



Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

December 2, 2015

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

RE: Notice of Exempt Modification for T-Mobile / L700 Crown Site BU: 876360
T-Mobile Site ID: CT11441A
389 Route 2, Preston, CT 06365
Latitude: 41° 29' 25.25" / Longitude: -71° 59' 29.55"

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 129 foot level of the existing 147 foot monopole at 389 Route 2 in Preston, CT. The tower is owned by Crown Castle. The property is owned by the Town of Preston. T-Mobile now intends to remove existing MetroPCS antennas, mounts and coax at a centerline elevation of 110', proposed installation of three (3) antennas and three (3) RRU's new 700MHz antennas. These antennas would be installed at the 129 foot level of the tower.

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.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Robert Congdon, First Selectman for the Town of Preston, as well as the property owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification 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 Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

Melanie A. Bachman
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For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Kimberly Myl

Sincerely,



Kimberly Myl
Real Estate Specialist
Crown Castle
1200 MacArthur Boulevard, Suite 200
Mahwah, New Jersey 07430
201-236-9069
kimberly.myl@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Robert Congdon, First Selectman
Town of Preston
389 Route 2
Preston, CT 06365

Town of Preston
Town Hall
389 Route 2
Preston, CT 06365-8830

GENERAL NOTES:

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

SITE WORK GENERAL NOTES:

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

ELECTRICAL INSTALLATION NOTES:

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

CONCRETE AND REINFORCING STEEL NOTES:

- 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.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000 PSI) MAY BE USED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE (UNO). SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
CONCRETE CAST AGAINST EARTH.....3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 AND LARGER2 IN.
#5 AND SMALLER & WWF.....1 1/2 IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB AND WALL3/4 IN.
BEAMS AND COLUMNS.....1 1/2 IN.
- A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
- CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC 1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER:
(A) RESULTS OF CONCRETE CYLINDER TESTS PERFORMED AT THE SUPPLIER'S PLANT,
(B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
- AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
- EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

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

CONSTRUCTION NOTES:

- FIELD VERIFICATION:
CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, T-MOBILE ANTENNA PLATFORM LOCATION AND ANTENNAS TO BE REPLACED.
- COORDINATION OF WORK:
CONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH PROJECT MANAGEMENT.
- CABLE LADDER RACK:
CONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION.
- GROUNDING OF ALL EQUIPMENT AND ANTENNAS IS NOT CONSIDERED PART OF THE SCOPE OF THIS PROJECT AND IS THE RESPONSIBILITY OF THE OWNER AND CONTRACTOR AT THE TIME OF CONSTRUCTION. ALL EQUIPMENT AND ANTENNAS TO BE INSTALLED AND GROUNDED IN ACCORDANCE WITH GOVERNING BUILDING CODE, MANUFACTURER RECOMMENDATIONS AND OWNER SPECIFICATIONS.



T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054



CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

CT11441A
PRESTON / TOWN
HALL

CONSTRUCTION DRAWINGS

NO.	DATE	DESCRIPTION
0	11/23/15	ISSUED AS FINAL



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



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

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

DRAWN BY: RA

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50066258

JOB NUMBER: 50078106

SITE ADDRESS:

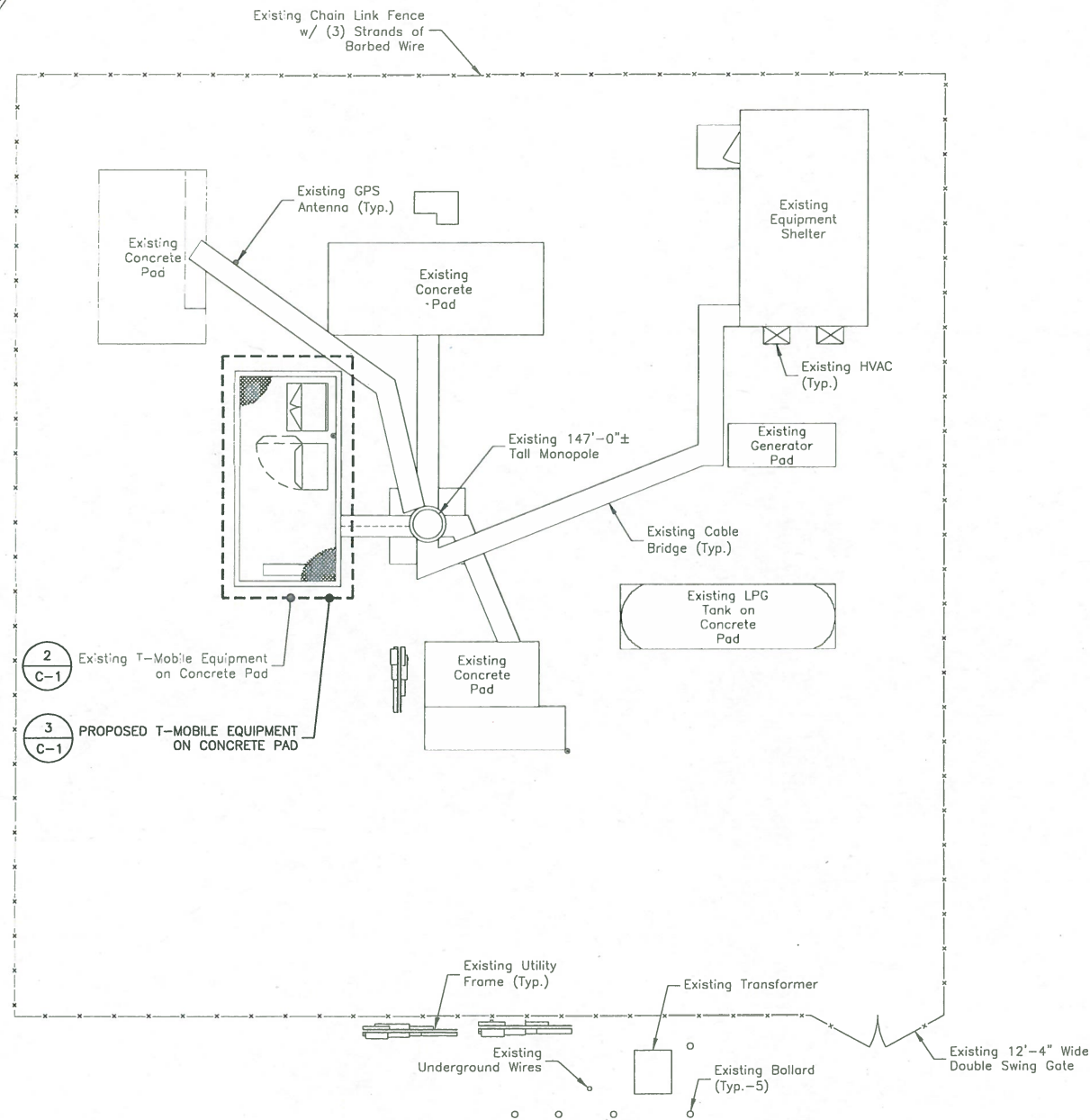
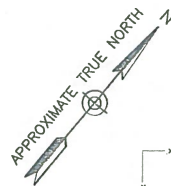
389 ROUTE 2
PRESTON, CT 06365
NEW LONDON COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

G-1

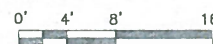


2
C-1 Existing T-Mobile Equipment on Concrete Pad

3
C-1 PROPOSED T-MOBILE EQUIPMENT ON CONCRETE PAD

COMPOUND PLAN

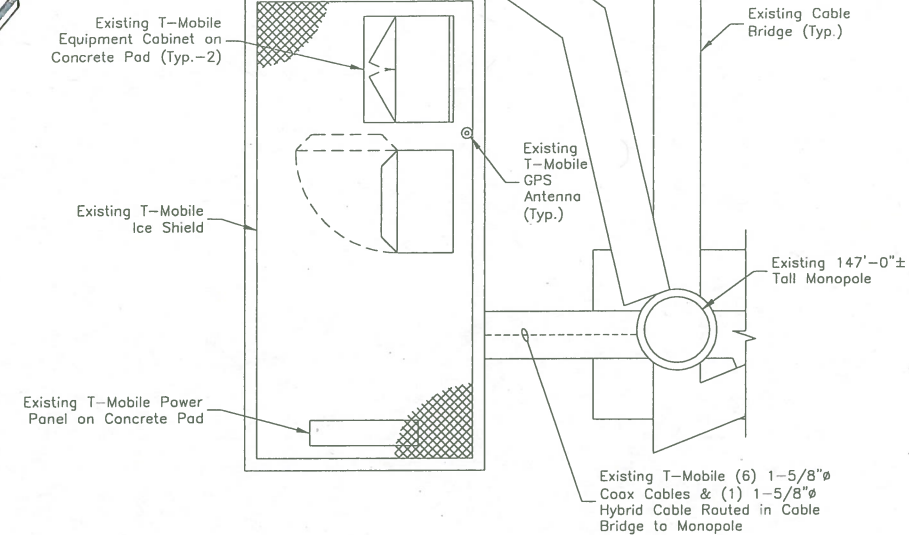
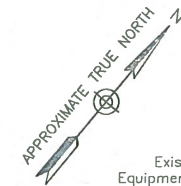
SCALE: 1/16"=1' FOR 11"x17"
1/8"=1' FOR 22"x34"



1

NOTES:

1. NORTH ARROW SHOWN AS APPROXIMATE.
2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
3. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, RRU'S, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE STRUCTURAL MODIFICATION REPORT BY PAUL J. FORD AND COMPANY DATED OCTOBER 28, 2015.

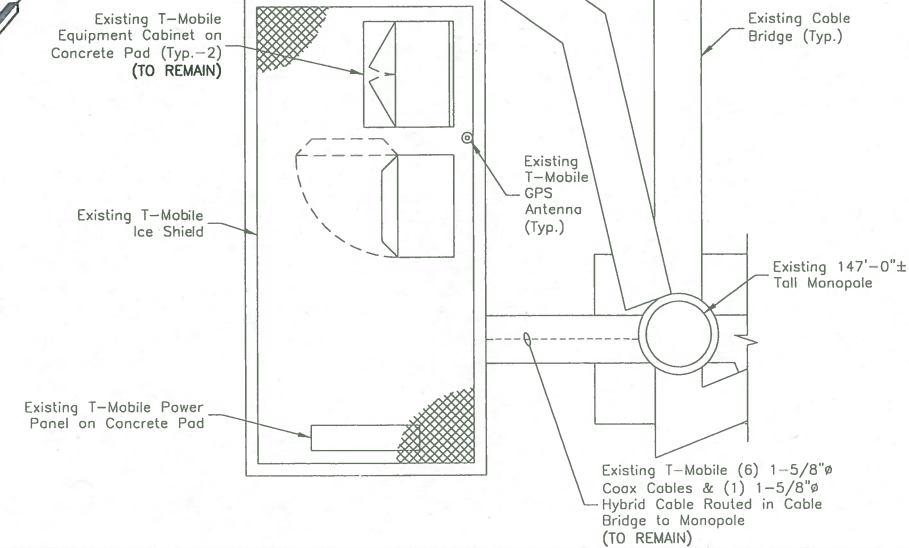
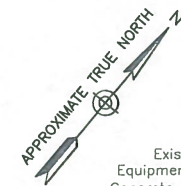


EXISTING EQUIPMENT PLAN

SCALE: 1/8"=1' FOR 11"x17"
1/4"=1' FOR 22"x34"

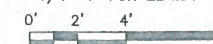


2



PROPOSED EQUIPMENT PLAN

SCALE: 1/8"=1' FOR 11"x17"
1/4"=1' FOR 22"x34"



3

NOTE:

1. NO EQUIPMENT IS PROPOSED AT GRADE



T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054



CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

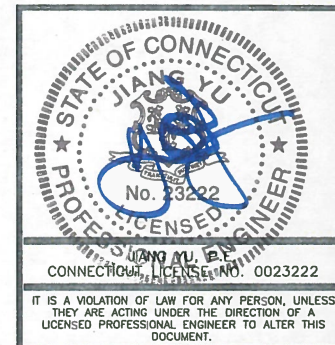
**CT11441A
PRESTON / TOWN
HALL**

CONSTRUCTION DRAWINGS

0 11/23/15 ISSUED AS FINAL



Dewberry Engineers Inc.
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FAX: 973.739.9710



DRAWN BY: RA

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50066258

JOB NUMBER: 50078106

SITE ADDRESS:

389 ROUTE 2
PRESTON, CT 06365
NEW LONDON COUNTY

SHEET TITLE

COMPOUND PLAN &
EQUIPMENT PLANS

SHEET NUMBER

C-1

**CT11441A
PRESTON / TOWN
HALL**

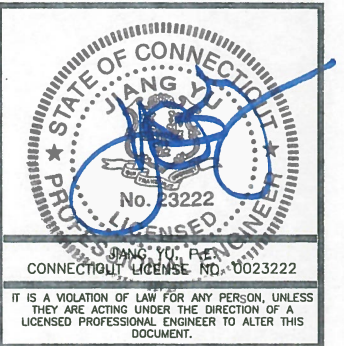
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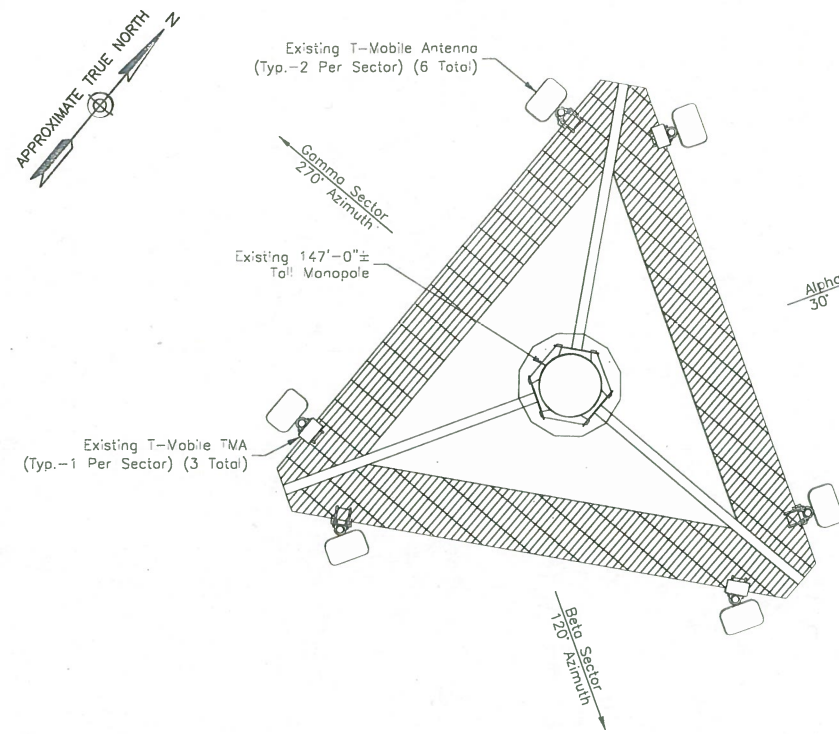
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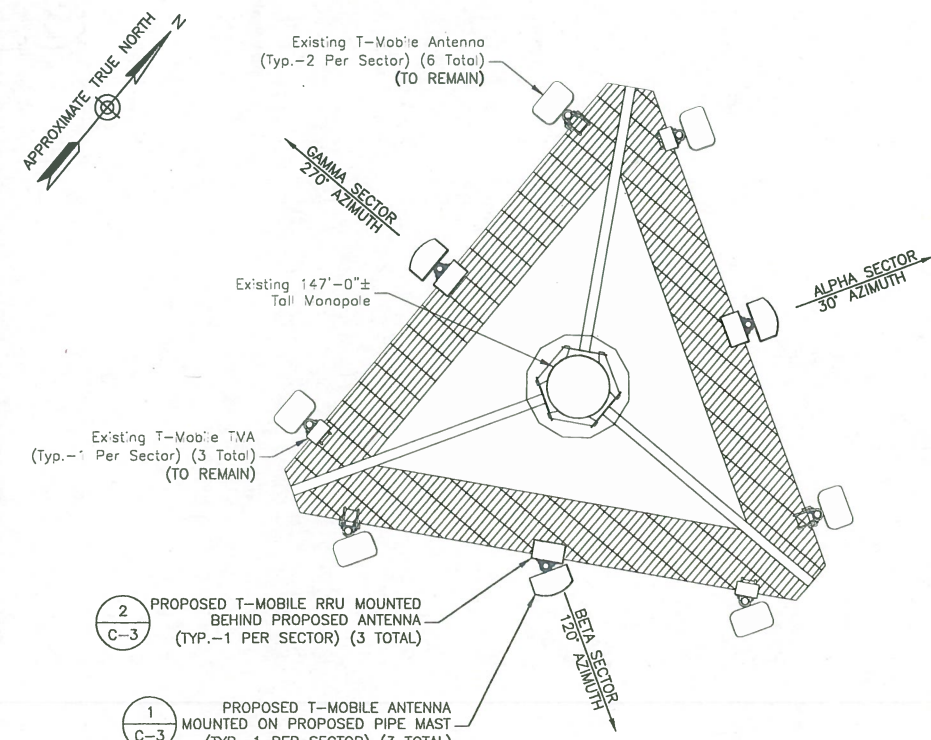
ANTENNA LAYOUTS &
ELEVATIONS

SHEET NUMBER



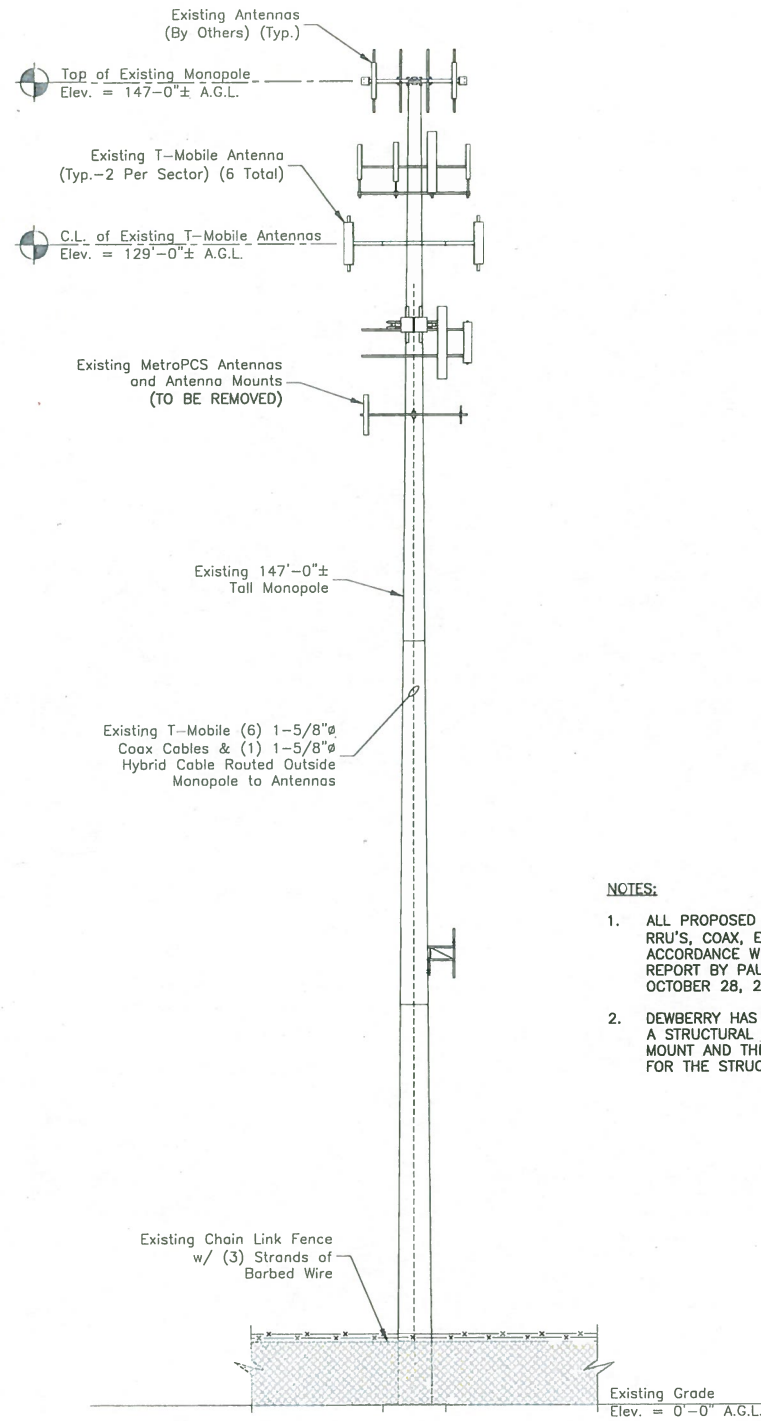
EXISTING ANTENNA LAYOUT
SCALE: N.T.S.

1



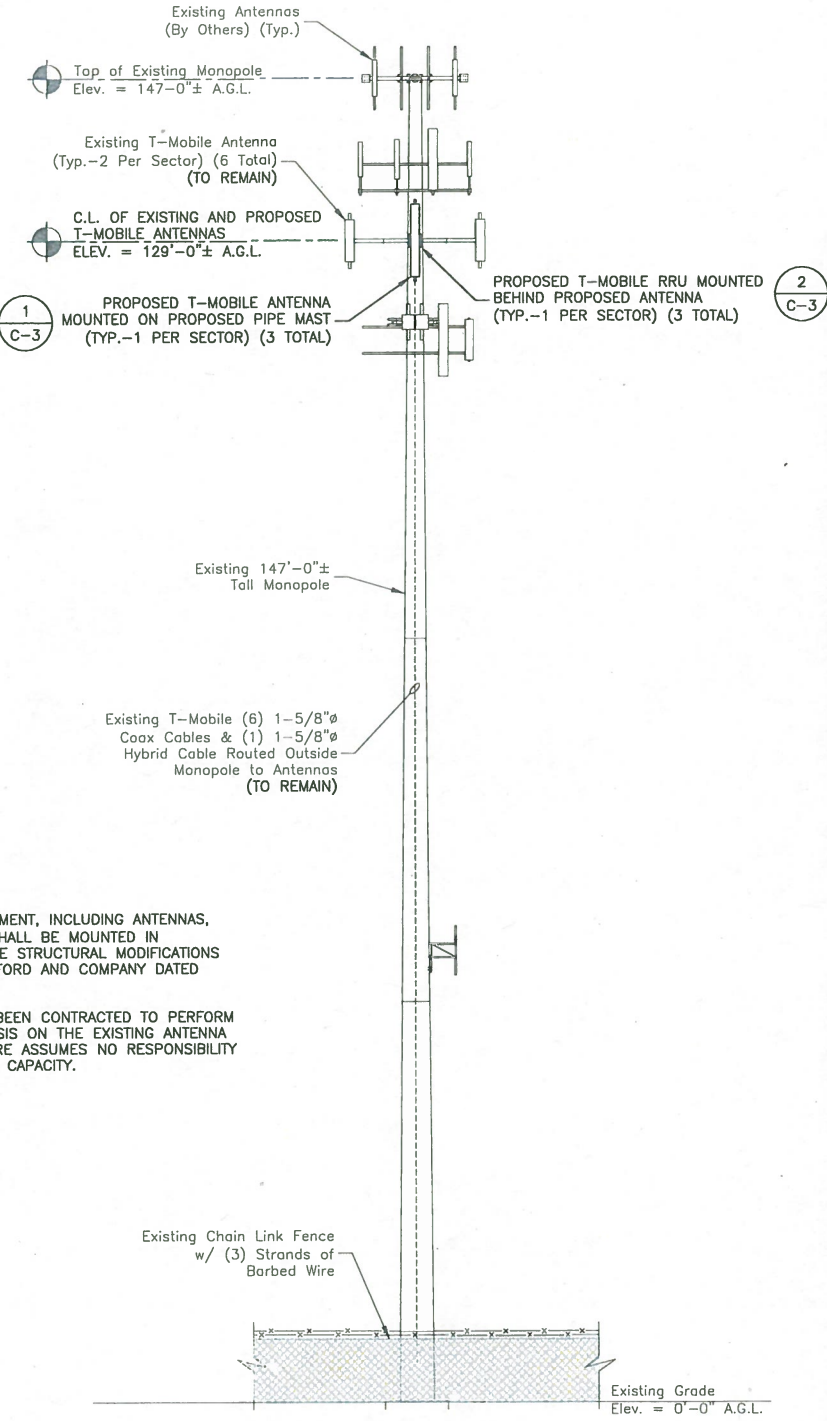
PROPOSED ANTENNA LAYOUT
SCALE: N.T.S.

2



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

3



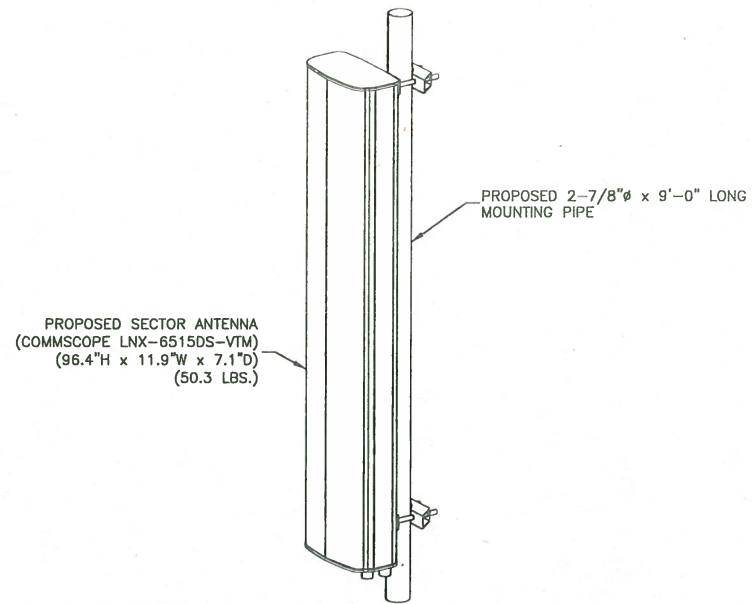
PROPOSED ELEVATION
SCALE: 3/64"=1' FOR 11"x17"
3/32"=1' FOR 22"x34"

4



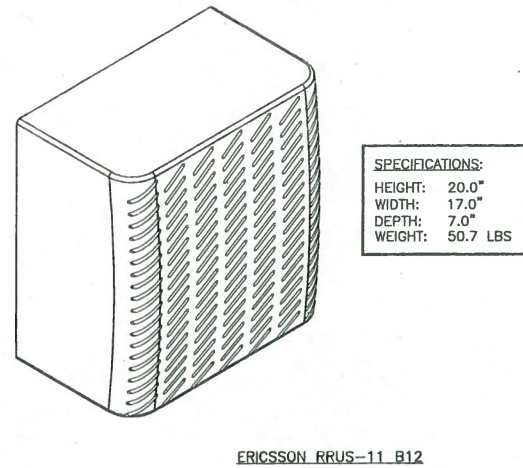
NOTES:

- ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, RRU'S, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE STRUCTURAL MODIFICATIONS REPORT BY PAUL J. FORD AND COMPANY DATED OCTOBER 28, 2015.
- DEWBERRY HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THE EXISTING ANTENNA MOUNT AND THEREFORE ASSUMES NO RESPONSIBILITY FOR THE STRUCTURAL CAPACITY.



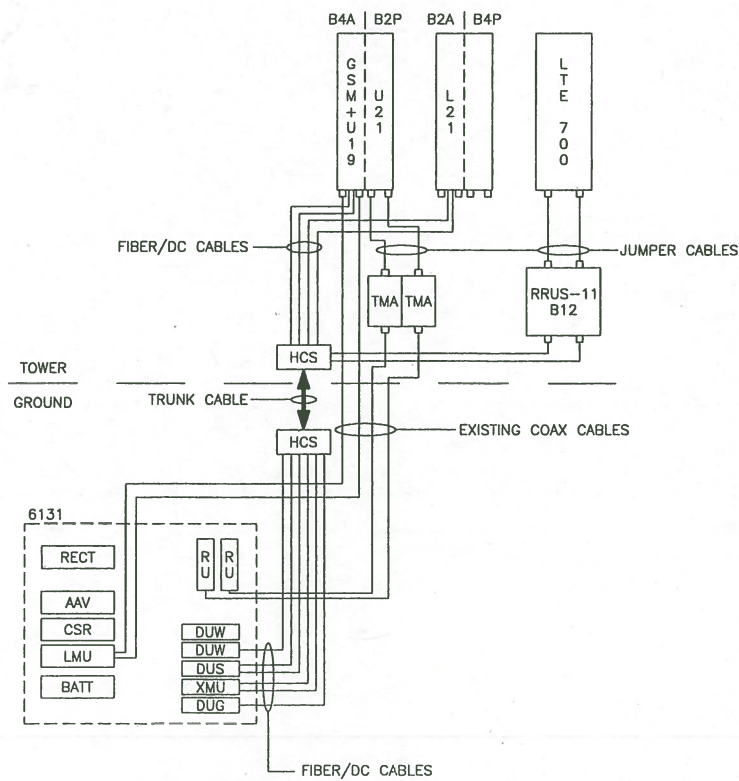
- NOTES:
1. MOUNT ANTENNAS PER MANUFACTURER'S RECOMMENDATIONS.
 2. GROUND ANTENNAS AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND T-MOBILE STANDARDS.
 3. CONFIRM REQUIRED ANTENNAS WITH THE LATEST RFDS.

ISOMETRIC ANTENNA DETAIL 1
SCALE: N.T.S.



- RRU NOTES:
1. MOUNT EQUIPMENT WITH MANUFACTURER PROVIDED MOUNTING BRACKETS.
 2. GROUND EQUIPMENT AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND T-MOBILE STANDARDS.
 3. CONFIRM REQUIRED EQUIPMENT WITH THE LATEST RFDS.

RRUS-11 - REMOTE RADIO UNIT 2
SCALE: N.T.S.



SITE CONFIGURATION 702Cu 3
SCALE: N.T.S.

DESIGN CONFIGURATION							
ANTENNAS		COAX		HYBRID	COAX LENGTH	TMA	RRU
EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING		EXISTING	PROPOSED
ALPHA	ERICSSON AIR 21 B2A B4P	EXISTING TO REMAIN			179'-0"	(1) KRY 112 144/1	
	-	COMMSCOPE LNX-6515DS-VTM	(2) 1-5/8"Ø	-			(1) RRUS-11 B12
BETA	ERICSSON AIR 21 B4A B2P	EXISTING TO REMAIN			179'-0"	(1) KRY 112 144/1	
	-	COMMSCOPE LNX-6515DS-VTM	(2) 1-5/8"Ø	-		(1) 1-5/8"Ø	(1) RRUS-11 B12
GAMMA	ERICSSON AIR 21 B2A B4P	EXISTING TO REMAIN			179'-0"	(1) KRY 112 144/1	
	-	COMMSCOPE LNX-6515DS-VTM	(2) 1-5/8"Ø	-			(1) RRUS-11 B12
	ERICSSON AIR 21 B4A B2P	EXISTING TO REMAIN					

T-Mobile

T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

CT11441A
PRESTON / TOWN HALL

CONSTRUCTION DRAWINGS

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Dewberry

Dewberry Engineers Inc.

600 PARSSIPANY ROAD
SUITE 301
PARSSIPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

Professional Engineer Seal for JIAN YU, P.E., License No. 23322, Connecticut. Includes text: "IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT."

DRAWN BY: RA

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50066258

JOB NUMBER: 50078106

SITE ADDRESS:

389 ROUTE 2
PRESTON, CT 06365
NEW LONDON COUNTY

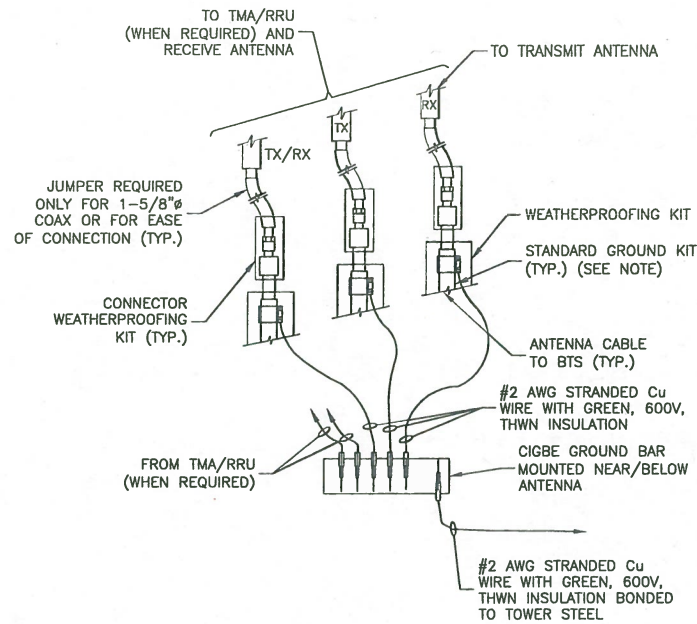
SHEET TITLE

CONSTRUCTION DETAILS

SHEET NUMBER

GROUNDING NOTES:

- THE CONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE CONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE ENGINEER FOR RESOLUTION.
- 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.
- THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. USE OF OTHER METHODS MUST BE PRE-APPROVED BY THE ENGINEER IN WRITING.
- 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.
- 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.
- METAL CONDUIT AND TRAY SHALL BE GROUNDING 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.
- 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.
- CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK-TO-BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8 INCHES.
- EACH INTERIOR TRANSMISSION CABINET FRAME/PUNTH 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/PUNTH SHALL BE DIRECTLY CONNECTED TO THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER WIRE UNLESS NOTED OTHERWISE IN THE DETAILS.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE 2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE. CONNECTIONS TO ABOVE GRADE UNITS SHALL BE MADE WITH EXOTHERMIC WELDS WHERE PRACTICAL OR WITH 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS. HIGH PRESSURE CRIMP CONNECTORS MAY ONLY BE USED WITH WRITTEN PERMISSION FROM T-MOBILE MARKET REPRESENTATIVE.
- EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTOR'S STRUCTURAL ENGINEER.
- ALL WIRE TO WIRE GROUND CONNECTIONS TO THE INTERIOR GROUND RING SHALL BE FORMED USING HIGH PRESS CRIMPS OR SPLIT BOLT CONNECTORS WHERE INDICATED IN THE DETAILS.
- ON ROOFTOP SITES WHERE EXOTHERMIC WELDS ARE A FIRE HAZARD COPPER COMPRESSION CAP CONNECTORS MAY BE USED FOR WIRE TO WIRE CONNECTIONS. 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.
- 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.
- APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 FT OF THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER GROUND CONDUCTOR. DURING EXCAVATION FOR NEW GROUND CONDUCTORS, IF EXISTING GROUND CONDUCTORS ARE ENCOUNTERED, BOND EXISTING GROUND CONDUCTORS TO NEW CONDUCTORS.
- GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT WITH LISTED BONDING FITTINGS.

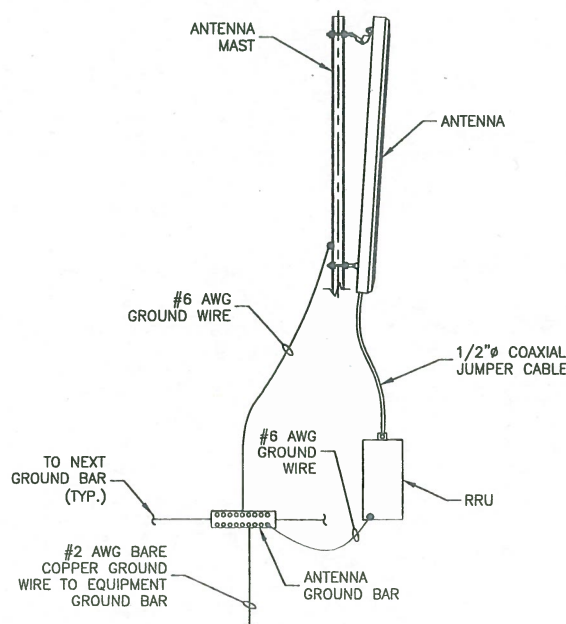


- NOTE:**
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE)

SCALE: N.T.S.

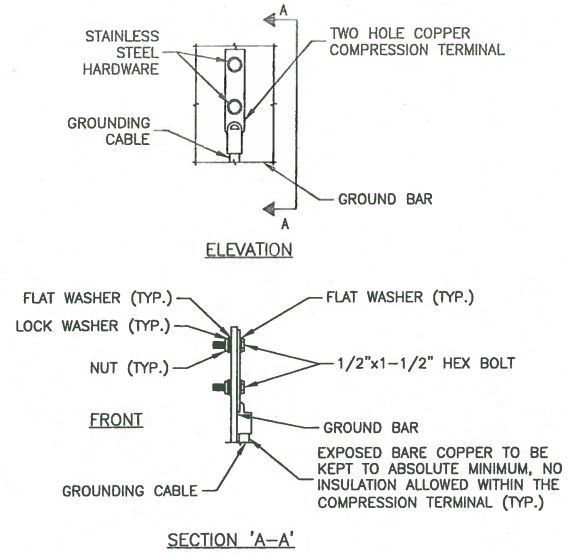
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TYPICAL ANTENNA GROUNDING DETAIL

SCALE: N.T.S.

3

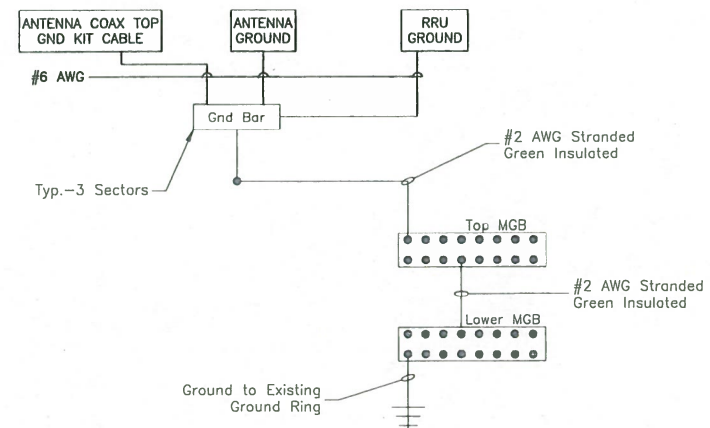


- NOTES:**
- DOUBLING UP OR STACKING OF CONNECTIONS IS NOT PERMITTED.
 - OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL

SCALE: N.T.S.

2



- NOTES:**
- BOND ANTENNA GROUNDING KIT CABLE TO TOP CIGBE
 - BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIGBE.
 - SCHEMATIC GROUNDING DIAGRAM IS TYPICAL FOR EACH SECTOR.
 - VERIFY EXISTING GROUND SYSTEM IS INSTALLED PER T-MOBILE STANDARDS.

SCHEMATIC GROUNDING DIAGRAM

SCALE: N.T.S.

4



T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054



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3 CORPORATE PARK DRIVE, SUITE 101
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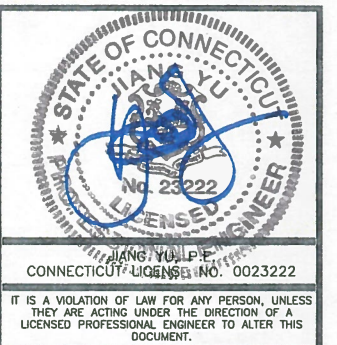
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DRAWN BY:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078106
SITE ADDRESS:	

389 ROUTE 2
PRESTON, CT 06365
NEW LONDON COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1



Date: **October 28, 2015**

Timothy Howell
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
980.209.8242

Paul J. Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
jmeinerding@pjfweb.com

Subject: Structural Modification Report

Carrier Designation: *T-Mobile Co-Locate*
Carrier Site Number: CT11441A
Carrier Site Name: Town Hall Sprint Tower

Crown Castle Designation:
Crown Castle BU Number: 876360
Crown Castle Site Name: PRESTON / TOWN HALL
Crown Castle JDE Job Number: 346378
Crown Castle Work Order Number: 1141595
Crown Castle Application Number: 310117 Rev. 6

Engineering Firm Designation: Paul J. Ford and Company Project Number: 37515-0448.007.7700

Site Data: 389 Rt. 2, PRESTON, New London County, CT
Latitude 41° 29' 25.25", Longitude -71° 59' 29.55"
147 Foot - Monopole Tower

Dear Timothy Howell,

Paul J. Ford and Company is pleased to submit this "Structural Modification Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 838604, in accordance with application 310117, revision 6.

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

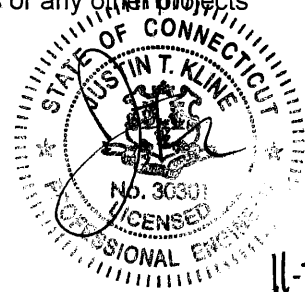
The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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

We at Paul J. Ford and Company appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Joey Meinerding, E.I.
Structural Designer



11-215

Date: **October 28, 2015**

Timothy Howell
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3530 Toringdon Way, Suite 300
Charlotte, NC 28277
980.209.8242

Paul J. Ford and Company
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614.221.6679
jmeinerding@pjfweb.com

Subject: Structural Modification Report

Carrier Designation: **T-Mobile Co-Locate**
Carrier Site Number: CT11441A
Carrier Site Name: Town Hall Sprint Tower

Crown Castle Designation: **Crown Castle BU Number:** 876360
Crown Castle Site Name: PRESTON / TOWN HALL
Crown Castle JDE Job Number: 346378
Crown Castle Work Order Number: 1141595
Crown Castle Application Number: 310117 Rev. 6

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Additional Calculations

1) INTRODUCTION

This tower is a 147 ft. monopole tower designed by Engineered Endeavors, Inc. in May of 2000. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
129.0	129.0	3	andrew	LNX-6515DS-VTM w/ Mount Pipe	2	1-5/8	--
		3	ericsson	RRUS 11 B12			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
147.0	147.0	6	decibel	DB978H90T2E-M w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Platform Mount [LP 601-1]			
136.0	138.0	3	alcatel lucent	RRH2X60-PCS	--	--	2
		6	andrew	HBXX-6517DS-VTM w/ Mount Pipe			
		6	andrew	LNX-6514DS-VTM w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
	136.0	1	tower mounts	Platform Mount [LP 601-1]	12	1-5/8	1
129.0	129.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	5	1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		1	tower mounts	Platform Mount [LP 403-1]			
		--	--	--	3	1-5/8	3
120.0	120.0	6	ericsson	TME-RRUS-11	--	--	1
		1	tower mounts	Side Arm Mount [SO 102-3]			
118.0	118.0	1	andrew	SBNH-1D6565C w/ Mount Pipe	3 6	3/8 1-1/4	1
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 303-1]			
110.0	110.0	3	kathrein	800 10504 w/ Mount Pipe	6	1-5/8	3
		3	kathrein	860 10025			
		1	tower mounts	T-Arm Mount [TA 602-3]			
50.0	51.0	1	lucent	KS24019-L112A	1	1/2	1
	50.0	1	tower mounts	Side Arm Mount [SO 701-1]			
48.0	49.0	1	lucent	KS24019-L112A	1	1/2	1
	48.0	1	tower mounts	Pipe Mount [PM 601-1]			

- Notes:
 1) Existing Equipment
 2) Reserved Equipment
 3) Equipment To Be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 08-01210G, 01/24/2008	2192501	CCISITES
4-POST-MODIFICATION INSPECTION	Vertical Solutions, 080609.05, 09/26/2008	2331610	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 131001.876360, 04/04/2013	3846952	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI, 6938, 05/03/2000	1615411	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEI, 6938, 05/02/2000	1615372	CCISITES
4-TOWER PROPOSED REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37515-0448.002.7700, 02/23/2015	5573224	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) For existing modifications: monopole was modified in conformance with the referenced modification drawings.
- 5) For proposed modifications: monopole will be modified in conformance with the referenced and attached 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)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	147 - 120.37	Pole	TP21.98x16.25x0.1875	1	-5.72	652.60	66.1	Pass
L2	120.37 - 110.5	Pole	TP23.6864x20.9057x0.25	2	-9.01	966.79	90.1	Pass
L3	110.5 - 105	Pole	TP24.8521x23.6864x0.4497	3	-9.86	1305.66	81.3	Pass
L4	105 - 103.5	Pole	TP25.17x24.8521x0.6968	4	-10.18	1948.86	58.0	Pass
L5	103.5 - 94.1667	Pole	TP27.1481x25.17x0.4671	5	-11.76	1429.55	96.3	Pass
L6	94.1667 - 84.91	Pole	TP29.11x27.1481x0.5744	6	-12.81	1825.18	83.4	Pass
L7	84.91 - 59.5	Pole	TP33.993x27.0775x0.5966	7	-20.39	2302.21	96.7	Pass
L8	59.5 - 58.5833	Pole	TP34.1872x33.993x0.6049	8	-20.63	2347.87	95.7	Pass
L9	58.5833 - 44.41	Pole	TP37.19x34.1872x0.6337	9	-23.19	2706.12	89.6	Pass
L10	44.41 - 30.5	Pole	TP39.5221x34.8274x0.6669	10	-26.01	2852.90	91.3	Pass
L11	30.5 - 29.75	Pole	TP39.6814x39.5221x0.6655	11	-30.53	3134.35	90.2	Pass
L12	29.75 - 29	Pole	TP39.8407x39.6814x0.744	12	-30.79	3512.73	81.1	Pass
L13	29 - 27.5833	Pole	TP40.1416x39.8407x0.7408	13	-31.29	3557.24	80.8	Pass
L14	27.5833 - 6.75	Pole	TP44.5664x40.1416x0.6517	14	-35.42	3535.68	86.5	Pass
L15	6.75 - 2.5	Pole	TP45.469x44.5664x0.649	15	-38.29	3484.06	91.4	Pass
L16	2.5 - 0	Pole	TP46x45.469x0.669	16	-39.79	3644.97	89.2	Pass
							Summary	
						Pole (L7)	96.7	Pass
						RATING =	96.7	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	82.7	Pass
1	Base Plate	0	94.2	Pass
1	Base Foundation Structural Steel	0	85.7	Pass
1	Base Foundation Soil Interaction	0	77.0	Pass

Structure Rating (max from all components) =	96.7%
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Notes:

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

4.1) Recommendations

Install the proposed modifications per the referenced and attached drawings.

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

There is a pole section.
 This tower is designed using the TIA/EIA-222-F standard.
 The following design criteria apply:

- 1) Tower is located in New London County, Connecticut.
- 2) Basic wind speed of 85.00 mph.
- 3) Nominal ice thickness of 0.7500 in.
- 4) Ice thickness is considered to increase with height.
- 5) Ice density of 56.00 pcf.
- 6) A wind speed of 37.60 mph is used in combination with ice.
- 7) Temperature drop of 50.00 °F.
- 8) Deflections calculated using a wind speed of 50.00 mph.
- 9) A non-linear (P-delta) analysis was used.
- 10) Pressures are calculated at each section.
- 11) Stress ratio used in pole design is 1.333.
- 12) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	147.0000- 120.3700	26.6300	3.25	18	16.2500	21.9800	0.1875	0.7500	A572-65 (65 ksi)
L2	120.3700- 110.5000	13.1200	0.00	18	20.9057	23.6864	0.2500	1.0000	A572-65 (65 ksi)
L3	110.5000- 105.0000	5.5000	0.00	18	23.6864	24.8521	0.4497	1.7988	Reinf 46.87 ksi (47 ksi)
L4	105.0000- 103.5000	1.5000	0.00	18	24.8521	25.1700	0.6968	2.7871	Reinf 45.02 ksi (45 ksi)
L5	103.5000- 94.1667	9.3333	0.00	18	25.1700	27.1481	0.4671	1.8682	Reinf 45.19 ksi (45 ksi)
L6	94.1667- 84.9100	9.2567	4.17	18	27.1481	29.1100	0.5744	2.2974	Reinf 45.27 ksi (45 ksi)
L7	84.9100- 59.5000	29.5800	0.00	18	27.0775	33.9930	0.5966	2.3862	Reinf 45.52 ksi (46 ksi)
L8	59.5000- 58.5833	0.9167	0.00	18	33.9930	34.1872	0.6049	2.4196	Reinf 45.53 ksi (46 ksi)
L9	58.5833- 44.4100	14.1733	5.17	18	34.1872	37.1900	0.6337	2.5347	Reinf 47.44 ksi (47 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L10	44.4100- 30.5000	19.0800	0.00	18	34.8274	39.5221	0.6669	2.6676	Reinf 47.56 ksi (48 ksi)
L11	30.5000- 29.7500	0.7500	0.00	18	39.5221	39.6814	0.6655	2.6621	Reinf 47.55 ksi (48 ksi)
L12	29.7500- 29.0000	0.7500	0.00	18	39.6814	39.8407	0.7440	2.9761	Reinf 47.57 ksi (48 ksi)
L13	29.0000- 27.5833	1.4167	0.00	18	39.8407	40.1416	0.7408	2.9631	Reinf 48.01 ksi (48 ksi)
L14	27.5833- 6.7500	20.8333	0.00	18	40.1416	44.5664	0.6517	2.6068	Reinf 50.71 ksi (51 ksi)
L15	6.7500-2.5000	4.2500	0.00	18	44.5664	45.4690	0.6490	2.5961	Reinf 48.15 ksi (48 ksi)
L16	2.5000-0.0000	2.5000		18	45.4690	46.0000	0.6690	2.6758	Reinf 47.91 ksi (48 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	16.5007	9.5592	311.5911	5.7022	8.2550	37.7457	623.5922	4.7805	2.5300	13.493
	22.3191	12.9693	778.1562	7.7363	11.1658	69.6908	1557.3364	6.4859	3.5385	18.872
L2	21.9276	16.3903	883.4938	7.3328	10.6201	83.1908	1768.1501	8.1967	3.2394	12.958
	24.0518	18.5968	1290.4956	8.3199	12.0327	107.2492	2582.6893	9.3002	3.7288	14.915
L3	24.0518	33.1661	2262.4602	8.2490	12.0327	188.0262	4527.8975	16.5862	3.3774	7.51
	25.2355	34.8299	2620.3190	8.6628	12.6249	207.5525	5244.0858	17.4183	3.5825	7.967
L4	25.2355	53.4213	3938.0100	8.5751	12.6249	311.9253	7881.2018	26.7158	3.1476	4.517
	25.5583	54.1245	4095.5559	8.6880	12.7864	320.3068	8196.5009	27.0674	3.2036	4.598
L5	25.5583	36.6201	2823.2782	8.7695	12.7864	220.8040	5650.2714	18.3135	3.6079	7.725
	27.5669	39.5524	3557.2713	9.4718	13.7912	257.9370	7119.2233	19.7800	3.9561	8.47
L6	27.5669	48.4444	4322.0232	9.4337	13.7912	313.3890	8649.7334	24.2268	3.7672	6.559
	29.5591	52.0210	5351.6957	10.1302	14.7879	361.8974	10710.433	26.0154	4.1125	7.16
L7	28.4851	50.1411	4442.1909	9.4007	13.7554	322.9427	8890.2270	25.0753	3.7157	6.229
	34.5174	63.2356	8910.4615	11.8557	17.2685	515.9963	17832.647	31.6238	4.9328	8.269
L8	34.5174	64.1026	9028.1227	11.8528	17.2685	522.8100	18068.124	32.0574	4.9182	8.131
	34.7146	64.4755	9186.5835	11.9217	17.3671	528.9642	18385.255	32.2439	4.9523	8.187
L9	34.7146	67.4852	9598.9499	11.9115	17.3671	552.7083	19210.530	33.7490	4.9017	7.735
	37.7637	73.5246	12413.529	12.9775	18.8925	657.0606	24843.393	36.7693	5.4302	8.569
L10	36.6564	72.3077	10660.306	12.1270	17.6923	602.5396	21334.640	36.1607	4.9559	7.431
	40.1318	82.2452	15687.233	13.7936	20.0772	781.3446	31395.108	41.1304	5.7822	8.67
L11	40.1318	82.0803	15656.886	13.7941	20.0772	779.8331	31334.374	41.0480	5.7846	8.692
	40.2935	82.4168	15850.242	13.8506	20.1582	786.2944	31721.340	41.2162	5.8126	8.734
L12	40.2935	91.9514	17612.830	13.8228	20.1582	873.7324	35248.836	45.9844	5.6745	7.627
	40.4553	92.3275	17829.874	13.8793	20.2391	880.9631	35683.210	46.1725	5.7025	7.664
L13	40.4553	91.9331	17756.644	13.8805	20.2391	877.3448	35536.653	45.9753	5.7082	7.706
	40.7608	92.6406	18169.741	13.9873	20.3919	891.0264	36363.390	46.3291	5.7611	7.777
L14	40.7608	81.6847	16093.464	14.0189	20.3919	789.2078	32208.104	40.8501	5.9179	9.081
	45.2539	90.8373	22132.015	15.5897	22.6397	977.5748	44293.152	45.4273	6.6967	10.276
L15	45.2539	90.4707	22045.361	15.5907	22.6397	973.7473	44119.731	45.2439	6.7014	10.325

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L16	46.1705	92.3301	23432.812 1	15.9111	23.0983	1014.4838	46896.457 7	46.1738	6.8603	10.57
	46.1705	95.1230	24120.167 0	15.9040	23.0983	1044.2416	48272.071 9	47.5706	6.8252	10.203
	46.7096	96.2504	24988.004 3	16.0925	23.3680	1069.3258	50008.888 4	48.1344	6.9186	10.342

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
ft	ft ²	in						
L1 147.0000-120.3700				1	1	1		
L2 120.3700-110.5000				1	1	1		
L3 110.5000-105.0000				1	1	1		
L4 105.0000-103.5000				1	1	1		
L5 103.5000-94.1667				1	1	1		
L6 94.1667-84.9100				1	1	1		
L7 84.9100-59.5000				1	1	1		
L8 59.5000-58.5833				1	1	1		
L9 58.5833-44.4100				1	1	1		
L10 44.4100-30.5000				1	1	1		
L11 30.5000-29.7500				1	1	1		
L12 29.7500-29.0000				1	1	1		
L13 29.0000-27.5833				1	1	1		
L14 27.5833-6.7500				1	1	1		
L15 6.7500-2.5000				1	1	1		
L16 2.5000-0.0000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf
LDF7-50A(1-5/8")	C	No	Inside Pole	147.0000 - 0.0000	6	No Ice	0.82
						1/2" Ice	0.82
						1" Ice	0.82
						2" Ice	0.82
						4" Ice	0.82

LDF7-50A(1-5/8")	C	No	Inside Pole	136.0000 - 0.0000	12	No Ice	0.82
						1/2" Ice	0.82
						1" Ice	0.82
						2" Ice	0.82
						4" Ice	0.82

MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	Inside Pole	129.0000 - 0.0000	1	No Ice	1.07
						1/2" Ice	1.07
						1" Ice	1.07
						2" Ice	1.07

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight
						ft ² /ft	plf	
LDF7-50A(1-5/8")	C	No	Inside Pole	129.0000 - 0.0000	4	4" Ice	0.0000	1.07
						No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
LDF7-50A(1-5/8")	C	No	Inside Pole	129.0000 - 0.0000	2	4" Ice	0.0000	0.82
						No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82

AVA6-50(1-1/4")	C	No	Inside Pole	118.0000 - 0.0000	6	No Ice	0.0000	0.45
						1/2" Ice	0.0000	0.45
						1" Ice	0.0000	0.45
						2" Ice	0.0000	0.45
						4" Ice	0.0000	0.45
FB-L98B-002-75000(3/8")	C	No	Inside Pole	118.0000 - 0.0000	3	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
						2" Ice	0.0000	0.06
						4" Ice	0.0000	0.06
2" Conduit	C	No	Inside Pole	118.0000 - 0.0000	1	No Ice	0.0000	1.16
						1/2" Ice	0.0000	1.16
						1" Ice	0.0000	1.16
						2" Ice	0.0000	1.16
						4" Ice	0.0000	1.16

LDF4-50A(1/2")	C	No	Inside Pole	50.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15

LDF4-50A(1/2")	C	No	Inside Pole	48.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15

Aero MP3-03	C	No	CaAa (Out Of Face)	30.7500 - 5.7500	1	No Ice	0.2625	0.00
						1/2" Ice	0.3736	0.00
						1" Ice	0.4847	0.00
						2" Ice	0.7069	0.00
						4" Ice	1.1514	0.00

1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	108.6700 - 0.0000	1	No Ice	0.2083	0.00
						1/2" Ice	0.3194	0.00
						1" Ice	0.4306	0.00
						2" Ice	0.6528	0.00
						4" Ice	1.0972	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	147.0000- 120.3700	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	0.000	0.34
L2	120.3700- 110.5000	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	0.000	0.24
L3	110.5000- 105.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L4	105.0000-103.5000	C	0.000	0.000	0.000	0.765	0.14
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L5	103.5000-94.1667	C	0.000	0.000	0.000	0.312	0.04
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L6	94.1667-84.9100	C	0.000	0.000	0.000	1.944	0.23
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L7	84.9100-59.5000	C	0.000	0.000	0.000	1.928	0.23
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L8	59.5000-58.5833	C	0.000	0.000	0.000	5.294	0.63
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L9	58.5833-44.4100	C	0.000	0.000	0.000	0.191	0.02
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L10	44.4100-30.5000	C	0.000	0.000	0.000	2.953	0.35
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L11	30.5000-29.7500	C	0.000	0.000	0.000	2.964	0.35
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L12	29.7500-29.0000	C	0.000	0.000	0.000	0.353	0.02
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L13	29.0000-27.5833	C	0.000	0.000	0.000	0.353	0.02
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L14	27.5833-6.7500	C	0.000	0.000	0.000	0.667	0.04
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L15	6.7500-2.5000	C	0.000	0.000	0.000	9.808	0.52
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L16	2.5000-0.0000	C	0.000	0.000	0.000	1.148	0.11
		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	0.521	0.06

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	147.0000-120.3700	A	0.887	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	0.000	0.34
L2	120.3700-110.5000	A	0.872	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	0.000	0.24
L3	110.5000-105.0000	A	0.864	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	1.470	0.14
L4	105.0000-103.5000	A	0.861	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	0.600	0.04
L5	103.5000-94.1667	A	0.855	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	3.719	0.23
L6	94.1667-84.9100	A	0.845	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	3.667	0.23
L7	84.9100-59.5000	A	0.823	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_{RA}A_A$ In Face ft ²	$C_{OA}A_A$ Out Face ft ²	Weight K
L8	59.5000-58.5833	C	0.804	0.000	0.000	0.000	10.067	0.63
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L9	58.5833-44.4100	C	0.791	0.000	0.000	0.000	0.355	0.02
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L10	44.4100-30.5000	C	0.761	0.000	0.000	0.000	5.444	0.35
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L11	30.5000-29.7500	C	0.750	0.000	0.000	0.000	5.452	0.35
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L12	29.7500-29.0000	C	0.750	0.000	0.000	0.000	0.603	0.02
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L13	29.0000-27.5833	C	0.750	0.000	0.000	0.000	0.603	0.02
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L14	27.5833-6.7500	C	0.750	0.000	0.000	0.000	1.139	0.04
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L15	6.7500-2.5000	C	0.750	0.000	0.000	0.000	16.753	0.52
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L16	2.5000-0.0000	C	0.750	0.000	0.000	0.000	2.023	0.11
		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	0.938	0.06

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	147.0000-120.3700	0.0000	0.0000	0.0000	0.0000
L2	120.3700-110.5000	0.0000	0.0000	0.0000	0.0000
L3	110.5000-105.0000	-0.1703	0.0983	-0.2907	0.1679
L4	105.0000-103.5000	-0.2460	0.1421	-0.4119	0.2378
L5	103.5000-94.1667	-0.2470	0.1426	-0.4147	0.2394
L6	94.1667-84.9100	-0.2485	0.1435	-0.4187	0.2418
L7	84.9100-59.5000	-0.2504	0.1446	-0.4261	0.2460
L8	59.5000-58.5833	-0.2521	0.1456	-0.4249	0.2453
L9	58.5833-44.4100	-0.2529	0.1460	-0.4252	0.2455
L10	44.4100-30.5000	-0.2595	0.1498	-0.4370	0.2523
L11	30.5000-29.7500	-0.5352	0.3090	-0.8151	0.4706
L12	29.7500-29.0000	-0.5355	0.3092	-0.8158	0.4710
L13	29.0000-27.5833	-0.5359	0.3094	-0.8169	0.4716
L14	27.5833-6.7500	-0.5396	0.3115	-0.8269	0.4774
L15	6.7500-2.5000	-0.3267	0.1886	-0.5321	0.3072
L16	2.5000-0.0000	-0.2566	0.1482	-0.4306	0.2486

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						ft
			ft	ft	°	ft	ft ²	ft ²	K	
(2) DB978H90T2E-M w/ Mount Pipe	A	From Leg	4.0000	0.00	0.0000	147.0000	No Ice	3.2208	2.8875	0.03
							1/2" Ice	3.5954	3.4896	0.06
							Ice	4.0226	4.1025	0.09
							1" Ice	4.9085	5.3784	0.18
							2" Ice	6.8160	8.2404	0.47
(2) DB978H90T2E-M w/ Mount Pipe	B	From Leg	4.0000	0.00	0.0000	147.0000	No Ice	3.2208	2.8875	0.03
							1/2" Ice	3.5954	3.4896	0.06
							Ice	4.0226	4.1025	0.09
							1" Ice	4.9085	5.3784	0.18
							2" Ice	6.8160	8.2404	0.47
(2) DB978H90T2E-M w/ Mount Pipe	C	From Leg	4.0000	0.00	0.0000	147.0000	No Ice	3.2208	2.8875	0.03
							1/2" Ice	3.5954	3.4896	0.06
							Ice	4.0226	4.1025	0.09
							1" Ice	4.9085	5.3784	0.18
							2" Ice	6.8160	8.2404	0.47
Platform Mount [LP 601-1]	C	None			0.0000	147.0000	No Ice	28.4700	28.4700	1.12
							1/2" Ice	33.5900	33.5900	1.51
							Ice	38.7100	38.7100	1.91
							1" Ice	48.9500	48.9500	2.69
							2" Ice	69.4300	69.4300	4.26
*** (2) FD9R6004/2C-3L	A	From Leg	4.0000	0.00	0.0000	136.0000	No Ice	0.3665	0.0846	0.00
							1/2" Ice	0.4506	0.1362	0.01
							Ice	0.5433	0.1965	0.01
							1" Ice	0.7546	0.3430	0.02
							2" Ice	1.2808	0.7396	0.06
(2) FD9R6004/2C-3L	B	From Leg	4.0000	0.00	0.0000	136.0000	No Ice	0.3665	0.0846	0.00
							1/2" Ice	0.4506	0.1362	0.01
							Ice	0.5433	0.1965	0.01
							1" Ice	0.7546	0.3430	0.02
							2" Ice	1.2808	0.7396	0.06
(2) FD9R6004/2C-3L	C	From Leg	4.0000	0.00	0.0000	136.0000	No Ice	0.3665	0.0846	0.00
							1/2" Ice	0.4506	0.1362	0.01
							Ice	0.5433	0.1965	0.01
							1" Ice	0.7546	0.3430	0.02
							2" Ice	1.2808	0.7396	0.06
(2) HBXX-6517DS-VTM w/ Mount Pipe	A	From Leg	4.0000	0.00	0.0000	136.0000	No Ice	8.9758	6.9629	0.07
							1/2" Ice	9.6473	8.1817	0.14
							Ice	10.2909	9.1436	0.21
							1" Ice	11.5946	11.0219	0.40
							2" Ice	14.3212	15.0267	0.91
(2) HBXX-6517DS-VTM w/ Mount Pipe	B	From Leg	4.0000	0.00	0.0000	136.0000	No Ice	8.9758	6.9629	0.07
							1/2" Ice	9.6473	8.1817	0.14
							Ice	10.2909	9.1436	0.21
							1" Ice	11.5946	11.0219	0.40
							2" Ice	14.3212	15.0267	0.91
(2) HBXX-6517DS-VTM w/ Mount Pipe	C	From Leg	4.0000	0.00	0.0000	136.0000	No Ice	8.9758	6.9629	0.07
							1/2" Ice	9.6473	8.1817	0.14
							Ice	10.2909	9.1436	0.21
							1" Ice	11.5946	11.0219	0.40
							2" Ice	14.3212	15.0267	0.91
(2) LNX-6514DS-VTM w/ Mount Pipe	A	From Leg	4.0000	0.00	0.0000	136.0000	No Ice	8.6346	7.0679	0.06
							1/2" Ice	9.2852	8.2532	0.13
							Ice	9.9050	9.1523	0.21
							1" Ice	11.1720	10.9842	0.39

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						ft
							ft ²	ft ²	K	
(2) LNX-6514DS-VTM w/ Mount Pipe	B	From Leg	4.0000	0.00	0.0000	136.0000	2" Ice	13.8246	15.0105	0.90
							4" Ice			
							No Ice	8.6346	7.0679	0.06
							1/2" Ice	9.2852	8.2532	0.13
							Ice	9.9050	9.1523	0.21
(2) LNX-6514DS-VTM w/ Mount Pipe	C	From Leg	4.0000	0.00	0.0000	136.0000	1" Ice	11.1720	10.9842	0.39
							2" Ice	13.8246	15.0105	0.90
							4" Ice			
							No Ice	8.6346	7.0679	0.06
							1/2" Ice	9.2852	8.2532	0.13
(2) FD9R6004/2C-3L	A	From Leg	4.0000	0.00	0.0000	136.0000	Ice	9.9050	9.1523	0.21
							1" Ice	11.1720	10.9842	0.39
							2" Ice	13.8246	15.0105	0.90
							4" Ice			
							No Ice	0.3665	0.0846	0.00
(2) FD9R6004/2C-3L	B	From Leg	4.0000	0.00	0.0000	136.0000	1/2" Ice	0.4506	0.1362	0.01
							Ice	0.5433	0.1965	0.01
							1" Ice	0.7546	0.3430	0.02
							2" Ice	1.2808	0.7396	0.06
							4" Ice			
(2) FD9R6004/2C-3L	C	From Leg	4.0000	0.00	0.0000	136.0000	No Ice	0.3665	0.0846	0.00
							1/2" Ice	0.4506	0.1362	0.01
							Ice	0.5433	0.1965	0.01
							1" Ice	0.7546	0.3430	0.02
							2" Ice	1.2808	0.7396	0.06
RRH2X60-PCS	A	From Leg	4.0000	0.00	0.0000	136.0000	4" Ice			
							No Ice	2.5667	2.0106	0.06
							1/2" Ice	2.7914	2.2184	0.08
							Ice	3.0247	2.4349	0.10
							1" Ice	3.5173	2.8938	0.16
RRH2X60-PCS	B	From Leg	4.0000	0.00	0.0000	136.0000	2" Ice	4.6062	3.9152	0.31
							4" Ice			
							No Ice	2.5667	2.0106	0.06
							1/2" Ice	2.7914	2.2184	0.08
							Ice	3.0247	2.4349	0.10
RRH2X60-PCS	C	From Leg	4.0000	0.00	0.0000	136.0000	1" Ice	3.5173	2.8938	0.16
							2" Ice	4.6062	3.9152	0.31
							4" Ice			
							No Ice	2.5667	2.0106	0.06
							1/2" Ice	2.7914	2.2184	0.08
Platform Mount [LP 601-1]	C	None			0.0000	136.0000	Ice	38.7100	38.7100	1.91
							1" Ice	48.9500	48.9500	2.69
							2" Ice	69.4300	69.4300	4.26
							4" Ice			
							No Ice	28.4700	28.4700	1.12
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000	0.00	0.0000	129.0000	1/2" Ice	7.3471	6.4800	0.17
							Ice	7.8631	7.2567	0.23
							1" Ice	8.9261	8.8640	0.38
							2" Ice	11.1755	12.2932	0.81
							4" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000	0.00	0.0000	129.0000	No Ice	6.8253	5.6424	0.11
							1/2" Ice	7.3471	6.4800	0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
			0.00			Ice 7.8631	7.2567	0.23
						1" Ice 8.9261	8.8640	0.38
						2" Ice 11.1755	12.2932	0.81
						4" Ice		
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 6.8253	5.6424	0.11
						1/2" 7.3471	6.4800	0.17
						Ice 7.8631	7.2567	0.23
						1" Ice 8.9261	8.8640	0.38
						2" Ice 11.1755	12.2932	0.81
						4" Ice		
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 6.8155	5.6334	0.11
						1/2" 7.3373	6.4717	0.17
						Ice 7.8532	7.2478	0.23
						1" Ice 8.9160	8.8537	0.38
						2" Ice 11.1650	12.2804	0.81
						4" Ice		
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 6.8155	5.6334	0.11
						1/2" 7.3373	6.4717	0.17
						Ice 7.8532	7.2478	0.23
						1" Ice 8.9160	8.8537	0.38
						2" Ice 11.1650	12.2804	0.81
						4" Ice		
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 6.8155	5.6334	0.11
						1/2" 7.3373	6.4717	0.17
						Ice 7.8532	7.2478	0.23
						1" Ice 8.9160	8.8537	0.38
						2" Ice 11.1650	12.2804	0.81
						4" Ice		
KRY 112 144/1	A	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 0.4083	0.2042	0.01
						1/2" 0.4969	0.2733	0.01
						Ice 0.5941	0.3511	0.02
						1" Ice 0.8145	0.5326	0.03
						2" Ice 1.3590	0.9992	0.08
						4" Ice		
KRY 112 144/1	B	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 0.4083	0.2042	0.01
						1/2" 0.4969	0.2733	0.01
						Ice 0.5941	0.3511	0.02
						1" Ice 0.8145	0.5326	0.03
						2" Ice 1.3590	0.9992	0.08
						4" Ice		
KRY 112 144/1	C	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 0.4083	0.2042	0.01
						1/2" 0.4969	0.2733	0.01
						Ice 0.5941	0.3511	0.02
						1" Ice 0.8145	0.5326	0.03
						2" Ice 1.3590	0.9992	0.08
						4" Ice		
LNx-6515DS-VTM w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 11.6382	9.8359	0.08
						1/2" 12.3560	11.3566	0.17
						Ice 13.0830	12.9014	0.27
						1" Ice 14.5347	15.2444	0.50
						2" Ice 17.7991	20.1092	1.15
						4" Ice		
LNx-6515DS-VTM w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 11.6382	9.8359	0.08
						1/2" 12.3560	11.3566	0.17
						Ice 13.0830	12.9014	0.27
						1" Ice 14.5347	15.2444	0.50
						2" Ice 17.7991	20.1092	1.15
						4" Ice		
LNx-6515DS-VTM w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	129.0000	No Ice 11.6382	9.8359	0.08
						1/2" 12.3560	11.3566	0.17
						Ice 13.0830	12.9014	0.27
						1" Ice 14.5347	15.2444	0.50
						2" Ice 17.7991	20.1092	1.15
						4" Ice		
RRUS 11 B12	A	From Leg	4.0000	0.0000	129.0000	No Ice 3.3056	1.3611	0.05

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						ft
				0.00			1/2"	3.5497	1.5404	0.07
				0.00			Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
							4" Ice			
RRUS 11 B12	B	From Leg	4.0000	0.0000	129.0000	No Ice	3.3056	1.3611	0.05	
			0.00			1/2"	3.5497	1.5404	0.07	
			0.00			Ice	3.8025	1.7284	0.10	
						1" Ice	4.3340	2.1302	0.15	
						2" Ice	5.5006	3.0377	0.31	
						4" Ice				
RRUS 11 B12	C	From Leg	4.0000	0.0000	129.0000	No Ice	3.3056	1.3611	0.05	
			0.00			1/2"	3.5497	1.5404	0.07	
			0.00			Ice	3.8025	1.7284	0.10	
						1" Ice	4.3340	2.1302	0.15	
						2" Ice	5.5006	3.0377	0.31	
						4" Ice				
Platform Mount [LP 403-1]	C	None		0.0000	129.0000	No Ice	18.8500	18.8500	1.50	
						1/2"	24.3000	24.3000	1.80	
						Ice	29.7500	29.7500	2.09	
						1" Ice	40.6500	40.6500	2.69	
						2" Ice	62.4500	62.4500	3.87	
						4" Ice				

(2) TME-RRUS-11	A	From Leg	2.0000	0.0000	120.0000	No Ice	3.2486	1.3726	0.05	
			0.00			1/2"	3.4905	1.5510	0.07	
			0.00			Ice	3.7411	1.7380	0.09	
						1" Ice	4.2682	2.1381	0.15	
						2" Ice	5.4260	3.0418	0.31	
						4" Ice				
(2) TME-RRUS-11	B	From Leg	2.0000	0.0000	120.0000	No Ice	3.2486	1.3726	0.05	
			0.00			1/2"	3.4905	1.5510	0.07	
			0.00			Ice	3.7411	1.7380	0.09	
						1" Ice	4.2682	2.1381	0.15	
						2" Ice	5.4260	3.0418	0.31	
						4" Ice				
(2) TME-RRUS-11	C	From Leg	2.0000	0.0000	120.0000	No Ice	3.2486	1.3726	0.05	
			0.00			1/2"	3.4905	1.5510	0.07	
			0.00			Ice	3.7411	1.7380	0.09	
						1" Ice	4.2682	2.1381	0.15	
						2" Ice	5.4260	3.0418	0.31	
						4" Ice				
Side Arm Mount [SO 102-3]	C	None		0.0000	120.0000	No Ice	3.0000	3.0000	0.08	
						1/2"	3.4800	3.4800	0.11	
						Ice	3.9600	3.9600	0.14	
						1" Ice	4.9200	4.9200	0.20	
						2" Ice	6.8400	6.8400	0.32	
						4" Ice				

P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.0000	0.0000	118.0000	No Ice	11.8229	9.0563	0.09	
			0.00			1/2"	12.5940	10.6186	0.18	
			0.00			Ice	13.3752	12.2051	0.28	
						1" Ice	14.9400	14.6968	0.51	
						2" Ice	18.3336	19.6430	1.14	
						4" Ice				
SBNH-1D6565C w/ Mount Pipe	B	From Leg	4.0000	0.0000	118.0000	No Ice	11.5561	9.7151	0.10	
			0.00			1/2"	12.2227	11.1857	0.19	
			0.00			Ice	12.8929	12.5942	0.28	
						1" Ice	14.2911	14.8689	0.51	
						2" Ice	17.4280	19.6184	1.15	
						4" Ice				
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.0000	0.0000	118.0000	No Ice	11.8229	9.0563	0.09	
			0.00			1/2"	12.5940	10.6186	0.18	
			0.00			Ice	13.3752	12.2051	0.28	
						1" Ice	14.9400	14.6968	0.51	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz	Lateral					
						ft	ft ²	ft ²	K
7770.00 w/ Mount Pipe	A	From Leg	4.0000	0.0000	118.0000	2" Ice	18.3336	19.6430	1.14
						4" Ice			
						No Ice	6.2208	4.8204	0.09
						1/2" Ice	6.7144	5.5082	0.14
						1" Ice	7.2182	6.2127	0.21
7770.00 w/ Mount Pipe	B	From Leg	4.0000	0.0000	118.0000	2" Ice	10.4762	11.0613	0.76
						4" Ice			
						No Ice	6.2208	4.8204	0.09
						1/2" Ice	6.7144	5.5082	0.14
						1" Ice	7.2182	6.2127	0.21
7770.00 w/ Mount Pipe	C	From Leg	4.0000	0.0000	118.0000	2" Ice	10.4762	11.0613	0.76
						4" Ice			
						No Ice	6.2208	4.8204	0.09
						1/2" Ice	6.7144	5.5082	0.14
						1" Ice	7.2182	6.2127	0.21
(2) LGP21401	A	From Leg	4.0000	0.0000	118.0000	2" Ice	10.4762	11.0613	0.76
						4" Ice			
						No Ice	1.2880	0.3640	0.01
						1/2" Ice	1.4453	0.4785	0.02
						1" Ice	1.6112	0.6017	0.03
(2) LGP21401	B	From Leg	4.0000	0.0000	118.0000	2" Ice	2.7882	1.5220	0.14
						4" Ice			
						No Ice	1.2880	0.3640	0.01
						1/2" Ice	1.4453	0.4785	0.02
						1" Ice	1.6112	0.6017	0.03
(2) LGP21401	C	From Leg	4.0000	0.0000	118.0000	2" Ice	2.7882	1.5220	0.14
						4" Ice			
						No Ice	1.2880	0.3640	0.01
						1/2" Ice	1.4453	0.4785	0.02
						1" Ice	1.6112	0.6017	0.03
DC6-48-60-18-8F	A	From Leg	4.0000	0.0000	118.0000	2" Ice	2.7882	1.5220	0.14
						4" Ice			
						No Ice	1.4667	1.4667	0.02
						1/2" Ice	1.6667	1.6667	0.04
						1" Ice	1.8778	1.8778	0.06
Platform Mount [LP 303-1]	C	None		0.0000	118.0000	2" Ice	3.3778	3.3778	0.24
						4" Ice			
						No Ice	14.6600	14.6600	1.25
						1/2" Ice	18.8700	18.8700	1.48
						1" Ice	23.0800	23.0800	1.71
*** KS24019-L112A	C	From Leg	3.0000	0.0000	50.0000	2" Ice	48.3400	48.3400	3.10
						4" Ice			
						No Ice	0.1556	0.1556	0.01
						1/2" Ice	0.2247	0.2247	0.01
						1" Ice	0.3025	0.3025	0.01
Side Arm Mount [SO 701-1]	C	None		0.0000	50.0000	2" Ice	0.4840	0.4840	0.02
						4" Ice			
						No Ice	0.9506	0.9506	0.06
						1/2" Ice	0.8500	1.6700	0.07
						1" Ice	1.1400	2.3400	0.08
***						2" Ice	1.4300	3.0100	0.09
						4" Ice			
						No Ice	2.0100	4.3500	0.12
						1" Ice	3.1700	7.0300	0.18
						2" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	$C_A A_A$ Front	$C_A A_A$ Side	Weight	
			Horz	Lateral Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
KS24019-L112A	A	From Leg	1.0000	0.0000	0.0000	48.0000	No Ice	0.1556	0.1556	0.01
			0.00				1/2"	0.2247	0.2247	0.01
			1.00				Ice	0.3025	0.3025	0.01
							1" Ice	0.4840	0.4840	0.02
							2" Ice	0.9506	0.9506	0.06
Pipe Mount [PM 601-1]	A	None			0.0000	48.0000	No Ice	3.0000	0.9000	0.07
							1/2"	3.7400	1.1200	0.08
							Ice	4.4800	1.3400	0.09
							1" Ice	5.9600	1.7800	0.12
							2" Ice	8.9200	2.6600	0.18
		4" Ice								

Tower Pressures - No Ice

$G_H = 1.690$

Section Elevation	z	K_Z	q_z	A_G	F a c e	A_F	A_R	A_{leg}	Leg %	$C_A A_A$ In Face	$C_A A_A$ Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 147.0000-120.3700	133.0198	1.489	28	42.419	A	0.000	42.419	42.419	100.00	0.000	0.000
					B	0.000	42.419		100.00	0.000	0.000
					C	0.000	42.419		100.00	0.000	0.000
L2 120.3700-110.5000	115.3590	1.43	26	18.622	A	0.000	18.622	18.622	100.00	0.000	0.000
					B	0.000	18.622		100.00	0.000	0.000
					C	0.000	18.622		100.00	0.000	0.000
L3 110.5000-105.0000	107.7280	1.402	26	11.123	A	0.000	11.123	11.123	100.00	0.000	0.000
					B	0.000	11.123		100.00	0.000	0.000
					C	0.000	11.123		100.00	0.000	0.765
L4 105.0000-103.5000	104.2484	1.389	26	3.126	A	0.000	3.126	3.126	100.00	0.000	0.000
					B	0.000	3.126		100.00	0.000	0.000
					C	0.000	3.126		100.00	0.000	0.312
L5 103.5000-94.1667	98.7745	1.368	25	20.346	A	0.000	20.346	20.346	100.00	0.000	0.000
					B	0.000	20.346		100.00	0.000	0.000
					C	0.000	20.346		100.00	0.000	1.944
L6 94.1667-84.9100	89.4845	1.33	25	21.699	A	0.000	21.699	21.699	100.00	0.000	0.000
					B	0.000	21.699		100.00	0.000	0.000
					C	0.000	21.699		100.00	0.000	1.928
L7 84.9100-59.5000	71.7995	1.249	23	65.691	A	0.000	65.691	65.691	100.00	0.000	0.000
					B	0.000	65.691		100.00	0.000	0.000
					C	0.000	65.691		100.00	0.000	5.294
L8 59.5000-58.5833	59.0412	1.181	22	2.604	A	0.000	2.604	2.604	100.00	0.000	0.000
					B	0.000	2.604		100.00	0.000	0.000
					C	0.000	2.604		100.00	0.000	0.191
L9 58.5833-44.4100	51.3973	1.135	21	42.152	A	0.000	42.152	42.152	100.00	0.000	0.000
					B	0.000	42.152		100.00	0.000	0.000
					C	0.000	42.152		100.00	0.000	2.953
L10 44.4100-30.5000	37.3501	1.036	19	43.829	A	0.000	43.829	43.829	100.00	0.000	0.000
					B	0.000	43.829		100.00	0.000	0.000
					C	0.000	43.829		100.00	0.000	2.964
L11 30.5000-29.7500	30.1247	1	18	2.475	A	0.000	2.475	2.475	100.00	0.000	0.000
					B	0.000	2.475		100.00	0.000	0.000
					C	0.000	2.475		100.00	0.000	0.353
L12 29.7500-29.0000	29.3747	1	18	2.485	A	0.000	2.485	2.485	100.00	0.000	0.000
					B	0.000	2.485		100.00	0.000	0.000
					C	0.000	2.485		100.00	0.000	0.353
L13 29.0000-27.5833	28.2908	1	18	4.721	A	0.000	4.721	4.721	100.00	0.000	0.000
					B	0.000	4.721		100.00	0.000	0.000
					C	0.000	4.721		100.00	0.000	0.000

Section Elevation ft	z ft	K _z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L14 27.5833-6.7500	16.9853	1	18	73.531	C	0.000	4.721	73.531	100.00	0.000	0.667
					A	0.000	73.531		100.00	0.000	0.000
					B	0.000	73.531		100.00	0.000	0.000
L15 6.7500-2.5000	4.6179	1	18	15.944	C	0.000	15.944	15.944	100.00	0.000	9.808
					A	0.000	15.944		100.00	0.000	0.000
					B	0.000	15.944		100.00	0.000	0.000
L16 2.5000-0.0000	1.2476	1	18	9.528	C	0.000	9.528	9.528	100.00	0.000	1.148
					A	0.000	9.528		100.00	0.000	0.000
					B	0.000	9.528		100.00	0.000	0.000

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K _z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 147.0000-120.3700	133.0198	1.489	5	0.8866	46.354	A	0.000	46.354	46.354	100.00	0.000	0.000
						B	0.000	46.354	100.00	0.000	0.000	
						C	0.000	46.354	100.00	0.000	0.000	
L2 120.3700-110.5000	115.3590	1.43	5	0.8715	20.080	A	0.000	20.080	20.080	100.00	0.000	0.000
						B	0.000	20.080	100.00	0.000	0.000	
						C	0.000	20.080	100.00	0.000	0.000	
L3 110.5000-105.0000	107.7280	1.402	5	0.8644	11.916	A	0.000	11.916	11.916	100.00	0.000	0.000
						B	0.000	11.916	100.00	0.000	0.000	
						C	0.000	11.916	100.00	0.000	1.470	
L4 105.0000-103.5000	104.2484	1.389	5	0.8610	3.342	A	0.000	3.342	3.342	100.00	0.000	0.000
						B	0.000	3.342	100.00	0.000	0.000	
						C	0.000	3.342	100.00	0.000	0.600	
L5 103.5000-94.1667	98.7745	1.368	5	0.8555	21.677	A	0.000	21.677	21.677	100.00	0.000	0.000
						B	0.000	21.677	100.00	0.000	0.000	
						C	0.000	21.677	100.00	0.000	3.719	
L6 94.1667-84.9100	89.4845	1.33	5	0.8454	23.003	A	0.000	23.003	23.003	100.00	0.000	0.000
						B	0.000	23.003	100.00	0.000	0.000	
						C	0.000	23.003	100.00	0.000	3.667	
L7 84.9100-59.5000	71.7995	1.249	5	0.8233	69.271	A	0.000	69.271	69.271	100.00	0.000	0.000
						B	0.000	69.271	100.00	0.000	0.000	
						C	0.000	69.271	100.00	0.000	10.067	
L8 59.5000-58.5833	59.0412	1.181	4	0.8042	2.727	A	0.000	2.727	2.727	100.00	0.000	0.000
						B	0.000	2.727	100.00	0.000	0.000	
						C	0.000	2.727	100.00	0.000	0.355	
L9 58.5833-44.4100	51.3973	1.135	4	0.7910	44.021	A	0.000	44.021	44.021	100.00	0.000	0.000
						B	0.000	44.021	100.00	0.000	0.000	
						C	0.000	44.021	100.00	0.000	5.444	
L10 44.4100-30.5000	37.3501	1.036	4	0.7612	45.663	A	0.000	45.663	45.663	100.00	0.000	0.000
						B	0.000	45.663	100.00	0.000	0.000	
						C	0.000	45.663	100.00	0.000	5.452	
L11 30.5000-29.7500	30.1247	1	4	0.7500	2.569	A	0.000	2.569	2.569	100.00	0.000	0.000
						B	0.000	2.569	100.00	0.000	0.000	
						C	0.000	2.569	100.00	0.000	0.603	
L12 29.7500-29.0000	29.3747	1	4	0.7500	2.579	A	0.000	2.579	2.579	100.00	0.000	0.000
						B	0.000	2.579	100.00	0.000	0.000	
						C	0.000	2.579	100.00	0.000	0.603	
L13 29.0000-27.5833	28.2908	1	4	0.7500	4.898	A	0.000	4.898	4.898	100.00	0.000	0.000
						B	0.000	4.898	100.00	0.000	0.000	
						C	0.000	4.898	100.00	0.000	1.139	
L14 27.5833-6.7500	16.9853	1	4	0.7500	76.135	A	0.000	76.135	76.135	100.00	0.000	0.000
						B	0.000	76.135	100.00	0.000	0.000	
						C	0.000	76.135	100.00	0.000	16.753	
L15 6.7500-2.5000	4.6179	1	4	0.7500	16.475	A	0.000	16.475	16.475	100.00	0.000	0.000
						B	0.000	16.475	100.00	0.000	0.000	
						C	0.000	16.475	100.00	0.000	2.023	
L16 2.5000-	1.2476	1	4	0.7500	9.841	A	0.000	9.841	9.841	100.00	0.000	0.000

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
0.0000						B	0.000	9.841		100.00	0.000	0.000
						C	0.000	9.841		100.00	0.000	0.938

Tower Pressure - Service

G_H = 1.690

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 147.0000-120.3700	133.0198	1.489	10	42.419	A	0.000	42.419	42.419	100.00	0.000	0.000
					B	0.000	42.419		100.00	0.000	0.000
					C	0.000	42.419		100.00	0.000	0.000
L2 120.3700-110.5000	115.3590	1.43	9	18.622	A	0.000	18.622	18.622	100.00	0.000	0.000
					B	0.000	18.622		100.00	0.000	0.000
					C	0.000	18.622		100.00	0.000	0.000
L3 110.5000-105.0000	107.7280	1.402	9	11.123	A	0.000	11.123	11.123	100.00	0.000	0.000
					B	0.000	11.123		100.00	0.000	0.000
					C	0.000	11.123		100.00	0.000	0.765
L4 105.0000-103.5000	104.2484	1.389	9	3.126	A	0.000	3.126	3.126	100.00	0.000	0.000
					B	0.000	3.126		100.00	0.000	0.000
					C	0.000	3.126		100.00	0.000	0.312
L5 103.5000-94.1667	98.7745	1.368	9	20.346	A	0.000	20.346	20.346	100.00	0.000	0.000
					B	0.000	20.346		100.00	0.000	0.000
					C	0.000	20.346		100.00	0.000	1.944
L6 94.1667-84.9100	89.4845	1.33	9	21.699	A	0.000	21.699	21.699	100.00	0.000	0.000
					B	0.000	21.699		100.00	0.000	0.000
					C	0.000	21.699		100.00	0.000	1.928
L7 84.9100-59.5000	71.7995	1.249	8	65.691	A	0.000	65.691	65.691	100.00	0.000	0.000
					B	0.000	65.691		100.00	0.000	0.000
					C	0.000	65.691		100.00	0.000	5.294
L8 59.5000-58.5833	59.0412	1.181	8	2.604	A	0.000	2.604	2.604	100.00	0.000	0.000
					B	0.000	2.604		100.00	0.000	0.000
					C	0.000	2.604		100.00	0.000	0.191
L9 58.5833-44.4100	51.3973	1.135	7	42.152	A	0.000	42.152	42.152	100.00	0.000	0.000
					B	0.000	42.152		100.00	0.000	0.000
					C	0.000	42.152		100.00	0.000	2.953
L10 44.4100-30.5000	37.3501	1.036	7	43.829	A	0.000	43.829	43.829	100.00	0.000	0.000
					B	0.000	43.829		100.00	0.000	0.000
					C	0.000	43.829		100.00	0.000	2.964
L11 30.5000-29.7500	30.1247	1	6	2.475	A	0.000	2.475	2.475	100.00	0.000	0.000
					B	0.000	2.475		100.00	0.000	0.000
					C	0.000	2.475		100.00	0.000	0.353
L12 29.7500-29.0000	29.3747	1	6	2.485	A	0.000	2.485	2.485	100.00	0.000	0.000
					B	0.000	2.485		100.00	0.000	0.000
					C	0.000	2.485		100.00	0.000	0.353
L13 29.0000-27.5833	28.2908	1	6	4.721	A	0.000	4.721	4.721	100.00	0.000	0.000
					B	0.000	4.721		100.00	0.000	0.000
					C	0.000	4.721		100.00	0.000	0.667
L14 27.5833-6.7500	16.9853	1	6	73.531	A	0.000	73.531	73.531	100.00	0.000	0.000
					B	0.000	73.531		100.00	0.000	0.000
					C	0.000	73.531		100.00	0.000	9.808
L15 6.7500-2.5000	4.6179	1	6	15.944	A	0.000	15.944	15.944	100.00	0.000	0.000
					B	0.000	15.944		100.00	0.000	0.000
					C	0.000	15.944		100.00	0.000	1.148
L16 2.5000-0.0000	1.2476	1	6	9.528	A	0.000	9.528	9.528	100.00	0.000	0.000
					B	0.000	9.528		100.00	0.000	0.000
					C	0.000	9.528		100.00	0.000	0.521

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	147 - 120.37	Pole	Max Tension	27	0.00	0.00	-0.00
			Max. Compression	14	-12.95	-0.00	0.00
			Max. Mx	5	-5.73	-183.84	0.01
			Max. My	2	-5.73	-0.01	183.84
			Max. Vy	5	14.69	-183.84	0.01
			Max. Vx	2	-14.69	-0.01	183.84
			Max. Torque	5			-0.00
			Max Tension	1	0.00	0.00	0.00
L2	120.37 - 110.5	Pole	Max. Compression	14	-18.42	-0.02	0.24
			Max. Mx	5	-9.01	-413.45	0.21
			Max. My	2	-9.01	-0.18	413.65
			Max. Vy	5	19.46	-413.45	0.21
			Max. Vx	2	-19.48	-0.18	413.65
			Max. Torque	12			-0.28
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-19.34	-0.02	0.24
L3	110.5 - 105	Pole	Max. Mx	5	-9.86	-521.43	0.31
			Max. My	2	-9.86	-0.29	521.75
			Max. Vy	5	19.82	-521.43	0.31
			Max. Vx	2	-19.84	-0.29	521.75
			Max. Torque	12			-0.28

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L4	105 - 103.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-19.69	-0.02	0.24
			Max. Mx	5	-10.19	-551.24	0.34
			Max. My	2	-10.18	-0.31	551.59
			Max. Vy	5	19.94	-551.24	0.34
			Max. Vx	2	-19.96	-0.31	551.59
L5	103.5 - 94.1667	Pole	Max. Torque	12			-0.28
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21.40	-0.02	0.24
			Max. Mx	5	-11.77	-740.27	0.52
			Max. My	2	-11.76	-0.49	740.82
			Max. Vy	5	20.59	-740.27	0.52
L6	94.1667 - 84.91	Pole	Max. Vx	2	-20.61	-0.49	740.82
			Max. Torque	12			-0.27
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-22.54	-0.02	0.24
			Max. Mx	5	-12.81	-845.90	0.62
			Max. My	2	-12.81	-0.58	846.55
L7	84.91 - 59.5	Pole	Max. Vy	5	20.96	-845.90	0.62
			Max. Vx	2	-20.98	-0.58	846.55
			Max. Torque	12			-0.26
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-30.79	-0.02	0.24
			Max. Mx	5	-20.39	-1498.02	1.17
L8	59.5 - 58.5833	Pole	Max. My	2	-20.39	-1.14	1499.32
			Max. Vy	5	23.11	-1498.02	1.17
			Max. Vx	2	-23.13	-1.14	1499.32
			Max. Torque	12			-0.25
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31.04	-0.02	0.24
L9	58.5833 - 44.41	Pole	Max. Mx	5	-20.63	-1519.22	1.19
			Max. My	2	-20.63	-1.16	1520.53
			Max. Vy	5	23.17	-1519.22	1.19
			Max. Vx	2	-23.19	-1.16	1520.53
			Max. Torque	11			-0.21
			Max Tension	1	0.00	0.00	0.00
L10	44.41 - 30.5	Pole	Max. Compression	14	-33.81	0.01	0.22
			Max. Mx	5	-23.19	-1730.42	1.35
			Max. My	2	-23.19	-1.31	1731.94
			Max. Vy	5	23.84	-1730.42	1.35
			Max. Vx	2	-23.86	-1.31	1731.94
			Max. Torque	11			-0.21
L11	30.5 - 29.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-41.80	0.01	0.24
			Max. Mx	5	-30.53	-2218.89	1.73
			Max. My	2	-30.53	-1.67	2220.85
			Max. Vy	5	25.27	-2218.89	1.73
			Max. Vx	2	-25.29	-1.67	2220.85
L12	29.75 - 29	Pole	Max. Torque	11			-0.18
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-42.09	0.01	0.24
			Max. Mx	5	-30.79	-2237.86	1.74
			Max. My	2	-30.79	-1.69	2239.83
			Max. Vy	5	25.32	-2237.86	1.74
L13	29 - 27.5833	Pole	Max. Vx	2	-25.34	-1.69	2239.83
			Max. Torque	11			-0.18
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-42.62	0.01	0.24

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L14	27.5833 - 6.75	Pole	Max. Mx	5	-31.29	-2273.79	1.77
			Max. My	2	-31.29	-1.71	2275.79
			Max. Vy	5	25.42	-2273.79	1.77
			Max. Vx	2	-25.45	-1.71	2275.79
			Max. Torque	11			-0.18
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-50.09	0.01	0.24
			Max. Mx	5	-38.27	-2817.55	2.15
			Max. My	2	-38.27	-2.10	2819.99
			Max. Vy	5	26.81	-2817.55	2.15
L15	6.75 - 2.5	Pole	Max. Vx	2	-26.84	-2.10	2819.99
			Max. Torque	11			-0.18
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-51.70	0.01	0.24
			Max. Mx	5	-39.77	-2932.01	2.23
			Max. My	2	-39.77	-2.17	2934.54
			Max. Vy	5	27.07	-2932.01	2.23
			Max. Vx	2	-27.10	-2.17	2934.54
			Max. Torque	10			-0.17
			Max Tension	1	0.00	0.00	0.00
L16	2.5 - 0	Pole	Max. Compression	14	-52.68	0.01	0.24
			Max. Mx	5	-40.69	-2999.85	2.27
			Max. My	2	-40.69	-2.22	3002.43
			Max. Vy	5	27.23	-2999.85	2.27
			Max. Vx	2	-27.25	-2.22	3002.43
			Max. Torque	10			-0.17

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	52.68	-0.00	0.00
	Max. H _x	11	40.70	27.21	-0.02
	Max. H _z	2	40.70	-0.02	27.23
	Max. M _x	2	3002.43	-0.02	27.23
	Max. M _z	5	2999.85	-27.21	0.02
	Max. Torsion	3	0.16	-13.62	23.60
	Min. Vert	2	40.70	-0.02	27.23
	Min. H _x	5	40.70	-27.21	0.02
	Min. H _z	8	40.70	0.02	-27.23
	Min. M _x	8	-3002.27	0.02	-27.23
	Min. M _z	11	-2999.80	27.21	-0.02
	Min. Torsion	10	-0.17	23.58	-13.63

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	40.70	0.00	-0.00	-0.08	-0.02	0.00
Dead+Wind 0 deg - No Ice	40.70	0.02	-27.23	-3002.43	-2.22	-0.12
Dead+Wind 30 deg - No Ice	40.70	13.62	-23.60	-2601.60	-1502.01	-0.16
Dead+Wind 60 deg - No Ice	40.70	23.58	-13.63	-1503.33	-2599.35	-0.16
Dead+Wind 90 deg - No Ice	40.70	27.21	-0.02	-2.27	-2999.85	-0.12
Dead+Wind 120 deg - No Ice	40.70	23.56	13.60	1499.38	-2597.16	-0.05
Dead+Wind 150 deg - No Ice	40.70	13.59	23.58	2599.25	-1498.22	0.04
Dead+Wind 180 deg - No Ice	40.70	-0.02	27.23	3002.27	2.17	0.12
Dead+Wind 210 deg - No Ice	40.70	-13.62	23.60	2601.44	1501.96	0.16
Dead+Wind 240 deg - No Ice	40.70	-23.58	13.63	1503.18	2599.30	0.17

Load Combination	Vertical	Shear _x	Shear _y	Overturning Moment, M _x	Overturning Moment, M _y	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 270 deg - No Ice	40.70	-27.21	0.02	2.12	2999.80	0.12
Dead+Wind 300 deg - No Ice	40.70	-23.56	-13.60	-1499.54	2597.12	0.05
Dead+Wind 330 deg - No Ice	40.70	-13.59	-23.58	-2599.41	1498.17	-0.04
Dead+Ice+Temp	52.68	0.00	-0.00	-0.24	0.01	0.00
Dead+Wind 0 deg+Ice+Temp	52.68	0.00	-6.43	-733.90	-0.41	-0.07
Dead+Wind 30 deg+Ice+Temp	52.68	3.22	-5.57	-635.82	-366.93	-0.07
Dead+Wind 60 deg+Ice+Temp	52.68	5.57	-3.22	-367.45	-635.12	-0.06
Dead+Wind 90 deg+Ice+Temp	52.68	6.43	-0.00	-0.69	-733.14	-0.02
Dead+Wind 120 deg+Ice+Temp	52.68	5.57	3.21	366.18	-634.70	0.02
Dead+Wind 150 deg+Ice+Temp	52.68	3.21	5.57	634.86	-366.20	0.05
Dead+Wind 180 deg+Ice+Temp	52.68	-0.00	6.43	733.36	0.43	0.07
Dead+Wind 210 deg+Ice+Temp	52.68	-3.22	5.57	635.28	366.94	0.07
Dead+Wind 240 deg+Ice+Temp	52.68	-5.57	3.22	366.91	635.14	0.06
Dead+Wind 270 deg+Ice+Temp	52.68	-6.43	0.00	0.15	733.15	0.02
Dead+Wind 300 deg+Ice+Temp	52.68	-5.57	-3.21	-366.72	634.72	-0.02
Dead+Wind 330 deg+Ice+Temp	52.68	-3.21	-5.57	-635.40	366.22	-0.05
Dead+Wind 0 deg - Service	40.70	0.01	-9.42	-1040.20	-0.79	-0.04
Dead+Wind 30 deg - Service	40.70	4.71	-8.16	-901.36	-520.38	-0.06
Dead+Wind 60 deg - Service	40.70	8.16	-4.72	-520.91	-900.61	-0.06
Dead+Wind 90 deg - Service	40.70	9.41	-0.01	-0.84	-1039.26	-0.04
Dead+Wind 120 deg - Service	40.70	8.15	4.71	519.40	-899.79	-0.02
Dead+Wind 150 deg - Service	40.70	4.70	8.16	900.44	-519.06	0.01
Dead+Wind 180 deg - Service	40.70	-0.01	9.42	1040.04	0.73	0.04
Dead+Wind 210 deg - Service	40.70	-4.71	8.16	901.20	520.33	0.06
Dead+Wind 240 deg - Service	40.70	-8.16	4.72	520.72	900.50	0.06
Dead+Wind 270 deg - Service	40.70	-9.41	0.01	0.68	1039.21	0.04
Dead+Wind 300 deg - Service	40.70	-8.15	-4.71	-519.60	899.80	0.02
Dead+Wind 330 deg - Service	40.70	-4.70	-8.16	-900.60	519.01	-0.01

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-40.70	0.00	0.00	40.70	0.00	0.000%
2	0.02	-40.70	-27.24	-0.02	40.70	27.23	0.006%
3	13.62	-40.70	-23.60	-13.62	40.70	23.60	0.000%
4	23.58	-40.70	-13.63	-23.58	40.70	13.63	0.000%
5	27.21	-40.70	-0.02	-27.21	40.70	0.02	0.006%
6	23.56	-40.70	13.60	-23.56	40.70	-13.60	0.000%
7	13.59	-40.70	23.58	-13.59	40.70	-23.58	0.000%
8	-0.02	-40.70	27.24	0.02	40.70	-27.23	0.006%
9	-13.62	-40.70	23.60	13.62	40.70	-23.60	0.000%
10	-23.58	-40.70	13.63	23.58	40.70	-13.63	0.000%
11	-27.21	-40.70	0.02	27.21	40.70	-0.02	0.006%
12	-23.56	-40.70	-13.60	23.56	40.70	13.60	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
13	-13.59	-40.70	-23.58	13.59	40.70	23.58	0.000%
14	0.00	-52.68	0.00	-0.00	52.68	0.00	0.000%
15	0.00	-52.68	-6.43	-0.00	52.68	6.43	0.000%
16	3.22	-52.68	-5.57	-3.22	52.68	5.57	0.000%
17	5.57	-52.68	-3.22	-5.57	52.68	3.22	0.000%
18	6.43	-52.68	-0.00	-6.43	52.68	0.00	0.000%
19	5.57	-52.68	3.21	-5.57	52.68	-3.21	0.000%
20	3.21	-52.68	5.57	-3.21	52.68	-5.57	0.000%
21	-0.00	-52.68	6.43	0.00	52.68	-6.43	0.000%
22	-3.22	-52.68	5.57	3.22	52.68	-5.57	0.000%
23	-5.57	-52.68	3.22	5.57	52.68	-3.22	0.000%
24	-6.43	-52.68	0.00	6.43	52.68	-0.00	0.000%
25	-5.57	-52.68	-3.21	5.57	52.68	3.21	0.000%
26	-3.21	-52.68	-5.57	3.21	52.68	5.57	0.000%
27	0.01	-40.70	-9.42	-0.01	40.70	9.42	0.006%
28	4.71	-40.70	-8.16	-4.71	40.70	8.16	0.003%
29	8.16	-40.70	-4.72	-8.16	40.70	4.72	0.001%
30	9.42	-40.70	-0.01	-9.41	40.70	0.01	0.006%
31	8.15	-40.70	4.71	-8.15	40.70	-4.71	0.003%
32	4.70	-40.70	8.16	-4.70	40.70	-8.16	0.003%
33	-0.01	-40.70	9.42	0.01	40.70	-9.42	0.006%
34	-4.71	-40.70	8.16	4.71	40.70	-8.16	0.003%
35	-8.16	-40.70	4.72	8.16	40.70	-4.72	0.003%
36	-9.42	-40.70	0.01	9.41	40.70	-0.01	0.006%
37	-8.15	-40.70	-4.71	8.15	40.70	4.71	0.001%
38	-4.70	-40.70	-8.16	4.70	40.70	8.16	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.0000001	0.0000001
2	Yes	15	0.00006511	0.00007454
3	Yes	19	0.0000001	0.00014455
4	Yes	19	0.0000001	0.00014507
5	Yes	15	0.00006512	0.00007765
6	Yes	19	0.0000001	0.00014366
7	Yes	19	0.0000001	0.00014450
8	Yes	15	0.00006511	0.00007401
9	Yes	19	0.0000001	0.00014482
10	Yes	19	0.0000001	0.00014426
11	Yes	15	0.00006512	0.00007523
12	Yes	19	0.0000001	0.00014464
13	Yes	19	0.0000001	0.00014384
14	Yes	6	0.0000001	0.0000001
15	Yes	17	0.0000001	0.00009063
16	Yes	17	0.0000001	0.00010409
17	Yes	17	0.0000001	0.00010416
18	Yes	17	0.0000001	0.00009052
19	Yes	17	0.0000001	0.00010379
20	Yes	17	0.0000001	0.00010386
21	Yes	17	0.0000001	0.00009049
22	Yes	17	0.0000001	0.00010401
23	Yes	17	0.0000001	0.00010390
24	Yes	17	0.0000001	0.00009051
25	Yes	17	0.0000001	0.00010400
26	Yes	17	0.0000001	0.00010398
27	Yes	14	0.00014624	0.00007220
28	Yes	15	0.00006904	0.00014882
29	Yes	16	0.0000001	0.00007563
30	Yes	14	0.00014624	0.00007241
31	Yes	15	0.00006905	0.00014689
32	Yes	15	0.00006905	0.00014974
33	Yes	14	0.00014623	0.00007216
34	Yes	15	0.00006904	0.00014973

35	Yes	15	0.00006904	0.00014784
36	Yes	14	0.00014624	0.00007231
37	Yes	16	0.00000001	0.00007544
38	Yes	15	0.00006905	0.00014749

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 120.37	33.673	28	2.2392	0.0007
L2	123.62 - 110.5	23.065	28	1.9917	0.0007
L3	110.5 - 105	17.959	28	1.6772	0.0004
L4	105 - 103.5	16.086	28	1.5730	0.0003
L5	103.5 - 94.1667	15.595	28	1.5535	0.0003
L6	94.1667 - 84.91	12.740	28	1.3664	0.0002
L7	89.08 - 59.5	11.330	28	1.2796	0.0002
L8	59.5 - 58.5833	4.840	28	0.7919	0.0001
L9	58.5833 - 44.41	4.690	28	0.7770	0.0001
L10	49.58 - 30.5	3.356	28	0.6386	0.0001
L11	30.5 - 29.75	1.241	28	0.3958	0.0000
L12	29.75 - 29	1.180	28	0.3855	0.0000
L13	29 - 27.5833	1.120	28	0.3763	0.0000
L14	27.5833 - 6.75	1.011	28	0.3589	0.0000
L15	6.75 - 2.5	0.058	28	0.0829	0.0000
L16	2.5 - 0	0.008	28	0.0298	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.0000	(2) DB978H90T2E-M w/ Mount Pipe	28	33.673	2.2392	0.0007	13276
136.0000	(2) FD9R6004/2C-3L	28	28.540	2.1648	0.0007	6034
129.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	28	25.385	2.0846	0.0007	3687
120.0000	(2) TME-RRUS-11	28	21.571	1.9109	0.0006	2554
118.0000	P65-17-XLH-RR w/ Mount Pipe	28	20.771	1.8620	0.0006	2420
50.0000	KS24019-L112A	28	3.413	0.6446	0.0001	4807
48.0000	KS24019-L112A	28	3.144	0.6170	0.0001	4926

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 120.37	96.934	2	6.4504	0.0019
L2	123.62 - 110.5	66.434	2	5.7386	0.0019
L3	110.5 - 105	51.746	3	4.8340	0.0012
L4	105 - 103.5	46.358	3	4.5342	0.0010
L5	103.5 - 94.1667	44.945	3	4.4783	0.0010
L6	94.1667 - 84.91	36.724	3	3.9397	0.0007
L7	89.08 - 59.5	32.665	3	3.6895	0.0006
L8	59.5 - 58.5833	13.963	3	2.2843	0.0002
L9	58.5833 - 44.41	13.528	3	2.2414	0.0002
L10	49.58 - 30.5	9.682	3	1.8425	0.0002
L11	30.5 - 29.75	3.582	3	1.1422	0.0001
L12	29.75 - 29	3.405	3	1.1124	0.0001
L13	29 - 27.5833	3.233	3	1.0857	0.0001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L14	27.5833 - 6.75	2.918	3	1.0356	0.0001
L15	6.75 - 2.5	0.167	3	0.2392	0.0000
L16	2.5 - 0	0.023	3	0.0860	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.0000	(2) DB978H90T2E-M w/ Mount Pipe	2	96.934	6.4504	0.0019	4715
136.0000	(2) FD9R6004/2C-3L	2	82.180	6.2363	0.0020	2142
129.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	2	73.106	6.0058	0.0020	1307
120.0000	(2) TME-RRUS-11	2	62.136	5.5063	0.0017	903
118.0000	P65-17-XLH-RR w/ Mount Pipe	2	59.836	5.3657	0.0016	855
50.0000	KS24019-L112A	3	9.847	1.8596	0.0002	1671
48.0000	KS24019-L112A	3	9.071	1.7800	0.0002	1712

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P K	Allow. P _s K	Ratio P P _s
L1	147 - 120.37 (1)	TP21.98x16.25x0.1875	26.6300	0.0000	0.0	39.000	12.5531	-5.72	489.57	0.012
L2	120.37 - 110.5 (2)	TP23.6864x20.9057x0.25	13.1200	0.0000	0.0	39.000	18.5968	-9.01	725.27	0.012
L3	110.5 - 105 (3)	TP24.8521x23.6864x0.449 7	5.5000	0.0000	0.0	28.122	34.8299	-9.86	979.49	0.010
L4	105 - 103.5 (4)	TP25.17x24.8521x0.6968	1.5000	0.0000	0.0	27.012	54.1245	-10.18	1462.01	0.007
L5	103.5 - 94.1667 (5)	TP27.1481x25.17x0.4671	9.3333	0.0000	0.0	27.114	39.5524	-11.76	1072.43	0.011
L6	94.1667 - 84.91 (6)	TP29.11x27.1481x0.5744	9.2567	0.0000	0.0	27.162	50.4098	-12.81	1369.23	0.009
L7	84.91 - 59.5 (7)	TP33.993x27.0775x0.5966	29.5800	0.0000	0.0	27.312	63.2356	-20.39	1727.09	0.012
L8	59.5 - 58.5833 (8)	TP34.1872x33.993x0.6049	0.9167	0.0000	0.0	27.318	64.4755	-20.63	1761.34	0.012
L9	58.5833 - 44.41 (9)	TP37.19x34.1872x0.6337	14.1733	0.0000	0.0	28.464	71.3216	-23.19	2030.10	0.011
L10	44.41 - 30.5 (10)	TP39.5221x34.8274x0.666 9	19.0800	0.0000	0.0	28.536	75.0004	-26.01	2140.21	0.012
L11	30.5 - 29.75 (11)	TP39.6814x39.5221x0.665 5	0.7500	0.0000	0.0	28.530	82.4168	-30.53	2351.35	0.013
L12	29.75 - 29 (12)	TP39.8407x39.6814x0.744	0.7500	0.0000	0.0	28.542	92.3275	-30.79	2635.21	0.012
L13	29 - 27.5833 (13)	TP40.1416x39.8407x0.740 8	1.4167	0.0000	0.0	28.806	92.6406	-31.29	2668.60	0.012
L14	27.5833 - 6.75 (14)	TP44.5664x40.1416x0.651 7	20.8333	0.0000	0.0	30.426	87.1762	-35.42	2652.42	0.013
L15	6.75 - 2.5 (15)	TP45.469x44.5664x0.649	4.2500	0.0000	0.0	28.890	90.4706	-38.29	2613.70	0.015
L16	2.5 - 0 (16)	TP46x45.469x0.669	2.5000	0.0000	0.0	28.746	95.1230	-39.79	2734.41	0.015

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	147 - 120.37 (1)	TP21.98x16.25x0.1875	183.87	33.803	39.000	0.867	0.00	0.000	39.000	0.000
L2	120.37 - 110.5 (2)	TP23.6864x20.9057x0.25	413.78	46.298	39.000	1.187	0.00	0.000	39.000	0.000
L3	110.5 - 105 (3)	TP24.8521x23.6864x0.44 97	521.95	30.178	28.122	1.073	0.00	0.000	28.122	0.000
L4	105 - 103.5 (4)	TP25.17x24.8521x0.6968	551.81	20.673	27.012	0.765	0.00	0.000	27.012	0.000
L5	103.5 - 94.1667 (5)	TP27.1481x25.17x0.4671	741.17	34.481	27.114	1.272	0.00	0.000	27.114	0.000
L6	94.1667 - 84.91 (6)	TP29.11x27.1481x0.5744	846.97	29.927	27.162	1.102	0.00	0.000	27.162	0.000
L7	84.91 - 59.5 (7)	TP33.993x27.0775x0.596 6	1500.1 3	34.887	27.312	1.277	0.00	0.000	27.312	0.000
L8	59.5 - 58.5833 (8)	TP34.1872x33.993x0.604 9	1521.3 7	34.513	27.318	1.263	0.00	0.000	27.318	0.000
L9	58.5833 - 44.41 (9)	TP37.19x34.1872x0.6337	1732.8 8	33.651	28.464	1.182	0.00	0.000	28.464	0.000
L10	44.41 - 30.5 (10)	TP39.5221x34.8274x0.66 69	1857.8 0	34.367	28.536	1.204	0.00	0.000	28.536	0.000
L11	30.5 - 29.75 (11)	TP39.6814x39.5221x0.66 55	2222.0 7	33.912	28.530	1.189	0.00	0.000	28.530	0.000
L12	29.75 - 29 (12)	TP39.8407x39.6814x0.74 4	2241.0 6	30.526	28.542	1.070	0.00	0.000	28.542	0.000
L13	29 - 27.5833 (13)	TP40.1416x39.8407x0.74 08	2277.0 3	30.666	28.806	1.065	0.00	0.000	28.806	0.000
L14	27.5833 - 6.75 (14)	TP44.5664x40.1416x0.65 17	2600.2 5	34.677	30.426	1.140	0.00	0.000	30.426	0.000
L15	6.75 - 2.5 (15)	TP45.469x44.5664x0.649	2821.5 3	34.771	28.890	1.204	0.00	0.000	28.890	0.000
L16	2.5 - 0 (16)	TP46x45.469x0.669	2936.1 3	33.741	28.746	1.174	0.00	0.000	28.746	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	147 - 120.37 (1)	TP21.98x16.25x0.1875	14.70	1.171	26.000	0.090	0.00	0.000	26.000	0.000
L2	120.37 - 110.5 (2)	TP23.6864x20.9057x0.25	19.50	1.048	26.000	0.081	0.02	0.001	26.000	0.000
L3	110.5 - 105 (3)	TP24.8521x23.6864x0.44 97	19.86	0.570	18.748	0.061	0.02	0.001	18.748	0.000
L4	105 - 103.5 (4)	TP25.17x24.8521x0.6968	19.97	0.369	18.008	0.041	0.02	0.000	18.008	0.000
L5	103.5 - 94.1667 (5)	TP27.1481x25.17x0.4671	20.63	0.521	18.076	0.058	0.03	0.001	18.076	0.000
L6	94.1667 - 84.91 (6)	TP29.11x27.1481x0.5744	21.00	0.417	18.108	0.046	0.03	0.001	18.108	0.000
L7	84.91 - 59.5 (7)	TP33.993x27.0775x0.596 6	23.14	0.366	18.208	0.040	0.06	0.001	18.208	0.000
L8	59.5 - 58.5833 (8)	TP34.1872x33.993x0.604 9	23.20	0.360	18.212	0.040	0.06	0.001	18.212	0.000
L9	58.5833 - 44.41 (9)	TP37.19x34.1872x0.6337	23.87	0.335	18.976	0.035	0.08	0.001	18.976	0.000
L10	44.41 - 30.5 (10)	TP39.5221x34.8274x0.66 69	24.49	0.326	19.024	0.034	0.09	0.001	19.024	0.000
L11	30.5 - 29.75 (11)	TP39.6814x39.5221x0.66 55	25.30	0.307	19.020	0.032	0.11	0.001	19.020	0.000
L12	29.75 - 29 (12)	TP39.8407x39.6814x0.74 4	25.36	0.275	19.028	0.029	0.11	0.001	19.028	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L13	29 - 27.5833 (13)	TP40.1416x39.8407x0.7408	25.46	0.275	19.204	0.029	0.11	0.001	19.204	0.000
L14	27.5833 - 6.75 (14)	TP44.5664x40.1416x0.6517	26.35	0.302	20.284	0.030	0.14	0.001	20.284	0.000
L15	6.75 - 2.5 (15)	TP45.469x44.5664x0.649	26.91	0.297	19.260	0.031	0.16	0.001	19.260	0.000
L16	2.5 - 0 (16)	TP46x45.469x0.669	27.19	0.286	19.164	0.030	0.16	0.001	19.164	0.000

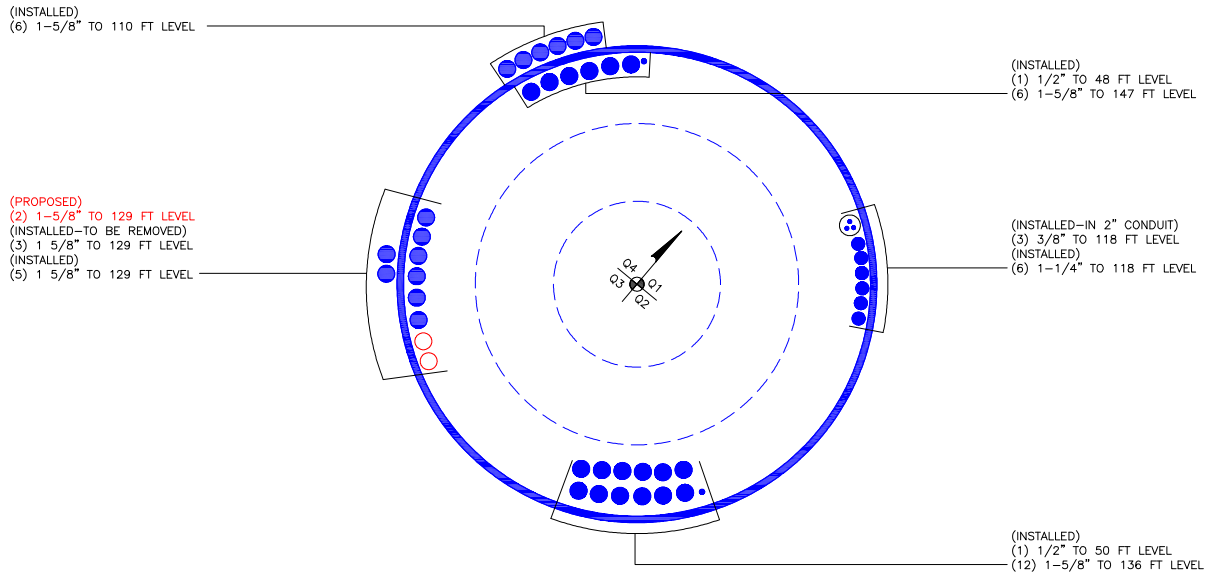
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P	Ratio f_{bx}	Ratio f_{by}	Ratio f_v	Ratio f_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\frac{P_a}{P}$	$\frac{F_{bx}}{F_{bx}}$	$\frac{F_{by}}{F_{by}}$	$\frac{F_v}{F_v}$	$\frac{F_{vt}}{F_{vt}}$			
L1	147 - 120.37 (1)	0.012	0.867	0.000	0.090	0.000	0.880	1.333	H1-3+VT ✓
L2	120.37 - 110.5 (2)	0.012	1.187	0.000	0.081	0.000	1.201	1.333	H1-3+VT ✓
L3	110.5 - 105 (3)	0.010	1.073	0.000	0.061	0.000	1.084	1.333	H1-3+VT ✓
L4	105 - 103.5 (4)	0.007	0.765	0.000	0.041	0.000	0.773	1.333	H1-3+VT ✓
L5	103.5 - 94.1667 (5)	0.011	1.272	0.000	0.058	0.000	1.284	1.333	H1-3+VT ✓
L6	94.1667 - 84.91 (6)	0.009	1.102	0.000	0.046	0.000	1.112	1.333	H1-3+VT ✓
L7	84.91 - 59.5 (7)	0.012	1.277	0.000	0.040	0.000	1.290	1.333	H1-3+VT ✓
L8	59.5 - 58.5833 (8)	0.012	1.263	0.000	0.040	0.000	1.276	1.333	H1-3+VT ✓
L9	58.5833 - 44.41 (9)	0.011	1.182	0.000	0.035	0.000	1.194	1.333	H1-3+VT ✓
L10	44.41 - 30.5 (10)	0.012	1.204	0.000	0.034	0.000	1.217	1.333	H1-3+VT ✓
L11	30.5 - 29.75 (11)	0.013	1.189	0.000	0.032	0.000	1.202	1.333	H1-3+VT ✓
L12	29.75 - 29 (12)	0.012	1.070	0.000	0.029	0.000	1.081	1.333	H1-3+VT ✓
L13	29 - 27.5833 (13)	0.012	1.065	0.000	0.029	0.000	1.077	1.333	H1-3+VT ✓
L14	27.5833 - 6.75 (14)	0.013	1.140	0.000	0.030	0.000	1.153	1.333	H1-3+VT ✓
L15	6.75 - 2.5 (15)	0.015	1.204	0.000	0.031	0.000	1.218	1.333	H1-3+VT ✓
L16	2.5 - 0 (16)	0.015	1.174	0.000	0.030	0.000	1.189	1.333	H1-3+VT ✓

Section Capacity Table

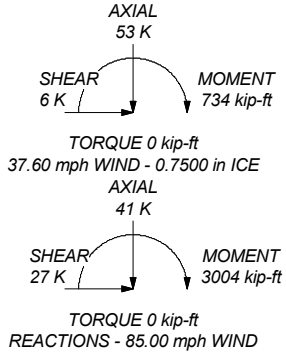
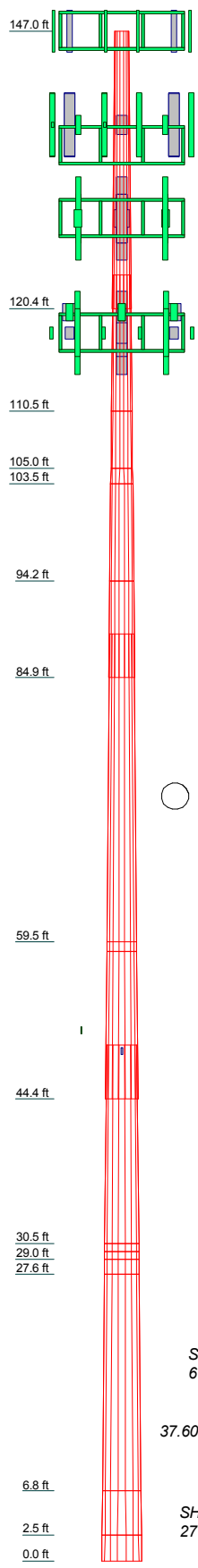
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail	
L1	147 - 120.37	Pole	TP21.98x16.25x0.1875	1	-5.72	652.60	66.1	Pass	
L2	120.37 - 110.5	Pole	TP23.6864x20.9057x0.25	2	-9.01	966.79	90.1	Pass	
L3	110.5 - 105	Pole	TP24.8521x23.6864x0.4497	3	-9.86	1305.66	81.3	Pass	
L4	105 - 103.5	Pole	TP25.17x24.8521x0.6968	4	-10.18	1948.86	58.0	Pass	
L5	103.5 - 94.1667	Pole	TP27.1481x25.17x0.4671	5	-11.76	1429.55	96.3	Pass	
L6	94.1667 - 84.91	Pole	TP29.11x27.1481x0.5744	6	-12.81	1825.18	83.4	Pass	
L7	84.91 - 59.5	Pole	TP33.993x27.0775x0.5966	7	-20.39	2302.21	96.7	Pass	
L8	59.5 - 58.5833	Pole	TP34.1872x33.993x0.6049	8	-20.63	2347.87	95.7	Pass	
L9	58.5833 - 44.41	Pole	TP37.19x34.1872x0.6337	9	-23.19	2706.12	89.6	Pass	
L10	44.41 - 30.5	Pole	TP39.5221x34.8274x0.6669	10	-26.01	2852.90	91.3	Pass	
L11	30.5 - 29.75	Pole	TP39.6814x39.5221x0.6655	11	-30.53	3134.35	90.2	Pass	
L12	29.75 - 29	Pole	TP39.8407x39.6814x0.744	12	-30.79	3512.73	81.1	Pass	
L13	29 - 27.5833	Pole	TP40.1416x39.8407x0.7408	13	-31.29	3557.24	80.8	Pass	
L14	27.5833 - 6.75	Pole	TP44.5664x40.1416x0.6517	14	-35.42	3535.68	86.5	Pass	
L15	6.75 - 2.5	Pole	TP45.469x44.5664x0.649	15	-38.29	3484.06	91.4	Pass	
L16	2.5 - 0	Pole	TP46x45.469x0.669	16	-39.79	3644.97	89.2	Pass	
							Summary		
							Pole (L7)	96.7	Pass
							RATING =	96.7	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Section	1	2	3	4	5	6	7	8	9	10	14	15	16
Length (ft)	26.6300	13.1200	15000.5000	9.3333	9.3333	9.2667	29.5800	0.9167	14.1733	19.0800	20.8333	2500.42500	2500.42500
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.2500	0.6980.4497	0.4671	0.5744	0.5744	0.5966	0.6049	0.6337	0.6669	0.6517	0.6690.6490	0.6690.6490
Socket Length (ft)	3.2500	16.2500											
Top Dia (in)	21.9800	23.6864	24.8523.6864	25.1700	27.1481	27.1481	27.0775	33.9430	34.1872	34.8274	40.1416	48.4694.6564	48.4694.6564
Bot Dia (in)			25.1700.48521	27.1481	28.1100	28.1100	33.9930	34.1872	37.1900	39.8221	44.5664	48.0085.4690	48.0085.4690
Grade	A572-65	A572-65	Reinf 45.19 ksi	Reinf 45.52 ksi	Reinf 45.27 ksi	Reinf 45.52 ksi	Reinf 45.53 ksi	Reinf 47.44 ksi	Reinf 47.56 ksi	Reinf 48.01 ksi	Reinf 50.71 ksi	Reinf 50.71 ksi	Reinf 50.71 ksi
Weight (K)	1.0	0.8	0.6	0.3	1.2	1.6	5.7	0.2	3.4	5.0	6.1	1.3	0.8



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) DB978H90T2E-M w/ Mount Pipe	147	KRY 112 144/1	129
(2) DB978H90T2E-M w/ Mount Pipe	147	KRY 112 144/1	129
(2) DB978H90T2E-M w/ Mount Pipe	147	KRY 112 144/1	129
Platform Mount [LP 601-1]	147	LNx-6515DS-VTM w/ Mount Pipe	129
(2) FD9R6004/2C-3L	136	LNx-6515DS-VTM w/ Mount Pipe	129
(2) FD9R6004/2C-3L	136	LNx-6515DS-VTM w/ Mount Pipe	129
(2) FD9R6004/2C-3L	136	RRUS 11 B12	129
(2) HBXX-6517DS-VTM w/ Mount Pipe	136	RRUS 11 B12	129
(2) HBXX-6517DS-VTM w/ Mount Pipe	136	RRUS 11 B12	129
(2) HBXX-6517DS-VTM w/ Mount Pipe	136	Platform Mount [LP 403-1]	129
(2) LNx-6514DS-VTM w/ Mount Pipe	136	(2) TME-RRUS-11	120
(2) LNx-6514DS-VTM w/ Mount Pipe	136	(2) TME-RRUS-11	120
(2) LNx-6514DS-VTM w/ Mount Pipe	136	(2) TME-RRUS-11	120
(2) LNx-6514DS-VTM w/ Mount Pipe	136	(2) TME-RRUS-11	120
(2) FD9R6004/2C-3L	136	Side Arm Mount [SO 102-3]	120
(2) FD9R6004/2C-3L	136	P65-17-XLH-RR w/ Mount Pipe	118
(2) FD9R6004/2C-3L	136	LNx-6515DS-VTM w/ Mount Pipe	118
RRH2X60-PCS	136	P65-17-XLH-RR w/ Mount Pipe	118
RRH2X60-PCS	136	7770.00 w/ Mount Pipe	118
RRH2X60-PCS	136	7770.00 w/ Mount Pipe	118
Platform Mount [LP 601-1]	136	7770.00 w/ Mount Pipe	118
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	129	(2) LGP21401	118
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	129	(2) LGP21401	118
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	129	(2) LGP21401	118
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	129	DC6-48-60-18-8F	118
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	129	Platform Mount [LP 303-1]	118
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	129	KS24019-L112A	50
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	129	Side Arm Mount [SO 701-1]	50
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	129	KS24019-L112A	48
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	129	Pipe Mount [PM 601-1]	48

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Reinf 47.56 ksi	48 ksi	60 ksi
Reinf 46.87 ksi	47 ksi	59 ksi	Reinf 47.55 ksi	48 ksi	60 ksi
Reinf 45.02 ksi	45 ksi	57 ksi	Reinf 47.57 ksi	48 ksi	60 ksi
Reinf 45.19 ksi	45 ksi	57 ksi	Reinf 48.01 ksi	48 ksi	61 ksi
Reinf 45.27 ksi	45 ksi	57 ksi	Reinf 50.71 ksi	51 ksi	64 ksi
Reinf 45.52 ksi	46 ksi	57 ksi	Reinf 48.15 ksi	48 ksi	61 ksi
Reinf 45.53 ksi	46 ksi	57 ksi	Reinf 47.91 ksi	48 ksi	60 ksi
Reinf 47.44 ksi	47 ksi	60 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for a 85.00 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37.60 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50.00 mph wind.
5. TOWER RATING: 96.7%

Paul J. Ford and Company 250 E. Broad Street, Suite 600 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	Job: 147 ft Monopole / Preston/Town Hall Project: PJF 37515-0448 / BU 876360	
	Client: CCI Code: TIA/EIA-222-F Path:	Drawn by: Joey Meinerding Date: 10/28/15 Scale: NTS Dwg No. E-1
	App'd:	
	Date: 10/28/15	
	Scale: NTS	



v4.4 - Effective 7-12-13

Asymmetric Anchor Rod Analysis

Moment = 3004 k-ft
Axial = 41.0 kips
Shear = 27.0 kips
Anchor Qty = 16

TIA Ref. = F
ASIF = 1.3333
Max Ratio = 105.0%

Location = Base Plate
η = N/A for BP, Rev. G Sect. 4.9.9
Threads = N/A for FP, Rev. G

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in ²	Area, in ²	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	15.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
2	2.250	#18J A615 Gr 75	75	100	45.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
3	2.250	#18J A615 Gr 75	75	100	75.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
4	2.250	#18J A615 Gr 75	75	100	105.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
5	2.250	#18J A615 Gr 75	75	100	135.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
6	2.250	#18J A615 Gr 75	75	100	165.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
7	2.250	#18J A615 Gr 75	75	100	195.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
8	2.250	#18J A615 Gr 75	75	100	225.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
9	2.250	#18J A615 Gr 75	75	100	255.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
10	2.250	#18J A615 Gr 75	75	100	285.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
11	2.250	#18J A615 Gr 75	75	100	315.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
12	2.250	#18J A615 Gr 75	75	100	345.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
13	2.250	#18J A615 Gr 75	75	100	0.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
14	2.250	#18J A615 Gr 75	75	100	90.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
15	2.250	#18J A615 Gr 75	75	100	180.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%
16	2.250	#18J A615 Gr 75	75	100	270.0	55.00	0.00	3.98	166.42	161.29	161.29	0.00	195.00	82.7%

63.68

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

TIA Rev F

Site Data	
BU#:	876360
Site Name:	Preston/Town Hall
App #:	
Pole Manufacturer:	Other

Reactions		
Moment:	4482.4542	ft-kips
Axial:	41	kips
Shear:	27	kips

Moment adjusted to account for additional anchor rods.

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	55	in

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

Anchor Rod Results		Stiffened
Maximum Rod Tension:	161.3 Kips	Service, ASD
		Fty*ASIF

Plate Data		
Diam:	61	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	6.08	in

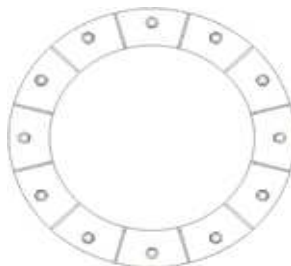
Base Plate Results		Flexural Check	Stiffened
Base Plate Stress:		52.2 ksi	Service, ASD
Allowable Plate Stress:		60.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:		86.9% Pass	Y.L. Length: N/A, Roark

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Both	
Groove Depth:	0.5	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.375	in
Width:	6	in
Height:	14	in
Thick:	1	in
Notch:	0.75	in
Grade:	65	ksi
Weld str.:	80	ksi

Stiffener Results	
Horizontal Weld :	55.0% Pass
Vertical Weld:	69.6% Pass
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	20.7% Pass
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	53.8% Pass
Plate Comp. (AISC Bracket):	62.6% Pass

Pole Results	
Pole Punching Shear Check:	25.7% Pass

Pole Data		
Diam:	46	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



Stress Increase Factor	
ASIF:	1.333

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

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

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

TIA Rev F

Site Data

BU#: 876360
Site Name: Preston/Town Hall
App #:
Pole Manufacturer: <i>Other</i>

Reactions

Moment:	2264.7167	ft-kips
Axial:	41	kips
Shear:	27	kips

Moment adjusted to account for additional anchor rods.

Anchor Rod Data

Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	55	in

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

Anchor Rod Results

Maximum Rod Tension: 161.3 Kips

Stiffened
Service, ASD
Fty*ASIF

Plate Data

Diam:	61	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	12.17	in

Base Plate Results

Base Plate Stress: 56.5 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 94.2% **Pass**

Flexural Check

Stiffened
Service, ASD
0.75*Fy*ASIF
Y.L. Length:
N/A, Roark

Stiffener Data (Welding at both sides)

Config:	3	*
Weld Type:	Groove	
Groove Depth:	0.25	in **
Groove Angle:	45	degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:	0.4375	in
Width:	6	in
Height:	14	in
Thick:	0.5	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	80	ksi
Clear Space between Stiffeners (b):	7	in

Stiffener Results

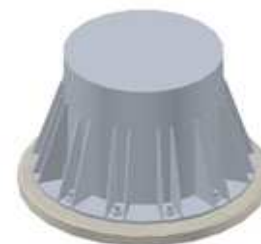
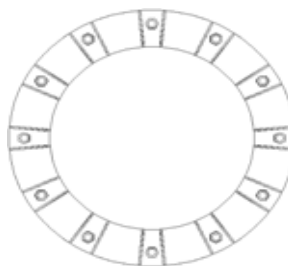
Horizontal Weld : 55.4% **Pass**
 Vertical Weld: 24.4% **Pass**
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: 22.6% **Pass**
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: 57.7% **Pass**
 Plate Comp. (AISC Bracket): 66.6% **Pass**

Pole Results

Pole Punching Shear Check: 10.5% **Pass**

Pole Data

Diam:	46	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



Stress Increase Factor

ASIF:	1.333
-------	-------

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

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

Foundation Loads:

Pole weight or tower leg compression = 41 (kips)
 Horizontal load at top of pier = 27 (kips)
 Overturning moment at top of pier = 3004 (ft-kips)

Design criteria:

Safety factor against overturning = 2

Soil Properties:

Soil density = 120 (pcf)
 Allowable soil bearing = 5 (ksf)
 Depth to water table = 99 (ft)

Dimensions:

Pier shape (round or square) = S ("R" or "S")
 Pier width = 7 (ft)
 Pier height above grade = 1 (ft)
 depth to bottom of footing = 6 (ft)
 Footing thickness = 3 (ft)
 Footing width = 26 (ft)
 Footing length = 26 (ft)

Concrete:

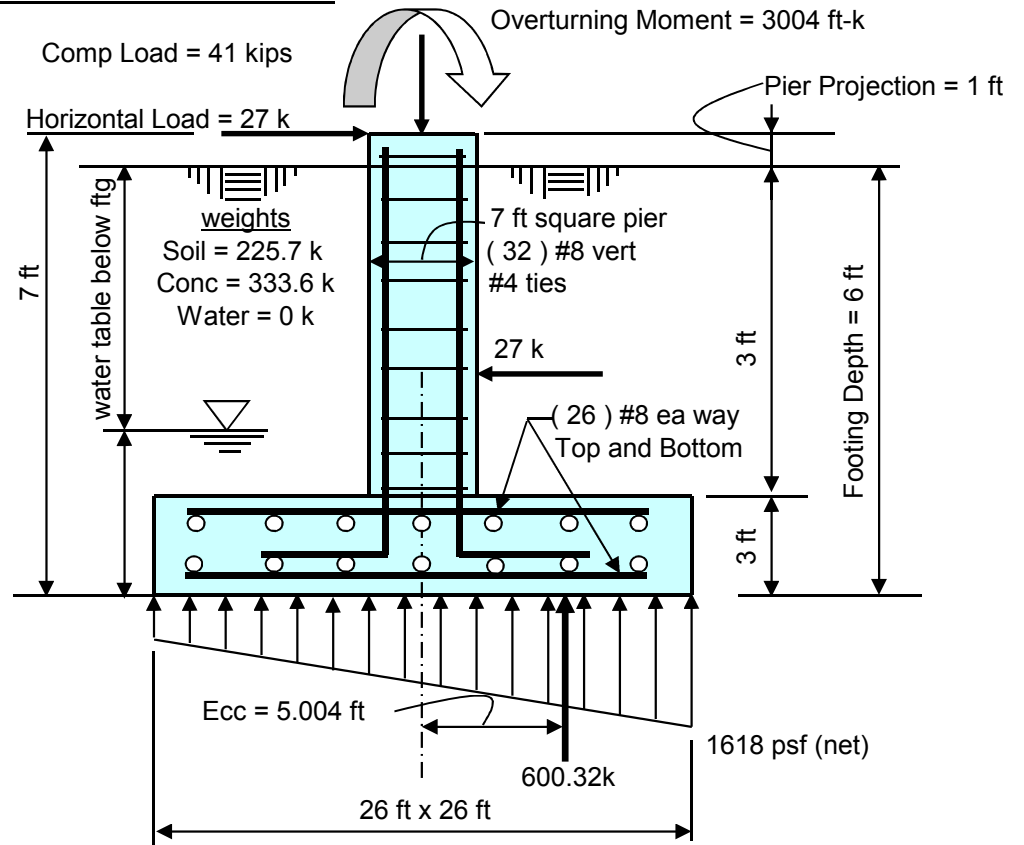
Concrete strength = 4 (ksi)
 Rebar strength = 60 (ksi)
 ultimate load factor = 1.3

Reinforcing Steel:

Pad
 minimum cover over rebar = 3 inches
 size of pad rebar = #8 bar
 quantity of pad rebar = 26 (ea direction)

Reinforcing Steel:

Pier
 size of vert rebar in pier = #8 bar
 vertical rebar quantity = 32
 size of pier ties = #4 bar
 minimum cover over rebar = 4.5 inches
 Total volume of concrete = 82.4 cu yd



Summary of analysis results	
Maximum Net Soil Bearing = 1.618 ksf Allowable Net Soil Bearing = 5 ksf Soil Bearing Stress Ratio = 0.32 Okay	Ult Bending Shear Capacity = 126 psi Ult Bending Shear Stress = 26 psi Bending Shear Stress Ratio = 0.21 Okay
Ftg Overturning Resistance = 7804 ft-kips Overturning Moment = 3004 ft-kips Required Overturning Safety Factor = 2 Overturning Safety Factor = 2.598 Ratio = 0.77 Okay	Pad Bending Moment Capacity = 2858 ft-k Pad Bending Moment = 1313 ft-k Bending Moment Stress Ratio = 0.46 OK


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Computer program for the Strength Design of Reinforced Concrete Sections
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General Information:

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 File Name: T:\375_Crown_Castle\2015\37515-0448_876360_PRESTON - TOWN HALL...\37515-0448.007.7700.col
 Project: 37515-0448.007.7700
 Column: Engineer: JWM
 Code: ACI 318-02 Units: English

 Run Option: Investigation Slenderness: Not considered
 Run Axis: X-axis Column Type: Structural

Material Properties:

=====
 f'c = 4 ksi fy = 60 ksi
 Ec = 3605 ksi Es = 29000 ksi
 Ultimate strain = 0.003 in/in
 Beta1 = 0.85

Section:

=====
 Rectangular: Width = 84 in Depth = 84 in

 Gross section area, Ag = 7056 in^2
 Ix = 4.14893e+006 in^4 Iy = 4.14893e+006 in^4
 rx = 24.2487 in ry = 24.2487 in
 xo = 0 in yo = 0 in

Reinforcement:

=====
 Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #4 ties with #8 bars, #4 with larger bars.
 phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Circular
 Pattern: All Sides Equal (Cover to longitudinal reinforcement)
 Total steel area: As = 26.07 in^2 at rho = 0.37% (Note: rho < 0.50%)
 Minimum clear spacing = 6.03 in

33 #8 Cover = 4.5 in

Factored Loads and Moments with Corresponding Capacities:

=====
 =====

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	41.00	4045.60	4719.68	1.167	5.79	78.83	0.03792	0.900

*** End of output ***

MODIFICATION OF AN EXISTING 147' MONOPOLE

BU #876360; PRESTON / TOWN HALL

389 RT. 2

PRESTON, CONNECTICUT 06365

NEW LONDON COUNTY

LAT: 41° 29' 25.25"; LONG: -71° 59' 29.55"

APP: 310117 REV. 6; WO: 1141595

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.D'AMICO.VENDOR@CROWNCastle.COM

PH: (860) 209-0104

ENGINEER OF RECORD:

PJFMOD@PJFWEB.COM

THIS PROJECT INCLUDES THE FOLLOWING ITEMS

SHAFT REINFORCING

REMOVE 110' LEVEL

SHEET INDEX

SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
S-1	GENERAL NOTES
S-2A	FORGBOLT™ DETAILS
S-2B	NEXGEN2™ BOLT DETAIL
S-3	MONOPOLE PROFILE
S-4	MI CHECKLIST

WIND DESIGN DATA

REFERENCE STANDARD	TIA/EIA-222-F
LOCAL CODE	2003 IBC
BASIC WIND SPEED (FASTEST-MILE)	85 MPH
ICE THICKNESS	0.75 IN
ICE WIND SPEED	37.6 MPH
SERVICE WIND SPEED	50 MPH

THE ASSOCIATED FAILING SA WO NUMBER FOR THIS PROJECT IS 1135618

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.

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Phone 614.221.6679 www.pauljford.com

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

MODIFICATION OF AN EXISTING 147'
MONOPOLE

BU #876360; PRESTON / TOWN HALL
PRESTON, CONNECTICUT

PROJECT No: 37515-0448.007.7700

DRAWN BY: B.M.S.

DESIGNED BY: J.W.M.

CHECKED BY:

DATE: 10-28-2015

TITLE SHEET

T-1

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. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. 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.
- 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/TIA-1019 (LATEST EDITION), OSHA AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-1019 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
- 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 EOR.
- 1.13. 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, MORAIN, 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. BASE PLATE GROUT - (NOT REQUIRED)

4. FOUNDATION WORK - (NOT REQUIRED)

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

6. EPOXY GROUTED REINFORCING ANCHOR RODS - (NOT REQUIRED)

7. TOUCH UP OF GALVANIZING

- 7.1. 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.
- 7.2. 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.
- 7.3. 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.

8. HOT-DIP GALVANIZING

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

9. PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER

- 9.1. 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.
- 9.2. 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.
- 9.3. CROWN CASTLE SHALL REFER TO TIA/EIA-222-F-1996, SECTION 14 AND ANNEX E 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 TIA/EIA-222-F-1996 SECTION 14.1, NOTE 1: "IT IS RECOMMENDED THAT THE STRUCTURE BE INSPECTED AFTER SEVERE WIND AND/OR ICE STORMS OR OTHER EXTREME LOADING CONDITIONS".

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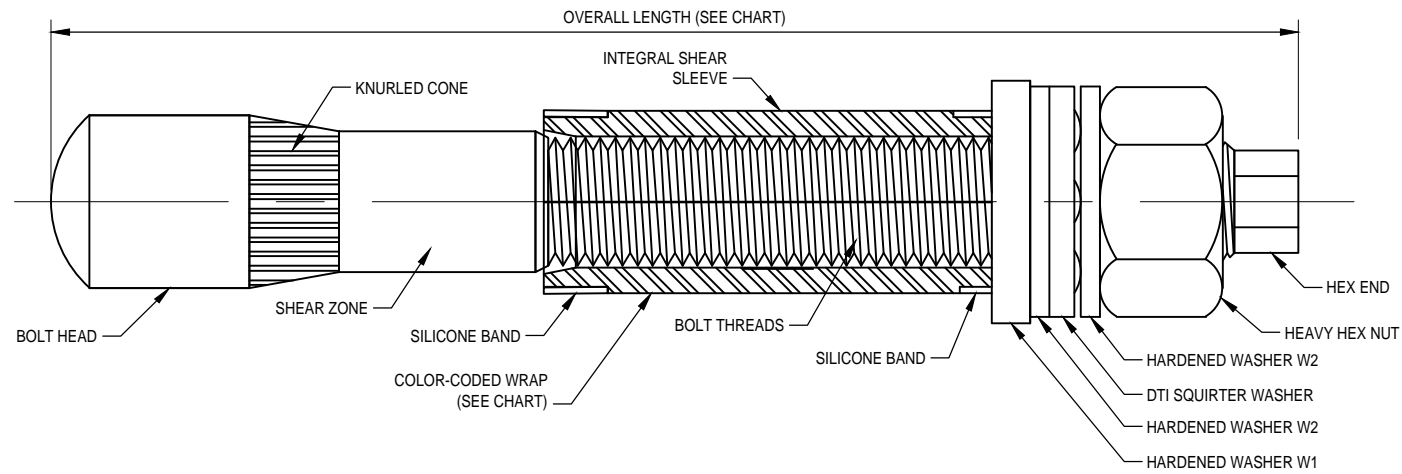
CROWN CASTLE
3530 TORINGDON WAY, SUITE 300, CHARLOTTE, NC 28277
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MODIFICATION OF AN EXISTING 147' MONOPOLE
BU #876360; PRESTON / TOWN HALL
PRESTON, CONNECTICUT

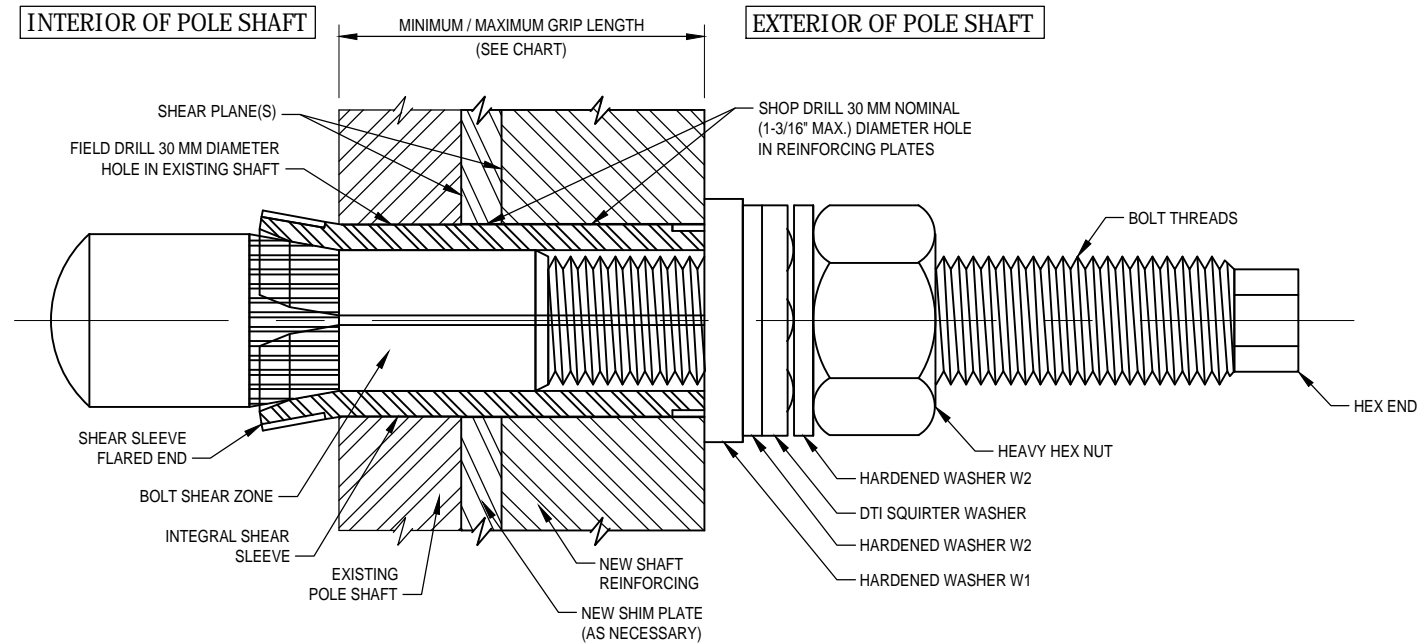
PROJECT No:	37515-0448.007.7700
DRAWN BY:	B.M.S.
DESIGNED BY:	J.W.M.
CHECKED BY:	
DATE:	10-28-2015

GENERAL NOTES

S-1



PRE-INSTALLED FORGBolt™ ASSEMBLY DETAIL 1
S-2A



INSTALLED FORGBolt™ ASSEMBLY DETAIL 2
S-2A

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)**

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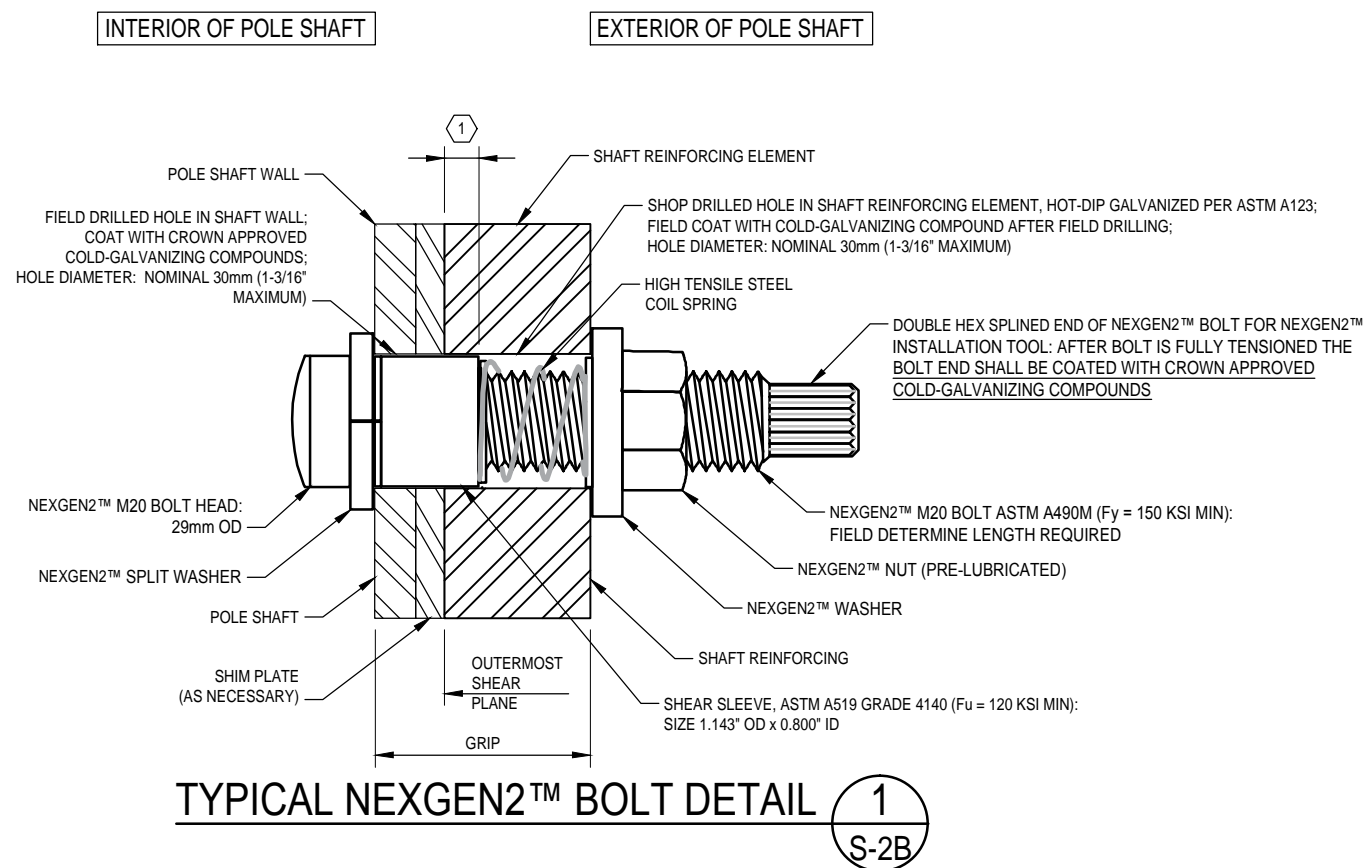
MODIFICATION OF AN EXISTING 147' MONOPOLE
BU #876360; PRESTON / TOWN HALL PRESTON, CONNECTICUT

PROJECT No:	37515-0448.007.7700
DRAWN BY:	B.M.S.
DESIGNED BY:	J.W.M.
CHECKED BY:	
DATE:	10-28-2015

FORGBolt™ DETAILS

S-2A

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.



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..

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:

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 BROOKPARK, OHIO 44142
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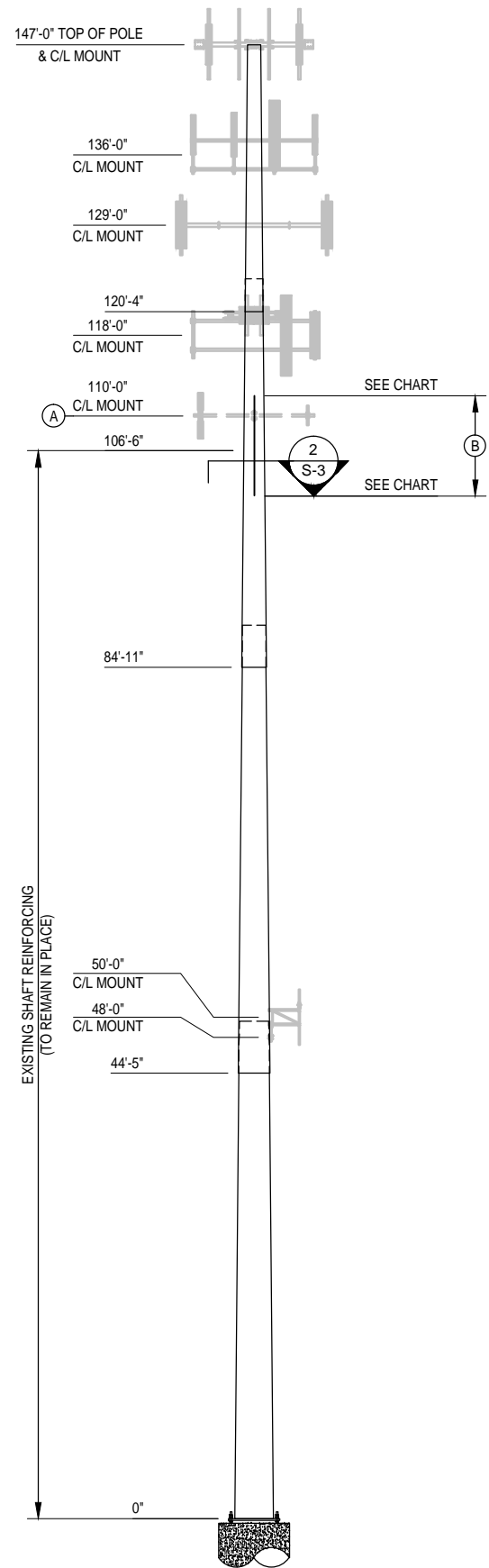
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PROJECT No:	37515-0448.007.7700
DRAWN BY:	B.M.S.
DESIGNED BY:	J.W.M.
CHECKED BY:	
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NEXGEN2™ BOLT DETAIL

S-2B

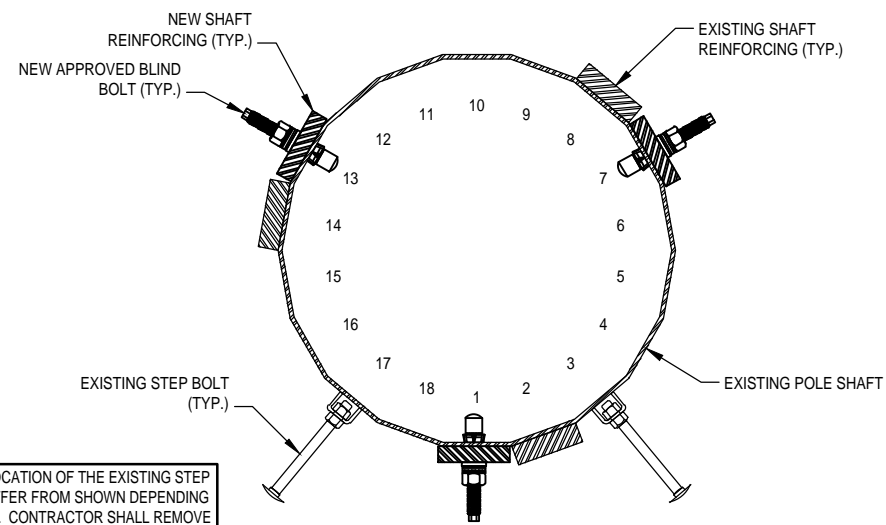


POLE ELEVATION 1
S-3

NEW CCI FLAT PLATE (65 KSI) REINFORCING SCHEDULE											
BOTTOM ELEVATION	TOP ELEVATION	FLAT # / DEGREE SEPARATION	ELEMENT	ELEMENT LENGTH	ELEMENT QUANTITY	APPROXIMATE BOLTS PER ELEMENT	APPROXIMATE TOTAL BOLT QUANTITY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	ESTIMATED TOTAL STEEL WEIGHT
102'-0"	112'-0"	F1, F7 & F13	CCI-SFP-04510010	10'-0"	3	16	48	6	6	20"	459 LBS.
								48			459 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.



NOTE: FLAT LOCATION OF THE EXISTING STEP BOLTS MAY DIFFER FROM SHOWN DEPENDING ON ELEVATION. CONTRACTOR SHALL REMOVE AND REPLACE STEP BOLTS AS REQUIRED FOR REINFORCING INSTALLATION

SECTION 2
S-3

SHAFT SECTION DATA							
SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLATS (IN)		POLE GRADE (ksi)	POLE SHAPE
				@ TOP	@ BOTTOM		
1	26.63	0.1875	39.00	16.250	21.980	65	18-SIDED
2	38.71	0.2500	50.00	20.905	29.110	65	18-SIDED
3	44.67	0.3125	62.00	27.726	37.190	65	18-SIDED
4	49.58	0.3750		35.469	46.000	65	18-SIDED

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

MODIFICATIONS:

- (A) REMOVE ALL EQUIPMENT, COAX, AND MOUNTS AT THE 110 FT. ELEVATION.
- (B) INSTALL NEW SHAFT REINFORCING. SEE CHART ON THIS SHEET.

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MONOPOLE PROFILE

S-3

MODIFICATION INSPECTION NOTES:

1. GENERAL

- 1.1. THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE EOR.
- 1.2. THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.
- 1.3. ALL MI'S SHALL BE CONDUCTED BY A CROWN CASTLE ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN CASTLE.
- 1.4. 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 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, CONTACT YOUR CROWN CASTLE POINT OF CONTACT (POC).
- 1.5. REFER TO ENG-SOW-10007: MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

2. MI INSPECTOR

- 2.1. THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:
 - 2.1.1. REVIEW THE REQUIREMENTS OF THE MI CHECKLIST.
 - 2.1.2. WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
 - 2.1.3. THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GC INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT TO CROWN CASTLE.

3. GENERAL CONTRACTOR

- 3.1. THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:
 - 3.1.1. REVIEW THE REQUIREMENTS OF THE MI CHECKLIST.
 - 3.1.2. WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
 - 3.1.3. BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS.
 - 3.1.4. THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AND ENG-SOW-10007.

4. RECOMMENDATIONS

- 4.1. THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:
 - 4.1.1. IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLE 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
 - 4.1.2. THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
 - 4.1.3. WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
 - 4.1.4. IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
 - 4.1.5. WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY 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.

5. CANCELLATION OR DELAYS IN SCHEDULED MI

- 5.1. IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN CASTLE SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF CROWN CASTLE CONTRACTS DIRECTLY FOR A THIRD PARTY MI, EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

6. CORRECTION OF FAILING MI'S

- 6.1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN CASTLE TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
 - 6.1.1. CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
 - 6.1.2. OR, WITH CROWN CASTLE'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

7. MI VERIFICATION INSPECTIONS

- 7.1. CROWN CASTLE RESERVES THE RIGHT TO CONDUCT A MI VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MI INSPECTION(S) ON TOWER MODIFICATION PROJECTS.
- 7.2. ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.
- 7.3. VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT AEV/AESV FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MI" OR "PASS AS NOTED MI" REPORT FOR THE ORIGINAL PROJECT.

8. PHOTOGRAPHS

- 8.1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:
 - 8.1.1. PRECONSTRUCTION GENERAL SITE CONDITION
 - 8.1.2. PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
 - 8.1.3. RAW MATERIALS
 - 8.1.4. PHOTOS OF ALL CRITICAL DETAILS
 - 8.1.5. FOUNDATION MODIFICATIONS
 - 8.1.6. WELD PREPARATION
 - 8.1.7. BOLT INSTALLATION AND TORQUE
 - 8.1.8. FINAL INSTALLED CONDITION
 - 8.1.9. SURFACE COATING REPAIR
 - 8.1.10. POST CONSTRUCTION PHOTOGRAPHS
 - 8.1.11. FINAL INFIELD CONDITION
 - 8.1.12. PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.
 - 8.1.13. THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOW-10007.

9. INSPECTION AND TESTING

- 9.1. ALL WORK SHALL BE SUBJECT TO REVIEW AND OBSERVATION BY CROWN CASTLE'S REPRESENTATIVE AND CROWN CASTLE'S AUTHORIZED INDEPENDENT INSPECTION AND TESTING AGENCY.
- 9.2. INSPECTION SERVICES WHICH ARE FURNISHED BY OTHERS ARE STILL REQUIRED WHEN THE EOR PERFORMS SUPPORT SERVICES DURING CONSTRUCTION.
- 9.3. OBSERVED DISCREPANCIES BETWEEN THE WORK AND THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
- 9.4. AN INDEPENDENT QUALIFIED INSPECTION/TESTING AGENCY SHALL BE SELECTED, RETAINED AND PAID FOR BY CROWN CASTLE FOR THE SOLE PURPOSE OF INSPECTING, TESTING, DOCUMENTING, AND APPROVING ALL WELDING AND FIELD WORK PERFORMED BY THE CONTRACTOR.
 - 9.4.1. ACCESS TO ANY PLACE WHERE WORK IS BEING DONE SHALL BE PERMITTED AT ALL TIMES.
 - 9.4.2. THE INSPECTION AGENCY SHALL SO SCHEDULE THIS WORK AS TO CAUSE A MINIMUM OF INTERRUPTION TO, AND COORDINATE WITH, THE WORK IN PROGRESS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE WORK SCHEDULE WITH THE TESTING AGENCY. THE CONTRACTOR SHALL ALLOW FOR ADEQUATE TIME AND ACCESS FOR THE TESTING AGENCY TO PERFORM THEIR DUTIES.
- 9.5. THE INSPECTION AND TESTING AGENCY SHALL BE RESPONSIBLE TO PERFORM THE FOLLOWING SERVICES AND INSPECT THE FOLLOWING ITEMS IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. THE TESTING AGENCY SHALL INSPECT ITEMS ON THIS LIST AND OTHER ITEMS AS NECESSARY TO FULFILL THEIR RESPONSIBILITY. THE TESTING AGENCY SHALL UTILIZE EXPERIENCED, TRAINED INSPECTORS INCLUDING AWS CERTIFIED WELDING INSPECTORS (CW). INSPECTORS SHALL HAVE THE TRAINING, CREDENTIALS, AND EXPERIENCE APPROPRIATE FOR AND COMMENSURATE WITH THE SCOPE AND TYPE OF INSPECTION WORK TO BE PERFORMED.
- 9.6. **GENERAL**
 - 9.6.1. PERFORM PERIODIC ON-SITE OBSERVATION, INSPECTION, VERIFICATION, AND TESTING DURING THE TIME THE CONTRACTOR IS WORKING ON-SITE. AGENCY SHALL NOTIFY CROWN CASTLE AND THE EOR IMMEDIATELY WHEN FIELD PROBLEMS OR DISCREPANCIES OCCUR.
- 9.7. FOUNDATIONS AND SOIL PREPARATION - (NOT REQUIRED)
- 9.8. CONCRETE TESTING PER ACI - (NOT REQUIRED)
- 9.9. STRUCTURAL STEEL
 - 9.9.1. CHECK STEEL ON THE JOB WITH THE PLANS.
 - 9.9.2. CHECK MILL CERTIFICATIONS. CALL FOR LABORATORY TEST REPORTS WHEN MILL CERTIFICATION IS IN QUESTION.
 - 9.9.3. CHECK GRADE OF STEEL MEMBERS, AND BOLTS FOR CONFORMANCE WITH DRAWINGS.
 - 9.9.4. INSPECT ALL STRUCTURAL BOLTS SHALL BE FIELD INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.
 - 9.9.5. INSPECT STEEL MEMBERS FOR DISTORTION, EXCESSIVE RUST, FLAWS AND BURNED HOLES.
 - 9.9.6. CHECK STEEL MEMBERS FOR SIZES, SWEEP AND DIMENSIONAL TOLERANCES.
 - 9.9.7. CHECK FOR SURFACE FINISH SPECIFIED, GALVANIZED.
 - 9.9.8. CHECK THAT BOLTS HAVE BEEN TIGHTENED PROPERLY.
 - 9.9.9. PRIOR TO ANY FIELD CUTTING THE CONTRACTOR SHALL MARK THE CUTOUT LINES ON THE STEEL AND THE INSPECTION/TESTING AGENCY SHALL VERIFY PROPOSED LAYOUT, LOCATION, AND DIMENSIONS. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
- 9.10. WELDING - (NOT REQUIRED)
- 9.11. REPORTS:
 - 9.11.1. COMPILER AND PERIODICALLY SUBMIT DAILY INSPECTION REPORTS TO CROWN CASTLE.
 - 9.11.2. THE INSPECTION PLAN OUTLINED HEREIN IS INTENDED AS A DESCRIPTION OF GENERAL AND SPECIFIC ITEMS OF CONCERN. IT IS NOT INTENDED TO BE ALL-INCLUSIVE. IT DOES NOT LIMIT THE TESTING AND INSPECTION AGENCY TO THE ITEMS LISTED. ADDITIONAL TESTING, INSPECTION, AND CHECKING MAY BE REQUIRED AND SHOULD BE ANTICIPATED. THE TESTING AGENCY SHALL USE THEIR PROFESSIONAL JUDGMENT AND KNOWLEDGE OF THE JOB SITE CONDITIONS AND THE CONTRACTOR'S PERFORMANCE TO DECIDE WHAT OTHER ITEMS REQUIRE ADDITIONAL ATTENTION. THE TESTING AGENCY'S JUDGMENT MUST PREVAIL ON ITEMS NOT SPECIFICALLY COVERED. ANY DISCREPANCIES OR PROBLEMS SHALL BE BROUGHT IMMEDIATELY TO CROWN CASTLE'S ATTENTION. RESOLUTIONS ARE NOT TO BE MADE WITHOUT CROWN CASTLE'S REVIEW AND SPECIFIC WRITTEN CONSENT. CROWN CASTLE RESERVES THE RIGHT TO DETERMINE WHETHER OR NOT A RESOLUTION IS ACCEPTABLE.
 - 9.11.3. AFTER EACH INSPECTION, THE TESTING AGENCY WILL PREPARE A WRITTEN ACCEPTANCE OR REJECTION WHICH WILL BE GIVEN TO THE CONTRACTOR AND FILED AS DAILY REPORTS TO CROWN CASTLE. THIS WRITTEN ACTION WILL GIVE THE CONTRACTOR A LIST OF ITEMS TO BE CORRECTED, PRIOR TO CONTINUING CONSTRUCTION, AND/OR LOADING OF STRUCTURAL ITEMS.
 - 9.11.4. THE TESTING AGENCY DOES NOT RELIEVE THE CONTRACTOR'S CONTRACTUAL OR STATUTORY OBLIGATIONS. THE CONTRACTOR HAS THE SOLE RESPONSIBILITY FOR ANY DEVIATIONS FROM THE OFFICIAL CONTRACT DOCUMENTS. THE TESTING AGENCY WILL NOT REPLACE THE CONTRACTOR'S QUALITY CONTROL PERSONNEL.

MI CHECKLIST	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY EOR)	REPORT ITEM
PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWINGS
X	EOR REVIEW
X	FABRICATION INSPECTION
NA	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
NA	FABRICATOR NDE INSPECTION
NA	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS: _____	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
NA	FOUNDATION INSPECTIONS
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS
NA	POST INSTALLED ANCHOR ROD VERIFICATION
NA	BASE PLATE GROUT VERIFICATION
NA	CONTRACTOR'S CERTIFIED WELD INSPECTION
NA	EARTHWORK: PROVIDE PHOTO DOCUMENTATION OF EXCAVATION QUALITY AND COMPACTION
X	ON SITE COLD GALVANIZING VERIFICATION
NA	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
NA	MICROPILE/ROCK ANCHOR INSTALLER'S DRILLING AND INSTALLATION LOGS AND QA/QC DOCUMENTS
ADDITIONAL TESTING AND INSPECTIONS: _____	
POST-CONSTRUCTION	
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
NA	POST INSTALLED ANCHOR ROD TARGET TENSION LOAD TESTING
NA	REFER TO MICROPILE/ROCK ANCHOR NOTES FOR SPECIAL INSPECTION AND TESTING REQUIREMENTS.
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS: _____	

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PMI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PMI REPORT

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

MODIFICATION OF AN EXISTING 147' MONOPOLE
 BU #876360; PRESTON / TOWN HALL
 PRESTON, CONNECTICUT

PROJECT No:	37515-0448.007.7700
DRAWN BY:	B.M.S.
DESIGNED BY:	J.W.M.
CHECKED BY:	
DATE:	10-28-2015

MI CHECKLIST

S-4

MODIFICATION OF AN EXISTING 147' MONOPOLE

BU #876360; PRESTON / TOWN HALL

389 RT. 2

PRESTON, CONNECTICUT 06365

NEW LONDON COUNTY

LAT: 41° 29' 25.25"; LONG: -71° 59' 29.55"

APP: 310117 REV. 6; WO: 1141595

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.D'AMICO.VENDOR@CROWNCastle.COM

PH: (860) 209-0104

ENGINEER OF RECORD:

PJFMOD@PJFWEB.COM

THIS PROJECT INCLUDES THE FOLLOWING ITEMS

SHAFT REINFORCING

REMOVE 110' LEVEL

SHEET INDEX

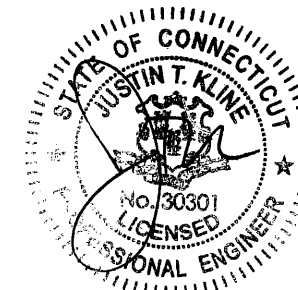
SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
S-1	GENERAL NOTES
S-2A	FORGBOLT™ DETAILS
S-2B	NEXGEN2™ BOLT DETAIL
S-3	MONOPOLE PROFILE
S-4	MI CHECKLIST

WIND DESIGN DATA

REFERENCE STANDARD	TIA/EIA-222-F
LOCAL CODE	2003 IBC
BASIC WIND SPEED (FASTEST-MILE)	85 MPH
ICE THICKNESS	0.75 IN
ICE WIND SPEED	37.6 MPH
SERVICE WIND SPEED	50 MPH

THE ASSOCIATED FAILING SA WO NUMBER FOR THIS PROJECT IS 1135618

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.



11-2-15

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TITLE SHEET

T-1

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. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. 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.
- 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/TIA-1019 (LATEST EDITION), OSHA AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-1019 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
- 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 EOR.
- 1.13. 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, MORAIN, 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. BASE PLATE GROUT - (NOT REQUIRED)

4. FOUNDATION WORK - (NOT REQUIRED)

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

6. EPOXY GROUTED REINFORCING ANCHOR RODS - (NOT REQUIRED)

7. TOUCH UP OF GALVANIZING

- 7.1. 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.
- 7.2. 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.
- 7.3. 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.

8. HOT-DIP GALVANIZING

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

9. PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER

- 9.1. 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.
- 9.2. 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.
- 9.3. CROWN CASTLE SHALL REFER TO TIA/EIA-222-F-1996, SECTION 14 AND ANNEX E 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 TIA/EIA-222-F-1996 SECTION 14.1, NOTE 1: 'IT IS RECOMMENDED THAT THE STRUCTURE BE INSPECTED AFTER SEVERE WIND AND/OR ICE STORMS OR OTHER EXTREME LOADING CONDITIONS'.

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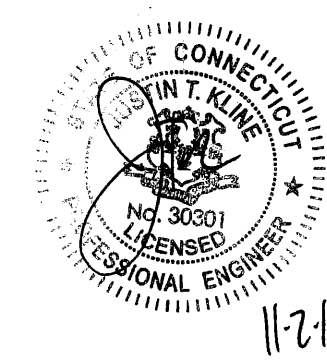
CROWN CASTLE
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MODIFICATION OF AN EXISTING 147' MONOPOLE
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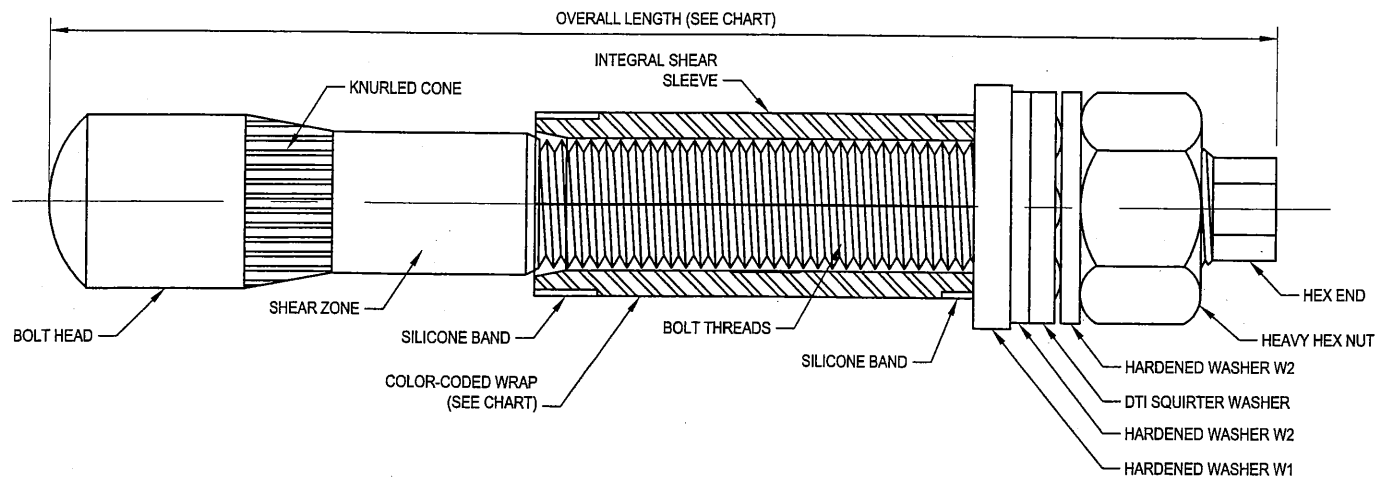
PROJECT No:	37515-0448.007.7700
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GENERAL NOTES

S-1

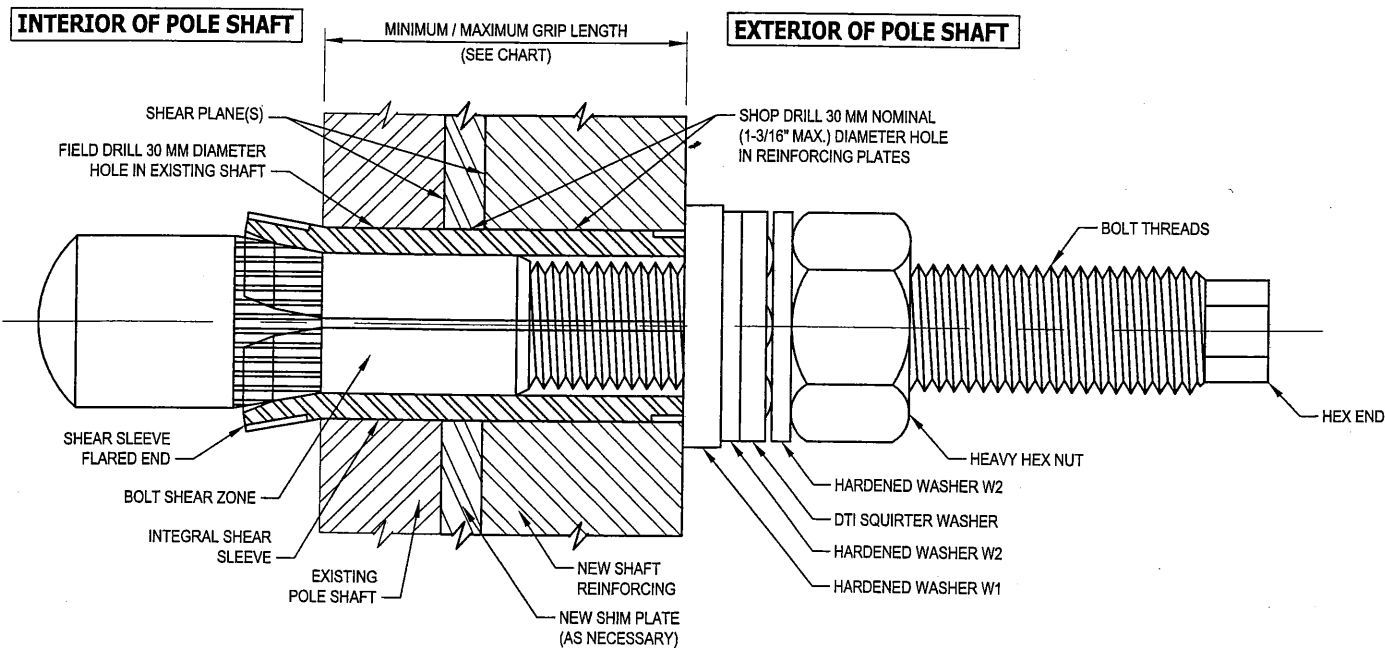


11-2-15



PRE-INSTALLED FORGBolt™ ASSEMBLY DETAIL

1
S-2A



INSTALLED FORGBolt™ ASSEMBLY DETAIL

2
S-2A

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.

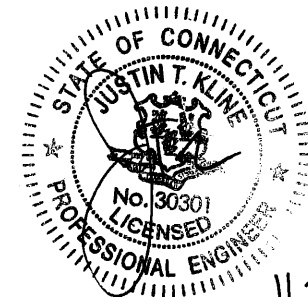
**AISC GROUP A MATERIAL: ASTM A325 AND PC8.8
(Fu = 120 KSI MIN. TENSILE STRESS)**

CONTAINS PROPRIETARY INFORMATION PATENT PENDING

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DISTRIBUTOR CONTACT:

PRECISION TOWER PRODUCTS
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11-2-15

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

MODIFICATION OF AN EXISTING 147' MONOPOLE
BU #876360; PRESTON / TOWN HALL
PRESTON, CONNECTICUT

PROJECT No: 37515-0448.007.7700
DRAWN BY: B.M.S.
DESIGNED BY: J.W.M.
CHECKED BY:
DATE: 10-28-2015

FORGBolt™
DETAILS

S-2A

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.

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

BOLT HOLE NOTES:

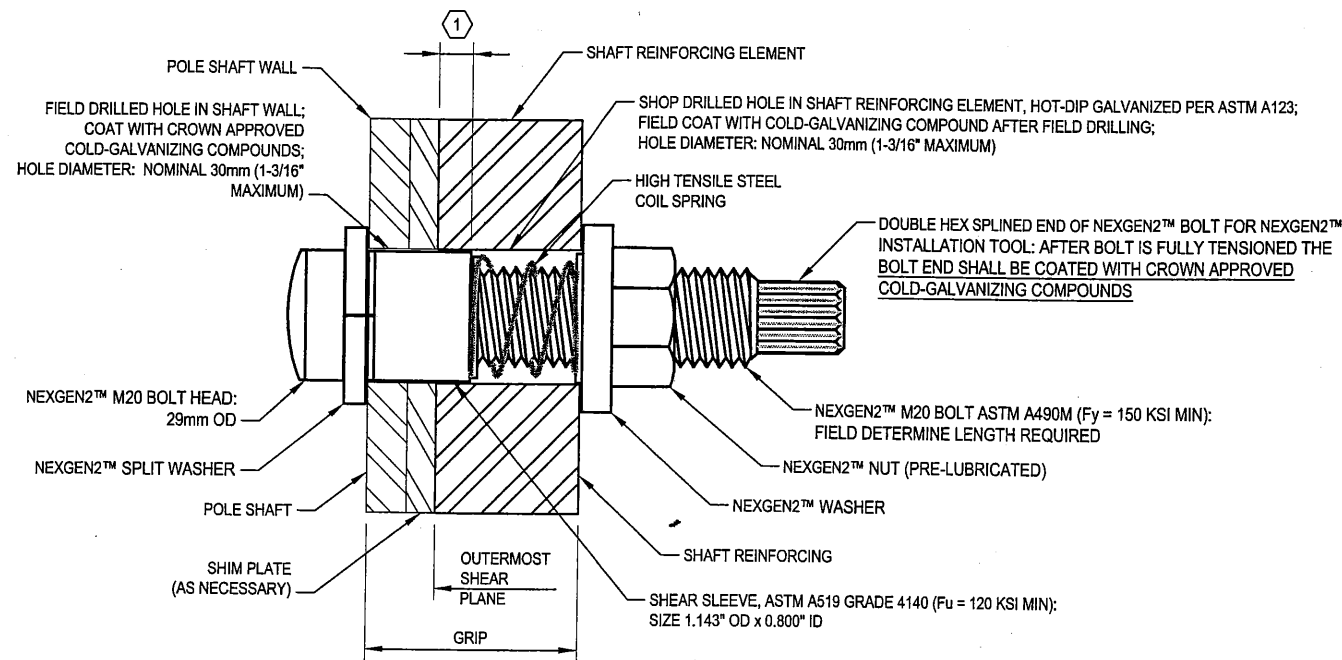
1. ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".
2. ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.

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..

INTERIOR OF POLE SHAFT

EXTERIOR OF POLE SHAFT

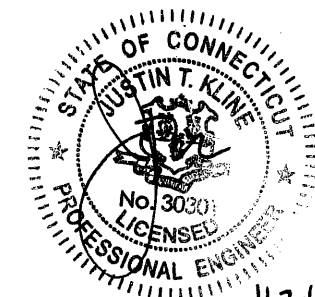


TYPICAL NEXGEN2™ BOLT DETAIL 1 S-2B

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
 15401 COMMERCE PARK DR.
 BROOKPARK, OHIO 44142
 PHONE: 440-232-6060
 E-MAIL: SALES@ALLFASTENERS.COM



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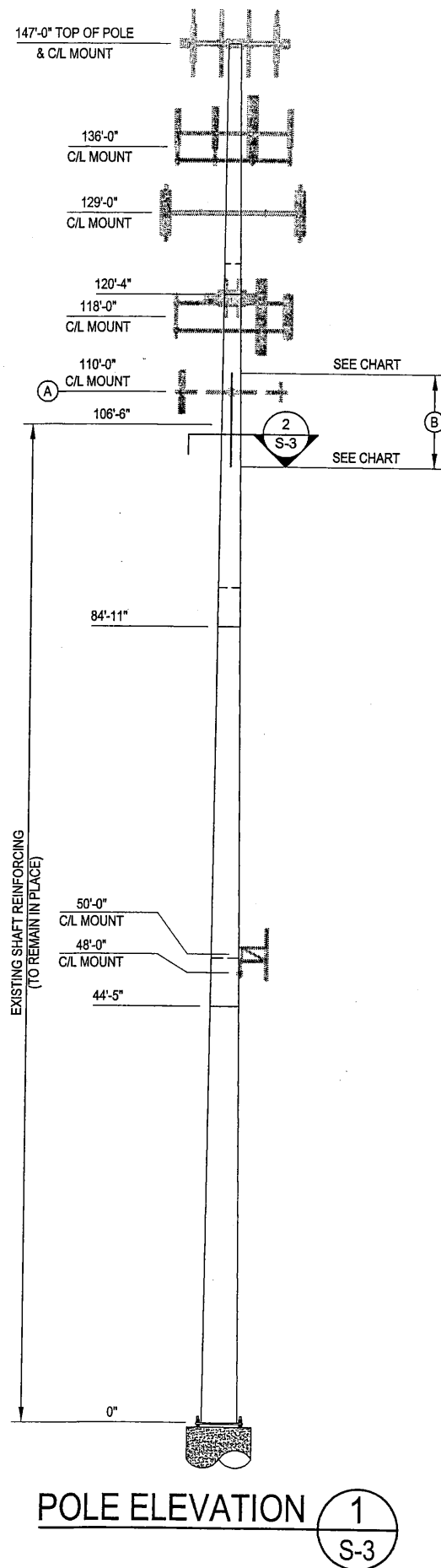
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NEXGEN2™ BOLT DETAIL

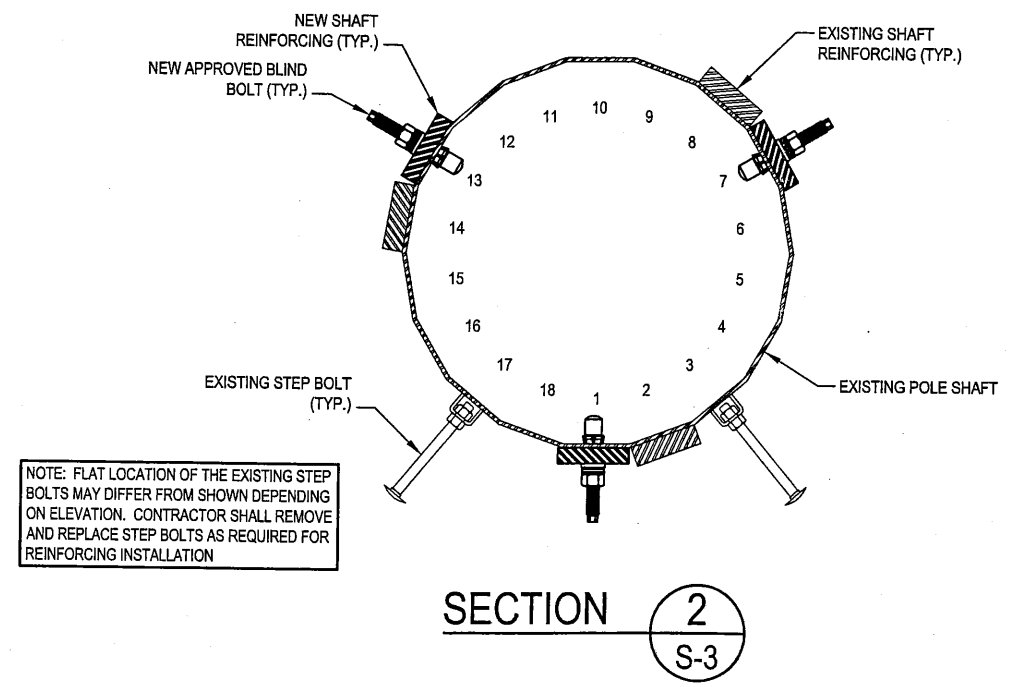
S-2B



NEW CCI FLAT PLATE (65 KSI) REINFORCING SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	FLAT # / DEGREE SEPARATION	ELEMENT	ELEMENT LENGTH	ELEMENT QUANTITY	APPROXIMATE BOLTS PER ELEMENT	APPROXIMATE TOTAL BOLT QUANTITY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	ESTIMATED TOTAL STEEL WEIGHT
102'-0"	112'-0"	F1, F7 & F13	CCI-SFP-04510010	10'-0"	3	16	48	6	6	20"	459 LBS.
								48			459 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.



SHAFT SECTION DATA

SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLATS (IN)		POLE GRADE (ksi)	POLE SHAPE
				@ TOP	@ BOTTOM		
1	26.63	0.1875		16.250	21.980	65	18-SIDED
2	38.71	0.2500	39.00	20.905	29.110	65	18-SIDED
3	44.67	0.3125	50.00	27.726	37.190	65	18-SIDED
4	49.58	0.3750	62.00	35.469	46.000	65	18-SIDED

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

- MODIFICATIONS:**
- REMOVE ALL EQUIPMENT, COAX, AND MOUNTS AT THE 110 FT. ELEVATION.
 - INSTALL NEW SHAFT REINFORCING. SEE CHART ON THIS SHEET.

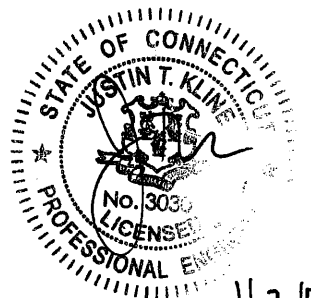
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11-2-15

MONOPOLE PROFILE

S-3

MODIFICATION INSPECTION NOTES:

1. GENERAL

- 1.1. THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE EOR.
- 1.2. THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.
- 1.3. ALL MI'S SHALL BE CONDUCTED BY A CROWN CASTLE ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN CASTLE.
- 1.4. 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 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, CONTACT YOUR CROWN CASTLE POINT OF CONTACT (POC).
- 1.5. REFER TO ENG-SOW-10007: MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

2. MI INSPECTOR

- 2.1. THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:
 - 2.1.1. REVIEW THE REQUIREMENTS OF THE MI CHECKLIST.
 - 2.1.2. WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
 - 2.1.3. THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GC INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT TO CROWN CASTLE.

3. GENERAL CONTRACTOR

- 3.1. THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:
 - 3.1.1. REVIEW THE REQUIREMENTS OF THE MI CHECKLIST.
 - 3.1.2. WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
 - 3.1.3. BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS.
 - 3.1.4. THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AND ENG-SOW-10007.

4. RECOMMENDATIONS

- 4.1. THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:
 - 4.1.1. IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLE 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
 - 4.1.2. THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
 - 4.1.3. WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
 - 4.1.4. IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
 - 4.1.5. WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY 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.

5. CANCELLATION OR DELAYS IN SCHEDULED MI

- 5.1. IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN CASTLE SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF CROWN CASTLE CONTRACTS DIRECTLY FOR A THIRD PARTY MI, EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

6. CORRECTION OF FAILING MI'S

- 6.1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN CASTLE TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
 - 6.1.1. CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
 - 6.1.2. OR, WITH CROWN CASTLE'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

7. MI VERIFICATION INSPECTIONS

- 7.1. CROWN CASTLE RESERVES THE RIGHT TO CONDUCT A MI VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MI INSPECTION(S) ON TOWER MODIFICATION PROJECTS.
- 7.2. ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.
- 7.3. VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT AEA/AESV FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MI" OR "PASS AS NOTED MI" REPORT FOR THE ORIGINAL PROJECT.

8. PHOTOGRAPHS

- 8.1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:
 - 8.1.1. PRECONSTRUCTION GENERAL SITE CONDITION
 - 8.1.2. PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
 - 8.1.3. RAW MATERIALS
 - 8.1.4. PHOTOS OF ALL CRITICAL DETAILS
 - 8.1.5. FOUNDATION MODIFICATIONS
 - 8.1.6. WELD PREPARATION
 - 8.1.7. BOLT INSTALLATION AND TORQUE
 - 8.1.8. FINAL INSTALLED CONDITION
 - 8.1.9. SURFACE COATING REPAIR
 - 8.1.10. POST CONSTRUCTION PHOTOGRAPHS
 - 8.1.11. FINAL INFIELD CONDITION
 - 8.1.12. PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.
 - 8.1.13. THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOW-10007.

9. INSPECTION AND TESTING

- 9.1. ALL WORK SHALL BE SUBJECT TO REVIEW AND OBSERVATION BY CROWN CASTLE'S REPRESENTATIVE AND CROWN CASTLE'S AUTHORIZED INDEPENDENT INSPECTION AND TESTING AGENCY.
- 9.2. INSPECTION SERVICES WHICH ARE FURNISHED BY OTHERS ARE STILL REQUIRED WHEN THE EOR PERFORMS SUPPORT SERVICES DURING CONSTRUCTION.
- 9.3. OBSERVED DISCREPANCIES BETWEEN THE WORK AND THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
- 9.4. AN INDEPENDENT QUALIFIED INSPECTION/TESTING AGENCY SHALL BE SELECTED, RETAINED AND PAID FOR BY CROWN CASTLE FOR THE SOLE PURPOSE OF INSPECTING, TESTING, DOCUMENTING, AND APPROVING ALL WELDING AND FIELD WORK PERFORMED BY THE CONTRACTOR.
 - 9.4.1. ACCESS TO ANY PLACE WHERE WORK IS BEING DONE SHALL BE PERMITTED AT ALL TIMES.
 - 9.4.2. THE INSPECTION AGENCY SHALL SO SCHEDULE THIS WORK AS TO CAUSE A MINIMUM OF INTERRUPTION TO, AND COORDINATE WITH, THE WORK IN PROGRESS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE WORK SCHEDULE WITH THE TESTING AGENCY. THE CONTRACTOR SHALL ALLOW FOR ADEQUATE TIME AND ACCESS FOR THE TESTING AGENCY TO PERFORM THEIR DUTIES.
- 9.5. THE INSPECTION AND TESTING AGENCY SHALL BE RESPONSIBLE TO PERFORM THE FOLLOWING SERVICES AND INSPECT THE FOLLOWING ITEMS IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. THE TESTING AGENCY SHALL INSPECT ITEMS ON THIS LIST AND OTHER ITEMS AS NECESSARY TO FULFILL THEIR RESPONSIBILITY. THE TESTING AGENCY SHALL UTILIZE EXPERIENCED, TRAINED INSPECTORS INCLUDING AWS CERTIFIED WELDING INSPECTORS (CWI). INSPECTORS SHALL HAVE THE TRAINING, CREDENTIALS, AND EXPERIENCE APPROPRIATE FOR AND COMMENSURATE WITH THE SCOPE AND TYPE OF INSPECTION WORK TO BE PERFORMED.
- 9.6. **GENERAL**
 - 9.6.1. PERFORM PERIODIC ON-SITE OBSERVATION, INSPECTION, VERIFICATION, AND TESTING DURING THE TIME THE CONTRACTOR IS WORKING ON-SITE. AGENCY SHALL NOTIFY CROWN CASTLE AND THE EOR IMMEDIATELY WHEN FIELD PROBLEMS OR DISCREPANCIES OCCUR.
- 9.7. **FOUNDATIONS AND SOIL PREPARATION - (NOT REQUIRED)**
- 9.8. **CONCRETE TESTING PER ACI - (NOT REQUIRED)**
- 9.9. **STRUCTURAL STEEL**
 - 9.9.1. CHECK STEEL ON THE JOB WITH THE PLANS.
 - 9.9.2. CHECK MILL CERTIFICATIONS. CALL FOR LABORATORY TEST REPORTS WHEN MILL CERTIFICATION IS IN QUESTION.
 - 9.9.3. CHECK GRADE OF STEEL MEMBERS, AND BOLTS FOR CONFORMANCE WITH DRAWINGS.
 - 9.9.4. INSPECT ALL STRUCTURAL BOLTS SHALL BE FIELD INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS", DEC. 31, 2009.
 - 9.9.5. INSPECT STEEL MEMBERS FOR DISTORTION, EXCESSIVE RUST, FLAWS AND BURNED HOLES.
 - 9.9.6. CHECK STEEL MEMBERS FOR SIZES, SWEEP AND DIMENSIONAL TOLERANCES.
 - 9.9.7. CHECK FOR SURFACE FINISH SPECIFIED, GALVANIZED.
 - 9.9.8. CHECK THAT BOLTS HAVE BEEN TIGHTENED PROPERLY.
 - 9.9.9. PRIOR TO ANY FIELD CUTTING THE CONTRACTOR SHALL MARK THE CUTOUT LINES ON THE STEEL AND THE INSPECTION/TESTING AGENCY SHALL VERIFY PROPOSED LAYOUT, LOCATION, AND DIMENSIONS. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
- 9.10. **WELDING - (NOT REQUIRED)**
- 9.11. **REPORTS:**
 - 9.11.1. COMPILER AND PERIODICALLY SUBMIT DAILY INSPECTION REPORTS TO CROWN CASTLE.
 - 9.11.2. THE INSPECTION PLAN OUTLINED HEREIN IS INTENDED AS A DESCRIPTION OF GENERAL AND SPECIFIC ITEMS OF CONCERN. IT IS NOT INTENDED TO BE ALL-INCLUSIVE. IT DOES NOT LIMIT THE TESTING AND INSPECTION AGENCY TO THE ITEMS LISTED. ADDITIONAL TESTING, INSPECTION, AND CHECKING MAY BE REQUIRED AND SHOULD BE ANTICIPATED. THE TESTING AGENCY SHALL USE THEIR PROFESSIONAL JUDGMENT AND KNOWLEDGE OF THE JOB SITE CONDITIONS AND THE CONTRACTOR'S PERFORMANCE TO DECIDE WHAT OTHER ITEMS REQUIRE ADDITIONAL ATTENTION. THE TESTING AGENCY'S JUDGMENT MUST PREVAIL ON ITEMS NOT SPECIFICALLY COVERED. ANY DISCREPANCIES OR PROBLEMS SHALL BE BROUGHT IMMEDIATELY TO CROWN CASTLE'S ATTENTION. RESOLUTIONS ARE NOT TO BE MADE WITHOUT CROWN CASTLE'S REVIEW AND SPECIFIC WRITTEN CONSENT. CROWN CASTLE RESERVES THE RIGHT TO DETERMINE WHETHER OR NOT A RESOLUTION IS ACCEPTABLE.
 - 9.11.3. AFTER EACH INSPECTION, THE TESTING AGENCY WILL PREPARE A WRITTEN ACCEPTANCE OR REJECTION WHICH WILL BE GIVEN TO THE CONTRACTOR AND FILED AS DAILY REPORTS TO CROWN CASTLE. THIS WRITTEN ACTION WILL GIVE THE CONTRACTOR A LIST OF ITEMS TO BE CORRECTED, PRIOR TO CONTINUING CONSTRUCTION, AND/OR LOADING OF STRUCTURAL ITEMS.
 - 9.11.4. THE TESTING AGENCY DOES NOT RELIEVE THE CONTRACTOR'S CONTRACTUAL OR STATUTORY OBLIGATIONS. THE CONTRACTOR HAS THE SOLE RESPONSIBILITY FOR ANY DEVIATIONS FROM THE OFFICIAL CONTRACT DOCUMENTS. THE TESTING AGENCY WILL NOT REPLACE THE CONTRACTOR'S QUALITY CONTROL PERSONNEL.

MI CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY EOR)	REPORT ITEM
PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWINGS
X	EOB REVIEW
X	FABRICATION INSPECTION
NA	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
NA	FABRICATOR NDE INSPECTION
NA	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS: _____	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
NA	FOUNDATION INSPECTIONS
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS
NA	POST INSTALLED ANCHOR ROD VERIFICATION
NA	BASE PLATE GROUT VERIFICATION
NA	CONTRACTOR'S CERTIFIED WELD INSPECTION
NA	EARTHWORK: PROVIDE PHOTO DOCUMENTATION OF EXCAVATION QUALITY AND COMPACTION
X	ON SITE COLD GALVANIZING VERIFICATION
NA	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
NA	MICROPILE/ROCK ANCHOR INSTALLER'S DRILLING AND INSTALLATION LOGS AND QA/QC DOCUMENTS
ADDITIONAL TESTING AND INSPECTIONS: _____	
POST-CONSTRUCTION	
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
NA	POST INSTALLED ANCHOR ROD TARGET TENSION LOAD TESTING
NA	REFER TO MICROPILE/ROCK ANCHOR NOTES FOR SPECIAL INSPECTION AND TESTING REQUIREMENTS.
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS: _____	

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PMI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PMI REPORT

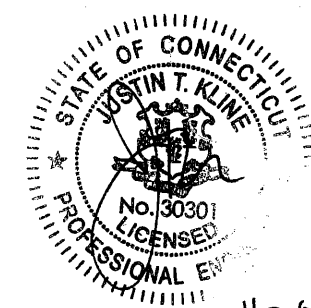
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PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

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

MODIFICATION OF AN EXISTING 147' MONOPOLE
BU #876360; PRESTON / TOWN HALL PRESTON, CONNECTICUT

PROJECT No: 37515-0448.007.7700
DRAWN BY: B.M.S.
DESIGNED BY: J.W.M.
CHECKED BY:
DATE: 10-28-2015



MI CHECKLIST

S-4

11-2-15

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL
TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11441A

Town Hall Sprint Tower
Route 2
Preston, CT 06365

September 22, 2015

EBI Project Number: 6215004840

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	7.00 %

September 22, 2015

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CT11441A – Town Hall Sprint Tower**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **Route 2, Preston, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the 700 MHz Band is approximately 467 $\mu\text{W}/\text{cm}^2$, and the general population exposure limit for the PCS and AWS bands is 1000 $\mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **Route 2, Preston, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 GSM / UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel
- 2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 5) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

- 6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antennas used in this modeling are the **Ericsson AIR21 (B4A/B2P & B2A/B4P)** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 (B4A/B2P & B2A/B4P)** have a maximum gain of **15.9 dBd** at their main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antenna mounting height centerline of the proposed antennas is **129 feet** above ground level (AGL).
- 9) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	129	Height (AGL):	129	Height (AGL):	129
Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)
Channel Count	2	Channel Count	2	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	1.11	Antenna B1 MPE%	1.11	Antenna C1 MPE%	1.11
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	129	Height (AGL):	129	Height (AGL):	129
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power:	120	Total TX Power:	120	Total TX Power:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A2 MPE%	1.11	Antenna B2 MPE%	1.11	Antenna C2 MPE%	1.11
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	129	Height (AGL):	129	Height (AGL):	129
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.44	Antenna B3 MPE%	0.44	Antenna C3 MPE%	0.44

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	2.66 %
AT&T	2.47 %
MetroPCS	0.40 %
Verizon Wireless	1.25 %
Sprint	0.22 %
Site Total MPE %:	7.00 %

T-Mobile Sector 1 Total:	2.66 %
T-Mobile Sector 2 Total:	2.66 %
T-Mobile Sector 3 Total:	2.66 %
Site Total:	7.00 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	2	2334.27	129	11.09	2100	1000	1.11%
T-Mobile 700 MHz LTE	1	865.21	129	2.06	700	467	0.44 %
T-Mobile 1900 MHz (PCS) GSM/UMTS	2	1167.14	129	5.55	1900	1000	0.55 %
T-Mobile 2100 MHz (AWS) UMTS	2	1167.14	129	5.55	2100	1000	0.55 %
						Total:	2.66%

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	2.66 %
Sector 2:	2.66 %
Sector 3 :	2.66 %
T-Mobile Per Sector Maximum:	2.66 %
Site Total:	7.00 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **7.00%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.



Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

December 8, 2015

Kimberly Myl
Crown Castle
1200 MacArthur Boulevard, Suite 200
Mahwah, NJ 07430

RE: **EM-T-MOBILE-114-151204** - T-Mobile notice of intent to modify an existing telecommunications facility located at 389 Route 2, Preston, Connecticut.

Dear Ms. Myl:

The Connecticut Siting Council (Council) received a notice of intent to modify the above-referenced facility on December 4, 2015.

Council staff has identified the following discrepancy:

- The decision in which the facility was approved and the conditions of approval are not given, and so it is unclear whether this modification would violate the municipality's conditions of approval.

The rationale for the request for information regarding municipal conditions of approval originates from the FCC Wireless Infrastructure Report and Order for eligible facilities requests to comply with any conditions of the original approval for an existing tower.

Therefore, the notice of intent to modify an existing telecommunications facility is incomplete at this time. This notice of incompleteness shall have the effect of tolling the Federal Communications Commission (FCC) 60-day timeframe in accordance with Paragraph 217 of the FCC Wireless Infrastructure Report and Order issued on October 21, 2014 (FCC 14-153).

The Council recommends that T-Mobile provide information to clarify or fulfill the deficiency noted above.

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Very truly yours,

Melanie Bachman
Acting Executive Director

MAB/CH

c: The Honorable Robert M. Congdon, First Selectman, Town of Preston
Kathy Warzecha, Town Planner, Town of Preston



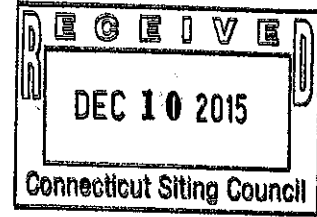
Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

December 9, 2015

em-t-mobile-114-151204

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

ORIGINAL



RE: Notice of Exempt Modification for T-Mobile / L700 Crown Site BU: 876360
T-Mobile Site ID: CT11441A
389 Route 2, Preston, CT 06365
Latitude: 41° 29' 25.25" / Longitude: -71° 59' 29.55"

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 129 foot level of the existing 147 foot monopole at 389 Route 2 in Preston, CT. The tower is owned by Crown Castle. The property is owned by the Town of Preston. T-Mobile now intends to remove existing MetroPCS antennas, mounts and coax at a centerline elevation of 110', proposed installation of three (3) antennas and three (3) RRU's new 700MHz antennas. These antennas would be installed at the 129 foot level of the tower.

This facility was approved by the Preston Planning and Zoning Commission in Site Plan # 2-00 on April 4, 2000. This approval included the condition(s) that:

1. A bond be posted for the site work in the amount of \$64,500.00, and bond be posted for the monopole removal in the amount of \$42,000.00.
2. A fall easement be obtained around the monopole that is equal to the height of the monopole (150 feet). The easement area should be shown on the plan.

This modification complies with the aforementioned condition(s).

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.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Robert Congdon, First Selectman for the Town of Preston, as well as the property owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modification 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 Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Kimberly Myl

Sincerely,



Kimberly Myl
Real Estate Specialist
Crown Castle
1200 MacArthur Boulevard, Suite 200
Mahwah, New Jersey 07430
201-236-9069
kimberly.myl@crowncastle.com

Attachments:

- Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
- Tab 2: Exhibit-2: Structural Modification Report
- Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Robert Congdon, First Selectman
Town of Preston
389 Route 2
Preston, CT 06365

Town of Preston
389 Route 2
Preston, CT 06365-8830



TOWN OF PRESTON
TOWN OFFICES
389 ROUTE 2
PRESTON, CONNECTICUT 06360

FILE COPY

Date: April 5, 2000

Certified Mail

Sprint Spectrum, L.P.
One International Blvd
Suite 800 Mahwah New, Jersey 07495

Dear Attorney Regan:

At the regular meeting of the Preston Planning and Zoning Commission held on April 4, 2000, the Commission reviewed application **Site Plan # 2-00** for the installation of a monopole and other associated work at 389 Route 2.

The Commission voted unanimously to approve the subject application with the following modifications:

1. A bond be posted for the site work in the amount of \$64,500.00, and bond be posted for the monopole removal in the amount of \$42,000.00.
2. A fall easement be obtained around the monopole that is equal to the height of the monopole (150 feet). The easement area should be shown on the plan.

Please provide one mylar copy of the plan revised in accordance with the above noted and produced or reproduced in compliance with section 7-31 of the Connecticut General Statutes regarding requirements for the filing of a map. In addition, provide two (2) paper copies. After endorsement of the plan by the Chairman, the mylar copy of the plan must be filed with the Town Clerk's office.

BONDING: Prior to the endorsement of the plan the two bonds in the amount of **\$64,500.00 (site work bond)** and **\$42,000.00 (tower removal bond)** must be filed with the Commission using the format as approved by the Commission. Please use bond forms that were previously provided. The Town will hold the bonds until such time the Commission approves their reduction or release. Any plan filed without the appropriate bond will be considered to be in violation with the approved plan and zoning regulations. In order for the Commission to consider a bond release or reduction, a letter requesting a release or reduction must be submitted to the Planning and Zoning Office two (2) weeks prior to the regularly scheduled meeting. This will allow adequate time to conduct a site inspection of the completed work. Unauthorized work could result in delays with the bond release or reduction by the Commission.

OTHER PERMITS REQUIRED: Prior to the commencement of any work, a zoning permit and other subsequent town and state permits must be obtained.

SITE INSPECTIONS: During the construction of the project, inspections will be conducted of the progress by the town staff. A forty-eight hour notice is required for the inspections. In the event that there is concern with the location of the structure, parking etc, the Zoning Enforcement Officer may require that a land surveyor licensed in the State of Connecticut locate the structure prior to construction. Failure to provide notice to the town of the work and failure to construct the project as shown on the plan without prior approval of the changes could result in problems with the issuance of Certificate of Occupancy and the release or reduction of the bond. Please contact the Planning and Zoning Office at 889-2529 to schedule an appointment to inspect the project at the following times:

1. After the installation of the erosion and sediment control.
2. After the structure has been staked out and the footings are to be placed.
3. After the parking and sidewalks have been staked out.
4. Completion of the project.

If there are any questions regarding this application or if the staff can be of any assistance at any time during the project construction, please do not hesitate to contact the office.

Congratulations on the success completion of the application.

Very truly yours,

Daniel Kulesza (KW)

Daniel Kulesza
Planning and Zoning Commission Chairman

cc: ZEO
First Selectman
Building Inspector

d) Site Plans:

i) Site Plan #2-00, Sprint Spectrum, L.P. dba Sprint PCS, applicant; Town of Preston, owner, applicant desires to construct a wireless communication facility on property located at 389 Route 2:

The Town Planner reviewed with the commission the application for a communications tower.

This application was originally to locate the tower on the Mattern property. The commission had requested that Sprint look at other locations in town, specifically in the Resort Commercial District.

The tower will be located on town property at 389 Route 2. The applicant will lease a 100 ft. by 100 ft. square access driveway. The tower will be 150 ft in height in an 87 by 87 foot compound. The driveway will be 14 ft. in width with a 6 inch layer of stone dust.

The application is consistent with the regulations.

A site bond of \$64,500 will be required.

A decommissioning bond of \$42,000 will also be required.

The applicant will need to provide a fall easement.

Tom Regan representing Sprint informed the commission that a communications tower was moved in Ledyard recently. This move changed the location in Preston where a tower needed to be located to provide adequate coverage. The town hall location is the best location.

W. Champagne asked if the compound could be seen from Route 2?

Tom Regan: The area slopes down and is heavily wooded. It shouldn't be seen.

Planner Warzecha noted that the plan could be approved with the addition of the bonds and a fall zone easement.

A motion was made by W. Champagne and seconded by J. Kendall to approve Site Plan #2-00, Sprint Spectrum, L.P. dba Sprint PCS, applicant; Town of Preston, owner, applicant to construct a wireless communication facility on property located at 389 Route 2 with two modifications:

1. Two bonds be posted. A site bond for \$64,500. A decommissioning bond of \$42,000.
2. A fall zone easement with a 150 ft. circumference be provided.

So Voted

ii) Site Plan #3-00, Joseph Balint, applicant Mildred Peringer, owner; applicant desires to construct an addition to an existing commercial building. Property located at 127 Route 12:

The Town Planner provided the commission with an overview of the proposal. Mr. Balint is proposing to add a 825 sq. ft. addition to his store, The Fish Connection. His commercial store is located in a C-1 zone and is located at 127 Route 12.

This is a legal non-conforming lot. Everything will remain the same. There are 9 parking spaces in the front. The existing residence will remain. The septic is adequate and city water is provided.

Planner Warzecha has added to the site plan all the required information.

1. Key Map