

CONNECTICUT SITING COUNCIL

SUB-PETITION OF NEW CINGULAR WIRELESS)
PCS, LLC ("AT&T") TO THE CONNECTICUT)
SITING COUNCIL FOR MODIFICATION AND)
EXTENSION OF AN EXISTING WIRELESS) SUB-PETITION NO. ____
TELECOMMUNICATIONS FACILITY AT)
985 FARMINGTON AVENUE, BRISTOL,) JUNE 6, 2023
CONNECTICUT)

SUB-PETITION FOR DECLARATORY RULING TO
APPROVE ELIGIBLE FACILITIES REQUEST FOR MODIFICATION AND EXTENSION OF AN
EXISTING WIRELESS TELECOMMUNICATIONS FACILITY
WITHOUT SUBSTANTIAL PHYSICAL CHANGE TO THE EXISTING TOWER AT
985 FARMINGTON AVENUE, BRISTOL, CONNECTICUT

I. Introduction

On behalf of New Cingular Wireless PCS, LLC ("AT&T"), we respectfully submit this letter and enclosures seeking administrative approval of a needed modification with an extension of an existing facility pursuant to Section 6409 of the Federal Middle-Class Tax Relief and Job Creation Act of 2012 ("Section 6409"). AT&T hereby petitions the Connecticut Siting Council ("Council") to modify the existing 119' monopole with internally mounted antennas ("unipole") and grade-level equipment ("Facility") at 985 Farmington Avenue, Bristol, Connecticut (the "Premises"). More specifically, AT&T is proposing to collocate its facility on the existing 119' unipole with an approximately 12' extension for installation of internally mounted antennas at a centerline height of 126' and a small expansion of the existing fenced equipment area at grade for ground equipment and an emergency back-up diesel generator. None of this work represents a substantial change to the existing Facility.

II. Existing Facility and Site Background

The Facility consists of a 119' unipole owned by Crown Castle that supports a T-Mobile wireless facility. Review of the Siting Council database reveals that exempt modifications were issued to T-Mobile in 2009 and 2013 for upgrades to its existing facility. (See EM-T-MOBILE-017-130729 and EM-T-MOBILE-017-090429).¹ A chain link fence surrounds the Facility. The Premises is an approximately 1.58-acre parcel owned by Farmington Ave Professional LLC and consists mostly of commercial and residential structures. A copy of the Letter of Authorization is included in Attachment 4. The Facility is located in the rear of the Premises.

III. Proposed Modification

AT&T plans to extend the Facility by approximately 12' bringing the Facility's total height to 131'. AT&T would internally mount (3) three panel antennas at a centerline height of

¹ The Siting Council database also includes an exempt modification for Pocket: EM-POCKET-017-10020. The T-Mobile exempt modifications indicate that the facility was originally a flagpole with internally mounted antennas.

approximately 126' among 3 sectors. Each sector will have 1 antenna, consisting of the following model number manufactured by Kathrein: 800372965. Cables will also be routed within the pole. Additionally, AT&T proposes to expand the existing fenced equipment area at the base on the pole with an approximately 12' by 15'-6" extension for the installation of equipment; 20kW diesel emergency back-up generator and six RRHs. Site drawings for the proposed modification prepared by Hudson Design Group LLP, last updated October 4, 2022, are included in Attachment 1. The Structural Modification Report included in Attachment 2 confirms that the tower can accommodate AT&T's proposed collocation upon structural modifications as detailed in the enclosed GPD Engineering drawings dated December 1, 2021.²

IV. The Modification Does Not Represent a Substantial Change to the Physical Dimensions of the Existing Tower and is an Eligible Facilities Request

Section 6409 requires that within 60 days of submission, a state or local agency must approve an "eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station."³ Section 6409 and the FCC Regulations provide that a modification does not constitute a "substantially change" of the physical dimensions of a tower if it meets the following criteria:⁴

- A. Modification does not increase the height by more than the greater of 10% of the tower height or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed 20'. AT&T is proposing to extend the 119' tower by 12', or 10% of the tower height. AT&T's proposed extension does not constitute more than one additional antenna array with separation from the nearest existing antenna of more than 20'.
- B. Modification does not add an appurtenance to the body of the tower that would protrude from the edge of the tower by the greater of 20' or the width of the tower at the level of the appurtenance, whichever is greater. AT&T's proposed antennas will be internally mounted within the extension.
- C. Modification does not involve installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets. Two cabinets are proposed.
- D. It entails any excavation or deployment outside of the current site, except that, for towers other than towers in the public rights-of-way, it entails any excavation or deployment of transmission equipment outside of the current site by more than 30 feet in any direction. The site boundary from which the 30 feet is measured excludes any access or utility easements currently related to the site. The existing tower is not located within a public right-of-way and the proposed extension of the existing fenced equipment area does not exceed 30 feet in any direction.
- E. The collocation does not defeat the existing concealment elements of the tower or base station. AT&T's modification will not defeat the existing concealment elements of its Facility. The proposed extension includes an antenna shroud for the internal mounting of the antennas.

² Appendices A-D included in the Structural Modification Report are being filed as a bulk filing.

³ 47 USCA § 1455(a)(1).

⁴ 47 CFR § 1.6100(b)(7).

- F. The proposal complies with conditions associated with the prior approval of the tower or base station and any non-compliance is due to an increase in height, increase in width, addition of cabinets, or new excavation that does not exceed the corresponding “substantial change” thresholds. The proposed modifications comply with the parameters allowed under Section 6409.

In light of the foregoing, AT&T’s proposal constitutes an “eligible facilities request” under Section 6409 as it is a “replacement of transmission equipment” at the existing Facility which does not constitute a “substantial change” to the physical dimensions of the existing facility.

V. Compliance with FCC MPE Limits

The Facility will be within 1.34% of the Federal and State emission standards for the general public. A copy of the Calculated Radio Frequency Emissions Report completed C Squared Systems, LLC, dated February 28, 2023 is included in Attachment 3. The analysis is cumulative and includes the existing wireless carriers’ facilities as well as AT&T’s proposed modification. The analysis demonstrates that the total radio frequency power density will be well within standards adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes and the Maximum Permissible Exposure (“MPE”) limits established by the Federal Communications Commission for the public.

VI. Notice

Pursuant to Petition 1133, a notice letter and a copy of this Sub-Petition was provided to the City of Bristol and the abutting property owners. Copies of this correspondence may be found in Attachment 5.

VII. Conclusion

It is respectfully submitted that AT&T’s proposal satisfies the criteria of Section 6409, while also enhancing wireless communication services to the community and enabling users to access a state-of-the-art, digital system for voice communications, messaging, and data transmission and reception.

Respectfully submitted,



Lucia Chiochio
On behalf of AT&T

cc: City of Bristol
Abutting Property Owners
AT&T
Crown Castle
Maximillian Mahalek, Esq.

Attachment 1

PROJECT INFORMATION	
SCOPE OF WORK:	TELECOMMUNICATIONS FACILITY (NSB A EXISTING 119'-0" A.G.L. TALL FLAGPOLE WITH PROPOSED 12' EXTENSION. PROPOSED GENERATOR, POWER PLANT, TWO PURCELL CABINETS, METER, PPC, TELCO BOX, TWO DC-12, SIX RRH'S AND THIRTY-SIX SURGE ARRESTORS AND WILL BE INSTALLED AT GRADE INSIDE A PROPOSED EXTENSION TO AN EXISTING FENCED-IN COMPOUND. PROPOSED THREE PANEL ANTENNAS SIX TWIN TMAS WILL BE INSTALLED AT A HEIGHT OF 126'-0" A.G.L.):
SITE ADDRESS:	985 FARMINGTON AVE BRISTOL, CT 06010
APPLICANT:	AT&T 550 COCHITUATE ROAD FRAMINGHAM, MA 01701
SITE OWNER:	FARMINGTON AVE PROFESSIONAL LLC 985 FARMINGTON AVE BRISTOL, CT 06010
TOWER OWNER:	CROWN CASTLE
LATITUDE:	41.69562 N, 41° 41' 44.2" N
LONGITUDE:	72.91127 W, 72° 54' 40.6" W
TYPE OF SITE:	FLAGPOLE/ OUTDOOR EQUIPMENT
TOWER HEIGHT:	131'-0"±
RAD CENTER:	126'-0"±



SITE NAME: BRISTOL FARMINGTON AVE

FA CODE:13934132

**PACE ID: MRCTB047893, MRCTB032798, MRCTB036536,
MRCTB036450**

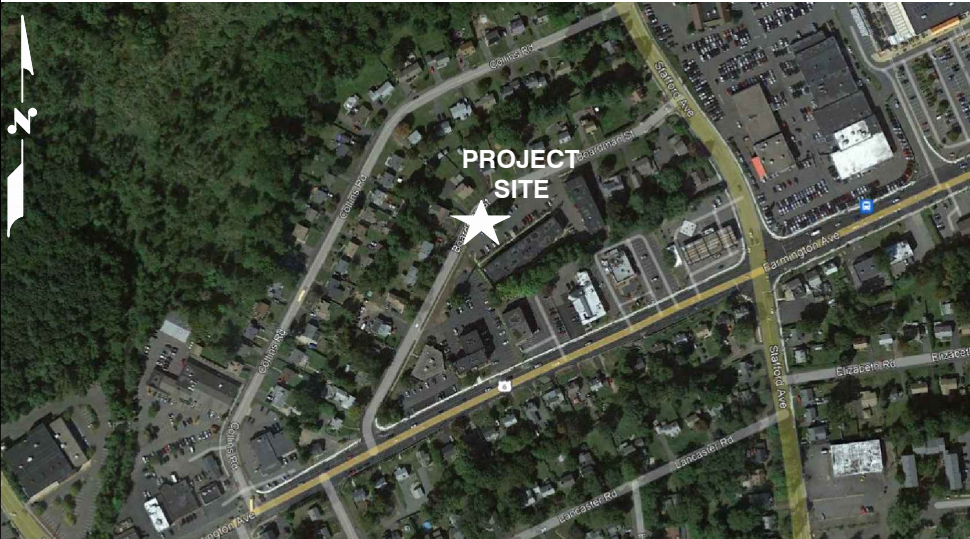
PROJECT: NSB

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	3
GN-1	GENERAL NOTES	3
SN-1	SPECIAL INSPECTION NOTES	3
A-1	COMPOUND & EQUIPMENT PLANS	3
A-2	ANTENNA LAYOUT & ELEVATIONS	3
A-3	DETAILS	3
A-4	DETAILS	3
A-5	DETAILS	3
A-6	DETAILS	3
E-1	ELECTRICAL NOTES & ONE-LINE DIAGRAM	3
G-1	GROUNDING DETAILS	3
RF-1	RF PLUMBING DIAGRAM	3

VICINITY MAP

DIRECTIONS TO SITE:

DEPART AND HEAD (NORTHEAST). TURN RIGHT, THEN IMMEDIATELY TURN LEFT ONTO LEGGATT MCCALL CONNECTOR RD. BEAR LEFT ONTO BURR ST. TURN LEFT ONTO MA-30 / COCHITUATE RD. TAKE THE RAMP ON THE RIGHT FOR I-90 EAST / I-90 WEST AND HEAD TOWARD BOSTON / SPRINGFIELD. AT EXIT 78, HEAD RIGHT ON THE RAMP FOR I-84 TOWARD HARTFORD / NEW YORK CITY. AT EXIT 38, HEAD RIGHT ON THE RAMP FOR US-6 WEST TOWARD BRISTOL. TURN RIGHT. 985 FARMINGTON AVE WILL BE ON THE LEFT.



DIRECTIONS TO SITE:

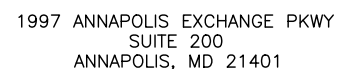
DEPART AND HEAD (NORTHEAST). TURN RIGHT, THEN IMMEDIATELY TURN LEFT ONTO LEGGATT MCCALL CONNECTOR RD. BEAR LEFT ONTO BURR ST. TURN LEFT ONTO MA-30 / COCHITUATE RD. TAKE THE RAMP ON THE RIGHT FOR I-90 EAST / I-90 WEST AND HEAD TOWARD BOSTON / SPRINGFIELD. AT EXIT 78, HEAD RIGHT ON THE RAMP FOR I-84 TOWARD HARTFORD / NEW YORK CITY. AT EXIT 38, HEAD RIGHT ON THE RAMP FOR US-6 WEST TOWARD BRISTOL. TURN RIGHT. 985 FARMINGTON AVE WILL BE ON THE LEFT.

- ## 72 HOURS

CALL
BEFORE YOU DIG


CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT



985 FARMINGTON AVE
BRISTOL, CT 06010
HARTFORD COUNTY



3	10/04/22	ISSUED FOR CONSTRUCTION	MJ	JC	DPH		AT&T		
2	09/07/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH				
1	08/24/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH		TITLE SHEET		
0	10/13/21	ISSUED FOR REVIEW	CC	JC	DPH		(NSB)		
NO.	DATE	REVISIONS	BY	CHK	APP'D				
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: CC			SEE NUMBER	DRAWING NUMBER	REV	
						CT1364	T-1	3	

GROUNDING NOTES

1. THE SUBCONTRACTOR 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 SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. 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 BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR – SMARTLINK
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR 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 CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR 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.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR 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.
19. 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.
20. APPLICABLE BUILDING CODES:

SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL

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

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		



45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845

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FAX: (978) 336-5586



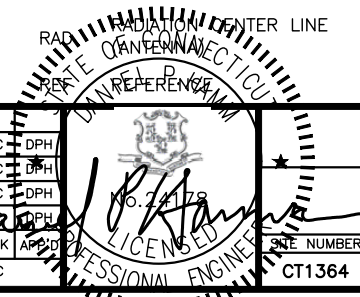
1997 ANNAPOLIS EXCHANGE PKWY
SUITE 200
ANNAPOLIS, MD 21401

SITE NUMBER: CT1364
SITE NAME: BRISTOL FARMINGTON AVE

985 FARMINGTON AVE
BRISTOL, CT 06010
HARTFORD COUNTY



550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

3	10/04/22	ISSUED FOR CONSTRUCTION	MJ	JC	DPH		AT&T		
2	09/07/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH		GENERAL NOTES		
1	08/24/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH		(NSB)		
0	10/13/21	ISSUED FOR REVIEW	CC	JC	DPH				
NO.	DATE	REVISIONS	BY	CHK	APP'D		SHEET NUMBER	DRAWING NUMBER	REV
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: CC				CT1364	GN-1	3

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

NOTES:

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

NOTES:

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

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	ENGINEER OF RECORD APPROVED SHOP DRAWINGS ¹
REQUIRED	MATERIAL SPECIFICATIONS REPORT ²
N/A	FABRICATOR NDE INSPECTION
REQUIRED	PACKING SLIPS ³

ADDITIONAL TESTING AND INSPECTIONS:

DURING CONSTRUCTION

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS ⁴
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION ⁵
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT

ADDITIONAL TESTING AND INSPECTIONS:

AFTER CONSTRUCTION

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS ⁶
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS

ADDITIONAL TESTING AND INSPECTIONS:



45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586



1997 ANNAPOLIS EXCHANGE PKWY
SUITE 200
ANNAPOLIS, MD 21401

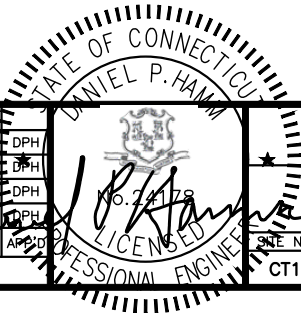
SITE NUMBER: CT1364
SITE NAME: BRISTOL FARMINGTON AVE

985 FARMINGTON AVE
BRISTOL, CT 06010
HARTFORD COUNTY



550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

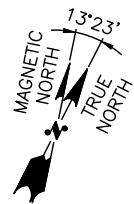
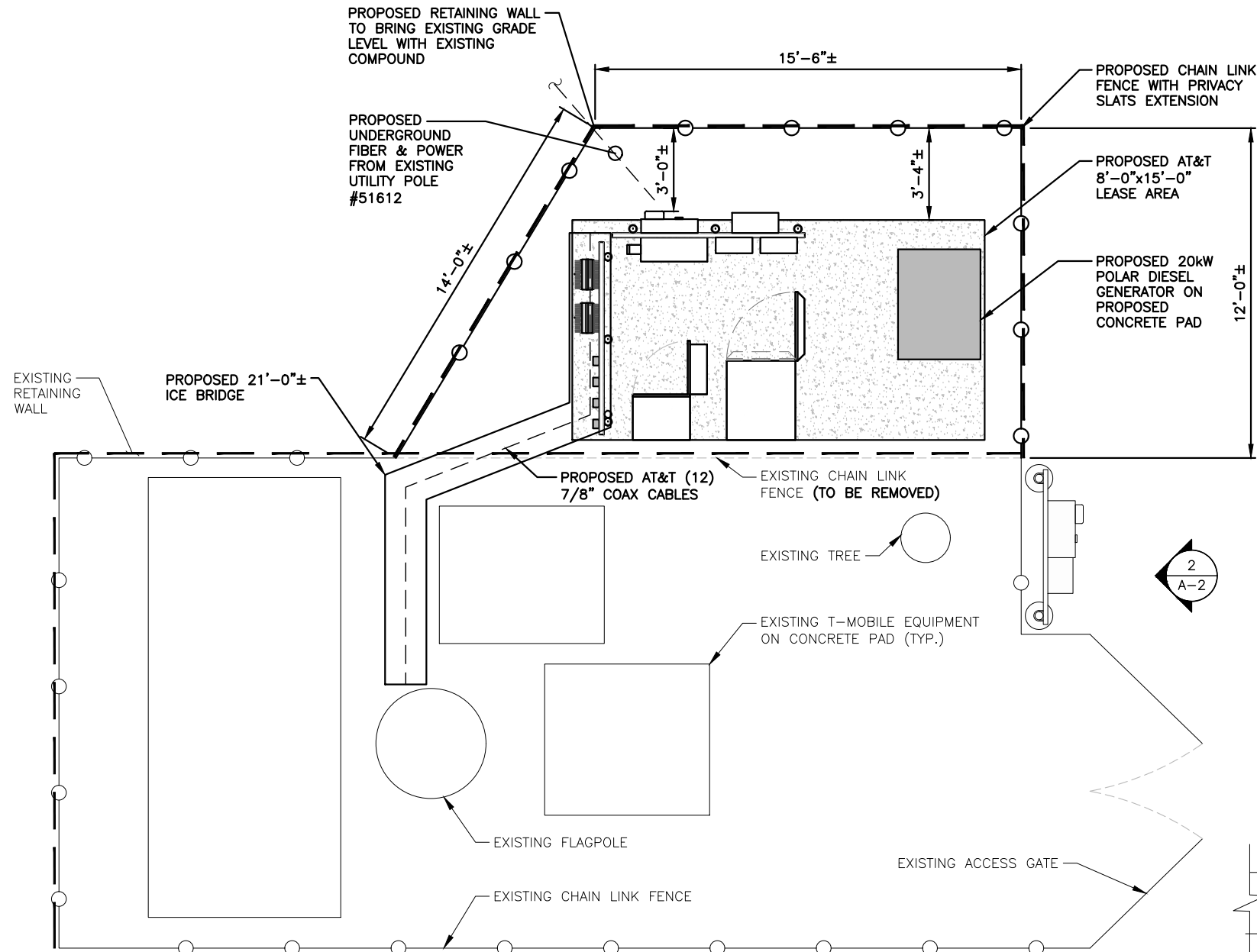
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2	09/07/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
1	08/24/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
0	10/13/21	ISSUED FOR REVIEW	CC	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: CC		



AT&T

STRUCTURAL NOTES
(NSB)

SHEET NUMBER	DRAWING NUMBER	REV
CT1364	SN-1	3

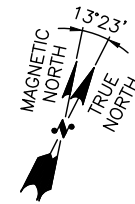
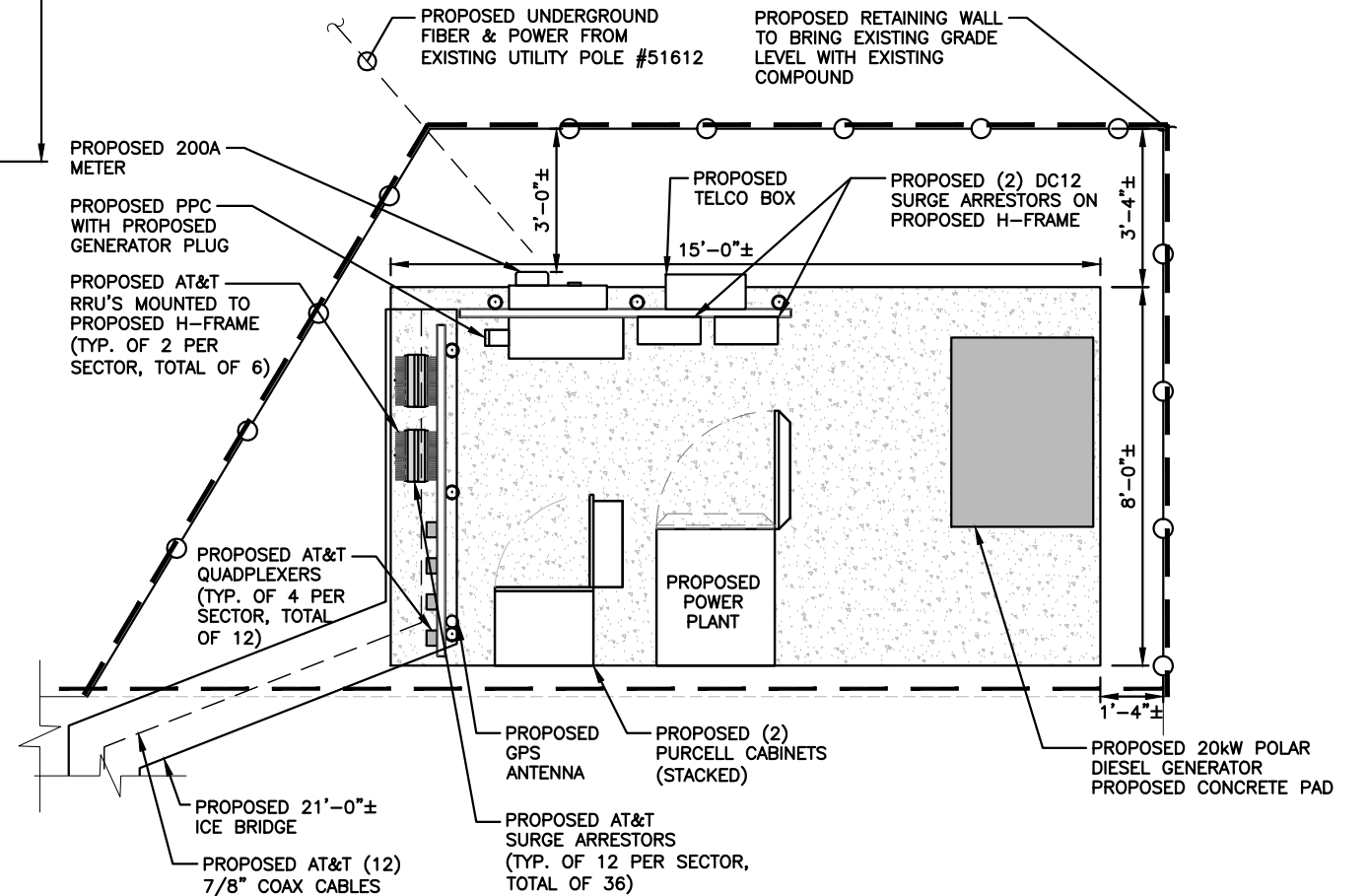


COMPOUND PLAN

22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

1
A-1

0 2'-8" 5'-4" 10'-8" 16'-0"



EQUIPMENT PLAN

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

2
A-1

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

NOTE:

REFER TO STRUCTURAL ANALYSIS AND TOWER MODIFICATION DRAWINGS BY: GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORP, DATED: DECEMBER 1, 2021, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT. MODIFICATIONS WILL BE NEEDED.

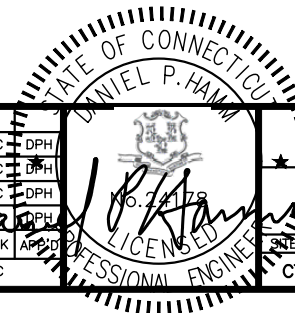
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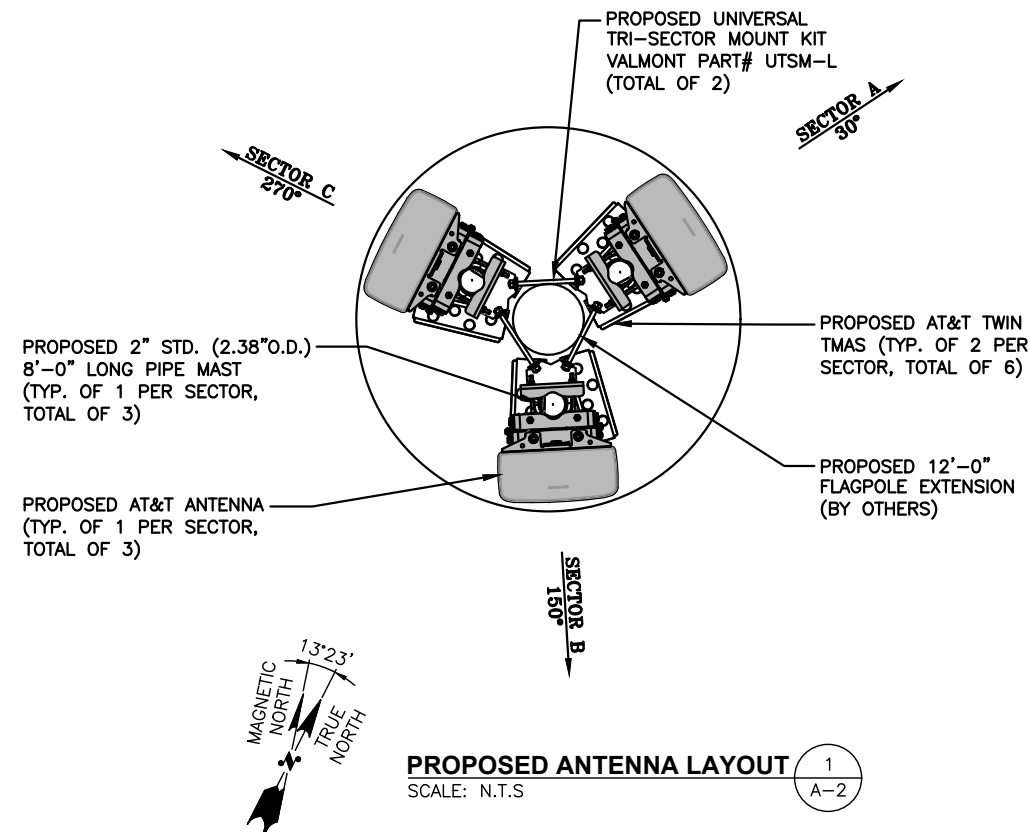
PROPOSED POWER, TELCO, & GROUNDING TO COME FROM EXISTING SOURCES (ROUTING TO BE DETERMINED)

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

3	10/04/22	ISSUED FOR CONSTRUCTION	MJ	JC	DPH
2	09/07/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
1	08/24/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
0	10/13/21	ISSUED FOR REVIEW	CC	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: CC		





TOP OF PROPOSED FLAGPOLE EXTENSION
ELEV. 131'-0" (AGL)

CL OF PROPOSED AT&T ANTENNAS
ELEV. 126'-0"± (AGL)

TOP OF EXISTING FLAGPOLE
ELEV. 119'-0"± (AGL)

PROPOSED 12' FLAGPOLE EXTENSION (BY OTHERS)

PROPOSED TOWER MODIFICATIONS FROM ELEV 103'-0" TO 131'-0". REFER TO STRUCTURAL ANALYSIS AND MODIFICATION DRAWINGS BY GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORPORATION DATED: DECEMBER 1, 2021

PROPOSED 4' X 12' ANTENNA SHROUD (TOTAL OF 1) (BY OTHERS)

PROPOSED AT&T ANTENNAS (TYP. OF 1 PER SECTOR, TOTAL OF 3)

PROPOSED AT&T TWIN TMAS (TYP. OF 2 PER SECTOR, TOTAL OF 6)

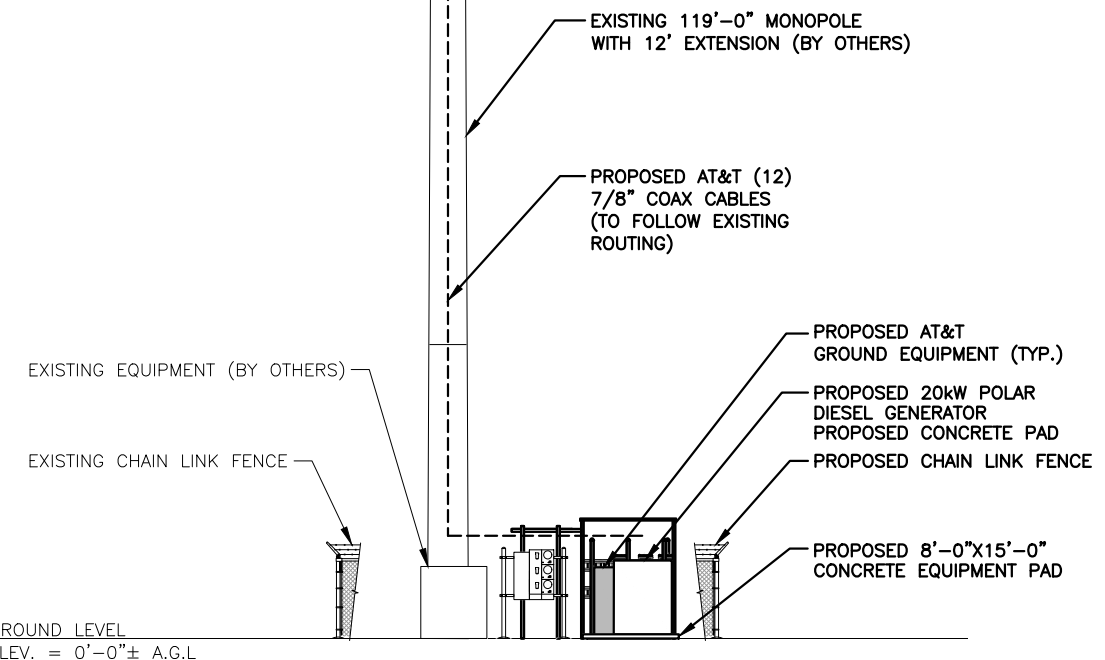
PROPOSED 4' X 10' ANTENNA SHROUD (TOTAL OF 2)

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

REFER TO STRUCTURAL ANALYSIS AND TOWER MODIFICATION DRAWINGS BY: GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORP., DATED: DECEMBER 1, 2021, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT. MODIFICATIONS WILL BE NEEDED.



NORTHEAST ELEVATION
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

2
A-2

0 4'-0" 8'-0" 16'-0"

NOTE:

REFER TO STRUCTURAL ANALYSIS AND TOWER MODIFICATION DRAWINGS BY: GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORP., DATED: DECEMBER 1, 2021, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT. MODIFICATIONS WILL BE NEEDED.

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

ANTENNA SCHEDULE											
SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA CL HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	PROPOSED	LTE 700 BC/ 850/PCS/AWS	800372965	77.9X14.9X6.5	126'-0"	30°	(P) (2) TMABPD7823VG12A (P) (G) (4) CQX6192123T-DS-43	(P) (G) (1) 4449 B5/B12 (P) (G) (1) 8843 B2/B66A	17.9X13.2X9.4 14.9X13.2X10.9	(P) (4) 7/8" COAX	(P) (12) TSXDC-4310FM
A2	-	-	-	-	-	-	-	-	-	-	-
A3	-	-	-	-	-	-	-	-	-	-	-
A4	-	-	-	-	-	-	-	-	-	-	-
B1	PROPOSED	LTE 700 BC/ 850/PCS/AWS	800372965	77.9X14.9X6.5	126'-0"	150°	(P) (2) TMABPD7823VG12A (P) (G) (4) CQX6192123T-DS-43	(P) (G) (1) 4449 B5/B12 (P) (G) (1) 8843 B2/B66A	17.9X13.2X9.4 14.9X13.2X10.9	(P) (4) 7/8" COAX	(P) (12) TSXDC-4310FM
B2	-	-	-	-	-	-	-	-	-	-	-
B3	-	-	-	-	-	-	-	-	-	-	-
B4	-	-	-	-	-	-	-	-	-	-	-
C1	PROPOSED	LTE 700 BC/ 850/PCS/AWS	800372965	77.9X14.9X6.5	126'-0"	270°	(P) (2) TMABPD7823VG12A (P) (G) (4) CQX6192123T-DS-43	(P) (G) (1) 4449 B5/B12 (P) (G) (1) 8843 B2/B66A	17.9X13.2X9.4 14.9X13.2X10.9	(P) (4) 7/8" COAX	(P) (12) TSXDC-4310FM
C2	-	-	-	-	-	-	-	-	-	-	-
C3	-	-	-	-	-	-	-	-	-	-	-
C4	-	-	-	-	-	-	-	-	-	-	-

PROPOSED 12'-0"
FLAGPOLE EXTENSION
(BY OTHERS)

PROPOSED UNIVERSAL
TRI-SECTOR MOUNT KIT
VALMONT PART# UTM-L
(TOTAL OF 2)

PROPOSED 2" STD. (2.38"O.D.)
8'-0" LONG PIPE MAST
(TYP. OF 1 PER SECTOR,
TOTAL OF 3)

PROPOSED AT&T ANTENNA
(TYP. OF 1 PER SECTOR,
TOTAL OF 3)

PROPOSED AT&T TWIN
TMAS (TYP. OF 2 PER
SECTOR, TOTAL OF 6)

CL OF PROPOSED AT&T
ANTENNAS
ELEV. = 126'-0"± A.G.L.

NOTE:

SEE RFDS FOR RRH
FREQUENCY AND
MODEL NUMBER

**PROPOSED SECTOR FRAME,
ANTENNA,SURGE SUPPRESSOR
& RRH'S MOUNTING DETAIL**

SCALE: N.T.S

2

A-3

NOTE:

HUDSON DESIGN GROUP DID NOT MAP
THIS TOWER. COAX AND ANTENNA
DESIGN IS BASED ON ANTENNA
FITMENT DETERMINATIONS BY CROWN
CASTLE.

NOTE:

SEE RFDS FOR RRH
FREQUENCY AND
MODEL NUMBER

PROPOSED RRU REFER TO THE
FINAL RFDS AND CHART FOR
QUANTITY, MODEL AND DIMENSIONS

NOTE:

MOUNT PER MANUFACTURER'S
SPECIFICATIONS.

PROPOSED RRUS DETAIL

SCALE: N.T.S

3

A-3

FINAL ANTENNA SCHEDULE

SCALE: N.T.S

1

A-3

PROPOSED 2-1/2"Ø
PIPE CAP (TYP.)

PROPOSED 2"Ø
H-FRAME POST (TYP.)

PROPOSED AT&T
RRU'S MOUNTED TO
PROPOSED H-FRAME
(TYP. OF 2 PER
SECTOR, TOTAL OF 6)

PROPOSED AT&T SURGE
ARRESTORS (TYP. OF 12 PER
SECTOR, TOTAL OF 36)

PROPOSED P1000
UNITSTRUT (TYP.)

PROPOSED 1/2"Ø
U-BOLT (TYP.)

PROPOSED AT&T
QUADPLEXERS
(TYP. OF 4 PER
SECTOR, TOTAL
OF 12)

NOTE:

ALL STEEL IS GALVANIZED.
ALL BOLTS TO BE FURNISHED
W/ WASHERS AND NUTS.

PROPOSED RRH MOUNTING DETAILS

SCALE: N.T.S

HDG HUDSON
Design Group LLC

45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

smartlink

1997 ANNAPOLIS EXCHANGE PKWY
SUITE 200
ANNAPOLIS, MD 21401

SITE NUMBER: CT1364
SITE NAME: BRISTOL FARMINGTON AVE

985 FARMINGTON AVE
BRISTOL, CT 06010
HARTFORD COUNTY

at&t

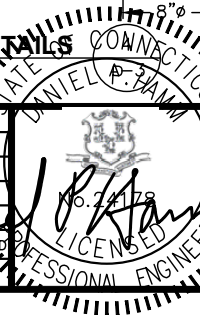
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
3	10/04/22	ISSUED FOR CONSTRUCTION	MJ	JC	DPH
2	09/07/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
1	08/24/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
0	10/13/21	ISSUED FOR REVIEW	CC	JC	DPH

SCALE: AS SHOWN

DESIGNED BY: JC

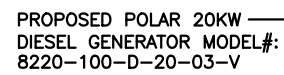
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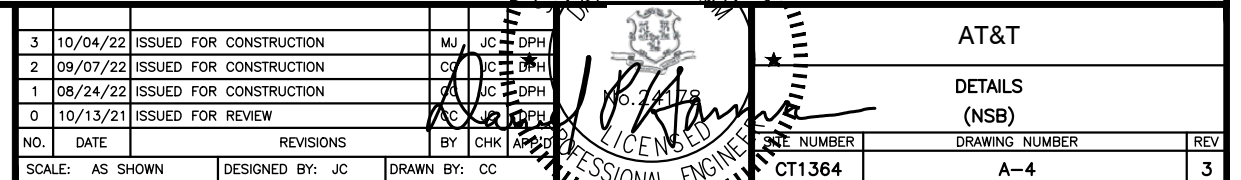
AT&T

ANTENNA LAYOUT & ELEVATION
(NSB)

DATE NUMBER	DRAWING NUMBER	REV
CT1364	A-3	3

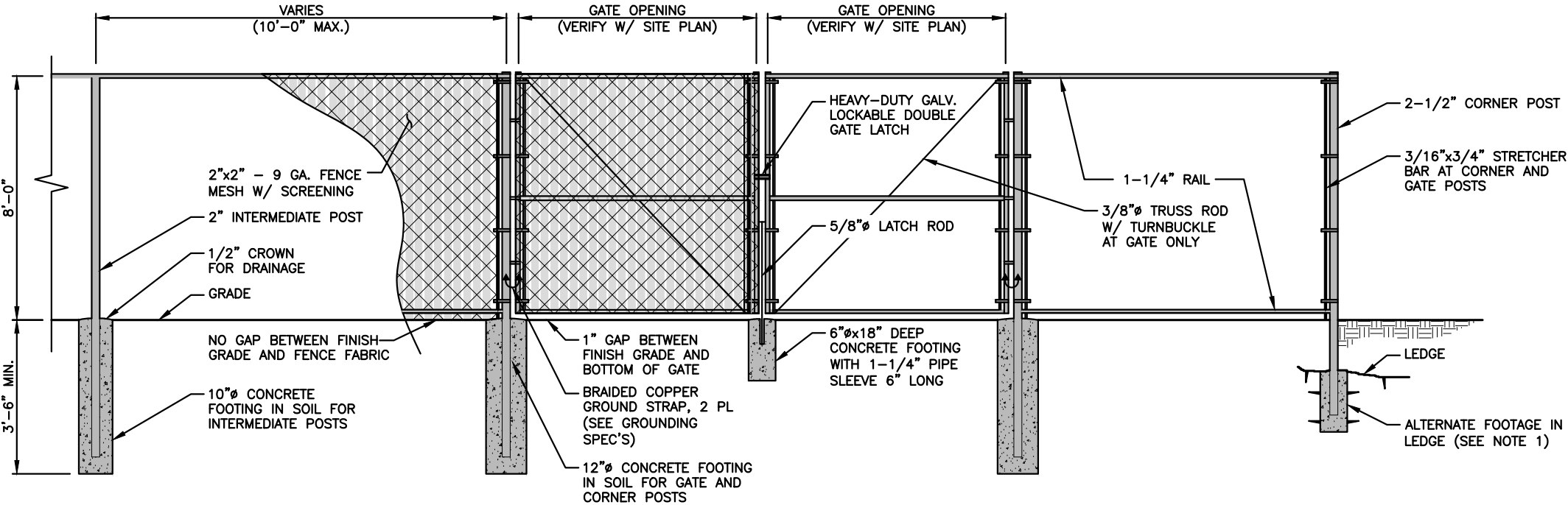


1. FOUNDATION AREA SHALL BE EXCAVATED TO THE DEPTH AND DIMENSIONS SHOWN ON THE PLANS. EXISTING LEDGE AND ALL OTHER EXISTING UNSUITABLE MATERIAL SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE. THE SUBGRADE SHALL BE ROLLED WITH A 1-TON, VIBRATORY, WALK-BEHIND ROLLER AT A SPEED OF LESS THAN 2 FPS, 6 PASSES MINIMUM, TO PROVIDE UNYIELDING SURFACE.
2. UNDERCUT SOFT OR "WEAVING" AREAS A MINIMUM OF 12 INCHES DEEP. BACKFILL UNDERCUT AREA WITH FILL MEETING THE SPECIFICATIONS OF STRUCTURAL FILL.
3. CONCRETE TO HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'_c)=4000 psi. CONCRETE TO BE AIR ENTRAINED, DESIRED AIR CONTENT TO BE 6% (PLUS OR MINUS 2%)
4. REINFORCING BAR TO BE ASTM A615 GRADE 60.
5. WELDED WIRE FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A185. WIRES FOR FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A82.
6. COORDINATE WITH MANUFACTURER OF PREFABRICATED SHELTER FOR LOCATION OF ATTACHMENTS TO BASE SLAB.
7. ALL REINFORCING TO HAVE MINIMUM CONCRETE COVER PER ACI SPECIFICATIONS.
8. ALL CONCRETE MATERIALS AND WORKMANSHIP SHALL CONFORM TO LATEST EDITION OF ACI 318 AND APPLICABLE STATE BUILDING CODE.



FENCE NOTES

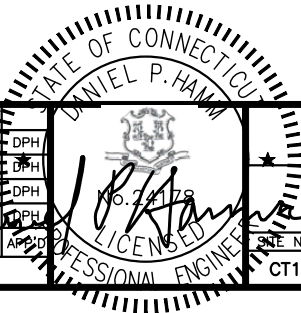
1. ALTERNATE FOOTINGS FOR ALL FENCE POSTS IN LEDGE: IF LEDGE IS ENCOUNTERED AT GRADE, OR AT A DEPTH SHALLOWER THAN 3'-6", CORE DRILL AN 8" DIA HOLE 18" INTO THE LEDGE. CENTER POST IN THE HOLE AND FILL WITH CONCRETE OR GROUT. IF LEDGE IS BELOW FINISH GRADE, COAT BACKFILLED SECTION OF POST WITH COAL TAR, AND BACKFILL WITH WELL-DRAINING GRAVEL.
2. ATTACH EACH GATE WITH 1-1/2" PAIR OF NON-LIFT-OFF TYPE, MALLEABLE IRON OR FORGING, PIN-TYPE HINGES. ASSEMBLIES SHALL ALLOW FOR 180° OF GATE TRAVEL.



CHAINLINK FENCE DETAIL
SCALE: N.T.S

1
A-5

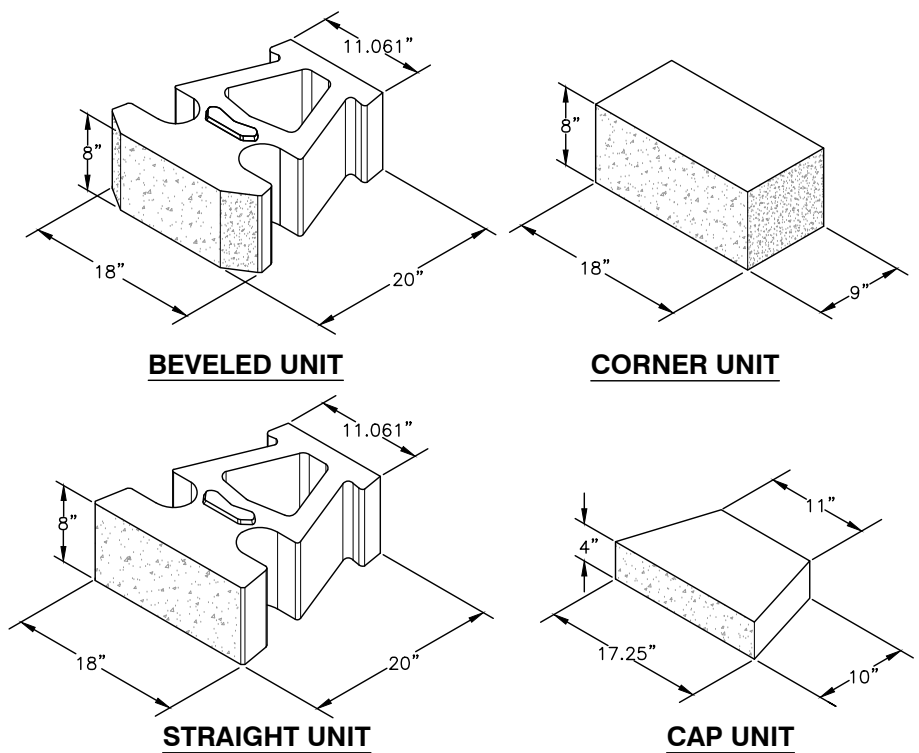
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2	09/07/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
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0	10/13/21	ISSUED FOR REVIEW	CC	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE:	AS SHOWN	DESIGNED BY: JC	DRAWN BY: CC		



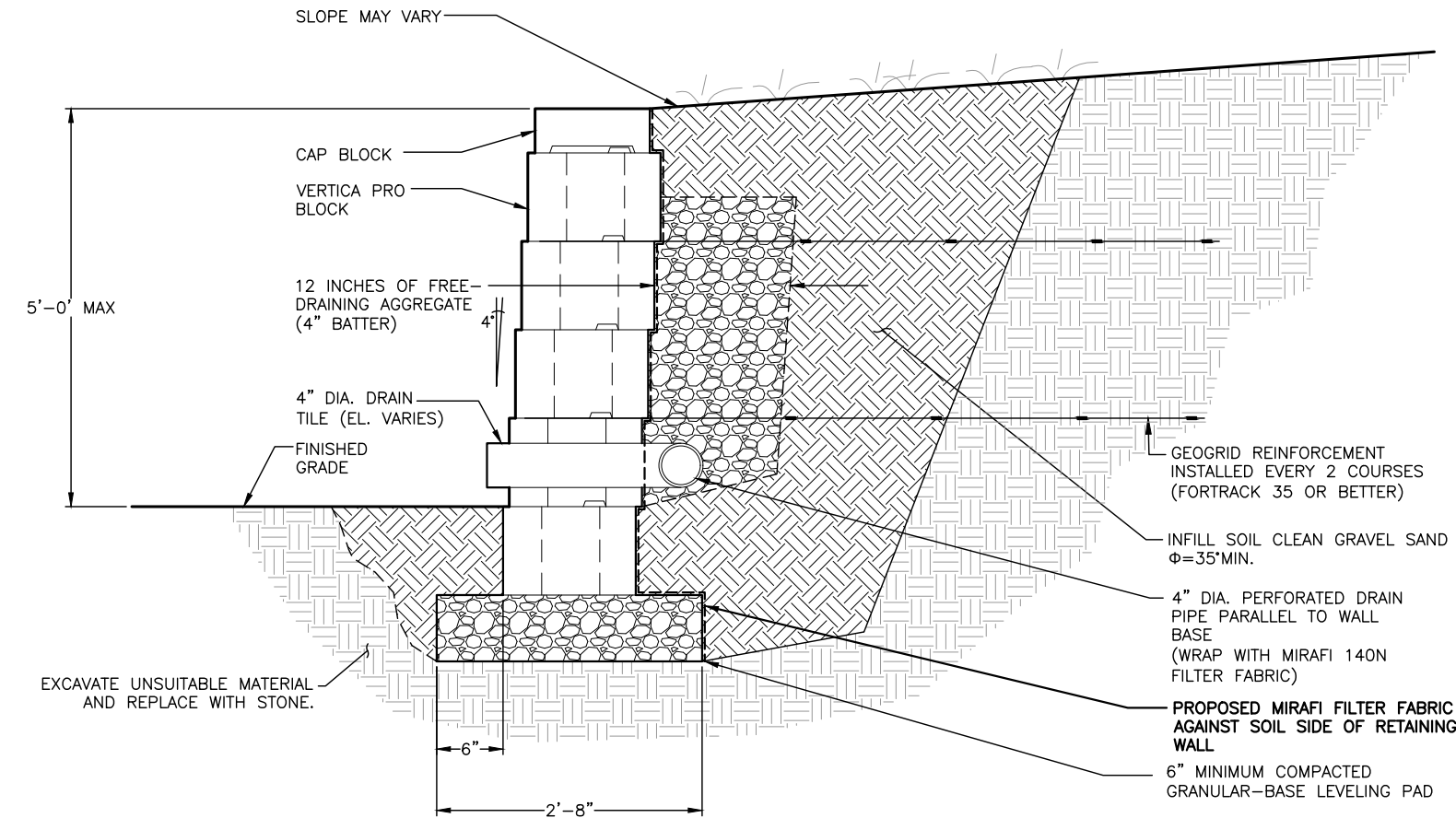
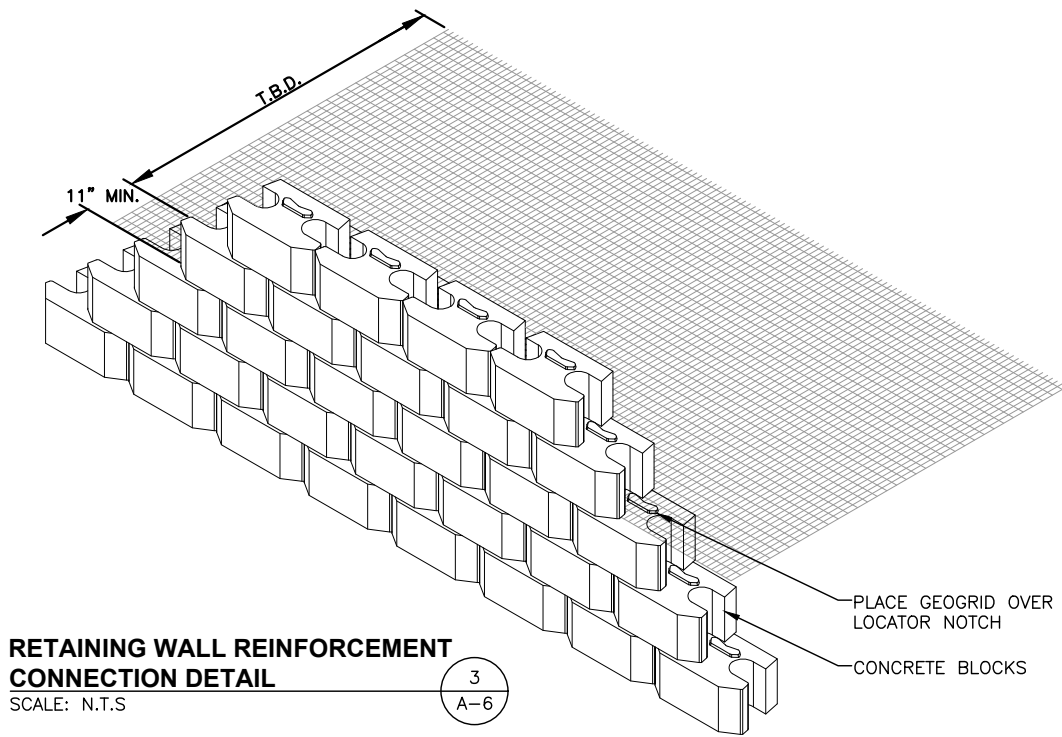
AT&T		
DETAILS (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1364	A-5	3

RETAINING WALL NOTES:

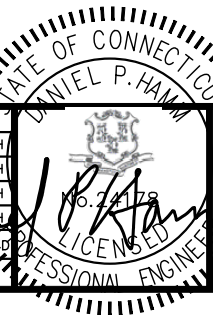
1. CONCRETE UNITS TO BE VERTICA PRO BLOCKS AS MANUFACTURED BY ANCHOR WALL SYSTEMS OR APPROVED EQUAL
2. DRAWINGS FOR SCHEMATIC & BIDDING PURPOSES ONLY. FINAL DESIGN BY VERTICA PRO (OR EQUAL).
3. WALL HEIGHT GREATER THAN 6 FEET WILL REQUIRE THE USE OF GEOSYNTHETIC REINFORCEMENT. CONSULT MANUFACTURER FOR PLACEMENT REQUIREMENTS.



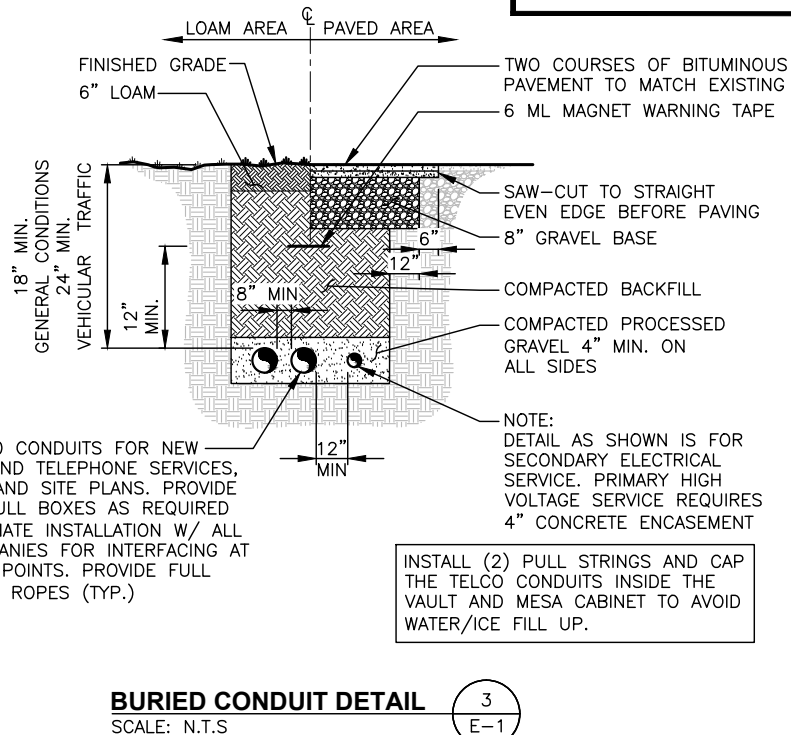
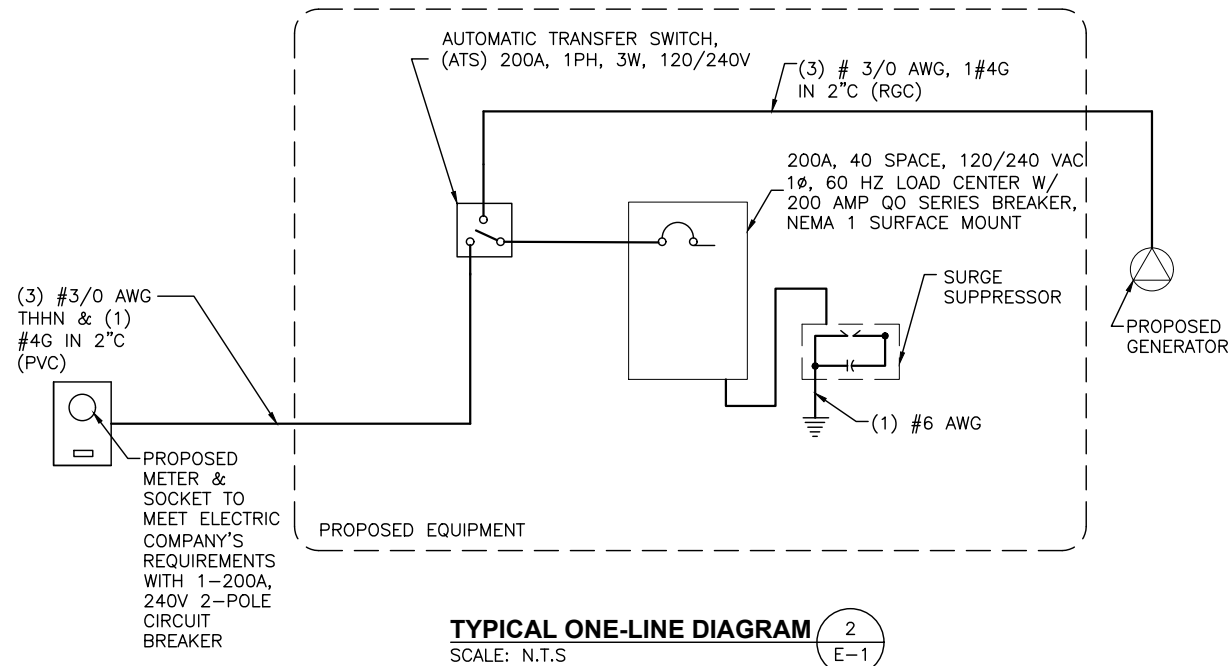
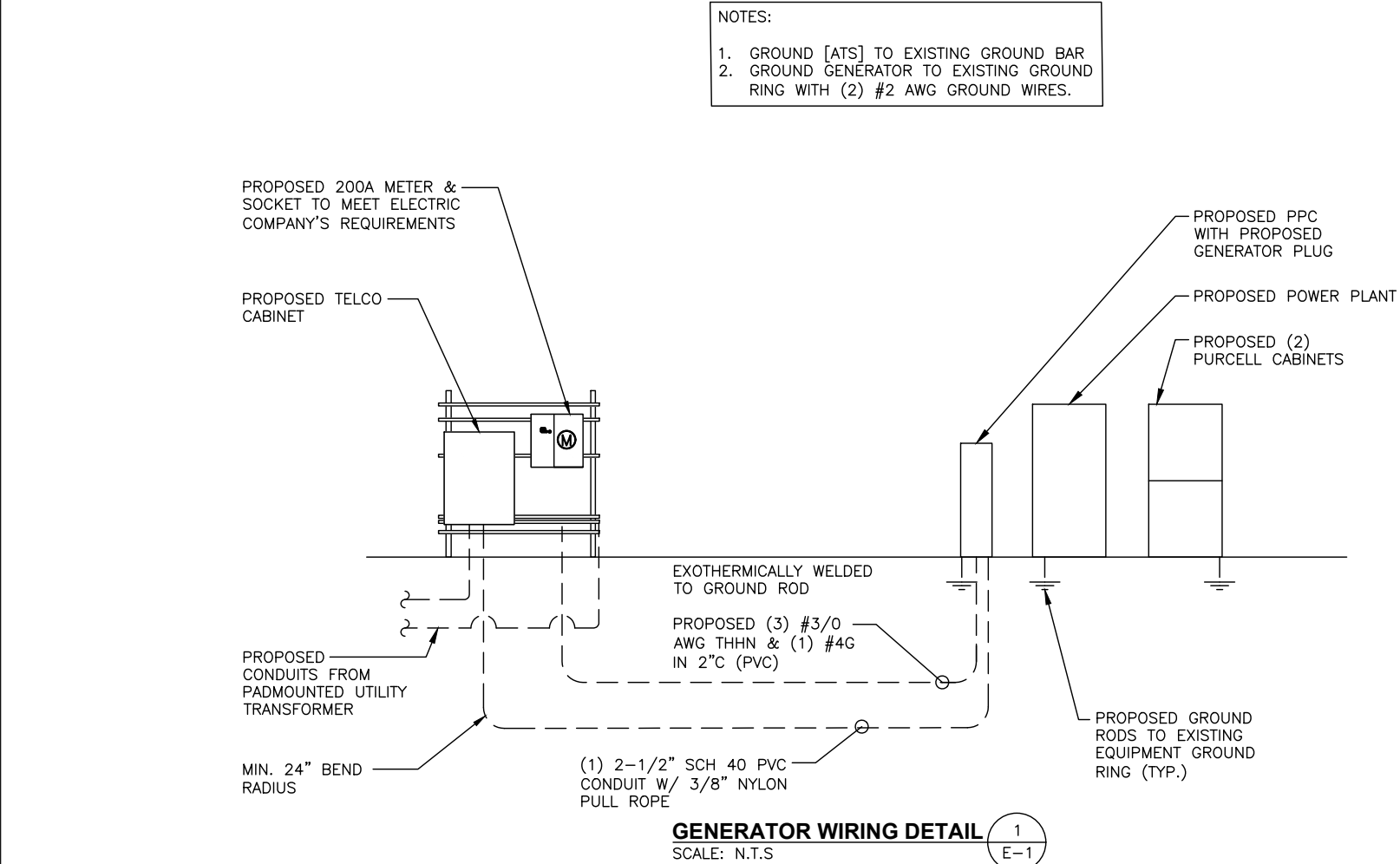
TYPICAL RETAINING WALL BLOCK DETAIL
SCALE: N.T.S.
2
A-6



NO.	DATE	REVISIONS	BY	CHK	APP'D
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2	09/07/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
1	08/24/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
0	10/13/21	ISSUED FOR REVIEW	CC	JC	DPH
SCALE:	AS SHOWN	DESIGNED BY: JC	DRAWN BY: CC		



AT&T	
DETAILS (NSB)	
SITE NUMBER	DRAWING NUMBER
CT1364	A-6
REV	3



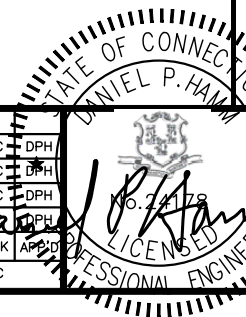
ELECTRICAL LEGEND & ABBREVIATIONS

	NEW PANEL BOARD, SURFACE MOUNTED
	EXISTING PANEL BOARD, SURFACE MOUNTED
	DRY TYPE TRANSFORMER
	METER
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
	FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
	TRANSIENT VOLTAGE SURGE SUPPRESSOR WITH BUILT-IN FUSES, SURFACE MOUNTED
	DUPLEX OUTLET, SURFACE MOUNTED, 20 AMPS, 125 VOLTS, SINGLE PHASE
	JUNCTION BOX, SURFACE MOUNTED 18" A.F.F.
	EXPOSED WIRING
	HOME RUNS, MINIMUM 2#10 + 1#8G IN 3/4" CONDUIT U.O.N.
	ABOVE FINISHED FLOOR
	UNLESS OTHERWISE NOTED
	WEATHERPROOF
	GROUND FAULT INTERRUPTER
	AMPERE
	VOLT
	KILOWATT - HOUR
	CONDUIT
	POLYVINYL CHLORIDE
	HERTZ
	PHASE
	WATTS
	NATIONAL ELECTRIC CODE
	POWER PROTECTION CABINET
	UNDERWRITER LABORATORIES
	POWER TRANSFER SWITCH
	QUICK OPEN
	GALVANIZED RIGID CONDUIT
	GROUND
	GROUND
	MASTER GROUND BAR
	EQUIPMENT GROUND BAR
	GROUND COPPER WIRE, SIZE AS NOTED
	EXPOSED WIRING
	COAXIAL CABLE
	5/8"x8" COPPER CLAD STAINLESS STEEL GROUND ROD
	EXOTHERMIC (CAD WELD) OR MECHANICAL (COMPRESSION TYPE) CONNECTION
	POWER FACTOR

ELECTRICAL AND GROUNDING NOTES

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
- GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
- ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
- BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
- ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THININSULATION.
- RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
- RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
- WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
- PPC SUPPLIED BY PROJECT OWNER.
- GROUNDING SHALL COMPLY WITH NEC ART. 250.
- GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
- USE #6 AWG COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 AWG SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
- ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
- ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 AWG WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
- CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
- APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
- BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
- BOND ANTENNA EGB'S AND MGB TO GROUND RING.
- CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
- CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
- ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL, MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50.

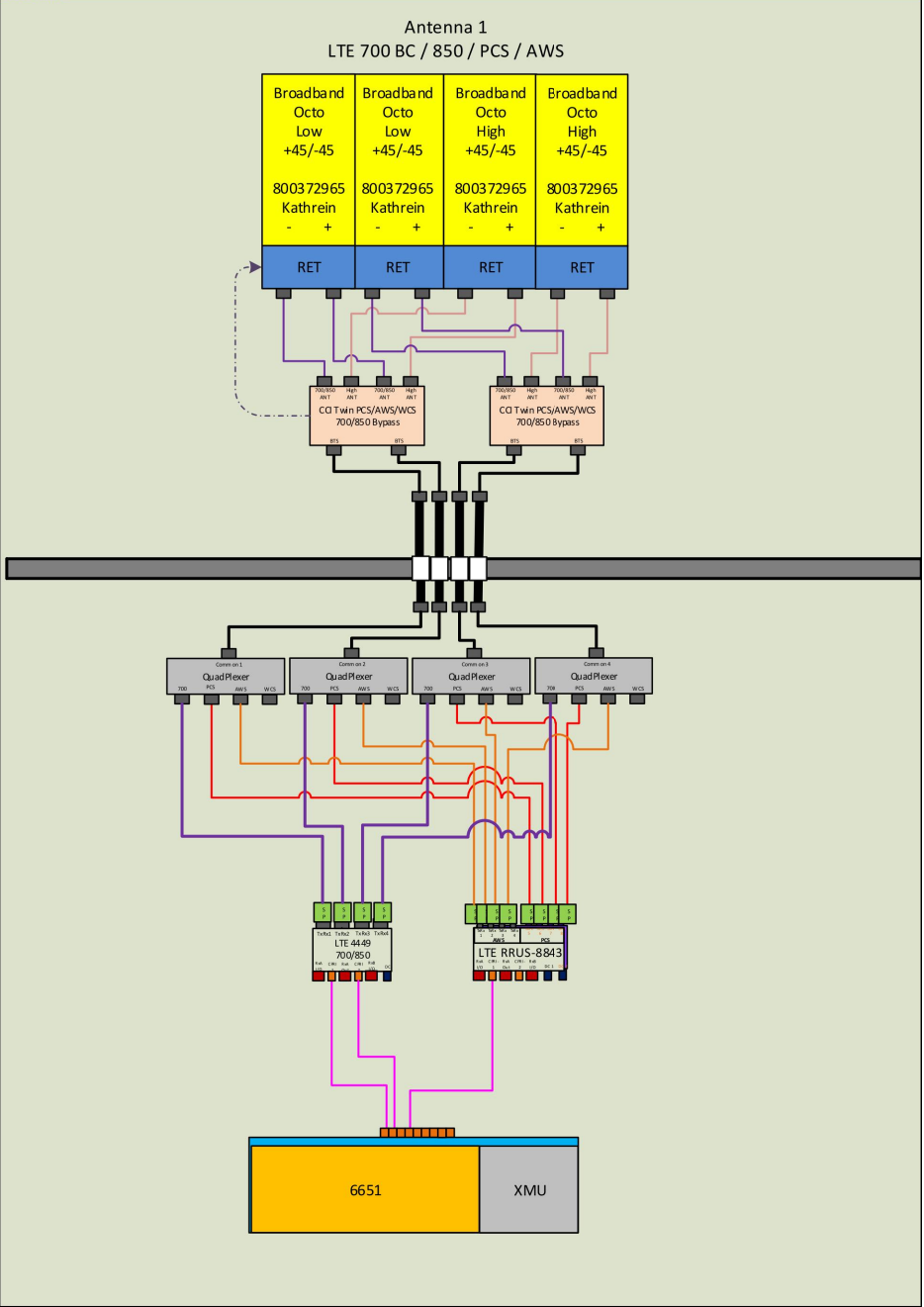
NO.	DATE	REVISIONS	BY	CHK	APP'D
3	10/04/22	ISSUED FOR CONSTRUCTION	MJ	JC	DPH
2	09/07/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
1	08/24/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
0	10/13/21	ISSUED FOR REVIEW	CC	JC	DPH
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: CC		



AT&T

ELECTRICAL NOTES & ONE-LINE DIAGRAM
(NSB)

SHEET NUMBER	DRAWING NUMBER	REV
CT1364	E-1	3



RF PLUMBING DIAGRAM 1
SCALE: N.T.S. RF-1

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

3	10/04/22	ISSUED FOR CONSTRUCTION	MJ	JC	DPH
2	09/07/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
1	08/24/22	ISSUED FOR CONSTRUCTION	CC	JC	DPH
0	10/13/21	ISSUED FOR REVIEW	CC	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: CC		

AT&T		
RF PLUMBING DIAGRAM (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1364	RF-1	3

Attachment 2

Date: **December 1, 2021**



520 South Main Street, Suite 2531
Akron, OH 44311
(216) 927-8663

Subject: **Structural Modification Report**

Carrier Designation: **AT&T Mobility Co-Locate**
Site Number: CT1364S
FA Number: 13934132

Crown Castle Designation: **BU Number:** 824012
Site Name: Farmington / Rt 6
JDE Job Number: 682778
Work Order Number: 2039941
Order Number: 580997 Rev. 3

Engineering Firm Designation: **GPD Project Number:** 2022777.824012.03

Site Data: **985 Farmington Avenue, Bristol, Hartford County, CT 06010**
Latitude 41° 41' 43.91", Longitude -72° 54' 40.53"
119 Foot - EEI Concealment Tower w/ Proposed Canister Expansion & 12' Canister Extension

We are pleased to submit this "**Structural Modification Report**" to determine the structural integrity of the above mentioned tower.

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

LC4.5: Proposed Equipment Configuration w/ Proposed Modifications: **Sufficient Capacity - 91.4%**

This analysis utilizes an ultimate 3-second gust wind speed of 117 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

All modifications designed by GPD (Project #: 2022777.824012.03, dated 12/1/2021, see Appendix D) and equipment proposed in this report shall be installed in accordance with the attached design drawings for the determined available structural capacity to be effective.

Structural analysis prepared by: Evan Martin

Respectfully submitted by:

Christopher J Scheks, P.E.
Connecticut #: 0030026

12/1/2021

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1) INTRODUCTION

This tower is a 119 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in 2000 and mapped by Tower Engineering Professionals in June of 2015.

Proposed modifications designed by GPD (Project #: 2022777.824012.03, dated 12/1/2021, see Appendix D) consist of replacing the existing concealment spine and canisters with a new concealment spine and 48" Ø canisters from 103' to 131'. These modifications were considered in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	117 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
125.0	126.0	3	Kathrein	800372965	4	7/8
	125.0	1		12' x 48" Canister		
	121.0	6	CCI Antennas	TMABPDB7823VG12A		
115.0	115.0	1		8' x 48" Canister		
107.0	107.0	1		8' x 48" Canister		

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)
115.0	115.0	3	RFS Celwave	APXV18-206516S-C-A20	6	1-5/8
		3	Ericsson	KRY 112 489/2		
107.0	107.0	3	RFS Celwave	APXV18-206516S-C-A20	6	7/8
		3	Ericsson	KRY 112 144/1		
96.0	96.0	3	Andrew	HBX-6516DS-VTM	6	3/8 7/8
		3	Commscope	ATM200-A20		
		1		5' x 60" Canister		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
GEOTECHNICAL REPORTS	3594408	CCISITES
TOWER MANUFACTURER DRAWINGS	3594409	CCISITES
TOWER STRUCTURAL ANALYSIS REPORTS	3594405	CCISITES
MODIFICATION DRAWINGS	--	GPD

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the of the TIA-222 standard.

3.2) Assumptions

- 1) The tower and structures were maintained in accordance with the TIA-222 standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions or items in Table 3 are not valid or have been made in error. GPD 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	131 - 119	Pole	TP4.5x4.5x0.674	1	-1.098	267.951	57.1	Pass
L2	119 - 111	Pole	TP6.625x6.625x0.864	2	-2.259	517.204	41.2	Pass
L3	111 - 103	Pole	TP6.625x6.625x0.864	3	-3.442	517.204	68.6	Pass
L4	103 - 98.33	Pole	TP20.16x19.5x0.188	4	-4.250	730.106	19.2	Pass
L5	98.33 - 93.33	Pole	TP20.86x20.16x0.188	5	-5.094	755.694	22.6	Pass
L6	93.33 - 76.29	Pole	TP23.26x20.86x0.188	6	-6.404	825.820	31.4	Pass
L7	76.29 - 45.54	Pole	TP27.09x22.36x0.188	7	-8.800	963.601	49.5	Pass
L8	45.54 - 0	Pole	TP33x26.153x0.25	8	-14.554	1596.262	48.8	Pass
						Summary	ELC:	LC4.5
						Pole (L3)	68.6	Pass
						Rating =	68.6	Pass

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

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Flange Bolts	119	47.7	Pass
1,2	Flange Plate	119	14.2	Pass
1,2	Flange Bolts	111	37.0	Pass
1,2	Flange Plate	111	15.2	Pass
1,2	Flange Bolts	103	41.9	Pass
1,2	Anchor Rods	0	66.4	Pass
1,2	Base Plate	0	91.4	Pass
1,2	Base Foundation Reinforcement	0	26.9	Pass
1,2	Base Foundation Soil Interaction	0	38.4	Pass

Structure Rating (max from all components) =	91.4%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H Section 15.5

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration once the proposed modifications are installed.

Attachment 3



C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report



CT1364
985 Farmington Ave, Bristol, CT 06010

February 28, 2023

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of AT&T antenna arrays to be mounted at 126' AGL on an existing flagpole tower located at 985 Farmington Ave in Bristol, CT. The coordinates of the tower are 41° 41' 44.2284" N, 72° 54' 40.572" W.

AT&T is proposing the following:

- 1) Install three (3) multi-band antennas (one per sector) to support its commercial LTE network and the FirstNet National Public Safety Broadband Network ("NPSBN").

This report considers the planned antenna configuration for AT&T¹ to derive the resulting % MPE of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm²). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment C contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

¹ As referenced to AT&T's Radio Frequency Design Sheet updated 10/04/2022.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{PowerDensity} = \left(\frac{EIRP}{\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{H^2 + V^2}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Antenna Inventory

Table 1 below outlines AT&T's proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Call Sign	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
AT&T	Alpha / 35°	700	160	14.0	4019	800372965	63	0	6.48	126.0
		850	160	14.9	4944		58			
		1900	160	17.9	9865		65			
		2100	240	18.1	15495		62			
	Beta / 155°	700	160	14.0	4019	800372965	63	0	6.48	126.0
		850	160	14.9	4944		58			
		1900	160	17.9	9865		65			
		2100	240	18.1	15495		62			
	Gamma / 270°	700	160	14.0	4019	800372965	63	0	6.48	126.0
		850	160	14.9	4944		58			
		1900	160	17.9	9865		65			
		2100	240	18.1	15495		62			

Table 1: Proposed Antenna Inventory^{2 3}

² Antenna heights are in reference to the Hudson Design Group LLC. Construction Drawings, dated 11/04/2022.

³ Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

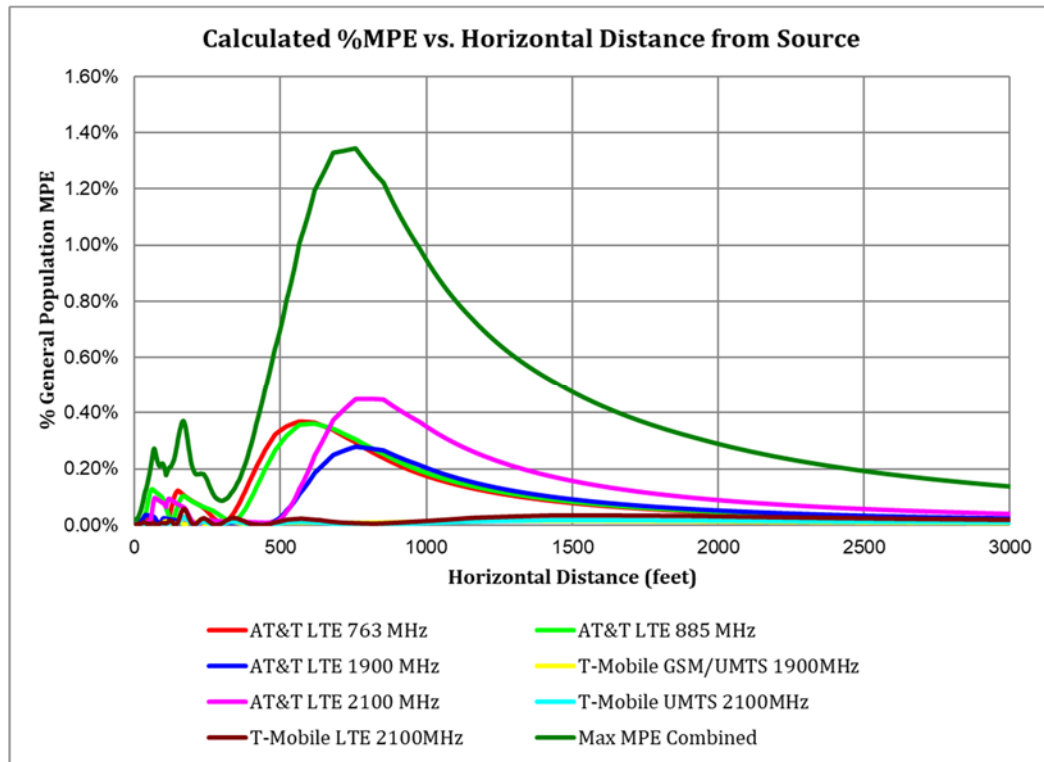


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (1.34% of the General Population limit) is calculated to occur at a horizontal distance of 757 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 757 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six-foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm ²)	Limit (mW/cm ²)	% MPE
AT&T LTE 1900 MHz	1	160.0	126.0	757	0.002787	1.000	0.28%
AT&T LTE 2100 MHz	1	240.0	126.0	757	0.004477	1.000	0.45%
AT&T LTE 763 MHz	1	160.0	126.0	757	0.001499	0.509	0.29%
AT&T LTE 885 MHz	1	160.0	126.0	757	0.001802	0.590	0.31%
T-Mobile GSM/UMTS 1900MHz	1	60.0	107.0	757	0.000079	1.000	0.01%
T-Mobile LTE 2100MHz	1	120.0	107.0	757	0.000065	1.000	0.01%
T-Mobile UMTS 2100MHz	1	60.0	107.0	757	0.000032	1.000	0.00%
Total							1.34%

Table 2: Maximum Percent of General Population Exposure Values

6. Conclusion

The above analysis verifies that RF exposure levels from the site with AT&T's proposed antenna configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be **1.34% of the FCC limit (General Population/Uncontrolled)**. This maximum cumulative percent of MPE value is calculated to occur 757 feet away from the site.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Report Prepared By: _____
Ram Acharya
RF Engineer
C Squared Systems, LLC

February 27, 2023
Date



Reviewed/Approved By: _____
Martin J. Lavin
Senior RF Engineer
C Squared Systems, LLC

February 28, 2023
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure⁴

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure⁵

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure

⁴ Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

⁵ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

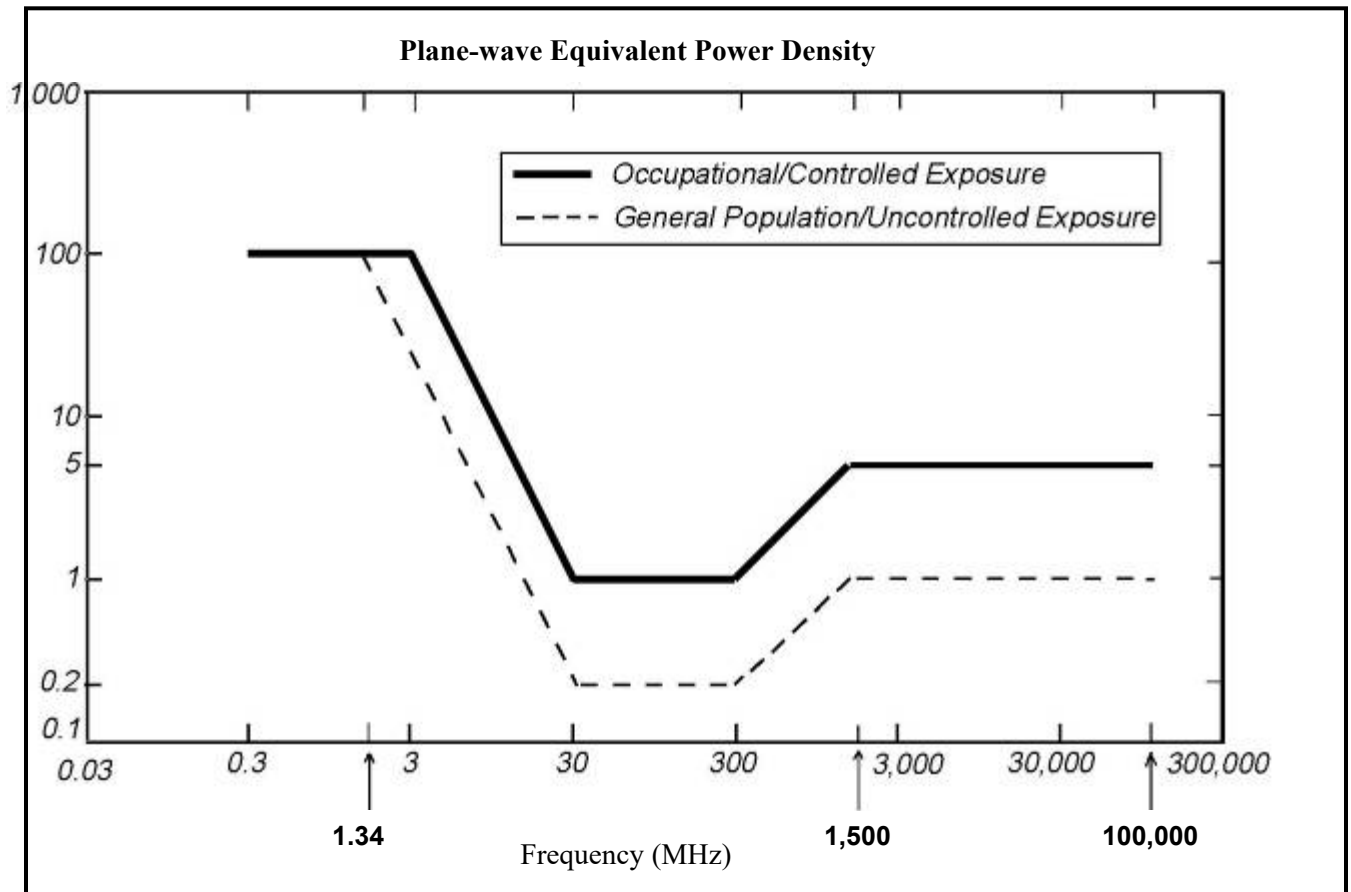
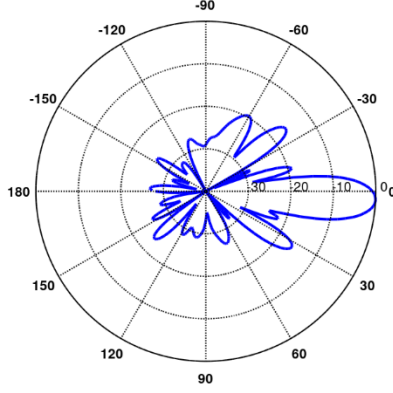
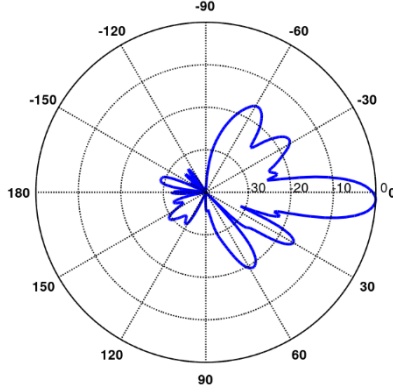
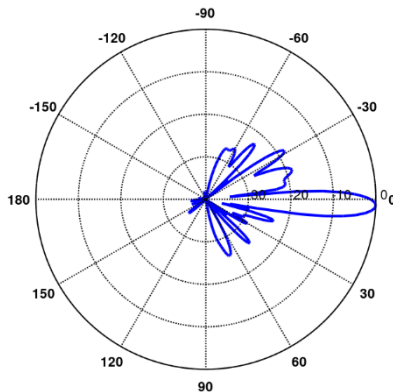


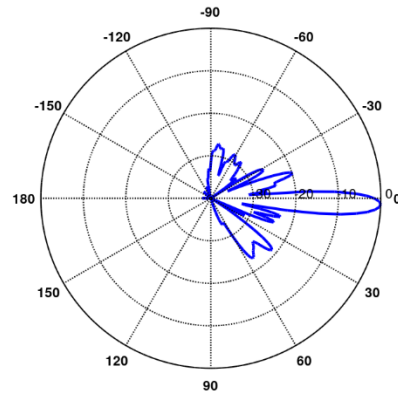
Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Mobility Antenna Model Data Sheets and Electrical Patterns

<p>763 MHz</p> <p>Manufacturer: Kathrein Model #: 800372965 Frequency Band: 698-806 MHz Gain: 14 dBi Vertical Beamwidth: 11.8° Horizontal Beamwidth: 63° Polarization: $\pm 45^\circ$ Dimensions (L x W x D): 77.8" x 14.9" x 6.5"</p>	
<p>885 MHz</p> <p>Manufacturer: Kathrein Model #: 800372965 Frequency Band: 824-894 MHz Gain: 14.9 dBi Vertical Beamwidth: 11.0° Horizontal Beamwidth: 58° Polarization: $\pm 45^\circ$ Dimensions (L x W x D): 77.8" x 14.9" x 6.5"</p>	
<p>1900 MHz</p> <p>Manufacturer: Kathrein Model #: 800372965 Frequency Band: 1850-1990 MHz Gain: 17.9 dBi Vertical Beamwidth: 6.4° Horizontal Beamwidth: 65° Polarization: $\pm 45^\circ$ Dimensions (L x W x D): 77.8" x 14.9" x 6.5"</p>	

2100 MHz

Manufacturer: Kathrein
Model #: 800372965
Frequency Band: 1920-2170 MHz
Gain: 18.1 dBi
Vertical Beamwidth: 17.9°
Horizontal Beamwidth: 62°
Polarization: $\pm 45^\circ$
Dimensions (L x W x D): 77.8" x 14.9" x 6.5"



Attachment 4



2344 Beallsville Road
Marianna, PA 15345

Phone: (724) 678-2047
www.crowncastle.com

February 14, 2023

VIA Email melaniedumont@dumontagency.com

FARMINGTON AVENUE PROFESSIONALS LLC
985 FARMINGTON AVE
BRISTOL, CT 06011-2058

RE: BU# 824012 – FARMINGTON / RT 6
Site Address: 985 Farmington Avenue, Bristol, CT 06010

Dear FARMINGTON AVENUE PROFESSIONALS LLC:

In order to better serve the public and minimize the number of towers in an area where a Lease is located, AT&T Mobility plans to modify the equipment at the telecommunication facility. The modification will not alter the character or use of the site nor will it change the nature of Crown Castle's occupancy of the site.

The CT - CONNECTICUT SITING COUNCIL requires Landowners Authorization for applications related to Land Use, zoning and/or building permits. I have enclosed a Landowners Authorization form which requires your signature (or designee) and date to obtain the necessary city approvals to proceed with an installation of new equipment at this site.

Thank you for your continued cooperation with Crown Castle. If you have any questions concerning this request, please feel free contact me at (724) 678-2047 or via email at Brian.Durkin.Contractor@crowncastle.com

Yours truly,

A handwritten signature in cursive script that reads 'Brian J. Durkin'.

Brian Durkin
Real Estate Specialist
(724) 678-2047
Brian.Durkin.Contractor@crowncastle.com

Property Owner Letter of Authorization

**CT - CONNECTICUT SITING COUNCIL
TEN FRANKLIN SQUARE
NEW BRITAIN, CT 06051**

Re: Zoning/ Permitting – Plan / Design Review Process

I hereby represent that I am the legal owner of the property referenced below, and I hereby give my authorization to AT&T MOBILITY and/or its Agent(s), to act as our Agent(s) in processing and obtaining approval for Building and/or Zoning permits through the CT - CONNECTICUT SITING COUNCIL for the modification of the facility located at the existing wireless communications site described as:

Crown Site ID:	824012/Farmington / Rt 6
AT&T MOBILITY Site ID:	CT1364S/
Site Address:	985 Farmington Avenue, Bristol, CT 06010
APN:	BRIS-056863-000000

Property Owner: FARMINGTON AVENUE PROFESSIONALS LLC

Signature: Melanie Dumont

Print Name: Melanie Dumont

Date: 5/11/2023

Attachment 5



445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

June 6, 2023

CERTIFICATE OF MAILING

FARMINGTON AVE PROFESSIONAL LLC
985 FARMINGTON AVE
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

AT&T is submitting this Sub-Petition as an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation Act of 2012 (codified at 47 USC Sec. 1455(a)) and as further clarified by the Federal Communications Commission in regulations found at 47 CFR 1.6100.

This notice and the enclosed copy of the Sub-Petition are provided to you as an abutting property owner in keeping with the Council's ruling in Petition 1133. Any comments regarding this proposal should be provided to the Council within thirty (30) days of the date of this submission.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

A handwritten signature in cursive script that reads 'Luca Chiocchio'.

Luca Chiocchio
Enclosures



445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

June 6, 2023

CERTIFICATE OF MAILING

WILFREDO ORTIZ
65 BOARDMAN ST
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Mr. Ortiz:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Very truly yours,

A handwritten signature in cursive script that reads 'Luca Chiocchio'.

Luca Chiocchio
Enclosures



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June 6, 2023

CERTIFICATE OF MAILING

CLEMENT J. BEAUCHEMIN
57 BOARDMAN ST
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Very truly yours,

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Luca Chiocchio
Enclosures



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June 6, 2023

CERTIFICATE OF MAILING

PENNY M. ROSS
51 BOARDMAN ST
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Ms. Ross:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Very truly yours,

A handwritten signature in cursive script that reads 'Luca Chiocchio'.

Luca Chiocchio
Enclosures



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June 6, 2023

CERTIFICATE OF MAILING

JESSICA ANNE STETZER
43 BOARDMAN ST
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Ms. Stetzer:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Very truly yours,

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Luca Chiocchio
Enclosures



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June 6, 2023

CERTIFICATE OF MAILING

JOHN F. GANGL
232 MARCIA DR
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Mr. Gangl:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Very truly yours,

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Luca Chiocchio
Enclosures



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June 6, 2023

CERTIFICATE OF MAILING

JOHN F. GANGL
35 BOARDMAN STREET
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Mr. Gangl:

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Very truly yours,

A handwritten signature in cursive script that reads 'Luca Chiocchio'.

Luca Chiocchio
Enclosures



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June 6, 2023

CERTIFICATE OF MAILING

RITA M. KLAJE
PAUL E. KLAJE
27 BOARDMAN ST
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Mr. and Mrs. Klaje:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Very truly yours,

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Luca Chiocchio
Enclosures



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June 6, 2023

CERTIFICATE OF MAILING

STEPHANIE HURSTON
21 BOARDMAN ST
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Ms. Hurtston:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Very truly yours,

A handwritten signature in cursive script that reads 'Luca Chiocchio'.

Luca Chiocchio
Enclosures



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June 6, 2023

CERTIFICATE OF MAILING

ESTATE OF CAROL K. CARTER
31 EAST HILL ST
TERRYVILLE, CT 06786

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

A handwritten signature in cursive script, reading 'Luca Chiocchio', is written in blue ink.

Luca Chiocchio
Enclosures



445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
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cuddyfeder.com

June 6, 2023

CERTIFICATE OF MAILING

ESTATE OF CAROL K. CARTER
15 BOARDMAN STREET
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Very truly yours,

A handwritten signature in cursive script that reads 'Luca Chiocchio'.

Luca Chiocchio
Enclosures



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June 6, 2023

CERTIFICATE OF MAILING

DINEJA J. WILLIAMS
7 BOARDMAN ST
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Ms. Williams:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Very truly yours,

A handwritten signature in cursive script that reads 'Luca Chiocchio'.

Luca Chiocchio
Enclosures



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June 6, 2023

CERTIFICATE OF MAILING

SOBOTA ENTERPRISES LLC
615 EAST MAIN ST
MERIDEN, CT 06450

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Very truly yours,

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Luca Chiocchio
Enclosures



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June 6, 2023

CERTIFICATE OF MAILING

SOBOTA ENTERPRISES LLC
950 FARMINGTON AVENUE
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

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Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

A handwritten signature in cursive script, reading 'Luca Chiocchio'.

Luca Chiocchio
Enclosures



445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

June 6, 2023

CERTIFICATE OF MAILING

WILLIAM SOBOTA
174 STAFFORD AVE
BURLINGTON, CT 06013

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Mr. Sobota:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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June 6, 2023

CERTIFICATE OF MAILING

WILLIAM SOBOTA
956 FARMINGTON AVENUE
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Mr. Sobota:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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June 6, 2023

CERTIFICATE OF MAILING

WILLIAM SOBOTA
962 FARMINGTON AVENUE
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Mr. Sobota:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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June 6, 2023

CERTIFICATE OF MAILING

EDILMA MACIAS
JAMIE V. MACIAS
968 FARMINGTON AVE
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Mr. and Mrs. Macias:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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June 6, 2023

CERTIFICATE OF MAILING

SHAROM BACHMAN
974 FARMINGTON AVE
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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June 6, 2023

CERTIFICATE OF MAILING

CASTILLO
BIANCA TEJADA-CASTILLO
980 FARMINGTON AVE
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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June 6, 2023

CERTIFICATE OF MAILING

HERCULANO HERNANDEZ
986 FARMINGTON AVE
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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June 6, 2023

CERTIFICATE OF MAILING

PETER A. ROBINSON
992 FARMINGTON AVE
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Mr. Robinson:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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June 6, 2023

CERTIFICATE OF MAILING

HJZ 2 LLC
780 KING ST
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

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June 6, 2023

CERTIFICATE OF MAILING

HJZ 2 LLC
1001 FARMINGTON AVE
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

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cuddyfeder.com

June 6, 2023

CERTIFICATE OF MAILING

N/A

70 BOARDMAN STREET
BRISTOL, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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June 6, 2023

CERTIFICATE OF MAILING

Mayor Jeffrey J. Caggiano
City of Bristol
111 North Main Street
Bristol, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Mayor Caggiano:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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June 6, 2023

CERTIFICATE OF MAILING

Robert M. Flanagan, AICP
City Planner
Planning & Zoning Department
City of Bristol
111 North Main Street
Bristol, CT 06010

Re: Connecticut Siting Council Sub-Petition
Modification and Extension of an Existing Wireless Facility
985 Farmington Avenue, Bristol, Connecticut

Dear Mr. Flanagan:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T is proposing to extend the existing 119' tower by approximately 12' to internally mount AT&T's antennas at a centerline height of 128'. AT&T also proposes to expand the existing fenced equipment area at the base of the facility to install related unmanned equipment.

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Luca Chiocchio
Enclosures

CERTIFICATION OF SERVICE

I hereby certify that on the 6th day of June, 2023 a copy of the following letter and copy of the Sub-Petition to the Connecticut Siting Council for a declaratory ruling was sent by certificate of mailing to the attached list of abutting properties:

Dated: 6/6/2023



Cuddy & Feder LLP
45 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Attorneys for: New Cingular Wireless
PCS, LLC (AT&T)

FARMINGTON AVE PROFESSIONAL LLC 985 FARMINGTON AVE BRISTOL, CT 06010	WILFREDO ORTIZ 65 BOARDMAN ST BRISTOL, CT 06010
CLEMENT J. BEAUCHEMIN 57 BOARDMAN ST BRISTOL, CT 06010	PENNY M. ROSS 51 BOARDMAN ST BRISTOL, CT 06010
JESSICA ANNE STETZER 43 BOARDMAN ST BRISTOL, CT 06010	JOHN F. GANGL 232 MARCIA DR BRISTOL, CT 06010
JOHN F. GANGL 35 BOARDMAN STREET BRISTOL, CT 06010	RITA M. KLAJE PAUL E. KLAJE 27 BOARDMAN ST BRISTOL, CT 06010
STEPHANIE HURSTON 21 BOARDMAN ST BRISTOL, CT 06010	ESTATE OF CAROL K. CARTER 31 EAST HILL ST TERRYVILLE, CT 06786
ESTATE OF CAROL K. CARTER 15 BOARDMAN STREET BRISTOL, CT 06010	DINEJA J. WILLIAMS 7 BOARDMAN ST BRISTOL, CT 06010
SOBOTA ENTERPRISES LLC 615 EAST MAIN ST MERIDEN, CT 06450	SOBOTA ENTERPRISES LLC 950 FARMINGTON AVENUE BRISTOL, CT 06010

WILLIAM SOBOTA 174 STAFFORD AVE BURLINGTON, CT 06013	WILLIAM SOBOTA 956 FARMINGTON AVENUE BRISTOL, CT 06010
WILLIAM SOBOTA 962 FARMINGTON AVENUE BRISTOL, CT 06010	EDILMA MACIAS JAMIE V. MACIAS 968 FARMINGTON AVE BRISTOL, CT 06010
SHAROM BACHMAN 974 FARMINGTON AVE BRISTOL, CT 06010	CASTILLO BIANCA TEJADA-CASTILLO 980 FARMINGTON AVE BRISTOL, CT 06010
HERCULANO HERNANDEZ 986 FARMINGTON AVE BRISTOL, CT 06010	PETER A. ROBINSON 992 FARMINGTON AVE BRISTOL, CT 06010
HJZ 2 LLC 780 KING ST BRISTOL, CT 06010	HJZ 2 LLC 1001 FARMINGTON AVE BRISTOL, CT 06010
N/A 70 BOARDMAN STREET BRISTOL, CT 06010	

CERTIFICATION OF SERVICE

I hereby certify that on the 6th day of June, 2023 a copy of the herein letter and copy of the Sub-Petition to the Connecticut Siting Council for a declaratory ruling was sent by certificate of mailing to the list below.

Dated: 6/6/2023



Cuddy & Feder LLP
45 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Attorneys for: New Cingular Wireless
PCS, LLC (AT&T)

City of Bristol

Mayor Jeffrey J. Caggiano City of Bristol 111 North Main Street Bristol, CT 06010	Robert M. Flanagan, AICP City Planner Planning & Zoning Department City of Bristol 111 North Main Street Bristol, CT 06010
--	---

Date: **December 1, 2021**



520 South Main Street, Suite 2531
Akron, OH 44311
(216) 927-8663

Subject: **Structural Modification Report**

Carrier Designation: **AT&T Mobility Co-Locate**
Site Number: CT1364S
FA Number: 13934132

Crown Castle Designation: **BU Number:** 824012
Site Name: Farmington / Rt 6
JDE Job Number: 682778
Work Order Number: 2039941
Order Number: 580997 Rev. 3

Engineering Firm Designation: **GPD Project Number:** 2022777.824012.03

Site Data: **985 Farmington Avenue, Bristol, Hartford County, CT 06010**
Latitude 41° 41' 43.91", Longitude -72° 54' 40.53"
119 Foot - EEI Concealment Tower w/ Proposed Canister Expansion & 12' Canister Extension

We are pleased to submit this "**Structural Modification Report**" to determine the structural integrity of the above mentioned tower.

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

LC4.5: Proposed Equipment Configuration w/ Proposed Modifications: **Sufficient Capacity - 91.4%**

This analysis utilizes an ultimate 3-second gust wind speed of 117 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

All modifications designed by GPD (Project #: 2022777.824012.03, dated 12/1/2021, see Appendix D) and equipment proposed in this report shall be installed in accordance with the attached design drawings for the determined available structural capacity to be effective.

Structural analysis prepared by: Evan Martin

Respectfully submitted by:

Christopher J Scheks, P.E.
Connecticut #: 0030026

12/1/2021

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Modification Drawings

1) INTRODUCTION

This tower is a 119 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in 2000 and mapped by Tower Engineering Professionals in June of 2015.

Proposed modifications designed by GPD (Project #: 2022777.824012.03, dated 12/1/2021, see Appendix D) consist of replacing the existing concealment spine and canisters with a new concealment spine and 48" Ø canisters from 103' to 131'. These modifications were considered in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	117 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
125.0	126.0	3	Kathrein	800372965	4	7/8
	125.0	1		12' x 48" Canister		
	121.0	6	CCI Antennas	TMABPDB7823VG12A		
115.0	115.0	1		8' x 48" Canister		
107.0	107.0	1		8' x 48" Canister		

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)
115.0	115.0	3	RFS Celwave	APXV18-206516S-C-A20	6	1-5/8
		3	Ericsson	KRY 112 489/2		
107.0	107.0	3	RFS Celwave	APXV18-206516S-C-A20	6	7/8
		3	Ericsson	KRY 112 144/1		
96.0	96.0	3	Andrew	HBX-6516DS-VTM	6	3/8 7/8
		3	Commscope	ATM200-A20		
		1		5' x 60" Canister		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
GEOTECHNICAL REPORTS	3594408	CCISITES
TOWER MANUFACTURER DRAWINGS	3594409	CCISITES
TOWER STRUCTURAL ANALYSIS REPORTS	3594405	CCISITES
MODIFICATION DRAWINGS	--	GPD

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the of the TIA-222 standard.

3.2) Assumptions

- 1) The tower and structures were maintained in accordance with the TIA-222 standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions or items in Table 3 are not valid or have been made in error. GPD 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	131 - 119	Pole	TP4.5x4.5x0.674	1	-1.098	267.951	57.1	Pass
L2	119 - 111	Pole	TP6.625x6.625x0.864	2	-2.259	517.204	41.2	Pass
L3	111 - 103	Pole	TP6.625x6.625x0.864	3	-3.442	517.204	68.6	Pass
L4	103 - 98.33	Pole	TP20.16x19.5x0.188	4	-4.250	730.106	19.2	Pass
L5	98.33 - 93.33	Pole	TP20.86x20.16x0.188	5	-5.094	755.694	22.6	Pass
L6	93.33 - 76.29	Pole	TP23.26x20.86x0.188	6	-6.404	825.820	31.4	Pass
L7	76.29 - 45.54	Pole	TP27.09x22.36x0.188	7	-8.800	963.601	49.5	Pass
L8	45.54 - 0	Pole	TP33x26.153x0.25	8	-14.554	1596.262	48.8	Pass
						Summary	ELC:	LC4.5
						Pole (L3)	68.6	Pass
						Rating =	68.6	Pass

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

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Flange Bolts	119	47.7	Pass
1,2	Flange Plate	119	14.2	Pass
1,2	Flange Bolts	111	37.0	Pass
1,2	Flange Plate	111	15.2	Pass
1,2	Flange Bolts	103	41.9	Pass
1,2	Anchor Rods	0	66.4	Pass
1,2	Base Plate	0	91.4	Pass
1,2	Base Foundation Reinforcement	0	26.9	Pass
1,2	Base Foundation Soil Interaction	0	38.4	Pass

Structure Rating (max from all components) =	91.4%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H Section 15.5

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration once the proposed modifications are installed.

APPENDIX A

TNXTOWER OUTPUT

Section	8	7	6	5	4	3	2	1
Length (ft)	49.460	34.170	17.040	5.000	4.670	8.000	8.000	12.000
Number of Sides	18	18	18	18	18	0	0	0
Thickness (in)	0.250	0.188	0.188	0.188	0.188	0.864	0.864	0.674
Socket Length (ft)		3.920	3.420					
Top Dia (in)	26.153	22.360	20.860	20.160	19.500	6.625	6.625	4.500
Bot Dia (in)	33.000	27.090	23.260	20.860	20.160	6.625	6.625	4.500
Grade		A572-65				A53-B-35		
Weight (K)	7.9	1.7	0.8	0.2	0.2	0.4	0.4	0.3

131.0 ft

119.0 ft

111.0 ft

103.0 ft

98.3 ft

93.3 ft

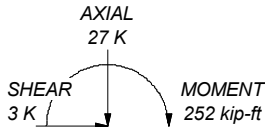
76.3 ft

45.5 ft

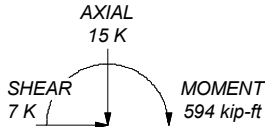
0.0 ft



ALL REACTIONS
ARE FACTORED



50 mph WIND - 1.500 in ICE



REACTIONS - 117 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 68.6%



GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: **Farmington / Rt 6 BU #: 842012**

Project: **2022777.824012.03**

Client: Crown Castle

Drawn by: Emartin

App'd:

Code: TIA-222-H

Date: 12/01/21

Scale: NTS

Path:

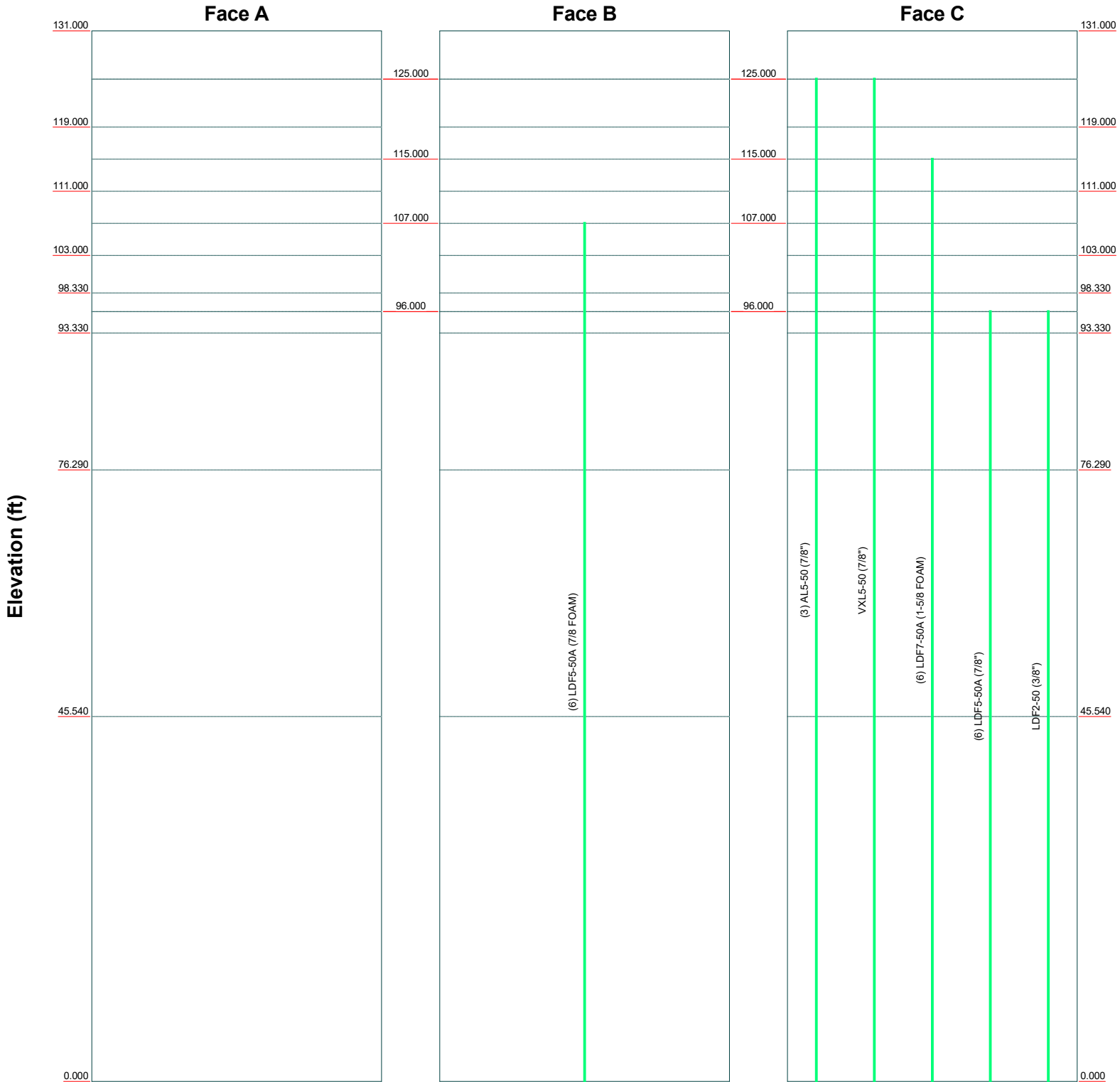
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Dwg No. E-1

Feed Line Distribution Chart

0' - 131'

Round Flat App In Face App Out Face Truss Leg



tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Farmington / Rt 6 BU #: 842012	Page	1 of 12
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	Client	Crown Castle	Designed by	Emartin

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Tower base elevation above sea level: 289.000 ft.

Basic wind speed of 117 mph.

Risk Category II.

Exposure Category B.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.000 ft.

Nominal ice thickness of 1.500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

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

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

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

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

Load Modification Factors used: $K_{cs}(F_w) = 0.95$, $K_{cs}(t_i) = 0.85$.

Maximum demand-capacity ratio is: 1.05.

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

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	√ All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-H Bracing Resist. Exemption
Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Use TIA-222-H Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	√ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	√ Pole Without Linear Attachments
		√ Pole With Shroud Or No Appurtenances
		Outside and Inside Corner Radii Are
		Known

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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	131.000-119.000	12.000	0.000	Round	4.500	4.500	0.674		A53-B-35 (35 ksi)
L2	119.000-111.000	8.000	0.000	Round	6.625	6.625	0.864		A53-B-35 (35 ksi)
L3	111.000-103.000	8.000	0.000	Round	6.625	6.625	0.864		A53-B-35 (35 ksi)
L4	103.000-98.330	4.670	0.000	18	19.500	20.160	0.188	0.820	A572-65 (65 ksi)
L5	98.330-93.330	5.000	0.000	18	20.160	20.860	0.188	0.820	A572-65 (65 ksi)
L6	93.330-76.290	17.040	3.420	18	20.860	23.260	0.188	0.820	A572-65 (65 ksi)
L7	76.290-45.540	34.170	3.920	18	22.360	27.090	0.188	0.788	A572-65 (65 ksi)
L8	45.540-0.000	49.460		18	26.153	33.000	0.250	1.060	A572-65 (65 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	4.500	8.101	15.284	1.374	2.250	6.793	30.567	4.048	0.000	0
	4.500	8.101	15.284	1.374	2.250	6.793	30.567	4.048	0.000	0
L2	6.625	15.637	66.333	2.060	3.313	20.025	132.665	7.814	0.000	0
	6.625	15.637	66.333	2.060	3.313	20.025	132.665	7.814	0.000	0
L3	6.625	15.637	66.333	2.060	3.313	20.025	132.665	7.814	0.000	0
	6.625	15.637	66.333	2.060	3.313	20.025	132.665	7.814	0.000	0
L4	19.770	11.493	541.578	6.856	9.906	54.672	1083.869	5.748	3.077	16.413
	20.440	11.886	599.022	7.090	10.241	58.491	1198.833	5.944	3.194	17.032
L5	20.440	11.886	599.022	7.090	10.241	58.491	1198.833	5.944	3.194	17.032
	21.151	12.303	664.239	7.339	10.597	62.683	1329.353	6.153	3.317	17.689
L6	21.151	12.303	664.239	7.339	10.597	62.683	1329.353	6.153	3.317	17.689
	23.588	13.731	923.484	8.191	11.816	78.155	1848.184	6.867	3.739	19.942
L7	23.156	13.196	819.612	7.871	11.359	72.155	1640.302	6.599	3.592	19.158
	27.478	16.010	1463.941	9.550	13.762	106.378	2929.808	8.007	4.424	23.597
L8	27.067	20.554	1742.429	9.196	13.286	131.148	3487.151	10.279	4.142	16.568
	33.469	25.987	3521.424	11.626	16.764	210.059	7047.481	12.996	5.347	21.388

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 131.000-119.000				1	0	1			
L2 119.000-111.000				1	0	1			
L3 111.000-103.000				1	0	1			

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L4 103.000-98.330				1	1	1			
L5 98.330-93.330				1	0	1			
L6 93.330-76.290				1	1	1			
L7 76.290-45.540				1	1	1			
L8 45.540-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		$C_A A_A$ ft ² /ft	Weight plf
AL5-50 (7/8")	C	No	No	Inside Pole	125.000 - 0.000	3	No Ice	0.000	0.260
							1/2" Ice	0.000	0.260
							1" Ice	0.000	0.260
							2" Ice	0.000	0.260
VXL5-50 (7/8")	C	No	No	Inside Pole	125.000 - 0.000	1	No Ice	0.000	0.290
							1/2" Ice	0.000	0.290
							1" Ice	0.000	0.290
							2" Ice	0.000	0.290
LDF7-50A (1-5/8 FOAM)	C	No	No	Inside Pole	115.000 - 0.000	6	No Ice	0.000	0.820
							1/2" Ice	0.000	0.820
							1" Ice	0.000	0.820
							2" Ice	0.000	0.820
LDF5-50A (7/8 FOAM)	B	No	No	Inside Pole	107.000 - 0.000	6	No Ice	0.000	0.330
							1/2" Ice	0.000	0.330
							1" Ice	0.000	0.330
							2" Ice	0.000	0.330
LDF5-50A (7/8")	C	No	No	Inside Pole	96.000 - 0.000	6	No Ice	0.000	0.330
							1/2" Ice	0.000	0.330
							1" Ice	0.000	0.330
							2" Ice	0.000	0.330
LDF2-50 (3/8")	C	No	No	Inside Pole	96.000 - 0.000	1	No Ice	0.000	0.080
							1/2" Ice	0.000	0.080
							1" Ice	0.000	0.080
							2" Ice	0.000	0.080

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
L1	131.000-119.000	A	0.000	0.000	0.000	0.000	0.000

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R</i>	<i>A_F</i>	<i>C_AA_A In Face</i>	<i>C_AA_A Out Face</i>	<i>Weight</i>
			<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>K</i>
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.006
L2	119.000-111.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.028
L3	111.000-103.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.008
		C	0.000	0.000	0.000	0.000	0.048
L4	103.000-98.330	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.009
		C	0.000	0.000	0.000	0.000	0.028
L5	98.330-93.330	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.010
		C	0.000	0.000	0.000	0.000	0.035
L6	93.330-76.290	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.034
		C	0.000	0.000	0.000	0.000	0.137
L7	76.290-45.540	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.061
		C	0.000	0.000	0.000	0.000	0.248
L8	45.540-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.090
		C	0.000	0.000	0.000	0.000	0.367

Feed Line/Linear Appurtenances Section Areas - With Ice

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A_R</i>	<i>A_F</i>	<i>C_AA_A In Face</i>	<i>C_AA_A Out Face</i>	<i>Weight</i>
				<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>K</i>
L1	131.000-119.000	A	1.457	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.006
L2	119.000-111.000	A	1.445	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.028
L3	111.000-103.000	A	1.434	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.008
		C		0.000	0.000	0.000	0.000	0.048
L4	103.000-98.330	A	1.425	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.009
		C		0.000	0.000	0.000	0.000	0.028
L5	98.330-93.330	A	1.418	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.010
		C		0.000	0.000	0.000	0.000	0.035
L6	93.330-76.290	A	1.401	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.034
		C		0.000	0.000	0.000	0.000	0.137
L7	76.290-45.540	A	1.355	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.061
		C		0.000	0.000	0.000	0.000	0.248
L8	45.540-0.000	A	1.225	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.090
		C		0.000	0.000	0.000	0.000	0.367

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Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L1	131.000-119.000	0.000	0.000	0.000	0.000
L2	119.000-111.000	0.000	0.000	0.000	0.000
L3	111.000-103.000	0.000	0.000	0.000	0.000
L4	103.000-98.330	0.000	0.000	0.000	0.000
L5	98.330-93.330	0.000	0.000	0.000	0.000
L6	93.330-76.290	0.000	0.000	0.000	0.000
L7	76.290-45.540	0.000	0.000	0.000	0.000
L8	45.540-0.000	0.000	0.000	0.000	0.000

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

User Defined Loads

Description	Elevation	Offset From Centroid	Azimuth Angle	Weight	F _x	F _z	Wind Force	C _A A _C
	ft	ft	°	K	K	K	K	ft ²
Flag	131.000	0.000	0.000	No Ice	0.063	0.000	0.000	18.532
				Ice	1.702	0.000	0.000	18.909
				Service	0.063	0.000	0.000	20.712

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	K
800372965 w/ Mount Pipe	A	From Face	0.500	0.000	125.000	No Ice	0.000	0.105
			0.000			1/2" Ice	0.000	0.184
			1.000			1" Ice	0.000	0.272
						2" Ice	0.000	0.478
800372965 w/ Mount Pipe	B	From Face	0.500	0.000	125.000	No Ice	0.000	0.105
			0.000			1/2" Ice	0.000	0.184
			1.000			1" Ice	0.000	0.272
						2" Ice	0.000	0.478
800372965 w/ Mount Pipe	C	From Face	0.500	0.000	125.000	No Ice	0.000	0.105
			0.000			1/2" Ice	0.000	0.184
			1.000			1" Ice	0.000	0.272
						2" Ice	0.000	0.478
(2) TMABPDB7823VG12A	A	From Face	0.500	0.000	125.000	No Ice	0.000	0.022
			0.000			1/2" Ice	0.000	0.029
			-4.000			1" Ice	0.000	0.038
						2" Ice	0.000	0.063
(2) TMABPDB7823VG12A	B	From Face	0.500	0.000	125.000	No Ice	0.000	0.022

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	Crown Castle	Emartin

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
			0.000			1/2" Ice	0.000	0.029
			-4.000			1" Ice	0.000	0.038
						2" Ice	0.000	0.063
(2) TMABPDB7823VG12A	C	From Face	0.500	0.000	125.000	No Ice	0.000	0.022
			0.000			1/2" Ice	0.000	0.029
			-4.000			1" Ice	0.000	0.038
						2" Ice	0.000	0.063
APXV18-206516S-C-A20 w/ Mount Pipe	A	From Face	0.500	0.000	115.000	No Ice	0.000	0.029
			0.000			1/2" Ice	0.000	0.056
			0.000			1" Ice	0.000	0.092
						2" Ice	0.000	0.182
APXV18-206516S-C-A20 w/ Mount Pipe	B	From Face	0.500	0.000	115.000	No Ice	0.000	0.029
			0.000			1/2" Ice	0.000	0.056
			0.000			1" Ice	0.000	0.092
						2" Ice	0.000	0.182
APXV18-206516S-C-A20 w/ Mount Pipe	C	From Face	0.500	0.000	115.000	No Ice	0.000	0.029
			0.000			1/2" Ice	0.000	0.056
			0.000			1" Ice	0.000	0.092
						2" Ice	0.000	0.182
KRY 112 489/2	A	From Face	0.500	0.000	115.000	No Ice	0.000	0.015
			0.000			1/2" Ice	0.000	0.020
			0.000			1" Ice	0.000	0.027
						2" Ice	0.000	0.046
KRY 112 489/2	B	From Face	0.500	0.000	115.000	No Ice	0.000	0.015
			0.000			1/2" Ice	0.000	0.020
			0.000			1" Ice	0.000	0.027
						2" Ice	0.000	0.046
KRY 112 489/2	C	From Face	0.500	0.000	115.000	No Ice	0.000	0.015
			0.000			1/2" Ice	0.000	0.020
			0.000			1" Ice	0.000	0.027
						2" Ice	0.000	0.046
APXV18-206516S-C-A20 w/ Mount Pipe	A	From Face	0.500	0.000	107.000	No Ice	0.000	0.029
			0.000			1/2" Ice	0.000	0.056
			0.000			1" Ice	0.000	0.092
						2" Ice	0.000	0.182
APXV18-206516S-C-A20 w/ Mount Pipe	B	From Face	0.500	0.000	107.000	No Ice	0.000	0.029
			0.000			1/2" Ice	0.000	0.056
			0.000			1" Ice	0.000	0.092
						2" Ice	0.000	0.182
APXV18-206516S-C-A20 w/ Mount Pipe	C	From Face	0.500	0.000	107.000	No Ice	0.000	0.029
			0.000			1/2" Ice	0.000	0.056
			0.000			1" Ice	0.000	0.092
						2" Ice	0.000	0.182
KRY 112 144/1	A	From Face	0.500	0.000	107.000	No Ice	0.000	0.011
			0.000			1/2" Ice	0.000	0.014
			0.000			1" Ice	0.000	0.019
						2" Ice	0.000	0.032
KRY 112 144/1	B	From Face	0.500	0.000	107.000	No Ice	0.000	0.011
			0.000			1/2" Ice	0.000	0.014
			0.000			1" Ice	0.000	0.019
						2" Ice	0.000	0.032
KRY 112 144/1	C	From Face	0.500	0.000	107.000	No Ice	0.000	0.011
			0.000			1/2" Ice	0.000	0.014
			0.000			1" Ice	0.000	0.019
						2" Ice	0.000	0.032
HBX-6516DS-VTM w/ Mount Pipe	A	From Face	0.500	0.000	96.000	No Ice	0.000	0.028
			0.000			1/2" Ice	0.000	0.061

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
			0.000			1" Ice 0.000	0.000	0.099
						2" Ice 0.000	0.000	0.195
HBX-6516DS-VTM w/ Mount Pipe	B	From Face	0.500	0.000	96.000	No Ice 0.000	0.000	0.028
			0.000			1/2" Ice 0.000	0.000	0.061
			0.000			1" Ice 0.000	0.000	0.099
						2" Ice 0.000	0.000	0.195
HBX-6516DS-VTM w/ Mount Pipe	C	From Face	0.500	0.000	96.000	No Ice 0.000	0.000	0.028
			0.000			1/2" Ice 0.000	0.000	0.061
			0.000			1" Ice 0.000	0.000	0.099
						2" Ice 0.000	0.000	0.195
ATM200-A20	A	From Face	0.500	0.000	96.000	No Ice 0.000	0.000	0.001
			0.000			1/2" Ice 0.000	0.000	0.002
			0.000			1" Ice 0.000	0.000	0.005
						2" Ice 0.000	0.000	0.015
ATM200-A20	B	From Face	0.500	0.000	96.000	No Ice 0.000	0.000	0.001
			0.000			1/2" Ice 0.000	0.000	0.002
			0.000			1" Ice 0.000	0.000	0.005
						2" Ice 0.000	0.000	0.015
ATM200-A20	C	From Face	0.500	0.000	96.000	No Ice 0.000	0.000	0.001
			0.000			1/2" Ice 0.000	0.000	0.002
			0.000			1" Ice 0.000	0.000	0.005
						2" Ice 0.000	0.000	0.015
Canister Load1	C	None		0.000	131.000	No Ice 10.800	10.800	0.151
						1/2" Ice 26.950	26.950	0.329
						1" Ice 27.500	27.500	0.510
						2" Ice 28.600	28.600	0.884
Canister Load2	C	None		0.000	119.000	No Ice 18.000	18.000	0.432
						1/2" Ice 44.917	44.917	0.728
						1" Ice 45.833	45.833	1.024
						2" Ice 47.667	47.667	1.616
Canister Load3	C	None		0.000	111.000	No Ice 14.400	14.400	0.381
						1/2" Ice 35.933	35.933	0.618
						1" Ice 36.667	36.667	0.855
						2" Ice 38.133	38.133	1.329
Canister Load4	C	None		0.000	103.000	No Ice 7.200	7.200	0.473
						1/2" Ice 17.967	17.967	0.592
						1" Ice 18.333	18.333	0.711
						2" Ice 19.067	19.067	0.949
Canister Load5	C	None		0.000	98.330	No Ice 5.625	5.625	0.374
						1/2" Ice 13.979	13.979	0.467
						1" Ice 14.208	14.208	0.560
						2" Ice 14.667	14.667	0.746
Canister Load6	C	None		0.000	93.330	No Ice 5.625	5.625	0.374
						1/2" Ice 13.979	13.979	0.467
						1" Ice 14.208	14.208	0.560
						2" Ice 14.667	14.667	0.746
Truck Ball	C	None		0.000	132.000	No Ice 1.571	1.571	0.050
						1/2" Ice 2.386	2.386	0.081
						1" Ice 2.581	2.581	0.114
						2" Ice 2.993	2.993	0.188

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Load Combinations

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

Maximum Tower Deflections - Service Wind

<i>Section No.</i>	<i>Elevation</i>	<i>Horz. Deflection</i>	<i>Gov. Load Comb.</i>	<i>Tilt</i>	<i>Twist</i>
	<i>ft</i>	<i>in</i>		<i>°</i>	<i>°</i>

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	131 - 119	22.588	45	2.126	0.000
L2	119 - 111	17.604	45	1.696	0.000
L3	111 - 103	14.913	45	1.493	0.000
L4	103 - 98.33	12.690	45	1.131	0.000
L5	98.33 - 93.33	11.600	45	1.096	0.000
L6	93.33 - 76.29	10.474	45	1.054	0.000
L7	79.71 - 45.54	7.655	45	0.918	0.000
L8	49.46 - 0	2.925	45	0.545	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
132.000	Truck Ball	45	22.588	2.126	0.000	2721
131.000	Canister Load1	45	22.588	2.126	0.000	2721
125.000	800372965 w/ Mount Pipe	45	20.000	1.884	0.000	2267
119.000	Canister Load2	45	17.604	1.696	0.000	1278
115.000	APXV18-206516S-C-A20 w/ Mount Pipe	45	16.191	1.613	0.000	1433
111.000	Canister Load3	45	14.913	1.493	0.000	1744
107.000	APXV18-206516S-C-A20 w/ Mount Pipe	45	13.742	1.294	0.000	1623
103.000	Canister Load4	45	12.690	1.131	0.000	1762
98.330	Canister Load5	45	11.600	1.096	0.000	6679
96.000	HBX-6516DS-VTM w/ Mount Pipe	45	11.073	1.081	0.000	9968
93.330	Canister Load6	45	10.474	1.054	0.000	6607

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	131 - 119	94.288	14	8.760	0.000
L2	119 - 111	73.768	14	7.048	0.000
L3	111 - 103	62.592	14	6.226	0.000
L4	103 - 98.33	53.315	14	4.741	0.000
L5	98.33 - 93.33	48.751	14	4.599	0.000
L6	93.33 - 76.29	44.030	14	4.425	0.000
L7	79.71 - 45.54	32.197	14	3.858	0.000
L8	49.46 - 0	12.313	14	2.292	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
132.000	Truck Ball	14	94.288	8.760	0.000	709
131.000	Canister Load1	14	94.288	8.760	0.000	709

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<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection</i>	<i>Tilt</i>	<i>Twist</i>	<i>Radius of Curvature</i>
<i>ft</i>			<i>in</i>	<i>°</i>	<i>°</i>	<i>ft</i>
125.000	800372965 w/ Mount Pipe	14	83.651	7.795	0.000	590
119.000	Canister Load2	14	73.768	7.048	0.000	330
115.000	APXV18-206516S-C-A20 w/ Mount Pipe	14	67.911	6.712	0.000	365
111.000	Canister Load3	14	62.592	6.226	0.000	436
107.000	APXV18-206516S-C-A20 w/ Mount Pipe	14	57.712	5.411	0.000	403
103.000	Canister Load4	14	53.315	4.741	0.000	436
98.330	Canister Load5	14	48.751	4.599	0.000	1638
96.000	HBX-6516DS-VTM w/ Mount Pipe	14	46.538	4.537	0.000	2424
93.330	Canister Load6	14	44.030	4.425	0.000	1609

Compression Checks

Pole Design Data

<i>Section No.</i>	<i>Elevation</i>	<i>Size</i>	<i>L</i>	<i>L_u</i>	<i>Kl/r</i>	<i>A</i>	<i>P_u</i>	ϕP_n	<i>Ratio</i> $\frac{P_u}{\phi P_n}$
	<i>ft</i>		<i>ft</i>	<i>ft</i>		<i>in²</i>	<i>K</i>	<i>K</i>	
L1	131 - 119 (1)	TP4.5x4.5x0.674	12.000	0.000	0.0	8.101	-1.098	255.191	0.004
L2	119 - 111 (2)	TP6.625x6.625x0.864	8.000	0.000	0.0	15.637	-2.259	492.575	0.005
L3	111 - 103 (3)	TP6.625x6.625x0.864	8.000	0.000	0.0	15.637	-3.442	492.575	0.007
L4	103 - 98.33 (4)	TP20.16x19.5x0.188	4.670	0.000	0.0	11.886	-4.250	695.339	0.006
L5	98.33 - 93.33 (5)	TP20.86x20.16x0.188	5.000	0.000	0.0	12.303	-5.094	719.709	0.007
L6	93.33 - 76.29 (6)	TP23.26x20.86x0.188	17.040	0.000	0.0	13.444	-6.404	786.495	0.008
L7	76.29 - 45.54 (7)	TP27.09x22.36x0.188	34.170	0.000	0.0	15.687	-8.800	917.715	0.010
L8	45.54 - 0 (8)	TP33x26.153x0.25	49.460	0.000	0.0	25.987	-14.554	1520.250	0.010

Pole Bending Design Data

<i>Section No.</i>	<i>Elevation</i>	<i>Size</i>	<i>M_{ux}</i>	ϕM_{nx}	<i>Ratio</i> $\frac{M_{ux}}{\phi M_{nx}}$	<i>M_{uy}</i>	ϕM_{ny}	<i>Ratio</i> $\frac{M_{uy}}{\phi M_{ny}}$
	<i>ft</i>		<i>kip-ft</i>	<i>kip-ft</i>		<i>kip-ft</i>	<i>kip-ft</i>	
L1	131 - 119 (1)	TP4.5x4.5x0.674	15.572	26.167	0.595	0.000	26.167	0.000
L2	119 - 111 (2)	TP6.625x6.625x0.864	32.429	75.837	0.428	0.000	75.837	0.000
L3	111 - 103 (3)	TP6.625x6.625x0.864	54.109	75.837	0.713	0.000	75.837	0.000
L4	103 - 98.33 (4)	TP20.16x19.5x0.188	68.578	351.728	0.195	0.000	351.728	0.000
L5	98.33 - 93.33 (5)	TP20.86x20.16x0.188	85.765	373.300	0.230	0.000	373.300	0.000
L6	93.33 - 76.29 (6)	TP23.26x20.86x0.188	139.518	434.237	0.321	0.000	434.237	0.000
L7	76.29 - 45.54 (7)	TP27.09x22.36x0.188	285.293	560.050	0.509	0.000	560.050	0.000
L8	45.54 - 0 (8)	TP33x26.153x0.25	594.136	1183.325	0.502	0.000	1183.325	0.000

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Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	131 - 119 (1)	TP4.5x4.5x0.674	1.344	76.557	0.018	0.000	25.752	0.000
L2	119 - 111 (2)	TP6.625x6.625x0.864	2.134	147.772	0.014	0.000	74.846	0.000
L3	111 - 103 (3)	TP6.625x6.625x0.864	2.706	147.772	0.018	0.000	74.846	0.000
L4	103 - 98.33 (4)	TP20.16x19.5x0.188	3.195	208.602	0.015	0.000	364.863	0.000
L5	98.33 - 93.33 (5)	TP20.86x20.16x0.188	3.448	215.913	0.016	0.000	390.887	0.000
L6	93.33 - 76.29 (6)	TP23.26x20.86x0.188	4.224	235.948	0.018	0.000	466.798	0.000
L7	76.29 - 45.54 (7)	TP27.09x22.36x0.188	5.386	275.315	0.020	0.000	635.555	0.000
L8	45.54 - 0 (8)	TP33x26.153x0.25	7.071	456.074	0.016	0.000	1308.058	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	131 - 119 (1)	0.004	0.595	0.000	0.018	0.000	0.600	1.050	4.8.2
L2	119 - 111 (2)	0.005	0.428	0.000	0.014	0.000	0.432	1.050	4.8.2
L3	111 - 103 (3)	0.007	0.713	0.000	0.018	0.000	0.721	1.050	4.8.2
L4	103 - 98.33 (4)	0.006	0.195	0.000	0.015	0.000	0.201	1.050	4.8.2
L5	98.33 - 93.33 (5)	0.007	0.230	0.000	0.016	0.000	0.237	1.050	4.8.2
L6	93.33 - 76.29 (6)	0.008	0.321	0.000	0.018	0.000	0.330	1.050	4.8.2
L7	76.29 - 45.54 (7)	0.010	0.509	0.000	0.020	0.000	0.519	1.050	4.8.2
L8	45.54 - 0 (8)	0.010	0.502	0.000	0.016	0.000	0.512	1.050	4.8.2

Section Capacity Table

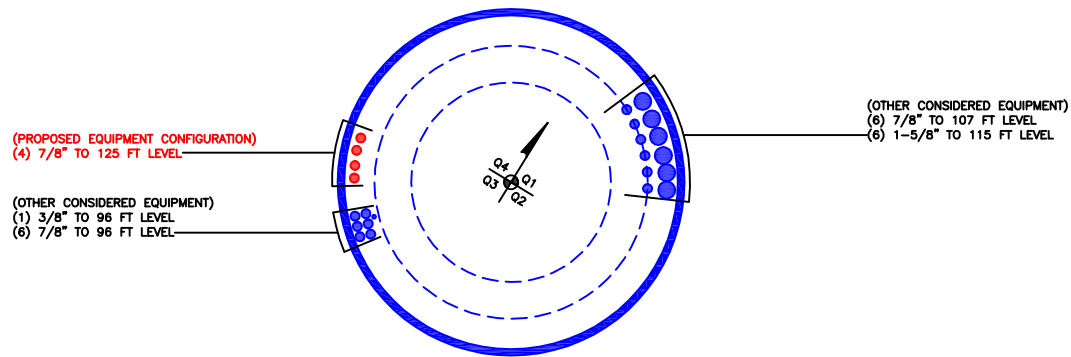
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	131 - 119	Pole	TP4.5x4.5x0.674	1	-1.098	267.951	57.1	Pass
L2	119 - 111	Pole	TP6.625x6.625x0.864	2	-2.259	517.204	41.2	Pass
L3	111 - 103	Pole	TP6.625x6.625x0.864	3	-3.442	517.204	68.6	Pass
L4	103 - 98.33	Pole	TP20.16x19.5x0.188	4	-4.250	730.106	19.2	Pass
L5	98.33 - 93.33	Pole	TP20.86x20.16x0.188	5	-5.094	755.694	22.6	Pass
L6	93.33 - 76.29	Pole	TP23.26x20.86x0.188	6	-6.404	825.820	31.4	Pass
L7	76.29 - 45.54	Pole	TP27.09x22.36x0.188	7	-8.800	963.601	49.5	Pass
L8	45.54 - 0	Pole	TP33x26.153x0.25	8	-14.554	1596.262	48.8	Pass
							Summary Pole (L3)	68.6 Pass

<i>tnxTower</i> GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Farmington / Rt 6 BU #: 842012	Page	12 of 12
	Project	2022777.824012.03	Date	08:34:30 12/01/21
	Client	Crown Castle	Designed by	Emartin

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Size</i>	<i>Critical Element</i>	<i>P K</i>	<i>ϕP_{allow} K</i>	<i>% Capacity</i>	<i>Pass Fail</i>
RATING =							68.6	Pass

Program Version 8.1.1.0 - 6/3/2021 File:T:/Crown/824012/03 MODS/5_Structural/02_Modification/00_Rev 0/04_Modeling/824012 FP.eri

APPENDIX B
BASE LEVEL DRAWING



CROWN REGION ADDRESS
USA

AC ESS APR CAR ME ST BR

19/04/13	NEW BUILD PER WORK ORDER # 801087
26/04/13	UPDATED PER WORK ORDER # 804805
12/07/13	UPDATED PER WORK ORDER # 803202
03/11/14	UPDATED PER WORK ORDER # 805333
27/12/16	UPDATED PER WORK ORDER 134444
04/04/21	UPDATED PER WORK ORDER 200833
13/06/21	UPDATED PER WORK ORDER 200797

DRAWN BY: AH
CHECKED BY:
DRAWING DATE: 19/4/13

SITE NUMBER:

SITE NAME:

SITE NAME

FARMINGTON / RT 6

BUSINESS UNIT NUMBER

824012

SITE ADDRESS

985 FARMINGTON AVE
BRISTOL, CT 06010
HARTFORD COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

APPENDIX C

ADDITIONAL CALCULATIONS

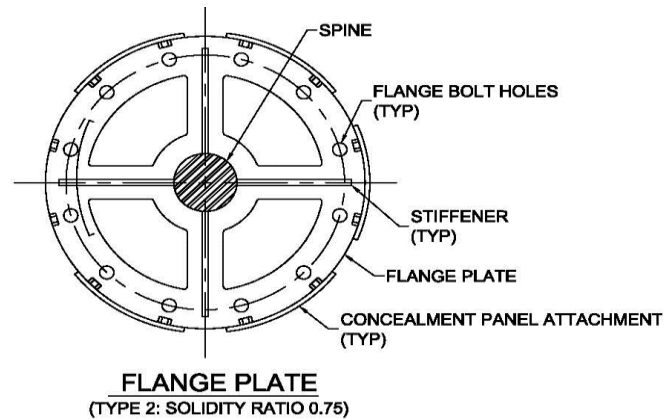
CCI Flagpole Tool



Site Data	
BU#:	824012
Site Name:	Farmington / Rt 6
Order #:	580997 Rev 3

Code	
Code:	TIA-222-H
Ice Thickness:	1.275 in
Windspeed (V):	117 mph
Ice Wind Speed (V):	50 mph
Exposure Category:	B
Topographic Feature:	N/A
Risk Category:	II

Tower Information	
Total Tower Height:	131 ft
Base Tower Height:	93.33 ft
Total Canister Length:	37.67 ft
Number of Canister Assembly Sections:	5



Canister Section Number *:	Canister Assembly Length (ft):	Canister Assembly Diameter (in):	Number of Sides Canister Section	Plate Type:	Mating Flange Plate Thickness (in)**:	Mating Flange Plate Diameter (in):	Solidity Ratio	Plate Weight (Kip):	Canister Weight (Kip)	Vent Length (ft):
1	12	48	Round	5	2.00	15	0.9	0.180	0.302	0-0
2	8	48	Round	5	2.00	15	0.9	0.180	0.201	0-0
3	8	48	Round	2	2.25	22.25	0.75	0.372	0.201	0-0
4	4.67	0	18	2	0.25	59.5	0.75	0.296	0.000	0-0
5	5	60	Round	2	0.25	59.5	0.75	0.296	0.157	0-0

* Sections are numbered from the top of the tower down

** Mating Flange Plate Thickness at the bottom of canister section

Flag on Tower:	Yes
Flag Width:	30 ft
Flag Height:	20 ft
Flag Elevation(z):	131 ft

Truck Ball on Tower:	Yes
Diameter of Ball:	24 in

Geometry : Base Tower + Spine				824012.eri (last saved 11/11 1:52 pm)					
Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material	Delete
131	12	0	0	4.5	4.5	0.674	n/a	A53-B-35	[x]
119	8	0	0	6.625	6.625	0.864	n/a	A53-B-35	[x]
111	8	0	0	6.625	6.625	0.864	n/a	A53-B-35	[x]

103	4.67	0	18	19.5	20.16	0.205	0.82	A572-65	[x]
98.33	5	0	18	20.16	20.86	0.205	0.82	A572-65	[x]
93.33	17.04	3.42	18	20.86	23.25	0.205	0.82	A572-65	[x]
79.71	34.17	3.92	18	22.360317	27.09	0.197	0.788	A572-65	[x]
49.46	49.46	0	18	26.153408	33	0.265	1.06	A572-65	[x]

Discrete Loads: Truck Ball	Apply $C_a A_A$ at Elevation(z) (ft)	$C_a A_A$ No Ice (ft ²)	$C_a A_A$ 1/2" Ice (ft ²)	$C_a A_A$ 1" Ice (ft ²)	$C_a A_A$ 2" Ice (ft ²)	$C_a A_A$ 4" Ice (ft ²)	Weight No Ice (Kip)	Weight 1/2" Ice (Kip)
	132	1.571	2.386	2.581	2.993	3.910	0.05	0.081

Discrete Loads : $C_F A_F$ for Canister Assembly								
Canister Loading	Apply $C_F A_F$ at Elevation(z) (ft)	$C_F A_F$ No Ice (ft ²)	$C_F A_F$ 1/2" Ice (ft ²)	$C_F A_F$ 1" Ice (ft ²)	$C_F A_F$ 2" Ice (ft ²)	$C_F A_F$ 4" Ice (ft ²)	Canister Assembly Weight No Ice (Kip)	Canister Assembly Weight 1/2" Ice (Kip)
Canister Load 1	131	10.800	26.950	27.500	28.600	30.800	0.151	0.329
Canister Load 2	119	18.000	44.917	45.833	47.667	51.333	0.432	0.728
Canister Load 3	111	14.400	35.933	36.667	38.133	41.067	0.381	0.618
Canister Load 4	103	7.200	17.967	18.333	19.067	20.533	0.473	0.592
Canister Load 5	98.33	5.625	13.979	14.208	14.667	15.583	0.374	0.467
Canister Load 6	93.33	5.625	13.979	14.208	14.667	15.583	0.374	0.467

User Forces: Flag Force Calculation Per ANSI/NAAMM FP 1001-07	
Wind _{FORCE} =	0.717 Kip
Weight=	0.063 Kip
Wind _{FORCE, ICE} =	0.134 Kip
Weight _{ICE} =	1.702 Kip
W _{FORCE, SERVICE WIND} =	0.189 Kip
Weight=	0.063 Kip

←Flag force should be included at the top of the flag attachment elevation. If the attachment of the flag to the halyard distributes forces equally to the pole, apply flag forces accordingly in tnx file.

Deflection Check Required:	Yes	Import Deflection Results
3% Spine Deflection Check		
Allowable (3%) Horizontal Spine Deflection (inches)	Actual Deflection *** (inches)	Sufficient/ Insufficient
10.080	9.898	Sufficient

*** Relative deflection under service level wind speed

Monopole Flange Plate Connection

Elevation = 119 ft.



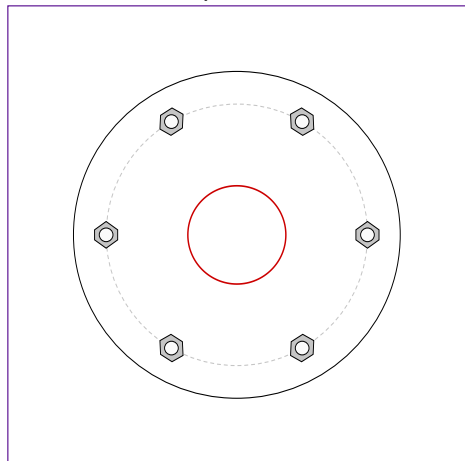
BU #	824012
Site Name	Farmington / Rt 6
Order #	580997 Rev 3

TIA-222 Revision	H
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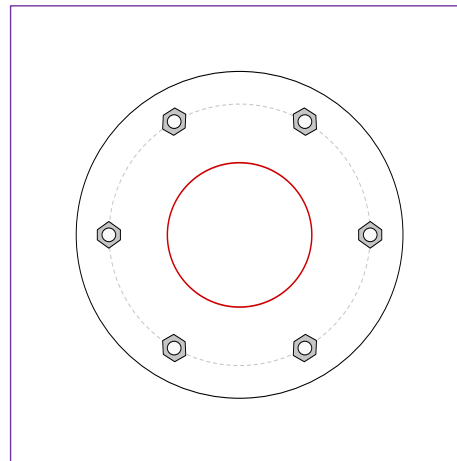
Applied Loads	
Moment (kip-ft)	15.57
Axial Force (kips)	1.10
Shear Force (kips)	1.34

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(6) 5/8" ϕ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 12" BC

Top Plate Data

15" OD x 2" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

N/A

Top Pole Data

4.5" x 0.674" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Plate Data

15" OD x 2" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

6.625" x 0.864" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	10.19
Allowable (kips)	20.34
Stress Rating:	47.7% Pass

Top Plate Capacity

Max Stress (ksi):	4.85	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	10.3%	Pass
Tension Side Stress Rating:	14.2%	Pass

Bottom Plate Capacity

Max Stress (ksi):	3.45	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	7.3%	Pass
Tension Side Stress Rating:	6.3%	Pass

Monopole Flange Plate Connection

Elevation = 111 ft.



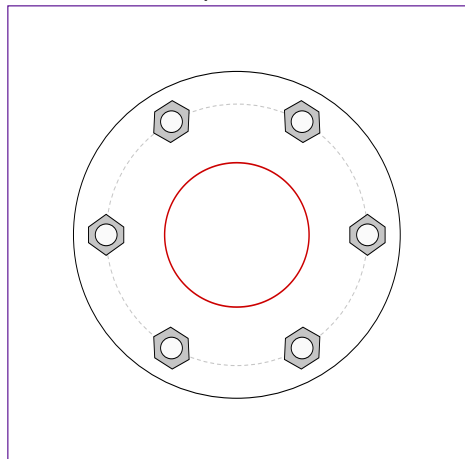
BU #	824012
Site Name	Farmington / Rt 6
Order #	580997 Rev 3

TIA-222 Revision	H
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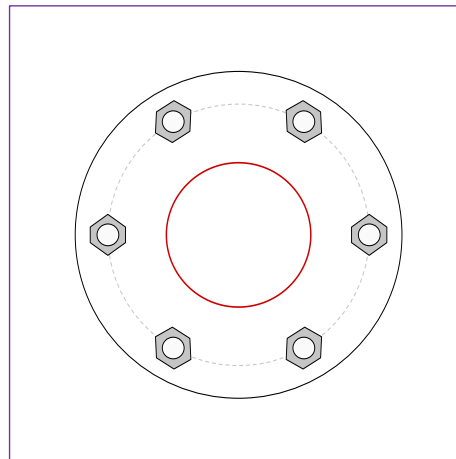
Applied Loads	
Moment (kip-ft)	32.43
Axial Force (kips)	2.26
Shear Force (kips)	2.13

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(6) 1" ϕ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 12" BC

Top Plate Data

15" OD x 2" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

N/A

Top Pole Data

6.625" x 0.864" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Plate Data

15" OD x 2" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

6.625" x 0.864" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	21.19
Allowable (kips)	54.54
Stress Rating:	37.0% Pass

Top Plate Capacity

Max Stress (ksi):	7.17	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	15.2%	Pass
Tension Side Stress Rating:	12.8%	Pass

Bottom Plate Capacity

Max Stress (ksi):	7.17	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	15.2%	Pass
Tension Side Stress Rating:	12.8%	Pass

Monopole Flange Plate Connection

Elevation = 103 ft.



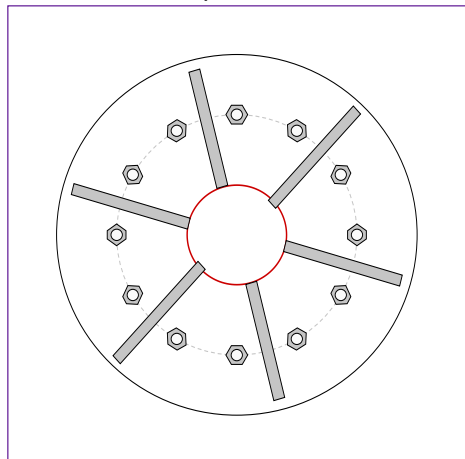
BU #	824012
Site Name	Farmington / Rt 6
Order #	580997 Rev 3

TIA-222 Revision	H
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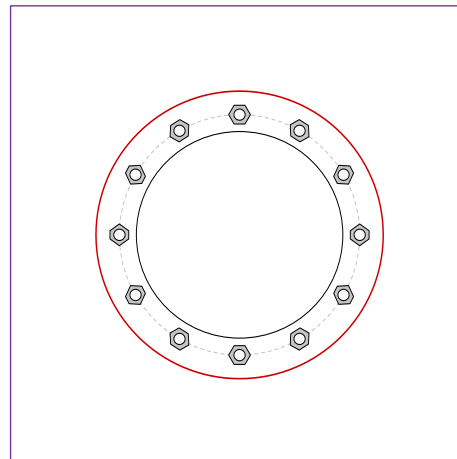
Applied Loads	
Moment (kip-ft)	54.11
Axial Force (kips)	3.44
Shear Force (kips)	2.71

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(12) 3/4" ϕ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 16" BC

Top Plate Data

24" OD x 3" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

(6) 11"H x 8"W x 0.75"T, Notch: 0"
plate: Fy= 50 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.5" fillet
vert. weld: 0.4506" fillet

Top Pole Data

6.625" x 0.864" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Plate Data

13.75" ID x 1.5" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

19.5" x 0.1875" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	13.23
Allowable (kips)	30.06
Stress Rating:	41.9% Pass

Bottom Plate Capacity

Max Stress (ksi):	7.58	(Flexural)
Allowable Stress (ksi):	54.00	
Stress Rating:	13.4%	Pass
Tension Side Stress Rating:	N/A	

Bottom Stiffener Capacity

Horizontal Weld:	N/A
Vertical Weld:	N/A
Plate Flexure+Shear:	N/A
Plate Tension+Shear:	N/A
Plate Compression:	N/A

Bottom Pole Capacity

Punching Shear:	N/A
-----------------	-----

Flange Plate Stiffener Analysis (G)

Stiffener Data		
Current Stiffener Force	27.49	kip
H. Weld Type	Fillet	
H. Fillet Weld Size	0.5	in
H. Groove Weld Depth		n/a
H. Groove Weld Angle		n/a
V. Fillet Weld Size	0.4506	in
Width	8	in
Height	11	in
Thickness	0.75	in
H. Notch	0	in
V. Notch	0	in
Grade	50	ksi
Weld Strength	70	ksi
Length H. Weld	4.4375	in
Length V. Weld	11	in
Vert. Strip of Unity Width MOI	110.917	in ⁴ /in
Stiffener Moment	109.97	kip-in
Top Wedge Bearing Stress	5.45	kip/in
Bottom Wedge Bearing Stress	-5.45	kip/in
Stiffener Horz. Reaction	0.00	kip

Weld Analysis		
Effective Throat	0.35	in
Allowable Shear	98.84	kip
Shear Ratio	0.00	
Allowable Tension	98.84	kip
Tension Ratio	0.28	
Interaction Ratio	0.28	
Vert. Weld Max Norm. Stress	8.56	ksi
Vert Weld Stress	3.92	ksi
Vert. Weld Vector Stress	9.41	ksi
Allowable Stress	31.50	ksi
Vert. Ratio	0.30	

Summary of Results		
Horizontal Weld:	27.8%	
Vertical Weld:	29.9%	
Plate Tension+Shear:	18.4%	
Plate Flex+Shear:	33.8%	
Plate Compression:	27.9%	
Max:	33.8%	
Stiffener Plate Analysis		
Plate Allowable Tension	149.77	kip
Tension Ratio	0.18	
Plate Allowable Shear	89.86	kip
Shear Ratio	0.00	
Interaction Ratio	0.18	
Plate Allowable Shear	222.75	kip
Shear Ratio	0.12	
Plate Bending Stress	14.54	ksi
Plate Allowable Bending	45.00	ksi
Bending Ratio	0.32	
Interaction Ratio	0.34	
Bracket Check b/a	0.73	
Bracket Check z	0.37	
Allowable Compression	98.70	kip
Ratio	0.28	
Bracket Buckling Check	0.23	in
OK		

Rupture Strength at Welds (Stiffener-to-Pipe)		
Pipe Diameter =	6.625	in
Pipe Thickness =	0.864	in
Pipe Fy =	35	ksi
Pipe Fu =	60	ksi
Rupture Strength of Welds =	13.38	k/in
Rupture Strength of Pole =	31.104	k/in
Capacity =	43.0%	OK

Monopole Base Plate Connection

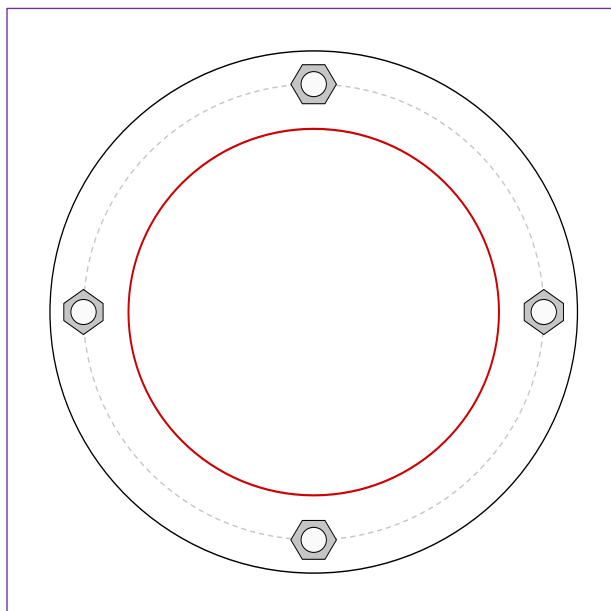


Site Info	
BU #	824012
Site Name	Farmington / Rt 6
Order #	580997 Rev 3

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
I_{ar} (in)	2

Applied Loads	
Moment (kip-ft)	594.14
Axial Force (kips)	14.55
Shear Force (kips)	7.07

*TIA-222-H Section 15.5 Applied



Connection Properties

Anchor Rod Data

(4) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 41" BC

Base Plate Data

47" OD x 1.5" Plate (A871 GR60; $F_y=60$ ksi, $F_u=75$ ksi)

Stiffener Data

N/A

Pole Data

33" x 0.25" 18-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)

Analysis Results

Anchor Rod Summary

(units of kips, kip-in)

$Pu_t = 170.04$	$\phi Pn_t = 243.75$	Stress Rating
$Vu = 1.77$	$\phi Vn = 149.1$	66.4%
$Mu = n/a$	$\phi Mn = n/a$	Pass

Base Plate Summary

Max Stress (ksi):	51.82	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	91.4%	Pass

Drilled Pier Foundation

BU # :	824012
Site Name:	Farmington / Rt 6
Order Number:	580997 Rev 3
TIA-222 Revision:	H
Tower Type:	Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	594	
Axial Force (kips)	15	
Shear Force (kips)	7	

Material Properties		
Concrete Strength, f _c :	4	ksi
Rebar Strength, F _y :	60	ksi
Tie Yield Strength, F _y :	60	ksi

Pier Design Data		
Depth	14	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 14' below grade		
Pier Diameter	5.5	ft
Rebar Quantity	22	
Rebar Size	8	
Rebar Cage Diameter	55	in
Tie Size	5	
Tie Spacing	12	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check		
D _{v=0} (ft from TOC)	4.55	-
Soil Safety Factor	3.29	-
Max Moment (kip-ft)	623.70	-
Rating*	38.4%	-
Soil Vertical Check		
Skin Friction (kips)	116.63	-
End Bearing (kips)	180.15	-
Weight of Concrete (kips)	64.15	-
Total Capacity (kips)	296.78	-
Axial (kips)	79.15	-
Rating*	25.4%	-
Reinforced Concrete Flexure		
Critical Depth (ft from TOC)	4.52	-
Critical Moment (kip-ft)	623.70	-
Critical Moment Capacity	2209.11	-
Rating*	26.9%	-
Reinforced Concrete Shear		
Critical Depth (ft from TOC)	11.21	-
Critical Shear (kip)	127.90	-
Critical Shear Capacity	482.29	-
Rating*	25.3%	-

Structural Foundation Rating*	26.9%
Soil Interaction Rating*	38.4%

*Rating per TIA-222-H Section 15.5



Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
N/A	<input type="checkbox"/>
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

[Go to Soil Calculations](#)

Soil Profile														
Groundwater Depth		29	# of Layers		2									
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	Y _{soil} (pcf)	Y _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2.75	2.75	135	150			0.000	0.000					Cohesionless
2	2.75	14	11.25	135	150		38	0.000	0.000	0.80	0.80	10.11		Cohesionless

ASCE 7 Hazards Report

Address:

No Address at This
Location

Standard:

ASCE/SEI 7-16

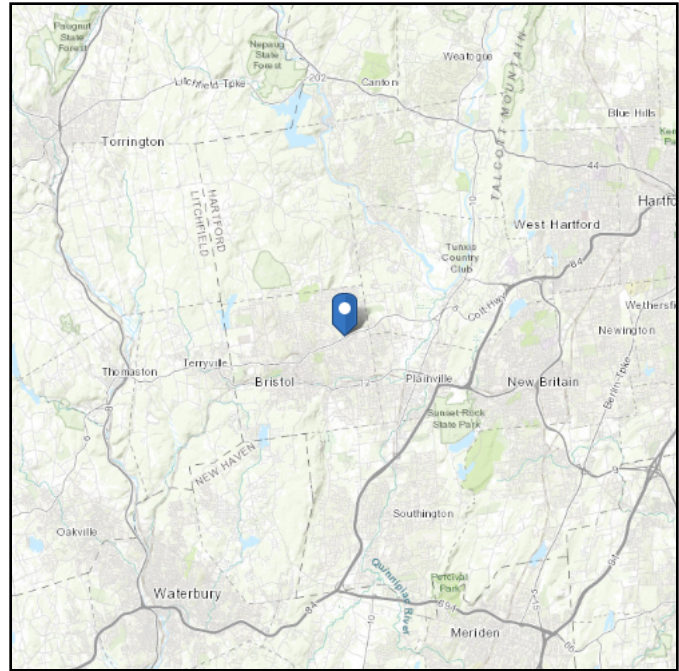
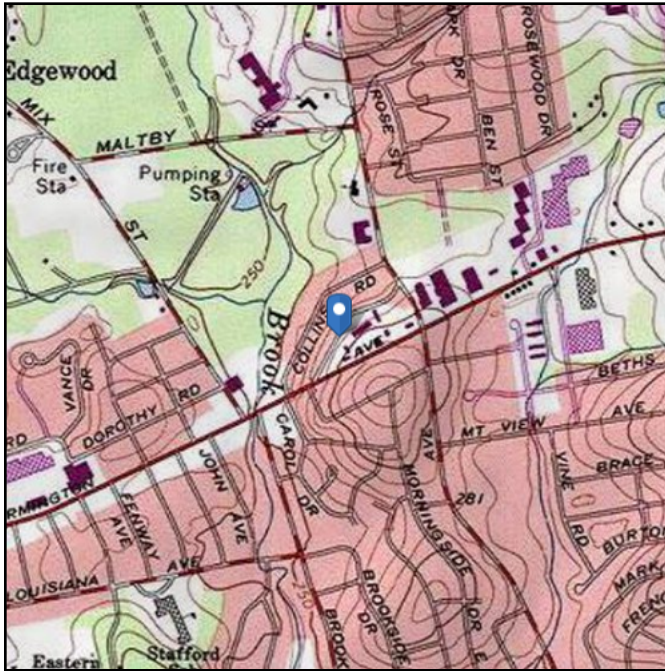
Risk Category: II**Soil Class:**

D - Default (see
Section 11.4.3)

Elevation: 288.99 ft (NAVD 88)

Latitude: 41.695528

Longitude: -72.91125



Wind

Results:

Wind Speed:	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Mon Sep 13 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

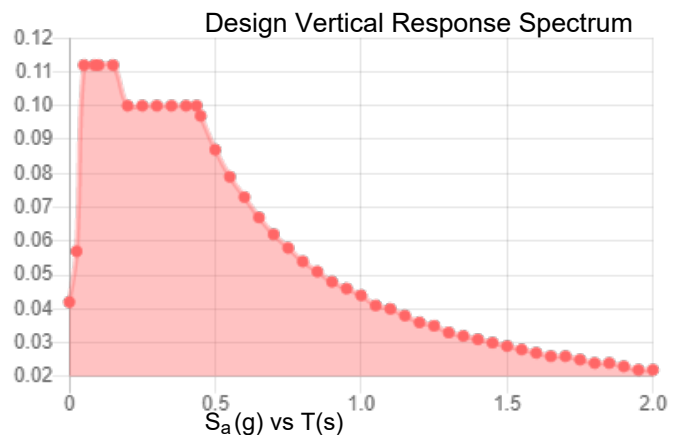
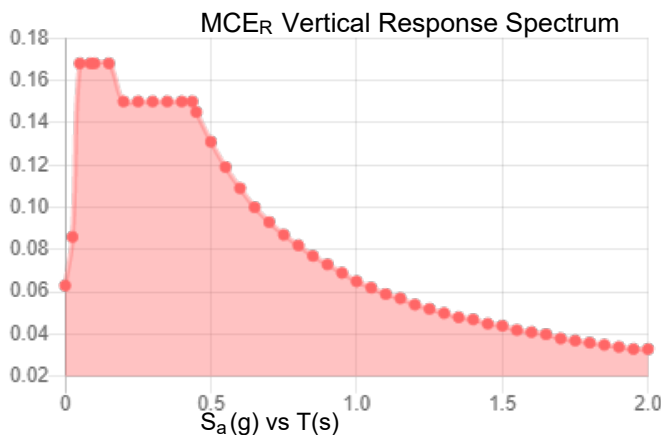
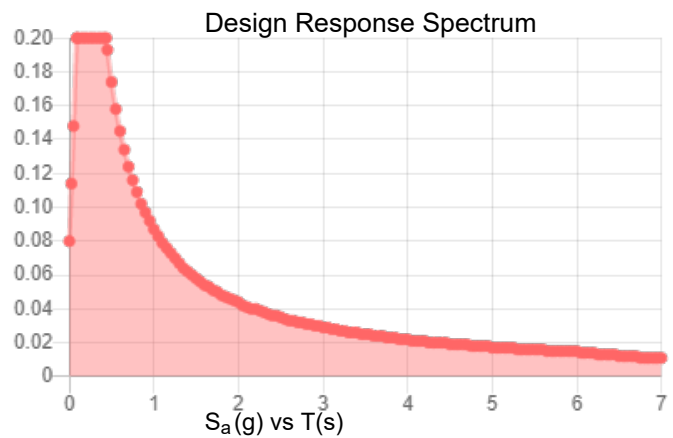
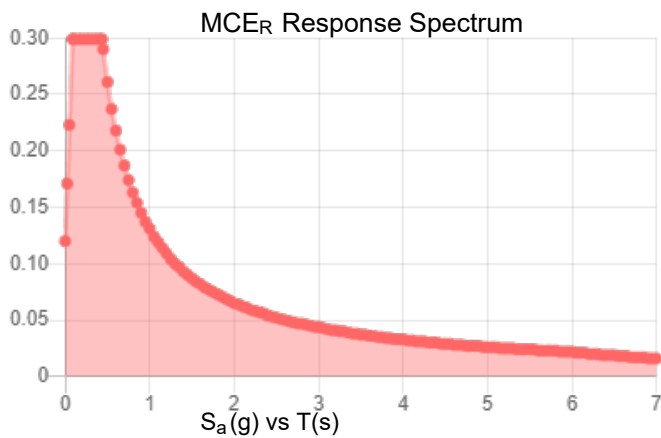
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_S :	0.187	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.101
F_v :	2.4	PGA _M :	0.162
S_{MS} :	0.299	F_{PGA} :	1.597
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.2	C_v :	0.7

Seismic Design Category B



Data Accessed:

Mon Sep 13 2021

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Results:

Ice Thickness: 1.50 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Mon Sep 13 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

APPENDIX D

MODIFICATION DRAWINGS

MONOPOLE REINFORCEMENT DRAWINGS

PREPARED FOR CROWN CASTLE

SITE NAME: FARMINGTON / RT 6

BU NUMBER: 824012

SITE ADDRESS:

985 FARMINGTON AVENUE

BRISTOL, CT 06010

HARTFORD COUNTY, USA

PROJECT CONTACTS:

1. CROWN PROJECT MANAGER:

JOHN MCGEE
(704) 877-8397
JOHN.MCGEE@CROWNCastle.COM
6325 ARDREY KELL ROAD, SUITE 600
CHARLOTTE, NC 28277

2. ENGINEER OF RECORD:

GPD ENGINEERING AND ARCHITECTURE
PROFESSIONAL CORPORATION
520 SOUTH MAIN STREET, SUITE 2531
AKRON, OH 44311
(330) 572-2100
FOR QUESTIONS PLEASE EMAIL:
CROWNMODS@GPDGROUP.COM

TOWER INFORMATION

TOWER MAPPING: DOC ID #: 3594409
TOWER HEIGHT / TYPE: 119 FT CONCEALMENT TOWER
TOWER LOCATION: LAT: 41° 41' 43.91"
DATUM: (NAD 1983) LONG: -72° 54' 40.53"
ELEV: 289 FT AMSL
STRUCTURAL DESIGN DRAWING: CCI/WO #: 2039941
STRUCTURAL ANALYSIS REPORT: GPD/WO #: 2011015
STRUCTURAL ANALYSIS DATE: 09/15/2021
CCI ORDER NUMBER: 580997 REV #: 3
CCISITES DOCUMENT ID: 9975383

CODE COMPLIANCE

GOVERNING CODES: TIA-222-H & 2018 CONNECTICUT STATE BUILDING CODE
WIND SPEEDS: 117 MPH 3 SECOND GUST
50 MPH 3 SECOND GUST (W/ICE)
ICE THICKNESS: 1 1/2"
RISK CATEGORY: II
EXPOSURE CATEGORY: B
TOPO CATEGORY: 1

DIRECTIONS: I-84 WEST, EXIT 38. CONTINUE ONTO ROUTE 6 WEST APPROX 7-8 MILES. SITE WILL BE IN PARKING LOT ON RIGHT HAND SIDE. ---- LL WANTS TO BE NOTIFIED WHEN A CREW WILL BE ON SITE WORKING. ESPECIALLY WHEN ELEVATED WORK WILL BE PERFORMED BECAUSE THE LL NEEDS TO COORDINATE WITH THE OTHER TENANTS TO HAVE A STAGING AREA FOR A MANLIFT.



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

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

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM GPD TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTING QUALIFIED ENGINEERING SERVICES PLEASE CONTACT GPD AT CROWNMODS@GPDGROUP.COM.

HOT WORK INCLUDED

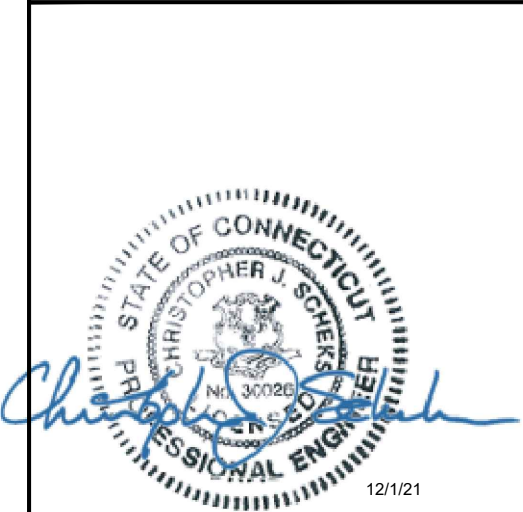
NA	BASE GRINDING ONLY
NA	BASE WELDING (AND GRINDING)
NA	AERIAL GRINDING ONLY
NA	AERIAL WELDING (AND GRINDING)

DRAWINGS INCLUDED

SHEET NUMBER	DESCRIPTION
S-1	TITLE PAGE
S-2	MODIFICATION INSPECTION CHECKLIST
S-3	GENERAL NOTES
S-4	ADDITIONAL NOTES
S-5	TOWER ELEVATION
S-6	TOWER SECTIONS
S-7	ADDITIONAL SECTIONS
S-8	ADDITIONAL SECTIONS
S-9	ADDITIONAL SECTIONS
OPS-PRC-10127	CROWN CASTLE CONCEALMENT REINFORCEMENT SOLUTION

NO.	DATE	DESCRIPTION	BY

REVISIONS



520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2102

GPD PROJECT NUMBER
2022777.824012.03

SITE NAME: FARMINGTON / RT 6

BU NUMBER: 824012

WO NUMBER: 2039941

SITE ADDRESS:
985 FARMINGTON AVENUE
BRISTOL, CT 06010
HARTFORD COUNTY, USA

ENG/QA BY: EM DATE: 12/1/21

DFT BY: JMJ DATE: 12/1/21

DFT/QA BY: DP DATE: 12/1/21

APRVD BY: CJS DATE: 12/1/21

SCALE: N.T.S.

TITLE PAGE

S-1

REV
0

CED-FRM-10354 MI CHECKLIST			
REQUIRED	REPORT ITEM	APPLICABLE CROWN DOC #	BRIEF DESCRIPTION
PRE-CONSTRUCTION			
X	MI CHECKLIST DRAWING	CED-SOW-10007	THIS CHECKLIST SERVES AS A GUIDELINE FOR THE REQUIRED CONSTRUCTION DOCUMENTS AND INSPECTIONS FOR THIS MODIFICATION
X	EOR APPROVED SHOP DRAWINGS	CED-SOW-10007	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. SHOP DRAWING SUBMISSION SHALL INCLUDE THE EOR RFI FORM DETAILING ANY CHANGES FROM THE ORIGINAL DESIGN
X	FABRICATION INSPECTION	CED-SOW-10007	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	CED-SOW-10007 CED-STD-10069	A CWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	CED-SOW-10007	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED AS REQUIRED PER SECTION 9.2.5 OF CED-SOW-10007. MTRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR NDE INSPECTION REPORT	CED-SOW-10066 CED-STD-10069	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	NDE OF MONOPOLE BASE PLATE	ENG-SOW-10033	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	CED-SOW-10007	PACKING/SHIPPING LIST FOR ALL MATERIAL USED DURING CONSTRUCTION OF THE MODIFICATION
ADDITIONAL TESTING AND INSPECTIONS:			
CONSTRUCTION			
NA	FOUNDATION INSPECTIONS	CED-SOW-10144	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL OBSERVATION OF THE REBAR SHALL BE PERFORMED BEFORE PLACING THE EPOXY. A SEALED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	CONCRETE COMP. STRENGTH AND SLUMP TEST	CED-SOW-10144	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE FOUNDATION REPORT.
NA	EARTHWORK	CED-SOW-10144	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY AN APPROVED FOUNDATION INSPECTOR AND RESULTS INCLUDED AS PART OF THE FOUNDATION REPORT.
NA	MICROPILE/ROCK ANCHOR	CED-SOW-10144	MICROPILES/ROCK ANCHORS SHALL BE INSPECTED BY THE FOUNDATION INSPECTION VENDOR AND SHALL BE INCLUDED AS PART OF THE FOUNDATION INSPECTION REPORT, ADDITIONAL TESTING AND/OR INSPECTION REQUIREMENTS ARE NOTED IN THESE CONTRACT DOCUMENTS.
NA	POST-INSTALLED ANCHOR ROD VERIFICATION	CED-SOW-10007 CED-FRM-10358	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH CROWN REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	BASE PLATE GROUT VERIFICATION	ENG-STD-10323	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMOVED AND/OR INSTALLED IN ACCORDANCE WITH CROWN REQUIREMENTS FOR INCLUSION IN THE MI REPORT.
NA	FIELD CERTIFIED WELD INSPECTION	CED-SOW-10066 CED-STD-10069	A CROWN APPROVED CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST FIELD WELDS, FOLLOWING ALL PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS APPLICABLE TO WELD INSPECTIONS. A REPORT SHALL BE PROVIDED. NDE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED BY CROWN STANDARDS AND CONTRACT DOCUMENTS. THE NDE REPORT SHALL BE INCLUDED IN THE CWI REPORT.
X	ON-SITE COLD GALVANIZING VERIFICATION	ENG-STD-10149 CED-FRM-10358	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.
NA	TENSION TWIST AND PLUMB	CED-PRC-10182 CED-STD-10261	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.
X	GC AS-BUILT DRAWINGS	CED-SOW-10007	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED
ADDITIONAL TESTING AND INSPECTIONS:			
X	TOWER PLUMB DELIVERABLES		THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THE TOWER PLUMB CONDITION. SEE REQUIREMENTS ON SHEET S-4.
X	BOLT PRE-TENSION VERIFICATION		TURN-OFF-THE NUT METHOD IS THE DEFAULT METHOD FOR PRE-TENSIONING BOLTS. MATCH-MARKINGS SHALL BE PRESENT ON EACH FASTENER FOR INSPECTION PURPOSES AND SHALL BE APPLIED IN ACCORDANCE WITH THE REQUIREMENTS OF THE RCSC SPECIFICATION. ALTERNATIVE PRE-TENSIONING METHODS ARE NOT ALLOWED WITHOUT PRIOR EOR CONSENT.
POST-CONSTRUCTION			
X	CONSTRUCTION COMPLIANCE LETTER	CED-SOW-10007 CED-FRM-10358	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
NA	POST-INSTALLED ANCHOR ROD PULL TESTS	CED-PRC-10119	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY A CROWN APPROVED PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	CED-SOW-10007	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
NA	BOLT HOLE INSTALLATION VERIFICATION REPORT	CED-SOW-10007	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	PUNCH LIST DEVELOPMENT AND CORRECTION DOCUMENTATION	CED-PRC-10283 CED-FRM-10285	FINAL PUNCH LIST INDICATING ALL NONCONFORMANCE(S) IDENTIFIED AND THE FINAL RESOLUTION/APPROVAL.
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	CED-SOW-10007	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
ADDITIONAL TESTING AND INSPECTIONS:			

THE MI CHECKLIST SHALL BE REVIEWED PRIOR TO THE START OF CONSTRUCTION. ALL PARTIES TO THE MODIFICATION SHALL UNDERSTAND CROWN REQUIREMENTS AND INSPECTION/DOCUMENTATION THAT IS APPLICABLE TO THE SCOPE OF WORK THEY ARE PERFORMING. ERRORS ON THE MI CHECKLIST SHALL BE BROUGHT TO THE ATTENTION OF THE CROWN POC AND EOR AS SOON AS POSSIBLE.

MODIFICATION INSPECTION NOTES

GENERAL

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

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

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

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

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

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

SERVICE LEVEL COMMITMENT

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

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


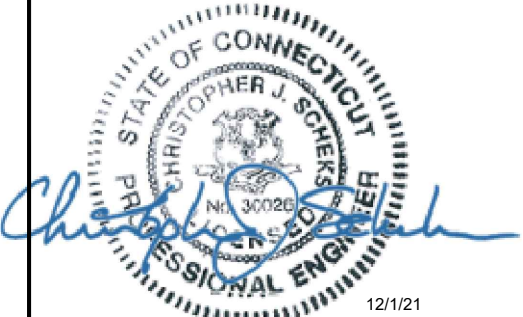
REQUIRED PHOTOS

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

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

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

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, FOR A COMPLETE LIST OF PHOTOS SEE CROWN DOCUMENT # CED-SOW-10007.

				 GPD Engineering and Architecture Professional Corporation 520 South Main Street, Suite 2531 Akron, OH 44311 330.572.2100 Fax 330.572.2102	
NO.	DATE	DESCRIPTION	BY	GPD PROJECT NUMBER 2022777.824012.03	
REVISIONS				SITE NAME: FARMINGTON / RT 6	
				BU NUMBER: 824012	
				WO NUMBER: 2039941	
				SITE ADDRESS: 985 FARMINGTON AVENUE BRISTOL, CT 06010 HARTFORD COUNTY, USA	
				ENG/QA BY: EM DATE: 12/1/21	
				DFT BY: JMJ DATE: 12/1/21	
				DFT/QA BY: DP DATE: 12/1/21	
				APRV'D BY: CJS DATE: 12/1/21	
				SCALE: N.T.S.	
				MODIFICATION INSPECTION CHECKLIST	
				S-2	REV 0

GENERAL NOTES:

1. The General Contractor (GC) shall reference CED-STD-10159, "Tower Modification Construction Specifications", as a continuation of the following General Notes. The GC shall keep a copy of this document with the Structural Design Drawings (SDD) at all times, and shall ensure that all Contractor Personnel are aware of the information enclosed within the General Notes and CED-STD-10159.
2. The Contract Documents are the property of Crown Castle (Crown). They are provided to the GC and its Lower Tier Contractors and material suppliers for the limited purpose of use in completing the Work for this Site, and shall be kept in strict confidence and not disclosed to any third parties. The Contract Documents shall not be used for any other purpose whatsoever without the prior written consent of Crown.
3. Detail drawings, including notes and tables, shall govern over general notes and typical details. Contact the Crown Point of Contact (POC) and Engineer of Record (EOR) for clarification as needed.
4. Do not scale drawings.
5. Any Work performed without a prefabrication mapping is done at the risk of the GC and/or fabricator. All dimensions of existing structural elements are assumed based on the available documentation and are preliminary until field-verified by the GC, unless noted otherwise (UNO). Where discrepancies are found, GC shall contact the Crown POC and EOR through RFI.
6. For this analysis and modification, the tower has been assumed to be in good condition without any structural defects, UNO. If the GC discovers any indication of an existing structural defect, contact the Crown POC and EOR immediately.
7. 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 GC responsible for the execution of the Work contained herein, and shall meet ANSI/ASSE A10.48 (latest edition); federal, state, and local regulations; and any applicable industry consensus standards related to the construction activities being performed. All rigging plans shall adhere to ANSI/ASSE A10.48 (latest edition) and Crown standard CED-STD-10253, "Rigging Program", including the required involvement of a qualified engineer for class IV construction to certify the supporting structure(s) in accordance with the ANSI/TIA-322 (latest edition).
8. The structural integrity of the modification design extends to the complete condition only. The GC must be cognizant that the removal of any structural component of an existing tower has the potential to cause the partial or complete collapse of the structure. All necessary precautions must be taken to ensure structural integrity, including, but not limited to, engineering assessment of construction stresses with installation maximum wind speed and/or temporary bracing and shoring.
9. Aerial and underground utilities and facilities may or may not be shown on the drawings. The GC shall take every precaution to preserve and protect these items, which may include aerial or underground power lines, telephone lines, water lines, sewer lines, cable television facilities, pipelines, structures and other public and private improvements within or adjacent to the Work area. The responsibility for determining the actual on-site location of these items shall rest exclusively with the GC.
10. All manufacturer's hardware assembly instructions shall be followed, UNO. Conflicting notes shall be brought to the attention of the EOR and the Crown POC.

11. The GC shall fabricate all required items per the materials specified below, UNO on the detail drawing sheets. If the GC finds for any component that the materials have not been clearly specified, the GC shall submit an RFI to the EOR to confirm the required material.

All structural elements shall be new and shall conform to the following requirements, UNO:

- Monopoles:

• Structural shapes and plates:

ASTM A572 Grade 65 (FY = 65 KSI)

• Welding electrodes, SMAW:

E80XX

• Welding electrodes, FCAW:

E8XT-XX
- Self-Support and Guyed Towers:

• Structural shapes and plates:

ASTM A572 Grade 50 (FY = 50 KSI)

• Welding electrodes, SMAW:

E70XX

• Welding electrodes, FCAW:

E7XT-XX

- All tower types:

• Steel angle:

ASTM A572 Grade 50 (FY = 50 KSI)

• Solid rod:

ASTM A36 (FY = 36 KSI)

• Pipe/tube (round):

ASTM A500 Grade C (FY = 46 KSI)

• Pipe/tube (square):

ASTM A500 Grade C (FY = 50 KSI)

• Bolts:

ASTM F3125 Grade A325 Type 1

• U-bolts:

ASTM A307 Grade A, or SAE J429 Grade 2

• Nuts:

ASTM A563 Grade DH

• Washers:

ASTM F436 Type 1

• Guy Wires:


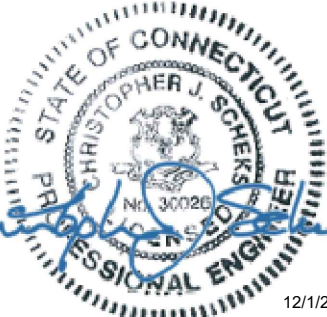
ASTM A475 Grade EHS

• Bridge Strand:

ASTM A586 Grade 1

12. After fabrication, hot-dip galvanize all steel items, UNO. Galvanize per ASTM A123, ASTM A153/A153M, or ASTM A653 G90, as applicable. ASTM A490 bolts shall not be hot-dip galvanized, but shall instead be coated with Magni 565 or EOR approved equivalent, per ASTM F2833.
13. Contractor Personnel shall not drill holes in any new or existing structural members, other than those drilled holes shown on structural drawings, without the approval of the EOR.
14. For a list of Crown-approved cold galvanizing compounds, refer to ENG-STD-10149, "Tower Protective Coatings Guidelines".
15. All exposed structural steel as the result of this scope of Work including welds (after final inspection of the weld by the CWI), field drilled holes, and shaft interiors (where accessible), shall be cleaned and two (2) coats cold galvanizing shall be applied by brush in accordance with ENG-STD-10149, "Tower Protective Coatings Guidelines". Photo documentation is required to be submitted to the MI Inspector.
16. If removal of existing modifications is required per the modification scope, the GC shall clean and cold galvanize any existing empty bolt holes, UNO. If additional unexpected, oversized, or slotted holes are found, the GC shall contact the EOR and Crown POC for guidance prior to proceeding with the modifications.
17. All Work involving base plate grout scope items or resulting in disturbance of base plate grout shall reference ENG-STD-10323, "Base Plate Grout", and shall follow any Base Plate Grout Removal Notes contained herein.

18. All tower grounding affected by the Work shall be repaired or replaced in accordance with OPS-STD-10090, "Tower Grounding", and OPS-BUL-10133, "Grounding Repair Recommendation".
19. If scope of modification requires removal or covering of tower ID tag, the tag must be replaced.
20. Any hardware removed from the existing tower shall be replaced with new hardware of equal size and quality, UNO. No existing fasteners shall be reused.
21. All joints using ASTM A325 or A490 bolts, U-bolts, V-bolts, and threaded rods shall be snug tightened, UNO.
22. A nut locking device shall be installed on all proposed and/or replaced snug tightened ASTM A325 or A490 bolts, U-bolts, V-bolts, and threaded rods.
23. All joints are bearing type connections UNO. If no bolt length is given in the Bill of Materials, the connection may include threads in the shear planes, and the GC is responsible for sizing the length of the bolt.
24. Blind bolts shall be installed per the installation specifications on the corresponding Approved Fastener sheets contained in CED-CAT-10300, "Monopole Standard Drawings and Approved Reinforcement Components".
25. If ASTM A325 or A490 bolts, and/or threaded rods are specified to be pre-tensioned, these shall be installed and tightened to the pretensioned condition according to the requirements of the RCSC Specification for Structural Joints Using ASTM High Strength Bolts.
26. All proposed and/or replaced bolts shall be of sufficient length such that the end of the bolt be at least flush with the face of the nut. It is not permitted for the bolt end to be below the face of the nut after tightening is completed.

				<div><div></div><div>GPD Engineering and Architecture Professional Corporation</div><div>520 South Main Street, Suite 2531 Akron, OH 44311 330.572.2100 Fax 330.572.2102</div></div>
NO.	DATE	DESCRIPTION	BY	GPD PROJECT NUMBER 2022777.824012.03
REVISIONS				SITE NAME: FARMINGTON / RT 6
<div><div></div><div>12/1/21</div></div>				BU NUMBER: 824012 WO NUMBER: 2039941 SITE ADDRESS: 985 FARMINGTON AVENUE BRISTOL, CT 06010 HARTFORD COUNTY, USA
				ENG/QA BY: EM DATE: 12/1/21
				DFT BY: JMJ DATE: 12/1/21
				DFT/QA BY: DP DATE: 12/1/21
				APRVD BY: CJS DATE: 12/1/21
SCALE: N.T.S.				
GENERAL NOTES				
S-3			REV 0	

TOWER PLUMB REQUIREMENTS:


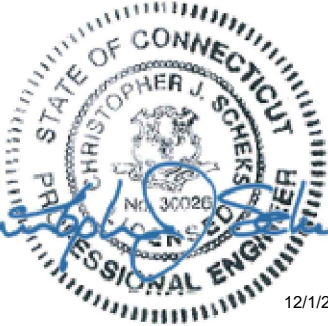
1. CHECK OF VERTICAL ALIGNMENT AND LEVEL OF BASE TOWER AND CANISTER ASSEMBLY SECTIONS FOR CONFORMANCE TO A PLUMB CONDITIONS IN ACCORDANCE WITH ANSI/TIA-222 (APPLICABLE VERSION) STANDARDS. PLUMB CONDITION IS TO BE DOCUMENTED WITH PROPER NOTES AND PICTURES TO PROVE, AT A MINIMUM, THE FOLLOWING:
- 1.1. DEFLECTION CALCULATIONS PER ANSI/TIA-222 (APPLICABLE VERSION) STANDARDS.

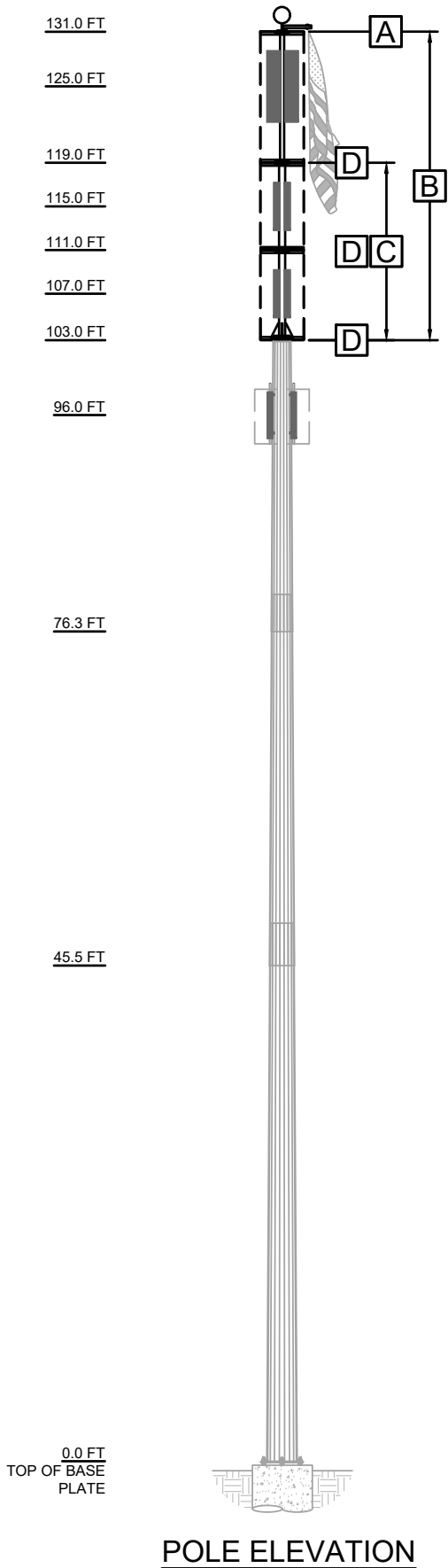
1.2. MINIMUM AND MAXIMUM (I.E. HOT AND COLD) SURFACE TEMPERATURE READINGS ON BASE MONOPOLE.

1.3. TIME OF DAY MEASUREMENT WAS TAKEN (E.G. DAWN, NOON, DUSK)

1.4. PICTURES OF A LEVEL OR DIGITAL INCLINOMETER MEASURED AT A MINIMUM OF (3) EQUIDISTANT LOCATIONS AROUND THE BASEPLATE TO PROVE LEVEL CONDITION.

1.5. AZIMUTH OR MONOPOLE FLAT NUMBER OF THE DIRECTION OF THE OUT-OF-PLUMB DEFLECTION.

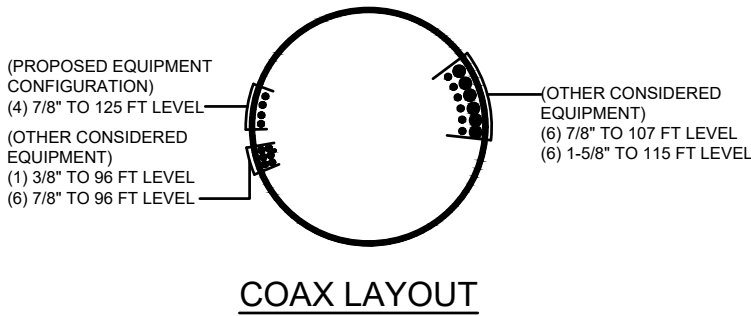
				<div><p>GPD Engineering and Architecture Professional Corporation</p><p>520 South Main Street, Suite 2531 Akron, OH 44311 330.572.2100 Fax 330.572.2102</p></div>	
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				APRVD BY: CJS DATE: 12/1/21	
				SCALE: N.T.S.	
				ADDITIONAL NOTES	
				S-4	
REV 0					




MANUFACTURER POLE SPECIFICATIONS	
TAPER:	0.1410 IN/FT
BASE PL STEEL:	ASTM A871 GRADE 60
ANCHOR RODS:	2-1/4"Ø #18J ASTM A615 GRADE 75

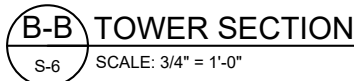
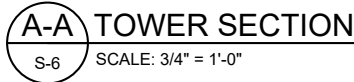
POLE MODIFICATION SCHEDULE			
	ELEVATION (FT)	MODIFICATION	REFERENCE SHEET
A	131.0	REPLACE THE EXISTING TRUCK AND BALL ASSEMBLY WITH NEW.	S-6
B	103.0 - 131.0	INSTALL NEW CONCEALMENT MASTS AND CANISTER ASSEMBLIES.	S-6, S-7, S-8, & S-9
		INSTALL CROWN CASTLE CONCEALMENT REINFORCEMENT SOLUTION.	OPS-PRC-10127
		PAINT NEW/EXISTING MATERIAL IN THE MODIFIED REGION TO MATCH EXISTING TOWER FINISH.	-
C	103.0 - 119.0	REMOVE THE EXISTING CONCEALMENT CANISTERS, MAST ASSEMBLY, AND ALL ASSOCIATED HARDWARE FROM THE TOWER.	S-5
D	119.0	NEW FLANGE BOLTS SHALL BE PRE-TENSIONED PER AISC TURN-OF-THE-NUT METHOD. MATCH MARKINGS SHALL BE PRESENT ON EACH FASTENER FOR INSPECTION PURPOSES.	S-6, S-7, & S-9
	111.0		
	103.0		
E	-	UPON COMPLETION OF MODIFICATIONS CHECK AND ADJUST PLUMB FOR THE ENTIRE TOWER.	-
FOR PARTS NOT DETAILED WITHIN THE DRAWING AND STARTING WITH "CCI-", SEE THE FOLLOWING CATALOG FOR DETAILS: CON-CAT-10300, MONOPOLE STANDARD DRAWINGS AND APPROVED REINFORCEMENT COMPONENTS.			
PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY AND SHALL NOT BE USED FOR FABRICATION.			


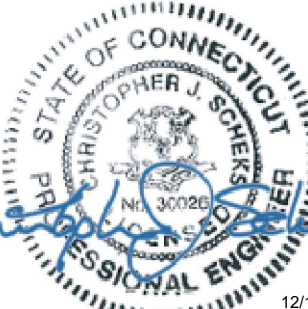
- NOTE:**
- ALL EXISTING MATERIAL REMOVED FROM THE TOWER SHALL BE DISPOSED OF BY THE CONTRACTOR OFF SITE.
 - IF A NEW FLAG IS BEING INSTALLED, CROWN CASTLE REQUESTS THE FLAG AND ALL ASSOCIATED HARDWARE BE PURCHASED FROM THE FOLLOWING SUPPLIER
- THE FLAG LOFT
1900 DELMAR STREET
ST. LOUIS, MO 63103
(800)-995-3524 (ATTN. RICK KELLY)

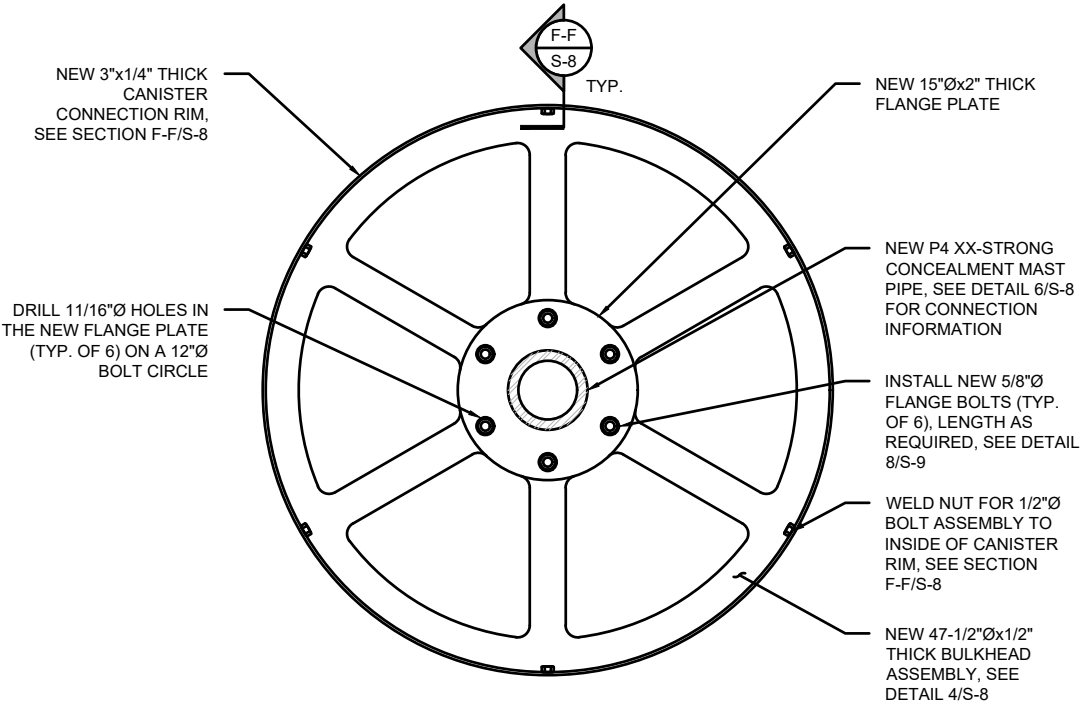


ORIGINAL MANUFACTURER SHAFT SECTION DATA								
SHAFT SECTION	SHAFT SECTION	SECTION LENGTH (FT)	POLE THICKNESS (IN)	SECTION GRADE (KSI)	FLANGE PLATE GRADE (KSI)	LAP SPLICE (IN)	DIAMETER ACROSS FLATS OR OF ROUND SECTION (IN)	
							@TOP	@BOTTOM
1	ROUND	16.00	0.6740	50	60	41.00 47.00	4.5000	4.5000
2	18-SIDED	26.71	0.1875	65	-		19.5000	23.2507
3	18-SIDED	34.17	0.1875	65	-		22.2700	27.0887
4	18-SIDED	49.46	0.2500	65	-		26.0403	33.0000

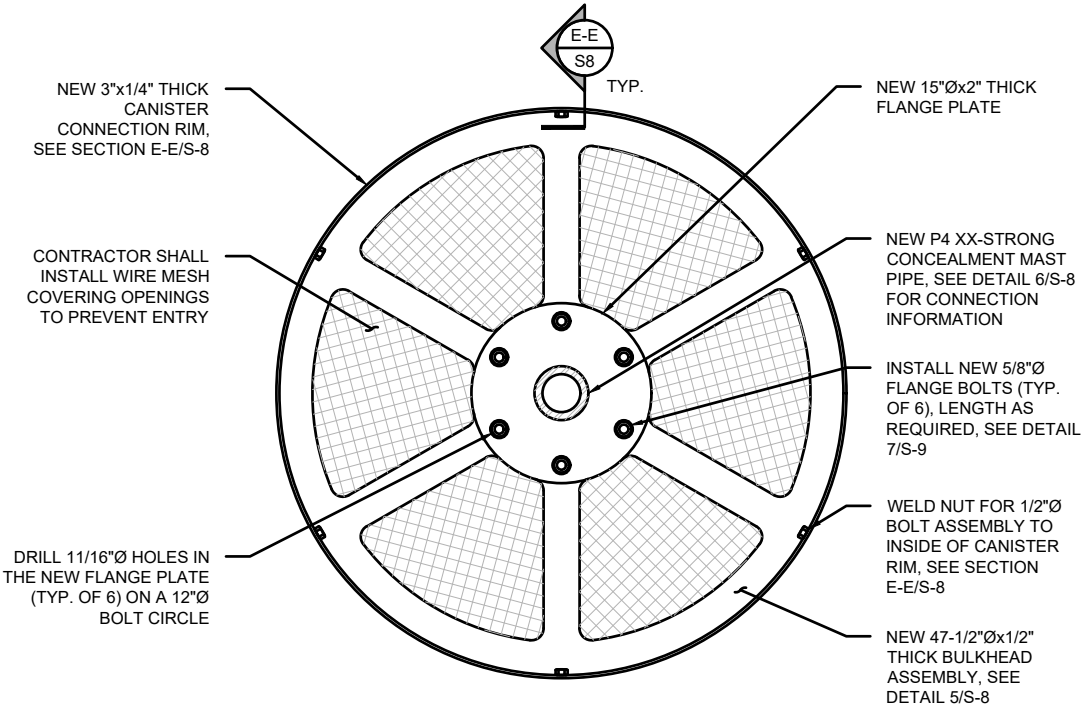
 GPD Engineering and Architecture Professional Corporation 520 South Main Street, Suite 2531 Akron, OH 44311 330.572.2100 Fax 330.572.2102			
NO.	DATE	DESCRIPTION	BY
REVISIONS			
GPD PROJECT NUMBER 2022777.824012.03			
SITE NAME: FARMINGTON / RT 6			
BU NUMBER: 824012 WO NUMBER: 2039941 SITE ADDRESS: 985 FARMINGTON AVENUE BRISTOL, CT 06010 HARTFORD COUNTY, USA			
ENG/QA BY: EM		DATE: 12/1/21	
DFT BY: JMJ		DATE: 12/1/21	
DFT/QA BY: DP		DATE: 12/1/21	
APRVD BY: CJS		DATE: 12/1/21	
SCALE: N.T.S.			
TOWER ELEVATION			
S-5			REV 0



- | | | | | | |  <p>GPD Engineering and Architecture
Professional Corporation</p> <p>520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2102</p> | |
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| NO. | DATE | DESCRIPTION | BY | GPD PROJECT NUMBER
2022777.824012.03 | | | |
| REVISIONS | | | | | | | |
| 
<i>Christopher J. Schekels</i>
12/1/21 | | | | SITE NAME: FARMINGTON / RT 6 | | | |
| | | | | BU NUMBER: 824012 | | | |
| | | | | WO NUMBER: 2039941 | | | |
| | | | | SITE ADDRESS:
985 FARMINGTON AVENUE
BRISTOL, CT 06010
HARTFORD COUNTY, USA | | | |
| | | | | ENG/QA BY: EM DATE: 12/1/21 | | | |
| | | | | DFT BY: JMJ DATE: 12/1/21 | | | |
| | | | | DFT/QA BY: DP DATE: 12/1/21 | | | |
| | | | | APRVD BY: CJS DATE: 12/1/21 | | | |
| | | | | SCALE: N.T.S. | | | |
| | | | | TOWER SECTIONS | | | |
| S-6 | | | REV
0 | | | | |

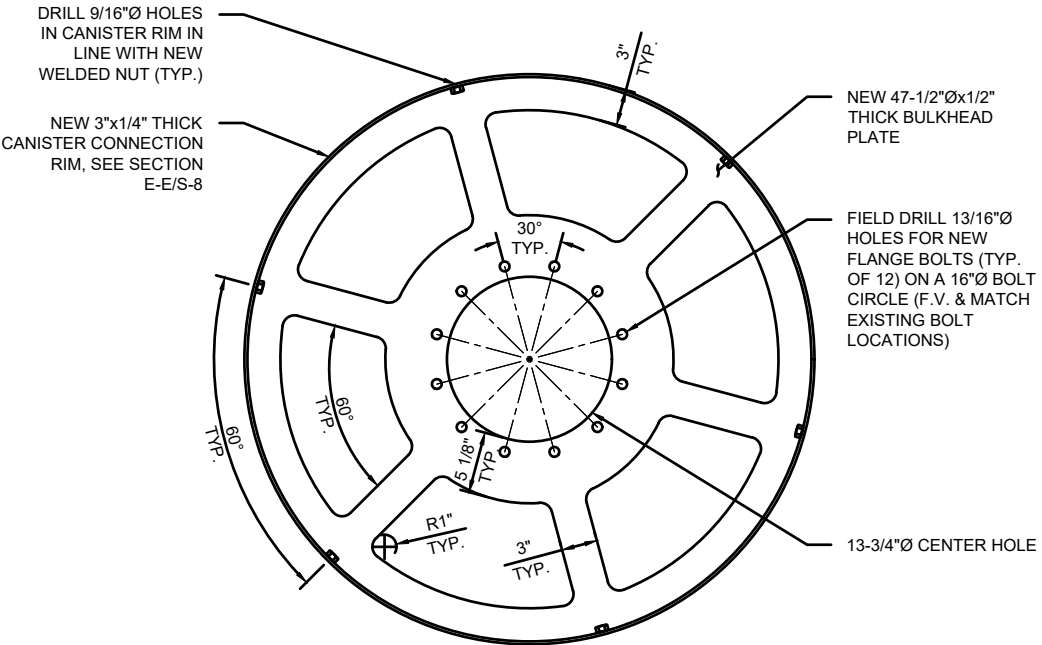


C-C TOWER SECTION
S-7 SCALE: 3/4" = 1'-0"



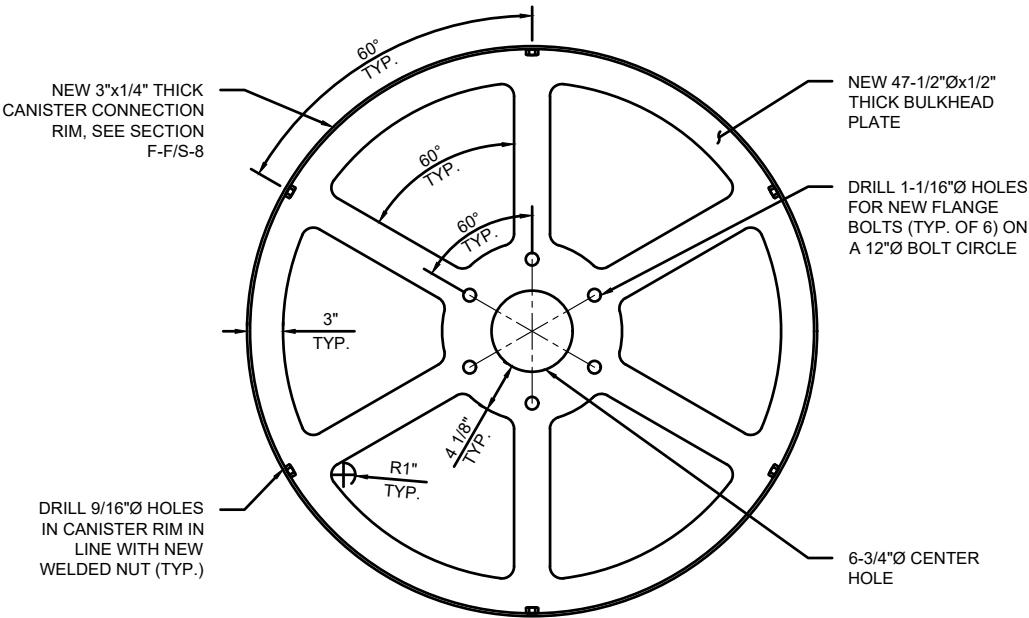
D-D TOWER SECTION
S-7 SCALE: 3/4" = 1'-0"

- NOTES:**
- ALL PLATE TO BE ASTM A572 GRADE 50 MATERIAL. MATERIAL TEST REPORTS ARE REQUIRED.
 - ALL PIPE TO BE ASTM A53 GRADE B (Fy= 35 KSI) MATERIAL. MATERIAL TEST REPORTS ARE REQUIRED.
 - ALL EXPOSED STRUCTURAL STEEL SHALL BE HOT-DIP GALVANIZED PER ASTM A153 / A153M OR A123, AS APPLICABLE. FIELD DRILLED OR CUT MATERIAL TO BE COATED WITH TWO BRUSH COATS OF CROWN APPROVED ZINC RICH PAINT IN ACCORDANCE WITH ENG-BUL-10149 *TOWER PROTECTIVE COATINGS BULLETIN*.
 - NEW FLANGE BOLTS AT 103.0', 111.0', & 119.0' SHALL BE PRE-TENSIONED PER AISC TURN-OF-THE-NUT METHOD. MATCH MARKINGS SHALL BE PRESENT ON EACH FASTENER FOR INSPECTION PURPOSES.




2 BULKHEAD DETAIL
S-7 SCALE: 1"=1'-0"

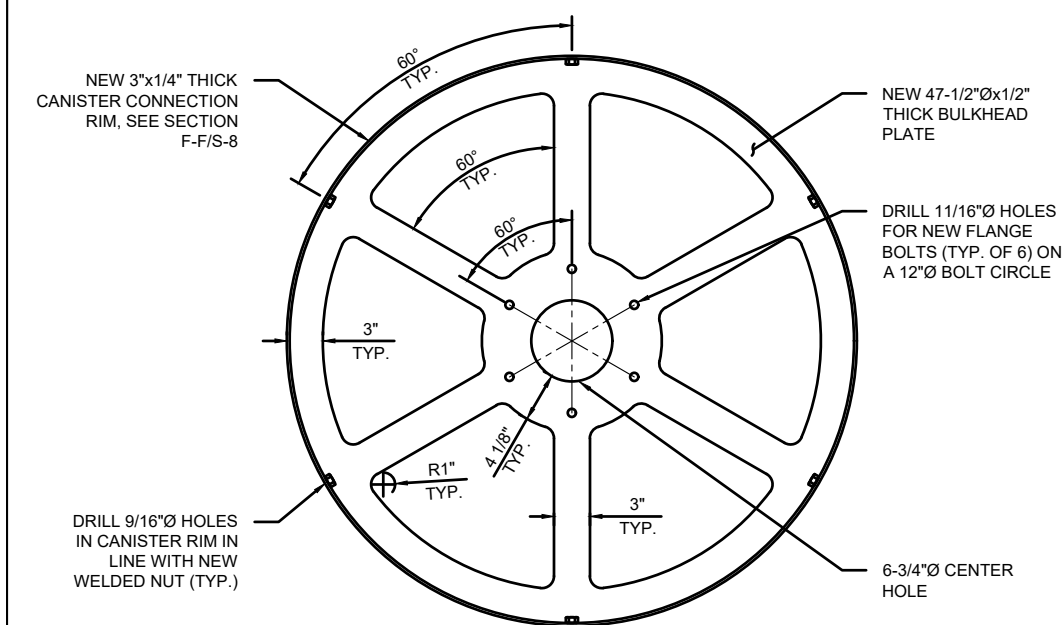
NOTE:
1. DETAIL IS TYPICAL FOR THE BULKHEAD AT 103.0'.



3 BULKHEAD DETAIL
S-7 SCALE: 1"=1'-0"

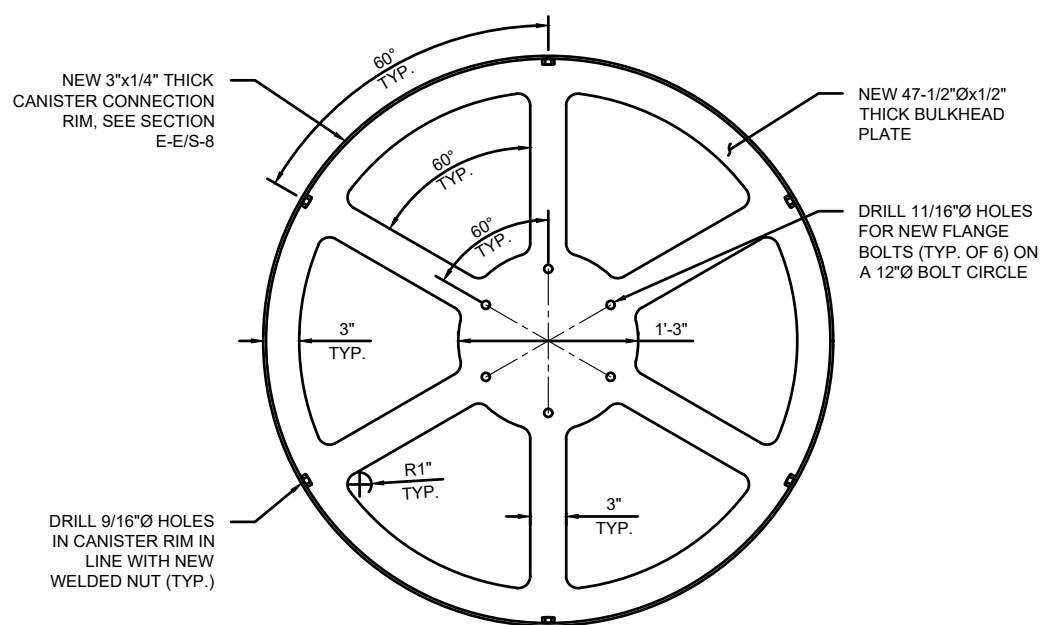
NOTE:
1. DETAIL IS TYPICAL FOR THE BULKHEAD AT 111.0'.

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				APRVD BY: CJS DATE: 12/1/21	
				SCALE: N.T.S.	
				ADDITIONAL SECTIONS	
				S-7	
				REV 0	



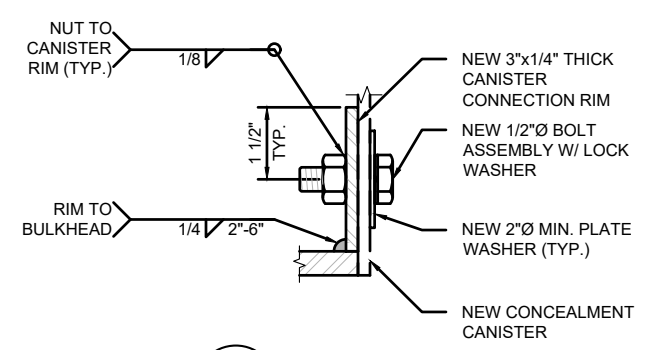
4 BULKHEAD DETAIL
S-8 SCALE: 1"=1'-0"

NOTE:
1. DETAIL IS TYPICAL FOR THE BULKHEAD AT 119.0'.



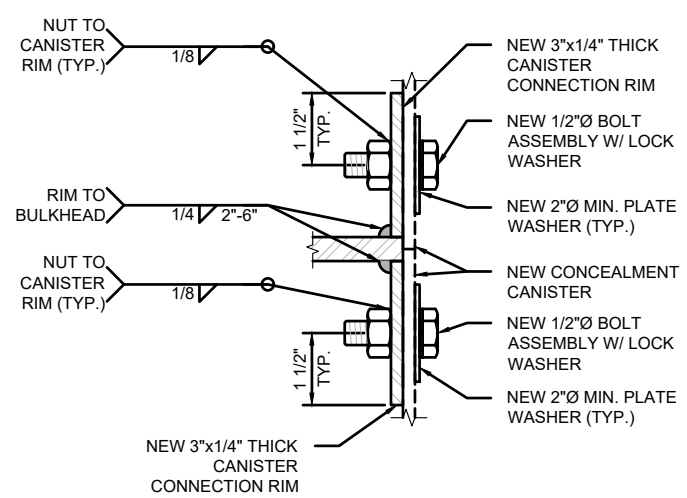
5 BULKHEAD DETAIL
S-8 SCALE: 1"=1'-0"

NOTE:
1. DETAIL IS TYPICAL FOR THE BULKHEAD AT 131.0'.



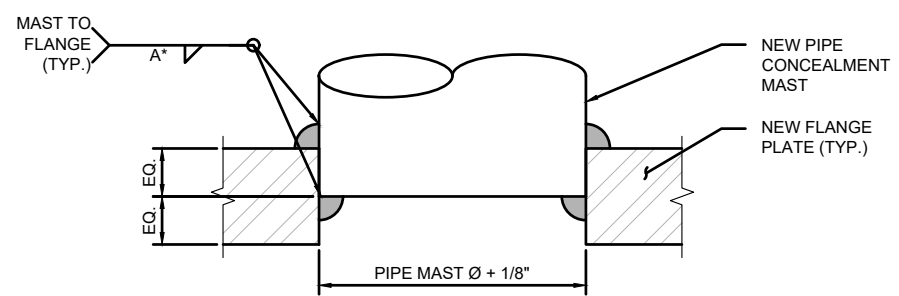
E-E SECTION
S-8 SCALE: N.T.S.

NOTE:
1. CANISTER CONNECTION ALTERNATIVE MUST BE APPROVED PRIOR TO FABRICATION.
2. DETAIL IS TYPICAL FOR THE BULKHEAD AT 103' AND 131.0'. BULKHEAD AT 131.0' IS SIMILAR BUT OF OPPOSITE HAND.



F-F SECTION
S-8 SCALE: N.T.S.

NOTE:
1. CANISTER CONNECTION ALTERNATIVE MUST BE APPROVED PRIOR TO FABRICATION.
2. DETAIL IS TYPICAL FOR THE BULKHEAD AT 111.0' AND 119.0'.




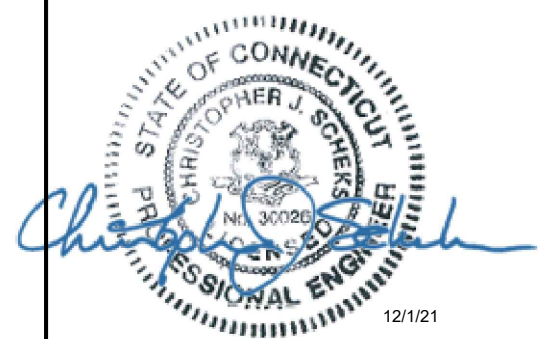
6 SOCKET DETAIL
S-8 N.T.S.

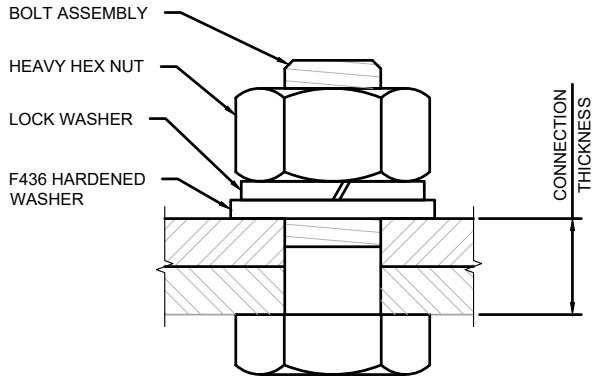
NOTE:
1. FABRICATION NDE SHALL BE REQUIRED FOR ALL FILLET WELDS BETWEEN THE MAST PIPES AND FLANGE PLATES. THESE WELDS SHALL BE 100% INSPECTED BY MT.

WELD SCHEDULE	
MAST SIZE	WELD SIZE (A)
P6 XX-STRONG	3/4
P4 XX-STRONG	1/2

- NOTES:
- ALL PLATE TO BE ASTM A572 GRADE 50 MATERIAL. MATERIAL TEST REPORTS ARE REQUIRED.
 - ALL PIPE TO BE ASTM A53 GRADE B (Fy= 35 KSI) MATERIAL. MATERIAL TEST REPORTS ARE REQUIRED.
 - ALL CANISTER CONNECTION BOLTS SHALL BE ASTM A307 GRADE BOLTS WITH GRADE F844 WASHERS. MATERIAL TEST REPORTS ARE REQUIRED.
 - ALL EXPOSED STRUCTURAL STEEL SHALL BE HOT-DIP GALVANIZED PER ASTM A153 / A153M OR A123, AS APPLICABLE. FIELD DRILLED OR CUT MATERIAL TO BE COATED WITH TWO BRUSH COATS OF CROWN APPROVED ZINC RICH PAINT IN ACCORDANCE WITH ENG-BUL-1014 TOWER PROTECTIVE COATINGS BULLETIN.

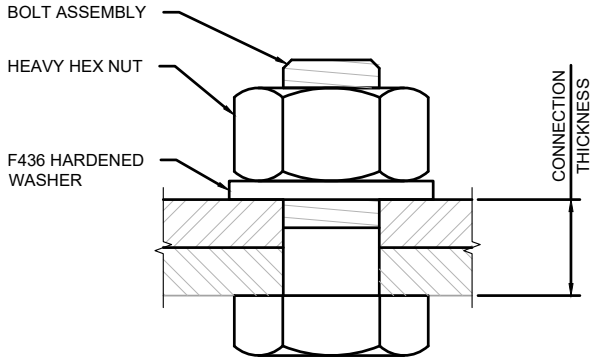
 GPD Engineering and Architecture Professional Corporation 520 South Main Street, Suite 2531 Akron, OH 44311 330.572.2100 Fax 330.572.2102			
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SCALE: N.T.S.			
ADDITIONAL SECTIONS			
S-8			REV 0





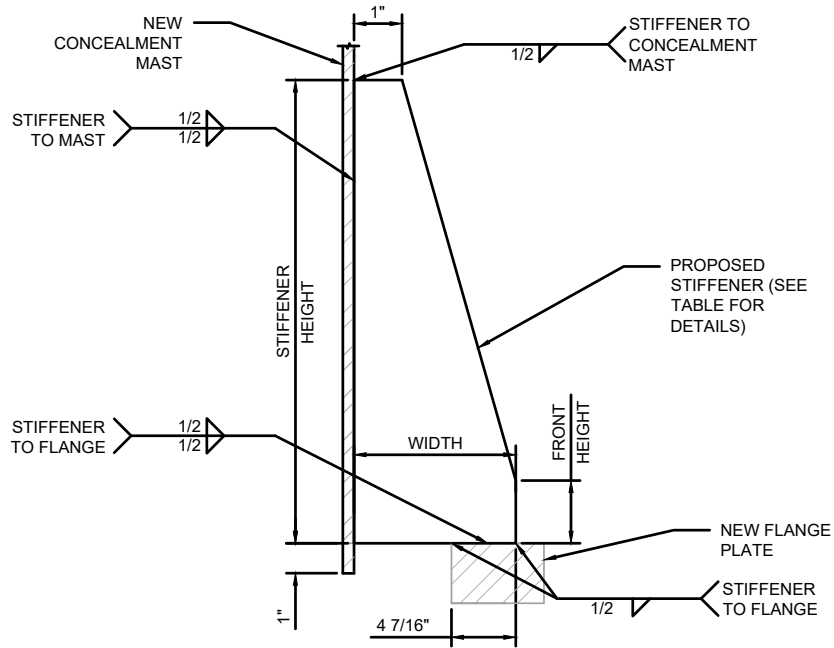
7 SNUG-TIGHT BOLT
S-9 SCALE: N.T.S.

- NOTES:
1. DETAIL IS TYPICAL FOR THE NEW FLANGE BOLTS AT 131.0'.



8 PRE-TENSIONED BOLT
S-9 SCALE: N.T.S.

- NOTES:
1. DETAIL IS TYPICAL FOR THE NEW FLANGE BOLTS AT 103.0', 111.0', & 119.0'.


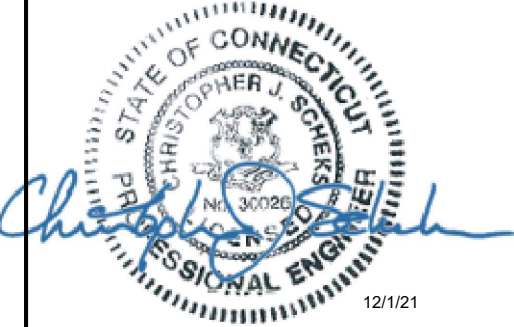


G-G SECTION
S-9 SCALE : N.T.S.

- NOTE:
1. FABRICATION NDE SHALL BE REQUIRED FOR ALL FILLET WELDS BETWEEN THE STIFFENERS AND PIPE MAST AS WELL AS BETWEEN THE STIFFENERS AND FLANGE PLATE. THESE WELDS SHALL BE 100% INSPECTED BY MT.

STIFFENER	
DESCRIPTION	MEASUREMENT (IN.)
STIFFENER HEIGHT	11
FRONT HEIGHT	1
WIDTH	8
THICKNESS	3/4
QUANTITY	6
NOTES: 1. ALL SIZES AND QUANTITIES SHALL BE VERIFIED PRIOR TO FABRICATION. CONTRACTOR IS REQUIRED TO PROVIDE FINAL SHOP DRAWINGS TO ENGINEER FOR APPROVAL. 2. ALL DIMENSIONS/MEASUREMENTS ARE SHOWN IN INCHES.	

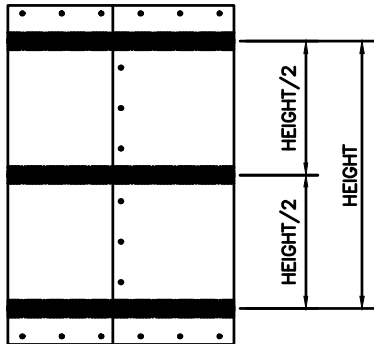
- NOTES:
1. ALL PLATE TO BE ASTM A572 GRADE 50 MATERIAL. MATERIAL TEST REPORTS ARE REQUIRED.
 2. ALL PIPE TO BE ASTM A53 GRADE B (Fy= 35 KSI) MATERIAL. MATERIAL TEST REPORTS ARE REQUIRED.
 3. ALL EXPOSED STRUCTURAL STEEL SHALL BE HOT-DIP GALVANIZED PER ASTM A153 / A153M OR A123, AS APPLICABLE. FIELD DRILLED OR CUT MATERIAL TO BE COATED WITH TWO BRUSH COATS OF CROWN APPROVED ZINC RICH PAINT IN ACCORDANCE WITH ENG-BUL-1014 TOWER PROTECTIVE COATINGS BULLETIN.

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				APRVD BY: CJS DATE: 12/1/21
				SCALE: N.T.S.
				ADDITIONAL SECTIONS
S-9			REV 0	

CONCEALMENT REINFORCEMENT SOLUTION – PARTS LIST

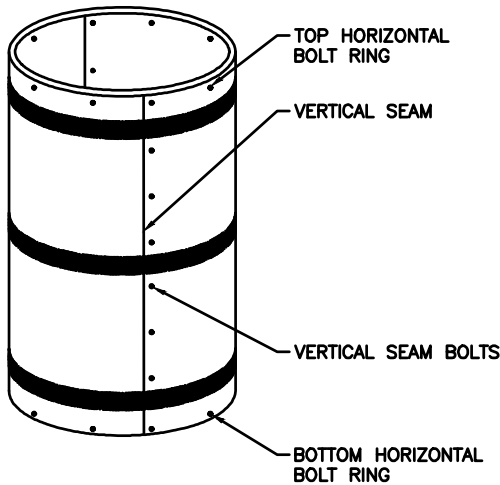
NO.	MANUFACTURER	DESCRIPTION	SIZE	PRODUCT NO.
(1)	USA STRAPPING	WOVEN POLYESTER STRAPPING	3/4"x250 FT. COIL	2700-34
(2)	MCNETT GEAR AID	DUAL-ADJUST BUCKLE	3/4" SIZE	80355
(3)	BUNKER INDUSTRIES	HURRICANE TAPE	3"x60 YD. ROLL	00101
(4)	RUST-OLEUM	GLOSS CLEAR SPRAY	12 OZ.	249117

*** NOTE: HURRICANE TAPE CAN BE SUBSTITUTED BY
3M SCOTCH BI-DIRECTIONAL FILAMENT 8959 TAPE

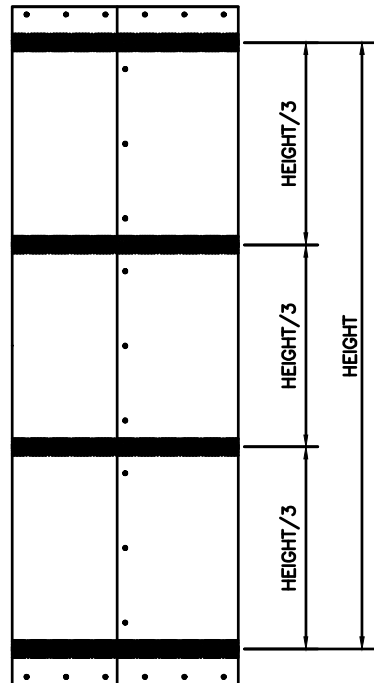


≤ 10'-0" CONCEALMENT COVER LEVEL HEIGHT

NOT TO SCALE



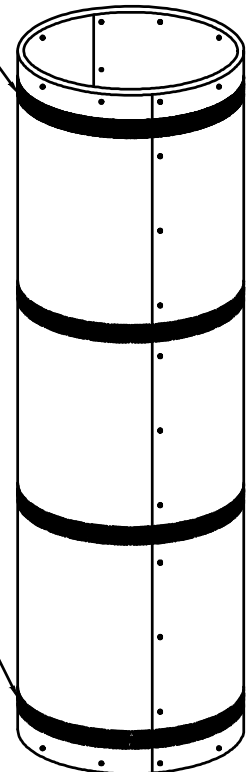
TOP BANDING SOLUTION TO
BE APPLIED BELOW THE TOP
HORIZONTAL BOLT RING



> 10'-0" CONCEALMENT COVER LEVEL HEIGHT

NOT TO SCALE

BOTTOM BANDING SOLUTION
TO BE APPLIED ABOVE
THE BOTTOM HORIZONTAL
BOLT RING



GENERAL:

- 1.) THE REINFORCEMENT SOLUTION IS ONLY TO BE APPLIED TO VERTICALLY-FASTENED MULTI-PANEL OR "SECTORIZED" CONCEALMENT COVERS. SOLID ONE-PIECE CONCEALMENT COVERS ARE NOT TO BE TREATED WITH THIS SOLUTION.
- 2.) FOR CONCEALMENT COVER LEVELS MEASURING 10 FT. IN HEIGHT OR LESS, (3) EQUALLY-SPACED BANDING APPLICATIONS ARE TO BE INSTALLED AT THE TOP, MID-SPAN, AND BOTTOM REGIONS. FOR LEVELS GREATER THAN 10 FT. IN HEIGHT, (4) EQUALLY-SPACED BANDING APPLICATIONS ARE TO BE INSTALLED, AT THE TOP, UPPER MIDDLE, LOWER MIDDLE, AND BOTTOM REGIONS.
- 3.) FOR CONCEALMENT COVERS OF ALL HEIGHTS, THE TOP BANDING APPLICATION IS TO BE POSITIONED DIRECTLY BELOW THE TOP CONCEALMENT COVER HORIZONTAL BOLT RING AND THE BOTTOM BANDING APPLICATION DIRECTLY ABOVE THE BOTTOM HORIZONTAL BOLT RING.
- 4.) BANDING APPLICATION SHALL NOT COVER ANY VERTICAL OR HORIZONTAL FASTENERS.

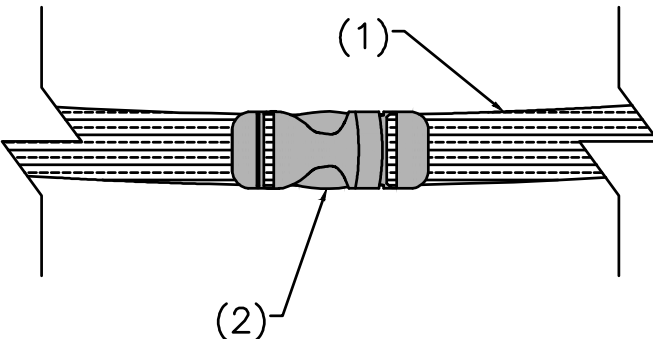
INSTALLATION:

- 1.) STRAPPING IS TO BE LOOPED AROUND THE CONCEALMENT COVER AND EACH CUT END OF THE STRAPPING FED AROUND A CROSS BAR ON EACH END OF THE DUAL-ADJUST BUCKLE.
- 2.) STRAPPING IS TO BE HAND-TIGHTENED USING THE BUCKLE SUCH THAT THE STRAPPING LIES FLAT, UNTWISTED, AND SQUARE TO THE CONCEALMENT COVER.
- 3.) AT LEAST (2) CONTINUOUS LAYERS OF HURRICANE (OR 3M 8959) TAPE ARE TO BE APPLIED ON TOP OF THE TIGHTENED STRAPPING SUCH THAT NO TAIL OF THE STRAPPING IS SHOWING OUTSIDE THE LAYERS OF TAPE.
- 4.) THE CURRENT DATE IS TO BE MARKED WITH PERMANENT INK ON THE TOP LAYER OF TAPE TO RECORD INSTALLATION DATE.
- 5.) ENSURE THAT THE SURFACE OF THE CANISTER IS FREE FROM OIL, GREASE, SOIL, DIRT, AND OTHER FOREIGN MATTER. THE SURFACE SHALL BE CLEAN, DRY AND SMOOTH TO RECEIVE THE STRAPPING AND THE TAPE.
- 6.) HURRICANE (OR 3M 8959) TAPE SHALL BE TACKED DOWN BY APPLYING (2) COATS OF NON-YELLOWING CLEAR COAT SPRAY OVER THE TAIL END OF THE TAPE AFTER IT IS SECURELY TAPED DOWN. SECOND COAT SHALL BE APPLIED ONCE THE FIRST COAT IS DRY TO TOUCH.

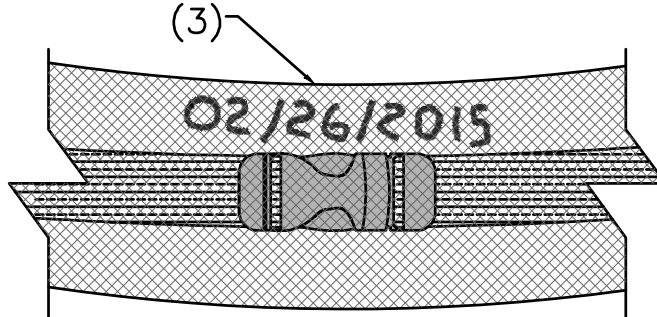
PAINTING HURRICANE (OR 3M 8959) TAPE [IF REQUIRED]:

- 1.) AFTER FULL INSTALLATION OF THE REINFORCEMENT SOLUTION, THE TAPE SHALL BE COATED TO MATCH THE COLOR OF THE EXISTING CONCEALMENT CANISTER
 - 1.1) AS AN EXAMPLE, IF THE EXISTING CONCEALMENT CANISTER IS WHITE, PAINTING WOULD NOT BE REQUIRED SINCE THE TAPE COLOR IS ALSO WHITE. HOWEVER, IF THE CANISTER IS BLACK, PAINT THE TAPE TO MATCH THE CANISTER COLOR.
- 2.) PAINT SHALL BE APPLIED WITH A BRUSH FOR A CLEAN EDGE ON THE TAPE. SPRAY PAINT IS PERMISSIBLE PROVIDED THAT PAINTER'S TAPE IS UTILIZED TO AVOID PAINTING THE CANISTER. SECOND COAT SHALL BE APPLIED AFTER THE FIRST COAT IS DRY. THE SHEEN OF THE PAINT SHALL MATCH THE CANISTER
- 3.) THE INSTALLATION DATE SHALL BE MARKED ON TOP OF THE COATED SURFACE.

STRAPPING INSTALLATION DETAIL



TAPE INSTALLATION DETAIL



CARRIERS LOGO

CROWN
CASTLE

2000 CORPORATE DRIVE
CANONSBURG PA, 15317

SPACE RESERVED FOR PROFESSIONAL SEALS

FOR
REFERENCE
ONLY

REVISIONS	NO.	DATE	DESCRIPTION	BY	MAJ	MAJ	MAJ						
	1	02/09/16	CONCEALMENT SOLUTION										
	2	02/04/16	CONCEALMENT SOLUTION										
	3	01/09/17	CONCEALMENT SOLUTION										
	4	04/29/20	ADDED SUBSTITUTE FOR HURRICANE TAPE										

DRAWN BY: MAJ
CHECKED BY: JYK
DRAWING DATE: 06/29/20

SHEET TITLE

TYPE

SHEET NUMBER

CROWN CASTLE CONCEALMENT REINFORCEMENT SOLUTION

SCALE: N.T.S.

REV
D

OPS-PRC-10127