



QC Development

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July 18, 2018

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) – CT2268
38 Spring Hill Lane, Bethel, CT 06801
N 41.36221389
W 73.39654167

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 122-foot level of the existing 125-foot Monopole at 38 Spring Hill Road, Bethel, CT. The tower and property are owned by Blue Sky Towers. AT&T now intends to add three (3) Kathrein antennas, three (3) Ericsson RRUS-32 B66 and three (3) Ericsson 4478-B14 remote radio units (RRU). The new antennas and RRUs will be installed at the 122-foot level.

This facility was approved by the Connecticut Siting Council, Docket No. 288 on August 12, 2004. This approval included no condition(s) that could feasibly be violated by this modification, including total facility height or mounting restrictions. This modification therefore 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 Matt Knickerbocker, First Selectman of the Town of Bethel and the Bethel Land Use Department, as well as the tower and property owner.

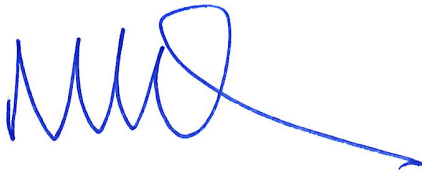
The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

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,

A handwritten signature in blue ink, consisting of several loops and a long tail that ends in an arrowhead pointing to the right.

Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Matt Knickerbocker - as Elected Official
Beth Cavagna – Director/Town Planner
Blue Sky Towers LLC - as tower and property owner

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm ²)	Freq. Band (MHz ^{**})	Limit S (mW/cm ²)	%MPE
Other Carriers*							14.02%
AT&T GSM	2	762	122	0.0407	850	0.5667	0.72%
AT&T UMTS	2	414	122	0.0221	850	0.5667	0.39%
AT&T UMTS	2	656	122	0.0351	1900	1.0000	0.35%
AT&T LTE	2	1183	122	0.0632	700	0.4667	1.35%
AT&T LTE	2	1423	122	0.0761	1900	1.0000	0.76%
AT&T LTE	2	2154	122	0.1151	2300	1.0000	1.15%
Site Total							18.75%

*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 ²)	Freq. Band (MHz ^{**})	Limit S (mW/cm ²)	%MPE
Other Carriers*							14.02%
AT&T UMTS	1	271	122	0.0072	850	0.5667	0.13
AT&T LTE	1	2951	122	0.0789	700	0.4667	1.69%
AT&T LTE	2	1476	122	0.0789	700	0.4667	1.69%
AT&T LTE	1	1000	122	0.0267	850	0.5667	0.47%
AT&T LTE	2	4842	122	0.2588	1900	1.0000	2.59%
AT&T LTE	1	5070	122	0.1355	2100	1.0000	1.35%
AT&T LTE	1	1285	122	0.0343	2300	1.0000	0.34%
Site Total							22.29%

*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

PROJECT INFORMATION

SCOPE OF WORK: TOP – INSTALL (3) OCTOPORT ANTENNAS IN POSITION (3), (1) 8' FOR ALPHA (1) 6' FOR BETA/GAMMA. INSTALL (3) AWS RRUS-32 B66, (3) 700-4478 FIRSTNET RADIOS & (1) DC SQUID.
 BOTTOM – REPLACE BB WITH RBS5216. SWAP IDL2 FOR IDLE.

SITE ADDRESS: 38 SPRING HILL LANE
 BETHEL, CT 06801

LATITUDE: 41° 21' 43.94" N (NAD 83)*
 LONGITUDE: 73° 23' 47.68" W (NAD 83)*
 *PER EXISTING AT&T PLANS

NAME OF APPLICANT: AT&T MOBILITY
 550 COCHITUATE ROAD
 SUITES 13 & 14
 FRAMINGHAM, MA 01701

CURRENT USE: TELECOMMUNICATIONS FACILITY
 PROPOSED USE: TELECOMMUNICATIONS FACILITY



at&t
 Mobility

SITE NAME: BETHEL SPRING STREET 6C/7C/FIRSTNET
SITE NUMBER: CT2268
PACE NO.: MRCTB026939 (6C) / MRCTB026920 (7C) / MRCTB026832 (FIRSTNET)

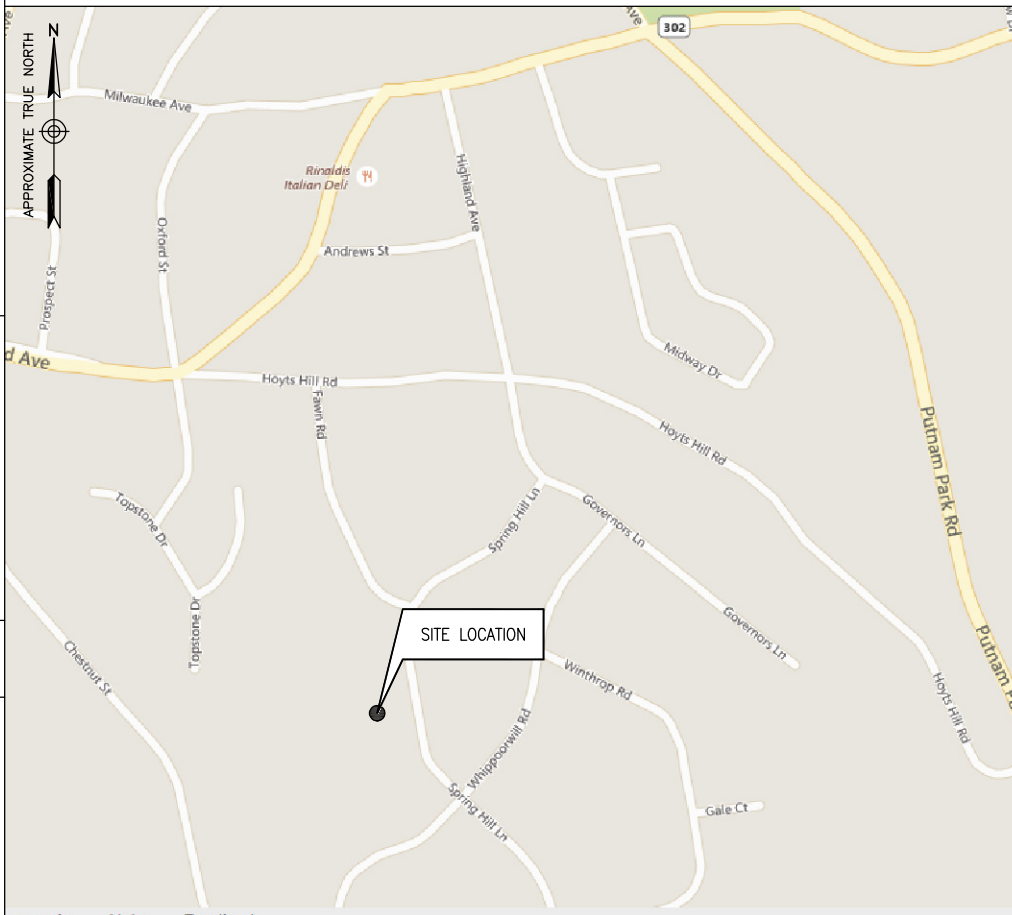
DRAWING INDEX

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VICINITY MAP

DIRECTIONS: TAKE I-91 S. TAKE EXIT 18 FOR I-691 W. TAKE EXIT 1 TO MERGE ONTO I-84 W. TAKE EXIT 11 TOWARD CT-34. TURN LEFT ONTO WASSERMAN WAY. CONTINUE ONTO MILE HILL ROAD. TURN RIGHT ONTO S MAIN STREET. TURN LEFT ONTO SUGAR STREET. TURN LEFT ONTO HIGHLAND AVENUE. CONTINUE ONTO GOVERNORS LANE. TURN RIGHT ONTO SPRING HILL ROAD. THE SITE WILL BE ON THE RIGHT.



APPLICABLE BUILDING CODES & STANDARDS

CONTRACTOR'S WORK SHALL COMPLY WITH PROJECT STANDARD NOTES, SYMBOLS & DETAILS (SEE DRAWING INDEX FOR STANDARD NOTES & DETAILS INCLUDED WITH TYPICAL DRAWING PACKAGE). CONTRACTOR WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, & LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES & STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE:
 INTERNATIONAL BUILDING CODE (IBC)

ELECTRICAL CODE:
 NATIONAL ELECTRICAL CODE (NEC)

CONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS. AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER & ANTENNA SUPPORTING STRUCTURES:
 TIA 607, COMMERCIAL BUILDING GROUNDING & BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL & ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, & EARTH SURFACE POTENTIALS OF A GROUND SYSTEM
 IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING & GROUNDING OF ELECTRONIC EQUIPMENT

IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" & "HIGH SYSTEM EXPOSURE")

TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

ANSI T1.311, FOR TELECOM – DC POWER SYSTEMS – TELECOM, ENVIRONMENTAL PROTECTION

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

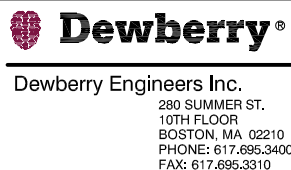
THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE & ITS SITE CONDITIONS & IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

STRUCTURAL NOTE:

- AS REQUIRED UNDER TIA/EIA 222H – STANDARD, CENTERLINE COMMUNICATIONS SHALL PROVIDE A STRUCTURAL ANALYSIS OF THE TOWER PREPARED BY A LICENSED CONNECTICUT STRUCTURAL ENGINEER CERTIFYING THAT, THE EXISTING TOWER & ANY REQUIRED IMPROVEMENTS & REINFORCEMENTS HAVE SUFFICIENT CAPACITY TO SUPPORT ALL EXISTING & PROPOSED ANTENNAS, SUPPORTS & APPURTENANCES & COMPLIES WITH THE CURRENT CONNECTICUT STATE BUILDING CODE & EIA/TIA CRITERIA. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS & REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, SUPPORTS & APPURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.

CONTACT INFORMATION

CONTACT	CONTACT	COMPANY	PHONE NO.
ENGINEERING:	BENJAMIN REVETTE, P.E.	DEWBERRY ENGINEERS INC.	(617) 531-0800
SAC:	DAVID FORD	CENTERLINE COMMUNICATIONS	(508) 821-6509



**BETHEL SPRING STREET
 6C/7C/FIRSTNET
 SITE NO. CT2268**
 38 SPRING HILL LANE
 BETHEL, CT 06801



NO.	DATE	REVISIONS	BY	CHK	APP'D
2	07/18/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
1	05/24/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
0	05/23/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
A	02/09/18	ISSUED FOR REVIEW	MR	DAS	DAS

SCALE: AS SHOWN DESIGNED BY: DAS DRAWN BY: MH



AT&T MOBILITY
 FRAMINGHAM, MA 01701

TITLE SHEET

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083725	T01	2

GENERAL NOTES:

- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
PROJECT MANAGEMENT – SAI COMMUNICATIONS
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 & 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 & INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, & ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES & COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, & LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
- ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL & UTILITY COMPANY SPECIFICATIONS & LOCAL JURISDICTIONAL CODES, ORDINANCES & APPLICABLE REGULATIONS.
- DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED & ARE INTENDED TO SHOW OUTLINE ONLY.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, & LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT & 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 & T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING & 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 & PROPOSED IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING & STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- CONTRACTOR SHALL LEGALLY & PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES & 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 & DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, & PROCEDURES & 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 & WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEER REVIEW.
- CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS & 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 CONTRACTOR. 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.
- CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS & RECOMMENDATIONS & SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE & PPM & CONSTRUCTION DEVICES SUCH AS WELDING & FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.

SITE WORK GENERAL NOTES:

- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, & OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, & 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 & PROJECT SPECIFICATIONS.
- IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, TOP SOIL & OTHER REFUSE SHALL BE REMOVED FROM THE SITE & DISPOSED OF LEGALLY.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC & 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 & 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 & 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 & NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, & STABILIZED TO PREVENT EROSION.
- EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION & SEDIMENT CONTROL.

CONCRETE & REINFORCING STEEL NOTES:

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 & THE DESIGN & CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000 PSI) MAY BE USED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE (UNO). SPLICES SHALL BE CLASS "B" & ALL HOOKS SHALL BE STANDARD, UNO.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
CONCRETE CAST AGAINST EARTH.....3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 & LARGER2 IN.
#5 & SMALLER & WWF1 1/2 IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB & WALL3/4 IN.
BEAMS & COLUMNS1 1/2 IN.
- A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- 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.
- CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC 1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER:
(A) RESULTS OF CONCRETE CYLINDER TESTS PERFORMED AT THE SUPPLIER'S PLANT,
(B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
- AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY & THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
- EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

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 & 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 & 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 & 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 & PLACE CRUSHED STONE AS REQUIRED.
- COMPACTION CERTIFICATION: AN INSPECTION & WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.
- AS AN ALTERNATIVE TO INSPECTION & 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 & 3 PROOFROLL 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 & REPLACED WITH A WELL-GRADED GRANULAR FILL, & 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 & ANTENNAS TO BE REPLACED.
- COORDINATION OF WORK:
CONTRACTOR SHALL COORDINATE RF WORK & PROCEDURES WITH PROJECT MANAGEMENT.
- CABLE LADDER RACK:
CONTRACTOR SHALL FURNISH & INSTALL CABLE LADDER RACK, CABLE TRAY, & CONDUIT AS REQUIRED TO SUPPORT CABLES TO ANY NEW BTS LOCATION.

ELECTRICAL INSTALLATION NOTES:

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC & ALL APPLICABLE LOCAL CODES.
- CONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF & TRANSPORT CABLING TO NEW BTS 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 & SUPPORT METHODS & MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC & TELCORDIA.
- ALL CIRCUITS SHALL BE SEGREGATED & MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC & TELCORDIA.
- CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
- EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, & T1 CONDUCTOR & 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, & 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, & BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD & CIRCUIT ID'S).
- PANELBOARDS (ID NUMBERS) & 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, & 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 & DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION & 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 & 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 & DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION & 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 & 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 & DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
- ALL POWER & POWER GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS & WIRENUTS BY THOMAS & BETTS (OR EQUAL). LUGS & WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
- RACEWAY & CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, & 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 & OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT & TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE & APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES, & WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, & NEC.
- CABINETS, BOXES, & WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- WIREWAYS SHALL BE EPOXY-COATED (GRAY) & INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); & RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, & PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, & RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- METAL RECEPTACLE, SWITCH, & DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A & NEMA OS 1; & RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- NONMETALLIC RECEPTACLE, SWITCH, & DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; & RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- THE CONTRACTOR SHALL NOTIFY & 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 & DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES & STANDARDS TO SAFEGUARD AGAINST LIFE & PROPERTY.

Dewberry Engineers Inc.
280 SUMMER ST.
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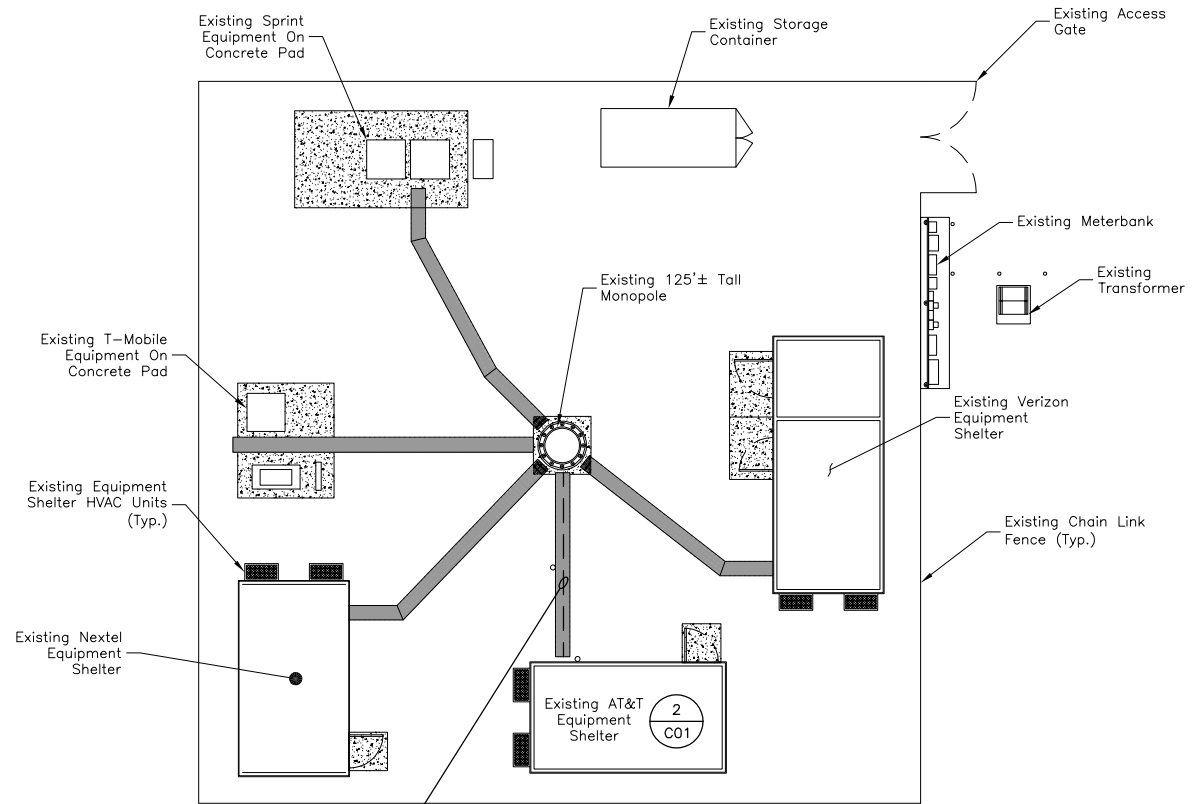
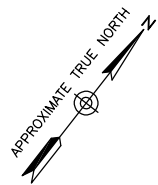
12 INDUSTRIAL WAY
SALEM, NH 03079

BETHEL SPRING STREET
6C/7C/FIRSTNET
SITE NO. CT2268
38 SPRING HILL LANE
BETHEL, CT 06801



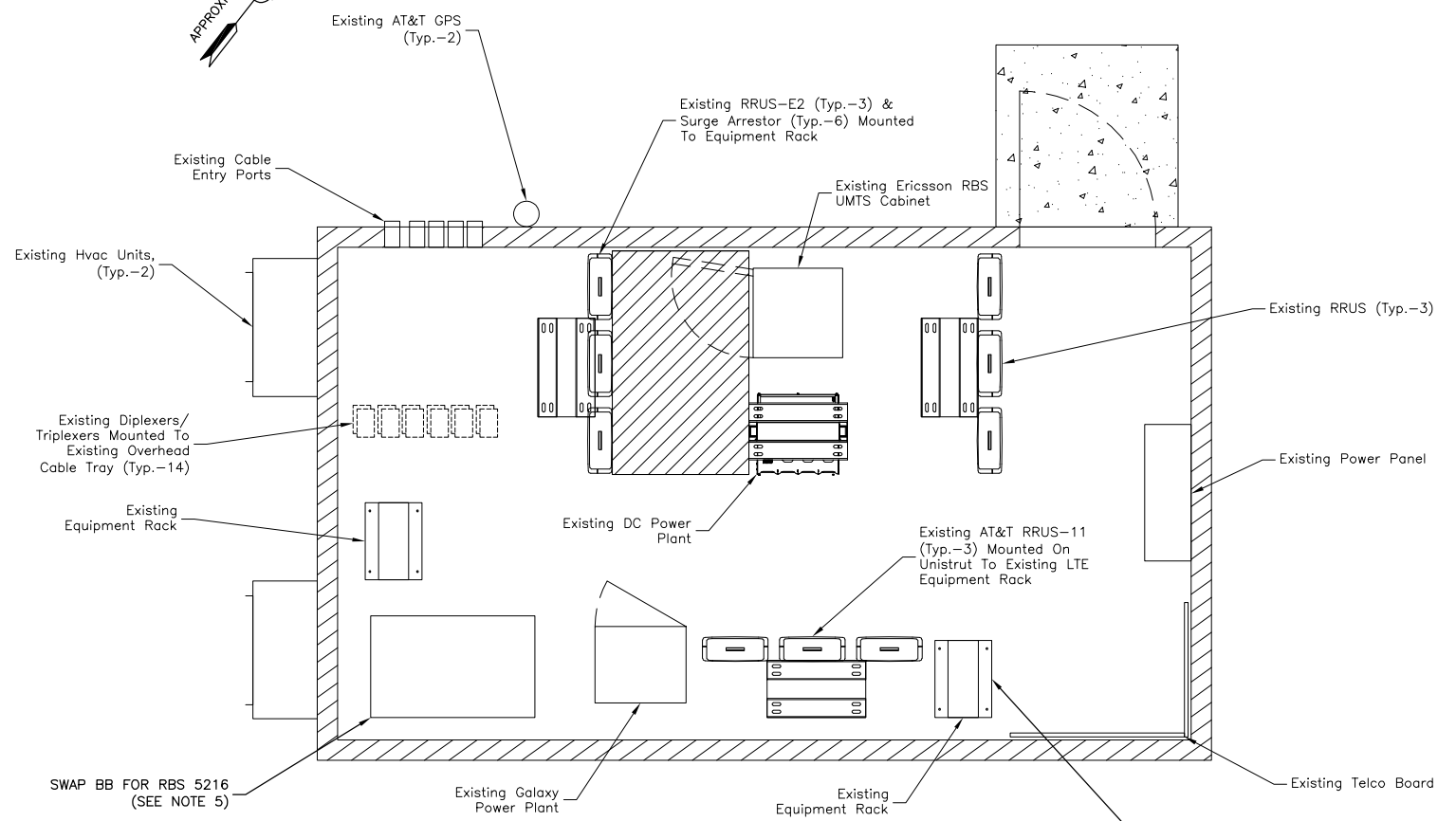
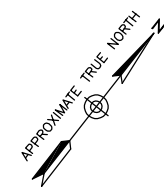
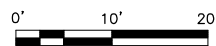
at&t
Mobility
550 COCHITUATE ROAD
SUITES 13 & 14
FRAMINGHAM, MA 01701

2	07/18/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
1	05/24/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
0	05/23/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
A	02/09/18	ISSUED FOR REVIEW	MR	DAS	DAS
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN			DESIGNED BY: DAS	DRAWN BY: MH	
AT&T MOBILITY FRAMINGHAM, MA 01701					
GENERAL NOTES					
DEWBERRY NO.			DRAWING NUMBER		REV
50019239/50083725			G01		2



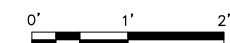
PROPOSED SITE PLAN

SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"



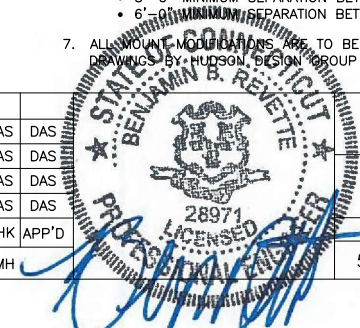
PROPOSED SHELTER PLAN

SCALE: 1"=2' FOR 11"x17"
1"=1' FOR 22"x34"



NOTES:

- NORTH ARROW SHOWN AS APPROXIMATE.
- ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY RAMAKER & ASSOCIATES DATED 04-19-18 & MOUNT STRUCTURAL ANALYSIS BY RAMAKER & ASSOCIATES, INC. DATED 07-10-18.
- NOT ALL INFORMATION SHOWN FOR CLARITY.
- EQUIPMENT MODIFICATION SCOPE:
 - TOP - INSTALL (3) OCTOPORT ANTENNAS IN POSITION (3), (1) 8' FOR ALPHA (1) 6' FOR BETA/GAMMA. INSTALL (3) AWS RRUS-32 B66, (3) 700-4478 FIRSTNET RADIOS & (1) DC SQUID.
 - BOTTOM - REPLACE BB WITH RBS5216. SWAP IDL2 FOR IDLE.
- ALL SPACING REQUIREMENTS FOR PROPOSED RRU MOUNTS SHALL BE CONFIRMED & SHALL NOT IMPEDE CLIMBING PEGS, TIE OFF FEATURES, OR OTHER EXISTING SAFETY FEATURES. ALL MOUNTS SHALL MAINTAIN EXISTING/PROPOSED MANUFACTURER REQUIREMENTS & SHALL NOT EXCEED THE TOP OF THE TOWER OR INTERFERE WITH OTHER RAD CENTERS.
- CONTRACTOR SHALL VERIFY ANTENNA SPACING IN FIELD & RELOCATE PIPE MASTS AS REQUIRED TO MEET ANTENNA SPACING REQUIREMENTS. THE ANTENNA SPACING REQUIREMENTS ARE AS FOLLOWS:
 - 3'-0" MINIMUM SEPARATION BETWEEN LTE ANTENNAS
 - 6'-0" MINIMUM SEPARATION BETWEEN 700BC & 700DE
- ALL MOUNT MODIFICATIONS ARE TO BE MADE IN ACCORDANCE WITH REV-0 MOUNT MODIFICATION DESIGN DRAWINGS BY HUDSON DESIGN GROUP LLC. DATED 05/02/18.



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12 INDUSTRIAL WAY
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**BETHEL SPRING STREET
6C/7C/FIRSTNET
SITE NO. CT2268**
38 SPRING HILL LANE
BETHEL, CT 06801



**at&t
Mobility**
550 COCHITUATE ROAD
SUITES 13 & 14
FRAMINGHAM, MA 01701

2	07/18/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
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0	05/23/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
A	02/09/18	ISSUED FOR REVIEW	MR	DAS	DAS
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: DAS	DRAWN BY: MH		

AT&T MOBILITY
FRAMINGHAM, MA 01701

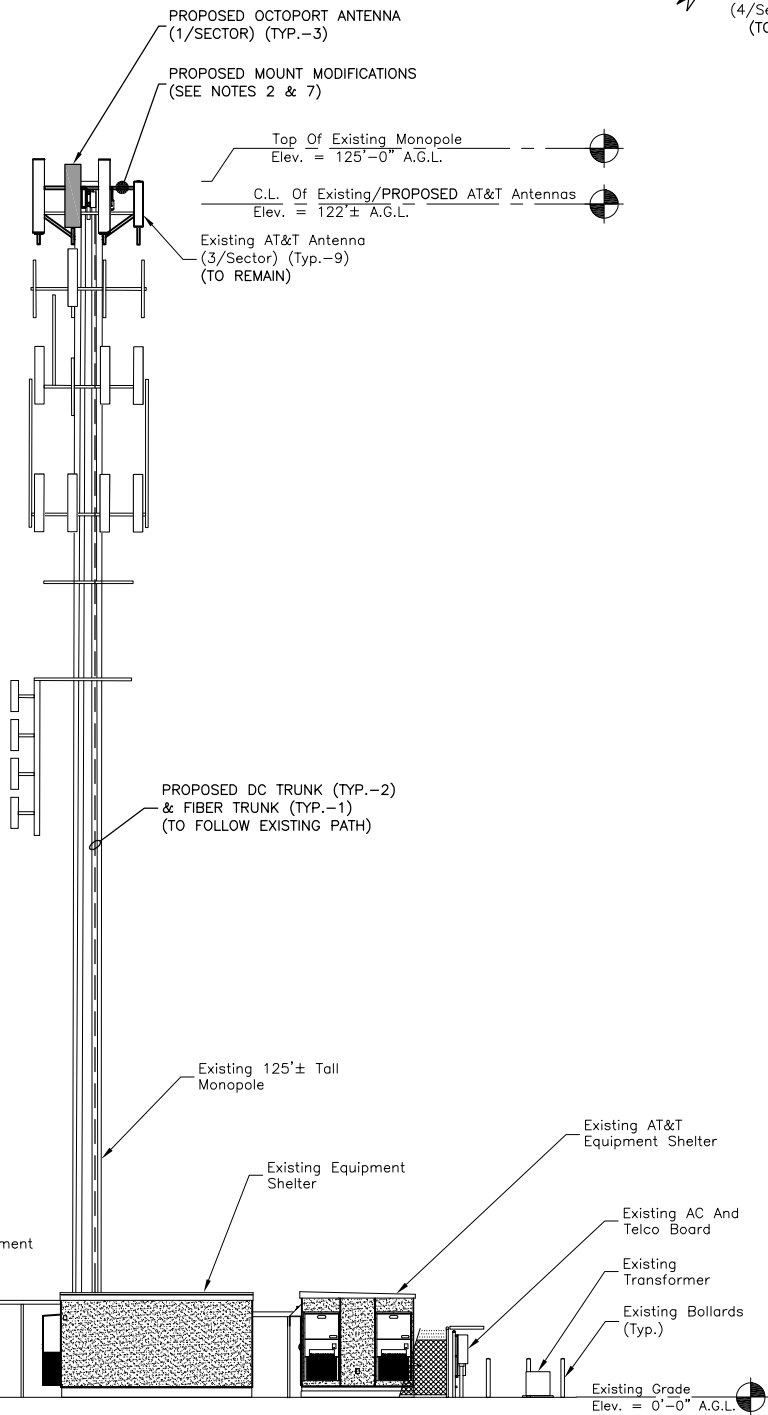
PROPOSED SITE PLAN & SHELTER PLAN

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083725	C01	2

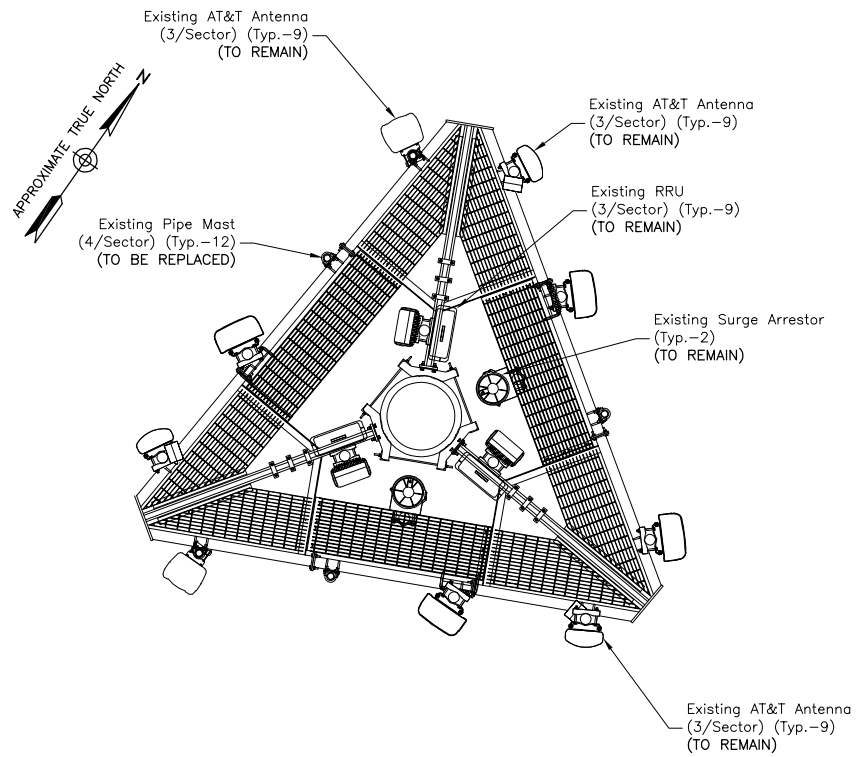
MOUNT NOTE
 CONTRACTOR TO CONFIRM ANTENNA AZIMUTHS AND ALIGNMENT WITH EXISTING PLATFORM IN THE FIELD PRIOR TO CONSTRUCTION. ROTATE EXISTING ANTENNA MOUNTS TO MINIMIZE SKEW OF PROPOSED LTE ANTENNAS AS REQUIRED. VERIFY WITH AT&T C.M. AND R.F. PRIOR TO COMMENCING MOUNT ALTERATIONS.

NOTES:

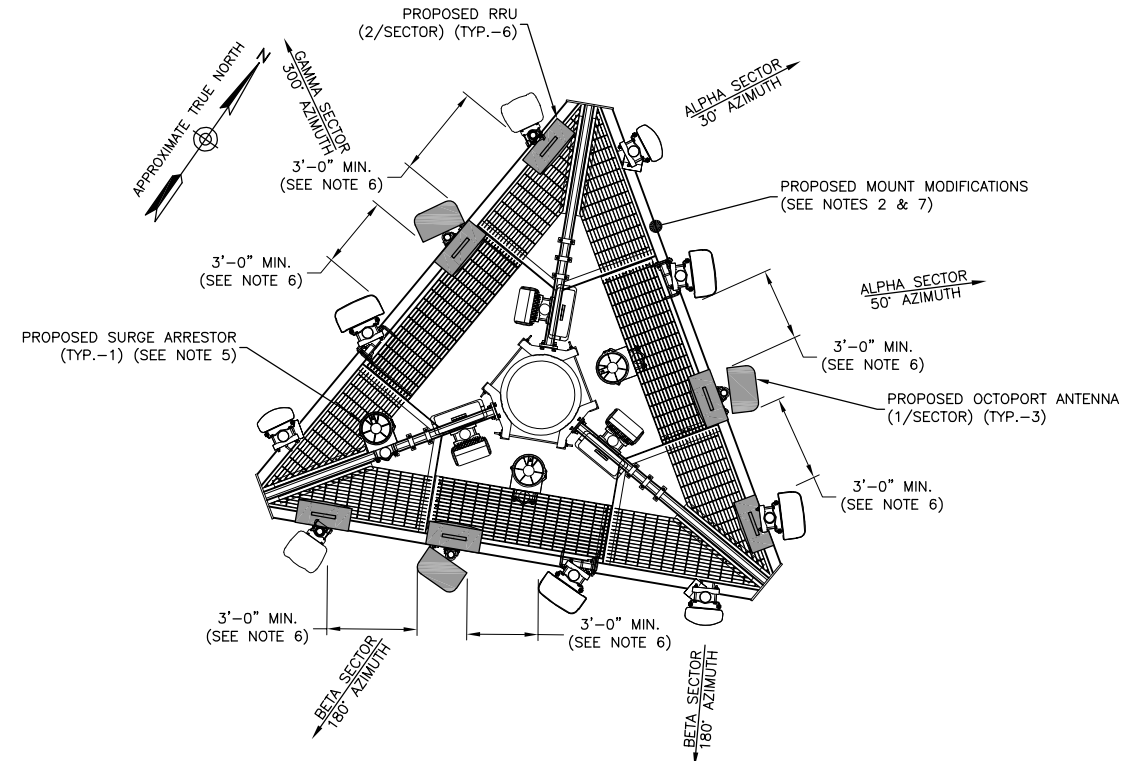
1. NORTH ARROW SHOWN AS APPROXIMATE.
2. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY RAMAKER & ASSOCIATES DATED 04-19-18 & MOUNT STRUCTURAL ANALYSIS BY RAMAKER & ASSOCIATES, INC. DATED 07-10-18.
3. NOT ALL INFORMATION SHOWN FOR CLARITY.
4. EQUIPMENT MODIFICATION SCOPE:
 TOP - INSTALL (3) OCTOPORT ANTENNAS IN POSITION (3), (1) 8' FOR ALPHA (1) 6' FOR BETA/GAMMA. INSTALL (3) AWS RRU-32 B66, (3) 700-4478 FIRSTNET RADIOS & (1) DC SQUID.
 BOTTOM - REPLACE BB WITH RBS5216. SWAP IDL2 FOR IDLE.
5. ALL SPACING REQUIREMENTS FOR PROPOSED RRU MOUNTS SHALL BE CONFIRMED & SHALL NOT IMPEDE CLIMBING PEGS, TIE OFF FEATURES, OR OTHER EXISTING SAFETY FEATURES. ALL MOUNTS SHALL MAINTAIN EXISTING/PROPOSED MANUFACTURER REQUIREMENTS & SHALL NOT EXCEED THE TOP OF THE TOWER OR INTERFERE WITH OTHER RAD CENTERS.
6. CONTRACTOR SHALL VERIFY ANTENNA SPACING IN FIELD & RELOCATE PIPE MASTS AS REQUIRED TO MEET ANTENNA SPACING REQUIREMENTS. THE ANTENNA SPACING REQUIREMENTS ARE AS FOLLOWS:
 - 3'-0" MINIMUM SEPARATION BETWEEN LTE ANTENNAS
 - 6'-0" MINIMUM SEPARATION BETWEEN 700BC & 700DE
7. ALL MOUNT MODIFICATIONS ARE TO BE MADE IN ACCORDANCE WITH REV-0 MOUNT MODIFICATION DESIGN DRAWINGS BY HUDSON DESIGN GROUP LLC. DATED 05/02/18.



PROPOSED ELEVATION 1
 SCALE: 1"=20' FOR 11"x17"
 1"=10' FOR 22"x34"
 0' 10' 20'



EXISTING



PROPOSED

ANTENNA ORIENTATION PLAN 2
 SCALE: N.T.S.

FINAL EQUIPMENT CONFIGURATION										
SECTOR	BAND	ANTENNA	SIZE (INCHES) (LxWxD)	RAD. CENTER	AZIMUTH	TMA	RRU	SIZE (INCHES) (LxWxD)	COAX FEEDERS	FIBER
ALPHA	UMTS 850	POWERWAVE 7770	55.0x11.0x5.0	122'±	30°	(E) POWERWAVE LGP 21401 (E) POWERWAVE LGP 21401	-	-	E (2)	-
	LTE 700 DE/PCS/850	HPA-65R-BUU-H8	92.4x14.8x7.4	122'±	50°	-	(E) RRU-11 (AT GRADE) (E) RRU-E2 (AT GRADE) (E) RRU-32 B2	27.2 x 12.1 x 7.0 20.4 x 18.5 x 7.5 27.2 x 12.1 x 7.0	E (2)	E (1)
	LTE B14/AWS J	(P) 800-10966	96.0x20.0x6.9	122'±	50°	-	(P) RRU B14-4478 (P) RRU-32 B66	15.0 x 13.2 x 5.4 27.2 x 12.1 x 7.0	-	P (1)
	LTE 700 BC/WCS	TPA-65R-LCUUUU-H8	96.0x14.4x8.6	122'±	50°	-	(E) RRU-11 (E) RRU-32	27.2 x 12.1 x 7.0 27.2 x 12.1 x 7.0	-	-
BETA	UMTS 850	POWERWAVE 7770	55.0x11.0x5.0	122'±	150°	(E) POWERWAVE LGP 21401 (E) POWERWAVE LGP 21401	-	-	E (2)	-
	LTE 700 DE/PCS/850	HPA-65R-BUU-H6	72.0x14.8x9.0	122'±	180°	-	(E) RRU-11 (AT GRADE) (E) RRU-E2 (AT GRADE) (E) RRU-32 B2	27.2 x 12.1 x 7.0 20.4 x 18.5 x 7.5 27.2 x 12.1 x 7.0	E (2)	E (1)
	LTE B14/AWS J	(P) 800-10966	96.0x20.0x6.9	122'±	180°	-	(P) RRU B14-4478 (P) RRU-32 B66	15.0 x 13.2 x 5.4 27.2 x 12.1 x 7.0	-	P (1)
	LTE 700 BC/WCS	QS66512-2	72.0x12.0x9.6	122'±	180°	-	(E) RRU-11 (E) RRU-32	27.2 x 12.1 x 7.0 27.2 x 12.1 x 7.0	-	-
GAMMA	UMTS 850	POWERWAVE 7770	55.0x11.0x5.0	122'±	300°	(E) POWERWAVE LGP 21401 (E) POWERWAVE LGP 21401	-	-	E (2)	-
	LTE 700 DE/PCS/850	HPA-65R-BUU-H6	72.0x14.8x9.0	122'±	300°	-	(E) RRU-11 (AT GRADE) (E) RRU-E2 (AT GRADE) (E) RRU-32 B2	27.2 x 12.1 x 7.0 20.4 x 18.5 x 7.5 27.2 x 12.1 x 7.0	E (2)	E (1)
	LTE B14/AWS J	(P) 800-10966	96.0x20.0x6.9	122'±	300°	-	(P) RRU B14-4478 (P) RRU-32 B66	15.0 x 13.2 x 5.4 27.2 x 12.1 x 7.0	-	P (1)
	LTE 700 BC/WCS	QS66512-2	72.0x12.0x9.6	122'±	300°	-	(E) RRU-11 (E) RRU-32	27.2 x 12.1 x 7.0 27.2 x 12.1 x 7.0	-	-

FINAL EQUIPMENT CONFIGURATION 3
 SCALE: N.T.S.

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SAI
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 SALEM, NH 03079

**BETHEL SPRING STREET
 6C/7C/FIRSTNET
 SITE NO. CT2268**
 38 SPRING HILL LANE
 BETHEL, CT 06801

at&t
 Mobility
 550 COCHITUATE ROAD
 SUITES 13 & 14
 FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	07/18/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
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0	05/23/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
A	02/09/18	ISSUED FOR REVIEW	MR	DAS	DAS

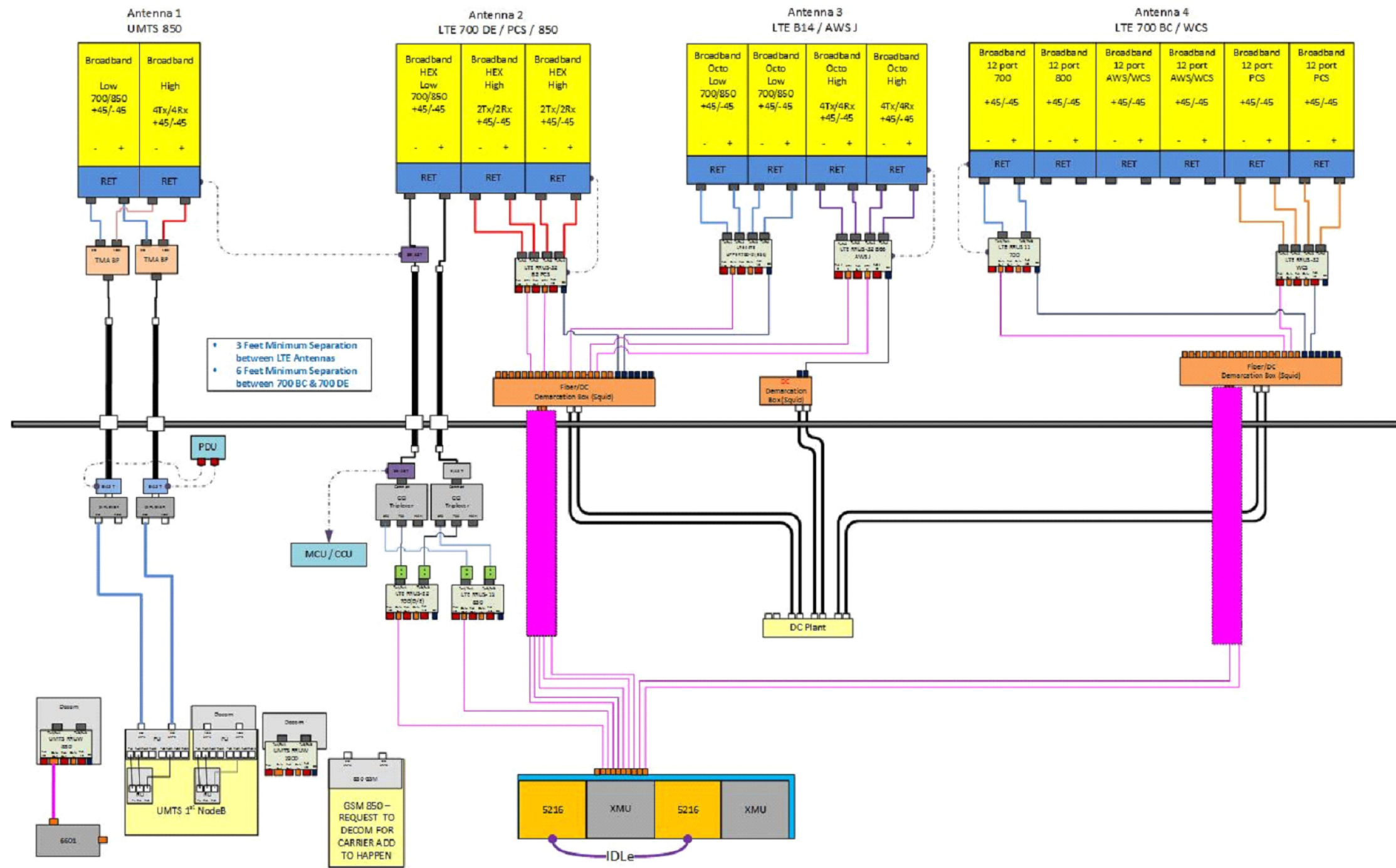
SCALE: AS SHOWN DESIGNED BY: DAS DRAWN BY: MH



AT&T MOBILITY
 FRAMINGHAM, MA 01701

PROPOSED ELEVATION & CONSTRUCTION DETAILS

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083725	C02	2



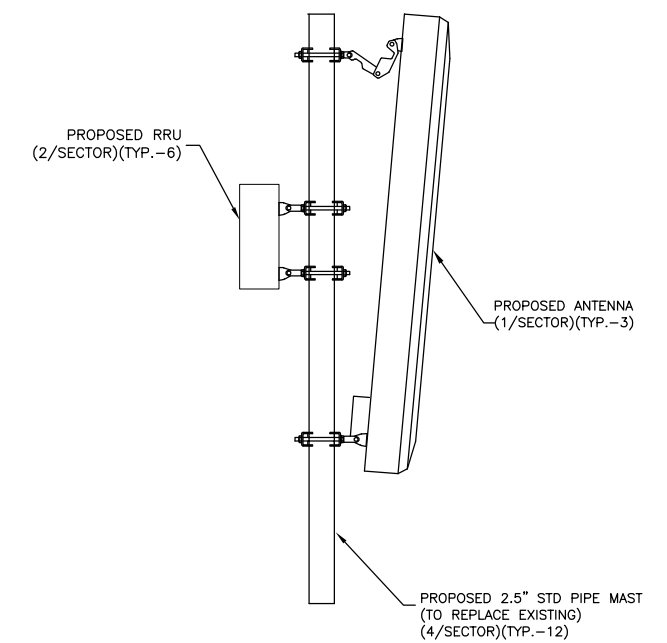
EQUIPMENT PLUMBING DIAGRAM

SCALE: N.T.S.

1

NOTES:

1. EQUIPMENT PLUMBING DIAGRAM PER RFDS VERSION 4 DATED 12/07/17.
2. CONTRACTOR TO VERIFY FINAL EQUIPMENT CONFIGURATION & SEPARATIONS WITH AT&T PRIOR TO CONSTRUCTION.



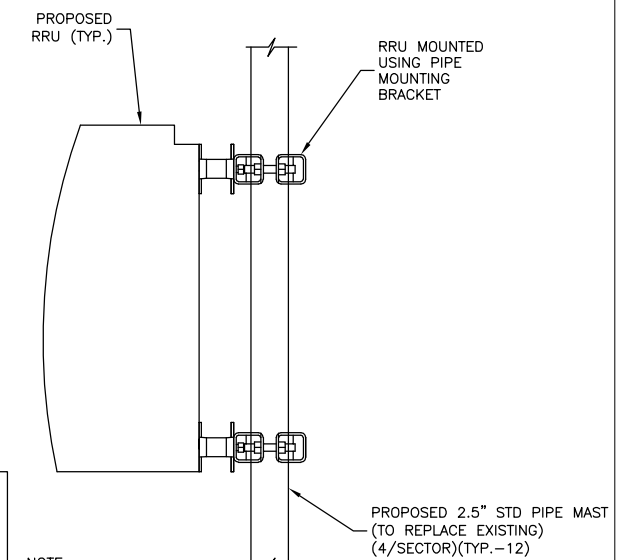
NOTE:

1. FIELD VERIFY CONDITION OF EXISTING MOUNTING HARDWARE. REPAIR OR REPLACE AS REQUIRED.
2. REFER TO LATEST RF DATA SHEET FOR SPECIFIC ANTENNA SETTINGS & MODEL.

ANTENNA MOUNT DETAIL

SCALE: N.T.S.

2



MOUNTING CLEARANCE
 TOP: 1'-6" - 3'-0"
 SIDES: 4"-12"
 BOTTOM: 16"
 FRONT: 2'-0" - 4'-0"

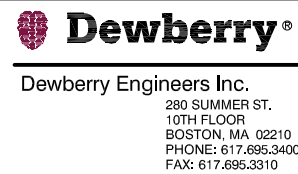
NOTE:

1. FIELD VERIFY CONDITION OF EXISTING MOUNTING HARDWARE. REPAIR OR REPLACE AS REQUIRED.
2. REFER TO LATEST RF DATA SHEET FOR SPECIFIC ANTENNA SETTINGS & MODEL.
3. SURGE MOUNTED SIMILARLY.

REMOTE ATTACHMENT DETAIL

SCALE: N.T.S.

3



**BETHEL SPRING STREET
 6C/7C/FIRSTNET
 SITE NO. CT2268**
 38 SPRING HILL LANE
 BETHEL, CT 06801



NO.	DATE	REVISIONS	BY	CHK	APP'D
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0	05/23/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
A	02/09/18	ISSUED FOR REVIEW	MR	DAS	DAS

SCALE: AS SHOWN DESIGNED BY: DAS DRAWN BY: MH



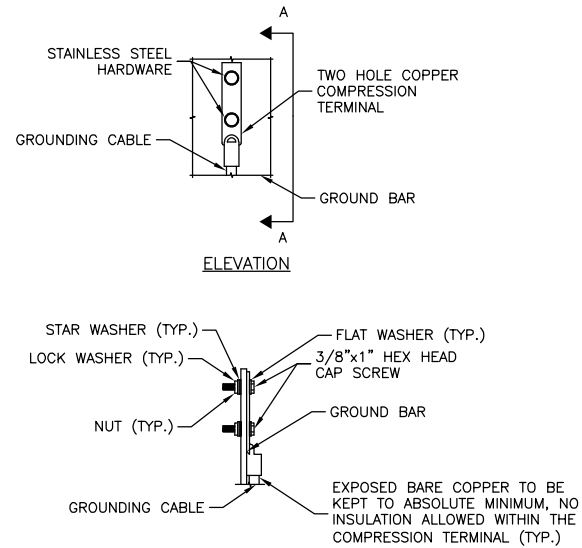
AT&T MOBILITY
 FRAMINGHAM, MA 01701

EQUIPMENT PLUMBING DIAGRAM

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083725	C03	2

GROUNDING NOTES:

- THE CONTRACTOR SHALL REVIEW & INSPECT THE EXISTING FACILITY GROUNDING SYSTEM & LIGHTNING PROTECTION SYSTEM (AS DESIGNED & INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, & GENERAL COMPLIANCE WITH TELCORDIA & TIA GROUNDING STANDARDS. THE CONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
- ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, & AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS. ALL AVAILABLE GROUNDING ELECTRODES SHALL BE CONNECTED TOGETHER IN ACCORDANCE WITH THE NEC.
- THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 & 81) FOR GROUND ELECTRODE SYSTEMS. USE OF OTHER METHODS MUST BE PRE-APPROVED BY CONTRACTOR IN WRITING.
- THE CONTRACTOR SHALL FURNISH & INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS ON TOWER SITES & 10 OHMS OR LESS ON ROOFTOP SITES. WHEN ADDING ELECTRODES, CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE BETWEEN THE ADDED ELECTRODE & ANY OTHER EXISTING ELECTRODE EQUAL TO THE BURIED LENGTH OF THE ROD. IDEALLY, CONTRACTOR SHALL STRIVE TO KEEP THE SEPARATION DISTANCE EQUAL TO TWICE THE BURIED LENGTH OF THE RODS.
- THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING & UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
- METAL CONDUIT & TRAY SHALL BE GROUNDED & MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE & UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED & INSTALLED WITH THE POWER CIRCUITS TO TRANSMISSION EQUIPMENT.
- CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK-TO-BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8 INCHES.
- EACH INTERIOR TRANSMISSION CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH 6 AWG STRANDED, GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRE UNLESS NOTED OTHERWISE IN THE DETAILS. EACH OUTDOOR CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER WIRE UNLESS NOTED OTHERWISE IN THE DETAILS.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS & THE GROUND RING, SHALL BE 2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE. CONNECTIONS TO ABOVE GRADE UNITS SHALL BE MADE WITH EXOTHERMIC WELDS WHERE PRACTICAL OR WITH 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS. HIGH PRESSURE CRIMP CONNECTORS MAY ONLY BE USED WITH WRITTEN PERMISSION FROM SAI COMMUNICATIONS COMMUNICATIONS MARKET REPRESENTATIVE.
- EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
- ALL WIRE TO WIRE GROUND CONNECTIONS TO THE INTERIOR GROUND RING SHALL BE FORMED USING HIGH PRESS CRIMPS OR SPLIT BOLT CONNECTORS WHERE INDICATED IN THE DETAILS.
- ON ROOFTOP SITES WHERE EXOTHERMIC WELDS ARE A FIRE HAZARD COPPER COMPRESSION CAP CONNECTORS MAY BE USED FOR WIRE TO WIRE CONNECTORS. 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS SHALL BE USED FOR CONNECTION TO ALL ROOFTOP TRANSMISSION EQUIPMENT & STRUCTURAL STEEL.
- COAX BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE & THE TOWER GROUND BAR USING TWO-HOLE MECHANICAL TYPE BRASS CONNECTORS & STAINLESS STEEL HARDWARE.
- APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION & BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL & NON-ELECTRICAL METAL BOXES, FRAMES & SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 FT OF THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER GROUND CONDUCTOR. DURING EXCAVATION FOR NEW GROUND CONDUCTORS, IF EXISTING GROUND CONDUCTORS ARE ENCOUNTERED, BOND EXISTING GROUND CONDUCTORS TO NEW CONDUCTORS.
- GROUND CONDUCTORS USED IN THE FACILITY GROUND & LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT WITH LISTED BONDING FITTINGS.



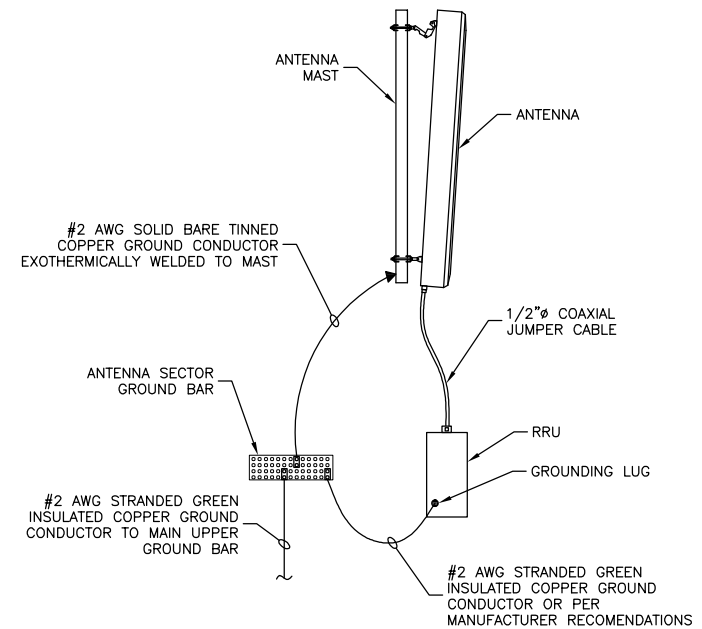
NOTES:

- DOUBLING UP OR STACKING OF CONNECTIONS IS NOT PERMITTED.
- OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL

SCALE: N.T.S.

1



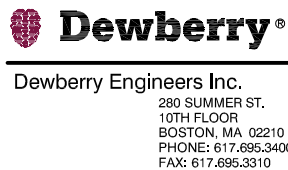
NOTES:

- VERIFY EXISTING GROUNDING SYSTEM IS INSTALLED PER AT&T STANDARDS.
- BOND NEW EQUIPMENT INTO EXISTING GROUND SYSTEM IN ACCORDANCE WITH AT&T STANDARDS & MANUFACTURER RECOMMENDATIONS.

TYPICAL ANTENNA/RRU GROUNDING DETAIL

SCALE: N.T.S.

2



**BETHEL SPRING STREET
6C/7C/FIRSTNET
SITE NO. CT2268**
38 SPRING HILL LANE
BETHEL, CT 06801



NO.	DATE	REVISIONS	BY	CHK	APP'D
2	07/18/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
1	05/24/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
0	05/23/18	ISSUED FOR CONSTRUCTION	MR	DAS	DAS
A	02/09/18	ISSUED FOR REVIEW	MR	DAS	DAS

SCALE: AS SHOWN DESIGNED BY: DAS DRAWN BY: MH



AT&T MOBILITY
FRAMINGHAM, MA 01701

GROUNDING DETAILS

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083725	E01	2



July 10, 2018

Sean Gormley
Blue Sky Towers, LLC
352 Park Street, Suite 106
N. Reading, MA 01864

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583

**SUBJECT: STRUCTURAL ASSESSMENT
125-FOOT MONOPOLE TOWER**

CARRIER: AT&T MOBILITY

**SITE: CT2268
38 SPRING HILL ROAD
BETHEL, FAIRFIELD COUNTY, CONNECTICUT 06801
RAMAKER & ASSOCIATES PROJECT NUMBER: 37840**

RESULTS:	TOWER:	98.8%	PASS WITH MODIFICATIONS
	FOUNDATION:	93.5%	PASS

Dear Sean Gormley:


Ramaker & Associates, Inc. (RAMAKER) respectfully submits this structural assessment for the above mentioned site. The purpose of this report is to determine the structural integrity of the existing structure with the existing and proposed loading. Engineering recommendations regarding the analysis results are provided in the following pages.

RAMAKER developed a finite element model of the tower using tnxTower analysis software. All information contained herein is valid only for the described structure configuration and loading conditions. RAMAKER reserves the right to modify our recommendations should alterations to the tower loading occur.

If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,

RAMAKER & ASSOCIATES, INC.


Thomas E. Moore
Project Engineer


James R. Skowronski, P.E.
Supervising Engineer



ANALYSIS CRITERIA

State Building Code	2016 CT State Building Code
Adopted Building Code	2012 IBC
Referenced Standard	TIA-222-G
Risk Category	II
Ultimate Design Wind Speed, V_{ult}	120 mph (3 sec. gust)
Nominal Design Wind Speed, V_{asd}	93 mph (3 sec. gust)
Design Wind Speed w/ Ice	50 mph (3 sec. gust)
Ice Thickness	3/4 inch
Exposure Category	B
Topographic Category	5 (SEAW RSM-03)
Crest Height	352 feet
Slope Distance	2932 feet

SUPPORTING DOCUMENTATION

- Structural analysis by Salient Associates, LLC., dated 12/14/12
- Structural analysis by Centek Engineering, project number 12124.C04, dated 3/7/13
- Structural analysis by Bennett & Pless, site number CT-5003, dated 3/25/16
- Construction drawings by RAMAKER, project number 37840
- Site visit(s) conducted by RAMAKER
- Other pertinent data procured or assumed by RAMAKER during site due diligence activities

TOWER LOADING

RAMAKER understands that the loading to be used for this analysis will consist of the antenna equipment, mount, and cable configurations as shown in the following chart:

Elevation	Appurtenance	Mount	Coax	Owner	Status
122	15' Omni	Low-Profile Platform (12) 2 STD Pipe Site Pro 1 HRK-14 Handrail Kit Site Pro 1 PRK-1245 Platform Reinforcement Kit (12) 2.5 STD Pipe	(1) 1-5/8	AT&T	Existing
	(3) Powerwave 7770.00		(12) 1-5/8 (4) DC Power (2) Fiber (2) DC Power (1) Fiber		
	(1) CCI HPA-65R-BUU-H8				
	(2) CCI HPA-65R-BUU-H6				
	(6) Powerwave LGP21401				
	(3) Ericsson RRUS-32				
	(3) Powerwave P65-16-XLH-RR				Remove
	(1) Kathrein 800-10966				
	(2) Kathrein 800-10965				
	(1) CCI TPA65R-LCUUUU-H8				Proposed
	(2) Quintel QS66512-2				
	(3) Ericsson RRUS-32 B66				
(3) Ericsson RRUS-4478 B14					
120	(3) Ericsson RRUS-32 B2	Collar Mount	(4) Hybrid	Sprint	Existing
	(3) Ericsson RRUS-11				
	(2) Raycap DC6-48-60-18-8F				
	(1) Raycap DC6-48-60-18-8F				Proposed
115	(3) RFS APXVSP18-C	Low-Profile Platform	(4) Hybrid	Sprint	Existing
	(3) RFS APXVTM14-ALU-I20				
	(3) ALU TD-RRH8x20-25				
105	(6) ALU 1900MHz 4x45W RRH	Collar Mount	(4) Hybrid	Sprint	Existing
	(3) ALU 800MHz 2x50W RRH				
	(3) RFS IBC1900HB-2				
102	(6) Kathrein 81010020R4B	Low-Profile Platform	(12) 1-5/8 (1) 1-7/16 (2) 1-5/8 Fiber	T-Mobile	Existing
	(3) Andrew LNX-6515DS-VTM				
	(3) Ericsson RRUS-11				
	(1) 15' Dipole				

Elevation	Appurtenance	Mount	Coax	Owner	Status
93	(2) Antel BXA-80080-6CF-EDIN-X	Low-Profile Platform	(12) 1-5/8	Verizon	Existing
	(1) Antel BXA-80063-6CF-EDIN-X				
	(6) Amphenol WWX063X19x00				
	(2) Kathrein 800 10736				
	(1) CSS X7C-FRO-660-VR0				
	(3) ALU RRH2x60 - AWS				
	(3) ALU RRH2x60 – 700MHz				
	(3) ALU RRH2x60 - PCS				
	(2) Raycap DB-T1 6Z-8AB-0Z				
	(2) 10' Omni		(2) 1-5/8		
82	--	Low-Profile Platform	--	--	Remove
72	(1) 15' Dipole	Low-Profile Platform (1) 6' Standoff	(1) 1-5/8	Tower	Remove Proposed

* All coax assumed to be routed inside tower

TOWER RESULTS

The maximum tower member stress capacities under the loading conditions previously described are as follows:

Component Type	Percent Capacity	Pass/Fail
Section 1	61.7	Pass
Section 2	97.6	Pass
Section 2 reinforcing	79.9	Pass
Section 3	98.8	Pass
Section 3 reinforcing	73.5	Pass
Anchor Rod	93.7	Pass
Base Plate / Stiffener	89.5	Pass
RATING	98.8	PASS

Results of the analysis show that the modified tower will be stressed to a maximum of 98.8 percent of capacity. Therefore, the modified tower will pass the TIA-222-G analysis requirements under proposed loading conditions.

FOUNDATION RESULTS

The maximum foundation stress capacities are as follows:

Component Type	Percent Capacity	Pass/Fail
Soil Interaction	87.2	Pass
Structural	93.5	Pass
RATING	93.5	PASS

The foundations were analyzed utilizing the structural reports referenced above. Results of the analysis show that the existing foundation will be stressed to a maximum of 93.5 percent of capacity. Therefore, the existing foundation will pass the TIA-222-G analysis requirements under proposed loading conditions.

LIMITATIONS

The recommendations contained within this report were developed using the supporting documentation as previously described. All recommendations pertain only to the proposed antenna installation activities as described in this report. RAMAKER assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to the following:

- Missing, corroding, and/or deteriorating members
- Improper manufacturing and/or construction
- Improper maintenance

RAMAKER assumes no responsibility for modifications completed prior to or hereafter in which RAMAKER was not directly involved. These modifications include but are not limited to the following:

- Replacing or strengthening bracing members
- Reinforcing or extending vertical members
- Installing or removing antenna mounting gates or side arms
- Changing loading configurations

The tower owner is responsible for verifying that the existing loading on the structure is consistent with the loading applied to the structure within this report. If there is any information contrary to that contained herein, or if there are any defects arising from the original design, material, fabrication and erection deficiencies, this report should be disregarded and RAMAKER should be contacted immediately. RAMAKER is not liable for any representation, recommendation, or conclusion not expressly stated herein.

This analysis pertains only to the tower structure, and no analyses or conclusions were made regarding the antenna and equipment mounting structure(s). Analysis and certification of the antenna and equipment mounting structure(s) is performed and submitted separately.

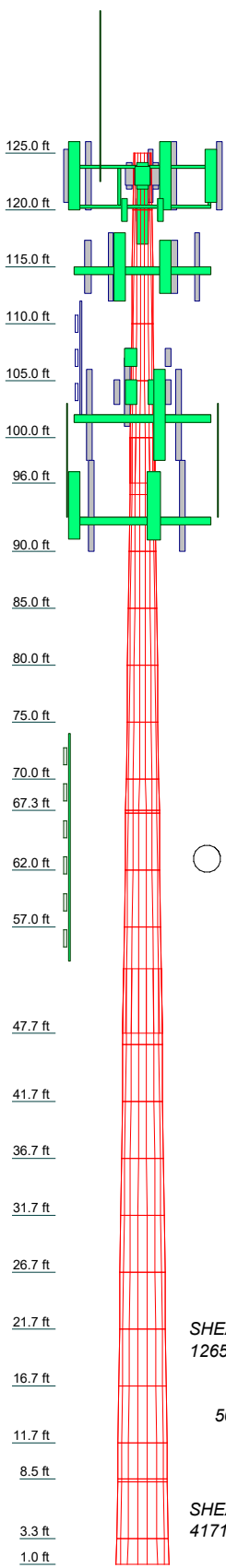
ATTACHMENTS

- Analysis Figures
- Analysis Calculations

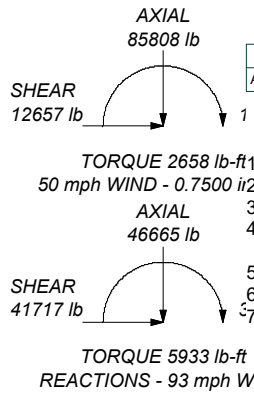
DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
15' Omni	122	1900MHz 4x45W RRH	105
7770.00 w/Mount Pipe	122	1900MHz 4x45W RRH	105
7770.00 w/Mount Pipe	122	1900MHz 4x45W RRH	105
7770.00 w/Mount Pipe	122	800MHz 2x50W RRH	105
HPA-65R-BUU-H8 w/Mount Pipe	122	800MHz 2x50W RRH	105
HPA-65R-BUU-H6 w/Mount Pipe	122	800MHz 2x50W RRH	105
HPA-65R-BUU-H6 w/Mount Pipe	122	IBC1900HB-2	105
(2) LGP214nn	122	IBC1900HB-2	105
(2) LGP214nn	122	IBC1900HB-2	105
(2) LGP214nn	122	Tri-Antenna Mount (Sprint)	105
RRUS-32	122	(2) 81010020R4B	102
RRUS-32	122	(2) 81010020R4B	102
RRUS-32	122	(2) 81010020R4B	102
RRUS 4478 B14	122	LNx-6515DS-VTM w/Mount Pipe	102
RRUS 4478 B14	122	LNx-6515DS-VTM w/Mount Pipe	102
RRUS 4478 B14	122	LNx-6515DS-VTM w/Mount Pipe	102
RRUS 32 B66	122	RRUS-11	102
RRUS 32 B66	122	RRUS-11	102
RRUS 32 B66	122	RRUS-11	102
800 10966 w/Mount Pipe	122	15' Dipole	102
800 10965 w/Mount Pipe	122	(3) 8"x2" Antenna Mount Pipe	102
800 10965 w/Mount Pipe	122	(3) 8"x2" Antenna Mount Pipe	102
TPA65R-LCUUUU-H8 w/Mount Pipe	122	(3) 8"x2" Antenna Mount Pipe	102
QS66512-2 w/Mount Pipe	122	Platform Mount [LP 1201-1] (T-Mobile)	102
QS66512-2 w/Mount Pipe	122	BXA-80080-6CF w/Mount Pipe	93
Platform Mount [LP 1201-1] (ATT)	122	BXA-80080-6CF w/Mount Pipe	93
Miscellaneous [NA 510-1] (ATT)	122	BXA-80063-6CF-EDIN-X w/Mount Pipe	93
Miscellaneous [NA 509-3] (ATT)	122		
RRUS-32 B2	120	WWWX063X19x00 w/Mount Pipe	93
RRUS-32 B2	120	WWWX063X19x00 w/Mount Pipe	93
RRUS-32 B2	120	WWWX063X19x00 w/Mount Pipe	93
RRUS-11	120	80010736V01 w/Mount Pipe	93
RRUS-11	120	80010736V01 w/Mount Pipe	93
RRUS-11	120	X7C-FRO-660-V w/Mount Pipe	93
DC6-48-60-18-8F	120	WWWX063X19x00 w/Mount Pipe	93
DC6-48-60-18-8F	120	WWWX063X19x00 w/Mount Pipe	93
DC6-48-60-18-8F	120	WWWX063X19x00 w/Mount Pipe	93
Tri-Antenna Mount (ATT)	120	RRH2x60-AWS	93
APXVSPP18-C w/Mount Pipe	115	RRH2x60-AWS	93
APXVSPP18-C w/Mount Pipe	115	700MHz 2x60 RRH	93
APXVSPP18-C w/Mount Pipe	115	700MHz 2x60 RRH	93
APXVTM14-ALU-120 w/Mount Pipe	115	700MHz 2x60 RRH	93
APXVTM14-ALU-120 w/Mount Pipe	115	700MHz 2x60 RRH	93
APXVTM14-ALU-120 w/Mount Pipe	115	PCS RRH2x60-1900A-4R	93
TD-RRH8x20-25	115	PCS RRH2x60-1900A-4R	93
TD-RRH8x20-25	115	PCS RRH2x60-1900A-4R	93
TD-RRH8x20-25	115	DB-T16Z-8AB-0Z	93
(2) 8"x2" Antenna Mount Pipe	115	DB-T16Z-8AB-0Z	93
(2) 8"x2" Antenna Mount Pipe	115	10' Omni	93
(2) 8"x2" Antenna Mount Pipe	115	10' Omni	93
Platform Mount [LP 1201-1] (Sprint)	115	Platform Mount [LP 1201-1] (Verizon)	93
1900MHz 4x45W RRH	105	15' Dipole (Other)	72
1900MHz 4x45W RRH	105	Side Arm Mount [SO 303-1]	72
1900MHz 4x45W RRH	105		

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
2	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
3	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
4	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
5	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
6	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
7	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
8	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
9	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
10	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
11	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
12	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
13	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
14	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
15	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
16	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
17	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
18	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
19	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
20	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
21	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
22	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
23	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
24	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
25	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
26	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
27	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
28	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000
29	5.00	18	0.1875	3.92	26.8466	26.8466	A572-65	18.0000



ALL REACTIONS ARE FACTORED




MATERIAL STRENGTH

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

TOWER DESIGN NOTES

- Tower is located in Fairfield County, Connecticut.
- Tower designed for Exposure B to the TIA-222-G Standard.
- Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
- Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
- Deflections are based upon a 60 mph wind.
- Tower Structure Class II.
- Topographic Category 3 with Crest Height of 250.00 ft



Ramaker & Associates, Inc
855 Community Drive
Sauk City, WI 53583
Phone: (608) 643-4100
FAX:

Job: **CT2268**
Project: **37840**
Client: Blue Sky Towers
Code: TIA-222-G
Path: I:\37800\37840\Structural\TNX\37840 rev7 CCI 3.eri

Drawn by: **TEM**
Date: **06/22/18**
Scale: **NTS**
Dwg No. **E-1**

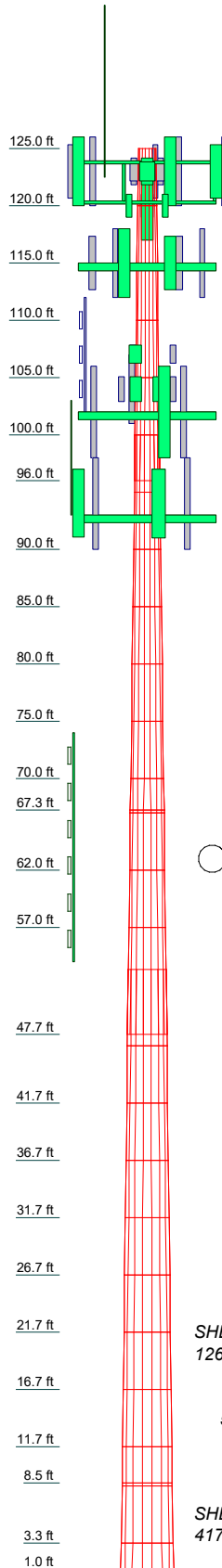
MATERIAL STRENGTH

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

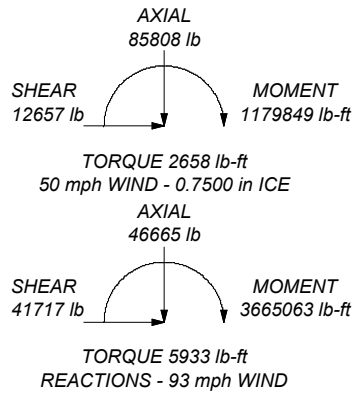
TOWER DESIGN NOTES


1. Tower is located in Fairfield County, Connecticut.
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4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 3 with Crest Height of 250.00 ft

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	5.00	18	0.1875	3.92	18.0000	18.0000	A572-65	188.1
2	5.00	18	0.1875	3.92	19.5366	19.5366	A572-65	203.7
3	5.00	18	0.1875	3.92	21.0732	21.0732	A572-65	219.3
4	5.00	18	0.1875	3.92	22.6098	22.6098	A572-65	234.8
5	5.00	18	0.1875	3.92	24.1464	24.1464	A572-65	250.4
6	5.00	18	0.1875	3.92	25.6830	25.6830	A572-65	266.0
7	5.00	18	0.1875	3.92	27.2196	27.2196	A572-65	281.6
8	5.00	18	0.1875	3.92	28.7562	28.7562	A572-65	297.2
9	5.00	18	0.1875	3.92	30.2928	30.2928	A572-65	312.8
10	5.00	18	0.1875	3.92	31.8294	31.8294	A572-65	328.4
11	5.00	18	0.1875	3.92	33.3660	33.3660	A572-65	344.0
12	5.00	18	0.1875	3.92	34.9026	34.9026	A572-65	359.6
13	5.00	18	0.1875	3.92	36.4392	36.4392	A572-65	375.2
14	5.00	18	0.1875	3.92	37.9758	37.9758	A572-65	390.8
15	5.00	18	0.1875	3.92	39.5124	39.5124	A572-65	406.4
16	5.00	18	0.1875	3.92	41.0490	41.0490	A572-65	422.0
17	5.00	18	0.1875	3.92	42.5856	42.5856	A572-65	437.6
18	5.00	18	0.1875	3.92	44.1222	44.1222	A572-65	453.2
19	5.00	18	0.1875	3.92	45.6588	45.6588	A572-65	468.8
20	5.00	18	0.1875	3.92	47.1954	47.1954	A572-65	484.4
21	5.00	18	0.1875	3.92	48.7320	48.7320	A572-65	500.0
22	5.00	18	0.1875	3.92	50.2686	50.2686	A572-65	515.6
23	5.00	18	0.1875	3.92	51.8052	51.8052	A572-65	531.2
24	5.00	18	0.1875	3.92	53.3418	53.3418	A572-65	546.8
25	5.00	18	0.1875	3.92	54.8784	54.8784	A572-65	562.4
26	5.00	18	0.1875	3.92	56.4150	56.4150	A572-65	578.0
27	5.00	18	0.1875	3.92	57.9516	57.9516	A572-65	593.6
28	5.00	18	0.1875	3.92	59.4882	59.4882	A572-65	609.2
29	5.00	18	0.1875	3.92	61.0248	61.0248	A572-65	624.8



ALL REACTIONS ARE FACTORED



 <p>Ramaker & Associates, Inc 855 Community Drive Sauk City, WI 53583 Phone: (608) 643-4100 FAX:</p>	Job: CT2268		
	Project: 37840		
	Client: Blue Sky Towers	Drawn by: TEM	App'd:
	Code: TIA-222-G	Date: 06/22/18	Scale: NTS
	Path: I:\37800\37840\Structural\TNX\37840 rev7 CCI 3.eri		Dwg No. E-1

tnxTower Ramaker & Associates, Inc 855 Community Drive Sauk City, WI 53583 Phone: (608) 643-4100 FAX:	Job CT2268	Page 1 of 36
	Project 37840	Date 13:38:51 06/25/18
	Client Blue Sky Towers	Designed by TEM

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

Tower is located in Fairfield County, Connecticut.

ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).

Basic wind speed of 93 mph.

Structure Class II.

Exposure Category B.

Topographic Category 3.

Crest Height 250.00 ft.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	125.00-120.00	5.00	0.00	18	18.0000	19.5366	0.1875	0.7500	A572-65 (65 ksi)
L2	120.00-115.00	5.00	0.00	18	19.5366	21.0732	0.1875	0.7500	A572-65 (65 ksi)
L3	115.00-110.00	5.00	0.00	18	21.0732	22.6098	0.1875	0.7500	A572-65 (65 ksi)
L4	110.00-105.00	5.00	0.00	18	22.6098	24.1464	0.1875	0.7500	A572-65 (65 ksi)
L5	105.00-100.00	5.00	0.00	18	24.1464	25.6830	0.1875	0.7500	A572-65 (65 ksi)
L6	100.00-96.04	3.96	3.92	18	25.6830	26.9000	0.1875	0.7500	A572-65 (65 ksi)
L7	96.04-94.96	5.00	0.00	18	25.3203	26.8464	0.2500	1.0000	A572-65 (65 ksi)
L8	94.96-89.96	5.00	0.00	18	26.8464	28.3725	0.2500	1.0000	A572-65 (65 ksi)
L9	89.96-84.96	5.00	0.00	18	28.3725	29.8985	0.2500	1.0000	A572-65 (65 ksi)
L10	84.96-79.96	5.00	0.00	18	29.8985	31.4246	0.2500	1.0000	A572-65 (65 ksi)
L11	79.96-74.96	5.00	0.00	18	31.4246	32.9507	0.2500	1.0000	A572-65 (65 ksi)
L12	74.96-69.96	5.00	0.00	18	32.9507	34.4768	0.2500	1.0000	A572-65 (65 ksi)
L13	69.96-67.25	2.71	0.00	18	34.4768	35.3039	0.2500	1.0000	A572-65

tnxTower Ramaker & Associates, Inc 855 Community Drive Sauk City, WI 53583 Phone: (608) 643-4100 FAX:	Job	CT2268	Page	2 of 36
	Project	37840	Date	13:38:51 06/25/18
	Client	Blue Sky Towers	Designed by	TEM

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L14	67.25-67.00	0.25	0.00	18	35.3039	35.3802	0.5000	2.0000	(65 ksi) A572-65
L15	67.00-62.00	5.00	0.00	18	35.3802	36.9063	0.4875	1.9500	(65 ksi) A572-65
L16	62.00-57.00	5.00	0.00	18	36.9063	38.4323	0.4750	1.9000	(65 ksi) A572-65
L17	57.00-47.67	9.33	5.67	18	38.4323	41.2800	0.4688	1.8750	(65 ksi) A572-65
L18	47.67-46.67	6.67	0.00	18	39.0494	41.0821	0.3125	1.2500	(65 ksi) A572-65
L19	46.67-41.67	5.00	0.00	18	41.0821	42.6059	0.3125	1.2500	(65 ksi) A572-65
L20	41.67-36.67	5.00	0.00	18	42.6059	44.1296	0.3125	1.2500	(65 ksi) A572-65
L21	36.67-31.67	5.00	0.00	18	44.1296	45.6533	0.3125	1.2500	(65 ksi) A572-65
L22	31.67-26.67	5.00	0.00	18	45.6533	47.1771	0.3125	1.2500	(65 ksi) A572-65
L23	26.67-21.67	5.00	0.00	18	47.1771	48.7008	0.3125	1.2500	(65 ksi) A572-65
L24	21.67-16.67	5.00	0.00	18	48.7008	50.2246	0.3125	1.2500	(65 ksi) A572-65
L25	16.67-11.67	5.00	0.00	18	50.2246	51.7483	0.3125	1.2500	(65 ksi) A572-65
L26	11.67-8.50	3.17	0.00	18	51.7483	52.7144	0.3125	1.2500	(65 ksi) A572-65
L27	8.50-8.25	0.25	0.00	18	52.7144	52.7906	0.5625	2.2500	(65 ksi) A572-65
L28	8.25-3.25	5.00	0.00	18	52.7906	54.3143	0.5500	2.2000	(65 ksi) A572-65
L29	3.25-1.00	2.25		18	54.3143	55.0000	0.5500	2.2000	(65 ksi) A572-65

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	18.2488	10.6007	424.9328	6.3234	9.1440	46.4712	850.4248	5.3013	2.8380	15.136
	19.8091	11.5151	544.6633	6.8689	9.9246	54.8802	1090.0432	5.7587	3.1084	16.578
L2	19.8091	11.5151	544.6633	6.8689	9.9246	54.8802	1090.0432	5.7587	3.1084	16.578
	21.3694	12.4296	685.0038	7.4144	10.7052	63.9880	1370.9090	6.2160	3.3789	18.021
L3	21.3694	12.4296	685.0038	7.4144	10.7052	63.9880	1370.9090	6.2160	3.3789	18.021
	22.9297	13.3441	847.5914	7.9599	11.4858	73.7948	1696.2980	6.6733	3.6493	19.463
L4	22.9297	13.3441	847.5914	7.9599	11.4858	73.7948	1696.2980	6.6733	3.6493	19.463
	24.4900	14.2585	1034.0624	8.5054	12.2664	84.3006	2069.4855	7.1306	3.9198	20.905
L5	24.4900	14.2585	1034.0624	8.5054	12.2664	84.3006	2069.4855	7.1306	3.9198	20.905
	26.0503	15.1730	1246.0538	9.0509	13.0470	95.5052	2493.7473	7.5879	4.1902	22.348
L6	26.0503	15.1730	1246.0538	9.0509	13.0470	95.5052	2493.7473	7.5879	4.1902	22.348
	27.2861	15.8973	1433.1421	9.4829	13.6652	104.8753	2868.1699	7.9501	4.4044	23.49
L7	26.8872	19.8933	1579.6584	8.9000	12.8627	122.8091	3161.3954	9.9485	4.0164	16.065
	27.2220	21.1042	1886.0444	9.4417	13.6380	138.2937	3774.5706	10.5541	4.2850	17.14
L8	27.2220	21.1042	1886.0444	9.4417	13.6380	138.2937	3774.5706	10.5541	4.2850	17.14
	28.7716	22.3152	2229.6879	9.9835	14.4132	154.6976	4462.3096	11.1597	4.5536	18.214
L9	28.7716	22.3152	2229.6879	9.9835	14.4132	154.6976	4462.3096	11.1597	4.5536	18.214
	30.3212	23.5261	2612.7261	10.5252	15.1885	172.0205	5228.8900	11.7653	4.8221	19.289

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Ramaker & Associates, Inc 855 Community Drive Sauk City, WI 53583 Phone: (608) 643-4100 FAX:</p>	<p style="text-align: center;">Job</p> <p style="text-align: center;">CT2268</p>	<p style="text-align: center;">Page</p> <p style="text-align: center;">3 of 36</p>
	<p style="text-align: center;">Project</p> <p style="text-align: center;">37840</p>	<p style="text-align: center;">Date</p> <p style="text-align: center;">13:38:51 06/25/18</p>
	<p style="text-align: center;">Client</p> <p style="text-align: center;">Blue Sky Towers</p>	<p style="text-align: center;">Designed by</p> <p style="text-align: center;">TEM</p>

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L10	30.3212	23.5261	2612.7261	10.5252	15.1885	172.0205	5228.8900	11.7653	4.8221	19.289
	31.8708	24.7370	3037.2970	11.0670	15.9637	190.2627	6078.5905	12.3709	5.0907	20.363
L11	31.8708	24.7370	3037.2970	11.0670	15.9637	190.2627	6078.5905	12.3709	5.0907	20.363
	33.4204	25.9480	3505.5388	11.6087	16.7389	209.4241	7015.6902	12.9765	5.3593	21.437
L12	33.4204	25.9480	3505.5388	11.6087	16.7389	209.4241	7015.6902	12.9765	5.3593	21.437
	34.9700	27.1589	4019.5885	12.1505	17.5142	229.5047	8044.4661	13.5820	5.6279	22.512
L13	34.9700	27.1589	4019.5885	12.1505	17.5142	229.5047	8044.4661	13.5820	5.6279	22.512
	35.8099	27.8153	4318.1031	12.4441	17.9344	240.7724	8641.8880	13.9103	5.7735	23.094
L14	35.7714	55.2338	8452.7437	12.3554	17.9344	471.3152	16916.6098	27.6221	5.3335	10.667
	35.8489	55.3549	8508.4610	12.3825	17.9731	473.3987	17028.1177	27.6827	5.3469	10.694
L15	35.8508	53.9903	8304.6715	12.3869	17.9731	462.0602	16620.2706	27.0003	5.3689	11.013
	37.4004	56.3517	9442.6685	12.9287	18.7484	503.6524	18897.7619	28.1812	5.6375	11.564
L16	37.4023	54.9256	9210.0257	12.9331	18.7484	491.2437	18432.1703	27.4680	5.6595	11.915
	38.9519	57.2264	10416.5858	13.4749	19.5236	533.5373	20846.8780	28.6186	5.9281	12.48
L17	38.9529	56.4827	10284.6041	13.4771	19.5236	526.7772	20582.7410	28.2467	5.9391	12.67
	41.8445	60.7195	12776.8955	14.4880	20.9702	609.2870	25570.6032	30.3655	6.4403	13.739
L18	41.3582	38.4222	7284.0015	13.7516	19.8371	367.1906	14577.5874	19.2147	6.3227	20.233
	41.6677	40.4384	8491.8824	14.4732	20.8697	406.8999	16994.9386	20.2230	6.6805	21.377
L19	41.6677	40.4384	8491.8824	14.4732	20.8697	406.8999	16994.9386	20.2230	6.6805	21.377
	43.2149	41.9497	9480.0526	15.0141	21.6438	438.0037	18972.5792	20.9788	6.9486	22.236
L20	43.2149	41.9497	9480.0526	15.0141	21.6438	438.0037	18972.5792	20.9788	6.9486	22.236
	44.7622	43.4611	10542.0545	15.5551	22.4178	470.2530	21097.9805	21.7347	7.2168	23.094
L21	44.7622	43.4611	10542.0545	15.5551	22.4178	470.2530	21097.9805	21.7347	7.2168	23.094
	46.3094	44.9724	11680.5474	16.0960	23.1919	503.6477	23376.4643	22.4905	7.4850	23.952
L22	46.3094	44.9724	11680.5474	16.0960	23.1919	503.6477	23376.4643	22.4905	7.4850	23.952
	47.8567	46.4838	12898.1927	16.6369	23.9660	538.1880	25813.3571	23.2463	7.7532	24.81
L23	47.8567	46.4838	12898.1927	16.6369	23.9660	538.1880	25813.3571	23.2463	7.7532	24.81
	49.4039	47.9952	14197.6488	17.1779	24.7400	573.8737	28413.9793	24.0022	8.0213	25.668
L24	49.4039	47.9952	14197.6488	17.1779	24.7400	573.8737	28413.9793	24.0022	8.0213	25.668
	50.9512	49.5065	15581.5776	17.7188	25.5141	610.7049	31183.6578	24.7580	8.2895	26.526
L25	50.9512	49.5065	15581.5776	17.7188	25.5141	610.7049	31183.6578	24.7580	8.2895	26.526
	52.4984	51.0179	17052.6381	18.2597	26.2882	648.6816	34127.7145	25.5138	8.5577	27.385
L26	52.4984	51.0179	17052.6381	18.2597	26.2882	648.6816	34127.7145	25.5138	8.5577	27.385
	53.4794	51.9761	18031.6326	18.6027	26.7789	673.3521	36086.9916	25.9930	8.7277	27.929
L27	53.4408	93.1107	31994.6126	18.5139	26.7789	1194.7692	64031.3245	46.5642	8.2877	14.734
	53.5182	93.2467	32135.0372	18.5410	26.8176	1198.2812	64312.3585	46.6322	8.3011	14.758
L28	53.5201	91.1964	31443.4910	18.5454	26.8176	1172.4942	62928.3562	45.6068	8.3231	15.133
	55.0674	93.8564	34275.9412	19.0863	27.5917	1242.2568	68596.9835	46.9371	8.5913	15.621
L29	55.0674	93.8564	34275.9412	19.0863	27.5917	1242.2568	68596.9835	46.9371	8.5913	15.621
	55.7636	95.0534	35604.1576	19.3298	27.9400	1274.3077	71255.1640	47.5357	8.7120	15.84

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 125.00-120.00				1	1	1			
L2 120.00-115.00				1	1	1			
L3 115.00-110.00				1	1	1			
L4 110.00-105.00				1	1	1			
L5 105.00-100.00				1	1	1			
L6 100.00-96.04				1	1	1			
L7 96.04-94.96				1	1	1			
L8 94.96-89.96				1	1	1			
L9 89.96-84.96				1	1	1			
L10 84.96-79.96				1	1	1			
L11 79.96-74.96				1	1	1			
L12 74.96-69.96				1	1	1			
L13 69.96-67.25				1	1	1			
L14 67.25-67.00				1	1	0.94394			
L15 67.00-62.00				1	1	0.948732			

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	Client Blue Sky Towers	Designed by TEM

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L16 62.00-57.00				1	1	0.955391			
L17 57.00-47.67				1	1	0.955546			
L18 47.67-46.67				1	1	1			
L19 46.67-41.67				1	1	1			
L20 41.67-36.67				1	1	1			
L21 36.67-31.67				1	1	1			
L22 31.67-26.67				1	1	1			
L23 26.67-21.67				1	1	1			
L24 21.67-16.67				1	1	1			
L25 16.67-11.67				1	1	1			
L26 11.67-8.50				1	1	1			
L27 8.50-8.25				1	1	0.906765			
L28 8.25-3.25				1	1	0.916978			
L29 3.25-1.00				1	1	0.912586			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
			ft				in	in	plf

MS650	A	Surface Af (CaAa)	70.00 - 50.00	1	1	0.000 0.000	6.5000	15.5000	0.00
MS650	B	Surface Af (CaAa)	70.00 - 50.00	1	1	0.000 0.000	6.5000	15.5000	0.00
MS650	C	Surface Af (CaAa)	70.00 - 50.00	1	1	0.000 0.000	6.5000	15.5000	0.00

TS1.25X6.5	A	Surface Af (CaAa)	12.00 - 1.00	1	1	-0.167 -0.167	1.2500	15.5000	27.65
TS1.25X6.5	B	Surface Af (CaAa)	12.00 - 1.00	1	1	0.167 0.167	1.2500	15.5000	27.65
TS1.25X6.5	C	Surface Af (CaAa)	12.00 - 1.00	1	1	-0.333 -0.333	1.2500	15.5000	27.65
TS1.25X6.5	C	Surface Af (CaAa)	12.00 - 1.00	1	1	0.333 0.333	1.2500	15.5000	27.65

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number		$C_A A_A$	Weight
				ft			ft ² /ft	plf

1 5/8 (ATT)	A	No	Inside Pole	122.00 - 1.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.04 1.04 1.04
3/4 (ATT)	A	No	Inside Pole	122.00 - 1.00	4	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.47 0.47 0.47

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	Client Blue Sky Towers	Designed by TEM

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
3/4 (ATT)	A	No	Inside Pole	122.00 - 1.00	2	No Ice	0.00	0.47
						1/2" Ice	0.00	0.47
						1" Ice	0.00	0.47
3/8 (ATT)	A	No	Inside Pole	122.00 - 1.00	2	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
3/8 (ATT)	A	No	Inside Pole	122.00 - 1.00	1	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08

HB114-1-08U4-M5J (Sprint)	B	No	Inside Pole	116.00 - 1.00	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08
1 1/4 (Sprint)	B	No	Inside Pole	116.00 - 1.00	1	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66

1 5/8 (T-Mobile)	C	No	Inside Pole	101.00 - 1.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
1 7/16" Coax (T-Mobile)	C	No	Inside Pole	101.00 - 1.00	1	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
1 5/8 (T-Mobile)	C	No	Inside Pole	101.00 - 1.00	2	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04

1 5/8 (Verizon)	C	No	Inside Pole	91.00 - 1.00	14	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
1 5/8 (Dipole)	A	No	Inside Pole	71.00 - 1.00	1	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
L1	125.00-120.00	A	0.000	0.000	0.000	0.000	31.08
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	120.00-115.00	A	0.000	0.000	0.000	0.000	77.70
		B	0.000	0.000	0.000	0.000	3.90
		C	0.000	0.000	0.000	0.000	0.00
L3	115.00-110.00	A	0.000	0.000	0.000	0.000	77.70
		B	0.000	0.000	0.000	0.000	19.50
		C	0.000	0.000	0.000	0.000	0.00
L4	110.00-105.00	A	0.000	0.000	0.000	0.000	77.70
		B	0.000	0.000	0.000	0.000	19.50
		C	0.000	0.000	0.000	0.000	0.00
L5	105.00-100.00	A	0.000	0.000	0.000	0.000	77.70
		B	0.000	0.000	0.000	0.000	19.50
		C	0.000	0.000	0.000	0.000	15.38
L6	100.00-96.04	A	0.000	0.000	0.000	0.000	61.54
		B	0.000	0.000	0.000	0.000	15.44

<p>tnxTower</p> <p>Ramaker & Associates, Inc 855 Community Drive Sauk City, WI 53583 Phone: (608) 643-4100 FAX:</p>	Job	CT2268	Page	6 of 36
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	Client	Blue Sky Towers	Designed by	TEM

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R ft²</i>	<i>A_F ft²</i>	<i>C_{AA} In Face ft²</i>	<i>C_{AA} Out Face ft²</i>	<i>Weight lb</i>
L7	96.04-94.96	C	0.000	0.000	0.000	0.000	60.90
		A	0.000	0.000	0.000	0.000	16.78
		B	0.000	0.000	0.000	0.000	4.21
L8	94.96-89.96	C	0.000	0.000	0.000	0.000	16.61
		A	0.000	0.000	0.000	0.000	77.70
		B	0.000	0.000	0.000	0.000	19.50
L9	89.96-84.96	C	0.000	0.000	0.000	0.000	92.04
		A	0.000	0.000	0.000	0.000	77.70
		B	0.000	0.000	0.000	0.000	19.50
L10	84.96-79.96	C	0.000	0.000	0.000	0.000	149.70
		A	0.000	0.000	0.000	0.000	77.70
		B	0.000	0.000	0.000	0.000	19.50
L11	79.96-74.96	C	0.000	0.000	0.000	0.000	149.70
		A	0.000	0.000	0.000	0.000	77.70
		B	0.000	0.000	0.000	0.000	19.50
L12	74.96-69.96	C	0.000	0.000	0.000	0.000	149.70
		A	0.000	0.000	0.043	0.000	78.78
		B	0.000	0.000	0.043	0.000	19.50
L13	69.96-67.25	C	0.000	0.000	0.043	0.000	149.70
		A	0.000	0.000	2.936	0.000	44.93
		B	0.000	0.000	2.936	0.000	10.57
L14	67.25-67.00	C	0.000	0.000	2.936	0.000	81.14
		A	0.000	0.000	0.271	0.000	4.14
		B	0.000	0.000	0.271	0.000	0.97
L15	67.00-62.00	C	0.000	0.000	0.271	0.000	7.49
		A	0.000	0.000	5.417	0.000	82.90
		B	0.000	0.000	5.417	0.000	19.50
L16	62.00-57.00	C	0.000	0.000	5.417	0.000	149.70
		A	0.000	0.000	5.417	0.000	82.90
		B	0.000	0.000	5.417	0.000	19.50
L17	57.00-47.67	C	0.000	0.000	5.417	0.000	149.70
		A	0.000	0.000	7.583	0.000	154.69
		B	0.000	0.000	7.583	0.000	36.39
L18	47.67-46.67	C	0.000	0.000	7.583	0.000	279.34
		A	0.000	0.000	0.000	0.000	16.58
		B	0.000	0.000	0.000	0.000	3.90
L19	46.67-41.67	C	0.000	0.000	0.000	0.000	29.94
		A	0.000	0.000	0.000	0.000	82.90
		B	0.000	0.000	0.000	0.000	19.50
L20	41.67-36.67	C	0.000	0.000	0.000	0.000	149.70
		A	0.000	0.000	0.000	0.000	82.90
		B	0.000	0.000	0.000	0.000	19.50
L21	36.67-31.67	C	0.000	0.000	0.000	0.000	149.70
		A	0.000	0.000	0.000	0.000	82.90
		B	0.000	0.000	0.000	0.000	19.50
L22	31.67-26.67	C	0.000	0.000	0.000	0.000	149.70
		A	0.000	0.000	0.000	0.000	82.90
		B	0.000	0.000	0.000	0.000	19.50
L23	26.67-21.67	C	0.000	0.000	0.000	0.000	149.70
		A	0.000	0.000	0.000	0.000	82.90
		B	0.000	0.000	0.000	0.000	19.50
L24	21.67-16.67	C	0.000	0.000	0.000	0.000	149.70
		A	0.000	0.000	0.000	0.000	82.90
		B	0.000	0.000	0.000	0.000	19.50
L25	16.67-11.67	C	0.000	0.000	0.000	0.000	149.70
		A	0.000	0.000	0.063	0.000	92.02
		B	0.000	0.000	0.063	0.000	28.62
L26	11.67-8.50	C	0.000	0.000	0.126	0.000	167.95
		A	0.000	0.000	0.605	0.000	140.20
		B	0.000	0.000	0.605	0.000	100.01
		C	0.000	0.000	1.209	0.000	270.20

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	Client Blue Sky Towers	Designed by TEM

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
L27	8.50-8.25	A	0.000	0.000	0.048	0.000	11.06
		B	0.000	0.000	0.048	0.000	7.89
		C	0.000	0.000	0.095	0.000	21.31
L28	8.25-3.25	A	0.000	0.000	0.954	0.000	221.14
		B	0.000	0.000	0.954	0.000	157.74
		C	0.000	0.000	1.908	0.000	426.18
L29	3.25-1.00	A	0.000	0.000	0.429	0.000	99.51
		B	0.000	0.000	0.429	0.000	70.98
		C	0.000	0.000	0.858	0.000	191.78

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
L1	125.00-120.00	A	1.919	0.000	0.000	0.000	0.000	31.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	120.00-115.00	A	1.919	0.000	0.000	0.000	0.000	77.70
		B		0.000	0.000	0.000	0.000	3.90
		C		0.000	0.000	0.000	0.000	0.00
L3	115.00-110.00	A	1.920	0.000	0.000	0.000	0.000	77.70
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	0.00
L4	110.00-105.00	A	1.920	0.000	0.000	0.000	0.000	77.70
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	0.00
L5	105.00-100.00	A	1.920	0.000	0.000	0.000	0.000	77.70
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	15.38
L6	100.00-96.04	A	1.920	0.000	0.000	0.000	0.000	61.54
		B		0.000	0.000	0.000	0.000	15.44
		C		0.000	0.000	0.000	0.000	60.90
L7	96.04-94.96	A	1.920	0.000	0.000	0.000	0.000	16.78
		B		0.000	0.000	0.000	0.000	4.21
		C		0.000	0.000	0.000	0.000	16.61
L8	94.96-89.96	A	1.920	0.000	0.000	0.000	0.000	77.70
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	92.04
L9	89.96-84.96	A	1.919	0.000	0.000	0.000	0.000	77.70
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	149.70
L10	84.96-79.96	A	1.918	0.000	0.000	0.000	0.000	77.70
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	149.70
L11	79.96-74.96	A	1.917	0.000	0.000	0.000	0.000	77.70
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	149.70
L12	74.96-69.96	A	1.915	0.000	0.000	0.058	0.000	79.46
		B		0.000	0.000	0.058	0.000	20.18
		C		0.000	0.000	0.058	0.000	150.38
L13	69.96-67.25	A	1.914	0.000	0.000	3.941	0.000	90.80
		B		0.000	0.000	3.941	0.000	56.44
		C		0.000	0.000	3.941	0.000	127.01
L14	67.25-67.00	A	1.913	0.000	0.000	0.364	0.000	8.37
		B		0.000	0.000	0.364	0.000	5.20
		C		0.000	0.000	0.364	0.000	11.71
L15	67.00-62.00	A	1.911	0.000	0.000	7.270	0.000	167.40

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	Client Blue Sky Towers	Designed by TEM

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
		B		0.000	0.000	7.270	0.000	104.00
		C		0.000	0.000	7.270	0.000	234.20
L16	62.00-57.00	A	1.908	0.000	0.000	7.267	0.000	167.20
		B		0.000	0.000	7.267	0.000	103.80
		C		0.000	0.000	7.267	0.000	234.00
L17	57.00-47.67	A	1.901	0.000	0.000	10.166	0.000	272.18
		B		0.000	0.000	10.166	0.000	153.87
		C		0.000	0.000	10.166	0.000	396.83
L18	47.67-46.67	A	1.895	0.000	0.000	0.000	0.000	16.58
		B		0.000	0.000	0.000	0.000	3.90
		C		0.000	0.000	0.000	0.000	29.94
L19	46.67-41.67	A	1.891	0.000	0.000	0.000	0.000	82.90
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	149.70
L20	41.67-36.67	A	1.881	0.000	0.000	0.000	0.000	82.90
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	149.70
L21	36.67-31.67	A	1.869	0.000	0.000	0.000	0.000	82.90
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	149.70
L22	31.67-26.67	A	1.854	0.000	0.000	0.000	0.000	82.90
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	149.70
L23	26.67-21.67	A	1.834	0.000	0.000	0.000	0.000	82.90
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	149.70
L24	21.67-16.67	A	1.806	0.000	0.000	0.000	0.000	82.90
		B		0.000	0.000	0.000	0.000	19.50
		C		0.000	0.000	0.000	0.000	149.70
L25	16.67-11.67	A	1.767	0.000	0.000	0.149	0.000	97.05
		B		0.000	0.000	0.149	0.000	33.65
		C		0.000	0.000	0.297	0.000	178.01
L26	11.67-8.50	A	1.720	0.000	0.000	1.408	0.000	186.86
		B		0.000	0.000	1.408	0.000	146.67
		C		0.000	0.000	2.817	0.000	363.52
L27	8.50-8.25	A	1.693	0.000	0.000	0.110	0.000	14.66
		B		0.000	0.000	0.110	0.000	11.49
		C		0.000	0.000	0.220	0.000	28.52
L28	8.25-3.25	A	1.638	0.000	0.000	2.166	0.000	290.24
		B		0.000	0.000	2.166	0.000	226.84
		C		0.000	0.000	4.333	0.000	564.38
L29	3.25-1.00	A	1.492	0.000	0.000	0.930	0.000	127.13
		B		0.000	0.000	0.930	0.000	98.60
		C		0.000	0.000	1.861	0.000	247.01

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	125.00-120.00	0.0000	0.0000	0.0000	0.0000
L2	120.00-115.00	0.0000	0.0000	0.0000	0.0000
L3	115.00-110.00	0.0000	0.0000	0.0000	0.0000
L4	110.00-105.00	0.0000	0.0000	0.0000	0.0000
L5	105.00-100.00	0.0000	0.0000	0.0000	0.0000
L6	100.00-96.04	0.0000	0.0000	0.0000	0.0000
L7	96.04-94.96	0.0000	0.0000	0.0000	0.0000

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Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
L8	94.96-89.96	0.0000	0.0000	0.0000	0.0000
L9	89.96-84.96	0.0000	0.0000	0.0000	0.0000
L10	84.96-79.96	0.0000	0.0000	0.0000	0.0000
L11	79.96-74.96	0.0000	0.0000	0.0000	0.0000
L12	74.96-69.96	0.0000	0.0000	0.0000	0.0000
L13	69.96-67.25	0.0000	0.0000	0.0000	0.0000
L14	67.25-67.00	0.0000	0.0000	0.0000	0.0000
L15	67.00-62.00	0.0000	0.0000	0.0000	0.0000
L16	62.00-57.00	0.0000	0.0000	0.0000	0.0000
L17	57.00-47.67	0.0000	0.0000	0.0000	0.0000
L18	47.67-46.67	0.0000	0.0000	0.0000	0.0000
L19	46.67-41.67	0.0000	0.0000	0.0000	0.0000
L20	41.67-36.67	0.0000	0.0000	0.0000	0.0000
L21	36.67-31.67	0.0000	0.0000	0.0000	0.0000
L22	31.67-26.67	0.0000	0.0000	0.0000	0.0000
L23	26.67-21.67	0.0000	0.0000	0.0000	0.0000
L24	21.67-16.67	0.0000	0.0000	0.0000	0.0000
L25	16.67-11.67	0.0000	0.1299	0.0000	0.1551
L26	11.67-8.50	0.0000	0.9347	0.0000	1.7784
L27	8.50-8.25	0.0000	0.9352	0.0000	1.7724
L28	8.25-3.25	0.0000	0.9351	0.0000	1.7559
L29	3.25-1.00	0.0000	0.9350	0.0000	1.7051

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L12	19	MS650	69.96 - 70.00	1.0000	1.0000
L12	20	MS650	69.96 - 70.00	1.0000	1.0000
L12	21	MS650	69.96 - 70.00	1.0000	1.0000
L13	19	MS650	67.25 - 69.96	1.0000	1.0000
L13	20	MS650	67.25 - 69.96	1.0000	1.0000
L13	21	MS650	67.25 - 69.96	1.0000	1.0000
L14	19	MS650	67.00 - 67.25	1.0000	1.0000
L14	20	MS650	67.00 - 67.25	1.0000	1.0000
L14	21	MS650	67.00 - 67.25	1.0000	1.0000
L15	19	MS650	62.00 - 67.00	1.0000	1.0000
L15	20	MS650	62.00 - 67.00	1.0000	1.0000
L15	21	MS650	62.00 - 67.00	1.0000	1.0000
L16	19	MS650	57.00 - 62.00	1.0000	1.0000
L16	20	MS650	57.00 - 62.00	1.0000	1.0000
L16	21	MS650	57.00 - 62.00	1.0000	1.0000
L17	19	MS650	50.00 - 57.00	1.0000	1.0000
L17	20	MS650	50.00 - 57.00	1.0000	1.0000
L17	21	MS650	50.00 - 57.00	1.0000	1.0000
L25	28	TS1.25X6.5	11.67 - 12.00	1.0000	1.0000
L25	29	TS1.25X6.5	11.67 - 12.00	1.0000	1.0000
L25	30	TS1.25X6.5	11.67 - 12.00	1.0000	1.0000
L25	31	TS1.25X6.5	11.67 - 12.00	1.0000	1.0000
L26	28	TS1.25X6.5	8.50 - 11.67	1.0000	1.0000
L26	29	TS1.25X6.5	8.50 - 11.67	1.0000	1.0000
L26	30	TS1.25X6.5	8.50 - 11.67	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L26	31	TS1.25X6.5	8.50 - 11.67	1.0000	1.0000
L27	28	TS1.25X6.5	8.25 - 8.50	1.0000	1.0000
L27	29	TS1.25X6.5	8.25 - 8.50	1.0000	1.0000
L27	30	TS1.25X6.5	8.25 - 8.50	1.0000	1.0000
L27	31	TS1.25X6.5	8.25 - 8.50	1.0000	1.0000
L28	28	TS1.25X6.5	3.25 - 8.25	1.0000	1.0000
L28	29	TS1.25X6.5	3.25 - 8.25	1.0000	1.0000
L28	30	TS1.25X6.5	3.25 - 8.25	1.0000	1.0000
L28	31	TS1.25X6.5	3.25 - 8.25	1.0000	1.0000
L29	28	TS1.25X6.5	1.00 - 3.25	1.0000	1.0000
L29	29	TS1.25X6.5	1.00 - 3.25	1.0000	1.0000
L29	30	TS1.25X6.5	1.00 - 3.25	1.0000	1.0000
L29	31	TS1.25X6.5	1.00 - 3.25	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	lb

15' Omni	C	From Leg	3.50 0.00 8.00	0.0000	122.00	No Ice 4.13 1/2" Ice 5.66 1" Ice 7.20	4.13 5.66 7.20	40.00 70.14 109.87

7770.00 w/Mount Pipe	A	From Face	3.50 -6.00 1.00	0.0000	122.00	No Ice 5.66 1/2" Ice 6.04 1" Ice 6.44	4.11 4.76 5.43	30.35 76.38 128.70
7770.00 w/Mount Pipe	B	From Face	3.50 -6.00 1.00	0.0000	122.00	No Ice 5.66 1/2" Ice 6.04 1" Ice 6.44	4.11 4.76 5.43	30.35 76.38 128.70
7770.00 w/Mount Pipe	C	From Face	3.50 -6.00 1.00	0.0000	122.00	No Ice 5.66 1/2" Ice 6.04 1" Ice 6.44	4.11 4.76 5.43	30.35 76.38 128.70
HPA-65R-BUU-H8 w/Mount Pipe	A	From Face	3.50 -2.00 1.00	0.0000	122.00	No Ice 13.05 1/2" Ice 13.66 1" Ice 14.27	9.42 10.82 12.07	97.20 192.07 296.65
HPA-65R-BUU-H6 w/Mount Pipe	B	From Face	3.50 -2.00 1.00	0.0000	122.00	No Ice 9.90 1/2" Ice 10.47 1" Ice 11.01	7.18 8.36 9.26	76.55 153.48 238.58
HPA-65R-BUU-H6 w/Mount Pipe	C	From Face	3.50 -2.00 1.00	0.0000	122.00	No Ice 9.90 1/2" Ice 10.47 1" Ice 11.01	7.18 8.36 9.26	76.55 153.48 238.58
(2) LGP214nn	A	From Face	3.00 0.00 1.50	0.0000	122.00	No Ice 1.11 1/2" Ice 1.25 1" Ice 1.39	0.21 0.28 0.35	14.10 21.30 30.39
(2) LGP214nn	B	From Face	3.00 0.00 1.50	0.0000	122.00	No Ice 1.11 1/2" Ice 1.25 1" Ice 1.39	0.21 0.28 0.35	14.10 21.30 30.39
(2) LGP214nn	C	From Face	3.00 0.00 1.50	0.0000	122.00	No Ice 1.11 1/2" Ice 1.25 1" Ice 1.39	0.21 0.28 0.35	14.10 21.30 30.39
RRUS-32	A	From Face	3.00 -2.00 1.00	0.0000	122.00	No Ice 2.69 1/2" Ice 2.91 1" Ice 3.14	1.59 1.78 1.97	50.80 71.33 95.01
RRUS-32	B	From Face	3.00	0.0000	122.00	No Ice 2.69	1.59	50.80

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	Client	Blue Sky Towers	Designed by	TEM

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight			
			Horz Lateral	Vert						°	ft	ft ²
				-2.00					1/2" Ice	2.91	1.78	71.33
				1.00					1" Ice	3.14	1.97	95.01
RRUS-32	C	From Face		3.00	0.0000	122.00			No Ice	2.69	1.59	50.80
				-2.00					1/2" Ice	2.91	1.78	71.33
				1.00					1" Ice	3.14	1.97	95.01
RRUS 4478 B14	A	From Face		3.00	0.0000	122.00			No Ice	2.02	1.25	59.40
				6.00					1/2" Ice	2.20	1.40	77.01
				1.00					1" Ice	2.39	1.55	97.40
RRUS 4478 B14	B	From Face		3.00	0.0000	122.00			No Ice	2.02	1.25	59.40
				6.00					1/2" Ice	2.20	1.40	77.01
				1.00					1" Ice	2.39	1.55	97.40
RRUS 4478 B14	C	From Face		3.00	0.0000	122.00			No Ice	2.02	1.25	59.40
				6.00					1/2" Ice	2.20	1.40	77.01
				1.00					1" Ice	2.39	1.55	97.40
RRUS 32 B66	A	From Face		3.00	0.0000	122.00			No Ice	2.74	1.67	60.00
				2.00					1/2" Ice	2.96	1.86	81.11
				1.00					1" Ice	3.19	2.05	105.42
RRUS 32 B66	B	From Face		3.00	0.0000	122.00			No Ice	2.74	1.67	60.00
				2.00					1/2" Ice	2.96	1.86	81.11
				1.00					1" Ice	3.19	2.05	105.42
RRUS 32 B66	C	From Face		3.00	0.0000	122.00			No Ice	2.74	1.67	60.00
				2.00					1/2" Ice	2.96	1.86	81.11
				1.00					1" Ice	3.19	2.05	105.42
800 10966 w/Mount Pipe	A	From Face		3.50	0.0000	122.00			No Ice	17.36	9.40	143.80
				2.00					1/2" Ice	17.99	10.82	257.08
				1.00					1" Ice	18.63	12.09	380.59
800 10965 w/Mount Pipe	B	From Face		3.50	0.0000	122.00			No Ice	14.16	7.73	137.80
				2.00					1/2" Ice	14.84	9.05	235.43
				1.00					1" Ice	15.50	10.22	342.19
800 10965 w/Mount Pipe	C	From Face		3.50	0.0000	122.00			No Ice	14.16	7.73	137.80
				2.00					1/2" Ice	14.84	9.05	235.43
				1.00					1" Ice	15.50	10.22	342.19
TPA65R-LCUUUU-H8 w/Mount Pipe	A	From Face		3.50	0.0000	122.00			No Ice	13.30	10.72	123.20
				6.00					1/2" Ice	13.90	12.15	223.76
				1.00					1" Ice	14.50	13.43	334.30
QS66512-2 w/Mount Pipe	B	From Face		3.50	0.0000	122.00			No Ice	8.37	8.46	136.55
				6.00					1/2" Ice	8.93	9.66	212.24
				1.00					1" Ice	9.46	10.55	296.07
QS66512-2 w/Mount Pipe	C	From Face		3.50	0.0000	122.00			No Ice	8.37	8.46	136.55
				6.00					1/2" Ice	8.93	9.66	212.24
				1.00					1" Ice	9.46	10.55	296.07
Platform Mount [LP 1201-1] (ATT)	C	None			0.0000	122.00			No Ice	23.10	23.10	2100.00
									1/2" Ice	26.80	26.80	2500.00
									1" Ice	30.50	30.50	2900.00
Miscellaneous [NA 510-1] (ATT)	C	None			0.0000	122.00			No Ice	6.00	6.00	255.70
									1/2" Ice	8.50	8.50	339.50
									1" Ice	11.00	11.00	423.30
Miscellaneous [NA 509-3] (ATT)	C	None			0.0000	122.00			No Ice	11.84	11.84	275.00
									1/2" Ice	16.96	16.96	296.20
									1" Ice	22.08	22.08	317.40

RRUS-32 B2	A	From Face		0.50	0.0000	120.00			No Ice	2.73	1.67	52.90
				0.00					1/2" Ice	2.95	1.86	73.96
				3.00					1" Ice	3.18	2.05	98.21
RRUS-32 B2	B	From Face		0.50	0.0000	120.00			No Ice	2.73	1.67	52.90
				0.00					1/2" Ice	2.95	1.86	73.96
				3.00					1" Ice	3.18	2.05	98.21

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						ft
			Lateral		°	ft	ft ²	ft ²	lb	
RRUS-32 B2	C	From Face	0.50		0.0000	120.00	No Ice	2.73	1.67	52.90
			0.00				1/2" Ice	2.95	1.86	73.96
			3.00				1" Ice	3.18	2.05	98.21
RRUS-11	A	From Face	0.50		0.0000	120.00	No Ice	2.78	1.19	50.71
			0.00				1/2" Ice	2.99	1.33	71.49
			3.00				1" Ice	3.21	1.49	95.32
RRUS-11	B	From Face	0.50		0.0000	120.00	No Ice	2.78	1.19	50.71
			0.00				1/2" Ice	2.99	1.33	71.49
			3.00				1" Ice	3.21	1.49	95.32
RRUS-11	C	From Face	0.50		0.0000	120.00	No Ice	2.78	1.19	50.71
			0.00				1/2" Ice	2.99	1.33	71.49
			3.00				1" Ice	3.21	1.49	95.32
DC6-48-60-18-8F	A	From Leg	1.00		0.0000	120.00	No Ice	0.92	0.92	32.80
			0.00				1/2" Ice	1.46	1.46	50.52
			0.00				1" Ice	1.64	1.64	70.72
DC6-48-60-18-8F	B	From Leg	1.00		0.0000	120.00	No Ice	0.92	0.92	32.80
			0.00				1/2" Ice	1.46	1.46	50.52
			0.00				1" Ice	1.64	1.64	70.72
DC6-48-60-18-8F	C	From Leg	1.00		0.0000	120.00	No Ice	0.92	0.92	32.80
			0.00				1/2" Ice	1.46	1.46	50.52
			0.00				1" Ice	1.64	1.64	70.72
Tri-Antenna Mount (ATT)	A	None			0.0000	120.00	No Ice	5.00	5.00	270.00
							1/2" Ice	6.00	6.00	290.00
							1" Ice	7.00	7.00	310.00

APXVSP18-C w/Mount Pipe	A	From Face	3.50		0.0000	115.00	No Ice	8.31	6.95	82.55
			2.00				1/2" Ice	8.87	8.13	150.82
			0.00				1" Ice	9.40	9.03	227.06
APXVSP18-C w/Mount Pipe	B	From Face	3.50		0.0000	115.00	No Ice	8.31	6.95	82.55
			2.00				1/2" Ice	8.87	8.13	150.82
			0.00				1" Ice	9.40	9.03	227.06
APXVSP18-C w/Mount Pipe	C	From Face	3.50		0.0000	115.00	No Ice	8.31	6.95	82.55
			2.00				1/2" Ice	8.87	8.13	150.82
			0.00				1" Ice	9.40	9.03	227.06
APXVTM14-ALU-120 w/Mount Pipe	A	From Face	3.50		0.0000	115.00	No Ice	6.53	4.91	87.78
			-2.00				1/2" Ice	6.97	5.67	141.88
			0.00				1" Ice	7.40	6.38	202.64
APXVTM14-ALU-120 w/Mount Pipe	B	From Face	3.50		0.0000	115.00	No Ice	6.53	4.91	87.78
			-2.00				1/2" Ice	6.97	5.67	141.88
			0.00				1" Ice	7.40	6.38	202.64
APXVTM14-ALU-120 w/Mount Pipe	C	From Face	3.50		0.0000	115.00	No Ice	6.53	4.91	87.78
			-2.00				1/2" Ice	6.97	5.67	141.88
			0.00				1" Ice	7.40	6.38	202.64
TD-RRH8x20-25	A	From Face	3.50		0.0000	115.00	No Ice	4.05	1.53	70.00
			-2.00				1/2" Ice	4.30	1.71	97.14
			0.00				1" Ice	4.56	1.90	127.80
TD-RRH8x20-25	B	From Face	3.50		0.0000	115.00	No Ice	4.05	1.53	70.00
			-2.00				1/2" Ice	4.30	1.71	97.14
			0.00				1" Ice	4.56	1.90	127.80
TD-RRH8x20-25	C	From Face	3.50		0.0000	115.00	No Ice	4.05	1.53	70.00
			-2.00				1/2" Ice	4.30	1.71	97.14
			0.00				1" Ice	4.56	1.90	127.80
(2) 8"x2" Antenna Mount Pipe	A	From Face	3.50		0.0000	115.00	No Ice	1.90	1.90	30.00
			0.00				1/2" Ice	2.73	2.73	44.34
			-3.00				1" Ice	3.40	3.40	63.96
(2) 8"x2" Antenna Mount Pipe	B	From Face	3.50		0.0000	115.00	No Ice	1.90	1.90	30.00
			0.00				1/2" Ice	2.73	2.73	44.34
			0.00				1" Ice	3.40	3.40	63.96

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
(2) 8"x2" Antenna Mount Pipe	C	From Face	-3.00		0.0000	115.00	1" Ice	3.40	3.40	63.96
			3.50				No Ice	1.90	1.90	30.00
			0.00				1/2" Ice	2.73	2.73	44.34
			-3.00				1" Ice	3.40	3.40	63.96
Platform Mount [LP 1201-1] (Sprint)	C	None			0.0000	115.00	No Ice	23.10	23.10	2100.00
							1/2" Ice	26.80	26.80	2500.00
							1" Ice	30.50	30.50	2900.00

1900MHz 4x45W RRH	A	From Face	1.00		0.0000	105.00	No Ice	2.32	2.24	59.50
			-1.00				1/2" Ice	2.53	2.44	82.62
			-1.00				1" Ice	2.74	2.65	108.98
1900MHz 4x45W RRH	A	From Face	1.00		0.0000	105.00	No Ice	2.32	2.24	59.50
			1.00				1/2" Ice	2.53	2.44	82.62
			-1.00				1" Ice	2.74	2.65	108.98
1900MHz 4x45W RRH	B	From Face	1.00		0.0000	105.00	No Ice	2.32	2.24	59.50
			-1.00				1/2" Ice	2.53	2.44	82.62
			-1.00				1" Ice	2.74	2.65	108.98
1900MHz 4x45W RRH	B	From Face	1.00		0.0000	105.00	No Ice	2.32	2.24	59.50
			1.00				1/2" Ice	2.53	2.44	82.62
			-1.00				1" Ice	2.74	2.65	108.98
1900MHz 4x45W RRH	C	From Face	1.00		0.0000	105.00	No Ice	2.32	2.24	59.50
			-1.00				1/2" Ice	2.53	2.44	82.62
			-1.00				1" Ice	2.74	2.65	108.98
1900MHz 4x45W RRH	C	From Face	1.00		0.0000	105.00	No Ice	2.32	2.24	59.50
			1.00				1/2" Ice	2.53	2.44	82.62
			-1.00				1" Ice	2.74	2.65	108.98
800MHz 2x50W RRH	A	From Face	1.00		0.0000	105.00	No Ice	2.06	1.93	64.00
			1.00				1/2" Ice	2.24	2.11	86.12
			2.00				1" Ice	2.43	2.29	111.30
800MHz 2x50W RRH	B	From Face	1.00		0.0000	105.00	No Ice	2.06	1.93	64.00
			1.00				1/2" Ice	2.24	2.11	86.12
			2.00				1" Ice	2.43	2.29	111.30
800MHz 2x50W RRH	C	From Face	1.00		0.0000	105.00	No Ice	2.06	1.93	64.00
			1.00				1/2" Ice	2.24	2.11	86.12
			2.00				1" Ice	2.43	2.29	111.30
IBC1900HB-2	A	From Face	1.00		0.0000	105.00	No Ice	1.13	0.71	40.00
			-1.00				1/2" Ice	1.27	0.84	49.10
			2.50				1" Ice	1.42	0.97	60.34
IBC1900HB-2	B	From Face	1.00		0.0000	105.00	No Ice	1.13	0.71	40.00
			-1.00				1/2" Ice	1.27	0.84	49.10
			2.50				1" Ice	1.42	0.97	60.34
IBC1900HB-2	C	From Face	1.00		0.0000	105.00	No Ice	1.13	0.71	40.00
			-1.00				1/2" Ice	1.27	0.84	49.10
			2.50				1" Ice	1.42	0.97	60.34
Tri-Antenna Mount (Sprint)	A	From Face	0.50		0.0000	105.00	No Ice	5.00	5.00	270.00
			0.00				1/2" Ice	6.00	6.00	290.00
			-1.00				1" Ice	7.00	7.00	310.00

(2) 81010020R4B	A	From Face	3.50		0.0000	102.00	No Ice	6.00	4.00	60.00
			0.00				1/2" Ice	7.50	5.50	110.00
			0.00				1" Ice	9.00	7.00	160.00
(2) 81010020R4B	B	From Face	3.50		0.0000	102.00	No Ice	6.00	4.00	60.00
			0.00				1/2" Ice	7.50	5.50	110.00
			0.00				1" Ice	9.00	7.00	160.00
(2) 81010020R4B	C	From Face	3.50		0.0000	102.00	No Ice	6.00	4.00	60.00
			0.00				1/2" Ice	7.50	5.50	110.00
			0.00				1" Ice	9.00	7.00	160.00

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA}		Weight lb
			Horz Lateral ft	Vert ft			Front ft ²	Side ft ²	
LNX-6515DS-VTM w/Mount Pipe	A	From Face	3.50	0.0000	102.00	No Ice	11.64	9.84	83.12
			-1.50			1/2" Ice	12.36	11.36	172.54
			0.00			1" Ice	13.08	12.90	271.91
LNX-6515DS-VTM w/Mount Pipe	B	From Face	3.50	0.0000	102.00	No Ice	11.64	9.84	83.12
			-1.50			1/2" Ice	12.36	11.36	172.54
			0.00			1" Ice	13.08	12.90	271.91
LNX-6515DS-VTM w/Mount Pipe	C	From Face	3.50	0.0000	102.00	No Ice	11.64	9.84	83.12
			-1.50			1/2" Ice	12.36	11.36	172.54
			0.00			1" Ice	13.08	12.90	271.91
RRUS-11	A	From Face	3.50	0.0000	102.00	No Ice	2.78	1.19	50.71
			-1.50			1/2" Ice	2.99	1.33	71.49
			0.00			1" Ice	3.21	1.49	95.32
RRUS-11	B	From Face	3.50	0.0000	102.00	No Ice	2.78	1.19	50.71
			-1.50			1/2" Ice	2.99	1.33	71.49
			0.00			1" Ice	3.21	1.49	95.32
RRUS-11	C	From Face	3.50	0.0000	102.00	No Ice	2.78	1.19	50.71
			-1.50			1/2" Ice	2.99	1.33	71.49
			0.00			1" Ice	3.21	1.49	95.32
15' Dipole	A	From Face	3.50	0.0000	102.00	No Ice	4.50	4.50	40.00
			-3.00			1/2" Ice	6.03	6.03	72.48
			5.00			1" Ice	7.58	7.58	114.58
(3) 8'x2" Antenna Mount Pipe	A	From Face	3.50	0.0000	102.00	No Ice	1.90	1.90	30.00
			0.00			1/2" Ice	2.73	2.73	44.34
			0.00			1" Ice	3.40	3.40	63.96
(3) 8'x2" Antenna Mount Pipe	B	From Face	3.50	0.0000	102.00	No Ice	1.90	1.90	30.00
			0.00			1/2" Ice	2.73	2.73	44.34
			0.00			1" Ice	3.40	3.40	63.96
(3) 8'x2" Antenna Mount Pipe	C	From Face	3.50	0.0000	102.00	No Ice	1.90	1.90	30.00
			0.00			1/2" Ice	2.73	2.73	44.34
			0.00			1" Ice	3.40	3.40	63.96
Platform Mount [LP 1201-1] (T-Mobile)	C	None		0.0000	102.00	No Ice	23.10	23.10	2100.00
						1/2" Ice	26.80	26.80	2500.00
						1" Ice	30.50	30.50	2900.00

BXA-80080-6CF w/Mount Pipe	A	From Face	3.50	0.0000	93.00	No Ice	6.03	6.22	43.55
			6.00			1/2" Ice	6.59	7.39	98.34
			1.00			1" Ice	7.12	8.28	160.71
BXA-80080-6CF w/Mount Pipe	B	From Face	3.50	0.0000	93.00	No Ice	6.03	6.22	43.55
			6.00			1/2" Ice	6.59	7.39	98.34
			1.00			1" Ice	7.12	8.28	160.71
BXA-80063-6CF-EDIN-X w/Mount Pipe	C	From Face	3.50	0.0000	93.00	No Ice	7.83	5.82	42.55
			6.00			1/2" Ice	8.39	6.99	103.53
			1.00			1" Ice	8.91	7.87	172.25
WWX063X19x00 w/Mount Pipe	A	From Face	3.50	0.0000	93.00	No Ice	9.01	7.46	61.90
			4.50			1/2" Ice	9.67	8.75	135.25
			1.00			1" Ice	10.30	9.90	216.97
WWX063X19x00 w/Mount Pipe	B	From Face	3.50	0.0000	93.00	No Ice	9.01	7.46	61.90
			4.50			1/2" Ice	9.67	8.75	135.25
			1.00			1" Ice	10.30	9.90	216.97
WWX063X19x00 w/Mount Pipe	C	From Face	3.50	0.0000	93.00	No Ice	9.01	7.46	61.90
			4.50			1/2" Ice	9.67	8.75	135.25
			1.00			1" Ice	10.30	9.90	216.97
80010736V01 w/Mount Pipe	A	From Face	3.50	0.0000	93.00	No Ice	11.63	7.30	74.75
			-1.00			1/2" Ice	12.35	8.81	152.77
			1.00			1" Ice	13.07	10.33	240.51
80010736V01 w/Mount Pipe	B	From Face	3.50	0.0000	93.00	No Ice	11.63	7.30	74.75
			-1.00			1/2" Ice	12.35	8.81	152.77

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
X7C-FRO-660-V w/Mount Pipe	C	From Face	1.00		0.0000	93.00	1" Ice	13.07	10.33	240.51
			3.50				No Ice	9.79	7.65	73.75
			-1.00				1/2" Ice	10.36	8.83	152.43
WWX063X19x00 w/Mount Pipe	A	From Face	1.00		0.0000	93.00	1" Ice	10.90	9.73	239.32
			3.50				No Ice	9.01	7.46	61.90
			-6.00				1/2" Ice	9.67	8.75	135.25
WWX063X19x00 w/Mount Pipe	B	From Face	1.00		0.0000	93.00	1" Ice	10.30	9.90	216.97
			3.50				No Ice	9.01	7.46	61.90
			-6.00				1/2" Ice	9.67	8.75	135.25
WWX063X19x00 w/Mount Pipe	C	From Face	1.00		0.0000	93.00	1" Ice	10.30	9.90	216.97
			3.50				No Ice	9.01	7.46	61.90
			-6.00				1/2" Ice	9.67	8.75	135.25
RRH2x60-AWS	A	From Face	1.00		0.0000	93.00	1" Ice	10.30	9.90	216.97
			3.00				No Ice	1.88	1.24	44.00
			4.50				1/2" Ice	2.06	1.39	60.01
RRH2x60-AWS	B	From Face	2.00		0.0000	93.00	1" Ice	2.24	1.54	78.72
			3.00				No Ice	1.88	1.24	44.00
			4.50				1/2" Ice	2.06	1.39	60.01
RRH2x60-AWS	C	From Face	2.00		0.0000	93.00	1" Ice	2.24	1.54	78.72
			3.00				No Ice	1.88	1.24	44.00
			4.50				1/2" Ice	2.06	1.39	60.01
700MHz 2x60 RRH	A	From Face	2.00		0.0000	93.00	1" Ice	2.24	1.54	78.72
			3.00				No Ice	2.13	1.89	51.00
			-1.00				1/2" Ice	2.32	2.07	72.38
700MHz 2x60 RRH	B	From Face	2.00		0.0000	93.00	1" Ice	2.52	2.26	96.81
			3.00				No Ice	2.13	1.89	51.00
			-1.00				1/2" Ice	2.32	2.07	72.38
700MHz 2x60 RRH	C	From Face	2.00		0.0000	93.00	1" Ice	2.52	2.26	96.81
			3.00				No Ice	2.13	1.89	51.00
			-1.00				1/2" Ice	2.32	2.07	72.38
PCS RRH2x60-1900A-4R	A	From Face	2.00		0.0000	93.00	1" Ice	2.52	2.26	96.81
			3.00				No Ice	1.89	1.28	46.00
			-6.00				1/2" Ice	2.07	1.43	62.39
PCS RRH2x60-1900A-4R	B	From Face	2.00		0.0000	93.00	1" Ice	2.26	1.60	81.50
			3.00				No Ice	1.89	1.28	46.00
			-6.00				1/2" Ice	2.07	1.43	62.39
PCS RRH2x60-1900A-4R	C	From Face	2.00		0.0000	93.00	1" Ice	2.26	1.60	81.50
			3.00				No Ice	1.89	1.28	46.00
			-6.00				1/2" Ice	2.07	1.43	62.39
DB-T16Z-8AB-0Z	A	From Leg	1.00		0.0000	93.00	No Ice	4.80	2.00	44.00
			0.00				1/2" Ice	5.07	2.19	80.13
			2.00				1" Ice	5.35	2.39	120.22
DB-T16Z-8AB-0Z	B	From Leg	1.00		0.0000	93.00	No Ice	4.80	2.00	44.00
			0.00				1/2" Ice	5.07	2.19	80.13
			2.00				1" Ice	5.35	2.39	120.22
10' Omni	B	From Leg	6.50		0.0000	93.00	No Ice	2.75	2.75	30.00
			0.00				1/2" Ice	3.78	3.78	50.21
			5.00				1" Ice	4.83	4.83	76.96
10' Omni	C	From Leg	6.50		0.0000	93.00	No Ice	2.75	2.75	30.00
			0.00				1/2" Ice	3.78	3.78	50.21
			5.00				1" Ice	4.83	4.83	76.96
Platform Mount [LP 1201-1] (Verizon)	C	None			0.0000	93.00	No Ice	23.10	23.10	2100.00
							1/2" Ice	26.80	26.80	2500.00
							1" Ice	30.50	30.50	2900.00

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	lb
15' Dipole (Other)	C	From Leg	6.00	0.0000	72.00	No Ice 4.50	4.50	40.00
			0.00			1/2" Ice 6.03	6.03	72.48
			-8.00			1" Ice 7.58	7.58	114.58
Side Arm Mount [SO 303-1]	C	From Leg	3.00	0.0000	72.00	No Ice 2.24	5.32	115.00
			0.00			1/2" Ice 3.19	7.69	158.73
			0.00			1" Ice 4.14	10.06	202.46

Force Totals

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M _x	Sum of Overturning Moments, M _z	Sum of Torques
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Leg Weight	16656.88					
Bracing Weight	0.00					
Total Member Self-Weight	16656.88			1302.79	1431.54	
Total Weight	38887.37			1302.79	1431.54	
Wind 0 deg - No Ice		-137.11	-26073.07	-2196920.02	14966.05	-3659.45
Wind 30 deg - No Ice		12285.96	-21435.09	-1890005.55	-1083280.12	-2787.88
Wind 60 deg - No Ice		21264.50	-12208.34	-1082364.90	-1890072.35	-1169.29
Wind 90 deg - No Ice		24598.62	137.11	14837.30	-2190305.11	762.60
Wind 120 deg - No Ice		21401.61	12445.82	1108412.94	-1903606.87	2490.16
Wind 150 deg - No Ice		12523.44	21572.20	1906145.63	-1106722.58	3550.48
Wind 180 deg - No Ice		137.11	26073.07	2199525.59	-12102.98	3659.45
Wind 210 deg - No Ice		-12285.96	21435.09	1892611.12	1086143.19	2787.88
Wind 240 deg - No Ice		-21264.50	12208.34	1084970.47	1892935.43	1169.29
Wind 270 deg - No Ice		-24598.62	-137.11	-12231.73	2193168.19	-762.60
Wind 300 deg - No Ice		-21401.61	-12445.82	-1105807.37	1906469.94	-2490.16
Wind 330 deg - No Ice		-12523.44	-21572.20	-1903540.06	1109585.66	-3550.48
Member Ice	10880.12					
Total Weight Ice	77196.67			2801.80	5400.35	
Wind 0 deg - Ice		-57.17	-12656.43	-1072003.21	10262.95	-2397.66
Wind 30 deg - Ice		6234.37	-10896.02	-925384.34	-526133.14	-1634.53
Wind 60 deg - Ice		10717.82	-6178.36	-529856.22	-919372.47	-433.44
Wind 90 deg - Ice		12408.88	57.17	7664.40	-1065242.74	883.80
Wind 120 deg - Ice		10775.00	6277.39	543882.08	-924235.07	1964.22
Wind 150 deg - Ice		6333.40	10953.19	935850.53	-534555.41	2518.34
Wind 180 deg - Ice		57.17	12656.43	1077606.81	537.75	2397.66
Wind 210 deg - Ice		-6234.37	10896.02	930987.93	536933.84	1634.53
Wind 240 deg - Ice		-10717.82	6178.36	535459.81	930173.17	433.44
Wind 270 deg - Ice		-12408.88	-57.17	-2060.80	1076043.44	-883.80
Wind 300 deg - Ice		-10775.00	-6277.39	-538278.49	935035.77	-1964.22
Wind 330 deg - Ice		-6333.40	-10953.19	-930246.94	545356.11	-2518.34
Total Weight	38887.37			1302.79	1431.54	
Wind 0 deg - Service		-51.06	-9710.11	-818123.73	6472.05	-1362.85
Wind 30 deg - Service		4575.53	-7982.84	-703822.93	-402535.78	-1038.26
Wind 60 deg - Service		7919.31	-4546.62	-403042.14	-703000.60	-435.47
Wind 90 deg - Service		9160.99	51.06	5576.90	-814813.01	284.01
Wind 120 deg - Service		7970.37	4635.06	412845.33	-708041.11	927.38
Wind 150 deg - Service		4663.97	8033.90	709936.21	-411266.20	1322.27
Wind 180 deg - Service		51.06	9710.11	819196.50	-3608.97	1362.85
Wind 210 deg - Service		-4575.53	7982.84	704895.69	405398.86	1038.26
Wind 240 deg - Service		-7919.31	4546.62	404114.91	705863.68	435.47

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Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Wind 270 deg - Service		-9160.99	-51.06	-4504.13	817676.09	-284.01
Wind 300 deg - Service		-7970.37	-4635.06	-411772.56	710904.19	-927.38
Wind 330 deg - Service		-4663.97	-8033.90	-708863.44	414129.28	-1322.27

Load Combinations

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

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Comb. No.	Description
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	125 - 120	Pole	Max Tension	48	0.00	0.00	-0.00
			Max. Compression	26	-13236.48	1578.29	519.32
			Max. Mx	20	-4562.11	25755.01	-22.89
			Max. My	14	-4579.94	-111.69	-25297.66
			Max. Vy	20	-8914.68	25755.01	-22.89
			Max. Vx	14	8802.52	-111.69	-25297.66
			Max. Torque	16			-1626.10
L2	120 - 115	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15573.30	1622.74	518.90
			Max. Mx	20	-5584.62	77997.46	482.88
			Max. My	14	-5602.74	-578.73	-76977.22
			Max. Vy	20	-10289.93	77997.46	482.88
			Max. Vx	14	10177.32	-578.73	-76977.22
			Max. Torque	16			-1626.32
L3	115 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23938.43	1684.48	516.02
			Max. Mx	20	-9115.03	149860.04	999.04
			Max. My	14	-9134.59	-1049.62	-148268.71
			Max. Vy	20	-14838.10	149860.04	999.04
			Max. Vx	14	14723.92	-1049.62	-148268.71
			Max. Torque	16			-1625.94
L4	110 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24636.60	1742.00	511.21
			Max. Mx	20	-9545.89	224879.91	1511.87
			Max. My	14	-9564.35	-1521.98	-222718.29
			Max. Vy	20	-15180.76	224879.91	1511.87
			Max. Vx	14	15066.77	-1521.98	-222718.29
			Max. Torque	16			-1624.91
L5	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36630.55	3564.17	730.52
			Max. Mx	20	-14291.96	321281.90	2241.99
			Max. My	2	-14312.71	3194.70	317714.93
			Max. Vy	20	-22407.02	321281.90	2241.99
			Max. Vx	14	22291.82	-1488.04	-317633.76
			Max. Torque	16			-3197.83
L6	100 - 96.04	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36637.37	3565.89	730.22
			Max. Mx	20	-14310.62	322177.92	2245.97
			Max. My	2	-14331.13	3198.81	318606.28
			Max. Vy	20	-22403.25	322177.92	2245.97
			Max. Vx	14	22286.09	-1492.38	-318525.13
			Max. Torque	16			-3197.13
L7	96.04 - 94.96	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38114.46	3635.02	717.99
			Max. Mx	20	-15211.37	435264.51	2767.02
			Max. My	2	-15231.05	3775.69	431113.03
			Max. Vy	20	-22832.36	435264.51	2767.02
			Max. Vx	14	22717.35	-1968.57	-431036.46
			Max. Torque	16			-3195.96
L8	94.96 - 89.96	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49925.99	3461.49	-294.30
			Max. Mx	20	-19434.29	578875.26	3444.39

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft			
L9	89.96 - 84.96	Pole	Max. My	14	-19447.38	-2849.27	-574689.66			
			Max. Vy	20	-30170.91	578875.26	3444.39			
			Max. Vx	14	30116.51	-2849.27	-574689.66			
			Max. Torque	2			3311.07			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-51058.02	3536.22	-311.98			
			Max. Mx	20	-20360.03	730571.78	4231.68			
			Max. My	14	-20371.53	-3595.02	-726116.08			
			Max. Vy	20	-30534.82	730571.78	4231.68			
			Max. Vx	14	30481.02	-3595.02	-726116.08			
L10	84.96 - 79.96	Pole	Max. Torque	2			3308.66			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-52232.67	3603.96	-329.29			
			Max. Mx	20	-21326.94	884089.93	5015.99			
			Max. My	14	-21336.92	-4344.23	-879367.16			
			Max. Vy	20	-30902.95	884089.93	5015.99			
			Max. Vx	14	30849.76	-4344.23	-879367.16			
			Max. Torque	2			3305.13			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-53449.84	3665.47	-346.30			
L11	79.96 - 74.96	Pole	Max. Mx	20	-22330.07	1039457.85	5797.01			
			Max. My	14	-22338.61	-5095.64	-1034470.99			
			Max. Vy	20	-31277.40	1039457.85	5797.01			
			Max. Vx	14	31224.80	-5095.64	-1034470.99			
			Max. Torque	2			3301.27			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-55244.17	6338.33	-1873.86			
			Max. Mx	20	-23527.66	1196470.54	6338.62			
			Max. My	14	-23529.69	-5332.67	-1191037.20			
			Max. Vy	20	-32071.40	1196470.54	6338.62			
L12	74.96 - 69.96	Pole	Max. Vx	14	32101.74	-5332.67	-1191037.20			
			Max. Torque	2			5959.36			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-56085.49	6365.12	-1881.97			
			Max. Mx	20	-24098.36	1283620.73	6954.57			
			Max. My	14	-24100.01	-5938.12	-1278270.32			
			Max. Vy	20	-32287.98	1283620.73	6954.57			
			Max. Vx	14	32318.65	-5938.12	-1278270.32			
			Max. Torque	2			5955.99			
			Max Tension	1	0.00	0.00	0.00			
L13	69.96 - 67.25	Pole	Max. Compression	26	-56188.58	6367.94	-1882.77			
			Max. Mx	20	-24200.67	1291689.83	7011.62			
			Max. My	14	-24202.20	-5995.38	-1286347.09			
			Max. Vy	20	-32291.34	1291689.83	7011.62			
			Max. Vx	14	32322.03	-5995.38	-1286347.09			
			Max. Torque	2			5954.09			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-58262.19	6412.61	-1896.37			
			Max. Mx	20	-25655.74	1454399.62	8146.57			
			Max. My	14	-25656.99	-7109.42	-1449211.39			
L14	67.25 - 67	Pole	Max. Vy	20	-32807.20	1454399.62	8146.57			
			Max. Vx	14	32838.17	-7109.42	-1449211.39			
			Max. Torque	2			5953.81			
			Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-60377.50	6454.25	-1909.05			
			Max. Mx	20	-27150.01	1619673.16	9281.62			
			Max. My	14	-27151.00	-8226.37	-1614640.54			
			Max. Vy	20	-33325.01	1619673.16	9281.62			
			Max. Vx	14	33356.20	-8226.37	-1614640.54			
			Max. Torque	2			5951.54			
L15	67 - 62	Pole	Max Tension	1	0.00	0.00	0.00			
			Max. Compression	26	-60377.50	6454.25	-1909.05			
L16	62 - 57	Pole	Max. Mx	20	-27150.01	1619673.16	9281.62			
			Max. My	14	-27151.00	-8226.37	-1614640.54			
			Max. Vy	20	-33325.01	1619673.16	9281.62			
			Max. Vx	14	33356.20	-8226.37	-1614640.54			
			Max. Torque	2			5951.54			
			Max Tension	1	0.00	0.00	0.00			
			L17	57 - 47.67	Pole	Max. Compression	26	-60377.50	6454.25	-1909.05
						Max. Mx	20	-27150.01	1619673.16	9281.62

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L18	47.67 - 46.67	Pole	Max. Compression	26	-61914.39	6482.63	-1917.71
			Max. Mx	20	-28260.91	1742301.98	10112.20
			Max. My	14	-28261.75	-9044.95	-1737383.94
			Max. Vy	20	-33710.36	1742301.98	10112.20
			Max. Vx	14	33741.70	-9044.95	-1737383.94
			Max. Torque	2		5949.26	
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66144.76	6532.23	-1932.90
			Max. Mx	20	-31139.63	1969789.09	11626.27
			Max. My	14	-31140.31	-10537.19	-1965080.49
L19	46.67 - 41.67	Pole	Max. Vy	20	-34505.97	1969789.09	11626.27
			Max. Vx	14	34537.41	-10537.19	-1965080.49
			Max. Torque	2		5946.20	
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67798.61	6552.77	-1939.21
			Max. Mx	20	-32455.82	2143369.61	12760.70
			Max. My	14	-32456.27	-11661.70	-2138819.27
			Max. Vy	20	-34964.71	2143369.61	12760.70
			Max. Vx	14	34996.49	-11661.70	-2138819.27
			Max. Torque	2		5945.58	
L20	41.67 - 36.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69498.42	6552.76	-1939.21
			Max. Mx	20	-33803.39	2319255.53	13891.60
			Max. My	14	-33803.64	-12785.24	-2314865.08
			Max. Vy	20	-35428.65	2319255.53	13891.60
			Max. Vx	14	35460.75	-12785.24	-2314865.08
			Max. Torque	2		5942.71	
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71243.23	6552.75	-1939.21
			Max. Mx	20	-35182.17	2497466.13	15018.64
L21	36.67 - 31.67	Pole	Max. My	14	-35182.27	-13907.30	-2493237.09
			Max. Vy	20	-35895.00	2497466.13	15018.64
			Max. Vx	14	35927.39	-13907.30	-2493237.09
			Max. Torque	2		5940.24	
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73031.71	6552.74	-1939.21
			Max. Mx	20	-36591.96	2678015.24	16141.52
			Max. My	14	-36591.94	-15027.41	-2673949.00
			Max. Vy	20	-36364.42	2678015.24	16141.52
			Max. Vx	14	36397.09	-15027.41	-2673949.00
L22	31.67 - 26.67	Pole	Max. Torque	2		5938.16	
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74862.01	6552.73	-1939.21
			Max. Mx	20	-38032.24	2860979.61	17259.99
			Max. My	14	-38032.12	-16145.14	-2857077.48
			Max. Vy	20	-36861.54	2860979.61	17259.99
			Max. Vx	14	36894.47	-16145.14	-2857077.48
			Max. Torque	2		5936.47	
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76731.36	6552.72	-1939.20
L23	26.67 - 21.67	Pole	Max. Mx	20	-39503.27	3046502.32	18373.76
			Max. My	14	-39503.08	-17260.10	-3042765.51
			Max. Vy	20	-37388.15	3046502.32	18373.76
			Max. Vx	14	37421.32	-17260.10	-3042765.51
			Max. Torque	2		5935.15	
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78699.24	6552.71	-1978.40
			Max. Mx	20	-41049.19	3234736.45	19455.75
			Max. My	14	-41048.96	-18371.96	-3231192.96
			Max. Vy	20	-37946.43	3234736.45	19455.75
L24	21.67 - 16.67	Pole	Max. Vx	14	37979.82	-18371.96	-3231192.96
			Max. Torque	2		5935.15	
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78699.24	6552.71	-1978.40
			Max. Mx	20	-41049.19	3234736.45	19455.75
L25	16.67 - 11.67	Pole	Max. My	14	-41048.96	-18371.96	-3231192.96
			Max. Vy	20	-37946.43	3234736.45	19455.75
			Max. Vx	14	37979.82	-18371.96	-3231192.96
			Max. Torque	2		5935.15	
			Max Tension	1	0.00	0.00	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L26	11.67 - 8.5	Pole	Max. Torque	2			5934.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80527.99	6552.70	-2354.18
			Max. M _x	20	-42437.49	3355554.52	19895.81
			Max. M _y	14	-42434.30	-19075.07	-3353434.77
			Max. V _y	20	-38320.15	3355554.52	19895.81
			Max. V _x	14	39022.82	-19075.07	-3353434.77
L27	8.5 - 8.25	Pole	Max. Torque	2			5933.58
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80705.41	6552.77	-2383.90
			Max. M _x	20	-42593.18	3365133.64	19930.37
			Max. M _y	14	-42590.16	-19131.04	-3363216.94
			Max. V _y	20	-38336.34	3365133.64	19930.37
			Max. V _x	14	39092.54	-19131.04	-3363216.94
L28	8.25 - 3.25	Pole	Max. Torque	2			5933.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84237.98	6552.69	-2978.28
			Max. M _x	20	-45383.12	3558543.82	20611.42
			Max. M _y	14	-45380.40	-20234.11	-3563551.89
			Max. V _y	20	-39044.20	3558543.82	20611.42
			Max. V _x	14	40895.22	-20234.11	-3563551.89
L29	3.25 - 1	Pole	Max. Torque	2			5933.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85807.81	6552.68	-3241.60
			Max. M _x	20	-46653.52	3646732.50	20913.51
			Max. M _y	14	-46652.81	-20729.87	-3656668.00
			Max. V _y	20	-39371.21	3646732.50	20913.51
			Max. V _x	14	41730.37	-20729.87	-3656668.00
			Max. Torque	2			5933.29

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	26	85807.81	0.00	-0.00
	Max. H _x	21	34998.63	39357.79	219.37
	Max. H _z	3	34998.63	219.37	41716.92
	Max. M _x	2	3653464.62	219.37	41716.92
	Max. M _z	8	3643071.04	-39357.79	-219.37
	Max. Torsion	2	5933.29	219.37	41716.92
	Min. Vert	11	34998.63	-34242.57	-19913.31
	Min. H _x	8	46664.85	-39357.79	-219.37
	Min. H _z	15	34998.63	-219.37	-41716.92
	Min. M _x	14	-3656668.00	-219.37	-41716.92
	Min. M _z	20	-3646732.50	39357.79	219.37
	Min. Torsion	14	-5914.25	-219.37	-41716.92

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
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<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Ramaker & Associates, Inc 855 Community Drive Sauk City, WI 53583 Phone: (608) 643-4100 FAX:</p>	Job	CT2268	Page	22 of 36
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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	38887.37	-0.00	0.00	1306.58	1446.82	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	46664.85	-219.37	-41716.92	-3653464.62	24302.12	-5933.29
0.9 Dead+1.6 Wind 0 deg - No Ice	34998.63	-219.37	-41716.92	-3616585.79	23599.84	-5899.28
1.2 Dead+1.6 Wind 30 deg - No Ice	46664.85	19657.54	-34296.15	-3143512.84	-1802105.75	-4509.27
0.9 Dead+1.6 Wind 30 deg - No Ice	34998.63	19657.54	-34296.15	-3111752.78	-1784099.74	-4484.54
1.2 Dead+1.6 Wind 60 deg - No Ice	46664.85	34023.20	-19533.35	-1800468.15	-3143842.05	-1872.51
0.9 Dead+1.6 Wind 60 deg - No Ice	34998.63	34023.20	-19533.35	-1782441.81	-3112083.58	-1863.77
1.2 Dead+1.6 Wind 90 deg - No Ice	46664.85	39357.79	219.37	24118.45	-3643071.04	1262.47
0.9 Dead+1.6 Wind 90 deg - No Ice	34998.63	39357.79	219.37	23476.84	-3606198.35	1252.96
1.2 Dead+1.6 Wind 120 deg - No Ice	46664.85	34242.57	19913.31	1842602.28	-3166237.75	4051.43
0.9 Dead+1.6 Wind 120 deg - No Ice	34998.63	34242.57	19913.31	1823358.69	-3134252.64	4026.36
1.2 Dead+1.6 Wind 150 deg - No Ice	46664.85	20037.50	34515.52	3169112.65	-1841035.49	5751.35
0.9 Dead+1.6 Wind 150 deg - No Ice	34998.63	20037.50	34515.52	3136308.50	-1822629.87	5717.47
1.2 Dead+1.6 Wind 180 deg - No Ice	46664.85	219.37	41716.92	3656668.00	-20730.38	5914.25
0.9 Dead+1.6 Wind 180 deg - No Ice	34998.63	219.37	41716.92	3618971.85	-20967.18	5880.54
1.2 Dead+1.6 Wind 210 deg - No Ice	46664.85	-19657.54	34296.15	3146755.71	1805700.05	4499.16
0.9 Dead+1.6 Wind 210 deg - No Ice	34998.63	-19657.54	34296.15	3114167.46	1786748.77	4474.56
1.2 Dead+1.6 Wind 240 deg - No Ice	46664.85	-34023.20	19533.35	1803711.74	3147481.21	1881.48
0.9 Dead+1.6 Wind 240 deg - No Ice	34998.63	-34023.20	19533.35	1784856.99	3114765.15	1872.55
1.2 Dead+1.6 Wind 270 deg - No Ice	46664.85	-39357.79	-219.37	-20913.62	3646732.50	-1243.38
0.9 Dead+1.6 Wind 270 deg - No Ice	34998.63	-39357.79	-219.37	-21089.78	3608896.08	-1234.18
1.2 Dead+1.6 Wind 300 deg - No Ice	46664.85	-34242.57	-19913.31	-1839436.91	3169876.67	-4041.29
0.9 Dead+1.6 Wind 300 deg - No Ice	34998.63	-34242.57	-19913.31	-1821000.25	3136934.00	-4016.35
1.2 Dead+1.6 Wind 330 deg - No Ice	46664.85	-20037.50	-34515.52	-3165948.01	1844629.56	-5760.27
0.9 Dead+1.6 Wind 330 deg - No Ice	34998.63	-20037.50	-34515.52	-3133950.56	1825278.70	-5726.21
1.2 Dead+1.0 Ice+1.0 Temp	85807.81	-0.00	0.00	3241.60	6552.68	0.12
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	85807.81	-57.17	-12656.43	-1171379.93	11917.84	-2547.82
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	85807.81	6234.37	-10896.02	-1011181.09	-574378.98	-1754.60
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	85807.81	10717.82	-6178.36	-578958.71	-1004248.27	-490.91
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	85807.81	12408.89	57.17	8534.88	-1163670.22	904.25
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	85807.81	10775.00	6277.39	594620.24	-1009506.52	2056.77
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	85807.81	6333.40	10953.19	1022996.81	-583486.91	2657.95
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	85807.81	57.17	12656.43	1177942.83	1403.29	2547.09
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	85807.81	-6234.37	10896.02	1017754.08	587710.56	1754.12
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	85807.81	-10717.82	6178.36	585527.82	1017593.70	491.41
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	85807.81	-12408.89	-57.17	-1979.72	1177019.06	-903.02
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	85807.81	-10775.00	-6277.39	-588075.18	1022844.92	-2055.79
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	85807.81	-6333.40	-10953.19	-1016447.87	596811.45	-2657.96
Dead+Wind 0 deg - Service	38887.37	-51.06	-9710.11	-844982.52	6728.68	-1389.26
Dead+Wind 30 deg - Service	38887.37	4575.53	-7982.84	-726887.16	-416155.14	-1057.50
Dead+Wind 60 deg - Service	38887.37	7919.31	-4546.62	-415921.53	-726822.92	-442.15
Dead+Wind 90 deg - Service	38887.37	9160.99	51.06	6545.36	-842431.85	291.51
Dead+Wind 120 deg - Service	38887.37	7970.37	4635.06	427614.52	-732034.56	946.67
Dead+Wind 150 deg - Service	38887.37	4663.97	8033.90	734763.22	-425183.70	1347.96
Dead+Wind 180 deg - Service	38887.37	51.06	9710.11	847646.91	-3697.58	1388.24
Dead+Wind 210 deg - Service	38887.37	-4575.53	7982.84	729553.32	419187.25	1056.92
Dead+Wind 240 deg - Service	38887.37	-7919.31	4546.62	418587.73	729857.03	442.60
Dead+Wind 270 deg - Service	38887.37	-9160.99	-51.06	-3880.89	845466.96	-290.46
Dead+Wind 300 deg - Service	38887.37	-7970.37	-4635.06	-424951.83	735068.67	-946.07
Dead+Wind 330 deg - Service	38887.37	-4663.97	-8033.90	-732100.56	428215.79	-1348.39

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-38887.37	0.00	0.00	38887.37	-0.00	0.000%
2	-219.37	-46664.85	-41716.92	219.37	46664.85	41716.92	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
3	-219.37	-34998.63	-41716.92	219.37	34998.63	41716.92	0.000%
4	19657.54	-46664.85	-34296.15	-19657.54	46664.85	34296.15	0.000%
5	19657.54	-34998.63	-34296.15	-19657.54	34998.63	34296.15	0.000%
6	34023.20	-46664.85	-19533.35	-34023.20	46664.85	19533.35	0.000%
7	34023.20	-34998.63	-19533.35	-34023.20	34998.63	19533.35	0.000%
8	39357.79	-46664.85	219.37	-39357.79	46664.85	-219.37	0.000%
9	39357.79	-34998.63	219.37	-39357.79	34998.63	-219.37	0.000%
10	34242.57	-46664.85	19913.31	-34242.57	46664.85	-19913.31	0.000%
11	34242.57	-34998.63	19913.31	-34242.57	34998.63	-19913.31	0.000%
12	20037.50	-46664.85	34515.52	-20037.50	46664.85	-34515.52	0.000%
13	20037.50	-34998.63	34515.52	-20037.50	34998.63	-34515.52	0.000%
14	219.37	-46664.85	41716.92	-219.37	46664.85	-41716.92	0.000%
15	219.37	-34998.63	41716.92	-219.37	34998.63	-41716.92	0.000%
16	-19657.54	-46664.85	34296.15	19657.54	46664.85	-34296.15	0.000%
17	-19657.54	-34998.63	34296.15	19657.54	34998.63	-34296.15	0.000%
18	-34023.20	-46664.85	19533.35	34023.20	46664.85	-19533.35	0.000%
19	-34023.20	-34998.63	19533.35	34023.20	34998.63	-19533.35	0.000%
20	-39357.79	-46664.85	-219.37	39357.79	46664.85	219.37	0.000%
21	-39357.79	-34998.63	-219.37	39357.79	34998.63	219.37	0.000%
22	-34242.57	-46664.85	-19913.31	34242.57	46664.85	19913.31	0.000%
23	-34242.57	-34998.63	-19913.31	34242.57	34998.63	19913.31	0.000%
24	-20037.50	-46664.85	-34515.52	20037.50	46664.85	34515.52	0.000%
25	-20037.50	-34998.63	-34515.52	20037.50	34998.63	34515.52	0.000%
26	0.00	-85807.81	0.00	0.00	85807.81	-0.00	0.000%
27	-57.17	-85807.81	-12656.43	57.17	85807.81	12656.43	0.000%
28	6234.37	-85807.81	-10896.02	-6234.37	85807.81	10896.02	0.000%
29	10717.82	-85807.81	-6178.36	-10717.82	85807.81	6178.36	0.000%
30	12408.88	-85807.81	57.17	-12408.88	85807.81	-57.17	0.000%
31	10775.00	-85807.81	6277.39	-10775.00	85807.81	-6277.39	0.000%
32	6333.40	-85807.81	10953.19	-6333.40	85807.81	-10953.19	0.000%
33	57.17	-85807.81	12656.43	-57.17	85807.81	-12656.43	0.000%
34	-6234.37	-85807.81	10896.02	6234.37	85807.81	-10896.02	0.000%
35	-10717.82	-85807.81	6178.36	10717.82	85807.81	-6178.36	0.000%
36	-12408.88	-85807.81	-57.17	12408.88	85807.81	57.17	0.000%
37	-10775.00	-85807.81	-6277.39	10775.00	85807.81	6277.39	0.000%
38	-6333.40	-85807.81	-10953.19	6333.40	85807.81	10953.19	0.000%
39	-51.06	-38887.37	-9710.11	51.06	38887.37	9710.11	0.000%
40	4575.53	-38887.37	-7982.84	-4575.53	38887.37	7982.84	0.000%
41	7919.31	-38887.37	-4546.62	-7919.31	38887.37	4546.62	0.000%
42	9160.99	-38887.37	51.06	-9160.99	38887.37	-51.06	0.000%
43	7970.37	-38887.37	4635.06	-7970.37	38887.37	-4635.06	0.000%
44	4663.97	-38887.37	8033.90	-4663.97	38887.37	-8033.90	0.000%
45	51.06	-38887.37	9710.11	-51.06	38887.37	-9710.11	0.000%
46	-4575.53	-38887.37	7982.84	4575.53	38887.37	-7982.84	0.000%
47	-7919.31	-38887.37	4546.62	7919.31	38887.37	-4546.62	0.000%
48	-9160.99	-38887.37	-51.06	9160.99	38887.37	51.06	0.000%
49	-7970.37	-38887.37	-4635.06	7970.37	38887.37	4635.06	0.000%
50	-4663.97	-38887.37	-8033.90	4663.97	38887.37	8033.90	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000508
2	Yes	7	0.00000001	0.00007668
3	Yes	6	0.00000001	0.00048035
4	Yes	7	0.00000001	0.00046645
5	Yes	7	0.00000001	0.00009674

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6	Yes	7	0.00000001	0.00052273
7	Yes	7	0.00000001	0.00011097
8	Yes	6	0.00000001	0.00024598
9	Yes	6	0.00000001	0.00007311
10	Yes	7	0.00000001	0.00053224
11	Yes	7	0.00000001	0.00011210
12	Yes	7	0.00000001	0.00047347
13	Yes	7	0.00000001	0.00009699
14	Yes	7	0.00000001	0.00005864
15	Yes	6	0.00000001	0.00036896
16	Yes	7	0.00000001	0.00054183
17	Yes	7	0.00000001	0.00011561
18	Yes	7	0.00000001	0.00048329
19	Yes	7	0.00000001	0.00010066
20	Yes	6	0.00000001	0.00016623
21	Yes	6	0.00000001	0.00004842
22	Yes	7	0.00000001	0.00048843
23	Yes	7	0.00000001	0.00010087
24	Yes	7	0.00000001	0.00054930
25	Yes	7	0.00000001	0.00011631
26	Yes	5	0.00000001	0.00069800
27	Yes	8	0.00000001	0.00013223
28	Yes	8	0.00000001	0.00022358
29	Yes	8	0.00000001	0.00023709
30	Yes	7	0.00000001	0.00094727
31	Yes	8	0.00000001	0.00025033
32	Yes	8	0.00000001	0.00022751
33	Yes	8	0.00000001	0.00013169
34	Yes	8	0.00000001	0.00025624
35	Yes	8	0.00000001	0.00023695
36	Yes	7	0.00000001	0.00096591
37	Yes	8	0.00000001	0.00023552
38	Yes	8	0.00000001	0.00026421
39	Yes	6	0.00000001	0.00008818
40	Yes	6	0.00000001	0.00016891
41	Yes	6	0.00000001	0.00020933
42	Yes	5	0.00000001	0.00051211
43	Yes	6	0.00000001	0.00021913
44	Yes	6	0.00000001	0.00017613
45	Yes	6	0.00000001	0.00008345
46	Yes	6	0.00000001	0.00023206
47	Yes	6	0.00000001	0.00017830
48	Yes	5	0.00000001	0.00050312
49	Yes	6	0.00000001	0.00018326
50	Yes	6	0.00000001	0.00023922

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 120	20.589	49	1.5611	0.0095
L2	120 - 115	18.955	49	1.5567	0.0089
L3	115 - 110	17.338	49	1.5285	0.0081
L4	110 - 105	15.762	49	1.4799	0.0074
L5	105 - 100	14.245	49	1.4141	0.0069
L6	100 - 96.04	12.805	49	1.3355	0.0061
L7	99.96 - 94.96	12.794	49	1.3348	0.0061
L8	94.96 - 89.96	11.417	49	1.2871	0.0056
L9	89.96 - 84.96	10.111	49	1.2061	0.0050
L10	84.96 - 79.96	8.894	49	1.1167	0.0044

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L11	79.96 - 74.96	7.774	49	1.0222	0.0039
L12	74.96 - 69.96	6.755	49	0.9250	0.0035
L13	69.96 - 67.25	5.838	49	0.8267	0.0030
L14	67.25 - 67	5.383	49	0.7734	0.0026
L15	67 - 62	5.343	49	0.7709	0.0026
L16	62 - 57	4.563	49	0.7197	0.0023
L17	57 - 47.67	3.836	49	0.6678	0.0021
L18	53.34 - 46.67	3.339	49	0.6299	0.0019
L19	46.67 - 41.67	2.488	49	0.5797	0.0017
L20	41.67 - 36.67	1.921	49	0.5039	0.0014
L21	36.67 - 31.67	1.432	49	0.4301	0.0012
L22	31.67 - 26.67	1.019	49	0.3584	0.0009
L23	26.67 - 21.67	0.681	49	0.2886	0.0007
L24	21.67 - 16.67	0.414	49	0.2209	0.0005
L25	16.67 - 11.67	0.217	49	0.1552	0.0004
L26	11.67 - 8.5	0.088	49	0.0915	0.0002
L27	8.5 - 8.25	0.041	49	0.0520	0.0001
L28	8.25 - 3.25	0.038	49	0.0503	0.0001
L29	3.25 - 1	0.004	49	0.0154	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.00	15' Omni	49	19.608	1.5605	0.0092	17787
120.00	RRUS-32 B2	49	18.955	1.5567	0.0090	17787
115.00	APXVSP18-C w/Mount Pipe	49	17.338	1.5285	0.0081	7470
105.00	1900MHz 4x45W RRH	49	14.245	1.4141	0.0069	3975
102.00	(2) 81010020R4B	49	13.371	1.3686	0.0065	4064
93.00	BXA-80080-6CF w/Mount Pipe	49	10.895	1.2606	0.0054	3732
72.00	15' Dipole	49	6.199	0.8694	0.0032	2917

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 120	88.711	22	6.7374	0.0400
L2	120 - 115	81.687	22	6.7189	0.0383
L3	115 - 110	74.734	22	6.5982	0.0347
L4	110 - 105	67.951	22	6.3885	0.0318
L5	105 - 100	61.428	22	6.1046	0.0294
L6	100 - 96.04	55.226	22	5.7670	0.0260
L7	99.96 - 94.96	55.178	22	5.7640	0.0260
L8	94.96 - 89.96	49.251	22	5.5586	0.0240
L9	89.96 - 84.96	43.623	22	5.2094	0.0212
L10	84.96 - 79.96	38.379	22	4.8233	0.0187
L11	79.96 - 74.96	33.550	22	4.4150	0.0166
L12	74.96 - 69.96	29.152	22	3.9949	0.0148
L13	69.96 - 67.25	25.196	22	3.5704	0.0127
L14	67.25 - 67	23.237	22	3.3402	0.0113
L15	67 - 62	23.062	22	3.3294	0.0112
L16	62 - 57	19.695	22	3.1082	0.0100

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L17	57 - 47.67	16.560	22	2.8843	0.0089
L18	53.34 - 46.67	14.413	22	2.7207	0.0081
L19	46.67 - 41.67	10.741	22	2.5037	0.0073
L20	41.67 - 36.67	8.293	22	2.1764	0.0060
L21	36.67 - 31.67	6.182	22	1.8576	0.0050
L22	31.67 - 26.67	4.400	22	1.5475	0.0040
L23	26.67 - 21.67	2.938	22	1.2463	0.0031
L24	21.67 - 16.67	1.787	22	0.9539	0.0023
L25	16.67 - 11.67	0.938	22	0.6701	0.0016
L26	11.67 - 8.5	0.381	22	0.3948	0.0009
L27	8.5 - 8.25	0.175	22	0.2245	0.0005
L28	8.25 - 3.25	0.164	22	0.2170	0.0005
L29	3.25 - 1	0.016	22	0.0663	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.00	15' Omni	22	84.493	6.7348	0.0398	4328
120.00	RRUS-32 B2	22	81.687	6.7189	0.0386	4328
115.00	APXVSP18-C w/Mount Pipe	22	74.734	6.5982	0.0347	1789
105.00	1900MHz 4x45W RRH	22	61.428	6.1046	0.0294	946
102.00	(2) 81010020R4B	22	57.664	5.9091	0.0276	968
93.00	BXA-80080-6CF w/Mount Pipe	22	47.002	5.4443	0.0232	883
72.00	15' Dipole	22	26.757	3.7548	0.0137	682

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	125 - 124	TP19.5366x18x0.1875	5.00	0.00	0.0	10.7836	-99.22	801164.00	0.000 ¹
	124 - 123					10.9665	-89.56	814753.00	0.000
	123 - 122					11.1493	-135.29	828341.00	0.000
	122 - 121					11.3322	-4513.64	838774.00	0.005
	121 - 120					11.5151	-4551.28	848795.00	0.005
L2	120 - 119	TP21.0732x19.5366x0.1875	5.00	0.00	0.0	11.6980	-5310.59	858704.00	0.006
	119 - 118					11.8809	-5374.24	868502.00	0.006
	118 - 117					12.0638	-5439.26	878188.00	0.006
	117 - 116					12.2467	-5505.63	887762.00	0.006
	116 - 115					12.4296	-5573.28	897225.00	0.006
L3	115 - 114	TP22.6098x21.0732x0.1875	5.00	0.00	0.0	12.6125	-8784.71	906575.00	0.010
	114 - 113					12.7954	-8861.42	915815.00	0.010
	113 - 112					12.9783	-8939.90	924942.00	0.010
	112 - 111					13.1612	-9020.07	933958.00	0.010
	111 - 110					13.3441	-9101.87	942862.00	0.010
L4	110 - 109	TP24.1464x22.6098x0.1875	5.00	0.00	0.0	13.5270	-9185.22	951654.00	0.010
	109 - 108					13.7099	-9270.08	960335.00	0.010

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio P _u / φP _n
	108 - 107					13.8928	-9356.38	968904.00	0.010
	107 - 106					14.0757	-9444.08	977361.00	0.010
	106 - 105					14.2585	-9533.13	985706.00	0.010
L5	105 - 104	TP25.683x24.1464x0.1875	5.00	0.00	0.0	14.4414	-10616.80	993940.00	0.011
	104 - 103					14.6243	-10713.70	1002060.00	0.011
	103 - 102					14.8072	-10812.00	1010070.00	0.011
	102 - 101					14.9901	-14168.50	1017970.00	0.014
	101 - 100					15.1730	-14276.80	1025760.00	0.014
L6	100 - 99.96	TP26.9x25.683x0.1875	3.96	0.00	0.0	15.1803	-14295.50	1026070.00	0.014
	99.96 - 96.04					15.8973	-6540.11	1055500.00	0.006
L7	99.96 - 96.04	TP26.8464x25.3203x0.25	5.00	0.00	0.0	20.8427	-8485.91	1529070.00	0.006
	96.04 - 94.96					21.1042	-15196.50	1543080.00	0.010
L8	94.96 - 93.96	TP28.3725x26.8464x0.25	5.00	0.00	0.0	21.3464	-15347.60	1555930.00	0.010
	93.96 - 92.96					21.5886	-18919.70	1568670.00	0.012
	92.96 - 91.96					21.8308	-19081.60	1581300.00	0.012
	91.96 - 90.96					22.0730	-19245.70	1593830.00	0.012
	90.96 - 89.96					22.3152	-19411.80	1606240.00	0.012
L9	89.96 - 88.96	TP29.8985x28.3725x0.25	5.00	0.00	0.0	22.5574	-19593.60	1618540.00	0.012
	88.96 - 87.96					22.7995	-19777.30	1630730.00	0.012
	87.96 - 86.96					23.0417	-19962.80	1642810.00	0.012
	86.96 - 85.96					23.2839	-20150.00	1654790.00	0.012
	85.96 - 84.96					23.5261	-20338.90	1666650.00	0.012
L10	84.96 - 83.96	TP31.4246x29.8985x0.25	5.00	0.00	0.0	23.7683	-20529.50	1678400.00	0.012
	83.96 - 82.96					24.0105	-20721.60	1690040.00	0.012
	82.96 - 81.96					24.2527	-20915.30	1701570.00	0.012
	81.96 - 80.96					24.4949	-21110.60	1712990.00	0.012
	80.96 - 79.96					24.7370	-21307.30	1724300.00	0.012
L11	79.96 - 78.96	TP32.9507x31.4246x0.25	5.00	0.00	0.0	24.9792	-21505.50	1735500.00	0.012
	78.96 - 77.96					25.2214	-21705.00	1746590.00	0.012
	77.96 - 76.96					25.4636	-21906.00	1757570.00	0.012
	76.96 - 75.96					25.7058	-22108.30	1768440.00	0.013
	75.96 - 74.96					25.9480	-22312.00	1779200.00	0.013
L12	74.96 - 73.96	TP34.4768x32.9507x0.25	5.00	0.00	0.0	26.1902	-22517.20	1789850.00	0.013
	73.96 - 72.96					26.4324	-22723.70	1800390.00	0.013
	72.96 - 71.96					26.6649	-22927.80	1810400.00	0.013
	71.96 - 70.96					26.9167	-23294.90	1821140.00	0.013
	70.96 - 69.96					27.1589	-23505.90	1831350.00	0.013
L13	69.96 - 68.605	TP35.3039x34.4768x0.25	2.71	0.00	0.0	27.4871	-23786.40	1845000.00	0.013
	68.605 - 67.25					27.8153	-24077.70	1858460.00	0.013
L14	67.25 - 67 (14)	TP35.3802x35.3039x0.5	0.25	0.00	0.0	55.3549	-24180.30	4112590.00	0.006
L15	67 - 66	TP36.9063x35.3802x0.4875	5.00	0.00	0.0	54.4626	-24460.10	4046300.00	0.006
	66 - 65					54.9349	-24751.30	4081390.00	0.006
	65 - 64					55.4071	-25044.50	4116470.00	0.006
	64 - 63					55.8794	-25339.50	4151560.00	0.006
	63 - 62					56.3517	-25636.40	4186650.00	0.006
L16	62 - 61	TP38.4323x36.9063x0.475	5.00	0.00	0.0	55.3858	-25931.60	4114890.00	0.006
	61 - 60					55.8459	-26228.90	4149070.00	0.006
	60 - 59					56.3061	-26528.00	4183260.00	0.006
	59 - 58					56.7662	-26829.00	4217450.00	0.006
	58 - 57					57.2264	-27131.90	4251630.00	0.006
L17	57 - 55.78	TP41.28x38.4323x0.4688	9.33	0.00	0.0	57.0367	-27497.70	4237540.00	0.006
	55.78 - 54.56					57.5907	-27869.30	4278700.00	0.007
	54.56 - 53.34					58.1447	-28243.60	4319860.00	0.007
	53.34 - 47.67					60.7195	-18616.50	4511150.00	0.004
L18	53.34 - 47.67	TP41.0821x39.0494x0.3125	6.67	0.00	0.0	40.1361	-12221.10	2761880.00	0.004
	47.67 - 46.67					40.4384	-31123.50	2775340.00	0.011
L19	46.67 - 45.67	TP42.6059x41.0821x0.3125	5.00	0.00	0.0	40.7406	-31384.60	2788680.00	0.011
	45.67 - 44.67					41.0429	-31647.00	2801910.00	0.011
	44.67 - 43.67					41.3452	-31910.60	2815040.00	0.011
	43.67 - 42.67					41.6474	-32175.50	2828050.00	0.011

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Ramaker & Associates, Inc 855 Community Drive Sauk City, WI 53583 Phone: (608) 643-4100 FAX:</p>	Job	CT2268	Page	28 of 36
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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio P _u φP _n
L20	42.67 - 41.67	TP44.1296x42.6059x0.3125	5.00	0.00	0.0	41.9497	-32441.60	2840960.00	0.011
	41.67 - 40.67					42.2520	-32709.10	2853750.00	0.011
	40.67 - 39.67					42.5543	-32977.70	2866430.00	0.012
	39.67 - 38.67					42.8565	-33247.60	2879010.00	0.012
L21	38.67 - 37.67	TP45.6533x44.1296x0.3125	5.00	0.00	0.0	43.1588	-33518.80	2891470.00	0.012
	37.67 - 36.67					43.4611	-33791.10	2903830.00	0.012
	36.67 - 35.67					43.7634	-34064.80	2916070.00	0.012
	35.67 - 34.67					44.0656	-34339.70	2928210.00	0.012
L22	34.67 - 33.67	TP47.1771x45.6533x0.3125	5.00	0.00	0.0	44.3679	-34615.90	2940240.00	0.012
	33.67 - 32.67					44.6702	-34893.30	2952150.00	0.012
	32.67 - 31.67					44.9725	-35171.90	2963960.00	0.012
	31.67 - 30.67					45.2747	-35451.70	2975650.00	0.012
L23	30.67 - 29.67	TP48.7008x47.1771x0.3125	5.00	0.00	0.0	45.5770	-35732.90	2987240.00	0.012
	29.67 - 28.67					45.8793	-36015.20	2998720.00	0.012
	28.67 - 27.67					46.1815	-36298.80	3010080.00	0.012
	27.67 - 26.67					46.4838	-36583.60	3021340.00	0.012
L24	26.67 - 25.67	TP50.2246x48.7008x0.3125	5.00	0.00	0.0	46.7861	-36869.50	3032490.00	0.012
	25.67 - 24.67					47.0884	-37156.70	3043520.00	0.012
	24.67 - 23.67					47.3906	-37445.10	3054450.00	0.012
	23.67 - 22.67					47.6929	-37734.80	3065270.00	0.012
L25	22.67 - 21.67	TP51.7483x50.2246x0.3125	5.00	0.00	0.0	47.9952	-38025.70	3075980.00	0.012
	21.67 - 20.67					48.2975	-38317.80	3086570.00	0.012
	20.67 - 19.67					48.5997	-38611.10	3097060.00	0.012
	19.67 - 18.67					48.9020	-38905.70	3107440.00	0.013
L26	18.67 - 17.67	TP52.7144x51.7483x0.3125	5.00	0.00	0.0	49.2043	-39201.50	3117710.00	0.013
	17.67 - 16.67					49.5065	-39498.60	3127870.00	0.013
	16.67 - 15.67					49.8088	-39805.60	3137910.00	0.013
	15.67 - 14.67					50.1111	-40113.90	3147850.00	0.013
L27	14.67 - 13.67	TP52.7906x52.7144x0.5625	0.25	0.00	0.0	50.4134	-40423.50	3157680.00	0.013
	13.67 - 12.67					50.7156	-40734.30	3167400.00	0.013
	12.67 - 11.67					51.0179	-41046.40	3177010.00	0.013
	11.67 - 10.6133					51.3373	-41507.40	3187040.00	0.013
L28	10.6133 - 9.55667	TP54.3143x52.7906x0.55	5.00	0.00	0.0	51.6567	-41970.80	3196960.00	0.013
	9.55667 - 8.5					51.9761	-42435.70	3206750.00	0.013
	8.5 - 8.25 (27)					93.1107	-42457.20	6917660.00	0.006
	8.25 - 7.25					91.1964	-42604.40	6775430.00	0.006
L29	7.25 - 6.25	TP55x54.3143x0.55	2.25	0.00	0.0	91.7284	-43160.00	6814960.00	0.006
	6.25 - 5.25					92.2604	-43717.70	6854480.00	0.006
	5.25 - 4.25					92.7924	-44277.40	6894010.00	0.006
	4.25 - 3.25					93.3244	-44839.10	6933530.00	0.006
L29	3.25 - 2.125	TP55x54.3143x0.55	2.25	0.00	0.0	93.8564	-45404.10	6973060.00	0.007
	2.125 - 1					94.4549	-46038.90	7017520.00	0.007

¹ P_u / φP_n controls

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} lb-ft	φM _{ux} lb-ft	Ratio M _{ux} φM _{ux}	M _{uy} lb-ft	φM _{uy} lb-ft	Ratio M _{uy} φM _{uy}
L1	125 - 124	TP19.5366x18x0.1875	12.68	297780.83	0.000	0.00	297780.83	0.000
	124 - 123		119.05	308020.00	0.000	0.00	308020.00	0.000
	123 - 122		269.34	318432.50	0.001	0.00	318432.50	0.000
	122 - 121		16872.50	327785.83	0.051	0.00	327785.83	0.000
	121 - 120		25794.33	337107.50	0.077	0.00	337107.50	0.000
L2	120 - 119	TP21.0732x19.5366x0.1875	37468.33	346511.67	0.108	0.00	346511.67	0.000

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Client	Blue Sky Towers	Designed by	TEM

Section No.	Elevation ft	Size	M_{ux}	ϕM_{ux}	Ratio	M_{uy}	ϕM_{uy}	Ratio
			lb-ft	lb-ft	$\frac{M_{ux}}{\phi M_{ux}}$	lb-ft	lb-ft	$\frac{M_{uy}}{\phi M_{uy}}$
	119 - 118		47583.58	355996.67	0.134	0.00	355996.67	0.000
	118 - 117		57764.08	365559.17	0.158	0.00	365559.17	0.000
	117 - 116		68010.25	375198.33	0.181	0.00	375198.33	0.000
	116 - 115		78322.75	384911.67	0.203	0.00	384911.67	0.000
L3	115 - 114	TP22.6098x21.0732x0.1875	91441.67	394697.50	0.232	0.00	394697.50	0.000
	114 - 113		106101.67	404552.50	0.262	0.00	404552.50	0.000
	113 - 112		120828.33	414475.00	0.292	0.00	414475.00	0.000
	112 - 111		135620.83	424463.33	0.320	0.00	424463.33	0.000
	111 - 110		150480.83	434514.17	0.346	0.00	434514.17	0.000
L4	110 - 109	TP24.1464x22.6098x0.1875	165407.50	444627.50	0.372	0.00	444627.50	0.000
	109 - 108		180402.50	454799.17	0.397	0.00	454799.17	0.000
	108 - 107		195465.00	465028.33	0.420	0.00	465028.33	0.000
	107 - 106		210596.67	475311.67	0.443	0.00	475311.67	0.000
	106 - 105		225796.67	485648.33	0.465	0.00	485648.33	0.000
L5	105 - 104	TP25.683x24.1464x0.1875	242858.33	496035.00	0.490	0.00	496035.00	0.000
	104 - 103		259546.67	506470.00	0.512	0.00	506470.00	0.000
	103 - 102		276305.00	516951.67	0.534	0.00	516951.67	0.000
	102 - 101		300096.67	527477.50	0.569	0.00	527477.50	0.000
	101 - 100		322522.50	538045.83	0.599	0.00	538045.83	0.000
L6	100 - 99.96	TP26.9x25.683x0.1875	323420.83	538469.17	0.601	0.00	538469.17	0.000
	99.96 - 96.04		181867.50	580265.83	0.313	0.00	580265.83	0.000
L7	99.96 - 96.04	TP26.8464x25.3203x0.25	230273.33	824541.67	0.279	0.00	824541.67	0.000
	96.04 - 94.96		436813.33	842633.33	0.518	0.00	842633.33	0.000
L8	94.96 - 93.96	TP28.3725x26.8464x0.25	459735.00	859491.67	0.535	0.00	859491.67	0.000
	93.96 - 92.96		490424.17	876458.33	0.560	0.00	876458.33	0.000
	92.96 - 91.96		520528.33	893516.67	0.583	0.00	893516.67	0.000
	91.96 - 90.96		550703.33	910675.00	0.605	0.00	910675.00	0.000
	90.96 - 89.96		580949.17	927925.00	0.626	0.00	927925.00	0.000
L9	89.96 - 88.96	TP29.8985x28.3725x0.25	611267.50	945266.67	0.647	0.00	945266.67	0.000
	88.96 - 87.96		641656.67	962700.00	0.667	0.00	962700.00	0.000
	87.96 - 86.96		672119.17	980225.00	0.686	0.00	980225.00	0.000
	86.96 - 85.96		702654.17	997833.33	0.704	0.00	997833.33	0.000
	85.96 - 84.96		733260.83	1015533.33	0.722	0.00	1015533.33	0.000
L10	84.96 - 83.96	TP31.4246x29.8985x0.25	763941.67	1033308.33	0.739	0.00	1033308.33	0.000
	83.96 - 82.96		794694.17	1051158.33	0.756	0.00	1051158.33	0.000
	82.96 - 81.96		825520.83	1069100.00	0.772	0.00	1069100.00	0.000
	81.96 - 80.96		856416.67	1087108.33	0.788	0.00	1087108.33	0.000
	80.96 - 79.96		887391.67	1105191.67	0.803	0.00	1105191.67	0.000
L11	79.96 - 78.96	TP32.9507x31.4246x0.25	918441.67	1123350.00	0.818	0.00	1123350.00	0.000
	78.96 - 77.96		949566.67	1141575.00	0.832	0.00	1141575.00	0.000
	77.96 - 76.96		980758.33	1159866.67	0.846	0.00	1159866.67	0.000
	76.96 - 75.96		1012033.33	1178225.00	0.859	0.00	1178225.00	0.000
	75.96 - 74.96		1043375.00	1196650.00	0.872	0.00	1196650.00	0.000
L12	74.96 - 73.96	TP34.4768x32.9507x0.25	1074800.00	1215133.33	0.885	0.00	1215133.33	0.000
	73.96 - 72.96		1106291.67	1233675.00	0.897	0.00	1233675.00	0.000
	72.96 - 71.96		1136525.00	1251533.33	0.908	0.00	1251533.33	0.000
	71.96 - 70.96		1168600.00	1270933.33	0.919	0.00	1270933.33	0.000
	70.96 - 69.96		1200816.67	1289641.67	0.931	0.00	1289641.67	0.000
L13	69.96 - 68.605	TP35.3039x34.4768x0.25	1244600.00	1315066.67	0.946	0.00	1315066.67	0.000
	68.605 - 67.25		1288525.00	1340583.33	0.961	0.00	1340583.33	0.000
L14	67.25 - 67 (14)	TP35.3802x35.3039x0.5	1296641.67	2930933.33	0.442	0.00	2930933.33	0.000
L15	67 - 66	TP36.9063x35.3802x0.4875	1329183.33	2911341.67	0.457	0.00	2911341.67	0.000
	66 - 65		1361833.33	2962400.00	0.460	0.00	2962400.00	0.000
	65 - 64		1394575.00	3013900.00	0.463	0.00	3013900.00	0.000
	64 - 63		1427425.00	3065850.00	0.466	0.00	3065850.00	0.000
	63 - 62		1460375.00	3118241.67	0.468	0.00	3118241.67	0.000
L16	62 - 61	TP38.4323x36.9063x0.475	1493425.00	3092916.67	0.483	0.00	3092916.67	0.000
	61 - 60		1526583.33	3144858.33	0.485	0.00	3144858.33	0.000
	60 - 59		1559841.67	3197225.00	0.488	0.00	3197225.00	0.000
	59 - 58		1593208.33	3250025.00	0.490	0.00	3250025.00	0.000

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Section No.	Elevation ft	Size	M_{ux}	ϕM_{ux}	$\frac{Ratio}{M_{ux}}$	M_{uy}	ϕM_{uy}	$\frac{Ratio}{M_{uy}}$
			lb-ft	lb-ft	ϕM_{ux}	lb-ft	lb-ft	ϕM_{uy}
L17	58 - 57	TP41.28x38.4323x0.4688	1626675.00	3303266.67	0.492	0.00	3303266.67	0.000
	57 - 55.78		1667641.67	3326100.00	0.501	0.00	3326100.00	0.000
	55.78 - 54.56		1708766.67	3391416.67	0.504	0.00	3391416.67	0.000
	54.56 - 53.34		1750050.00	3457375.00	0.506	0.00	3457375.00	0.000
L18	53.34 - 47.67	TP41.0821x39.0494x0.3125	1178783.33	3772250.00	0.312	0.00	3772250.00	0.000
	47.67 - 46.67		765475.83	2298450.00	0.333	0.00	2298450.00	0.000
	46.67 - 45.67		1978908.33	2327175.00	0.850	0.00	2327175.00	0.000
	45.67 - 44.67		2013641.67	2355975.00	0.855	0.00	2355975.00	0.000
L19	44.67 - 43.67	TP42.6059x41.0821x0.3125	2048475.00	2384850.00	0.859	0.00	2384850.00	0.000
	43.67 - 42.67		2083391.67	2413800.00	0.863	0.00	2413800.00	0.000
	42.67 - 41.67		2118400.00	2442816.67	0.867	0.00	2442816.67	0.000
	41.67 - 40.67		2153508.33	2471908.33	0.871	0.00	2471908.33	0.000
L20	40.67 - 39.67	TP44.1296x42.6059x0.3125	2188708.33	2501058.33	0.875	0.00	2501058.33	0.000
	39.67 - 38.67		2223991.67	2530283.33	0.879	0.00	2530283.33	0.000
	38.67 - 37.67		2259375.00	2559566.67	0.883	0.00	2559566.67	0.000
	37.67 - 36.67		2294850.00	2588908.33	0.886	0.00	2588908.33	0.000
L21	36.67 - 35.67	TP45.6533x44.1296x0.3125	2330416.67	2618308.33	0.890	0.00	2618308.33	0.000
	35.67 - 34.67		2366075.00	2647766.67	0.894	0.00	2647766.67	0.000
	34.67 - 33.67		2401825.00	2677275.00	0.897	0.00	2677275.00	0.000
	33.67 - 32.67		2437675.00	2706841.67	0.901	0.00	2706841.67	0.000
L22	32.67 - 31.67	TP47.1771x45.6533x0.3125	2473608.33	2736458.33	0.904	0.00	2736458.33	0.000
	31.67 - 30.67		2509641.67	2766116.67	0.907	0.00	2766116.67	0.000
	30.67 - 29.67		2545766.67	2795825.00	0.911	0.00	2795825.00	0.000
	29.67 - 28.67		2581983.33	2825583.33	0.914	0.00	2825583.33	0.000
L23	28.67 - 27.67	TP48.7008x47.1771x0.3125	2618300.00	2855375.00	0.917	0.00	2855375.00	0.000
	27.67 - 26.67		2654708.33	2885208.33	0.920	0.00	2885208.33	0.000
	26.67 - 25.67		2691208.33	2915083.33	0.923	0.00	2915083.33	0.000
	25.67 - 24.67		2727800.00	2944983.33	0.926	0.00	2944983.33	0.000
L24	24.67 - 23.67	TP50.2246x48.7008x0.3125	2764500.00	2974925.00	0.929	0.00	2974925.00	0.000
	23.67 - 22.67		2801291.67	3004900.00	0.932	0.00	3004900.00	0.000
	22.67 - 21.67		2838183.33	3034900.00	0.935	0.00	3034900.00	0.000
	21.67 - 20.67		2875183.33	3064925.00	0.938	0.00	3064925.00	0.000
L25	20.67 - 19.67	TP51.7483x50.2246x0.3125	2912275.00	3094983.33	0.941	0.00	3094983.33	0.000
	19.67 - 18.67		2949475.00	3125058.33	0.944	0.00	3125058.33	0.000
	18.67 - 17.67		2986783.33	3155158.33	0.947	0.00	3155158.33	0.000
	17.67 - 16.67		3024191.67	3185275.00	0.949	0.00	3185275.00	0.000
L26	16.67 - 15.67	TP52.7144x51.7483x0.3125	3061708.33	3215408.33	0.952	0.00	3215408.33	0.000
	15.67 - 14.67		3099333.33	3245550.00	0.955	0.00	3245550.00	0.000
	14.67 - 13.67		3137066.67	3275716.67	0.958	0.00	3275716.67	0.000
	13.67 - 12.67		3174908.33	3305883.33	0.960	0.00	3305883.33	0.000
L27	12.67 - 11.67	TP52.7144x51.7483x0.3125	3212866.67	3336066.67	0.963	0.00	3336066.67	0.000
	11.67 - 10.6133		3250933.33	3366250.00	0.966	0.00	3366250.00	0.000
	10.6133 - 9.55667		3291241.67	3398150.00	0.969	0.00	3398150.00	0.000
	9.55667 - 8.5		3331691.67	3430050.00	0.971	0.00	3430050.00	0.000
L28	8.5 - 8.25 (27)	TP52.7906x52.7144x0.5625	3372283.33	3461958.33	0.974	0.00	3461958.33	0.000
	8.25 - 7.25	TP54.3143x52.7906x0.55	3372283.33	7397116.67	0.456	0.00	7397116.67	0.000
L29	7.25 - 6.25	TP55x54.3143x0.55	3381908.33	7259208.00	0.466	0.00	7259208.00	0.000
	6.25 - 5.25		3420491.67	7344591.33	0.466	0.00	7344591.33	0.000
	5.25 - 4.25		3459216.67	7430474.67	0.466	0.00	7430474.67	0.000
	4.25 - 3.25		3498091.67	7516858.00	0.465	0.00	7516858.00	0.000
L29	3.25 - 2.125	TP55x54.3143x0.55	3537108.33	7603741.33	0.465	0.00	7603741.33	0.000
	2.125 - 1		3576266.67	7691124.67	0.465	0.00	7691124.67	0.000
			3620500.00	7790024.67	0.465	0.00	7790024.67	0.000

Pole Shear Design Data

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	Client Blue Sky Towers	Designed by TEM

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	125 - 124	TP19.5366x18x0.1875	25.43	400582.00	0.000	0.00	597220.00	0.000
	124 - 123		119.71	407376.00	0.000	0.00	617739.17	0.000
	123 - 122		181.05	414170.00	0.000	0.00	638605.83	0.000
	122 - 121		8852.69	419387.00	0.021	1177.58	657346.67	0.002
	121 - 120		8971.80	424398.00	0.021	414.10	676025.00	0.001
L2	120 - 119	TP21.0732x19.5366x0.1875	10084.10	429352.00	0.023	414.10	694868.33	0.001
	119 - 118		10149.10	434251.00	0.023	413.94	713872.50	0.001
	118 - 117		10214.60	439094.00	0.023	413.93	733033.33	0.001
	117 - 116		10280.80	443881.00	0.023	413.92	752346.67	0.001
	116 - 115		10347.50	448612.00	0.023	413.91	771808.33	0.001
L3	115 - 114	TP22.6098x21.0732x0.1875	14630.00	453288.00	0.032	414.06	791414.17	0.001
	114 - 113		14696.40	457907.00	0.032	414.06	811159.17	0.001
	113 - 112		14763.10	462471.00	0.032	414.06	831040.00	0.000
	112 - 111		14830.00	466979.00	0.032	414.06	851050.00	0.000
	111 - 110		14897.30	471431.00	0.032	414.06	871191.67	0.000
L4	110 - 109	TP24.1464x22.6098x0.1875	14965.00	475827.00	0.031	414.08	891450.00	0.000
	109 - 108		15033.10	480167.00	0.031	414.09	911825.00	0.000
	108 - 107		15101.60	484452.00	0.031	414.12	932325.00	0.000
	107 - 106		15170.60	488680.00	0.031	414.15	952925.00	0.000
	106 - 105		15240.00	492853.00	0.031	414.19	973633.33	0.000
L5	105 - 104	TP25.683x24.1464x0.1875	16659.80	496970.00	0.034	414.24	994441.67	0.000
	104 - 103		16729.40	501031.00	0.033	414.23	1015350.00	0.000
	103 - 102		16799.50	505036.00	0.033	414.30	1036350.00	0.000
	102 - 101		22401.50	508986.00	0.044	325.04	1057433.33	0.000
	101 - 100		22468.10	512879.00	0.044	324.89	1078600.00	0.000
L6	100 - 99.96	TP26.9x25.683x0.1875	22470.70	513034.00	0.044	324.81	1079450.00	0.000
	99.96 - 96.04		10158.10	527749.00	0.019	143.21	1163183.33	0.000
L7	99.96 - 96.04	TP26.8464x25.3203x0.25	12664.80	764536.00	0.017	181.41	1653466.67	0.000
	96.04 - 94.96		22893.70	771538.00	0.030	324.37	1689716.67	0.000
L8	94.96 - 93.96	TP28.3725x26.8464x0.25	22967.80	777964.00	0.030	324.18	1723500.00	0.000
	93.96 - 92.96		30080.30	784336.00	0.038	1405.23	1757483.33	0.001
	92.96 - 91.96		30151.60	790652.00	0.038	1405.02	1791666.67	0.001
	91.96 - 90.96		30222.80	796913.00	0.038	1404.70	1826041.67	0.001
	90.96 - 89.96		30294.00	803119.00	0.038	1404.38	1860608.33	0.001
L9	89.96 - 88.96	TP29.8985x28.3725x0.25	30366.60	809270.00	0.038	1404.03	1895358.33	0.001
	88.96 - 87.96		30439.20	815366.00	0.037	1403.67	1930291.67	0.001
	87.96 - 86.96		30512.00	821407.00	0.037	1403.31	1965400.00	0.001
	86.96 - 85.96		30584.80	827393.00	0.037	1402.92	2000675.00	0.001
	85.96 - 84.96		30657.90	833323.00	0.037	1402.53	2036133.33	0.001
L10	84.96 - 83.96	TP31.4246x29.8985x0.25	30731.00	839199.00	0.037	1402.13	2071741.67	0.001
	83.96 - 82.96		30804.40	845019.00	0.036	1401.72	2107516.67	0.001
	82.96 - 81.96		30878.00	850785.00	0.036	1401.30	2143450.00	0.001
	81.96 - 80.96		30951.80	856495.00	0.036	1400.87	2179533.33	0.001
	80.96 - 79.96		31025.90	862150.00	0.036	1400.42	2215766.67	0.001
L11	79.96 - 78.96	TP32.9507x31.4246x0.25	31100.10	867750.00	0.036	1399.97	2252141.67	0.001
	78.96 - 77.96		31174.60	873296.00	0.036	1399.52	2288650.00	0.001
	77.96 - 76.96		31249.50	878785.00	0.036	1399.06	2325300.00	0.001
	76.96 - 75.96		31324.60	884220.00	0.035	1398.59	2362083.33	0.001
	75.96 - 74.96		31400.10	889600.00	0.035	1398.12	2398991.67	0.001
L12	74.96 - 73.96	TP34.4768x32.9507x0.25	31475.80	894925.00	0.035	1397.63	2436016.67	0.001
	73.96 - 72.96		31551.80	900195.00	0.035	1397.14	2473166.67	0.001
	72.96 - 71.96		32122.90	905409.00	0.035	4059.33	2508933.33	0.002
	71.96 - 70.96		32199.50	910569.00	0.035	4058.28	2547800.00	0.002
	70.96 - 69.96		32276.40	915673.00	0.035	4057.64	2585275.00	0.002
L13	69.96 - 68.605	TP35.3039x34.4768x0.25	32387.40	922501.00	0.035	4056.88	2636225.00	0.002
	68.605 - 67.25		32492.90	929229.00	0.035	4056.03	2687341.67	0.002
L14	67.25 - 67 (14)	TP35.3802x35.3039x0.5	32496.40	2056290.00	0.016	4055.63	5881658.00	0.001
L15	67 - 66	TP36.9063x35.3802x0.4875	32603.90	2023150.00	0.016	4055.43	5841933.33	0.001
	66 - 65		32705.00	2040690.00	0.016	4055.11	5944283.33	0.001
	65 - 64		32806.80	2058240.00	0.016	4054.80	6047516.67	0.001

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Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L16	64 - 63	TP38.4323x36.9063x0.475	32909.20	2075780.00	0.016	4054.48	6151641.33	0.001
	63 - 62		33012.20	2093320.00	0.016	4054.18	6256658.00	0.001
	62 - 61		33114.70	2057440.00	0.016	4053.87	6205433.33	0.001
	61 - 60		33217.60	2074540.00	0.016	4053.56	6309541.33	0.001
	60 - 59		33321.10	2091630.00	0.016	4053.25	6414508.00	0.001
	59 - 58		33425.20	2108720.00	0.016	4052.94	6520350.00	0.001
L17	58 - 57	TP41.28x38.4323x0.4688	33529.90	2125820.00	0.016	4052.64	6627050.00	0.001
	57 - 55.78		33659.20	2118770.00	0.016	4052.30	6672574.67	0.001
	55.78 - 54.56		33786.80	2139350.00	0.016	4051.94	6803500.00	0.001
L18	54.56 - 53.34	TP41.0821x39.0494x0.3125	33915.20	2159930.00	0.016	4051.57	6935691.33	0.001
	53.34 - 47.67		21135.00	2255580.00	0.009	2455.68	7566774.67	0.000
	47.67 - 46.67		13508.40	1380940.00	0.010	1595.08	4607883.33	0.000
L19	46.67 - 45.67	TP42.6059x41.0821x0.3125	34711.00	1387670.00	0.025	4050.19	4665425.00	0.001
	45.67 - 44.67		34801.60	1394340.00	0.025	4049.77	4723125.00	0.001
	44.67 - 43.67		34892.70	1400960.00	0.025	4049.35	4780975.00	0.001
L20	43.67 - 42.67	TP44.1296x42.6059x0.3125	34984.30	1407520.00	0.025	4048.94	4838966.67	0.001
	42.67 - 41.67		35076.50	1414030.00	0.025	4048.55	4897108.33	0.001
	41.67 - 40.67		35169.20	1420480.00	0.025	4048.17	4955383.33	0.001
L21	40.67 - 39.67	TP45.6533x44.1296x0.3125	35260.80	1426880.00	0.025	4047.79	5013783.33	0.001
	39.67 - 38.67		35352.90	1433220.00	0.025	4047.43	5072325.00	0.001
	38.67 - 37.67		35445.60	1439500.00	0.025	4047.07	5130983.33	0.001
L22	37.67 - 36.67	TP47.1771x45.6533x0.3125	35538.80	1445740.00	0.025	4046.73	5189766.67	0.001
	36.67 - 35.67		35632.60	1451910.00	0.025	4046.41	5248666.67	0.001
	35.67 - 34.67		35724.60	1458040.00	0.025	4046.09	5307683.33	0.001
L23	34.67 - 33.67	TP48.7008x47.1771x0.3125	35817.30	1464110.00	0.024	4045.78	5366800.00	0.001
	33.67 - 32.67		35910.40	1470120.00	0.024	4045.48	5426025.00	0.001
	32.67 - 31.67		36004.10	1476080.00	0.024	4045.20	5485350.00	0.001
L24	31.67 - 30.67	TP50.2246x48.7008x0.3125	36098.30	1481980.00	0.024	4044.93	5544775.00	0.001
	30.67 - 29.67		36190.90	1487830.00	0.024	4044.66	5604283.33	0.001
	29.67 - 28.67		36284.20	1493620.00	0.024	4044.40	5663883.33	0.001
L25	28.67 - 27.67	TP51.7483x50.2246x0.3125	36377.90	1499360.00	0.024	4044.16	5723566.67	0.001
	27.67 - 26.67		36472.20	1505040.00	0.024	4043.93	5783333.33	0.001
	26.67 - 25.67		36566.90	1510670.00	0.024	4043.70	5843166.67	0.001
L26	25.67 - 24.67	TP52.7144x51.7483x0.3125	36665.10	1516240.00	0.024	4043.49	5903083.33	0.001
	24.67 - 23.67		36763.90	1521760.00	0.024	4043.28	5963058.00	0.001
	23.67 - 22.67		36863.10	1527230.00	0.024	4043.09	6023091.33	0.001
L27	22.67 - 21.67	TP52.7906x52.7144x0.5625	36962.90	1532630.00	0.024	4042.92	6083191.33	0.001
	21.67 - 20.67		37063.30	1537990.00	0.024	4042.74	6143341.33	0.001
	20.67 - 19.67		37167.30	1543290.00	0.024	4042.58	6203541.33	0.001
L28	19.67 - 18.67	TP54.3143x52.7906x0.55	37271.90	1548530.00	0.024	4042.43	6263791.33	0.001
	18.67 - 17.67		37377.10	1553720.00	0.024	4042.28	6324083.33	0.001
	17.67 - 16.67		37482.80	1558850.00	0.024	4042.15	6384408.00	0.001
L29	16.67 - 15.67	TP55x54.3143x0.55	37589.10	1563930.00	0.024	4042.03	6444766.67	0.001
	15.67 - 14.67		37699.40	1568960.00	0.024	4041.92	6505158.00	0.001
	14.67 - 13.67		37810.30	1573930.00	0.024	4041.82	6565566.67	0.001
L26	13.67 - 12.67	TP52.7144x51.7483x0.3125	37921.80	1578840.00	0.024	4041.72	6626008.00	0.001
	12.67 - 11.67		38033.80	1583700.00	0.024	4041.64	6686458.00	0.001
	11.67 - 10.6133		38146.50	1588510.00	0.024	4041.57	6746924.67	0.001
L27	10.6133 - 9.55667	TP52.7906x52.7144x0.5625	38277.60	1593520.00	0.024	4041.51	6810824.67	0.001
	9.55667 - 8.5		38408.10	1598480.00	0.024	4041.45	6874724.67	0.001
	8.5 - 8.25 (27)		38539.00	1603370.00	0.024	4041.40	6938633.33	0.001
L28	8.25 - 7.25	TP54.3143x52.7906x0.55	38556.40	3463880.00	0.011	4041.37	14836333.33	0.000
	7.25 - 6.25		38708.90	3407480.00	0.011	4041.36	14559249.33	0.000
	6.25 - 5.25		38853.20	3427240.00	0.011	4041.34	14730333.33	0.000
L29	5.25 - 4.25	TP55x54.3143x0.55	38998.00	3447000.00	0.011	4041.32	14902416.00	0.000
	4.25 - 3.25		39143.30	3466770.00	0.011	4041.32	15075582.67	0.000
	3.25 - 2.125		39289.20	3486530.00	0.011	4041.31	15249666.67	0.000
L29	2.125 - 1	TP55x54.3143x0.55	39457.60	3508760.00	0.011	4041.30	15424749.33	0.000
	1		39625.30	3531000.00	0.011	4041.30	15623000.00	0.000

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Pole Interaction Design Data

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
L1	125 - 124	0.000	0.000	0.000	0.000	0.000	0.000 ¹	1.000	4.8.2
	124 - 123	0.000	0.000	0.000	0.000	0.000	0.000	1.000	4.8.2
	123 - 122	0.000	0.001	0.000	0.000	0.000	0.001	1.000	4.8.2
	122 - 121	0.005	0.051	0.000	0.021	0.002	0.057	1.000	4.8.2
	121 - 120	0.005	0.077	0.000	0.021	0.001	0.082	1.000	4.8.2
L2	120 - 119	0.006	0.108	0.000	0.023	0.001	0.115	1.000	4.8.2
	119 - 118	0.006	0.134	0.000	0.023	0.001	0.140	1.000	4.8.2
	118 - 117	0.006	0.158	0.000	0.023	0.001	0.165	1.000	4.8.2
	117 - 116	0.006	0.181	0.000	0.023	0.001	0.188	1.000	4.8.2
	116 - 115	0.006	0.203	0.000	0.023	0.001	0.210	1.000	4.8.2
L3	115 - 114	0.010	0.232	0.000	0.032	0.001	0.242	1.000	4.8.2
	114 - 113	0.010	0.262	0.000	0.032	0.001	0.273	1.000	4.8.2
	113 - 112	0.010	0.292	0.000	0.032	0.000	0.302	1.000	4.8.2
	112 - 111	0.010	0.320	0.000	0.032	0.000	0.330	1.000	4.8.2
	111 - 110	0.010	0.346	0.000	0.032	0.000	0.357	1.000	4.8.2
L4	110 - 109	0.010	0.372	0.000	0.031	0.000	0.383	1.000	4.8.2
	109 - 108	0.010	0.397	0.000	0.031	0.000	0.407	1.000	4.8.2
	108 - 107	0.010	0.420	0.000	0.031	0.000	0.431	1.000	4.8.2
	107 - 106	0.010	0.443	0.000	0.031	0.000	0.454	1.000	4.8.2
	106 - 105	0.010	0.465	0.000	0.031	0.000	0.476	1.000	4.8.2
L5	105 - 104	0.011	0.490	0.000	0.034	0.000	0.501	1.000	4.8.2
	104 - 103	0.011	0.512	0.000	0.033	0.000	0.524	1.000	4.8.2
	103 - 102	0.011	0.534	0.000	0.033	0.000	0.546	1.000	4.8.2
	102 - 101	0.014	0.569	0.000	0.044	0.000	0.585	1.000	4.8.2
	101 - 100	0.014	0.599	0.000	0.044	0.000	0.615	1.000	4.8.2
L6	100 - 99.96	0.014	0.601	0.000	0.044	0.000	0.617	1.000	4.8.2
	99.96 - 96.04	0.006	0.313	0.000	0.019	0.000	0.320	1.000	4.8.2
L7	99.96 - 96.04	0.006	0.279	0.000	0.017	0.000	0.285	1.000	4.8.2
	96.04 - 94.96	0.010	0.518	0.000	0.030	0.000	0.529	1.000	4.8.2
L8	94.96 - 93.96	0.010	0.535	0.000	0.030	0.000	0.546	1.000	4.8.2
	93.96 - 92.96	0.012	0.560	0.000	0.038	0.001	0.573	1.000	4.8.2
	92.96 - 91.96	0.012	0.583	0.000	0.038	0.001	0.596	1.000	4.8.2
	91.96 - 90.96	0.012	0.605	0.000	0.038	0.001	0.618	1.000	4.8.2
	90.96 - 89.96	0.012	0.626	0.000	0.038	0.001	0.640	1.000	4.8.2
L9	89.96 - 88.96	0.012	0.647	0.000	0.038	0.001	0.660	1.000	4.8.2
	88.96 - 87.96	0.012	0.667	0.000	0.037	0.001	0.680	1.000	4.8.2

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Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
	87.96 - 86.96	0.012	0.686	0.000	0.037	0.001	0.699 ✓	1.000	4.8.2 ✓
	86.96 - 85.96	0.012	0.704	0.000	0.037	0.001	0.718 ✓	1.000	4.8.2 ✓
	85.96 - 84.96	0.012	0.722	0.000	0.037	0.001	0.736 ✓	1.000	4.8.2 ✓
L10	84.96 - 83.96	0.012	0.739	0.000	0.037	0.001	0.753 ✓	1.000	4.8.2 ✓
	83.96 - 82.96	0.012	0.756	0.000	0.036	0.001	0.770 ✓	1.000	4.8.2 ✓
	82.96 - 81.96	0.012	0.772	0.000	0.036	0.001	0.786 ✓	1.000	4.8.2 ✓
	81.96 - 80.96	0.012	0.788	0.000	0.036	0.001	0.801 ✓	1.000	4.8.2 ✓
	80.96 - 79.96	0.012	0.803	0.000	0.036	0.001	0.817 ✓	1.000	4.8.2 ✓
L11	79.96 - 78.96	0.012	0.818	0.000	0.036	0.001	0.831 ✓	1.000	4.8.2 ✓
	78.96 - 77.96	0.012	0.832	0.000	0.036	0.001	0.846 ✓	1.000	4.8.2 ✓
	77.96 - 76.96	0.012	0.846	0.000	0.036	0.001	0.859 ✓	1.000	4.8.2 ✓
	76.96 - 75.96	0.013	0.859	0.000	0.035	0.001	0.873 ✓	1.000	4.8.2 ✓
	75.96 - 74.96	0.013	0.872	0.000	0.035	0.001	0.886 ✓	1.000	4.8.2 ✓
L12	74.96 - 73.96	0.013	0.885	0.000	0.035	0.001	0.898 ✓	1.000	4.8.2 ✓
	73.96 - 72.96	0.013	0.897	0.000	0.035	0.001	0.911 ✓	1.000	4.8.2 ✓
	72.96 - 71.96	0.013	0.908	0.000	0.035	0.002	0.922 ✓	1.000	4.8.2 ✓
	71.96 - 70.96	0.013	0.919	0.000	0.035	0.002	0.934 ✓	1.000	4.8.2 ✓
	70.96 - 69.96	0.013	0.931	0.000	0.035	0.002	0.945 ✓	1.000	4.8.2 ✓
L13	69.96 - 68.605	0.013	0.946	0.000	0.035	0.002	0.961 ✓	1.000	4.8.2 ✓
	68.605 - 67.25	0.013	0.961	0.000	0.035	0.002	0.975 ✓	1.000	4.8.2 ✓
L14	67.25 - 67 (14)	0.006	0.442	0.000	0.016	0.001	0.449 ✓	1.000	4.8.2 ✓
L15	67 - 66	0.006	0.457	0.000	0.016	0.001	0.463 ✓	1.000	4.8.2 ✓
	66 - 65	0.006	0.460	0.000	0.016	0.001	0.466 ✓	1.000	4.8.2 ✓
	65 - 64	0.006	0.463	0.000	0.016	0.001	0.469 ✓	1.000	4.8.2 ✓
	64 - 63	0.006	0.466	0.000	0.016	0.001	0.472 ✓	1.000	4.8.2 ✓
	63 - 62	0.006	0.468	0.000	0.016	0.001	0.475 ✓	1.000	4.8.2 ✓
L16	62 - 61	0.006	0.483	0.000	0.016	0.001	0.489 ✓	1.000	4.8.2 ✓
	61 - 60	0.006	0.485	0.000	0.016	0.001	0.492 ✓	1.000	4.8.2 ✓
	60 - 59	0.006	0.488	0.000	0.016	0.001	0.494 ✓	1.000	4.8.2 ✓
	59 - 58	0.006	0.490	0.000	0.016	0.001	0.497 ✓	1.000	4.8.2 ✓
	58 - 57	0.006	0.492	0.000	0.016	0.001	0.499 ✓	1.000	4.8.2 ✓
L17	57 - 55.78	0.006	0.501	0.000	0.016	0.001	0.508 ✓	1.000	4.8.2 ✓
	55.78 - 54.56	0.007	0.504	0.000	0.016	0.001	0.511 ✓	1.000	4.8.2 ✓
	54.56 - 53.34	0.007	0.506	0.000	0.016	0.001	0.513 ✓	1.000	4.8.2 ✓
	53.34 - 47.67	0.004	0.312	0.000	0.009	0.000	0.317 ✓	1.000	4.8.2 ✓
L18	53.34 - 47.67	0.004	0.333	0.000	0.010	0.000	0.338 ✓	1.000	4.8.2 ✓
	47.67 - 46.67	0.011	0.850	0.000	0.025	0.001	0.862 ✓	1.000	4.8.2 ✓
L19	46.67 - 45.67	0.011	0.855	0.000	0.025	0.001	0.867 ✓	1.000	4.8.2 ✓
	45.67 - 44.67	0.011	0.859	0.000	0.025	0.001	0.871 ✓	1.000	4.8.2 ✓
	44.67 - 43.67	0.011	0.863	0.000	0.025	0.001	0.875 ✓	1.000	4.8.2 ✓

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Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{ux}	ϕM_{uy}	ϕV_n	ϕT_n			
L20	43.67 - 42.67	0.011	0.867	0.000	0.025	0.001	0.879 ✓	1.000	4.8.2 ✓
	42.67 - 41.67	0.011	0.871	0.000	0.025	0.001	0.883 ✓	1.000	4.8.2 ✓
	41.67 - 40.67	0.011	0.875	0.000	0.025	0.001	0.887 ✓	1.000	4.8.2 ✓
	40.67 - 39.67	0.012	0.879	0.000	0.025	0.001	0.891 ✓	1.000	4.8.2 ✓
	39.67 - 38.67	0.012	0.883	0.000	0.025	0.001	0.895 ✓	1.000	4.8.2 ✓
	38.67 - 37.67	0.012	0.886	0.000	0.025	0.001	0.899 ✓	1.000	4.8.2 ✓
	37.67 - 36.67	0.012	0.890	0.000	0.025	0.001	0.902 ✓	1.000	4.8.2 ✓
L21	36.67 - 35.67	0.012	0.894	0.000	0.025	0.001	0.906 ✓	1.000	4.8.2 ✓
	35.67 - 34.67	0.012	0.897	0.000	0.024	0.001	0.909 ✓	1.000	4.8.2 ✓
	34.67 - 33.67	0.012	0.901	0.000	0.024	0.001	0.913 ✓	1.000	4.8.2 ✓
	33.67 - 32.67	0.012	0.904	0.000	0.024	0.001	0.916 ✓	1.000	4.8.2 ✓
	32.67 - 31.67	0.012	0.907	0.000	0.024	0.001	0.920 ✓	1.000	4.8.2 ✓
L22	31.67 - 30.67	0.012	0.911	0.000	0.024	0.001	0.923 ✓	1.000	4.8.2 ✓
	30.67 - 29.67	0.012	0.914	0.000	0.024	0.001	0.926 ✓	1.000	4.8.2 ✓
	29.67 - 28.67	0.012	0.917	0.000	0.024	0.001	0.930 ✓	1.000	4.8.2 ✓
	28.67 - 27.67	0.012	0.920	0.000	0.024	0.001	0.933 ✓	1.000	4.8.2 ✓
	27.67 - 26.67	0.012	0.923	0.000	0.024	0.001	0.936 ✓	1.000	4.8.2 ✓
L23	26.67 - 25.67	0.012	0.926	0.000	0.024	0.001	0.939 ✓	1.000	4.8.2 ✓
	25.67 - 24.67	0.012	0.929	0.000	0.024	0.001	0.942 ✓	1.000	4.8.2 ✓
	24.67 - 23.67	0.012	0.932	0.000	0.024	0.001	0.945 ✓	1.000	4.8.2 ✓
	23.67 - 22.67	0.012	0.935	0.000	0.024	0.001	0.948 ✓	1.000	4.8.2 ✓
	22.67 - 21.67	0.012	0.938	0.000	0.024	0.001	0.951 ✓	1.000	4.8.2 ✓
L24	21.67 - 20.67	0.012	0.941	0.000	0.024	0.001	0.954 ✓	1.000	4.8.2 ✓
	20.67 - 19.67	0.012	0.944	0.000	0.024	0.001	0.957 ✓	1.000	4.8.2 ✓
	19.67 - 18.67	0.013	0.947	0.000	0.024	0.001	0.960 ✓	1.000	4.8.2 ✓
	18.67 - 17.67	0.013	0.949	0.000	0.024	0.001	0.963 ✓	1.000	4.8.2 ✓
	17.67 - 16.67	0.013	0.952	0.000	0.024	0.001	0.965 ✓	1.000	4.8.2 ✓
L25	16.67 - 15.67	0.013	0.955	0.000	0.024	0.001	0.968 ✓	1.000	4.8.2 ✓
	15.67 - 14.67	0.013	0.958	0.000	0.024	0.001	0.971 ✓	1.000	4.8.2 ✓
	14.67 - 13.67	0.013	0.960	0.000	0.024	0.001	0.974 ✓	1.000	4.8.2 ✓
	13.67 - 12.67	0.013	0.963	0.000	0.024	0.001	0.977 ✓	1.000	4.8.2 ✓
	12.67 - 11.67	0.013	0.966	0.000	0.024	0.001	0.979 ✓	1.000	4.8.2 ✓
L26	11.67 - 10.6133	0.013	0.969	0.000	0.024	0.001	0.982 ✓	1.000	4.8.2 ✓
	10.6133 - 9.55667	0.013	0.971	0.000	0.024	0.001	0.985 ✓	1.000	4.8.2 ✓
	9.55667 - 8.5	0.013	0.974	0.000	0.024	0.001	0.988 ✓	1.000	4.8.2 ✓
L27	8.5 - 8.25 (27)	0.006	0.456	0.000	0.011	0.000	0.462 ✓	1.000	4.8.2 ✓
L28	8.25 - 7.25	0.006	0.466	0.000	0.011	0.000	0.472 ✓	1.000	4.8.2 ✓
	7.25 - 6.25	0.006	0.466	0.000	0.011	0.000	0.472 ✓	1.000	4.8.2 ✓
	6.25 - 5.25	0.006	0.466	0.000	0.011	0.000	0.472 ✓	1.000	4.8.2 ✓
	5.25 - 4.25	0.006	0.465	0.000	0.011	0.000	0.472 ✓	1.000	4.8.2 ✓

tnxTower Ramaker & Associates, Inc 855 Community Drive Sauk City, WI 53583 Phone: (608) 643-4100 FAX:	Job CT2268	Page 36 of 36
	Project 37840	Date 13:38:51 06/25/18
	Client Blue Sky Towers	Designed by TEM

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
	4.25 - 3.25	0.006	0.465	0.000	0.011	0.000	0.472 ✓	1.000	4.8.2 ✓
L29	3.25 - 2.125	0.007	0.465	0.000	0.011	0.000	0.472 ✓	1.000	4.8.2 ✓
	2.125 - 1	0.007	0.465	0.000	0.011	0.000	0.471 ✓	1.000	4.8.2 ✓

¹ $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	125 - 120	Pole	TP19.5366x18x0.1875	1	-4551.28	848795.00	8.2	Pass
L2	120 - 115	Pole	TP21.0732x19.5366x0.1875	2	-5573.28	897225.00	21.0	Pass
L3	115 - 110	Pole	TP22.6098x21.0732x0.1875	3	-9101.87	942862.00	35.7	Pass
L4	110 - 105	Pole	TP24.1464x22.6098x0.1875	4	-9533.13	985706.00	47.6	Pass
L5	105 - 100	Pole	TP25.683x24.1464x0.1875	5	-14276.80	1025760.00	61.5	Pass
L6	100 - 96.04	Pole	TP26.9x25.683x0.1875	6	-14295.50	1026070.00	61.7	Pass
L7	96.04 - 94.96	Pole	TP26.8464x25.3203x0.25	7	-15196.50	1543080.00	52.9	Pass
L8	94.96 - 89.96	Pole	TP28.3725x26.8464x0.25	8	-19411.80	1606240.00	64.0	Pass
L9	89.96 - 84.96	Pole	TP29.8985x28.3725x0.25	9	-20338.90	1666650.00	73.6	Pass
L10	84.96 - 79.96	Pole	TP31.4246x29.8985x0.25	10	-21307.30	1724300.00	81.7	Pass
L11	79.96 - 74.96	Pole	TP32.9507x31.4246x0.25	11	-22312.00	1779200.00	88.6	Pass
L12	74.96 - 69.96	Pole	TP34.4768x32.9507x0.25	12	-23505.90	1831350.00	94.5	Pass
L13	69.96 - 67.25	Pole	TP35.3039x34.4768x0.25	13	-24077.70	1858460.00	97.5	Pass
L14	67.25 - 67	Pole	TP35.3802x35.3039x0.5	14	-24180.30	4112590.00	44.9	Pass
L15	67 - 62	Pole	TP36.9063x35.3802x0.4875	15	-25636.40	4186650.00	47.5	Pass
L16	62 - 57	Pole	TP38.4323x36.9063x0.475	16	-27131.90	4251630.00	49.9	Pass
L17	57 - 47.67	Pole	TP41.28x38.4323x0.4688	17	-28243.60	4319860.00	51.3	Pass
L18	47.67 - 46.67	Pole	TP41.0821x39.0494x0.3125	18	-31123.50	2775340.00	86.2	Pass
L19	46.67 - 41.67	Pole	TP42.6059x41.0821x0.3125	19	-32441.60	2840960.00	88.3	Pass
L20	41.67 - 36.67	Pole	TP44.1296x42.6059x0.3125	20	-33791.10	2903830.00	90.2	Pass
L21	36.67 - 31.67	Pole	TP45.6533x44.1296x0.3125	21	-35171.90	2963960.00	92.0	Pass
L22	31.67 - 26.67	Pole	TP47.1771x45.6533x0.3125	22	-36583.60	3021340.00	93.6	Pass
L23	26.67 - 21.67	Pole	TP48.7008x47.1771x0.3125	23	-38025.70	3075980.00	95.1	Pass
L24	21.67 - 16.67	Pole	TP50.2246x48.7008x0.3125	24	-39498.60	3127870.00	96.5	Pass
L25	16.67 - 11.67	Pole	TP51.7483x50.2246x0.3125	25	-41046.40	3177010.00	97.9	Pass
L26	11.67 - 8.5	Pole	TP52.7144x51.7483x0.3125	26	-42435.70	3206750.00	98.8	Pass
L27	8.5 - 8.25	Pole	TP52.7906x52.7144x0.5625	27	-42457.20	6917660.00	46.2	Pass
L28	8.25 - 3.25	Pole	TP54.3143x52.7906x0.55	28	-42604.40	6775430.00	47.2	Pass
L29	3.25 - 1	Pole	TP55x54.3143x0.55	29	-45404.10	6973060.00	47.2	Pass
							Summary	
						Pole (L26)	98.8	Pass
						RATING =	98.8	Pass

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	124 - 119	5		18	18.000	19.537	0.1875	A572-65	1.000
2	119 - 114	5		18	19.537	21.073	0.1875	A572-65	1.000
3	114 - 109	5		18	21.073	22.610	0.1875	A572-65	1.000
4	109 - 104	5		18	22.610	24.146	0.1875	A572-65	1.000
5	104 - 99	5		18	24.146	25.683	0.1875	A572-65	1.000
6	99 - 98.96	3.96	3.92	18	25.683	26.900	0.1875	A572-65	1.000
7	98.96 - 93.96	5		18	25.320	26.846	0.25	A572-65	1.000
8	93.96 - 88.96	5		18	26.846	28.372	0.25	A572-65	1.000
9	88.96 - 83.96	5		18	28.372	29.899	0.25	A572-65	1.000
10	83.96 - 78.96	5		18	29.899	31.425	0.25	A572-65	1.000
11	78.96 - 73.96	5		18	31.425	32.951	0.25	A572-65	1.000
12	73.96 - 68.96	5		18	32.951	34.477	0.25	A572-65	1.000
13	68.96 - 66.25	2.71		18	34.477	35.304	0.25	A572-65	1.000
14	66.25 - 66	0.25		18	35.304	35.380	0.5	A572-65	0.944
15	66 - 61	5		18	35.380	36.906	0.4875	A572-65	0.949
16	61 - 56	5		18	36.906	38.432	0.475	A572-65	0.955
17	56 - 52.34	9.33	5.67	18	38.432	41.280	0.46875	A572-65	0.956
18	52.34 - 45.67	6.67		18	39.049	41.082	0.3125	A572-65	1.000
19	45.67 - 40.67	5		18	41.082	42.606	0.3125	A572-65	1.000
20	40.67 - 35.67	5		18	42.606	44.130	0.3125	A572-65	1.000
21	35.67 - 30.67	5		18	44.130	45.653	0.3125	A572-65	1.000
22	30.67 - 25.67	5		18	45.653	47.177	0.3125	A572-65	1.000
23	25.67 - 20.67	5		18	47.177	48.701	0.3125	A572-65	1.000
24	20.67 - 15.67	5		18	48.701	50.225	0.3125	A572-65	1.000
25	15.67 - 10.67	5		18	50.225	51.748	0.3125	A572-65	1.000
26	10.67 - 7.5	3.17		18	51.748	52.714	0.3125	A572-65	1.000
27	7.5 - 7.25	0.25		18	52.714	52.791	0.5625	A572-65	0.907
28	7.25 - 2.25	5		18	52.791	54.314	0.55	A572-65	0.917
29	2.25 - 0	2.25		18	54.314	55.000	0.55	A572-65	0.913

TNX Section Forces

Increment (ft):		TNX Output				
	5	Section Height (ft)		P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	124 - 119	4.55	25.79	8.97		
2	119 - 114	5.57	78.32	10.35		
3	114 - 109	9.10	150.48	14.90		
4	109 - 104	9.53	225.80	15.24		
5	104 - 99	14.28	322.52	22.47		
6	99 - 98.96	14.30	323.42	22.47		
7	98.96 - 93.96	15.20	436.81	22.89		
8	93.96 - 88.96	19.41	580.95	30.29		
9	88.96 - 83.96	20.34	733.26	30.66		
10	83.96 - 78.96	21.31	887.39	31.03		
11	78.96 - 73.96	22.31	1043.38	31.40		
12	73.96 - 68.96	23.51	1200.82	32.28		
13	68.96 - 66.25	24.08	1288.52	32.49		
14	66.25 - 66	24.18	1296.64	32.50		
15	66 - 61	25.64	1460.38	33.01		
16	61 - 56	27.13	1626.67	33.53		
17	56 - 52.34	28.24	1750.05	33.92		
18	52.34 - 45.67	31.12	1978.90	34.71		
19	45.67 - 40.67	32.44	2153.51	35.17		
20	40.67 - 35.67	33.79	2330.41	35.63		
21	35.67 - 30.67	35.17	2509.64	36.10		
22	30.67 - 25.67	36.58	2691.21	36.57		
23	25.67 - 20.67	38.03	2875.18	37.06		
24	20.67 - 15.67	39.50	3061.71	37.59		
25	15.67 - 10.67	41.05	3250.93	38.15		
26	10.67 - 7.5	42.44	3372.28	38.54		
27	7.5 - 7.25	42.59	3381.91	38.56		
28	7.25 - 2.25	45.38	3576.27	39.29		
29	2.25 - 0	46.65	3665.06	39.92		

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
124 - 119	Pole	TP19.537x18x0.1875	Pole	8.2%	Pass
119 - 114	Pole	TP21.073x19.537x0.1875	Pole	21.0%	Pass
114 - 109	Pole	TP22.61x21.073x0.1875	Pole	35.7%	Pass
109 - 104	Pole	TP24.146x22.61x0.1875	Pole	47.6%	Pass
104 - 99	Pole	TP25.683x24.146x0.1875	Pole	61.5%	Pass
99 - 98.96	Pole	TP26.9x25.683x0.1875	Pole	61.7%	Pass
98.96 - 93.96	Pole	TP26.846x25.32x0.25	Pole	52.9%	Pass
93.96 - 88.96	Pole	TP28.372x26.846x0.25	Pole	64.0%	Pass
88.96 - 83.96	Pole	TP29.899x28.372x0.25	Pole	73.6%	Pass
83.96 - 78.96	Pole	TP31.425x29.899x0.25	Pole	81.7%	Pass
78.96 - 73.96	Pole	TP32.951x31.425x0.25	Pole	88.6%	Pass
73.96 - 68.96	Pole	TP34.477x32.951x0.25	Pole	94.5%	Pass
68.96 - 66.25	Pole	TP35.304x34.477x0.25	Pole	97.6%	Pass
66.25 - 66	Pole + Reinf.	TP35.38x35.304x0.5	Reinf. 1 Tension Rupture	70.2%	Pass
66 - 61	Pole + Reinf.	TP36.906x35.38x0.4875	Reinf. 1 Tension Rupture	74.1%	Pass
61 - 56	Pole + Reinf.	TP38.432x36.906x0.475	Reinf. 1 Tension Rupture	77.6%	Pass
56 - 52.34	Pole + Reinf.	TP41.28x38.432x0.4688	Reinf. 1 Tension Rupture	79.9%	Pass
52.34 - 45.67	Pole	TP41.082x39.049x0.3125	Pole	86.2%	Pass
45.67 - 40.67	Pole	TP42.606x41.082x0.3125	Pole	88.3%	Pass
40.67 - 35.67	Pole	TP44.13x42.606x0.3125	Pole	90.3%	Pass
35.67 - 30.67	Pole	TP45.653x44.13x0.3125	Pole	92.0%	Pass
30.67 - 25.67	Pole	TP47.177x45.653x0.3125	Pole	93.6%	Pass
25.67 - 20.67	Pole	TP48.701x47.177x0.3125	Pole	95.1%	Pass
20.67 - 15.67	Pole	TP50.225x48.701x0.3125	Pole	96.6%	Pass
15.67 - 10.67	Pole	TP51.748x50.225x0.3125	Pole	98.0%	Pass
10.67 - 7.5	Pole	TP52.714x51.748x0.3125	Pole	98.8%	Pass
7.5 - 7.25	Pole + Reinf.	TP52.791x52.714x0.5625	Reinf. 2 Connection	72.4%	Pass
7.25 - 2.25	Pole + Reinf.	TP54.314x52.791x0.55	Reinf. 2 Compression	64.9%	Pass
2.25 - 0	Pole + Reinf.	TP55x54.314x0.55	Reinf. 2 Connection	73.5%	Pass
				Summary	
			Pole	98.8%	Pass
			Reinforcement	79.9%	Pass
			Overall	98.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity		
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2
124 - 119	544	n/a	544	11.51	n/a	11.51	8.2%		
119 - 114	685	n/a	685	12.43	n/a	12.43	21.0%		
114 - 109	847	n/a	847	13.34	n/a	13.34	35.7%		
109 - 104	1034	n/a	1034	14.26	n/a	14.26	47.6%		
104 - 99	1246	n/a	1246	15.17	n/a	15.17	61.5%		
99 - 98.96	1247	n/a	1247	15.18	n/a	15.18	61.7%		
98.96 - 93.96	1885	n/a	1885	21.10	n/a	21.10	52.9%		
93.96 - 88.96	2229	n/a	2229	22.31	n/a	22.31	64.0%		
88.96 - 83.96	2612	n/a	2612	23.53	n/a	23.53	73.6%		
83.96 - 78.96	3036	n/a	3036	24.74	n/a	24.74	81.7%		
78.96 - 73.96	3504	n/a	3504	25.95	n/a	25.95	88.6%		
73.96 - 68.96	4018	n/a	4018	27.16	n/a	27.16	94.5%		
68.96 - 66.25	4317	n/a	4317	27.81	n/a	27.81	97.6%		
66.25 - 66	4345	4133	8477	27.87	24.38	52.25	49.5%	70.2%	
66 - 61	4936	4480	9416	29.09	24.38	53.46	53.2%	74.1%	
61 - 56	5578	4842	10421	30.30	24.38	54.67	56.8%	77.6%	
56 - 52.34	6083	5116	11199	31.18	24.38	55.56	59.2%	79.9%	
52.34 - 45.67	8489	n/a	8489	40.44	n/a	40.44	86.2%		
45.67 - 40.67	9477	n/a	9477	41.95	n/a	41.95	88.3%		
40.67 - 35.67	10538	n/a	10538	43.46	n/a	43.46	90.3%		
35.67 - 30.67	11676	n/a	11676	44.97	n/a	44.97	92.0%		
30.67 - 25.67	12893	n/a	12893	46.48	n/a	46.48	93.6%		
25.67 - 20.67	14192	n/a	14192	47.99	n/a	47.99	95.1%		
20.67 - 15.67	15576	n/a	15576	49.50	n/a	49.50	96.6%		
15.67 - 10.67	17046	n/a	17046	51.02	n/a	51.02	98.0%		
10.67 - 7.5	18025	n/a	18025	51.97	n/a	51.97	98.8%		
7.5 - 7.25	18104	13908	32012	52.05	32.50	84.55	56.0%		72.4%
7.25 - 2.25	19727	14629	34356	53.56	32.50	86.06	57.7%		64.9%
2.25 - 0	20488	14960	35448	54.24	32.50	86.74	58.4%		73.5%

Note: Section capacity checked in 5 degree increments.

Stiffened or Unstiffened, UngROUTed, Circular Base Plate - Any Rod Material

TIA Rev G

Assumption: Clear space between bottom of leveling nut and top of concrete not exceeding (1)*(Rod Diameter)

Site Data

Project #: 37840
Site Name: CT2268

Pole Manufacturer: *Other*

Anchor Rod Data

Qty: 12
Diam: 2.25 in
Rod Material: A615-J
Strength (Fu): 100 ksi
Yield (Fy): 75 ksi
Bolt Circle: 63 in

Plate Data

Diam: 69 in
Thick: 1.75 in
Grade: 60 ksi
Single-Rod B-eff: 14.55 in

Stiffener Data (Welding at both sides)

Config: 1 *
Weld Type: Fillet
Groove Depth: <-- Disregard
Groove Angle: <-- Disregard
Fillet H. Weld: 0.875 in
Fillet V. Weld: 0.25 in
Width: 6.5 in
Height: 20 in
Thick: 1.5 in
Notch: 1 in
Grade: 50 ksi
Weld str.: 70 ksi

Pole Data

Diam: 55 in
Thick: 0.3125 in
Grade: 65 ksi
of Sides: 18 "0" IF Round
Fu: 80 ksi
Reinf. Fillet Weld: 0 "0" if None

Reactions

Mu:	3665.06	ft-kips
Axial, Pu:	46.67	kips
Shear, Vu:	41.72	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria: **AISC LRFD** <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Max Rod (Cu+ Vu/rj): 243.5 Kips
Allowable Axial, Φ*Fu*Anet: 260.0 Kips
Anchor Rod Stress Ratio: 93.7% **Pass**

Stiffened
AISC LRFD
φ*Tn

Base Plate Results

Base Plate Stress: 46.8 ksi
Allowable Plate Stress: 54.0 ksi
Base Plate Stress Ratio: 86.6% **Pass**

Flexural Check

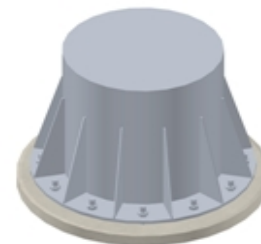
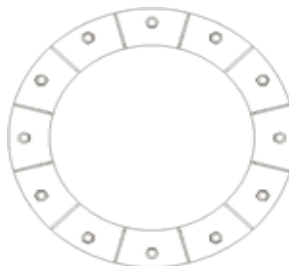
Stiffened
AISC LRFD
φ*Fy
Y.L. Length: N/A, Roark

Stiffener Results

Horizontal Weld : 80.9% **Pass**
Vertical Weld: 89.5% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2: 11.7% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2: 49.4% **Pass**
Plate Comp. (AISC Bracket): 47.5% **Pass**

Pole Results

Pole Punching Shear Check: 21.4% **Pass**



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, UngROUTed, Circular Base Plate - Any Rod Material

TIA Rev G

Assumption: Clear space between bottom of leveling nut and top of concrete not exceeding (1)*(Rod Diameter)

Site Data

Project #: 37840
Site Name: CT2268

Pole Manufacturer: *Other*

Anchor Rod Data

Qty: 12
Diam: 2.25 in
Rod Material: A615-J
Strength (Fu): 100 ksi
Yield (Fy): 75 ksi
Bolt Circle: 63 in

Plate Data

Diam: 69 in
Thick: 1.75 in
Grade: 60 ksi
Single-Rod B-eff: 14.55 in

Stiffener Data (Welding at both sides)

Config: 3 *
Weld Type: Both
Groove Depth: 0.625 in **
Groove Angle: 45 degrees
Fillet H. Weld: 0.25 in
Fillet V. Weld: 0.25 in
Width: 6.5 in
Height: 17 in
Thick: 1.25 in
Notch: 0.75 in
Grade: 65 ksi
Weld str.: 80 ksi

Clear Space between Stiffeners (b): 5 in

Pole Data

Diam: 55 in
Thick: 0.3125 in
Grade: 65 ksi
of Sides: 18 "0" IF Round
Fu: 80 ksi
Reinf. Fillet Weld: 0 "0" if None

Reactions

Mu:	3665.06	ft-kips
Axial, Pu:	46.67	kips
Shear, Vu:	41.72	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria: AISC LRFD <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Max Rod (Cu+ Vu/η): 243.5 Kips
Allowable Axial, Φ*Fu*Anet: 260.0 Kips
Anchor Rod Stress Ratio: 93.7% **Pass**

Stiffened
AISC LRFD
φ*Tn

Base Plate Results

Base Plate Stress: 10.4 ksi
Allowable Plate Stress: 32.4 ksi
Base Plate Stress Ratio: 32.1% **Pass**

Shear Check Only

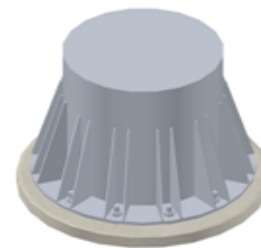
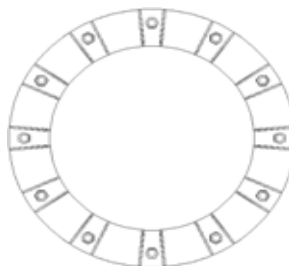
Stiffened
AISC LRFD
φ*Fy
Y.L. Length: N/A, Roark

Stiffener Results

Horizontal Weld : 24.2% **Pass**
Vertical Weld: 54.3% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2: 6.7% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2: 24.3% **Pass**
Plate Comp. (AISC Bracket): 28.0% **Pass**

Pole Results

Pole Punching Shear Check: 16.4% **Pass**



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Pier and Pad Foundation

Project #: 37840
 Site Name: CT2268

TIA-222 Revision: G
 Tower Type: Monopole

Block Foundation?:

Superstructure Analysis Reactions		
Compression, P_{comp} :	46.67	kips
Base Shear, V_{u_comp} :	41.717	kips
Moment, M_u :	3665.06	ft-kips
Tower Height, H :	125	ft
BP Dist. Above Fdn, bp_{dist} :	3	in

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
<i>Lateral (Sliding) (kips)</i>	168.04	41.72	24.8%	Pass
<i>Bearing Pressure (ksf)</i>	4.50	2.96	65.8%	Pass
<i>Overturing (kip*ft)</i>	4479.95	3904.94	87.2%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	3962.92	3706.78	93.5%	Pass
<i>Pier Compression (kip)</i>	18370.97	53.59	0.3%	Pass
<i>Pad Flexure (kip*ft)</i>	6074.46	1820.58	30.0%	Pass
<i>Pad Shear - 1-way (kips)</i>	1215.32	244.58	20.1%	Pass
<i>Pad Shear - 2-way (ksi)</i>	0.16	0.00	0.0%	Pass

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, $dpier$:	7.0	ft
Ext. Above Grade, E :	1.00	ft
Pier Rebar Size, S_c :	9	
Pier Rebar Quantity, mc :	24	
Pier Tie/Spiral Size, S_t :	4	
Pier Tie/Spiral Quantity, mt :	3	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Soil Rating:	87.2%
Structural Rating:	93.5%

Pad Properties		
Depth, D :	4.5	ft
Pad Width, W :	25.0	ft
Pad Thickness, T :	4.5	ft
Pad Rebar Size, S_p :	9	
Pad Rebar Quantity, mp :	28	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60000	psi
Concrete Compressive Strength, F'_c :	3000	psi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	100	pcf
Ultimate Gross Bearing, Q_{ult} :	6.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	30	degrees
SPT Blow Count, N_{blows} :		
Base Friction, μ :	0.45	
Neglected Depth, N :	3.30	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	None	ft

<--Toggle between Gross and Net



April 6, 2018



SAI Communications
12 Industrial Way
Salem NH, 03079

RE: Site Number: CT2268 (LTE 6C-7C)
 FA Number: 10090874
 PACE Number: MRCTB026939
 PT Number: 2051A0EFQA
 Site Name: Bethel Spring Street
 Site Address: 23 Spring Hill Lane
 Bethel, CT 06801

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by SAI Communications to perform a mount analysis on the existing AT&T antenna mount to determine its capability of supporting the following equipment loading:

- (3) 7770 Antennas (55.0"x11.0"x5.0" – Wt. = 35 lbs. /each)
- (1) HPA-65R-BUU-H8 Antennas (92.4"x14.8"x7.4" – Wt. = 68 lbs. /each)
- (2) HPA-65R-BUU-H6 Antennas (72.0"x14.8"x9.0" – Wt. = 51 lbs. /each)
- (1) TPA-65R-LCUUUU-H8 Antennas (96.0"x14.4"x8.6" – Wt. = 75 lbs. /each)
- (2) QS66512-2 Antennas (72.0"x12.0"x9.6" – Wt. = 111 lbs. /each)
- (6) RRUS-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each) (tower mounted)
- (3) RRUS-E2 RRH's (20.4"x18.5"x7.5" – Wt. = 53 lbs. /each) (tower mounted)
- (3) RRUS-32 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (2) Squid Surge Arrestors (24.0"x9.7"Ø – Wt. = 33 lbs. /each) (tower mounted)
- **(1) 800-10966 Antennas (96.0"x20.0"x6.9" – Wt. = 115 lbs. /each)**
- **(2) 800-10965 Antennas (78.7"x20.0"x6.9" – Wt. = 109 lbs. /each)**
- **(3) RRUS-32 B66 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7"Ø – Wt. = 33 lbs. /each) (tower mounted)**

**Proposed Loading Shown in Bold.*

No original structural design documents or fabrication drawings were available for the existing mount. A mount mapping report dated May 25, 2016 was provided by AT&T.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the International Building Code 2012 with 2005 Connecticut Supplement with 2016 Amendments, and AT&T Mount Technical Directive – R5.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. A max basic wind speed of 110 mph and a max basic wind speed with ice of 50 mph were used to perform this analysis per TIA-222-G, Appendix B.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban and wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 3; tower is located at the upper half of a hill.
- This mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 1.
- The sector frame has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.

Based on our analysis, we have determined that the existing antenna mount **IS NOT CAPABLE** of supporting the proposed antenna installation. HDG recommends the following modifications:

- **Install new handrail kit, SitePro1 P/N HRK-14 (or approved equal).**
- **Install new platform reinforcement kit, SitePro1 P/N PRK-1245 (or approved equal).**
- **Install new 2.5" std. (2.88" O.D.) pipe mast, secure to existing mount and new handrail (typ. of 4 per sector, total of 12).**

	Member	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	30	LC1	225%	FAIL
Proposed Mount Rating	30	LC3	89%	PASS

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
Hudson Design Group LLC



Michael Cabral
Structural Dept. Head



Daniel P. Hamm, PE
Principal

FIELD PHOTOS:





HUDSON
Design Group LLC

**Wind & Ice
Calculations**

Date: 4/6/2018
 Project Name: Bethel Spring Street
 Project Number: CT2268
 Designed By: JN Checked By: MSC



2.6.5.2 Velocity Pressure Coeff:

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

$K_z =$ **1.046** $z =$ 122 (ft)
 $z_g =$ 1200 (ft)
 $\alpha =$ 7.0

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

Table 2-4

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

2.6.6.4 Topographic Factor:

Table 2-5

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

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

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

$K_{zt} =$ **1.531569861**

$K_h =$ 2.0078622

$K_e =$ 0.9 (from Table 2-4)

$K_t =$ 0.53 (from Table 2-5)

f = 2 (from Table 2-5)

z = 122

H = 350 (Ht. of the crest above surrounding terrain)

$K_{zt} =$ 1.53

$K_{iz} =$ 1.14 (from Sec. 2.6.8)

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

Category = **3**

Date: 4/6/2018
 Project Name: Bethel Spring Street
 Project Number: CT2268
 Designed By: JN Checked By: MSC



HUDSON
 Design Group LLC

2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0]

h= ht. of structure

h= 124

Gh= 0.85

2.6.7.2 Guyed Masts

Gh= 0.85

2.6.7.3 Pole Structures

Gh= 1.1

2.6.9 Appurtenances

Gh= 1.0

2.6.7.4 Structures Supported on Other Structures

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

Gh= 1.35

Gh= 1.00

2.6.9.2 Design Wind Force on Appurtenances

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

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

q_z= 47.14

q_{z (ice)}= 9.74

K_z= 1.046

K_{zt}= 1.5

K_d= 0.95

V_{max}= 110

V_{max (ice)}= 50

I= 1.0

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (Supercritical)	0.5	0.6	0.6

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

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

Ice Thickness =

0.75 in

Angle = 0 (deg)

Equivalent Angle = 130 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ ice)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	260	63
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	6.24	1.37	612	141
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.86	1.31	455	106
800-10966 Antenna	96.0	20.0	6.9	13.33	4.80	1.30	819	185
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	651	147
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	6.67	1.39	627	145
QS66512-2 Antenna	72.0	12.0	9.6	6.00	6.00	1.36	383	91
RRUS-32 RRH	27.2	12.1	7.0	2.29	2.25	1.20	129	32
RRUS-32 RRH (Shielded)	27.2	0.0	7.0	0.00	0.00	1.20	0	0
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	2.25	1.20	129	32
RRUS-32 B2 RRH (Shielded)	27.2	0.0	7.0	0.00	0.00	1.20	0	0
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	2.25	1.20	129	32
RRUS-32 B66 RRH (Shielded)	27.2	0.0	7.0	0.00	0.00	1.20	0	0
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	95	24
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	0.00	1.20	0	0
LGP21401 TMA	14.4	2.7	9.0	0.27	5.33	1.33	17	6
Squid Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	53	14

WIND LOADS

Angle = 30 (deg)

Ice Thickness = 0.75 in.

Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	260	138	229
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	612	354	547
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	455	304	417
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	819	354	702
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	651	275	557
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	627	416	574
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	383	321	368
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	117
RRUS-32 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	69	79	72
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	117
RRUS-32 B2 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	69	79	72
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	117
RRUS-32 B66 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	69	79	72
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	95	59	86
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	48	59	51
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	51	25

WIND LOADS WITH ICE:

7770 Antenna	56.5	12.5	6.5	4.90	2.55	4.52	8.69	1.29	1.46	62	36	55
HPA-65R-BUU-H8 Antenna	93.9	16.3	8.9	10.63	5.80	5.76	10.55	1.34	1.52	139	86	126
HPA-65R-BUU-H6 Antenna	73.5	16.3	10.5	8.32	5.36	4.51	7.00	1.29	1.40	104	73	97
800-10966 Antenna	97.5	21.5	8.4	14.56	5.69	4.53	11.61	1.29	1.55	183	86	159
800-10965 Antenna	80.2	21.5	8.4	11.97	4.68	3.73	9.55	1.25	1.48	146	68	127
TPA-65R-LCUUUU-H8 Antenna	97.5	15.9	10.1	10.77	6.84	6.13	9.65	1.36	1.49	143	99	132
QS66512-2 Antenna	73.5	13.5	11.1	6.89	5.67	5.44	6.62	1.33	1.38	89	76	86
RRUS-32 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	29
RRUS-32 RRH (Shielded)	28.7	6.8	8.5	1.36	1.69	4.22	3.38	1.28	1.24	17	20	18
RRUS-32 B2 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	29
RRUS-32 B2 RRH (Shielded)	28.7	6.8	8.5	1.36	1.69	4.22	3.38	1.28	1.24	17	20	18
RRUS-32 B66 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	29
RRUS-32 B66 RRH (Shielded)	28.7	6.8	8.5	1.36	1.69	4.22	3.38	1.28	1.24	17	20	18
B14 4478 RRH	19.6	14.9	9.8	2.03	1.33	1.32	2.00	1.20	1.20	24	16	22
B14 4478 RRH (Shielded)	19.6	7.5	9.8	1.01	1.33	2.63	2.00	1.21	1.20	12	16	13
LGP21401 TMA	15.9	4.2	10.5	0.46	1.16	3.79	1.51	1.26	1.20	6	14	8

WIND LOADS

Angle = 60 (deg)

Ice Thickness = 0.75 in.

Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	260	138	168
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	612	354	419
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	455	304	342
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	819	354	470
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	651	275	369
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	627	416	469
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	383	321	336
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	91
RRUS-32 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	99	79	84
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	91
RRUS-32 B2 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	99	79	84
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	91
RRUS-32 B66 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	99	79	84
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	95	59	68
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	71	59	62
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	51	42

WIND LOADS WITH ICE:

7770 Antenna	56.5	12.5	6.5	4.90	2.55	4.52	8.69	1.29	1.46	62	36	43
HPA-65R-BUU-H8 Antenna	93.9	16.3	8.9	10.63	5.80	5.76	10.55	1.34	1.52	139	86	99
HPA-65R-BUU-H6 Antenna	73.5	16.3	10.5	8.32	5.36	4.51	7.00	1.29	1.40	104	73	81
800-10966 Antenna	97.5	21.5	8.4	14.56	5.69	4.53	11.61	1.29	1.55	183	86	110
800-10965 Antenna	80.2	21.5	8.4	11.97	4.68	3.73	9.55	1.25	1.48	146	68	87
TPA-65R-LCUUUU-H8 Antenna	97.5	15.9	10.1	10.77	6.84	6.13	9.65	1.36	1.49	143	99	110
QS66512-2 Antenna	73.5	13.5	11.1	6.89	5.67	5.44	6.62	1.33	1.38	89	76	80
RRUS-32 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	23
RRUS-32 RRH (Shielded)	28.7	10.2	8.5	2.03	1.69	2.81	3.38	1.21	1.24	24	20	21
RRUS-32 B2 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	23
RRUS-32 B2 RRH (Shielded)	28.7	10.2	8.5	2.03	1.69	2.81	3.38	1.21	1.24	24	20	21
RRUS-32 B66 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	23
RRUS-32 B66 RRH (Shielded)	28.7	10.2	8.5	2.03	1.69	2.81	3.38	1.21	1.24	24	20	21
B14 4478 RRH	19.6	14.9	9.8	2.03	1.33	1.32	2.00	1.20	1.20	24	16	18
B14 4478 RRH (Shielded)	19.6	11.2	9.8	1.52	1.33	1.75	2.00	1.20	1.20	18	16	16
LGP21401 TMA	15.9	4.2	10.5	0.46	1.16	3.79	1.51	1.26	1.20	6	14	12

Date: 4/6/2018
 Project Name: Bethel Spring Street
 Project Number: CT2268
 Designed By: JN Checked By: MSC



WIND LOADS

Angle = 90 (deg)

Ice Thickness = 0.75 in.

Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	260	138	138
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	612	354	354
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	455	304	304
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	819	354	354
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	651	275	275
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	627	416	416
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	383	321	321
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	79
RRUS-32 RRH (Shielded)	27.2	0.0	7.0	0.00	1.32	0.00	3.89	1.20	1.26	0	79	79
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	79
RRUS-32 B2 RRH (Shielded)	27.2	0.0	7.0	0.00	1.32	0.00	3.89	1.20	1.26	0	79	79
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	79
RRUS-32 B66 RRH (Shielded)	27.2	0.0	7.0	0.00	1.32	0.00	3.89	1.20	1.26	0	79	79
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	95	59	59
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	0.00	2.18	1.20	1.20	0	59	59
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	51	51

WIND LOADS WITH ICE:

7770 Antenna	56.5	12.5	6.5	4.90	2.55	4.52	8.69	1.29	1.46	62	36	36
HPA-65R-BUU-H8 Antenna	93.9	16.3	8.9	10.63	5.80	5.76	10.55	1.34	1.52	139	86	86
HPA-65R-BUU-H6 Antenna	73.5	16.3	10.5	8.32	5.36	4.51	7.00	1.29	1.40	104	73	73
800-10966 Antenna	97.5	21.5	8.4	14.56	5.69	4.53	11.61	1.29	1.55	183	86	86
800-10965 Antenna	80.2	21.5	8.4	11.97	4.68	3.73	9.55	1.25	1.48	146	68	68
TPA-65R-LCUUUU-H8 Antenna	97.5	15.9	10.1	10.77	6.84	6.13	9.65	1.36	1.49	143	99	99
QS66512-2 Antenna	73.5	13.5	11.1	6.89	5.67	5.44	6.62	1.33	1.38	89	76	76
RRUS-32 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	20
RRUS-32 RRH (Shielded)	28.7	1.5	8.5	0.30	1.69	19.13	3.38	1.80	1.24	5	20	20
RRUS-32 B2 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	20
RRUS-32 B2 RRH (Shielded)	28.7	1.5	8.5	0.30	1.69	19.13	3.38	1.80	1.24	5	20	20
RRUS-32 B66 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	20
RRUS-32 B66 RRH (Shielded)	28.7	1.5	8.5	0.30	1.69	19.13	3.38	1.80	1.24	5	20	20
B14 4478 RRH	19.6	14.9	9.8	2.03	1.33	1.32	2.00	1.20	1.20	24	16	16
B14 4478 RRH (Shielded)	19.6	1.5	9.8	0.20	1.33	13.07	2.00	1.60	1.20	3	16	16
LGP21401 TMA	15.9	4.2	10.5	0.46	1.16	3.79	1.51	1.26	1.20	6	14	14

Date: 4/6/2018
 Project Name: Belhel Spring Street
 Project Number: CT2268
 Designed By: JN Checked By: MSC



WIND LOADS

Angle = 120 (deg) Ice Thickness = 0.75 in. Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	260	138	168
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	612	354	419
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	455	304	342
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	819	354	470
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	651	275	369
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	627	416	469
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	383	321	336
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	91
RRUS-32 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	99	79	84
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	91
RRUS-32 B2 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	99	79	84
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	91
RRUS-32 B66 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	99	79	84
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	95	59	68
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	71	59	62
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	51	42

WIND LOADS WITH ICE:

7770 Antenna	56.5	12.5	6.5	4.90	2.55	4.52	8.69	1.29	1.46	62	36	43
HPA-65R-BUU-H8 Antenna	93.9	16.3	8.9	10.63	5.80	5.76	10.55	1.34	1.52	139	86	99
HPA-65R-BUU-H6 Antenna	73.5	16.3	10.5	8.32	5.36	4.51	7.00	1.29	1.40	104	73	81
800-10966 Antenna	97.5	21.5	8.4	14.56	5.69	4.53	11.61	1.29	1.55	183	86	110
800-10965 Antenna	80.2	21.5	8.4	11.97	4.68	3.73	9.55	1.25	1.48	146	68	87
TPA-65R-LCUUUU-H8 Antenna	97.5	15.9	10.1	10.77	6.84	6.13	9.65	1.36	1.49	143	99	110
QS66512-2 Antenna	73.5	13.5	11.1	6.89	5.67	5.44	6.62	1.33	1.38	89	76	80
RRUS-32 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	23
RRUS-32 RRH (Shielded)	28.7	10.2	8.5	2.03	1.69	2.81	3.38	1.21	1.24	24	20	21
RRUS-32 B2 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	23
RRUS-32 B2 RRH (Shielded)	28.7	10.2	8.5	2.03	1.69	2.81	3.38	1.21	1.24	24	20	21
RRUS-32 B66 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	23
RRUS-32 B66 RRH (Shielded)	28.7	10.2	8.5	2.03	1.69	2.81	3.38	1.21	1.24	24	20	21
B14 4478 RRH	19.6	14.9	9.8	2.03	1.33	1.32	2.00	1.20	1.20	24	16	18
B14 4478 RRH (Shielded)	19.6	11.2	9.8	1.52	1.33	1.75	2.00	1.20	1.20	18	16	16
LGP21401 TMA	15.9	4.2	10.5	0.46	1.16	3.79	1.51	1.26	1.20	6	14	12

WIND LOADS

Angle = 150 (deg)

Ice Thickness = 0.75 in.

Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	260	138	229
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	612	354	547
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	455	304	417
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	819	354	702
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	651	275	557
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	627	416	574
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	383	321	368
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	117
RRUS-32 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	69	79	72
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	117
RRUS-32 B2 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	69	79	72
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	129	79	117
RRUS-32 B66 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	69	79	72
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	95	59	86
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	48	59	51
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	51	25

WIND LOADS WITH ICE:

7770 Antenna	56.5	12.5	6.5	4.90	2.55	4.52	8.69	1.29	1.46	62	36	55
HPA-65R-BUU-H8 Antenna	93.9	16.3	8.9	10.63	5.80	5.76	10.55	1.34	1.52	139	86	126
HPA-65R-BUU-H6 Antenna	73.5	16.3	10.5	8.32	5.36	4.51	7.00	1.29	1.40	104	73	97
800-10966 Antenna	97.5	21.5	8.4	14.56	5.69	4.53	11.61	1.29	1.55	183	86	159
800-10965 Antenna	80.2	21.5	8.4	11.97	4.68	3.73	9.55	1.25	1.48	146	68	127
TPA-65R-LCUUUU-H8 Antenna	97.5	15.9	10.1	10.77	6.84	6.13	9.65	1.36	1.49	143	99	132
QS66512-2 Antenna	73.5	13.5	11.1	6.89	5.67	5.44	6.62	1.33	1.38	89	76	86
RRUS-32 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	29
RRUS-32 RRH (Shielded)	28.7	6.8	8.5	1.36	1.69	4.22	3.38	1.28	1.24	17	20	18
RRUS-32 B2 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	29
RRUS-32 B2 RRH (Shielded)	28.7	6.8	8.5	1.36	1.69	4.22	3.38	1.28	1.24	17	20	18
RRUS-32 B66 RRH	28.7	13.6	8.5	2.71	1.69	2.11	3.38	1.20	1.24	32	20	29
RRUS-32 B66 RRH (Shielded)	28.7	6.8	8.5	1.36	1.69	4.22	3.38	1.28	1.24	17	20	18
B14 4478 RRH	19.6	14.9	9.8	2.03	1.33	1.32	2.00	1.20	1.20	24	16	22
B14 4478 RRH (Shielded)	19.6	7.5	9.8	1.01	1.33	2.63	2.00	1.21	1.20	12	16	13
LGP21401 TMA	15.9	4.2	10.5	0.46	1.16	3.79	1.51	1.26	1.20	6	14	8

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 Designed By: JN Checked By: MSC



2.6.5.2 Velocity Pressure Coeff:

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

$K_z = 1.046$

z = 122 (ft)
 z_g = 1200 (ft)
 α = 7.0

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

Table 2-4

Exposure	Z _g	α	K _{zmin}	K _e
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.4 Topographic Factor:

Table 2-5

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

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

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

$K_{zt} = 1.531569861$

K_h = 2.0078622

K_e = 0.9 (from Table 2-4)

K_t = 0.53 (from Table 2-5)

f = 2 (from Table 2-5)

z = 122

H = 350 (Ht. of the crest above surrounding terrain)

K_{zt} = 1.53

K_{iz} = 1.14 (from Sec. 2.6.8)

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

Category = 3

Date: 4/6/2018
 Project Name: Bethel Spring Street
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 Designed By: JN Checked By: MSC



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2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0]

h= ht. of structure

h= 124

Gh= 0.85

2.6.7.2 Guyed Masts

Gh= 0.85

2.6.7.3 Pole Structures

Gh= 1.1

2.6.9 Appurtenances

Gh= 1.0

2.6.7.4 Structures Supported on Other Structures

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

Gh= 1.35

Gh= 1.00

2.6.9.2 Design Wind Force on Appurtenances

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

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

q_z = 3.51

q_{z (ice)} = 9.74

K_z = 1.046

K_{zt} = 1.5

K_d = 0.95

V_{max} = 30

V_{max (ice)} = 50

I = 1.0

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

Date: 4/6/2018
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 Designed By: JN Checked By: MSC



Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (Supercritical)	0.5	0.6	0.6

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

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

Ice Thickness = 0.75 in Angle = 0 (deg) Equivalent Angle = 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	19	63
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	6.24	1.37	46	141
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.86	1.31	34	106
800-10966 Antenna	96.0	20.0	6.9	13.33	4.80	1.30	61	185
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	48	147
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	6.67	1.39	47	145
QS66512-2 Antenna	72.0	12.0	9.6	6.00	6.00	1.36	29	91
RRUS-32 RRH	27.2	12.1	7.0	2.29	2.25	1.20	10	32
RRUS-32 RRH (Shielded)	27.2	0.1	7.0	0.02	272.00	10.23	1	32
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	2.25	1.20	10	32
RRUS-32 B2 RRH (Shielded)	27.2	0.0	7.0	0.00	0.00	1.20	0	0
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	2.25	1.20	10	32
RRUS-32 B66 RRH (Shielded)	27.2	0.0	7.0	0.00	0.00	1.20	0	0
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	7	24
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	0.00	1.20	0	0
LGP21401 TMA	14.4	2.7	9.0	0.27	5.33	1.33	1	6
Squid Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	4	14

Date: 4/6/2018
 Project Name: Bethel Spring Street
 Project Number: CT2268
 Designed By: JN Checked By: MSC



WIND LOADS

Angle = 30 (deg)

Ice Thickness = 0.75 in.

Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	19	10	17
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	46	26	41
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	34	23	31
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	61	26	52
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	48	20	41
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	47	31	43
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	29	24	27
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	9
RRUS-32 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	5	6	5
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	9
RRUS-32 B2 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	5	6	5
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	9
RRUS-32 B66 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	5	6	5
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	7	4	6
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	4	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	4	2

Date: 4/6/2018

Project Name: Bethel Spring Street

Project Number: CT2268

Designed By: JN Checked By: MSC



WIND LOADS

Angle = 60 (deg)

Ice Thickness = 0.75 in.

Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	19	10	13
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	46	26	31
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	34	23	25
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	61	26	35
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	48	20	27
TPA-65R-LCUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	47	31	35
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	29	24	25
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	7
RRUS-32 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	7	6	6
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	7
RRUS-32 B2 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	7	6	6
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	7
RRUS-32 B66 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	7	6	6
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	7	4	5
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	5	4	5
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	4	3

Date: 4/6/2018
 Project Name: Bethel Spring Street
 Project Number: CT2268
 Designed By: JN Checked By: MSC



WIND LOADS

Angle = 90 (deg)

Ice Thickness = 0.75 in.

Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	19	10	10
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	46	26	26
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	34	23	23
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	61	26	26
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	48	20	20
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	47	31	31
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	29	24	24
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	6
RRUS-32 RRH (Shielded)	27.2	0.1	7.0	0.02	1.32	272.00	3.89	10.23	1.26	1	6	6
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	6
RRUS-32 B2 RRH (Shielded)	27.2	0.0	7.0	0.00	1.32	0.00	3.89	1.20	1.26	0	6	6
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	6
RRUS-32 B66 RRH (Shielded)	27.2	0.0	7.0	0.00	1.32	0.00	3.89	1.20	1.26	0	6	6
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	7	4	4
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	0.00	2.18	1.20	1.20	0	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	4	4

Date: 4/6/2018
 Project Name: Bethel Spring Street
 Project Number: CT2268
 Designed By: JN Checked By: MSC



WIND LOADS

Angle = 120 (deg)

Ice Thickness = 0.75 in.

Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	19	10	13
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	46	26	31
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	34	23	25
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	61	26	35
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	48	20	27
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	47	31	35
Q566512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	29	24	25
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	7
RRUS-32 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	7	6	6
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	7
RRUS-32 B2 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	7	6	6
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	7
RRUS-32 B66 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	7	6	6
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	7	4	5
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	5	4	5
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	4	3

Date: 4/6/2018
 Project Name: Bethel Spring Sireel
 Project Number: CT2268
 Designed by: JN Checked by: MSC



WIND LOADS

Angle = 150 (deg)

Ice Thickness = 0.75 in.

Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	19	10	17
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	46	26	41
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	34	23	31
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	61	26	52
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	48	20	41
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	47	31	43
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	29	24	27
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	9
RRUS-32 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	5	6	5
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	9
RRUS-32 B2 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	5	6	5
RRUS-32 B66 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	10	6	9
RRUS-32 B66 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	5	6	5
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	7	4	6
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	4	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	4	2

Date: 4/6/2018

Project Name: Bethel Spring Street

Project Number: CT2268

Designed By: JN Checked By: MSC



HUDSON
Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice (in): 0.75

* Density of ice used = 56 PCF

7770 Antenna

Weight of ice based on total radial SF area:

Height (in): 55.0

Width (in): 11.0

Depth (in): 5.0

Total weight of ice on object: 45 lbs

Weight of object: 35 lbs

Combined weight of ice and object: 80 lbs

HPA-65R-BUU-H8 Antenna

Weight of ice based on total radial SF area:

Height (in): 92.4

Width (in): 14.8

Depth (in): 7.4

Total weight of ice on object: 105 lbs

Weight of object: 68 lbs

Combined weight of ice and object: 173 lbs

HPA-65R-BUU-H6 Antenna

Weight of ice based on total radial SF area:

Height (in): 72.0

Width (in): 14.8

Depth (in): 9.0

Total weight of ice on object: 90 lbs

Weight of object: 51 lbs

Combined weight of ice and object: 141 lbs

800-10966 Antenna

Weight of ice based on total radial SF area:

Height (in): 96.0

Width (in): 20.0

Depth (in): 6.9

Total weight of ice on object: 132 lbs

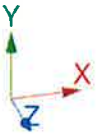
Weight of object: 115 lbs

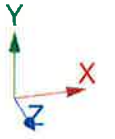
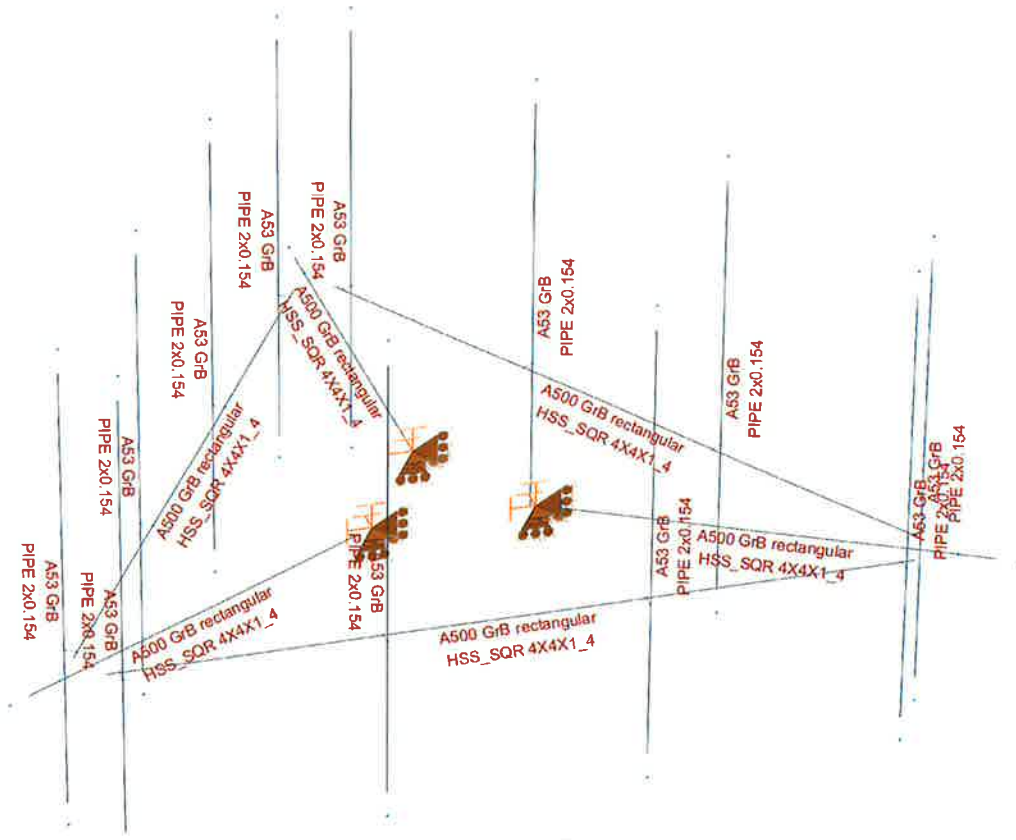
Combined weight of ice and object: 247 lbs



HUDSON
Design Group LLC

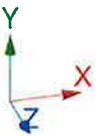
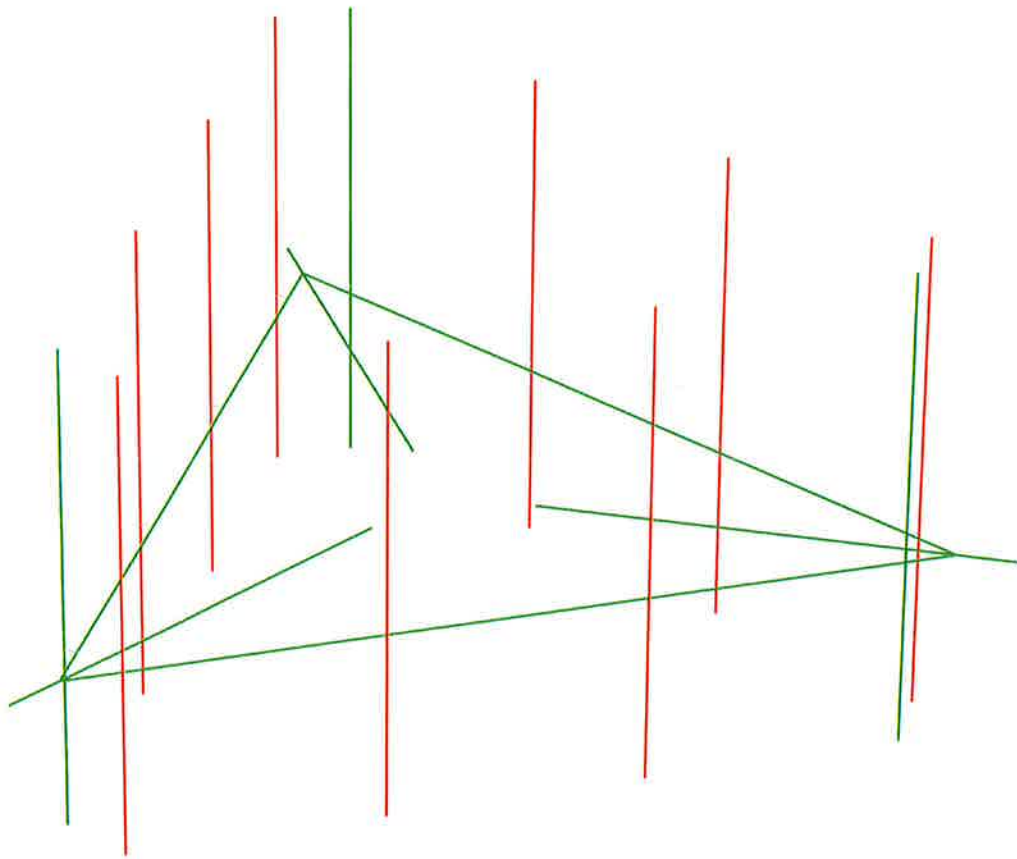
**Mount Calculations
(Existing Conditions)**

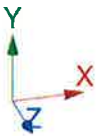
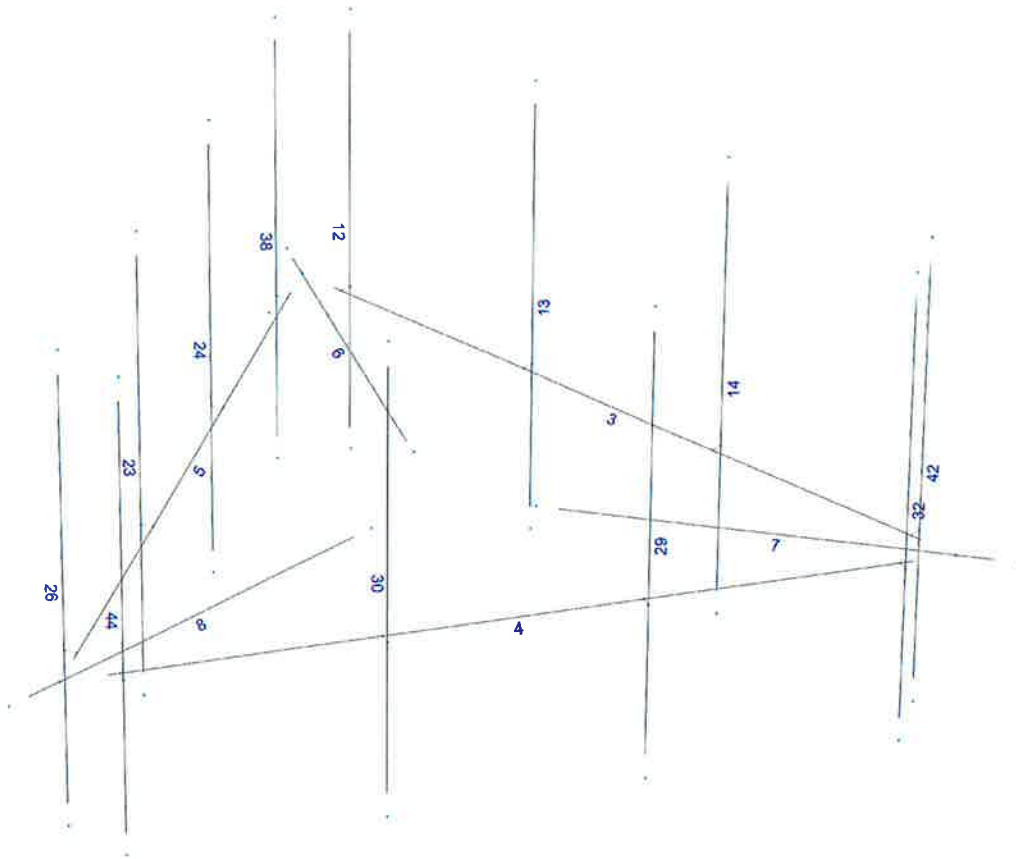




Design status

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





Current Date: 4/6/2018 3:17 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2268\CT2268 (LTE 6C-7C).etx

Load data

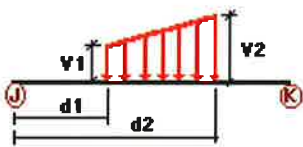
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60deg	No	WIND
W30	Wind Load 30/90deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60deg	No	WIND
Wi30	Ice Wind Load 30/90deg	No	WIND
WL0	WL 30 mph 0/60deg	No	WIND
WL30	WL 30 mph 30/90deg	No	WIND
LL1	250 lb Live Load	No	LL
LL2	500 lb Live Load	No	LL
W180	-W0	Yes	
W210	-W30	Yes	
Wi180	-Wi0	Yes	
Wi210	-Wi30	Yes	
WL180	-WL0	Yes	
WL210	-WL30	Yes	

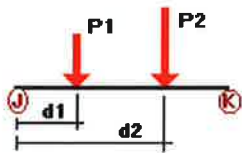
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%	
DL	3	y	-0.01	0.00	0.00	No	0.00	No	
	4	y	-0.01	0.00	0.00	No	0.00	No	
	5	y	-0.01	0.00	0.00	No	0.00	No	
	6	y	-0.01	-0.01	1.00	No	3.50	No	
	7	y	-0.01	-0.01	1.00	No	3.50	No	
	8	y	-0.01	-0.01	1.00	No	3.50	No	
	W0	3	z	-0.031	0.00	0.00	No	0.00	No
		4	z	-0.031	0.00	0.00	No	0.00	No
5		z	-0.031	0.00	0.00	No	0.00	No	
W30	3	x	-0.031	0.00	0.00	No	0.00	No	
	5	x	-0.031	0.00	0.00	No	0.00	No	
	29	x	-0.007	0.00	0.00	No	0.00	No	
	30	x	-0.007	0.00	0.00	No	0.00	No	

Di	32	x	-0.007	0.00	0.00	No	0.00	No
	44	x	-0.007	0.00	0.00	No	0.00	No
	3	y	-0.007	0.00	0.00	No	0.00	No
	4	y	-0.007	0.00	0.00	No	0.00	No
	5	y	-0.007	0.00	0.00	No	0.00	No
	6	y	-0.007	0.00	0.00	No	0.00	No
	7	y	-0.007	0.00	0.00	No	0.00	No
	8	y	-0.007	0.00	0.00	No	0.00	No
	12	y	-0.002	0.00	0.00	No	0.00	No
	13	y	-0.002	0.00	0.00	No	0.00	No
	23	y	-0.002	0.00	0.00	No	0.00	No
	24	y	-0.002	0.00	0.00	No	0.00	No
	14	y	-0.002	0.00	0.00	No	0.00	No
	26	y	-0.002	0.00	0.00	No	0.00	No
	29	y	-0.002	0.00	0.00	No	0.00	No
	30	y	-0.002	0.00	0.00	No	0.00	No
	32	y	-0.002	0.00	0.00	No	0.00	No
	42	y	-0.002	0.00	0.00	No	0.00	No
	38	y	-0.002	0.00	0.00	No	0.00	No
	44	y	-0.002	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	12	y	-0.018	1.50	No
		y	-0.018	5.50	No
		y	-0.038	3.00	No
	13	y	-0.026	1.00	No
		y	-0.026	6.00	No
		y	-0.06	3.00	No
	23	y	-0.026	1.00	No
		y	-0.026	6.00	No
		y	-0.06	3.00	No
	24	y	-0.055	1.00	No
		y	-0.055	6.00	No
		y	-0.06	3.00	No
	14	y	-0.06	5.75	No
		y	-0.055	1.00	No
		y	-0.055	6.00	No
		y	-0.06	3.00	No
	26	y	-0.06	5.75	No
		y	-0.018	1.50	No
		y	-0.018	5.50	No
	29	y	-0.038	3.00	No
y		-0.034	0.50	No	
y		-0.034	7.50	No	
30	y	-0.06	3.00	No	
	y	-0.058	0.50	No	
		y	-0.058	7.50	No

		y	-0.06	3.00	No
		y	-0.06	5.75	No
	32	y	-0.018	1.50	No
		y	-0.018	5.50	No
		y	-0.038	3.00	No
	42	y	-0.056	1.00	No
		y	-0.056	6.00	No
		y	-0.06	3.00	No
	38	y	-0.056	1.00	No
		y	-0.056	6.00	No
		y	-0.06	3.00	No
	44	y	-0.038	0.50	No
		y	-0.038	7.50	No
		y	-0.06	3.00	No
W0	12	z	-0.085	1.50	No
		z	-0.085	5.50	No
		z	-0.042	3.00	No
	13	z	-0.171	1.00	No
		z	-0.171	6.00	No
		z	-0.084	3.00	No
		z	-0.062	5.75	No
	23	z	-0.171	1.00	No
		z	-0.171	6.00	No
		z	-0.084	3.00	No
	24	z	-0.185	1.00	No
		z	-0.185	6.00	No
		z	-0.084	3.00	No
		z	-0.062	5.75	No
	14	z	-0.185	1.00	No
		z	-0.185	6.00	No
		z	-0.084	3.00	No
		z	-0.062	5.75	No
	26	z	-0.085	1.50	No
		z	-0.085	5.50	No
		z	-0.042	3.00	No
	29	z	-0.306	0.50	No
		z	-0.306	7.50	No
	30	z	-0.41	0.50	No
		z	-0.41	7.50	No
	32	z	-0.13	1.50	No
		z	-0.13	5.50	No
	42	z	-0.169	1.00	No
		z	-0.169	6.00	No
		z	-0.084	3.00	No
	38	z	-0.169	1.00	No
		z	-0.169	6.00	No
		z	-0.084	3.00	No
	44	z	-0.314	0.50	No
		z	-0.314	7.50	No
W30	12	x	-0.115	1.50	No
		x	-0.115	5.50	No
		x	-0.025	3.00	No
	13	x	-0.209	1.00	No
		x	-0.209	6.00	No
		x	-0.072	3.00	No
	23	x	-0.209	1.00	No
		x	-0.209	6.00	No
		x	-0.072	3.00	No
	24	x	-0.279	1.00	No
		x	-0.279	6.00	No

		x	-0.072	3.00	No
		x	-0.051	5.75	No
14		x	-0.279	1.00	No
		x	-0.279	6.00	No
		x	-0.072	3.00	No
		x	-0.051	5.75	No
26		x	-0.115	1.50	No
		x	-0.115	5.50	No
		x	-0.025	3.00	No
29		x	-0.178	0.50	No
		x	-0.178	7.50	No
		x	-0.079	3.00	No
30		x	-0.177	0.50	No
		x	-0.177	7.50	No
		x	-0.079	3.00	No
		x	-0.059	5.75	No
32		x	-0.07	1.50	No
		x	-0.07	5.50	No
		x	-0.051	3.00	No
42		x	-0.184	1.00	No
		x	-0.184	6.00	No
		x	-0.072	3.00	No
38		x	-0.184	1.00	No
		x	-0.184	6.00	No
		x	-0.072	3.00	No
44		x	-0.208	0.50	No
		x	-0.208	7.50	No
		x	-0.079	3.00	No
Di	12	y	-0.023	1.50	No
		y	-0.023	5.50	No
		y	-0.029	3.00	No
13		y	-0.045	1.00	No
		y	-0.045	6.00	No
		y	-0.029	3.00	No
23		y	-0.045	1.00	No
		y	-0.045	6.00	No
		y	-0.029	3.00	No
24		y	-0.055	1.00	No
		y	-0.055	6.00	No
		y	-0.029	3.00	No
		y	-0.025	5.75	No
14		y	-0.055	1.00	No
		y	-0.055	6.00	No
		y	-0.029	3.00	No
		y	-0.025	5.75	No
26		y	-0.023	1.50	No
		y	-0.023	5.50	No
		y	-0.018	3.00	No
29		y	-0.053	0.50	No
		y	-0.053	7.50	No
		y	-0.029	3.00	No
30		y	-0.066	0.50	No
		y	-0.066	7.50	No
		y	-0.029	3.00	No
		y	-0.025	5.75	No
32		y	-0.023	1.50	No
		y	-0.023	5.50	No
		y	-0.018	3.00	No
42		y	-0.041	1.00	No
		y	-0.041	6.00	No

		y	-0.029	3.00	No
	38	y	-0.041	1.00	No
		y	-0.041	6.00	No
		y	-0.029	3.00	No
	44	y	-0.057	0.50	No
		y	-0.057	7.50	No
Wi0	12	y	-0.029	3.00	No
		z	-0.022	1.50	No
		z	-0.022	5.50	No
		z	-0.012	3.00	No
	13	z	-0.041	1.00	No
		z	-0.041	6.00	No
		z	-0.023	3.00	No
	23	z	-0.041	1.00	No
		z	-0.041	6.00	No
		z	-0.023	3.00	No
	24	z	-0.044	1.00	No
		z	-0.044	6.00	No
		z	-0.023	3.00	No
		z	-0.018	5.75	No
	14	z	-0.044	1.00	No
		z	-0.044	6.00	No
		z	-0.023	3.00	No
		z	-0.018	5.75	No
	26	z	-0.022	1.50	No
		z	-0.022	5.50	No
		z	-0.012	3.00	No
	29	z	-0.071	0.50	No
		z	-0.071	7.50	No
		z	-0.032	3.00	No
	30	z	-0.093	0.50	No
		z	-0.093	7.50	No
		z	-0.032	3.00	No
		z	-0.024	5.75	No
	32	z	-0.032	1.50	No
		z	-0.032	5.50	No
		z	-0.006	3.00	No
	42	z	-0.04	1.00	No
		z	-0.04	6.00	No
		z	-0.023	3.00	No
	38	z	-0.04	1.00	No
		z	-0.04	6.00	No
		z	-0.023	3.00	No
	44	z	-0.073	0.50	No
		z	-0.073	7.50	No
		z	-0.032	3.00	No
Wi30	12	x	-0.028	1.50	No
		x	-0.028	5.50	No
		x	-0.008	3.00	No
	13	x	-0.049	1.00	No
		x	-0.049	6.00	No
		x	-0.029	3.00	No
	23	x	-0.049	1.00	No
		x	-0.049	6.00	No
		x	-0.029	3.00	No
	24	x	-0.064	1.00	No
		x	-0.064	6.00	No
		x	-0.029	3.00	No
		x	-0.022	5.75	No
	14	x	-0.064	1.00	No

		x	-0.064	6.00	No
		x	-0.029	3.00	No
		x	-0.022	5.75	No
26		x	-0.028	1.50	No
		x	-0.028	5.50	No
		x	-0.008	3.00	No
29		x	-0.043	0.50	No
		x	-0.043	7.50	No
		x	-0.02	3.00	No
30		x	-0.044	0.50	No
		x	-0.044	7.50	No
		x	-0.02	3.00	No
		x	-0.016	5.75	No
32		x	-0.019	1.50	No
		x	-0.019	5.50	No
		x	-0.014	3.00	No
42		x	-0.044	1.00	No
		x	-0.044	6.00	No
		x	-0.029	3.00	No
38		x	-0.044	1.00	No
		x	-0.044	6.00	No
		x	-0.029	3.00	No
44		x	-0.05	0.50	No
		x	-0.05	7.50	No
		x	-0.02	3.00	No
WLO	12	z	-0.007	1.50	No
		z	-0.007	5.50	No
		z	-0.003	3.00	No
13		z	-0.013	1.00	No
		z	-0.013	6.00	No
		z	-0.007	3.00	No
23		z	-0.013	1.00	No
		z	-0.013	6.00	No
		z	-0.007	3.00	No
24		z	-0.014	1.00	No
		z	-0.014	6.00	No
		z	-0.007	3.00	No
		z	-0.005	5.75	No
14		z	-0.014	1.00	No
		z	-0.014	6.00	No
		z	-0.007	3.00	No
		z	-0.005	5.75	No
26		z	-0.007	1.50	No
		z	-0.007	5.50	No
		z	-0.003	3.00	No
29		z	-0.023	0.50	No
		z	-0.023	7.50	No
30		z	-0.031	0.50	No
		z	-0.031	7.50	No
32		z	-0.01	1.50	No
		z	-0.01	5.50	No
42		z	-0.013	1.00	No
		z	-0.013	6.00	No
		z	-0.007	3.00	No
38		z	-0.013	1.00	No
		z	-0.013	6.00	No
		z	-0.007	3.00	No
44		z	-0.024	0.50	No
		z	-0.024	7.50	No
WL30	12	x	-0.009	1.50	No

		x	-0.009	5.50	No
		x	-0.002	3.00	No
13		x	-0.016	1.00	No
		x	-0.016	6.00	No
		x	-0.005	3.00	No
23		x	-0.016	1.00	No
		x	-0.016	6.00	No
		x	-0.005	3.00	No
24		x	-0.021	1.00	No
		x	-0.021	6.00	No
		x	-0.005	3.00	No
		x	-0.004	5.75	No
14		x	-0.021	1.00	No
		x	-0.021	6.00	No
		x	-0.005	3.00	No
		x	-0.004	5.75	No
26		x	-0.009	1.50	No
		x	-0.009	5.50	No
		x	-0.002	3.00	No
29		x	-0.014	0.50	No
		x	-0.014	7.50	No
		x	-0.006	3.00	No
30		x	-0.014	0.50	No
		x	-0.014	7.50	No
		x	-0.006	3.00	No
		x	-0.004	5.75	No
32		x	-0.006	1.50	No
		x	-0.006	5.50	No
		x	-0.004	3.00	No
42		x	-0.014	1.00	No
		x	-0.014	6.00	No
		x	-0.005	3.00	No
38		x	-0.014	1.00	No
		x	-0.014	6.00	No
		x	-0.005	3.00	No
44		x	-0.016	0.50	No
		x	-0.016	7.50	No
		x	-0.006	3.00	No
LL1	7	y	-0.25	0.00	Yes
LL2	32	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60deg	No	0.00	0.00	0.00
W30	Wind Load 30/90deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90deg	No	0.00	0.00	0.00
LL1	250 lb Live Load	No	0.00	0.00	0.00
LL2	500 lb Live Load	No	0.00	0.00	0.00

W180	-W0	Yes	0.00	0.00	0.00
W210	-W30	Yes	0.00	0.00	0.00
Wi180	-Wi0	Yes	0.00	0.00	0.00
Wi210	-Wi30	Yes	0.00	0.00	0.00
WL180	-WL0	Yes	0.00	0.00	0.00
WL210	-WL30	Yes	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
W180	0.00	0.00	0.00
W210	0.00	0.00	0.00
Wi180	0.00	0.00	0.00
Wi210	0.00	0.00	0.00
WL180	0.00	0.00	0.00
WL210	0.00	0.00	0.00

Current Date: 4/6/2018 3:17 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2268\CT2268 (LTE 6C-7C).etx\

Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

- LC1=1.2DL+1.6W0
- LC2=1.2DL+1.6W30
- LC3=1.2DL-1.6W0
- LC4=1.2DL-1.6W30
- LC5=0.9DL+1.6W0
- LC6=0.9DL+1.6W30
- LC7=0.9DL-1.6W0
- LC8=0.9DL-1.6W30
- LC9=1.2DL+Di+Wi0
- LC10=1.2DL+Di+Wi30
- LC11=1.2DL+Di-Wi0
- LC12=1.2DL+Di-Wi30
- LC13=1.2DL
- LC14=0.9DL
- LC15=1.2DL+1.6LL1
- LC16=1.2DL+1.6WL0+LL2
- LC17=1.2DL+1.6WL30+LL2
- LC18=1.2DL-1.6WL0+LL2
- LC19=1.2DL-1.6WL30+LL2

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	3	LC1 at 100.00%	0.61	OK	Eq. H1-1b
			LC10 at 0.00%	0.32	OK	
			LC11 at 0.00%	0.31	OK	
			LC12 at 0.00%	0.33	OK	
			LC13 at 0.00%	0.19	OK	
			LC14 at 0.00%	0.14	OK	
			LC15 at 0.00%	0.24	OK	
			LC16 at 0.00%	0.23	OK	
			LC17 at 0.00%	0.26	OK	
			LC18 at 0.00%	0.25	OK	
			LC19 at 0.00%	0.26	OK	
			LC2 at 0.00%	0.61	OK	
			LC3 at 7.50%	0.38	OK	Eq. H1-1b
			LC4 at 0.00%	0.80	OK	Eq. H3-6
			LC5 at 100.00%	0.57	OK	
			LC6 at 0.00%	0.56	OK	
			LC7 at 7.50%	0.35	OK	
			LC8 at 0.00%	0.75	OK	
			LC9 at 100.00%	0.33	OK	
		4	LC1 at 100.00%	0.79	OK	Eq. H3-6
			LC10 at 100.00%	0.33	OK	
			LC11 at 100.00%	0.35	OK	
			LC12 at 0.00%	0.33	OK	
			LC13 at 100.00%	0.19	OK	
			LC14 at 100.00%	0.14	OK	
			LC15 at 0.00%	0.24	OK	
			LC16 at 0.00%	0.27	OK	
			LC17 at 0.00%	0.24	OK	
			LC18 at 0.00%	0.26	OK	

	LC19 at 0.00%	0.27	OK	
	LC2 at 100.00%	0.54	OK	
	LC3 at 100.00%	0.79	OK	Eq. H3-6
	LC4 at 0.00%	0.57	OK	Eq. H1-1b
	LC5 at 100.00%	0.74	OK	
	LC6 at 100.00%	0.49	OK	
	LC7 at 100.00%	0.73	OK	
	LC8 at 0.00%	0.52	OK	
	LC9 at 100.00%	0.36	OK	
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5	LC1 at 100.00%	0.58	OK	Eq. H1-1b
	LC10 at 0.00%	0.32	OK	
	LC11 at 0.00%	0.31	OK	
	LC12 at 100.00%	0.33	OK	
	LC13 at 100.00%	0.19	OK	
	LC14 at 100.00%	0.14	OK	
	LC15 at 100.00%	0.19	OK	
	LC16 at 100.00%	0.21	OK	
	LC17 at 0.00%	0.21	OK	
	LC18 at 0.00%	0.20	OK	
	LC19 at 100.00%	0.21	OK	
	LC2 at 0.00%	0.74	OK	Eq. H3-6
	LC3 at 0.00%	0.39	OK	
	LC4 at 100.00%	0.66	OK	Eq. H3-6
	LC5 at 100.00%	0.53	OK	
	LC6 at 0.00%	0.69	OK	
	LC7 at 7.50%	0.35	OK	
	LC8 at 100.00%	0.61	OK	
	LC9 at 100.00%	0.33	OK	
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6	LC1 at 100.00%	0.97	OK	Eq. H1-1b
	LC10 at 100.00%	0.72	OK	
	LC11 at 100.00%	0.63	OK	
	LC12 at 100.00%	0.72	OK	
	LC13 at 100.00%	0.47	OK	
	LC14 at 100.00%	0.36	OK	
	LC15 at 100.00%	0.45	OK	
	LC16 at 100.00%	0.49	OK	
	LC17 at 100.00%	0.47	OK	
	LC18 at 100.00%	0.42	OK	
	LC19 at 100.00%	0.47	OK	
	LC2 at 100.00%	0.74	OK	
	LC3 at 15.63%	0.21	OK	
	LC4 at 100.00%	0.74	OK	
	LC5 at 100.00%	0.85	OK	
	LC6 at 15.63%	0.62	OK	
	LC7 at 31.25%	0.14	OK	
	LC8 at 15.63%	0.62	OK	
	LC9 at 100.00%	0.77	OK	
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7	LC1 at 15.63%	0.58	OK	
	LC10 at 100.00%	0.64	OK	
	LC11 at 100.00%	0.75	OK	
	LC12 at 100.00%	0.77	OK	
	LC13 at 100.00%	0.48	OK	
	LC14 at 100.00%	0.36	OK	
	LC15 at 100.00%	0.71	OK	
	LC16 at 100.00%	0.70	OK	
	LC17 at 100.00%	0.69	OK	
	LC18 at 100.00%	0.74	OK	
	LC19 at 100.00%	0.75	OK	
	LC2 at 15.63%	0.40	OK	
	LC3 at 100.00%	0.86	OK	
	LC4 at 100.00%	0.96	OK	Eq. H1-1b

		LC5 at 15.63%	0.51	OK	
		LC6 at 15.63%	0.33	OK	
		LC7 at 100.00%	0.74	OK	
		LC8 at 100.00%	0.84	OK	
		LC9 at 100.00%	0.68	OK	
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	8	LC1 at 15.63%	0.63	OK	
		LC10 at 100.00%	0.76	OK	
		LC11 at 100.00%	0.77	OK	
		LC12 at 100.00%	0.64	OK	Eq. H1-1b
		LC13 at 100.00%	0.46	OK	
		LC14 at 100.00%	0.34	OK	
		LC15 at 100.00%	0.44	OK	
		LC16 at 100.00%	0.45	OK	
		LC17 at 100.00%	0.48	OK	
		LC18 at 100.00%	0.48	OK	
		LC19 at 100.00%	0.42	OK	
		LC2 at 100.00%	0.92	OK	
		LC3 at 100.00%	0.92	OK	Eq. H1-1b
		LC4 at 15.63%	0.36	OK	
		LC5 at 15.63%	0.55	OK	
		LC6 at 100.00%	0.80	OK	
		LC7 at 100.00%	0.81	OK	
		LC8 at 15.63%	0.29	OK	
		LC9 at 100.00%	0.70	OK	
		<hr/>			
PIPE 2x0.154	12	LC1 at 59.38%	0.62	OK	
		LC10 at 59.38%	0.12	OK	
		LC11 at 59.38%	0.10	OK	
		LC12 at 59.38%	0.12	OK	
		LC13 at 59.38%	0.01	OK	
		LC14 at 59.38%	0.01	OK	
		LC15 at 59.38%	0.01	OK	
		LC16 at 59.38%	0.05	OK	
		LC17 at 59.38%	0.06	OK	
		LC18 at 59.38%	0.05	OK	
		LC19 at 59.38%	0.06	OK	
		LC2 at 59.38%	0.74	OK	
		LC3 at 59.38%	0.62	OK	
		LC4 at 59.38%	0.74	OK	Eq. H1-1b
		LC5 at 59.38%	0.62	OK	
		LC6 at 59.38%	0.74	OK	
		LC7 at 59.38%	0.62	OK	
		LC8 at 59.38%	0.74	OK	
		LC9 at 59.38%	0.10	OK	
		<hr/>			
	13	LC1 at 59.38%	1.39	N.G.	
		LC10 at 59.38%	0.27	OK	
		LC11 at 59.38%	0.22	OK	
		LC12 at 59.38%	0.27	OK	
		LC13 at 59.38%	0.01	OK	
		LC14 at 59.38%	0.01	OK	
		LC15 at 59.38%	0.01	OK	
		LC16 at 59.38%	0.11	OK	
		LC17 at 59.38%	0.13	OK	
		LC18 at 59.38%	0.11	OK	
		LC19 at 59.38%	0.13	OK	
		LC2 at 59.38%	1.60	N.G.	Eq. H1-1b
		LC3 at 59.38%	1.39	N.G.	
		LC4 at 59.38%	1.60	N.G.	
		LC5 at 59.38%	1.39	N.G.	
		LC6 at 59.38%	1.60	N.G.	
		LC7 at 59.38%	1.39	N.G.	
		LC8 at 59.38%	1.60	N.G.	

	LC9 at 59.38%	0.22	OK	
23	LC1 at 59.38%	1.39	N.G.	
	LC10 at 59.38%	0.27	OK	
	LC11 at 59.38%	0.22	OK	
	LC12 at 59.38%	0.27	OK	
	LC13 at 59.38%	0.01	OK	
	LC14 at 59.38%	0.01	OK	
	LC15 at 59.38%	0.01	OK	
	LC16 at 59.38%	0.11	OK	
	LC17 at 59.38%	0.13	OK	
	LC18 at 59.38%	0.11	OK	
	LC19 at 59.38%	0.13	OK	
	LC2 at 59.38%	1.60	N.G.	Eq. H1-1b
	LC3 at 59.38%	1.39	N.G.	
	LC4 at 59.38%	1.60	N.G.	
LC5 at 59.38%	1.39	N.G.		
LC6 at 59.38%	1.60	N.G.		
LC7 at 59.38%	1.39	N.G.		
LC8 at 59.38%	1.60	N.G.		
LC9 at 59.38%	0.22	OK		
24	LC1 at 59.38%	1.48	N.G.	
	LC10 at 59.38%	0.33	OK	
	LC11 at 59.38%	0.24	OK	
	LC12 at 59.38%	0.33	OK	
	LC13 at 59.38%	0.02	OK	
	LC14 at 59.38%	0.01	OK	
	LC15 at 59.38%	0.02	OK	
	LC16 at 59.38%	0.11	OK	
	LC17 at 59.38%	0.16	OK	
	LC18 at 59.38%	0.11	OK	
	LC19 at 59.38%	0.16	OK	
	LC2 at 59.38%	2.07	N.G.	Eq. H1-1b
	LC3 at 59.38%	1.48	N.G.	
	LC4 at 59.38%	2.07	N.G.	
LC5 at 59.38%	1.48	N.G.		
LC6 at 59.38%	2.06	N.G.		
LC7 at 59.38%	1.48	N.G.		
LC8 at 59.38%	2.06	N.G.		
LC9 at 59.38%	0.24	OK		
14	LC1 at 59.38%	1.48	N.G.	
	LC10 at 59.38%	0.33	OK	
	LC11 at 59.38%	0.24	OK	
	LC12 at 59.38%	0.33	OK	
	LC13 at 59.38%	0.02	OK	
	LC14 at 59.38%	0.01	OK	
	LC15 at 59.38%	0.02	OK	
	LC16 at 59.38%	0.11	OK	
	LC17 at 59.38%	0.16	OK	
	LC18 at 59.38%	0.11	OK	
	LC19 at 59.38%	0.16	OK	
	LC2 at 59.38%	2.07	N.G.	Eq. H1-1b
	LC3 at 59.38%	1.48	N.G.	
	LC4 at 59.38%	2.07	N.G.	
LC5 at 59.38%	1.48	N.G.		
LC6 at 59.38%	2.06	N.G.		
LC7 at 59.38%	1.48	N.G.		
LC8 at 59.38%	2.06	N.G.		
LC9 at 59.38%	0.24	OK		
26	LC1 at 59.38%	0.62	OK	
	LC10 at 59.38%	0.12	OK	

	LC11 at 59.38%	0.10	OK	
	LC12 at 59.38%	0.12	OK	
	LC13 at 59.38%	0.01	OK	
	LC14 at 59.38%	0.01	OK	
	LC15 at 59.38%	0.01	OK	
	LC16 at 59.38%	0.05	OK	
	LC17 at 59.38%	0.06	OK	
	LC18 at 59.38%	0.05	OK	
	LC19 at 59.38%	0.06	OK	
	LC2 at 59.38%	0.74	OK	
	LC3 at 59.38%	0.62	OK	
	LC4 at 59.38%	0.74	OK	Eq. H1-1b
	LC5 at 59.38%	0.62	OK	
	LC6 at 59.38%	0.74	OK	
	LC7 at 59.38%	0.62	OK	
	LC8 at 59.38%	0.74	OK	
	LC9 at 59.38%	0.10	OK	
29	LC1 at 59.38%	1.68	N.G.	Eq. H1-1b
	LC10 at 59.38%	0.19	OK	
	LC11 at 59.38%	0.30	OK	
	LC12 at 59.38%	0.19	OK	
	LC13 at 59.38%	0.01	OK	
	LC14 at 59.38%	0.01	OK	
	LC15 at 59.38%	0.01	OK	
	LC16 at 59.38%	0.13	OK	
	LC17 at 59.38%	0.10	OK	
	LC18 at 59.38%	0.13	OK	
	LC19 at 59.38%	0.10	OK	
	LC2 at 59.38%	1.26	N.G.	
	LC3 at 59.38%	1.68	N.G.	
	LC4 at 59.38%	1.26	N.G.	
	LC5 at 59.38%	1.68	N.G.	
	LC6 at 59.38%	1.26	N.G.	
	LC7 at 59.38%	1.68	N.G.	
	LC8 at 59.38%	1.26	N.G.	
	LC9 at 59.38%	0.30	OK	
30	LC1 at 59.38%	2.25	N.G.	Eq. H1-1b
	LC10 at 59.38%	0.19	OK	
	LC11 at 59.38%	0.38	OK	
	LC12 at 59.38%	0.19	OK	
	LC13 at 59.38%	0.02	OK	
	LC14 at 59.38%	0.01	OK	
	LC15 at 59.38%	0.02	OK	
	LC16 at 59.38%	0.18	OK	
	LC17 at 59.38%	0.10	OK	
	LC18 at 59.38%	0.18	OK	
	LC19 at 59.38%	0.10	OK	
	LC2 at 59.38%	1.25	N.G.	
	LC3 at 59.38%	2.25	N.G.	
	LC4 at 59.38%	1.25	N.G.	
	LC5 at 59.38%	2.24	N.G.	
	LC6 at 59.38%	1.25	N.G.	
	LC7 at 59.38%	2.24	N.G.	
	LC8 at 59.38%	1.25	N.G.	
	LC9 at 59.38%	0.38	OK	
32	LC1 at 59.38%	0.55	OK	
	LC10 at 59.38%	0.08	OK	
	LC11 at 59.38%	0.10	OK	
	LC12 at 59.38%	0.08	OK	
	LC13 at 59.38%	0.01	OK	
	LC14 at 59.38%	0.01	OK	

	LC15 at 59.38%	0.01	OK	
	LC16 at 59.38%	0.07	OK	
	LC17 at 59.38%	0.06	OK	
	LC18 at 59.38%	0.07	OK	
	LC19 at 59.38%	0.06	OK	
	LC2 at 59.38%	0.51	OK	
	LC3 at 59.38%	0.55	OK	Eq. H1-1b
	LC4 at 59.38%	0.51	OK	
	LC5 at 59.38%	0.55	OK	
	LC6 at 59.38%	0.51	OK	
	LC7 at 59.38%	0.55	OK	
	LC8 at 59.38%	0.51	OK	
	LC9 at 59.38%	0.10	OK	
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42	LC1 at 59.38%	1.38	N.G.	
	LC10 at 59.38%	0.25	OK	
	LC11 at 59.38%	0.22	OK	
	LC12 at 59.38%	0.25	OK	
	LC13 at 59.38%	0.02	OK	
	LC14 at 59.38%	0.01	OK	
	LC15 at 59.38%	0.02	OK	
	LC16 at 59.38%	0.11	OK	
	LC17 at 59.38%	0.12	OK	
	LC18 at 59.38%	0.11	OK	
	LC19 at 59.38%	0.12	OK	
	LC2 at 59.38%	1.44	N.G.	Eq. H1-1b
	LC3 at 59.38%	1.38	N.G.	
	LC4 at 59.38%	1.44	N.G.	
	LC5 at 59.38%	1.38	N.G.	
	LC6 at 59.38%	1.44	N.G.	
	LC7 at 59.38%	1.38	N.G.	
	LC8 at 59.38%	1.44	N.G.	
	LC9 at 59.38%	0.22	OK	
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38	LC1 at 59.38%	1.38	N.G.	
	LC10 at 59.38%	0.25	OK	
	LC11 at 59.38%	0.22	OK	
	LC12 at 59.38%	0.25	OK	
	LC13 at 59.38%	0.02	OK	
	LC14 at 59.38%	0.01	OK	
	LC15 at 59.38%	0.02	OK	
	LC16 at 59.38%	0.11	OK	
	LC17 at 59.38%	0.12	OK	
	LC18 at 59.38%	0.11	OK	
	LC19 at 59.38%	0.12	OK	
	LC2 at 59.38%	1.44	N.G.	Eq. H1-1b
	LC3 at 59.38%	1.38	N.G.	
	LC4 at 59.38%	1.44	N.G.	
	LC5 at 59.38%	1.38	N.G.	
	LC6 at 59.38%	1.44	N.G.	
	LC7 at 59.38%	1.38	N.G.	
	LC8 at 59.38%	1.44	N.G.	
	LC9 at 59.38%	0.22	OK	
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44	LC1 at 59.38%	1.72	N.G.	Eq. H1-1b
	LC10 at 59.38%	0.21	OK	
	LC11 at 59.38%	0.31	OK	
	LC12 at 59.38%	0.21	OK	
	LC13 at 59.38%	0.01	OK	
	LC14 at 59.38%	0.01	OK	
	LC15 at 59.38%	0.01	OK	
	LC16 at 59.38%	0.14	OK	
	LC17 at 59.38%	0.11	OK	
	LC18 at 59.38%	0.14	OK	

LC19 at 59.38%	0.11	OK
LC2 at 59.38%	1.42	N.G.
LC3 at 59.38%	1.72	N.G.
LC4 at 59.38%	1.42	N.G.
LC5 at 59.38%	1.72	N.G.
LC6 at 59.38%	1.42	N.G.
LC7 at 59.38%	1.72	N.G.
LC8 at 59.38%	1.42	N.G.
LC9 at 59.38%	0.31	OK

Current Date: 4/6/2018 3:17 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2268\CT2268 (LTE 6C-7C).et3

Geometry data

GLOSSARY

Cb22, Cb33 : Moment gradient coefficients
 Cm22, Cm33 : Coefficients applied to bending term in interaction formula
 d0 : Tapered member section depth at J end of member
 DJX : Rigid end offset distance measured from J node in axis X
 DJY : Rigid end offset distance measured from J node in axis Y
 DJZ : Rigid end offset distance measured from J node in axis Z
 DKX : Rigid end offset distance measured from K node in axis X
 DKY : Rigid end offset distance measured from K node in axis Y
 DKZ : Rigid end offset distance measured from K node in axis Z
 dL : Tapered member section depth at K end of member
 Ig factor : Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
 K22 : Effective length factor about axis 2
 K33 : Effective length factor about axis 3
 L22 : Member length for calculation of axial capacity
 L33 : Member length for calculation of axial capacity
 LB pos : Lateral unbraced length of the compression flange in the positive side of local axis 2
 LB neg : Lateral unbraced length of the compression flange in the negative side of local axis 2
 RX : Rotation about X
 RY : Rotation about Y
 RZ : Rotation about Z
 TO : 1 = Tension only member 0 = Normal member
 TX : Translation in X
 TY : Translation in Y
 TZ : Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
9	-9.69E-05	0.00	-8.0828	0
10	6.9999	0.00	4.0415	0
15	-7.00	0.00	4.0413	0
16	7.866	0.00	4.5413	0
17	-1.299	0.00	0.75	0
18	0.00	0.00	-1.50	0
19	1.299	0.00	0.75	0
20	0.00	0.00	-9.0828	0
21	-7.8659	0.00	4.5415	0
36	4.694	-3.00	-0.3525	0
37	2.6524	-3.00	-3.8888	0
38	4.694	5.00	-0.3525	0
39	2.6524	5.00	-3.8888	0
41	0.624	-3.00	-7.4021	0
42	0.624	5.00	-7.4021	0
59	-2.6523	-3.00	-3.8889	0
60	-4.694	-3.00	-0.3526	0
61	-2.6523	5.00	-3.8889	0
62	-4.694	5.00	-0.3526	0
65	-6.7224	-3.00	3.1606	0
66	-6.7224	5.00	3.1606	0
71	-2.0417	-3.00	4.2414	0

72	2.0416	-3.00	4.2414	0
73	-2.0417	5.00	4.2414	0
74	2.0416	5.00	4.2414	0
77	6.0984	-3.00	4.2415	0
78	6.0984	5.00	4.2415	0
91	-0.6239	-3.00	-7.4021	0
92	-0.6239	5.00	-7.4021	0
99	6.7224	-3.00	3.1607	0
100	6.7224	5.00	3.1607	0
103	-6.0985	-3.00	4.2414	0
104	-6.0985	5.00	4.2414	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
17	1	1	1	1	1	1
18	1	1	1	1	1	1
19	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
3	10	9		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
4	10	15		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
5	15	9		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
6	20	18		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
7	16	19		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	21	17		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
12	42	41		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
13	39	37		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
23	62	60		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
24	61	59		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
14	38	36		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
26	66	65		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
29	74	72		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
30	73	71		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
32	78	77		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
42	100	99		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
38	92	91		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
44	104	103		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

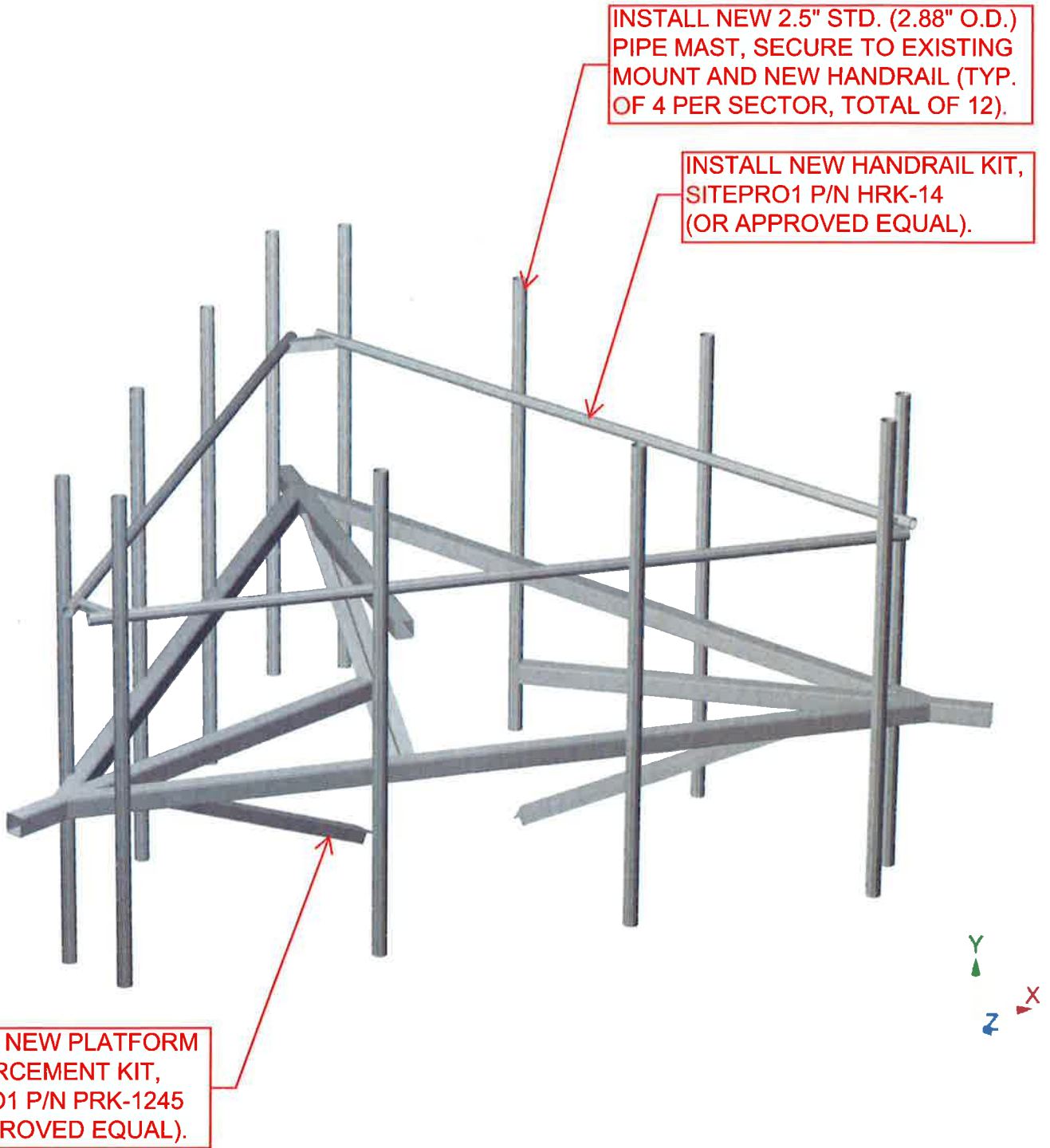
Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
12	0.00	2	-0.50	0.00	-0.866
13	0.00	2	-0.50	0.00	-0.866
23	0.00	2	-0.50	0.00	0.866
24	0.00	2	-0.50	0.00	0.866
14	0.00	2	-0.50	0.00	-0.866
26	0.00	2	-0.50	0.00	0.866
42	0.00	2	-0.50	0.00	-0.866
38	0.00	2	-0.50	0.00	0.866





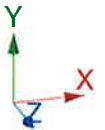
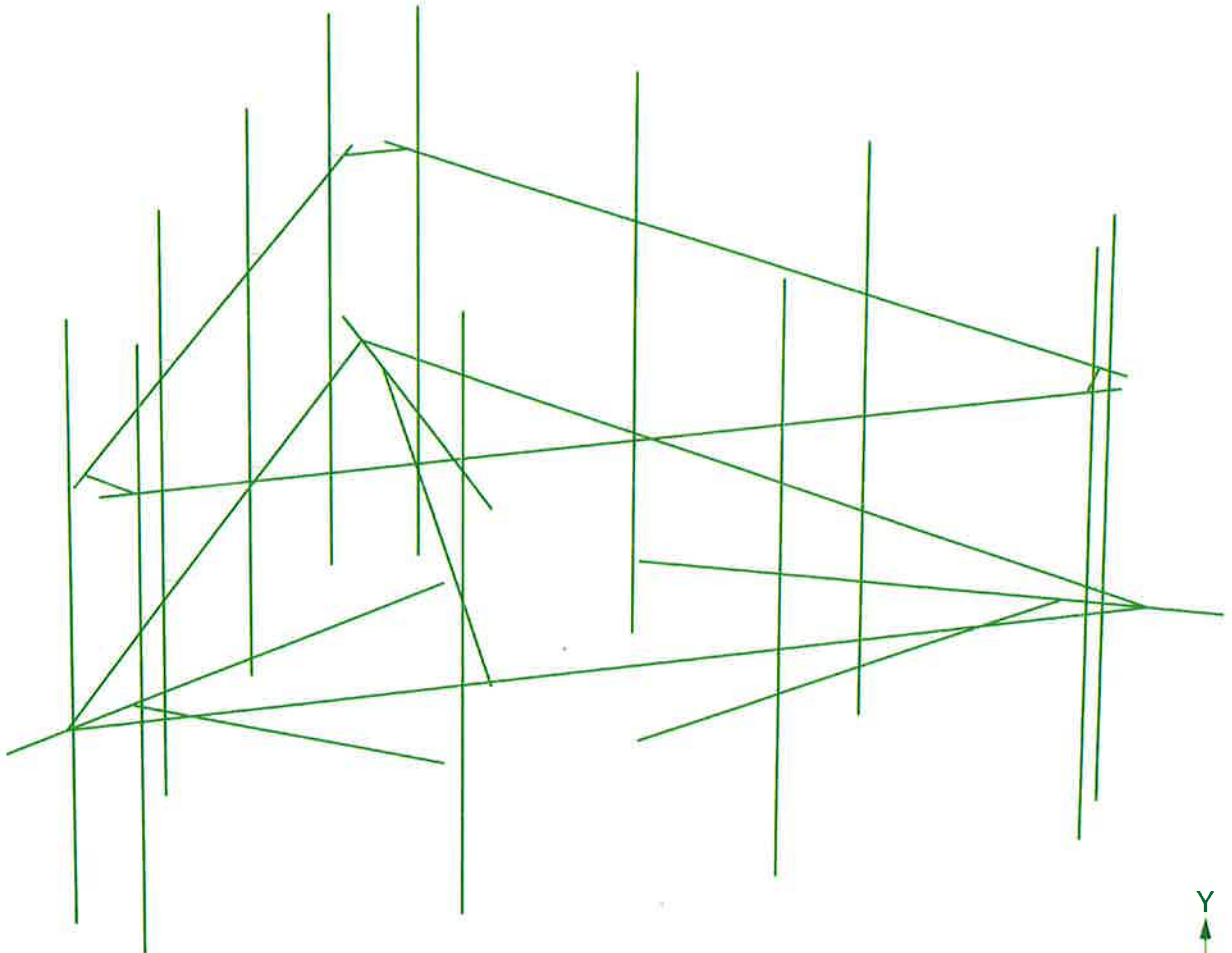
HUDSON
Design Group LLC

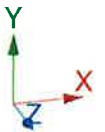
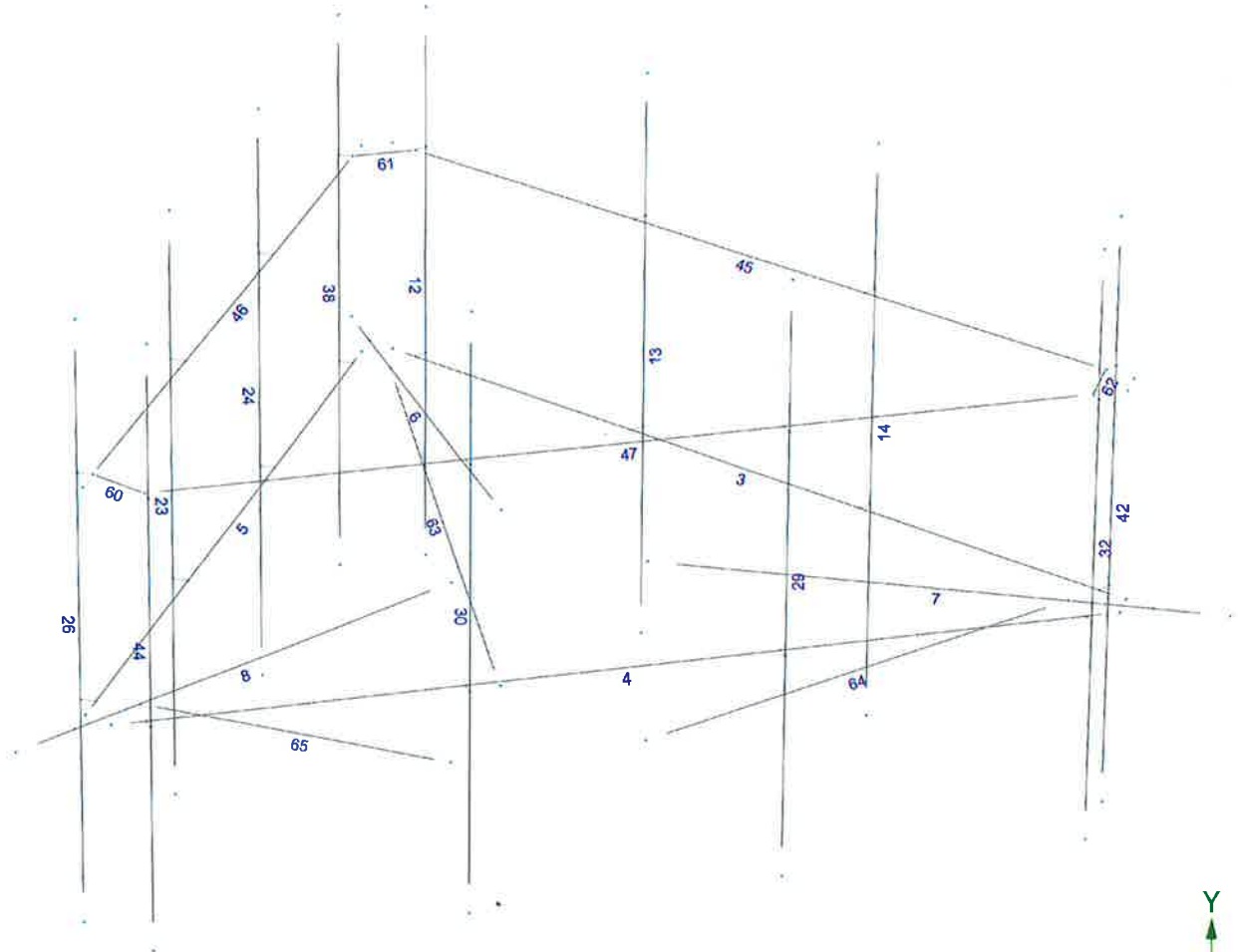
**Mount Calculations
(Proposed Conditions)**



Design status

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





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Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

- LC1=1.2DL+1.6W0
- LC2=1.2DL+1.6W30
- LC3=1.2DL-1.6W0
- LC4=1.2DL-1.6W30
- LC5=0.9DL+1.6W0
- LC6=0.9DL+1.6W30
- LC7=0.9DL-1.6W0
- LC8=0.9DL-1.6W30
- LC9=1.2DL+Di+Wi0
- LC10=1.2DL+Di+Wi30
- LC11=1.2DL+Di-Wi0
- LC12=1.2DL+Di-Wi30
- LC13=1.2DL
- LC14=0.9DL
- LC15=1.2DL+1.6LL1
- LC16=1.2DL+1.6WL0+LL2
- LC17=1.2DL+1.6WL30+LL2
- LC18=1.2DL-1.6WL0+LL2
- LC19=1.2DL-1.6WL30+LL2

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	3	LC1 at 100.00%	0.39	OK	Eq. H1-1b
			LC10 at 0.00%	0.18	OK	
			LC11 at 0.00%	0.16	OK	
			LC12 at 0.00%	0.19	OK	
			LC13 at 0.00%	0.10	OK	
			LC14 at 0.00%	0.08	OK	
			LC15 at 0.00%	0.12	OK	
			LC16 at 0.00%	0.12	OK	
			LC17 at 0.00%	0.13	OK	
			LC18 at 0.00%	0.12	OK	
			LC19 at 0.00%	0.14	OK	
			LC2 at 0.00%	0.39	OK	
			LC3 at 100.00%	0.27	OK	
			LC4 at 0.00%	0.45	OK	Eq. H1-1b
			LC5 at 100.00%	0.37	OK	
			LC6 at 0.00%	0.37	OK	
			LC7 at 100.00%	0.25	OK	
			LC8 at 0.00%	0.43	OK	
			LC9 at 100.00%	0.17	OK	
		4	LC1 at 100.00%	0.49	OK	Eq. H1-1b
			LC10 at 100.00%	0.18	OK	
			LC11 at 100.00%	0.21	OK	
			LC12 at 0.00%	0.17	OK	
			LC13 at 100.00%	0.10	OK	
			LC14 at 100.00%	0.08	OK	
			LC15 at 0.00%	0.12	OK	
			LC16 at 0.00%	0.14	OK	
			LC17 at 0.00%	0.13	OK	
			LC18 at 0.00%	0.14	OK	

	LC19 at 0.00%	0.14	OK	
	LC2 at 100.00%	0.34	OK	
	LC3 at 100.00%	0.50	OK	Eq. H1-1b
	LC4 at 0.00%	0.30	OK	
	LC5 at 100.00%	0.46	OK	
	LC6 at 100.00%	0.31	OK	
	LC7 at 100.00%	0.48	OK	
	LC8 at 7.14%	0.29	OK	
	LC9 at 100.00%	0.20	OK	
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5	LC1 at 100.00%	0.40	OK	Eq. H1-1b
	LC10 at 0.00%	0.18	OK	
	LC11 at 100.00%	0.16	OK	
	LC12 at 100.00%	0.18	OK	
	LC13 at 100.00%	0.10	OK	
	LC14 at 100.00%	0.08	OK	
	LC15 at 100.00%	0.10	OK	
	LC16 at 100.00%	0.12	OK	
	LC17 at 0.00%	0.12	OK	
	LC18 at 100.00%	0.11	OK	
	LC19 at 100.00%	0.12	OK	
	LC2 at 0.00%	0.43	OK	Eq. H1-1b
	LC3 at 100.00%	0.27	OK	
	LC4 at 100.00%	0.39	OK	Eq. H1-1b
	LC5 at 100.00%	0.38	OK	
	LC6 at 0.00%	0.40	OK	
	LC7 at 100.00%	0.24	OK	
	LC8 at 100.00%	0.36	OK	
	LC9 at 100.00%	0.18	OK	
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6	LC1 at 14.58%	0.19	OK	
	LC10 at 14.58%	0.26	OK	
	LC11 at 14.58%	0.21	OK	Eq. H1-1b
	LC12 at 14.58%	0.26	OK	
	LC13 at 14.58%	0.15	OK	
	LC14 at 14.58%	0.11	OK	
	LC15 at 14.58%	0.15	OK	
	LC16 at 14.58%	0.15	OK	
	LC17 at 14.58%	0.16	OK	
	LC18 at 14.58%	0.15	OK	
	LC19 at 14.58%	0.16	OK	
	LC2 at 14.58%	0.55	OK	
	LC3 at 14.58%	0.16	OK	
	LC4 at 14.58%	0.55	OK	Eq. H1-1b
	LC5 at 14.58%	0.16	OK	
	LC6 at 14.58%	0.51	OK	
	LC7 at 14.58%	0.12	OK	
	LC8 at 14.58%	0.51	OK	
	LC9 at 14.58%	0.21	OK	
<hr/>				
7	LC1 at 14.58%	0.48	OK	
	LC10 at 14.58%	0.22	OK	
	LC11 at 14.58%	0.25	OK	
	LC12 at 14.58%	0.23	OK	
	LC13 at 14.58%	0.15	OK	
	LC14 at 14.58%	0.11	OK	
	LC15 at 14.58%	0.15	OK	
	LC16 at 14.58%	0.19	OK	
	LC17 at 14.58%	0.18	OK	
	LC18 at 14.58%	0.19	OK	
	LC19 at 14.58%	0.18	OK	
	LC2 at 14.58%	0.34	OK	
	LC3 at 14.58%	0.50	OK	Eq. H1-1b
	LC4 at 14.58%	0.36	OK	

		LC5 at 14.58%	0.44	OK	
		LC6 at 14.58%	0.30	OK	
		LC7 at 14.58%	0.47	OK	
		LC8 at 14.58%	0.33	OK	
		LC9 at 14.58%	0.24	OK	
		<hr/>			
	8	LC1 at 14.58%	0.51	OK	
		LC10 at 14.58%	0.22	OK	
		LC11 at 14.58%	0.27	OK	
		LC12 at 14.58%	0.21	OK	
		LC13 at 14.58%	0.15	OK	
		LC14 at 14.58%	0.11	OK	
		LC15 at 14.58%	0.14	OK	
		LC16 at 14.58%	0.16	OK	
		LC17 at 14.58%	0.15	OK	
		LC18 at 14.58%	0.16	OK	
		LC19 at 14.58%	0.15	OK	
		LC2 at 14.58%	0.34	OK	
		LC3 at 14.58%	0.56	OK	Eq. H1-1b
		LC4 at 14.58%	0.30	OK	
		LC5 at 14.58%	0.47	OK	
		LC6 at 14.58%	0.31	OK	
		LC7 at 14.58%	0.52	OK	
		LC8 at 14.58%	0.26	OK	
		LC9 at 14.58%	0.27	OK	
		<hr/>			
	L 2-1_2X2-1_2X1_4				
	60	LC1 at 0.00%	0.85	OK	Eq. H3-8
		LC10 at 0.00%	0.10	OK	
		LC11 at 100.00%	0.14	OK	
		LC12 at 100.00%	0.10	OK	
		LC13 at 0.00%	0.04	OK	
		LC14 at 0.00%	0.03	OK	
		LC15 at 0.00%	0.03	OK	
		LC16 at 0.00%	0.08	OK	
		LC17 at 0.00%	0.07	OK	
		LC18 at 100.00%	0.08	OK	
		LC19 at 100.00%	0.05	OK	
		LC2 at 100.00%	0.46	OK	
		LC3 at 100.00%	0.87	OK	Eq. H2-1
		LC4 at 100.00%	0.50	OK	Sec. F1
		LC5 at 0.00%	0.85	OK	
		LC6 at 100.00%	0.47	OK	
		LC7 at 100.00%	0.86	OK	
		LC8 at 100.00%	0.50	OK	
		LC9 at 0.00%	0.15	OK	
		<hr/>			
	61	LC1 at 100.00%	0.45	OK	Eq. H2-1
		LC10 at 0.00%	0.11	OK	
		LC11 at 100.00%	0.07	OK	
		LC12 at 100.00%	0.12	OK	
		LC13 at 100.00%	0.04	OK	
		LC14 at 100.00%	0.03	OK	
		LC15 at 100.00%	0.04	OK	
		LC16 at 100.00%	0.05	OK	
		LC17 at 0.00%	0.05	OK	
		LC18 at 0.00%	0.05	OK	
		LC19 at 100.00%	0.07	OK	
		LC2 at 0.00%	0.53	OK	Sec. F1
		LC3 at 100.00%	0.45	OK	
		LC4 at 0.00%	0.49	OK	
		LC5 at 100.00%	0.45	OK	
		LC6 at 0.00%	0.53	OK	
		LC7 at 100.00%	0.45	OK	Eq. H2-1
		LC8 at 0.00%	0.50	OK	

PIPE 2-1_2x0.203

	LC9 at 100.00%	0.08	OK	
62	LC1 at 0.00%	0.51	OK	Sec. F1
	LC10 at 100.00%	0.10	OK	
	LC11 at 100.00%	0.11	OK	
	LC12 at 0.00%	0.08	OK	
	LC13 at 100.00%	0.04	OK	
	LC14 at 100.00%	0.03	OK	
	LC15 at 100.00%	0.03	OK	
	LC16 at 0.00%	0.08	OK	
	LC17 at 100.00%	0.07	OK	
	LC18 at 0.00%	0.04	OK	
	LC19 at 0.00%	0.08	OK	
	LC2 at 100.00%	0.59	OK	Sec. F1
	LC3 at 100.00%	0.50	OK	
	LC4 at 100.00%	0.56	OK	
	LC5 at 0.00%	0.51	OK	
	LC6 at 100.00%	0.58	OK	
	LC7 at 100.00%	0.49	OK	
	LC8 at 100.00%	0.56	OK	
	LC9 at 0.00%	0.11	OK	
12	LC1 at 60.42%	0.51	OK	Eq. H1-1b
	LC10 at 60.42%	0.12	OK	
	LC11 at 25.00%	0.07	OK	
	LC12 at 60.42%	0.14	OK	
	LC13 at 60.42%	0.09	OK	
	LC14 at 60.42%	0.07	OK	
	LC15 at 60.42%	0.08	OK	
	LC16 at 60.42%	0.11	OK	
	LC17 at 60.42%	0.08	OK	
	LC18 at 60.42%	0.05	OK	
	LC19 at 60.42%	0.09	OK	
	LC2 at 25.00%	0.23	OK	Eq. H1-1b
	LC3 at 60.42%	0.32	OK	
	LC4 at 25.00%	0.19	OK	
	LC5 at 60.42%	0.48	OK	
	LC6 at 25.00%	0.23	OK	
	LC7 at 60.42%	0.34	OK	
	LC8 at 25.00%	0.19	OK	
	LC9 at 60.42%	0.19	OK	
13	LC1 at 60.42%	0.67	OK	
	LC10 at 60.42%	0.20	OK	
	LC11 at 60.42%	0.06	OK	
	LC12 at 60.42%	0.13	OK	
	LC13 at 60.42%	0.08	OK	
	LC14 at 60.42%	0.06	OK	
	LC15 at 60.42%	0.07	OK	
	LC16 at 60.42%	0.10	OK	
	LC17 at 60.42%	0.11	OK	
	LC18 at 60.42%	0.05	OK	
	LC19 at 60.42%	0.07	OK	
	LC2 at 60.42%	0.69	OK	Eq. H1-1b
	LC3 at 60.42%	0.52	OK	
	LC4 at 60.42%	0.54	OK	
	LC5 at 60.42%	0.65	OK	
	LC6 at 60.42%	0.68	OK	
	LC7 at 60.42%	0.54	OK	
	LC8 at 60.42%	0.56	OK	
	LC9 at 60.42%	0.19	OK	
23	LC1 at 60.42%	0.54	OK	
	LC10 at 60.42%	0.20	OK	

	LC11 at 60.42%	0.20	OK	
	LC12 at 60.42%	0.12	OK	
	LC13 at 60.42%	0.08	OK	
	LC14 at 60.42%	0.06	OK	
	LC15 at 60.42%	0.08	OK	
	LC16 at 60.42%	0.06	OK	
	LC17 at 60.42%	0.12	OK	
	LC18 at 60.42%	0.12	OK	
	LC19 at 60.42%	0.08	OK	
	LC2 at 60.42%	0.72	OK	Eq. H1-1b
	LC3 at 60.42%	0.69	OK	
	LC4 at 60.42%	0.58	OK	
	LC5 at 60.42%	0.56	OK	
	LC6 at 60.42%	0.71	OK	
	LC7 at 60.42%	0.67	OK	
	LC8 at 60.42%	0.60	OK	
	LC9 at 60.42%	0.07	OK	
<hr/>				
24	LC1 at 60.42%	0.68	OK	
	LC10 at 60.42%	0.11	OK	
	LC11 at 60.42%	0.05	OK	
	LC12 at 60.42%	0.19	OK	
	LC13 at 60.42%	0.06	OK	
	LC14 at 60.42%	0.05	OK	
	LC15 at 60.42%	0.06	OK	
	LC16 at 60.42%	0.10	OK	
	LC17 at 60.42%	0.06	OK	
	LC18 at 60.42%	0.04	OK	
	LC19 at 60.42%	0.11	OK	
	LC2 at 60.42%	0.61	OK	
	LC3 at 60.42%	0.58	OK	
	LC4 at 60.42%	0.74	OK	Eq. H1-1b
	LC5 at 60.42%	0.67	OK	
	LC6 at 60.42%	0.63	OK	
	LC7 at 60.42%	0.59	OK	
	LC8 at 60.42%	0.72	OK	
	LC9 at 60.42%	0.18	OK	
<hr/>				
14	LC1 at 60.42%	0.55	OK	
	LC10 at 60.42%	0.11	OK	
	LC11 at 60.42%	0.18	OK	
	LC12 at 60.42%	0.19	OK	
	LC13 at 60.42%	0.06	OK	
	LC14 at 60.42%	0.05	OK	
	LC15 at 60.42%	0.07	OK	
	LC16 at 60.42%	0.04	OK	
	LC17 at 60.42%	0.08	OK	
	LC18 at 60.42%	0.11	OK	
	LC19 at 60.42%	0.11	OK	
	LC2 at 60.42%	0.68	OK	
	LC3 at 60.42%	0.68	OK	
	LC4 at 60.42%	0.78	OK	Eq. H1-1b
	LC5 at 60.42%	0.57	OK	
	LC6 at 60.42%	0.69	OK	
	LC7 at 60.42%	0.66	OK	
	LC8 at 60.42%	0.77	OK	
	LC9 at 60.42%	0.05	OK	
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26	LC1 at 25.00%	0.35	OK	
	LC10 at 60.42%	0.19	OK	
	LC11 at 60.42%	0.16	OK	
	LC12 at 25.00%	0.08	OK	
	LC13 at 60.42%	0.09	OK	
	LC14 at 60.42%	0.07	OK	

	LC15 at 60.42%	0.09	OK	
	LC16 at 60.42%	0.08	OK	
	LC17 at 60.42%	0.12	OK	
	LC18 at 60.42%	0.11	OK	
	LC19 at 60.42%	0.07	OK	
	LC2 at 60.42%	0.51	OK	Eq. H1-1b
	LC3 at 25.00%	0.40	OK	Eq. H1-1b
	LC4 at 60.42%	0.32	OK	
	LC5 at 25.00%	0.36	OK	
	LC6 at 60.42%	0.49	OK	
	LC7 at 25.00%	0.39	OK	
	LC8 at 60.42%	0.34	OK	
	LC9 at 60.42%	0.12	OK	
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29	LC1 at 60.42%	0.69	OK	
	LC10 at 62.50%	0.05	OK	
	LC11 at 60.42%	0.22	OK	
	LC12 at 60.42%	0.20	OK	
	LC13 at 60.42%	0.08	OK	
	LC14 at 60.42%	0.06	OK	
	LC15 at 60.42%	0.08	OK	
	LC16 at 60.42%	0.12	OK	
	LC17 at 60.42%	0.03	OK	
	LC18 at 60.42%	0.12	OK	
	LC19 at 60.42%	0.11	OK	
	LC2 at 60.42%	0.51	OK	
	LC3 at 60.42%	0.76	OK	Eq. H1-1b
	LC4 at 60.42%	0.66	OK	
	LC5 at 60.42%	0.67	OK	
	LC6 at 60.42%	0.53	OK	
	LC7 at 60.42%	0.74	OK	
	LC8 at 60.42%	0.65	OK	
	LC9 at 60.42%	0.21	OK	
<hr/>				
30	LC1 at 60.42%	0.81	OK	
	LC10 at 60.42%	0.18	OK	
	LC11 at 60.42%	0.22	OK	
	LC12 at 62.50%	0.05	OK	
	LC13 at 60.42%	0.06	OK	
	LC14 at 60.42%	0.05	OK	
	LC15 at 60.42%	0.06	OK	
	LC16 at 60.42%	0.13	OK	
	LC17 at 60.42%	0.11	OK	
	LC18 at 60.42%	0.13	OK	
	LC19 at 25.00%	0.03	OK	
	LC2 at 60.42%	0.66	OK	
	LC3 at 60.42%	0.89	OK	Eq. H1-1b
	LC4 at 60.42%	0.53	OK	
	LC5 at 60.42%	0.79	OK	
	LC6 at 60.42%	0.64	OK	
	LC7 at 60.42%	0.87	OK	
	LC8 at 60.42%	0.55	OK	
	LC9 at 60.42%	0.22	OK	
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32	LC1 at 60.42%	0.18	OK	
	LC10 at 60.42%	0.09	OK	
	LC11 at 60.42%	0.18	OK	
	LC12 at 60.42%	0.19	OK	
	LC13 at 60.42%	0.09	OK	
	LC14 at 60.42%	0.07	OK	
	LC15 at 60.42%	0.06	OK	
	LC16 at 60.42%	0.09	OK	
	LC17 at 60.42%	0.08	OK	
	LC18 at 60.42%	0.11	OK	

	LC19 at 60.42%	0.12	OK	
	LC2 at 60.42%	0.26	OK	
	LC3 at 60.42%	0.38	OK	
	LC4 at 60.42%	0.44	OK	Eq. H1-1b
	LC5 at 60.42%	0.20	OK	
	LC6 at 60.42%	0.29	OK	
	LC7 at 60.42%	0.36	OK	
	LC8 at 60.42%	0.42	OK	
	LC9 at 60.42%	0.10	OK	
<hr/>				
42	LC1 at 60.42%	0.25	OK	
	LC10 at 25.00%	0.09	OK	
	LC11 at 60.42%	0.16	OK	
	LC12 at 60.42%	0.20	OK	
	LC13 at 60.42%	0.09	OK	
	LC14 at 60.42%	0.07	OK	
	LC15 at 60.42%	0.07	OK	
	LC16 at 60.42%	0.08	OK	
	LC17 at 25.00%	0.07	OK	
	LC18 at 60.42%	0.10	OK	
	LC19 at 60.42%	0.12	OK	
	LC2 at 60.42%	0.35	OK	
	LC3 at 60.42%	0.38	OK	
	LC4 at 60.42%	0.55	OK	Eq. H1-1b
	LC5 at 60.42%	0.27	OK	
	LC6 at 60.42%	0.38	OK	
	LC7 at 60.42%	0.36	OK	
	LC8 at 60.42%	0.53	OK	
	LC9 at 60.42%	0.11	OK	
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38	LC1 at 60.42%	0.55	OK	Eq. H1-1b
	LC10 at 60.42%	0.14	OK	
	LC11 at 25.00%	0.08	OK	
	LC12 at 60.42%	0.13	OK	
	LC13 at 60.42%	0.09	OK	
	LC14 at 60.42%	0.07	OK	
	LC15 at 60.42%	0.09	OK	
	LC16 at 60.42%	0.12	OK	
	LC17 at 60.42%	0.09	OK	
	LC18 at 60.42%	0.06	OK	
	LC19 at 60.42%	0.09	OK	
	LC2 at 60.42%	0.18	OK	
	LC3 at 60.42%	0.36	OK	
	LC4 at 60.42%	0.27	OK	
	LC5 at 60.42%	0.53	OK	
	LC6 at 62.50%	0.17	OK	
	LC7 at 60.42%	0.38	OK	
	LC8 at 60.42%	0.26	OK	
	LC9 at 60.42%	0.20	OK	
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44	LC1 at 62.50%	0.53	OK	Eq. H1-1b
	LC10 at 60.42%	0.20	OK	
	LC11 at 60.42%	0.22	OK	
	LC12 at 25.00%	0.09	OK	
	LC13 at 60.42%	0.09	OK	
	LC14 at 60.42%	0.07	OK	
	LC15 at 60.42%	0.09	OK	
	LC16 at 60.42%	0.09	OK	
	LC17 at 60.42%	0.13	OK	
	LC18 at 60.42%	0.13	OK	
	LC19 at 25.00%	0.07	OK	
	LC2 at 60.42%	0.55	OK	
	LC3 at 60.42%	0.57	OK	Eq. H1-1b
	LC4 at 60.42%	0.37	OK	

		LC5 at 62.50%	0.53	OK	
		LC6 at 60.42%	0.53	OK	
		LC7 at 60.42%	0.55	OK	
		LC8 at 60.42%	0.39	OK	
		LC9 at 60.42%	0.14	OK	
PIPE 2x0.154	45	LC1 at 96.25%	0.78	OK	Eq. H1-1b
		LC10 at 66.25%	0.18	OK	
		LC11 at 3.75%	0.22	OK	
		LC12 at 3.75%	0.27	OK	
		LC13 at 3.75%	0.12	OK	
		LC14 at 3.75%	0.09	OK	
		LC15 at 96.25%	0.11	OK	
		LC16 at 96.25%	0.15	OK	
		LC17 at 96.25%	0.11	OK	
		LC18 at 3.75%	0.14	OK	
		LC19 at 3.75%	0.16	OK	
		LC2 at 3.75%	0.54	OK	
		LC3 at 96.25%	0.55	OK	
		LC4 at 3.75%	0.80	OK	Eq. H1-1b
		LC5 at 96.25%	0.75	OK	
		LC6 at 3.75%	0.57	OK	
		LC7 at 96.25%	0.57	OK	
		LC8 at 3.75%	0.77	OK	
		LC9 at 96.25%	0.27	OK	
		46	LC1 at 3.75%	0.77	OK
LC10 at 96.25%	0.28		OK		
LC11 at 96.25%	0.23		OK		
LC12 at 33.75%	0.20		OK		
LC13 at 3.75%	0.12		OK		
LC14 at 3.75%	0.09		OK		
LC15 at 3.75%	0.12		OK		
LC16 at 3.75%	0.15		OK		
LC17 at 96.25%	0.16		OK		
LC18 at 96.25%	0.14		OK		
LC19 at 3.75%	0.12		OK		
LC2 at 96.25%	0.80		OK	Eq. H1-1b	
LC3 at 3.75%	0.56		OK		
LC4 at 33.75%	0.58		OK		
LC5 at 3.75%	0.74		OK		
LC6 at 96.25%	0.77		OK		
LC7 at 3.75%	0.58		OK		
LC8 at 96.25%	0.56	OK			
LC9 at 3.75%	0.25	OK			
47	LC1 at 33.75%	0.56	OK		
	LC10 at 3.75%	0.26	OK		
	LC11 at 33.75%	0.29	OK		
	LC12 at 96.25%	0.28	OK		
	LC13 at 3.75%	0.12	OK		
	LC14 at 3.75%	0.09	OK		
	LC15 at 3.75%	0.11	OK		
	LC16 at 33.75%	0.13	OK		
	LC17 at 3.75%	0.17	OK		
	LC18 at 33.75%	0.16	OK		
	LC19 at 96.25%	0.15	OK		
	LC2 at 3.75%	0.82	OK	Eq. H1-1b	
	LC3 at 33.75%	0.75	OK	Eq. H1-1b	
	LC4 at 96.25%	0.76	OK	Eq. H1-1b	
	LC5 at 33.75%	0.56	OK		
	LC6 at 3.75%	0.80	OK		
LC7 at 33.75%	0.71	OK			
LC8 at 96.25%	0.73	OK			

T2L 3X3X1_4X3_8

	LC9 at 33.75%	0.22	OK	
63	LC1 at 100.00%	0.22	OK	Eq. H2-1
	LC10 at 0.00%	0.17	OK	
	LC11 at 0.00%	0.15	OK	
	LC12 at 0.00%	0.18	OK	
	LC13 at 0.00%	0.12	OK	
	LC14 at 0.00%	0.09	OK	
	LC15 at 0.00%	0.12	OK	
	LC16 at 0.00%	0.12	OK	
	LC17 at 0.00%	0.12	OK	
	LC18 at 0.00%	0.11	OK	
	LC19 at 0.00%	0.12	OK	
	LC2 at 0.00%	0.28	OK	
	LC3 at 0.00%	0.09	OK	
	LC4 at 0.00%	0.28	OK	Eq. H2-1
	LC5 at 100.00%	0.20	OK	
	LC6 at 0.00%	0.25	OK	
	LC7 at 0.00%	0.07	OK	
	LC8 at 0.00%	0.25	OK	
	LC9 at 0.00%	0.17	OK	
64	LC1 at 0.00%	0.16	OK	
	LC10 at 0.00%	0.15	OK	
	LC11 at 0.00%	0.17	OK	
	LC12 at 0.00%	0.17	OK	
	LC13 at 0.00%	0.12	OK	
	LC14 at 0.00%	0.09	OK	
	LC15 at 100.00%	0.15	OK	
	LC16 at 0.00%	0.15	OK	
	LC17 at 0.00%	0.14	OK	
	LC18 at 0.00%	0.14	OK	
	LC19 at 0.00%	0.15	OK	
	LC2 at 100.00%	0.10	OK	
	LC3 at 0.00%	0.22	OK	Eq. H2-1
	LC4 at 100.00%	0.23	OK	Eq. H2-1
	LC5 at 0.00%	0.13	OK	
	LC6 at 100.00%	0.08	OK	
	LC7 at 100.00%	0.20	OK	
	LC8 at 100.00%	0.22	OK	
	LC9 at 0.00%	0.16	OK	
65	LC1 at 0.00%	0.22	OK	
	LC10 at 0.00%	0.17	OK	
	LC11 at 0.00%	0.18	OK	
	LC12 at 0.00%	0.15	OK	
	LC13 at 0.00%	0.12	OK	
	LC14 at 0.00%	0.09	OK	
	LC15 at 0.00%	0.11	OK	
	LC16 at 0.00%	0.12	OK	
	LC17 at 0.00%	0.12	OK	
	LC18 at 0.00%	0.12	OK	
	LC19 at 0.00%	0.11	OK	
	LC2 at 100.00%	0.22	OK	Eq. H2-1
	LC3 at 0.00%	0.29	OK	Eq. H2-1
	LC4 at 100.00%	0.08	OK	
	LC5 at 0.00%	0.19	OK	
	LC6 at 100.00%	0.20	OK	
	LC7 at 0.00%	0.26	OK	
	LC8 at 100.00%	0.06	OK	
	LC9 at 0.00%	0.18	OK	

Current Date: 4/6/2018 3:18 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2268\CT2268 (LTE 6C-7C) (MOD).et

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
9	-9.69E-05	0.00	-8.0828	0
10	6.9999	0.00	4.0415	0
15	-7.00	0.00	4.0413	0
16	7.866	0.00	4.5413	0
17	-1.299	0.00	0.75	0
18	0.00	0.00	-1.50	0
19	1.299	0.00	0.75	0
20	0.00	0.00	-9.0828	0
21	-7.8659	0.00	4.5415	0
36	4.694	-3.00	-0.3525	0
37	2.6524	-3.00	-3.8888	0
38	4.694	5.00	-0.3525	0
39	2.6524	5.00	-3.8888	0
41	0.624	-3.00	-7.4021	0
42	0.624	5.00	-7.4021	0
59	-2.6523	-3.00	-3.8889	0
60	-4.694	-3.00	-0.3526	0
61	-2.6523	5.00	-3.8889	0
62	-4.694	5.00	-0.3526	0
65	-6.7224	-3.00	3.1606	0
66	-6.7224	5.00	3.1606	0
71	-2.0417	-3.00	4.2414	0

72	2.0416	-3.00	4.2414	0
73	-2.0417	5.00	4.2414	0
74	2.0416	5.00	4.2414	0
77	6.0984	-3.00	4.2415	0
78	6.0984	5.00	4.2415	0
91	-0.6239	-3.00	-7.4021	0
92	-0.6239	5.00	-7.4021	0
99	6.7224	-3.00	3.1607	0
100	6.7224	5.00	3.1607	0
103	-6.0985	-3.00	4.2414	0
104	-6.0985	5.00	4.2414	0
105	-6.775	0.00	3.651	0
106	-6.5492	0.00	4.0413	0
107	-0.2254	0.00	-7.6925	0
108	0.2253	0.00	-7.6925	0
109	6.7745	0.00	3.6511	0
110	6.5491	0.00	4.0415	0
111	6.0984	3.00	4.0415	0
113	6.5491	3.00	3.2608	0
115	6.7745	3.00	3.6511	0
116	6.5491	3.00	4.0415	0
123	0.4507	3.00	-7.3021	0
125	0.2253	3.00	-7.6925	0
126	-0.4507	3.00	-7.3021	0
128	-0.2254	3.00	-7.6925	0
135	-6.5499	3.00	3.2606	0
137	-6.775	3.00	3.651	0
138	-6.0985	3.00	4.0414	0
140	-6.5492	3.00	4.0413	0
141	-6.0498	0.00	3.4928	0
146	-8.07E-05	0.00	-6.9857	0
151	6.0498	0.00	3.4929	0
152	-1.299	-2.50	0.75	0
153	0.00	-2.50	-1.50	0
154	1.299	-2.50	0.75	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
17	1	1	1	1	1	1
18	1	1	1	1	1	1
19	1	1	1	1	1	1
152	1	1	1	1	1	1
153	1	1	1	1	1	1
154	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
3	10	9		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
4	10	15		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
5	15	9		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
6	20	18		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
7	16	19		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	21	17		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
12	42	41		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
13	39	37		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
23	62	60		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
24	61	59		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
14	38	36		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
26	66	65		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
29	74	72		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
30	73	71		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
32	78	77		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
42	100	99		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
38	92	91		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
44	104	103		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
45	115	125		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
46	128	137		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
47	140	116		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
60	135	138		L 2-1_2X2-1_2X1_4	A36	0.00	0.00	0.00
61	126	123		L 2-1_2X2-1_2X1_4	A36	0.00	0.00	0.00
62	113	111		L 2-1_2X2-1_2X1_4	A36	0.00	0.00	0.00
63	153	146		T2L 3X3X1_4X3_8	A36	0.00	0.00	0.00
64	154	151		T2L 3X3X1_4X3_8	A36	0.00	0.00	0.00
65	152	141		T2L 3X3X1_4X3_8	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
12	0.00	2	-0.50	0.00	-0.866
13	0.00	2	-0.50	0.00	-0.866
23	0.00	2	-0.50	0.00	0.866
24	0.00	2	-0.50	0.00	0.866
14	0.00	2	-0.50	0.00	-0.866
26	0.00	2	-0.50	0.00	0.866
42	0.00	2	-0.50	0.00	-0.866
38	0.00	2	-0.50	0.00	0.866
60	90.00	0	0.00	0.00	0.00
61	180.00	0	0.00	0.00	0.00
62	180.00	0	0.00	0.00	0.00

Bethel, CT : Assessor Database

Property Search:

Parcel ID:	Alternate ID:	Owner 1 Name:	Street Number:	Street Name:
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	SPRING HILL LANE <input type="text" value="v"/>

<input type="button" value="Search"/>	<input type="button" value="Reset"/>
---------------------------------------	--------------------------------------

Property Detail:

Parcel ID:	Alternate ID/Map Block Lot:	Card:	Card:	Street Name:	Street Number:	Zoning:	LUC:	Acres:
32 47A 121	R06064			SPRING HILL LANE	38	R-40	PP FOR PUBLIC UTILITIES	1.63

Owner Information:

Owner 1 Name:	BLUE SKY TOWERS LLC
Owner 2 Name:	
Street 1:	158 MAIN STREET STE #2
Street 2:	
City:	NORFOLK
State:	MA
Zip:	02056
Volume:	1051
Page:	496
Deed Date:	0000-00-00

Property Images:

Picture:
There is no picture available.

Sketch:
There is no sketch available.

Valuation:

Appraised Land:	\$151,300.00
Appraised Land PA490:	\$0.00
Appraised Bldg:	\$942,200.00
Appraised Total:	\$1,093,500.00
Total Assessment:	\$765,450.00

Sales History:

Book:	Page:	Sale Date:	Price:	Validity:	Sale Type:
1051	496	10/03/2014	220,720	23	2
979	229	10/02/2009	240,000	03	1
455	393	12/20/1988			

Out-Buildings:

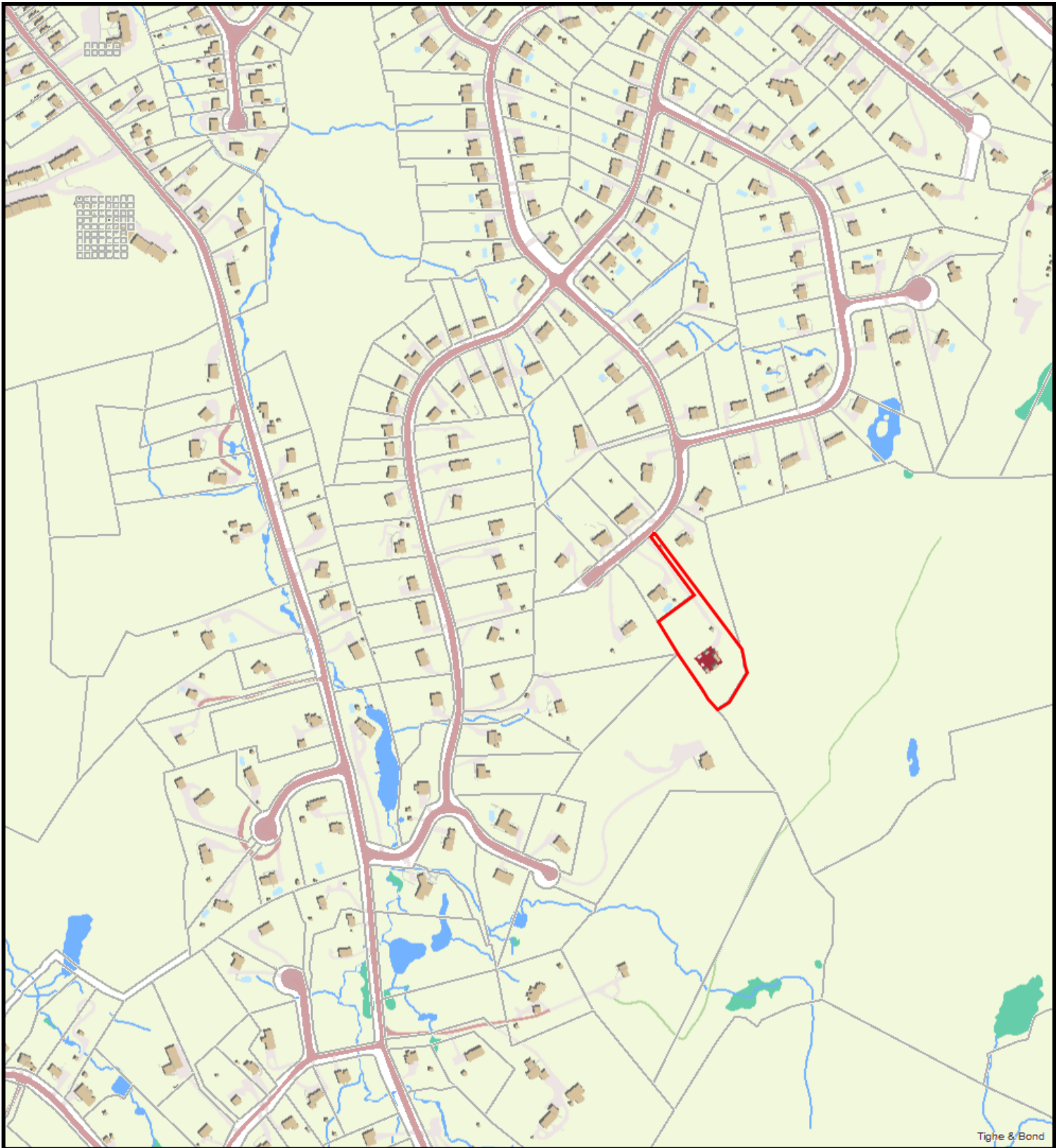
Code:	Description:	Units:	Year Built:	Size1:	Size2:	Area:	Grade:	Condition:
RS1	FRAME UTILITY SHED	1	2006	9	23	207	B	GOOD (Comm)
RS1	FRAME UTILITY SHED	1	2006	8	15	120	B	GOOD (Comm)
RS1	FRAME UTILITY SHED	1	2006	9	12	108	B	GOOD (Comm)
RS1	FRAME UTILITY SHED	1	2006	10	12	120	B	GOOD (Comm)
TT4	TOWER CELLULAR	1	2011	1	120	120	A	GOOD (Comm)

The providers of this database: Tyler CLT, Big Room Studios, and Bethel, CT assume no liability for any error or omission in the information provided here.

Comments regarding this service should be directed to: Assessor@betheltownhall.org

Fri. July 13, 2018 : 06:51 AM : 0.18s : 10mb





SPRING HILL LANE


7/13/2018 6:56:49 AM

Scale: 1"=500'

Scale is approximate

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






**UNITED STATES
POSTAL SERVICE®**

Click-N-Ship®

P

USPS.com 9405 8036 9930 0666 5676 88 0067 0000 0020 6801
US POSTAGE
 Flat Rate Env
 07/18/2018



Mailed from 06268 062S00000001309

PRIORITY MAIL 3-DAY™

Expected Delivery Date: 07/21/18

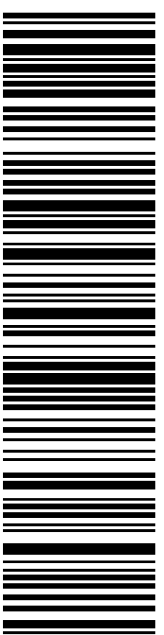
MARK J ROBERTS
 QC DEVELOPMENT
 PO BOX 916
 STORRS CT 06268-0916

0004

C011

SHIP TO: THE HONORABLE MATT KNICKERBOCKER
 TOWN OF BETHEL
 1 SCHOOL ST
 BETHEL CT 06801-1828

USPS TRACKING #



9405 8036 9930 0666 5676 88

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.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

**USPS TRACKING # / Insurance Number:
 9405 8036 9930 0666 5676 88**

Trans. #:	439720001	Priority Mail® Postage:	\$6.70
Print Date:	07/18/2018	Insurance Fee	\$0.00
Ship Date:	07/18/2018	Total	\$6.70
Expected Delivery Date:	07/21/2018		
Insured Value:	\$50.00		

From: MARK J ROBERTS
 QC DEVELOPMENT
 PO BOX 916
 STORRS CT 06268-0916

To: THE HONORABLE MATT KNICKERBOCKER
 TOWN OF BETHEL
 1 SCHOOL ST
 BETHEL CT 06801-1828

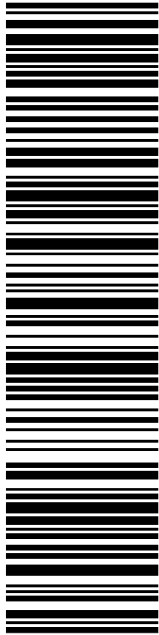
* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!
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SHIP TO: JAMES BURGESS
BLUE SKY TOWERS
158 MAIN ST
STE 2
NORFOLK MA 02056-1301


USPS TRACKING #



9405 8036 9930 0666 5677 01

P

USPS.com
US POSTAGE \$6.70
Flat Rate Env
07/18/2018



Mailed from 06268 062S0000001311

PRIORITY MAIL 2-DAY™

Expected Delivery Date: 07/20/18

R009

0004

Click-N-Ship®

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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.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # / Insurance Number:
9405 8036 9930 0666 5677 01

Trans. #:	439720001	Priority Mail® Postage:	\$6.70
Print Date:	07/18/2018	Insurance Fee	\$0.00
Ship Date:	07/18/2018	Total	\$6.70
Expected Delivery Date:	07/20/2018		
Insured Value:	\$50.00		

From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: JAMES BURGESS
BLUE SKY TOWERS
158 MAIN ST
STE 2
NORFOLK MA 02056-1301

* 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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