smartlink

June 4, 2014

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

Re:	**Notice of Exempt Modification – Antenna Swap**
Property Address:	**347 East Street, Wolcott, CT 06176 (the "Property")**
Applicant:	**New Cingular Wireless PCS, LLC ("AT&T")**

Dear Ms. Bachman:

AT&T dba New Cingular Wireless PCS, LLC currently maintains nine (9) wireless telecommunication antennas at an antenna centerline of 160' on an existing 180' tower owned by Crown Atlantic Company and located on the Property (the "Tower"). The Council approved AT&T's/New Cingular Wireless use of the Tower in the following prior decisions; Dockets No. EM-AT&T-166-021001, EM-CING-166-070612, EM-CING-166-070815, EM-CING-166-120622 and EM-CING-166-130711.

AT&T now intends to replace six (6) of the existing panel antennas and add three (3) panel antennas, totaling twelve (12) panel antennas at the 160-foot level. Included in Attachment 1 are specifications for the replacement antennas.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to Thomas G. Dunn, Mayor for the town of Wolcott, CT. A copy of this letter is also being sent to Crown Atlantic Company, the owner of the property where the tower is located.

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 height of the existing tower. AT&T's replacement antennas will be installed at the 160 foot level of the 180 foot tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require and extension of the site boundary.

33 Boston Post Road West, Marlborough, Massachusetts 01752
p: 508.954.7702 • adam.braillard@smartlinkllc.com
www.smartlinkllc.com

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3. The proposed modifications will not increase the noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the General Power Density table included in Attachment 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (See Structural Analysis Report included in Attachment 3).

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

Sincerely,

Adam F. Braillard

cc: Crown Atlantic Company, LLC, 2000 Corporate Drive Canonsburg, PA 15317
Thomas G. Dunn, Mayor, Wolcott Town Hall, 10 Kenea Avenue Wolcott, CT 06716

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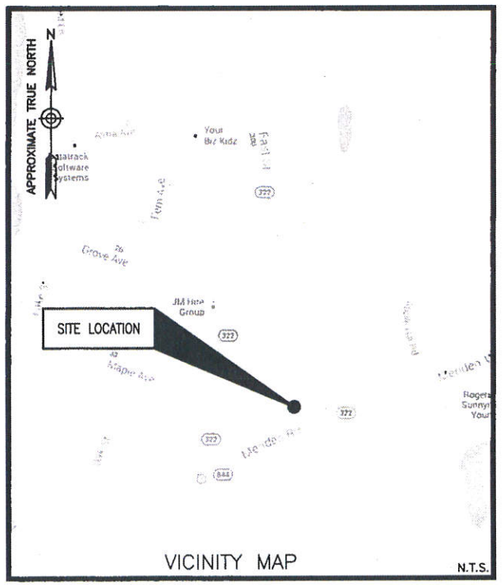
TAB 1

SITE NAME: WOLCOTT EAST STREET
SITE NUMBER: CT1060
347 EAST STREET,
WOLCOTT, CT 06176



VICINITY MAP N.T.S.

DIRECTIONS FROM 500 ENTERPRISE DRIVE, ROCKY HILL, CT:

HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. TURN LEFT ONTO CAPITAL BLVD. TURN LEFT ONTO WEST ST. TURN LEFT TO MERGE ONTO I-91 S. TAKE EXIT 18 TO MERGE ONTO I-691 W TOWARD MERIDEN/WATERBURY. TAKE EXIT 3 FOR CT-10 TOWARD MILLDALE/CHESHIRE. TURN RIGHT ONTO CT-10 N/HIGHLAND AVE. CONTINUE ONTO OLD TURNPIKE RD. TURN LEFT ONTO CT-322 W/MERIDEN-WATERBURY TURNPIKE. TURN RIGHT ONTO CT-322 W/EAST ST. TOWER WILL BE ON THE RIGHT.

SITE INFORMATION

SITE COORDINATES:
LATITUDE: N 41° 33' 34.41"
LONGITUDE: W 72° 56' 49.10"
(PER AT&T EXISTING PLANS)

ELEVATION DATA
GRADE ELEVATION AT TOWER = 745'± A.M.S.L
ELEVATION BASED ON VELOROUTES.ORG.

ANTENNA ELEVATION (TO TOP OF ANTENNA)
ALPHA SECTOR: 163'-0"± A.G.L.
BETA SECTOR: 163'-10"± A.G.L.
GAMMA SECTOR: 163'-0"± A.G.L.

PROJECT DESCRIPTION

- REMOVE AND REPLACE ANTENNA MOUNT WITH A NEW MOUNT.
- REMOVE AND REPLACE (2) PANEL ANTENNAS PER SECTOR WITH (3) PANEL ANTENNAS PER SECTOR FOR A TOTAL OF (9) NEW ANTENNAS. (12) TOTAL TO BE ON SITE.
- ADD (5) NEW RRUS PER SECTOR ON A NEW MOUNT FOR A TOTAL OF (15) RRUS. (18) TOTAL TO BE ON SITE.
- ADD (2) NEW SURGE ARRESTORS ON A NEW MOUNT FOR A TOTAL OF (3) SURGE ARRESTORS.
- REMOVE (1) NOKIA GSM CABINET FROM EXISTING SHELTER.
- ADD (1) NEW 23" EQUIPMENT RACK IN EXISTING SHELTER.
- ADD (1) NEW GE INFINITY POWER PLANT IN EXISTING SHELTER.
- REMOVE (6) TOTAL LINES OF COAX CABLES.

PROJECT INFORMATION

SITE NAME:
WOLCOTT EAST STREET

SITE NUMBER:
CT1060

LOCATION:
347 WOLCOTT EAST STREET,
WOLCOTT, CT 06176
NEW HAVEN COUNTY

LANDLORD:
CROWN ATLANTIC COMPANY, LLC
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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

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 INDEX

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

smartlink
1997 ANNAPOLIS EXCHANGE PARKWAY
SUITE 200
ANNAPOLIS, MD 21401

CT1060
WOLCOTT EAST STREET

CONSTRUCTION DRAWINGS

2	05/14/14	ISSUED AS FINAL
1	04/25/14	ISSUED AS FINAL
0	04/14/14	ISSUED FINAL
A	03/04/14	PRELIMINARY SUBMISSION

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

ROBERT J. FOLEY, P.E.
CT LICENSE NO. PEN.0029056

DRAWN BY:	FG
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50063024
JOB NUMBER:	50063030

SITE ADDRESS:

347 EAST STREET,
WOLCOTT, CT 06176
NEW HAVEN COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   PROJECT MANAGEMENT – SMARTLINK
   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		
2	05/14/14	ISSUED AS FINAL
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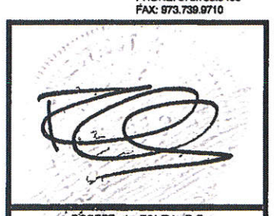


ROBERT J. FOLEY, P.E.
CT LICENSE No. PEN.0029056

DRAWN BY:	FG
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50063024
JOB NUMBER:	50063030
SITE ADDRESS:	

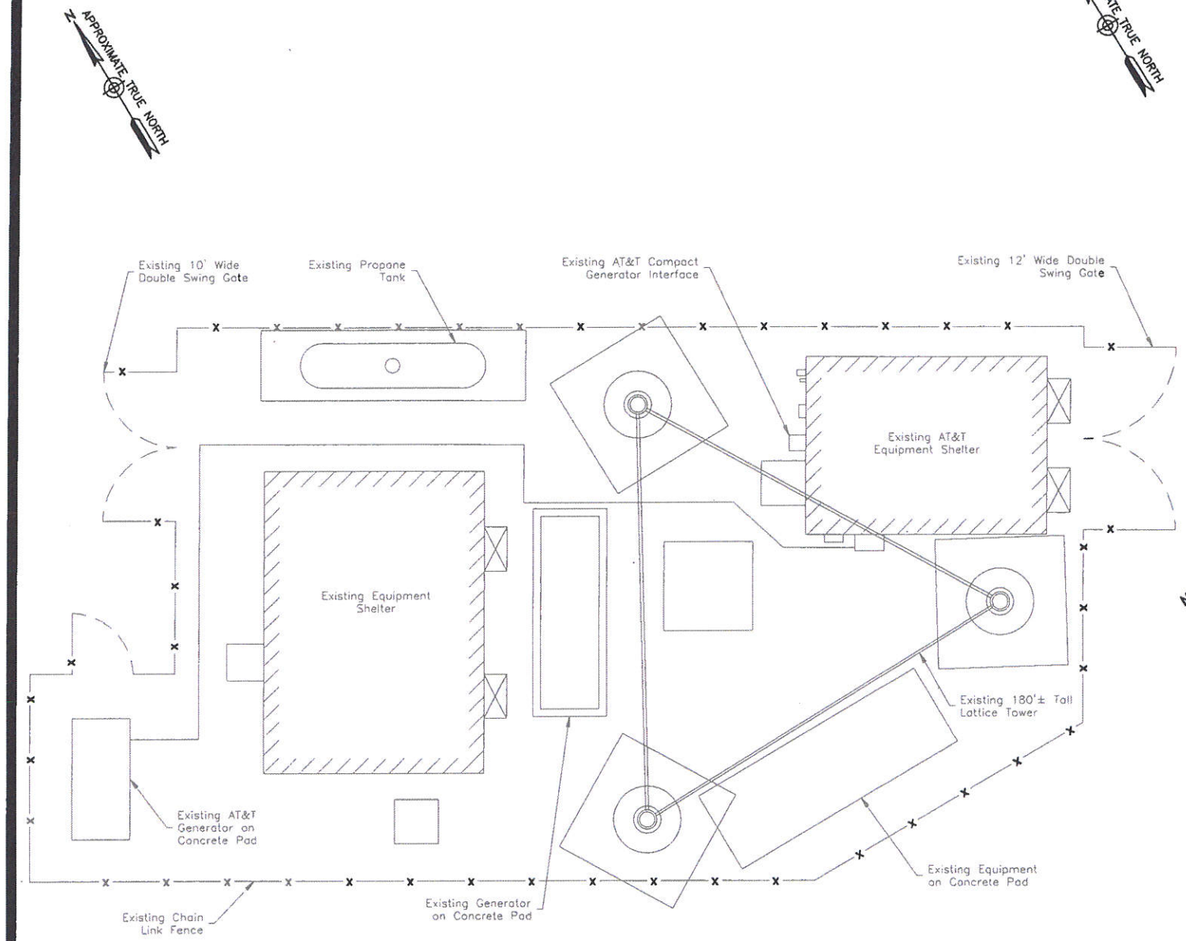
347 EAST STREET,
WOLCOTT, CT 06176
NEW HAVEN COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

G-1

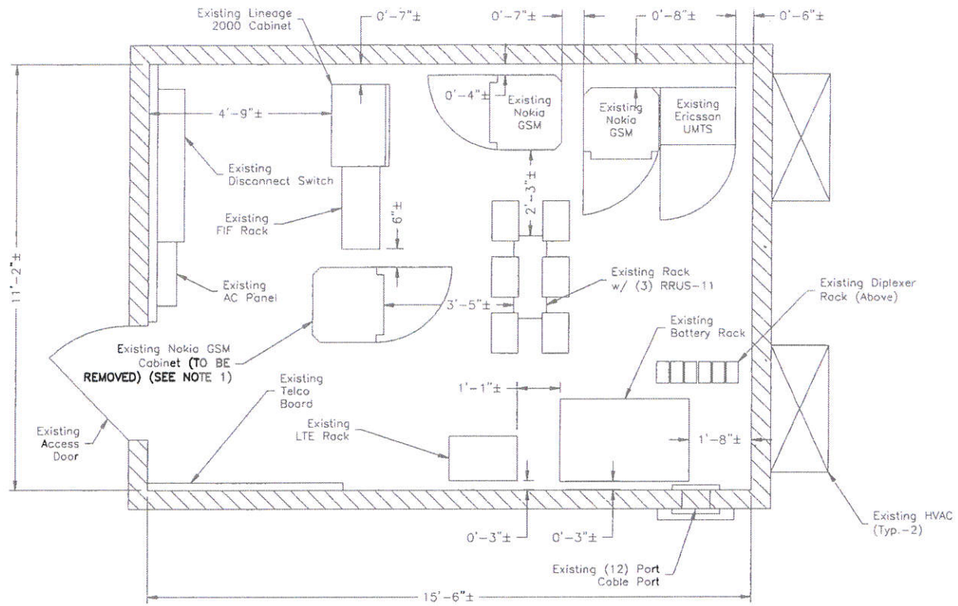


SITE PLAN

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

0' 10' 20'

1



EXISTING EQUIPMENT PLAN

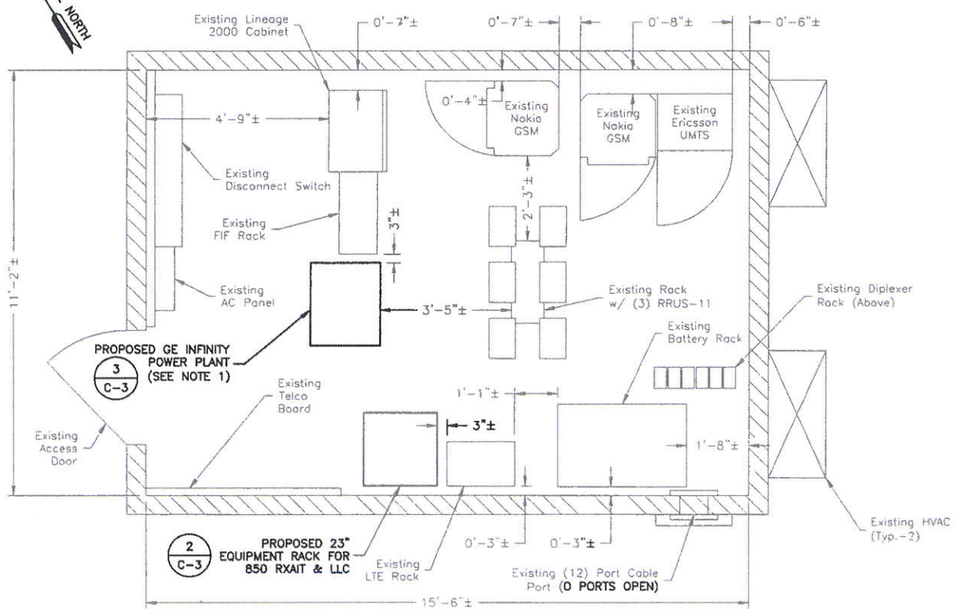
SCALE: 1/4"=1' FOR 11"x17"
1/2"=1' FOR 22"x34"

0' 1' 2' 4'

2

NOTE:

1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL CONFIRM WHICH NOKIA GSM CABINET IS TO BE REMOVED WITH AT&T CONSTRUCTION MANAGER.



PROPOSED EQUIPMENT PLAN

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

0' 1' 2' 4'

3

NOTE:

1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL CONFIRM WHICH NOKIA GSM CABINET IS TO BE REMOVED WITH AT&T CONSTRUCTION MANAGER.

NOTES:

1. NORTH SHOWN AS APPROXIMATE.
2. MOUNT ALL ANTENNAS, COAX, SURGE ARRESTORS, RRUS ETC. IN ACCORDANCE WITH STRUCTURAL ANALYSIS BY OTHERS.
3. NOT ALL INFORMATION IS SHOWN FOR CLARITY.

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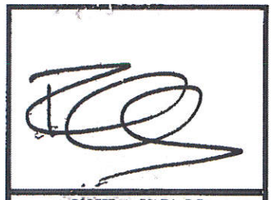

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347 EAST STREET,
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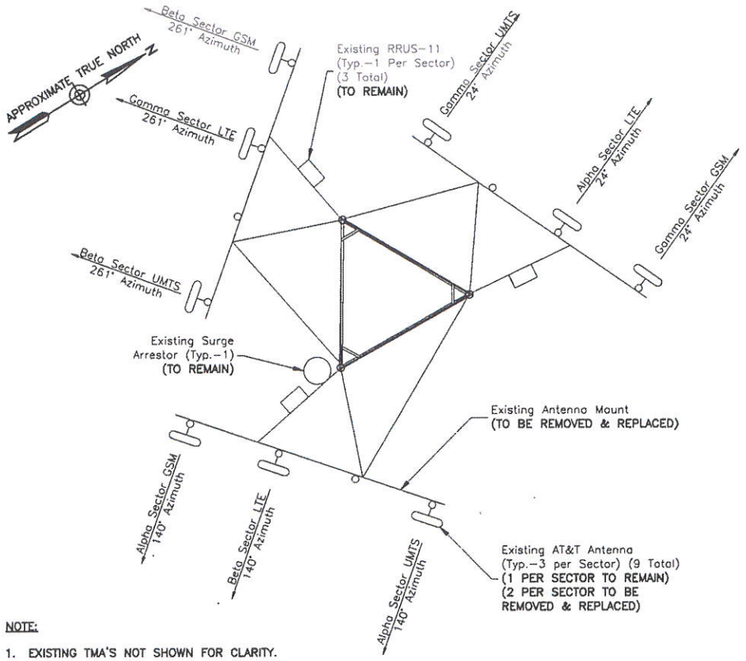
SHEET TITLE

SITE PLAN &
EQUIPMENT PLANS

SHEET NUMBER

C-1

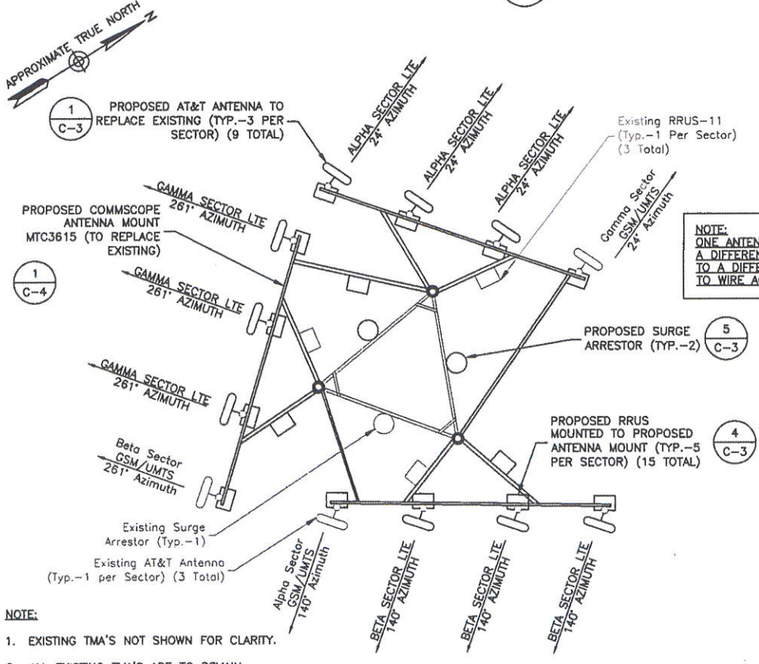


NOTE:

1. EXISTING TMA'S NOT SHOWN FOR CLARITY.
2. ALL EXISTING TMA'S ARE TO REMAIN.

EXISTING ANTENNA LAYOUT (1)

SCALE: N.T.S.



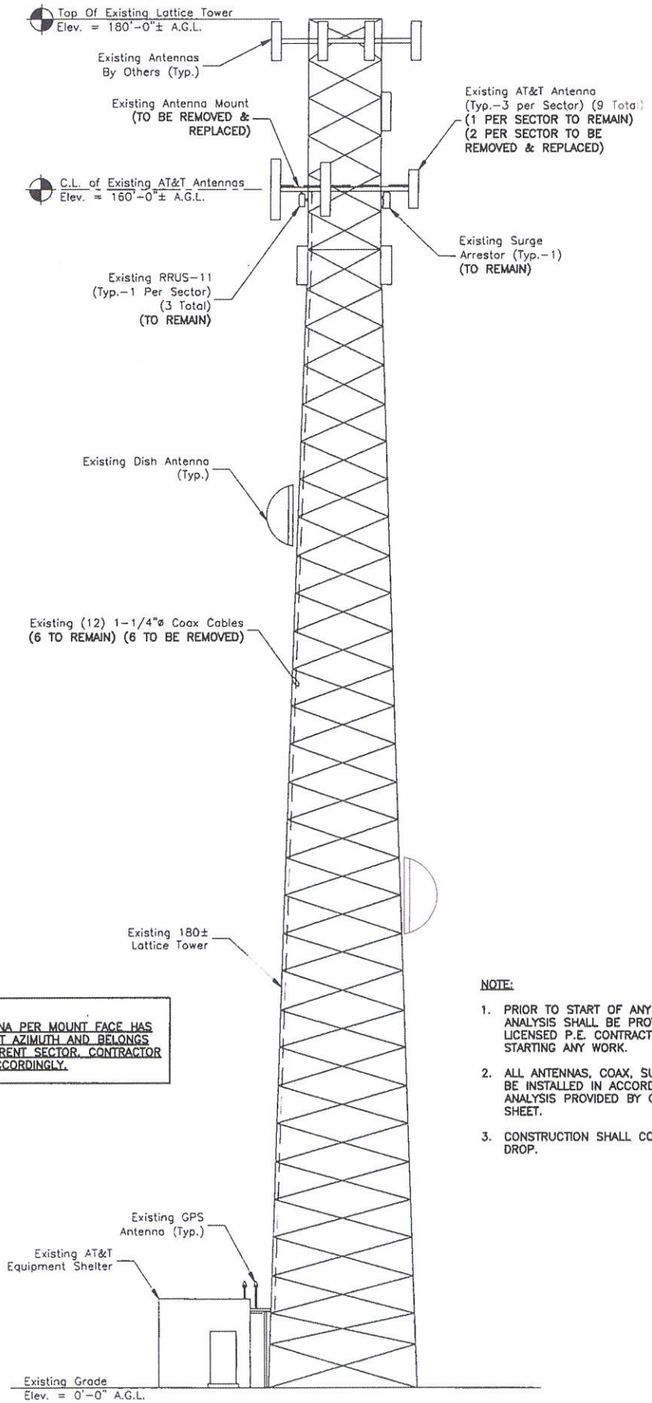
NOTE:
ONE ANTENNA PER MOUNT FACE HAS A DIFFERENT AZIMUTH AND BELONGS TO A DIFFERENT SECTOR. CONTRACTOR TO WIRE ACCORDINGLY.

NOTE:

1. EXISTING TMA'S NOT SHOWN FOR CLARITY.
2. ALL EXISTING TMA'S ARE TO REMAIN.

PROPOSED ANTENNA LAYOUT (2)

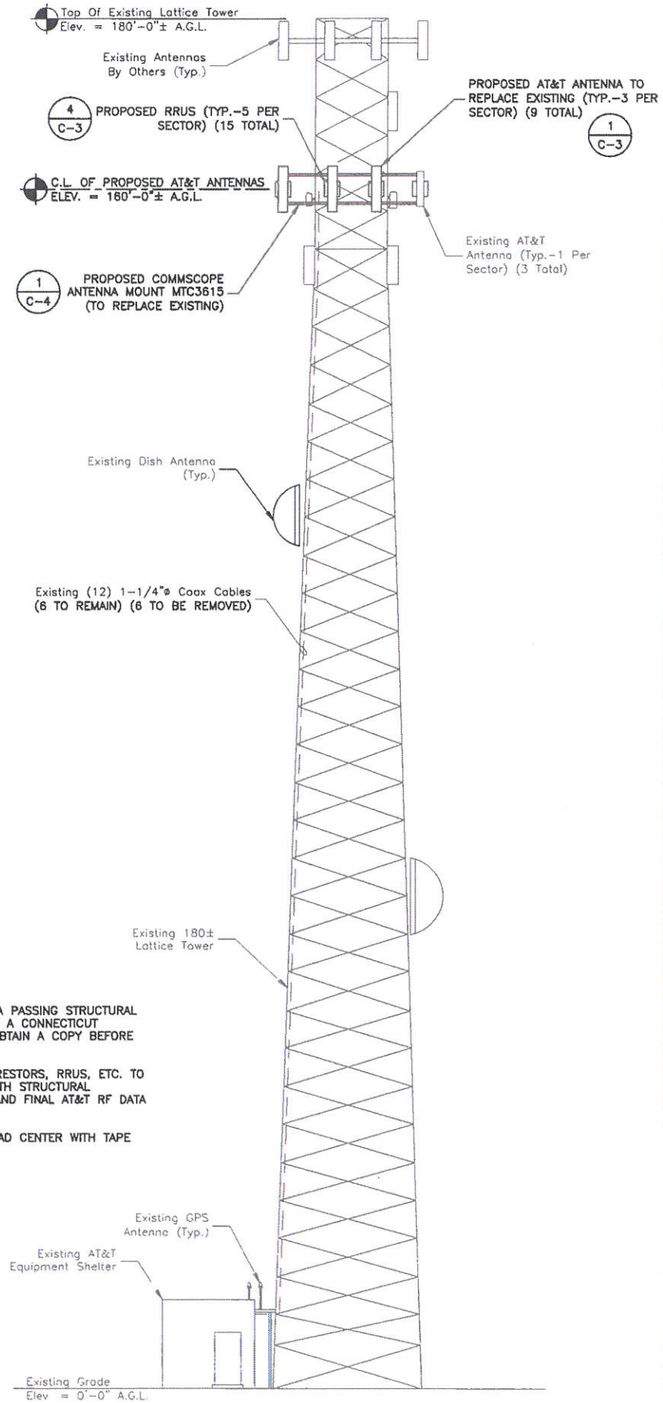
SCALE: N.T.S.



EXISTING WEST ELEVATION (3)

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

0' 10' 20'



NOTE:

1. PRIOR TO START OF ANY WORK, A PASSING STRUCTURAL ANALYSIS SHALL BE PROVIDED BY A CONNECTICUT LICENSED P.E. CONTRACTOR TO OBTAIN A COPY BEFORE STARTING ANY WORK.
2. ALL ANTENNAS, COAX, SURGE ARRESTORS, RRUS, ETC. TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY OTHERS AND FINAL AT&T RF DATA SHEET.
3. CONSTRUCTION SHALL CONFIRM RAD CENTER WITH TAPE DROP.

PROPOSED WEST ELEVATION (4)

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

0' 10' 20'

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ROBERT J. FOLEY, P.E.
CT LICENSE No. PEN.0029056

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SITE ADDRESS:	

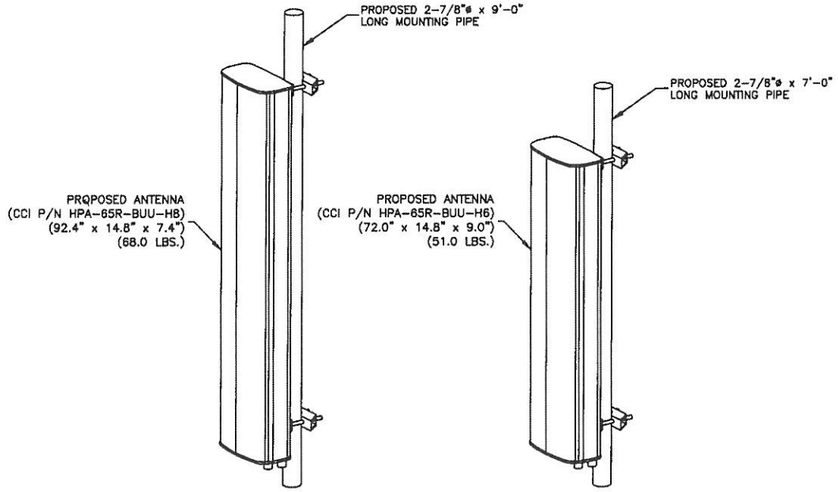
347 EAST STREET,
WOLCOTT, CT 06176
NEW HAVEN COUNTY

SHEET TITLE

ANTENNA LAYOUTS & ELEVATIONS

SHEET NUMBER

C-2

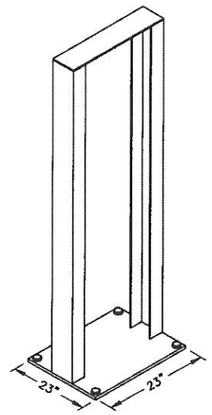


NOTE:

1. PLEASE SEE RFDS FOR SPECIFIC ANTENNA MODEL.

ISOMETRIC ANTENNA DETAILS (1)

SCALE: N.T.S.



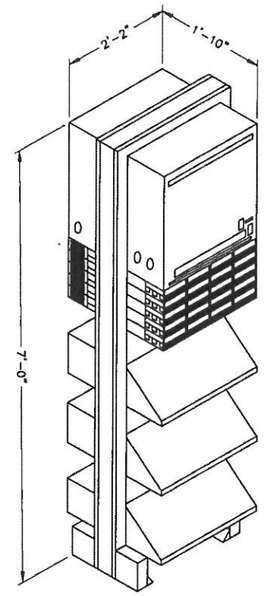
ISOMETRIC

NOTE:

1. CONTRACTOR SHALL SECURE RACK AS PER MANUFACTURER RECOMMENDATIONS.

23" x 23" INDOOR RACK (2)

SCALE: N.T.S.



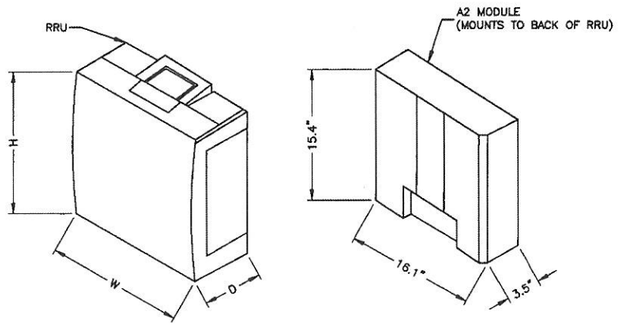
ISOMETRIC

NOTE:

1. CONTRACTOR SHALL SECURE RACK & POWER PLANT AS PER MANUFACTURER RECOMMENDATIONS.

GE INFINITY POWER PLANT DETAIL (3)

SCALE: N.T.S.



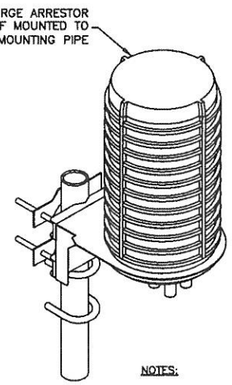
RRU MODEL & DIMENSIONS	
ERICSSON MODEL #	DIMENSIONS (HxWxD)
RRUS-11	19.7"x17.0"x7.2"
RRUS-12	20.4"x18.5"x7.5"
RRUS-E2	20.4"x18.5"x7.5"
RRUS-32	29.9"x13.3"x6.7"

NOTES:

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

RRU & A2 MODULE (4)

SCALE: N.T.S.



NOTES:

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

SURGE ARRESTOR MOUNTING DETAIL (5)

SCALE: N.T.S.

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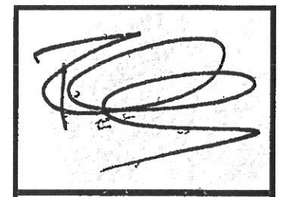

ROBERT J. FOLEY, P.E.
CT LICENSE No. PEN.0029056

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REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50063024
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SITE ADDRESS:	

347 EAST STREET,
WOLCOTT, CT 06176
NEW HAVEN COUNTY

SHEET TITLE

CONSTRUCTION DETAILS

SHEET NUMBER

C-3

EXISTING ANTENNA SCHEDULE

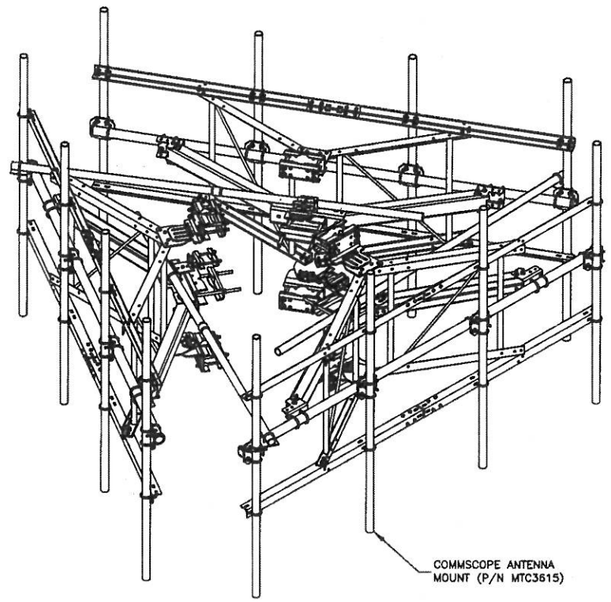
SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	POWERWAVE	7770	55x11x5
	KMW	AM-X-CD-16-65-00T-RET	72x11.8x5.9
	ANDREW	SBNH-1D6565C	96.4x11.9x7.1
BETA:	POWERWAVE	7770	55x11x5
	ANDREW	SBNH-1D6565C	96.4x11.9x7.1
	KMW	AM-X-CD-16-65-00T-RET	72x11.8x5.9
GAMMA:	POWERWAVE	7770	55x11x5
	KMW	AM-X-CD-16-65-00T-RET	72x11.8x5.9
	KMW	AM-X-CD-16-65-00T-RET	72x11.8x5.9

PROPOSED ANTENNA SCHEDULE

SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	CCI	HPA-65R-BUU-H6	72.0x14.8x9.0
	CCI	HPA-65R-BUU-H6	72.0x14.8x9.0
	CCI	HPA-65R-BUU-H6	72.0x14.8x9.0
	POWERWAVE	7770	55x11x5
BETA:	CCI	HPA-65R-BUU-H8	92.4x14.8x7.4
	CCI	HPA-65R-BUU-H8	92.4x14.8x7.4
	CCI	HPA-65R-BUU-H8	92.4x14.8x7.4
	POWERWAVE	7770	55x11x5
GAMMA:	POWERWAVE	7770	55x11x5
	CCI	HPA-65R-BUU-H6	72.0x14.8x9.0
	CCI	HPA-65R-BUU-H6	72.0x14.8x9.0
	CCI	HPA-65R-BUU-H6	72.0x14.8x9.0

PROPOSED RRUS SCHEDULE

SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-E2	20.4x18.5x7.5
	ERICSSON	RRUS-32	29.9x13.3x6.7
BETA:	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-E2	20.4x18.5x7.5
	ERICSSON	RRUS-32	29.9x13.3x6.7
GAMMA:	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-E2	20.4x18.5x7.5
	ERICSSON	RRUS-32	29.9x13.3x6.7



ANTENNA MOUNT DETAIL (1)
SCALE: N.T.S.

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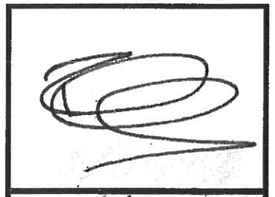

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347 EAST STREET,
WOLCOTT, CT 06176
NEW HAVEN COUNTY

SHEET TITLE

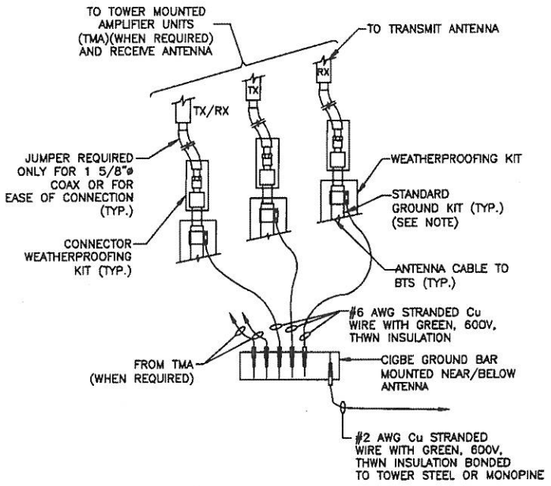
ANTENNA SCHEDULE & CONSTRUCTION DETAILS

SHEET NUMBER

C-4

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 SMARTLINK 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.

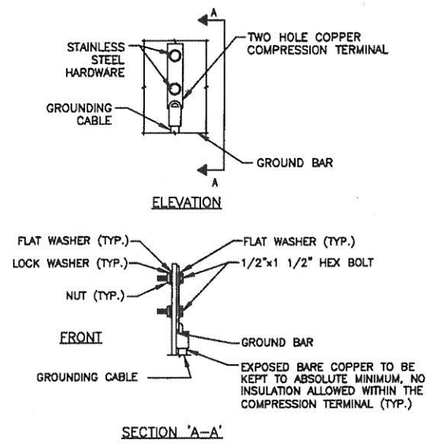


NOTE:

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

SCALE: N.T.S.



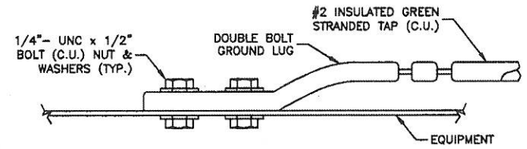
SECTION 'A-A'

NOTES:

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

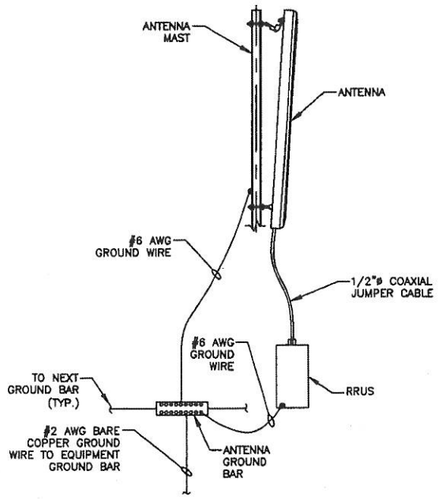
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL 2

SCALE: N.T.S.



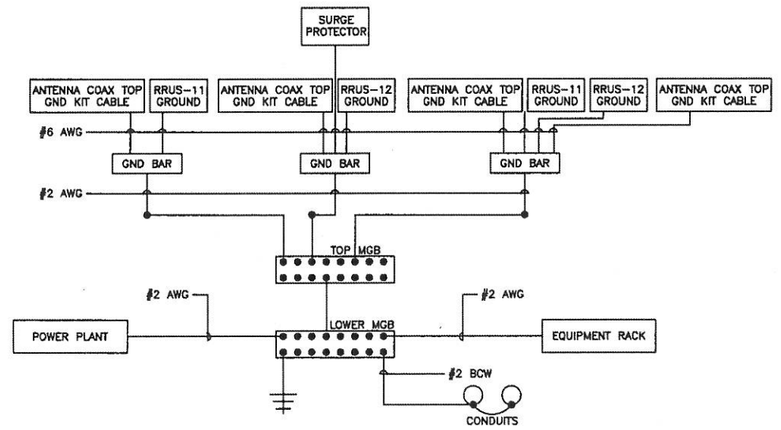
CONNECTION TO EQUIPMENT DETAIL 3

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

500 ENTERPRISE DRIVE SUITE 3A
ROCKY HILL, CT 06067

smartlink

1997 ANNAPOLIS EXCHANGE PARKWAY
SUITE 200
ANNAPOLIS, MD 21401

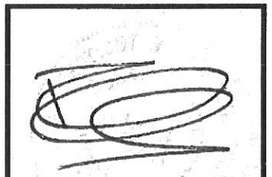
CT1060
WOLCOTT EAST STREET

CONSTRUCTION DRAWINGS

2	05/14/14	ISSUED AS FINAL
1	04/25/14	ISSUED AS FINAL
0	04/14/14	ISSUED FINAL
A	03/04/14	PRELIMINARY SUBMISSION

Dewberry®

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



ROBERT J. FOLEY, P.E.
CT LICENSE No. PEN.0029056

DRAWN BY:	FG
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50063024
JOB NUMBER:	50063030
SITE ADDRESS:	

347 EAST STREET,
WOLCOTT, CT 06176
NEW HAVEN COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

TAB 2

sitesafe
rf compliance experts

200 North Glebe Road, Suite 1000
Arlington, VA 22203-3728

Todd Oliver
Smartlink, LLC
Market Manager, NE
33 Boston Post Road, Suite 210
Marlborough, MA 01752

Reference: Smartlink LLC Site, Wolcott East Street, 347 East Street, Wolcott, CT

Date: 9 May 2014

1. This letter will address the additional RF impact that adding AT&T LTE antennas to the referenced site. Attached are two documents which cover the modeled RF emissions from the site.

2. The first report, "RF Emissions Compliance Report," for the site complied by Sitesafe, uses the antenna patterns for the antennas at the site to calculate the General Public Maximum Permissible Exposure (MPE) on the ground. The total MPE of all the carriers is 3.2% (based on the General Public MPE) based on this modeling, with AT&T antennas emitting a maximum of 0.809% of the General Public MPE on the ground.

3. The second attachment has the calculations, used by the Connecticut Siting Council, which assumes the maximum antenna gain transmits in a spherical pattern where the worst case results would be at the base of the tower. That calculation, based on the existing antennas, gives a result of 38.00% of the General Public MPE, with the AT&T antennas emitting 15.65% of the General Public MPE on the ground, using the modeling predictions used by Connecticut Siting Council.

4. In either case, the site is compliant with FCC guidelines. If you have any questions regarding this site, the compliance report, please contact me at 719-434-0700 or dcotton@sitesafe.com.

David C. Cotton, Jr.
Licensed Professional Engineer (Electrical)
State of Connecticut, PEN.0027481
Date: 2014-May-12

Director, RF Compliance

Attachment 1

RF EMISSIONS COMPLIANCE REPORT

Smartlink LLC on behalf of AT&T Mobility, LLC

AT&T Mobility, LLC Site FA: 10035040
AT&T Mobility, LLC Site USID: 140414
AT&T Mobility, LLC Site ID: CT1060
AT&T Mobility, LLC Site Name: Wolcott East Street
37 East Street
Wolcott, CT
5/9/2014

Report Status:

AT&T Mobility, LLC Is Compliant

Prepared By:

Sitesafe, Inc.

200 North Glebe Road, Suite 1000 Arlington, VA 22203

Voice 703-276-1100
Fax 703-276-1169

Engineering Statement in Re:
Electromagnetic Energy Analysis
AT&T Mobility, LLC
Wolcott, CT

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Sitesafe, Inc. in Arlington, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by AT&T Mobility, LLC (See attached Site Summary and Carrier documents), and that AT&T Mobility, LLC's installations involve communications equipment, antennas and associated technical equipment at a location referred to as the "Wolcott East Street" ("the site"); and

That AT&T Mobility, LLC proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by AT&T Mobility, LLC and shown on the worksheet, and that worst-case 100% duty cycle have been assumed; and

That in addition to the emitters specified in the worksheet, there are additional collocated point-to-point microwave facilities on this structure and, the antennas used are highly directional oriented at angles at or just below the horizontal and, that the energy present at ground level is typically so low as to be considered insignificant; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio-frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio-frequency radiation must utilize the standards set by the FCC, which is the Federal Agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," defined as situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and (2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for

licensees of AT&T Mobility, LLC's operating frequency as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed AT&T Mobility, LLC operation is no more than 0.809% of the maximum in any accessible area on the ground and

That it is understood per FCC Guidelines and OET65 Appendix A, that regardless of the existent radio-frequency environment, only those licenses whose contributions exceed five percent of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 3.2% of the maximum in any accessible area up to two meters above the ground per OET-65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET-65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier and frequency range indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding Radio Frequency Safety.

In summary, it is stated here that the proposed operation at the site would not result in exposure of the Public to excessive levels of radio-frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307 and that AT&T Mobility, LLC's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals, and approved contractor personnel trained in radio-frequency safety; and that the instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower, or in the immediate proximity of the antennas.

Note: Sitesafe has used data obtained from the "Connecticut Siting Council" to create this report. The manufacturer antenna patterns for AT&T Mobility, LLC were used to determine the RF emissions from the AT&T Mobility, LLC antennas. Generic antennas were used for the other operators on the tower as this information was not available, or provided at the time the study was conducted. Sitesafe has also referenced the AT&T Mobility, LLC construction diagram for this site.

The following documents below were the primary sources of data used to create this report. The primary document was the "Connecticut Siting Council" document. The AT&T Mobility, LLC construction diagram was referenced when appropriate. Sitesafe has conducted additional FCC research on this site for the Clearwire microwave licensed at the site, as not all of this information was included on the "Connecticut Siting Council" data. Sitesafe has included additional representative modeling for the addition of the second carrier AT&T Mobility, LLC LTE operations at the site.

There are additional antennas that are that were not shown on the AT&T Mobility, LLC construction drawing that were included on the "Connecticut Siting Council" data that were modeled as a worst case analysis of the tower. Additionally there were variances with the antenna elevations; the data contained with the "Connecticut Siting Council" was used. The T-Mobile ERP values on the "Connecticut Siting Council" are too low to be an ERP value; these are transmitter powers to the antenna and have been corrected in this report. Please review the engineering statement above regarding RF emissions from the microwave antenna.

Connecticut Siting Council: AlphaExMPowDens 4-16-14

AT&T Mobility, LLC Construction Diagram: 10035040.AE201.140425 (CT1060) Dewberry Rev 1

[1] This Power Density information was taken from the Connecticut Siting Council database dated April 16, 2014.
[2] This Power Density information is based on worse case assumptions from AT&T's radio frequency engineers.

AT&T Mobility, LLC (Proposed)
Wolcott East Street
Site Summary

Carrier	Area Maximum Percentage MPE
AT&T Mobility, LLC	0.278 %
AT&T Mobility, LLC	0.194 %
AT&T Mobility, LLC (Proposed/Future)	0 %
AT&T Mobility, LLC (Proposed/Future)	0 %
AT&T Mobility, LLC (Proposed/Future)	0 %
AT&T Mobility, LLC (Proposed)	0.167 %
AT&T Mobility, LLC (Proposed)	0.17 %
Clearwire	0.019 %
MetroPCS	0.254 %
MetroPCS	0.14 %
T-Mobile	0.224 %
T-Mobile	0.205 %
Verizon Wireless	0.145 %
Verizon Wireless	0.282 %
Verizon Wireless	0.348 %
Verizon Wireless	0.774 %
WQNG859 - Clearwire/Path 1 (Microwave)	0 %
Composite Site MPE:	3.2 %

Attachment 2

Wolcott - 347 East Street

Power Density Calculations

Control Number	Site	Carrier	#Channels	ERP/Ch	Ant Ht	Power Density (mW/c	MHz	S	%MPE	Site Total
EM-CING-166-120622	Wolcott - 347 East Street	AT&T UMTS	2	565	160	0.0159	880	0.5867	2.71%	
EM-CING-166-120622	Wolcott - 347 East Street	AT&T UMTS	2	875	160	0.0246	1900	1.0000	2.46%	
EM-CING-166-120622	Wolcott - 347 East Street	AT&T GSM	1	538	160	0.0076	880	0.5867	1.29%	
EM-CING-166-120622	Wolcott - 347 East Street	AT&T GSM	4	934	160	0.0525	1900	1.0000	5.25%	
EM-CING-166-120622	Wolcott - 347 East Street	AT&T LTE	1	1375	160	0.0193	734	0.4893	3.95%	
TS-Clearwire-166-100730	Wolcott - 347 East Street	Clearwire	2	153	168	0.0039	2496	1.0000	0.39%	
TS-Clearwire-166-100730	Wolcott - 347 East Street	Clearwire	1	211	168	0.0027	11 GHz	1.0000	0.27%	
EM-MetroPCS-166-121228-MA	Wolcott - 347 East Street	MetroPCS CDMA	3	727	148	0.0358	2135	1.0000	3.58%	
EM-MetroPCS-166-121228-MA	Wolcott - 347 East Street	MetroPCS LTE	1	1200	148	0.0197	2130	1.0000	1.97%	
EM-VER-166-130918	Wolcott - 347 East Street	Verizon cellular	9	371	177	0.0383	869	0.5793	6.61%	
EM-VER-166-130918	Wolcott - 347 East Street	Verizon PCS	11	383	177	0.0484	1970	1.0000	4.84%	
EM-VER-166-130918	Wolcott - 347 East Street	Verizon LTE	1	1050	177	0.0121	698	0.4653	2.59%	
EM-VER-166-130918	Wolcott - 347 East Street	Verizon AWS	1	1750	177	0.0201	2145	1.0000	2.01%	
EM-T-Mobile-166-130816	Wolcott - 347 East Street	T-Mobile UMTS/LTE	4	12	188	0.0005	2100	1.0000	0.05%	
EM-T-Mobile-166-130816	Wolcott - 347 East Street	T-Mobile GSM/UMTS	4	11	188	0.0004	1950	1.0000	0.04%	38.00%

TAB 3

Date: **May 19, 2014**

Sean Dempsey
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CTL01060
	Carrier Site Name:	Wolcott-East St.
Crown Castle Designation:	**Crown Castle BU Number:**	806362
	Crown Castle Site Name:	NHV 108 943133
	Crown Castle JDE Job Number:	265109
	Crown Castle Work Order Number:	728694
	Crown Castle Application Number:	211663 Rev. 5
Engineering Firm Designation:	**FDH Engineering, Inc. Project Number:**	1465IG1400

Site Data: **Intersection of RTE 322/Meridian R Wolcott Site, Wolcott, New Haven County, CT**
Latitude *41° 33' 34.41"*, Longitude *-72° 56' 49.1"*
180 Foot - Self Support Tower

Dear Sean Dempsey,

FDH Engineering, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 646780, in accordance with application 211663, revision 5.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 85 mph fastest mile.

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

We at *FDH Engineering, Inc.* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Chip DeVoto, EI
Project Engineer

Reviewed by:

Bradley R. Newman, PE
Senior Project Engineer
CT PE License No. 29630

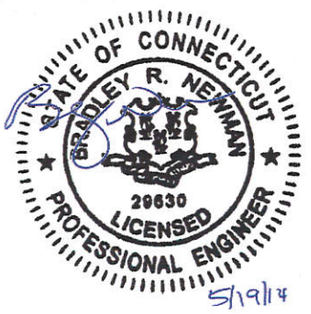


TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 180 ft Self Support tower designed by ROHN in September of 1986. The tower was originally designed for E.I.A. zone C with 1" radial ice. This tower has been modified per reinforcement drawings prepared by All-Points Technology Corp., P.C., in August of 2002. Reinforcement consists of the addition of concrete caps to the existing foundations.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
158.0	160.0	6	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe	---	---	---
		3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe			
		3	ericsson	RRUS 11			
		6	ericsson	RRUS 12 W/SOLAR SHIELD			
		6	ericsson	RRUS A2 MODULE			
		3	ericsson	RRUS E2 B29			
		3	ericsson	WCS RRUS-32-B30			
	158.0	1	commscope	MTC3615			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
180.0	188.0	3	ericsson	AIR 21	1	1-5/8	2
	180.0	6	rfs celwave	ATMAA1412D-1A20	18	1-5/8	1
177.0	177.0	3	alcatel lucent	RRH2X40-AWS	1	1-5/8	2
		3	antel	BXA-70040/6CFx4 w/ Mount Pipe			
		3	antel	BXA-171063/8CF w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
177.0	177.0	1	antel	BXA-185063/12CFx2 w/ Mount Pipe	12	1-5/8	1
		2	antel	LPA-80063/6CFx5 w/ Mount Pipe			
		1	crown mounts	Sector Mount [SM 502-3]			
		2	rfs celwave	APX18-206516L-CT0 w/ Mount Pipe			
		2	andrew	DB846F65ZAXY w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		2	swedcom	SC-E 6014 rev2 w/ Mount Pipe			
168.0	168.0	3	argus technologies	LLPX310R w/ Mount Pipe	1 3	1/2 5/16	1
		1	crown mounts	Sector Mount [SM 411-3]			
		1	dragonwave	A-ANT-18G-2-C			
		3	samsung telecommunications	FDD_R6_RRH			
158.0	160.0	3	powerwave technologies	7770.00 w/ Mount Pipe	---	---	1
		4	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	---	---	3
		2	andrew	SBNH-1D6565C w/ Mount Pipe			
	158.0	1	crown mounts	Sector Mount [SM 502-3]			
		3	ericsson	RRUS-11			
		3	communication components inc.	DTMABP7819VG12A	12 2 1	1-1/4 3/4 3/8	1
		6	adc	DUAL BAND 800/1900 FULL BAND MASTHEAD			
		3	ericsson	RRUS-11			
		3	powerwave technologies	7020.00			
		6	powerwave technologies	LGP13519			
		1	raycap	DC6-48-60-18-8F			
148.0	148.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1
40.0	40.0	1	crown mounts	Side Arm Mount [SO 201-1]	1	1/2	1
		1	gps	GPS_A			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment to be Removed, Not considered in this analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
180	180	4	rfs	PD10017	---	---
170	170	3	rfs	PD1132D	---	---
160	160	2	generic	6' STD Dish	---	---

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	2303630	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn	217670	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Rohn	529684	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	All Points Technology Corp.	903539	CCISITES

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. FDH Engineering, Inc. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	180 - 160	Leg	ROHN 2.5 STD	2	-13.14	41.14	31.9	Pass
		Diagonal	ROHN 2 STD	9	-6.14	15.54	39.5	Pass
		Horizontal	ROHN 1.5 STD	7	-3.30	20.29	16.3 19.2 (b)	Pass
		Top Girt	ROHN 1.5 STD	5	-1.41	20.34	6.9	Pass
		Inner Bracing	L2x2x1/8	37	-0.02	5.86	0.4	Pass
T2	160 - 140	Leg	ROHN 3 X-STR	41	-49.94	83.78	59.6	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
		Diagonal	ROHN 2 STD	60	-10.05	14.09	71.3	Pass
		Horizontal	ROHN 1.5 STD	46	-5.88	17.38	33.8 34.8 (b)	Pass
		Inner Bracing	L2x2x1/8	52	-0.01	4.29	0.3	Pass
T3	140 - 120	Leg	ROHN 4 X-STR	80	-85.53	139.07	61.5	Pass
		Diagonal	ROHN 2 STD	87	-8.88	11.51	77.1	Pass
		Horizontal	ROHN 2 STD	85	-6.09	24.65	24.7 35.5 (b)	Pass
		Inner Bracing	L2x2x1/8	91	-0.01	2.93	0.4	Pass
T4	120 - 100	Leg	ROHN 5 X-STR	119	-111.38	177.42	62.8	Pass
		Diagonal	ROHN 2.5 STD	126	-10.50	14.43	72.8	Pass
		Horizontal	ROHN 2 STD	124	-6.26	20.43	30.7 36.5 (b)	Pass
		Inner Bracing	L2x2x1/8	131	-0.01	2.21	0.4	Pass
T5	100 - 80	Leg	ROHN 5 X-STR	146	-138.00	177.35	77.8	Pass
		Diagonal	ROHN 2.5 STD	153	-9.32	12.60	74.0	Pass
		Horizontal	ROHN 2 STD	151	-6.11	14.77	41.4	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	157	-0.01	3.47	0.4	Pass
T6	80 - 60	Leg	ROHN 6 EHS	173	-161.73	212.13	76.2	Pass
		Diagonal	ROHN 2.5 STD	180	-9.63	11.15	86.4	Pass
		Horizontal	ROHN 2.5 STD	178	-6.72	25.42	26.4 39.1 (b)	Pass
		Inner Bracing	L3x3x3/16	184	-0.01	4.55	0.5	Pass
T7	60 - 40	Leg	ROHN 6 X-STR	200	-184.91	264.22	70.0	Pass
		Diagonal	ROHN 2.5 X-STR	207	-9.81	12.30	79.7	Pass
		Horizontal	ROHN 2.5 STD	205	-7.14	19.66	36.3 41.8 (b)	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	212	-0.01	7.45	0.5	Pass
T8	40 - 20	Leg	ROHN 6 X-STR	227	-206.75	264.19	78.3	Pass
		Diagonal	ROHN 3 STD	234	-9.56	16.86	56.7	Pass
		Horizontal	ROHN 2.5 STD	232	-7.22	15.57	46.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	238	-0.01	5.93	0.5	Pass
T9	20 - 0	Leg	ROHN 8 EHS	254	-216.86	332.47	65.2	Pass
		Diagonal	ROHN 3 STD	267	-14.80	28.18	52.5 57.4 (b)	Pass
		Horizontal	ROHN 3 STD	263	-8.07	27.51	29.3 47.0 (b)	Pass
		Redund Horz 1 Bracing	ROHN TS1.5x11 ga	265	-3.76	4.90	76.8	Pass
		Redund Diag 1 Bracing	ROHN 1.5 STD	262	-3.44	3.58	96.1	Pass
		Redund Hip 1 Bracing	ROHN TS1.5x11 ga	270	-0.04	4.35	1.0	Pass
		Redund Hip Diagonal Bracing	ROHN 2.5 STD	282	-0.05	6.98	0.7	Pass
		Inner Bracing	ROHN 3 STD	284	-0.01	19.74	0.4	Pass
							Summary	
						Leg (T8)	78.3	Pass
						Diagonal (T6)	86.4	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Horizontal (T9)	47.0	Pass
						Top Girt (T1)	6.9	Pass
						Redund Horz 1 Bracing (T9)	76.8	Pass
						Redund Diag 1 Bracing (T9)	96.1	Pass
						Redund Hip 1 Bracing (T9)	1.0	Pass
						Redund Hip Diagonal Bracing (T9)	0.7	Pass
						Inner Bracing (T8)	0.5	Pass
						Bolt Checks	57.4	Pass
						Rating =	96.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
---	Anchor Rods	0	54.5	Pass
1	Base Foundation Soil Interaction	0	28.8	Pass

Structure Rating (max from all components) =	96.1%

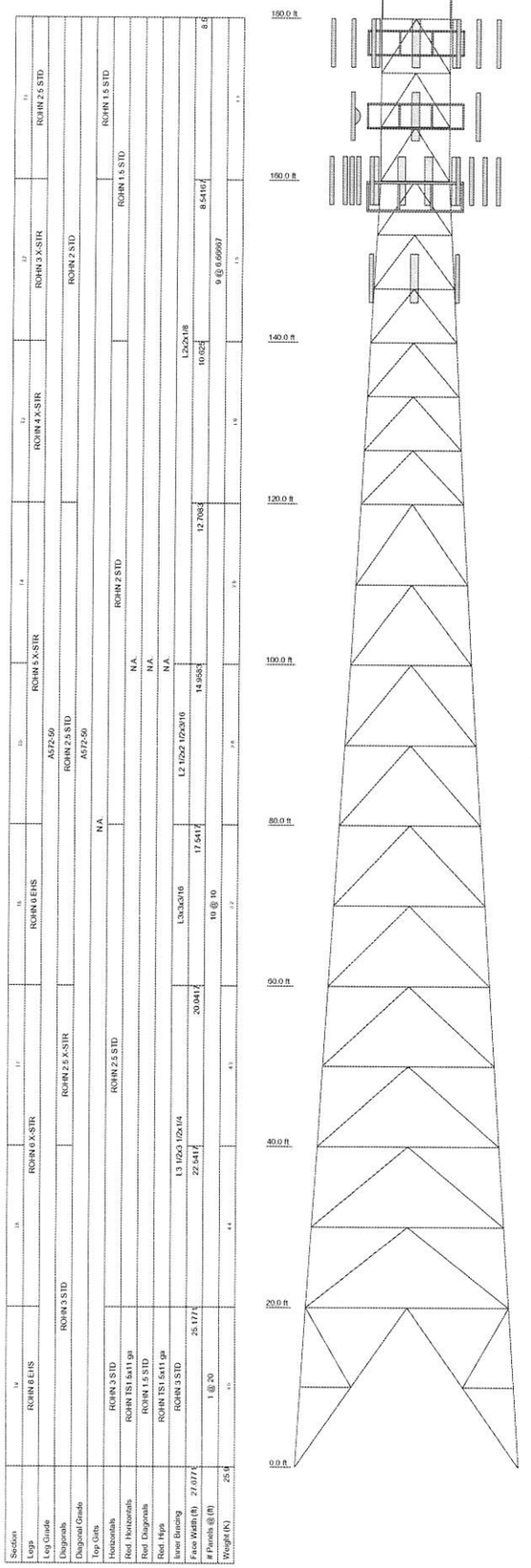
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	180	RRUS 11	158
8'x2 1/2" Pipe Mount	180	(2) RRUS 12 W/SOLAR SHIELD	158
(3) AIR 21	180	(2) RRUS A2 MODULE	158
(6) ATMAA1412D-1A20	180	WCS RRUS-32-B30	158
(2) DB846F65ZAXY w/ Mount Pipe	177	RRUS E2 B29	158
BXA-185063/12CFx2 w/ Mount Pipe	177	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	158
RRH2X40-AWS	177	DTMABP7819VG12A	158
BXA-171063/8CF w/ Mount Pipe	177	RRUS-11	158
BXA-70040/6CFx4 w/ Mount Pipe	177	7020.00	158
(2) FD9R6004/2C-3L	177	7770.00 w/ Mount Pipe	158
RRH2X40-AWS	177	(2) LGP13519	158
BXA-171063/8CF w/ Mount Pipe	177	(3) HPA-65R-BUU-H8 w/ Mount Pipe	158
BXA-70040/6CFx4 w/ Mount Pipe	177	RRUS 11	158
(2) LPA-80063/0CFx5 w/ Mount Pipe	177	(2) RRUS 12 W/SOLAR SHIELD	158
APX18-206516L-C-T0 w/ Mount Pipe	177	(2) RRUS A2 MODULE	158
(2) FD9R6004/2C-3L	177	RRUS E2 B29	158
DB-T1-6Z-8AB-0Z	177	WCS RRUS-32-B30	158
RRH2X40-AWS	177	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	158
BXA-171063/8CF w/ Mount Pipe	177	DTMABP7819VG12A	158
BXA-70040/6CFx4 w/ Mount Pipe	177	RRUS-11	158
APX18-206516L-C-T0 w/ Mount Pipe	177	7020.00	158
(2) FD9R6004/2C-3L	177	7770.00 w/ Mount Pipe	158
(2) SC-E 6014 rev2 w/ Mount Pipe	177	(2) LGP13519	158
Sector Mount [SM 502-3]	177	(3) HPA-65R-BUU-H6 w/ Mount Pipe	158
LLPX310R w/ Mount Pipe	168	RRUS 11	158
FDD_R6_RRH	168	(2) RRUS 12 W/SOLAR SHIELD	158
LLPX310R w/ Mount Pipe	168	(2) RRUS A2 MODULE	158
FDD_R6_RRH	168	WCS RRUS-32-B30	158
LLPX310R w/ Mount Pipe	168	RRUS E2 B29	158
FDD_R6_RRH	168	(3) MTC3615	158
Sector Mount [SM 411-3]	168	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	158
A-ANT-18G-2-C	168	APXV18-206517S-C w/ Mount Pipe	148
DTMABP7819VG12A	158	APXV18-206517S-C w/ Mount Pipe	148
RRUS-11	158	APXV18-206517S-C w/ Mount Pipe	148
7020.00	158	Side Arm Mount [SO 201-1]	40
7770.00 w/ Mount Pipe	158	GPS_A	40
(2) LGP13519	158		
DC6-48-60-18-8F	158		
(3) HPA-65R-BUU-H6 w/ Mount Pipe	158		

MATERIAL STRENGTH

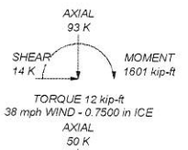
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

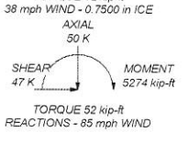
1. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
3. Deflections are based upon a 50 mph wind.
4. TOWER RATING: 96.1%

MAX. CORNER REACTIONS AT BASE:
DOWN: 237 K
SHEAR: 28 K

UPLIFT: -198 K
SHEAR: 25 K



TORQUE 12 kip-ft
38 mph WIND - 0.7500 in ICE



TORQUE 52 kip-ft
REACTIONS - 85 mph WIND

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
Phone: (919) 755-1012
FAX: (919) 755-1031
Tower Analysis

Job:	806362 NHV 108 943133
Project:	1465IG1400
Client: Crown Castle	Drawn by: Chip DeVoto, E
Code: TIA/EIA-222-F	Date: 05/19/14
Path:	Scale: NTS
	Dwg No. E-1

tnxTower	Job	Page
	806362 NHV 108 943133	1 of 34
FDH Engineering, Inc. 6521 Meridien Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031	Project 1465IG1400	Date 09:46:12 05/19/14
	Client Crown Castle	Designed by Chip DeVoto, EI

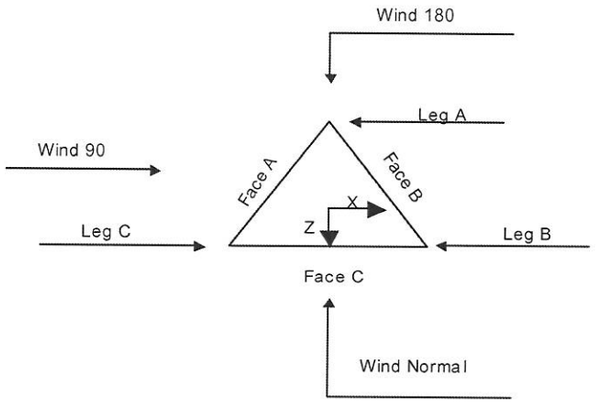
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 8.50 ft at the top and 27.68 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Basic wind speed of 85 mph.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	√ SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
√ Escalate Ice	Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	√ Include Angle Block Shear Check
√ Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination	Use TIA-222-G Tension Splice Capacity Exemption	



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.00-160.00			8.50	1	20.00
T2	160.00-140.00			8.54	1	20.00
T3	140.00-120.00			10.63	1	20.00
T4	120.00-100.00			12.71	1	20.00
T5	100.00-80.00			14.96	1	20.00
T6	80.00-60.00			17.54	1	20.00
T7	60.00-40.00			20.04	1	20.00
T8	40.00-20.00			22.54	1	20.00
T9	20.00-0.00			25.18	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	180.00-160.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T2	160.00-140.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T3	140.00-120.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T4	120.00-100.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T5	100.00-80.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T6	80.00-60.00	10.00	K Brace Down	No	Yes	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T7	60.00-40.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T8	40.00-20.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T9	20.00-0.00	20.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-160.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T2 160.00-140.00	Pipe	ROHN 3 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T3 140.00-120.00	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 120.00-100.00	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T5 100.00-80.00	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T6 80.00-60.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T7 60.00-40.00	Pipe	ROHN 6 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)
T8 40.00-20.00	Pipe	ROHN 6 X-STR	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T9 20.00-0.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T2 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T3 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T5 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T6 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T7 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T8 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T9 20.00-0.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 180.00-160.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T2 160.00-140.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T3 140.00-120.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T4 120.00-100.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T5 100.00-80.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 80.00-60.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T7 60.00-40.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 40.00-20.00	Solid Round		A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 20.00-0.00	Solid Round		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T9 20.00-0.00	A572-50 (50 ksi)	Horizontal (1)	Pipe	ROHN TS1.5x11 ga	1
		Diagonal (1)	Pipe	ROHN 1.5 STD	1
		Hip (1)	Pipe	ROHN TS1.5x11 ga	1
		Hip Diagonal		ROHN 2.5 STD	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T5 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1 180.00-160.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 160.00-140.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 140.00-120.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 120.00-100.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T5 100.00-80.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 80.00-60.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T7 60.00-40.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T8 40.00-20.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T9 20.00-0.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 180.00-160.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T2 160.00-140.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T3 140.00-120.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T4 120.00-100.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T5 100.00-80.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T6 80.00-60.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T7 60.00-40.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T8 40.00-20.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T9 20.00-0.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180.00-160.00	Flange	0.7500 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T2 160.00-140.00	Flange	0.8750 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T3 140.00-120.00	Flange	1.0000 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T4 120.00-100.00	Flange	1.0000 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T5 100.00-80.00	Flange	1.0000 A325N	6	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T6 80.00-60.00	Flange	1.0000 A325N	6	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T7 60.00-40.00	Flange	1.0000 A325N	6	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T8 40.00-20.00	Flange	1.0000 A325N	8	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0
T9 20.00-0.00	Flange	1.0000 A449	8	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LCF158-50A(1-5/8")	C	Yes	Ar (CfAe)	158.00 - 0.00	-1.0000	-0.44	31	14	0.5000	1.9800		0.80
LCF158-50A(1-5/8")	C	Yes	Ar (CfAe)	180.00 - 158.00	-1.5000	-0.44	19	12	0.5000	1.9800		0.80

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***												
561(1-5/8")	A	Yes	Ar (CfAe)	177.00 - 0.00	1.0000	-0.35	12	2	0.5000	1.6250		1.35
561(1-5/8")	A	Yes	Ar (CfAe)	177.00 - 0.00	10.0000	-0.36	1	1	0.5000	1.6250		1.35
***												
7983A(1/2")	A	Yes	Ar (CfAe)	168.00 - 0.00	0.0000	0.45	1	1	0.5000	0.5800		0.08
9207(5/16")	A	Yes	Ar (CfAe)	168.00 - 0.00	0.0000	0.48	3	3	0.3300	0.0000		0.60
1 1/2" Rigid Conduit	A	Yes	Ar (CfAe)	168.00 - 0.00	0.0000	0.48	2	2	0.5000	1.5000		1.00
FB-L98B-002-75000(3/8")	C	Yes	Ar (CfAe)	158.00 - 0.00	0.0000	-0.4	1	1	0.3937	0.0000		0.06
WR-VG86ST-BRD(3/4)	C	Yes	Ar (CfAe)	158.00 - 0.00	0.0000	-0.4	2	2	0.5000	0.0000		0.58
2" Rigid Conduit	C	Yes	Ar (CfAe)	158.00 - 0.00	0.0000	-0.4	1	1	2.0000	2.0000		2.80
***												
LCF158-50JL(1-5/8")	A	Yes	Ar (CfAe)	148.00 - 0.00	0.0000	0.4	6	3	0.5000	1.9800		0.52
***												
LDF4-50A(1/2")	A	Yes	Ar (CfAe)	40.00 - 0.00	0.0000	-0.45	1	1	0.5000	0.6300		0.15
***												
Feedline Ladder (Af) 1.5"	A	Yes	Af (CfAe)	177.00 - 0.00	0.0000	-0.4	1	1	1.5000	1.5000	6.0000	4.20
Feedline Ladder (Af) 1.5"	A	Yes	Af (CfAe)	168.00 - 0.00	0.0000	0.4	1	1	1.5000	1.5000	6.0000	4.20
T-Brackets	A	Yes	Af (CfAe)	177.00 - 0.00	0.0000	-0.35	1	1	1.0000	1.0000	4.0000	8.40
Feedline Ladder (Af)	C	Yes	Af (CfAe)	180.00 - 0.00	-2.0000	-0.4	2	1	3.0000	3.0000	12.0000	8.40
***												
Safety Line 3/8	C	Yes	Ar (CfAe)	180.00 - 0.00	0.0000	0.5	1	1	0.3750	0.3750		0.22

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
***							

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-160.00	A	9.293	4.542	0.000	0.000	0.58
		B	0.000	0.000	0.000	0.000	0.00
		C	40.225	5.000	0.000	0.000	0.64
T2	160.00-140.00	A	18.052	6.667	0.000	0.000	0.79
		B	0.000	0.000	0.000	0.000	0.00
		C	49.165	5.000	0.000	0.000	0.89
T3	140.00-120.00	A	23.992	6.667	0.000	0.000	0.83
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	50.158	5.000	0.000	0.000	0.92
T4	120.00-100.00	A	23.992	6.667	0.000	0.000	0.83
		B	0.000	0.000	0.000	0.000	0.00
		C	50.158	5.000	0.000	0.000	0.92
T5	100.00-80.00	A	23.992	6.667	0.000	0.000	0.83
		B	0.000	0.000	0.000	0.000	0.00
		C	50.158	5.000	0.000	0.000	0.92
T6	80.00-60.00	A	23.992	6.667	0.000	0.000	0.83
		B	0.000	0.000	0.000	0.000	0.00
		C	50.158	5.000	0.000	0.000	0.92
T7	60.00-40.00	A	23.992	6.667	0.000	0.000	0.83
		B	0.000	0.000	0.000	0.000	0.00
		C	50.158	5.000	0.000	0.000	0.92
T8	40.00-20.00	A	25.042	6.667	0.000	0.000	0.83
		B	0.000	0.000	0.000	0.000	0.00
		C	50.158	5.000	0.000	0.000	0.92
T9	20.00-0.00	A	25.042	6.667	0.000	0.000	0.83
		B	0.000	0.000	0.000	0.000	0.00
		C	50.158	5.000	0.000	0.000	0.92

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-160.00	A	0.913	14.817	13.586	0.000	0.000	1.15
		B		0.000	0.000	0.000	0.000	0.00
		C		10.012	52.496	0.000	0.000	1.69
T2	160.00-140.00	A	0.899	26.393	23.945	0.000	0.000	1.68
		B		0.000	0.000	0.000	0.000	0.00
		C		21.016	60.655	0.000	0.000	2.35
T3	140.00-120.00	A	0.884	29.866	28.802	0.000	0.000	1.85
		B		0.000	0.000	0.000	0.000	0.00
		C		21.994	61.531	0.000	0.000	2.40
T4	120.00-100.00	A	0.867	29.515	28.686	0.000	0.000	1.83
		B		0.000	0.000	0.000	0.000	0.00
		C		21.701	61.492	0.000	0.000	2.38
T5	100.00-80.00	A	0.846	29.102	28.548	0.000	0.000	1.81
		B		0.000	0.000	0.000	0.000	0.00
		C		21.358	61.447	0.000	0.000	2.36
T6	80.00-60.00	A	0.821	28.600	28.381	0.000	0.000	1.79
		B		0.000	0.000	0.000	0.000	0.00
		C		20.939	61.391	0.000	0.000	2.33
T7	60.00-40.00	A	0.788	27.950	28.164	0.000	0.000	1.75
		B		0.000	0.000	0.000	0.000	0.00
		C		20.397	61.319	0.000	0.000	2.29
T8	40.00-20.00	A	0.750	30.733	27.908	0.000	0.000	1.74
		B		0.000	0.000	0.000	0.000	0.00
		C		19.758	61.233	0.000	0.000	2.25
T9	20.00-0.00	A	0.750	30.733	27.908	0.000	0.000	1.74
		B		0.000	0.000	0.000	0.000	0.00
		C		19.758	61.233	0.000	0.000	2.25

Feed Line Shielding

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
T1	180.00-160.00	A	1.091	4.398	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.566	9.150	0.000	0.000
T2	160.00-140.00	A	1.818	7.134	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.984	11.057	0.000	0.000
T3	140.00-120.00	A	2.271	7.964	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	4.087	10.923	0.000	0.000
T4	120.00-100.00	A	1.865	6.109	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.355	8.416	0.000	0.000
T5	100.00-80.00	A	1.746	5.617	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.140	7.779	0.000	0.000
T6	80.00-60.00	A	1.789	5.475	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.219	7.632	0.000	0.000
T7	60.00-40.00	A	1.729	5.130	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.111	7.213	0.000	0.000
T8	40.00-20.00	A	1.953	5.517	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.398	7.384	0.000	0.000
T9	20.00-0.00	A	1.981	6.028	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.446	8.068	0.000	0.000

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	180.00-160.00	10.7757	9.3880	6.1158	6.6655
T2	160.00-140.00	11.8260	7.7606	7.8387	6.4245
T3	140.00-120.00	12.3984	6.2351	8.7297	6.2458
T4	120.00-100.00	14.1226	7.0860	10.5080	7.3713
T5	100.00-80.00	16.2607	8.1440	12.1998	8.4672
T6	80.00-60.00	17.0383	8.5216	13.2280	9.0995
T7	60.00-40.00	18.8313	9.4086	14.8215	10.0803
T8	40.00-20.00	18.9568	10.0433	14.4273	11.2755
T9	20.00-0.00	19.0410	10.0803	14.5266	11.3727

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod	C	From Leg	0.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.25 0.66 0.97 1.49 2.68	0.25 0.66 0.97 1.49 2.68	0.03 0.03 0.04 0.06 0.14
****									
8'x2 1/2" Pipe Mount	B	From Leg	0.00 0.00 4.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.30 3.13 3.62 4.62 6.73	2.30 3.13 3.62 4.62 6.73	0.04 0.06 0.08 0.14 0.33
(3) AIR 21	B	From Leg	0.00 0.00 8.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.42 6.86 7.30 8.22 10.17	4.28 4.69 5.11 5.98 7.82	0.08 0.12 0.17 0.28 0.57
(6) ATMAA1412D-1A20	B	From Leg	0.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.17 1.31 1.47 1.81 2.58	0.47 0.57 0.69 0.95 1.57	0.01 0.02 0.03 0.06 0.14
***									
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.27 7.88 8.48 9.72 12.33	7.82 9.01 9.91 11.81 15.98	0.05 0.11 0.19 0.37 0.87
BXA-185063/12CFx2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.03 5.59 6.11 7.17 9.44	5.29 6.46 7.35 9.15 12.95	0.04 0.09 0.14 0.27 0.68
RRH2X40-AWS	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.52 2.75 2.99 3.50 4.61	1.59 1.80 2.01 2.46 3.48	0.04 0.06 0.08 0.13 0.28
BXA-171063/8CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.14 3.52 3.92 4.80 6.71	3.51 4.13 4.76 6.06 9.09	0.03 0.06 0.10 0.20 0.49
BXA-70040/6CFx4 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	16.55 17.27 17.96 19.37 22.30	7.37 8.54 9.42 11.23 15.34	0.06 0.16 0.27 0.52 1.17
(2) FD9R6004/2C-3L	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0.00 0.01 0.01 0.02 0.06
RRH2X40-AWS	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.52 2.75 2.99 3.50 4.61	1.59 1.80 2.01 2.46 3.48	0.04 0.06 0.08 0.13 0.28

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
BXA-171063/8CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.14 3.52 3.92 4.80 6.71	3.51 4.13 4.76 6.06 9.09	0.03 0.06 0.10 0.20 0.49
BXA-70040/6CFx4 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	16.55 17.27 17.96 19.37 22.30	7.37 8.54 9.42 11.23 15.34	0.06 0.16 0.27 0.52 1.17
(2) LPA-80063/6CFx5 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.55 11.21 11.84 13.13 15.83	10.65 11.91 12.88 14.89 19.13	0.05 0.14 0.25 0.48 1.09
APX18-206516L-CT0 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.74 4.16 4.59 5.54 7.57	3.29 4.00 4.66 6.04 9.02	0.04 0.07 0.11 0.21 0.52
(2) FD9R6004/2C-3L	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0.00 0.01 0.01 0.02 0.06
DB-T1-6Z-8AB-0Z	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.60 5.92 6.24 6.91 8.37	2.33 2.56 2.79 3.28 4.37	0.04 0.08 0.12 0.21 0.45
RRH2X40-AWS	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.52 2.75 2.99 3.50 4.61	1.59 1.80 2.01 2.46 3.48	0.04 0.06 0.08 0.13 0.28
BXA-171063/8CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.14 3.52 3.92 4.80 6.71	3.51 4.13 4.76 6.06 9.09	0.03 0.06 0.10 0.20 0.49
BXA-70040/6CFx4 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	16.55 17.27 17.96 19.37 22.30	7.37 8.54 9.42 11.23 15.34	0.06 0.16 0.27 0.52 1.17
APX18-206516L-CT0 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.74 4.16 4.59 5.54 7.57	3.29 4.00 4.66 6.04 9.02	0.04 0.07 0.11 0.21 0.52
(2) FD9R6004/2C-3L	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0.00 0.01 0.01 0.02 0.06
(2) SC-E 6014 rev2 w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	177.00	No Ice 1/2" Ice	3.78 4.18	4.40 5.01	0.03 0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00					1" Ice	4.59	5.64	0.12
								2" Ice	5.44	6.96	0.22
								4" Ice	7.29	9.90	0.54
Sector Mount [SM 502-3]	C	None				0.0000	177.00	No Ice	33.02	33.02	1.67
								1/2" Ice	47.36	47.36	2.22
								1" Ice	61.70	61.70	2.77
								2" Ice	90.38	90.38	3.88
								4" Ice	147.74	147.74	6.08
***											
LLPX310R w/ Mount Pipe	A	From Leg	4.00			0.0000	168.00	No Ice	5.07	2.98	0.05
			0.00					1/2" Ice	5.48	3.53	0.08
			0.00					1" Ice	5.91	4.09	0.13
								2" Ice	6.79	5.31	0.23
								4" Ice	8.70	8.13	0.54
FDD_R6_RRH	A	From Leg	4.00			0.0000	168.00	No Ice	1.79	0.78	0.03
			0.00					1/2" Ice	1.97	0.92	0.04
			0.00					1" Ice	2.16	1.07	0.06
								2" Ice	2.57	1.39	0.09
								4" Ice	3.49	2.14	0.20
LLPX310R w/ Mount Pipe	B	From Leg	4.00			0.0000	168.00	No Ice	5.07	2.98	0.05
			0.00					1/2" Ice	5.48	3.53	0.08
			0.00					1" Ice	5.91	4.09	0.13
								2" Ice	6.79	5.31	0.23
								4" Ice	8.70	8.13	0.54
FDD_R6_RRH	B	From Leg	4.00			0.0000	168.00	No Ice	1.79	0.78	0.03
			0.00					1/2" Ice	1.97	0.92	0.04
			0.00					1" Ice	2.16	1.07	0.06
								2" Ice	2.57	1.39	0.09
								4" Ice	3.49	2.14	0.20
LLPX310R w/ Mount Pipe	C	From Leg	4.00			0.0000	168.00	No Ice	5.07	2.98	0.05
			0.00					1/2" Ice	5.48	3.53	0.08
			0.00					1" Ice	5.91	4.09	0.13
								2" Ice	6.79	5.31	0.23
								4" Ice	8.70	8.13	0.54
FDD_R6_RRH	C	From Leg	4.00			0.0000	168.00	No Ice	1.79	0.78	0.03
			0.00					1/2" Ice	1.97	0.92	0.04
			0.00					1" Ice	2.16	1.07	0.06
								2" Ice	2.57	1.39	0.09
								4" Ice	3.49	2.14	0.20
Sector Mount [SM 411-3]	C	None				0.0000	168.00	No Ice	21.88	21.88	1.07
								1/2" Ice	30.68	30.68	1.48
								1" Ice	39.48	39.48	1.90
								2" Ice	57.08	57.08	2.73
								4" Ice	92.28	92.28	4.40
***											
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	A	From Leg	4.00			0.0000	158.00	No Ice	1.55	0.81	0.03
			0.00					1/2" Ice	1.72	0.94	0.04
			0.00					1" Ice	1.90	1.09	0.05
								2" Ice	2.28	1.40	0.09
								4" Ice	3.14	2.12	0.19
DTMABP7819VG12A	A	From Leg	4.00			0.0000	158.00	No Ice	1.14	0.39	0.02
			0.00					1/2" Ice	1.28	0.49	0.03
			0.00					1" Ice	1.44	0.59	0.04
								2" Ice	1.77	0.83	0.06
								4" Ice	2.54	1.41	0.14
RRUS-11	A	From Leg	4.00			0.0000	158.00	No Ice	2.94	1.25	0.06
			0.00					1/2" Ice	3.17	1.41	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	3.41	1.59	0.10
						2" Ice	3.91	1.96	0.15
						4" Ice	5.02	2.82	0.30
7020.00	A	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice	0.12	0.20	0.00
						1/2" Ice	0.17	0.28	0.01
						1" Ice	0.23	0.36	0.01
						2" Ice	0.38	0.56	0.02
						4" Ice	0.78	1.05	0.07
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	6.12	4.25	0.06
						1/2" Ice	6.63	5.01	0.10
						1" Ice	7.13	5.71	0.16
						2" Ice	8.16	7.16	0.29
						4" Ice	10.36	10.41	0.66
(2) LGP13519	A	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice	0.34	0.21	0.01
						1/2" Ice	0.42	0.28	0.01
						1" Ice	0.51	0.36	0.01
						2" Ice	0.73	0.55	0.02
						4" Ice	1.25	1.03	0.07
DC6-48-60-18-8F	A	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice	2.57	4.32	0.03
						1/2" Ice	2.80	4.60	0.06
						1" Ice	3.04	4.88	0.10
						2" Ice	3.54	5.49	0.18
						4" Ice	4.66	6.80	0.40
(3) HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	10.60	8.11	0.08
						1/2" Ice	11.27	9.30	0.16
						1" Ice	11.91	10.21	0.25
						2" Ice	13.21	12.17	0.46
						4" Ice	15.93	16.35	1.02
RRUS 11	A	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.10
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
(2) RRUS 12 W/SOLAR SHIELD	A	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	3.67	1.46	0.06
						1/2" Ice	3.92	1.64	0.08
						1" Ice	4.19	1.84	0.11
						2" Ice	4.74	2.25	0.17
						4" Ice	5.96	3.17	0.34
(2) RRUS A2 MODULE	A	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	1.87	0.42	0.02
						1/2" Ice	2.05	0.53	0.03
						1" Ice	2.24	0.65	0.04
						2" Ice	2.66	0.91	0.08
						4" Ice	3.58	1.54	0.18
WCS RRUS-32-B30	A	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	3.87	2.76	0.08
						1/2" Ice	4.15	3.02	0.10
						1" Ice	4.44	3.29	0.14
						2" Ice	5.06	3.85	0.21
						4" Ice	6.38	5.08	0.41
RRUS E2 B29	A	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	3.67	1.49	0.06
						1/2" Ice	3.93	1.67	0.08
						1" Ice	4.19	1.87	0.11
						2" Ice	4.75	2.28	0.17
						4" Ice	5.96	3.21	0.35
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	B	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice	1.55	0.81	0.03
						1/2" Ice	1.72	0.94	0.04
						1" Ice	1.90	1.09	0.05
						2" Ice	2.28	1.40	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	3.14	2.12	0.19
DTMABP7819VG12A	B	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.39 0.49 0.59 0.83 1.41	0.02 0.03 0.04 0.06 0.14
RRUS-11	B	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.06 0.07 0.10 0.15 0.30
7020.00	B	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.78	0.20 0.28 0.36 0.56 1.05	0.00 0.01 0.01 0.02 0.07
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
(2) LGP13519	B	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	0.01 0.01 0.01 0.02 0.07
(3) HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	13.81 14.54 15.27 16.76 19.84	10.80 12.12 13.17 15.29 19.72	0.08 0.18 0.29 0.54 1.22
RRUS 11	B	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.10 0.15 0.31
(2) RRUS 12 W/SOLAR SHIELD	B	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.92 4.19 4.74 5.96	1.46 1.64 1.84 2.25 3.17	0.06 0.08 0.11 0.17 0.34
(2) RRUS A2 MODULE	B	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.87 2.05 2.24 2.66 3.58	0.42 0.53 0.65 0.91 1.54	0.02 0.03 0.04 0.08 0.18
RRUS E2 B29	B	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.93 4.19 4.75 5.96	1.49 1.67 1.87 2.28 3.21	0.06 0.08 0.11 0.17 0.35
WCS RRUS-32-B30	B	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.87 4.15 4.44 5.06 6.38	2.76 3.02 3.29 3.85 5.08	0.08 0.10 0.14 0.21 0.41
(2) DUAL BAND 800/1900	C	From Leg	4.00	0.0000	158.00	No Ice	1.55	0.81	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
FULL BAND MASTHEAD			0.00 0.00			1/2" Ice	1.72	0.94	0.04
						1" Ice	1.90	1.09	0.05
						2" Ice	2.28	1.40	0.09
						4" Ice	3.14	2.12	0.19
DTMABP7819VG12A	C	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice	1.14	0.39	0.02
						1/2" Ice	1.28	0.49	0.03
						1" Ice	1.44	0.59	0.04
						2" Ice	1.77	0.83	0.06
						4" Ice	2.54	1.41	0.14
RRUS-11	C	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice	2.94	1.25	0.06
						1/2" Ice	3.17	1.41	0.07
						1" Ice	3.41	1.59	0.10
						2" Ice	3.91	1.96	0.15
						4" Ice	5.02	2.82	0.30
7020.00	C	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice	0.12	0.20	0.00
						1/2" Ice	0.17	0.28	0.01
						1" Ice	0.23	0.36	0.01
						2" Ice	0.38	0.56	0.02
						4" Ice	0.78	1.05	0.07
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	6.12	4.25	0.06
						1/2" Ice	6.63	5.01	0.10
						1" Ice	7.13	5.71	0.16
						2" Ice	8.16	7.16	0.29
						4" Ice	10.36	10.41	0.66
(2) LGP13519	C	From Leg	4.00 0.00 0.00	0.0000	158.00	No Ice	0.34	0.21	0.01
						1/2" Ice	0.42	0.28	0.01
						1" Ice	0.51	0.36	0.01
						2" Ice	0.73	0.55	0.02
						4" Ice	1.25	1.03	0.07
(3) HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	10.60	8.11	0.08
						1/2" Ice	11.27	9.30	0.16
						1" Ice	11.91	10.21	0.25
						2" Ice	13.21	12.17	0.46
						4" Ice	15.93	16.35	1.02
RRUS 11	C	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.10
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
(2) RRUS 12 W/SOLAR SHIELD	C	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	3.67	1.46	0.06
						1/2" Ice	3.92	1.64	0.08
						1" Ice	4.19	1.84	0.11
						2" Ice	4.74	2.25	0.17
						4" Ice	5.96	3.17	0.34
(2) RRUS A2 MODULE	C	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	1.87	0.42	0.02
						1/2" Ice	2.05	0.53	0.03
						1" Ice	2.24	0.65	0.04
						2" Ice	2.66	0.91	0.08
						4" Ice	3.58	1.54	0.18
WCS RRUS-32-B30	C	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	3.87	2.76	0.08
						1/2" Ice	4.15	3.02	0.10
						1" Ice	4.44	3.29	0.14
						2" Ice	5.06	3.85	0.21
						4" Ice	6.38	5.08	0.41
RRUS E2 B29	C	From Leg	4.00 0.00 2.00	0.0000	158.00	No Ice	3.67	1.49	0.06
						1/2" Ice	3.93	1.67	0.08
						1" Ice	4.19	1.87	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	4.75	2.28	0.17
						4" Ice	5.96	3.21	0.35
(3) MTC3615	C	None		0.0000	158.00	No Ice	49.30	49.30	2.29
						1/2" Ice	52.20	52.20	2.68
						1" Ice	55.10	55.10	3.07
						2" Ice	60.90	60.90	3.85
						4" Ice	72.50	72.50	5.41
***									
***									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	0.50 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.10 0.15 0.28 0.68
APXV18-206517S-C w/ Mount Pipe	B	From Leg	0.50 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.10 0.15 0.28 0.68
APXV18-206517S-C w/ Mount Pipe	C	From Leg	0.50 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.10 0.15 0.28 0.68
***									
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GPS_A	A	From Leg	1.00 0.00 0.00	0.0000	40.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.30 0.37 0.46 0.65 1.15	0.30 0.37 0.46 0.65 1.15	0.00 0.00 0.01 0.02 0.08
Side Arm Mount [SO 201-1]	A	From Leg	0.50 0.00 0.00	0.0000	40.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.96 4.10 5.24 7.52 12.08	2.11 2.93 3.75 5.39 8.67	0.10 0.12 0.14 0.18 0.26
***									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
A-ANT-18G-2-C	C	Paraboloid w/o Radome	From Leg	3.00 0.00 0.00	90.0000		168.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.03 0.05 0.07 0.11 0.19

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				ft	°	°	ft	ft	ft^2	K
***										
***										
***										

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 160	Leg	Max Tension	12	8.61	0.24	0.05

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	6	-13.14	0.75	0.03
			Max. Mx	4	-0.35	2.24	-0.10
			Max. My	9	-1.25	0.00	-2.46
			Max. Vy	6	1.09	0.00	0.00
			Max. Vx	9	1.26	0.00	0.00
		Diagonal	Max Tension	5	6.08	0.00	0.00
			Max. Compression	5	-6.14	0.00	0.00
			Max. Mx	20	1.55	0.03	0.00
			Max. My	8	-0.76	0.00	0.00
			Max. Vy	20	-0.02	0.00	0.00
			Max. Vx	8	-0.00	0.00	0.00
		Horizontal	Max Tension	5	3.28	0.00	0.00
			Max. Compression	5	-3.30	0.00	0.00
			Max. Mx	21	0.09	-0.02	-0.00
			Max. My	12	-0.77	-0.01	-0.01
			Max. Vy	21	-0.02	-0.02	-0.00
			Max. Vx	12	0.00	-0.01	-0.01
		Top Girt	Max Tension	8	1.42	-0.01	0.00
			Max. Compression	2	-1.41	-0.01	-0.00
			Max. Mx	21	-0.09	-0.02	-0.00
			Max. My	6	0.56	-0.01	0.00
			Max. Vy	21	-0.02	-0.02	-0.00
			Max. Vx	6	-0.00	-0.01	0.00
		Inner Bracing	Max Tension	2	0.02	0.00	0.00
			Max. Compression	2	-0.02	0.00	0.00
			Max. Mx	14	0.00	-0.01	0.00
			Max. My	19	0.00	0.00	-0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
T2	160 - 140	Leg	Max Tension	12	39.67	0.09	0.01
			Max. Compression	6	-49.94	0.17	0.00
			Max. Mx	12	16.05	2.61	-0.02
			Max. My	3	-4.35	-0.04	2.74
			Max. Vy	12	-1.72	-0.81	-0.03
			Max. Vx	9	1.82	-0.04	0.88
		Diagonal	Max Tension	13	9.98	0.00	0.00
			Max. Compression	13	-10.05	0.00	0.00
			Max. Mx	20	2.29	0.04	0.00
			Max. My	8	-0.90	0.00	0.00
			Max. Vy	20	0.02	0.00	0.00
			Max. Vx	8	-0.00	0.00	0.00
		Horizontal	Max Tension	13	5.96	0.00	0.00
			Max. Compression	13	-5.99	-0.01	0.00
			Max. Mx	21	0.25	-0.03	-0.00
			Max. My	6	1.50	0.00	0.01
			Max. Vy	21	-0.02	-0.03	-0.00
			Max. Vx	6	-0.00	0.00	0.01
		Inner Bracing	Max Tension	3	0.01	0.00	0.00
			Max. Compression	13	-0.01	0.00	0.00
			Max. Mx	14	-0.00	-0.02	0.00
			Max. My	19	-0.00	0.00	-0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
T3	140 - 120	Leg	Max Tension	12	72.27	-0.16	0.00
			Max. Compression	6	-85.53	0.38	0.01
			Max. Mx	12	72.09	-0.39	-0.00
			Max. My	9	-6.82	-0.01	0.43
			Max. Vy	12	0.08	-0.39	-0.00
			Max. Vx	3	0.11	-0.01	-0.43
		Diagonal	Max Tension	13	9.16	0.00	0.00
			Max. Compression	13	-9.25	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	2.15	0.05	0.00
			Max. My	8	-0.99	0.00	0.00
			Max. Vy	20	-0.02	0.00	0.00
			Max. Vx	8	-0.00	0.00	0.00
		Horizontal	Max Tension	13	6.06	0.00	0.00
			Max. Compression	13	-6.09	-0.02	0.00
			Max. Mx	21	0.37	-0.05	-0.00
			Max. My	12	-0.79	-0.04	-0.01
			Max. Vy	21	-0.03	-0.05	-0.00
			Max. Vx	12	0.00	-0.04	-0.01
		Inner Bracing	Max Tension	3	0.01	0.00	0.00
			Max. Compression	8	-0.01	0.00	0.00
			Max. Mx	14	-0.00	-0.03	0.00
			Max. My	19	-0.00	0.00	-0.00
			Max. Vy	14	0.02	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
T4	120 - 100	Leg	Max Tension	12	95.22	-0.40	-0.00
			Max. Compression	6	-111.38	0.45	0.01
			Max. Mx	12	94.90	-0.48	-0.00
			Max. My	9	-8.28	-0.01	0.50
			Max. Vy	12	0.08	-0.48	-0.00
			Max. Vx	9	-0.12	-0.02	0.48
		Diagonal	Max Tension	13	10.59	0.00	0.00
			Max. Compression	13	-10.73	0.00	0.00
			Max. Mx	20	2.56	0.11	0.00
			Max. My	8	-1.30	0.00	0.00
			Max. Vy	20	-0.04	0.00	0.00
			Max. Vx	8	0.00	0.00	0.00
		Horizontal	Max Tension	13	6.18	0.00	0.00
			Max. Compression	13	-6.26	-0.02	-0.00
			Max. Mx	21	0.46	-0.06	-0.00
			Max. My	12	-1.02	-0.05	-0.01
			Max. Vy	21	-0.03	-0.06	-0.00
			Max. Vx	12	0.00	-0.05	-0.01
		Inner Bracing	Max Tension	3	0.00	0.00	0.00
			Max. Compression	13	-0.01	0.00	0.00
			Max. Mx	14	-0.00	-0.03	0.00
			Max. My	6	0.00	0.00	-0.00
			Max. Vy	14	-0.02	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T5	100 - 80	Leg	Max Tension	12	118.37	-0.40	-0.00
			Max. Compression	6	-138.00	0.46	0.01
			Max. Mx	12	118.05	-0.49	-0.00
			Max. My	9	-9.91	-0.02	0.57
			Max. Vy	12	0.09	-0.49	-0.00
			Max. Vx	3	0.12	-0.02	-0.57
		Diagonal	Max Tension	13	9.28	0.00	0.00
			Max. Compression	13	-9.45	0.00	0.00
			Max. Mx	20	2.21	0.14	0.00
			Max. My	8	-1.32	0.00	0.00
			Max. Vy	20	-0.04	0.00	0.00
			Max. Vx	8	-0.00	0.00	0.00
		Horizontal	Max Tension	13	6.01	0.00	0.00
			Max. Compression	13	-6.11	-0.03	-0.00
			Max. Mx	21	0.56	-0.07	-0.00
			Max. My	6	0.63	-0.00	0.01
			Max. Vy	21	-0.04	-0.07	-0.00
			Max. Vx	6	-0.00	-0.00	0.01
		Inner Bracing	Max Tension	3	0.00	0.00	0.00
			Max. Compression	13	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.06	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	6	-0.00	0.00	-0.00
			Max. Vy	14	0.03	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T6	80 - 60	Leg	Max Tension	12	138.37	-0.61	0.00
			Max. Compression	6	-161.73	0.54	0.01
			Max. Mx	12	128.08	-0.61	0.00
			Max. My	9	-11.65	-0.02	0.66
			Max. Vy	12	0.10	-0.61	0.00
			Max. Vx	9	-0.12	-0.01	0.63
		Diagonal	Max Tension	13	9.36	0.00	0.00
			Max. Compression	13	-9.63	0.00	0.00
			Max. Mx	20	2.24	0.17	0.00
			Max. My	8	-1.34	0.00	0.00
			Max. Vy	20	-0.05	0.00	0.00
			Max. Vx	8	-0.00	0.00	0.00
		Horizontal	Max Tension	13	6.67	0.00	0.00
			Max. Compression	13	-6.72	-0.07	-0.00
			Max. Mx	21	0.67	-0.13	-0.00
			Max. My	12	-1.48	-0.10	-0.01
			Max. Vy	21	-0.06	-0.13	-0.00
			Max. Vx	12	0.00	-0.10	-0.01
		Inner Bracing	Max Tension	3	0.00	0.00	0.00
			Max. Compression	25	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.09	0.00
			Max. My	6	0.00	0.00	-0.00
			Max. Vy	14	0.04	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T7	60 - 40	Leg	Max Tension	12	157.30	-0.58	0.00
			Max. Compression	6	-184.91	0.43	0.00
			Max. Mx	12	147.64	-0.58	0.00
			Max. My	9	-13.67	-0.03	0.66
			Max. Vy	12	-0.09	-0.58	0.00
			Max. Vx	3	-0.12	-0.02	-0.66
		Diagonal	Max Tension	13	9.42	0.00	0.00
			Max. Compression	13	-9.81	0.00	0.00
			Max. Mx	20	2.21	0.24	0.00
			Max. My	8	-1.38	0.00	0.00
			Max. Vy	20	-0.06	0.00	0.00
			Max. Vx	8	-0.00	0.00	0.00
		Horizontal	Max Tension	13	7.18	0.00	0.00
			Max. Compression	13	-7.14	-0.09	-0.00
			Max. Mx	21	0.77	-0.15	-0.00
			Max. My	2	1.34	-0.05	0.01
			Max. Vy	21	-0.06	-0.15	-0.00
			Max. Vx	2	-0.00	-0.05	0.01
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.16	0.00
			Max. My	6	-0.00	0.00	-0.00
			Max. Vy	14	-0.06	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T8	40 - 20	Leg	Max Tension	12	174.55	-0.91	0.00
			Max. Compression	6	-206.75	-1.63	0.02
			Max. Mx	6	-206.75	-1.63	0.02
			Max. My	9	-15.82	-0.31	2.11
			Max. Vy	6	0.31	1.04	0.00
			Max. Vx	9	-0.28	-0.31	2.11
		Diagonal	Max Tension	13	9.11	0.00	0.00
			Max. Compression	13	-9.56	0.00	0.00
			Max. Mx	20	2.09	0.29	0.00
			Max. My	2	1.05	0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-0.07	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Horizontal	Max Tension	13	7.34	0.00	0.00
			Max. Compression	13	-7.22	-0.11	-0.00
			Max. Mx	21	0.88	-0.18	-0.00
			Max. My	2	1.63	-0.07	0.01
			Max. Vy	21	-0.07	-0.18	-0.00
			Max. Vx	2	-0.00	-0.07	0.01
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.19	0.00
			Max. My	6	-0.00	0.00	-0.00
			Max. Vy	14	-0.06	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
T9	20 - 0	Leg	Max Tension	8	180.96	0.92	0.19
			Max. Compression	6	-216.86	-0.00	-0.00
			Max. Mx	6	-216.46	6.12	-0.02
			Max. My	9	-16.64	-0.31	2.11
			Max. Vy	6	-0.84	6.12	-0.02
			Max. Vx	9	0.47	-0.31	2.11
		Diagonal	Max Tension	13	14.35	-0.16	0.09
			Max. Compression	13	-14.80	0.00	0.00
			Max. Mx	8	9.90	-0.20	0.06
			Max. My	7	-14.10	0.03	-0.10
			Max. Vy	21	0.05	-0.13	0.01
			Max. Vx	7	-0.01	0.00	0.00
		Horizontal	Max Tension	13	7.92	0.00	0.00
			Max. Compression	13	-8.07	-0.16	-0.00
			Max. Mx	8	-2.01	-0.24	-0.02
			Max. My	2	1.54	-0.08	0.02
			Max. Vy	21	0.09	-0.24	-0.00
			Max. Vx	2	-0.00	-0.08	0.02
		Redund Horz 1 Bracing	Max Tension	6	3.76	0.00	0.00
			Max. Compression	6	-3.76	0.00	0.00
			Max. Mx	15	1.42	0.02	0.00
			Max. Vy	15	-0.01	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	6	3.44	0.00	0.00
			Max. Compression	6	-3.44	0.00	0.00
			Max. Mx	19	1.43	0.04	0.00
			Max. My	2	3.34	0.00	-0.00
			Max. Vy	19	0.01	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	13	-0.04	0.00	0.00
			Max. Mx	14	-0.01	0.02	0.00
			Max. Vy	14	-0.01	0.00	0.00
		Redund Hip Diagonal Bracing	Max Tension	13	0.07	0.00	0.00
			Max. Compression	10	-0.06	0.00	0.00
			Max. Mx	21	0.04	0.19	0.00
			Max. My	10	0.03	0.00	0.00
			Max. Vy	21	-0.05	0.00	0.00
			Max. Vx	10	-0.00	0.00	0.00
		Inner Bracing	Max Tension	2	0.00	0.00	0.00
			Max. Compression	2	-0.01	0.00	0.00
			Max. Mx	14	-0.01	0.23	0.00
			Max. My	10	-0.00	0.00	0.00
			Max. Vy	14	-0.07	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	10	-0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	10	232.84	24.73	-13.21
	Max. H_x	10	232.84	24.73	-13.21
	Max. H_z	4	-196.89	-22.17	11.76
	Min. Vert	4	-196.89	-22.17	11.76
	Min. H_x	4	-196.89	-22.17	11.76
	Min. H_z	10	232.84	24.73	-13.21
Leg B	Max. Vert	6	236.78	-24.47	-14.18
	Max. H_x	12	-198.12	21.83	12.71
	Max. H_z	13	-169.48	17.44	13.28
	Min. Vert	12	-198.12	21.83	12.71
	Min. H_x	6	236.78	-24.47	-14.18
	Min. H_z	7	205.96	-19.88	-14.52
Leg A	Max. Vert	2	230.64	0.98	27.96
	Max. H_x	11	16.49	3.75	1.51
	Max. H_z	2	230.64	0.98	27.96
	Min. Vert	8	-198.44	-0.98	-25.10
	Min. H_x	6	-94.25	-3.79	-12.13
	Min. H_z	8	-198.44	-0.98	-25.10

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	50.18	-0.00	-0.00	35.83	-15.87	-0.00
Dead+Wind 0 deg - No Ice	50.18	-0.15	-46.39	-5127.30	11.73	47.41
Dead+Wind 30 deg - No Ice	50.18	22.99	-39.72	-4386.08	-2580.72	52.04
Dead+Wind 60 deg - No Ice	50.18	39.85	-22.76	-2491.48	-4473.82	43.09
Dead+Wind 90 deg - No Ice	50.18	46.32	0.31	89.81	-5206.16	24.11
Dead+Wind 120 deg - No Ice	50.18	40.54	23.44	2659.99	-4554.63	-2.87
Dead+Wind 150 deg - No Ice	50.18	23.32	39.95	4499.65	-2639.60	-28.55
Dead+Wind 180 deg - No Ice	50.18	0.24	45.88	5157.32	-59.41	-45.99
Dead+Wind 210 deg - No Ice	50.18	-22.90	39.83	4477.20	2532.50	-50.94
Dead+Wind 240 deg - No Ice	50.18	-40.34	23.04	2588.84	4486.72	-43.81
Dead+Wind 270 deg - No Ice	50.18	-46.27	-0.17	5.75	5165.81	-22.87
Dead+Wind 300 deg - No Ice	50.18	-40.05	-23.04	-2543.98	4477.62	3.66
Dead+Wind 330 deg - No Ice	50.18	-23.29	-39.90	-4418.90	2602.52	29.02
Dead+Ice+Temp	93.39	-0.00	-0.00	77.57	-66.62	0.00
Dead+Wind 0 deg+Ice+Temp	93.39	-0.03	-13.79	-1409.84	-61.75	11.19
Dead+Wind 30 deg+Ice+Temp	93.39	6.46	-11.16	-1139.43	-772.53	12.35
Dead+Wind 60 deg+Ice+Temp	93.39	10.96	-6.28	-608.29	-1271.28	10.72
Dead+Wind 90 deg+Ice+Temp	93.39	12.98	0.06	88.60	-1489.85	7.04
Dead+Wind 120 deg+Ice+Temp	93.39	12.02	6.94	829.98	-1369.05	0.98
Dead+Wind 150 deg+Ice+Temp	93.39	6.52	11.21	1303.01	-783.67	-5.45
Dead+Wind 180 deg+Ice+Temp	93.39	0.05	12.63	1462.55	-75.31	-9.92
Dead+Wind 210 deg+Ice+Temp	93.39	-6.44	11.19	1299.16	635.35	-12.11

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 240 deg+Ice+Temp	93.39	-11.98	6.87	816.07	1228.63	-12.00
Dead+Wind 270 deg+Ice+Temp	93.39	-12.97	-0.03	72.13	1354.41	-6.76
Dead+Wind 300 deg+Ice+Temp	93.39	-11.00	-6.33	-617.96	1144.52	-0.63
Dead+Wind 330 deg+Ice+Temp	93.39	-6.51	-11.20	-1145.55	648.95	5.56
Dead+Wind 0 deg - Service	50.18	-0.05	-16.05	-1750.66	-6.35	16.41
Dead+Wind 30 deg - Service	50.18	7.96	-13.74	-1494.20	-903.36	18.01
Dead+Wind 60 deg - Service	50.18	13.79	-7.87	-838.58	-1558.45	14.90
Dead+Wind 90 deg - Service	50.18	16.03	0.11	54.57	-1811.88	8.34
Dead+Wind 120 deg - Service	50.18	14.03	8.11	943.93	-1586.44	-0.99
Dead+Wind 150 deg - Service	50.18	8.07	13.83	1580.50	-923.78	-9.88
Dead+Wind 180 deg - Service	50.18	0.08	15.88	1808.07	-30.96	-15.91
Dead+Wind 210 deg - Service	50.18	-7.92	13.78	1572.69	865.92	-17.63
Dead+Wind 240 deg - Service	50.18	-13.96	7.97	919.30	1542.11	-15.16
Dead+Wind 270 deg - Service	50.18	-16.01	-0.06	25.49	1777.08	-7.92
Dead+Wind 300 deg - Service	50.18	-13.86	-7.97	-856.76	1538.91	1.26
Dead+Wind 330 deg - Service	50.18	-8.06	-13.81	-1505.54	890.12	10.04

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-50.18	0.00	0.00	50.18	0.00	0.000%
2	-0.15	-50.18	-46.39	0.15	50.18	46.39	0.001%
3	22.99	-50.18	-39.72	-22.99	50.18	39.72	0.001%
4	39.85	-50.18	-22.76	-39.85	50.18	22.76	0.001%
5	46.32	-50.18	0.31	-46.32	50.18	-0.31	0.001%
6	40.54	-50.18	23.44	-40.54	50.18	-23.44	0.001%
7	23.32	-50.18	39.96	-23.32	50.18	-39.95	0.001%
8	0.24	-50.18	45.88	-0.24	50.18	-45.88	0.001%
9	-22.90	-50.18	39.83	22.90	50.18	-39.83	0.001%
10	-40.34	-50.18	23.04	40.34	50.18	-23.04	0.001%
11	-46.27	-50.18	-0.17	46.27	50.18	0.17	0.001%
12	-40.05	-50.18	-23.04	40.05	50.18	23.04	0.001%
13	-23.29	-50.18	-39.90	23.29	50.18	39.90	0.001%
14	0.00	-93.39	0.00	0.00	93.39	0.00	0.000%
15	-0.03	-93.39	-13.79	0.03	93.39	13.79	0.000%
16	6.46	-93.39	-11.16	-6.46	93.39	11.16	0.000%
17	10.96	-93.39	-6.28	-10.96	93.39	6.28	0.000%
18	12.98	-93.39	0.06	-12.98	93.39	-0.06	0.000%
19	12.02	-93.39	6.94	-12.02	93.39	-6.94	0.000%
20	6.52	-93.39	11.21	-6.52	93.39	-11.21	0.000%
21	0.05	-93.39	12.63	-0.05	93.39	-12.63	0.000%
22	-6.44	-93.39	11.19	6.44	93.39	-11.19	0.000%
23	-11.98	-93.39	6.87	11.98	93.39	-6.87	0.000%
24	-12.97	-93.39	-0.03	12.97	93.39	0.03	0.000%
25	-11.00	-93.39	-6.33	11.00	93.39	6.33	0.000%
26	-6.51	-93.39	-11.20	6.51	93.39	11.20	0.000%
27	-0.05	-50.18	-16.05	0.05	50.18	16.05	0.000%
28	7.96	-50.18	-13.74	-7.96	50.18	13.74	0.000%
29	13.79	-50.18	-7.87	-13.79	50.18	7.87	0.000%
30	16.03	-50.18	0.11	-16.03	50.18	-0.11	0.001%
31	14.03	-50.18	8.11	-14.03	50.18	-8.11	0.001%
32	8.07	-50.18	13.83	-8.07	50.18	-13.83	0.001%
33	0.08	-50.18	15.88	-0.08	50.18	-15.88	0.000%
34	-7.92	-50.18	13.78	7.92	50.18	-13.78	0.000%
35	-13.96	-50.18	7.97	13.96	50.18	-7.97	0.000%
36	-16.01	-50.18	-0.06	16.01	50.18	0.06	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
37	-13.86	-50.18	-7.97	13.86	50.18	7.97	0.000%
38	-8.06	-50.18	-13.81	8.06	50.18	13.81	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00001071
2	Yes	8	0.00000001	0.00009653
3	Yes	8	0.00000001	0.00009273
4	Yes	8	0.00000001	0.00008887
5	Yes	8	0.00000001	0.00009316
6	Yes	8	0.00000001	0.00009686
7	Yes	8	0.00000001	0.00009297
8	Yes	8	0.00000001	0.00008874
9	Yes	8	0.00000001	0.00009269
10	Yes	8	0.00000001	0.00009683
11	Yes	8	0.00000001	0.00009300
12	Yes	8	0.00000001	0.00008871
13	Yes	8	0.00000001	0.00009248
14	Yes	7	0.00000001	0.00007074
15	Yes	9	0.00000001	0.00003240
16	Yes	9	0.00000001	0.00003221
17	Yes	9	0.00000001	0.00003254
18	Yes	9	0.00000001	0.00003345
19	Yes	9	0.00000001	0.00003420
20	Yes	9	0.00000001	0.00003361
21	Yes	9	0.00000001	0.00003300
22	Yes	9	0.00000001	0.00003291
23	Yes	9	0.00000001	0.00003313
24	Yes	9	0.00000001	0.00003209
25	Yes	8	0.00000001	0.00014700
26	Yes	8	0.00000001	0.00014794
27	Yes	8	0.00000001	0.00009028
28	Yes	8	0.00000001	0.00008914
29	Yes	8	0.00000001	0.00008815
30	Yes	8	0.00000001	0.00008972
31	Yes	8	0.00000001	0.00009097
32	Yes	8	0.00000001	0.00008955
33	Yes	8	0.00000001	0.00008806
34	Yes	8	0.00000001	0.00008938
35	Yes	8	0.00000001	0.00009078
36	Yes	8	0.00000001	0.00008949
37	Yes	8	0.00000001	0.00008798
38	Yes	8	0.00000001	0.00008897

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	4.248	31	0.2129	0.0724

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T2	160 - 140	3.346	31	0.2032	0.0616
T3	140 - 120	2.494	31	0.1784	0.0463
T4	120 - 100	1.772	31	0.1478	0.0342
T5	100 - 80	1.193	31	0.1208	0.0256
T6	80 - 60	0.740	31	0.0910	0.0182
T7	60 - 40	0.407	31	0.0634	0.0125
T8	40 - 20	0.179	31	0.0411	0.0082
T9	20 - 0	0.043	27	0.0188	0.0041

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Lightning Rod	31	4.248	0.2129	0.0724	513112
177.00	(2) DB846F65ZAXY w/ Mount Pipe	31	4.112	0.2119	0.0709	513112
168.00	A-ANT-18G-2-C	31	3.704	0.2085	0.0664	213797
158.00	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	31	3.257	0.2014	0.0602	97698
148.00	APXV18-206517S-C w/ Mount Pipe	31	2.823	0.1899	0.0525	46267
40.00	GPS_A	31	0.179	0.0411	0.0082	57178

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	12.123	6	0.6032	0.2092
T2	160 - 140	9.561	6	0.5779	0.1780
T3	140 - 120	7.131	6	0.5082	0.1338
T4	120 - 100	5.069	6	0.4214	0.0989
T5	100 - 80	3.415	6	0.3444	0.0740
T6	80 - 60	2.121	6	0.2597	0.0527
T7	60 - 40	1.170	6	0.1809	0.0362
T8	40 - 20	0.515	6	0.1173	0.0237
T9	20 - 0	0.123	2	0.0537	0.0120

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Lightning Rod	6	12.123	0.6032	0.2092	203962
177.00	(2) DB846F65ZAXY w/ Mount Pipe	6	11.736	0.6009	0.2051	203962
168.00	A-ANT-18G-2-C	6	10.580	0.5921	0.1920	84984
158.00	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	6	9.308	0.5730	0.1740	37213
148.00	APXV18-206517S-C w/ Mount Pipe	6	8.071	0.5406	0.1517	16515

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
40.00	GPS_A	6	0.515	0.1173	0.0237	20070

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325N	0.7500	4	2.15	19.44	0.111 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	2.05	6.44	0.318 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	1.65	6.44	0.256 ✓	1.333	Bolt Shear
T2	160	Leg	A325N	0.8750	4	9.92	26.46	0.375 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.35	6.44	0.520 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	2.99	6.44	0.465 ✓	1.333	Bolt Shear
T3	140	Leg	A325N	1.0000	4	18.07	34.56	0.523 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.08	6.44	0.479 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.05	6.44	0.473 ✓	1.333	Bolt Shear
T4	120	Leg	A325N	1.0000	4	23.81	34.56	0.689 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.58	6.44	0.555 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.13	6.44	0.486 ✓	1.333	Bolt Shear
T5	100	Leg	A325N	1.0000	6	19.73	34.56	0.571 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.15	6.44	0.489 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.06	6.44	0.474 ✓	1.333	Bolt Shear
T6	80	Leg	A325N	1.0000	6	23.06	34.56	0.667 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.21	6.44	0.498 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.36	6.44	0.522 ✓	1.333	Bolt Shear
T7	60	Leg	A325N	1.0000	6	26.22	34.56	0.759 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.27	6.44	0.508 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.59	6.44	0.557 ✓	1.333	Bolt Shear
T8	40	Leg	A325N	1.0000	8	21.82	34.56	0.631 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.19	6.44	0.495 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.67	6.44	0.569 ✓	1.333	Bolt Shear
T9	20	Leg	A449	1.0000	8	22.58	31.10	0.726 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	4.93	6.44	0.766 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	4.03	6.44	0.626 ✓	1.333	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 2.5 STD	20.00	6.67	84.4 K=1.00	18.110	1.7040	-13.14	30.86	0.426 ✓
T2	160 - 140	ROHN 3 X-STR	20.04	6.68	70.5 K=1.00	20.840	3.0159	-49.94	62.85	0.795 ✓
T3	140 - 120	ROHN 4 X-STR	20.04	6.68	54.3 K=1.00	23.671	4.4074	-85.53	104.33	0.820 ✓
T4	120 - 100	ROHN 5 X-STR	20.04	10.02	65.4 K=1.00	21.776	6.1120	-111.38	133.10	0.837 ✓
T5	100 - 80	ROHN 5 X-STR	20.06	10.03	65.4 K=1.00	21.769	6.1120	-138.00	133.05	1.037 ✓
T6	80 - 60	ROHN 6 EHS	20.05	10.03	54.1 K=1.00	23.705	6.7133	-161.73	159.14	1.016 ✓
T7	60 - 40	ROHN 6 X-STR	20.05	10.03	54.8 K=1.00	23.583	8.4049	-184.91	198.21	0.933 ✓
T8	40 - 20	ROHN 6 X-STR	20.06	10.03	54.8 K=1.00	23.580	8.4049	-206.75	198.19	1.043 ✓
T9	20 - 0	ROHN 8 EHS	20.05	10.03	41.2 K=1.00	25.662	9.7193	-216.86	249.41	0.869 ✓

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 2 STD	7.92	7.70	117.3 K=1.00	10.850	1.0745	-6.14	11.66	0.527 ✓
T2	160 - 140	ROHN 2 STD	8.31	8.08	123.2 K=1.00	9.839	1.0745	-10.05	10.57	0.951 ✓
T3	140 - 120	ROHN 2 STD	9.21	8.94	136.3 K=1.00	8.039	1.0745	-8.88	8.64	1.028 ✓
T4	120 - 100	ROHN 2.5 STD	12.49	12.10	153.3 K=1.00	6.353	1.7040	-10.50	10.82	0.970 ✓
T5	100 - 80	ROHN 2.5 STD	13.31	12.96	164.1 K=1.00	5.546	1.7040	-9.32	9.45	0.987 ✓
T6	80 - 60	ROHN 2.5 STD	14.16	13.77	174.4 K=1.00	4.908	1.7040	-9.63	8.36	1.151 ✓
T7	60 - 40	ROHN 2.5 X-STR	15.07	14.70	190.9 K=1.00	4.096	2.2535	-9.81	9.23	1.063 ✓
T8	40 - 20	ROHN 3 STD	16.08	15.73	162.2 K=1.00	5.675	2.2285	-9.56	12.65	0.756 ✓
T9	20 - 0	ROHN 3 STD	24.33	12.17	125.5 K=1.00	9.486	2.2285	-14.80	21.14	0.700 ✓

Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
T1	180 - 160	ROHN 1.5 STD	8.53	4.14	79.9 K=1.00	19.038	0.7995	-3.30	15.22	0.217 ✓
T2	160 - 140	ROHN 1.5 STD	9.93	4.82	92.9 K=1.00	16.310	0.7995	-5.88	13.04	0.451 ✓
T3	140 - 120	ROHN 2 STD	12.01	5.82	88.7 K=1.00	17.212	1.0745	-6.09	18.50	0.329 ✓
T4	120 - 100	ROHN 2 STD	13.83	6.68	101.9 K=1.00	14.260	1.0745	-6.26	15.32	0.409 ✓
T5	100 - 80	ROHN 2 STD	16.25	7.89	120.3 K=1.00	10.313	1.0745	-6.11	11.08	0.551 ✓
T6	80 - 60	ROHN 2.5 STD	18.79	9.12	115.5 K=1.00	11.192	1.7040	-6.72	19.07	0.352 ✓
T7	60 - 40	ROHN 2.5 STD	21.29	10.37	131.3 K=1.00	8.656	1.7040	-7.14	14.75	0.484 ✓
T8	40 - 20	ROHN 2.5 STD	23.86	11.65	147.6 K=1.00	6.854	1.7040	-7.22	11.68	0.618 ✓
T9	20 - 0	ROHN 3 STD	25.18	12.31	127.0 K=1.00	9.262	2.2285	-8.07	20.64	0.391 ✓

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
T1	180 - 160	ROHN 1.5 STD	8.50	4.13	79.6 K=1.00	19.091	0.7995	-1.41	15.26	0.092 ✓

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
T9	20 - 0	ROHN TS1.5x11 ga	6.29	5.93	145.4 K=1.00	7.062	0.5202	-3.76	3.67	1.024 ✓

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
T9	20 - 0	ROHN 1.5 STD	11.50	10.94	210.9 K=1.00	3.357	0.7995	-3.44	2.68	1.281 ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T9	20 - 0	ROHN TS1.5x11 ga	6.29	6.29	154.2 K=1.00	6.278	0.5202	-0.04	3.27	0.014 ✓

Redundant Hip Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T9	20 - 0	ROHN 2.5 STD	15.07	15.07	190.9 K=1.00	4.096	1.7040	-0.05	6.98	0.007* ✓

* DL controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/8	4.25	4.25	128.3 K=1.00	9.074	0.4844	-0.02	4.39	0.006 ✓
T2	160 - 140	L2x2x1/8	4.62	4.62	139.4 K=1.00	7.685	0.4844	-0.01	3.72	0.002 ✓
T3	140 - 120	L2x2x1/8	6.01	6.01	181.3 K=1.00	4.542	0.4844	-0.01	2.20	0.003 ✓
T4	120 - 100	L2x2x1/8	6.92	6.92	208.8 K=1.00	3.426	0.4844	-0.01	1.66	0.004 ✓
T5	100 - 80	L2 1/2x2 1/2x3/16	8.13	8.13	197.0 K=1.00	3.849	0.9020	-0.01	3.47	0.002* ✓
T6	80 - 60	L3x3x3/16	9.40	9.40	189.2 K=1.00	4.173	1.0900	-0.01	4.55	0.002* ✓
T7	60 - 40	L3 1/2x3 1/2x1/4	10.65	10.65	184.1 K=1.00	4.407	1.6900	-0.01	7.45	0.001* ✓
T8	40 - 20	L3 1/2x3 1/2x1/4	11.93	11.93	206.3 K=1.00	3.510	1.6900	-0.01	5.93	0.002* ✓
T9	20 - 0	ROHN 3 STD	12.59	12.59	129.8 K=1.00	8.860	2.2285	-0.01	19.74	0.001* ✓

* DL controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 2.5 STD	20.00	6.67	84.4	30.000	1.7040	8.61	51.12	0.168
T2	160 - 140	ROHN 3 X-STR	20.04	6.68	70.5	30.000	3.0159	39.67	90.48	0.438
T3	140 - 120	ROHN 4 X-STR	20.04	6.68	54.3	30.000	4.4074	72.27	132.22	0.547
T4	120 - 100	ROHN 5 X-STR	20.04	10.02	65.4	30.000	6.1120	95.22	183.36	0.519
T5	100 - 80	ROHN 5 X-STR	20.06	10.03	65.4	30.000	6.1120	118.37	183.36	0.646
T6	80 - 60	ROHN 6 EHS	20.05	10.03	54.1	30.000	6.7133	138.37	201.40	0.687
T7	60 - 40	ROHN 6 X-STR	20.05	10.03	54.8	30.000	8.4049	157.30	252.15	0.624
T8	40 - 20	ROHN 6 X-STR	20.06	10.03	54.8	30.000	8.4049	174.55	252.15	0.692
T9	20 - 0	ROHN 8 EHS	20.05	10.03	41.2	30.000	9.7193	180.96	291.58	0.621

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 2 STD	7.92	7.70	117.3	30.000	1.0745	6.08	32.24	0.189
T2	160 - 140	ROHN 2 STD	8.31	8.08	123.2	30.000	1.0745	9.98	32.24	0.310
T3	140 - 120	ROHN 2 STD	8.75	8.48	129.2	30.000	1.0745	9.16	32.24	0.284
T4	120 - 100	ROHN 2.5 STD	12.16	11.78	149.2	30.000	1.7040	10.59	51.12	0.207
T5	100 - 80	ROHN 2.5 STD	12.89	12.54	158.8	30.000	1.7040	9.28	51.12	0.181
T6	80 - 60	ROHN 2.5 STD	14.16	13.77	174.4	30.000	1.7040	9.36	51.12	0.183
T7	60 - 40	ROHN 2.5 X-STR	15.07	14.70	190.9	30.000	2.2535	9.42	67.61	0.139
T8	40 - 20	ROHN 3 STD	16.08	15.73	162.2	30.000	2.2285	9.11	66.85	0.136

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T9	20 - 0	ROHN 3 STD	24.33	12.17	125.5	30.000	2.2285	14.35	66.85	0.215 ✓

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8.53	4.14	79.9	30.000	0.7995	3.28	23.98	0.137 ✓
T2	160 - 140	ROHN 1.5 STD	9.24	4.47	86.2	30.000	0.7995	5.96	23.98	0.248 ✓
T3	140 - 120	ROHN 2 STD	12.01	5.82	88.7	30.000	1.0745	6.06	32.24	0.188 ✓
T4	120 - 100	ROHN 2 STD	13.83	6.68	101.9	30.000	1.0745	6.18	32.24	0.192 ✓
T5	100 - 80	ROHN 2 STD	16.25	7.89	120.3	30.000	1.0745	6.01	32.24	0.186 ✓
T6	80 - 60	ROHN 2.5 STD	18.79	9.12	115.5	30.000	1.7040	6.67	51.12	0.130 ✓
T7	60 - 40	ROHN 2.5 STD	21.29	10.37	131.3	30.000	1.7040	7.18	51.12	0.140 ✓
T8	40 - 20	ROHN 2.5 STD	23.86	11.65	147.6	30.000	1.7040	7.34	51.12	0.144 ✓
T9	20 - 0	ROHN 3 STD	25.18	12.31	127.0	30.000	2.2285	7.92	66.85	0.118 ✓

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8.50	4.13	79.6	30.000	0.7995	1.42	23.98	0.059 ✓

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T9	20 - 0	ROHN TS1.5x11 ga	6.29	5.93	145.4	30.000	0.5202	3.76	15.61	0.241 ✓

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T9	20 - 0	ROHN 1.5 STD	11.50	10.94	210.9	30.000	0.7995	3.44	23.98	0.143 ✓

Redundant Hip Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T9	20 - 0	ROHN 2.5 STD	15.07	15.07	190.9	30.000	1.7040	0.07	51.12	0.001 ✓

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/8	4.25	4.25	81.4	21.600	0.4844	0.02	10.46	0.002 ✓
T2	160 - 140	L2x2x1/8	4.27	4.27	81.8	21.600	0.4844	0.01	10.46	0.001 ✓
T3	140 - 120	L2x2x1/8	5.31	5.31	101.8	21.600	0.4844	0.01	10.46	0.001 ✓
T4	120 - 100	L2x2x1/8	6.35	6.35	121.8	21.600	0.4844	0.00	10.46	0.000 ✓
T5	100 - 80	L2 1/2x2 1/2x3/16	7.48	7.48	115.4	21.600	0.9020	0.00	19.48	0.000 ✓
T6	80 - 60	L3x3x3/16	8.77	8.77	112.1	21.600	1.0900	0.00	23.54	0.000 ✓
T9	20 - 0	ROHN 3 STD	12.59	12.59	129.8	30.000	2.2285	0.00	66.85	0.000 ✓

Section Capacity Table

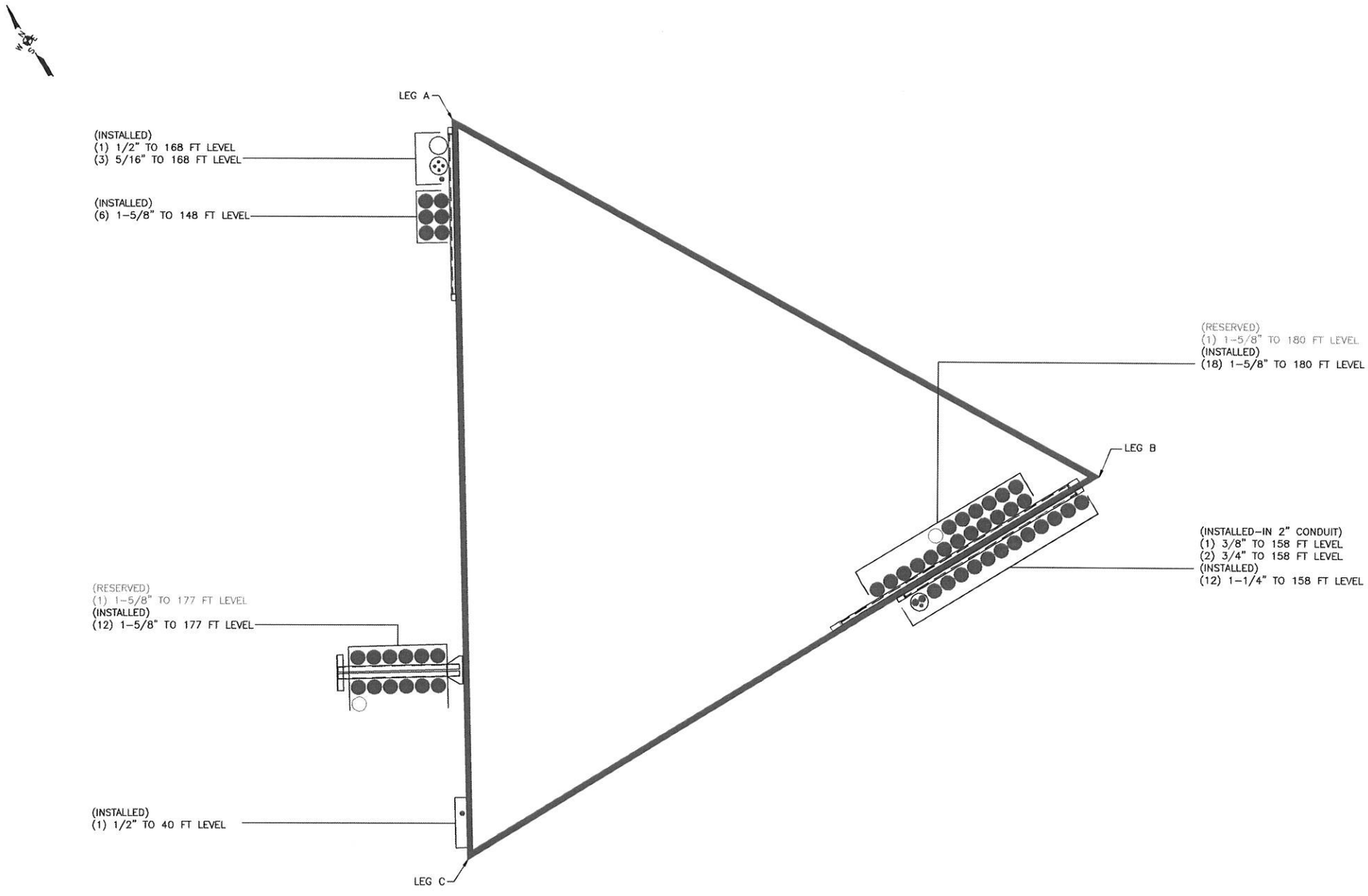
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	180 - 160	Leg	ROHN 2.5 STD	2	-13.14	41.14	31.9	Pass
		Diagonal	ROHN 2 STD	9	-6.14	15.54	39.5	Pass
		Horizontal	ROHN 1.5 STD	7	-3.30	20.29	16.3	Pass
							19.2 (b)	
		Top Girt	ROHN 1.5 STD	5	-1.41	20.34	6.9	Pass
		Inner Bracing	L2x2x1/8	37	-0.02	5.86	0.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
T2	160 - 140	Leg	ROHN 3 X-STR	41	-49.94	83.78	59.6	Pass
		Diagonal	ROHN 2 STD	60	-10.05	14.09	71.3	Pass
		Horizontal	ROHN 1.5 STD	46	-5.88	17.38	33.8	Pass
							34.8 (b)	
		Inner Bracing	L2x2x1/8	52	-0.01	4.29	0.3	Pass
T3	140 - 120	Leg	ROHN 4 X-STR	80	-85.53	139.07	61.5	Pass
		Diagonal	ROHN 2 STD	87	-8.88	11.51	77.1	Pass
		Horizontal	ROHN 2 STD	85	-6.09	24.65	24.7	Pass
							35.5 (b)	
		Inner Bracing	L2x2x1/8	91	-0.01	2.93	0.4	Pass
T4	120 - 100	Leg	ROHN 5 X-STR	119	-111.38	177.42	62.8	Pass
		Diagonal	ROHN 2.5 STD	126	-10.50	14.43	72.8	Pass
		Horizontal	ROHN 2 STD	124	-6.26	20.43	30.7	Pass
							36.5 (b)	
		Inner Bracing	L2x2x1/8	131	-0.01	2.21	0.4	Pass
T5	100 - 80	Leg	ROHN 5 X-STR	146	-138.00	177.35	77.8	Pass
		Diagonal	ROHN 2.5 STD	153	-9.32	12.60	74.0	Pass
		Horizontal	ROHN 2 STD	151	-6.11	14.77	41.4	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	157	-0.01	3.47	0.4	Pass
T6	80 - 60	Leg	ROHN 6 EHS	173	-161.73	212.13	76.2	Pass
		Diagonal	ROHN 2.5 STD	180	-9.63	11.15	86.4	Pass
		Horizontal	ROHN 2.5 STD	178	-6.72	25.42	26.4	Pass
							39.1 (b)	
		Inner Bracing	L3x3x3/16	184	-0.01	4.55	0.5	Pass
T7	60 - 40	Leg	ROHN 6 X-STR	200	-184.91	264.22	70.0	Pass
		Diagonal	ROHN 2.5 X-STR	207	-9.81	12.30	79.7	Pass
		Horizontal	ROHN 2.5 STD	205	-7.14	19.66	36.3	Pass
							41.8 (b)	
		Inner Bracing	L3 1/2x3 1/2x1/4	212	-0.01	7.45	0.5	Pass
T8	40 - 20	Leg	ROHN 6 X-STR	227	-206.75	264.19	78.3	Pass
		Diagonal	ROHN 3 STD	234	-9.56	16.86	56.7	Pass
		Horizontal	ROHN 2.5 STD	232	-7.22	15.57	46.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	238	-0.01	5.93	0.5	Pass
T9	20 - 0	Leg	ROHN 8 EHS	254	-216.86	332.47	65.2	Pass
		Diagonal	ROHN 3 STD	267	-14.80	28.18	52.5	Pass
							57.4 (b)	
		Horizontal	ROHN 3 STD	263	-8.07	27.51	29.3	Pass
							47.0 (b)	
		Redund Horz 1 Bracing	ROHN TS1.5x11 ga	265	-3.76	4.90	76.8	Pass
		Redund Diag 1 Bracing	ROHN 1.5 STD	262	-3.44	3.58	96.1	Pass
		Redund Hip 1 Bracing	ROHN TS1.5x11 ga	270	-0.04	4.35	1.0	Pass
		Redund Hip Diagonal Bracing	ROHN 2.5 STD	282	-0.05	6.98	0.7	Pass
		Inner Bracing	ROHN 3 STD	284	-0.01	19.74	0.4	Pass
							Summary	
						Leg (T8)	78.3	Pass
						Diagonal (T6)	86.4	Pass
						Horizontal (T9)	47.0	Pass
						Top Girt (T1)	6.9	Pass
						Redund Horz 1 Bracing (T9)	76.8	Pass
						Redund Diag 1 Bracing (T9)	96.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
						Redund Hip 1 Bracing (T9)	1.0	Pass
						Redund Hip Diagonal Bracing (T9)	0.7	Pass
						Inner Bracing (T8)	0.5	Pass
						Bolt Checks	57.4	Pass
						RATING =	**96.1**	**Pass**

APPENDIX B

BASE LEVEL DRAWING

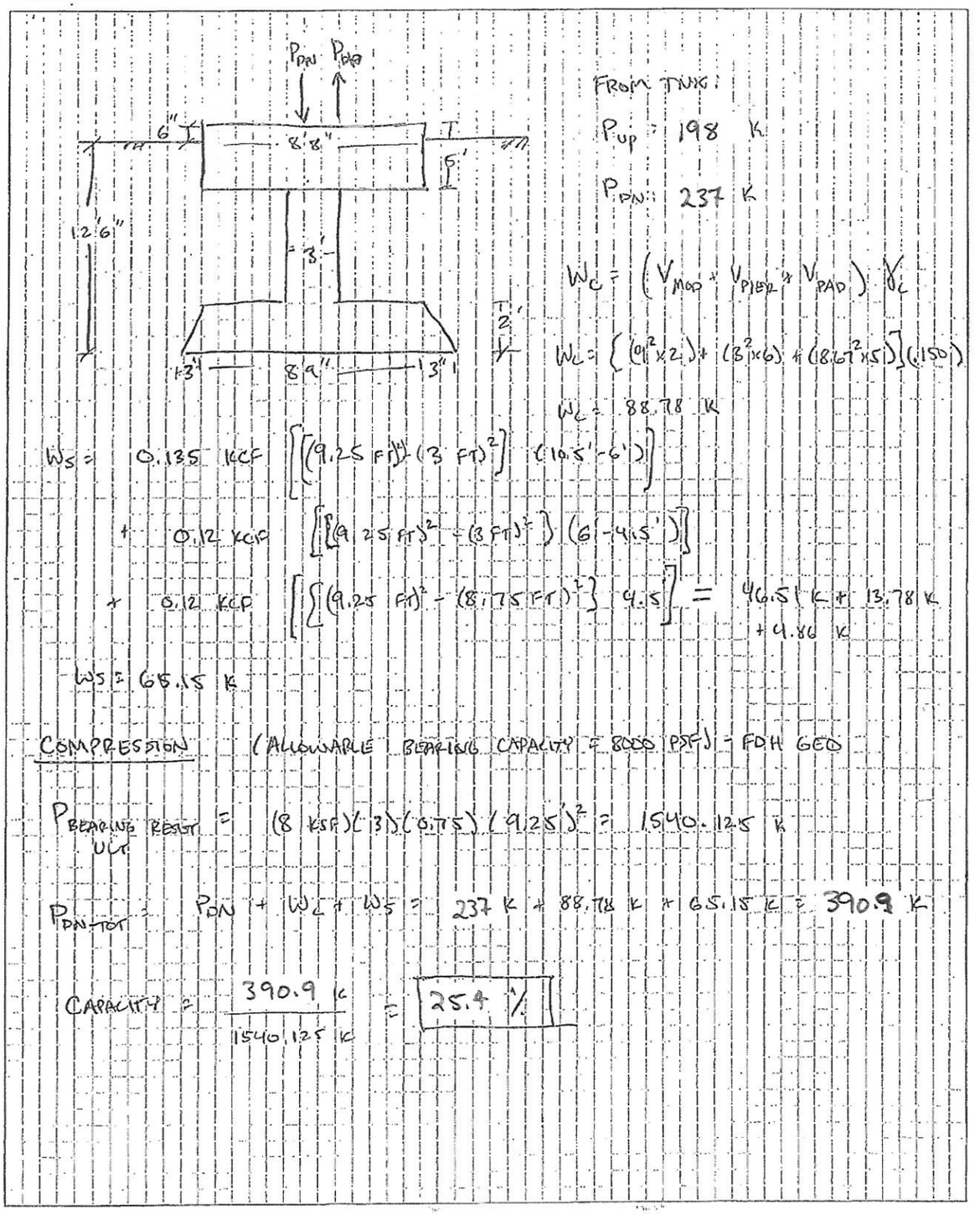


BUSINESS UNIT: 806362 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Project: BU 806362
Sheet ____ of ____ Date: ____
By: ____ FDH Project #: ____
Checked By: ____ Drawing #: ____



FROM TNX:

$P_{UP} = 198$ K

$P_{DN} = 237$ K

$W_C = (V_{MOD} + V_{PIER} + V_{PAD}) \gamma_C$

$W_C = \left[(9^2 \times 2) + (8^2 \times 6) + (8.67^2 \times 5) \right] (.150)$

$W_C = 88.78$ K

$W_S = 0.135$ KCF $\left[\left[(9.25\ FT)^2 - (3\ FT)^2 \right] (10.5' - 6') \right]$

$+ 0.12$ KCF $\left[\left[(9.25\ FT)^2 - (3\ FT)^2 \right] (6' - 4.5') \right]$

$+ 0.12$ KCF $\left[\left[(9.25\ FT)^2 - (8.75\ FT)^2 \right] 4.5 \right] = 46.51$ K $+ 13.78$ K $+ 4.86$ K

$W_S = 65.15$ K

COMPRESSION (ALLOWABLE BEARING CAPACITY = 8000 PSF) - FDH GEO

$P_{BEARING\ RESIST\ ULT} = (8\ KSF)(3)(0.75)(9.25')^2 = 1540.125$ K

$P_{DN-TOT} = P_{DN} + W_C + W_S = 237$ K $+ 88.78$ K $+ 65.15$ K $= 390.9$ K

$CAPACITY = \frac{390.9\ K}{1540.125\ K} = 25.4\%$

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Project: BU 806362
Sheet ____ of ____
By: ____
Checked By: ____
Date: ____
FDH Project #: ____
Drawing #: ____

UPLIFT

UPLIFT RESISTANCE DUE TO COHESION (7 KSF FROM 6'-10.5')

$= (4)(9.25')(10.5' - 6')(7\ KSF) = 1165.5\ K$

$U_{REQUIRED} = \text{MIN}$ of:

$\frac{88.78\ K}{1.25} + \frac{65.15\ K}{1.20} + \frac{1165.5\ K}{2.0} = 686.35\ K$

$\frac{88.78\ K + 65.15\ K + 1165.5\ K}{1.5} = 879.62\ K$

CAPACITY = $\frac{198\ K}{686.35\ K} = 288\ \%$ ← CONTROLS

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