



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

July 23, 2015

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

RE: AT&T LTE 3C Modification - Crown Site BU: 842869
AT&T Site ID: CT5378
Located at: 450 West Main Street, Meriden, CT 06451

Dear Ms. Bachman:

This letter and exhibits are submitted on behalf of AT&T. AT&T is making modifications to certain existing sites in its Connecticut system in order to implement their 2.5GHz LTE technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies (“R.C.S.A.”), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Manuel A. Santos, Mayor for the City of Meriden, and Hunter’s Ambulance Service, Inc., Property Owner.

AT&T plans to modify the existing wireless communications facility owned by Crown Castle and located at **450 West Main Street, Meriden, CT 06451**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to AT&T’s operations at the site (Exhibit-3).

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes (“C.G.S.”) § 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in the R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. AT&T’s additional antennas will be located at the same elevation on the existing tower.
2. There will be no proposed modifications to the ground and no extension of boundaries.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

The Foundation for a Wireless World.

CrownCastle.com

Melanie A. Bachman

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4. A Structural Modification Report confirming that the tower and foundation can support AT&T's proposed modifications is included as Exhibit-2.
5. The operation of the additional antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative General Power Density table report for AT&T's modified facility is included as Exhibit-3.

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

Sincerely,



Jeff Barbadora

Real Estate Specialist

Enclosures

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Manuel A. Santos, Mayor
142 East Main Street
Meriden CT, 06450

cc: Hunter's Ambulance Service, Inc.
450 West Main Street
Meriden, CT 06451

PROJECT INFORMATION

SCOPE OF WORK:

- REMOVE ALL TOWER TOP EQUIPMENT & REPLACE SECTOR FRAMES.
- NEW AT&T ANTENNAS: (1) NEW ANTENNAS PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW ANTENNAS; (3) EXISTING UMS ANTENNAS TO BE RE-USED (1 PER SECTOR) AND (3) EXISTING LTE ANTENNAS TO BE RE-USED (1 PER SECTOR).
- AT&T RRUs: (1) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (3) EXISTING RRUs TO BE RE-USED (1 PER SECTOR).
- (1) NEW A2 MODULES PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) A2 MODULES.
- (1) NEW AT&T DC6 SURGE SUPPRESSOR; (1) EXISTING DC6 TO BE REUSED
- REMOVE EXISTING ALPHA CABINET.
- NEW CONCRETE PAD EXTENSION.
- NEW LTE RBS-6601 & DC-DC CONVERTER INSTALLED IN PROPOSED PURCELL CABINET.
- REMOVE & REPLACE EXISTING DIPLEXERS ON ICE BRIDGE AT GROUND LEVEL.
- (1) NEW FIBER TRUNK & (2) NEW DC TRUNKS

SITE ADDRESS: 450-478 WEST MAIN STREET
MERIDEN, CT 06451

LATITUDE: 41.53989 41° 32' 23.60"N
LONGITUDE: -72.81889 -72° 49' 8.00"W

USID: 25975

TOWER OWNER: CROWN CASTLE
2000 CORPORATE DR.
CANONSBURG, PA 15317

TYPE OF SITE: MONOPOLE/OUTDOOR EQUIPMENT

MONOPOLE HEIGHT: 100'-0"±

RAD CENTER: 100'-0"±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY



**at&t
MOBILITY**

FA CODE: 10071118
SITE NUMBER: CT5378
SITE NAME:
MERIDEN WEST CENTRAL

PROJECT TEAM

CLIENT REPRESENTATIVE

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

SITE ACQUISITION:

COMPANY: CROWN CASTLE
ADDRESS: 2000 CORORATE DR.
CANONSBURG, PA 15317
CONTACT: TO BE PROVIDED
PHONE: TO BE PROVIDED
EMAIL: TO BE PROVIDED

ZONING:

COMPANY: CROWN CASTLE
ADDRESS: 2000 CORORATE DR.
CANONSBURG, PA 15317
CONTACT: TO BE PROVIDED
PHONE: TO BE PROVIDED
EMAIL: TO BE PROVIDED

ENGINEERING:

COMPANY: COM-EX CONSULTANTS, LLC
ADDRESS: 4 SECOND AVENUE
SUITE 204
DENVER, NJ 07834
CONTACT: NICHOLAS D. BARILE, P.E.
PHONE: 862-209-4300
EMAIL: nbarile@comexconsultants.com

RF ENGINEER:

COMPANY: AT&T MOBILITY – NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD
SUITE 550 13 & 14
FRAMINGHAM, MA 01801
CONTACT: CAMERON SYME
PHONE: 508-596-7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: GRZEGORZ "GREG" DORMAN
PHONE: 484-683-1750
EMAIL: gdorman@empiretelecomm.com

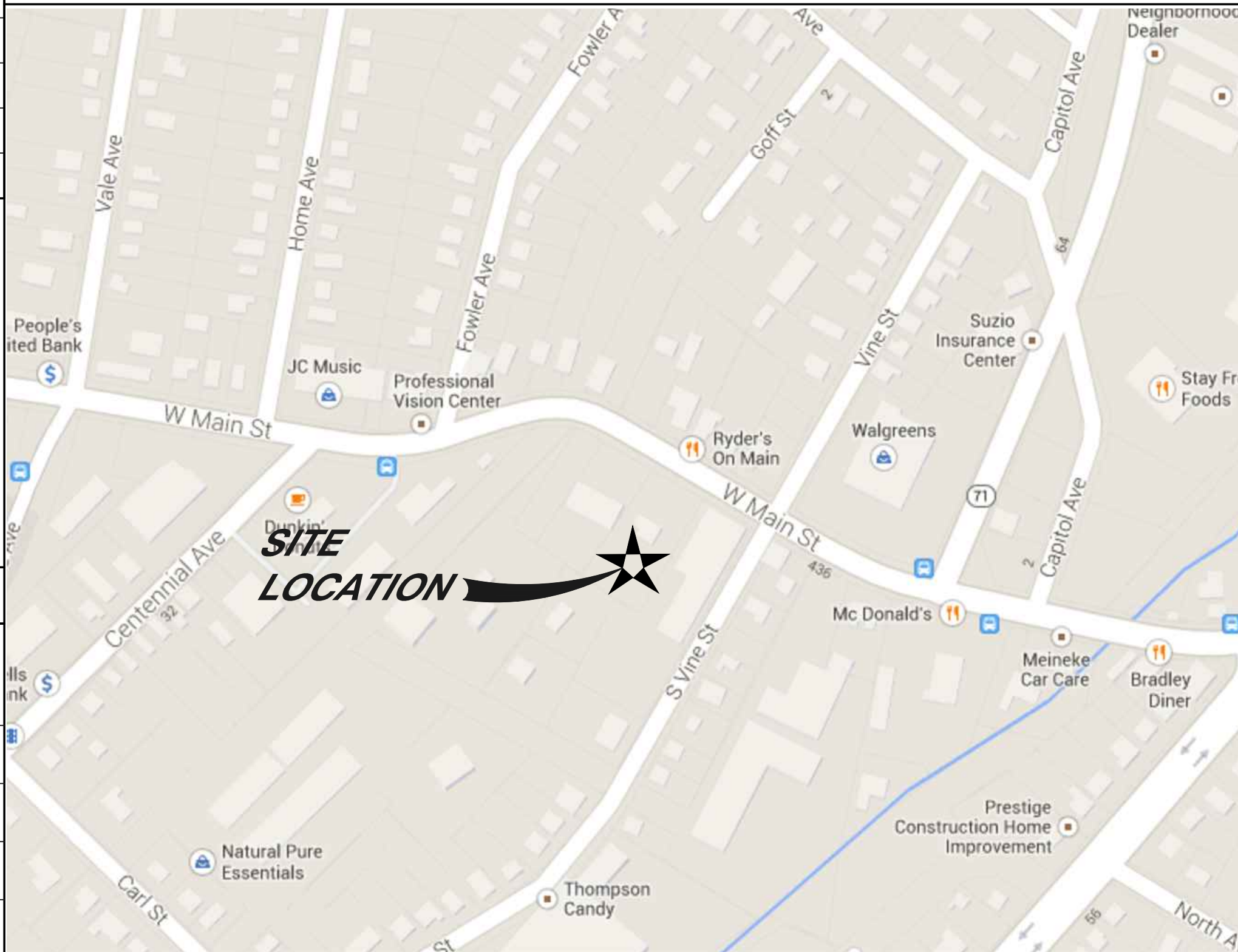
DRAWING INDEX

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VICINITY MAP

1. GET ON I-90 WEST/MASSACHUSETTS TURNPIKE (1.7 MI). 2. FOLLOW I-90 WEST/MASSACHUSETTS TURNPIKE TO I-84 SOUTH TO I-91 SOUTH TO I-691 WEST (101 MI). 3. TAKE EXIT 6 FROM I-691 WEST FOR LEWIS AVENUE. 4. MERGE AND CONTINUE ON LEWIS AVE. (1.9 MI). 5. TURN RIGHT ONTO WEST MAIN STREET AND DESTINATION WILL BE ON THE LEFT (0.5 MI)



GENERAL NOTES

- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY, AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
- THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

DISCIPLINE:	NAME:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		



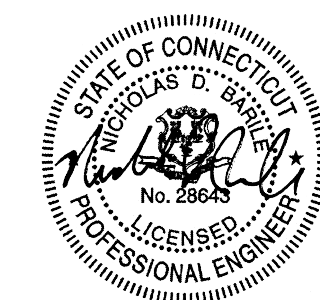
CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811



SITE NUMBER: CT5378
SITE NAME: MERIDEN WEST CENTRAL
450-478 WEST MAIN STREET
MERIDEN, CT 06451
NEW HAVEN COUNTY



0	07/16/15	ISSUED FOR CONSTRUCTION	CJT	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: CJT	DRAWN BY: DAB		07/16/15



AT&T		
DRAWING TITLE: TITLE SHEET		
JOB NUMBER 14026-EMP	DRAWING NUMBER T-1	REV 0

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) 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. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.
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; 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 WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER 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 AND TRAY SHALL BE GROUNDED AND 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. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').
14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE 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 TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR - EMPIRE TELECOM
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER - AT&T MOBILITY
 OEM - ORIGINAL EQUIPMENT MANUFACTURER
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. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. 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.
8. 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. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. 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.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF 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.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. 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). 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.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. 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.
17. 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 MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE 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 REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

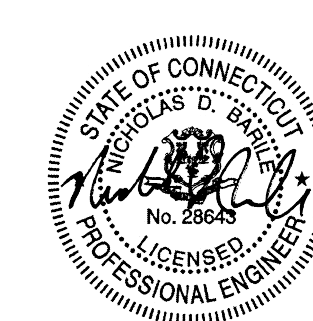
19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
 - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
 - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
20. 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, THIRTEENTH EDITION
 - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
 - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
 - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
 - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
 - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
 - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
21. 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.



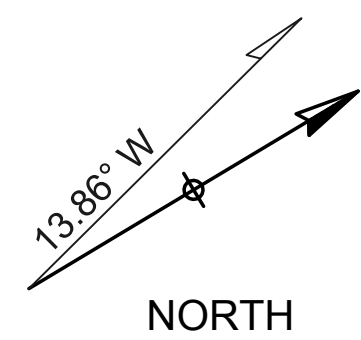
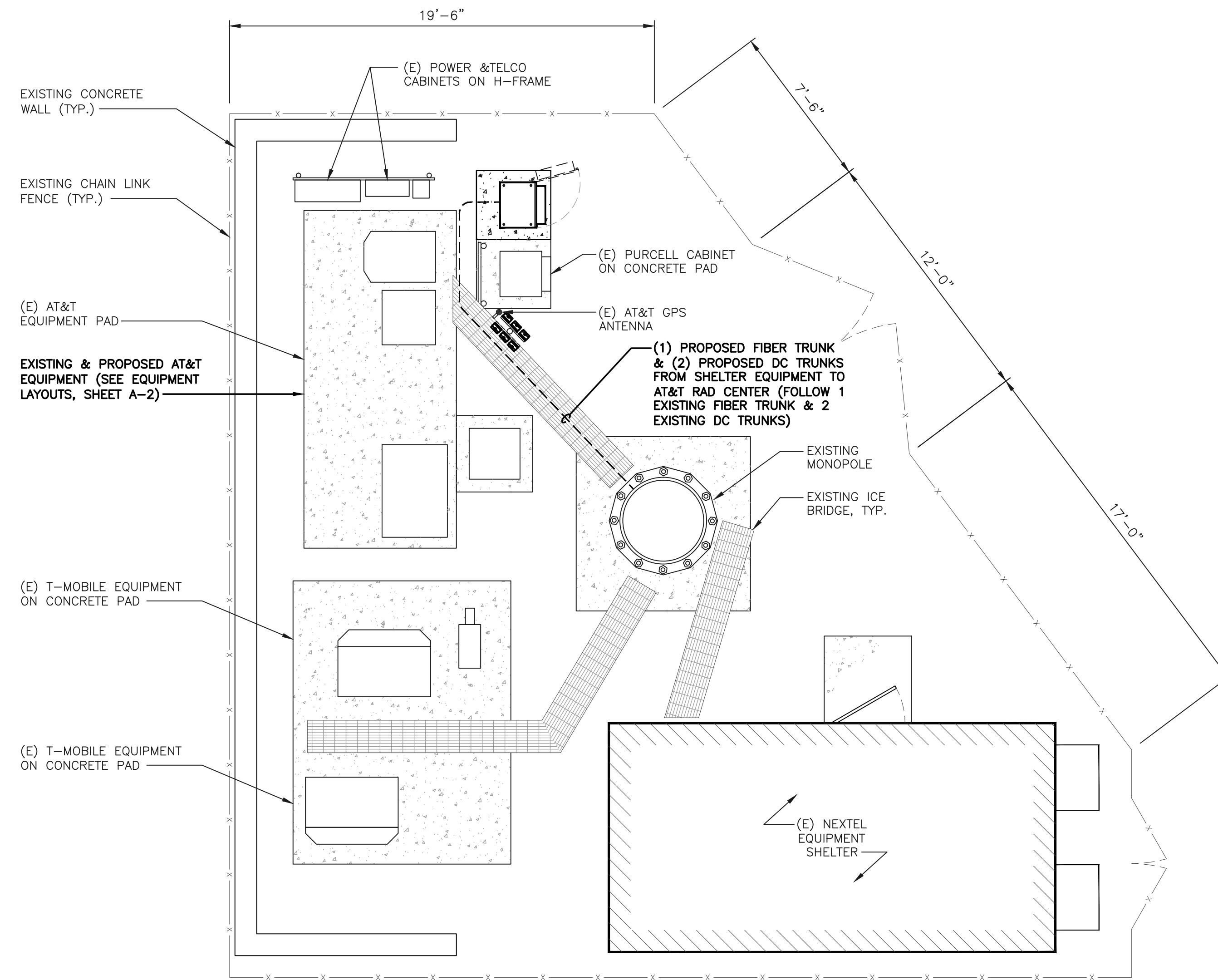
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SITE NAME: MERIDEN WEST CENTRAL
 450-478 WEST MAIN STREET
 MERIDEN, CT 06451
 NEW HAVEN COUNTY



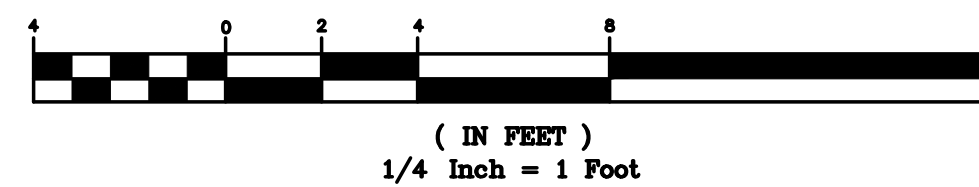
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: CJT	DRAWN BY: DAB		07/16/15



AT&T		
DRAWING TITLE: GROUNDING NOTES & GENERAL NOTES		
JOB NUMBER 14026-EMP	DRAWING NUMBER GN-1	REV 0



COMPOUND LAYOUT
SCALE: 1" = 4'-0"



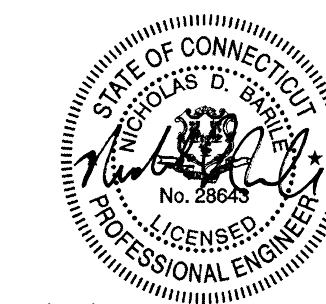
COM-EX
Consultants
4 SECOND AVENUE
SUITE 204
DENVER, NJ 07834
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

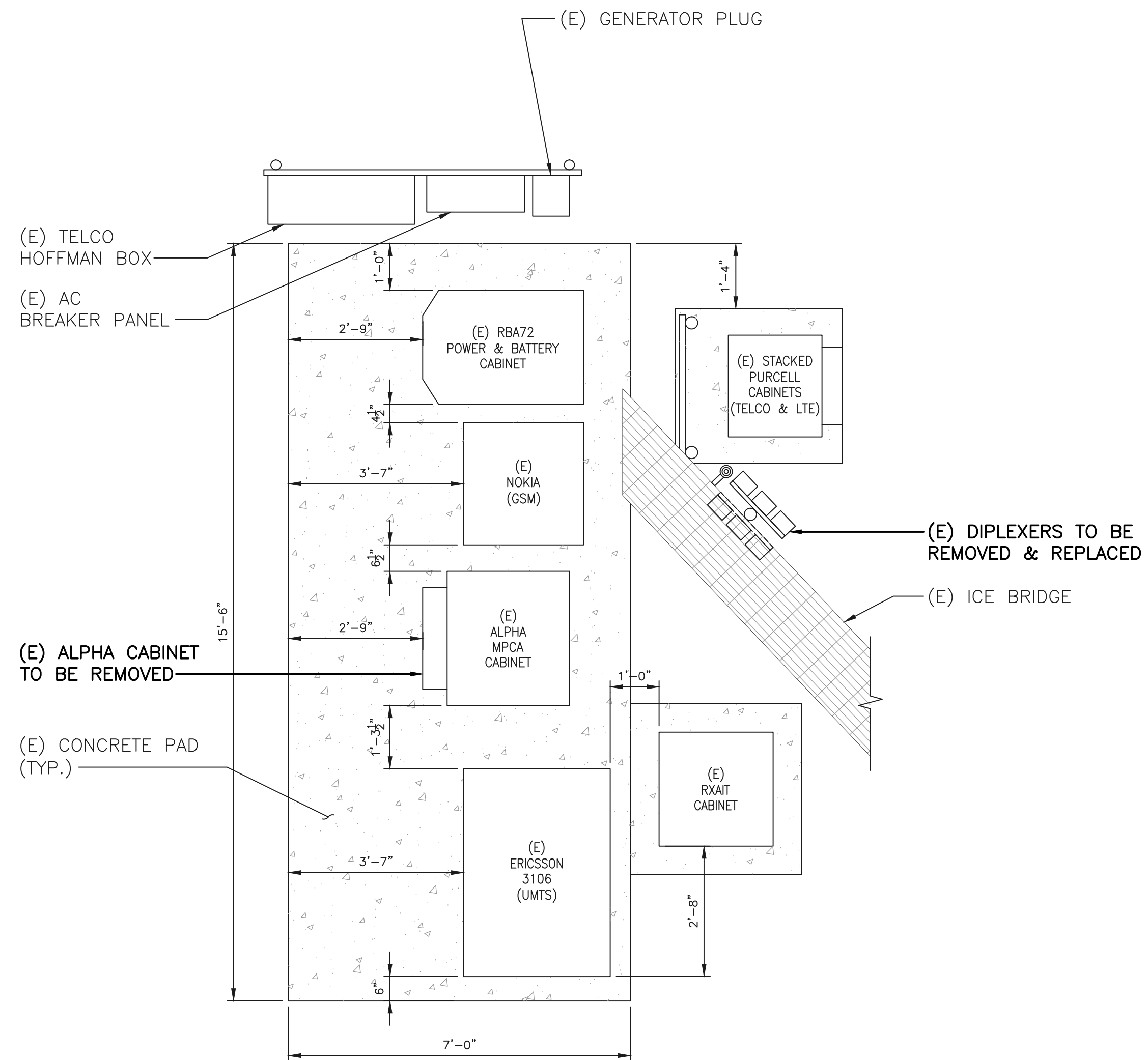
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MERIDEN, CT 06451
NEW HAVEN COUNTY

 **at&t**
MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	07/16/15	ISSUED FOR CONSTRUCTION	CJT	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: CJT	DRAWN BY: DAB		07/16/15



AT&T		
DRAWING TITLE:		
COMPOUND LAYOUT		
JOB NUMBER	DRAWING NUMBER	REV
14026-EMP	A-1	0

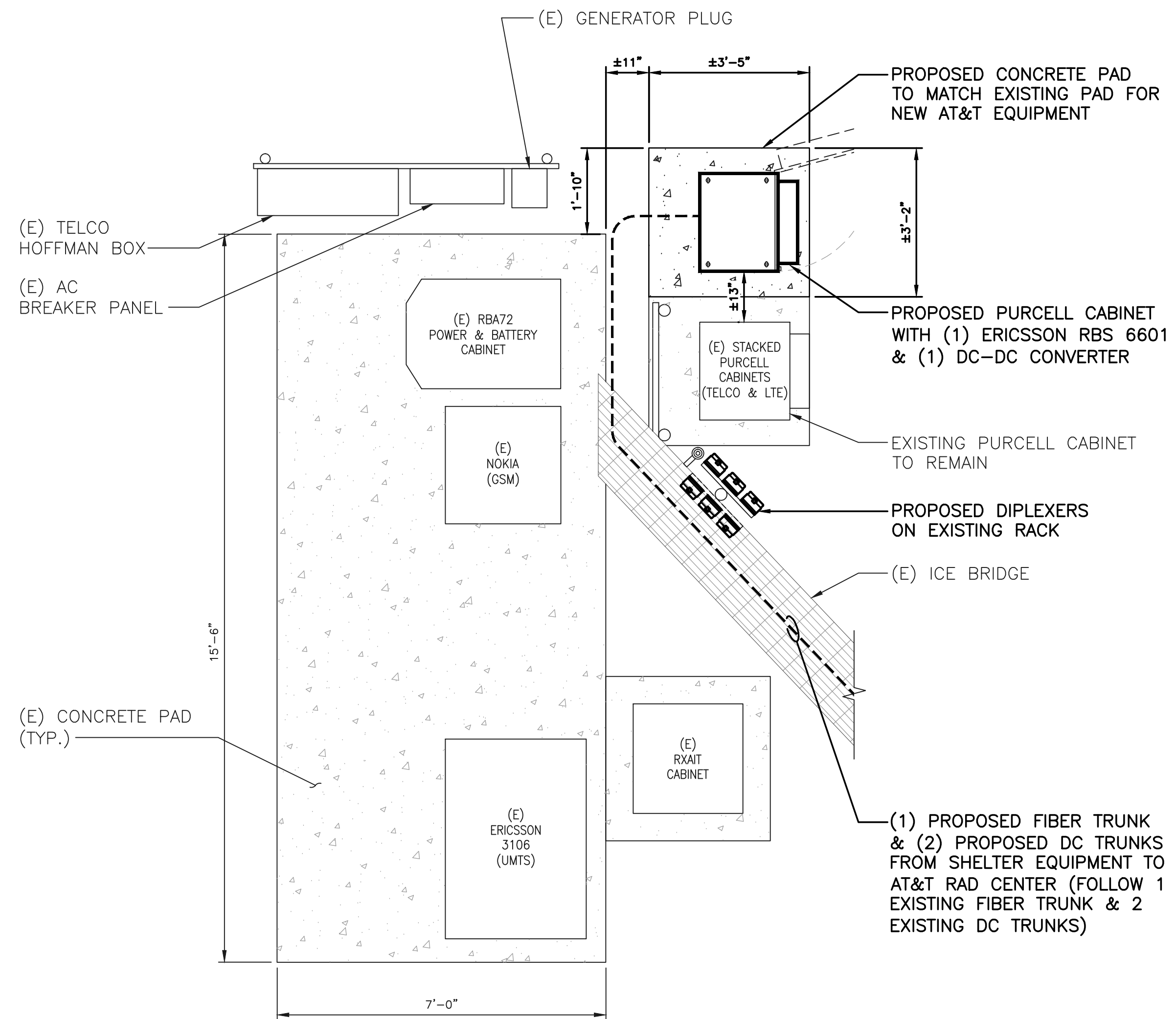
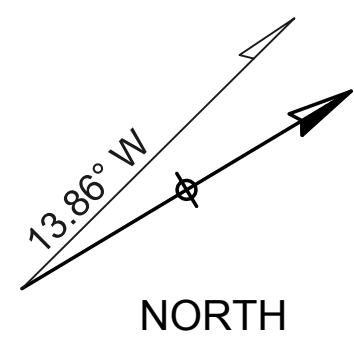


EXISTING EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"



(IN FEET)
1/2 Inch = 1 Foot

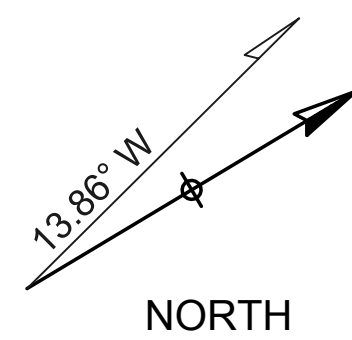


PROPOSED EQUIPMENT LAYOUT

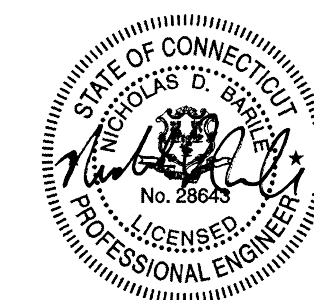
SCALE: 1" = 2'-0"



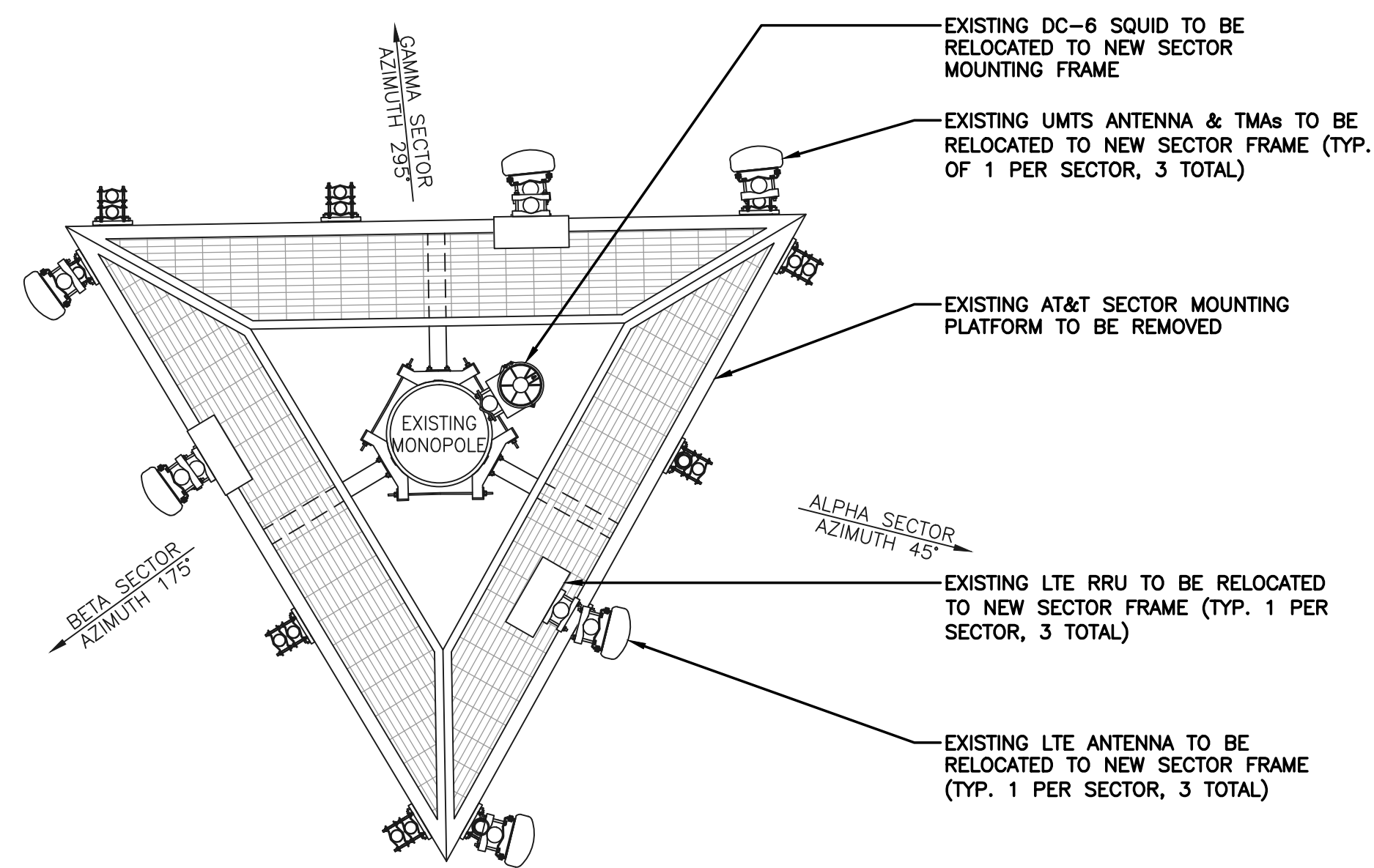
(IN FEET)
1/2 Inch = 1 Foot



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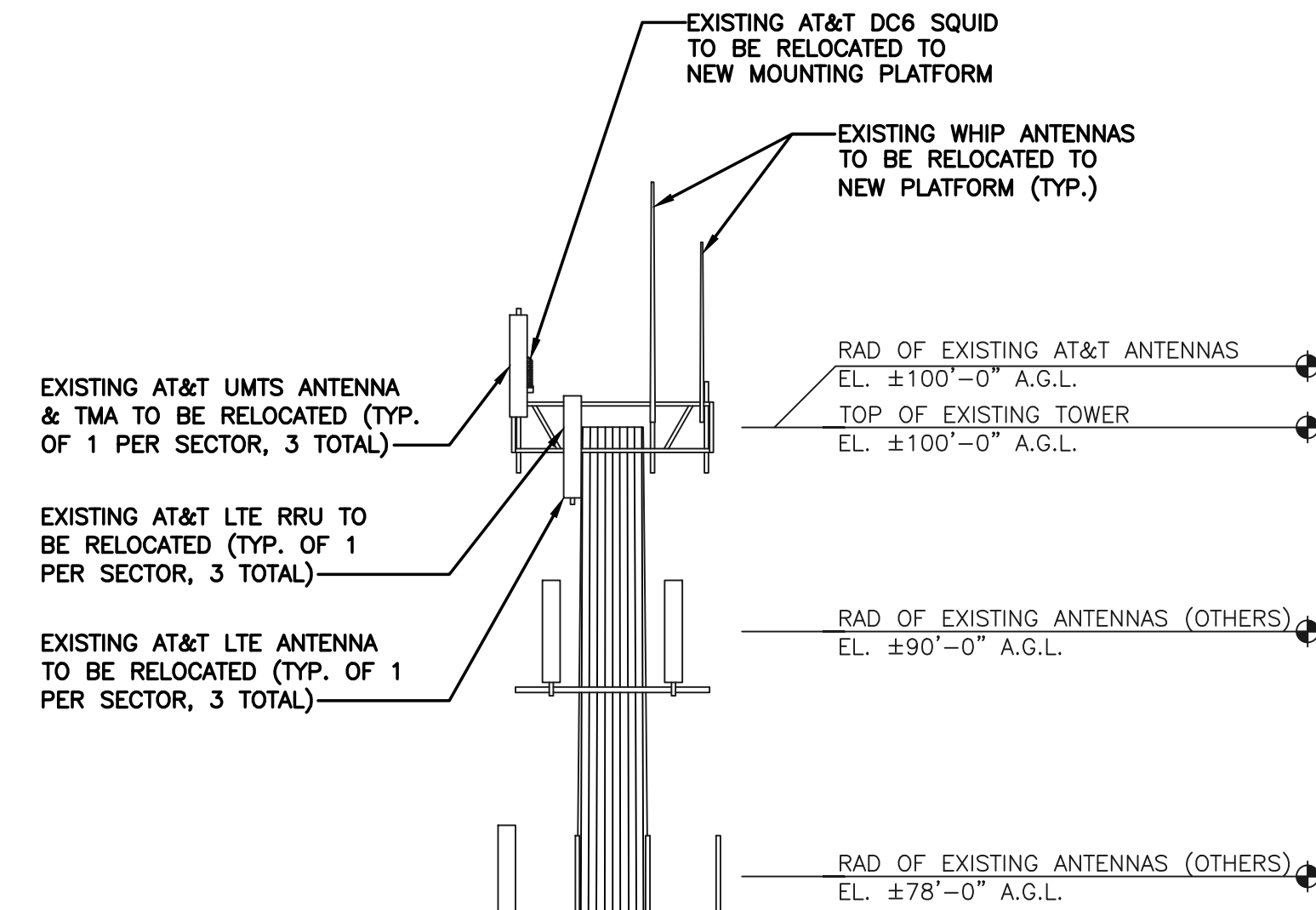
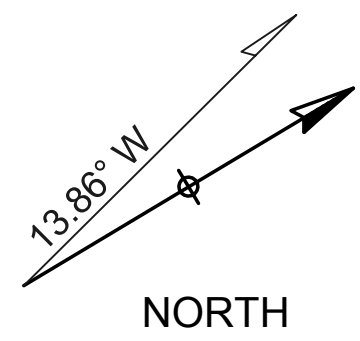
AT&T		
DRAWING TITLE:		
EQUIPMENT LAYOUTS		
JOB NUMBER	DRAWING NUMBER	REV
14026-EMP	A-2	0



EXISTING ANTENNA LAYOUT

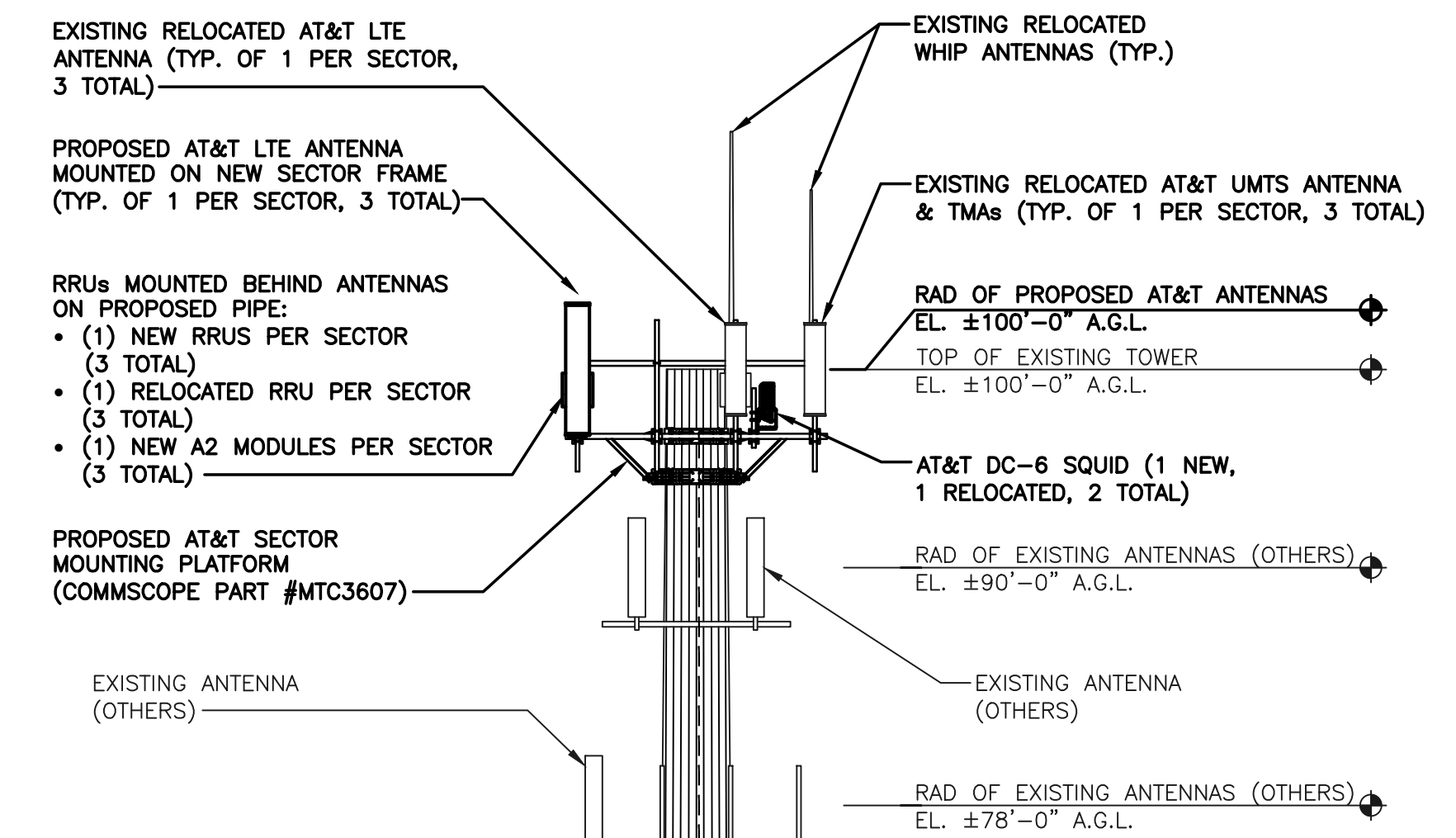
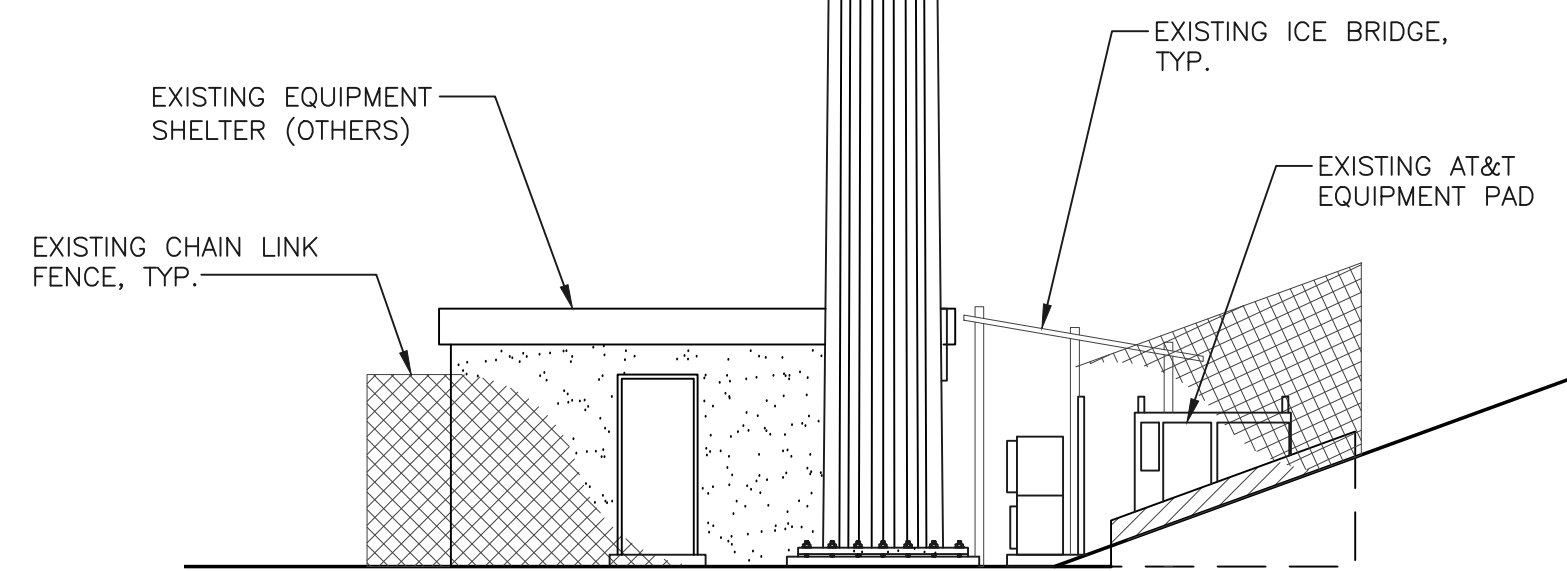
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 2. EXISTING OMNI ANTENNAS NOT SHOWN FOR CLARITY.



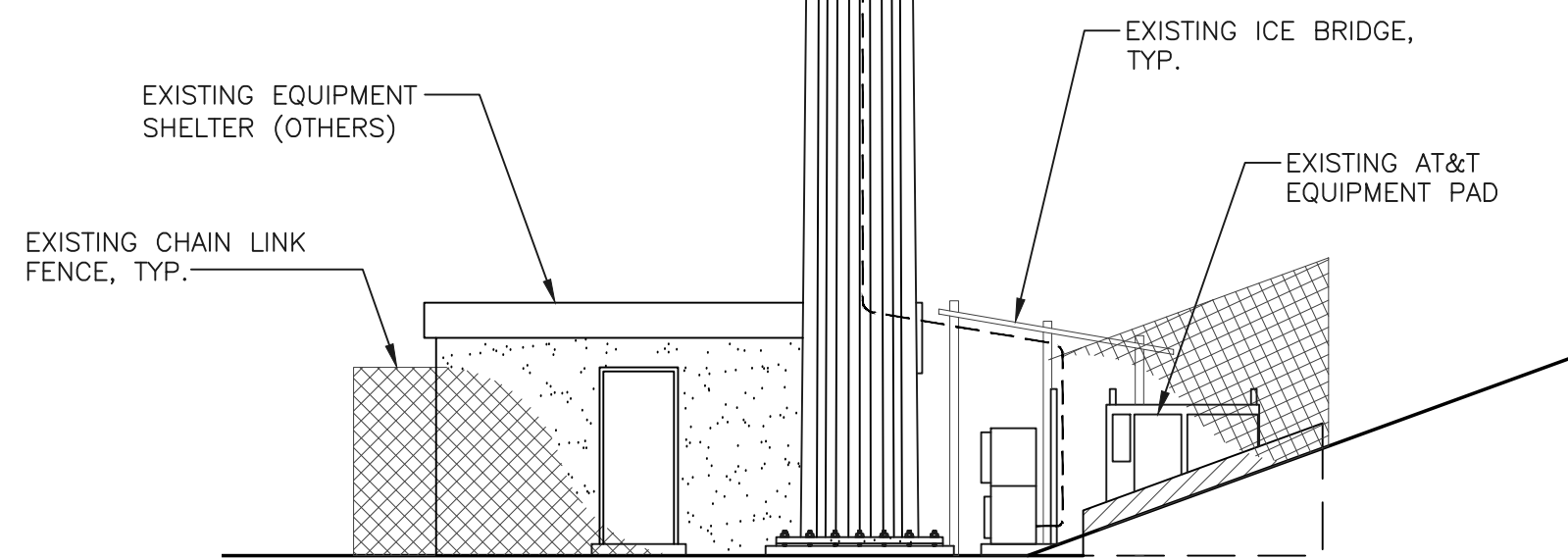
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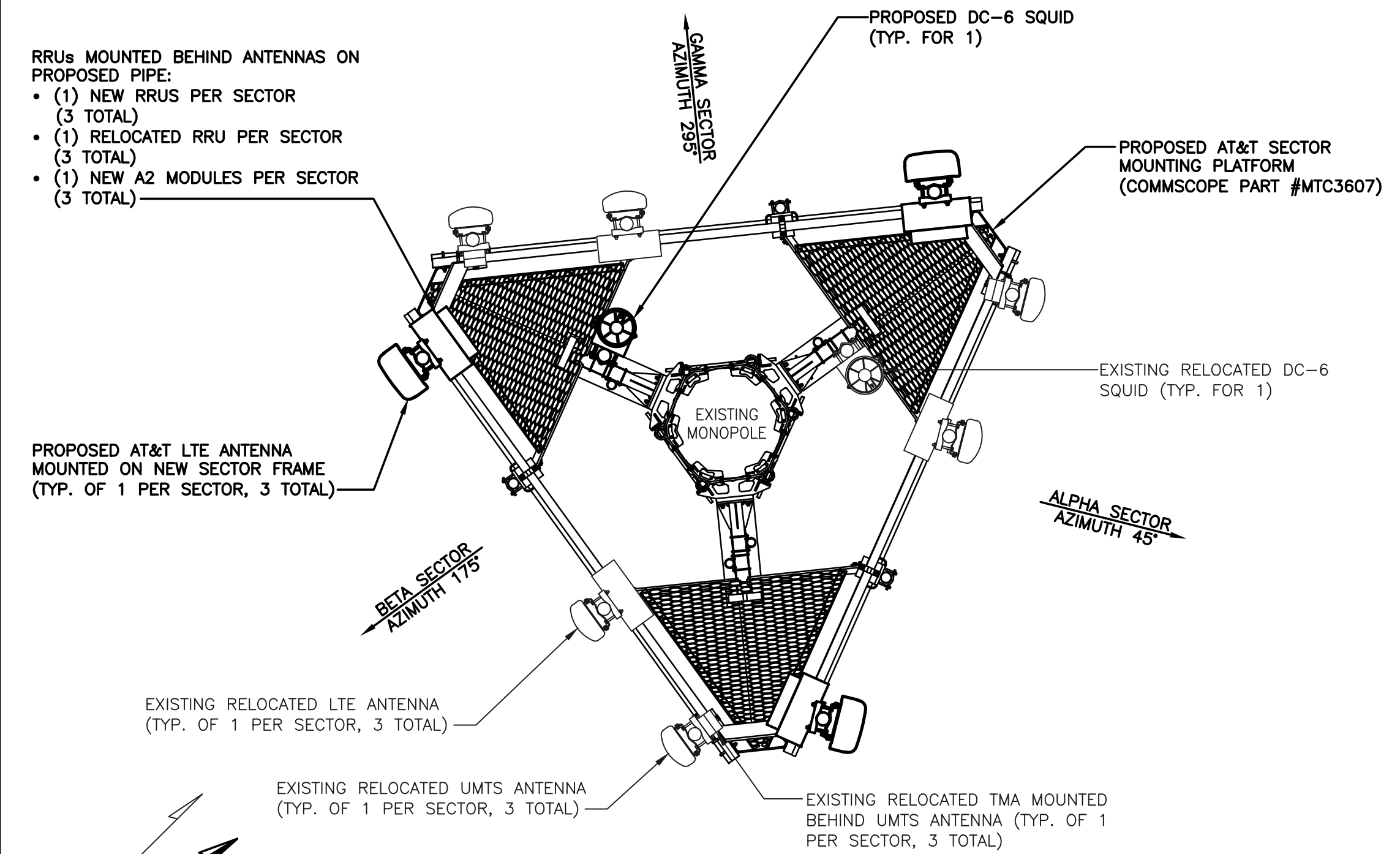


PROPOSED TOWER ELEVATION

SCALE: N.T.S.



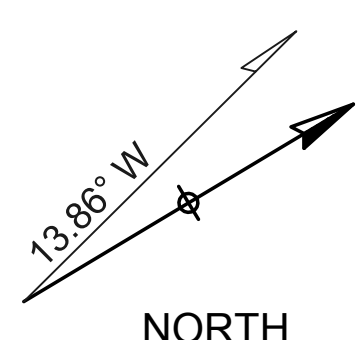
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PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.

NOTES:
 1. ALL EXISTING OMNI ANTENNAS TO BE RELOCATED TO NEW MOUNTING PLATFORM.
 2. EXISTING OMNI ANTENNAS NOT SHOWN FOR CLARITY.



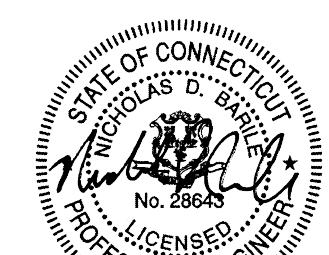
COM-EX
 Consultants
 4 SECOND AVENUE
 SUITE 204
 DENVER, NJ 07834
 PHONE: 862.209.4300
 FAX: 862.209.4301

EMPIRE
 telecom
 16 ESQUIRE ROAD
 BILLERICA, MA 01821

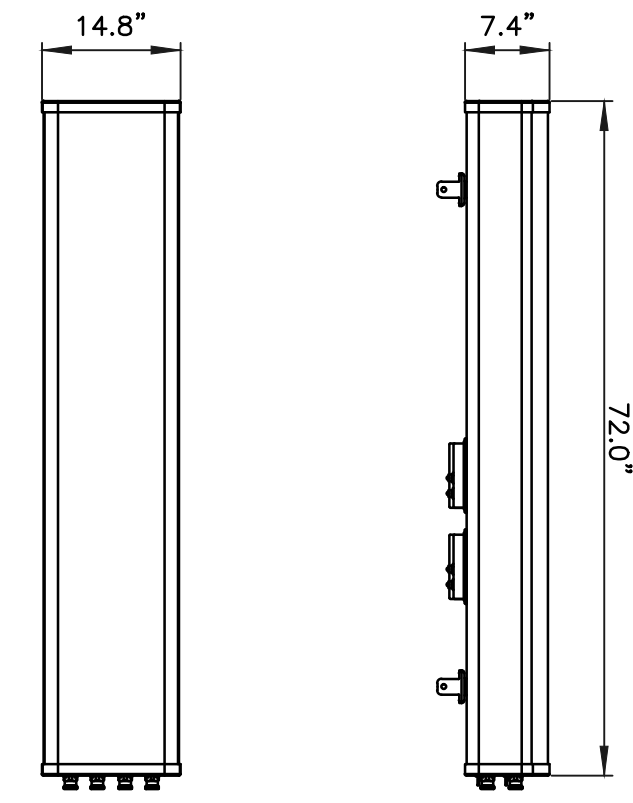
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SITE NAME: MERIDEN WEST CENTRAL
 450-478 WEST MAIN STREET
 MERIDEN, CT 06451
 NEW HAVEN COUNTY

at&t
 MOBILITY
 550 COCHITUATE ROAD
 FRAMINGHAM, MA 01701

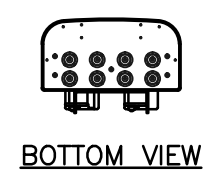
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: CJT	DRAWN BY: DAB		07/16/15



AT&T		
DRAWING TITLE: ANTENNA LAYOUTS & ELEVATIONS		
JOB NUMBER 14026-EMP	DRAWING NUMBER A-3	REV 0



FRONT VIEW SIDE VIEW

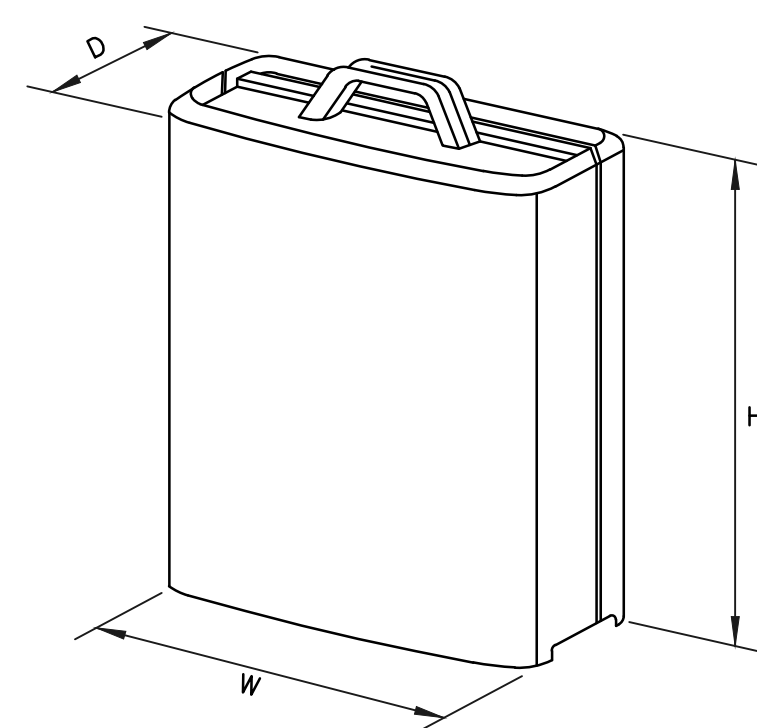


BOTTOM VIEW

MANUFACTURER	CCI
MODEL	OPA-65R-LCUU-H6
WEIGHT	73.0 LBS

LTE ANTENNA DETAIL

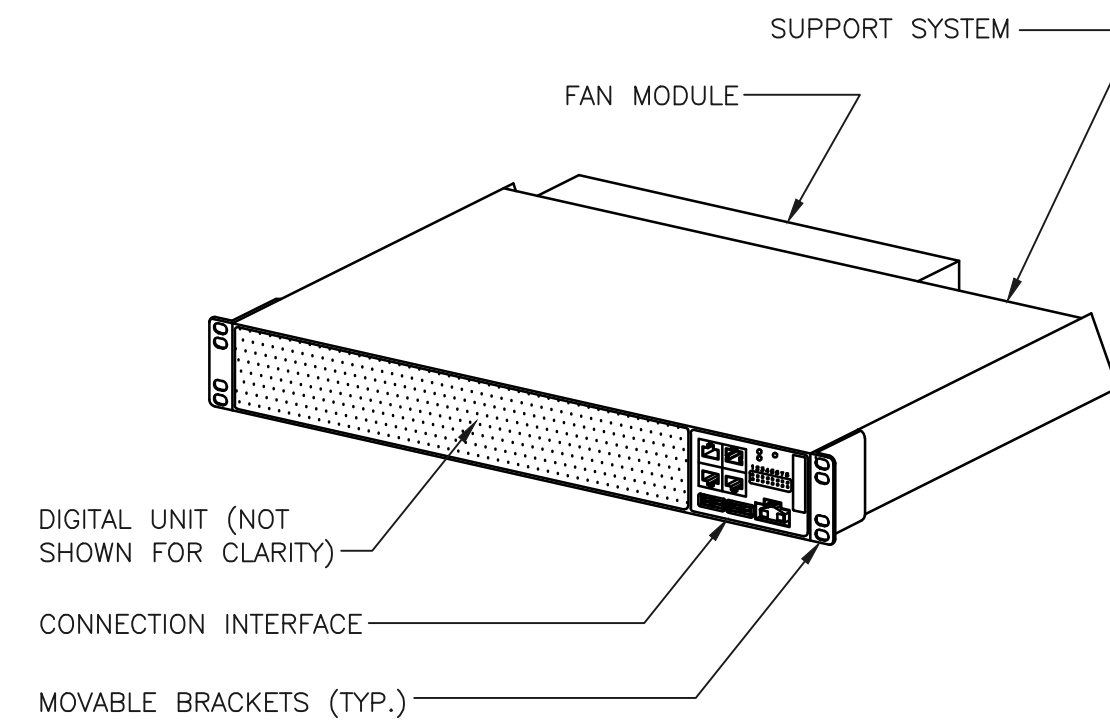
SCALE: N.T.S.



MODEL	L x W x H	WEIGHT
RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
A2 MODULE	16.4" x 15.2" x 3.4"	22 LBS

RRUS DETAIL

SCALE: N.T.S.

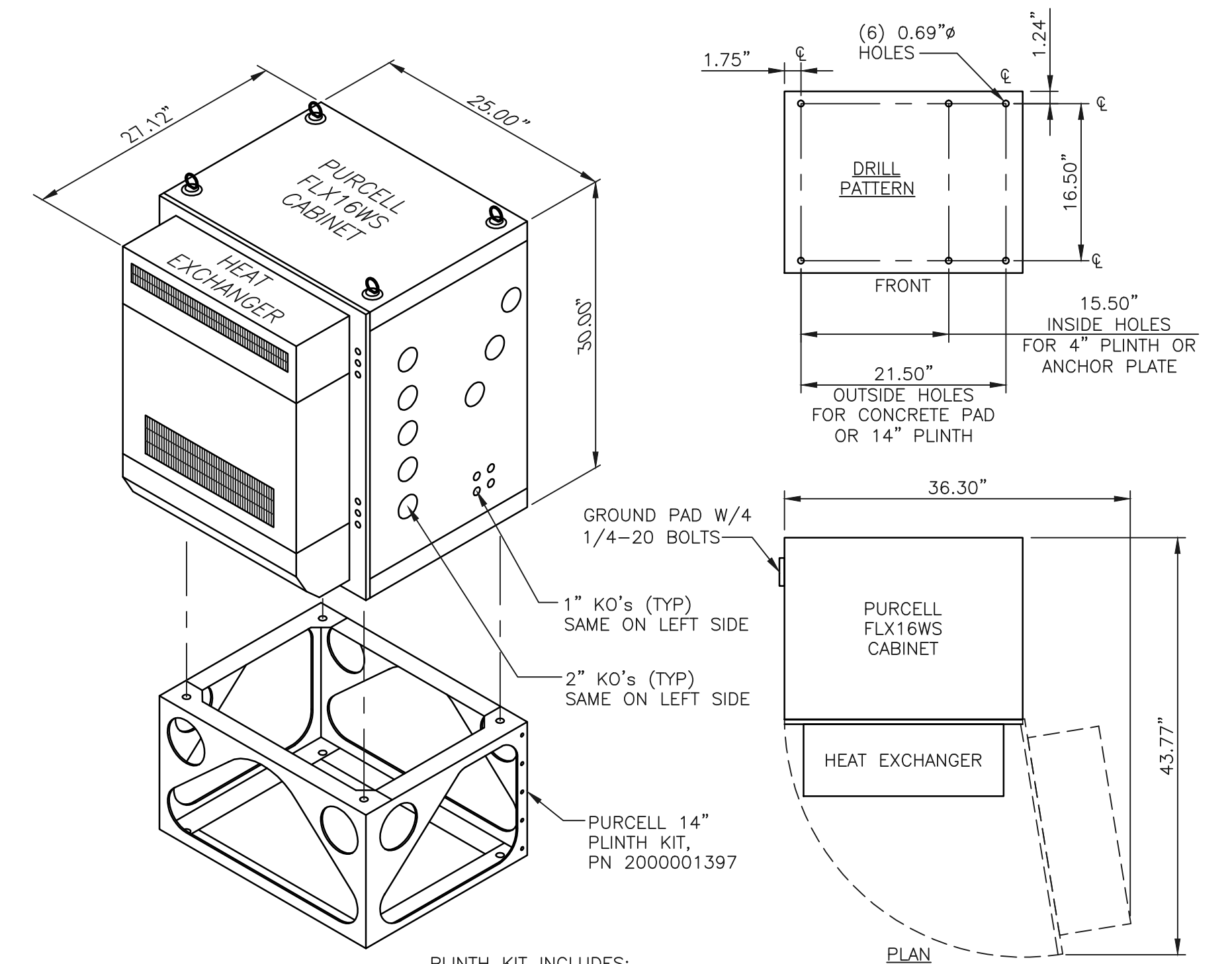


PHYSICAL CHARACTERISTICS	
HEIGHT	2.59" (1.5 U)
WIDTH	19"
DEPTH	13.77"
WEIGHT (FULLY EQUIPPED)	<22 LBS.
COLOR	WHITE

DC POWER SUPPLY	
NOMINAL VOLTAGE	-48VDC
OPERATING VOLTAGE RANGE	-40.0 TO -57.6 VDC
NON-DESTRUCTIVE VOLTAGE RANGE	0 TO -60 VDC

RBS 6601 DETAIL

SCALE: N.T.S.



PLINTH KIT INCLUDES:

- (1) 14", HIGH PLINTH ASSEMBLY
- (8) 1/2-13, 1.25" LONG STAINLESS STEEL HEX BOLTS
- (16) 1/2 STAINLESS STEEL FLAT WASHERS
- (12) 1/2 STAINLESS STEEL SPLIT LOCK WASHERS
- (4) 1/2-13, 1.5" LONG STAINLESS STEEL HEX BOLTS
- (8) LOAD SPREADING WASHERS

WEIGHT:

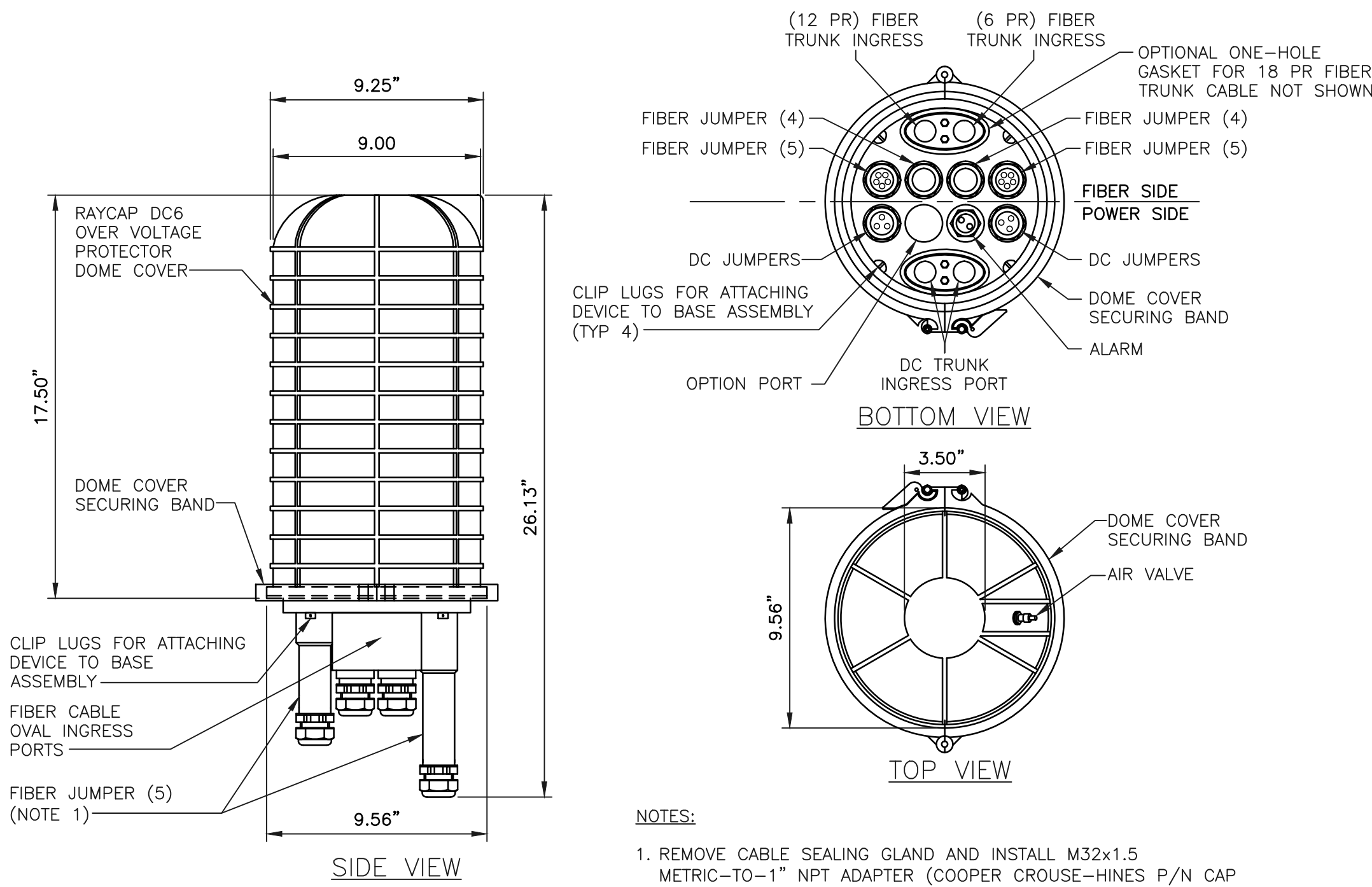
- EMPTY W/BLANK DOOR = 80lbs
- EMPTY W/ HEAT EXCHANGER = 120lbs
- EQUIPMENT (VARIES) = 400/lbs MAX
- CABINET TOTAL (MAX) = 600lbs

NOTES:

- 1. DOOR HINGE MAY BE REVERSED
- 2. MINIMUM ANCHOR SIZE MUST BE 1/2"DIA.
- 3. AN ISOLATOR BASE IS REQUIRED WHEN MOUNTING CABINET DIRECTLY ON CONCRETE PAD.

PURCELL CABINET DETAIL

SCALE: N.T.S.

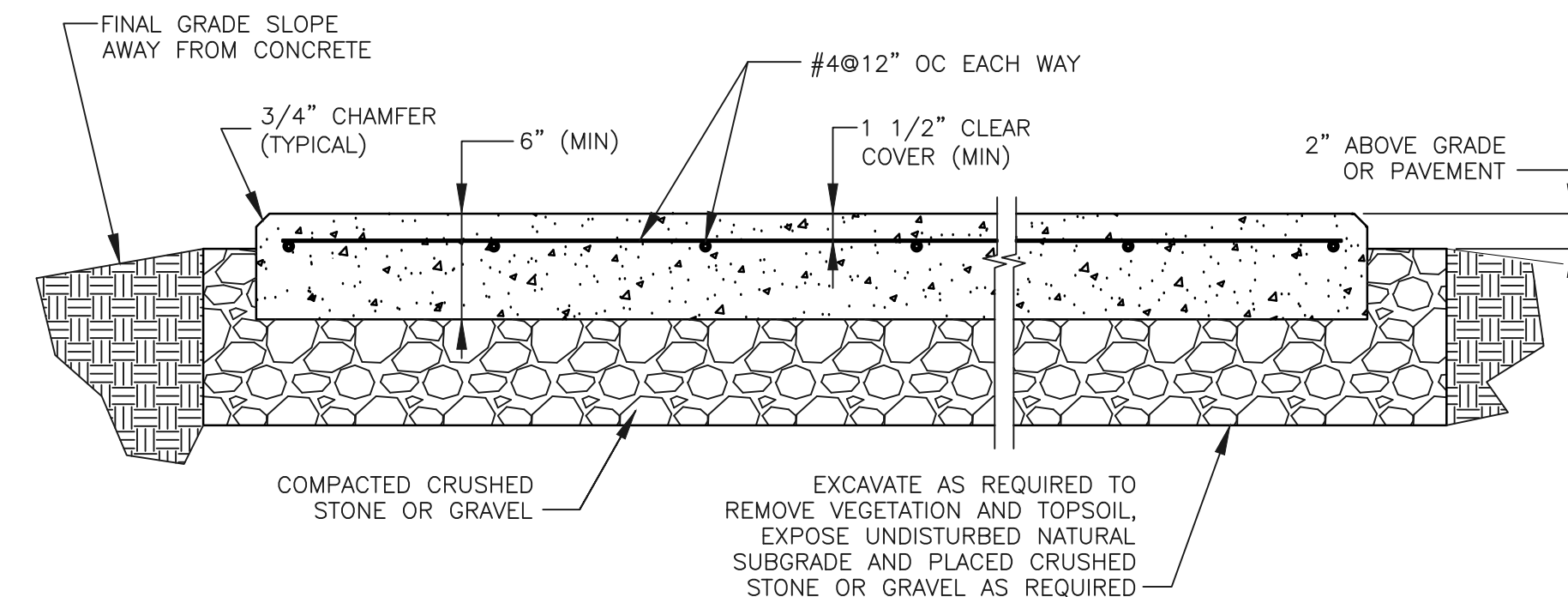


NOTES:

- 1. REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC-TO-1" NPT ADAPTER (COOPER CROUSE-HINES P/N CAP 740 994 OR EQUIVALENT MFR) WHEN CONNECTING CONDUIT TO OVP.

DC-6 SURGE SUPPRESSOR DETAIL

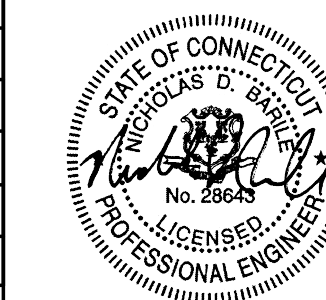
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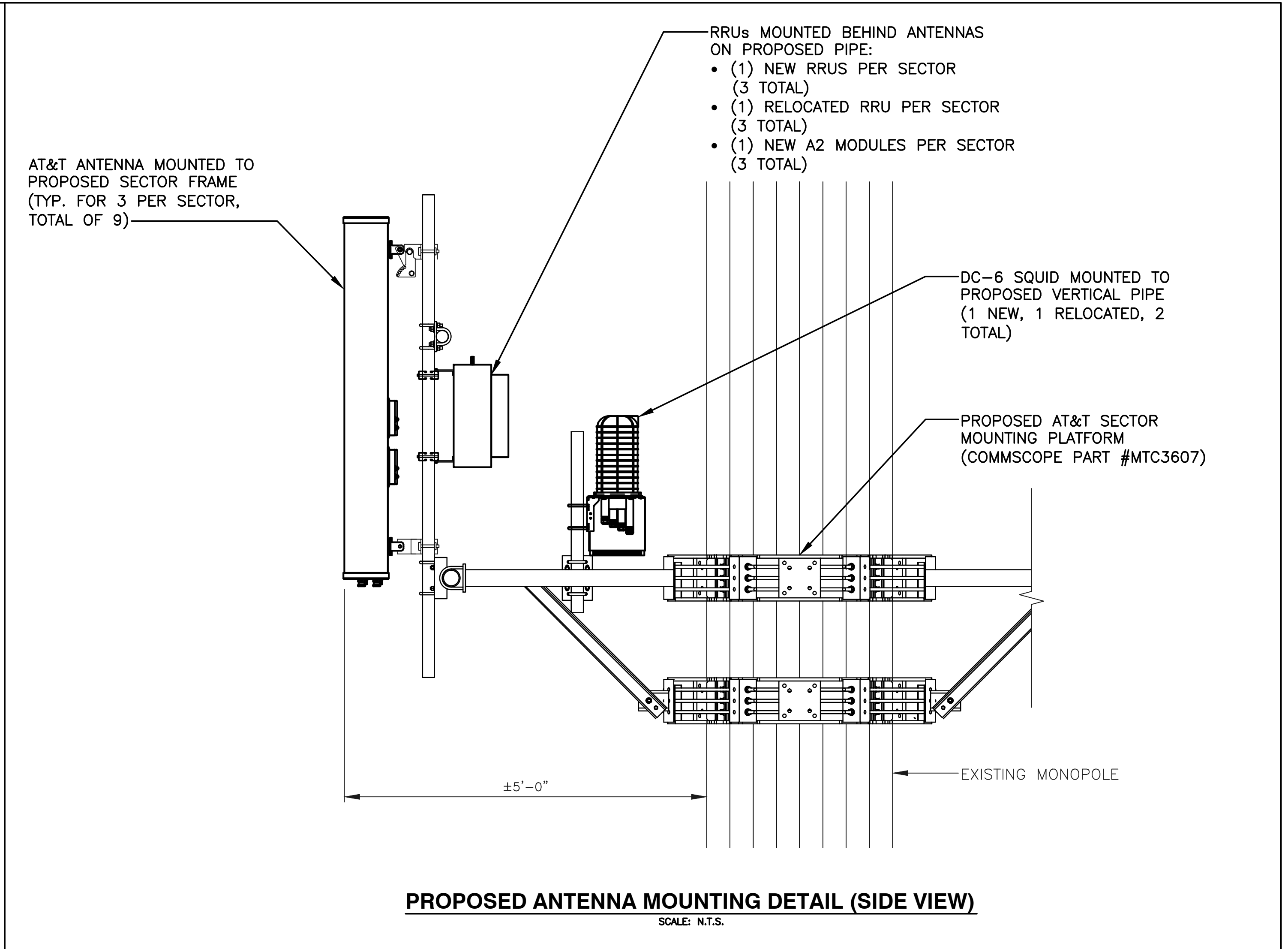
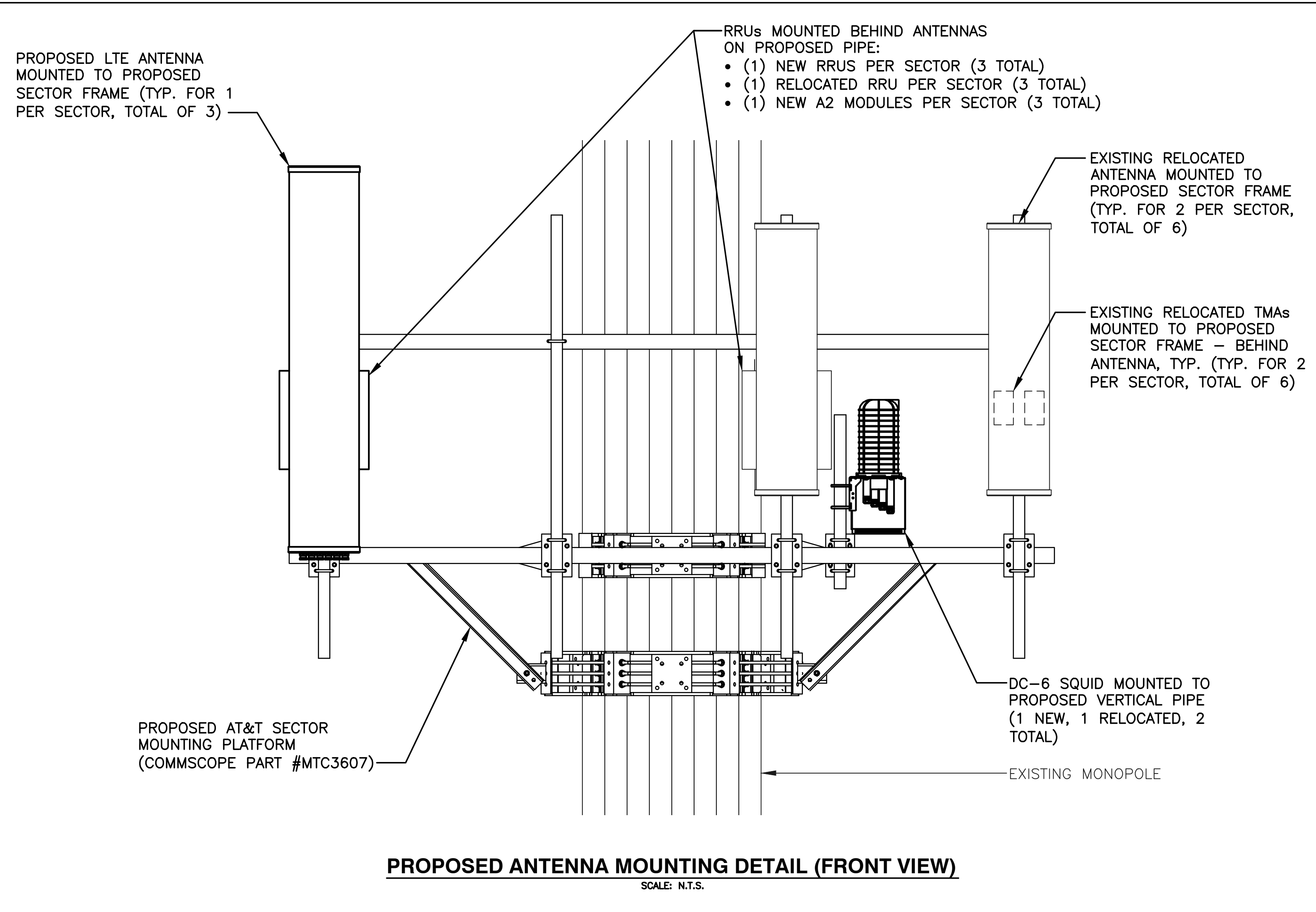
CONCRETE PAD DETAIL

SCALE: N.T.S.

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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: CJT	DRAWN BY: DAB		07/16/15



AT&T		
DRAWING TITLE: DETAILS		
JOB NUMBER 14026-EMP	DRAWING NUMBER A-4	REV 0



EXISTING ANTENNA SCHEDULE				
SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	-	-	-
	A2	-	-	-
	A3	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"
	A4	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"
BETA	B1	-	-	-
	B2	-	-	-
	B3	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"
	B4	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"
GAMMA	G1	-	-	-
	G2	-	-	-
	G3	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"
	G4	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"

PROPOSED ANTENNA SCHEDULE				
SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"
	A2	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"
	A3	-	-	-
	A4	CCI	OPA-65R-LCUU-H6	72"x14.8"x7.4"
BETA	B1	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"
	B2	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"
	B3	-	-	-
	B4	CCI	OPA-65R-LCUU-H6	72"x14.8"x7.4"
GAMMA	G1	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"
	G2	KMW	AM-X-CD-16-65-00T-RET	54"x12.6"x7.87"
	G3	-	-	-
	G4	CCI	OPA-65R-LCUU-H6	72"x14.8"x7.4"

PROPOSED RRH SCHEDULE					
SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-11	19.7"x16.9"x7.2"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS-11 (RELOCATED)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-11	19.7"x16.9"x7.2"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS-11 (RELOCATED)	19.7"x16.9"x7.2"		
GAMMA	ERICSSON	RRUS-11	19.7"x16.9"x7.2"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS-11 (RELOCATED)	19.7"x16.9"x7.2"		

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.



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Professional Corporation

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dpalkovic@gpdgroup.com

Date: **July 1, 2015**

Sean Dempsey
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
704-405-6565

Subject: **Structural Analysis Report**

Carrier Designation: **AT&T Mobility Co-Locate**
Carrier Site Number: CT5378
Carrier Site Name: MERIDEN WEST CENTRAL

Crown Castle Designation: **Crown Castle BU Number:** 842869
Crown Castle Site Name: MERIDEN WEST CENTRAL
Crown Castle JDE Job Number: 291693
Crown Castle Work Order Number: 1082049
Crown Castle Application Number: 249261 Rev. 14

Engineering Firm Designation: **GPD Project Number:** 2015777.842869.01

Site Data: **450-478 West Main Street, Meriden, New Haven County, CT 06451**
Latitude 41° 32' 24.24", Longitude -72° 49' 9.06"
100 Foot – Glen Martin Monopole Tower

Dear Sean Dempsey,

GPD is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural ‘Statement of Work’ and the terms of Crown Castle Purchase Order Number 801260, in accordance with application 249261, revision 14.

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

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

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

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

Structural analysis prepared by: Andrew Fischer

Respectfully submitted by:

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

7/1/2015

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1) INTRODUCTION

This existing 100 ft monopole consists of two major sections that are connected by a slip joint. It has a 16-sided cross section and is evenly tapered from 51.37" (flat-flat) at the base to 28" (flat-flat) at the top. The structure is galvanized and does not have aviation lighting.

This tower is a 100 ft Monopole tower designed by Glen Martin Engineering in December of 2003. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut State Building Code and TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 38 mph with 0.75 inch ice thickness (in accordance with ASCE7-05 ice conditions) and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
100.0	100.0	1	Commscope	MTC 3607	1 2	3/8 3/4	1
		3	CCI Antennas	DTMABP7819VG12A			
		3	CCI Antennas	OPA-65R-LCUU-H6			
		3	Ericsson	RRUS A2 MODULE			
		3	Ericsson	RRUS-11 1900MHz			
		1	Raycap	DC6-48-60-18-8F			

Notes:

- 1) See Appendix B for proposed coax layout

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
100.0	115.0	1	DBSpectra	DS8A12F36U-N			3
	106.0	3	Decibel	DB201-A			
		1	KMW	HB-X-AW-19-65-00T			
	103.0	3	Kathrein	860 10025	1	1/2	1
		3	Powerwave Technologies	LGP21401			
	101.0	3	Powerwave Technologies	LGP21401	1 2 6 8	3/8 3/4 1-1/4 1/2	3
	100.0	3	Ericsson	RRUS 11			
		3	Ericsson	RRUS 11-700			
		1	Raycap	DC6-48-60-18-8F			
		4	Decibel	DB432-A			
6	KMW Communications	AM-X-CD-16-65-00T-RET					
3	Kathrein	860 10025			1		
86.0	90.0	3	Ericsson	Ericsson Air 21 B4A B12P-B5P 8FT	1 12 1	1/2 7/8 1-5/8	2
		3	Ericsson	RRUS 11 B12			
		3	Ericsson	KRY 112 71			
		3	Ericsson	ERICSSON AIR 21 B2A B4P			
	86.0	1	Andrew	VHLP1-23			
		1		Platform Mount [LP 305-1]			
78.0	78.0	3	Alcatel Lucent	1900MHz RRH			
		3	Alcatel Lucent	800 EXTERNAL NOTCH FILTER			
		3	Alcatel Lucent	TME-800MHZ RRH			
		1		Side Arm Mount [SO 104-3]			
76.0	79.0	3	RFS Celwave	APXVTM14-C-120	3	5/16	2
		3	Alcatel Lucent	TD-RRH8x20-25	1	1-1/4	
		3	RFS Celwave	APXVSP18-C-A20	3	1-1/4	
	76.0	1		Platform Mount [LP 304-1]			
65.0	65.0	6	Antel	BXA-70063/6CF	2	1-5/8	2
		6	Antel	BXA-171063/12CF			
		3	Alcatel Lucent	RRH2x40 700			
		3	Alcatel Lucent	RRH2X40-AWS			
		2	RFS Celwave	DB-T1-6Z-8AB-0Z			
		1		Platform Mount [LP 303-1]			

Notes:

- 1) Existing equipment that is to be removed from the tower and has not been considered in this analysis.
- 2) Reserved equipment that has been considered in this analysis.
- 3) Existing equipment is to be relocated to the proposed mount.

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
99	99	6	Allgon	7920	12	1-5/8
89	89	9	-	4' Panel Antenna	9	1-5/8
79	79	9	-	4' Panel Antenna	9	1-5/8

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Tectonic Site #: CT-378 "Meriden North Central, Dated 8/28/2002	4529388	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Glen Martin Engineering, Inc. DWG #: MP0100853-0001, Dated 12/11/2003	4529387	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Glen Martin Engineering, Inc. DWG #: MP0100853-0001, Dated 12/11/2003	4713237	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.

This analysis may be affected if any assumptions 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 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	100 - 47	Pole	TP40.72x28x0.3125	1	-16.14	2019.47	45.5	Pass
L2	47 - 0	Pole	TP51.37x38.655x0.375	2	-28.15	3171.35	65.5	Pass
						Summary	ELC:	Load Case 7
						Pole (L2)	65.5	Pass
						Rating =	65.5	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	61.0	Pass
1	Base Plate	0	33.8	Pass
1	Base Foundation Structure	0	67.1	Pass
1	Base Foundation Soil Interaction	0	25.3	Pass

Structure Rating (max from all components) =	67.1%
---	--------------

Notes:

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

4.1) Recommendations

The existing tower and its foundation are sufficient for the proposed loading and do not require modifications.

5) DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A
TNXTOWER OUTPUT

DESIGNED APPURTENANCE LOADING

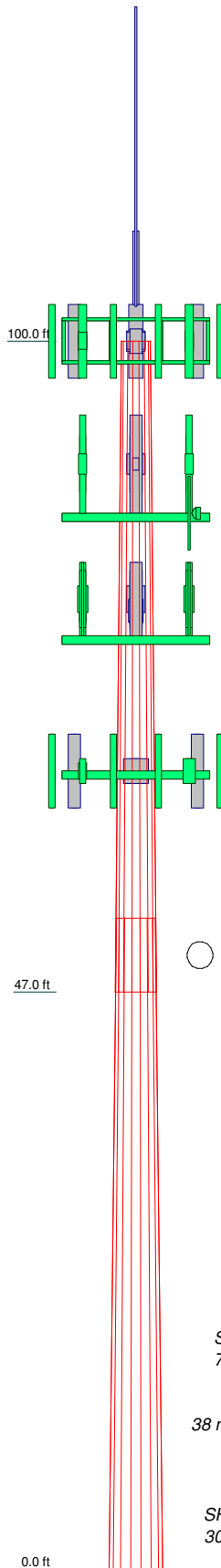
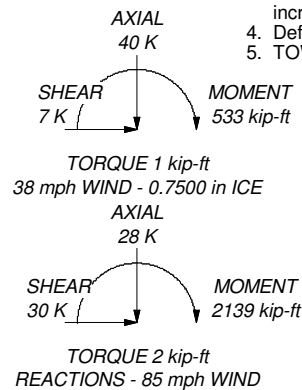
TYPE	ELEVATION	TYPE	ELEVATION
DS8A12F36U-N	100	RRUS 11 B12	86
DB201-A	100	RRUS 11 B12	86
DB201-A	100	6' x 2" Mount Pipe	86
DB201-A	100	Platform Mount [LP 305-1]	86
HB-X-AW-19-65-00T	100	VHLP1-23	86
(2) AM-X-CD-16-65-00T-RET	100	1900MHz RRH	78
(2) AM-X-CD-16-65-00T-RET	100	1900MHz RRH	78
(2) AM-X-CD-16-65-00T-RET	100	800 EXTERNAL NOTCH FILTER	78
OPA-65R-LCUU-H6	100	800 EXTERNAL NOTCH FILTER	78
OPA-65R-LCUU-H6	100	800 EXTERNAL NOTCH FILTER	78
OPA-65R-LCUU-H6	100	TME-800MHZ RRH	78
RRUS-11 1900MHz	100	TME-800MHZ RRH	78
RRUS-11 1900MHz	100	TME-800MHZ RRH	78
RRUS-11 1900MHz	100	6' x 2" Mount Pipe	78
RRUS A2 MODULE	100	6' x 2" Mount Pipe	78
RRUS A2 MODULE	100	6' x 2" Mount Pipe	78
RRUS 11-700	100	Side Arm Mount [SO 104-3]	78
RRUS 11-700	100	1900MHz RRH	78
RRUS 11-700	100	APXVSP18-C-A20 w/ Mount Pipe	76
RRUS 11-700	100	APXVSP18-C-A20 w/ Mount Pipe	76
DC6-48-60-18-8F Surge Suppression Unit	100	TD-RRH8x20-25	76
DC6-48-60-18-8F Surge Suppression Unit	100	TD-RRH8x20-25	76
DC6-48-60-18-8F Surge Suppression Unit	100	TD-RRH8x20-25	76
DTMABP7819VG12A	100	APXVTM14-C-120 w/ Mount Pipe	76
DTMABP7819VG12A	100	APXVTM14-C-120 w/ Mount Pipe	76
DTMABP7819VG12A	100	APXVTM14-C-120 w/ Mount Pipe	76
(2) DB432-A	100	(2) Pipe Mount 6'x2.375"	76
(2) DB432-A	100	(2) Pipe Mount 6'x2.375"	76
MTC 3607	100	(2) Pipe Mount 6'x2.375"	76
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	86	Platform Mount [LP 304-1]	76
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	86	APXVSP18-C-A20 w/ Mount Pipe	76
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	86	(2) BXA-171063/12CF w/ Mount Pipe	65
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	86	(2) BXA-171063/12CF w/ Mount Pipe	65
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	86	(2) BXA-70063/6CF w/ Mount Pipe	65
Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	86	(2) BXA-70063/6CF w/ Mount Pipe	65
Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	86	(2) BXA-70063/6CF w/ Mount Pipe	65
Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	86	RRH2x40 700	65
Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	86	RRH2x40 700	65
Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	86	RRH2x40 700	65
KRY 112 71	86	RRH2x40-AWS	65
KRY 112 71	86	RRH2x40-AWS	65
KRY 112 71	86	RRH2x40-AWS	65
RRUS 11 B12	86	DB-T1-6Z-8AB-0Z	65
		DB-T1-6Z-8AB-0Z	65
		Platform Mount [LP 303-1]	65
		(2) BXA-171063/12CF w/ Mount Pipe	65

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 65.5%



Section	1	2
Length (ft)	53.0000	53.0000
Number of Sides	16	16
Thickness (in)	0.3125	0.3750
Socket Length (ft)	6.0000	38.6550
Top Dia (in)	28.0000	51.3700
Bot Dia (in)	40.7200	
Grade	A572-65	A572-65
Weight (K)	6.1	9.6
		15.8

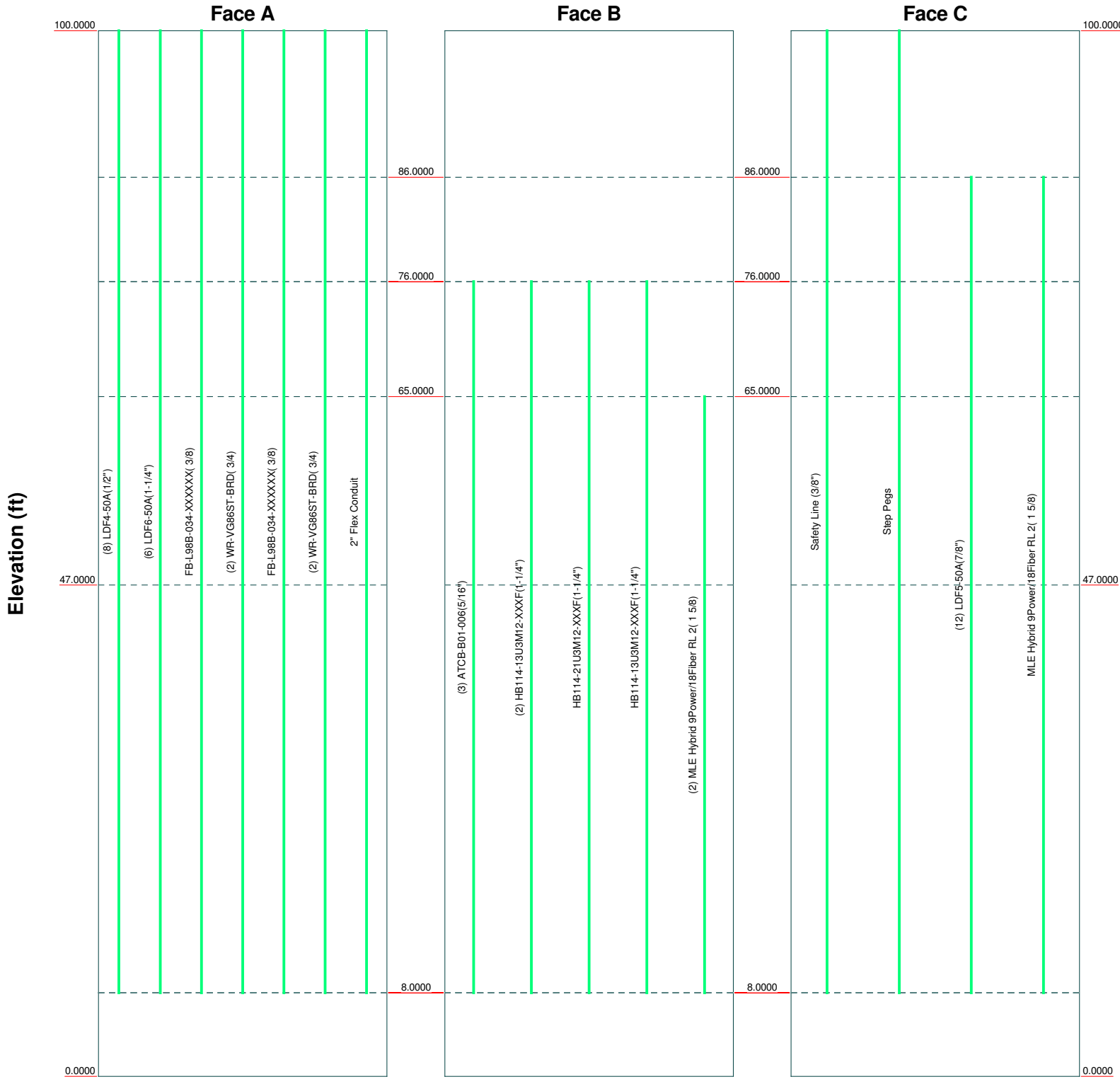
GPD
 520 S. Main Street, Ste 2531
 Akron, OH 44311
 Phone: (330) 572-2100
 FAX: (330) 572-2101

Job: **Meriden West Central BU#: 842869**
 Project: **2015777.842869.01**
 Client: Crown Castle Drawn by: afischer App'd:
 Code: TIA/EIA-222-F Date: 07/01/15 Scale: NTS
 Path: T:\Crown\842869\01\TNX\842869.eri Dwg No. E-1

Feed Line Distribution Chart

0' - 100'

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



GPD

520 S. Main Street, Ste 2531

Akron, OH 44311

Phone: (330) 572-2100

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Job: Meriden West Central BU#: 842869		
Project: 2015777.842869.01		
Client: Crown Castle	Drawn by: afischer	App'd:
Code: TIA/EIA-222-F	Date: 07/01/15	Scale: NTS
Path: T:\Crown\842869\01\TNX\842869.erl		Dwg No. E-7

tnxTower GPD 520 S. Main Street, Ste 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job Meriden West Central BU#: 842869	Page 1 of 12
	Project 2015777.842869.01	Date 14:45:12 07/01/15
	Client Crown Castle	Designed by afischer

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in New Haven County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 38 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

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

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

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

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	100.0000-47.00 00	53.0000	6.0000	16	28.0000	40.7200	0.3125	1.2500	A572-65 (65 ksi)
L2	47.0000-0.0000	53.0000		16	38.6550	51.3700	0.3750	1.5000	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	28.5486	27.6010	2673.0452	9.8567	14.2800	187.1880	5386.5635	13.6472	4.9501	15.84

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	Project	2015777.842869.01	Date	14:45:12 07/01/15
	Client	Crown Castle	Designed by	afischer

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L2	41.5178	40.2812	8308.8518	14.3851	20.7672	400.0949	16743.5097	19.9169	7.4814	23.94
	40.8799	45.7925	8477.1936	13.6277	19.7141	430.0077	17082.7422	22.6420	6.9461	18.523
	52.3764	61.0028	20040.9868	18.1542	26.1987	764.9611	40385.4186	30.1627	9.4764	25.27

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	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
L1 100.0000-47.0 000				1	1	1		
L2 47.0000-0.000 0				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
Safety Line (3/8")	C	No	CaAa (Out Of Face)	100.0000 - 8.0000	1	No Ice	0.0375	0.22
						1/2" Ice	0.1375	0.75
						1" Ice	0.2375	1.28
						2" Ice	0.4375	2.34
						4" Ice	0.8375	4.46
Step Pegs	C	No	CaAa (Out Of Face)	100.0000 - 8.0000	1	No Ice	0.0800	2.72
						1/2" Ice	0.1800	3.51
						1" Ice	0.2800	4.92
						2" Ice	0.4800	9.56
						4" Ice	0.8800	26.18
LDF4-50A(1/2")	A	No	Inside Pole	100.0000 - 8.0000	8	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
LDF6-50A(1-1/4")	A	No	Inside Pole	100.0000 - 8.0000	6	No Ice	0.0000	0.66
						1/2" Ice	0.0000	0.66
						1" Ice	0.0000	0.66
						2" Ice	0.0000	0.66
						4" Ice	0.0000	0.66
FB-L98B-034-XXXXXXX (3/8)	A	No	Inside Pole	100.0000 - 8.0000	1	No Ice	0.0000	0.05
						1/2" Ice	0.0000	0.05
						1" Ice	0.0000	0.05
						2" Ice	0.0000	0.05
						4" Ice	0.0000	0.05
WR-VG86ST-BRD(3/4)	A	No	Inside Pole	100.0000 - 8.0000	2	No Ice	0.0000	0.58
						1/2" Ice	0.0000	0.58
						1" Ice	0.0000	0.58
						2" Ice	0.0000	0.58
						4" Ice	0.0000	0.58
FB-L98B-034-XXXXXXX (3/8)	A	No	Inside Pole	100.0000 - 8.0000	1	No Ice	0.0000	0.05
						1/2" Ice	0.0000	0.05
						1" Ice	0.0000	0.05
						2" Ice	0.0000	0.05
						4" Ice	0.0000	0.05
WR-VG86ST-BRD(3/4)	A	No	Inside Pole	100.0000 - 8.0000	2	No Ice	0.0000	0.58

tnxTower GPD 520 S. Main Street, Ste 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Meriden West Central BU#: 842869	Page	3 of 12
	Project	2015777.842869.01	Date	14:45:12 07/01/15
	Client	Crown Castle	Designed by	afischer

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
						1/2" Ice	0.0000	0.58
						1" Ice	0.0000	0.58
						2" Ice	0.0000	0.58
						4" Ice	0.0000	0.58
2" Flex Conduit	A	No	Inside Pole	100.0000 - 8.0000	1	No Ice	0.0000	0.32
						1/2" Ice	0.0000	0.32
						1" Ice	0.0000	0.32
						2" Ice	0.0000	0.32
						4" Ice	0.0000	0.32
LDF5-50A(7/8")	C	No	Inside Pole	86.0000 - 8.0000	12	No Ice	0.0000	0.33
						1/2" Ice	0.0000	0.33
						1" Ice	0.0000	0.33
						2" Ice	0.0000	0.33
						4" Ice	0.0000	0.33
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	Inside Pole	86.0000 - 8.0000	1	No Ice	0.0000	1.07
						1/2" Ice	0.0000	1.07
						1" Ice	0.0000	1.07
						2" Ice	0.0000	1.07
						4" Ice	0.0000	1.07
ATCB-B01-006(5/16")	B	No	Inside Pole	76.0000 - 8.0000	3	No Ice	0.0000	0.07
						1/2" Ice	0.0000	0.07
						1" Ice	0.0000	0.07
						2" Ice	0.0000	0.07
						4" Ice	0.0000	0.07
HB114-13U3M12-XXX F(1-1/4")	B	No	Inside Pole	76.0000 - 8.0000	2	No Ice	0.0000	0.99
						1/2" Ice	0.0000	0.99
						1" Ice	0.0000	0.99
						2" Ice	0.0000	0.99
						4" Ice	0.0000	0.99
HB114-21U3M12-XXX F(1-1/4")	B	No	Inside Pole	76.0000 - 8.0000	1	No Ice	0.0000	1.22
						1/2" Ice	0.0000	1.22
						1" Ice	0.0000	1.22
						2" Ice	0.0000	1.22
						4" Ice	0.0000	1.22
HB114-13U3M12-XXX F(1-1/4")	B	No	Inside Pole	76.0000 - 8.0000	1	No Ice	0.0000	0.99
						1/2" Ice	0.0000	0.99
						1" Ice	0.0000	0.99
						2" Ice	0.0000	0.99
						4" Ice	0.0000	0.99
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	B	No	Inside Pole	65.0000 - 8.0000	2	No Ice	0.0000	1.07
						1/2" Ice	0.0000	1.07
						1" Ice	0.0000	1.07
						2" Ice	0.0000	1.07
						4" Ice	0.0000	1.07

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horiz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
DS8A12F36U-N	A	From Centroid-Log	5.0000 0.00 15.00	0.0000	100.0000	No Ice	5.1275	5.1275	0.07
						1/2" Ice	7.5950	7.5950	0.11
						1" Ice	10.0792	10.0792	0.16
						2" Ice	15.0975	15.0975	0.32

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Client	Crown Castle	Designed by	afischer

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight							
			Horz	Lateral						°	ft	ft ²	ft ²	K		
RRUS-11 1900MHz	C	Centroid- Le g	From 5.0000	0.0000	0.0000	100.0000	No Ice	1.9000	0.06							
									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
									1/2" Ice	3.1718	1.3512	0.09				
									1" Ice	3.4103	1.5210	0.14				
									2" Ice	3.9133	1.8865	0.29				
									4" Ice	5.0229	2.7214	0.04				
									1/2" Ice	3.1718	1.3512	0.06				
									1" Ice	3.4103	1.5210	0.09				
									2" Ice	3.9133	1.8865	0.14				
									4" Ice	5.0229	2.7214	0.29				
RRUS A2 MODULE	A	Centroid- Le g	From 5.0000	0.0000	0.0000	100.0000	No Ice	1.9000	0.02							
									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
									1/2" Ice	2.0512	0.5324	0.03				
									1" Ice	2.2443	0.6504	0.04				
									2" Ice	2.6565	0.9122	0.08				
									4" Ice	3.5847	1.5397	0.18				
									1/2" Ice	2.0512	0.5324	0.03				
									1" Ice	2.2443	0.6504	0.04				
									2" Ice	2.6565	0.9122	0.08				
									4" Ice	3.5847	1.5397	0.18				
RRUS A2 MODULE	B	Centroid- Le g	From 5.0000	0.0000	0.0000	100.0000	No Ice	1.9000	0.02							
									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
									1/2" Ice	2.0512	0.5324	0.03				
									1" Ice	2.2443	0.6504	0.04				
									2" Ice	2.6565	0.9122	0.08				
									4" Ice	3.5847	1.5397	0.18				
									1/2" Ice	2.0512	0.5324	0.03				
									1" Ice	2.2443	0.6504	0.04				
									2" Ice	2.6565	0.9122	0.08				
									4" Ice	3.5847	1.5397	0.18				
RRUS A2 MODULE	C	Centroid- Le g	From 5.0000	0.0000	0.0000	100.0000	No Ice	1.9000	0.02							
									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
									1/2" Ice	2.0512	0.5324	0.03				
									1" Ice	2.2443	0.6504	0.04				
									2" Ice	2.6565	0.9122	0.08				
									4" Ice	3.5847	1.5397	0.18				
									1/2" Ice	2.0512	0.5324	0.03				
									1" Ice	2.2443	0.6504	0.04				
									2" Ice	2.6565	0.9122	0.08				
									4" Ice	3.5847	1.5397	0.18				
RRUS 11-700	A	Centroid- Le g	From 5.0000	0.0000	0.0000	100.0000	No Ice	1.3790	0.05							
									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
									1/2" Ice	3.4982	1.5577	0.07				
									1" Ice	3.7490	1.7450	0.09				
									2" Ice	4.2766	2.1455	0.15				
									4" Ice	5.4355	3.0504	0.31				
									1/2" Ice	3.4982	1.5577	0.07				
									1" Ice	3.7490	1.7450	0.09				
									2" Ice	4.2766	2.1455	0.15				
									4" Ice	5.4355	3.0504	0.31				
RRUS 11-700	B	Centroid- Le g	From 5.0000	0.0000	0.0000	100.0000	No Ice	1.3790	0.05							
									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
									1/2" Ice	3.4982	1.5577	0.07				
									1" Ice	3.7490	1.7450	0.09				
									2" Ice	4.2766	2.1455	0.15				
									4" Ice	5.4355	3.0504	0.31				
									1/2" Ice	3.4982	1.5577	0.07				
									1" Ice	3.7490	1.7450	0.09				
									2" Ice	4.2766	2.1455	0.15				
									4" Ice	5.4355	3.0504	0.31				
RRUS 11-700	C	Centroid- Le g	From 5.0000	0.0000	0.0000	100.0000	No Ice	1.3790	0.05							
									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
									1/2" Ice	3.4982	1.5577	0.07				
									1" Ice	3.7490	1.7450	0.09				
									2" Ice	4.2766	2.1455	0.15				
									4" Ice	5.4355	3.0504	0.31				
									1/2" Ice	3.4982	1.5577	0.07				
									1" Ice	3.7490	1.7450	0.09				
									2" Ice	4.2766	2.1455	0.15				
									4" Ice	5.4355	3.0504	0.31				
DC6-48-60-18-8F Surge Suppression Unit	A	Centroid- Le g	From 5.0000	0.0000	0.0000	100.0000	No Ice	1.4667	0.02							
									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
									1/2" Ice	1.6667	1.6667	0.04				
									1" Ice	1.8778	1.8778	0.06				
									2" Ice	2.3333	2.3333	0.11				
									4" Ice	3.3778	3.3778	0.24				
									1/2" Ice	1.6667	1.6667	0.04				
									1" Ice	1.8778	1.8778	0.06				
									2" Ice	2.3333	2.3333	0.11				
									4" Ice	3.3778	3.3778	0.24				
DC6-48-60-18-8F Surge Suppression Unit	C	Centroid- Le g	From 5.0000	0.0000	0.0000	100.0000	No Ice	1.4667	0.02							
									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
									1/2" Ice	1.6667	1.6667	0.04				
									1" Ice	1.8778	1.8778	0.06				
									2" Ice	2.3333	2.3333	0.11				
									4" Ice	3.3778	3.3778	0.24				
									1/2" Ice	1.6667	1.6667	0.04				
									1" Ice	1.8778	1.8778	0.06				
									2" Ice	2.3333	2.3333	0.11				
									4" Ice	3.3778	3.3778	0.24				
DTMABP7819VG12A	A	Centroid- Le g	From 5.0000	0.0000	0.0000	100.0000	No Ice	0.3907	0.02							
									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
									1/2" Ice	1.2835	0.4884	0.03				
									1" Ice	1.4368	0.5947	0.04				
									2" Ice	1.7693	0.8334	0.06				
									4" Ice	2.5380	1.4144	0.14				
									1/2" Ice	1.2835	0.4884	0.03				
									1" Ice	1.4368	0.5947	0.04				
									2" Ice	1.7693	0.8334	0.06				
									4" Ice	2.5380	1.4144	0.14				
DTMABP7819VG12A	B	Centroid- Le g	From 5.0000	0.0000	0.0000	100.0000	No Ice	0.3907	0.02							
									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
									1/2" Ice	1.2835	0.4884	0.03				
									1" Ice	1.4368	0.5947	0.04				
									2" Ice	1.7693	0.8334	0.06				
									4" Ice	2.5380	1.4144	0.14				
									1/2" Ice	1.2835	0.4884	0.03				
									1" Ice	1.4368	0.5947	0.04				
									2" Ice	1.7693	0.8334	0.06				
									4" Ice	2.5380	1.4144	0.14				

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Client	Crown Castle	Designed by	afischer

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
DTMABP7819VG12A	C	From Centroid-Le g	5.0000	0.0000	100.0000	2" Ice	1.7693	0.8334	0.06
						4" Ice	2.5380	1.4144	0.14
						No Ice	1.1389	0.3907	0.02
						1/2" Ice	1.2835	0.4884	0.03
						1" Ice	1.4368	0.5947	0.04
						2" Ice	1.7693	0.8334	0.06
(2) DB432-A	B	From Centroid-Le g	5.0000	0.0000	100.0000	4" Ice	2.5380	1.4144	0.14
						No Ice	0.3000	0.3000	0.01
						1/2" Ice	0.5400	0.5400	0.01
						1" Ice	0.7800	0.7800	0.01
						2" Ice	1.2600	1.2600	0.01
						4" Ice	2.2200	2.2200	0.02
(2) DB432-A	C	From Centroid-Le g	5.0000	0.0000	100.0000	No Ice	0.3000	0.3000	0.01
						1/2" Ice	0.5400	0.5400	0.01
						1" Ice	0.7800	0.7800	0.01
						2" Ice	1.2600	1.2600	0.01
						4" Ice	2.2200	2.2200	0.02
						No Ice	51.7000	51.7000	2.26
MTC 3607	C	None	0.0000	100.0000	1/2" Ice	62.7000	62.7000	2.94	
					1" Ice	73.7000	73.7000	3.61	
					2" Ice	95.7000	95.7000	4.95	
					4" Ice	139.7000	139.7000	7.65	
					No Ice	6.9044	5.7216	0.11	
					1/2" Ice	7.4613	6.6281	0.17	
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Centroid-Le g	5.0000	0.0000	86.0000	1" Ice	7.9976	7.4239	0.24
						2" Ice	9.1024	9.0694	0.39
						4" Ice	11.4404	12.5753	0.82
						No Ice	6.9044	5.7216	0.11
						1/2" Ice	7.4613	6.6281	0.17
						1" Ice	7.9976	7.4239	0.24
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Centroid-Le g	5.0000	0.0000	86.0000	2" Ice	9.1024	9.0694	0.39
						4" Ice	11.4404	12.5753	0.82
						No Ice	6.9044	5.7216	0.11
						1/2" Ice	7.4613	6.6281	0.17
						1" Ice	7.9976	7.4239	0.24
						2" Ice	9.1024	9.0694	0.39
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Centroid-Le g	5.0000	0.0000	86.0000	4" Ice	11.4404	12.5753	0.82
						No Ice	6.9044	5.7216	0.11
						1/2" Ice	7.4613	6.6281	0.17
						1" Ice	7.9976	7.4239	0.24
						2" Ice	9.1024	9.0694	0.39
						4" Ice	11.4404	12.5753	0.82
Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	A	From Centroid-Le g	5.0000	0.0000	86.0000	No Ice	11.7819	11.0375	0.16
						1/2" Ice	12.5023	12.5645	0.25
						1" Ice	13.2319	14.1155	0.36
						2" Ice	14.7352	16.4710	0.61
						4" Ice	18.0042	21.3607	1.28
						No Ice	11.7819	11.0375	0.16
Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	B	From Centroid-Le g	5.0000	0.0000	86.0000	1/2" Ice	12.5023	12.5645	0.25
						1" Ice	13.2319	14.1155	0.36
						2" Ice	14.7352	16.4710	0.61
						4" Ice	18.0042	21.3607	1.28
						No Ice	11.7819	11.0375	0.16
						1/2" Ice	12.5023	12.5645	0.25
Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	C	From Centroid-Le g	5.0000	0.0000	86.0000	1" Ice	13.2319	14.1155	0.36
						2" Ice	14.7352	16.4710	0.61
						4" Ice	18.0042	21.3607	1.28
						No Ice	11.7819	11.0375	0.16
						1/2" Ice	12.5023	12.5645	0.25
						1" Ice	13.2319	14.1155	0.36
KRY 112 71	A	From Centroid-Le g	5.0000	0.0000	86.0000	2" Ice	14.7352	16.4710	0.61
						4" Ice	18.0042	21.3607	1.28
						No Ice	0.6806	0.4497	0.01
						1/2" Ice	0.8022	0.5590	0.02
						1" Ice	0.9325	0.6769	0.03
						2" Ice	1.2190	0.9388	0.04
						4" Ice	1.8956	1.5662	0.11

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	Client	Crown Castle	Designed by	afischer

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
KRY 112 71	B	From Centroid-Le g	5.0000	0.0000	86.0000	No Ice	0.6806	0.4497	0.01
			0.00	0.0000		1/2" Ice	0.8022	0.5590	0.02
			4.00	0.0000		1" Ice	0.9325	0.6769	0.03
				0.0000		2" Ice	1.2190	0.9388	0.04
				0.0000		4" Ice	1.8956	1.5662	0.11
KRY 112 71	C	From Centroid-Le g	5.0000	0.0000	86.0000	No Ice	0.6806	0.4497	0.01
			0.00	0.0000		1/2" Ice	0.8022	0.5590	0.02
			4.00	0.0000		1" Ice	0.9325	0.6769	0.03
				0.0000		2" Ice	1.2190	0.9388	0.04
				0.0000		4" Ice	1.8956	1.5662	0.11
RRUS 11 B12	A	From Centroid-Le g	5.0000	0.0000	86.0000	No Ice	3.3056	1.3611	0.05
			0.00	0.0000		1/2" Ice	3.5497	1.5404	0.07
			4.00	0.0000		1" Ice	3.8025	1.7284	0.10
				0.0000		2" Ice	4.3340	2.1302	0.15
				0.0000		4" Ice	5.5006	3.0377	0.31
RRUS 11 B12	B	From Centroid-Le g	5.0000	0.0000	86.0000	No Ice	3.3056	1.3611	0.05
			0.00	0.0000		1/2" Ice	3.5497	1.5404	0.07
			4.00	0.0000		1" Ice	3.8025	1.7284	0.10
				0.0000		2" Ice	4.3340	2.1302	0.15
				0.0000		4" Ice	5.5006	3.0377	0.31
RRUS 11 B12	C	From Centroid-Le g	5.0000	0.0000	86.0000	No Ice	3.3056	1.3611	0.05
			0.00	0.0000		1/2" Ice	3.5497	1.5404	0.07
			4.00	0.0000		1" Ice	3.8025	1.7284	0.10
				0.0000		2" Ice	4.3340	2.1302	0.15
				0.0000		4" Ice	5.5006	3.0377	0.31
6' x 2" Mount Pipe	B	From Centroid-Le g	5.0000	0.0000	86.0000	No Ice	1.4250	1.4250	0.02
			0.00	0.0000		1/2" Ice	1.9250	1.9250	0.03
			0.00	0.0000		1" Ice	2.2939	2.2939	0.05
				0.0000		2" Ice	3.0596	3.0596	0.09
				0.0000		4" Ice	4.7022	4.7022	0.23
Platform Mount [LP 305-1]	C	None	0.0000	0.0000	86.0000	No Ice	18.0100	18.0100	1.12
				0.0000		1/2" Ice	23.3300	23.3300	1.35
				0.0000		1" Ice	28.6500	28.6500	1.58
				0.0000		2" Ice	39.2900	39.2900	2.05
				0.0000		4" Ice	60.5700	60.5700	2.97
1900MHz RRH	A	From Centroid-Le g	5.0000	0.0000	78.0000	No Ice	2.9069	3.8014	0.04
			0.00	0.0000		1/2" Ice	3.1446	4.0650	0.08
			0.00	0.0000		1" Ice	3.3909	4.3372	0.11
				0.0000		2" Ice	3.9094	4.9076	0.19
				0.0000		4" Ice	5.0502	6.1520	0.41
1900MHz RRH	B	From Centroid-Le g	5.0000	0.0000	78.0000	No Ice	2.9069	3.8014	0.04
			0.00	0.0000		1/2" Ice	3.1446	4.0650	0.08
			0.00	0.0000		1" Ice	3.3909	4.3372	0.11
				0.0000		2" Ice	3.9094	4.9076	0.19
				0.0000		4" Ice	5.0502	6.1520	0.41
1900MHz RRH	C	From Centroid-Le g	5.0000	0.0000	78.0000	No Ice	2.9069	3.8014	0.04
			0.00	0.0000		1/2" Ice	3.1446	4.0650	0.08
			0.00	0.0000		1" Ice	3.3909	4.3372	0.11
				0.0000		2" Ice	3.9094	4.9076	0.19
				0.0000		4" Ice	5.0502	6.1520	0.41
800 EXTERNAL NOTCH FILTER	A	From Centroid-Le g	5.0000	0.0000	78.0000	No Ice	0.7701	0.3747	0.01
			0.00	0.0000		1/2" Ice	0.8898	0.4647	0.02
			0.00	0.0000		1" Ice	1.0181	0.5634	0.02
				0.0000		2" Ice	1.3007	0.7868	0.04
				0.0000		4" Ice	1.9696	1.3372	0.11
800 EXTERNAL NOTCH FILTER	B	From Centroid-Le	5.0000	0.0000	78.0000	No Ice	0.7701	0.3747	0.01
			0.00	0.0000		1/2" Ice	0.8898	0.4647	0.02

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K
		g	0.00			1" Ice	1.0181	0.5634	0.02
						2" Ice	1.3007	0.7868	0.04
						4" Ice	1.9696	1.3372	0.11
800 EXTERNAL NOTCH FILTER	C	From Centroid-Le	5.0000	0.0000	78.0000	No Ice	0.7701	0.3747	0.01
		g	0.00			1/2" Ice	0.8898	0.4647	0.02
						1" Ice	1.0181	0.5634	0.02
						2" Ice	1.3007	0.7868	0.04
						4" Ice	1.9696	1.3372	0.11
TME-800MHZ RRH	A	From Centroid-Le	5.0000	0.0000	78.0000	No Ice	2.4899	2.0685	0.05
		g	0.00			1/2" Ice	2.7061	2.2705	0.07
						1" Ice	2.9310	2.4812	0.10
						2" Ice	3.4068	2.9284	0.16
						4" Ice	4.4620	3.9265	0.32
TME-800MHZ RRH	B	From Centroid-Le	5.0000	0.0000	78.0000	No Ice	2.4899	2.0685	0.05
		g	0.00			1/2" Ice	2.7061	2.2705	0.07
						1" Ice	2.9310	2.4812	0.10
						2" Ice	3.4068	2.9284	0.16
						4" Ice	4.4620	3.9265	0.32
TME-800MHZ RRH	C	From Centroid-Le	5.0000	0.0000	78.0000	No Ice	2.4899	2.0685	0.05
		g	0.00			1/2" Ice	2.7061	2.2705	0.07
						1" Ice	2.9310	2.4812	0.10
						2" Ice	3.4068	2.9284	0.16
						4" Ice	4.4620	3.9265	0.32
6' x 2" Mount Pipe	A	From Centroid-Le	5.0000	0.0000	78.0000	No Ice	1.4250	1.4250	0.02
		g	0.00			1/2" Ice	1.9250	1.9250	0.03
						1" Ice	2.2939	2.2939	0.05
						2" Ice	3.0596	3.0596	0.09
						4" Ice	4.7022	4.7022	0.23
6' x 2" Mount Pipe	B	From Centroid-Le	5.0000	0.0000	78.0000	No Ice	1.4250	1.4250	0.02
		g	0.00			1/2" Ice	1.9250	1.9250	0.03
						1" Ice	2.2939	2.2939	0.05
						2" Ice	3.0596	3.0596	0.09
						4" Ice	4.7022	4.7022	0.23
6' x 2" Mount Pipe	C	From Centroid-Le	5.0000	0.0000	78.0000	No Ice	1.4250	1.4250	0.02
		g	0.00			1/2" Ice	1.9250	1.9250	0.03
						1" Ice	2.2939	2.2939	0.05
						2" Ice	3.0596	3.0596	0.09
						4" Ice	4.7022	4.7022	0.23
Side Arm Mount [SO 104-3]	C	None		0.0000	78.0000	No Ice	3.3000	3.3000	0.29
						1/2" Ice	4.1300	4.1300	0.32
						1" Ice	4.9600	4.9600	0.35
						2" Ice	6.6200	6.6200	0.41
						4" Ice	9.9400	9.9400	0.53
APXVSPP18-C-A20 w/ Mount Pipe	A	From Centroid-Le	5.0000	0.0000	76.0000	No Ice	8.2600	6.7083	0.08
		g	0.00			1/2" Ice	8.8075	7.6609	0.14
			3.00			1" Ice	9.3636	8.4899	0.22
						2" Ice	10.5017	10.1979	0.39
						4" Ice	12.8817	13.9750	0.87
APXVSPP18-C-A20 w/ Mount Pipe	B	From Centroid-Le	5.0000	0.0000	76.0000	No Ice	8.2600	6.7083	0.08
		g	0.00			1/2" Ice	8.8075	7.6609	0.14
			3.00			1" Ice	9.3636	8.4899	0.22
						2" Ice	10.5017	10.1979	0.39
						4" Ice	12.8817	13.9750	0.87
APXVSPP18-C-A20 w/ Mount Pipe	C	From Centroid-Le	5.0000	0.0000	76.0000	No Ice	8.2600	6.7083	0.08
		g	0.00			1/2" Ice	8.8075	7.6609	0.14
			3.00			1" Ice	9.3636	8.4899	0.22
						2" Ice	10.5017	10.1979	0.39

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			Lateral	ft	°	ft	ft ²	ft ²	K	
TD-RRH8x20-25	A	From Centroid-Le g	5.0000	0.00	0.0000	76.0000	4" Ice	12.8817	13.9750	0.87
							No Ice	4.7198	1.7027	0.07
							1/2" Ice	5.0138	1.9196	0.10
							1" Ice	5.3165	2.1453	0.13
							2" Ice	5.9478	2.6224	0.20
TD-RRH8x20-25	B	From Centroid-Le g	5.0000	0.00	0.0000	76.0000	4" Ice	7.3141	3.6805	0.40
							No Ice	4.7198	1.7027	0.07
							1/2" Ice	5.0138	1.9196	0.10
							1" Ice	5.3165	2.1453	0.13
							2" Ice	5.9478	2.6224	0.20
TD-RRH8x20-25	C	From Centroid-Le g	5.0000	0.00	0.0000	76.0000	4" Ice	7.3141	3.6805	0.40
							No Ice	4.7198	1.7027	0.07
							1/2" Ice	5.0138	1.9196	0.10
							1" Ice	5.3165	2.1453	0.13
							2" Ice	5.9478	2.6224	0.20
APXVTM14-C-120 w/ Mount Pipe	A	From Centroid-Le g	5.0000	0.00	0.0000	76.0000	4" Ice	7.3141	3.6805	0.40
							No Ice	7.1342	4.9591	0.08
							1/2" Ice	7.6618	5.7544	0.13
							1" Ice	8.1830	6.4723	0.19
							2" Ice	9.2563	8.0099	0.34
APXVTM14-C-120 w/ Mount Pipe	B	From Centroid-Le g	5.0000	0.00	0.0000	76.0000	4" Ice	11.5262	11.4120	0.75
							No Ice	7.1342	4.9591	0.08
							1/2" Ice	7.6618	5.7544	0.13
							1" Ice	8.1830	6.4723	0.19
							2" Ice	9.2563	8.0099	0.34
APXVTM14-C-120 w/ Mount Pipe	C	From Centroid-Le g	5.0000	0.00	0.0000	76.0000	4" Ice	11.5262	11.4120	0.75
							No Ice	7.1342	4.9591	0.08
							1/2" Ice	7.6618	5.7544	0.13
							1" Ice	8.1830	6.4723	0.19
							2" Ice	9.2563	8.0099	0.34
(2) Pipe Mount 6'x2.375"	A	From Centroid-Le g	5.0000	0.00	0.0000	76.0000	4" Ice	11.5262	11.4120	0.75
							No Ice	1.4250	1.4250	0.03
							1/2" Ice	1.9250	1.9250	0.04
							1" Ice	2.2939	2.2939	0.05
							2" Ice	3.0596	3.0596	0.09
(2) Pipe Mount 6'x2.375"	B	From Centroid-Le g	5.0000	0.00	0.0000	76.0000	4" Ice	4.7022	4.7022	0.23
							No Ice	1.4250	1.4250	0.03
							1/2" Ice	1.9250	1.9250	0.04
							1" Ice	2.2939	2.2939	0.05
							2" Ice	3.0596	3.0596	0.09
(2) Pipe Mount 6'x2.375"	C	From Centroid-Le g	5.0000	0.00	0.0000	76.0000	4" Ice	4.7022	4.7022	0.23
							No Ice	1.4250	1.4250	0.03
							1/2" Ice	1.9250	1.9250	0.04
							1" Ice	2.2939	2.2939	0.05
							2" Ice	3.0596	3.0596	0.09
Platform Mount [LP 304-1]	C	None			0.0000	76.0000	4" Ice	4.7022	4.7022	0.23
							No Ice	17.4600	17.4600	1.35
							1/2" Ice	22.4400	22.4400	1.62
							1" Ice	27.4200	27.4200	1.90
							2" Ice	37.3800	37.3800	2.45
(2) BXA-171063/12CF w/ Mount Pipe	A	From Centroid-Le g	5.0000	0.00	0.0000	65.0000	4" Ice	57.3000	57.3000	3.55
							No Ice	4.7915	5.3433	0.05
							1/2" Ice	5.2415	6.1459	0.10
							1" Ice	5.6990	6.9637	0.15
							2" Ice	6.6361	8.6495	0.28
(2) BXA-171063/12CF w/	B	From	5.0000	0.0000	65.0000	65.0000	4" Ice	8.6406	12.2209	0.67
							No Ice	4.7915	5.3433	0.05

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	Client	Crown Castle	Designed by	afischer

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			Lateral		°	ft	ft ²	ft ²	K
Mount Pipe		Centroid-Le	0.00			1/2" Ice	5.2415	6.1459	0.10
		g	0.00			1" Ice	5.6990	6.9637	0.15
						2" Ice	6.6361	8.6495	0.28
						4" Ice	8.6406	12.2209	0.67
(2) BXA-171063/12CF w/ Mount Pipe	C	From	5.0000	0.0000	65.0000	No Ice	4.7915	5.3433	0.05
		Centroid-Le	0.00			1/2" Ice	5.2415	6.1459	0.10
		g	0.00			1" Ice	5.6990	6.9637	0.15
						2" Ice	6.6361	8.6495	0.28
						4" Ice	8.6406	12.2209	0.67
(2) BXA-70063/6CF w/ Mount Pipe	A	From	5.0000	0.0000	65.0000	No Ice	8.2348	5.6624	0.05
		Centroid-Le	0.00			1/2" Ice	8.9874	6.9245	0.11
		g	0.00			1" Ice	9.7082	8.0386	0.18
						2" Ice	11.0851	9.9390	0.34
						4" Ice	13.9714	13.9396	0.83
(2) BXA-70063/6CF w/ Mount Pipe	B	From	5.0000	0.0000	65.0000	No Ice	8.2348	5.6624	0.05
		Centroid-Le	0.00			1/2" Ice	8.9874	6.9245	0.11
		g	0.00			1" Ice	9.7082	8.0386	0.18
						2" Ice	11.0851	9.9390	0.34
						4" Ice	13.9714	13.9396	0.83
(2) BXA-70063/6CF w/ Mount Pipe	C	From	5.0000	0.0000	65.0000	No Ice	8.2348	5.6624	0.05
		Centroid-Le	0.00			1/2" Ice	8.9874	6.9245	0.11
		g	0.00			1" Ice	9.7082	8.0386	0.18
						2" Ice	11.0851	9.9390	0.34
						4" Ice	13.9714	13.9396	0.83
RRH2x40 700	A	From	5.0000	0.0000	65.0000	No Ice	2.2896	1.2058	0.05
		Centroid-Le	0.00			1/2" Ice	2.4929	1.3631	0.07
		g	0.00			1" Ice	2.7048	1.5291	0.09
						2" Ice	3.1546	1.8868	0.13
						4" Ice	4.1580	2.7061	0.27
RRH2x40 700	B	From	5.0000	0.0000	65.0000	No Ice	2.2896	1.2058	0.05
		Centroid-Le	0.00			1/2" Ice	2.4929	1.3631	0.07
		g	0.00			1" Ice	2.7048	1.5291	0.09
						2" Ice	3.1546	1.8868	0.13
						4" Ice	4.1580	2.7061	0.27
RRH2x40 700	C	From	5.0000	0.0000	65.0000	No Ice	2.2896	1.2058	0.05
		Centroid-Le	0.00			1/2" Ice	2.4929	1.3631	0.07
		g	0.00			1" Ice	2.7048	1.5291	0.09
						2" Ice	3.1546	1.8868	0.13
						4" Ice	4.1580	2.7061	0.27
RRH2X40-AWS	A	From	5.0000	0.0000	65.0000	No Ice	2.5217	1.5894	0.04
		Centroid-Le	0.00			1/2" Ice	2.7530	1.7953	0.06
		g	0.00			1" Ice	2.9930	2.0098	0.08
						2" Ice	3.4990	2.4648	0.13
						4" Ice	4.6146	3.4785	0.28
RRH2X40-AWS	B	From	5.0000	0.0000	65.0000	No Ice	2.5217	1.5894	0.04
		Centroid-Le	0.00			1/2" Ice	2.7530	1.7953	0.06
		g	0.00			1" Ice	2.9930	2.0098	0.08
						2" Ice	3.4990	2.4648	0.13
						4" Ice	4.6146	3.4785	0.28
RRH2X40-AWS	C	From	5.0000	0.0000	65.0000	No Ice	2.5217	1.5894	0.04
		Centroid-Le	0.00			1/2" Ice	2.7530	1.7953	0.06
		g	0.00			1" Ice	2.9930	2.0098	0.08
						2" Ice	3.4990	2.4648	0.13
						4" Ice	4.6146	3.4785	0.28
DB-T1-6Z-8AB-OZ	A	From	5.0000	0.0000	65.0000	No Ice	5.6000	2.3333	0.04
		Centroid-Le	0.00			1/2" Ice	5.9154	2.5580	0.08
		g	0.00			1" Ice	6.2395	2.7914	0.12

tnxTower GPD 520 S. Main Street, Ste 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Meriden West Central BU#: 842869	Page	11 of 12
	Project	2015777.842869.01	Date	14:45:12 07/01/15
	Client	Crown Castle	Designed by	afischer

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			ft ft ft	°	ft	ft ²	ft ²	K	
DB-T1-6Z-8AB-0Z	B	From Centroid-Log	5.0000 0.00 0.00	0.0000	65.0000	2" Ice	6.9136	3.2840	0.21
						4" Ice	8.3654	4.3728	0.45
						No Ice	5.6000	2.3333	0.04
						1/2" Ice	5.9154	2.5580	0.08
						1" Ice	6.2395	2.7914	0.12
Platform Mount [LP 303-1]	C	None		0.0000	65.0000	2" Ice	6.9136	3.2840	0.21
						4" Ice	8.3654	4.3728	0.45
						No Ice	14.6600	14.6600	1.25
						1/2" Ice	18.8700	18.8700	1.48
						1" Ice	23.0800	23.0800	1.71
						2" Ice	31.5000	31.5000	2.18
						4" Ice	48.3400	48.3400	3.10

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				ft ft ft	°	°	ft	ft	ft ²	K	
VHLP1-23	B	Paraboloid w/Shroud (HP)	From Leg	4.0000 0.00 0.00	-20.0000		86.0000	1.0000	No Ice	1.2800	0.01
									1/2" Ice	1.4500	0.03
									1" Ice	1.6200	0.04
									2" Ice	1.9700	0.08
									4" Ice	2.6600	0.15

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
100.0000	DS8A12F36U-N	38	9.494	0.7406	0.0039	46284
86.0000	VHLP1-23	38	7.318	0.6830	0.0029	16530
78.0000	1900MHz RRH	38	6.129	0.6472	0.0024	10519
76.0000	APXVSP18-C-A20 w/ Mount Pipe	38	5.843	0.6376	0.0022	9642
65.0000	(2) BXA-171063/12CF w/ Mount Pipe	38	4.366	0.5797	0.0016	6611

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _n	Kl/r	F _a	A	Actual P	Allow. P _a	Ratio P/P _a
	ft		ft	ft		ksi	in ²	K	K	
L1	100 - 47 (1)	TP40.72x28x0.3125	53.0000	0.0000	0.0	39.000	38.8457	-16.14	1514.98	0.011

tnxTower GPD 520 S. Main Street, Ste 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Meriden West Central BU#: 842869	Page	12 of 12
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	Client	Crown Castle	Designed by	afischer

Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
L2	47 - 0 (2)	TP51.37x38.655x0.375	53.0000	0.0000	0.0	39.000	61.0028	-28.15	2379.11	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio f _{bx} F _{bx}	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio f _{by} F _{by}
L1	100 - 47 (1)	TP40.72x28x0.3125	719.88	23.223	39.000	0.595	0.00	0.000	39.000	0.001
L2	47 - 0 (2)	TP51.37x38.655x0.375	2139.20	33.558	39.000	0.860	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f _v ksi	Allow. F _v ksi	Ratio f _v F _v	Actual T kip-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio f _{vt} F _{vt}
L1	100 - 47 (1)	TP40.72x28x0.3125	23.76	0.612	26.000	0.048	2.05	0.032	26.000	0.001
L2	47 - 0 (2)	TP51.37x38.655x0.375	29.84	0.489	26.000	0.038	1.30	0.010	26.000	0.000

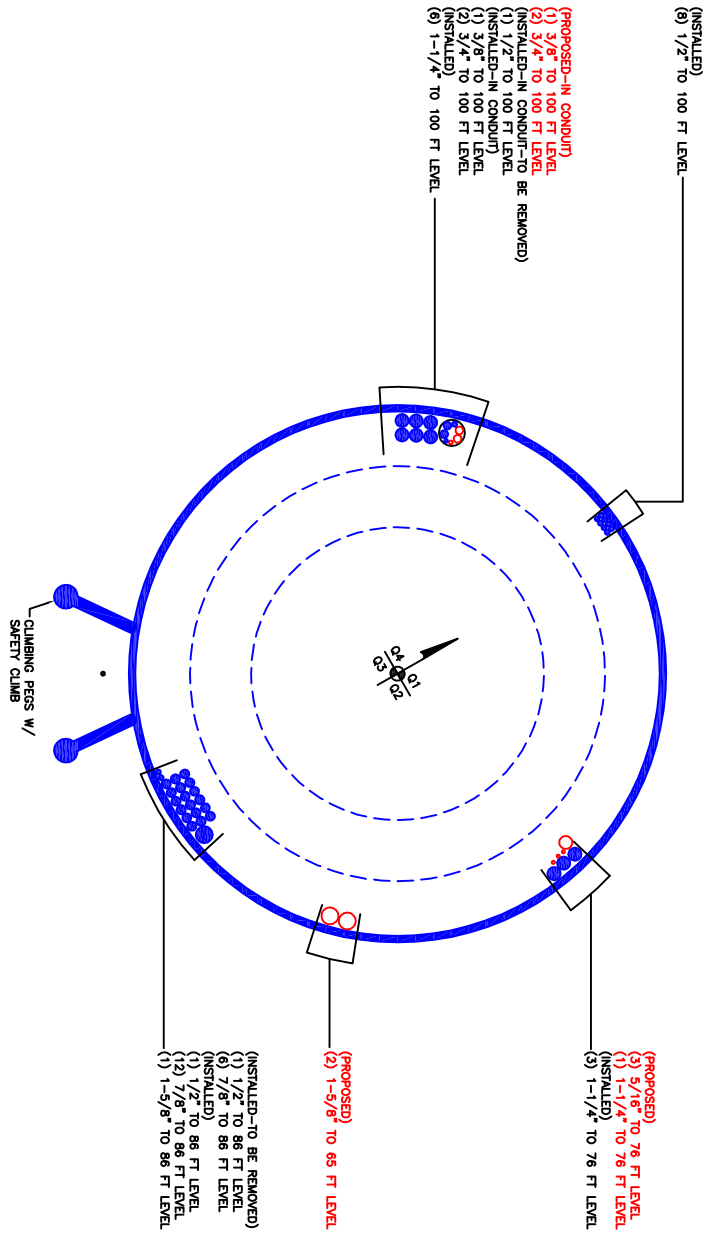
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P P _a	Ratio f _{bx} F _{bx}	Ratio f _{by} F _{by}	Ratio f _v F _v	Ratio f _{vt} F _{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	100 - 47 (1)	0.011	0.595	0.000	0.048	0.001	0.607	1.333	H1-3+VT ✓
L2	47 - 0 (2)	0.012	0.860	0.000	0.038	0.000	0.873	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail
L1	100 - 47	Pole	TP40.72x28x0.3125	1	-16.14	2019.47	45.5	Pass
L2	47 - 0	Pole	TP51.37x38.655x0.375	2	-28.15	3171.35	65.5	Pass
Summary							ELC:	Load Case 7
Pole (L2)							65.5	Pass
Rating =							65.5	Pass

APPENDIX B
BASE LEVEL DRAWING



CROWN REGION ADDRESS
USA

DW	NEW BUILD PER WORK ORDER # 746495
ARR	UPDATED PER WORK ORDER # 782255
JF	UPDATED PER WORK ORDER # 790141
JF	UPDATED PER WORK ORDER # 790630
ALM	UPDATED PER WORK ORDER # 948609
APC	UPDATED PER WORK ORDER # 950288
DMB	UPDATED PER WORK ORDER # 961337
SLW	UPDATED PER WORK ORDER 1010256
CRU	UPDATED PER WORK ORDER 1082064

DRAWN BY: EJB
CHECKED BY:
DRAWING DATE: 2/10/14

SITE NUMBER:
SITE NAME:
MERIDEN WEST CENTRAL
BUSINESS UNIT NUMBER
842869
SITE ADDRESS:
450-778 WEST MAIN STREET
MERIDEN, CT 06451
USA
SHEET TITLE
BASE LEVEL

BASE LEVEL DRAWING

1

A1-0

APPENDIX C
ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#: 842869	
Site Name: Meriden West Central	
App #: 249261 Rev. 14	
Pole Manufacturer:	Other

Reactions

Moment:	2139	ft-kips
Axial:	28	kips
Shear:	30	kips

Anchor Rod Data

Qty:	20	
Diam:	2.5	in
Rod Material:	Other	
Strength (Fu):	65	ksi
Yield (Fy):	50	ksi
Bolt Circle:	59	in

If No stiffeners, Criteria:

AISC ASD

<-Only Applicable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension: 85.6 Kips
 Allowable Tension: 140.4 Kips
 Anchor Rod Stress Ratio: 61.0% Pass

Rigid
Service ASD
Fty*ASIF

Plate Data

Diam:	69	in
Thick:	3	in
Grade:	50	ksi
Single-Rod B-eff:	8.17	in

Base Plate Results

Base Plate Stress: 16.9 ksi
 Allowable Plate Stress: 50.0 ksi
 Base Plate Stress Ratio: 33.8% Pass

Flexural Check

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length:
29.02

Stiffener Data (Welding at both sides)

Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

Stiffener Results

Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: n/a
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

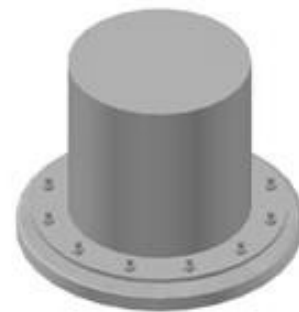
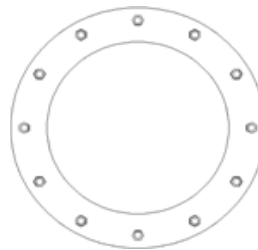
Pole Punching Shear Check: n/a

Pole Data

Diam:	51.37	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	16	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

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



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

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



Mat Foundation Analysis
Meriden West Central BU#: 842869
2015777.842869.01

General Info	
Code	TIA/EIA-222-F (LRFD)
Bearing On	Soil
Foundation Type	Mono Pad
Pier Type	Square
Reinforcing Known	Yes
Max Capacity	1.1

Tower Reactions	
Moment, M	2139 k-ft
Axial, P	28 k
Shear, V	30 k

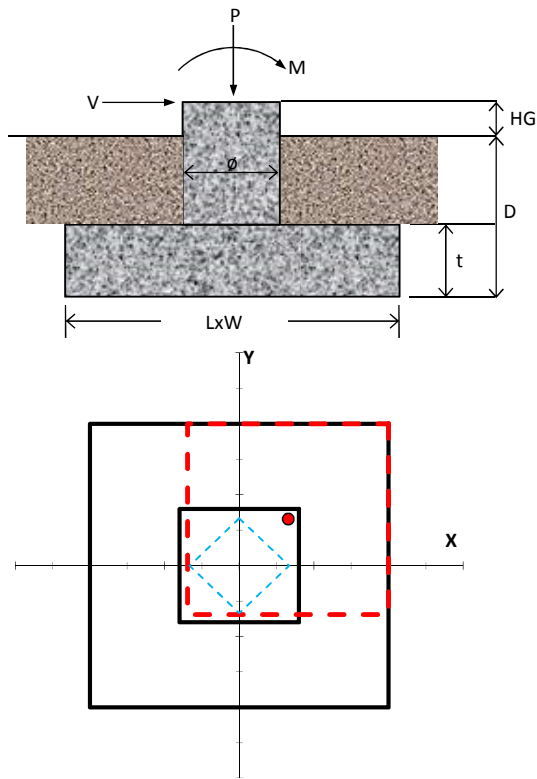
Pad & Pier Geometry		
Pier Width, ϕ	8	ft
Pad Length, L	20	ft
Pad Width, W	20	ft
Pad Thickness, t	2.5	ft
Depth, D	7.5	ft
Height Above Grade, HG	1	ft

Pad & Pier Reinforcing		
Rebar Fy	60	ksi
Concrete Fc'	4	ksi
Clear Cover	3	in
Reinforced Top & Bottom?	Yes	
Pad Reinforcing Size	# 9	
Pad Quantity Per Layer	32	
Pier Rebar Size	# 11	
Pier Quantity of Rebar	60	

Soil Properties	
Soil Type	Granular
Soil Unit Weight	110 pcf
Angle of Friction, ϕ	30 °
Bearing Type	Net
Ultimate Bearing	16 ksf
Water Table Depth	99 ft
Frost Depth	3.5 ft

Bearing Summary			Load Case
Qxmax	2.87	ksf	0.9D+1.6W
Qymax	2.87	ksf	0.9D+1.6W
Qmax @ 45°	2.95	ksf	0.9D+1.6W
Q _{(all) Gross}	12.62	ksf	
Controlling Capacity	23.4%	Pass	

Overturning Summary (Required FS=1.0)			Load Case
FS(ot)x	1.49	≥1.0	0.9D+1.6W
FS(ot)y	1.49	≥1.0	0.9D+1.6W
Controlling Capacity	67.1%	Pass	





Tower Reactions	
Moment	2139 k-ft
Axial	28 k
Shear	30 k

Pad & Pier Geometry	
Height	7.5 ft
Height above Grade	1 ft
Pad Length, L	20 ft
Pad Width, W	20 ft
Pad Thickness	2.5 ft
Pier Shape	Square
Square Pier Width	8 ft

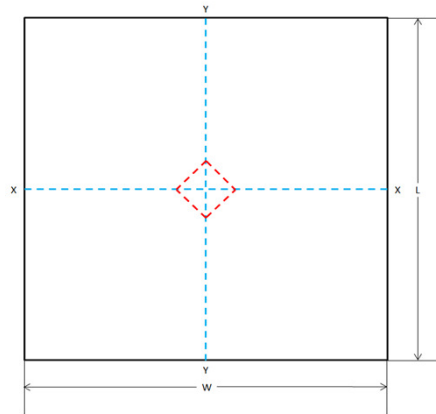
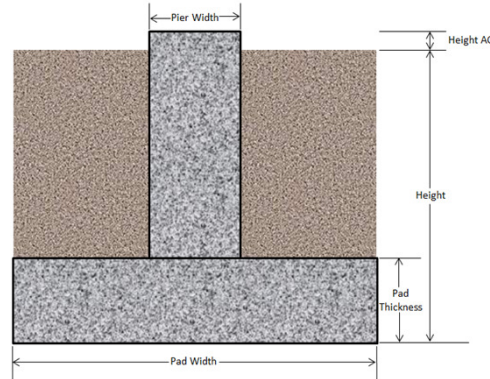
Pad & Pier Reinforcing	
Reinforcing Known	Yes
f'_c	4 ksi
Clear Cover	3 in
Rebar F_y	60 ksi
Reinforced Top & Bottom?	Yes
Pad Rebar Size	# 9
Pad Rebar Quantity	32
Pier Rebar Size	# 11
Pier Rebar Quantity	60

Unit Weights	
Concrete Unit Weight	150 pcf
Soil Unit Weight	110 pcf

Orthogonal Bearing	
Q_{max}	3.43 ksf
Q_{min}	0.00 ksf
Bearing Length	14.69 ft

Pad Moment Capacity	
$M_u =$	33.43 k-ft
$\phi M_n =$	173.75 k-ft
Moment Capacity	19.2% OK
<i>One-Way (Wide-Beam) Shear</i>	
$V_u =$	145.51 kips
$\phi V_n =$	576.22 kips
Shear Capacity	25.3% OK
<i>Two-Way (Punching) Shear</i>	
$V_u =$	293.16 kips
$\phi V_n =$	2330.01 kips
Shear Capacity	12.6% OK
<i>Pier Compression</i>	
$P_u =$	28.00 kips
$\phi P_n =$	19048.72 kips
Compression Capacity	0.1% OK

Overall Capacities		
Reinforcement Capacity	25.3%	OK
As Min Met?	Yes	
Controlling Capacity	25.3%	OK



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

AT&T Existing Facility

Site ID: CT5378

**Meriden West Central
450 - 478 West Main Street
Meriden, CT 06451**

July 15, 2015

EBI Project Number: 6214006235

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	92.52 %

July 15, 2015

AT&T Mobility – New England
Attn: Cameron Syme
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 01701

Emissions Analysis for Site: **CT5378 – Meriden West Central**

EBI Consulting was directed to analyze the proposed AT&T facility located at **450 - 478 West Main Street, Meriden, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 700 MHz and 800 MHz Bands are $467 \mu\text{W}/\text{cm}^2$ and $567 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) band is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **450 - 478 West Main Street, Meriden, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

- 1) 4 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 4 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 4 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **KMW AM-X-CD-16-65-00 and the CCI OPA-65R-LCUU-H6**. This is based on feedback from the carrier with regards to anticipated antenna selection. The manufacturers maximum gain values per assigned frequency band are listed in the following data table on the next page. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **100 feet** above ground level (AGL).
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	KMW AM-X-CD-16-65-00	Make / Model:	KMW AM-X-CD-16-65-00	Make / Model:	KMW AM-X-CD-16-65-00
Gain:	15.25 / 13.85 dBd	Gain:	15.25 / 13.85 dBd	Gain:	15.25 / 13.85 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Frequency Bands	1900 MHz(PCS) / 850 MHz	Frequency Bands	1900 MHz(PCS) / 850 MHz	Frequency Bands	1900 MHz(PCS) / 850 MHz
Channel Count	8	Channel Count	8	# PCS Channels:	8
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	6,931.52	ERP (W):	6,931.52	ERP (W):	6,931.52
Antenna A1 MPE%	3.72 (2.09 @ 850 MHz) (1.64 @ 1900 MHz)	Antenna B1 MPE%	3.72 (2.09 @ 850 MHz) (1.64 @ 1900 MHz)	Antenna C1 MPE%	3.72 (2.09 @ 850 MHz) (1.64 @ 1900 MHz)
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6
Gain:	14.9 / 11.7 dBd	Gain:	14.9 / 11.7 dBd	Gain:	14.9 / 11.7 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Frequency Bands	1900 MHz(PCS) / 850 MHz	Frequency Bands	1900 MHz(PCS) / 850 MHz	Frequency Bands	1900 MHz(PCS) / 850 MHz
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power:	240	Total TX Power:	240	Total TX Power:	240
ERP (W):	5,483.28	ERP (W):	5,483.28	ERP (W):	5,483.28
Antenna A2 MPE%	3.06 (1.51 @ 1900 MHz) (1.55 @ 700 MHz)	Antenna B2 MPE%	3.06 (1.51 @ 1900 MHz) (1.55 @ 700 MHz)	Antenna C2 MPE%	3.06 (1.51 @ 1900 MHz) (1.55 @ 700 MHz)
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	KMW AM-X-CD-16-65-00	Make / Model:	KMW AM-X-CD-16-65-00	Make / Model:	KMW AM-X-CD-16-65-00
Gain:	15.25 / 13.85 dBd	Gain:	15.25 / 13.85 dBd	Gain:	15.25 / 13.85 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Frequency Bands	1900 MHz(PCS) / 850 MHz	Frequency Bands	1900 MHz(PCS) / 850 MHz	Frequency Bands	1900 MHz(PCS) / 850 MHz
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power:	240	Total TX Power:	240	Total TX Power:	240
ERP (W):	6,931.52	ERP (W):	6,931.52	ERP (W):	6,931.52
Antenna A3 MPE%	3.72 (2.09 @ 850 MHz) (1.64 @ 1900 MHz)	Antenna B3 MPE%	3.72 (2.09 @ 850 MHz) (1.64 @ 1900 MHz)	Antenna C3 MPE%	3.72 (2.09 @ 850 MHz) (1.64 @ 1900 MHz)

Site Composite MPE%	
Carrier	MPE%
AT&T	31.52%
Hunters Yagi 1	7.43%
Hunters Yagi 2	7.43%
Hunters Yagi 3	22.28%
Hunters Whip	7.43%
T-Mobile	0.43%
Sprint	1.41%
Verizon Wireless	14.59%
Site Total MPE %:	92.52 %

AT&T Sector 1 Total:	10.51 %
AT&T Sector 2 Total:	10.51 %
AT&T Sector 3 Total:	10.51 %
Site Total:	92.52 %

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector 1:	10.51%
Sector 2:	10.51%
Sector 3 :	10.51%
AT&T Total:	31.52 %
Site Total:	92.52 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **92.52 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



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