QC Development
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Storrs, CT 06268
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April 12, 2019

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) – CT1115
31 New Hartford Road, Barkhamsted, CT 06063
N 41.89361111
W 72.9966667

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 114-foot level of the existing 144-foot Monopole at 31 New Hartford Road, Barkhamsted, CT. The tower is owned by American Tower and the property is owned by Regional Refuse Disposal District #1. AT&T now intends to remove three (3) Powerwave and (3) KMW antennas and replace them with four (4) Kathrein 800-10965 antennas and two (2) Kathrein 800-10964 antennas. AT&T will also swap (3) Ericsson RRUS-11 for (3) Ericsson 4449-B5/B12 Remote Radio Units (RRU) and add (3) Ericsson 4478-B14 and (3) Ericsson 8843 B2/B66A RRUs. The new antennas and RRUs will also be installed at the 114-foot level of the tower.

This facility was approved by the Connecticut Siting Council in Docket # 182 on July 25, 1998 and a subsequent height extension was approved in Docket #182A on May 7, 2002. These approvals included conditions that the tower be camouflaged as a tree and that the tower height not exceed 144 feet above ground level. Since no modification to the overall facility height or camouflaging is proposed, 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 Donald Stein, First Selectman of the Town of Barkhamsted, and the Barkhamsted Zoning Office as well as the property and tower owner.

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

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

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

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

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

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

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

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

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

Sincerely,

Mark Roberts
QC Development
Consultant for AT&T

Attachments

Cc: Donald Stein - Elected Official
Debra Brydon – Zoning Officer
Regional Refuse Disposal District #1 - Property Owner
American Tower - Tower 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*							9.16%
AT&T GSM	1	283	114	0.0087	880	0.5867	0.15%
AT&T UMTS	2	565	114	0.0348	880	0.5867	0.59%
AT&T UMTS	4	525	114	0.0647	1900	1.0000	0.65%
AT&T LTE	1	1313	114	0.0405	734	0.4893	0.83%
AT&T LTE	2	875	114	0.0540	1900	1.0000	0.54%
Site Total							11.92%

*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*							9.16%
AT&T UMTS	2	565	114	0.0348	850	0.5667	0.61%
AT&T LTE	2	2951	114	0.1820	700	0.4667	3.90%
AT&T LTE	1	1000	114	0.0308	850	0.5667	0.54%
AT&T 5G	1	1000	114	0.0308	850	0.5667	0.54%
AT&T LTE	2	3664	114	0.2259	1900	1.0000	2.26%
AT&T LTE	1	3837	114	0.1183	2100	1.0000	1.18%
Site Total							18.21%

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

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

SITE NAME: BARKHAMSTED
SITE NUMBER: CT1115
127 NEW HARTFORD ROAD
BARKHAMSTED, CT 06063
FA CODE: 10035345
PACE ID: MRCTB035130, MRCTB035129, MRCTB035168, MRCTB035209, MRCTB035342
PROJECT: LTE 2C, 3C, 4C, 5C

VICINITY MAP N.T.S.

SITE COORDINATES:
LATITUDE: 41°-53'-37.172" N
LONGITUDE: -72°-59'-47.295" W
(PER EXISTING DRAWINGS PROVIDED)

ELEVATION DATA:
GRADE ELEVATION AT TOWER = 780'± A.M.S.L.
(PER EXISTING DRAWINGS PROVIDED)

SITE INFORMATION

- SWAP (3) EXISTING GSM ANTENNAS & (3) EXISTING LTE ANTENNAS FOR (2) 4' 800-10964 & (4) 6' 800-10965 OCTO ANTENNAS
- SWAP (3) RRUS-11S FOR (3) 700/850 B5/B12-4449 RRUS AT TOWER TOP
- ADD (3) B14-4478 RRUS AT TOWER TOP
- ADD (3) 1900/2100 B2/B66A-8843 RRUS AT TOWER TOP
- ADD (1) DC6-48-60-18-8C SQUID WITH (1) 2" CONDUIT FOR 2 DC/1 FIBER
- ADD (1) DC6-48-60-0-8C-EV DC ONLY SQUID W/ (1) 2" CONDUIT FOR 2 DC
- SWAP DUS FOR RBS 6630, ADD XMU, ADD 5G RBS 6630

PROJECT DESCRIPTION

SITE NAME:
BARKHAMSTED

SITE NUMBER:
CT1115

SITE ADDRESS:
127 NEW HARTFORD ROAD
BARKHAMSTED, CT 06063

TOWER OWNER:
REGIONAL REFUSE DISPOSAL DISTR
31 NEW HARTFORD RD
BARKHAMSTED, CT 06063

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

PROJECT INFORMATION

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

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

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

SHEET INDEX

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

SAI
27 NORTHWESTERN DRIVE
SALEM, NH 03079

CT1115
BARKHAMSTED

CONSTRUCTION DRAWINGS

0	04/11/19	ISSUED AS FINAL
B	03/22/19	REVISED PER COMMENTS
A	02/06/19	ISSUED FOR REVIEW

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

STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED PROFESSIONAL ENGINEER

JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	AMD
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50093843
SITE ADDRESS:	

127 NEW HARTFORD ROAD
BARKHAMSTED, CT 06063

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   PROJECT MANAGEMENT – SAI COMMUNICATIONS, INC.
   CONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
   OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF PROJECT MANAGEMENT.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
5. DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY PROJECT MANAGEMENT.
9. CONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. CONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. CONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH PROJECT MANAGEMENT.
10. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
11. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
14. CONTRACTOR SHALL NOTIFY DEWBERRY 48 HOURS IN ADVANCE OF POURING CONCRETE, OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEER REVIEW.
15. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. CONTRACTOR SHALL NOTIFY PROJECT MANAGEMENT OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
16. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY CONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH LAND LORD. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
17. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

SITE WORK GENERAL NOTES:

1. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO:
   A) FALL PROTECTION
   B) CONFINED SPACE
   C) ELECTRICAL SAFETY
   D) TRENCHING & EXCAVATION.
3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, TOP SOIL AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
6. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.
7. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE AT&T SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE TRANSMISSION EQUIPMENT AND TOWER AREAS.
9. 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.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION, SEE SOIL COMPACTION NOTES.
11. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
12. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. 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.
3. 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" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. 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 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALL .....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.
5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. 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.
7. 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.
8. AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
9. 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:

1. ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS UNLESS NOTED OTHERWISE. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".
2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.
3. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"Ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
4. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
5. 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.
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.
7. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

1. EXCAVATE AS REQUIRED TO REMOVE VEGETATION & TOPSOIL EXPOSE UNDISTURBED NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.
2. COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.
3. AS AN ALTERNATIVE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.
4. 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.
5. AS AN ALTERNATIVE TO ITEMS 2 AND 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 AND REPLACED WITH A WELL-GRADED GRANULAR FILL, AND COMPACTED AS STATED ABOVE.

COMPACTION EQUIPMENT:

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

CONSTRUCTION NOTES:

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

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. CONTRACTOR SHALL SUBMIT MODIFICATIONS TO PROJECT MANAGEMENT FOR APPROVAL.
3. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
4. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
5. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
6. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
7. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA, AND MATCH EXISTING INSTALLATION REQUIREMENTS.
8. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
9. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
10. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
11. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
12. POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL.) PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS.
13. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (SIZE 6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
14. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
15. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
16. ALL POWER AND POWER GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
17. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
18. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
19. 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.
20. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
21. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
22. 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.
23. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
24. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
25. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
26. CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
27. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
28. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
29. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
30. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
31. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM PROJECT MANAGEMENT BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
32. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

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CONSTRUCTION DRAWINGS

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A	02/06/19	ISSUED FOR REVIEW

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STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED PROFESSIONAL ENGINEER
JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	AMD
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50093843
SITE ADDRESS:	

127 NEW HARTFORD ROAD
BARKHAMSTED, CT 06063

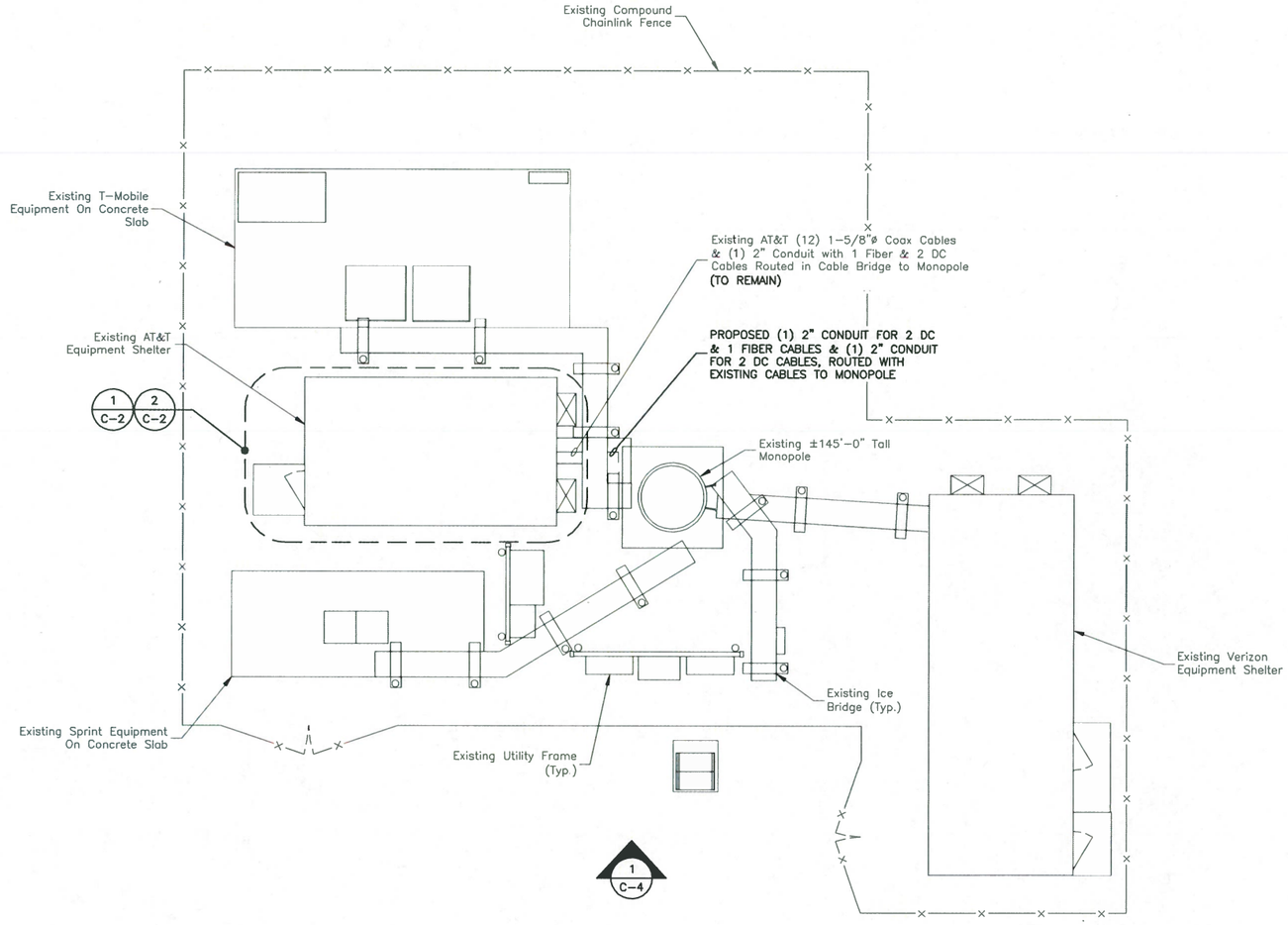
SHEET TITLE

GENERAL NOTES

SHEET NUMBER

G-1

APPROXIMATE TRUE NORTH



COMPOUND PLAN 1

SCALE: 3/32"=1' FOR 11"x17"
3/16"=1' FOR 22"x34"

0' 4' 8' 12'

NOTES:

1. NORTH SHOWN AS APPROXIMATE.
2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
3. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, TMA'S, RRU'S, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY OTHERS & THE MOUNT MODIFICATION REPORT BY HUDSON DESIGN GROUP LLC DATED 02/14/19.

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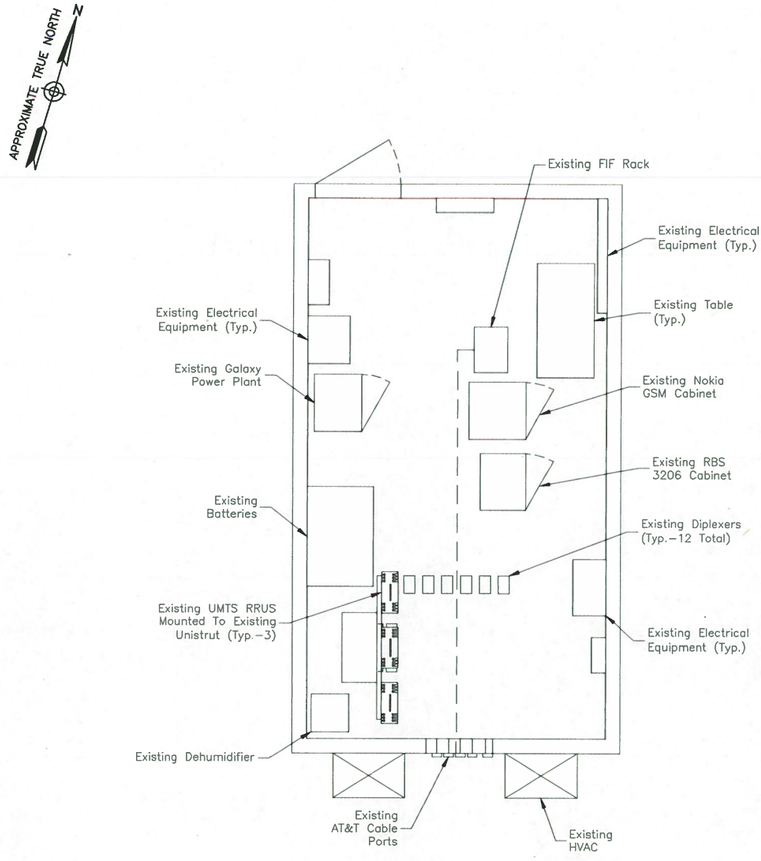
SHEET TITLE

COMPOUND PLAN

SHEET NUMBER

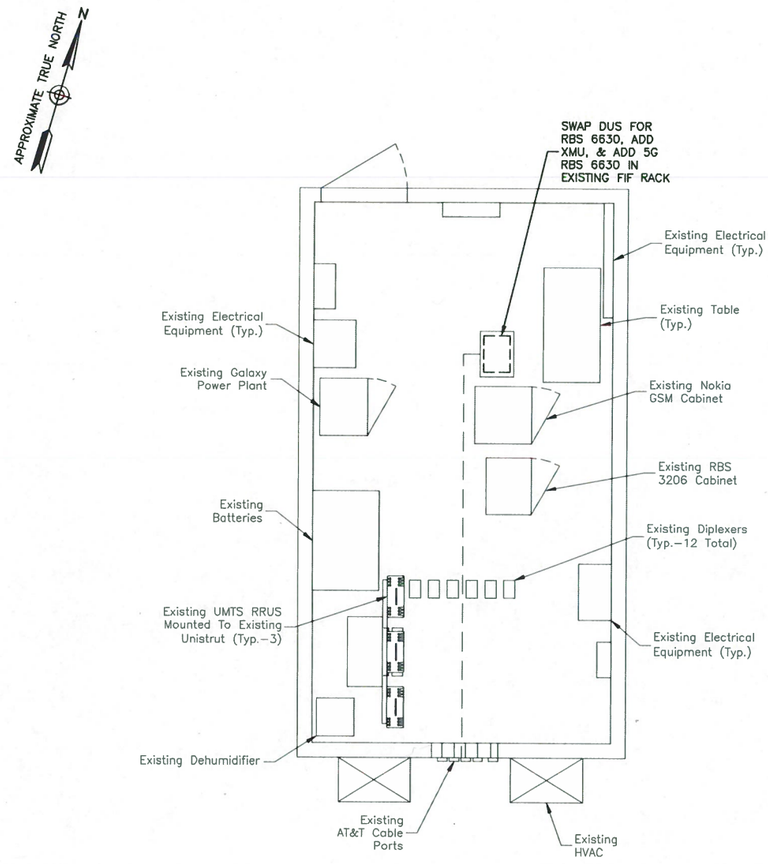
C-1



EXISTING SHELTER LAYOUT 1

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

0' 2' 4' 6'



PROPOSED SHELTER LAYOUT 2

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

0' 2' 4' 6'

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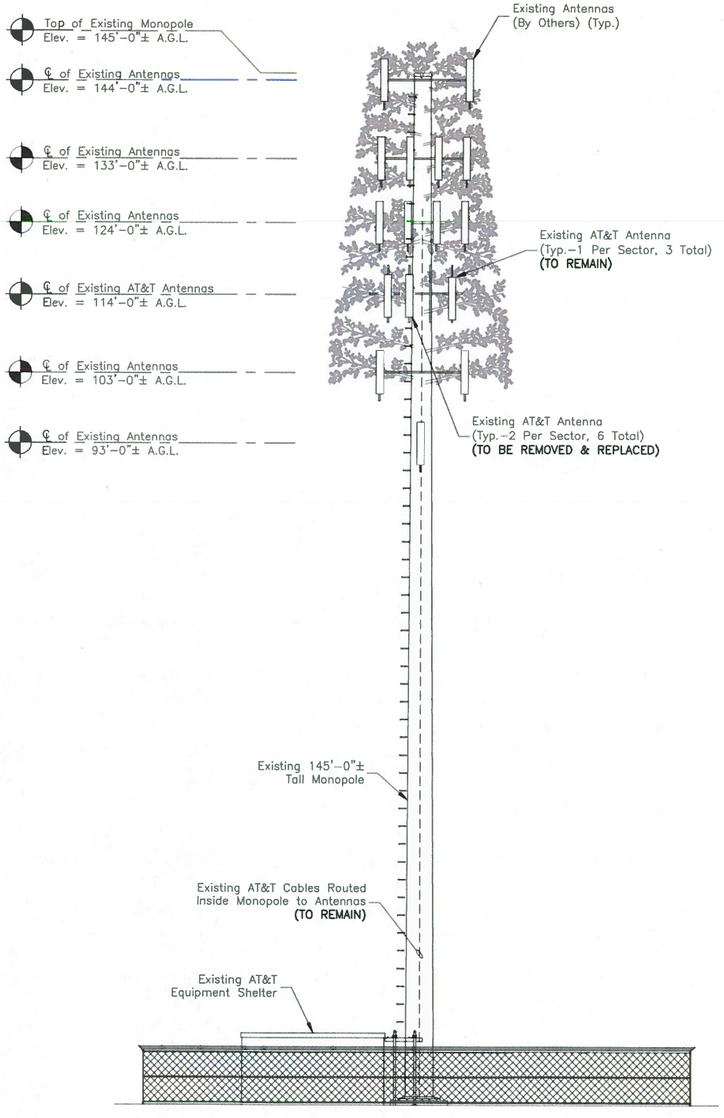
SHEET TITLE

EXISTING & PROPOSED EQUIPMENT LAYOUTS

SHEET NUMBER

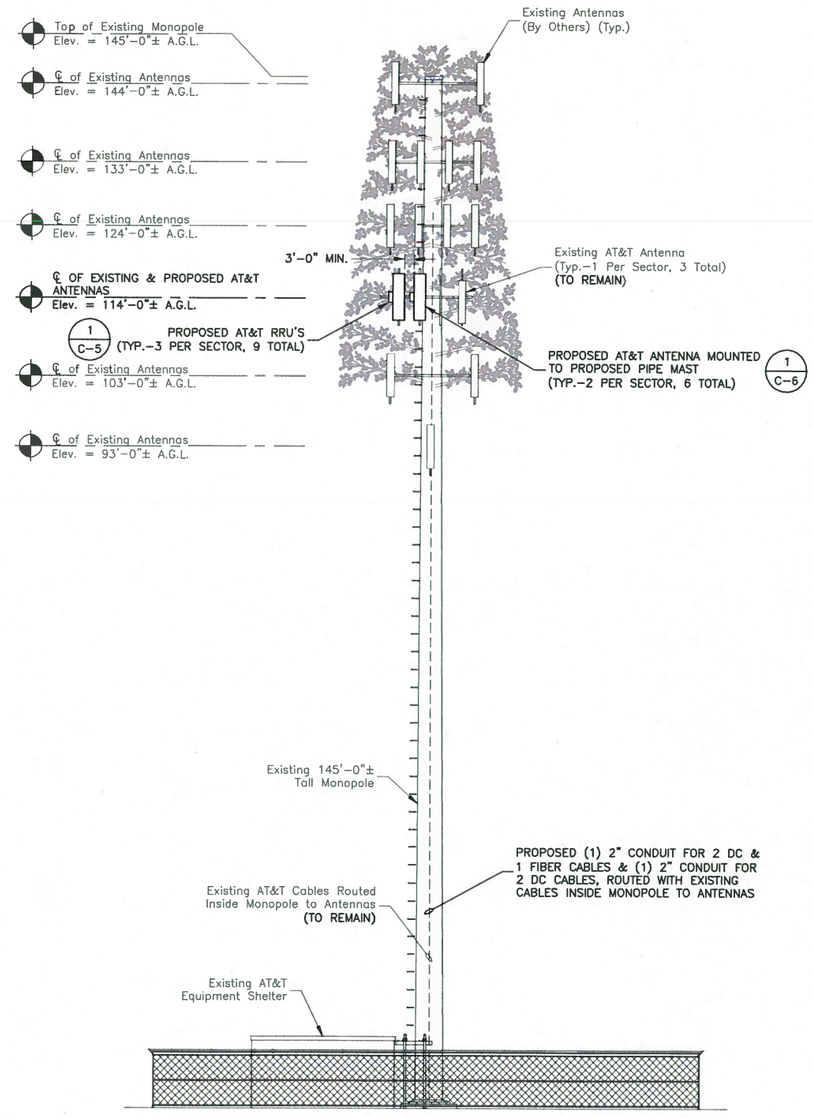
C–2



EXISTING ELEVATION 1

SCALE: 3/64"=1' FOR 11"x17"
3/32"=1' FOR 22"x34"

0' 8' 16' 24'



PROPOSED ELEVATION 2

SCALE: 3/64"=1' FOR 11"x17"
3/32"=1' FOR 22"x34"

0' 8' 16' 24'

NOTE:

1. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, TMA'S, RRU'S, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY OTHERS, AND MOUNT MODIFICATION REPORT BY HUDSON DESIGN LLC DATED 02/14/19..

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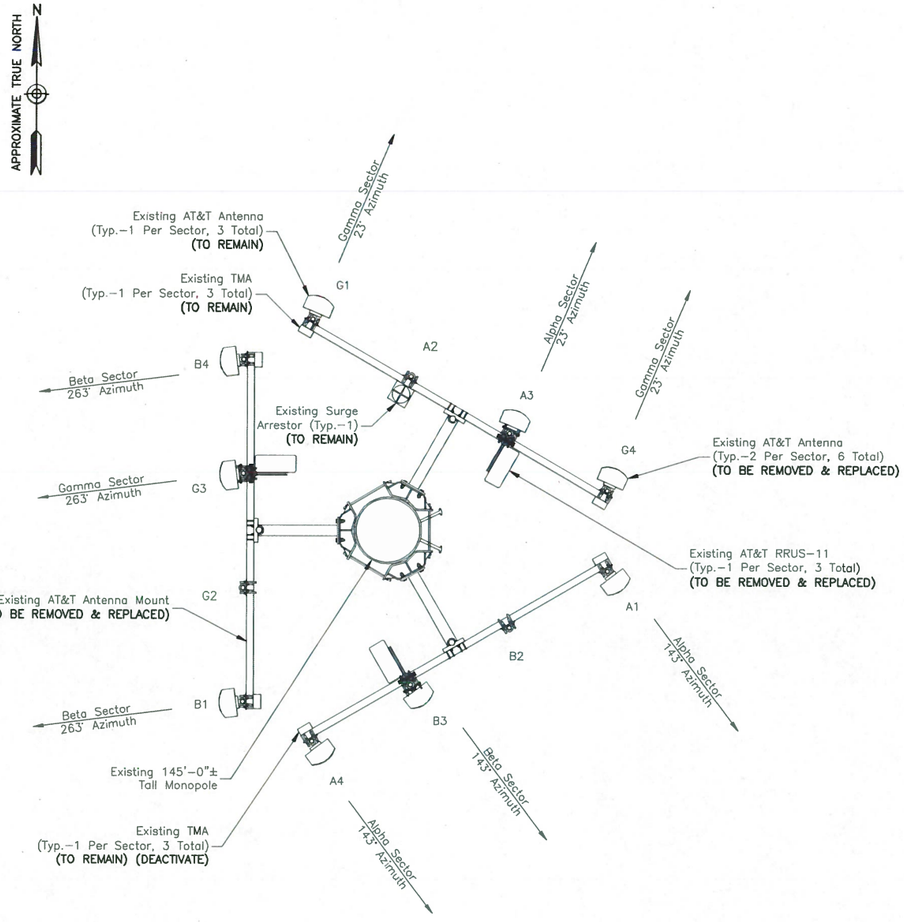
SHEET TITLE

EXISTING & PROPOSED ELEVATIONS

SHEET NUMBER

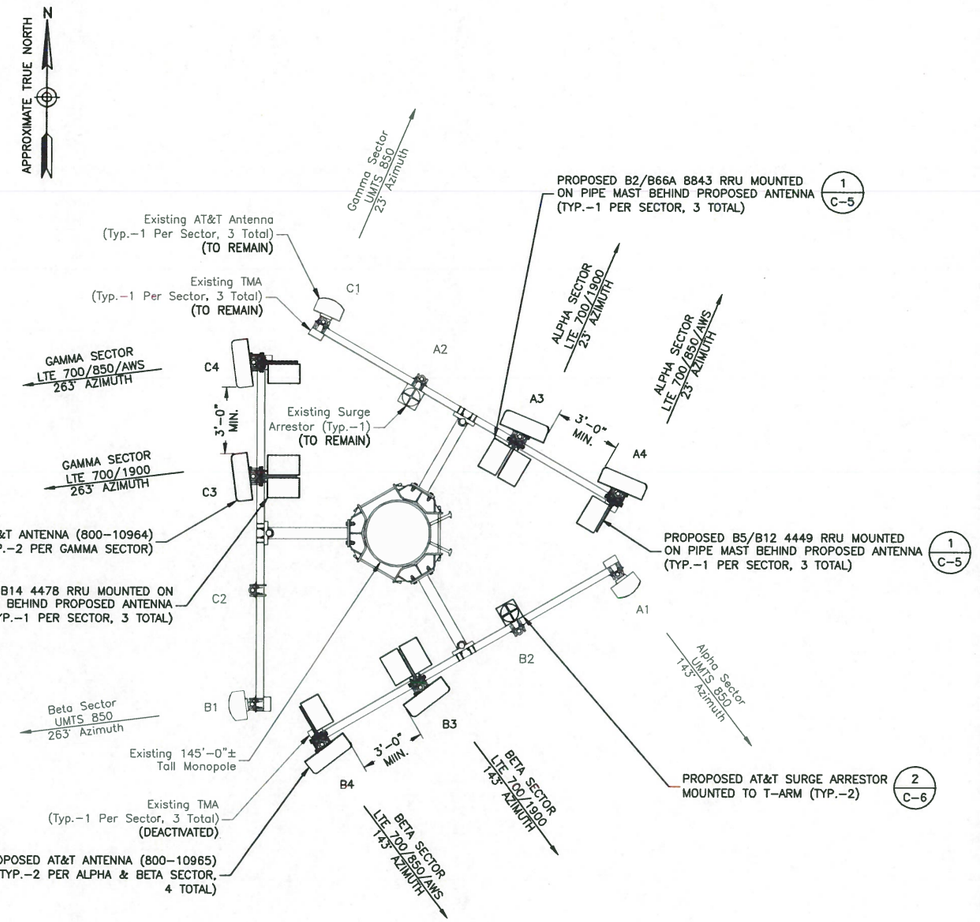
C-3



EXISTING ANTENNA LAYOUT 1

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

0' 2' 4' 6'



PROPOSED ANTENNA LAYOUT 2

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

0' 2' 4' 6'

NOTE:

1. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, TMA'S, RRU'S, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY OTHERS, AND MOUNT MODIFICATION REPORT BY HUDSON DESIGN GROUP LLC DATED 02/14/19.

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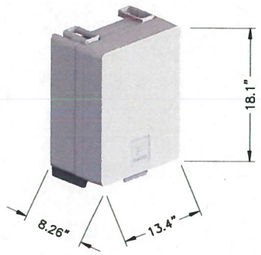
SHEET TITLE

EXISTING & PROPOSED
ANTENNA LAYOUTS

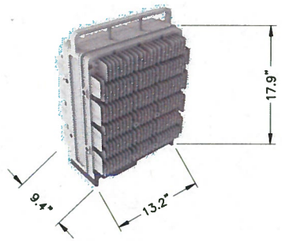
SHEET NUMBER

C–4



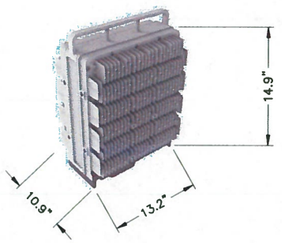
ERICSSON RRUS 4478 B14

SPECIFICATIONS:
HEIGHT: 18.1"
WIDTH: 13.4"
DEPTH: 8.26"
WEIGHT: 59.4 LBS



ERICSSON RRUS B5/B12 4449

SPECIFICATIONS:
HEIGHT: 17.9"
WIDTH: 13.2"
DEPTH: 9.4"
WEIGHT: 70.4 LBS



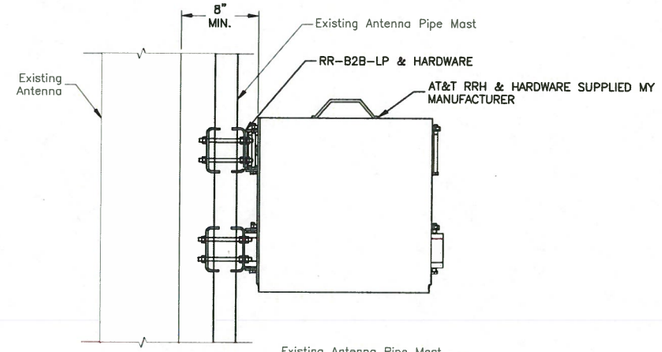
ERICSSON RRUS B2/B66A 8843

SPECIFICATIONS:
HEIGHT: 14.9"
WIDTH: 13.2"
DEPTH: 10.9"
WEIGHT: 72.0 LBS

RRU NOTES:

1. MOUNT EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
2. GROUND EQUIPMENT AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND AT&T STANDARDS.
3. CONFIRM REQUIRED EQUIPMENT WITH THE LATEST RFDS.

REMOTE RADIO UNIT DETAILS 1
SCALE: N.T.S.



NOTES:

1. 8" MIN. BETWEEN BACK OF ANTENNA & RRH UNIT.
2. CONTRACTOR TO COMPLY WITH MANUFACTURER'S INSTRUCTIONS TO ENSURE THAT ALL RRH UNITS RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH UNITS IN THE RAIN.

RRH DUAL BRACKET MOUNT DETAIL 2
SCALE: N.T.S.

ANTENNA SCHEDULE

SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/DIPLEXER	RRU	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	POWERWAVE 7770	114'	143°	(2) POWERWAVE/LGP 21901 (1) 08BP111-001 TWIN	–	(4) 1-5/8" COAX	(E) (1) RAYCAP DC6-48-60-18-8C (P) (1) RAYCAP DC6-48-60-18-8C (P) (1) RAYCAP DC6-48-60-0-8C-EV
A2	–	–	–	–	–	–	–	–	
A3	PROPOSED	LTE 700/1900	KATHREIN 800-10965	114'	23°	–	(P) ERICSSON RRUS B14 4478	FIBER	
A4	PROPOSED	LTE 700/850/AWS	KATHREIN 800-10965	114'	23°	–	(P) ERICSSON RRUS B5/B12 4449 (P) ERICSSON RRUS B2/B66A 8843	FIBER	
B1	EXISTING	UMTS 850	POWERWAVE 7770	114'	263°	(2) POWERWAVE/LGP 21901 (1) 08BP111-001 TWIN	–	(4) 1-5/8" COAX	
B2	–	–	–	–	–	–	–	–	
B3	PROPOSED	LTE 700/1900	KATHREIN 800-10965	114'	143°	–	(P) ERICSSON RRUS B14 4478	FIBER	
B4	PROPOSED	LTE 700/850/AWS	KATHREIN 800-10965	114'	143°	–	(P) ERICSSON RRUS B5/B12 4449 (P) ERICSSON RRUS B2/B66A 8843	FIBER	
C1	EXISTING	UMTS 850	POWERWAVE 7770	114'	23°	(2) POWERWAVE/LGP 21901 (1) 08BP111-001 TWIN	–	(4) 1-5/8" COAX	
C2	–	–	–	–	–	–	–	–	
C3	PROPOSED	LTE 700/1900	KATHREIN 800-10964	114'	263°	–	(P) ERICSSON RRUS B14 4478	FIBER	
C4	PROPOSED	LTE 700/850/AWS	KATHREIN 800-10964	114'	263°	–	(P) ERICSSON RRUS B5/B12 4449 (P) ERICSSON RRUS B2/B66A 8843	FIBER	

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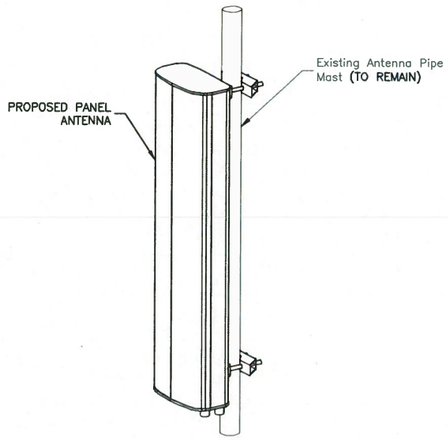
BARKHAMSTED, CT 06063

SHEET TITLE

CONSTRUCTION DETAILS I

SHEET NUMBER

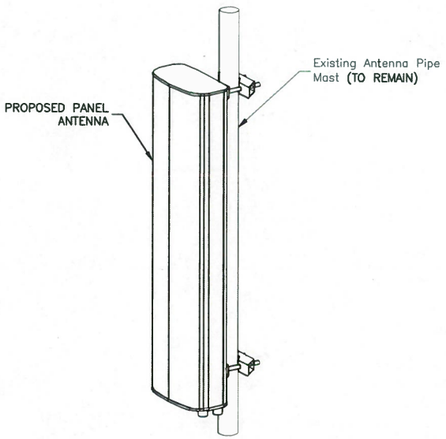
C-5



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

NOTES:

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



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

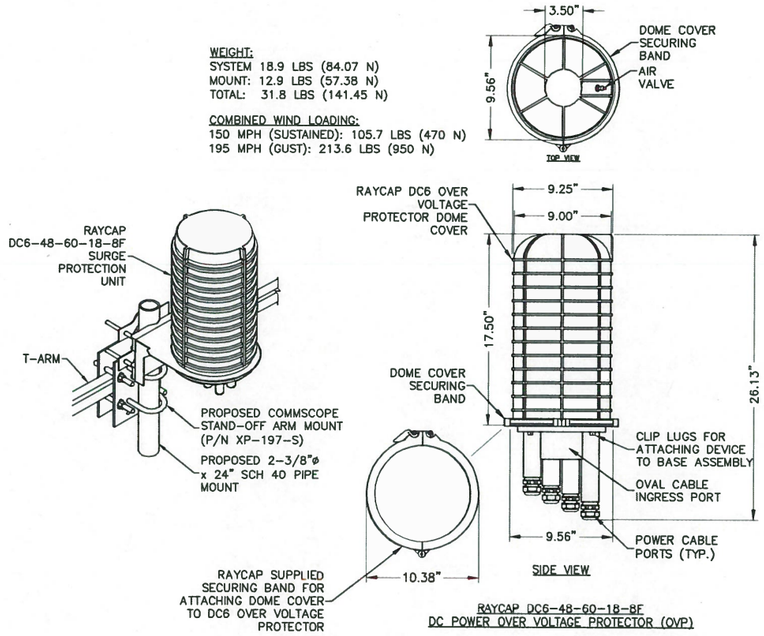
NOTES:

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

ANTENNA DETAILS (1)
SCALE: N.T.S.

WEIGHT:
SYSTEM 18.9 LBS (84.07 N)
MOUNT: 12.9 LBS (57.38 N)
TOTAL: 31.8 LBS (141.45 N)

COMBINED WIND LOADING:
150 MPH (SUSTAINED): 105.7 LBS (470 N)
195 MPH (GUST): 213.6 LBS (950 N)



RAYCAP DC6-48-60-18-8F
DC POWER OVER VOLTAGE PROTECTOR (OVP)

TOWER MOUNTED SURGE ARRESTOR DETAIL (2)
SCALE: N.T.S.

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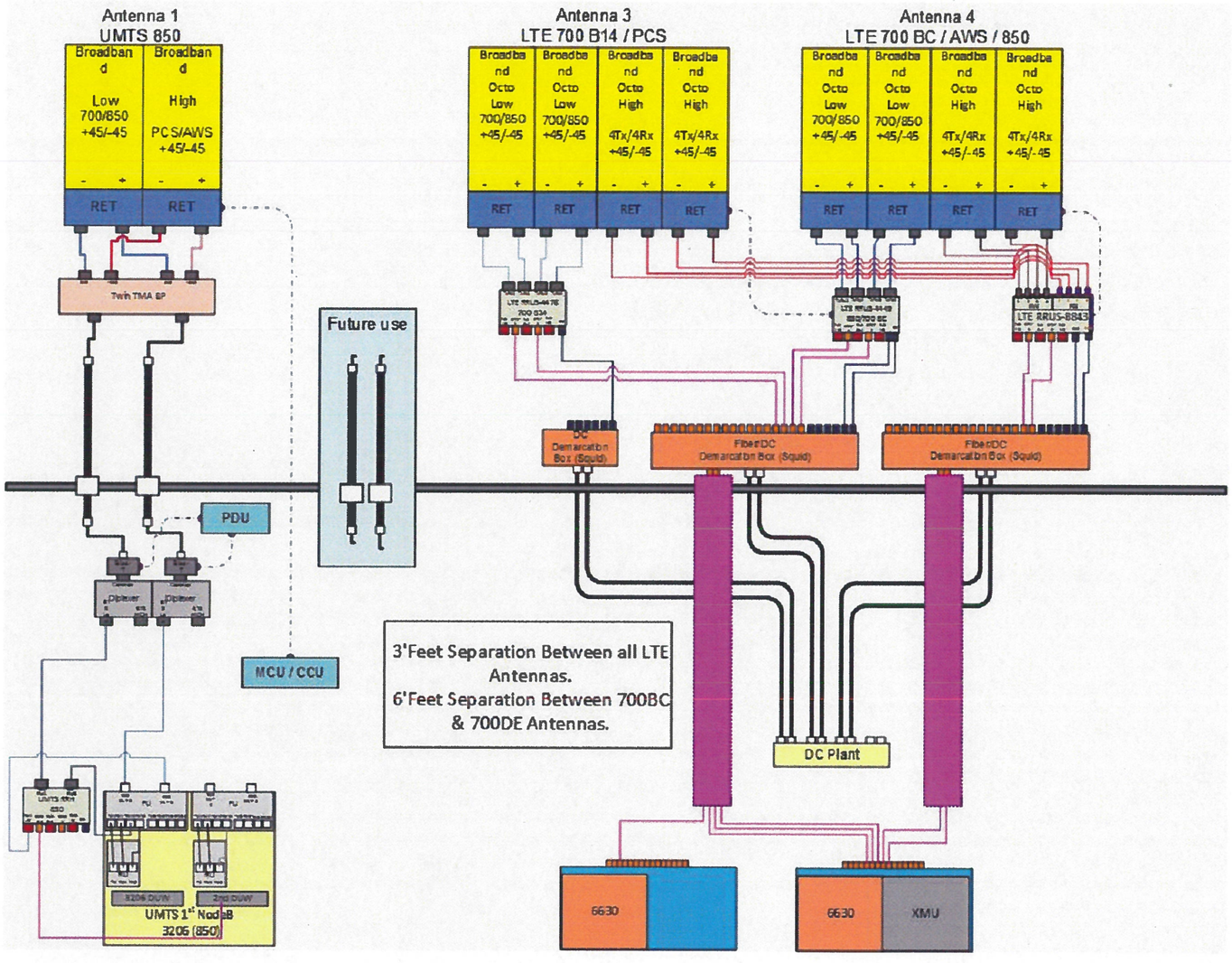
SHEET TITLE

CONSTRUCTION DETAILS II

SHEET NUMBER

C-6



PLUMBING DIAGRAM (1)
SCALE: N.T.S.

NOTE:

1. PLUMBING DIAGRAM BASED ON RFDS V2.00 DATED 09/19/2018. CONFIRM FINAL PLUMBING DIAGRAM WITH THE LATEST RFDS.

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STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED
PROFESSIONAL ENGINEER

JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	AMD
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50093843
SITE ADDRESS:	

127 NEW HARTFORD ROAD
BARKHAMSTED, CT 06063

SHEET TITLE

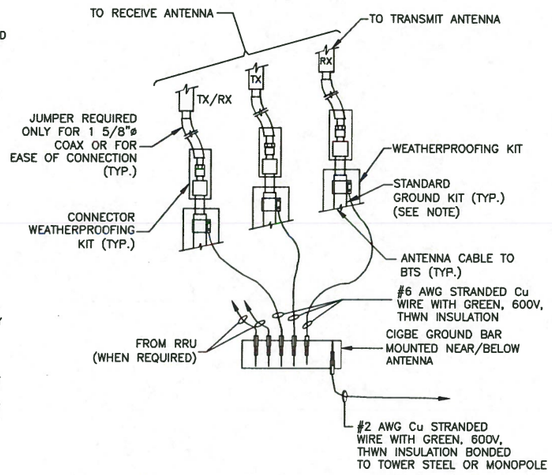
PLUMBING DIAGRAM

SHEET NUMBER

C-7

GROUNDING NOTES:

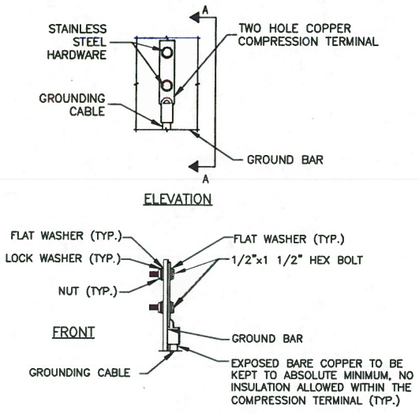
1. THE CONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ). THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE CONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE ENGINEER FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS. ALL AVAILABLE GROUNDING ELECTRODES SHALL BE CONNECTED TOGETHER IN ACCORDANCE WITH THE NEC.
3. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. USE OF OTHER METHODS MUST BE PRE-APPROVED BY THE ENGINEER IN WRITING.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS ON TOWER SITES AND 10 OHMS OR LESS ON ROOFTOP SITES. WHEN ADDING ELECTRODES, CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE BETWEEN THE ADDED ELECTRODE AND 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.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
6. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE AND UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
7. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO TRANSMISSION EQUIPMENT.
8. 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.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. 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.
11. 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.
12. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE 2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
13. 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 MARKET REPRESENTATIVE.
14. EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
15. 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.
16. 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 AND STRUCTURAL STEEL.
17. COAX BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR USING TWO-HOLE MECHANICAL TYPE BRASS CONNECTORS AND STAINLESS STEEL HARDWARE.
18. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
19. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
20. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
21. 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.
22. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND 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.



NOTE:

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

CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE) 1

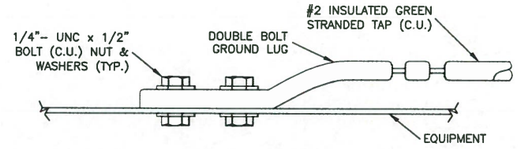


NOTES:

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

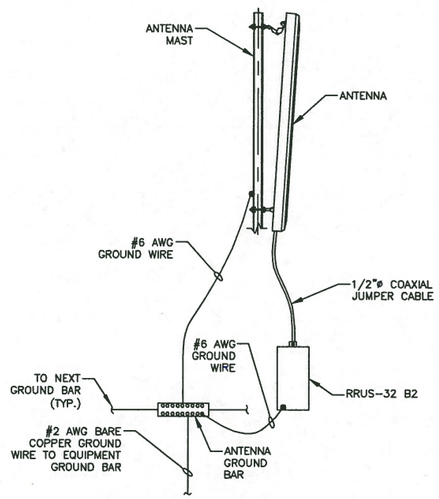
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL 2

SCALE: N.T.S.



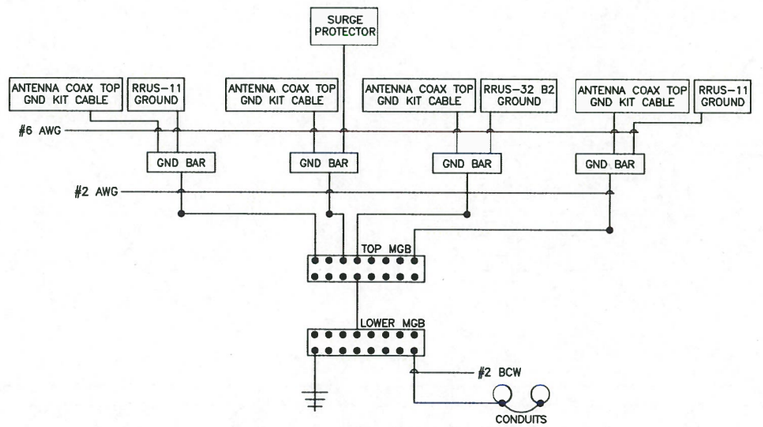
CONNECTION TO EQUIPMENT DETAIL 3

SCALE: N.T.S.



TYPICAL ANTENNA GROUNDING DETAIL 4

SCALE: N.T.S



NOTES:

1. BOND ANTENNA GROUNDING KIT CABLE TO TOP CIGBE
2. BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIGBE.
3. SCHEMATIC GROUNDING DIAGRAM IS TYPICAL FOR EACH SECTOR.
4. GROUND ALL EQUIPMENT PER MANUFACTURER RECOMMENDATIONS.

SCHEMATIC GROUNDING DIAGRAM 5

SCALE: N.T.S.

at&t

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ROCKY HILL, CT 06067

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CT1115
BARKHAMSTED

CONSTRUCTION DRAWINGS

0	04/11/19	ISSUED AS FINAL
B	03/22/19	REVISED PER COMMENTS
A	02/06/19	ISSUED FOR REVIEW

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STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED PROFESSIONAL ENGINEER

JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

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CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50093843
SITE ADDRESS:	

127 NEW HARTFORD ROAD
BARKHAMSTED, CT 06063

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-70 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTION CHECKLIST

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

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

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SALEM, NH 03079

SITE NUMBER: CT1115
SITE NAME: BARKHAMSTED

127 NEW HARTFORD ROAD
BARKHAMSTED, CT 06063
LITCHFIELD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	2/14/19	ISSUED FOR REVIEW	AR	MC	DC

SCALE: AS SHOWN | DESIGNED BY: MC | DRAWN BY: AR

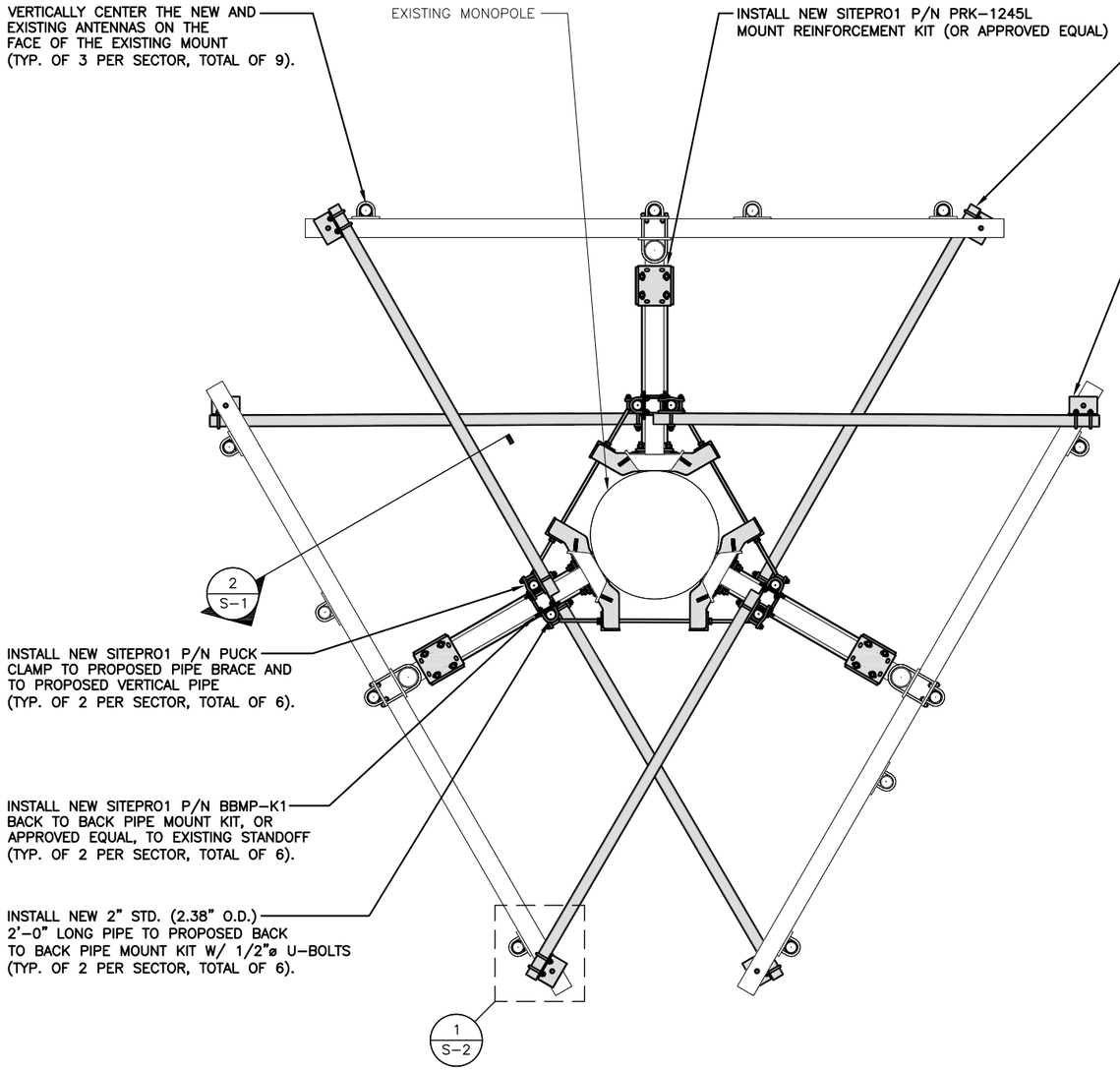
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

AT&T

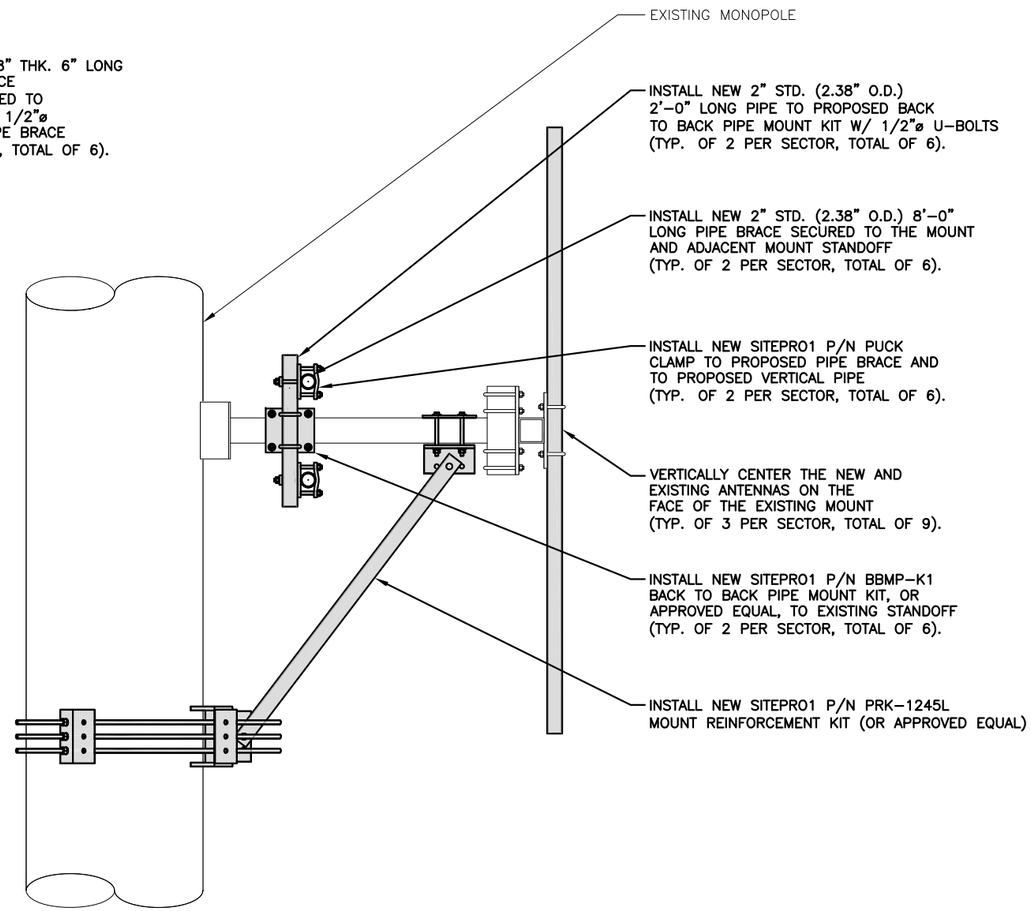
STRUCTURAL NOTES
(LTE-2C/3C/4C/5C)

JOB NUMBER	DRAWING NUMBER	REV
CT1115	SN-1	1



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

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



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

0 0'-6" 1'-0" 2'-0" 3'-0"

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SITE NUMBER: CT1115
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NO.	DATE	REVISIONS	BY	CHK	APP'D
1	2/14/19	ISSUED FOR REVIEW	AR	MC	DG

SCALE: AS SHOWN | DESIGNED BY: MC | DRAWN BY: AR

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
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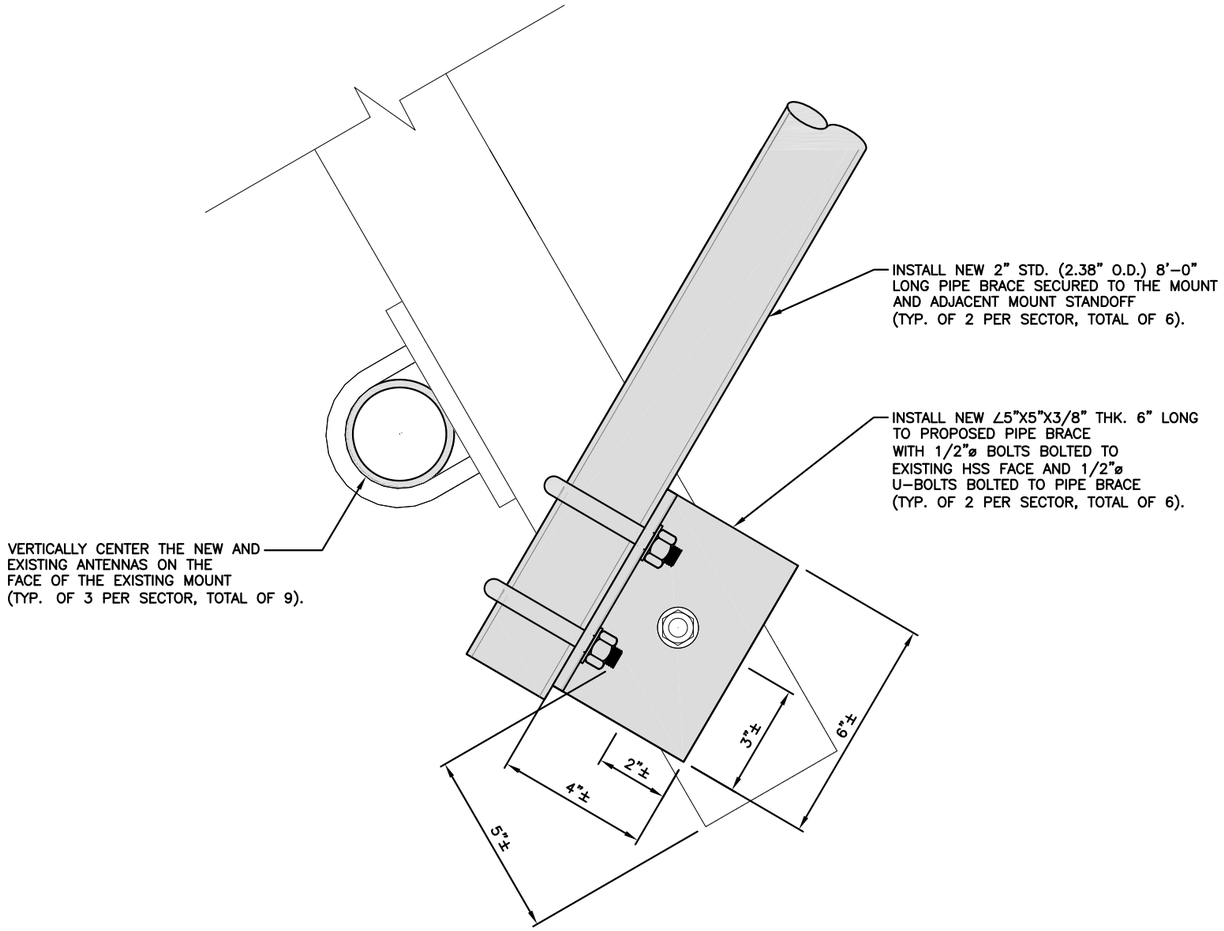
AT&T

MOUNT MOD DESIGN PLAN & ELEVATION
(LTE-2C/3C/4C/5C)

JOB NUMBER	DRAWING NUMBER	REV
CT1115	S-1	1



CONNECTION DETAIL (1 / S-2)

22x34 SCALE: 6"=1'-0"
11x17 SCALE: 3"=1'-0"

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

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MOD DESIGN DETAILS
(LTE-2C/3C/4C/5C)

JOB NUMBER	DRAWING NUMBER	REV
CT1115	S-2	1

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**144.5 ft Monopine**
ATC Site Name	:	**Barkhamstead CT, CT**
ATC Site Number	:	**411181**
Engineering Number	:	**OAA747114_C3_02**
Proposed Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**Barkhamsted**
Carrier Site Number	:	**CT1115**
Site Location	:	**50 Rust Road** **Barkhamsted, CT 06063-3314** **41.893800,-72.996500**
County	:	**Litchfield**
Date	:	**March 29, 2019**
Max Usage	:	**61%**
Result	:	**Pass**

Prepared By:
Jennifer Yu
Structural Engineer I

Jennifer Yu

Reviewed By:

COA: PEC.0001553

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Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 144.5 ft monopine to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	Summit, PJF Job #29200-1316, dated September 5, 2000 Mapping by Geostructural Site #411181, dated February 22, 2016
Foundation Drawing	Summit, PJF Job #29200-1316, dated September 5, 2000
Geotechnical Report	Clarence Welti Project: AT&T Tower Site, dated March 27, 2000

Analysis

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

Basic Wind Speed:	93 mph (3-Second Gust, Vasd) / 120 (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.18, S_1 = 0.06
Site Class:	D - Stiff Soil

Conclusion

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

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
150.0	3	Alcatel-Lucent 1900MHz RRH	T-Arm	(3) 1 1/4" Coax (15) 1 5/8" Coax (3) 1 1/4" Hybriflex Cable (1) 5/8" Hybriflex (2) 0.78" (19.7mm) 8 AWG 6	SPRINT NEXTEL
	3	Alcatel-Lucent 800 MHz RRH w/ Notch Filter			
	3	RFS APXVSPP18-C-A20			
	15	Decibel DB980F90E-M			
136.0	3	Commscope SBNHH-1D65B (72.9")	T-Arm	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Amphenol Antel BXA-70063-6CF-EDIN-X			
	4	Antel LPA-80063/4CF			
	2	Antel LPA-80080/4CF ___			
	3	Alcatel-Lucent B66A RRH4x45-4R w/ Solar Shield			
	3	Alcatel-Lucent B13 RRH4X30-4R w/ Solar Shield (57.2 lbs)			
	2	Raycap RC2DC-3315-PF-48			
133.0	3	Commscope SBNHH-1D65B (72.9")			
131.0	1	VZW Unused Reserve: 15683 sq in			
117.0	1	Andrew ABT-DMDF-ADBH	T-Arm	(1) 0.39" (10mm) Fiber Trunk (12) 1 1/4" Coax (1) 3" conduit (2) 0.78" (19.7mm) 8 AWG 6	AT&T MOBILITY
	3	Powerwave Allgon 7770.00			
	6	Powerwave Allgon LGP21901			
	1	Raycap DC6-48-60-18-8F(32.8 lbs)			
104.0	3	Commscope LNX-6515DS-A1M (50.3 lb)	T-Arm	(18) 1 5/8" Coax (1) 1/2" Coax	T-MOBILE
	3	RFS ATMAP1412D-1A20			
	3	Ericsson KRY 112 71			
	1	Generic E-911 GPS			
	6	RFS APX16DWV-16DWV-S-E-ACU			
93.0	3	RFS APXV18-206517S-C	Flush	-	METRO PCS INC
50.0	1	PCTEL GPS-TMG-HR-26N	Flush	(1) 1/2" Coax	SPRINT NEXTEL

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
113.0	3	Spinner Bias-T	-	-	AT&T MOBILITY
	6	Powerwave Allgon LGP21401			
	2	KMW AM-X-CD-16-65-00T-RET			
	3	Powerwave Allgon 7770.00			
	1	Kathrein Scala 800 10764			
	6	Ericsson RRUS-11 (50 lbs.)			

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
117.0	6	Powerwave Allgon TT19-08BP111-001	T-Arm with Site Pro 1 PRK-1245	(1) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6 (2) 2" conduit	AT&T MOBILITY
	3	Ericsson RRUS 8843 B2, B66A			
	3	Ericsson RRUS 4449 B5, B12			
	3	Ericsson RRUS 4478 B14			
	1	Raycap DC6-48-60-18-8C			
	1	Raycap DC6-48-60-18-8C-EV			
	2	Kathrein Scala 80010964			
	4	Kathrein Scala 80010965			

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	61%	Pass
Shaft	61%	Pass
Base Plate	43%	Pass
Flanges	32%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	7,100.0	9,585.0	5,755.7	60%
Shear (Kips)	64.0	86.4	53.0	61%

*** The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1**

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
117.0	Powerwave Allgon TT19-08BP111-001	AT&T MOBILITY	0.960	0.912
	Ericsson RRUS 8843 B2, B66A			
	Ericsson RRUS 4449 B5, B12			
	Ericsson RRUS 4478 B14			
	Raycap DC6-48-60-18-8C			
	Raycap DC6-48-60-18-8C-EV			
	Kathrein Scala 80010964			
	Kathrein Scala 80010965			

***Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G**

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Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

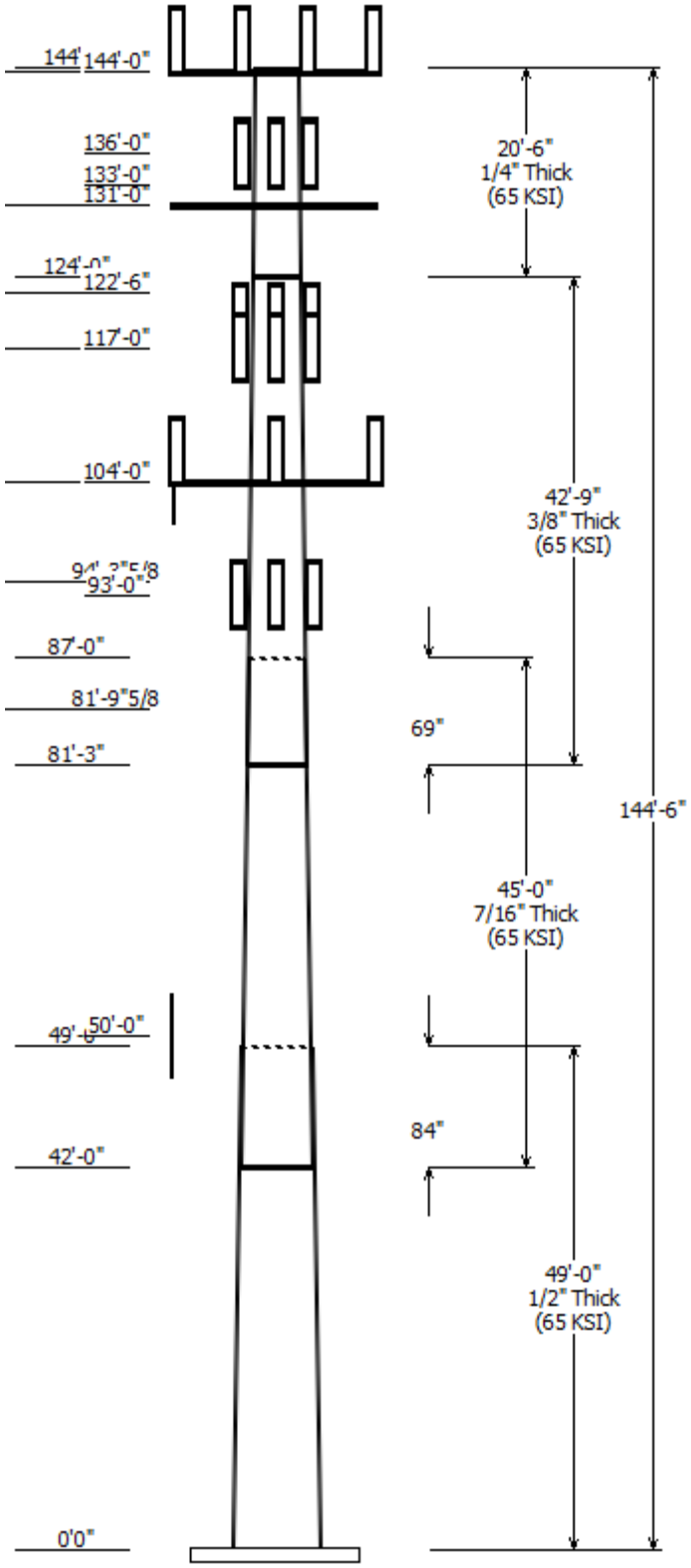
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.



Job Information

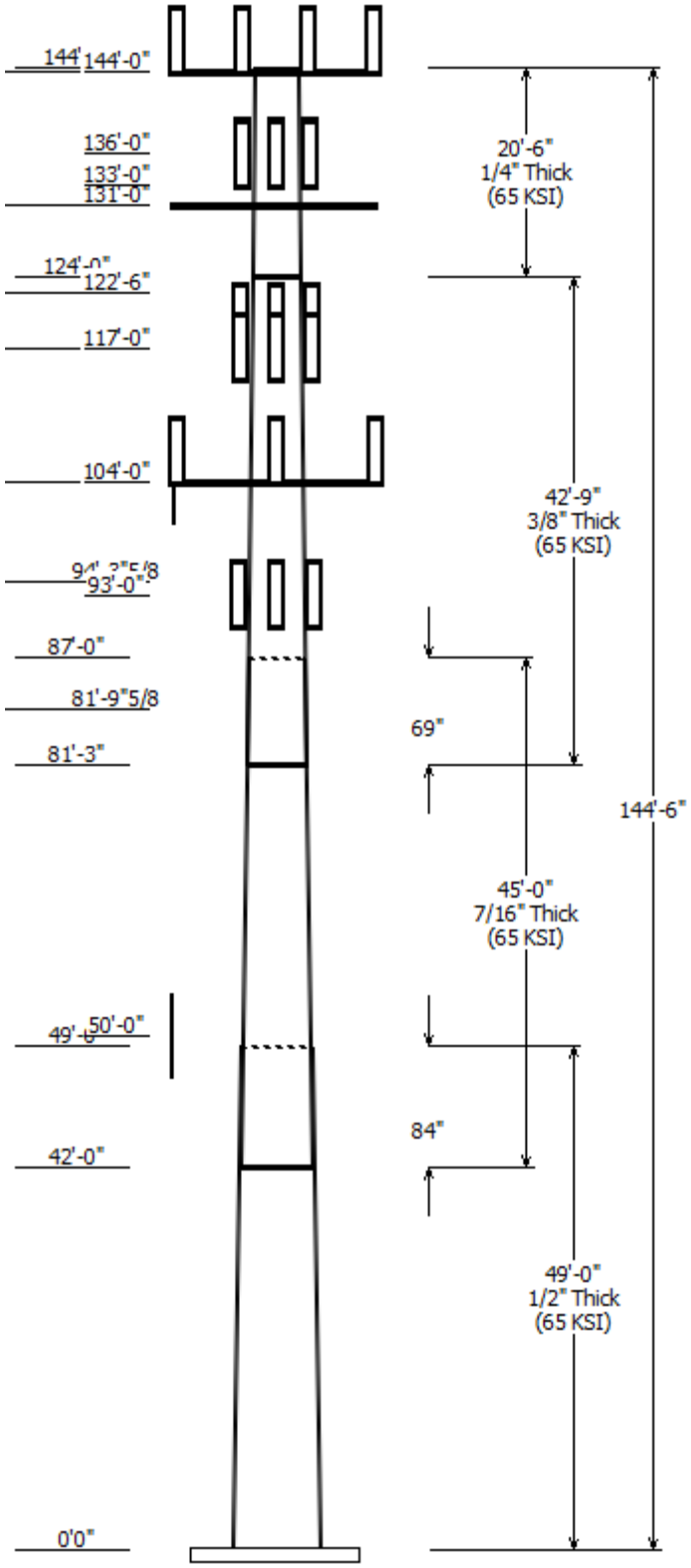
Pole :	411181	Code:	ANSI/TIA-222-G
Location :	Barkhamstead CT, CT		
Description :			
Client :	AT&T MOBILITY	Struct Class :	II
Shape :	18 Sides	Exposure :	B
Height :	144.50 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.283669 (in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	49.000	52.15	66.05	0.500		0.000	18 Sides	65
2	45.000	42.24	55.01	0.438	Slip Joint	84.000	18 Sides	65
3	42.750	32.50	44.62	0.375	Slip Joint	69.000	18 Sides	65
4	20.500	24.00	32.50	0.250	Butt Joint	0.000	18 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
144.500	144.500	1	Pine Tree Branches
144.000	147.000	3	RFS APXVSPP18-C-A20
144.000	147.000	15	Decibel DB980F90E-M
144.000	147.000	3	Alcatel-Lucent 1900MHz RRH
144.000	147.000	3	Alcatel-Lucent 800 MHz RRH
144.000	144.000	3	Round T-Arm
136.000	136.000	3	Commscope SBNHH-1D65B
136.000	136.000	3	Amphenol Antel BXA-70063-
136.000	136.000	4	Antel LPA-80063/4CF
136.000	136.000	2	Antel LPA-80080/4CF ___
136.000	136.000	2	Raycap RC2DC-3315-PF-48
136.000	136.000	3	Alcatel-Lucent B66A RRH4x45-
136.000	136.000	3	Alcatel-Lucent B13 RRH4X30-
133.000	136.000	3	Commscope SBNHH-1D65B
131.000	131.000	1	VZW Unused Reserve: 15683
131.000	131.000	3	Round T-Arm
122.500	122.500	1	Pine Tree Branches
117.000	117.000	3	T-Arm with Site Pro 1 PRK-
117.000	117.000	4	Kathrein Scala 80010965
117.000	117.000	2	Kathrein Scala 80010964
117.000	121.000	3	Powerwave Allgon 7770.00
117.000	117.000	1	Raycap DC6-48-60-18-8C-EV
117.000	117.000	1	Raycap DC6-48-60-18-8C
117.000	117.000	3	Ericsson RRUS 4478 B14
117.000	117.000	3	Ericsson RRUS 4449 B5, B12
117.000	117.000	3	Ericsson RRUS 8843 B2, B66A
117.000	121.000	1	Raycap DC6-48-60-18-8F(32.8 lb
117.000	117.000	6	Powerwave Allgon TT19-
117.000	121.000	6	Powerwave Allgon LGP21901
117.000	121.000	1	Andrew ABT-DMDF-ADBH
104.000	104.000	3	Flat T-Arm
104.000	108.000	3	Commscope LNX-6515DS-A1M
104.000	108.000	6	RFS APX16DWV-16DWV-S-E-
104.000	108.000	3	RFS ATMAP1412D-1A20
104.000	108.000	3	Ericsson KRY 112 71
104.000	104.000	1	Generic E-911 GPS
94.300	94.300	1	Pine Tree Branches
93.000	93.000	3	RFS APXV18-206517S-C
81.800	81.800	1	Pine Tree Branches
50.000	50.000	1	PCTEL GPS-TMG-HR-26N



Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	50.000	1/2" Coax	No
0.000	104.0	1 5/8" Coax	Yes
0.000	104.0	1 5/8" Coax	No
0.000	104.0	1/2" Coax	No
0.000	117.0	0.39" (10mm)	No
0.000	117.0	0.39" (10mm)	No
0.000	117.0	0.78" (19.7mm) 8	No
0.000	117.0	1 1/4" Coax	No
0.000	117.0	2" conduit	No
0.000	117.0	3" conduit	No
0.000	131.0	1 5/8" Hybriflex	No
0.000	133.0	1 5/8" Coax	No
0.000	136.0	1 5/8" Coax	No
0.000	147.0	1 1/4" Hybriflex	No
0.000	147.0	5/8" Hybriflex	No
0.000	150.0	1 1/4" Coax	No
0.000	150.0	1 5/8" Coax	No

Load Cases

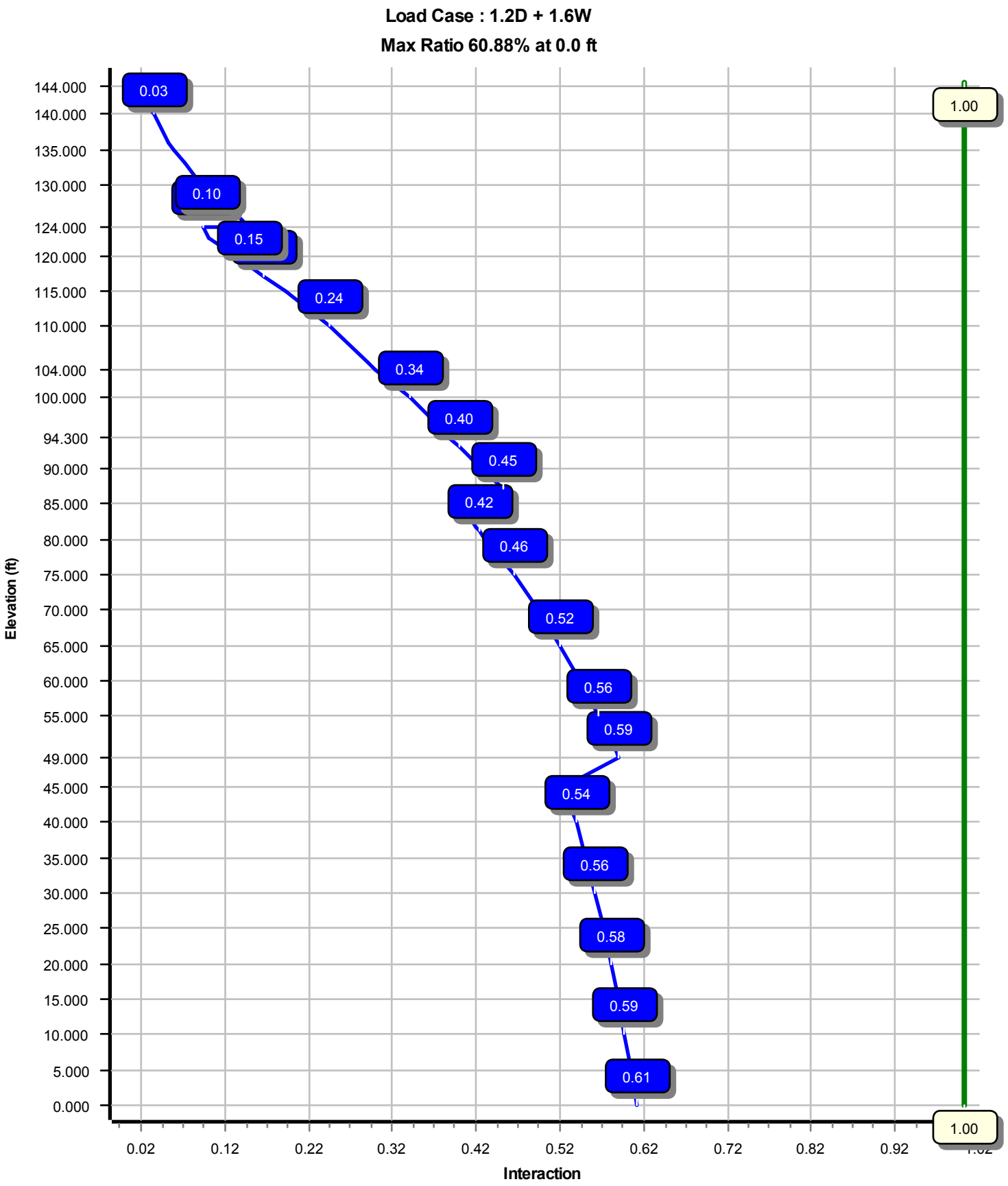
1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	5755.71	52.96	68.38
0.9D + 1.6W	5721.51	52.94	51.27
1.2D + 1.0Di + 1.0Wi	1755.53	16.03	115.31
(1.2 + 0.2Sds) * DL + E ELFM	341.24	3.19	68.08
(1.2 + 0.2Sds) * DL + E EMAM	313.34	2.95	68.08
(0.9 - 0.2Sds) * DL + E ELFM	338.85	3.19	47.28
(0.9 - 0.2Sds) * DL + E EMAM	311.00	2.95	47.28
1.0D + 1.0W	1492.24	13.77	57.04

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000


Load Case : 1.2D + 1.6W
Max Ratio 60.88% at 0.0 ft
Elevation (ft)
144.000
140.000
135.000
130.000
124.000
120.000
115.000
110.000
104.000
100.000
94.300
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
49.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.03
0.10
0.15
0.24
0.34
0.40
0.45
0.42
0.46
0.52
0.56
0.59
0.54
0.56
0.58
0.59
0.61
1.00
1.00
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number:	411181	Code: ANSI/TIA-222-G	
Site Name:	Barkhamstead CT, CT	Engineering Number:OAA747114_C3_02	3/29/2019 7:41:20 AM
Customer:	AT&T MOBILITY		

Analysis Parameters

Location :	Litchfield County, CT	Height (ft) :	144.5
Code :	ANSI/TIA-222-G	Base Diameter (in) :	66.05
Shape :	18 Sides	Top Diameter (in) :	24.00
Pole Type :	Custom	Taper (in/ft) :	0.284
Pole Manfacturer :	Summit Manuf	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	93 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	1.61				
T_L (sec):	6	p:	1.3	C_s:	0.043
S_s:	0.184	S_1:	0.065	C_s Max:	0.043
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.196	S_{d1}:	0.104		

Load Cases

1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 411181 Code: ANSI/TIA-222-G

Site Name: Barkhamstead CT, CT Engineering Number:OAA747114_C3_02 3/29/2019 7:41:20 AM

Customer: AT&T MOBILITY

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	49.000	0.5000	65		0.00	15,506	66.05	0.00	104.02	56471.9	21.53	132.10	52.15	49.00	81.97	27626.8	16.63	104.30	0.283669
2-18	45.000	0.4375	65	Slip	84.00	10,247	55.01	42.00	75.78	28514.5	20.41	125.74	42.24	87.00	58.05	12820.6	15.26	96.56	0.283669
3-18	42.750	0.3750	65	Slip	69.00	6,612	44.62	81.25	52.67	13030.8	19.22	119.00	32.50	124.00	38.24	4985.5	13.52	86.67	0.283669
4-18	20.500	0.2500	65	Butt	0.00	1,550	32.50	124.00	25.59	3362.6	21.16	130.00	24.00	144.50	18.84	1343.0	15.16	96.00	0.414634
				Shaft Weight		33,914													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
144.50	Pine Tree Branches	1	1.00	0.000	337.50	11.700	1.00	572.18	19.836	1.00
144.00	Alcatel-Lucent 800 MHz RRH w/	3	1.00	3.000	61.80	2.500	0.67	151.90	3.540	0.67
144.00	Alcatel-Lucent 1900MHz RRH	3	1.00	3.000	44.00	3.260	0.72	152.57	4.446	0.72
144.00	Decibel DB980F90E-M	15	1.00	3.000	9.50	3.750	0.68	100.58	4.795	0.68
144.00	RFS APXVSPP18-C-A20	3	1.00	3.000	57.00	8.020	0.69	228.91	10.798	0.69
144.00	Round T-Arm	3	0.75	0.000	250.00	9.700	0.75	458.28	17.916	0.75
136.00	Alcatel-Lucent B13 RRH4X30-4R	3	0.80	0.000	57.20	2.160	0.67	124.95	3.156	0.67
136.00	Alcatel-Lucent B66A RRH4x45-	3	0.80	0.000	56.80	2.540	0.67	126.31	3.653	0.67
136.00	Raycap RC2DC-3315-PF-48	2	0.80	0.000	32.00	3.780	0.77	140.73	5.091	0.77
136.00	Antel LPA-80080/4CF ___	2	0.80	0.000	12.00	5.400	0.72	145.79	3.454	0.72
136.00	Antel LPA-80063/4CF	4	0.80	0.000	20.00	6.140	0.76	223.86	7.172	0.76
136.00	Amphenol Antel BXA-70063-6CF-	3	0.80	0.000	17.00	7.570	0.66	163.80	10.306	0.66
136.00	Commscope SBNHH-1D65B	3	0.80	0.000	40.60	8.200	0.69	215.55	11.005	0.69
133.00	Commscope SBNHH-1D65B	3	0.80	3.000	40.60	8.200	0.69	215.10	10.998	0.69
131.00	Round T-Arm	3	0.75	0.000	250.00	9.700	0.67	456.53	17.847	0.67
131.00	VZW Unused Reserve: 15683 sq	1	0.80	0.000	1,695.40	108.910	0.90	2,862.57	183.887	0.90
122.50	Pine Tree Branches	1	1.00	0.000	3,300.00	383.240	1.00	5,555.18	645.142	1.00
117.00	Andrew ABT-DMDF-ADBH	1	0.80	4.000	1.10	0.050	1.00	3.27	0.238	1.00
117.00	Powerwave Allgon LGP21901	6	0.80	4.000	5.50	0.200	0.50	13.00	0.512	0.50
117.00	Powerwave Allgon TT19-	6	0.80	0.000	16.00	0.550	0.50	35.73	1.047	0.50
117.00	Raycap DC6-48-60-18-8F(32.8	1	0.80	4.000	32.80	1.470	1.00	93.05	2.152	1.00
117.00	Ericsson RRUS 8843 B2, B66A	3	0.80	0.000	72.00	1.640	0.50	131.86	2.466	0.50
117.00	Ericsson RRUS 4449 B5, B12	3	0.80	0.000	71.00	1.970	0.50	133.94	2.881	0.50
117.00	Ericsson RRUS 4478 B14	3	0.80	0.000	59.40	2.020	0.67	119.33	2.941	0.67
117.00	Raycap DC6-48-60-18-8C	1	0.80	0.000	16.00	2.030	1.00	72.86	2.772	1.00
117.00	Raycap DC6-48-60-18-8C-EV	1	0.80	0.000	16.00	4.790	1.00	142.11	6.227	1.00
117.00	Powerwave Allgon 7770.00	3	0.80	4.000	35.00	5.510	0.65	165.98	6.536	0.65
117.00	Kathrein Scala 80010964	2	0.80	0.000	83.80	10.000	0.71	283.58	12.306	0.71
117.00	Kathrein Scala 80010965	4	0.80	0.000	97.60	13.810	0.62	357.97	16.789	0.62
117.00	T-Arm with Site Pro 1 PRK-1245	3	0.75	0.000	450.00	17.900	0.75	756.17	30.079	0.75
104.00	Generic E-911 GPS	1	0.80	0.000	5.00	0.580	1.00	29.70	1.007	1.00
104.00	Ericsson KRY 112 71	3	0.80	4.000	13.20	0.580	0.50	30.85	1.111	0.50
104.00	RFS ATMAP1412D-1A20	3	0.80	4.000	13.00	1.000	0.50	38.58	1.643	0.50
104.00	RFS APX16DWV-16DWV-S-E-ACU	6	0.80	4.000	39.60	6.080	0.60	118.68	8.065	0.60
104.00	Commscope LNX-6515DS-A1M	3	0.80	4.000	50.30	11.440	0.70	273.38	14.575	0.70
104.00	Flat T-Arm	3	0.75	0.000	250.00	12.900	0.67	451.50	20.785	0.67
94.30	Pine Tree Branches	1	1.00	0.000	937.50	138.580	1.00	1,561.84	230.869	1.00
93.00	RFS APXV18-206517S-C	3	1.00	0.000	26.40	5.160	0.68	114.77	7.416	0.68
81.80	Pine Tree Branches	1	1.00	0.000	937.50	146.250	1.00	1,553.24	242.306	1.00
50.00	PCTEL GPS-TMG-HR-26N	1	1.00	0.000	0.60	0.090	1.00	4.94	0.252	1.00
Totals	Num Loadings:40	118			14,260.40			31,962.31		

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	150.00	3	1 1/4" Coax	1.55	0.63	N	0.00	N	SPRINT NEXTEL
0.00	150.00	15	1 5/8" Coax	1.98	0.82	N	0.00	N	SPRINT NEXTEL
0.00	147.00	3	1 1/4" Hybriflex Cable	1.54	1.00	N	0.00	N	SPRINT NEXTEL
0.00	147.00	1	5/8" Hybriflex	0.84	0.70	N	0.00	N	SPRINT NEXTEL
0.00	136.00	9	1 5/8" Coax	1.98	0.82	N	0.00	N	VERIZON WIRELESS
0.00	133.00	3	1 5/8" Coax	1.98	0.82	N	0.00	N	VERIZON WIRELESS
0.00	131.00	2	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	VERIZON WIRELESS
0.00	117.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0.00	N	AT&T MOBILITY
0.00	117.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0.00	N	AT&T MOBILITY
0.00	117.00	6	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0.00	N	AT&T MOBILITY
0.00	117.00	12	1 1/4" Coax	1.55	0.63	N	0.00	N	AT&T MOBILITY
0.00	117.00	2	2" conduit	2.38	3.65	N	0.00	N	AT&T MOBILITY
0.00	117.00	1	3" conduit	3.50	7.58	N	0.00	N	AT&T MOBILITY
0.00	104.00	6	1 5/8" Coax	1.98	0.82	N	1.98	Y	T-MOBILE
0.00	104.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	T-MOBILE
0.00	104.00	1	1/2" Coax	0.63	0.15	N	0.00	N	T-MOBILE
0.00	50.00	1	1/2" Coax	0.63	0.15	N	0.00	N	SPRINT NEXTEL

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.5000	66.050	104.024	56,471.9	21.53	132.10	76.1	1684.	0.0	0.0
5.00		0.5000	64.632	101.773	52,884.9	21.03	129.26	76.7	1611.	0.0	1,750.7
10.00		0.5000	63.213	99.522	49,453.1	20.53	126.43	77.3	1540.	0.0	1,712.4
15.00		0.5000	61.795	97.272	46,173.1	20.03	123.59	77.8	1471.	0.0	1,674.1
20.00		0.5000	60.377	95.021	43,041.4	19.53	120.75	78.4	1404.	0.0	1,635.8
25.00		0.5000	58.958	92.770	40,054.6	19.03	117.92	79.0	1338.	0.0	1,597.5
30.00		0.5000	57.540	90.519	37,209.3	18.53	115.08	79.6	1273.	0.0	1,559.2
35.00		0.5000	56.122	88.268	34,502.0	18.03	112.24	80.2	1210.	0.0	1,520.9
40.00		0.5000	54.703	86.017	31,929.3	17.53	109.41	80.8	1149.	0.0	1,482.6
42.00	Bot - Section 2	0.5000	54.136	85.117	30,937.2	17.33	108.27	81.0	1125.	0.0	582.3
45.00		0.5000	53.285	83.767	29,487.8	17.03	106.57	81.4	1090.	0.0	1,629.6
49.00	Top - Section 1	0.4375	53.025	73.022	25,513.8	19.61	121.20	78.3	947.7	0.0	2,132.5
50.00		0.4375	52.742	72.628	25,103.1	19.49	120.55	78.5	937.5	0.0	247.8
55.00		0.4375	51.323	70.659	23,115.8	18.92	117.31	79.1	887.1	0.0	1,218.9
60.00		0.4375	49.905	68.689	21,236.3	18.35	114.07	79.8	838.1	0.0	1,185.4
65.00		0.4375	48.486	66.720	19,461.5	17.78	110.83	80.5	790.6	0.0	1,151.9
70.00		0.4375	47.068	64.750	17,788.4	17.21	107.58	81.2	744.4	0.0	1,118.4
75.00		0.4375	45.650	62.781	16,214.1	16.64	104.34	81.8	699.6	0.0	1,084.9
80.00		0.4375	44.231	60.811	14,735.5	16.06	101.10	82.5	656.2	0.0	1,051.4
81.25	Bot - Section 3	0.4375	43.877	60.319	14,380.5	15.92	100.29	82.6	645.5	0.0	257.6
81.80		0.4375	43.721	60.102	14,226.1	15.86	99.93	82.6	640.9	0.0	211.1
85.00		0.4375	42.813	58.842	13,349.7	15.49	97.86	82.6	614.2	0.0	1,213.2
87.00	Top - Section 2	0.3750	42.996	50.728	11,642.3	18.45	114.66	79.7	533.3	0.0	745.3
90.00		0.3750	42.145	49.715	10,958.8	18.05	112.39	80.2	512.2	0.0	512.7
93.00		0.3750	41.294	48.702	10,302.5	17.65	110.12	80.6	491.4	0.0	502.3
94.30		0.3750	40.925	48.263	10,026.5	17.48	109.13	80.8	482.5	0.0	214.5
95.00		0.3750	40.726	48.027	9,879.9	17.39	108.60	81.0	477.8	0.0	114.7
100.0		0.3750	39.308	46.338	8,874.2	16.72	104.82	81.7	444.7	0.0	802.8
104.0		0.3750	38.173	44.988	8,120.7	16.19	101.80	82.4	419.0	0.0	621.5
105.0		0.3750	37.890	44.650	7,939.3	16.05	101.04	82.5	412.7	0.0	152.5
110.0		0.3750	36.471	42.962	7,072.4	15.39	97.26	82.6	381.9	0.0	745.3
115.0		0.3750	35.053	41.274	6,271.0	14.72	93.47	82.6	352.4	0.0	716.6
117.0		0.3750	34.486	40.599	5,968.3	14.45	91.96	82.6	340.9	0.0	278.6
120.0		0.3750	33.635	39.586	5,532.6	14.05	89.69	82.6	324.0	0.0	409.3
122.5		0.3750	32.926	38.742	5,186.2	13.72	87.80	82.6	310.2	0.0	333.2
124.0	Top - Section 3	0.3750	32.500	38.235	4,985.5	13.52	86.67	82.6	302.1	0.0	196.5
124.0	Bot - Section 4	0.2500	32.500	25.589	3,362.6	21.16	130.00	76.5	203.8	0.0	
125.0		0.2500	32.085	25.260	3,234.6	20.87	128.34	76.9	198.6	0.0	86.5
130.0		0.2500	30.012	23.615	2,642.9	19.40	120.05	78.6	173.4	0.0	415.8
131.0		0.2500	29.598	23.286	2,534.0	19.11	118.39	78.9	168.6	0.0	79.8
133.0		0.2500	28.768	22.628	2,325.2	18.53	115.07	79.6	159.2	0.0	156.2
135.0		0.2500	27.939	21.970	2,128.2	17.94	111.76	80.3	150.0	0.0	151.8
136.0		0.2500	27.524	21.641	2,034.0	17.65	110.10	80.6	145.6	0.0	74.2
140.0		0.2500	25.866	20.325	1,685.0	16.48	103.46	82.0	128.3	0.0	285.6
144.0		0.2500	24.207	19.009	1,378.5	15.31	96.83	82.6	112.2	0.0	267.7
144.5		0.2500	24.000	18.845	1,343.0	15.16	96.00	82.6	110.2	0.0	32.2
											33,913.9

Site Number: 411181 Code: ANSI/TIA-222-G

Site Name: Barkhamstead CT, CT Engineering Number:OAA747114_C3_02 3/29/2019 7:41:20 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 93 mph with No Ice 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		232.8	0.0					0.0	0.0	232.8	0.0	0.0	0.0
5.00		460.6	2,100.8					0.0	428.9	460.6	2,529.8	0.0	0.0
10.00		450.5	2,054.9					0.0	428.9	450.5	2,483.8	0.0	0.0
15.00		440.4	2,008.9					0.0	428.9	440.4	2,437.9	0.0	0.0
20.00		430.3	1,963.0					0.0	428.9	430.3	2,391.9	0.0	0.0
25.00		420.2	1,917.0					0.0	428.9	420.2	2,346.0	0.0	0.0
30.00		414.9	1,871.1					0.0	428.9	414.9	2,300.0	0.0	0.0
35.00		418.0	1,825.1					0.0	428.9	418.0	2,254.1	0.0	0.0
40.00		295.5	1,779.2					0.0	428.9	295.5	2,208.1	0.0	0.0
42.00	Bot - Section 2	214.8	698.8					0.0	171.6	214.8	870.4	0.0	0.0
45.00		303.7	1,955.5					0.0	257.4	303.7	2,212.8	0.0	0.0
49.00	Top - Section 1	217.4	2,559.0					0.0	343.2	217.4	2,902.2	0.0	0.0
50.00	Appurtenance(s)	261.3	297.4	2.7	0.0	0.0	0.7	0.0	85.8	264.0	383.9	0.0	0.0
55.00		435.1	1,462.7					0.0	428.0	435.1	1,890.8	0.0	0.0
60.00		433.8	1,422.5					0.0	428.0	433.8	1,850.5	0.0	0.0
65.00		431.2	1,382.3					0.0	428.0	431.2	1,810.3	0.0	0.0
70.00		427.6	1,342.1					0.0	428.0	427.6	1,770.1	0.0	0.0
75.00		422.9	1,301.9					0.0	428.0	422.9	1,729.9	0.0	0.0
80.00		262.3	1,261.7					0.0	428.0	262.3	1,689.7	0.0	0.0
81.25	Bot - Section 3	75.4	309.1					0.0	107.0	75.4	416.1	0.0	0.0
81.80		157.8	253.3					0.0	47.1	157.8	300.4	0.0	0.0
85.00		218.0	1,455.8					0.0	273.9	218.0	1,729.8	0.0	0.0
87.00	Top - Section 2	207.5	894.4					0.0	171.2	207.5	1,065.6	0.0	0.0
90.00		246.9	615.2					0.0	256.8	246.9	872.0	0.0	0.0
93.00	Appurtenance(s)	175.5	602.8	377.2	0.0	0.0	95.0	0.0	256.8	552.7	954.7	0.0	0.0
94.30		81.1	257.4					0.0	111.3	81.1	368.7	0.0	0.0
95.00		228.2	137.6					0.0	59.9	228.2	197.5	0.0	0.0
100.00		356.7	963.3					0.0	428.0	356.7	1,391.3	0.0	0.0
104.00	Appurtenance(s)	195.5	745.8	2,181.2	0.0	5,778.1	1,466.5	0.0	342.4	2,376.7	2,554.8	0.0	0.0
105.00		229.7	183.0					0.0	67.7	229.7	250.7	0.0	0.0
110.00		377.0	894.4					0.0	338.6	377.0	1,233.0	0.0	0.0
115.00		259.1	859.9					0.0	338.6	259.1	1,198.5	0.0	0.0
117.00	Appurtenance(s)	180.9	334.3	3,585.7	0.0	1,590.4	3,378.1	0.0	135.4	3,766.7	3,847.9	0.0	0.0
120.00		196.4	491.1					0.0	109.2	196.4	600.3	0.0	0.0
122.50	Appurtenance(s)	140.9	399.8	14,857.8	0.0	0.0	3,960.0	0.0	91.0	14,998.6	4,450.8	0.0	0.0
124.00	Top - Section 3	87.0	235.7					0.0	54.6	87.0	290.3	0.0	0.0
125.00		202.0	103.8					0.0	36.4	202.0	140.2	0.0	0.0
130.00		199.8	498.9					0.0	182.0	199.8	680.9	0.0	0.0
131.00	Appurtenance(s)	95.9	95.8	3,676.8	0.0	0.0	2,934.5	0.0	36.4	3,772.7	3,066.6	0.0	0.0
133.00	Appurtenance(s)	125.6	187.5	542.4	0.0	1,627.2	146.2	0.0	66.6	668.0	400.2	0.0	0.0
135.00		92.5	182.1					0.0	60.6	92.5	242.8	0.0	0.0
136.00	Appurtenance(s)	148.2	89.0	2,354.2	0.0	0.0	819.4	0.0	30.3	2,502.5	938.7	0.0	0.0
140.00		229.2	342.7					0.0	85.9	229.2	428.6	0.0	0.0
144.00	Appurtenance(s)	124.8	321.2	3,397.7	0.0	8,199.2	1,657.1	0.0	85.9	3,522.5	2,064.2	0.0	0.0
144.50	Appurtenance(s)	13.5	38.6	475.5	0.0	0.0	405.0	0.0	10.7	489.0	454.4	0.0	0.0
								Totals:		43,069.2	66,201.2	0.00	0.00

Load Case: 1.2D + 1.6W 93 mph with No Ice 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.20
Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-68.38	-52.96	0.00	-5,755.71	0.00	5,755.71	7,122.56	3,561.28	19,188.7	9,608.64	0.00	0.00	0.609
5.00	-65.72	-52.66	0.00	-5,490.92	0.00	5,490.92	7,022.33	3,511.17	18,506.2	9,266.89	0.08	-0.14	0.602
10.00	-63.11	-52.36	0.00	-5,227.61	0.00	5,227.61	6,919.72	3,459.86	17,829.4	8,927.97	0.30	-0.29	0.595
15.00	-60.54	-52.06	0.00	-4,965.81	0.00	4,965.81	6,814.72	3,407.36	17,158.6	8,592.07	0.68	-0.43	0.587
20.00	-58.02	-51.76	0.00	-4,705.50	0.00	4,705.50	6,707.34	3,353.67	16,494.3	8,259.41	1.22	-0.58	0.579
25.00	-55.54	-51.46	0.00	-4,446.69	0.00	4,446.69	6,597.58	3,298.79	15,836.8	7,930.21	1.91	-0.73	0.569
30.00	-53.11	-51.16	0.00	-4,189.38	0.00	4,189.38	6,485.43	3,242.71	15,186.7	7,604.67	2.76	-0.89	0.559
35.00	-50.72	-50.84	0.00	-3,933.59	0.00	3,933.59	6,370.90	3,185.45	14,544.3	7,283.01	3.77	-1.04	0.548
40.00	-48.42	-50.60	0.00	-3,679.38	0.00	3,679.38	6,253.98	3,126.99	13,910.1	6,965.42	4.95	-1.20	0.536
42.00	-47.49	-50.43	0.00	-3,578.19	0.00	3,578.19	6,206.55	3,103.27	13,658.8	6,839.58	5.46	-1.26	0.531
45.00	-45.18	-50.17	0.00	-3,426.90	0.00	3,426.90	6,134.68	3,067.34	13,284.5	6,652.13	6.29	-1.36	0.523
49.00	-42.22	-49.93	0.00	-3,226.24	0.00	3,226.24	5,148.39	2,574.20	11,119.7	5,568.15	7.48	-1.49	0.588
50.00	-41.75	-49.74	0.00	-3,176.31	0.00	3,176.31	5,129.41	2,564.70	11,018.5	5,517.45	7.80	-1.52	0.584
55.00	-39.72	-49.37	0.00	-2,927.63	0.00	2,927.63	5,033.07	2,516.53	10,515.9	5,265.79	9.49	-1.69	0.564
60.00	-37.74	-48.99	0.00	-2,680.79	0.00	2,680.79	4,934.34	2,467.17	10,019.8	5,017.38	11.35	-1.87	0.542
65.00	-35.80	-48.61	0.00	-2,435.84	0.00	2,435.84	4,833.24	2,416.62	9,530.68	4,772.43	13.40	-2.04	0.518
70.00	-33.91	-48.21	0.00	-2,192.82	0.00	2,192.82	4,729.75	2,364.87	9,048.82	4,531.13	15.63	-2.21	0.492
75.00	-32.06	-47.81	0.00	-1,951.77	0.00	1,951.77	4,623.87	2,311.94	8,574.69	4,293.72	18.03	-2.37	0.462
80.00	-30.30	-47.53	0.00	-1,712.71	0.00	1,712.71	4,515.61	2,257.81	8,108.72	4,060.38	20.60	-2.53	0.429
81.25	-29.86	-47.45	0.00	-1,653.30	0.00	1,653.30	4,481.39	2,240.69	7,981.45	3,996.66	21.27	-2.57	0.421
81.80	-28.63	-42.21	0.00	-1,627.21	0.00	1,627.21	4,465.29	2,232.65	7,923.94	3,967.86	21.57	-2.59	0.417
85.00	-26.85	-41.95	0.00	-1,492.13	0.00	1,492.13	4,371.64	2,185.82	7,593.43	3,802.36	23.34	-2.69	0.399
87.00	-25.74	-41.73	0.00	-1,408.23	0.00	1,408.23	3,638.50	1,819.25	6,366.16	3,187.81	24.48	-2.75	0.449
90.00	-24.82	-41.48	0.00	-1,283.05	0.00	1,283.05	3,586.91	1,793.45	6,149.48	3,079.31	26.24	-2.84	0.424
93.00	-23.84	-40.91	0.00	-1,158.61	0.00	1,158.61	3,534.46	1,767.23	5,935.01	2,971.92	28.06	-2.94	0.397
94.30	-22.59	-35.78	0.00	-1,105.44	0.00	1,105.44	3,511.46	1,755.73	5,842.77	2,925.73	28.87	-2.98	0.385
95.00	-22.36	-35.58	0.00	-1,080.39	0.00	1,080.39	3,499.01	1,749.51	5,793.29	2,900.95	29.31	-3.00	0.379
100.00	-20.91	-35.19	0.00	-902.51	0.00	902.51	3,408.74	1,704.37	5,443.61	2,725.85	32.53	-3.14	0.338
104.00	-18.46	-32.70	0.00	-755.97	0.00	755.97	3,334.80	1,667.40	5,168.85	2,588.26	35.21	-3.25	0.298
105.00	-18.18	-32.48	0.00	-723.27	0.00	723.27	3,316.07	1,658.04	5,100.87	2,554.23	35.89	-3.28	0.289
110.00	-16.91	-32.06	0.00	-560.89	0.00	560.89	3,191.87	1,595.94	4,722.36	2,364.69	39.38	-3.39	0.243
115.00	-15.69	-31.75	0.00	-400.60	0.00	400.60	3,066.45	1,533.23	4,356.70	2,181.59	42.99	-3.49	0.189
117.00	-12.06	-27.76	0.00	-335.52	0.00	335.52	3,016.29	1,508.14	4,214.57	2,110.42	44.46	-3.52	0.163
120.00	-11.46	-27.53	0.00	-252.24	0.00	252.24	2,941.04	1,470.52	4,005.78	2,005.87	46.68	-3.56	0.130
122.50	-7.95	-12.29	0.00	-183.41	0.00	183.41	2,878.33	1,439.16	3,835.85	1,920.77	48.56	-3.59	0.098
124.00	-7.66	-12.18	0.00	-164.98	0.00	164.98	2,840.70	1,420.35	3,735.65	1,870.60	49.69	-3.61	0.091
124.00	-7.66	-12.18	0.00	-164.98	0.00	164.98	1,762.15	881.07	2,335.37	1,169.42	49.69	-3.61	0.146
125.00	-7.53	-11.98	0.00	-152.79	0.00	152.79	1,747.31	873.66	2,285.71	1,144.55	50.44	-3.61	0.138
130.00	-6.86	-11.74	0.00	-92.90	0.00	92.90	1,670.08	835.04	2,041.30	1,022.17	54.26	-3.67	0.095
131.00	-4.04	-7.78	0.00	-81.16	0.00	81.16	1,654.02	827.01	1,993.27	998.12	55.03	-3.68	0.084
133.00	-3.68	-7.09	0.00	-63.97	0.00	63.97	1,621.29	810.65	1,898.16	950.49	56.57	-3.69	0.070
135.00	-3.44	-6.98	0.00	-49.80	0.00	49.80	1,587.75	793.87	1,804.36	903.52	58.12	-3.71	0.057
136.00	-2.67	-4.42	0.00	-42.82	0.00	42.82	1,570.67	785.34	1,757.99	880.30	58.90	-3.71	0.050
140.00	-2.25	-4.17	0.00	-25.13	0.00	25.13	1,500.33	750.16	1,576.21	789.28	62.02	-3.73	0.033
144.00	-0.42	-0.52	0.00	-0.26	0.00	0.26	1,412.31	706.15	1,386.75	694.40	65.15	-3.74	0.001
144.50	0.00	-0.49	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	65.54	-3.74	0.000

Site Number: 411181 Code: ANSI/TIA-222-G

Site Name: Barkhamstead CT, CT Engineering Number:OAA747114_C3_02 3/29/2019 7:41:27 AM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W — 93 mph with No Ice (Reduced DL) — 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		232.8	0.0					0.0	0.0	232.8	0.0	0.0	0.0
5.00		460.6	1,575.6					0.0	321.7	460.6	1,897.3	0.0	0.0
10.00		450.5	1,541.2					0.0	321.7	450.5	1,862.9	0.0	0.0
15.00		440.4	1,506.7					0.0	321.7	440.4	1,828.4	0.0	0.0
20.00		430.3	1,472.2					0.0	321.7	430.3	1,793.9	0.0	0.0
25.00		420.2	1,437.8					0.0	321.7	420.2	1,759.5	0.0	0.0
30.00		414.9	1,403.3					0.0	321.7	414.9	1,725.0	0.0	0.0
35.00		418.0	1,368.8					0.0	321.7	418.0	1,690.5	0.0	0.0
40.00		295.5	1,334.4					0.0	321.7	295.5	1,656.1	0.0	0.0
42.00	Bot - Section 2	214.8	524.1					0.0	128.7	214.8	652.8	0.0	0.0
45.00		303.7	1,466.6					0.0	193.0	303.7	1,659.6	0.0	0.0
49.00	Top - Section 1	217.4	1,919.3					0.0	257.4	217.4	2,176.6	0.0	0.0
50.00	Appurtenance(s)	261.3	223.0	2.7	0.0	0.0	0.5	0.0	64.3	264.0	287.9	0.0	0.0
55.00		435.1	1,097.0					0.0	321.0	435.1	1,418.1	0.0	0.0
60.00		433.8	1,066.9					0.0	321.0	433.8	1,387.9	0.0	0.0
65.00		431.2	1,036.7					0.0	321.0	431.2	1,357.8	0.0	0.0
70.00		427.6	1,006.6					0.0	321.0	427.6	1,327.6	0.0	0.0
75.00		422.9	976.4					0.0	321.0	422.9	1,297.4	0.0	0.0
80.00		262.3	946.3					0.0	321.0	262.3	1,267.3	0.0	0.0
81.25	Bot - Section 3	75.4	231.9					0.0	80.3	75.4	312.1	0.0	0.0
81.80		157.8	190.0					0.0	35.3	157.8	225.3	0.0	0.0
85.00		218.0	1,091.9					0.0	205.5	218.0	1,297.3	0.0	0.0
87.00	Top - Section 2	207.5	670.8					0.0	128.4	207.5	799.2	0.0	0.0
90.00		246.9	461.4					0.0	192.6	246.9	654.0	0.0	0.0
93.00	Appurtenance(s)	175.5	452.1	377.2	0.0	0.0	71.3	0.0	192.6	552.7	716.0	0.0	0.0
94.30		81.1	193.0					0.0	83.5	81.1	276.5	0.0	0.0
95.00		228.2	103.2					0.0	44.9	228.2	148.2	0.0	0.0
100.00		356.7	722.5					0.0	321.0	356.7	1,043.5	0.0	0.0
104.00	Appurtenance(s)	195.5	559.4	2,181.2	0.0	5,778.1	1,099.9	0.0	256.8	2,376.7	1,916.1	0.0	0.0
105.00		229.7	137.3					0.0	50.8	229.7	188.0	0.0	0.0
110.00		377.0	670.8					0.0	253.9	377.0	924.7	0.0	0.0
115.00		259.1	644.9					0.0	253.9	259.1	898.9	0.0	0.0
117.00	Appurtenance(s)	180.9	250.7	3,585.7	0.0	1,590.4	2,533.6	0.0	101.6	3,766.7	2,885.9	0.0	0.0
120.00		196.4	368.3					0.0	81.9	196.4	450.2	0.0	0.0
122.50	Appurtenance(s)	140.9	299.8	14,857.8	0.0	0.0	2,970.0	0.0	68.2	14,998.6	3,338.1	0.0	0.0
124.00	Top - Section 3	87.0	176.8					0.0	40.9	87.0	217.8	0.0	0.0
125.00		202.0	77.9					0.0	27.3	202.0	105.2	0.0	0.0
130.00		199.8	374.2					0.0	136.5	199.8	510.7	0.0	0.0
131.00	Appurtenance(s)	95.9	71.8	3,676.8	0.0	0.0	2,200.9	0.0	27.3	3,772.7	2,300.0	0.0	0.0
133.00	Appurtenance(s)	125.6	140.6	542.4	0.0	1,627.2	109.6	0.0	49.9	668.0	300.1	0.0	0.0
135.00		92.5	136.6					0.0	45.5	92.5	182.1	0.0	0.0
136.00	Appurtenance(s)	148.2	66.8	2,354.2	0.0	0.0	614.5	0.0	22.7	2,502.5	704.0	0.0	0.0
140.00		229.2	257.0					0.0	64.4	229.2	321.5	0.0	0.0
144.00	Appurtenance(s)	124.8	240.9	3,397.7	0.0	8,199.2	1,242.8	0.0	64.4	3,522.5	1,548.1	0.0	0.0
144.50	Appurtenance(s)	13.5	29.0	475.5	0.0	0.0	303.8	0.0	8.1	489.0	340.8	0.0	0.0
								Totals:		43,069.2	49,650.9	0.00	0.00

Load Case: 0.9D + 1.6W 93 mph with No Ice (Reduced DL) 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :0.90
Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-51.27	-52.94	0.00	-5,721.51	0.00	5,721.51	7,122.56	3,561.28	19,188.7	9,608.64	0.00	0.00	0.603
5.00	-49.24	-52.60	0.00	-5,456.82	0.00	5,456.82	7,022.33	3,511.17	18,506.2	9,266.89	0.08	-0.14	0.596
10.00	-47.25	-52.26	0.00	-5,193.84	0.00	5,193.84	6,919.72	3,459.86	17,829.4	8,927.97	0.30	-0.28	0.589
15.00	-45.29	-51.92	0.00	-4,932.54	0.00	4,932.54	6,814.72	3,407.36	17,158.6	8,592.07	0.68	-0.43	0.581
20.00	-43.37	-51.59	0.00	-4,672.92	0.00	4,672.92	6,707.34	3,353.67	16,494.3	8,259.41	1.21	-0.58	0.572
25.00	-41.48	-51.26	0.00	-4,414.97	0.00	4,414.97	6,597.58	3,298.79	15,836.8	7,930.21	1.89	-0.73	0.563
30.00	-39.62	-50.93	0.00	-4,158.67	0.00	4,158.67	6,485.43	3,242.71	15,186.7	7,604.67	2.74	-0.88	0.553
35.00	-37.80	-50.58	0.00	-3,904.04	0.00	3,904.04	6,370.90	3,185.45	14,544.3	7,283.01	3.75	-1.03	0.542
40.00	-36.06	-50.33	0.00	-3,651.12	0.00	3,651.12	6,253.98	3,126.99	13,910.1	6,965.42	4.91	-1.19	0.530
42.00	-35.34	-50.15	0.00	-3,550.47	0.00	3,550.47	6,206.55	3,103.27	13,658.8	6,839.58	5.43	-1.25	0.525
45.00	-33.59	-49.87	0.00	-3,400.04	0.00	3,400.04	6,134.68	3,067.34	13,284.5	6,652.13	6.25	-1.35	0.517
49.00	-31.35	-49.64	0.00	-3,200.56	0.00	3,200.56	5,148.39	2,574.20	11,119.7	5,568.15	7.43	-1.48	0.581
50.00	-30.98	-49.43	0.00	-3,150.92	0.00	3,150.92	5,129.41	2,564.70	11,018.5	5,517.45	7.75	-1.51	0.577
55.00	-29.43	-49.04	0.00	-2,903.78	0.00	2,903.78	5,033.07	2,516.53	10,515.9	5,265.79	9.42	-1.68	0.558
60.00	-27.91	-48.65	0.00	-2,658.58	0.00	2,658.58	4,934.34	2,467.17	10,019.8	5,017.38	11.27	-1.85	0.536
65.00	-26.42	-48.25	0.00	-2,415.34	0.00	2,415.34	4,833.24	2,416.62	9,530.68	4,772.43	13.31	-2.02	0.512
70.00	-24.98	-47.85	0.00	-2,174.10	0.00	2,174.10	4,729.75	2,364.87	9,048.82	4,531.13	15.52	-2.19	0.486
75.00	-23.56	-47.44	0.00	-1,934.88	0.00	1,934.88	4,623.87	2,311.94	8,574.69	4,293.72	17.90	-2.35	0.456
80.00	-22.23	-47.16	0.00	-1,697.69	0.00	1,697.69	4,515.61	2,257.81	8,108.72	4,060.38	20.46	-2.51	0.423
81.25	-21.89	-47.08	0.00	-1,638.74	0.00	1,638.74	4,481.39	2,240.69	7,981.45	3,996.66	21.12	-2.55	0.415
81.80	-21.02	-41.85	0.00	-1,612.84	0.00	1,612.84	4,465.29	2,232.65	7,923.94	3,967.86	21.41	-2.57	0.412
85.00	-19.67	-41.60	0.00	-1,478.92	0.00	1,478.92	4,371.64	2,185.82	7,593.43	3,802.36	23.17	-2.67	0.394
87.00	-18.83	-41.38	0.00	-1,395.72	0.00	1,395.72	3,638.50	1,819.25	6,366.16	3,187.81	24.31	-2.73	0.444
90.00	-18.12	-41.13	0.00	-1,271.57	0.00	1,271.57	3,586.91	1,793.45	6,149.48	3,079.31	26.05	-2.82	0.419
93.00	-17.39	-40.56	0.00	-1,148.18	0.00	1,148.18	3,534.46	1,767.23	5,935.01	2,971.92	27.86	-2.92	0.392
94.30	-16.51	-35.46	0.00	-1,095.44	0.00	1,095.44	3,511.46	1,755.73	5,842.77	2,925.73	28.66	-2.96	0.380
95.00	-16.32	-35.24	0.00	-1,070.62	0.00	1,070.62	3,499.01	1,749.51	5,793.29	2,900.95	29.09	-2.98	0.374
100.00	-15.22	-34.87	0.00	-894.40	0.00	894.40	3,408.74	1,704.37	5,443.61	2,725.85	32.29	-3.12	0.333
104.00	-13.41	-32.40	0.00	-749.16	0.00	749.16	3,334.80	1,667.40	5,168.85	2,588.26	34.95	-3.22	0.294
105.00	-13.19	-32.18	0.00	-716.76	0.00	716.76	3,316.07	1,658.04	5,100.87	2,554.23	35.62	-3.25	0.285
110.00	-12.23	-31.77	0.00	-555.87	0.00	555.87	3,191.87	1,595.94	4,722.36	2,364.69	39.09	-3.36	0.239
115.00	-11.32	-31.47	0.00	-397.02	0.00	397.02	3,066.45	1,533.23	4,356.70	2,181.59	42.67	-3.46	0.186
117.00	-8.65	-27.54	0.00	-332.49	0.00	332.49	3,016.29	1,508.14	4,214.57	2,110.42	44.12	-3.49	0.161
120.00	-8.19	-27.32	0.00	-249.86	0.00	249.86	2,941.04	1,470.52	4,005.78	2,005.87	46.33	-3.53	0.128
122.50	-5.78	-12.15	0.00	-181.55	0.00	181.55	2,878.33	1,439.16	3,835.85	1,920.77	48.19	-3.56	0.097
124.00	-5.57	-12.05	0.00	-163.33	0.00	163.33	2,840.70	1,420.35	3,735.65	1,870.60	49.31	-3.58	0.089
124.00	-5.57	-12.05	0.00	-163.33	0.00	163.33	1,762.15	881.07	2,335.37	1,169.42	49.31	-3.58	0.143
125.00	-5.47	-11.84	0.00	-151.28	0.00	151.28	1,747.31	873.66	2,285.71	1,144.55	50.06	-3.59	0.135
130.00	-4.97	-11.62	0.00	-92.06	0.00	92.06	1,670.08	835.04	2,041.30	1,022.17	53.85	-3.64	0.093
131.00	-2.91	-7.70	0.00	-80.44	0.00	80.44	1,654.02	827.01	1,993.27	998.12	54.61	-3.65	0.082
133.00	-2.65	-7.02	0.00	-63.41	0.00	63.41	1,621.29	810.65	1,898.16	950.49	56.14	-3.66	0.068
135.00	-2.48	-6.92	0.00	-49.37	0.00	49.37	1,587.75	793.87	1,804.36	903.52	57.68	-3.68	0.056
136.00	-1.93	-4.37	0.00	-42.45	0.00	42.45	1,570.67	785.34	1,757.99	880.30	58.45	-3.68	0.049
140.00	-1.63	-4.13	0.00	-24.96	0.00	24.96	1,500.33	750.16	1,576.21	789.28	61.54	-3.70	0.033
144.00	-0.31	-0.51	0.00	-0.25	0.00	0.25	1,412.31	706.15	1,386.75	694.40	64.65	-3.71	0.001
144.50	0.00	-0.49	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	65.04	-3.71	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 21 Iterations

Gust Response Factor :1.10 | Ice Dead Load Factor :1.00 | Wind Importance Factor :1.00
Dead Load Factor :1.20 | Ice Importance Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		80.4	0.0					0.0	0.0	80.4	0.0	0.0	0.0
5.00		159.4	2,578.5					0.0	500.5	159.4	3,079.0	0.0	0.0
10.00		156.5	2,577.6					0.0	508.7	156.5	3,086.3	0.0	0.0
15.00		153.4	2,547.5					0.0	513.0	153.4	3,060.5	0.0	0.0
20.00		150.2	2,507.9					0.0	515.9	150.2	3,023.8	0.0	0.0
25.00		147.0	2,463.3					0.0	518.2	147.0	2,981.5	0.0	0.0
30.00		145.4	2,415.6					0.0	520.1	145.4	2,935.6	0.0	0.0
35.00		146.8	2,365.7					0.0	521.7	146.8	2,887.4	0.0	0.0
40.00		103.9	2,314.2					0.0	523.0	103.9	2,837.3	0.0	0.0
42.00	Bot - Section 2	75.6	912.6					0.0	209.6	75.6	1,122.2	0.0	0.0
45.00		107.0	2,278.3					0.0	314.7	107.0	2,593.0	0.0	0.0
49.00	Top - Section 1	76.6	2,984.1					0.0	420.2	76.6	3,404.3	0.0	0.0
50.00	Appurtenance(s)	92.3	403.6	1.4	0.0	0.0	5.7	0.0	105.2	93.7	514.5	0.0	0.0
55.00		153.9	1,983.3					0.0	525.5	153.9	2,508.9	0.0	0.0
60.00		153.8	1,933.9					0.0	526.5	153.8	2,460.4	0.0	0.0
65.00		153.2	1,883.9					0.0	527.3	153.2	2,411.2	0.0	0.0
70.00		152.3	1,833.4					0.0	528.2	152.3	2,361.5	0.0	0.0
75.00		151.0	1,782.4					0.0	528.9	151.0	2,311.3	0.0	0.0
80.00		93.8	1,731.0					0.0	529.6	93.8	2,260.6	0.0	0.0
81.25	Bot - Section 3	27.0	426.0					0.0	132.5	27.0	558.5	0.0	0.0
81.80		56.5	305.5					0.0	58.3	56.5	363.8	0.0	0.0
85.00		78.1	1,754.1					0.0	339.5	78.1	2,093.5	0.0	0.0
87.00	Top - Section 2	74.5	1,079.0					0.0	212.3	74.5	1,291.3	0.0	0.0
90.00		88.7	887.7					0.0	318.6	88.7	1,206.3	0.0	0.0
93.00	Appurtenance(s)	63.2	870.9	97.9	0.0	0.0	439.3	0.0	318.9	161.1	1,629.1	0.0	0.0
94.30		29.2	372.8					0.0	138.2	29.2	511.1	0.0	0.0
95.00		82.3	199.6					0.0	74.5	82.3	274.0	0.0	0.0
100.00		128.9	1,392.3					0.0	532.2	128.9	1,924.5	0.0	0.0
104.00	Appurtenance(s)	70.8	1,081.1	559.5	0.0	1,378.8	4,591.2	0.0	426.1	630.3	6,098.5	0.0	0.0
105.00		83.4	266.4					0.0	67.7	83.4	334.2	0.0	0.0
110.00		137.2	1,297.8					0.0	338.6	137.2	1,636.3	0.0	0.0
115.00		94.5	1,250.1					0.0	338.6	94.5	1,588.7	0.0	0.0
117.00	Appurtenance(s)	66.2	488.5	915.0	0.0	372.3	9,797.7	0.0	135.4	981.2	10,421.6	0.0	0.0
120.00		72.0	717.5					0.0	109.2	72.0	826.6	0.0	0.0
122.50	Appurtenance(s)	51.8	585.1	4,518.5	0.0	0.0	9,515.2	0.0	91.0	4,570.2	10,191.2	0.0	0.0
124.00	Top - Section 3	32.0	345.7					0.0	54.6	32.0	400.3	0.0	0.0
125.00		74.7	176.3					0.0	36.4	74.7	212.7	0.0	0.0
130.00		73.9	840.1					0.0	182.0	73.9	1,022.1	0.0	0.0
131.00	Appurtenance(s)	35.7	163.3	1,137.3	0.0	0.0	7,166.6	0.0	36.4	1,173.0	7,366.3	0.0	0.0
133.00	Appurtenance(s)	46.8	319.1	131.4	0.0	394.3	791.5	0.0	66.6	178.3	1,177.1	0.0	0.0
135.00		34.6	310.3					0.0	60.6	34.6	371.0	0.0	0.0
136.00	Appurtenance(s)	55.7	152.3	528.1	0.0	0.0	4,075.7	0.0	30.3	583.8	4,258.3	0.0	0.0
140.00		86.5	581.9					0.0	85.9	86.5	667.8	0.0	0.0
144.00	Appurtenance(s)	47.3	546.7	870.9	0.0	1,947.6	5,998.2	0.0	85.9	918.3	6,630.8	0.0	0.0
144.50	Appurtenance(s)	5.1	66.7	145.6	0.0	0.0	977.2	0.0	10.7	150.8	1,054.6	0.0	0.0
								Totals:		13,054.8	109,949.	0.00	0.00

Site Number: 411181 Code: ANSI/TIA-222-G

Site Name: Barkhamstead CT, CT Engineering Number:OAA747114_C3_02 3/29/2019 7:41:40 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 21 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00 Wind Importance Factor :1.00

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-115.31	-16.03	0.00	-1,755.53	0.00	1,755.53	7,122.56	3,561.28	19,188.7	9,608.64	0.00	0.00	0.199
5.00	-112.22	-15.96	0.00	-1,675.38	0.00	1,675.38	7,022.33	3,511.17	18,506.2	9,266.89	0.02	-0.04	0.197
10.00	-109.12	-15.88	0.00	-1,595.60	0.00	1,595.60	6,919.72	3,459.86	17,829.4	8,927.97	0.09	-0.09	0.195
15.00	-106.05	-15.81	0.00	-1,516.19	0.00	1,516.19	6,814.72	3,407.36	17,158.6	8,592.07	0.21	-0.13	0.192
20.00	-103.01	-15.73	0.00	-1,437.17	0.00	1,437.17	6,707.34	3,353.67	16,494.3	8,259.41	0.37	-0.18	0.189
25.00	-100.02	-15.65	0.00	-1,358.52	0.00	1,358.52	6,597.58	3,298.79	15,836.8	7,930.21	0.58	-0.22	0.186
30.00	-97.07	-15.58	0.00	-1,280.26	0.00	1,280.26	6,485.43	3,242.71	15,186.7	7,604.67	0.84	-0.27	0.183
35.00	-94.17	-15.49	0.00	-1,202.38	0.00	1,202.38	6,370.90	3,185.45	14,544.3	7,283.01	1.15	-0.32	0.180
40.00	-91.32	-15.42	0.00	-1,124.92	0.00	1,124.92	6,253.98	3,126.99	13,910.1	6,965.42	1.51	-0.37	0.176
42.00	-90.20	-15.38	0.00	-1,094.08	0.00	1,094.08	6,206.55	3,103.27	13,658.8	6,839.58	1.67	-0.39	0.175
45.00	-87.59	-15.31	0.00	-1,047.93	0.00	1,047.93	6,134.68	3,067.34	13,284.5	6,652.13	1.92	-0.42	0.172
49.00	-84.18	-15.24	0.00	-986.70	0.00	986.70	5,148.39	2,574.20	11,119.7	5,568.15	2.28	-0.45	0.194
50.00	-83.66	-15.19	0.00	-971.46	0.00	971.46	5,129.41	2,564.70	11,018.5	5,517.45	2.38	-0.46	0.192
55.00	-81.14	-15.09	0.00	-895.51	0.00	895.51	5,033.07	2,516.53	10,515.9	5,265.79	2.90	-0.52	0.186
60.00	-78.67	-14.99	0.00	-820.06	0.00	820.06	4,934.34	2,467.17	10,019.8	5,017.38	3.47	-0.57	0.179
65.00	-76.24	-14.88	0.00	-745.14	0.00	745.14	4,833.24	2,416.62	9,530.68	4,772.43	4.09	-0.62	0.172
70.00	-73.87	-14.76	0.00	-670.76	0.00	670.76	4,729.75	2,364.87	9,048.82	4,531.13	4.77	-0.67	0.164
75.00	-71.55	-14.65	0.00	-596.95	0.00	596.95	4,623.87	2,311.94	8,574.69	4,293.72	5.51	-0.73	0.155
80.00	-69.28	-14.56	0.00	-523.71	0.00	523.71	4,515.61	2,257.81	8,108.72	4,060.38	6.29	-0.77	0.144
81.25	-68.72	-14.54	0.00	-505.52	0.00	505.52	4,481.39	2,240.69	7,981.45	3,996.66	6.50	-0.79	0.142
81.80	-65.70	-12.95	0.00	-497.52	0.00	497.52	4,465.29	2,232.65	7,923.94	3,967.86	6.59	-0.79	0.140
85.00	-63.60	-12.87	0.00	-456.09	0.00	456.09	4,371.64	2,185.82	7,593.43	3,802.36	7.13	-0.82	0.135
87.00	-62.31	-12.80	0.00	-430.36	0.00	430.36	3,638.50	1,819.25	6,366.16	3,187.81	7.48	-0.84	0.152
90.00	-61.09	-12.72	0.00	-391.97	0.00	391.97	3,586.91	1,793.45	6,149.48	3,079.31	8.02	-0.87	0.144
93.00	-59.46	-12.56	0.00	-353.81	0.00	353.81	3,534.46	1,767.23	5,935.01	2,971.92	8.58	-0.90	0.136
94.30	-56.29	-10.99	0.00	-337.48	0.00	337.48	3,511.46	1,755.73	5,842.77	2,925.73	8.82	-0.91	0.131
95.00	-56.01	-10.92	0.00	-329.79	0.00	329.79	3,499.01	1,749.51	5,793.29	2,900.95	8.96	-0.92	0.130
100.00	-54.08	-10.80	0.00	-275.17	0.00	275.17	3,408.74	1,704.37	5,443.61	2,725.85	9.94	-0.96	0.117
104.00	-47.99	-10.08	0.00	-230.60	0.00	230.60	3,334.80	1,667.40	5,168.85	2,588.26	10.76	-0.99	0.104
105.00	-47.65	-10.01	0.00	-220.52	0.00	220.52	3,316.07	1,658.04	5,100.87	2,554.23	10.97	-1.00	0.101
110.00	-46.02	-9.87	0.00	-170.46	0.00	170.46	3,191.87	1,595.94	4,722.36	2,364.69	12.04	-1.04	0.087
115.00	-44.43	-9.76	0.00	-121.11	0.00	121.11	3,066.45	1,533.23	4,356.70	2,181.59	13.14	-1.07	0.070
117.00	-34.02	-8.59	0.00	-101.22	0.00	101.22	3,016.29	1,508.14	4,214.57	2,110.42	13.59	-1.08	0.059
120.00	-33.20	-8.51	0.00	-75.44	0.00	75.44	2,941.04	1,470.52	4,005.78	2,005.87	14.27	-1.09	0.049
122.50	-23.09	-3.75	0.00	-54.16	0.00	54.16	2,878.33	1,439.16	3,835.85	1,920.77	14.84	-1.10	0.036
124.00	-22.69	-3.71	0.00	-48.54	0.00	48.54	2,840.70	1,420.35	3,735.65	1,870.60	15.19	-1.10	0.034
124.00	-22.69	-3.71	0.00	-48.54	0.00	48.54	1,762.15	881.07	2,335.37	1,169.42	15.19	-1.10	0.054
125.00	-22.48	-3.64	0.00	-44.83	0.00	44.83	1,747.31	873.66	2,285.71	1,144.55	15.42	-1.10	0.052
130.00	-21.46	-3.55	0.00	-26.65	0.00	26.65	1,670.08	835.04	2,041.30	1,022.17	16.58	-1.12	0.039
131.00	-14.12	-2.23	0.00	-23.10	0.00	23.10	1,654.02	827.01	1,993.27	998.12	16.82	-1.12	0.032
133.00	-12.95	-2.03	0.00	-18.25	0.00	18.25	1,621.29	810.65	1,898.16	950.49	17.29	-1.13	0.027
135.00	-12.57	-1.99	0.00	-14.19	0.00	14.19	1,587.75	793.87	1,804.36	903.52	17.76	-1.13	0.024
136.00	-8.33	-1.32	0.00	-12.20	0.00	12.20	1,570.67	785.34	1,757.99	880.30	18.00	-1.13	0.019
140.00	-7.66	-1.22	0.00	-6.92	0.00	6.92	1,500.33	750.16	1,576.21	789.28	18.95	-1.14	0.014
144.00	-1.05	-0.17	0.00	-0.09	0.00	0.09	1,412.31	706.15	1,386.75	694.40	19.90	-1.14	0.001
144.50	0.00	-0.15	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	20.02	-1.14	0.000

Load Case: 1.0D + 1.0W Serviceability 60 mph 20 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		60.6	0.0					0.0	0.0	60.6	0.0	0.0	0.0
5.00		119.8	1,750.7					0.0	357.5	119.8	2,108.2	0.0	0.0
10.00		117.2	1,712.4					0.0	357.5	117.2	2,069.9	0.0	0.0
15.00		114.6	1,674.1					0.0	357.5	114.6	2,031.6	0.0	0.0
20.00		111.9	1,635.8					0.0	357.5	111.9	1,993.3	0.0	0.0
25.00		109.3	1,597.5					0.0	357.5	109.3	1,955.0	0.0	0.0
30.00		107.9	1,559.2					0.0	357.5	107.9	1,916.7	0.0	0.0
35.00		108.7	1,520.9					0.0	357.5	108.7	1,878.4	0.0	0.0
40.00		76.9	1,482.6					0.0	357.5	76.9	1,840.1	0.0	0.0
42.00	Bot - Section 2	55.9	582.3					0.0	143.0	55.9	725.3	0.0	0.0
45.00		79.0	1,629.6					0.0	214.5	79.0	1,844.0	0.0	0.0
49.00	Top - Section 1	56.5	2,132.5					0.0	286.0	56.5	2,418.5	0.0	0.0
50.00	Appurtenance(s)	68.0	247.8	0.7	0.0	0.0	0.6	0.0	71.5	68.7	319.9	0.0	0.0
55.00		113.2	1,218.9					0.0	356.7	113.2	1,575.6	0.0	0.0
60.00		112.8	1,185.4					0.0	356.7	112.8	1,542.1	0.0	0.0
65.00		112.2	1,151.9					0.0	356.7	112.2	1,508.6	0.0	0.0
70.00		111.2	1,118.4					0.0	356.7	111.2	1,475.1	0.0	0.0
75.00		110.0	1,084.9					0.0	356.7	110.0	1,441.6	0.0	0.0
80.00		68.2	1,051.4					0.0	356.7	68.2	1,408.1	0.0	0.0
81.25	Bot - Section 3	19.6	257.6					0.0	89.2	19.6	346.8	0.0	0.0
81.80		41.1	211.1					0.0	39.2	41.1	250.3	0.0	0.0
85.00		56.7	1,213.2					0.0	228.3	56.7	1,441.5	0.0	0.0
87.00	Top - Section 2	54.0	745.3					0.0	142.7	54.0	888.0	0.0	0.0
90.00		64.2	512.7					0.0	214.0	64.2	726.7	0.0	0.0
93.00	Appurtenance(s)	45.7	502.3	98.1	0.0	0.0	79.2	0.0	214.0	143.8	795.6	0.0	0.0
94.30		21.1	214.5					0.0	92.7	21.1	307.2	0.0	0.0
95.00		59.4	114.7					0.0	49.9	59.4	164.6	0.0	0.0
100.00		92.8	802.8					0.0	356.7	92.8	1,159.5	0.0	0.0
104.00	Appurtenance(s)	50.9	621.5	567.4	0.0	1,503.1	1,222.1	0.0	285.4	618.3	2,129.0	0.0	0.0
105.00		59.8	152.5					0.0	56.4	59.8	208.9	0.0	0.0
110.00		98.1	745.3					0.0	282.2	98.1	1,027.5	0.0	0.0
115.00		67.4	716.6					0.0	282.2	67.4	998.7	0.0	0.0
117.00	Appurtenance(s)	47.1	278.6	932.8	0.0	413.7	2,815.1	0.0	112.9	979.9	3,206.6	0.0	0.0
120.00		51.1	409.3					0.0	91.0	51.1	500.3	0.0	0.0
122.50	Appurtenance(s)	36.6	333.2	3,865.2	0.0	0.0	3,300.0	0.0	75.8	3,901.8	3,709.0	0.0	0.0
124.00	Top - Section 3	22.6	196.5					0.0	45.5	22.6	241.9	0.0	0.0
125.00		52.6	86.5					0.0	30.3	52.6	116.8	0.0	0.0
130.00		52.0	415.8					0.0	151.7	52.0	567.4	0.0	0.0
131.00	Appurtenance(s)	25.0	79.8	956.5	0.0	0.0	2,445.4	0.0	30.3	981.5	2,555.5	0.0	0.0
133.00	Appurtenance(s)	32.7	156.2	141.1	0.0	423.3	121.8	0.0	55.5	173.8	333.5	0.0	0.0
135.00		24.1	151.8					0.0	50.5	24.1	202.3	0.0	0.0
136.00	Appurtenance(s)	38.6	74.2	612.4	0.0	0.0	682.8	0.0	25.3	651.0	782.3	0.0	0.0
140.00		59.6	285.6					0.0	71.6	59.6	357.2	0.0	0.0
144.00	Appurtenance(s)	32.5	267.7	883.9	0.0	2,133.0	1,380.9	0.0	71.6	916.4	1,720.2	0.0	0.0
144.50	Appurtenance(s)	3.5	32.2	123.7	0.0	0.0	337.5	0.0	8.9	127.2	378.6	0.0	0.0
								Totals:		11,204.2	55,167.7	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 20 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.00
Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-57.04	-13.77	0.00	-1,492.24	0.00	1,492.24	7,122.56	3,561.28	19,188.7	9,608.64	0.00	0.00	0.163
5.00	-54.92	-13.69	0.00	-1,423.37	0.00	1,423.37	7,022.33	3,511.17	18,506.2	9,266.89	0.02	-0.04	0.161
10.00	-52.84	-13.60	0.00	-1,354.93	0.00	1,354.93	6,919.72	3,459.86	17,829.4	8,927.97	0.08	-0.07	0.159
15.00	-50.80	-13.52	0.00	-1,286.92	0.00	1,286.92	6,814.72	3,407.36	17,158.6	8,592.07	0.18	-0.11	0.157
20.00	-48.80	-13.44	0.00	-1,219.32	0.00	1,219.32	6,707.34	3,353.67	16,494.3	8,259.41	0.32	-0.15	0.155
25.00	-46.84	-13.35	0.00	-1,152.14	0.00	1,152.14	6,597.58	3,298.79	15,836.8	7,930.21	0.49	-0.19	0.152
30.00	-44.91	-13.27	0.00	-1,085.37	0.00	1,085.37	6,485.43	3,242.71	15,186.7	7,604.67	0.71	-0.23	0.150
35.00	-43.02	-13.18	0.00	-1,019.02	0.00	1,019.02	6,370.90	3,185.45	14,544.3	7,283.01	0.98	-0.27	0.147
40.00	-41.18	-13.12	0.00	-953.11	0.00	953.11	6,253.98	3,126.99	13,910.1	6,965.42	1.28	-0.31	0.143
42.00	-40.45	-13.07	0.00	-926.87	0.00	926.87	6,206.55	3,103.27	13,658.8	6,839.58	1.42	-0.33	0.142
45.00	-38.60	-13.00	0.00	-887.65	0.00	887.65	6,134.68	3,067.34	13,284.5	6,652.13	1.63	-0.35	0.140
49.00	-36.17	-12.94	0.00	-835.65	0.00	835.65	5,148.39	2,574.20	11,119.7	5,568.15	1.94	-0.39	0.157
50.00	-35.85	-12.89	0.00	-822.70	0.00	822.70	5,129.41	2,564.70	11,018.5	5,517.45	2.02	-0.39	0.156
55.00	-34.26	-12.79	0.00	-758.26	0.00	758.26	5,033.07	2,516.53	10,515.9	5,265.79	2.46	-0.44	0.151
60.00	-32.71	-12.69	0.00	-694.30	0.00	694.30	4,934.34	2,467.17	10,019.8	5,017.38	2.94	-0.48	0.145
65.00	-31.20	-12.59	0.00	-630.84	0.00	630.84	4,833.24	2,416.62	9,530.68	4,772.43	3.47	-0.53	0.139
70.00	-29.71	-12.49	0.00	-567.89	0.00	567.89	4,729.75	2,364.87	9,048.82	4,531.13	4.05	-0.57	0.132
75.00	-28.26	-12.38	0.00	-505.46	0.00	505.46	4,623.87	2,311.94	8,574.69	4,293.72	4.67	-0.61	0.124
80.00	-26.85	-12.31	0.00	-443.54	0.00	443.54	4,515.61	2,257.81	8,108.72	4,060.38	5.34	-0.66	0.115
81.25	-26.50	-12.29	0.00	-428.15	0.00	428.15	4,481.39	2,240.69	7,981.45	3,996.66	5.51	-0.67	0.113
81.80	-25.33	-10.93	0.00	-421.39	0.00	421.39	4,465.29	2,232.65	7,923.94	3,967.86	5.59	-0.67	0.112
85.00	-23.88	-10.86	0.00	-386.42	0.00	386.42	4,371.64	2,185.82	7,593.43	3,802.36	6.05	-0.70	0.107
87.00	-22.99	-10.81	0.00	-364.70	0.00	364.70	3,638.50	1,819.25	6,366.16	3,187.81	6.34	-0.71	0.121
90.00	-22.26	-10.74	0.00	-332.28	0.00	332.28	3,586.91	1,793.45	6,149.48	3,079.31	6.80	-0.74	0.114
93.00	-21.46	-10.59	0.00	-300.05	0.00	300.05	3,534.46	1,767.23	5,935.01	2,971.92	7.27	-0.76	0.107
94.30	-20.24	-9.26	0.00	-286.28	0.00	286.28	3,511.46	1,755.73	5,842.77	2,925.73	7.48	-0.77	0.104
95.00	-20.07	-9.21	0.00	-279.79	0.00	279.79	3,499.01	1,749.51	5,793.29	2,900.95	7.59	-0.78	0.102
100.00	-18.91	-9.11	0.00	-233.75	0.00	233.75	3,408.74	1,704.37	5,443.61	2,725.85	8.43	-0.81	0.091
104.00	-16.78	-8.47	0.00	-195.80	0.00	195.80	3,334.80	1,667.40	5,168.85	2,588.26	9.12	-0.84	0.081
105.00	-16.57	-8.41	0.00	-187.33	0.00	187.33	3,316.07	1,658.04	5,100.87	2,554.23	9.30	-0.85	0.078
110.00	-15.54	-8.30	0.00	-145.29	0.00	145.29	3,191.87	1,595.94	4,722.36	2,364.69	10.21	-0.88	0.066
115.00	-14.54	-8.22	0.00	-103.77	0.00	103.77	3,066.45	1,533.23	4,356.70	2,181.59	11.14	-0.90	0.052
117.00	-11.35	-7.20	0.00	-86.91	0.00	86.91	3,016.29	1,508.14	4,214.57	2,110.42	11.52	-0.91	0.045
120.00	-10.85	-7.14	0.00	-65.32	0.00	65.32	2,941.04	1,470.52	4,005.78	2,005.87	12.10	-0.92	0.036
122.50	-7.21	-3.18	0.00	-47.47	0.00	47.47	2,878.33	1,439.16	3,835.85	1,920.77	12.58	-0.93	0.027
124.00	-6.96	-3.15	0.00	-42.71	0.00	42.71	2,840.70	1,420.35	3,735.65	1,870.60	12.88	-0.93	0.025
124.00	-6.96	-3.15	0.00	-42.71	0.00	42.71	1,762.15	881.07	2,335.37	1,169.42	12.88	-0.93	0.040
125.00	-6.85	-3.10	0.00	-39.55	0.00	39.55	1,747.31	873.66	2,285.71	1,144.55	13.07	-0.94	0.038
130.00	-6.28	-3.04	0.00	-24.06	0.00	24.06	1,670.08	835.04	2,041.30	1,022.17	14.06	-0.95	0.027
131.00	-3.74	-2.01	0.00	-21.02	0.00	21.02	1,654.02	827.01	1,993.27	998.12	14.26	-0.95	0.023
133.00	-3.41	-1.84	0.00	-16.57	0.00	16.57	1,621.29	810.65	1,898.16	950.49	14.66	-0.96	0.020
135.00	-3.21	-1.81	0.00	-12.90	0.00	12.90	1,587.75	793.87	1,804.36	903.52	15.06	-0.96	0.016
136.00	-2.44	-1.14	0.00	-11.09	0.00	11.09	1,570.67	785.34	1,757.99	880.30	15.26	-0.96	0.014
140.00	-2.08	-1.08	0.00	-6.52	0.00	6.52	1,500.33	750.16	1,576.21	789.28	16.07	-0.97	0.010
144.00	-0.38	-0.13	0.00	-0.07	0.00	0.07	1,412.31	706.15	1,386.75	694.40	16.88	-0.97	0.000
144.50	0.00	-0.13	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	16.99	-0.97	0.000

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_s):	0.18	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.04	
Upper Limit C_s	0.04	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	1.61	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	1.56	
Total Unfactored Dead Load:	57.04	k
Seismic Base Shear (E):	3.19	k

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
44	144.25	41	94	0.002	6	51
43	142.00	339	757	0.015	46	420
42	138.00	357	762	0.015	47	443
41	135.50	99	206	0.004	13	123
40	134.00	202	413	0.008	25	251
39	132.00	212	422	0.008	26	262
38	130.50	110	216	0.004	13	136
37	127.50	567	1,071	0.021	65	703
36	124.50	117	213	0.004	13	145
35	123.25	242	433	0.008	26	300
34	121.25	409	714	0.014	44	507
33	118.50	500	843	0.016	51	620
32	116.00	391	638	0.012	39	485
31	112.50	999	1,551	0.030	95	1,238
30	107.50	1,027	1,487	0.028	91	1,273
29	104.50	209	289	0.006	18	259
28	102.00	907	1,210	0.023	74	1,124
27	97.50	1,159	1,442	0.028	88	1,437
26	94.65	165	195	0.004	12	204
25	93.65	307	359	0.007	22	381
24	91.50	716	807	0.015	49	888
23	88.50	727	777	0.015	47	901
22	86.00	888	908	0.017	55	1,100

21	83.40	1,441	1,406	0.027	86	1,786
20	81.53	250	236	0.005	14	310
19	80.63	347	321	0.006	20	430
18	77.50	1,408	1,225	0.023	75	1,745
17	72.50	1,442	1,130	0.022	69	1,787
16	67.50	1,475	1,035	0.020	63	1,828
15	62.50	1,509	939	0.018	57	1,870
14	57.50	1,542	843	0.016	52	1,911
13	52.50	1,576	748	0.014	46	1,953
12	49.50	319	138	0.003	8	396
11	47.00	2,418	966	0.019	59	2,997
10	43.50	1,844	653	0.013	40	2,285
9	41.00	725	234	0.004	14	899
8	37.50	1,840	517	0.010	32	2,280
7	32.50	1,878	423	0.008	26	2,328
6	27.50	1,917	333	0.006	20	2,375
5	22.50	1,955	248	0.005	15	2,423
4	17.50	1,993	171	0.003	10	2,470
3	12.50	2,032	103	0.002	6	2,518
2	7.50	2,070	48	0.001	3	2,565
1	2.50	2,108	9	0.000	1	2,613
Pine Tree Branches	144.50	338	774	0.015	47	418
Alcatel-Lucent 800 M	144.00	185	423	0.008	26	230
Alcatel-Lucent 1900M	144.00	132	301	0.006	18	164
Decibel DB980F90E-M	144.00	142	325	0.006	20	177
RFS APXVSPP18-C-A20	144.00	171	390	0.007	24	212
Round T-Arm	144.00	750	1,711	0.033	105	929
Alcatel-Lucent B13 R	136.00	172	358	0.007	22	213
Alcatel-Lucent B66A	136.00	170	356	0.007	22	211
Raycap RC2DC-3315-PF	136.00	64	134	0.003	8	79
Antel LPA-80080/4CF	136.00	24	50	0.001	3	30
Antel LPA-80063/4CF	136.00	80	167	0.003	10	99
Amphenol Antel BXA-7	136.00	51	106	0.002	7	63
Commscope SBNHH-1D65	136.00	122	254	0.005	16	151
Commscope SBNHH-1D65	133.00	122	245	0.005	15	151
Round T-Arm	131.00	750	1,476	0.028	90	929
VZW Unused Reserve:	131.00	1,695	3,338	0.064	204	2,101
Pine Tree Branches	122.50	3,300	5,853	0.112	358	4,090
Andrew ABT-DMDF-ADBH	117.00	1	2	0.000	0	1
Powerwave Allgon LGP	117.00	33	54	0.001	3	41
Powerwave Allgon TT1	117.00	96	159	0.003	10	119
Raycap DC6-48-60-18-	117.00	33	54	0.001	3	41
Ericsson RRUS 8843 B	117.00	216	357	0.007	22	268
Ericsson RRUS 4449 B	117.00	213	352	0.007	21	264
Ericsson RRUS 4478 B	117.00	178	294	0.006	18	221
Raycap DC6-48-60-18-	117.00	16	26	0.001	2	20
Raycap DC6-48-60-18-	117.00	16	26	0.001	2	20
Powerwave Allgon 777	117.00	105	173	0.003	11	130
Kathrein Scala 80010	117.00	168	277	0.005	17	208
Kathrein Scala 80010	117.00	390	645	0.012	39	484
T-Arm with Site Pro	117.00	1,350	2,229	0.043	136	1,673
Generic E-911 GPS	104.00	5	7	0.000	0	6
Ericsson KRY 112 71	104.00	40	54	0.001	3	49
RFS ATMAP1412D-1A20	104.00	39	54	0.001	3	48
RFS APX16DWV-16DWV-S	104.00	238	327	0.006	20	294
Commscope LNX-6515DS	104.00	151	207	0.004	13	187
Flat T-Arm	104.00	750	1,031	0.020	63	929
Pine Tree Branches	94.30	938	1,107	0.021	68	1,162
RFS APXV18-206517S-C	93.00	79	91	0.002	6	98
Pine Tree Branches	81.80	938	887	0.017	54	1,162
PCTEL GPS-TMG-HR-26N	50.00	1	0	0.000	0	1
		57,043	52,206	1.000	3,190	70,690

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
44	144.25	41	94	0.002	6	35
43	142.00	339	757	0.015	46	292
42	138.00	357	762	0.015	47	307
41	135.50	99	206	0.004	13	86
40	134.00	202	413	0.008	25	174
39	132.00	212	422	0.008	26	182
38	130.50	110	216	0.004	13	95
37	127.50	567	1,071	0.021	65	488
36	124.50	117	213	0.004	13	101
35	123.25	242	433	0.008	26	208
34	121.25	409	714	0.014	44	352
33	118.50	500	843	0.016	51	431
32	116.00	391	638	0.012	39	337
31	112.50	999	1,551	0.030	95	860
30	107.50	1,027	1,487	0.028	91	884
29	104.50	209	289	0.006	18	180
28	102.00	907	1,210	0.023	74	781
27	97.50	1,159	1,442	0.028	88	998
26	94.65	165	195	0.004	12	142
25	93.65	307	359	0.007	22	264
24	91.50	716	807	0.015	49	617
23	88.50	727	777	0.015	47	625
22	86.00	888	908	0.017	55	764
21	83.40	1,441	1,406	0.027	86	1,241
20	81.53	250	236	0.005	14	215
19	80.63	347	321	0.006	20	298
18	77.50	1,408	1,225	0.023	75	1,212
17	72.50	1,442	1,130	0.022	69	1,241
16	67.50	1,475	1,035	0.020	63	1,270
15	62.50	1,509	939	0.018	57	1,299
14	57.50	1,542	843	0.016	52	1,327
13	52.50	1,576	748	0.014	46	1,356
12	49.50	319	138	0.003	8	275
11	47.00	2,418	966	0.019	59	2,082
10	43.50	1,844	653	0.013	40	1,587
9	41.00	725	234	0.004	14	624
8	37.50	1,840	517	0.010	32	1,584
7	32.50	1,878	423	0.008	26	1,617
6	27.50	1,917	333	0.006	20	1,650
5	22.50	1,955	248	0.005	15	1,683
4	17.50	1,993	171	0.003	10	1,716
3	12.50	2,032	103	0.002	6	1,749
2	7.50	2,070	48	0.001	3	1,782
1	2.50	2,108	9	0.000	1	1,815
Pine Tree Branches	144.50	338	774	0.015	47	291
Alcatel-Lucent 800 M	144.00	185	423	0.008	26	160
Alcatel-Lucent 1900M	144.00	132	301	0.006	18	114
Decibel DB980F90E-M	144.00	142	325	0.006	20	123
RFS APXVSPP18-C-A20	144.00	171	390	0.007	24	147
Round T-Arm	144.00	750	1,711	0.033	105	646
Alcatel-Lucent B13 R	136.00	172	358	0.007	22	148
Alcatel-Lucent B66A	136.00	170	356	0.007	22	147
Raycap RC2DC-3315-PF	136.00	64	134	0.003	8	55
Antel LPA-80080/4CF	136.00	24	50	0.001	3	21
Antel LPA-80063/4CF	136.00	80	167	0.003	10	69
Amphenol Antel BXA-7	136.00	51	106	0.002	7	44
Commscope SBNHH-1D65	136.00	122	254	0.005	16	105

Commscope SBNHH-1D65	133.00	122	245	0.005	15	105
Round T-Arm	131.00	750	1,476	0.028	90	646
VZW Unused Reserve:	131.00	1,695	3,338	0.064	204	1,459
Pine Tree Branches	122.50	3,300	5,853	0.112	358	2,840
Andrew ABT-DMDF-ADBH	117.00	1	2	0.000	0	1
Powerwave Allgon LGP	117.00	33	54	0.001	3	28
Powerwave Allgon TT1	117.00	96	159	0.003	10	83
Raycap DC6-48-60-18-	117.00	33	54	0.001	3	28
Ericsson RRUS 8843 B	117.00	216	357	0.007	22	186
Ericsson RRUS 4449 B	117.00	213	352	0.007	21	183
Ericsson RRUS 4478 B	117.00	178	294	0.006	18	153
Raycap DC6-48-60-18-	117.00	16	26	0.001	2	14
Raycap DC6-48-60-18-	117.00	16	26	0.001	2	14
Powerwave Allgon 777	117.00	105	173	0.003	11	90
Kathrein Scala 80010	117.00	168	277	0.005	17	144
Kathrein Scala 80010	117.00	390	645	0.012	39	336
T-Arm with Site Pro	117.00	1,350	2,229	0.043	136	1,162
Generic E-911 GPS	104.00	5	7	0.000	0	4
Ericsson KRY 112 71	104.00	40	54	0.001	3	34
RFS ATMAP1412D-1A20	104.00	39	54	0.001	3	34
RFS APX16DWV-16DWV-S	104.00	238	327	0.006	20	205
Commscope LNX-6515DS	104.00	151	207	0.004	13	130
Flat T-Arm	104.00	750	1,031	0.020	63	646
Pine Tree Branches	94.30	938	1,107	0.021	68	807
RFS APXV18-206517S-C	93.00	79	91	0.002	6	68
Pine Tree Branches	81.80	938	887	0.017	54	807
PCTEL GPS-TMG-HR-26N	50.00	1	0	0.000	0	1
		57,043	52,206	1.000	3,190	49,099

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-68.08	-3.19	0.00	-341.24	0.00	341.24	7,122.56	3,561.28	19,188.7	9,608.64	0.00	0.00	0.045
5.00	-65.51	-3.20	0.00	-325.27	0.00	325.27	7,022.33	3,511.17	18,506.2	9,266.89	0.00	-0.01	0.044
10.00	-62.99	-3.20	0.00	-309.27	0.00	309.27	6,919.72	3,459.86	17,829.4	8,927.97	0.02	-0.02	0.044
15.00	-60.52	-3.20	0.00	-293.26	0.00	293.26	6,814.72	3,407.36	17,158.6	8,592.07	0.04	-0.03	0.043
20.00	-58.10	-3.19	0.00	-277.25	0.00	277.25	6,707.34	3,353.67	16,494.3	8,259.41	0.07	-0.03	0.042
25.00	-55.72	-3.18	0.00	-261.28	0.00	261.28	6,597.58	3,298.79	15,836.8	7,930.21	0.11	-0.04	0.041
30.00	-53.40	-3.16	0.00	-245.38	0.00	245.38	6,485.43	3,242.71	15,186.7	7,604.67	0.16	-0.05	0.041
35.00	-51.12	-3.14	0.00	-229.58	0.00	229.58	6,370.90	3,185.45	14,544.3	7,283.01	0.22	-0.06	0.040
40.00	-50.22	-3.13	0.00	-213.90	0.00	213.90	6,253.98	3,126.99	13,910.1	6,965.42	0.29	-0.07	0.039
42.00	-47.93	-3.09	0.00	-207.65	0.00	207.65	6,206.55	3,103.27	13,658.8	6,839.58	0.32	-0.07	0.038
45.00	-44.93	-3.03	0.00	-198.39	0.00	198.39	6,134.68	3,067.34	13,284.5	6,652.13	0.37	-0.08	0.037
49.00	-44.54	-3.02	0.00	-186.28	0.00	186.28	5,148.39	2,574.20	11,119.7	5,568.15	0.44	-0.09	0.042
50.00	-42.58	-2.98	0.00	-183.25	0.00	183.25	5,129.41	2,564.70	11,018.5	5,517.45	0.46	-0.09	0.042
55.00	-40.67	-2.93	0.00	-168.36	0.00	168.36	5,033.07	2,516.53	10,515.9	5,265.79	0.56	-0.10	0.040
60.00	-38.80	-2.88	0.00	-153.70	0.00	153.70	4,934.34	2,467.17	10,019.8	5,017.38	0.67	-0.11	0.038
65.00	-36.97	-2.82	0.00	-139.32	0.00	139.32	4,833.24	2,416.62	9,530.68	4,772.43	0.79	-0.12	0.037
70.00	-35.19	-2.75	0.00	-125.23	0.00	125.23	4,729.75	2,364.87	9,048.82	4,531.13	0.92	-0.13	0.035
75.00	-33.44	-2.68	0.00	-111.48	0.00	111.48	4,623.87	2,311.94	8,574.69	4,293.72	1.06	-0.14	0.033
80.00	-33.01	-2.66	0.00	-98.10	0.00	98.10	4,515.61	2,257.81	8,108.72	4,060.38	1.21	-0.15	0.031
81.25	-31.54	-2.59	0.00	-94.78	0.00	94.78	4,481.39	2,240.69	7,981.45	3,996.66	1.25	-0.15	0.031
81.80	-29.75	-2.50	0.00	-93.36	0.00	93.36	4,465.29	2,232.65	7,923.94	3,967.86	1.26	-0.15	0.030
85.00	-28.65	-2.44	0.00	-85.36	0.00	85.36	4,371.64	2,185.82	7,593.43	3,802.36	1.37	-0.16	0.029
87.00	-27.75	-2.39	0.00	-80.48	0.00	80.48	3,638.50	1,819.25	6,366.16	3,187.81	1.43	-0.16	0.033
90.00	-26.86	-2.35	0.00	-73.29	0.00	73.29	3,586.91	1,793.45	6,149.48	3,079.31	1.53	-0.16	0.031
93.00	-26.39	-2.32	0.00	-66.26	0.00	66.26	3,534.46	1,767.23	5,935.01	2,971.92	1.64	-0.17	0.030
94.30	-25.02	-2.24	0.00	-63.24	0.00	63.24	3,511.46	1,755.73	5,842.77	2,925.73	1.69	-0.17	0.029
95.00	-23.58	-2.14	0.00	-61.68	0.00	61.68	3,499.01	1,749.51	5,793.29	2,900.95	1.71	-0.17	0.028
100.00	-22.46	-2.07	0.00	-50.96	0.00	50.96	3,408.74	1,704.37	5,443.61	2,725.85	1.90	-0.18	0.025
104.00	-20.69	-1.95	0.00	-42.68	0.00	42.68	3,334.80	1,667.40	5,168.85	2,588.26	2.05	-0.19	0.023
105.00	-19.41	-1.85	0.00	-40.73	0.00	40.73	3,316.07	1,658.04	5,100.87	2,554.23	2.09	-0.19	0.022
110.00	-18.18	-1.75	0.00	-31.47	0.00	31.47	3,191.87	1,595.94	4,722.36	2,364.69	2.30	-0.20	0.019
115.00	-17.69	-1.72	0.00	-22.70	0.00	22.70	3,066.45	1,533.23	4,356.70	2,181.59	2.50	-0.20	0.016
117.00	-13.58	-1.37	0.00	-19.27	0.00	19.27	3,016.29	1,508.14	4,214.57	2,110.42	2.59	-0.20	0.014
120.00	-13.08	-1.32	0.00	-15.17	0.00	15.17	2,941.04	1,470.52	4,005.78	2,005.87	2.72	-0.21	0.012
122.50	-8.69	-0.92	0.00	-11.87	0.00	11.87	2,878.33	1,439.16	3,835.85	1,920.77	2.83	-0.21	0.009
124.00	-8.54	-0.91	0.00	-10.49	0.00	10.49	2,840.70	1,420.35	3,735.65	1,870.60	2.89	-0.21	0.009
124.00	-8.54	-0.91	0.00	-10.49	0.00	10.49	1,762.15	881.07	2,335.37	1,169.42	2.89	-0.21	0.014
125.00	-7.84	-0.84	0.00	-9.58	0.00	9.58	1,747.31	873.66	2,285.71	1,144.55	2.93	-0.21	0.013
130.00	-7.70	-0.83	0.00	-5.38	0.00	5.38	1,670.08	835.04	2,041.30	1,022.17	3.16	-0.21	0.010
131.00	-4.41	-0.49	0.00	-4.55	0.00	4.55	1,654.02	827.01	1,993.27	998.12	3.20	-0.21	0.007
133.00	-4.01	-0.45	0.00	-3.57	0.00	3.57	1,621.29	810.65	1,898.16	950.49	3.29	-0.21	0.006
135.00	-3.89	-0.44	0.00	-2.66	0.00	2.66	1,587.75	793.87	1,804.36	903.52	3.38	-0.21	0.005
136.00	-2.60	-0.30	0.00	-2.22	0.00	2.22	1,570.67	785.34	1,757.99	880.30	3.42	-0.21	0.004
140.00	-2.18	-0.25	0.00	-1.01	0.00	1.01	1,500.33	750.16	1,576.21	789.28	3.60	-0.22	0.003
144.00	0.00	0.00	0.00	0.00	0.00	0.00	1,412.31	706.15	1,386.75	694.40	3.79	-0.22	0.000
144.50	0.00	0.00	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	3.81	-0.22	0.000

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-47.28	-3.19	0.00	-338.85	0.00	338.85	7,122.56	3,561.28	19,188.7	9,608.64	0.00	0.00	0.042
5.00	-45.50	-3.20	0.00	-322.89	0.00	322.89	7,022.33	3,511.17	18,506.2	9,266.89	0.00	-0.01	0.041
10.00	-43.75	-3.20	0.00	-306.90	0.00	306.90	6,919.72	3,459.86	17,829.4	8,927.97	0.02	-0.02	0.041
15.00	-42.04	-3.19	0.00	-290.93	0.00	290.93	6,814.72	3,407.36	17,158.6	8,592.07	0.04	-0.03	0.040
20.00	-40.35	-3.18	0.00	-274.97	0.00	274.97	6,707.34	3,353.67	16,494.3	8,259.41	0.07	-0.03	0.039
25.00	-38.70	-3.17	0.00	-259.06	0.00	259.06	6,597.58	3,298.79	15,836.8	7,930.21	0.11	-0.04	0.039
30.00	-37.09	-3.14	0.00	-243.23	0.00	243.23	6,485.43	3,242.71	15,186.7	7,604.67	0.16	-0.05	0.038
35.00	-35.50	-3.12	0.00	-227.51	0.00	227.51	6,370.90	3,185.45	14,544.3	7,283.01	0.22	-0.06	0.037
40.00	-34.88	-3.11	0.00	-211.93	0.00	211.93	6,253.98	3,126.99	13,910.1	6,965.42	0.29	-0.07	0.036
42.00	-33.29	-3.07	0.00	-205.72	0.00	205.72	6,206.55	3,103.27	13,658.8	6,839.58	0.32	-0.07	0.035
45.00	-31.21	-3.01	0.00	-196.52	0.00	196.52	6,134.68	3,067.34	13,284.5	6,652.13	0.37	-0.08	0.035
49.00	-30.93	-3.00	0.00	-184.48	0.00	184.48	5,148.39	2,574.20	11,119.7	5,568.15	0.44	-0.09	0.039
50.00	-29.58	-2.96	0.00	-181.48	0.00	181.48	5,129.41	2,564.70	11,018.5	5,517.45	0.46	-0.09	0.039
55.00	-28.25	-2.91	0.00	-166.70	0.00	166.70	5,033.07	2,516.53	10,515.9	5,265.79	0.55	-0.10	0.037
60.00	-26.95	-2.85	0.00	-152.16	0.00	152.16	4,934.34	2,467.17	10,019.8	5,017.38	0.66	-0.11	0.036
65.00	-25.68	-2.79	0.00	-137.89	0.00	137.89	4,833.24	2,416.62	9,530.68	4,772.43	0.78	-0.12	0.034
70.00	-24.44	-2.72	0.00	-123.93	0.00	123.93	4,729.75	2,364.87	9,048.82	4,531.13	0.91	-0.13	0.033
75.00	-23.23	-2.65	0.00	-110.31	0.00	110.31	4,623.87	2,311.94	8,574.69	4,293.72	1.05	-0.14	0.031
80.00	-22.93	-2.63	0.00	-97.06	0.00	97.06	4,515.61	2,257.81	8,108.72	4,060.38	1.20	-0.15	0.029
81.25	-21.90	-2.56	0.00	-93.77	0.00	93.77	4,481.39	2,240.69	7,981.45	3,996.66	1.23	-0.15	0.028
81.80	-20.66	-2.47	0.00	-92.36	0.00	92.36	4,465.29	2,232.65	7,923.94	3,967.86	1.25	-0.15	0.028
85.00	-19.90	-2.42	0.00	-84.44	0.00	84.44	4,371.64	2,185.82	7,593.43	3,802.36	1.35	-0.15	0.027
87.00	-19.27	-2.37	0.00	-79.61	0.00	79.61	3,638.50	1,819.25	6,366.16	3,187.81	1.42	-0.16	0.030
90.00	-18.66	-2.32	0.00	-72.50	0.00	72.50	3,586.91	1,793.45	6,149.48	3,079.31	1.52	-0.16	0.029
93.00	-18.32	-2.29	0.00	-65.54	0.00	65.54	3,534.46	1,767.23	5,935.01	2,971.92	1.63	-0.17	0.027
94.30	-17.38	-2.21	0.00	-62.56	0.00	62.56	3,511.46	1,755.73	5,842.77	2,925.73	1.67	-0.17	0.026
95.00	-16.38	-2.12	0.00	-61.01	0.00	61.01	3,499.01	1,749.51	5,793.29	2,900.95	1.70	-0.17	0.026
100.00	-15.60	-2.05	0.00	-50.40	0.00	50.40	3,408.74	1,704.37	5,443.61	2,725.85	1.88	-0.18	0.023
104.00	-14.37	-1.92	0.00	-42.21	0.00	42.21	3,334.80	1,667.40	5,168.85	2,588.26	2.04	-0.19	0.021
105.00	-13.48	-1.83	0.00	-40.28	0.00	40.28	3,316.07	1,658.04	5,100.87	2,554.23	2.07	-0.19	0.020
110.00	-12.62	-1.73	0.00	-31.13	0.00	31.13	3,191.87	1,595.94	4,722.36	2,364.69	2.27	-0.19	0.017
115.00	-12.29	-1.70	0.00	-22.45	0.00	22.45	3,066.45	1,533.23	4,356.70	2,181.59	2.48	-0.20	0.014
117.00	-9.43	-1.35	0.00	-19.06	0.00	19.06	3,016.29	1,508.14	4,214.57	2,110.42	2.57	-0.20	0.012
120.00	-9.08	-1.31	0.00	-15.01	0.00	15.01	2,941.04	1,470.52	4,005.78	2,005.87	2.69	-0.20	0.011
122.50	-6.03	-0.91	0.00	-11.75	0.00	11.75	2,878.33	1,439.16	3,835.85	1,920.77	2.80	-0.21	0.008
124.00	-5.93	-0.90	0.00	-10.38	0.00	10.38	2,840.70	1,420.35	3,735.65	1,870.60	2.86	-0.21	0.008
124.00	-5.93	-0.90	0.00	-10.38	0.00	10.38	1,762.15	881.07	2,335.37	1,169.42	2.86	-0.21	0.012
125.00	-5.45	-0.83	0.00	-9.48	0.00	9.48	1,747.31	873.66	2,285.71	1,144.55	2.91	-0.21	0.011
130.00	-5.35	-0.82	0.00	-5.33	0.00	5.33	1,670.08	835.04	2,041.30	1,022.17	3.13	-0.21	0.008
131.00	-3.06	-0.49	0.00	-4.51	0.00	4.51	1,654.02	827.01	1,993.27	998.12	3.17	-0.21	0.006
133.00	-2.79	-0.45	0.00	-3.53	0.00	3.53	1,621.29	810.65	1,898.16	950.49	3.26	-0.21	0.005
135.00	-2.70	-0.44	0.00	-2.63	0.00	2.63	1,587.75	793.87	1,804.36	903.52	3.35	-0.21	0.005
136.00	-1.81	-0.30	0.00	-2.20	0.00	2.20	1,570.67	785.34	1,757.99	880.30	3.39	-0.21	0.004
140.00	-1.51	-0.25	0.00	-1.00	0.00	1.00	1,500.33	750.16	1,576.21	789.28	3.57	-0.21	0.002
144.00	0.00	0.00	0.00	0.00	0.00	0.00	1,412.31	706.15	1,386.75	694.40	3.75	-0.21	0.000
144.50	0.00	0.00	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	3.77	-0.21	0.000

Equivalent Modal Forces Analysis

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	1.61
Redundancy Factor (p):	1.30

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
44	144.25	41	1.883	1.946	1.128	0.379	14	51
43	142.00	339	1.825	1.655	1.021	0.342	101	420
42	138.00	357	1.724	1.214	0.852	0.281	87	443
41	135.50	99	1.662	0.983	0.757	0.245	21	123
40	134.00	202	1.625	0.859	0.705	0.225	39	251
39	132.00	212	1.577	0.709	0.639	0.200	37	262
38	130.50	110	1.542	0.609	0.594	0.182	17	136
37	127.50	567	1.471	0.433	0.509	0.148	73	703
36	124.50	117	1.403	0.290	0.435	0.118	12	145
35	123.25	242	1.375	0.238	0.406	0.106	22	300
34	121.25	409	1.331	0.165	0.364	0.088	31	507
33	118.50	500	1.271	0.082	0.311	0.067	29	620
32	116.00	391	1.218	0.022	0.268	0.049	17	485
31	112.50	999	1.146	-0.041	0.216	0.029	25	1,238
30	107.50	1,027	1.046	-0.095	0.155	0.007	6	1,273
29	104.50	209	0.988	-0.113	0.126	-0.002	0	259
28	102.00	907	0.942	-0.120	0.104	-0.008	-6	1,124
27	97.50	1,159	0.860	-0.120	0.073	-0.012	-13	1,437
26	94.65	165	0.811	-0.114	0.057	-0.013	-2	204
25	93.65	307	0.794	-0.111	0.052	-0.012	-3	381
24	91.50	716	0.758	-0.103	0.043	-0.011	-7	888
23	88.50	727	0.709	-0.090	0.032	-0.007	-4	901
22	86.00	888	0.669	-0.077	0.024	-0.003	-2	1,100
21	83.40	1,441	0.630	-0.064	0.018	0.002	3	1,786
20	81.53	250	0.602	-0.054	0.015	0.006	1	310
19	80.63	347	0.588	-0.049	0.013	0.008	3	430
18	77.50	1,408	0.544	-0.032	0.009	0.015	19	1,745
17	72.50	1,442	0.476	-0.007	0.006	0.026	32	1,787
16	67.50	1,475	0.412	0.014	0.006	0.034	44	1,828
15	62.50	1,509	0.354	0.032	0.008	0.040	53	1,870
14	57.50	1,542	0.299	0.045	0.012	0.044	59	1,911
13	52.50	1,576	0.249	0.055	0.017	0.046	62	1,953
12	49.50	319	0.222	0.060	0.020	0.046	13	396
11	47.00	2,418	0.200	0.063	0.023	0.046	96	2,997

10	43.50	1,844	0.171	0.066	0.027	0.045	72	2,285
9	41.00	725	0.152	0.068	0.030	0.044	28	899
8	37.50	1,840	0.127	0.070	0.033	0.043	69	2,280
7	32.50	1,878	0.096	0.071	0.038	0.042	68	2,328
6	27.50	1,917	0.068	0.072	0.041	0.040	67	2,375
5	22.50	1,955	0.046	0.071	0.042	0.038	65	2,423
4	17.50	1,993	0.028	0.067	0.040	0.036	62	2,470
3	12.50	2,032	0.014	0.060	0.035	0.032	56	2,518
2	7.50	2,070	0.005	0.045	0.025	0.024	44	2,565
1	2.50	2,108	0.001	0.019	0.010	0.011	20	2,613
Pine Tree Branches	144.50	338	1.890	1.980	1.140	0.384	112	418
Alcatel-Lucent 800 M	144.00	185	1.877	1.912	1.115	0.375	60	230
Alcatel-Lucent 1900M	144.00	132	1.877	1.912	1.115	0.375	43	164
Decibel DB980F90E-M	144.00	142	1.877	1.912	1.115	0.375	46	177
RFS APXVSPP18-C-A20	144.00	171	1.877	1.912	1.115	0.375	56	212
Round T-Arm	144.00	750	1.877	1.912	1.115	0.375	244	929
Alcatel-Lucent B13 R	136.00	172	1.674	1.027	0.776	0.252	38	213
Alcatel-Lucent B66A	136.00	170	1.674	1.027	0.776	0.252	37	211
Raycap RC2DC-3315-PF	136.00	64	1.674	1.027	0.776	0.252	14	79
Antel LPA-80080/4CF	136.00	24	1.674	1.027	0.776	0.252	5	30
Antel LPA-80063/4CF	136.00	80	1.674	1.027	0.776	0.252	17	99
Amphenol Antel BXA-7	136.00	51	1.674	1.027	0.776	0.252	11	63
Commscope SBNHH-	136.00	122	1.674	1.027	0.776	0.252	27	151
Commscope SBNHH-	133.00	122	1.601	0.782	0.672	0.212	22	151
Round T-Arm	131.00	750	1.553	0.641	0.609	0.188	122	929
VZW Unused Reserve:	131.00	1,695	1.553	0.641	0.609	0.188	276	2,101
Pine Tree Branches	122.50	3,300	1.358	0.210	0.390	0.099	283	4,090
Andrew ABT-DMDF-	117.00	1	1.239	0.045	0.285	0.056	0	1
Powerwave Allgon LGP	117.00	33	1.239	0.045	0.285	0.056	2	41
Powerwave Allgon TT1	117.00	96	1.239	0.045	0.285	0.056	5	119
Raycap DC6-48-60-18-	117.00	33	1.239	0.045	0.285	0.056	2	41
Ericsson RRUS 8843 B	117.00	216	1.239	0.045	0.285	0.056	10	268
Ericsson RRUS 4449 B	117.00	213	1.239	0.045	0.285	0.056	10	264
Ericsson RRUS 4478 B	117.00	178	1.239	0.045	0.285	0.056	9	221
Raycap DC6-48-60-18-	117.00	16	1.239	0.045	0.285	0.056	1	20
Raycap DC6-48-60-18-	117.00	16	1.239	0.045	0.285	0.056	1	20
Powerwave Allgon 777	117.00	105	1.239	0.045	0.285	0.056	5	130
Kathrein Scala 80010	117.00	168	1.239	0.045	0.285	0.056	8	208
Kathrein Scala 80010	117.00	390	1.239	0.045	0.285	0.056	19	484
T-Arm with Site Pro	117.00	1,350	1.239	0.045	0.285	0.056	65	1,673
Generic E-911 GPS	104.00	5	0.979	-0.115	0.121	-0.004	0	6
Ericsson KRY 112 71	104.00	40	0.979	-0.115	0.121	-0.004	0	49
RFS ATMAP1412D-1A20	104.00	39	0.979	-0.115	0.121	-0.004	0	48
RFS APX16DWV-16DWV-	104.00	238	0.979	-0.115	0.121	-0.004	-1	294
Commscope LNX-	104.00	151	0.979	-0.115	0.121	-0.004	0	187
Flat T-Arm	104.00	750	0.979	-0.115	0.121	-0.004	-2	929
Pine Tree Branches	94.30	938	0.805	-0.113	0.055	-0.013	-10	1,162
RFS APXV18-206517S-C	93.00	79	0.783	-0.109	0.049	-0.012	-1	98
Pine Tree Branches	81.80	938	0.606	-0.055	0.015	0.006	5	1,162
PCTEL GPS-TMG-HR-	50.00	1	0.226	0.059	0.020	0.046	0	1
		57,043	87.376	29.574	28.338	8.513	2,968	70,690

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
44	144.25	41	1.883	1.946	1.128	0.379	14	35
43	142.00	339	1.825	1.655	1.021	0.342	101	292
42	138.00	357	1.724	1.214	0.852	0.281	87	307

41	135.50	99	1.662	0.983	0.757	0.245	21	86
40	134.00	202	1.625	0.859	0.705	0.225	39	174
39	132.00	212	1.577	0.709	0.639	0.200	37	182
38	130.50	110	1.542	0.609	0.594	0.182	17	95
37	127.50	567	1.471	0.433	0.509	0.148	73	488
36	124.50	117	1.403	0.290	0.435	0.118	12	101
35	123.25	242	1.375	0.238	0.406	0.106	22	208
34	121.25	409	1.331	0.165	0.364	0.088	31	352
33	118.50	500	1.271	0.082	0.311	0.067	29	431
32	116.00	391	1.218	0.022	0.268	0.049	17	337
31	112.50	999	1.146	-0.041	0.216	0.029	25	860
30	107.50	1,027	1.046	-0.095	0.155	0.007	6	884
29	104.50	209	0.988	-0.113	0.126	-0.002	0	180
28	102.00	907	0.942	-0.120	0.104	-0.008	-6	781
27	97.50	1,159	0.860	-0.120	0.073	-0.012	-13	998
26	94.65	165	0.811	-0.114	0.057	-0.013	-2	142
25	93.65	307	0.794	-0.111	0.052	-0.012	-3	264
24	91.50	716	0.758	-0.103	0.043	-0.011	-7	617
23	88.50	727	0.709	-0.090	0.032	-0.007	-4	625
22	86.00	888	0.669	-0.077	0.024	-0.003	-2	764
21	83.40	1,441	0.630	-0.064	0.018	0.002	3	1,241
20	81.53	250	0.602	-0.054	0.015	0.006	1	215
19	80.63	347	0.588	-0.049	0.013	0.008	3	298
18	77.50	1,408	0.544	-0.032	0.009	0.015	19	1,212
17	72.50	1,442	0.476	-0.007	0.006	0.026	32	1,241
16	67.50	1,475	0.412	0.014	0.006	0.034	44	1,270
15	62.50	1,509	0.354	0.032	0.008	0.040	53	1,299
14	57.50	1,542	0.299	0.045	0.012	0.044	59	1,327
13	52.50	1,576	0.249	0.055	0.017	0.046	62	1,356
12	49.50	319	0.222	0.060	0.020	0.046	13	275
11	47.00	2,418	0.200	0.063	0.023	0.046	96	2,082
10	43.50	1,844	0.171	0.066	0.027	0.045	72	1,587
9	41.00	725	0.152	0.068	0.030	0.044	28	624
8	37.50	1,840	0.127	0.070	0.033	0.043	69	1,584
7	32.50	1,878	0.096	0.071	0.038	0.042	68	1,617
6	27.50	1,917	0.068	0.072	0.041	0.040	67	1,650
5	22.50	1,955	0.046	0.071	0.042	0.038	65	1,683
4	17.50	1,993	0.028	0.067	0.040	0.036	62	1,716
3	12.50	2,032	0.014	0.060	0.035	0.032	56	1,749
2	7.50	2,070	0.005	0.045	0.025	0.024	44	1,782
1	2.50	2,108	0.001	0.019	0.010	0.011	20	1,815
Pine Tree Branches	144.50	338	1.890	1.980	1.140	0.384	112	291
Alcatel-Lucent 800 M	144.00	185	1.877	1.912	1.115	0.375	60	160
Alcatel-Lucent 1900M	144.00	132	1.877	1.912	1.115	0.375	43	114
Decibel DB980F90E-M	144.00	142	1.877	1.912	1.115	0.375	46	123
RFS APXVSPP18-C-A20	144.00	171	1.877	1.912	1.115	0.375	56	147
Round T-Arm	144.00	750	1.877	1.912	1.115	0.375	244	646
Alcatel-Lucent B13 R	136.00	172	1.674	1.027	0.776	0.252	38	148
Alcatel-Lucent B66A	136.00	170	1.674	1.027	0.776	0.252	37	147
Raycap RC2DC-3315-PF	136.00	64	1.674	1.027	0.776	0.252	14	55
Antel LPA-80080/4CF	136.00	24	1.674	1.027	0.776	0.252	5	21
Antel LPA-80063/4CF	136.00	80	1.674	1.027	0.776	0.252	17	69
Amphenol Antel BXA-7	136.00	51	1.674	1.027	0.776	0.252	11	44
Commscope SBNHH-	136.00	122	1.674	1.027	0.776	0.252	27	105
Commscope SBNHH-	133.00	122	1.601	0.782	0.672	0.212	22	105
Round T-Arm	131.00	750	1.553	0.641	0.609	0.188	122	646
VZW Unused Reserve:	131.00	1,695	1.553	0.641	0.609	0.188	276	1,459
Pine Tree Branches	122.50	3,300	1.358	0.210	0.390	0.099	283	2,840
Andrew ABT-DMDF-	117.00	1	1.239	0.045	0.285	0.056	0	1
Powerwave Allgon LGP	117.00	33	1.239	0.045	0.285	0.056	2	28
Powerwave Allgon TT1	117.00	96	1.239	0.045	0.285	0.056	5	83
Raycap DC6-48-60-18-	117.00	33	1.239	0.045	0.285	0.056	2	28
Ericsson RRUS 8843 B	117.00	216	1.239	0.045	0.285	0.056	10	186
Ericsson RRUS 4449 B	117.00	213	1.239	0.045	0.285	0.056	10	183

Ericsson RRUS 4478 B	117.00	178	1.239	0.045	0.285	0.056	9	153
Raycap DC6-48-60-18-	117.00	16	1.239	0.045	0.285	0.056	1	14
Raycap DC6-48-60-18-	117.00	16	1.239	0.045	0.285	0.056	1	14
Powerwave Allgon 777	117.00	105	1.239	0.045	0.285	0.056	5	90
Kathrein Scala 80010	117.00	168	1.239	0.045	0.285	0.056	8	144
Kathrein Scala 80010	117.00	390	1.239	0.045	0.285	0.056	19	336
T-Arm with Site Pro	117.00	1,350	1.239	0.045	0.285	0.056	65	1,162
Generic E-911 GPS	104.00	5	0.979	-0.115	0.121	-0.004	0	4
Ericsson KRY 112 71	104.00	40	0.979	-0.115	0.121	-0.004	0	34
RFS ATMAP1412D-1A20	104.00	39	0.979	-0.115	0.121	-0.004	0	34
RFS APX16DWV-16DWV-	104.00	238	0.979	-0.115	0.121	-0.004	-1	205
Commscope LNX-	104.00	151	0.979	-0.115	0.121	-0.004	0	130
Flat T-Arm	104.00	750	0.979	-0.115	0.121	-0.004	-2	646
Pine Tree Branches	94.30	938	0.805	-0.113	0.055	-0.013	-10	807
RFS APXV18-206517S-C	93.00	79	0.783	-0.109	0.049	-0.012	-1	68
Pine Tree Branches	81.80	938	0.606	-0.055	0.015	0.006	5	807
PCTEL GPS-TMG-HR-	50.00	1	0.226	0.059	0.020	0.046	0	1
		57,043	87.376	29.574	28.338	8.513	2,968	49,099

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-68.08	-2.95	0.00	-313.34	0.00	313.34	7,122.56	3,561.28	19,188.7	9,608.64	0.00	0.00	0.042
5.00	-65.51	-2.92	0.00	-298.58	0.00	298.58	7,022.33	3,511.17	18,506.2	9,266.89	0.00	-0.01	0.042
10.00	-62.99	-2.87	0.00	-284.00	0.00	284.00	6,919.72	3,459.86	17,829.4	8,927.97	0.02	-0.02	0.041
15.00	-60.52	-2.82	0.00	-269.65	0.00	269.65	6,814.72	3,407.36	17,158.6	8,592.07	0.04	-0.02	0.040
20.00	-58.10	-2.76	0.00	-255.57	0.00	255.57	6,707.34	3,353.67	16,494.3	8,259.41	0.07	-0.03	0.040
25.00	-55.72	-2.70	0.00	-241.79	0.00	241.79	6,597.58	3,298.79	15,836.8	7,930.21	0.10	-0.04	0.039
30.00	-53.40	-2.63	0.00	-228.30	0.00	228.30	6,485.43	3,242.71	15,186.7	7,604.67	0.15	-0.05	0.038
35.00	-51.12	-2.57	0.00	-215.13	0.00	215.13	6,370.90	3,185.45	14,544.3	7,283.01	0.20	-0.06	0.038
40.00	-50.22	-2.55	0.00	-202.27	0.00	202.27	6,253.98	3,126.99	13,910.1	6,965.42	0.27	-0.07	0.037
42.00	-47.93	-2.48	0.00	-197.18	0.00	197.18	6,206.55	3,103.27	13,658.8	6,839.58	0.30	-0.07	0.037
45.00	-44.93	-2.38	0.00	-189.75	0.00	189.75	6,134.68	3,067.34	13,284.5	6,652.13	0.34	-0.07	0.036
49.00	-44.54	-2.37	0.00	-180.22	0.00	180.22	5,148.39	2,574.20	11,119.7	5,568.15	0.41	-0.08	0.041
50.00	-42.59	-2.31	0.00	-177.85	0.00	177.85	5,129.41	2,564.70	11,018.5	5,517.45	0.42	-0.08	0.041
55.00	-40.67	-2.26	0.00	-166.30	0.00	166.30	5,033.07	2,516.53	10,515.9	5,265.79	0.52	-0.09	0.040
60.00	-38.80	-2.21	0.00	-155.02	0.00	155.02	4,934.34	2,467.17	10,019.8	5,017.38	0.62	-0.10	0.039
65.00	-36.98	-2.17	0.00	-143.98	0.00	143.98	4,833.24	2,416.62	9,530.68	4,772.43	0.73	-0.11	0.038
70.00	-35.19	-2.14	0.00	-133.15	0.00	133.15	4,729.75	2,364.87	9,048.82	4,531.13	0.86	-0.12	0.037
75.00	-33.44	-2.12	0.00	-122.46	0.00	122.46	4,623.87	2,311.94	8,574.69	4,293.72	0.99	-0.13	0.036
80.00	-33.01	-2.12	0.00	-111.86	0.00	111.86	4,515.61	2,257.81	8,108.72	4,060.38	1.14	-0.14	0.035
81.25	-31.54	-2.11	0.00	-109.20	0.00	109.20	4,481.39	2,240.69	7,981.45	3,996.66	1.17	-0.15	0.034
81.80	-29.75	-2.11	0.00	-108.04	0.00	108.04	4,465.29	2,232.65	7,923.94	3,967.86	1.19	-0.15	0.034
85.00	-28.65	-2.11	0.00	-101.30	0.00	101.30	4,371.64	2,185.82	7,593.43	3,802.36	1.29	-0.15	0.033
87.00	-27.75	-2.11	0.00	-97.08	0.00	97.08	3,638.50	1,819.25	6,366.16	3,187.81	1.36	-0.16	0.038
90.00	-26.87	-2.12	0.00	-90.75	0.00	90.75	3,586.91	1,793.45	6,149.48	3,079.31	1.46	-0.16	0.037
93.00	-26.39	-2.12	0.00	-84.39	0.00	84.39	3,534.46	1,767.23	5,935.01	2,971.92	1.56	-0.17	0.036
94.30	-25.02	-2.13	0.00	-81.62	0.00	81.62	3,511.46	1,755.73	5,842.77	2,925.73	1.61	-0.17	0.035
95.00	-23.58	-2.14	0.00	-80.13	0.00	80.13	3,499.01	1,749.51	5,793.29	2,900.95	1.64	-0.18	0.034
100.00	-22.46	-2.15	0.00	-69.41	0.00	69.41	3,408.74	1,704.37	5,443.61	2,725.85	1.83	-0.19	0.032
104.00	-20.69	-2.15	0.00	-60.80	0.00	60.80	3,334.80	1,667.40	5,168.85	2,588.26	1.99	-0.19	0.030
105.00	-19.41	-2.14	0.00	-58.65	0.00	58.65	3,316.07	1,658.04	5,100.87	2,554.23	2.03	-0.20	0.029
110.00	-18.17	-2.12	0.00	-47.94	0.00	47.94	3,191.87	1,595.94	4,722.36	2,364.69	2.24	-0.21	0.026
115.00	-17.69	-2.10	0.00	-37.36	0.00	37.36	3,066.45	1,533.23	4,356.70	2,181.59	2.46	-0.22	0.023
117.00	-13.58	-1.92	0.00	-33.16	0.00	33.16	3,016.29	1,508.14	4,214.57	2,110.42	2.55	-0.22	0.020
120.00	-13.07	-1.89	0.00	-27.40	0.00	27.40	2,941.04	1,470.52	4,005.78	2,005.87	2.69	-0.22	0.018
122.50	-8.69	-1.56	0.00	-22.68	0.00	22.68	2,878.33	1,439.16	3,835.85	1,920.77	2.81	-0.23	0.015
124.00	-8.54	-1.55	0.00	-20.33	0.00	20.33	2,840.70	1,420.35	3,735.65	1,870.60	2.88	-0.23	0.014
124.00	-8.54	-1.55	0.00	-20.33	0.00	20.33	1,762.15	881.07	2,335.37	1,169.42	2.88	-0.23	0.022
125.00	-7.84	-1.48	0.00	-18.78	0.00	18.78	1,747.31	873.66	2,285.71	1,144.55	2.93	-0.23	0.021
130.00	-7.70	-1.46	0.00	-11.39	0.00	11.39	1,670.08	835.04	2,041.30	1,022.17	3.17	-0.24	0.016
131.00	-4.41	-1.01	0.00	-9.93	0.00	9.93	1,654.02	827.01	1,993.27	998.12	3.22	-0.24	0.013
133.00	-4.01	-0.95	0.00	-7.91	0.00	7.91	1,621.29	810.65	1,898.16	950.49	3.32	-0.24	0.011
135.00	-3.89	-0.93	0.00	-6.01	0.00	6.01	1,587.75	793.87	1,804.36	903.52	3.42	-0.24	0.009
136.00	-2.60	-0.69	0.00	-5.08	0.00	5.08	1,570.67	785.34	1,757.99	880.30	3.47	-0.24	0.007
140.00	-2.18	-0.58	0.00	-2.34	0.00	2.34	1,500.33	750.16	1,576.21	789.28	3.67	-0.24	0.004
144.00	0.00	0.00	0.00	0.00	0.00	0.00	1,412.31	706.15	1,386.75	694.40	3.88	-0.24	0.000
144.50	0.00	0.00	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	3.90	-0.24	0.000

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-47.28	-2.95	0.00	-311.00	0.00	311.00	7,122.56	3,561.28	19,188.7	9,608.64	0.00	0.00	0.039
5.00	-45.50	-2.91	0.00	-296.24	0.00	296.24	7,022.33	3,511.17	18,506.2	9,266.89	0.00	-0.01	0.038
10.00	-43.75	-2.86	0.00	-281.67	0.00	281.67	6,919.72	3,459.86	17,829.4	8,927.97	0.02	-0.02	0.038
15.00	-42.04	-2.81	0.00	-267.36	0.00	267.36	6,814.72	3,407.36	17,158.6	8,592.07	0.04	-0.02	0.037
20.00	-40.35	-2.75	0.00	-253.33	0.00	253.33	6,707.34	3,353.67	16,494.3	8,259.41	0.07	-0.03	0.037
25.00	-38.70	-2.68	0.00	-239.60	0.00	239.60	6,597.58	3,298.79	15,836.8	7,930.21	0.10	-0.04	0.036
30.00	-37.09	-2.62	0.00	-226.18	0.00	226.18	6,485.43	3,242.71	15,186.7	7,604.67	0.15	-0.05	0.035
35.00	-35.50	-2.55	0.00	-213.09	0.00	213.09	6,370.90	3,185.45	14,544.3	7,283.01	0.20	-0.06	0.035
40.00	-34.88	-2.53	0.00	-200.32	0.00	200.32	6,253.98	3,126.99	13,910.1	6,965.42	0.27	-0.06	0.034
42.00	-33.29	-2.46	0.00	-195.26	0.00	195.26	6,206.55	3,103.27	13,658.8	6,839.58	0.29	-0.07	0.034
45.00	-31.21	-2.36	0.00	-187.88	0.00	187.88	6,134.68	3,067.34	13,284.5	6,652.13	0.34	-0.07	0.033
49.00	-30.93	-2.35	0.00	-178.43	0.00	178.43	5,148.39	2,574.20	11,119.7	5,568.15	0.40	-0.08	0.038
50.00	-29.58	-2.29	0.00	-176.08	0.00	176.08	5,129.41	2,564.70	11,018.5	5,517.45	0.42	-0.08	0.038
55.00	-28.25	-2.23	0.00	-164.63	0.00	164.63	5,033.07	2,516.53	10,515.9	5,265.79	0.51	-0.09	0.037
60.00	-26.95	-2.18	0.00	-153.45	0.00	153.45	4,934.34	2,467.17	10,019.8	5,017.38	0.61	-0.10	0.036
65.00	-25.68	-2.14	0.00	-142.53	0.00	142.53	4,833.24	2,416.62	9,530.68	4,772.43	0.73	-0.11	0.035
70.00	-24.44	-2.11	0.00	-131.82	0.00	131.82	4,729.75	2,364.87	9,048.82	4,531.13	0.85	-0.12	0.034
75.00	-23.23	-2.10	0.00	-121.25	0.00	121.25	4,623.87	2,311.94	8,574.69	4,293.72	0.98	-0.13	0.033
80.00	-22.93	-2.10	0.00	-110.78	0.00	110.78	4,515.61	2,257.81	8,108.72	4,060.38	1.13	-0.14	0.032
81.25	-21.91	-2.09	0.00	-108.16	0.00	108.16	4,481.39	2,240.69	7,981.45	3,996.66	1.16	-0.14	0.032
81.80	-20.67	-2.08	0.00	-107.01	0.00	107.01	4,465.29	2,232.65	7,923.94	3,967.86	1.18	-0.15	0.032
85.00	-19.90	-2.08	0.00	-100.35	0.00	100.35	4,371.64	2,185.82	7,593.43	3,802.36	1.28	-0.15	0.031
87.00	-19.28	-2.09	0.00	-96.18	0.00	96.18	3,638.50	1,819.25	6,366.16	3,187.81	1.34	-0.16	0.035
90.00	-18.66	-2.10	0.00	-89.91	0.00	89.91	3,586.91	1,793.45	6,149.48	3,079.31	1.44	-0.16	0.034
93.00	-18.33	-2.10	0.00	-83.63	0.00	83.63	3,534.46	1,767.23	5,935.01	2,971.92	1.55	-0.17	0.033
94.30	-17.38	-2.11	0.00	-80.90	0.00	80.90	3,511.46	1,755.73	5,842.77	2,925.73	1.60	-0.17	0.033
95.00	-16.38	-2.12	0.00	-79.42	0.00	79.42	3,499.01	1,749.51	5,793.29	2,900.95	1.62	-0.17	0.032
100.00	-15.60	-2.13	0.00	-68.81	0.00	68.81	3,408.74	1,704.37	5,443.61	2,725.85	1.81	-0.18	0.030
104.00	-14.37	-2.13	0.00	-60.30	0.00	60.30	3,334.80	1,667.40	5,168.85	2,588.26	1.97	-0.19	0.028
105.00	-13.48	-2.12	0.00	-58.17	0.00	58.17	3,316.07	1,658.04	5,100.87	2,554.23	2.01	-0.20	0.027
110.00	-12.62	-2.10	0.00	-47.57	0.00	47.57	3,191.87	1,595.94	4,722.36	2,364.69	2.22	-0.20	0.024
115.00	-12.28	-2.08	0.00	-37.09	0.00	37.09	3,066.45	1,533.23	4,356.70	2,181.59	2.44	-0.21	0.021
117.00	-9.43	-1.90	0.00	-32.93	0.00	32.93	3,016.29	1,508.14	4,214.57	2,110.42	2.53	-0.22	0.019
120.00	-9.08	-1.87	0.00	-27.22	0.00	27.22	2,941.04	1,470.52	4,005.78	2,005.87	2.67	-0.22	0.017
122.50	-6.03	-1.55	0.00	-22.54	0.00	22.54	2,878.33	1,439.16	3,835.85	1,920.77	2.78	-0.22	0.014
124.00	-5.93	-1.54	0.00	-20.21	0.00	20.21	2,840.70	1,420.35	3,735.65	1,870.60	2.85	-0.23	0.013
124.00	-5.93	-1.54	0.00	-20.21	0.00	20.21	1,762.15	881.07	2,335.37	1,169.42	2.85	-0.23	0.021
125.00	-5.44	-1.47	0.00	-18.67	0.00	18.67	1,747.31	873.66	2,285.71	1,144.55	2.90	-0.23	0.019
130.00	-5.35	-1.45	0.00	-11.33	0.00	11.33	1,670.08	835.04	2,041.30	1,022.17	3.14	-0.23	0.014
131.00	-3.06	-1.01	0.00	-9.88	0.00	9.88	1,654.02	827.01	1,993.27	998.12	3.19	-0.23	0.012
133.00	-2.78	-0.94	0.00	-7.87	0.00	7.87	1,621.29	810.65	1,898.16	950.49	3.29	-0.24	0.010
135.00	-2.70	-0.92	0.00	-5.98	0.00	5.98	1,587.75	793.87	1,804.36	903.52	3.39	-0.24	0.008
136.00	-1.80	-0.68	0.00	-5.06	0.00	5.06	1,570.67	785.34	1,757.99	880.30	3.44	-0.24	0.007
140.00	-1.51	-0.58	0.00	-2.32	0.00	2.32	1,500.33	750.16	1,576.21	789.28	3.64	-0.24	0.004
144.00	0.00	0.00	0.00	0.00	0.00	0.00	1,412.31	706.15	1,386.75	694.40	3.84	-0.24	0.000
144.50	0.00	0.00	0.00	0.00	0.00	0.00	1,400.09	700.04	1,362.73	682.38	3.87	-0.24	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	52.96	0.00	68.38	0.00	0.00	5755.71	0.00	0.61
0.9D + 1.6W	52.94	0.00	51.27	0.00	0.00	5721.51	0.00	0.60
1.2D + 1.0Di + 1.0Wi	16.03	0.00	115.31	0.00	0.00	1755.53	0.00	0.20
(1.2 + 0.2Sds) * DL + E ELFM	3.19	0.00	68.08	0.00	0.00	341.24	0.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	2.95	0.00	68.08	0.00	0.00	313.34	0.00	0.04
(0.9 - 0.2Sds) * DL + E ELFM	3.19	0.00	47.28	0.00	0.00	338.85	0.00	0.04
(0.9 - 0.2Sds) * DL + E EMAM	2.95	0.00	47.28	0.00	0.00	311.00	0.00	0.04
1.0D + 1.0W	13.77	0.00	57.04	0.00	0.00	1492.24	0.00	0.16

Base Plate & Anchor Rod Analysis

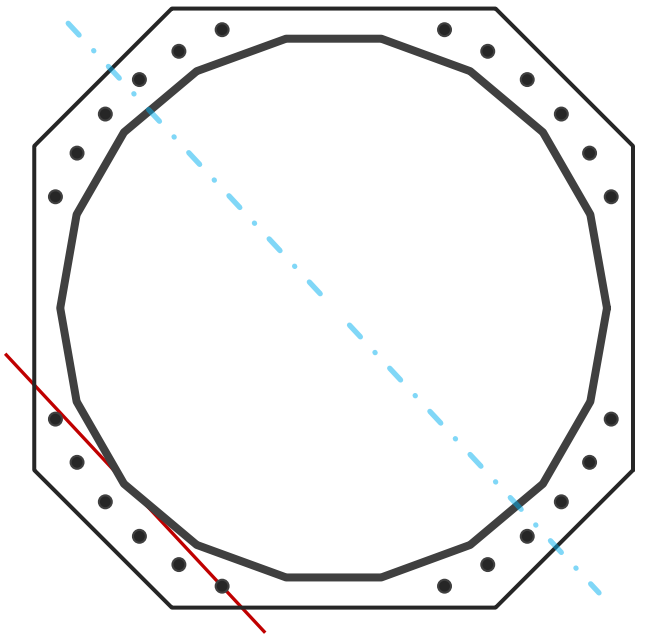
Pole Dimensions		
Number of Sides	18	-
Diameter	66.05	in
Thickness	0.5	in
Orientation Offset		°

Base Reactions		
Moment, Mu	5755.7	k-ft
Axial, Pu	68.4	k
Shear, Vu	53.0	k
Neutral Axis	133	°

Report Capacities		
Component	Capacity	Result
Base Plate	43%	Pass
Anchor Rods	61%	Pass
Dwyidag	-	-

Base Plate		
Shape	Square	-
Width	74	in
Thickness	3 1/4	in
Grade	Other	-
Yield Strength, Fy	55	ksi
Tensile Strength, Fu	70	ksi
Clip	17	in
Orientation Offset		°
Anchor Rod Detail	d	η=0.5
Clear Distance	2.75	in
Applied Moment, Mu	2141.7	k
Bending Stress, ϕMn	4980.3	k

Original Anchor Rods		
Arrangement	Cluster	-
Quantity	24	-
Diameter, ø	2 1/4	in
Bolt Circle	74	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset		°
Applied Force, Pu	158.2	k
Anchor Rods, ϕPn	259.8	k



Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	53.0	5755.7	1.00
Anchor Rod Forces	53.0	5755.7	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	102.4437	5.6913	0.4761		55031.14
Bolt	3.9761	3.2477	0.8393	4.5	53373.19
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Square	-
Width, W	74	in
Thickness, t	3.25	in
Yield Strength, Fy	55	ksi
Tensile Strength, Fu	70	ksi
Base Plate Chord	33.368	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	2.75	-

Anchor Rods		
Anchor Rod Quantity, N	24	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	74	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	158.2	k
Applied Shear, Vu	0.2	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.609	OK
Interaction Capacity	0.610	OK

External Base Plate		
Chord Length AA	38.102	in
Additional AA	0.000	in
Section Modulus, Z	100.613	in^3
Applied Moment, Mu	2141.7	k-ft
Bending Capacity, ϕMn	4980.3	k-ft
Capacity, Mu/ϕMn	0.430	OK
Chord Length AB	37.075	in
Additional AB	0.000	in
Section Modulus, Z	97.902	in^3
Applied Moment, Mu	1718.0	k-ft
Bending Capacity, ϕMn	4846.1	k-ft
Capacity, Mu/ϕMn	0.355	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in^3
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in^3
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Base/Flange Plate	Plate Type	***Flange***	***@ 124 ft***
	Pole Diameter	32.5	in
	Pole Thickness	0.25	in
	Plate Diameter	41	in
	Plate Thickness	1.25	in
	Plate Fy	50	ksi
	Weld Length	0.1875	in
	ϕ_s Resistance	125.59	k-in
	Applied	25.79	k-in
Stiffeners	#		

Bolts	#	***12***	
	Bolt Circle	37	in
	(R)adial / (S)quare	R	
	Diameter	1	in
	Hole Diameter	1.125	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	54.52	k
	Applied	17.19	k
Reinforcement ●	#	***0***	
Extra Bolts O	#	***0***	

Code Rev. ***G***

Moment 165.0 k-ft

Axial 7.7 k

Date 3/27/2019

Engineer Jennifer.Yu

Site # 411181

Carrier AT&T MOBILITY

Required Flange Thickness:

0.57 in OK

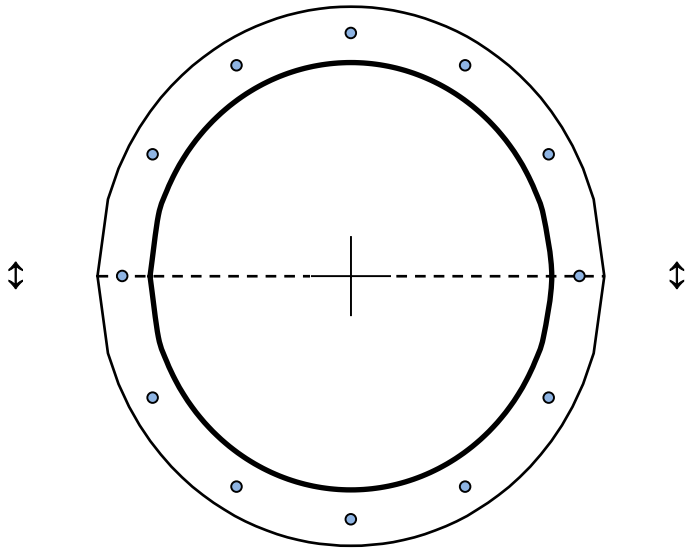


Plate Stress Ratio:

0.21 (Pass)

Bolt Stress Ratio:

0.32 (Pass)

February 1, 2019

CENTERLINE COMMUNICATIONS at&t

Centerline Communications
750 West Center Street, Suite #301
West Bridgewater, MA 02379

RE:		
	Site Number:	CT1115 (LTE 2C/3C/4C/5C)
	FA Number:	10035345
	PACE Number:	MRCTB035129
	PT Number:	2051A0KPJY
	Site Name:	BARKHAMSTED
	Site Address:	127 New Hartford Road Barkhamsted, CT 06063

To Whom It May Concern:

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

- (3) 7770 Antennas (55.0"x11.0"x5.0" - Wt. = 35 lbs. /each)
- (3) TT19-08BP111-001 TMA's (9.9"x6.7"x5.4" - Wt. = 16 lbs. /each)
- (2) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each) (Tower Mount)
- **(4) 800-10965 Antennas (78.7"x20.0"x6.9"– Wt. = 109 lbs. /each)**
- **(2) 800-10964 Antennas (59.0"x20.0"x6.9" – Wt. = 95 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3"– Wt. = 60 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(3) B5/B12 4449 RRH's (18.0"x13.2"x9.5" – Wt. = 71 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. ICE conducted a survey climb and mapping of the existing antenna mount.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R11.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-G Annex B, the max basic wind speed for this site is equal to 100 mph with a max basic wind speed with ice of 40 mph and a max ice thickness of 1.0 in. Per the AT&T Mount Technical Directive and Appendix N of the Connecticut State Building Code, an ultimate wind speed of 120 mph converted to a nominal wind speed of 93 mph and an escalated ice thickness of 2.27 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 3; tower is located at the upper half of a hill.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 3.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with bent plates. The connection is considered OK by visual inspection.

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

- **Install new 2" std. (2.38" O.D.) pipe brace secured to the mount and adjacent mount standoff (typ. of 2 per sector, total of 6).**
- **Install new mount reinforcement kit, SitePro1 P/N PRK-1245 (or approved equal).**
- **Vertically center the new and existing antennas on the face of the existing mount (typ. of 3 per sector, total of 9).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 2C/3C/4C/5C) Mount Rating	1	LC30	152%	**FAIL**
Modified (LTE 2C/3C/4C/5C) Mount Rating	10	LC1	76%	**PASS**

Reference Documents:

- Mount mapping data provided by ICE.

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:






p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027






p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 02/01/2019
Project Name: BARKHAMSTEAD
Project No.: CT1115
Designed By: SO **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

z=	115	(ft)
z_g=	1200	(ft)
α=	7.0	

K_z= 1.028

Kzmin ≤ Kz ≤ 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

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

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

K_{zt}= #DIV/0!

K_h=	#DIV/0!	
K_e=	0.9	(from Table 2-4)
K_t=		(from Table 2-5)
f=		(from Table 2-5)
z=	115	
H=		(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	
K_{iz} =	1.13	(from Sec. 2.6.8)

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

Category= 1

2.6.8 Design Ice Thickness

Max Ice Thickness = t_i =	1.00	in
Importance Factor, I_{ice} = I_{ice}=	1.00	(from Table 2-3)
$t_{iz} = 2.0*t_i*I_{ice}*K_{iz}*(Kzt)^{0.35}$ t_{iz} =	2.27	in

Date: 02/01/2019
Project Name: BARKHAMSTEAD
Project No.: CT1115
Designed By: SO 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= 180 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

State Code Ultimate Design Wind Speed: V_{ult} = 120 mph

Nomial Design Wind Speed, $V_{asd} = V_{ult}\sqrt{(0.6)}$ V_{asd} = 93 mph

V_{asd} per the AT&T Mount Technical Directive and Connecticut State Building Code, Latest Edition.
Per TIA-222-G, V_{min} = 90 mph V_{max} = 100 mph

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

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

		K_z=	1.028
		K_{zt}=	1.0
q_z=	**21.61**	K_d=	0.95 (from Table 2-2)
$q_{z\,(ice)}$=	**4.00**	V_{asd}=	93 mph
$q_{z\,(30)}$=	**2.25**	$V_{max\,(ice)}$=	40 mph
		V_{30}=	30 mph
		I=	1.0 (from Table 2-3)
		I_{wice}=	1.0 (from Table 2-3)

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: 02/01/2019
Project Name: BARKHAMSTEAD
Project No.: CT1115
Designed By: SO Checked By: MSC

HUDSON Design Group LLC

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 = **2.27** in | **Angle =** **0 (deg)** | **Equivalent Angle =** **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	**119**	**34**	**12**
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	**299**	**72**	**31**
800-10964 Antenna	59.0	20.0	6.9	8.19	2.95	1.22	**216**	**53**	**23**
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	**44**	**14**	**5**
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	2.70	1.21	**22**	**9**	**2**
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.20	**35**	**11**	**4**
B2/B66A 8843 RRH (Shielded)	14.9	6.6	10.9	0.68	2.26	1.20	**18**	**7**	**2**
B5/B12 4449 RRH	18.0	13.2	9.5	1.65	1.36	1.20	**43**	**13**	**4**
B5/B12 4449 RRH (Shielded)	18.0	6.6	9.5	0.83	2.73	1.21	**22**	**8**	**2**
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	1.83	1.20	**10**	**5**	**1**
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	**24**	**8**	**3**

Date: 02/01/2019
Project Name: BARKHAMSTEAD
Project No.: CT1115
Designed By: SO Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	2.27	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	119	63	105
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	299	126	255
800-10964 Antenna	59.0	20.0	6.9	8.19	2.83	2.95	8.55	1.22	1.45	216	89	184
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	44	27	40
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	22	27	23
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	35	29	34
B2/B66A 8843 RRH (Shielded)	14.9	6.6	10.9	0.68	1.13	2.26	1.37	1.20	1.20	18	29	21
B5/B12 4449 RRH	18.0	13.2	9.5	1.65	1.19	1.36	1.89	1.20	1.20	43	31	40
B5/B12 4449 RRH (Shielded)	18.0	6.6	9.5	0.83	1.19	2.73	1.89	1.21	1.20	22	31	24
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	10	12	10

WIND LOADS WITH ICE:

7770 Antenna	59.5	15.5	9.5	6.42	3.94	3.83	6.25	1.26	1.37	32	22	30
800-10965 Antenna	83.2	24.5	11.4	14.18	6.61	3.39	7.28	1.24	1.41	70	37	62
800-10964 Antenna	63.5	24.5	11.4	10.82	5.04	2.59	5.56	1.20	1.34	52	27	46
B14 4478 RRH	22.6	17.9	12.8	2.82	2.02	1.26	1.76	1.20	1.20	14	10	13
B14 4478 RRH (Shielded)	22.6	9.0	12.8	1.41	2.02	2.52	1.76	1.20	1.20	7	10	8
B2/B66A 8843 RRH	19.4	17.7	15.4	2.39	2.08	1.10	1.26	1.20	1.20	11	10	11
B2/B66A 8843 RRH (Shielded)	19.4	8.9	15.4	1.20	2.08	2.19	1.26	1.20	1.20	6	10	7
B5/B12 4449 RRH	22.5	17.7	14.0	2.77	2.20	1.27	1.61	1.20	1.20	13	11	13
B5/B12 4449 RRH (Shielded)	22.5	8.9	14.0	1.39	2.20	2.54	1.61	1.20	1.20	7	11	8
TT19-08BP111-001 TMA	14.4	9.9	11.2	1.00	1.13	1.45	1.28	1.20	1.20	5	5	5

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	7	11
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	31	13	27
800-10964 Antenna	59.0	20.0	6.9	8.19	2.83	2.95	8.55	1.22	1.45	23	9	19
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	2	3	2
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	4
B2/B66A 8843 RRH (Shielded)	14.9	6.6	10.9	0.68	1.13	2.26	1.37	1.20	1.20	2	3	2
B5/B12 4449 RRH	18.0	13.2	9.5	1.65	1.19	1.36	1.89	1.20	1.20	4	3	4
B5/B12 4449 RRH (Shielded)	18.0	6.6	9.5	0.83	1.19	2.73	1.89	1.21	1.20	2	3	2
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	1	1	1

Date: 02/01/2019
Project Name: BARKHAMSTEAD
Project No.: CT1115
Designed By: SO Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	2.27	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	119	63	77
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	299	126	169
800-10964 Antenna	59.0	20.0	6.9	8.19	2.83	2.95	8.55	1.22	1.45	216	89	121
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	44	27	31
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	33	27	28
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	35	29	31
B2/B66A 8843 RRH (Shielded)	14.9	9.9	10.9	1.02	1.13	1.51	1.37	1.20	1.20	27	29	29
B5/B12 4449 RRH	18.0	13.2	9.5	1.65	1.19	1.36	1.89	1.20	1.20	43	31	34
B5/B12 4449 RRH (Shielded)	18.0	9.9	9.5	1.24	1.19	1.82	1.89	1.20	1.20	32	31	31
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	10	12	11

WIND LOADS WITH ICE:

7770 Antenna	59.5	15.5	9.5	6.42	3.94	3.83	6.25	1.26	1.37	32	22	24
800-10965 Antenna	83.2	24.5	11.4	14.18	6.61	3.39	7.28	1.24	1.41	70	37	46
800-10964 Antenna	63.5	24.5	11.4	10.82	5.04	2.59	5.56	1.20	1.34	52	27	33
B14 4478 RRH	22.6	17.9	12.8	2.82	2.02	1.26	1.76	1.20	1.20	14	10	11
B14 4478 RRH (Shielded)	22.6	13.4	12.8	2.11	2.02	1.68	1.76	1.20	1.20	10	10	10
B2/B66A 8843 RRH	19.4	17.7	15.4	2.39	2.08	1.10	1.26	1.20	1.20	11	10	10
B2/B66A 8843 RRH (Shielded)	19.4	13.3	15.4	1.79	2.08	1.46	1.26	1.20	1.20	9	10	10
B5/B12 4449 RRH	22.5	17.7	14.0	2.77	2.20	1.27	1.61	1.20	1.20	13	11	11
B5/B12 4449 RRH (Shielded)	22.5	13.3	14.0	2.08	2.20	1.69	1.61	1.20	1.20	10	11	10
TT19-08BP111-001 TMA	14.4	9.9	11.2	1.00	1.13	1.45	1.28	1.20	1.20	5	5	5

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	7	8
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	31	13	18
800-10964 Antenna	59.0	20.0	6.9	8.19	2.83	2.95	8.55	1.22	1.45	23	9	13
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	3	3	3
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
B2/B66A 8843 RRH (Shielded)	14.9	9.9	10.9	1.02	1.13	1.51	1.37	1.20	1.20	3	3	3
B5/B12 4449 RRH	18.0	13.2	9.5	1.65	1.19	1.36	1.89	1.20	1.20	4	3	4
B5/B12 4449 RRH (Shielded)	18.0	9.9	9.5	1.24	1.19	1.82	1.89	1.20	1.20	3	3	3
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	1	1	1

Date: 02/01/2019
Project Name: BARKHAMSTEAD
Project No.: CT1115
Designed By: SO Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	2.27	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	119	63	63
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	299	126	126
800-10964 Antenna	59.0	20.0	6.9	8.19	2.83	2.95	8.55	1.22	1.45	216	89	89
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	44	27	27
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	22	27	27
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	35	29	29
B2/B66A 8843 RRH (Shielded)	14.9	6.6	10.9	0.68	1.13	2.26	1.37	1.20	1.20	18	29	29
B5/B12 4449 RRH	18.0	13.2	9.5	1.65	1.19	1.36	1.89	1.20	1.20	43	31	31
B5/B12 4449 RRH (Shielded)	18.0	6.6	9.5	0.83	1.19	2.73	1.89	1.21	1.20	22	31	31
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	10	12	12

WIND LOADS WITH ICE:

7770 Antenna	59.5	15.5	9.5	6.42	3.94	3.83	6.25	1.26	1.37	32	22	22
800-10965 Antenna	83.2	24.5	11.4	14.18	6.61	3.39	7.28	1.24	1.41	70	37	37
800-10964 Antenna	63.5	24.5	11.4	10.82	5.04	2.59	5.56	1.20	1.34	52	27	27
B14 4478 RRH	22.6	17.9	12.8	2.82	2.02	1.26	1.76	1.20	1.20	14	10	10
B14 4478 RRH (Shielded)	22.6	11.2	12.8	1.77	2.02	2.01	1.76	1.20	1.20	8	10	10
B2/B66A 8843 RRH	19.4	17.7	15.4	2.39	2.08	1.10	1.26	1.20	1.20	11	10	10
B2/B66A 8843 RRH (Shielded)	19.4	11.1	15.4	1.50	2.08	1.75	1.26	1.20	1.20	7	10	10
B5/B12 4449 RRH	22.5	17.7	14.0	2.77	2.20	1.27	1.61	1.20	1.20	13	11	11
B5/B12 4449 RRH (Shielded)	22.5	11.1	14.0	1.74	2.20	2.02	1.61	1.20	1.20	8	11	11
TT19-08BP111-001 TMA	14.4	9.9	11.2	1.00	1.13	1.45	1.28	1.20	1.20	5	5	5

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	7	7
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	31	13	13
800-10964 Antenna	59.0	20.0	6.9	8.19	2.83	2.95	8.55	1.22	1.45	23	9	9
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	2	3	3
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
B2/B66A 8843 RRH (Shielded)	14.9	6.6	10.9	0.68	1.13	2.26	1.37	1.20	1.20	2	3	3
B5/B12 4449 RRH	18.0	13.2	9.5	1.65	1.19	1.36	1.89	1.20	1.20	4	3	3
B5/B12 4449 RRH (Shielded)	18.0	6.6	9.5	0.83	1.19	2.73	1.89	1.21	1.20	2	3	3
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	1	1	1

Date: 02/01/2019
Project Name: BARKHAMSTEAD
Project No.: CT1115
Designed By: SO Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	2.27	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	119	63	77
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	299	126	169
800-10964 Antenna	59.0	20.0	6.9	8.19	2.83	2.95	8.55	1.22	1.45	216	89	121
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	44	27	31
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	33	27	28
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	35	29	31
B2/B66A 8843 RRH (Shielded)	14.9	9.9	10.9	1.02	1.13	1.51	1.37	1.20	1.20	27	29	29
B5/B12 4449 RRH	18.0	13.2	9.5	1.65	1.19	1.36	1.89	1.20	1.20	43	31	34
B5/B12 4449 RRH (Shielded)	18.0	9.9	9.5	1.24	1.19	1.82	1.89	1.20	1.20	32	31	31
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	10	12	11

WIND LOADS WITH ICE:

7770 Antenna	59.5	15.5	9.5	6.42	3.94	3.83	6.25	1.26	1.37	32	22	24
800-10965 Antenna	83.2	24.5	11.4	14.18	6.61	3.39	7.28	1.24	1.41	70	37	46
800-10964 Antenna	63.5	24.5	11.4	10.82	5.04	2.59	5.56	1.20	1.34	52	27	33
B14 4478 RRH	22.6	17.9	12.8	2.82	2.02	1.26	1.76	1.20	1.20	14	10	11
B14 4478 RRH (Shielded)	22.6	13.4	12.8	2.11	2.02	1.68	1.76	1.20	1.20	10	10	10
B2/B66A 8843 RRH	19.4	17.7	15.4	2.39	2.08	1.10	1.26	1.20	1.20	11	10	10
B2/B66A 8843 RRH (Shielded)	19.4	13.3	15.4	1.79	2.08	1.46	1.26	1.20	1.20	9	10	10
B5/B12 4449 RRH	22.5	17.7	14.0	2.77	2.20	1.27	1.61	1.20	1.20	13	11	11
B5/B12 4449 RRH (Shielded)	22.5	13.3	14.0	2.08	2.20	1.69	1.61	1.20	1.20	10	11	10
TT19-08BP111-001 TMA	14.4	9.9	11.2	1.00	1.13	1.45	1.28	1.20	1.20	5	5	5

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	7	8
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	31	13	18
800-10964 Antenna	59.0	20.0	6.9	8.19	2.83	2.95	8.55	1.22	1.45	23	9	13
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	3	3	3
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
B2/B66A 8843 RRH (Shielded)	14.9	9.9	10.9	1.02	1.13	1.51	1.37	1.20	1.20	3	3	3
B5/B12 4449 RRH	18.0	13.2	9.5	1.65	1.19	1.36	1.89	1.20	1.20	4	3	4
B5/B12 4449 RRH (Shielded)	18.0	9.9	9.5	1.24	1.19	1.82	1.89	1.20	1.20	3	3	3
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	1	1	1

Date: 02/01/2019
Project Name: BARKHAMSTEAD
Project No.: CT1115
Designed By: SO Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	2.27	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	119	63	105
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	299	126	255
800-10964 Antenna	59.0	20.0	6.9	8.19	2.83	2.95	8.55	1.22	1.45	216	89	184
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	44	27	40
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	22	27	23
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	35	29	34
B2/B66A 8843 RRH (Shielded)	14.9	6.6	10.9	0.68	1.13	2.26	1.37	1.20	1.20	18	29	21
B5/B12 4449 RRH	18.0	13.2	9.5	1.65	1.19	1.36	1.89	1.20	1.20	43	31	40
B5/B12 4449 RRH (Shielded)	18.0	6.6	9.5	0.83	1.19	2.73	1.89	1.21	1.20	22	31	24
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	10	12	10

WIND LOADS WITH ICE:

7770 Antenna	59.5	15.5	9.5	6.42	3.94	3.83	6.25	1.26	1.37	32	22	30
800-10965 Antenna	83.2	24.5	11.4	14.18	6.61	3.39	7.28	1.24	1.41	70	37	62
800-10964 Antenna	63.5	24.5	11.4	10.82	5.04	2.59	5.56	1.20	1.34	52	27	46
B14 4478 RRH	22.6	17.9	12.8	2.82	2.02	1.26	1.76	1.20	1.20	14	10	13
B14 4478 RRH (Shielded)	22.6	9.0	12.8	1.41	2.02	2.52	1.76	1.20	1.20	7	10	8
B2/B66A 8843 RRH	19.4	17.7	15.4	2.39	2.08	1.10	1.26	1.20	1.20	11	10	11
B2/B66A 8843 RRH (Shielded)	19.4	8.9	15.4	1.20	2.08	2.19	1.26	1.20	1.20	6	10	7
B5/B12 4449 RRH	22.5	17.7	14.0	2.77	2.20	1.27	1.61	1.20	1.20	13	11	13
B5/B12 4449 RRH (Shielded)	22.5	8.9	14.0	1.39	2.20	2.54	1.61	1.20	1.20	7	11	8
TT19-08BP111-001 TMA	14.4	9.9	11.2	1.00	1.13	1.45	1.28	1.20	1.20	5	5	5

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	7	11
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	31	13	27
800-10964 Antenna	59.0	20.0	6.9	8.19	2.83	2.95	8.55	1.22	1.45	23	9	19
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	2	3	2
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	4
B2/B66A 8843 RRH (Shielded)	14.9	6.6	10.9	0.68	1.13	2.26	1.37	1.20	1.20	2	3	2
B5/B12 4449 RRH	18.0	13.2	9.5	1.65	1.19	1.36	1.89	1.20	1.20	4	3	4
B5/B12 4449 RRH (Shielded)	18.0	6.6	9.5	0.83	1.19	2.73	1.89	1.21	1.20	2	3	2
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	1	1	1

Date: 02/01/2019
Project Name: BARKHAMSTEAD
Project No.: CT1115
Designed By: SO **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 2.27 in.
Density of ice: 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:		182 lbs
Weight of object:	35.0 lbs	
Combined weight of ice and object:		217 lbs

800-10965 Antenna

Weight of ice based on total radial SF area:

Height (in):	78.7	
Width (in):	20.0	
Depth (in):	6.9	
Total weight of ice on object:		426 lbs
Weight of object:	109.0 lbs	
Combined weight of ice and object:		535 lbs

800-10964 Antenna

Weight of ice based on total radial SF area:

Height (in):	59.0	
Width (in):	20.0	
Depth (in):	6.9	
Total weight of ice on object:		319 lbs
Weight of object:	84.0 lbs	
Combined weight of ice and object:		403 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		75 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		135 lbs

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:		67 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		139 lbs

B5/B12 4449 RRH

Weight of ice based on total radial SF area:

Height (in):	18.0	
Width (in):	13.2	
Depth (in):	9.5	
Total weight of ice on object:		77 lbs
Weight of object:	71.0 lbs	
Combined weight of ice and object:		148 lbs

TT19-08BP111-001 TMA

Weight of ice based on total radial SF area:

Height (in):	9.9	
Width (in):	5.4	
Depth (in):	6.7	
Total weight of ice on object:		25 lbs
Weight of object:	16.0 lbs	
Combined weight of ice and object:		41 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		66 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		99 lbs

2" pipe

Per foot weight of ice:

diameter (in):	4.5	
Per foot weight of ice on object:		19 plf

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		22 plf

Double L2-1/2x2-1/2 Angle

Weight of ice based on total radial SF area:

Height (in):	5	
Width (in):	2.5	
Per foot weight of ice on object:		22 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

Bentley

Current Date: 2/1/2019 1:41 PM
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Bentley

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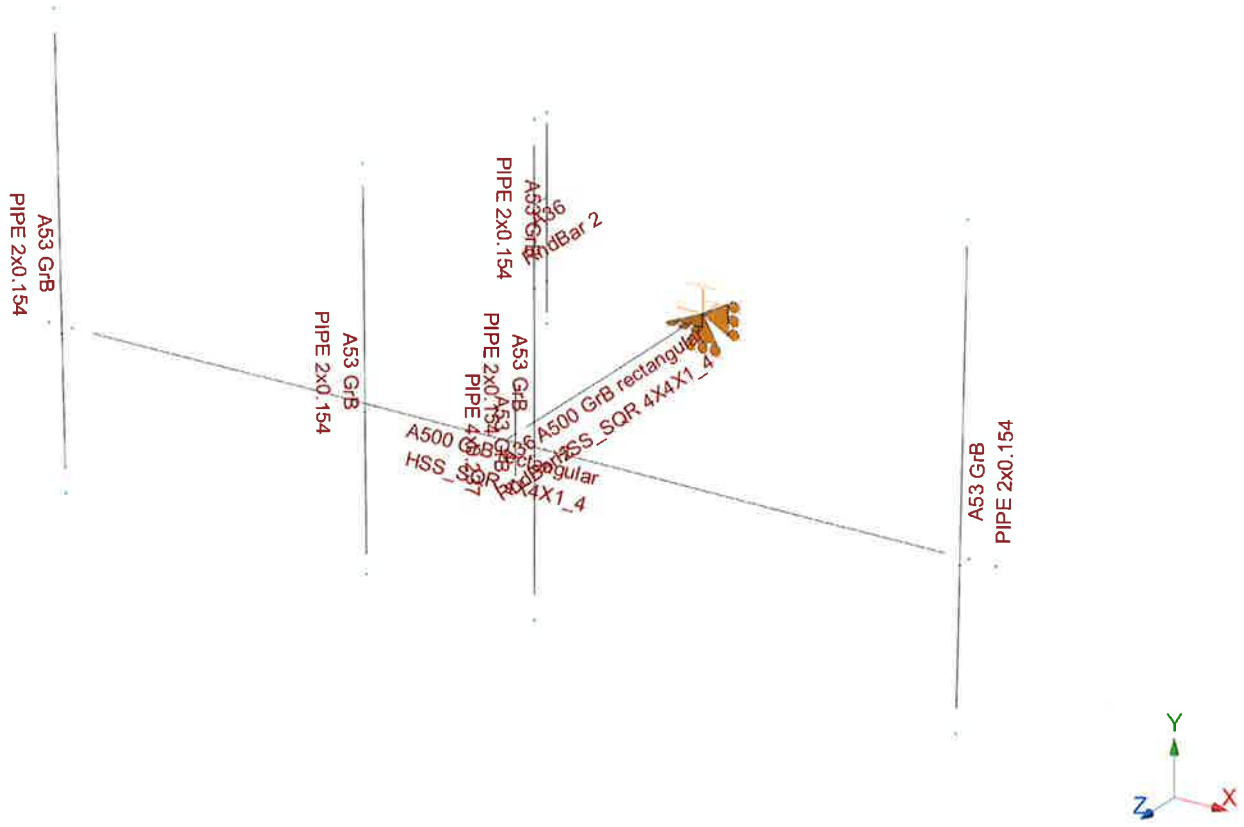

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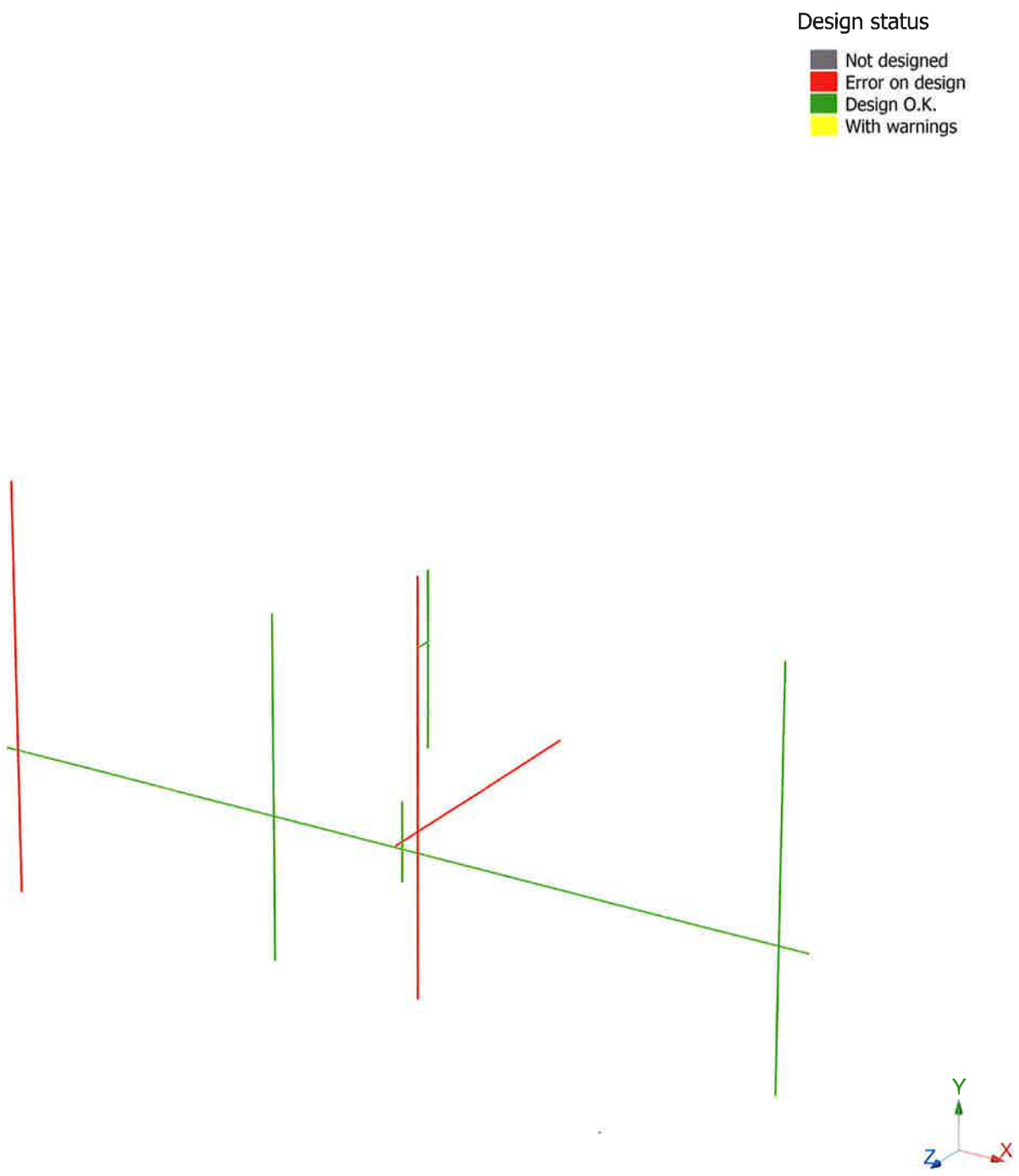

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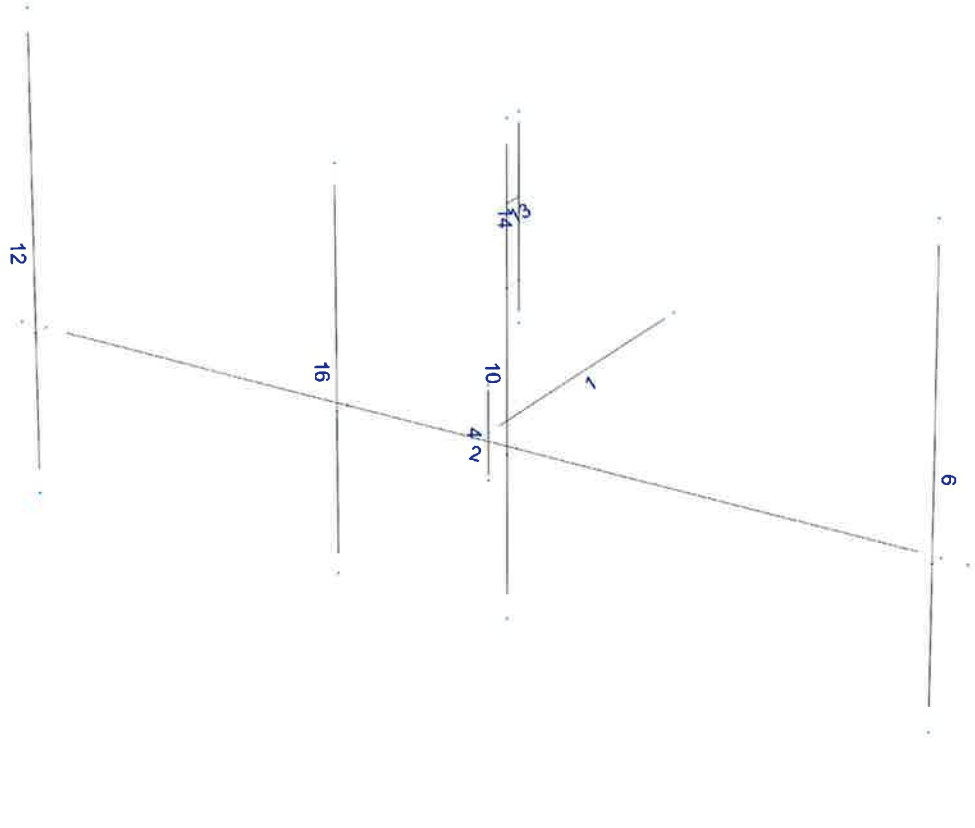

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Load data

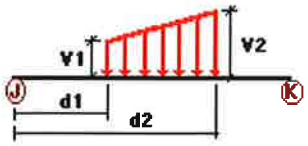
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

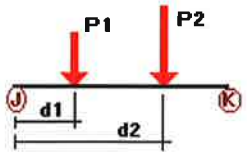
Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load on Left End	No	LL
LL2	250 lb Live Load on Center	No	LL
LL3	250 lb Live Load on Right End	No	LL
LLa1	250 lb Live Load on Antenna 1	No	LL
LLa2	250 lb Live Load on Antenna 2	No	LL
LLa3	250 lb Live Load on Antenna 3	No	LL
LLa4	250 lb Live Load on Antenna 4	No	LL

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	2	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	4	Z	-0.01	-0.01	0.00	Yes	100.00	Yes
W30	1	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	2	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	4	Z	-0.01	-0.01	0.00	Yes	100.00	Yes
	14	3	-0.005	-0.005	0.00	Yes	100.00	Yes
W60	1	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	2	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	4	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	9	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	10	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	12	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	16	X	-0.005	-0.005	0.00	Yes	100.00	Yes
W90	1	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	2	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	4	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	9	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	10	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	12	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	16	X	-0.005	-0.005	0.00	Yes	100.00	Yes
W120	1	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	2	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	4	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	9	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	10	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	12	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	16	X	-0.005	-0.005	0.00	Yes	100.00	Yes
W150	1	Z	0.014	0.014	0.00	Yes	100.00	Yes
	2	Z	0.014	0.014	0.00	Yes	100.00	Yes
	4	Z	0.01	0.01	0.00	Yes	100.00	Yes
	14	3	0.005	0.005	0.00	Yes	100.00	Yes
Di	1	y	-0.022	-0.022	0.00	Yes	100.00	Yes
	2	y	-0.022	-0.022	0.00	Yes	100.00	Yes
	4	Y	-0.019	-0.019	0.00	Yes	100.00	Yes
	9	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	10	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	12	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	14	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	16	Y	-0.013	-0.013	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	9	y	-0.018	1.50	No
		y	-0.018	4.50	No
		y	-0.016	3.00	No
	10	y	-0.055	0.50	No
		y	-0.055	5.50	No
	12	y	-0.055	0.50	No

		y	-0.055	5.50	No
		y	-0.143	2.50	No
	14	y	-0.06	1.00	No
	16	y	-0.033	2.00	No
Wo	9	z	-0.06	1.50	No
		z	-0.06	4.50	No
	10	z	-0.15	0.50	No
		z	-0.15	5.50	No
	12	z	-0.15	0.50	No
		z	-0.15	5.50	No
		z	-0.04	2.50	No
	14	z	-0.022	1.00	No
	16	z	-0.024	2.00	No
W30	9	3	-0.053	1.50	No
		3	-0.053	4.50	No
		3	-0.01	3.00	No
	10	3	-0.128	0.50	No
		3	-0.128	5.50	No
	12	3	-0.128	0.50	No
		3	-0.128	5.50	No
		3	-0.024	2.50	No
	14	3	-0.023	1.00	No
	16	3	-0.024	2.00	No
W60	9	3	-0.039	1.50	No
		3	-0.039	4.50	No
		3	-0.011	3.00	No
	10	3	-0.085	0.50	No
		3	-0.085	5.50	No
	12	3	-0.085	0.50	No
		3	-0.085	5.50	No
		3	-0.031	2.50	No
	14	3	-0.028	1.00	No
	16	3	-0.024	2.00	No
W90	9	x	-0.032	1.50	No
		x	-0.032	4.50	No
		x	-0.012	3.00	No
	10	x	-0.064	0.50	No
		x	-0.064	5.50	No
	12	x	-0.064	0.50	No
		x	-0.064	5.50	No
		x	-0.031	2.50	No
	14	x	-0.027	1.00	No
	16	x	-0.024	2.00	No
W120	9	2	-0.039	1.50	No
		2	-0.039	4.50	No
		2	-0.011	3.00	No
	10	2	-0.085	0.50	No
		2	-0.085	5.50	No
	12	2	-0.085	0.50	No
		2	-0.085	5.50	No
		2	-0.031	2.50	No
	14	2	-0.028	1.00	No
	16	2	-0.024	2.00	No
W150	9	2	-0.053	1.50	No
		2	-0.053	4.50	No
		2	-0.01	3.00	No
	10	2	-0.128	0.50	No
		2	-0.128	5.50	No
	12	2	-0.128	0.50	No
		2	-0.128	5.50	No

		2	-0.024	2.50	No
	14	2	-0.023	1.00	No
	16	2	-0.024	2.00	No
Di	9	y	-0.091	1.50	No
		y	-0.091	4.50	No
		y	-0.025	3.00	No
	10	y	-0.213	0.50	No
		y	-0.213	5.50	No
	12	y	-0.213	0.50	No
		y	-0.213	5.50	No
		y	-0.144	2.50	No
	14	y	-0.075	1.00	No
	16	y	-0.066	2.00	No
WI0	9	z	-0.017	1.50	No
		z	-0.017	4.50	No
	10	z	-0.036	0.50	No
		z	-0.036	5.50	No
	12	z	-0.036	0.50	No
		z	-0.036	5.50	No
		z	-0.015	2.50	No
	14	z	-0.009	1.00	No
	16	z	-0.008	2.00	No
WI30	9	3	-0.015	1.50	No
		3	-0.015	4.50	No
		3	-0.005	3.00	No
	10	3	-0.032	0.50	No
		3	-0.032	5.50	No
	12	3	-0.032	0.50	No
		3	-0.032	5.50	No
		3	-0.008	2.50	No
	14	3	-0.008	1.00	No
	16	3	-0.008	2.00	No
WI60	9	3	-0.013	1.50	No
		3	-0.013	4.50	No
		3	-0.005	3.00	No
	10	3	-0.023	0.50	No
		3	-0.023	5.50	No
	12	3	-0.023	0.50	No
		3	-0.023	5.50	No
		3	-0.01	2.50	No
	14	3	-0.01	1.00	No
	16	3	-0.008	2.00	No
WI90	9	x	-0.011	1.50	No
		x	-0.011	4.50	No
		x	-0.005	3.00	No
	10	x	-0.019	0.50	No
		x	-0.019	5.50	No
	12	x	-0.019	0.50	No
		x	-0.019	5.50	No
		x	-0.011	2.50	No
	14	x	-0.01	1.00	No
	16	x	-0.008	2.00	No
WI120	9	2	-0.013	1.50	No
		2	-0.013	4.50	No
		2	-0.005	3.00	No
	10	2	-0.023	0.50	No
		2	-0.023	5.50	No
	12	2	-0.023	0.50	No
		2	-0.023	5.50	No
		2	-0.01	2.50	No

	14	2	-0.01	1.00	No
	16	2	-0.008	2.00	No
WI150	9	2	-0.015	1.50	No
		2	-0.015	4.50	No
		2	-0.005	3.00	No
	10	2	-0.032	0.50	No
		2	-0.032	5.50	No
	12	2	-0.032	0.50	No
		2	-0.032	5.50	No
		2	-0.008	2.50	No
	14	2	-0.008	1.00	No
	16	2	-0.008	2.00	No
WL0	9	z	-0.006	1.50	No
		z	-0.006	4.50	No
	10	z	-0.016	0.50	No
		z	-0.016	5.50	No
	12	z	-0.016	0.50	No
		z	-0.016	5.50	No
		z	-0.004	2.50	No
	14	z	-0.002	1.00	No
	16	z	-0.003	2.00	No
WL30	9	3	-0.006	1.50	No
		3	-0.006	4.50	No
		3	-0.001	3.00	No
	10	3	-0.014	0.50	No
		3	-0.014	5.50	No
	12	3	-0.014	0.50	No
		3	-0.014	5.50	No
		3	-0.002	2.50	No
	14	3	-0.002	1.00	No
	16	3	-0.003	2.00	No
WL60	9	3	-0.005	1.50	No
		3	-0.005	4.50	No
		3	-0.001	3.00	No
	10	3	-0.009	0.50	No
		3	-0.009	5.50	No
	12	3	-0.009	0.50	No
		3	-0.009	5.50	No
		3	-0.003	2.50	No
	14	3	-0.003	1.00	No
	16	3	-0.003	2.00	No
WL90	9	x	-0.004	1.50	No
		x	-0.004	4.50	No
		x	-0.001	3.00	No
	10	x	-0.007	0.50	No
		x	-0.007	5.50	No
	12	x	-0.007	0.50	No
		x	-0.007	5.50	No
		x	-0.003	2.50	No
	14	x	-0.003	1.00	No
	16	x	-0.003	2.00	No
WL120	9	2	-0.005	1.50	No
		2	-0.005	4.50	No
		2	-0.001	3.00	No
	10	2	-0.009	0.50	No
		2	-0.009	5.50	No
	12	2	-0.009	0.50	No
		2	-0.009	5.50	No
		2	-0.003	2.50	No
	14	2	-0.003	1.00	No

	16	2	-0.003	2.00	No
WL150	9	2	-0.006	1.50	No
		2	-0.006	4.50	No
		2	-0.001	3.00	No
	10	2	-0.014	0.50	No
		2	-0.014	5.50	No
	12	2	-0.014	0.50	No
		2	-0.014	5.50	No
		2	-0.002	2.50	No
	14	2	-0.002	1.00	No
	16	2	-0.003	2.00	No
LL1	2	y	-0.25	12.50	No
LL2	2	y	-0.25	6.25	No
LL3	2	y	-0.25	0.00	No
LLa1	9	y	-0.25	3.00	No
LLa2	10	y	-0.25	3.00	No
LLa3	12	y	-0.25	3.00	No
LLa4	16	y	-0.25	2.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load on Left End	No	0.00	0.00	0.00
LL2	250 lb Live Load on Center	No	0.00	0.00	0.00
LL3	250 lb Live Load on Right End	No	0.00	0.00	0.00
LLa1	250 lb Live Load on Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load on Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load on Antenna 3	No	0.00	0.00	0.00
LLa4	250 lb Live Load on Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

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

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+1.6Wo
LC2=1.2D+1.6W30
LC3=1.2D+1.6W60
LC4=1.2D+1.6W90
LC5=1.2D+1.6W120
LC6=1.2D+1.6W150
LC7=1.2D-1.6Wo
LC8=1.2D-1.6W30
LC9=1.2D-1.6W60
LC10=1.2D-1.6W90
LC11=1.2D-1.6W120
LC12=1.2D-1.6W150
LC13=0.9D+1.6Wo
LC14=0.9D+1.6W30
LC15=0.9D+1.6W60
LC16=0.9D+1.6W90
LC17=0.9D+1.6W120
LC18=0.9D+1.6W150
LC19=0.9D-1.6Wo
LC20=0.9D-1.6W30
LC21=0.9D-1.6W60
LC22=0.9D-1.6W90
LC23=0.9D-1.6W120
LC24=0.9D-1.6W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=0.9D
LC38=1.2D+1.6LL1
LC39=1.2D+1.6LL2
LC40=1.2D+1.6LL3
LC41=1.2D+WL0+LLa1
LC42=1.2D+WL30+LLa1
LC43=1.2D+WL60+LLa1
LC44=1.2D+WL90+LLa1
LC45=1.2D+WL120+LLa1
LC46=1.2D+WL150+LLa1
LC47=1.2D-WL0+LLa1
LC48=1.2D-WL30+LLa1
LC49=1.2D-WL60+LLa1
LC50=1.2D-WL90+LLa1
LC51=1.2D-WL120+LLa1
LC52=1.2D-WL150+LLa1
LC53=1.2D+WL0+LLa2

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

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**1**	LC30 at 0.00%	**1.52**	**N.G.**	Eq. H3-6
		2	LC31 at 48.96%	0.66	OK	Eq. H1-1b
	PIPE 2x0.154	**9**	LC7 at 65.63%	0.27	OK	Eq. H1-1b
		10	LC1 at 65.63%	**1.08**	**N.G.**	Eq. H1-1b
		12	LC1 at 65.63%	1.05	N.G.	Eq. H1-1b
		14	LC2 at 79.17%	0.12	OK	Eq. H1-1b
		16	LC4 at 59.38%	0.08	OK	Eq. H1-1b
	PIPE 4x0.237	**4**	LC11 at 50.00%	**0.00**	**OK**	
	RndBar 2	**13**	LC1 at 0.00%	**0.07**	**OK**	Eq. H1-1b

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Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
10	0.00	0.58	4.00	0
16	5.917	4.00	4.40	0
17	0.50	4.00	4.40	0
18	-1.75	3.00	4.40	0
19	-5.917	4.00	4.40	0
20	5.917	-2.00	4.40	0
21	0.50	-2.00	4.40	0
22	-1.75	-2.00	4.40	0
23	-5.917	-2.00	4.40	0
25	0.50	3.00	4.15	0
26	0.50	4.00	4.15	0
27	0.50	1.50	4.15	0
12	-1.75	0.00	4.40	0
2	0.00	0.00	4.00	0

Restraints

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	1	2		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
2	4	3		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
4	11	10		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
9	16	20		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
10	17	21		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
12	19	23		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
13	24	25		RndBar 2	A36	0.00	0.00	0.00
14	26	27		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
16	18	22		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
9	315.00	0	0.00	0.00	0.00
10	315.00	0	0.00	0.00	0.00
12	315.00	0	0.00	0.00	0.00
14	315.00	0	0.00	0.00	0.00
16	315.00	0	0.00	0.00	0.00

HUDSON
Design Group LLC

Mount Calculations
(Modified Conditions)

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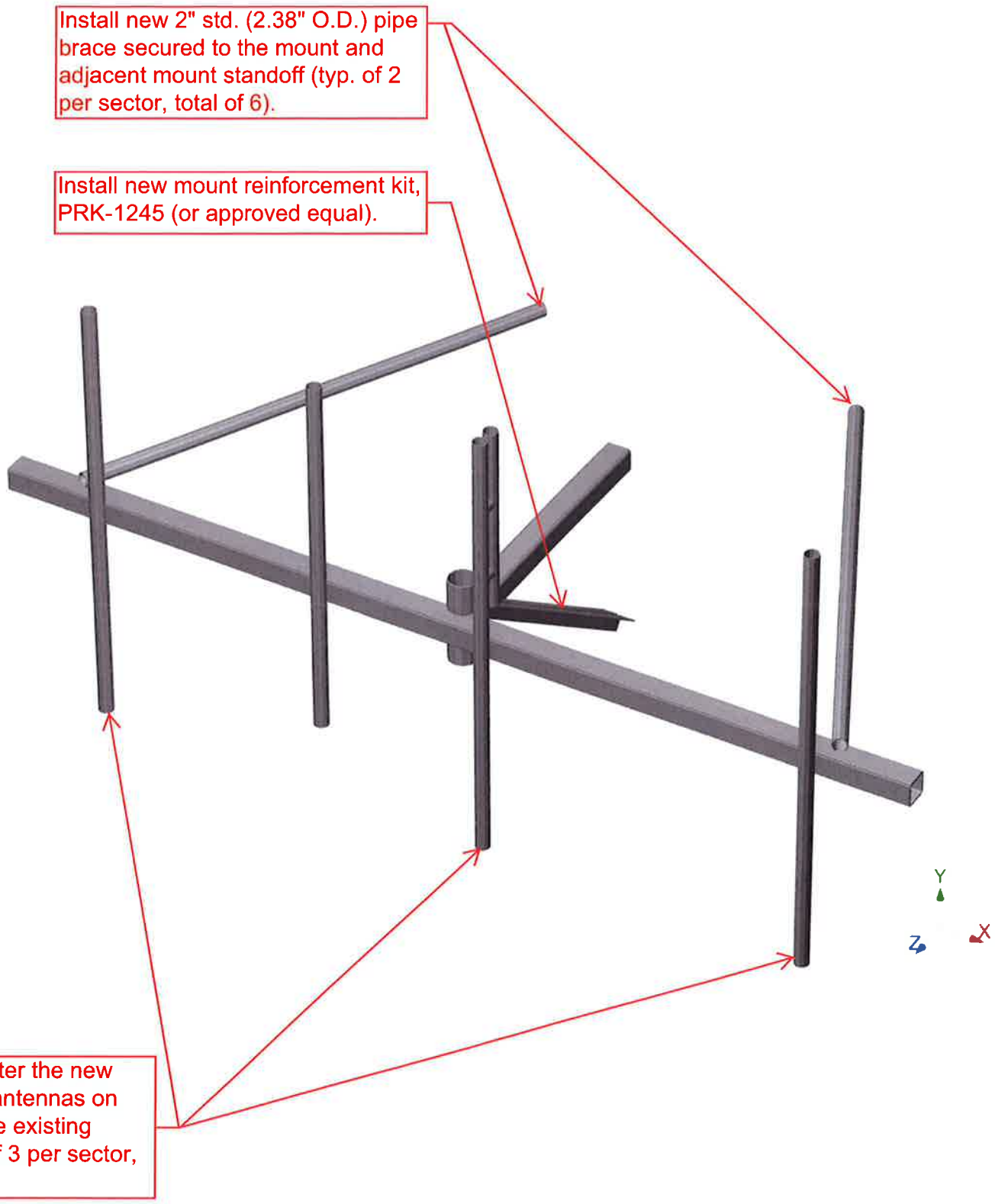

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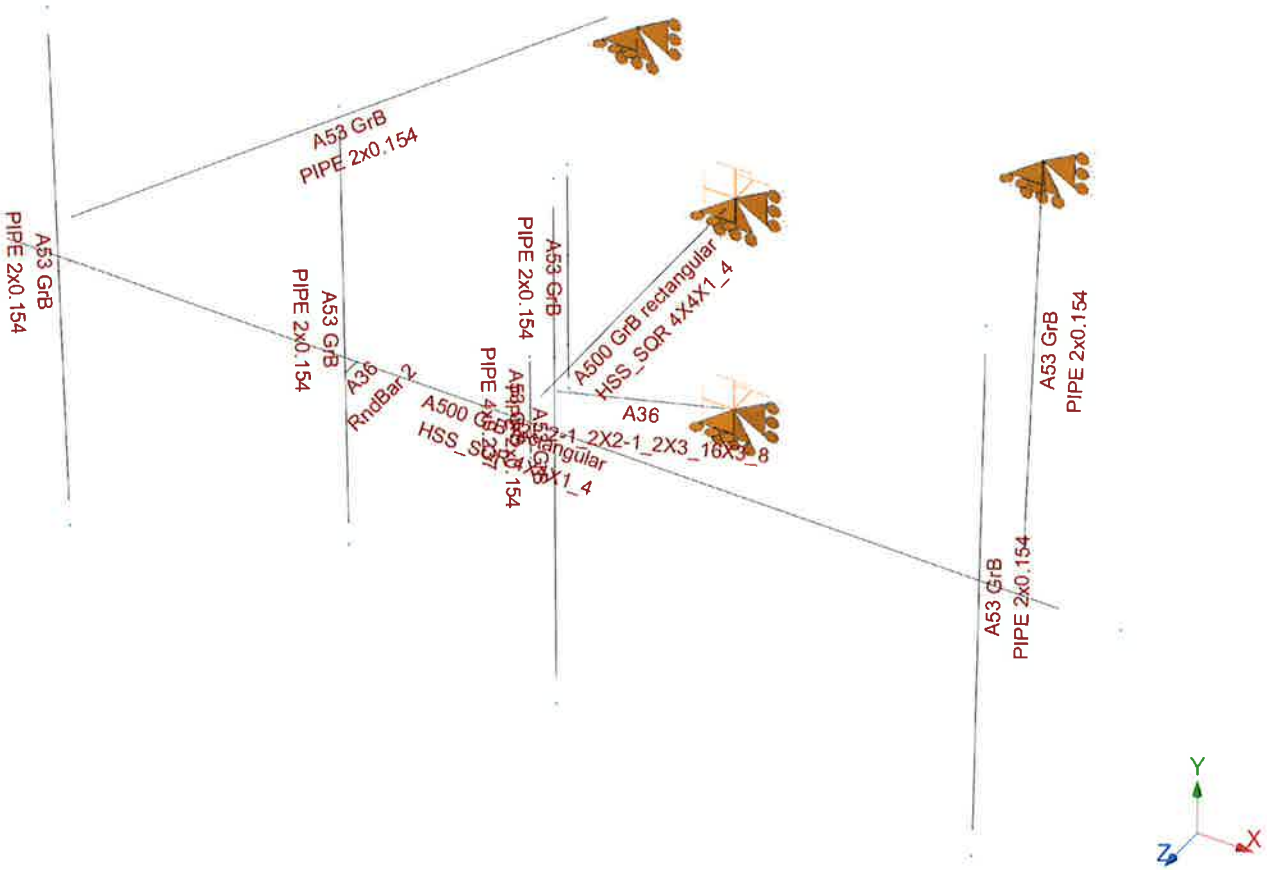

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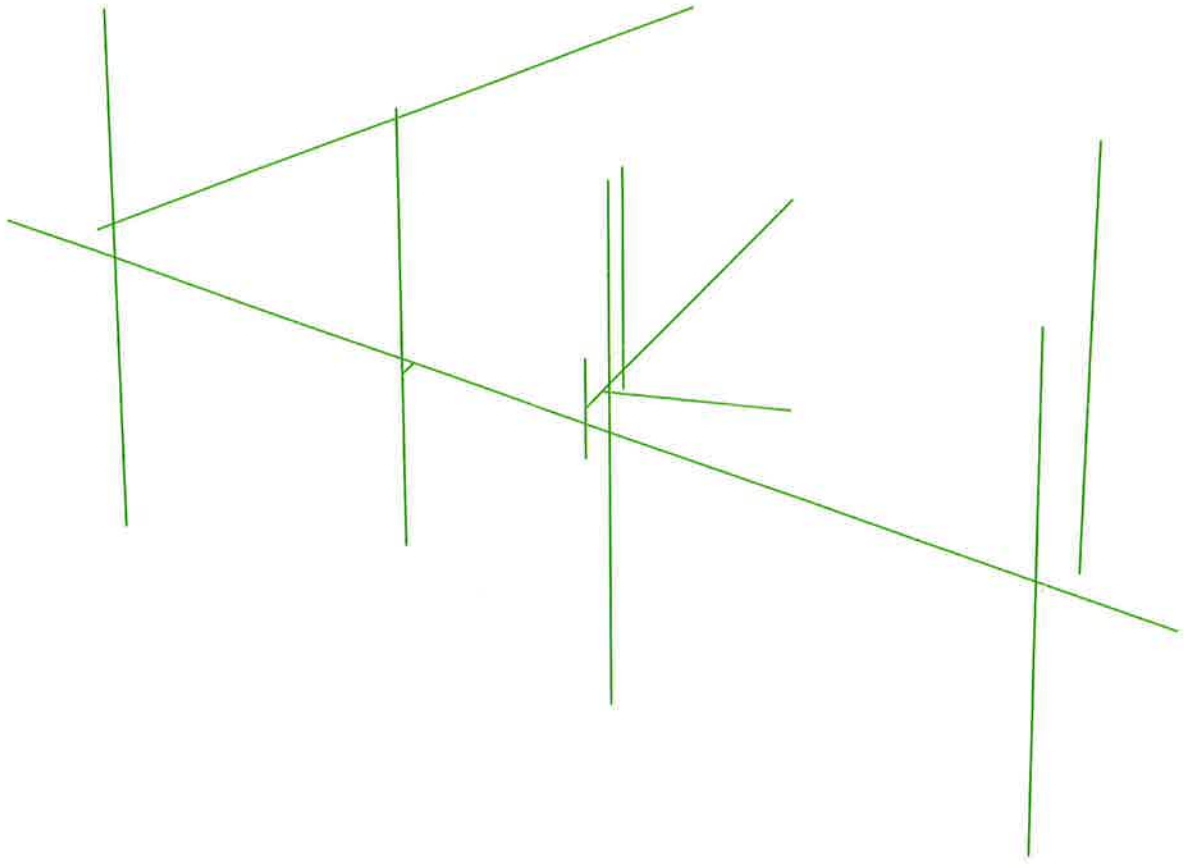
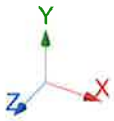
Design status

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





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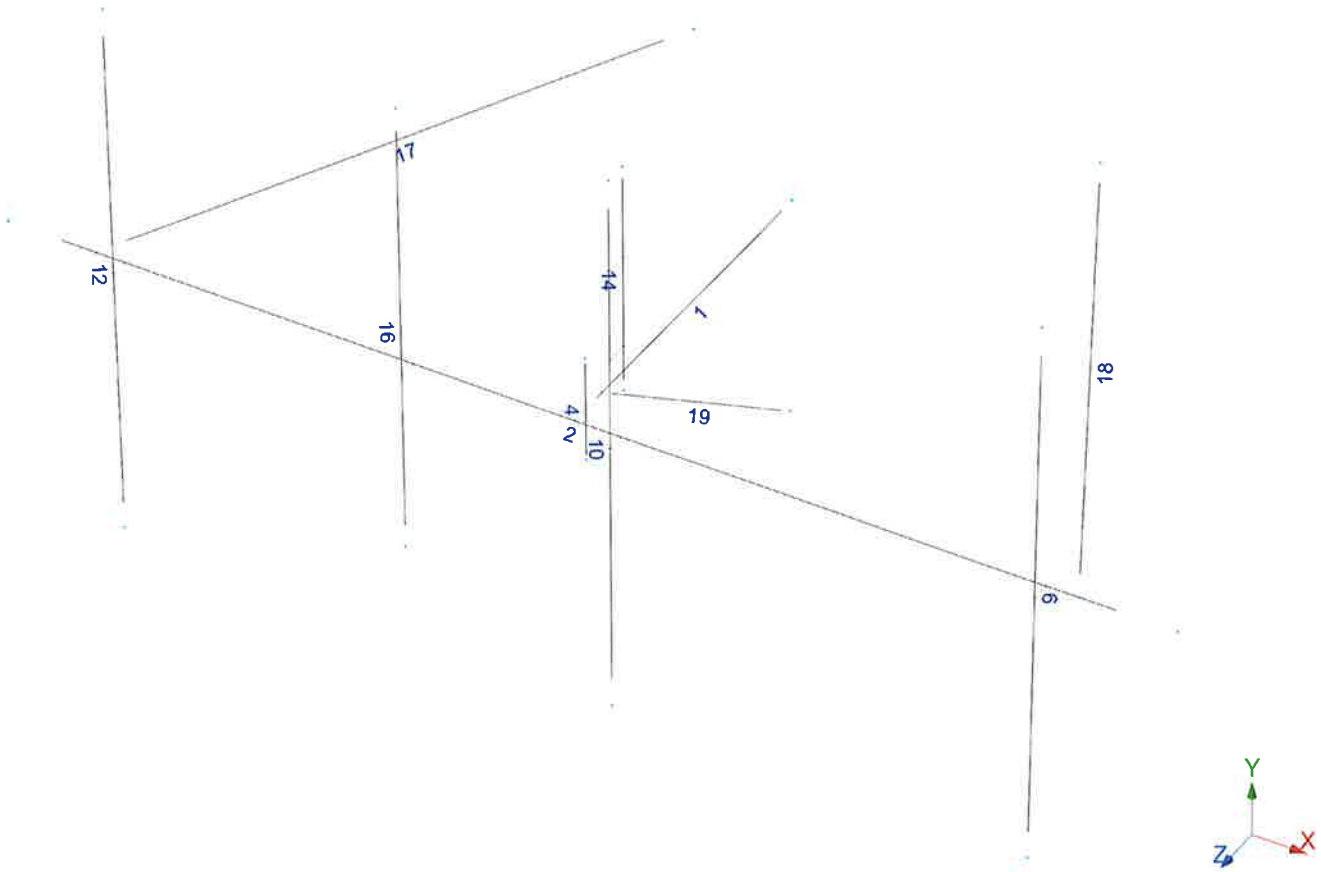

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Load data

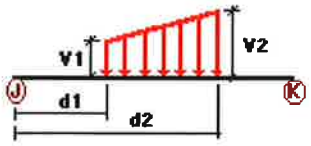
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

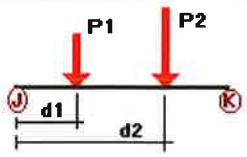
Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load on Left End	No	LL
LL2	250 lb Live Load on Center	No	LL
LL3	250 lb Live Load on Right End	No	LL
LLa1	250 lb Live Load on Antenna 1	No	LL
LLa2	250 lb Live Load on Antenna 2	No	LL
LLa3	250 lb Live Load on Antenna 3	No	LL
LLa4	250 lb Live Load on Antenna 4	No	LL

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	2	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	4	Z	-0.01	-0.01	0.00	Yes	100.00	Yes
	16	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	17	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	18	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
W30	1	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	2	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	4	Z	-0.01	-0.01	0.00	Yes	100.00	Yes
	14	3	-0.005	-0.005	0.00	Yes	100.00	Yes
	16	3	-0.005	-0.005	0.00	Yes	100.00	Yes
	17	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
	18	Z	-0.005	-0.005	0.00	Yes	100.00	Yes
W60	1	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	2	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	4	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	9	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	10	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	12	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	16	3	-0.005	-0.005	0.00	Yes	100.00	Yes
	17	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	18	X	-0.005	-0.005	0.00	Yes	100.00	Yes
W90	1	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	2	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	4	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	9	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	10	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	12	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	16	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	17	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	18	X	-0.005	-0.005	0.00	Yes	100.00	Yes
W120	1	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	2	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	4	X	-0.01	-0.01	0.00	Yes	100.00	Yes
	9	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	10	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	12	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	16	2	-0.005	-0.005	0.00	Yes	100.00	Yes
	17	X	-0.005	-0.005	0.00	Yes	100.00	Yes
	18	X	-0.005	-0.005	0.00	Yes	100.00	Yes
W150	1	Z	0.014	0.014	0.00	Yes	100.00	Yes
	2	Z	0.014	0.014	0.00	Yes	100.00	Yes
	4	Z	0.01	0.01	0.00	Yes	100.00	Yes
	14	3	0.005	0.005	0.00	Yes	100.00	Yes
	16	2	-0.005	-0.005	0.00	Yes	100.00	Yes
	17	Z	0.005	0.005	0.00	Yes	100.00	Yes
	18	Z	0.005	0.005	0.00	Yes	100.00	Yes
Di	1	y	-0.022	-0.022	0.00	Yes	100.00	Yes
	2	y	-0.022	-0.022	0.00	Yes	100.00	Yes
	4	Y	-0.019	-0.019	0.00	Yes	100.00	Yes
	9	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	10	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	12	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	14	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	16	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	17	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	18	Y	-0.013	-0.013	0.00	Yes	100.00	Yes
	19	Y	-0.022	-0.022	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	9	y	-0.018	1.50	No
		y	-0.018	4.50	No
		y	-0.016	3.00	No
	10	y	-0.055	0.50	No
		y	-0.055	5.50	No
	12	y	-0.055	0.50	No
		y	-0.055	5.50	No
		y	-0.143	2.50	No
	14	y	-0.06	1.00	No
	16	y	-0.033	2.00	No
Wo	9	z	-0.06	1.50	No
		z	-0.06	4.50	No
	10	z	-0.15	0.50	No
		z	-0.15	5.50	No
	12	z	-0.15	0.50	No
		z	-0.15	5.50	No
		z	-0.04	2.50	No
	14	z	-0.022	1.00	No
	16	z	-0.024	2.00	No
W30	9	3	-0.053	1.50	No
		3	-0.053	4.50	No
		3	-0.01	3.00	No
	10	3	-0.128	0.50	No
		3	-0.128	5.50	No
	12	3	-0.128	0.50	No
		3	-0.128	5.50	No
		3	-0.024	2.50	No
	14	3	-0.023	1.00	No
	16	3	-0.024	2.00	No
W60	9	3	-0.039	1.50	No
		3	-0.039	4.50	No
		3	-0.011	3.00	No
	10	3	-0.085	0.50	No
		3	-0.085	5.50	No
	12	3	-0.085	0.50	No
		3	-0.085	5.50	No
		3	-0.031	2.50	No
	14	3	-0.028	1.00	No
	16	3	-0.024	2.00	No
W90	9	x	-0.032	1.50	No
		x	-0.032	4.50	No
		x	-0.012	3.00	No
	10	x	-0.064	0.50	No
		x	-0.064	5.50	No
	12	x	-0.064	0.50	No
		x	-0.064	5.50	No
		x	-0.031	2.50	No
	14	x	-0.027	1.00	No
	16	x	-0.024	2.00	No
W120	9	2	-0.039	1.50	No
		2	-0.039	4.50	No
		2	-0.011	3.00	No
	10	2	-0.085	0.50	No
		2	-0.085	5.50	No

	12	2	-0.085	0.50	No
		2	-0.085	5.50	No
		2	-0.031	2.50	No
	14	2	-0.028	1.00	No
	16	2	-0.024	2.00	No
W150	9	2	-0.053	1.50	No
		2	-0.053	4.50	No
		2	-0.01	3.00	No
	10	2	-0.128	0.50	No
		2	-0.128	5.50	No
	12	2	-0.128	0.50	No
		2	-0.128	5.50	No
		2	-0.024	2.50	No
	14	2	-0.023	1.00	No
	16	2	-0.024	2.00	No
Di	9	y	-0.091	1.50	No
		y	-0.091	4.50	No
		y	-0.025	3.00	No
	10	y	-0.213	0.50	No
		y	-0.213	5.50	No
	12	y	-0.213	0.50	No
		y	-0.213	5.50	No
		y	-0.144	2.50	No
	14	y	-0.075	1.00	No
	16	y	-0.066	2.00	No
WI0	9	z	-0.017	1.50	No
		z	-0.017	4.50	No
	10	z	-0.036	0.50	No
		z	-0.036	5.50	No
	12	z	-0.036	0.50	No
		z	-0.036	5.50	No
		z	-0.015	2.50	No
	14	z	-0.009	1.00	No
	16	z	-0.008	2.00	No
WI30	9	3	-0.015	1.50	No
		3	-0.015	4.50	No
		3	-0.005	3.00	No
	10	3	-0.032	0.50	No
		3	-0.032	5.50	No
	12	3	-0.032	0.50	No
		3	-0.032	5.50	No
		3	-0.008	2.50	No
	14	3	-0.008	1.00	No
	16	3	-0.008	2.00	No
WI60	9	3	-0.013	1.50	No
		3	-0.013	4.50	No
		3	-0.005	3.00	No
	10	3	-0.023	0.50	No
		3	-0.023	5.50	No
	12	3	-0.023	0.50	No
		3	-0.023	5.50	No
		3	-0.01	2.50	No
	14	3	-0.01	1.00	No
	16	3	-0.008	2.00	No
WI90	9	x	-0.011	1.50	No
		x	-0.011	4.50	No
		x	-0.005	3.00	No
	10	x	-0.019	0.50	No
		x	-0.019	5.50	No
	12	x	-0.019	0.50	No

		x	-0.019	5.50	No
		x	-0.011	2.50	No
	14	x	-0.01	1.00	No
	16	x	-0.008	2.00	No
WI120	9	2	-0.013	1.50	No
		2	-0.013	4.50	No
		2	-0.005	3.00	No
	10	2	-0.023	0.50	No
		2	-0.023	5.50	No
	12	2	-0.023	0.50	No
		2	-0.023	5.50	No
		2	-0.01	2.50	No
	14	2	-0.01	1.00	No
	16	2	-0.008	2.00	No
WI150	9	2	-0.015	1.50	No
		2	-0.015	4.50	No
		2	-0.005	3.00	No
	10	2	-0.032	0.50	No
		2	-0.032	5.50	No
	12	2	-0.032	0.50	No
		2	-0.032	5.50	No
		2	-0.008	2.50	No
	14	2	-0.008	1.00	No
	16	2	-0.008	2.00	No
WL0	9	z	-0.006	1.50	No
		z	-0.006	4.50	No
	10	z	-0.016	0.50	No
		z	-0.016	5.50	No
	12	z	-0.016	0.50	No
		z	-0.016	5.50	No
		z	-0.004	2.50	No
	14	z	-0.002	1.00	No
	16	z	-0.003	2.00	No
WL30	9	3	-0.006	1.50	No
		3	-0.006	4.50	No
		3	-0.001	3.00	No
	10	3	-0.014	0.50	No
		3	-0.014	5.50	No
	12	3	-0.014	0.50	No
		3	-0.014	5.50	No
		3	-0.002	2.50	No
	14	3	-0.002	1.00	No
	16	3	-0.003	2.00	No
WL60	9	3	-0.005	1.50	No
		3	-0.005	4.50	No
		3	-0.001	3.00	No
	10	3	-0.009	0.50	No
		3	-0.009	5.50	No
	12	3	-0.009	0.50	No
		3	-0.009	5.50	No
		3	-0.003	2.50	No
	14	3	-0.003	1.00	No
	16	3	-0.003	2.00	No
WL90	9	x	-0.004	1.50	No
		x	-0.004	4.50	No
		x	-0.001	3.00	No
	10	x	-0.007	0.50	No
		x	-0.007	5.50	No
	12	x	-0.007	0.50	No
		x	-0.007	5.50	No

		x	-0.003	2.50	No
	14	x	-0.003	1.00	No
	16	x	-0.003	2.00	No
WL120	9	2	-0.005	1.50	No
		2	-0.005	4.50	No
		2	-0.001	3.00	No
	10	2	-0.009	0.50	No
		2	-0.009	5.50	No
	12	2	-0.009	0.50	No
		2	-0.009	5.50	No
		2	-0.003	2.50	No
	14	2	-0.003	1.00	No
	16	2	-0.003	2.00	No
WL150	9	2	-0.006	1.50	No
		2	-0.006	4.50	No
		2	-0.001	3.00	No
	10	2	-0.014	0.50	No
		2	-0.014	5.50	No
	12	2	-0.014	0.50	No
		2	-0.014	5.50	No
		2	-0.002	2.50	No
	14	2	-0.002	1.00	No
	16	2	-0.003	2.00	No
	17	2	-0.014	0.50	No
		2	-0.014	5.50	No
		2	-0.002	2.50	No
	18	2	-0.014	0.50	No
		2	-0.014	5.50	No
		2	-0.002	2.50	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load on Left End	No	0.00	0.00	0.00

LL2	250 lb Live Load on Center	No	0.00	0.00	0.00
LL3	250 lb Live Load on Right End	No	0.00	0.00	0.00
LLa1	250 lb Live Load on Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load on Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load on Antenna 3	No	0.00	0.00	0.00
LLa4	250 lb Live Load on Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

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

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+1.6Wo
LC2=1.2D+1.6W30
LC3=1.2D+1.6W60
LC4=1.2D+1.6W90
LC5=1.2D+1.6W120
LC6=1.2D+1.6W150
LC7=1.2D-1.6Wo
LC8=1.2D-1.6W30
LC9=1.2D-1.6W60
LC10=1.2D-1.6W90
LC11=1.2D-1.6W120
LC12=1.2D-1.6W150
LC13=0.9D+1.6Wo
LC14=0.9D+1.6W30
LC15=0.9D+1.6W60
LC16=0.9D+1.6W90
LC17=0.9D+1.6W120
LC18=0.9D+1.6W150
LC19=0.9D-1.6Wo
LC20=0.9D-1.6W30
LC21=0.9D-1.6W60
LC22=0.9D-1.6W90
LC23=0.9D-1.6W120
LC24=0.9D-1.6W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=0.9D
LC38=1.2D+1.6LL1
LC39=1.2D+1.6LL2
LC40=1.2D+1.6LL3
LC41=1.2D+WL0+LLa1
LC42=1.2D+WL30+LLa1
LC43=1.2D+WL60+LLa1
LC44=1.2D+WL90+LLa1
LC45=1.2D+WL120+LLa1
LC46=1.2D+WL150+LLa1
LC47=1.2D-WL0+LLa1
LC48=1.2D-WL30+LLa1
LC49=1.2D-WL60+LLa1
LC50=1.2D-WL90+LLa1
LC51=1.2D-WL120+LLa1
LC52=1.2D-WL150+LLa1
LC53=1.2D+WL0+LLa2

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

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**1**	LC10 at 0.00%	0.38	OK	Eq. H1-1b
		2	LC30 at 49.22%	**0.57**	**OK**	Eq. H1-1b
	PIPE 2x0.154	**9**	LC1 at 50.00%	0.16	OK	Eq. H1-1b
		10	LC1 at 48.44%	**0.76**	**OK**	Eq. H1-1b
		12	LC1 at 50.00%	0.68	OK	Eq. H1-1b
		14	LC2 at 79.17%	0.12	OK	Eq. H1-1b
		16	LC4 at 59.38%	0.08	OK	Eq. H1-1b
		17	LC1 at 100.00%	0.16	OK	Eq. H1-1b
		18	LC30 at 100.00%	0.27	OK	Eq. H1-1b
	PIPE 4x0.237	**4**	LC11 at 50.00%	**0.00**	**OK**	Sec. G1
	T2L 2-1_2X2-1_2X3_16X3_8	**19**	LC31 at 50.00%	**0.27**	**OK**	Eq. H2-1

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Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
3	6.25	0.00	4.00	0
4	-6.25	0.00	4.00	0
10	0.00	0.58	3.80	0
16	4.917	3.00	4.20	0
17	0.50	3.00	4.20	0
18	-1.75	3.00	4.20	0
19	-4.917	3.00	4.20	0
20	4.917	-3.00	4.20	0
21	0.50	-3.00	4.20	0
22	-1.75	-2.00	4.20	0
23	-4.917	-3.00	4.20	0
26	0.50	3.00	3.95	0
27	0.50	0.50	3.95	0
30	5.25	0.00	4.00	0
32	-2.25	0.00	-2.00	0
33	2.25	0.00	-2.00	0
34	0.00	-2.50	0.00	0
35	0.00	0.00	3.50	0
11	0.00	-0.583	3.80	0
12	-1.75	0.00	4.20	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1
32	1	1	1	0	0	0
33	1	1	1	0	0	0
34	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	1	2		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
2	4	3		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
4	11	10		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
9	16	20		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
10	17	21		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
12	19	23		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
14	26	27		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
16	18	22		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
17	31	32		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
18	33	30		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
19	35	34		T2L 2-1_2X2-1_2X3_16...	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
9	315.00	0	0.00	0.00	0.00
10	315.00	0	0.00	0.00	0.00
12	315.00	0	0.00	0.00	0.00
14	315.00	0	0.00	0.00	0.00
16	315.00	0	0.00	0.00	0.00

Rigid end offsets

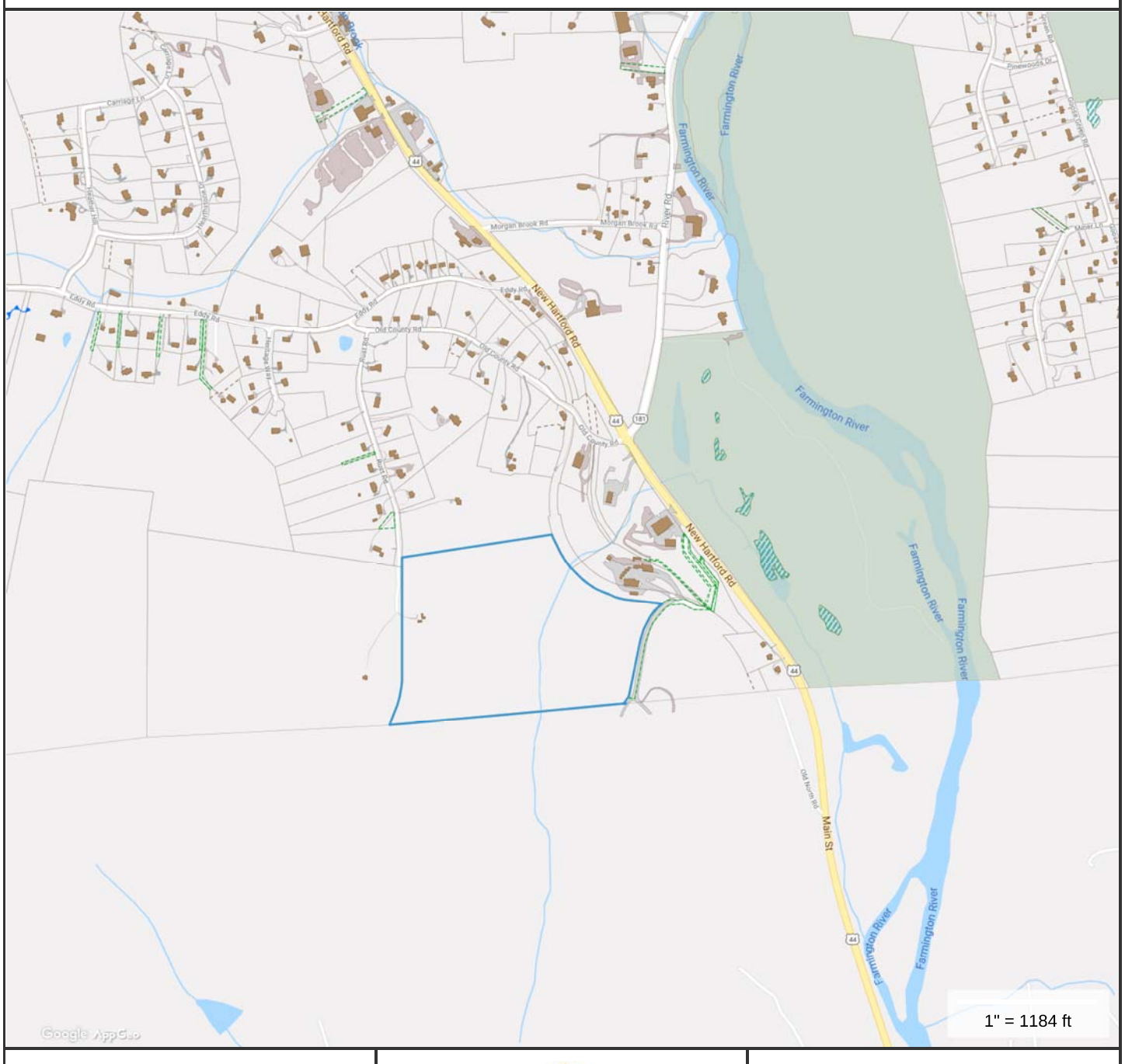
Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
17	0.00	3.00	0.00	0.00	3.00	0.00
18	0.00	3.00	0.00	0.00	3.00	0.00

Hinges

Member	Node-J				Node-K				TOR	AXL	Axial rigidity
	M33	M22	V3	V2	M33	M22	V3	V2			
19	1	1	0	0	1	1	0	0	0	0	Full

Town of Barkhamsted, CT April 11, 2019

31 NEW HARTFORD ROAD



Property Information

Property ID	49-18-14R-B
Location	31 B NEW HARTFORD RD
Owner	REGIONAL REFUSE DISPOSAL DISTRICT 1

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Barkhamsted, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 5/1/2018
Data updated 11/15/2018

Property Location: 31 B NEW HARTFORD RD | **MAP ID:** 49/ 18/ 14/R-B / | **Bldg Name:** | **State Use:** 300

Vision ID: 1781 | **Account #** 00178500 | **Bldg #:** 1 of 1 | **Sec #:** 1 of 1 | **Card** 1 of 1 | **Print Date:** 12/01/2018 17:23

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
REGIONAL REFUSE DISPOSAL DISTR	4 Rolling			
DEBBIE ANGELL				
31 NEW HARTFORD RD				
BARKHAMSTED, CT 06063				
Additional Owners:				

SUPPLEMENTAL DATA

Other ID:	49-18-14R-B	DV Lot #	B
B.P. Status		Solar Energy	
Census Tr.		BAA	
Interior		Callback	
100 Yr Flood		PA490 Date:	
DV Map #	942		
GIS ID:		ASSOC PID#	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
IND LAND	3-1	375,000	262,500
VAC IN LN	5-3	1,156,550	809,580
	Total	1,531,550	1,072,080

6005
BARKHAMSTED, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
REGIONAL REFUSE DISPOSAL DISTRICT 1	150/1047	08/15/2011	U	V		04
REGIONAL REFUSE DISP DISTR #1	56/ 50	04/02/1974		V	0	

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2018	3-1	262,500	2017	3-1	262,500	2016	3-1	262,500
2018	5-3	809,580	2017	5-3	807,880	2016	5-3	807,880
	Total:	1,072,080		*Total:*	1,070,380		*Total:*	1,070,380

This signature acknowledges a visit by a Data Collector or Assessor

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	0
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	0
Appraised Land Value (Bldg)	1,531,550
Special Land Value	0
Total Appraised Parcel Value	1,531,550
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	**1,531,550**

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				

NOTES

PARCEL B 51.76AC ON ORIGINAL DEED/MAP#48
PARCEL FKA 59AC FOR TOTAL OF ALL PARCELS
8/15/2011 NOTICE OF BOUNDARY LINE ADJUST
MAP #942 PROPOSED ECONOMIC DEV ZONE
LEASE V112/1020; V162/906
2008 ASGN OF LEASE VOL 142/924
2010 - LAND VALUED FOR CELL SITE
***ACCESS VIA RUST RD**
8/27/03 MAP 669 EASEMENT AREA
STATE LND USE LIMITATION

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date of CO	Comments
17-102-E	06/05/2017	EL	Electric	25,000		100		install new equipment pad, setting new equipme
17-87-E	05/18/2017	EL	Electric	15,000		100		Verizon wireless is looking to replace existing ar
14-10-64	10/01/2014	OT	Other	15,000		100		add one antenna & one pipe mount persector (t
14-08-50	08/13/2014	OT	Other	15,000		100		add 3 antennas etc
14-04-13	04/23/2014	OT	Other	7,500		100		replace 6 existing antennas & add 1 fiber cable
14-01-03	02/03/2014	GN	Generator	10,500		100		50 km generator
13-01-08	01/23/2013	OT	Other	30,000		100		3 antennas etc

VISIT/ CHANGE HISTORY

Date	ID	Cd.	Purpose/Result
12/10/2008	DW	94	Vacant w/Outbldgs
04/07/2008	JQ	99	Vacant Land

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	Front	Depth	Units	Unit Price	I. Factor	S.A.	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing: Spec Use	Special Pricing: Spec Calc	S Adj Fact	Adj. Unit Price	Land Value
1	300	Industrial Vacant	I-1			2.00 AC	61,372.00	0.5714	5	0.60	NH	1.50	TOPO/USE			1.00		63,130
1	300	Industrial Vacant	I-1			51.34 AC	35,496.00	1.0000	0	0.60		0.00	TOPO/USE			1.00		1,093,420
1	350	Cell Tower	I-1			0.13 AC	0.00	1.0000	0	1.00		0.00	CELL TOWER SITE			1.00		375,000

Total Card Land Units: 53.47 AC | **Parcel Total Land Area:** 53.47 AC | **Total Land Value:** 1,531,550

Property Location: **31 B NEW HARTFORD RD** *MAP ID:* **49/ 18/ 14/R-B /** *Bldg Name:* *State Use:* **300**

Vision ID: **1781** *Account* **#00178500** *Bldg #:* **1 of 1** *Sec #:* **1** *of* **1** *Card* **1** *of* **1** *Print Date:* **12/01/2018 17:23**

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Model	**00**		**Vacant**

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
300	**Industrial Vacant**	**100**

COST/MARKET VALUATION

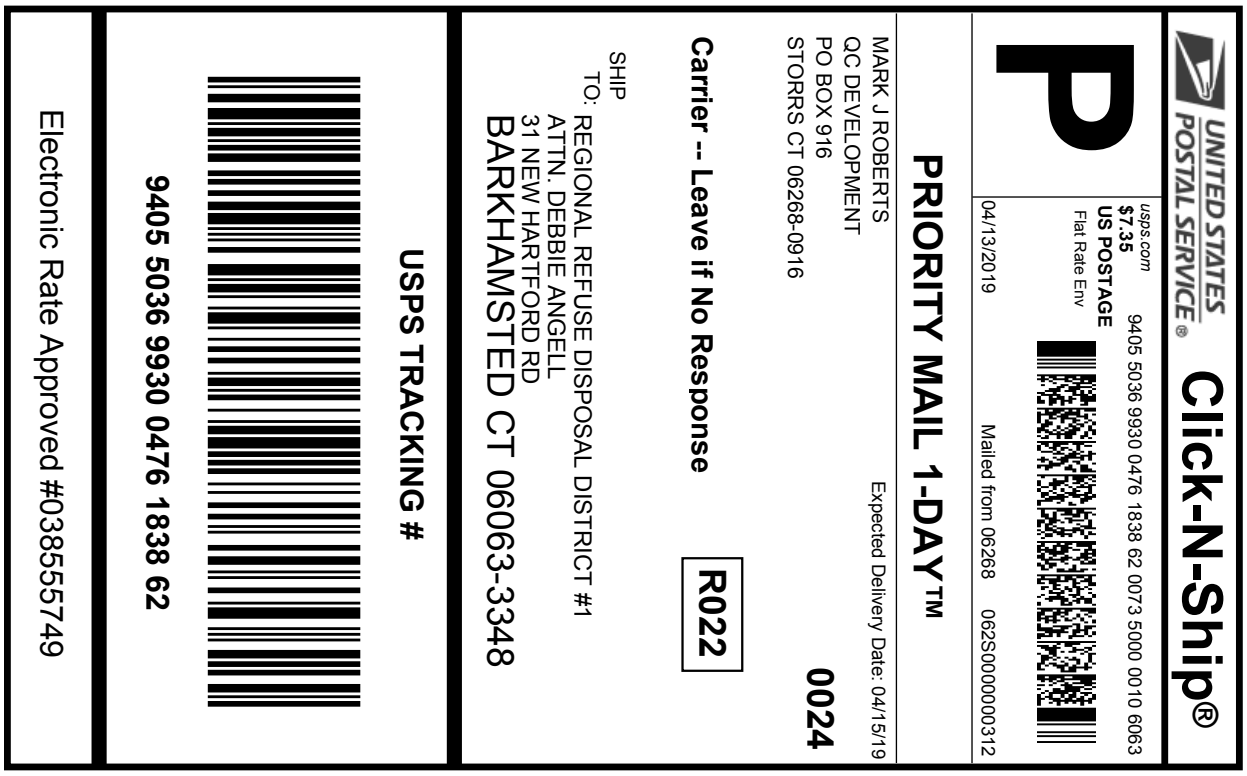
Adj. Base Rate:	**0.00**
Replace Cost	**0**
AYB	
Dep Code	
Remodel Rating	
Year Remodeled	
Dep %	
Functional Obslnc	
External Obslnc	
Cost Trend Factor	
Condition	
% Complete	
Overall % Cond	
Apprais Val	
Dep % Ovr	**0**
Dep Ovr Comment	
Misc Imp Ovr	**0**
Misc Imp Ovr Comment	
Cost to Cure Ovr	**0**
Cost to Cure Ovr Comment	

OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area
	Ttl. Gross Liv/Lease Area:	**0**	**0**



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 # :
9405 5036 9930 0476 1838 62

Trans. #:	461509641
Print Date:	04/12/2019
Ship Date:	04/13/2019
Expected Delivery Date:	04/15/2019

Priority Mail® Postage:	**$7.35**
Total	**$7.35**

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

To: REGIONAL REFUSE DISPOSAL DISTRICT #1
ATTN. DEBBIE ANGELL
31 NEW HARTFORD RD
BARKHAMSTED CT 06063-3348

* 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!
Check the status of your shipment on the USPS Tracking® page at usps.com

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

9405 5036 9930 0476 1838 86 0073 5000 0010 6063

usps.com
$7.35
US POSTAGE
Flat Rate Env

04/13/2019 Mailed from 06268 062S0000000312

P

PRIORITY MAIL 1-DAY™

Expected Delivery Date: 04/15/19

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

0024

Carrier -- Leave if No Response

R022

SHIP TO: DONALD S STEIN
TOWN OF BARKHAMSTED
67 RIPLEY HILL RD
CC: DEBRA BYRON - ZONING OFFICER
BARKHAMSTED CT 06063-3329

USPS TRACKING #

9405 5036 9930 0476 1838 86

Electronic Rate Approved #038555749

Cut on dotted line.

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UNITED STATES POSTAL SERVICE®

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