Girt	A325N	0.63	1	0.44	10.44	0.042	✓	1	Member Bearing
		Leg	A325N	0.75	4	18.23	30.10	0.606	✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	6.08	9.72	0.625	✓	1	Member Block Shear
T5	100	Secondary Horizontal	A325N	0.75	2	0.72	8.00	0.090	✓	1	Member Block Shear
		Leg	A325N	0.88	4	24.40	41.56	0.587	✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	6.54	10.44	0.626	✓	1	Gusset Bearing
T6	80	Secondary Horizontal	A325N	0.75	2	0.95	8.51	0.112	✓	1	Member Block Shear
		Leg	A325N	1.00	4	30.48	54.52	0.559	✓	1	Bolt Tension
		Diagonal	A325N	0.63	1	7.49	10.44	0.718	✓	1	Gusset Bearing
T7	60	Secondary Horizontal	A325N	0.75	2	1.18	11.35	0.104	✓	1	Member Block Shear
		Leg	A325N	1.00	4	36.49	54.52	0.669	✓	1	Bolt Tension



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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T8	40	Diagonal	A325N	0.63	1	7.83	10.44	0.750	1	Gusset Bearing
		Leg	A325N	1.00	6	28.07	54.52	0.515	1	Bolt Tension
T9	20	Diagonal	A325N	0.63	1	7.96	10.44	0.762	1	Gusset Bearing
		Diagonal	A325N	0.63	1	8.69	10.44	0.832	1	Gusset Bearing

### Compression Checks

### Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
T1	160 - 140	P2.5x.203<ERW>	20.00	4.88	61.4 K=1.00	1.59	-33.52	58.63	0.572 <sup>1</sup>
T2	140 - 126.667	P2.5x.276<ERW>	13.36	3.40	43.8 K=1.00	2.11	-47.22	89.00	0.531 <sup>1</sup>
T3	126.667 - 120	P2.5x.276<ERW>	6.68	3.31	42.8 K=1.00	2.11	-61.35	89.59	0.685 <sup>1</sup>
T4	120 - 100	P2.5x.552<ERW>	20.03	3.35	47.1 K=1.00	3.81	-88.12	157.07	0.561 <sup>1</sup>
T5	100 - 80	P3x.3<ERW>	20.03	3.34	35.0 K=1.00	2.82	-115.11	125.17	0.920 <sup>1</sup>
T6	80 - 60	P4x.337<ERW>	20.04	5.03	40.7 K=1.00	4.12	-143.97	177.12	0.813 <sup>1</sup>
T7	60 - 40	P5x.375<ERW>	20.03	9.73	63.2 K=1.00	5.71	-172.60	206.85	0.834 <sup>1</sup>
T8	40 - 20	P5x.375<ERW>	20.04	9.77	63.4 K=1.00	5.71	-199.76	206.44	0.968 <sup>1</sup>
T9	20 - 0	ROHN 6 EHS<ERW>	20.03	9.82	52.8 K=1.00	6.27	-226.94	247.98	0.915 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
T1	160 - 140	L1 3/4x1 3/4x3/16	9.93	4.68	163.7 K=1.00	0.62	-5.26	6.64	0.793 <sup>1</sup>
T2	140 - 126.667	L2x2x1/4	11.66	5.74	176.3 K=1.00	0.94	-4.90	8.64	0.567 <sup>1</sup>

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KL/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>u</sub> K	Ratio $\frac{P_u}{\phi P_u}$
T3	126.667 - 120	L2x2x1/4	12.14	5.98	183.4 K=1.00	0.94	-5.86	7.98	0.734 <sup>1</sup>
T4	120 - 100	L2 1/2x2 1/2x3/16	13.94	6.88	166.8 K=1.00	0.90	-6.25	9.28	0.674 <sup>1</sup>
T5	100 - 80	L3x3x3/16	15.75	7.75	156.1 K=1.00	1.09	-7.08	12.80	0.553 <sup>1</sup>
T6	80 - 60	L3x3x1/4	18.93	9.40	190.6 K=1.00	1.44	-8.18	11.35	0.721 <sup>1</sup>
T7	60 - 40	L3 1/2x3 1/2x1/4	20.69	10.22	176.6 K=1.00	1.69	-8.24	15.50	0.531 <sup>1</sup>
T8	40 - 20	L3 1/2x3 1/2x1/4	22.55	11.16	193.0 K=1.00	1.69	-8.37	12.99	0.644 <sup>1</sup>
T9	20 - 0	L4x4x1/4	24.42	12.03	181.6 K=1.00	1.94	-9.35	16.83	0.556 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>u</sub> controls

### Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KL/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>u</sub> K	Ratio $\frac{P_u}{\phi P_u}$
T2	140 - 126.667	L2x2x1/4	9.64	9.40	106.3 K=0.57	0.94	-0.82	21.77	0.038 <sup>1</sup>
T3	126.667 - 120	L2x2x1/4	10.29	10.05	109.5 K=0.55	0.94	-0.97	21.03	0.046 <sup>1</sup>
T4	120 - 100	L2 1/2x2 1/2x3/16	12.32	12.08	106.6 K=0.57	0.90	-1.44	20.87	0.069 <sup>1</sup>
T5	100 - 80	L3x3x3/16	14.34	14.05	104.9 K=0.58	1.09	-1.90	25.24	0.075 <sup>1</sup>
T6	80 - 60	L3x3x1/4	16.22	15.85	111.1 K=0.54	1.44	-2.35	31.71	0.074 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>u</sub> controls

### Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KL/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>u</sub> K	Ratio $\frac{P_u}{\phi P_u}$
T1	160 - 140	L2x2x5/16	8.65	8.12	250.0 K=1.00	1.15	-0.37	5.27	0.070 <sup>1</sup>
T2	140 - 126.667	KL/R > 200 (C) - 5 L2 1/2x2 1/2x3/16	8.67	8.15	197.6 K=1.00	0.90	-0.23	6.61	0.035 <sup>1</sup>
T3	126.667 - 120	L3x3x3/16	9.98	9.46	190.4 K=1.00	1.09	-0.42	8.60	0.049 <sup>1</sup>



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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
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<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Tension Checks

### Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	P2.5x.203<ERW>	20.00	4.88	61.4	1.59	23.40	77.27	0.303 <sup>1</sup>
T2	140 - 126.667	P2.5x.276<ERW>	13.36	3.40	43.8	2.11	35.81	102.40	0.350 <sup>1</sup> ✓
T3	126.667 - 120	P2.5x.276<ERW>	6.68	3.31	42.8	2.11	48.68	102.40	0.475 <sup>1</sup> ✓
T4	120 - 100	P2.5x.552<ERW>	20.03	3.35	47.1	3.81	72.93	184.73	0.395 <sup>1</sup> ✓
T5	100 - 80	P3x.3<ERW>	20.03	3.34	35.0	2.82	97.58	136.93	0.713 <sup>1</sup> ✓
T6	80 - 60	P4x.337<ERW>	20.04	5.03	40.7	4.12	121.93	199.92	0.610 <sup>1</sup> ✓
T7	60 - 40	P5x.375<ERW>	20.03	9.73	63.2	5.71	145.94	277.07	0.527 <sup>1</sup> ✓
T8	40 - 20	P5x.375<ERW>	20.04	9.77	63.4	5.71	168.43	277.07	0.608 <sup>1</sup> ✓
T9	20 - 0	ROHN 6 EHS<ERW>	20.03	9.82	52.8	6.27	190.81	303.95	0.628 <sup>1</sup> ✓

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	L1 3/4x1 3/4x3/16	9.93	4.68	107.8	0.36	5.18	15.68	0.330 <sup>1</sup> ✓
T2	140 - 126.667	L2x2x1/4	11.13	5.48	110.7	0.56	5.05	24.49	0.206 <sup>1</sup> ✓
T3	126.667 - 120	L2x2x1/4	12.14	5.98	120.5	0.56	5.36	24.49	0.219 <sup>1</sup> ✓
T4	120 - 100	L2 1/2x2 1/2x3/16	13.94	6.88	108.3	0.57	6.08	24.84	0.245 <sup>1</sup> ✓
T5	100 - 80	L3x3x3/16	15.75	7.75	100.9	0.71	6.54	30.97	0.211 <sup>1</sup> ✓

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T6	80 - 60	L3x3x1/4	18.93	9.40	123.1	0.94	7.49	40.86	0.183 <sup>1</sup> ✓
T7	60 - 40	L3 1/2x3 1/2x1/4	20.69	10.22	114.0	1.13	7.83	49.02	0.160 <sup>1</sup> ✓
T8	40 - 20	L3 1/2x3 1/2x1/4	22.55	11.16	124.4	1.13	7.96	49.02	0.162 <sup>1</sup> ✓
T9	20 - 0	L4x4x1/4	23.52	11.59	112.6	1.31	8.69	57.18	0.152 <sup>1</sup> ✓

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T2	140 - 126.667	L2x2x1/4	9.64	9.40	185.2	0.56	0.82	24.49	0.033 <sup>1</sup> ✓
T3	126.667 - 120	L2x2x1/4	10.29	10.05	198.0	0.56	0.97	24.49	0.040 <sup>1</sup> ✓
T4	120 - 100	L2 1/2x2 1/2x3/16	12.32	12.08	186.4	0.55	1.44	24.08	0.060 <sup>1</sup> ✓
T5	100 - 80	L3x3x3/16	14.34	14.05	179.5	0.69	1.90	30.21	0.063 <sup>1</sup> ✓
T6	80 - 60	L3x3x1/4	16.22	15.85	204.5	0.92	2.35	39.84	0.059 <sup>1</sup> ✓

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	L2x2x5/16	8.65	8.12	167.8	0.69	0.31	29.87	0.010 <sup>1</sup> ✓
T2	140 - 126.667	L2 1/2x2 1/2x3/16	8.67	8.15	130.0	0.57	0.03	24.84	0.001 <sup>1</sup> ✓
T3	126.667 - 120	L3x3x3/16	9.98	9.46	124.5	0.71	0.44	30.97	0.014 <sup>1</sup> ✓

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls



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### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\sigma P_{allow}$ K	% Capacity	Pass Fail
T1	160 - 140	Leg	P2.5x.203<ERW>	1	-33.52	58.63	57.2	Pass
		Diagonal	L1 3/4x1 3/4x3/16	12	-5.26	6.64	79.3	Pass
		Top Girt	L2x2x5/16	5	-0.37	5.27	7.0	Pass
T2	140 - 126.667	Leg	P2.5x.216<ERW>	31	-47.22	89.00	53.1	Pass
		Diagonal	L2x2x1/4	38	-4.90	8.64	56.7	Pass
		Secondary Horizontal	L2x2x1/4	43	-0.82	21.77	3.8	Pass
		Top Girt	L2 1/2x2 1/2x3/16	34	-3.23	6.61	3.5	Pass
T3	126.667 - 120	Leg	P2.5x.276<ERW>	55	-61.35	89.59	68.5	Pass
		Diagonal	L2x2x1/4	62	-5.86	7.98	73.4	Pass
		Secondary Horizontal	L2x2x1/4	67	-0.97	21.03	4.6	Pass
T4	120 - 100	Top Girt	L3x3x3/16	59	-0.42	8.60	4.9	Pass
		Leg	P2.5x.552<ERW>	70	-88.12	157.07	56.1	Pass
		Diagonal	L2 1/2x2 1/2x3/16	74	-6.25	9.28	67.4	Pass
T5	100 - 80	Secondary Horizontal	L2 1/2x2 1/2x3/16	79	-1.44	20.87	6.9	Pass
		Leg	P3x.3<ERW>	101	-115.11	125.17	92.0	Pass
		Diagonal	L3x3x3/16	104	-7.08	12.80	55.3	Pass
T6	80 - 60	Secondary Horizontal	L3x3x3/16	109	-1.90	25.24	7.5	Pass
		Leg	P4x.337<ERW>	131	-143.97	177.12	81.3	Pass
		Diagonal	L3x3x1/4	134	-8.18	11.35	72.1	Pass
T7	60 - 40	Secondary Horizontal	L3x3x1/4	139	-2.35	31.71	7.4	Pass
		Leg	P5x.375<LRW>	152	-172.60	206.85	83.4	Pass
		Diagonal	L3 1/2x3 1/2x1/4	155	-8.24	15.50	53.1	Pass
T8	40 - 20	Leg	P5x.375<ERW>	167	-199.76	206.44	96.8	Pass
		Diagonal	L3 1/2x3 1/2x1/4	170	-8.37	12.99	64.4	Pass
T9	20 - 0	Leg	ROHN 6 EHS<ERW>	182	-226.94	247.98	91.5	Pass
		Diagonal	L4x4x1/4	185	-9.35	16.83	55.6	Pass
Summary								
Leg (T8)							96.8	Pass
Diagonal (T1)							79.3	Pass
Secondary Horizontal (T5)							7.5	Pass
Top Girt (T1)							7.0	Pass
Bolt Checks							83.2	Pass
RATING -							96.8	Pass

# CCIplate

Project Information	
BU #	28229
Site Name	Windsor
Order #	REV05

Tower Information	
Tower Type	Self Support
TIA-222 Rev	H

Apply TIA-222-H Section 15.5

Applied Loads		
	Comp.	Uplift
Axial (k)	225.84	189.79
Shear (k)	26.16	22.78

Anchor Rod Data	
Quantity:	6
Diameter (in):	1
Material Grade:	A354-BC
Grout Considered:	
$l_{ar}$ (in):	0
Eta Factor, $\eta$ :	
Thread Type:	N-Included
Configuration:	Symmetrical

Fy=109 ksi Fu=125 ksi  
Not Considered,  $l_{ar} \leq 1(d)$

Anchor Rod Results	
Axial, $Pu_c$ (kips)	37.64
Shear, $Vu$ (kips)	4.36
Moment, $Mu$ (kip-in)	-
Axial Cap., $\phi Pn_c$ (kips)	66.05
Shear Cap., $\phi Vn$ (kips)	19.82
Moment Cap., $\phi Mn$ (kip-in)	-
Stress Rating	58.9%

Pass



Site Name: Windsor  
 Site Number: 28229  
 Engineer: JHH  
 Engineering Number: REV05  
 Date: 10/21/2020

**Reactions**

Compression/Leg (P): 225.8 k  
 Uplift/Leg (U): 189.8 k

**Foundation Parameters**

Equivalent Diameter of Caisson:	5.8 ft	Vertical Steel Rebar Size #:	1 3/8" R71
Bottom Pad Width:	8.0 ft	# of rebars:	4
Caisson Embedment:	11.5 ft	Rebar Area:	1.58 in <sup>2</sup>
Caisson Height Above Ground:	1.5 ft	Rebar Yield Strength (F <sub>y</sub> ):	120 ksi
Minimum Embedment to Rock:	0.00 ft	Rebar Ultimate Strength (F <sub>u</sub> ):	150 ksi
Diameter of Drill Holes:	4.0 in		
Rock Anchors Circle:	5.0 ft		
Rock Anchor Bonding Length:	20 ft		

**Soil Properties**

Unit Weight of Soil above Rock: 110.0 pcf  
 Unit Weight of Rock: 165.0 pcf  
 Depth to Rock from Ground: 26.00 ft  
 Pullout Angle: 30 degrees  
 Ultimate End Bearing Pressure: 24000 psf  
 Ultimate Rock-Grout Bond Stress: 100 psi

**Compression**

P<sub>u</sub>: 276.7 k  
 $\phi_s P_n$ : 1152.0 k  
 P<sub>u</sub>/ $\phi_s P_n$ : 0.24 Result: OK

**Uplift**

Bond Capacity / Anchor: 226.2 k  
 Total Bond Capacity: 904.8 k  
 T<sub>u</sub>/ $\phi_s T_n$ : 0.21 Result: OK

Rebar Capacity: 682.6 k  
 T<sub>u</sub>/ $\phi_s T_n$ : 0.28 Result: OK

Volume of Soil: 24072.5 cf  
 Volume of Rock: 20495.1 cf  
 Pullout Weight: 6080.5 k  
 $\phi_s T_n$ : 5472.5 k



BU: 28229  
 WO: Windsor  
 Order: REV05

Structure:  
 Rev: H

Location					
	Decimal Degrees	Deg	Min	Sec	
Lat:	41.866361	+	41	51	58.90
Long:	-72.674777	-	72	40	29.20

Code and Site Parameters	
Seismic Design Code:	TIA-222-H
Site Soil:	B Rock
Risk Category:	II
<u>USGS Seismic Reference</u>	
S <sub>0</sub> :	0.1790 g
S <sub>1</sub> :	0.0550 g
T <sub>1</sub> :	6 s

Seismic Design Category Determination	
Importance Factor, I <sub>p</sub> :	1
Acceleration-based site coefficient, F <sub>a</sub> :	0.9000
Velocity-based site coefficient, F <sub>v</sub> :	0.8000
Design spectral response acceleration short period, S <sub>D5</sub> :	0.1074 g
Design spectral response acceleration 1 s period, S <sub>D1</sub> :	0.0293 g
Seismic Design Category Based on S <sub>D5</sub> :	A
Seismic Design Category Based on S <sub>D1</sub> :	A
Seismic Design Category Based on S <sub>1</sub> :	N/A
Controlling Seismic Design Category:	A





BU: 28229  
 WO: Windsor  
 Order: REV05

Structure:   
 Rev: H

Tower Details		
Tower Type:	Self-Support	
Height, h:	160	ft
Effective Seismic Weight, W:	35.24	kips
Amplification Factor, A <sub>s</sub> :	1.0	2.7.8.1
Seismic Base Shear		
Response Modification Factor, R:	3	
w <sub>a</sub> :	14.8548	ft
w <sub>0</sub> :	22.8646	ft
W <sub>1</sub> :	20.1599	kips
Weight of Structure and Appurtenances within top 5%, W <sub>2</sub> :	7.7218	kips
K <sub>f</sub> :	4540	ft
F <sub>a</sub> :	2.2401	hz
Approximate Fundamental Period Self-Support, T <sub>a</sub> :	0.4464	s
		2.7.7.1.3.2
Seismic Response Coefficient, C <sub>s</sub> :	0.0358	2.7.7.1.1
Seismic Response Coefficient Max 1, C <sub>s,max</sub> :	0.0219	2.7.7.1.1
Seismic Response Coefficient Max 2, C <sub>s,max</sub> :	N/A	2.7.7.1.1
Seismic Response Coefficient Min 1, C <sub>s,min</sub> :	0.0300	2.7.7.1.1
Seismic Response Coefficient Min 2, C <sub>s,min</sub> :	N/A	2.7.7.1.1
Controlling Seismic Response Coefficient, C <sub>sc</sub> :	0.0300	
Seismic Base Shear, V:	1.057	kips
		2.7.7.1.1
Vertical Distribution Factors		
Period Related Exponent, k:	1.000	2.7.7.1.2
Sum of w <sub>i</sub> <sup>k</sup> :	3249.48	2.7.7.1.2

Tower Section Leads								
Section Number	Length	Top Height	Mid Height, $h_x$	Section Weight, $w_x$	$w_x h_x^3$	$C_{v1}$	$F_{v1}$	$F_{v2}$
1	20.00	160.00	150.00	1.0534	158.01	0.0486	0.0514	0.0226
2	13.33	140.00	133.33	1.0068	134.24	0.0413	0.0437	0.0216
3	6.67	126.67	123.33	0.6024	74.29	0.0229	0.0242	0.0129
4	20.00	120.00	110.00	1.8805	206.86	0.0637	0.0673	0.0404
5	20.00	100.00	90.00	2.0920	188.28	0.0579	0.0613	0.0449
6	20.00	80.00	70.00	2.4458	171.21	0.0527	0.0557	0.0525
7	20.00	60.00	50.00	2.6482	132.41	0.0407	0.0431	0.0569
8	20.00	40.00	30.00	2.7784	83.35	0.0257	0.0271	0.0597
9	20.00	20.00	10.00	3.2805	32.80	0.0101	0.0107	0.0705
Sum				27.0379	1725.15			



Discrete Loads						
Name	$h_s$	$w_s$	$w_s h_s^3$	$C_{ds}$	$F_{ds}$	$F_{dvs}$
16 ft Whip	159.00	0.0400	6.36	0.0020	0.0021	0.0009
tower mounts Platform w/Rail	157.00	2.5000	392.50	0.1208	0.1277	0.0537
(4) amphenol BXA-70080/BCF	157.00	0.0920	14.44	0.0044	0.0047	0.0020
(4) amphenol BXA-70080/BCF	157.00	0.0920	14.44	0.0044	0.0047	0.0020
(4) amphenol BXA-70080/BCF	157.00	0.0920	14.44	0.0044	0.0047	0.0020
(4) ericsson RRUS A2 Module	157.00	0.0800	12.56	0.0039	0.0041	0.0017
(4) ericsson RRUS A2 Module	157.00	0.0800	12.56	0.0039	0.0041	0.0017
(4) ericsson RRUS A2 Module	157.00	0.0800	12.56	0.0039	0.0041	0.0017
(2) RRH 3JR52709AA 2x60	157.00	0.1100	17.27	0.0053	0.0056	0.0024
(2) RRH 3JR52709AA 2x60	157.00	0.1100	17.27	0.0053	0.0056	0.0024
(2) RRH 3JR52709AA 2x60	157.00	0.1100	17.27	0.0053	0.0056	0.0024
RRH 4x30-4T4R B13	157.00	0.0572	8.98	0.0028	0.0029	0.0012
RRH 4x30-4T4R B13	157.00	0.0572	8.98	0.0028	0.0029	0.0012
RRH 4x30-4T4R B13	157.00	0.0572	8.98	0.0028	0.0029	0.0012
RRH 4x30-4T4R B25	157.00	0.0510	8.01	0.0025	0.0026	0.0011
RRH 4x30-4T4R B25	157.00	0.0510	8.01	0.0025	0.0026	0.0011
RRH 4x30-4T4R B25	157.00	0.0510	8.01	0.0025	0.0026	0.0011
(4) mscl 10"x7"x2" TMA	157.00	0.0800	12.56	0.0039	0.0041	0.0017
(4) mscl 10"x7"x2" TMA	157.00	0.0800	12.56	0.0039	0.0041	0.0017
(4) mscl 10"x7"x2" TMA	157.00	0.0800	12.56	0.0039	0.0041	0.0017
OVP Junction Box	157.00	0.0200	3.13	0.0010	0.0010	0.0004
OVP Junction Box	157.00	0.0200	3.13	0.0010	0.0010	0.0004
OVP Junction Box	157.00	0.0200	3.13	0.0010	0.0010	0.0004
Face Frame	157.00	0.1100	17.27	0.0053	0.0056	0.0024
18 ft Pipe	157.00	0.5140	80.70	0.0248	0.0263	0.0110
Modified Mount	157.00	0.4000	62.80	0.0193	0.0204	0.0086
(3) T Arms with Platform	157.00	0.7260	113.98	0.0351	0.0371	0.0156
kathrein 800-10965	157.00	0.1100	17.27	0.0053	0.0056	0.0024
kathrein 800-10965	157.00	0.1100	17.27	0.0053	0.0056	0.0024
kathrein 800-10964	157.00	0.0900	14.13	0.0043	0.0046	0.0019
DC6-48-60-18-8C	157.00	0.0262	4.11	0.0013	0.0013	0.0006
raycap DC6-48-60-18-8F	157.00	0.0300	4.71	0.0014	0.0015	0.0006
(3) quintel QS66512-2	157.00	0.3300	51.81	0.0159	0.0169	0.0071
(3) ericsson RRUS 32 B30	157.00	0.1500	23.55	0.0072	0.0077	0.0032
(3) ericsson 4449 B5/B12 RRU	157.00	0.2100	32.97	0.0101	0.0107	0.0045
(3) ericsson 8843 B2/B66A RRU	157.00	0.2100	32.97	0.0101	0.0107	0.0045
tower mounts Sector Frame	146.00	0.5000	73.00	0.0225	0.0237	0.0107
tower mounts Sector Frame	146.00	0.5000	73.00	0.0225	0.0237	0.0107
tower mounts Sector Frame	146.00	0.5000	73.00	0.0225	0.0237	0.0107
APX16DWV-16DWVS C-A20	146.00	0.0407	5.94	0.0018	0.0019	0.0009
APX16DWV-16DWVS C-A20	146.00	0.0407	5.94	0.0018	0.0019	0.0009
APX16DWV-16DWVS C-A20	146.00	0.0407	5.94	0.0018	0.0019	0.0009
commscope LNX-6515D5-A1M	146.00	0.0400	5.84	0.0018	0.0019	0.0009
commscope LNX-6515D5-A1M	146.00	0.0400	5.84	0.0018	0.0019	0.0009
commscope LNX-6515D5-A1M	146.00	0.0400	5.84	0.0018	0.0019	0.0009
11"x6"x3.5" TMA	146.00	0.0132	1.93	0.0006	0.0006	0.0003
11"x6"x3.5" TMA	146.00	0.0132	1.93	0.0006	0.0006	0.0003
11"x6"x3.5" TMA	146.00	0.0132	1.93	0.0006	0.0006	0.0003
7"x6"x2.5" TMA	146.00	0.0100	1.46	0.0004	0.0005	0.0002
7"x6"x2.5" TMA	146.00	0.0100	1.46	0.0004	0.0005	0.0002
7"x6"x2.5" TMA	146.00	0.0100	1.46	0.0004	0.0005	0.0002
14 ft Face Mount	132.00	0.1400	18.48	0.0057	0.0060	0.0030
tower mounts 6 ft Sidearm	126.50	0.0700	8.86	0.0027	0.0029	0.0015
16 ft Whip	126.50	0.0400	5.06	0.0016	0.0016	0.0009
tower mounts 6 ft Sidearm	107.00	0.0700	7.49	0.0023	0.0024	0.0015
16 ft Whip	107.00	0.0400	4.28	0.0013	0.0014	0.0009
tower mounts 4 ft Sidearm	47.50	0.0533	2.53	0.0008	0.0008	0.0011
10 ft Dipole	47.50	0.0200	0.95	0.0003	0.0003	0.0004
tower mounts 4 ft Sidearm	37.50	0.0533	2.00	0.0006	0.0007	0.0011
12 ft Whip	37.50	0.0300	1.13	0.0003	0.0004	0.0006
Feed Line	163.00	0.0475	7.75	0.0024	0.0025	0.0010
Feed Line	163.00	0.0298	4.85	0.0015	0.0016	0.0006
Sum		4.4721	1431.14			



Linear Loads									
Name	Start Height	End Height	$h_s$	$w_s$	$w_s h_s^2$	$C_{us}$	$F_{us}$	$F_{us}$	$F_{us}$
general cable 7/8" Coax From 0 to 159	140.00	159.00	149.50	0.0099	1.48	0.0005	0.0005	0.0002	
general cable 7/8" Coax From 0 to 159	126.67	140.00	133.33	0.0069	0.92	0.0003	0.0003	0.0001	
general cable 7/8" Coax From 0 to 159	120.00	126.67	123.33	0.0035	0.43	0.0001	0.0001	0.0001	
general cable 7/8" Coax From 0 to 159	100.00	120.00	110.00	0.0104	1.14	0.0004	0.0004	0.0002	
general cable 7/8" Coax From 0 to 159	80.00	100.00	90.00	0.0104	0.94	0.0003	0.0003	0.0002	
general cable 7/8" Coax From 0 to 159	60.00	80.00	70.00	0.0104	0.73	0.0002	0.0002	0.0002	
general cable 7/8" Coax From 0 to 159	40.00	60.00	50.00	0.0104	0.52	0.0002	0.0002	0.0002	
general cable 7/8" Coax From 0 to 159	20.00	40.00	30.00	0.0104	0.31	0.0001	0.0001	0.0002	
general cable 7/8" Coax From 0 to 159	0.00	20.00	10.00	0.0104	0.10	0.0000	0.0000	0.0002	
(6) general cable 1 1/4" Coax From 0 to 159	140.00	159.00	149.50	0.0752	11.25	0.0035	0.0037	0.0016	
(6) general cable 1 1/4" Coax From 0 to 159	126.67	140.00	133.33	0.0528	7.04	0.0022	0.0023	0.0011	
(6) general cable 1 1/4" Coax From 0 to 159	120.00	126.67	123.33	0.0264	3.26	0.0010	0.0011	0.0006	
(6) general cable 1 1/4" Coax From 0 to 159	100.00	120.00	110.00	0.0792	8.71	0.0027	0.0028	0.0017	
(6) general cable 1 1/4" Coax From 0 to 159	80.00	100.00	90.00	0.0792	7.13	0.0022	0.0023	0.0017	
(6) general cable 1 1/4" Coax From 0 to 159	60.00	80.00	70.00	0.0792	5.54	0.0017	0.0018	0.0017	
(6) general cable 1 1/4" Coax From 0 to 159	40.00	60.00	50.00	0.0792	3.96	0.0012	0.0013	0.0017	
(6) general cable 1 1/4" Coax From 0 to 159	20.00	40.00	30.00	0.0792	2.38	0.0007	0.0008	0.0017	
(6) general cable 1 1/4" Coax From 0 to 159	0.00	20.00	10.00	0.0792	0.79	0.0002	0.0003	0.0017	
(2) general cable 0.78" DC From 0 to 157	140.00	157.00	148.50	0.0201	2.98	0.0009	0.0010	0.0004	
(2) general cable 0.78" DC From 0 to 157	126.67	140.00	133.33	0.0157	2.10	0.0006	0.0007	0.0003	
(2) general cable 0.78" DC From 0 to 157	120.00	126.67	123.33	0.0079	0.97	0.0003	0.0003	0.0002	
(2) general cable 0.78" DC From 0 to 157	100.00	120.00	110.00	0.0236	2.60	0.0008	0.0008	0.0005	
(2) general cable 0.78" DC From 0 to 157	80.00	100.00	90.00	0.0236	2.12	0.0007	0.0007	0.0005	
(2) general cable 0.78" DC From 0 to 157	60.00	80.00	70.00	0.0236	1.65	0.0005	0.0005	0.0005	
(2) general cable 0.78" DC From 0 to 157	40.00	60.00	50.00	0.0236	1.18	0.0004	0.0004	0.0005	
(2) general cable 0.78" DC From 0 to 157	20.00	40.00	30.00	0.0236	0.71	0.0002	0.0002	0.0005	
(2) general cable 0.78" DC From 0 to 157	0.00	20.00	10.00	0.0236	0.24	0.0001	0.0001	0.0005	
general cable 0.39" Fiber Trunk From 0 to 157	140.00	157.00	148.50	0.0010	0.15	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	126.67	140.00	133.33	0.0008	0.11	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	120.00	126.67	123.33	0.0004	0.05	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	100.00	120.00	110.00	0.0012	0.13	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	80.00	100.00	90.00	0.0012	0.11	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	60.00	80.00	70.00	0.0012	0.08	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	40.00	60.00	50.00	0.0012	0.06	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	20.00	40.00	30.00	0.0012	0.04	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	0.00	20.00	10.00	0.0012	0.01	0.0000	0.0000	0.0000	
(2) general cable 0.78" DC From 0 to 157	140.00	157.00	148.50	0.0201	2.98	0.0009	0.0010	0.0004	
(2) general cable 0.78" DC From 0 to 157	126.67	140.00	133.33	0.0157	2.10	0.0006	0.0007	0.0003	
(2) general cable 0.78" DC From 0 to 157	120.00	126.67	123.33	0.0079	0.97	0.0003	0.0003	0.0002	
(2) general cable 0.78" DC From 0 to 157	100.00	120.00	110.00	0.0236	2.60	0.0008	0.0008	0.0005	
(2) general cable 0.78" DC From 0 to 157	80.00	100.00	90.00	0.0236	2.12	0.0007	0.0007	0.0005	
(2) general cable 0.78" DC From 0 to 157	60.00	80.00	70.00	0.0236	1.65	0.0005	0.0005	0.0005	
(2) general cable 0.78" DC From 0 to 157	40.00	60.00	50.00	0.0236	1.18	0.0004	0.0004	0.0005	
(2) general cable 0.78" DC From 0 to 157	20.00	40.00	30.00	0.0236	0.71	0.0002	0.0002	0.0005	
(2) general cable 0.78" DC From 0 to 157	0.00	20.00	10.00	0.0236	0.24	0.0001	0.0001	0.0005	
general cable 0.39" Fiber Trunk From 0 to 157	140.00	157.00	148.50	0.0010	0.15	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	126.67	140.00	133.33	0.0008	0.11	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	120.00	126.67	123.33	0.0004	0.05	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	100.00	120.00	110.00	0.0012	0.13	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	80.00	100.00	90.00	0.0012	0.11	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	60.00	80.00	70.00	0.0012	0.08	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	40.00	60.00	50.00	0.0012	0.06	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	20.00	40.00	30.00	0.0012	0.04	0.0000	0.0000	0.0000	
general cable 0.39" Fiber Trunk From 0 to 157	0.00	20.00	10.00	0.0012	0.01	0.0000	0.0000	0.0000	
(12) general cable 1 5/8" Coax From 0 to 157	140.00	157.00	148.50	0.0122	1.82	0.0006	0.0006	0.0003	
(12) general cable 1 5/8" Coax From 0 to 157	126.67	140.00	133.33	0.0096	1.28	0.0004	0.0004	0.0002	
(12) general cable 1 5/8" Coax From 0 to 157	120.00	126.67	123.33	0.0048	0.59	0.0002	0.0002	0.0001	
(12) general cable 1 5/8" Coax From 0 to 157	100.00	120.00	110.00	0.0144	1.58	0.0005	0.0005	0.0003	
(12) general cable 1 5/8" Coax From 0 to 157	80.00	100.00	90.00	0.0144	1.30	0.0004	0.0004	0.0003	
(12) general cable 1 5/8" Coax From 0 to 157	60.00	80.00	70.00	0.0144	1.01	0.0003	0.0003	0.0003	
(12) general cable 1 5/8" Coax From 0 to 157	40.00	60.00	50.00	0.0144	0.72	0.0002	0.0002	0.0003	
(12) general cable 1 5/8" Coax From 0 to 157	20.00	40.00	30.00	0.0144	0.43	0.0001	0.0001	0.0003	
(12) general cable 1 5/8" Coax From 0 to 157	0.00	20.00	10.00	0.0144	0.14	0.0000	0.0000	0.0003	
(3) general cable 1 1/4" Hybrid Cable From 0 to 157	140.00	157.00	148.50	0.0530	7.88	0.0024	0.0026	0.0011	
(3) general cable 1 1/4" Hybrid Cable From 0 to 157	126.67	140.00	133.33	0.0416	5.55	0.0017	0.0018	0.0009	
(3) general cable 1 1/4" Hybrid Cable From 0 to 157	120.00	126.67	123.33	0.0208	2.57	0.0008	0.0008	0.0004	
(3) general cable 1 1/4" Hybrid Cable From 0 to 157	100.00	120.00	110.00	0.0624	6.86	0.0021	0.0022	0.0013	
(3) general cable 1 1/4" Hybrid Cable From 0 to 157	80.00	100.00	90.00	0.0624	5.62	0.0017	0.0018	0.0013	
(3) general cable 1 1/4" Hybrid Cable From 0 to 157	60.00	80.00	70.00	0.0624	4.37	0.0013	0.0014	0.0013	
(3) general cable 1 1/4" Hybrid Cable From 0 to 157	40.00	60.00	50.00	0.0624	3.12	0.0010	0.0010	0.0013	
(3) general cable 1 1/4" Hybrid Cable From 0 to 157	20.00	40.00	30.00	0.0624	1.87	0.0006	0.0006	0.0013	
(3) general cable 1 1/4" Hybrid Cable From 0 to 157	0.00	20.00	10.00	0.0624	0.62	0.0002	0.0002	0.0013	
(18) general cable 1 5/8" Coax From 0 to 157	140.00	157.00	148.50	0.2907	43.17	0.0133	0.0140	0.0062	
(18) general cable 1 5/8" Coax From 0 to 157	126.67	140.00	133.33	0.2280	30.40	0.0094	0.0099	0.0049	
(18) general cable 1 5/8" Coax From 0 to 157	120.00	126.67	123.33	0.1140	14.06	0.0043	0.0046	0.0024	
(18) general cable 1 5/8" Coax From 0 to 157	100.00	120.00	110.00	0.3420	37.62	0.0116	0.0122	0.0073	
(18) general cable 1 5/8" Coax From 0 to 157	80.00	100.00	90.00	0.3420	30.78	0.0095	0.0100	0.0073	
(18) general cable 1 5/8" Coax From 0 to 157	60.00	80.00	70.00	0.3420	23.94	0.0074	0.0078	0.0073	
(18) general cable 1 5/8" Coax From 0 to 157	40.00	60.00	50.00	0.3420	17.19	0.0053	0.0056	0.0073	
(18) general cable 1 5/8" Coax From 0 to 157	20.00	40.00	30.00	0.3420	10.26	0.0032	0.0033	0.0073	
(18) general cable 1 5/8" Coax From 0 to 157	0.00	20.00	10.00	0.3420	3.42	0.0011	0.0011	0.0073	



general cable 7/8" Coax From 0 to 146	140.00	146.00	143.00	0.0062	0.89	0.0003	0.0003	0.0001
general cable 7/8" Coax From 0 to 146	126.67	140.00	133.33	0.0139	1.85	0.0006	0.0006	0.0004
general cable 7/8" Coax From 0 to 146	120.00	126.67	123.33	0.0069	0.86	0.0003	0.0003	0.0001
general cable 7/8" Coax From 0 to 146	100.00	120.00	110.00	0.0208	2.29	0.0007	0.0007	0.0004
general cable 7/8" Coax From 0 to 146	80.00	100.00	90.00	0.0208	1.87	0.0006	0.0006	0.0004
general cable 7/8" Coax From 0 to 146	60.00	80.00	70.00	0.0208	1.46	0.0004	0.0005	0.0004
general cable 7/8" Coax From 0 to 146	40.00	60.00	50.00	0.0208	1.04	0.0003	0.0003	0.0004
general cable 7/8" Coax From 0 to 146	20.00	40.00	30.00	0.0208	0.62	0.0002	0.0002	0.0004
general cable 7/8" Coax From 0 to 146	0.00	20.00	10.00	0.0208	0.21	0.0001	0.0001	0.0004
general cable 7/8" Coax From 0 to 118.5	100.00	118.50	109.25	0.0096	1.05	0.0003	0.0003	0.0002
general cable 7/8" Coax From 0 to 118.5	80.00	100.00	90.00	0.0104	0.94	0.0003	0.0003	0.0002
general cable 7/8" Coax From 0 to 118.5	60.00	80.00	70.00	0.0104	0.73	0.0002	0.0002	0.0002
general cable 7/8" Coax From 0 to 118.5	40.00	60.00	50.00	0.0104	0.52	0.0002	0.0002	0.0002
general cable 7/8" Coax From 0 to 118.5	20.00	40.00	30.00	0.0104	0.31	0.0001	0.0001	0.0002
general cable 7/8" Coax From 0 to 118.5	0.00	20.00	10.00	0.0104	0.10	0.0000	0.0000	0.0002
general cable 1/2" Coax From 0 to 99	80.00	99.00	89.50	0.0099	0.88	0.0003	0.0003	0.0002
general cable 1/2" Coax From 0 to 99	60.00	80.00	70.00	0.0104	0.73	0.0002	0.0002	0.0002
general cable 1/2" Coax From 0 to 99	40.00	60.00	50.00	0.0104	0.52	0.0002	0.0002	0.0002
general cable 1/2" Coax From 0 to 99	20.00	40.00	30.00	0.0104	0.31	0.0001	0.0001	0.0002
general cable 1/2" Coax From 0 to 99	0.00	20.00	10.00	0.0104	0.10	0.0000	0.0000	0.0002
general cable 1/2" Coax From 0 to 47.5	40.00	47.50	43.75	0.0012	0.05	0.0000	0.0000	0.0000
general cable 1/2" Coax From 0 to 47.5	20.00	40.00	30.00	0.0032	0.10	0.0000	0.0000	0.0001
general cable 1/2" Coax From 0 to 47.5	0.00	20.00	10.00	0.0032	0.03	0.0000	0.0000	0.0001
W/G Ladder A From 0 to 37.5	20.00	37.50	28.75	0.0028	0.08	0.0000	0.0000	0.0001
W/G Ladder A From 0 to 37.5	0.00	20.00	10.00	0.0032	0.03	0.0000	0.0000	0.0001
W/G Ladder B From 10 to 147	140.00	147.00	143.50	0.0420	6.03	0.0019	0.0020	0.0009
W/G Ladder B From 10 to 147	126.67	140.00	133.33	0.0900	10.67	0.0033	0.0035	0.0017
W/G Ladder B From 10 to 147	120.00	126.67	123.33	0.0400	4.93	0.0015	0.0016	0.0009
W/G Ladder B From 10 to 147	100.00	120.00	110.00	0.1200	13.20	0.0041	0.0043	0.0026
W/G Ladder B From 10 to 147	80.00	100.00	90.00	0.1200	10.80	0.0033	0.0035	0.0026
W/G Ladder B From 10 to 147	60.00	80.00	70.00	0.1200	8.40	0.0026	0.0027	0.0026
W/G Ladder B From 10 to 147	40.00	60.00	50.00	0.1200	6.00	0.0018	0.0020	0.0026
W/G Ladder B From 10 to 147	20.00	40.00	30.00	0.1200	3.60	0.0011	0.0012	0.0026
W/G Ladder B From 10 to 147	10.00	20.00	15.00	0.0600	0.90	0.0003	0.0003	0.0013
W/G Ladder C From 11 to 160	140.00	160.00	150.00	0.1200	18.00	0.0055	0.0059	0.0026
W/G Ladder C From 11 to 160	126.67	140.00	133.33	0.0800	10.67	0.0033	0.0035	0.0017
W/G Ladder C From 11 to 160	120.00	126.67	123.33	0.0400	4.93	0.0015	0.0016	0.0009
W/G Ladder C From 11 to 160	100.00	120.00	110.00	0.1200	13.20	0.0041	0.0043	0.0026
W/G Ladder C From 11 to 160	80.00	100.00	90.00	0.1200	10.80	0.0033	0.0035	0.0026
W/G Ladder C From 11 to 160	60.00	80.00	70.00	0.1200	8.40	0.0026	0.0027	0.0026
W/G Ladder C From 11 to 160	40.00	60.00	50.00	0.1200	6.00	0.0018	0.0020	0.0026
W/G Ladder C From 11 to 160	20.00	40.00	30.00	0.1200	3.60	0.0011	0.0012	0.0026
W/G Ladder C From 11 to 160	11.00	20.00	15.50	0.0540	0.84	0.0003	0.0003	0.0012
W/G Ladder D From 12 to 152	140.00	152.00	146.00	0.0720	10.51	0.0032	0.0034	0.0015
W/G Ladder D From 12 to 152	126.67	140.00	133.33	0.0800	10.67	0.0033	0.0035	0.0017
W/G Ladder D From 12 to 152	120.00	126.67	123.33	0.0400	4.93	0.0015	0.0016	0.0009
W/G Ladder D From 12 to 152	100.00	120.00	110.00	0.1200	13.20	0.0041	0.0043	0.0026
W/G Ladder D From 12 to 152	80.00	100.00	90.00	0.1200	10.80	0.0033	0.0035	0.0026
W/G Ladder D From 12 to 152	60.00	80.00	70.00	0.1200	8.40	0.0026	0.0027	0.0026
W/G Ladder D From 12 to 152	40.00	60.00	50.00	0.1200	6.00	0.0018	0.0020	0.0026
W/G Ladder D From 12 to 152	20.00	40.00	30.00	0.1200	3.60	0.0011	0.0012	0.0026
W/G Ladder D From 12 to 152	12.00	20.00	16.00	0.0480	0.72	0.0002	0.0002	0.0010
W/G Ladder E From 14.5 to 147	140.00	147.00	143.50	0.0420	6.03	0.0019	0.0020	0.0009
W/G Ladder E From 14.5 to 147	126.67	140.00	133.33	0.0900	10.67	0.0033	0.0035	0.0017
W/G Ladder E From 14.5 to 147	120.00	126.67	123.33	0.0400	4.93	0.0015	0.0016	0.0009
W/G Ladder E From 14.5 to 147	100.00	120.00	110.00	0.1200	13.20	0.0041	0.0043	0.0026
W/G Ladder E From 14.5 to 147	80.00	100.00	90.00	0.1200	10.80	0.0033	0.0035	0.0026
W/G Ladder E From 14.5 to 147	60.00	80.00	70.00	0.1200	8.40	0.0026	0.0027	0.0026
W/G Ladder E From 14.5 to 147	40.00	60.00	50.00	0.1200	6.00	0.0018	0.0020	0.0026
W/G Ladder E From 14.5 to 147	20.00	40.00	30.00	0.1200	3.60	0.0011	0.0012	0.0026
W/G Ladder E From 14.5 to 147	14.50	20.00	17.25	0.0330	0.57	0.0002	0.0002	0.0007
Sum								

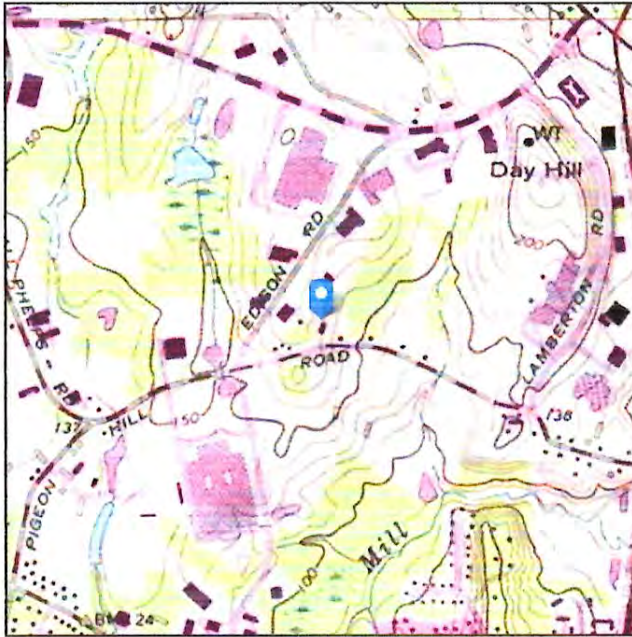


# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

**Standard:** ASCE/SEI 7-16  
**Risk Category:** II  
**Soil Class:** B - Rock

**Elevation:** 169.4 ft (NAVD 88)  
**Latitude:** 41.866639  
**Longitude:** -72.674777



## Wind

### Results:

Wind Speed:	116 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

**Data Source:** ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1-CC.2-4

**Date Accessed:** Fri Oct 16 2020

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

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

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

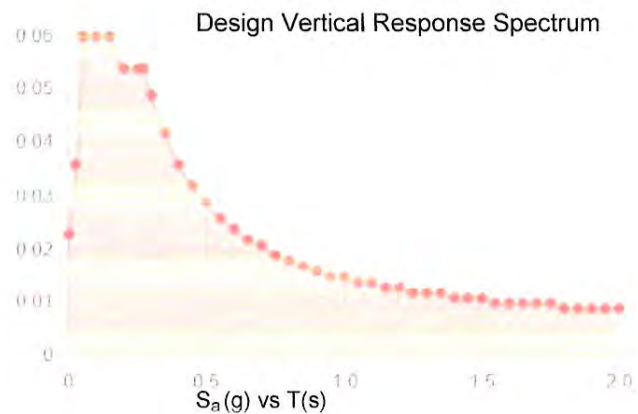
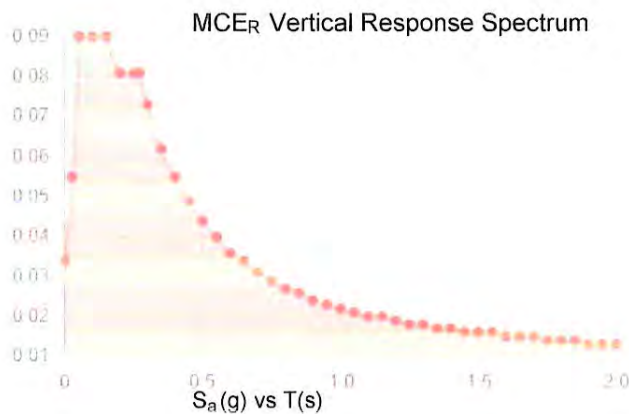
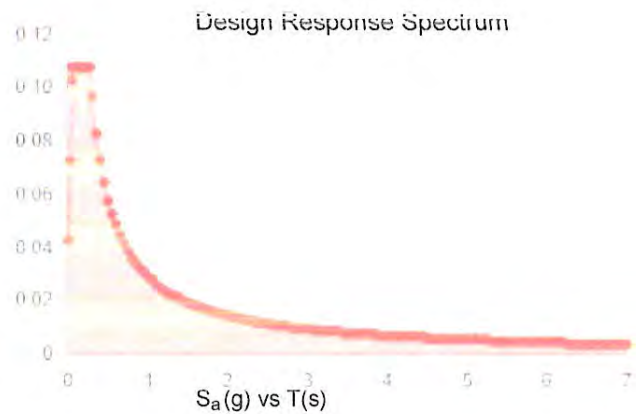
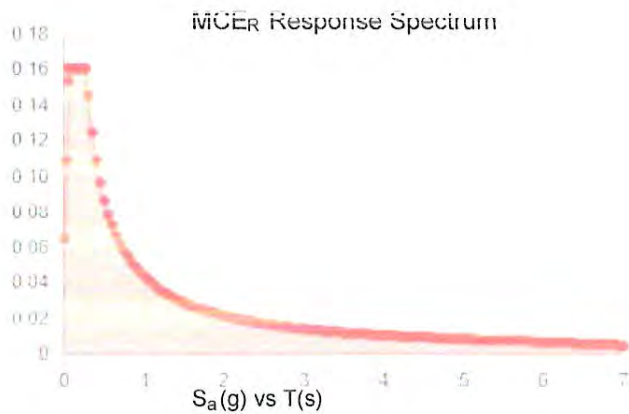


Site Soil Class: B - Rock

**Results:**

$S_S$ :	0.179	$S_{D1}$ :	0.029
$S_I$ :	0.055	$T_L$ :	6
$F_a$ :	0.9	PGA :	0.095
$F_v$ :	0.8	PGA <sub>M</sub> :	0.086
$S_{MS}$ :	0.161	$F_{PGA}$ :	0.9
$S_{M1}$ :	0.044	$I_e$ :	1
$S_{DB}$ :	0.108	$C_v$ :	0.7

Seismic Design Category A



**Data Accessed:**

Fri Oct 16 2020

**Date Source:**

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



## Ice

---

### Results:

Ice Thickness: 1.50 in.

Concurrent Temperature: 5 F

Gust Speed: 50 mph

**Data Source:** Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

**Date Accessed:** Fri Oct 16 2020

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

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

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The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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September 1, 2020

Mary Caulfield  
SAI Communications, LLC.  
12 Industrial Way  
Salem, NH 03079  
(603) 560-5075

B+T Group  
1717 S. Boulder, Suite 300  
Tulsa, OK 74119  
(918) 587-4630  
btwo@btgrp.com

**Subject:** **Appurtenance Mount Analysis Report**

**Carrier Designation:** **Site Number:** 10035288  
**Site Name:** Windsor-Pigeon Hill

**Engineering Firm Designation:** **B+T Group Project Number:** 130652.005.01 Rev A

**Site Data:** **482 Pigeon Hill Road, Windsor, CT, 06095, Hartford County**  
**Latitude 41.86663°, Longitude -72.67477°**  
**Self-Support Tower**  
**(3) 11' T-Arm Mount**

Dear Ms. Caulfield,

B+T Group is pleased to submit this “**Appurtenance Mount Analysis Report**” to determine the structural integrity of the antenna mount on the above-mentioned structure.

The purpose of the analysis is to determine acceptability of the mount’s stress level. Based on our analysis we have determined the stress level for the mount under the following load case to be:

Existing + Proposed Equipment  
Note: See Table 1 for the final loading configuration

**Sufficient Capacity<sup>1</sup>**  
**(Passing at 72.4%)**

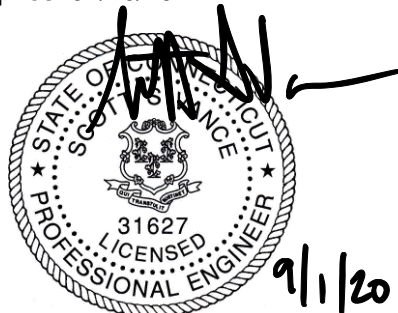
The jurisdiction has adopted the 2015 International Building Code. This analysis has been performed in accordance with the ANSI/TIA-222-H Standard.

All the equipment proposed in this report shall be installed in accordance with the drawings for the determined available structural capacity to be effective.

We at B+T Group appreciate the opportunity of providing our continuing professional services to you and SAI Communications, LLC. If you have any questions or need further assistance on this or any other projects, please give us a call.

Mount structural analysis prepared by: Nitin K Manjunath

Respectfully submitted by: B&T Engineering, Inc.  
COA: PEC 0001564 Expires: 02/10/2021



Scott S. Vance, P.E.

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RISA-3D Output



## 1) INTRODUCTION

The appurtenance mount consists of T-Arm mounts at 169 ft. attached to self-support tower at 482 Pigeon Hill Road, Windsor, CT, 06095, Hartford County. The proposed antenna loading information was obtained from SAI Communications, LLC. All information provided to B+T Group was assumed accurate and complete.

## 2) ANALYSIS CRITERIA

The structural analysis was performed for this mount in accordance with the ANSI/TIA-222-H-2017 Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures using a 3-second gust wind speed of 116 mph with no ice and 50 mph with 1.5 inch escalated ice thickness. Exposure Category C & Topographic Category 1 and Risk Category II were used in this analysis. In addition, the T-Arm mount has been analyzed for various live loading conditions consisting of a 250-lb man live load applied individually at the midpoint and cantilevered ends of horizontal members as well as a 0-pound man live load applied individually at mount pipe locations using a 3-second gust of 30 mph. The mount was analyzed under 30° increments in the wind direction. The analyzed loading is detailed in Table 1.

**Table 2 – Proposed and Existing Equipment Information**

Loading	RAD Center Elev. (ft.)	Position	Qty.	Manufacturer	Model / Type	Note
Proposed	169	5	1	Kathrein	80010964	1
			2	Kathrein	80010965	
		2	3	Ericsson	RRUS-32 B30	2
			3	Ericsson	RRUS 8843 B2/B66A	
		5	3	Ericsson	RRUS 4449 B5/B12	
-	-	Raycap	DC6-48-60-18-8C	3		
Existing	169	-	3	Quintel	QS66512-2	4
			1	Raycap	DC6-48-60-18-8F	

Note:

- (1) Proposed Antenna to be installed on the existing Mount Pipe.
- (2) Proposed Equipment to be installed with RRUS Support, directly behind the Antenna.
- (3) Proposed Equipment to be installed on the mount.
- (4) Existing Equipment installed on the Mount.

**Table 3 - Documents Provided**

Documents	Remarks	Reference	Source
Scoping (Descoped Loading)	Existing Loading Proposed Loading	Date: 08/06/2020	SAI Communications, LLC.
Mount Modification Report	B+T Group	Date: 05/20/2020	On File
Mount Mapping		Date: 12/18/2018	

## 3) ANALYSIS PROCEDURE

### 3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses and deflections for various loading cases. Selected output from the analysis is included in Appendix A.

### 3.2) Assumptions

1. The mount was built in accordance with the manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas and other appurtenances are as specified in Table 1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.
5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.

The following assumptions have been included in the analysis of the mount

Component	Section	Length	Note
Antenna Mounting Pipes	2" Std. Pipe	7'-0"	Position 2 & 5, In all sectors

6. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
7. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
8. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
9. The following material grades were assumed (Unless Noted Otherwise):
  - a) Connection Bolts : ASTM A325
  - b) Steel Pipe : ASTM A53 (GR. 35)
  - c) HSS (Round) : ASTM 500 (GR. B-42)
  - d) HSS (Rectangular) : ASTM 500 (GR. B-46)
  - e) Channel : ASTM A36 (GR. 36)
  - f) Steel Solid Rod : ASTM A36 (GR. 36)
  - g) Steel Plate : ASTM A36 (GR. 36)
  - h) Steel Angle : ASTM A36 (GR. 36)
  - i) UNISTRUT : ASTM A570 (GR. 33)

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the antenna mounting system.

### 4) ANALYSIS RESULTS

**Table 4 – Mount Component Stresses vs. Capacity**

Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Main Horizontals	169	59.0	Pass
-	Support Arms	169	53.5	Pass
-	Mount Pipes	169	63.9	Pass
-	Supporting Tubes	169	46.3	Pass
-	Main Supporting Pipe	169	72.4	Pass
-	Connection Pipe	169	49.8	Pass
-	Mod Vertical Pipe	169	61.7	Pass
-	Tieback	169	64.0	Pass



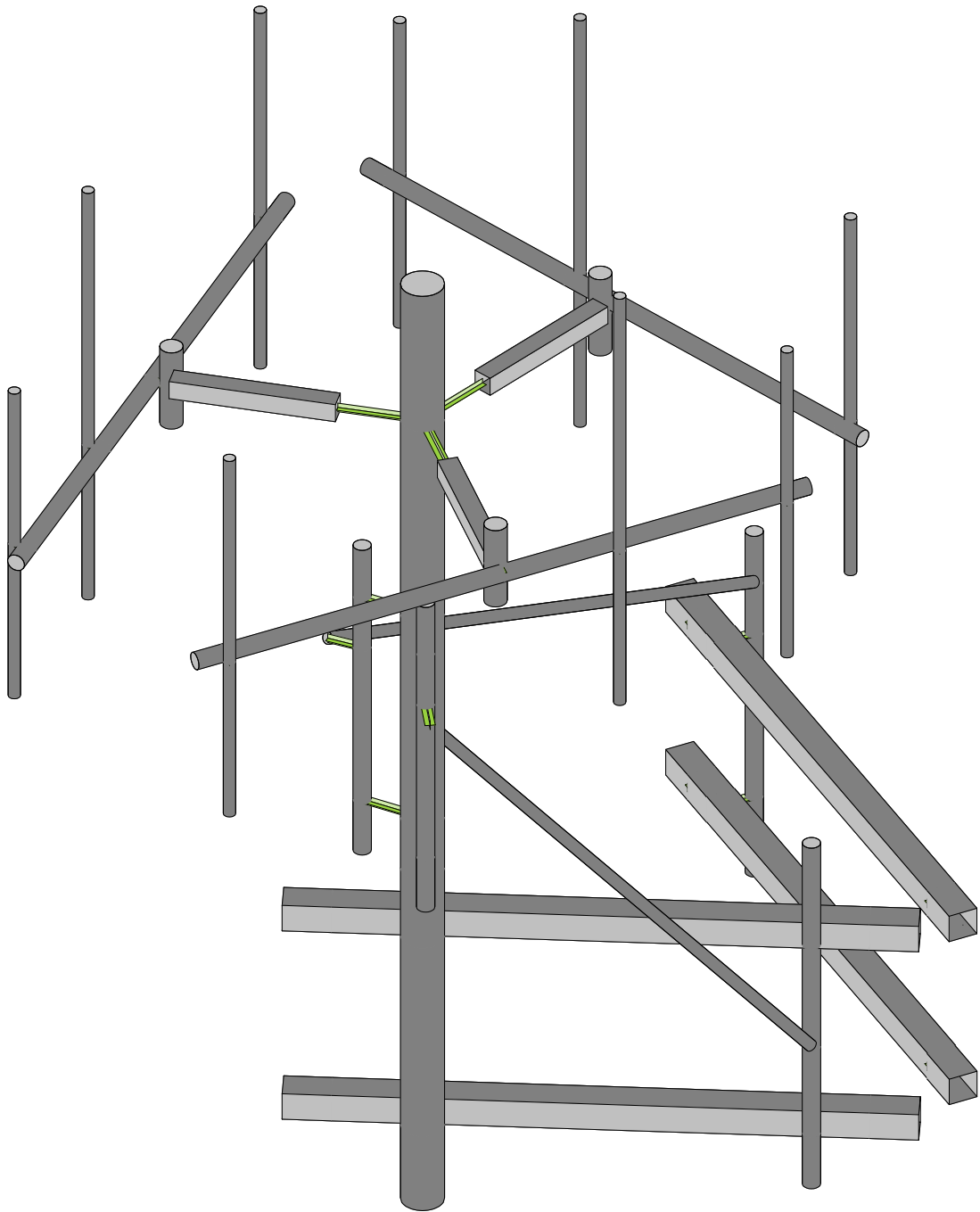
## 5) RECOMMENDATIONS

The modified mount has sufficient capacity to carry the existing and proposed loads and is in compliance with the ANSI/TIA-222-H standard for the proposed and existing loading. (Refer to the RISA output for the specific members).

# APPENDIX A

(RISA-3D Output)





Envelope Only Solution

B+T Group

NKM

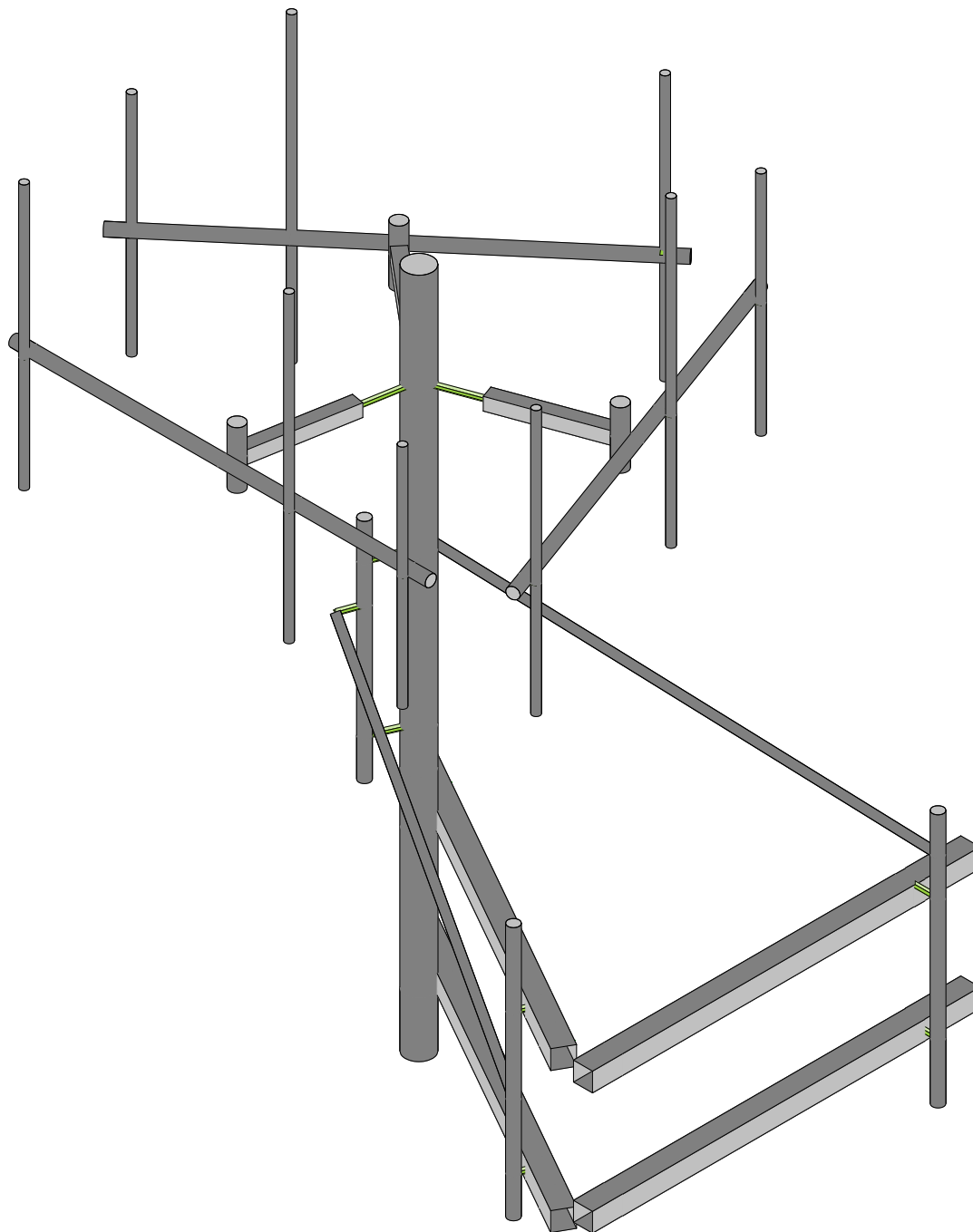
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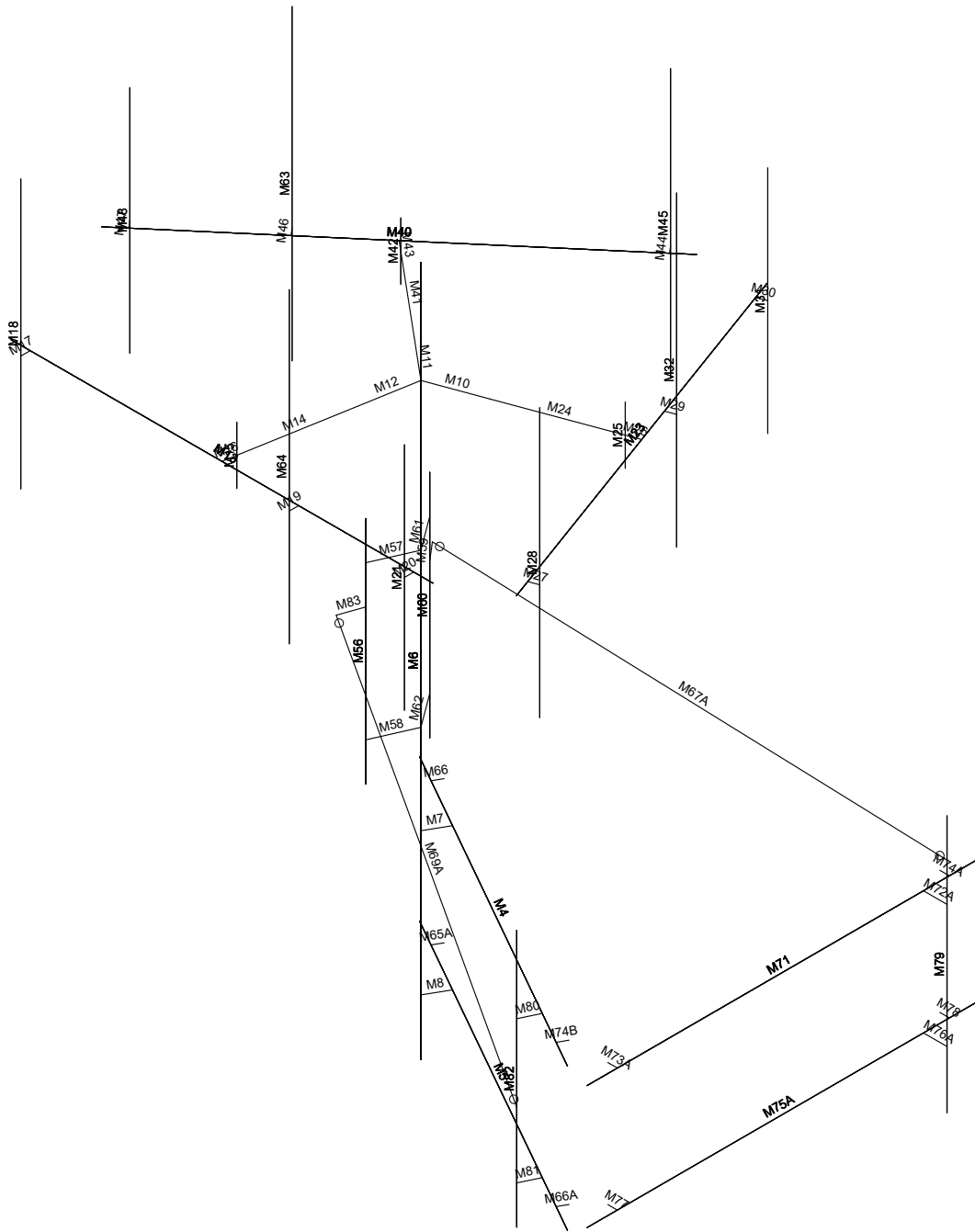
Envelope Only Solution

B+T Group
NKM
130652.002.01 REV A

10035288 - Windsor-Pigeon Hill
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SK - 1
Aug 24, 2020 at 3:36 PM
130652_002_01_Windsor-Pigeon ...





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130652.002.01 REV A

10035288 - Windsor-Pigeon Hill

SK - 3

Aug 24, 2020 at 3:37 PM

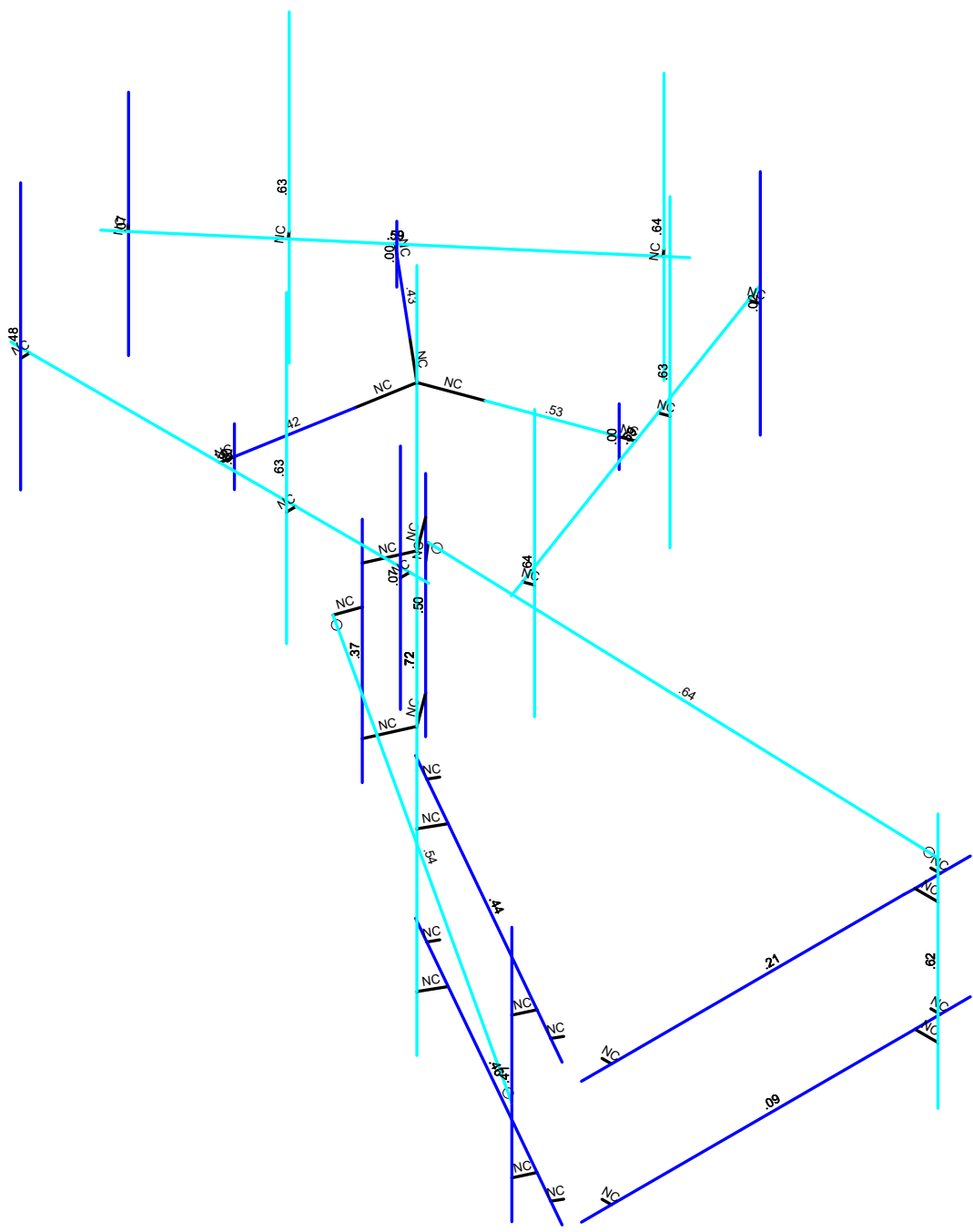
130652\_002\_01\_Windsor-Pigeon ...





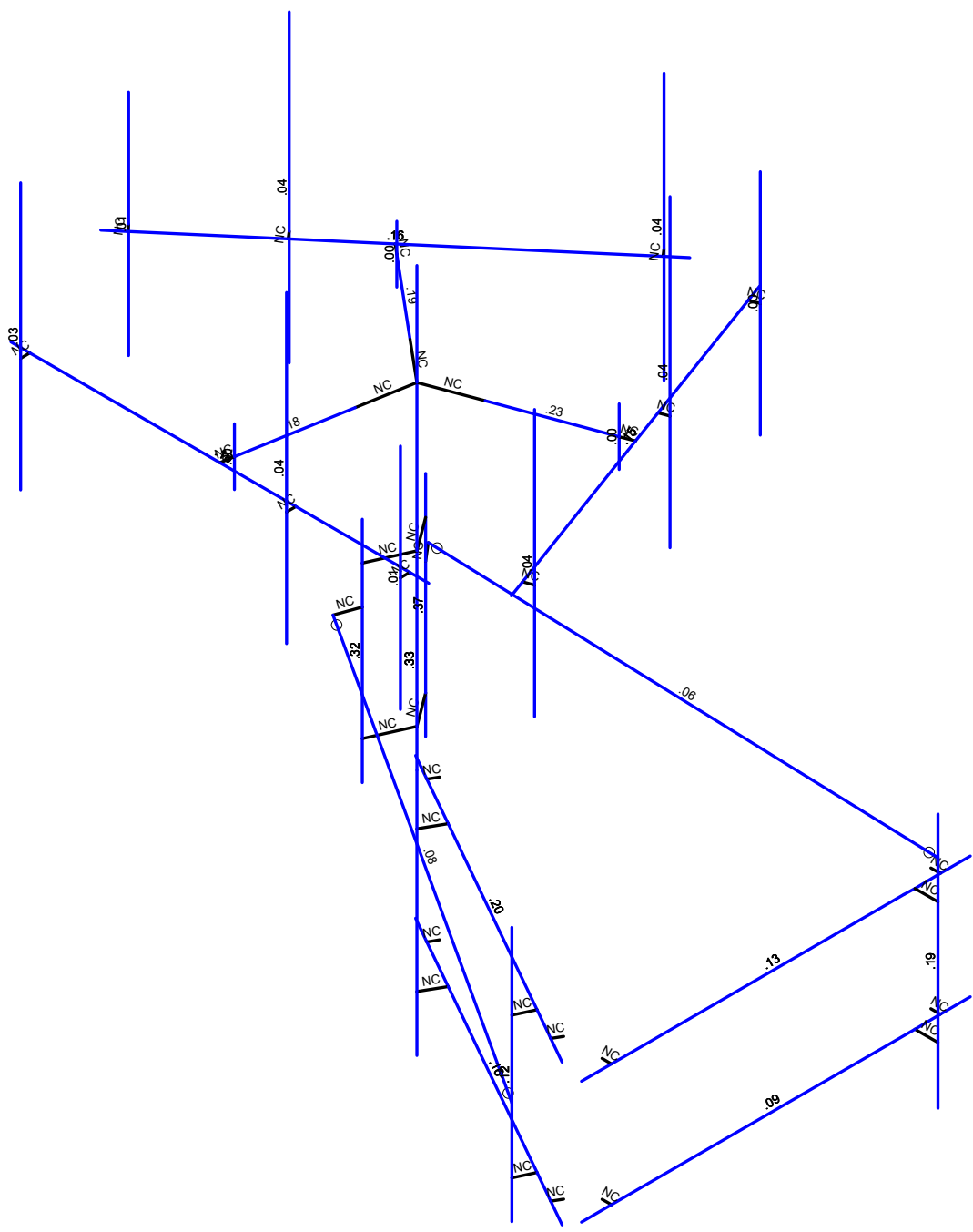
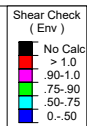


Code Check ( Env )	
Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Member Code Checks Displayed (Enveloped)  
Envelope Only Solution

B+T Group	10035288 - Windsor-Pigeon Hill	SK - 5
NKM		Aug 24, 2020 at 3:37 PM
130652.002.01 REV A		130652_002_01_Windsor-Pigeon ...



Member Shear Checks Displayed (Enveloped)  
Envelope Only Solution

B+T Group
NKM
130652.002.01 REV A

10035288 - Windsor-Pigeon Hill

SK - 6
Aug 24, 2020 at 3:38 PM
130652_002_01_Windsor-Pigeon ...



### Hot Rolled Steel Properties

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

### Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	MF-H1	HSS3.500X0.203	Beam	HSS Pipe	A500 Gr...	Typical	1.97	2.7	2.7	5.41
2	F1-H1	HSS4X4X4	Beam	Tube	A500 Gr...	Typical	3.37	7.8	7.8	12.8
3	MF-P1	PIPE 2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
4	F1-P1	PIPE 2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	F1-V1	HSS4.500X0.188	Column	HSS Pipe	A500 Gr...	Typical	2.36	5.54	5.54	11.1
6	F1-ST1	HSS6X6X4	Beam	Tube	A500 Gr...	Typical	5.24	28.6	28.6	45.6
7	F1-CP1	PIPE 8.5X0.31	Column	Pipe	A53 Gr.B	Typical	7.976	66.972	66.972	133.945
8	F1-CP2	PL 1/4X3	Beam	RECT	A36 Gr.36	Typical	.75	.004	.563	.015
9	Mod Pipe 1	HSS3.500X0.313	Column	HSS Pipe	A500 Gr...	Typical	2.93	3.81	3.81	7.61
10	MOD pipe 2	HSS3.500X0.313	Column	HSS Pipe	A500 Gr...	Typical	2.93	3.81	3.81	7.61
11	Tieback	HSS2.375X0.218	VBrace	HSS Pipe	A500 Gr...	Typical	1.39	.824	.824	1.65

### Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	Dead	DL		-1			40		
2	0 Wind - No Ice	WLZ					40	29	
3	90 Wind - No Ice	WLX					40	29	
4	0 Wind - Ice	WLZ					40	29	
5	90 Wind - Ice	WLX					40	29	
6	0 Wind - Service	WLZ					40	29	
7	90 Wind - Service	WLX					40	29	
8	Ice	OL1					40	29	
9	0 Seismic	ELZ					40	29	
10	90 Seismic	ELX					40	29	
11	Live Load c	LL							
12	Live Load d	LL							
13	Maint LL 1	LL					1		
14	Maint LL 2	LL					1		
15	Maint LL 3	LL					1		
16	Maint LL 4	LL					1		
17	Maint LL 5	LL					1		
18	Maint LL 6	LL					1		
19	Maint LL 7	LL					1		
20	Maint LL 8	LL					1		
21	Maint LL 9	LL					1		
22	Maint LL 10	LL					1		

### Load Combinations

	Description	S...PDelta	SRSS	B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...
1	1.4 Dead	Y...	Y		1	1.4								
2	1.2 D + 1.0 - 0 W	Y...	Y		1	1.2	2	1						





Company : B+T Group  
 Designer : NKM  
 Job Number : 130652.002.01 REV A  
 Model Name : 10035288 - Windsor-Pigeon Hill

Aug 24, 2020  
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 Checked By: \_\_\_\_\_

**Load Combinations (Continued)**

Description	S...	PDelta	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...
3	1.2 D + 1.0 - 30 W	Y...	Y		1	1.2	2	.866	3	.5								
4	1.2 D + 1.0 - 60 W	Y...	Y		1	1.2	3	.866	2	.5								
5	1.2 D + 1.0 - 90 W	Y...	Y		1	1.2	3	1										
6	1.2 D + 1.0 - 120 W	Y...	Y		1	1.2	3	.866	2	-.5								
7	1.2 D + 1.0 - 150 W	Y...	Y		1	1.2	2	-.8...	3	.5								
8	1.2 D + 1.0 - 180 W	Y...	Y		1	1.2	2	-1										
9	1.2 D + 1.0 - 210 W	Y...	Y		1	1.2	2	-.8...	3	-.5								
10	1.2 D + 1.0 - 240 W	Y...	Y		1	1.2	3	-.8...	2	-.5								
11	1.2 D + 1.0 - 270 W	Y...	Y		1	1.2	3	-1										
12	1.2 D + 1.0 - 300 W	Y...	Y		1	1.2	3	-.8...	2	.5								
13	1.2 D + 1.0 - 330 W	Y...	Y		1	1.2	2	.866	3	-.5								
14	1.2 D + 1.0 - 0 W/Ice	Y...	Y		1	1.2	4	1			8	1						
15	1.2 D + 1.0 - 30 W/Ice	Y...	Y		1	1.2	4	.866	5	.5	8	1						
16	1.2 D + 1.0 - 60 W/Ice	Y...	Y		1	1.2	5	.866	4	.5	8	1						
17	1.2 D + 1.0 - 90 W/Ice	Y...	Y		1	1.2	5	1			8	1						
18	1.2 D + 1.0 - 120 W/Ice	Y...	Y		1	1.2	5	.866	4	-.5	8	1						
19	1.2 D + 1.0 - 150 W/Ice	Y...	Y		1	1.2	4	-.8...	5	.5	8	1						
20	1.2 D + 1.0 - 180 W/Ice	Y...	Y		1	1.2	4	-1			8	1						
21	1.2 D + 1.0 - 210 W/Ice	Y...	Y		1	1.2	4	-.8...	5	-.5	8	1						
22	1.2 D + 1.0 - 240 W/Ice	Y...	Y		1	1.2	5	-.8...	4	-.5	8	1						
23	1.2 D + 1.0 - 270 W/Ice	Y...	Y		1	1.2	5	-1			8	1						
24	1.2 D + 1.0 - 300 W/Ice	Y...	Y		1	1.2	5	-.8...	4	.5	8	1						
25	1.2 D + 1.0 - 330 W/Ice	Y...	Y		1	1.2	4	.866	5	-.5	8	1						
26	1.2 D + 1.0 E - 0	Y...	Y		1	1.2	9	1										
27	1.2 D + 1.0 E - 30	Y...	Y		1	1.2	9	.866	10	.5								
28	1.2 D + 1.0 E - 60	Y...	Y		1	1.2	10	.866	9	.5								
29	1.2 D + 1.0 E - 90	Y...	Y		1	1.2	10	1										
30	1.2 D + 1.0 E - 120	Y...	Y		1	1.2	10	.866	9	-.5								
31	1.2 D + 1.0 E - 150	Y...	Y		1	1.2	9	-.8...	10	.5								
32	1.2 D + 1.0 E - 180	Y...	Y		1	1.2	9	-1										
33	1.2 D + 1.0 E - 210	Y...	Y		1	1.2	9	-.8...	10	-.5								
34	1.2 D + 1.0 E - 240	Y...	Y		1	1.2	10	-.8...	9	-.5								
35	1.2 D + 1.0 E - 270	Y...	Y		1	1.2	10	-1										
36	1.2 D + 1.0 E - 300	Y...	Y		1	1.2	10	-.8...	9	.5								
37	1.2 D + 1.0 E - 330	Y...	Y		1	1.2	9	.866	10	-.5								
38	1.2 D + 1.5 LL a + Service - 0 W	Y...	Y		1	1.2	6	1			11	1.5						
39	1.2 D + 1.5 LL a + Service - 30 W	Y...	Y		1	1.2	6	.866	7	.5	11	1.5						
40	1.2 D + 1.5 LL a + Service - 60 W	Y...	Y		1	1.2	7	.866	6	.5	11	1.5						
41	1.2 D + 1.5 LL a + Service - 90 W	Y...	Y		1	1.2	7	1			11	1.5						
42	1.2 D + 1.5 LL a + Service - 120 W	Y...	Y		1	1.2	7	.866	6	-.5	11	1.5						
43	1.2 D + 1.5 LL a + Service - 150 W	Y...	Y		1	1.2	6	-.8...	7	.5	11	1.5						
44	1.2 D + 1.5 LL a + Service - 180 W	Y...	Y		1	1.2	6	-1			11	1.5						
45	1.2 D + 1.5 LL a + Service - 210 W	Y...	Y		1	1.2	6	-.8...	7	-.5	11	1.5						
46	1.2 D + 1.5 LL a + Service - 240 W	Y...	Y		1	1.2	7	-.8...	6	-.5	11	1.5						
47	1.2 D + 1.5 LL a + Service - 270 W	Y...	Y		1	1.2	7	-1			11	1.5						
48	1.2 D + 1.5 LL a + Service - 300 W	Y...	Y		1	1.2	7	-.8...	6	.5	11	1.5						
49	1.2 D + 1.5 LL a + Service - 330 W	Y...	Y		1	1.2	6	.866	7	-.5	11	1.5						
50	1.2 D + 1.5 LL b + Service - 0 W	Y...	Y		1	1.2	6	1			12	1.5						
51	1.2 D + 1.5 LL b + Service - 30 W	Y...	Y		1	1.2	6	.866	7	.5	12	1.5						
52	1.2 D + 1.5 LL b + Service - 60 W	Y...	Y		1	1.2	7	.866	6	.5	12	1.5						
53	1.2 D + 1.5 LL b + Service - 90 W	Y...	Y		1	1.2	7	1			12	1.5						
54	1.2 D + 1.5 LL b + Service - 120 W	Y...	Y		1	1.2	7	.866	6	-.5	12	1.5						
55	1.2 D + 1.5 LL b + Service - 150 W	Y...	Y		1	1.2	6	-.8...	7	.5	12	1.5						
56	1.2 D + 1.5 LL b + Service - 180 W	Y...	Y		1	1.2	6	-1			12	1.5						
57	1.2 D + 1.5 LL b + Service - 210 W	Y...	Y		1	1.2	6	-.8...	7	-.5	12	1.5						
58	1.2 D + 1.5 LL b + Service - 240 W	Y...	Y		1	1.2	7	-.8...	6	-.5	12	1.5						
59	1.2 D + 1.5 LL b + Service - 270 W	Y...	Y		1	1.2	7	-1			12	1.5						



**Load Combinations (Continued)**

Description	S...	PDelta	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...
60	1.2 D + 1.5 LL b + Service - 300 W	Y...	Y		1	1.2	7	-8...	6	.5	12	1.5						
61	1.2 D + 1.5 LL b + Service - 330 W	Y...	Y		1	1.2	6	.866	7	-5	12	1.5						
62	1.2 D + 1.5 LL c + Service - 0 W	Y...	Y		1	1.2	6	1			13	1.5						
63	1.2 D + 1.5 LL c + Service - 30 W	Y...	Y		1	1.2	6	.866	7	.5	13	1.5						
64	1.2 D + 1.5 LL c + Service - 60 W	Y...	Y		1	1.2	7	.866	6	.5	13	1.5						
65	1.2 D + 1.5 LL c + Service - 90 W	Y...	Y		1	1.2	7	1			13	1.5						
66	1.2 D + 1.5 LL c + Service - 120 W	Y...	Y		1	1.2	7	.866	6	-5	13	1.5						
67	1.2 D + 1.5 LL c + Service - 150 W	Y...	Y		1	1.2	6	-8...	7	.5	13	1.5						
68	1.2 D + 1.5 LL c + Service - 180 W	Y...	Y		1	1.2	6	-1			13	1.5						
69	1.2 D + 1.5 LL c + Service - 210 W	Y...	Y		1	1.2	6	-8...	7	-5	13	1.5						
70	1.2 D + 1.5 LL c + Service - 240 W	Y...	Y		1	1.2	7	-8...	6	-5	13	1.5						
71	1.2 D + 1.5 LL c + Service - 270 W	Y...	Y		1	1.2	7	-1			13	1.5						
72	1.2 D + 1.5 LL c + Service - 300 W	Y...	Y		1	1.2	7	-8...	6	.5	13	1.5						
73	1.2 D + 1.5 LL c + Service - 330 W	Y...	Y		1	1.2	6	.866	7	-5	13	1.5						
74	1.2 D + 1.5 LL d + Service - 0 W	Y...	Y		1	1.2	6	1			14	1.5						
75	1.2 D + 1.5 LL d + Service - 30 W	Y...	Y		1	1.2	6	.866	7	.5	14	1.5						
76	1.2 D + 1.5 LL d + Service - 60 W	Y...	Y		1	1.2	7	.866	6	.5	14	1.5						
77	1.2 D + 1.5 LL d + Service - 90 W	Y...	Y		1	1.2	7	1			14	1.5						
78	1.2 D + 1.5 LL d + Service - 120 W	Y...	Y		1	1.2	7	.866	6	-5	14	1.5						
79	1.2 D + 1.5 LL d + Service - 150 W	Y...	Y		1	1.2	6	-8...	7	.5	14	1.5						
80	1.2 D + 1.5 LL d + Service - 180 W	Y...	Y		1	1.2	6	-1			14	1.5						
81	1.2 D + 1.5 LL d + Service - 210 W	Y...	Y		1	1.2	6	-8...	7	-5	14	1.5						
82	1.2 D + 1.5 LL d + Service - 240 W	Y...	Y		1	1.2	7	-8...	6	-5	14	1.5						
83	1.2 D + 1.5 LL d + Service - 270 W	Y...	Y		1	1.2	7	-1			14	1.5						
84	1.2 D + 1.5 LL d + Service - 300 W	Y...	Y		1	1.2	7	-8...	6	.5	14	1.5						
85	1.2 D + 1.5 LL d + Service - 330 W	Y...	Y		1	1.2	6	.866	7	-5	14	1.5						
86	1.2 D + 1.5 LL Maint (1)	Y...	Y		1	1.2					15	1.5						
87	1.2 D + 1.5 LL Maint (2)	Y...	Y		1	1.2					16	1.5						
88	1.2 D + 1.5 LL Maint (3)	Y...	Y		1	1.2					17	1.5						
89	1.2 D + 1.5 LL Maint (4)	Y...	Y		1	1.2					18	1.5						
90	1.2 D + 1.5 LL Maint (5)	Y...	Y		1	1.2					19	1.5						
91	1.2 D + 1.5 LL Maint (6)	Y...	Y		1	1.2					20	1.5						
92	1.2 D + 1.5 LL Maint (7)	Y...	Y		1	1.2					21	1.5						
93	1.2 D + 1.5 LL Maint (8)	Y...	Y		1	1.2					22	1.5						
94	1.2 D + 1.5 LL Maint (9)	Y...	Y		1	1.2					23	1.5						
95	1.2 D + 1.5 LL Maint (10)	Y...	Y		1	1.2					24	1.5						
96	1.2 D + 1.5 LL Maint (11)	Y...	Y		1	1.2					25	1.5						
97	1.2 D + 1.5 LL Maint (12)	Y...	Y		1	1.2					26	1.5						
98	1.2 D + 1.5 LL Maint (13)	Y...	Y		1	1.2					27	1.5						
99	1.2 D + 1.5 LL Maint (14)	Y...	Y		1	1.2					28	1.5						
100	1.2 D + 1.5 LL Maint (15)	Y...	Y		1	1.2					29	1.5						
101	1.2 D + 1.5 LL Maint (16)	Y...	Y		1	1.2					30	1.5						
102	1.2 D + 1.5 LL Maint (17)	Y...	Y		1	1.2					31	1.5						
103	1.2 D + 1.5 LL Maint (18)	Y...	Y		1	1.2					32	1.5						
104	1.2 D + 1.5 LL Maint (19)	Y...	Y		1	1.2					33	1.5						
105	1.2 D + 1.5 LL Maint (20)	Y...	Y		1	1.2					34	1.5						
106	1.2 D + 1.5 LL Maint (21)	Y...	Y		1	1.2					35	1.5						
107	1.2 D + 1.5 LL Maint (22)	Y...	Y		1	1.2					36	1.5						
108	1.2 D + 1.5 LL Maint (23)	Y...	Y		1	1.2					37	1.5						
109	1.2 D + 1.5 LL Maint (24)	Y...	Y		1	1.2					38	1.5						

**Connection Rules**

Label	Conn Type	Type	Beam Conn	Col/Girder Conn
1	Col/Bm Clip Angle	Shear	Column/Beam Clip Double Angle Shear	Welded Bolted
2	Col/Bm Shear Tab	Shear	Column/Beam Shear Tab Shear	Bolted N/A



**Connection Rules (Continued)**

	Label	Conn Type	Type	Beam Conn	Col/Girder Conn
3	Girder/Bm Clip Angle	Shear	Girder/Beam Clip Single Angle Shear	Welded	Bolted
4	Girder/Bm Shear Tab	Shear	Girder/Beam Shear Tab Shear	Bolted	N/A
5	Flange Plate Moment	Moment	Column/Beam Flange Plate Moment	Bolted	N/A
6	End-Plate Moment	Moment	Column/Beam Extended End-Plate Moment	N/A	N/A
7	Col Shear Splice	Shear	Column Shear Tab Splice	N/A	N/A
8	Col Moment Splice	Moment	Column Moment Plate Splice	N/A	N/A
9	Diagonal Brace	Brace	Diagonal Vertical Brace	N/A	N/A
10	Chevron Brace	Brace	Chevron Vertical Brace	N/A	N/A
11	Knee Brace	Brace	Knee Brace	N/A	N/A
12	Base Plate	Baseplate	Single Column Baseplate	N/A	N/A

**Joint Loads and Enforced Displacements**

Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad)...
No Data to Print ...			

**Member Point Loads (BLC 1 : Dead)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M64	Y	-.056	%10
2	M64	Y	-.056	%85
3	M64	Y	-.053	%30
4	M64	Y	-.072	%60
5	M64	Y	0	0
6	M18	Y	-.042	%5
7	M18	Y	-.042	%85
8	M18	Y	-.071	%45
9	M18	Y	0	0
10	M18	Y	0	0
11	M21	Y	-.026	%80
12	M21	Y	0	0
13	M21	Y	0	0
14	M21	Y	0	0
15	M21	Y	0	0
16	M63	Y	-.056	%10
17	M63	Y	-.056	%85
18	M63	Y	-.053	%30
19	M63	Y	-.072	%60
20	M63	Y	0	0
21	M45	Y	-.054	%5
22	M45	Y	-.054	%95
23	M45	Y	-.071	%45
24	M45	Y	0	0
25	M45	Y	0	0
26	M48	Y	-.033	%80
27	M48	Y	0	0
28	M48	Y	0	0
29	M48	Y	0	0
30	M48	Y	0	0
31	M32	Y	-.056	%10
32	M32	Y	-.056	%85
33	M32	Y	-.053	%30
34	M32	Y	-.072	%60
35	M32	Y	0	0
36	M28	Y	-.054	%5
37	M28	Y	-.054	%95





**Member Point Loads (BLC 1 : Dead) (Continued)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
38	M28	Y	-.071	%45
39	M28	Y	0	0
40	M28	Y	0	0

**Member Point Loads (BLC 2 : 0 Wind - No Ice)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	M64	Z	-.169	%10
2	M64	Z	-.169	%85
3	M64	Z	-.114	%30
4	M64	Z	-.068	%60
5	M64	Z	0	0
6	M18	Z	-.208	%5
7	M18	Z	-.208	%85
8	M18	Z	-.082	%45
9	M18	Z	0	0
10	M18	Z	0	0
11	M21	Z	-.048	%80
12	M21	Z	0	0
13	M21	Z	0	0
14	M21	Z	0	0
15	M21	Z	0	0
16	M63	Z	-.169	%10
17	M63	Z	-.169	%85
18	M63	Z	-.114	%30
19	M63	Z	-.068	%60
20	M63	Z	0	0
21	M45	Z	-.287	%5
22	M45	Z	-.287	%95
23	M45	Z	-.082	%45
24	M45	Z	0	0
25	M45	Z	0	0
26	M48	Z	-.05	%80
27	M48	Z	0	0
28	M48	Z	0	0
29	M48	Z	0	0
30	M48	Z	0	0
31	M32	Z	-.169	%10
32	M32	Z	-.169	%85
33	M32	Z	-.114	%30
34	M32	Z	-.068	%60
35	M32	Z	0	0
36	M28	Z	-.287	%5
37	M28	Z	-.287	%95
38	M28	Z	-.082	%45
39	M28	Z	0	0
40	M28	Z	0	0

**Member Point Loads (BLC 3 : 90 Wind - No Ice)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	M64	X	-.135	%10
2	M64	X	-.135	%85
3	M64	X	-.066	%30
4	M64	X	-.056	%60
5	M64	X	0	0
6	M18	X	-.072	%5
7	M18	X	-.072	%85



**Member Point Loads (BLC 3 : 90 Wind - No Ice) (Continued)**

	Member Label	Direction	Magnitude[k.k-ft]	Location[ft,%]
8	M18	X	-.059	%45
9	M18	X	0	0
10	M18	X	0	0
11	M21	X	-.048	%80
12	M21	X	0	0
13	M21	X	0	0
14	M21	X	0	0
15	M21	X	0	0
16	M63	X	-.135	%10
17	M63	X	-.135	%85
18	M63	X	-.066	%30
19	M63	X	-.056	%60
20	M63	X	0	0
21	M45	X	-.099	%5
22	M45	X	-.099	%95
23	M45	X	-.059	%45
24	M45	X	0	0
25	M45	X	0	0
26	M48	X	-.05	%80
27	M48	X	0	0
28	M48	X	0	0
29	M48	X	0	0
30	M48	X	0	0
31	M32	X	-.135	%10
32	M32	X	-.135	%85
33	M32	X	-.066	%30
34	M32	X	-.056	%60
35	M32	X	0	0
36	M28	X	-.099	%5
37	M28	X	-.099	%95
38	M28	X	-.059	%45
39	M28	X	0	0
40	M28	X	0	0

**Member Point Loads (BLC 4 : 0 Wind - Ice)**

	Member Label	Direction	Magnitude[k.k-ft]	Location[ft,%]
1	M64	Z	-.032	%10
2	M64	Z	-.032	%85
3	M64	Z	-.021	%30
4	M64	Z	-.013	%60
5	M64	Z	0	0
6	M18	Z	-.039	%5
7	M18	Z	-.039	%85
8	M18	Z	-.015	%45
9	M18	Z	0	0
10	M18	Z	0	0
11	M21	Z	-.009	%80
12	M21	Z	0	0
13	M21	Z	0	0
14	M21	Z	0	0
15	M21	Z	0	0
16	M63	Z	-.032	%10
17	M63	Z	-.032	%85
18	M63	Z	-.021	%30
19	M63	Z	-.013	%60
20	M63	Z	0	0



**Member Point Loads (BLC 4 : 0 Wind - Ice) (Continued)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
21	M45	Z	-0.053	%5
22	M45	Z	-0.053	%95
23	M45	Z	-0.015	%45
24	M45	Z	0	0
25	M45	Z	0	0
26	M48	Z	-0.009	%80
27	M48	Z	0	0
28	M48	Z	0	0
29	M48	Z	0	0
30	M48	Z	0	0
31	M32	Z	-0.032	%10
32	M32	Z	-0.032	%85
33	M32	Z	-0.021	%30
34	M32	Z	-0.013	%60
35	M32	Z	0	0
36	M28	Z	-0.053	%5
37	M28	Z	-0.053	%95
38	M28	Z	-0.015	%45
39	M28	Z	0	0
40	M28	Z	0	0

**Member Point Loads (BLC 5 : 90 Wind - Ice)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M64	X	-0.025	%10
2	M64	X	-0.025	%85
3	M64	X	-0.012	%30
4	M64	X	-0.011	%60
5	M64	X	0	0
6	M18	X	-0.013	%5
7	M18	X	-0.013	%85
8	M18	X	-0.011	%45
9	M18	X	0	0
10	M18	X	0	0
11	M21	X	-0.009	%80
12	M21	X	0	0
13	M21	X	0	0
14	M21	X	0	0
15	M21	X	0	0
16	M63	X	-0.025	%10
17	M63	X	-0.025	%85
18	M63	X	-0.012	%30
19	M63	X	-0.011	%60
20	M63	X	0	0
21	M45	X	-0.018	%5
22	M45	X	-0.018	%95
23	M45	X	-0.011	%45
24	M45	X	0	0
25	M45	X	0	0
26	M48	X	-0.009	%80
27	M48	X	0	0
28	M48	X	0	0
29	M48	X	0	0
30	M48	X	0	0
31	M32	X	-0.025	%10
32	M32	X	-0.025	%85
33	M32	X	-0.012	%30





**Member Point Loads (BLC 5 : 90 Wind - Ice) (Continued)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
34	M32	X	-0.11	%60
35	M32	X	0	0
36	M28	X	-0.18	%5
37	M28	X	-0.18	%95
38	M28	X	-0.11	%45
39	M28	X	0	0
40	M28	X	0	0

**Member Point Loads (BLC 6 : 0 Wind - Service)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M64	Z	-0.11	%10
2	M64	Z	-0.11	%85
3	M64	Z	-0.08	%30
4	M64	Z	-0.05	%60
5	M64	Z	0	0
6	M18	Z	-0.14	%5
7	M18	Z	-0.14	%85
8	M18	Z	-0.05	%45
9	M18	Z	0	0
10	M18	Z	0	0
11	M21	Z	-0.03	%80
12	M21	Z	0	0
13	M21	Z	0	0
14	M21	Z	0	0
15	M21	Z	0	0
16	M63	Z	-0.11	%10
17	M63	Z	-0.11	%85
18	M63	Z	-0.08	%30
19	M63	Z	-0.05	%60
20	M63	Z	0	0
21	M45	Z	-0.19	%5
22	M45	Z	-0.19	%95
23	M45	Z	-0.05	%45
24	M45	Z	0	0
25	M45	Z	0	0
26	M48	Z	-0.03	%80
27	M48	Z	0	0
28	M48	Z	0	0
29	M48	Z	0	0
30	M48	Z	0	0
31	M32	Z	-0.11	%10
32	M32	Z	-0.11	%85
33	M32	Z	-0.08	%30
34	M32	Z	-0.05	%60
35	M32	Z	0	0
36	M28	Z	-0.19	%5
37	M28	Z	-0.19	%95
38	M28	Z	-0.05	%45
39	M28	Z	0	0
40	M28	Z	0	0

**Member Point Loads (BLC 7 : 90 Wind - Service)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M64	X	-0.09	%10
2	M64	X	-0.09	%85
3	M64	X	-0.04	%30



**Member Point Loads (BLC 7 : 90 Wind - Service) (Continued)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
4	M64	X	-.004	%60
5	M64	X	0	0
6	M18	X	-.005	%5
7	M18	X	-.005	%85
8	M18	X	-.004	%45
9	M18	X	0	0
10	M18	X	0	0
11	M21	X	-.003	%80
12	M21	X	0	0
13	M21	X	0	0
14	M21	X	0	0
15	M21	X	0	0
16	M63	X	-.009	%10
17	M63	X	-.009	%85
18	M63	X	-.004	%30
19	M63	X	-.004	%60
20	M63	X	0	0
21	M45	X	-.007	%5
22	M45	X	-.007	%95
23	M45	X	-.004	%45
24	M45	X	0	0
25	M45	X	0	0
26	M48	X	-.003	%80
27	M48	X	0	0
28	M48	X	0	0
29	M48	X	0	0
30	M48	X	0	0
31	M32	X	-.009	%10
32	M32	X	-.009	%85
33	M32	X	-.004	%30
34	M32	X	-.004	%60
35	M32	X	0	0
36	M28	X	-.007	%5
37	M28	X	-.007	%95
38	M28	X	-.004	%45
39	M28	X	0	0
40	M28	X	0	0

**Member Point Loads (BLC 8 : Ice)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M64	Y	-.111	%10
2	M64	Y	-.111	%85
3	M64	Y	-.077	%30
4	M64	Y	-.051	%60
5	M64	Y	0	0
6	M18	Y	-.122	%5
7	M18	Y	-.122	%85
8	M18	Y	-.058	%45
9	M18	Y	0	0
10	M18	Y	0	0
11	M21	Y	-.068	%80
12	M21	Y	0	0
13	M21	Y	0	0
14	M21	Y	0	0
15	M21	Y	0	0
16	M63	Y	-.111	%10



**Member Point Loads (BLC 8 : Ice) (Continued)**

	Member Label	Direction	Magnitude[k.k-ft]	Location[ft. %]
17	M63	Y	-.111	%85
18	M63	Y	-.077	%30
19	M63	Y	-.051	%60
20	M63	Y	0	0
21	M45	Y	-.162	%5
22	M45	Y	-.162	%95
23	M45	Y	-.058	%45
24	M45	Y	0	0
25	M45	Y	0	0
26	M48	Y	-.072	%80
27	M48	Y	0	0
28	M48	Y	0	0
29	M48	Y	0	0
30	M48	Y	0	0
31	M32	Y	-.111	%10
32	M32	Y	-.111	%85
33	M32	Y	-.077	%30
34	M32	Y	-.051	%60
35	M32	Y	0	0
36	M28	Y	-.162	%5
37	M28	Y	-.162	%95
38	M28	Y	-.058	%45
39	M28	Y	0	0
40	M28	Y	0	0

**Member Point Loads (BLC 9 : 0 Seismic)**

	Member Label	Direction	Magnitude[k.k-ft]	Location[ft. %]
1	M64	Z	-.032	%10
2	M64	Z	-.032	%85
3	M64	Z	-.015	%30
4	M64	Z	-.021	%60
5	M64	Z	0	0
6	M18	Z	-.024	%5
7	M18	Z	-.024	%85
8	M18	Z	-.02	%45
9	M18	Z	0	0
10	M18	Z	0	0
11	M21	Z	-.007	%80
12	M21	Z	0	0
13	M21	Z	0	0
14	M21	Z	0	0
15	M21	Z	0	0
16	M63	Z	-.032	%10
17	M63	Z	-.032	%85
18	M63	Z	-.015	%30
19	M63	Z	-.021	%60
20	M63	Z	0	0
21	M45	Z	-.031	%5
22	M45	Z	-.031	%95
23	M45	Z	-.02	%45
24	M45	Z	0	0
25	M45	Z	0	0
26	M48	Z	-.009	%80
27	M48	Z	0	0
28	M48	Z	0	0
29	M48	Z	0	0





**Member Point Loads (BLC 9 : 0 Seismic) (Continued)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
30	M48	Z	0	0
31	M32	Z	-.032	%10
32	M32	Z	-.032	%85
33	M32	Z	-.015	%30
34	M32	Z	-.021	%60
35	M32	Z	0	0
36	M28	Z	-.031	%5
37	M28	Z	-.031	%95
38	M28	Z	-.02	%45
39	M28	Z	0	0
40	M28	Z	0	0

**Member Point Loads (BLC 10 : 90 Seismic)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M64	X	-.032	%10
2	M64	X	-.032	%85
3	M64	X	-.015	%30
4	M64	X	-.021	%60
5	M64	X	0	0
6	M18	X	-.024	%5
7	M18	X	-.024	%85
8	M18	X	-.02	%45
9	M18	X	0	0
10	M18	X	0	0
11	M21	X	-.007	%80
12	M21	X	0	0
13	M21	X	0	0
14	M21	X	0	0
15	M21	X	0	0
16	M63	X	-.032	%10
17	M63	X	-.032	%85
18	M63	X	-.015	%30
19	M63	X	-.021	%60
20	M63	X	0	0
21	M45	X	-.031	%5
22	M45	X	-.031	%95
23	M45	X	-.02	%45
24	M45	X	0	0
25	M45	X	0	0
26	M48	X	-.009	%80
27	M48	X	0	0
28	M48	X	0	0
29	M48	X	0	0
30	M48	X	0	0
31	M32	X	-.032	%10
32	M32	X	-.032	%85
33	M32	X	-.015	%30
34	M32	X	-.021	%60
35	M32	X	0	0
36	M28	X	-.031	%5
37	M28	X	-.031	%95
38	M28	X	-.02	%45
39	M28	X	0	0
40	M28	X	0	0



**Member Point Loads (BLC 13 : Maint LL 1)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	M13	Y	-0.25	%5

**Member Point Loads (BLC 14 : Maint LL 2)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	M13	Y	-0.25	%95

**Member Point Loads (BLC 15 : Maint LL 3)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	M40	Y	-0.25	%95

**Member Point Loads (BLC 16 : Maint LL 4)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	M40	Y	-0.25	%5

**Member Point Loads (BLC 17 : Maint LL 5)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	M23	Y	-0.25	%5

**Member Point Loads (BLC 18 : Maint LL 6)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	M23	Y	-0.25	%95

**Member Point Loads (BLC 19 : Maint LL 7)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	M14	Y	-0.25	%5

**Member Point Loads (BLC 20 : Maint LL 8)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	M41	Y	-0.25	%5

**Member Point Loads (BLC 21 : Maint LL 9)**

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	M24	Y	-0.25	%5

**Member Distributed Loads (BLC 2 : 0 Wind - No Ice)**

	Member Label	Direction	Start Magnitude[k/ft,F...]	End Magnitude[k/ft,F...]	Start Location[ft, %]	End Location[ft, %]
1	M4	Z	-0.038	-0.038	0	0
2	M5	Z	-0.038	-0.038	0	0
3	M6	Z	-0.018	-0.018	0	0
4	M13	Z	-0.014	-0.014	0	0
5	M14	Z	-0.019	-0.019	0	0
6	M15	Z	-0.01	-0.01	0	0
7	M18	Z	-0.01	-0.01	0	0
8	M21	Z	-0.01	-0.01	0	0
9	M23	Z	-0.014	-0.014	0	0
10	M24	Z	-0.019	-0.019	0	0
11	M25	Z	-0.01	-0.01	0	0
12	M28	Z	-0.01	-0.01	0	0
13	M31	Z	-0.01	-0.01	0	0
14	M32	Z	-0.01	-0.01	0	0
15	M40	Z	-0.014	-0.014	0	0



**Member Distributed Loads (BLC 2 : 0 Wind - No Ice) (Continued)**

	Member Label	Direction	Start Magnitude[k/ft.F...	End Magnitude[k/ft.F...	Start Location[ft.%,]	End Location[ft.%,]
16	M41	Z	-019	-019	0	0
17	M42	Z	-01	-01	0	0
18	M45	Z	-01	-01	0	0
19	M48	Z	-01	-01	0	0
20	M67A	Z	-01	-01	0	0
21	M69A	Z	-01	-01	0	0
22	M71	Z	-038	-038	0	0
23	M75A	Z	-038	-038	0	0
24	M79	Z	-011	-011	0	0
25	M82	Z	-011	-011	0	0
26	M56	Z	-01	-01	0	0
27	M60	Z	-01	-01	0	0
28	M63	Z	-01	-01	0	0
29	M64	Z	-01	-01	0	0

**Member Distributed Loads (BLC 3 : 90 Wind - No Ice)**

	Member Label	Direction	Start Magnitude[k/ft.F...	End Magnitude[k/ft.F...	Start Location[ft.%,]	End Location[ft.%,]
1	M4	X	-038	-038	0	0
2	M5	X	-038	-038	0	0
3	M6	X	-018	-018	0	0
4	M13	X	-014	-014	0	0
5	M14	X	-019	-019	0	0
6	M15	X	-01	-01	0	0
7	M18	X	-01	-01	0	0
8	M21	X	-01	-01	0	0
9	M23	X	-014	-014	0	0
10	M24	X	-019	-019	0	0
11	M25	X	-01	-01	0	0
12	M28	X	-01	-01	0	0
13	M31	X	-01	-01	0	0
14	M32	X	-01	-01	0	0
15	M40	X	-014	-014	0	0
16	M41	X	-019	-019	0	0
17	M42	X	-01	-01	0	0
18	M45	X	-01	-01	0	0
19	M48	X	-01	-01	0	0
20	M67A	X	-01	-01	0	0
21	M69A	X	-01	-01	0	0
22	M71	X	-038	-038	0	0
23	M75A	X	-038	-038	0	0
24	M79	X	-011	-011	0	0
25	M82	X	-011	-011	0	0
26	M56	X	-01	-01	0	0
27	M60	X	-01	-01	0	0
28	M63	X	-01	-01	0	0
29	M64	X	-01	-01	0	0

**Member Distributed Loads (BLC 4 : 0 Wind - Ice)**

	Member Label	Direction	Start Magnitude[k/ft.F...	End Magnitude[k/ft.F...	Start Location[ft.%,]	End Location[ft.%,]
1	M4	Z	-012	-012	0	0
2	M5	Z	-012	-012	0	0
3	M6	Z	-005	-005	0	0
4	M13	Z	-003	-003	0	0
5	M14	Z	-007	-007	0	0
6	M15	Z	-003	-003	0	0
7	M18	Z	-002	-002	0	0





**Member Distributed Loads (BLC 4 : 0 Wind - Ice) (Continued)**

	Member Label	Direction	Start Magnitude[k/ft,F...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
8	M21	Z	-0.02	-0.02	0	0
9	M23	Z	-0.03	-0.03	0	0
10	M24	Z	-0.07	-0.07	0	0
11	M25	Z	-0.03	-0.03	0	0
12	M28	Z	-0.02	-0.02	0	0
13	M31	Z	-0.02	-0.02	0	0
14	M32	Z	-0.02	-0.02	0	0
15	M40	Z	-0.03	-0.03	0	0
16	M41	Z	-0.07	-0.07	0	0
17	M42	Z	-0.03	-0.03	0	0
18	M45	Z	-0.02	-0.02	0	0
19	M48	Z	-0.02	-0.02	0	0
20	M67A	Z	-0.02	-0.02	0	0
21	M69A	Z	-0.02	-0.02	0	0
22	M71	Z	-0.12	-0.12	0	0
23	M75A	Z	-0.12	-0.12	0	0
24	M79	Z	-0.03	-0.03	0	0
25	M82	Z	-0.03	-0.03	0	0
26	M56	Z	-0.03	-0.03	0	0
27	M60	Z	-0.03	-0.03	0	0
28	M63	Z	-0.02	-0.02	0	0
29	M64	Z	-0.02	-0.02	0	0

**Member Distributed Loads (BLC 5 : 90 Wind - Ice)**

	Member Label	Direction	Start Magnitude[k/ft,F...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	M4	X	-0.12	-0.12	0	0
2	M5	X	-0.12	-0.12	0	0
3	M6	X	-0.05	-0.05	0	0
4	M13	X	-0.03	-0.03	0	0
5	M14	X	-0.07	-0.07	0	0
6	M15	X	-0.03	-0.03	0	0
7	M18	X	-0.02	-0.02	0	0
8	M21	X	-0.02	-0.02	0	0
9	M23	X	-0.03	-0.03	0	0
10	M24	X	-0.07	-0.07	0	0
11	M25	X	-0.03	-0.03	0	0
12	M28	X	-0.02	-0.02	0	0
13	M31	X	-0.02	-0.02	0	0
14	M32	X	-0.02	-0.02	0	0
15	M40	X	-0.03	-0.03	0	0
16	M41	X	-0.07	-0.07	0	0
17	M42	X	-0.03	-0.03	0	0
18	M45	X	-0.02	-0.02	0	0
19	M48	X	-0.02	-0.02	0	0
20	M67A	X	-0.02	-0.02	0	0
21	M69A	X	-0.02	-0.02	0	0
22	M71	X	-0.12	-0.12	0	0
23	M75A	X	-0.12	-0.12	0	0
24	M79	X	-0.03	-0.03	0	0
25	M82	X	-0.03	-0.03	0	0
26	M56	X	-0.03	-0.03	0	0
27	M60	X	-0.03	-0.03	0	0
28	M63	X	-0.02	-0.02	0	0
29	M64	X	-0.02	-0.02	0	0



**Member Distributed Loads (BLC 6 : 0 Wind - Service)**

	Member Label	Direction	Start Magnitude[k/ft,F...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	M4	Z	-0.003	-0.003	0	0
2	M5	Z	-0.003	-0.003	0	0
3	M6	Z	-0.001	-0.001	0	0
4	M13	Z	-0.0005	-0.0005	0	0
5	M14	Z	-0.001	-0.001	0	0
6	M15	Z	-0.0006	-0.0006	0	0
7	M18	Z	-0.0003	-0.0003	0	0
8	M21	Z	-0.0003	-0.0003	0	0
9	M23	Z	-0.0005	-0.0005	0	0
10	M24	Z	-0.001	-0.001	0	0
11	M25	Z	-0.0006	-0.0006	0	0
12	M28	Z	-0.0003	-0.0003	0	0
13	M31	Z	-0.0003	-0.0003	0	0
14	M32	Z	-0.0003	-0.0003	0	0
15	M40	Z	-0.0005	-0.0005	0	0
16	M41	Z	-0.001	-0.001	0	0
17	M42	Z	-0.0006	-0.0006	0	0
18	M45	Z	-0.0003	-0.0003	0	0
19	M48	Z	-0.0003	-0.0003	0	0
20	M67A	Z	-0.0003	-0.0003	0	0
21	M69A	Z	-0.0003	-0.0003	0	0
22	M71	Z	-0.003	-0.003	0	0
23	M75A	Z	-0.003	-0.003	0	0
24	M79	Z	-0.0005	-0.0005	0	0
25	M82	Z	-0.0005	-0.0005	0	0
26	M56	Z	-0.0006	-0.0006	0	0
27	M60	Z	-0.0006	-0.0006	0	0
28	M63	Z	-0.0003	-0.0003	0	0
29	M64	Z	-0.0003	-0.0003	0	0

**Member Distributed Loads (BLC 7 : 90 Wind - Service)**

	Member Label	Direction	Start Magnitude[k/ft,F...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	M4	X	-0.003	-0.003	0	0
2	M5	X	-0.003	-0.003	0	0
3	M6	X	-0.001	-0.001	0	0
4	M13	X	-0.0005	-0.0005	0	0
5	M14	X	-0.001	-0.001	0	0
6	M15	X	-0.0006	-0.0006	0	0
7	M18	X	-0.0003	-0.0003	0	0
8	M21	X	-0.0003	-0.0003	0	0
9	M23	X	-0.0005	-0.0005	0	0
10	M24	X	-0.001	-0.001	0	0
11	M25	X	-0.0006	-0.0006	0	0
12	M28	X	-0.0003	-0.0003	0	0
13	M31	X	-0.0003	-0.0003	0	0
14	M32	X	-0.0003	-0.0003	0	0
15	M40	X	-0.0005	-0.0005	0	0
16	M41	X	-0.001	-0.001	0	0
17	M42	X	-0.0006	-0.0006	0	0
18	M45	X	-0.0003	-0.0003	0	0
19	M48	X	-0.0003	-0.0003	0	0
20	M67A	X	-0.0003	-0.0003	0	0
21	M69A	X	-0.0003	-0.0003	0	0
22	M71	X	-0.003	-0.003	0	0
23	M75A	X	-0.003	-0.003	0	0
24	M79	X	-0.0005	-0.0005	0	0



**Member Distributed Loads (BLC 7 : 90 Wind - Service) (Continued)**

	Member Label	Direction	Start Magnitude[k/ft,F...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
25	M82	X	-.0005	-.0005	0	0
26	M56	X	-.0006	-.0006	0	0
27	M60	X	-.0006	-.0006	0	0
28	M63	X	-.0003	-.0003	0	0
29	M64	X	-.0003	-.0003	0	0

**Member Distributed Loads (BLC 8 : Ice)**

	Member Label	Direction	Start Magnitude[k/ft,F...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	M4	Y	-.022	-.022	0	0
2	M5	Y	-.022	-.022	0	0
3	M6	Y	-.022	-.022	0	0
4	M13	Y	-.011	-.011	0	0
5	M14	Y	-.016	-.016	0	0
6	M15	Y	-.014	-.014	0	0
7	M18	Y	-.009	-.009	0	0
8	M21	Y	-.009	-.009	0	0
9	M23	Y	-.011	-.011	0	0
10	M24	Y	-.016	-.016	0	0
11	M25	Y	-.014	-.014	0	0
12	M28	Y	-.009	-.009	0	0
13	M31	Y	-.009	-.009	0	0
14	M32	Y	-.009	-.009	0	0
15	M40	Y	-.011	-.011	0	0
16	M41	Y	-.016	-.016	0	0
17	M42	Y	-.014	-.014	0	0
18	M45	Y	-.009	-.009	0	0
19	M48	Y	-.009	-.009	0	0
20	M67A	Y	-.009	-.009	0	0
21	M69A	Y	-.009	-.009	0	0
22	M71	Y	-.022	-.022	0	0
23	M75A	Y	-.022	-.022	0	0
24	M79	Y	-.011	-.011	0	0
25	M82	Y	-.011	-.011	0	0
26	M56	Y	-.012	-.012	0	0
27	M60	Y	-.012	-.012	0	0
28	M63	Y	-.009	-.009	0	0
29	M64	Y	-.009	-.009	0	0

**Member Distributed Loads (BLC 9 : 0 Seismic)**

	Member Label	Direction	Start Magnitude[k/ft,F...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	M4	Z	-.005	-.005	0	0
2	M5	Z	-.005	-.005	0	0
3	M6	Z	-.008	-.008	0	0
4	M13	Z	-.002	-.002	0	0
5	M14	Z	-.004	-.004	0	0
6	M15	Z	-.003	-.003	0	0
7	M18	Z	-.001	-.001	0	0
8	M21	Z	-.001	-.001	0	0
9	M23	Z	-.002	-.002	0	0
10	M24	Z	-.004	-.004	0	0
11	M25	Z	-.003	-.003	0	0
12	M28	Z	-.001	-.001	0	0
13	M31	Z	-.001	-.001	0	0
14	M32	Z	-.001	-.001	0	0
15	M40	Z	-.002	-.002	0	0
16	M41	Z	-.004	-.004	0	0





**Member Distributed Loads (BLC 9 : 0 Seismic) (Continued)**

	Member Label	Direction	Start Magnitude[k/ft,F...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
17	M42	Z	-0.003	-0.003	0	0
18	M45	Z	-0.001	-0.001	0	0
19	M48	Z	-0.001	-0.001	0	0
20	M67A	Z	-0.001	-0.001	0	0
21	M69A	Z	-0.001	-0.001	0	0
22	M71	Z	-0.005	-0.005	0	0
23	M75A	Z	-0.005	-0.005	0	0
24	M79	Z	-0.002	-0.002	0	0
25	M82	Z	-0.002	-0.002	0	0
26	M56	Z	-0.003	-0.003	0	0
27	M60	Z	-0.003	-0.003	0	0
28	M63	Z	-0.001	-0.001	0	0
29	M64	Z	-0.001	-0.001	0	0

**Member Distributed Loads (BLC 10 : 90 Seismic)**

	Member Label	Direction	Start Magnitude[k/ft,F...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	M4	X	-0.005	-0.005	0	0
2	M5	X	-0.005	-0.005	0	0
3	M6	X	-0.008	-0.008	0	0
4	M13	X	-0.002	-0.002	0	0
5	M14	X	-0.004	-0.004	0	0
6	M15	X	-0.003	-0.003	0	0
7	M18	X	-0.001	-0.001	0	0
8	M21	X	-0.001	-0.001	0	0
9	M23	X	-0.002	-0.002	0	0
10	M24	X	-0.004	-0.004	0	0
11	M25	X	-0.003	-0.003	0	0
12	M28	X	-0.001	-0.001	0	0
13	M31	X	-0.001	-0.001	0	0
14	M32	X	-0.001	-0.001	0	0
15	M40	X	-0.002	-0.002	0	0
16	M41	X	-0.004	-0.004	0	0
17	M42	X	-0.003	-0.003	0	0
18	M45	X	-0.001	-0.001	0	0
19	M48	X	-0.001	-0.001	0	0
20	M67A	X	-0.001	-0.001	0	0
21	M69A	X	-0.001	-0.001	0	0
22	M71	X	-0.005	-0.005	0	0
23	M75A	X	-0.005	-0.005	0	0
24	M79	X	-0.002	-0.002	0	0
25	M82	X	-0.002	-0.002	0	0
26	M56	X	-0.003	-0.003	0	0
27	M60	X	-0.003	-0.003	0	0
28	M63	X	-0.001	-0.001	0	0
29	M64	X	-0.001	-0.001	0	0

**Joint Coordinates and Temperatures**

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	8.530704	0	-4.39113	0	
2	N2	5.003562	0	-0.037424	0	
3	N3	-0.811922	0	-0.173259	0	
4	N4	8.102921	0	4.885207	0	
5	N5	-0.811922	-3.7083	-0.173259	0	
6	N6	8.102921	-3.7083	4.885207	0	
7	N7	0.874378	-5.166667	1.478226	0	



Company : B+T Group  
 Designer : NKM  
 Job Number : 130652.002.01 REV A  
 Model Name : 10035288 - Windsor-Pigeon Hill

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**Joint Coordinates and Temperatures (Continued)**

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
8	N8	1.172536	0	0.952763	0	
9	N9	0.874378	0	1.478226	0	
10	N10	1.172536	-3.7083	0.952763	0	
11	N11	0.874378	-3.7083	1.478226	0	
12	N12	0.874378	12.833333	1.478226	0	
13	N13	0.874378	1.333333	1.478226	0	
14	N14	0.874378	10.166667	1.478226	0	
15	N15	-5.392987	10.166667	5.896408	0	
16	N16	5.607013	10.166667	5.896408	0	
17	N17	0.634638	10.166667	2.858554	0	
18	N18	0.164054	10.916667	5.567992	0	
19	N19	0.164054	9.416667	5.567992	0	
20	N20	0.164054	10.166667	5.567992	0	
21	N21	0.107013	10.166667	5.896408	0	
22	N22	-4.892987	10.166667	5.896408	0	
23	N23	-4.892987	10.166667	6.141408	0	
24	N24	-4.892987	14.166667	6.141408	0	
25	N25	-4.892987	7.166667	6.141408	0	
26	N26	2.107013	10.166667	5.896408	0	
27	N27	2.107013	10.166667	6.141408	0	
28	N28	5.107013	10.166667	5.896408	0	
29	N29	5.107013	10.166667	6.141408	0	
30	N30	5.107013	13.166667	6.141408	0	
31	N31	5.107013	7.166667	6.141408	0	
32	N32	2.107013	15.166667	6.141408	0	
33	N34	6.97868	10.166667	5.097159	0	
34	N35	3.189956	10.166667	-5.229776	0	
35	N36	2.189647	10.166667	0.995682	0	
36	N37	4.771381	10.916667	0.048501	0	
37	N38	4.771381	9.416667	0.048501	0	
38	N39	4.771381	10.166667	0.048501	0	
39	N40	5.084318	10.166667	-0.066309	0	
40	N41	6.806466	10.166667	4.627752	0	
41	N42	7.036475	10.166667	4.543367	0	
42	N43	7.036475	14.166667	4.543367	0	
43	N44	7.036475	7.166667	4.543367	0	
44	N45	4.739889	10.166667	-1.005121	0	
45	N46	4.969898	10.166667	-1.089506	0	
46	N47	3.362171	10.166667	-4.76037	0	
47	N48	3.59218	10.166667	-4.844755	0	
48	N49	3.59218	13.166667	-4.844755	0	
49	N50	3.59218	7.166667	-4.844755	0	
50	N51	4.969898	15.166667	-1.089506	0	
51	N52	4.969898	7.166667	-1.089506	0	
52	N63	1.620853	10.166667	-4.959387	0	
53	N64	-6.757251	10.166667	2.168542	0	
54	N65	-0.201152	10.166667	0.58044	0	
55	N66	-2.312302	10.916667	-1.181816	0	
56	N67	-2.312302	9.416667	-1.181816	0	
57	N68	-2.312302	10.166667	-1.181816	0	
58	N69	-2.568199	10.166667	-1.395423	0	
59	N70	1.240031	10.166667	-4.635391	0	
60	N71	1.081272	10.166667	-4.821994	0	
61	N72	1.081272	14.166667	-4.821994	0	
62	N73	1.081272	7.166667	-4.821994	0	
63	N74	-4.09149	10.166667	-0.099436	0	
64	N75	-4.250249	10.166667	-0.286039	0	



Company : B+T Group  
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 Job Number : 130652.002.01 REV A  
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**Joint Coordinates and Temperatures (Continued)**

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
65	N76	-6.376428	10.166667	1.844545	0	
66	N77	-6.535186	10.166667	1.657942	0	
67	N78	-6.535186	13.166667	1.657942	0	
68	N79	-6.535186	7.166667	1.657942	0	
69	N80	-4.250249	15.166667	-0.286039	0	
70	N106	0	0	0	0	
71	N107	-0.123377	0	0.217435	0	
72	N108	8.542583	0	4.275528	0	
73	N109	7.414376	0	4.494512	0	
74	N124	0	-3.7083	0	0	
75	N125	-0.123377	-3.7083	0.217435	0	
76	N126	7.537753	-3.7083	4.277077	0	
77	N127	7.414376	-3.7083	4.494512	0	
78	N128	0.874378	6.333333	1.478226	0	
79	N129	7.472934	-1	-4.389347	0	
80	N130	0.437526	5.333333	2.477978	0	
81	N131	6.580875	0	4.021566	0	
82	N135	8.793667	0	5.066852	0	
83	N136	8.779619	0	-5.183139	0	
84	N137	8.79054	0	-3.714812	0	
85	N138	9.3947	0	-3.71564	0	
86	N140	8.792582	0	4.275186	0	
87	N142	8.780704	0	-4.391473	0	
88	N143	8.782017	0	-3.43314	0	
89	N141	7.537753	0	4.277077	0	
90	N142A	8.530704	-3.2083	-4.39113	0	
91	N143A	8.542583	-3.2083	4.275528	0	
92	N144	8.793667	-3.2083	5.066852	0	
93	N145	8.779619	-3.2083	-5.183139	0	
94	N146	8.79054	-3.2083	-3.714812	0	
95	N147	9.3947	-3.2083	-3.71564	0	
96	N148	8.792582	-3.2083	4.275186	0	
97	N149	8.780704	-3.2083	-4.391473	0	
98	N150	9.3947	-4.7083	-3.71564	0	
99	N151	9.3947	2	-3.71564	0	
100	N152	9.3947	1	-3.71564	0	
101	N153	6.580875	-3.708	4.021566	0	
102	N154	6.369565	0	4.47472	0	
103	N155	6.369565	-3.708	4.47472	0	
104	N156	6.369565	2	4.47472	0	
105	N157	6.369565	-4.708	4.47472	0	
106	N158	6.369565	-2	4.47472	0	
107	N160	0.235143	5.333333	3.047233	0	
108	N108A	0.437526	7.333333	2.477978	0	
109	N109A	0.437526	1.333333	2.477978	0	
110	N110	0.437526	6.333333	2.477978	0	
111	N111	0.874378	2.333333	1.478226	0	
112	N112	0.437526	2.333333	2.477978	0	
113	N114	0.226992	5.333333	0.600025	0	
114	N115	-0.164805	5.333333	0.140129	0	
115	N116	0.226992	7.333333	0.600025	0	
116	N117	0.226992	1.333333	0.600025	0	
117	N118	0.226992	6.333333	0.600025	0	
118	N120	0.226992	2.333333	0.600025	0	
119	N119	2.107013	7.166667	6.141408	0	
120	N120A	-4.250249	7.166667	-0.286039	0	





### Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N106	Reaction	Reaction	Reaction			
2	N108	Reaction	Reaction	Reaction			
3	N124	Reaction	Reaction	Reaction			
4	N126	Reaction	Reaction	Reaction			
5	N129	Reaction	Reaction	Reaction			
6	N1	Reaction	Reaction	Reaction			
7	N141	Reaction	Reaction	Reaction			
8	N142A	Reaction	Reaction	Reaction			
9	N143A	Reaction	Reaction	Reaction			

### Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M4	N3	N4			F1-ST1	Beam	Tube	A500 Gr.B...	Typical
2	M5	N5	N6			F1-ST1	Beam	Tube	A500 Gr.B...	Typical
3	M6	N7	N12			F1-CP1	Column	Pipe	A53 Gr.B	Typical
4	M7	N8	N9			RIGID	None	None	RIGID	Typical
5	M8	N10	N11			RIGID	None	None	RIGID	Typical
6	M10	N14	N36			RIGID	None	None	RIGID	Typical
7	M11	N14	N65			RIGID	None	None	RIGID	Typical
8	M12	N14	N17			RIGID	None	None	RIGID	Typical
9	M13	N15	N16			MF-H1	Beam	HSS Pipe	A500 Gr.B...	Typical
10	M14	N20	N17			F1-H1	Beam	Tube	A500 Gr.B...	Typical
11	M15	N18	N19			F1-V1	Column	HSS Pipe	A500 Gr.B...	Typical
12	M16	N20	N21			RIGID	None	None	RIGID	Typical
13	M17	N22	N23			RIGID	None	None	RIGID	Typical
14	M18	N24	N25			MF-P1	Column	Pipe	A53 Gr.B	Typical
15	M19	N26	N27			RIGID	None	None	RIGID	Typical
16	M20	N28	N29			RIGID	None	None	RIGID	Typical
17	M21	N30	N31			MF-P1	Column	Pipe	A53 Gr.B	Typical
18	M23	N34	N35			MF-H1	Beam	HSS Pipe	A500 Gr.B...	Typical
19	M24	N39	N36			F1-H1	Beam	Tube	A500 Gr.B...	Typical
20	M25	N37	N38			F1-V1	Column	HSS Pipe	A500 Gr.B...	Typical
21	M26	N39	N40			RIGID	None	None	RIGID	Typical
22	M27	N41	N42			RIGID	None	None	RIGID	Typical
23	M28	N43	N44			MF-P1	Column	Pipe	A53 Gr.B	Typical
24	M29	N45	N46			RIGID	None	None	RIGID	Typical
25	M30	N47	N48			RIGID	None	None	RIGID	Typical
26	M31	N49	N50			MF-P1	Column	Pipe	A53 Gr.B	Typical
27	M32	N51	N52			MF-P1	Column	Pipe	A53 Gr.B	Typical
28	M40	N63	N64			MF-H1	Beam	HSS Pipe	A500 Gr.B...	Typical
29	M41	N68	N65			F1-H1	Beam	Tube	A500 Gr.B...	Typical
30	M42	N66	N67			F1-V1	Column	HSS Pipe	A500 Gr.B...	Typical
31	M43	N68	N69			RIGID	None	None	RIGID	Typical
32	M44	N70	N71			RIGID	None	None	RIGID	Typical
33	M45	N72	N73			MF-P1	Column	Pipe	A53 Gr.B	Typical
34	M46	N74	N75			RIGID	None	None	RIGID	Typical
35	M47	N76	N77			RIGID	None	None	RIGID	Typical
36	M48	N78	N79			MF-P1	Column	Pipe	A53 Gr.B	Typical
37	M66	N106	N107			RIGID	None	None	RIGID	Typical
38	M65A	N124	N125			RIGID	None	None	RIGID	Typical
39	M66A	N126	N127			RIGID	None	None	RIGID	Typical
40	M67A	N152	N115			Tieback	VBrace	HSS Pipe	A500 Gr.B...	Typical
41	M69A	N158	N160		180	Tieback	VBrace	HSS Pipe	A500 Gr.B...	Typical
42	M71	N135	N136			F1-ST1	Beam	Tube	A500 Gr.B...	Typical



**Member Primary Data (Continued)**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
43	M72A	N137	N138			RIGID	None	None	RIGID	Typical
44	M73A	N108	N140			RIGID	None	None	RIGID	Typical
45	M74A	N1	N142			RIGID	None	None	RIGID	Typical
46	M74B	N141	N109			RIGID	None	None	RIGID	Typical
47	M75A	N144	N145			F1-ST1	Beam	Tube	A500 Gr.B...	Typical
48	M76A	N146	N147			RIGID	None	None	RIGID	Typical
49	M77	N143A	N148			RIGID	None	None	RIGID	Typical
50	M78	N142A	N149			RIGID	None	None	RIGID	Typical
51	M79	N150	N151			Mod Pipe 1	Column	HSS Pipe	A500 Gr.B...	Typical
52	M80	N154	N131			RIGID	None	None	RIGID	Typical
53	M81	N155	N153			RIGID	None	None	RIGID	Typical
54	M82	N156	N157			Mod Pipe 1	Column	HSS Pipe	A500 Gr.B...	Typical
55	M83	N160	N130			RIGID	None	None	RIGID	Typical
56	M56	N108A	N109A			MOD pipe 2	Column	HSS Pipe	A500 Gr.B...	Typical
57	M57	N110	N128			RIGID	None	None	RIGID	Typical
58	M58	N112	N111			RIGID	None	None	RIGID	Typical
59	M59	N115	N114			RIGID	None	None	RIGID	Typical
60	M60	N116	N117			MOD pipe 2	Column	HSS Pipe	A500 Gr.B...	Typical
61	M61	N118	N128			RIGID	None	None	RIGID	Typical
62	M62	N120	N111			RIGID	None	None	RIGID	Typical
63	M63	N80	N120A			MF-P1	Column	Pipe	A53 Gr.B	Typical
64	M64	N32	N119			MF-P1	Column	Pipe	A53 Gr.B	Typical

**Plate Primary Data**

Label	A Joint	B Joint	C Joint	D Joint	Material	Thickness[in]
No Data to Print ...						

**Envelope Joint Reactions**

Joint	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC	
1	N106	max	14.841	2	8.225	3	15.623	2	0	109	0	109	109
2		min	-16.252	8	-4.962	9	-17.873	8	0	1	0	1	1
3	N108	max	.914	6	.472	7	8.136	13	0	109	0	109	109
4		min	-.891	12	-.241	13	-8.404	7	0	1	0	1	1
5	N124	max	2.187	6	6.108	7	8.767	7	0	109	0	109	109
6		min	-1.159	11	-3.176	13	-6.622	13	0	1	0	1	1
7	N126	max	1.331	2	4.167	9	1.147	10	0	109	0	109	109
8		min	-1.875	8	-3.496	3	-1.146	4	0	1	0	1	1
9	N129	max	0	109	0	109	0	109	0	109	0	109	109
10		min	0	1	0	1	0	1	0	1	0	1	1
11	N1	max	7.165	7	1.242	7	5.839	7	0	109	0	109	109
12		min	-7.163	13	-.839	13	-5.778	13	0	1	0	1	1
13	N141	max	12.794	8	1.175	10	4.663	8	0	109	0	109	109
14		min	-12.023	2	-.67	4	-4.458	2	0	1	0	1	1
15	N142A	max	2.173	13	3.785	13	1.362	2	0	109	0	109	109
16		min	-2.083	7	-3.51	7	-1.276	8	0	1	0	1	1
17	N143A	max	.142	4	.326	13	.799	7	0	109	0	109	109
18		min	-.147	10	-.11	7	-.761	13	0	1	0	1	1
19	Totals:	max	5.654	5	9.393	20	7.133	2					
20		min	-5.654	11	4.238	2	-7.133	8					



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

Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	...	LC	phi*P...	phi*P...	phi*M...	phi*M...	Eqn
1	M6	PIPE_8.5X0...	.724	5.25	2	.330	5.25	8	189.0...	251.25	54.609	54.609	H3-6
2	M67A	HSS2.375X0...	.640	5.125	13	.058	0	8	10.339	52.542	3.024	3.024	H1-1a
3	M28	PIPE_2.0	.639	3.938	8	.043	3.938	8	17.855	32.13	1.872	1.872	H1-1b
4	M45	PIPE_2.0	.639	3.938	2	.043	3.938	2	17.855	32.13	1.872	1.872	H1-1b
5	M64	PIPE_2.0	.633	5	8	.042	5	8	14.916	32.13	1.872	1.872	H1-1b
6	M63	PIPE_2.0	.632	5	2	.042	5	2	14.916	32.13	1.872	1.872	H1-1b
7	M32	PIPE_2.0	.631	5	8	.042	5	8	14.916	32.13	1.872	1.872	H1-1b
8	M79	HSS3.500X0...	.617	4.752	7	.186	4.752	7	81.552	110.7...	9.45	9.45	H1-1b
9	M40	HSS3.500X0...	.590	5.5	14	.164	5.5	3	34.108	74.466	6.521	6.521	H1-1b
10	M23	HSS3.500X0...	.588	5.5	20	.155	5.5	12	34.108	74.466	6.521	6.521	H1-1b
11	M69A	HSS2.375X0...	.543	4.531	9	.081	9.667	8	13.834	52.542	3.024	3.024	H1-1a
12	M24	HSS4X4X4	.535	2.75	2	.234	2.75	y 20	135.1...	139.5...	16.181	16.181	H1-1b
13	M13	HSS3.500X0...	.503	5.5	2	.180	5.5	8	34.108	74.466	6.521	6.521	H1-1b
14	M60	HSS3.500X0...	.498	2	13	.375	2	6	86.7	110.7...	9.45	9.45	H3-6
15	M18	PIPE_2.0	.485	3.938	8	.034	3.938	8	17.855	32.13	1.872	1.872	H1-1b
16	M5	HSS6X6X4	.463	2.242	7	.159	2.242	z 7	180.0...	216.9...	38.64	38.64	H1-1b
17	M4	HSS6X6X4	.444	2.242	2	.198	.854	y 3	180.0...	216.9...	38.64	38.64	H1-1b
18	M41	HSS4X4X4	.426	2.75	25	.186	2.75	y 87	135.1...	139.5...	16.181	16.181	H1-1b
19	M14	HSS4X4X4	.422	2.75	22	.176	2.75	y 64	135.1...	139.5...	16.181	16.181	H1-1b
20	M82	HSS3.500X0...	.414	5.66	9	.120	5.66	9	81.554	110.7...	9.45	9.45	H1-1b
21	M56	HSS3.500X0...	.374	2	9	.319	2	10	86.7	110.7...	9.45	9.45	H1-1b
22	M71	HSS6X6X4	.210	8.755	7	.126	9.396	z 7	180.0...	216.9...	38.64	38.64	H1-1b
23	M75A	HSS6X6X4	.087	8.862	13	.091	9.396	y 13	180.0...	216.9...	38.64	38.64	H1-1b
24	M48	PIPE_2.0	.074	3	7	.008	3	7	20.867	32.13	1.872	1.872	H1-1b
25	M21	PIPE_2.0	.071	3	8	.008	3	8	20.867	32.13	1.872	1.872	H1-1b
26	M31	PIPE_2.0	.024	3	7	.003	3	2	20.867	32.13	1.872	1.872	H1-1b
27	M15	HSS4.500X0...	.000	.75	8	.000	.75	8	88.455	89.208	10.269	10.269	1 H1-1b
28	M42	HSS4.500X0...	.000	.75	2	.000	.75	2	88.455	89.208	10.269	10.269	1 H1-1b
29	M25	HSS4.500X0...	.000	.75	8	.000	.75	8	88.455	89.208	10.269	10.269	1 H1-1b



CURRENT OWNER			TOPO	UTILITIES	STRT / ROAD	LOCATION	CURRENT ASSESSMENT				
CELLCO PARTNERSHIP C/O VERIZON WIRELESS P.O. BOX 2549			1 Level		1 Paved		Description	Code	Appraised	Assessed	6164  WINDSOR, CT
							UTL LAND	4-1	562,500	393,750	
ADDISON TX 75001			<b>SUPPLEMENTAL DATA</b>				UTL BLDG	4-2	12,867,700	9,007,390	<b>VISION</b>
			Alt Prcl ID 10082 INC: O/OCC GH 2007 2761430 GIS ID 10082	CTRACT 4735.01 CBLOCK 917 DIST HEART GL YEAR	UTL OUTBL	4-3	53,700	37,590			
							Total		13,483,900	9,438,730	

RECORD OF OWNERSHIP			BK-VOL/PAGE	SALE DATE	Q/U	VI	SALE PRICE	VC	PREVIOUS ASSESSMENTS (HISTORY)					
CELLCO PARTNERSHIP			1087 0406	06-14-1996	U	I	387,100	3	Year	Code	Assessed	Year	Code	Assessed
METRO MOBILE CTS OF HTFD INC			0588 0146	10-16-1986			0		2019	4-1	393,750	2018	4-1	393,750
									4-2	9,007,390		4-2	1,335,180	
									4-3	37,590		4-3	37,590	
									Total	9438730	Total	1766520	Total	1718290

EXEMPTIONS			OTHER ASSESSMENTS					
Year	Code	Description	Amount	Code	Description	Number	Amount	Comm Int
Total			0.00					

ASSESSING NEIGHBORHOOD					
Nbhd	Sub	Nbhd Name	B	Tracing	Batch
100	A				

NOTES		
10082.00 35-108-11D VERIZON WIRELESS 480 PIGEON HILL MERGED INTO THIS PARCEL 10/99 REF:V1086 P376 462 - 500 - 510 PIGEON HILL RD		
MERGED INTO THIS PARCEL 10-1-15 REF:V1812 PG 704		

BUILDING PERMIT RECORD									VISIT / CHANGE HISTORY					
Permit Id	Issue Date	Type	Description	Amount	Insp Date	% Comp	Date Comp	Comments	Date	Id	Type	Is	Cd	Purpost/Result
E-191398	10-25-2018	EL	Electric	30,000	10-01-2019	100	10-01-2019	SWAP 6 ANTENNAS & 6 RAD	10-01-2019	LL			20	Bldg Permit Insp
B-182000	10-25-2018	NC	New Construct	22,500,000	10-01-2019	70		22,000 SF ADDITION TO DAT	06-19-2015	LL			20	Bldg Permit Insp
P-182531	10-15-2018	PL	Plumbing	23,885	10-01-2019	100	10-01-2019	NITROGEN GENERATOR	08-11-2011	LL			20	Bldg Permit Insp
H-180774	10-15-2018	HA	HVAC	1,333,253	10-01-2019	0		NEW COMPUTER ROOM AC	03-24-2010	SK			43	Change - Reinspection Rer
B-180774	09-10-2018	RE	Renovation	128,900	10-01-2019	100	10-01-2019	RENOVATION	12-03-2009	SK			20	Bldg Permit Insp
P-180774	07-03-2018	PL	Plumbing	57,272	10-01-2019	100	10-01-2019	NEW SANITARY PIPE & FLO	10-01-2005	SK			11	Cert of Occup Insp
E-182000	07-03-2018	EL	Electric	7,804,580	10-01-2019	100	10-01-2019	ELECTRICAL WORK & GENE	05-19-2000	SK			00	Measur+Listed

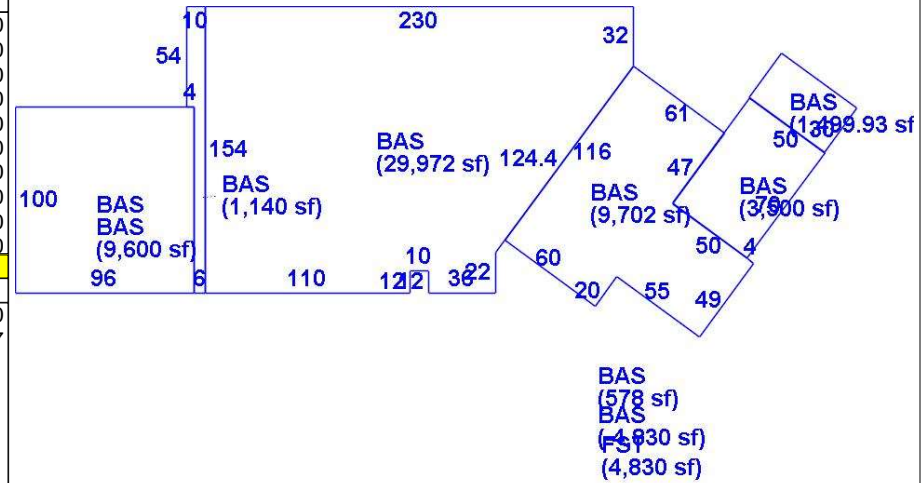
LAND LINE VALUATION SECTION															
B	Use Code	Description	Zone	Land Type	Land Units	Unit Price	I. Factor	Site Index	Cond.	Nbhd.	Nbhd Adj	Notes	Location Adjustment	Adj Unit Pric	Land Value
1	4300	Tel X Station	I		1.000	AC 82,000	1.00000	I	1.00	100	1.200			0	98,400
1	4300	Tel X Station	I1		5.660	AC 82,000	1.00000	0	1.00	5	1.000			0	464,100
Total Card Land Units					6.660	AC	Parcel Total Land Area: 6.6600					Total Land Value		562,500	

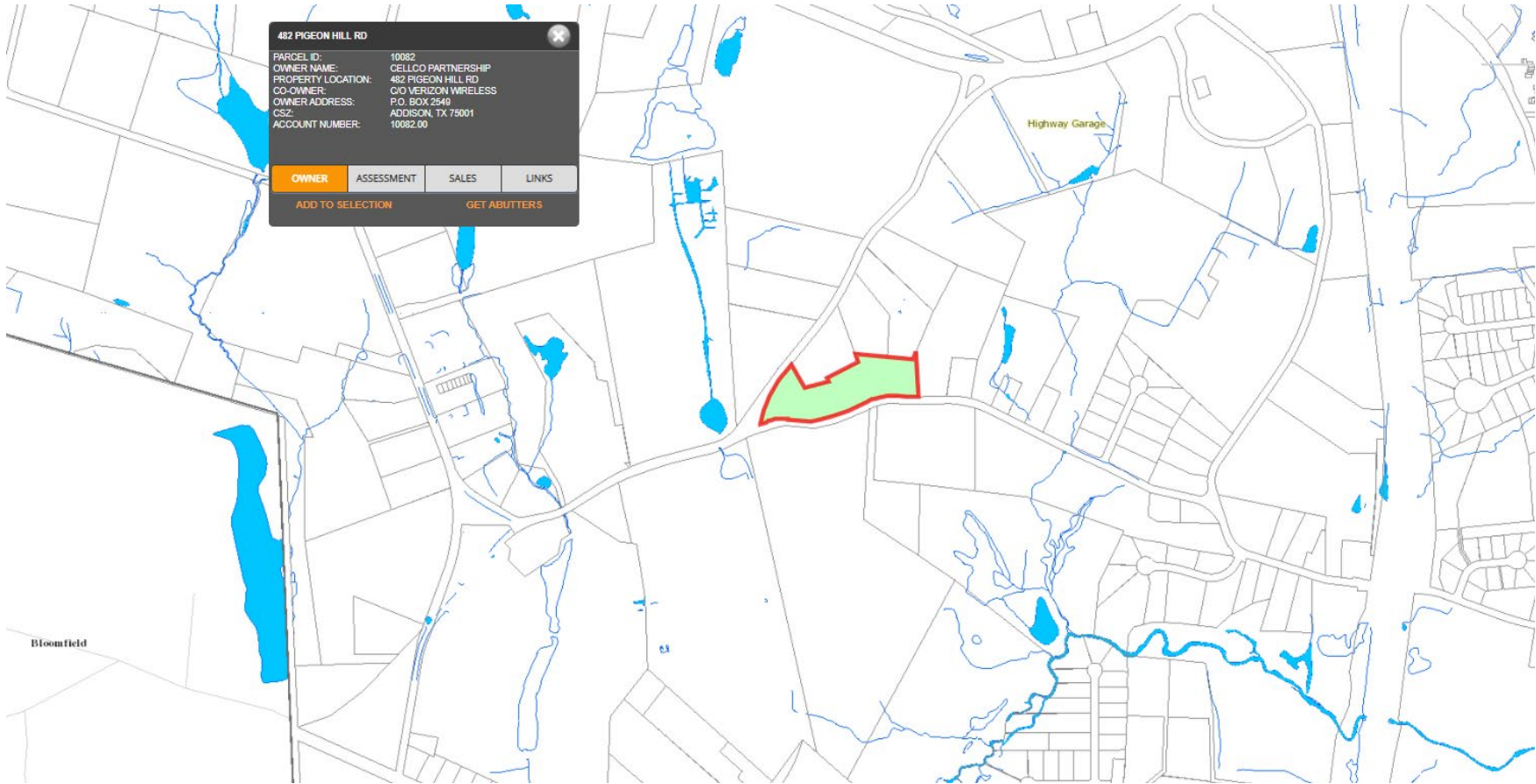
CONSTRUCTION DETAIL			CONSTRUCTION DETAIL (CONTINUED)		
Element	Cd	Description	Element	Cd	Description
Style:	79	Telephone Bldg			
Model	96	Ind/Comm			
Grade	15				
Stories:	1				
Occupancy					
Exterior Wall 1	19	Brick Veneer			
Exterior Wall 2	15	Concrete/Block			
Roof Structure	01	Flat			
Roof Cover	04	T&G/Rubber			
Interior Wall 1	05	Drywall			
Interior Wall 2					
Interior Floor 1	14	Carpet	RCN		18,035,446
Interior Floor 2	05	Vinyl			
Heating Fuel	04	Electric			
Heating Type	04	Forced Air	Year Built		1987
AC Type	03	Central	Effective Year Built		
Bldg Use	4300	Tel X Station	Depreciation Code		G
Total Rooms			Remodel Rating		
Total Bedrms	00		Year Remodeled		
Total Baths	2		Depreciation %		6
Heat/AC	02	Heat/AC Split	Functional Obsol		
Frame Type	05	Steel	External Obsol		
Baths/Plumbing	02	Average	Trend Factor		1
Ceiling/Wall	05	Sus-Ceil & WI	Condition		UC
Rooms/Prtns	02	Average	Condition %		70
Wall Height	18.00		Percent Good		70
% Conn Wall	0.00		Cns Sect Rcndd		12,624,800
1st Floor Use:	4300		Dep % Ovr		
			Dep Ovr Comment		
			Misc Imp Ovr		
			Misc Imp Ovr Comment		
			Cost to Cure Ovr		
			Cost to Cure Ovr Comment		



OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)												
Code	Descripti	Sub	Sub Ty	L/B	Units	Unit Price	Yr Blt	Cond. Cd	% Gd	Grade	Grade Ad	Appr. V
PAV1	PAVING-			L	5,000	2.50	2003		99		0.00	12,400
SHP1	WORK			L	480	17.00	2003		100		0.00	8,200
SHP1	WORK			L	300	17.00	2003		100		0.00	5,100
MSC8	SPR1			B	1	8300.00	2001		70		0.00	5,800
MSC9	SPR4(2			B	1	69600.00	2001		70		0.00	48,700
MSC9	SPR1(2			B	1	32300.00	2001		70		0.00	22,600
MSC9	SPR4(2			B	1	96800.00	2001		70		0.00	67,800
PAV1	PAVING-			L	11,20	2.50	2005		100		0.00	28,000
MSC9	SPR4(2			B	1	65000.00	2001		70		0.00	45,500
ELVF	FREIGH			B	1	75000.00	2019	G	70	E	0.00	52,500

BUILDING SUB-AREA SUMMARY SECTION						
Code	Description	Living Area	Floor Area	Eff Area	Unit Cost	Undeprec Value
BAS	First Floor	60,762	60,762		287.67	17,479,660
FST	Utility, Storage	4,830	4,830		115.07	555,787
Ttl Gross Liv / Lease Area		65,592	65,592			18,035,447





**482 PIGEON HILL RD**

PARCEL ID:	10082
OWNER NAME:	CELIGO PARTNERSHIP
PROPERTY LOCATION:	482 PIGEON HILL RD
CO-OWNER:	C/O VERIZON WIRELESS
OWNER ADDRESS:	P.O. BOX 2540
CSZ:	ADDISON, TX 75001
ACCOUNT NUMBER:	10082.00

<b>OWNER</b>	ASSESSMENT	SALES	LINKS
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[ADD TO SELECTION](#)      [GET ABUTTERS](#)



DOCKET NO. 58

AN APPLICATION OF HARTFORD CELLULAR  
COPANY FOR A CERTIFICATE OF  
ENVIRONMENTAL COMPATIBILITY AND PUBLIC  
NEED FOR THE CONSTRUCTION, MAINTENANCE,  
AND OPERATION OF FACILITIES TO PROVIDE  
CELLULAR SERVICE IN HARTFORD, TOLLAND AND  
MIDDLESEX COUNTIES.

CONNECTICUT SITING  
COUNCIL

July 11, 1986.

D E C I S I O N A N D O R D E R

Pursuant to the foregoing opinion, the Connecticut Siting Council (Council) hereby directs that a Certificate of Environmental Compatibility and Public Need as provided by Section 16-50k of the General Statutes of Connecticut (CGS) be issued to the Hartford Cellular Company for the construction, maintenance, and operation of cellular mobile phone telecommunication towers and associated equipment in the towns of Glastonbury, Haddam, Hartford, Portland, Rocky Hill, Somers, Vernon, Windsor, and Willington subject to the conditions below.

- 1) The proposed Bloomfield and Middlefield sites are rejected without prejudice.
- 2) The antennas on the Glastonbury tower shall be mounted no higher than the 180' level of this existing tower.
- 3) The Portland and Rocky Hill towers shall be monopoles.
- 4) The towers shall be no taller than necessary to provide the proposed service, and in no event shall exceed total heights, including antennas, of
  - a) 193' at the Haddam site;
  - b) 173' at the Portland site;

- c) 153' at the Rocky Hill site;
- d) 173' at the Somers site;
- e) 173' at the Vernon site;
- f) 153' at the Willington site;
- g) 173' at the Windsor site.

5) The Hartford site receive antennas shall be mounted below the top of the high point of the building to preclude visibility.

6) Any future actions requiring the removal of the existing Glastonbury tower to be shared by the certificate holder shall also apply to the equipment mounted on that tower by the certificate holder, regardless of that equipment's status under Chapter 277a of the CGS.

7) The certificate holder shall submit a development and management (D&M) plan for the Haddam, Portland, Rocky Hill, Somers, Vernon and Windsor sites pursuant to Sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies (RSA), except that irrelevant items in Section 16-50j-76 need only be identified as such. In addition to the requirements of Section 16-50j-76, the D&M plan shall provide plans for evergreen screening around the fenced perimeter at the Haddam, Somers, Vernon, and Windsor sites. The D&M plan shall include a proposal for painting the approved monopole structures to blend with the sky. The D&M plan must be approved prior to facility construction. Any changes to specifications in the D&M plan must be approved by the Council prior to facility operation.

8) All certified facilities shall be constructed, operated, and maintained as specified in the Council's record and in the

site plan required by order number 7.

9) The certificate holder shall comply with any future radiofrequency (RF) standards promulgated by state or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted in this decision shall continue to be in compliance with such standards.

10) The certificate holder shall permit public or private entities to share space on the towers approved herein, for due consideration received, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. In addition to complying with Section 16-50j-73 of the RSA, the certificate holder shall notify the Council of the addition of any equipment to any approved tower.

11) A fence not lower than 8' shall surround each tower and associated equipment.

12) Unless necessary to comply with order 13, no lights shall be installed on any of these towers.

13) The facilities' construction and any future tower sharing shall be in accordance with all applicable federal, state, and municipal laws and regulations. Shared uses by entities not subject to jurisdiction pursuant to Section 16-50k of the CGS shall be subject to all applicable federal, state, and municipal laws and regulations.

14) Construction activities shall take place during daylight working hours.



15) This decision and order shall be void and the towers and associate equipment shall be dismantled and removed, or reapplication for any new use shall be made to the Council before any such new use is made, if the towers do not provide or permanently cease to provide cellular service following completion of construction.

16) This decision and order shall be void if all construction authorized herein is not completed within three years of the issuance of this decision, or within three years of the completion of any appeal if appeal of this decision is taken, unless otherwise approved by the Council.

Pursuant to CGS Section 16-50p, we hereby direct that a copy of the decision and order shall be served on each person listed below. A notice of the issuance shall be published in the Hartford Courant, Middletown Press, Manchester Journal Inquirer, and the Willimantic Chronicle.

The parties to the proceeding are:

Metro Mobile (applicant)  
5 Eversley Avenue  
Norwalk, Connecticut 06855  
ATTN: Armand Mascioli  
General Manager

Howard L. Slater, Esq. (its attorneys)  
Scott A. Gursky, Esq.  
Byrne, Slater, Sandler,  
Shulman & Rouse, P.C.  
111 Pearl Street  
Hartford, Connecticut 06103

Richard Rubin, Esq.  
Fleischman and Walsh, P.C.  
1725 N Street, N.W.  
Washington, D. C. 20036

Mr. William Wamester  
1225 Randolph Road  
Middletown, Connecticut 06457

The Southern New England Telephone Company  
227 Church Street  
New Haven, Connecticut 06506  
ATTN: Peter J. Tyrrell, Esq.

Mr. James W. Tilney

represented by:  
Patricia A. Ayars  
Samuel Baily, Jr.  
Robinson & Cole  
One Commercial Plaza  
Hartford, CT. 06103-3597

Mr. Samuel DuBosar, Chairman  
Bessie Bennett, Esq.  
Town Plan & Zoning Commission  
P.O. Box 337  
Bloomfield, Connecticut 06002

Town of Somers

represented by:  
  
Mr. Robert F. Peters  
Town Counsel  
Tatoian, Devline, Peters  
& Davis  
11 South Road  
P.O. Box 415  
Somers, CT. 06071

Town of Haddam  
represented by:

Lucy R. Petrella  
Chairperson  
Town Office Building  
Route 9A  
P.O. Box 87  
Haddam, CT. 06438

Midstate Regional Planning Agency

represented by:  
  
Thomas M. Gilligan  
Regional Planner  
P.O. Box 139  
Middletown, CT. 06457

Dr. Donald P. LaSalle  
Director  
Talcott Mountain Science Center  
Montevideo Road  
Avon, Connecticut 06001

Barnard Tilson (service waived)  
Secretary  
Avon Planning and Zoning  
60 West Main Street  
Avon, Connecticut 06001

Alden Giddings  
33 Privelege Road  
Bloomfield, Connecticut 06002

Town of Bloomfield

represented by:

Joseph M. Suggs, Jr.  
Deputy Mayor  
Town Hall  
880 Bloomfield Avenue  
P.O. Box 337  
Bloomfield, CT. 06002  
(service waived)

Town of Middlefield

represented by:

David Silverstone, Esq.  
Silverstone & Koontz  
37 Lewis Street  
Hartford, CT. 06103

with a copy to:

Geoffrey Colegrove  
Midstate Regional Planning Agency  
100 DeKoven Drive  
Middletown, CT. 06457

Zoning Commission  
Town of Somers

represented by:

Joseph A. Paradis  
Chairman  
Town Hall  
600 Main Street  
P.O. Box 803  
Somers, CT. 06071



Barbara Sirwilo, Secretary (service waived)  
Planning & Zoning Commission  
Town of Rocky Hill  
600 Old Main Street  
P.O. Box 657  
Rocky Hill, Connecticut 06067

H. Robert Goodrich (service waived)  
Goodrich Lane  
Portland, Connecticut 06480

The Honorable Richard P. Antonetti  
State Representative (service waived)  
5 Sachem Circle  
Meriden, Connecticut 06450

John Hevrin  
R.D. #1 - Plains Road  
Haddam, Connecticut 06438

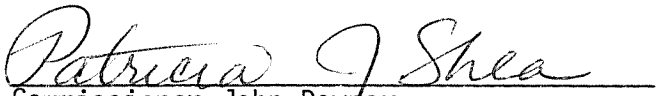



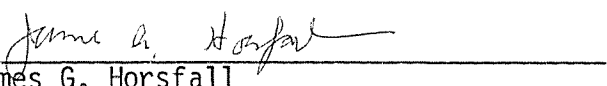
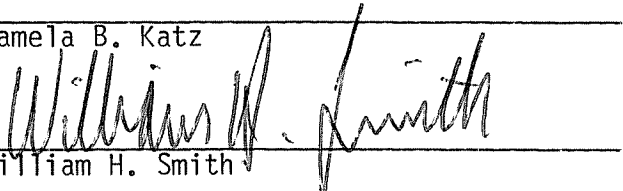
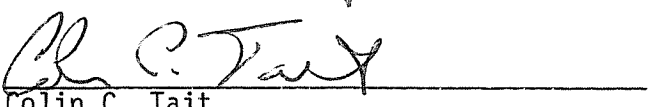
Norman and Darlene Manning (represented by)

Elizabeth Allen, Esq.  
P.O. Box 467  
Higganum, CT. 06441  
(service waived)

C E R T I F I C A T I O N

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut, this 11th day of July, 1986.

<u>Council Members</u>	<u>Vote Cast</u>
_____) Gloria Dibble Pond Chairperson	Absent
 _____) Commissioner John Downey Designee: Patricia Shea	Yes
 _____) Commissioner Stanley Pac Designee: Christopher Cooper	Yes
 _____) Owen L. Clark	Yes
 _____) Mortimer A. Gelston	Yes
 _____) James G. Horsfall	Yes
_____) Pamela B. Katz	Absent
 _____) William H. Smith	Yes
 _____) Colin C. Tait	Yes


STATE OF CONNECTICUT  
COUNTY OF HARTFORD

)  
:  
)


ss. New Britain, July 11, 1986

I hereby certify that the foregoing is a true and correct copy of the decision and order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

  
\_\_\_\_\_  
Christopher S. Wood, Executive Director  
Connecticut Siting Council






**UNITED STATES  
POSTAL SERVICE®**

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usps.com  
**US POSTAGE**  
Flat Rate Env



12/05/2020

Mailed from 06268 062S0000001311

**PRIORITY MAIL 1-DAY™**

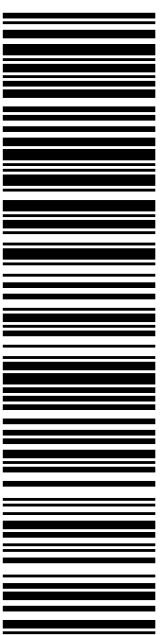
QC DEVELOPMENT  
 PO BOX 916  
 STORRS CT 06268-0916

Expected Delivery Date: 12/07/20

**0024**

**SHIP** MR. PETER SOUZA  
 TO: TOWN OF WINDSOR  
 275 BROAD ST  
 CC: ERIC BARZ, TOWN PLANNER  
 WINDSOR CT 06095-2940

**USPS TRACKING #**



**9405 5036 9930 0154 7816 63**

Electronic Rate Approved #038555749



Cut on dotted line.

### Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
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### Click-N-Ship® Label Record

**USPS TRACKING # :**  
**9405 5036 9930 0154 7816 63**

Trans. #: 515960653	Priority Mail® Postage: <b>\$7.75</b>
Print Date: 12/04/2020	Total: <b>\$7.75</b>
Ship Date: 12/05/2020	
Expected Delivery Date: 12/07/2020	

**From:** QC DEVELOPMENT  
 PO BOX 916  
 STORRS CT 06268-0916

**To:** MR. PETER SOUZA  
 TOWN OF WINDSOR  
 275 BROAD ST  
 CC: ERIC BARZ, TOWN PLANNER  
 WINDSOR CT 06095-2940

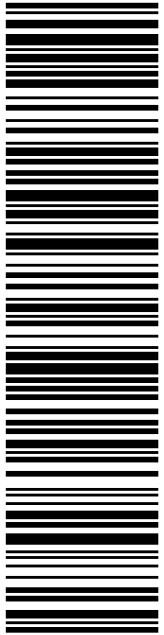
\* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



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**SHIP TO:** CELCO PARTNERSHIP  
C/O VERIZON WIRELESS  
PO BOX 2549  
ADDISON TX 75001-2549

**USPS TRACKING #**



**9405 5036 9930 0154 7816 87**


QC DEVELOPMENT  
PO BOX 916  
STORRS CT 06268-0916

**PRIORITY MAIL 2-DAY™**

Expected Delivery Date: 12/08/20

**B031**

**0004**



**Click-N-Ship®**

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US POSTAGE \$7.75  
Flat Rate Env  
12/05/2020 Mailed from 06268 062S0000000101



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PO BOX 916  
STORRS CT 06268-0916

**To:** CELCO PARTNERSHIP  
C/O VERIZON WIRELESS  
PO BOX 2549  
ADDISON TX 75001-2549

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