CUDDY +FEDER LLP

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

Daniel M. Laub
dlaub@cuddyfeder.com

October 20, 2017

VIA EMAIL & OVERNIGHT DELIVERY
Melanie Bachman, Esq.
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Petition 1122
Request for Minor Modification
New Cingular Wireless PCS, LLC (AT&T)
200 Edgemark Acres, Meriden, Connecticut

Dear Executive Director Bachman:

On behalf of our client, New Cingular Wireless PCS, LLC ("AT&T") we respectfully request approval of a minor modification of the facility approved in Petition 1122 located at 200 Edgemark Acres in the city of Meriden.

AT&T plans to install an 11' 6" x 12' clapboard sided shelter with a single pitched roof in lieu of the approved 11' 6" x 24' clapboard peak roof shelter. This smaller shelter will allow space to accommodate necessary twelve (12) remote radio head units (RRUs) that will be mounted on a unistrut frame under the approved ice bridge. The reduced shelter size also requires that the associated backup generator be installed externally within an acoustic enclosure that will ensure compliance with applicable noise standards. The shelter, generator and RRUs will all still be within the approved fence enclosure.

Enclosed please find drawings prepared by Centek Engineer last revised August 3, 2017 and a specification sheet of the generator to be installed.

Thank you in advance for your consideration of this request.

Very truly yours,

Daniel M. Laub

Enclosures

cc: Mayor Kevin Scarpati, Meriden
City Manager Guy Scaife, Meriden
Director of Development and Enforcement Robert W. Seale, Meriden
AT&T

at&t

WIRELESS COMMUNICATIONS FACILITY

CT2117
MERIDEN
EVERSOURCE UTILITY STRUCT. NO. 783
200 EDGEMARK ACRES
MERIDEN, CT 06451

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA–222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.

2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.

3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.

4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD–OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.

5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.

6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.

CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS–BUILT' SET OF DRAWINGS TO
7. OWNER UPON COMPLETION OF PROJECT.

LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.

8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.

9.

10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.

11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.

12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.

13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.

14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON–SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.

15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.

16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.

17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB–CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.

19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.

20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1–800–922–4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.

21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE
ROCKY HILL, CT

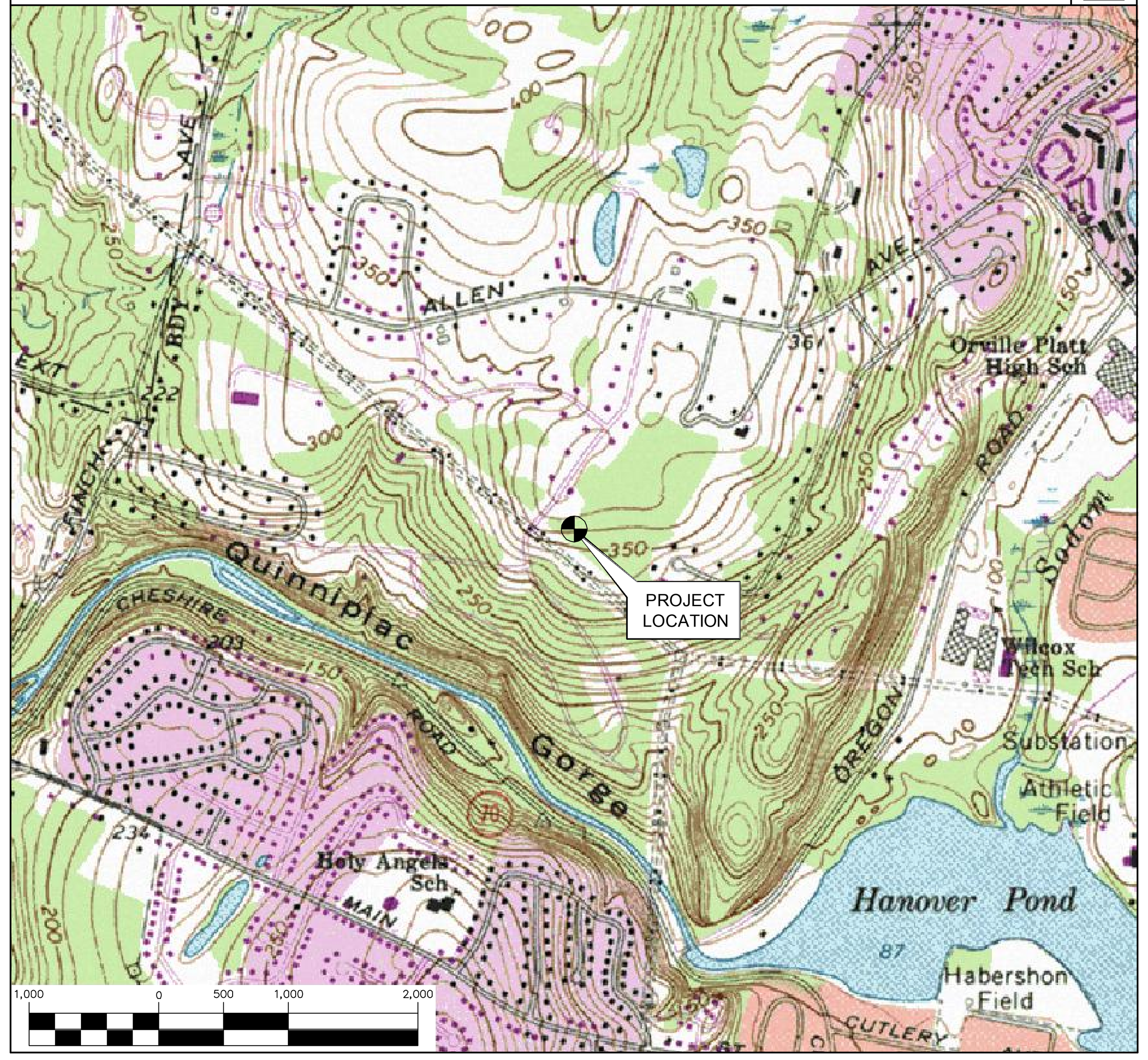
TO: 200 EDGEMARK ACRES
MERIDEN, CT

1. HEAD NORTHEAST ON ENTERPRISE DRIVE TOWARD CAPITAL BLVD	0.3 MI
2. TURN LEFT ONTO CAPITOL BLVD	0.3 MI
3. TURN LEFT ONTO WEST ST	0.3 MI
4. TURN LEFT TO MERGE ONTO I–91 S TOWARD NEW HAVEN	0.3 MI
5. MERGE ONTO I–91 S	8.8 MI
6. TAKE EXIT 18 FOR I–691 W TOWARD MERIDEN/WATERBURY	0.2 MI
7. EXIT 18 TURNS SLIGHTLY RIGHT AND BECOMES I–691 W	2.2 MI
8. TAKE EXIT 6 FOR LEWIS AVE TOWARD CT–71	0.2 MI
9. TURN RIGHT ONTO LEWIS AVE	0.8 MI
10. TURN RIGHT ONTO W MAIN ST	0.8 MI
11. SLIGHT LEFT ONTO JOHNSON AVE	417 FT
12. TAKE THE 1ST LEFT ONTO ALLEN AVE	0.9 MI
13. TURN LEFT ONTO EDGEMARK ACRES, AND THE DESTINATION WILL BE ON THE LEFT	0.4 MI

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE GENERAL SCOPE OF WORK CONSISTS OF THE FOLLOWING:

- INSTALLATION OF A PREFABRICATED 11'–5"x 12'–0" EQUIPMENT SHELTER WITH A 30KW DIESEL FUELED EMERGENCY POWER GENERATOR ON A CONCRETE PAD ADJACENT TO SHELTER.
- A TOTAL OF NINE (9) DIRECTIONAL PANEL ANTENNAS ARE TO BE MOUNTED TO A ANTENNA MAST ATTACHED TO THE EXISTING ±80.1' TALL CL&P STRUCTURE #783 AT A CENTERLINE ELEVATION OF ±90' ABOVE THE EXISTING TOWER BASE PLATE.

2. POWER & TELCO UTILITIES WILL BE ROUTED UNDERGROUND FROM THE EXISTING UTILITY DEMARCS TO THE PROPOSED EQUIPMENT SHELTER. ALL UTILITY WORK AND ROUTING TO BE COORDINATED AND APPROVED BY THE LOCAL UTILITY COMPANIES AND LAND OWNER.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT2117
AT&T SITE NAME:	MERIDEN
SITE ADDRESS:	EVERSOURCE STRUCTURE NO. 783 200 EDGEMARK ACRES MERIDEN, CT 06451
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63–2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°–31'–51.74"N LONGITUDE: 72°–50'–33.65"W GROUND ELEVATION: ±359.23' A.M.S.L. COORDINATES AND GROUND ELEVATION BASED ON FAA 1–A SURVEY CERTIFICATION AS PREPARED BY CENTEK ENGINEERING, INC., DATED JULY 8, 2017.

SHEET INDEX

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	11/20/14	HMR	CFC	CONSTRUCTION
0	11/10/14	HMR	CFC	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE:	11/03/14
SCALE:	AS NOTED
JOB NO.:	13305.000
AMENDED JOB NO.:	17010.08

TITLE SHEET

T–1

NOTES AND SPECIFICATIONS

DESIGN BASIS

GOVERNING CODE/STANDARD(S): 2012 INTERNATIONAL BUILDING CODE; (IBC) AS MODIFIED BY THE 2016 CT STATE SUPPLEMENT/ASCE 7-10

RISK CATEGORY: II (ASCE 7-10 TABLE 1.5-1)

SNOW LOAD

GROUND SNOW LOAD (Pg)	30 PSF	(2016 CSBC/2016 AMENDMENT: APPENDIX 'N')
IMPORTANCE FACTOR (Is)	1.1	(ASCE 7-10 TABLE 1.5-2)
EXPOSURE FACTOR (Ce)	1.0	(ASCE 7-10 TABLE 7-2)
THERMAL FACTOR (Ct)	1.0	(ASCE 7-10 TABLE 7-3)

TRANSMISSION TOWER

WIND LOAD: PER NESC C2-2012 SECTION 25 RULE 250C (TOWER & FOUNDATION) 110 MPH (3 SECOND GUST)

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST THE PRE MANUFACTURED EQUIPMENT BUILDING SHOP DRAWINGS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. THE CONTRACTOR SHALL LIMIT THE DURATION OF ANY FOUNDATION MODIFICATION WORK. THE EXISTING FOUNDATION WITHIN THE SHOWN LIMITS IS STABLE FOR WIND SPEEDS LESS THAN 50MPH WITHOUT ICE LOADING. IF HIGHER WIND SPEED OR ICE EVENT IS EXPECTED, THE EXCAVATION AREA SHALL BE FILLED WITH COMPACT FILL MATERIAL.
12. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
13. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
14. NO DRILLING WELDING OR TAPING ON CL&P OWNED EQUIPMENT.
15. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. ALL RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED OFF SITE AND BE LEGALLY DISPOSED, AT NO ADDITIONAL COST.
4. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT AND TOWER AREAS.
5. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
6. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
7. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
8. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
9. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.
10. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST THE PRE MANUFACTURED EQUIPMENT BUILDING SHOP DRAWINGS.
11. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.

EARTHWORK NOTES

1. COMPACTED GRAVEL FILL SHALL BE FURNISHED AND PLACED AS A FOUNDATION FOR STRUCTURES, WHERE SHOWN ON THE CONTRACT DRAWINGS OR DIRECTED BY THE ENGINEER.
2. CRUSHED STONE FILL SHALL BE PLACED IN 12" MAX. LIFTS AND CONSOLIDATED USING A HAND OPERATED VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 2 PAQSSES OF COMPACTOR PER LIFT.
3. COMPACTED GRAVEL FILL TO BE WELL GRADED BANK RUN GRAVEL MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1 ½"	100
No. 4	40–70
No. 100	5–20
No. 200	4–8

4. CRUSHED STONE TO BE UNIFORMLY GRADED, CLEAN, HARD PROCESS AGGREGATE MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1"	100
¾"	90–100
½"	0–15
⅜"	0–5

5. SELECT BACKFILL FOR FOUNDATION WALLS SHALL BE FREE OF ORGANIC MATERIAL, TOPSOIL, DEBRIS AND BOULDERS LARGER THAN 6".
6. GRAVEL AND GRANULAR FILL SHALL BE INSTALLED IN 10" MAX. LIFTS. COMPACTED TO 95% MIN. AT MAX. DRY DENSITY.
7. NON WOVEN GEOTEXTILE FOR SEPARATION PURPOSES SHALL BE MIRAFI 140N, OR ENGINEER APPROVED EQUAL.

FOUNDATION CONSTRUCTION NOTES

1. ALL FOOTINGS SHALL BE PLACED ON SUITABLE, COMPACTED SOIL HAVING ADEQUATE BEARING CAPACITY AND FREE OF ORGANIC CONTENT, CLAY, OR OTHER UNSUITABLE MATERIAL. ADDITIONAL EXCAVATION MAY BE REQUIRED BELOW FOOTING ELEVATIONS INDICATED IF UNSUITABLE MATERIAL IS ENCOUNTERED.
2. SUBGRADE PREPARATION: IF UNSUITABLE SOIL IS ENCOUNTERED, REMOVE ALL UNSUITABLE MATERIALS FROM BELOW PROPOSED STRUCTURE FOUNDATIONS AND COMPACT EXPOSED SOIL SURFACES. PLACE AND COMPACT APPROVED GRAVEL FILL. PLACEMENT OF ALL COMPACTED FILL MUST BE UNDER SUPERVISION OF AN APPROVED TESTING LABORATORY. FILL SHALL BE COMPACTED IN LAYERS NOT TO EXCEED 10" BEFORE COMPACTION. DETERMINE MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D1557-70 AND MAKE ONE (1) FIELD DENSITY TEST IN ACCORDANCE WITH ASTM D2167-66 FOR EACH 50 CUBIC YARDS OF COMPACTED FILL. BUT NOT LESS THAN ONE (1) PER LAYER, TO INSURE COMPACTION TO 95% OF MAX. DRY DENSITY.
3. ALL SOIL SURROUNDING AND UNDER ALL FOOTINGS SHALL BE KEPT REASONABLY DRY AND PROTECTED FROM FREEZING AND FROST ACTION DURING THE COURSE OF CONSTRUCTION.
4. WHERE GROUNDWATER IS ENCOUNTERED, DEWATERING SHALL BE ACCOMPLISHED CONTINUOUSLY AND COMPLETELY DURING FOUNDATION CONSTRUCTION. PROVIDE CRUSHED STONE AS REQUIRED TO STABILIZE FOOTING SUBGRADE.
5. ALL FOOTINGS ARE TO REST ON FIRM SOIL, REGARDLESS OF ELEVATIONS SHOWN ON THE DRAWINGS, BUT IN NO CASE MAY FOOTING ELEVATIONS BE HIGHER THAN INDICATED ON THE FOUNDATION PLAN, UNLESS SPECIFICALLY DIRECTED BY THE ENGINEER.
6. FOUNDATION WATERPROOFING AND DAMPPROOFING SHALL COMPLY WITH BUILDING CODE REQUIREMENTS UNLESS A MORE SUBSTANTIAL SYSTEM IS INDICATED OR SPECIFIED.

CONCRETE CONSTRUCTION NOTES

1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE FOLLOWING STANDARDS:

ACI 211 – STANDARD PRACTICE FOR SELECTING PROPORTIONS FOR NORMAL AND HEAVYWEIGHT CONCRETE.

ACI 301 – SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.

ACI 302 – GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION

ACI 304 – RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE.

ACI 306.1 STANDARD SPECIFICATION FOR COLD WEATHER CONCRETING

ACI 318 – BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.

2. CONCRETE SHALL DEVELOP COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:

SLABS ON GRADE	4,000 PSI
ALL OTHER CONCRETE	3,000 PSI

- PORTLAND CEMENT: ASTM C150, TYPE II, (540 LBS/CUBIC YARD)
- AGGREGATE: ASTM C33, No. 67, TYPICAL
- WATER: POTABLE WITH MAXIMUM WATER CEMENT RATIO OF .55
- SLUMP: 3" TO 4"
- ADMIXTURES: USE AIR ENTRAINING AGENT CONFORMING TO ASTM C260 WITH 4 TO 6% TOTAL AIR. USE WATER REDUCING AGENT CONFORMING TO ASTM C494, TYPE A, IN ALL CONCRETE. CALCIUM CHLORIDE MAY NOT BE USED TO ACCELERATE THE CONCRETE SETTING TIME.

3. REINFORCING STEEL SHALL BE 60,000 PSI YIELD STRENGTH.
4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM- A-185.
5. ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, MUST FOLLOW THE LATEST ACI CODE AND LATEST ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".
6. CONCRETE COVER OVER REINFORCING SHALL CONFORM TO THE FOLLOWING, UNLESS OTHERWISE SHOWN:

CONCRETE CAST AGAINST & PERMANENTLY EXPOSED TO EARTH	3 INCHES
CONCRETE EXPOSED TO EARTH OR WEATHER:	
#6 THROUGH #18 BARS	2 INCHES
#5 BAR, W31 OR D31 WIRE, AND SMALLER	1-1/2 INCHES
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND:	
#14 THROUGH #18 BARS	1-1/2 INCHES
#11 BAR AND SMALLER	3/4 INCHES

7. NO STEEL WIRE, METAL FORM TIES, OR ANY OTHER METAL SHALL REMAIN WITHIN THE REQUIRED COVER OF ANY CONCRETE SURFACE.
8. ALL REINFORCEMENT SHALL BE CONTINUOUS UNLESS OTHERWISE NOTED. SPLICES SHALL BE WELL STAGGERED. ADDITIONAL BARS AND SPECIAL BENDING DETAILS ARE REQUIRED AT INTERSECTING WALLS AND AT JOINTS. SUCH DETAILS SHALL COMPLY WITH ACI 315 RECOMMENDATIONS UNLESS OTHERWISE SHOWN.
9. NO TACK WELDING OF REINFORCING WILL BE PERMITTED.
10. NO CALCIUM CHLORIDE OR ADMIXTURES CONTAINING MORE THAN 1% CHLORIDE BY WEIGHT OF ADMIXTURE SHALL BE USED IN THE CONCRETE.
11. UNLESS OTHERWISE NOTED, ALL LAP SPLICES SHALL BE 48 BAR DIAMETERS.
12. SLAB ON GRADE FINISHES:

EXTERIOR SLAB: NON-SLIP BROOM FINISH
INTERIOR SLAB: STEEL TROWEL FINISH

13. INSPECTION AND TESTING OF CONCRETE WORK SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY, PAID BY THE OWNER, AND APPROVED BY THE ENGINEER. THE INSPECTOR SHALL OBSERVE CONDITION OF SOILS AND FORMWORK BEFORE FOOTINGS ARE PLACED, SIZE, SPACING AND LOCATION OF REINFORCEMENT, AND PLACEMENT OF CONCRETE.
14. THE TESTING COMPANY SHALL ALSO OBTAIN A MINIMUM OF THREE (3) COMPRESSIVE STRENGTH TEST SPECIMENS FOR EACH CONCRETE MIX DESIGN. ONE SPECIMEN TESTED AT 7 DAYS, ONE AT 28 DAYS, AND ONE HELD IN RESERVE FOR FUTURE TESTING, IF NEEDED.
15. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
E. PIPE---ASTM A53 (FY = 35 KSI)
F. CONNECTION BOLTS---ASTM A325-N
G. U-BOLTS---ASTM A36
H. ANCHOR RODS---ASTM F 1554
I. WELDING ELECTRODE---ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1 WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLET J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION" 9TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.
11. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
12. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
13. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
14. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
15. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
16. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
17. FABRICATE BEAMS WITH MILL CAMBER UP.
18. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
19. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
20. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
21. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

STRUCTURAL LUMBER CONSTRUCTION:

1. STRUCTURAL LUMBER USED FOR JOISTS, RAFTERS AND COLUMNS SHALL BE NO. 2 GRADE DOUGLAS FIR AND SHALL HAVE NOT LESS THAN THE FOLLOWING ALLOWABLE UNIT STRESSES, BEFORE ADJUSTMENT FOR DURATION FACTORS, BASED ON 1997 NDS SPECIFICATION:

EXTREME FIBER IN BENDING	Fb 875 PSI
HORIZONTAL SHEAR	Fv 95 PSI
TENSION PARALLEL TO GRAIN	Ft = 575 PSI
COMPRESSION PERPENDICULAR TO GRAIN	Fc 625 PSI
COMPRESSION PARALLEL TO GRAIN .	Fc = 1,350 PSI
MODULUS OF ELASTICITY	E = 1,600,000 PSI

2. LIGHT FRAMING LUMBER USED FOR STUDS, PARTITIONS, AND MISCELLANEOUS FRAMING SHALL NOT BE LESS THAN STANDARD GRADE AND SHALL HAVE THE FOLLOWING MINIMUM ALLOWABLE UNIT STRESSES:

EXTREME FIBER IN BENDING	Fb 675 PSI
TENSION PARALLEL TO GRAIN	Ft = 450 PSI
COMPRESSION PARALLEL TO GRAIN	Fc 850 PSI
MODULUS OF ELASTICITY	E = 1,400,000 PSI

3. MOISTURE CONTENT OF ALL FRAMING LUMBER WHEN DELIVERED TO THE PROJECT SITE SHALL NOT EXCEED 19%.
4. EXCEPT WHERE STRICTER PROVISIONS ARE INDICATED, 2003 INTERNATIONAL RESIDENTIAL CODE SHALL GOVERN ALL WOOD CONSTRUCTION INCLUDING, BUT NOT LIMITED TO: MATERIALS, FASTENERS (TYPE, SIZE, SPACING, EMBEDMENT), SHOP AND FIELD FABRICATION, CONNECTIONS, AND INSTALLATION.
5. NOT USED
6. NAIL PENETRATION INTO WALL STUDS AND CORNER POSTS SHALL BE AT LEAST 1 3/4 INCHES.
7. PROVIDE AND INSTALL TIMBER POSTS (6x6 OR BUILT UP 2x6 MEMBERS) AT ALL EXTERIOR CORNERS AND ANCHOR TO FOUNDATION WALLS, AND BETWEEN EACH FRAMING LEVEL TO RESIST UPLIFT FORCES. PROVIDE AND INSTALL SIMPSON HDU5-SDS2.5 (HOLD DOWN) ANCHORS WITH SSTB24 ANCHOR RODS OR EQUIVALENT AT FOUNDATION WALLS. PROVIDE AND INSTALL HDU2-SDS2.5 ANCHORS WITH SSTB16 ANCHOR RODS AND POSTS EACH SIDE OF DOOR OPENINGS GREATER THAN 4'-0" IN EXTERIOR WALLS.
8. HORIZONTAL (SLOPED) DIAPHRAGMS: THE FLOOR AND ROOF ARE DESIGNED AS DIAPHRAGMS TO RESIST LATERAL LOADS. FLOOR SHEATHIING SHALL BE 3/4 INCH THICK APA RATED STURDI-FLOOR TONGUE AND GROOVE PLYWOOD. FLOOR SHEATHING SHALL BE ATTACHED TO FLOOR JOISTS WITH CONSTRUCTION ADHESIVE AND 8D NAILS. ROOF SHEATHIING SHALL BE 5/8 INCH THICK CDX PLYWOOD. ROOF SHEATHING SHALL BE ATTACHED TO RAFTERS WITH 8D NAILS.

MAXIMUM NAIL SPACING OF FLOOR AND ROOF SHEATHING SHALL BE 6" o.c. ALONG ALL EDGES. ALL EDGES SHALL BE SUPPORTED WITH SOLID BLOCKING. FIELD NAILING SHALL BE 12" o.c. NAIL PENETRATION INTO SUPPORTING MEMBER SHALL BE AT LEAST 1-1 /2 INCHES.

9. ALL DOUBLE TOP PLATES, RIM JOISTS, AND HEADERS IN EXTERIOR WALLS ARE USED AS DIAPHRAGM CHORD MEMBERS. SPLICES IN DOUBLE TOP PLATES SHALL BE STAGGERED AND METAL STRAPS PROVIDED TO CONNECT RIM JOISTS WITH HEADER AND LINTEL BEAMS.
10. FRAMING ANCHORS AND RELATED CONNECTION HARDWARE SHALL BE FABRICATED BY SIMPSON STRONG-TIE COMPANY, INC., OR EQUAL. SUCH PRODUCTS SHALL BE PROPERLY INSTALLED WITH THE TYPE AND NUMBER OF FASTENERS SPECIFIED BY THE MANUFACTURER FOR THE INTENDED USE.

JOIST AND BEAM HANGERS AND OTHER FRAMING ANCHORS SHALL BE SIZED FOR REACTIONS SHOWN ON THE DRAWINGS UNLESS A SPECIFIC HANGER OR FRAMING ANCHOR IS INDICATED. SUBMIT SHOP DRAWINGS INDICATING PROPOSED HANGER SIZE AND TYPE.

CONNECTION HARDWARE AND FASTENERS SHALL BE GALVANIZED OR STAINLESS STEEL. FRAMING ANCHORS AND FASTENERS THAT ARE NOT EXPOSED TO THE WEATHER SHALL BE G90 GALVANIZED. FRAMING ANCHORS AND FASTENERS THAT ARE EXPOSED TO THE WEATHER SHALL BE STAINLESS STEEL.

11. ALL STRUCTURAL WOOD MEMBERS SHALL BE PROPERLY FIELD FABRICATED TO REQUIRED LENGTHS AND SPACING. PROVIDE SUITABLE CONNECTIONS, BEARING LENGTHS, STIFFENERS, BRIDGING, HEADERS, AND OTHER SPECIAL FRAMING AS INDICATED OR REQUIRED BY BUILDING CODE FOR COMPLETE INSTALLATION. ADDITIONAL JOISTS ARE REQUIRED AT FRAMED OPENINGS, AT CONCENTRATED LOADS, AND DIRECTLY BELOW PARTITIONS THAT ARE PARALLEL WITH JOISTS.
12. ALL FRAMING (ROOF, FLOORS, WALLS) SHALL BE PROPERLY ANCHORED TO EACH OTHER AND TO CONCRETE FOUNDATIONS AGAINST UPLIFT BY ADEQUATELY SPLICED AND NAILED ROOF AND WALL SHEATHING, BY METAL STRAPS, HURRICANE ANCHORS, OR SIMILAR CONNECTION HARDWARE.
13. PROVIDE HEAVY HEX NUTS AND WASHERS AT ALL ANCHOR BOLTS AND AT WOOD FRAME CONNECTIONS TO AVOID CRUSHING WOOD FIBERS.
14. PRESSURE TREATED LUMBER SHALL BE USED FOR FOUNDATION SILLS AND FOR ALL LUMBER EXPOSED TO THE WEATHER AND IN DIRECT CONTACT WITH CONCRETE OR MASONRY FOUNDATIONS.
15. PROVIDE SOLID BLOCKING BETWEEN ADJACENT FLOOR JOISTS AND ROOF RAFTERS, AT ALL SUPPORTS AND TOP FLANGE HANGERS, TO PREVENT MEMBER ROTATION. ALLOW SUFFICIENT CLEARANCE FOR CROSS VENTILATION AT ROOF.
16. PROVIDE SOLID BLOCKING AND/OR MINIMUM 1"x3" DIAGONAL BRIDGING AT 7 FEET ON CENTER MAXIMUM AT ALL WOOD FRAMING. IF SOLID BLOCKING IS USED, IT SHALL EXTEND THE FULL DEPTH OF THE MEMBER IT IS LATERALLY SUPPORTING, UNLESS OTHERWISE NOTD.
17. EXTERIOR WALLS AND INTERIOR LOAD-BEARING WALLS SHALL BE FRAMED WITH 2x6 STUDS SPACED AT 16 INCHES ON CENTER AND SHALL HAVE DOUBLE TOP PLATES. INTERIOR NON-LOAD-BEARING PARTITIONS SHALL BE FRAMED WITH 2x4 STUDS SPACED AT 16 INCHES ON CENTER. UNLESS OTHERWISE INDICATED, BEARING WALLS AND PARTITIONS THAT ARE PARALLEL WITH FLOOR JOISTS SHALL BE FULLY SUPPORTED BY DOUBLE JOISTS. INSTALL SOLID FULL-DEPTH BLOCKING BETWEEN JOISTS DIRECTLY BELOW BEARING WALLS AND PARTITIONS THAT ARE PERPENDICULAR WITH FLOOR JOISTS.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
3	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	06/27/17	DMD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
0	11/20/14	HMR	CFC	CONSTRUCTION
0	11/10/14	HMR	CFC	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE:	11/03/14
SCALE:	AS NOTED
JOB NO.:	13305.000
AMENDED JOB NO.:	17010.08

NOTES AND SPECIFICATIONS

N-1

MISCELLANEOUS SITE INFORMATION

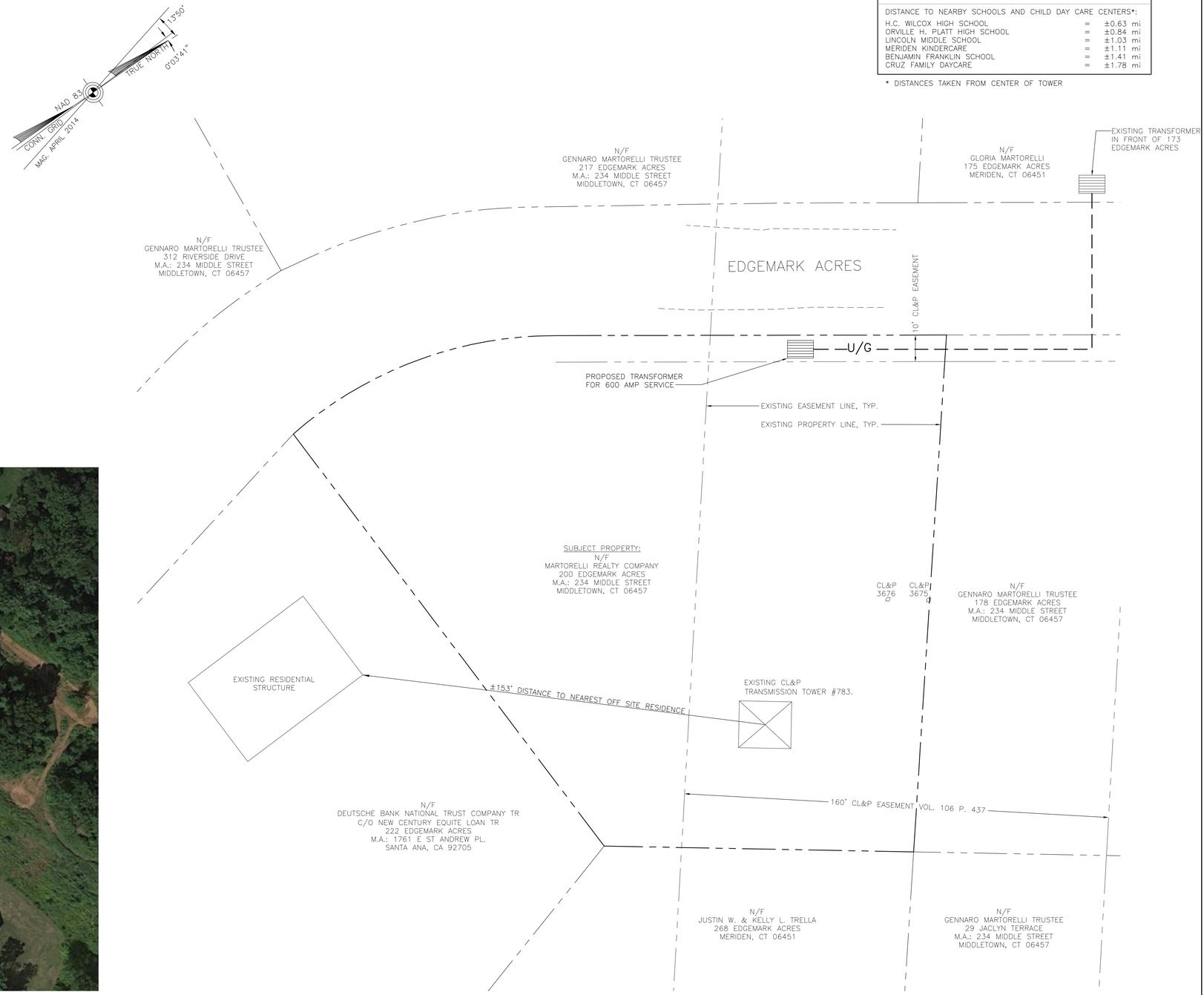
DISTANCE TO NEAREST OFF SITE RESIDENCE*	=	±153'
NUMBER OF RESIDENTIAL STRUCTURES WITHIN 1000' OF TOWER	=	±42
DISTANCE TO NEAREST PROPERTY LINE*	=	±47'
DISTANCE TO NEARBY SCHOOLS AND CHILD DAY CARE CENTERS*:		
H.C. WILCOX HIGH SCHOOL	=	±0.63 mi
ORVILLE H. PLATT HIGH SCHOOL	=	±0.84 mi
LINCOLN MIDDLE SCHOOL	=	±1.03 mi
MERIDEN KINDERCARE	=	±1.11 mi
BENJAMIN FRANKLIN SCHOOL	=	±1.41 mi
CRUZ FAMILY DAYCARE	=	±1.78 mi

* DISTANCES TAKEN FROM CENTER OF TOWER

2 C-1.0 **AERIAL PHOTO** SCALE: 1" = 100'

APPROXIMATE NORTH

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.



1 C-1.0 **ABUTTERS MAP** SCALE: 1" = 20'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	11/20/14	HMR	CPC	CONSTRUCTION – ISSUED FOR CLIENT REVIEW
0	11/10/14	HMR	CPC	

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE:	11/03/14
SCALE:	AS NOTED
JOB NO.:	13305.000
AMENDED JOB NO.:	17010.08

ABUTTERS MAP

C-1.0

Sheet No. 3 of 17

SYMBOLS LEGEND

- PROPERTY LINE
- EASEMENT LINE
- DRIVE (EXISTING)
- 650 CONTOUR LINE
- 650 GRADING LINE
- UTILITY POLE
- MH EXISTING MANHOLE
- FENCE LINE
- PROPOSED SPOT GRADE
- CB EXISTING CATCH BASIN
- WV EXISTING WATER VALVE
- GV EXISTING GAS VALVE

NOTES

USE OF METAL BASED TAPE MEASURES FOR PURPOSES OF TOWER AND ANTENNA HEIGHT MEASUREMENTS IS **PROHIBITED** WHEN THE HEIGHT OF THE TOWER/ANTENNA MAST IS **GREATER** THAN THE DISTANCE TO THE NEAREST POWER LINE.

HEIGHT OF TOWER/ANTENNA MAST (A.G.L)	=	±93'
DISTANCE TO NEAREST POWER LINE	=	±21'

SURVEY NOTES

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300B-1 THRU 20-300B-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES – "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPT. 26, 1996. THE LIMITED TOPOGRAPHIC SURVEY PORTION OF THIS PLAN CONFORMS TO A VERTICAL ACCURACY OF CLASS T-2 AND IS INTENDED TO BE USED TO DEPICT A PROPOSED TELECOMMUNICATION SITE.

THE PROPERTY/BOUNDARY LINES DEPICTED HEREON ARE COMPILED FROM OTHER MAPS, DEEDS AND LIMITED FIELD SURVEY. THESE LINES ARE NOT TO BE CONSTRUED AS A BOUNDARY OPINION AND ARE SUBJECT TO CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE. PROPERTY MAY BE SUBJECT TO ENCUMBRANCES, EASEMENTS, RIGHTS OF WAY AS A TITLE SEARCH REPORT MAY DISCLOSE. PLANIMETRIC FEATURES SUCH AS PARKING AREAS, PAVED DRIVE ARE COMPILED FROM OTHER MAPS AND LIMITED FIELD SURVEY.

COORDINATES REFER TO NAD 83.

VERTICAL DATUM IS BASED ON NGVD 29.

PARCEL OWNER OF RECORD: MARTORELLI REALTY CO
234 MIDDLE STREET
MIDDLETOWN, CT 06457

PARCEL AREA = 0.83± ACRES.

PARCEL IS IN R-R ZONING DISTRICT.

PARCEL ID 0627-0225-004L-0043 ON THE MERIDEN ASSESSOR'S MAP.

SUBJECT PARCEL IS NOT IN A FLOOD ZONE AS SHOWN ON THE FLOOD INSURANCE RATE MAP, NEW HAVEN COUNTY, CONNECTICUT PANEL 164 OF 635, MAP NUMBER 09009C0164H, MAP EFFECTIVE DATE DECEMBER 17, 2010, BY FEDERAL EMERGENCY MANAGEMENT AGENCY.

REFERENCE IS MADE TO THE FOLLOWING MAPS:

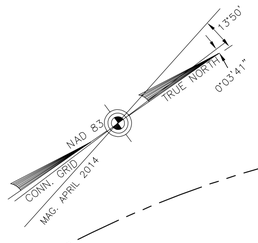
1. SUBDIVISION, ROLLING HILLS PHASE II, MERIDEN, CT, SCALE 1"=100', DATED 5-6-88, REVISED THROUGH 12-6-90. RECORDED AS MAP #5119 OF THE MERIDEN LAND RECORDS.

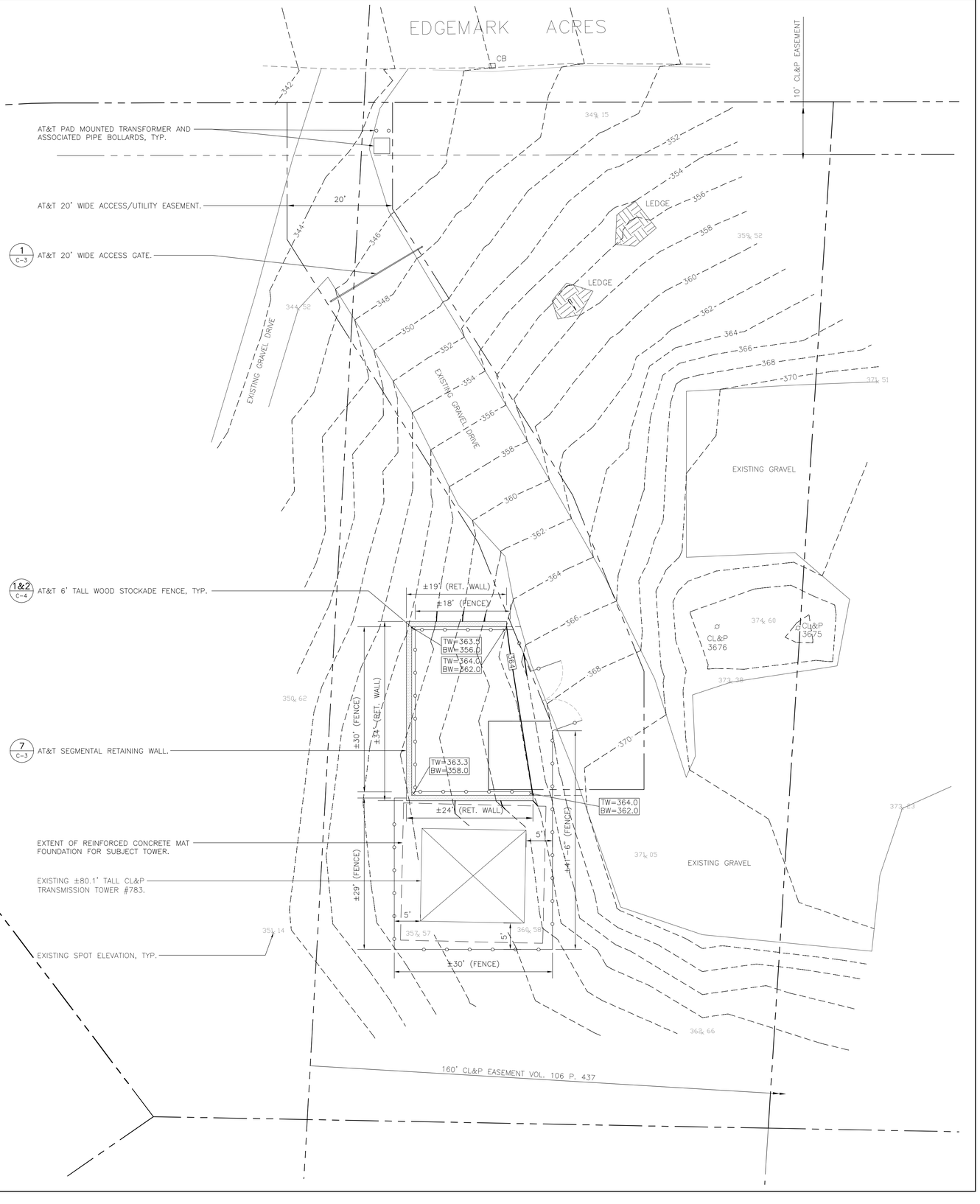
NOT ALL IMPROVEMENTS SHOWN.

TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON

THIS MAP IS NOT VALID WITHOUT A LIVE SIGNATURE AND SEAL

A. RAFAEL MARTINEZ LLS #18833 DATE





1 C-1 SITE/SITE SURVEY PLAN
SCALE: 1" = 10'

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	11/20/14	HMR	CPC	CONSTRUCTION – ISSUED FOR CLIENT REVIEW
0	11/10/14	HMR	CPC	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

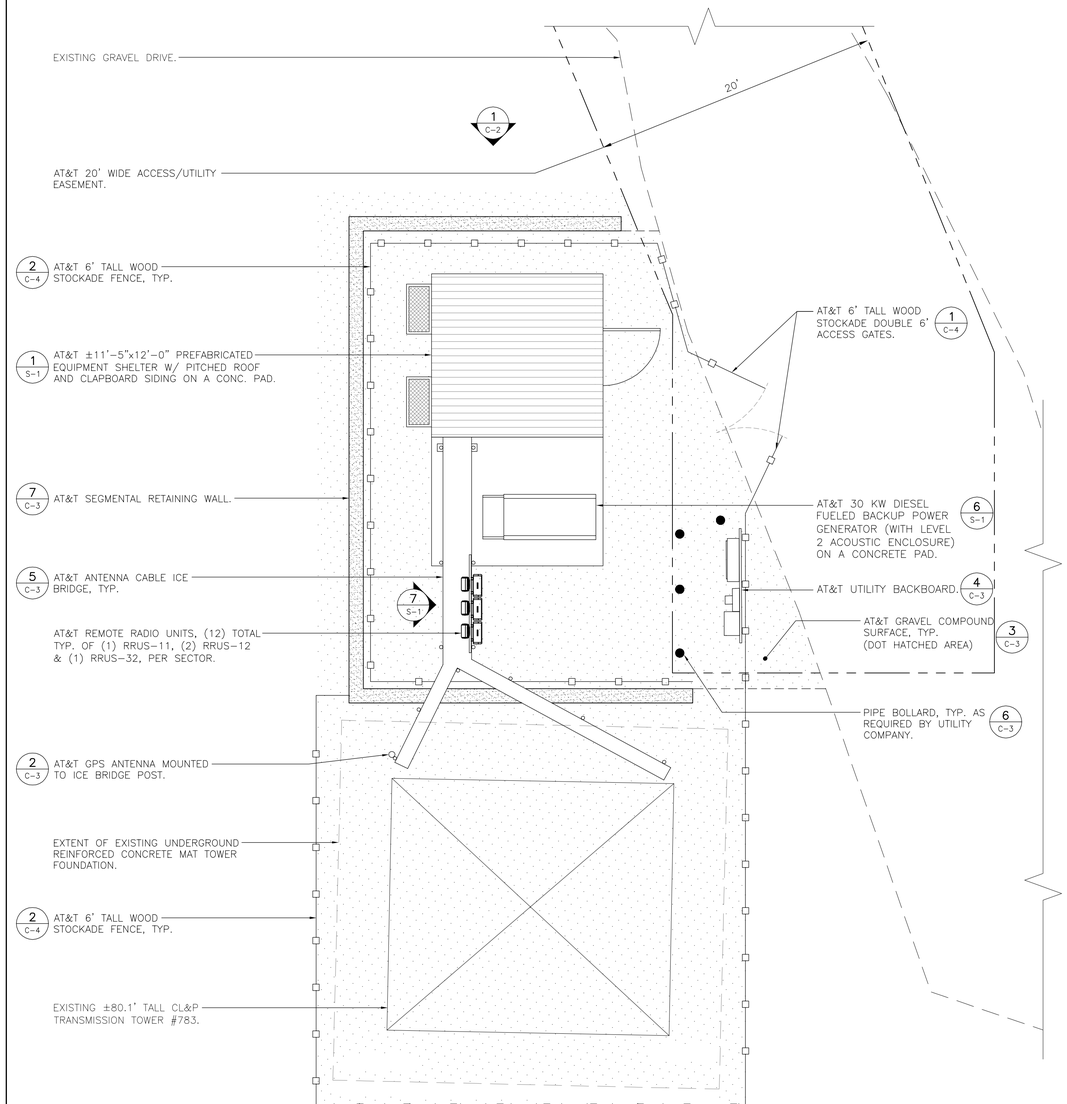
DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

SITE/SITE SURVEY PLAN

C-1.1

RF EQUIPMENT TABLE

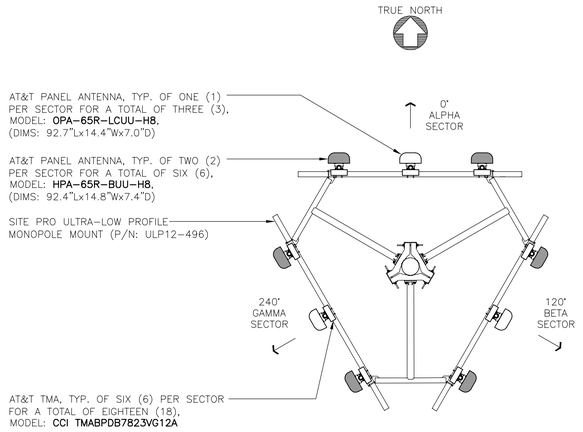
SECTOR	PANEL ANTENNAS					FILTER	FROM TMA				TMA		FROM SHELTER		
	AZIMUTH	QTY.	MAKE: MODEL	RAD CENTER (AGL)	DOWNTILT	QTY.	JUMPER QTY.	JUMPER SIZE	JUMPER LENGTH	RET QTY.	QTY.	MAKE & MODEL	COAX SIZE	COAX QTY.	COAX LENGTH
ALPHA	0°	2	CCI: HPA-65R-BUU-H8	90.0'	2°E	0	20	1/2" Ø	15' ±	0	6	CCI TMABPDB7823VG12A	1-5/8"	36	120'±
		1	CCI: OPA-65R-LCUU-H8		0°M										
BETA	120°	2	CCI: HPA-65R-BUU-H8	90.0'	3°E	0	20	1/2" Ø	15' ±	0	6	CCI TMABPDB7823VG12A			120'±
		1	CCI: OPA-65R-LCUU-H8		0°M										
GAMMA	240°	2	CCI: HPA-65R-BUU-H8	90.0'	2°E	0	20	1/2" Ø	15' ±	0	6	CCI TMABPDB7823VG12A			120'±
		1	CCI: OPA-65R-LCUU-H8		0°M										



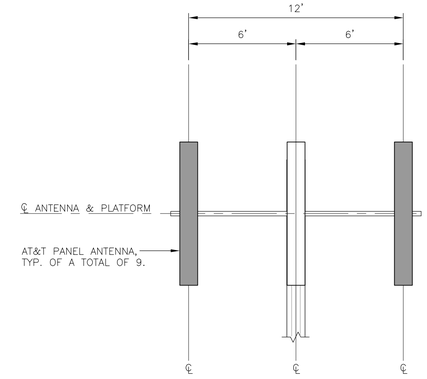
2 C-2 **COMPOUND PLAN**
SCALE: 1" = 5'

APPROXIMATE NORTH

GRAPHIC SCALE
5 0 2.5 5 10 20
(IN FEET)
1 inch = 5 ft.



P L A N

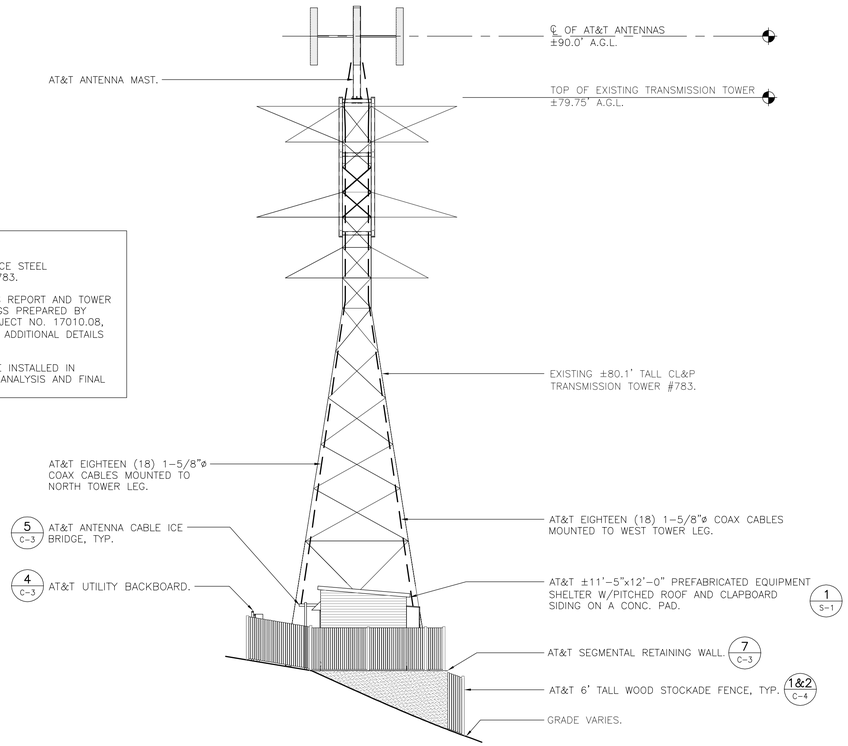


E L E V A T I O N

3 C-2 **ANTENNA MOUNTING CONFIGURATION DETAILS**
SCALE: 1/4" = 1'

TOWER NOTES:

1. EXISTING 79.75' TALL EVERSOURCE STEEL TRANSMISSION STRUCTURE NO. 783.
2. REFER TO STRUCTURAL ANALYSIS REPORT AND TOWER REINFORCEMENT DESIGN DRAWINGS PREPARED BY CENTEK ENGINEERING, INC., PROJECT NO. 17010.08, DATED 06/29/17, (REV-0) FOR ADDITIONAL DETAILS AND REQUIREMENTS.
3. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS AND FINAL AT&T RF DATA SHEET.



1 C-2 **WESTERN ELEVATION**
SCALE: 1" = 10'

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	11/20/14	HMR	CFC	CONSTRUCTION
0	11/10/14	HMR	CFC	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

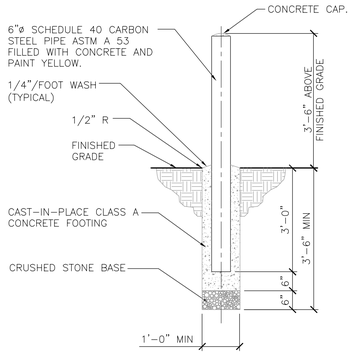
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

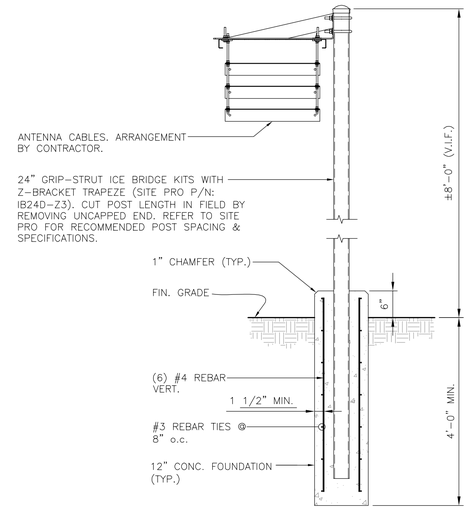
COMPOUND PLAN, ELEVATION AND ANTENNA MOUNTING DETAILS

C-2

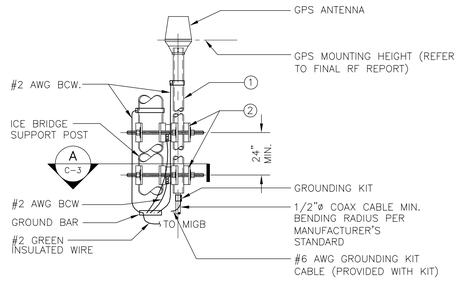
Sheet No. 5 of 17



6 C-3 **BOLLARD DETAIL**
NOT TO SCALE



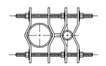
5 C-3 **ICE BRIDGE DETAIL**
NOT TO SCALE



GPS ANTENNA MOUNTING BRACKET

BILL OF MATERIALS

ITEM	DESCRIPTION	QUANTITY
1	2-1/2"ø SCH. 40 x 8'-0" LG. MAX SS OR GALV. PIPE	1
2	UNIVERSAL CLAMP SET.	2

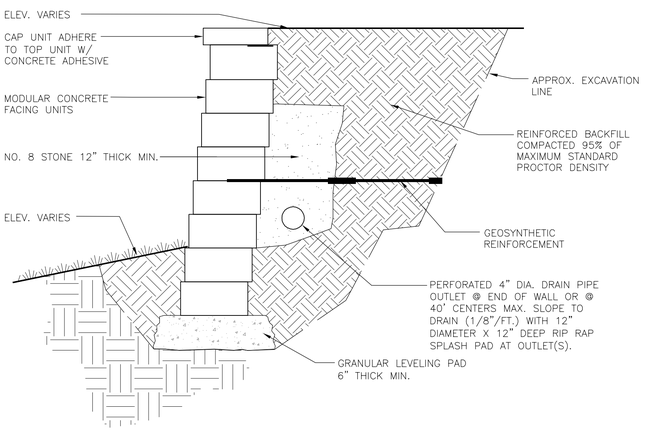


A C-3 **SECTION**
NOT TO SCALE

NOTES:

1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 2-1/2" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 24 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.
3. ATTACH TO ICE BRIDGE POST NEAREST ANTENNA CABLE PORT AT EQUIPMENT.
4. PRIOR TO INSTALLATION CONTRACTOR SHALL TEST GPS LOCATION WITH HAND HELD AND MOVE GPS ANTENNA TO OTHER ICE BRIDGE POSTS AS REQUIRED TO ACHIEVE ADEQUATE SIGNAL. FAILURE TO ACHIEVE ADEQUATE SIGNAL WITH A HAND HELD GPS SHALL BE REPORTED TO CONSTRUCTION MANAGER AND ENGINEER TO DETERMINE ALTERNATE INSTALLATION LOCATION FOR GPS ANTENNA.

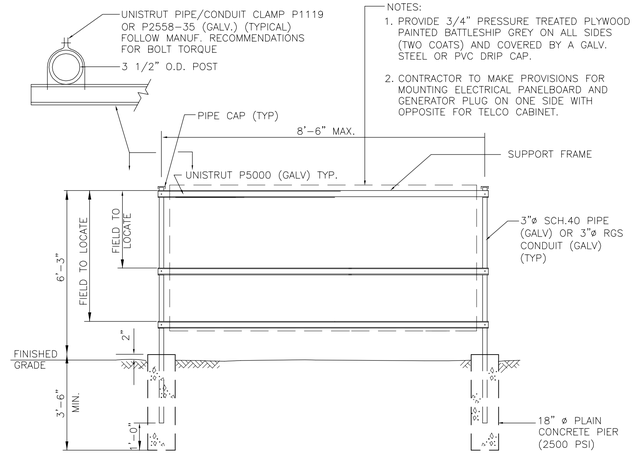
2 C-3 **GPS GROUNDING/MOUNTING BRACKET DETAIL**
NOT TO SCALE



SEGMENTAL RETAINING WALL NOTES:

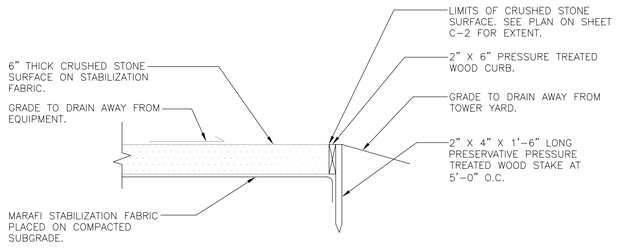
1. STRIP VEGETATION AND ORGANIC SOIL FROM WALL AND GEOSYNTHETIC ALIGNMENT.
2. BENCH CUT ALL EXCAVATED SLOPES.
3. DO NOT OVER EXCAVATE UNLESS DIRECTED BY SITE SOIL ENGINEER TO REMOVE UNSUITABLE SOIL.
4. SITE SOIL ENGINEER SHALL VERIFY FOUNDATION SOILS AS BEING COMPETENT PER THE DESIGN STANDARDS AND PARAMETERS.
5. BASE SHALL CONSIST OF COMPACTED GRAVEL, 6" THICK MIN.
6. CONTRACTOR MAY OPT FOR A LEAN CONCRETE PAD. CONCRETE PAD SHALL BE UNREINFORCED, 4" THICK.
7. MINIMUM EMBEDMENT OF WALL BELOW FINISH GRADE SHALL BE 2 COURSES OF BLOCK".
8. FOLLOW APPLICABLE PROVISIONS OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS.
9. NO. 8 CRUSHED STONE SHALL BE INSTALLED BEHIND THE WALL UP TO 18" FROM THE TOP OF THE WALL. CRUSHED STONE SHALL NOT EXTEND BELOW FINISHED GRADE IN FRONT OF WALL.
10. WHERE DRAIN PIPE IS USED, PROVIDE OUTLETS @ MAX. 40 FT C-C.
11. FOR UNITS TO BE EMBEDDED, COMPACT FILL IN FRONT OF UNITS AT THE SAME TIME BACKFILL BEHIND UNITS IS COMPACTED.
12. COMPACTION TESTS SHALL BE TAKEN AS THE WALL IS INSTALLED. THE MINIMUM NUMBER OF TESTS SHALL BE DETERMINED BY THE ENGINEER.
13. COMPACTION SHALL BE TO 95% OF MAXIMUM STANDARD PROCTOR DENSITY. (ASTM D-698)
14. SEE SHOP DRAWINGS FOR GEOSYNTHETIC TYPE, LENGTH AND LOCATION REQUIRED.
15. GEOSYNTHETIC SHALL BE THE TYPE AND LENGTH AS SHOWN ON SHOP DRAWINGS. PULL GEOSYNTHETIC TIGHT PRIOR TO BACKFILLING.
16. GEOSYNTHETIC SHALL BE PLACED WITH STRONGEST DIRECTION PERPENDICULAR TO WALL. FOLLOW GEOSYNTHETIC MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS.
17. THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING SHOWING THE COMPLETE WALL SYSTEM AND ALL DETAILS BASED ON THE ACTUAL SOILS IN THE FIELD THESE SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT
18. IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR MUST CONTACT ENGINEER PRIOR TO PROCEEDING WITH THE CONSTRUCTION OF THE WALL.
19. IF WALL LEVELING PAD REQUIRES FILL IT SHALL BE COMPACTED GRAVEL FROM BOTTOM OF EXCAVATION TO SUITABLE SOIL TO BOTTOM OF WALL.

7 C-3 **SEGMENTAL RETAINING WALL DETAIL**
NOT TO SCALE

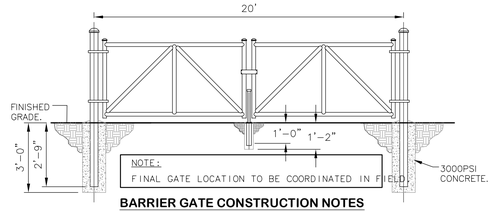


4 C-3 **UTILITY SUPPORT FRAME (TYP)**
NOT TO SCALE

NOTES:
1. PROVIDE 3/4" PRESSURE TREATED PLYWOOD PAINTED BATTLESHIP GREY ON ALL SIDES (TWO COATS) AND COVERED BY A GALV. STEEL OR PVC DRIP CAP.
2. CONTRACTOR TO MAKE PROVISIONS FOR MOUNTING ELECTRICAL PANELBOARD AND GENERATOR PLUG ON ONE SIDE WITH OPPOSITE FOR TELCO CABINET.



3 C-3 **COMPOUND SURFACING DETAIL**
NOT TO SCALE



BARRIER GATE CONSTRUCTION NOTES

1. GATE POST 3" ø SCHEDULE 40 FOR GATE WIDTHS UP THRU 6 FEET OR 12 FEET FOR DOUBLE SWING BARRIER GATE PER ASTM-F1083.
2. GATE FRAME: 2" ø SCHEDULE 40 PIPE PER ASTM-F1083.
3. CENTER UPRIGHT AND ANGLE BRACES: 1 5/8" ø SCHEDULE 40 PIPE PER ASTM-F1083.
4. HINGES: INDUSTRIAL OFFSET HINGES (NO STEM).
5. VERTICAL DROP ROD AND LATCH.
6. PROVIDE CAPS ON POSTS AND UPRIGHTS.

1 C-3 **BARRIER GATE DETAIL**
NOT TO SCALE SITE ENTRANCE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION - REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION - REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	CAG	CONSTRUCTION - REVISED CRITERIA PER CLIENT
1	11/20/14	HMR	CFC	CONSTRUCTION
0	11/10/14	HMR	CFC	CONSTRUCTION - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

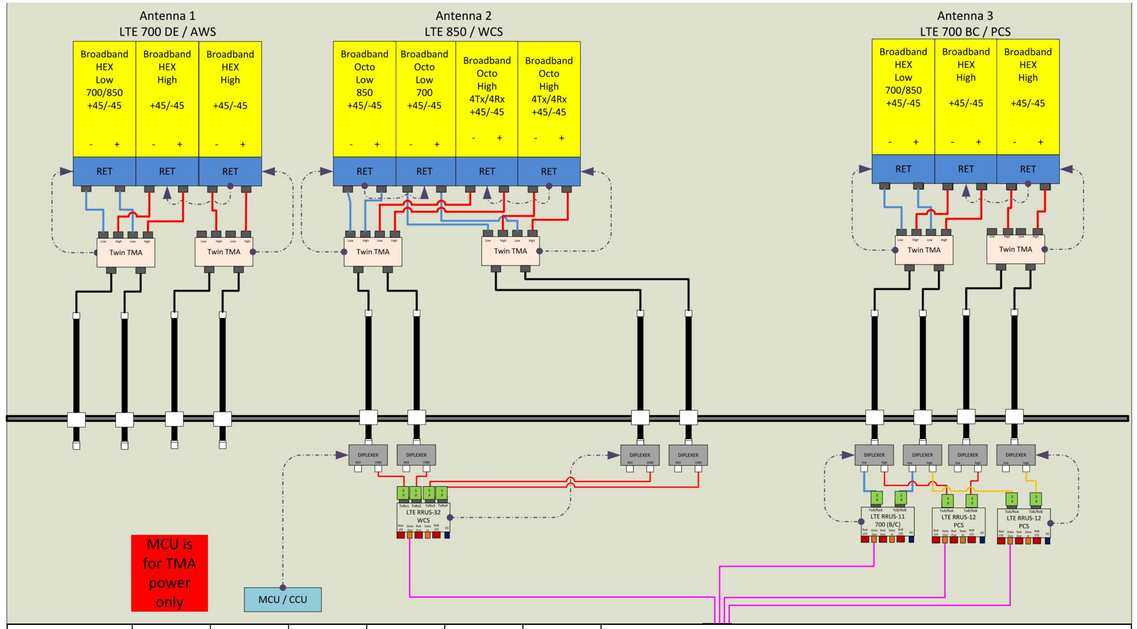
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE:	11/03/14
SCALE:	AS NOTED
JOB NO.:	13305.000
AMENDED JOB NO.:	17010.08

SITE DETAILS

C-3

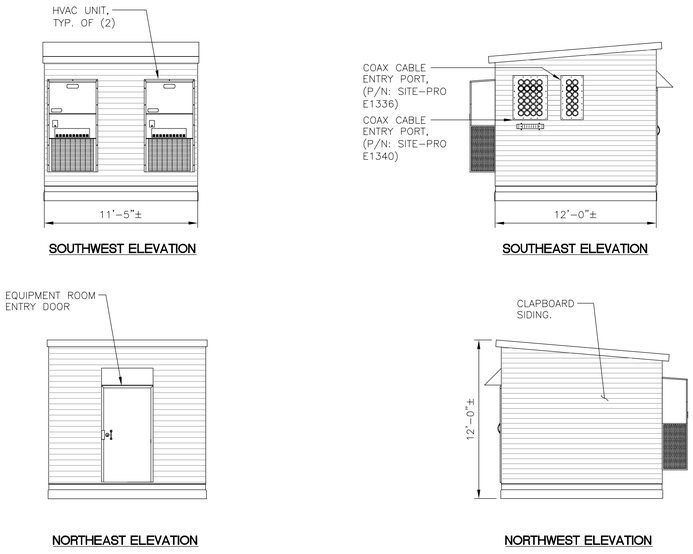
Sheet No. 6 of 17



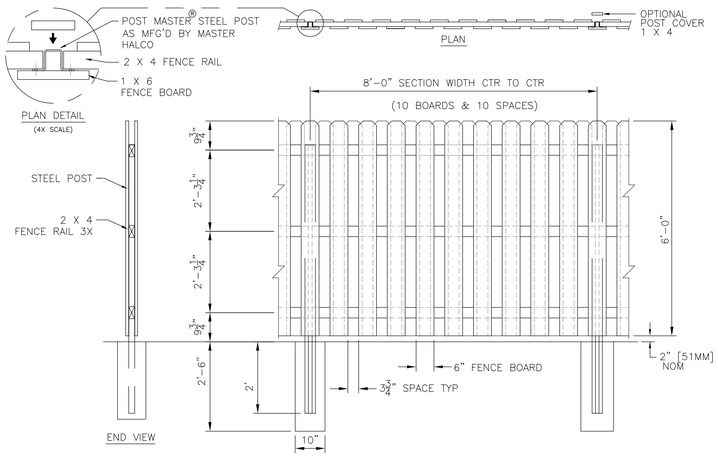
5216	A	B	C	D	E	F
	700 - A	700 - B	700 - C	XMU1-2	XMU1-1	XMU1-3

XMU 1	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
	PCS 1 - A	PCS 2 - A	PCS 1 - B	PCS 2 - B	PCS 1 - C	PCS 2 - C	WCS - A	WCS - B		WCS - C						

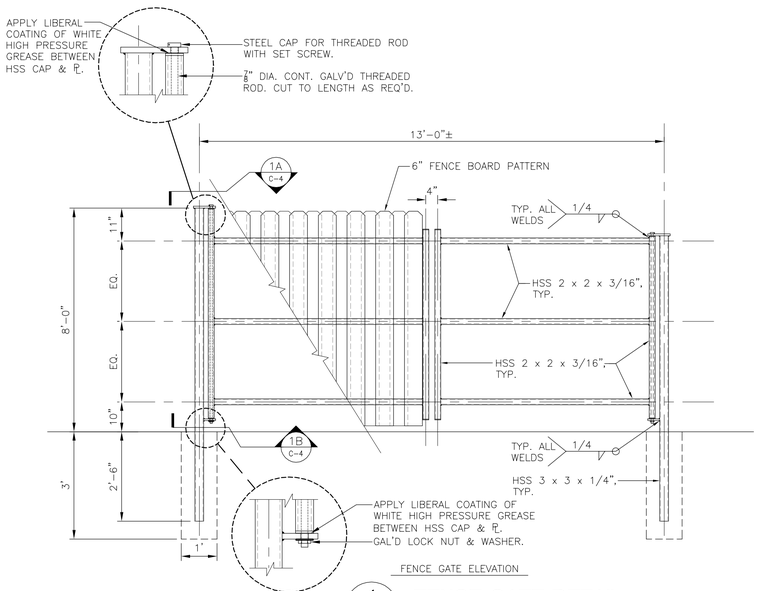
4 C-4 TYP. RF PLUMBING DIAGRAM
NOT TO SCALE



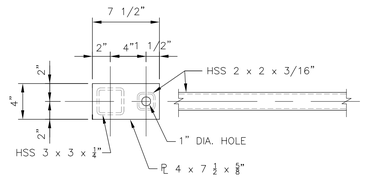
3 C-4 EQUIPMENT SHELTER ELEVATIONS
SCALE: 3/16" = 1'-0"



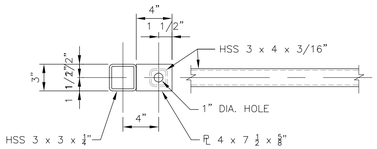
2 C-4 FENCE DETAIL
NOT TO SCALE



1 C-4 FENCE GATE DETAIL
NOT TO SCALE



1A C-4 UPPER POST SECTION
NOT TO SCALE



1B C-4 UPPER POST SECTION
NOT TO SCALE

FENCE & GATE NOTES:

1. ALL STEEL FENCE GATE COMPONENTS SHALL BE GALVANIZED. STEEL FENCE GATE MEMBERS SHALL BE SHOP WELDED AND GALV'D AFTER FABRICATION.
2. ALL WOOD COMPONENTS SHALL BE WHITE CEDAR. DIMENSIONS SHOWN ARE NOMINAL.
3. ALL METAL FENCE POSTS (OTHER THAN GATE) AND ASSOCIATED ACCESSORIES AND SCREWS ARE TO BE POST MASTER BY MASTER HALCO OR APPROVED EQUAL.
4. ALL VERTICAL GATE FRAMING MEMBERS SHALL HAVE 1/4" WELDED END PLATE CAPS.

WOOD FENCE COMPONENT FINISH:

ALL WOOD COMPONENTS TO RECEIVE MINIMUM (2) COATS OF VALSPAR PREMIUM PENETRATING OIL DECK & SIDING TONER OR APPROVED EQUAL. FIRST COAT TO BE APPLIED PRIOR TO ASSEMBLY. APPLY COATING PER MANUFACTURER'S WRITTEN RECOMMENDATIONS.

FASTENERS:

WOOD-TO-STEEL: 1 1/2" LNG #8-25 GA., FLUSH HEAD HILTI KWIK-PRO GALV'D SELF-DRILLING SCREWS (2 SCREWS AT EA. RAIL LOCATION, TYP.)

WOOD-TO-WOOD: REFER TO POST MASTER BY HALCO FOR REQUIRED FASTENERS.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
-	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	11/20/14	HMR	CFC	CONSTRUCTION – ISSUED FOR CLIENT REVIEW
0	11/10/14	HMR	CFC	CONSTRUCTION –

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

SITE DETAILS AND SHELTER ELEVATIONS

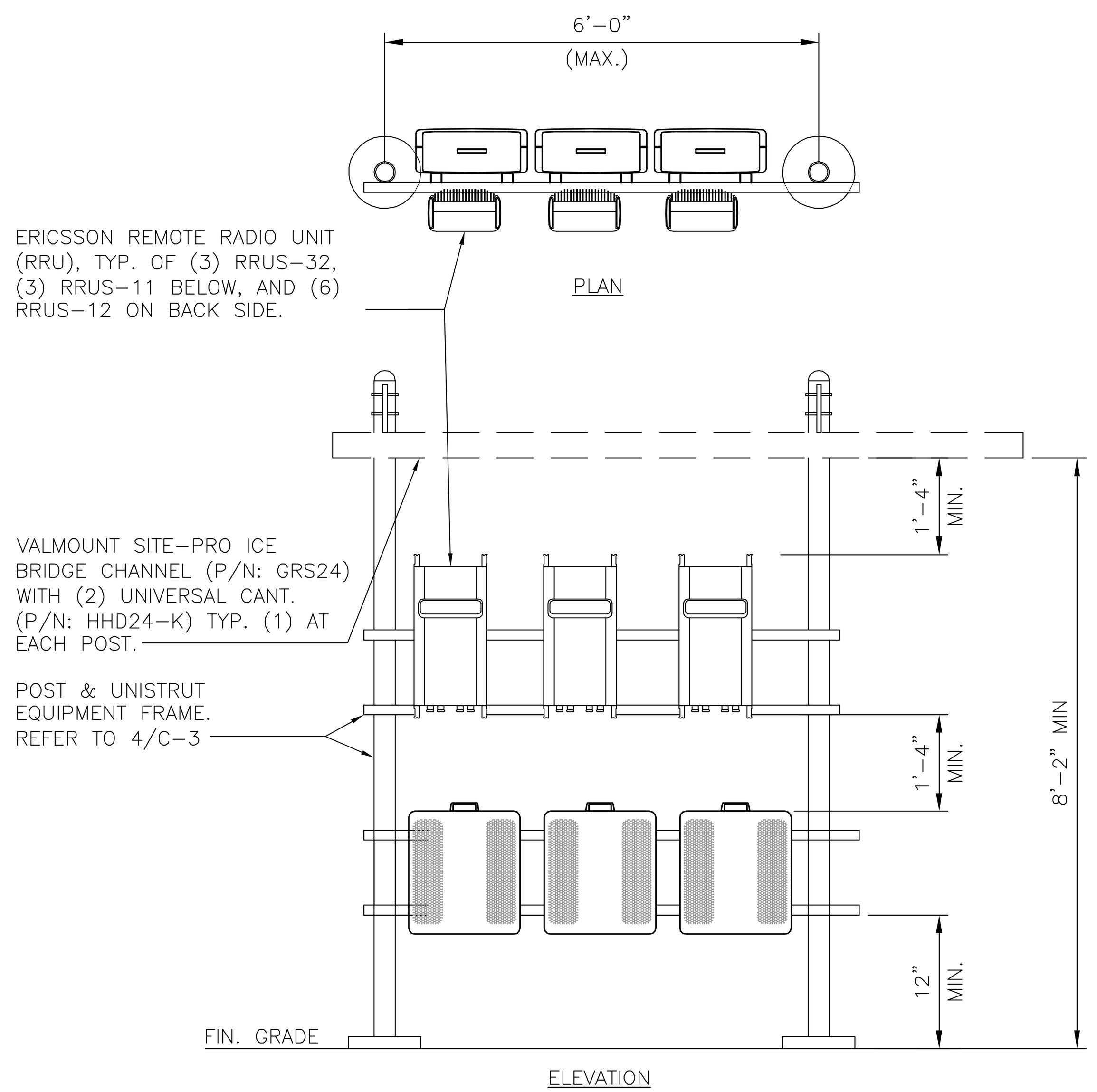
C-4

EQUIPMENT SHELTER VENDOR SELECTION BY AT+T. VERIFY ALL SHELTER DIMENSIONS, EQUIPMENT DIMENSIONS, EQUIPMENT LOCATIONS AND UTILITY OPENINGS WITH BUILDING SHOP DRAWINGS PRIOR TO COMMENCEMENT OF WORK.

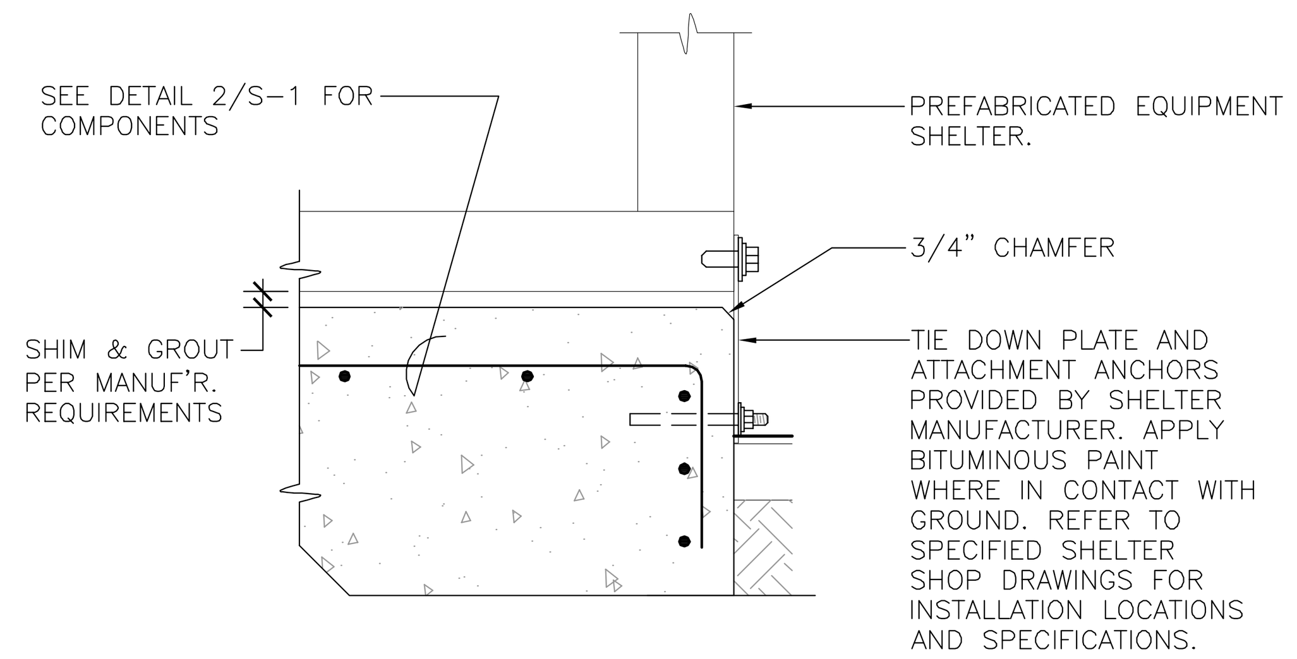
SLAB ON GRADE FOUNDATION DESIGN CONFORMS TO THE REQUIREMENTS OF THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE SUPPLEMENT SECTION 1809.5 'FROST PROTECTION' AND SEI/ASCE STANDARD 32-01 SECTION 7.1 'SLAB ON GRADE CONSTRUCTION'.

FOUNDATION PLAN NOTES:

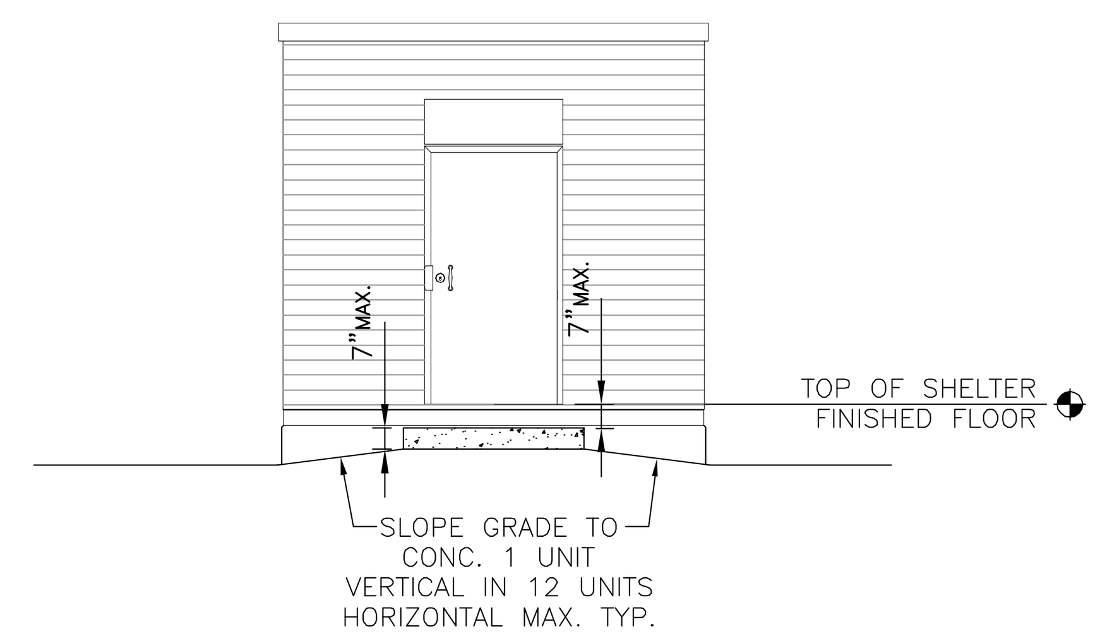
1. BEARING SHIMS, TIE-DOWN PLATES AND ASSOCIATED INSTALLATION ANCHORS PROVIDED BY SHELTER MANUFACTURER. CONTRACTOR SHALL VERIFY ALL SHIM & TIE-DOWN QUANTITIES AND LOCATIONS AND ANY SPECIAL CONDITIONS WITH SHELTER MANUFACTURER PRIOR TO PERFORMING FOUNDATION WORK.
2. SLAB/ TOP OF WALL TOLERANCE IS 1/4"±
3. REFER TO NOTES ON DWG. N-1 FOR ADDITIONAL REQUIREMENTS.
4. PER NEC REQUIREMENTS, THE REBAR IN FOUNDATION AND FOOTING SHALL BE BONDED TO GROUND RING WITH A #2 AWG SOLID CONDUCTOR USING LISTED AND APPROVED METHODS.
5. PROVIDE PVC SLEEVES FOR UTILITY CONDUIT PASSAGE THROUGH FOUNDATION OR CAST CONDUITS IN PLACE. REFER TO ELECTRICAL DRAWINGS FOR CONDUIT SIZES AND QUANTITIES.



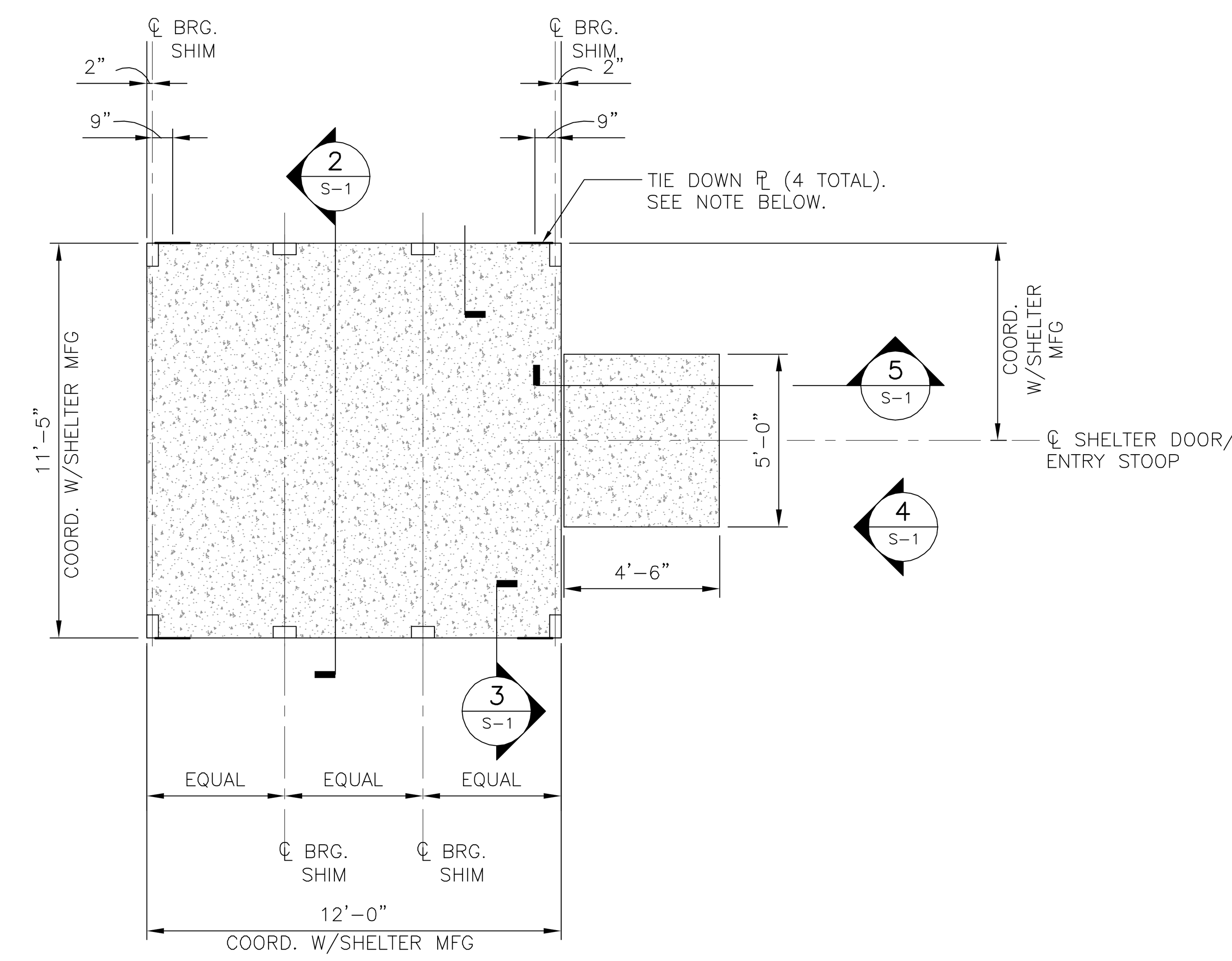
3 C-1 TYPICAL RRU MOUNTING DETAILS
SCALE: 1/2" = 1'



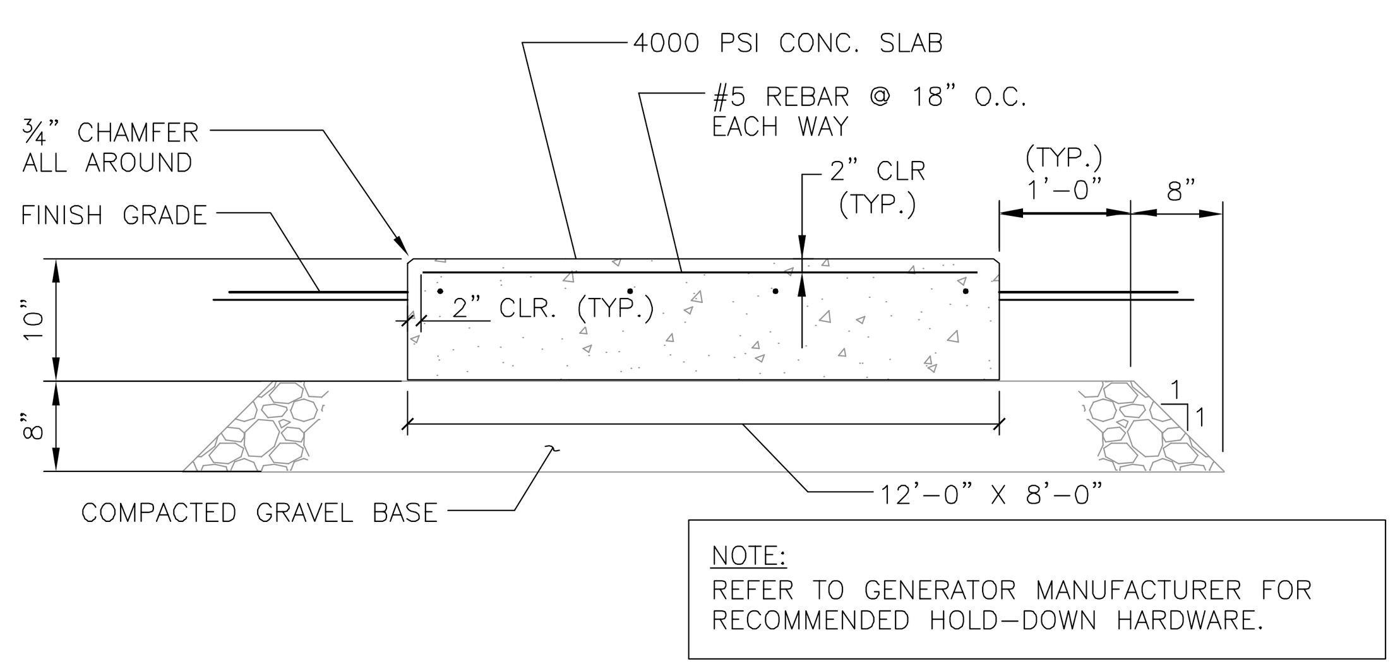
3 S-1 SHELTER TIE DOWN
SCALE: 1" = 1'



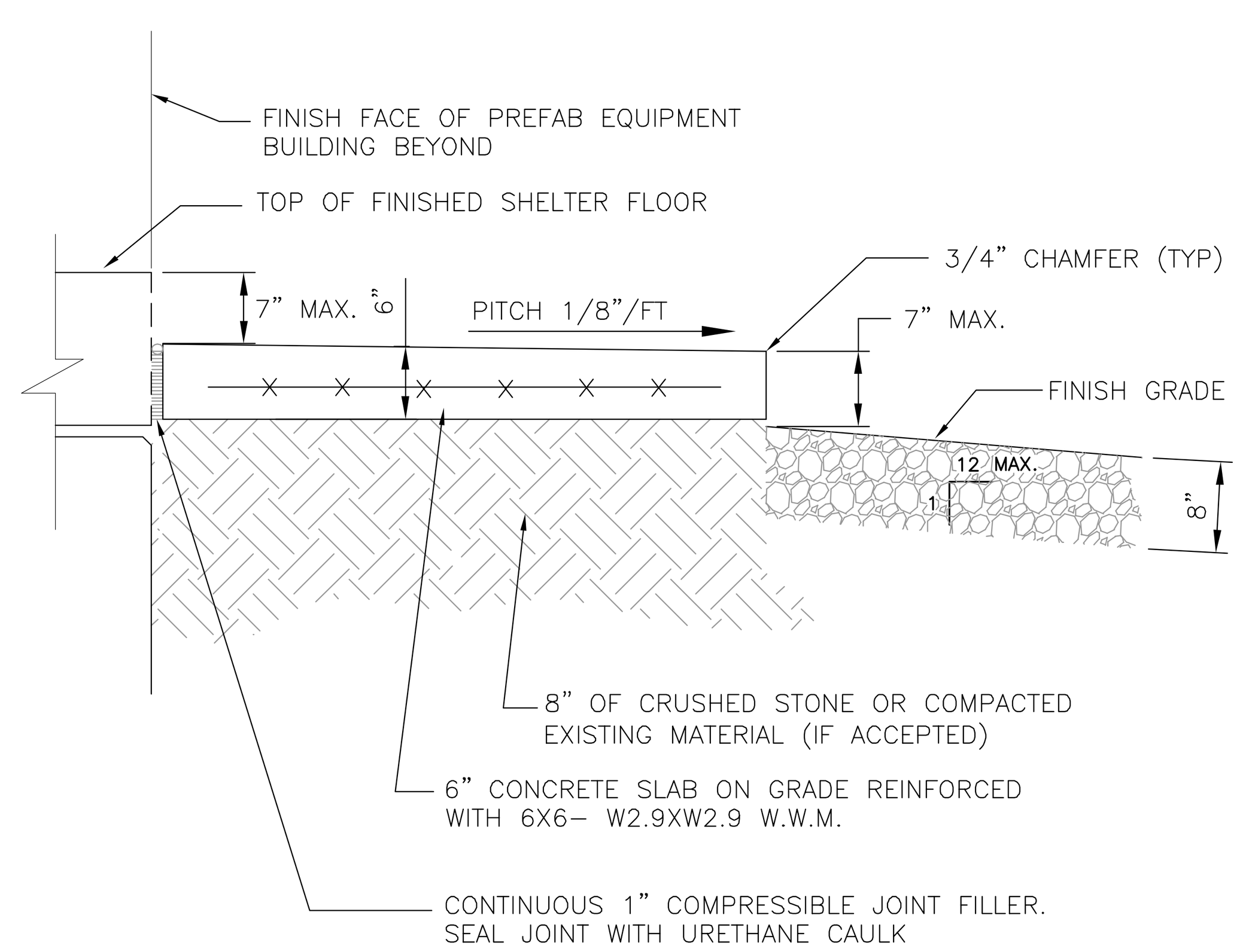
4 S-1 ENTRY STOOP DETAIL - ELEVATION
SCALE: 3/16" = 1'



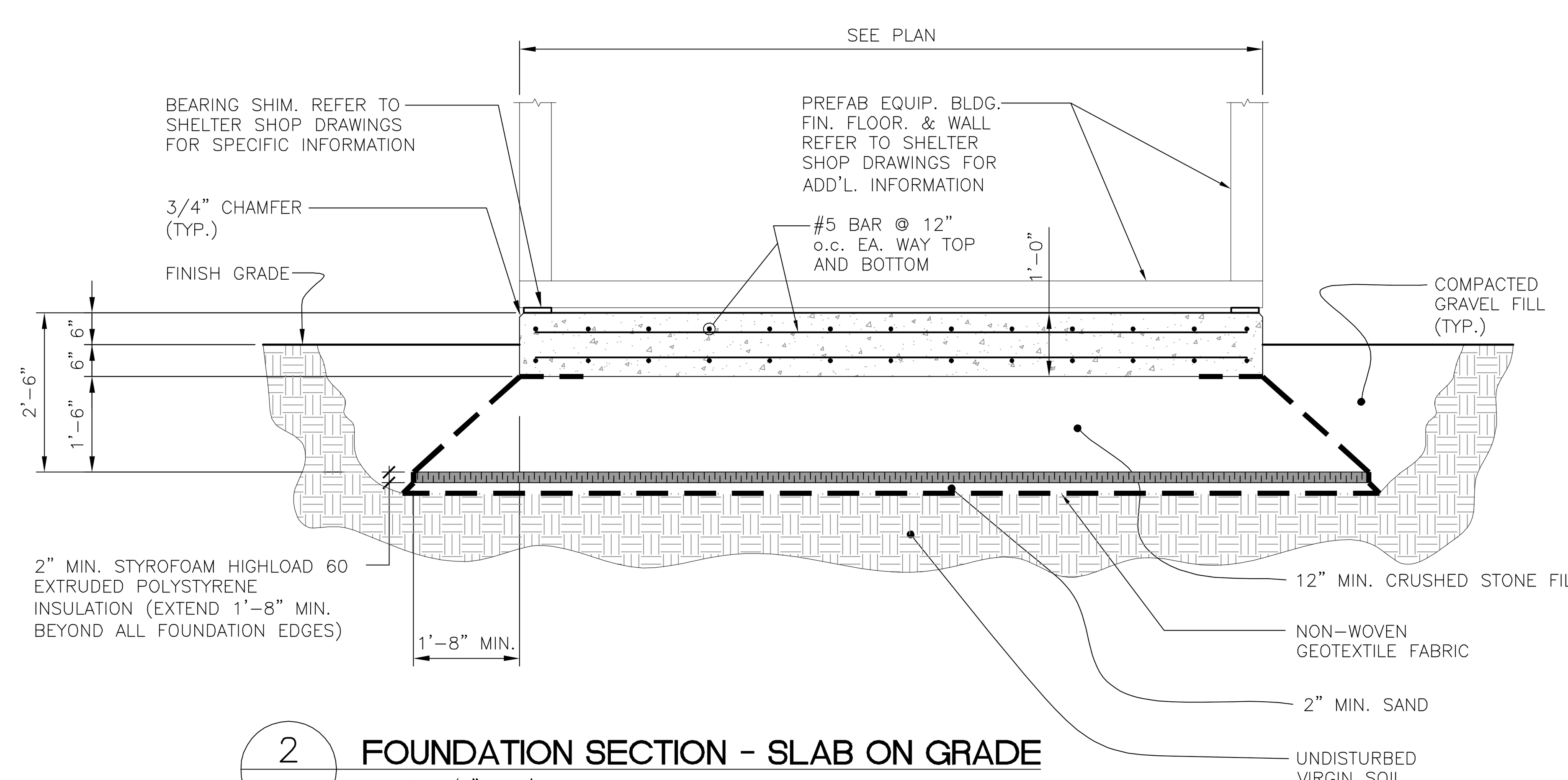
1 S-1 FOUNDATION PLAN
SCALE: 1/4" = 1'
NORTH



6 S-1 GENERATOR PAD DETAIL
NOT TO SCALE



5 S-1 ENTRY STOOP DETAIL - SECTION
SCALE: 3/16" = 1'



2 S-1 FOUNDATION SECTION - SLAB ON GRADE
SCALE: 1/2" = 1'

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION - REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION - REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	CAG	CONSTRUCTION - REVISED CRITERIA PER CLIENT
1	11/20/14	HMR	CFC	CONSTRUCTION
0	11/10/14	HMR	CFC	CONSTRUCTION - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

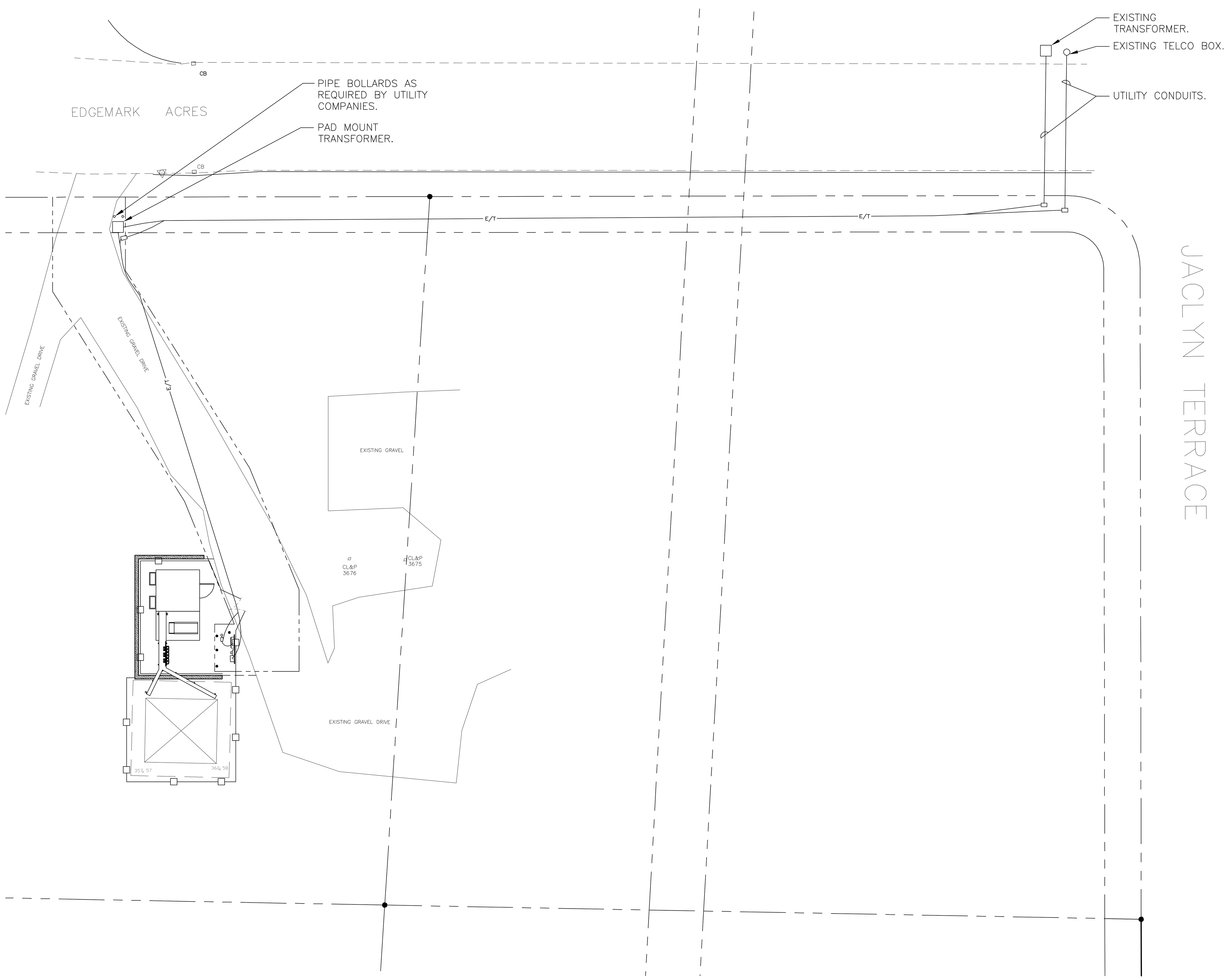
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

EQUIPMENT SHELTER FOUNDATION PLAN AND DETAILS

S-1

Sheet No. 8 of 17



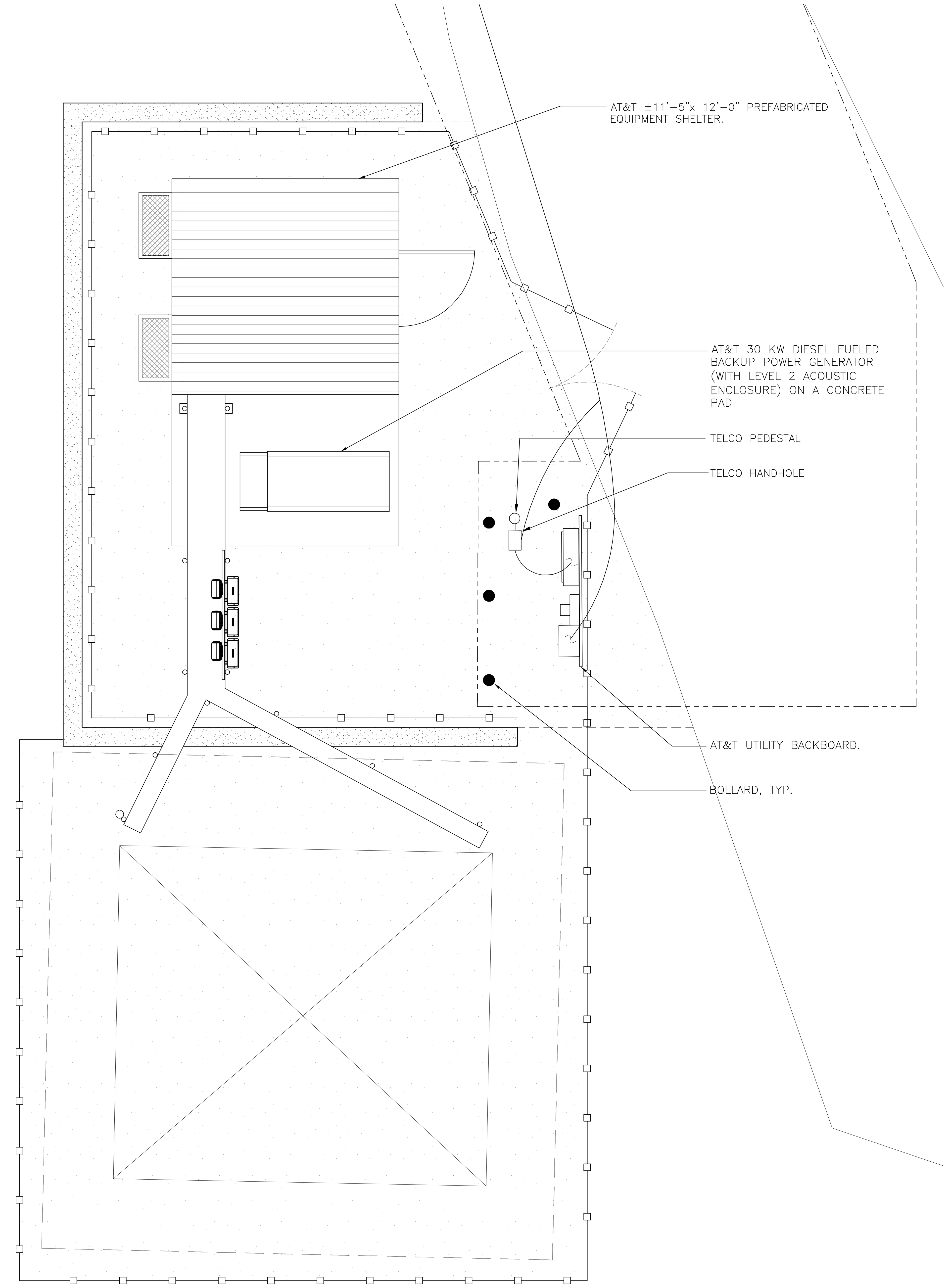
1 E-1 UTILITY SITE PLAN
SCALE: 1" = 20'-0"
APPROX. NORTH

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
——— - - ———	PROPERTY LINE
——— - - - ———	ACCESS/ UTILITY EASEMENT LINE (PROPOSED)
——E/T——	ELECTRICAL/TELCO CONDUIT RUN (UNDERGROUND)
——O/H——	UTILITY LINES (OVERHEAD BY UTILITY CO.)
O ▭	UTILITY PULL BOX/SILO
⌽	UTILITY POLE

UTILITY NOTES

1. COORDINATE WITH OWNER FOR ALL EASEMENT DOCUMENTS.
2. UTILITY ROUTING SHOWN ON THIS PLAN IS SCHEMATIC. CONTRACTOR SHALL COORDINATE FINAL ROUTING WITH RESPECTIVE UTILITY COMPANIES PRIOR TO PERFORMING ANY UTILITY TRENCH WORK. ALL UTILITY CONDUITS AND PULL BOXES SHALL BE LOCATED WITHIN THE EASEMENT AREA.
3. UTILITY PULL BOXES/SILOS TO BE INSTALLED IN APPROXIMATE LOCATIONS SHOWN ON THIS PLAN. CONTRACTOR TO COORDINATE FINAL PULL BOX LOCATIONS WITH RESPECTIVE LOCAL UTILITY COMPANIES.
4. ALL UTILITY EQUIPMENT SHALL BE LOCATED WITHIN THE EASEMENT AREA. PRIOR TO START OF CONSTRUCTION THE CONTRACTOR SHALL OBTAIN A VALID COPY OF THE EASEMENT MAP FROM THE OWNER.



2 E-1 COMPOUND PLAN
SCALE: 1" = 4'-0"
APPROX. NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	GK	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	11/20/14	TJB	CKD	CONSTRUCTION
0	11/10/14	TJB	CKD	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

SITE UTILITY PLAN

E-1

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
— — —	GROUND RING
—T——T—	UNDERGROUND COMMUNICATION CONDUIT
—E——E—	UNDERGROUND ELECTRICAL CONDUIT AS INDICATED
(ground bar symbol)	GROUND BAR
—o——o—	PERIMETER CHAIN LINK FENCE
⊗	5/8" DIAMETER x 10'-0" COPPER GROUND ROD **OR** 24"x24" GROUND PLATE ABOVE MATT FOUNDATION.
⊠	5/8" DIAMETER x 10'-0" COPPER GROUND ROD WITH ACCESS.
■	EXOTHERMIC WELD TYPE "TA"
●	MECHANICAL CONNECTION
▼ (circled)	GROUND WELL

GENERAL NOTES

1. REFER TO CIVIL DRAWINGS FOR ACTUAL LOCATIONS OF STRUCTURES ON SITE.
2. COORDINATION, LAYOUT AND FURNISHING OF CONDUIT, CABLE AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL/TELECOMMUNICATIONS SERVICES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
3. THE EXACT BUILDING FOUNDATION SIZE AND BUILDING WALL PENETRATIONS FOR UTILITIES SHALL BE CONFIRMED WITH THE BUILDING SPECIFICATIONS AND PLANS PRIOR TO LAYOUT.
4. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
5. PROVIDE CADWELD CONNECTION STYLES: THROUGH (CABLE TO CABLE) TYPE "TA"
   (CABLE TO SURFACE) TYPE "LA" OR "VS" (PIPE)
   (CABLE TO ROD) TYPE "GT" OR "NC"
   (CABLE TO CABLE) TYPE "SS"
6. EXTEND UTILITY SERVICES TO UTILITY BACKBOARD IN PROPOSED OWNERS EQUIPMENT SHELTER. COORDINATE WITH SHELTER SHOP DRAWINGS FOR LOCATION. OWNER TO COORDINATE ALL UTILITY SERVICES TO NEW EQUIPMENT SHELTER.
7. SEE CIVIL SHEETS FOR DETAILS OF FLOOR AND WALL PENETRATIONS.
8. ALL CONDUITS SHALL BE PROPERLY ANCHORED ALONG ENTIRE ROUTE.

VERIFY ALL SHELTER DIMENSIONS, EQUIPMENT DIMENSIONS, EQUIPMENT LOCATIONS AND UTILITY OPENINGS WITH BUILDING SHOP DRAWINGS PRIOR TO COMMENCEMENT OF WORK

NOTES

1. CONTRACTOR TO VERIFY ALL CONDUIT ROUTING AND INSTALLATION REQUIREMENTS WITH LOCAL UTILITIES PRIOR TO INSTALLATION.
2. ALL CONDUITS SHALL HAVE EXPANSION COUPLINGS WHERE EXTENDING ABOVE GRADE.
3. ALL UTILITY SUPPLY CONDUITS, CONDUCTORS AND ASSOCIATED EQUIPMENT MUST BE LOCATED WITHIN THE LIMITS OF THE UTILITY EASEMENT. COORDINATE WITH OWNER FOR EASEMENT DOCUMENTATION.
4. REFER TO SITE UTILITY PLAN.
5. TELEPHONE EQUIPMENT SHOWN APPROXIMATE. COORDINATE WITH TELEPHONE UTILITY COMPANY AND PROVIDE ALL SPECIFIED EQUIPMENT.
6. COORDINATE SERVICE EQUIPMENT INTERRUPTING RATING WITH AVAILABLE FAULT CURRENT FROM UTILITY COMPANY. EQUIPMENT SHALL NOT BE RATED LESS THAN 65 KAIC.
7. ALL TELEPHONE AND ELECTRIC UTILITY WORK MUST BE COORDINATED WITH UTILITY COMPANY, AND ALL EQUIPMENT MUST BE UTILITY COMPANY APPROVED. CONTRACTOR SHALL PROVIDE ALL ELEMENTS NOT PROVIDED BY UTILITY COMPANIES.
8. CONDUCTOR SIZES SHALL NOT BE REDUCED OR SUBSTITUTED WITHOUT ENGINEERS APPROVAL.
9. INSTALL PULL ROPES IN ALL EMPTY CONDUITS.
10. ALL CONDUCTORS AND CONDUCTOR TERMINATIONS SHALL BE RATED FOR 75°C OPERATION.
11. COORDINATE WALL PENETRATIONS WITH SHELTER MANUFACTURER.

ELECTRICAL ABBREVIATIONS

ABBREVIATION	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
AIC	AMPERE INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAGE
C	CONDUIT
EGR	EXTERIOR GROUND RING
G – GRD	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
IGR	INTERIOR GROUND RING MOUNTED 9'-0" ABOVE FINISHED FLOOR
KWH	KILO-WATT-HOUR
MCCB	MOLDED CASE CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
NC	NORMALLY CLOSED
OC	ON CENTER
SA	SURGE ARRESTOR
VM	VOLTAGE MONITOR
WP	WEATHERPROOF
ER	EXISTING TO REMAIN
RR	REMOVE AND RELOCATE
RE	RELOCATED EXISTING
RGS	RIGID GALVANIZED STEEL

NOTES

(1) EXISTING TRANSFORMER AND TELCO PEDESTAL TO BE USED. REFER TO SITE SURVEY AND UTILITY PLAN. COORDINATE WITH EACH UTILITY COMPANY.

(2) (1) 3" CONDUIT FOR PRIMARY ELECTRIC CONDUCTORS. CONDUCTORS PROVIDED BY UTILITY COMPANY FROM UTILITY POLE TO TRANSFORMER. PROVIDE ALL COUPLINGS, ADAPTERS, SWEEPS, AND ASSOCIATED HARDWARE. MATERIAL SHALL BE PER UTILITY COMPANY SPECIFICATIONS. PROVIDE CONCRETE ENCASEMENT (MIN. 3" COVER ALL AROUND) AS REQUIRED BY CL&P. REFER TO NEW SERVICE REQUEST # 229-7566.

(3) TRANSFORMER PROVIDED BY UTILITY COMPANY. TRANSFORMER VAULT, HOUSING, AND GROUND GRID BY ELECTRICAL CONTRACTOR, PER UTILITY COMPANY SPECIFICATIONS.

(4) PROVIDE TRANSFORMER GROUNDING PER NEC AND UTILITY COMPANY SPECIFICATIONS.

(5) TWO SETS OF: (3) 600 KCMIL, (1) 1/0 AWG GROUND, 4"C.

(6) TWO 4" CONDUITS WITH PULL ROPES FOR TELEPHONE COMPANY CONDUCTORS. CONDUCTORS PROVIDED BY TELEPHONE COMPANY FROM UTILITY POLE TO UTILITY BOARD. PROVIDE ALL COUPLINGS, ADAPTERS, SWEEPS, AND ASSOCIATED HARDWARE. MATERIAL SHALL BE PER TELEPHONE COMPANY SPECIFICATIONS. CONDUITS SHALL BE ENCASED IN CONCRETE WITH ELECTRICAL CONDUITS, PER AT&T AND U.I. SPECIFICATIONS. PROVIDE SEPARATION BETWEEN UTILITIES AS REQUIRED BY BOTH UTILITY COMPANIES.

(7) PROVIDE CONDUIT WITH PULL ROPE BETWEEN HANDHOLE AND PEDESTAL. EXPECT TWO 4" CONDUITS, BUT FINAL SIZE AND QUANTITY PER TELEPHONE COMPANY.

(8) TELEPHONE & ELECTRIC JUNCTION/SPLICE BOX. MUST BE TRAFFIC RATED. QUANTITY AND LOCATION PER EACH UTILITY COMPANY SPECIFICATIONS.

(9) TELEPHONE COMPANY HANDHOLE. INSTALL PER TELEPHONE COMPANY SPECIFICATIONS.

(10) TELEPHONE COMPANY PEDESTAL. INSTALL PER TELEPHONE COMPANY SPECIFICATIONS.

(11) UTILITY BACKBOARD. REFER TO CIVIL DRAWINGS.

(12) TWO 3'x4'x1' NEMA-3R TELEPHONE ENCLOSURES INSTALLED NEXT TO EACH OTHER ON UTILITY BACKBOARD. MAINTAIN APPROXIMATELY 1' SEPARATION BETWEEN AND INSTALL A SECTION OF 4" CONDUIT CONNECTING BOTH BOXES.

(13) PROVIDE DOUBLE DUPLEX, GFI RECEPTACLE IN WEATHERPROOF ENCLOSURE INSIDE OF TELEPHONE ENCLOSURE. CONNECT TO DEDICATED 20A/1P CIRCUIT IN OWNERS ELECTRIC PANEL IN SHELTER.

(14) PROVIDE GROUND BAR AS REQUIRED BY TELEPHONE COMPANY.

(15) #2 AWG GROUNDING CONDUCTOR IN 3/4" PVC CONDUIT, UNLESS OTHERWISE SPECIFIED BY TELEPHONE COMPANY. BOND TO GROUNDING TRIAD.

(16) 800A, 240/120V, 1P, 65 KAIC RATED, NEMA-3R, MAIN CIRCUIT BREAKER MODULE WITH 800A/2P MAIN CIRCUIT BREAKER. (SQUARE-D: EZM1800CBU OR APPROVED EQUIVALENT.) MUST BE UTILITY COMPANY APPROVED.

(17) 3-GANG MULTI-METER BRANCH DEVICES WITH 240V, 1P, 3W, 225A RATED METER SOCKETS. (SQUARE-D: EZML113225 OR APPROVED EQUIVALENT). MUST BE UTILITY COMPANY APPROVED. (LEAVE ROOM FOR FUTURE 3-GANG MODULE.)

(18) UTILITY COMPANY APPROVED METER FOR AT&T IN AVAILABLE SOCKET. PROVIDE LABEL STATING "AT&T WIRELESS".

(19) 200A/2P MAIN CIRCUIT BREAKER IN AVAILABLE POSITION CORRESPONDING TO METER FOR OWNER.

(20) 3/0 AWG GROUNDING ELECTRODE CONDUCTOR IN 3/4 PVC CONDUIT BONDED TO GROUNDING TRIAD LOCATED AT UTILITY BACKBOARD. GROUNDING TRIAD SHALL BE BONDED TO COMPOUND GROUND RING WITH #2 AWG SOLID TINNED BARE COPPER WIRE.

(21) (3) #3/0 AWG, (1) #6 AWG GROUND, 2-1/2"C. FROM METER TO TRANSFER SWITCH IN SHELTER.

(22) (2) #12 AWG, #12 AWG GROUND, 3/4"C. FROM DEDICATED 20A/1P CIRCUIT BREAKER IN OWNERS POWER PANEL TO RECEPTACLE IN TELCO BOXES.

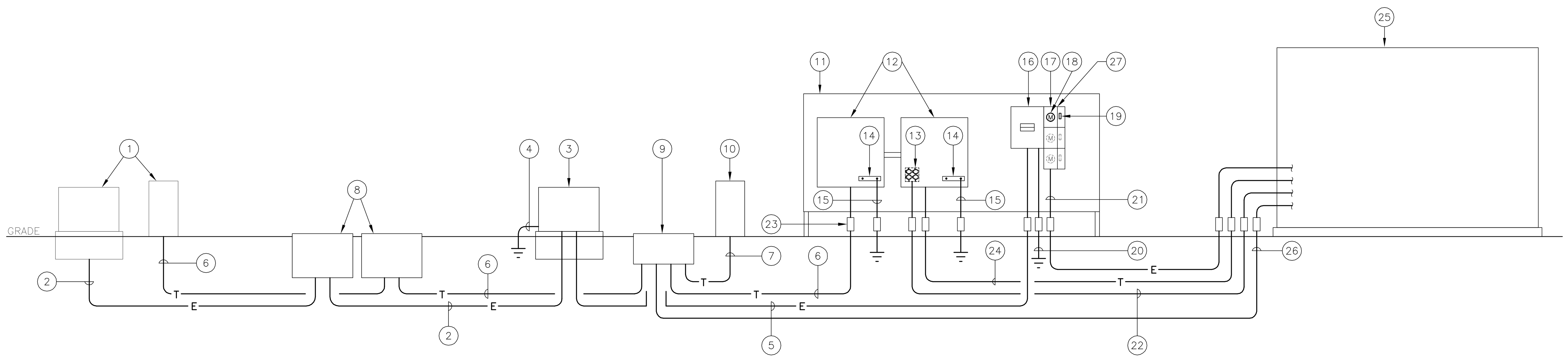
(23) EXPANSION COUPLING, TYPICAL.

(24) 4" PVC CONDUIT FOR TELEPHONE SERVICE. PROVIDE TELEPHONE CABLES AS REQUIRED BY TELEPHONE COMPANY AND OWNER. EXTEND TO OWNERS TELCO BOARD IN SHELTER.

(25) AT&T EQUIPMENT SHELTER.

(26) 4" PVC CONDUIT FROM HANDHOLE TO TELCO BOARD IN SHELTER. PROVIDE TELEPHONE CABLES AS REQUIRED BY TELEPHONE COMPANY AND OWNER.

(27) PROVIDE LABEL AT METER LISTING TYPE AND LOCATION OF ON SITE STANDBY GENERATOR.



1 / E-2 **RISER DIAGRAM**
SCALE: N.T.S.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	TGK	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	11/20/14	TJB	CKD	CONSTRUCTION
0	11/10/14	TJB	CKD	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

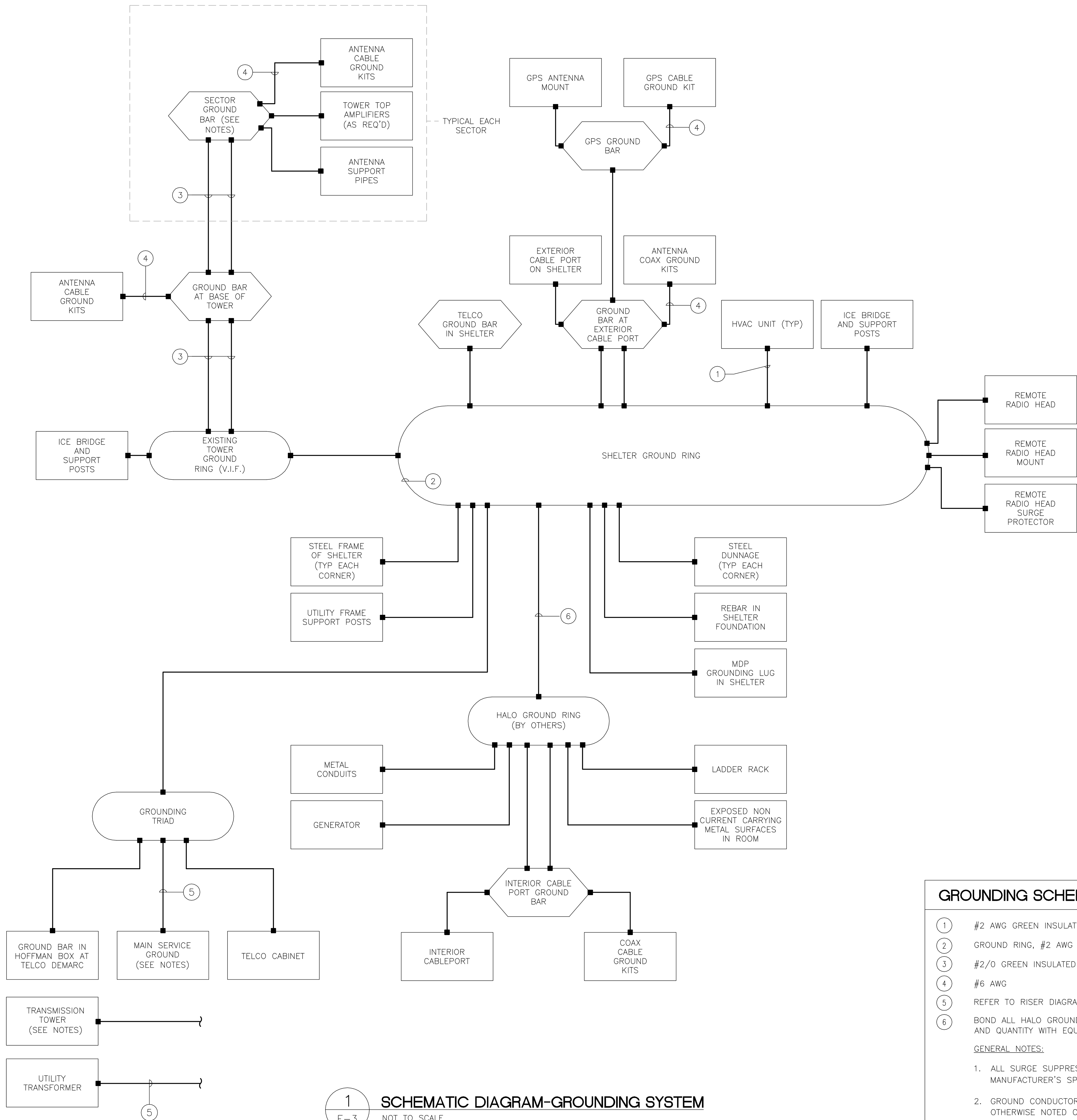
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

ELECTRICAL RISER DIAGRAM, NOTES AND LEGEND

E-2

Sheet No. 10 of 17



1
E-3

SCHEMATIC DIAGRAM-GROUNDING SYSTEM

NOT TO SCALE

CELLULAR GROUNDING NOTES

OBJECTIVE

PROVIDE A CELLULAR GROUNDING SYSTEM WITH MAXIMUM ALTERNATING CURRENT RESISTANCE OF 5 OHMS BETWEEN ANY POINT ON THE GROUNDING SYSTEM AND REFERENCE GROUND. PROVIDE EXTERIOR GROUNDING SCHEME WITH OWNERS APPROVAL AS REQUIRED TO ACHIEVE DESIRED MAXIMUM AC RESISTANCE TO GROUND. CONNECT

TESTING

CONTRACTOR TO PROVIDE AN INDEPENDENT TESTING CONTRACTOR TO DETERMINE THE GROUNDING SYSTEM RESISTANCE BY USE OF THE THREE POINT TEST AND AN AEMC MODEL 4500, OR APPROVED EQUAL. TEST TO BE PERFORMED PRIOR TO CONNECTION OF POWER SUPPLY TO THE CELL SITE AND CONNECTION OF THE GROUNDING SYSTEM TO THE WATER MAIN OR AC SUPPLY AS APPLICABLE.

CONDUCTOR USED FOR CELLULAR GROUNDING SYSTEM

EGR – #2 AWG ANNEALED SOLID TINNED BARE COPPER
IGR – #2 AWG ANNEALED STRANDED (7 STRAND) 'THW' GREEN COLORED INSULATION
INTER–BUS EXTENSION (FROM IGR TO EGR) – SEE DETAILS
EXTERNAL BOND CONNECTIONS TO EGR – #2 ANNEALED SOLID TINNED BARE COPPER
INTERIOR BOND CONNECTIONS TO IGR – #6 ANNEALED STRANDED (7 STRAND) 'THW' GREEN COLORED INSULATION

MINIMUM BENDING RADIUS

IGR #2 : 1'–0" NOMINAL AND 8" MINIMUM
EGR #2 : 2'–0" NOMINAL AND 8" MINIMUM
CELLULAR GROUNDING CONDUCTOR SHALL BE AS STRAIGHT AS POSSIBLE WITH MINIMUM 6" BENDING RADIUS.

FASTENER FOR CELLULAR GROUNDING CONDUCTOR

USE NON–METALLIC FASTENER AND STANDOFF 'CLIC' (AVAIL. FROM NEFCO 203–289–0285) TO SURFACE SUPPORT CONDUCTOR 3" AWAY FROM SURFACES.

SPACING OF FASTENERS: 2'–0" O.C. OUTSIDE BUILDING
3'–0" O.C. INSIDE BUILDING

GROUNDING ELECTRODE

GROUNDING ELECTRODE SHALL BE 5/8" DIA. x 10'–0" l. COPPER CLAD STEEL ROD. ADJUST LOCATION OF GROUNDING ELECTRODE IF SOIL CONDITION IS NOT CONDUCTIVE (GRAVEL, SANDY SOIL, ROCKS). SPACE GROUNDING ELECTRODES 8'–0" TO 10'–0" APART. ELECTRODES SHALL BE DRIVEN ONLY WITH PROPER DRIVER SLEEVE TO PREVENT MUSHROOMING TOP OF ROD. WHEN ROCK BOTTOM IS ENCOUNTERED, THE ELECTRODE SHALL BE DRIVEN AT AN OBLIQUE ANGLE NOT TO EXCEED 45° FROM THE VERTICAL AWAY FROM STRUCTURES. TOP OF GROUNDING ELECTRODE SHALL BE MIN. 3'–6" BELOW FINISH GRADE.

CONNECTIONS ABOVE GRADE (MECHANICAL)

COMPRESSION LUG CONNECTOR – 15 TON COMPRESSION, 2 HOLE, LONG BARREL, ELECTRO TINNED PLATED, HIGH CONDUCTIVITY, COPPER 600V RATED. USE 1/4" ø BOLT, 3/4" SPACING LUGS TO BOND OBJECTS FROM THE IGR. (CONNECTOR SHALL BE BURNDY HYLUG SERIES OR EQUAL.)

EXOTHERMIC WELD LUG CONNECTOR – 2 HOLE, OFFSET, ELECTRO TINNED PLATED, HIGH CONDUCTIVITY, COPPER 600V. USE 1/2"ø BOLT, 1–3/4" SPACING LUGS. CONNECTOR SHALL BE CADWELD CONNECTION STYLE (CABLE TO SURFACE) TYPE LA, LUG SIZE 1/8 x 1. EXOTHERMIC WELD TO LUG AS REQUIRED.

C–TAP COMPRESSION CONNECTOR – HIGH CONDUCTIVITY COPPER FOR MAIN TO BRANCH LINE TAPPING. (CONNECTOR SHALL BE BURNDY HYTAP SERIES OR EQUAL.)

MECHANICAL CONNECTIONS

USE MATCHING MANUFACTURER TOOL AND DIE FOR COMPRESSION CONNECTION.

APPLY ANTI–OXIDANT CONDUCTIVITY ENHANCER COMPOUND ON SURFACES THAT ARE COMPRESSED.

SURFACES INTENDED TO BE CONNECTED WITH MECHANICAL CONNECTORS SHALL BE BARE METAL TO BARE METAL. PRIME AND PAINT OVER BONDED AREA TO PREVENT CORROSION.

WHEN BONDING #2 TO #2

EXTERIOR OF BUILDING – USE EXOTHERMIC WELD CONNECTION
INTERIOR OF BUILDING – USE COMPRESSION CONNECTION ON STRANDED CONDUCTORS ONLY.
– USE EXOTHERMIC WELD CONNECTION ON SOLID CONDUCTOR.

WHEN BONDING #2 TO FENCE POST

USE EXOTHERMIC WELD 'CADWELD TYPE VS' CONNECTION TO FENCE POST STEEL SURFACE. TEST WELD FOR POSSIBLE BURN THRU. PATCH WELDED AREA WITH GALVANIZED COATING AS REQUIRED FOR PROPER WELDED PERMANENT BOND. REFER TO MANUFACTURER'S REQUIREMENTS FOR DETAILS

GROUNDING SYSTEM INTERCONNECTION

BOND THE EGR DOWN CONDUCTORS, AND/OR BURIED GROUND RING TO ANY METALLIC OBJECT OR EXISTING GROUNDING SYSTEM WITHIN 6'.

WHEN BONDING #2 TO TOWER GROUND PLATE

TOWER GROUND PLATE SHALL BE 6" x 8" x 1/4" COPPER AND BE MADE AVAILABLE TO TOWER CONTRACTOR TO BE INSTALLED DURING TOWER CONSTRUCTION. USE EXOTHERMIC WELD 'CADWELD TYPE HS' TO TOWER GROUND PLATE TEST WELD FOR POSSIBLE BURN THRU. COORDINATE THE SIZE OF THE MOUNTING HOLE WITH TOWER CONTRACTOR.

METALLIC CONDUITS

BOND ALL STEEL CONDUITS TO PANELS AT POINT OF CONTACT WITH APPROVED GROUNDING BUSHING.

GROUNDING SCHEMATIC NOTES

(1) #2 AWG GREEN INSULATED

(2) GROUND RING, #2 AWG BCW

(3) #2/0 GREEN INSULATED

(4) #6 AWG

(5) REFER TO RISER DIAGRAM FOR SPECIFICATIONS

(6) BOND ALL HALO GROUND RING TAILS TO GROUND RING. COORDINATE LOCATION AND QUANTITY WITH EQUIPMENT ROOM/SHELTER DRAWINGS

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. GROUND CONDUCTORS SHOWN SHALL BE #2 AWG SOLID TINNED BCW UNLESS OTHERWISE NOTED OR REQUIRED BY CODE.
3. BOND CABLE TRAY AND ICE BRIDGE SECTIONS TOGETHER WITH #6 AWG STRANDED GREEN INSULATED JUMPERS.
4. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
5. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
6. REFER TO GROUNDING PLAN FOR LOCATION OF GROUNDING DEVICES.
7. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
8. COORDINATE ALL TOWER MOUNTED EQUIPMENT REQUIREMENTS WITH OWNER.
9. ALL TOWER MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
10. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.
11. ALL EXPOSED METAL OBJECTS IN SHELTER SHALL BE BONDED TO THE HALO GROUND WITHIN THAT ROOM.
12. REFER TO RISER DIAGRAM FOR SPECIFICATIONS OF SERVICE GROUND AND TRANSFORMER GROUND.
13. COORDINATE WITH CL&P TRANSMISSION DEPARTMENT REPRESENTATIVE TO DETERMINE ADDITIONAL GROUNDING REQUIREMENTS. PROVIDE ALL REQUIRED ELEMENTS TO MEET CL&P APPROVAL.
14. COORDINATE WITH TOWER OWNER BEFORE INSTALLING ANY GROUNDING ELEMENTS ON TOWER OR BONDING TO EXISTING TOWER GROUND RING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	TGK	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	11/20/14	TJB	CKD	CONSTRUCTION
0	11/10/14	TJB	CKD	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

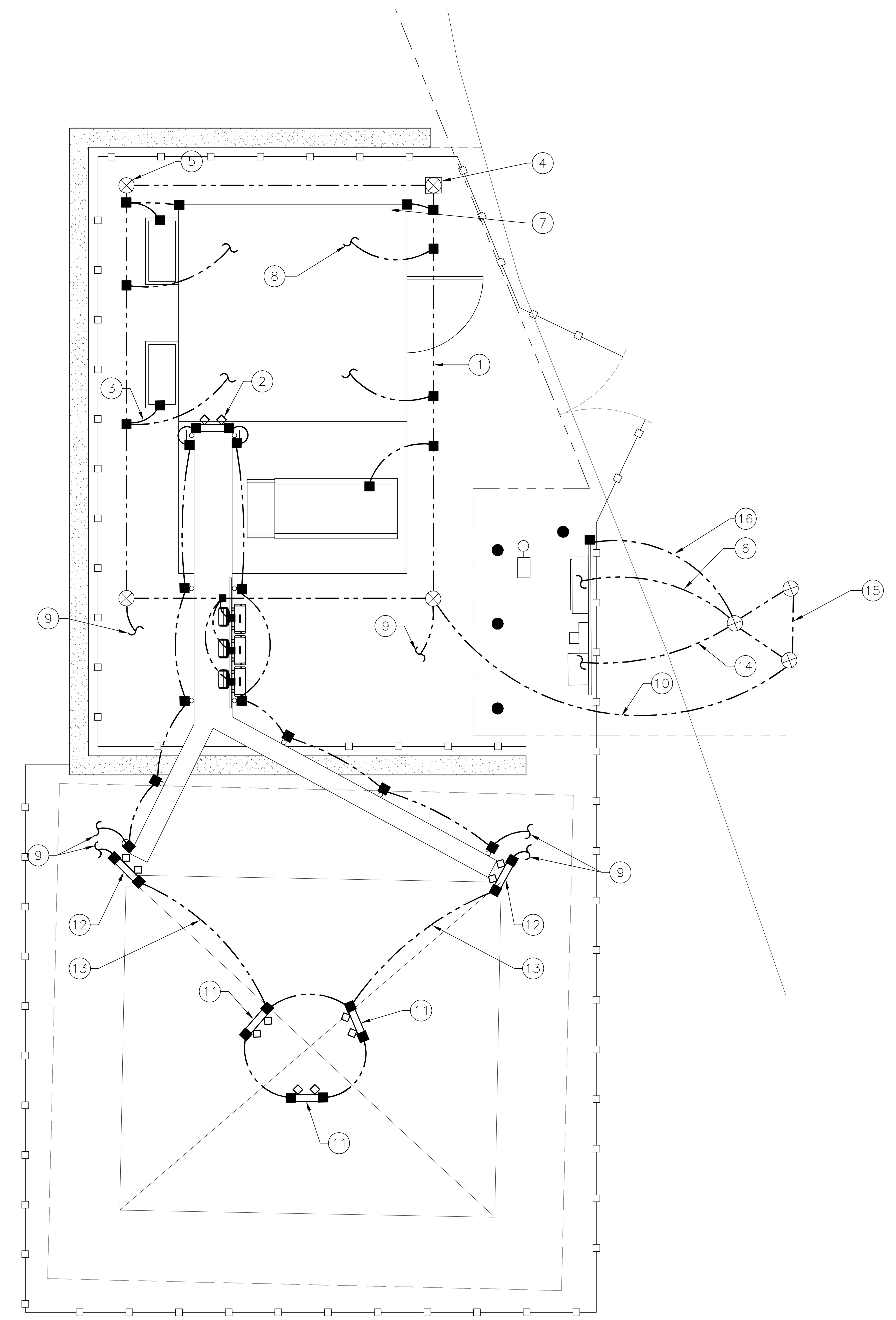
CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

ELECTRICAL GROUNDING SYSTEM

E-3



1 / E-4 **GROUNDING PLAN**
SCALE: 1" = 4'

APPROX. NORTH

GRAPHIC SCALE
(IN FEET)
1 inch = 4 ft.

GROUNDING PLAN NOTES

1. #2 SOLID TINNED BCW GROUND RING (TYP. 2'-0" FROM OUTSIDE EDGE OF EQUIPMENT SHELTER FOUNDATION) (TYP.).
2. WAVEPORT GROUND BAR SEE DETAIL.
3. BOND HVAC UNITS TO GROUND RING.
4. GROUNDING ROD WITH ACCESS (TYP.) SEE DETAILS.
5. GROUNDING ROD (TYP.) SEE DETAILS.
6. TELEPHONE CABINET GROUNDING. (SEE RISER DIAGRAM).
7. CADWELD EQUIPMENT BUILDING TO GROUND RING (TYP).
8. BOND SHELTER TAIL GROUND LEADS TO SHELTER GROUND RING (TYP. 6 PLACES).
9. BOND TO EXISTING TOWER GROUND RING. CONTRACTOR TO VERIFY LOCATION/CONFIGURATION IN FIELD. COORDINATE WITH TOWER OWNER. (TYP.)
10. BOND GROUNDING TRIAD TO GROUND RING.
11. UPPER TOWER MOUNTED SECTOR GROUND BAR.
12. LOWER TOWER MOUNTED GROUND BAR.
13. BOND UPPER TOWER MOUNTED GROUND BAR TO LOWER TOWER MOUNTED GROUND BAR (2 GROUND LEADS).
14. MAIN SERVICE GROUND. (SEE RISER DIAGRAM).
15. GROUNDING TRIAD (REFER TO DETAIL).
16. BOND UTILITY FRAME SUPPORT POSTS TO GROUNDING TRIAD.

NOTES

1. COORDINATE WITH RISER DIAGRAM, GROUNDING SYSTEM SCHEMATIC DIAGRAM, AND ALL GROUNDING DETAILS.
2. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
3. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY TOWER OWNER PRIOR TO INSTALLATION.
4. PROVIDE ANY ADDITIONAL GROUNDING ELEMENTS REQUIRED BY TOWER OWNER.
5. SOME LANDSCAPING NOT SHOWN FOR CLARITY. REFER TO CIVIL DRAWINGS.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	TGK	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	11/20/14	TJB	CKD	CONSTRUCTION
0	11/10/14	TJB	CKD	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

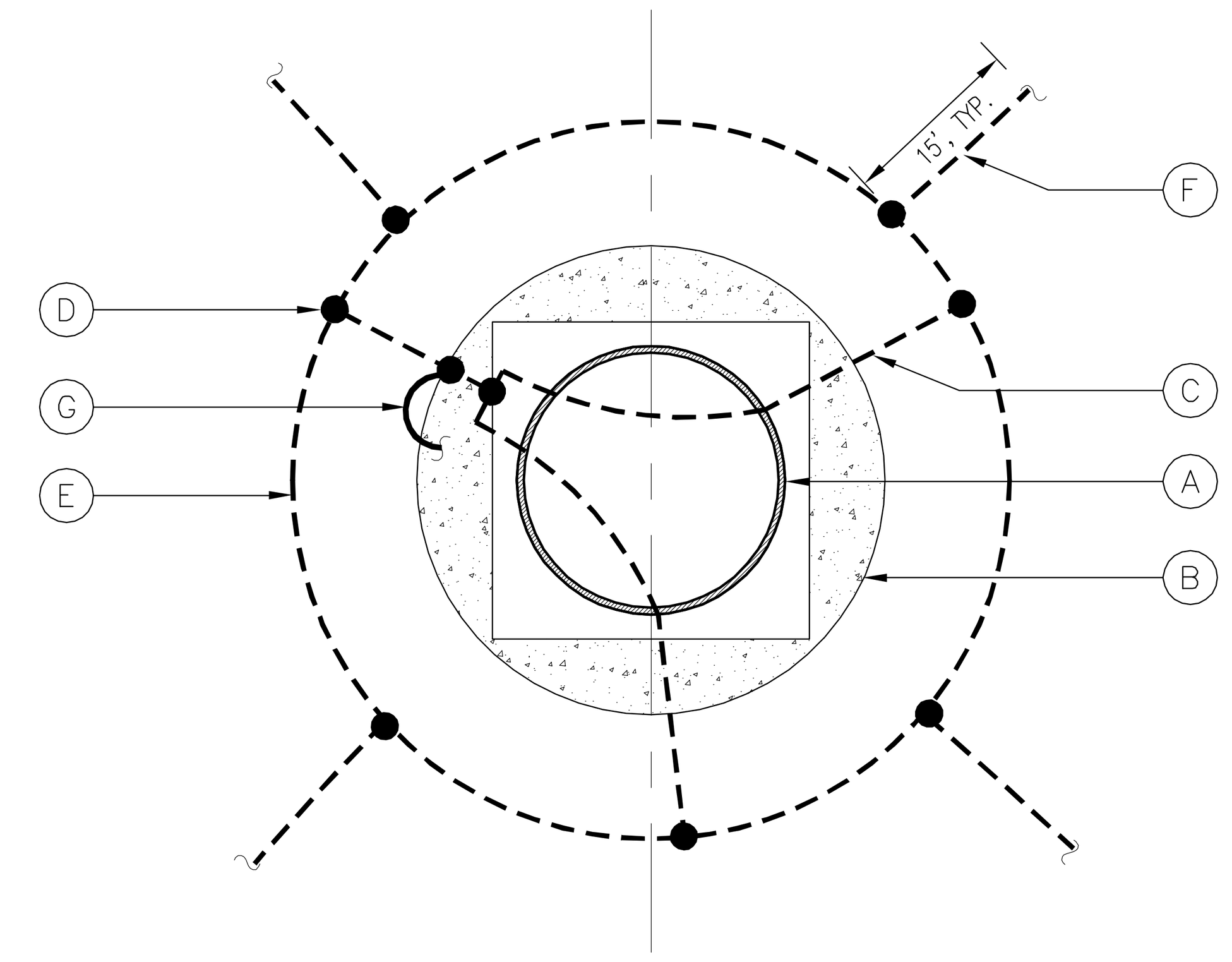
CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

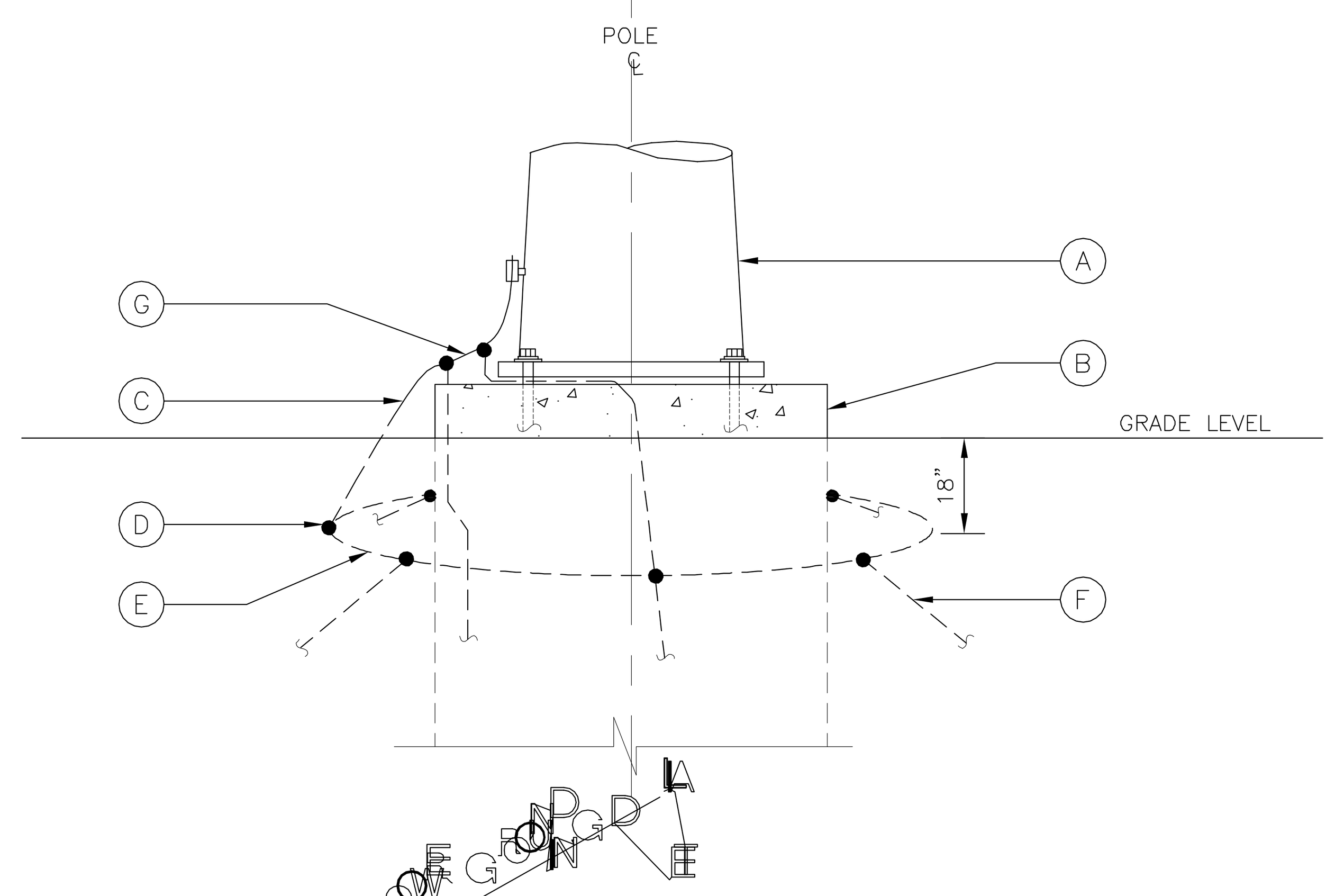
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

ELECTRICAL GROUNDING PLAN

E-4





1
E-5
NOT TO SCALE

NU TOWER GROUNDING NOTES:

(NORTHEAST UTILITIES REQUIREMENTS)

- (A) STEEL HYBRID POLE.
- (B) CONCRETE CAISSON TYPE FOUNDATION.
- (C) STRANDED COPPERWELD SPOKE FROM POLE GROUND TO GRADING RING. SPOKES ARE A CONTINUATION OF STRANDED COPPERWELD COUNTERPOISE CONNECTING GRADING RING TO POLE GROUND. SPOKES TO SLOPE ON STRAIGHT LINE FROM GROND LEVEL TO GRADING RING.
- (D) PARALLEL GROVE CONNECTOR, NU SC190052.
- (E) GRADING RING @ 18" MINIMUM BELOW GRADE AND 24" TO 30" FROM TOWER FOUNDATION. GRADING RING TO BE 3 NO. 8 STRANDED ANEALED COPPERWELD.
- (F) COUNTERPOISE, 3 NO. 8 STRANDED ANEALED COPPERWELD (TYPICAL).
- (G) COPPERWELD POLE GROUND.

GENERAL NOTES:

1. THE INFORMATION ON THIS SHEET REPRESENTS TYPICAL NORTHEAST UTILITIES GROUNDING REQUIREMENTS. CONTRACTOR MUST COORDINATE WITH NORTHEAST UTILITIES SITE MANAGER FOR SPECIFIC (AND CURRENT) GROUNDING REQUIREMENTS AT THIS SITE.

NORTHEAST UTILITIES - TOWER GROUNDING SYSTEM NOTES

GENERAL–

1. THE OWNER WILL FURNISH THE WIRE, CONNECTORS, AND MISCELANEOUS MATERIAL ASSOCIATED WITH THE COUNTERPOISE GROUNDING SYSTEM.
2. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO INSTALL THE GROUNDING SYSTEM AND TO REHABILITATE THE RIGHT–OF–WAY AS CLOSE AS POSSIBLE TO ITS ORIGINAL CONDITION.
3. THE CONTRACTOR SHALL HANDLE AND TRANSPORT THE OWNER SUPPLIED MATERIAL FROM THE OWNER'S STOREROOMS AND YARDS TO THE JOB SITE AND SHALL RETURN SURPLUS MATERIAL AND EMPTY REELS TO DESIGNATED STOREROOMS AND YARDS UPON COMPLETION OF THE CONTRACT.
4. NORTHEAST UTILITIES WILL BE RESPONSIBLE FOR PERFORMING TESTS FOR SURGE IMPEDANCE AND WAVE IMPEDENCE.

INSTALLATION–

1. UNLESS OTHERWISE DURECTED BY THE OWNER'S REPRESENTATIVE, COUNTERPOISE SHALL BE BURIED A MINIMUM OF 24" IN CULTIVATED AREAS AND 18" IN WOODED OR OTHER AREAS. IN ROCKY AREAS OR WHERE OBSTRUCTIONS ARE ENCOUNTERED, THE COUNTERPOISE SHALL BE DIVERTED AROUND SUCH OBSTRUCTIONS. ALL INSTALLATIONS SHALL INCLUDE CONNECTIONS TO EXISTING OR PROPOSED STRUCTURES, AND SUCH CONNECTIONS SHALL BE MADE BELOW GROUND USING BOLTED PARALLEL GROVE CONNECTORS.
2. WHERE MULTIPLE STUCTURE GROUNDS EXIST AT MULTI POLE STRUCTURES, THEY SHALL BE CONNECTED TOGETHER WITH BURIED COPPERWELD WIRE, BUT ONLY IF SUCH GROUNDS HAVE METALLIC CONNECTIONS UP THE POLES TO THE SHIELD WIRE(S). AT STRUCTURES THAT HAVE PALE GROUNDS AND ALSO POLE GUY GROUNDS, CONNECTIONS SHALL BE MADE ONLY TO THE POLE GROUNDS, AND THE MINIMUM SPACING BETWEEN THE COUNTERPOISE AND ANCHOR RODS SHALL BE 10'. AT WOOD POLE STRUCTURES WHERE NO SUCH POLE GROUND EXISTS, COUNTERPOISE CONNECTIONS SHALL BE MADE TO THE POLE TOP GUYS.
3. FOR SINGLE COUNTINUOUS (TYPE A) AND SINGLE BROKEN (TYPE B) COUNTERPOISE, THE WIRE SHALL IN GENERAL BE LAYED AT THE CENTERLINE OF THE TRANSMISSION LINE. FOR DOUBLE CONTINUOUS (TYPE C) AND DOUBLE BROKEN (TYPE D) COUNTERPOISE, THE WIRES SHALL IN GENERAL SHALL BE LAYED UNDER THE OUTSIDE PHASE WIRES OF THE TRANSMISSION LINE. COUNTERPOISE SHALL NOT BE INSTALLED ACROSS BROOKS, RIVERS, HIGHWAYS, RAILROADS, OR IN THE VICINITY OF TELEPHONE CABLES OR PIPELINES.
4. AT STEEL POLE STRUCTURES, A BURIED GRADING RING AND SPOKES SHALL ALSO BE INSTALLED AROUND THE STRUCTURE UNLESS THE STRUCTURE HAS A PAD AND PIER FOUNDATION OR UNLESS A RING ALREADY EXISTS. COUNTERPOISE WIRE SHALL BE CONNECTED AT TWO PLACES TO EACH RING, AND COPPERWELD SPOKES SHALL SLOPE LINEARLY UP TO THE STRUCTURE GROUND.
5. AT WOOD POLE STRUCTURES, AN 8' LENGTH OF PLASTIC MOULDING SHALL BE STAPLED OVER THE BOTTOM WITH 8' OF DOWNLEAD.

GROUND RODS–

1. WHERE GROUND RODS ARE REQUIRED, THEY SHALL BE SINGLE OR SECTIONAL WITH THE LENGTH SPECIFIED. THEY SHALL BE DRIVEN VERTICALLY INTO THE GROUND TO A DEPTH WHICH WILL LEAVE THE TOP OF THE ROD AT LEAST 12" BELOW GRADE. ALL RODS SHALL BE CONNECTED TO COUNTERPOISE OR TO POLE GROUNDS USING BOLTED CONNECTORS.

REHABILITATION–

1. SELECTIVE CLEARING PROCEDURES WERE USED IN THE DEVELOPMENT OF THE RIGHT–OF–WAY, AND GROWTH OF SELECTED SPECIES HAS BEEN SAVED. THE CONTRACTOR SHALL NOT VIOLATE THE OWNER'S INTENT TO SAVE SELECTIVE SPECIES AND IMPOSE THE MINIMUM ENVIRONMENTAL IMPACT ON THE RIGHT OF WAY DURING THE EXECUTION OF THE WORK. THE CONTRACTOR SHALL REVIEW THE ROUTING OF EACH SECTION OF COUNTERPOISE WITH THE OWNER'S REPRESENTATIVE PRIOR TO ITS FIELD SPECIFIED LOCATION. THE CONTRACTOR IS RESPONSIBLE TO THE OWNER FOR DAMAGES TO THE RIGHT–OF–WAY IN OTHER THAN THE FIELD SPECIFIED LOCATIONS.
2. ANY BRUSH ALONG THE FIELD SPECIFIED COUNTERPOISE ROUTES WHICH IS LEFT IN AN UNSIGHTLY CONDITION BY THE INSTALLATION WORK WILL BE CUT TO THE GROUND BY THE CONTRACTOR AND LEFT IN SMALL, NEAT PILES IN PLACE WHERE CUT.
3. IN LOCATIONS WHERE EXCAVATION FOR THE INSTALLATION OF COUNTERPOISE BRINGS TO THE SURFACE ANY SMALL BOULDERS, THEY WILL BE BACKFILLED BELOW GRADE OR DIPERSED ON THE RIGHT–OF–WAY AS THE OWNER'S REPRESENTATIVE MAY DIRECT. INSTALLATION OF THE COUNTERPOISE SHALL NOT RESULT IN A PATH OF SMALL BOULDERS ON THE FINISHED SURFACE.
4. THE OWNER ANTICIPATES THAT SEASONAL CONDITIONS MAY NOT ALLOW PERMANENT REHABILITATION OF WORK SITES AND THE RIGHT–OF–WAY UPON COMPLETION OF THE INSTALLATION OF THE COUNTERPOISE. WHERE TEMPORARY REHABILITATION HAS BEEN COMPLETED IN ADVERSE SEASON, THE CONTRACTOR SHALL TAKE THE FOLLOWING STEPS:
   A. WATERBARS WILL BE CONSTRUCTED ON ACCESS ROADS AND TRENCH LINES TO SHUNT WATER OFF THIS LINE OF DISTURBED SURFACES AND CONTROL EROSION ALONG THE DISTURBED SURFACE.
   B. ALL DISTURBED SURFACES OF FOUNDATION SITES OR ALONG TRENCH LINES OR ACCESS ROADS WILL BE GRADED AND COVERED WITH HAY MULCH. SUCH DISTURBED SY=URFACES ON SLOPES GREATER THAN ONE (VERTICAL) ON FOUR (HORIZONTAL) SHALL BE COVERED WITH WOOD CHIPS.
5. AS DRYING CONDITIONS PERMIT IN THE SPRING, FOLLOWING COMPLETION OF THE INSTALLATION OF COUNTERPOISE, PERMANENT REHABILITATION OF ALL DISTURBED OR ERODED SURFACES SHALL BE ACCOMPLISHED AS FOLLOWS:
   A. LAWNS, GOLF COURSES, CEMETARIES AND OTHER SIMILAR OCCUPANCIES SHALL BE LOAMED, GRADED, FERTILIZED, SEEDED AND WHERE APPROPRIATE, MULCHED, TO ESTABLISH A REHABILITATION CONSISTANT WITH THE USE ESTABLISHED BY THE OCCUPANT.
   B. GARDENS, OTHER CULTIVATED AREAS AND PASTURES, SHALL BE GRADED AND TOPSOILED TO RESTORE THE DEPTH OF FERTILE SOIL COMMON TO THE ADJACENT GROUND. WHERE APPROPRIATE, SEEDING SHALL BE DONE IN ACCORDANCE WITH STEP C BELOW.
   C. THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS ALONG THE NEW COUNTERPOISE ROUTES. SEED SHALL BE SPREAD AT THE RATE OF 100 LBS. PER ACRE AND SHALL BE AS FOLLOWS OR APPROVED EQUAL:

	% BY WEIGHT	% BY GERMINATION	% BY PURITY
CREEPING RED FESCUE	30	85	98
DOMESTIC RYE	20	90	98
KENTUCKY TALL FESCUE	50	--	--
	100		

   D. ALL OTHER DISTURBED AREAS INCLUDING REMAINING FOUNDATION SITES, ACCESS ROADS, AND REPAIR OF EROSION OF SITUATION SHALL BE SEEDED WITH MIXED SPECIFICATION ABOVE. IN REMOTE AREAS, A CONSERVATION MIX, AS USED BY THE CONNECTICUT STATE PARKS AND FOREST COMMISION MAY BE SUBSTITUTED. ALL AREAS WHICH EXPERIENCED EROSION DAMAGE AND ALL SLOPES OVER ONE (VERTICAL) AND FOUR (HORIZONTAL) WHERE TEMPORARY REHABILITAION WORK HAS BEEN DONE SHALL BE REMULCHED.
6. IT IS IMPERATIVE THAT PERMANENT REHABILITATION BE ACCOMPLISHED IN GOOD TIME, WHICH WILL ALLOW THE OCCUPANT FULL AND UNDISTURBED USE OF THE SITE IN THE SUCCEEDING SEASON, AND TO PREVENT UNNECESSARY AND UNREASONABLE SPREADING OF CONTINUATION OF DISTURBED SURFACES.
7. ANY BRUSH ALONG THE ACCESS ROADS WHICH IS LEFT IN AN UNSIGHTLY CONDITION BY THE WORK CONDUCTED, SHALL BE CUT TO THE GROUND BY THE CONTRACTOR AND LEFT IN SMALL NEAT PILES IN PLACE WHERE CUT.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	TGK	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	11/20/14	TJB	CKD	CONSTRUCTION
0	11/10/14	TJB	CKD	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

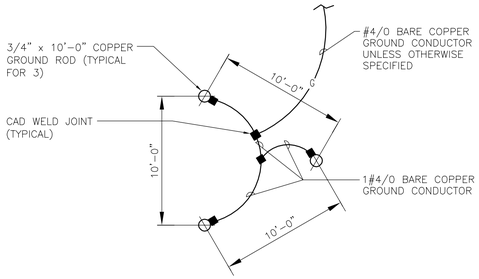
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

N.U. GROUNDING PLAN, DETAILS AND NOTES

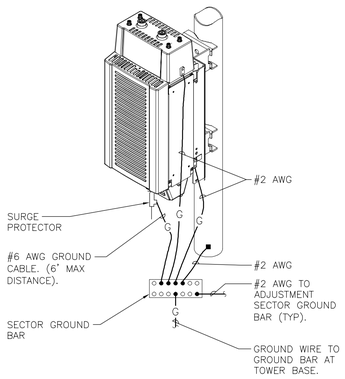
E-5

Sheet No. 13 of 17

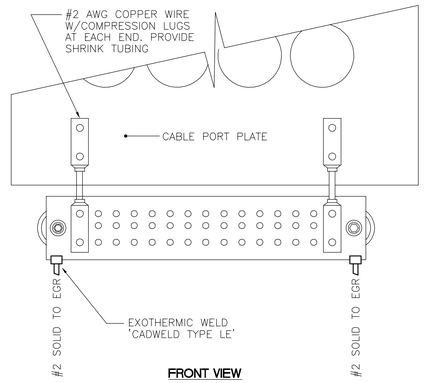


1 E-6 **GROUND TRIAD DETAIL**
NOT TO SCALE

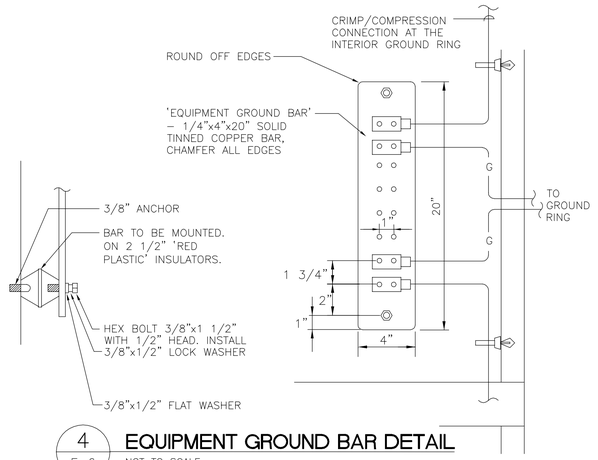
EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



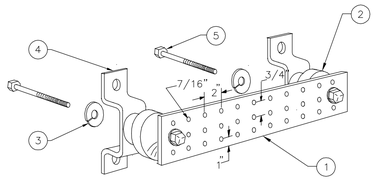
2 E-6 **RRH POLE MOUNT GROUNDING**
NOT TO SCALE



3 E-6 **CABLEPORT GROUND BAR LUG CONNECTION**
NOT TO SCALE



4 E-6 **EQUIPMENT GROUND BAR DETAIL**
NOT TO SCALE



NOTES

1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056.
5. 5/8-11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS.

5 E-6 **GROUND BAR DETAIL**
NOT TO SCALE

WARNING
ARC FLASH & SHOCK HAZARD
APPROPRIATE PPE REQUIRED
MAXIMUM AVAILABLE FAULT CURRENT:
XX,XXX AMPS
DATE: MM/DD/YYYY

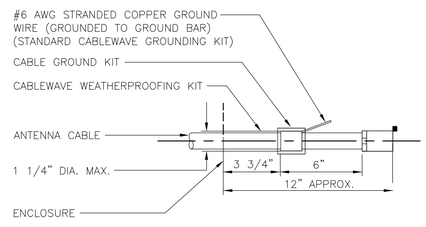
NOTES:
1. REFER TO SPECIFICATIONS FOR FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. PROVIDE WARNING LABEL ON ALL SERVICE EQUIPMENT IN ACCORDANCE WITH 2011 NEC 110.24.

6 E-6 **DETAIL OF TYPICAL FAULT CURRENT SIGN**
NOT TO SCALE

DANGER
ARC FLASH AND SHOCK HAZARD.
APPROPRIATE PPE REQUIRED.

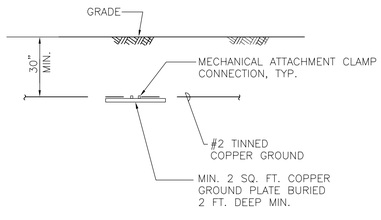
NOTES:
1. REFER TO SPECIFICATIONS FOR FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. PROVIDE WARNING LABEL ON ALL SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS IN ACCORDANCE WITH 2005 NEC 110.16.

7 E-6 **DETAIL OF TYPICAL FLASH PROTECTION WARNING SIGN**
NOT TO SCALE



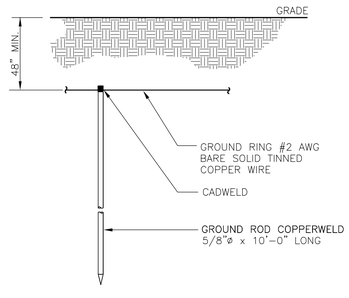
NOTE:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

8 E-6 **ANTENNA CABLE GROUNDING DETAIL**
NOT TO SCALE



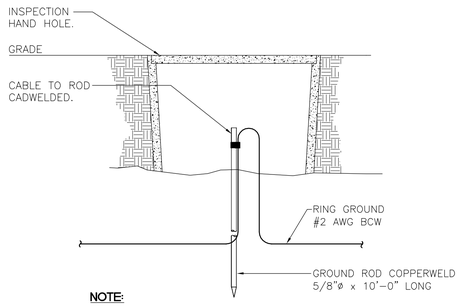
NOTE:
1. GROUND PLATE DETAIL TO BE USED ONLY IF 10 FT. GROUND ROD DEPTH CANNOT BE ACHIEVED DUE TO LEDGE CONDITION OR IF EXISTING TOWER FOUNDATION IS ENCOUNTERED.

8A E-6 **GROUND PLATE DETAIL**
NOT TO SCALE



NOTE:
1. USE GROUND PLATE DETAIL IF 10 FT. GROUND ROD DEPTH CANNOT BE ACHIEVED DUE TO LEDGE CONDITION OR IF EXISTING TOWER FOUNDATION IS ENCOUNTERED.

9 E-6 **GROUND ROD DETAIL**
NOT TO SCALE



NOTE:
1. INSPECTION HAND HOLE MAY BE CONCRETE OR PVC AND SHALL BE A MINIMUM OF 12" DIA x 18" DEEP.

10 E-6 **GROUND ROD WITH ACCESS DETAIL**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
3	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	06/27/17	DMD	TGK	CONSTRUCTION – REVISED CRITERIA PER CLIENT
0	11/20/14	TJB	CKD	CONSTRUCTION
	11/10/14	TJB	CKD	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

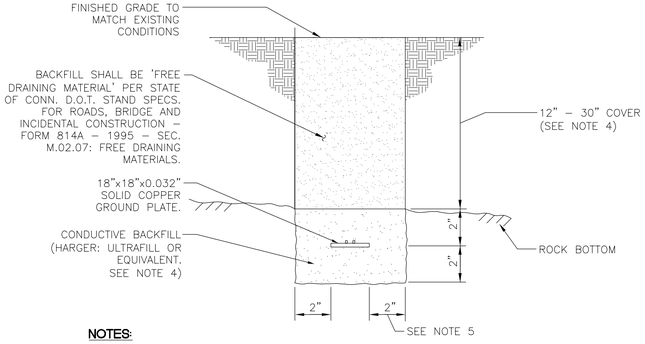
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

ELECTRICAL DETAILS

E-6

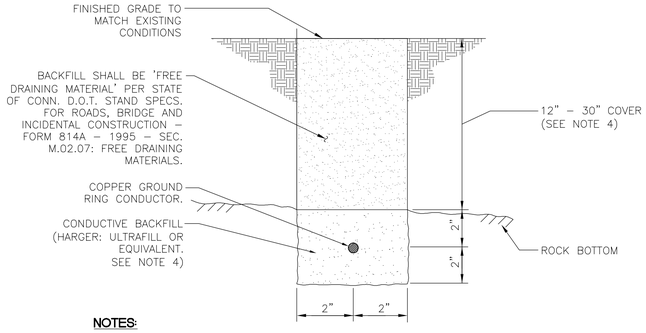
Sheet No. 14 of 17



NOTES:

1. ENGINEER SHALL INSPECT PLACEMENT OF EGR CONDUCTOR PRIOR TO BACKFILLING.
2. MAINTAIN MIN. 2'–0" LINEAR CLEARANCE BETWEEN BACKFILL AND THE FOLLOWING: FOUNDATION, UNDERGROUND PIPING/CONDUIT, UNDERGROUND SERVICES. IN THE CLEARANCE AREAS, USE EARTH BACKFILL INSTEAD.
3. EXERCISE HANDLING AND USE PRECAUTION OF BACKFILL MATERIAL PER MFR'S REQUIREMENTS.
4. FOR LOCATIONS WHERE ROCK BOTTOM DEPTH IS LESS THAN 12" CONDUCTIVE CONCRETE SHALL BE USED INSTEAD OF CONDUCTIVE BACKFILL.
5. PROVIDE MIN 2" CLEARANCE ON ALL SIDES OF GROUND PLATE.

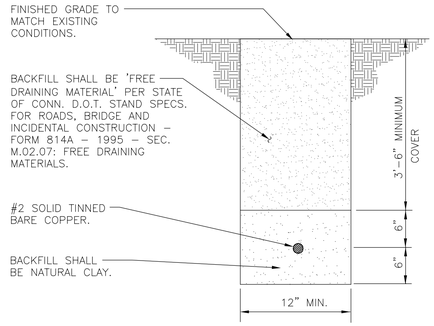
1 / E–7 **GROUND PLATE TRENCH/BACKFILL DETAIL (SHALLOW TOPSOIL)**
NOT TO SCALE



NOTES:

1. ENGINEER SHALL INSPECT PLACEMENT OF EGR CONDUCTOR PRIOR TO BACKFILLING.
2. MAINTAIN MIN. 2'–0" LINEAR CLEARANCE BETWEEN BACKFILL AND THE FOLLOWING: FOUNDATION, UNDERGROUND PIPING/CONDUIT, UNDERGROUND SERVICES. IN THE CLEARANCE AREAS, USE EARTH BACKFILL INSTEAD.
3. EXERCISE HANDLING AND USE PRECAUTION OF BACKFILL MATERIAL PER MFR'S REQUIREMENTS.
4. FOR LOCATIONS WHERE ROCK BOTTOM DEPTH IS LESS THAN 12" CONDUCTIVE CONCRETE SHALL BE USED INSTEAD OF CONDUCTIVE BACKFILL.

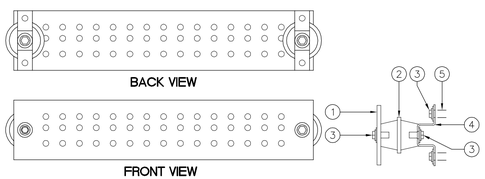
2 / E–7 **EGR TRENCH/BACKFILL DETAIL (SHALLOW TOPSOIL)**
NOT TO SCALE



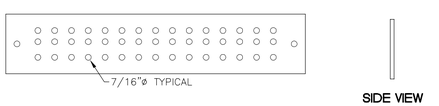
NOTES:

1. ENGINEER SHALL INSPECT PLACEMENT OF EGR CONDUCTOR PRIOR TO BACKFILLING.
2. MAINTAIN MIN. 2'–0" LINEAR CLEARANCE BETWEEN NATURAL CLAY BACKFILL AND THE FOLLOWING: FOUNDATION, UNDERGROUND PIPING/CONDUIT, UNDERGROUND SERVICES. IN THE CLEARANCE AREAS, USE EARTH BACKFILL INSTEAD.
3. EXERCISE HANDLING AND USE PRECAUTION OF BACKFILL MATERIAL PER MFR'S REQUIREMENTS.

3 / E–7 **EGR TRENCH/BACKFILL DETAIL**
NOT TO SCALE



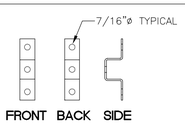
TYPICAL GROUND BAR ASSEMBLY
N.T.S.



TYPICAL GROUND BAR - DIMENSIONS
N.T.S.

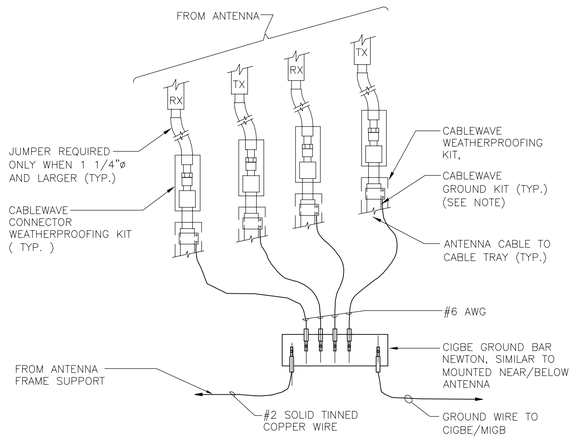
NOTES

1. HIGH CONDUCTIVITY TINNED COPPER BAR 1'–8"Lx4"Wx1/4"D.
2. RED COLORED STANDOFF INSULATOR PLASTIC #1872–1A.
3. STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS, SPLIT LOCKWASHER AND FLAT WASHER.
4. 1"Wx1/8"T STAINLESS STEEL TYPE 304 BRACKET.
5. STAINLESS STEEL TYPE 304 HARDWARE – 3/8"ø EXPANSION BOLT FOR CONCRETE.



BRACKET FOR GROUND BAR-DIMENSIONS
N.T.S.

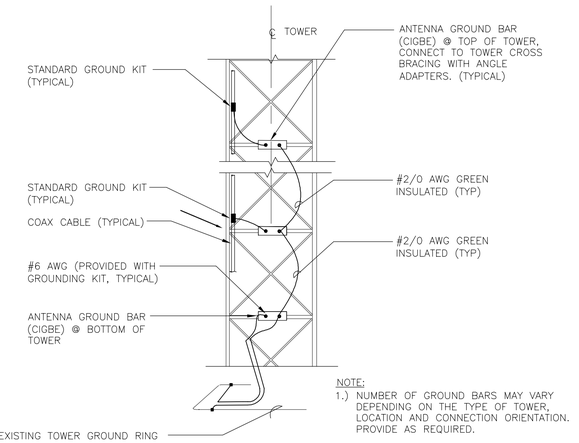
4 / E–7 **MASTER/EQUIPMENT GROUND BAR DETAILS**
N.T.S.



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

5 / E–7 **CONNECTION OF GROUND WIRES TO GROUND BAR**
NOT TO SCALE



6 / E–7 **ANTENNA CABLE GROUNDING - LATTICE TOWER**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	TGK	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	11/20/14	TJB	CKD	CONSTRUCTION
0	11/10/14	TJB	CKD	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

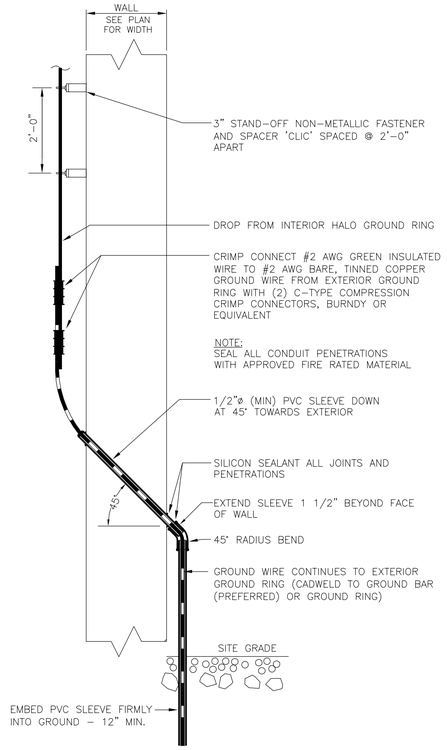
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

ELECTRICAL DETAILS

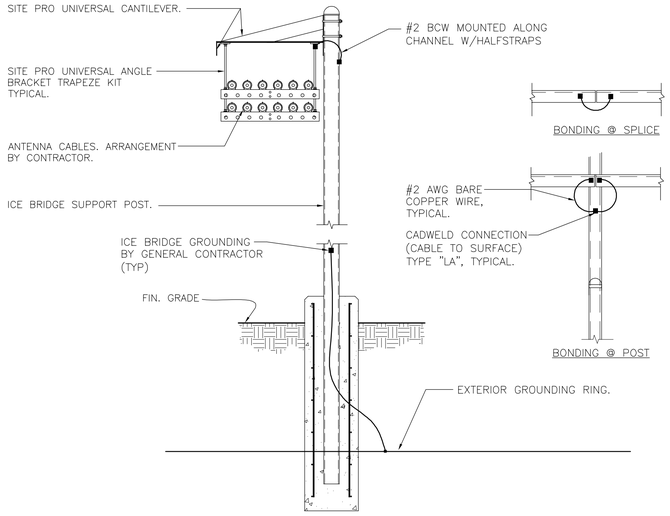
E-7

Sheet No. 15 of 17



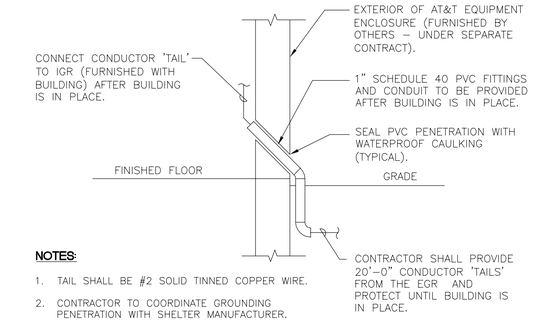
CELLULAR GROUNDING CONDUCTOR SECURED ON WALL

1 / E-8 — N.T.S.



ICE BRIDGE BONDING DETAIL

2 / E-8 — NOT TO SCALE

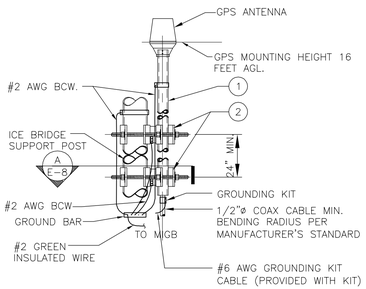


NOTES:

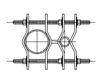
1. TAIL SHALL BE #2 SOLID TINNED COPPER WIRE.
2. CONTRACTOR TO COORDINATE GROUNDING PENETRATION WITH SHELTER MANUFACTURER.

TYPICAL EXTERIOR/INTERIOR GROUNDING CONNECTION

3 / E-8 — NOT TO SCALE



GPS ANTENNA MOUNTING BRACKET



A / E-8 — SECTION — NOT TO SCALE

NOTES

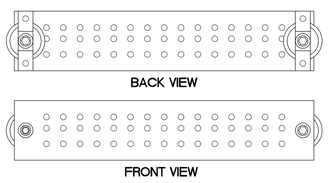
1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 2-1/2" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 24 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.

BILL OF MATERIALS

ITEM	DESCRIPTION	QUANTITY
1	2-1/2"ø SCH. 40 x 8'-0" LG. MAX SS OR GALV. PIPE	1
2	UNIVERSAL CLAMP SET.	2

GPS GROUNDING/MOUNTING BRACKET DETAIL

4 / E-8 — NOT TO SCALE



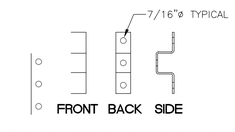
TYPICAL GROUND BAR ASSEMBLY

N.T.S.

TYPICAL GROUND BAR - DIMENSIONS

N.T.S.

NOTES:
1. HIGH CONDUCTIVITY TINNED COPPER BAR 1'-8"Lx4"Wx1/4"D
2. RED COLORED STANDOFF INSULATOR PLASTIC #1872-1A
3. STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS, SPLIT LOCKWASHER AND FLAT WASHER
4. 1"Wx1/8"T STAINLESS STEEL TYPE 304 BRACKET
5. STAINLESS STEEL TYPE 304 HARDWARE – 3/8"ø EXPANSION BOLT FOR CONCRETE

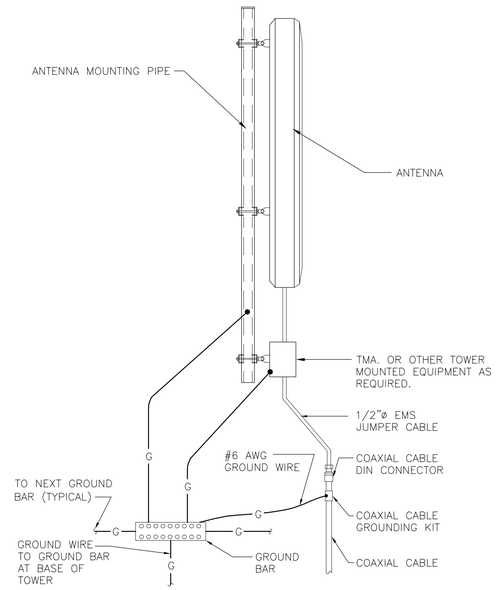


BRACKET FOR GROUND BAR-DIMENSIONS

N.T.S.

MASTER/EQUIPMENT GROUND BAR DETAILS

5 / E-8 — N.T.S.



TYPICAL ANTENNA GROUNDING DETAIL

6 / E-8 — NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
3	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
1	06/27/17	DMD	TGK	CONSTRUCTION – REVISED CRITERIA PER CLIENT
0	11/20/14	TJB	CKD	CONSTRUCTION
	11/10/14	TJB	CKD	CONSTRUCTION – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE:	11/03/14
SCALE:	AS NOTED
JOB NO.:	13305.000
AMENDED JOB NO.:	17010.08

ELECTRICAL DETAILS

E-8

Sheet No. 16 of 17

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. SCOPE OF WORK

A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. INSTALL NEW 6–GANG MULTI METER CENTER, 800A, 240/120V, 1P, 3 WIRE ELECTRIC SERVICE WITH REVENUE METER AND 200A MAIN CIRCUIT BREAKER FOR OWNER AND ASSOCIATED DISTRIBUTION EQUIPMENT. (AS REQUIRED BY UTILITY CO.)
2. NEW SITE TELEPHONE SERVICE AS SPECIFIED BY TELEPHONE COMPANY.
3. GENERATOR/TRANSFER SWITCH.
4. FEEDERS AND BRANCH CIRCUIT WIRING TO PANELS, RECEPTACLES, EQUIPMENT, LIGHTING FIXTURES, ETC. AS INDICATED OR NOTED ON PLANS.
5. POWER AND TEMPERATURE CONTROL WIRING FOR HVAC EQUIPMENT.
   a. FURNISH AND INSTALL ALL POWER WIRING FOR ALL HEATING, VENTILATING, AIR CONDITIONING, MOTORS AND DEVICES, AND FIRE PROTECTION EQUIPMENT INDICATED ON THE PLANS OR CALLED FOR IN THIS SPECIFICATION, EITHER ELECTRICAL OR MECHANICAL INCLUDING ALL CONTROL WIRING. ALL MAGNETIC STARTERS SHALL BE FURNISHED UNDER DIVISION 15 AND HAVE INSTALLED THEREIN A PROPER OVERLOAD HEATER FOR EACH MOTOR.
   b. ALL WIRING, BOTH POWER AND CONTROL, FOR SUCH ITEMS AS UNIT HEATERS, EXHAUST FANS, ETC., NOT SPECIFICALLY CALLED FOR IN THE TEMPERATURE CONTROL SPECIFICATIONS, SHALL BE WIRED UNDER DIVISION 16.
   c. ALL CONTROLS WHICH ARE TO BE WIRED BY THIS CONTRACTOR SHALL BE DELIVERED TO HIM BY THE CONTRACTOR/VENDOR FURNISHING THEM.
6. CELLULAR SITE ALARMS, ASSOCIATED WIRING AND DEVICES.
7. CELLULAR GROUNDING SYSTEMS, CONSISTING OF ANTENNA GROUNDING, INTERIOR GROUNDING RING, GROUND BARS, ETC.
8. FURNISH AND INSTALL 3/4" PLYWOOD BACKBOARD OF SIZE INDICATED ON DRAWINGS FOR MOUNTING OF POWER/SERVICE EQUIPMENT AND TELEPHONE/ALARM EQUIPMENT. BACKBOARDS SHALL BE PAINTED WITH TWO (2) COATS OF SEMI–GLOSS GRAY FIRE RETARDANT PAINT.
9. FIELD MEASURE EXISTING ELECTRICAL SERVICES TO CONFIRM AVAILABLE EXISTING POWER.
10. COORDINATE ALL WORK SHOWN, ON THESE PLANS WITH LOCAL UTILITY COMPANIES.

B. LOCAL UTILITY COMPANIES SHALL PROVIDE THE FOLLOWING:

1. TELEPHONE CABLES.
2. SHUTDOWN OF SERVICE (COORDINATE WITH OWNER).

C. CONTRACTOR SHALL CONFER WITH LOCAL UTILITY COMPANIES TO ASCERTAIN THE LIMITS OF THEIR WORK AND SHALL INCLUDE IN BID ANY CHARGES OR FEES MADE BY THE UTILITY COMPANIES FOR THEIR PORTION OF THE WORK AND SHALL PROVIDE AND INSTALL ALL ITEMS REQUIRED, BUT NOT PROVIDED BY UTILITY COMPANY.

D. ELECTRICAL CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH ELECTRIC UTILITY CO. PRIOR TO INSTALLATION.

E. CONTRACTOR SHALL COORDINATE WITH TELEPHONE UTILITY COMPANY FOR LOCATION OF TELEPHONE SERVICE AND TO DETERMINE ANY REQUIRED EQUIPMENT TO BE INSTALLED BY CONTRACTOR.

1.02. GENERAL REQUIREMENTS

A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.

B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.

E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH LOCAL TELEPHONE COMPANY THAT MAY BE REQUIRED FOR THE INSTALLATION OF TELEPHONE SERVICE TO THE PROPOSED CELLULAR SITE.

F. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.

G. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.

H. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.

I. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3–RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.

J. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

K. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.

L. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS–BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.

M. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.

N. SHOP DRAWINGS:

1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.
2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.

O. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION.

SECTION 16111

1.01. CONDUIT

A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". ALL CONDUIT RUNS LOCATED WITHIN THE OWNER'S EQUIPMENT ROOM SHALL ORIGINATE FROM THE WIREWAY AND RUN VERTICALLY TO ITS DESTINATION. NO BENDS WILL BE ACCEPTED. CONDUITS SHALL BE PROPERLY FASTENED TO THE WALLS AND CEILINGS AS REQUIRED BY THE N.E.C.

CONDUIT MATERIAL SHALL BE AS FOLLOWS:

1. ELECTRIC METALLIC TUBING (EMT) – BRANCH CIRCUITS INSIDE WIRELESS ROOM
2. GALVANIZED RIGID CONDUIT (GRC) – FEEDERS AND CIRCUITS EXPOSED TO EXTERIOR & UNDERGROUND.
3. LIQUID TIGHT FLEXIBLE METAL CONDUIT – FOR SHORT LENGTHS (MAX. 3'–0") WIRING TO VIBRATING EQUIPMENT (HVAC UNITS, MOTORS, ETC.) IN WET LOCATIONS.
4. FLEXIBLE METAL CONDUIT – FOR SHORT LENGTHS (MAX. 3'–0") WIRING TO VIBRATING EQUIPMENT IN DRY LOCATIONS.
5. PVC CONDUIT – WHERE SHOWN ON GROUNDING DETAILS.

SECTION 16114

1.01. CABLE TRAY

A. CABLE TRAY SHALL BE SOLID SIDE BAR, 18" WIDE (NEWTON INSTRUMENT COMPANY, INC.). TRAY SHALL BE INSTALLED AS SHOWN ON CONTRACT DOCUMENTS.

B. CROSSWISE RUNS SHALL BE COORDINATED WITH THE SPECIFIC EQUIPMENT THE TRAY SHALL SERVE.

C. ALL PROTRUDING CABLE TRAY SUPPORT RODS SHALL BE FILED SMOOTH WITH NO SHARP EDGES. ALL SUPPORT RODS SHALL BE CAD–PLATED FOR RUST RESISTANCE AND A MINIMUM 1/2" DIAMETER.

SECTION 16123

1.01. CONDUCTORS

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT–BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

	120/208/240V	277/480V
LINE	COLOR	COLOR
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

1.01. BOXES

A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.

B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

SECTION 16140

1.01. WIRING DEVICES

A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.

1. 15 MINUTE TIMER SWITCH – INTERMATIC #FF15M (INTERIOR LIGHTS)
2. DUPLEX RECEPTACLE – P&S #2095 (GFCI) SPECIFICATION GRADE
3. SINGLE POLE SWITCH – P&S #CSB20AC2 (20A–120V HARD USE) SPECIFICATION GRADE
4. DUPLEX RECEPTACLE – P&S #5362 (20A–120V HARD USE) SPECIFICATION GRADE

B. PLATES – ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.

C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

1.01. DISCONNECT SWITCHES

A. FUSIBLE AND NON–FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

SECTION 16190

1.01. SEISMIC RESTRAINT

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT

A. CONTRACTOR SHALL FURNISH AND INSTALL NON–METALLIC ENGRAVED BACK–LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.

B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1–1/2 INCH HIGH WITH 1/4 INCH MARGIN.

C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

D. PROVIDE NAMEPLATE FOR PORTABLE ENGINE/GENERATOR CONNECTION SHOWING VOLTAGE KVA/KW RATING, # PHASE, AND # OF WIRES. PLATE TO BE PLASTIC ENGRAVED, RED WITH WHITE LETTERS.

E. ALL RECEPTACLES, SWITCHES, DISCONNECT SWITCHES, ETC. SHALL BE LABELED WITH THE CORRECT BRANCH CIRCUIT NUMBER SERVED BY MEANS OF PERMANENT PRESSED TYPE BLACK 1/4" TRANSFER LETTERING. (FOR EXAMPLE: "MDP–5", ETC.).

F. PROVIDE A NAMEPLATE AT THE SERVICE EQUIPMENT INDICATING THE TYPE AND LOCATION OF THE ON SITE GENERATOR.

SECTION 16450

1.01. GROUNDING

A. ALL NON–CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.

B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.

C. GROUNDING OF PANELBOARDS:

1. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.
2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).

D. EQUIPMENT GROUNDING CONDUCTOR:

1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250–122.
2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.
3. REFER TO PANEL SCHEDULE "BRANCH CIRCUIT" DATA FOR EQUIPMENT GROUND CONDUCTOR SIZE FOR EACH BRANCH CIRCUIT.
4. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).

E. CELLULAR GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3–POINT GROUNDING TEST. (REFER TO SECTION 16960).

PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

1. GROUND BARS
2. INTERIOR GROUND RING
3. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).
4. ANTENNA GROUND CONNECTIONS AND PLATES.

F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S WIRELESS PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.

G. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

SECTION 16470

1.01. DISTRIBUTION EQUIPMENT

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16477

1.01. FUSES

A. FUSES SHALL BE NONRENEWABLE TYPE AS MANUFACTURED BY "BUSSMAN" OR APPROVED EQUAL. FUSES RATED TO 1/10 AMPERE UP TO 600 AMPERES SHALL BE EQUIVALENT TO BUSSMAN TYPE LPN–RK (250V) UL CLASS RK1, LOW PEAK, DUAL ELEMENT, TIME–DELAY FUSES. FUSES SHALL HAVE SEPARATE SHORT CIRCUIT AND OVERLOAD ELEMENTS AND HAVE AN INTERRUPTING RATING OF 200 KAIC. UPON COMPLETION OF WORK, PROVIDE ONE SPARE SET OF FUSES FOR EACH TYPE INSTALLED.

SECTION 16700

1.01. BUILDING ALARMS (SIGNAL COMMUNICATIONS)

A. ALARM BOX SHALL BE 12" W x 12" H x 6" D NEMA 1 ENCLOSURE, MCKINSTRY #30–1216LP WITH ACCESSORIES:

- "T" HANDLE LATCH KIT
- 14 GAUGE STEEL PANEL, PAINTED WHITE ENAMEL
- (6) 1/2"–3/4" K.OS ON EACH SIDE/TOP/BOTTOM WALLS
- (2) 3/4" RUBBER GROMMETS AS SLEEVES
- PROVIDE WIRING SCHEMATIC IN REMOVABLE PLASTIC COVER, TAPED TO BACK SIDE OF HINGED DOOR.

B. ALARM SENSORS' RELAY SHALL BE NORMALLY CLOSED. UPON ALARM CONDITION, THE RELAY SHALL REVERSE STATE TO OPEN. CONFIRM INSTALLATION AND LOCATION REQUIREMENTS FOR BUILDING'S ALARM SENSORS.

ALARM SENSORS SHALL BE:

1. FIRE ALARM CONTROL PANEL: FROM C CONTACT RELAY.
2. DOOR CONTACT SENSOR (SENTROL #1085T): SPDT MAGNETIC FORM C CONTACT – OPEN/CLOSE LOOP, MAX 1" GAP.
3. LOW TEMPERATURE SENSOR (HONEYWELL #T631C1103): SPDT AIR SWITCH CONTROLLER – COILED COPPER TUBE IN NEMA 1 ENCLOSURE. SET AT 50 DEGREES F., MOUNT LAMINATED, BACK–LIT NAMEPLATE WITH LEGIBLE DESCRIPTION "LOW TEMP 50 DEGREE F" BELOW SENSOR.
4. HIGH TEMPERATURE SENSOR (HONEYWELL #T631C1103): SPDT AIR SWITCH CONTROLLER – COILED COPPER TUBE IN NEMA 1 ENCLOSURE. SET AT 80 DEGREES F., MOUNT LAMINATED, BACK–LIT NAMEPLATE WITH LEGIBLE DESCRIPTION "HI TEMP 80 DEGREES F" BELOW SENSOR.

C. CONFIRM REQUIREMENTS FOR ALL BUILDING ALARM SENSORS INSTALLATION, AND LOCATION OF EACH SENSOR. ALARM WIRING SHALL BE ROUTED TO ALARM BOX AND SPADE CONNECTED TO RESPECTIVE TERMINAL BLOCK. EACH PAIR OF ALARM WIRING SHALL BE PERMANENTLY AND UNIQUELY TAGGED AT EACH TERMINAL STRIP LOCATION AND AT SPLICE/JUNCTION/BOXES/WIRING TROUGH.

D. REFER TO "WIRING SCHEMATIC FOR ALARM SENSORS" ON DRAWINGS.

SECTION 16500

1.01. LIGHTING FIXTURES

A. REFER TO LIGHT FIXTURE SCHEDULE FOR REQUIREMENTS.

SECTION 16620

(SUPPLIED BY OWNER, INSTALLED BY CONTRACTOR)

1.01. GENERATOR SET

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16960

1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.

TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

SECTION 16961

1.01. TESTS BY CONTRACTOR

A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.

B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE SO CONNECTED TO THE PANELBOARDS SUCH THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.

C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	11/10/14	TJB	CKD	CONSTRUCTION – ISSUED FOR CLIENT REVIEW
1	11/20/14	TJB	CKD	CONSTRUCTION – REVISED CRITERIA PER CLIENT
2	06/27/17	DMD	TGK	CONSTRUCTION – REVISED CRITERIA PER CLIENT
3	07/12/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT
	08/03/17	JTD	CAG	CONSTRUCTION – REVISED CRITERIA PER CLIENT

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MERIDEN
SITE NUMBER: CT2117
200 EDGEMARK ACRES
MERIDEN, CT 06451

DATE: 11/03/14
SCALE: AS NOTED
JOB NO.: 13305.000
AMENDED JOB NO.: 17010.08

ELECTRICAL SPECIFICATIONS

E-9

SD030 | 2.4L | 30 kW

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

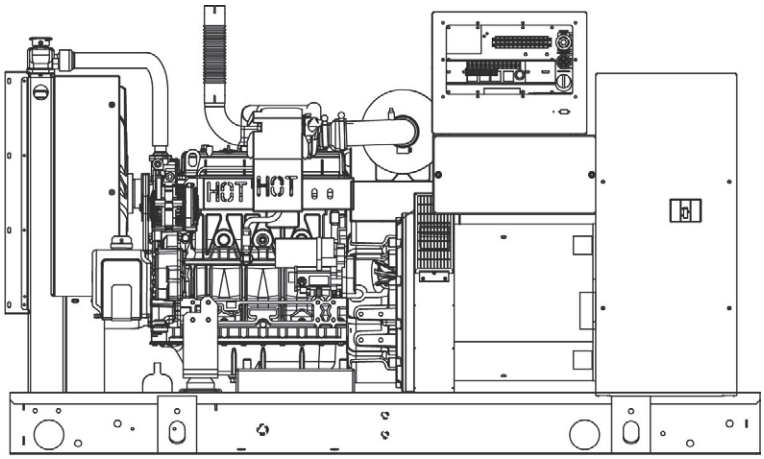
GENERAC | INDUSTRIAL POWER

STANDBY POWER RATING

30 kW, 38 kVA, 60 Hz

PRIME POWER RATING*

27 kW, 34 kVA, 60 Hz



*Built in the USA using domestic and foreign parts

*EPA Certified Prime ratings are not available in the U.S. or its Territories.

**Certain options or customization may not hold certification valid.

Image used for illustration purposes only

CODES AND STANDARDS

Generac products are designed to the following standards:

UL2200, UL508, UL142, UL498

NFPA70, 99, 110, 37

NEC700, 701, 702, 708

ISO9001, 8528, 3046, 7637, Pluses #2b, 4

NEMA ICS10, MG1, 250, ICS6, AB1

ANSI C62.41

POWERING AHEAD

For over 50 years, Generac has led the industry with innovative design and superior manufacturing.

Generac ensures superior quality by designing and manufacturing most of its generator components, including alternators, enclosures and base tanks, control systems and communications software.

Generac's gensets utilize a wide variety of options, configurations and arrangements, allowing us to meet the standby power needs of practically every application.

Generac searched globally to ensure the most reliable engines power our generators. We choose only engines that have already been proven in heavy-duty industrial application under adverse conditions.

Generac is committed to ensuring our customers' service support continues after their generator purchase.

SD030 | 2.4L | 30 kW

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

STANDARD FEATURES

ENGINE SYSTEM

General

- Oil Drain Extension
- Air Cleaner
- Fan Guard
- Stainless Steel flexible exhaust connection
- Critical Exhaust Silencer (enclosed only)
- Factory Filled Oil
- Radiator Duct Adapter (open set only)

Fuel System

- Fuel lockoff solenoid
- Primary fuel filter

Cooling System

- Closed Coolant Recovery System
- UV/Ozone resistant hoses
- Factory-Installed Radiator
- Radiator Drain Extension
- 50/50 Ethylene glycol antifreeze
- 120 VAC Coolant Heater

Engine Electrical System

- Battery charging alternator
- Battery cables
- Battery tray
- Solenoid activated starter motor
- Rubber-booted engine electrical connections

ALTERNATOR SYSTEM

- UL2200 GENprotect™
- 12 leads (3-phase, non 600 V)
- Class H insulation material
- Vented rotor
- 2/3 pitch
- Skewed stator
- Auxiliary voltage regulator power winding
- Amortisseur winding
- Brushless Excitation
- Sealed Bearings
- Automated manufacturing (winding, insertion, lacing, varnishing)
- Rotor dynamically spin balanced
- Full load capacity alternator
- Protective thermal switch

GENERATOR SET

- Internal Genset Vibration Isolation
- Separation of circuits - high/low voltage
- Separation of circuits - multiple breakers
- Silencer Heat Shield
- Wrapped Exhaust Piping
- Silencer housed in discharge hood (enclosed only)
- Standard Factory Testing
- 2 Year Limited Warranty (Standby rated Units)
- 1 Year Limited Warranty (Prime rated Units)
- Silencer mounted in the discharge hood (enclosed only)

ENCLOSURE (IF SELECTED)

- Rust-proof fasteners with nylon washers to protect finish
- High performance sound-absorbing material
- Gasketed doors
- Stamped air-intake louvers
- Air discharge hoods for radiator-upward pointing
- Stainless steel lift off door hinges
- Stainless steel lockable handles
- Rhino Coat™ - Textured polyester powder coat

TANKS (IF SELECTED)

- UL 142
- Double wall
- Vents
- Sloped top
- Sloped bottom
- Factory pressure tested (2 psi)
- Rupture basin alarm
- Fuel level
- Check valve in supply and return lines
- Rhino Coat™ - Textured polyester powder coat
- Stainless hardware

CONTROL SYSTEM

Control Panel

- Digital H Control Panel - Dual 4x20 Display
- Programmable Crank Limiter
- 7-Day Programmable Exerciser
- Special Applications Programmable PLC
- RS-232/485
- All-Phase Sensing DVR
- Full System Status
- Utility Monitoring
- Low Fuel Pressure Indication
- 2-Wire Start Compatible
- Power Output (kW)
- Power Factor
- kW Hours, Total & Last Run
- Real/Reactive/Apparent Power
- All Phase AC Voltage
- All Phase Currents
- Oil Pressure
- Coolant Temperature
- Coolant Level
- Engine Speed
- Battery Voltage
- Frequency
- Date/Time Fault History (Event Log)
- Isochronous Governor Control
- Waterproof/sealed Connectors
- Audible Alarms and Shutdowns
- Not in Auto (Flashing Light)
- Auto/Off/Manual Switch
- E-Stop (Red Mushroom-Type)
- NFPA110 Level I and II (Programmable)
- Customizable Alarms, Warnings, and Events
- Modbus protocol
- Predictive Maintenance algorithm
- Sealed Boards
- Password parameter adjustment protection
- Single point ground
- 15 channel data logging
- 0.2 msec high speed data logging
- Alarm information automatically comes up on the display

Alarms

- Oil Pressure (Pre-programmable Low Pressure Shutdown)
- Coolant Temperature (Pre-programmed High Temp Shutdown)
- Coolant Level (Pre-programmed Low Level Shutdown)
- Low Fuel Pressure Alarm
- Engine Speed (Pre-programmed Over speed Shutdown)
- Battery Voltage Warning
- Alarms & warnings time and date stamped
- Alarms & warnings for transient and steady state conditions
- Snap shots of key operation parameters during alarms & warnings
- Alarms and warnings spelled out (no alarm codes)

SD030 | 2.4L | 30 kW

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

CONFIGURABLE OPTIONS

ENGINE SYSTEM

General

- O Oil Heater
- O Industrial Exhaust Silencer

Fuel System

- O Flexible fuel lines
- O Primary fuel filter

Engine Electrical System

- O 10A UL battery charger
- O 2.5A UL battery charger
- O Battery Warmer

ALTERNATOR SYSTEM

- O Alternator Upsizing
- O Anti-Condensation Heater
- O Tropical coating
- O Permanent Magnet Excitation

CIRCUIT BREAKER OPTIONS

- O Main Line Circuit Breaker
- O 2nd Main Line Circuit Breaker
- O Shunt Trip and Auxiliary Contact
- O Electronic Trip Breaker

GENERATOR SET

- O Gen-Link Communications Software (English Only)
- O 8 Position Load Center
- O 2 Year Extended Warranty
- O 5 Year Warranty
- O 5 Year Extended Warranty

ENCLOSURE

- O Weather Protected
- O Level 1 Sound Attenuation
- O Level 2 Sound Attenuation
- O Steel Enclosure
- O Aluminum Enclosure
- O 150 MPH Wind Kit
- O 12 VDC Enclosure Lighting Kit
- O 120 VAC Enclosure Lighting Kit
- O AC/DC Enclosure Lighting Kit
- O Door Alarm Switch

TANKS (Size on last page)

- O Electrical Fuel Level
- O Mechanical Fuel Level
- O 54 Gal (204.4 L) Usable Capacity
- O 132 Gal (499.7 L) Usable Capacity
- O 211 Gal (798.7 L) Usable Capacity
- O 300 Gal (1135.6 L) Usable Capacity
- O 8” Fill Extension
- O 13” Fill Extension
- O 19” Fill Extension

CONTROL SYSTEM

- O 21-Light Remote Annunciator
- O Remote Relay Panel (8 or 16)
- O Oil Temperature Sender with Indication Alarm
- O Remote E-Stop (Break Glass-Type, Surface Mount)
- O Remote E-Stop (Red Mushroom-Type, Surface Mount)
- O Remote E-Stop (Red Mushroom-Type, Flush Mount)
- O Remote Communication - Modem
- O Remote Communication - Ethernet
- O 10A Run Relay
- O Ground Fault Indication and Protection Functions

ENGINEERED OPTIONS

ENGINE SYSTEM

- O Coolant heater ball valves
- O Block Heaters
- O Fluid containment pans

ALTERNATOR SYSTEM

- O 3rd Breaker Systems

CONTROL SYSTEM

- O Spare inputs (x4) / outputs (x4) - H Panel Only
- O Battery Disconnect Switch

GENERATOR SET

- O Special Testing
- O IBC Seismic Certification

ENCLOSURE

- O Motorized Dampers
- O Door switched for intrusion alert
- O Enclosure ambient heaters

TANKS

- O Overfill Protection Valve
- O UL2085 Tank
- O ULC S-601 Tank
- O Stainless Steel Tank
- O Special Fuel Tanks (MIDEQ and FL DEP/DERM, etc.)
- O Vent Extensions

RATING DEFINITIONS

Standby - Applicable for a varying emergency load for the duration of a utility power outage with no overload capability.

Prime - Applicable for supplying power to a varying load in lieu of utility for an unlimited amount of running time. A 10% overload capacity is available for 1 out of every 12 hours. The Prime Power option is only available on International applications. Power ratings in accordance with ISO 8528-1, Second Edition

SD030 | 2.4L | 30 kW

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

APPLICATION AND ENGINEERING DATA

ENGINE SPECIFICATIONS

General

Make	Generac
EPA Emissions Compliance	Stationary Emergency
EPA Emissions Reference	See Emissions Data Sheet
Cylinder #	4
Type	In-Line
Displacement - L (cu In)	2.4 (146.46)
Bore - mm (in)	90 (3.54)
Stroke - mm (in)	94 (3.70)
Compression Ratio	21.3:1
Intake Air Method	Turbocharged
Cylinder Head Type	Cast Iron
Piston Type	Aluminium

Engine Governing

Governor	Electronic Isochronous
Frequency Regulation (Steady State)	+/- 0.25%

Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Full Flow
Crankcase Capacity - L (qts)	6.2 (6.52)

Cooling System

Cooling System Type	Closed Recovery
Water Pump	Pre-Lubed, Self Sealing
Fan Type	Pusher
Fan Speed (rpm)	2698
Fan Diameter mm (in)	560 (22)
Coolant Standard Wattage	1500
Coolant Heater Standard Voltage	120 VAC

Fuel System

Fuel Type	Ultra Low Sulfur Diesel Fuel
Fuel Specifications	ASTM
Fuel Filtering (microns)	5
Fuel Injection	Distribution Injection Pump
Fuel Pump Type	Engine Driven Gear
Injector Type	Mechanical
Fuel Supply Line mm (in)	7.94 (0.31)
Fuel Return Line mm (in)	7.94 (0.31)

Engine Electrical System

System Voltage	12 VDC
Battery Charging Alternator	Std
Battery Size	See Battery Index 0161970SBY
Battery Voltage	12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	390
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<50
Standard Excitation	Synchronous
Bearings	Single Sealed Cartridge
Coupling	Direct, Flexible Disc
Load Capacity - Standby	100%
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.25%

SD030 | 2.4L | 30 kW

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL POWER

OPERATING DATA

POWER RATINGS

		Standby
Single-Phase 120/240 VAC @1.0pf	30 kW	Amps: 125
Three-Phase 120/208 VAC @0.8pf	30 kW	Amps: 104
Three-Phase 120/240 VAC @0.8pf	30 kW	Amps: 90
Three-Phase 277/480 VAC @0.8pf	30 kW	Amps: 46
Three-Phase 346/600 VAC @0.8pf	30 kW	Amps: 36

STARTING CAPABILITIES (sKVA)

		sKVA vs. Voltage Dip											
		480 VAC						208/240 VAC					
Alternator	kW	10%	15%	20%	25%	30%	35%	10%	15%	20%	25%	30%	35%
Standard	35	24	36	48	60	72	84	18	27	36	45	54	63
Upsize 1	40	27	41	54	68	81	95	20	31	41	51	61	71
Upsize 2	50	34	52	69	86	103	120	26	39	52	65	77	90

FUEL CONSUMPTION RATES*

Fuel Pump Lift - ft (m)
3 (1)
Total Fuel Pump Flow (Combustion + Return)
4.5 gph

Diesel - gph (lph)	
Percent Load	gph (lph)
25%	0.92 (3.5)
50%	1.45 (5.5)
75%	1.96 (7.4)
100%	2.74 (10.4)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby
Coolant Flow per Minute	gpm (lpm)	10 (38)
Coolant System Capacity	gal (L)	2.8 (10.95)
Heat Rejection to Coolant	BTU/hr	111,000
Inlet Air	cfm (m3/hr)	4,500 (7647)
Max. Operating Radiator Air Temp	F° (C°)	122 (50)
Max. Ambient Temperature (before derate)	F° (C°)	104 (40)
Maximum Radiator Backpressure	in H_2O	0.5

COMBUSTION AIR REQUIREMENTS

		Standby
Flow at Rated Power	cfm (m3/min)	90 (2.55)

ENGINE

		Standby
Rated Engine Speed	rpm	1800
Horsepower at Rated kW**	hp	49
Piston Speed	ft/min (m/min)	1110 (338)
BMEP	psi	153

EXHAUST

		Standby
Exhaust Flow (Rated Output)	cfm (m^3/min)	230 (391)
Max. Backpressure (Post Silencer)	inHg (Kpa)	1.5 (5.1)
Exhaust Temp (Rated Output)	°F (°C)	850 (454)
Exhaust Outlet Size (Open Set)	mm (in)	63.5 (2.5)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.

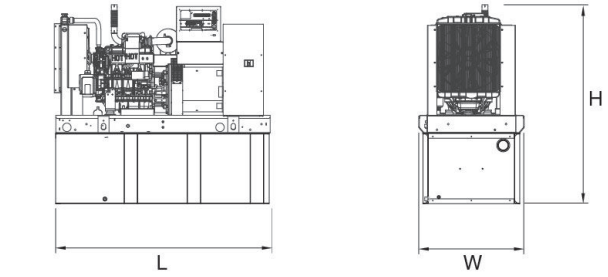
SD030 | 2.4L | 30 kW

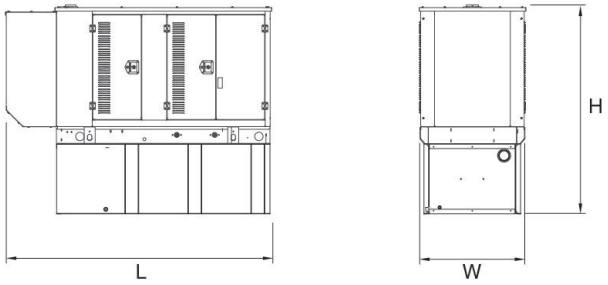
INDUSTRIAL DIESEL GENERATOR SET

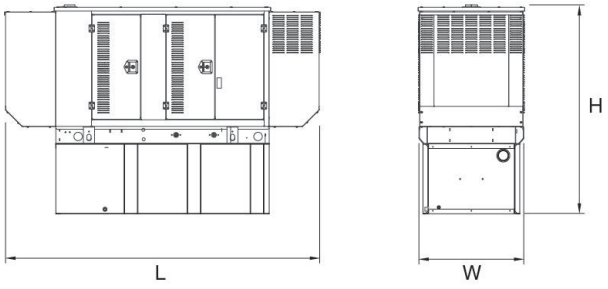
EPA Certified Stationary Emergency

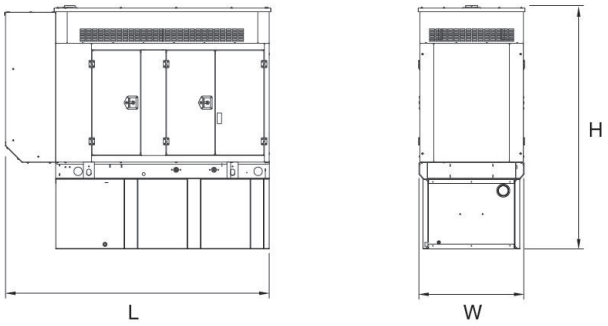
GENERAC | INDUSTRIAL POWER

DIMENSIONS AND WEIGHTS*









OPEN SET

RUN TIME HOURS	USABLE CAPACITY GAL (L)	L x W x H in (mm)	WT lbs (kg) - Tank & Open Set
NO TANK	-	76 (1930.4) x 37.4 (949.9) x 42.2 (1072.1)	2060 (934)
19	54 (204.4)	76 (1930.4) x 37.4 (949.9) x 55.2 (1402.1)	2540 (1152)
48	132 (499.7)	76 (1930.4) x 37.4 (949.9) x 67.2 (1706.9)	2770 (1257)
77	211 (798.7)	76 (1930.4) x 37.4 (949.9) x 79.2 (2011.7)	2979 (1351)
109	300 (1135.6)	92.9 (2360) x 37.4 (949.9) x 82.7 (2100.6)	3042 (1380)

STANDARD ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY GAL (L)	L x W x H in (mm)	WT lbs (kg) - Enclosure Only	
			Steel	Aluminum
NO TANK	-	94.8 (2408.9) x 38 (965.2) x 49.5 (1258.1)		
19	54 (204.4)	94.8 (2408.9) x 38 (965.2) x 62.5 (1587.5)		
48	132 (499.7)	94.8 (2408.9) x 38 (965.2) x 74.5 (1892.3)	302 (137)	191 (87)
77	211 (798.7)	94.8 (2408.9) x 38 (965.2) x 86.5 (2197.1)		
109	300 (1135.6)	94.8 (2408.9) x 38 (965.2) x 90 (2286)		

LEVEL 1 ACOUSTIC ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY GAL (L)	L x W x H in (mm)	WT lbs (kg) - Enclosure Only	
			Steel	Aluminum
NO TANK	-	112.5 (2857.1) x 38 (965.2) x 49.5 (1258.1)		
19	54 (204.4)	112.5 (2857.1) x 38 (965.2) x 62.5 (1587.5)		
48	132 (499.7)	112.5 (2857.1) x 38 (965.2) x 74.5 (1892.3)	455 (206)	288 (131)
77	211 (798.7)	112.5 (2857.1) x 38 (965.2) x 86.5 (2197.1)		
109	300 (1135.6)	112.5 (2857.1) x 38 (965.2) x 90 (2286)		

LEVEL 2 ACOUSTIC ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY GAL (L)	L x W x H in (mm)	WT lbs (kg) - Enclosure Only	
			Steel	Aluminum
NO TANK	-	94.8 (2408.9) x 38 (965.2) x 62 (1573.9)		
19	54 (204.4)	94.8 (2408.9) x 38 (965.2) x 75 (1905)		
48	132 (499.7)	94.8 (2408.9) x 38 (965.2) x 87 (2209.8)	460 (209)	291 (132)
77	211 (798.7)	94.8 (2408.9) x 38 (965.2) x 99 (2514.6)		
109	300 (1135.6)	94.8 (2408.9) x 38 (965.2) x 102.5 (2603.5)		

*All measurements are approximate and for estimation purposes only. Sound dBA can be found on the sound data sheet. Enclosure Only weight is added to Tank & Open Set weight to determine total weight.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.

Generac Power Systems, Inc. | P.O. Box 8 | Waukesha, WI 53187
P: (262) 544-4811

Part No 0K5085
Rev. D 08/19/15