QC Development
PO Box 916
Storrs, CT 06268
860-670-9068
Mark.Roberts@QCDevelopment.net

October 26, 2018

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT1193
28 Brewer Drive, Bloomfield, CT 06002
N 41.83516667
W 72.74118333

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 100-foot level of the existing 120-foot Monopole at 28 Brewer Drive, Bloomfield, CT. The structure is owned by Crown Castle and the property is owned by the Town of Bloomfield. AT&T now intends to remove three (3) Ericsson RRUS-32 B2 Remote Radio Units (RRU) and replace them with three (3) Ericsson 8843-B2/B66 RRUs. The new RRUs would be installed on the existing radio mounts immediately below the 100-foot level of the tower.

This facility was approved by the Town of Bloomfield Zoning Board of Appeals on August 5th, 1996 and by the Town Plan and Zoning Commission on August 22nd, 1996. The ZBA Variance limited the height of the structure to 120 feet. No increase in the tower's total height is proposed by AT&T. This modification therefore complies with the aforementioned approvals.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Honorable Suzette DeBeatham-Brown, Mayor of the Town of Bloomfield, as local elected official

and property owner, the Bloomfield Planning and Zoning Department, and the tower owner.

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

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

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

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

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

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

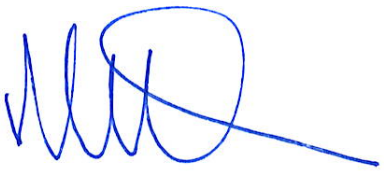
6. The existing structure and its foundation can support the proposed loading.

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

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

Thank you for your consideration.

Sincerely,



Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Mayor Suzette DeBeatham-Brown - as elected official and property owner
Jose Giner – Director of Planning & Zoning
Crown Castle - as tower owner (via e-mail)

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							8.41%
AT&T GSM	1	317	100	0.0129	850	0.5667	0.23%
AT&T GSM	1	615	100	0.0250	1900	1.0000	0.25%
AT&T UMTS	2	317	100	0.0258	850	0.5667	0.46%
AT&T UMTS	2	615	100	0.0501	1900	1.0000	0.50%
AT&T LTE	1	1476	100	0.0601	700	1.0000	0.60%
AT&T LTE	1	3664	100	0.1491	1900	1.0000	1.49%
AT&T LTE	1	1146	100	0.0466	2300	1.0000	0.47%
Site Total							13.09%

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

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

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							8.41%
AT&T UMTS	1	317	100	0.0129	850	0.5667	0.23%
AT&T UMTS	1	615	100	0.0250	1900	1.0000	0.25%
AT&T LTE	1	793	100	0.0323	700	0.4667	0.69%
AT&T LTE	2	2624	100	0.2136	1900	1.0000	2.14%
AT&T LTE	1	3837	100	0.1562	2100	1.0000	1.56%
AT&T LTE	1	3664	100	0.1491	2300	1.0000	1.49%
Site Total							14.77%

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

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

Note: Proposed Loading may also include corrections to certain Existing Loading values

PROJECT INFORMATION

SCOPE OF WORK:	TOP – SWAP (1) RRUS–32 PCS WITH (1) RRUS–8843 PER SECTOR. BOTTOM – ADD 2ND XMU IN SHELTER.
SITE ADDRESS:	28 BREWER DRIVE BLOOMFIELD, CT 06002
LATITUDE:	41° 50' 06.60" N (NAD 83)*
LONGITUDE:	72° 44' 28.11" W (NAD 83)* *PER PREVIOUS PLANS
JURISDICTION:	TOWN OF BLOOMFIELD
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
NAME OF APPLICANT:	AT&T MOBILITY 550 COCHITUATE ROAD SUITES 13 & 14 FRAMINGHAM, MA 01701
TOWER OWNER: TOWER NUMBER:	CROWN CASTLE 876329

DRAWING INDEX

		REV
T01	TITLE SHEET	3
G01	GENERAL NOTES	3
C01	PROPOSED SITE PLAN & SHELTER PLAN	3
C02	PROPOSED ELEVATION & CONSTRUCTION DETAILS	3
C03	EQUIPMENT PLUMBING DIAGRAM	3
E01	GROUNDING NOTES & DETAILS	3

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.

STRUCTURAL NOTE:

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

CONTACT INFORMATION

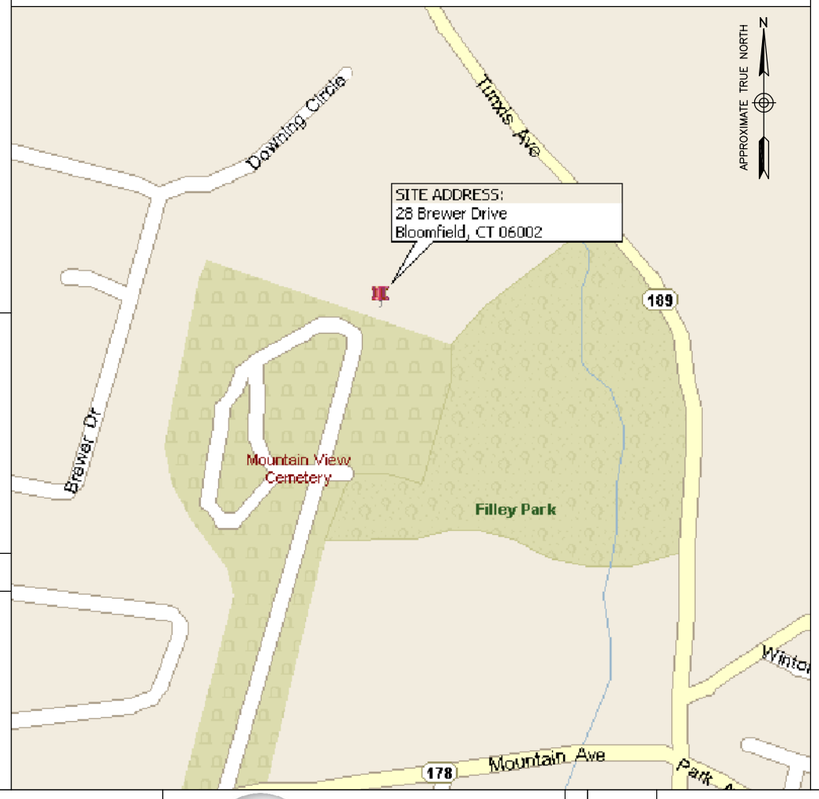
CONTACT	CONTACT	COMPANY	PHONE NO.
ENGINEERING:	BENJAMIN REVETTE, P.E.	DEWBERRY	(617) 531–0800
SAC:	TIM BURKS	SAI COMMUNICATIONS	(860) 9889–0001

at&t Mobility

SITE NAME: BLOOMFIELD CEMETARY 4C
SITE NUMBER: CT1193
PACE NUMBER: MRCTB026803 (4C)

VICINITY MAP

DIRECTIONS: FROM FRAMINGHAM, MA: TAKE I–90 W. TAKE EXIT 9 TO MERGE ONTO I–84 TOWARD RT–20/HARTFORD. TAKE EXIT 61 TO MERGE ONTO I–291 W. TAKE EXIT 1 FOR RT–218 W TOWARD BLOOMFIELD. TURN LEFT ONTO RT–218 W/PUTNAM HWY. SLIGHT RIGHT ONTO MAPLE AVE. CONTINUE ONTO BROWN STREET. TURN RIGHT ONTO DOWNING CIRCLE. TURN RIGHT ONTO BREWER DRIVE. THE SITE WILL BE ON THE LEFT.



APPLICABLE BUILDING CODES AND STANDARDS

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

BUILDING CODE:
2016 CONNECTICUT STATE BUILDING CODE (2012 INTERNATIONAL BUILDING CODE)

ELECTRICAL CODE:
NATIONAL ELECTRICAL CODE (NEC)

CONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS.
AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222–H, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

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

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

TELCORDIA GR–1503, COAXIAL CABLE CONNECTIONS

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

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

Dewberry®
Dewberry Engineers Inc.
280 SUMMER ST.
10TH FLOOR
BOSTON, MA 02210
PHONE: 617.695.3400
FAX: 617.695.3310

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

BLOOMFIELD CEMETARY 4C
SITE NO. CT1193

28 BREWER DRIVE
BLOOMFIELD, CT 06002

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/07/18	FOR CONSTRUCTION	KB	DAS	BBR
0	04/19/18	FOR CONSTRUCTION	KB	DAS	BBR
A	02/08/18	FOR REVIEW	KB	DAS	BBR

SCALE: AS SHOWN | DESIGNED BY: KB | DRAWN BY: NMS

STATE OF CONNECTICUT
BENJAMIN B. REVETTE
28971
LICENSED
PROFESSIONAL ENGINEER

AT&T MOBILITY
ROCKY HILL, CT 06067

TITLE SHEET

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083721	T01	1

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   PROJECT MANAGEMENT – SAI
   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 & PROPOSED 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 CONTRACTOR. 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.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.

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.

STATE OF CONNECTICUT
BENJAMIN B. REVETTE
28971
LICENSED
PROFESSIONAL ENGINEER

Dewberry®
Dewberry Engineers Inc.
280 SUMMER ST.
10TH FLOOR
BOSTON, MA 02210
PHONE: 617.695.3400
FAX: 617.695.3310

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

BLOOMFIELD CEMETARY 4C
SITE NO. CT1193
28 BREWER DRIVE
BLOOMFIELD, CT 06002

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

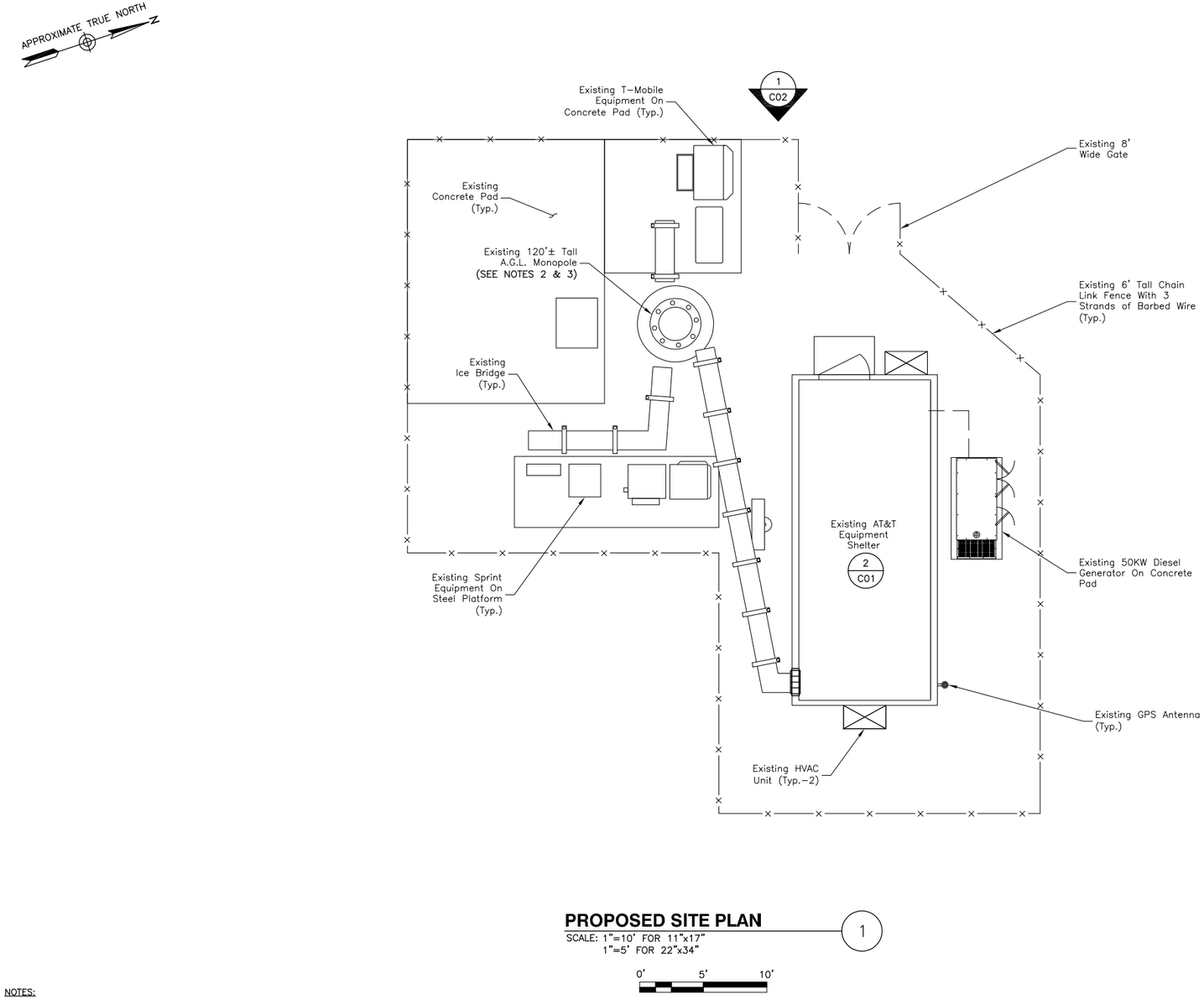
NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/07/18	FOR CONSTRUCTION	KB	DAS	BBR
0	04/19/18	FOR CONSTRUCTION	KB	DAS	BBR
A	02/08/18	FOR REVIEW	KB	DAS	BBR

SCALE: AS SHOWN | DESIGNED BY: KB | DRAWN BY: NMS

AT&T MOBILITY
ROCKY HILL, CT 06067

GENERAL NOTES

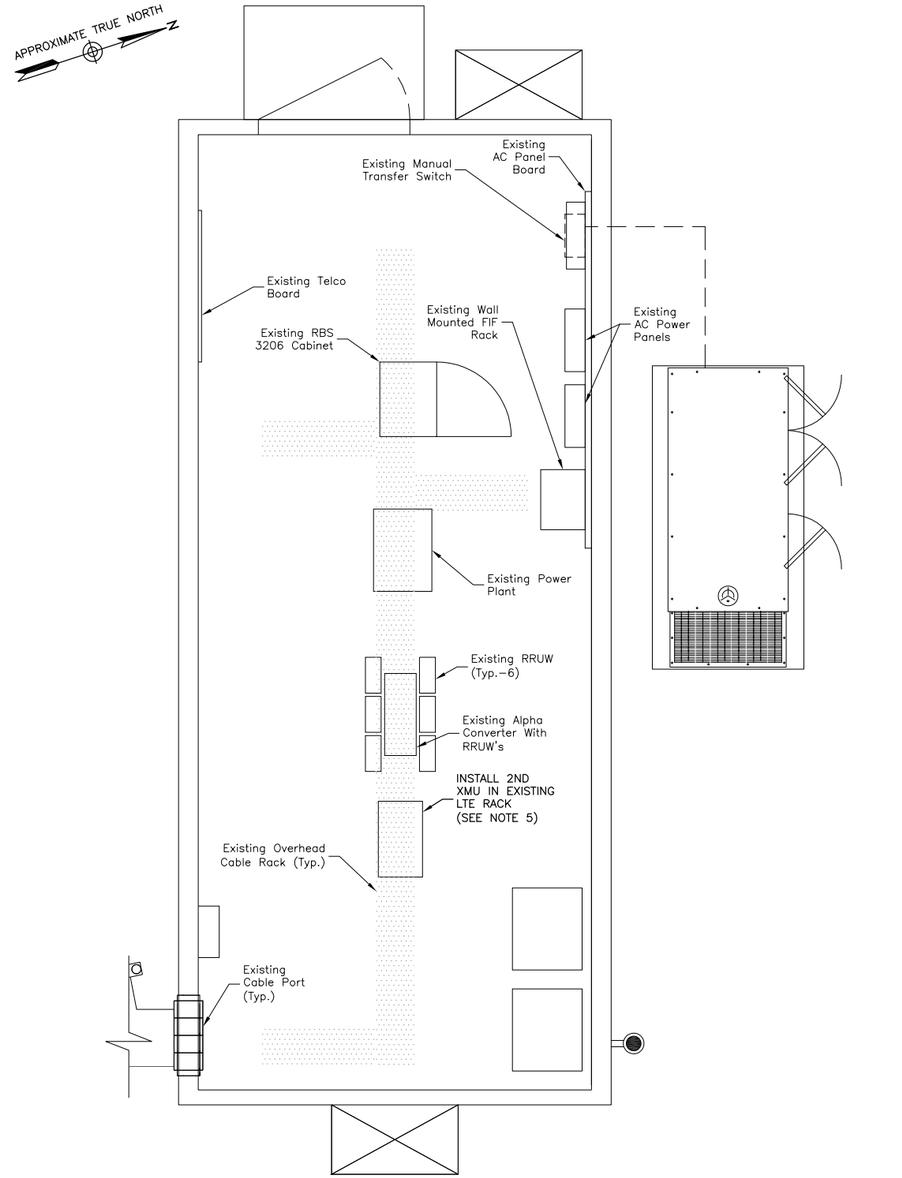
DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083721	G01	1



PROPOSED SITE PLAN 1

SCALE: 1"=10' FOR 11"x17"
1"=5' FOR 22"x34"

0' 5' 10'



PROPOSED SHELTER PLAN 2

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

NOTES:

1. NORTH ARROW SHOWN AS APPROXIMATE.
2. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE MOUNT ANALYSIS BY HUDSON DESIGN GROUP LLC DATED 10-15-18.
3. DEWBERRY WAS NOT PROVIDED WITH OR CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THIS TOWER. TOWER RELATED IMPROVEMENTS ARE NOT TO BE INSTALLED WITHOUT A PASSING STRUCTURAL ANALYSIS. SEE STRUCTURAL NOTE ON SHEET T01.
4. NOT ALL INFORMATION SHOWN FOR CLARITY.
5. EQUIPMENT MODIFICATION SCOPE:

   TOP - SWAP (1) RRUS-32 PCS WITH (1) RRUS-8843 PER SECTOR.
   BOTTOM - ADD 2ND XMU IN SHELTER.

Dewberry®
Dewberry Engineers Inc.
280 SUMMER ST.
10TH FLOOR
BOSTON, MA 02210
PHONE: 617.695.3400
FAX: 617.695.3310

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

BLOOMFIELD CEMETARY 4C
SITE NO. CT1193

28 BREWER DRIVE
BLOOMFIELD, CT 06002

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/07/18	FOR CONSTRUCTION	KB	DAS	BBR
0	04/19/18	FOR CONSTRUCTION	KB	DAS	BBR
A	02/08/18	FOR REVIEW	KB	DAS	BBR

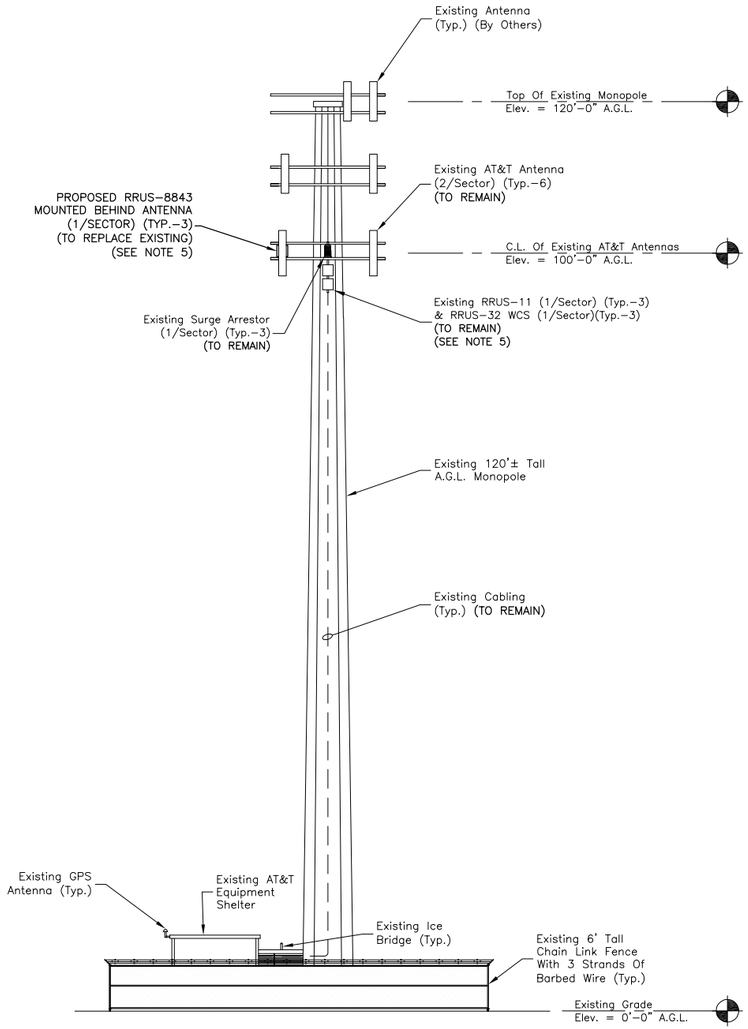
SCALE: AS SHOWN | DESIGNED BY: KB | DRAWN BY: NMS

STATE OF CONNECTICUT
BENJAMIN B. REVETTE
28971
LICENSED
PROFESSIONAL ENGINEER

AT&T MOBILITY
ROCKY HILL, CT 06067

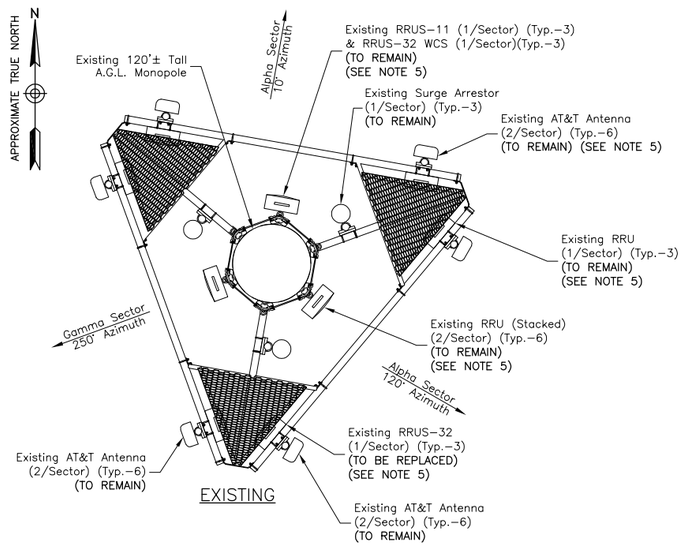
PROPOSED SITE PLAN & SHELTER PLAN

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083721	C01	1

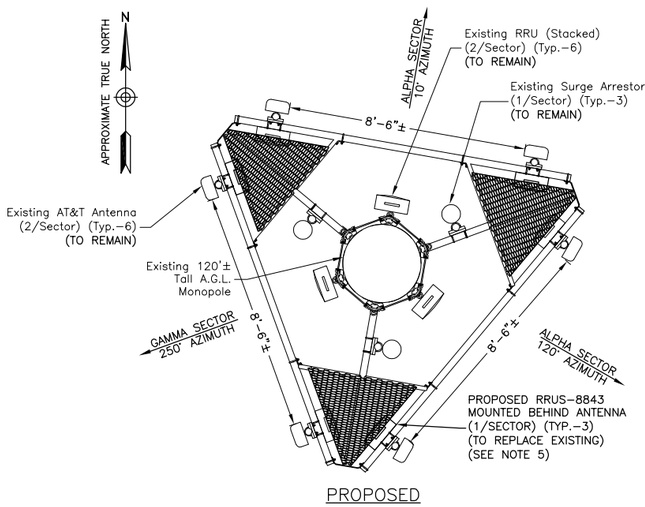


PROPOSED ELEVATION 1

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



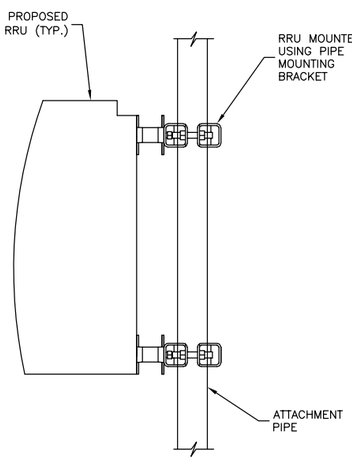
EXISTING



PROPOSED

ANTENNA ORIENTATION PLAN 2

SCALE: N.T.S.



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

REMOTE ATTACHMENT DETAIL 3

SCALE: N.T.S.

NOTES:

1. NORTH ARROW SHOWN AS APPROXIMATE.
2. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE MOUNT ANALYSIS BY HUDSON DESIGN GROUP LLC DATED 10-15-18.
3. DEWBERRY WAS NOT PROVIDED WITH OR CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THIS TOWER. TOWER RELATED IMPROVEMENTS ARE NOT TO BE INSTALLED WITHOUT A PASSING STRUCTURAL ANALYSIS. SEE STRUCTURAL NOTE ON SHEET T01.
4. NOT ALL INFORMATION SHOWN FOR CLARITY.
5. EQUIPMENT MODIFICATION SCOPE:

   TOP – SWAP (1) RRUS-32 PCS WITH (1) RRUS-8843 PER SECTOR.
   BOTTOM – ADD 2ND XMU IN SHELTER.
6. ALL SPACING REQUIREMENTS FOR PROPOSED RRU MOUNTS SHALL BE CONFIRMED & SHALL NOT IMPEDE CLIMBING PEGS, TIE OFF FEATURES, OR OTHER EXISTING SAFETY FEATURES. ALL MOUNTS SHALL MAINTAIN EXISTING/PROPOSED MANUFACTURER REQUIREMENTS & SHALL NOT EXCEED THE TOP OF THE TOWER OR INTERFERE WITH OTHER RAD CENTERS.
7. CONTRACTOR SHALL VERIFY ANTENNA SPACING IN FIELD & RELOCATE PIPE MASTS AS REQUIRED TO MEET ANTENNA SPACING REQUIREMENTS. THE ANTENNA SPACING REQUIREMENTS ARE AS FOLLOWS:
   - 4'-0" MINIMUM SEPARATION BETWEEN LTE ANTENNAS
   - 1'-11" MINIMUM SEPARATION BETWEEN 700BC & 700DE

Dewberry®
Dewberry Engineers Inc.
280 SUMMER ST.
10TH FLOOR
BOSTON, MA 02210
PHONE: 617.695.3400
FAX: 617.695.3310

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

BLOOMFIELD CEMETARY 4C
SITE NO. CT1193

28 BREWER DRIVE
BLOOMFIELD, CT 06002

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/07/18	FOR CONSTRUCTION	KB	DAS	BBR
0	04/19/18	FOR CONSTRUCTION	KB	DAS	BBR
A	02/08/18	FOR REVIEW	KB	DAS	BBR

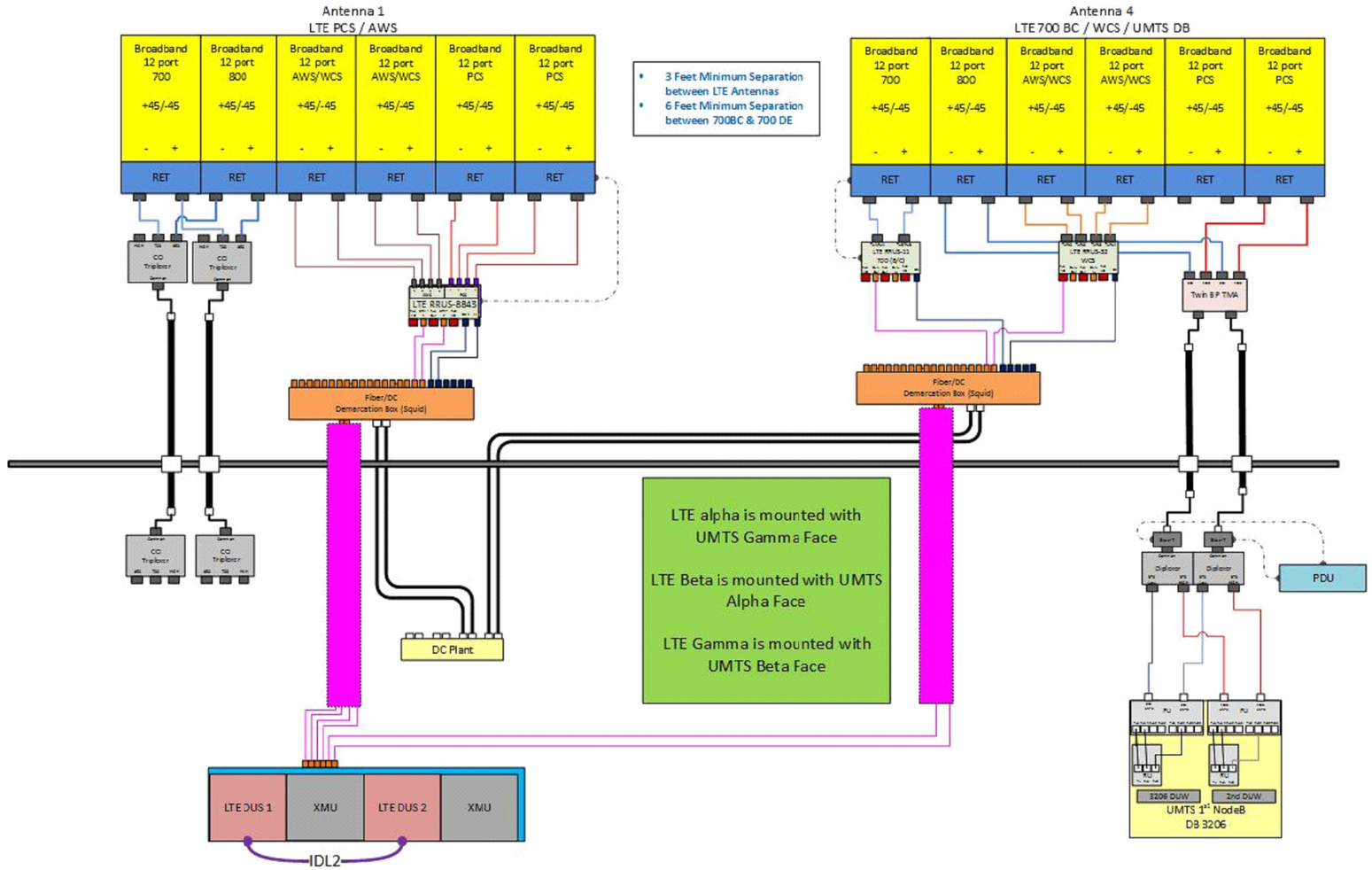
SCALE: AS SHOWN | DESIGNED BY: KB | DRAWN BY: NMS

STATE OF CONNECTICUT
BENJAMIN B. REVETTE
28971
LICENSED
PROFESSIONAL ENGINEER

AT&T MOBILITY
ROCKY HILL, CT 06067

PROPOSED ELEVATION & CONSTRUCTION DETAILS

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083721	C02	1



EQUIPMENT PLUMBING DIAGRAM

SCALE: N.T.S.

1

NOTES:

1. EQUIPMENT PLUMBING DIAGRAM PER RFDS VERSION 3 DATED 08/02/18.
2. CONTRACTOR TO VERIFY FINAL EQUIPMENT CONFIGURATION & SEPARATIONS WITH AT&T PRIOR TO CONSTRUCTION.

Dewberry®
Dewberry Engineers Inc.
280 SUMMER ST.
10TH FLOOR
BOSTON, MA 02210
PHONE: 617.695.3400
FAX: 617.695.3310

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

BLOOMFIELD CEMETARY 4C
SITE NO. CT1193

28 BREWER DRIVE
BLOOMFIELD, CT 06002

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/07/18	FOR CONSTRUCTION	KB	DAS	BBR
0	04/19/18	FOR CONSTRUCTION	KB	DAS	BBR
A	02/08/18	FOR REVIEW	KB	DAS	BBR

SCALE: AS SHOWN | DESIGNED BY: KB | DRAWN BY: NMS

STATE OF CONNECTICUT
BENJAMIN B. REVETTE
28971
LICENSED
PROFESSIONAL ENGINEER

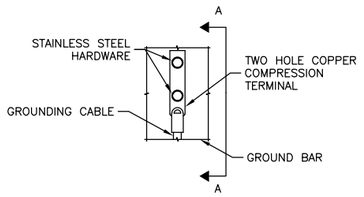
AT&T MOBILITY
ROCKY HILL, CT 06067

EQUIPMENT PLUMBING DIAGRAM

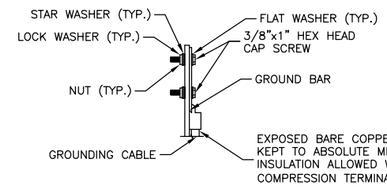
DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083721	C03	1

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 CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS. 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 CONTRACTOR IN WRITING.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS ON TOWER SITES AND 10 OHMS OR LESS ON ROOFTOP SITES. WHEN ADDING ELECTRODES, CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE BETWEEN THE ADDED ELECTRODE AND ANY OTHER EXISTING ELECTRODE EQUAL TO THE BURIED LENGTH OF THE ROD. IDEALLY, CONTRACTOR SHALL STRIVE TO KEEP THE SEPARATION DISTANCE EQUAL TO TWICE THE BURIED LENGTH OF THE RODS.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
6. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE AND UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
7. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO TRANSMISSION EQUIPMENT.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK-TO-BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8 INCHES.
11. EACH INTERIOR TRANSMISSION CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH 6 AWG STRANDED, GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRE UNLESS NOTED OTHERWISE IN THE DETAILS. EACH OUTDOOR CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER WIRE UNLESS NOTED OTHERWISE IN THE DETAILS.
12. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE 2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
13. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE. CONNECTIONS TO ABOVE GRADE UNITS SHALL BE MADE WITH EXOTHERMIC WELDS WHERE PRACTICAL OR WITH 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS. HIGH PRESSURE CRIMP CONNECTORS MAY ONLY BE USED WITH WRITTEN PERMISSION FROM SAI COMMUNICATIONS 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.



ELEVATION

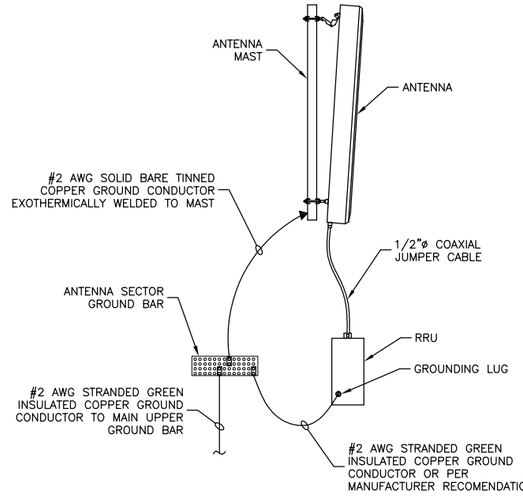


NOTES:

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 1

SCALE: N.T.S.



NOTES:

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

TYPICAL ANTENNA/RRU GROUNDING DETAIL 2

SCALE: N.T.S

Dewberry®
Dewberry Engineers Inc.
280 SUMMER ST.
10TH FLOOR
BOSTON, MA 02210
PHONE: 617.695.3400
FAX: 617.695.3310

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

BLOOMFIELD CEMETARY 4C
SITE NO. CT1193

28 BREWER DRIVE
BLOOMFIELD, CT 06002

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	09/07/18	FOR CONSTRUCTION	KB	DAS	BBR
0	04/19/18	FOR CONSTRUCTION	KB	DAS	BBR
A	02/08/18	FOR REVIEW	KB	DAS	BBR

SCALE: AS SHOWN | DESIGNED BY: KB | DRAWN BY: NMS

STATE OF CONNECTICUT
BENJAMIN B. REVETTE
28971
LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY
ROCKY HILL, CT 06067

GROUNDING NOTES & DETAILS

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50083721	E01	1

PAUL J. FORD & COMPANY

Date: **September 21, 2018**

Cheryl Schultz
Crown Castle
3530 Toringdon WaySuite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1193
	Carrier Site Name:	BLOOMFIELD CEMETARY
Crown Castle Designation:	**Crown Castle BU Number:**	876329
	Crown Castle Site Name:	MTN. VIEW CEM. (FILLEY PARK)
	Crown Castle JDE Job Number:	477480
	Crown Castle Work Order Number:	1636427
	Crown Castle Order Number:	420701 Rev. 11
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37518-2442.003.7805
Site Data:	**28 Brewer Dr., BLOOMFIELD, Hartford County, CT** **Latitude *41° 50' 6.57"*, Longitude *-72° 44' 28.2"*** **120 Foot - Monopole Tower**	

Dear Cheryl Schultz,

Paul J. Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

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:

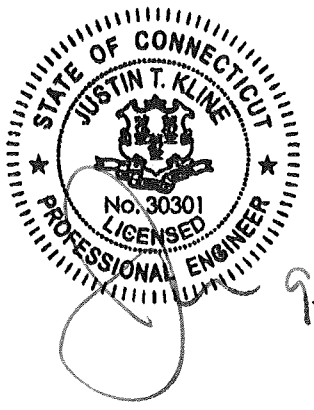
LC4.7: Modified Structure w/ Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1 were used in this analysis.

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

Respectfully submitted by:

Gowtham Penumatsa C.J.P.
Structural Designer



9-26-18

PAUL J. FORD & COMPANY

Date: **September 21, 2018**

Cheryl Schultz
Crown Castle
3530 Toringdon WaySuite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1193
	Carrier Site Name:	BLOOMFIELD CEMETARY
Crown Castle Designation:	**Crown Castle BU Number:**	876329
	Crown Castle Site Name:	MTN. VIEW CEM. (FILLEY PARK)
	Crown Castle JDE Job Number:	477480
	Crown Castle Work Order Number:	1636427
	Crown Castle Order Number:	420701 Rev. 11
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37518-2442.003.7805
Site Data:	**28 Brewer Dr., BLOOMFIELD, Hartford County, CT**	
	Latitude *41° 50' 6.57"*, Longitude *-72° 44' 28.2"*	
	120 Foot - Monopole Tower	

Dear Cheryl Schultz,

Paul J. Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

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:

LC4.7: Modified Structure w/ Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1 were used in this analysis.

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

Respectfully submitted by:

Gowtham Penumatsa
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 120 ft Monopole tower designed by ROHN in October of 1996. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

Building Code:	2016 Connecticut State Building Code
TIA-222 Revision:	TIA-222-G
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
99.0	100.0	6	cci antennas	TPX-070821	12 2 4	7/8 3/8 3/4
		1	communication components inc.	DTMABP7819VG12A		
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 8843 B2/B66A		
		6	quintel technology	QS66512-2 w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8C		
		1	raycap	DC6-48-60-18-8F		
	99.0	1	cci tower mounts	Platform Mount [LP 502-1]		
		2	communication components inc.	DTMABP7819VG12A		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
118.0	120.0	3	alcatel lucent	TD-RRH8X20-25	2 1 3	1/2 5/8 1-1/4	1
		1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe			
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		3	rfs celwave	IBC1900BB-1			
		3	rfs celwave	IBC1900HG-2A			
	118.0	1	cci tower mounts	Platform Mount [LP 502-1]			
	116.0	1	andrew	VHLP1-18			
		1	andrew	VHLP1-23-DW1			
		2	dragonwave	HORIZON COMPACT			
114.0	115.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz	-	-	1
	114.0	1	cci tower mounts	Pipe Mount [PM 602-3]			
	113.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
107.0	108.0	3	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe	1 12	1-3/8 1-5/8	1
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		3	ericsson	RADIO 4449 B12/B71			
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe			
	107.0	1	cci tower mounts	Platform Mount [LP 712-1]			
59.0	59.0	1	tower mounts	Side Arm Mount [SO 701-1]	-	-	1
48.0	50.0	1	gps	GPS_A	1	1/2	1
	48.0	1	tower mounts	Side Arm Mount [SO 701-1]			

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti P.E.; P.C.	1529722	CCISITES
4-POST-MODIFICATION INSPECTION	B+T Group, 79582, 11/03/2008	2343686	CCISITES
4-POST-MODIFICATION INSPECTION	GPD Group, 2011111.27, 05/31/2011	4092494	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals, Inc.	6693484	CCISITES
4-POST-MODIFICATION INSPECTION	TUV Rheinland Industrial Solutions, Inc.	6898999	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn, 4963307, 10/11/1996	1616549	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Rohn, 34738/SW, 10/23/1996	2158527	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Solutions, 080063.01, 01/22/2008	2205450	CCISITES
4-TOWER REINFORCEMENT DESIGN DRAWINGS/DATA	B&T, 79582, 11/03/2008	2343687	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD Group, 2011111.27, 05/31/2011	2917489	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Semaan Engineering, CT03C076, 08/25/2003	3386189	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37516-0115.006.7700, 08/18/2016	6413631	CCISITES
4-PROPOSED TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37518-2442.001.7700, 08/15/2018	7736461	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.4.0), 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) Monopole was modified in conformance with the referenced modification drawings.
5) Reinforcement from documents CCI# 6898999, 2205450, 4092494 are partially found ineffective and are not considered in the analysis. Please see attached designed drawings for the existing reinforcement considered in this analysis.
6) In accordance with discussions with CCI Corporate Engineering: Based on the assumption that the monopole manufacturer (ROHN/PiRod) has designed the flange plates at splices to adequately develop the full capacity of the unreinforced shaft section using unpublished and/or proprietary methodologies, we are assuming that if our analysis shows that both the existing shaft and the existing flange bolts are at a usage capacity of 100% or less, then the existing flange plates are at a usage capacity of 100% or less and no additional analysis of the flange plate is required.
7) It is assumed that the welded bridge stiffeners at 30' elevation takes all the loads and no load is shared between the original flange connection.
8) Monopole will be modified in conformance with the referenced proposed modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
120 - 115	Pole	TP24x24x0.25	Pole	6.9%	Pass
115 - 110	Pole	TP24x24x0.25	Pole	15.8%	Pass
110 - 105	Pole	TP24x24x0.25	Pole	29.4%	Pass
105 - 100	Pole	TP24x24x0.25	Pole	46.1%	Pass
100 - 95	Pole	TP24x24x0.25	Pole	69.4%	Pass
95 - 90	Pole	TP24x24x0.25	Pole	93.3%	Pass
90 - 85	Pole	TP24x24x0.375	Pole	74.7%	Pass
85 - 80	Pole	TP24x24x0.375	Pole	90.5%	Pass
80 - 79.75	Pole + Reinf.	TP24x24x0.625	Reinf. 1 Tension Rupture	78.0%	Pass
79.75 - 78.5	Pole + Reinf.	TP24x24x0.625	Reinf. 1 Tension Rupture	81.4%	Pass
78.5 - 78.25	Pole + Reinf.	TP24x24x1.075	Reinf. 1 Tension Rupture	51.0%	Pass
78.25 - 73.25	Pole + Reinf.	TP24x24x1.075	Reinf. 1 Tension Rupture	59.8%	Pass
73.25 - 68.25	Pole + Reinf.	TP24x24x1.075	Reinf. 1 Tension Rupture	68.9%	Pass
68.25 - 68	Pole + Reinf.	TP24x24x1.075	Reinf. 1 Tension Rupture	69.4%	Pass
68 - 67.75	Pole + Reinf.	TP24x24x0.775	Reinf. 6 Tension Rupture	67.1%	Pass
67.75 - 62.75	Pole + Reinf.	TP24x24x0.775	Reinf. 6 Tension Rupture	76.1%	Pass
62.75 - 60	Pole + Reinf.	TP24x24x0.775	Reinf. 6 Tension Rupture	81.1%	Pass
60 - 59.75	Pole + Reinf.	TP30x30x0.675	Pole	59.8%	Pass
59.75 - 54.75	Pole + Reinf.	TP30x30x0.675	Pole	67.2%	Pass
54.75 - 49.75	Pole + Reinf.	TP30x30x0.675	Pole	74.6%	Pass
49.75 - 45.42	Pole + Reinf.	TP30x30x0.675	Pole	81.3%	Pass
45.42 - 45.17	Pole + Reinf.	TP30x30x0.8375	Pole	67.8%	Pass
45.17 - 40.17	Pole + Reinf.	TP30x30x0.8375	Pole	74.3%	Pass
40.17 - 36.42	Pole + Reinf.	TP30x30x0.8375	Pole	79.4%	Pass
36.42 - 36.17	Pole + Reinf.	TP30x30x1	Pole	68.1%	Pass
36.17 - 32.75	Pole + Reinf.	TP30x30x1	Pole	72.1%	Pass
32.75 - 32.5	Pole + Reinf.	TP30x30x3.025	Reinf. 10 Compression	45.5%	Pass
32.5 - 32.25	Pole + Reinf.	TP30x30x3.525	Reinf. 10 Compression	41.4%	Pass
32.25 - 30	Pole + Reinf.	TP30x30x3.525	Reinf. 10 Compression	42.9%	Pass
30 - 28.66	Pole + Reinf.	TP36x36x2.225	Reinf. 10 Compression	37.4%	Pass
28.66 - 28.41	Pole + Reinf.	TP36x36x1.45	Reinf. 10 Compression	53.6%	Pass
28.41 - 26.75	Pole + Reinf.	TP36x36x1.45	Reinf. 10 Compression	55.1%	Pass
26.75 - 26.5	Pole + Reinf.	TP36x36x0.7125	Pole	75.9%	Pass
26.5 - 21.5	Pole + Reinf.	TP36x36x0.7125	Pole	81.9%	Pass
21.5 - 21	Pole + Reinf.	TP36x36x0.7125	Pole	82.5%	Pass
21 - 20.75	Pole + Reinf.	TP36x36x0.975	Pole	62.0%	Pass
20.75 - 15.75	Pole + Reinf.	TP36x36x0.975	Pole	66.6%	Pass
15.75 - 10.75	Pole + Reinf.	TP36x36x0.975	Pole	71.3%	Pass
10.75 - 5.75	Pole + Reinf.	TP36x36x0.975	Pole	76.0%	Pass
5.75 - 2	Pole + Reinf.	TP36x36x0.975	Pole	79.6%	Pass
2 - 1.75	Pole + Reinf.	TP36x36x1.15	Reinf. 9 Connection	71.5%	Pass
1.75 - 0	Pole + Reinf.	TP36x36x1.15	Reinf. 9 Connection	73.0%	Pass
				Summary	
			Pole	93.3%	Pass
			Reinforcement	81.4%	Pass
			Overall	93.3%	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	93.5	Pass
1	Base Plate	0	65.1	Pass
1	Base Foundation Structural Steel	0	86.8	Pass
1	Base Foundation Soil Interaction	0	34.5	Pass
1	Flange Connection	30	60.1	Pass
1	Flange Connection	60	63.2	Pass
1,6	Flange Connection	90	93.3	Pass

Structure Rating (max from all components) =	93.5%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) See assumption #6

4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the proposed loading configuration once the proposed modifications per the referenced drawings are installed for the determined available structural capacity to be effective.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

1) Tower is located in Hartford County, Connecticut.
2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
3) Basic wind speed of 97 mph.
4) Structure Class II.
5) Exposure Category C.
6) Topographic Category 1.
7) Crest Height 0.00 ft.
8) Nominal ice thickness of 1.0000 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56.00 pcf.
11) A wind speed of 50 mph is used in combination with ice.
12) Temperature drop of 50 °F.
13) Deflections calculated using a wind speed of 60 mph.
14) A non-linear (P-delta) analysis was used.
15) Pressures are calculated at each section.
16) Stress ratio used in pole design is 1.
17) 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		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Pole Section Geometry

Section	*Elevation*	*Section Length*	*Pole Size*	*Pole Grade*	*Socket Length*
	ft	*ft*			*ft*
L1	120.00-115.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L2	115.00-110.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L3	110.00-105.00	5.00	P24x0.25	A53-B-42	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L4	105.00-100.00	5.00	P24x0.25	(42 ksi) A53-B-42 (42 ksi)	
L5	100.00-95.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L6	95.00-90.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L7	90.00-85.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L8	85.00-80.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L9	80.00-79.75	0.25	P24x0.625	A53-B-42 (42 ksi)	
L10	79.75-78.50	1.25	P24x0.625	A53-B-42 (42 ksi)	
L11	78.50-78.25	0.25	P24x1.075	A53-B-42 (42 ksi)	
L12	78.25-73.25	5.00	P24x1.075	A53-B-42 (42 ksi)	
L13	73.25-68.25	5.00	P24x1.075	A53-B-42 (42 ksi)	
L14	68.25-68.00	0.25	P24x1.075	A53-B-42 (42 ksi)	
L15	68.00-67.75	0.25	P24x0.775	A53-B-42 (42 ksi)	
L16	67.75-62.75	5.00	P24x0.775	A53-B-42 (42 ksi)	
L17	62.75-60.00	2.75	P24x0.775	A53-B-42 (42 ksi)	
L18	60.00-59.75	0.25	P30x0.675	A53-B-42 (42 ksi)	
L19	59.75-54.75	5.00	P30x0.675	A53-B-42 (42 ksi)	
L20	54.75-49.75	5.00	P30x0.675	A53-B-42 (42 ksi)	
L21	49.75-45.42	4.33	P30x0.675	A53-B-42 (42 ksi)	
L22	45.42-45.17	0.25	P30x0.8375	A53-B-42 (42 ksi)	
L23	45.17-40.17	5.00	P30x0.8375	A53-B-42 (42 ksi)	
L24	40.17-36.42	3.75	P30x0.8375	A53-B-42 (42 ksi)	
L25	36.42-36.17	0.25	P30x1	A53-B-42 (42 ksi)	
L26	36.17-32.75	3.42	P30x1	A53-B-42 (42 ksi)	
L27	32.75-32.50	0.25	P30x3.025	A53-B-42 (42 ksi)	
L28	32.50-32.25	0.25	P30x3.525	A53-B-42 (42 ksi)	
L29	32.25-30.00	2.25	P30x3.525	A53-B-42 (42 ksi)	
L30	30.00-28.66	1.34	P36x2.225	A53-B-42 (42 ksi)	
L31	28.66-28.41	0.25	P36x1.45	A53-B-42 (42 ksi)	
L32	28.41-26.75	1.66	P36x1.45	A53-B-42 (42 ksi)	
L33	26.75-26.50	0.25	P36x0.7125	A53-B-42 (42 ksi)	
L34	26.50-21.50	5.00	P36x0.7125	A53-B-42 (42 ksi)	
L35	21.50-21.00	0.50	P36x0.7125	A53-B-42 (42 ksi)	
L36	21.00-20.75	0.25	P36x0.975	A53-B-42 (42 ksi)	
L37	20.75-15.75	5.00	P36x0.975	A53-B-42 (42 ksi)	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L38	15.75-10.75	5.00	P36x0.975	A53-B-42 (42 ksi)	
L39	10.75-5.75	5.00	P36x0.975	A53-B-42 (42 ksi)	
L40	5.75-2.00	3.75	P36x0.975	A53-B-42 (42 ksi)	
L41	2.00-1.75	0.25	P36x1.15	A53-B-42 (42 ksi)	
L42	1.75-0.00	1.75	P36x1.15	A53-B-42 (42 ksi)	

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	Double Angle Stitch Bolt Spacing Redundants in
L1 120.00-115.00				1	1	1			
L2 115.00-110.00				1	1	1			
L3 110.00-105.00				1	1	1			
L4 105.00-100.00				1	1	1			
L5 100.00-95.00				1	1	1			
L6 95.00-90.00				1	1	1			
L7 90.00-85.00				1	1	1			
L8 85.00-80.00				1	1	1			
L9 80.00-79.75				1	1	0.933238			
L10 79.75-78.50				1	1	0.933238			
L11 78.50-78.25				1	1	0.863218			
L12 78.25-73.25				1	1	0.863218			
L13 73.25-68.25				1	1	0.863218			
L14 68.25-68.00				1	1	0.863218			
L15 68.00-67.75				1	1	0.916633			
L16 67.75-62.75				1	1	0.916633			
L17 62.75-60.00				1	1	0.916633			
L18 60.00-59.75				1	1	0.947179			
L19 59.75-54.75				1	1	0.947179			
L20 54.75-49.75				1	1	0.947179			
L21 49.75-45.42				1	1	0.947179			
L22 45.42-45.17				1	1	0.91779			
L23 45.17-40.17				1	1	0.91779			
L24 40.17-36.42				1	1	0.91779			
L25 36.42-36.17				1	1	0.892768			
L26 36.17-				1	1	0.892768			

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	Double Angle Stitch Bolt Spacing Redundants in
32.75									
L27 32.75-32.50				1	1	0.434312			
L28 32.50-32.25				1	1	0.293843			
L29 32.25-30.00				1	1	0.293843			
L30 30.00-28.66				1	1	0.39485			
L31 28.66-28.41				1	1	0.457282			
L32 28.41-26.75				1	1	0.457282			
L33 26.75-26.50				1	1	0.94281			
L34 26.50-21.50				1	1	0.94281			
L35 21.50-21.00				1	1	0.94281			
L36 21.00-20.75				1	1	0.917846			
L37 20.75-15.75				1	1	0.917846			
L38 15.75-10.75				1	1	0.917846			
L39 10.75-5.75				1	1	0.917846			
L40 5.75-2.00				1	1	0.917846			
L41 2.00-1.75				1	1	0.790024			
L42 1.75-0.00				1	1	0.790024			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
****									
1 1/4" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	25.00 - 0.00	2	No Ice	0.21	0.00
							1/2" Ice	0.32	0.00
							1" Ice	0.43	0.00
1" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	55.00 - 48.00	2	No Ice	0.17	0.00
							1/2" Ice	0.28	0.00
							1" Ice	0.39	0.00
1 1/4" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	80.50 - 65.00	2	No Ice	0.21	0.00
							1/2" Ice	0.32	0.00
							1" Ice	0.43	0.00
Aero MP3-03	C	No	No	CaAa (Out Of Face)	48.00 - 35.00	2	No Ice	0.26	0.00
							1/2" Ice	0.37	0.00
							1" Ice	0.48	0.00
**									
FSJ4-50B(1/2)	C	No	No	CaAa (Out Of Face)	118.00 - 0.00	1	No Ice	0.00	0.14
							1/2" Ice	0.00	0.77
							1" Ice	0.00	2.01
FSJ4-50B(1/2)	C	No	No	CaAa (Out Of Face)	118.00 - 0.00	1	No Ice	0.05	0.14
							1/2" Ice	0.15	0.77
							1" Ice	0.25	2.01
HB058-M12-XXXF(5/8)	C	No	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	0.24
							1/2" Ice	0.00	0.24
							1" Ice	0.00	0.24
HB114-1-08U4-M5J(1-1/4)	C	No	No	Inside Pole	118.00 - 0.00	3	No Ice	0.00	1.08
							1/2" Ice	0.00	1.08
							1" Ice	0.00	1.08

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
FLC 158-50J(1-5/8)	C	No	No	Inside Pole	107.00 - 0.00	6	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
HCS 6X12 6AWG(1-3/8)	C	No	No	Inside Pole	107.00 - 0.00	1	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
FLC 158-50J(1-5/8)	C	No	No	CaAa (Out Of Face)	107.00 - 0.00	5	No Ice	0.00	0.92
							1/2" Ice	0.00	2.46
							1" Ice	0.00	4.60
FLC 158-50J(1-5/8)	C	No	No	CaAa (Out Of Face)	107.00 - 0.00	1	No Ice	0.20	0.92
							1/2" Ice	0.30	2.46
							1" Ice	0.40	4.60
***									
LDF5-50A(7/8)	C	No	No	Inside Pole	99.00 - 0.00	12	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
FB-L98B-002-75000(3/8)	C	No	No	Inside Pole	99.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	99.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	99.00 - 0.00	2	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	99.00 - 0.00	2	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
****									
LDF4-50A(1/2)	C	No	No	CaAa (Out Of Face)	48.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.84
							1" Ice	0.00	2.14

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
L1	120.00-115.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.159	0.01
L2	115.00-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.265	0.02
L3	110.00-105.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.668	0.04
L4	105.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.273	0.08
L5	100.00-95.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.273	0.11
L6	95.00-90.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.273	0.11
L7	90.00-85.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.273	0.11
L8	85.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.481	0.11

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
L9	80.00-79.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.168	0.01
L10	79.75-78.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.839	0.03
L11	78.50-78.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.168	0.01
L12	78.25-73.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.356	0.11
L13	73.25-68.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.356	0.11
L14	68.25-68.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.168	0.01
L15	68.00-67.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.168	0.01
L16	67.75-62.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.418	0.11
L17	62.75-60.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.700	0.06
L18	60.00-59.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.064	0.01
L19	59.75-54.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.356	0.11
L20	54.75-49.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.939	0.11
L21	49.75-45.42	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.040	0.10
L22	45.42-45.17	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.195	0.01
L23	45.17-40.17	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.897	0.12
L24	40.17-36.42	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.923	0.09
L25	36.42-36.17	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.195	0.01
L26	36.17-32.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.485	0.08
L27	32.75-32.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.064	0.01
L28	32.50-32.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.064	0.01
L29	32.25-30.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.573	0.05
L30	30.00-28.66	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.341	0.03
L31	28.66-28.41	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.064	0.01

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
L32	28.41-26.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.422	0.04
L33	26.75-26.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.064	0.01
L34	26.50-21.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.731	0.12
L35	21.50-21.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.336	0.01
L36	21.00-20.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.168	0.01
L37	20.75-15.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.356	0.12
L38	15.75-10.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.356	0.12
L39	10.75-5.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.356	0.12
L40	5.75-2.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.517	0.09
L41	2.00-1.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.168	0.01
L42	1.75-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.175	0.04

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
L1	120.00-115.00	A	2.271	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.521	0.06
L2	115.00-110.00	A	2.261	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.526	0.10
L3	110.00-105.00	A	2.251	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.819	0.27
L4	105.00-100.00	A	2.240	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.753	0.53
L5	100.00-95.00	A	2.229	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.730	0.55
L6	95.00-90.00	A	2.217	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.707	0.55
L7	90.00-85.00	A	2.205	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.682	0.55
L8	85.00-80.00	A	2.192	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.352	0.54
L9	80.00-79.75	A	2.185	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.629	0.03

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
L10	79.75-78.50	A	2.183	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.143	0.13
L11	78.50-78.25	A	2.181	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.628	0.03
L12	78.25-73.25	A	2.173	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.532	0.54
L13	73.25-68.25	A	2.158	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.469	0.53
L14	68.25-68.00	A	2.150	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.622	0.03
L15	68.00-67.75	A	2.150	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.622	0.03
L16	67.75-62.75	A	2.141	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.317	0.52
L17	62.75-60.00	A	2.128	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.041	0.29
L18	60.00-59.75	A	2.123	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.276	0.03
L19	59.75-54.75	A	2.113	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.817	0.51
L20	54.75-49.75	A	2.094	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.781	0.51
L21	49.75-45.42	A	2.075	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.625	0.45
L22	45.42-45.17	A	2.064	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.631	0.03
L23	45.17-40.17	A	2.052	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.561	0.53
L24	40.17-36.42	A	2.030	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.351	0.39
L25	36.42-36.17	A	2.019	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.621	0.03
L26	36.17-32.75	A	2.009	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.277	0.35
L27	32.75-32.50	A	1.998	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.263	0.03
L28	32.50-32.25	A	1.996	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.263	0.03
L29	32.25-30.00	A	1.988	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.362	0.23
L30	30.00-28.66	A	1.977	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.400	0.13
L31	28.66-28.41	A	1.971	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.261	0.02
L32	28.41-26.75	A	1.964	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.727	0.16

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
L33	26.75-26.50	A	1.958	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.259	0.02
L34	26.50-21.50	A	1.937	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.619	0.49
L35	21.50-21.00	A	1.914	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.144	0.05
L36	21.00-20.75	A	1.910	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.571	0.02
L37	20.75-15.75	A	1.885	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.315	0.47
L38	15.75-10.75	A	1.826	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.064	0.46
L39	10.75-5.75	A	1.741	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.707	0.44
L40	5.75-2.00	A	1.614	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.629	0.31
L41	2.00-1.75	A	1.501	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.485	0.02
L42	1.75-0.00	A	1.391	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.230	0.12

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	120.00-115.00	-0.2683	0.1549	-1.0012	0.5781
L2	115.00-110.00	-0.4396	0.2538	-1.5638	0.9028
L3	110.00-105.00	-1.0411	0.6011	-2.1964	1.2681
L4	105.00-100.00	-1.7916	1.0344	-2.9902	1.7264
L5	100.00-95.00	-1.7916	1.0344	-2.9836	1.7226
L6	95.00-90.00	-1.7916	1.0344	-2.9767	1.7186
L7	90.00-85.00	-1.7916	1.0344	-2.9693	1.7143
L8	85.00-80.00	-1.9475	1.1244	-3.2131	1.8551
L9	80.00-79.75	-2.2711	1.3112	-4.8847	2.8202
L10	79.75-78.50	-2.2711	1.3112	-4.8833	2.8194
L11	78.50-78.25	-2.2711	1.3112	-4.8819	2.8186
L12	78.25-73.25	-2.2711	1.3112	-4.8768	2.8156
L13	73.25-68.25	-2.2711	1.3112	-4.8666	2.8097
L14	68.25-68.00	-2.2711	1.3112	-4.8609	2.8064
L15	68.00-67.75	-2.2711	1.3112	-4.8603	2.8061
L16	67.75-62.75	-1.7431	1.0064	-4.1277	2.3831
L17	62.75-60.00	-1.7916	1.0344	-2.9229	1.6875
L18	60.00-59.75	-1.8844	1.0879	-3.1660	1.8279
L19	59.75-54.75	-1.9889	1.1483	-3.2955	1.9027
L20	54.75-49.75	-3.0307	1.7498	-5.3000	3.0600
L21	49.75-45.42	-2.4633	1.4222	-5.4315	3.1359
L22	45.42-45.17	-2.6790	1.5467	-5.5210	3.1876
L23	45.17-40.17	-2.6790	1.5467	-5.5102	3.1813
L24	40.17-36.42	-2.6790	1.5467	-5.4907	3.1701
L25	36.42-36.17	-2.6790	1.5467	-5.4811	3.1645
L26	36.17-32.75	-2.6409	1.5247	-4.0536	2.3403
L27	32.75-32.50	-1.8844	1.0879	-3.0735	1.7745
L28	32.50-32.25	-1.8844	1.0879	-3.0723	1.7738
L29	32.25-30.00	-1.8844	1.0879	-3.0664	1.7704

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L30	30.00-28.66	-1.9310	1.1149	-3.2322	1.8661
L31	28.66-28.41	-1.9310	1.1149	-3.2276	1.8635
L32	28.41-26.75	-1.9310	1.1149	-3.2219	1.8602
L33	26.75-26.50	-1.9310	1.1149	-3.2160	1.8567
L34	26.50-21.50	-3.2429	1.8723	-5.0732	2.9290
L35	21.50-21.00	-3.5612	2.0561	-5.6867	3.2832
L36	21.00-20.75	-3.5612	2.0561	-5.6827	3.2809
L37	20.75-15.75	-3.5612	2.0561	-5.6532	3.2639
L38	15.75-10.75	-3.5612	2.0561	-5.5834	3.2236
L39	10.75-5.75	-3.5612	2.0561	-5.4817	3.1649
L40	5.75-2.00	-3.5612	2.0561	-5.3235	3.0735
L41	2.00-1.75	-3.5612	2.0561	-5.1763	2.9885
L42	1.75-0.00	-3.5612	2.0561	-5.0270	2.9023

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	K
Lightning Rod 5/8"x4'	B	From Leg	2.00 0.00 7.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.25 0.66 0.97	0.25 0.66 0.97	0.00 0.01 0.01
10'x4" Mount Pipe	B	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	3.46 5.24 5.85	3.46 5.24 5.85	0.13 0.16 0.19
***									
Platform Mount [LP 502-1]	C	None		0.0000	118.00	No Ice 1/2" Ice 1" Ice	32.35 45.67 58.99	32.35 45.67 58.99	0.93 1.19 1.46
10'x2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.38 3.40 4.45	2.38 3.40 4.45	0.04 0.05 0.08
(2) 7'x2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.66 2.39 2.83	1.66 2.39 2.83	0.03 0.04 0.06
(2) 7'x2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.66 2.39 2.83	1.66 2.39 2.83	0.03 0.04 0.06
10'x2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.38 3.40 4.45	2.38 3.40 4.45	0.04 0.05 0.08

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
APXV9ERR18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	7.47 8.66 9.56	0.09 0.16 0.24
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.95 8.13 9.02	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.95 8.13 9.02	0.08 0.15 0.23
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 6.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 -6.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 6.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
(2) HORIZON COMPACT	B	From Leg	4.00 0.00 -2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.72 0.83 0.94	0.37 0.45 0.54	0.01 0.02 0.03
IBC1900BB-1	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.97 1.09 1.22	0.46 0.56 0.66	0.02 0.03 0.04
IBC1900BB-1	B	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.97 1.09 1.22	0.46 0.56 0.66	0.02 0.03 0.04
IBC1900BB-1	C	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.97 1.09 1.22	0.46 0.56 0.66	0.02 0.03 0.04
IBC1900HG-2A	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.97 1.09 1.22	0.46 0.56 0.66	0.02 0.03 0.04
IBC1900HG-2A	B	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.97 1.09 1.22	0.46 0.56 0.66	0.02 0.03 0.04
IBC1900HG-2A	C	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.97 1.09 1.22	0.46 0.56 0.66	0.02 0.03 0.04
TD-RRH8X20-25	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
(2) TD-RRH8X20-25	B	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
***									
Pipe Mount [PM 602-3]	C	None		0.0000	114.00	No Ice 1/2" Ice 1" Ice	7.68 9.50 11.32	7.68 9.50 11.32	0.28 0.35 0.43

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
PCS 1900MHz 4x45W-65MHz	A	From Leg	1.00 0.00 1.00	0.0000	114.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	B	From Leg	1.00 0.00 1.00	0.0000	114.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	C	From Leg	1.00 0.00 1.00	0.0000	114.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
800MHz 2X50W RRH W/FILTER	A	From Leg	1.00 0.00 -1.00	0.0000	114.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	B	From Leg	1.00 0.00 -1.00	0.0000	114.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	C	From Leg	1.00 0.00 -1.00	0.0000	114.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
*** *** *****									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	4.00 -6.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	4.00 -6.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	4.00 -6.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
KRY 112 144/1	A	From Face	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.17 0.23 0.30	0.01 0.01 0.02
KRY 112 144/1	B	From Face	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.17 0.23 0.30	0.01 0.01 0.02
KRY 112 144/1	C	From Face	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.17 0.23 0.30	0.01 0.01 0.02
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99	11.02 12.55 14.10	0.16 0.30 0.44
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99	11.02 12.55 14.10	0.16 0.30 0.44
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99	11.02 12.55 14.10	0.16 0.30 0.44
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.00 0.00	0.0000	107.00	No Ice 1/2"	6.75 7.20	6.07 6.87	0.15 0.21

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
			1.00			Ice	7.65	7.58	0.28
						1" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.00	0.0000	107.00	No Ice	6.75	6.07	0.15
			0.00			1/2"	7.20	6.87	0.21
			1.00			Ice	7.65	7.58	0.28
						1" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.00	0.0000	107.00	No Ice	6.75	6.07	0.15
			0.00			1/2"	7.20	6.87	0.21
			1.00			Ice	7.65	7.58	0.28
						1" Ice			
RADIO 4449 B12/B71	A	From Leg	4.00	0.0000	107.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			1.00			Ice	1.98	1.45	0.11
						1" Ice			
RADIO 4449 B12/B71	B	From Leg	4.00	0.0000	107.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			1.00			Ice	1.98	1.45	0.11
						1" Ice			
RADIO 4449 B12/B71	C	From Leg	4.00	0.0000	107.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			1.00			Ice	1.98	1.45	0.11
						1" Ice			
Platform Mount [LP 712-1]	C	None		0.0000	107.00	No Ice	24.53	24.53	1.34
						1/2"	29.94	29.94	1.65
						Ice	35.35	35.35	1.96
						1" Ice			
********** ****									
(2) QS66512-2 w/ Mount Pipe	A	From Face	4.00	0.0000	99.00	No Ice	8.37	8.46	0.14
			0.00			1/2"	8.93	9.66	0.21
			1.00			Ice	9.46	10.55	0.30
						1" Ice			
(2) QS66512-2 w/ Mount Pipe	B	From Face	4.00	0.0000	99.00	No Ice	8.37	8.46	0.14
			0.00			1/2"	8.93	9.66	0.21
			1.00			Ice	9.46	10.55	0.30
						1" Ice			
(2) QS66512-2 w/ Mount Pipe	C	From Face	4.00	10.0000	99.00	No Ice	8.37	8.46	0.14
			0.00			1/2"	8.93	9.66	0.21
			1.00			Ice	9.46	10.55	0.30
						1" Ice			
DTMABP7819VG12A	A	From Face	4.00	0.0000	99.00	No Ice	0.98	0.34	0.02
			0.00			1/2"	1.10	0.42	0.03
			1.00			Ice	1.23	0.51	0.04
						1" Ice			
DTMABP7819VG12A	A	From Face	4.00	0.0000	99.00	No Ice	0.98	0.34	0.02
			0.00			1/2"	1.10	0.42	0.03
			0.00			Ice	1.23	0.51	0.04
						1" Ice			
DTMABP7819VG12A	C	From Face	4.00	0.0000	99.00	No Ice	0.98	0.34	0.02
			0.00			1/2"	1.10	0.42	0.03
			0.00			Ice	1.23	0.51	0.04
						1" Ice			
RRUS 32	A	From Face	4.00	0.0000	99.00	No Ice	2.86	1.78	0.06
			0.00			1/2"	3.08	1.97	0.08
			1.00			Ice	3.32	2.17	0.10
						1" Ice			
RRUS 32	C	From Face	4.00	0.0000	99.00	No Ice	2.86	1.78	0.06
			0.00			1/2"	3.08	1.97	0.08
			1.00			Ice	3.32	2.17	0.10
						1" Ice			
RRUS 32	B	From Face	4.00	0.0000	99.00	No Ice	2.86	1.78	0.06
			0.00			1/2"	3.08	1.97	0.08
			1.00			Ice	3.32	2.17	0.10
						1" Ice			
DC6-48-60-18-8F	A	From Face	1.00	0.0000	99.00	No Ice	0.92	0.92	0.02

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
			0.00			1/2"	1.46	1.46	0.04
			1.00			Ice	1.64	1.64	0.06
						1" Ice			
DC6-48-60-18-8C	A	From Face	1.00	0.0000	99.00	No Ice	2.74	2.74	0.03
			0.00			1/2"	2.96	2.96	0.05
			1.00			Ice	3.20	3.20	0.08
						1" Ice			
RRUS 8843 B2/B66A	A	From Leg	4.00	0.0000	99.00	No Ice	1.64	1.35	0.07
			0.00			1/2"	1.80	1.50	0.09
			1.00			Ice	1.97	1.65	0.11
						1" Ice			
RRUS 8843 B2/B66A	B	From Leg	4.00	0.0000	99.00	No Ice	1.64	1.35	0.07
			0.00			1/2"	1.80	1.50	0.09
			1.00			Ice	1.97	1.65	0.11
						1" Ice			
RRUS 8843 B2/B66A	C	From Leg	4.00	0.0000	99.00	No Ice	1.64	1.35	0.07
			0.00			1/2"	1.80	1.50	0.09
			1.00			Ice	1.97	1.65	0.11
						1" Ice			
(2) TPX-070821	A	From Face	4.00	0.0000	99.00	No Ice	0.47	0.10	0.01
			0.00			1/2"	0.56	0.15	0.01
			1.00			Ice	0.66	0.20	0.02
						1" Ice			
(2) TPX-070821	B	From Face	4.00	0.0000	99.00	No Ice	0.47	0.10	0.01
			0.00			1/2"	0.56	0.15	0.01
			1.00			Ice	0.66	0.20	0.02
						1" Ice			
(2) TPX-070821	C	From Face	4.00	0.0000	99.00	No Ice	0.47	0.10	0.01
			0.00			1/2"	0.56	0.15	0.01
			1.00			Ice	0.66	0.20	0.02
						1" Ice			
RRUS 11	A	From Face	4.00	0.0000	99.00	No Ice	2.79	1.19	0.05
			0.00			1/2"	3.00	1.34	0.07
			1.00			Ice	3.21	1.50	0.10
						1" Ice			
RRUS 11	B	From Face	4.00	0.0000	99.00	No Ice	2.79	1.19	0.05
			0.00			1/2"	3.00	1.34	0.07
			1.00			Ice	3.21	1.50	0.10
						1" Ice			
RRUS 11	C	From Face	4.00	0.0000	99.00	No Ice	2.79	1.19	0.05
			0.00			1/2"	3.00	1.34	0.07
			1.00			Ice	3.21	1.50	0.10
						1" Ice			
Platform Mount [LP 502-1]	C	None		0.0000	99.00	No Ice	32.35	32.35	0.93
						1/2"	45.67	45.67	1.19
						Ice	58.99	58.99	1.46
						1" Ice			
****									
Side Arm Mount [SO 701-1]	A	None		0.0000	59.00	No Ice	0.85	1.67	0.07
						1/2"	1.14	2.34	0.08
						Ice	1.43	3.01	0.09
						1" Ice			
****									
GPS_A	B	From Leg	4.00	0.0000	48.00	No Ice	0.26	0.26	0.00
			0.00			1/2"	0.32	0.32	0.00
			2.00			Ice	0.39	0.39	0.01
						1" Ice			
Side Arm Mount [SO 701-1]	B	None		0.0000	48.00	No Ice	0.85	1.67	0.07
						1/2"	1.14	2.34	0.08
						Ice	1.43	3.01	0.09
						1" Ice			
**									
(2) Bridge Stiffener (137" x 15.5" x 1.25")	C	None		0.0000	30.00	No Ice	21.55	2.38	0.75
						1/2"	22.42	3.66	0.83
						Ice	23.30	4.96	0.92

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) Bridge Stiffener (109" x 15.75" x 1.25") ***	C	None		0.0000	60.00	1" Ice No Ice 1/2" Ice 1" Ice	16.65 17.33 18.01	1.89 2.92 3.96	0.61 0.67 0.75

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP1-18	B	Paraboloid w/o Radome	From Leg	1.00 0.00 -2.00	-6.0000		118.00	1.27	No Ice 1/2" Ice 1" Ice	1.28 1.45 1.62	0.01 0.02 0.03
VHLP1-23-DW1	B	Paraboloid w/o Radome	From Leg	1.00 0.00 -2.00	-6.0000		118.00	1.27	No Ice 1/2" Ice 1" Ice	1.28 1.45 1.62	0.01 0.02 0.03

Load Combinations

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

Comb. No.	Description
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	120 - 115	Pole	Max Tension	42	0.00	-0.00	0.00
			Max. Compression	26	-8.58	-11.33	-1.80
			Max. Mx	8	-2.44	-25.11	-1.31
			Max. My	14	-2.45	-3.49	-22.32
			Max. Vy	20	-5.85	18.94	0.53
			Max. Vx	2	-5.75	-1.54	21.33
			Max. Torque	14			6.57
L2	115 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.34	-11.33	-1.87
			Max. Mx	8	-3.50	-58.96	-2.28
			Max. My	14	-3.51	-4.64	-55.75
			Max. Vy	20	-7.21	53.13	1.92
			Max. Vx	2	-7.11	0.17	55.01
			Max. Torque	14			6.57
L3	110 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.74	-11.21	-2.02
			Max. Mx	8	-6.87	-109.82	-3.27
			Max. My	14	-6.89	-5.80	-106.20
			Max. Vy	20	-12.84	104.34	3.32
			Max. Vx	2	-12.73	1.91	105.70
			Max. Torque	14			6.56
L4	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.03	-10.91	-2.31
			Max. Mx	8	-7.35	-174.63	-4.28
			Max. My	14	-7.36	-6.97	-170.63
			Max. Vy	20	-13.24	169.55	4.72
			Max. Vx	2	-13.13	3.67	170.34
			Max. Torque	14			6.52
L5	100 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.59	-9.45	-2.30
			Max. Mx	8	-10.45	-263.86	-5.36
			Max. My	2	-10.46	5.83	259.75
			Max. Vy	20	-18.55	259.79	6.29
			Max. Vx	2	-18.45	5.83	259.75
			Max. Torque	14			6.46
L6	95 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.90	-9.15	-2.59
			Max. Mx	8	-11.04	-357.12	-6.50
			Max. My	2	-11.05	7.74	352.83
			Max. Vy	20	-18.90	353.43	7.82
			Max. Vx	2	-18.80	7.74	352.83
			Max. Torque	14			5.99

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L7	90 - 85	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.39	-8.83	-2.88
			Max. Mx	8	-11.82	-452.13	-7.64
			Max. My	2	-11.83	9.66	447.67
			Max. Vy	20	-19.26	448.84	9.36
			Max. Vx	2	-19.15	9.66	447.67
			Max. Torque	14			5.93
L8	85 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.88	-8.50	-3.16
			Max. Mx	8	-12.62	-548.91	-8.78
			Max. My	2	-12.63	11.59	544.28
			Max. Vy	20	-19.61	546.02	10.89
			Max. Vx	2	-19.51	11.59	544.28
			Max. Torque	14			5.88
L9	80 - 79.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.97	-8.48	-3.17
			Max. Mx	8	-12.68	-553.80	-8.83
			Max. My	2	-12.69	11.68	549.16
			Max. Vy	20	-19.64	550.92	10.97
			Max. Vx	2	-19.54	11.68	549.16
			Max. Torque	14			5.81
L10	79.75 - 78.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.41	-8.39	-3.24
			Max. Mx	8	-12.94	-578.37	-9.12
			Max. My	2	-12.95	12.16	573.70
			Max. Vy	20	-19.84	575.60	11.35
			Max. Vx	2	-19.73	12.16	573.70
			Max. Torque	14			5.80
L11	78.5 - 78.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.53	-8.38	-3.26
			Max. Mx	8	-13.02	-583.32	-9.17
			Max. My	2	-13.03	12.26	578.63
			Max. Vy	20	-19.87	580.57	11.43
			Max. Vx	2	-19.77	12.26	578.63
			Max. Torque	14			5.77
L12	78.25 - 73.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.80	-8.04	-3.53
			Max. Mx	8	-14.54	-684.26	-10.30
			Max. My	2	-14.54	14.18	679.40
			Max. Vy	20	-20.66	681.91	12.96
			Max. Vx	2	-20.55	14.18	679.40
			Max. Torque	14			5.76
L13	73.25 - 68.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.06	-7.70	-3.79
			Max. Mx	8	-16.07	-789.05	-11.44
			Max. My	2	-16.08	16.11	784.02
			Max. Vy	20	-21.41	787.09	14.50
			Max. Vx	2	-21.31	16.11	784.02
			Max. Torque	14			5.62
L14	68.25 - 68	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.17	-7.68	-3.81
			Max. Mx	8	-16.15	-794.38	-11.49
			Max. My	2	-16.16	16.20	789.35
			Max. Vy	20	-21.45	792.45	14.58
			Max. Vx	2	-21.34	16.20	789.35
			Max. Torque	14			5.48
L15	68 - 67.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.27	-7.66	-3.82
			Max. Mx	8	-16.22	-799.73	-11.55
			Max. My	2	-16.22	16.30	794.69
			Max. Vy	20	-21.48	797.82	14.65
			Max. Vx	2	-21.38	16.30	794.69
			Max. Torque	14			5.47
L16	67.75 - 62.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.22	-7.32	-4.08
			Max. Mx	8	-17.49	-908.36	-12.68

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-17.49	18.23	903.15
			Max. Vy	20	-22.13	906.85	16.19
			Max. Vx	2	-22.02	18.23	903.15
			Max. Torque	14			5.47
L17	62.75 - 60	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.28	-7.13	-4.22
			Max. Mx	8	-18.20	-969.20	-13.30
			Max. My	2	-18.21	19.30	963.89
			Max. Vy	20	-22.29	967.90	17.03
			Max. Vx	2	-22.18	19.30	963.89
			Max. Torque	14			5.37
L18	60 - 59.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.53	-7.11	-4.24
			Max. Mx	8	-19.69	-975.15	-13.36
			Max. My	2	-19.69	19.40	969.83
			Max. Vy	20	-23.88	973.87	17.11
			Max. Vx	2	-23.78	19.40	969.83
			Max. Torque	14			5.34
L19	59.75 - 54.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.82	-6.67	-4.55
			Max. Mx	8	-21.17	-1095.46	-14.50
			Max. My	2	-21.17	21.34	1089.98
			Max. Vy	20	-24.35	1094.61	18.64
			Max. Vx	2	-24.24	21.34	1089.98
			Max. Torque	14			5.33
L20	54.75 - 49.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.96	-6.23	-4.85
			Max. Mx	8	-22.59	-1218.08	-15.63
			Max. My	2	-22.59	23.29	1212.44
			Max. Vy	20	-24.87	1217.64	20.16
			Max. Vx	2	-24.76	23.29	1212.44
			Max. Torque	14			5.27
L21	49.75 - 45.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.99	-5.96	-5.18
			Max. Mx	8	-23.90	-1327.02	-16.60
			Max. My	2	-23.91	24.97	1321.23
			Max. Vy	20	-25.60	1326.94	21.48
			Max. Vx	2	-25.49	24.97	1321.23
			Max. Torque	14			5.12
L22	45.42 - 45.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.11	-5.94	-5.20
			Max. Mx	8	-24.00	-1333.41	-16.66
			Max. My	2	-24.00	25.06	1327.61
			Max. Vy	20	-25.63	1333.34	21.56
			Max. Vx	2	-25.52	25.06	1327.61
			Max. Torque	16			5.07
L23	45.17 - 40.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.50	-5.47	-5.50
			Max. Mx	20	-25.65	1463.38	23.08
			Max. My	2	-25.65	27.00	1457.06
			Max. Vy	20	-26.38	1463.38	23.08
			Max. Vx	2	-26.28	27.00	1457.06
			Max. Torque	16			5.06
L24	40.17 - 36.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.28	-5.12	-5.72
			Max. Mx	20	-26.90	1563.29	24.21
			Max. My	2	-26.91	28.45	1556.54
			Max. Vy	20	-26.92	1563.29	24.21
			Max. Vx	2	-26.81	28.45	1556.54
			Max. Torque	16			4.96
L25	36.42 - 36.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.41	-5.10	-5.73

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-27.01	1570.02	24.29
			Max. My	2	-27.01	28.55	1563.24
			Max. Vy	20	-26.94	1570.02	24.29
			Max. Vx	2	-26.83	28.55	1563.24
			Max. Torque	16			4.88
L26	36.17 - 32.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.17	-4.78	-5.91
			Max. Mx	20	-28.30	1662.59	25.32
			Max. My	2	-28.30	29.87	1655.41
			Max. Vy	20	-27.19	1662.59	25.32
			Max. Vx	2	-27.09	29.87	1655.41
			Max. Torque	16			4.88
L27	32.75 - 32.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.35	-4.76	-5.93
			Max. Mx	20	-28.45	1669.39	25.40
			Max. My	2	-28.45	29.97	1662.18
			Max. Vy	20	-27.20	1669.39	25.40
			Max. Vx	2	-27.10	29.97	1662.18
			Max. Torque	16			4.84
L28	32.5 - 32.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.54	-4.74	-5.94
			Max. Mx	20	-28.61	1676.19	25.47
			Max. My	2	-28.61	30.06	1668.96
			Max. Vy	20	-27.22	1676.19	25.47
			Max. Vx	2	-27.12	30.06	1668.96
			Max. Torque	16			4.84
L29	32.25 - 30	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.30	-4.53	-6.06
			Max. Mx	20	-30.03	1737.63	26.15
			Max. My	2	-30.03	30.93	1730.14
			Max. Vy	20	-27.39	1737.63	26.15
			Max. Vx	2	-27.28	30.93	1730.14
			Max. Torque	16			4.83
L30	30 - 28.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.77	-4.39	-6.14
			Max. Mx	20	-32.49	1776.74	26.55
			Max. My	2	-32.49	31.45	1769.09
			Max. Vy	20	-29.24	1776.74	26.55
			Max. Vx	2	-29.14	31.45	1769.09
			Max. Torque	16			4.82
L31	28.66 - 28.41	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.89	-4.36	-6.16
			Max. Mx	20	-32.58	1784.06	26.63
			Max. My	2	-32.58	31.55	1776.37
			Max. Vy	20	-29.25	1784.06	26.63
			Max. Vx	2	-29.15	31.55	1776.37
			Max. Torque	16			4.81
L32	28.41 - 26.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.75	-4.18	-6.26
			Max. Mx	20	-33.17	1832.73	27.12
			Max. My	2	-33.17	32.19	1824.85
			Max. Vy	20	-29.39	1832.73	27.12
			Max. Vx	2	-29.28	32.19	1824.85
			Max. Torque	16			4.81
L33	26.75 - 26.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.88	-4.15	-6.28
			Max. Mx	20	-33.26	1840.08	27.20
			Max. My	2	-33.27	32.29	1832.17
			Max. Vy	20	-29.39	1840.08	27.20
			Max. Vx	2	-29.29	32.29	1832.17
			Max. Torque	16			4.79
L34	26.5 - 21.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.36	-3.62	-6.58
			Max. Mx	20	-35.02	1988.07	28.70
			Max. My	2	-35.02	34.22	1979.57
			Max. Vy	20	-29.80	1988.07	28.70

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-29.69	34.22	1979.57
			Max. Torque	16			4.79
L35	21.5 - 21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.60	-3.57	-6.61
			Max. Mx	20	-35.20	2002.97	28.85
			Max. My	2	-35.20	34.42	1994.41
			Max. Vy	20	-29.83	2002.97	28.85
			Max. Vx	2	-29.73	34.42	1994.41
			Max. Torque	16			4.71
L36	21 - 20.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.75	-3.54	-6.63
			Max. Mx	20	-35.31	2010.43	28.93
			Max. My	2	-35.32	34.51	2001.84
			Max. Vy	20	-29.85	2010.43	28.93
			Max. Vx	2	-29.75	34.51	2001.84
			Max. Torque	16			4.71
L37	20.75 - 15.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.70	-3.03	-6.92
			Max. Mx	20	-37.54	2160.81	30.42
			Max. My	2	-37.55	36.44	2151.64
			Max. Vy	20	-30.30	2160.81	30.42
			Max. Vx	2	-30.19	36.44	2151.64
			Max. Torque	16			4.70
L38	15.75 - 10.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.61	-2.54	-7.21
			Max. Mx	20	-39.79	2313.27	31.90
			Max. My	2	-39.79	38.36	2303.50
			Max. Vy	20	-30.69	2313.27	31.90
			Max. Vx	2	-30.59	38.36	2303.50
			Max. Torque	16			4.61
L39	10.75 - 5.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.48	-2.07	-7.48
			Max. Mx	20	-42.05	2467.63	33.38
			Max. My	2	-42.05	40.27	2457.28
			Max. Vy	20	-31.06	2467.63	33.38
			Max. Vx	2	-30.96	40.27	2457.28
			Max. Torque	16			4.52
L40	5.75 - 2	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.59	-1.75	-7.66
			Max. Mx	20	-43.74	2584.57	34.48
			Max. My	2	-43.74	41.70	2573.78
			Max. Vy	20	-31.32	2584.57	34.48
			Max. Vx	2	-31.22	41.70	2573.78
			Max. Torque	16			4.44
L41	2 - 1.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.73	-1.73	-7.67
			Max. Mx	20	-43.87	2592.40	34.56
			Max. My	2	-43.87	41.79	2581.59
			Max. Vy	20	-31.32	2592.40	34.56
			Max. Vx	2	-31.22	41.79	2581.59
			Max. Torque	16			4.37
L42	1.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.69	-1.61	-7.75
			Max. Mx	20	-44.65	2647.33	35.07
			Max. My	2	-44.65	42.46	2636.32
			Max. Vy	20	-31.47	2647.33	35.07
			Max. Vx	2	-31.37	42.46	2636.32
			Max. Torque	16			4.37

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	31	81.69	-8.53	-4.94
	Max. H_x	21	33.50	31.44	0.30
	Max. H_z	2	44.67	0.37	31.34
	Max. M_x	2	2636.32	0.37	31.34
	Max. M_z	8	2643.51	-31.38	-0.21
	Max. Torsion	16	4.34	15.52	-26.95
	Min. Vert	25	33.50	16.00	27.22
	Min. H_x	8	44.67	-31.38	-0.21
	Min. H_z	15	33.50	-0.24	-31.30
	Min. M_x	14	-2632.41	-0.24	-31.30
	Min. M_z	20	-2647.33	31.44	0.30
	Min. Torsion	4	-4.32	-15.50	26.96

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	37.22	0.00	0.00	0.77	-1.74	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	44.67	-0.37	-31.34	-2636.32	42.46	3.68
0.9 Dead+1.6 Wind 0 deg - No Ice	33.50	-0.37	-31.34	-2616.40	42.62	3.62
1.2 Dead+1.6 Wind 30 deg - No Ice	44.67	15.50	-26.96	-2261.11	-1299.88	4.32
0.9 Dead+1.6 Wind 30 deg - No Ice	33.50	15.50	-26.96	-2244.09	-1289.42	4.26
1.2 Dead+1.6 Wind 60 deg - No Ice	44.67	27.05	-15.46	-1292.11	-2274.50	3.81
0.9 Dead+1.6 Wind 60 deg - No Ice	33.50	27.05	-15.46	-1282.51	-2256.57	3.77
1.2 Dead+1.6 Wind 90 deg - No Ice	44.67	31.38	0.21	26.68	-2643.51	2.25
0.9 Dead+1.6 Wind 90 deg - No Ice	33.50	31.38	0.21	26.20	-2622.73	2.24
1.2 Dead+1.6 Wind 120 deg - No Ice	44.67	27.29	15.85	1341.54	-2303.71	0.01
0.9 Dead+1.6 Wind 120 deg - No Ice	33.50	27.29	15.85	1331.01	-2285.51	0.04
1.2 Dead+1.6 Wind 150 deg - No Ice	44.67	15.86	27.23	2294.82	-1344.27	-2.22
0.9 Dead+1.6 Wind 150 deg - No Ice	33.50	15.86	27.23	2277.02	-1333.40	-2.17
1.2 Dead+1.6 Wind 180 deg - No Ice	44.67	0.24	31.30	2632.41	-31.28	-3.77
0.9 Dead+1.6 Wind 180 deg - No Ice	33.50	0.24	31.30	2612.05	-30.44	-3.71
1.2 Dead+1.6 Wind 210 deg - No Ice	44.67	-15.52	26.95	2261.59	1298.62	-4.34
0.9 Dead+1.6 Wind 210 deg - No Ice	33.50	-15.52	26.95	2244.09	1289.27	-4.28
1.2 Dead+1.6 Wind 240 deg - No Ice	44.67	-27.18	15.36	1281.50	2285.74	-3.71
0.9 Dead+1.6 Wind 240 deg - No Ice	33.50	-27.18	15.36	1271.52	2268.81	-3.68
1.2 Dead+1.6 Wind 270 deg - No Ice	44.67	-31.44	-0.30	-35.07	2647.33	-2.12
0.9 Dead+1.6 Wind 270 deg - No Ice	33.50	-31.44	-0.30	-34.99	2627.63	-2.11
1.2 Dead+1.6 Wind 300 deg - No Ice	44.67	-27.36	-15.87	-1341.58	2308.32	-0.05
0.9 Dead+1.6 Wind 300 deg - No Ice	33.50	-27.36	-15.87	-1331.52	2291.18	-0.07
1.2 Dead+1.6 Wind 330 deg - No Ice	44.67	-16.00	-27.22	-2292.60	1356.44	2.04

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
0.9 Dead+1.6 Wind 330 deg - No Ice	33.50	-16.00	-27.22	-2275.30	1346.56	1.99
1.2 Dead+1.0 Ice+1.0 Temp	81.69	0.00	0.00	7.75	-1.61	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	81.69	-0.08	-9.82	-870.65	8.05	0.49
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	81.69	4.88	-8.47	-748.21	-437.22	1.04
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	81.69	8.49	-4.87	-426.69	-760.13	1.32
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	81.69	9.83	0.03	12.21	-880.74	1.23
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	81.69	8.53	4.94	450.79	-765.50	0.80
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	81.69	4.94	8.52	770.02	-444.73	0.15
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	81.69	0.04	9.81	884.71	-6.96	-0.52
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	81.69	-4.89	8.47	763.51	434.79	-1.05
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	81.69	-8.52	4.85	438.86	761.24	-1.30
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	81.69	-9.84	-0.06	0.59	879.76	-1.21
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	81.69	-8.55	-4.94	-435.64	764.74	-0.81
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	81.69	-4.98	-8.52	-754.23	446.11	-0.20
Dead+Wind 0 deg - Service	37.22	-0.08	-6.71	-561.14	7.71	0.79
Dead+Wind 30 deg - Service	37.22	3.32	-5.77	-481.18	-278.29	0.93
Dead+Wind 60 deg - Service	37.22	5.79	-3.31	-274.72	-485.95	0.81
Dead+Wind 90 deg - Service	37.22	6.71	0.05	6.27	-564.59	0.48
Dead+Wind 120 deg - Service	37.22	5.84	3.39	286.43	-492.19	0.00
Dead+Wind 150 deg - Service	37.22	3.39	5.83	489.55	-287.76	-0.47
Dead+Wind 180 deg - Service	37.22	0.05	6.70	561.47	-7.99	-0.81
Dead+Wind 210 deg - Service	37.22	-3.32	5.77	482.46	275.36	-0.93
Dead+Wind 240 deg - Service	37.22	-5.81	3.29	273.64	485.69	-0.80
Dead+Wind 270 deg - Service	37.22	-6.73	-0.06	-6.88	562.75	-0.46
Dead+Wind 300 deg - Service	37.22	-5.85	-3.40	-285.28	490.52	-0.01
Dead+Wind 330 deg - Service	37.22	-3.42	-5.82	-487.92	287.69	0.44

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-37.22	0.00	0.00	37.22	0.00	0.000%
2	-0.37	-44.67	-31.34	0.37	44.67	31.34	0.000%
3	-0.37	-33.50	-31.34	0.37	33.50	31.34	0.000%
4	15.50	-44.67	-26.96	-15.50	44.67	26.96	0.000%
5	15.50	-33.50	-26.96	-15.50	33.50	26.96	0.000%
6	27.05	-44.67	-15.46	-27.05	44.67	15.46	0.000%
7	27.05	-33.50	-15.46	-27.05	33.50	15.46	0.000%
8	31.38	-44.67	0.21	-31.38	44.67	-0.21	0.000%
9	31.38	-33.50	0.21	-31.38	33.50	-0.21	0.000%
10	27.29	-44.67	15.85	-27.29	44.67	-15.85	0.000%
11	27.29	-33.50	15.85	-27.29	33.50	-15.85	0.000%
12	15.86	-44.67	27.23	-15.86	44.67	-27.23	0.000%
13	15.86	-33.50	27.23	-15.86	33.50	-27.23	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
14	0.24	-44.67	31.30	-0.24	44.67	-31.30	0.000%
15	0.24	-33.50	31.30	-0.24	33.50	-31.30	0.000%
16	-15.52	-44.67	26.95	15.52	44.67	-26.95	0.000%
17	-15.52	-33.50	26.95	15.52	33.50	-26.95	0.000%
18	-27.18	-44.67	15.36	27.18	44.67	-15.36	0.000%
19	-27.18	-33.50	15.36	27.18	33.50	-15.36	0.000%
20	-31.44	-44.67	-0.30	31.44	44.67	0.30	0.000%
21	-31.44	-33.50	-0.30	31.44	33.50	0.30	0.000%
22	-27.36	-44.67	-15.87	27.36	44.67	15.87	0.000%
23	-27.36	-33.50	-15.87	27.36	33.50	15.87	0.000%
24	-16.00	-44.67	-27.22	16.00	44.67	27.22	0.000%
25	-16.00	-33.50	-27.22	16.00	33.50	27.22	0.000%
26	0.00	-81.69	0.00	-0.00	81.69	-0.00	0.000%
27	-0.08	-81.69	-9.82	0.08	81.69	9.82	0.000%
28	4.88	-81.69	-8.47	-4.88	81.69	8.47	0.000%
29	8.49	-81.69	-4.87	-8.49	81.69	4.87	0.000%
30	9.83	-81.69	0.03	-9.83	81.69	-0.03	0.000%
31	8.53	-81.69	4.94	-8.53	81.69	-4.94	0.000%
32	4.94	-81.69	8.52	-4.94	81.69	-8.52	0.000%
33	0.04	-81.69	9.81	-0.04	81.69	-9.81	0.000%
34	-4.89	-81.69	8.47	4.89	81.69	-8.47	0.000%
35	-8.52	-81.69	4.85	8.52	81.69	-4.85	0.000%
36	-9.84	-81.69	-0.06	9.84	81.69	0.06	0.000%
37	-8.55	-81.69	-4.94	8.55	81.69	4.94	0.000%
38	-4.98	-81.69	-8.52	4.98	81.69	8.52	0.000%
39	-0.08	-37.22	-6.71	0.08	37.22	6.71	0.000%
40	3.32	-37.22	-5.77	-3.32	37.22	5.77	0.000%
41	5.79	-37.22	-3.31	-5.79	37.22	3.31	0.000%
42	6.71	-37.22	0.05	-6.71	37.22	-0.05	0.000%
43	5.84	-37.22	3.39	-5.84	37.22	-3.39	0.000%
44	3.39	-37.22	5.83	-3.39	37.22	-5.83	0.000%
45	0.05	-37.22	6.70	-0.05	37.22	-6.70	0.000%
46	-3.32	-37.22	5.77	3.32	37.22	-5.77	0.000%
47	-5.81	-37.22	3.29	5.81	37.22	-3.29	0.000%
48	-6.73	-37.22	-0.06	6.73	37.22	0.06	0.000%
49	-5.85	-37.22	-3.40	5.85	37.22	3.40	0.000%
50	-3.42	-37.22	-5.82	3.42	37.22	5.82	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00069423
3	Yes	5	0.00000001	0.00031225
4	Yes	6	0.00000001	0.00015630
5	Yes	6	0.00000001	0.00004979
6	Yes	6	0.00000001	0.00012302
7	Yes	6	0.00000001	0.00003820
8	Yes	5	0.00000001	0.00038398
9	Yes	5	0.00000001	0.00017260
10	Yes	6	0.00000001	0.00013754
11	Yes	6	0.00000001	0.00004244
12	Yes	6	0.00000001	0.00015614
13	Yes	6	0.00000001	0.00004894
14	Yes	6	0.00000001	0.00003739
15	Yes	5	0.00000001	0.00045361
16	Yes	6	0.00000001	0.00012001
17	Yes	6	0.00000001	0.00003732
18	Yes	6	0.00000001	0.00014993
19	Yes	6	0.00000001	0.00004760
20	Yes	5	0.00000001	0.00012344
21	Yes	5	0.00000001	0.00005511
22	Yes	6	0.00000001	0.00014572
23	Yes	6	0.00000001	0.00004534

24	Yes	6	0.00000001	0.00013150
25	Yes	6	0.00000001	0.00004044
26	Yes	5	0.00000001	0.00022373
27	Yes	6	0.00000001	0.00071340
28	Yes	6	0.00000001	0.00086842
29	Yes	6	0.00000001	0.00084958
30	Yes	6	0.00000001	0.00073694
31	Yes	6	0.00000001	0.00089212
32	Yes	6	0.00000001	0.00089449
33	Yes	6	0.00000001	0.00073149
34	Yes	6	0.00000001	0.00083700
35	Yes	6	0.00000001	0.00085756
36	Yes	6	0.00000001	0.00070700
37	Yes	6	0.00000001	0.00083997
38	Yes	6	0.00000001	0.00083854
39	Yes	5	0.00000001	0.00004319
40	Yes	5	0.00000001	0.00007907
41	Yes	5	0.00000001	0.00004487
42	Yes	4	0.00000001	0.00051553
43	Yes	5	0.00000001	0.00004940
44	Yes	5	0.00000001	0.00007336
45	Yes	5	0.00000001	0.00004719
46	Yes	5	0.00000001	0.00004805
47	Yes	5	0.00000001	0.00006915
48	Yes	4	0.00000001	0.00041662
49	Yes	5	0.00000001	0.00005692
50	Yes	5	0.00000001	0.00004748

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 115	14.47	43	1.1097	0.0167
L2	115 - 110	13.31	43	1.1061	0.0155
L3	110 - 105	12.15	43	1.0944	0.0137
L4	105 - 100	11.02	43	1.0734	0.0118
L5	100 - 95	9.91	43	1.0380	0.0099
L6	95 - 90	8.85	43	0.9852	0.0081
L7	90 - 85	7.85	43	0.9110	0.0064
L8	85 - 80	6.93	43	0.8459	0.0052
L9	80 - 79.75	6.09	43	0.7657	0.0041
L10	79.75 - 78.5	6.05	43	0.7629	0.0041
L11	78.5 - 78.25	5.85	43	0.7489	0.0039
L12	78.25 - 73.25	5.81	43	0.7472	0.0039
L13	73.25 - 68.25	5.05	43	0.7086	0.0035
L14	68.25 - 68	4.33	43	0.6639	0.0030
L15	68 - 67.75	4.29	43	0.6615	0.0030
L16	67.75 - 62.75	4.26	43	0.6583	0.0030
L17	62.75 - 60	3.61	43	0.5892	0.0025
L18	60 - 59.75	3.28	43	0.5475	0.0022
L19	59.75 - 54.75	3.25	43	0.5453	0.0021
L20	54.75 - 49.75	2.70	43	0.4976	0.0018
L21	49.75 - 45.42	2.21	43	0.4443	0.0015
L22	45.42 - 45.17	1.83	43	0.3937	0.0013
L23	45.17 - 40.17	1.81	43	0.3912	0.0013
L24	40.17 - 36.42	1.43	43	0.3385	0.0010
L25	36.42 - 36.17	1.18	43	0.2958	0.0009
L26	36.17 - 32.75	1.16	43	0.2933	0.0008
L27	32.75 - 32.5	0.96	43	0.2580	0.0007
L28	32.5 - 32.25	0.95	43	0.2569	0.0007
L29	32.25 - 30	0.94	43	0.2559	0.0007
L30	30 - 28.66	0.82	43	0.2469	0.0007
L31	28.66 - 28.41	0.75	43	0.2426	0.0007
L32	28.41 - 26.75	0.74	43	0.2414	0.0006
L33	26.75 - 26.5	0.65	43	0.2336	0.0006
L34	26.5 - 21.5	0.64	43	0.2313	0.0006
L35	21.5 - 21	0.42	43	0.1836	0.0005

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L36	21 - 20.75	0.41	43	0.1787	0.0004
L37	20.75 - 15.75	0.40	43	0.1768	0.0004
L38	15.75 - 10.75	0.23	43	0.1380	0.0003
L39	10.75 - 5.75	0.11	43	0.0964	0.0002
L40	5.75 - 2	0.03	43	0.0519	0.0001
L41	2 - 1.75	0.00	43	0.0167	0.0000
L42	1.75 - 0	0.00	43	0.0147	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
118.00	Lightning Rod 5/8"x4'	43	14.00	1.1088	0.0164	36759
116.00	VHLP1-18	43	13.54	1.1073	0.0159	36759
114.00	Pipe Mount [PM 602-3]	43	13.07	1.1045	0.0153	30770
107.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	43	11.47	1.0832	0.0126	12589
99.00	(2) QS66512-2 w/ Mount Pipe	43	9.69	1.0293	0.0096	6012
60.00	(2) Bridge Stiffener (109" x 15.75" x 1.25")	43	3.28	0.5475	0.0022	4705
59.00	Side Arm Mount [SO 701-1]	43	3.16	0.5386	0.0021	5103
48.00	GPS_A	43	2.05	0.4232	0.0014	5055
30.00	(2) Bridge Stiffener (137" x 15.5" x 1.25")	43	0.82	0.2469	0.0007	11587

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 115	67.32	10	5.1302	0.0789
L2	115 - 110	61.96	10	5.1192	0.0736
L3	110 - 105	56.63	10	5.0732	0.0647
L4	105 - 100	51.37	10	4.9840	0.0558
L5	100 - 95	46.24	10	4.8275	0.0469
L6	95 - 90	41.32	22	4.5879	0.0384
L7	90 - 85	36.70	22	4.2474	0.0302
L8	85 - 80	32.41	22	3.9471	0.0246
L9	80 - 79.75	28.47	22	3.5759	0.0191
L10	79.75 - 78.5	28.29	22	3.5633	0.0190
L11	78.5 - 78.25	27.36	22	3.4983	0.0181
L12	78.25 - 73.25	27.18	22	3.4901	0.0180
L13	73.25 - 68.25	23.62	22	3.3114	0.0161
L14	68.25 - 68	20.26	22	3.1040	0.0142
L15	68 - 67.75	20.10	22	3.0928	0.0141
L16	67.75 - 62.75	19.94	22	3.0778	0.0140
L17	62.75 - 60	16.88	22	2.7565	0.0115
L18	60 - 59.75	15.35	22	2.5621	0.0101
L19	59.75 - 54.75	15.22	22	2.5516	0.0100
L20	54.75 - 49.75	12.66	22	2.3292	0.0086
L21	49.75 - 45.42	10.35	22	2.0807	0.0072
L22	45.42 - 45.17	8.57	22	1.8439	0.0060
L23	45.17 - 40.17	8.47	22	1.8322	0.0059
L24	40.17 - 36.42	6.68	22	1.5860	0.0048
L25	36.42 - 36.17	5.52	22	1.3863	0.0040
L26	36.17 - 32.75	5.44	22	1.3745	0.0039
L27	32.75 - 32.5	4.52	22	1.2089	0.0033
L28	32.5 - 32.25	4.45	22	1.2038	0.0033
L29	32.25 - 30	4.39	22	1.1992	0.0033
L30	30 - 28.66	3.84	22	1.1570	0.0031

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L31	28.66 - 28.41	3.51	22	1.1370	0.0030
L32	28.41 - 26.75	3.46	22	1.1316	0.0030
L33	26.75 - 26.5	3.07	22	1.0949	0.0029
L34	26.5 - 21.5	3.01	22	1.0842	0.0029
L35	21.5 - 21	1.99	22	0.8608	0.0022
L36	21 - 20.75	1.90	22	0.8375	0.0021
L37	20.75 - 15.75	1.86	22	0.8287	0.0021
L38	15.75 - 10.75	1.09	22	0.6469	0.0015
L39	10.75 - 5.75	0.51	22	0.4519	0.0010
L40	5.75 - 2	0.14	22	0.2436	0.0005
L41	2 - 1.75	0.02	22	0.0785	0.0002
L42	1.75 - 0	0.01	22	0.0687	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
118.00	Lightning Rod 5/8"x4'	10	65.17	5.1282	0.0771	10401
116.00	VHLP1-18	10	63.03	5.1235	0.0749	10401
114.00	Pipe Mount [PM 602-3]	10	60.89	5.1132	0.0721	8457
107.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	10	53.47	5.0266	0.0593	2988
99.00	(2) QS66512-2 w/ Mount Pipe	10	45.24	4.7882	0.0452	1354
60.00	(2) Bridge Stiffener (109" x 15.75" x 1.25")	22	15.35	2.5621	0.0101	1013
59.00	Side Arm Mount [SO 701-1]	22	14.82	2.5206	0.0098	1099
48.00	GPS_A	22	9.61	1.9817	0.0067	1085
30.00	(2) Bridge Stiffener (137" x 15.5" x 1.25")	22	3.84	1.1570	0.0031	2477

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L1	120 - 115 (1)	P24x0.25	5.00	0.00	0.0	18.6532	-2.42
L2	115 - 110 (2)	P24x0.25	5.00	0.00	0.0	18.6532	-3.47
L3	110 - 105 (3)	P24x0.25	5.00	0.00	0.0	18.6532	-6.84
L4	105 - 100 (4)	P24x0.25	5.00	0.00	0.0	18.6532	-7.32
L5	100 - 95 (5)	P24x0.25	5.00	0.00	0.0	18.6532	-10.42
L6	95 - 90 (6)	P24x0.25	5.00	0.00	0.0	18.6532	-11.01
L7	90 - 85 (7)	P24x0.375	5.00	0.00	0.0	27.8325	-11.79
L8	85 - 80 (8)	P24x0.375	5.00	0.00	0.0	27.8325	-12.60
L9	80 - 79.75 (9)	P24x0.625	0.25	0.00	0.0	45.8967	-12.66
L10	79.75 - 78.5 (10)	P24x0.625	1.25	0.00	0.0	45.8967	-12.91
L11	78.5 - 78.25	P24x1.075	0.25	0.00	0.0	77.422	-13.00

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u
	ft		ft	ft		in^2	K
	(11)					6	
L12	78.25 - 73.25	P24x1.075	5.00	0.00	0.0	77.422	-14.51
	(12)					6	
L13	73.25 - 68.25	P24x1.075	5.00	0.00	0.0	77.422	-16.05
	(13)					6	
L14	68.25 - 68	P24x1.075	0.25	0.00	0.0	77.422	-16.13
	(14)					6	
L15	68 - 67.75	P24x0.775	0.25	0.00	0.0	56.546	-16.19
	(15)					7	
L16	67.75 - 62.75	P24x0.775	5.00	0.00	0.0	56.546	-17.47
	(16)					7	
L17	62.75 - 60	P24x0.775	2.75	0.00	0.0	56.546	-18.18
	(17)					7	
L18	60 - 59.75	P30x0.675	0.25	0.00	0.0	62.185	-19.67
	(18)					9	
L19	59.75 - 54.75	P30x0.675	5.00	0.00	0.0	62.185	-21.15
	(19)					9	
L20	54.75 - 49.75	P30x0.675	5.00	0.00	0.0	62.185	-22.57
	(20)					9	
L21	49.75 - 45.42	P30x0.675	4.33	0.00	0.0	62.185	-23.89
	(21)					9	
L22	45.42 - 45.17	P30x0.8375	0.25	0.00	0.0	76.729	-23.98
	(22)					0	
L23	45.17 - 40.17	P30x0.8375	5.00	0.00	0.0	76.729	-25.63
	(23)					0	
L24	40.17 - 36.42	P30x0.8375	3.75	0.00	0.0	76.729	-26.89
	(24)					0	
L25	36.42 - 36.17	P30x1	0.25	0.00	0.0	91.106	-27.00
	(25)					2	
L26	36.17 - 32.75	P30x1	3.42	0.00	0.0	91.106	-28.29
	(26)					2	
L27	32.75 - 32.5	P30x3.025	0.25	0.00	0.0	256.35	-28.44
	(27)					20	
L28	32.5 - 32.25	P30x3.525	0.25	0.00	0.0	293.18	-28.60
	(28)					70	
L29	32.25 - 30	P30x3.525	2.25	0.00	0.0	293.18	-30.02
	(29)					70	
L30	30 - 28.66	P36x2.225	1.34	0.00	0.0	236.08	-32.48
	(30)					90	
L31	28.66 - 28.41	P36x1.45	0.25	0.00	0.0	157.38	-32.57
	(31)					60	
L32	28.41 - 26.75	P36x1.45	1.66	0.00	0.0	157.38	-33.16
	(32)					60	
L33	26.75 - 26.5	P36x0.7125	0.25	0.00	0.0	78.987	-33.25
	(33)					0	
L34	26.5 - 21.5	P36x0.7125	5.00	0.00	0.0	78.987	-35.01
	(34)					0	
L35	21.5 - 21 (35)	P36x0.7125	0.50	0.00	0.0	78.987	-35.19
						0	
L36	21 - 20.75	P36x0.975	0.25	0.00	0.0	107.28	-35.31
	(36)					30	
L37	20.75 - 15.75	P36x0.975	5.00	0.00	0.0	107.28	-37.54
	(37)					30	
L38	15.75 - 10.75	P36x0.975	5.00	0.00	0.0	107.28	-39.79
	(38)					30	
L39	10.75 - 5.75	P36x0.975	5.00	0.00	0.0	107.28	-42.04
	(39)					30	
L40	5.75 - 2 (40)	P36x0.975	3.75	0.00	0.0	107.28	-43.74
						30	
L41	2 - 1.75 (41)	P36x1.15	0.25	0.00	0.0	125.90	-43.87
						70	
L42	1.75 - 0 (42)	P36x1.15	1.75	0.00	0.0	125.90	-44.65
						70	

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft
L1	120 - 115 (1)	P24x0.25	25.68
L2	115 - 110 (2)	P24x0.25	60.36
L3	110 - 105 (3)	P24x0.25	112.05
L4	105 - 100 (4)	P24x0.25	177.72
L5	100 - 95 (5)	P24x0.25	267.92
L6	95 - 90 (6)	P24x0.25	362.15
L7	90 - 85 (7)	P24x0.375	458.13
L8	85 - 80 (8)	P24x0.375	555.88
L9	80 - 79.75 (9)	P24x0.625	560.81
L10	79.75 - 78.5 (10)	P24x0.625	585.63
L11	78.5 - 78.25 (11)	P24x1.075	590.62
L12	78.25 - 73.25 (12)	P24x1.075	692.53
L13	73.25 - 68.25 (13)	P24x1.075	798.29
L14	68.25 - 68 (14)	P24x1.075	803.68
L15	68 - 67.75 (15)	P24x0.775	809.07
L16	67.75 - 62.75 (16)	P24x0.775	918.67
L17	62.75 - 60 (17)	P24x0.775	980.04
L18	60 - 59.75 (18)	P30x0.675	986.03
L19	59.75 - 54.75 (19)	P30x0.675	1107.33
L20	54.75 - 49.75 (20)	P30x0.675	1230.92
L21	49.75 - 45.42 (21)	P30x0.675	1340.93
L22	45.42 - 45.17 (22)	P30x0.8375	1347.38
L23	45.17 - 40.17 (23)	P30x0.8375	1478.36
L24	40.17 - 36.42 (24)	P30x0.8375	1578.99
L25	36.42 - 36.17 (25)	P30x1	1585.77
L26	36.17 - 32.75 (26)	P30x1	1678.98
L27	32.75 - 32.5 (27)	P30x3.025	1685.83
L28	32.5 - 32.25 (28)	P30x3.525	1692.68
L29	32.25 - 30 (29)	P30x3.525	1754.55
L30	30 - 28.66 (30)	P36x2.225	1793.92
L31	28.66 - 28.41 (31)	P36x1.45	1801.28
L32	28.41 - 26.75 (32)	P36x1.45	1850.27
L33	26.75 - 26.5 (33)	P36x0.7125	1857.66
L34	26.5 - 21.5 (34)	P36x0.7125	2006.59
L35	21.5 - 21 (35)	P36x0.7125	2021.59
L36	21 - 20.75 (36)	P36x0.975	2029.10
L37	20.75 - 15.75 (37)	P36x0.975	2180.42
L38	15.75 - 10.75 (38)	P36x0.975	2333.81
L39	10.75 - 5.75 (39)	P36x0.975	2489.09

Section No.	Elevation	Size	M_{ux}
	ft		kip-ft
L40	5.75 - 2 (40)	P36x0.975	2606.72
L41	2 - 1.75 (41)	P36x1.15	2614.60
L42	1.75 - 0 (42)	P36x1.15	2669.86

Pole Shear Design Data

Section No.	Elevation	Size	Actual V_u
	ft		K
L1	120 - 115 (1)	P24x0.25	5.95
L2	115 - 110 (2)	P24x0.25	7.31
L3	110 - 105 (3)	P24x0.25	12.94
L4	105 - 100 (4)	P24x0.25	13.34
L5	100 - 95 (5)	P24x0.25	18.68
L6	95 - 90 (6)	P24x0.25	19.03
L7	90 - 85 (7)	P24x0.375	19.38
L8	85 - 80 (8)	P24x0.375	19.74
L9	80 - 79.75 (9)	P24x0.625	19.77
L10	79.75 - 78.5 (10)	P24x0.625	19.96
L11	78.5 - 78.25 (11)	P24x1.075	19.99
L12	78.25 - 73.25 (12)	P24x1.075	20.78
L13	73.25 - 68.25 (13)	P24x1.075	21.54
L14	68.25 - 68 (14)	P24x1.075	21.57
L15	68 - 67.75 (15)	P24x0.775	21.61
L16	67.75 - 62.75 (16)	P24x0.775	22.25
L17	62.75 - 60 (17)	P24x0.775	22.41
L18	60 - 59.75 (18)	P30x0.675	24.01
L19	59.75 - 54.75 (19)	P30x0.675	24.47
L20	54.75 - 49.75 (20)	P30x0.675	24.99
L21	49.75 - 45.42 (21)	P30x0.675	25.79
L22	45.42 - 45.17 (22)	P30x0.8375	25.82
L23	45.17 - 40.17 (23)	P30x0.8375	26.58
L24	40.17 - 36.42 (24)	P30x0.8375	27.11
L25	36.42 - 36.17 (25)	P30x1	27.13
L26	36.17 - 32.75 (26)	P30x1	27.39
L27	32.75 - 32.5 (27)	P30x3.025	27.39
L28	32.5 - 32.25 (28)	P30x3.525	27.41
L29	32.25 - 30 (29)	P30x3.525	27.58
L30	30 - 28.66 (30)	P36x2.225	29.43
L31	28.66 - 28.41 (31)	P36x1.45	29.45
L32	28.41 - 26.75 (32)	P36x1.45	29.58
L33	26.75 - 26.5	P36x0.7125	29.59

Section No.	Elevation ft	Size	Actual V_u K
	(33)		
L34	26.5 - 21.5	P36x0.7125	29.99
	(34)		
L35	21.5 - 21 (35)	P36x0.7125	30.02
L36	21 - 20.75	P36x0.975	30.04
	(36)		
L37	20.75 - 15.75	P36x0.975	30.49
	(37)		
L38	15.75 - 10.75	P36x0.975	30.88
	(38)		
L39	10.75 - 5.75	P36x0.975	31.25
	(39)		
L40	5.75 - 2 (40)	P36x0.975	31.51
L41	2 - 1.75 (41)	P36x1.15	31.51
L42	1.75 - 0 (42)	P36x1.15	31.66

CCIpole

per TIA-222- G

Site BU: 876329

Work Order: _____

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	120	30		0	24	24	0.25		A53-B-42
2	90	30		0	24.00	24	0.375		A53-B-42
3	60	30		0	30.00	30	0.375		A53-B-42
4	30	30		0	36.00	36	0.375		A53-B-42

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	68	80	plate	P 3 x 1.25; (1) (1.1875)_	4	80	170	260	350														
2	32.5	36.42	channel	MP3-05; (1) (1.21875)_	4					5	95	185	275										
3	36.42	45.42	channel	MP3-03; (1) (1.21875)_	4					5	95	185	275										
4	2	26.75	plate	CCI-SFP-065125	4									30	120	210	300						
5	32.5	60	plate	CCI-AFP-060100	4									30	120	210	300						
6	60	78.5	plate	CCI-SFP-060100	4									30	120	210	300						
7	2	21	plate	CI-060100; (1) (1.1875)	4													60	150	240	330		
8	0	2	plate	FP 1.25 x 6_1	4													34	124	214	304		
9	0	2	plate	FP 1.25 x 5.5_1	4					56	150	236	330										
10	26.75	32.75	plate	FP 1.25 x 6_2	4					50	140	230	320										
11	28.66	32.5	plate	FP 1.25 x 4.25_1	4	0	90	180	270														
12																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	3	1.25	3.75	0.625	n/a	n/a	24.000	2.188	1.1875	A572-65
2	5.3307	2.087	5.6089	0.783	n/a	n/a	18.000	4.968	1.2188	A572-65
3	4.062992126	1.57480315	2.88	0.5873	n/a	n/a	18.000	2.492	1.2188	A572-65
4	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
5	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
6	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
7	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
8	1.25	6	7.5	3	n/a	n/a	0.000	7.500	0.0000	A572-65
9	1.25	5.5	6.875	2.75	n/a	n/a	0.000	6.875	0.0000	A572-65
10	1.25	6	7.5	15.5	n/a	n/a	0.000	7.500	0.0000	A572-65
11	1.25	4.25	5.3125	12.75	n/a	n/a	0.000	5.313	0.0000	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	120 - 115	5		0	24.000	24.000	0.25	A53-B-42	1.000
2	115 - 110	5		0	24.000	24.000	0.25	A53-B-42	1.000
3	110 - 105	5		0	24.000	24.000	0.25	A53-B-42	1.000
4	105 - 100	5		0	24.000	24.000	0.25	A53-B-42	1.000
5	100 - 95	5		0	24.000	24.000	0.25	A53-B-42	1.000
6	95 - 90	5	0	0	24.000	24.000	0.25	A53-B-42	1.000
7	90 - 85	5		0	24.000	24.000	0.375	A53-B-42	1.000
8	85 - 80	5		0	24.000	24.000	0.375	A53-B-42	1.000
9	80 - 79.75	0.25		0	24.000	24.000	0.625	A53-B-42	0.933
10	79.75 - 78.5	1.25		0	24.000	24.000	0.625	A53-B-42	0.933
11	78.5 - 78.25	0.25		0	24.000	24.000	1.075	A53-B-42	0.863
12	78.25 - 73.25	5		0	24.000	24.000	1.075	A53-B-42	0.863
13	73.25 - 68.25	5		0	24.000	24.000	1.075	A53-B-42	0.863
14	68.25 - 68	0.25		0	24.000	24.000	1.075	A53-B-42	0.863
15	68 - 67.75	0.25		0	24.000	24.000	0.775	A53-B-42	0.917
16	67.75 - 62.75	5		0	24.000	24.000	0.775	A53-B-42	0.917
17	62.75 - 60	2.75	0	0	24.000	24.000	0.775	A53-B-42	0.917
18	60 - 59.75	0.25		0	30.000	30.000	0.675	A53-B-42	0.947
19	59.75 - 54.75	5		0	30.000	30.000	0.675	A53-B-42	0.947
20	54.75 - 49.75	5		0	30.000	30.000	0.675	A53-B-42	0.947
21	49.75 - 45.42	4.33		0	30.000	30.000	0.675	A53-B-42	0.947
22	45.42 - 45.17	0.25		0	30.000	30.000	0.8375	A53-B-42	0.918
23	45.17 - 40.17	5		0	30.000	30.000	0.8375	A53-B-42	0.918
24	40.17 - 36.42	3.75		0	30.000	30.000	0.8375	A53-B-42	0.918
25	36.42 - 36.17	0.25		0	30.000	30.000	1	A53-B-42	0.893
26	36.17 - 32.75	3.42		0	30.000	30.000	1	A53-B-42	0.893
27	32.75 - 32.5	0.25		0	30.000	30.000	3.025	A53-B-42	0.434
28	32.5 - 32.25	0.25		0	30.000	30.000	3.525	A53-B-42	0.294
29	32.25 - 30	2.25	0	0	30.000	30.000	3.525	A53-B-42	0.294
30	30 - 28.66	1.34		0	36.000	36.000	2.225	A53-B-42	0.395
31	28.66 - 28.41	0.25		0	36.000	36.000	1.45	A53-B-42	0.457
32	28.41 - 26.75	1.66		0	36.000	36.000	1.45	A53-B-42	0.457
33	26.75 - 26.5	0.25		0	36.000	36.000	0.7125	A53-B-42	0.943
34	26.5 - 21.5	5		0	36.000	36.000	0.7125	A53-B-42	0.943
35	21.5 - 21	0.5		0	36.000	36.000	0.7125	A53-B-42	0.943
36	21 - 20.75	0.25		0	36.000	36.000	0.975	A53-B-42	0.918
37	20.75 - 15.75	5		0	36.000	36.000	0.975	A53-B-42	0.918
38	15.75 - 10.75	5		0	36.000	36.000	0.975	A53-B-42	0.918
39	10.75 - 5.75	5		0	36.000	36.000	0.975	A53-B-42	0.918
40	5.75 - 2	3.75		0	36.000	36.000	0.975	A53-B-42	0.918
41	2 - 1.75	0.25		0	36.000	36.000	1.15	A53-B-42	0.790
42	1.75 - 0	1.75		0	36.000	36.000	1.15	A53-B-42	0.790

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	120 - 115	2.42	25.68	5.95
2	115 - 110	3.47	60.36	7.31
3	110 - 105	6.84	112.05	12.94
4	105 - 100	7.32	177.72	13.34
5	100 - 95	10.42	267.92	18.68
6	95 - 90	11.01	362.15	19.03
7	90 - 85	11.79	458.13	19.38
8	85 - 80	12.60	555.88	19.74
9	80 - 79.75	12.66	560.81	19.77
10	79.75 - 78.5	12.91	585.63	19.96
11	78.5 - 78.25	13.00	590.62	19.99
12	78.25 - 73.25	14.51	692.53	20.78
13	73.25 - 68.25	16.05	798.29	21.54
14	68.25 - 68	16.13	803.68	21.57
15	68 - 67.75	16.19	809.07	21.61
16	67.75 - 62.75	17.47	918.67	22.25
17	62.75 - 60	18.18	980.04	22.41
18	60 - 59.75	19.67	986.04	24.01
19	59.75 - 54.75	21.15	1107.33	24.47
20	54.75 - 49.75	22.57	1230.91	24.99
21	49.75 - 45.42	23.88	1340.92	25.79
22	45.42 - 45.17	23.98	1347.37	25.82
23	45.17 - 40.17	25.63	1478.36	26.58
24	40.17 - 36.42	26.89	1578.99	27.11
25	36.42 - 36.17	27.00	1585.77	27.13
26	36.17 - 32.75	28.29	1678.98	27.39
27	32.75 - 32.5	28.44	1685.83	27.39
28	32.5 - 32.25	28.60	1692.68	27.41
29	32.25 - 30	30.02	1754.55	27.58
30	30 - 28.66	32.48	1793.91	29.43
31	28.66 - 28.41	32.57	1801.28	29.45
32	28.41 - 26.75	33.16	1850.27	29.58
33	26.75 - 26.5	33.25	1857.66	29.59
34	26.5 - 21.5	35.01	2006.59	29.99
35	21.5 - 21	35.19	2021.59	30.02
36	21 - 20.75	35.31	2029.10	30.04
37	20.75 - 15.75	37.54	2180.42	30.49
38	15.75 - 10.75	39.79	2333.81	30.88
39	10.75 - 5.75	42.04	2489.09	31.25
40	5.75 - 2	43.74	2606.73	31.51
41	2 - 1.75	43.87	2614.60	31.51
42	1.75 - 0	44.65	2669.86	31.66

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
120 - 115	Pole	TP24x24x0.25	Pole	6.9%	Pass
115 - 110	Pole	TP24x24x0.25	Pole	15.8%	Pass
110 - 105	Pole	TP24x24x0.25	Pole	29.4%	Pass
105 - 100	Pole	TP24x24x0.25	Pole	46.1%	Pass
100 - 95	Pole	TP24x24x0.25	Pole	69.4%	Pass
95 - 90	Pole	TP24x24x0.25	Pole	93.3%	Pass
90 - 85	Pole	TP24x24x0.375	Pole	74.7%	Pass
85 - 80	Pole	TP24x24x0.375	Pole	90.5%	Pass
80 - 79.75	Pole + Reinf.	TP24x24x0.625	Reinf. 1 Tension Rupture	78.0%	Pass
79.75 - 78.5	Pole + Reinf.	TP24x24x0.625	Reinf. 1 Tension Rupture	81.4%	Pass
78.5 - 78.25	Pole + Reinf.	TP24x24x1.075	Reinf. 1 Tension Rupture	51.0%	Pass
78.25 - 73.25	Pole + Reinf.	TP24x24x1.075	Reinf. 1 Tension Rupture	59.8%	Pass
73.25 - 68.25	Pole + Reinf.	TP24x24x1.075	Reinf. 1 Tension Rupture	68.9%	Pass
68.25 - 68	Pole + Reinf.	TP24x24x1.075	Reinf. 1 Tension Rupture	69.4%	Pass
68 - 67.75	Pole + Reinf.	TP24x24x0.775	Reinf. 6 Tension Rupture	67.1%	Pass
67.75 - 62.75	Pole + Reinf.	TP24x24x0.775	Reinf. 6 Tension Rupture	76.1%	Pass
62.75 - 60	Pole + Reinf.	TP24x24x0.775	Reinf. 6 Tension Rupture	81.1%	Pass
60 - 59.75	Pole + Reinf.	TP30x30x0.675	Pole	59.8%	Pass
59.75 - 54.75	Pole + Reinf.	TP30x30x0.675	Pole	67.2%	Pass
54.75 - 49.75	Pole + Reinf.	TP30x30x0.675	Pole	74.6%	Pass
49.75 - 45.42	Pole + Reinf.	TP30x30x0.675	Pole	81.3%	Pass
45.42 - 45.17	Pole + Reinf.	TP30x30x0.8375	Pole	67.8%	Pass
45.17 - 40.17	Pole + Reinf.	TP30x30x0.8375	Pole	74.3%	Pass
40.17 - 36.42	Pole + Reinf.	TP30x30x0.8375	Pole	79.4%	Pass
36.42 - 36.17	Pole + Reinf.	TP30x30x1	Pole	68.1%	Pass
36.17 - 32.75	Pole + Reinf.	TP30x30x1	Pole	72.1%	Pass
32.75 - 32.5	Pole + Reinf.	TP30x30x3.025	Reinf. 10 Compression	45.5%	Pass
32.5 - 32.25	Pole + Reinf.	TP30x30x3.525	Reinf. 10 Compression	41.4%	Pass
32.25 - 30	Pole + Reinf.	TP30x30x3.525	Reinf. 10 Compression	42.9%	Pass
30 - 28.66	Pole + Reinf.	TP36x36x2.225	Reinf. 10 Compression	37.4%	Pass
28.66 - 28.41	Pole + Reinf.	TP36x36x1.45	Reinf. 10 Compression	53.6%	Pass
28.41 - 26.75	Pole + Reinf.	TP36x36x1.45	Reinf. 10 Compression	55.1%	Pass
26.75 - 26.5	Pole + Reinf.	TP36x36x0.7125	Pole	75.9%	Pass
26.5 - 21.5	Pole + Reinf.	TP36x36x0.7125	Pole	81.9%	Pass
21.5 - 21	Pole + Reinf.	TP36x36x0.7125	Pole	82.5%	Pass
21 - 20.75	Pole + Reinf.	TP36x36x0.975	Pole	62.0%	Pass
20.75 - 15.75	Pole + Reinf.	TP36x36x0.975	Pole	66.6%	Pass
15.75 - 10.75	Pole + Reinf.	TP36x36x0.975	Pole	71.3%	Pass
10.75 - 5.75	Pole + Reinf.	TP36x36x0.975	Pole	76.0%	Pass
5.75 - 2	Pole + Reinf.	TP36x36x0.975	Pole	79.6%	Pass
2 - 1.75	Pole + Reinf.	TP36x36x1.15	Reinf. 9 Connection	71.5%	Pass
1.75 - 0	Pole + Reinf.	TP36x36x1.15	Reinf. 9 Connection	73.0%	Pass
				Summary	
			Pole	93.3%	Pass
			Reinforcement	81.4%	Pass
			Overall	93.3%	Pass

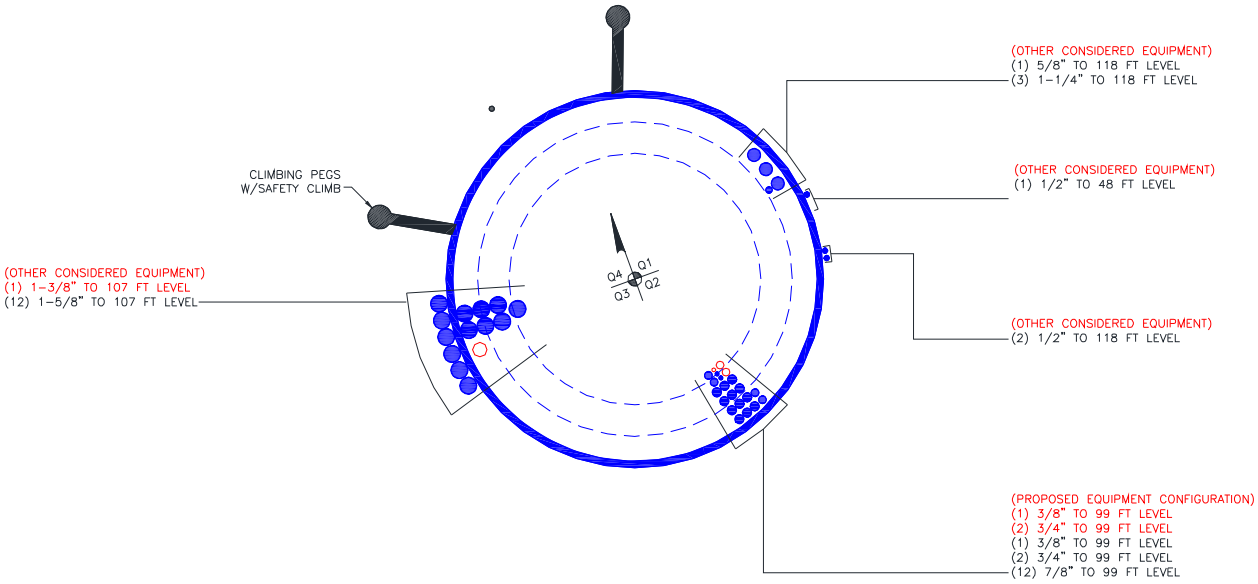
Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity											
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
120 - 115	1315	n/a	1315	18.65	n/a	18.65	6.9%											
115 - 110	1315	n/a	1315	18.65	n/a	18.65	15.8%											
110 - 105	1315	n/a	1315	18.65	n/a	18.65	29.4%											
105 - 100	1315	n/a	1315	18.65	n/a	18.65	46.1%											
100 - 95	1315	n/a	1315	18.65	n/a	18.65	69.4%											
95 - 90	1315	n/a	1315	18.65	n/a	18.65	93.3%											
90 - 85	1942	n/a	1942	27.83	n/a	27.83	74.7%											
85 - 80	1942	n/a	1942	27.83	n/a	27.83	90.5%											
80 - 79.75	1942	1202	3144	27.83	15.00	42.83	56.3%	78.0%										
79.75 - 78.5	1942	1202	3144	27.83	15.00	42.83	58.8%	81.4%										
78.5 - 78.25	1942	3114	5056	27.83	39.00	66.83	36.8%	51.0%					37.4%					
78.25 - 73.25	1942	3114	5056	27.83	39.00	66.83	43.2%	59.8%					43.8%					
73.25 - 68.25	1942	3114	5056	27.83	39.00	66.83	49.7%	68.9%					50.4%					
68.25 - 68	1942	3114	5056	27.83	39.00	66.83	50.1%	69.4%					50.8%					
68 - 67.75	1942	1912	3854	27.83	24.00	51.83	66.1%						67.1%					
67.75 - 62.75	1942	1912	3854	27.83	24.00	51.83	75.0%						76.1%					
62.75 - 60	1942	1912	3854	27.83	24.00	51.83	80.0%						81.1%					
60 - 59.75	3829	2920	6749	34.90	24.00	58.90	59.8%					58.0%						
59.75 - 54.75	3829	2920	6749	34.90	24.00	58.90	67.2%					65.1%						
54.75 - 49.75	3829	2920	6749	34.90	24.00	58.90	74.6%					72.4%						
49.75 - 45.42	3829	2920	6749	34.90	24.00	58.90	81.3%					78.8%						
45.42 - 45.17	3829	4323	8152	34.90	35.52	70.42	67.8%			64.7%		65.7%						
45.17 - 40.17	3829	4323	8152	34.90	35.52	70.42	74.3%			71.0%		72.1%						
40.17 - 36.42	3829	4323	8152	34.90	35.52	70.42	79.4%			75.8%		77.0%						
36.42 - 36.17	3829	5729	9558	34.90	46.44	81.34	68.1%		62.2%			66.1%						
36.17 - 32.75	3829	5729	9558	34.90	46.44	81.34	72.1%		65.9%			69.9%						
32.75 - 32.5	3829	19729	23559	34.90	76.44	111.34	29.6%		27.0%			28.7%					45.5%	
32.5 - 32.25	3829	22200	26029	34.90	51.25	86.15	27.0%										41.4%	37.7%
32.25 - 30	3829	22200	26029	34.90	51.25	86.15	27.9%										42.9%	39.1%
30 - 28.66	6659	26945	33604	41.97	51.25	93.22	27.3%										37.4%	34.4%
28.66 - 28.41	6659	16881	23540	41.97	30.00	71.97	39.1%										53.6%	
28.41 - 26.75	6659	16881	23540	41.97	30.00	71.97	40.1%										55.1%	
26.75 - 26.5	6659	5696	12355	41.97	32.50	74.47	75.9%				70.4%							
26.5 - 21.5	6659	5696	12355	41.97	32.50	74.47	81.9%				76.1%							
21.5 - 21	6659	5696	12355	41.97	32.50	74.47	82.5%				76.6%							
21 - 20.75	6659	9840	16499	41.97	56.50	98.47	62.0%				57.6%			58.3%				
20.75 - 15.75	6659	9840	16499	41.97	56.50	98.47	66.6%				61.8%			62.7%				
15.75 - 10.75	6659	9840	16499	41.97	56.50	98.47	71.3%				66.2%			67.1%				
10.75 - 5.75	6659	9840	16499	41.97	56.50	98.47	76.0%				70.6%			71.5%				
5.75 - 2	6659	9840	16499	41.97	56.50	98.47	79.6%				73.9%			74.9%				
2 - 1.75	6659	12590	19249	41.97	57.50	99.47	68.5%								60.3%	71.5%		
1.75 - 0	6659	12590	19249	41.97	57.50	99.47	70.0%								61.6%	73.0%		

Note: Section capacity checked in 5 degree increments.

APPENDIX B

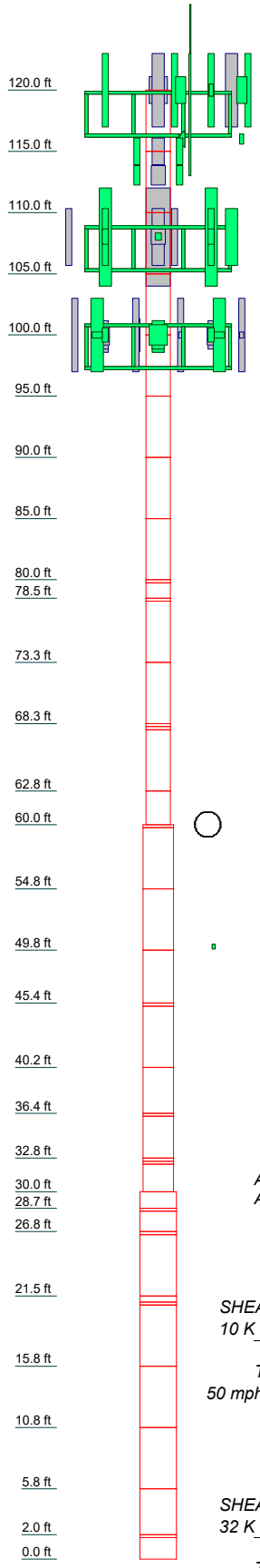
BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(1) 5/8" TO 118 FT LEVEL
(3) 1-1/4" TO 118 FT LEVEL
CLIMBING PEGS
W/SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 48 FT LEVEL
Q4
Q1
Q3
Q2
(OTHER CONSIDERED EQUIPMENT)
(1) 1-3/8" TO 107 FT LEVEL
(12) 1-5/8" TO 107 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1/2" TO 118 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 3/8" TO 99 FT LEVEL
(2) 3/4" TO 99 FT LEVEL
(1) 3/8" TO 99 FT LEVEL
(2) 3/4" TO 99 FT LEVEL
(12) 7/8" TO 99 FT LEVEL

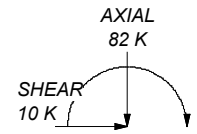
APPENDIX C

ADDITIONAL CALCULATIONS

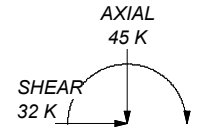
Section	Size	Length (ft)	Grade	Weight (K)
1	P24x0.25	5.00	A53-B-42	0.3
2	P24x0.25	5.00		0.3
3	P24x0.25	5.00		0.3
4	P24x0.25	5.00		0.3
5	P24x0.25	5.00		0.3
6	P24x0.25	5.00		0.3
7	P24x0.375	5.00		0.5
8	P24x0.375	5.00		0.5
11				
12		5.00		1.1
13		5.00		1.1
16		5.00		0.9
17		2.75		0.5
19		5.00		1.0
20	P30x0.675	5.00		1.0
21		4.33		0.9
23		5.00		1.2
24		3.75		0.9
34		5.00		1.3
37	P36x0.975	5.00		1.7
38	P36x0.975	5.00		1.7
39	P36x0.975	5.00		1.7
40		3.75		1.3
42	P36x0.975	1.75		23.90



ALL REACTIONS ARE FACTORED



TORQUE 1 kip-ft
50 mph WIND - 1.0000 in ICE



TORQUE 4 kip-ft
REACTIONS - 97 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
Phone: (614) 221-6679
FAX:

Job: MTN. VIEW CEM. (FILLEY PARK) (BU# 876329			
Project: 37518-2442 (876329.1558710)			
Client: Crown Castle	Drawn by: gpenumatsa	App'd:	
Code: TIA-222-G	Date: 09/26/18	Scale: NTS	
Path:		Dwg No. E-1	

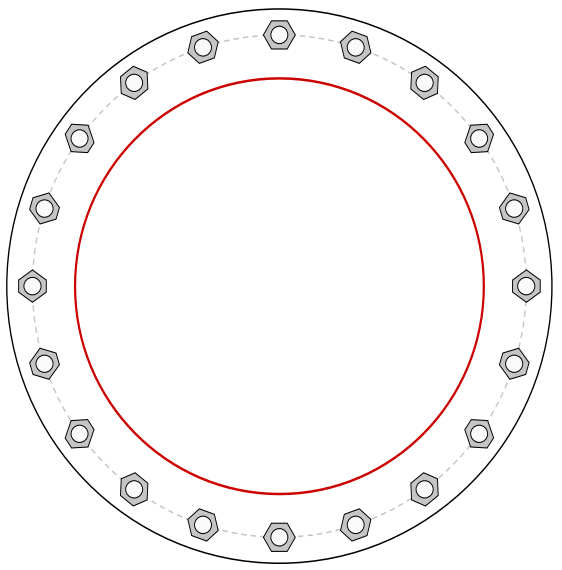
Monopole Flange Plate Connection

Elevation = 90 ft.

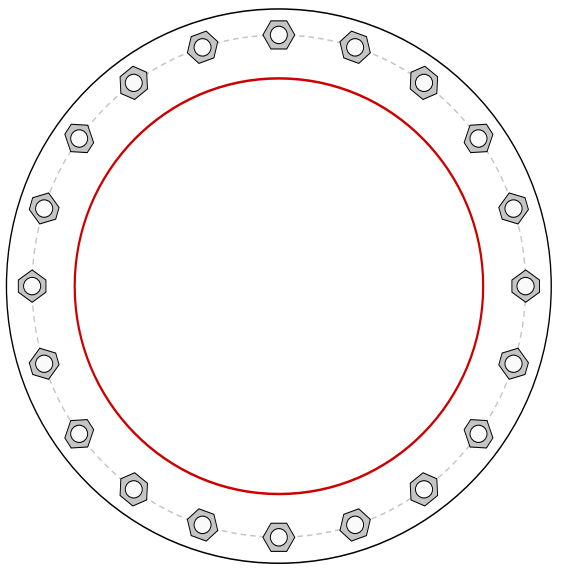
BU #	876329
Site Name	
Order #	
TIA-222 Revision	G

Applied Loads	
Moment (kip-ft)	362.15
Axial Force (kips)	11.01
Shear Force (kips)	19.03

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(20) 1" ø bolts (A325; Fy=92 ksi, Fu=120 ksi) on 29" BC

Top Plate Data

32" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

32" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

24" x 0.25" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

24" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	29.41	
Allowable (kips)	54.52	
Stress Ratio:	53.9%	**Pass**

Top Plate Capacity

Max Stress (ksi):	20.75	
Allowable Stress (ksi):	32.40	
Stress Ratio:	64.1%	**Pass**
Tension Side Stress Ratio:	30.9%	**Pass**

Bottom Plate Capacity

Max Stress (ksi):	20.75	
Allowable Stress (ksi):	32.40	
Stress Ratio:	64.1%	**Pass**
Tension Side Stress Ratio:	30.9%	**Pass**

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v2.1, Effective Date: 05-03-17

Date: 9/26/2018
Project No: 37518-2442.003.7805
Site Name: MTN. View CEM (filley Park)
Site Number/BUN: 876329
Description:
Owner:
Engineer:

Welded Bridge Stiffener Analysis per TIA-222-G & AISC 13th Ed. (Black)

General Parameters and Loading:

Flange Elevation:	60.00	ft
TIA Reference Standard:	TIA-222-G	
AISC Manual:	13th Ed. (Black)	
Method:	LRFD	
ASD Stress Increase, ASIF:	N/A	
Moment, Muf:	980.0	k-ft
Axial, Puf:	18.2	kips
Shear, Vf:	22.4	kips

Pole Parameters:

	Upper Pole	Lower Pole	
Pole Diameter, Dp:	24.00	30.00	in
Pole Thickness, tp:	0.3750	0.3750	in
Pole Fy:	42	42	ksi
Pole Fu:	60	60	ksi
Flange Diameter, Df:	41.00	41.00	in

Bridge Stiffener Parameters:

	Stiffener Type 1	Stiffener Type 2	
Qty. Stiffeners:	4	0	
Upper Weld Length, L1:	51.19	0.00	in
Lower Weld Length, L2:	51.19	0.00	in
Weld Size, w:	0.3750	0.0000	in
Electrode:	E80	E70	
Effective Stiffener Width, Ws:	6.00	0.00	in
Stiffener Thickness, ts:	1.25	0.00	in
Notch, n:	1.00	0.00	in
Stiffener Fy:	65	0	ksi
Stiffener Fu:	80	0	ksi
Unbraced Length, L:	5.63	0.00	in
K:	0.80	0.00	
Stiffener Spacing:	Symmetric	Symmetric	
Start Angle, for Symmetric:	50	0	degrees
Stiffener Circle:	49.00	41.00	in = Df + 2 n + Ws
Upper Eccentricity, e1:	12.50	8.50	in = (Df - Dp) / 2 + n + Ws / 2
Lower Eccentricity, e2:	9.50	5.50	in = (Df - Dp) / 2 + n + Ws / 2

Flange Bolt Parameters:

Number of Bolt Circles: (1) Bolt Circle

	Bolt Circle 1	Bolt Circle 2	
Qty. Bolts:	0	0	
Bolt Diameter:	1.50	0.00	in
Bolt Circle:	35.00	0.00	in
Bolt Spacing:	Symmetric	Symmetric	
Start Angle, for Symmetric:	0	0	degrees
Bolt Area, Ag:	0.0000	0.0000	in
Max. Tension:	0.00	0.00	kips
Max. Net Tension:	0.00	0.00	kips
Max. Net Compression:	0.00	0.00	kips
Moment to Bolt Circle:	0.00	0.00	k-ft
Axial to Bolt Circle:	0.00	0.00	kips
Shear to Bolt Circle:	0.00	0.00	kips
Equivalent Bolt Circle:	0.00	0.00	in

Weld Analysis per AISC Tables 8-4 & 8-3:

Upper Pole	Stiffener Type 1	Stiffener Type 2	
D:	6	0	Num. of Sixteenths in Weld
a:	0.2442	0.0000	= e1 / L1
k:	0	0	
C:	3.3332	3.7100	Tabulated Cofficient
C1:	1.0300	1.0000	Coefficient for Electrode
Φ:	0.7500	0.7500	
Stiffener Axial, Pu:	244.7	0.0	kips
Axial Capacity, ΦPn:	790.8	0.0	kips = Φ C C1 D L
Ratio:	30.9%	0.0%	

Lower Pole			
D:	6	0	Num. of Sixteenths in Weld
a:	0.1856	0.0000	= e2 / L2
k:	0	0	
C:	3.5561	3.7100	Tabulated Cofficient
C1:	1.0300	1.0000	Coefficient for Electrode
Φ:	0.7500	0.7500	
Stiffener Axial, Pu:	244.7	0.0	kips
Axial Capacity, ΦPn:	843.7	0.0	kips = Φ C C1 D L
Ratio:	29.0%	0.0%	

Pole Analysis per AISC Table J2.5 & Sect. J4.2:

Upper Pole	Stiffener Type 1	Stiffener Type 2	
Stiffener Axial, Pu:	244.7	0.0	kips
Effective Throat, te:	0.2651	0.0000	in = 0.707 w
Shear Stress, fuv:	2.4	0.0	kips/in= Pu / (2 L1)
Section Modulus, S:	873.4	0.0	$in^2 = L1^2 / 3$
Bending Stress, fub:	3.5	0.0	kips/in = Pu e1 / S
Combined Stress, fu:	4.2	0.0	kips/in = $(fuv^2 + fub^2)^{1/2}$
Φ:	1.0000	0.0000	
Stress Capacity, ΦFn	9.5	0.0	kips/in = Φ 0.6 Fy tp
Ratio:	44.9%	0.0%	

Lower Pole			
Stiffener Axial, Pu:	244.7	0.0	kips
Effective Throat, te:	0.2651	0.0000	in = 0.707 w
Shear Stress, fuv:	2.4	0.0	ksi = Pu / (2 L2)
Section Modulus, S:	873.4	0.0	$in^2 = L2^2 / 3$
Bending Stress, fub:	2.7	0.0	ksi = Pu e2 / S
Combined Stress, fu:	3.6	0.0	kips/in = $(fuv^2 + fub^2)^{1/2}$
Φ:	1.0000	0.0000	
Stress Capacity, ΦFn	9.5	0.0	kips/in = Φ 0.6 Fy tp
Ratio:	37.9%	0.0%	

Stiffener 1 Analysis per AISC Sect. D2, E3 & E7

	Stiffener Type 1	
Gross Area, Ag:	7.5000	in^2
Effective Net Area, Aen:	7.5000	in^2 = Ag U, where U = 1.000
Stiffener Axial, Pu:	244.7	kips
Stiffener Stress, fu:	32.6	ksi = Pu / Ag
b:	15.5000	in = (Df - Dp) / 2 + n + Ws, Upper Pole
b / ts:	12.4000	in
Q, Where Qa = 1.0:	0.8938	= Qa 1.34 - 0.76 (b / ts) $(Fy / E)^{1/2}$
r:	0.3608	in^3
K L / r:	12.4708	
Φ:	0.9000	
Axial Capacity, ΦFcr:	51.60	ksi = Φ Q $[0.658^{Q Fy / Fe}]$ Fy
Φ:	0.9000	
Ten. Yielding Cap., ΦFnt:	58.50	ksi = Φ Fy
Φ:	0.7500	
Ten. Rupture Cap., ΦFnr:	60.00	ksi = Φ Fu (Aen / Ag)
Ratio:	63.2%	

Stiffener 2 Analysis per AISC Sect. D2, E3 & E7

	Stiffener Type 2	
Gross Area, Ag:	0.0000	in^2
Effective Net Area, Aen:	0.0000	in^2 = Ag U, where U = 1.000
Stiffener Axial, Pu:	0.0	kips
Stiffener Stress, fu:	0.0	ksi = Pu / Ag
b:	0.0000	in = (Df - Dp) / 2 + n + Ws, Upper Pole
b / ts:	0.0000	in
Q, Where Qa = 1.0:	0.0000	
r:	0.0000	in^3
K L / r:	0.0000	
Φ:	0.0000	
Axial Capacity, ΦFcr:	0.00	ksi = Φ Fy
Φ:	0.0000	
Ten. Yielding Cap., ΦFnt:	0.00	ksi = Φ Fy
Φ:	0.0000	
Ten. Rupture Cap., ΦFnr:		ksi = Φ Fu (Aen / Ag)
Ratio:	0.0%	

Analysis Summary:

Bridge Stiffener Type 1	Bridge Stiffener Type 2
Weld Analysis Ratio: 30.9% PASS	Weld Analysis Ratio: 0.0% PASS
Pole Analysis Ratio: 44.9% PASS	Pole Analysis Ratio: 0.0% PASS
Stiffener Analysis Ratio: 63.2% PASS	Stiffener Analysis Ratio: 0.0% PASS

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v2.1, Effective Date: 05-03-17

Date: 9/26/2018
Project No: 37518-2442.003.7805
Site Name: MTN. View CEM (filley Park)
Site Number/BUN: 876329
Description:
Owner:
Engineer:

Welded Bridge Stiffener Analysis per TIA-222-G & AISC 13th Ed. (Black)

General Parameters and Loading:

Flange Elevation:	30.00	ft
TIA Reference Standard:	TIA-222-G	
AISC Manual:	13th Ed. (Black)	
Method:	LRFD	
ASD Stress Increase, ASIF:	N/A	
Moment, Muf:	1754.6	k-ft
Axial, Puf:	30.0	kips
Shear, Vf:	27.6	kips

Pole Parameters:

	Upper Pole	Lower Pole	
Pole Diameter, Dp:	30.00	36.00	in
Pole Thickness, tp:	0.3750	0.3750	in
Pole Fy:	42	42	ksi
Pole Fu:	60	60	ksi
Flange Diameter, Df:	47.00	47.00	in

Bridge Stiffener Parameters:

	Stiffener Type 1	Stiffener Type 2	
Qty. Stiffeners:	4	4	
Upper Weld Length, L1:	27.00	60.00	in
Lower Weld Length, L2:	21.25	67.00	in
Weld Size, w:	0.3750	0.3750	in
Electrode:	E80	E80	
Effective Stiffener Width, Ws:	4.25	6.00	in
Stiffener Thickness, ts:	1.25	1.25	in
Notch, n:	0.62	1.00	in
Stiffener Fy:	65	65	ksi
Stiffener Fu:	80	80	ksi
Unbraced Length, L:	12.00	5.63	in
K:	0.80	0.80	
Stiffener Spacing:	Symmetric	Symmetric	
Start Angle, for Symmetric:	0	50	degrees
Stiffener Circle:	52.49	55.00	in = Df + 2 n + Ws
Upper Eccentricity, e1:	11.25	12.50	in = (Df - Dp) / 2 + n + Ws / 2
Lower Eccentricity, e2:	8.25	9.50	in = (Df - Dp) / 2 + n + Ws / 2

Flange Bolt Parameters:

Number of Bolt Circles: (1) Bolt Circle

	Bolt Circle 1	Bolt Circle 2	
Qty. Bolts:	0	0	
Bolt Diameter:	1.50	0.00	in
Bolt Circle:	41.00	0.00	in
Bolt Spacing:	Symmetric	Symmetric	
Start Angle, for Symmetric:	0	0	degrees
Bolt Area, Ag:	0.0000	0.0000	in
Max. Tension:	0.00	0.00	kips
Max. Net Tension:	0.00	0.00	kips
Max. Net Compression:	0.00	0.00	kips
Moment to Bolt Circle:	0.00	0.00	k-ft
Axial to Bolt Circle:	0.00	0.00	kips
Shear to Bolt Circle:	0.00	0.00	kips
Equivalent Bolt Circle:	0.00	0.00	in

Weld Analysis per AISC Tables 8-4 & 8-3:

Upper Pole	Stiffener Type 1	Stiffener Type 2	
D:	6	6	Num. of Sixteenths in Weld
a:	0.4165	0.2083	= e1 / L1
k:	0	0	
C:	2.5990	3.4767	Tabulated Cofficient
C1:	1.0300	1.0300	Coefficient for Electrode
Φ:	0.7500	0.7500	
Stiffener Axial, Pu:	160.5	237.2	kips
Axial Capacity, ΦPn:	325.3	966.9	kips = Φ C C1 D L
Ratio:	49.3%	24.5%	

Lower Pole			
D:	6	6	Num. of Sixteenths in Weld
a:	0.3880	0.1418	= e2 / L2
k:	0	0	
C:	2.7116	3.6782	Tabulated Cofficient
C1:	1.0300	1.0300	Coefficient for Electrode
Φ:	0.7500	0.7500	
Stiffener Axial, Pu:	160.5	237.2	kips
Axial Capacity, ΦPn:	267.1	1142.2	kips = Φ C C1 D L
Ratio:	60.1%	20.8%	

Pole Analysis per AISC Table J2.5 & Sect. J4.2:

Upper Pole	Stiffener Type 1	Stiffener Type 2	
Stiffener Axial, Pu:	160.5	237.2	kips
Effective Throat, te:	0.2651	0.2651	in = 0.707 w
Shear Stress, fuv:	3.0	2.0	kips/in= Pu / (2 L1)
Section Modulus, S:	243.0	1200.0	in^2 = $L1^2$ / 3
Bending Stress, fub:	7.4	2.5	kips/in = Pu e1 / S
Combined Stress, fu:	8.0	3.2	kips/in = $(fuv^2 + fub^2)^{1/2}$
Φ:	1.0000	1.0000	
Stress Capacity, ΦFn	9.5	9.5	kips/in = Φ 0.6 Fy tp
Ratio:	84.6%	33.5%	

Lower Pole			
Stiffener Axial, Pu:	160.5	237.2	kips
Effective Throat, te:	0.2651	0.2651	in = 0.707 w
Shear Stress, fuv:	3.8	1.8	ksi = Pu / (2 L2)
Section Modulus, S:	150.5	1496.3	in^2 = $L2^2$ / 3
Bending Stress, fub:	8.8	1.5	ksi = Pu e2 / S
Combined Stress, fu:	9.6	2.3	kips/in = $(fuv^2 + fub^2)^{1/2}$
Φ:	1.0000	1.0000	
Stress Capacity, ΦFn	9.5	9.5	kips/in = Φ 0.6 Fy tp
Ratio:	56.6%	24.6%	

Stiffener 1 Analysis per AISC Sect. D2, E3 & E7

	Stiffener Type 1	
Gross Area, Ag:	5.3125	in^2
Effective Net Area, Aen:	5.3125	in^2 = Ag U, where U = 1.000
Stiffener Axial, Pu:	160.5	kips
Stiffener Stress, fu:	30.2	ksi = Pu / Ag
b:	13.3700	in = (Df - Dp) / 2 + n + Ws, Upper Pole
b / ts:	10.6960	in
Q, Where Qa = 1.0:	0.9551	= Qa 1.34 - 0.76 (b / ts) (Fy / E)$^{1/2}$
r:	0.3608	in^3
K L / r:	26.6043	
Φ:	0.9000	
Axial Capacity, ΦFcr:	52.40	ksi = Φ Q [0.658$^{Q Fy / Fe}$] Fy
Φ:	0.9000	
Ten. Yielding Cap., ΦFnt:	58.50	ksi = Φ Fy
Φ:	0.7500	
Ten. Rupture Cap., ΦFnr:	60.00	ksi = Φ Fu (Aen / Ag)
Ratio:	57.7%	

Stiffener 2 Analysis per AISC Sect. D2, E3 & E7

	Stiffener Type 2	
Gross Area, Ag:	7.5000	in^2
Effective Net Area, Aen:	7.5000	in^2 = Ag U, where U = 1.000
Stiffener Axial, Pu:	237.2	kips
Stiffener Stress, fu:	31.6	ksi = Pu / Ag
b:	15.5000	in = (Df - Dp) / 2 + n + Ws, Upper Pole
b / ts:	12.4000	in
Q, Where Qa = 1.0:	0.8938	= Qa 1.34 - 0.76 (b / ts) (Fy / E)$^{1/2}$
r:	0.3608	in^3
K L / r:	12.4708	
Φ:	0.9000	
Axial Capacity, ΦFcr:	51.60	ksi = Φ Q [0.658$^{Q Fy / Fe}$] Fy
Φ:	0.9000	
Ten. Yielding Cap., ΦFnt:	58.50	ksi = Φ Fy
Φ:	0.7500	
Ten. Rupture Cap., ΦFnr:	60.00	ksi = Φ Fu (Aen / Ag)
Ratio:	61.3%	

Analysis Summary:

Bridge Stiffener Type 1
Weld Analysis Ratio: 60.1% PASS
Pole Analysis Ratio: 56.6% PASS
Stiffener Analysis Ratio: 57.7% PASS

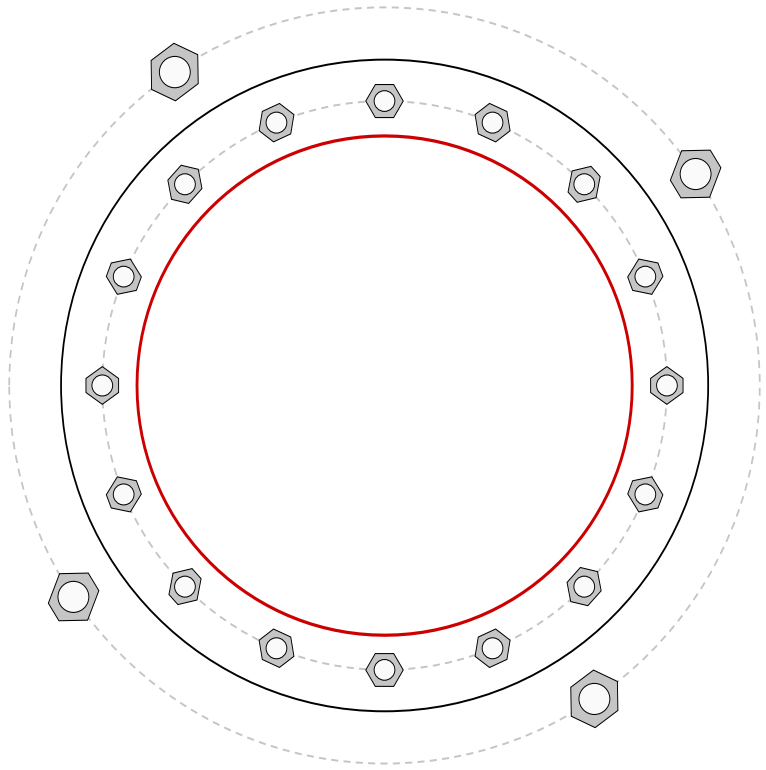
Bridge Stiffener Type 2
Weld Analysis Ratio: 24.5% PASS
Pole Analysis Ratio: 33.5% PASS
Stiffener Analysis Ratio: 61.3% PASS

Monopole Base Plate Connection

Site Info	
BU #	876329
Site Name	
Order #	

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	No
l_{ar} (in)	1.5
Eta Factor, η	0.5

Applied Loads	
Moment (kip-ft)	2661.85
Axial Force (kips)	29.77
Shear Force (kips)	30.58



Connection Properties

Anchor Rod Data

GROUP 1: (16) 1-1/2" ø bolts (A354-BC; Fy=109 ksi, Fu=125 ksi) on 41" BC
GROUP 2: (4) 2-1/4" ø bolts (A193 Gr. B7; Fy=105 ksi, Fu=125 ksi) on 54.5" BC

Base Plate Data

47" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Stiffener Data

N/A

Pole Data

36" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-ft)*

GROUP 1:		
Pu = 97.63	ϕPn = 141	**Stress Rating**
Vu = 1.21	ϕVn = n/a	**71.0%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu = 298.18	ϕPn = 325	**Stress Rating**
Vu = 2.79	ϕVn = n/a	**93.5%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	21.09	
Allowable Stress (ksi):	32.4	
Stress Ratio:	**65.1%**	**Pass**

Drilled Pier Foundation

BU # :	876329
Site Name:	MTN. View CEM. (Fille
App. Number:	

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	**Comp.**	**Uplift**
Moment (kip-ft)	2670	
Axial Force (kips)	45	
Shear Force (kips)	32	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	25	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 25' below grade		
Pier Diameter	6	ft
Rebar Quantity	24	
Rebar Size	9	
Clear Cover to Ties	3	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	6.62	-
Soil Safety Factor	3.86	-
Max Moment (kip-ft)	2859.49	-
Rating	*34.5%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	526.86	-
End Bearing (kips)	169.65	-
Weight of Concrete (kips)	108.61	-
Total Capacity (kips)	696.50	-
Axial (kips)	153.61	-
Rating	*22.1%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	6.67	-
Critical Moment (kip-ft)	2859.47	-
Critical Moment Capacity	3295.90	-
Rating	*86.8%*	-

Soil Interaction Rating	**34.5%**
Structural Foundation Rating	**86.8%**

Soil Profile

Groundwater Depth	15	ft	
# of Layers	3		

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.33	3.33	135	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.33	15	11.67	135	150		36	1.350	1.350				50	Cohesionless
3	15	25	10	75	87.6		36	2.151	2.151			8	42	Cohesionless

MODIFIED 120'-0" MONOPOLE

BU #876329; MTN VIEW CEM (FILLEY PARK)

28 BREWER DR
BLOOMFIELD, CONNECTICUT 06002
HARTFORD COUNTY
LAT: 41° 50' 6.57"; LONG: -72° 44' 28.2"
ORDER: 420701 REV. 10; WO: 1591717

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

PROJECT CONTACTS

STRUCTURE OWNER:
CROWN CASTLE
MOD PM: DAN VADNEY AT DAN.VADNEY@CROWNCASTLE.COM
PH: (518) 373-3510
MOD CM: JASON D'AMICO AT JASON.DAMICO@CROWNCASTLE.COM
PH: (860) 209-0104

ENGINEER OF RECORD:
PJFMOD@PAULJFORD.COM

THIS PROJECT INCLUDES THE FOLLOWING ITEMS

REMOVE EXISTING STIFFENERS AND POST INSTALLED ANCHOR RODS
REMOVE EXISTING BASE PLATE GROUT
REMOVE EXISTING WELDED & BOLTED SHAFT REINFORCING AS NECESSARY
REMOVE AND REPLACE STEP BOLTS AS NECESSARY
INSPECT POLE SHAFT FOR DAMAGE FROM EXISTING WELDS
POST INSTALLED ANCHOR RODS
FIELD WELDED ANCHOR BRACKETS
WELDED FLANGE BRIDGE STIFFENERS
SHAFT REINFORCING
OBSTRUCTION SIGNAGE

SHEET INDEX

SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
MI-1	MI CHECKLIST
N-1	GENERAL NOTES
B-1	FORGBolt® DETAILS
B-2	NEXGEN2™ BOLT DETAIL
B-3	AJAX ONESIDE™ BOLT DETAIL
S-1	MONOPOLE PROFILE
S-2	MONOPOLE SECTIONS AND DETAILS
S-3	BASE PLATE DETAILS
S-4	ANCHOR BRACKET DETAILS
S-5	TRANSITION STIFFENER DETAILS
S-6	BRIDGE STIFFENER DETAILS
S-7	BRIDGE STIFFENER DETAILS

WIND DESIGN DATA

REFERENCE STANDARD	ANSI/TIA-222-G-2-2009
LOCAL CODE	2016 CSBC
NOMINAL WIND SPEED (3-SECOND GUST)	97 MPH
ICE THICKNESS	1.0 IN
ICE WIND SPEED	50 MPH
SERVICE WIND SPEED	60 MPH
RISK CATEGORY	II
EXPOSURE CATEGORY	C
Kzt	1.0

TOWER MANUFACTURER: ROHN
TOWER MANUFACTURER #: 34738/SW

THE ASSOCIATED FAILING SA WO NUMBER FOR THIS PROJECT IS 1558710

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM PAUL J. FORD & COMPANY TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTED QUALIFIED ENGINEERING SERVICES, PLEASE CONTACT RIGGING@PAULJFORD.COM.

HOT WORK INCLUDED	
NA	BASE GRINDING ONLY
X	BASE WELDING (AND GRINDING)
NA	AERIAL GRINDING ONLY
X	AERIAL WELDING (AND GRINDING)

SAFETY CLIMB: "LOOK UP"
THE INTEGRITY OF THE WIRE ROPE SAFETY CLIMB SYSTEM SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION AND INSPECTION. TOWER REINFORCEMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF ANY WIRE ROPE SAFETY CLIMB ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO; PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, OR IMPACT TO THE ANCHORAGE POINTS IN ANY WAY. ANY COMPROMISED SAFETY CLIMB MUST BE REPORTED TO YOUR CROWN POC FOR RESOLUTION, INCLUDING EXISTING CONDITIONS

ATTENTION ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT (800) 788-7011.

8-7-18

REV	DATE	DESCRIPTION

BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

TITLE SHEET

T-1

V1.0 37518-2442.001.DWG

MI CHECKLIST

REQUIRED	REPORT ITEM	APPLICABLE CROWN DOC #	BRIEF DESCRIPTION
PRE-CONSTRUCTION			
X	MI CHECKLIST DRAWING	CED-SOW-10007	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
X	EOR APPROVED SHOP DRAWINGS	CED-SOW-10007	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. APPROVED ASSEMBLY/SHOP DRAWINGS SHALL BE SUBMITTED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATION INSPECTION	CED-SOW-10007	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	CED-SOW-10007 CED-STD-10069	A CWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	CED-SOW-10007	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED AS REQUIRED PER SECTION 9.2.5 OF CED-SOW-10007. MTRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	FABRICATOR NDE INSPECTION REPORT	CED-SOW-10066 CED-STD-10069	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	NDE OF MONOPOLE BASE PLATE	ENG-SOW-10033	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	CED-SOW-10007	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
ADDITIONAL TESTING AND INSPECTIONS:			
NA			
CONSTRUCTION			
NA	FOUNDATION INSPECTIONS	CED-SOW-10144	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL OBSERVATION OF THE REBAR SHALL BE PERFORMED BEFORE PLACING THE EPOXY. A SEALED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	CONCRETE COMP. STRENGTH AND SLUMP TEST	CED-SOW-10144	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE FOUNDATION REPORT.
NA	EARTHWORK	CED-SOW-10144	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND RESULTS INCLUDED AS PART OF THE FOUNDATION REPORT.
NA	MICROPILE/ROCK ANCHOR	CED-SOW-10144	MICROPILES/ROCK ANCHORS SHALL BE INSPECTED BY THE FOUNDATION INSPECTION VENDOR AND SHALL BE INCLUDED AS PART OF THE FOUNDATION INSPECTION REPORT, ADDITIONAL TESTING AND/OR INSPECTION REQUIREMENTS ARE NOTED IN THESE CONTRACT DOCUMENTS.
X	POST-INSTALLED ANCHOR ROD VERIFICATION	CED-SOW-10007	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH CROWN REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	BASE PLATE GROUT VERIFICATION	ENG-STD-10323	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMOVED AND/OR INSTALLED IN ACCORDANCE WITH CROWN REQUIREMENTS FOR INCLUSION IN THE MI REPORT.
X	FIELD CERTIFIED WELD INSPECTION	CED-SOW-10066 CED-STD-10069	A CROWN APPROVED CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST FIELD WELDS, FOLLOWING ALL PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS APPLICABLE TO WELD INSPECTIONS. A REPORT SHALL BE PROVIDED. NDE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED BY CROWN STANDARDS AND CONTRACT DOCUMENTS. THE NDE REPORT SHALL BE INCLUDED IN THE CWI REPORT.
X	ON-SITE COLD GALVANIZING VERIFICATION	ENG-STD-10149 ENG-BUL-10149	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.
NA	TENSION TWIST AND PLUMB	CED-PRC-10182 CED-STD-10261	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.
X	GC AS-BUILT DRAWINGS	CED-SOW-10007	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED WHEN THE EOR IS SPECIFYING ADDITIONAL INSPECTIONS DESCRIPTION AND APPLICABLE STANDARDS SHALL BE APPLIED.
ADDITIONAL TESTING AND INSPECTIONS:			
NA			
POST-CONSTRUCTION			
X	CONSTRUCTION COMPLIANCE LETTER	CED-SOW-10007	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
X	POST-INSTALLED ANCHOR ROD PULL TESTS	CED-PRC-10119	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY A CROWN APPROVED PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	CED-SOW-10007	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
NA	BOLT INSTALLATION VERIFICATION REPORT	CED-SOW-10007	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	PUNCHLIST DEVELOPMENT AND CORRECTION DOCUMENTATION	CED-PRC-10283 CED-FRM-10285	FINAL PUNCHLIST INDICATING ALL NONCONFORMANCE(S) IDENTIFIED AND THE FINAL RESOLUTION AND APPROVAL.
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	CED-SOW-10007	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
ADDITIONAL TESTING AND INSPECTIONS:			
NA			

MODIFICATION INSPECTION NOTES

GENERAL

THE MI IS AN ON-SITE VISUAL AND HANDS-ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS; IN ACCORDANCE WITH APPLICABLE CROWN STANDARDS; AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE CROWN POINT OF CONTACT (CROWN POC) FOR EVALUATION.

ALL MI'S SHALL BE CONDUCTED BY A CROWN APPROVED MI INSPECTOR, WORKING FOR A CROWN APPROVED MI VENDOR. SEE CROWN CED-LST-10173, "APPROVED MI VENDORS".

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR INSPECTOR SHALL CONTACT THE CROWN POINT OF CONTACT (POC).

REFER TO CROWN CED-SOW-10007, "MODIFICATION INSPECTION SOW", FOR FURTHER DETAILS AND REQUIREMENTS.

SERVICE LEVEL COMMITMENT

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:

- THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
  - WELD PREPARATION
  - BOLT INSTALLATION
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO CROWN DOCUMENT # CED-SOW-10007.

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

8/7/18

REV	DATE	DESCRIPTION

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 · Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

MI CHECKLIST

MI-1

V1.0 37518-2442.001.DWG

1. GENERAL NOTES
   - 1.1. THE MONOPOLE STRUCTURE IN ITS EXISTING CONDITION DOES NOT HAVE THE STRUCTURAL CAPACITY TO CARRY ALL OF THE PROPOSED AND EXISTING LOADS FROM THE ATTACHED STRUCTURAL MODIFICATION REPORT AT THE REQUIRED MINIMUM WIND SPEEDS. DO NOT INSTALL ANY NEW LOADS UNTIL THE MONOPOLE REINFORCING SYSTEM IS COMPLETELY AND SUCCESSFULLY INSTALLED.
   - 1.2. THESE DRAWINGS WERE PREPARED FROM INFORMATION PROVIDED BY CROWN CASTLE. THE INFORMATION PROVIDED HAS NOT BEEN FIELD VERIFIED BY THE ENGINEER OF RECORD (EOR) FOR ACCURACY AND THEREFORE DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL SITE CONDITIONS SHOULD BE ANTICIPATED. THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT DRAWINGS AND THEIR FIELD VERIFIED CONDITIONS AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL IMMEDIATELY REPORT ANY AND ALL DISCREPANCIES TO THE EOR AND CROWN CASTLE BEFORE PROCEEDING WITH THE WORK. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GENERAL CONTRACTOR AND/OR THE FABRICATOR
   - 1.3. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED OR NOTED SHALL BE PROVIDED.
   - 1.4. THIS STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE INSTALLATION OF THE REINFORCING REPAIR SYSTEM HAS BEEN SUCCESSFULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO ENSURE THE SAFETY AND STABILITY OF THE MONOPOLE AND ITS COMPONENT PARTS DURING FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.
   - 1.5. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN STANDARD CED-STD-10253 INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSI/TIA-322 (LATEST EDITION).
   - 1.6. OBSERVATION VISITS TO THE SITE BY CROWN CASTLE AND/OR THE EOR SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES. ANY SUPPORT SERVICES PERFORMED BY THE EOR DURING CONSTRUCTION ARE SOLELY FOR THE PURPOSE OF ACHIEVING GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE THE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
   - 1.7. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY CROWN CASTLE AND EOR PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
   - 1.8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK AS WELL AS CROWN CASTLE SAFETY GUIDELINES.
   - 1.9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW COAXIAL CABLES AND OTHER EQUIPMENT DURING CONSTRUCTION.
   - 1.10. ANY EXISTING ATTACHMENTS AND/OR PROJECTIONS ON THE POLE THAT MAY INTERFERE WITH THE INSTALLATION OF THE REINFORCING SYSTEM WILL HAVE TO BE REMOVED AND RELOCATED, REPLACED, OR RE-INSTALLED AS REQUIRED AFTER THE REINFORCING IS SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL IDENTIFY AND COORDINATE THESE ITEMS PRIOR TO CONSTRUCTION WITH CROWN CASTLE, TESTING AGENCY, AND EOR.
   - 1.11. ANY AND ALL EXISTING PLATFORMS THAT ARE LOCATED IN AREAS OF THE POLE SHAFT WHERE SHAFT REINFORCING MUST BE APPLIED SHALL BE TEMPORARILY REMOVED OR OTHERWISE SUPPORTED TO PERMIT NEW CONTINUOUS REINFORCEMENT TO BE ATTACHED. AFTER THE CONTRACTOR HAS SUCCESSFULLY INSTALLED THE MONOPOLE REINFORCEMENT SYSTEM, THE CONTRACTOR SHALL RE-INSTALL THE PLATFORMS.
   - 1.12. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE YOUR CROWN POC. ALL ALTERATIONS TO A SAFETY CLIMB'S ORIGINAL MANUFACTURER'S CONFIGURATION MUST BE DESIGNED BY THE ENGINEER OF RECORD. IF THE GENERAL CONTRACTOR FINDS THAT THE CLIMBING FACILITIES ARE IMPEDED, EITHER DURING BIDDING, DURING PRE-FABRICATION MAPPING, OR WHILE ON-SITE, THE GENERAL CONTRACTOR SHALL CONTACT THE CROWN POC TO DETERMINE A METHOD OF RESOLUTION.
   - 1.13. FOR STANDARD CROWN PARTS SEE THE MOST RECENT VERSION OF THE "CCI APPROVED REINFORCEMENT COMPONENTS" CATALOG.
   - 1.14. ALL SOLUTIONS FOR THE REPLACEMENT, RELOCATION OR MODIFICATION OF THE SAFETY CLIMB AND/OR ANY OF THE MONOPOLE CLIMBING FACILITIES SHALL BE COORDINATED WITH TUF-TUG PRODUCTS. CONTACT DETAILS: 3434 ENCRETE LANE, MORAINE, OHIO 45439 PHONE: 937-299-1213 EMAIL: TUFTUG@AOL.COM

2. STRUCTURAL STEEL
   - 2.1. STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING REFERENCE STANDARDS:
     - 2.1.1. BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
       - 2.1.1.1. "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS."
       - 2.1.1.2. "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM HIGH STRENGTH BOLTS," AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS.
       - 2.1.1.3. "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
     - 2.1.2. BY THE AMERICAN WELDING SOCIETY (AWS):
       - 2.1.2.1. "STRUCTURAL WELDING CODE - STEEL D1.1."
       - 2.1.2.2. "STANDARD SYMBOLS FOR WELDING, BRAZING, AND NONDESTRUCTIVE EXAMINATION"
   - 2.2. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM HIGH STRENGTH BOLTS', DEC. 31, 2009.
   - 2.3. ANY MATERIAL OR WORKMANSHIP WHICH IS OBSERVED TO BE DEFECTIVE OR INCONSISTENT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED, MODIFIED, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
   - 2.4. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1. ALL WELD ELECTRODES SHALL BE E80XX UNLESS NOTED OTHERWISE ON THE DRAWINGS.
   - 2.5. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED BY AWS. CONTRACTOR SHALL SUBMIT WELDERS' CERTIFICATION AND QUALIFICATION DOCUMENTATION TO CROWN CASTLE'S TESTING AGENCY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
   - 2.6. STRUCTURAL STEEL PLATES SHALL CONFORM TO ASTM A572 GRADE 65(FY = 65 KSI MIN) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
   - 2.7. SURFACES OF EXISTING STEEL SHALL BE PREPARED AS REQUIRED FOR FIELD WELDING PER AWS. SEE SECTION I NOTES REGARDING TOUCH UP OF GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS FIELD WELDING.
   - 2.8. NO WELDING SHALL BE DONE TO THE EXISTING STRUCTURE WITHOUT THE PRIOR APPROVAL AND SUPERVISION OF THE TESTING AGENCY.
   - 2.9. FIELD CUTTING OF STEEL:
     - 2.9.1. IMPORTANT CUTTING AND WELDING SAFETY GUIDELINES: THE CONTRACTOR SHALL FOLLOW ALL CROWN CASTLE CUTTING, WELDING, FIRE PREVENTION AND SAFETY GUIDELINES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT CROWN CASTLE GUIDELINES. PER THE 12-01-2005 CROWN CASTLE DIRECTIVE: "ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CROWN CASTLE POLICY 'CUTTING AND WELDING SAFETY PLAN' (DOC # ENG-PLN-10015) ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT". ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, RESULTING FROM THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
     - 2.9.2. ALL REQUIRED CUTS SHALL BE CUT WITHIN THE DIMENSIONS SHOWN ON THE DRAWINGS. NO CUTS SHALL EXTEND BEYOND THE OUTLINE OF THE DIMENSIONS SHOWN ON THE DRAWINGS. ALL CUT EDGES SHALL BE GROUND SMOOTH AND DE-BURRED. CUT EDGES THAT ARE TO BE FIELD WELDED SHALL BE PREPARED FOR FIELD WELDING PER AWS D1.1 AND AS SHOWN ON THE DRAWINGS. CONTRACTOR TO AVOID 90 DEGREE CORNERS. IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUTS.

3. TOUCH UP OF GALVANIZING
   - 3.1. THE CONTRACTOR SHALL TOUCH UP ANY AND ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION. GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ANY AND ALL ABRASIONS, CUTS, FIELD DRILLING, AND ALL FIELD WELDING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZRC COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.
   - 3.2. CONTRACTOR SHALL CLEAN AND PREPARE ALL FIELD WELDS ON GALVANIZED AND PRIME PAINTED SURFACES FOR TOUCH-UP COATING IN ACCORDANCE WITH AWS D1.1. CROWN CASTLE'S TESTING AGENCY SHALL VERIFY THE PREPARED SURFACE PRIOR TO APPLICATION OF THE TOUCH-UP COATING.
   - 3.3. CROWN CASTLE'S TESTING AGENCY SHALL TEST AND VERIFY THE COATING THICKNESS AFTER THE CONTRACTOR HAS APPLIED THE ZRC COLD GALVANIZING COMPOUND AND IT HAS SUFFICIENTLY DRIED. AREAS FOUND TO BE ADEQUATELY COATED, SHALL BE RE-COATED BY THE CONTRACTOR AND RE-TESTED BY THE TESTING AGENCY.

4. HOT-DIP GALVANIZING
   - 4.1. HOT-DIP GALVANIZE ALL STRUCTURAL STEEL MEMBERS AND ALL STEEL ACCESSORIES, BOLTS, WASHERS, ETC. PER ASTM A123 OR PER ASTM A153, AS APPROPRIATE.
   - 4.2. PROPERLY PREPARE STEEL ITEMS FOR GALVANIZING. DRILL OR PUNCH WEEP AND/OR DRAINAGE HOLES WITH EOR APPROVAL OF LOCATIONS.
   - 4.3. ALL GALVANIZING SHALL BE DONE AFTER FABRICATION IS COMPLETED AND PRIOR TO FIELD INSTALLATION.

5. PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER
   - 5.1. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MONOPOLE REINFORCING SYSTEM AND THE WORK HAS BEEN ACCEPTED BY CROWN CASTLE, CROWN CASTLE WILL BE RESPONSIBLE FOR THE LONG TERM AND PERPETUAL INSPECTION AND MAINTENANCE OF THE POLE AND REINFORCING SYSTEM.
   - 5.2. ANY FIELD WELDED CONNECTIONS ARE SUBJECT TO CORROSION DAMAGE AND DETERIORATION IF THEY ARE NOT PROPERLY MAINTAINED AND COVERED WITH CORROSION PREVENTIVE COATING SUCH AS THE ZRC GALVANIZING COMPOUND SPECIFIED PREVIOUSLY. THE STRUCTURAL LOAD CARRYING CAPACITY OF THE REINFORCED POLE SYSTEM IS DEPENDENT UPON THE INSTALLED SIZE AND QUALITY, MAINTAINED SOUND CONDITION AND STRENGTH OF THESE FIELD WELDED CONNECTIONS. ANY CORROSION OF, DAMAGE TO, FATIGUE, FRACTURE, AND/OR DETERIORATION OF THESE WELDS AND/OR THE EXISTING GALVANIZED STEEL POLE STRUCTURE AND THE WELDED COMPONENTS WILL RESULT IN THE LOSS OF STRUCTURAL LOAD CARRYING CAPACITY AND MAY LEAD TO FAILURE OF THE STRUCTURAL SYSTEM. THEREFORE, IT IS IMPERATIVE THAT CROWN CASTLE REGULARLY INSPECTS, MAINTAINS, AND REPAIRS AS NECESSARY, ALL OF THESE WELDS, CONNECTIONS, AND COMPONENTS FOR THE LIFE OF THE STRUCTURE.
   - 5.3. CROWN CASTLE SHALL REFER TO ANSI/TIA-222-G-2-2009, SECTION 14 AND ANNEX J FOR RECOMMENDATIONS FOR MAINTENANCE AND INSPECTION. THE FREQUENCY OF THE INSPECTION AND MAINTENANCE INTERVALS IS TO BE DETERMINED BY CROWN CASTLE BASED UPON ACTUAL SITE AND ENVIRONMENTAL CONDITIONS. THE EOR RECOMMENDS THAT A COMPLETE AND THOROUGH INSPECTION OF THE ENTIRE REINFORCED MONOPOLE STRUCTURAL SYSTEM BE PERFORMED YEARLY AND/OR AS FREQUENTLY AS CONDITIONS WARRANT. ACCORDING TO ANSI/TIA-222-G-2-2009 SECTION 14.2: "IT IS RECOMMENDED THAT THE STRUCTURE BE INSPECTED AFTER SEVERE WIND AND/OR ICE STORMS OR OTHER EXTREME LOADING CONDITIONS".

6. FIELD NDE MINIMUM REQUIREMENTS
   - 6.1. ALL NDE SHALL BE IN ACCORDANCE WITH AWS D1.1.
   - 6.2. FOR NEW BASE STIFFENERS (INCLUSIVE OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT.
   - 6.3. FOR NEW FLAT PLATE REINFORCEMENT AT THE BASE OF THE TOWER, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT, BUT MAY BE LIMITED TO A HEIGHT OF 10'-0".
   - 6.4. FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD, GC SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. PLEASE SEE ENG-SOW-10033: 'TOWER BASE PLATE NDE, AND ENG-BUL-10051: 'NDE REQUIREMENTS FOR MONOPOLE BASE PLATE TO PREVENT CONNECTION FAILURE'. NOTIFY THE EOR AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING MODIFICATIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.
   - 6.5. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

7. FOUNDATION WORK - (NOT REQUIRED)

8. CAST-IN-PLACE CONCRETE - (NOT REQUIRED)

9. EPOXY GROUTED REINFORCING ANCHOR RODS
   - 9.1. UNLESS OTHERWISE NOTED, REINFORCING ANCHOR RODS SHALL BE 150 KSI ALL-THREAD BARS CONFORMING TO ASTM A722. RECOMMENDED MANUFACTURERS/SUPPLIERS OF 150 KSI ALL-THREAD BARS ARE WILLIAMS FORM ENGINEERING CORPORATION AND DYWIDAG SYSTEMS INTERNATIONAL.
   - 9.2. ALL REINFORCING ANCHOR RODS SHALL BE HOT DIP GALVANIZED PER ASTM A123.
   - 9.3. THE CORE-DRILLED HOLES IN THE CONCRETE FOR THE ANCHOR RODS SHALL BE CLEAN AND DRY, AND OTHERWISE PROPERLY PREPARED ACCORDING TO THE ANCHOR ROD AND EPOXY MANUFACTURERS' INSTRUCTIONS, PRIOR TO PLACEMENT OF ANCHOR RODS AND EPOXY. CONTRACTOR SHALL FOLLOW ALL ANCHOR ROD AND EPOXY MANUFACTURER RECOMMENDATIONS REGARDING HANDLING OF RODS, EPOXY, ACCEPTABLE AMBIENT TEMPERATURE RANGE DURING INSTALLATION AND POST-INSTALLATION CURING, THE EFFECT OF TEMPERATURE ON EPOXY CURING TIME, PREPARATION OF HOLE, ETC.
   - 9.4. ALLFASTENER AF35LVE EPOXY SHALL BE USED TO ANCHOR THE BAR IN THE DRILL HOLES UNLESS OTHERWISE NOTED. IF THE DESIGNED EMBEDMENT IS GREATER THAN 12 FT, CONTRACTOR HAS THE OPTION TO USE PILE ANCHOR GROUT BY E-CHEM AS AN ALTERNATE. IF CONTRACTOR WISHES TO USE A DIFFERENT EPOXY, A REQUEST INCLUDING THE EPOXY TECHNICAL DATA SHEET(S) SHALL BE SUBMITTED TO THE EOR FOR REVIEW PRIOR TO CONSTRUCTION.
   - 9.5. ONCE THE REINFORCING ANCHOR RODS HAVE BEEN INSTALLED AND ALL EPOXY AND GROUT HAVE CURED (IF BASE PLATE AND/OR BEARING PLATES HAVE BEEN GROUTED PRIOR TO TESTING), ALL REINFORCING ANCHORS SHALL BE LOAD TESTED PER CROWN CASTLE ENGINEERING DOCUMENT #ENG-PRC-10119. REFER TO THE NEW ANCHOR & BRACKET DETAIL ON FOLLOWING SHEETS FOR SPECIFIED ANCHOR ROD TARGET TENSION LOAD.
   - 9.6. ONCE THE REINFORCING ANCHOR RODS HAVE BEEN SUCCESSFULLY LOAD TESTED AND APPROVED THE CONTRACTOR SHALL TIGHTEN ALL HEAVY HEX ANCHOR NUTS TO SNUG TIGHT PLUS 1/8 TURN OF NUT.
   - 9.7. TAKE ALL MEASUREMENTS NECESSARY TO AVOID DAMAGING EXISTING REINFORCING BARS DURING CORING OPERATIONS. NOTIFY ENGINEER OF RECORD IMMEDIATELY IF EXISTING REINFORCING BARS ARE ENCOUNTERED AND INTERFERE WITH PLACEMENT OF NEW ANCHORS. MINOR ADJUSTMENT TO PROPOSED LOCATION OF NEW ANCHORS MAY BE REQUIRED.
   - 9.8. IF BASE PLATE GROUT REMOVAL IS REQUIRED FOR ANCHOR ROD INSTALLATION SEE ENG-PRC-10012; "BASE PLATE GROUT REPAIR' FOR PROCEDURES AND RECOMMENDED MANUFACTURERS. CONTRACTOR TO DETERMINE THE QUANTITY REQUIRED.
   - 9.9. HILTI HIT-HY 200 SHALL BE USED FOR ALL HORIZONTAL DOWEL UNLESS OTHERWISE NOTED.
   - 9.10. HILTI RE-500 V3 EPOXY SHALL BE USED FOR ANCHORS WITH DIAMETERS LESS THAN 1 1/2 INCHES AND ALL VERTICAL DOWELS UNLESS OTHERWISE NOTED.

10. BASE PLATE GROUT REMOVAL
    - 10.1. THE GC SHALL BEGIN THIS PROCEDURE AS EARLY AS POSSIBLE DURING THE MODIFICATION PROCESS SO THAT IF ISSUES ARISE, THEY CAN BE RESOLVED WITHIN THE ANTICIPATED MODIFICATION TIMELINE.
    - 10.2. IF ANY DETERIORATED GROUT EXISTS, BEGIN AT THIS LOCATION. REMOVE DETERIORATED GROUT AND THE GROUT AROUND THE NEAREST ONE OR TWO ANCHOR RODS TO FULLY EXPOSE THE LEVELING NUT. IF THE GC DISCOVERS THAT A HALF NUT OR JAM NUT WAS USED AS A LEVELING NUT, OR IF NO LEVELING NUT IS PRESENT, IMMEDIATELY CONTACT CED AND THE CROWN POC (TYPICALLY THE MOD PM) FOR A RESOLUTION. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.
    - 10.3. OTHERWISE, CHECK THE LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 1.3.2.3 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR". IF SEVERE CORROSION / MATERIAL LOSS IS FOUND OR CORROSION EXISTS TO THE POINT WHERE THE LEVELING NUT IS UNABLE TO BE TIGHTENED WHEN OBVIOUSLY LOOSE, IMMEDIATELY NOTIFY THE CROWN POC (TYPICALLY THE MOD PM). REFERENCE ENG-BUL-10114 "RUST CLASSIFICATION" FOR EXAMPLES OF MATERIAL LOSS. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.
    - 10.4. IN THE EVENT THAT SEVERE CORROSION IS NOT ENCOUNTERED, AND BEING SURE TO CHECK EACH ANCHOR ROD FOR CORROSION PER ENG-BUL-10114 "RUST CLASSIFICATION", REMOVE ALL EXISTING BASEPLATE GROUT WHILE CHECKING EACH LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 1.3.2.3 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR".
    - 10.5. CONSISTENT WITH SECTION 1.3.2.4 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR", HAND TOOL CLEAN TO SSPC-SP2 AND SOLVENT CLEAN TO SSPC-SP1, ALL EXPOSED STRUCTURAL STEEL ELEMENTS, INCLUDING ANCHOR RODS, LEVELING NUTS, AND UNDERSIDE OF BASE PLATE TO THE GREATEST EXTENT POSSIBLE. ENSURE THAT ALL OLD GROUT IS REMOVED TO ALLOW COLD GALVANIZING TO ADHERE TO THE STEEL.
    - 10.6. APPLY BY BRUSH TWO COATS OF A CROWN-APPROVED COLD-GALVANIZING COMPOUND TO ALL EXPOSED STRUCTURAL STEEL ELEMENTS BENEATH THE BASE PLATE, AND ALLOW CURING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. A LIST OF CROWN-APPROVED DIRECT APPLICATION COLD-GALVANIZING COMPOUNDS CAN BE FOUND IN ENG-STD-10149 "TOWER PROTECTIVE COATINGS GUIDELINES" SECTION 2.1.1.

11. BASE PLATE GROUT - (NOT REQUIRED)

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER
8.7.18

REV	DATE	DESCRIPTION

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

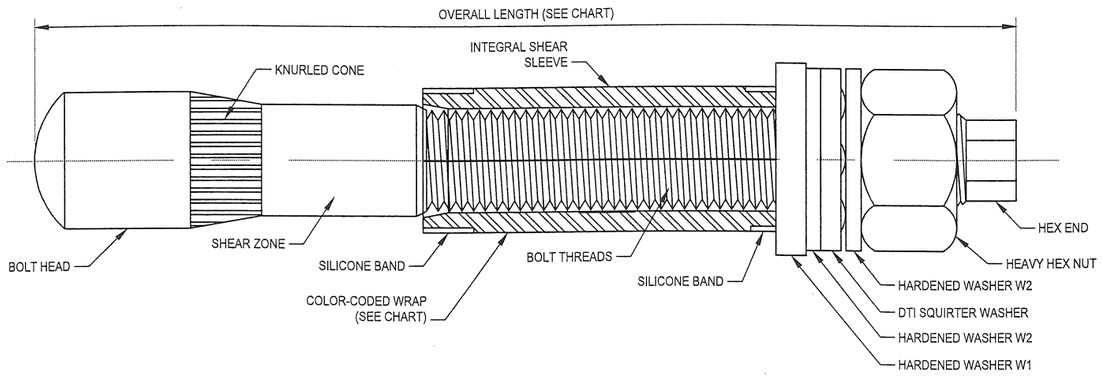
BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

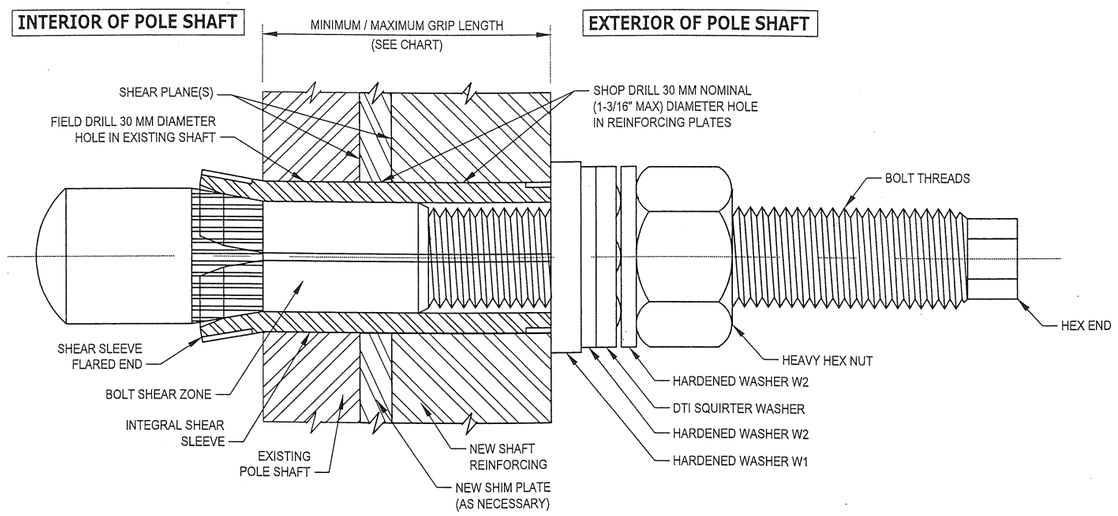
GENERAL NOTES

N-1

V1.0 37518-2442.001.DWG



PRE-INSTALLED FORGBolt® ASSEMBLY DETAIL 1 / B-1



INSTALLED FORGBolt® ASSEMBLY DETAIL 2 / B-1

FORGBolt®		AISC Group A Material: ASTM A325 and PC8.8 (Tensile Stress, Fu = 120 ksi minimum)				
GROUP A	FORGBolt® Size (mm)	Overall Length (inches)	Estimated Weight Each (lbs)	Grip Range (inch)	Comment	Color Code
FORGBolt® A325 - PC8.8 1	135	5.31	1.3	3/8" to 1"	--	RED
2	160	6.30	1.6	3/4" to 1-1/2"	--	GREEN
3	195	7.68	1.9	1-1/4" to 2-1/4"	--	BLUE
4	260	10.24	2.6	2" to 3-1/2"	Splice Bolt	YELLOW
5	365	14.37	3.6	3-1/2" to 5-1/2"	Flange Jump Bolt	ORANGE
6	440	17.32	4.3	5-1/2" to 8-1/2"	Flange Jump Bolt	BLACK
DTI Note	Each Group A (A325/PC8.8) FORGBolt® assembly shall have a 'Squirter' DTI that is compatible with a M20-PC8.8 bolt.					

FOLLOW ALL MANUFACTURER / DISTRIBUTOR RECOMMENDATIONS FOR INSTALLATION, TIGHTENING, AND INSPECTION

INSTALLATION NOTES:
1. FIELD DRILL HOLES TO 30 MM DIAMETER.
2. SELECT CORRECT BOLT SIZE FOR INSTALLATION GRIP (REFER TO PLANS).
3. INSERT BOLT ASSEMBLY THROUGH HOLES IN SHAFT REINFORCING PLATES AND SEAT THE HARDENED WASHER W1 FLUSH AGAINST OUTSIDE OF PLATE.
4. HAND TIGHTEN NUT TO FINGER TIGHT.
5. TIGHTEN NUT TO PRETENSIONED CONDITION AND UNTIL DTI SHOWS PROPER INDICATION.
6. PROPERLY DOCUMENT AND INSPECT BOLT TIGHTENING PER PLAN REQUIREMENTS.

BOLT HOLE NOTES:
1. ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".
2. ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.

BOLT TIGHTENING AND INSPECTION NOTES:
1. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.
2. ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

AISC GROUP A MATERIAL: ASTM A325 AND PC8.8
(Fu = 120 KSI MIN TENSILE STRESS)

CONTAINS PROPRIETARY INFORMATION
U.S. PATENT NUMBER 9,562,558 B2

DISTRIBUTOR CONTACT:
PRECISION TOWER PRODUCTS
PHONE: 888-926-4857
EMAIL: info@precisiontowerproducts.com
WEB: www.precisiontowerproducts.com

STATE OF CONNECTICUT JUSTIN T. KLINE No. 30301 LICENSED PROFESSIONAL ENGINEER
8-7218

REV	DATE	DESCRIPTION

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

FORGBolt® DETAILS

B-1

V1.0 37518-2442.001.DWG

FOLLOW ALL MANUFACTURER / DISTRIBUTOR RECOMMENDATIONS FOR INSTALLATION, TIGHTENING, AND INSPECTION

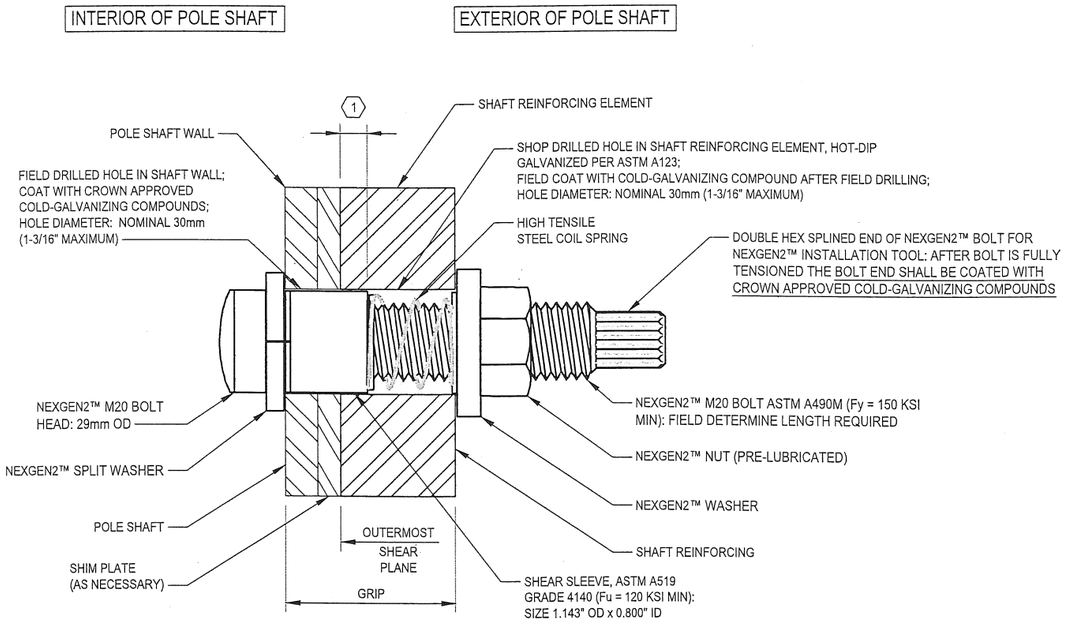
BOLT HOLE NOTES:

1. ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".
2. ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.

BOLT TIGHTENING AND INSPECTION NOTES:

1. ALL NEXGEN2™ BOLT ASSEMBLIES SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF SECTION 8.2.3 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. PER SECTION 8.2.3: ALL FASTENER ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS IN AISC SECTION 8.1 WITHOUT SEVERING THE SPLINED END AND WITH WASHERS POSITIONED AS REQUIRED IN AISC SECTION 6.2. PER REQUIREMENTS IN SECTION 8.1: PRIOR TO BOLT PRETENSIONING, THE JOINT SHALL FIRST BE COMPACTED TO THE SNUG-TIGHT CONDITION. SNUG TIGHT IS THE CONDITION THAT EXISTS WHEN ALL OF THE PLIES IN THE CONNECTION HAVE BEEN PULLED INTO FIRM CONTACT BY THE BOLTS AND THE BOLTS HAVE BEEN TIGHTENED SUFFICIENTLY TO PREVENT THE REMOVAL OF THE NUTS WITHOUT THE USE OF A WRENCH. ONCE THE SNUG TIGHT CONDITION IS ACHIEVED, THEN THE BOLT ASSEMBLY CAN BE TIGHTENED TO THE PRETENSIONED CONDITION.
2. ALL NEXGEN2™ BOLT ASSEMBLIES SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF SECTION 9.2.3 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. NOTE THAT COMPLETE INSPECTION OF ALL NEXGEN2™ BOLT ASSEMBLIES IS REQUIRED IN ADDITION TO ROUTINE OBSERVATION.
3. ALL NEXGEN2™ BOLTS SHALL BE INSPECTED BY A QUALIFIED BOLT INSPECTOR PER NOTES 1 AND 2, ABOVE. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT: THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE NEXGEN2™ BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION; AND THE CONTRACTOR'S TENSIONING PROCEDURE. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THAT THE DOUBLE HEX SPLINED END OF THE BOLTS HAVE BEEN TWISTED OFF AND COATED WITH CROWN APPROVED COLD-GALVANIZING COMPOUND..

(1) NOTE: SHEAR SLEEVE LENGTH: THE SHEAR SLEEVE SHALL PROJECT A MINIMUM OF 3/8" BEYOND THE OUTERMOST SHEAR PLANE. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS SHOWING NEXGEN2™ BOLT LENGTHS AND SHEAR SLEEVE LENGTHS TO THE EOR FOR REVIEW AND APPROVAL.



TYPICAL NEXGEN2™ BOLT DETAIL (1) B-2

PART NUMBER	BOLT LENGTH	SLEEVE LENGTH	MIN GRIP RANGE	MAX GRIP RANGE
2NG2032	M20x75	1/2"	5/8"	1 3/8"
2NG2036	M20x95	11/16"	15/16"	1 7/16"
2NG2048	M20x95	1 3/16"	1 7/16"	1 7/8"
2NG2057	M20x95	1 5/8"	1 7/8"	2 1/4"
2NG2068	M20x135	2"	2 1/4"	2 11/16"
2NG2096	M20x135	2 7/16"	2 11/16"	3 3/4"
2NG2127	M20x175	3"	3 3/4"	5"
2NG2212	M20x250	4"	5"	8 5/16"

NOTE: NEXGEN2™ BOLT ASSEMBLY SHALL BE MAGNI 565 COATED PER ASTM F2833 AND MANUFACTURER SPECIFICATIONS.

NOTE: INSTALL NEXGEN2™ BOLT ASSEMBLY PER MANUFACTURER'S INSTRUCTIONS.

DISTRIBUTOR CONTACT DETAILS:
ALLFASTENERS
959 LAKE ROAD
MEDINA, OHIO, USA 44256
PHONE: 440-232-6060
FAX 440-232-6062
WEBSITES: WWW.ALLFASTENERS.COM
WWW.AFTOWER.COM

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER
8/7/18

REV	DATE	DESCRIPTION

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

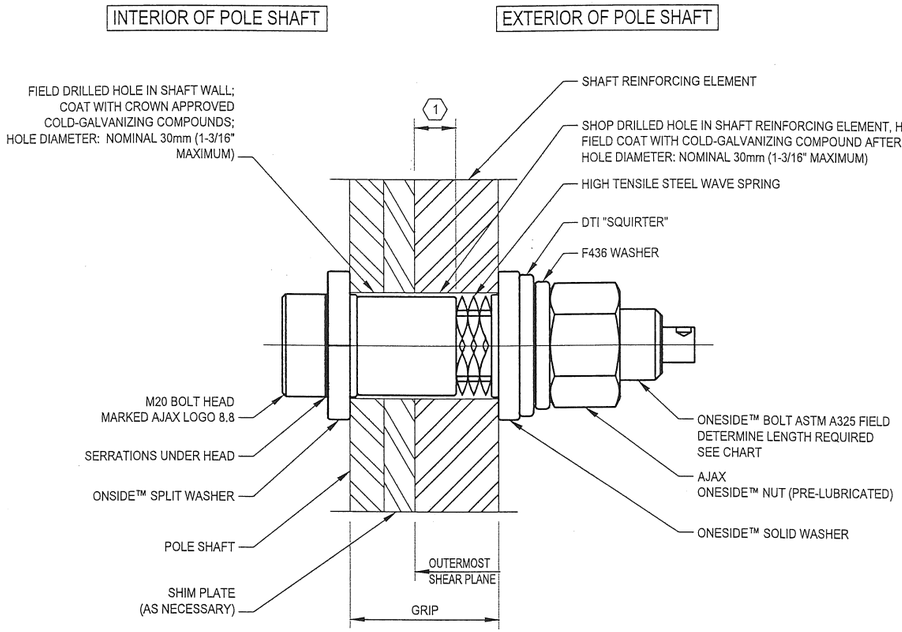
NEXGEN2™ BOLT DETAIL

B-2

V1.0 37518-2442.001.DWG

AJAX ONESIDE™ BOLT NOTE SHEET: REV. 1.01, 06-08-2016

(1) NOTE: SHEAR SLEEVE LENGTH: THE SHEAR SLEEVE SHALL PROJECT A MINIMUM OF 3/8" BEYOND THE OUTERMOST SHEAR PLANE. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS SHOWING AJAX ONESIDE™ BOLT LENGTHS AND SHEAR SLEEVE LENGTHS TO THE EOR FOR REVIEW AND APPROVAL.



TYPICAL AJAX ONESIDE™ BOLT DETAIL 1 / B-3

FOLLOW ALL MANUFACTURER / DISTRIBUTOR RECOMMENDATIONS FOR INSTALLATION, TIGHTENING, AND INSPECTION

BOLT HOLE NOTES:

1. ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".
2. ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.

BOLT TIGHTENING AND INSPECTION NOTES:

1. ALL AJAX ONESIDE™ BOLT ASSEMBLIES SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF SECTION 8.2.4 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. PER SECTION 8.2.4: ALL FASTENER ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS IN AISC SECTION 8.1 WITH WASHERS POSITIONED AS REQUIRED IN AISC SECTION 6.2. PER REQUIREMENTS IN SECTION 8.1: PRIOR TO BOLT PRETENSIONING, THE JOINT SHALL FIRST BE COMPACTED TO THE SNUG-TIGHT CONDITION. SNUG TIGHT IS THE CONDITION THAT EXISTS WHEN ALL OF THE PLIES IN THE CONNECTION HAVE BEEN PULLED INTO FIRM CONTACT BY THE BOLTS AND THE BOLTS HAVE BEEN TIGHTENED SUFFICIENTLY TO PREVENT THE REMOVAL OF THE NUTS WITHOUT THE USE OF A WRENCH. ONCE THE SNUG TIGHT CONDITION IS ACHIEVED, THEN THE BOLT ASSEMBLY CAN BE TIGHTENED TO THE PRETENSIONED CONDITION.
2. ALL AJAX ONESIDE™ BOLT ASSEMBLIES SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF SECTION 9.2.4 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. NOTE THAT COMPLETE INSPECTION OF ALL AJAX ONESIDE™ BOLT ASSEMBLIES IS REQUIRED IN ADDITION TO ROUTINE OBSERVATION.
3. ALL AJAX ONESIDE™ BOLTS SHALL BE INSPECTED BY A QUALIFIED BOLT INSPECTOR PER NOTES 1 AND 2, ABOVE. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT: THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE AJAX ONESIDE™ BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION; AND THE CONTRACTOR'S TENSIONING PROCEDURE. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THAT THE DIRECT TENSION INDICATOR WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED.
4. A MINIMUM OF 4 OUT OF 5 SQUIRTER® DTI PROTRUSIONS SHALL BE ENGAGED IN ANY AJAX ONESIDE™/DTI BOLT ASSEMBLY IN THE REINFORCING MEMBERS. A FEELER GAGE MAY BE USED TO VERIFY PROTRUSION COMPRESSION.
5. INSPECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND CROWN DOCUMENT ENG-SOW-10007: *MODIFICATION INSPECTION SOW*.

BOLT ASSEMBLY AND INSTALLATION:

1. BOLT MUST BE PURCHASED PRE-ASSEMBLED.
2. FOLLOW BOLT AND DTI MANUFACTURERS INSTRUCTIONS FOR INSTALLATION.

AJAX ONESIDE™ BOLT DETAIL

CODE	SIZE	COLOR	SLEEVE LENGTH	GRIP	GRIP IMP
OSBA20.65-6	M20 x 65	ORANGE	6.0 (0.236")	12.5 / 20.0	0.500" / 0.787"
OSBA20.95-14	M20 x 95	BLACK	14.0 (0.551")	20.0 / 32.0	0.787" / 1.259"
OSBA20.95-22	M20 x 95	GREEN	22.0 (0.866")	30.0 / 50.0	1.181" / 1.968"
OSBA20.95-30	M20 x 95	YELLOW	30.0 (1.181")	40.5 / 50.0	1.595" / 1.968"
OSBA20.135-39	M20 x 135	BLUE	39.0 (1.535")	49.0 / 77.0	1.929" / 3.031"
OSBA20.135-48	M20 x 135	BROWN	48.0 (1.889")	60.5 / 77.0	2.375" / 3.031"
OSBA20.135-57	M20 x 135	PURPLE	57.0 (2.244")	67.0 / 90.0	2.637" / 3.543"
OSBA20.165-76	M20 x 165	RED	76.0 (3.000")	87.0 / 120.0	3.425" / 4.724"
OSBA20.250	M20 x 250	SILVER	MTO	121.0 / 211.0	4.724" / 8.310"

DISTRIBUTOR
IRA SVENSGAARD AND ASSOCIATES
PETER SVENDSGAARD - PETERS@IRASVENS.COM
JOHN KILLAM - JOHN@IRASVENS.COM
PHONE: (530) 647-8225
FAX: (530) 647-8229

MANUFACTURER
AJAX FASTENERS
SALES + TECH: ONESIDE@AJAXFAST.COM.AU

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED PROFESSIONAL ENGINEER
8.17.18

REV	DATE	DESCRIPTION

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

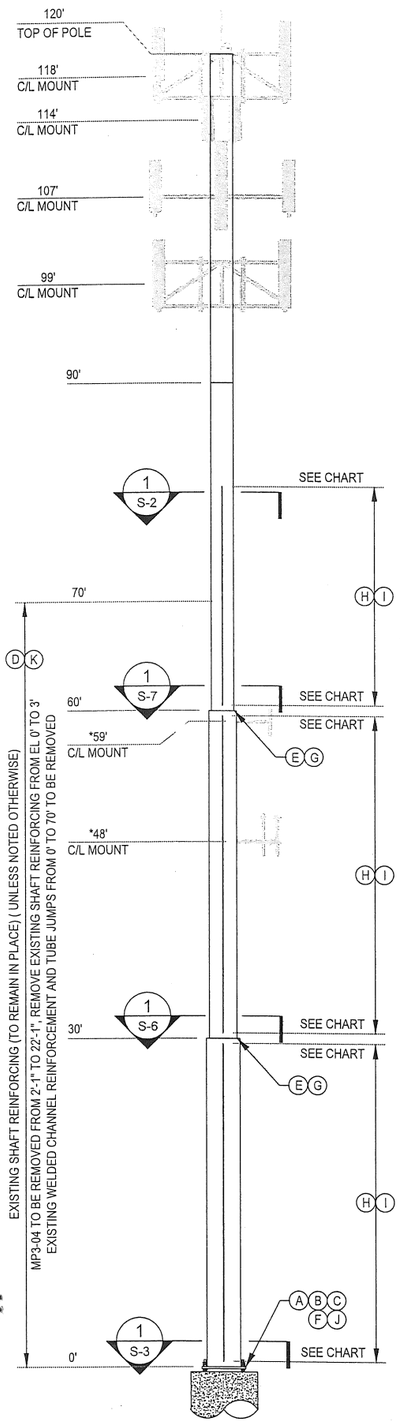
BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

AJAX ONESIDE™ BOLT DETAIL

B-3

V1.0 37518-2442.001.DWG



POLE ELEVATION 1 / S-1

TOWER MODIFICATION SCHEDULE

	ELEVATION	TOWER MODIFICATION DESCRIPTION	REFERENCE SHEETS
A	0'	REMOVE EXISTING BASE PLATE GROUT. SEE BASE PLATE GROUT REMOVAL NOTES	N-1, S-4, S-5
B	0'	REMOVE EXISTING POST INSTALLED ANCHOR RODS AND BRACKETS	S-3
C	0'	INSTALL TRANSITION STIFFENERS AT THE BASE	S-3 & S-5
D	0' TO 70'	REMOVE EXISTING SHAFT REINFORCING AS NECESSARY	S-3
E	30' & 60'	REMOVE EXISTING TUBE JUMPS	S-6
F	0'	INSTALL NEW ANCHOR RODS AND BRACKETS AT BASE PLATE	S-3 & S-4
G	30' & 60'	INSTALL NEW WELDED FLANGE BRIDGE STIFFENERS	S-6 & S-7
H	0'-6" TO 29'-6", 30'-6" TO 59'-6" & 60'-6" TO 80'-6"	INSTALL NEW SHAFT REINFORCING	S-1 & S-2
I	0'-6" TO 29'-6", 30'-6" TO 59'-6" & 60'-6" TO 80'-6"	REMOVE AND REPLACE STEP BOLTS AS REQUIRED FOR INSTALLATION OF NEW SHAFT REINFORCING. SEE CROWN DOCUMENT CED-CAT-10300 FOR STEP BOLT ATTACHMENT DETAILS.	S-1 & S-2
J	-	** CONTRACTOR TO POST SIGNAGE INDICATING OBSTRUCTED CLIMBING FACILITIES	S-1
K	0' TO 70'	AFTER REMOVAL OF EXISTING REINFORCING, INSPECT POLE SHAFT FOR DAMAGE AND CONFIRM THERE HAS BEEN NO SECTION LOSS DUE TO EXISTING POOR WELDS.	S-1

** CONTRACTOR NOTE: REFER TO THE OBSTRUCTION CLIMBING FACILITIES SIGNAGE SHEET OF CROWN DOCUMENT CAT-CED-10300 FOR INFORMATION REGARDING OBSTRUCTION SIGNAGE.

* EXISTING MOUNTS MAY NEED TO BE ADJUSTED, MOVED AND/OR TEMPORARILY SUPPORTED DURING THE INSTALLATION OF SHAFT REINFORCING

MANUFACTURER POLE SPECIFICATIONS

TAPER	NA
BASE PLATE STEEL	ASTM A36 GRADE 36 (36 KSI)
ANCHOR RODS	1 1/2"ø ASTM A354 GRADE BC
FLANGE PLATE STEEL	ASTM A36
FLANGE BOLTS	1" & 1 1/2"ø A325

SHAFT SECTION DATA

SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPLICE (FT)	DIAMETER ACROSS FLATS (IN) @ TOP	DIAMETER ACROSS FLATS (IN) @ BOTTOM	POLE GRADE (ksi)	POLE SHAPE
1	30.00	0.2500		24.000	24.000	42	ROUND
2	30.00	0.3750		24.000	24.000	42	ROUND
3	30.00	0.3750		30.000	30.000	42	ROUND
4	30.00	0.3750		36.000	36.000	42	ROUND

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

PRIOR TO FABRICATION AND INSTALLATION CONTRACTOR SHALL VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY AND SHALL NOT BE USED FOR FABRICATION.

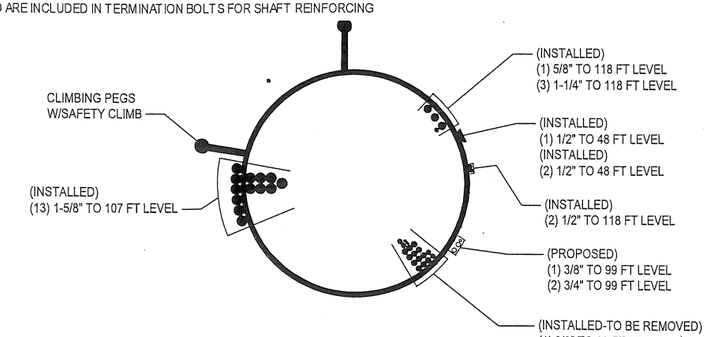
NEW CCI FLAT PLATE (65 KSI) REINFORCING SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	ELEMENT	FLAT # / DEGREE SEPARATION	ELEMENT LENGTH	ELEMENT QUANTITY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	APPROXIMATE BOLTS PER ELEMENT	STEEL WEIGHT PER PLATE	APPROXIMATE TOTAL BOLT QUANTITY	ESTIMATED TOTAL STEEL WEIGHT	NOTES
0' - 6"	23' - 6"	CFP-06010023 #1	60, 150, 240 & 330	23' - 0"	4	0	8	16"	19	470 LBS.	38	1880 LBS.	SHAFT REINFORCING
0' - 6"	29' - 6"	CFP-06512529 #3	30, 120, 210 & 300	29' - 0"	4	0	11	19"	23	802 LBS.	92	3208 LBS.	SHAFT REINFORCING
30' - 6"	59' - 6"	CFP-06010029 #4	30, 120, 210 & 300	29' - 0"	4	8	8	16"	34	592 LBS.	136	2368 LBS.	SHAFT REINFORCING
60' - 6"	80' - 6"	CCI-SFP-06010020	30, 120, 210 & 300	20' - 0"	4	8	8	16"	27	408 LBS.	108	1632 LBS.	SHAFT REINFORCING
											336	9088 LBS.	

NOTES:

1.) ALL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. ALTERNATIVELY, ALL NEW STIFFENER PLATE STEEL REINFORCING MAY BE COLD GALVANIZED AS FOLLOWS: APPLY A MINIMUM OF TWO COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.
2.) ALL REINFORCING SHALL BE ASTM A572 GR. 65.
3.) WELDS SHALL BE E80XX OR GREATER. TERMINATION WELDS SHALL BE 3/8" FILLET WELDS.
4.) HOLES FOR BOLTS ARE 30mm UNLESS NOTED OTHERWISE.
5.) ALL SHIMS SHALL BE ASTM A-36.
6.) ALL HOLES ARE TO BE DRILLED, DO NOT BURN OR PUNCH.
7.) FOR PLATES STARTING AT 6", THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT 6" ± 1". FOR SINGLE PLATES OR MULTIPLE PLATES SPLICED TOGETHER, THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT THE PROPOSED ELEVATION ± 3". FOR MULTIPLE PLATES SPLICED TOGETHER, THE TOP OF THE FLAT PLATE IS TO BE PLACED SUCH THAT THERE IS NO MORE THAN 3" DIFFERENCE BETWEEN THE ACTUAL OVERALL LENGTH OF THE SPAN AND THE PROPOSED OVERALL LENGTH OF THE SPAN, FROM THE BOTTOM OF THE PLATE

* FOR JUMP PLATES, TERMINATION BOLTS LISTED ARE INCLUDED IN TERMINATION BOLTS FOR SHAFT REINFORCING



COAX LAYOUT 2 / S-1

CROWN CASTLE US PATENT NOS 8,046,972; 8,156,712; 7,849,659; 8,424,269 AND PATENT PENDING

REV	DATE	DESCRIPTION

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

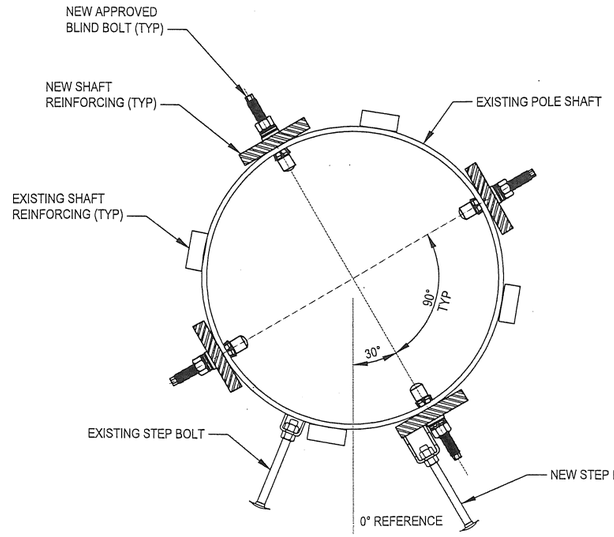
PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

MONOPOLE PROFILE

S-1

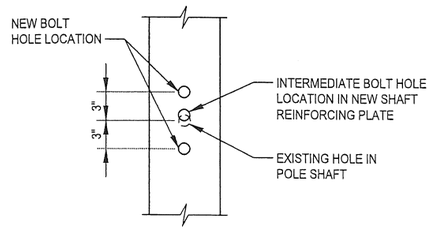
STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED PROFESSIONAL ENGINEER
8.17.18

V1.0 37518-2442.001.DWG

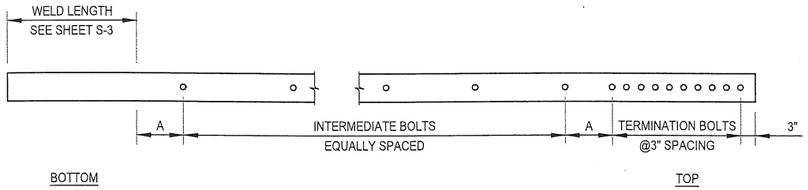


SECTION 1 / S-2
EL 80'

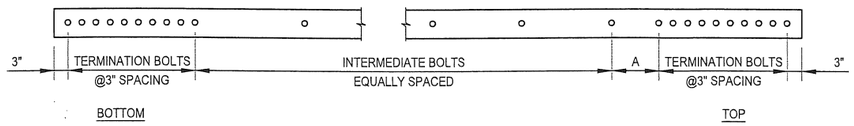
NOTE:
EXISTING STEP BOLTS AND STEP BOLT CLIPS THAT ARE REMOVED SHALL NOT BE REUSED



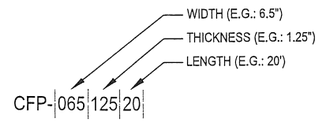
INTERMEDIATE BOLT HOLE FIX 2 / S-2
SCALE: NTS



CUSTOM WELDED FLAT PLATE DETAIL
NOTE: "A" DIMENSION MAY VARY,
NOT TO EXCEED MAXIMUM
INTERMEDIATE BOLT SPACING



CUSTOM BOLTED FLAT PLATE DETAIL
NOTE: "A" DIMENSION MAY VARY,
NOT TO EXCEED MAXIMUM
INTERMEDIATE BOLT SPACING



CUSTOM FLAT PLATE PART NUMBER BREAKDOWN

REV	DATE	DESCRIPTION

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600· Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

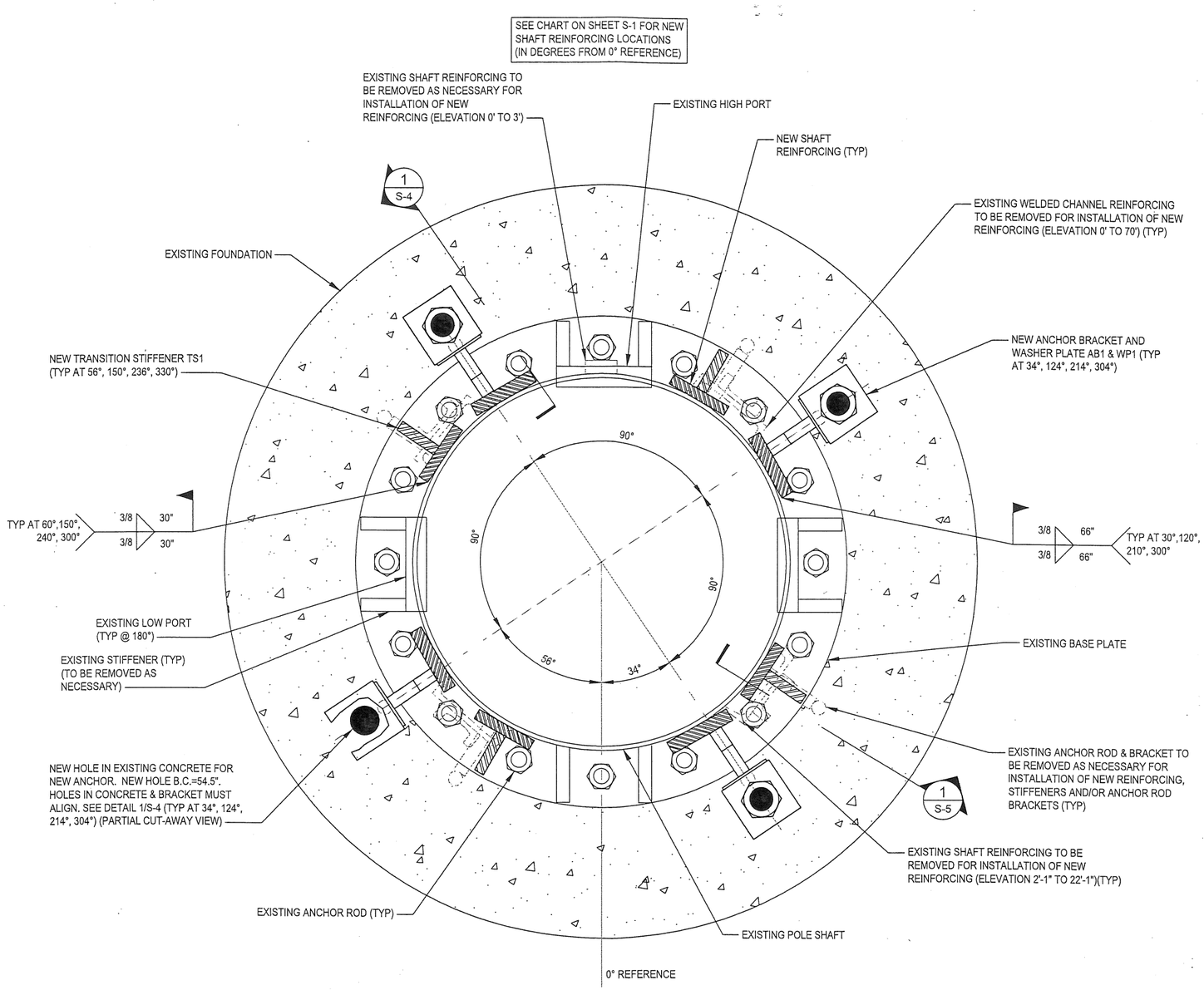
BU #876329; MTN VIEW CEMETERY (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

MONOPOLE SECTIONS & DETAILS

S-2

V1.0 37518-2442.001.DWG



BASE PLATE 1 / S-3

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

BASE PLATE DETAILS

S-3

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

8.17.18

REV	DATE	DESCRIPTION

V1.0 37518-2442.001.DWG

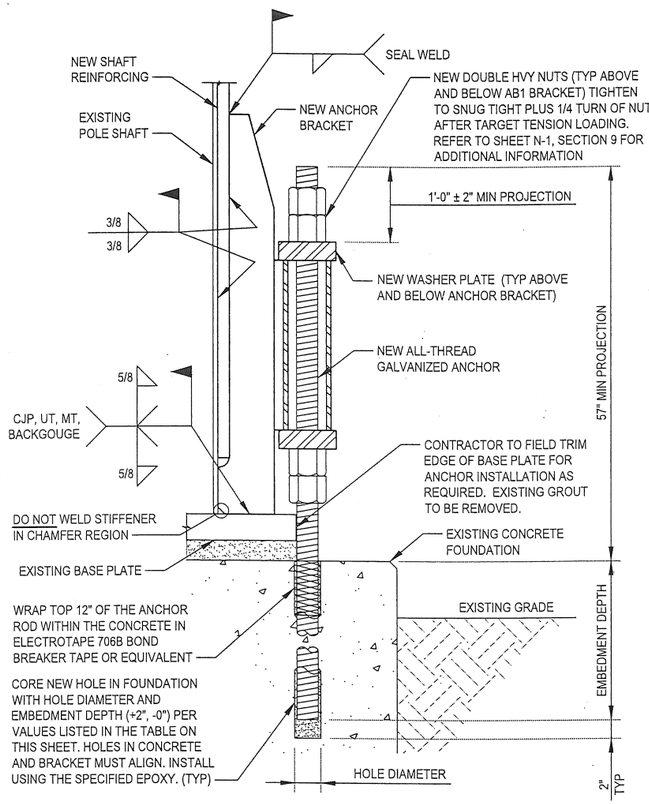
PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

NEW ANCHOR RODS

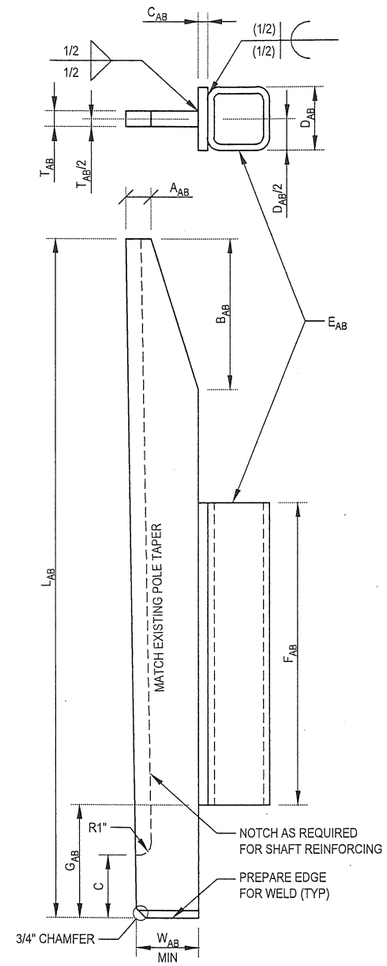
PART #	DIAMETER (IN)	QTY	LENGTH (IN)	MATERIAL	EMBEDMENT DEPTH (IN)	HOLE DIAMETER (IN)	EPOXY	TARGET TENSION LOAD (KIPS)
CCI-AR-0225	2 1/4	6	132	A193 GR B7	72	2 1/2	ALLFASTENERS AF35LVE	190

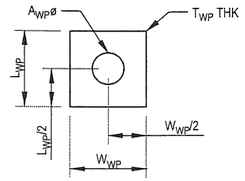


NEW ANCHOR & BRACKET DETAIL (1 / S-4)

NOTES:

1. PLATE WASHER SHALL FULLY BEAR ON THE TUBE.
2. REFERENCE CC APPROVED COMPONENTS (CURRENT VERSION) FOR ANCHOR ROD DIMENSIONS.
3. RODS SHALL BE GALVANIZED FROM THE TOP OF THE PROJECTION TO 15" BELOW THE SURFACE OF THE CONCRETE, AT A MINIMUM.
4. CORED HOLES SHALL BE MECHANICALLY ROUGHENED USING A CARBIDE HOLE ROUGHENER OR EQUIVALENT. BRUSHING WITH A NYLON OR WIRE BRUSH SHALL BE USED IN THE PROCESS OF HOLE CLEANING, BUT DOES NOT SATISFY THE HOLE ROUGHENING REQUIREMENT.
5. FOLLOW EPOXY MANUFACTURER'S RECOMMENDATIONS FOR HOLE CLEANING.
6. ALL HOLES SHALL BE DRY PRIOR TO PLACING EPOXY.
7. FOLLOW EPOXY MANUFACTURER'S RECOMMENDATIONS REGARDING HANDLING OF THREADED ROD AND EPOXY, AS WELL AS ALL INSTALLATIONS INSTRUCTIONS AND REQUIREMENTS.
8. TAKE ALL MEASUREMENTS NECESSARY TO AVOID DAMAGING EXISTING REINFORCING BARS DURING CORING OPERATIONS. NOTIFY EOR IMMEDIATELY IF EXISTING REINFORCING BARS ARE ENCOUNTERED AND INTERFERE WITH PLACEMENT OF NEW ANCHORS. MINOR ADJUSTMENT TO PROPOSED LOCATION OF NEW ANCHORS MAY BE REQUIRED.
9. IF BASE PLATE GROUT REPAIR IS REQUIRED FOR ANCHOR ROD INSTALLATION, SEE ENG-PRC-10012: BASE PLATE GROUT REPAIR, FOR PROCEDURES AND RECOMMENDED MANUFACTURERS. CONTRACTOR SHALL DETERMINE THE QUANTITY REQUIRED.
10. ONCE ALL RESIN AND GROUT HAVE CURED, NEW ANCHOR ROD REINFORCING SHALL BE TARGET TENSIONED TO THE VALUE LISTED IN THE TABLE ON THIS SHEET. SEE ENG-PRC-10119: PULL-OUT TESTING POST-INSTALLED ANCHOR RODS, FOR SPECIFICATIONS.
11. CONTRACTOR SHALL VERIFY THAT A PULL TEST IS ABLE TO BE PERFORMED USING THE ANCHOR ROD PROJECTION SHOWN.
12. WHEN COMPLETED WITH EPOXY INSTALLATION, THE TOP OF THE EPOXY SHALL BE EQUAL TO OR HIGHER THAN THE TOP OF THE FOUNDATION, SUCH THAT WATER IS NOT ABLE TO COLLECT IN THE ANNULAR AREA AROUND THE EXPOSED PORTION OF THE ANCHOR ROD.





WASHER PLATE

PART #	ANGLE	QTY	MAT'L SPEC	T_{WP} (IN)	W_{WP} (IN)	L_{WP} (IN)	A_{WP} (IN)
WP1	34°, 124°, 214°, 304°	8	ASTM A572 GR 65KSI	1 1/4	5 1/2	5 1/2	2 3/8

ANCHOR BRACKET

PART #	ANGLE	QTY	ANCHOR PLATE						BACKER PLATE			TUBE			G_{AB} (IN)	NOTCH	
			MAT'L SPEC	T_{AB} (IN)	W_{AB} (IN)	L_{AB} (IN)	A_{AB} (IN)	B_{AB} (IN)	MAT'L SPEC	C_{AB} (IN)	D_{AB} (IN)	E_{AB} (SIZE)	MAT'L SPEC	F_{AB} (IN)		REQ'D	C (IN)
AB1	34°, 124°, 214°, 304°	4	ASTM A572 GR 65KSI	1 1/4	6	66	2	12	ASTM A572 GR 65KSI	3/4	5	HSS5x5x1/2	ASTM A500 GR C (50 KSI)	24	12	YES	6

CONTRACTOR SHALL VERIFY THAT HEAVY HEX NUTS ARE INSTALLED BELOW BASE PLATE ON ALL EXISTING ANCHOR RODS DURING THE GROUT REMOVAL PROCESS. SEE "BASE PLATE GROUT" NOTES ON SHEET N-1. IF HEAVY HEX NUTS ARE NOT INSTALLED, SPLIT NUTS SHALL BE ADDED TO ALL EXISTING ANCHOR RODS.

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER
8/17/18

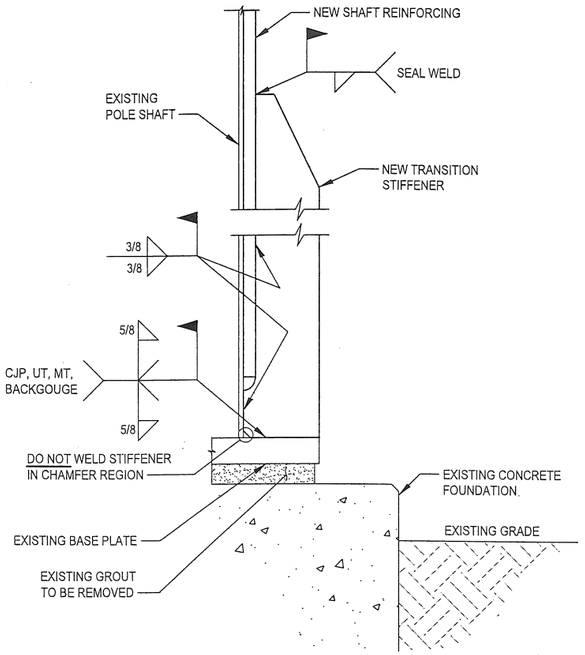
REV	DATE	DESCRIPTION

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

ANCHOR BRACKET DETAILS

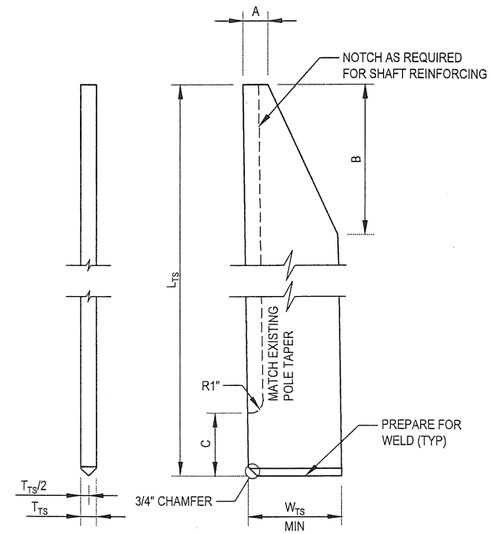
S-4

V1.0 37518-2442.001.DWG



TRANSITION STIFFENER DETAIL 1 / S-5

CONTRACTOR SHALL VERIFY THAT HEAVY HEX NUTS ARE INSTALLED BELOW BASE PLATE ON ALL EXISTING ANCHOR RODS DURING THE GROUT REMOVAL PROCESS. SEE "BASE PLATE GROUT" NOTES ON SHEET N-1. IF HEAVY HEX NUTS ARE NOT INSTALLED, SPLIT NUTS SHALL BE ADDED TO ALL EXISTING ANCHOR RODS.



TRANSITION STIFFENER										
PART #	ANGLE	QTY	MAT'L SPEC	T_{TS} (IN)	W_{TS} (IN)	L_{TS} (IN)	A (IN)	B (IN)	NOTCH	
									REQ'D	C (IN)
TS1	56°, 150°, 236°, 330°	4	ASTM A572 GR 65KSI	1 1/4	5 1/2	30	2	12	YES	6

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600· Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

TRANSITION STIFFENER DETAILS

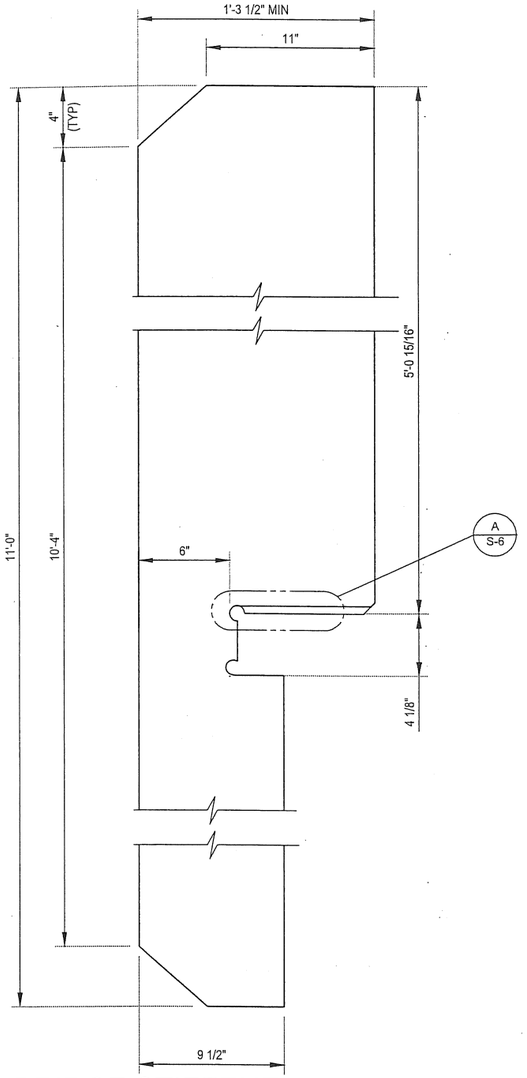
S-5

STATE OF CONNECTICUT · JUSTIN T. KLINE · No. 30301 · LICENSED PROFESSIONAL ENGINEER

8/17/18

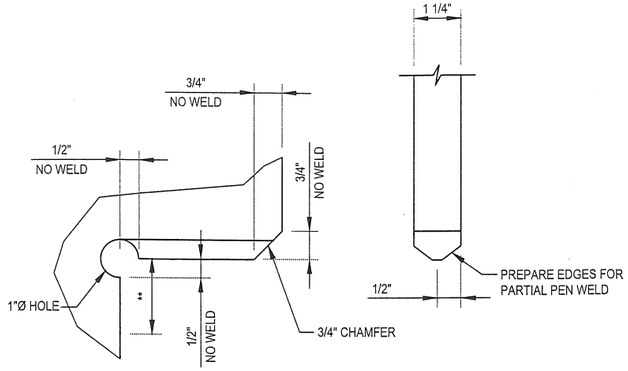
REV	DATE	DESCRIPTION

V1.0 37518-2442.001.DWG



BRIDGE STIFFENER MK~BS1

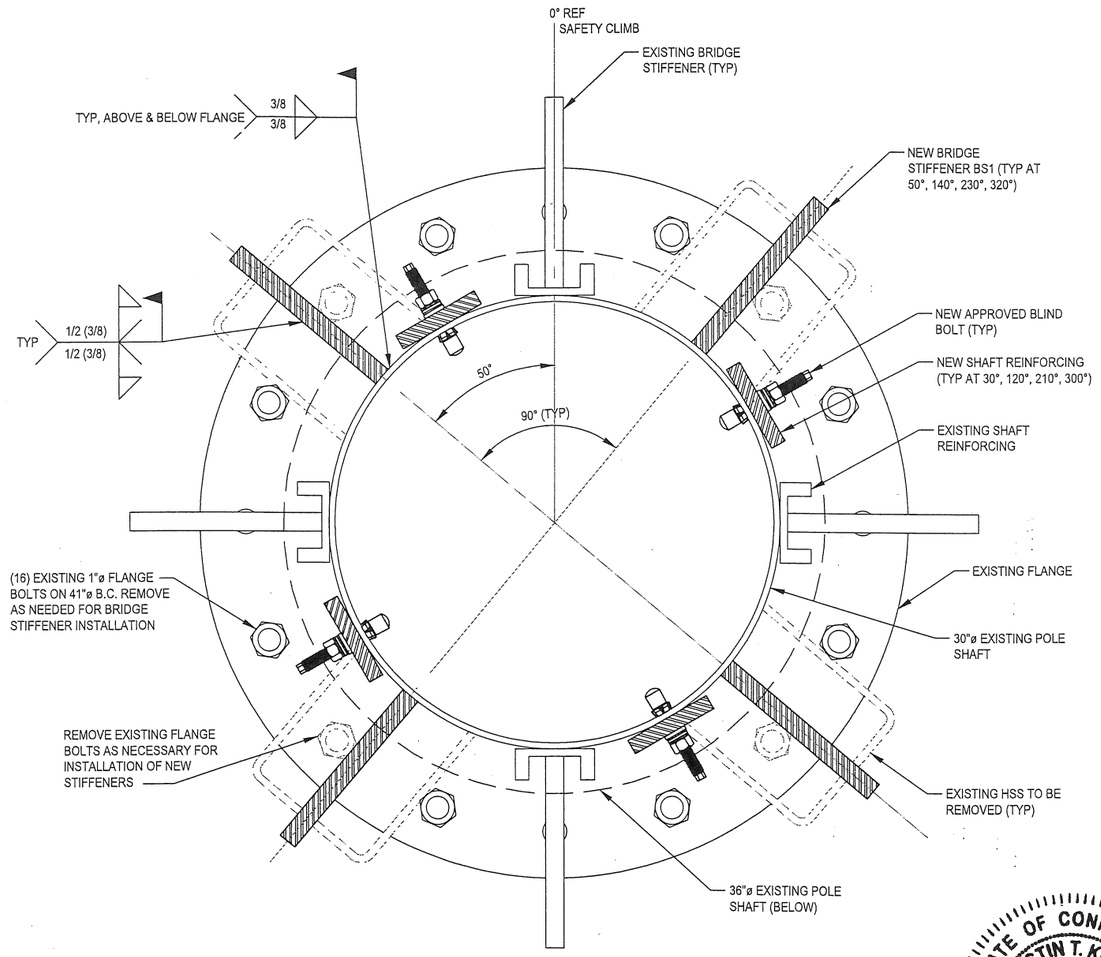
(4 REQUIRED) (Fy = 65 KSI)



** NO WELD REGION SHOULD EXTEND BEYOND FLANGE LOCATIONS

DETAIL A

(TYPICAL)



SHAFT PLAN

EL 30'

1 / S-6

WELDED FLANGE JUMP TYPICAL DETAILS. CONTRACTOR TO SEE ORIGINAL MANUFACTURER DOCUMENTS FOR EXISTING POLE INFORMATION, EXISTING FLANGE PLATE INFORMATION AND FLANGE BOLT INFORMATION. EXISTING CONDITIONS TO BE FIELD VERIFIED PRIOR TO FABRICATION.

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 · Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

BRIDGE STIFFENER DETAILS

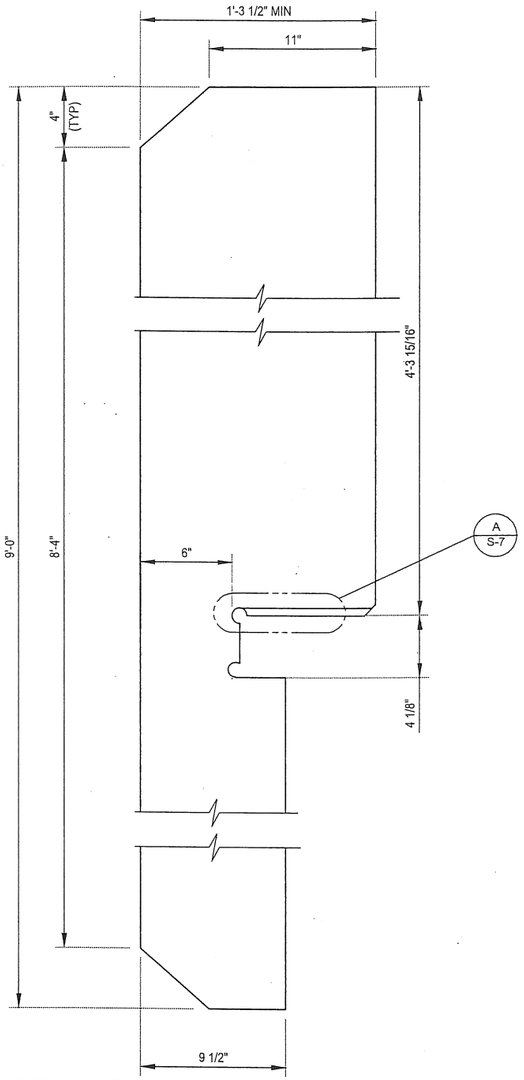
S-6

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

8/1/18

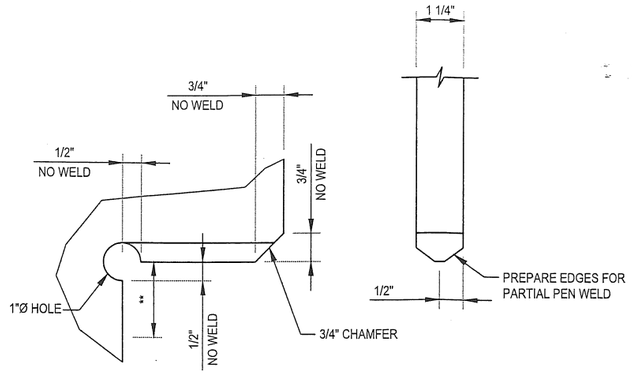
REV	DATE	DESCRIPTION

V1.0 37518-2442.001.DWG



BRIDGE STIFFENER MK~BS1

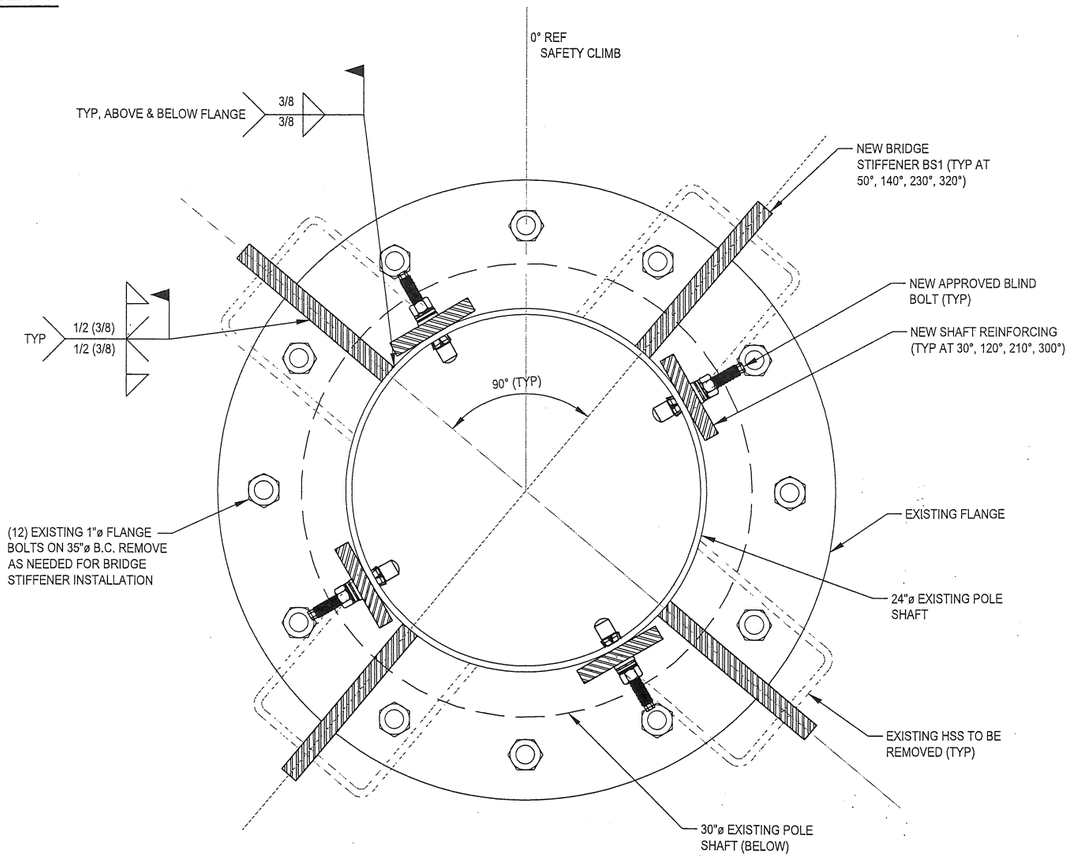
(4 REQUIRED) (Fy = 65 KSI)



** NO WELD REGION SHOULD EXTEND BEYOND FLANGE LOCATIONS

DETAIL A

(TYPICAL)



SHAFT PLAN

EL 60'

1 / S-7

WELDED FLANGE JUMP TYPICAL DETAILS. CONTRACTOR TO SEE ORIGINAL MANUFACTURER DOCUMENTS FOR EXISTING POLE INFORMATION, EXISTING FLANGE PLATE INFORMATION AND FLANGE BOLT INFORMATION. EXISTING CONDITIONS TO BE FIELD VERIFIED PRIOR TO FABRICATION.

REV	DATE	DESCRIPTION

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

8/16

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876329; MTN VIEW CEM (FILLEY PARK)
BLOOMFIELD, CONNECTICUT
MODIFIED 120'-0" MONOPOLE

PROJECT No:	37518-2442.001.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	BKK
DATE:	08-15-2018

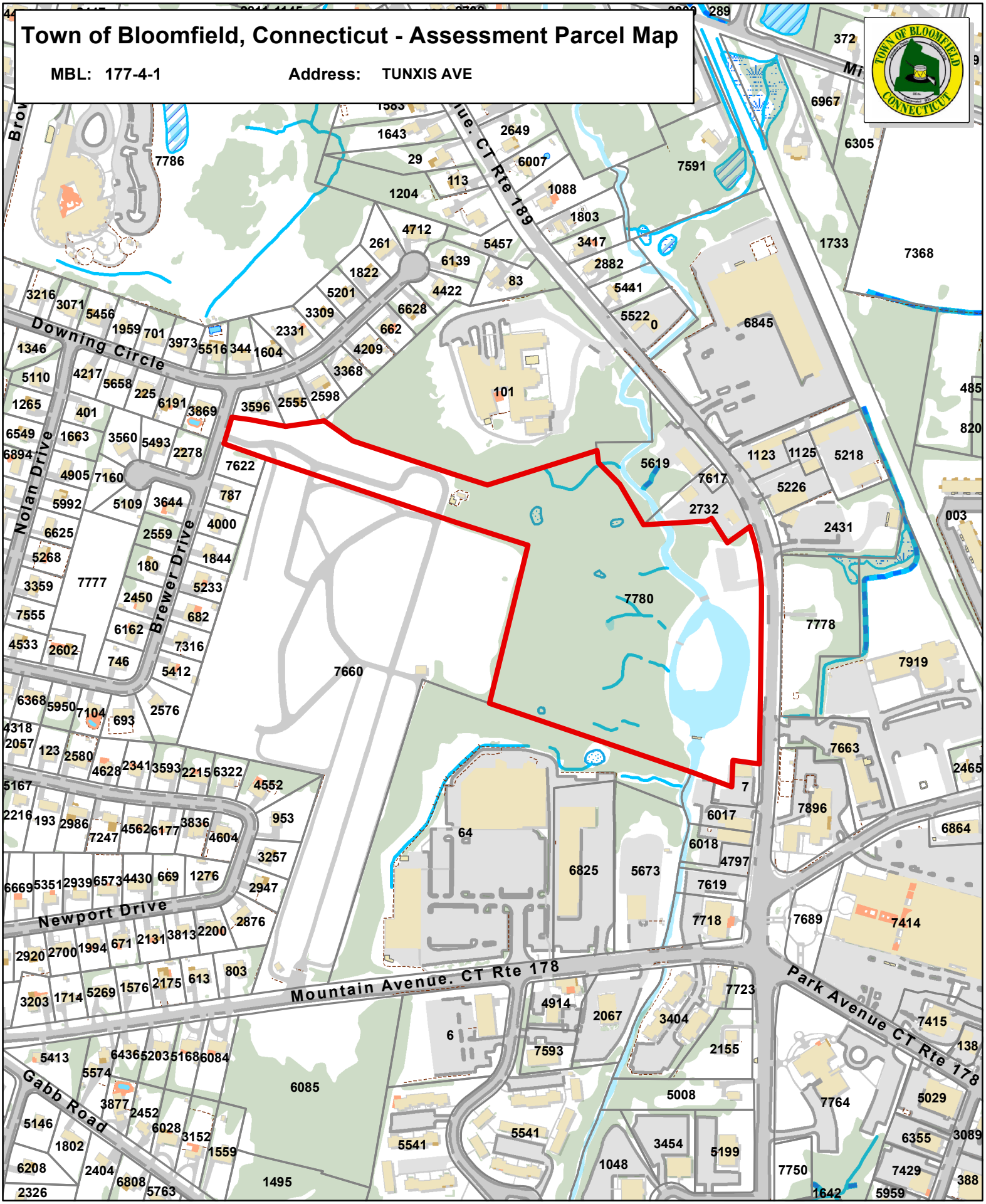
BRIDGE STIFFENER DETAILS

S-7

V1.0 37518-2442.001.DWG

Town of Bloomfield, Connecticut - Assessment Parcel Map

MBL: 177-4-1 **Address:** TUNXIS AVE



Approximate Scale:

1 inch = 400 feet

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Bloomfield and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Produced July 2017

Parcels labeled by Unique ID

Town of Bloomfield, CT

Property Listing Report | Map Block Lot 177-4-1 | Account R90128

Property Information

Property Location	TUNXIS AVE
Owner	BLOOMFIELD TOWN OF
Co-Owner	TOWN HALL
Mailing Address	800 BLOOMFIELD AVE. BLOOMFIELD CT 06002
Land Use	920 Mun Land Com
Land Class	E
Zoning Code	BCD
Census Tract	
Sub Lot	

Neighborhood	
Acreage	14.19
Utilities	
Lot Setting/Desc	
Survey Map	
Foundation	

Photo

Sketch

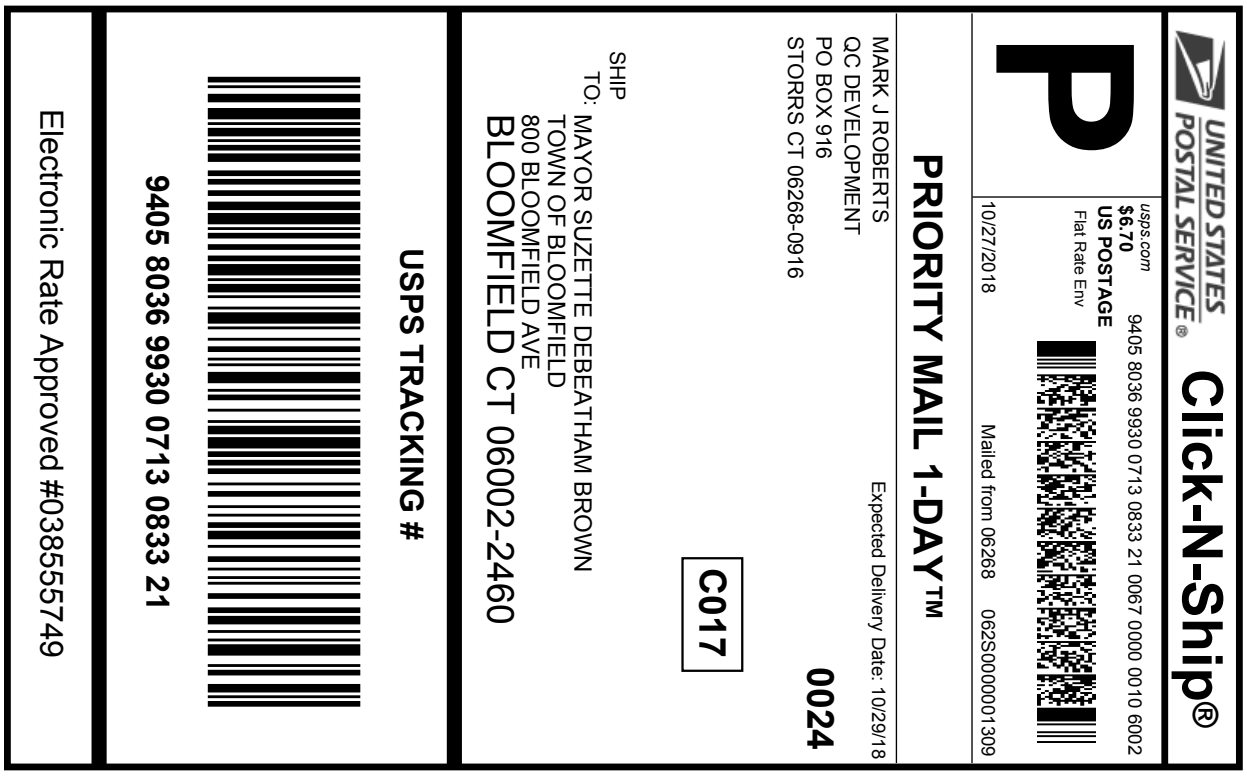
Primary Construction Details

Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Floors	
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

Exterior Walls	
Interior Walls	
Heating Type	
Heating Fuel	
AC Type	
Gross Bldg Area	
Total Living Area	

Report Created On 10/26/2018



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # / Insurance Number:
9405 8036 9930 0713 0833 21

Trans. #:	447298344
Print Date:	10/26/2018
Ship Date:	10/27/2018
Expected Delivery Date:	10/29/2018
Insured Value:	$50.00

Priority Mail® Postage:	**$6.70**
Insurance Fee	**$0.00**
Total	**$6.70**

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

To: MAYOR SUZETTE DEBEATHAM BROWN
TOWN OF BLOOMFIELD
800 BLOOMFIELD AVE
BLOOMFIELD CT 06002-2460

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

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com